Leo (Neon)
Brosius
Penn State/GSFC
Tim Kane, Penn State
Chris Gilly, SwRI
Poster
Current sheets are a universal feature of space plasmas, yet they are not yet fully understood. The Heliospheric Current Sheet (HCS) is an excellent laboratory for exploring feature detection and dynamic range in data analysis. In this work, we show Parker Solar Probe magnetometer data timeseries and hodogram analysis using Radial, Tangential, Normal (RTN) coordinates and compare these timeseries to analyses using a set of Möbius transformations. These transformations are interesting because they are conformal, meaning they preserve angles between magnetic field components while distorting amplitudes. The amplitude distortions from Möbius transformations allow for feature detection with very small and very large background magnetic field amplitudes. Angle preservation in Möbius transformations can reveal circular, elliptical, or linear polarization in magnetic field perturbations. These types of transformations could be useful in analyzing imagery from PUNCH, but in this work we consider in-situ magnetometer data from PSP that may include the Alfven zone.
Poster PDF
Brosius-PUNCH4-new.pdf
Meeting homepage
PUNCH 4 Science Meeting
Download to PDF