

Magnetic properties and behaviors of sunspot light bridges in terms of magnetic reconnection

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Abstract. In the Hinode-2 meeting, we reported on observations of chromospheric plasma ejections recurrently and intermittently occurred for almost two days along a sunspot light bridge in NOAA AR 10953 (Shimizu et al. 2009). Moreover, Louis et al. (2009) recently found occurrence of supersonic downflows in the same light bridge in the next days after reducing the number of chromospheric upward ejections. The both of them may be the signatures of magnetic reconnection at the interface between the flux tubes embeded along the light bridge and vertically oriented umbral fields, although the observed signatures are different from each other. The biggest puzzle is why magnetic reconnection can take place repeatedly for such a long time (almost 4 days!) along the light bridge. It appears that this light bridge is not a special case; Similar chromospheric plasma ejections are found in another light bridge, although the number of ejections is significantly small. Also, transient brightenings and brightness enhancements are commonly observed with Ca II H in many light bridges. This paper will present the recent progress in investigating magnetic properties and behaviors of sunspot light bridges in terms of magnetic reconnection and discuss what happens in magnetic configuration along light bridges.