

Session 5

SPOTS – SpectroPolarimetric Observations of T Tauri Stars: preliminary results

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Proto-planetary disk (PPD) jets and winds are a key ingredient in the evolution of pre-main-sequence stars. They play a fundamental role in the extraction of angular momentum and in the disk dispersal, which set the physical conditions for the formation of planets. The standard analysis to probe such outflows is based on high-resolution spectroscopy of optical/infrared emission forbidden lines and Balmer/Paschen lines which usually present composite profiles associated with different jet/wind components. However, the physical origin of some of these components is still poorly constrained due to the lack of geometrical information on sub-au scales.

In our SPOTS (Spectropolarimetric Observations of T Tauri Stars) project we propose to unveil winds and jets at sub-au scale using the extra-dimension of information provided by linear spectropolarimetry thanks to the unprecedented combination of sensitivity and high-resolution provided by the recent facilities such as that of PEPSI@LBT.

In this poster we will present the preliminary results of the first observational run of SPOTS with PEPSI: we successfully detected strong linear polarimetric signals across the Balmer lines in two bright CTTs (RY Tau and GM Aur) with a spectral resolution never achieved before. For the first time, we also detected significant polarization signals across the Sodium D-lines at 589 and 589.6 nm while we did not detect any signals across the [OI] line at 630 nm, in contrast to the previous low-resolution observations.