

Session 2

The formation and disappearance of penumbra

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Unique high-resolution spectropolarimetric observations of the SST/CRISP ground-based instrument, complemented with data from the SDO/HMI and Hinode/SP spaceborne instruments and from potential field extrapolations and data inversion, are used to investigate the formation and decay of penumbral regions.

Here we report the magnetic and velocity properties of the solar plasma during the formation and decay of a penumbra observed from the lower photosphere to the upper chromosphere in AR NOAA 12585. We show that the penumbra only appears in a photospheric region that lacks an overlying magnetic canopy. We then show that the penumbra disappears progressively both in time and space. This process seems to be linked with the presence of overlying canopies as well. Noticeably, we also show the detection of Evershed flows and horizontal fields after the apparent disappearance of the penumbral sectors.