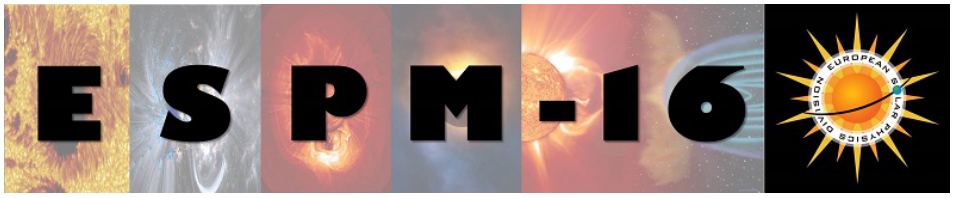

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Thermal structure of Coronal Bright Points at their base in the low transition region

Thursday, 9 September 2021 09:39 (13 minutes)

Coronal bright points (CBPs) are prominent features of the corona in the quiet-Sun and coronal holes, best observed in extreme-ultraviolet (EUV) and X-ray wavelengths, with lifetimes of up to several hours. They appear as small loops of sizes of about 10-20 Mm connected to bipolar magnetic field concentrations in the photosphere, often associated with flux emergence and cancellation. They can reorganize coronal magnetic fields and often erupt to supply heated material to the upper atmosphere and wind, which makes them important for coronal dynamics.

We report on thermal characteristics of CBPs using first observations from the EUV spectrometer SPICE onboard Solar Orbiter. One unique feature of SPICE is its simultaneous coverage of a broad temperature range from coronal plasma to the low transition region down to 0.01 MK. We utilize this to compare the thermal properties of CBPs with those of the quiet-Sun corona at low temperatures, not accessible to e.g. EIS/Hinode, by conducting differential emission measure (DEM) analysis. Here we can access the minimum of the DEM around log T[K] of ca 5.0 to 5.2 and in particular the gradient of the DEM at lower temperatures towards the chromosphere.

We will present results on how the thermal structure of a CBP differs from the quiet Sun, in particular at low temperatures at the base of the transition region. This should shed new light on where the plasma in a coronal bright point is predominantly heated: from its loop feet or at the top of the brightening loops.

Student poster?

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