

## **Saturday: 4 January**

Astronomy Communication and Science Engagement with Religious  
Publics

12:30 pm – 4:00 pm | Room 306 AB

Organizer: Jennifer Wiseman, NASA

Fee: \$10

This workshop will assist attendees interested in building inclusion in the field of astronomy, and who seek to better understand potential tensions at the intersections of science and culture, including religion, in classrooms, laboratories, social media, policy discussions, or public settings. An individual's worldview, including their religious beliefs and cultural background, can be a major element of their personal identity, and informs their sense of belonging in scientific contexts. Though faith is often perceived as a source of tension around science and technology topics, national polls suggest that most US adults express an interest in and enthusiasm for science and technology, and roughly  $\frac{3}{4}$  claim a religious identity. Yet faith identity and spirituality are not always acknowledged as an element of inclusion in STEM fields, including astronomy. A recognition and respect of the importance of this aspect of people's lives can be important for drawing and retaining highly capable people, including from underrepresented communities, into the discipline. Furthermore, debates within and beyond the astronomy community - on topics ranging from the site of the Thirty Meter Telescope, to the ethics of space exploration, to the potential for light pollution in the night sky from commercial satellites - highlight the need for thoughtful, socially responsive science engagement with diverse publics. Facilitators will lead participants through an overview of why it is important to consider culture, worldview and identity (including faith) in science engagement with students and broader public audiences. Participants will review and discuss strategies, examples, and best practices for constructive dialogue, including ideas shared from astronomers familiar with public engagement. The workshop will include moderated discussions and a small-group exercise to respond to a challenging question or scenario with peers. While the focus of the workshop is on engagement with religious publics around astronomy, the content is relevant and applicable to effective science education and communication with a broad range of audiences. This workshop was developed in a collaboration between the American Association for the Advancement of Science (AAAS) Dialogue on Science, Ethics, and Religion (DoSER) program and the AAAS Center for Public Engagement on Science and Technology. Refreshments will be provided.

## **Sunday, 5 January**

Special Session: Innovative Collaborations of Integrity with the Hawaiian Community

12:30 pm – 4:00 pm | Room 317 B

Maunakea is a nexus for cultural, environmental, scientific, and numerous other interests in Hawai'i. While these interests overlap on Maunakea, they do not always seamlessly intersect. In recent years though, motivated by a strong sense of community and grounded in an island culture with roots that extend back in time for millennia, Hawai'i is becoming a crucible for expressing contemporary world views in an indigenous context. The result is a powerful platform of collaboration with integrity that is leveraging new approaches to listening, learning, and growing as a diverse but unified community. Collaboration with integrity is the practice of integrating Indigenous and Western scientific perspectives as complementary ways of knowing. This approach is essential for addressing historical and cultural tensions over the scientific use of indigenous lands, such as Maunakea. The seat of creation for the Hawaiian people and a site of cultural and religious importance, the dry, dark, high-altitude summit of Maunakea has also enabled many of the most fundamental astronomical discoveries over the past 50 years. The conflicts over who has access to and stewardship of these lands, and for what purposes, can only be resolved through collaborations of integrity. In this special session, our speakers will describe the motivation, design and outcomes of several innovative collaborations of integrity between astronomers and native communities that have emerged around Maunakea. These collaborations encompass astronomical research, Hawaiian language and cultural practice, education and community policy-making, and include partners at research institutions, museums, and community organizations. This session is intended to help participants recognize and understand the need for collaborations with integrity with indigenous communities worldwide, providing examples that may be helpful in their communities. Some elements of the program

include - • A Hua He Inoa - which advances 'olelo Hawai'i and the longstanding cultural practice of naming objects, but applied to astronomy discoveries made by Hawai'i based telescopes • EnVision Maunakea - a 3 year program that created safe spaces for a broad cross-section of Hawai'i Island residents to share their stories, views, and visions pertaining to Maunakea. • Maunakea Scholars - a first of its kind, this program opens the doors of the Maunakea Observatories to high school students across the Hawaiian islands to conduct their own mentored research using the most powerful collection of telescopes in the world • I-WISE - an NSF-funded initiative aimed at understanding the intersection of Native and Western science in informal education • MANU - an innovative program that teaches sea wayfaring and navigation techniques using the stars, bringing a whole new light on STEM education • HISTAR - a 1 week astronomy program that the Univ. of Hawaii leads annually for students in grades 8 – 11, with an emphasis on research projects that can be entered into local science fairs. This rich ensemble of communication, education, and research programs reflects the passion with which the people of Hawai'i are reaching out to each other, to make a better place for all to live.

Doug Simons

Plenary: He Lani Ko Luna, A Sky Above: In losing the sight of land you discover the stars  
11:40 am–12:30 pm | Ballroom AB

Some 4,000 years ago oceanic mariners set out on an epic human odyssey to explore and settle the largest expanse of ocean in the world, the Pacific. Pwo navigator Kālepa Baybayan and his daughter, navigator Kalā Tanaka will speak about the resurgence of Oceanic Wayfinding, the indigenous art of non-instrument navigation and orientation at sea, and the bond formed between father and daughter to preserve this tradition. Moving west to east against the direction of the prevailing trade winds, oceanic explorers, farmers and traders, pointed their canoes upwind and left their footprints on the untouched shores of distant uninhabited islands. With a tropical star field circling above their heads they developed a simple system to orient their canoes and to mark the location of newly discovered islands, leading to this remarkable feat of human migration.

Public Event: Stargazing Party  
7:00–10:00 pm | Ala Moana Beach Park

On Sunday evening, 5 January, 7:00-10:00pm, join University of Hawai'i astronomer Roy Gal and friends at Ala Moana Park, a short walk from the convention center, for a star party featuring telescopic views of celestial highlights of the Hawai'ian winter sky. This stargazing party will bring together astronomy enthusiasts of all ages and levels to marvel at the night sky and learn from world renowned experts in their field. Take your time to view through the myriad of telescopes that will be setup at the park. Join in lively conversations with editors and writers from *Sky and Telescope* magazine, the sponsors of this event.

## **Monday, 6 January**

### **The Many Facets of Hawai'i Astronomy**

2:00 pm | Room 324

The summits of Maunakea and Haleakala are among the best astronomical observing sites in the world. As a result they now host the largest collection of O/IR, radio, and sub-mm observatories ever assembled. A significant fraction of global astronomical research can be directly traced to Hawai'i based facilities, which are geographically at the nexus of leading scientific and economic arenas in North and South America, Asia, and Australia. Access to these two summits has attracted world-leading facilities and astronomers to Hawai'i and has generated strong collaborations with institutes all over the globe. The growth of astronomy over the last 50 years has allowed this field to substantially drive the high- tech economy on Hawai'i Island, and is leading to a multitude of educational opportunities for local students. Astronomy has been an important and defining part of Hawaiian culture for centuries. Today's extraordinary fusion of modern astronomical expertise and Hawaiian culture is also gaining international recognition. The scientific impact, advanced technologies, economic importance, educational opportunities, and rich cultural traditions in Hawaii astronomy together create an exceptional story to share with the world. In this special session we will present:

- The History of Astronomy in Hawai'i
- Important Astronomical Discoveries made from Maunakea and Haleakala
- Maunakea and Haleakala as Premier Sites
- Key Technologies Developed Through Hawai'i Astronomy
- Astronomy Helping Communities in Hawai'i
- Workforce Development and Demographics
- The Future of Hawai'i Astronomy

This blend of presentations will give context to one of the largest astronomical research complexes in the US, the value of which to 21st century astronomy is arguably priceless.

Doug Simons

## FREE Public Talk: Physics of Pō at Hawai'i Convention Center

7:00–8:30 pm | Room 311

The AAS will welcome the general public to join meeting attendees at the convention center for a special joint presentation by Larry Kimura (University of Hawaii) and Doug Simons (Canada- France-Hawaii Telescope). Entitled "Physics of Pō," it explores the intersection of astronomy and Hawaiian culture by examining the first 11 lines of the 2,102-line Kumulipo, a thousand- year-old Hawaiian creation chant whose name means "beginning in deep darkness." Kimura, an associate professor of the Hawaiian language, and Simons, director of one of the observatories atop Maunakea, discuss parallels between the text of the chant and our scientific understanding of the creation and evolution of the universe. The first time they gave the presentation, in July 2019 at the 'Imiloa Astronomy Center in Hilo, they spoke to a sold-out, standing-room-only crowd that paid rapt attention and asked a wide variety of thoughtful questions.

## **Tuesday, 7 January**

FREE Educational Astronomy Event for Honolulu Area Students

11:30 am - 2:00 pm | Room 311

Students will have the opportunity to participate in hands-on demonstrations and speak with world famous scientists and engineers at the forefront of astronomy research. Students will gain knowledge of blackholes, pulsars, ultraviolet light, space telescopes, search for exoplanets, ground based radio telescopes, construction of mirrors, learning astronomy in universities and so much more! They will leave with a desire to pursue their interests and the resources to make it happen. Don't miss out on this once in a lifetime opportunity to meet with scientists from NASA, National Science Foundation, national observatories, prestigious universities, acclaimed laboratories and companies on the cutting edge of discovery.

The event is appropriate for students in 6th-12th grades and Junior College. More information is available in the FAQ.

Special Session: Astronomy and Culture — Best Practices for Systematic Transformation in an Increasingly Diverse and Interconnected Global Society  
2:00 pm | Room 324

In these times of turbulence and uncertainty there are few things that anchor us firmly in awe, excitement, curiosity, and hope. Our human connection to the stars excites and sustains us like nothing else. We have looked at the stars for tens of thousands of years. Indigenous people have nurtured critical relationships with the stars, from keen observation and sustainable engineering to place-based ceremony, navigation, and celestial architecture. The Indigenous relationship and knowledge of the sky is exceptional in that it encompasses mind, body, heart, and spirit. This legacy of our species - connection to sky - is in critical danger. Indigenous communities and Indigenous knowledge systems have suffered great loss, but knowledge and knowledge keepers are still among us. Artificial lights are increasingly saturating our night sky. Will there soon be a generation that has never known the magic and beauty of a dark night sky? As society becomes increasingly reliant, even infatuated with science and technology, we are missing something.

Indigenous Knowledge Systems bring to the conversation that piece that is critically and urgently needed, the big picture. This Special Session, Astronomy and Culture – Best Practices for Systematic Transformation in an Increasingly Diverse and Interconnected Society, brings together Indigenous Star Knowledge Keepers, Indigenous Astronomy experts, and Allies of Indigenous STEM communities from US, Canada and internationally.

Speakers include: astronomers, science educators, artists, cultural knowledge holders/elders, planetarium and museum professionals, K- 12 educators, informal science educators, assessment and evaluation experts, and colleagues from other interdisciplinary fields. As we face an increasingly diverse American landscape in higher education and in society, we must consider paths of change that are more than superficial, but instead weave systematic transformation into the very thread of science and society.

**Organizer:** Jarita Holbrook