The Multi-Thermal and Multi-Strand Nature of Coronal Rain

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New IRIS observations in upper chromospheric and TR lines show abundance of coronal rain in active regions. The wide range of spectral lines in which it is observed, through co-observations in cool chromospheric lines with SOT and SST, and in coronal and TR lines with SDO, show clearly that coronal rain has a broad multi-thermal character. Prevalence of fine structure is found to increase at higher resolution with no clear change of trend, suggesting a tip of the iceberg scenario. A possible correlation with temperature is also found, strengthening the picture in which cool and dense cores are surrounded by a diffuse halo of warmer material. Whether such inhomogeneity extrapolates to the magnetic field, as expected from the Bennett pinch effect, is discussed. Furthermore, SST reveals highly coherent fine structure at the smallest scales in the transverse direction to the magnetic field, suggesting influence from the MHD thermal mode on the blob morphology. All these features agree well with the thermal instability scenario. A statistical analysis of the line widths in the rain provides estimates of the non-thermal line broadening and temperature. Mainly, we find Gaussian-like distributions of non-thermal line broadening with a peak at 7 km/s and a small upper tail spanning up to 25 km/s, with a small tendency to increase with height.