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Oral
(Invited Talk)
The transition from subAlfvenic to superAlfvenic flow in the solar atmosphere is examined by means of Parker Solar Probe (PSP) measurements during solar encounters 8 to 14. Around 220 subAlfvenic periods with a duration of at least 10 minutes are identified. The distribution of their durations, heliocentric distances, and Alfven Mach number are analyzed and compared with a global magnetohydrodynamic model of the solar corona and wind, which includes turbulence effects. The results are consistent with a patchy and fragmented morphology, and suggestive of a turbulent Alfven zone within which the transition from subAlfvenic to superAlfvenic flow occurs over an extended range of helioradii. We discuss implication of this structure for wave propagation in the Alfven zone. We also present preliminary analyses of in-situ spacecraft data that aim to quantify the preponderance of anti-Sunward Alfven modes over Sunward modes in the solar wind. These results inform and establish context for detailed analyses of subAlfvenic coronal plasma that are expected to emerge from PSP's final mission phase, as well as for the PUNCH mission.
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