Small Telescope Spectroscopy

Sacramento Mountains Spectroscopy Workshop
Las Cruces, New Mexico February 24, 2019
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Overview

- Goals
- Technology
- Software
- Collected Spectra
Goals for New Mexico

- Experience collecting spectra
- Processing Data
- Familiarity with Equipment
- Learn transferable skills for future research at The College of Idaho
- Develop user manuals for future research students
What We Learned

- How to set up and run the observatory equipment
- How to use various spectroscopy software to collect data
- How to calibrate and produce spectra in the ISIS program
- Fundamental astronomy concepts—mini lectures
Technology

- Paramount Telescope Mount
- Carbon Fiber Tube Telescope
- LHIRES III Spectrograph
- Arduino Controller
- Autoguider
Software

TheSkyX Professional Edition

Integrated Spectrographic Innovative Software (ISIS)

Bulk Rename Utility
Submitted four spectra to database of Be Star Spectra (BeSS) database

Submitted two spectra to the American Association of Variable Star Observers International (AAVSO) database

Why is submitting spectra to databases useful to the astronomical community?
**Shifted Wavelength Formula**

\[
\frac{FWHM}{2.35} = \sigma \text{ (wavelength shift)}
\]

**Doppler Shift Formula:**

\[
\frac{\sigma_{\text{wavelength shift}}}{\lambda_{\text{supposed wavelength}}} c = \text{rotational velocity}
\]
Close-up View “Forbidden” emission line

[N II] at 6548 Angstroms

[N II] at 6584 Angstroms

HD 45677

Drew Chojnowski
All work and no play
Above: Exploring White Sands National Monument in Alamogordo, New Mexico

Below: From right to left, Micah Woodard, Nick Lotspeich, and Molly Vitale-Sullivan in Dr. Daglen's roll-off observatory
Special thanks to Joe and Frankee Daglen, Dr. Dull, Dr. Devine, and The College of Idaho for making this research experience possible.

We are also happy to share our user manuals for TheSkyX Professional Edition and Integrated Spectrographic Innovative Software to anyone who is interested.