

## “Stokes Profile Inversion and Comparison to Full-Resolution Data”

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The desire to understand the magnetic field strength and orientation in the atmosphere of the sun originates in its being an indicator of present and future space weather and solar activity. Spectro-polarimeters are able to observe the spectrum of solar light as well as the Stokes profiles, polarizations which are created by the presence of magnetic fields, which can then be inverted using inversion codes, such as the HEXIC program used here, to reveal the Milne-Eddington parameters (elements of a simple atmospheric model) for a specific area, including the magnetic field vector. The Chromosphere and Prominence Magnetometer, ChroMag, is one of these spectro-polarimeters (2.2” resolution). By degrading full-resolution (.32”) sunspot data from the Hinode mission’s spectro-polarimeter on the Solar Optical Telescope, we will be able to anticipate what we will and what we won’t be able to detect using ChroMag.

The Level 1 Hinode data, raw except for the removal of instrumental effects, is degraded to ChroMag resolution and then inverted using HEXIC. The resulting Milne-Eddington parameters are compared to those from smoothed Level 2 Hinode data which contains the parameters from a comprehensive inversion of the full-resolution data.