BOSTON UNIVERSITY

Boston University College of Arts & Sciences Center for Space Physics

2021—2022 SPACE PHYSICS SEMINAR SERIES

Following a prominence eruption from Sun to Parker Solar Probe with multi-spacecraft observations

In the early hours of 2021 April 25, the Solar Probe Cup on-board Parker Solar Probe (PSP) registered the passage of a solar wind structure characterized by a clear and constant alpha to proton density ratio above 6% during three hours that remained later intermittently within a twelve-hour window. PSP was behind the Sun relative to the Earth but visible to both Solar Orbiter (SO) and STEREO-A (STA) which were in nearly perfect quadrature. In this presentation, I will talk about our study following the helium-enriched plasma structure from the Sun to PSP combining multi-spacecraft remote sensing and in situ measurements. We identify a prominence as the likely source, visible in both STA/EUVI and SO/EUI. The associated coronal mass ejection (CME) was observed in STA/COR2, SO/Metis and SoloHI and reached PSP when it was located at 46 R⊙. Except for the extraordinary alpha ratio enhancement, the CME showed ordinary plasma signatures and a complex magnetic field configuration. The PSP/WISPR images show a structure entering the field of view a few hours before the in situ crossing followed by repetitive transient structures that are the result of flying through the CME body. We believe this to be the first example of a CME being imaged by PSP/WISPR directly, before and during, being detected in situ.

Thursday, April 28th

4:00-5:00 p.m.

See website for Zoom details

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