FOR IMMEDIATE RELEASE

Astronomical Society of the Pacific Announces 2022 Awards for Astronomy Research and Education

San Francisco, California – August 30, 2022 The Astronomical Society of the Pacific (ASP), one of the oldest, most innovative, and most respected organizations in the U.S. dedicated to increasing the understanding and teaching of astronomy, is honored to announce the recipients of its 2022 awards for excellence in astronomy research and education.

Join us in celebration of these prestigious awards at the in-person 2022 ASP Awards Gala on November 19, 2022 in Burlingame, California.

Catherine Wolfe Bruce Gold Medal

The Astronomical Society of the Pacific (ASP) is proud to announce the 2022 recipient of its most prestigious award, the **Catherine Wolfe Bruce Gold Medal** honoring **Dr. Ellen Gould Zweibel**, in recognition of her contributions to the understanding of astrophysical plasmas, especially those associated with the Sun, stars, galaxies, and galactic clusters. She has also made major contributions in linking plasma characteristics and behaviors observed in laboratories to astrophysical plasma phenomena occurring in the universe.

Ellen Zweibel was born in New York City, grew up in New Jersey, and went to college at the University of Chicago where she majored in mathematics and was introduced to astronomy research. She did graduate work at Princeton University, where she studied plasma physics and wrote her thesis on galactic dynamics, receiving her PhD in 1977. After a year at the Institute for Advanced Study in Princeton, she joined the scientific staff of the High Altitude Observatory in Boulder, CO, but was drawn back to academia and began a faculty appointment at the University of Colorado in 1981. In 2003 she moved to the University of Wisconsin-Madison, where she is currently the William L. Kraushaar Professor of Astronomy and Physics.

Zweibel's research has focused on plasma effects in astrophysical systems. Most of these effects are due to an embedded magnetic field, and many of them can be grouped into a small number of basic physical processes: how magnetic fields are generated, how they exchange energy with their environments (sometimes on explosively fast timescales), their role in global instabilities, how they cause a tiny fraction of thermal particles to be accelerated to relativistic energies, and how they mediate the interaction of these relativistic particles (cosmic rays) with their gaseous environments through waves and instabilities on microscales. Although all these processes occur in laboratory plasmas, it is in natural plasmas that they take their most extreme forms. Zweibel and her students and postdocs have used analytical theory and numerical simulations to study the generation and evolution of magnetic fields in the Sun and other stars, in galaxies, and in galaxy clusters, and have researched the effects of high energy cosmic ray particles in all of these environments. Their most recent work centers on the role of cosmic rays in star formation feedback: the self-regulation of the star formation rate in galaxies through energy and momentum input to the ambient medium by the stars themselves.

Zweibel has authored over 242 refereed publications with over 8,000 citations. In 2016 she was awarded the American Physical Society's James Clerk Maxwell Prize for Plasma Physics "For seminal research on the energetics, stability, and dynamics of astrophysical plasmas, including those related to stars and galaxies, and for leadership in linking plasma and other astrophysical phenomena." She is a member of the National Academy of Sciences.

The Astronomical Society of the Pacific's **Catherine Wolfe Bruce Gold Medal** was established in 1898 by Catherine Wolfe Bruce, an American philanthropist and patroness of astronomy. The ASP presents the medal annually to a professional astronomer in recognition of a lifetime of outstanding achievement and contributions to astrophysics research. It was first awarded in 1898 to Simon Newcomb. Previous recipients of the Bruce Medal include Giovanni V. Schiaparelli (1902), Edwin Hubble (1938), Fred Hoyle (1970), and Vera Rubin (2003).

Arthur B.C. Walker II Award

The Astronomical Society of the Pacific's Arthur B.C. Walker II Award honors an African-American scientist whose research has substantially contributed to astronomy or related fields, and who has demonstrated a substantial commitment to promoting diversity and inclusion in STEM. It was first awarded in 2016 to NASA mathematician and Presidential Medal of Freedom recipient, Katherine Johnson.

The 2022 recipient of the Arthur B.C. Walker II Award is Dr. Jedidah C. Isler Principal Assistant Director for STEM Opportunity & Engagement at the White House Office of Science & Technology Policy, where she currently leads the Science & Society division. Dr. Isler was formerly an Assistant Professor of Astrophysics at Dartmouth College where she studied hyperactive, supermassive black holes. Her research explores the physics of blazars – supermassive black holes at the centers of galaxies that create particle jets moving at nearly the speed of light.

Even as an early career scientist, Dr. Isler's contributions to astronomy have been lauded by the scientific community. The American Astronomical Society (AAS) awarded her dissertation "In Like a Lamb, Out Like a Lion: Probing the Disk-Jet Connection in Fermi Gamma-ray Bright Blazars" with the Rodger Doxsey Dissertation Prize, an honor bestowed on only 10% of all dissertations presented at the annual AAS meeting. As a testament to the quality of her work and potential to make significant contributions to science, she was one of a few early career researchers invited to the 2016 National Academy of Sciences/Kavli Foundation US Frontiers of Science Symposium. These symposia invite 25 early-career scientists from a wide range of disciplines who are recognized as emerging young scientific leaders.

Dr. Isler is equally dedicated to improving the public's understanding of science and has become an important public voice in astronomy. She has made numerous media appearances, including on *All Things Considered,* the *TED Radio Hour*, the Science Channel's *How the Universe Works*, and the 2016 National Geographic miniseries *MARS*. As a 2015 TED fellow and a 2017 Senior TED Fellow, more than 3.5 million viewers have watched her TED talks. As one nominator remarked, Dr. Isler's "*public face is important in providing a role model to future astronomers amongst minority groups*."

Dr. Isler is an outspoken advocate of equity, inclusion and empowerment in STEM fields and is the creator and former host of "Vanguard: Conversations with Women of Color in STEM." The nonprofit organization she founded, The STEM en Route to Change Foundation, uses STEM as a pathway for social justice and has developed the #VanguardSTEM online platform, providing women of color with mentoring, support, and peer community that welcomes both new and would-be scientists.

Dr. Isler has also helped shape policy and practices within the profession. Her involvement in the 2015 inaugural AAS's Inclusive Astronomy Conference was critical to developing the recommendations made to the AAS Council

for improving diversity and inclusion in the field. She was a member of the inaugural *State of the Profession & Societal Impacts* panel, for the 2020 Astronomy & Astrophysics Decadal Survey, which produced recommendations for increasing equity in the field of astrophysics. Dr. Isler also served as a member of the American Institute of Physics National Task Force to Elevate African American Representation in Undergraduate Physics & Astronomy (TEAM-UP) and investigate the reasons for the persistent underrepresentation of African Americans in physics and astronomy. TEAM-UP produced a report with its findings and evidence-based recommendations to increase the number of African Americans earning physics and astronomy bachelor's degrees. Dr. Isler, along with the entire TEAM-UP Task Force was awarded the 2022 American Physical Society's Excellence in Physics Education for this work.

Among her many honors, Dr. Isler has also been recognized as a National Geographic Emerging Explorer (2016) and one of *The Root Magazine*'s 100 Most Influential African Americans (2016).

Robert J. Trumpler Award

The Robert J. Trumpler Award is presented to a recent recipient of a PhD degree whose research is considered unusually important to astronomy. The recipient of the **2022 Robert J. Trumpler Award is Dr. Ariadna Murguia-Berthier**, who completed her doctorate in astronomy from the University of California, Santa Cruz in 2021. One nominator described Murguia-Berthier as *"among the best and most internationally recognized recently graduated PhD students working in high-energy astrophysics."*

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Her dissertation, "Binary Neutron Star Mergers," was integral in interpreting and analyzing one of the most important recent astrophysical events – the first detection of both gravitation waves and electromagnetic radiation coming from the same astronomical object. Named GW/GRB170817, this multi-messenger event engaged the astronomical community in intense research efforts and helped solve some key mysteries, including the origin of heavy elements (like gold and platinum) and the source of the short gamma-ray bursts detected in the cosmos. Years prior to the event, Murguia-Berthier had developed simulations to study the conditions necessary for short gamma-ray burst jets to arise from neutron star mergers, including the role the formation of black holes from the neutron star merger remnants has on the propagation of the jet. This early work not only helped astrophysicists interpret GW/GRB170817, but Murguia-Berthier went on to develop a model revealing GW/GRB170817 as an off-axis view of a short gamma-ray burst jet.

Although early in her career, Murguia-Berthier already has an impressive publications record. By the time she had completed her doctorate, her 18 peer-reviewed articles had already been cited over 4,500 times. Of those, her seven first-author publications had been cited three hundred and fifty times. Her work appears in some of the most prestigious journals in science, including *Nature*, *Science,* and the *Astrophysical Journal Letters*. As one of her nominators wrote, *"these impressive accomplishments highlight how Ariadna works at the frontier of astrophysics, maintains expertise on current topics and trends in the field, and is prepared to theoretically address developments on one of the most important astronomical discoveries in decades."*

Murguia-Berthier is currently a NASA Hubble Postdoctoral Fellow at Northwestern University, where her main research interest continues to focus on studying the merger of compact objects through numerical simulations.

Klumpke-Roberts Award

Awarded to an individual or individuals who have made outstanding contributions to the public understanding and appreciation of astronomy, the **Klumpke-Roberts Award for 2022** goes to **Suzanne Gurton**, Director of Education and Public Outreach at National Radio Astronomy Observatory. Her dedication to public outreach has spanned almost 40 years of leading, organizing, developing, and training educators for astronomy outreach programs that have become permanent fixtures in the outreach community, lasting long beyond her involvement.

Gurton's leadership in the field of astronomy communication to the public began with her participation in the planetarium world, launching her passion to enhance the public's understanding of astronomy. She participated in writing programs, giving lectures, and producing shows as well as coordinating the art and special effects used to illustrate the planetarium shows. At the same time, she initiated grant proposals and developed public exhibitions.

Her longtime work at the Astronomical Society of the Pacific is where she left a major imprint on signature programs such as *Project ASTRO*, *Night Sky Network*, and *My Sky Tonight*. It was Gurton's work with the ASP's *Astronomy from the Ground Up* program training park & field rangers that turned a small Lassen Dark Sky Festival into the premier summer event at Lassen Volcanic National Park in California. A former field ranger and nominator pays tribute that "*This would not have been possible without Suzy's dedication, commitment, and passion for sharing her appreciation and expertise for all things astronomical."* She didn't just show off sunspots through a solar scope, but she stayed up until the wee hours of the morning to make sure every visitor had a chance to view the Ring Nebula through a telescope. *"There is no one more dedicated to the public understanding and appreciation of astronomy,"* she emphasized.

There is no doubt Gurton's style of public engagement is infectious, but it has also inspired young professionals. She spent years as lead educator training early career astronomers through yearly American Astronomical Society (AAS) Ambassadors Workshops. She is currently Co-Investigator with the National Science Foundation-funded On-the-Spot Assessment to Improve Scientist Engagement with the Public, developing tactics scientists can use to solicit feedback on their outreach work.

Her current work at the National Radio Astronomy Observatory (NRAO) leading the Education and Public Outreach (EPO), News and Public Information, multimedia, and Very Large Array (VLA) Visitor Center, has raised the Observatory's public profile, fostering local community relations, and broadening participation and diversity in science and science education.

And most importantly, her work is careful to include people of all ages and backgrounds. A fellow nominator expresses this importance that *"coming into the field when being a woman astronomer was a novelty, she is sensitive to meeting the needs of people who do not see others like them in the field."* Gurton's passion has left an impactful and inspiring footprint on the field of astronomy education.

Gordon Myers Amateur Achievement Award

The **Gordon Myers Amateur Achievement Award** recognizes significant observational or technological contributions to astronomy by an individual not employed in a professional capacity. The **2022 recipient is Paul D. Maley** who has demonstrated an extraordinary record of accomplishment for an amateur astronomer, contributing serious professional quality work at the highest levels.

Dedicating nearly 60 years of his life to his craft, Maley is a passionate amateur astronomer, not just in his love for observing, but also traveling around the world encouraging, advising, and enabling others to chase solar eclipses, stellar occultations, and the Northern Lights.

Maley's tireless efforts include his commitment to public outreach as a longtime member of the Johnson Space Center Astronomical Society (JSCAS). He has organized almost 50 solar eclipse expeditions around the world, two Transit of Venus expeditions, three Transit of Mercury ventures, and personally observed 80 solar eclipses of all types through 2022. He planned these trips generally several years in advance looking at the history of weather records and assessing possible hazards to select the highest probability of success and safest locations for viewing. His work supporting the JSCAS has also included training international amateurs in the art of making grazing lunar occultation and minor planet occultation measurements. As one nominator expresses *"Before anyone had heard the term Citizen Science he was out there, organizing it…".* His travels and observational trips have taken him to places like Saudi Arabia and Iraq, to Cuba and India. He has created official historical markers for the location of lesser known but important astronomical events such as expeditions in the 18th and 19th century for Transits of Venus; also for the residence of Asaph Hall, the discoverer of Mars' two satellites in Washington, DC.

A major part of Maley's life has also been spent observing and documenting sky phenomena concentrating on artificial earth satellites, spacecraft reentries and asteroids. A fellow nominator and JSCAS member noted that Maley *"observed over 500 minor planet occultations from six continents in an ongoing effort to measure shapes and sizes of minor planets."* His most notable contribution was the possible first observation of an occultation of a star by an asteroid moon in 1977—a type of body never before known to exist. Although not confirmed, the subsequent report spurred professionals and amateurs to observe asteroid occultations until the first confirmed asteroid moon was imaged by the Galileo spacecraft in 1993. Additional work in this field included observations of grazing occultations at the edges of the predicted path to improve the polar diameter of the Moon, and observations from the edges of solar eclipse paths to attempt to determine changes in the Sun's polar diameter. Several new double stars were discovered as a result of his occultation activity.

Maley's astronomical work separately resulted in the discovery of intense flashes of light occurring when the Sun's light glints from inactive earth satellites - originally mistaken for novel astronomical phenomena in the 1980s and 90s. This gave fair warning of the amount of space debris humans had created, but also demonstrated how inactive Earth satellites could create some 'false' professional astronomical discoveries. There is no doubt Maley has made use of his skills as an amateur astronomer, shared this enthusiasm with the public through his solar eclipse, occultation travels, viewing the Northern Lights, and ultimately through discovery, observation, and collaboration impacted the professional world of astronomy.

Richard H. Emmons Award

The Astronomical Society of the Pacific's **Richard H. Emmons Award** — established by Jeanne & Allan Bishop to honor Ms. Bishop's father, Richard Emmons, an astronomer with a lifelong dedication to astronomy education — is awarded annually to an individual demonstrating outstanding achievement in the teaching of college-level introductory astronomy for non-science majors. The 2022 recipient is **Prof. George Greenstein, Sidney Dillon Professor of Astronomy, Amherst College, Emeritus,** for his innovative methods of mentoring students and other educators, and for his textbook and other writings that explain astronomical developments and ways of thinking.

Greenstein's approach to science and astronomy has always reached beyond the expected and predictable. His innovative teaching began in 1971 as Assistant Professor of Astronomy at Amherst College where, according to a professional colleague and nominator, his approach in the classroom was to engage *"in animated dialog with the students and comment on their work, rather than simply lecture about his own philosophy".* Furthermore, he was *"an early advocate of engaging students through active learning"* and emphasized "*guided discovery in his classes, often using real data to present his students with the kinds of puzzles astronomers face in the practice of research."* Thousands of students in the five-college system that includes Amherst have taken his courses over the years.

His innovative teaching methods extended to his role as an inspirational mentor to undergraduate research students. One former student of Prof Greenstein's notes how "*George was always looking for new and innovative methods to teach astronomy and physics, and to show how undergraduate students can work on cutting-edge problems*."

An eloquent writer, Greenstein is the sole author of *Understanding the Universe: An Inquiry Approach to Astronomy and the Nature of Scientific Research,* an unconventional textbook that helps students think and act like scientists. He is also the author of several approachable astronomy books for the general public, including his prize-winning *Frozen Star,* written in 1989 and clarifying the complex topic of the death of stars. A professional colleague wrote that even after 34 years "*there are few books that so effectively convey the mental meandering of the scientist… fired with the curious passion that drives basic research."*

Greenstein also contributed at the national level to the teaching of introductory astronomy. Along with previous Emmons Award winner, Bruce Partridge, he organized a series of workshops for department chairs on the teaching and goals of "Astronomy 101," which they then wrote up into an influential article that is one of the rare pieces of guidance available for instructors at this level. Greenstein was also co-author of *An Ancient Universe: How Astronomers Know the Vast Scale of Cosmic Time,* a booklet jointly published by the American Astronomical Society and the Astronomical Society of the Pacific, to help K-12 teachers refute creationist claims and help students understand the implications of modern cosmology. In these and many other ways, Prof. Greenstein has enlarged and improved the modern conversation on how best to teach astronomy.

Las Cumbres Amateur Outreach Award

Established by Wayne Rosing and Dorothy Largay, the **Las Cumbres Amateur Outreach Award** honors outstanding educational outreach by an amateur astronomer to K-12 children and the interested lay public. The **2022 award recipient is Billy Hix, member of the Von Braun Astronomical Society** (VBAS) in Huntsville, Alabama, and founder/director of the Motlow College Foundation STEM Outreach Program in Tennessee.

Since his early years, Hix has had the drive to impact education and outreach in astronomy. Growing up on a rural farm in Tennessee, Hix was obsessed with the night sky and space program from the time he was discouraged from learning about science. He even declared in 5th grade to *"work at NASA, and on his vacation days visit schools and talk about science."*

Hix's aspirations became his passion and focus as an adult. For years before retirement, he took personal time on weekends and holidays traveling to schools that could not afford to attend planetarium programs and local science centers to conduct star/moon parties. He integrated astronomy into teaching standards and has woven the night sky into every discipline of instructional curriculum, giving teachers professional development in the process. His outreach efforts using his portable planetarium dome have reached over 72,000 students and teachers. His tireless efforts after early retirement allowed him just this past school year to visit over 130 schools and conduct programs with over 13,000 students and teachers, many who are looking into a telescope for the first time. His dedication has even created an annual July star party at his home observatory in a field behind his home for a rural school.

As one colleague and nominator emphasized, *"Every day as he visits a school, he has the expectation that he will inspire the student that has the potential in the future to solve one of the large cosmological questions. It will make everything he has done worthwhile when that student traces their love of astronomy to the day that the lights dimmed, and the stars came out in a planetarium and they saw a world that they did not know even existed."*

There is no doubt that beyond his professional work as a teacher, his dedicated volunteer time and passion for astronomy introducing teachers and children about the night sky through his home and portable planetariums has given thousands exposure to the night sky and the opportunity to dream big. As one nominator praised, *"…you will not find anyone who is doing more for astronomy outreach than Billy Hix. He has given much of his life to see that children have the chance to be inspired by the night sky."*

About the ASP

The Astronomical Society of the Pacific (ASP), established in 1889, is a 501c3 nonprofit organization whose mission is to use astronomy to increase the understanding and appreciation of science and to advance science and science literacy. The ASP connects scientists, educators, amateur astronomers and the public together to learn about astronomical research, improve astronomy education, and share resources that engage learners of all kinds in the excitement and adventure of scientific discovery. Current ASP programs and initiatives support college faculty, K-12 science teachers, amateur astronomy clubs, science museums, libraries, park rangers, and girl scouts to name a few.

Through its annual awards, ASP recognizes achievement in research, technology, education, and public outreach. The awards include the ASP's highest honor, the Catherine Wolfe Bruce Gold Medal awarded since 1898 for a lifetime of outstanding research in astronomy. The Bruce Medal has gone to some of the greatest astronomers of the past century, including Arthur Eddington, Edwin P. Hubble, Subrahmanyan Chandrasekhar, and Vera Rubin. The ASP also presents the Klumpke-Roberts Award for outstanding contributions to the public understanding and appreciation of astronomy. Awardees include Carl Sagan, Isaac Asimov, and the Hubble Heritage Project.

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