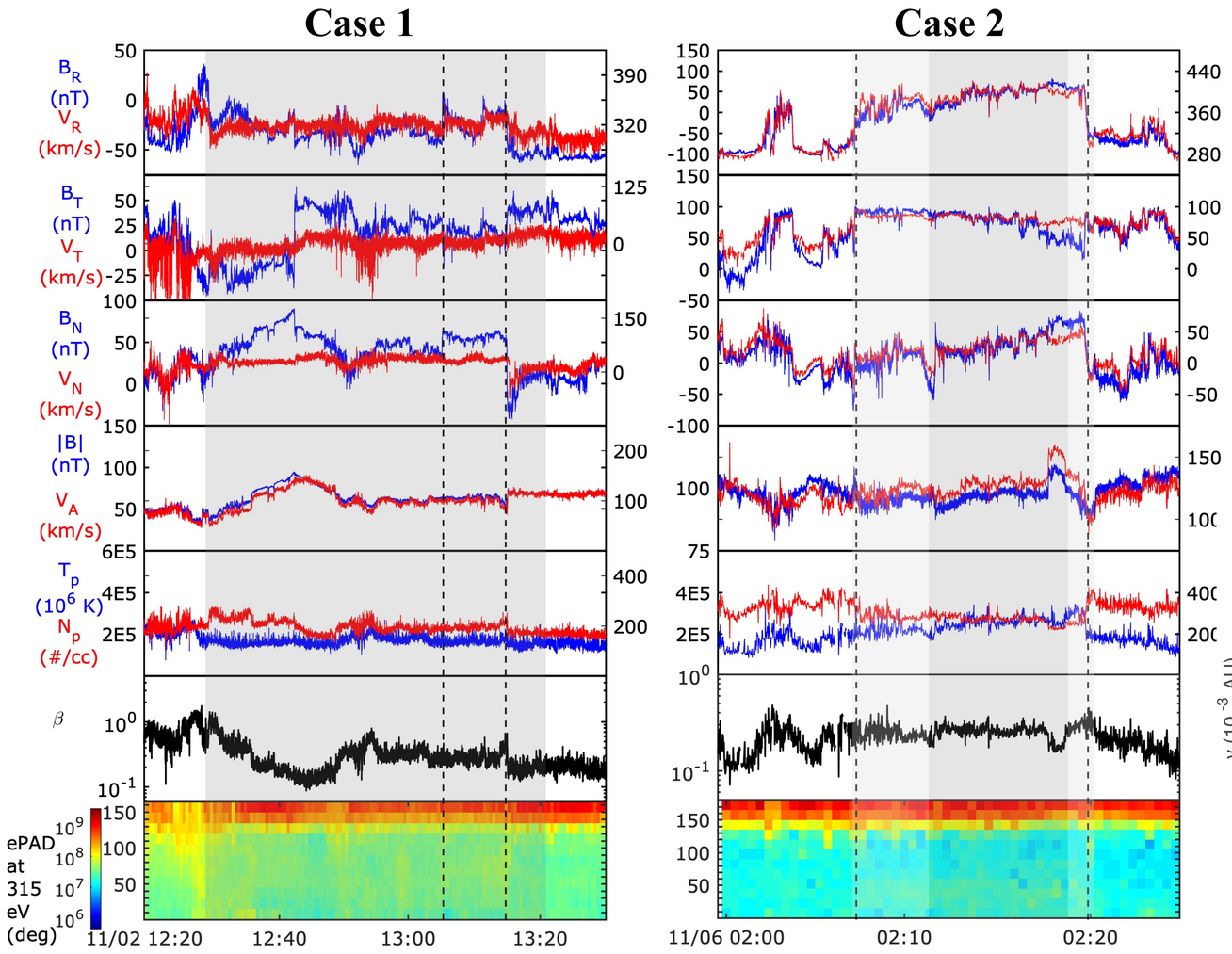
EGU21-8043

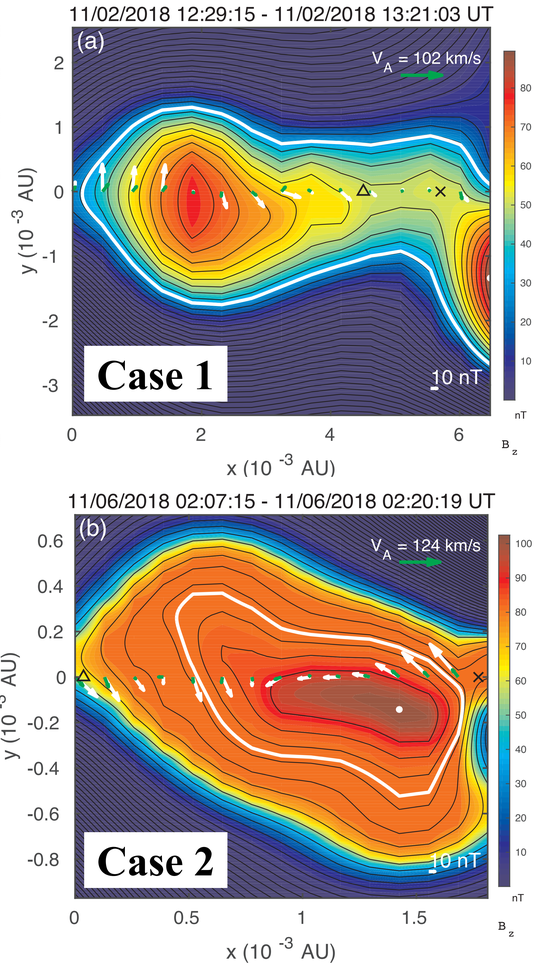
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CENTER FOR SPACE PLASMA & AERONOMIC RESEARCH

Small-scale Magnetic Flux Ropes with Field-aligned Flows via the PSP In-situ Observations

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The PSP in-situ measurements & the new type of GS reconstruction (Teh 2018)

- Small-scale magnetic flux ropes (**FRs**)
- Small FRs with the field-aligned flows (**FRFFs**)

Case 1: spike is enclosed by an FR

- An FR & spike in an elongated current sheet - X-point configuration prone to the magnetic reconnection

Case 2: spike encloses an FRFF

- Directions of $\boldsymbol{B}_t$ at starting (Δ) and ending (X) times are completely reversed
- $\boldsymbol{V}_t$ vectors are aligned with the local $\boldsymbol{B}_t$, especially at boundaries

Time-series: Switchback spikes are marked by the two vertical dashed lines, while FR/FRFF is marked by gray area.
Cross-section maps: Black contours, color background, white and green arrows denote B_t, B_z, and vectors of B_t and V_t along the s/c path.

This work had been submitted to ApJ and is currently under revision.