Contribution ID: **113** Type: **not specified**

Risultati da recenti studi di eruzioni solari con Metis a bordo di Solar Orbiter

Thursday 5 June 2025 12:15 (12 minutes)

This presentation reviews recent results from the study of Coronal Mass Ejections (CMEs) and prominence eruptions using data from the multi-channel Metis coronagraph aboard Solar Orbiter. Analysis of one of the first events observed by Metis in February 2021, during Solar Orbiter's cruise phase, allowed characterization of a CME, followed by the expulsion of a prominence, and the formation of a post-CME Current Sheet (CS) with blob propagation. Visible light (VL) data demonstrated the advantages of acquiring polarized images with four polarimeter orientations for 3D CME reconstruction. UV Lyman-alpha images, in contrast, provided insight into the temperature distribution across the blob. The CS evolution was the focus of a more detailed study (in collaboration with PMO, Nanjing, China), which determined the temporal evolution and spatial distribution of plasma temperature within the structure, offering theoretical constraints for its heating. This was made possible by the combined use of VL and UV images from Metis. Another study focused on multiple post-CME blobs observed after a November 2021 eruption, demonstrating that their formation height was in the intermediate corona, not at the base of the post-CME CS in the innermost corona where the associated flare occurred. Finally, another work (again with PMO) investigated an eruptive prominence observed in UV Lyman-alpha not only by Solar Orbiter, but also for the first time by instruments aboard the Chinese ASO-S mission. This joint analysis enabled characterization of plasma temperature evolution during the eruption and the first-ever 3D reconstruction of a prominence based on Lyman-alpha emission.

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Session Classification: Sole, Luna e sistema solare: verso le missioni future (chair: S. Esposito)