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Oral
(Invited Talk)
We model the propagation of a solar coronal mass ejection (CME) that occurred on 30 August 2025 through the inner heliosphere and compare the modeling results with observations from multiple space missions, including PUNCH, STEREO, ACE, and PSP. We use the GAMERA inner heliosphere model with a solar wind background driven by output from the coronal WSA+ADAPT model. A CME represented by the Gibson–Low flux rope model is injected into the solar wind at 20 solar radii from the Sun. For this CME event, we assume different magnetic configurations allowed by the CME model and compare the results of the simulation ensemble with in situ and imaging data. In particular, we generate synthetic images for the PUNCH, PSP/WISPR, and STEREO/HI fields of view and spacecraft locations. We discuss the solar wind-CME interactions that create certain shapes of CME features in synthetic images and compare the modeled CME appearance with imaging observations. We also compare plasma and magnetic field signatures of the CME at 0.5 au with PSP in situ data, where the CME was detected on 31 August 2025, and at 1 au with STEREO-A and ACE, where the CME arrived on 1 September 2025. We discuss the insights that the simulation ensemble provides into the internal magnetic field structure of the CME and its interaction with background solar wind structures.
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