Radiative transfer modeling of complex young stars' magnetospheres

Professor Alicia Aarnio

University of North Carolina Greensboro

Spectroscopic observations of young stars present a rich and complex picture of circumstellar environments in the epoch of planet formation. Given observational limitations, these spectroscopic signatures can be extremely difficult to disentangle, their physical origins mysterious. After conducting an extensive observational campaign to assemble an atlas of young stars' spectral line profiles, we have run radiative transfer simulations in an effort to reproduce observations. I will discuss how stellar magnetic fields are observed, the limitations of these observations, and how data-driven simulations can help push modeling limits. Finally, I'll discuss implications for stars with increasingly complex magnetic fields which may not be resolvable due to flux cancelation.