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Oral
(Invited Talk)
The heliospheric plasma is in a perpetual state of flow that couples with the magnetic flux throughout the solar system, so far carrying unanswered questions about the interactions between the Sun and the magnetic environment around the other planets, including Earth. Mapping these plasma flows accurately is of paramount importance for describing and understanding these interactions, and for improving our space weather forecasting capacities. While the motion of radiating density structures in the solar wind may be easy to visualize in time series of images, they remain challenging to measure precisely and systematically. The boundaries of the plasma density structures are inherently fuzzy. Being optically thin, the uncertainties on their 3D distributions, and the lack of ground-truth datasets make it challenging to evaluate our flow tracking performance. In this presentation, we report on the latest progress of our flow tracking focus group for the PUNCH mission: we combine MHD-based simulated imagery of polarized brightness, tomography, and flow tracking algorithms to evaluate our ability to reconstruct 3D maps of the flows of solar wind density structures with quantified uncertainties.
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