ROBUST SPECTRAL INDICES FOR EXOPLANETS OBSERVED WITH JWST. T. G. Kopytova[1] and M. R. Line[1], [1]School of Earth & Space Exploration, Arizona State University, Tempe AZ 85287, USA

The James Webb Space Telescope will enable us to obtain exoplanet transit spectra with unprecedented precision over the wide spectral range (0.6 - 28.3 microns). We aim to determine spectral indices that are most sensitive to certain exoplanet parameters, such as effective temperature, surface gravity, and chemical abundances. The spectral indices will serve the community with a faster way of characterizing exoplanets, as oppose to comparison of observations to the entire grid of theoretical models.

We use two different approaches to determine spectral indices. The first approach is a machine-learning algorithm that allows to train a model representing flux at each wavelength as a function of exoplanet parameters [1]. The second approach is the Principal Component Analysis allowing to identify linearly-independent components that can reconstruct spectra. Both approaches use the PETIT atmospheric model grid [2] to calculate spectral indices.

We compare the results obtained from two different approaches. We also discuss how these results can be combined with the most optimal observing modes for JWST obtained using the information theory [3][4]. While we test these methods on primarily jovian transiting planets, these approaches can also be easily applied to terrestrial/ earth-like planets to identify bio-signature indices.

[1] Ness M. K. et al. (2015) *ApJ, 808,* 16. [2] Molliere P.. et al. (2016) *ApJ, 813,* 47. [3] Batalha N. E. And Line M. R. (2016) arXiv:1612.0208. [4] Howe A. R. et al. (2016) arXiv:1612.01245.