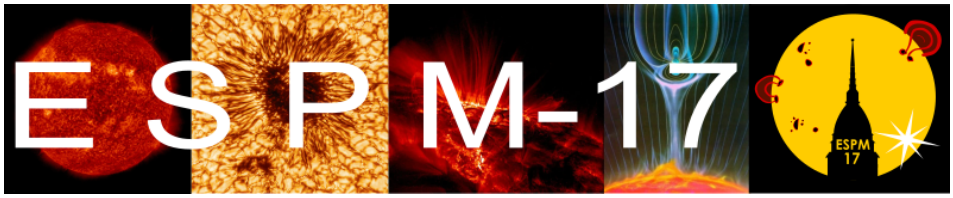

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The Fast Imaging Solar Scanning Spectro-Polarimeter (FISS-SP): First observations and early results

The feasibility of restoration of spectrograph data was first demonstrated by Keller and Johannesson [1995] based on a speckle-based method. In van Noort [2017] this method was revisited using an MFBD based approach on data acquired with the SST. This new approach allows for the restoration of spectro-polarimetric data over large FOVs with a spatial resolution that can compete with that of restored 2D-filtergraph images.
As a follow-up to the work of van Noort [2017], we have further explored the performance of image restoration of solar spectra on data sets with a considerably higher spatial resolution. The Fast Imaging Solar Spectrograph (FISS) instrument [Chae et al., 2013] installed at the 1.6 meter Goode Solar Telescope (GST) [Cao et al., 2011] at the BBSO offered the right platform. We extended the FISS by spectro-polarimetric capabilities, a fast context imager, and a state-of-the-art large format spectrograph camera. The resulting Fast Imaging Solar Scanning Spectro-Polarimeter (FISS-SP) experiment can accommodate a spectral range in excess of 30˚A at a central wavelength of 5241 A, allowing for the simultaneous full Stokes observation of more than 150 solar absorption lines.
The huge spectral window opens up the possibility of achieving a high polarimetric sensitivity by combining the information of many lines, as proposed by Riethmüller and Solanki [2019]. In this contribution we present restored first light FISS-SP data sets with outstanding spectral and spatial resolution. Furthermore, we present a preliminary analysis based on the new many line inversion technique.

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Session Classification: Coffee break and poster session 1

Track Classification: Energy and mass transfer throughout the solar atmosphere and structures within