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Magnetic switchbacks and associated with them plasma waves in the young solar wind: Parker Solar Probe observations at 35.7 solar radii

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Parker Solar Probe (Fox et al., 2016) is the first spacecraft to go close enough to the Sun to sample the in-situ characteristics of the young solar wind during its formation aiming to trace the flow of energy that heats and accelerates the solar corona and solar wind; to determine the structure and dynamics of the plasma and magnetic fields at the sources of the solar wind; and to explore mechanisms that accelerate and transport energetic particles. A recent major discovery of PSP was the presence of large numbers of localized radial velocity spikes associated with the magnetic structures containing the sudden deflections of the magnetic field at 35.7-50 solar radii in the local radial magnetic field near the first PSP perihelion (Kasper et al. 2019; Bale et al. 2019, and others). The resent results related to the switchback and associated wave activity is presented.

Primary author: Dr AGAPITOV, Oleksiy (SSL UC Berkeley, Berkeley, United States)

Co-authors: CASE , A. W. (Harvard-Smithsonian Center for Astrophysics, Cambridge, MA, USA); FROMENT, C. (LPC2E-University of Orleans); MALASPINA , D. (LASP); MOZER, F.S. (SSL UC Berkeley); DRAKE , J. F. (University of Maryland, College Park, MD, USA); BONNELL, J. W. (SSL UC Berkeley); SWISDAK, M. (University of Maryland, College Park, MD, USA); WHITTLESEY, P. L.; BALE, S. (SSL UC Berkeley); DUDOK DE WIT, T. (LPC2E-University of Orleans); KRASNOSELSKIKH, V. (SSL UC Berkeley); GOETZ, K. (University of Minnesota); KASPER, J. C. (Kasper, University of Michigan, Ann Arbor, MI, USA); KORRECK, K. E. (Harvard-Smithsonian Center for Astrophysics, Cambridge, MA, USA); LARSON, D.E. (Larson, SSL UC Berkeley); LIVI, R. (SSL UC Berkeley); MACDOWALL, R. J. (Harvard-Smithsonian Center for Astrophysics, Cambridge, MA, USA); PULUPA, M. (SSL UC Berkeley); STEVENS, M. (Harvard-Smithsonian Center for Astrophysics, Cambridge, MA, USA); WYGANT, J. R. (Wygant, University of Minnesota)

Presenter: Dr AGAPITOV, Oleksiy (SSL UC Berkeley, Berkeley, United States)

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