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Sustained Heating of the Chromosphere and Transition Region Over a Sunspot Light Bridge

The solar chromosphere and transition region (TR) play an important role in coupling the dense, 6000 K photosphere to the tenuous, million degree corona. As the plasma beta changes dramatically over these layers, ascertaining the processes that maintain their thermal structure, remains a fundamental problem in solar physics. By combining observations from the 50-cm Multi-Application Solar Telescope (MAST) at Udaipur Solar Observatory, the Interface Region Imaging Spectrograph (IRIS), Hinode, the Atmospheric Imaging Assembly (AIA), and the Helioseismic and Magnetic Imager (HMI) we analyze the sustained heating of the chromosphere and TR over several days in a regular sunspot light bridge (LB). In this talk I shall describe the various diagnostics used to infer the thermal and magnetic structure of the LB, as well as the possible processes that could supply the necessary energy to maintain the temperature spanning a range of 8000 K to 2.5 MK over a period of days. Additional cases of sustained heating over sunspots will also be presented that indicate the phenomena to be generic and not exceptional.

Contribution Type

Theme

Solar Magnetism in High-Resolution

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