

EP 12: Astrophysics II

Time: Friday 9:00–9:45

Location: H-HS VIII

Invited Talk EP 12.1 Fri 9:00 H-HS VIII
Asteroseismology of red-giant stars — ●SASKIA HEKKER — Max Planck Institut für Sonnensystemforschung, Göttingen, Germany — Stellar Astrophysics Centre, Aarhus, Denmark

Over the past decades we experienced a revolution in asteroseismology of red-giant stars. In this talk, I will discuss this revolution and first insights gained from asteroseismology into the stellar structure of red-giant stars.

EP 12.2 Fri 9:30 H-HS VIII
Evidence of an evolved nature of MWC 349A — ●MICHAELA KRAUS¹, MARIA LAURA ARIAS², LYDIA CIDALE², and ANDREA TORRES² — ¹Astronomical Institute, Czech Academy of Sciences, Ondrejov, Czech Republic — ²Institute of Astrophysics, CONICET-UNLP, La Plata, Argentina

The Galactic emission-line object MWC 349A is one of the brightest radio stars in the sky. The central object is embedded in an almost

edge-on oriented Keplerian rotating thick disk that seems to drive a rotating bipolar wind. The dense disk is also the site of the hot molecular emission such as the CO bands with its prominent band heads in the near-infrared spectral range. Despite numerous studies, the nature of MWC 349A is still controversial with classifications ranging from a pre-main sequence object to an evolved supergiant. To study the molecular disk of MWC 349A, and in particular to search for the isotope ^{13}CO , we collected new high-resolution near-infrared spectra using the GNIRS spectrograph at Gemini-North. The amount of ^{13}CO , obtained from the $^{12}\text{CO}/^{13}\text{CO}$ ratio, is recognized as an excellent tool to discriminate between pre-main sequence and evolved massive stars. We detect CO band emission with considerably lower intensity and CO gas temperature compared to previous observations. Moreover, from detailed modeling of the mission spectrum, we derive an isotope ratio of $^{12}\text{CO}/^{13}\text{CO}$ of 4. Based on this significant enrichment of the circumstellar environment in ^{13}CO we conclude that MWC 349A belongs to the group of B[e] supergiants, and we discuss possible reasons for the drop in CO intensity.