

1. Fundamental physical processes and modeling

**Constraints on active region coronal heating properties from observations and modeling of chromospheric, transition region, and coronal emission**

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We discuss how high spatial, spectral, and temporal resolution chromospheric/transition region/coronal observations coupled with detailed modeling can help us diagnose coronal heating properties in active region cores in non-flaring conditions. We will focus on recent results from IRIS, which provides us with unprecedented high spatial, temporal and spectral resolution observations of the chromosphere and transition region. Joint with coronal observations with Hinode (XRT and EIS), and SDO/AIA, these data cover from the upper photosphere to the corona. In particular, we will discuss how IRIS observations of footpoints of hot active region loops, coupled with detailed HD and MHD modeling including chromosphere, transition region and corona, provide tight constraints on the coronal heating mechanisms in the core of active regions.