

## **Investigating Substellar Atmospheres**

Brown dwarfs and directly imaged self-luminous exoplanets form a critical stepping stone along the path to imaging Earth-like planets. By examining ultracool subdwarfs, objects that have metallicities significantly lower than that of the Sun and ages  $> 5\text{Gyr}$ , we can gain insight into understanding how metallicity affects the observable spectral features. Currently, substellar subdwarfs are thought to have cloudless atmospheres due to reduced condensate opacities from their low-metallicities. In this talk, I will discuss the impact of metallicity and clouds by examining the one of the bluest known subdwarfs, SDSS J1256. Using the Brewster retrieval framework, I will discuss the results for the widely separated co-moving low-mass d/sdL7+T7.5p pair SDSS J1416+1348AB to understand their atmospheric properties and formation and evolution of the pair. Additionally, I will present results from a sample of brown dwarfs of similar temperatures to explore their chemical composition and thermal profiles to link underlying causes for differences in their spectra. Lastly, looking towards cooler and smaller objects, I will discuss ongoing and future retrieval work on a broad sample of directly-imaged exoplanets.

**Monday, December 6th**

3:30 - 4:30 p.m.

725 Commonwealth Ave | Room 502

**Eileen Gonzales**

Cornell University