WINTER 2025

The Bent

Of Tau Beta Pi

THE ENGINEERING HONOR SOCIETY

Space Technology on Earth

Convention Summary 2024

The Bent
Of
Tau Beta Pi
The Engineering Honor Society

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

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

On the COVER: The 2024 Convention attendees, nearly 500 in total, visited Mount Rushmore for self-guided tours, lunch, and this historic group picture. Thanks to **Kiffer Creveling,** *UT A '13*, for providing Convention images in this issue.

Artist: Dali Polivka

VISIT www.tbp.org

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See back inside cover for listing of Tau Beta Pi Chapters.

WINTER 2025

The Bent

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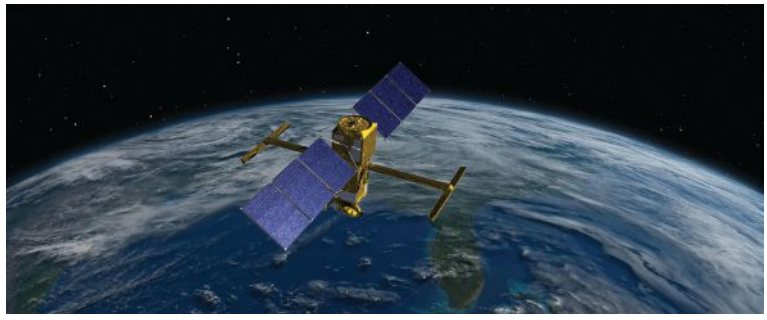
FEATURES:

REPORTS:

DEPARTMENTS:



06 Applications of space technology continue to shape innovation on Earth.

11 Caption this image from the 2024 Convention and possibly win a Tau Beta Pi t-shirt.

18 Congratulations to the 2023-24 Chapter Award recipients.

COUNCIL'S CORNER

Marla A. Peterson, *AZ A '83*, ΤΒΠ 2025 President

SHARING A LOVE FOR THE ASSOCIATION

If you want to visualize the future of engineering and know that it is promising, I can confirm that it is! As I write this, I just returned from the 118th Tau Beta Pi Annual Convention in Rapid City, South Dakota. What an experience to watch 442 members representing 206 collegiate chapters and 33 alumni chapters executing the Association's business.

Each year, the agenda is laid out for 13 Convention committees: Advisors, Alumni Chapters, Awards, Chapter & Assoc. Financial Affairs, Constitution & Bylaws, Convention Site, Diversity, Equity and Inclusion (DEI), New Engineering Solutions for Tomorrow (NEST), Program Review, Petitions Public Relations, Resolutions, and Rituals.

The members of each committee deliberate to prepare decisions on new chapters and new or revised policies. Watching these Tau Bates execute our organization's business was a sight! They came prepared, enthusiastic, and a few committees worked till midnight to ensure that it was done!

Committee Chairs were elected and presented their findings to the entire Convention body. And they all did a fantastic job! Not only was their decision heard, but they followed parliamentary procedure to address debate from all sides!

I would like to take this opportunity to thank Ron Hickling for his leadership and guidance over the Convention as well as his efforts as TBΠ President, promoting and supporting the Association. He's served 30+ years as the Convention Parliamentarian and his vast knowledge of Parliamentary procedure ensures productive discourse.

The Convention in Rapid City, SD, was planned and organized by a committee of Tau Bates, led by Tricia Gomulinski, which executed an amazing Convention allowing all attendees to visit Mount Rushmore, including a group picture beneath the monument! A special shout out to our hosts Dr. Larry Simonson, Dr. Cassandra Bierrenkott, and the SD Alpha Chapter.

To ensure Convention runs smoothly, we relied heavily on our Tau Beta Pi Headquarters' staff! They were in full-force and made it happen! Special thanks to our Executive Director, Curt Gomulinski for always having our back and making sure we were on task and prepared.

As we look to 2025, I'm so excited to be handed the leadership role of the Executive Council. I haven't lived through too many years engaged in TBΠ, but can provide some outside eyes that I believe will help the organization look at things a bit differently. My goal is to support our continued pursuit of initiating more students and increasing our Scholarship and Fellowship giving.

Lately, I've been traveling a bit and everywhere I go, I try to find the Bent monuments that are displayed on the campuses of our collegiate chapters. In the last two weeks, I have seen Bents in South Dakota, North Dakota (ND Alpha Bent was in storage due to construction), and southern California. I had an opportunity to participate at the Society of Hispanic Professional Engineers conference in Anaheim, CA, and took advantage of visiting eight additional Bents. Thanks to the Bent-O-Rama website (*bents.tbp.org*) for helping me find them quickly and easily; if only it also provided details of where to park for free on each campus!

When I have challenges finding a Bent monument, I ask someone if they know where it is located. I usually have to show a picture, but even then many do not know what I am talking about.

One goal that I would like to tie into our objective to initiate more students into Tau Beta Pi would be to increase awareness on campuses so that even freshmen know what the Bent is, what it represents, and requirements to get an invitation to join Tau Beta Pi.

I feel that 2025 is going to be great for the Association and I encourage you to take advantage of the Bent-O-Rama resource to locate Bents all over this amazing country. I look forward to reporting the Executive Council's goals and objectives for 2025! The 119th Tau Beta Pi Annual Convention will be in Albuquerque, NM, October 30 – November 1, 2025. Make plans to join us!

MARLA PETERSON, recently retired from Honeywell and has a B.S. in systems engineering from the University of Arizona. She's been dedicated to aerospace product excellence for 40+ years, serving in various leadership positions, and joined the Executive Council in 2023.

2025 EXECUTIVE COUNCIL DIRECTORY

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YOUR LETTERS

Send letters to tbp.media@tbp.org.
Text may be edited for length and clarity; not all letters can be published.

Can Everything Be Engineered?

I think it was in the year 1962, on the campus of Howard University in Washington, DC, that I enjoyed a Broadway play entitled "Carousel" put on by Howard's drama department.

In fact, several years later when my engineering roommate John and I both moved to New York (still roommates), the leading lady in that play was his girlfriend, who was then attending the Juilliard School of Music in Manhattan.

It was the same year that the DC Alpha Chapter, along with other local honor societies, had tea on the White House lawn and President John F. Kennedy came out to speak with us (sorry, I lost the pictures since that was "BC" i.e. Before Cellphones). I admit to reminiscing a little when I saw my pre-law school granddaughter, Meghan, do her internship at The White House in 2024, then see her graduate from Syracuse University, where President Biden went to law school.

And so, having just come from playing a round of golf, I sit here reading the Fall 2024 issue and am moved by MingDe Lin's Council's Corner and his conclusion.

I am also very heartened by his vision and diligence in promoting the institutions HBCUs and HSIs, NSBE and SHPE.

Over the years, I've held P.E. licenses in New York and New Jersey with a structural eng'g master's from NYU (which then merged with Brooklyn Polytech) where I did two years of a Ph.D. program, when matrix analysis was first being introduced to structural analytics in grad schools. I then decided not to complete my doctorate, but to go to Law School instead.

On Page 7, we are also reminded of the Thomas Edison quote "Opportunity is missed by most people because it is dressed in overalls and looks like work."

So, I write these few words, because as a bell-curved octogenarian, having practiced law in New York for 45 years, and with well-worn overalls, I can reflect on one notion propagated in the Broadway Play "Carousel" that envisions our dreams to have come true when TODAY becomes A LONG TIME AGO.

Raye C.R. Titus, *DC A '64*

What I Wish I Had Known

The Fall article by Jill S. Tietjen, P.E. contained many observations and suggestions that engineers of any age should find useful in the advancement of their careers and in performing their day-to-day assignments. I would like to add some principles which I've found to be very helpful to me:

- Integrity and Honesty
- Clarity and Conciseness in written and verbal communications
- Discretion in written and verbal communications, except for the words "Please" and "Thank you," which are hard to overuse
- Give credit to others for their accomplishments, especially if done in support of your assignments
- Courtesy to all regardless of their position in the organization
- Respect for the organization's management structure regardless of one's opinion of individual members of the organization
- Leave your work problems at work and your home problems at home

Guided by these principles, I rarely had a poor night's sleep because of the workplace.

Vito Cedro III, P.E., *PA Γ '70*

FROM THE EDITORS

Dylan Lane and **Patricia McDaniel**

From all of us at Tau Beta Pi Headquarters, we wish you and your family a joyous holiday season and a prosperous New Year.

We love to hear from our readers, so please reach out and let us know how we can make *your* magazine better.

Contact us at:
tbp.media@tbp.org

Happy New Year 2025!

TN Alpha Chapter members polished and decorated the Bent monument outside TBP HQ in Knoxville.

WHO'S WHO IN TAU BETA PI

Recognizing Tau Bate accomplishments

Jeffery W. Allen Ph.D.

Texas Eta '05

was recognized as an Air Force Research Laboratory (AFRL) 2024 Fellow. He works as a senior research electronics engineer at the Munitions Directorate, AFRL, Eglin Air Force Base in Florida, where his primary area of interest is electromagnetic wave matter interaction and research in novel sensing paradigms. Jeffery has authored 100+ technical papers and serves as reviewer for peer-reviewed journals such as *Optical Engineering*.

Adrian Bejan Ph.D.

Massachusetts Beta '71

was named the 2024 American Society of Mechanical Engineers Medal recipient. This is the Society's highest award recognizing "eminently distinguished engineering achievement." He was honored for unprecedented creativity, breadth, and permanent impact on engineering; for developments in the new science of energy, motion, form, and evolution. He is a Distinguished Professor at Duke University.

Paul R. Gray Ph.D.

California Alpha '63

was named the 2024 Simon Ramo Founders Award recipient by the National Academy of Engineering (NAE) "for contributions to modern analog integrated circuit design through research and education, and for leadership of academic, philanthropic, and corporate enterprises." A Univ. of California, Berkeley professor emeritus, he previously served there as executive vice chancellor & provost and has three EE degrees from the Univ. of Arizona.

Leonard Kleinrock Ph.D.

Massachusetts Beta '62

was awarded the 2024 IEEE Computer Society Computer Pioneer Award "for the development of the mathematical theory of data networks, the technology underpinning the Internet." At UCLA, where he is a Distinguished Professor of Computer Science, "his computer became the first node of the Internet in 1969." Leonard has received eight honorary degrees, published 250+ papers, authored six books, and is a National Medal of Science recipient.

MingDe Lin Ph.D.

New York Gamma '01

received a 2024 Distinguished Investigator Award from the Academy for Radiology and Biomedical Imaging Research. He was nominated by the Society for Imaging Informatics in Medicine for this prestigious honor, recognizing individuals for their outstanding contributions to medical imaging. Ming is director, clinical research North America, at Visage Imaging, Inc., and an associate professor adjunct at Yale University.

Zuhair A. Munir Ph.D.

California Alpha '56

was recognized as a Distinguished Life Member by the American Ceramic Society, or ACerS, the organization's highest honor. He is a Distinguished Professor emeritus and dean emeritus in the college of engineering at the Univ. of California, Davis. Zuhair is known for his investigations into the role of electromagnetic fields in material processing and acquired the first spark plasma sintering facility in the Western Hemisphere while at UC Davis.

Shrikanth S. Narayanan

Ph.D. *California Epsilon '93*

"For contributions to speech communication science and technologies for inclusive human-centered engineering," Shri will receive the 2025 IEEE James L. Flanagan Speech and Audio Processing Award, the highest technical honor in this field. He serves as university professor, chair in engineering, and recently became VP for Presidential Initiatives at the Univ. of Southern California. Shri met Flanagan while at AT&T Bell Labs.

Franklin M. Orr Jr. Ph.D.

California Gamma '69

was selected by the National Academy of Engineering (NAE) as the 2024 Arthur M. Bueche Award recipient "for government, academic and industrial service in promoting clean energy policy, reduction of greenhouse gas emissions and developments in carbon sequestration." He is a professor emeritus at Stanford University and previously served as under secretary for science and energy at the U.S. Department of Energy from 2014-17.

Jay G. Parikh

Virginia Beta '94

Jay will join the senior leadership team as an executive vice president at Microsoft, reporting to CEO Satya Nadella. Recently, he oversaw cloud security startup Lacework, previously led engineering at Facebook, now Meta Platforms Inc., where he worked for more than a decade focused on technical infrastructure and data center projects. Jay has a mechanical engineering degree from Virginia Poly Institute and State University.

Gintaras V. Reklaitis Ph.D.

Illinois Beta '65

was presented the 2024 Founders Award by AIChE's Board of Directors for outstanding contributions to the field of chemical engineering. He is a Distinguished Professor at Purdue University with a focus on process systems eng'g. In his recent research, Gintaras' process management methods have helped drive the transition from traditional batch processing to fully continuous automated manufacturing of pharmaceutical products.

David J. Soukup P.E.

Arizona Alpha '76

was named a Fellow of the Institute of Industrial and Systems Engineers (IISE). He is Managing Director, Governance for the American Society of Mechanical Engineers and an industrial engineering adjunct professor at New York University, where he helped launch the IISE student chapter that has now achieved "Gold Status." David is a certified Association Executive and served as ΤΒΠ's Assistant Secretary-Treasurer from 1976 until 1984.

Karan L. Watson Ph.D., P.E.

Texas Beta '77

is the recipient of the 2024 Linton E. Grinter Distinguished Service Award, the highest honor bestowed by the Accreditation Board for Engineering and Technology, Inc. (ABET). She is a Regents Professor, senior professor in electrical eng'g, and was previously provost and executive vice president at Texas A&M University. Her research focuses on engineering education. Karan is an ASEE Fellow, IEEE Fellow, and past ABET president.

THE SOCIETY OF HISPANIC ENGINEERS CELEBRATES 50 YEARS

The recent National Convention in Anaheim, California, was the setting for the 50th anniversary celebration of the Society of Hispanic Professional Engineers (SHPE).

The Convention "represents the largest gathering of Hispanic STEM talent and SHPE believes the industry's most pressing problem is that the workforce has yet to reflect the diversity of our nation."

The prestigious STAR (SHPE Technical Achievement And Recognition) Awards recognized key individuals, corporations, government agencies, and academic institutions that have contributed significantly to support Hispanics in STEM. At least two Tau Bates received STAR Awards this year (below). Visit the SHPE website for more information.

Lauren Ferlita Breitenbach

Florida Delta '11

Dr. Ellen Ochoa Award

Staff Chief Engineer
Northrop Grumman

John J. Ramirez Avila Ph.D.

Mississippi Alpha '11

Outstanding Chpt. Advisor

Associate Professor
Mississippi State Univ.

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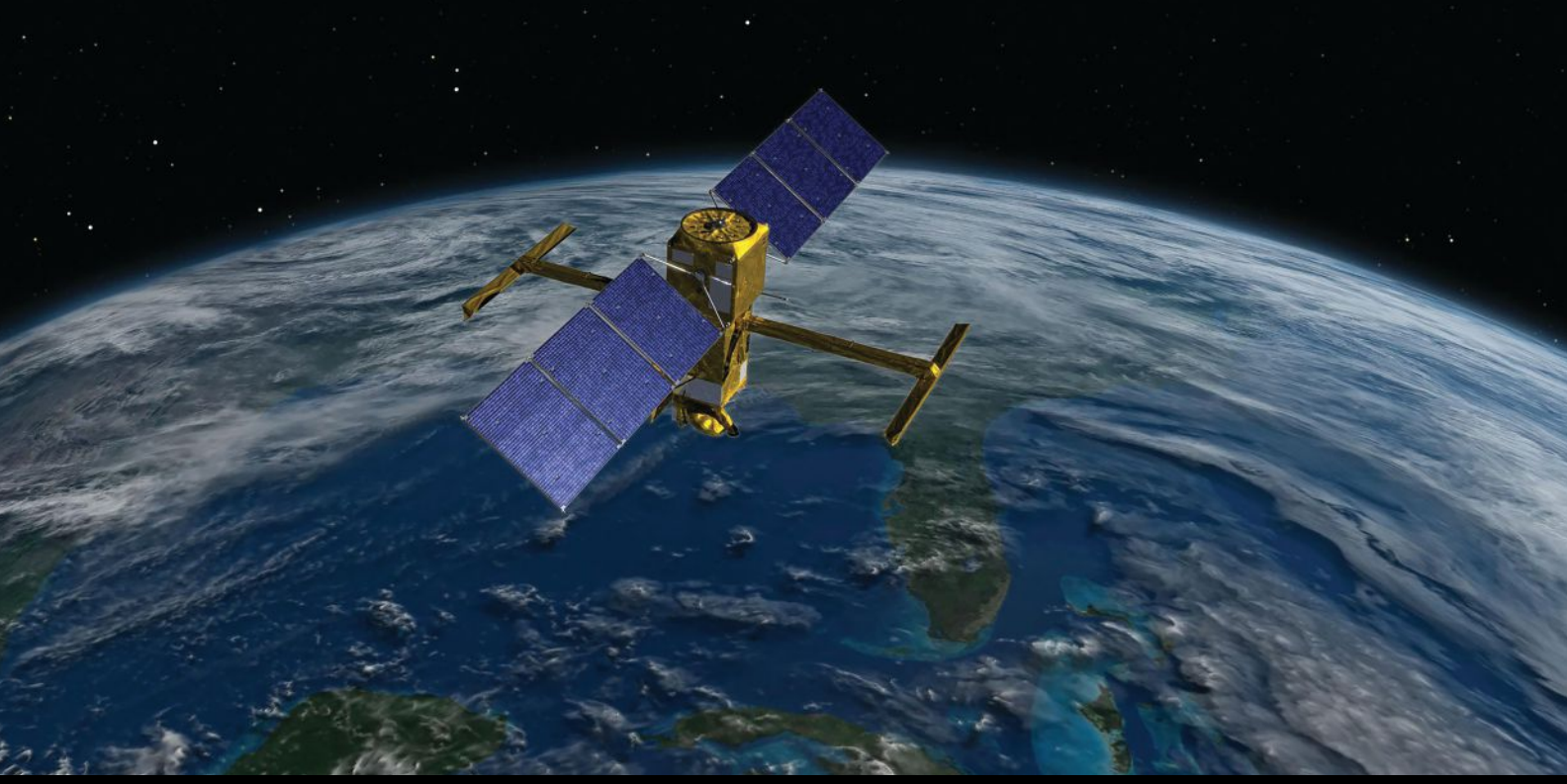
Free distribution by mail (samples, complimentary)	738	730
Total distribution	75,313	59,631
Copies not distributed	139	214
Total	75,452	59,845

I certify that the statements made above are correct and complete. —*Curtis D. Gomulinski, Executive Director*



Space Industry Technology Lands on Earth

BY KAT FRIEDRICH, ***WISCONSIN ALPHA '00***

A stunning diversity of space technologies has been adopted for Earth applications in other industries ranging from farming to robotics to Global Positioning System (GPS). They are especially useful in extreme environments such as deserts, sea floors, and Antarctica, as well as remote locations. For example, a robot operating in a desert environment could make use of technologies designed for Mars.

Early on, the National Aeronautics and Space Administration's (NASA) culture was very open to sharing ideas.

Initially, "NASA... shared everything," said Rod Pyle, editor-in-chief of *Ad Astra* magazine. "They shared their technology, all their discoveries, all the science with commercial industries and with academia. It was given out pretty freely to everybody."

This changed later as federal policy evolved, but technology transfer remains extensive, as the NASA Spinoff website shows in detail (*https://spinoff.nasa.gov/*).

The website contains descriptions of numerous patents that have emerged from space innovation. The industry has become a hub of commercial creativity in the United States.

One especially exciting arena is the synergy between deep-sea and space research. The deep-sea environment is at a high pressure and poses many hazards to equipment. The ocean is a maximum of around four miles deep. Few creatures can survive in the most extreme parts of the deep ocean, where fish have evolved to have light-generating organs.

"Recent advances in robotic design, autonomy, and sensor integration create solutions for the exploration of deep-sea environments, transferable to the oceans of tiny moons," according to an article by Jacopo Aguzzi and other co-authors, "Developing Technological Synergies between Deep-Sea and Space Research," published in *Elementa: Science of the Anthropocene*.

"Recently, a soft-bodied robot with distributed electronics was successfully deployed in the Mariana Trench, proving the ability to protect electronics from high-pressure water by using elastomeric materials," Aguzzi and his co-authors wrote. "Life-detecting technologies are also of relevance. [Those] conceived for astrobiological research should be sufficiently repeatable, sensitive and reliable in detecting life signatures."

Discovering life in the deep ocean fascinates researchers. Finding life in space excites them even more.

Shelli Brunswick, CEO and founder of SB Global LLC, predicted in *Forbes* 2022 that space technologies were about to see "a spike in innovation." These innovations will affect the work done by engineers in the future. The patents may show up in mechanical engineering, electrical engineering, materials science, nuclear engineering, and other fields.

Image left:

An illustration of the Surface Water and Ocean Topography (SWOT) satellite launched December 16, 2022, and operated by NASA and the Centre national d'études spatiales (CNES), the French space agency.

SWOT will survey nearly all water on the Earth's surface for the first time, tracking how water levels rise and fall over time. It will study ocean features at ten times the resolution of current technologies and measure more than a million lakes and rivers around the globe.

These observations will help scientists improve flood forecasts, build better models for monitoring droughts, and make more precise predictions for rising sea levels.

Credit: NASA SWOT

Images below:

In 2024, a team of researchers developed a self-powered soft robot to explore the world's deepest region — the Mariana Trench.

At a depth more than 10,000 meters underwater, the pressure increases to an extreme level.

The robot was inspired by the Hadal snailfish and taken down by an unmanned deep-sea lander, and released by a robotic arm. The self-powered robot maintained the flapping motion for 45 minutes without any pressure-protective devices.

"Discoveries and space innovation often require global collaboration and partnerships, and space technology is years in the making; it is rigorously tested and generally the most advanced in the world," Brunswick wrote. These patents "can be picked up by industrious entrepreneurs and applied in innovative ways to bring space technology to the masses through commercial products."

"Few people understand that the space economy... could soon transform how they live and work," Ryan Brukardt wrote in an article from McKinsey & Company, "How Will the Space Economy Change the World?"

In an article I contributed to *Supercluster* in early 2024, "Space Experiment Provides Insights for Developing Cancer Drugs," cancer researchers from Frederick National Laboratory had been studying drugs that can attack cancer-causing proteins. In a zero-gravity environment, they can conduct experiments on how the proteins behave. The experiment, which studied the tail of a KRAS protein, was relatively unsuccessful.

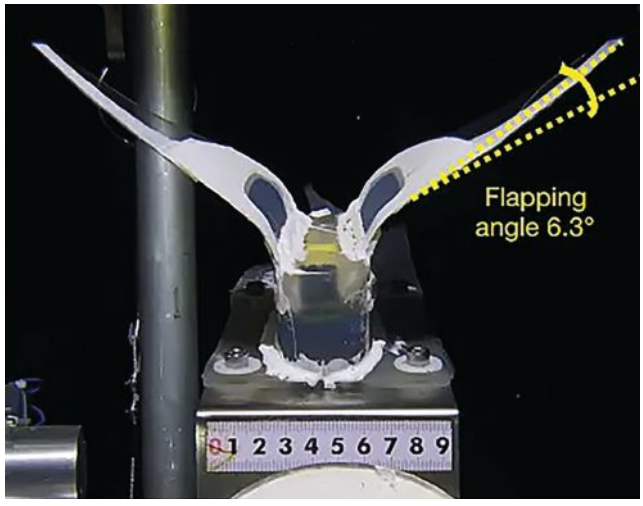
Brukardt added that pharmaceutical companies could study cell growth in a space station lab, or semiconductor chips could be manufactured in space.

Metal cutting is one activity that would be needed for space manufacturing. In my 2022 article for *Popular Mechanics*, "Rocket Debris Is Cluttering Low-Earth Orbit. We Could Turn It Into Space Outposts, Instead," discusses the fact that metal is now being cut successfully in space.

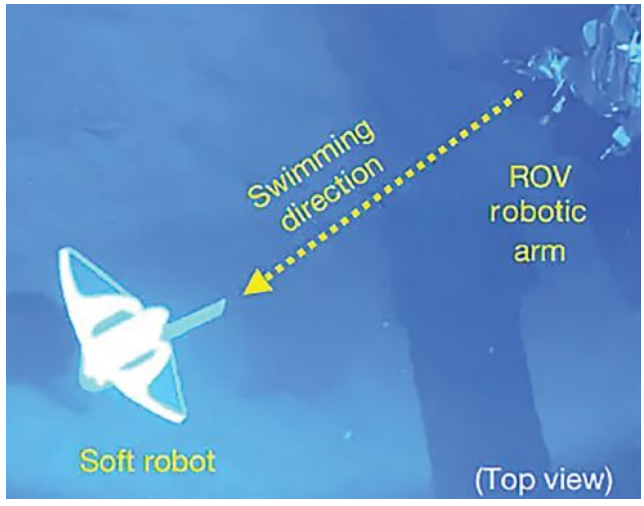
"From the launch of Sputnik in 1957 through today, the space economy has delivered most of its value through satellite services, including communications and data and image collection and analysis," Brukardt wrote. "Consumers use satellite technology whenever an online navigation system pinpoints their location, or when they make calls during plane fights or from rural locations that lack cell phone towers." Companies use satellites for financial transactions, video conferencing, and inventory monitoring.

For national security, governments use satellites in a host of applications. For example, they can monitor troop locations or observe weapons systems, he wrote.

Satellites can be used for a broad range of military activities, including intelligence gathering and weapons deployment.



The robot's fins, made of a smart soft material called 'dielectric elastomer (DE),' — can produce mechanical work from the electrical energy supplied from the on-board lithium-ion battery.
Source credit: Li et al., 2021 (Figure g)



The remotely operated vehicle (ROV) carried the robot down into the deep sea, released it using a robotic arm, and recorded the successful "free-swimming."
Source credit: Li et al., 2021 (Figure j)

War has become increasingly automated and can easily be conducted from a distance. The U.S. military relies on satellites very extensively to engage in all kinds of data-gathering activities, and can also be used to coordinate and facilitate attacks on the ground. This has an immense impact on how wars are waged today.

Observing the world's weather is another role satellites play.

"NASA's always been the first warning system," Pyle said. "At this point, they're measuring inches of sea level rise on coastlines. They're measuring ocean temperatures, which is giving us a warning about the possible collapse of the Atlantic current which keeps Britain and Central Europe warmer than they should be." They also measure melting ice caps.

Brutal cold weather in the UK and Europe would be devastating for the population and economy there. Shoreline flooding can cause many urban disasters, forcing communities to relocate.

Space-developed technologies are especially useful in adverse environments on Earth such as deserts, deep oceans, Antarctica, and the Arctic.

Remote locations are good places to use space technologies. For example, satellites can provide web services to remote rural environments through the Starlink system. This helps to improve global health and education, Brukardt said.

Accessing international communication networks makes it possible for rural young people to learn more rapidly, discover professional interests, and potentially be part of the innovation economy or pursue higher education. This is the effect of broadening opportunities and networks for rural people and facilitating remote work.

There are many space technology applications that benefit farmers. Satellites can observe crop development and prevent food shortages, Brukardt said.

"The greatest value from satellite sensors for agriculture relates to yield-improvement opportunities," Brukardt said. "For instance, farmers can use satellite images to identify areas that require replanting early in the season."

Space technologies have many applications in the energy industry. In an article published in *WIRED* and *Ars Technica* earlier this year, "Will Space-Based Solar Power Ever Make Sense?," I analyzed the prospect of large-scale space solar power, which I'm skeptical about.

Space was one of the first locations where solar PV was used frequently.

Pyle described some of the issues involved. "When you're out in space, you've got temperature extremes, but you've also got targeting. You've got issues with mass. You've got these enormous, in some cases football-field-sized solar panels unfolded."

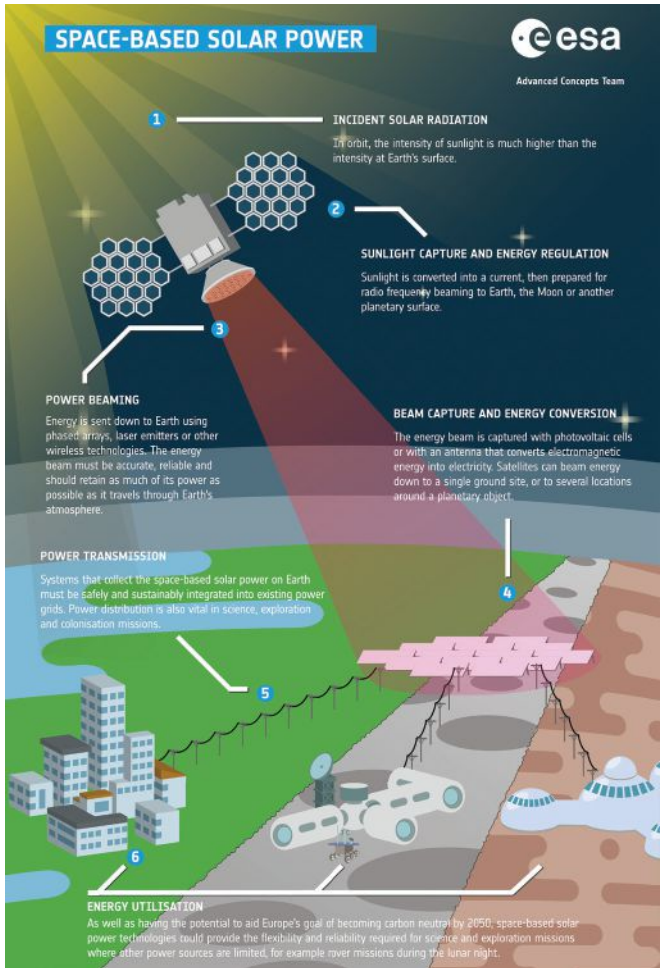
Implementing space-based solar power would be challenging because of the huge financial investment and technical expertise required to set up and automate the solar power station.

Solar power is now very popular on the ground. The industry has grown massively since the 1950s with the assistance of federal tax credits.

GPS is one of the best-known technology transfer success stories in the space industry. It is owned by the U.S. government and the Air Force operates it.

"GPS has its origins in the Sputnik era when scientists were able to track the satellite with shifts in its radio signal known as the Doppler Effect," according to NASA's website. The Doppler Effect occurs when a sound wave frequency is shifted because the source is moving relative to the observer.

The U.S. Navy experimented with this effect in the 1960s to find the location of a submarine carrying nuclear missiles.



Pillars of space-based solar power from The European Space Agency.

"DISCOVERIES AND SPACE INNOVATION OFTEN REQUIRE GLOBAL COLLABORATION AND PARTNERSHIPS, AND SPACE TECHNOLOGY IS YEARS IN THE MAKING; IT IS RIGOROUSLY TESTED AND GENERALLY THE MOST ADVANCED IN THE WORLD." — SHELLI BRUNSWICK

In the 1970s, the U.S. Department of Defense created the GPS satellite navigation system, which started out with 24 satellites that were fully active in 1993.

Brukardt wrote that the Space Foundation published a statistic that the space economy was worth $469 billion in 2021 - 9% more than it was worth in 2020. Most of this value comes from its benefits on Earth.

In 2022, Brunswick wrote that employment in the private space sector had reached a 9-year high that happened during an economic downturn.

Another high-impact invention has been the integrated circuit which has revolutionized information technology.

"During the Apollo years when I grew up... the lunar module navigation and landing computer was the first use of integrated circuits on anything smaller than modern computers," Pyle said. "At this point, the smartphone you're using has more data than the entire planet Earth did in the 1960s."

Science fiction fuels collective enthusiasm for this industry. Pyle, in his book "Blueprint for a Battlestar," describes how the tricorder, a medical device from Star Trek, has inspired the creation of medical uses of smartphones.

The original tricorder was a handheld device that was around the same size as a paperback book. It had three unmarked buttons and there was a remote body-analysis sensor that made tiny noises as it did its work.

Smartphones today have sensory devices inside them already and can have attachments for a variety of purposes. These include breathalyzers to measure alcohol content, spirometers to measure lung capacity, brain scanners, blood glucose meters, heart rate sensors, and blood oxygenation sensors.

The spinoff technologies of this industry can be licensed through NASA's Technology Transfer Program, the Technology Transfer Programme office of the European Space Agency, or many other government agencies.

The growing commercialization of space travel is leading to massive interest in the sector, which is expanding engineering activities as well. This growth is reflected by increasing news coverage, as well as fan behavior by the public, with launches being viewed regularly on broadcast video. In the next two decades, this industry may become more commercially funded than government-funded, Brukardt wrote.

KAT FRIEDRICH is an engineering journalist who is the editor-in-chief of the magazine *Solar Today* and a regular contributor at *PCI Journal*. In 2012, she co-founded Clean Energy Finance Forum, an entrepreneurial news project that Yale Univ. acquired. She has written and/or edited material for the Northeast Sustainable Energy Association, Renewable Energy World, Energy News Network, Microgrid Knowledge, the University of Wisconsin-Madison, and the American Council for an Energy-Efficient Economy. Previously, Kat was an engineer for American Superconductor and Forest Products Lab. She joined ΤΒΠ at the Wisconsin Alpha Chapter where she majored in mechanical engineering.

Right: Digital glucose meter with smart phone sensor.

NASA Technology Transfer Program "circuits" logo.

Space Industry Technology Lands on Earth

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Need a Feature from a Back Issue?

You can find previous features from the magazine back to 1979 on our website.

One month after each *Bent* is published, the features from that issue are posted in PDF format at:

www.tbp.org/bent-features.cfm#feature

You can reach out to us at:

tbp.media@tbp.org

with any other requests.

We need *YOU*, to write for *The Bent*

The Editors of *The Bent* are frequently searching for well-written, general interest feature articles for the magazine.

Many of you have the appropriate experience, are qualified, and capable of preparing such a feature.

Manuscripts can be 1,000-3,000 words, and should be double- spaced and submitted as a text or MS Word document. Publishing cannot be guaranteed.

Email your proposal to:

tbp.media@tbp.org

The STORY BEHIND The PHOTO

Announcing the Winter 2025 "Caption This Photo" Contest!

At the recent 2024 Convention in Rapid City, SD, Sam Rokni, *CA C '05,* demonstrates his annual signature Convention pose during a committee meeting. Sam serves Tau Beta Pi as a District 16 Director as well as an advisor to the California Chi Chapter at California State University, Fullerton.

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

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

DEADLINE: MONDAY, FEBRUARY 3 5 P.M. [ET]

Questions? Contact *d.lane@tbp.org*

WINNERS of the Fall 2024 "Caption This Photo" Contest:

The judges reviewed 60 clever captions created by 40 imaginative individuals. You can read all entries, including captions and results from recent contests, at ***www.tbp.org/bent-features.cfm#caption***. ***If you are interested in serving as one of our judges, contact Dylan Lane at*** *d.lane@tbp.org*.

1ST PLACE:

"When I first became a Tau Bate I was about this tall. Look at me now! "

Michael D. Lovato, *NM G '87*

2ND PLACE:

"You must be this high to ride the coaster."

Thomas G. Hippe, *MO A '75*
(Previous t-shirt winner)

3RD PLACE:

"Tau Bates, after graduation your engineering career will take off like this."

Yi-Hsien Doo, *MI Z '81*
(Previous t-shirt winner)

4TH PLACE:

"Shadow puppets were never Larry's strong suit."

Barton R. Field, *WV A '83*

CONGRATULATIONS TO OUR WINNERS!

▲ The camera captured Larry A. Simonson, Ph.D., P.E., *SD A '69*, then a District 12 Director and South Dakota Alpha Chief Advisor, making a point while addressing the 1996 Convention in Rapid City, SD.

THE ANNUAL REPORT OF THE

PRESIDENT

ADDRESSING CONVENTION: STATE OF THE ASSOCIATION

RONALD M. HICKLING, *California Epsilon '80*
2024 President of the Association

It is my privilege to report on the Tau Beta Pi Association and its activities for the year 2024. As I mentioned in my remarks during this past Convention, although this report is credited to the President, the activities reported here are the work of the many, many volunteers and paid staff for whose efforts I am deeply grateful. As the representative head of the Association for this year, I thank all of you who contributed to its efforts, whether that be in the form of your labor, your donations, or both.

The ultimate governing body of the Association is the annual Convention. Between Conventions the Executive Council governs in accordance with direction from the Convention but also in concert with the strategic priorities set by the Council itself. There are five Program Directors that are appointed by and report to the Council: (1) Alumni Affairs, (2) District Program, (3) Engineering Futures, (4) Fellowships (who also oversees scholarships), and (5) Rituals. In addition, there are multiple committees that serve as subject matter experts that report to the Council and often serve as the starting place for topics and proposals that are brought before the Convention. Their work is summarized below:

ALUMNI AFFAIRS

As of July 31, 2024, there were 52 active alumni chapters of Tau Beta Pi around the country. The Central Michigan Alumni Chapter was reactivated in June. [Note: We have gained one more provisional alumni chapter since July 31: Scissortail in the Oklahoma City/Norman, OK, area.]

The alumni chapters are encouraged to offer opportunities for networking, social events, professional development, and service activities as well as to work with the collegiate chapters in their area. Events are posted on the ΤΒΠ events calendar (*www.tbp.org/alumni-chapters.cfm*) and are often announced on chapter and Association social media sites. A Google Group and a Facebook page are maintained for alumni chapter officers, where information is shared, ideas are exchanged, and pictures are posted of activities, which are also publicized in *The Bulletin* and *The Bent*.

For the year 2022-23, alumni chapters were asked to complete surveys and submit event information, which were reviewed by the Director of Alumni Affairs and the Alumni Chapters Committee at Convention. This information was used by the Director of Alumni Affairs to award the first-ever alumni chapter recognitions, which were presented to alumni chapters at the 2023 Convention. In 2023, 35 of 51 active alumni chapters completed surveys for 2023-24, and 26 of those chapters submitted accompanying event information spreadsheets. To join an alumni chapter near you, contact an officer using the interactive map at: *www.tbp.org/alumni-chapters.cfm*.

DISTRICT PROGRAM

This past year, nine new District Directors were introduced into the program and ten Directors did not seek reappointment at the end of their term. Three new Chapter Development Committee members were introduced into the program and one committee member transitioned into a District Director role. The Council and Director of the District Program, Stacey Forkner, would like to thank these volunteers for their passionate support of our chapters!

One of the biggest and most important responsibilities of the District Program and District Directors is to plan and carryout a District Conference for each District. The goals of the conference are twofold: 1) to build successful leaders to run each of our chapters, and 2) to facilitate the transition of chapter leadership to the new officers.

During the 2024 District Conferences:

- More than 450 chapter leaders from 150 collegiate chapters became better leaders.
- Attendees participated in modules to develop an understanding of chapter operations – such as the simulation of running a chapter for a semester, planning projects, and motivating members – as well as networking, and career coaching.
- Sixty-five alumni members representing 22 alumni chapters attended and demonstrated that involvement in Tau Beta Pi is for life!
- Thirty advisors supported the development of their chapters through their attendance.

The President's Report continues on page 38.

Newly Elected Executive Councillors

The 2024 Convention delegates elected three new members to the Executive Council from a field of five candidates to fill the seats of three members whose terms expire on December 31, 2024: Ronald M. Hickling (reelected), MingDe Lin, and Joan M. Sciacca. The new Councillors will serve the 2025-27 term and join six members previously elected. The Executive Council comprises nine Tau Beta Pi alumni who serve staggered terms of three years.

DAVID J. COWAN JR., P.E., ENV SP

FLORIDA EPSILON '14

David is a senior engineer in the West Palm Beach office of Chen Moore and Associates and has 15+ years of experience specializing in the renovation and design of water/wastewater pump facilities and water/wastewater conveyance and distribution systems.

He holds B.S. and M.S. degrees in civil engineering, with a water resource focus, from Florida Atlantic University. David is a FL E Chapter Advisor and previously served as a District 5 Director (2017-24), held the position of secretary for the Palm Beach/Broward Alumni Chapter, and was a collegiate chapter president.

David is a Florida Engineering Leadership Institute graduate and assumes executive roles for several professional organizations.

RONALD M. HICKLING

CALIFORNIA EPSILON '80

Ron is a senior systems engineer for Creative Digital Systems Integration Simi Valley, involved in the development of digital beamforming antennas.

He has a B.S. in electrical engineering from the University of California, Los Angeles and has been TBΠ's Permanent Convention Chair 28 times and Parliamentarian before that. He's been a District 15 Director, Engineering Futures Facilitator, and Director of Engineering Futures (1995-99).

A senior member of IEEE, Ron co-founded and serves as president & CTO of Techno-Concepts, Inc., which develops software defined radio chips and systems.

SUE L.R. HOLL., Ph.D.

CALIFORNIA LAMBDA '76

Sue is Professor Emerita, materials science department of mechanical engineering at California State University, Sacramento.

She earned a B.S. in electrical engineering, and B.S and M.S. degrees in materials science & eng'g from the Univ. of California, Davis, and a Ph.D. in materials science & eng'g from UC Berkeley. Sue supported the CA Upsilon and Lambda Chapters in hosting the 2008 Convention and is a certified Engineering Futures Facilitator.

During her career at CSUS, she taught graduate and undergraduate courses, pursued research in semiconductor device fabrication, became department chair, and actively advised student professional organizations.

Members of the 2025 Executive Council include:

- Rachel K. Alexander, P.E., *California Upsilon '15*
- David J. Cowan Jr., *Florida Epsilon '14* **newly elected**
- Michael J. Hand III, *Michigan Gamma '11*
- Ronald M. Hickling, *California Epsilon '80* **reelected**
- Colleen L. Hill-Stramsak, P.E., *Michigan Epsilon '00*
- Sue L.R. Holl, Ph.D., *California Lambda '76* **newly elected**
- Henry H. Houh, Ph.D., *Massachusetts Beta '89*
- Marla A. Peterson, *Arizona Alpha '83*
- Thomas A. Pinkham IV, *Massachusetts Epsilon '88*

Our thanks to candidates, Russell W. Pierce, *Washington Alpha '70*, and Steve E. Watkins, Ph.D., *Missouri Beta '83*, who were not elected.

The new Executive Council will elect officers for the upcoming year from among the Council members, who 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. Vice President Marla Peterson will become the 2025 president. Executive Director Curtis D. Gomulinski serves as a non-voting member of the Council.

New Executive Councillors at the 2024 Convention.

2024 TAU BETA PI CONVENTION

SUMMARY OF ACTIVITIES AND BUSINESS FROM THE 2024 CONVENTION

Rapid City, SD, was the setting for the 118th Convention of Tau Beta Pi, held October 26-28. Unlike the 1996 Convention's surprise snowstorm, the City of Presidents delivered three days of beautiful fall weather that made the group visit to Mount Rushmore even more memorable and the official picture more striking (see front cover).

Making the trip to South Dakota were 442 members representing 206 collegiate chapters and 33 alumni chapters. The total included students, alumni, officials, and chapter advisors. Additional non-member guests and volunteers participated in Convention activities.

The South Dakota Alpha Chapter at the South Dakota School of Mines and Technology (South Dakota Mines) hosted the Society's annual meeting, led by **Larry A. Simonson, Ph.D., P.E.,** *SD A '69*, Advisor of SD A, and **Lucas I. Pierce,** *SD A '25*, Convention Arrangements Chair.

Headquarters for this Convention was The Monument Event Center. Four Business Meetings, Committee and District meetings, Professional Development and NICE Sessions, a Recruiting Fair, Engineering Futures training, and a Model Initiation were held at The Monument.

At the First Business Meeting on Thursday, the President's Report on behalf of the Executive Council was presented by **President Ronald M. Hickling,** *CA E '80*, (**page 12**). Reports of the Directors of the Association were heard. The day's activities included District, Committee, and NICE meetings, a corporate and graduate program Recruiting Fair (**see p. 15 for list of Recruiters**), and Professional Development and Engineering Futures training.

The evening's banquet, sponsored by South Dakota Mines, honored the 2024 Laureates and included welcome messages from **Marla A. Peterson,** *AZ A '07,* Association Vice President; **Cassandra M. Birrenkott, Ph.D.**, *SD A '07*, South Dakota Mines Associate Professor and SD Alpha Chief Advisor; and **Lucas Pierce.**

On Friday morning, the attendees were divided into two groups and bused to Mount Rushmore National Memorial, approximately 32 miles from Rapid City.

There was ample time for each group to take self-guided tours, plenty of selfies, and enjoy a delicious box lunch. Everyone assembled for the Convention group photo, orchestrated by **Kiffer Creveling,** *UT A '13*, official Convention photographer.

The Friday evening Alumni Recognition Banquet, sponsored by South Dakota Mines, included presentations of the 2024 McDonald Mentor, Outstanding Advisor, and Distinguished Alumni. Vice President Peterson led the recognition of ΤΒΠ Advisors and **Michael J. Hand III**, ΤΒΠ Treasurer, presented service certificates to thirteen volunteers.

The Chapter Recognition Luncheon on Saturday was also sponsored by South Dakota Mines and included presentations of the 2024 Chapter Excellence Awards to 20 chapters (**page 18**), Reports of the Executive Director and Director of Development, and Chapter Project Awards (**page 20**).

The Chapter Awards Banquet on Saturday, sponsored by **Harry W. Lange**, *MI Z '75,* brought Convention business to a close. The Final Business Meeting was held as well as recognition of the winners of the J.D. Froula Most Improved Membership Awards (**page 19**), the R.H. Nagel Most Improved Chapter Awards (**page 19**), and the R.C. Matthews Outstanding Chapter Awards (**page 18**). Director of Alumni Affairs Tricia E. Gomulinski presented the 2024 Alumni Chapter Awards (**page 42**). A plaque was presented to the Michigan Gamma winning team of the 2024 NEST Competition. Following the Resolutions Committee presentation, Executive Council service as well as the new Executive Councillors were recognized. The Convention was adjourned with a napkin chain as well as a rousing rendition of the Tau Beta Pi yell, complete with live enactments of the letters TBΠ, led by Jim Froula, Executive Director Emeritus.

TAU BETA PI LAUREATES

At Thursday's Laureate Banquet, Executive Councillor **Henry H. Houh,** Ph.D., introduced the 2024 Laureates: **Derrick Bailey IV,** *TN A '24*, for service; **Amanda Stone,** *AZ B '23,* for achievements in the arts; **Raafay Uqaily,** *WV A '23*, for service; and **Matthew Yee,** *IN D '24,* for achievements in the arts. Each Laureate received a commemorative plaque and $2,500 check.

TAU BETA PI-MCDONALD MENTOR

Steve E. Watkins, Ph.D., *MO B '83*, was honored with the 2024 McDonald Mentor Award at Friday's Alumni Recognition Banquet. Executive Councillor **Rachel K. Alexander, P.E.,** presented him with a $1,000 check, a bronze engraved medallion, and a replica lapel pin. Another $1,000 will be presented to the nominating chapter, Missouri Beta at the Missouri University of Science & Technology.

OUTSTANDING ADVISOR

Ramak Asgari, *CA H '99*, was recognized as the 2024 Outstanding Advisor by Executive Councillor **Colleen L. Hill-Stramsak, P.E.** Ramak was unable to attend the banquet and will receive $1,000, and another $1,000 will be presented to San Jose State University's College of Engineering discretionary fund.

DISTINGUISHED ALUMNUS

Three Distinguished Alumni were honored: **Adedeji B. Badiru, Ph.D., P.E.**, *TN G '79;* **William R. Goodin, Ph.D.**, *CA E '75;* and **John W. Steadman, Ph.D., P.E.**, *WY A '64*, who is the Asad M. Madni Distinguished Alumnus. Executive Councillor **Thomas A. Pinkham IV** presented each with an engraved plaque, and a $2,000 scholarship in each winner's name was awarded to three TBΠ students for the 2024-25 academic year.

CHAPTER & PROFESSIONAL DEVELOPMENT

The Chapter Development Program included National Interactive Chapter Exchanges (NICE) and district meetings. Each district met three times during Convention and NICE Sessions were offered on Thursday and Friday. A Professional Development Program presented nine topics in career growth and leadership: • Engineering Licensure: How & Why • Unlock Your Professional Success with Working Genius • Graduate Fellowships • Forging Your Path: A Comprehensive Guide to Manifesting Your Dream Job in Tech • How to Climb the Corporate Ladder & Navigating Your Career Path with Friends • Effective and Impactful Communication for Engineers and Scientists • From Gig Worker to Tech Firm CEO: Scaling Your Dreams • Negotiating Job Offers: Overcoming Your Trepidation • Preparing for Graduate School.

2025-27 EXECUTIVE COUNCILLORS ELECTED

Five candidates, introduced in the Fall 2024 issue of *The Bent*, ran for the opportunity to serve on the Executive Council. The Convention elected three members to serve the 2025-27 term. Results are reported on **page 13**.

A SPECIAL THANKS TO OUR RECRUITERS

We gratefully acknowledge the 2024 Virtual and In-person Recruiting Fair participants:

Platinum Recruiters

Pitt Swanson Engineering Graduate School
Raytheon – An RTX Business

Gold Recruiters

Collins Aerospace – An RTX Business
The George Washington University SEAS
University of Michigan Electrical & Computer Engineering
POET
STEFFES
SUPERIOR – WESTMOR
US Patent & Trademark Office
University of Virginia Engineering

Silver Recruiters

Epic
FBI – Minneapolis
George Washington University Online Engineering Programs
Iowa State University
Michigan Tech Graduate School
Northeastern University College of Engineering
NYU Tandon School of Engineering
Penn Engineering
Penn State University
Performance Engineering
Rensselaer Polytechnic University
Sandia Labs
South Dakota Department of Transportation
Stevens Institute of Technology
University of Connecticut College of Engineering
University of Florida
University of Southern California
Worcester Polytechnic Institute

Bronze Recruiters

American Consolidated Natural Resources, Inc.
BAE Systems
Columbia University
Dartmouth Engineering
Freeport McMoRan
Husch Blackwell
Interstates
Lehigh University
Michigan State College of Engineering
MIT Leaders for Global Operations
New Mexico Institute of Mining & Technology
North Carolina State University College of Engineering
Northwestern University Master of Science in Law
Pepsi Co
South Dakota School of Mines & Technology
Siemens
The Ohio State University
University of Michigan
University of Tennessee – Oak Ridge Innovation Institute
Vanderbilt University

COMMITTEES

Convention business was handled by 13 standing and *ad hoc* committees with collegiate and alumni chapter voting delegates serving on one of the following committees: **Advisors**; **Alumni Chapters**; **Awards**; **Chapter & Association Financial Affairs**; **Constitution and Bylaws**; **Convention Site**; **Diversity, Equity & Inclusion** (DEI); **New Engineering Solutions for Tomorrow** (NEST); **Petitions**; **Program Review**; **Public Relations**; **Resolutions**; and **Rituals**.

CONSTITUTION AND BYLAWS

The committee was charged with reviewing a policy developed by the Executive Council following the general revision to the Constitution and Bylaws, a proposal to permit Executive Council responsibilities be defined in policy, proposed amendments to Articles V and VII, and requests for review arising from other committees during the Convention. The committee adopted the amendment regarding Executive Council responsibilities and sent it to the chapters for ratification. The committee reviewed the proposed changes to Articles V and VII and adopted for ratification changes to Article VII but declined to recommend any changes to Article V.

NEW CHAPTER GRANTED

The Petitions Committee reviewed a petition for a new chapter at Fairfield University in Fairfield, CT. Determining that it met the requirements in the Constitution & Bylaws, a motion to accept the petition of the local society, Tau Beta Phi, and grant a chapter to Fairfield University was passed (see image below). The chapter will be installed on May 2, 2025, raising the number of active chapters to 258.
A proposal to modify Article VI, Section 1 regarding requirements for a petitioning society was passed and will be sent to the chapters for ratification.

FINANCIAL AFFAIRS

The committee was tasked to review and recommend action to increase the initiation fee and review the Convention reimbursable expense policy. They also reviewed chapter accounts receivable to HQ and the auditor's report for 2021-22. No unusual voting delegate expenses were identified for the 2024 Convention. The committee met with eight chapters with balances over $500 and discussed plans for repayment. The 2021-22 auditors report appeared in order. No action was taken on the Convention reimbursement expense policy. A motion increasing the Association initiation fee by $5 for each of the next four years and outlining future reviews of the increase passed. Lastly, the committee requested that the EC retool the Student Assistance Program.

RESOLUTIONS

The committee's charge included preparing the resolutions presentation to the Convention and also preparing recognition materials for members of the Association. Reference to the committee's Final Report to the Convention appears at the end of this article.

RITUALS

The Rituals Committee reviewed a proposal to modify language in the Ritual. Changes were considered but no proposals were brought to the floor.

The committee organized the Model Initiation ceremony which included 19 initiates from South Dakota Alpha and two charter members from Connecticut Delta at Fairfield University.

CHAPTER AWARDS

The Chapter Awards Committee announced MI Gamma at the University of Michigan as the R.C. Matthews Outstanding Chapter for 2023-24, the highest honor for a collegiate chapter in Tau Beta Pi. Honorable mentions were presented to IN Alpha and KS Gamma. The R.H. Nagel Most Improved Chapter for 2023-24 went to OH Alpha at Case Western Reserve University, with Honorable mention going to NM Beta. The J.D. Froula Most Improved Membership Award for 2023-24 was presented to DE Alpha at the University of Delaware. Honorable mentions for Most Improved Membership went to CA Phi and FL Zeta.

Fairfield University petitioners applauded by the Convention.

2024 Laureate Amanda E. Stone.

FUTURE CONVENTIONS

The Convention Site Committee reviewed information to recommend sites to host the 2027 and 2028 Conventions. Information from six locations was reviewed for the 2027 site selection, and from seven cities for 2028. The proposals to host the 2027 Convention in St. Louis, MO, with Columbus, OH, as an alternate option and the 2028 Convention in Minneapolis, MN, with Columbus, OH, as an alternate option, were approved. Motions to accept both proposals passed.

OTHER BUSINESS

The *ad hoc* **Alumni Chapters Committee** was assigned to review and recommend changes to the operations and activities of alumni chapters, and also to review proposals to create an Alumni Chapters standing Convention committee and to add provisional Alumni Chapters to the Constitution. A list of recommendations was provided to the Executive Council and Director of Alumni Affairs. The proposed amendment to make the Alumni Chapter Committee a standing committee failed, but the proposed amendment to define provisional alumni chapters passed and will be sent to chapters for ratification.

Charges to the *ad hoc* **Diversity, Equity & Inclusion Committee** included establishing strategies for initiating more Eminent Engineers from underrepresented groups, reviewing the process for establishing chapters, given that current practice discourages outreach to schools without TBΠ chapters, and review resources for diversity and inclusion. Four recommendations were made pertaining to the Eminent Engineer initiation strategy, three recommendations were identified for establishing chapters, and three for resources. The motion to reinstate the *ad hoc* DEI Convention Committee at the 2025 Convention was approved.

The *ad hoc* **New Engineering Solutions for Tomorrow Committee** reviewed NEST materials and provided general improvement recommendations to the NEST program developers, and introduced the program and competition to the Convention body on Friday evening.

Convention leaders and South Dakota Alpha members and alumni: (left to right) Tricia Gomulinski '98, Larry Simonson '69, Owen Stenstadvolden '24, and Annaliese Braucht '25.

At the 2023 Convention, "Waste Management" was selected as the challenge topic. The 2023-24 winning solution project, "PreCompose," was presented by MI G Advisor Drew Boughton's team from the MI G Chapter at the University of Michigan. A motion that the 2024-25 competition challenge be "Resource Insecurity" passed.

Charges to the *ad hoc* **Advisors Committee** included determining the best ways to: 1) inform advisors about the Advisor's Evaluation, 2) host advisor information-sharing sessions, 3) encourage more advisor Convention attendance and Advisor Committee meeting participation, 4) ensure awareness of revisions to the *Chapter Advisors Manual,* and solicit feedback, and 5) identify and elect new advisors at chapters lacking four advisors. Following discussion of all charges, recommendations were submitted to the Executive Council and/or TBΠ for all topics except #2.

The *ad hoc* **Program Review Committee** was charged with reviewing and recommending action on the following appeals which were all approved: Computer Science at WA D, WI D, and LA A; and Human-Centered Design and Engineering from WA A. CA Xi notified the committee that they no longer wished to appeal their program; therefore, it was not considered.

The *ad hoc* **Public Relations Committee** selected the final design for the new graduation stole available in Spring 2025. Charge #1 was to develop a plan for collegiate chapters to follow that makes them more visible on campus. Recommendations to the Executive Council include making their findings readily accessible to all chapters, and to authorize a Public Relations Committee at the 2025 Convention. Charge #2 was to evaluate the proposed Measured Email Campaign and brainstorm the development of a Unique Selling Proposition component. Two email templates for invitations to candidates were developed.

The **Resolutions Committee** thanked the host chapter members, officials, generous alumni, recruiters, award winners, HQ staff, volunteers, and others for the many positive things that took place during the year. The Chair of the Resolutions Committee concluded his remarks to Convention with inspirational messages for chapter leaders to take back to their chapters.

More information is available at *www.tbp.org/convention.cfm*, including Convention images for download.

Chapter Awards

MI Gamma president Hunter Muench (left) with Awards Committee members Jose Tabarez Jr., *TX N '24*, Jacques Singham, *GA A '25*, and Zoe Worrall, *CA W '25*.

OUTSTANDING CHAPTER AWARD:

Michigan Gamma

The Michigan Gamma Chapter at the University of Michigan received the 2023-24 R.C. Matthews Outstanding Chapter Award. This is the third time in the past 15 years, including an honorable mention in 2016-17, that MI Gamma has been recognized as the Association's most outstanding collegiate chapter.

The 1956 Convention established the Outstanding Chapter Award to encourage and recognize high-grade work in both routine and special affairs. It is based on how well chapter service projects fulfill the objectives of Tau Beta Pi and on the quality and promptness of reports to Headquarters.

The Convention Awards Committee recognized the chapter for efforts to reestablish DEI-based events and expanding K-12 outreach activities. As a result of this undertaking, friendships within the chapter were strengthened. Another event focused on cultivating community within the Association, a joint TBPi Day activity with the MI Epsilon and Iota Chapters.

MICHIGAN GAMMA CHAPTER LEADERS (2023-24):

President – **Kevin T. Masel, *MI G '24***

Vice President – **Karen Jin, *MI G '25***

Treasurer – **Alexander J. Li, *MI G '24***

Recording Secretary – **Namit D. Padgaonkar, *MI G '24***

MICHIGAN GAMMA CHAPTER ADVISORS (2023-24):

Kyle A. Lady, *MI G '10* (***Chief***)

Michael L. Benson, *MI G '07*

Katherine R. Giammalvo, *MI G '22*

David T. Martel, Ph.D., *MI G '13*

Ranadeep Mitra, Ph.D., *MI G '22*

HONORABLE MENTIONS — Outstanding Chapter Award: **Indiana Alpha** (Purdue University) and **Kansas Gamma** (Kansas State University)

★ ★ ★ ★ ★

Chapter Excellence Awards 2023-24

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 Alpha
Alabama Epsilon
Arkansas Alpha
California Eta
Colorado Beta
District of Columbia Alpha
Florida Gamma
Georgia Beta
Indiana Alpha
Iowa Alpha
Kansas Gamma
Michigan Gamma
Michigan Epsilon
Michigan Iota
New Mexico Beta
New York Tau
Ohio Alpha
Ohio Delta
Ohio Iota
Tennessee Alpha

★ ★ ★ ★ ★

Tau Beta Pi
The Engineering Honor Society

2024 Convention

OH Alpha president Kashika Dhanjal (left) with Awards Committee members Jose Tabarez Jr., and Jacques Singham.

Jim Froula presents Anoushka Buddhikot, *DE A '26*, and Alex Abrams, *DE A '24*, with the 2024 J.D. Froula Award.

MOST IMPROVED CHAPTER AWARD:

Ohio Alpha

The Ohio Alpha Chapter at Case Western Reserve University received the 2023-24 R.H. Nagel Most Improved Chapter Award.

The 1971 Convention established this award to recognize major improvement in chapter development, including project work and reports to HQ, in one year as compared with previous years.

OH Alpha was installed as the seventh ΤΒΠ collegiate chapter in 1900 and its been 30+ years since the chapter's last major award. Highlights from OH Alpha's project reports this year included: posting to the chapter's Instagram about summer professional development activities of members, giving out free pie for *Pi Day*, and hosting an Entrepreneurship Skills Lab Series with important speakers on topics such as Intellectual Property.

OHIO ALPHA CHAPTER LEADERS (2023-24):

President – **Deepti Naruka, *OH A '24***

Vice President – **Russell S. Lubin, *OH A '24***

Treasurer – **Ethan Degrandis, *OH A '24***

Corresponding Secretary – **Kyler K. Rosen, *OH A '25***

Recording Secretary – **Eabha Abramson, *OH A '24***

OHIO ALPHA CHAPTER ADVISORS (2023-24):

John A. Yirga, Esq., J.D., *OH A '92 (Chief)*

Bryan E. Schmidt, Ph.D., *OH A '11*

HONORABLE MENTION — Most Improved Chapter Award: **New Mexico Beta** (University of New Mexico)

MOST IMPROVED MEMBERSHIP AWARD:

Delaware Alpha

The Delaware Alpha Chapter at the University of Delaware was selected as the 2023-24 J.D. Froula Most Improved Membership Award recipient.

In 2011, the Executive Council established an annual Most Improved Membership Award to recognize chapters for increased membership over a three-year period. Named in honor of James D. Froula, P.E. (ret.), TN A '67, the third person to hold the position of ΤΒΠ *Secretary-Treasurer*.

Installed in 1933 and located in Newark, the DE Alpha Chapter also won the 2020-21 J.D. Froula Award. Current chapter president Georgia Angeletakis began serving in May 2023 and will conclude her second term in May 2025. She has also previously had the roles of corresponding secretary, recording secretary, and treasurer for the DE Alpha Chapter and is a 2024 ΤΒΠ Scholar.

DELAWARE ALPHA CHAPTER LEADERS (2023-24):

President & Recording Secretary – **Georgia A. Angeletakis, *DE A '25***

Vice President & Treasurer – **Kaelyn E. Owen, *DE A '24***

DELAWARE ALPHA CHAPTER ADVISOR (2023-24):

Abraham M. Lenhoff, Ph.D., *DE A '76 (Chief)*

HONORABLE MENTIONS — Most Improved Membership Award: **California Phi** (University of the Pacific) and **Florida Zeta** (Florida Institute of Technology)

Chapter ⋆ Project Awards

Iowa Alpha Chapter members set up for the November Free Coffee Friday.

Purdue Univ. (IN Alpha) student on a walk with a shelter dog.

KS Gamma maintenance crew for the K-Hill concrete letters and civic monument.

AL Ε University of South Alabama
69 Projects Received resume tips from interviews with companies such as Chevron, Airbus, and Hargrove. Also participated in the 'Beta Battle,' a dodge ball tournament held outside the campus engineering building.

CA Ε Univ. of California Los Angeles
90 Projects Hosted a "LinkedIn Headshot Photoshoot" project to provide electees with a professional headshot. Chapter members had opportunities to bond during retreats, bonfires, and hikes to Inspiration Point.

CA Ψ Univ. of California, San Diego
70 Projects Handed out slices of pie on campus to celebrate the 30th anniversary of the chapter's installation. Took a short hike to watch the sunset over the ocean at Gliderport, for a social activity.

FL Α University of Florida
42 Projects Facilitated multiple GatorTRAX sessions, a math & engineering outreach program, to provide K-12 students opportunities to learn about STEM. Organized bowling and volleyball social activities.

IA Α Iowa State University
59 Projects Continued the Free Coffee Friday service project providing coffee, tea, and hot chocolate to engineering students and faculty. Held the 30th annual Pi Mile Run during Engineers Week.

IL Α Univ. of Illinois at Urbana-Champaign **82 Projects** Targeted increased visibility on campus with trivia nights, a barn dance, and two *Pi Day* races for all Engineering College students/faculty. Presented a special senior medallion to active members.

IN Α Purdue University
85 Projects Volunteered in the community at the local animal shelter, cleaning and walking dogs. Sent encouraging letters to those fighting cancer through the "Send A Smile" charity.

KS Γ Kansas State University
59 Projects Hosted their first engineering formal with 250+ guests and a beach & bonfire jamboree to increase awareness on campus. Celebrated the 50th anniversary of the chapter during the Spring banquet.

Image (left): The Illinois Alpha Chapter Information Session table for electees.

Image (right): Members of the California Psi Chapter enjoying the sunset.

At the 2024 Convention, 16 chapters were recognized with **Chapter Project Awards** for outstanding performance during 2023-24.

MD Β University of Maryland
54 Projects Assembled care packages for local homeless shelters. Held a poker night for electees to socialize and get to know current chapter members and hosted a BBQ Bent monument shining activity.

MI Γ University of Michigan
185 Projects Continued the T-B-Pals mentorship program, where a member is 1-on-1 with an electee throughout the membership process. Held a t-shirt design contest to promote the chapter and create a souvenir.

MI Ε Wayne State University
47 Projects Hosted their first "Micro-Symposium" to encourage student involvement in academic research. Planted trees in collaboration with the organization, "Greening of Detroit."

NY Ο SUNY at Stony Brook
24 Projects Collaborated with several organizations to compete in an RC Car race and an architectural LEGO build. Volunteered to help the campus Origami Club with their new art installation.

OH Α Case Western Reserve Univ.
23 Projects Hosted a S'mores Social Event designed to attract eligible candidates and promote ΤΒΠ in the community. Held tutoring sessions for engineering student exams during their "Spring Core Cram" event.

OK Α University of Oklahoma
29 Projects During semester exam prep, hosted "Tau Beta Puppies," with therapy dogs and snacks in the engineering quad. Collaborated with other honor societies for "Tau Beta Plants" on Earth Day.

TX Α University of Texas at Austin
99 Projects Carried on their annual fundraising tradition, "Burger Burn" to raise funds for chapter activities and member scholarships. Organized a talent show as a member social, including a karaoke machine.

WI Α Univ. of Wisconsin-Madison
71 Projects Sponsored a Red Cross blood drive, surpassing the donation goal. Gathered to 'cut and tie' fleece blankets for Project Linus Madison, which delivers them to children and hospitals in the community.

DIY tote bag made by MI Epsilon member during a TBP/SWE event.

The OH Alpha Chapter highlighted their members' summer activities on Instagram.

TX Alpha members placed second in a pageant during E-Week competitions.

A total of $4,000 in Scholarships will be awarded to eight chapters that received Chapter Project Awards for at least three consecutive years. Each chapter will receive $500.

Alabama Epsilon
Florida Alpha
Iowa Alpha
Michigan Gamma
New York Omicron
Oklahoma Alpha
Texas Alpha
Wisconsin Alpha

WHY DO WE CALL IT A...

THIS IS THE SIXTEENTH IN A SERIES OF ARTICLES THAT INVESTIGATES 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...?"

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

STOKES

In a past *Non Sequitur* comic strip, the mischievous heroine told the other little girl that Sir Isaac Newton was famous for "inventing gravity." Until Newton created that law, she said, everyone was just floating around. Of course, she also said that Sir Isaac invented the fig newton. The recipient of this valuable information was last seen running off to write her science report, which, we assume, did not receive an enviable grade.

This pair of protagonists might produce a similar scenario involving a Scottish mathematical physicist, Sir George Stokes, crediting him with "inventing viscosity." Viscosity can be thought of as a fluid's resistance to pouring, or, as I like to think of it, the opposite of runniness. Before viscosity was "invented," fluids, both liquids and gases, would have just sloshed around with no impediment to flow. With neither gravity nor viscosity, things would have been a colossal mess. Oh my.

While Stokes didn't really invent viscosity, he was responsible for developing the concept and establishing a mathematical model of the phenomenon. In honor of his many achievements, the centimeter-gram-second (CGS) unit of kinematic viscosity has been named the stokes (abbreviated St). Here is a brief look at the history of this brilliant scientist.

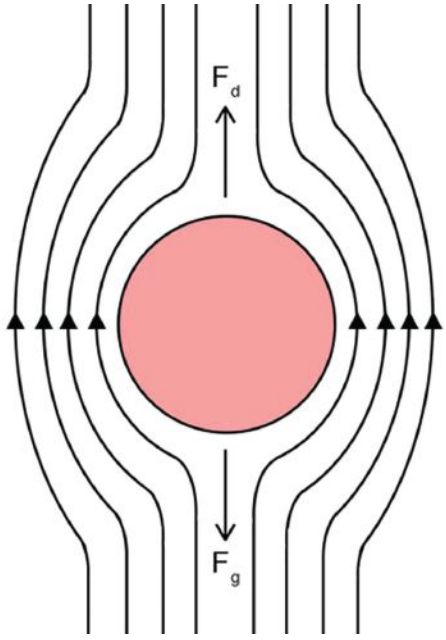
George Gabriel Stokes was born in County Sligo in Northwestern Ireland on 13 August 1819, the youngest son of a clergyman in the Church of Ireland. After receiving his elementary and secondary education in local schools, Stokes enrolled in Pembroke College of Cambridge University at the age of 18. He was an outstanding student, graduating with several honors including Senior Wrangler, a title awarded to the mathematics graduate with the highest score on an extremely competitive mathematics examination.

Why "Wrangler"? As nearly as I can determine, it's because these students wrangle or wrestle with difficult mathematical problems. Several famous scientists, including James Clerk Maxwell, Lord Kelvin, William Henry Bragg, and Bertrand Russel, were high-ranking wranglers. In 1890, the highest score on the exam was earned by a woman, Philippa Fawcett. She could

not be named Senior Wrangler or even be listed as a wrangler, however, because at that time women could not receive degrees at Cambridge. While the university began admitting women in 1869, they did not award degrees to women until 1948. But I digress.

Stokes spent his entire career at Pembroke College of Cambridge University. His academic achievement earned him immediate appointment as fellow of the college, one of a small group of scholars who are responsible for the college's governance. Interestingly, Stokes was required to resign the fellowship in 1857, when he got married. At that time, fellows of the college were required to be single. He was re-elected fellow in 1869, when the requirement was removed. Stokes was accorded the honor of being elected Master of Pembroke in 1902, shortly before his death.

Stokes' achievements were wide-ranging and contributed to several fields of science. As suggested above, he is probably best known for his work in fluid mechanics and viscosity, which he studied early in his career. He contributed to the understanding of the motion of fluids and the frictional forces that are involved in fluids in motion. While the concept of viscosity had been developed by Claude-Luis Navier some 30 years before, Stokes expanded understanding of the phenomenon. In 1851, he derived what is now known as Stokes' Law, which describes the motion of a spherical body through a viscous fluid. Specifically, the law says that the viscous force on a sphere moving through a fluid is proportional to the diameter of the sphere, its velocity relative to the fluid, and the viscosity of the fluid. It is the basis of the operation of the falling sphere viscometer, which determines the viscosity of a fluid by measuring the terminal velocity of a ball falling through the fluid.



Creeping flow past a falling sphere in a fluid: streamlines, drag force F_d and force by gravity F_g.

Stokes is also well-known for his studies of light. He published a number of papers early in his career investigating several optical phenomena including aberration - the apparent positional shift of a star due to the motion of the observer - diffraction of light in solids and liquids, and effects of polarization. He also studied the phenomenon of fluorescence wherein various materials exhibit the property of absorbing light of one frequency, such as ultraviolet, which is invisible to the human eye, and emitting another frequency that may be visible. This phenomenon has come to be known as the Stokes shift.

While Stokes' best-known work is in the basic sciences, he was also involved in more applied engineering activities. In May of 1847, the bridge over the Dee River in Chester, England collapsed, resulting in five deaths. In December 1879, a bridge over the Tay River in Scotland collapsed, killing everyone on board the train that was crossing the bridge at the time. In both cases (note they were some 30 years apart) Stokes was a member of the commissions that evaluated the accidents. The first commission's report resulted in the elimination of cast iron in railway bridges while the second established Stokes' method of calculating wind loading as standard practice in bridge design.

Sir George was also active in the non-technical world. Cambridge University elected - and still elects - one member of the British House of Commons; Stokes held that post from 1887-92 (Sir Isaac Newton had held it for two terms some 180 years earlier). Stokes was religiously devout and, interestingly, worked to defend Christian beliefs from challenges wrought by science, especially Darwin's theory.

Sir Stokes received many honors during his lifetime, including the Rumford Medal and the Copley Medal of the Royal Society. He was named an international member of the American Academy of Arts and Sciences and the American Philosophical Society. Probably more than any other scientist, Stokes has had his name applied as an adjective to various things, e.g., Stokes' Law, Stokes Vector, Stokes Operator, the Navier-Stokes equation, and many more. There is a Stokes Crater on the Moon and another on Mars.

Sir George Stokes died in 1903 at the age of 83. He made enormous contributions to science and engineering and received many honors and awards. His interests and capabilities were very broad, and he produced many scientific papers in such diverse fields as fluid mechanics, optics, ophthalmology and chemistry. He is best known, however, for his contributions to the understanding of viscosity. And that's why we call a stokes a stokes.

BRAIN TICKLERS

Results From Summer

Perfect Scores

Bannister, Kenneth A.	PA	B	'82
*Benson, Gary R.	WA	A	'60
Costantino, John T.	NJ	A	'79
*Couillard, J. Gregory	IL	A	'89
Field, Gregory T.	NY	Γ	'78
*Gerken, Gary M.	CA	H	'11
*Gibbs, Kenneth P.	MO	Γ	'76
Hill, Howard T.	DC	Γ	'62
*Kuhn, Walter A.	OH	A	'81
*Roche, James R.	IN	Γ	'85
Roche, Kevin M.	Son of member		
*Roediger, Robert R.	MO	Γ	'71
*Slegel, Timothy J.	PA	A	'80
Slegel, Craig M.	Son of member		
Strong, Michael D.	PA	A	'84
*Van Dillen, David E.	NJ	B	'67
*Willman, Christopher R.	WA	A	'94
Willman, David J.	Son of member		

Other

Bertrand, Richard M.	WI	B	'73
Bhatia, Sunita K.	DE	A	'92
Bohlmann, Rodney J.	IN	Δ	'70
Brucks, Mark L.	KS	A	'78
Doo, Yi-Hsien	MI	Z	'81
Gaston, Charles A.	PA	B	'61
Golemme, Steven S.	IL	A	'20
Goodrich, Robert W.	CA	B	'81
Griffiths, Peter D.	GA	A	'82
Jordan, Byron L.	MS	A	'73
Kimsey, David B.	AL	A	'71
Lalinsky, Mark A.	MI	Γ	'77
Manning, Robert J.	MA	A	'88
Marks, Lawrence B.	NY	I	'81
Marks, Benjamin	Son of member		
Prager, John	Non-member		
Matusz, Robert J.	MI	Γ	'82
*Mayer, Michael A.	IL	A	'89
*Norris, Thomas G.	OK	A	'56
Parks, Christopher J.	NY	Γ	'82
Schwam, Susan E.	WA	A	'88
Schwam, Freely	Spouse of member		
Silver, Robert E.	NY	P	'80
Spring, Gary S.	MA	Z	'82
Spring, Mitchell G.	Son of member		
Summerfield, Steven L.	MO	Γ	'85
Tellechea, Gabriel	TX	A	'87

*Denotes correct bonus solution

Summer Review

Problem 3 (12-hour clock) was the most missed of the regular problems with only 67% of the answers being correct.

The Bonus (resistors) only had 60% correct answers and problem 4 (lying guides) had more than 90% correct answers.

Fall Answers

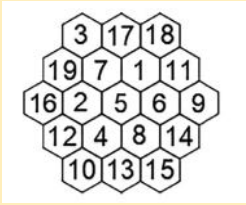
1: Triangles **8-21-22** and **11-16-22** are two triangles which share a common side of 22 and have the same area of almost 84. The problem reduces to finding two triples (a,b,c) such that $a_1 = a_2$, $(a_1 + b_1 + c_1) \neq (a_2 + b_2 + c_2)$ and $\text{Area}_1 = \text{Area}_2$. Heron's formula $A = \sqrt{[s(s-a)(s-b)(s-c)]}$, where s is the semiperimeter, shows us how to calculate the area of a triangle given the length of three sides a, b, and c. For our purposes the integer $R = 16A^2 = (a + b + c)(a + b - c)(a + c - b)(b + c - a)$ is a suitable proxy for area when comparing two triangles for equal area. Two triangles T_1 and T_2 have the same area if their respective R_1 and R_2 are equal. By extension, both R_1 and R_2 must have the same prime factorization.

Two additional observations reduce the possible solution space: (1) the perimeters $(a + b + c)$ of the two triangles must have the same integral parity, since that corresponds to the parity of R and (2) since the perimeter must be the largest of the four factors of the R, we see that any triangle with a prime perimeter cannot have the same area as another triangle with a different perimeter.

Given the observations about prime factorization and perimeters, the search space for a pair of triangles is restricted enough to be traversed by a simple program or a patient human.

Some solvers may be tempted to declare the pair of triples 10-21-21 and 12-17-21 as the solution. While the pair does fit the base criteria of a common side and identical areas, note that even though the longest side of 21 is shorter than 22, their area of nearly 102 is actually larger than the best solution.

2: The numbers in the canonical beehive below sum to 38 in each of the 15 horizontal and diagonal lines.



Eleven other variants of the solutions are possible, all are rotations and/or reflections of the one above.

3: It takes a minimum of $\boldsymbol{w + x + z + \min(2x, w + y)}$ minutes for all four to cross the bridge.

Call the four Tau Bates W, X, Y, and Z who take w, x, y, and z minutes to cross respectively.

Separately consider two possibilities, $2x < (w + y)$ and $2x > (w + y)$.

In the first case, let W and X cross first, for an elapsed time of x minutes. W crosses back with the flashlight, giving $w + x$ minutes total. Y and Z take the flashlight and cross forward, $w + x + z$ elapsed minutes. X crosses back, reaching the near shore at $w + 2x + z$ minutes. Finally, W and X cross forward, completing the traversal in $w + 3x + z$ minutes.

Alternatively, in the second case, again W and X cross first, for an elapsed time of x minutes. W crosses back with the flashlight, giving $w + x$ minutes total. W and Z take the flashlight and cross forward, $w + x + z$ elapsed minutes. W crosses back, reaching the near shore at $2w + x + z$ minutes. Finally, W and Y cross forward, completing the traversal in $2w + x + y + z$ minutes.

Combine the two partial solutions to get the above formula. Note that when $2x = (w + y)$, both solutions result in the same value.

3: *continued*
The Brain Ticklers columnist admittedly failed to correctly solve this problem at the time of Fall publication, finding only one of the two partial solutions. In recognition of this, the judges agreed to mark as correct any submitted answer that contained one of the two.

4: **1-3-10-2-5.** Each pair of non-identical marks will cover two interval lengths, that is, the distance *d* between the two, and the complementary length 21-*d*. The five distinct marks can be paired in ten ways, giving coverage of exactly 20 composite distances. The distance 21 is trivially covered by any point to itself. We must find the five base distances to precisely cover the 20 composite lengths, such that the sum of the base distances is 21.

The base distance 1 is obviously required, as is base distance 2. If 3 is to be excluded as a base distance, 2 must be adjacent to 1. Then, three remaining base distances must then come from one of three sets: {4, 5, 9}, {4, 6, 8}, or {5, 6, 7}. In the first case {4, 5, 9}, notice that because 4 + 5 = 9, all of the six ways to order those three base distances cause a composite conflict. In the second case {4, 6, 8}, placing any of the three next to the 2 results in a conflict. The last case {5, 6, 7}, makes it impossible to make a composite length of 4, and can be eliminated. Therefore, we conclude that 3 is also a base distance, and that the distance 2 must not be adjacent to distance 1.

With 1, 2, and 3 as base distances, the list must be from one of the three forms 1-3-*x*-2-*y*, 1-3-2-*x*-*y*, or 1-*x*-2-3-*y*, where the *x* and *y* distances must be chosen from one of four unordered sets: {4, 11}, {5, 10}, {6, 9}, or {7, 8}. This gives 24 possibilities to examine, most of which can be trivially eliminated, giving $x = 10$, $y = 5$ in the first form as the only solution, giving us 1-3-10-2-5.

5: Gary's house is number **17**. Howard's house is number **81**. The incorrect guesses of Howard's house by Gary, Don, and Bill were **25**, **64**, and **15**, respectively.

When Howard gives his responses to the four questions, in order to reach a conclusion on Howard's house number, the listeners must expect consistent information, even given in light of their own opinions of an answer's veracity. We are told that Howard alternates "Yes" and "No" in his answers, and that Gary believes them all. If Howard starts with a "No" to question #1 and follows with a "Yes" to question #2, and both statements are true, then Howard's house is both less than and greater than Don's, and Gary will be unable to draw a conclusion about Howard. Therefore, we know Howard answers YNYN to questions 1 through 4.

Given that, we know that Gary can conclude from Q2, Q3, and Q4 that Howard's house is 16 or 25. Since we are told that Gary "knows" Howard's number, we conclude Gary thinks Howard is **25**, and that Gary must be an odd number between 16 and 25, that is, 17, 19, 21, or 23.

From Don's perspective, Howard's answer to Q2 is false, but the rest are true. So, Don concludes that Howard's number is a perfect square greater than 49, not divisible by 3, that is, **64**.

From Bill's perspective, Howard's answer to Q2 is true, but the rest are false. So, Bill concludes Howard's number is divisible by 3, but smaller than Gary's. We now have deduced that Gary is 23 or less, so we would presume that Bill thinks Howard is 15, 18, or 21. But, Bill's guess is conclusive from his perspective, so Bill says Howard is **15**, and we can conclude Gary is **17**.

Finally, Jim learns that two of Howard's answers are lies, so instead of YNYN, in truth, Howard would have answered in one of six ways: (1) NYYN (2) NNNN (3) NNYY (4) YYNN (5) YYYY (6) YNNY. Sequence #1 is impossible, since the first two answers are contradictory.

Sequence #2 is nearly conclusive, but at best Howard is known to be 13 or 14. Sequence #3 isn't possible, it requires a perfect square divisible by 3 between 13 and 17. Sequence #4 is inconclusive, leading to multiple solutions > 49. Sequence #6 is also inconclusive, with many multiples of 3 between 17 and 49. Finally, sequence #5 results in only one possible answer for Howard, that is **81**.

BONUS: If there is no money in the till, the probability that no one will have to wait (assuming that $N \geq M$) is $\mathbf{1 - (M!N!)/[(M-T-1)!(N+T+1)!]}$ which reduces to $\mathbf{(N - M + 1)/(N + 1)}$ when $T = 0$.

Consider the simple case first. For no customers to have to wait for change, every person in line must have at least as many in front of them who hold tens as do those who hold twenties. Clearly the *N* who hold tens never have to wait, and we need only concern ourselves with the *M* who hold twenties.

The number of ways to arrange the $N + M$ Tau Bates is $C(N + M, M) = (N + M)!/(N!M!)$, where $C(x,y)$ is the number of y combinations of a set of x. When $N \geq M$, the number of orderings that require waiting is $C(N + M, M - 1) = (N + M)!/((N + 1)!(M - 1)!)$, so the probability that an ordering is wait free is $[C(N + M, M) - C(N + M, M - 1)] / C(N + M, M)$, which simplifies to $1-M/(N + 1) = (N - M + 1)/(N + 1)$.

In the complicated case where there are *T* ten dollar bills in the till, the number of ways that require waiting is $C(N + M, M - T - 1)$. We can compute the wait-free probability similarly to the simple case, that is $[C(N + M, M) - C(N + M, M - T - 1)] / C(N + M, M) = 1 - C(N + M, M - T - 1) / C(N + M, M)$. Unfortunately, the simplification isn't quite as tidy, which reduces to $1 - (M!N!)/[(M - T - 1)!(N + T + 1)!]$.

BTs continue on page 36.

Alumni Giving

Donor Recognition Clubs

The Donor Recognition Clubs are part of our effort to recognize a donor's total lifetime cumulative giving to Tau Beta Pi. **THANK YOU** to the 551 TAU BETA PI ALUMNI and others who made donations to the Association totaling $133,644 between August 1, 2024, and October 31, 2024. The names of donors whose gifts were received after October 31 do not appear here but will be published in the Spring 2025 issue. These club names and amounts, established by the TBΠ Executive Council, are set at the following levels:

$1 MILLION+
Williams Club

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

$500,000+
Heikes Club

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

$250,000+
Harelson Club

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

$100,000+
Matthews Club

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

$50,000+
Franklin Club

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

$25,000+
Nagel Club

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

$10,000+
Clarke Club

Edith Clarke, WB #95
Inventor of graphic calculator

$5,000+
Evans Club

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

$2,500+
Eaves Club

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

$1,000+
Downing Club

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

$500+
Moore Club

A.D. Moore, *PA G 1915*, TBΠ president, Fellowship Program founder

$250+
Forman Club

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

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

Clarke Club
Brian D. Chace
MA Α '69
"My support of Tau Beta Pi connects me to the generations of engineers coming after me."

Clarke Club
Ronald P. Brand
VT Α '60
"As a VT Alpha charter member, I'm pleased to continue supporting future generations of top engineers."

Moore, Forman & Pre-Club Members Listed on website

Due to the number of alumni contributors, the Moore, Forman, and Pre-Club Members will be acknowledged on our website at: *www.tbp.org/?AGP*. All donations are essential to the continued success of the Association, but as print costs rise with each issue, these donors will be listed with all of the other contributors in a protected PDF document. If you have questions or concerns, please contact *tbp.development@tbp.org*. Thank you for your understanding as we strive to produce an enjoyable and cost effective magazine for our readers.

$1 MILLION+ Williams Club

No alumni gifts for this quarter

$500,000+ Heikes Club

No alumni gifts for this quarter

$250,000+ Harelson Club

No alumni gifts for this quarter

$100,000+ Matthews Club

No alumni gifts for this quarter

$50,000+ Franklin Club

SPEC Anonymous
OH Η Merkle, Larry '92

$25,000+ Nagel Club

IL Α Ditman, Jason Blair '91
MI Α Colbry, Dirk Joel '06
Colbry, Katy Luchini '99
NY Β Anonymous '80
NY Θ Van Wagenen Jr., Bill Edward '78
OH Α Salamon Jr., Peter Francis '71
PA Λ Anonymous '90
TN Α Dodge, Frank T. '60

$10,000+ Clarke Club

CA Γ Kwok, Munson Arthur '62
CA Λ Hall, Vickie Lee '86
Holl, Sue '76
CA Υ Alexander, Joseph William '06
Alexander, Rachel Kristin '15
CT Β Hunziker, Bob Neal '83
DE Α Kershner, Vance V. '79
MA Α Chace, Brian David '69
MA Η Garriques, Ronald Gene C '86
NJ Δ Yu, Jeff Chih-ping '89
NC Α †Fiedler, Maria L. '72
OK Α Morris, Jay Kevin '81
PA Γ Spector, Scott Jay '74
TN Α Cook, Jim Michael '72
TX Γ Sandmann Jr., Charles William '82
VT Α Brand, Ron Parsons '60
WV Β Payne, Michael E. '81

$5,000+ Evans Club

AL Δ Koelbl, Terry Gene '84
CO Β Kinzie, Edward Ottis '64
FL Α Lewis, Becky Ann '04
FL Ε Cowan Jr., David James '14
IL Α Baits, Paul Gordon '79
IA Α Feisel, Lyle Dean '61
Krambeck, Scott David '82
MA Ζ Cetti, Richard Phillip '70
MA Η Wotiz, Robert Paul '78
MI Α McIntosh, Carl L. '70
MO Γ Taber, Norma J. '80
NJ Γ Kenney, Thomas Edward '70
NM Α Smith, Jeffrey A. '84
NM Β Slominski, Paul '78
NY Π Demmel, Hans George '83
Stalzer, Jeffrey '74
NY Τ Olenik, Anthony Michael '08
NC Α De Haas, Cynthia '91
OH Α Whittington, John T. '93
OH Γ Becher, Charles David '72
Cowan II, Robert Lee '66
PR Α Hilerio Sanchez, Josuan '07
SC Β Daley, Leslie N. '71
TN Α Riggs, Donna R.H. '87
TN Β Layne, Peggy Edith '80
TN Δ Chauvin, Wendy M. '89
TX Δ Goodson Jr., Alfred Wesley '70
VA Γ Richmond, Mark David '98
WA Α Pierce, Russ W. '70
WV Β Ashman, Michael D. '84
WI Β Whittington, Laura Lee '88

$2,500+ Eaves Club

AL Β Bell III, Willis Vincent '78
CA Θ Temple, Richard C. '90
CA Λ Okpisz, Alexander Edward '91
CO Γ Pearson, Larry '64
DC Γ Cooper, Reid Franklin '77
FL Α Passman, Alan Joseph '06
FL Β Jennings IV, Tipton Davis '54
GA Α Negro, James Eugene '68
IL Α Tatara, Richard '78
IN Α Ginter, James Lee '67
IN Γ Richter, Richard Terrell '70
IA Α Hammar, Kelly Jean '89
KS Α Conrad, Kenneth F. '74
Anonymous '82
KS Γ Bucher, William Alexander '76
KY Β Arbaugh, Andrew Carey '95
LA Γ Poole, Ronald Gene '69
MD Α Tate, David Marshall '84
MD Β Antony, Roger William '71
MA Β Patterson, John Bryan '68
MA Δ Buffinton, Keith William '79
Raisler, Richard Allen '72
MA Ε Pinkham IV, Tom A. '88
MA Ζ Meurer Jr., Glenn William '86
MI Α Chiti, James D. '71
MI Β Lindgren, Douglas LeRoy '69
Skaugen, Borg '63
MI Γ Ardis, Robert Boyd '46
Stewart, Steve Russell '66
MI Δ Ponticello, John Charles '78
Rossi, Nicholas Michael '63
MI Η Czupinski, Glenn Walter '83

Alumni Giving

Eaves Club continued

NE Α Steube, Milan Ray '74
NJ Β Rabin, Dan E. '73
NJ Γ Mauermeyer, Henry A. '72
NY Α Cohen, Adam Barrett '85
NY Β Phillips, Glen E. '71
NY Γ Chamberlin, Donald Melsom '67
Ordway III, Fred Delancy '69
NY Δ Juister, Milton Henry '64
NY Η Schlein, Robert George '72
NY Ι Ronan, Gregory John '81
NC Α Vercaemert, Carol Starnes '76
NC Γ Hansen, Mikkel Anders '78
Hovis, John Garrison '78
OH Α Ehlert, Donald Arthur '84
Hamilton, Joshua J. '09
OH Γ Feltz, John Francis '61
Hagenlocker, Edward Emerson '62
Steiner, William Samuel '63
OH Ζ Zelms, Charles Michael '73
OR Α Milton, Stuart W. '84
PA Β Weston, Matthew Wayne '93
PA Γ Kavoulakis, Alexandra Marie '84
PA Ε Ryan, Richard Edward '86
PA Η Price, Russell William '72
TN Α Davis Jr., Fred Thomas '74
Jennings-King, Sherry Denise '93
King, Greg T. '93
TN Β Hampton, David Rolston '85
Petersen, Eric Scott '84
Petersen, Stephanie A. '84
TX Β Darby, Mark Leslie '79
Glenn, Stephen W. '66
TX Δ Fink, Tami Neal '91
Glasscock, Melbern Gilbert '59
TX Η Godwin, Albert Eugene '84
TX Θ Stokes, F. Xavier '78
Van Landingham, David J. '74
TX Λ Alsop, Albert Walter '80
UT Α Lyman, George Randall '79
VA Α Johnson, W. Reed '53
WI Α Klanderman, Kent Arlen '58
WI Β Hutton, Teresa Jean '91
WI Γ Formella, John Patrick '81

$1,000+ Downing Club

AL Α Anderson, Pete Lawrence '75
Johnson, Edwin '71
AZ Β Flanigan, Maxwell '16
CA Γ Bankovitch, Walter John '87
CA Δ Klein, Shelley Marie '82
Nakatani, David Takeshi '63
Yamashiro, Keith Kotsu '79
Young, Tina Ting-Ting '88
CA Ε Hickling, Ron Michael '80
Miller, Wendell Roger '80
CA Θ Hoekstra, Gerben N. '66
Kennedy, Joseph Albert '76
CA Ι Hanna, Hugh Allen '60
CA Κ Treinen, Donald Joseph '83
CA Λ Sturgeon, Randy Randall '70
CA Ξ Fowler, David Michael '92
St. Clair, Christine Marie '81
CO Β Davis, Gregg Randal '77
Herhold, Mark Kenneth '80
Horrell, Robin S. '85
CT Α Cleland, Alan Stuart '60
CT Β White, Bill Richard '65
DE Α Witt, Jeffrey Lawrence '81
DC Α Grayson, Rodney Maurice '71
FL Α Lorberbaum, Henri Stuart '77
GA Α Brush, Gary Stoddard '80
Faulkinberry, David Laws '77
Hair, J.G. Graham '59
Northington, Peyton Alexander '78
Parker, Jonathan Edward '59
IL Α Gromala, Edward Joseph '79
Lenzini, Peter Arnold '75
Schleicher, Kathy Louise '85
Smith, Leslie Garrett '48
Wilkins, Gregory Martiné '92
Williams, Allan Richard '71
IL Β Johnson, J. Randall '63
IL Γ Williams, Molly Wells '63
IL Δ Klasing, Wayne Gill '65
IN Α Binash, Irene Marie '79
Gilewski, Robert Leslie '73
Simnick, James John '74
IN Γ Silio Jr., Charles B. '65
IN Δ Dietrich, Jay Michael '80
IN Ε Campbell, Patrick D. '13
IA Α Haack, Leland Arthur '53
Henderson, Jim Allen '70
Irvine, Alexander John '79
Morse, David Sanford '52
IA Β Monk, David Harold '60
KS Α Vijgen, Paul '87
LA Γ Randall, James Benjamin '79
MD Α Beatty Jr., Millard Fillmore '59
MD Β Anonymous '77
Dinkle, Ralph Edward '65
McCracken, Rich Paul '70
MA Δ Adams, Randolph Keith '70
Savage, Paul David '77
MA Ε Johnson, David Norman '77
MA Ζ Wylie, Bruce Kerr '66
MI Α Derby, Stephen George '69
MI Β Phillips, Gerald Raymond '70
Wilden, Helm '65
MI Γ Berno, Jeffrey William '63
Burkholder, Earl F. '73
Capelli, Ronald B. '73
Dieck, Donald Henry '65
Drago, Gary Alan '75
Hickcox, Timothy Earl '65
Noronha, Michelle Josephine '11
Pace Jr., George Donald '61
MI Ε Brooks, Vern Eugene '60
MI Ζ Kovacs, Robert Lewis '86
MI Η Wukie, Tim S. '74
MN Α Carlson, Philip Jay '68
Petrich, Gale Sean '86
MS Α Hibbard, Janet C. '86
Hibbard, Michael Joseph '78
Miller, Elton Ray '70
MO Α Merz, Jeffrey B. '67
MO Β Brockhaus, Douglas Adolph '68
Hardebeck, Harry Elmer '57
Vandergriff, Leland E. '71
NE Α Matthews, Deborah Jo '82
NH Β Cloyd, Joseph R. '02
NJ Α MacMillan Jr., Duncan J.S. '66
NJ Β Palko, John Raymond '69
NJ Γ Becker Jr., George William '66
Gagliardo, Reginald Saverio '70
Goodrich Jr., Robert Rhoades '70
Husson III, Matthew Alexander '66
Moeller, Peter Allan '78
NJ Δ Mills, Franklin Perry '84
NM Β Donnelly, Carolyn Elaine '01
NM Γ Rocco, Jim Robert '85
NY Γ Levinson, Stanley H. '78
NY Ε Boyarsky, David '59
NY Ζ Hamm Jr., Bill '67
Tuchband, Stuart Martin '63
NY Η Filipek, Stephan John '82
NY Θ Cipollina, Joseph Domenick '09
NY Ι Hartmann, Hans Gustav '70
Hauge, Kenneth '61
Kalian, Arianna '88
Keevill, Gary Steven '79
NY Κ Martens, Hinni Robert '57
Muller-Girard Jr., Otto '89
Singer, Bart Alan '82
NY Λ Cilento, Eugene Vito '73
NY Ν Pardini, Thomas John '77
Stearns, Richard Earl '67
NY Ξ Snyder, William Joseph '81
NY Ο Hofmann, Linda '79
NC Α Davis, John Michael '73
Poindexter, Richard Clinton '64
NC Γ Jackson, James Roy '69
Maxson, Robert Jay '62
OH Γ Chadwick, Harold Edwin '65
OH Ζ Herman, Madison Rachelle '13
OH Η Breuder, Andrew Joseph '70
Lantier, Ward John '63
Tannen, Peter David '57
OH Μ Hill, Leah Beth '10
OK Α Burton, Donald O'Neil '71
Dunn Jr., Robert Ovington '82
Gimpel, Robert Jefferson '73
OR Α Sterk, Frederick John '64
PA Α Brownlie, Thomas John '71
Haist, Randall Matthew '80
PA Β Olinick, Stephen Andrew '71
Zahora, Kenneth Richard '76
PA Γ Kuhr, Tina Michelle '81
Marietta, William Grey '68
PA Δ Long, TC '95
PA Ε Krein, Philip T. '78
PA Η Gilman, Thomas Carter '66
PA Θ Addotta, Robert Frank '77
PA Ι Dehoff, Gregg Alan '86

Eaves Club
Richard C. Temple, P.E.
CA Θ '90
"Tau Beta Pi promotes integrity and excellence in future engineers."

Downing Club continued

PA Λ Francisco, Amy Denise '99
RI Α Solomon, John Victor '60
SC Γ Kennedy Jr., Thomas William '64
TN Α Sewell, John Ike '54
Sharp, Jason Wayne '02
TN Β Brown, Kevin George '85
Hodges Jr., Willie Erwin '67
TN Γ Badiru, Adedeji B. '79
Moyers, Robert Lewis '05
TX Α Kopecky, Johnny Anthony '65
Wong, Lucas '84
TX Β Baker Jr., Marvin Elroy '86
Marasco, David Foster '87
Osborne, David Charles '61
TX Δ McGinnis, Charles Irving '49
Murthy, Prahlad N. '92
Smith, Manning DeWitt '64
TX Ε Valka, William Allen '75
TX Η Williams, Larry Donal '80
UT Β Hardy, Mark Douglas '84
VA Α Dye, Michael Loren '87
WA Α Grant, Patrick William '75
Rising, Jerry Joseph '61
WA Β Groat, J. Everett '94
WV Α Bibbee, Dennis Evans '75
WI Α Fahrbach, David Rolland '69
Williams, Lynn Edward '67
WI Β Petrie, Dennis James '78
Pickett, Mark Allan '72
WI Γ Merkel, Brian John '81
WY Α Hill, Janet Lynn '95

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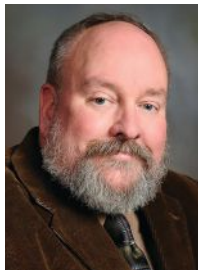
IN THE COLLEGES

Tau Bates having an impact at institutions of higher learning

Thomas L. Brandon Ph.D.

South Carolina Alpha '81



Tom was conferred the title of professor emeritus by the Virginia Tech (VT) Board of Visitors after serving the VT community for 39+ years focused on geotechnical eng'g. Through his leadership, Tom contributed to the establishment of the W.C. English Geotechnical Research Lab and as a task force member investigating the failure of the flood control system during Hurricane Katrina in New Orleans, LA.

Kelly A. Burke Ph.D.

Connecticut Beta '05

Kelly, a UConn alumna and associate professor, was recently named head of the College of Engineering's Chemical and Biomolecular Engineering department. Her research centers on the practical applications of anisotropic and naturally sourced materials. Kelly is a CT Beta Chapter Advisor (since 2017) and is an associate editor for the journal *Polymer Reviews*.

Charles B. Chadwell Ph.D., P.E.

California Alpha '97

Charles recently became the dean of Northern Arizona University's College of Engineering, Informatics, and Applied Sciences. He also serves as Executive Director of Chi Epsilon, the Civil Engineering Honor Society, and was previously the department chair of civil & environmental eng'g and associate dean of engineering at California Poly State Univ., San Luis Obispo.

SPOTLIGHT: University of Dayton Harnessing Energy from Sand— In the Thermal Applications Lab at the University of Dayton (UD), assistant professor **Andrew J. Schrader, Ph.D.,** *IN D '14,* and a team of student researchers are working on three projects to use and store energy from "really hot sand" and to connect different energy resources into one central system. "Our hope is that by using simple sand thermal batteries we're able to store energy within those batteries," said Dr. Schrader, who began teaching at UD in 2020. As part of the team, senior **Jacob J. Brenner,** *OH Q '25*, is getting hands-on experience and wants to see how renewable energy can be useful. The projects are funded by the U.S. DOE's Solar Technologies Office and in partnership with Brayton Energy and Sandia Labs.

Astronaut Scholars Presentation — Three Texas A&M University seniors were recently awarded scholarships from the Astronaut Scholarship Foundation (ASF) during an event on campus. The ASF was founded, most notably, by the six surviving Mercury 7 astronauts to encourage students to pursue scientific excellence and STEM careers. **Bonnie J. Dunbar, Ph.D.,** *TX E '83,* presented the awards valued for their monetary support and opportunities for mentorship & professional development with industry leaders. A former astronaut, Dr. Dunbar is Texas A&M dept. chair, professor, Director of the Aerospace Human Systems Lab, and TX Delta Chapter Chief Advisor. She presented *Thinking Outside the Sphere*, highlighting her five space missions and path to becoming an engineer.

Katy C. Kao Ph.D.

California Tau '97

Katy was awarded a Distinguished Engineering Educator APEX Award by the Society of Women Engineers. A professor at San Jose State University in the dept. of chemical and materials engineering, she was cited for her commitment to student learning and success. Katy is also a recipient of a National Research Service Award by the National Institutes of Health and a Fluor Distinguished Teaching Award from Texas A&M University.

Leo. C Kempel Ph.D.

Ohio Beta '89

Leo received a 2024 Univ. of Michigan (U-M) ECE Alumni Award for "contributions to society." He is an Endowed Professor of electromagnetics, dean of the Michigan State College of Engineering and previously served as the inaugural director of the MSU High Performance Computing Center. At the ceremony, Leo presented a lecture on the U-M campus, where he had earned M.S. and Ph.D. degrees in electrical eng'g.

Kelly D. Keselica P.E.

Nevada Alpha '05

Kelly is the 2024 recipient of the F. Donald Tibbitts Distinguished Teacher Award at the University of Nevada, Reno (UNR), where she is a lecturer and faculty advisor for the American Society of Civil Engineers. She has B.S. and M.S. degrees in civil engineering and an MBA, all from UNR. Kelly previously served as the Coordinator of the Center for Civil Engineering Earthquake Research at UNR, from 2008-16.

Donald J. Leo Ph.D.

Illinois Alpha '90

Donald began a new position in July as Ohio University's executive vice president and provost. Previously, he was dean of the Univ. of Georgia College of Engineering. An ASME Fellow, he's author/co-author on 200+ research publications in the area of smart materials. Donald helped establish the 258th ΤΒΠ collegiate chapter, Georgia Delta, serving as president and advisor.

Christopher J. Medberry

Ph.D. *Pennsylvania Beta '08*

Chris has joined the Leonhard Center for the Enhancement of Engineering Education board at Penn State. He is Director of Global Regulatory Affairs, Digital Health at Johnson & Johnson Innovative Medicine, committed to advancing healthcare through the integration of technology and regulatory innovation. He earned a Ph.D. from the University of Pittsburgh.

Wil V. Srubar III Ph.D.

Texas Delta '06

Wil has been appointed as the first Deming Associate Dean for Innovation & Entrepreneurship, a new role established by CU Boulder's College of Engineering and Applied Science. This position is designed to provide education, mentorship and training to faculty, postdoctoral researchers, and graduate students in the creation and commercialization of intellectual property.

FACILITIES: Groundbreaking at Georgia Institute of Technology — The Georgia Tech School of Aerospace Engineering recently kicked off the construction of "The Hangar" with a groundbreaking event in the heart of the North Avenue Research Area. The 10,000 square-feet facility is expected to be completed in the fall of 2025 and will house specialized laboratories, including an electric powertrain lab, a propulsion system test cell, an avionics lab, composite fabrication areas, and an area for integrating prototype aircraft with wing spans up to 20 ft. A focus area for the facility will be electric vertical takeoff and landing (eVTOL) aircrafts, a collaborative effort with NASA and optoXense, marking a new era in advanced aeronautics research.

Morgan State University Community Dedicates Lecture Hall — This October, the DeLoatch Lecture Hall Dedication Ceremony was held at the Morgan State University (MSU) School of Engineering in Maryland. The event celebrated the life and achievements of MSU's emeritus dean, and current MD Epsilon Chapter Advisor, **Eugene M. DeLoatch, Ph.D.,** *DC A '59,* and included the unveiling of a bust in his likeness. Among his many accomplishments, Dr. DeLoatch established the Morgan State University engineering school in 1984, co-founded the BEYA STEM Conference on the MSU campus 40 years ago, and is a 2016 ΤΒΠ Distinguished Alumnus. Anecdotes and tributes were given by those in attendance, including MSU leaders and alumni, colleagues, and family.

Christopher E. Sugino Ph.D.

California Omega '15

Chris received a 2024 NSF CAREER Award as an exemplary early-career researcher and educator. He is an assistant professor at Stevens Institute of Technology, working to reframe how people interact with sounds and acoustic waves. This project builds on his expertise in meta-materials & meta-surfaces with K-12 educational outreach. Chris is a past CA Omega Chapter president.

Edward B. White Ph.D.

Ohio Alpha '95

Edward was named head of the Department of Mechanical Engineering at The University of Texas at Dallas. Most recently, he was associate dept. head and professor of aerospace eng'g at Texas A&M Univ. He's active with AIAA, has 2,500+ paper citations in the fields of aerodynamics, design and experimentation, and previously directed a large-scale wind-tunnel testing facility.

Yannis C. Yortsos Ph.D.

California Delta '73

Yannis received the title of Doctor Honoris Causa from The Senate of the National Technical University of Athens (NTUA) in Greece. As Dean of Engineering at the University of Southern California, he was recommended by NTUA's School of Chemical Engineering for scientific achievements, contributions to shaping engineering education, and addressing contemporary challenges.

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 ***tbp.memberupdate@tbp.org.*** Members that were 100+ years when passing are identified with "***Cent.***"

ALABAMA

ALPHA AL Α

Lisano, Michael Edward, *'88*, no details.

BETA AL Β

Johnson Jr., James Hodge, *'59*, Sept. 26, 2024.

ARIZONA

BETA AZ Β

Hooton, Thomas Randall, *'62*, Feb. 25, 2024.

CALIFORNIA

ALPHA CA Α

Bekey, George Albert, *'50*, October 17, 2024.
Pribbenow, Francis C., *'58*, no details.
North, George Gordon, *'59*, January 27, 2022.

GAMMA CA Γ

Richardson, John Lloyd, *'56*, May 13, 2024.

DELTA CA Δ

Soden, Archie Deane, *'51*, June 16, 2024.
Bovich, Emil Joseph, *'57*, no details.
Walter, Donald Frank, *'57*, October 5, 2023.

EPSILON CA Ε

Dippel, Alan James, *'66*, May 12, 2021.
Kentosh, Brian Clark, *'11*, October 27, 2024.
Bhoot, Chinmay, *'15*, October 23, 2023.

ZETA CA Ζ

Eisele, William Raymond, *'66*, no details.

ETA CA Η

Pilgeram, Dale William, *'67*, May 1, 2024.

IOTA CA Ι

Middleton Jr., Ralph E., *'61*, October 2, 2024.

LAMBDA CA Λ

Gillis, Steven G., *'71*, August 28, 2024.

COLORADO

ALPHA CO Α

Naumes, Robert Edward, *'61*, Nov. 10, 2022.

BETA CO Β

Gude, Fredrik Julius, *'61*, August 9, 2024.
Zaraza, Leslie Adam, *'75*, May 28, 2024.

CONNECTICUT

ALPHA CT Α

Duderstadt, James J., *'64*, August 21, 2024.
Head, Michael B., *'68*, September 26, 2024.

DISTRICT OF COLUMBIA

ALPHA DC Α

Cannon, Joseph Nevel, *'64*, Sept. 9, 2024.

FLORIDA

GAMMA FL Γ

Thompson, Sidney James, *'71*, Jan. 26, 2024.

DELTA FL Δ

Hosler, Earl Ramon, *'57*, June 24, 2024.

GEORGIA

ALPHA GA Α

Brown, Malcolm, *'56*, August 28, 2024.
McKee, Marvin Lavern, *'58*, July 4, 2017.
Batts, Warren Leighton, *'61*, Sept. 2, 2024.

ILLINOIS

ALPHA IL Α

Lewin, Norman L., *'50*, October 5, 2018.
Sloan III, Earl L., *'53*, September 6, 2023.
Purtle, George Alan, *'74*, December 8, 2011.
Hart, Brian Christopher, *'96*, Jan. 17, 2024.

BETA IL Β

Lewis, Burton A., *'48*, October 13, 2024.
Sladek, Norbert Joseph, *'50*, June 9, 2021.
Staschke, Ralph Arthur, *'50*, July 23, 2024.
Darda, Larry Alan, *'63*, September 10, 2024.

GAMMA IL Γ

Dietrich, George Wayne, *'66*, Dec. 21, 2023.

INDIANA

ALPHA IN Α

Maus, Galen Rankin, *'49*, November 2, 2017.
Schnelker, Philip L., *'56*, May 9, 2022.
Rodda, William E., *'58*, September 13, 2024.
Berk III, Morris, *'62*, March 12, 2022.
Smith, William M., *'62*, no details.
Hooks, Collis Charles, *'64*, January 13, 2024.
Suzuki, Wayne Takashi, *'67*, Sept. 21, 2024.
Ribar, Thomas F., *'74*, no details.

GAMMA IN Γ

Scott, Robert Anthony, *'70*, January 1, 2022.

IOWA

ALPHA IA Α

Graff, Richard Stanley, *'48*, April 13, 2024.
Cowles, Harold Andrews, *'49*, July 12, 2024.
Meinert, Harry Mathais, *'53*, June 7, 2016.

KANSAS

ALPHA KS Α

Gaumer, Dale Jackson, *'60*, Sept. 7, 2024.

KENTUCKY

ALPHA KY Α

Miracle, Beverly P., *'50*, October 4, 2022.
Rowady, Edward P., *'50*, August 22, 2024.
Heaberlin, James Leslie, *'56*, Sept. 23, 2024.
Ball, Billy Lynn, *'60*, June 22, 2013.
Myers, Chester James, *'60*, April 23, 2024.
Smith, W. Prentice, *'64*, April 20, 2015.

BETA KY Β

Tyler, Larry D., *'63*, November 5, 2024.

MAINE

ALPHA ME Α

Erickson, Ivan LeRoy, *'70*, August 26, 2022.

MARYLAND

ALPHA MD Α

Belaga, Myron William, *'50*, Nov. 1, 2018.
Brucker, Edward Byerly, *'52*, August 23, 2024.
Sutera, Salvatore Philip, *'54*, Nov. 7, 2023.
Evering, Frederick C., *'58*, December 30, 2014.

BETA MD Β

Rowland, Ralph Wilson, *'51*, October 8, 2024.
Viner, John Gilbert, *'59*, September 4, 2021.
Cramer, Stephen Douglas, *'61*, April 12, 2024.
Bryan, John Leland, *'63*, October 1, 2014.
Etheridge, John Edward, *'69*, no details.

MASSACHUSETTS

ALPHA MA Α

Zimmie, Thomas Frank, *'60*, May 3, 2023.

BETA MA Β

Joyce Jr., Charles Cyril, *'56*, Nov. 25, 2019.
Northfield, William E., *'56*, August 13, 2023.
Larson, Robert Edward, *'60*, March 10, 2022.

EPSILON MA Ε

Askew, Theodore Richard, *'70*, Aug. 1, 2023.
Demesa III, Nicanor Peter, *'72*, April 8, 2017.
Freiman, Steven Barry, *'79*, Feb. 28, 2024.

ZETA MA Ζ

Hazelton, Arthur R., *'66*, December 9, 2022.

CT Α

Connecticut Alpha '64

James J. Duderstadt, Ph.D.

August 21, 2024

Was President Emeritus at the University of Michigan where he served as Dean of the College of Engineering. He published 30+ books in his areas of research and was awarded the National Medal of Technology in 1991.

SD Β

South Dakota Beta '65

Richard B. Hayter, Ph.D., P.E.

October 20, 2024

Named 2008 ΤΒΠ Outstanding Advisor while working at Kansas State Univ. (KS G Chapter); active with ASHRAE as president 1995-96 and Board of Directors senior officer; and named 1999 citizen of the year in Manhattan, KS.

Washington Alpha '48

Daniel J. Evans

September 20, 2024

A three-term Washington State governor, U.S. Senator & leader of the Washington House, he was repeatedly considered for the vice presidency. A civil engineer, he championed education, civil rights & environmental causes.

Washington Alpha '73

Anita E. Gale

May 19, 2024

Longtime CEO of the National Space Society, responsible for headquarters at Kennedy Space Center. Worked on the space shuttle program with Rockwell Intl. and held three U.S. patents on launch vehicle payload interface.

MICHIGAN

BETA MI Β

Williams, Robert T., *'51*, March 1, 2023.
Johnson, Jack Paul, *'52*, no details.
Boatman, Lester Ronald, *'58*, July 8, 2024.

GAMMA MI Γ

Dillingham, Thomas C., *'49*, Dec. 15, 2022.

DELTA MI Δ

Aimette, Alexander Argeiw, *'60*, Jan. 19, 2023.

MINNESOTA

ALPHA MN Α

Brasket, Richard G., *'58*, March 21, 2024.

MISSISSIPPI

ALPHA MS Α

Fleming, Bobby Ross, *'58*, June 12, 2024.
Owens, John Kent, *'65*, November 6, 2024.

MISSOURI

GAMMA MO Γ

Keyes, Robert Raymond, *'48*, Oct. 14, 2024.
Brown Jr., James A., *'50*, June 10, 2024.

NEW HAMPSHIRE

ALPHA NH Α

Gallant, George Albert, *'50*, May 25, 1987.

NEW JERSEY

ALPHA NJ Α

Alvey, Courtney Douglas, *'45*, Nov. 19, 2023.

GAMMA NJ Γ

Burck, Seymour P., *'48*, October 26, 1981.
Field, Charles Raymond, *'51*, Feb. 18, 2023.
Gibson, Kenneth Allen, *'63*, March 29, 2019.

DELTA NJ Δ

Bodman, John Oramel, *'56*, May 8, 2016.

NEW YORK

ALPHA NY Α

Roth, Wilfred, *'43*, April 6, 2004.

BETA NJ Β

Millner, Leonard J., *'49*, September 8, 2024.
Briggs, David Clifford, *'53*, October 13, 2024.
Kluga, Donald Andrew, *'73*, May 26, 2024.

GAMMA NY Γ

Meeks, Philip J., *'51*, August 19, 2024.
Stotz, Kerwin Clyde, *'53*, October 3, 2021.
Kazden, Richard Jay, *'63*, no details.
Defilippo, James John, *'65*, July 25, 2018.

ZETA NY Ζ

Rosenbaum, Harold, *'60*, August 12, 2024.

THETA NY Θ

Simkin, Paul J., *'58*, August 27, 2023.

IOTA NY Ι

Myers, William H., *'64*, March 30, 2024.

KAPPA NY Κ

Swanson, Warren Albert, *'61*, August 7, 2003.
Morytko, John Anthony, *'84*, no details.

LAMBDA NY Λ

Morrison, Thomas, *'65*, October 26, 2024.

NORTH CAROLINA

ALPHA NC Α

Bell, Wayland Kenneth, *'65*, October 15, 2017.

DELTA NC Δ

Davis, Gary Holland, *'80*, February 1, 2019.

NORTH DAKOTA

ALPHA ND Α

Sorlie, Donald Thomas, *'55*, October 30, 2024.
Tareski, Val Gerard, *'63*, no details.

OHIO

BETA OH Β

Kinder, George William, *'61*, February 5, 2020.
Polas, Theodore Stephen, *'67*, Sept. 15, 2024.

GAMMA OH Γ

Crabill, Thomas Buskirk, *'62*, June 11, 2016.
Riedel, Nelson Andrew, *'67*, Nov. 4, 2024.

EPSILON OH Ε

Hrabak, Marguerite J., *'74*, Sept. 26, 2024.
Wilkolak, Ronald, *'75*, May 1, 2006.

THETA OH Θ

Sero, Raymond James, *'67*, January 9, 2024.

OKLAHOMA

ALPHA OK Α

Brady, Carl Owen, *'61*, August 23, 2024.

GAMMA OK Γ

Willard, Edward Payson, *'70*, no details.

PENNSYLVANIA

ALPHA PA Α

Williams, Russell Harry, *'56*, Dec. 18, 2018.
Preperato, Michael Joseph, *'80*, Sept. 4, 2022.

BETA PA Β

Miltenberger, James R., *'58*, August 14, 2024.
Merkel, Dennis Lowell, *'68*, October 19, 2023.

DELTA PA Δ

Sankewitsch, Vladimir, *'58*, April 9, 2023.

EPSILON PA Ε

Clark, Gordon Beckwith, *'51*, no details.

ZETA PA Ζ

Forbes, Blair Carleton, *'58*, October 28, 2024.
Hochberg, E. David, *'61*, April 5, 2023.

THETA PA Θ

Bentz, John Charles, *'65*, July 10, 2024.
Dugandzic, Joseph Phillip, *'83*, May 30, 2024.

IOTA PA Ι

Hammond Sr., John L., *'56*, August 1, 2015.

KAPPA PA Κ

De Burlo Jr., Comegys R., *'47*, Feb. 24, 2024.

SOUTH CAROLINA

BETA SC Β

Headley, William Edward, *'62*, Dec. 7, 2024.
Gantt Jr., Clifton Wilson, *'69*, July 13, 2016.

SOUTH DAKOTA

BETA SD Β

Hayter, Richard B., *'65*, October 20, 2024.

TENNESSEE

ALPHA TN Α

Googe, Joseph Morris, *'50*, Sept. 22, 2024.
Grantham, Curtis Othell, *'58*, Jan. 19, 2024.
Shasteen, Lynn Ray, *'58*, August 19, 2024.

BETA TN Β

DeKimpe, Richard A., *'53*, October 4, 2024.

TEXAS

ALPHA TX Α

Grafe, Ervin Victor, *'60*, October 6, 2023.
Dannenbaum, James D., *'62*, Sept. 19, 2024.

IOTA TX Ι

Denton, Judith Shanks, *'84*, October 15, 2024.

KAPPA TX Κ

Cook, Rodney Lee, *'99*, no details.

UTAH

BETA UT Β

Paulsen, David Finn, *'72*, April 23, 2023.

VERMONT

ALPHA VT Α

Perrin, David Porter, *'55*, November 9, 2023.

VIRGINIA

ALPHA VA Α

Hunter Jr., William Winslow, *'58*, Jan. 1, 2013.

BETA VA Β

Meith, Robert Melvourne, *'57*, March 30, 2024.
Ludwick, Carl Jackson, *'71*, January 3, 2023.

WASHINGTON

ALPHA WA Α

Evans, Daniel Jackson, *'48*, Sept. 20, 2024.
Ross, George Roger, *'59*, April 10, 2021.
Gale, Anita E., *'73*, May 19, 2024.
Rosenwald, Gary Waldo, *'92*, Oct. 26, 2020.

WEST VIRGINIA

ALPHA WV Α

Collins, Thomas Leo, *'51*, no details.
Utt Jr., Walter Kenneth, *'59*, January 31, 2021.
West, Blaine, *'60*, September 18, 2008.
LeMasters, Jerry Ray, *'63*, January 18, 2020.
Hannaman, Susan Kay, *'86*, Sept. 24, 2023.

WISCONSIN

ALPHA WI Α

Schuh, Peter O., *'63*, no details.

BETA WI Β

Mayer, Michael R., *'67*, September 13, 2024.

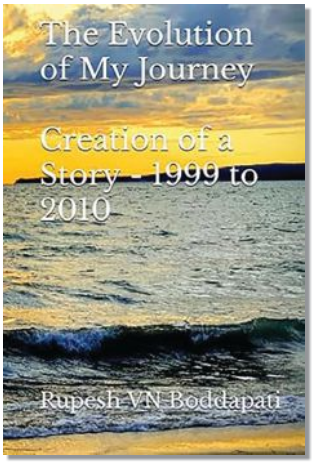
WYOMING

ALPHA WY Α

Tyrrell, Patrick T., *'79*, September 28, 2024.

Authors

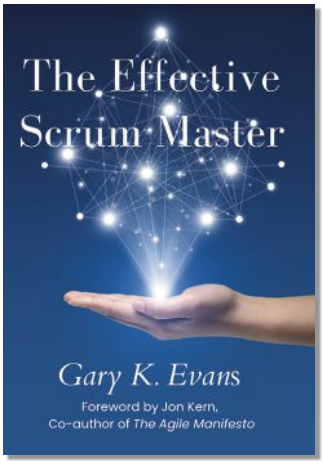
Recently published a book? If so, we would like to recognize you! Send details and a cover image to d.lane@tbp.org.
Note: Due to the popularity of this section, submissions are first come, first served, as room allows. Thanks!



Rupesh VN Boddapati
Ohio Zeta '21

The Evolution of My Journey: Creation of a Story - 1999 to 2010

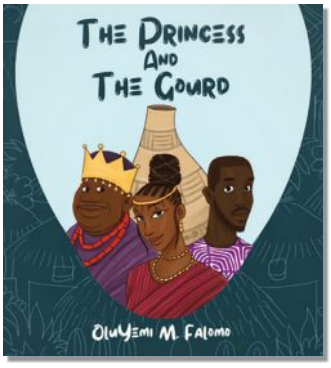
This autobiography details Rupesh's experiences starting at birth and includes episodes from his time at the University of Toledo (UT) as a bioengineering undergraduate. This self-published book has themes related to the importance of parents, grandparents, and one's journey. He is currently a 2nd year medical student at the UT College of Medicine & Life Sciences and dedicated his first book to his father, who passed in 2021.



Gary K. Evans
Virginia Alpha '77

The Effective Scrum Master

This book is Gary's latest legacy to the software development community. It's an expansive tour of the Scrum Master role in Agile software development that goes beyond the mechanics of the Scrum framework, advocating that effective Scrum Masters be Sherpa, Shepherd, Sheepdog, and Diagnostician. Gary has worked for 30+ years as a Scrum Master and Agile Coach, is founder & principal at Evanetics, Inc., and has computer science and philosophy B.S. degrees.



Oluyemi M. Falomo
Connecticut Beta '65

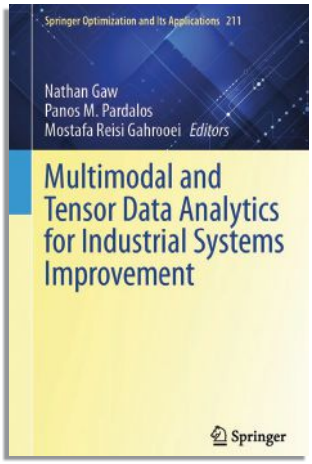
The Princess and the Gourd

In his debut book, children will embark on an enchanted journey to an African kingdom. This heartwarming tale introduces a king, his cherished daughter, and their quest to find the perfect prince. Readers will explore valuable lessons of compassion and kindness while being swept away on an adventure. The rich heritage and culture are woven into the narrative, offering a delightful way to learn about diverse cultures. Oluyemi is a retired engineer and avid musician.

Nathan B. Gaw, Ph.D.
Arizona Beta '13

Multimodal and Tensor Data Analytics for Industrial Systems Improvement

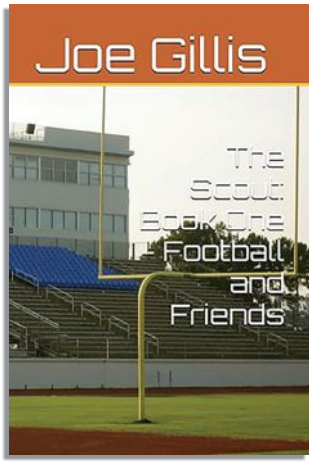
This volume, from Nathan and his co-editors, covers the latest methodologies for using multimodal data fusion and analytics across several applications. The curated content presents recent developments/challenges and illuminates a pathway toward new research. An assistant professor of data science at the Air Force Inst. of Tech. (OH), he's focused on developing new statistical machine learning algorithms.



Joe K. Gillis, P.E.
Alabama Alpha '87

The Scout: Book One - Football and Friends

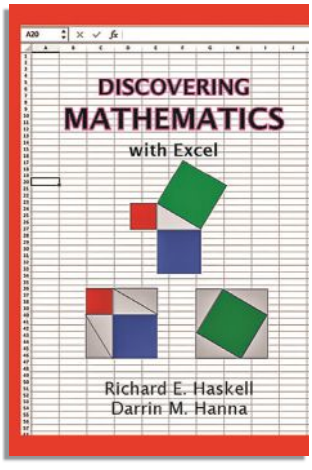
Joe writes about a high school quarterback, Kevin, with dreams of playing for Vanderbilt and bringing them a championship. In addition to covering the lead character's football experience, this book also looks at his family and friends as he grows up in Tennessee. Joe has B.S. and M.S. degrees in civil engineering from Auburn University and a software engineering master's degree from Kennesaw State.

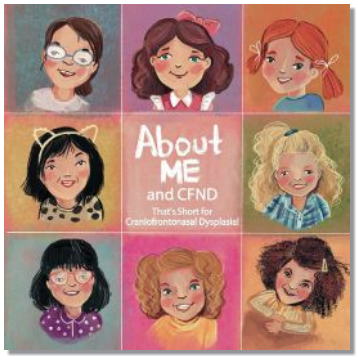


Richard E. Haskell, Ph.D.
New York Gamma '60

Discovering Mathematics with Excel

Richard is an Emeritus Professor of Engineering at Oakland Univ. (MI), where he taught electrical and computer eng'g for 46 years. He's authored 30+ books, including textbooks, nonfiction, and novels. This co-authored book shows how you can discover geometry, calculus, trig, number theory, probability, logic, and differential equations using a spreadsheet like Excel. Unique topics covered include public-key cryptography and chaos.

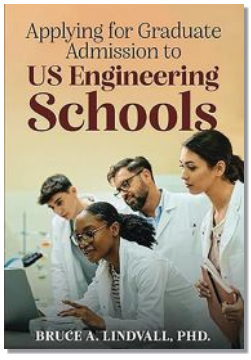




Rebecca "Becky" A. Lewis
Florida Alpha '04

About Me and CFND: That's Short for Craniofrontonasal Dysplasia

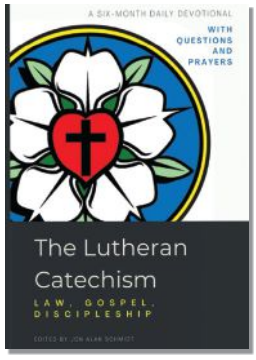
Craniofrontonasal Dysplasia (CFND) is a rare condition that affects 1 in 120,000 babies. This book explores what it is like to have CFND and how to explain it to kids, friends, and family members. Above all, it's a reminder to embrace and celebrate our differences and to be kind. Becky is VP of Internal Audit at NextEra Energy and has a B.S. degree in industrial engineering and an MBA. Her seven-year-old daughter, Claire, was born with CFND and is the inspiration for her first book.



Bruce A. Lindvall, Ph.D.
Non-member

Applying for Graduate Admissions in U.S. Engineering Schools

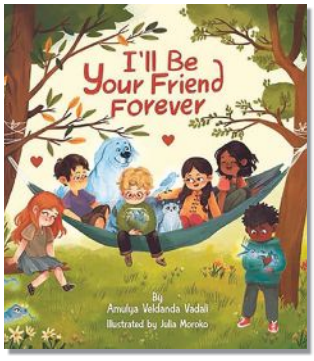
After 51 years in higher education, Bruce wrote this book which contains important information and resources to help prospective engineering graduate students applying for M.S. and Ph.D. programs. Before his retirement in 2023, he spent the previous 18 years helping students around the world apply for admission to U.S. graduate schools, including many Tau Bates, as a respected fixture at ΤΒΠ Conventions.



Jon A. Schmidt, P.E.
District of Columbia Gamma '92

The Lutheran Catechism: Law, Gospel, Discipleship

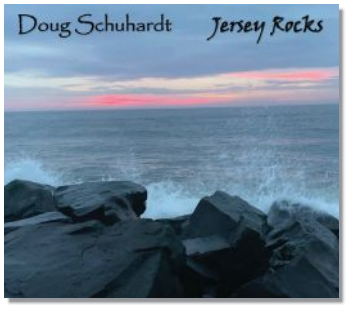
At the time of the Reformation, Martin Luther's concern for the spiritual well-being of the laity prompted him to reorganize traditional formulations of basic teachings of the Christian faith. His accompanying explanations constitute the Small and Large Catechisms, which Jon has arranged in parallel as a daily devotional, with questions for reflection and a brief prayer with each pair of readings. Jon is a structural engineer at Burns & McDonnell with a civil engineering degree from George Washington University.



Amulya Veldanda Vadali
New Jersey Zeta '18

I'll Be Your Friend Forever

A Wiley publication, this book is written for anyone who has ever lost a pet. It is a heartwarming message from across the "rainbow bridge." Join your pet on a beautiful journey of love and loss as you see how some friendships last longer than a lifetime. Amulya, who has authored eight books including the Cosmo series, is an associate scientist in R&D at Integra LifeSciences, and has B.S. and M.S. degrees in biomedical engineering.



Tau Bate Musician

Douglas W. Schuhardt
Maryland Beta '89

Jersey Rocks (The Album)

After retiring in 2021, having worked for 32 years as a chemical engineer with Exxon Chemical (and the joint venture, Infineum), Doug turned his attention to a career in music. In September, he put out his first collection of professionally produced songs. The album, now available on YouTube (search: "Doug Schuhardt"), has dual themes of New Jersey and the problems of our time. A University of Maryland graduate, Doug served as MD Beta corresponding secretary.

Fall Brain Tickler Answers *Continued from page 25*

COMPUTER BONUS:

In base 10, we have:

13944_{10}
84546_{10}
6264_{10}

104754_{10}

Alternately, one can find in base 17:

$19ebb_{17}$
$fbcb6_{17}$
$6a6b_{17}$

$10b3cb_{17}$

It is interesting to note that $3_{17} + 7_{17} + 9_{17} = 12_{17}$.

New Winter Problems

1: *The Incredibles* Merit

Mr. Incredible, Elastigirl, Violet, Dash, and Jack-Jack are placed in an order of merit (with no ties) for their recent superhero exploits.

Violet and Dash are next to each other in this order, and they each make two remarks. Those made by the one with higher merit are both false, those made by the other are both true.

Violet: 1. Jack-Jack's place of merit was equidistant from those of Elastigirl and Violet.

2. Dash was placed third.

Dash: 1. Mr. Incredible's place of merit was equidistant from those of Violet and Jack-Jack.

2. Elastigirl was higher in merit than Mr. Incredible and Violet.

What is the order of merit (from highest to lowest) for these five superheroes?

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

2: Cards and Letters

Consider a game consisting of nine cards, each printed with a unique word from the following list: CITY, GAZE, HAIR, JUST, LION, MOPE, RENT, ROWS, SAND. You and your opponent take turns picking a card with the objective that the aggregate set of letters on all your own cards contains at least one group of three letters in common; achieving this results in victory and, of course, general bragging rights. Unfortunately, you lose the coin flip to decide who picks first and your opponent selects ROWS. Assuming her to be a master of this game, what card must you take to stop her from winning?

—Adapted from *Tantalizers*
by Martin Hollis

3: Drawing Circles

A straight line intersects an annulus of area A_1 at points P, Q, R, and S. (P and S lie on the outer circle and Q and R lie on the inner circle.)

A second annulus of area A_2 is constructed by drawing circles having PS and QR as diameters. What is the ratio of A_1 to A_2?

—**Richard I. Hess,** *CA B '62*

4: Non-congruent Dice

On the faces of a standard die, 1 is opposite 6, 2 is opposite 5, and 3 is opposite 4. The numbers are, of course, represented by 1 to 6 pips, arranged in the familiar patterns.

How many different non-congruent dice are possible which have: (a) the standard arrangement of numbers; (b) no such constraint on opposing numbers? Two dice are deemed non-congruent if, for example, they are identical except that the direction of the slant of the three pips representing side 3 on one die is flipped 90 degrees compared to the other.

—**Walter O. Stadlin, P.E.,** *NJ Γ '52*

5: Cryptarithm

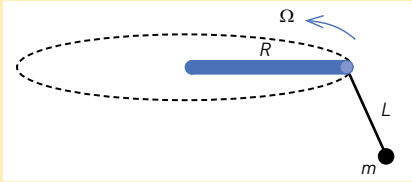
Solve the following doubly-true cryptarithm: ELEVEN + SEVEN + TWO = TWENTY, with ELEVEN being divisible by 11. Standard rules apply: each different letter stands for a different digit, and each different digit is always represented by the same letter; no leading zeros are allowed.

—*Madachy's Mathematical Recreations*
by Joseph S. Madachy

BONUS:

As shown in the figure below, one end of a horizontal rod of length R, is attached to a vertical shaft rotating with a constant angular frequency Ω. From the other end of the rod hangs a simple pendulum of mass m a distance of length L from its pivot point on the rod. If the pendulum undergoes small oscillations about its equilibrium position (radially towards the center of the circle of rotation), what is its frequency of oscillation?

—*Physics* by Halliday and Resnick



COMPUTER BONUS:

A number in a particular base is palindromic if the digits (no leading zeros allowed) read the same right to left as left to right. For each integer BASE $N > 2$, let $P(N)$ be the decimal representation of the smallest integer exceeding $2N$ that is palindromic both in base N and in base 2. Consider the sequence of numbers formed by including $P(N)$ (as N is incremented by 1) provided it is larger than any existing $P(N)$ already in the sequence. To wit, $P(3)$, which can be represented as 100010001 in base 3 and 1100111110011 in base 2 (and 6643 as a decimal) is established as the first number. $P(4)$, which can be represented as 33 in base 4 and 1111 in base 2 (and 15 as a decimal), is smaller than $P(3)$ and, therefore, is excluded from the sequence. What is the first decimal number in this sequence larger than one quadrillion? What is the corresponding N and which number in the sequence is it?

COMPUTER BONUS:

The columnist would welcome seeing programming details such as run time and language used included in the submission!

—Adapted from 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 **F.J. Tydeman,** *CA Δ '73;* **J.C. Rasbold,** *OH Α '83;* **K.D. Berthold, P.E.,** *TX Β '04;* and the columnist for this issue,

— **J.R. Stribling, Ph.D.,** *CA Α '92*

In Memory of

Ralph Wilson "Bill" Rowland, *MD Β '51*, passed away October 8, 2024, at the age of 96 in Silver Spring, Maryland.

Bill served in the Army as a radio repairman in Japan and was awarded the WWII Victory Medal and the Army of Occupation Medal Japan.

Following his honorable discharge, he earned a master's degree in electrical engineering from the University of Maryland and spent many years working on missile guidance systems.

From 1982 to 2003, he served as a Brain Tickler judge and upon stepping down received a ΤΒΠ Distinguished Service Award for his contributions.

On behalf of the Association, we offer our sincere condolences to his family.

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PRESIDENT'S REPORT

CONTINUED FROM PAGE 12

ENGINEERING FUTURES

The Engineering Futures (EF) program continues to partner with the NSF-funded CyberAmbassadors project to provide Communications, Teamwork, and Leadership skills to students and professionals across STEM. In addition to the Engineering Futures-branded trainings for TBΠ chapters and meetings, Tau Beta Pi is a co-host of all Cyber-Ambassadors-branded trainings, which allows the Association to reach a global audience.

During the 2023-24 academic year (Sept. 1 – Aug. 31), 38 facilitators conducted 148 sessions for 3,894 participants (1,880 in person and 2,014 via live remote participation). In addition, we trained 27 new facilitators, bringing the total number of volunteer facilitators to almost 150. Nearly 600 participants have earned a certificate by completing all nine modules in the curriculum, including 186 new certificates earned in 2023-24.

EF sessions were conducted for chapters in AZ, AR, CA, FL, IN, IA, KS, MI, and TN; sessions were also offered at Convention and the District 1, 2, 6, and 13 Conferences. Additional sessions were hosted by universities in CO, IL, and PR, as part of classes, student organization activities, and outreach events. The University of Illinois and the Jackson Lab also hosted certificate programs for employees.

TBΠ chapters (collegiate and alumni) can submit session requests online at: *www.tbp.org/ef-session-request.cfm*. Students and alums who are interested in volunteering as a facilitator, session host, or to help with logistics can email *tbp.def@tbp.org*

FELLOWSHIPS & SCHOLARSHIPS

For the 2023-24 year, 31 Fellows were selected from 417 graduates and 263 Scholars were awarded scholarships from 1,328 applicants. The total amount awarded was $792,000 in 2023.

Fellowship applications will be available beginning December 15 and Scholarship applications on February 1. Changes to the scholarship application include: one required letter of recommendation (down from two), and dual B.S./M.S. students can apply one time. Information webinars will be conducted for both Fellowships and Scholarships.

NEST

New Engineering Solutions for Tomorrow (NEST) is a trial program that has been in development officially within Tau Beta Pi for the past two years. NEST is an annual competition geared to be hosted at Convention and is centered on a changing topic annually that addresses global issues like access to clean water, accessibility, and waste management, as examples. Alumni are encouraged to participate as a way to give back to chapters by promoting career mentorship through applied techniques related to project management and execution. Chapter members are encouraged to address an annual topic and solicit help from TBΠ initiates, freshmen and sophomore students alike to cohesively develop a project together, led by Tau Bates, that involves the campus in a meaningful way.

This year, NEST had 20+ chapters reach out after Convention that expressed interest in participating. NEST representatives talked to each district about the program and how chapters could participate. This year, one chapter presented their project at Convention addressing the topic of Waste Management.

NEST intends to find new ways to grow the program and integrate better into Tau Beta Pi in the 2024-25 term so chapters and alumni have better awareness of the program and what it can offer members in future years.

For more information, visit the website and see how NEST can help make an impact!
https://tbpnest.wixsite.com/home

CHARGES TO THE COUNCIL

The 2023 Convention gave the Executive Council 47 separate charges. An item-by-item review of the Council's response to these charges would make this report extraordinarily long, but here are some highlights:

- Several committees requested re-commissioning for the 2024 Convention. These requests were all honored.
- Some ad hoc committees requested being designated as standing committees through a Constitutional amendment. These were not placed on the 2024 agenda as the Council views re-commissioning a committee by majority action of the Convention is an easier path to achieving the same thing compared to obtaining a three-fourths majority at the Convention and a three-fourths majority by chapter ratification to amend the Constitution.
- The Alumni Chapters Committee recommended implementation of an online option to pay dues. This is in progress and will be completed soon.

PRESIDENT'S REPORT

CONTINUED FROM PAGE 38

CHARGES TO THE COUNCIL *continued*

- Several items of "clean-up work" on policies requested by the Constitution and Bylaws Committee have been completed.
- Two items from the DEI Committee (Eminent Engineers from underrepresented groups and outreach to HBCUs/HSIs/MSIs) were discussed by the 2024 Convention's DEI Committee specifically as to how they might be accomplished.
- The Financial Affairs Committee requested that all materials be available 60 days before the start of the 2024 Convention. This parallels action taken by the 2023 Convention that all Convention background materials be available 60 days in advance of the 2024 Convention. The Executive Director and President complied with this order.
- There was guidance from the Constitution & Bylaws Committee to consider the Constitutional wording of the section on Council responsibilities. This was referred to the 2024 Constitution & Bylaws Committee.
- There were proposals from the Petitions Committee regarding naming of international chapters. Council adopted PG11 and further, the 2024 Constitution & Bylaws Committee also considered the topic.

The Council undertook some projects of its own in 2024. One of these projects was to examine a more effective way to form and use committees to further the strategic objectives of the Association. The effort is ongoing and included a survey of students and alumni on the Association's priorities. Additionally, a project is underway on a small-scale trial basis to engage candidates for membership as an effort to collect real data on perceptions about the Association and the value of membership. We fully expect to continue these efforts in the New Year to learn more effective ways of engaging both students and alumni.

It has been an honor to serve as the 2024 Association President. In addition, I look forward to working with the incoming Councillors to improve our ability to steer the Association towards long-term growth and effectiveness in its mission.

ASSOCIATION BRIEFS

2024 CONVENTION IMAGES

Image left:
Convention Business Meeting in LaCroix Hall at The Monument in Rapid City, South Dakota.

Credit:
Anthony J. Cammarano, *NJ B '24*

Image below:
Happy Tau Bates at the In-person Recruiting Fair.

A Tau Bate selfie at Mount Rushmore.

Alumni Chapter Officers man an information table during the Recruiting Fair.

The 2024 McDonald Mentor and Distinguished Alumni.

ASSOCIATION OFFICIALS NEWS

Meet Our New District Directors

District 6
Rene K. Aldrich
SD A '02

District 10
Natalie L. Monzavifar
SC B '22

District 7
Sergei Akhmatdinov
MI K '23

District 12
Robert W. Streeter, Ph.D.
WY A '11

District Directors **James C. Hill, Ph.D.,** *CA Γ '62*, and **Russell L. Werneth,** *MD B '64*, received ΤΒΠ Distinguished Service Awards after the conclusion of their long-standing commitment to the Association and its members.

Jim began his role as a District 11 Director in 1995 and continues to serve as an Iowa Alpha Chapter Advisor. He is also a recipient of the ΤΒΠ Outstanding Advisor (1994) and McDonald Mentor (2018) awards.

Russ was a District 4 Director for 40+ years, spent a year as ΤΒΠ Director of District Programs, and was ever present at Convention.

Jim Hill

Russ Werneth

A full list of ΤΒΠ District Directors is available at: *www.tbp.org/?DDs*

WE NEED YOU AS A DISTRICT DIRECTOR

Are you interested in taking a more active volunteer role in the Association? Currently, four ΤΒΠ districts are looking for new District Directors! Find the job description at: *www.tbp.org/?DDjob*

Candidates should be located near:

D4 - Baltimore area

D5 - Atlanta (GA) or South Carolina

D9 - Missouri or Kansas area

D15 - Sacramento area

If you are interested, contact Stacey Forkner, Director of the District Program at: *s.forkner@tbp.org*

ASSOCIATION BRIEFS

Members of the IL Beta and Chicago Alumni Chapters after the collegiate chapter's fall initiation.

GSMAC picnic attendees enjoying Irvey's Ice Cream.

ALUMNI ACTIVITY: CHICAGO (IL) ALUMNI CHAPTER

Members of the Chicago Alumni Chapter turned out to support the fall initiations of both the IL Beta, at Illinois Institute of Technology, and IN Gamma at University of Notre Dame.

Thanks to the Chicago AC for posting the image and info to social media. Contact the chapter at: *tbpchicago@gmail.com*

ALUMNI ACTIVITY: GREAT SMOKY MOUNTAINS (TN) ALUMNI CHAPTER

GSMAC hosted their annual fall "picnic" at Kern's Food Hall in Knoxville and treated everyone to free ice cream.

To join the Great Smoky Mountains Alumni Chapter, email: *GSMAC@tbp.org*

ANNUAL ALUMNI CHAPTER AWARDS: 2024 CONVENTION

At Saturday's Chapter Awards Banquet Tricia E. Gomulinski, *SD A '98*, Director of Alumni Affairs, presented the Alumni Chapter Awards for 2023-24.

Ohio's North Coast Alumni Chapter
Overall Outstanding Alumni Chapter

Honorable Mention:
Indianapolis Alumni Chapter

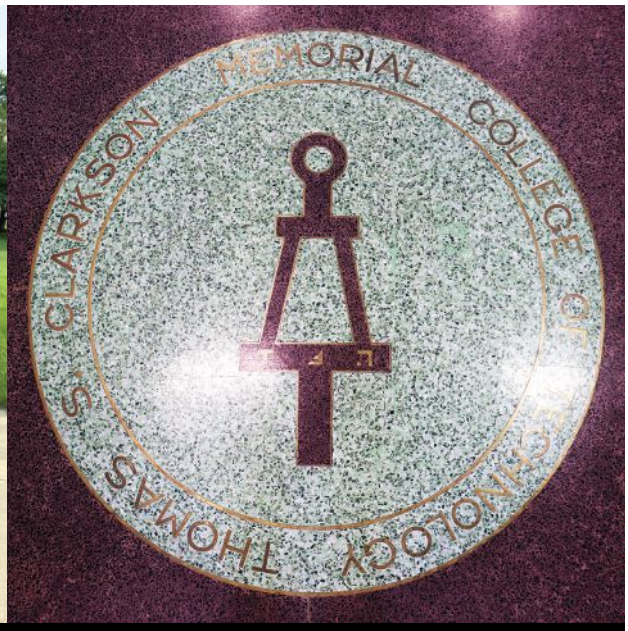
Chicago Alumni Chapter
Most Improved Alumni Chapter

Honorable Mention:
Mid-South (TN) Alumni Chapter

Ohio's North Coast Alumni Chapter
Collaboration with Collegiate Chapters

Honorable Mentions:
Great Smoky Mountains (TN), Richmond, and San Francisco Bay Area Alumni Chapters

Indianapolis Alumni Chapter
Participation by Members



A BENTSPEDITION UPDATE

BY NICHOLAS R. DIVILBISS, *KANSAS GAMMA '25*

INTRODUCTION

I'm Nick, the Kansas Gamma Chapter president, and on December 17, 2023, I set out to visit a few Tau Beta Pi collegiate chapters between Kansas and North Carolina. Since then, Bent monument hunting has become a lifestyle and by March 2025, I'll finish the first ever *Bentspedition* following three rules: visit all active collegiate chapters; no flying unless driving is impossible; and finally, hotels are off limits.

In May 2024, 92 visits occurred during the project's fourth leg, including every chapter in North Dakota, Minnesota, Michigan, Pennsylvania, New York, Vermont, New Hampshire, Maine, Massachusetts, Rhode Island, Connecticut, New Jersey, Delaware, D.C., and Maryland, along with all remaining chapters in Indiana, Ohio, and West Virginia (plus South Dakota Beta).

HIGHLIGHTS

While visiting the University of Nebraska–Lincoln, I found the NE Alpha Bent alongside a newly refurbished Sigma Tau pyramid. (**See Image below**)

In the Dakotas, I found many Bent monuments but unfortunately no Sigma Tau pyramids.

I enjoyed visiting the Upper Peninsula in Michigan and seeing the Mackinac Bridge lights shimmering across the waters of Lake Michigan.

In New York, I found two unique monuments: a ceramic Bent at Alfred University (NY Sigma) and a terrazzo Bent at Clarkson University (NY Theta). (**See Image above/right**)

Next, I 'set sail' for the shores of Vermont on the Lake Champlain Ferry to visit the VT Alpha Chapter and the birthplace of our Association's founder **Edward H. Williams Jr., Sc.D.**

The true solitude of Vermont led to strong feelings of homesickness and loneliness, leading me to reflect and question the point of this trip.

Fortunately, the next day was a true achievement as I laid eyes on the Maine Alpha Bent in Orono, nearly 4,000 miles from home. Having no idea whether that Bent existed, it was a tremendously fulfilling find.

In Massachusetts, there were many Bents and lots of traffic. Regrettably, "Tortillo the Tacoma" took his first hit, while at MIT when a parking attendant backed us straight into an obviously visible handrail.

New York Upsilon at West Point had the most jaw dropping vista of any campus thus far, with the historic Hudson River's twists and turns through towering mountains, while helicopters swooped down overhead.

New Jersey, Delaware, Washington D.C., and Maryland were kind to me and I was happy to catch up with District Directors **Sandhiya Kannan,** *NY O '17*, (D2); and **J.P. Blackford,** *DC G '95*, (D4); as well as Delaware Alpha's president **Georgia Angeletakis.**

Maryland Epsilon's Bent at Morgan State University (**See Image above/left**) represented the final chapter on the East Coast, while Lewisburg, PA, (home to Bucknell University) stole my heart as one of the most beautiful small towns in America. Then, I finally made it to Wright-Patterson Air Force Base to see Ohio Eta's *Bents*!

Yes, the *Bentspedition* is alive and well, and I can't wait to share more with you in the summer 2025 grand finale article!

Executive Council MEETING MINUTES

Summaries from Executive Council (EC) Meetings — June through July 2023.

June 9-10, 2023
Albuquerque, New Mexico

The following consent items were adopted as presented and include:

- At the request of Executive Director Curtis Gomulinski, allocate $20,000 from the Levin Family Trust to the Headquarters Operating Fund.
- At the request of Mr. Gomulinski, appoint the following members to serve in the indicated roles for the 2023 Convention:
  - **Jason A. Abellada,** *FL A '04*, as Permanent Chair
  - **George K. Miyata,** *WA D '10*, as Parliamentarian
  - **Benjamin J. Pollatz,** *MI I '18*, as Credentials Committee Chair
  - **Wesley R. Repke,** *MI L '09*, as Tellers Committee Chair
  - **Joseph A. Kuspa,** *CA I '93*, as Historian, and
  - **Christopher (Kiffer) J. Creveling,** *UT A '13*, as Convention Photographer.
- At the request of Director of Fellowships, Sally J. Steadman:
  - Award **Robert E. Efimba,** *MA B '63*, with a Distinguished Service Award for his nine and a half years on the Fellowship Board; and
  - Appoint **Leo H. McWilliams,** *IN G '82*, to the Fellowship Board to a term starting 7/1/23 and ending 6/30/26.
- At the request of Director of Marketing and Communications, Patricia B. McDaniel, reappoint the following to the Editorial Board to a term starting 7/1/23 and ending 6/30/26:
  - **Alison L. Hu,** *CA G '96*; and
  - **John W. Prados,** *TN A '54*.
- At the request of Director of Engineering Futures, Kathleen T.L. Colbry, reappoint the following as Engineering Futures Facilitators to a term starting 7/1/23 and ending 6/30/26:
  - **Abraham O. Atte,** *KS A '20*;
  - **Susan L.R. Holl,** *CA L '76*;
  - **Amy R. Irwin Ball,** *MS A '91*
  - **Luis F. Torrens Sotomayor,** *PR A '19;*
  - **Scott M. Trocchia,** *DC G '11*.
- Reappoint the following as Engineering Futures Facilitators to a term starting 7/1/23 and ending 6/30/24:
  - **Prince Kumar,** *TX D '22*;
  - **Julia Pimentel,** *WV B '22*; and
  - **Robert C. Styles,** *AL D '76*.

Reports of Officers and Officials:
Written reports were received from the President and Treasurer.

Reports of Boards, Committees, and Task Forces:
Written reports were received from the Image & Marketing Committee, Advisors Committee, and the Trust Advisory Committee, including performance reports for Q1 2023 and March 2023, portfolio construction, and cash transfers and balances.

Reports of the Awards Selection Subcommittee:
The Council reviewed information provided by the Distinguished Alumnus and McDonald Mentor subcommittees and postponed further consideration until Saturday after the subcommittee had an opportunity to meet and provide an updated report. The Council received no further reports from the committees and postponed further consideration to the July 2023 EC Meeting. The Council reviewed the report from the Laureate subcommittee, postponed further consideration until Saturday, and on Saturday, committee member Dr. Tonya J. Whitehead provided details on the deliberation and selection process. The committee received six nominations; however, they only received required information for two candidates, which were recommended to receive the award. Dr. Whitehead will work with Michael A. Brown, Director of Finance and Operations, to obtain the missing information. The Council adopted the subcommittee's recommendations.

The Outstanding Advisor subcommittee report was presented by Dr. Sue L.R. Holl. The Council adopted the recommendation to name Andrew E. Toy as the 2023 Outstanding Advisor.

International Chapters' Inspection Reports:
Mr. Gomulinski and Councillor Dr. Menna Youssef, both members of the inspection committees, reported on their visits to Texas A&M University at Qatar and the American University of Sharjah. Both schools meet the requirements for a ΤΒΠ chapter and members of the committees were impressed with the schools, facilities, students, and faculty members. The Council adopted a motion to send both petitions to the 2023 Convention for consideration and discussed additional details about the establishment of international chapters including the need for the American University of Sharjah to appeal their computer science program at the Convention.

Ratification Ballot Report:
Mr. Gomulinski presented a report on the status of the Constitutional amendments. With 305 chapters eligible to vote, (255 collegiate and 50 alumni), 229 votes in favor were required to ratify an amendment and 77 were required to defeat an amendment. A total of 218 valid ballots (3 late) and no invalid ballots were received. The amendment to allow private equity was defeated with 125 votes in favor and 92 against. The amendment to add the position of the Director of the District Program to the Constitution received 162 votes in favor and 55 against. Per the Constitution, the Council has the authority to act for the 88 chapters that did not cast votes.

Trust Advisory Committee Charges:
Treasurer Michael J. Hand III presented changes to the Trust Advisory Committee (TAC). The policy approved in 2019 contains language that limits term lengths to exactly three years, limits total service to nine years, restricts service as the chair, and requires grammar updates. Mr. Hand proposed modifying the charter to provide additional flexibility. After questions and debate, the changes were adopted by the required two-thirds vote.

Trust Advisory Committee Reappointments:
Mr. Hand reported that three members of the TAC have terms that expire on June 30, 2023. This does not adhere to the charter which requires that only two members have terms that expire in any given year. To ensure staggered terms, he recommended that Jim Johnson be given a two-year term. The motion to accept **James W. Johnson Jr.,** *NC A '77*, to an additional two-year term starting 7/1/23 and ending 6/30/25, was adopted by the two-thirds vote. The motion to reappoint **Yung B. Lim,** *NJ D '87*, and **David A. Liu,** *PA D '93*, to additional three year terms starting 7/1/23 and ending 6/30/26, was adopted. The terms of existing members **Brent S. Beardsley,** *TX D '93*, and **Harry W. Lange,** *MI Z '75*, expire on 6/30/25, and 6/30/26, respectively.

Convention Business

- President Rachel K. Alexander presented an overview of the business currently under consideration by the 2023 Convention; no Council action was required. The Council also reviewed and assigned responsibilities for the 2023 Convention.

Additional Delegate Funding

- Mr. Gomulinski presented a proposal to pay for up to 25 non-voting delegates or advisors from struggling chapters to attend the 2023 Convention at the Association's expense. He indicated that some funding exists from the Convention assessments from the cancelled 2021 Convention to cover these expenses. The motion to authorize up to $38,000 to support non-voting delegates and advisors to attend the 2023 Convention was adopted.

New Business

- At the request of the Director of the District Program, Stacey L. Forkner, the Council adopted a motion to reappoint the following District Directors to a term starting 7/1/23 and ending 6/30/26:
  - **Bruce A. DeVantier,** *IL E '77*, as a District 8 Director
  - **Steven R. Harper,** *IL A '06*, as a District 4 Director
  - **Josuan Hilerio Sanchez,** *PR A '07*, as a District 5 Director
  - **James C. Hill,** *CA G '62*, as a District 11 Director
  - **Daniel T. Kruusmagi,** *CA H '13*, as a District 15 Director
  - **Lara L. Spinelli,** *NJ G '14*, as a District 2 Director
  - **Ellen S. Styles,** *AL D '85*, as a District 6 Director
  - **Jeffrey S. Zola,** *NY D '91*, as a District 14 Director; and
- The Council adopted a motion to reappoint the following District Directors to a term starting 7/1/23 and ending 6/30/24:
  - **Gregory M. Newcomb,** *CO B '06*, as a District 12 Director
  - **Tonya J. Whitehead,** *MI E '17*, as a District 7 Director.
- At the request of Ms. Forkner, the Council adopted a motion to award:
  - **Madison R. Herman,** *OH Z '13*, a Distinguished Service Award for serving as a District 10 Director since 12/2024;
  - **Raymond P. LeBeau,** *VA A '90*, a Distinguished Service Award for serving as a District 9 Director since 9/2016;
  - **Christopher C. McComb,** *CA R '12*, a Distinguished Service Award for serving as a District 3 Director since 6/2013;
  - **Mary Ann Susavidge,** *PA Z '89*, a Resolution of Appreciation Award for serving as a District 3 Director since 4/2019; and
  - **Natalie J. Turco,** *NY S '20*, a Resolution of Appreciation Award for serving as a District 1 Director since 2/2021.

General Revision Phase 2 Subcommittee Appointments

- Vice President Ronald M. Hickling and Mr. Hand discussed the General Revision Phase 2 Subcommittee. The Council adopted a motion to appoint the following individuals to the subcommittee with terms starting 6/10/23 and ending 12/31/24:
  - **Russell W. Pierce,** *WA A '70*;
  - **Bruce A. DeVantier,** *IL E '77*;
  - **Steven P. Klepac,** *AL E '21*;
  - **R. "Gene" McGinnis,** *TN E '79*;
  - **Elizabeth A. Kroll,** *MI E '24*;
  - **Joseph P. (J.P.) Blackford,** *DC G '95*, and
  - **Neal T. Bussett,** *CA X '09*.
- The Council further adopted a motion to appoint J.P. Blackford as chair of the subcommittee pending his acceptance.

July 18, 2023
Virtual

Appointments

At the request of Advisor Committee Chair, Steven P. Klepac, the following reappointments were approved for the Advisor Committee:

- **Susan L.R. Holl,** *CA L '76*, to a term starting 7/1/23 and ending 6/30/26;
- **Steven P. Klepac,** *AL E '21*, to a term starting 7/1/23 and ending 6/30/26;
- **R. "Gene" McGinnis,** *TN E '79*, to a term starting 7/1/23 and ending 6/30/26; and
- **Russell W. Pierce,** *WA A '70*, to a term starting 7/1/23 and ending 6/30/26.

At the request of DEI Committee Chair, Tonya J. Whitehead, the following reappointments were approved for the DEI Committee:

- **LeVern W. Faidley,** *IA A '67*, to a term starting 7/1/23 and ending 6/30/26;
- **Josuan Hilerio Sanchez,** *PR A '07*, to a term starting 7/1/23 and ending 6/30/26;
- **Lupita D.C. Montoya,** *CA K '89*, to a term starting 7/1/23 and ending 6/30/26;
- **Bakari I. Smith,** *NY Q '17*, to a term starting 7/1/23 and ending 6/30/26;
- **Heather A. Splawn,** *SC B '04*, to a term starting 7/1/22 and ending 6/31/25; and
- **Charles E. "Gene" Fuller III,** *AL A '65*, to a term starting 7/1/22 and ending 6/31/25.

At the request of DEI Committee Chair, Dr. Whitehead, the following appointments were approved for the DEI Committee.

- **Isha S. Bhagavatula,** *CA L '23*, to a term starting 7/1/23 and ending 6/31/24;
- **Christina M. Coulton,** *NY T '23*, to a term starting 7/1/23 and ending 6/31/24;
- **Stephan L. King-Monroe,** *MI E '08*, to a term starting 7/1/23 and ending 6/31/25;
- **Loren C. Larrieu,** *AZ G '23*, to a term starting 7/1/23 and ending 6/31/25;
- **Bayaan H. Odeh,** *MI E '23*, to a term starting 7/1/23 and ending 6/31/25;
- **Ciana Witherell,** *MI L '23*, to a term starting 7/1/23 and ending 6/31/26; and
- **Mennatoallah M. Youssef,** *VA G '04*, to a term starting 7/1/23 and ending 6/31/26.

Reports of Officers and Officials:

Written reports were received from the President and Executive Director.

Reports of Boards, Committees & Task Forces:

Written reports were received from the DEI Committee and the Convention Program Planning Committee.

Special Orders:

- **Additional Delegate Funding** request was discussed and Dr. Whitehead and Dr. Montoya put forth a proposal to fund two DEI committee members and up to ten eminent engineer candidates to attend the 2023 Convention in Atlanta. After discussion, the Council adopted a motion to fund up to 12 people (2 DEI committee members and up to 10 eminent engineer candidates) to attend the 2023 Convention at a cost not to exceed $13,800.
- **DEI Proposal – Eminent Engineer Recruitment** was presented by Dr. Whitehead and Dr. Montoya to actively recruit and initiate diverse eminent engineers from underrepresented groups to connect other organizations and increase the profile at other schools and organizations. Candidates would be identified with the support of alumni and collegiate chapters, HQ, and member recommendations. After discussion, the Council accepted the proposal and adopted a motion to direct the Executive Director to dedicate the resources necessary to make the proposal possible.

Unfinished Business & General Orders:

- The Council reviewed and updated the assigned responsibilities for the 2023 Convention. Mr. Gomulinski presented a resolution to continue funding Tau Beta Pi's operations through August 31, 2023, and the Council adopted the resolution.

Continued on page 48

ALUMNI NOTES

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

CALIFORNIA GAMMA '20

Kelsey M. Bing

Kelsey, a first time Olympian, competed as Team USA Women's starting Field Hockey goalkeeper at the 2024 Paris Olympic Summer games. She earned bachelor's and master's degrees in mechanical engineering at Stanford University and is employed as a part-time GNC engineer at Joby Aviation.

CALIFORNIA PSI '08

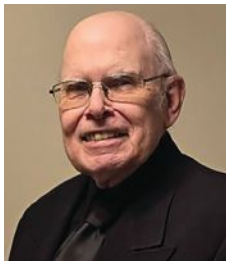
Henry T. Tse Ph.D.

Henry was named the 2024 Rising Professional Achievement Award recipient given by the UCLA Samueli School of Engineering. He is co-founder and chief technology officer of Cytovale, a medical diagnostics company developing the microfluidics, instrumentation, and algorithms for early detection of sepsis.

CONNECTICUT GAMMA '08

Jonathan C. Silver Ph.D.

Jonathan is starting an initiative called Yeshivat L'Ohr Goyim, which will teach about the 7 Noahide Commandments, the Unity of Hashem, and imbue other necessary tools to bring about world peace. He has degrees in mechanical eng'g (B.S.), aerospace eng'g (M.S.), and acoustics & turbulence (Ph.D.) from Univ. of Notre Dame.



ILLINOIS BETA '69

Robert B. Johnson S.E., P.E.

Robert received a 2024 Professional Achievement Award from Illinois Tech, recognizing achievement in his field. He worked for the Benesch Company in the design of high-rise buildings, including Three Illinois Center and has been active with the Structural Engineers Assoc. of IL for 30+ years promoting engineering.

LOUISIANA GAMMA '83

Cameron H.G. Wright Ph.D., P.E.

Cameron was awarded the National Council of Examiners for Engineering and Surveying (NCEES) Distinguished Examination Service Award for "his dedicated service to NCEES and the engineering profession." A professor at Univ. of Wyoming and professional engineer, he's been an NCEES volunteer since 2000, had a 30-year military career, and taught at the U.S. Air Force Academy.

NEW JERSEY BETA '12

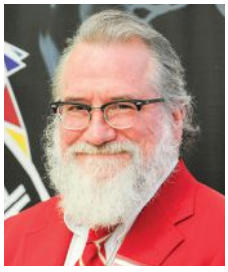
Parth H. Oza P.E.

Parth was awarded the Distinguished Young Alumnus Award at the 2024 Rutgers School of Engineering Medal of Excellence Alumni Awards Dinner. He is assistant commissioner, Capital Program Management at NJ Department of Transportation and serves as TBΠ Central Jersey Alumni Chapter VP and past NJ Beta Chapter VP.

NORTH CAROLINA ALPHA '85

Adm. Daryl L. Caudle Ph.D., P.E.

Daryl received the Distinguished Engineering Alumni Award from North Carolina State University. Promoted to Admiral (four-star rank) in 2021, he assumed command of U.S. Fleet Forces Command, a role that includes managing a $16 billion budget, responsibility for 125,000 sailors & civilians, 125 ships & submarines, and 1,000 aircraft.



NORTH CAROLINA ALPHA '83

Robert E. Troxler Ph.D.

Robert was named a North Carolina State University Distinguished Engineering Alumni Award recipient. As director of advanced technologies at Troxler Electronic Laboratories in Research, he concentrates on optics, sensor design & applications of nuclear physics, and holds 80+ U.S. and international patents.

MICHIGAN BETA '76

Guy C. Jeske P.E.

Guy was inducted into the Oconto Falls High School Wall of Fame in Wisconsin. He had a 43-year career in the mining and explosives industries focused on best practices in mining operations and maintenance. He retired as a Mine Safety and Health Administration inspector and earned his B.S. degree in geological engineering from Michigan Tech.

WYOMING ALPHA '60

Raymond G. Jacquot Ph.D., P.E.

Raymond received a 2024 Distinguished Examination Service Award from NCEES. He contributed to the development of the FE exam for 25 years and served terms as chair and vice chair of the FE Electrical & Computer subcommittee. Raymond is a Professor Emeritus at the Univ. of Wyoming, with expertise in vibration and structural dynamics and a WY Alpha Chapter Advisor.

Send news about promotions, honors, civic activities, weddings, etc. to Tau Beta Pi, P.O. Box 2697, Knoxville, TN 37901-2697 or to tbp.media@tbp.org. Deadlines: February 1 for **Spring** issue and May 1 for **Summer** issue. Include a recent headshot, name, address, chapter/class year, and email address or phone number. We cannot accept graduation announcements. Thank you!

Highlight: A Family Farm of Engineers

Trattore Farms is located in Geyserville, California, and includes the Dry Creek Olive Company, founded in 2006, and Trattore Wines, founded in 2012. Part of the land was an olive ranch in the 1850s and a few trees from that original planting are still there. To bring back the heritage of the land, the Bucher family planted more trees and imported an olive mill from Italy to press olives into oil. Having started development in 1999, they are celebrating 25 years since inception.

Mary Louise Bucher, *CA Z '87*, and **Timothy Bucher,** *CA L '86*, oversee the farm and have had assistance from their children Jenna, Mikayla, and **Steven,** *CA Z '21*, who is currently a product manager at Microsoft. "We were thrilled to raise the children on the farm and help build it as a family," Tim said. "It's a great life, and they got to experience a well-grounded lifestyle and appreciation for hard work." (2023, New Holland)

The Bucher family (left to right): Steven, Mikayla, Mary, Jenna, and Tim.

Mary Louise was recently profiled by *The Press Democrat* detailing her work as owner of Trattore Farms and her engineering past. She has B.S. and M.S. degrees in electrical engineering, worked at Hewlett-Packard, and her father **Louis Reginato,** *CA Z '60* was also an engineer. Now a master miller, Mary Louise oversees every aspect of the olive oil business, from planting and maintenance to creating new blends, designing and writing labels, and coordinating all milling and bottling operations, as well as tours and tastings.

Tim is CEO of Agtonomy, a hybrid autonomy and tele-assist platform for agriculture vehicles, and also serves as president of Trattore Farms. His engineering degrees, a B.S. in computer & electrical engineering and M.S. in computer architecture, have led him to create several successful high-tech companies. In a 2023 profile, Tim said he has used his tech knowledge to improve efficiency at Trattore Farms, including the design of a water recycling plant to handle all the production water used in the wine cellar and olive mill.

The name Trattore (image right) comes from the translated Italian word for tractor and the farms are located on 40 acres of rolling hillsides in Dry Creek Valley (image below). Visitors can enjoy a 360 degree valley view, delicious food pairings, and a diverse array of award-winning wines and olive oils. More information is available at: https://trattorefarms.com/.

2025 DISTRICT CONFERENCE SCHEDULE

District 1: *April 5-6*
VT Alpha – Burlington

District 2: *April 5-6*
NY Tau – Binghamton

District 3: *April 11-12*
PA Gamma – TBD

District 4: *April 4-5*
NC Alpha – Raleigh

District 5: *March 1-2*
FL Alpha – Gainesville

District 6: *February 7-8*
TN Gamma – Cookeville

District 7: *April 4-5*
MI Kappa – Kalamazoo

District 8: *April 12-13*
IL Beta – Chicago

District 9: *March 8*
MO Beta – Rolla

District 10: *April 12*
LA Alpha – Baton Rouge

District 11: *April 12*
MN Alpha – Minneapolis

District 12: *March 8-9*
ID Gamma – Boise

District 13: *April 5*
NM Beta – Albuquerque

District 14: *February 22-23*
OR Gamma – Portland

District 15: *March 8*
CA Lambda – Davis

District 16: *February 22-23*
CA Nu – Pomona

Note: Conference dates are subject to change. For the latest information, check our website at:
www.tbp.org/districts.cfm#conf-schedule

THE BENEFITS OF MEMBERSHIP

See the complete list at:
www.tbp.org/member-benefits.cfm

AMBITION IN MOTION:
A mentorship program for students and alumni to help form professional connections for guidance.

DELL: Discount program on Dell branded personal products, electronics, and accessories. See **back cover**.

HP: partnership providing discounts on HP equipment. See **page 29** for more details.

LOCAL HOSPITALITY:
Access to a worldwide inventory of hotels at exclusively discounted rates.

PPI: 20 percent discount on preparation materials for the FE/EIT and PE licensing exams.

CIVIL SERVICE: Receive automatic entry-level advancement of U.S. Government applicants to GS-7.

LINKEDIN: Join 36,900 members in our official group for professional networking and career discussions (search: Tau Beta Pi Engineering Honor Society).

TAU BETA PI JOB BOARD:
Post a resume online and browse hundreds of engineering jobs at top companies.

EXECUTIVE COUNCIL MEETING MINUTES

Continued from page 45

Laureate Report Update:
The Council received an updated report from the Laureate Selection Subcommittee who worked with the Director of Finance and Operations, Michael A. Brown to obtain the missing information for some of the nomination packets. The committee recommended naming an additional two Laureates beyond the two named in June. The full list of approved Laureates are: **Maxine Dupuis,** *NY N '23*, Athletics; **Alexander Francisco,** *NY N '24*, Arts; **Gwyneth Schloer,** *VA B '22*, Diverse Achievements; and **Mitchell Sueker,** *SD A '23*, Athletics.

New Business

- EC Candidate Interview Video Proposal – based on the recommendation from a DD, President Alexander presented a proposal to conduct video interviews with Council candidates which would be posted online and distributed to members. After feedback and recommendations, the consensus of the Council was to not move forward with the videos.
- The Council discussed implementing an off-boarding process for volunteers which could include an exit interview. The Council also discussed creating a mechanism for volunteers to share concerns with the Council.
- The Crowe audit for 2020 and 2021 fiscal years, with supporting materials, was presented by Mr. Gomulinski and he noted that this is one of the financial reports that should be carefully considered and approved by the Council.

COLLEGIATE CHAPTERS

263 COLLEGIATE CHAPTERS
257 ACTIVE — 641,104 MEMBERS

*6 Inactive chapters shown in **BLUE***

Α = ALPHA
Β = BETA
Γ = GAMMA
Δ = DELTA
Ε = EPSILON
Ζ = ZETA
Η = ETA
Θ = THETA
Ι = IOTA
Κ = KAPPA
Λ = LAMBDA
Μ = MU
Ν = NU
Ξ = XI
Ο = OMICRON
Π = PI
Ρ = RHO
Σ = SIGMA
Τ = TAU
Υ = UPSILON
Φ = PHI
Χ = CHI
Ψ = PSI
Ω = OMEGA

AL ALPHA Auburn University
BETA University of Alabama
GAMMA Univ. of Ala. at Birmingham
DELTA Univ. of Ala. in Huntsville
EPSILON Univ. of South Alabama
AK ALPHA Univ. of Alaska Fairbanks
AZ ALPHA University of Arizona
BETA Arizona State University
GAMMA Northern Arizona University
DELTA Embry-Riddle Univ., Prescott
AR ALPHA University of Arkansas
BETA Univ. of Ark. at Little Rock
CA ALPHA UC Berkeley
BETA Calif. Institute of Technology
GAMMA Stanford University
DELTA University of Southern Calif.
EPSILON UC Los Angeles
ZETA Santa Clara University
ETA San Jose State University
THETA Calif. State Univ., Long Beach
IOTA Calif. State Univ., Los Angeles
KAPPA Calif. State Univ., Northridge
LAMBDA UC Davis
MU Calif. Poly St. Univ., San Luis Obispo
NU Calif. State Poly Univ., Pomona
XI San Diego State University
OMICRON Loyola Marymount Univ.
PI Northrop University (inactive)
RHO California State Univ., Fresno
SIGMA UC Santa Barbara
TAU University of California, Irvine
UPSILON Calif. St. Univ., Sacramento
PHI University of the Pacific
CHI California State Univ., Fullerton
PSI UC San Diego
OMEGA Harvey Mudd College
ALPHA ALPHA Calif. St. Univ., Chico
ALPHA BETA UC Riverside
ALPHA GAMMA San Francisco St. Univ.
ALPHA DELTA UC Santa Cruz
ALPHA EPSILON Univ. of San Diego
CO ALPHA Colorado School of Mines
BETA Univ. of Colorado at Boulder
GAMMA University of Denver
DELTA Colorado State University
EPSILON Univ. of Colorado at Denver
ZETA U.S. Air Force Academy
CT ALPHA Yale University
BETA University of Connecticut
GAMMA University of Hartford
DE ALPHA University of Delaware
DC ALPHA Howard University
BETA Catholic Univ. of America
GAMMA George Washington Univ.
FL ALPHA University of Florida
BETA University of Miami
GAMMA University of South Florida
DELTA University of Central Florida
EPSILON Florida Atlantic University
ZETA Florida Institute of Technology
ETA FL A&M Univ.-FL State Univ.
THETA Florida International Univ.
IOTA Embry-Riddle Aero. Univ.
GA ALPHA Georgia Institute of Technology
BETA Mercer University
GAMMA Georgia Southern Univ.
DELTA University of Georgia
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.
KAPPA Merrimack College
MI ALPHA Michigan State University
BETA Michigan Technological Univ.
GAMMA University of Michigan
DELTA University of Detroit Mercy
EPSILON Wayne State University
ZETA Kettering University
ETA Lawrence Technological Univ.
THETA Oakland University
IOTA Univ. of Michigan-Dearborn
KAPPA Western Michigan Univ.
LAMBDA Grand Valley State Univ.
MN ALPHA Univ. of Minnesota-Twin Cities
BETA Univ. of Minnesota, Duluth
MS ALPHA Mississippi State University
BETA University of Mississippi
MO ALPHA Univ. of Missouri-Columbia
BETA Missouri Univ. of Science & Tech.
GAMMA Washington University
DELTA Univ. of Missouri-Kansas City
EPSILON Saint Louis University
MT ALPHA Montana State University
BETA Montana Tech. of the Univ. of MT
NE ALPHA Univ. of Nebraska-Lincoln
NV ALPHA University of Nevada, Reno
BETA Univ. of Nevada, Las Vegas
NH ALPHA Univ. of New Hampshire
BETA Dartmouth College
NJ ALPHA Stevens Institute of Technology
BETA Rutgers University
GAMMA New Jersey Inst. of Tech.
DELTA Princeton University
EPSILON Rowan University
ZETA The College of New Jersey
NM ALPHA New Mexico State University
BETA University of New Mexico
GAMMA NM Inst. of Mining & Tech.
NY ALPHA Columbia University
BETA Syracuse University
GAMMA Rensselaer Polytechnic Inst.
DELTA Cornell University
EPSILON New York Univ. (inactive)
ZETA Brooklyn Polytechnic (inactive)
ETA City College of CUNY
THETA Clarkson University
IOTA Cooper Union School of Eng'g.
KAPPA University of Rochester
LAMBDA Pratt Institute (inactive)
MU Union College
NU SUNY at Buffalo
XI Manhattan College
OMICRON SUNY at Stony Brook
PI Rochester Institute of Tech.
RHO NYU Tandon School of Eng'g.
SIGMA Alfred University
TAU Binghamton University
UPSILON U.S. Military Academy
NC ALPHA North Carolina State Univ.
BETA Univ. of North Carolina (inactive)
GAMMA Duke University
DELTA Univ. of NC at Charlotte
EPSILON NC A&T State University
ZETA East Carolina University
ETA Western 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
QATAR ALPHA Texas A&M Univ. at Qatar
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
ETA Lipscomb University
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
UAE ALPHA American Univ. of Sharjah
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 Wlisconsin-Milwaukee
DELTA Milwaukee School of Eng'g.
EPSILON Univ. of Wisconsin-Platteville
WY ALPHA University of Wyoming

ALUMNI CHAPTERS

82 ALUMNI CHAPTERS
52 ACTIVE

*30 Inactive chapters shown in **BLUE***

DISTRICT 1
Central CT, Hartford
Greater Boston Area, MA

DISTRICT 2
Buffalo, NY
Central Jersey, NJ
Long Island 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
Charlotte, NC
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
Southwest FL
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

DISTRICT 7
Columbus, OH
Dayton, OH
Flint, MI
Ohio's North Coast, Cleveland
SE Michigan, Detroit
West Michigan, Grand Rapids

DISTRICT 8
Chicago Area, IL
Central Illinois, Urbana-Champaign
Indianapolis, IN
Milwaukee Area, WI

DISTRICT 9
Kansas City, KS
Pioneer, OK
Rolla, MO
Scissortail, OKC-Norman OK
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

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