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Astronomical Society of the Pacific Announces 2023 Awards for Astronomy Research and Education

San Francisco, California – September 28, 2023 The Astronomical Society of the Pacific (ASP), one of the oldest, innovative, and respected organizations in the U.S. dedicated to increasing the understanding and teaching of astronomy, is honored to announce the recipients of its 2023 awards for excellence in astronomy research and education.

Join us in celebration of these prestigious awards at the in-person ASP Awards Gala on Saturday, November 11, 2023 at the Grand Bay Hotel San Francisco in Redwood City, California.



Catherine Wolfe Bruce Gold Medal

The Astronomical Society of the Pacific (ASP) is proud to announce the 2023 recipient of its most prestigious award, the **Catherine Wolfe Bruce Gold Medal**, honoring **Dr. Marcia J. Rieke**, Regents Professor of Astronomy and Elizabeth Roemer Endowed Chair, Steward Observatory at the University of Arizona and Principal Investigator on the Near-Infrared Camera (NIRCam) for the James Webb Space Telescope. Rieke's research has focused on infrared observations of the center of the Milky Way and high redshift galaxies in the early universe. Marcia Rieke is considered by many to be one of the "founding mothers of infrared astronomy," and it is for her groundbreaking contributions to astronomical research at these wavelengths that she is being recognized and celebrated.

Marcia Rieke spent her early years in Midland, Michigan, where she credits the presence of the headquarters of Dow Chemicals for bringing the excitement of science to her schools and sparking her own passion for learning more. Rieke ultimately received both her undergraduate and graduate degrees in physics from the Massachusetts Institute of Technology before joining the University of Arizona as a postdoctoral fellow in 1976, where she ultimately remained and made her seminal contributions to infrared astronomy.

Dr. Rieke served as Deputy Principal Investigator for the Near Infrared Camera and Multi-Object Spectrometer (NICMOS) on the Hubble Space Telescope and Co-Investigator for the multiband imaging photometer on the Spitzer Space Telescope. Dr. Rieke was also involved with several infrared ground-based observatories, including the Multiple Mirror Telescope Observatory in Arizona.

Dr. Rieke's leadership is credited for the success of JWST's Near-Infrared Camera (NIRCam). As one of her nominator's stated, "*The NIRCam was the JWST Program's most challenging instrument development effort. The instrument's outstanding performance is due largely to the outstanding performance of its PI. Marcia's consistent focus, diligence, and 'lead from the front' approach under extremely difficult technical and programmatic circumstances presents an example for others to follow.*"

Dr. Rieke has authored 310 refereed publications which have over 30,000 citations. Her deep knowledge and expertise were put into service as Vice Chair for Program Prioritization for the Astro 2010 Decadal Survey Committee's "*New Worlds, New Horizons.*" Her landmark contributions to astronomical research, instrument development, and service to public policy and public outreach have been recognized nationally, being elected a Fellow of the American Academy of Arts and Sciences in 2007, a Fellow of the National Academy of Sciences in 2012, and a Legacy Fellow of the American Astronomical Society in 2020. Dr. Rieke has also been the recipient of numerous prestigious awards, including the NASA Distinguished Public Service Medal (2023) for her contribution to the field of astronomy and key role in the development of cutting-edge instruments for the James Webb Space Telescope.

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).



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 2023** goes to **Don McCarthy**, for his four decades of commitment and dedication to the field of astronomy, impacting the lives and careers of thousands of astronomy enthusiasts throughout his career, as well as bringing his leadership, humility, and determination as a model to emulate those whose lives he touched.

Throughout his scientific career, McCarthy has enjoyed explaining technical concepts (like “infrared interferometry” and “brown dwarfs”) to people of all ages. Beginning with his children who wondered what Dad did on mountaintops at night, he sought to provide behind-the-scenes experiences at modern observatories. His most well-known educational endeavor began in 1989, with the development of the teenage Astronomy Camp programs and creating one of the most revered outreach programs in its field. The Camps still emphasize a hands-on, project-oriented approach at mountaintop observatories. Campers reside on site and are personally mentored by astronomers at different stages in their careers. Camps were also created for adults, educators, Girl Scouts, and school groups throughout the U.S. and the Tecnológico de Monterrey (TEC) School of Hermosillo, México.

An enthusiastic supporter expresses how *“Many students leave Camp inflamed with a zeal for astronomy and an expressed intent to pursue the discipline as a career.”* To date, 30 Camp alumni have received doctoral degrees in astrophysics. Former Campers now work at more than 50 institutions worldwide including 30 universities/colleges, 12 national labs, six research observatories, Defense companies, science education centers, schools, and even serve in Congress.

In 2001, the Astronomy Camp model became the foundation for Arizona’s education proposal to build the Near-Infrared Camera (NIRCam) for the James Webb Space Telescope (JWST). As a member of the NIRCam Science Team, McCarthy created a 15-year partnership with the Girl Scouts of the USA (GSUSA) to “Train the Trainers” on age-appropriate STEM concepts so that young girls would understand upcoming JWST discoveries and consider STEM careers. Eventually, nearly 400 adult trainers attended the biannual workshops in Tucson from 47 states, Guam, Japan, and Puerto Rico.

McCarthy has not just mentored students and Campers, but also colleagues. One former Camp counselor validates that *“without the camp experience I would not be as effective in my teaching, outreach, and even my professional work...his selfless efforts have had incredible impacts both personally and professionally for campers of all ages.”*



Robert J. Trumpler Award

Presented to a recent recipient of a PhD degree whose research is considered unusually important to astronomy, the **2023 Robert J. Trumpler Award** is presented to **Dr. Deborah Lokhorst**, who received her doctorate in astronomy from the University of Toronto.

One nominator described Dr. Lokhorst as *“an intellectually brilliant, extraordinarily capable scientist and a rising star in astrophysics.”* Another described her dissertation as *“a landmark study, ushering in a new era of extremely sensitive ionized gas studies.”* Her dissertation, *“Ultra-Narrowband Imaging with the Dragonfly Telephoto Array: Toward the Cosmic Web,”* is a rare thesis that combines theory, observation, and instrumentation. In her thesis, Lokhorst describes the conception, design, fabrication, and use of an innovative new imaging device for the Dragonfly telescope – an array of lenses working in tandem like the compound eye of a dragonfly – to detect extraordinarily dim astronomical objects.

Lokhorst analyzed hydrodynamical simulations to calculate the observational limits needed to directly detect “invisible” gas in the medium surrounding nearby galaxies. Next, she designed, machined, and assembled a prototype for a new component of the Dragonfly Telephoto Array that could detect these gases at the observational limit. Named “the Filter-Tilter,” Lokhorst’s invention helped Dragonfly’s narrowband imager reveal what had been undetectable before – a giant ionized gas cloud surrounding the starburst galaxy, M82.

Lokhorst’s dissertation has also been recognized by the Royal Astronomical Society of Canada and the Canadian Astronomical Society who jointly presented her with their J.S. Plaskett Medal for most outstanding astrophysics doctoral thesis in Canada. She is currently a Herzberg Instrument Science Fellow at the Herzberg Astronomy and Astrophysics Research Centre. Expanding upon her work on the Dragonfly Telescopic Array, she is now project and science lead for the Dragonfly Spectral Line Mapper with the goal of directly imaging the faintest and largest structures in the Universe. She is also committed to education and is involved in the construction of a smaller version of Dragonfly that can be used by high school students and astronomy clubs.



Gordon Myers Amateur Achievement Award

Recognizing significant observational or technological contributions to astronomy or amateur astronomy by an individual not employed in the field of astronomy in a professional capacity, the **2023 Gordon Myers Amateur Achievement Award** goes to **Dan Caselden** for reshaping the understanding of what is possible in volunteer-research.

A Principal Software Engineer at Netskope by trade, Caselden is also a revered citizen scientist whose dedication to science research began in 2017 when he created an interactive browser tool to visualize data from any part of the sky using imaging from NASA's Wide-field Infrared Survey Explorer (WISE) and NEOWISE missions.

The "Backyard Worlds: Planet 9" citizen science project originally launched on the Zooniverse platform in early 2017 caught Caselden's eye on Reddit. His experience helping answer questions from other users inspired him to create a new, efficient visualization tool, WiseView, with a fellow data scientist. What followed was a surge of brown dwarf discoveries and over the following five years, Caselden's pioneering the application of machine learning techniques to discover extremely important and unusual cosmic treasures. Three of them are among the very coldest known brown dwarfs now approved as James Webb Space Telescope (JWST) Cycle 1 targets. Others are members of a "second new class of brown dwarfs...extreme T-type subdwarfs" that may be the coldest and lowest mass objects formed in the Galaxy's earliest generation of stars.

Caselden's selfless contributions to brown dwarf research, and the timing of the discoveries prior to Spitzer's retirement in 2020 and prior to the start of JWST's mission, accentuates his immense technical abilities in machine learning as well as his deep commitment to creating publicly accessible astronomy tools. A former colleague praises how Caselden's *"rare combination of software, data visualization and web programming skills has been and will continue to be a truly unique asset to the field of astronomy for many years to come."* Rather than take all the credit, Caselden allows others to take ownership of writing publications, grants, or follow-up observing proposals. *"There is no limit to how much he wants to know and contribute, and he asks nothing in return"*, emphasizes a researcher who worked closely with Caselden on the Backyard Worlds: Planet 9 project.

A continued dedication to supporting citizen science has led Caselden to three important collaborations beyond his "day job" as a computer security researcher. All on his own time, Caselden is a collaborator at Caltech on the CatWISE astronomical source catalog of over ten years of WISE images; co-investigator on NSF's NOIRLab's Backyard Worlds: Cool Neighbors, a NASA-funded, citizen science in development spinoff of Backyard Worlds: Planet 9; and lastly a volunteer affiliate at the American Museum of Natural History as a Research Associate.



Nancy Grace Roman Award

Named for an icon in the history of astronomy research and space exploration, ASP's Nancy Grace Roman Award was introduced this year to recognize an individual or group for significant contributions to promoting gender equity and inclusion in astronomy and related fields. The award celebrates the achievements of individuals, groups, or organizations working to encourage participation in astronomy and related fields by people traditionally or currently excluded from these fields because of their gender, including girls, women, and transgender, non-binary, and gender-nonconforming people.

The inaugural recipient of the **Nancy Grace Roman Award** is **Dr. Francesca Primas**, Full Astronomer at the European Southern Observatory (ESO). Dr. Primas is a renowned observational astrophysicist studying the formation and evolution of the Milky Way and its satellite galaxies via their chemical histories. The Nancy Grace Roman Award recognizes her extensive commitment and contributions to the promotion of women in astronomy and against gender biases in science.

Dr. Primas began her work in gender equity 15 years ago, publishing a study on the status of women at the ESO. This work sparked important discussions and led to the creation of diversity and inclusion initiatives at ESO in which she continues to be actively engaged. "*Francesca has always been a very vocal supporter of women in astronomy and, more in general, in science,*" praises a Full Astronomer colleague.

Primas went on to serve as an advisor and then chair of International Astronomical Union's (IAU) Working Group on Women in Astronomy. To celebrate the 100th anniversary of the IAU, Francesca spearheaded the AstroVoices project. Through the creation of short video clips, this initiative gave over 600 women from 60 different countries an opportunity to share their passion for astronomy with the goal of encouraging young girls to follow their path.

Dr. Primas has organized and participated in numerous task forces, forums, panels, and presentations focused on the status of women in astronomy and strategies for creating safe and encouraging work environments. She has also been an active member of the American Astronomical Society Committee on the Status of Women in Astronomy.

About Nancy Grace Roman

Nancy Grace Roman was an icon in the history of astronomy research and space exploration. She was often called "mother" of the Hubble Space Telescope for her work in spearheading its development. Roman was also a vocal advocate for encouraging girls to participate in STEM as well as a generous supporter and benefactor of the ASP.

Roman earned her doctorate in astronomy from the University of Chicago in 1949. Ten years later, Nancy Grace Roman became the first woman to hold an executive position at NASA, overseeing a new "program for space astronomy." NASA itself was a new government agency, and in her position Dr. Roman toured the country to talk to the nation's research astronomers, find out what they wanted to study, and then convince them to consider the many advantages of collecting their data from space. In the years that followed, Dr. Roman planned many of the



highly successful programs and experiments for NASA's space missions, including SpaceLab, Gemini, Apollo, and Skylab. In 1979, NASA felt ready to develop a program to launch a large and versatile space-based telescope. Dr. Roman was hired by the agency to plan and campaign for this new generation of telescope, helping NASA pitch the project to a variety of skeptical government agencies, including Congress. Dr. Roman's passionate advocacy is credited for the launch of the Hubble Space Telescope in 1990, the instrument that for decades has provided the research community with images and data that has fundamentally transformed humanity's understanding of the cosmos.

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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