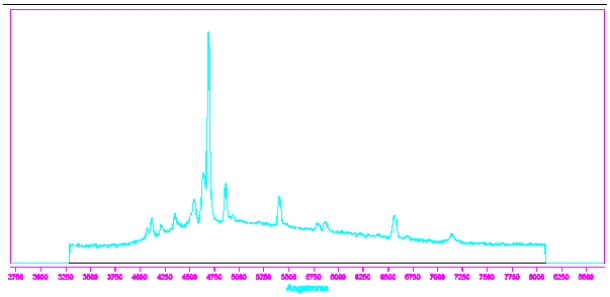
Research Committee Report for November 2017

This month was rich with images, spectra, and presentations.

Solar System: Jim Nordhausen was lucky enough to see a brief flare from an Iridium satellite.
Clif Ashcraft imaged the *first quarter moon* displaying Crater Tycho's long rays stretching way across Mare Serenitatis. That must have been an enormously energetic impact.

Stars: Clif imaged NGC 654, an open star cluster in Cassiopeia with his new setup and was pleased to see nice round star images in 10 seconds exposures.
Dennis Conti observed several more KELT exoplanet transit candidates.
Steve Lowe's goal with his new setup is to secure spectra of supernova candidates. He has used his Alpy spectroscope in slit mode to take a *spectrum of WR 136*, a red giant in the center of the Crescent Nebula in Cygnus. It shows strong helium emission lines. Massive stars puff off their outer envelope of hydrogen and then become Wolf-Rayet (WR) stars with fierce hot winds before eventually exploding as a supernova.
Tolga Gumusayak's month of observations of the non-eclipse of PDS 110 were sent to Hugh Osborn. His group had predicted that this star would have a very deep and long eclipse in September due to an exoplanet with a huge ring system. Thirty-two other observers also said that it didn't happen.



Nebulae: In 7.5 hours Helder Jacinto imaged the *Heart Nebula (IC 1805),* Elizabeth's favorite object. This emission nebula is illuminated by several massive stars in its center, and is 7500 light years away in Cassiopeia. He also imaged IC 59 and IC 63, faint reflection and emission nebula near Gamma Cas and displayed them in two different color palettes.

Presentations: Dennis presented "Looking for Zebras when there are only Horses" (dealing with exoplanet false positives) at the annual meeting of the American Association of Variable Star Observers (AAVSO) held at Vanderbilt University in Nashville, Tennessee from November 2-4. Clif also attended this meeting and heard interesting discussions of exoplanets, novas, and eclipsing binaries. He reported that exoplanet observers, both amateur and professional, were eager to learn how to use his speckle interferometry method to resolve close "blended" doubles. This will be particularly useful when the TESS spacecraft is launched sometime next year. People were also generally amazed at his high resolution images of Jupiter and Mars.

I spoke on “Exoplanets” at the American Physical Society (APS) mid-Atlantic regional meeting at NJIT in Newark and heard about space weather, solar observatories, and a search for exomoons.

Other: Steve has finished constructing his new roll-off roof observatory for his Paramount MYT mount and Celestron C8 HD telescope.
Clif has constructed a new concrete pier and installed his C14 telescope on an Astro-Physics 1200 GTO mount.
Clif began a discussion on flat fielding techniques for astrophotography.
Dennis started a discussion on techniques for field de-rotation and suggested using ONAG science images to de-rotate the field. Tolga reported that recent updates to PlaneWave software can fix field rotation problems for their telescopes.

Respectfully submitted, Mary Lou West, Research Chair