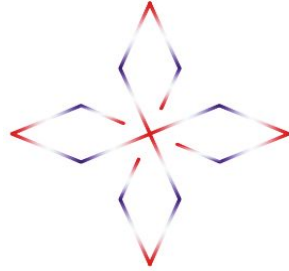


Shadow the Scientists: Creating Community Connections Through Virtual Science, Technology, Engineering, and Math Engagement



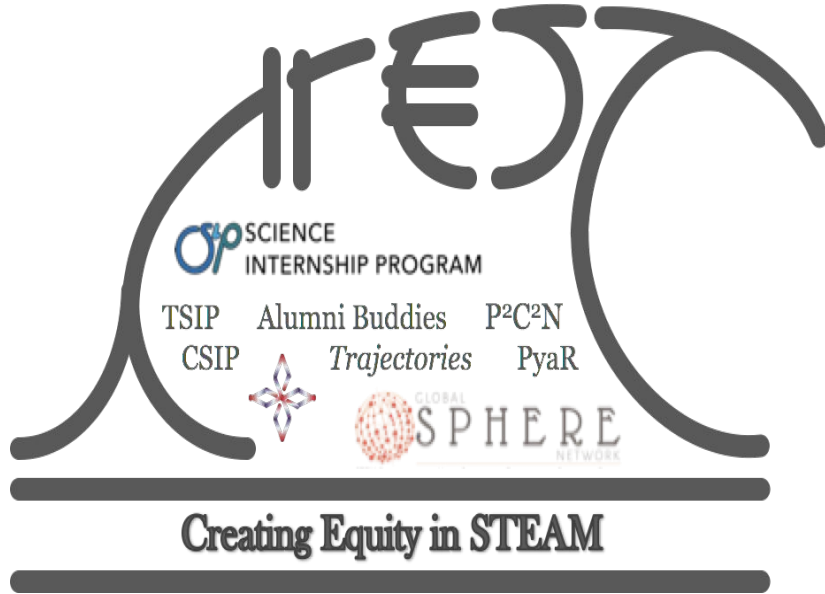
Shadow the Scientists

Jameeka Marshall
Shadow the Scientists
Coordinator
NOIRLab Presentation
Thursday, September 14, 2023



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Shadow the Scientists: A CrEST Initiative



CrEST is an umbrella of programs/initiatives that seeks to create equity and promote diversity in STEAM fields by engaging students from historically excluded backgrounds in critical thinking in the context of research.



CrEST Team



Abbi Davis
*CrEST Global
Liaison*



Anand Lallria
*SIP
Operations
Coordinator*



**Raja
GuhaThakurta**
*CrEST Faculty
Director and
Founder*



Lindsay Lauver
*CrEST Associate
Director*

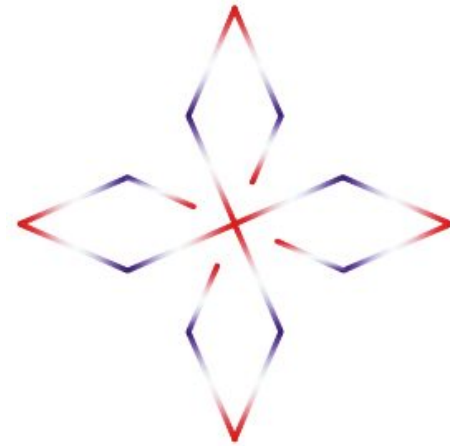


Sierra Schneider
*SIP Assistant
Director*



Shadow the Scientists: Creating Community Connections Through Virtual Science, Technology, Engineering, and Math Engagement

- StS began the summer of 2020
- Connects the public to scientists engaging in authentic research such as observing with professional astronomers on world-class telescopes



Shadow the Scientists



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Shadow the Scientists: Creating Community Connections Through Virtual Science, Technology, Engineering, and Math Engagement



Received a three-year grant
for \$720K from the
Heising-Simons Foundation
August 2022



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StS Partners in Hawai'i



Dr. Brian Lemaux, staff scientist at Gemini-North
Observatory

brian.lemaux@noirlab.edu



Dr. Roy Gal, Outreach Coordinator at the University
of Hawai'i Institute for Astronomy (IfA)

roygal@hawaii.edu



Shadow the Scientists: Creating Community Connections Through Virtual Science, Technology, Engineering, and Math Engagement

What is Community?



NSF's NOIRLab
HQ, Tucson, Arizona

CSDC CTIO GEMINI KPNO RUBIN US-ELTP

AURA Corporate Office
HQ, AURA-O, CAS, NSF-funded HR

Washington DC | Baltimore, MD
La Serena, Chile | Santiago, Chile
Tucson, AZ | Hilo, HI

Kitt Peak

KPNO



Maunakea

GEMINI

NSF's NOIRLab
Hilo, Hawaii

GEMINI

NSF's NOIRLab
Recinto, La Serena, Chile

CTIO CSDC GEMINI RUBIN

Cerro Tololo

CTIO

Cerro Pachón

CTIO GEMINI RUBIN





Shadow the Scientists: Creating Community Connections Through Virtual Science, Technology, Engineering, and Math Engagement

What is Community Engagement?





Shadow the Scientists: Creating Community Connections Through Virtual Science, Technology, Engineering, and Math Engagement

Astro 2020 Decadal Survey on Astronomy and Astrophysics

The Profession and its Societal Impacts

“The pursuit of science, and scientific excellence, is inseparable from the humans who animate it.”

-- Panel on the State of the Profession and Societal Impacts

Guiding principles: diversity, equitable access, benefits to the nation and the world, sustainability and accountability





Shadow the Scientists: Creating Community Connections Through Virtual Science, Technology, Engineering, and Math Engagement

- W. M. Keck Observatory (HI)
- Subaru Telescope (HI)
- NOIRLab Gemini North telescope (HI)
- Lick Observatory Shane telescope (CA)
- Total of 56 sessions to date!





Shadow the Scientists: Creating Community Connections Through Virtual Science, Technology, Engineering, and Math Engagement

- Open StS sessions and dedicated StS sessions
- Comca'ac Nation (Sonoran desert, Mexico)
- High schools in Colombia (Medellin, Bogotá) and Mexico (Monterrey)
- High schools in India (Kashmir and Gujarat)
- High schools in Ethiopia, Malawi, and Zimbabwe (Africa)
- High schools in Palestine and Israel





Shadow the Scientists: Creating Community Connections Through Virtual Science, Technology, Engineering, and Math Engagement

Open Sessions

April 16, 2023: Dwarf Elliptical (dE) Galaxies

Watch later Share

ESIP Program Identification

Index	Name	RA (J2000)	Dec (J2000)	Equinox	Mag	DATA
1	UC00001	12:29:27.741	12:51:11.71	2000.00	0.00	0.0000
2	UC00002	12:28:28.270	12:50:28.00	2000.00	0.00	0.0000
3	UC00003	12:28:28.270	12:50:28.00	2000.00	0.00	0.0000
4	UC00004	12:28:28.270	12:50:28.00	2000.00	0.00	0.0000
5	UC00005	12:28:28.270	12:50:28.00	2000.00	0.00	0.0000
6	UC00006	12:28:28.270	12:50:28.00	2000.00	0.00	0.0000
7	UC00007	12:28:28.270	12:50:28.00	2000.00	0.00	0.0000

Watch on YouTube

April 16, 2023: Dwarf Elliptical (dE) Galaxies

Joel Roediger (Herzberg Astronomy and Astrophysics Research Centre), Elisa Toloba (University of the Pacific), Eric Peng (NOIRLab), Raja GuhaThakurta (UC Santa Cruz), and their collaborators on the Next Generation Virgo Cluster Survey (NGVS) team will use the Keck II 10-meter telescope and Echelle Spectrograph and Imager (ESI) instrument on the summit of Maunakea on the Big Island of Hawai'i.

The team will study a class of low-mass galaxies, dwarf elliptical (dE) galaxies, in the Virgo cluster of galaxies. The Virgo cluster, the nearest large collection of galaxies, is located at a distance of 50 million light years from us.



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Shadow the Scientists: Creating Community Connections Through Virtual Science, Technology, Engineering, and Math Engagement

Dedicated Sessions

Shadow The Scientists (STS)
March 30, 2023: Bilingual Gujarati/English - Gal...
Live Sky Observing Session
On ZOOM
Using Keck and Subaru Telescopes
Hawaii, USA
First Ever Gujarati Knowledge
Sharing Interactive Session
by one of the members
Date: 30/03/2023
Time: Morning 10.30 to 12.30

Watch on YouTube

March 30, 2023 – Bilingual Gujarati & English Session

In this special Shadow the Scientists session, Dr. Ekta Shah ([University of California, Davis](#)) facilitates our first session in Gujarati as we shadow Dr. Brian Lemaux ([Gemini-N/NOIRLab](#)), Dr. Lu Shen ([Texas A&M University](#)), Dr. Roy Gal ([Institute for Astronomy, UH](#)), Dr. Ben Forrest (University of California, Davis), and graduate student Priti Staab (University of California, Davis) as they simultaneously use *two* telescopes at the top of Maunakea on the Big Island of Hawai'i.

In these observations, the team will be using the Multi-Object InfraRed Camera and Spectrograph ([MOIRCS](#)) on the [Subaru Telescope](#) and the Multi-Object Spectrometer For InfraRed Exploration ([MOSFIRE](#)) on the [W.M. Keck Observatory](#) to understand how galaxy clusters are formed.

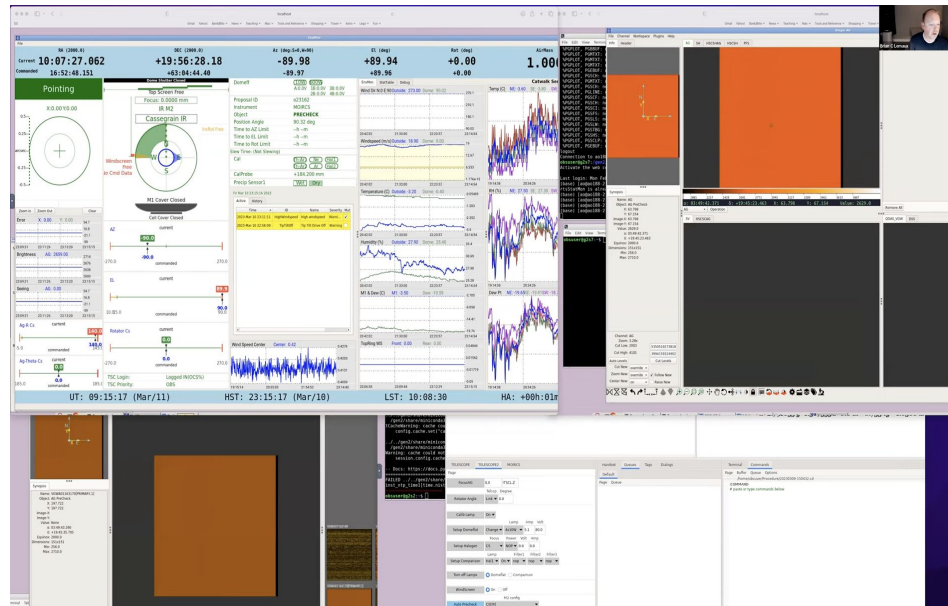




Shadow the Scientists: Creating Community Connections Through Virtual Science, Engineering, and Math Engagement

The Benefits of Hosting a “Shadow” Session

- Synergizes with work that you are already doing
- Great introduction to the engagement experience
- Build team cohesion
- Effective Recruitment Tool
- Broader impact component of project proposal or grant funding
- DEI efforts





Shadow the Scientists: Creating Community Connections Through Virtual Science, Technology, Engineering, and Math Engagement

Hosting a “Shadow” Session



1. [Contact us](#)
2. Determine what aspect of your work do you want to share
3. Plan the details
4. Review the guidelines for hosting a session

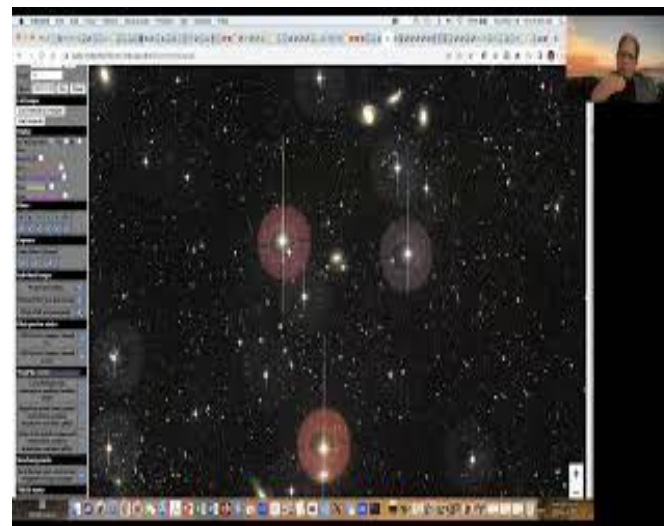




Shadow the Scientists: Creating Community Connections Through Virtual Science, Technology, Engineering, and Math Engagement

Hosting a “Shadow” Session: Best Practices

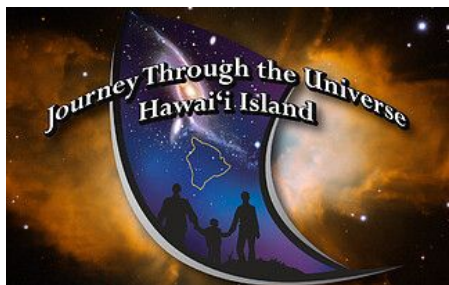
- **Discuss the hosting and observing roles with your team**
- **If possible, designate at least one member of your team to be primarily responsible for answering questions verbally and in the chat.**
- **For observing sessions, preparation of some visual material in case of weather, etc.**
- **Introduce yourself and participating colleagues**
- **If observing session, allow telescope support staff to introduce themselves as well**
- **Have fun!!!!**





Shadow the Scientists: Creating Community Connections Through Virtual Science, Technology, Engineering, and Math Engagement

Complements Existing Outreach and Engagement Efforts



OSP SCIENCE INTERNSHIP PROGRAM

Science Internship Program (SIP)

is a summer-long (10 week) STEAM research internship program for high school students. SIP promotes critical thinking in the context of closely mentored open-ended real world research projects.

UCSC PhD students, professors, and researchers provide one-on-one mentoring of high school interns. Interns are inserted into existing research projects currently happening at UCSC.

Opportunities for wider exposure to topics in current research, academic enrichment, and college preparation are embedded into the program during the internship.

This year's stats: hybrid, 394 interns, 129 mentors, [26 research areas](#), increased global footprint, scholarships, need-based stipends, global travel support



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CrEST Umbrella of Initiatives

Additional STEAM educational initiatives under the umbrella which are offshoots of SIP

- Research in Computational Biology (ReComBio)
- Teachers in SIP (TSIP)
 - Embeds teachers and pre-service teachers (undergrads training to become teachers) in SIP
 - Partnership with the STAR program at Cal Poly SLO
- Community College Students in SIP (CSIP)
 - Partnership with Foothill/De Anza College in the Bay Area
- Alumni Buddies
- Peer-to-Peer College and Career Network (P²C²N)
 - A network of SIP alumni and their parents who volunteer to provide free college admissions/navigation and career advice to current SIP interns and their families
- Global SPHERE Network
 - Community of practice for STEAM researchers who engage (or wish to engage) high school students
 - The network was founded in 2017 by six established high School STEM research programs: [SIP](#), [Global STEM Alliance](#), [Bay Area Teen Science](#), [Science Research Mentoring Program](#), [RockEDU](#), and [Harvard-MIT Science Research Mentoring Program](#)

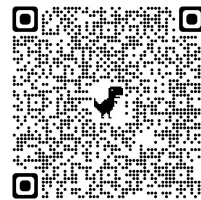




**Shadow the Scientists:
Creating Community Connections Through Virtual Science, Technology,
Engineering, and Math Engagement**

Questions?

Comments?



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