Evidence of Non-Thermal Particles in Coronal Loops Heated Impulsively by Nanoflares

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The variability of emission of the "moss", i.e., the upper transition region (TR) layer of high pressure loops in active regions provides stringent constraints on the characteristics of heating events. The Interface Region Imaging Spectrograph (IRIS), launched in June 2013, provides imaging and spectral observations at high spatial (0.166 arcsec/pix), and temporal (down to ~1s) resolution at FUV and NUV wavelengths, and together with the high spatial and temporal resolution observations of SDO/AIA, can provide important insights into the coronal heating mechanisms. We present here an analysis of the temporal variability properties of moss regions at the footpoints of hot active region core loops undergoing heating, as observed by IRIS and AIA, covering emission from the corona to the transition region and the chromosphere. We model the observations using dynamic loop models (the Palermo-Harvard code, and RADYN, which also includes the effects of non-thermal particles) and discuss the implications on energy transport mechanisms (thermal conduction vs beams of non-thermal particles).