Nicholeen
Viall
NASA Goddard Space Flight Center
Jeff Newmark, NASA GSFC
Shanwlee Sow Mondal, NASA GSFC/CUA
Yeon-Han Kim, KASI
Raphael Attie, NASA GSFC/GMU
Silvano Fineschi, INAF
Samantha Wallace, Embry Riddle Aeronautical University
Oral
Understanding how the corona becomes the solar wind is one of the fundamental challenges in Heliophysics. A major difficulty is that no existing instrument or mission by itself is capable of observing the solar wind acceleration continuously from the low corona through the middle and high corona out into the solar wind. We take advantage of a coordinated observing campaign during a fortuitous alignment in August 2025 between Polarimeter to UNify the Corona and Heliosphere (PUNCH), Proba-3 ASPIICS (Association of Spacecraft for Polarimetry and Imaging Investigation of the Corona of the Sun),.COronal Diagnostic EXperiment (CODEX) on the International Space Station, and the Metis on Solar Orbiter that will make coordinated measurement of the solar wind acceleration. The coverage obtained by combining all the fields of view is unprecedented, spanning from close to the limb of the Sun to as high as 180 solar radii. With these measurements, we will be able to link different types of solar wind streams from their solar source to their corresponding solar wind structures in heliosphere. Additionally, CODEX will provide measurements of the electron temperature through the middle corona, giving additional information on the rate and location of energy deposition. PUNCH, CODEX and Metis each use a different technique for determining the flow speed: PUNCH determines radial speed via flow tracking of density features; CODEX uses multiple narrow passband filters to measure the Doppler shift; and Metis uses the Doppler dimming effect in H I Lyman-? line emission images. Each technique has unique benefits and challenges, and this joint campaign is a great opportunity to directly compare the techniques to each other. We conclude by describing how this joint campaign advances our understanding of the source, release, acceleration and evolution of the solar wind.
Presentation file
Viall-Nicholeen_V2.pdf
YouTube link
View recording
Meeting homepage
PUNCH 7 Science Meeting
Download Abstract