

New observations of sunspot light bridges as revealed by *Hinode*

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Abstract. Sunspot light bridges (LBs) represent an abrupt change in the umbral morphology and magnetic field. Although the nature of sub-photospheric convection that powers the LB is still not understood properly, the presence of an LB is indicative of the formation and subsequent decay of sunspots. The chromosphere of these structures, in particular, is characterized by ejections and brightness enhancements that are believed to be manifestations of reconnection of the overlying umbral field in the upper photosphere/lower chromosphere. In this talk I will highlight the discovery of supersonic downflows in a sunspot light bridge in NOAA AR 10953, using observations from the spectropolarimeter on board *Hinode*. The occurrence of these downflows in close spatial and temporal proximity of chromospheric enhancements, seen in Ca II H filtergrams, perhaps demonstrates in a more direct manner, the photospheric signatures of magnetic reconnection. We speculate that the supersonic downflows and brightness enhancements could be triggered by inhomogeneities in the magnetic field organized at scales of ≈ 0.3 arcsec. These strong velocities were inferred from the use of novel model atmospheres in the inversion code which will be briefly described.