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Session UM2 - Mini-Conference on Reconnection/Space and Astrophysical Plasmas.
ORAL session, Friday morning, November 02
Room 201,

[UM2.012] Four-Field Model for Dispersive Field-Line Resonances: Numerical Simulations

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Numerical simulations of a new four-field model for dispersive field-line resonances (FLRs) in magnetospheric plasmas (A. Bhattacharjee, C. A. Kletzing, Z. W. Ma, C. S. Ng, N. F. Otani, and X. Wang, *Geophys. Res. Lett.* 26) 3281 (1999). are presented. This model predicts much lower resonant frequencies than earlier two-field models due to the coupling of the shear-Alfvén mode to the slow mode in the four-field system, and thus may account for the low frequencies of FLRs observed by the FAST satellite and ground-based observations. A new method to calculate the resonant frequency is proposed. It is shown that resonant FLR structures can indeed be sustained at the observed lower frequencies. Simulations with damping on the slow wave are also performed and show that broadened structures can still be driven up to significant amplitudes at the resonances with current densities and parallel electric fields that are qualitatively consistent with observations.

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