Magnetic field in magnetosheath jets: A statistical study of $B_Z$ near the magnetopause

L. Vuorinen, H. Hietala, F. Plaschke, A. T. LaMoury

THEMIS case studies have shown that jets can influence magnetopause reconnection

- Hietala et al. (GRL, 2018): a jet compressed the magnetopause, triggering reconnection
- Nykyri et al. (JGR, 2019): jets with southward $B_Z$ linked to triggering reconnection during northward IMF

How about statistically?

$P_{dyn}$

A unique feature of jets

This study (Vuorinen et al., JGR, 2021): $B_Z$ distribution in jets vs. $B_Z$ distribution in the non-jet magnetosheath
A statistical study of $B_Z$ in magnetosheath jets

- Plaschke et al. (2013) THEMIS 2008—2011 data set with ~3000 jets
- OMNI data for IMF conditions

Sample comparable non-jet intervals
A statistical study of $B_Z$ in magnetosheath jets: northward IMF

Conclusions

• Most jets exhibit some $B_Z$ opposite to the IMF $B_Z$

• Most periods of opposite $B_Z$ are short, but periods up to ~20 s are more common in jets

Read more:
Vuorinen et al., JGR, 2021