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Supplement of

Statistical analysis of mirror mode waves in sheath regions driven by interplanetary coronal mass ejection

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Table S1. Median plasma betas, plasma beta anisotropy and mirror instability threshold values in both plasma containing MMs and non-MM plasma. The last column shows the properties of MMs and plasma in the ICME-driven sheaths generally, i.e., in whole fractional distance interval from 0 to 1.

	Near-shock	Mid-sheath	Near-LE	Whole sheath
Plasma properties in MM sheath				
β_{\perp}	4.7	5.9	5.2	5.3
β_{\parallel}	5.2	5.8	5.0	5.2
$\beta_{\perp}/\beta_{\parallel}$	1.0	1.0	1.0	1.0
C_m	-0.16	-0.17	-0.18	-0.17
Plasma properties in non-MM sheath				
β_{\perp}	1.1	0.9	0.8	0.9
β_{\parallel}	1.2	1.1	0.9	1.1
$\beta_{\perp}/\beta_{\parallel}$	0.95	0.91	0.90	0.92
C_m	-0.95	-1.16	-1.32	-1.13

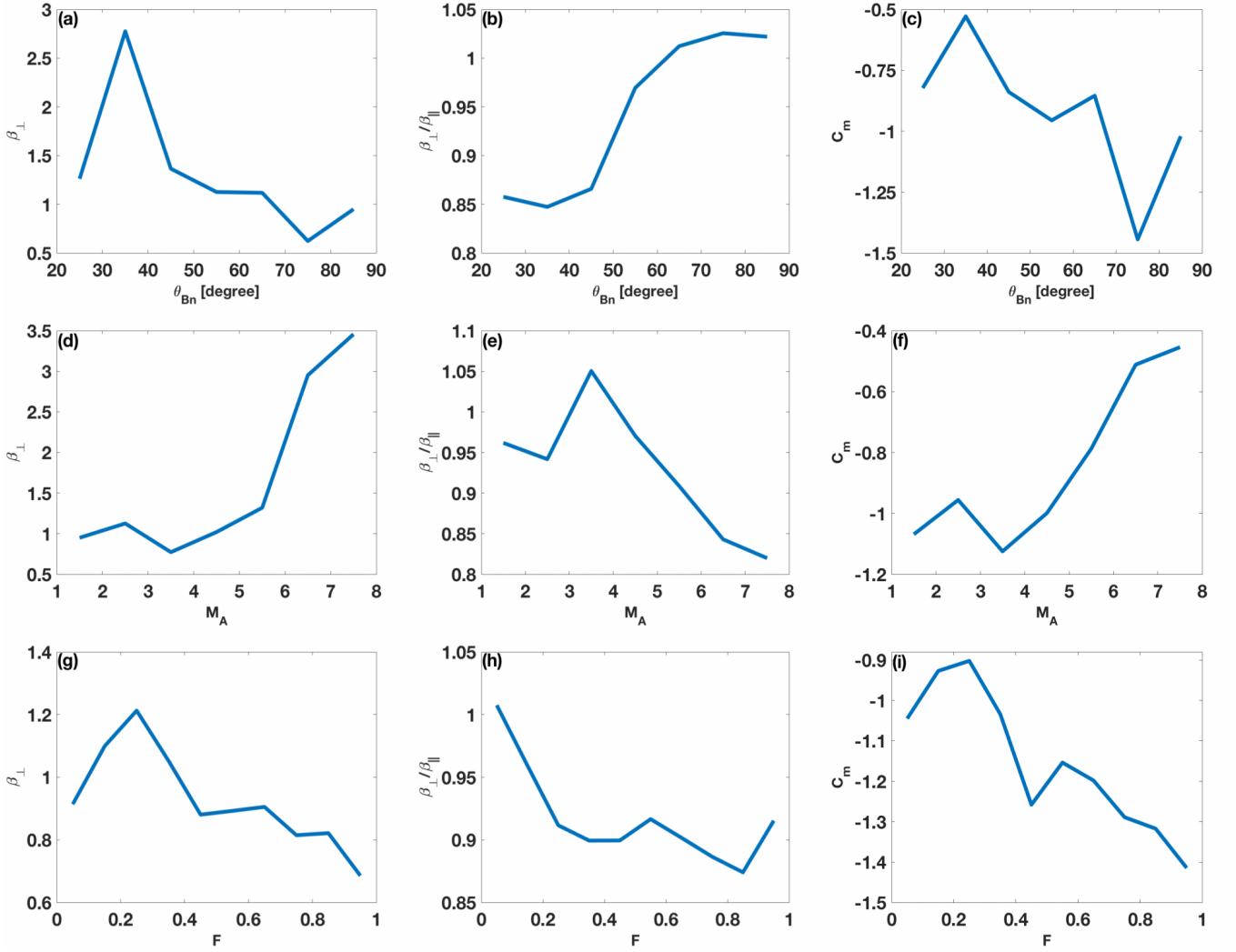


Figure S1. Median β_{\perp} , $\beta_{\perp}/\beta_{\parallel}$ and C_m in the near-shock sub-region as functions of θ_{Bn} (panels (a)-(c)) and M_A (panels (d)-(f)) in bins of 10° and unity, respectively. Panels (g)-(i) show the plasma parameters as a function of F in bins of 0.1. Due to low statistics, the sheaths whose shock had $0^\circ < \theta_{Bn} < 20^\circ$ are omitted in panels (a)-(c) and the ones whose shock had $M_A > 8$ are omitted in panels (d)-(f) (see Fig. 9). Panels (a) and (b) show that as a function of θ_{Bn} , β_{\perp} decreases but $\beta_{\perp}/\beta_{\parallel}$ increases. Panel (c) indicates that the plasma is more mirror stable if the shock is quasi-perpendicular. After a strong shock, the plasma has clearly larger β_{\perp} (panel (d)) and C_m increases as a function of M_A (panel (f)), although the beta anisotropy decreases. After an sharp increase, β_{\perp} decreases as a function of F (panel (g)) whereas the anisotropy has its maximum right after the shock and decreases towards the ICME leading edge with the exceptions of two increases in the latter half of the sheath (panel (h)). Panel (i) indicates that the mirror instability threshold value follows the profile of β_{\perp} and has, in addition, an local increase in the latter half of the sheath probable due to similar increase of the $\beta_{\perp}/\beta_{\parallel}$ at the bin of F . However, the increase of the anisotropy just near the leading edge does not affect the value of C_m .