What is Spectroscopy?

• The investigation and measurement of spectra emitted by objects via electromagnetic radiation.

Goal

• Learn more about Spectroscopy
• Use that new knowledge to gain the ability to use software
• Study how spectrometers work and set up the observatory to make observations
• Make observations of different types of stars
• Interpret and present findings as the first found from the observatory

Learning experiences

• Learning curve because of lack of experience with spectroscopy
• Technical difficulties with 20 in and spectrograph
• Learning new software: RSPEC, CCDOPS, and MAXIM DL
• Making observations and calibrating spectra with RSPEC
• Problem solving techniques with advanced technology

More information

• Many different types, but this project mainly looked at stellar objects.
• Comparing spectra can differentiate objects

Methods

• Extensive research using
  – *Astronomical Spectroscopy for Amateurs* by Ken M. Harrison
  – *Practical Amateur Spectroscopy* by Stephen F. Tonkin (Ed.)
• Online resources provided by:
  – Santa Barbara Instrument Group
  – RSPEC, Real-time Spectroscopy open courseware
• Calibration of SBIG SGS spectrograph using neon lamps
• Learned about 20in telescope operation
• Used knowledge gained from this to make observations
• Used calibrated spectrograph and 20in to obtain images of Megrez on April 4th, 2016 (Shown on bottom left)
  – Unclear whether this was an actual spectra or not
  – Had several problems getting both cameras to work on spectrograph

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Spectrum of Vega inputted into RSPEC

SBIG Spectrometer courtesy of Santa Barbara Instrument Group

Complete Solar spectrum from smartphone spectrometer. Kit courtesy of Public Lab.

Spectrum of Megrez taken on April 5th by SBIG SGS with ST-7 CCD camera on 20in telescope.

Acknowledgments:

Ms. Elizabeth Warner, University of Maryland
Dr. Dennis Welnitz, University of Maryland

Background
image: www.noao.edu/image_gallery/html/im0609.html