| | Monday June 12 | | Tuesday June 13 | | Wednesday June 14 | |
|---|---|---|---|---|---|---|
| 8:30 - 9 AM | Coffee and Danish | | Coffee and Danish | | Coffee and Danish | |
| 9 AM - Noon (Coffee break 10:20-10:40 AM) | Introductory Material | | Transmission Measurements | | Emission Measurements | |
| | Exoplanets 101 | | Clear Sky and Atmospheric Chemistry | | Vertical Temperature Structure | |
| | Topics | Instructor(s) | Topics | Instructor(s) | Topics | Instructor(s) |
| | • Basics of exoplanet detection techniques<br>• Techniques of planet characterization<br>• Types of planets, incl. hot Jupiters<br>• Exoplanet demographics & statistics<br>• Types of atmospheres<br>• On-going/future ground-/space-based missions | René Doyon & David Lafrenière (iREx, UdeM) | • Horizontal radiative transfer in atmosphere<br>• Transit geometry, transit light curve & spectroscopy<br>• Equilibrium chemistry: temperature, pressure, [Fe/H], C/O<br>• Disequilibrium chemistry: vertical and horizontal quenching, photochemistry | Eliza Kempton (Grinnell College) | • Vertical radiative transfer, emission spectrum<br>• Irradiated vs isolated atmospheres<br>• Temperature inversion<br>• Observation of directly imaged planets, secondary eclipses<br>• Effect of clouds on emission spectra | Mike Line (Arizona State University) |
| Noon - 1:30 PM | Lunch | | Lunch | | Lunch | |
| 1:30 - 4:30 PM (Coffee break 3:00 - 3:20 PM) | Exoplanet atmospheres 101 | | Clouds | | Atmospheric dynamics | |
| | Topics | Instructor(s) | Topics | Instructor(s) | Topics | Instructor(s) |
| | • Hydrostatic equilibrium<br>• Shortwave and longwave radiation<br>• Opacity: optically thick and thin limits<br>• Convective instability<br>• Limiting temperature structures: adiabats and isotherms<br>• Energy balance models | Nicolas Cowan (iREx, MSI, McGill) | • Characterization of clouds on Earth and on exoplanets<br>• Microphysics (condensation, nucleation)<br>• Cloud dynamics<br>• Cloud models | Yi Huang (MSI, McGill) | • Energy balance review, day-night asymmetry, heat redistribution<br>• Fluid dynamics on rotating spheres<br>• Thermal wind and super-rotation<br>• Phase curve observations<br>• Eccentricity seasons and eccentric phase curves | Nikole Lewis (STScI) |