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Investigating the evolution of erupting prominences uninterruptedly using EUI FSI+Metis mosaics

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Understanding how erupting prominences evolve as they rise through the middle corona is essential for constraining the early phases of coronal mass ejections (CMEs).
This study aims to investigate the evolution of erupting prominences across the transition from the inner to the middle corona by combining observations from EUI/FSI and Metis aboard Solar Orbiter. The unprecedented characteristics of these instruments—such as the large field of view of a coronal EUV imager, the overlap between their FOVs, and the high-cadence sequences acquired during Remote Sensing Windows—enable the construction of continuous mosaics that trace prominence dynamics and morphology seamlessly from their onset in the low corona up to several solar radii.

As part of this project, we are developing EUIMET, a dedicated tool to generate EUI FSI+Metis mosaics from calibrated data, allowing users to customize enhancement techniques and opacity levels to optimize the visibility of key coronal features.
We apply this method to the spectacular polar crown eruption of the 20 October 2023, jointly observed by both instruments, to perform an in-depth morphological and kinematic characterization, through triangulation and time–distance analyses. This case study serves as a proof of concept for future systematic investigations of eruptive prominences observed simultaneously in the EUV, UV, and WL regimes.
By providing a unified view of prominence evolution across the middle corona, this work aims to improve our understanding of CME initiation and propagation processes. The developed mosaic tool and data products will be made publicly available to support the solar physics community.

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