

# After Dark

Updates from the Great Basin National Park Foundation  
& the Great Basin Observatory

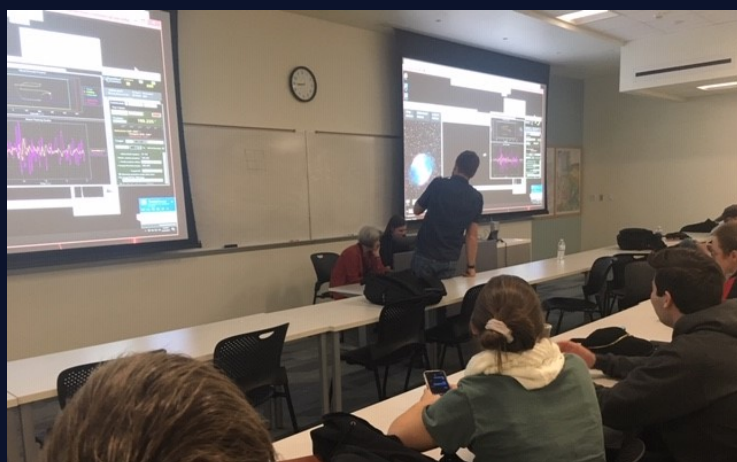


## STAR FEST 2

Fall, 2019

Over 30 people attended Starfest 2 in Cedar City, Utah on October 26 & 27. Starfest celebrates the research stemming from the Great Basin Observatory (GBO), and allows our four university partners (Concordia University Irvine; CUI, Southern Utah University; SUU, University of Nevada Reno; UNR and Western Nevada College; WNC) to build a collegial community of practice. Research presentations included work done on double stars, exoplanet transits, eShel spectrograph development, and ideas for using the GBO with undergraduate and high school students. Students learned about telescopic equipment and operation, and were able to test their new skills in an evening GBO live session.

New this year—three high school students attended with their teacher from SUCCESS Academy (Southern Utah Center for Computer, Engineering and Science Students) to present on the double star research they completed through remote collaboration with SUU's Dr. Cameron Pace. Feedback from the high school students on the collaborative process included, "My professor supported my group every step of the way allowing us to think critically, to understand the research and to solve problems. That I am very thankful for.", "This research helped me get into various science and engineering programs in college which aided in receiving multiple scholarships.", and "If you have the opportunity to join and do research please take it. It helps you build communication, research and collaboration skills making you stand out in future programs/opportunities." The Great Basin National Park Foundation is helping to link rural high school students in Nevada and Utah to this life changing opportunity.



Some of the Starfest 2 participants, college students participate in a GBO live session, SUCCESS Academy students with Dr. Pace

## Reach for the Stars (RFS) Education and Outreach

45 classrooms and 995 students were able to participate in an interactive Great Basin National Park presentation in Nevada and Utah this year. Seventy five 5th-8th grade students came to Great Basin National Park to learn about the solar systems immense scale and view celestial bodies at an astronomy program, and RFS supported an additional 3,600 Park visitors at Park Astronomy programs this year.

"I loved this activity for my class. I liked how it combined math and science. Great activity— I can't wait for next

year!" said a 3rd grade teacher from Millard Elementary School in Utah. "This presentation could not have been better! My students had a fabulous time and they learned a lot about the effects of light pollution," commented a 5th grade teacher from Ely Learning Bridge Academy in Nevada. Our most reoccurring comment is, "my students were so engaged!"

We are thrilled that the Great Basin Heritage Area Partnership is helping us present to students in Nevada and Utah this year!

## From trial to triumph— Concordia University, Irvine (CUI)

Ruth Larson (CUI physics/mathematics undergraduate) and CUI Prof. Cole Niebuhr, (also Director of Research at Global Science Directive) don't let months of misadventures get in their way. The pair ran into multiple obstacles trying to make the software supplied with the newly installed eShel spectrograph work.

Spectroscopy is the study of how light interacts with matter. Specific details about an object can be ascertained by looking at the types of light that are emitted by a star or reflected by a planet. Spectroscopic technology at the GBO is of great importance and provides new avenues for student, amateur, and professional level research.

Ruth and Prof. Niebuhr spent months trying to get the eShel spectrograph's software to work. They contacted the manufacturer multiple times, spent hours testing, downloading, and re-calibrating, but they only reached

dead ends. But, dead ends could not stop our dedicated team! Since the pre-installed spectrograph software didn't work, the pair decided to teach themselves computer programming and create their own original software. Three weeks later, they were able to successfully generate and analyze their first spectrum using the hardware in the laboratory at CUI.

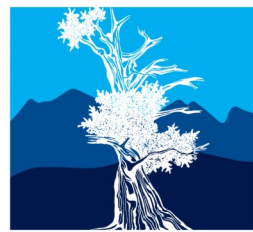
In the next several weeks the GBO spectrograph will be fully online and operational thanks to new ESPECKA software created by the duo and integrated by Global Science Directive. It is fitting that Ruth Larson was the Great Basin Observatory scholarship recipient for 2019!

Photo: Prof. Cole Niebuhr and Ruth Larson (CUI)



## Who We Are

The Great Basin National Park Foundation is the official nonprofit partner of Great Basin National Park. We help the Park engage and connect the public to Great Basin's spectacular wide-open scenery, dark night skies, cultural heritage and diverse native



GREAT BASIN  
NATIONAL PARK  
— FOUNDATION —

Learn more at

[www.greatbasinfoundation.org](http://www.greatbasinfoundation.org)  
[www.greatbasinobservatory.org](http://www.greatbasinobservatory.org)