Space Science Seminar
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What Role Does Small-Scale Magnetic Activity Play in the Formation and Evolution of Coronal Plumes?

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Host: Dr. Alphonse Sterling (Sponsored by ST13)

Coronal plumes are large-scale columnar, episodic structures that persist at coronal temperatures (~1 MK) for days, yet without the intense variability characterized by features such as flares and CMEs that can clearly be associated with magnetic reconnection. They are controversial structures in many respects. Until recently it was not clear how they form and how a plasma structure can be continuously maintained for long periods at a coronal temperature. Recent EUV observations and magnetic field data suggest a tendency for plumes to be dependent on the occurrence of transients (i.e., jetlets) resulting from low-rate magnetic reconnection. At higher coronal altitudes, plasma dynamics within plumes and their contribution to the solar wind are also a matter of debate. I will provide an overview on the role of small-scale, transient magnetic activity in the formation and evolution of solar coronal plumes. I will also present model predictions of plasma dynamics within plumes in the low to mid corona, which are relevant to future missions such as Solar Probe Plus and Solar Orbiter.

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