



FALL 2022

# The Bent

Of Tau Beta Pi

THE ENGINEERING HONOR SOCIETY



**Is Fusion Finally  
Ready for Prime Time?**

**Meet the 2022  
Awardees and Scholars**

# ALUMNI CHAPTERS

79 ALUMNI CHAPTERS  
47 ACTIVE

Inactive chapters shown in **BLUE**

## DISTRICT 1

Central CT, Hartford  
Greater Boston Area, MA

## DISTRICT 2

Buffalo, NY  
Central Jersey, NJ  
LI Suburban, NY  
Newark, NJ  
New York City, NY  
New York Capital District, NY  
Rochester, NY  
Southern Tier, Binghamton, NY

## DISTRICT 3

Lehigh Valley, Bethlehem, PA  
Philadelphia, PA  
Pittsburgh, PA  
Wilmington, DE

## DISTRICT 4

Baltimore, MD  
Hampton Roads, Newport News, VA  
Kanawha Valley, Charleston, WV  
Research Triangle, Durham-Chapel Hill-Raleigh, NC  
Richmond, VA  
Washington, DC

## DISTRICT 5

Atlanta, GA  
Central FL, Orlando  
Daytona Beach, FL  
Gainesville, FL  
Miami, FL  
Midlands, Columbia, SC  
Palm Beach/Broward, FL  
Piedmont, Clemson, SC  
Puerto Rico  
Tampa Bay, FL

## DISTRICT 6

Bluegrass, Lexington-Frankfort, KY  
Central Alabama, Birmingham  
Great Smoky Mountains, Knoxville-Oak Ridge, TN  
Greater Gulf Coast, Mobile, AL  
Louisville, KY  
Mid-South, Memphis, TN  
Rocket City, Huntsville, AL

## DISTRICT 7

Ann Arbor Area, MI  
Central MI, Lansing  
Cincinnati, OH  
Columbus, OH  
Dayton, OH  
Flint, MI  
Ohio's North Coast, Cleveland  
SE Michigan, Detroit  
West Michigan, Grand Rapids

## DISTRICT 8

Chicago Area, IL  
Central Illinois, Urbana-Champaign  
Indianapolis, IN  
Milwaukee Area, WI

## DISTRICT 9

Kansas City, KS  
Pioneer, OK  
Rolla, MO  
St. Louis, MO

## DISTRICT 10

Central Texas, Austin/San Antonio  
North Texas, Dallas-Fort Worth  
Greater New Orleans, LA  
Texas Gulf Coast, Houston

## DISTRICT 11

Ames, IA  
Minnesota, Twin Cities, MN

## DISTRICT 12

Pikes Peak, CO  
Front Range, CO/WY  
Salt Lake City, UT  
Treasure Valley, Boise, ID

## DISTRICT 13

Albuquerque, NM  
El Paso, TX  
Phoenix, AZ  
Sun City, AZ  
Tucson, AZ

## DISTRICT 14

Columbia River Basin, Richland, WA  
Portland, OR  
Puget Sound, Seattle, WA

## DISTRICT 15

Sacramento Vly, CA  
SF Bay Area, CA  
SF Peninsula, Palo Alto, CA

## DISTRICT 16

Los Angeles, CA  
Orange County, CA  
Greater San Diego, California  
Southern California

# COLLEGIATE CHAPTERS

257 COLLEGIATE CHAPTERS  
625,273 MEMBERS

6 Inactive chapters shown in **BLUE**

A = ALPHA  
B = BETA  
Γ = GAMMA

Δ = DELTA  
E = EPSILON  
Z = ZETA

H = ETA  
Θ = THETA  
I = IOTA

K = KAPPA  
Λ = LAMBDA  
M = MU

N = NU  
Ξ = XI  
O = OMICRON

Π = PI  
P = RHO  
Σ = SIGMA

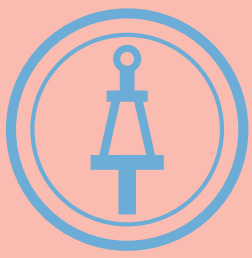
T = TAU  
Υ = UPSILON  
Φ = PHI

X = CHI  
Ψ = PSI  
Ω = OMEGA

**AL ALPHA** Auburn University  
**BETA** University of Alabama  
**GAMMA** Univ. of Ala. at Birmingham  
**DELTA** Univ. of Ala. in Huntsville  
**EPSILON** Univ. of South Alabama  
**AK ALPHA** Univ. of Alaska Fairbanks  
**AZ ALPHA** University of Arizona  
**BETA** Arizona State University  
**GAMMA** Northern Arizona University  
**DELTA** Embry-Riddle Univ., Prescott  
**AR ALPHA** University of Arkansas  
**BETA** Univ. of Ark. at Little Rock  
**CA ALPHA** UC Berkeley  
**BETA** Calif. Institute of Technology  
**GAMMA** Stanford University  
**DELTA** University of Southern Calif.  
**EPSILON** UC Los Angeles  
**ZETA** Santa Clara University  
**ETA** San Jose State University  
**THETA** Calif. State Univ., Long Beach  
**IOTA** Calif. State Univ., Los Angeles  
**KAPPA** Calif. State Univ., Northridge  
**LAMBDA** UC Davis  
**MU** Calif. Poly St. Univ., San Luis Obispo  
**NU** Calif. State Poly Univ., Pomona  
**XI** San Diego State University  
**OMICRON** Loyola Marymount Univ.  
**PI** Northrop University (inactive)  
**RHO** California State Univ., Fresno  
**SIGMA** UC Santa Barbara  
**TAU** University of California, Irvine  
**UPSILON** Calif. St. Univ., Sacramento  
**PHI** University of the Pacific  
**CHI** California State Univ., Fullerton  
**PSI** UC San Diego  
**OMEGA** Harvey Mudd College  
**ALPHA ALPHA** Calif. St. Univ., Chico  
**ALPHA BETA** UC Riverside  
**ALPHA GAMMA** San Francisco St. Univ.  
**ALPHA DELTA** UC Santa Cruz  
**ALPHA EPSILON** Univ. of San Diego  
**CO ALPHA** Colorado School of Mines  
**BETA** Univ. of Colorado at Boulder  
**GAMMA** University of Denver  
**DELTA** Colorado State University  
**EPSILON** Univ. of Colorado at Denver  
**ZETA** U.S. Air Force Academy  
**CT ALPHA** Yale University  
**BETA** University of Connecticut  
**GAMMA** University of Hartford  
**DE ALPHA** University of Delaware  
**DC ALPHA** Howard University  
**BETA** Catholic Univ. of America  
**GAMMA** George Washington Univ.  
**FL ALPHA** University of Florida  
**BETA** University of Miami  
**GAMMA** University of South Florida  
**DELTA** University of Central Florida  
**EPSILON** Florida Atlantic University  
**ZETA** Florida Institute of Technology  
**ETA** FL A&M Univ.-FL State Univ.  
**THETA** Florida International Univ.  
**IOTA** Embry-Riddle Aero. Univ.  
**GA ALPHA** Georgia Institute of Technology  
**BETA** Mercer University  
**GAMMA** Georgia Southern Univ.  
**ID ALPHA** University of Idaho  
**BETA** Idaho State University  
**GAMMA** Boise State University  
**DELTA** Brigham Young Univ.-Idaho  
**IL ALPHA** Univ. of IL at Urbana-Champaign  
**BETA** Illinois Institute of Technology  
**GAMMA** Northwestern University  
**DELTA** Bradley University  
**EPSILON** S. Illinois Univ. at Carbondale  
**ZETA** University of Illinois at Chicago  
**IN ALPHA** Purdue University  
**BETA** Rose-Hulman Inst. of Technology  
**GAMMA** University of Notre Dame  
**DELTA** Valparaiso University  
**EPSILON** Trine University  
**ZETA** Indiana Univ.-Purdue Univ. Indpls.  
**IA ALPHA** Iowa State University  
**BETA** University of Iowa  
**KS ALPHA** University of Kansas  
**BETA** Wichita State University

**GAMMA** Kansas State University  
**KY ALPHA** University of Kentucky  
**BETA** University of Louisville  
**GAMMA** Western Kentucky University  
**LA ALPHA** Louisiana State University  
**BETA** Tulane University  
**GAMMA** Louisiana Tech. University  
**DELTA** Univ. of Louisiana at Lafayette  
**EPSILON** University of New Orleans  
**ME ALPHA** University of Maine  
**MD ALPHA** Johns Hopkins Univ.  
**BETA** University of Maryland  
**GAMMA** U.S. Naval Academy  
**DELTA** Univ. of Maryland Baltimore Co.  
**EPSILON** Morgan State University  
**MA ALPHA** Worcester Polytechnic Inst.  
**BETA** Massachusetts Inst. of Tech.  
**GAMMA** Harvard University (inactive)  
**DELTA** Tufts University  
**EPSILON** Northeastern University  
**ZETA** University of Mass. at Amherst  
**ETA** Boston University  
**THETA** Univ. of Massachusetts Lowell  
**IOTA** Western New England Univ.  
**MI ALPHA** Michigan State University  
**BETA** Michigan Technological Univ.  
**GAMMA** University of Michigan  
**DELTA** University of Detroit Mercy  
**EPSILON** Wayne State University  
**ZETA** Kettering University  
**ETA** Lawrence Technological Univ.  
**THETA** Oakland University  
**IOTA** Univ. of Michigan-Dearborn  
**KAPPA** Western Michigan Univ.  
**LAMBDA** Grand Valley State Univ.  
**MN ALPHA** Univ. of Minnesota-Twin Cities  
**BETA** Univ. of Minnesota, Duluth  
**MS ALPHA** Mississippi State University  
**BETA** University of Mississippi  
**MO ALPHA** Univ. of Missouri-Columbia  
**BETA** Missouri Univ. of Science & Tech.  
**GAMMA** Washington University  
**DELTA** Univ. of Missouri-Kansas City  
**EPSILON** Saint Louis University  
**MT ALPHA** Montana State University  
**BETA** Montana Tech. of the Univ. of MT  
**NE ALPHA** Univ. of Nebraska-Lincoln  
**NV ALPHA** University of Nevada, Reno  
**BETA** Univ. of Nevada, Las Vegas  
**NH ALPHA** Univ. of New Hampshire  
**BETA** Dartmouth College  
**NJ ALPHA** Stevens Institute of Technology  
**BETA** Rutgers University  
**GAMMA** New Jersey Inst. of Tech.  
**DELTA** Princeton University  
**EPSILON** Rowan University  
**ZETA** The College of New Jersey  
**NM ALPHA** New Mexico State University  
**BETA** University of New Mexico  
**GAMMA** NM Inst. of Mining & Tech.  
**NY ALPHA** Columbia University  
**BETA** Syracuse University  
**GAMMA** Rensselaer Polytechnic Inst.  
**DELTA** Cornell University  
**EPSILON** New York Univ. (inactive)  
**ZETA** Brooklyn Polytechnic (inactive)  
**ETA** City College of CUNY  
**THETA** Clarkson University  
**IOTA** Cooper Union School of Eng'g.  
**KAPPA** University of Rochester  
**LAMBDA** Pratt Institute (inactive)  
**MU** Union College  
**NU** SUNY at Buffalo  
**XI** Manhattan College  
**OMICRON** SUNY at Stony Brook  
**PI** Rochester Institute of Tech.  
**RHO** NYU Tandon School of Eng'g.  
**SIGMA** Alfred University  
**TAU** Binghamton University  
**UPSILON** U.S. Military Academy  
**NC ALPHA** North Carolina State Univ.  
**BETA** Univ. of North Carolina (inactive)  
**GAMMA** Duke University  
**DELTA** Univ. of NC at Charlotte  
**EPSILON** NC A&T State University  
**ZETA** East Carolina University

**ND ALPHA** North Dakota State University  
**BETA** University of North Dakota  
**OH ALPHA** Case Western Reserve Univ.  
**BETA** University of Cincinnati  
**GAMMA** Ohio State University  
**DELTA** Ohio University  
**EPSILON** Cleveland State Univ.  
**ZETA** University of Toledo  
**ETA** Air Force Institute of Tech.  
**THETA** University of Dayton  
**IOTA** Ohio Northern University  
**KAPPA** University of Akron  
**LAMBDA** Youngstown State Univ.  
**MU** Wright State University  
**NU** Cedarville University  
**XI** Miami University  
**OK ALPHA** University of Oklahoma  
**BETA** University of Tulsa  
**GAMMA** Oklahoma State University  
**OR ALPHA** Oregon State University  
**BETA** Portland State University  
**GAMMA** University of Portland  
**DELTA** Oregon Institute of Tech.  
**PA ALPHA** Lehigh University  
**BETA** Pennsylvania State University  
**GAMMA** Carnegie Mellon University  
**DELTA** University of Pennsylvania  
**EPSILON** Lafayette College  
**ZETA** Drexel University  
**ETA** Bucknell University  
**THETA** Villanova University  
**IOTA** Widener University  
**KAPPA** Swarthmore College  
**LAMBDA** University of Pittsburgh  
**MU** Penn State Erie, Behrend College  
**PR ALPHA** University of Puerto Rico  
**RI ALPHA** Brown University  
**BETA** University of Rhode Island  
**SC ALPHA** Clemson University  
**BETA** University of South Carolina  
**GAMMA** The Citadel  
**SD ALPHA** S. Dakota Sch. of Mines & Tech.  
**BETA** South Dakota State University  
**TN ALPHA** University of Tennessee  
**BETA** Vanderbilt University  
**GAMMA** Tennessee Tech. University  
**DELTA** Christian Brothers Univ.  
**EPSILON** University of Memphis  
**ZETA** Univ. of Tenn. at Chattanooga  
**TX ALPHA** University of Texas at Austin  
**BETA** Texas Tech. University  
**GAMMA** Rice University  
**DELTA** Texas A&M University  
**EPSILON** University of Houston  
**ZETA** Lamar University  
**ETA** Univ. of Texas at Arlington  
**THETA** Univ. of Texas at El Paso  
**IOTA** Southern Methodist University  
**KAPPA** Prairie View A&M University  
**LAMBDA** Texas A&M Univ.-Kingsville  
**MU** Univ. of Texas at San Antonio  
**NU** Univ. of Texas Rio Grande Valley  
**XI** University of Texas at Dallas  
**UT ALPHA** University of Utah  
**BETA** Brigham Young University  
**GAMMA** Utah State University  
**VT ALPHA** University of Vermont  
**BETA** Norwich University  
**VA ALPHA** University of Virginia  
**BETA** Virginia Poly. Inst. & State Univ.  
**GAMMA** Old Dominion University  
**DELTA** Virginia Military Institute  
**EPSILON** Virginia Commonwealth Univ.  
**WA ALPHA** University of Washington  
**BETA** Washington State University  
**GAMMA** Seattle University  
**DELTA** Gonzaga University  
**WV ALPHA** West Virginia University  
**BETA** West Virginia Univ. Inst. of Tech.  
**WI ALPHA** Univ. of Wisconsin-Madison  
**BETA** Marquette University  
**GAMMA** Univ. of Wisconsin-Milwaukee  
**DELTA** Milwaukee School of Eng'g.  
**EPSILON** Univ. of Wisconsin-Platteville  
**WY ALPHA** University of Wyoming



# The Bent

FALL 2022

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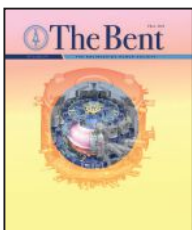
- 6 Is Fusion Ready for Prime Time?  
by Alan S. Brown

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**COVER:** The International Thermonuclear Experimental Reactor (ITER), one of the most complex engineering projects in history, promises to surpass fusion energy break-even in the 2030s.  
**Artist:** Dali Polivka

**Editor:** Dylan S. Lane

**Managing Editor:** Patricia B. McDaniel

**Editorial Board:** Lyle D. Feisel, Ph.D., P.E. (ret.), *IA A '61*; James D. Froula, P.E. (ret.), *TN A '67*; Alison L. Hu, *CA I '96*; Bridget A. Moorman, *AZ B '85*; and John W. Prados, Ph.D., P.E., *TN A '54*.

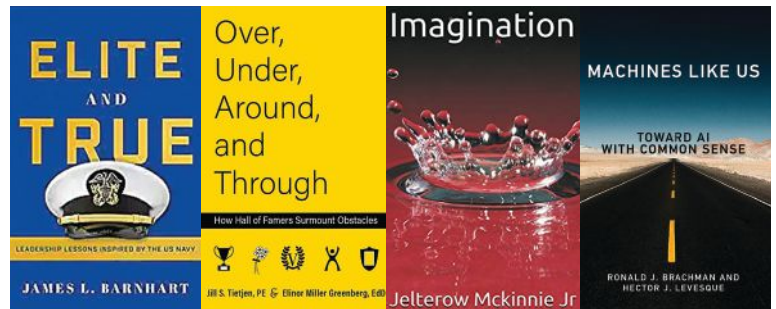
**Copy Editor:** Angela Boles

Tau Beta Pi was founded at Lehigh University, South Bethlehem, PA, June 15, 1885, by Edward H. Williams Jr., A.B., A.C., E.M., Sc.D., LL.D. (1849-1933). Key and name registered in U.S. Patent and Trademark Office.

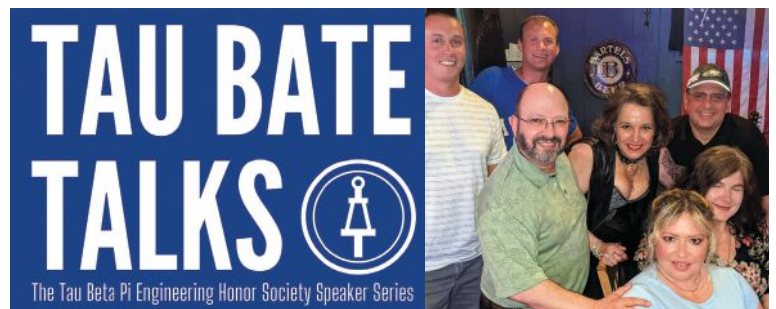
Member, *American Society for Engineering Education*; co-founder *Association of College Honor Societies*; and Affiliate, *American Association for the Advancement of Science*.



**12** Congratulations to the 2022 Association Award Winners!



**16** Highlighting Tau Bate authors and engineering-related books.



**40** Upcoming Tau Bate Talks, in-person Alumni Chapter events, and HQ visitors.

VISIT [www.tbp.org](http://www.tbp.org)

**The Bent of Tau Beta Pi**® (ISSN 0005-884X) is published quarterly for \$10 per year by The Tau Beta Pi Association, Inc., Room 508, Dougherty Engineering, The University of Tennessee, Knoxville, TN 37996-2215. Life subscriptions are: \$95-Print, \$45-Digital. Printed in U.S.A. Periodicals postage paid at Knoxville, TN, and at additional mailing offices.

**SUBSCRIBERS AND POSTMASTER:** Send address change, request for online subscription, and other correspondence to [tbp@tbp.org](mailto:tbp@tbp.org) or to *The Bent* of Tau Beta Pi, P.O. Box 2697, Knoxville, TN 37901-2697.

**Volume 113, Number 4 | Circulation: 88,700 | Initiated Members: 625,273**

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# COUNCIL'S CORNER

Ronald M. Hickling, CA E '80, TBP 2022 Executive Councillor

## CONVENTION — REFLECTIONS, THOUGHTS & A CALL TO ACTION

At the end of September, the Association will be holding our first in-person Convention in three years — this is a big deal. Many societies have annual national meetings, but Tau Beta Pi is unique in that it is truly a student run society, and the Convention is central to that governance.

It was a Convention that finally voted to offer full membership to women in 1968, to merge with Sigma Tau in 1973, to formally adopt the District Program in 1978, and to formally adopt the Engineering Futures Program in 1993.

My first Convention was in Tulsa in 1980, attending as California Epsilon Chapter president. By the time I attended my second Convention aboard the *Queen Mary* in Long Beach, I had already been appointed an Assistant District 15 Director replacing Joe Jimenez, who had recently passed away. The title has since been eliminated and the district, which at that time covered all of California and Nevada, was (following the “wisdom of Solomon”) cut in two. What was then the “Southern California Area Council” (more or less) is now designated as District 16.

This Convention will be the first that I will be attending in a role other than as its Permanent Chair, a position I served in for approximately thirty Conventions. I had come to that role in a somewhat roundabout way. In the early eighties, the Convention was chaired by Lawrence J. Hollander, NYE '51, who served as Director of Fellowships, and there was no Parliamentarian. During one Convention, John R. Luchini, MIG '71, (whom many of you may remember as my TBP “co-conspirator”) approached me and said, “Here, sit next to Larry and act dumb” (a fairly easy task for me). After about half a minute of silence, Larry asked, “So, do you want to be Parliamentarian?” I served as Parliamentarian for Larry and

Leighton E. Sissom, GAA '65, (Vice President of the Kentucky/Tennessee Executive Council) before substituting for Leighton as Chair of the 1990 Convention in Albuquerque.

Much has changed since my first Convention. The Association has seen more women in leadership roles — both at the chapter and Association levels. There is greater connectivity between chapters as the success of the District Program led to programs such as the Interactive Chapter Exchange (ICE), which focuses on specific chapter challenges, and the Engineering Futures Program, which prepares our members for leadership roles. Yet, one of the things that has not changed in the revisions to our governing documents, effected in the last few years, is the quorum for the Convention—a majority of our student chapters. Embedded in our Constitution and Bylaws, *is the recognition that operating with the knowledge and input of our student leaders is critical to who we are as an Association.*

With the world awash in bad news, it may be easy to wonder whether an honor society (especially one that often plays “Brand X” to better known society—Phi Beta something or other) is capable of making a difference. You might even ask how can a society, whose very mission is to set people apart from the crowd by virtue of their achievements, engage communities of people that often see the world in vastly different ways from ourselves. I would propose that we can do that by:

- Dedicating ourselves to identifying candidates for membership and for future chapters that represent society in all its diversity
- Ensuring that we are welcoming to all of our members
- Training and equipping our members to be the type of leaders that can bring people together whether they lead “from the front” or

collaboratively as a team member

- Lending a hand where we can make a difference, even in a small way.

This year’s Convention will address many of the points above:

- Convening an *ad hoc* committee on Diversity, Equity & Inclusion (DEI), following up on a grass roots discussion initiated during the 2020 *Unvention*
- Considering what types of activities from alumni chapters might warrant recognition and what sorts of awards would be appropriate
- Considering petitions for chapters from four very different types of universities
- Considering permanently re-establishing the position of Director of the District Program
- Reviewing a new project competition program, “New Engineering Solutions for Tomorrow (NEST).”

This is in addition to Professional Development Sessions, a Recruiting Fair, and an opportunity to be around “real” (non-virtual) members from across the country. So let us, through this Convention, rededicate ourselves to doing what we can to be a positive influence to **our Association, our profession**, and to the communities we are part of, as we do every year through programs such as Engineering Futures and MindSET.

In closing, I offer my congratulations to George K. Miyata, WAD '10, who will be serving as Permanent Chair this year. I hope you enjoy every moment of the experience.

.....  
**RON HICKLING**, a senior systems engineer at Interconnect Systems, a Molex, LLC subsidiary, has a B.S. in electrical engineering from the University of California, Los Angeles. He began his career at Hughes Aircraft Co. as a Hughes Masters Fellow, co-founded startup TechnoConcepts, Inc., and is a senior member of IEEE. He joined the TBP Executive Council in 2021.

# YOUR LETTERS

Send letters to [media@tbp.org](mailto:media@tbp.org). Text may be edited for length and clarity; not all letters can be published.

## Laureate Thank You

Thank you again for your contributions to TBPI and for selecting me to receive a 2021 Laureate Award! I'm incredibly grateful for Tau Beta Pi's continued support and I hope to pay it forward to others in the future!

**Tyler A. Kleinsasser, SD A '19**

## Bitcoin & Energy Consumption

In the Spring 2022 issue, a misleading reference was made to Bitcoin and its carbon footprint in the article by Trudy E. Bell. This issue is much more nuanced, and requires much more discourse than is possible by this article. First off, the whole discussion seems to dismiss the actual value that Bitcoin provides to people, or the value of an open monetary network. This is quite common in many pieces that complain about Bitcoin's energy usage. I would offer up Nic Carter's piece in the *Harvard Business Review* (<https://hbr.org/2021/05/how-much-energy-does-bitcoin-actually-consume>) to summarize this point. One point that Mr. Carter makes is that energy consumption is not equivalent to carbon generation. In fact, data provided by publicly traded bitcoin mining companies has shown that in Q1'22, approximately 58% of all mining is done with renewable energy. This percentage is increasing as well (<https://bitcoinminingcouncil.com/bitcoin-mining-council-survey-confirms-year-on-year-improvements-in-sustainable-power-mix-and-technological-efficiency>). It would be interesting to compare this with other industries. Bitcoin miners are actually incentivized to source the lowest cost of energy, and this often comes in the form of stranded renewables (e.g. solar/wind energy that is already being generated but can't be used due to lack of demand or inability to transmit it). Miners can actually help to fund more investment in renewables, in that they can provide a base load for the power generators.

The other issue I see is that in many of these pieces, we never see a true comparison to another financial network. It would be interesting to see the energy consumption or carbon footprint data of what our current monetary system looks like, as an example. How much does it cost to run all of the ATMs, bank branches, corporate office buildings, vaults, armored vehicles, etc. or all of the related server infrastructure to process credit card payments

on the back end? And considering that government militaries are ultimately what secure independent national currencies, you could also add this to the total cost.

Now, one could surmise that **a)** the energy consumption of all of this is not good, and **b)** it's not published anywhere in total. This would actually be a valid comparison, versus comparing Bitcoin energy usage to a country like Norway or Argentina.

Incidentally, the energy usage of Bitcoin rivals that of clothes dryers or Christmas lights, though I don't see much, if any discourse, regulation, etc. about how we should stop using either of these. Maybe we should, but this gets back to the network value question. If you place zero value on the network, then even if Bitcoin used 100% renewables, there would still be complaints about its energy usage. To this, I would just say that there are two other letters in "ESG" besides the "E." I'd ask you to consider researching how the Human Rights Foundation is using bitcoin to advance its initiatives globally (<https://hrf.org/devfund>). Or, consider examples of how people have been able to leave war torn areas like Afghanistan with their monetary resources, simply by remembering 12 words (<https://bitcoinmagazine.com/culture/bitcoin-financial-freedom-in-afghanistan>).

In summary, I believe comparisons of Bitcoin's energy usage are well meaning in regards to the fact that we should drive towards more renewable energy and lower carbon footprints, though they are often flawed in that they only compare the costs, and not the benefits. And in examining the costs, apples to apples comparisons are not being made.

**Michael D. White Jr., MI I '99**

## Decarbonizing the Atmosphere

The "tirade" by J. Foell caught my eye. This is a brutally complex topic, but I can appreciate how someone with education and training in complex models involving heat transfer, thermodynamics, and fluid flow would get triggered by this paragraph: "However, if by 2030—**that's in just eight short years, folks**— too little or nothing is done, and greenhouse gases continue to be emitted and to accumulate at the high rates of business as usual, computational climate models project that by 2100, global surface temperature could reach as high

# FROM THE EDITORS

Dylan Lane and Patricia McDaniel

## The Editorial Staff apologizes for the following error:

In the Spring 2022 issue:

Page 39 of Chapter Eternal, the listing for Bob James Purinton was incorrectly placed under the Oklahoma Alpha Chapter and should have been included with the Oklahoma Beta Chapter. One of Purinton's classmates from the University of Tulsa alerted us to this mistake.

*Thank you to our readers for helping maintain the accuracy of the magazine. If you find an error or inconsistency, please email [dylan@tbp.org](mailto:dylan@tbp.org)*

as 3.30C to 5.7 C more, with *concomitant catastrophic climate alterations worldwide.*"

The structural problem, however, as Foell suspects, is the insular and groupthink construct of public research out there when Bell has to rely on the IPCC.

In the fall of 2021, the Nobel prize in Physics was awarded to Syukuro Manabe for a *hypothetical or idealized* "model" to predict how increases in CO<sub>2</sub> can increase the world's temperature. I suspect that much of what seems on the surface to be junk science is the clumsy attempt to "dumb down" what is a very elegant model of Manabe, a climatologist, and Kirk Bryan, an oceanographer. They published a coupled climate model in the 1980s. In summary, the work purports to show that the long time-steps cycle of retained heat in the ocean currents is a built-in or internal mechanism for "warming the planet" assuming no outside source or change of radiative heat.

Letters continue on page 38.

# WHO'S WHO IN TAU BETA PI

Recognizing Tau Beta Pi accomplishments

## Abdeldjelil Belarbi Ph.D., P.E.

*Texas Epsilon '90*

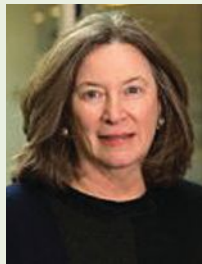
is a recipient of the Delmar L. Bloem Distinguished Service Award from the American Concrete Institute (ACI). A Distinguished Professor at the University of Houston and an active member of ACI since 1989, he has served on several national and international technical and educational committees. His research and design code implementation have covered both bridge and building design aspects.



## Barbara D. Boyan Ph.D.

*Virginia Epsilon '70*

received the 2022 Distinguished Scientist Award from the American Association for Dental, Oral, and Craniofacial Research (AADOCR). She is Virginia Commonwealth University College of Engineering Dean, and a nationally acclaimed researcher and entrepreneur, whose research focuses on all aspects of bone and cartilage biology. This is the highest award given by the AADOCR.



## Peyman Givi Ph.D.

*Ohio Lambda '80*

was elected the 2021 American Academy of Mechanics Fellow. A Distinguished Professor of mechanical engineering at the University of Pittsburgh, he previously taught at the State University of New York at Buffalo, where he received the TBPI 2022 Professor of the Year Award. Peyman is among the first eng'g faculty to receive the White House Presidential Faculty Fellowship, presented by President George H.W. Bush.



## Lirio L. Liu

*Texas Eta '91*

was selected by the Federal Aviation Administration (FAA) as head of aircraft certification. She formerly ran the agency's international affairs office and has been with the FAA since 1991. An aerospace engineer, she also headed up the Office of Rulemaking for aviation safety for seven years and has a B.S. degree from the University of Texas at Arlington.



## Rao Manneppalli

*Massachusetts Alpha '87*

was elected as a Fellow of the Institution of Engineering and Technology. He is the associate director of systems engineering and chief engineer at Raytheon Technologies, USA. In addition, Rao is a Fellow of the Institution of Electronics and Telecommunication Engineers, an associate Fellow of AIAA, and has made significant contributions to the areas of Ballistic Missile Defense scenario.



## Govindarajan Muralidhara

Ph.D. *Alabama Gamma '87*

was elected as a Fellow of the National Academy of Inventors and recognized for "a highly prolific spirit of innovation in creating or facilitating outstanding inventions that have made a tangible impact on the quality of life, economic development, and welfare of society." He is a scientist and inventor at the Department of Energy's Oak Ridge National Laboratory (ORNL).



## Khanh D. Pham Ph.D.

*Nebraska Alpha '97*

was recognized as a Fellow of the Royal Aeronautical Society (RAeS). He is a principal aerospace engineer at the Air Force Research Laboratory (AFRL) Space Vehicles Directorate, having joined the AFRL in 2004. He serves as a technical expert in the development of protected tactical satellite communications and resilient satellite navigation for the Space Vehicles Geospace Technologies Division.



## Lara A. Thompson Ph.D.

*Massachusetts Theta '03*

is a recipient of the U.S. National Science Foundation's Alan T. Waterman Award, the country's top honor for early-career scientists and engineers. She is a biomedical engineer, associate professor, and director of the CBRE Lab at University of the District of Columbia, and was also named a 2017 Emerging Scholar. Her area of research studies human mobility for unimpaired as well as impaired populations.



## Doug Tougaw Ph.D., P.E.

*Indiana Beta '91*

was elected president of the American Society for Engineering Education (ASEE). He is dean of the Valparaiso University College of Engineering and his research interests include quantum electronics, embedded micro-controllers, and electromagnetic field theory. He received his B.S. degree at the Rose-Hulman Institute of Technology in electrical eng'g.



# Executive Council CANDIDATES

The Executive Council is our board of directors consisting of nine members who are alumni and serve a 3-year term. The Executive Council names its own officers: *Chair*, who is also President of the Association; *Vice Chair*, who is also Vice President; *Secretary*, *Treasurer*, and five *Councillors*.

In accord with the Constitution, three members of the Executive Council are elected to three-year terms by the Convention each year. The terms of Vice President Rachel K. Alexander and Councillors George J. Morales and Russell W. Pierce expired on December 31, 2021. Because no Convention was held in 2021, an election was not held. Per the provisions of the Constitution, all three agreed to continue until their successors could be elected by the 2022 Convention. Alexander is seeking another term while Morales and Pierce are not. In response to the call for candidates, four individuals were nominated and nominations are closed. **NOMINEES FOR 2023-25:**



## RACHEL K. ALEXANDER

P.E. CALIFORNIA UPSILON '15

*Nominated by the Sacramento Valley Alumni Chapter.* Rachel has a B.S. degree in civil engineering from California State University, Sacramento, and is a registered professional engineer in California.

She is employed as a civil engineer by the Sacramento County Department of Airports which operates and maintains four airports,

including Sacramento International (SMF). Her work as a project manager includes multiple areas which span from pavement rehabilitations of airfield pavements such as taxiways, to roadways and parking lots, utility improvements, and replacing the rotating beacon tower at SMF.

Her TBII involvement includes social chair and president of her collegiate chapter and as president and in other capacities for the Sacramento Valley Alumni Chapter. She was elected to the TBII Executive Council in 2019 and has served the Association as Secretary (2020 & 2021) and vice president (2022).

Rachel is passionate about helping collegiate members transition to their careers with great resumes, and presents multiple sessions of resume workshops to TBII members. She looks forward to continuing to serve the Association and connecting collegiate members with alumni.



## MICHAEL J. HAND III

MICHIGAN GAMMA '11

*Nominated by the Ann Arbor Area Alumni Chapter.* Mike has B.S. & M.S. degrees in EE and electrical engineering systems from the University of Michigan.

He works at Ford as an autonomous vehicles systems engineer, was initiated by MI Gamma in 2009, and has been involved

in leadership and volunteer roles ever since—roles that have provided him with the skills and experience necessary to be an effective member of the Executive Council.

Mike's TBII involvement has connected him to numerous facets of the organization. He served as MI Gamma Chapter president and Advisor, and as chair of the Student Advisory Board, is a TBII Fellow (2012), helped establish the Ann Arbor Alumni Chapter, helped lead the Constitution and Bylaws reorganization from 2014-18, and in 2020 was instrumental in planning and executing the virtual *Unvention*. He has attended every Convention since 2011 and currently assists chapters by serving as a District 7 Director.

If elected, Mike will work to create Association committees to provide more volunteer opportunities for students and alumni, expand chapter resources, streamline the organization's operations, expand the Association's commitment to DEI Initiatives by leveraging data, and utilize digital communication platforms to better connect members. In his free time, Mike works on projects around the house, homebrewing, and training his newly adopted dog, Fiona.



## CHETAN G. DATE, Ph.D., P.E.

ARIZONA BETA '84

*Nominated by the Phoenix Alumni Chapter.* Chetan holds a Ph.D. in structural engineering, an executive MBA from Arizona State Univ., and B.Tech. from IIT Kharagpur. He is a certified Six-Sigma Black Belt and registered professional engineer in Arizona.

He retired as VP of global quality at ITT's

Connect & Control Technology and previously held senior-level leadership positions at Honeywell Aerospace. During his 36-year aerospace career, Chetan managed multi-location organizations/businesses that span the globe. He has expertise in engineering, QA & regulatory compliance, Six-Sigma, and product management; and is a proven turnaround specialist. Chetan is currently a visiting associate professor at Embry-Riddle Aeronautical University, Prescott, AZ.

Chetan has led various technical committees sponsored by the FAA and industry groups like AIA and SAE. He has published technical papers and led global teams to write international standards. He was chairman of PRI-Nadcap Management Council and on the Board of Directors of the non-profit Southwest Alliance for Excellence. He serves TBII as Phoenix Alumni Chapter VP, an Engineering Futures Facilitator, and chairperson of the Membership Committee.

He enjoys transforming challenging situations by focusing on people, processes, and executing sustainable changes. If elected, he will apply his experience/skills to strengthen and grow the organization. He lives in Tempe, AZ, with his wife Shobhna, AZ B '82.



## MARLA A. PETERSON

ARIZONA ALPHA '83

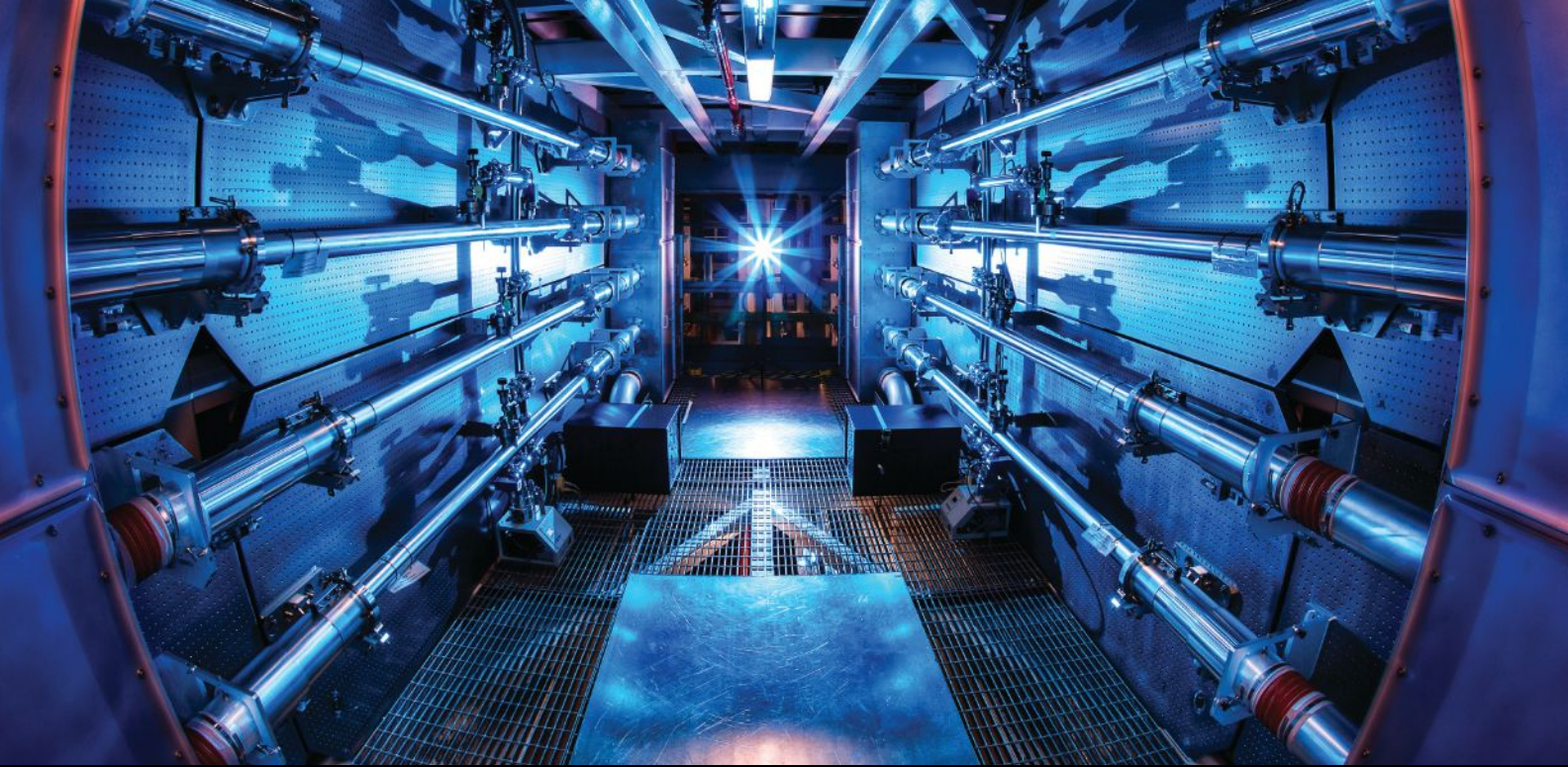
*Nominated by the Arizona Alpha Chapter.* Marla earned a B.S. in systems engineering from the University of Arizona (UA), where she served as AZ Alpha Chapter vice president for two years.

She initially joined Garrett, now Honeywell, and refined her love of technology and efficiencies by becoming a Black Belt, Lean

Expert, and Lean Master. Now, Marla is a senior technical manager for Continuous Improvement. She has been dedicated to aerospace product excellence for 38 years, serving in leadership positions for over 25 years at various levels.

She is a founding member of the Engineering & Technology Diversity Council and Women in Honeywell network. She also serves as the Honeywell corporate program manager for engineering diversity events and is the campus manager of UA. She continues to mentor and sponsor interns, new hires, and experienced women in aerospace.

Marla is a member of the University of Arizona Systems and Industrial Engineering Advisory Council, served as Chairwoman of the University of Arizona Phoenix Alumni Board Scholarship Committee (12 years), and served as President of the University of Arizona Maricopa County Engineering Alumni Board.



# Is Fusion Ready for Prime Time?

BY ALAN S. BROWN

**Physicists promised clean, green fusion power for decades and never delivered. Now, new technologies and massive investments promise changes.**

Researchers have believed that fusion energy is just around the corner since the 1950s. Yet, the process by which stars transform hydrogen plasma into helium with a slight loss of mass that becomes energy remains tantalizingly out of reach. Today's mega-projects are still struggling with translating the Sun's environment to Earth-bound reactors.

Now, however, innovative technologies backed by billions of venture capital dollars are changing the game. Many startups believe they could reach "Q," the point where fusion produces more energy than it takes to initiate, within this decade.

Governments are also giving fusion a second look, said Scott Hsu, who heads the U.S. Department of Energy's fusion program. They are finding it harder to achieve net-zero carbon emissions than they thought, and fusion has the potential to provide vast quantities of clean baseline energy without the risks associated with nuclear fission.

Hsu believes they have cause for optimism. "Technology push and market

pull are both happening at the same time and at unprecedented levels," he said. After spending 70 years mastering fusion plasmas, both government-funded mega-projects and dozens of startups are leveraging that knowledge to refine or develop innovative fusion technologies.

On the mega-project side, the National Ignition Facility in Livermore, CA, achieved a record-breaking 0.7 Q self-sustaining burning plasma, if only for a few moments. Experiments at U.K.'s Joint European Torus (JET) reaffirmed predictions that the \$25 billion International Thermonuclear Experimental Reactor (ITER) under construction in France could surpass Q by 2035. Reactors in South Korea and China set records for prolonged plasma confinement.

Startups are promising faster results. Small companies, building on breakthroughs in high-temperature superconductors, advanced computing, and three-quarters of a century of research, are developing dozens of impressive new designs into the future.

Commonwealth Fusion Systems, for example, demonstrated a powerful 20 Tesla superconducting magnet, the key to smaller, more affordable reactors. Helion Energy and Tokamak Energy both pushed plasma temperatures above the 100 million Kelvin needed for fusion, and General Fusion proved its ability to compress plasma precisely.

Excited private investors have injected \$5 billion into 33 fusion startups over the past two years, according to a study by the Fusion Industry Association. Over the past year, Commonwealth alone raised \$1.8 billion and Helion Energy, \$500 million. For the first time, Hsu said, private capital is exceeding government spending, enabling researchers to quickly turn designs into pilot plants.

Not everyone is so sanguine. Daniel Jassby, a former research physicist at Princeton Plasma Laboratory, likens today's optimism to a pandemic of marketing and financial hype that breaks out periodically. He does not expect commercial fusion until the next century.

Jassby argues that no one has produced fusion on anything approaching commercial scale. Mega-projects have sustained fusion for only a handful of seconds at best. Many startups have failed to meet self-proclaimed goals and most others have not yet demonstrated any actual fusion.

Jassby sees many gaps in fundamental knowledge. Most reactor designs are based on empirical models, which have a poor record of scaling up. Reactors consume colossal amounts of electricity creating and controlling plasma, and he sees no scientific breakthroughs that will push  $Q$  to the very high levels needed to make electricity profitably. We may not even have enough hydrogen isotopes to fuel a large fleet of fusion power plants.

Both sides make valid points. The only way to resolve them is to see if one of those startups can build a commercial power plant.

## GETTING TO Q

While fusion on Earth is similar to natural fusion on the Sun, it is their differences that make commercial fusion so difficult to achieve. Stars have huge gravitational fields that squeeze hydrogen ions together at 15 million K, causing them to fuse and form helium and energy.

To replicate a star on Earth, researchers must find a way to confine plasma. Since they cannot achieve the densities found in stars, they must combine the hydrogen isotopes most likely to fuse, deuterium and tritium. Even then, they must heat the D-T mixture to 100 million K to provide enough energy for fusion.

Since the 1960s, physicists have attempted to use powerful magnets to confine a hot D-T plasma as it spins around a donut-shaped reactor called a tokamak. The technology is very well characterized and forms the basis for the JET and ITER reactors.

Tokamaks use a variety of magnetic fields to do this. Toroidal fields that run along their circumference of the torus' chamber are created by powerful ring-shaped magnets that encircle the donut. A powerful alternating current coil in the donut's center creates a poloidal magnetic field within the plasma that runs perpendicular to the toroidal field, complemented by poloidal magnets above and below the reactor. By balancing these magnetic fields, researchers shape and densify the plasma to achieve fusion.

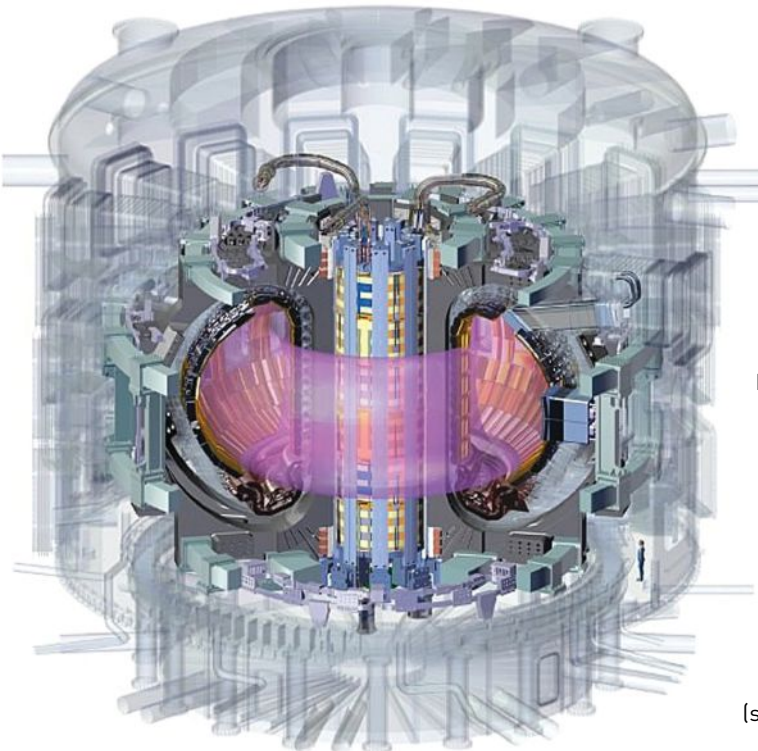
High-energy plasmas are difficult to control, said Chris Hegna, a professor of engineering physics at University of Wisconsin-Madison and co-founder of Type One Energy, a fusion startup.

“Tokamak plasmas require currents that can be the source of instabilities. These instabilities can cause the plasma column to deform towards the reactor walls. This can produce a thermal collapse of the plasma and a transient electric field that accelerates electrons to high enough energies that they could damage the walls of the reactor.”

Another successful route to fusion is inertial confinement, a technique proposed in the 1970s. It uses powerful lasers to implode a D-T target with enough density and heat to trigger fusion. It took decades to develop powerful enough lasers to make this work.

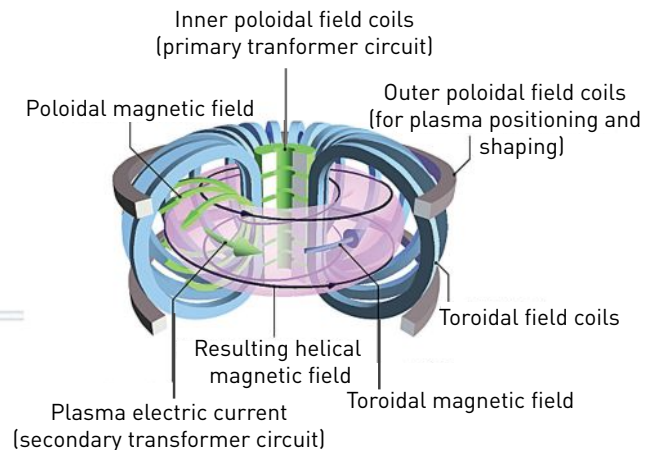
In 2009, the \$3.5 billion National Ignition Facility opened. To achieve fusion, it encases a pea-sized D-T target inside a tiny container called a hohlraum. NIF's 192 UV lasers then blast the hohlraum with 500 trillion watts of peak power. This implodes the target while X-rays generated by laser beams converging on the hohlraum's interior surface heat the plasma.

At first, NIF underperformed. Then, in August 2021, it achieved a plasma that yielded 70 percent of the energy used to initiate it, a record for any fusion system. The reaction began in the core and was about to propagate into the surrounding D-T shell before expansion cooling killed it.



Left: The \$20+ billion ITER tokamak reactor hopes to achieve break-even fusion performance in the 2030s. Credit: DOE.

Below: Tokamak reactors use poloidal and toroidal magnetic fields generated by a variety of magnets and the plasma itself to shape hot, energetic plasmas to achieve fusion. Credit: US ITER.



Subsequent experiments yielded no more than half that value. One theory is that NIF's aging lasers and minute variations in the hohlraum shaped the implosion in unexpected ways. Untangling those interactions will take time.

NIF has other issues. Targeting and timing the output of 192 lasers with pinpoint precision will always be difficult. Lasers are also inefficient X-ray generators, Jassby said. High-energy ion beams might do a better job, but Jassby believes they will take decades of development.

Still, magnetic and inertial confinement face the same problem: both take an enormous amount of energy to generate a fusion reaction. To overcome that barrier, researchers must push  $Q$  way above 1.

Jassby points to ITER as an example: "Computer projections show it will have a  $Q$  of 10, but if it actually gets there, its net energy balance will be about zero." That's because ITER uses enormous amounts of energy to run its vacuum pumping system, cool its superconductors to 4-5 K, recover tritium, move coolant, and run its computer, diagnostics, and HVAC systems.

"ITER consumes 75 to 110 MW of electrical power even when it's not operating. To inject 50 MW of heating power at 50 percent efficiency will require another 100 MW. So, ITER will consume 200 MW each pulse. If it produces 500 MW of power [ $Q=10$ ] and converts that to electricity at 40 percent efficiency, it will generate 200 MW of power, barely matching its energy consumption."

Many startups say they can surmount this hurdle, but how?

### SMALLER TOKAMAKS

If any company is the poster child for commercial fusion, it is MIT spinoff Commonwealth Fusion. It raised \$1.8 billion in 2022 alone — a lot of money for a company born from a chance conversation and a class project.

This happened a few years after Dennis Whyte, now professor of engineering and director of MIT's Plasma Science & Fusion Center, came to MIT in 2006. He decided to resurrect MIT's principles of fusion engineering course at a time when most of the action in fusion was on the physics side.

For Whyte, the best part of the class came when he asked his students to form teams and try to solve one of fusion's top-20 challenges. Yet, even though he enjoyed his class, Whyte was growing increasingly frustrated at fusion energy's slow pace.

"My scientific community had underestimated the challenges of putting together ITER, the largest and most complex engineering project envisioned by humanity," he said. "I didn't think it was ever going to lead to a power plant."

Then fate intervened. Whyte stepped out of his office and saw a colleague carrying a strand of ribbon in his hand. "What's that?" he asked. It was a new type of high-temperature superconductor (HTS) wire under development in a lab 50 feet away from his doorway. The researchers were trying to develop HTS

wire to make powerful magnets for MRI and nuclear magnetic resonance (NMR) equipment. No one had thought about applying them to fusion.

Superconductors were not new. ITER planned to make its magnets from 500 metric tons of niobium-tin low-temperature (LTS) superconductors. Yet, LTS had limitations: their magnetic fields are limited to 10-11 Tesla and they had to be chilled to a scant 4 K above absolute zero.

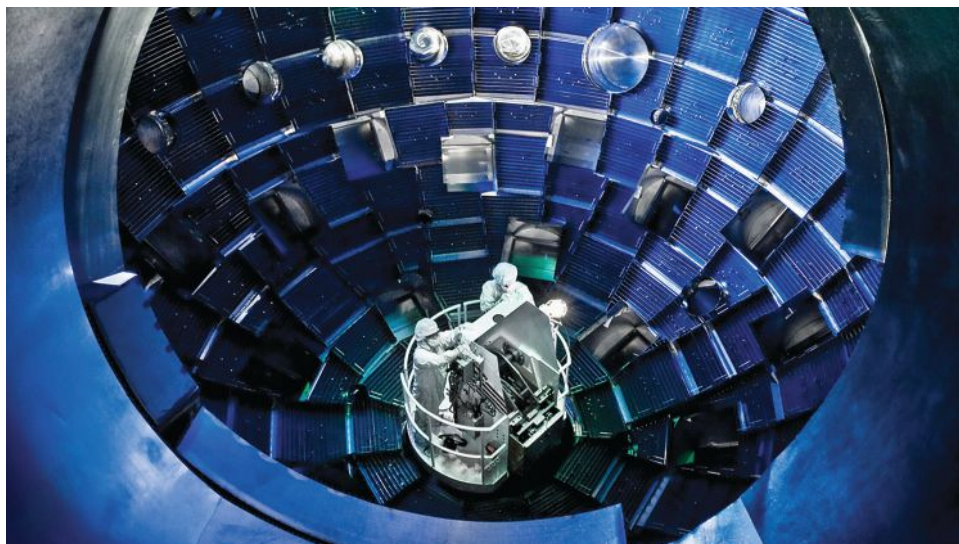
HTS could burst past these limitations. It could carry enormous amounts of current, produce larger magnetic fields, and operate higher temperatures that require less energy to sustain. Magnets made from these materials could achieve orders of magnitude better performance in fusion.

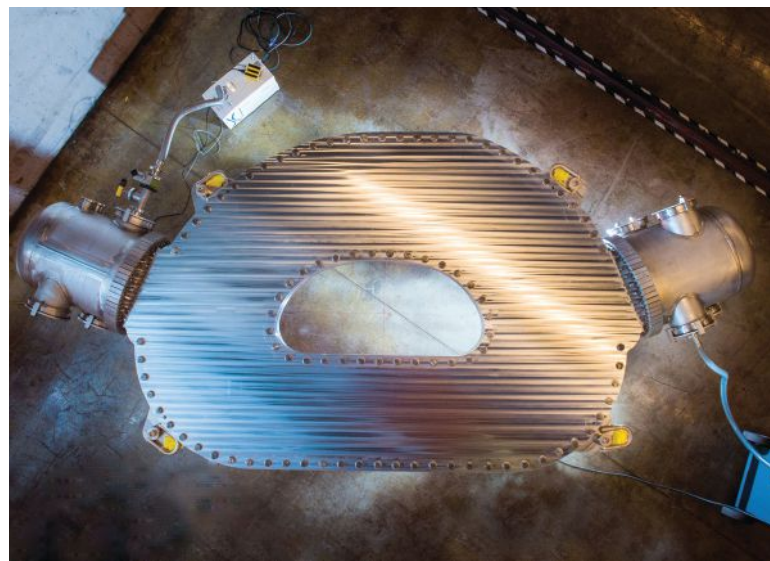
Whyte introduced his class to HTS wires, but after the semester, he realized that he had not taken full advantage of HTS' disruptive potential. So, he posed a more ambitious challenge for his next class: design a 500 MW fusion device and make it as small as possible.

What emerged was the conceptual idea for Commonwealth Fusion's ARC reactor, named after a reactor built by Marvel Comic's Tony Stark (Iron Man), who attended MIT. The reactor would be powerful, small (about the size of JET), and affordable.

To turn ARC into a reality, Whyte and several of his students formed Commonwealth Fusion. Its first order of business was to collaborate with MIT to develop a new class of fusion-ready HTS wire.

The inside of the National Ignition Facility's 10-meter-diameter target chamber, where 192 powerful lasers implode a deuterium-tritium pellet to initiate fusion. Credit: Lawrence Livermore National Laboratory.





Fabricated by Commonwealth Fusion Systems and MIT's Plasma Science and Fusion Center, this large-bore, full-scale magnet used high-temperature superconductors to produce a 20 tesla magnetic field, the strongest ever for a fusion magnet. Credit: Gretchen Ertl, MIT.



An illustration of SPARC, a compact, high-field tokamak now under construction by a joint Commonwealth Fusion Systems-MIT. Roughly the size of today's experimental tokamaks, it is designed to generate up to 100 MW of plasma energy for 10 seconds. Credit: T. Henderson, MIT.

The result was VIPER, for vacuum pressure impregnated, insulated, partially transposed, extruded, and roll-formed. It consists of a flat steel ribbon a fraction of a millimeter thick coated with a buffer layer and topped with a microns-thin layer of rare earth-barium-copper-oxide (REBCO) HTS that carries 1,000 Amperes with ease.

The structure solves one of the key issues facing HTS wires: stress. REBCO naturally resists magnetic fields that would scramble its complex crystals and kill its superconductivity. Yet, large magnetic fields also generate enormous physical forces that would do the same thing to its structure.

VIPER's structural steel substrate and its magnet construction methods enable Commonwealth's magnet to tolerate 900 megapascals (MPa) of force without a significant drop in performance. This enabled the company to demonstrate a 20 Tesla magnet, twice as powerful as the low-temperature superconductor magnets being built for ITER.

High fields boost small reactor performance in big ways. The smaller the reactor, the denser the plasma. "If we increase the plasma density by a factor of two, we increase the fusion power output by a factor of four," Whyte said. "That increases the amount of power you make per unit volume of fuel, which is a key economic driver of the cost of fusion."

ARC also relies on a central HTS A/C coil core to rapidly ramp up current and magnetic fields while withstanding thousands of cycles. This will enable ARC to produce fusion through repetitive pulses that may last tens of minutes. By forgoing continuous fusion, ARC simplifies reactor design and slashes costs.

Commonwealth is currently putting the finishing touches on its SPARC reactor, a 1.85-meter diameter ARC prototype that will generate a 100 MW of plasma for 10 seconds.

Whyte believes it will be the first fusion plant to achieve  $Q > 1$ . He calls it the team's Kitty Hawk moment, where fusion proves it can fly.

"The most difficult conditions necessary for fusion have already been obtained," he said. "We've exceeded 100 million degrees and the density and containment times required for fusion. We've just never done them all together."

If all goes well, ARC will leap over that hurdle and open the door to commercial fusion.

## ROLLER COASTERS

Tokamaks are not the only magnetic confinement game in town. Stellarators are the second best-characterized reactor and have several potential benefits over tokamak designs, said Type One's Hegna.

"With stellarators, there is no need to rely on plasma currents to provide the confining poloidal magnetic field," he said. "Instead, stellarators use only external magnetic fields. You don't have to worry about plasma current drive systems and you avoid instability-inducing disruptions."

Unfortunately, that simplicity comes at a cost: stellarator magnets bend and twist around the reactor like a roller coaster, no two magnets shaped or angled the same. For engineers used to dealing with symmetrical designs, stellarators are nightmares.

"In the early days, people came up with designs, but they had poor plasma confinement properties," Hegna said. "Still, they made something, saw how it worked, and moved forward. The real breakthroughs came in the late 1980s and 1990s, when researchers began using high-fidelity computation to optimize their coils. We could start with prescribing the plasma physics properties we wanted, then ask if coils could be constructed to produce the desired magnetic field."

The resulting roller coaster designs made stellarators practical. So did HTS wiring. Type One, like several other startups, is leveraging Commonwealth Fusion's VIPER HTS wires. Type One, however, must still show that it can bend and twist HTS magnets into the shapes it needs to make the stellarator work.

Type One has also embraced additive manufacturing, creating its own build platform to make parts that are both large and intricate. This has greatly accelerated efforts to build its Starblazer reactor.

Starblazer is based on lessons learned from University of Wisconsin's 2.4-meter-diameter HSX stellarator built in 2007 and Germany's 5.5-meter W7-X stellarator demonstrated in 2018. German researchers hope improvements they are now developing will boost W7-X performance to tokamak levels and achieve run times measured in minutes rather than seconds.

To get there, stellarators must overcome some inherent weaknesses. Confinement times, for example, are two or three times shorter than an equivalent tokamak. Yet this is at least partially balanced by their higher plasma densities.

"There's some trade-off between the two," Hegna said. "It becomes a much more complicated problem when you start considering reactor styles or reactor processes."

Type One is betting that new software will yield a deeper understanding of turbulence so it can improve its reactors and control systems to prolong confinement. Hegna remains optimistic that Type One's stellarators will exceed  $Q > 1$  by the early 2030s.

## ZAP

Z-pinch fusion relies only on the attraction of electrical currents. It requires no magnetic coils and could produce fusion for a fraction of the cost of magnetic confinement or inertial fusion systems.

The process is simplicity itself, said Matthew Thompson, vice president of engineering for Zap Energy, which is developing the process. "You simply run a large current through a gas," he said. "This creates the plasma and a powerful magnetic field that heats and pinches [compresses] the gas so you get fusion reactions."

Z-pinch is also well characterized, but not in a good way. The concept dates to the 1950s, when it was one of the first fusion technologies. The reason researchers abandoned Z-pinch is that its plasmas are wildly unstable.

"The plasma starts to look like sausages on a line, with some parts over-pinched and others under-pinched," Thompson said. "Or it starts to corkscrew. Russian researchers developed tokamaks to confine those instabilities."

Led by Uri Shumlak, University of Washington, researchers spent 20 years perfecting the use of shear to stabilize Z-pinch plasmas. Thompson likens the concept to changing lanes on a highway: "If everyone is going down the highway at the same speed, it's easy to change lanes. But if each lane were 100 mph

faster than the other, nobody could ever change lanes. So that's what we're trying to do with our plasma — have it moving faster than the gas layers around it to suppress the formation of instabilities."

Shumlak co-founded Zap in 2017. The next year, his team announced that his lab-scale FuZE reactor had boosted plasma stability times by a factor of 5,000 and had achieved deuterium fusion for several microseconds. Lawrence Livermore National Laboratory confirmed this in 2021.

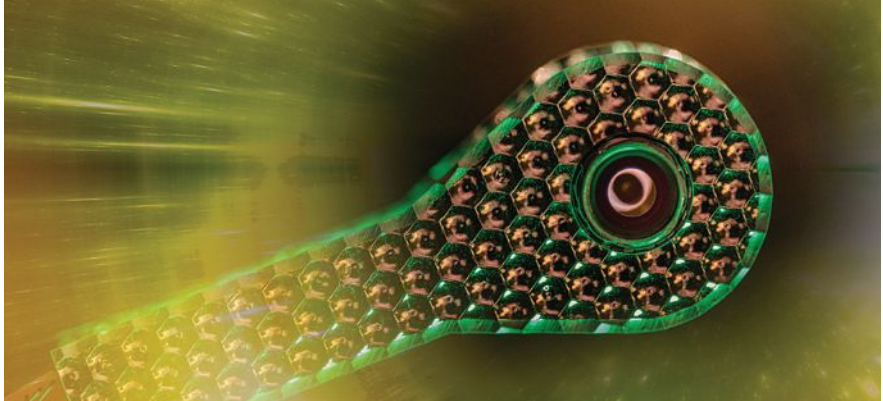
Since then, Zap has raised almost \$190 million and has begun construction of its new FuZE-Q reactor. It will require massive power supplies, large capacitor banks, and finely tuned switching to produce an optimal Z-pinch at 650 kA, Thompson said. He expects it to hold the Z-pinch stable for 100 msec, five to ten times longer than the FuZE reactor, and achieve significant amounts of fusion, he added.

"Z-pinch poses significant challenges, but a lot of the technology is at a high readiness level," he said. "We don't need lasers that don't exist yet or high-temperature superconductors to make it work."

Below: A 3D model of plasma moving through a roller coaster-like series of superconducting stellarator solenoid coils in the experimental Wendelstein 7-X fusion device. Credit: Max Planck Institute for Plasma Physics.



Left: Zap Energy's Z-pinch reactor does not rely on magnets to stabilize its plasma. Instead, it uses shear created by different layers of plasma moving at different speeds to maintain control. Credit: Zap Energy.



This stylized image shows a cryogenic target used in inertial fusion experiments to achieve a record fusion output of 1.3 megajoules at the National Ignition Facility in 2021. Credit: James Wickboldt, LLNL.

**“WE DON’T NEED LASERS THAT DON’T EXIST YET OR HIGH-TEMPERATURE SUPERCONDUCTORS TO MAKE IT WORK.”**

## FUEL FOR THE FUTURE

Even optimists have daunting hurdles to overcome. One involves the models used to design and predict reactor performance. Since they are based on empirical data rather than first principles, they may not scale well or properly apply the results of one reactor to another.

“Look at the National Ignition Facility,” Jassby said. “Their initial yield was 1,000 times lower than they expected. It took 10 years to approach where they are now.” The two tokamaks Jassby helped build at Princeton Plasma Laboratory also initially underperformed, though by a factor of 10.

“It’s like the models used to predict stock market performance,” he said. “They have all the parameters needed to predict the past, but not the ones needed to predict the future.”

David Hatch, a research professor at the Institute for Fusion Studies at University of Texas at Austin, is more optimistic. He specializes in applying modeling and machine learning to fusion.

“I work with tokamaks and I think the models are really good, depending on what part of the problem we’re asking about,” he said. “The challenge is to model everything at one go because the variation in time and length scales is extreme.”

Many tokamak and stellarator models are quite mature and HTS does not change that much, he said. While they model the plasma core reliably, modeling the edge, near the wall, is more challenging and uncertain. Such models would require additional validation before using them to simulate non-tokamak/stellarator designs, Hatch added.

Hatch also works with machine learning firm Sapien.ai. “One of the things we focus on is starting with small amounts of data and building models that can point experiments to regions of parameter space that we can use to create better models and learn more about the process,” he said. The company is currently working with CT Fusion, General Fusion, General Atomics, and Princeton Plasma Physics Lab.

Another critique of fusion involves fuel. The ideal mix is half deuterium and half tritium, but tritium is extraordinarily scarce. The total global stockpile is about 25 kilograms and tritium has a short, 12.3-year half-life. The only commercial supply of tritium comes from 19 Canada Deuterium Uranium (CANDU) reactors, which are slated to close. No wonder tritium costs up to \$100,000 per gram.

Most fusion reactors expect to create their own fuel supply through nuclear alchemy. Fusion generates energetic neutrons. These will give up their energy by interacting with coolants. While the heated coolants drive the power turbines, the less energetic neutrons will interact with lithium-6 isotopes and transmute them into tritium and helium. Reactors will also recycle the unused 99 percent of the tritium fuel.

Not everyone believes this will produce enough tritium to fuel a fleet of fusion reactors. Mohamed Abdou, director of the Fusion Science and Technology Center at University of California, Los Angeles, expects even the best systems will produce only a scant bit more tritium than they need for fuel. They will lose some of that through leaks and maintenance shutdowns.

Yet, Whyte is confident that ARC’s lithium-salt cooling system could produce 15 to 20 percent excess tritium. “We’re building an experiment now to prove it works,” he said.

Some startups, like TAE Technologies (hydrogen-boron) and Helion Energy (deuterium-helium-3) are pursuing routes to fusion that use no tritium, though they will have to operate far above 100 K. Others are testing new reactor designs, from spherical tokamaks and magnetic mirrors to shock-driven inertial confinement and hypervelocity gradient fields. Each of the 33 startups surveyed by Fusion Energy Association has its own spin on the technology.

In the end, empirical results will determine whether the optimists or pessimists are right. DOE’s Hsu sides with the optimists. “We still have challenges ahead, but over the past 20 or 30 years, most of the big science problems have been solved. We’re finally in a position to see a light at the end of the tunnel,” he said.

“The influx of venture capital over the past two years has changed the game,” he added. “If we combine public and private funding, I think we have a chance to get to breakeven in the 2020s and pilot scale electricity on the grid in the 2030s.”

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**ALAN S. BROWN** has written broadly about engineering, technology, and science for more than 30 years. He is a board member of Science Writers in New York, a writer for The Kavli Foundation, a former senior editor of ASME’s *Mechanical Engineering* magazine, and contributes to a wide range of publications. He graduated *magna cum laude* in 1974 from Hofstra University and can be reached at: [insight01@verizon.net](mailto:insight01@verizon.net).

# Association Awards

## ★ McDonald Mentor

Established in 2005, the Tau Beta Pi-McDonald Mentor Award celebrates **excellence in mentoring and advising among educators and engineers who have consistently supported the personal and professional development of their students and colleagues.** It recognizes those who have shown true concern for individuals, supported an environment for developing talents, and earned respect and recognition in their field and the greater community.



### ASAD M. MADNI Ph.D., C.Eng.

CALIFORNIA EPSILON '69  
NOMINATED BY  
CALIFORNIA EPSILON

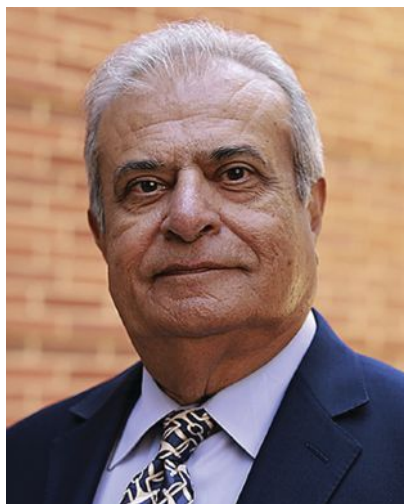
Asad Madni **has been named the 2022 TBP-McDonald Mentor.** He is a distinguished adjunct professor at the University of California, Los Angeles (UCLA).

Dr. Madni will receive \$1,000, a bronze engraved medallion, and a replica lapel pin. A \$1,000 grant will be presented to California Epsilon, the nominating chapter.

*Established by Marion and Capers W. McDonald, NC G '74, and the Association, the McDonald Mentor Award recognizes engineering educators or professionals in industry, government, or service organizations.*

He received B.S. and M.S. degrees from UCLA, Ph.D. from California Coast University, and S.E. from MIT Sloan School of Management. He has been awarded honorary doctorates from Ryerson Univ. (D.Sc.), Technical Univ. of Crete (D.Eng.), Cal State Univ., Northridge (Sc.D.), Universiti Kebangsaan Malaysia (Ph.D.), National Chiao Tung Univ. (Ph.D.), and Tufts Univ. (D.Eng.).

The nomination recognized Dr. Madni for his world-renowned engineering and scientific contributions, service to the engineering profession, and five decades of mentoring and advising high school, undergraduate, graduate, and post-doctoral students & scholars; junior faculty



members; and engineers & executives in industry.

He was also cited for his exceptional vision "with a keen insight and perspective in advising researchers and rising entrepreneurs through the demanding engineering and scientific challenges."

Since 2011, he has been a Distinguished Adjunct Professor and Distinguished Scientist at UCLA ECE department. Prior to UCLA, he was president, COO, and CTO of BEI Technologies; and chairman, president, and CEP of Systron Donner Corp.

Dr. Madni is an internationally recognized authority on the development and commercialization of "intelligent" sensors, systems, instrumentation, and signal processing. He is credited with more than 150 refereed publications; 100 research reports and internal publications; 100 keynote addresses; and 68 issued or pending patents resulting in numerous

"industry firsts."

As an advocate for underrepresented groups of individuals and equality for five decades, his dedication to mentoring students of diverse backgrounds is a testament of his devotion to raising the next generation of highly effective leaders. His students and mentees hold the highest positions in academia and industry. During his highly successful career as CEO of two Fortune 500 companies, he championed female candidates. He has shown us that recognizing and valuing the diversity and contributions of all voices is truly the only way to inspire innovation and make positive social change.

The global impact and significance of his pioneering contributions have been recognized worldwide with major honors (including 2022 IEEE Medal of Honor, 2022 RAE Prince Philip Medal, and 2016 Ellis Island Medal of Honor), election to the most prestigious academies/professional societies, and six honorary professorships.

A colleague said "Dr. Madni's technical leadership, management skills, and technical contributions have solved fundamental problems that have had a worldwide impact in improving our economy and quality of life. His mentorship of students, engineers, executives, and underrepresented minorities has played a significant role in establishing the foundation for the U.S.'s 21st century workforce."

For his philanthropic nature, dedication to mentoring, and leadership in his field, **we honor Dr. Asad Madni as the 2022 TBP-McDonald Mentor.**

## ★ Outstanding Advisor

The Tau Beta Pi Outstanding Advisor has been named since 1994 and recognizes outstanding performance among the Chapter Advisors of the Association. Selection is made by a committee of deans at engineering colleges and past award winners.



### MONICA M. BURDICK Ph.D.

NEW YORK KAPPA '98  
NOMINATED BY OHIO DELTA

Monica Burdick, associate professor of chemical engineering at Ohio University is **the 2022 TBPI Outstanding Advisor**.

She will receive \$1,000, a commemorative plaque, and a \$1,000 grant will be presented to the Russ College of Engineering and Technology's discretionary fund.

*The Outstanding Advisor Award recognizes chapter advisors, lauds excellence in engineering education, and in the ethical practice of engineering.*

Dr. Burdick has served as Chief Advisor to the OH Delta Chapter since 2012. In that time, she has been committed to developing and expanding the chapter's reach and helping Tau Beta Pi become one of the most integral parts of Russ College.

She earned a B.S. in chemical engineering from the University of Rochester and a Ph.D. in chemical and biomolecular engineering from the Johns Hopkins University. Dr. Burdick joined Ohio University in 2007 and prior to that was a postdoctoral research associate at the Brigham and Women's Hospital (MA).

Her service to the Association began when she joined the NY Kappa Chapter in 1996 as an undergraduate student and served as chapter president during the 1997-98 school year. Recently, Dr. Burdick began serving as a volunteer reviewer for the TBPI



Scholarship Program.

In addition to her role as an associate professor, she leads a biomedical engineering research group at Russ College where she shares her passion for mentoring and advising students personally and professionally inside and out of the classroom.

At Ohio University, she mentors numerous Ph.D. and M.S. students in her research group, but has also mentored nearly 40 undergraduate researchers. Mentoring in this context is a multi-year commitment, as she personally instructs students in lab techniques and teaches them to plan experiments, analyze data, and prepare presentations and papers. Her undergraduate researchers present at national meetings, co-author peer-reviewed publications, and participate in international collaborations. Last year, several of her past students nominated her for a mentoring award from the Women's Initiative Committee for AIChE.

Here's an excerpt from their letter: "Prior to meeting Dr. Burdick, I had begun to fall into the false narrative that I would have to give up a part of myself to be taken seriously as an engineer. Dr. Burdick showed me that you could be intelligent, capable, and successful as well as being approachable, friendly, funny, and fashionable." She has previously been recognized for her endeavors with the 2014 Excellence in Education Award from the *Ohio Magazine*, 2016 and 2020 Ohio University Cutler Scholars Outstanding Mentor Award, and for leading the OH Delta Chapter to receive a TBPI Chapter Excellence Award for three consecutive years (2020-22).

In a letter of recommendation for this award, the Russ College dean cited Dr. Burdick's contributions to the entire college community through the work of the OH Delta Chapter at career fairs and other service events and for "creating a wealth of opportunities for students to grow and flourish."

Dr. Burdick has been a catalyst among Ohio University faculty, as diversity, equity, inclusion, accessibility, and belonging have changed from topics rarely discussed to recognized responsibilities of the chemical engineering profession. For her role as a mentor, work to increase and diversify participation in STEM, and leadership of student organizations, **Dr. Monica Burdick is the 2022 Tau Beta Pi Outstanding Advisor**.

# Association Awards

## ★ Distinguished Alumni

Distinguished Alumni are recognized for their demonstration of outstanding adherence to the ideals of Tau Beta Pi (integrity, breadth of interest, adaptability, and unselfish activity) and for fostering a spirit of liberal culture in society.



### MAKOLA M. ABDULLAH Ph.D.

DISTRICT OF COLUMBIA  
ALPHA '90

In recognition of *service to education development and as a seasoned leader*, Makola Abdullah, **has been named a 2022 TBPI Distinguished Alumnus.**

Dr. Abdullah earned his B.S.

degree from Howard University in civil engineering and master's and Ph.D. degrees in the same field from Northwestern University, where he became the youngest African American to receive an engineering Ph.D.

In 2016, he was appointed president of Virginia State University (VSU). Before that, Dr. Abdullah served as provost and senior vice president at Bethune-Cookman University (FL) and dean and director of 1890 land grant programs at Florida A&M University.

Under his leadership, VSU has experienced significant achievements, such as being named HBCU Male President of the Year (2017), HBCU of the Year (2018), and ranked as the No. 8 HBCU by *U.S. News & World Report*.

Dr. Abdullah is an internationally-renowned educator recognized for outstanding research and was cited in his nomination for a "professional career and personal life (that) exemplify integrity, success, and honor."

He was initiated into Tau Beta Pi as an undergraduate, served as DC Alpha Chapter president, and as a FL Eta Chapter Advisor for ten years (2000-10).

Earlier this year, Dr. Abdullah was appointed by President Biden to the President's Board on HBCU's with the goal of advancing the HBCU Initiative to increase capacity and to provide the highest-quality education. In addition, he is an active member on numerous boards and committees, including: Big Brothers Big Sisters of America Board of Directors, Central Intercollegiate Athletic Association Board of Directors (past chair), Virginia Council of Presidents (chair), and APLU 1890 Council of Presidents (past chair). A Chicago native, he and his wife Ahkinyala Cobb-Abdullah, Ph.D., are the proud parents of a son and daughter, both of whom are college graduates.



### KATHERINE L. BOUMAN Ph.D.

MICHIGAN GAMMA '11

In recognition of her *pioneering techniques, commitment to inclusion, and impactful contributions*, Katherine Bouman, **has been named a 2022 TBPI Distinguished Alumna.**

Dr. Bouman obtained a B.S in electrical engineering from the

University of Michigan and M.S. and Ph.D. degrees from MIT in electrical engineering and computer science. As a post-doctoral fellow in 2019 with the Event Horizon Telescope, she reconstructed the first image of a black hole for which she was a co-recipient of the prestigious Breakthrough Prize.

She joined the California Institute of Technology in June 2019, where she is currently an assistant professor and Rosenberg Scholar. Even as a young scientist and engineer, Dr. Bouman has already had a transformative impact in the fields of electrical engineering, computer science, and astrophysics.

Currently, she is spearheading new interdisciplinary research initiatives in the computing and mathematical sciences department at Caltech and continues to make immeasurable contributions to liberal culture at the campus, national, and international levels.

In addition, Dr. Bouman continues her personal mission to improve diversity on campus by leading the graduate admissions for prospective students in AI and machine learning and through membership on the DEI Steering Committee.

To date, her accomplishments have been recognized with a faculty teaching award at Caltech, Scientist of the Year Award from the Society for Imaging Science and Technology, Event Horizon Telescope Early Career Award, and the Royal Photographic Society Progress Medal.

According to her nomination, "Dr. Bouman not only advises students on algorithms to improve computational imaging, but also on developing algorithms that address explainability and affect social change."

Originally from West Lafayette, Indiana, her father Charles A. Bouman, Ph.D., PA Δ '81, is an engineering professor at Purdue University.

# The STORY BEHIND The PHOTO

## Announcing the Fall 2022 “Caption This Photo” Contest!

The image to the right appeared in the December 1979 *Council Bulletin*. Here, the Awards Committee is engrossed in their work at the “Cornhusker” Convention at the University of Nebraska in 1979.

**How to Enter:** Send us your witty caption(s) for this photo from *The Bulletin* archives. If the judges vote yours as one of the top three (and you have not been a previous winner), **we'll send you a TBP t-shirt of your choice!**

Submit your entry using this form: [www.tbp.org/?CaptionSub](http://www.tbp.org/?CaptionSub) or mail to *The Bent* of Tau Beta Pi, Caption Contest, P.O. Box 2697, Knoxville, TN 37901-2697.



**DEADLINE: TUESDAY, NOVEMBER 1, 2022  
5 P.M. (ET)**

Questions? Contact [pat@tbp.org](mailto:pat@tbp.org)

## WINNERS of the Summer 2022 “Caption This Photo” Contest:

The judges considered 50 captions received from 23 members for the Summer 2022 contest. Thank you! You can read all entries, including captions and results from recent contests, at: [tbp.org/pubs/captionContest.cfm](http://tbp.org/pubs/captionContest.cfm).

### 1ST PLACE:

**“The sign on the door read “TBP” but some thought that meant “Tryouts for Band and Performance.”**

Daniel R. Thomson, *ID Δ '19*

### 2ND PLACE:

**“Engineer’s Got Talent 1998?”**

King C.O. Au, *CA H '86*

### 3RD PLACE (TIE):

**“Again! With more Cow Bell!”**

E. William “Bill” Beans, *OH Γ '53*

### 3RD PLACE (TIE):

**“And that ladies and gentlemen, concludes our memorial service for the slide rule.”**

Stephen M. Martinez, *CA E '84*



▲ The Summer 2022 contest image (above) was taken at the 1998 Convention in Manhattan, KS. Thanks to Bill Beans, who is looking over John’s shoulder in the picture, we now know that the late Robert O. Barr Jr., *MI Γ '61*, on piano, and the late John R. Luchini, *MI Γ '71*, on guitar, were leading the group in a sing-along of show tunes.

**CONGRATULATIONS TO OUR WINNERS!**

# Authors

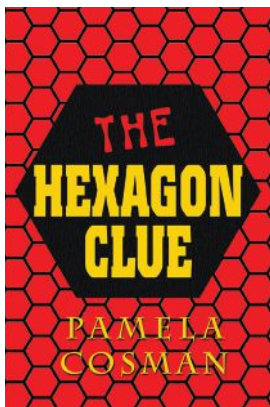
Recently published a book? If so, we would like to recognize you! Send details and a cover image to [dylan@tbp.org](mailto:dylan@tbp.org).  
 Note: This section has become extremely popular and submissions are first come, first served, as room allows. Thanks!



**Ronald J. Brachman, Ph.D.**  
 New Jersey Delta '71

**Machines Like Us: Toward AI With Common Sense**

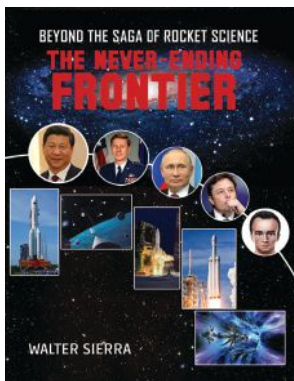
Ron and his coauthor tackle the critical unsolved problem of giving artificial intelligence systems common sense in this book, published in 2022. He has been a leading contributor to AI for more than 40 years and serves as the Director of the Jacobs Technion-Cornell Institute at Cornell Tech, where he is also a professor of computer science.



**Pamela C. Cosman, Ph.D.**  
 California Beta '87

**The Hexagon Clue**

Published in 2021 by Ransom (UK), *The Hexagon Clue* deploys engineering and math to solve crimes. The series, for ages 9 to 12, began with *The Secret Code Menace* (2016). An engineering professor at UC San Diego, Pamela aims to introduce STEM concepts to kids through fiction. All of her degrees are in electrical eng'g.



**Walter E. Hammond, Ph.D.**  
 Texas Eta '71

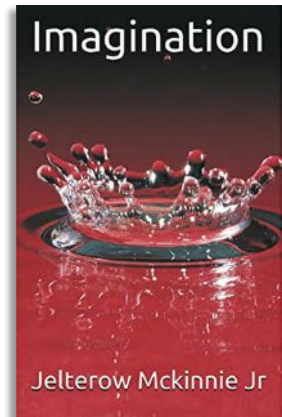
**Beyond the Saga of Rocket Science: The Never-Ending Frontier**

Hammond, whose pen name is Walter Sierra, is author of this four-book series published in 2021. It provides an amply-illustrated, perspective to a broad, non-technical audience of the entire panorama surrounding the development of rockets, missiles, and space vehicles. He is a research scientist at Hill Technical Solutions, Inc.

**Jelterow McKinnie Jr.**  
 Florida Theta '00

**Imagination**

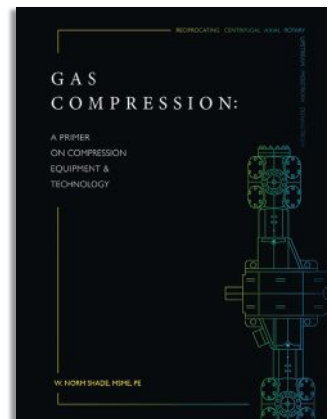
Jelterow published *Imagination*, his ninth book, in 2020 and uses Scripture to outline how to embrace your God given imagination to strengthen your faith in God's Word and achieve new levels of success. He earned his B.S. degree in mechanical engineering from Florida International University.



**W. Norm Shade Jr., P.E.**  
 Ohio Gamma '70

**Gas Compression: A Primer on Compression Equipment & Technology**

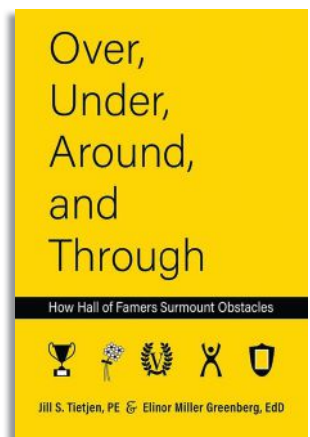
Published in 2021, Norm's book applies five decades of experience into a comprehensive reference that fills a knowledge gap for application engineers and operators of heavy industrial gas compression machinery used in the oil/natural gas industry. He is senior consultant & president-emeritus of ACI Services Inc.



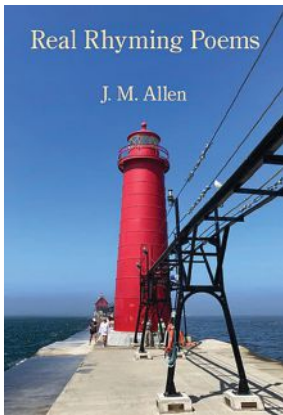
**Jill S. Tietjen, P.E.**  
 Virginia Alpha '76

**Over, Under, Around, and Through: How Hall of Famers Surmount Obstacles**

Jill, coauthor of this book published in 2022, features biographies of fifty successful women, based on interviews and historical records. These women have all been inducted into halls of fame across the U.S./world, and each profile discusses how they handled significant challenges in their lives.

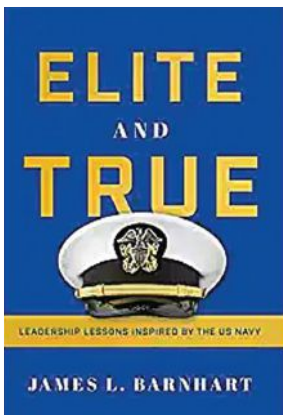
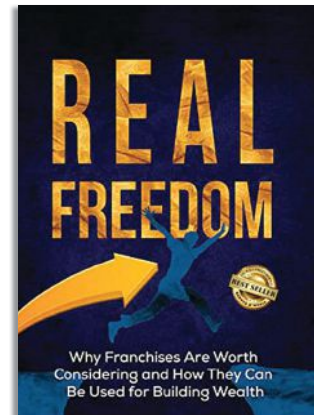


# Authors continued from page 16



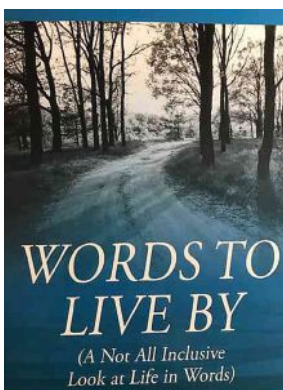
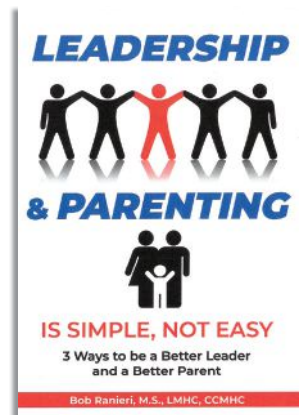
**J. M. Allen**  
*Michigan Gamma '92*  
**Real Rhyming Poems**  
 Jon's book, traditionally published by Kelsay Books in 2022, is a collection of 30 rhyming poems, 20 of which have been individually published. He is an electrical engineer, parent, an alumnus of the University of Michigan, and longtime resident of Rochester, MN. Jon has worked at IBM for nearly 30 years.

**Gregory K. Mohr**  
*California Upsilon '97*  
**Real Freedom**  
 A *Wall Street Journal* Best-seller, Gregory's book gathers his own experiences in the interest of illustrating how franchising is the greatest plan for building wealth—when done correctly. He has 17 years of restaurant management experience, EE and physics degrees, and a track record as a franchise consultant.



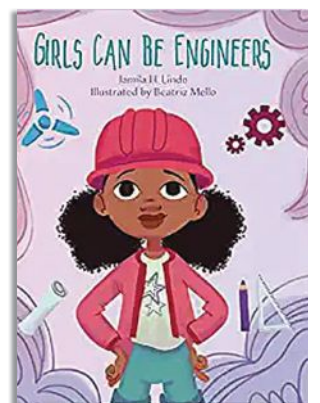
**James L. Barnhart, Ph.D.**  
*Washington Beta '84*  
**Elite and True: Leadership Lessons Inspired by the US Navy**  
 A distinguished naval graduate, James served as a naval eng'g officer leading nuclear controls and instrumentation divisions aboard submarines before succeeding in the corporate C-suite. The book provides aspiring leaders with a roadmap for achieving success through storytelling with leadership lessons for a fresh take on how the US Navy develops leaders.

**Bob Ranieri, LMHC**  
*New York Beta '73*  
**Leadership & Parenting is Simple, Not Easy**  
 Bob's book, published in 2022, looks at three ways leaders can be more effective and help their people grow. It also assists parents in raising confident adults with the skills necessary to be self-sufficient based on his experiences as a construction manager, corporate trainer, and a Licensed Mental Health Counselor teaching parenting classes.



**Kenneth J. Kogut, Ph.D., P.E.**  
*Michigan Delta '71*  
**Words to Live By**  
 Ken published his most recent book in 2019—a collection of phrases, sayings, and thoughts—looking at life as seen through some notable notables. He maintains a professional energy and management consulting practice, has B.S. and M.S. degrees in mechanical eng'g from the University of Detroit Mercy, and a Ph.D. in eng'g management.

**Jamila H. Lindo**  
*Not a Member*  
**Girls Can Be Engineers**  
 Born in Jamaica, Jamila matches her passion for encouraging young girls to explore STEM fields with her education and experience in engineering. She earned a B.S. in civil engineering from Manhattan College and is pursuing graduate studies at Columbia Univ. Her work experiences range from transportation engineering in NYC to Microsoft's global data center construction.



# TBP SCHOLARS

Scholarships have been awarded to 254 undergraduate members for the 2022-23 year.

The Fellowship Board announced the selection of 254 engineering students from 394 applicants. Most recipients will receive a cash award of \$2,000 for one year and a few will receive \$1,000 for one semester. This year, a total of \$494,000 was awarded. All TBI Scholarships are awarded on the competitive criteria of high scholarship, campus leadership and service, and promise of future contributions to the engineering profession. These awards bring the total to 3,883 scholarships granted since 1998.

**Kathleen M. Abrams** SC B '24  
**Record No. 1779** | Biomedical eng'g

**Wilbur Acharya** LA E '23  
**Stabile No. 1045** | Mechanical eng'g

**Derrick K. Agbezukey** ID Δ '23  
**Forge No. 131** | Electrical eng'g

**Hrithik R. Aghav** AZ A '23  
**Nagel No. 63** | Aerospace eng'g

**Anand Agrawal** IN Δ '23  
**Stabile No. 1102** | Electrical eng'g

**Cavin J. Alderfer** CO Δ '24  
**Scribner No. 67** | Environmental eng'g

**Jeremiah H.D. Alterman** PA E '23  
**Stabile No. 1071** | Mechanical eng'g

**Sarah E. Altman** NE A '23  
**Record No. 1753** | Biological Sys eng'g

**Rocky An** NY Δ '23  
**Stabile No. 1089** | Mechanical eng'g

**Willow X. Arana** OK A '23  
**Stabile No. 1034** | Industrial & Sys eng'g

**Mithra L. Athiappan** IL E '21  
**Record No. 1818** | Civil & environ eng'g

**Ansel R. Austin** CA O '23  
**Forge No. 124** | Mechanical eng'g

**Abanoub Aziz** TN Γ '23  
**Stabile No. 1077** | Mechanical eng'g

**Madeline J. Baalman** CA Σ '23  
**Forge No. 126** | Mechanical eng'g

**Kelsey M. Baker** ND B '23  
**Record No. 1789** | Chemical eng'g

**Molly K. Baker** VT A '23  
**Stabile No. 1105** | Environmental eng'g

**Rei Ballabani** PA Z '23  
**Althouse No. 14** | Electrical eng'g

**Daphne G. Barretto** NJ Δ '23  
**Record No. 1831** | Computer Science

**Jerrod T. Batu** NV B '24  
**Record No. 1825** | Computer eng'g

**Olabisi A. Bello** DC A '23  
**Abdullah No. 1** | Chemical eng'g

**Michela Benazzi** MA A '23  
**Stabile No. 1123** | Chemical eng'g

**Ethan L. Biedenstein** OK Γ '24  
**Stabile No. 1094** | Mechanical eng'g

**Caitlin Bingham** UT B '23  
**Record No. 1839** | Electrical eng'g

**Addison L. Black** MS A '23  
**Record No. 1806** | Civil eng'g

## The following scholarships are named for members:

The **Abdullah Scholarship** is in recognition of Makola M. Abdullah, Ph.D., *DC A '90*, a 2022 recipient of the TBI Distinguished Alumnus Award.

Henry M. Alford, *MS A '27*, left a bequest sufficient to permanently endow the **Alford Scholarships**.

The **Althouse Scholarship** honors Ernest E. Althouse, *PA A '26*, who left a bequest in 2006.

The **Bloomberg Scholarship** is named for Michael R. Bloomberg, *MD A '64*, whose gifts have funded one award for 16 years.

The **Bouman Scholarship** is in recognition of Katherine L. Bouman, Ph.D., *MI Γ '11*, a 2022 recipient of the TBI Distinguished Alumnus Award.

Marian K. and John H. Brems Jr., *MI Γ '46*, left a bequest to fund the **Brems Scholarships** in 2016.

Ruth M. and Cleveland L. Campbell, P.E., *IA A '47*, made gifts to permanently endow the **Campbell Scholarships**.

A 2007 bequest from the estate of Richard A. Curtis, Ph.D., *OH A '64*, permanently endows the **Curtis Scholarship**.

The **Dechman Scholarship** was established by David, *VA B '82*; Ken, and Jim Dechman, *TX A '89*; to honor their father, Don A. Dechman, *TX A '57*, on his 80<sup>th</sup> birthday.

The **Dodson Scholarships** are sponsored by the late Charles R. Dodson, *MD B '30*, who made gifts to the Association in 1998 and 1999.

Charles O. Forge, *CA Γ '56*, left a bequest in 2010 to support the **Forge Scholarships**.

The **Nagel Scholarships** are given in honor of Robert H. Nagel, P.E., *NY Δ '39*, for his service as Editor & Secretary-Treasurer from 1942-82 and as Secretary-Treasurer Emeritus from 1982-97.

The **Record Scholarships** commemorate Leroy E. Record, *KS A '29*, whose generous bequest will provide earnings to support awards in perpetuity.

The **Schwaller Scholarship** commemorates Shawn R. Schwaller, *SD A '95*, whose friends and family established a fund in 2007.

A bequest from A. Clayton Scribner, *NY Γ '29*, permanently endows the **Scribner Scholarships**.

All Scholars submitted a short bio that has been posted on our TBPI website at:  
[www.tbpi.org/memb/ScholarArchives/ScholarBios/ScholarBios22-23.pdf](http://www.tbpi.org/memb/ScholarArchives/ScholarBios/ScholarBios22-23.pdf)

**Thomas S. Blum** CT A '23  
**Record No. 1757** | Biomedical eng'g

**Evan J. Boekweg** UT B '22  
**Stabile No. 1081** | Mechanical eng'g

**Katelyn R. Boettcher** ID Γ '23  
**Stabile No. 1109** | Materials sci & eng'g

**Mario Bonatti** MN A '23  
**Record No. 1768** | Biomedical eng'g

**William K. Bortlik** CA Σ '23  
**Forge No. 125** | Chemical eng'g

**Michael Botros** NJ A '23  
**Stabile No. 1053** | Mechanical eng'g

**Mason S. Brasher** AL E '23  
**Stabile No. 1036** | Mechanical eng'g

**Benjamin A. Burnham** MA Θ '22  
**Stabile No. 1046** | Mechanical eng'g

**David F.J. Calabuig Jr.** UT B '23  
**Stabile No. 1082** | Mechanical eng'g

**Natalie P. Caldwell** WY A '23  
**Record No. 1817** | Civil eng'g

**William Logan Caldwell** AL E '23  
**Dodson No. 88** | Chemical eng'g

**Kayleigh R. Cameron** NM Γ '24  
**Stabile No. 1107** | Materials eng'g

**Brendan J.D. Carroll** GA Γ '22  
**Stabile No. 1041** | Mechanical eng'g

**Natalia Castaneda** ID B '23  
**Record No. 1824** | Computer eng'g

**Daniel S. Chang** TX A '24  
**Stabile No. 1078** | Mechanical eng'g

**Bryce I. Cheek** UT A '22  
**Record No. 1838** | Electrical eng'g

**Ellie Cheong** NY Δ '23  
**Stabile No. 1057** | Mechanical eng'g

**Matthew D. Chertok** FL A '23  
**Soden No. 23** | Chemical eng'g

**Justin A. Chomo** NY Γ '23  
**Stabile No. 1058** | Mechanical eng'g

**Dakota A. Clay** OH N '23  
**Record No. 1811** | Civil eng'g

**Will J. Clayton** TN Δ '23  
**Stabile No. 1075** | Mechanical eng'g

**Isabell Cook** OK Γ '23  
**Record No. 1827** | Computer eng'g

**Christina M. Coulton** NY T '23  
**Record No. 1776** | Biomedical eng'g

**Caroline R. Day** AL B '23  
**Scribner No. 66** | Environmental eng'g

**Samantha M. Denver** IL Δ '23  
**Stabile No. 1043** | Mechanical eng'g

**Gururaj M. Deshpande** GA A '23  
**Record No. 1763** | Biomedical eng'g

**Erik M. DeSmith** MN B '24  
**Stabile No. 1130** | Civil eng'g

**Kelli L. Determan** TN A '23  
**Stabile No. 1097** | Electrical eng'g

**Victoria C. Dillio** OH Λ '23  
**Record No. 1810** | Civil & environ eng'g

**Connor Dilse** ND A '24  
**Stabile No. 1051** | Mechanical eng'g

The **Sickafoose Scholarships** are named for Kathleen A. and Robert D. Sickafoose, *IL B '50*, who left a bequest in 2012 and 2013.

Glenn A. Skaggs, *MD B '57*, left a bequest in 2017 to permanently endow the **Skaggs Scholarship**.

The three **Soden Scholarships** are named for Archie D. Soden, *CA Δ '51*, who made gifts to TBPI to fund scholarships in perpetuity.

The **Spirit of Apollo Scholarship** is supported by an anonymous donor to honor the legacy of the U.S. NASA Apollo program.

The **Stabile Scholarships** are named for Vincent A. Stabile, *NY Λ '40*, whose gifts to the Association have permanently endowed scholarships.

### Corporations sponsor the remaining scholarships.

The Alabama Power Foundation, Inc., made a gift in 1995 to endow an **Alabama Power Scholarship**, awarded for the 19<sup>th</sup> time.

Awarded for the 14<sup>th</sup> year, the **GEICO Scholarship** is sponsored through a partnership with GEICO insurance.

### This year's recipients have chosen the following engineering curricula:

**64** MECHANICAL  
**34** CHEMICAL  
**31** BIOMEDICAL  
**25** ELECTRICAL  
**21** CIVIL  
**10** COMPUTER  
**9** COMPUTER SCIENCE  
**8** AEROSPACE  
**8** ENVIRONMENTAL  
**6** INDUSTRIAL  
**5** CIVIL & ENVIRONMENTAL  
**5** MATERIALS SCIENCE  
**3** ARCHITECTURAL  
**3** BIOENGINEERING  
**2** BIOLOGICAL SYSTEMS, ENGINEERING PHYSICS, MATERIALS, & ROBOTICS

*The other engineering fields of study include: Agricultural & Biosystems, Biological, Chemical & Biomolecular, Electrical & Computer, Engineering, Engineering Sciences, Financial, Industrial & Systems, Macromolecular, Mechanical & Aerospace, Metallurgical, Mining, Operations Research, and Software.*

# TBP SCHOLARS

Continued

**Matthew G. Dinnen** OH I '23  
**Stabile No. 1064** | Mechanical eng'g

**Megan L. Dodge** PA E '23  
**Record No. 1800** | Chemical eng'g

**Whitney C. Duncan** MS A '23  
**Record No. 1807** | Civil eng'g

**Jennifer Duong** NY H '22  
**Scribner No. 70** | Environmental eng'g

**Brendan Edwards** MT B '23  
**Skaggs No. 14** | Electrical eng'g

**Mason M. Ericson** KS Γ '23  
**Stabile No. 1127** | Civil eng'g

**Anna C. Erpenbeck** KY A '24  
**Forge No. 133** | Electrical eng'g

**Daniel B. Falvo** MI Γ '23  
**Bouman No. 1** | Mechanical eng'g

**Owen Farchione** NY Δ '23  
**Record No. 1752** | Biological eng'g

**Nicolas D. Fernandez** MI Λ '22  
**Stabile No. 1096** | Electrical eng'g

**Madeline J. Fidler** MN A '23  
**Stabile No. 1129** | Civil eng'g

**Michael D. Finigian** AZ Δ '23  
**Brems No. 19** | Aerospace eng'g

**Aaron J. Fleming** CA H '23  
**Forge No. 123** | Computer eng'g

**Jack J. Fredrick** TN A '23  
**Stabile No. 1112** | Materials sci & eng'g

**Joseph A. Fuchs** OH Θ '22  
**Stabile No. 1065** | Mechanical eng'g

**Abram Gallegos** IL A '23  
**Record No. 1830** | Computer Science

**John A. Gardiner** UT Γ '23  
**Stabile No. 1087** | Mechanical eng'g

**Khyati Garg** CA A '23  
**Dodson No. 89** | Chemical eng'g

**Ahmed Ghani** NJ A '23  
**Record No. 1791** | Chemical eng'g

**Robert M. Gianniny** WV A '22  
**Stabile No. 1033** | Industrial eng'g

**Katherine A. Gisi** IA A '23  
**Forge No. 122** | Electrical eng'g

**Gloria G. Givler** PA Λ '23  
**Stabile No. 1032** | Industrial eng'g

**Caylie A. Graeber** ND B '23  
**Record No. 1790** | Chemical eng'g

**Connor M. Gray** TX A '23  
**Dechman No. 8** | Chemical eng'g

**Kade A. Griesse** SD B '23  
**Skaggs No. 16** | Electrical eng'g

**Jamie Griggs** IL B '22  
**Record No. 1805** | Civil eng'g

**Nicole E. Guldin** NY N '23  
**Stabile No. 1031** | Industrial eng'g

**Lais K. Haddad** TX A '24  
**Record No. 1782** | Biomedical eng'g

**Grace B. Haller** SC A '23  
**Record No. 1751** | Bioengineering

**William C. Hamrick** GA B '23  
**Stabile No. 1119** | Computer eng'g

**Rick R. Hanish** TX A '24  
**Record No. 1828** | Computer eng'g

**William Hanna** NJ A '24  
**Stabile No. 1054** | Mechanical eng'g

**Olivia N. Hansen** IL B '23  
**Stabile No. 1118** | Civil & Struct. eng'g

**Marlee E. Hanson** OH K '23  
**Record No. 1797** | Chemical eng'g

**Ryan A. Hanson** UT B '24  
**Stabile No. 1083** | Mechanical eng'g

**Zachary Hauptman** NJ Z '23  
**Record No. 1809** | Civil eng'g

**Grace X. He** NY A '23  
**Bloomberg No. 16** | Financial eng'g

**Sarah L. Heagy** TX A '23  
**Scribner No. 71** | Environmental eng'g

**Grayce A. Henderson** PA Γ '23  
**Record No. 1813** | Civil eng'g

**Haley L. Hernandez** TX A '24  
**Nagel No. 67** | Architectural eng'g

**Tiber J. Hernandez** CA Ξ '23  
**Forge No. 128** | Computer eng'g

**Tori A. Hoffman** NM A '23  
**Stabile No. 1092** | Mechanical & aero eng'g

**Klea Hoxhallari** MI I '22  
**Nagel No. 68** | Bioengineering

**Andrea M. Huang** NY Δ '23  
**Record No. 1773** | Biomedical eng'g

**Hans Pocholo Hugo** NJ Γ '23  
**Record No. 1772** | Biomedical eng'g

**Min Ha Hwang** CA ΑΓ '22  
**Record No. 1823** | Computer eng'g

**Jennifer E. Johnson** SD A '23  
**Stabile No. 1113** | Metallurgical eng'g

**Jared N. Jones** AL A '23  
**Alford No. 23** | Electrical eng'g

**Meghana Kaipa** CA T '24  
**Forge No. 127** | Biomedical eng'g

**Samm Kaiser** MO Γ '23  
**Record No. 1837** | Computer Science

**Thomas B. Kaps** NV A '22  
**Record No. 1794** | Chemical eng'g

**Sam Karp** CT A '23  
**Soden No. 21** | Chemical eng'g

**Phillip C. Keating** OH N '23  
**Record No. 1826** | Computer eng'g

**William C. Keith** AL A '23  
**Dodson No. 87** | Chemical eng'g

**Thresa S. Kelly** KS A '23  
**Stabile No. 1104** | Engineering Physics

**Justin P. Keszthelyi** NY Ξ '23  
**Stabile No. 1063** | Mechanical eng'g

**Jane Keth** NM B '23  
**Record No. 1793** | Chemical eng'g

**Humfrey M. Kimanya** NY K '23  
**Stabile No. 1059** | Mechanical eng'g

**Nicholas M. King** WI A '23  
**Record No. 1803** | Chemical eng'g

**Philip B. Klocke** UT B '23  
**Stabile No. 1084** | Mechanical eng'g

**Lance M. Knipper** TN A '23  
**Record No. 1781** | Biomedical eng'g

**Wayne Koelsch** AK A '22  
**Stabile No. 1035** | Mechanical eng'g

**Nathan J. Kolbas** NE A '23  
**GEICO No. 68** | Software eng'g

**Ashlyn H. Kozlowski** TN A '23  
**Spirit of Apollo No. 9** | Aerospace eng'g

**Jacob Kulig** OH Θ '23  
**Stabile No. 1066** | Mechanical eng'g

**Avinash Kumar** MA Θ '23  
**Stabile No. 1100** | Electrical eng'g

**Samuel G. Lambert** KY A '24  
**Stabile No. 1128** | Civil eng'g

**Mathias W. Lane** CA A '23  
**Forge No. 121** | Mechanical eng'g

**Jacob W. Lang** MA Θ '24  
**Stabile No. 1117** | Industrial eng'g

**Phuong Le** NY K '23  
**Record No. 1774** | Biomedical eng'g

**McKayla N. Leary** ME A '23  
**Stabile No. 1048** | Mechanical eng'g

**Rachel Leblanc** OH A '22  
**Record No. 1841** | Polymer sci & eng'g

**Abigail M. Lee** TN Z '22  
**Sickafoose No. 11** | Chemical eng'g

**Elizabeth G. Lee** MI H '23  
**Record No. 1767** | Biomedical eng'g

**Spencer P. Lehmann** IN Δ '23  
**Stabile No. 1044** | Mechanical eng'g

**Danielle Lemisch** PA E '23  
**Record No. 1804** | Chem & biomol eng'g

**Samantha A. Lewandoski** MO Δ '23  
**Stabile No. 1099** | Elect & comp eng'g

**Robert E. Licari** MN B '22  
**Record No. 1787** | Chemical eng'g

**Albert K. Lin** NJ Δ '23  
**Record No. 1832** | Computer Science

**Cheng-Hsin Liu** CA A '23  
**Dodson No. 90** | Chemical eng'g

**David M.B. Long** CO A '25  
**Stabile No. 1095** | Electrical eng'g

**Sidney C. Lovelady** AL Δ '23  
**AL Power No. 19** | Electrical eng'g

**Christopher Lu** NY K '23  
**Record No. 1775** | Biomedical eng'g

**Spencer A. Lund** SD A '23  
**Schwaller No. 12** | Industrial eng'g

**Sara M. Lydon** NH B '23  
**Record No. 1770** | Engineering Sciences

**Slade L. Machado** FL A '23  
**Stabile No. 1126** | Civil eng'g

**DeAngelo D. Maestas** NM A '23  
**Stabile No. 1093** | Mech & Aero eng'g

**Shantanu Majumder** TX B '23  
**Stabile No. 1098** | Electrical eng'g

**Jemma R. Mallia** NY B '22  
**Skaggs No. 15** | Electrical eng'g

**Nikola Marinos Raitsevits** NY K '23  
**Stabile No. 1060** | Mechanical eng'g

**Shannon K. Mathers** OK A '24  
**Stabile No. 1068** | Mechanical eng'g

**Amanda M. Mavricos** NJ A '24  
**Record No. 1771** | Biomedical eng'g

**Macy B. Mekiliesky** SC B '24  
**Record No. 1814** | Civil eng'g

**Luis A. Mendez** OH Θ '23  
**Stabile No. 1067** | Mechanical eng'g

**Victoria N. Messuri** OH Δ '23  
**Record No. 1802** | Chemical eng'g

**Zachary M. Miller** AL E '23  
**Stabile No. 1037** | Mechanical eng'g

**Lydia A. Mitchell** AL A '23  
**Stabile No. 1101** | Electrical eng'g

**Clamon M. Moody** TN A '22  
**Stabile No. 1074** | Mechanical eng'g

**Gino Muto** FL E '23  
**Stabile No. 1039** | Mechanical eng'g

**Rachel L. Nagy** MI H '24  
**Nagel No. 65** | Architectural eng'g

**Sophie E. Naud** CT A '23  
**Record No. 1758** | Biomedical eng'g

**Rachel H. Necky** CT Γ '22  
**Record No. 1761** | Biomedical eng'g

**Kendrick R. Neptune** TX A '23  
**Stabile No. 1079** | Mechanical eng'g

**Christian P. Newkirk** OK A '23  
**Stabile No. 1069** | Mechanical eng'g

**Khoa A. Nguyen** MS B '23  
**Record No. 1788** | Chemical eng'g

**Derek A. Ni** NY Δ '23  
**Record No. 1833** | Computer Science

**Bhargavi Nimoji** NH A '23  
**Record No. 1808** | Civil eng'g

**Carly A. Noone** OK Γ '24  
**Record No. 1812** | Civil eng'g

**Elle M. Oakes** OR A '23  
**Nagel No. 69** | Bioengineering

**Conor R. O'Bryon** TX A '23  
**Record No. 1816** | Civil eng'g

**Tylee J. Oldham** KY A '23  
**Stabile No. 1106** | Materials eng'g

**Jacob J. Otolski** MN A '23  
**Record No. 1786** | Chemical eng'g

**Daniel P. Owens** IN Δ '23  
**Scribner No. 68** | Environmental eng'g

**Emily X.L. Padgett** IN B '23  
**Forge No. 132** | Electrical eng'g

**James D. Palmer** FL I '23  
**Stabile No. 1040** | Mechanical eng'g

**James T. Parker** AL A '23  
**Stabile No. 1121** | Civil eng'g

**McKenzie C. Pearson** IN Δ '23  
**Scribner No. 69** | Environmental eng'g

**Zachary R. Perry** TN E '23  
**Stabile No. 1076** | Mechanical eng'g

**Emily B. Philpot** MA Θ '22  
**Stabile No. 1047** | Mechanical eng'g

**Edita Pipic** OK A '23  
**Nagel No. 66** | Architectural eng'g

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Continued

**Brenden K. Preiss** MI H '23  
**Stabile No. 1115** | Robotics eng'g

**Matthew R. Prescavage** AZ Δ '23  
**Brems No. 20** | Aerospace eng'g

**Henry A. Price** PA A '23  
**Stabile No. 1111** | Materials sci & eng'g

**William P. Quintana** DE A '23  
**Stabile No. 1108** | Materials sci & eng'g

**Emily E. Reitz** NY T '23  
**Record No. 1777** | Biomedical eng'g

**Dominic Riepenhoff** OH Δ '23  
**Record No. 1796** | Chemical eng'g

**Jasmine E. Rodriguez** FL Γ '24  
**Stabile No. 1030** | Industrial eng'g

**Sunshine A. Rodriguez** NV A '23  
**Stabile No. 1056** | Mechanical eng'g

**Calvin G. Rogers** UT B '23  
**Stabile No. 1085** | Mechanical eng'g

**Michael L. Roling** IA A '23  
**Forge No. 130** | Electrical eng'g

**Patricio B. Sainz** ID Γ '22  
**Stabile No. 1042** | Mechanical eng'g

**Max L. Salzer** ND A '23  
**Stabile No. 1052** | Mechanical eng'g

**Matteo Sanchez-Dahl Gonzalez** DC Γ '23  
**Record No. 1762** | Biomedical eng'g

**George W. Saphir** AZ A '23  
**Stabile No. 1125** | Civil eng'g

**Nathan C. Schatz** MD Γ '23  
**Skaggs No. 13** | Electrical eng'g

**Joseph J. Schendel** IA A '23  
**Brems No. 23** | Aerospace eng'g

**Gabriel J. Schettler** ND B '23  
**Campbell No. 53** | Mechanical eng'g

**Paul D. Schlotman** SD B '23  
**Nagel No. 64** | Agriculture & biosys eng'g

**Austin T. Schmitz** MI Z '23  
**Stabile No. 1049** | Mechanical eng'g

**Stephen J. Scripp** WI Δ '22  
**Record No. 1785** | Biomedical eng'g

**Anna L. Sedivy-Thompson** OK A '22  
**Record No. 1836** | Computer Science

**Julianne Chania Setiadi** AZ A '22  
**Record No. 1756** | Biomedical eng'g

**Daniel J. Shade** TN B '23  
**Sickafoose No. 12** | Chemical eng'g

**Heli M. Shah** NJ A '23  
**Record No. 1792** | Chemical eng'g

**Karsen P. Shannon** WV B '23  
**Record No. 1840** | Electrical eng'g

**Emma R. Sheffield** ME A '23  
**Record No. 1819** | Civil & environ eng'g

**Jacob M. Shellhamer** NY B '23  
**Record No. 1795** | Chemical eng'g

**Haley A. Sieg** OH E '23  
**Record No. 1778** | Biomedical eng'g

**Jon O.R. Siemon** TX A '22  
**Stabile No. 1080** | Mechanical eng'g

**Timothy A. Singleton** AZ Γ '23  
**Alford No. 22** | Electrical eng'g

**Yaman Siwakoti** DC A '24  
**Stabile No. 1090** | Mechanical eng'g

**Mizuki K. Small** CA M '23  
**Brems No. 21** | Aerospace eng'g

**Julia G. Som** VA E '23  
**Record No. 1784** | Biomedical eng'g

**Kathleen A. Song** NJ Δ '23  
**Record No. 1820** | Environmental eng'g

**Jenna N. Sperduto** NJ E '23  
**Record No. 1821** | Civil & Environ eng'g

**Benjamin L. Stone** KY A '23  
**Stabile No. 1122** | Chemical eng'g

**Emily I. Street** MI B '22  
**Record No. 1842** | Mining eng'g

**Nicole J. Stubbe** IA B '23  
**Record No. 1764** | Biomedical eng'g

**Alexandra A. Stuedli** SC B '23  
**Record No. 1780** | Biomedical eng'g

**Rujia Sun** NY Δ '23  
**Record No. 1834** | Computer Science

**Christopher Swagler** MA E '23  
**Stabile No. 1120** | Computer eng'g

**Daniella M. Tagliaferri** PA Θ '23  
**Stabile No. 1072** | Mechanical eng'g

**Maria T. Tagliaferri** PA Θ '23  
**Stabile No. 1073** | Mechanical eng'g

**Bhavin Tanna** NY P '23  
**Stabile No. 1061** | Mechanical eng'g

**Deanté M. Taylor** DC A '22  
**Record No. 1829** | Computer Science

**Cole R. Thomas** PA B '23  
**Record No. 1799** | Chemical eng'g

**Sarthak Tiwari** UT A '23  
**Record No. 1783** | Biomedical eng'g

**Jason Tramontana** NJ A '23  
**Stabile No. 1055** | Mechanical eng'g

**Vincent T.K. Tran** AZ A '22  
**Stabile No. 1038** | Mechanical eng'g

**Braden R. Trejo** UT B '24  
**Stabile No. 1086** | Mechanical eng'g

**Grace D. Trippiedi** OH E '22  
**Stabile No. 1091** | Mechanical eng'g

**Benjamin A. Vasquez** LA B '23  
**Stabile No. 1103** | Engineering Physics

**Nathan R. Verros** SD B '23  
**Record No. 1822** | Civil & environ eng'g

**Zoe Vittum** ME A '23  
**Record No. 1765** | Biomedical eng'g

**Alyssa Vu** CA E '23  
**Doson No. 91** | Chemical eng'g

**Judy Q. Vu** LA E '23  
**Skaggs No. 12** | Electrical eng'g

**Grayson A. Wagner** CT A '23  
**Record No. 1759** | Biomedical eng'g

**John-Todd Wallace** OK Γ '22  
**Stabile No. 1070** | Mechanical eng'g

**Savannah K. Walvoord** NE A '23  
**Record No. 1754** | Biological sys eng'g

**Andrew R. Walz** MN B '23  
**Stabile No. 1050** | Mechanical eng'g

# TBP SCHOLARS

Continued

**Ian A. Wells** WA B '23  
**Stabile No. 1088** | Mechanical eng'g

**George Wenson** NJ B '23  
**Stabile No. 1110** | Materials sci eng'g

**Rebecca P. Wheeler** CA Ψ '23  
**Forge No. 129** | Chemical eng'g

**Karley N. White** OK Γ '22  
**Record No. 1798** | Chemical eng'g

**Timothy A. Widner** NY Y '23  
**Stabile No. 1062** | Mechanical eng'g

**Django M. Wiedel** OR A '23  
**Campbell No. 54** | Mechanical eng'g

**Shayla E. Wilhelm** FL Z '23  
**Brems No. 22** | Aerospace eng'g

**Yancey D. Williams II** AL Γ '23  
**Record No. 1755** | Biomedical eng'g

**Sean Y. Wu** CA Ω '23  
**Curtis No. 15** | Engineering

**Tinghan Ye** NY Δ '23  
**Stabile No. 1114** | Ops research eng'g

**Rachel Yiu** LA A '23  
**Forge No. 134** | Electrical eng'g

**Grace A. Yost** MO E '23  
**Record No. 1769** | Biomedical eng'g

**Ramiz Yusuf** AL E '23  
**Stabile No. 1124** | Civil eng'g

**Antonio M. Zaccaria** MD Γ '23  
**Stabile No. 1116** | Robotics eng'g

**Jordan E. Zais** MI B '23  
**Record No. 1766** | Biomedical eng'g

**Ziheng Zeng** PA H '23  
**Record No. 1801** | Chemical eng'g

**Shihao Zhai** CT B '23  
**Soden No. 22** | Chemical eng'g

**Samantha J. Zhang** NY Δ '23  
**Record No. 1835** | Computer Science

**Christy Zheng** CT A '23  
**Record No. 1760** | Biomedical eng'g

**Rachel E. Zook** SD B '23  
**Record No. 1850** | Civil eng'g

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# BRAIN TICKLERS



## Results From Spring

### Perfect Scores

*Capelli, Ronald B.	MI	Γ	'73
Couillard, J. Gregory	IL	Δ	'89
*Gibbs, Kenneth P.	MO	Γ	'76
*Gulian, Franklin J.	DE	Δ	'83
Gulian, Joseph D.	Son of member		
*Kimsey, David B.	AL	Δ	'71
*Norris, Thomas G.	OK	Δ	'56
*Slegel, Timothy J.	PA	Δ	'80

### Other

Alexander, Jay A.	IL	Γ	'86
Bannister, Kenneth A.	PA	B	'82
Bertrand, Richard M.	WI	B	'73
Edel, Kentworth M.	AZ	Δ	'83
Flores, Christopher	NY	Ξ	'22
*Gaston, Charles A.	PA	B	'61
*Griggs Jr., James L.	OH	Δ	'56
Harvey, Arthur J.	OH	Δ	'83
Hitz, Steven G.	WI	Γ	'76
Johnson, Mark C.	IL	Δ	'00
Johnson, Roger W.	MN	Δ	'79
McHenry, S. Dale	MO	B	'81
Mitchell, Mike K.	AZ	Δ	'75
Munsil, Wesley E.	CA	B	'71
Parks, Christopher J.	NY	Γ	'82
Riedesel, Jeremy M.	OH	B	'96
Schmidt, V. Hugo	WA	B	'51
Schwam, Susan E.	WA	Δ	'88
Schwam, Freely	Spouse of member		
Smith, Scott	Non-member		
Schweitzer, Robert W.	NY	Z	'52
Spong, Robert N.	UT	Δ	'58
Spring, Gary S.	MA	Z	'82
*Strong, Michael D.	PA	Δ	'84
Szostek, Renee	MI	Δ	'87
*Upshur, John I.	VA	Δ	'83
Voellinger, Edward J.	Non-member		
Zison, Stanley W.	CA	Θ	'83

\*Denotes correct bonus solution

## Spring Review

Responses to the first five problems were surprisingly consistent. The number of responses and the percentage of correct responses were reasonably similar across the numbered problems.

The most popular problem by a small margin was number 3 (Find the Ace).

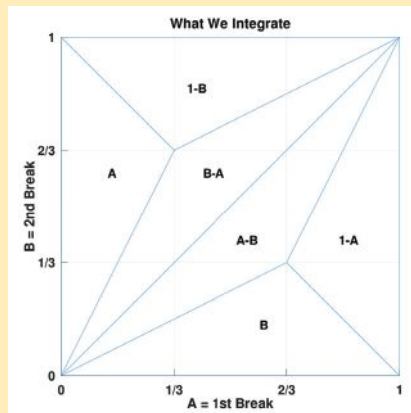
The judges had predicted that member solutions to problem 4 (Trammel Curve) would fall into either of two forms. Members submitted several additional interesting (and equally correct) forms.

## Summer Answers

**1: 7 walkabouts.** Move Alice as far clockwise as possible, that is, 3 places. Subsequently, Hare moves clockwise 6, followed by Doormouse 9, Hatter 12, Alice 9, Hare 6, and finally Doormouse 3. Three other clockwise variants are possible, depending upon which character goes first. There are four counter-clockwise options, complementary to the clockwise solutions.

**2: Denmark defeated Canada by a score of 1-0. The Danes conceded the fewest number of goals.** In order for the goals scored constraint to be upheld, the Argentina-Canada match and the Belgium-Denmark match must end with identical scores, and the teams in the Belgium-Canada match each score two more than the teams in the Argentina-Denmark match.

**3: 1/9.** Let A and B denote the location of the two points chosen at random. The function f(A,B) in the diagram (in the next column) with six distinct regions defines the length of the shortest segment. The expected value of the shortest segment can be calculated by integrating f(A,B) over both A and B on the unit square. Instead of doing the actual integration, notice that the value of the function around the perimeter and along the diagonal is zero. Each region defines a flat surface with a maximum value of 1/3; defining two irregular tetrahedra, one on the upper left, the other on the bottom right. The volume of an irregular tetrahedron is 1/3 (base)(height). Each has volume = 1/3(1/2)(1/3) = 1/18, for combined volume of 2 \* 1/18 = 1/9



In general, given  $n$  segments from a line of unit length as defined by  $n-1$  random points, the expected value of the  $r$ th smallest segment is  $(1/n) \sum_{j=1}^r (1/(n-j+1))$ .

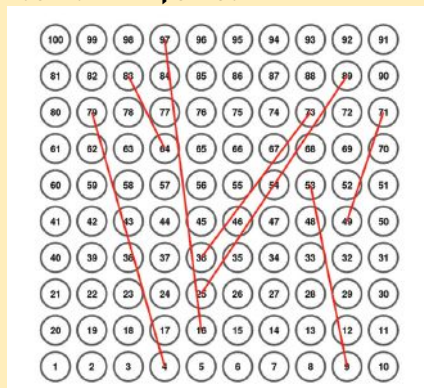
So for  $r=1$ , and two random points (i.e.  $n=3$ ), the expected value is  $1/n^2 = 1/9$ .

**4: 521/10<sup>8</sup>.** The maximum score for 8 games is 24, so there are only four ways to achieve a score of 22 or more:

- all eight games drawn  $p = 10^{-8}$
- seven draws and one home win  $p = C(8,1) \times 4 \times 10^{-8} = 32 \times 10^{-8}$
- seven draws and one visitor win  $p = C(8,1) \times 5 \times 10^{-8} = 40 \times 10^{-8}$
- seven draws and two visitor wins  $p = C(8,2) \times 4^2 \times 10^{-8} = 28 \times 16 \times 10^{-8} = 448 \times 10^{-8}$

for a sum of  $(1 + 32 + 40 + 448) \times 10^{-8} = 521 \times 10^{-8}$

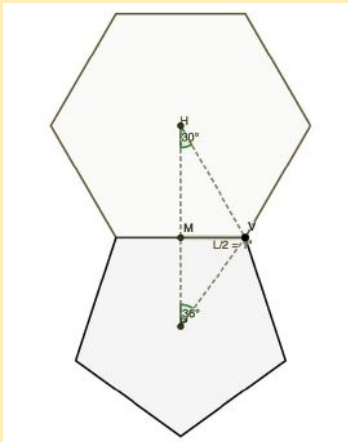
**5: 4-79, 9-53, 16-97, 25-89, 36-73 49-71, 64-83.**



## BONUS: 9.844 inches.

The polyhedron that forms a traditionally constructed soccer ball is called a regular truncated icosahedron. When inflated, assume that each of the 30 edges where two hexagons meet lies on a great circle of radius  $R$ .

Consider an edge on the polyhedron where one of the regular pentagons meets one of the regular hexagons. The length  $L$  of the common edge is given as  $L = 2''$ ; let  $M$  be the midpoint of the edge and point  $V$  (either) one of the endpoints, so  $MV$  has length  $L / 2$ . Call  $P$  and  $H$  the centers of those adjacent polygons comprising the pentagon-hexagon pair.



A spherical triangle is formed by points  $P$ ,  $H$ , and  $V$ . The angle  $\angle PHV$  at the center of the hexagon equals  $2\pi / 12 = \pi / 6$ . The angle  $\angle HPV$  at the center of the pentagon equals  $2\pi / 10 = \pi / 5$ . The altitude  $MV$  from side  $HP$  has length  $1''$ .

Let  $\alpha$  be the angle subtended by arc  $MV$  from the polyhedron's center. From angles  $\angle MVP$  and  $\angle MVH$  in spherical triangles  $MPV$  and  $MHV$ , we know that

$$\cos(\pi / 5) = \cos(\alpha) \sin(\angle MVP)$$

$$\cos(\pi / 6) = \cos(\alpha) \sin(\angle MVH)$$

and at vertex  $V$ , since the adjacent hexagon-hexagon edge is on a great circle,

$$\pi = \angle MVP + 2\angle MVH.$$

Given that  $\cos(\pi / 5) = (1 + \sqrt{5}) / 4$  and  $\cos(\pi / 6) = \sqrt{3} / 2$ , and solving for  $\alpha$ , we get  $\alpha = \arccos\sqrt{(18 / (21 - \sqrt{5}))} \cong .20317$ . The ball's radius is therefore  $R = (L / 2) / \alpha$ , so the diameter is given by  $2R = L / \alpha \cong L / .20317 \cong 9.844''$

## DOUBLE BONUS: \$99,500

for the entire group. Each contestant counts the number of red hats they see in front of them, and keeps track of the number of "red" guesses they hear from behind them. If the sum of the two values is even, they guess "red," otherwise, they guess "blue." The first contestant has a 50-50 chance of being correct, but every other contestant will guess correctly. For each of the  $N$  contestants, the expected winnings is  $\$1,000 \times (2N - 1) / 2N$ .

## New Fall Problems

### 1: Order of Merit

A, B, C, D, E all know their own places in an order of merit (no ties) and B also knows D's place. First place is best.

A: 'I was not second.'

B: 'I was two places better than D.'

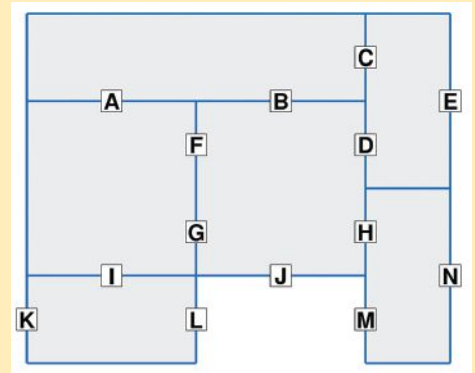
C overheard these remarks and on the evidence of what he knew about their characters, came to the conclusion that one of them was true and the other false. (He was quite right.)

After a pause for reflection, C announced that he could write down the complete order of merit of all five of them. He did so, and he was quite right. With the additional information that C was not 5th, what is the complete order of merit?

—*Brain Puzzler's Delight*  
by E.R. Emmet

### 2: Doors

Uncle Don's bungalow is well endowed with doors (letters in figure), as you can see. He locks them each night to keep out things that go bump. He would dearly love to do it by passing through each door just once and locking it behind him, so as to finish safely locked up in his bedroom. Alas, it cannot be done. But it could be if he had one of the doors nailed shut. Which one?



—A Tantalizer by Martin Hollis  
in *New Scientist*

### 3: Darts

Consider a dart board made up of four little circles of radius 1 inside a large circle of radius 2. The four little circles meet at the origin, which is the center of the large circle. The centers of the little circles are on the four axes. The area in question is outside of all little circles, but inside the large circle.

George has trained his pet monkey to throw darts at the area in question. Although the monkey always hits the board, his dart just lands at a random point on the board. What is the exact probability that his dart will land in the area in question? Assume that the probability that a dart will land in a given area is proportional to the ratio of that area to the total area of the board.

—based on a Puzzle Corner  
by Allen Gottlieb in  
*Technology Review*

### 4: Balance the Die

The die in question is of the ordinary kind; on the hidden faces, 6 lies opposite 1, 4 opposite 3, and 2 opposite 5. But it doesn't roll true. The dots marking the numbers are little gold spheres on the faces of the die, and their weight tends to make the larger numbers end up at the bottom when the die is rolled. The existing dots are either at the center of a face, or half way between the center and an edge or vertex and are symmetric about the center of a face.

Continued on page 39

# Alumni Giving

## Donor Recognition Clubs

The Donor Recognition Clubs are part of our effort to recognize a donor's total lifetime cumulative giving to Tau Beta Pi. **THANK YOU** to the 1,392 TAU BETA PI ALUMNI and others who made donations to the Association totaling \$253,552 between May 1, 2022, and July 31, 2022. Gifts received after July 31 do not appear here but will be published in the Winter 2023 issue. These club names and amounts, updated by the TBII Executive Council, are set at the following levels:

### \$1 MILLION+ Williams Club

Edward H. Williams Jr., Sc.D.  
PA A 1875, Founder of Tau Beta Pi

### \$500,000+ Heikes Club

Irving A. Heikes, PA A 1885  
1st student member

### \$250,000+ Harelson Club

Katharine C. Harelson, KY A 1924  
1st Women's Badge (WB) recipient

### \$100,000+ Matthews Club

R.C. "Red" Matthews, IL A 1902  
1st Sec.-Treasurer of TBII

### \$50,000+ Franklin Club

Marjorie A.H. Franklin, KS A 1957  
1st woman initiated into Sigma Tau

### \$25,000+ Nagel Club

Robert H. Nagel, P.E., NY D 1939  
2nd Sec.-Treasurer of TBII

### \$10,000+ Clarke Club

Edith Clarke, WB #95  
Inventor of graphic calculator

### \$5,000+ Evans Club

Henry B. Evans, Ph.D., PA A 1893  
1st president of Tau Beta Pi

### \$2,500+ Eaves Club

Elsie Eaves, CO B 1920, WB #24  
Influential civil engineer

### \$1,000+ Downing Club

Lewis K. Downing, MI G 1921  
1st Black HBCU engr. dean

### \$500+ Moore Club

A.D. Moore, PA G 1915, TBII presi-  
dent, Fellowship Program founder

### \$250+ Forman Club

George W. Forman, IL A 1941  
Led TBII/Sigma Tau merger

#### NOTES:

1. Names preceded by SPEC denote gifts from non-members.
2. Names marked with a † symbol are of deceased members in whose memory donations were made either by relatives and friends or through bequests.



Franklin Club  
**Nicholas M. Donofrio**  
 NY Γ '67  
*"Integrity and Excellence in Engineering" exactly what our country and the world needs more of and TBP enables!*



Franklin Club  
**Renee M. Schoenborn, P.E.**  
 WY A '85  
*It feels right to give back to the institution that afforded me so many opportunities!*

## Moore, Forman & Pre-Club Members Listed on website

Due to the number of alumni contributors, the Moore, Forman, and Pre-Club Members will be acknowledged on our website at: [www.tbp.org/?AGP](http://www.tbp.org/?AGP). All donations are essential to the continued success of the Association, but due to rising print costs of each issue, these donors will be listed with

all of the other contributors in a protected PDF document. If you have questions or concerns, please contact [development@tbp.org](mailto:development@tbp.org). Thank you for your understanding as we strive to produce an enjoyable and cost effective magazine for our readers.

### \$1 MILLION+ Williams Club

No alumni gifts for this quarter

### \$500,000+ Heikes Club

No alumni gifts for this quarter

### \$250,000+ Harelson Club

No alumni gifts for this quarter

### \$100,000+ Matthews Club

- IA A Anonymous '69
- NY A McGrann, James Michael '84
- OH Γ †Rockow, Ralph Arthur '58

### \$50,000+ Franklin Club

- IA A Kilzer, Dave Darrell '96
- NY Γ Donofrio, Nick Michael '67
- OH H Merkle, Larry '92
- RI B Anonymous '81
- WY A Schoenborn, Renee Margal '85

### \$25,000+ Nagel Club

- IA B Glasgow, Justin Mathew '05
- MI A Colbry, Dirk Joel '06
- Colbry, Katy Luchini '99
- LaFrey, Ray Richard '61
- NY B Anonymous '80
- NY Δ Angle, Fritz F. '82
- OH A Salamon Jr., Peter Francis '71
- PA Δ Anonymous '90
- TX Γ Loewenstern Jr., Walter '59

### \$10,000+ Clarke Club

- SPEC Anonymous
- CA Γ Davies III, Paul Lewis '83
- CA Δ Fong, Frank Moodo '69
- CA N Steenhoven, Jerry C. '77
- CA Y Idenmill, Ethan Matthew '04
- IL A Luzbetak, Paul Daniel '96
- LA E Champagne Jr., Pierre '76
- MA A Keogh, Brian James '84
- MI Δ Repke, Wesley Ryan '09
- MO Γ Gibbs, Ken Paul '76
- NY E Maniscalco, Thomas Louis '67
- PA H Hettche, Ray Raymond '61
- PR A Garcia, Carlos E. '77
- RI A Vigar, Judy Wells '83
- TN A Cook, Jim Michael '72
- Stiles, Larry '71
- TX Δ Rushing, Jay Alan '76
- WA A Asplin, Lyle Irving '59
- Eastman, Jim Scoville '53
- WV B Payne, Michael E. '81

### \$5,000+ Evans Club

- AL A Wilhelm, William Jean '58
- AK A Gaddis, B.L. '73
- CA Γ Bowerman, Lawrence John '69
- CA Δ Crews, Brian '70
- Hall, Vickie Lee '86
- Holl, Sue '76
- CA N Joy Jr., Robert Lee '66
- CA Y Lytle, Scott K. '86
- Alexander, Joseph W. '06
- Alexander, Rachel Kristin '15
- Gruspe, Nancy T. '88
- CO B Clair, David Richard '58
- Kinzie, Edward Ottis '64
- Lewis, Becky Ann '04
- FL A Cowan Jr., David James '14
- FL E Herzing, Hank George '59
- IL Γ Hooks, Collis Charles '64
- IN A Ihlenfeld, Jay Vining '74
- IA A Krambeck, Scott David '82
- LA B Junius Jr., Ralph William '70
- Vaughan, Robin Marie '81

- MA A Chace, Brian David '69
- MA B Nobel, Sanford Millard '58
- Poduska Sr., John William '99
- MI Γ Holderness, Jim Henry '67
- MI Δ Klimaszewski, Richard A. '65
- MI Z Dymale, Raymond C. '70
- MO Γ Philipp, Patrick William '98
- NH A Dycewicz, Vickie Sue '96
- NJ Γ Kenney, Thomas Edward '70
- NY Γ Gorin, Ralph Edgar '70
- NY Δ Hart, Marjorie Leigh '51
- NY E Grosso, John Joseph '69
- NY H Anonymous '57
- NY O Bauer, Richard Carlton '66
- NY E O'Keefe, Luke Francis '80
- NY P Calfa Jr., Frank Salvatore '81
- NY T Olenik, Anthony Michael '08
- OH A Linsalata, Frank N. '63
- OH B Zureick, Elizabeth Ann '73
- OR A Cantwell, Gary Kenneth '80
- PA B Reese, J. Mark '80
- PA I Salyers, John Marshall '01
- Smith Jr., Donald Benedict '91
- Dusablon, Louise Victoria '64

- TN Δ Hanes, Richard Michael '67
- TX B Chauvin, Wendy M. '89
- TX B Ellisen, Arthur Raymond '62
- TX Γ Capshaw, David M. '80
- Jordan, Paul Joseph '90
- Sandmann Jr., Charles W. '82
- TX Z Wint, Stephen Peter '83
- UT Γ Panatier, Michael James '71
- VA B Carpenter, Joseph Andrew '63
- Lovell, Lale Gokbudak '96
- Lovell, Matt Bruce '96
- WA B Anderson, Bud L. '66
- Cass, Robert Dennis '83
- WV B Ashman, Michael D. '84

### \$2,500+ Eaves Club

- AL A Cowles, Gary Dreaper Edward '87
- AL Δ Koelbl, Terry Gene '84
- AR A Newtown Jr., Glenford Andrew '69
- CA A †Reed, Donald Elliot '44
- CA B Hammer, David A. '64
- CA Γ Holmen, Bob R. '85
- Parker, Henry Whipple '45
- CA Δ Zehrbach, Bill Ernest '69



# Alumni Giving



Clarke Club  
**Wesley R. Repke**  
 MI A '09

*Because every Tau Bate has  
 the potential to change the  
 world for the better.*

*Eaves Club continued*

- CA E** Gritton, Eugene Charles '63  
Simsarian, Greg Garabed '82
- CA H** Kruusmagi, Daniel Thomas '13
- CA I** Kuspa, Joe Anthony '93
- CA K** Ramirez, Marvin Jerome '82  
Scanlan, Lawrence Allen '68
- CA L** Coombs, Richard Allen '75  
Lieu, Tom '94
- CA P** Kraft, Lyle David '87
- CO A** Anderson, Arvid Neil '54  
Kranzler, Irvin '54  
Pearson, Larry '64
- CO G** Leib, David Bernard '61
- DC B** Ingram, Robert Louis '69
- DC B** King, David Alan '68
- FL A** Daniher, Peter Michael '66
- IL B** Forish Jr., George Edward '75
- IL G** Dixon, David Allen '63
- IN A** Sommer, Dianna Marie '83  
Yoder, Norman Everett '71
- IN G** Boehnen, Daniel A. '72  
Richter, Richard Terrell '70
- IN Δ** Luecke, Edgar Jacob '55  
Vocke, Merlyn Clarence '55
- IA A** Harms, Richard Paul '65
- IA B** Schwarting, Eugene Raymond '63  
Smith, Richard Kenneth '60
- KS A** Moore, Richard Arthur '51  
Smith, Ricky Dean '83  
Gemaehlich, Donald Joel '83
- KS G** Lasky, William T. '86
- KY B** Gilman, Cynthia Margaret '80
- ME A** Joseph, John Hamilton '85
- MD B** Fenner, Peter Richards '64
- MA A** Patterson, John Bryan '68
- MA B** Raister, Richard Allen '72
- MA Δ** Harrison, C. Brett '64
- MA Z** Kelly, Thomas William '80  
Lastella, Michael James '72  
Strzegowski Jr., Joseph C. '67
- MA H** Duda, James A. '84
- MI B** Vukovich, Robert James '83
- MI G** Holmes, John William '65  
Liepa, Mark Albert '81  
Reines, Jose '59  
Stewart, Steve Russell '66
- MI E** Chudd, Richard Alan '66  
Husak, Philip William '72
- MI Z** Cookman, Jordan Christopher '94  
Pettiford, Steven Douglas '72
- MI H** Czupinski, Glenn Walter '83
- MN A** Hanson, Henry Arthur '66
- MS A** Black, Howard Wayne '95
- MS B** Woody, Marvin David '79
- MO G** Saufnauer III, John '61
- NE A** Steube, Milan Ray '74
- NJ B** Blasi, Michael G. '68
- NJ G** Mauermeyer, Henry A. '72
- NJ Δ** Meyer, John Edward '81
- NM A** Peace, Jeffrey Howard '76
- NY A** Cohen, Adam Barrett '85
- NY G** Stallman, Thomas Frank '59
- NY Δ** Desloge, Joseph Gilles '92  
Klepeis, John Emrich '85  
Marshall, Donald Jay '59
- NY Θ** †Buyck, Wesley John '55
- NY K** Gaul, Michael Arthur '76
- NY N** Roach, Linda J. '82
- NY Ξ** Mancuso, Richard G. '92
- NC A** Caudle, Daryl Lane '85  
Hall, Michael L. '83

- OH A** Biery, Kurt Alan '85  
Goralski, Christian Thomas '64  
Gropp, William Douglas '77  
Hamilton, Joshua J. '09
- OH G** Ouellette, Andrew Louis '86  
Robinette Jr., William Henry '68
- OH Δ** Brown III, Claude M. '74  
Miller, Truesdell Charles '64  
Bliss, Douglas Paul '75
- OH Z** Leifeste, Sam Ernest '63
- OK A** Markland, Ralph John '88
- OR A** Milton, Stuart W. '84  
Paynter III, W. Burton '74  
Lynch, Sarah Hayward '89  
Nisley, Elmer Edward '74  
Weber Jr., John Herbert '63
- PA A** Moore, Albert Lloyd '56  
Smyth, John '61  
Thompson Jr., A. '63  
Kasoff, David '55
- PA H** McDonnell, Robert William '48
- PR A** Sanchez, Hector Luis '76
- RI A** Vascellaro, Jerome Charles '74
- SC B** Husband, D. Mark '83
- SD A** Johnson, Jerry Allen '92
- TN A** Shafer, Robert Weldon '47
- TN B** Casson Jr., Walter Andrew '56  
Hampton, David Rolston '85  
Lodal, Jan Martin '65
- TX G** Clinton Jr., Daniel Darius '52
- TX Δ** Fink, Tami Neal '91  
Kaminski, Bryan Joseph '84  
Brown, Ian William '73
- TX H** Stokes, F. Xavier '78
- TX Θ** Rosenwald Jr., John Andrew '88
- TX Λ** Dewey, William Alonzo '67
- UT A** Kellogg, David Holt '62
- VT A** Urciuoli, Joseph Charles '68
- VT B** Harpel, Barbara McLaughlin '96
- VA A** Harris, Wesley Leroy '64  
Jones, John Hamilton '73
- VA B** Hulsizer, Stephen Anthony '69
- WA A** O'Byrne Jr., Michael Edward '61
- WA B** Opfer, Neil David '76
- WV A** Reckenstein, Richard C. '63
- WI A** Wulff, Kurt Henry '63
- WI B** Jaye, Deborah Ann '03

## \$1,000+ Downing Club

- SPEC** Dickson Jr., Bill  
Sevy, Elizabeth
- AL A** Glover, Martin Cochran '70  
Henderson, Phillip Roy '62  
Wear, A. Wesley '92
- AL B** Mason, William Warren '89
- AZ A** Bell, Edward Anthony '72  
Frondorf, George '69  
Krisa, Kenneth Charles '82  
Mahr, Eric Michael '97  
Park, Trevor Howard '97
- AR A** Brady, Mark Jeffrey '83  
Keith, Edwin Lewis '62  
Sharp, Steve Harold '76
- CA A** Magyary, Andrew '65  
Mar, Wing Jong '79  
Ong, Allen '70  
Reynolds, Barry Duane '84  
Wing, Jimmie '52

- CA G** Orr Jr., Franklin Mattes '69  
Roodhouse, James Greenlee '59  
Taniguchi, Brian Yoshito '77
- CA Δ** Katin, Bob A. '74  
MacDonald, Kirk Stewart '70
- CA E** Holzman, Eric Louis '84
- CA Z** Cancilla, Charles Edmund '59
- CA H** Clark, William Charles '72  
Holstead, Raymond H. '71  
Pershon, James M. '79  
Zanini, David Victor '90
- CA Θ** Bach, David P. '69  
Thabault, Charles W. '91  
Freeman, Karl Allen '89
- CA M** Mayer, Robert James '85
- CA N** Ortiz, Janet M. '82  
Rheinhardt, Brian J. '83
- CA Ξ** Hawkins II, John Colman '79
- CA O** Elliott, Pamela Ann '88
- CA P** Markarian, Thomas Franklyn '95
- CA Y** Burns, Michael Thomas '88
- CO B** Cormack, Christopher Watson '82  
Farmer, Brian Keith '78  
Hidahl, Jerry Paul Edward '77  
Talcott Jr., Noel A. '73  
Walker, John Sherwood '53
- CO G** Lee, Don Evard '59
- CT A** Baublitz, John Eberhart '60  
Lehman, Philip Lester '76
- CT B** Staniunas II, Joseph William '95
- DE A** Rae, Kirk Alfred '88
- DC A** Wimberly, Mark Oliver '77
- DC B** Murphy, Joseph A. '60
- DC G** Sonstebly, Ornulv '74
- FL A** Barkat, Scott Lawrence '78  
Charlton, John Dunaway '72  
Gunter, Alan Dale '79  
Mennes, C. Martin '68  
Milburn, David M. '91  
Schoppman, Gregg M. '08  
Traverse, Richard Stephen '71  
Troceen, Daniel Ross '72
- FL Z** Delaurentis, Daniel Andrew '92  
Hatfield, Thomas Anthony '87  
Oppliger, Gerald T. '59
- FL H** Baran, Thomas Vincent '93
- GA A** Allen, Myron B. '58  
Brush, Gary Stoddard '80  
Burgess, John Milton '61  
Crawford, David William '61  
Kaduck Jr., William Walter '76  
Northington, Peyton Alexander '78  
Watts, David Lee '79  
Wetenhall, Paul David '73
- ID A** Dafoe, Kathryn Michelle '05
- IL A** Bassler III, Robert Edward '74  
Graham, Joseph Gund '51  
Anderson, Robert Francis '62
- IL B** McCormick, Thomas Joseph '60
- IL G** Asbury, Michael George '83  
Miner, Warren Philip '59
- IL E** Sheehan, Patrick Joseph '85
- IN A** Becker, Kenneth Alan '81  
Brodie, Bruce Rogers '65  
Dries, David James Anthony '76  
Grot, Arnold Stephen '71  
Hendryx, Kevin Scott '81  
Muehlbauer, James Herman '63  
Stokes, Ronald Blaine '60  
Willis Jr., Charles Pressley '48  
Woosnam, Thomas Jay '65



Evans Club  
**Patrick W. Philipp**  
 MO Γ '98

*I wish to pay it forward, supporting new engineers.*



Downing Club  
**Tina M. Kuhr**  
 PA Γ '81

*I give to TBΠ because academic excellence deserves to be recognized.*

Downing Club continued

- IN B** Yee, Stuart '89
- IN Γ** Fleckenstein, John Thomas '64  
Shilling, David Christopher '10  
Silio Jr., Charles B. '65
- IA A** Kurr, Amy Catherine '18  
Matheson, Harold Moffat '55  
Morse, David Sanford '52  
Sellew, Roger Franklin '59  
Sutherland, Keith Allan '69  
Wallace, Jean Ellen '81  
Watson, Stephen Louis '67
- IA B** McSwiggin, Thomas G. '61
- KS A** Harmony, Marlin Dale '58  
Anonymous '82
- KY A** Gardner, Timothy Alan '75  
Wells, William Lochridge '62
- KY B** Yee, Ngai Sandy '82
- LA Γ** Ibuado, Rachel Anne '07
- LA Δ** Halkiades, George '63
- ME A** Johnson, Philip Martin '55  
Welch, Peter James '72
- MD A** Dryden, Thomas E. '79  
Guzy, Jeffrey David '83  
Hall, H. Thomas '56  
Hart, Edwin Flessner '68
- MD B** Kanofsky, Hal Steven '70  
McCracken, Richard Paul '70  
Mentzer Jr., William Richard '61  
Roberts, Carla '82  
Sacks, Herbert Kenneth '64  
Sheen, Timothy Walter '72  
Wamsley, Brian Woodrow '77  
Yourshaw, Sheryl Lynn '99  
Zalesch, Steven Elliot '73
- MD Γ** Hauge, Todd Allen '83  
Quint, John H. '84
- MD Δ** Iannuzzi, Jo '96
- MA A** Mitschang, George W. '65  
Oakes, Michael Willard '77
- MA B** Butkus, Lawrence Michael '85  
Frassinelli, Guido Joseph '48  
Koehler Jr., Richard F. '67  
Maskrey, Robert Harley '63  
Osterberg, Peter Maynard '78  
Rogers, Peter Todd '82  
Smith, Alan Jay '71
- MA Δ** Adams, Randolph Keith '70  
Curtis, Jonathan Greely '69  
Savage, Paul David '77
- MA E** Levesque Jr., George Emile '70  
McEachern, James Francis '30  
Préssumé, Hantz Antony '89  
Sciartelli, Anthony Paul '86  
Williams, Charles Robert '53
- MA Z** Benwood, Bruce Robert '69
- MA Θ** Chapman, David M. '83  
Gregg, John Edward '84  
Paul, David Dickson '92
- MI A** Beimers, Chuck John '69  
Gidner, Richard V. '53  
Kupfer, Michael David '83  
Shannon, David Harlow '59
- MI B** Bohrer, Timothy Henry '71  
Pearson, Walter Claydon '62  
Sonsalla, Tim Carl '95
- MI Γ** Allwin, Roger Paul '75  
Altin, Mehmet '68  
Capelli, Ronald B. '73  
Grossman, Michael Alan '88  
Kleinau, Julie Ann '84  
Rigge, Lawrence Allen '83  
Stewart, David Mark '76

- MI Δ** Dauerer, Walter Peter '60  
Di Cicco, Dominic Armand '61  
Rutherford, Charles Robert '53
- MI E** Brooks, Vern Eugene '60  
Siepierski, Michael Anthony '80  
Sigler, David Rudolph '76
- MI Z** Haines, John Gregory '72  
Kovacs, Robert Lewis '86
- MI H** Lundstrom, Richard Raye '64
- MI Θ** Spall, James Charles '79
- MN A** Petrich, Gale Sean '86
- MS A** Carman Jr., Jack Baker '62  
Tynner, Fred Mack '93
- MO A** Salerno, Michael Joseph '84  
Sprouse, Loren V. '73
- MO B** Arnoldy, Richard Raymond '69  
Brewer, Lawrence Oliver '77  
Brockhaus, Douglas Adolph '68  
Friedman, Marc Andrew '00  
Patterson, Michael A. '77
- MO Γ** Apanel, Anna Maria '80  
Briner, Charles Dean '52  
Goldring, Stanley '64  
Salman, Naif Diab '56  
Shomber, Henry Rolan '78
- MT A** Courville, George Eugene '59  
Jellison, Gabe Lee '98
- MT B** Jackson, Darron Boyd '86  
Montgomery III, Wayne W. '83
- NE A** Gilbreath, Donald Robert '85
- NV A** Karably, Kenneth B. '83  
Wigchert, Albert Henry '74
- NH A** Bailey, Joseph Gregory '86
- NH B** Price, Alexander Daniel '05
- NJ A** Brechka, Thomas Michael '73  
Compton, Joanne B. '79  
Iapicco, Jeffrey Allen '77  
Waricka, Peter Thomas '71
- NJ B** Bubenick, David Virgil '73  
Herrmann, Eric Peter '69  
Starr, James W. '73
- NJ Γ** Castaldi, Frank James '69  
Goodrich Jr., Robert Rhoades '70  
Morgan, Dennis Ross '68  
Reder, David Philip '85  
Szebenyi, Tom A. '69
- NJ Δ** Mills, Franklin Perry '84  
Wise, Frank W. '80
- NM B** Donnelly, Carolyn Elaine '01
- NY Γ** Diefenbacher, Robert Henry '59  
Dowgwill, Robert Michael '75  
Miller, Rollin Ted '46  
Staudinger, James Robert '77  
Walter, Buff Arthur '60
- NY Δ** Elko, Michael Joseph '89  
Frederick, Thomas Robert '87  
Heineman, Duane Thayer '58  
Hodgson Jr., Edward William '68  
Kahn, Mindy S. '89  
Philip, James Henry '69
- NY E** Boyarsky, David '59
- NY Z** Brook, John Walter '56  
Chu, Lawrence Joseph '71  
Keller, Norman Kurt '58  
Labianca, Frank M. '61  
Parris, Richard F. '61  
Sindel, Fred Hans '59  
Young, Raymond Joseph '74
- NY H** Goodman, Alvin Solomon '44  
Kern, Frank John '70  
Kushel, Glenn Elliot '68
- NY I** Cassella, Judith Ann '71

- NY K** Ronan, Gregory John '81  
Curtis, Johnson Ottawa '66
- NY Λ** Petsche, Frank '78  
Silverman, Joel Stuart '74
- NY M** Hurewitz, David Lewis '64  
Willis, Michael James '82
- NY N** Davis, James Steven '70  
Stearns, Richard Earl '67  
Theoclitus, David Thomas '86
- NY Ξ** Machuca, Luis Arthur '69  
Sanelli, Ronald Nicholas '84
- NY Π** Grosch, David A. '85
- NY P** Pooran, Nakechand R. '90
- NC A** Daniels, Eric Andrew '85  
Freeman, Theresa Mooney '85  
Minday, Richard Michael '66  
Shelton, Monty Lee '84  
Wynegar, Kathleen M. '86  
Yohman, Donald Forest '73
- NC Γ** Fischell, Bob E. '51  
Jackson, James Roy '69
- OH A** Ammar, Gregory Steven '81  
Bracy, Kevin Norman '93  
Tomasch, Walter John '52
- OH B** McCarthy, Martin David '70  
Robinette, Lisa Marie '03  
Wood, Ronald Eugene '89
- OH Γ** Bressler, David Michael '98  
Carr, Stephen J. '70  
Frey, Mary Ellen '89  
Kinzel, Evelyn Kay '69  
Risch, Gary Allan '76  
Taylor, Ashley Scott '84
- OH E** Derkaschenko, Alex '74  
Duscha, Rudolph Albert '59
- OH Z** Proctor, Margaret Pearl '82
- OH H** Beurket Jr., Raymond Thomas '63  
Gressang, Randall Vernon '72  
Menna, Richard Joseph '62  
Miller, William Gilbert '83  
Niemeyer, Joseph Bernard '85  
Wolfe, Stephen A. '85
- OH Θ** Berger, Norman Rudolf '68  
Kramer, Lawrence Joseph '62  
Sero, Raymond James '67  
Sink Jr., Robert Dean '87
- OH I** Larson, William Jed '75  
Snyder, Sharon E. '09
- OH K** Dudek, Scott Andrew '90  
Duffy, Stephen Francis '78  
Stimler, Jeff Joseph '84  
Wielopolski, Richard John '76
- OH Λ** Eckhardt, Andrew James '79
- OK A** Carnes Jr., Albert Cowser '56  
Dunn Jr., Robert Ovington '82  
Gimpel, Robert Jefferson '73  
Hand, Ronald Wayne '72  
Dean, Philip Maxwell '74  
Havner, Kerry S. '55
- OR A** Anderson, Joseph Russell '66
- OR Γ** Tuttle, Neil James '09
- PA A** Arrowsmith, Donald Leighton '65  
Brownlie, Thomas John '71  
Haist, Randall Matthew '80  
Jones, Donald Paul '65  
Labovitz, Judith Ann '86  
Labovitz, Stuart Lewis '85  
Marshall, Steven John '82
- PA B** Fisher, Robert Harold '72  
Foster, Richard Donald '55  
Mayers, Douglas L. '74  
Overbaugh, Thomas Michael '83

MAY 1 — JULY 31, 2022

# Alumni Giving



Downing Club  
**Steven H. Sharp**  
AR A '76

*I was honored to be selected for TBI and I'm happy to help others have this opportunity.*

## Downing Club continued

- PA** Γ Kornuta, Nick Joseph '81  
Kuhr, Tina Michelle '81  
Marietta, William Grey '68
- PA** Δ Hagist, Warren Mellor '48  
Lewis, Timothy '64  
Nackoney, Ogden G. '63
- PA** E Hermann, Frank Valentine '59  
Miller, Ruth D. '84  
Stratton, Carl William '81
- PA** Z Eisenberg, Eric Jay '88
- PA** H Keil, Alan James '72
- PA** Θ Corradino, Joseph Carmen '65  
Gallen, Robert Michael '64
- PA** I Schoenberger, Lewis Robert '84
- PA** K Beseler, Jan W. '88  
Mangelsdorf, Frederick E. '53  
Fitzpatrick, Anthony Ryan '03
- PA** Λ Townsend, James Courtland '60
- RI** A Adamedes, Zoe '84  
Bradley, Ken Alan '81  
Lieberman, James '67
- SC** A Marley, Brian Lee '89  
Peters, William J. '70
- SC** B Massey, Kristina Logue '71
- SC** Γ Baggett, Charlie Cleveland '63  
Fletcher, Robert Hough '64  
Reed II, Henry McDavid '60
- SD** A Beck, Carl William '83  
Brass, Lorin Lee '75  
Case, Robert Howard '75  
Jenkins, Creties David '83
- TN** A Bowers, Bob '68  
Burnett, William Allen '71  
Chambers, George Philip '58  
Hickman, Charles Edward '57  
Hitch, Benjamin Franklin '67
- TN** B Lowe, Robert Alexander '70  
Rogers, Marvin Dale '70  
Zimmerman, James L. '58
- TN** Δ Bass, Jay Kevin '87  
Brown, George Arthur '55  
Brown, Kevin George '85  
Burnett Jr., Wilton Wright '67
- TN** Z Miles, Thomas O. '81
- TN** Z Wilson, Matthew William '00
- TX** A Casswell, John Wesley '68  
Courtney Jr., Lonzo Cleveland '58  
Howerton, Lloyd Foster '51  
Hurst, Terry Lee '76  
Kassler, Harlan Larry '91  
Wong, Lucas '84  
Zwernemann, Gregory Richard '76
- TX** B Osborne, David Charles '61  
Schacht, John Paul '63  
Uher, Edward L. '65
- TX** Γ Upchurch, James Alan '76  
Altman, Thomas Clark '70  
Cox, Bill E. '76
- TX** Δ Larkins, Robert Pruett '56  
Armstrong, Bryan M. '95  
Balusek, David Kiser '82  
Boutte, Jennifer Lynne '89  
Garner, Scott Jahrand '77  
Johnson, Vance Clay '78  
Jordan, Kirk Gerald '80  
McGinnis, Charles Irving '49  
Porter Jr., James Walter '51  
Simpson, Stancy Jean '79  
Smith, Manning DeWitt '64  
Cawoski, Victor George '74  
Godwin, Albert Eugene '84  
Southall, Hugh Landon '68
- TX** Θ Williams, Larry Donal '80  
Putnam, Judd Lee '73  
Quesada, Paul '72
- TX** Λ Hinojosa, Juan Jose '84
- UT** B Craig, Donald Dean '82  
Paxton, Thornton Shirrel '63
- VT** A Shatz, Jonathan Ary '82
- VT** B Dekalb, Shawn Wayne '85  
Henry, Thomas Arthur '70
- VA** A Mac Glashan, Donald Welton '57  
Shirley, David Eugene '65  
Cassell II, Ray Vaughn '88
- VA** B Hyduke, Robert Alan '74  
Maloney, Melissa Marie '90  
Meith, Robert M. '57
- VA** Γ Mahaney, Jack Morris '82
- WA** A McNeese, Jackson Lowry '68  
Otteman, Lloyd Gilbert '54
- WA** B Groat, J. Everett '94  
Hartup Jr., John Dewey '50  
Large, Robert William '60  
Nemitz, Rodney Eugene '86  
Wahl, David John '62
- WV** A Baker, Walter Lee '74  
Berry, David Kyle '73
- WV** B Farmer, Harry Clayton '70  
Janeshek, Anthony Martin '74
- WI** A Antolovich, Stephen Dale '62  
Goba, John J. '66  
Jens, Barry Lee '64  
Williams, Lynn Edward '67
- WI** B Derra, Kenneth William '90  
Murawski, Steven Lee '80  
Pickett, Mark Allan '72  
Wolf, Thomas Francis '59
- WI** Γ Jenn, David C. '75  
Merkel, Brian John '81
- WY** A Hill, Janet Lynn '95

## Ensuring the Future of Tau Beta Pi through Planning Today

### Meet Paul D. Wetenhall

Paul, GA A '73, grasped the power of engineering analysis and discipline through the dinner-time stories of his engineer father whose life demonstrated that integrity and honesty were more important than technical expertise. Paul appreciates that Tau Beta Pi recognizes students who demonstrate excellence in their engineering studies and personal values. Paul supports TBI annually to help American universities continue to educate engineers who will act with technical brilliance and personal integrity. He has included Tau Beta Pi in his estate plans to join others in strengthening the organization's long-term financial resources. Your donations make all the difference. Large or small, every dollar counts and helps turn students' dreams into reality. If you want to ensure that your support for Tau Beta Pi continues, a gift in your will or trust may be right for you.



For more information about planned giving, email Sherry Jennings-King at [development@tbp.org](mailto:development@tbp.org) or visit [www.tbp.org/?Give](http://www.tbp.org/?Give)

# Standards in Engineering Education

## **Need for Technical Standards Education of Engineers in University Systems**

The understanding and exposure to students of standards in engineering education programs is now essential to worldwide applications and is a keynote criterion for Accreditation Board for Engineering and Technology, Inc. (ABET) certifications. ABET is a non-governmental accrediting organization that reviews post-secondary education programs in applied and natural science, computing, and engineering. These standards range from the safe use of consumer products to wireless technologies in fire and security systems. Organizations across academia and industry have been investing in the education of their young engineers to tackle the increasing challenges the engineering field is facing.

**We would like your help**, please fill out the feedback form using the link below to help us understand what facets of a technical standards course would be most appealing to you, so that the course can be improved: [www.tbp.org/?standards](http://www.tbp.org/?standards)

### STANDARDS EDUCATION CHALLENGES:



New college graduates' standards knowledge falls short of managers' expectations



ABET 2022-23 requirements include earlier standard introduction at the undergrad level



Professors lack standards knowledge and industry experience



Scarcity of clinical professors and professors of practice in engineering colleges

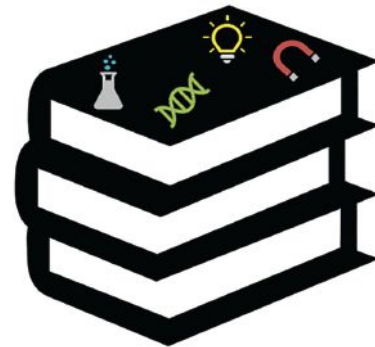


Decreasing sustainability of university librarians, the academic standards gatekeepers



Increasing demand for professional engineers (with strong standards knowledge)

### PROPOSED SOLUTION:



### STANDARDS IN ENGINEERING EDUCATION CURRICULUM

#### **One Solution: Undergrad Engineering Courses on Technical Standards**

This challenge has been met via various efforts on behalf of educators and industry alike. However, many academic institutions are still behind when it comes to technical standards education and are struggling to keep pace with the technical standards education expected of new hires. A team formed by **Amy Kurr, IA A '18**, a Ph.D. student at Case Western Reserve Univ., **David Icove, Ph.D., P.E., TN A '71**, an Underwriters Laboratories Professor of Practice at the Univ. of Tennessee (UTK), and Jimmy Landmesser, a fire protection engineer at Oak Ridge National Lab, is developing a course on Standards in Engineering Education that exposes and educates engineering students on the applicable standards in their respective fields and will be distributed at no cost to universities worldwide. Variations of the module address engineering curriculum requirements and allow for easy insertion into existing lower-level semester-long courses. This allows universities who do not have the bandwidth to create such a course direct access to one that is thoroughly vetted via collaborations with industry, academia, and standards organizations.

#### **And anything else I should know?**

The team mentioned (right) is collecting feedback from various individuals (e.g., students, professors, managers, librarians, industry professionals) regarding the technical standards challenges they face and would appreciate if individuals would complete the 5-minute survey.

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# IN THE COLLEGES

Tau Bates having an impact at institutions of higher learning.

## Ali Abolmaali Ph.D.

*Texas Eta '80*

Ali was appointed Wayne State University's next college of engineering dean. For the past ten years, he has served as chair of the civil engineering department at the University of Texas at Arlington, where he's also an Endowed Professor, founding director of the Center for Structural Engineering Research, and professor-in-charge of the Structural Simulation Lab.



## Ella M. Atkins Ph.D.

*Massachusetts Beta '88*

Ella was appointed as head of aerospace and ocean engineering at Virginia Tech College of Engineering. She previously held the same position at the University of Michigan and also directed the Autonomous Aerospace Systems Lab. Recently, Ella spent a year as a technical fellow at Collins Aerospace, gaining industry research and offering expertise in aerospace AI.



## David J. Bayless Ph.D.

*Missouri Beta '87*

David was named the new chair of mechanical & aerospace engineering at Missouri S&T. An S&T alumnus, he formerly served as professor and graduate chair of mechanical eng'g at Ohio University. He is an expert in the connections among energy, water, and waste, holds 13 patents, and his research focuses on carbon recycling and wastewater remediation.



### SPOTLIGHT: Missouri S&T Researchers to Develop Lunar Construction Techniques—

**Leslie S. Gertsch, Ph.D., CO A '82**, associate professor of geological engineering, will coordinate S&T's efforts to use electrostatic and magnetic extraction techniques to separate anorthite from lunar soil known as regolith. Anorthite contains calcium and magnesium needed to make parts for manufacturing equipment, which NASA believes is more efficient than launching supplies from Earth. The goal is to develop mineral extraction techniques for lunar construction as part of a NASA project to make it possible for people to live and work on the Moon. NASA will provide up to \$2 million over two years in support of the research.

### University of Maryland (UMD) to Lead Build America Center—

UMD was awarded \$5 million in funding to lead a national Center for Transportation Excellence to help foster innovative avenues for financing highway projects. Four other universities — Virginia Tech, Georgia Tech, Purdue, and Stanford — will serve as regional leads. Known as the Build America Center, it will support the Federal Highway Administration and the Build America Bureau as they seek new approaches to financing the construction and maintenance of the nation's roadways. "Building a transportation infrastructure system that meets our future needs is a critical priority, and engineers are positioned to help address this challenge," said UMD Engineering Dean **Samuel Graham Jr., Ph.D., FL H '93**.

## Roger T. Bonnecaze Ph.D.

*New York Delta '85*

Roger has served as interim dean since July 2021 and was named permanent dean in late May at the University of Texas at Austin. He is an internationally recognized expert in rheology, modeling, and simulation for nanomanufacturing and has served on the UT faculty for nearly 30 years. His three degrees are in chemical eng'g from Cornell and Caltech.



## Julie Chen Ph.D.

*Massachusetts Beta '86*

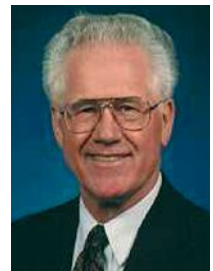
Julie was selected as chancellor of the University of Massachusetts Lowell. A member of the faculty at UMass Lowell since 1997, she's been vice chancellor for research and innovation since 2016. A strong advocate for Diversity, Equity, and Inclusion Initiatives, Julie serves as co-lead for the university's Council on Social Justice & Inclusion and has three MIT ME degrees.



## Lyle D. Feisel Ph.D., P.E. (ret.)

*Iowa Alpha '61*

Lyle was inducted into the Iowa State University Department of Electrical and Computer Engineering Hall of Fame 2022 class. He was cited as the founding dean of the SUNY Binghamton School of Engineering and for significant contributions to laboratory teaching through the development of fundamental objectives. Lyle also serves on the Editorial Board for this magazine.



## Clifford L. Henderson Ph.D.

*Georgia Alpha '94*

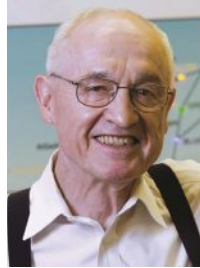
Clifford was named dean of the University of Alabama College of Engineering. Most recently, he served as professor and chair of the dept. of chemical, biological, and materials engineering at the University of South Florida. A recognized researcher, he has published more than 200 papers at the intersection of chemical engineering, chemistry, and materials science.



## Nick Holonyak Jr. Ph.D.

*Illinois Alpha '50*

The Institute of Electrical and Electronics Engineers (IEEE) has established a major new award named for Dr. Holonyak, UIUC professor emeritus, "placing the inventor of the world's first practical semiconductor laser and LED in the pantheon of engineering legends." The first IEEE Nick Holonyak Jr. Medal for Semiconductor Optoelectronic Technologies will be presented in 2024.



## Peter K. Kilpatrick Ph.D.

*Indiana Gamma '83*

Peter was selected to serve as the next president of the Catholic University of America. He is a former dean of the engineering school at University of Notre Dame and worked as provost at Illinois Institute of Technology for the past four years. A chemical engineer, Peter earned his Ph.D. from the University of Minnesota and holds or shares 12 patents.



### **FACILITIES: Corporate Partner Helps SD Mines with New Building**

—A \$5 million gift from Nucor, the largest recycler and domestic steel producer in North America, will help the South Dakota School of Mines & Technology pay for a new mineral industries building. To date, it is the largest corporate gift in the university's history. Nucor has been a partner with SD Mines for decades through donations and as one of the school's top recruiters. SD Mines President **Jim Rankin, Ph.D., SD A '78**, said he hopes to have a groundbreaking this summer and that "the modern building will have the electricity we need ... (to) advance our state of education in the mineral industries."

### **University of Notre Dame Adds Two New Hypersonics Research Facilities**

—The Notre Dame Turbomachinery Laboratory (NDTL) completed construction of two new test cells dedicated to research, development, and testing of hypersonic propulsion systems. Along with partners Hermeus, an Atlanta startup, and FGC Plasma Solutions, a Boston startup, NDTL has developed separate facilities for ram engine and high-Mach combustion testing. Both are operational and will serve as a critical resource for development of high-speed flight engines and hypersonic aviation. **Robert J. Bernhard, Ph.D., IA A '73**, professor and VP for research indicated that the ND staff/students are eager to contribute to solving the technical challenges of powered hypersonic flight.

## Joanna M. Millunchick Ph.D.

*Michigan Gamma '95*

Joanna was appointed dean of Indiana University School of Informatics, Computing, and Engineering. In this position, she will serve as dean for both the schools at IU Bloomington and IUPUI. Previously, Joanna was a professor of materials science & eng'g and associate dean at the University of Michigan. One area of her research focuses on equity-centered engineering education.



## Wilkistar A. Otieno Ph.D.

*Florida Gamma '10*

Wilkistar was chosen as part of the inaugural group of Notable Women in Engineering by *BizTimes Milwaukee*. She is an associate professor, dept. chair, and director at the University of Wisconsin-Milwaukee and was cited for making contributions to the engineering community through her research in predictive data analytics, sustainable manufacturing, and reliability analysis.



## Kenneth Van Treuren Ph.D.

*Colorado Zeta '77*

Kenneth received the 2022 Cornelia Marschall Smith Professor of the Year Award from Baylor University where he is professor of mechanical engineering and associate dean of research and faculty development. Nominations were received from faculty, students & alumni and he received a commemorative plaque and cash award. Kenneth will present a lecture on his chosen topic in 2022.



# CHAPTER ETERNAL

Our fellow Tau Bates who are gone, but never forgotten.



Alabama Beta '49

**Arthur W. Blackman Jr., P.E.**

May 24, 2022

*He served President Ford on the U.S. Govt. Science Advisory Committee, received the prestigious AIAA Goddard Award, and obtained 13 patents for United Aircraft Corp.*

The condensed style of these notices is made necessary by the Association's large membership and space limitations in *The Bent*. You may contact the Editor for additional facts (if available) concerning the following deceased members. The assistance of all is earnestly sought in reporting the deaths of Tau Bates, including full name and date of death, by emailing [chapter.eternal@atbp.org](mailto:chapter.eternal@atbp.org). Members who were 100+ years when passing are identified with "**Cent.**" and those who served as **Association Officials** are **bolded**.

## ALABAMA

### ALPHA AL A

Bailey, Robert Leo, '49, May 23, 2022.  
Bird, Mafus Rhodes, '49, December 11, 2020.  
Uthlout Jr., Herbert T., '51, Dec. 21, 2021.  
Conover, Nelson Perry, '53, Oct. 16, 2006.  
Livingston, Owen W., '60, no details.  
Rowell, William Johnston, '69, April 13, 2022.  
Moon, Phillip Franklin, '71, Feb. 24, 2019.  
Paulk, Ronald Eugene, '71, Sept. 2, 2001.

### BETA AL B

Clark, Robert T., '47, July 30, 2014.  
Blackman Jr., Arthur W., '49, May 24, 2022.  
Segner Jr., Edmund Peter, '49, Feb. 28, 2022.  
Currier, William Ray, '54, Dec. 11, 2020.  
Humphries, Waymon, '68, July 1, 2014.  
Darnell, Kenneth Edward, '74, April 27, 2022.

### GAMMA AL Γ

Wright, Jay Michael, '80, July 10, 2005.

## ARIZONA

### ALPHA AZ A

Russell, Paul Edgar, '46, February 16, 2014.  
Dickstein, Harold D., '51, February 14, 2002.  
Shaw Jr., Warren Clark, '51, March 1, 2007.  
Arnold, Wayne Lee, '55, no details.  
Kim, Kirk Jai, '57, no details.  
Hess, Richard Jacob, '63, October 7, 2010.  
Crede, Donald Earle, '64, February 20, 2022.  
Bosworth, Thomas H., '65, March 12, 1998.  
Karr, Donald Ray, '65, November 20, 2020.

### BETA AZ B

Vlastelich, Rudolph John, '68, Oct. 26, 1985.  
Stevens, Thad Engler, '71, Dec. 1, 2015.  
Brewer, Roger Allyn, '77, June 24, 1997.  
Jung, Henry H., '80, no details.

## ARKANSAS

### ALPHA AR A

Doyle, James Robert, '52, January 3, 2001.  
Denney, Carl Alison, '53, February 2, 2007.  
Strickland Jr., William T., '59, Oct. 7, 2018.  
Shelnut, Conard Roe, '61, October 12, 2011.  
McSwain, George Oliver, '67, Feb. 1, 2021.  
Harvey, Gary Leamon, '69, February 2, 2003.  
Gray Jr., Charles Clayton, '70, April 17, 2010.

## CALIFORNIA

### ALPHA CA A

Reed, Donald Elliot, '44, no details.  
Pister, Karl Stark, '45, May 14, 2022.  
Carlson, Richard Harold, '52, Aug. 25, 2021.  
Mears Jr., Carleton M., '53, March 2, 2022.  
Munn, Harold Cyril, '54, June 27, 2018.  
Couzens, Thomas Roger, '57, no details.

### BETA CA B

Gould Jr., Roy Walter, '49, February 19, 2022.  
Helfrey, Paul Francis, '51, no details.  
Adams, James Lowell, '55, January 15, 2022.

Specht Jr., Walter Albert, '57, Dec. 21, 2020.

### GAMMA CA Γ

Dana, William Richard, '49, April 29, 2022.  
Gilliland Jr., Lyman Claude, '50, Oct. 6, 2011.  
Mark, Hans M., '51, December 18, 2021.  
DeBra, Daniel Brown, '52, Dec. 3, 2021.  
Morse, John Spencer, '52, March 7, 2020.  
Tiller, William A., '52, February 7, 2022.

### DELTA CA Δ

Plato, Russell John, '48, Sept. 10, 2018.  
Winn, Boyd E., '50, March 14, 2022.  
Mallis, Richard Kenneth, '52, May 26, 2019.  
Elkin, Herbert Sanford, '57, Nov. 12, 2012.

### EPSILON CA Ε

Malone, Robert Lee, '58, no details.  
Botts, Thomas Edward, '69, April 15, 2022.

### ZETA CA Ζ

Hancock, Noble, '48, August 21, 2021.  
Going Jr., Edward Jackson, '49, Dec. 30, 2019.  
Clegg, Frederick W., '65, December 25, 2021.

### THETA CA Θ

Weisz, Dorothy M., '72, April 2, 2022.

### IOTA CA Ι

Baum, Lawrence Milton, '62, April 1, 2019.  
Malcom, Robert William, '81, Dec. 18, 2004.

### LAMBDA CA Λ

Jin, Calvin George, '76, January 31, 2022.

### MU CA Μ

Hires, John B., '57, July 1, 1992.  
Castaldo, Stephen Anthony, '85, Dec. 24, 2013.

### NU CA Ν

Dempey, Edward J., '81, July 1, 2017.

### TAU CA Τ

Foraker, Joseph W., '50, January 28, 2017.

## COLORADO

### ALPHA CO A

Abell, Joseph Markwell, '56, no details.

### BETA CO B

Reed, Ted Harry, '41, December 18, 2010.  
Buffo, Martin Andrew, '42, February 6, 2017.  
Carlin, Palmer W., '45, May 20, 2021.  
Johnson, Willis Blair, '48, April 10, 2021.  
Demuth, Howard B., '49, February 20, 2022.  
Richardson, Robert James, '49, Dec. 6, 2021.  
Walker, Richard Frank, '49, Dec. 3, 2021.  
Muldrow Jr., William F., '50, March 28, 2016.  
Bartlett, Paul Eugene, '51, January 1, 2022.  
Brown, Lee Francis, '51, June 30, 2021.  
Estes, John Carlton, '52, June 26, 2017.  
Stradley, Telford Van Buren, '53, Feb. 8, 2001.  
Chernow, Fred, '55, no details.  
Kinney, Donald Eugene, '60, Nov. 27, 2016.  
Lowrie Jr., Patrick Houston, '61, April 5, 2014.  
Ebner, Stanley G., '63, June 22, 2021.  
Cassell, James Patrick, '77, no details.

Fergesen, James Eric, '82, March 6, 2015.  
Kohne, Kurt E., '87, September 5, 2001.

### GAMMA CO Γ

Mondt, James Robert, '53, April 3, 2021.

### EPSILON CO Ε

Brasch, Beryle E., '51, November 12, 2021.

## CONNECTICUT

### ALPHA CT A

Lamb, Richard Norton, '57, Sept. 21, 2016.

### BETA CT B

Mali, Paul, '53, September 28, 2016.  
Brailey, John Phillip, '55, February 18, 2020.  
Lugli, Raymond Mando, '65, March 1, 1995.

## DELAWARE

### ALPHA DE A

Collins, Morton, '58, December 13, 2021.  
Gorman Jr., Harry H., '59, March 10, 2022.

## DISTRICT OF COLUMBIA

### ALPHA DC A

Wallace, Arthur William, '59, Sept. 1, 2008.  
Chang, I-Hsiung, '69, February 1, 2010.

### GAMMA DC Γ

Murdock, Carlos Anthony, '95, Jan. 29, 2001.

## FLORIDA

### ALPHA FL A

Birge, Warren Arthur, '54, April 2, 2018.  
Everhart, Millard R., '58, January 1, 2022.  
Bentley, Ronald Douglas, '64, June 13, 2005.  
**Earle, Jonathan F. K., '65, June 2, 2022.**  
Hunt, James David, '78, December 20, 2021.

### BETA FL B

Messulam, Aldo Jack, '67, February 7, 2021.

### GAMMA FL Γ

Hagler, Thomas Albert, '74, Jan. 19, 2022.  
Broyles, Richard Welty, '83, Jan. 15, 2022.

## GEORGIA

### ALPHA GA A

Schreiber, Ernest Jackson, '43, Nov. 4, 2013.  
Trowbridge Jr., Malcolm, '44, no details.  
Hodges, Charles Edwin, '45, Jan. 14, 2018.  
Cheely, Joel Frank, '49, December 29, 2005.  
Armenakas, Anthony E., '50, April 17, 2019.  
Tindel, Theodore A., '50, January 16, 2001.  
Kornfeld, Leo Louis, '52, April 8, 2020.  
McMillan, Vernon James, '54, March 17, 2022.  
Mattingly, John Howard, '72, Jan. 27, 2022.

## ILLINOIS

### ALPHA IL A

Debs, Robert Joseph, '42, July 19, 2001.  
Seidenschwartz, Arthur W., '42, no details.  
Johnson, Otto Eugene, '43, Sept. 20, 2001.  
Crum, William, '47, October 29, 2018.  
Robbins, Harry Richard, '47, Oct. 18, 2019.  
Adkisson, Robert Allen, '49, Jan. 24, 2022.  
McGann, Kenneth Francis, '49, Jan. 24, 2022.

Kizer, Richard Wright, '51, Nov. 16, 2018.  
Rodda, Errol David, '51, October 30, 2011.  
Mayne, Richard William, '52, no details.  
Peithman Jr., Harlan W., '53, Feb. 19, 2021.  
Quade, Robert Northrop, '54, April 8, 2022.  
Clemons, Robert Eugene, '55, Feb. 19, 2022.  
Dowsett, Raymond Dean, '55, Jan. 12, 2013.  
Fue, Harold, '57, January 19, 2022.  
Mast, Robert Frederick, '57, March 10, 2022.  
Hartley, William Arthur, '59, March 11, 2018.  
Boyce, James Buckley, '66, January 7, 2002.  
Wollin, Marvin Alwin, '66, May 6, 2021.

#### **BETA IL B**

Alm, Richard, '48, May 30, 2002.  
Menkick, George Francis, '55, Jan. 25, 2012.  
Warmington, Robert Dean, '57, Jan. 1, 2013.  
Leipziger, Stuart, '59, April 7, 2011.  
Wiard, James F., '60, May 14, 2009.  
Underys, Algirdas Antanas, '78, Nov. 24, 2021.

#### **GAMMA IL Γ**

Mallick, Earl W., '46, September 6, 2017.  
Boothe, Norton, '50, March 27, 2022.  
Behnke, Wallace Perry, '51, Jan. 11, 2022.  
Elson, Donald Edwin, '59, no details.

#### **EPSILON IL E**

Tempelmeyer, Kenneth E., '52, Jan. 18, 2022.

### **INDIANA**

#### **ALPHA IN A**

Brennan, Patrick Joseph, '41, Aug. 25, 2003.  
Neese Jr., Elbert Haven, '44, March 10, 2006.  
Meise, Norman Russell, '46, no details.  
Wolff, Jay Ralian, '48, no details.  
Dorsey Jr., Edward G., '49, April 18, 2022.  
Stevens, Eloy Charles, '51, no details.  
Bonnell, John M., '52, May 9, 2020.  
Miskin, Howard Charles, '52, Aug. 25, 2017.  
Lichtenheld, Kenneth W., '54, March 24, 2021.  
Pollard, Ben Marksbury, '54, Nov. 11, 2016.  
Braunagel, Magnus Victor, '56, April 6, 2020.  
Stepanek, William D., '56, March 28, 2019.  
Grant, Michael Peter, '57, January 30, 2008.  
Hanna, Edward Eli, '57, April 18, 2021.  
Lucky, Robert W., '57, March 10, 2022.  
Martin, Alfred, '57, November 6, 2016.  
Peckham, John Rogers, '57, April 10, 2003.  
Swoverland Jr., Harold C., '58, May 14, 2022.  
Click, Raymond Dale, '62, March 5, 2017.  
Drobish, Robert Gary, '62, June 20, 2003.  
Flora Jr., James Jefferson, '69, May 15, 2018.  
Lewis, Donald George, '69, August 2, 2021.  
Nelson, Donald Mark, '73, April 12, 2010.  
Wolf, Lawrence Russell, '74, no details.  
Fletcher, William Robert, '75, Oct. 8, 1991.

#### **GAMMA IN Γ**

Mason, James A., '56, November 9, 2021.  
Sweeney, John Michael, '61, May 24, 2022.  
Jordan, John Franklin, '63, January 28, 2021.

### **IOWA**

#### **ALPHA IA A**

Cochran, Jack Gordon, '41, August 22, 2002.  
Niewald, Roy Joseph, '47, no details.  
Shaner, Willis Wheeler, '50, July 21, 2021.  
Easton, Roger J., '52, March 16, 2020.  
Peck, John Henry, '54, January 14, 2015.  
Dueker, Leonard LeRoy, '55, January 1, 2022.  
Leonard, Ronald Keith, '56, Nov. 8, 2021.  
Loupee, Burton James, '56, Jan. 10, 2021.  
Nichols, Donald Orville, '61, Feb. 28, 2022.  
Sater, Clair William, '64, January 3, 2013.  
Garbe, Robert Lynn, '75, June 19, 2022.

#### **BETA IA B**

Lazar, Arnold Joseph, '69, June 13, 2014.

### **KANSAS**

#### **ALPHA KS A**

Wahl, Arthur, '42, December 19, 2009.  
Anschutz, Glenn William, '50, Nov. 23, 2021.  
Trull, Donald Emery, '51, January 13, 2013.  
Halliday, Arthur Winter, '52, Sept. 11, 2018.  
Coxen, Alan LaVerne, '54, April 12, 2022.  
Wilson, Norman G., '55, November 24, 2021.  
Remsberg, James C., '57, Dec. 18, 2021.  
Eller, James Morey, '68, May 5, 2022.

#### **GAMMA KS Γ**

Biegel, John E., '48, January 20, 2010.

### **KENTUCKY**

#### **ALPHA KY A**

Conrad, Hans, '43, March 16, 2022.  
Meador, Earl Wright, '53, no details.  
Krimm, Martin Christian, '54, no details.

#### **BETA KY B**

Campbell, Frank C., '53, July 2, 2020.

### **LOUISIANA**

#### **ALPHA LA A**

Sippel, Jimmie Dick, '55, July 1, 2019.  
Young, Walter Russell, '67, June 15, 2010.  
Halphen, David Scott, '92, April 20, 2022.

#### **BETA LA B**

Murphy, Edward Landry, '40, no details.  
Grehan, Bernard Albert, '42, no details.  
Boisseau Jr., Henry J., '53, June 13, 2021.  
Williamson, Edward Paine, '55, Oct. 10, 2002.  
Frosch, James Albert, '56, March 14, 2000.  
Barcelo, Wayne Robert, '60, Sept. 7, 2001.  
Simpson, William James, '61, Jan. 4, 2002.  
Yates, Steven Michael, '82, October 22, 2002.

#### **GAMMA LA Γ**

Todd, James Brigham, '52, March 7, 2007.  
Walker, Pirtle Eugene, '63, Feb. 25, 2017.  
Kallas, Mohamed Nabil A., '84, Feb. 2, 2013.

### **MAINE**

#### **ALPHA ME A**

Cullen, William Joseph, '47, March 2, 2020.  
Folsom, Bruce Dalton, '49, April 7, 2017.  
Sylvester, Maurice Albert, '49, April 30, 2012.  
Chandler, Colby Hackett, '50, March 4, 2021.  
Bayer, Bryce Edward, '51, Nov. 13, 2012.  
Sullivan, Roger Allen, '52, February 12, 2021.  
Brann, James H., '55, January 7, 2018.  
Henderson, Wallace Dean, '58, Oct. 14, 2021.  
MacDonald Jr., Duncan J., '59, Jan. 19, 2022.

### **MARYLAND**

#### **ALPHA MD A**

Hoffman, Herbert William, '43, Feb. 4, 2022.  
Myers, Charles Mayer, '45, January 8, 2003.  
Leimkuhler, Urban Edwin, '50, Jan. 26, 2004.  
Sadilek, Albert Charles, '72, Jan. 20, 2019.

#### **BETA MD B**

Dean, Richard Davis, '50, January 6, 2009.  
Garber Jr., Daniel Leedy, '52, May 1, 2013.  
Lund, Raymond Howard, '55, no details.  
Bisset, John W., '59, March 10, 2014.  
Kaminsky, Barry, '63, May 5, 2021.  
Betts Jr., William Spencer, '68, no details.

### **MASSACHUSETTS**

#### **ALPHA MA A**

Luiz, Edward Anthony, '49, July 12, 2021.  
Sauer, Harold Sanwick, '55, January 7, 2013.  
Wiles, Edwin Oren, '74, August 31, 2012.

#### **BETA MA B**

Frankel Jr., Raymond F., '43, Oct. 30, 2017.  
Folger, Thomas Wilson, '48, May 18, 2022.  
Dick, Malcolm, '49, March 14, 2013.  
Paulling Jr., John Randolph, '52, Nov. 22, 2021.

Vieira, Herbert L., '53, March 9, 2022.  
Hartrick, William Lee, '54, Dec. 10, 2020.  
Neff, William James, '55, July 3, 2017.  
Zeilon, Dean, '55, November 21, 2021.  
Milgram, Jerome H., '61, December 21, 2021.  
Stern, Robert Gottlieb, '61, Feb. 14, 1997.  
Hester Jr., James A., '65, May 11, 2019.  
Evans, Rowland Grayson, '66, June 1, 2000.

#### **DELTA MA Δ**

Gustaff, Albert Joseph, '51, May 31, 2013.  
Cocozella, Robert Anthony, '52, no details.  
Peterson, John William, '53, June 6, 2022.  
Wren Jr., Paul Ingraham, '57, May 1, 2022.

#### **EPSILON MA E**

Thurell Jr., John Reed, '49, March 6, 2018.  
Simms, David Munroe, '53, no details.  
Brown III, Richard Baxter, '54, March 5, 2013.  
Concannon, Robert Joseph, '60, no details.  
Haley, Harold Ralph, '69, July 31, 2020.  
Walsh, James Richard, '70, March 6, 2015.  
Zamanian, Berj, '70, May 14, 2020.

#### **ZETA MA Z**

Chapdelaine, Edward N., '51, Jan. 23, 2008.  
Facey Jr., Philip George, '51, Feb. 28, 2006.  
Dzialo, Frederick John, '54, March 24, 2020.  
Fontana, Mario H., '55, no details.  
Cadieux, Ronald Aime, '57, Dec. 12, 2020.  
Ostheimer, Arpad John, '59, June 1, 2022.  
Taylor Jr., Richard S., '59, March 4, 2014.  
Racette Jr., Russell A., '63, Nov. 26, 2021.  
Daley, Michael Leo, '68, February 8, 2010.  
Bean, Thomas Webster, '73, Nov. 24, 2019.  
Daly, Bryon K., '90, September 23, 2017.

### **MICHIGAN**

#### **ALPHA MI A**

Reaser, Richard Lee, '55, Nov. 23, 2021.  
Warnke, Gary Neil, '59, July 13, 2021.  
Bazylewicz, Joseph, '61, August 26, 2017.  
Burdette, William Arterburn, '66, Feb. 3, 2014.

#### **BETA MI B**

Knutilla, Robert Lloyd, '51, May 25, 2022.  
Vredeveld, Donald R., '53, March 4, 2022.  
Knoll, Richard Herman, '57, August 18, 2021.  
Lassila, Arthur Delbert, '57, June 3, 1995.  
Woolston, Donald J., '58, March 22, 2012.  
Youngquist, Robert Paul, '59, Dec. 2, 2021.  
Berkes, John Stephan, '62, June 25, 2018.  
Vrable, Daniel Leroy, '69, Dec. 15, 2021.

#### **GAMMA MI Γ**

Amdall, Kenneth Herman, '46, April 23, 2021.  
Eichhorn, Jacob, '46, June 2, 2022.  
Johnson, Kalin Shaw, '46, June 8, 2022.  
Bilitzke, Armand James, '48, July 15, 2008.  
Pomering, Don Arthur, '49, August 14, 2020.  
Greenlade, Ronald Stuart, '50, April 7, 2017.  
Elmblad, Thomas Robert, '52, Jan. 30, 2016.  
Merow, John Edward, '52, January 12, 2019.  
Nemec, William Leonard, '52, Sept. 29, 2018.  
Verhake, Thomas LeRoy, '53, Jan. 29, 2012.  
Arquette Jr., Lester Kear, '54, May 20, 2017.  
Fogg, Ka Lun, '54, May 2, 2002.  
Davis, Wendell Alan, '63, February 13, 2022.  
Bhullar, Pushpinder S., '65, Dec. 1, 1995.  
Brandell, Brian William, '81, April 6, 2021.

#### **DELTA MI Δ**

Dietrich, Robert William, '57, April 6, 2022.

#### **EPSILON MI E**

Silver, Arthur Gilbert, '59, no details.  
Hawkes, Philip H., '60, June 20, 2021.  
Petrucci, Brian Sydney, '87, no details.

#### **ZETA MI Z**

Holland, Gerald Willard, '62, July 22, 2020.

# CHAPTER ETERNAL

Continued



Massachusetts Delta '53  
**Captain John W. Peterson, USN ret.**  
June 6, 2022

*A founding member of the MA Delta Chapter at Tufts, he served in leadership positions on five ships in the U.S. Navy and was given command of his sixth: the USS Glover from 1968-70.*

## ETA MI H

Tressler, Arthur Wallace, '79, Aug. 11, 2018.

## MINNESOTA

### ALPHA MN A

Beatty, George Erwin, '52, January 17, 2019.  
Cabak, Michael Richard, '55, Sept. 7, 2021.  
Burgeson, David Charles, '57, Aug. 28, 2010.  
Hayden, John William, '58, March 19, 2006.

## MISSISSIPPI

### ALPHA MS A

Morton Jr., Daniel Clyde, '47, March 23, 2020.  
Tullos, Thomas Andrew, '52, March 8, 2022.  
McCraney, James Leonard, '59, Sept. 1, 1996.  
Sims, Joseph Hilton, '63, April 9, 2022.  
Hatcher, Warren Andrew, '72, Feb. 7, 2022.  
Sanders, John Mark, '80, May 20, 2012.

## MISSOURI

### ALPHA MO A

Curtiss, Robert Henry, '50, March 11, 2022.  
Gastineau, Lloyd, '51, May 10, 2022.  
Henson Jr., Clarence E., '53, June 13, 2021.  
Oberlag, Gerald Allan, '66, May 1, 2022.

### BETA MO B

Coffer, Harold Roy, '49, January 1, 2000.  
Blendermann, Gene R., '51, July 5, 2021.  
Swisher, Roger Henry, '51, January 5, 2004.  
Sweeney, James Robert, '52, Nov. 2, 2013.  
Bachman, David Allen, '66, Nov. 2, 2010.  
Long, Joseph John, '68, November 1, 2018.  
Alvord, Harold Frank, '74, Sept. 30, 2019.

### GAMMA MO Γ

White, David Edward, '49, October 13, 2016.  
Heising, Edward John, '52, October 4, 2010.  
Brammeier, Glen Frederic, '57, Jan. 20, 2020.

## MONTANA

### ALPHA MT A

Durgan, Virgil Richard, '55, Dec. 7, 2013.  
Losinski, Joseph Benedict, '61, Oct. 31, 2010.

### BETA MT B

Lindsey, Dan Michael, '80, Sept. 18, 2021.

## NEBRASKA

### ALPHA NE A

Fuchser, Fay Eugene, '51, January 18, 2022.

## NEW HAMPSHIRE

### ALPHA NH A

Farnham, Stoughton R., '49, Nov. 19, 2012.  
Zecchini, Charles Robert, '50, June 15, 2021.

## NEW JERSEY

### ALPHA NJ A

Gussack, Seymour Irving, '44, Jan. 18, 2018.  
Eber Jr., Louis Otto, '52, Sept. 15, 2021.  
Andrus, John Robert, '53, July 14, 2018.  
Schwarz, James Alan, '65, Sept. 26, 2004.  
Tripka, Steven Joseph, '66, June 29, 2018.  
Perlee, Lawrence Robert, '71, Dec. 9, 2021.

### BETA NJ B

Murphy Jr., Creighton F., '49, Feb. 22, 2022.  
Knauer, Scott Carroll, '68, no details.

### GAMMA NJ Γ

Dench, John Edward, '49, October 24, 2021.  
Bidlack, Richard Henry, '51, Jan. 14, 2021.

Cventzel, David, '57, no details.

Chan, Paul Chi-Keung, '58, June 15, 2005.  
Staas Jr., Philip Charles, '58, Jan. 30, 2022.  
Griese, William Francis, '60, July 10, 2005.  
Simon, Alan Michael, '73, Nov. 17, 2021.

## NEW YORK

### ALPHA NY A

Baker, Theodore, '56, December 29, 2020.  
Miller, Steven F., '63, April 21, 2022.

### BETA NY B

Bolton, Bruce, '43, no details.  
Andrews, David Richard, '45, Jan. 26, 2022.  
Mossman, Allen Leonard, '49, May 17, 2022.  
November, William E., '49, June 10, 2020.  
Mitchell, James Robert, '51, May 31, 2016.  
Baschkin, Bernard B., '52, February 5, 2001.  
Landis, William Howard, '52, no details.  
Muvdi, Bichara Bichara, '52, Feb. 26, 2020.  
Hemmer, Ferdinand John, '54, Sept. 3, 2019.  
Jureller, John Francis, '55, March 20, 2019.  
Baron, William Carl C., '57, Dec. 28, 2006.

### GAMMA NY Γ

Landon, Robert Benson, '43, no details.  
Krokus, Donald Jerome, '47, April 17, 2022.  
Beningson, Robert Matthew, '50, Feb. 6, 2019.  
Eames, Arnold Charles, '51, January 3, 2022.  
Kaehn, Richard Hanson, '51, Sept. 13, 2003.  
MacHover, Carl, '51, March 5, 2012.  
Monnoletto, Louis Frank, '51, April 28, 2012.  
O'Neil Jr., John Joseph, '51, April 1, 2016.  
Winkler, Werner, '52, July 25, 2019.  
Eddy, Thomas Aldrich, '53, May 6, 2001.  
Ingle, James Flagg, '55, no details.  
Noyes, John Robert, '56, March 31, 2022.  
Edwards Jr., Louis L., '58, July 25, 2016.  
Segal, David Joseph, '66, Dec. 21, 2004.

### DELTA NY Δ

Goodkind, Donald Robert, '42, Sept. 7, 2013.  
Russell Jr., Robert Henry, '49, July 30, 2021.  
Jacobs, Eugene Stephen, '50, June 21, 2019.  
Hyde, Howard L., '51, January 15, 2022.  
Riefler, Monte Paul, '60, March 20, 2003.  
McHale Jr., Frank Austin, '61, June 2, 2004.  
Seligson, Charles Douglas, '65, no details.

### EPSILON NY E

Rathjens, William R., '51, no details.  
Schultz, Kenneth Walter, '51, Sept. 27, 2005.  
Heise Jr., Fred Henry, '57, October 15, 2021.  
Connelly, John, '59, April 28, 2001.  
Rabinowitz, Andrew David, '63, April 10, 2019.

### ZETA NY Z

Libby, Paul Andrew, '42, November 2, 2021.  
Lutwak, Sol, '49, January 7, 2020.  
Keating, Kenneth Bernard, '53, Jan. 1, 2022.  
Ford, Earl Paris, '67, no details.

### ETA NY H

Menkes, Sherwood B., '42, Jan. 22, 2001.  
Wolf, Murray, '48, September 13, 2021.  
Glantz, Lester Murray, '49, Feb. 18, 2007.  
Weiss, Norman Lee, '49, December 17, 2017.  
Benveniste, Jacques Elias, '51, Jan. 7, 2019.  
Greenfield, George, '51, January 16, 2020.  
Zussman, Arthur L., '58, January 26, 2022.

## THETA NY Θ

Koff, Bernard Louis, '51, November 2, 2021.  
Buyck, Wesley John, '55, December 19, 2020.  
Bergold, Robert Stanley, '62, no details.

## IOTA NY I

Hofmann, Peter Ludwig, '50, Feb. 11, 2004.  
Nelson, Carl E., '54, August 1, 2017.  
Lent Jr., Andrew E., '58, March 13, 2022.  
Bazik, Stephen John, '64, May 10, 2020.  
Keller, Jean Paul, '66, August 1, 2005.

## KAPPA NY K

Krosse, John William, '46, June 2, 2017.

## LAMBDA NY Λ

Cypser, Rudolph John, '44, Feb. 16, 2018.  
Loika, Alexander, '44, June 11, 2015.  
Spatz, Sol, '50, February 6, 2014.  
Butterworth, Greig Spencer, '52, Feb. 1, 2016.

## MU NY M

Goldreich, Joseph D., '45, January 18, 2015.  
Lapointe, Caelan Baker, '15, Feb. 13, 2022.

## NU NY N

Espersen, George C., '60, July 12, 2002.  
Barnett, Charles Arthur, '85, no details.

## XI NY Ξ

Leone, Ronald Alphonse, '67, Jan. 8, 2009.

## NORTH CAROLINA

### ALPHA NC A

Steele, Francis Montgomery, '47, no details.  
Howell, Edward Keith, '48, May 20, 2018.  
Howell Jr., Carl Jackson, '50, Feb. 28, 2021.  
Cotley Jr., John Leonard, '57, July 15, 2020.

### GAMMA NC Γ

Jackson II, Harold M., '49, March 8, 2014.  
Woodfield, Roland Lawton, '51, Nov. 7, 2021.  
Bassett, Charles Leland, '59, Oct. 5, 2020.

## NORTH DAKOTA

### ALPHA ND A

D'Errico, Thomas R., '41, May 18, 2010.  
Bergstedt, Herman Paul, '50, Aug. 20, 2021.  
Rosvold, Marvin Jerome, '52, Oct. 10, 2008.  
Duin, David Henry, '58, January 13, 2015.  
Sorneson, Clay Franklin, '62, Sept. 30, 2017.  
Piltingsrud, Mark D., '70, February 1, 2020.

## OHIO

### ALPHA OH A

Schuerger, Thomas Robert, '50, May 3, 2022.  
Halverstadt, Robert Dale, '51, Sept. 13, 2015.  
Luchsinger, John William, '51, Dec. 28, 2020.  
Brichford, Thomas K., '55, Aug. 26, 2021.  
Musser, Marion Richard, '57, Jan. 21, 2022.  
Rohde, Paul John, '58, June 1, 2017.  
Pflueger, Eugene Morgan, '59, Feb. 22, 2022.  
Sykes, Roy Roger, '68, no details.

### BETA OH B

Barkocy, Andrew Robert, '56, Feb. 20, 2022.  
Arthur, Norman Lee, '59, March 16, 2013.

### GAMMA OH Γ

Martin, William Carl, '44, no details.  
Abel, William Ludwig, '51, Sept. 25, 2021.  
Eichhorn, Karl Frederick, '52, Nov. 26, 2017.  
Lucke, Virgil Henry, '55, May 6, 2019.

Morse, Charles, '59, January 20, 2013.  
Meves, Philip Jerome, '71, Dec. 23, 2018.

**EPSILON OH E**  
Skerkoski, Eugene Chester, '50, Nov. 5, 2018.  
Frantz, Richard Herman, '56, Nov. 16, 2016.  
Klotz, C. Robert, '62, November 24, 2005.

**ZETA OH Z**  
Kamke, William A., '43, December 3, 2017.  
Engel, John Richard, '53, June 12, 2017.  
McNichols, Roger J., '62, no details.

**ETA OH H**  
Anderson, Carl Andrew, '48, Feb. 5, 2018.  
Singleton, Briana Janine, '08, May 22, 2022.

**THETA OH Θ**  
Rose, Thomas John, '56, March 29, 2022.  
Jergens, Paul B., '69, March 29, 2022.  
Reinoehl, Robert Charles, '69, Aug. 28, 2013.  
Hollis IV, Richard William, '73, May 28, 2021.  
Kretschmann, Robert J., '74, Jan. 21, 2022.

**IOTA OH I**  
Leader Jr., Charles B., '60, August 20, 2021.

**KAPPA OH K**  
Handelman, Robert A., '62, March 8, 2022.

**OKLAHOMA**

**ALPHA OK A**  
Bork, Walter Albert, '51, August 19, 2018.  
Griffith Jr., Verne Emerson, '62, Dec. 24, 2021.  
Slear III, David Garver, '66, April 21, 2019.  
Edwards, Tommy M., '68, Nov. 28, 2005.

**BETA OK B**  
Reed, Robert De Hart, '71, July 18, 1988.

**OREGON**

**ALPHA OR A**  
Conyers, James B., '49, June 1, 2022.  
Herrington, Robert John, '49, April 20, 2014.  
Cavanaugh, Richard James, '52, Nov. 24, 200  
Lewis, Floyd V., '56, January 9, 2013.  
Dilts, John Bernard, '67, no details.

**PENNSYLVANIA**

**ALPHA PA A**  
Tatge, Robert B., '49, April 19, 2022.  
Bradley Jr., Charles W., '51, Oct. 22, 2021.  
Canfield, Robert Emerson, '52, Dec. 26, 2020.  
Engel, Heinz, '52, March 30, 2018.  
Stout III, Joshua Wilson, '54, Jan. 23, 2017.  
Krummenoehl, Arthur F., '68, Feb. 14, 2022.

**BETA PA B**  
Herzog, James Reese, '49, August 29, 2021.  
Kendig, Robert Lintner, '51, January 1, 1997.  
Hostetter, Darwin Robert, '56, Nov. 12, 2002.  
Kulak, Albert Joseph, '57, August 21, 2015.  
Boyer, Lester Leroy, '60, March 4, 2022.  
Butler Jr., Stanley R., '60, May 25, 2022.  
Brooks, Grant Phillip, '64, January 1, 1989.  
Schultz, Eric Ernest, '95, September 5, 2017.

**GAMMA PA Γ**  
McIlvried III, Howard G., '53, March 26, 2022.  
Taylor, Robert Newell, '53, June 1, 2017.  
Shields, Robert Bruce, '56, March 3, 2022.  
Albright, William H., '63, October 15, 2013.  
Helfer Jr., Arleigh P., '67, Dec. 26, 2021.

**DELTA PA Δ**  
Besser, Gilbert M., '49, December 22, 2021.

**EPSILON PA E**  
Super, John Duncan, '68, no details.

**ZETA PA Z**  
Stoudt, Edgar Allen, '51, April 25, 2005.  
Ungerman, Fred Anton, '51, Oct. 14, 2021.

**ETA PA H**  
Frederick, William A., '49, Oct. 29, 2021.

**THETA PA Θ**  
Quense, Walter James, '52, Sept. 17, 2020.  
Mullee, William A., '54, April 27, 2021.

**KAPPA PA K**  
Erdman, Frank H., '41, January 1, 2013.

**LAMBDA PA Λ**  
FERENCE, Edward W., '51, March 27, 2018.

**RHODE ISLAND**

**ALPHA RI A**  
Dail, James Edward, '70, no details.  
Ritter, Charles Joseph, '73, May 12, 2022.

**BETA RI B**  
Jaye, Walter E., '51, November 9, 2020.  
Ochab, William, '61, May 28, 2018.  
Vieira Jr., John, '64, no details.

**SOUTH CAROLINA**

**ALPHA SC A**  
Martin, John Campbell, '48, no details.  
Bookhart, Thomas W., '55, May 22, 2022.  
Webster III, Joseph B., '63, Dec. 13, 2004.  
Clark, David Andrew, '86, April 30, 2018.

**BETA SC B**  
Wofford, J. Brian, '49, no details.  
Goforth Jr., Samuel Turner, '54, Feb. 22, 2022.  
Neese, Theron Bert, '72, Sept. 24, 2019.

**SOUTH DAKOTA**

**BETA SD B**  
Schuneman, William Dean, '78, Aug. 13, 2005.

**TENNESSEE**

**ALPHA TN A**  
Beall Jr., Samuel E., '42, April 8, 2022. **Cent.**  
Walker, Robert Bernard, '43, March 16, 2016.  
Walker, Carl Lee, '52, September 27, 2020.  
Smith, William Wayne, '53, May 10, 2022.  
Clinton, Sammie Dale, '56, Feb. 27, 2022.  
Campbell, William Buford, '58, April 24, 2022.  
Patterson, Grant Turner, '66, July 11, 2021.  
Todd, Richard Allen, '73, June 8, 2022.

**BETA TN B**  
Stephenson, Charles V., '48, July 25, 2021.  
Blair, James Cannon, '57, January 15, 2022.  
Baxter, Robert Cole, '60, January 5, 2017.

**GAMMA TN Γ**  
Dyer III, Everett B., '66, June 7, 2016.

**DELTA TN Δ**  
Langford, Steven Major, '88, Dec. 7, 2009.

**TEXAS**

**ALPHA TX A**  
Clark, Glynn Alden, '48, December 12, 2021.  
Iglehart, Donald Royce, '48, Dec. 18, 2021.  
Goldsmith, James Schuyler, '50, no details.  
Henry, Wesley Bert, '51, August 2, 2022.  
Steinert, Allen Roy, '53, no details.  
Sherrod Jr., Henry Clay, '54, Sept. 15, 2021.  
Mills, Denver Laverne, '57, May 7, 2022.  
Lovelace, Byron Keith, '59, Feb. 15, 2022.  
Wachel, Johnny Charles, '59, June 2, 2022.  
Jones, Jerold Webster, '62, August 1, 2016.

**BETA TX B**  
Gilmore, Earl Howard, '43, no details.  
Faw, Lewis Alfred, '50, December 21, 2005.  
Rossler, Steven Wayne, '73, August 15, 2021.

**GAMMA TX Γ**  
Sandow, Kiyoshi, '43, October 25, 2009.  
Conley, Richard Allen, '47, no details.  
Whitson, Robert Eugene, '53, Feb. 28, 2009.  
Wansbrough, Robert W., '59, May 4, 2005.

**DELTA TX Δ**  
Halfin, George S., '49, February 13, 2022.  
Massengale Jr., Levon, '51, Feb. 12, 2022.  
Welch, Franklin Dee, '51, June 22, 2017.  
Muller, Frank William, '57, August 11, 2005.  
Greene, Raymond H., '58, April 23, 2006.  
Hopper, Jack R., '59, April 11, 2022.  
Sherrill, Guy Jackson, '64, Feb. 27, 2020.  
Roberts, Thomas Anthony, '69, June 23, 2019.  
Oates, Georgie K., '74, February 1, 2000.  
Brunner, Christine M., '84, March 6, 2018.  
King, Kurt Alan, '86, October 23, 2006.  
Muheim, Danniella Melissa, '87, Oct. 16, 2015.

**ZETA TX Z**  
Oosterhout, Kenneth C., '56, May 13, 2019.  
Turlington, Boyce Lynn, '59, April 19, 2014.

**ETA TX H**  
Brammer, Gary Michael, '72, March 31, 2021.

**LAMBDA TX Λ**  
Harrison, C. Wayne, '58, January 25, 2022.

**UTAH**

**ALPHA UT A**  
Call, Rey Lucero, '50, January 1, 2021.  
Vernooy, David Burton, '52, no details.  
Bills, Richard Demont, '66, October 12, 2007.  
Carroll, Barry Glen, '88, April 10, 2012.

**VERMONT**

**BETA VT B**  
Knudsen, David Warren, '51, June 15, 2021.  
Thoo, Kim Poh, '80, February 28, 2022.

**VIRGINIA**

**ALPHA VA A**  
Davis Jr., James Willard, '64, no details.

**BETA VA B**  
Bridges Jr., John Thomas, '42, Nov. 15, 2001.  
Grandolfi, Michael James, '58, no details.  
Flanik, George S., '69, no details.

**WASHINGTON**

**ALPHA WA A**  
Ringlee, Robert James, '46, Nov. 27, 2019.  
Szego, George Charles, '47, April 3, 2008.  
Ott, Albert Frederick, '55, April 2, 2019.  
Kitagawa, Kiyoshi, '61, February 3, 2022.  
Walters, Claude Justine, '63, Dec. 9, 2018.  
Green, Harvey Eugene, '66, May 2, 2006.

**BETA WA B**  
Enstrom, Walter Glenn, '51, August 4, 2012.  
Finlayson, Richard Smith, '57, July 10, 2021.  
Binder, Bertram Bernhard, '60, Dec. 26, 2021.  
Schoeff, John Albert, '68, May 8, 2022.  
Eckard, Teresa Foster, '82, July 14, 2020.  
Lang, Lawrence Linton, '92, Dec. 23, 2021.

**WEST VIRGINIA**

**ALPHA WV A**  
Mongold Jr., Guy Earl, '50, March 11, 2022.  
Smith, Charles A., '61, no details.

**WISCONSIN**

**ALPHA WI A**  
Stoll, Linus Matthew, '46, March 21, 2015.  
Bligard, Erling Jacob, '48, April 13, 2022.  
Earle, David Hugh, '48, no details.  
Powers, Raymond Robert, '49, June 5, 2015.  
Wittkop, Charles F., '53, Sept. 16, 2014.  
Levy, Donald Marc, '56, November 7, 2021.  
Bollinger, John Gustave, '57, April 7, 2022.  
Baun Jr., Philip John, '59, February 18, 2022.  
Duley, James R., '62, February 12, 2005.  
Ketelsen, Robert Jens, '63, no details.

Continued on page 39

This project was meant to support a theory published at the turn of the century by Chamberlin [1899] "suggesting that large variations in the Earth's climate may be partly attributable to changing concentration of CO<sub>2</sub> in the atmosphere on the basis of an estimate of the CO<sub>2</sub> exchange between the atmosphere and lithosphere (ocean)." This messaging got confusing when propagandists replaced "retained heat with CO<sub>2</sub>." Perhaps this replacement was put forth to clean up the counterintuitive fact that low or reduced CO<sub>2</sub> enhances heat conduction (in the atmosphere, as is higher methane for that matter) and conversely higher CO<sub>2</sub> insulates the Earth from radiative heat. I would encourage *The Bent* to secure and publish an independent review of Manabe and Bryant. It is a transient model, whose assumptions and limitations should be addressed.

**Timothy L. Benton, OK A '78**

### Decarbonizing the Atmosphere

Thank you for publishing the letters of members John Foell, Edmund Piasecki, and Jeff Peace in the Summer issue. Their intelligent comments and objective analysis are food-for-thought for those who mindlessly believe that we know a lot more about the cause and impact of climate change than is actually the case. Dr. Steven Koonin, former Department of Energy Undersecretary in the Obama Administration and physics professor at Caltech, provides insights and expert perspective of what science really says about climate change in his book "Unsettled: What Climate Science Tells Us, What It Doesn't, and Why It Matters." The climate is changing, but the why and how aren't anywhere as clear or compelling as politicians, alarmists, and the media would have you believe.

**Ralph E. Warmack, Ph.D., MO A '67**

### Decarbonizing the Atmosphere

Every day, in every way, things are getting "complicateder and complicateder."

**Forrest W. Schultz, PA Z '62**

### Decarbonizing the Atmosphere

I was surprised by some of the Summer 2022 letters re: decarbonizing the atmosphere — in particular one who believes this is a ploy to remove our freedoms and another who is happy that not all the Arctic ice has disappeared and that the Polar bears haven't gone extinct yet. I suppose these people and their ilk have not had their houses burn down due to the increase in wild fires, don't live in Alaska where their house was toppled by the melting of the permafrost, or in the Mid-West where the tornado frequency

has gotten all too frequent, or in the Southwest where both Lake Mead and Lake Powell have dropped to record lows, or in Phoenix where during some days in the summer it is so hot that planes cannot take off because they can't get the lift they need, or in a Coastal Alaskan village that is threatened by rising sea levels and coastal erosion due to retreating ice, or in South Asia where the rapidly melting Himalayan glaciers threaten agriculture and the water supply of millions of people, or in the South Pacific where Island Nations are going under water.

The Earth will survive very nicely without us but the fate of humanity is in the cross hairs.

**David B. Gross, NY Γ '62**

### Decarbonizing the Atmosphere

I found the series of letters in the Summer issue to be very interesting. I wonder too how the temperature rise can unilaterally be assigned to the carbonization of the atmosphere when many times in the past humans did not even exist on the planet when carbon dioxide levels/temperature fluctuations occurred.

However, in the entire conversation, only once was brought up the fact that the increase in heat would cause massive evaporation of the water on the planet — yet I have not seen any graphs/data showing an overall increase of humidity in the air. Glaciers melt, rivers dry, lakes shrink... yet no increase in humidity? So, I can think of two reasons: **1)** It's not really happening or **2)** the water is going somewhere where it is no longer part of the ecosystem. For the sake of argument lets focus on point two. My understanding of the oil industry is that they use a lot of water (saltwater, freshwater, whatever) to pump oil from the ground. Using it for fracking or just pumping to move the oil from the pool under the ground to a common place where they can drill and extract (oil is lighter than water). Has anyone tried to calculate the amount of water being used for this purpose, and further, has anyone calculated the amount of shrinkage of glaciers/rivers/lakes? Are these two amounts close in volume?

I keep hearing that the oceans will rise due to climate change, but have not seen it. Does anyone have that number (or the volume of water it is supposed to represent)? Perhaps climate change does exist, but the real reason is not carbonization, but ecology and the misuse of water resources.

**Robert J. Martin, CA Π '84**

### Tesla & Kilimanjaro

While I always enjoy receiving the magazine, I found two of the articles in the Summer issue especially interesting. One was another excellent article by my old friend and colleague, Lyle Feisel, on "Why do we call it a Tesla." I have always found the history of the competition between Thomas Edison and Nikola Tesla fascinating as Edison's labs and home are National Park historic sites in New Jersey, not far from my home. Reading about Tesla's history, I am sorry I did not know about or get to visit his memorial center in Croatia on one of our visits to that country. The other fits well with our (Susan and I) lifelong travels around the world — spurred by our activity in many engineering and scientific organizations and our hobbies and interests. We have visited every state, every continent (including Antarctica), and well over one hundred countries. One of our past and continuing agenda items is a visit to Kenya and Tanzania to see the Great Migration, the Serengeti, and Mount Kilimanjaro, but that is all delayed now because of the pandemic. So the article by Lauren Swett caught my attention immediately. While I am a hiker, and in a hiking club, I am not a mountain climber as such. The description of the various stages of the trek to the top of the tallest mountain in Africa was fascinating.

We have been to some high elevations in various parts of the world but not to 19,341 feet like Lauren on Kilimanjaro. We have been to the top of Mouna Kea on the Big Island of Hawaii via a jeep tour to the university observatories located at almost 14,000 ft and to the 12,500 ft elevation of Lake Titicaca in Peru. We both had some altitude effects; mine was a mild headache and slowness afoot on the Mauna Kea summit and Susan's was extreme dryness impacting breathing at Lake Titicaca. Since we were (by far) the oldest people in our small group visits in both cases, we were quite proud of our fortitude. Lauren's ability to handle the altitude on Kilimanjaro was extraordinary. Our travels only took us (once) to the equivalent of the start of her 5th day on Kilimanjaro between Karanga camp and the first Barafu camp. While we will not make plans to hike to the top of Mount Kilimanjaro when we get to Tanzania, we will continue to visit new places in the world and are happy to see another engineer starting off on exotic travels while still young. Too many people wait until retirement to do that and no longer have the health or energy or are constrained by unforeseen circumstances. To all: Stay Safe. Stay Well.

**Ronald S. Kane, Ph.D., P.E., NY H '65**

## Fall Problems *Continued*

I have some spare little gold spheres, and I want to “balance the die” (same number of spheres on each face; ignore center of gravity) by gluing them at suitable vertices or mid-edges. Naturally, I want to use as few as possible. And I should like (if it doesn’t cost me any extra spheres) to put one at vertex 1/4/5 (that one counts as adding one sphere to each of faces 1, 4, and 5).

Where should I glue them on? (For convenience, call the mid-edge between faces 4 and 5 “4/5”, the vertex surrounded by faces 1, 4, and 5 “1/4/5”, and so on.) All gold spheres are the same size. At most, one sphere may be placed at any given spot.

—An Enigma by Stephen Ainley  
in *New Scientist*

### 5: Cryptic Division

Solve the following cryptic division in which TWELVE is divisible by 12.

$$\text{TWELVE} / \text{SIX} = \text{TWO}$$

Different letters are different digits; same letter is same digit everywhere; and assume the calculations are in base 10.

—D.A. Dechman, *TX A '57*

### BONUS:

Consider a  $2N$  by  $2N$  square grid of lattice points (so an odd number of little squares), where adjacent points (horizontally or vertically) are connected by 1 ohm resistors. A 1 volt battery is connected between the diagonally opposite points of the middle square. How much current flows from the battery for the cases of  $N=1, 2,$  and  $3$ ?

—F.J. Tydeman, *CA Δ '73*

### COMPUTER BONUS:

What is the largest prime that contains no repeated digits, that is, none of the digits 0 to 9 is used more than once?

—*Prime Numbers, the Most Mysterious Figures in Math*  
by David Wells

Email your answers (plain text only) to any or all of the Fall Brain Ticklers to [BrainTicklers@tbp.org](mailto:BrainTicklers@tbp.org) or by postal mail to **Dylan Lane, Tau Beta Pi, P.O. Box 2697, Knoxville, TN 37901-2697.**

The method of solution is not necessary. The Computer Bonus is not graded. Where possible, exact answers are preferable to approximations. The cutoff date for entries to the Fall column is the appearance of the Winter *Bent* which typically arrives in early January (the digital distribution is several days earlier). We welcome any interesting problems that might be suitable for the column. Dylan will forward your entries to the judges who are **J.C. Rasbold, OH A '83; J.R. Stribling, CA A '92; G.M. Gerken, CA H '11;** and the columnist for this issue,

— **F.J. Tydeman, CA Δ '73**

# CHAPTER ETERNAL

Continued from page 37



Tennessee Alpha '42

**Samuel E. Beall Jr.**

April 8, 2022

*Worked on the Manhattan Project building the atomic bomb, at ORNL helping to assemble the graphic graphite reactor, and at Hanford Washington Nuclear Plant.*

### BETA W I B

Sipek, Charles Benedict, '42, April 27, 2002.  
Schimmels, Thomas J., '51, Jan. 21, 2014.  
Varish Jr., George Paul, '51, Jan. 10, 2018.  
Ehr, Donald Gerald, '52, January 30, 2016.  
Peterson, James Harold, '57, Feb. 17, 2021.  
Niggemann, Richard E., '60, May 3, 2022.  
Widera, George E. Otto, '60, Feb. 11, 2022.  
Bennett, Craig Charles, '65, Feb. 28, 2008.  
Petersen, Clifford Warin, '70, June 17, 2005.

### WYOMING

#### ALPHA WY A

Wing, Wayman C., '47, April 29, 2020.

## IN MEMORY of JONATHAN EARLE



Jonathan F.K. Earle, Ph.D., P.E., *FL A '65*, passed away on June 2, 2022, at the age of 82. He was born in Goodwill, St. James, Jamaica and emigrated to the United States to attend the University of Florida (UF), where he earned his master’s and Ph.D. degrees in engineering.

He joined the UF faculty department of agricultural & biological engineering in 1987, was later promoted to associate dean, and when he retired in 2007 was awarded the title of Associate Dean Emeritus.

He joined TBII in 1994 as an eminent engineer and from 2006-14 served on the Executive Council. He was one of the founders of the STEM program (Gator TRAX) at UF and subsequently helped start the national K-12 MindSET Program with TBII that has helped prepare thousands of students for a STEM career. Throughout his life, he won numerous awards, accolades, and recognitions. The culmination of his life’s work occurred in 2007 when he was called to the White House where he received the National Science Foundation Presidential Award of Excellence in Science, Mathematics, and Engineering Mentoring from President George W. Bush.

# ASSOCIATION BRIEFS



Members of the Central Jersey Alumni Chapter.



Milwaukee Area Alumni Chapter members.

## ALUMNI ACTIVITY: CENTRAL JERSEY (NJ) ALUMNI CHAPTER

On June 10, members of the Central Jersey Alumni Chapter got together in support of Tau Bate Martha Molinini and her band The Suspects playing at The Lighthouse Tavern in South Jersey.

Tau Bates in the image above include: (left to right), **Frank A. Lombardi**, NJ  $\Gamma$  '11, white shirt; **Scott L. Bilker**, NJ  $\Gamma$  '91, green shirt; **Martha Molinini**, NJ  $\Gamma$  '12, middle; and **Joe Perino**, PA Z '88, with hat.

Thanks to **Scott Bilker** president of CJAC for the image.  
Contact the chapter at: [CJAlumni@tbp.org](mailto:CJAlumni@tbp.org).

## ALUMNI ACTIVITY: MILWAUKEE AREA (WI) ALUMNI CHAPTER

Earlier this summer, members of the Milwaukee Area Alumni Chapter hosted a social event at the Alpinage Cheese aging facility in Oak Creek, Wisconsin.

The group enjoyed tasting different open air aged cheeses during the cheese processing and aging tour of the facility.

Thanks to **Carmen I. Daoud**, WI A '20, secretary of the Milwaukee Area Alumni Chapter for sharing the photo.  
Contact the chapter at: [MilwaukeeAC@tbp.org](mailto:MilwaukeeAC@tbp.org).

**TAU BATE  
TALKS**

The Tau Beta Pi Engineering Honor Society Speaker Series

## UPCOMING TAU BATE TALKS:

This series features Tau Bates who have used their engineering background to pursue fascinating experiences.

● **September 18** – 4 pm ET — Robert V. Sobczak, PA E '92, "Hydrology of the Big Cypress Swamp and Everglades using the Water Cycle Approach"

● **October 16** – 4 pm ET — Dennis D. Truax, Ph.D., P.E., MS A '79, Title TBA

More info at: [www.tbp.org/?TBPtalks](http://www.tbp.org/?TBPtalks) or, contact Tricia Gomulinski at [tricia@tbp.org](mailto:tricia@tbp.org).

## TBP HEADQUARTERS VISITORS

**Andrew I. Doyka, TN Γ '17**  
Knoxville, TN; March 14, 2022

**Robert A. Edlund, TN E '79**  
Farragut, TN; March 14, 2022

**Arlene A. Garrison, Ph.D., TN A '88**  
Oak Ridge, TN; March 14, 2022

**Alvin L. Jenkins, TN A '61**  
Maryville, TN; March 14, 2022

**Patrick C. Jennings, TN Γ '99**  
Maryville, TN; March 14, 2022

**Robert & Terry Olberding, TN A '82/'78**  
Knoxville, TN; March 14, 2022

**Richard T. Redano, NC A '78**  
Raleigh, NC; March 14, 2022

**N. Raymond Thach Jr., TN A '64**  
Oak Ridge, TN; March 14, 2022

**Christopher L. Whaley, TN A '94**  
Knoxville, TN; March 14, 2022

**Kathy M. Wynegar, NC A '86**  
Lenoir City, TN; March 14, 2022

**Amy C. Kurr, IA A '18**  
Cleveland, OH; June 7, 2022

**David J. Icové, Ph.D., P.E., TN A '71**  
Knoxville, TN; June 7, 2022

## TBP JUNE MEETING IN WASHINGTON, DC

From June 3-5, TBPI Association Officials and several Headquarters staff met in Washington, D.C. The June meeting is an essential activity, providing an opportunity for program, board, and committee members to share and discuss accomplishments, challenges, goals, and resources required to grow and improve. The images below were taken by TBPI President Menna Youssef.



### STAY CONNECTED

Follow us on social media and tag us, so we can see your TBPI images using **#taubetapi**.

**INSTAGRAM:** [instagram.com/taubetapiofficial/](https://www.instagram.com/taubetapiofficial/)

**FACEBOOK:** [facebook.com/TauBetaPiHQ/](https://www.facebook.com/TauBetaPiHQ/)

**WORDPRESS BLOG:** [taubetapihq.wordpress.com/](https://taubetapihq.wordpress.com/)

**TWITTER:** [twitter.com/TauBetaPi](https://twitter.com/TauBetaPi)

**YOUTUBE:** [youtube.com/c/TheTauBetaPiAssociationInc](https://www.youtube.com/c/TheTauBetaPiAssociationInc)



# Executive Council MEETING MINUTES

Summaries from Executive Council (EC) Meetings — January 2022 through March 2022.

## January 18, 2022

### Virtual

Councillor Pierce moved to approve the consent items and the Council approved on a voice vote:

District Director Appointments:

**Sandhiya Kannan**, NY O '17, as a D2 Director to a term beginning 1/18/22 and ending 6/30/24, and **Natalie M. England**, LA A '08, as a D12 Director to a term beginning 1/18/22 and ending 6/30/24.

Advisor Committee Appointments:

**Sami Mian**, AZ B '16, to a term beginning 1/1/22 and ending 12/31/24;  
**William R. Goodin**, CA E '75, to a term beginning 1/1/22 and ending 6/30/22;  
**Russell W. Pierce**, WA A '70, to a term beginning 1/1/22 and ending 12/31/23.

Membership Committee Appointment:

**Sami Mian**, AZ B '16, to a term beginning 1/1/22 and ending 12/31/24.

President M. Youssef welcomed the Councillors to a new year on the Executive Council and thanked each for their service. She discussed practices for the Council in 2022, including committee reports and deadlines for submissions of content for EC meetings.

Executive Director Gomulinski reported that scheduling for petitioning inspections is underway at HQ. TBII will not be pursuing the proposed AMS software options; next steps will be setting budget and timeline for upgrades to current system. Amy Chaney has stepped down as TBII bookkeeper but will continue to assist with event planning. An account with Fidelity was opened to receive funds from a donor.

Secretary R. Alexander presented the Image and Marketing Committee report and provided the current progress on updates to the Recruiting and Member websites. The committee will present a timeline for Member Site updates at the February EC Meeting.

Councillor M. Peterson presented the new Action Item Tracker and reviewed the open action items. Councillor J. Sciacca moved to approve the 2021-22 Strategic Plan Goals as presented.

Dr. Youssef moved and the following were approved: the 2022 proposed schedule for the EC and the 2022 Committee

Assignments. Councillor Peterson moved to appoint Councillor Sciacca as chair of the Strategic Planning Task Force and it was approved. Dr. Youssef will look into adding committee assignments to the 2022 EC calendar to ensure quarterly updates are made.

Councillor Peterson noted the status of scheduling for the 2022 District Conferences. Director of the District Program, **Stacey L. Forkner**, WI A '96, is presently encouraging districts to have dates.

## March 8, 2022

### Virtual

The Executive Council held a moment of silence in memory of **Roger E. Hawks**, NY A '75, former Assistant Secretary-Treasurer of the Association who passed away suddenly on February 28, 2022.

The Council approved the following:

District Director Appointment:

**Lisa C. Lombino**, NY N '97, was appointed as a D4 Director to a term beginning 3/8/22 and ending 6/30/24.

Ten Engineering Futures Facilitators were reappointed to terms beginning 7/1/21 and ending 6/30/24 per request by **Katy Colbry**, MI A '99; **JP Blackford**, DC I '95; **William P. Cleveland**, MS A '10; **Dirk J. Colbry**, MI A '06; **Scott V. Eckersall**, CA I '96; **Wendy A. Harper**, WV B '00; **Christie R. Hasbrouck**, IN E '16; **Amy C. Kurr**, IA A '18; **Timothy J.F. Luchini**, SD A '11; **Wayne B. Paugh**, FL I '93; and **Kirstie T. Weimer**, NY T '11.

Advisor Committee Appointments:

**Steven Klepac**, AL E '21, as committee chair effective 2/1/22 and ending 1/31/23;  
**Ming Lin**, NY I '01, to a term beginning 2/1/22 and ending 6/30/23; and adjust the term of **Angelique Y. Louie**, CA A '85, to end 2/28/22.

Membership Committee Appointment:

**Chetan G. Date**, AZ B '84, as committee chair effective 2/1/22 and ending 1/31/23.

President M. Youssef reported on the recent inspection trip to Western Carolina University; discussed plans for holding a June Meeting for the Executive Council and Association Officials; and encouraged Councillors to provide their availability via a provided poll.

Executive Director Gomulinski reported that the TAC is meeting to review a variety

of items; a self-assessment will be sent to the Council to complete; various staff changes were provided to the Council; contract work is ongoing for future Conventions; updated the Council on recent major bequests left to TBII; and the net assets project is complete and will be presented to the Council at a future meeting.

Secretary R. Alexander updated the Council on recent policy work completed on the Governance Committee; current status of the pending ratification ballot; and a potential amendment to allow for virtual voting.

The Image and Marketing Committee is working with HQ to develop a web page for volunteer opportunities. Ms. Alexander noted that the updated Members Site is still in development; a task force may be established to review the website. Ms. Alexander requested that the Council share feedback on social media efforts and *Bent* articles. Marketing materials may be sent out to an external firm for development in the next fiscal year.

## 2022 EXECUTIVE COUNCIL OFFICER DIRECTORY

President Menna M. Youssef, Ph.D., VA G '04  
Burke, VA [myoussef@tbp.org](mailto:myoussef@tbp.org)

Vice President Rachel K. Alexander, P.E., CA U '15  
Roseville, CA [ralexander@tbp.org](mailto:ralexander@tbp.org)

Secretary Michael L. Peterson, IA A '89  
Waterford, MI [mlpeterson@tbp.org](mailto:mlpeterson@tbp.org)

Treasurer Russ W. Pierce, WA A '70  
Puyallup, WA [rpierce@tbp.org](mailto:rpierce@tbp.org)

Councillor Ron M. Hickling, CA E '80  
Newbury Park, CA [rhickling@tbp.org](mailto:rhickling@tbp.org)

Councillor MingDe Lin, Ph.D., NY G '01  
North Haven, CT [mclin@tbp.org](mailto:mclin@tbp.org)

Councillor George J. Morales, Ph.D., FL E '06  
Gilbert, AZ [george@tbp.org](mailto:george@tbp.org)

Councillor Joan M. Sciacca, CA M '87  
Terrebonne, OR [jsciaccia@tbp.org](mailto:jsciaccia@tbp.org)

Councillor George Youssef, NJ G '01  
Bloomfield, NJ [georgeyoussef78@gmail.com](mailto:georgeyoussef78@gmail.com)

## ASSOCIATION OFFICIALS: REAPPOINTMENTS & RECOGNITIONS

In July and August, the Tau Beta Pi Executive Council approved the following Association Officials' reappointments and recognitions. Visit the TBP website for more information at: [www.tbp.org/about.cfm](http://www.tbp.org/about.cfm)

### Advisor Committee: *all terms end 06/30/25*

Bruce A. DeVantier, IL E '77

William R. Goodin, CA E '75

Michael W. Griffis, FL A '85

### District Directors: *all terms end 06/30/25*

Brent J. Barcus, NY G '02

Joseph P. Blackford, DC G '95

Eric F. Dorge, NY N '82

Andrew I. Doyka, TN G '17

Meghan Ferrall-Fairbanks, FL A '12

Margaret G. Goshert, MN A '12

Michael J. Hand III, MI G '11

Teresa J. Hutton, WI B '91

Elson Y. Liu, AZ A '02

Thomas A. Pinkham IV, MA E '88

Matthew T. Pittard, UT B '01

Jon M. Sonsteby, PA B '95

Jose E. Suarez, LA E '10

Lauren J. Swett, ME A '04

### District Director Service Recognition:

Christopher W. Potts, CA U '16 – Resolution of Appreciation

Melissa L. Morris, WV A '06 – Distinguished Service Award

Ian J. Frank, NY Pi '09 – Resolution of Appreciation

### Editorial Board:

Lyle D. Feisel, IA A '61 – term ends 06/30/25

### Engineering Futures Facilitators:

*all terms end 06/30/24*

Michael D. Czebatul, OK A '92

Cheryl Cheng, MI G '00

Richard Della Rovere, NJ G '10

Russell W. Pierce, WA A '70

Ellen S. Styles, AL D '85

Dennis J. Tyner, MA E '85

### Membership Committee:

Susan L.R. Holl, CA L '76 – term ends 06/30/23

Jacob L. Lewellen, OK G '22 – term ends 06/30/25



## ★ 2022 Laureates ★

No Laureate was selected in the 41<sup>st</sup> year of Tau Beta Pi's annual program to recognize gifted engineering students who have excelled in areas beyond their technical majors. Award categories include arts, athletics, diverse achievements, and service. Since the program began in 1982, 114 outstanding Tau Bates have been recognized for their "spirit of liberal culture in engineering colleges."



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## NO ANNUAL REPORT ... AGAIN?

I don't expect that many of our members anxiously await the arrival of the fall issue of *The Bent* to review the Executive Director's Report. At the same time, while dry, it provides a snapshot in time about the state of affairs of the Association. In my role, I have found numerous occasions where flipping back to an old Executive Director's Report has been instructive and insightful.

A careful reader might have noticed a small piece in the Fall 2021 issue that provided an update on the situation. While I hoped the report would appear in the Winter 2022 issue, it did not. A major piece of the Executive Director's report is a section on the finances of the Association including Statement of Financial Position and a Statement of Activities, which are part of our annual audit. The primary reason these reports have not been published is that audits for the 2019-20 and 2020-21 fiscal years

are incomplete. In fact, the statements presented in the Fall 2020 issue for the 2019-20 fiscal year will be restated.

Almost four years ago, members of the Executive Council and I began looking at the Association's trust funds to ensure that all assets were properly restricted and accounted for based on the intent of our donors. Around the same time, auditing standards changed and the terms "Temporarily Restricted" and "Permanently Restricted" simply became "Donor Restricted." For those unfamiliar with these terms, "Temporarily Restricted" refers to a gift that must be used for a specific purpose and the restriction ends when that purpose is fulfilled. An example is a \$2,000 gift designed for a scholarship. When that money is given out as a scholarship, the restriction is fulfilled. "Permanently Restricted" refers to a gift that is kept in perpetuity whose earnings are to be used for a specific purpose.

An example is a \$200,000 gift used to endow a fellowship. The original gift must be maintained, and any earnings must be used to provide fellowships. While auditing standards now classify both as "Donor Restricted," Tau Beta Pi continues to internally use both to track its obligations to fulfill the intent of our donors. However, this accounting change pointed to several cases where some of our funds might not be properly restricted.

After consulting with our auditors, this cursory review and changes to the accounting standards led to a detailed analysis beginning in fall 2020. What started out as a small project ended as a substantive endeavor including a review of nearly forty years of legal documents, member correspondence, financial statements, and audit records. Fortunately, Tau Beta Pi maintains copious records, and we were able to review the records of 47 of the Association's funds, some of which dated back to 1978.

Because of the magnitude of the review and the complexity of forty years of financial records, it took until earlier this year to conclude the review and issue a final report to the auditors and the Executive Council. This information has been used by the auditors to update our net assets, ensure the accurate accounting of all revenue and expenses, and the proper restrictions are in place based on the intent of our donors.

Some people might be concerned that Tau Beta Pi has "been under audit" for two years and that our financial statements required a "restatement." Fortunately, in our situation, neither of these terms implied a negative situation. Because our review indicated that some of the numbers presented in our audit required updates, the auditors needed to issue a "restatement" to clarify the situation and present adjusted numbers.

# TBP HEADQUARTERS NEWS continued

The good news is that not a dime of our assets was spent in a manner that contradicted the intent of our donors! If anything, Tau Beta Pi has been too restrictive in how we accounted for and utilized our trust funds. Of the 47 funds reviewed, 46 were either properly classified as donor restricted, had nominal pieces that should have been Executive Council restricted, or were classified as donor restricted but should have been Executive Council restricted. The single fund that should have been classified as donor restricted was restricted by the Executive Council for scholarships which reflected the wishes of the donors.

It has been a long journey to reach this point in the review of the Association's assets. Our auditing team is wrapping up their review of the 2019-20 and 2020-21 fiscal years and expects to issue the financial statements shortly. In addition, we are working diligently to prepare for the 2021-22 audit which will commence shortly. While this review has been underway, we have continued to file the required IRS forms and comply with all the other requirements of a non-profit. My report, past audits, and IRS forms are all published on our website at [www.tbp.org/giving.cfm](http://www.tbp.org/giving.cfm).

An upcoming issue of *The Bent* will provide more details on the results of

the review of our net assets along with information contained in the regular Executive Director's reports. These, along with the completed audits, will be available on the giving page of our website as soon as they are completed. If you have any questions, you are welcome to email me at [curt@tbp.org](mailto:curt@tbp.org).

.....  
**CURTIS GOMULINSKI**, is the Executive Director of The Tau Beta Pi Association. He succeeded Jim Froula at the close of the 2011 Convention and is the fourth member to hold this position. He holds a bachelor's degree in electrical engineering from Wayne State University and a master's degree in computer science and engineering from the University of Michigan.

## HEADQUARTERS WELCOMES THREE STAFF MEMBERS:



**Roxanne Bachert** is the new HQ Bookkeeper with the Finance & Operations team. Originally from the mountains of Pennsylvania, she settled in Knoxville in 1993 and obtained her degree. Roxanne excels at accounting and administrative positions, previously working

for Zoo Knoxville and as assistant controller at a general contracting company. She enjoys spending time with her family, reading, puzzles, and traveling.



**Matthew Brissette** is TBPI's new IT Analyst/Administrator Associate working with our Systems Administrator. He grew up in Mount Juliet, TN, and earned a degree in computer science from Tennessee Tech Univ. Matthew joined TBPI part-time in August of 2020 and

became a full-time employee in February of 2022. He has an affinity for puzzles which helps in his work to maintain and expand TBPI's software. His hobbies include tabletop gaming and indulging in campy horror.



**Connor Dubrule** joined HQ's Member & Chapter Services team as a Chapter Service Representative. He grew up in Knoxville, TN, attended Knoxville Catholic High School, and earned his business degree from the University of Tennessee. Connor started as a part-

time employee, but was thrilled to be brought on, less than a year later, full-time. He enjoys cheering on the Vols, playing video games, cooking, and spending time with his family.

More information about the TBP HQ staff is available on our website: [www.tbp.org/about/hqStaffBios.cfm](http://www.tbp.org/about/hqStaffBios.cfm)

# ALUMNI NOTES

Your fellow Tau Bates are interested in news about **you**.



## CALIFORNIA LAMBDA '85

### Diane M. Bryant

Diane is chairman and CEO at medical tech start-up NovaSignal and previously worked in the executive offices at Intel Corp. and Google. Her B.S. degree is in electrical engineering from the University of California, Davis, and she was named one of *Fortune's* 50 Most Powerful Women in Business (2015 & 2016).



## INDIANA BETA '20

### Gabrielle L. Gilbertson

Gabbie is a ride performance engineer within the Williams Formula 1 race team's vehicle dynamics group in the U.K. She was sought for her mathematical modeling skills after earning degrees from the University of Cambridge (M.S.) and Rose-Hulman Institute of Technology (B.S. in Biomed and ME).



## LOUISIANA ALPHA '63

### Isby L. Schexnayder Jr.

A New Iberia, LA, resident, Isby continues to be a practicing engineer at the age of 80 and spent his entire career working in sugar mills across Texas, Louisiana, and internationally (Jamaica & Brazil). Isby and (wife) Julaine, are proud parents of Dr. Janet Schexnayder, a founding member of Univ. of New Orleans TBII Chapter.



## LOUISIANA BETA '83

### Lisa P. Jackson

Lisa is Apple Inc.'s vice president of Environment, Policy, and Social Initiatives. She was recently appointed by President Biden to the Board of Advisors on Historically Black Colleges and Universities. Previously, she served as Chief of Staff to Governor Corzine and NJ Dept. of Environmental Protection Comm.



## MARYLAND DELTA '78

### Neil S. Rothman Ph.D.

Neil was honored by the IMAGE Center of Maryland with its VME (Volunteers for Medical Engineering) Volunteer of the Year Award. He is professor and program coordinator of Stevenson University's biomedical engineering program and has three degrees in engineering, two of which are from Rensselaer Polytechnic Institute.



## MICHIGAN IOTA '90

### Desi Ujkashevic

Desi has joined Apple Inc. as a senior director to focus on the development of an electric car. She had worked at Ford Motor Co. since 1991 leading safety and vehicle engineering efforts, most recently as director, Engineering North American Programs. Her B.S., M.S., and MBA degrees are from the Univ. of Michigan.



## MISSISSIPPI ALPHA '83

### Randy J. Cleveland

Randy was honored with Mississippi State University's highest alumni honor, 2022 National Alumnus of the Year. He was a successful leader in the oil and gas industry for 35+ years at Exxon and as president at XTO Energy, Inc., until retiring in 2019. His B.S. degree is in petroleum engineering from MSU.



## MISSOURI BETA '79

### Thomas R. Gredell P.E.

Thomas is founder and president of GREDELL Engineering Resources, Inc., earned B.S. and M.S. degrees in engineering, and was part of the Miner Athletics Hall of Fame basketball team in 1999 — all from Missouri S&T where he was inducted into the Academy of Civil Engineers earlier this year.



## MISSOURI BETA '96

### Jeff J. Neemann Ph.D., P.E.

Jeff is area director and associate vice president of Black & Veatch and has two engineering degrees from Missouri S&T where he was inducted into the Academy of Civil Engineers earlier this year. The academy recognizes outstanding alumni for their professional achievement and success.



## NEVADA BETA '92

### Michael A. Schwob Ph.D., P.E.

Michael received a Ph.D. in mechanical engineering in 2022 from the University of Nevada, Las Vegas. He was awarded a patent for a pneumatic seat support in 2021 and also received the ASHRAE Technical Paper Award in 2019. He provides acoustical consulting for Schwob Acoustics — a firm he founded in 2017.

Send items about civic activities, honors won, weddings, promotions, etc. to Tau Beta Pi, P.O. Box 2697, Knoxville, TN 37901-2697 or to [media@tbp.org](mailto:media@tbp.org). Material for publication must be received by November 1 for the Winter issue and by February 1 for the Spring issue. Include name, address, chapter/class year, and email address or phone number. Thank you!

## James Webb Space Telescope

Launched in December 2021 by NASA, the largest space telescope ever built, is a space science observatory that will be used to study the universe.

The James Webb Space Telescope arrived at its “insertion location” in January 2022 — about 930,000 miles from Earth. Following the completion of critical mirror alignment steps in March, the telescope team expects that Webb’s optical performance will be able to meet or exceed the science goals it was built to achieve.

According to NASA, the Webb Telescope is the first in space to use segmented primary mirrors. The team concluded all aspects of Optical Telescope Element alignment in May and has recently finished scientific instruments calibration.

Among the investigations planned for the first year are studies of two hot exoplanets classified as “super-Earths” for their size and rocky composition: the lava-covered 55 Cancri e and the airless LHS 3844 b. Researchers will train Webb’s high-precision spectrographs on these planets with a view to understanding the geologic diversity of planets across the galaxy, and the evolution of rocky planets like Earth.

Top Image: star-forming region called NGC 3324 in the Carina Nebula captured in infrared light by the new James Webb Space Telescope. Bottom image: the primary mirror of NASA’s James Webb Space Telescope inside a cleanroom at Johnson Space Center in Texas.



NEW MEXICO BETA '83

### Michael A. Hamman P.E.

Michael was appointed as the state engineer by Governor Michelle Lujan Grisham of New Mexico. Previously, he was CEO and chief engineer for the Middle Rio Grande Conservancy District. A homegrown professional, his agency will focus on water infrastructure and craft a 50-year water plan.



TENNESSEE ALPHA '81

### Anthony P. Gouge

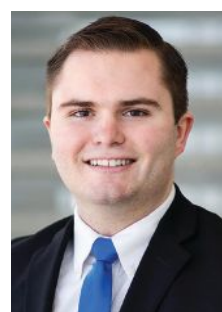
Anthony received the honor of Laboratory Fellow at the Savannah River National Lab (SC); built an international reputation as a highly skilled and recognized technical expert in nuclear fuel reprocessing, heavy water production, and nuclear chemistry; and earned the distinction for outstanding scientific achievements.



TENNESSEE ALPHA '85

### Kathy Williams Southall

Kathy was recognized as a Hall of Fame inductee by the Halls High School (TN) Alumni Association. As an engineer, she began working for NASA as a contractor and later as a civil servant where she was assigned to the *Challenger* Redesign Team. She has B.S. and M.S. engineering degrees.



UTAH GAMMA '21

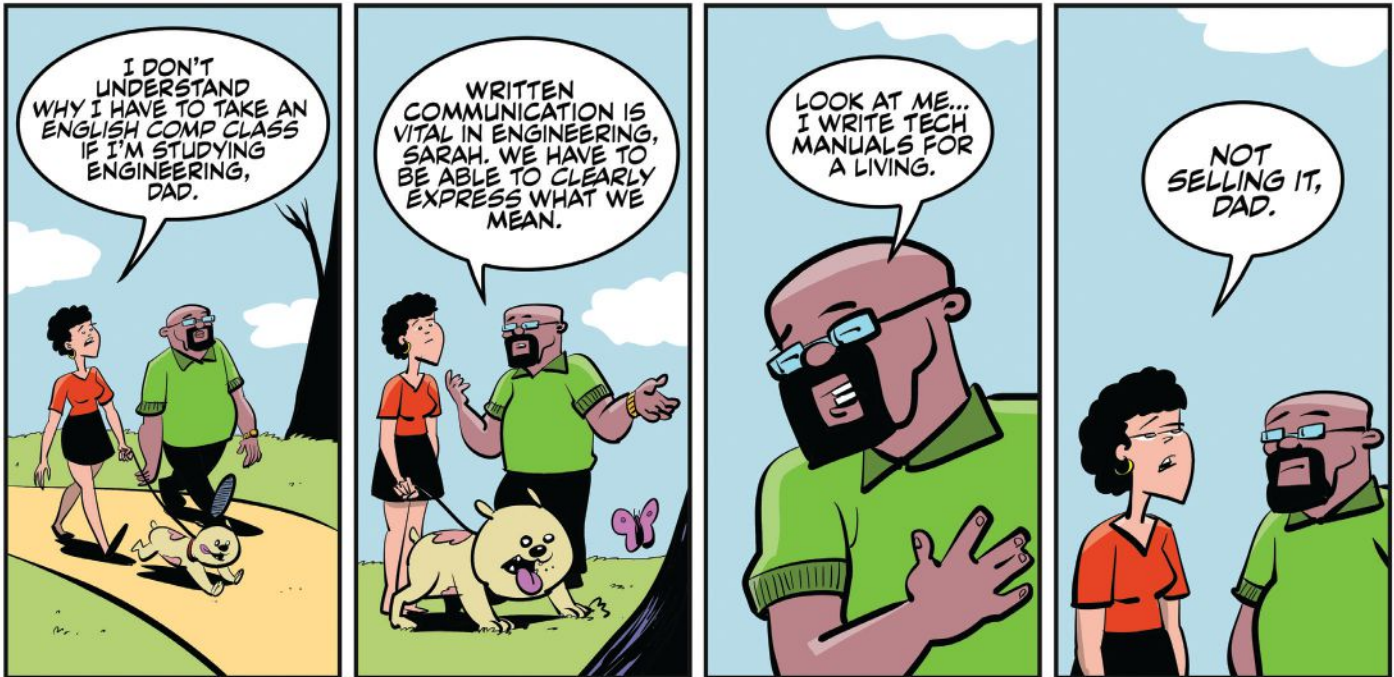
### Joshua T. Ward

Joshua received an Eisenhower Transportation Graduate Fellowship from the Federal Highway Administration for a full year of transportation research. He is a master’s student at Utah State University in civil and environmental engineering, a TBI Scholar (2020), UT Gamma Chapter Advisor, and former chapter vice president and secretary.

# TRUE TALES from the TESTBENCH...

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## We need YOU, to write for *The Bent*

The Editors of *The Bent* are frequently searching for well-written, general interest feature articles for the magazine. Many of you have the appropriate experience, are qualified, and capable of preparing such a feature.

Manuscripts can be between 1,000-3,000 words, and should be double-spaced and submitted as a text or MS Word document. Publishing decisions cannot be guaranteed.

Email your proposal to [media@tbp.org](mailto:media@tbp.org).

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**DELL:** Discount program on Dell branded personal products, electronics, and accessories.

**LINKEDIN:** Join 33,450 members in our official group for professional networking and career discussions (search: Tau Beta Pi Engineering Honor Society).

**LOCAL HOSPITALITY:** Access to a worldwide inventory of hotels at exclusively discounted rates.

**PPI:** 20 percent discount on professional licensing exam review materials (FE/EIT, PE, and more).

**TAU BETA PI JOB BOARD:** Post a resume online and browse hundreds of engineering jobs at top companies.

## Need a Feature from a Back Issue?

You can find previous features from the magazine on our website. A month after each *Bent* is published, the features from that issue are posted in PDF format at: [www.tbp.org/?Features](http://www.tbp.org/?Features)

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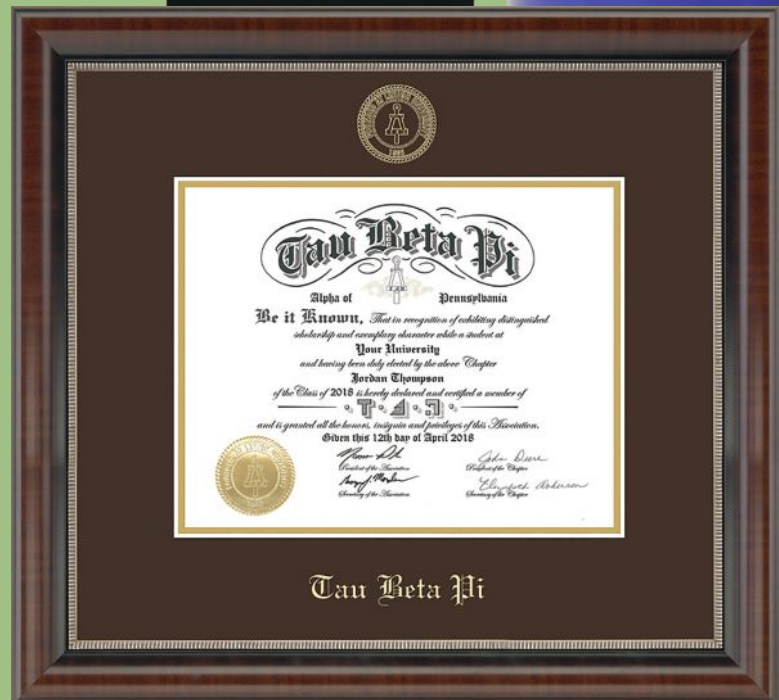


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