

Name: John Hodgson II
Email: john.hodgson.71@my.csun.edu
Institution: California State University, Northridge
Title: A spectroscopic and photometric search for star-planet interactions
Type: Poster
Session: Stellar Activity, Rotation, Ages, Metallicity
Abstract: Co-Authors: Damian J. Christian (CSUN), D. Bodewits (UMD), S. Hawley (UW)

We have undertaken a study to determine if the orbital geometry of exoplanets affects the activity of their host stars by observing a sample of planetary systems known to contain massive planets on short period, highly elliptical orbits. While recent studies in the optical, UV, and X-Ray have shown enhanced chromospheric activity for stars hosting exoplanets with orbital semi-major axes less than 0.1 AU [1, 2, 3, 4], it is not yet clear whether this activity is driven by magnetic or tidal interaction. For the first portion on our study, we are probing the dependence of star-planet interactions (SPI) on the orbital geometry of the planetary systems by analyzing the Ca II H & K emission lines for variability phased with the exoplanet's orbit. We have obtained high resolution spectra of several systems with the McDonald 2.1m Sandiford echelle spectrograph and ARCES on the APO 3.5m. For the second part, we are analyzing the high precision short cadence Kepler light curves of a few Kepler host stars to look for modulations symbolic of a hot spot generated on the stellar disk as a result of SPI. We shall describe our methodology and review our results on how orbital geometry can be used to study how planets may affect the activity of their host stars.

References

- [1] Krejcová, T., & Budaj, J., 2012, *A&A*, 540, A82
- [2] Shkolnik, E., 2013, *ApJ* pre-print from arXiv:1301.6192v1
- [3] Kashyap, V.L., Drake, J.J., & Saar, S.H., 2008, *ApJ*, 687, 1339
- [4] Poppenhaeger, K., Roßbrade, J., & Schmitt, J.H., 2010, *A&A*, 515, A98