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TWO DISTINCT ERUPTIVE EVENTS OBSERVED BY METIS ON OCTOBER 28, 2021

On October 28, 2021 the first X-class solar flare of Solar Cycle 25 occurred in active region NOAA AR 12887. It produced the rare event of ground-level enhancement of the solar relativistic proton flux and a global extreme ultraviolet (EUV) wave, along with a fast halo coronal mass ejection (CME) as seen from Earth's perspective. A few hours before the flare, a slower CME had erupted from a quiet Sun region just behind the northwestern solar limb. Solar Orbiter was almost aligned with the Sun-Earth line and, during a synoptic campaign, its coronagraph Metis detected two CME events in both the VL and UV channels. The earlier CME took place in the northwest (NW) sector of Metis field of view, while several bright features of the flare-related event appeared to the southeast (SE).

The NW and SE events have two distinct origins but were both characterized by a bright emission in HI Ly-alpha visible in the images of Metis up to 8 solar radii. This work investigates the evolution of these two almost co-temporal CMEs originating in distinct source regions. To that end, we extensively inspect data sets from numerous remote-sensing instruments observing the Sun in several spatial and spectral regimes. We track the erupting prominences associated with both CMEs with respect to their outer envelopes, from their source regions into the outer corona, by means of three-dimensional reconstruction techniques. Preliminary results of this work point to notable differences between these two events showing significant UV emission in the corona.

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