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Stratification of canopy magnetic fields in a plage region

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The role of magnetic fields in the chromospheric heating problem remains greatly unconstrained. Most theoretical predictions from numerical models rely on a magnetic configuration, field strength, and connectivity; the details of which have not been well established with observational studies for many chromospheric scenarios. High-resolution studies of chromospheric magnetic fields in plage are very scarce or non-existent in general.

Our aim is to study the stratification of the magnetic field vector in plage regions. Previous studies predict the presence of a magnetic canopy in the chromosphere that has not yet been studied with full-Stokes observations. We use high-spatial resolution full-Stokes observations acquired with the CRisp Imaging Spectro-Polarimeter (CRISP) at the Swedish 1-m Solar Telescope in the Mg I 5173 Å, Na I 5896 Å and Ca II 8542 Å lines.

We have developed a spatially-regularized weak-field approximation (WFA) method, based on the idea of spatial regularization. This method allows for a fast computation of magnetic field maps for an extended field of view. The fidelity of this new technique has been assessed using a snapshot from a realistic 3D magnetohydrodynamics simulation.

Student poster?

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