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# The Magnetic Origin of Solar Coronal Jets and Campfires: SDO and Solar Orbiter Observations

*Wednesday, January 22, 2025 8:55 AM (15 minutes)*

Here we present the magnetic origin of different types of campfires and coronal jets, using line-of-sight magnetograms from Solar Dynamics Observatory (SDO)/Helioseismic and Magnetic Imager together with extreme ultraviolet images from Solar Orbiter/ Extreme Ultraviolet Imager and SDO/Atmospheric Imaging Assembly. We find that (i) both campfires and coronal jets reside above neutral lines and they often appear at sites of magnetic flux cancelation between the majority-polarity magnetic flux patch and a merging minority-polarity flux patch, with a flux cancelation rate of  $\sim 10^{18}$  Mx hr $^{-1}$  (ii) majority of campfires are preceded by a cool-plasma structure, analogous to minifilaments in coronal jets. Our observations suggest that (a) the presence of magnetic flux ropes may be ubiquitous in the solar atmosphere and not limited to coronal jets and larger-scale eruptions that make CMEs, and (b) magnetic flux cancelation, most likely accompanied with magnetic reconnection in the lower solar atmosphere, is the fundamental process for the formation and triggering of most solar campfires and coronal jets. Finally, we compare fine-scale jets with those found in a Bifrost MHD simulation.

## Contribution Type

### Theme

Energetic Phenomena

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