APL Achievement Awards and Prizes: The Lab's Top Inventions, Technical Breakthroughs, and Staff Achievements for 2023 and 2024

APL Staff Writers

ABSTRACT

The Johns Hopkins University Applied Physics Laboratory (APL) is dedicated to delivering game-changing technical solutions to our nation's most critical challenges. In addition to making technical contributions, APL staff members advance enterprise services, participate in and expand a robust innovation ecosystem, and embody the organization's core values in their work. Every year the Laboratory honors staff members' accomplishments with an awards program. This article details the awards presented for achievements in 2023 and 2024.

INTRODUCTION

APL honored a total of nearly 360 staff members for their exceptional contributions in 2023 and 2024. Staff members received awards for outstanding work in areas such as publications, research and development, innovation, invention, and mission-driven programs. A new award debuted for 2023: The Courageous Achievement Award recognizes significant contributions to APL or the nation that exemplify courage, integrity, and leadership.

This article details the 2023 and 2024 awards and winning staff members. Although some of the honored efforts would not have been possible without external collaborators, the awards program is limited to current APL staff members, so only those contributors are named.

PUBLICATION AWARDS

The publication awards, first presented in 1986, are the genesis of APL's annual Achievement Awards program. Administered by the *Johns Hopkins APL Technical Digest* editorial board, these awards encourage and celebrate scholarship through publication in the professional literature. Departments and sectors may submit up to two nominations in each of the eight award categories. Judges consider nominated works' significance and clarity, emphasizing publications that significantly advance science, engineering, or APL's mission.

Author's First Paper in a Peer-Reviewed Journal or Proceedings

This award recognizes an early-career investigator who has published their first paper as lead author at APL. The award for a 2023 publication went to Gabriella Hunt for "High Emissive Contrast of Adaptive, Thin-Film, Tungsten-Doped VO_2 Composites."[1] This paper describes APL researchers' work to develop a highly efficient adaptive thermal management solution by utilizing novel phase-change material. The design parameters they explored and selected will enhance the performance of thermal management devices, ultimately reducing total energy consumption in homes and industries.

SPECIAL FEATURE

The 2024 award went to Carlos Braga for "A Coronal Mass Ejection Impacting Parker Solar Probe at 14 Solar Radii."[2] This paper describes the novel analysis and unprecedented measurements Parker Solar Probe made while crossing through a solar transient within the solar corona. These findings clarify long-standing questions on coronal mass ejection structure with important implications for space weather analyses.

Outstanding Paper in the *Johns Hopkins APL Technical Digest* (The Walter G. Berl Award)

This award recognizes excellence in APL's own technical journal, which has been published since 1961. The honor is named for Walter Berl, who was editor-in-chief of the *Digest* when the publication awards program was created and who oversaw the program for many years.

Winners for 2023 were Andrew Cheng, Ralph McNutt, and Harold Weaver for "Science Highlights from NASA's New Horizons Mission."[3] The paper details science discoveries from New Horizons, the first mission to explore Pluto and the Kuiper Belt. The mission transformed our understanding of Pluto and its giant moon Charon from mere points of light into geologically complex worlds formed of exotic materials. It revealed the Kuiper Belt object Arrokoth to be a comet "contact binary" with an organic-rich surface.

The were two winning publications in 2024. The first was "A Multidimensional Cyber Threat Scenario Enumeration Model for Resilience Engineering" by Anurag Dwivedi.[4] This article describes a threat scenario characterization and enumeration approach that does not rely on intelligence or threat databases and allows for tailored abstraction of threat scenarios to inform mitigation decisions and facilitate cybersecurity and resilience engineering. The second award was presented to Khamphone Inboune, S. John Lehtonen, Nicholas Nowicki, and Vanessa Rojas for "Microelectronics Packaging at APL: Delivering Custom Devices for Critical Missions."[5] This paper highlights APL's advancements in microelectronics packaging, focusing on custom, high-reliability solutions for mission-critical applications. It details novel processes, such as laser cutting and hermetic sealing, and showcases contributions to key programs, such as NASA's Double Asteroid Redirection Test (DART) and Dragonfly missions, emphasizing APL's unique capabilities in prototyping and delivering specialized devices.

Outstanding Research Paper in an Externally Refereed Publication

This award recognizes research, including investigations in basic and applied science and engineering, published in a peer-reviewed journal. The 2023 award went to Elena Adams, Olivier Barnouin, Nancy Chabot, Michelle Chen, Andrew Cheng, Terik Daly, Carolyn Ernst, Zachary Fletcher, Mark Jensenius, and Andrew

Rivkin for "Successful Kinetic Impact into an Asteroid for Planetary Defence," published in *Nature*.[6] This paper describes the DART spacecraft's autonomous kinetic impact into Dimorphos, a small moon of the near-Earth asteroid Didymos. Details include the timeline leading up to impact, the location and nature of the impact site, and the size and shape of Dimorphos. The impact event and the resulting change in Dimorphos's orbit demonstrated that kinetic impactor technology is a viable technique to defend Earth if necessary.

The award for a 2024 publication went to another DART paper, this one by Ronald Ballouz, Olivier Barnouin, Nancy Chabot, Andrew Cheng, Terik Daly, Carolyn Ernst, Andrew Rivkin, and Angela Stickle and titled "The Geology and Evolution of the Near-Earth Binary Asteroid System (65803) Didymos."[7] This paper describes the physical properties of Didymos and its moon Dimorphos, which were analyzed using data collected during DART's Dimorphos encounter and deflection demonstration. Didymos is mechanically weak, similar to other small rubble pile asteroids, and Dimorphos is even weaker, probably as a result of its formation from loose debris from Didymos.

Outstanding Development Paper in an Externally Refereed Publication

This award celebrates development efforts, including applications of science or engineering to the development of a system or a specific product or prototype, published in a peer-reviewed journal. The 2023 award went to Robert Armiger, Matthew Fifer, Priya Gajendiran, Meiyong Pelos, Courtney Moran, Harrison Nguyen, Luke Osborn, Jonathan Pierce, Richard Ung, Rama Venkatasubramanian, and Jared Wormley for "Evoking Natural Thermal Perceptions Using a Thin-Film Thermoelectric Device with High Cooling Power Density and Speed," published in *Nature Biomedical Engineering*.[8] The paper describes how APL researchers used novel thin-film thermoelectric devices, robotic systems, and targeted neurostimulation to enable amputees to intuitively perceive the temperature of objects they grasped with an advanced prosthesis. Evoking thermal sensations at biologically relevant timescales will help achieve advanced human–machine interfaces with enhanced realism and function.

Winners of the 2024 award were Debra Buczkowski, Katie Hancock, Yuki Itoh, Alexandra Matiella Novak, Frank Morgan, Scott Murchie, A. Hari Nair, Frank Seelos, Kim Seelos, and Christina Viviano for "The CRISM Investigation in Mars Orbit: Overview, History, and Delivered Data Products."[9] The APL-designed, -built, and -operated CRISM instrument and associated data have provided spectra that demonstrate the mineralogy of the surface of Mars. This paper details the wealth of data the CRISM instrument collected over the roughly 15 years that it operated.

Outstanding Professional Book

This award recognizes outstanding books written by APL staff members. The award for a 2023 book went to Edward Birrane, Sarah Heiner, and Kenneth McKeever for *Securing Delay-Tolerant Networks With BPSec*, published by John Wiley & Sons.[10] This book examines how delay-tolerant networks can be secured when operating in environments that would otherwise break many of the common security approaches used on the terrestrial internet today. The text includes considerations and tutorials for deploying Bundled Protocol Security, or BPSec, in both regular and delay-tolerant networks.

There were no nominations in this category for 2024.

Outstanding Special Publication

This award recognizes publications and publication activities, such as book chapters, review papers, tutorials, and book or proceedings editorship, that are outside of the other publication award categories. The award for a 2023 special publication went to Robert Allen, Robert Decker, Russell Howard, Vamsee Jagarlamudi, James Kinnison, Nour Rawafi, Guillermo Stenborg, and Angelos Vourlidas for "Parker Solar Probe: Four Years of Discoveries at Solar Cycle Minimum," published in *Space Science Reviews*.[11] This publication summarizes the scientific advances NASA's Parker Solar Probe made mainly during the first four years of the mission.

The winner for a 2024 publication was Adrienn Luspay-Kuti, editor of the book *Triton and Pluto: The Long Lost Twins of Active Worlds*.[12] Neptune's moon Triton and the dwarf planet Pluto are near-twins with similar but distinct histories. This book, which Luspay-Kuti coedited with a former APL staff member, captures the current state of knowledge of these two worlds and is an important reference on Kuiper belt objects and ice giant planets.

Outstanding Conference Publication

This award emphasizes the value of participating in conferences to meet colleagues and establish professional contacts. The 2023 award went to Michelle Chen, Musad Haque, Stephen Jenkins, Mark Jensenius, Daniel O'Shaughnessy, Carolyn Sawyer, and Emil Superfin for "SMART Nav Guidance: Ensuring Asteroid Impact for the DART Mission," published in the *Proceedings of the 45th Annual American Astronautical Society Guidance and Control Conference*.[13] This paper describes the APL-developed Small-body Maneuvering Autonomous Real-Time Navigation, or SMART Nav, system that performed onboard, autonomous asteroid detection, targeting, and guidance during DART's four-hour terminal phase, enabling successful intercept.

The winners for a 2024 conference publication were Samuel Audia, Benjamin Estacio, Rachel Hartig, Greta Kintzley, Matt Landes, and Aayush Sharma for "Hypervelocity Impact Properties of Polyimide Aerogels for Space Debris Shielding and Capture," published in *Proceedings of the 2024 IEEE Aerospace Conference*.[14] This paper describes RAVIOLI (Removing Articles Via In-situ On-orbit Localized Impacts), a technology that leverages the properties of aerogels and Kevlar materials to protect against a wide range of small particle impacts in space. Research has validated RAVIOLI as a candidate for spacecraft shielding, and current work is extending its use to hypersonic reentry systems.

Lifetime Achievement Publication Award

This award honors an author's career of achievement through a substantial body of publications that are significant in terms of peer recognition, prizes, citation frequency, or influence on the innovation ecosystem. For 2023, APL honored two staff members with this prestigious award: Barry Mauk,[15] for his extensive and insightful writing on space missions spearheaded by APL, illuminating the complexities and triumphs of space exploration; and Donald G. Mitchell,[16] for advancing our understanding of the solar system through his prolific contributions and significant research in planetary science and astrophysics.

For 2024, Brian Anderson,[17] a space physicist and magnetic field measurement scientist, was recognized for his contributions to the geosciences community through participation in more than 300 scientific publications as either lead or contributing researcher.

R. W. HART PRIZES FOR EXCELLENCE IN INDEPENDENT RESEARCH AND DEVELOPMENT

The Hart Prizes—first presented in 1989 and named for former APL assistant director for research and exploratory development Robert W. Hart—recognize significant contributions that advance science and technology through independent research and development. Sectors and departments recommend candidates, and managing executives judge the nominations on their quality and importance to APL. Prizes are awarded in two categories: best research project and best development project.

Best Research Project

The 2023 award went to Brian Bittner, Scott Gibson, Michael Kepler, Zachary Kurtz, Varun Madabushi, Christopher Moran, Jason Reid, Lee Schloesser, and Nick Zielinski for "Advanced Perception and Control for Autonomous UUV Manipulation."

The award for the best research project in 2024 went to Rachel Altmaier, Stav Elazar Mittelman, Diarny Fernandes, Konstantinos Gerasopoulos, Evan Jacque, Michael Jin, Richard Korneisel, Courtney McHale, Adam Simmonds, and Jason Tiffany for "FABRICS: Fiber Architecture Breakthroughs In Conversion and Storage."[18]

Best Development Project

Winners for 2023 were Curt Albert, Scott Gibson, John Lindemon, Toni Salter, Andrew Skow, Paul Stankiewicz, and Vivek Viswanathan for "USV Perception and Autonomy Development and Demonstration."

The 2024 honor went to Daniel Berman, Tom Curtis, Laura Dunphy, Rickey Egan, Libby Lewis, and Diego Luna for "Fung-AI: AI/ML-Driven Antifungal Discovery."

INVENTION OF THE YEAR

The Invention of the Year Award was first presented in 2000 to encourage new technology and innovation at APL. To identify the top technology from the preceding year, an independent review panel judges invention disclosures. The judges, including technical and business consultants, technology transfer professionals, and intellectual property attorneys, assess inventions' creativity, novelty, improvement to existing technology, commercial potential, and probable benefit to society.

Winners for their 2023 invention were Jarod Gagnon, Lisa Pogue, and Scott Shuler for "Method for Recycling Rare Earths from End-of-Life Electronics."

The award for the best 2024 invention went to Alexander Beall and Harley Parkes for "Behavioral Alerting Sets for Control Systems (BAS/CS)."

MASTER INVENTOR AWARD

Lab management first presented the Master Inventor Award in 2007 to honor those staff members who have demonstrated a career of innovation with 10 or more patents based on APL intellectual property. To date, only 35 staff members have attained the honor. The two newest master inventors are Konstantinos Gerasopoulos and Robert Osiander.[19] Among Gerasopoulos' notable patents are an unbreakable, incombustible lithium-ion battery; battery- and solar-powered fibers; and a safe, high-energy-density battery anode. Osiander's patents address a range of challenges and gaps, from biomedical innovations to novel materials to navigation tools.

GOVERNMENT PURPOSE INVENTION

The first Government Purpose Invention Award, recognizing an invention that meets a critical sponsor need, was presented in 2011. Selected by a team of technical leaders from across the Lab who are acquainted with APL's technology transfer practices, finalist inventions are judged on their novelty and potential impact to the sponsor community.

The award for 2023 was presented to Timothy Allensworth, Jonathan Bierce, Raymond Lennon, Matthew Shanaman, Clara Smart, Christopher Stiles, and Steven Storck for "Novel Additive Structures for Pressure Vessels."

Winners for a 2024 invention were Chuck Forrest, Christopher Gardner, Christopher Gifford, Juliana Illingworth, Zachary Kurtz, Jonathan Ligo, Samim Manizade, Denise Nemenz, Hee Won Pak, and Adam Watkins for "Tactical Agile Model Refinement (AMR)."

PROJECT CATALYST AWARDS

To position the organization to respond to increasingly complex national challenges and to capitalize on rapid technological advances, APL's leaders have introduced several initiatives to encourage innovation.[20] One of these initiatives, Project Catalyst, offers staff members three funding opportunities for bold, high-risk, transformational ideas that will ensure our nation's preeminence in the 21st century. Staff members submit ideas in response to challenges posted during several cycles throughout the year. Peers and leaders vote on the submissions, and finalists receive funding to develop their ideas. Awards recognize excellent work funded through Project Catalyst.

Ignition Grant Prize for Innovation

The inaugural Project Catalyst award, the Ignition Grant Prize, was presented for the first time in 2013 for the Ignition Grant project judged to be most creative and to have the greatest potential impact.

The winners of the 2023 prize were Xiomara Calderón-Colón, Spencer Langevin, and Michael D. Sherburne for "Strain Sensing Nanomaterial-Based Paint (SSNaP) for Naval Applications."

For a 2024 project, Xiomara Calderón-Colón, Christine Chung, Savannah Est-Witte, Corrine Fuller, and Sarah Ton were recognized for "Lab Veins: Vasculature Model for Cell Growth."

Combustion Grant Prize for Innovation

The Combustion Grant Prize, first presented in 2017, recognizes high-risk, high-impact technical ideas.

The award for 2023 went to Denise Hoover, Nicholas Pavlopoulos, and Nathan Rafisiman for "N2A: Nitrogen-to-Ammonia for Sustainable Energy."

Daniel Berman, Amanda Ernlund, and Libby Lewis won for their 2024 project "MutaGAN: Boosting Seasonal Vaccines with Deep Learning Farther."

Propulsion Grant Prize for Innovation

And, finally, presented for the first time in 2018, the Propulsion Grant Prize honors ideas that were selected for their third year of Propulsion Grant funding.

The first 2023 prize went to Ben Baker, Bryan Bates, Daniel Binion, Richard Maltagliati, and Andrew Raab for "Poseidon's Net Raid Neutralizer." The second was

presented to Ian Bird, Molly Gallagher, Sarah Grady, Mika Helfers, and Jessica Resnick for "Immunity Twin: Developing Parallel Biological and Computational Immunological Model Systems." And the third 2023 prize went to Matthew Bailey, Walter Kelso, Ryan Seery, Daniel Shaefer, and Dajie Zhang for "Omega Prime – Reconfigurable Equipment Section."

For 2024, the first prize went to Jeffrey Garstecki, John Hamilton, Stephen Mitchell, Olukayode Okusaga, and Sam Reynolds for "Neural Networked Clock Ensemble for Coherent Sensing." Rylie Bull, Dawn Graninger, Max Harrow, Sabrina Pellegrini, and Devin Protzko for were awarded a 2024 prize for "LOCUST: Lots Of Cubesats Used to Survey a Target." And Nick Andrejow, Sean Bailey, Michael Herman, Brice Pridgen, and Bryan Rex won for "Deep Diving Tuna — Targeting Demersal Objects."

MISSION ACCOMPLISHMENT AWARDS

The Outstanding Mission Accomplishment Awards, first presented in 2014, recognize major achievements in mission-oriented programs and projects. Awards are given in two categories: a current challenge and an emerging challenge. For both types, a review team of managers and executives from APL's sectors and mission areas solicits nominations for technical accomplishments in sponsored programs during the previous year. A program has to have achieved a significant milestone within the previous fiscal year to be eligible. The panel judges entries on technical excellence and potential impact.

Outstanding Mission Accomplishment for a Current Challenge

The 2023 award went to core team members Timothy Allensworth, TJ Coleman, Matthew DeHart, Douglas Haefeli, Justin Jones, Dillon Kasmer, Andrew Miller, David Orr, Thomas Sherman, and Tony Zampardo for "Anguilla."

Two awards were presented for 2024 challenges. The first went to Simmie Berman, Carl Engelbrecht, Stuart Hill, Taejoo Lee, Adrienn Luspay-Kuti, Thomas Magner, Joseph Niewola, Sofia Stachel, Zibi Turtle, and Kyle Weber for "NASA's Europa Clipper Mission." The second was presented to E. David Beksinski, Brad Couto, Emily Gotowka, Matthew Kazanas, Armen Melikian, Eric Reidelbach, Josey Stevens, and Eric Uthoff for "Real-World Cell for Middle East Defensive Operations."

Outstanding Mission Accomplishment for an Emerging Challenge

The 2023 award was presented to core team members Teck Choo, Chuong Dang, Mo DeVillier, Barry Fridling, Mick Marana, Trystan May, Dante Sanaei, Jack Santori,

Joshua Sloane, and Benjamin Waida for "Electromagnetic Maneuver Warfare Capabilities for Zumwalt."

The 2024 award went to Daniel Araya, Dennis Berridge, Cameron Butler, Parth Kathrotiya, Rubbel Kumar, Prasad Kutty, Gregory McKiernan, John Melcher, Bradley Wheaton, and Thomas Wolf for "Boundary Layer Transition (BOLT-1B) Flight Experiment."[21]

ALVIN R. EATON AWARD

The Alvin R. Eaton, or A – R – E, Award has been presented annually since 2001 but was not presented publicly during the awards ceremony until 2016. It honors staff members who have spent much of their careers leading remarkable achievements that we cannot talk about openly. Awardees are selected by APL's director and assistant director for programs. The award is named for Al Eaton, who worked at APL for more than 65 years and, among other achievements, helped establish APL's highly sensitive program structure. The A – R – E Award was first presented to Eaton himself.

The 2023 award went to Russell Popkin for delivering technical analysis and revolutionary system capabilities for service and joint sponsors.

The 2024 honor was presented to Robert Reichert for his extraordinary contributions to homeland defense.

ENTERPRISE ACCOMPLISHMENT AWARD

The Enterprise Accomplishment Award, first presented in 2015, recognizes the enterprise accomplishment with the greatest impact on APL's operations and culture of innovation. Winners are selected by a joint panel of APL's operations executives and managing executives.

Winners for a 2023 accomplishment were David Casselbury, David Harper, Kristine Harshaw, Scott Kim, Jillian Kingwood, Julia Mooney, Sylvie Porter, Gregory Schilsson, and Briana Vecchio-Pagán for "Slack Enterprise Launch and Adoption."

The 2024 award went to Kenny Carter, Claire DeSmit, Janeen Kawabata, Lee Lachman, Christen McBeth, and Michelle Shirey for "Campus Enterprise Wayfinding Initiative."

DIRECTOR'S AWARD FOR SPECIAL ACHIEVEMENTS

Sometimes a major accomplishment is outside the usual award categories. The Director's Award for Special Achievements recognizes such accomplishments. This award was first presented in 2017.

The 2023 award went to Garret Bonnema, Michael S. Brown, Benjamin Henty, Sara Margala, Katherine Newell, Xochitl Oliveros, Vincent Pagán, Daniel Tebben, Chad Weiler, and Christine Zgrabik for "TAMERLANE."

Two awards were presented for 2024. The first went to Matthew Cross, Kelly DeLawder, Radmil Elkis, Chad Orbe, and Gregory Stabler for "GroundHog Day." The second award was presented to Kharl Bocala, Jonathan Graf, Peter Green, Andy Im, Randy Maurizio, William McCollom, Jerry Richard, Eric Schuler, Mac Sparks, and Rose Trepkowski for "AMDS Special Study Team."

THE "BOLDIES"

In early 2018, APL management asked a team of technical leaders and contributors for recommendations to increase APL's boldness. This group, Team Bold, proposed instituting two formal awards to celebrate boldness.

Bumblebee Award

The first award, the Bumblebee Award, recognizes improbable designs that had remarkable results, much like APL's historic Bumblebee program, whose name was inspired by a quote attributed to aviation pioneer Igor Sikorsky: "According to recognized aerotechnical tests the bumblebee cannot fly because of the shape and weight of his body in relation to the total wing areas. BUT, the bumblebee doesn't know this, so he goes ahead and flies anyway."

Winners for 2023 were Brad Bazow, Mary Daffron, Daniel Eby, Samuel Gonzalez, Andrew Lennon, Kyle Lowery, Salahudin Nimer, Vincent Pagán, Michael Pekala, and Steven Storck for "Debunking Current Military Specifications for Additive Manufactured (AM) Part Qualification."

The 2024 award recognized Andrew DiPrinzio, Brandon Filo, Manav Gandhi, Tyler Golden, Rachel Hartig, Garrett Krol, John O'Neill, William Shaw, Zachary Sweep, and Paul Venginickal for "SOUL TRAIN."

Noble Prize

The second award in this category, the Noble Prize, celebrates work that was not fully successful but yielded valuable lessons. Its name is a play on Nobel Prize and noble failure.

The award for 2023 was presented to Hannah Collins, Zachary Kiick, Steven Knowlden, Brian Koronkiewicz, Allison Moyer, and Scott Shuler for "OLD BAE: Operable Ligands for Decontaminating Befouled Aquatic Environments."

For 2024, Jenny Boothby, Avi Bregman, William Fahy, Collin McClain, Nicholas Pavlopoulos, Nathan Rafisiman, Elizabeth Robinson, Clare Sabata, and Alexander Yuan were recognized for "Green Concrete: Handling CO_2 Nature's Way."

LIGHT THE FUSE AWARD

The Light the FUSE Award was first presented during the 2021 ceremony. This award recognizes significant contributions that promote a positive culture at the Laboratory, increasing APL's potential for innovation.

The award for 2023 was presented to David Díaz Márquez, Teresa Johnson, Hannah Kowpak, Ronald Ostrenga, Robin Qualls, Krista Rand, and Katie Zaback for "APL Accessibility Map Project."

The 2024 award went to Greyson Brothers, Paul Hage, David Helmer, Sage Jessee, Willa Mannering, Griffin Milsap, Harrison Nguyen, Martin Veloso, Kerstin Vignard, and Robert Wilson for "Human–Machine Teaming Testbed."

ANALYTICAL ACHIEVEMENT AWARD

The Analytical Achievement Award was first presented during the 2022 ceremony. It recognizes the most insightful analytic work that resulted in a critical contribution to a government decision-maker or program.

Two teams were recognized in 2023: Dylan Carter, Bill Lee, Chris Najmi, Tahzib Safwat, John Schmidt, and Naruhisa Takashima for applying analysis to inform the establishment of a partnership between the United States and Japan; and Stephanie Allen, Xander Dawson, Jim Farrell III, Eric Gerdes, Jason Miller, Joshua Mueller, Jared Ott, Kevin Peters, and Andrew Ridenour for leading an effort to develop system-of-system requirements for the US Navy and US Air Force.

The 2024 award went to Richard Arnold, Dennis Evans, Matthew Lytwyn, and Mitch Nikolich for critical analysis of a novel adversary threat.

COURAGEOUS ACHIEVEMENT AWARD

The Courageous Achievement Award was established in 2023 to recognize significant contributions to APL or the nation that exemplify courage, integrity, and leadership in how staff members engage with colleagues and serve the Laboratory or its sponsors. Winners are selected by the director, assistant directors, and chief of staff.

Two awards were presented for 2023. The first award went to Tyler Boehmer, David Frankford, Yuriy Noyvert, Katrina Roarty, Antonio Trujillo Parra, and Kyle Weber for "Identification and Mitigation of Foreign-Sourced Printed Circuit Boards." And the second award went to Sara McGarity for "Courage to Report Discrepancies."

The 2024 award went to Matt Cilli, Charles Crossett, Michael Hartigan, Christopher MacGahan, Royce Marsingill, Samantha Marsingill, George Pyryt, Douglas Roldan, Wes Rudy, and Sharon Singer-Barnard for "Strategic Systems Programs Trident II D5LE2 Life Extension Program."

REFERENCES

[1]G. M. Hunt, J. A. Miragliotta, J. Ginn, A. P. Warren, and D. B. Shrekenhamer, "High emissive contrast of adaptive, thin-film, tungsten doped VO_2 composites," *Appl. Phys. Lett.*, vol. 123, no. 7, art. 071103, 2023, https://doi.org/10.1063/5.0164936.

[2]C. R. Braga, V. Krishna Jagarlamudi, A. Vourlidas, G. Stenborg, and T. Nieves-Chinchilla, "A coronal mass ejection impacting Parker Solar Probe at 14 solar radii," *Astrophys. J.*, vol. 965, art. 185, 2024, https://doi.org/10.3847/1538-4357/ad2b4e.

[3]H. A. Weaver, S. A. Stern, L. A. Young, J. R. Spencer, C. B. Olkin, A. F. Cheng, and R. L. McNutt Jr., "Science highlights from NASA's New Horizons mission," *Johns Hopkins APL Tech. Dig.*, vol. 37, no. 1, pp. 73–92, 2023, https://secwww.jhuapl.edu/techdigest/Content/techdigest/pdf/V37-N01/37-01-Weaver.pdf.

[4]A. Dwivedi, "A multidimensional cyber threat scenario enumeration model for resilience engineering," *Johns Hopkins APL Tech. Dig.*, vol. 37, no. 2, pp. 139–149, 2024, https://www.jhuapl.edu/sites/default/files/2024-09/37-02-Dwivedi.pdf.

[5]V. O. Rojas, S. J. Lehtonen, N. M. Nowicki, and K. Inboune, "Microelectronics packaging at APL: Delivering custom devices for critical missions," *Johns Hopkins APL Tech. Dig.*, vol. 37, no. 3, pp. 219–227, 2024, https://www.jhuapl.edu/sites/default/files/2024-09/37-03-Rojas.pdf.

[6]R. T. Daly, C. M. Ernst, O. S. Barnouin, N. L. Chabot, A. S. Rivkin, et al., "Successful kinetic impact into an asteroid for planetary defence," *Nature*, vol. 616, pp. 443–447, 2023, https://doi.org/10.1038/s41586-023-05810-5.

[7]O. Barnouin, R.-L. Ballouz, S. Marchi, J.-B. Vincent, H. Agrusa, Y. Zhang, et al., "The Geology and evolution of the near-earth binary asteroid system (65803) Didymos," *Nature Commun.*, vol. 15, art. 6202, 2024, https://doi.org/10.1038/s41467-024-50146-x.

[8]L. E. Osborn, R. Venkatasubramanian, M. Himmtann, C. W. Moran, J. M. Pierce, et al., "Evoking natural thermal perceptions using a thin-film thermoelectric device with high cooling power density and speed," *Nature Biomed. Eng.*, pp. 1–14, 2023, https://doi.org/10.1038/s41551-023-01070-w.

[9]F. P. Seelos, K. D. Seelos, S. L. Murchie, M. A. Matiella Novak, C. D. Hash, M. F. Morgan, et al., "The CRISM investigation in Mars orbit: Overview, history, and delivered data products," *Icarus*, vol. 419, art. 115612, 2024. https://doi.org/10.1016/j.icarus.2023.115612.

[10]E. J. Birrane III, S. Heiner, and K. McKeever, *Securing Delay-Tolerant Networks with BPSec*, Wiley, 2023.

[11]N. E. Raouafi, L. Matteini, J. Squire, S. T. Badman, M. Velli, et al., "Parker Solar Probe: Four Years of discoveries at solar cycle minimum," *Space Sci. Rev.*, vol. 219, art. 8, 2023, https://doi.org/10.1007/s11214-023-00952-4.

[12]A. Luspay-Kuti and K. Mandt, eds. *Triton and Pluto: The Long Lost Twins of Active Worlds*. Bristol, UK: Institute of Physics (IOP) Publishing, 2024.

[13]M. A. Jensenius, M. Chen, P. Ericksen, M. Haque, S. Jenkins, et al., "SMART Nav guidance: Ensuring asteroid impact for the DART mission," in *Proc. 2023 AAS GNC Conf.*, Feb. 6, 2023.

[14]A. R. Sharma, G. K. Kintzley, R. K. Hartig, S. Audia, M. Landes, and B. Estacio, "Hypervelocity impact properties of polyimide aerogels for space debris shielding and capture" in *Proc. 2024 IEEE Aerosp. Conf.*, pp. 1–8, 2024. https://doi.org/10.1109/AERO58975.2024.10521073.

[15]"Barry Mauk," bio, Johns Hopkins University Applied Physics Laboratory, https://www.jhuapl.edu/about/people/barry-mauk.

[16]"Donald Mitchell," bio, Johns Hopkins University Applied Physics Laboratory, https://www.jhuapl.edu/about/people/donald-mitchell.

[17]"Brian Anderson," bio, Johns Hopkins University Applied Physics Laboratory, https://www.jhuapl.edu/about/people/brian-anderson.

[18]APL, "Breakthrough process creates next generation of powered wearable fibers," press reelase, May 22, 2024, https://www.jhuapl.edu/news/news-releases/240522-fiber-power.

[19]A. Sigler, "Johns Hopkins APL celebrates master inventors as beacons of innovation," press reelase, May 28, 2025, https://www.jhuapl.edu/news/news-releases/250528-master-inventors-gerasopoulos-osiander.

[20]A. E. Kedia and J. A. Krill, "Inspiring innovation and creativity at APL," *Johns Hopkins APL Tech. Dig.*, vol. 35, no. 4, pp. 363–379, 2021, https://www.jhuapl.edu/Content/techdigest/pdf/V35-N04/35-04-Kedia.pdf.

[21]APL, "U.S. Air Force, Johns Hopkins APL hypersonic experiment soars and collects vital data," press release, Sep. 5, 2024, https://www.jhuapl.edu/news/news-releases/240905-apl-bolt-launch-collects-data.