

**Celebrating Ten Years of Bringing Science
to the Classrooms!**



March 6 – 14, 2014



March 6-14, 2014
Hilo, Hawai'i



With Journey through the Universe's tenth anniversary behind us, we can now see the impact on our community that this program has delivered. For the past decade astronomy educators and engineers have visited an annual average of 7,000 students in 380 classrooms in the Hilo/Waiakea District. This year was no exception and our astronomers/astronomy educators were able to convey their passion and excitement for science, engineering, and education and share this enthusiasm with their students.

The Gemini led Journey through the Universe program nurtures our student's innate curiosity, provides workshops for our teachers in STEM (Science, Technology, Engineering and Mathematics) education and provides an opportunity for our community members (ambassadors) to visit the classrooms alongside our astronomers. For our tenth anniversary we also included a career workshop that featured a panel of employees from the Mauna Kea Observatories. This very diverse group had the opportunity to share employment opportunities available at the telescopes. Journey's annual Family Science Event held at the 'Imiloa Astronomy Center and the UHH Family Science Night were enjoyed by thousands.

District Superintendent Valerie Takata elaborates, "Our Hilo/Waiakea complex area schools' stellar partnership with the business organizations and community is Journey through the Universe: STEM initiative. As a part of the educational system our complex area is overwhelmed with appreciation for the enthusiasm and energy this initiative has generated for our schools.... students, teachers and administrators and families. This concerted effort has made this grassroots program a sustaining reality.... for the past ten years. We humbly thank the community for their continued support as we all work together toward common goals - building a better future."

Our community partners include the Department of Education Hilo/Waiakea Complex, observatories on Mauna Kea, the National Center for Earth and Space Science, the University of Hawaii at Hilo, Imiloa Astronomy Center, Solar System Exploration Research Institute, the Institute for Astronomy, Bank of Hawaii, Big Island Toyota, New West Broadcasting, KTA Superstores, and the Hawaii Tribune Herald, just to name a few.





March 6-14, 2014
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The Hawaii Island and Japanese Chambers of Commerce have also supported this effort monetarily as well as hosting a celebratory event at the Yacht Club for the past several years. The two Chambers' thank-you celebration provides a unique opportunity for astronomers, educators, and the business community to discuss and share what is our common goal – to enrich science education in our schools and inspire our children to aim high. During the evening's event Governor Neil Abercrombie's liaison expressed sincere gratitude for the Journey through the Universe program. The audience was assured of the Governor's continued support of astronomy and science education in our schools.

The Journey Team would like to thank everyone involved in the Journey program for their continued support and acknowledgement of this national flagship initiative. A program of this magnitude could not happen without the dedication of our community partners and their ongoing support.

As we look forward to our next decade of the Journey through the Universe program, we know we will continue to change our student's lives as we advance science literacy through astronomy and encourage all students to reach for the stars!

Much aloha and our sincerest Mahalo,

Janice Harvey
Journey Team Leader
Gemini Observatory
www.gemini.edu/journey





UNIVERSITY of HAWAII HILO



UNIVERSITY OF OREGON



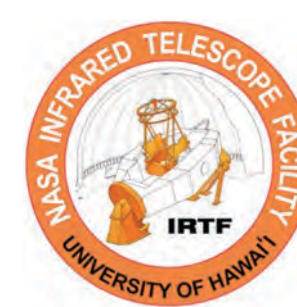
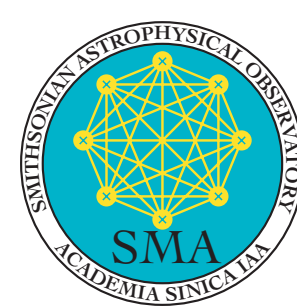
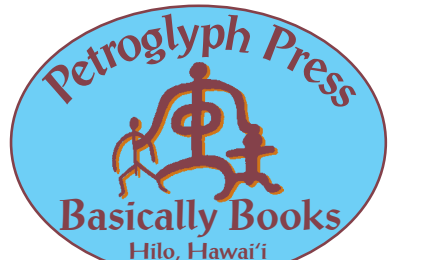
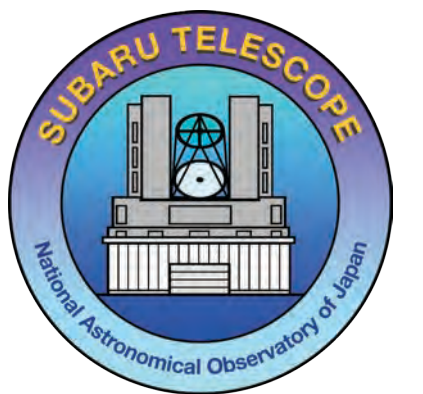
10th Anniversary!
Journey through the Universe
Hilo, Hawaii
2014

Astronomy Educators in the classroom

www.gemini.edu/journey
For more information contact
Janice Harvey at:
jharvey@gemini.edu

DEPARTMENT OF EDUCATION
Hilo-Waiakea Complex Area

- Andy Adamson, Gemini Observatory
- Nobuo Arimoto, Subaru Telescope
- Christoph Baranec, UH Institute for Astronomy
- Daniel Berke, Joint Astronomy Centre
- Jennie Berghuis, Subaru Telescope
- Dan Birchall, Subaru Telescope
- Kevin Caruso, Morey Corp
- Andre-Nicholas Chene, Gemini Observatory
- Hsin-Fang Chiang, UH Institute for Astronomy
- Mark Chun, UH Institute for Astronomy
- Ann Marie Cody, Caltech
- Sandra Dawson, Thirty Meter Telescope
- Brian Day, NASA SSERVI
- Jessica Delgado, University of Hawaii-Manoa
- Daniel Devost, Canada-France-Hawaii Telescope
- Jeff Donahue, Gemini Observatory
- Angelic Ebbers, Gemini Observatory
- Ryan Felix, University of Hawaii-Manoa
- Scott Fisher, University of Oregon
- Suzanne Frayser, Subaru Telescope
- Gary Fujihara, UH Institute for Astronomy
- Roy Gal, UH Institute for Astronomy
- Tom Geballe, Gemini Observatory
- Jeff Goldstein, National Center for Earth and Space Education
- Bryan Gorges, Joint Astronomy Centre
- Kevin Grazier
- Olivier Guyon, Subaru Telescope
- John Hamilton, PISCES
- Janice Harvey, Gemini Observatory
- Isabel Hawkins, Exploratorium
- Saeko Hayashi, Subaru Telescope
- Kris Helminiak, Subaru Telescope
- Michael Hoenig, Gemini Observatory
- Matthew Hosek, UH Institute for Astronomy
- Stewart Hunter, Mauna Kea Support Services
- Masatoshi Imanishi, Subaru Telescope
- Ikuru Iwata, Subaru Telescope
- Russell Kackley, Subaru Telescope
- Yuko Kakazu, Subaru Telescope
- Rob Kelso, PISCES
- Markus Kissler-Patig, Gemini Observatory
- Scot Kleinman, Gemini Observatory
- Bernhard Laurich, Hawaii Community College
- Nadine Manset, Canada-France-Hawaii Telescope
- Pierre Martin, University of Hawaii-Hilo
- Tony Matulonis, NASA IRTF
- Callie McNew, James Clerk Maxwell Telescope
- Peter Michaud, Gemini Observatory
- Joseph Minafra, NASA SSERVI
- Brian Mitchell, NASA SSERVI
- Rita Morris, Subaru Telescope
- Janet Nathani, Mauna Kea Visitor Information Station
- Paul Nguyen, University of Hawaii-Manoa
- Nagayoshi Ohashi, Subaru Telescope
- Harriet Parsons, Joint Astronomy Centre
- Emily Peavy, University of Hawaii-Hilo
- Laura Peticolas, University of California Berkeley
- Christopher Phillips, Imiloa Astronomy Education Center
- Tae-Soo Pyo, Subaru Telescope
- Bo Reipurth, UH Institute for Astronomy
- Kathy Roth, Gemini Observatory
- Yuriko Saito, Subaru Telescope
- Sharon Schleigh, Purdue University
- Doug Simons, Canada-France-Hawaii Telescope
- Garima Singh, Subaru Telescope
- Evan Sinukoff, UH Institute for Astronomy-Manoa
- Breann Sitarski, University of California Los Angeles
- Gordon Squires, Thirty Meter Telescope
- Marianne Takamiya, University of Hawaii-Hilo
- Ichi Tanaka, Subaru Telescope
- Shelly Valdez, Native Pathways
- Joshua Williams, Subaru Telescope
- Kohei Yamazaki, Subaru Telescope
- Sherry Yeh, Subaru Telescope
- Robert Young, University of Hawaii-Manoa





A Brief Overview of Journey Through the Universe in Hawai`i

Gemini and the other observatories on Mauna Kea, the University of Hawai`i at Hilo, Hawai`i's Department of Education, and several other institutions across the United States (including NASA), have led a grassroots STEM initiative called "Journey through the Universe." This program engages hundreds of astronomers/astronomy educators to bring the wonders of our universe to our local, underrepresented students. Each year, for the past nine years, educators participating in the Journey program have visited an average of over 300 local classrooms and inspired over 7,000 students, educators and the public. The impact of this initiative on our local community has indeed been profound.

Hawai`i Governor Neil Abercrombie visited several of our classrooms during the 2013 program and, in his words, "...was truly moved by the experience." We would be honored to have our United States President see firsthand the wonders of astronomers/scientists working directly with our Department of Education and business community to inspire and nurture our next generation of science explorers.

Journey through the Universe originated as a national program developed by the National Center for Earth and Space Science, <http://journeythroughtheuniverse.org>. The program's goal was to engage entire communities, students, teachers, families, and the public, using educational programs in the Earth and space sciences and space exploration to inspire and educate. This initiative supports sustained science, technology, engineering, and mathematics (STEM) education in local schools, and is a celebration of the exploration and the joy of learning. Hawai`i joined the national *Journey through the Universe* program in June 2004.

Gemini Observatory Press Release
For Immediate Release on February 20, 2014

For images and more details see: www.gemini.edu/journey
Contacts at end of release

**GEMINI OBSERVATORY LEADS 10TH ANNIVERSARY CELEBRATION OF
HAWAII'S JOURNEY THROUGH THE UNIVERSE**



“Ten years ago, the idea to intensively share the discoveries made by the Mauna Kea observatories with our Hilo-area schools and community started a revolution,” says Gemini Observatory’s Janice Harvey who has kept the revolution expanding every year since then.

The program, based on a national program called Journey Through the Universe, began in Hawai’i in 2004 and, according to Harvey, “has exploded beyond our wildest dreams!”

This year, the program has continued to attract numerous partners, including national participants from NASA and beyond, in what promises to be the program’s most explosive year yet when it kicks off on March 7th. Almost 80 scientists, engineers and educators will engage several thousand students in presentations at Hilo area schools during the week starting on March 10th. In addition, the public is invited to join in the Family Science Day at the ‘Imiloa Astronomy Education Center on March 9 where numerous educational, family-friendly events, and talks will be presented by local astronomers, scientists, and educators. Details on the specific events can be found at: <www.gemini.edu/journey>.

The “Journey” partnership began when the Gemini Observatory and the Hilo-Waiakea Complex of the Hawai’i state Department of Education agreed to work together and share Mauna Kea astronomy with students. Over the past decade tens of thousands of local students, hundreds of teachers, and the community-at-large have benefited from the Journey program which has grown to include dozens of local (and national) research and education institutions as well as local businesses, government agencies and individuals. “We measure our success by our impact on

students,” says Hilo-Waiakea Complex Area Superintendent Valerie Takata, “but we are also proud of the partnerships this program has fostered with our local community and when community partners come to us to participate we know we are having an impact.”



The extensive local and national partnership includes: DOE Hilo-Waiakea Complex Area, Gemini Observatory, Bank of Hawai'i, Basically Books, Big Island Toyota, Caltech Submillimeter Observatory, Canada-France-Hawai'i Telescope, DeLuz Chevrolet, Hawai'i Community College, Hawai'i Electric Light Company, Hawai'i Island Chamber of Commerce, Hawai'i Island Economic Development Board, Hawai'i Space Grant Consortium, Hawai'i Tribune-Herald, IEI - Indigenous Education Institute, 'Imiloa Astronomy Center, James Clerk Maxwell Telescope, Japanese Chamber of Commerce & Industry, Joint Astronomy Centre, KTA Superstores, KWXX Radio Station, Mauna Kea Astronomy Outreach Committee, Mauna Kea Visitor Information Station, NASA Infrared Telescope Facility, NASA Lunar Science Institute National Center for Earth & Space Science, National Optical Astronomy Observatory, National Radio Astronomy Observatory, PISCES, Project Astro/Family Astro, Purdue University, Rotary Club of Hilo Bay, Smithsonian Submillimeter Array, Subaru Telescope, Thirty Meter Telescope, UCO Lick Observatory, UH Hilo College of Pharmacy, UH Hoku Ke'a and 2.2 Meter Telescopes, UH Institute for Astronomy, United Kingdom Infrared Telescope, University of California – Berkeley, University of California - Los Angeles, University of Hawai'i at Hilo, University of Hawai'i-Manoa, University of Oregon, and W.M. Keck Observatory.



Proclamation

Presented







In Recognition of the 10th Anniversary of Journey through the Universe 2014

WHEREAS, the 10th Anniversary of Journey through the Universe 2014 celebrates the educational initiative brought to fruition by the National Center for Earth and Space Science Education, bridging students, teachers, families and the public as they explore space and Earth science; and

WHEREAS, the 10th Anniversary of Journey through the Universe 2014 endorses sustained education in the critical areas of science, technology, engineering and mathematics (STEM), developing the splendor of learning beyond the classroom; and

WHEREAS, the 10th Anniversary of Journey through the Universe 2014 provides teachers with tools and training needed to conduct stimulating lessons in the classroom relevant to the Hawai'i Content and Performance Standards in addition to providing venues for family learning where parents and their children work together; and

WHEREAS, the 10th Anniversary of Journey through the Universe 2014 encourages participation in presentations conducted by Astronomer Educators highlighting workshops titled:

-  **"Why Did Bees, Moths, Pigs, Fish, Frogs, Butterflies and Monkeys Fly in SPACE?"**
-  **"Talking Story and Building an Astro-Bridge to the Mainland;"**
-  **"Are We Alone? Life beyond Earth;"**
-  **"Planets: Near and Far;"**
-  **"Sharing the Skies – a Cross Cultural and Multi-Disciplinary View;"** and
-  **"Gravity – the World's Cheapest Space Suit";** and

WHEREAS, the 10th Anniversary of Journey through the Universe 2014 Ambassador's team is a significant contributor to the Journey through the Universe program, representing community members who motivate and support youth by facilitating transportation, distributing educational materials and coordinating classroom engagements; and

WHEREAS, the 10th Anniversary of Journey through the Universe 2014 strengthens the community by partnering with The Gemini Observatory, Hawai'i Department of Education Hilo/Waiakea Complex, 'Imiloa Astronomy Center of Hawai'i and observatories on Mauna Kea, as well as all the other contributing organizations in empowering participants with the magnificence of science and all its grandeur;

NOW, THEREFORE I, NEIL ABERCROMBIE, Governor, and I, SHAN S. TSUTSUI, Lieutenant Governor of the State of Hawai'i, do hereby proclaim March 8 – 14, 2014, as

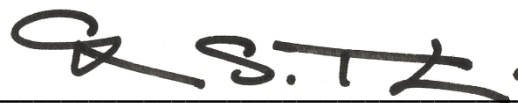
"JOURNEY THROUGH THE UNIVERSE WEEK"

in Hawai'i to urge the people of the *Aloha* State to join us in the celebration of the 10th Anniversary of Journey through the Universe, which encourages Astronomy Educators and scientists to conduct classroom visits and motivate teachers and students to engage in scientific studies about the universe.

DONE at the State Capitol, in Executive Chambers, Honolulu, State of Hawai'i, this eleventh day of February 2014.



NEIL ABERCROMBIE
Governor, State of Hawai'i



SHAN S. TSUTSUI
Lt. Governor, State of Hawai'i

COUNTY OF HAWAII

Proclamation

WHEREAS, the National Center for Earth and Space Science Education's (NCESS) central objective is to continue America's legacy as a leader on the frontiers of science and technology well into the 21st century by ensuring a scientifically literate public and a next generation of scientists and engineers; and

WHEREAS, NCESS is joined by the local scientific community beginning with Gemini Observatory, Joint Astronomy Centre, Subaru Telescope, Thirty Meter Telescope, Submillimeter Array, National Radio Observatory Telescope, Hoku Ke'a Telescope, James Clerk Maxwell Telescope, NASA Infrared Telescope, NASA Lunar Science Institute, United Kingdom Infrared Telescope, UH Institute for Astronomy, Caltech Submillimeter Observatory, W. M. Keck Observatory, 'Imiloa Astronomy Center of Hawai'i, UH-Hilo Physics & Astronomy, Mauna Kea Support Services, Mauna Kea Observatories Outreach Committee, PISCES; and

WHEREAS, partnered with the Department of Education Hilo/Waiakea Complex Area, "Journey Through the Universe" continues for a 10th year on March 6-14, 2014, and features a full nine days of whirlwind cosmic exploration and 'star-studded' space and science education for students, teachers, and parents as a national team of approximately 70 astronomers working on the frontier of space visit students in 400 classrooms; and

WHEREAS, the County of Hawai'i fully encourages and supports the educators who perpetuate learning and exploration of our universe in order to excite our youth about the future; and

WHEREAS, there are only ten sites across the country and the Hilo site has been recognized as the flagship "Journey" program in the nation,

NOW, THEREFORE, I, BILLY KENOI, Mayor of the County of Hawai'i, do hereby proclaim March 6-14, 2014, as

JOURNEY THROUGH THE UNIVERSE WEEK

in the County of Hawai'i and urge all citizens to be mindful of the great contributions that astronomy makes to the educational and economic betterment of our island's people.

IN WITNESS WHEREOF, I have hereunto set my hand and caused The Seal of the County of Hawai'i to be affixed. Done this 3rd day of January, 2014, in Hilo, Hawai'i.



A handwritten signature in black ink, appearing to read "Billy Kenoi".

Billy Kenoi
MAYOR



Office of the Director

670 N. A'ohoku Place • Hilo, Hawai'i 96720 • Phone (808) 974-2500 • Fax: (808) 974-2589

August 21, 2013

President Barack Obama
The White House
1600 Pennsylvania Avenue NW
Washington, DC 20500

Dear Mr. President:

It is our great pleasure to invite you, your family, and any of your staff or administration members to join us on the Big Island of Hawai'i on March 10, 2014 for a special celebration with the Gemini Observatory, the Hawai'i Department of Education, and the local Chamber of Commerce marking the tenth anniversary of *Journey Through the Universe*.

As our nation's ambassador of science and education, your presence at this *Journey Through the Universe* tenth anniversary event will bring the excitement and inspiration of the life-long possibilities available in science, technology, engineering, and mathematics (STEM) to untold heights.

Over the past decade, Gemini Observatory (with majority funding by the National Science Foundation) has led a highly successful educational initiative called *Journey Through the Universe*, reflecting Hawai'i's strong leadership in international astronomical research. Since 2004, this innovative program has touched thousands of our local children as dozens of scientists and engineers share their passion for scientific exploration in hundreds of classrooms across the Big Island. *Journey Through the Universe* serves as an exciting and unique model for other communities that want to support education and inspire students to pursue bold, adventurous, and audacious careers.

Through a partnership of scientific organizations and businesses throughout our local community, *Journey Through the Universe* has succeeded in promoting the underrepresented STEM professions in the state of Hawai'i. The Gemini Observatory and its partners intend to extend this endeavor for many more years and wish to celebrate with pride the first decade of this unique program.

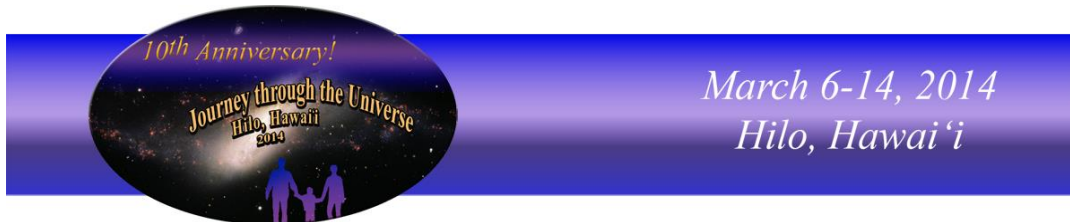
We look forward to you joining us for this 10th anniversary celebration on March 10, 2014, helping us to inspire not only our local students and educators, but also the entire nation for science, technology, engineering, and mathematics on this exciting journey through the universe!

Sincerely,

A handwritten signature in blue ink, appearing to read "Markus Kissler-Patig", with a stylized flourish at the end.

Dr. Markus Kissler-Patig
Director, Gemini Observatory

For more information on the Journey through the Universe program, please see the summary on the next page and at www.gemini.edu/journey.



ASTRONOMY EDUCATORS

Friday, March 7, 2014

'Imiloa Astronomy Center 8:30am - 3:00pm

- **For Astronomy Educators: Working Lunch Session (11:30-12:45) with DOE Teachers**
- **For DOE teachers: STEM Professional Development Sessions for Lead Teachers Grades K - 12: Focusing on College, Career and Community Readiness**

AGENDA

8:30 - 9:45

Career Opportunities in Astronomy

You'll be surprised at what you *don't know you don't know* when it comes to the opportunities for your student's future in astronomy. Learn about the diversity of possible life-long careers at the Mauna Kea Observatories as well as internships, mentorships, and classroom resources to help your students "shoot for the stars!"

10:00 - 11:30

Panel Discussion: "New Horizons in Astronomy"

This session will bring together an invited panel from the Mauna Kea astronomy community to share their thoughts on what lies ahead for astronomy research on Mauna Kea, from the exploration of exoplanets and dark energy, to the amazing technologies that will make it all happen. Bring your questions since time will be allowed for Qs&As.

11:30 - 12:45

Working lunch for astronomy educators & DOE teachers

This session, which provides the opportunity for Astronomy Educators and school-level educators to discuss proposed presentations, is designed to help astronomers enhance and focus their classroom visits. Astronomers are encouraged to bring their classroom presentation materials to this workshop to get valuable feedback from classroom experts. This workshop dramatically improves the impact of astronomers' and scientists' classroom visits. Astronomy Educators and Science Educators are volunteering astronomers, engineers, and faculty from astronomical institutions and colleges, both local and national.

1:00 - 3:00

Cultural Education and Astronomy

Journey through the Universe Teacher Workshops

Elementary (K-5) and Secondary (6 -12)



Saturday, Mar. 8, 2014
‘Imiloa Astronomy Center

Learn more about STEM teaching and learning by joining us at one of the following workshops (course credit option available)!

Elementary Teachers (K-5): 8:30 – 3:00 Moanahoku Hall

- **STEM Strategies for Earth Space Science- The Science of Parachutes**
Karen Umeda, State Resource Teacher: Teachers will learn how to address science standards related to force and motion as they practice inquiry and engineering design through the study of parachutes – which are often used in landing rovers and other space exploration modules.

Secondary Teachers (6 – 12): 8:30 – 3:00 Classroom

- **8:30 – 12:15 Aligning ELA Common Core with Argumentation in STEM:**
Sharon Price Schleigh, Purdue University. In this session, teachers will gain strategies for engaging students in a scientific argument and aligning class work to both NGSS and the common core standards. Examples will be provided from various science disciplines (includes text).
1:00 – 3:00 Connecting Students to Online Inquiry Opportunities in Astronomy, Lunar and Planetary Exploration
- **Brian Day, NASA/Ames Research Center.** Learn about a number of exciting programs and tools to engage students in astronomy, lunar science and planetary science. Learn how to guide student inquiry through the use of the Lunar Mapping and Modeling Portal, Moon Tours, Moon Mappers, and Moon Zoo

Lunch will provided to all-day participants from 12:15 – 1:00pm.

Interested teachers may attend additional scheduled sessions to earn PDE3 credits (approval of courses is pending) if desired. Please review the requirements for PDE3 credit on the following page, and indicate your interest when registering at this link:

<http://tinyurl.com/Mar-8-STEM-Registration>



OPTIONAL: PDE3 Credit Requirements (pending PDE3 approval)

Until approved, the course will not appear on the PDE3 site. However, by indicating your interest on the workshop registration form you will be assured of a space in the course.

Please note: Teachers seeking course credits will need to arrive 30 min earlier, and stay 30 min. later than other workshop participants on Sat., Mar. 8 to discuss course requirements and logistics.

Elementary: Journey through the Universe 2014 – Elementary STEM Strategies: Earth Space Science. Instructor: Karen Umeda: Contact hours = 24 (3 credits)

- Saturday, Mar. 8, 2014 8:00 – 3:30 'Imiloa Astronomy Center (Parachutes)
- Saturday, Apr. 12, 2014 8:00 – 3:30 Hawaii District Annex, Rm 2 (Magnetism)
- Saturday, May 3, 2014 8:00 – 3:30 Hawaii District Annex, Rm 2 (Communication)
- WebEx Session: Date and Time TBA (90 min.)

Learning Portfolio Requirements: Due June 30, 2014

** Each item will include a title page with caption

1. **Pre-Course Assessment** (Short Essay): Describe your current understanding and implementation of STEM curriculum and instruction, including strengths and challenges related to teaching science inquiry and the engineering design process.
2. **Daily Activity Logs** that describe the featured inquiry and engineering design activities, and how the teacher intends to implement them with students.
3. **Lesson Plan Outlines** (3) based on course content, including-
 - Standard(s)/Benchmark(s)
 - Student learning objective(s)
 - Identification of assessment(s) to determine student progress toward the stated learning objectives.
 - Instructional procedures for conducting the lesson.
4. **Lesson Implementation Report:** Description, evidence of student learning, and reflection.
 - Describe the selected lesson as implemented with students
 - Analyze student learning as evidenced by work samples (2 minimum)
 - Reflect on the effectiveness of your teaching
5. **Visual Presentation** (Powerpoint or similar) that explains and illustrates the implementation of the STEM learning experience for the purpose of contributing to the learning of other teachers.
6. **End of Course Reflection:** Describe what you learned from attending this course and how it will impact your classroom practice with regard to STEM curriculum and instruction, including science inquiry and the engineering design process

Secondary: Journey through the Universe 2014 - Secondary: Integration of Argumentation with Student Learning Experiences in Science

Instructor: Sharon Price Schleigh

Contact hours = 16 (2 credits)

Saturday, Mar. 8: 8:00 – 3:30 'Imiloa Astronomy Center, Hilo, HI

- Sharon Price Schleigh, Purdue University
Aligning ELA Common Core with Argumentation in STEM
- Brian Day, NASA/Ames Research Center
Connecting Students to Online Inquiry Opportunities in Astronomy, Lunar and Planetary Exploration

Sunday, Mar. 9: 8:00 – 3:30 'Imiloa Astronomy Center, Hilo, HI

- Rob Kelso, PISCES Project
Why did bees, moths, pigs, fish, frogs, butterflies & monkeys fly in SPACE?
- Scott Fisher, University of Oregon
Building an Astro-bridge to the Mainland
- Markus Kissler-Patig, Gemini Observatory
Are we alone? Life beyond Earth
- Sandra Dawson, Ann Marie Cody, & Breann Sitarski, Thirty Meter Telescope: *Planets: Near and Far*
- Laura Peticolas, UC Berkeley
Sharing the Skies – a cross cultural and multi-disciplinary view
- Kevin Caruso, Morey Corporation
"Gravity" and the World's Cheapest Space Suit!

Wednesday, Mar. 12 : 7:00 – 9:00pm, UH Hilo Science and Technology Building Lecture Hall

- Kevin Grazier, Science Advisor SyFy Channel
What is the Role of a Hollywood Science Advisor?

For more complete session descriptions, go to: <http://www.gemini.edu/journey>

For more information about presenters:

http://www.gemini.edu/images/pio/jttu/2014/2014Educators_bios.pdf

Learning Portfolio Requirements: Due June 30, 2014

** Each item will include a title page with caption

- 1. Pre-Course Assessment (Short Essay):** Describe your current use of argumentation in teaching science, as well as your strengths and challenges in designing learning experiences that actively engage students in real-world science investigations and/or engineering design.
- 2. Synopses of Earth-Space Science presentations:** Brief descriptions of eight presentations including identification of key science concepts and possible applications to your classroom instruction.
- 3. Lesson Plan Outlines (2)** that incorporate content from one or more

- presentations: Including-
- Standard(s)/Benchmark(s) for ELA argumentation and science
 - Student Learning Objective(s)
 - Identification of Assessment(s) to determine student progress toward the stated learning objectives.
 - Instructional procedures for conducting the lesson.
4. **Lesson Implementation Report:** Description, evidence of student learning, and reflection
- Describe the selected lesson as implemented with students
 - Analyze student learning as evidenced by work samples (2 minimum)
 - Reflect on the effectiveness of your teaching
5. **End of Course Reflection:** Describe what you learned from attending this course and how it will impact your classroom practice with regard to teaching argumentation as part of science instruction.



'Imiloa's 8th Annual Family Day

celebrating **Journey through the Universe's
10th Anniversary**

FREE event sponsored by **KTA Super Stores**

Sunday, March 9, 2014
9:00 am - 4:00 pm



Giveaways for the first 500 keiki!
Birthday Cake

Journey through the Universe Presentations

Hands-on Activities

Exhibit & Garden Tours

Planetarium Experience

KTA Super Stores Cookout



www.imiloahawaii.org or 808.969.9703

Journey through the Universe Presentations

10AM Rob Kelso

“Why did bees, moths, pigs, fish, frogs, butterflies and monkeys fly in SPACE?”

Come and find out the answers from the Pacific International Space Center for Exploration Systems (PISCES) Director and former Space Shuttle Flight Director.

11AM Dr. Scott Fisher

“Talking Story and Building an Astro-bridge to the Mainland”

Dr. Fisher will speak about what it's like to be a professional astronomer that works at one of the Mauna Kea observatories. In this informal talk, which is filled with great pictures and videos, Dr. Fisher will portray “A Day in the Life of an Astronomer” and share some of the most recent discoveries in the realm of astronomy. He will also talk about how he plans to connect Hilo-town and the Big Island to schools and universities in Oregon through a proposed “Remote Observing Center.” By building an “astro-bridge” between Hawaii and Oregon, Dr. Fisher hopes to give students in both states a way to study astronomy using both small and large telescopes. Finally, there will be a rousing game of “Stump the Astronomer!” where Dr. Fisher will field questions from the audience.

12PM Dr. Doug Simons

“Discoveries in the Fundamental Nature of Space”

Our perception of the universe is biased toward things we can detect, large or small. In astronomy, centuries of scientific research are founded upon the study of stars, galaxies, interstellar gas, planets, and other celestial objects – things we can detect.

Thanks to advances in astronomy and high energy physics, we are gaining a new appreciation for the fundamental nature of the space that connects everything. Through telescopes to probe the largest objects in the universe and particle accelerators to probe the smallest, we are beginning to come full circle, and appreciate the importance of the space between.

1PM Sandra Dawson, Ann Marie Cody and

Breann Sitarski

“Planets: Near and Far”

Did you know that our solar system is not alone? Over 1000 planets have now been identified around other stars, and many possess unique properties! Finding and characterizing these planets has been a triumph of modern astronomy. We will take an interactive journey starting with the Earth and Moon and ending in solar systems other than our own to explore these discoveries and the size scales involved.

2PM Dr. Laura Peticolas, Dr. Nancy Maryboy, and Dr. Isabel Hawkins

“Sharing the Skies – a cross cultural and multi-disciplinary view”

We will share some of our findings about both Indigenous ways of knowing the sky and Universe as well as western astronomy interpretations of the sky and Universe. From atmospheric phenomena to the distant cosmos, we share what we have learned from our own cultural understanding, tools, exploration, and discovery. We will explore with our audience how language, mathematics, knowledge of the sky from past studies, and knowledge from elders have helped us develop a more complete understanding of the space around Earth and beyond.

3PM Kevin Caruso

“Gravity” and the World's Cheapest Space Suit!

Watch an audience volunteer dress up in “The World's Cheapest Space Suit” as electrical engineer and space author Kevin Caruso shares a fun hands-on educational discussion about the design of real NASA Space Suits--- as compared to the Hollywood Space Suits shown in the movie “Gravity”.

At the same time, we'll answer the important question: Is There Gravity In Space? Hint: YES!!!



Journey through the Universe 2014 Ambassadors



10th Anniversary!

*Journey through the Universe
Hilo, Hawaii
2014*

SAVE THE DATE!



*Monday March 10, 2014
5:00 pm, location to be announced*

*Astronomy Educators Reception
& Journey's 10th Anniversary
Celebration!*

www.gemini.edu/journey for additional information

We invite you to celebrate Journey Week!
Meet and greet National Science Team members plus the many
astronomers and educators who are delivering this fantastic
educational program to our K-12 schools.

Join the business community in thanking them for their commitment
to the Journey Through the Universe program.





Lunar Scientist, Brian Day will share work being conducted by NASA to explore the moon. Brian will also talk about the current moon mission, LADEE and other future missions. Join Brian as he brings to life the amazing images and discoveries as NASA explores the moon!



© NASA/JPL-Caltech

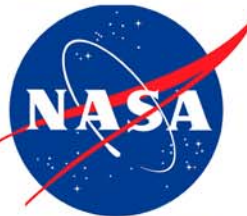


FREE Public Lecture
by Lunar Scientist, Brian Day of NASA Ames Solar System Exploration Research Virtual Institute
WHERE: UH Hilo Science & Technology Bldg. Room 108
WHEN: Wednesday, March 12, 7:00pm

Call (808)-932-7187 or
email uhhpa@hawaii.edu
for more information.
www.astro.uhh.hawaii.edu

Co-Sponsored by:
UH Hilo Physics and Astronomy Dept.
Gemini, Journey Through the Universe
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UNIVERSITY
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HILO

Journey Through the Universe Science Educator's Workshops



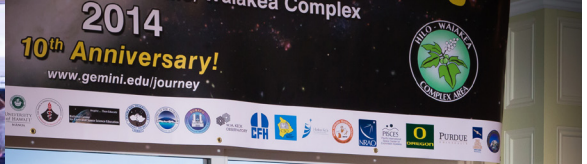
Career Workshop Panel



Family Science Events at 'Imiloa & UHH



Hawai'i Island and Japanese Chambers of Commerce Event



Journey Through the Universe Classroom Visits









OSHIRASE

The Newsletter of the Japanese Chamber of Commerce & Industry of Hawai'i

December 2013
Junigatsu

十二月

10th Anniversary! Journey through the Universe Hilo, Hawai'i 2014

By Amanda Lee, Oshirase Editor and Janice Harvey, Journey Local Team Leader



With next year marking the 10th anniversary of Journey through the Universe, our chamber wanted to take a closer look at this incredible initiative, and the relationship that the chamber has had with it over the years. We sat down with **Janice Harvey**

of Gemini Observatory to explore what Journey through the Universe means for all of us. **Janice** is the Community Outreach and Education Programs Leader for Gemini Observatory and serves as the local team leader for Journey on the Big Island.



Journey started over a decade ago under the vision of **Dr. Jeff Goldstein**, Director of the National Center for Earth and Space Science Education, and over the years has evolved into one of the most respected and successful Journey programs in the nation. Through Gemini Observatory, Hilo is one of 10 communities in the nation that participates as a Journey site. Journey brings together the local students and teachers with astronomers and engineers who not only share their passion and knowledge for science and technology, but also inspire local students to aim high in their education and future careers. To understand the impact that this outreach has had, for each of the past nine years, astronomy educators and engineers have visited an average of 7,000 students in 380 classrooms in the Hilo/Waiakea District.

Janice shares that JCCIH has been on board since the beginning. Along with Hawaii Island Chamber of Commerce, JCCIH has sponsored an annual event at the Yacht Club for the past several years. This thank you celebration is a unique opportunity for astronomers, educators, and the business community to discuss and share a common goal - to enrich science education in our schools and inspire our children to aim high.

We asked **Janice** how Journey through the Universe has been able to grow into such a successful initiative in our community. She shares that with the vision behind it, that it's the commitment and caring support of individuals and organizations that has developed Journey into a very respected and exceptional program. Commitment from people such as Dept. of Education District Superintendent **Valerie Takata**, who has been involved since the beginning, and has been so important in the Journey partnership and helping to make it a thriving and sustainable program in our schools. **Janice** described how JCCIH's commitment to Journey from "day one" is a great example of how the dedication in our community and enthusiasm to support education for our children has helped to launch Journey into the wonderful program that it is today. JCCIH President **Carol VanCamp** and Education Committee Chair **Audrey Takamine** have both embraced this relationship with Journey and have been great supporters of the effort.

After learning about Journey's history from **Janice**, it is clear that it is so successful in large part because of the passion and love for it from **Janice**. An amazingly dedicated woman, she has been developing this initiative over the years, and deserves a very grateful *mahalo* from the chamber for all she has given to the Journey program, the children, the community, and all she continues to contribute to this wonderful effort!

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Journey through the universe



HOLLYN JOHNSON/Tribune-Herald

Assistant scientist Andre Nicolas Chene, left, and data analysis specialist Michael Hoenig laugh together in the Operations Room at the Gemini Observatory office in Hilo on Friday evening. The two scientists will be presenters in this year's Journey Through the Universe.

Program aims to spark keiki's interest in science

By **MEGAN MOSELEY**
Tribune-Herald staff writer

Hilo High graduate Devin Chu said thanks to Gemini Observatory's Journey Through the Universe program, he's reaching for the stars. "Journey Through the Universe

furthered my interest in astronomy, and I was motivated to conduct my own science projects with the help of a Mauna Kea astronomer," said the 22-year-old physics and astronomy major at Dartmouth College.

Chu is one of the program's success stories. What started

as a small presentation with several astronomers has grown to host 80 industry experts all looking to share their love and knowledge of the universe with students at Hilo-area schools.

Michael Hoenig, data analysis specialist at Gemini North, has

See **JOURNEY** Page A5

JOURNEY From front page

participated in multiple Journey programs. In the past he's used interactive techniques to show middle school students how infrared light makes seemingly hidden objects become visible.

Hoenig said he's looking forward to educating local keiki on the impacts and aspects of astronomy and science.

"It's a chance to connect with the community and give back to the community," he said.

Kathy Roth, associate scientist at Gemini North, said Journey helps to raise awareness about science and jobs.

"It drums up interest in science, as well as exposes what career options are out there," she said.

According to Gemini's web site, Hilo is one of 10 communities around the nation that are designated Journey sites. The speakers will visit 15 schools and teach in an average of 400 classrooms.

This year marks Journey's 10th year in existence. Janice Harvey, community outreach and education programs leader at the observatory, said the program started when the observatory and the Hilo-Waiakea Complex of the Hawaii State Department of Education decided to expand the studies of astronomy on Mauna Kea and around the world into local classrooms.

Journey advocates are calling the decade-long program a success.

"We measure our success by our impact on our students," said Hilo-Waiakea Complex Area Superintendent Valerie Takata in a press release.

"But we are also proud of the partnerships this program has fostered

with our local community and when community partners come to us to participate we know we are having an impact."

The program starts March 7 with an Astronomy Educators Workshop at the 'Imiloa Astronomy Center. There will be a Family Science Day at the 'Imiloa Astronomy Education Center on March 9. The event is free to the public and will consist of garden tours, numerous talks and presentations including a discussion on space suits and one titled, "Why did bees, moths, pigs, fish, frogs, butterflies and monkeys fly in space?" by Rob Kelso, Pacific International Space Center for Exploration Systems (PISCES) director and former Space Shuttle Flight director. The program will conclude on Wednesday, March 12 with a presentation at the University of Hawaii at Hilo. Dr. Kevin Grazier, science advisor for the film "Gravity," will be talking about his scientific studies and his work in Hollywood.

The Gemini Observatory is an international collaboration with two identical 8-meter telescopes. The Frederick C. Gillett Gemini Telescope is located on Mauna Kea, Hawaii Gemini North and the other telescope of Cerro Pachon on central Chile (Gemini South); together the twin telescopes provide full coverage over both hemispheres of the sky.

For more information visit www.gemini.edu.

Email Megan Moseley at mmoseley@hawaii-tribune-herald.com

The Tribune-Herald is a 2014 Journey Through the Universe Program sponsor.

'Gravity' advisor to speak

Dr. Kevin Grazier, science advisor for the critically acclaimed film "Gravity," said he's looking forward to this year's Journey Through the Universe program.

"It's the people you meet and the look on the kids' faces when you talk to a classroom full of kids," he said.

Part of Grazier's enthusiasm for science started while watching Apollo missions on the television with his family as a kid.

"It was an all day thing. They'd tell you what's going to happen and what you're going to see. There was much more excitement, so much more national pride," he said.

That's one reason why Grazier said he

likes to share with the public his studies and support programs like Journey.

Attendees can expect to hear him discuss his role as a science advisor for the SyFy Channel series "Defiance," as well as his work with "Battlestar Galactica," "Eureka," "Falling Skies," "The Zula Patrol," and "Gravity."

Grazier will also be talk about his role as a planning engineer at NASA's Jet Propulsion Laboratory on the Cassini/Huygens Mission.

He'll be speaking at the University of Hawaii at Hilo Science and Technology Building Room 108 on Wednesday, March 12 at 7 p.m. The event is free to the public.

Schedule of events

Journey Through The Universe Schedule March 6-14 at 'Imiloa Astronomy Center
Friday, March 7: Master Educators/Astronomers' Workshop: 8 a.m.- 3p.m.

Saturday, March 8: 'Imiloa Astronomy Center Teacher Workshop: 8 a.m.-3p.m.

Sunday, March 9: 'Imiloa Astronomy

Center: 9 a.m.- 4 p.m.

Monday-Friday March 10-14: Astronomy Educators will make classroom visits to participating schools

Monday, March 10: Hawaii Chambers of Commerce Appreciation Event: 5 p.m.-8 p.m.

Wednesday, March 12: Presentation at UH-Hilo with Dr. Kevin Grazier 7 p.m.

Journey Through the Universe

2014

Astronomy Educator Profiles



Christoph Baranec
UH Institute for Astronomy
Contact: baranec@hawaii.edu

Christoph Baranec joined the University of Hawaii's Institute for Astronomy faculty at the beginning of July. He earned his B.S. in astronomy from Caltech in 2001, and his Ph.D. in optical sciences from Arizona in 2007. He specializes in creating adaptive optics systems, which compensate for turbulence in Earth's atmosphere that normally blurs light from celestial bodies, and is particularly interested in using these systems to study exoplanets and their environments. As a postdoctoral researcher at Caltech, Baranec led an international team that created the world's first fully automated laser adaptive optics system called Robo-AO which is now being used to take high-resolution images of all the candidate exoplanet host stars identified by NASA's Kepler mission. He previously helped create Palomar Observatory's PALM-3000 adaptive optics system, the first of the purpose built extreme adaptive optics systems, which allow astronomers to peer ever closer to the area around nearby stars to find planets hiding.



Daniel Berke
Joint Astronomy Centre
Contact: d.berke@jach.hawaii.edu

Daniel Berke earned his Bachelor's degrees in Physics and Astronomy at UH Hilo in December 2011 after moving to Hawaii from California. He quickly fell in love with the climate and after graduating spent a year working at the Mauna Kea Visitor Information Station before finding a job at the Joint Astronomy Centre. There he keeps an eye on the output of the James Clark Maxwell Telescope, watching to make sure everything is running as it should be. Apart from his main loves of physics and astronomy he enjoys reading anything he can get his hands on, hiking, playing computer games, powerbocking, classical music, spelunking, and singing in choir. In the future Daniel plans to go on to graduate school to obtain a Ph.D. in theoretical physics.



Nobuo Arimoto
Subaru Observatory
Contact: arimoto@nao1.org

Nobuo Arimoto's intense interest in astronomy began when a neighbor showed him how to use a telescope when he was 11 years old. He went on to become a student of astronomy at Tohoku University, where he received his Ph.D. in astronomy in 1980. He has held positions the Observatoire de Paris-Meudon in France (1984-1988), the University of Durham in the United Kingdom (1988-1991), the Universitaet der Heidelberg in Germany (1991-1993), the Institute of Astronomy at the University of Tokyo in Japan (1993-2001), and NAOJ in Japan (2001-2012). He served as part of Subaru's Time Allocation Committee (2000-2004) and as Chair of the Subaru Advisory Committee (2004-2012). He took over Director of the Subaru Telescope in April of this year (2012). A heavy user of Subaru's telescope (59 nights as a principal investigator in a little over a decade), Dr. Arimoto focuses his scientific research on understanding galaxy evolution and the properties of individual stars within galaxies.



Jennie Berghuis
Subaru Telescope
Contact: jp_lolo@hotmail.com

Jennie Berghuis is an Assistant Telescope Operator for Subaru Telescope. She did her education at the University of Hawai'i at Hilo, graduating with a B.S. in Astronomy in 2007. She gained experience through locally offered internships including studying and reducing asteroid research data collected at NASA's Infrared Telescope Facility (IRTF), working as a Night Attendant for IRTF, assisting in the fabrication, assembly, and organization of Subaru's HiCIAO instrument project, and building a remotely-controlled telescope dome currently in operation on Mauna Loa. She enjoys adventure, backcountry hiking, skydiving, surfing, paddling, snowboarding, movies, playing music, and most importantly: looking up!



Dan Birchall
Subaru Telescope
Contact: d1b@naoj.org

Dan Birchall is an Operator at the Subaru Telescope. He came to Mauna Kea in 2004 as a volunteer and operator at the UH 2.2-meter, with a background in computing. He also worked as an aircraft spotter for the Keck and Gemini observatories, then joined Subaru in 2009 while completing a Graduate Certificate of Science in Astronomy. In his spare time, Dan volunteers at the Visitor Information Station, studies supernovae and sustainable development, and helps his toddler learn the planets.






Kevin Caruso
Morey Corp
Contact: Kcaruso@moreycorp.com




Kevin Caruso is an electrical engineer, private pilot, and space author. He also sells control panels and keypads for electronic equipment. Kevin received his BSEE from the University of Illinois, and did graduate work in patent law at the Illinois Institute of Technology. In 1991, Kevin created a Young Pilot Program for 11-16 year old students who were eager to learn about flying. He has been sharing his passion for space exploration with students and teachers since 1994. At that time, NASA's field center in Cleveland Ohio selected him to share space science and Apollo Moon rocks with schools across Illinois. He was selected in 1999 to serve as a NASA JPL Solar System Ambassador in Illinois and has been a guest presenter at Space Center Houston's Educator Conference for 5 consecutive years. After four years of research, his middle school book entitled "Back To The Moon" was published in 2001. Kevin enjoys sharing his passion for space with students, educators, and parents. He lives in Illinois and is the proud father of 2 wonderful teenage children.



Andre-Nicholas Chene
Gemini Observatory
Contact: achene@gemini.edu

André-Nicolas Chéné is an assistant scientist at the Gemini North Observatory since early 2013. He obtained his Ph.D. in astrophysics from the Université de Montréal in 2007. He then moved across his home country ("A Mari Usque Ad Mare") to become a research associate for the National Research Council Canada at the Herzberg Institute of Astrophysics from 2007 to 2010. From 2010 to 2013, he held a joint post-doctoral position between the Universidad de Concepcion and the Universidad de Valparaiso, in Chile, and joined the science team of the VISTA Variable in Via Lactea survey. His main scientific interests are massive stars and young stellar open clusters. His expertise covers optical and near-infrared imaging and spectroscopy. Two things he enjoys a lot since he moved to Hawai'i are long observing runs at Mauna Kea, and his daily bike ride to work up and down Puainako St.

 <p>Hsin-Fang Chiang UH Institute for Astronomy Contact: hchiang@ifa.hawaii.edu</p>	<p>Hsin-Fang Chiang is a postdoc at the Institute for Astronomy and NASA Astrobiology Institute at the University of Hawaii at Manoa. She received her Ph.D. from the University of Illinois at Urbana-Champaign in 2011, with a thesis about observations and modeling of protostars.</p>
 <p>Mark Chun UH Institute for Astronomy Contact: mchun@ifa.hawaii.edu</p>	<p>Mark Chun is an astronomer working at the University of Hawaii's Institute for Astronomy. His research interests include astronomical instrumentation in the area of adaptive optics and atmospheric optical turbulence.</p>
 <p>Ann Marie Cody Caltech Contact: amc@ipac.caltech.edu</p>	<p>Ann Marie Cody is a postdoctoral scholar at Caltech, working with the Young Stellar Object Variability group at Spitzer/IPAC on the Coordinated Synoptic Investigation of NGC 2264. These projects seek to understand the diversity of variability behavior in young stars, its mechanisms, and connections to circumstellar disks. Her research involves high-precision optical and infrared photometry of young stars and brown dwarfs using ground and space-based telescopes. Ann Marie enjoys visiting observatories from Hawaii to Chile while carrying out her work.</p>

 <p>Kathy Cooksey UHH Physics & Astronomy Contact: kcooksey@hawaii.edu</p>	<p>Kathy Cooksey studies the cosmic web at high and low redshift, by using background quasars to probe the foreground gaseous structure in absorption. She works to characterize the cosmic enrichment cycle through the signatures etched into the processed gas and reflected in its metallicity, elemental abundances, density and/or spatial distribution. Whenever possible, Kathy plays soccer. Failing that, she likes running and hiking. On the more sedentary side, she crochets and watches anime.</p>
 <p>Sandra Dawson Thirty Meter Telescope Project Contact: sdawson@tmt.org</p>	<p>Sandra Dawson is Manager, Hawai'i Community Relations, for the proposed Thirty Meter Telescope Project. Dawson has a Bachelor of Arts degree in Political Science and a Master's Degree in International Studies from Claremont Graduate University. For 20 years as an employee of the California Institute of Technology (Caltech) she worked at Caltech's Jet Propulsion Laboratory on some of JPL's largest projects for NASA, including the Galileo, Cassini and Mars missions, and received numerous group and individual awards. She retired from Caltech in December and is now on the staff of the TMT Observatory Corporation. She lives in Hilo with her husband Dwayne.</p>
 <p>Brian Day NASA Lunar Science Institute Contact: brian.h.day@nasa.gov</p>	<p>Brian Day is a NASA contractor at Ames Research Center. His duties there have included serving as Education and Public Outreach Lead for NASA's LCROSS lunar impactor mission and for the upcoming Lunar Atmosphere and Dust Environment Explorer mission. His hobbies and professional life focus on astronomy. For 16 years, he was chairman of the Foothill College Observatory. Brian and his wife Pam are avid solar eclipse chasers, having traveled around the world to see eight total, five annular, and numerous partial eclipses from such exotic locations as the wilds of Africa, the heights of the Andes, the jungles of Central America, the Australian Outback, the frozen wastes of Northern Mongolia, the base of the Great Wall of China, and the beer gardens of Germany.</p>



Jessica Delgado
University of Hawaii – Manoa
Contact: jd9661@gmail.com

Jessica Delgado grew up in Monterey, CA, attended San Francisco State for her undergrad degree in math. While she was there she also played collegiate softball. Jessica stayed at SFSU and earned her Master's this past spring. She now attend UH as a PhD student studying number theory.



Daniel Devost
Canada-France-Hawaii Telescope
Contact: devost@cfht.hawaii.edu

Daniel Devost is the Director of Science Operations at the Canada-France-Hawaii Telescope since 2008. He started at CFHT in 2007 as a Canadian Resident Astronomer and was the WIRCAM Instrument Scientist. Before Moving to Hawaii, Daniel worked at Cornell University from 2000 to 2007 as an Instrument Scientist for the Infrared Spectrograph. The spectrograph is one of three instruments on board the Spitzer Space Telescope that was launched in August 2003. Daniel did his PhD at the Université Laval in Québec City, Canada in collaboration with the Space Telescope Science Institute in Baltimore where he spend three years. His science interests are the formation of massive stars and the amount of metals in the Universe.



Jeff Donahue
Gemini Observatory
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Jeff Donahue is Senior Laser Technician at Gemini Observatory. He supports the laser guide star, preparing the laser for each laser run. Jeff and his wife came from Oregon, where he spent 17 years at Hewlett Packard. Jeff also worked in Corvallis, Oregon as an electronic and laser maintenance technician supporting Inkjet Manufacturing. Jeff has a B.S. degree in Industrial Technology from Central Washington University and an A.S. degree in Electronic Engineering Technology from Linn Benton Community College. In addition to his laser activities, Jeff enjoys snorkeling and exploring the Big Island.



Angelic Ebbers
Gemini Observatory
Contact: aebbers@gemini.edu

Angelic Ebbers is a Senior Software Engineer for Gemini Observatory. She is part of the Software Operations group as well as a Telescope Technical Manager. Angelic specializes in motion control systems, EPICS real-time development, and troubleshooting. Angelic earned a B.Sc. from York University in the Space and Communications Sciences stream, with Honors in Computer Science and Physics, plus a minor in Astronomy. Prior to joining Gemini, Angelic worked for The Herzberg Institute of Astrophysics as well as the University of Toronto Southern Observatory in Chile. Outside of work, Angelic can be found training/competing in Dog Agility, scuba diving, or reading a good science fiction book.



Ryan Felix
University of Hawaii – Manoa
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Ryan Felix a graduate student at UH Manoa and is a Super-MI fellow, with Lanai High and Elementary School, researching mathematics and mathematics education. SUPER-MI is a project at the Department of Mathematics of the University of Hawaii at Manoa funded by a National Science Foundation, Graduate STEM Fellows in K-12 Education (GK-12) program. As part of this program he works with K-12 teachers to design innovative, developmentally appropriate, and engaging activities for K-12 students to enhance STEM skills.



Scott Fisher
University of Oregon
Contact: scottfisher@gmail.com

Scott Fisher is a faculty member within the University of Oregon, Department of Physics, where he teaches astronomy courses and serves as the Director of Outreach for the department. Scott previously worked at the National Science Foundation in Washington, DC where he was responsible for selecting and funding astronomy programs across the United States. Before his time in Washington, Scott worked as a staff member of the Gemini Observatory as an instrument scientist and as a member of the Gemini Outreach team. Scott lived in Hilo-town for just over 10 years while he worked at Gemini. He obtained his Ph.D. from the University of Florida in 2001 after working his way through the Florida state school system, including a stint at Lake Sumter Community College. Scott's main area of research is searching for and studying planet-forming disks around young stars. He is also involved with the design, construction, and use of infrared camera systems that are used on some of the biggest telescopes in the world. He has spent approximately 350 nights observing from the summit of Mauna Kea since his first trip to Hawaii in 1996. In addition to his love of astronomy, Scott is an amateur photographer and a Geocacher.



Suzanne Frayser
Subaru Telescope
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Suzanne G. Frayser is Subaru Telescope's English Press Officer in the Office of Public Information and Outreach. She earned her B.A. in sociology and anthropology at the College of William and Mary and her Ph.D. in anthropology from Cornell University. She is a member of Phi Beta Kappa and received a Professional Associate Award from the Cultural Learning Institute of the East-West Center at the University of Hawaii. She has served as a college professor (SUNY Potsdam and Colorado College); the founder and principal researcher of a research and consulting firm (Cultural Insights); and an officer in several professional organizations. She is the author of several scholarly books and many articles. Her main areas of interest are applied anthropology, cross-cultural research and communication, and effective presentation of science to the public.



Gary Fujihara
UH Institute for Astronomy
Contact: fujihara@ifa.hawaii.edu

Gary Fujihara was born in Honolulu, and a resident of Hilo since 1980, with a background in graphic arts, music and computer software engineering. Gary heads the Office of Science Education and Public Outreach at UH Institute for Astronomy. While he was a telescope operator at Subaru in 2002, Gary founded **Astro Day**, a nationally recognized and award-winning annual event that attracts over 15,000 people every year in Hilo. Gary has been a NASA Jet Propulsion Laboratory Solar system Ambassador since 2004, and is a member of the Astronomical Society of the Pacific, the Astronomical League and the International Dark Sky Association.



Roy Gal
UH Institute for Astronomy
Contact: rgal@ifa.hawaii.edu

Roy Gal received his B.A. in Astrophysics from Columbia University in 1994, and his Ph.D. in Astronomy from Caltech in 2001, detecting and studying galaxy clusters from the 2nd Palomar Sky Survey. He then worked on the Sloan Digital Sky Survey at Johns Hopkins University, followed by three years at U.C. Davis, studying galaxy evolution in clusters that formed when the Universe was half its present age. He has been a faculty member at UH Manoa's Institute for Astronomy (IFA) for eight years, continuing to study the evolution of galaxies. He oversees all of the IFA's outreach programs and media relations, teaches astronomy classes, and heads the UH National Gemini Office and the Friends of the Institute for Astronomy.



Tom Geballe
Gemini Observatory
Contact: tgeballe@gemini.edu

Tom Geballe obtained a Ph.D. in physics in 1974 under Prof. Charles Townes at U.C. Berkeley. Following postdoctoral fellowships at Berkeley, Leiden, and a Carnegie Fellowship at Hale Observatories in Pasadena, he became a staff astronomer at the United Kingdom Infrared Telescope (UKIRT) in 1981. He was Astronomer-in-charge, Associate Director, and Head of Operations at UKIRT from 1987 until 1998. Among his research interests are the galactic center, the physics of quiescent and shocked molecular clouds, the late stages of stellar evolution, the composition of interstellar dust, the surfaces, atmospheres, and aurorae of planets and moons, and brown dwarfs. Recent significant papers include spectroscopy/classification of brown dwarfs, detection of H3+ in both dark and diffuse interstellar clouds, and infrared evolution of erupting stars V838 Monocerotis and Sakurai's Object.



Jeff Goldstein
National Center for Earth and Space Science Education
Contact: jeffgoldstein@ncesse.org

Jeff Goldstein is a nationally recognized science educator and planetary scientist who has dedicated his career to the public understanding of science and the joys of learning. As Center Director for the National Center for Earth and Space Science Education, Jeff oversees the creation and delivery of programs that engage entire communities, train 3,000 teachers annually, and emphasize family learning. He led the inter-organization team that permanently installed the Voyage model Solar System on the National Mall in Washington, D.C., in front of the Smithsonian. The Voyage National Program is permanently installing low-cost replicas in 100 communities world-wide. Jeff also oversees the Student Spacelight Experiments Program (SSEP) that provides real research opportunities for pre-college students on the Space Shuttle and International Space Station. Jeff was the keynote speaker for the NSTA National Conference in San Francisco, California, in March 2011. Jeff was at the National Air and Space Museum for 8 years, departing in 1996 as acting Chair of the Lab for Astrophysics. He was on the senior staff at Challenger Center from 1996-2005. In 2005 he created the National Center for Earth and Space Science Education. Visit Jeff's website at <http://blogonthuniverse.org>.



Bryan Gorges
 Joint Astronomy Centre
 Contact: b.gorges@jach.hawaii.edu

Coming from the high plains of Cheyenne, Wyoming, **Bryan Gorges** moved to Hilo to work for the Joint Astronomy Centre in 2008. With a degree in Computer Engineering from the University of Wyoming, Bryan is interested in software, robotics, and artificial intelligence. Most of the work he does for the JAC is control software and user interfaces for both of the telescopes with other duties, including a short stint operating UKIRT and volunteering to run extended observing for JCMT. Bryan enjoys Fencing, Archery, Hiking, and Birdwatching outside of work. He also loves thinking about how to solve problems that might include robotic solutions, maybe he will get to try some of these ideas someday.



Kevin Grazier

Kevin R. Grazier, Ph.D. is the Science Advisor for the Syfy Channel series "Defiance," and the film "Gravity." He performed the same role on the Peabody Award winning "Battlestar Galactica", as well "Eureka", "Falling Skies", "The Zula Patrol", and many other series. He produced the award-winning short "D.N.E.: Do Not Erase," with several other projects currently in development, including science documentaries, and the science fiction web series "Stasys." Grazier co-authored the book "The Science of Battlestar Galactica", and is an editor and contributing author for the American Chemical Society anthology "Hollywood Chemistry: When Science Met Entertainment" (2013). Currently writing "Hollywood Science" (Springer) with Stephen Cass, and the novel "The Once and Future War" with Ges Seger. For 15 years he was a research scientist and science planning engineer at NASA's Jet Propulsion Laboratory on the Cassini/Huygens Mission. He was the Investigation Scientist for the Imaging Science Subsystem, and wrote mission planning and analysis software that won both JPL- and NASA-wide awards (saving Cassini an estimated \$250,000). Still an active researcher, his research includes numerical method development, and long-term large-scale simulations of Solar System dynamics, evolution, and chaos. Dr. Grazier is also active in bringing the wonders of science and space to the public. For 15 years he was one of the most sought-after speakers at JPL, and has appeared on several episodes of History Channel's "The Universe," Science Channel's "Alien Encounters," and Nat Geo's "Naked Science." He teaches classes in basic astronomy, planetary science, cosmology, the search for extraterrestrial life, and the science of science fiction at UCLA and SMC. Grazier also regularly serves on NASA educational product review panels.



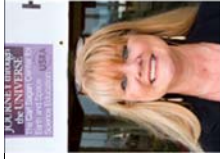
Olivier Guyon
 Subaru Telescope
 Contact: guyon@naoj.org

Olivier Guyon is an astronomer at the Subaru Telescope. He started looking at stars from the age of 10, and he is now both an avid amateur astronomer and a professional astronomer. Olivier graduated from University of Paris 6 in 2002 (Ph.D. research topic: wide field interferometry), and now works with other scientists to directly observe exoplanets. Olivier has been developing new techniques for imaging exoplanets (planets around other stars) from telescopes on Earth and also future telescopes in space. With these new techniques, astronomers will soon be able to observe planets like ours and start to find out if there is life elsewhere in the Universe. In 2007, Olivier received a Presidential Early Career for Scientists and Engineers award from President Bush at the White House. Olivier received in 2012 the MacArthur fellowship (nicknamed the "Genius grant") for his innovative work in astronomical optics. In his spare time, he builds telescopes which he then uses to observe from the clear skies of Mauna Kea and Mauna Loa.



John Hamilton
 UH Hilo Physics & Astronomy
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John Hamilton is currently serving as Deputy Director of the Pacific International Space Center for Exploration Systems (PISCES) based at the University of Hawaii'i at Hilo. An astronomer by trade, he has been associated with space exploration since 1972 with the Skylab missions, spent most of his career supporting astronomical observations at multiple observatories in Hawaii'i on Haleakala and Mauna Kea and also in Chile. He has most recently managed the first two international ISRU analog field tests in Hawaii'i in 2008 and 2010 and is currently working on the 2012 deployment. John currently teaches undergraduates in Physics and Astronomy courses at UH Hilo. He also serves as co-founder and chief scientist for a local high-tech R&D company Akeakamai Enterprises LLC.



Janice Harvey
 Gemini Observatory
 Contact: jharvey@gemini.edu

Janice Harvey is the Community Outreach and Education Programs Leader at Gemini Observatory and serves as the director of the nationally recognized Journey through the Universe Program on the Big Island. Janice is also the National Team Site Leader for the Family Astro/Project Astro program in Hawaii and serves as the StarLab Portable Planetarium instructor and trainer. In 2010 she was awarded the *Outstanding Individual in Business* award by the Rotary Club of Hilo. She is a member of the Astronomical Society of the Pacific, the International Planetarium Society, and the National Science Teachers Association. Janice has a BS in mathematics and went back for her associate degree in astronomy in 2000 at UHH. She has lived on the Big Island for 40 years and has worked as the Mayor's Executive Assistant, owned and operated Sylvan Learning Centers and three travel agencies in Hawaii. Janice's passion is bringing science and astronomy into the local classrooms.



Isabel Hawkins
 Exploratorium
 Contact: hawkins.isabel@gmail.com

Isabel Hawkins, Ph.D., is a bilingual and bicultural native of Córdoba, Argentina. Dr. Hawkins received her Ph.D. in astrophysics at the University of California, Los Angeles, in 1986. She worked for 20 years at the University of California at Berkeley as a Senior Fellow on several NASA satellite projects, and as the Director of Science Education at the Space Sciences Laboratory. Currently, she is Astronomer & Project Director at the San Francisco Exploratorium, and Faculty of the Indigenous Education Institute, Friday Harbor, WA. In 2005, she hosted a live webcast from Chichén Itzá, Yucatán, México, during the March Equinox, and was executive producer of the award winning book for the general public, and website, titled *Traditions of the Sun*, on the astronomy at Chaco Culture National Historical Park in New Mexico and at several Maya archaeological sites in the Yucatán. In 2011, Dr. Hawkins produced the bilingual (English and Hawaiian) Webby-award winning website *Never Lost: Polynesian Navigation* at the Exploratorium, which features the astronomical foundations of Native Hawaiian navigation. She worked with Maya curators to develop the website "*Living Maya Time – Viviendo el tiempo maya*" website for the Smithsonian National Museum of the American Indian. Her work focuses on broadening access to science and enhancing participation by all communities through the appreciation of the cultural roots of science. Dr. Hawkins received eight NASA awards between 2004 and 2008 for her work on NASA education and public outreach. In 2009, the Astronomical Society of the Pacific awarded Dr. Hawkins the prestigious Klumpke-Roberts Award in recognition of her outstanding contributions to the public understanding and appreciation of astronomy.



Saeiko Hayashi
 Subaru Telescope
 Contact: saeiko@naoj.org

Saeiko S. Hayashi grew up in Tohoku, a northeastern region of Japan, where she spent part of her childhood in Fukushima. After graduating from a local high school, she boldly went on to attend Tokyo University as one of the few women undergraduates (1% in STEM majors); she continued there and became the first woman to enroll as a full-time student in the Ph.D. astronomy program. She conducted her graduate research at the 45-m radio telescope in Nobeyama, Japan. After receiving her doctorate, she worked at the 15-m James Clerk Maxwell Telescope in Hawaii and then was a staff member of the 7.5-m Japan National Large Telescope (JNLT) project, which began at the National Astronomical Observatory of Japan in 1990, and later became known as the Subaru Telescope. She has performed a variety of roles at Subaru from fixing mirrors and managing day crews to currently managing the Public Information and Outreach Office. She hopes to participate in the publication of research that will lead to major discoveries of Earth-like exoplanets, possibly with water and vegetation. Saeiko is also an active member of the **Rotary Club of Hilo**. She says, "Subaru Telescope, where people from all over the world come together and work with each other, is a great place to work. The challenges of working at the Mauna Kea summit and the satisfaction of community life in Hilo enrich family life".



Kris Helminiak
 Subaru Telescope
 Contact: xyziek@naoj.org

With probably the most unpronounceable name in Hilo, **Krzysztof** prefers to be called "Kris". Studied and graduated in Torun, Poland, the birthplace of Nicolaus Copernicus. After the PhD, Kris moved for three years to Chile to work as a post-doctoral researcher at the Pontifical Catholic University. While visiting Hawaii twice in the meantime, he fell in love with the Big Island and decided to take any opportunity to move here. Joined the Subaru Telescope in October 2013 to become a research fellow. He mainly works on eclipsing binary stars, looking for strange and unusual stellar pairs, studying their properties, and looking for planets around them. Involved in building a global network of robotic telescopes 'Solaris', dedicated to look for extrasolar planets around eclipsing pairs. As a member of the VISTA Variable in the Via lactea (VVV) project, he also uses eclipsing systems to map the Milky Way, especially its unreachable parts hidden behind the galactic center.

Stephanie W. Henry
 NASA Marshall Space Flight Center
 Contact: stephanie.l.wilson@nasa.gov

Stephanie W. Henry serves as a Communications Strategist with Analytical Services, Inc. in Huntsville, AL. Stephanie's duties include external communications for the Lunar Quest and Discovery/New Frontiers Program Office at NASA's Marshall Space Flight Center. Stephanie assists in developing communication products and materials for the programs. She visits schools, museums, and community organizations to excite students and teachers about NASA's mission and encourages the students to study science, technology, engineering, and math. Stephanie is a graduate of the University of North Alabama where she received a Bachelor of Arts degree in Spanish/Political Science and a Master of Arts in Community Counseling. Stephanie also attended Belmont University in Nashville, TN where she earned her teacher certification for kindergarten through eighth grade. Before joining ASI, Stephanie's experience includes work in a variety of educational arenas. Stephanie spent seven years working in Student Affairs at different universities and seven years teaching in the classroom, formal and informal instruction. Stephanie is a native of Tupelo, MS and has lived in the Huntsville, AL area for the past nine years. She is married and has a 15-year-old stepson. Stephanie enjoys traveling, shopping, tennis, and spending time with her family in her spare time.



Michael Hoening
 Gemini Observatory
 Contact: mhoening@gemini.edu

Michael Hoening is currently working as a Data Analysis Specialist at the Gemini Observatory. He did his undergraduate degree in Astrophysics at the University of Sussex (England) in the mid-1990s, and then went on to do a Ph.D. at the University of Cambridge, which he completed in 2004. His thesis centered around the construction of a wide field infrared camera called CIRS, which meant he ended up going on a number of observing trips to Mauna Kea and the Canary Islands. Once all the data from the instrument was properly reduced and calibrated, it was used to search for distant clusters of galaxies - and he is happy to report he actually found some, too. After his Ph.D. he worked in translation and publishing for a few years. He is thrilled to be back in astronomy and back in Hawaii. When he's not examining data from the telescope, he likes to go to the beach, read a good book or dance Argentine tango.



Matthew Hosek
 UH Institute for Astronomy
 Contact: mwhosek@gmail.com

Matt Hosek is a second year graduate student at the University of Hawaii Institute for Astronomy, having received a B.A. in Astrophysics from Williams College in 2012. He is interested in how stars interact with and affect their galactic environment, and is currently studying star formation near the supermassive black hole at the center of our galaxy. Interested in astronomy from a young age, he is excited for the opportunity to share his enthusiasm through education and outreach. Outside of astronomy, he is a huge football fan (GO GIANTS!) and enjoys hiking and playing ultimate frisbee.



Stewart Hunter
 Mauna Kea Support Services
 Contact: shunter@ifa.hawaii.edu

Stewart Hunter has been the General Manager at Mauna Kea Observatories Services (MKSS) since 2010. MKSS operates and maintains the mid-level astronomy facilities at Hale Pihaku on Mauna Kea. This includes the astronomy dormitories, the dining facility and the Visitor Information Station as well as maintaining the summit roads. Prior to working at MKSS, Stewart spent 24 years in the Navy, serving on submarines as an electronics technician, then after receiving a commission, a logistics officer until retiring in 2004 as a Lieutenant Commander. He received a BS in Earth Science from Oregon State University in 1991 and a MS in Systems Management from the Naval Post Graduate School in 1999. Stewart and his wife Lory have been Hilo residents since 2000, where they also own and operate a local Bed and Breakfast.



Masatoshi Imanishi
 Subaru Telescope
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Masatoshi Imanishi works at Subaru Telescope. He studies merging galaxies and supermassive blackholes in the universe.



Ikuru Iwata
 Subaru Telescope
 Contact: iwata@naojo.org

Ikuru Iwata is the associate professor at Subaru Telescope, NAOJ. He moved to Hilo in 2010 to join the new development group of Subaru Telescope, which is working for commissioning of exciting new instruments and planning of the future instrumentation. He received his Ph. D. in 2003 based on the data taken with Subaru Telescope, and is continuing his exploration to understand how the galaxies in the Universe were born and evolved.



Russell Kackley
 Subaru Telescope
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Russell Kackley holds a Bachelor of Science in Mechanical Engineering from Wayne State University and a Master of Science in Mechanical Engineering from Stanford University. He worked for 16 years on spacecraft design and analysis at Lockheed-Martin before moving to Hawaii. Here in Hilo, he worked for 11 years at the Joint Astronomy Centre and was responsible for the Telescope Control System software. Since April 2011, he has been working at the Subaru Telescope in the Observation Control Software group. He also mentors the Waiakea Intermediate and Honoka'a High School robotics teams.



Yuko Kakazu
Subaru Telescope
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Yuko Kakazu recently joined the Subaru Telescope as an outreach specialist. A native Okinawan, she began her journey into astronomy when she attended NASA's U.S. Space Camp program at age 13. She graduated from Tohoku University in Japan and then obtained her Ph.D. at the Institute for Astronomy, University of Hawai'i at Manoa in 2008. Since then, she has worked as a postdoctoral researcher in Paris, France (Institut d'Astrophysique de Paris), California (California Institute of Technology), and Chicago (University of Chicago). Her research focuses on metal poor galaxies and distant galaxies with the aim of improving our understanding of galaxy formation and chemical enrichment history. At Subaru, Yuko arranges and conducts public outreach events and lectures for the local and the international communities, including Japanese audiences. She is hoping to help fill the gap between scientists and the public and wants to encourage young people, especially women and minorities, to engage in science and technology. When Yuko is not talking about astronomy or playing with her baby galaxies, she enjoys cooking (as well as eating), listening to piano jazz and classical music, and taking yoga or Zumba class at the gym. She is a certified Zumba fitness instructor.



Rob Kelso
Pacific International Space Center
for Exploration Systems (PISCES)
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Rob Kelso has worked for NASA for 38 years at the Johnson Space Center in Houston, Texas. During the late 1980's and 90's, Rob served as a Shuttle Flight Director in NASA's famed Mission Control Center (MCC) while directing 25 Space Shuttle missions. His role as Flight Director is the same as Gene Kranz (*Failure is Not an Option*) in the movie "Apollo 13" starring Tom Hanks. During the missions, Rob often used the NASA and Air Force tracking/communications ground stations in Hawaii to monitor the Shuttle and communicate with the astronauts. He is currently the Executive Director of PISCES (Pacific International Space Center for Exploration Systems) in Hilo. PISCES is responsible for conducting robotic operations on the Big Island for testing planetary surface technologies before launch. He has a bachelor's degree in physics and an MBA in public management.



Markus Kissler-Patig
Gemini Observatory
Contact: mkissler@gemini.edu

Markus Kissler-Patig grew up in Switzerland and France before moving to Germany for his university studies. He obtained his PhD in astrophysics in 1997 from the University of Bonn and held post-doctoral positions at the University of California Santa Cruz and the European Southern Observatory (ESO) in Germany. He joined the latter as faculty in 2000 as instrument scientist for a series of instruments for ESO's Very Large Telescope. In 2008, he took up the position of project scientist for the 40m European Extremely Large Telescope. In August 2012, Markus Kissler-Patig joined the Gemini Observatory as director. He remains an adjunct professor at the Ludwig-Maximilians University in Munich where he has been teaching astrophysics and astrophysics since 2005.



Scot Kleinman
Gemini Observatory
Contact: skleinman@gemini.edu

Scot (there was a shortage of "i"'s when he was born) **Kleinman** is an astronomer at Gemini North. He works as the Instrument Program Scientist, helping develop and bring to fruition the next generation of Gemini instruments. He joined Gemini from the Subaru Telescope where he served as the Instrument Division Chief. Prior, he served as the Site Science Manager/Deputy Head of Survey Operations for the Sloan Digital Sky Survey. He has been the Associate Director of the Whole Earth Telescope and still sits on its board. Scot received his Ph.D. from the University of Texas in 1995. He studies various aspects of the dwarf stars, the longest lived (and final) stage of most stars in the Universe. Scot also works with data from large astronomical surveys which are ushering in a new era of observational astronomy. When not working (when is that?), Scot likes surfing, live music, and maintaining/modifying his car.



Bernhard Laurich
Hawai'i Community College
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Bernhard Laurich received his Ph.D. in Physics at the University of Stuttgart, Germany, where he studied the electronic properties of silicon. In 1986 he moved to the U.S. and spent 10 years at the Los Alamos National Laboratory doing research on layered inorganic and organic semiconductors and their structural, electric and electro-optic properties. In 1996 he followed his passion to create and foster interest in science, and since that time he has been teaching Physics, Chemistry and Astronomy at Hawai'i Community College. His most recent interests are astrophysics and sustainable energy systems.



Michael Lemmen
Subaru Telescope
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Mike Lemmen is an Operator for Subaru Observatory since 2003. He has worked in the computer industry since 1990 in such varied roles as support, administration, and education. Originally from the suburbs of Detroit, he escaped in 1999 and has lived in the Hilo area ever since.



Nadine Manset
Canada-France-Hawaii Telescope
Contact: manset@cfht.hawaii.edu

Nadine Manset has been a resident astronomer at CFHT since 1999, right after finishing her PhD thesis at Université de Montréal. Over the years, she has helped astronomers observe in classical mode at CFHT, with spectrographs and imagers. Now in charge of the Queued Service Observing mode, she prepares observations for CFHT's spectropolarimeter and oversees the nightly observations taken with the various instruments. In addition to chairing the Mauna Kea Astronomy Outreach Committee, Nadine participates to public outreach events a few times every year.



R. Pierre Martin
UHH Physics & Astronomy
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Dr. R. Pierre Martin is an Assistant Professor of Physics and Astronomy and the Director of the UH Hilo Hoku ke'a Observatory on Mauna Kea. He earned his MS and PhD in astrophysics at Université Laval in Quebec, Canada. He has held post-doctoral fellowship positions at Steward Observatory in Arizona, and with the European Southern Observatory New Technology Telescope in Chile. Between 1997 and 2008, Dr. Martin was a resident astronomer at the Canada-France-Hawaii Telescope on Mauna Kea, and its Director of Science Operations for six years. Prior to joining UH Hilo, he was the Executive Director of the WIYN 3.5m telescope on Kitt Peak (Arizona) and also a consultant for the Giant Magellan Telescope project. Dr. Martin fields of research include the chemical evolution of galaxies, massive star formation, galaxy morphology, planetary nebulae, astronomical instrumentation and the optimization of the observational process for professional observatories.



Tony Matulis
NASA IRTF
Contact: maunakea69sky@yahoo.com

Tony Matulis works at NASA Infrared Telescope Facility. He earned his Bachelor of Science in Astronomy from the University of Hawai'i at Hilo in 2002. After working as an Interpretive Guide at the Ellison Onizuka Center for International Astronomy Visitor Information Station, Observatory Night Attendant at the NASA IRTF, Telescope Operator at the UH 2.2-meter on Mauna Kea, System Support Associate at Gemini Observatory, he joined IRTF in 2013. His interests include adaptive optics and laser guide star systems.



Callie McNew
James Clerk Maxwell Telescope
Contact: mcnew@hawaii.edu

Callie McNew is currently a Telescope System Specialist at the James Clerk Maxwell Telescope. Callie recently graduated from the University of Hawaii at Manoa in the Spring of 2012 with a Master's degree in Educational Technology. Callie has worked for several Mauna Kea observatories over the past eight years fulfilling a variety of positions including public outreach, laser operations, and telescope operations.



Peter Michaud
Gemini Observatory
Contact: pmichaud@gemini.edu

Peter D. Michaud, Gemini's Public Information and Outreach Manager, has pursued a career that has provided a broad set of experiences in education, media relations and photography. These have ranged from the initiation and management of many informal science education programs to the authoring of a monthly newspaper column on astronomy. Prior to moving to Honolulu in 1989 to manage the Bishop Museum Planetarium, Peter obtained his Bachelor's Degree in Atmospheric Physics and certification in Physical Science Education in 1985. This led to his selection for the highly competitive annual planetarium education internship at the Strasenburg Planetarium in Rochester N.Y. in 1985 - 86. During almost a decade at the Bishop Museum Planetarium, Peter worked closely with local educators as well as the Mauna Kea astronomical community and initiated many new projects that included a NASA-funded project to produce a nationally distributed planetarium program about Mauna Kea. In June 1998, Peter accepted his current position at the Gemini Observatory in Hilo. Since arriving here, Peter has been involved in a variety of projects that have included the management of multiple outreach, education and media relations initiatives. An example of the innovative products produced by his office is the Gemini Observatory Virtual Tour CD-ROM/Kiosk which is currently being translated into multiple languages and has been installed in a variety of public facilities around the world.



Joseph Minafra
NASA Ames Research Center
Contact: joseph.minafra@nasa.gov

At the NASA Ames Research Center, **Joseph Minafra** serves as Lead of Technical Systems for the NASA Solar System Exploration Research Virtual Institute (SSERV) as well as the Sr. Lead Application Developer and Collaborative Technology Specialist for Lockheed Martin. Joe has an extremely diverse background that ranges from biology and art to web design and collaborative technology development. With his varied background, Joe has been responsible for a broad set of technical tasks for the NASA Ames Center Director as well as the Space and BioSciences Divisions. Currently, his work is to oversee technology innovation in order to enable collaboration and communication between competitively selected science and research teams across not only the United States but internationally as well. Joe has a long history of integrating government work with commercial enterprises and bringing that message to the public through the education and public outreach sectors. He is excited to share his NASA experiences with the Journey through the Universe communities! Ad Astra!



Brian Mitchell
NASA Lunar Science Institute
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Brian Mitchell is the Education and Public Outreach manager for NASA's Discovery/New Frontiers/Lunar Quest Program Office. He has more than 25 years at the Marshall Space Flight Center located in Huntsville, Alabama and has worked on various Space Shuttle payload missions including ASTRO, ATLAS, and Spacelab, as well as several experiments for the International Space Station. He has been the Program Office Education and Outreach lead during the LRO, LCROSS, LADEE, JUNO, GRAIL, and JML missions to our Moon, Jupiter and Mars. Future missions in his Office include the asteroid sample return mission OSIRIS-REx, INSIGHT seismic mission to Mars, and the New Horizon spacecraft nearing Pluto now. Brian is tasked with educating the general public and inspiring/engaging students and educators on Discovery/New Frontiers/Lunar Quest Office missions. Agency science and exploration objectives, by using existing or creating new opportunities. He spends much of his time speaking in classrooms and public venues, as well as designing innovative interactive exhibits that travel the country. When not talking about space, Brian keeps his 1965 Ford tractor alive, competes in shooting events, and occasionally gets to swing a golf club with his two teenagers.



Rita Morris
Subaru Telescope
Contact: rdmorris@naoi.org

Rita Morris is a telescope operator for Subaru telescope. She moved to the big island right after graduating from the University of Arizona in 2011 with a bachelor's degree in astronomy and physics, and a minor in planetary sciences. She spent her time there operating telescopes for Steward Observatory and working with several people on a variety of projects such as the testing of a pyramid wavefront sensor for use on the future GMT, observational studies of subdwarf B stars and transiting exoplanets, and a project involving photoinometry of Jupiter's moon Europa. When she's not looking through telescopes, you can usually find Rita playing sports of all kinds. If there was hockey on the big island, it's very likely she would be doing nothing but playing all day long.



Janet Nathani
Mauna Kea Visitor Information Station
Contact: Nathani@hawaii.edu

Originally from Pennsylvania, **Janet Nathani** started school at East Stroudsburg University, majoring in Biology. During her senior year, she decided to come to Hawai'i through the National Student Exchange program. Falling in love with the ocean and Mauna Kea, Janet found her new home on the Big Island, where she is now living permanently. Currently, Janet Nathani is an Interpretive Guide at Mauna Kea Visitor Information Station (VIS), where she provides safety information to visitors, conducts star gazing activities and summit tours. She is also the Universe Tonight coordinator at the VIS, which is a free public event that enables astronomers from different observatories to present their research to the public. Aside from work, Janet aims to obtain her biology degree in May 2013. In the future, Janet plans to attend a Natural Medicine School in Hawai'i, where she can learn the skills of Chinese medicine and preventive care. In her spare time, Janet enjoys stargazing on Mauna Kea, going surfing and living the Aloha lifestyle.



Paul Nguyen
University of Hawaii at Manoa
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Paul Nguyen is a Ph.D student at the University of Hawaii at Manoa. He does research on the computability of index sets of universal algebras.



Nagavoshi Ohashi
 Subaru Telescope
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Harriet Parsons
 Joint Astronomy Centre
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Harriet Parsons moved to Hilo in 2011 and is a Staff Astronomer for the James Clark Maxwell Telescope. This is her first job after completing her Ph.D. at the University of Hertfordshire in the United Kingdom. Her day-to-day job varies widely from assisting visiting astronomers both in terms of health and safety and in terms of quality of images, to working on data from the newest instrument on the JCMT: SCUBA-2. When she has time, her research focuses on cold dense clouds (made of gas and dust) within our own Milky Way galaxy looking at where massive stars may be forming. These stars are more than eight times the mass of our sun and end violently in supernovae; however the way they form is shrouded in mystery (well, OK, dust!). Using the JCMT astronomers can “see” through the dust helping to unlock the secrets of these clouds. Away from astronomy she enjoys paddling with Puna Canoe Club, learning Hula, snorkeling, and traveling. She also loves going to the diverse events available in Hilo, from Shakespeare in the Park to watching Paradise Roller Girls!



Emily Peavy
 UHH Physics & Astronomy
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Emily Peavy is a planetarium student worker majoring in astronomy at the University of Hawaii at Hilo and is currently in her third year of the program. She has been working at 'Imiloa as Planetarium Operator since January of 2012. Emily also enjoys volunteering at the Mauna Kea Visitor Information Center, and has completed an internship through the Akamai Workforce Initiative working at the Institute for Astronomy. She can easily see herself going into the outreach and education side of astronomy, but is also intrigued by much of the research that is occurring in the field.



Laura Peticolas
 UC Berkeley
 Contact: laura@ssl.berkeley.edu

Laura Peticolas has loved science, abstract thinking, nature, music, art, math, school, and teaching for as long as she can remember. In 2000 at the University of Alaska, Fairbanks Laura fulfilled a long-time dream since 9th grade of getting a Ph.D. in physics. While in Alaska, she spent long nights on the computer, days learning physics and math and the intricate connection between the two, as well as time skijoring, fishing, and spending time with friends. In 2000, Laura was fortunate to get a post-doc position at the same place and time as my husband at the Space Sciences Laboratory at the University of California, Berkeley and worked for 3 years analyzing particle and fields data with optical images of aurora in order to understand better what makes the aurora (Northern and Southern Lights) look and act the way they do. She then transitioned to working more and more with the education group at the Space Sciences Laboratory: the Center for Science Education. In the many years since then, she has had years of professional development and intense learning experiences about how people learn and about best practices in science education pedagogy. She is the Director of a education group, called Multiverse. She is grateful to work with the Multiverse team to provide learning experiences around earth and space science and the multicultural universe. They collaborate with integrity with amazing partners in order to learn how best to facilitate learning science within the context of individual and community cultures, histories and backgrounds. It is an honor to learn with so many brilliant people from different cultures about ourselves, Earth, the night sky, and the Universe.



Christopher Phillips
 Imiloa Astronomy Center of Hawaii
 Contact: cpPhillips@imiloahawaii.org

Christopher Phillips is originally from the United Kingdom and is based at the 'Imiloa Astronomy Center of Hawaii'. He has been involved in science communication and education working in science centers and museums internationally. At 'Imiloa Astronomy Center he is part of the planetarium team responsible for producing full-dome content and has worked on numerous full-dome productions including the 'Awesome Light' series. Christopher also works internationally as an independent consultant and researcher on projects as diverse as museum programming, exhibit design, science communication training, international development and education. Most recently Christopher has served as scientific consultant for the construction of new radio telescopes at Kazan University in the Russian Federation and science park facilities at Goonhilly satellite base station in the United Kingdom. Christopher is also a regular contributor to 'Guru Magazine', a brand new online popular science publication. He is also an active member of Astronomers without Borders and he founded the 'Reach for the Stars - Afghanistan' program – an effort to bring science education to children of conflict zones and the developing world.



Tae-Soo Pyo
 Subaru Telescope
 Contact: pyo@naoj.org

Tae-Soo Pyo is a Support Astronomer at the Subaru Telescope. His research focuses on star formation, especially, outflows from young stellar objects. He is actively involved the development of new infrared instruments which will facilitate this research. Tae-Soo Pyo did his undergraduate work in the Department of Astronomy at Seoul National University in 1992 and continued on to get his Master's degree in 1994. He then transferred to University of Tokyo. Pyo worked at the Subaru Telescope as a Jr. Astronomical Researcher from 2000 until he received his Ph.D in 2003. During this time, he participated in the final development and engineering observations for the Infra-Red Camera and Spectrograph (IRCS). After graduating, he continued at the Subaru Telescope as a Korea-Subaru Liaison Researcher for Multi-Wavelength Observational Study of Outflows Emanating from Young Stellar Objects. In 2005 he became a support astronomer for IRCS, the same instrument he helped develop as a Jr. Astronomical Researcher.



Bo Reipurth
 UH Institute for Astronomy
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Bo Reipurth graduated from the University of Copenhagen in Denmark. After spending some years as a postdoc there, he took up a position as staff astronomer with the European Southern Observatory in Chile for 11 years. Subsequently, he worked at CASA in Colorado as a Research Professor, and later joined the Institute for Astronomy at the University of Hawaii in Manoa in order to pursue studies of star and planet formation. "One of my first astronomical experiences as a small kid was to see the craters of the Moon and the rings of Saturn through the telescope at the public observatory on top of the Round Tower in Copenhagen. After that I was never in doubt that I had to become an astronomer. Conditions in Copenhagen were already in those days not ideal for looking at the night sky, but instead I spent innumerable hours with my small telescope drawing sunspots as they crossed the Sun. I took out a subscription to Sky and Telescope, which I then painstakingly read through with the help of a dictionary. One day I read an article about small mysterious blobs called Herbig-Haro objects which might be signposts of stars in the making. I was completely captivated by the possibility that we might actually be able to see stars in the process of being born, and I have spent most of my professional career trying to learn about how stars are formed."



Kathy Roth
 Gemini Observatory
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Kathy Roth is an Associate Scientist based at Gemini North. She is the instrument scientist for the Gemini Multi-Object Spectrograph (GMOS-N) and has been with Gemini since July 2000. She obtained her B.Sc. in Physics and Computer Science at Duke University in 1985 and her Ph.D. in Astrophysics from Northwestern University in 1992. She held a postdoctoral position at the Space Telescope Science Institute (STScI) in Baltimore from 1992 until 1995, followed by a Hubble Fellowship at the University of Hawai'i Institute for Astronomy from 1995 until 1998. In 1998 she joined the staff of the Far Ultraviolet Spectroscopic Explorer (FUSE) at Johns Hopkins University in Baltimore. Her research interests include the chemical enrichment of the interstellar medium in our galaxy and in the high-redshift universe via quasar absorption line spectroscopy, the study of distant young galaxies, and the use of gamma ray bursts to probe chemical enrichment of the early universe by the first stars.



Yuriko Saito
 Subaru Telescope
 Contact: yuriko@naoi.org

Yuriko Saito is a graduate student at The Graduate University for Advanced Studies (SOKENDAI), and works at Subaru Telescope as a research intern. Her research focuses on the co-evolution between galaxies and supermassive black holes located in the center of galaxies in early universe. Her interest in Astronomy began when she was a high school student. Yuriko graduated from Tsukuba University with a bachelor's degree in Physics. After that, she entered SOKENDAI and have been studying Astronomy. It has been a year and a half since Yuriko came to Hilo.



Sharon Schleigh
Purdue University
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Sharon Price Schleigh has been an educator for over 20 years, teaching all ages from pre-school to university. She received her doctoral degree from Arizona State University and is currently an Assistant Professor at Purdue University. Her research interests include understanding how people think about and engage in science. This has led to research projects that have examined argumentation in a science classroom; authentic research in astronomy and problem-based curriculum designs; how students, teachers and scientists think about the nature of science; and how curriculum impacts content knowledge and attitudes about science. She has been involved in projects such as the NASA Deep Impact Mission (Institute for Astronomy, Hawaii); Toward Other Planetary Systems (IFA/NSF); AII'i Astrobiology Summer Workshops; and Teacher Leaders in Research-Based Science Education (NOAO, Kitt Peak). She has been on the education board for the Las Cumbres Observatories of Global Telescopes network (LCOGT), the Faulkes Telescopes, and GoScience. She is the current director of the Research Engaged Science Teacher Education Program to improve STEM (RESTEP to STEM), funded by NASA and the NC Space Grant to promote astronomy/science education with pre-service teachers. She has served as a Regional Science & Engineering Fair Director, a Regional Science Olympiad Director, a trainer and presenter of the ECU Portable Planetarium program, an AAPT State Representative (HI), as the Mentor Coordinator for the Near East School Alliance Virtual Science Fair.



Doug Simons
Canada-France-Hawaii Telescope
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Doug Simons received his B.S. in astronomy at the California Institute of Technology in 1985, and a Ph.D. in astronomy at the University of Hawaii in 1990, before working as a staff astronomer at the Canada-France-Hawaii Telescope (CFHT) for 4 years. Doug joined Gemini in May of 1994 as the Systems Scientist, then managed Gemini's instrument development program for 5 years before becoming Gemini's Director from 2006-2011. Doug returned to CFHT in 2012 where he now serves as Executive Director. Principal areas of interest include infrared instrumentation and studies of the Galactic center, low mass stars, and star formation regions.



Garima Singh
Subaru Telescope
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Garima Singh is a 4th year graduate student from Observatoire de Paris pursuing her research in collaboration with Subaru Telescope. Astronomy childhood lover, Indian by Nationality and highly motivated to contribute her life for the search of an Exo-Earth. Garima works on Subaru Coronagraphic Extreme Adaptive Optics system (SCEXAO) which aims for high contrast imaging of the exoplanets around bright stars. Garima received her Bachelor's of Technology in 'Computer Science' in 2008 from India. Her dream to study the heavenly bodies then led her to France where she have completed her Masters of Engineering in "Astronomical & Space-based System Engineering" at Observatoire de Paris in 2010. Astronomy is her passion and searching another world out there is her dream. Garima currently works in the development of the high performance coronagraphic low order wavefront sensor which will help ground-based telescopes and eventually in near future, the space-based telescopes to directly image the reflected light habitable planets.



Evan Sinukoff
UH Institute for Astronomy -
Manoa
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Evan Sinukoff is a second year graduate student at the University of Hawaii Institute for Astronomy. Born and raised in Toronto, Canada, he completed his undergraduate degree at McMaster University, majoring in Physics. As part of this degree, he spent time working as a research assistant at NASA's Goddard Space Flight Center in Maryland. There, he had the opportunity to meet astronauts, and was exposed to the amazing world of space exploration. He became particularly interested in the detection and characterization of extrasolar planets, especially those which might be host to alien life. Presently, as a graduate research assistant, he is using some of the world's most powerful telescopes to search for Earth-sized exoplanets and the black hole remnants of exploded stars. His research team recently measured the mass and density of a hot, Earth-sized exoplanet, Kepler-78b, finding its composition to be mostly rocky like Earth. Aside from astronomy, Evan loves to hike, surf and play a variety of different sports, and, as most Canadians, this includes ice hockey.



Breann Sitarski
University of California Los Angeles
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Breann Sitarski is a graduate student researcher in the Galactic Center Group at UCLA. She got her Bachelor's degree in Astrophysics from UCLA, and continued there for graduate school, where she is currently working on her Ph.D. in Astronomy. Breann studies dusty objects near the supermassive black hole at the center of our Galaxy to try to understand where they come from, what they are, and how they survive in such a hostile environment. She also studies the adaptive optics system on the Keck II telescope to try to correct for aberrations that the NIRC2 instrument itself is making on astronomical data. She is also one of the lead outreach coordinators of Astronomy Live! - UCLA's award-winning astronomy outreach group. Breann also likes studying history, traveling, playing various sports, and reading!



Gordon Squires
Thirty Meter Telescope Project
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Gordon K. Squires is an astronomer at the California Institute of Technology, working with the Thirty Meter Telescopes as well as NASA's Spitzer Space Telescope, the Herschel Space Observatory, the Galaxy Evolution Explorer and other space telescopes with Caltech involvement. His research explores the old, cold and distant universe, understanding how galaxies formed billions of years ago, and the nature of the dark matter and dark energy that fills space.



Marianne Takamiya
UH Hilo Physics & Astronomy
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Marianne Takamiya comes from Chile where she obtained her B.Sc. in Physics. She earned her Ph.D. in Astronomy and Astrophysics from The University of Chicago and came to Hilo in 1998 as one of the first Gemini Science Fellows. She is a mother of two children and wife of an astronomer. She is currently an Assistant Professor in the Department of Physics and Astronomy at the University of Hawai'i at Hilo where she teaches physics and astronomy courses and studies the evolution of galaxies and star formation in galaxies near and far.



Ichi Tanaka
Subaru Telescope
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Ichi Tanaka is a Japanese astronomer working at Subaru Telescope. He is from Niigata Prefecture, Japan. Ichi got his PhD of Astronomy at Tohoku University in 2000. After some PostDoc careers in Japan, he moved to Hawaii in 2005 as a support astronomer of MOIRCS (a near-infrared camera and multi-object spectrograph). His current title is the Senior Resident Astronomer. Ichi's scientific interest is in the formation and evolution of galaxies. Especially, he is currently working on how galaxies grow in the forming clusters of galaxies in young universe. In Hawaii Ichi lives with his wife and 3 kids. He enjoys classic piano music, watching Hawaiian birds, night skies, and geological scenes.



Raja Guha Thakurta
Univ. of California Santa Cruz
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Raja (Puragra) GuhaThakurta received a bachelor's degree in Physics at Saint Xavier's College in Kolkata, India and a Ph.D. in Astrophysical Sciences at Princeton University in 1989. He was a postdoctoral researcher at the Institute for Advanced Study, Princeton, NJ and at Princeton University. He worked briefly at NASA's Space Telescope Science Institute in Baltimore, MD (operational headquarters of the Hubble Space Telescope), before joining the faculty of the University of California Santa Cruz in 1994 where he is currently a professor of Astronomy and Astrophysics. The primary focus of GuhaThakurta's research is the formation and evolution of galaxies, including the Andromeda galaxy. He has authored/coauthored 400+ journal articles and meeting abstracts, and has given dozens of lectures, both non-technical and technical. He received an Alfred P. Sloan Fellowship in 1997 and the Herzberg Memorial Prize and Fellowship in 2001. He is deeply committed to the education of young people. In 2009, he started the Science Internship Program at UCSC for high-school students.



Shelly Valdez
Native Pathways
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Shelly Valdez is a member of the Pueblo of the Laguna Tribe, located in central New Mexico, and Hispanic descent. Shelly's educational background includes a Bachelor of Arts degree in Elementary Education, Master of Arts in Bilingual Education, and Ph.D. in Multicultural Teacher Education focusing on research in the area of Science Education. Shelly has worked in the area of education for 29+ years and currently owns & manages an educational consulting business, Native Pathways, (NaPs), located in central New Mexico. An important component of NaPs focuses is in the area of world views in science education, primarily focusing on indigenous science. Shelly's interest and passion of indigenous science has influenced her approaches in the field of education, evaluation and partnerships she works with. As part of her work, she is honored to be invited to join various educational boards, committees and supports educational programs at local, state and national levels. Her greatest moments in life are spending time with her son, Shpeyiah (Kyle) Swimmer, who is attending the Northern Arizona University. Shelly's vision for the future is to continue to be an active participant and an advocate for influencing Worldviews in evaluation and educational opportunities for indigenous people.



Josh Williams
Subaru Observatory
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Josh Williams is an Operator for Subaru Observatory where he's been since March of 2011. He got his Bachelor's of Science degree in 2007 from the University of Hawaii – Hilo where he majored in Astronomy, and minored in Physics and Mathematics. Since graduating he has spent a significant amount of his time above an altitude of 9,000 ft. in various facets – as a volunteer and then Interpretive Guide at the Visitor Information Station on Mauna Kea (9,100 ft.), a Telescope Operator for the AMIBA Observatory on Mauna Loa (~11,100 ft.), and now as a Telescope Operator on the "proper" mountain, Mauna Kea (13,800 ft.). As a long time regular on Mauna Kea he has enjoyed eating copious amounts of ice cream at the mid-level facility.



Kohei Yamazaki
Subaru Observatory
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Kohei Yamazaki is an AO Technical Assistant for Subaru telescope. He works for Subaru Telescope since 2010 during college. Kohei studied at the University Hawaii at Hilo, graduating with a B.A. in Natural Science, Minor Biology and Liberal Arts in Spring 2013. He also worked at Onizuka Visitor Information Station on Mauna Kea as an interpretive star gazing guide. Kohei loves basketball and long distance running. Big Sean, Neyo and Wiz Khalifa are his favorite music artists. His favorite food is "2choices Poke bowl".



Sherry Yeh
Subaru Observatory
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Sherry Yeh joined Subaru Telescope in 2013 as a NAOJ-Subaru Research Fellow. She knew she wanted to become a scientist at a young age, and she made up her mind to become an astronomer after attending summer schools at the Ken-Ting Observatory and Academia Sinica Institute of Astronomy and Astrophysics in Taiwan. Sherry received her PhD at the University of Toronto in Canada; using near- and mid-infrared instruments on telescopes around the world, her research focuses on the interplay between massive star clusters and their interstellar medium in nearby galaxies. When not exploring the Universe, Sherry enjoys knitting, long-distance cycling, and wandering in the volcano park.



Robert Young
University of Hawai'i at Manoa
Contact: rjyoung@hawaii.edu

Robert Young is a graduate student at UH Manoa studying mathematics. His research is in computational neuroscience and modeling the evolution of the nervous system. Robert is also a SUPER-M fellow with Ke Kula Kaiapuni 'O Ānuenuē, a Hawaiian language immersion school on Oahu.



March 6-14, 2014
Hilo, Hawai'i

*It Takes a Community!
Thank You to Everyone Involved!*

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Commerce
Hawai'i Island Economic
Development Board
Hawai'i Space Grant Consortium
Hawai'i Tribune-Herald
IEI - Indigenous Education
Institute
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