



The Bent

WINTER 2021

Of Tau Beta Pi

THE ENGINEERING HONOR SOCIETY



Plug-and-Play Robots — Here Now
Virtual “Unvention” Summary

ALUMNI CHAPTERS

78 ALUMNI CHAPTERS
46 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

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

256 COLLEGIATE CHAPTERS
610,133 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. Poly St. 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
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
NB 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)
NY ZETA Polytechnic Inst. of Brooklyn
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

WINTER 2021

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AWARDS:

- 18 2020 Chapter Awards
- 20 2020 Chapter Project Awards

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COVER: A Talos humanoid robot from PAL Robotics.

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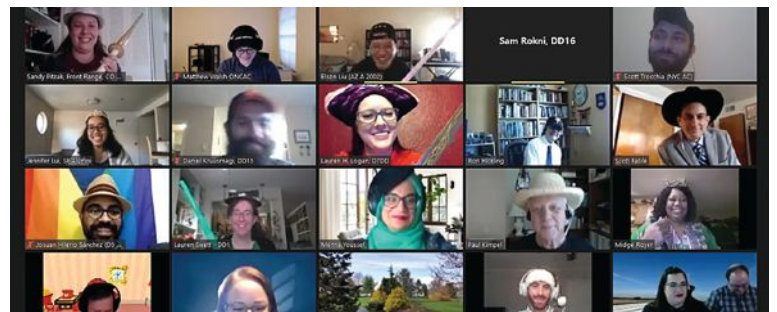
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Member, *American Society for Engineering Education*; co-founder *Association of College Honor Societies*; and Affiliate, *American Association for the Advancement of Science*.



06 Ready for robots everywhere? Alan Brown explores applications of autonomous robots.



16 A summary of activities and business from the Association's first virtual "Unvention."



18 Congratulations to our top collegiate chapter award winners for 2019-20.

VISIT www.tbp.org

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COUNCIL'S CORNER

George J. Morales, Ph.D., Florida Epsilon '06, TBTI 2021 President

RECAP OF 2020—LOOKING FORWARD TO A NEW YEAR

Tau Beta Pi will continue to grow and adapt to whatever is thrown our way.

Well, 2020 was different to say the least. A global pandemic, working from home, taking courses from home, homeschooling children, empty shelves in grocery stores, and job loss seemed beyond anyone's imagination. Being at home has stressed not only our nerves, but has led to some hard realizations that patience is indeed a virtue. A virtue I find myself at times to be lacking, as many do these days.

Despite all of this, our volunteers and their tireless efforts were able to maintain our commitment to be there for our members. The Executive Council took (at first) an unpopular decision (for some) to suspend all business travel, in-person District Meetings, and Engineering Futures Sessions. We still have our commitment to "Mark in a Fitting Manner" candidates of exemplary character as well as academic and professional success. This commitment was met by creating an online version of our initiation ceremony. Our chapters and new members are grateful that Tau Beta Pi will continue to grow and adapt to whatever is thrown our way.

2020 UNVENTION

With travel and occupancy restrictions placed by local municipalities, it became necessary to suspend the 2020 Annual Convention in Atlanta, GA. Again, a tough decision—as the only time documented in our history was the suspension of the annual Convention in 1942, after the outbreak of World War II. Unprecedented times for us all, but again our committed volunteer base rose to the occasion and was able to deliver the 2020 Unvention held throughout

late October and early November. Vice President Menna M. Youseff, Ph.D., VA G '04; Director of Alumni Affairs Tricia E. Gomulinski, SDA '98; District 16 Director Neal T. Bussett, CA X '09, and many others delivered a program that Tau Beta Pi can continue to use to further support our members who would like to attend a Convention but cannot. For our members in Atlanta, we will be back!

EXECUTIVE COUNCILLORS

Elections were held at our 2020 Unvention and I would like to welcome our two new Executive Councillors: MingDe Lin, Ph.D., NY G '01, Joan M. Sciacca, CAM '87, and our returning Councillor and former Treasurer Scott E. Fable, CA T '96. I'm confident, with your leadership, we will be well positioned going into the next three years. With that, I extend my deepest appreciation to Councillor Stephan L. King-Monroe, MIE '08, and President C. Craig Smith, P.E., TNE '80, for their amazing contributions and strong leadership over their past three years of service. I have no doubt they will continue to contribute their energy and passion to our Association.

LOOKING AHEAD

2020 impacted us all and we are taking a good hard look at what this year has thrown our way and how we move on from here. For starters, we will be working strongly to engage more of our alumni in volunteer efforts as well as maintaining our commitment towards our fellowship and scholarship programs. Adapting to what now

has become the norm, we will look at expanding online resources for our members. With the movement towards more remote collaboration, Tau Beta Pi stands in a strong position to expand our connections between alumni and students which could yield positive results in terms of networking and access to job opportunities. Additionally, we would also maintain our goal of increasing alumni giving to strengthen the Association.

Finally, our commitment to recognizing the ongoing struggles of race relations in this country will continue. Our members come from all over the globe, from different ethnicities, socio-economic backgrounds, religions, sexual orientations, identities, and engineering disciplines! You all set the example of professionalism in engineering. We believe that through *diversity*, great achievements are possible. We are in the process of establishing listening sessions to address our members' concerns and provide a safe space so that all may be heard.

I look forward to a brighter 2021 and hopefully seeing you all at our annual Convention in Knoxville, TN. Stay safe and stay healthy.

.....
GEORGE MORALES works at Intel Corporation as a packaging research and development engineer. He joined the TBTI Executive Council in 2014, and was re-elected in 2019, serving in the roles of Secretary (2017), Treasurer (2018), and Vice President (2020). His three degrees are in electrical engineering earned from Penn State University (B.S.) and Florida Atlantic University (M.S. and Ph.D.).



JOIN US FOR
THE 8th ANNUAL

TAU BETA PI DAY

3.14.21

March 14, 2021—wear your Bent or TBPI apparel, participate in a TBPI activity (virtual or in-person), and post on social media with **#taubetapiday**

www.tbp.org/other/PiDay.cfm



WHO'S WHO IN TAU BETA PI

Recognizing Tau Beta Pi accomplishments.

Arden L. Bement Jr. Ph.D.

Colorado Alpha '54

has been awarded the 2020 Arthur M. Bueche Award from the National Academy of Engineering "for his contributions to technology research, policy, and national and international cooperation." He is Distinguished Professor Emeritus of nuclear engineering at Purdue University and has held appointments under six U.S. presidents—including director of the NSF 2004–10.



Bonnie J. Dunbar Ph.D.

Texas Epsilon '83

was awarded the 2020 McGovern Science and Society Award by Sigma Xi "for leadership and contributions in aerospace engineering; work spanning industry, academia & government; a commitment to furthering engineering & science education; and outreach to K–12 students." She is a retired NASA astronaut, educator at Texas A&M University & TX Delta Chief Advisor.



William S. Hammack Ph.D.

Michigan Beta '84

has been selected to receive the 2020 Hoover Medal commemorating the civic and humanitarian achievements of an engineer whose endeavors have advanced the well-being of humankind. It is administered by a board representing five engineering organizations. He is a professor of engineering at the Univ. of Illinois at Urbana-Champaign and creator and host of the YouTube channel "engineerguy."



Cara A. Cowan Watts Ph.D.

Oklahoma Gamma '97

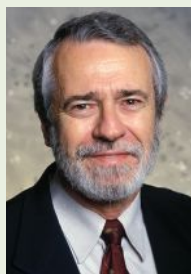
received the 2020 Ely S. Parker Award from the American Indian Science and Engineering Society. The award recognizes an Indigenous professional who has achieved an exceptional career while supporting education in STEM disciplines. She is CEO and principal owner of Tulsa Pier Drilling, a company she built and one of the fastest-growing, 100% Native American-owned.



Don P. Giddens Ph.D.

Georgia Alpha '63

received the 2020 ASEE Lifetime Achievement Award in Engineering Education for sustained contributions to engineering education at Georgia Tech. He is the former engineering dean (2002–11) and founding biomedical chair of the BME department at Tech. An aerospace engineering alumnus of Tech, he also served as president of the American Society for Engineering Education (ASEE) 2011–12.



Eric O. Johnson S.E.

Illinois Alpha '01

has been named the USACE Structural Engineer of the Year by the U.S. Army Corps of Engineers, Rock Island District. Johnson received this award for his work coordinating and leading teams in the areas of lock miter gate design and composite hydraulic structures. He is one of the foremost experts in miter gates and earned B.S. and M.S. degrees from the University of Illinois at Urbana-Champaign.



NEW AIChE FELLOWS

Richard B. Dickinson Ph.D.

Florida Alpha '87

has been elected as a Fellow of AIChE, the highest grade of membership. He is a professor of chemical engineering and department chair at the University of Florida, while also a division director at the National Science Foundation. His research includes seminal contributions in areas of cell motility, microbial adhesion, and cytoskeletal filament dynamics.



David L. Silverstein Ph.D.

Alabama Beta '92

a KY Alpha Chapter Advisor, has been elected as a Fellow of AIChE. He is a professor at the University of Kentucky, Paducah, where he directs the COE's Extended Campus programs. His research interests include faculty professional development, conceptual learning tools & guided inquiry through simulation. He received AIChE awards for Technical Programming and Outstanding Student Chapter Advisor.



Richard Turton Ph.D., P.E.

West Virginia Alpha '79

lead author of the textbook *Analysis, Synthesis, and Design of Chemical Processes*, has been elected as a Fellow of AIChE. He is chair of chemical & biomedical engineering at West Virginia University, where he holds the Bolton Professorship for Outstanding Teaching. He previously worked as a process engineer for Pullman-Kellogg Co. (U.K.) and Fluor Engineering and Construction (U.S.).



Susan G. Margulies Ph.D.

New Jersey Delta '82

has been elected to The National Academy of Medicine (NAM) 2020 class. Election to NAM is considered one of the highest honors in the fields of health and medicine. She is a professor at Georgia Tech and chair of the department of biomedical engineering at Tech and Emory University. Her research interests center around traumatic brain injury in children with a focus in the areas of prevention.



Raj Shah Ph.D.

New York Omicron '91

has been inducted as a Fellow of the Institute of Chemical Engineers, commended as a Fellow by the Chartered Management Institute, and elevated as a Fellow of the Institute of Measurement and Control. He is Director at Koehler Instrument Company and a volunteer adjunct professor at the State University of New York, Stony Brook. He joined TBP in 2020 as an eminent engineer.



Allen Taflove Ph.D.

Illinois Gamma '71

has been selected as a member of the inaugural cohort of Sigma Xi Fellows “for pioneering work on finite-difference time-domain computational solutions of Maxwell’s equations of electro-dynamics.” Fellows of Sigma Xi are awarded on a competitive basis to members who have been recognized by their peers. He is a professor of electrical and computer engineering at Northwestern University.



Gary S. May Ph.D.

Georgia Alpha '86

has been elected as a member of the American Academy of Arts and Sciences under the classification of educational and academic leadership. He is the 7th chancellor of the University of California, Davis, serving since 2017, was previously dean of the college of engineering (2011), and was a member of the ECE faculty at Georgia Tech.



Peyton J. Schmid

Michigan Theta '22

won an Alan Mulally (KS A '68) Leadership in Engineering Scholarship. She is an electrical engineering student at Oakland University, has a lifelong interest in cars, and serves as MI Theta Chapter social chair. The highly coveted \$10,000 scholarship, named in honor of the former president and CEO of Ford Motor Co., is awarded annually to only ten engineering students at universities around the world.



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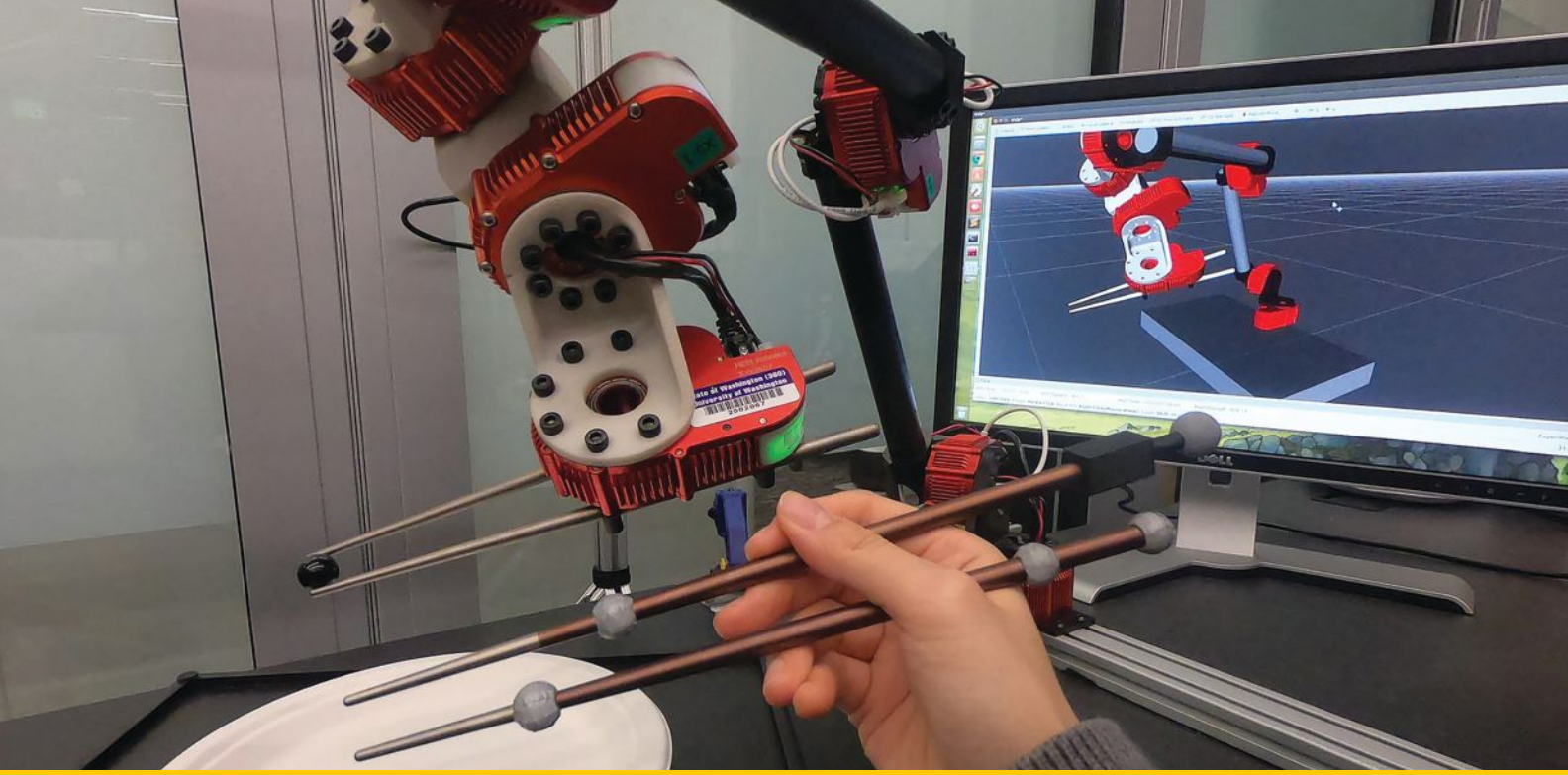
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Free distribution by mail (samples, complimentary)	707	717
Total distribution	70,809	70,441
Copies not distributed	186	190
Total	70,995	70,631

I certify that the statements made above are correct and complete.

—Curtis D. Gomulinski, Executive Director



Plug-and-Play Robots: Closer Than You Think

BY ALAN S. BROWN

Vendors are developing components, operating systems, and software that make it easier to modify or build robots. Are you ready for robots everywhere?

Is the market for robots about to explode the way personal computers did in the 1980s?

We may not see robots (other than Roombas) in every household for years to come, but applications of autonomous robots and cobots (robot arms built to work around people) are surging. Suddenly, robots are checking supermarket inventory, cleaning airport floors, disinfecting hospital rooms, and checking petrochemical storage tanks and pipes for corrosion.

The numbers are sometimes surprising. Amazon warehouses alone use more than 200,000 autonomous robots. Brain Corp. claims more than 14,000 cleaning robots use its robotic operating system. In factories, thousands of cobots do jobs ranging from machine tending and driving screws to inspection and pick-and-pack, while autonomous tugs shuttle parts between workstations.

These are not your father's (or mother's) industrial robots. Unlike the mighty but dumb goliaths that weld autobodies, today's robots are smarter. Autonomous vehicles use artificial intelligence to map their location, identify people, and avoid obstacles. Even remotely controlled robots, like drones and maintenance crawlers, leverage AI to make it easier for technicians to control them. AI makes them faster, safer, more economical, and more flexible to deploy than other mobile solutions.

While cobots are essentially smaller and slower versions of their industrial cousins, add-on products make them smart enough to grab workpieces jumbled in a bin and place them in a machine. That task takes seconds, compared to minutes several years ago.

Once, complex functions like autonomy or grabbing unsorted objects would have taken a research team years to develop. Today, small companies with just a handful of employees can

build or modify robots to do complex tasks—thanks to the same two factors that drove the rapid growth of PCs in the 1980s.

The first was the rise of killer apps, such as spreadsheets, word processing, presentations, and gaming. They gave everyone a reason to buy a computer.

The second was the growth of standardized components. When IBM released its PC in 1981, it outsourced components from Intel, Microsoft, and others. Once the industry standardized on the IBM AT circuit board communications bus, anyone could enter the market by building a PC from those same standardized plug-and-play components. Hundreds and hundreds of companies did just that.

We are getting close to that point in the robot market now. Pioneers have proven that robots make economic sense and others have followed. Instead of a killer app, there are lots of useful apps.

A research robot at University of Washington's Personal Robotics Lab uses HEBI's platform to teach a robot to use chopsticks.

Meanwhile, an ecosystem of suppliers has emerged to provide everything from cameras, sensors, and arms to autonomy systems, mapping and vision software, and operating systems. Today, this robot ecosystem is sprawling and messy. Sometimes it is more plug-and-pray than plug-and-play. Yet it is already making integration and customization easier for robot developers and users alike.

UP AND RUNNING

This all comes together in UR+, an online marketplace for plug-and-play add-ons created by Universal Robots, the world's first and now largest cobot maker. UR+ resembles the Apple Store, but for robot components, software, and application kits. Its products range from vision systems and grippers to kits that enable robots to perform specific tasks.

Universal's goal is to provide plug-and-play systems. To do that, it shares its mechanical, electrical, and software specifications with developers so they can build compatible components.

"Take a simple gripper," Joe Campbell, Universal's senior manager of application development, said. "If you mount it on the robot faceplate, there's a single cable that goes from the gripper to the robot. Download the software to our teach pendant and we know the gripper's make, model, and operating sequences. It maps all the way up into our software. There is no custom programming. This is true not just for grippers, but for vision systems, tool changers, force sensors, flexible feeders, and other end-effectors. If you develop to those standards, you wind up with a truly plug-and-play gripper," he said.

Other robot arm vendors, such as Kuka and Fanuc, have set up similar marketplaces and encouraged industry vendors to develop components and software

for their robots. Denmark's OnRobot, is trying to get a foot in the door of all these markets with its grippers, cameras, tool changers, and other add-ons.

To connect with robots from different vendors, OnRobot developed its "compute box." Kristian Hulgard, OnRobot's general manager for the Americas, likens it to "a virtual Swiss Army knife for communications."

"It's a controller that translates our product language into the robot's language," he said. "If you know how to program your robot, you already know how to program all our tools and sensors because it's all done in the robot's software. You just call up our subroutines."

software that enables users to finish contoured surfaces without complex programming.

"The old way of doing that took many hours or even days of programming," Campbell said. "Robotiq's software lets you program a complex contour in maybe ten minutes to half an hour."

Universal's impressive ActiNav application enables cobots to quickly pull unsorted parts from a bin and pack, place, or inspect them. The kit includes a 3D vision sensor, an autonomous motion controller, an alignment marker, and all the control software, cables, screws, and brackets needed to get going.

HEBI'S kits make it easy for researchers to build robots using ROS or other interfaces. According to ABI, ROS will be on 55 percent of all robots sold in 2024.

To switch between OnRobot's tools, users click a button, remove the tool, and snap in a new end-effector. This makes it far easier to redeploy robots and use them as the general-purpose tools they were meant to be.

Hulgard argues that moving a robotic arm to the correct position is fairly easy. His customers are more concerned with how to grip, process, sand, finish, and assemble parts. These tool-specific operations are often complex, and where the robot's true intelligence lies.

In addition to plug-and-play components, UR+ also offers application kits. They include the hardware and software needed for a cobot to perform specific tasks, like welding, sealing, nut driving, and picking. They are applications-in-a-box.

One example is a sanding kit from Canadian firm Robotiq. It includes an orbital head, vacuum system, and

Users train the cobot with a six-step wizard, marking off safe spaces and noting the location of the bin. They scan the end-effector holding the part, and the ActiNav app uses the image to capture the relationship between the end-effector and part. Then, the cobot goes to work. ActiNav reduces the time needed to set up a bin picking—a task most small companies with robots could never even contemplate before—to as little as two hours.

VISION

Many of the same products sold in robot marketplaces help simplify building robots from scratch. Vendors make this easier than ever by bundling hardware with software to provide integrated solutions.

One example is the 3D stereoscopic camera system developed by Germany's Roboception. Its software calculates 3D images by measuring minute differ-

ences in the maps and images taken by its two cameras, CEO Michael Suppa explained. Its software then calculates where a cobot can grasp randomly oriented parts, something that often requires extensive cobot training first.

According to Suppa, the process is breathtakingly fast. “In most cases, we can identify an object in less than one second, pick 1,000 parts per hour, and place 200 to 300 parts per hour” Suppa said.

Roboception also provides simultaneous location and mapping, or SLAM software. It lets autonomous robots use its stereoscopic images to build a map of an unknown environment while locating their position on the map. Combined with a built-in inertial measurement unit (which combines a gyroscope and accelerometer) to double-check the map, the system lets mobile robots see their world—and their location within it—in three dimensions.

Many vendors want to make it easier to solve customer problems, Suppa said. “If the problem is recognizing and grasping the part, does a customer have to source the camera and gripper and integrate them himself?” he said. “Or do we have a system that has both and already solves the problem for you?”

Siera.AI, based in Austin, TX, also

offers vision capabilities, but its software grew out of its work on data analytics. It originally developed its S3 vision system to install on existing manually operated forklifts. Linked to the cloud, it analyzes warehouse traffic flows and monitors operator safety. The system helped Siera’s customers track driver attentiveness and retrain operators to take sharp turns slower, so loads did not fall off their forklifts, CEO Saurav Agarwal, *NYP ’96*, said.

The S3 platform also bolts onto human-driven warehouse forklifts and tugs to provide autonomous control. The system looks for people, obstacles, and moving objects, slowing the vehicle within 5 ft. of them and stopping it completely within 1 ft. It never loses its attention and reacts much faster than people—milliseconds rather than fractions of a second—to unexpected threats, like a forklift coming around a blind corner. This reduces the likelihood of accidental collisions that cost the average warehouse hundreds of thousands of dollars annually.

More recently, Siera launched its own driverless tug. The new T-10 is capable of towing 10,000 lbs. at speeds of up to 4.5 mph. It uses SLAM to learn and map its environment while sending updates to the cloud for analysis. Customers can build and train AI models that enable the T-10 to do things like identify color-coded drums or read a hazmat label.

Although the T-10 embeds Siera’s S3 platform, the build relies on standardized parts. These include the ROS robotic operating system for internal communications, off-the-shelf mapping and other software, lasers, high-end infrared sensors, cameras from different vendors (depending on lighting and application), and a vehicle drivetrain and controls.

What makes the robot proprietary is its ability to fuse data from different sensors when making navigation decisions and its cloud-based analytics features.



This maintenance robot from Baker Hughes inspects and cleans boiler waterwalls without requiring scaffolds or disassembly. Source: Baker Hughes

“THE OLD WAY OF DOING THAT TOOK MANY HOURS OR EVEN DAYS OF PROGRAMMING,” CAMPBELL SAID. “ROBOTIQ’S SOFTWARE LETS YOU PROGRAM A COMPLEX CONTOUR IN MAYBE TEN MINUTES TO HALF AN HOUR.”

OPERATING SYSTEM

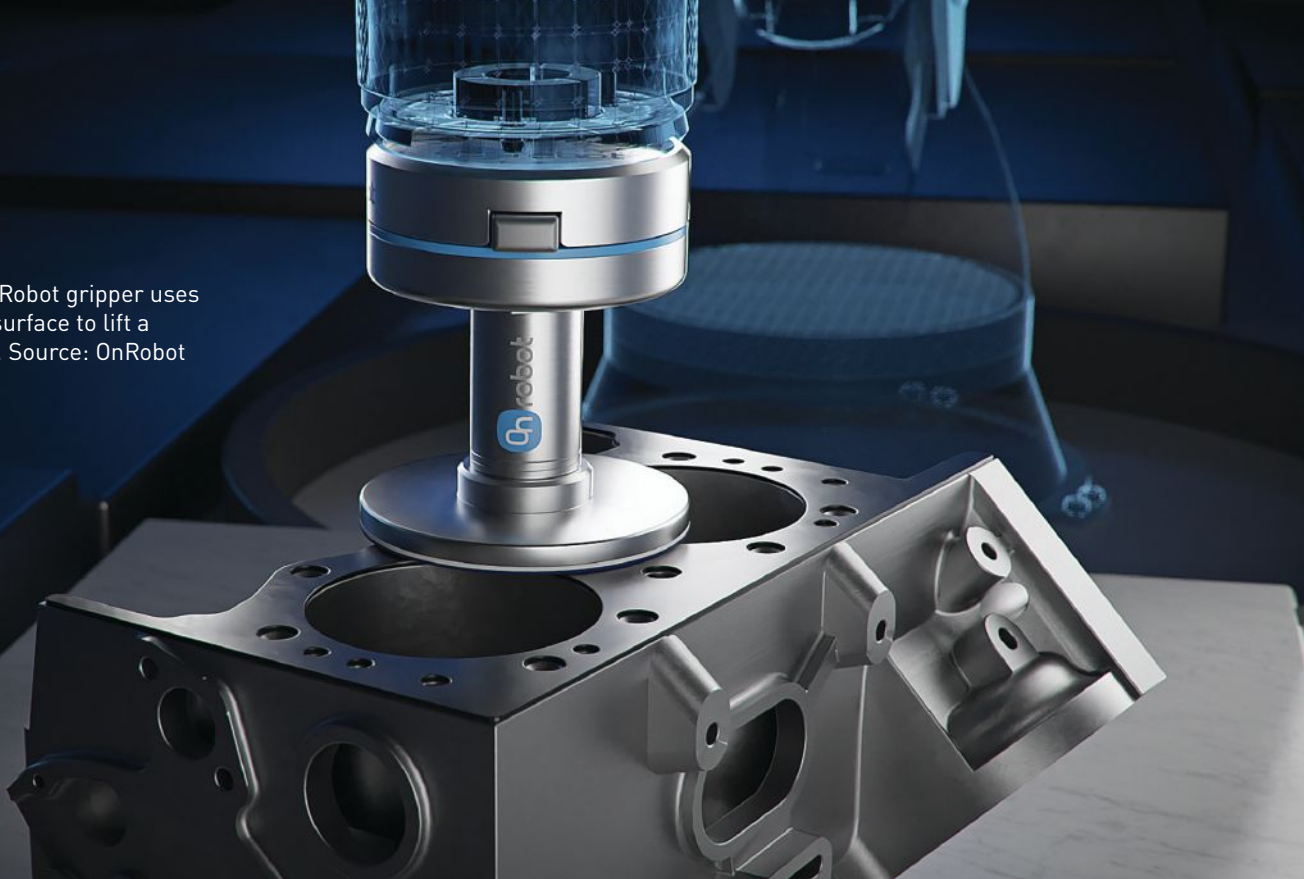
If components for robot builders are not yet plug-and-play, today’s combinations of hardware and software are certainly simpler to integrate than in the past.

Yet imagine how much easier that would be if the industry had standardized operating systems like the one Microsoft developed for IBM-compatible computers. That is exactly what Open Robotics is trying to accomplish with its open-source Robotic Operating System, or ROS.

Company CEO Brian Gerkey, *LA B ’98*, would be the first to tell you that ROS is not actually an operating system. It is more like a software development kit (SDK), with libraries of software, tools, and simulation capabilities that enable engineers to build and model functioning robots.

It also provides an abstraction layer that lets programs command cameras, arms, force sensors, or other devices without

A snap-on OnRobot gripper uses a gekko-like surface to lift a machine part. Source: OnRobot



a detailed understanding of their hardware commands. It makes it possible to switch hardware components without reprogramming—as long as vendors provide a device driver.

Agarwal likens ROS to plumbing: it makes it possible for different types of hardware and software—there can be dozens of subroutines running at once—to connect with one another.

Because ROS is open source, it does not tie users to any one proprietary system. The ROS community has thousands of active developers and hundreds of thousands of users. Over the past ten years, volunteers have created an extensive library of documentation and how-to tutorials. Their efforts are mirrored by a cottage industry of churning out ROS technical books and training classes. Most university robotics courses teach ROS, and it enjoys support from major corporations.

Yet ROS has issues that trace back to its history as a Stanford University project to get robot researchers up and running fast. While many roboticists have adapted ROS to commercial applications, weaknesses remain.

For example, the developers wrote it in Ubuntu Linux, which buffers data before processing it. This makes it too slow for some industrial and other applications. Also, ROS runs only on computers and does not support embedded systems for development and commercial production.

“We could have improved ROS around the edges, but we thought it was best to take what we have learned and build a system designed to meet safety-critical production scenarios,” Gerkey said.

Enter ROS 2. One big change is a new real-time communications system that prioritizes messages and setting delivery deadlines. This is essential for applications like industrial robots and autonomous vehicles.

Also new is Micro-ROS, a stripped-down version of ROS 2 that runs on microcontrollers where cost, size, weight, and power are constraints, such as drones and consumer robots. Gerkey also promises better documentation and the ability to run on Windows and eventually Apple Mac OS.

Given such advances, ABI research predicts ROS and ROS 2 will be on nearly 55 percent of the 915,000 commercial robots shipped in 2024.

BRAIN

While ROS has an enormous following, it is not the only OS in town. Several companies are developing operating systems of their own and Blackberry and Qualcomm both offer a stripped-down, chip-based OS. Start-ups A&K Robotics and Qobotix are also developing operating systems.

The leading alternative to ROS is arguably BrainOS from Brain Corp. It comes closer to a true commercial OS for autonomous wheeled systems, and features navigation, cloud-based mapping, sensor integration, and speed control. More than 14,000 mobile robots use BrainOS for floor cleaning, delivery tugs, and store shelf inventory management.

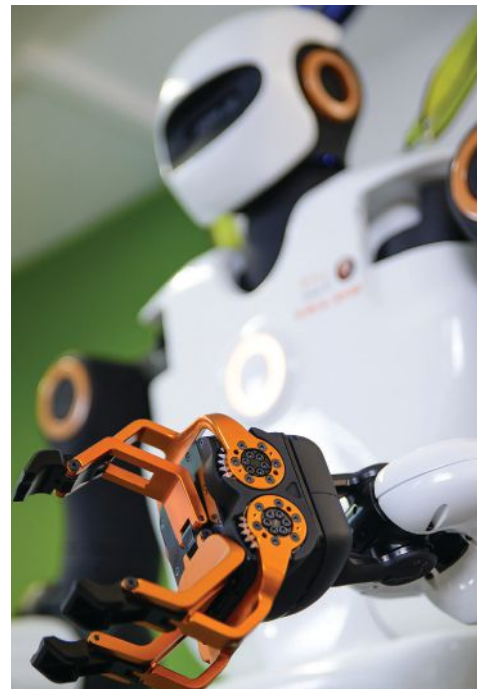
Tennant, a 100-year-old maker of floor care equipment, partnered with Brain to develop robotic floor scrubbers four years ago, while BrainOS was still under development.



A Universal Robot cobot arm uses an ActiNav kit to pick unsorted parts from a bin. Source: Universal Robots



OnRobot has developed robot end-effectors, such as this sander, that are easy to swap and work with a variety of robot arms. Source: OnRobot



A Talos humanoid robot from PAL Robotics based on the open-source Robot Operating System (ROS). Source: PAL Robotics

Mechanical floor scrubbers are complex. They need to regulate several discrete functions, such as water pressure, brush speed, downward pressure, and squeegeeing and vacuuming excess dirty water.

“Floors have a lot of variation,” said Tennant vice president of engineering Barb Balinski. “Getting the floors to shine and reflect the way people expect, no matter if you’re going straight or turning a corner, that’s difficult to do.”

It took Brain and Tennant three years to launch its first robotic scrubber, the T7, in 2018, Balinski said. They spent much of that time fine tuning the system to ensure the robot delivered the same performance as a manual system. Even though it was a learning experience, they still needed a year to design Tennant’s autonomous T380AMR, which launched in 2020.

While most OS developers focus on autonomous robots, Qobotix is creating an operating system for cobot arms, said CEO Egor Korneev. He argues that robotic arms—and eventually end-effectors and tools—will become

commodities. What will count is the software that drives them.

His goal is to emulate Google’s Android operating system: Code an OS that any robotic arm maker can use and create an app store to empower the robot to perform certain tasks. Korneev’s team has already begun populating the store with apps for variable picking from bins or belts, visual inspection, and packaging.

Not everyone wants a full-blown robot, said Dave Rollinson, a co-founder of HEBI Robotics. HEBI grew out of snake robot research at Carnegie-Mellon University. After struggling to find a market, it morphed into a supplier of compliant motion control actuators and eventually robot kits for researchers. The kits support ROS, and also MathWorks’ MATLAB and Python programming language for people who value accessibility over functionality.

“That came out of the lab,” Rollinson said. “Using MATLAB really opened up who could contribute to snake robot research. A lot of ideas about how to make things wiggle came from mechan-

ical engineers and even art majors, who know how to think about things spatially in ways most others cannot. They’re not going to sit down and start writing in C++. If they could express those wiggles as a sine curve or whatever in MATLAB, there’s not a lot else they had to do to test an idea.”

ROBOT RUSH

Robotic hardware, software, and operating systems are getting easier to use and integrate. Yet controlling a robot—calculating kinematics, fusing sensor data, and making navigation decisions—is far more complex than building a personal computer. It takes a lot of integration engineering.

Roboception, Siera, and other component vendors may provide hardware-software solutions, but they work closely with customers to implement them. Even with BrainOS, it took a year to get Tennant’s second cleaning robot out the door. Open Robotics funds its ROS work by consulting with firms building robots.

Tennant's T380 autonomous scrubber runs on the BrainOS operating system. Brain Corp. says 14,000 autonomous devices use its OS. Source: Tennant



Lee Baldwin can attest to the hard work. He is segment manager for core autonomy of the Autonomy and Positioning Division of Hexagon, a Swedish firm that parlayed its expertise in global navigation satellite systems (GNSS) into control systems for autonomous cars, mining equipment, and tractors.

Hexagon wants to sell kits to make tractors autonomous, so Baldwin built a demonstrator. He started with a farm tractor whose electronic controls ran over a conventional CANbus communications network. Using a network sniffer, his team sussed out how the tractor's controls worked. From this information, they created a set of ROS subroutines to run the tractor using CANbus. Through the ROS abstraction layer, they added GNSS, cameras, and laser distance sensors. ROS also supported the autonomy level.

Safety was a major concern. Not only did the tractor have to recognize obstacles like rocks, ponds, streams, and high-tension towers, but it also needed to avoid partially obscured humans, cows, and other animals moving through a field.

This involved training the system's AI by throwing tens of thousands of images of humans and other hazards at it. Then they tested it on different images and tweaked the algorithms to improve performance. Several companies are also developing virtual reality software to generate test cases, and these are likely to become part of the robot infrastructure one day. Even so, testing takes time because no one wants to unleash smart robots unless they are safe, Baldwin said.

Ultimately, Hexagon wants to develop driverless systems for tractor manufacturers who—like cleaning companies, welding suppliers, automakers, and others—want to provide self-operating versions of existing products.

Add to that the number of entirely new robots in everything from plant maintenance and warehouse operations to supermarket inventory—and demand for robots is sure to grow.

It will only get easier for users and developers to find the tools and components they need to meet that demand. For robot users, plug-and-play tools and solutions are already emerging for cobots and industrial robots. Most are now based on proprietary systems, but vendors are making it even easier to switch between different brands of robots.

For robot builders, the story is more complex. It still takes lots of engineering time and safety testing to launch a new robot. Yet more and more vendors are combining hardware and software

to simplify integration. ROS 2 may eventually become the industry's go-to operating system, or perhaps systems like BrainOS will retain important niches. Eventually, engineers will write industry codes that make it even easier to plug into these systems.

Robots may not be ready to explode the way computers did in the 1980s, but they have made major steps towards increased ease of use. If demand keeps growing, true plug-and-play robots cannot be far behind.

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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, and a former senior editor of ASME's *Mechanical Engineering* magazine, and contrib-

utes to a wide range of publications. He graduated New College at Hofstra University *magna cum laude* in 1974 and can be reached at insight01@verizon.net



THE ANNUAL REPORT OF THE PRESIDENT

WHAT A YEAR IT HAS BEEN!

Founded in 1885, this is the 135th year of Tau Beta Pi. What an extraordinary year it has been—and it is not over yet. When I began my term as President on January 1, I envisioned a calm year of steady achievements within the Executive Council (EC). That seems a quaint notion now.

The state of the organization is good, surprisingly so, given the circumstances.

- There are 250 active collegiate chapters
- There are 46 active alumni chapters
- Two new collegiate chapters were installed: Arkansas Beta at the University of Arkansas, Little Rock and Texas Xi at the University of Texas at Dallas
- One new alumni chapter, Albuquerque, was installed
- Two inactive alumni chapters, Mid-South and El Paso, were reactivated
- Three petitions for new chapters have been received that require inspections in the coming year
- One school, Georgia Southern University, was inspected and its petition is being considered at the Unvention
- One member was expelled, posthumously

As the COVID-19 pandemic unfolded, the EC monitored the developments across campuses nationwide. The EC did not overreact, nor underreact. In March, we reluctantly directed the remaining District Conferences to pivot to online events, postpone until fall, or cancel altogether. All Engineering Futures Sessions were cancelled. All Tau Beta Pi-sponsored travel was suspended. The EC deliberated carefully and felt these actions were warranted and timely. We did receive criticism from a number of members regarding these decisions. Subsequent developments proved out.

Given the restrictions on in-person meetings on most campuses, the Initiation Ceremony had to pivot to an online event. Ed D'Avignon, Director of Rituals, and many others worked hard to develop and per-

fect an online ceremony that embraced the necessity of change while preserving the tradition. It has been used by 166 chapters resulting in 2,308 new members.

The programmatic successes of the year were focused primarily in two areas, Governance and Finance. Many of the policies that were devolved from the Constitution and Bylaws revision in 2017 remained to be issued for review and use. Headquarters, in cooperation with the Executive Council, developed a process to manage the handling of those many documents. The process engaged a broad audience, including the full EC, Headquarters leadership staff, Student Advisory Board, Program Directors, and others, when appropriate. The Governance Committee and Headquarters staff conducted a diligent effort moving the policies through the process and delivering them to the full EC for adoption. Eighteen of the nineteen constitutionally obligated policies were completed. The remaining policy, the Trust Investment policy, is pending review by the new, expanded Trust Advisory Committee. An additional fifty-nine policies were processed and adopted, further bolstering the policy catalog in several areas.

Numerous financial changes were achieved in 2020. The Trust Advisory Committee reforms begun in October 2019 were completed in 2020. The committee now has five members vs. the previous three. One committee member rolled off and three new members were recruited and appointed. Members serve three year terms and are limited to three consecutive terms. These new members and dynamic turnover of membership ensure diverse perspectives and broad financial business awareness.

The Executive Director filled an open position, Director of Development; Sherry Jennings-King, Major Gifts Officer, agreed to serve in this expanded role. This achieves a synergy between the two arms of fundraising, major gifts, and annual giving. This is a crucial development.

Additionally, the EC authorized the Trust Advisory Committee to identify an active trustee to assist in the management of the Tau Beta Pi Trust. This effort will continue in the coming year.

For many years, Tau Beta Pi operated at a deficit, an artifact of a complex funding profile with many funds restricted for specific use and not available for general operations. The trust spending guide was 5%, averaged over four years. However, the 5% guide was routinely exceeded. The restricted vs. non-restricted funding stream resulted in the deficit being made up from the unrestricted funds, artificially creating an even larger deficit for the smaller unrestricted pool. The majority of the 5% guide was routinely devoted to fellowships and scholarships; thus, underfunding other deserving programs.

In 2020, the Executive Council authorized the phased reduction of the spending guide to 4.5%, enacted over a five year period. Moreover, the period over which the average is calculated was increased to seven years vs. the current four years. Over time, these two reforms will stabilize, and ultimately improve, the organization's finances to a healthy, financially conservative position.

The tangle of restricted and non-restricted funds was revisited. It was discovered that some funds that were considered restricted were not or had been so designated by the EC of that time and the restriction could now be reconsidered. As a result, over five million dollars can potentially be released from the restricted designation.

Funding of fellowships and scholarships will be reevaluated to provide effective funding of those important programs but to also devote necessary funds to other valuable and productive activities, e.g. Engineering Futures, the District Program, and Convention.

I am compelled to remark on the societal unrest across the country, originally triggered by the death of George Floyd while being brutalized by police during an arrest, but subsequently morphing into widespread disruptions associated with inequalities across racial and class lines. Again, the Executive Council carefully monitored these developments. It became clear that a statement from the organization was necessary. The EC deliberated and autho-

riized a message be crafted and sent to the entire membership by email. As with the cancellations, this too generated some negative responses from some members, but the preponderance was supportive. In that statement, the Executive Council made a commitment—a commitment that has proven difficult to achieve. The EC envisioned, and pledged, to host an event offering safe space for members to share their stories and experiences. Paralleling psychotherapy techniques, the vision was to foster open discussions and allow for a catharsis and some measure of comfort from shared experiences. However, as resources were assigned to this effort, obstacles emerged. Discussions were held with several companies that specialize in large scale online events, focused on sensitive topics like race and inequality. The proposals were too ambitious, too expensive, or both.

Eventually, a resource was identified that resonated with the intent. Consequently, a change of intentions emerged. In addition to hosting an event as originally intended, an additional goal is to begin and foster a program that endures. A program that persists and becomes a thread in the fabric of the organization. Not a module or a training class, but rather an ongoing discussion leading to improved racial and social awareness. In short, the ambition will be to provide the vocabulary and awareness in which issues fraught with racial and social disparity can be openly discussed, calmly and without conflict. Based on some of the email received in response to the announcement and subsequent communications from some members, this vocabulary is sorely needed. Let us heed the words of Dr. Martin Luther King Jr. and strive for a community where all are judged by the character revealed in their actions, rather than the color of their skin, their religion, sexual orientation, or any other societal demarcation. Please join me in future activities of this program as it emerges and matures in the coming year.

Although no one can assure it, I hope to join you in Knoxville, Tennessee, for the 2021 annual Convention.

C. CRAIG SMITH, P.E., is a Spallation Neutron Source team leader at ORNL and earned his bachelor's degree in mechanical engineering from the University of Memphis. He joined the Executive Council in 2018, served as 2019 Vice President, and President in 2020. He previously served in leadership roles with the Great Smoky Mountain Alumni Chapter [TN].

Newly Elected Executive Councillors

The 2020 Unvention delegates elected three new members to the Executive Council from a field of four candidates to fill the seats of three members whose terms expire on December 31, 2020: Scott E. Fable, *CA T '96*; Stephan L. King-Monroe, *MI E '08*; and C. Craig Smith, *TN E '80*. The new Councillors will serve the 2021-23 term and join six members elected in 2017, 2018, and 2019. The Executive Council comprises nine Tau Beta Pi alumni who serve staggered terms of three years.

Members of the 2021 Executive Council include: Rachel K. Alexander, EIT, *California Upsilon '15*; MingDe Lin, Ph.D., *New York Gamma '01*, **who was elected**; Scott E. Fable, *California Tau '96*, **who was reelected**; George J. Morales, Ph.D., *Florida Epsilon '06*; Michael L. Peterson, *Iowa Alpha '89*; Russ W. Pierce, *Washington Alpha '70*; Joan M. Sciacca, *California Mu '87*, **who was elected**; George Youssef, *New Jersey Gamma '01*; and Menna-toallah M. Youssef, Ph.D., *Virginia Gamma '04*.

Our thanks to the fourth candidate, Thomas A. Pinkham, *Massachusetts Epsilon '83*, who was not elected.

The new Executive Council have met and elected officers for the upcoming year from among the Council members and will serve for a period of one year. After serving as vice president for one year, the vice president automatically becomes president the following year. The officers for 2021 include: President George J. Morales, Vice President Menna-toallah M. Youssef, Secretary Rachel K. Alexander, and Treasurer George Youssef. Executive Director Curtis D. Gomulinski serves as a non-voting member of the Council.



JOAN M. SCIACCA
CALIFORNIA MU '87

Joan is a graduate of California Polytechnic State University, with a B.S. in aeronautical engineering.

Joan retired after a diverse career —over 30 years with Honeywell International where

she held leadership positions in engineering projects, aircraft engine test, a joint venture with General Electric, a \$1B divestiture transition, six sigma and lean problem solving, global strategic sourcing and internal consulting, and human resources talent management.

During her senior collegiate year, she served as the California Mu president, participated in design meetings for the Engineering Futures Program in the late 1980s, and facilitated sessions from 1987 through 1998.

She is the founder of Finestra Consulting, LLC, where she continues her passion for process excellence and coaching/mentoring early career professionals in leadership. She has been a volunteer mentor with Menttium since 2008, and as a member of the EC, looks forward to bringing to TBII her experience and enthusiasm for shaping future engineering leaders.



SCOTT E. FABLE
CALIFORNIA TAU '96

Scott earned a B.S. in mechanical engineering from University of CA, Irvine, and an M.S.M.E. at UC Berkeley.

As a manager at Pacific Gas and Electric Company, Scott leads quality control and stakeholder

communications for PG&E's energy efficiency incentive programs.

Scott has volunteered continuously with TBII for over 20 years, as a District 15 Director, a Chapter Advisor, and a member of the Executive Council.

In these roles, Scott consistently applied best practices to improve District 15 chapters. As a member of the EC, Scott aims to work with HQ to build an Annual Giving Plan that doubles donations by 2030, increase alumni involvement in the of TBII-wide programs/initiatives by 2022, and revamp the website and online resources to support chapters' virtual/live activities, recruitment, events, and meetings.



MINGDE LIN Ph.D.
NEW YORK GAMMA '01

Ming earned his B.S. from Rensselaer Polytechnic Institute and Ph.D. from Duke University, both in biomedical engineering.

The Director of Clinical Research North America for Visage Imaging, Inc., he is stationed at Yale-New

Haven Hospital (adjunct assistant professor, Department of Radiology and Biomedical Imaging). Here he oversees research collaborations (especially around Artificial Intelligence) with high profile academic hospitals in North America to develop new solutions for diagnostic image analysis that improve clinical and operational outcomes while reducing the cost of care.

Dr. Lin has been a CT Alpha Advisor since 2016. He reactivated the Central Connecticut Alumni Chapter in 2017, and has been serving, first as president (2017-19) and then as director (2020-present), working with the officers in longer term strategic goals to bring a closer connection with the collegiate chapters.

As an Councillor, he plans to instill a greater connection between alumni and collegiate Tau Bates, to explore the role TBII can play in equality and inclusiveness and to encourage new membership.

The STORY BEHIND The PHOTO



Announcing the Winter 2021 “Caption This Photo” Contest!

This photo from the Winter 1981 issue of *The Bent* shows the incredible courage of the Convention photographer (*name unknown*) as he sets up for the group photo.

How to Enter: Send us your cleverest caption(s) for this photo from *The Bent* 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!**

Email your entry to captions@tbp.org or mail to *The Bent* of Tau Beta Pi, Caption Contest, P.O. Box 2697, Knoxville, TN 37901-2697.

DEADLINE: MONDAY, FEBRUARY 1, 2021.

The WINNERS of the Fall 2020 “Caption This Photo” Contest:

This contest inspired 48 enlightened entries from 39 members. Thank you! View all entries, including captions and results from recent contests, at tbp.org/pubs/captionContest.cfm.

1ST PLACE:

“This coffee is strong enough to grow hair on your face.”

Darrell J. Scott, *NC D '82*, won by a mere point with this entry in an exceptionally close race.

2ND PLACE:

“Wait till they hear back in Crabtree how I cleverly disguised this quarter keg of beer as a coffee urn — THAT’s Engineering!!!”

Christopher F. Sullivan, *MA Z '81*. He and John Mardirosian lived in the same dorm at UMass, Amherst.

3RD PLACE (3-way tie):

“After the *Beauty and the Beast* play closed, Ms. Pott’s husband had to “urn” a living at the Tulsa Convention as a coffee pot.”

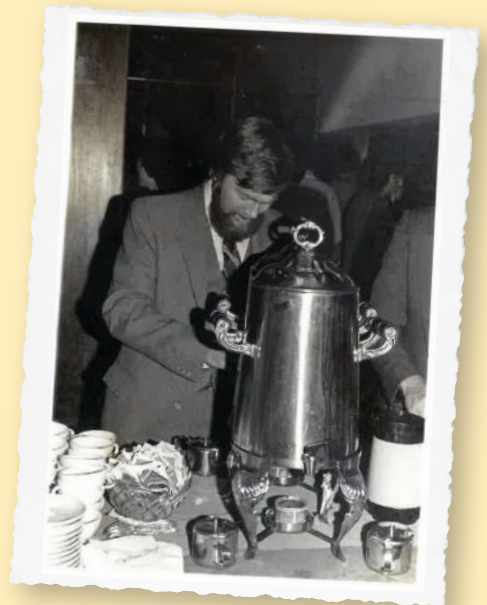
Paul L. Eckley, P.E., *NVA '75*

“The exact moment that John “Keurig” Mardirosian was hit with inspiration for a quick single cup coffee maker.”

Daniel L. Stickler, *KY B '76*

“Here’s to all the conference attendees who remain unharmed because I have coffee and a sense of humor.”

Steven S. Golemme, *IL A '20*



▲ The Fall 2020 caption contest image, above, was taken at the 1980 Convention in Tulsa, OK. **John Mardirosian, MA Z '81**, grabs some coffee during a well-earned break. If you have ever been to Convention, you might relate.



2020 TAU BETA PI UNVENTION

ASSOCIATION'S FIRST VIRTUAL EVENT

Unvention logo created by Krishna M. Sadasivam, *TN Alpha '95*

SUMMARY OF ACTIVITIES AND BUSINESS FROM THE 2020 UNVENTION

In June, the Executive Council met and decided to cancel the in-person component of the 2020 Convention due to public health concerns. In accord with the TBPI Constitution, the chapters were requested to provide their consent to the postponement of the in-person event for one year which they did unanimously. This marks the first time since World War II the Convention was not held.

In place of the typical fall event, a virtual series of activities and meetings dubbed the "Unvention" was held over a period of four weeks starting with a resume workshop on Saturday, October 10, and concluding with an Executive Council Meeting and a Meet & Greet on Saturday, November 7. Arrangements for the Unvention were spearheaded by Executive Councillor **Menna M. Youssef**,

Ph.D., *VA G '04*, with the assistance of Director of Alumni Affairs **Tricia E. Gomulinski**, *SD A '98*; Executive Councillor **Rachel K. Alexander**, E.I.T., *CAU '15*; and dozens of other hard-working Tau Beta Pi volunteers. Over 1,200 members and guests registered to attend the Unvention through an app called Whova. Attendees gathered, communicated, and interacted with one another through Whova, Zoom, and the social media platform Discord. As much as possible, the Unvention incorporated familiar aspects of the annual Convention such as committee work, business meetings, district meetings, Professional Development Sessions, Interactive Chapter Exchanges (ICE), Recruiting Fair, and networking opportunities. Major actions of the Unvention are reported in this article.

Tennessee state law, where Tau Beta Pi is incorporated, does not allow for non-profits to conduct annual meetings virtually. However, state law does permit a non-profit's Board of Directors to meet virtually, and an organization is permitted to conduct any business it would normally conduct at an annual meeting by ballot. Given these restrictions, a series of Executive Council Meetings were organized to present reports of Association Officers and Officials, facilitate committee reports, and to provide a framework to conduct balloting for Executive Council elections. In addition, actions recommended by the committees were submitted to voting delegates for approval by ballot in November.

C. Craig Smith, 2020 TBPI President, presented the President's Report for the Executive Council during the First

Executive Council Meeting on Saturday, October 17. See page 12 for the full report.

Jenna R. Jambeck, Ph.D., FLA '96, was this year's keynote speaker. She is a professor in the college of engineering at the University of Georgia and a National Geographic Fellow.

Unvention business was handled by five standing and ad hoc committees with collegiate and alumni chapter voting delegates serving on one of the following committees: Awards, Financial Affairs, Petitions, Program Review, and Rituals.

The Virtual Recruiting Fair was held on October 22-23, supported by the CareerFair Plus app. Over 500 candidates met individually by video chat with 124 recruiters representing 37 graduate engineering programs and corporations. The list of recruiters is presented to the right.

NEW CHAPTER RECOMMENDED

In response to a petition, a committee met with representatives of the Tau Beta Gamma local honor society at Georgia Southern University. The committee recommended that the new chapter be chartered which will be considered on the ballot to voting delegates to the Unvention. If approved, this will raise the number of active collegiate chapters to 251. The petitioning society would become the Georgia Gamma Chapter.

Three members of the society presented to the Unvention a brief history of the university and details of the chapter's activities and efforts. The presenters were Nicholas Jenkins (president), Austin Sumner (treasurer), and Jonathan Link (vice president). Chief advisor David Calamas, Ph.D., and local society member Lindsey Davis also attended the Unvention activities.

FINANCIAL AFFAIRS

The Financial Affairs Committee had a lighter than usual docket of responsibilities with the challenges of meeting virtually. The committee recommended that reimbursable expenses for the 2021 Convention remain the same as those planned for the 2020 Convention except for en-route meals which were set at a

flat amount per day of travel instead of a reimbursable amount per meal. This will also be placed on the ballot for voting delegates to approve.

A review of the 2019-20 auditor's report and Executive Director's report and chapters owing more than \$500 will be considered by the 2021 committee.

PROGRAM REVIEW

The ad hoc Program Review Committee recommended that the computer science program at North Carolina Alpha be accepted for membership in Tau Beta Pi. Unvention voting delegates will formally vote on this recommendation as part of the balloting process.

RITUALS

The Rituals Committee reviewed the virtual initiation ceremony developed in response to the COVID-19 pandemic to allow chapters to continue to initiate new members outside of the normal initiation ceremony. The committee recommended minor wording changes to the instructions and supporting materials and that the ceremony be formally approved on the ballot by Unvention voting delegates.

AWARDS

The Awards Committee reviewed the 2019-20 records of the chapter activities to select recipients of the R.C. Matthews Outstanding Chapter Award, the R.H. Nagel Most Improved Chapter Award, and the J.D. Froula Most Improved Chapter Award.

Announcement of these awards and the honorees of the Chapter Performance Scholarship Program are reported in detail on pages 18-21.

FUTURE CONVENTION

There was no Convention Site Committee, but the hope is to return to an in-person Convention in 2021 with Knoxville, Tennessee, as the host city. The 2022 Convention is scheduled to be held in Rapid City, South Dakota. Unvention voting delegates will be asked to approve Atlanta, Georgia, as the host of the 2023 event since the 2020 Convention could not be hosted there in person this year.

A SPECIAL THANKS TO OUR RECRUITERS

We gratefully acknowledge the 2020 Virtual Recruiting Fair participants:

BAE Systems

Cognizant

DeNOVO Solutions

Epic

FM Global

The George Washington University School of Engineering & Applied Science

Iowa State University

Intelsat

Keck Graduate Institute

Kettering University

Lehigh University

MIT Leaders for Global Operations

Michigan State University

Michigan Technological University

New Jersey Institute of Technology

New Mexico Tech University

New York University

Tandon School of Engineering

North Carolina State University Engineering

Northeastern University

Northwestern University SEAS

Parsons

Penn State SEDTAPP

University of Pittsburgh Swanson SOE

Purdue University COE

Raytheon Technologies

Rensselaer Polytechnic Institute

Sandia National Laboratories

Stevens Institute of Technology

Tufts University School of Engineering

University of Michigan College of Engineering

University of Pennsylvania

University of Rochester

University of Southern California Viterbi School of Engineering

University of Virginia Engineering

Vanderbilt University

Virginia Commonwealth University

Worcester Polytechnic Institute

Continued on page 32.

Chapter Awards



Alabama Epsilon members after a pre-COVID initiation.

OUTSTANDING CHAPTER AWARD:

Alabama Epsilon

The Alabama Epsilon Chapter at the University of South Alabama was selected as the recipient of the 2019-20 R.C. Matthews Outstanding Chapter Award. This is the second year in a row, and fourth overall, the chapter has received this prestigious recognition. Here's what the chapter leaders had to say:

"(We) are honored to receive the R.C. Matthews Outstanding Chapter Award. We are committed to promoting the values of Tau Beta Pi through meaningful, innovative projects and involvement across all levels of the chapter. From the time they become candidates, our members are highly active in project participation. This, along with excellent faculty advising, ensures an effective transition each year to new leaders who continue to find new ways for our chapter to stay involved in our campus and local communities."

ALABAMA EPSILON CHAPTER LEADERS (2019-20):

- President – **Nicholas B. Naylor**
- Vice President – **Alysa San Filippo**
- Treasurer – **Jacob H. Herring**
- Recording Secretary – **Jordan M. Harbison**
- Corresponding Secretary – **Joanna D. Caldwell**

ALABAMA EPSILON CHAPTER ADVISORS (2019-20):

- Sally J. Steadman, Ph.D., WYA '69** (Chief)
- Christy W. West, Ph.D., AL B '96**
- Georgios Y. Lazarou, NY H '92**
- Joseph D. Richardson, Ph.D., MS B '88**
- Eric J. Steward, Ph.D., AL E '03**

HONORABLE MENTION for the Outstanding Chapter Award went to **Iowa Alpha** (Iowa State University).



Chapter Excellence Awards 2019-20

Executive Director Curt Gomulinski recognized these chapters to mark excellence in their performance in seven areas. Chapters with distinction, scoring 100 percent or more, are in bold:

- | | |
|------------------------------|-------------------------|
| Alabama Epsilon | Missouri Gamma |
| Alaska Alpha | Missouri Epsilon |
| Arizona Alpha | New Jersey Alpha |
| California Gamma | New Mexico Alpha |
| California Zeta | New Mexico Beta |
| California Alpha Beta | New Mexico Gamma |
| California Alpha Delta | New York Delta |
| Colorado Epsilon | New York Omicron |
| Connecticut Alpha | Ohio Delta |
| DC Alpha | Ohio Iota |
| Florida Alpha | Ohio Kappa |
| Indiana Delta | Oklahoma Gamma |
| Iowa Alpha | South Dakota Alpha |
| Louisiana Beta | Tennessee Alpha |
| Michigan Beta | Texas Beta |
| Michigan Gamma | Texas Delta |
| Michigan Epsilon | Texas Eta |
| Michigan Theta | Wyoming Alpha |
| Michigan Zeta | |



Tau Beta Pi
The Engineering Honor Society

2020 Unvention



The Bent monument on the Texas Tech University campus.

MOST IMPROVED CHAPTER AWARD:

Texas Beta

The Texas Beta Chapter at Texas Tech University was selected as the recipient of the 2019-20 R.H. Nagel Most Improved Chapter Award.

“The officer corps last year worked tirelessly to showcase the benefits of giving back to our community while empowering all members and their endeavors, regardless of circumstance. We are deeply grateful to be able to continue the mission of enabling the next generation of leaders and innovators to pursue their dreams and make the world a better place. Crucial to this mission is the well-earned recognition and resources that Tau Beta Pi provides to students, even when the going gets tough.”

TEXAS BETA CHAPTER LEADERS (2019-20):

- President – **Eddy A. Mercedes**
- Vice President – **John H. White**
- Treasurer – **Hadja M.L. Binate**
- Recording Secretary – **Jasmine N. Workman**

TEXAS BETA CHAPTER ADVISORS (2019-20):

- Michael G. Giesselmann, Ph.D., P.E., TX B '81** (Chief)
- Jeffrey L. Hanson, TX B '92**
- Gordon F.B. Christopher, Ph.D., NYA '02**
- Allen D. Erickson, NM G '14**
- Ayed R. Alajmi, TX B '17**

HONORABLE MENTION for the Most Improved Chapter Award went to **New Mexico Alpha** (New Mexico State University).



Texas Kappa Chapter officers and advisors.

MOST IMPROVED MEMBERSHIP AWARD:

Texas Kappa

The Texas Kappa Chapter at Prairie View A&M University was selected as the recipient of the 2019-20 J.D. Froula Most Improved Membership Award.

“Growing our chapter’s membership is fundamental to the function and future sustainability of the organization. We are committed to not only meeting and exceeding the expectations of members, but also to improving the value our chapter provides. Our members build bridges through chapter sponsored volunteer tutoring, social events, and involvement across the COE and local community. Executive board members along with faculty play a key role in the efforts to enhance the image, visibility, and branding of Tau Beta Pi which helps to recruit individuals with distinguished scholarship and exemplary character.”

TEXAS KAPPA CHAPTER LEADERS (2019-20):

- President – **Kinza Rizwan**
- Vice President – **Yucabeth Ombura**
- Treasurer – **Christopher Gowens**
- Recording Secretary – **Elyse M. Hebert**
- Corresponding Secretary – **Caleb M. Myers**

TEXAS KAPPA CHAPTER ADVISORS (2019-20):

- Annamalai Annamalai Jr., Ph.D., TX K '93** (Chief)
- John O. Attia, Ph.D., TX E '83**

HONORABLE MENTION for the Most Improved Membership Award went to the **District of Columbia Alpha** (Howard University).

Chapter ★ Project Awards



Alabama Epsilon group showing off new TBP polo-shirt design.



Arizona Alpha members together at the UA Club Olympics.



California Gamma members pose after taking a group hike.



District of Columbia Alpha hosts a networking mixer social event.

AL E University of South Alabama
44 Projects Mentoring K-12 school teams for Best Robotics and hosted 4th annual leadership workshop.

AZ A University of Arizona
50 Projects Hosted TBPI faculty trivia night and a campus-wide 5k Pi Day event.

AR A University of Arkansas
32 Projects Hosted an informal BBQ “smoker” for eligible students and participated in cleaning of Lake Fayetteville.

CA Γ Stanford University
24 Projects Hosted CEO Dinner Series with a CEO and TBPI alumni, members & candidates and a virtual Mental Health Discussion during COVID-19.

CA E University of California, Los Angeles
33 Projects Hosted a free, drop-in tutoring program and workshops on topics including internships and resumes.

CA E San Diego State University
51 Projects Started a monthly organization get-together to connect with other engineering organizations on campus to work with them and to collaborate on problems and scheduling joint events.

CA Ψ Univ. of California, San Diego
75 Projects Continued Florence Elementary outreach program for 3rd and 4th graders with engineering projects to encourage STEM fields.

DC A Howard University
64 Projects Hosted weekly MindSET events in conjunction with the Cultural Academy for Excellence volunteerism project.

FL A University of Florida
62 Projects Volunteered at local humane society and regular road clean-up through the Adopt-a-Street Program.

IA A Iowa State University
125 Projects Hosted a Pi Mile Run fundraiser in collaboration with Engineers’ Week and K-12 STEM outreach events.

MD B University of Maryland
53 Projects Volunteered at animal shelter to walk/play with animals and hosted a Custom Bent party to show off custom-made bents.

MI Γ University of Michigan
149 Projects Hosted programs to develop members in non-technical areas, such as MLK Jr. Luncheons and North Campus Sustainability Initiative.

\$7,000 in Scholarships will be awarded to 14 chapters that received Chapter Project

Alabama Epsilon
 Arkansas Alpha
 California Epsilon

California Psi
 Florida Alpha
 Iowa Alpha

At the 2020 Unvention, **Chapter Project Awards** for outstanding performances during 2019-20 include:

MI E Wayne State University

32 Projects Partnered with SEMI Alumni Chapter to host alumni panel and hosted Knockerball social, aka bubble soccer.

MI I Univ. of Michigan-Dearborn

26 Projects Hosted Patent and Intellectual Property Talks and chapter gatherings to create eligibility letters.

MN A University of Minnesota-Twin Cities

24 Projects Participated in K-12 STEM outreach at local homeless shelter & attended a gymnastics meet as group social.

NM A New Mexico State University

15 Projects Partnered to renovate and repaint Student Veterans' NMSU housing and worked to get a permanent Bent monument on campus.

NM B University of New Mexico

32 Projects Hosted Bent Week to celebrate new Bent monument on campus with events such as Pie in the Face.

NM Γ New Mexico Inst. of Mining and Technology

25 Projects Volunteered at Science Olympiad and started a middle school volunteering program for STEM tutoring.

OH K University of Akron

35 Projects Participated in "Make a Difference Day" in Akron community and volunteered at Children's Museum.

PA Z Drexel University

12 Projects Hosted the TBII D2 Conference and established "Breakfast at the Bent" for eligible students.

TN A University of Tennessee

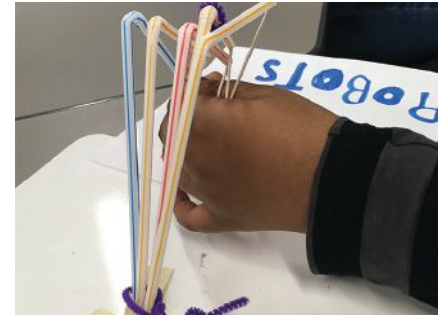
26 Projects Continued hosting Mind-SET sessions with 4th graders and volunteered at Teen Driving Roadoo.

TX A University of Texas at Austin

90 Projects Hosted Fireside events with professors and volunteered at Central Texas Food Bank.

TX B Texas Tech University

26 Projects Participated in "My Clean Lubbock" community event and volunteered with local Habitat for Humanity.



Minnesota Alpha STEM outreach projects included drawing and constructing robotic hands with straws that could move.



New Mexico Alpha's new Bent monument.



Ohio Kappa painted the "spirit rock" at the center of campus to promote chapter pride and visibility on campus.



Pennsylvania Zeta group together at a General Board meeting.

Awards for at least three consecutive years. Each chapter will receive \$500.

Maryland Beta
Michigan Gamma
Michigan Epsilon
New Mexico Beta

New Mexico Gamma
Ohio Kappa
Tennessee Alpha
Texas Alpha

BRAIN TICKLERS



Results From Summer

Perfect Scores

*Bohdan, Timothy E.	IN	Γ	'85
*Capelli, Ronald B.	MI	Γ	'73
*Couillard, J. Gregory	IL	A	'89
*Griggs Jr., James L.	OH	A	'56
*Johnson, Mark C.	IL	A	'00
Marks, Lawrence B.	NY	I	'81
Marks, Benjamin	Son of member		
*Marx, Kenneth D.	OR	A	'61
*Norris, Thomas G.	OK	A	'56
Parks, Christopher J.	NY	Γ	'82
*Seidel, Mark N.	MA	B	'83
*Slegel, Timothy J.	PA	A	'80
Spong, Robert N.	UT	A	'58
*Wells, Alan T.	RI	B	'16

Other

Alexander, Jay A.	IL	Γ	'86
Aron, Gert	IA	B	'58
*Berthold, Kristopher D.	TX	B	'04
Bertrand, Richard M.	WI	B	'73
*Bukowski, Justin D.	OH	A	'90
Dangler, Paul E.	NY	Θ	'76
*Dechman, Don A.	TX	A	'57
Dungan, Michael R.	VA	B	'92
Gerken, Jeffrey D.	OH	Δ	'76
Glaze, James B.	KS	Γ	'75
*Gulian, Franklin J.	DE	A	'83
Gulian, Joseph D.	Son of member		
*Hasek, William R.	PA	Γ	'49
Hedegard, Alan H.	IN	A	'64
*Hosford, Glen A.	OK	A	'95
Johnson, Roger W.	MN	A	'79
Jordan, R. Jeffrey	OK	Γ	'00
Lalinsky, Mark A.	MI	Γ	'77
Lamb, James A.	NY	Γ	'66
*Luetkemeier, Glenn A.	IN	A	'73
Marrone, James I.	IN	A	'61
McConnell, James C.	PA	B	'82
*McCullough, Charles R.	AL	B	'12
Mettler, Rick A.	WA	B	'81
Oliver, Christopher R.	AL	E	'08
*Panczyk, Mark M.	NJ	Γ	'08
Rand, Timothy W.	ND	B	'86
*Richards, John R.	NJ	B	'76
*Richardson, Casey L.	IN	Δ	'19
*Riedesel, Jeremy M.	OH	B	'96
Roggli, Victor L.	TX	Γ	'73
Rowland, Ralph W.	MD	B	'51
Sauer, Daniel M.	MI	B	'05
*Schmidt, V. Hugo	WA	B	'51
Seaverson, Audrey	Daughter of member		
Sigillito, Vincent G.	MD	B	'58
Skinn, Jeffrey R.	OH	Γ	'08
Spring, Gary S.	MA	Z	'82
*Strong, Michael D.	PA	A	'84
*Voellinger, Edward J.	Non-member		
Weinstein, Stephen A.	NY	Γ	'96
Zison, Stanley W.	CA	Θ	'83

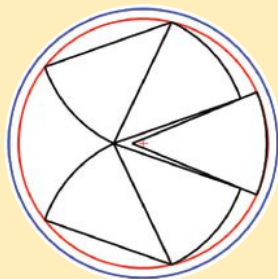
*Denotes correct bonus solution

Summer Review

Problem #4, regarding the distribution of the first decimal digit of 2^N , turned out to be the hardest regular Tickler, drawing a correct answer from less than 50% of all entries. Many respondents approximated the solution with 0.3, but the judges were looking for the more precise $\log_{10}2$.

It was a little surprising that the Bonus sheet-folding question drew exactly the same number of correct answers as #4. The judges were impressed (and occasionally confounded) by the variety of inventive ways respondents used to describe their folding sequences. Kudos to **Jeremy Riedesel, OH B '96**, for particularly good artwork.

The pizza slice configuration Double Bonus drew few responses. The problem was open-ended, as the judges were not certain of the optimal diameter values. For the five-slice configuration, **Kris Berthold, TX B '04**, improved on the judges' published answer to 27.7997 cm by withdrawing the center slice slightly and rotating the other four, as shown in the layout below. A couple other readers also reported better diameters, but diagrams were not available for verification.



Fall Answers

1: The ranking of the five people (Alf, Bert, Charlie, Duggie, and

Ernie) for the three traits is:

	1st	2nd	3rd	4th	5th
Honesty	E	D	B	A	C
Charm	B	D	E	A	C
Intelligence	D	B	C	E	A

If A is truthful, then D is truthful, but since D says A lies, this implies that A must be lying. C is the remaining liar since 4th place for Honesty cannot be truthful. So, C is 5th place for Honesty, and A is 4th.

B has higher Charm than Intelligence and higher Intelligence than Honesty. The lowest (and highest) his Honesty can be is 3rd, so he is 2nd in Intelligence and is 1st in Charm. E is 3rd for Charm, and the sum of D's places must be one less than that of B's which must be 5. This cannot be derived from 1+1+3, since D cannot be 1st in Honesty, so it must be derived from 1+2+2. This implies that D is 1st in Intelligence, 2nd in both Charm and Honesty. From here, E must be 1st in Honesty. A's Charm is higher than his Intelligence, so they are 4th and 5th, respectively. This forces C to be 5th in Charm, and given that in one test E must be lower than C, C is 3rd in Intelligence while E is 4th.

2: The lily pad is **100cm** in diameter. As the snake moves along the log, the center of mass of that grouping remains stationary. The same is true for the newt on the lily pad as it moves. If x is the distance from the center of the log to the center of mass, then $7(50-x) = 25x$ implying $x = 10.9375\text{cm}$, so the log moves away from the lily pad by $2x = 21.875\text{cm}$. If the radius of the lily pad is R , and y is the distance from the center of the lily pad to the center of mass after the newt has moved, then $.02(R-y) = 0.3y$ implying $y = 0.0625R$, so the lily pad moves away from the log by

0.0625Rcm. We then have $75\text{cm} + 21.875\text{cm} + 0.0625R = 100\text{cm}$, resulting in $R = 50\text{cm}$. Thus, the diameter is $2R = 100\text{cm}$.

3: F and S are the two swapped letters. Note that all loops require an even number of moves. F and S are the only letters that have an odd distance between their two instances. The layout is:

```

M--D--N--H
|  |  |  |
O A--L R
|  |  |  |
I--P Q--J
|  |  |  |
C S--E B
|  |  |  |
T--F--K--G

```

4: $39 \times 402 = 15678$ is the solution to $AB \times CDE = FGHIJ$ with no zeros in the five digit number. This one likely required some number crunching with the aid of a computer!

5: $256^3 + 64^4 = 32^5$ is the smallest positive solution to $a^3 + b^4 = c^5$. Assume $a^3 = b^4$, then the left-hand side needs to be multiple of 12 for the exponents, and the right-hand side needs to be multiple of 5 for the exponent and needs to be one higher than the left side. So, $2^{24} + 2^{24} = 2^{25}$ implies $256^3 + 64^4 = 32^5$.

BONUS: 20 cards (out of the 81 cards) is the maximum number of cards that can be used and still not have a set. The SET cards can be mapped into 4-dimensional lattice space with three axis points for each dimension. In that space, any three points on the same line will be a set. First, consider a one property card deck. It has $3^1 = 3$ cards. This maps to 1-dimensional space. It is obvious that one can have two cards and not have a set. For example, take cards 0 and 2 as:

```

012
* *

```

Next, consider a two property card deck. It has $3^2 = 9$ cards. This maps to 2-dimensional space.

Four cards can be taken and still not have a set. One way is:

```

012
a* *
b
c* *

```

If a 5th card is added to that, a line with three cards will be formed and it will be a set. Notice that a one property solution is a subset of the two property solution. Another way to do four cards is:

```

012
a *
b* *
c *

```

Now, it appears that adding a 5th card in a corner will not be a line. But, lines in this space loop around.

```

So,
012
a**
b* *
c *

```

has the line $a_0-c_1-b_2$, which is a set (all properties different). Next, consider a three property card deck. It has $3^3 = 27$ cards. This maps to 3-dimensional space. Nine cards can be taken and still not have a set. One way is:

```

I 012      J 012      K 012
a* *      a      a *
b          b *      b* *
c* *      c          c *

```

Notice that two property solutions are subsets of the three property solution. Adding a 10th card to either the I or K planes makes an obvious line of three (which is a set). Adding a 10th card at Ja_0 gets the line: $Ic_0-Ja_0-Kb_0$. Adding a 10th card at Jb_0 gets the line $Ia_2-Jb_0-Kc_1$. Now, finally, consider a four property card deck. It has $3^4 = 81$ cards. This maps to 4-dimensional space. Twenty cards can be taken and still not have a set. One way is:

```

I 012      J 012      K 012
a* *      a      a *
Xb        b *      b* *
c* *      c          c *

```

```

I 012      J 012      K 012
a          a      a
Yb *      b      b *
c          c          c

```

```

I 012      J 012      K 012
a* *      a      a * *
Zb        b *      b
c* *      c          c * *

```

Notice that three property solutions are subsets of the four property solutions. Adding a 21st card to any of XJ, YI, YK, or ZJ gets the same line as the three property case. Adding a 21st card to YJb1 gets the line YIb1-YJb1-YKb1. Adding a 21st card at YJa0 gets the line XJa0-YJa0-ZKa0. Adding a 21st card at YJa1 gets the line XKa1-YJa1-ZIa1. These maximum subsets that do not contain a set are called “cap sets” in the literature (Ramsey theory). Results are known for five properties (45) and six properties (113), but nothing higher—it remains an open question.

COMPUTER BONUS:

Start with a 4×4 matrix with fixed relationships between rows and columns:

```

1      2      5      10
3      6      15     30
4      8      20     40
12     24     60     120

```

Then, use a double-Latin square “Euler (Graeco-Latin) square” to rearrange to:

```

1      30     8      60
24     20     3      10
15     2      120    4
40     12     5      6

```

which is a “gnomon magic square.” The magic product is 120^2 .

New Winter Problems

1: Cryptic Multiplication

John D. Owens, CA A '95, a close friend of the columnist, recently shared this Tickler:

```

          * * *
X         * *
-----
          * * * *
* * * *
-----
* * * * *

```

BTs continue on page 33.

THIS IS THE EIGHTH IN A SERIES OF ARTICLES THAT EXPLORE THE HISTORY OF SCIENCE AND ENGINEERING.

One way in which this history has been preserved is in the names of the scientific units that we commonly use. Those units will serve as starting points for these articles as we explore “Why do we call it a...?”



WHY DO WE CALL IT AN...

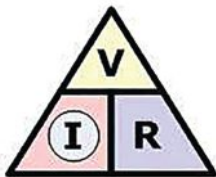
OHM

By: **Lyle D. Feisel, Ph.D., P.E. (Ret.), Iowa Alpha '61**

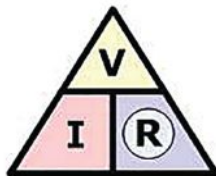
OHMS LAW DIAGRAM



$$\textcircled{V} = I \times R$$



$$\textcircled{I} = \frac{V}{R}$$



$$\textcircled{R} = \frac{V}{I}$$

When you first started to learn about electricity, what was the first law or equation you encountered? If I were a gambling man, I would wager that it was Ohm's Law. This is a simple equation that says the voltage across a resistor, measured in volts, is equal to the current through the resistor, measured in amperes, times the resistance of the resistor, measured in ohms. Resistance is determined from the dimensions of the resistor and the resistivity of the material from which it is made.

As we see it today, Ohm's Law is a straightforward linear relationship, about as simple as you can get. There were, however, some tortuous twists and turns in the development of that equation and there were, at first, much more complicated versions. The driver — I almost said “conductor” — through

this complex journey was the German physicist Georg Ohm (1789-1854), for whom, obviously, the unit of resistance is named. And no, that's not a misprint; Georg is not supposed to have an *e* on the end.

Georg Simon Ohm was born on 16 March, 1789, in Erlangen in the Kingdom of Bavaria, which is now a part of Germany. Ohm's father, Johann, was a locksmith and apparently had acquired a reasonably good education by essentially educating himself. He provided a basic background in science and philosophy for his children, enough for Georg to enroll in the Erlangen Gymnasium or high school where, apparently, the addition to his education was minimal. The city was then, and is now, a college town and in 1805, at the age of 16, Ohm matriculated in Erlangen University. His

tenure at the university was brief and inglorious, lasting only three semesters. According to one account, his time there was devoted more to dancing, billiards, and ice skating (!) than the pursuit of knowledge, and his father said, “Enough is enough. Out you go.” Of course, he said it in German.

While Ohm may not have been a sterling student, he acquired enough knowledge — or at least the credentials — to qualify him for a job teaching at a school in Switzerland where he started in 1806. He spent five years in Switzerland, teaching at the school and as a private tutor, and then returned to Erlangen University. Apparently, Ohm had spent his spare time in Switzerland studying the writings of the leading scientists of the day. In so doing, he learned enough that he was able, in short order, to pass the appropriate examinations and be awarded the Doctor of Philosophy degree.

Then, as now, the Ph.D. degree was the ticket to a university teaching position. It didn’t seem to work for Ohm, however, and while he tried to get a job in a university, he was destined to spend some twenty years teaching at lesser institutions such as high schools and the German military school. He was fortunate, however, in that one of these schools, the Jesuit Gymnasium in Cologne where he taught from 1818-26, had excellent laboratory facilities. It was here where Ohm did much of his important experimental work and began publishing his results.

It is interesting to look at the state of knowledge of electricity and magnetism during this period. Prior to 1800, all experiments had been conducted using static electricity. The concept of electric current — a constant flow of electrical “fluid” — did not exist until Alessandro Volta invented the pile or battery in 1800. And while many scientists believed there was some relationship between electricity and magnetism, the effect of electromagnetism was not observed until 1820. Finally, the phenomenon of thermoelectricity

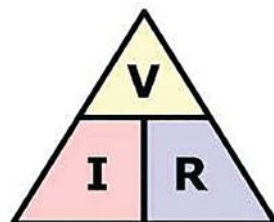
—the generation of an electric current when a junction of two dissimilar metals is heated — was first reported in 1822. What was *not* known, at least not in a quantitative sense, was how an external circuit affected the output of a source of electricity. Ohm, as much a mathematician as a physicist, set out to explore that relationship and express it mathematically.

When talking about the challenges faced by our scientific forerunners, I often say something like, “They couldn’t just go to the laboratory and pull a voltmeter and an ammeter off the shelf.” Well, it turns out that in, say, 1822, that wasn’t strictly the case. A good laboratory would have an electroscope; this was a device that consisted of two pith balls or two gold leaves that repelled each other and deflected when attached to a source of charge. The amount of deflection was a measure of the electric potential (voltage) of that source. The lab would also have what later became known as a galvanometer, a device that measured the force exerted on a magnet by a coil of wire connected to an electrical source. The force, of course, was proportional to what we now call current. Voila! A voltmeter (sort of) and an ammeter (sort of).

For Ohm’s primary and most famous experiment, all he really needed was a voltaic pile, some kind of galvanometer, and a coil of wire. Using the galvanometer, he established a base force (current) by essentially shorting the battery with a heavy wire. That current would have been determined by what we now call the internal resistance of the battery. He then inserted into the circuit thin wires (0.025” diameter) of varying length and measured the *reduction* in force as the wire length was increased. When these data were plotted, they produced a curve that Ohm roughly approximated with this equation:

$$V = K \log(1+x)$$

where V is the reduction in force (i.e., current, I continue to remind you), K is a constant, and x is the length of the wire in the circuit. This,



Ohm's Law Diagram

then, was the original version of Ohm’s Law. Obviously, this is not the Ohm’s Law we have come to know and love, but it was the best description of the state of knowledge at the time.

In 1827, Ohm took leave from the gymnasium in Cologne and spent a year in Berlin. There he wrote his *magnum opus*, “Mathematical Consideration of The Galvanic Circuit.” This very mathematical treatise (available on Google Books) presents both mathematical and descriptive discussions of electric circuits. In it, Ohm reworks some of his earlier data and derives the equation, $V=IR$, that we know so well.

One would think that such a simple result would have been accepted and, indeed, celebrated. Such was not the case, however. Ohm had his detractors and was subjected to various degrees of criticism and contumely before he and his work were formally recognized. Indeed, ever since he received his Ph.D. in 1811, he sought appointment as a professor in a recognized university but remained frustrated. He achieved some measure of success in 1833 when he joined the faculty of the Technische Hochschule in Nuremberg; still not a university, but much more prestigious than his previous appointments. The institution is now named the Nuremberg Institute of Technology Georg Simon Ohm. Its logo, fittingly, is the Greek letter Ω , which is, of course, the symbol for the ohm, the SI unit of resistance.

While at Nuremberg, Ohm finally received the honors he sought and deserved. He was awarded the Copley Medal from the Royal Society of London and was made a corresponding member of the academies of Berlin, Turin, and Bavaria.

Finally, in 1849, Ohm was appointed Full Professor at the University of Munich where he remained until he died on 6 July, 1854. While many scientists of the 19th century sensed that there was a relationship between electric tension (voltage) and force (current), it was Georg Simon Ohm who, through reason, experiment, and mathematical analysis, determined the details of that relationship. And that’s why we call an ohm an ohm.

IN THE COLLEGES

Tau Bates having an impact at institutions of higher learning.

Forest M. Agostinelli Ph.D.

Ohio Gamma '12

Forest has joined the University of South Carolina's new Artificial Intelligence Institute as an assistant professor. His research involves designing new artificial intelligence algorithms and applying these algorithms to problems in the sciences. His bachelor's degree is in computer science & engineering from The Ohio State University.



Hannah D. Budinoff Ph.D.

Arizona Alpha '13

Hannah returns to her alma mater, the University of Arizona, as an assistant professor in systems & industrial engineering, previously working as a design engineer at Honeywell. Her research focuses on solving problems in design and manufacturing, within the context of additive manufacturing. Her B.S., M.S., and Ph.D. degrees are in mechanical engineering.



Burak Eksioğlu Ph.D.

Florida Alpha '02

Burak has been named the new director of the Center for Excellence in Logistics and Distribution, a consortium with a mission to enable member organizations to achieve logistics and distribution excellence. He is an engineering professor at the University of Arkansas with a research focus in the area of optimization with applications in transportation, logistics, and healthcare.



SPOTLIGHT: Helping manufacturers meet autonomous vehicles standards for people with disabilities—

The University of Pittsburgh will spearhead a national study about the accessibility of autonomous transportation for people with disabilities after receiving a \$1 million grant from the U.S. Department of Transportation. Pitt will lead the consortium and the group will serve as the foundation for Pitt's University Transportation Center for Accessible Autonomous Vehicles and Transportation. **Rory A. Cooper, Ph.D., CA M '84**, director of the Human Engineering Research Laboratories at Pitt, was named as the lead researcher on the study team and director of the center.

Researcher receives more than \$1 million—

The NSF has awarded two research grants to **Jamel N. Ali, Ph.D., DC A '10**, to support investigations that have the potential to impact societal health by supporting new diagnosis and treatment methods for diseases. Dr. Ali, an assistant professor of chemical & biomedical engineering at the FAMU-FSU College of Engineering, is investigating bacteria-related dynamics to determine the role fluid flow has on the development and evolution of bacterial communities. In the second project, he hopes to create nanoscale sensors capable of detecting very small changes in biological environments.

Jeremy S. Guest Ph.D.

Michigan Gamma '05

Jeremy leads a team of researchers that has been awarded a \$2 million grant from the U.S. Department of Energy to study the use of algae to purify wastewater while simultaneously producing biomass for fuel production. He is an associate professor at the University of Illinois at Urbana-Champaign. His Ph.D. is in environmental eng'g from the Univ. of Michigan.



Archie L. Holmes Jr. Ph.D.

Texas Alpha '90

Archie will be the next executive vice chancellor of academic affairs at The University of Texas System. Previously, he was vice provost for academic affairs at the University of Virginia. The appointment will be a homecoming for Holmes, who grew up in Texas, received his undergraduate degree in electrical engineering from UT Austin, and was a faculty member at UT for ten years.



Bradley H. Jared Ph.D.

Tennessee Alpha '94

Bradley joined the University of Tennessee MABE department this fall as an associate professor of mechanical engineering. Previously, he was a principal member of the technical staff at Sandia National Laboratories. He has 25+ years of experience in mechanical design and advanced manufacturing process development and is a TBII Fellow (1994).



Keith E. Masser Ph.D.

Pennsylvania Beta '73

Keith was conferred the rank of trustee emeritus at Pennsylvania State University in recognition of his years of meritorious service to the board and the university. Elected to the Board of Trustees in 2008, he served as chairman of the board from 2013-16, and continued to serve as a trustee through 2020. He is president of Stermas Masser Inc., a family farm based in Sacramento, PA.



James E. McCarthy Jr. Ph.D.

Indiana Alpha '91

James has been awarded the 2020 Outstanding Mechanical Engineering Award from Purdue University's School of Mechanical Engineering for his work on conserving fossil fuels and reducing emissions. He is a chief engineer with Eaton's Vehicle Group, led the development of numerous emissions-reducing technologies, and authored multiple white papers on the topic.



Steven W. McLaughlin Ph.D.

Illinois Gamma '85

Steven assumed the role of provost and executive vice president for academic affairs at Georgia Tech, effective October 1. He has served in leadership roles at Georgia Tech for nearly 25 years, most recently as dean of the college of engineering (2017-20). His bachelor's degree is from Northwestern University in electrical engineering.



FACILITIES: Oklahoma State University

cross-collaboration—Baker Hughes' donation of its Oklahoma City Energy Innovation Center building brings industry and academic experts under one roof, creating experiential learning opportunities for Oklahoma State University (OSU) students and supporting Baker Hughes researchers in applying technology-driven solutions for energy and industrial sectors. OSU will host classes for its master of petroleum engineering program at the center and provide hands-on experience in state-of-the-art lab facilities and work with Baker Hughes to advance key technologies in the areas of aerospace, mechanical, electrical & chemical engineering.

Illinois at Urbana-Champaign Quantum Sensing

Center Award—A team from UIUC's Grainger College of Engineering was awarded an Energy Frontier Research Center by the Department of Energy. The collaboration was awarded for their proposal "Energy Frontier Research Center for Quantum Sensing and Quantum Materials." On campus, the program draws together experts in quantum information science, physics & materials science from the Illinois Quantum Information Science & Technology Center, Physics Department, and the Materials Research Laboratory. The center aims to develop and apply nontrivial quantum sensing methods to measure and unravel mysteries associated with three families of quantum materials.

Kim L. Needy Ph.D.

Pennsylvania Lambda '84

Kim has been named to a one-year appointment as dean of the college of engineering at the University of Arkansas. Previously, she served as dean of the graduate school and international education (2014-20) and will be the first female to lead the college of engineering. Her B.S., M.S., and Ph.D. degrees are in industrial engineering.



Lance A. Roberts Ph.D.

South Dakota Alpha '98

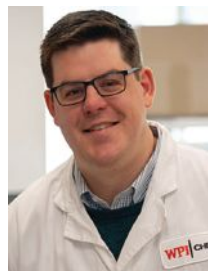
Lance has been named the new provost and vice president for academic affairs at South Dakota School of Mines & Technology. Previously, he served as interim provost, professor, and head of the department of mining engineering and management. He is an alumnus, earning his B.S. and M.S. degrees in civil engineering and worked for three years as senior VP at RESPEC.



Eric M. Young Ph.D.

Maine Alpha '08

Eric has received four grants of more than \$2 million to support his research in using yeast and fungi for significant genetic engineering challenges. He is an assistant professor of chemical eng'g at WPI (MA) and aims to engineer organisms to make it easier to develop numerous products and increase security by developing a new method to detect hidden underground explosives.



Alumni Giving



Heikes Club
Nick A. Farmer
 MD B '68

Supporting the next generation of engineers is a great investment for our country!

THANK YOU! The names of **838 TAU BETA PI ALUMNI** and others who made donations to the Association in the 2020 Alumni Giving Program appear in two separate sections on the following pages. Their gifts totaling \$181,388 arrived between August 1 and October 31, 2020. **Gifts received after October 31 do not appear here but will be published in the Spring 2021 issue.**

The generous support of each member is deeply appreciated by the Executive Council and other Association Officials. The financial resources have permitted strengthening programs in several areas that emphasize the importance of Tau Beta Pi's basic objectives and that help all collegiate chapters and student members.

Recognition Club Donors are listed alphabetically within their chapters and appear in the first section.

Names preceded by SPEC denote gifts from non-members.

Those names marked with a † symbol are of deceased members in whose memory donations were made either by relatives and friends or through bequests.

Pre-Club Members/Contributors appear in the subsequent section.

In addition to gifts acknowledged here, several were made anonymously and are also deeply appreciated.

Donor Recognition Clubs

In this first section, the names of 658 Tau Bates and others appear. They made donations to the Alumni Giving Program between August 1 and October 31, 2020, AND they have also made CUMULATIVE contributions (in some cases including matching gifts) and bequests to Tau Beta Pi through the years, totaling from \$250 to more than \$1,000,000.

The Donor Recognition Clubs are part of our effort to recognize a donor's total lifetime cumulative giving to Tau Beta Pi. Such continuous support significantly contributes to the overall strength of the Association and allows us, with confidence in our financial resources, to plan for growth in our services to the engineering profession.

These clubs were chartered by the Executive Council in 1986 and have been set at the following levels:

The NAGEL Club \$250,000

TX A Brill, Arno William '71

The WILLIAMS Club \$100,000

OR A Brandt, Larry Don '67

The HEIKES Club \$50,000

MD B Farmer, Nick Arthur '68

The ALPHA Club \$25,000

CA E Anonymous '83

CA E Anonymous '85

IA A Faidley, LeVern William '67

NJ A Forslund, Donald Charles '60

OH Γ Beans, Bill '53

OH Δ Robe, Richard '55

RI B Keddie, William Joseph '59

TX H Trich, John Albert '70

The BETA Club \$10,000

AR A Brotherton, Robert Harold '67

CA Δ Fong, Franklin Moodo '69

IL B Clewett, Thomas Alan '88

IL Γ Gross, Richard Charles '80

IL Z Allendorfer, Robert Kevin '83

LA E Champagne Jr., Pierre '76

MD B Sabio, Vincent Joseph '86

MI A Colbry, Dirk Joel '06

Colbry, Katy Luchini '99

LaFrey, Raymond Richard '61

MO B Jinkerson, Kenneth R. '75

MO Γ Gibbs, Kenneth Paul '76

NY Δ Jacobs, Irwin Mark '56

PA Δ Anonymous '90

TN A Cook, James Michael '72

TX A Anonymous '63

Mickelson, Kent Burdell '77

VA B Hogan, James Campbell '70

WA A Eastman, James Scoville '53

WV B Payne, Michael E. '81

The DELTA Club \$5,000

SPEC Anonymous

AL A Griffith, Gordon Harvey '57

Roberts, Yvonne Renee '95

CA Δ Holl, Sue '76

CA N Joy Jr., Robert Lee '66

FL A Lewis, Becky Ann '04

Shacter, Philip '79

FL E Cowan Jr., David James '14

IL A Baits, Paul Gordon '79

IN A McDonald, John Douglas '73

IA A Carlson, Mary Terese '78

MD B Ausherman, Donald Wayne '79

MA A Chace, Brian David '69

MA Δ Coutts, Robert Bruce '72

MI I Amici, Alan J. '85

NJ B Boysen, Robert Lorenz '63



Alpha Club
LeVern W. Faidley, Ph.D.

IA A '67
I welcome the opportunity to donate to the Student Assistance Program and the needs of many great students.



Beta Club
Kenneth P. Gibbs, Ph.D.

MO Γ '76
Support for TBP helps tomorrow's engineering leaders reach their full potential.

Delta Club continued

- NY E** Hellman, Martin Edward '66
- NY H** Butterman, Heidi Carol '79
- NY II** Demmel, Hans George '83
- OH I** Anonymous '87
- SC A** Harman, Patrick '65
- SC B** Daley, Leslie N. '71
- TN A** Trundle, Max Don '72
- TX Γ** Jordan, Paul Joseph '90
- VA A** Powell, Joseph Broun '78
- WA A** Pierce, Russ W. '70
- WA B** Anderson, Bud L. '66
- WV B** Ashman, Michael D. '84

The ZETA Club

\$2,500

- AK A** Keiser, Jan Ann '76
- AZ A** Soukup, David Joseph '76
- AZ B** Barnett, J. Matthew '90
- AR A** Newtown Jr., Glenford Andrew '69
- CA Γ** Jedenoff, George A. '40
- CA P** Kraft, Lyle David '87
- CA Y** Alexander, Joseph William '06
Alexander, Rachel Kristin '15
- DC Γ** Cooper, Reid Franklin '77
- FL A** Passman, Alan Joseph '06
- IN Δ** Luecke, Edgar Jacob '55
- IA A** Davenport, Delbert James '67
Hammar, Kelly Jean '89
- KY A** Davis Jr., Lewis Berkley '66
- LA B** Vaughan, Robin Marie '81
- MD B** Loger, Jaan Alvin '63
- MI Γ** Pepper, Julia Lynn '84
Stewart, Steve Russell '66
- MI Δ** Ponticello, John Charles '78
- MI E** Chudd, Richard Alan '66
Sluchak, Thomas John '77
- MI Z** Cookman, Jordan Christopher '94
- MN A** Petesch, Douglas John '84
Sandell Jr., Nils Richard '70
- MS A** Owens, John Kent '65
- MO A** Currie, Wayne Lee '59
- NJ B** Rabin, Dan E. '73
- NJ Γ** Kunyz Jr., Joseph John '73
Mauermeyer, Henry A. '72
- NJ Δ** Yu, Jeffrey Chih-ping '89
- NM B** Sullivan, Thomas Daniel '74
- NY B** Leader, Jeffery James '85
Phillips, Glen E. '71
Wedlake, Raymond A. '73
- NY Γ** Stallman, Thomas Frank '59
Thal Jr., Herbert Ludwig '53
- NY Δ** Abel, John Fredrick '63
- NY K** Coleman, Thomas G. '62
- NY N** Roach, Linda J. '82
- NY Ξ** O'Keefe, Luke Francis '80
- NC A** Caudle, Daryl Lane '85
Searle, John Randolph '70
- NC Δ** Jones, Luellen Barnett '83
- OH A** Hamilton, Joshua J. '09
- OH Γ** Becher, Charles David '72
- OH Z** Tenney, Thomas Harold '67

- OH H** Campbell, John Joseph '76
- OK A** Markland, Ralph John '88
- OR A** Jones, Reilly '75
Milton, Stuart W. '84
- PA B** Hummel, John Richard '73
Marsteller, Charles Edward '74
Moore, Albert Lloyd '56
- PA Θ** Meyer, James Leo '68
- TN A** Davis Jr., Fred Thomas '74
Jarratt, James Stroud '68
Jennings-King, Sherry Denise '93
Riggs, Donna R.H. '87
- TN E** Smith, Craig '80
- TX Δ** Glasscock, Melbern Gilbert '59
- TX E** Hon, Richard Wai-Leung '67
- TX Z** Norwood, Larry Dwight '73
- TX Θ** Stokes, F. Xavier '78
- UT A** Lyman, George Randall '79
- VA A** Hardy Jr., Edward Ira '69
Orphan, Victor John '62
- WA A** O'Byrne Jr., Michael Edward '61
- WV B** Dehart II, Robert Elwood '72
- WI A** Lee, Jun Wai '68
Wulff, Kurt Henry '63
- WI B** Jaye, Deborah Ann '03

The CHI Club

\$1,000

- AL A** Vollberg, Walter Karl '73
- AL B** Helms, Robert Knight '61
- AZ A** Berg, Jeffrey Roy '93
- CA A** Figueira, Michael Robert '73
Morihiro, Steve '79
- CA Δ** Hedin, Richard Allen '69
- CA E** McDonnell, John Donnell '60
Suyematsu, Herbert Takashi '58
- CA Θ** Hill, Jo Ann Lucy '87
- CA I** Hanna, Hugh Allen '60
- CA Λ** Lieu, Tom '94
Sturgeon, William Randall '70
- CA M** Lee, Steven Yang-Sien '86
- CA N** Newberry, Conrad Floyde '57
Smith, Michael P. '84
- CA Ξ** Hawkins II, John Colman '79
Stewart, Diana Frieda '83
- CA Y** Davis, Sean Thearon '94
- CO A** Ruebush, John Charles '78
Trembly, Steven Alan '93
- CO B** Herhold, Mark Kenneth '80
Lafollette, Jack '59
Luppens, John Christian '76
Walker, John Sherwood '53
- CT A** Baublitz, John Eberhart '60
- CT B** Hurley, John Frank '66
Kane, Martin Paul '86
Whittlesey, Richard Allen '64
- DC A** Long, Michael Edward '72
- DC B** Lee, Wah H. '73
Maslen, Carrie J. '82
- FL A** Perrygo, Charles Maurice '75
Traverse, Richard Stephen '71

- GA A** Brush, Gary Stoddard '80
Trawick, Charles David '78
- IL A** Schleicher, Kathy Louise '85
- IL B** Hartwell, Robert Aaron '81
Lewis, Burton A. '48
Thomas Jr., Stanley Robert '72
- IL Γ** Dietrich, George Wayne '66
Henry, Thomas Peter '73
Herzing, Henry George '59
Schwartzbard, David Leigh '91
- IL E** Sheehan, Patrick Joseph '85
- IN A** Paniaguas, John Steven '73
Pickett, Leroy Kenneth '68
Rea, David Richard '62
Rushworth, James Lynn '58
Wilson, Joseph Mark '50
- IN B** Ruddick, Everett Lindley '64
- KS A** Hinton, Robert Allan '61
Remsberg, James Carleton '57
- KY A** Rhoads, Harold Spencer '68
- KY B** Minsterl, James R. '71
- LA Γ** Hogan, Harry A. '79
- ME A** Johnson, Philip Martin '55
- MD A** Guzy, Jeffrey David '83
Kutcher Jr., John Francis '86
Mitchell, Keith Phillip '78
- MD B** Gaske, Thomas Paul '76
Iacangelo, Gerard Felix '80
Kanofsky, Hal Steven '70
Yourshaw, Sheryl Lynn '99
- MA B** Denhard, William George '42
Efimba, Bob E. '63
Kornafel, Peter Robert '65
Patterson, John Bryan '68
Rogers, Peter Todd '82
Spradlin, Louis Woodson '57
Gunn, John F. '64
- MA Δ** Savage, Paul David '77
- MA E** Linscott, Anne Wiklord '80
Présumé, Hantz Antony '89
Ridlon, Stephen Allan '66
Williams, Charles Robert '53
- MA Z** Cooper, Perry A. '62
- MI B** Dejonge, Michael Kent '65
- MI Γ** Burkholder, Earl F. '73
Hammond, Donal Dwight '52
Leeds, Thomas Murray '85
Miller, Carol Jean '79
Miller, Stephen Scott '78
- MI Δ** Conti, Mark '76
- MI E** Brooks, Vern Eugene '60
- MI Z** Scarlatelli, Michael George '76
- MI I** Kantrow, Maryann '88
- MN A** Loughlin, James Paul '85
Petrich, Gale Sean '86
- MS A** Hatmaker Jr., John William '79
Steele Jr., W. Glenn '68
Tyner, Fred Mack '93
- MO A** Brownfield, David Lee '68
Merz, Jeffrey B. '67
- MO B** Ernest, Terry Lee '82

Alumni Giving

Chi Club continued

- MO** Γ Byrne, Clare Theresa '78
Diboll Jr., Wallace B. '44
- MT** **A** Courville, George Eugene '59
- NE** **A** Claar, Stephen Beryl '73
- NV** **A** Wigchert, Albert Henry '74
- NJ** **A** Allen, Samuel Miller '70
Greenip Jr., John Francis '66
Waricka, Peter Thomas '71
- NJ** **B** Colarusso Jr., Remo John '83
Renkart, Brandon M. '08
- NJ** Γ Gagliardo, Reginald Saverio '70
- NM** Γ Spicer, Mark Jonathan '84
- NY** **B** Leader, Margaret E. '85
- NY** Γ Dupier, Dennis George '61
Hirschman, Gordon Bradley '78
Levinson, Stanley H. '78
- NY** Δ Kahn, Mindy S. '89
Philip, James Henry '69
- NY** **E** Kuhn, Alfred '57
Niebanck, Charles F. '54
- NY** **H** Kern, Frank John '70
- NY** Θ Hearl, Steven Charles '80
Meyer, Bruce George '69
- NY** **K** Martens, Hinrich Robert '57
- NY** Λ Rigert, John Anthony '70
- NY** **M** Hurewitz, David Lewis '64
Sutter, Richard Randall '71
- NY** **T** Chacko, Vinny James '09
- NC** **A** Davis, John Michael '73
Maybee, Clarion Lee '77
Trivette, Wendell Allison '82
- OH** **A** Ehlert, Donald Arthur '84
- OH** **B** Fazzoni, Gregory Francis '76
Spires, Richard Andrew '84
- OH** Γ Edwards, Dale C. '61
Overmyer, Ray Arthur '73
Stumbaugh, Gary Allen '66
- OH** Δ Brown III, Claude M. '74
Nussbaum, Lael Edward '68
- OH** **Z** Busbey, Bruce C. '84
Herman, Madison Rachelle '13
- OH** **H** Lantier, Ward John '63
Sweeder, James '82
- OH** Λ Gwin, Russel Willis '85
Suhar, Richard Allen '83
- OH** **N** Struebel, Jonathan Paul '04
- OK** **A** Burton, Donald O'Neil '71
Carnes Jr., Albert Cowser '56
Sossamon, Dana Ray '76
Strattan, Bob '58
- PA** **A** Goldsborough, John Paul '56
Granville Jr., Richard W. '55
- PA** **B** Zahora, Kenneth Richard '76
- PA** Γ Chan, Allen Henry '82
Costanza, Charles Peter '63
Kavoulakis, Alexandra Marie '84
Kuhr, Tina Michelle '81
- PA** Δ Long, TC '95
- PA** **E** Nolan, Christopher William '86
Schroeder, Karl Richard '49
- PA** **Z** Thomas, Jeffrey R. '65
- PA** **H** Howes, Michael Lynn '75
Price, Russell William '72
- PA** Λ Janocko, David Jeffrey '81
- PR** **A** Hilerio Sanchez, Josuan '07
- RI** **B** Adamedes, Zoe '84
- SC** **A** Conner, Edward D. '67
- SC** **B** Skvoretz, Jonathan Maxwell '95
Wilson, Samuel Scott '91
- TN** **A** Ward, Joanne Schaich '81
King, Gregory Tyler '93
- TN** **B** Heflinger, Richard Scott '72
Hodges Jr., Willie Erwin '67
- TN** Γ Perkins, William Samuel '54
- TX** **A** Cardwell, John Wesley '68
Hurst, Terry Lee '76
Malins, Chester Joseph '76
White, Karen Leigh '84
- TX** **B** Cummins, Ronald Allen '75
MacCallum, Gregory James '81
Osborne, David Charles '61
Palmer, Jim Brown '64
- TX** Γ Sandmann Jr., Charles W. '82
- TX** Δ Kunze, Glenn Ray '77
Linn, William Ray '81
- TX** **H** Godwin, Albert Eugene '84
- TX** Θ Van Lindingham, David J. '74
- VA** **A** Anderson, Willie Corevis '75
Barrell, Charles Davidson '70
Forziati Jr., Kenneth Thomas '92
Roesch III, Maurice Albert '78
Hanley, Thomas Richard '67
Nowotarski, Adam Alexander '91
- VA** **B** Davis, Beverly Ziegler '80
- WA** **A** Bennett, Chris John '06
- WI** **A** Diedrich, Donald Leo '69
Holzman, Perry A. '85
- WI** Γ Jenn, David C. '75
- WY** **A** Scharton, Craig Allen '85
- CA** **O** Maulhardt, Alan Lee '81
- CA** **Y** Burns, Michael Thomas '88
- CO** **A** Akiyama, Frank Masaratso '55
Oakley, Jilene Marie '11
- CO** **B** Gustafson, Molly Burkholder '85
Woempner-Martin, Cynthia E. '81
- CO** Γ Ton, Scott Marshall '74
- CO** **Z** Crews, Mark Conrad '82
- CT** **B** Gareau, James Peter '93
Pollitt, Julie Anne '87
- FL** **A** Browell, Edward Vern '68
Holmes, Alvin Edgar '63
- FL** **B** Nunez, Ramon Luis '75
- FL** Δ Smith, Shaina Maryann '99
- GA** **A** Brown Jr., Harry Jay '65
Schreiber, Don Clifford '91
- ID** **A** Dafeo, Kathryn Michelle '05
- IL** **A** Angus, Richard Myers '57
Kuhn, Paul A. '54
Quiros Jr., Jorge Luis '75
- IL** **B** Gewartowski, James W. '52
Johnson, J. Randall '63
Pasowicz, Ronald Joseph '77
- IL** Γ Rivera, Angel Luis '80
- IL** **E** Joseph, Howard Lowell '83
- IN** **A** Forster, Allen Vaan '72
Jebsen, Eric Richard '80
Minniti Jr., Robert Joseph '70
Schmertzler, Alvin Louis '45
Simnick, James John '74
- IN** Δ Walton, Richard Albert '65
- IA** **A** Gallagher, Richard Ray '64
Houston, M. Dean '52
Kurr, Amy Catherine '18
Braet, Ronald Lee '63
Monk, David Harold '60
- IA** **B** Bradley, Richard Leland '59
- KS** **A** Buemi Jr., Joseph Michael '74
- KY** **A** +Braun, Ralph Frank '58
- LA** **A** Randall, James Benjamin '79
- LA** Γ Ogden, Stephen Wade '79
- ME** **A** Kutcher, Susan Lynn '89
- MD** **A** Anonymous '77
Galloway Jr., John Perrin '73
Law Jr., Preston Eugene '60
Lawrence III, Joseph Parran '68
Mitchell, Reginald Henry '72
Tracy, Anita Lynne '89
- MA** **A** Haringa, Glenn E. '74
- MA** **B** Appelstein, Gerald M. '80
Colavita, Michael Mark '81
Fahy, Thomas Edward '76
Frassinelli, Guido Joseph '48
Manganaro, James Lawrence '61
Topolcic, Claudio '76
- MI** **A** Salisz, Albert Andrew '75
- MI** **B** Kuhn, Jonathan L. '92
Phillips, Gerald Raymond '70
Sauer, Daniel Michael '05
- MI** Γ Berno, Jeffrey William '63

The SECOND CENTURY Club \$500

- AL** **A** Malseed, Robert Allen '77
Walkley, Kenneth Boland '71
- AK** **A** Leonard, Leroy Edward '72
- AZ** **B** Takinen, Scott Alan '79
- AR** **A** Hegeman, Louis Edward '65
Moody, Charles Roger '58
Perciful, Jerry Cecil '60
- CA** **A** Bruemmer, Timothy Michael '84
- CA** Δ Lawson, William Edward '62
- CA** **E** Schurr, Andrew Hiroshi '12
Ssutu, Louis '65
- CA** Θ Brandt-Robuck, Patricia '75
Lowe, William Warren '79
Murray, Donald I. '72
- CA** **I** Sun, John '85
- CA** Λ Johnston, Brian David '95
- CA** **M** Empey, Daniel Martin '82
Robertson, David Wayne '74
- CA** **N** Nguyen, Mai '79



Delta Club
Philip Shacter
FL A '79

Utilize the resources and benefits available from TBP and the engineering technical societies.



Delta Club
Becky A. Lewis
FL A '04

Investing in our next generation of engineering leaders is incredibly important.

Second Century Club continued

- Boettner, Donald William '62
- Frantz, John Alexander '75
- Goodenough, Richard Duane '74
- Mohsberg III, Sidney Augustus '71
- Sagaser, Donald D. '48
- Stover, Dennis Eugene '67
- Thomas, David Charles '56
- MI Δ** Dubois, Kenneth R. '88
- MI ⊙** Merrick, Nelson J. '71
- MN A** Carlson, Philip Jay '68
- MO A** Devilbiss, Wayne Francis '63
- Herman Jr., Donald Louis '84
- Salerno, Michael Joseph '84
- MO B** Berkey, Vernon Glessner '50
- MT B** Montgomery III, Wayne W. '83
- NE A** Matthews, Deborah Jo '82
- NH A** Davis, Paul Fraser '76
- Plamondon, Maynard A. '62
- Qualters, Kevin Robert '85
- NH B** Cloyd, Joseph R. '02
- NJ B** Badgley Jr., Robert Henry '60
- Brandenburg, Dan Saul '72
- Peoples, Robert '63
- NJ Γ** Jacobsen, Peter Christian '69
- Labos, William Joseph '73
- NJ Δ** Maienschein, Jon Lee '74
- NY A** Bishop, Bruce Scott '80
- NY B** Olson, John Frederick '64
- NY Γ** Foust Jr., Tilman Harrison '68
- Walter, Robert Wayne '64
- NY E** Feldman, Robert E. '59
- Gallo, Santo Vincent '72
- NY ⊙** Hunt II, William Edward '59
- Zagrobelyn Jr., Thadeus John '76
- NY I** Berger, Jack Solomon '61
- Hauge, Kenneth '61
- Hoffner, Jeffrey Norman '71
- NY K** Cohn, Brian David '80
- Rie, Henry '53
- Singer, Bart Alan '82
- NY Λ** †Jew, James Lee '71
- NY N** Kosmerl, Richard David '72
- MacNeil, Randall Lewis '69
- Uhl, Thomas John '84
- NY Ξ** Perrotta, Thomas '82
- Short, Rosemarie '91
- NY O** Lewer, Philip Michael '87
- Wickman, Richard Alan '76
- NY Π** Bell, Brian D. '96
- NC A** Clark, Jennifer Anne '79
- Noble, Robert Theodore '69
- Skipper, Julie '81
- Skipper, Lee Roy '82
- Starr, Hygie Irene '88
- NC Γ** Block, Norman Gregory '54
- Maxson, Robert Jay '62
- NC E** Blunk, Thomas Reynolds '92
- ND A** Seppanen, John Louis '86
- OH A** Cassidy, Robert Blair '94
- OH B** Mayer, Robert Lawrence '69
- Schoo, Donald Clarence '60

- OH Γ** Shockling, Larry Anthony '68
- OH E** Bairoti, Janice Lynn '78
- Brandes, Thomas Alan '72
- OH Z** Badik Jr., Thomas B. '85
- OH H** Chi, Maxwell Michael '91
- Merkle, Larry '92
- Wolfe, Stephen A. '85
- OH K** Dudek, Scott Andrew '90
- Lestingi, Joseph Francis '57
- OH Λ** Stiver, Alan Wayne '86
- OH M** Kojola, Gregory Kenneth '89
- OK A** Bastron, Victor Christian '66
- Wolf, Jerald Michael '88
- OK Γ** Lewis, William Jeffrey '84
- PA A** Haist, Randall Matthew '80
- PA B** Ferenci, Jack Edward '75
- PA Γ** Kaplan, David Seth '03
- PA Δ** Sern, Stacey D. '86
- PA E** Hartman Jr., Harold Fredrick '56
- Santo, William John '53
- Stephens, David G. '59
- Ziegler, Mark Allen '77
- PA H** Sweetman, Denman John '60
- PA ⊙** Dreiss, Steven Anthony '83
- PA K** Ellis, Raymond Henry '64
- PR A** Caceres, Maria Margarita '86
- Cancio, Hugo M. '74
- RI A** Edgar, Richard B. '47
- Solomon, John Victor '60
- SC A** Barnwell Jr., Thomas Osborn '69
- Exley Sr., Slade Forrest '72
- McMullan, Richard Jeffrey '91
- Sams III, James H. '54
- SC Γ** Burton, Kevin Lane '90
- TN A** Lowe, Robert Alexander '70
- TN Γ** Howey, James Edwin '68
- TX A** Hodges, Bobby Wayne '53
- Tedeschi, William John '84
- TX B** Gates, Robert Douglass '72
- TX Γ** Avant, Richard Lee '83
- Lucas, Raymond David '60
- TX Δ** Barrow Jr., Thomas Gerald '85
- Blaschke, Byron C. '60
- Foster, Scott Alden '84
- Johnson, Vance Clay '78
- Jordan, Kirk Gerald '80
- Massett, Donald Allen '70
- Schwierzke Jr., Perry Julius '60
- TX H** Tepper, John C. '82
- TX K** Harness Jr., Jerry Wayne '03
- VT B** Svrcek, Steven Paul '77
- VA A** Colonna, James Lewis '65
- VA B** Collie, Joseph Haslett '50
- Maloney, Melissa Marie '90
- Thiel, Stephen Ward '81
- VA Γ** Carlson, Diana Lu Weaver '91
- Korte, John Julius '80
- WA B** Aaserude, Robert Gerald '84
- Groat, J. Everett '94
- WI A** Hildebrandt, Kurt Edsel '91
- Niemeyer, John Allen '68

- WI B** Jilek, Carol Marie '84
 - WI Δ** Palmer, Mark William '90
- The FOUNDERS Club**
\$250
- AL A** Reilly, Patrick Francis '93
 - AZ A** Coxon, Moran '54
 - Hartwein, Kenneth Joe '53
 - AZ B** Gembarowski, Charles Jerry '74
 - AR A** Barr, James Claeborne '55
 - Johnson, Cody '15
 - Robirds, Kenneth Dale '54
 - CA A** Silva, Christopher Patrick '82
 - CA Δ** Thorne, Douglas Boyd '61
 - Wang, Stewart P. '87
 - CA Z** Oven, Mark Joseph '75
 - CA K** Smoots, Neil Randall '78
 - CA Λ** Wilson, Darrell M. '73
 - CA M** Calia, Kristin Denise '95
 - Hermanson, Glenn E. '87
 - CA N** Miller, James Allen '73
 - CA Ξ** Libby, Jean Marie '80
 - CA P** McComb, Chris Carson '12
 - CO B** Daubert, David Bruce '81
 - FL Δ** Hanson, Roselle Burton '86
 - GA A** Falkner, Clay Edgar '61
 - Royer, Steven Lee '88
 - IL B** Kohnen, Robert Eugene '59
 - IL Γ** Parks, Melvin Jay '52
 - IL Z** Anaglate, David Kwasi '03
 - Restis, Jude H. '89
 - Steinkoenig, Glen Lee '95
 - IN A** Burch, Harry Carlton '75
 - IA A** Ackley, Mark W. '72
 - KS A** Horner, J. Michael '70
 - LA Γ** Kareh, Ahmad Ragheb '85
 - ME A** Verrill, Christopher Lee '85
 - MD A** Horowitz, Harvey Allen '63
 - Schrodel Jr., Charles Suman '57
 - Yaffe, Barry Marshall '62
 - MD B** Brenner, David Joseph '60
 - Makar, Joseph Stephen '78
 - MD Δ** Pierson, Jeffrey Scott '05
 - MD E** Constantine, Fyiad '03
 - MA B** Chandar, Venkat Bala '06
 - Hartzell, Frank Carlisle '53
 - Lim, Pean '85
 - MA Z** Miller, Kendall Gifford '79
 - MI A** Pfeil, Richard John '54
 - MI B** McKindles, Gerald Thomas '50
 - MI Δ** Lott, Adriano P. '63
 - MI E** Walton, Gregory Francis '71
 - Whitehead, Tonya J. '17
 - MI Z** Carpenter, Janet Marie '82
 - Carpenter, Robert Daniel '82
 - Miller, Gene H. '67

Continues on page 44.

2020 UNVENTION SUMMARY CONTINUED

From page 17.

TAU BETA PI LAUREATES

Unvention was treated to highlight videos created by Chris W. Potts, *CAU '16*, of 2020 Laureates Kevin Ptak, *SDA '19*, for athletics; and Natalie J. Turco, *NYS '20*, for diverse achievements.

Each Laureate will receive a commemorative plaque and \$2,500 check.

TAU BETA PI-MCDONALD MENTOR

The 2020 McDonald Mentor is Dean S. Papajohn, Ph.D., P.E., *IL A '85*, an associate professor of practice in the department of civil and architectural engineering and mechanics at the University of Arizona.

He will receive an engraved commemorative medallion, lapel pin, \$1,000 check, and another \$1,000 will be credited to the school of his choice. You can watch a highlight video of Dr. Papajohn on the Unvention YouTube channel.

OUTSTANDING ADVISOR

The 2020 Outstanding Advisor is Amy L. Kaleita, Ph.D., P.E., *PAB '97*, a professor and associate chair for teaching agricultural and bio-systems engineering at Iowa State University.

She has served as an advisor to the IA Alpha Chapter since 2003. Dr. Kaleita will receive a \$1,000 check, commem-

orative plaque, and a \$1,000 grant will be presented to the ISU College of Engineering's discretionary fund.

DISTINGUISHED ALUMNUS

There are four recipients of the 2020 Tau Beta Pi Distinguished Alumnus Award: Jerry D. Holmes, Major General USA (ret), *OK A '58*, adjunct professor at the University of Oklahoma; Paul D. Plotkowski, Ph.D., *MI Q '80*, dean of engineering at Grand Valley State University; Ronald W. Rousseau, Ph.D., *LA A '66*, Endowed Chair Emeritus at Georgia Institute of Technology; and Dale W. Zimmerman, P.E., *FL A '65*, principal owner and president of Mock, Roos & Associates, Inc.

Each awardee will receive a commemorative plaque and a TBP scholarship was given to four students this summer in honor of each Distinguished Alumnus.

CHAPTER & PROFESSIONAL DEVELOPMENT

The Chapter Development Program included Interactive Chapter Exchanges (ICE) and district meetings, all of which were held virtually. Each district met twice during Unvention while multiple ICE Sessions were offered on different days and times to students, advisors, and alumni. In addition to the



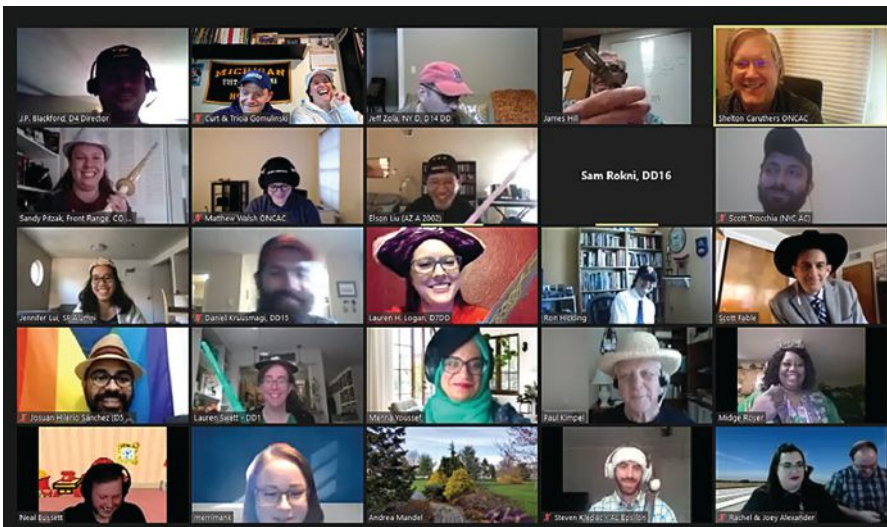
Executive Director Curtis D. Gomulinski opens the 2020 Unvention.

traditional ICE Sessions, ICE Special Topic Sessions were held with successful chapters presenting information about their activities to their peers. Presenting chapters made videos which were made available to attendees prior to the Unvention and continue to be available on the Unvention YouTube channel.

In addition to district meetings and ICE Sessions, a two-track Professional Development Session program was presented on the topics of Career Development and Leadership. The sessions were hosted two at a time over four weeks, including the Judy and Ron Pasadyan Professional Development Session: Preparing & Deciding When to Go to Grad School by Keeping Your Options Open, presented by Bruce A. Lindvall, Ph.D., Assistant Dean for Graduate Studies at Northwestern University; and The 7 Habits of Highly Effective People, presented by Teresa J. Hutton, *WIB '91*. A new resume workshop and one-on-one resume review was also available to Unvention attendees.

2021-23 EXECUTIVE COUNCILLORS ELECTED

Four candidates, introduced in the Summer 2020 issue of *The Bent*, ran for the opportunity to serve on the Executive Council. The Unvention elected three members to fill the vacancies and serve the 2021-23 term. The results are reported on page 14.



Screenshot from the final Zoom Meet & Greet from the 2020 Unvention.

Winter Problems *Continued*

Given the fact that each * independently represents a prime digit, solve the cryptic multiplication.

—*The Moscow Puzzles*
by Boris A. Kordemsky

2: Spy Aliases

I have four friends: Anna, Beth, Cate, and Dawn who are spies. As is often the case in the espionage profession, they each assume three unique aliases of different word lengths to suit their need in the moment. Their five-letter aliases are (in some order) Alice, Betty, Carol, and Debra. Their six-letter aliases are (in some order) Astrid, Bianca, Claire, and Dharma. Their seven-letter aliases are (in some order) Allison, Barbara, Cristin, and Darlene. The other day in the spy lounge, I overheard each friend make two statements.

ANNA: 1. Beth is Betty.

2. Cate is "perfect."

BETH: 1. Bianca is "perfect."

2. Anna is Carol.

CATE: 1. Anna is "imperfect."

2. Beth is not Betty.

DAWN: 1. Carol is not Astrid.

2. Dharma is not Darlene.

It is well understood that in the spy world such declaration pairs, if and only if they are both true, indicate the speaker is a "perfect" spy with name and aliases all beginning with unique letters. It is equally known that such declaration pairs, if and only if they are both false, indicate the speaker is an "imperfect" spy with name and aliases all beginning with the same letter. Of course, no spy would ever consider having exactly three of their four monikers begin with the same letter. Find all aliases associated with each spy.

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

3: Bubble Experiment

A cylinder which is completely full of water, except for a bubble of air held at the bottom, is sealed

at both ends. There is no air gap between the top of the water and the top of the cylinder. The pressure the water exerts on the top of the cylinder is zero. Suppose the bubble is now allowed to rise to the top of the cylinder. Find the percent pressure change experienced (if any) at the bottom of the cylinder. Assume that water is incompressible and that the volume of the cylinder does not change.

—Daryl Cooper

4: Mirror Triangles

Given five identical 3:4:5 triangles, construct a plane figure with mirror symmetry. The triangles may not overlap.

—Fred J. Tydeman, *CA Δ '73*

5: Shatter Testing

Al is back on the job testing a new batch of bowling balls. He now has three identical bowling balls and is to test their impact resistance by dropping them out of windows on various floors of a 100-story building. He is to determine the lowest floor from which a dropped bowling ball will shatter on impact with the pavement below. Al knows nothing about the strength of the balls. They may shatter when dropped from the first (non-ground) floor or not until dropped from the 100th floor. Balls that do not shatter may be dropped again and all balls may be destroyed during the test. Find the minimum number of ball drops needed to guarantee that Al can uniquely determine the lowest floor from which the balls will shatter. If Al wants to establish the minimum number of drops as 14, find the maximum number of stories the building can have.

—Adapted from *How to Ace the Brain Teaser Interview*
by John Kadorew

BONUS: A roller coaster at rest drops from an initial height of 100m at which time it begins a loop-de-loop. The loop is formed from an initially horizontal segment of track that bends upward with a radius of curvature of 40m until it becomes vertical, at which point

there is a 10m section of vertical track. From this point, the track continues the loop with a reduced radius of curvature of 30m until it is horizontal and at the apex of the loop. The descent of the loop is symmetric to the ascent. Find the time required for the coaster to complete the entire loop, to the nearest hundredth of a second. The coaster can be assumed to maintain motion in a single vertical plane; ignore any effects of friction and drag. Assume $g = 9.81 \text{ m/s}^2$.

—Jeffrey R. Stribling, *CA A '92*

COMPUTER BONUS:

Define $SD(n)$ as the sum of digits of n reduced to a single digit, where n is a positive integer. For example, $SD(25) \rightarrow 2 + 5 = 7$, and $SD(2598) \rightarrow 2 + 5 + 9 + 8 = 24 \rightarrow 2 + 4 = 6$. For some n , $n/SD(n)$ is an integer, e.g., $81/SD(81) = 9$. For other n , it is not, e.g., $85/SD(85) = 85/4 = 21.25$. Find the longest possible sequence of integers for which $n/SD(n)$ is an integer and give the starting integer of the first such sequence.

—Allan Gottlieb's Puzzle Corner
in *Technology Review*

Email your answers (plain text only) to any or all of the Winter Brain Ticklers to 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 Winter column is the appearance of the Spring *Bent* which typically arrives in late March (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**; **F.J. Tydeman, CA Δ '73**; **G.M. Gerken, CA H '11**; and the columnist for this issue,

— J.R. Stribling, *CA A '92*

CHAPTER ETERNAL

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

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. You may report the death of a member by sending an email to chapter.eternal@tbp.org. Thank you to all who assisted with locating Chapter Eternal records. **This larger list is a result of deceased names provided from a recent Proprietary Change of Address Report (PCOA).**

ALABAMA

ALPHA AL A

Harper, Raymond E., '56, October 20, 2020.
Pierre Sr., Donald S., '58, October 10, 2020.
Albritton Jr., William P., '62, March 11, 2014.
Alge, William Lynn, '62, March 18, 2001.
Reeves, Arthur Hasty, '64, August 28, 2000.
Cleal, Stephen Roger, '67, July 20, 2009.
Pesto Jr., William Steve, '84, June 3, 2006.
Lippincott, Aaron C., '88, December 1, 2018.
Singh, Bhuwan Bhuwan, '98, May 7, 2004.

BETA AL B

Whitley, Elton Clyde, '41, no details.
Gore, Philip Willie, '50, no details.
Carlisle, Leroy Jackson, '57, Sept. 13, 2007.
Howse Jr., Paul Thomas, '59, Sept. 30, 2009.
Drummond, Garry Neil, '61, July 13, 2016.
Watts, Gaines Linwood, '63, August 13, 2017.
Bell, Jerry Vernon, '65, January 27, 2011.
Weaver, Edward Harrison, '70, July 22, 2006.
Willis, Robert Bryan, '71, January 11, 2003.
Rice II, Frank Auxford, '84, no details.

GAMMA AL Γ

Parker, Henry Allen, '65, July 27, 2018.
Jager Sinak, Debra Lynn, '89, July 19, 2017.

ALASKA

ALPHA AK A

Johnson, Scott Dwayne, '80, no details.

ARIZONA

ALPHA AZ A

Ching, Douglas Lin P., '56, March 11, 2004.
Porter, Newell Samuel, '58, August 2, 2000.
Rushton, William Eugene, '59, no details.
Cornelius, Kenneth D., '63, Jan. 20, 2012.
Miner, James Gregory, '75, no details.

BETA AZ B

Farmer, Bufford D., '64, May 22, 2019.
Bergland, Ronald Jack, '66, July 30, 2011.
Harlan, David Martin, '67, June 6, 2001.
Bersch, Merland B., '68, Dec. 26, 2005.
Markin Jr., Harold James, '71, no details.

ARKANSAS

ALPHA AR A

Hobson, Robert Raymond, '41, no details.
Sanders, John Paul, '50, October 27, 2020.
De Roulhac, Joseph H., '51, Sept. 7, 2005.
Hadley, Bobby Lee, '51, January 6, 2005.
Rhode, Alfred Bell, '56, December 31, 2005.
Hudson, Charles Lee, '59, January 1, 2005.
Heird, Vernie Eliga, '60, June 19, 2020.
Schofield, Donald Dean, '60, no details.
Sherrill, Lloyd Wade, '62, Nov. 25, 2014.
Baker, William Charles, '63, no details.
Benton, Kent Cranfill, '68, January 20, 2005.
Staggs, George Eugene, '71, Nov. 10, 2009.

Foster, Brian David, '75, August 28, 2020.

Alexander, Nathaniel B., '73, Sept. 20, 2020.

CALIFORNIA

ALPHA CA A

Bocast, Donald Rocco, '45, August 13, 2020.
Martina, Robert Alfred, '48, no details.
Ransom, Roger Hambrecht, '49, July 3, 2020.
Pigozzi, Leo John, '50, August 17, 2019.
Hull, Robert Eugene, '51, Sept. 7, 2009.
Croy, Eugene Lyman, '57, January 30, 2008.
Seaman, Lynn, '59, August 19, 2007.
Trezek, George James, '61, Dec. 18, 2019.
Mangney, John Lawrence, '64, Jan. 30, 2020.
McCune Jr., Earl William, '79, May 27, 2020.

BETA CA B

Acosta, Allan James, '45, May 18, 2020.
Hook, Joseph Frederick, '45, Jan. 10, 2011.

GAMMA CA Γ

Werdern, Peter Jerome, '56, Nov. 4, 2011.
Oakberg, Robert Glen, '62, June 15, 2013.
Johnson, Adam Lowell, '73, Sept. 27, 2020.

DELTA CA Δ

Baskin, Kenneth Phillip, '60, Sept. 4, 2020.

EPSILON CA E

Land, Robert Perry, '58, October 4, 2020.
Mischler, Robert Gary, '60, Sept. 22, 2018.
Smith, Francis Elmer, '60, March 23, 2020.
Gliksman, Jerome A., '62, October 3, 2020.
Schreiner, Sheldon L., '64, no details.

ETA CA H

Campbell, Mack Sanders, '65, Jan. 10, 2001.
Rosnick, Charles K., '68, June 11, 2007.
Parra, Gilbert T., '71, March 21, 2008.
Andrews, George Steven, '73, no details.
Connolly, Michael Gregory, '76, Jan. 3, 2014.
Bowlby, John Louis, '80, October 3, 2010.
Wong, Duane Eric, '93, July 26, 2005.

THETA CA Θ

Vance, Garry Dean, '68, May 25, 2001.
Best, Gary Lee, '71, July 25, 2001.
Foasberg, Eric Vance, '73, April 12, 2004.
Silver, Sid, '88, January 11, 2006.

IOTA CA I

Goldstein, Julian, '76, June 22, 2004.
Depieri, Wagner, '89, July 13, 2004.

KAPPA CA K

Polen, Michael David, '69, Nov. 29, 2004.

LAMBDA CA Λ

Borchers, David Richard, '74, June 19, 2007.

MU CA M

Sabto, Jacob C.A., '49, no details.
Phaklides, William John, '56, no details.
Mellema, Roger Dennis, '74, no details.

NU CA N

Evans II, George Delbert, '66, no details.
Feldberg, Lance, '72, no details.
Sagpao, Gloripe Cenica, '94, Sept. 10, 2011.

XI CA Ξ

Forrest, Donald Roger, '49, no details.
Lewis, Sheril Gene, '69, August 15, 2005.
Garcia Jr., Trinidad Thomas, '87, no details.

COLORADO

ALPHA CO A

Licht Jr., Samuel Robert, '43, Oct. 30, 2010.
Minnich, Clark S., '53, June 25, 2001.
Williams, John Philip, '95, March 6, 2010.

BETA CO B

Swanson, Alvin D., '46, no details.
Tyler, John Joseph, '47, October 30, 2007.
Parker, William Edward, '48, Feb. 21, 2011.
Brooks, Robert Newman, '49, no details.
Trapp Jr., Frederick John, '49, Feb. 29, 2016.
Hartong, William Richard, '51, Jan. 13, 2014.
Petry, William Lyons, '54, Dec. 25, 2001.
Boatright, Jarrel Lee, '60, Sept. 29, 2015.
Jackson III, Oliver H., '61, August 15, 2004.
Muhs Jr., Harvey Paul, '61, no details.
Behm, Dennis Duane, '62, August 28, 2020.
Sato, Richard Kyoji, '65, no details.
Johnson Jr., George W., '80, Dec. 17, 2012.
Bray, Steven Lee, '86, May 24, 2000.

GAMMA CO Γ

Vanderleest, Alvin Ray, '50, no details.
Shoenberger, George C., '52, Feb. 18, 2009.

DELTA CO Δ

Cooper, Stirling Merrell, '83, no details.

EPSILON CO E

Lange, Dale Erwin, '88, September 30, 2008.

CONNECTICUT

ALPHA CT A

Hartwell, Mortimer H., '50, May 6, 2000.
Henry, Joseph William, '50, April 19, 2007.
Cushman, Robinson, '51, no details.
Jones, William Cranz, '53, October 25, 2020.
Smith, Robert Sanders, '57, no details.
Gebler, Douglas Paul, '64, July 27, 2020.

BETA CT B

Nowakowski, Boguslaw, '56, no details.
Fennick, John Hamilton, '59, Oct. 10, 2020.
Camarata, Ronald, '63, February 20, 2008.
Guile, Robert Webster, '66, August 5, 2017.

DELAWARE

ALPHA DE A

Seidel, Barry Stanley, '53, January 14, 2019.
Gore, Robert Walton, '59, Sept. 17, 2020.
Whitesell, John Nowland, '65, no details.
Danfelt, Edward Lewis, '75, Dec. 28, 2002.



California Alpha '79

Earl W. McCune Jr., Ph.D.

May 27, 2020

Worked on technology development in the field of radiofrequency and wireless design for more than 45 years and wrote two reference books with Cambridge University Press.



Delaware Alpha '59

Robert W. Gore, Ph.D.

September 17, 2020

President of W. L. Gore & Associates for 25 years, whose invention of ePTFE created the breathable-yet-waterproof fabric known as Gore-Tex®.

DISTRICT OF COLUMBIA

ALPHA DC A

Bevans, Nathan Eugene, '61, April 20, 2006.
Caldwell, Theodore, '62, no details.
Blackburn, Walter Scott, '63, no details.
Davenport Jr., Roy Kirklin, '65, Aug. 17, 2015.
Isibor, Edward I., '65, December 9, 2016.
Harris, Gary Lynn, '75, no details.
Turner, Lordian Peter S., '77, no details.

GAMMA DC T

Plyer, Charles Herbert, '52, no details.
Bladen, James Benjamin, '70, July 19, 2006.
Riley, Gordon Leroy, '76, November 23, 2009.

FLORIDA

ALPHA FL A

Yii, Roland, '45, June 5, 2001.
Venning, Selby Gregorie, '49, no details.
Godfrey, William Melvin, '50, Nov. 7, 2011.
Williams, Joseph W., '50, March 17, 2004.
Christensen, Bent Aksel, '51, Aug. 16, 2014.
Rummel, Raymond Alfred, '57, Nov. 28, 2001.
Fontana Jr., Andrew J., '62, Sept. 11, 2004.
Tew Jr., Walter Hosey, '63, June 7, 2001.
Pringle, George Overton, '65, Dec. 8, 2006.
Leonard, Michael Steven, '70, Jan. 23, 2020.
Roshitsh, Todd William, '88, Dec. 24, 2004.
Tyson, Julia Marie, '01, March 19, 2005.

BETA FL B

Heyer, Edwin F., '54, July 14, 2015.
De Young, Maurice, '78, June 16, 2011.

GAMMA FL T

Griffith, John Edward, '50, February 6, 2017.
Baker, Clyde M., '74, March 24, 2005.
Schaufelberger, Theodore, '81, Feb. 27, 2001.
Greenlees, William M., '82, Aug. 17, 2017.
Johnson, John Thomas, '92, Nov. 10, 2001.

DELTA FL Δ

Denning, Richard Grayson, '56, Aug. 7, 2013.
Tyson, Nina Marie, '84, December 30, 2005.
Jaros, David Paul, '90, November 11, 2014.

EPSILON FL E

Sedock, Brian David, '93, August 5, 2006.

GEORGIA

ALPHA GA A

Funderburk, Joe Carmichael, '41, no details.
Reiser Jr., Walter Allen, '43, Dec. 30, 2005.
De Vries, Alfred Lothar, '45, Feb. 13, 2005.
Dougherty, Richard Leo, '47, Feb. 24, 2010.
Giegold, William Carl, '47, no details.
Eichhorn, Delmas Fairbanks, '48, no details.
Willbanks, Jack, '48, June 15, 2007.
Clemons, Joe Newton, '49, April 9, 2005.
Greene, Rufus Riherd, '49, Feb. 17, 2004.
Hays, James Calvin, '50, October 31, 2020.
Jackson, James Earl, '50, Dec. 25, 2011.
Tutt, John Franklin, '50, August 16, 2007.
Buchanan, William Wray, '52, May 16, 2015.
Jenkins, Claude William, '52, Oct. 26, 2007.
Siggelko, Howard Roger, '53, Dec. 11, 2001.

Christopher, Ben Gray, '54, Sept. 28, 2017.
Shuford, Solon Carl, '54, no details.
Ellis, Marvin Gene, '57, December 29, 2019.
Johnson, Charles Edward, '57, Oct. 2, 2009.
Warshaw, Stanley Irving, '57, March 8, 2017.
Wiegmann Sr., Francis L., '57, July 17, 2020.
Yates, William Alton, '59, October 28, 2003.
Reid, George Paul, '60, May 5, 2014.
Henderson Jr., Willie B., '62, Sept. 3, 2020.
Ryter, Henry Albert, '62, November 21, 2003.
Hall, Nanette Elizabeth, '79, no details.
Keever, David Ray, '98, no details.

IDAHO

ALPHA ID A

Anderson, Jay V., '61, December 16, 2002.
Lee, Harry William, '72, June 2, 2009.
Chua, Song Seng, '84, November 3, 2005.

ILLINOIS

ALPHA IL A

Albright, William Graydon, '42, July 28, 2000.
Lessner, John Willard, '42, January 27, 2002.
Knell, Martin, '43, no details.
Wunder, Frederick R., '43, Dec. 17, 2017.
Whitaker, Robert William, '44, no details.
Pelletier, Shirley William, '47, Feb. 21, 2004.
Schroeder, Howard E., '47, Sept. 12, 2004.
Pechloff, Joseph, '48, August 29, 2010.
Johnson, John Grewe, '50, no details.
Boaz, Reynolds Ollia, '51, no details.
McCullough, Thomas G., '51, April 9, 2006.
Miller, Leon Jackson, '52, March 15, 2001.
Roszyk, Leon Marion, '54, October 25, 2011.
Brush, Ronald Albert, '55, Sept. 20, 2006.
Larson, Raymond Edward, '55, Nov. 11, 2003.
Gee, Gordon Edward, '56, August 14, 2001.
Beebe, Donald Roy, '57, March 18, 2008.
Beutjer, William Herbert, '59, Aug. 18, 2006.
Bruen, James Patrick, '60, March 1, 2007.
Lawson, Erwin Clair, '60, Dec. 16, 2000.
Lenzi, Ernest Vance, '62, December 30, 2015.
Strohman, Rollin Dean, '62, Sept. 8, 2011.
Lindsey, Thomas Harry, '65, Feb. 10, 2020.
Onischuk, Steven James, '71, no details.
Goetschel, Christian J., '85, April 10, 2009.

BETA IL B

Chertow, Bernard, '42, no details.
Bubley, Henry Joe, '51, no details.
Kizaur, William Joseph, '54, no details.
Postma, Robert William, '54, Aug. 22, 2020.
Wentworth, Milo Riggs, '56, May 13, 2005.
Bergendorf, Harold W., '58, July 9, 2010.
Lautenschlager, Eugene, '58, March 14, 2009.
Popper, Glenn Francis, '58, no details.
Gustafson, William C., '59, July 26, 2002.
Staib, Bernard George, '59, Oct. 14, 2020.
Triplett, Melvin Eugene, '61, Oct. 27, 2009.

GAMMA IL T

Petritz, Richard Louis, '44, April 28, 2003.
Whitson, John Thomas, '47, no details.
Knapp, George Wayne, '48, April 28, 2009.

Meyer, Theodore Craig, '49, no details.
Dusch, Glen Arthur, '50, no details.
Jones, Donald Lloyd, '50, Sept. 23, 2007.
Hammer, Mark John, '54, August 9, 2014.
Daly, Georgann G., '81, June 19, 2000.

DELTA IL Δ

Stear, James Robert, '58, no details.
Kozlevcar, Joseph Gerald, '63, Oct. 19, 2020.

INDIANA

ALPHA IN A

Hollis, Walter Charles, '41, no details.
Van Horn, John Coerper, '41, Jan. 19, 2006.
Lovett, Gordon Hale, '42, no details.
Sprague, Richard Edgar, '42, no details.
Turner, Frederick Judson, '42, July 28, 2007.
Zech, William Albert, '42, February 8, 2011.
Caccavale, Anthony G., '43, April 19, 2005.
McMyler, Safford William, '44, Dec. 3, 2004.
Minges, Richard John, '44, no details.
Victor, Irving William, '45, May 11, 2011.
Lockwood, James Potter, '46, Dec. 5, 2003.
Shore, Leonard Ross, '47, March 7, 2004.
Appel, Frederick T., '48, Nov. 13, 2008.
Hummel, Richard P., '48, March 10, 2008.
Casebeer, Harry Mark, '49, July 26, 2006.
James Jr., George T., '49, May 22, 2020.
Kenney Jr., Frank McLead, '49, May 27, 2010.
Paul, William T., '49, January 12, 2001.
Stanley, George P., '49, no details.
Whiting Jr., Charles A., '49, June 12, 2020.
Yost, Arnold Gordon, '49, August 11, 2004.
Beesley, James Price, '50, no details.
Little, William Evan, '50, January 13, 2005.
Ross, Elton Chenoweth, '50, April 1, 2020.
Salmon, Thomas Walsh, '50, Nov. 10, 2007.
Giuglianotti, Anthony, '51, June 14, 2002.
Stumpf, Charles Lester, '51, July 22, 2005.
Quantz, Raoul J., '52, September 17, 2003.
Berkery, Eugene Aloysius, '53, no details.
Smith, Charles Christopher, '53, no details.
Wanthal Jr., Alvin Edmund, '54, no details.
Barnes, John Ray, '55, February 5, 2017.
Drissell, Brian Arthur, '55, no details.
Brubaker, Samuel C., '56, Nov. 19, 2005.
Mikesell Jr., Walter Ray, '56, Oct. 12, 2005.
Reid, Thomas Barbee, '56, May 16, 2002.
Burton, Robert Monroe, '57, Sept. 22, 2020.
Musleh, Fouad E., '58, December 8, 2019.
Davidson, Michael Longhran, '59, no details.
Peter, Anthony Edward, '59, no details.
Tults, Peter Priit, '59, August 23, 2004.
Zeh, David Baur, '59, December 26, 2005.
Brubaker, Louis Miller, '60, Nov. 13, 2003.
Stout, James Roy, '61, November 9, 2004.
Winter, David Frank, '63, no details.
Lacy, Donald Lee, '64, April 11, 2001.
Bultemeier, Ralph, '65, April 20, 2007.
Hodgins, Bruce John, '65, Dec. 16, 2005.
Killen, George Edward, '65, May 5, 2008.
Calderone, John George, '66, August 1, 2007.

CHAPTER ETERNAL

Continued

ALPHA IN A

Glaze, Jerome, '66, April 26, 2019.
Bicknell, Bruce Allen, '68, October 12, 2015.
May, Daniel Wesley, '69, June 8, 2014.
Huskamp, Jeffrey Craig, '71, May 27, 2010.
Martz, Tom Lee, '77, May 1, 2000.

BETA IN B

Flack, Robert Wade, '47, April 9, 2014.
Cole, Leon M., '58, October 5, 2020.

GAMMA IN Γ

Austin, Michael Edward, '61, Feb. 7, 2011.
Meyers, John Richard, '63, no details.
Garbrous, Joseph, '69, April 14, 2000.

DELTA IN Δ

Buss, Kenneth Gene, '64, April 24, 2004.
Sedore, John Erie, '67, December 15, 2006.

EPSILON IN E

Haughey, Lynne Anne, '90, October 2, 2017.

IOWA

ALPHA IA A

Bishop, Glen Sumner, '42, no details.
Wilts, James Reed, '44, no details.
Kurtz, John Wendell, '45, January 14, 2020.
Brackett, Robert Chase, '48, Oct. 22, 2020.
Twedt, Paul Leroy, '48, no details.
Vander Haar, Robert Earl, '51, April 25, 2004.
Crites, Raymond David, '52, May 16, 2008.
Cosgrove, Thomas Henry, '53, Jan. 22, 2005.
Krumm, Floyd Henry, '53, no details.
Gordon, Gene Paul, '54, October 27, 2020.
Thompson, Jack Dean, '54, June 3, 2011.
Ashland, Robert F., '57, Dec. 16, 2004.
Meddaugh, Samuel Alan, '58, Oct. 13, 2014.
Birlingmair, William Enos, '59, Aug. 18, 2003.
Vollmar, Craig Lee, '59, April 18, 2014.
Lang, Tony R., '60, October 1, 2000.
Hutchinson, Boyd Liam, '63, June 15, 2005.
Stephens, Kenneth Rodman, '63, no details.
Anderson, John Ernest, '65, March 12, 2020.
Nissen, Michael Ludwig, '66, May 6, 2001.
Chatterton, Gale Harmon, '67, Jan. 12, 2019.
Grimes, Geoffrey C., '69, March 31, 2020.
Hutchison, Everett E., '72, August 23, 2010.

BETA IA B

Noon, T. Cyril, '42, July 30, 2006.
Conger, Robert Lynn, '48, November 1, 1989.
Curtis, Huntington W., '50, Sept. 13, 2011.
Putnam, Duncan M., '50, Dec. 23, 2012.
Marble, Maurice Andy, '58, no details.
Huff, Herbert David, '60, July 15, 2014.
Post, Robert Francis, '66, Dec. 18, 2003.
Groe, Lynn Gerald, '69, January 14, 2018.

KANSAS

ALPHA KS A

Johnson, Leland Robert, '41, March 22, 2007.
Munsinger, Dorus Milo, '42, July 27, 2007.
Harned, Malcolm Stuart, '43, no details.
Sloan, Clinton Crawford, '44, Feb. 26, 2002.
Mahuron, Hal Hawley, '48, Sept. 22, 2008.
McCarter, Duane King, '48, Sept. 16, 2005.
Potter, Richard Ralph, '48, Sept. 13, 2005.

Sciandrone, Joseph Carl, '48, Jan. 30, 2007.
Harrison, James Cameron, '49, no details.
Barnett, William Prentiss, '50, Aug. 13, 2006.
Nahman, Norris Stanley, '51, Sept. 6, 2019.
Seever, Robert Earl, '51, no details.
Stucker, Nova Eugene, '52, Nov. 13, 2018.
Lamb, Robert Lewis, '55, August 28, 2020.
Brinkmeyer, Francis M., '56, Dec. 30, 2011.
Rodewald, Newell C., '58, Oct. 28, 2008.
Ingenthron, Robert B., '61, Oct. 24, 2013.
Miller, Kelman Max, '62, October 20, 2007.
Huber, Michael L., '88, no details.
Miller, Gail Ann, '94, November 9, 2008.

BETA KS B

Forcum, William Richard, '51, June 18, 2003.
Maxon, Gene Harland, '57, Sept. 1, 2005.
Clark, Dale Leroy, '64, July 20, 2010.
Scheu, Arnold William, '69, October 19, 2006.
Ruhl, Gregory S., '95, April 21, 2007.

GAMMA KS Γ

Williams, Wayne W., '51, May 10, 2005.

KENTUCKY

ALPHA KY A

Finnie, William Horace, '47, March 16, 2001.
Kadaba, Prasad Krishna, '47, Nov. 27, 2018.
Witt, Wesley Gordon, '49, no details.
Christoph, Vern Hewitt, '52, October 18, 2007.
Lafferty, James Francis, '55, Nov. 3, 2013.
Keeling, Fred Milton, '58, no details.
Shelton, Glenn Brandon, '59, Feb. 1, 2020.
Kennoy Jr., John Sharp, '60, March 11, 2013.
Mellott, Jack Raymond, '60, March 19, 2006.
Hill, James Porter, '62, Nov. 30, 2018.
Richardson, Tilford Ray, '62, August 4, 2020.
Imredy, John B., '64, January 17, 2000.
Steele, Larry Morgan, '69, no details.
Schmitz, Jerome J., '70, Sept. 16, 2001.
Clark, Paul Alan, '80, April 4, 2013.
Foley, Stephen Sean, '81, August 31, 2003.
Massey, Raymond T., '81, May 31, 2006.

BETA KY B

Becker, Stanley Edward, '52, no details.
Cart Jr., Eldred Nolen, '57, March 19, 2018.

LOUISIANA

ALPHA LA A

Liebert Jr., Joseph, '41, no details.
Middleton Jr., Walter Green, '41, no details.
Coe Jr., Paul Eber, '42, April 10, 2000.
Edelen, Garland Osea, '43, no details.
Anding, Robert Dalton, '48, no details.
Girner, Henry M., '50, April 29, 2000.
Power, Robert Alexander, '56, Jan. 22, 2019.
Braun, Ralph Frank, '58, October 11, 2020.
Woltz, John Robert, '59, February 1, 2005.
Hackler, Michael Thomas, '70, Aug. 27, 2007.
Bell, Thomas Aubrey, '83, Dec. 19, 2007.

BETA LA B

Bell Jr., Frank Arundel, '49, May 23, 2016.
Lartigue Jr., Henry James, '60, Oct. 16, 2020.
Bagalman, Perry Marvin, '67, Aug. 17, 1984.
Swayne III, Robert John, '75, March 26, 2013.

Bonney, Robert D., '79, March 14, 2005.

GAMMA LA Γ

Lindsey, Myron Jerry, '57, no details.
Royer, Kenneth Ray, '57, no details.
Ackel, Carter Barton, '58, January 21, 2006.
Hendricks, Abe Troy, '58, Sept. 30, 2020.
DeVilbiss, Alan Jerome, '60, April 16, 2011.
Crabtree, Kenneth W., '62, March 25, 2006.
Caulfield, Joseph Larry, '69, Dec. 28, 2009.
Huff, Coy William, '95, September 5, 2009.

DELTA LA Δ

Binnings, Robert Perry, '52, no details.
Miller, Merlin John, '60, no details.
Burguieres, Philip J., '65, June 30, 2016.

MAINE

ALPHA ME A

Brown, Francis Almon, '43, October 12, 2003.
Cope, Philip, '44, May 26, 2000.
Innes, Richard Burgess, '45, October 9, 2020.
Hammond, Warren Everett, '50, no details.
Cox, Charles D., '54, no details.
Desroberts, George Henry, '54, no details.
Healy, Edwin David, '59, September 10, 2012.
Wheaton, Elwin, '59, no details.
Allen, Charles Edward, '60, no details.
Arsenault, Robert David, '73, Jan. 12, 2003.
Perry, Peter Emerson, '77, July 22, 2011.

MARYLAND

ALPHA MD A

Long, Robert Radcliffe, '41, Feb. 28, 2014.
Strible, Verne Clarke, '48, May 7, 2020.
Mills Jr., Robert Roger, '52, no details.
Sisk Jr., Mason Samuel, '58, Dec. 25, 2001.
Hanlein, Stuart Lamar, '60, July 17, 2020.
Winslow, Nathan John, '71, March 17, 2005.
Woolbert Jr., Robert E., '75, Nov. 28, 2001.
Leslie, William Stephen, '81, Sept. 30, 2011.
Iasiello, Alfonso Nicholas, '88, April 5, 2002.

BETA MD B

Burnside, Bruce H., '43, March 28, 2010.
Lundell, Kermit Albert, '44, June 5, 2006.
Hochuli, Urs Erwin, '50, March 5, 2002.
Hughes, Harry Elroy, '51, October 22, 2007.
Miller, Leo Charles, '58, no details.
Hanyok, Joseph Michael, '65, Dec. 5, 2018.
Barolet, John Alfred, '66, June 12, 2011.
Newhouse, Joseph David, '97, Feb. 12, 2005.

MASSACHUSETTS

ALPHA MA A

Majka, Stanley John, '41, February 3, 2000.
Ramsay Jr., Allan Duthie, '42, April 24, 2002.
Gleason, Walter Warren, '45, no details.
Busch, Robert Arthur, '51, April 30, 2013.
Lewis, Edward L., '51, March 12, 2013.
Sabbagh, Edward, '78, no details.
Doyle, Gregory John, '82, October 6, 2020.

BETA MA B

Biggs, John Melvin, '41, September 9, 2000.
Maxwell, Robert William, '43, no details.
Cunningham, Herbert Jay, '44, July 23, 2004.
Rock, David Miguel, '45, no details.



Kansas Alpha '51
Norris S. Nahman, Ph.D.
 September 06, 2019

Received California State Poly Distinguished Alumnus Award in 1972, was an IEEE Fellow, and directed the National Bureau of Standards pulse & time domain section as chief.



Special Gifts in Memory of:

*Ralph F. Braun, LA A '58, from his wife;
 Calvert F. Eck, MA Z '60, from his wife Joy;
 Geoffrey C. Grimes, IA A '69, from his wife Vicki;
 and James L. Jew, NY L '71, from his wife Janet.*

Hyde, Richard Walker, '47, Sept. 2, 2001.
 Noss Jr., Oscar Fritz, '49, August 23, 2006.
 Fournier, Henry Morton, '50, April 8, 2009.
 Erickson, Arnold Roderick, '52, Jan. 5, 2015.
 Almqvist Jr., Milton L., '54, March 14, 2010.
 Hindel, Robert, '55, April 5, 2007.
 Markham, Richard Arthur, '55, Nov. 7, 2003.
 Musgrove, Max Donnell, '55, no details.
 Schneider, Michael, '57, September 6, 2001.
 Cameron Jr., Allan Kenzie, '58, no details.
 Mortensen, Richard Edgar, '58, Oct. 26, 2004.
 Weimer, Ronald Burdette, '58, Nov. 20, 2003.
 Glenn, William Henry, '59, no details.
 Janak, James Francis, '60, no details.
 Karp, Sherman, '60, May 16, 2017.
 Schow II, Horace, '60, March 29, 2005.
 Brendel, Philip Joseph, '62, March 21, 2010.
 Everett, Sidney John, '65, January 9, 2020.
 Nicholson, David William, '66, Jan. 23, 2014.
 Cheng, Hsiang-Shou, '68, March 15, 2008.
 Baldwin, Robert William, '80, Aug. 21, 2007.
 Fester, Mordechai Bezald, '87, Dec. 24, 2009.

DELTA MA Δ

Schmidt, Werner Hans, '36, June 9, 2020.
 Whitehead, Karl Winfield, '50, Dec. 1, 2010.
 Molander Jr., William A., '51, Dec. 22, 2007.
 Ferguson, Paul F., '53, April 1, 2008.
 Derby, Marshall Joseph, '64, May 16, 2007.

EPSILON MA E

Stahl, Richard Irwin, '64, December 18, 2013.
 Drevitch, Nolan Arthur, '67, June 28, 2002.
 Cameron, Gary John, '70, Nov. 12, 2004.
 Adamson, Keith Allen, '77, October 2, 2007.
 Chan, Shek Tsang, '77, July 10, 2003.

ZETA MA Z

Falcone, James Francis, '52, Dec. 2, 2005.
 Nicholas, Douglas, '52, April 1, 2008.
 Bembem, Stanley Michael, '56, Oct. 5, 2019.
 Klingloff, Robert Fuller, '59, no details.
 Mullaly, Jerome Raymond, '63, Oct. 11, 2011.
 Greenwood, David Francis, '64, July 30, 2009.
 Connors, David Michael, '65, Aug. 15, 2006.
 Rockwell, Robert E., '65, no details.
 Gagliardo, Victor Arthur, '79, no details.
 Arzberger, David S., '81, no details.

ETA MA H

Harrington Jr., Francis A., '70, Nov. 5, 2017.
 Houle, Peter James, '76, January 27, 2004.
 Mroszczyk, John W., '77, July 30, 2019.

THETA MA Θ

Cavaliari, Anthony Jay, '84, June 19, 2007.

MICHIGAN

ALPHA MI A

Aalsburg, Joe Theodore, '48, Sept. 19, 2014.
 Patterson, Garvin Wesley, '69, July 11, 2020.
 Roelse, James Lee, '81, no details.

BETA MI B

Karlsen, Torgeir, '51, no details.
 Zellmer, Lynn Rodney, '51, June 26, 2002.
 Jensen, Harold Sherwood, '52, Feb. 8, 2018.
 Peterson, Roger H., '56, January 1, 2012.

Junttila, John William, '58, August 11, 2007.
 Slocum, Richard L., '58, September 17, 2020.
 Fisher, James Edward, '59, Feb. 19, 2007.
 Shannette, Gary Wayne, '59, no details.
 Windmuth, John David, '67, June 30, 2013.
 Bouckaert, Kirk Emiez, '81, April 10, 2002.

GAMMA MI Γ

Harwood, John Henry, '41, June 18, 2006.
 Hann, Paul Douglas, '43, July 6, 2003.
 Drutowski, Richard C., '44, Dec. 9, 2006.
 Morrison, Howard R., '47, July 13, 2002.
 Callahan, Marion Leroy, '48, no details.
 Papenguth, Loren Robert, '48, July 23, 2010.
 Hadden, George, '49, September 26, 2009.
 Kalikoff, Stanley R., '49, August 31, 2004.
 Titus, Robert Edmund, '50, June 3, 2006.
 Kowalski, Eugene Roman, '51, no details.
 Bing, John Andrew, '53, October 10, 2010.
 Brooks, Victor Loren, '53, February 10, 2014.
 Graham, Thomas Daniel, '53, April 26, 2002.
 Wagner, Charles Edward, '53, March 1, 2013.
 Nicolaysen, Emil, '54, July 18, 2009.
 Ryan, James McKee, '54, August 23, 2016.
 Brown, Edward Cowan, '56, Sept. 8, 2020.
 Kraai, Dwight Alan, '57, October 3, 2019.
 Scott, Richard A., '57, February 27, 2020.
 Tromley, Richard James, '59, Dec. 12, 2017.
 Hinton, Edward Stephen, '60, no details.
 Adair, James Edwin, '61, July 28, 2005.
 Parker, Alan Keith, '61, no details.
 Goldsmith, John Allen, '62, August 11, 2002.
 Snell, Spencer Allan, '63, February 10, 2008.
 Greene, Edward Sherwin, '66, May 14, 2009.
 Torkelson, Marcus A., '89, June 11, 2003.
 Ghiso, Neil Samuel, '92, February 11, 2002.

DELTA MI Δ

McAulay, Hubert J., '42, March 12, 2004.
 Manko, Rolf Emanuel, '45, no details.
 Riedinger, Louis Allen, '47, no details.
 Parker III, William H., '60, Nov. 11, 2019.
 Jacobs, Dennis R., '66, June 16, 2002.
 Pastula, John Stanley, '74, no details.
 Kuzma, John Paul, '78, December 18, 2014.

EPSILON MI E

Bradford, Claude Homer, '45, April 15, 2020.
 Vetenko, Howard John, '47, Sept. 19, 2004.
 Smart, Gordon Maxwell, '49, Feb. 20, 2004.
 Hock, Roy Edward, '51, October 25, 2020.
 Stoker, Richard Sorrell, '58, no details.
 Norling, Richard Lee, '59, January 1, 2019.
 Ettinger, Bruce Lee, '60, no details.
 Schmitt, John Fredrick, '64, May 10, 2020.
 Stubits, John, '66, April 24, 2020.
 Tiefenbach, Alfred, '68, February 21, 2002.
 Fassett, Bruce Alan, '70, no details.
 Wagner, Thomas Earl, '74, Feb. 10, 2007.

ZETA MI Z

Rose, Harry Roy, '48, July 5, 2006.
 Medicus, Lawrence G., '50, April 22, 2006.
 Tison, Robert Wayne, '93, Sept. 10, 2012.

ETA MI H

Dukes, Sam E., '59, November 5, 2000.

Rzepka, David Stanley, '79, Sept. 9, 2011.

MINNESOTA

ALPHA MN A

Kendall, Emmett Lyle, '49, July 16, 2007.
 Doherty, Robert Patrick, '50, no details.
 Cotrill, Harry Eugene, '51, no details.
 Borgstrom, James C., '53, June 25, 2013.
 Nelson, Roger Harvey, '54, February 2, 2020.
 Tiemens, Myron Frank, '57, Oct. 10, 2011.
 Tersteeg, Glenn Edward, '62, August 9, 2020.
 Erickson, William Algot, '67, October 8, 2016.
 Ronning, Steven Phillip, '68, October 8, 2001.
 Patoile, Francis Joseph, '69, Dec. 20, 2003.

MISSISSIPPI

ALPHA MS A

Lewis, Willis Hamilton, '41, July 12, 2010.
 Stampley, Norris Lochlen, '41, Jan. 14, 2007.
 Cockrell, Sanford C., '42, Oct. 14, 2012.
 Vail, Glenn Elbert, '50, no details.
 Andrews, William Roscoe, '56, Nov. 14, 2005.
 Billingsley, James P., '56, March 27, 2011.
 Lewis Jr., Sam Richard, '56, May 31, 2012.
 Watts Jr., Herman L., '58, Nov. 29, 2019.
 Mack, Donald Edwin, '60, June 3, 2006.
 Patin, Larry James, '62, February 4, 2018.
 Smelko, John Thomas, '64, Sept. 10, 2008.
 Allbritton, Gary Douglas, '69, Nov. 28, 1998.
 Evans, Michael Scott, '91, no details.

BETA MS B

Best, Edwin Moore, '69, April 18, 2010.

MISSOURI

ALPHA MO A

Fitzer, Jack N., '51, January 3, 2018.
 Gassner Jr., John Henry, '56, no details.
 Gillum, Marvis Neal, '61, October 25, 2019.
 Nipper, Collin Daryl, '63, no details.
 Asher, Stephen James, '65, April 11, 2014.
 Draney, David Edward, '78, no details.
 Stapleton, Jerry Wayne, '78, Jan. 15, 2001.
 Gegg, Steven Gerard, '82, January 16, 2014.

BETA MO B

Main, Marion Kenneth, '43, Feb. 12, 2004.
 Walpert, George W., '47, no details.
 Anderson, Walter F., '48, August 6, 2007.
 Breton Jr., Ernest Joseph, '49, Feb. 6, 2010.
 Frank, Kurt Hubert, '49, June 17, 2005.
 Sarzin, Julius Leon, '49, no details.
 Wood, James Edward, '49, May 29, 2011.
 Horsley, Joseph John, '50, Sept. 4, 2003.
 Rausch, Maurice Keith, '50, Jan. 25, 2001.
 Spiller, William Charles, '50, Feb. 10, 2017.
 Fritschen Jr., Herman A., '51, July 3, 2010.
 Tarwater, James Pinkney, '51, no details.
 Sanders, Eugene Fred, '52, Dec. 30, 2016.
 Soehlke, Richard George, '52, Aug. 10, 2020.
 Sharp, Brooks Martin, '59, July 21, 2017.
 Donaldson, John William, '60, Aug. 29, 2006.
 Urekar, Joseph Florijan, '61, Nov. 17, 2003.
 Allen Jr., Louis Benton, '63, Nov. 5, 2007.
 Rowlan, Charles William, '67, Jan. 10, 2011.
 Roberts, Omer Howard, '69, Sept. 15, 2005.
 Borgmeyer, James David, '70, Jan. 6, 2004.

CHAPTER ETERNAL

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

BETA MO B

Canon, Ronald Martin, '70, October 14, 2020.
Burke, Harold Leon, '73, no details.
Porubec, Kris L., '00, July 7, 2003.

GAMMA MO Γ

Head, Forrest Emmett, '41, October 7, 2002.
Thoenes, Edward George, '41, no details.
Geisman, Raymond A., '43, March 31, 2003.
Krachmalnick, Fred, '45, no details.
Malley, Eugene Stanley, '49, no details.
Sattler, Robert Edward, '49, Jan. 19, 2002.
Forrest, Charles Stanley, '50, Sept. 4, 2006.
Cavagnaro, Edward J., '51, March 19, 2002.
Muth, John Fraser, '52, October 23, 2005.
Griffith, Virgil V., '56, May 10, 2001.
Blaha, John, '61, March 12, 2006.
Hong, Richard, '61, April 10, 2003.
Saufnauer III, John, '61, no details.
Gruender, Leonard Hubert, '62, Oct. 4, 2004.
Schulte, Louis Terry, '63, May 18, 2000.
Shamblin, Ronald John, '65, no details.
Keller, Robert, '66, September 13, 2020.
David Jr., Robert Wallace, '67, Aug. 1, 2006.
Crouther, Ronald, '71, July 7, 2010.
Turley, Richard Duane, '89, August 6, 2007.

MONTANA

ALPHA MT A

McCullough, David W., '47, April 9, 2003.
Johnson, John Lowell, '49, Sept. 6, 2020.
Cigliana, Elroy, '51, June 15, 2005.
McKee, Alan Forrest, '56, no details.
Newman, Bill Henry, '65, no details.
Miller, Gregory Kent, '73, July 1, 2010.

NEBRASKA

ALPHA NE A

Dinh, Thanh Kim, '84, November 16, 2000.
Hindman, Timothy William, '85, no details.
Summers, Rick Leon, '89, no details.

NEVADA

ALPHA NV A

Dickinson, David Franklin, '41, no details.
Brown, Noel Brooking, '83, Sept. 29, 2000.

NEW HAMPSHIRE

ALPHA NH A

Bullard, Edwin Arthur, '51, October 12, 2007.
Dooley, George Hadley, '53, August 12, 2020.
Veech, Edwards Hayden, '64, Aug. 18, 2006.

NEW JERSEY

ALPHA NJ A

Egan, Edward Francis, '40, July 15, 2020.
Halbach, Edward, '43, February 26, 2002.
Rodie, Edward Bruce, '43, no details.
Novick, Robert, '44, May 6, 2007.
West, Walter Farish, '45, August 23, 2003.
Reed, George Dallas, '49, August 2, 2001.
Keller, William Nicholas, '51, Nov. 11, 2017.
Rossi, Richard Alfred, '53, Sept. 26, 2003.
Wilson III, John A., '53, March 23, 2009.
Canham, Alan Tracy, '55, March 10, 2004.
Reekstin Jr., John Peter, '61, Oct. 26, 2006.
Wander, John Eric, '66, January 21, 2006.

Steiner, James Leslie, '67, October 10, 2002.
Molinaro, Frank Paul, '68, May 15, 2010.
Hrycak, Peter Donald, '73, July 2, 2003.

BETA NJ B

Heacock, David Powell, '41, Feb. 27, 2001.
McDonnell, John Andrew, '42, no details.
Fohrhaltz, Howard Augustus, '44, no details.
Mulder, James Wagar, '49, August 6, 2001.
Paraskevas, Paul T., '51, March 19, 2001.
Simon, Thomas Cameron, '67, Oct. 26, 2007.

GAMMA NJ Γ

Redmon, John King, '42, October 6, 2006.
Barab, Saul, '44, March 2, 2000.
Van-Blarcom, Albert M., '44, Oct. 16, 2006.
Hamalian, Aram Charles, '49, May 31, 2006.
Mustillo, Anthony D., '51, Feb. 28, 2007.
Wilt, Daniel Stuart, '51, August 20, 2020.
Albanese, Damian Frank, '52, Feb. 9, 2008.
Kizma, Raymond Eli, '53, July 11, 2003.
Koutouzakis, John Samuel, '53, July 8, 2002.
Woloshyn, Bohdan Donald, '58, May 25, 2001.
Kondracki, Edward John, '59, August 3, 2010.
Stafford, Thomas, '61, July 27, 2005.
Valentin, John Edward C., '61, no details.
Cohen, Jeffrey M., '62, October 12, 2003.
Benou, Robert, '67, December 10, 2017.
Glick, Robert Ronald, '68, November 1, 2019.
Zeiss, John Charles, '69, April 6, 2019.
Morrow Jr., John Gordon, '70, no details.
Hoffman, Theresa Ann, '71, June 1, 2001.
Zimmerly, Harry Leroy, '71, Nov. 9, 2000.
Maidt Jr., Robert William, '73, May 5, 2007.
Jubon, Jan David, '74, March 20, 2015.
Pursoo, Johnson Lashley, '82, July 16, 2005.
Dulisse, Leo D., '89, March 24, 2007.

DELTA NJ Δ

Beatty, Douglas Nellis, '57, August 17, 2020.
Burt, John Blair, '61, March 19, 2002.

NEW MEXICO

ALPHA NM A

Bushnell Jr., Paul Stanley, '81, Jan. 8, 2000.
Kovacich, Gregory Victor, '82, no details.
Hartman, Franklin T., '86, July 29, 2010.
Medina, Marcos Carlos, '91, March 17, 2000.

BETA NM B

Duran, Felicia Angelica, '92, April 16, 2020.

NEW YORK

ALPHA NY A

Epstein, Bennett Noah, '43, Sept. 24, 2008.
Weinberger, Howard L., '47, Dec. 4, 2009.

BETA NY B

Nocka, Carlo, '45, no details.
Plumb, Lewis Robert, '45, December 9, 2001.
Smith, Bernard Charles, '47, Feb. 23, 2000.
McCormick, James P., '49, no details.
Halkiotis, Rudolph Theognis, '50, no details.
Hall, Henry Marion, '50, February 26, 2011.
Tenenbaum, Edgar, '50, no details.
Quinlan, William James, '52, no details.
Casper, Donald M., '53, May 15, 2007.
Diaz, John Francis, '53, March 16, 2008.

Moffitt, Myron Lester, '56, June 13, 2001.
Kunzelman Jr., George J., '58, no details.

GAMMA NY Γ

Larson, Charles Albert, '41, Dec. 18, 2001.
Seymour, William E., '41, January 2, 2007.
Thomas Jr., Robert E., '44, Feb. 10, 2015.
Flomenhoft, Hubert Ivan, '45, Aug. 3, 2018.
Stephens, Henry E., '47, May 4, 2002.
Emley, Frank, '49, April 16, 2020.
Williams, Owen L., '49, no details.
Caravaty, Raymond D., '50, no details.
Frichette Jr., Roswell S., '50, no details.
Schnabel, Harry Valentine, '50, Dec. 4, 2003.
Young, Ronald James, '50, Sept. 16, 2001.
Miller, Robert Huntley, '51, no details.
Quirk, William Joseph, '51, no details.
Surprenant, Donald T., '51, no details.
Rogers, James H., '52, no details.
Dargue, Frank Bradley, '54, Sept. 6, 2002.
Gendron, Merrill, '54, August 8, 2020.
Hansen, Paul Anthony, '54, no details.
Yoshihara, Takeshi, '56, June 25, 2020.
Guthrie Jr., Leslie C., '57, June 11, 2011.
Hoffner Jr., Carleton C., '57, April 21, 2020.
Goldzung, Richard William, '60, no details.
Sistarenik, Frederick, '70, April 15, 2020.

DELTA NY Δ

Kendig, Ronald John, '72, April 27, 2005.

EPSILON NY E

Campagnolo, Joseph Felix, '42, no details.
Koltowich, Alexander, '49, no details.
Grasman, Charles Edward, '55, Nov. 8, 2010.
Manchak, John, '56, no details.
Hathaway, Robert N., '58, Sept. 18, 2020.
Paterson, Hugh Joseph, '58, July 10, 2009.
Brancazio, Peter John, '59, April 25, 2020.
Brantman, Russel, '67, November 20, 2012.
Defilippis, Giangrazio, '69, July 24, 2010.
Misiura, Stanley J., '72, December 25, 2017.

ZETA NY Z

McKenzie, Donald, '52, no details.
Pattin, Herbert Bernard, '52, no details.
Berman, Henry M., '54, no details.
Kwap, Theodore, '62, August 18, 2007.
Duryea, Wayne, '63, January 12, 2003.

ETA NY H

Illovsky, Gabriel, '44, no details.
Samson, Ralph Lawrence, '48, Nov. 19, 2001.
Monheit, Arthur T., '50, Feb. 27, 2007.
Moss, Alan M., '52, January 8, 2010.
Zachmann, Peter Harold, '53, Jan. 1, 2016.
Hansen, Harry Arthur, '55, May 13, 2005.
Friedland, Allan Burton, '60, Feb. 25, 2020.
Holmes Jr., Edward F., '62, Sept. 16, 2007.
Assal, Francois Tsvi, '67, August 26, 2011.
Gutjahr, Karl M., '73, no details.

THETA NY Θ

Wells, Eugene Francis, '50, October 2, 2020.
Clary, Leon H., '62, July 31, 2003.
Driscoll, John Joseph, '64, July 31, 2001.
Kelly, William Arnold, '79, Sept. 12, 2020.



New York Epsilon '59

Peter J. Brancazio, Ph.D.

April 25, 2020

Taught at Brooklyn College for 34 years, served as NY Epsilon Chapter president, was an early pioneer in the field of the physics of sports, and lectured on science and faith.



Ohio Alpha '51

Donald L. Southam

August 09, 2020

Past OH Alpha Chapter president, was awarded ten patents for missile and aircraft fuel systems, space power plants, printing presses, and foundry equipment.

IOTA NY I

- Alpern, Milton, '45, April 8, 2007.
- Ernst, Robert F., '49, no details.
- Rolund, Michael, '61, August 5, 2020.
- Leyendecker, Edward R., '63, no details.
- Herbig, William Joseph, '64, Jan. 26, 2011.
- Margolis, Stuart, '68, December 6, 2002.
- Georgalas, Gregory, '77, no details.

KAPPA NY K

- McKeehan, John Hughes, '46, Oct. 24, 2020.

LAMBDA NY Λ

- Schwab, Raymond William, '48, Dec. 3, 2007.
- Ober, Stephen Michael, '65, October 5, 2010.
- Eccleston, Harold F., '68, Sept. 25, 2010.
- Sorin, Victor Basil, '70, no details.
- Balamut, Morris Alan, '78, April 14, 2009.
- Mendelson, Jeffrey B., '79, April 26, 2007.
- Hai, Ilan, '89, no details.

NU NY Ν

- Ruckenstein, Eli, '49, September 30, 2020.
- Behnke, Edward R., '50, no details.
- Knight, Robert Leonard, '52, June 5, 2011.
- Rae, William J., '60, July 15, 2020.
- Cenkner, August Albert, '65, Oct. 31, 2011.
- Bernecki, Thomas Francis, '71, Oct. 19, 2011.
- Duncavage, Thomas D., '72, Aug. 7, 2011.
- Pisello, Thomas, '86, April 26, 2017.

XI NY Ξ

- Barry, B. Austin, '42, no details.
- Kiely, Robert John, '51, August 15, 2018.
- O'Connell, Sean Michael, '85, April 1, 2011.
- Pezzella, Romona Angela, '86, Dec. 29, 2009.
- Tully, Shane P., '87, no details.

PI NY Π

- Harris, Richard Glenn, '74, Dec. 24, 2006.

RHO NY Ρ

- Aupperle, Kenneth R., '79, Jan. 29, 2001.
- Mui, Chi Kin, '80, April 27, 2006.
- Holtzman, Ronald, '89, April 22, 2007.

SIGMA NY Σ

- Vernacotola, Dean Edward, '91, no details.

NORTH CAROLINA

ALPHA NC Α

- Armstrong Jr., John Roland, '48, Oct. 9, 2020.
- Epps, Harry Edward, '57, April 20, 2010.
- Craver, Billy Hoyle, '58, January 28, 2016.
- Salter Jr., Luther Carlton, '59, Jan. 13, 2011.
- Livengood, Romulus Odell, '60, Oct. 3, 2018.
- Raum, John Frederick, '62, no details.
- Broome, Timothy Gayle, '66, March 31, 2019.
- Thomas, Robert Gray, '72, March 14, 2001.

GAMMA NC Γ

- Dunaiski, Raymond M., '46, Oct. 13, 2001.
- Hunter, Jack Watkins, '49, no details.
- Fiegel, Harvey Edward, '51, June 14, 2015.
- Downey, Thomas D., '52, April 20, 2001.
- Roberts, John Edward, '54, Nov. 27, 2009.
- Bukowitz, Moritz, '55, April 21, 2002.
- Judd Jr., John Howard, '69, no details.
- Holt, Edwin David, '83, July 1, 2004.

DELTA NC Δ

- Pickard Jr., John Alonzo, '91, April 10, 2006.

EPSILON NC Ε

- Barnes, Glenn Franklin, '92, April 2, 2017.

NORTH DAKOTA

ALPHA ND Α

- Broschat, Myron Dale, '48, June 13, 2016.
- Lutness, Waldemar Davis, '49, no details.
- Bolmgren, Lester Norris, '55, June 6, 2017.
- Elton, Ole LaVerne, '58, December 22, 2014.
- Menze, Verlin Herman, '59, no details.
- Kutter, Lloyd Ray, '60, no details.
- Prothero, Dennis David, '60, Jan. 14, 2013.
- Bodmer, Thomas Carl, '69, June 25, 2015.
- Paulson, Clint Warren, '95, Feb. 24, 2015.

BETA ND Β

- Wolff, Margo Adele, '82, April 13, 2005.

OHIO

ALPHA OH Α

- Wischmeyer, William J., '43, no details.
- Levy, Gerald Vatz, '48, May 20, 2010.
- Southam, Donald Lee, '51, August 9, 2020.
- Slabinski, Victor Joseph, '61, no details.

BETA OH Β

- Bevis, Robert Charles, '42, no details.
- Fopma, Robert James, '42, Nov. 22, 2001.
- Cook, John Philip, '51, no details.
- Springmeier, Cliff Maddox, '56, May 26, 2001.
- Engel, John David, '57, April 16, 2011.
- Ivers, Deane W., '57, no details.
- Cox, Gayle Sylvanus, '58, no details.
- Morse, Webster Way, '60, no details.
- Beyer, Harold H., '61, June 18, 2010.
- Plane, Donald Ray, '61, no details.
- Stanforth, Richard Allen, '62, Dec. 2, 2010.
- Czarnecki, Dale David, '72, no details.
- Kelchak, Joseph Andrew, '77, Nov. 27, 2005.

GAMMA OH Γ

- Malavazos, James Chris, '42, no details.
- Cost, Joe Lewis, '43, no details.
- Deneroff, Lawrence, '43, May 20, 2003.
- Joost, Adelbert Ernest, '43, Feb. 12, 2001.
- Mayne Jr., Daniel Ira, '44, no details.
- Addleman, Lloyd Andrew, '49, June 5, 2008.
- Wilmarth, Robert W., '49, May 20, 2004.
- Irwin, Howard Dale, '50, March 27, 2009.
- Rocco, Francesco Patrick, '51, Dec. 5, 2007.
- Zerwick, John Harold, '51, August 10, 2020.
- Fallon, William Winkler, '52, October 9, 2020.
- Koch, John Arthur, '54, no details.
- Yerina, James Andrew, '54, June 14, 2006.
- McEntee, Jansen A., '57, April 26, 2005.
- Versal, George, '58, September 16, 2005.
- Clay, Don Richard, '60, November 4, 2018.
- Mullet, Edward Wayne, '60, Jan. 16, 2010.
- Center Jr., Daniel Haydn, '61, May 24, 2017.
- Fast, Delbert Lee, '62, no details.
- Kraft Jr., Leland Milo, '65, Sept. 1, 2011.
- Palkuti Jr., Leslie John, '66, Oct. 19, 2017.
- Gabel, Gerard Joseph, '77, May 11, 2015.

DELTA OH Δ

- Seifert Jr., Lloyd R., '62, Feb. 14, 2007.

- Russ, Terry Paul, '89, March 4, 2009.

EPSILON OH Ε

- Kostelich, John Frank, '52, Nov. 5, 2009.
- Turk, James Francis, '57, no details.
- Fussner Jr., Arthur Robert, '58, Aug. 6, 2008.
- Lassa, Stanley Eugene, '58, Dec. 8, 2004.
- Kappenhagen, George A., '59, March 8, 2016.
- Crow, Jack E., '62, September 3, 2004.
- Polomsky, John Paul, '62, Sept. 15, 2018.
- Perles, Henry Paul, '63, October 7, 2004.
- Lemmermann, Clarence, '66, July 19, 2001.
- Sedlak, Daniel Andrew, '67, Feb. 5, 2015.
- Van Horn, Lester Lavone, '71, no details.
- Helmerich, Kenneth D., '83, Sept. 30, 2008.

ZETA OH Ζ

- Knisely, Robert Carl, '48, August 5, 2007.
- Gagat, David J., '78, January 27, 2005.

ETA OH Η

- Curran, Edward Thomas, '48, Feb. 4, 2020.
- Potter, Raymond Selva, '48, May 11, 2020.
- Schuessler, John Major, '60, Aug. 23, 2009.
- Smyser, Craig Harrison, '65, May 18, 2018.
- Hackford Jr., Richard H., '72, Feb. 16, 2010.

THETA OH Θ

- Reiger Jr., Arthur Charles, '51, no details.
- Lewis, Chester, '66, December 29, 2003.

IOTA OH Ι

- Markey, Stanley Hart, '46, no details.
- Skemp, Charles G., '57, February 2, 2009.

OKLAHOMA

ALPHA OK Α

- Geffen, Theodore Morton, '43, no details.
- Rollins, Carl Lee, '50, April 4, 2009.
- Worrell, David J., '51, no details.
- Griffith, Brandon Harvey, '54, no details.
- Waddell, Richard Edward, '56, Jan. 8, 2020.
- Roberts, Thomas Delano, '63, Aug. 1, 2020.
- Fickel, Monty George, '65, October 2, 2008.
- Morrison, Patton A., '76, no details.
- Fore, Sharon Gayle, '77, October 23, 2020.
- Gratke, Frederick Michael, '80, Oct. 1, 2009.
- Landreth, Kelly Gene, '01, Sept. 7, 2008.

BETA OK Β

- Osborn, Jack Stoelting, '45, October 5, 2002.
- Watson, Harold David, '70, no details.
- Rutherford, Ronald E., '71, Nov. 20, 2007.

GAMMA OK Γ

- Fate Jr., Martin Eugene, '55, no details.
- Sharaf-Eldeen, Yahya I., '82, August 6, 2019.

OREGON

ALPHA OR Α

- Duffy, John Walter, '43, no details.
- Helman, Jack Farley, '50, no details.
- Gottenberg, William G., '54, April 25, 2010.
- Sharp Jr., Aubrey Lee, '62, Dec. 14, 2006.
- Darling, Ronald Kenneth, '67, Jan. 14, 2010.

PENNSYLVANIA

ALPHA PA Α

- Beauchamp Jr., James M., '41, Dec. 6, 2001.
- Latimer Jr., Elwood D., '42, Nov. 1, 2006.
- Link, Roderick Wylie, '44, Sept. 9, 2020.

CHAPTER ETERNAL

Continued

ALPHA PA A

Hunt, Valerio Rodrique, '49, Jan. 28, 2008.
Foster, Harold Marvin, '50, June 29, 2005.
Keel, Thomas Herbert, '51, October 26, 2005.
Moyant, George Carl, '51, November 7, 2006.
Saraydar, Richard Armen, '51, Jan. 7, 2008.
Hertzog, William Franklin, '56, no details.
Mikisits, Frank Joseph, '74, June 22, 2012.

BETA PA B

Van Emon, Clair E., '50, March 11, 2007.
Duncan, Lee Earle, '53, April 4, 2017.
Foose, Richard M., '59, no details.
Bauer, Edmund George, '61, June 2, 2007.
Greeley, David Michael, '62, March 20, 2003.
Lebowitz, Howard E., '68, Sept. 26, 2008.
Weaver, Kerry Alan, '73, no details.
Schelhorn, Kim R., '80, no details.
Buehler, David Leon, '84, no details.
Beck, Anderson L., '13, January 29, 2020.

GAMMA PA Γ

Beatty, Ralph Emerson, '42, April 24, 2010.
Meindl, James Donald, '55, June 7, 2020.
Petersen, Robert Bernard, '66, Feb. 18, 2011.
Ver Planck, David Morrison, '67, no details.

DELTA PA Δ

Blair, Harry Charles J., '61, Jan. 3, 2006.
Tong, David Woo Sang, '68, no details.
Senseny, Paul Edward, '72, Nov. 5, 2008.
Chang, Kuo-Shu Edward, '84, Jan. 1, 2007.

EPSILON PA Ε

Kulp Sr., Robert Charles, '48, April 24, 2000.
Carpenter, John Hallman, '51, July 12, 2020.
Gucwa, Stanley, '52, no details.
Powers, Robert Lee, '52, September 9, 2007.
Winkler, Richard Axford, '52, Jan. 25, 2018.
Conway Jr., William John, '70, June 24, 2005.

ZETA PA Ζ

Whirlein Sr., John J., '41, April 24, 2005.
Beard, Richard Burnham, '47, July 3, 2010.
Neubert, Warren E., '47, no details.
Hess, Edward Clinton, '48, May 23, 2003.
Sall, Irving, '48, February 2, 2001.
Berman, Charles David, '49, July 13, 2004.
Roschen, John K., '52, July 26, 2010.
Day, Esrom Eyster, '53, no details.
Boles, Elmore J., '55, April 10, 2010.
Laverty, David Paul, '56, May 23, 2000.
Kaplan, David, '57, no details.
Cholister, Russell John, '61, no details.
Krauss, John B., '61, September 22, 2012.
Caccuro, John A., '63, April 9, 2007.
Lubeck, Benjamin Bernard, '65, no details.
Petri, Paul F., '65, December 13, 2008.
Wrigley, Randall Darwin, '66, August 7, 2017.
Rivera, Ulise Camilo, '67, December 8, 2000.
Ellison, Jeffrey Jay, '68, April 7, 2007.
Fox, Ronald Norwood, '69, Feb. 23, 2019.
Garfinkle, Robert James, '75, Oct. 10, 2011.

ETA PA Η

Wittes Sr., John Alvin, '50, no details.

THETA PA Θ

Nedzbala, James Michael, '56, no details.
Ciamporcero, Audley A., '67, July 18, 2000.
Grab, George Dominic, '70, August 20, 2004.
Dietrick, Eugene Lewis, '75, June 12, 2005.
Walsh, John F., '81, April 29, 2005.

KAPPA PA Κ

McHenry, Thomas F., '50, Jan. 19, 2007.

LAMBDA PA Λ

Crusi, Suzanne Bronson, '78, Oct. 1, 2010.
Miller, Steven Keiht, '01, June 20, 2008.

RHODE ISLAND

ALPHA RI A

Marvell, Eric Sumner, '48, Nov. 15, 2006.
Rey, Paul Rudolf, '51, no details.
Brockington, Harry Rogers, '60, no details.

BETA RI B

Jones, Richard Earl, '48, February 20, 2005.
Grenier Jr., Henry Joseph, '70, Sept. 2, 2019.
MacDonald, John F., '72, no details.

SOUTH CAROLINA

ALPHA SC A

Storey, Wallace Arnold, '47, Sept. 4, 2020.
Hart, Richard Milledge, '50, Feb. 10, 2005.
Brent, John Allen, '63, May 7, 2013.
Ferguson, Alan Corbett, '75, July 12, 2011.

BETA SC B

Sumwalt Jr., Robert L., '49, June 11, 2016.
Sallman, John Barnes, '50, Dec. 4, 2002.
Schwartz, Elmer G., '50, March 19, 2005.
Breeland, Fred Scott, '51, October 22, 2013.
Covington, Carl William, '58, April 16, 2016.
Wall, Donald Beatty, '60, no details.
Bonham III, Charlton Harry, '61, Oct. 3, 2017.
Bowers, Ronald Evans, '68, June 25, 2018.

GAMMA SC Γ

Evans Jr., William Leroy, '48, March 11, 2009.
Seckinger, Allen H., '50, September 17, 2014.
Sloan Jr., Edward Dunn, '50, Oct. 27, 2020.
Scott, James M., '58, August 1, 2020.
Doughty, Jerry S., '70, August 19, 2005.

SOUTH DAKOTA

ALPHA SD A

Bach, Rodney Lee, '95, June 16, 2020.

BETA SD B

Dudden, Milo Allen, '41, January 18, 2003.

TENNESSEE

ALPHA TN A

Foster, Douglas Lee, '49, March 28, 2013.
Christopher Jr., James P., '58, Nov. 19, 2008.
Lee Jr., Oliver Boyd, '58, June 19, 2017.
Clement Jr., Frank Leslie, '59, July 30, 2008.
Sherrell, Fred Gordon, '60, October 8, 2007.
Barton, Thomas Alfred, '61, Oct. 28, 2018.
Craven Jr., Clyde Wesley, '61, June 2, 2019.
Lee, Robert Gaines, '62, February 13, 2019.
Milligan, Franklin Grady, '62, April 24, 2019.

BETA TN B

Gillespie, Robert Arthur, '49, Oct. 26, 2006.
Threadgill, Walter Dennis, '50, no details.

Beatty III, William Henry, '57, July 15, 2016.
Couch Jr., Frank Ben, '59, January 31, 2017.
Falk, Everett Harry, '61, January 24, 2003.

GAMMA TN Γ

Blevins, Donald Ray, '65, June 13, 2002.
Collier, William Lee, '83, October 10, 2020.

ZETA TN Ζ

Braddock, Justin Michael, '12, Oct. 24, 2020.

TEXAS

ALPHA TX A

Denson, Bryan Leslie, '41, no details.
Massey, Clem Martin, '48, no details.
Turpin, Robert Davis, '48, no details.
Mayo, James Adrian, '49, no details.
Ausman Jr., Joseph George, '50, no details.
Ling, Edward Hugo, '56, October 23, 2007.
Walker, Larry Glenn, '56, August 20, 2020.
Hall Jr., Jesse Berman, '59, August 24, 2013.
Cooper Jr., Bythel K., '60, August 3, 2000.
Seamon, James Hugh, '61, Nov. 16, 2001.
Young, Frank Levi, '64, March 19, 2016.
Dawson, Carroll T., '65, March 23, 2005.
Steger Jr., Paul Anthony, '76, Dec. 7, 2002.

BETA TX B

Beane, Kenneth Glenn, '42, June 7, 2009.
Willett, Felix Roger, '47, October 15, 2011.
Meadows, Paul, '49, February 25, 2006.
Parker, Douglas Franklin, '49, Oct. 7, 2015.
Henry, James Boyd, '50, October 2, 2020.
Dowdy, George Alvin, '52, no details.
Phillips, Willis Willard, '52, Sept. 5, 2007.
Duncan, Robert Leo, '55, February 1, 2020.
Wilde, James Bradford, '55, October 8, 2009.
Holliman, Kenneth Dale, '58, June 18, 2009.
Dumas, Theodore A., '60, July 24, 2020.
Tarrant, Richard Tully, '62, January 14, 2007.
McMichael, Richard Byron, '66, no details.
Gray, Patricia Ann, '86, October 11, 2010.

GAMMA TX Γ

Morosow, George, '50, February 8, 2006.
Siebenhausen Jr., Christian, '50, Aug. 14, 2020.
Griffith, Richard M., '54, July 18, 2001.
Campbell, David Temple, '58, Oct. 11, 2006.
Bertin, John Joseph, '61, October 11, 2008.
Lockett, Robert Reaves, '77, no details.

DELTA TX Δ

Montgomery, William J., '41, no details.
Peery, Allison Boyd, '48, December 11, 2005.
Boynton, Harry Gene, '49, Nov. 20, 2004.
Dickson, James Robert, '49, no details.
Seidel, Fred William, '49, Dec. 17, 2012.
Harlin Jr., Curtis Chester, '50, Sept. 5, 2020.
McClain, Frank Herbert, '50, Oct. 6, 2013.
Kusenberger, Felix Nels, '51, no details.
Ready, John Frank, '51, December 28, 2010.
Pankratz, Werner, '52, September 22, 2020.
Simon, Haskell L., '53, August 26, 2020.
Kirkham, Fred Charles, '55, no details.
Volz, William August, '58, April 28, 2006.
Ghormley, Thomas Alfred, '59, Oct. 4, 2001.
Hilton, James Caldwell, '63, Feb. 10, 2002.



Tennessee Alpha '61

Clyde "Pete" W. Craven Jr., Ph.D.

June 02, 2019

Began the office of SAIC at ORNL, started Integrated Computer Systems and AllMeds, Inc., earned a nuclear engineering Ph.D., and has three sibling Tau Bates.



West Virginia Alpha '43

Robert E. Sharps

May 07, 2020

Served in WWII in the Pacific arena and received a Purple Heart. Worked at P&G on Ivory soap and was proud of developing the flavor for Crisco.

Thompson, Alan Venson, '70, Feb. 8, 2020.
Sherwyn, Raymond Jay, '72, August 6, 2008.
Jares, James Blaise, '79, November 1, 2005.
Mershon, Rand L., '80, July 19, 2000.
Tillman, John Mitchell, '81, June 21, 2020.

ZETA TX Z

Dunn, Joseph Lamar, '62, February 13, 2020.
Byrd Jr., Otis Eugene, '66, August 19, 2017.
Hardy, Thomas Earl, '81, no details.
Reynolds, James Conrad, '02, Feb. 27, 2010.

ETA TX H

Cleveland, Jerry Gay, '64, July 27, 2004.
Hance, Douglas James, '69, July 25, 2000.

IOTA TX I

Barlow, Dallas Jay, '99, May 6, 2001.

KAPPA TX K

Amuneke, Michael O., '84, Feb. 23, 2001.

LAMBDA TX L

Martin, Monte Marion, '78, no details.

UTAH

ALPHA UT A

Whitney, Jack Matson, '52, no details.
Anderson, Merlynn O., '53, May 27, 2001.
Farnsworth, Phillip LeGrande, '58, no details.
Chaffee, Edwin G., '63, January 1, 2006.
Wells, John Alford, '89, no details.

VERMONT

ALPHA VT A

Remick, Allan Earle, '58, August 14, 2018.
Chatfield, John Luther, '69, October 13, 2007.
Jephson, James W., '78, July 8, 2010.

BETA VT B

Young, James Keay, '55, December 31, 2010.
Hauck, John C., '72, April 20, 2006.

VIRGINIA

ALPHA VA A

McKenney, Ronald Angus, '59, Nov. 22, 2008.
Close, Lowry Mann, '68, February 10, 2016.
Early, Stephen Paul, '84, July 25, 2000.

BETA VA B

Atwood, Harold Sears, '41, Sept. 23, 2010.
Gonzalez, Juan O., '41, no details.
Lankford, John L., '42, September 1, 2001.
Roane Jr., Eugene Stuart, '42, no details.
Funk, Robert Newton, '43, June 4, 2002.
Yang Jr., Yih Chang, '44, January 17, 2008.
Farthing, William Gardiner, '47, June 5, 2005.
Weinberg, Harold Paul, '48, May 3, 2007.
Ringler, Wilson Edward, '49, no details.
Dodl Jr., Rudolph Conrad, '50, July 25, 2009.
Carpenter, Frank W., '52, May 11, 2017.
Carter, Richard Carlos, '58, May 25, 2013.
Hartlove, Carroll Fillmore, '60, Feb. 28, 2003.
Watkins, Linwood C., '61, April 15, 2003.
Brown, Nelson Kenyon, '65, Feb. 8, 2009.
Pursell Sr., Bryson M., '70, June 21, 2017.
Pelz, Richard B., '79, September 24, 2002.

GAMMA VA I

Meadows, Kristine Reuter, '85, April 24, 2007.

WASHINGTON

ALPHA WA A

Quick, Robert Harold, '48, August 15, 2014.
Carlson, Dale Arvid, '50, February 16, 2019.
Taniguchi, Ray Akira, '52, no details.
Rothermel, Richard C., '53, June 28, 2010.
Russ, Doyle Wayne, '56, no details.
McCbride, John James, '57, May 24, 2017.
Schleusener, Stuart A., '58, May 5, 2006.
McCallum, David Gunning, '61, Feb. 20, 2006.
Roller, Maurice Leigh, '68, no details.
Arlint, Kenneth Dale, '70, August 22, 1998.
Gunther, Christian K., '79, no details.
Olson, Stephen Arnold F., '82, Jan. 21, 2020.
Mudge, Robert Stuart, '83, October 6, 2009.
Pierce, Donald Lee, '88, December 9, 2002.

BETA WA B

Rogers, Gordon James, '44, Sept. 11, 2010.
Coombs, George Gates, '50, no details.
Mukai, Roy Asahi, '51, no details.
Walden, Merle Lee, '52, December 14, 2008.
Rowley, Robert Edwin, '53, Sept. 8, 2000.
McTigue, Larry Don, '60, January 20, 2006.
Hanson, Bernard Neil, '63, May 18, 2007.
Schweiger, John Joseph, '78, May 19, 2008.

WEST VIRGINIA

ALPHA WV A

De-Antonis, Victor Joseph, '41, no details.
Frincke, Robert Brenner, '41, April 5, 2014.
Malone, James Cornelius, '41, April 15, 2006.
Phillips, Douglas Wise, '41, May 20, 2003.
Bane, Frank Pershing, '42, no details.
Comuntzis, Marcus George, '42, no details.
Cooksey, Benjamin H., '42, October 19, 2004.
Waltz, Dale Albert, '42, November 2, 2007.
Farr, Stanley, '43, March 2, 2011.
Fraker Jr., Joseph Elmer, '43, Nov. 9, 2016.
Holland, Charles Robert, '43, Sept. 10, 2012.
Noone, William Hatchett, '43, July 5, 2005.
Poling, Warren D., '43, November 17, 2011.
Sharps, Robert Edward, '43, May 7, 2020.
Bays, Grover Haynes, '44, Sept. 27, 2013.
Coogle, John Jenkins, '44, no details.
Keener, Everett Lee, '44, November 24, 2009.
Lough, William Earl, '44, April 20, 2014.
Mumma, Frank Britton, '44, no details.
Pritchard Jr., Fred C., '44, October 25, 2008.
Zegeer, David Abraham, '44, Dec. 10, 2012.
Clark, Andrew Lewis, '47, January 13, 2011.
Roomy, Jack Elvin, '47, no details.
Slonneger, Robert Dean, '47, July 29, 2014.
Fowler, Cleon Roscoe, '48, October 18, 2007.
Reaves, Herbert Andrew, '48, Dec. 19, 2006.
Shelton, Winston LaVerne, '48, April 15, 2019.
Heebink, David V., '49, no details.
Mann, Anthony Proctor, '52, April 18, 2013.
Null, Rexford L., '62, May 3, 2010.
Hargett, Donald Roy, '65, August 25, 2020.
Simmons, Rollin Gary, '70, March 20, 2004.

WISCONSIN

ALPHA WI A

Gauper, Harold A., '43, December 1, 2019.

Gilmore, Warren L., '43, November 9, 2003.
Blinka, Joseph, '44, no details.
Wachtl, William Wendell, '44, Aug. 23, 2016.
Blank, Henry F., '48, no details.
Dreher Jr., Frederick Carl, '48, Aug. 9, 2020.
De Merit Jr., Merrill W., '49, Feb. 11, 2001.
Einarson, James Lloyd, '49, June 29, 2005.
Borden, James Benjamin, '50, Feb. 10, 2016.
Campbell, Sylvester J., '50, Sept. 28, 2005.
Szczeny, Frank Florian, '51, Jan. 19, 2010.
Gottschalk, Robert Neal, '52, August 2, 2011.
Duewel, Edward Paul, '53, August 3, 2004.
Elton, Robert Lee, '57, June 6, 2015.
Benson, Rollin Forrest, '58, March 12, 2015.
Edwards, Terry Winslow, '58, no details.
Reed, Richard D., '61, August 24, 2009.
Demeny, Leroy Martin, '64, no details.
Boehm, William George, '65, Feb. 1, 2019.
Steffes, Frank John, '65, August 25, 2005.
Tredrga, David Ross, '65, May 7, 2008.
Knapton, Edward John, '78, Nov. 6, 2019.

BETA WI B

Jorgenson, John George, '41, no details.
Roberts, Emory Gilman, '41, Feb. 1, 2011.
Bernhardt, Howard E., '42, Oct. 13, 2001.
Schaeffler, Anton Louis, '42, Dec. 9, 2001.
Hein, Quentin Walter, '43, February 20, 2007.
Lasek, Edward Francis, '44, Nov. 17, 2010.
Dangl, John Richard, '46, May 4, 2005.
Peterson, Harold C., '47, February 25, 2005.
Nawn, Brendan Damian, '48, no details.
Beil, Charles Anthony, '49, Sept. 21, 2000.
Katt, William, '49, November 1, 2001.
Trost, Arthur Frank, '49, February 3, 2007.
Anshus, Hjalmer John, '50, April 7, 2002.
MacEjkovic, Frank John, '50, no details.
Brunner, Donald George, '51, Sept. 8, 2007.
Moeller, Arthur Charles, '51, Jan. 31, 2010.
Caspari, Robert William, '53, no details.
Sances Jr., Anthony, '53, February 15, 2007.
Ratai Jr., Walter Robert, '57, April 28, 2019.
Turner, George Earl, '57, June 15, 2007.
Immekus, Robert James, '59, July 30, 2020.
Kopydlowski, Donald J., '59, Aug. 1, 2001.
Gurschke, Herbert Joseph, '61, Aug. 7, 2003.
Immekus, John Anthony, '61, June 19, 2020.
Kranz, James Celestine, '61, Dec. 6, 2018.
Lipo, Thomas Anthomas, '62, May 8, 2020.
Engel, Horst H., '67, September 29, 2011.
Ekey Jr., Lawrence A., '68, Sept. 26, 2017.
Gawin, Norbert Joseph, '69, July 2, 2000.
Schabowski, Albin John, '69, no details.
Minch, Morris Louis, '70, July 23, 2004.
Gall, Urban Peter, '71, no details.
Hampton, Freddie Louis, '73, Dec. 23, 2003.

GAMMA WI I

Anderson, Brian John, '81, Nov. 8, 2010.

WYOMING

ALPHA WY A

Beattie, John Robert, '67, October 26, 2017.
Carroll Jr., William Edward, '69, May 7, 2019.

ASSOCIATION BRIEFS

JOIN AN ALUMNI CHAPTER OR EVEN BECOME AN OFFICER!

Tricia E. Gomulinski, *SDA '98*, is the Director of Alumni Affairs and works as a software/IT project manager for Teledyne Brown Engineering in Knoxville, TN.



ALUMNI CHAPTER: OPPORTUNITIES

Are you interested in meeting other Tau Beta Pi alumni in your area? Would you like to join or lead an alumni chapter in that area? We encourage our alumni chapters to offer opportunities for networking, social events, professional development, and service activities as well as to work with the local collegiate chapters. Even during the pandemic, chapters are holding virtual speaker series, hosting virtual happy hours, and attending student initiations.

To join an alumni chapter near you, visit:

www.tbp.org/?ACcontact

If there is not an alumni chapter near you, contact tricia@tbp.org, to discuss the possibility of establishing a chapter.

ALUMNI CHAPTER: BECOME AN OFFICER

Several of our alumni chapters need leaders! If you live in one of these areas and would be interested in helping out as an officer, please email tricia@tbp.org.

Central Connecticut
Central Florida (Orlando)
El Paso, TX
Indianapolis, IN
Louisville, KY
North Texas (Dallas/Fort Worth)
Phoenix, AZ
Pikes Peak (Colorado Springs)
Portland, OR
Rochester, NY
Sacramento Valley, CA
St. Louis, MO
Texas Gulf Coast (Houston)
Tucson, AZ
and Rocket City in Huntsville, AL, is looking for a webmaster.



ALUMNI ACTIVITY: PIONEER ALUMNI CHAPTER (OK) DISTRIBUTES MASKS

In August amid COVID-19, the Pioneer Alumni Chapter and the Oklahoma Gamma Chapter worked together to distribute masks to students during a campus campaign at Oklahoma State University to remind and emphasize the importance of wearing and frequently washing masks.

In total, more than 200 masks were distributed along with juice pouches and Code of Engineering Ethics brochures. The groups did not limit mask distribution to only engineering students.

Above Image of John D. Houck, P.E., *IL A' 71*, Pioneer AC Director with OK G student officer. Thanks to **Kurt P. Rouser**, Ph.D., *OH H '11*, for submitting these images and write-up. Contact at tbp.pioneer.alumni@gmail.com.



RETIRING VOLUNTEERS:

Haley H. Smestad, MA A '15
District 1 Director

Steven T. Stewart, AL A '14
District 6 Director

Kristopher C. Johnson, AR A '15
District 9 Director

Will D. Lindquist, KS A '02
District 9 Director

Allen D. Erickson, NM G '14
District 13 Director

Ian J. Frank, NYP '09
District 14 Director

Janette A. Keiser, AK A '76
District 14 Director, Engineering Futures Fac.

Vanessa A. Bechtold, FL Q '09
Engineering Futures Facilitator

Nancy R. Gray, MI G '69
Engineering Futures Facilitator

Diana Hasegan-Dan, PA E '10
Engineering Futures Facilitator

Julia M. Nolan, CA L '03
Engineering Futures Facilitator

Andrea J. Pinkus, NY D '97
Engineering Futures Facilitator

Rodger F. Smith, WI A '64
Trust Advisory Committee

NEW VOLUNTEERS:

Joseph P. Blackford, DC G '95
District 4 Director

Teresa J. Hutton, WI B '91
District 8 Director

Dakota Roberson, WYA '13
District 12 Director

Madeline G. Sciuлло Esposito, FL Z '14
District 13 Director

Jeffrey S. Zola, NY D '91
District 14 Director

Chetan G. Date, AZ B '84
Engineering Futures Facilitator

ACTIVE VOLUNTEERS:

Will D. Lindquist, KS A '02
District 9 Director for 6 Years

Sam Rokni, CA C '05
District 16 Director for 6 Years

Lauren J. Swett, ME A '04
District 1 Director for 12 Years

Thomas A. Pinkham IV, MA E '88
District 2 Director for 30 Years

Vanessa A. Bechtold, FL Q '09
Engineering Futures Facilitator for 6 Years

Matthew W. Ohland, FL A '96
Engineering Futures Facilitator for 24 Years

Stephen K. Kramer, UT B '81
Engineering Futures Facilitator for 30 Years

Lyle D. Feisel, IA A '61
Editorial Board for 18 Years

John W. Prados, TN A '54
Editorial Board for 18 Years

Robert E. Efimba, MA B '63
Fellowship Board for 6 Years

Scott E. Fable, CA T '96
18 Years as an Executive Councillor,
District 15 Director, and Engineering Futures Facilitator

Edward J. D'Avignon, NY B '88
30 Years as Director of Rituals,
Executive Councillor, and District 2 Director

Russell L. Werneth, MD B '64
42 years as a District 4 Director,
Executive Councillor, and Director of the District Program



STAY CONNECTED ON SOCIAL MEDIA

Follow us on social media and tag us, so we can see your TBII images using **#taubetapi**.

INSTAGRAM: [instagram.com/taubetapiofficial/](https://www.instagram.com/taubetapiofficial/)

FACEBOOK: [facebook.com/TauBetaPiHQ/](https://www.facebook.com/TauBetaPiHQ/)

WORDPRESS BLOG: taubetapiathq.wordpress.com/

TWITTER: twitter.com/TauBetaPi



HEADQUARTERS NEWS: STAFF MEMBER JOINS

In October, Emma Grace Thompson joined the team at HQ as a Marketing & Communications Specialist. She recently graduated from the University

of Tennessee, Knoxville, with a master of arts degree in American History and also earned B.A. and M.A.ED. degrees from Emory & Henry College. Emma Grace will manage the Association's social media channels, assist with graphic design updates to publicity materials, write press releases, and compile *The Bulletin*, our quarterly on-line publication for collegiate members.

More information about the TBP HQ staff is available on our website: www.tbp.org/about/hqStaffBios.cfm

Alumni Giving



Zeta Club
Alan J. Passman
 FL A '06

Science, engineering, and integrity are important for our future.

Founders Club Contributors Continued from page 31.

MI ⊕ Long, Michael Charles '84
MN A Christensen, Bruce James '88
MS A Brasher, Cecil Keith '59
 Cleveland, William Peter '10
 Kyzar, Ralph Andy '67
MO A Pearce, James M. '66
 Smith, Richard Vincent '72
MO B Weese, John R. '74
MO Γ Peters, Christopher John '09
NJ A Amato, Corrado '76
 Holwitt, Eric A. '70
NJ B Holls, Robert Emil '62
NJ Γ Della Rovere, Richard '10
 Kuchner, Robert Andrew '69
 Pisz, Frank Andrew '71
NY A Zhai, Eric Xiaoyuan '03
NY Δ Ku, Katharine '71
NY E Wolfson, Herbert L. '62
NY Z Sarcona, Roy Douglas '68
NY I Nelson, Ivan '60
NY Λ Chipolone, Michael Domenick '54
 Traina, Edward P. '62
NY M Griggs, Francis E. '56

NY N Rosenthal, Jordan Charles '95
NY Ξ Siuta, Michael Thaddeus '71
NY P Ferreira, Antonio Manuel '97
NC A Pitts Jr., Robert McPherson '78
NC Γ Russell Jr., Parvin Masters '57
NC Δ Johnson, James Kenneth '83
 Morris, Steven Wesley '85
 Nixon, Robert David '82
OH A Andersen, Kayla Brooke '17
 Churchman, Joseph Sailer '67
OH B Wilke, Raymond Joseph '81
OH Γ Riddiford, Bryan Peter '87
 Strang, David Arthur '51
 Swanson, Robert Jon '61
OH E Shaniuk, Thomas Joseph '85
OH H Christian Jr., Thomas Franklin '68
 Cole, Kenneth Nelson '86
 Silkowski, Eric '90
 Spector, Marvin '73
OH Λ Repko, Raymond '77
 Stevens, Charles A. '58
OK B McKinley, Gordon Stuart '90
PA A Lunny, James Edward '78

PA B Deluca, Bob Michael '70
 Mudrinich, Richard Todd '85
PA Γ Beittle Sr., Robert Richard '62
PA Z Levensgood, Darvin Lee '60
PA ⊕ Czop, Walter J. '86
 Murray, Donald Joseph '62
PA Λ Matey, John Gerald '78
 Needy, Kim LaScola '84
SC B Jacobs, Wynona P. '87
SC Γ Messervy, Thomas Sinclair '00
SD A Baker, Gary Allen '72
TN A Kaley, John Straud '01
 Sinko, Robert John '85
TN B Bass, Sara Jean '73
TN E Kee, Paula Anita '84
TX Γ Ricken, Mathias Guenter '04
TX Δ Burk, Dannie O. '68
TX Z McCabe, Glen Howard '82
TX H Farrow, Alan Lee '68
 Zimmerer, Douglas Richard '93
TX K Williams, Donald Craig '89
TX Λ Gonzalez, Israel T. '73
UT A Coombs Jr., Clyde F. '56

Pre-Club Members/Contributors

AL A Aliffi, Thomas J. '88
 Bishop, William Yancy '68
 Wheeler, Kenneth Lamar '56
AL B Haznedar, Haldun '81
 Massey, Dianne Joy '70
 Minsloff, William Don '72
AL E Harrison, Keith '77
AZ A Welty, Kenneth Harry '61
AZ B Stewart, Richard James '92
AZ Δ Vis, Matthew Demi '17
AR A Wylie, Robert David '65
CA Γ Fink, Allison Michelle '13
CA E Zimmerman, Lee Clayborn '64
CA H Alam, Shayela '02
CA I Green, Norman Scott '85
CA Λ Murchison, Gary Scott '77
CA M Dickstein, Dylan Abraham '16
CA Y Potts, Christopher Wayne '16
CO A Long, C. Joseph '71
CO B Fox, Robert Harold '72
 Heagerty, Daniel Edward '60
 O'Hara, Joseph P. '76

CO E Wolfe, Mike Robert '16
CO Z Dean, Diana L. '89
 Fink, Michael R. '76
 Mason, Jackson Wade '09
DE A Cannon, Anne Davis '57
DC Γ Koch, Paul Robert '84
 Trandac, Trung '81
FL A Gruber, Heather A. '14
FL B Prada, Jaime Octavio '70
GA A Day, Le-Roy Edward '46
ID A Stubbs, Bradley Leonard '78
ID Γ Khanal, Mandar '76
IL A Craig Jr., Ashley Batemen '54
 Kyle, Martin Lawrence '79
 Zelac, Ronald Edward '62
IL B Rosen, Edward Marshall '52
IL Δ Dellar, Ralph Evan '71
IL E Roth, Christopher Alan '86
IN A Gkritza, Nardia '06
 Handa, Vandna '04
 Jochem, Stephen Kent '73

Kell, Robert John '50
 Oates, William Robert '65
 Presnak, Robert G. '72
IN E Scranage, David Alan '86
IA A †Grimes, Geoffrey C. '69
 Leeb, Robert George '52
KS B Lovitt, John Robert '68
KS Γ Lindly, Edwin C. '42
KY B Murphy, Bret Lee '16
LA A Landry, Warren Edward '85
MD A Brannon, Brian Gregory '01
 Mahmood, Qasim Ali '14
 Ulanowicz, Robert E. '64
MD B Busch, Ronald G. '83
 Dorenfeld, Alan Steven '67
 Drager, John Arthur '64
 Karceski, Jeffrey David '88
 Radack, Daniel Joel '83
MD Δ Parks, Michael Brian '03
MA A Mullarkey, Peter William '79
MA B Bart, Stephen F. '82



Chi Club
Henry G. Herzing
 IL Γ '59

I'm glad to assist future engineers; the problem solvers with important skills to our country.



Chi Club
Josuan Hilerio Sanchez
 PR A '07

I give because it's my family, and I enjoy watching my family grow and accomplish more every day.

Pre-Club Members/Contributors continued

- Carpenter, Jack William '51
- Linde, Richard Paul '58
- MA Δ** Doerr, William Walter '73
- MA E** Case, William C. '75
- Marcinuk, Robert Andrew '72
- MA Z** †Eck, Calvert Franklyn '60
- MA H** Fullford, Deborah Ann '89
- MA Θ** Aste, Stephen Robert '99
- MI A** Baldwin, Arthur Gilbert '71
- MI B** Hudson, R. Dennis Dennis '62
- Ingram, George F. '71
- MI Γ** Gesink, John Willis '65
- Parkinson, James Benjamin '59
- Senunas, Louis '61
- Sklar, Jay Robbins '60
- MI Δ** Clerihew, Alec Frank '62
- MI E** Tracy, Shawn Lance '95
- MI Θ** Quinn, Tom Ryan '18
- MO A** Durst, Carl Leonard '73
- MO B** Astrack, Richard Frederick '68
- Dreisewerd, Douglas Wayne '66
- Kaplan, Al '72
- MO Γ** Reeves, Barry Lucas '56
- MT A** Anderson, Erik S. '15
- NE A** Stryson, Matthew C. '81
- NH A** Anason, Christopher Matthew '07
- NJ A** Gallanter, Charles Roe '71
- Goller, Karl Richard '52
- Kelly, Arnold James '55
- NJ B** Beke, Peter S. '90
- NM Γ** Erickson, Allen Darel '14
- NY A** Bhattacharjee, Sambarta '02
- Kim, David '18
- NY B** Kulpa, Theodore Andrew '62
- NY Γ** Mueller, Frederick John '75
- Saphier, Stewart Harvey '68
- NY Δ** Sheppard, Charles Williams '67
- NY E** Mennerich, Kenneth Arthur '65
- NY H** Carter, Reid '75

- NY Θ** Cipollina, Joseph Domenick '09
- Vandevalk, Will Anthony '81
- NY I** Diskin, Glenn Stephen '84
- McCabe, John Francis '64
- NY Λ** Glazer, Stanley '60
- NY N** Alexandridis, Paschalis '89
- Coates, Donald Andrew '64
- Miller Jr., Donald Bruce '90
- NY Π** Boughner Jr., Arnold R. '96
- Kelly, Matthew Ryan '14
- McClellan, Nathan Allen '11
- NY P** Yurman, Joseph L. '87
- NC A** Corcoran, Kermit C. '04
- Fulbright, Nelson Eugene '65
- Gerdts III, Richard James '00
- Loppacker Jr., Everett Pierce '60
- Rudisill, Jacob M. '75
- Sun, Dan '18
- NC Γ** Offerdahl, Richard '65
- ND A** Reistad, Morris James '67
- ND B** Phillips, Monte L. '59
- OH A** Southam, Donald Lee '51
- OH B** McGrew, David Rexall '67
- OH Γ** Sah, Byron David '94
- OH Δ** Lippian, Joseph Michael '71
- OH H** Brooks, Adam Lee '19
- Fox, Gordon William '63
- Kelley, Gilbert Freeman '60
- Klimack, William Klaeve '99
- OH K** Crow, John Francis '85
- Dunlap, Adrianna Michelle '19
- Welsch, John Stephen '77
- OH Λ** Koehler Jr., Don H. '16
- OH M** Moore, Leah Beth '10
- OK B** Farris, Robert Sharp '72
- OK Γ** Cowan Watts, Cara A. '97
- PA A** Solender, Peter Edward '62
- PA B** Gray, Kevin Troy '85
- Nye, Brady James '21

- PA Δ** Cohen, Matthew Leon '10
- Vrudhula, Amey '17
- PA E** Bera, John Peter '70
- Ozalas, Michael L. '71
- PA Z** Fine, Joseph Michael '75
- Mantakounis, Steven George '87
- Sherwood, Alexander William '19
- PA H** Buczynski, Robert John '61
- PA Θ** Becher, Michael Charles '63
- PA Λ** Becse, Robert Emery '90
- RI B** Galipeau, David William '71
- Simon, Franklin Wallace '50
- SC A** McCord, Stephen Andrew '90
- SD A** Greaves, Wayne Ronald '71
- Strub, Rhenda Iris '92
- SD B** Amert, Timothy Todd '83
- TN A** Baxter, Van David '75
- TN B** Harper Jr., Richard E. '64
- Martin, Peter Wetmore '69
- TN Δ** Wauford, Samuel M. '19
- TX A** Boles, Brian D. '74
- Meier, Kevin Robert '86
- Schwartz, Nicole Suzanne '06
- Voigt, Richard Allen '69
- TX Γ** Adams, Glenn David '84
- Lewis, Michael Josh '82
- Wilson, Thomas Leon '65
- TX Δ** Smith, David Henry '68
- Wagner, David '88
- VT A** Nowlan, Nicholas P. '72
- VT B** White, Frederick E. '67
- VA A** Brauburger Jr., George Henry '68
- Owen, William Rodney '69
- VA B** Keller, Donald Michael '82
- VA Γ** Srodulski, Barbara W. '82
- WA A** Yutani, Nobuo '52
- WI A** Borden, Donald Lewis '50
- Tanamal, Chitwin '06
- WI B** Zoeller, Leo Joseph '62

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ALUMNI NOTES

Your fellow Tau Bates are interested in news about **you**.



CALIFORNIA BETA '61

John P. Stenbit

John has joined ScribeRule as an independent member of the Board of Directors. His career spans over 30+ years of public and private sector service in the telecommunications and command and control fields, including as former Department of Defense Chief Information Officer.



GEORGIA ALPHA '89

Jeffrey S. Vetter Ph.D.

Jeffrey is a Distinguished R&D Staff Member, and founding group leader of the Future Technologies Group in the Computer Science and Mathematics Division of ORNL and has been named a Corporate Fellow in recognition of significant career accomplishments and leadership in the scientific fields.



IDAHO GAMMA '20

Kendra K. Noneman

Kendra, a former Boise State University track and field student-athlete, was named 2019-20 Mountain West Female Scholar-Athlete of the Year. She graduated with a B.S. in materials science and is a grad student at Carnegie Mellon Univ. She is a TBII Fellow, Laureate, Scholar & past chapter president.



MARYLAND ALPHA '78

Gary S. Ledley M.D.

Gary accepted the position of Regional Director, Clinical Cardiology Services for the Tower Health System in Southeastern Pennsylvania. He continues to practice general, invasive & interventional cardiology, is a professor of medicine at Drexel Univ. College of Medicine, and has a BES from Johns Hopkins Univ.



MISSISSIPPI BETA '15

Dudley "DJ" Moore

Dudley has been selected to receive a scholarship from SOPREMA®, Inc., a company in the roofing, wall protection & civil engineering waterproofing industries, to pursue his graduate (Ph.D.) degree in mechanical engineering at the University of Alabama "dedicated to the building envelope."



NEW YORK DELTA '95

Catherine M. Charlton

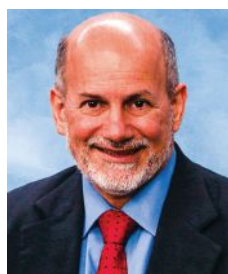
Catherine was appointed as the Executive Director of Musicopia and Dancing Classrooms Philly. She is a pianist, composer, and arts advocate with a B.S. in acoustical engineering, a minor in music, and holds an executive certificate for non-profits, all from Cornell Univ. She is a 1994 TBII Laureate.



OKLAHOMA ALPHA '81

Andrew C. Taylor P.E.

Andrew was named senior program manager for Fleet Licensing in the Nuclear Regulatory Affairs Dept. at Tennessee Valley Authority in Chattanooga. He provides licensing support for Browns Ferry, Sequoyah, and Watts Bar nuclear power plants. He retired as Captain from the U.S. Navy Reserve.



PUERTO RICO ALPHA '85

Ramon "Tony" A. Morales

Tony, Naval Surface Warfare Center, (Philadelphia Division) Wastewater In-Service Engineering branch head, is retiring from the Command after a 38-year career, breaking ground for Hispanic engineers, and mentoring the next generation. He was the first Hispanic engineer hired by NAVSSES in 1982.



TEXAS ALPHA '83

Angela Archon

Angela was appointed to the Switch Inc. Board of Directors, effective November 4. She has 30+ years of leadership experience in the technology industry with expertise in artificial intelligence, digital transformation, and operational excellence. Her B.S. degree is in ChemE from UT Austin.



TEXAS ALPHA '62

George H. Born Ph.D.

George is a 2020 inductee (posthumous award) into the Colorado Space Heroes Hall of Fame. He was a pioneering space researcher, aerospace engineer, distinguished professor, and founder and director emeritus of the Colorado Center for Astrodynamic Research (CCAR) at the Univ. of Colorado Boulder.

Send items about civic activities, honors won, weddings, promotions, changes in address, etc. to Tau Beta Pi, P.O. Box 2697, Knoxville, TN 37901-2697 or to media@tbp.org. Material for publication must be received by February 1 for the Spring issue and by May 1 for the Summer issue. Include name, address, chapter/class year, and email address or phone number. Thank you!



UTAH BETA '95

Armondo DeCarlo

Armondo has retired. His 40-year mechanical engineering career involved maintenance and project engineering positions, which included five years overseas, and also the Department of Defense for 19 years. His final assignment was the nuclear missile program at Hill Air Force Base, Utah.



VIRGINIA EPSILON '17

Alex F. Kniffin

Alex is a junior engineer at Naval Surface Warfare Center (Dahlgren, VA). He is the winner of the 2020 G. Dennis White Early Career Human Systems Integration Practitioner Award for leadership in the new wearable technologies designed to prevent accidents and save lives (Human Systems R&D Branch).



WASHINGTON DELTA '20

Samuel J. Nieslanik

Sam has joined Mountain Waterworks' corporate office in Boise, Idaho, as a staff engineer. He graduated from Gonzaga University with a B.S. in civil engineering with an emphasis in environmental studies, plans to obtain a master's degree, and pursue professional engineering licensure.



WEST VIRGINIA ALPHA '18

Kristyn B. Johnson

Kristyn, a West Virginia University engineering graduate student, took first place in the Oak Ridge Institute for Science and Education (ORISE) Ignite Off Competition for her research on reducing fuel consumption and emissions in gas turbine power plants.

INDIANA DELTA '12

Kyle E. Zobeck

Kyle was a standout soccer player (goalie) during his four years (2008-12) at Valparaiso University while earning his mechanical engineering bachelor's degree. He was drafted 64th overall in the 2013 Major League Soccer Draft by FC Dallas, yet his first MLS game action came this year, eight seasons after being drafted.

The Iowa native set an MLS record as the oldest debutant among players at age 30. In addition to this impressive stat, he also became just the third Iowa-born player to play an MLS game.

In September, a week after coming in as a substitute for an injured player, he had his first two career MLS starts under his belt, and earned his first MLS Team of the Week honors.

At Valpo, Kyle was named the Horizon League Goalkeeper of the year (2011), First Team All-League honoree, and set a new single-season record with 11 total shutouts and a 0.66 GAA, goals-against average. He also holds the program's career record for shutouts with 23. Kyle Zobeck's standout performance as a goalkeeper makes him one of the most influential players in Valpo history.

His academic honors include being named a Tau Beta Pi Laureate in 2012 and also earning presidential academic honors. Congratulations to Kyle Zobeck on his accomplishments and perseverance as he continues to travel and train with the FC Dallas squad.



Kyle Zobeck (above) 2012 TBP Laureate;
Kyle Zobeck 2020 with MLS FC Dallas soccer club.
Source: Zobeck's Twitter account

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