

Contributed Talk

Splinter Plasma

GLOBAL CORONAL MAGNETIC FIELD MODELING USING
STEREOSCOPIC CONSTRAINS

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The extrapolation of solar surface vector magnetograms into the corona under the model assumption that the coronal plasma is in a force-free state has now become a standard technique to reconstruct the coronal magnetic field. Even though the method has its shortcomings, the lack of direct magnetic field measurements in the corona makes it a unique tool to estimate the topology of the coronal field, its energy and helicity. Comparisons of the field models with stereoscopically reconstructed loops have revealed occasional discrepancies in the local field directions of 20 degrees and more. For the purpose to reconcile the field model with the loop reconstructions, we extended the NLFFF optimization code by the inclusion of stereoscopic loop reconstruction constrains. The extended method (called S-NLFFF) contains an additional term that minimizes the angle between the local magnetic field direction and the orientation of the 3D coronal loops reconstructed by stereoscopy. This approach results in force-free field models which agree with both types of observations and are therefore much more reliable.