
Hanle and Zeeman effects: From solar to stellar diagnostics

Arturo Lopez Ariste*¹

¹Télescope héliographique pour l'étude du magnétisme et des instabilités solaires (THEMIS) – CNRS :
UPS853 – C/O IAC Via Lactea s/n 38205 LA LAGUNA TENERIFE, France

Abstract

Diagnostics of magnetic fields in the solar atmosphere are made easy thanks to the abundance of photons. The high SNR allows one to use all the subtleties of the Zeeman effect, including profile asymmetries, and the quantum weirdness of the Hanle effect. When translating this experience to stellar observations the low photon flux gets further complicated by the lack of spatial resolution. I will consider in this talk how to address those diagnostics in stellar observations. I will focus in two cases: one, the presence of area asymmetries in the Stokes V profiles of stars as an indication of magnetic variability along the atmospheric layers cross by the photon in its way out. Second the use of Hanle effect integrated over the stellar disk as a measurement of weak global fields that break the spherical symmetry of the star.

*Speaker