

Session 2

Observational Evidence for the Hanle and Magneto-Optical Effects in the Polarization of the Mg II h & k Lines Observed by CLASP2

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Using the unprecedented observations across the Mg II h & k lines around 280 nm obtained by the Chromospheric LAYer Spectro-Polarimeter (CLASP2), we investigate how the linear polarization signals at different wavelengths (i.e., at the center, and at the near and far wings of the k line) vary with the longitudinal component of the magnetic field (B_L) at their approximate height of formation. Particular attention is given to the sign of the Stokes U signals, and the total linear polarization amplitude (LP) and its direction (χ), which are expected to be influenced by the presence of magnetic fields through the Hanle and magneto-optical (MO) effects. We find that at the center and near wings of the k line, the behavior of these quantities is significantly different in the observed quiet and plage regions, and that both LP and χ seem to depend on B_L . These observational results are indicative of the operation of the Hanle effect at the center of the k line and of the MO effects at the near wings of the k line. Hydrogen Ly α at 121.6 nm is another spectral line sensitive to the Hanle and MO effects. We also show the 2D map of linear polarization in the Ly α wings obtained by the CLASP2 slit-jaw imager, aiming at finding evidence of the operation of the MO effects.