The rise of exoplanet science offers an unprecedented opportunity to explore the inner workings, possible origins, and the potential for extraterrestrial life of planetary bodies across the Galaxy. With current prolific surveys like those of the Transiting Exoplanet Survey Satellite, the upcoming launch of the James Webb Space Telescope, and first light from extremely large ground-based telescopes, the number of discovered and characterized exoplanets will increase exponentially in the next decades. In this talk, I will emphasize some of the ways in which the diversity of exoplanets can inform our understanding of planetary origins, evolution, and habitability. I will begin with hot and warm giant exoplanets, for which we have the highest quality observations. Transmission spectra of dozens of these objects show that most of them have cloudy atmospheres. I will describe my efforts in explaining the trends in exoplanet cloudiness using cloud microphysics, which is a necessary step towards knowing these worlds’ compositions and eventually their birth environments. I will then speak on the nature of sub-Neptunes - worlds in mass and radius between that of Earth and Neptune that make up the majority of planets found so far, but which don't exist in the Solar System. Finally, I will touch upon the coming revolution in rocky exoplanet characterization, and how they can be studied by considering the Solar System terrestrial worlds as analogues.

Please meet our guest speaker and share in refreshments 3:45-4:10 p.m. in the foyer on floor G above the lecture hall