

NLTE polarized lines and 3D structure of magnetic fields

P.Mein, N.Mein, M.Faurobert, V.Bommier, J-M Malherbe, G. Aulanier

We present some investigations of the solar magnetic field at high levels of the photosphere, derived from NLTE line profiles.

- 1 - We compare THEMIS/MSDP observations of the sodium D1 line with synthetic profiles deduced from the MULTI code and flux tube models close to magneto-static equilibrium. The results show, in particular, that seeing effects must be taken into account in deriving the vertical magnetic gradients inside flux tubes. Full agreement between synthetic and observed profiles should include more sophisticated MHD models, especially at upper levels.
- 2 - We compare fast THEMIS/MSDP vector magnetic maps of active regions obtained with the lines 610.3 CaI and 630.2 FeI, as well as MSDP and MTR maps, derived from UNNOFIT inversion. More data reductions are still needed to interpret departures between both lines.
- 3 - We shall review very briefly the capabilities of NLTE synthetic profiles in the framework of weak field approximation: response functions, formation altitudes (for line-of-sight and transverse fields), gradient measurements, filling factor effects,...

P. Mein
Lesia
Observatoire de Paris
5 place J. Janssen
92195 Meudon Cedex
pierre.mein@obspm.fr