

Session 3

P-CORONA : A new forward modeling code to study the polarization of solar coronal lines

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Over the last few years we have developed P-CORONA, a new parallel code to model the intensity and polarization of both forbidden and permitted lines in 3D models of the solar corona. For any coronal line of interest, P-CORONA computes the line-of-sight integrated Stokes profiles in any given 3D coronal model taking into account the symmetry breaking produced by the presence of magnetic fields and non-radial solar wind velocities. In this contribution, we first give an overview of P-CORONA (which will be made available as an open-source code to the astrophysical community in the near future). Secondly, we will present the results of an investigation of the effects of non-radial solar wind velocities on the polarization of the Fe XIII lines at 10747 and 10798 Å. Generally, these forbidden lines are assumed to be insensitive to the solar wind velocities because it is given for granted that the pumping radiation from the underlying solar disk is spectrally flat. However, there are strong photospheric lines of Si I at nearby wavelengths, separated in velocity by 72 km/s and 47 km/s, respectively, from the Fe XIII 10747 Å and 10798 Å lines. We present the results of our investigation of this problem in 3D models of the solar corona.