

## Measurements of the magnetic field of the upper chromosphere with polarimetry

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A major remaining challenge for heliophysics is to decipher the magnetic structure of the chromosphere. The chromosphere is the critical interface between the Sun's photosphere and corona: it contains more mass than the entire interplanetary heliosphere, requires a heating rate that is larger than that of the corona, and mediates all the energy driving the solar wind, solar atmospheric heating and solar eruptions. While measurements of the magnetic field in the photosphere are routine, the chromosphere poses several extra challenges. The magnetically sensitive lines formed in the upper chromosphere are in the ultraviolet, so space-based observations are required. The lines are often formed over a range of heights, sampling different plasma which complicates the inversion process. These lines are sensitive to the magnetic field via polarized light that is created or modified through the Hanle and Zeeman effects. There are a few observations of these lines, and a significant challenge remains in extracting the magnetic field from the polarization measurements, as detailed model atmospheres with advanced radiative transfer physics are needed. Real progress is obtained by a simultaneous improvement in both the observational side and the modeling side. We present information on the CLASP (Chromospheric LAYER Spectro-Polarimeter) sounding rocket program, and future prospects for these types of measurements.