

1999 Fall Meeting Search Results:

Your query was:
"Ng, C"

HR: 1330h
AN: **SM22A-13**
TI: [Four-Field Model for Dispersive Field-Line Resonances in Collisionless Magnetospheric Plasmas](#)
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AB: A new theoretical model is proposed for dispersive field-line resonances in magnetospheric plasmas. The model is based on reduced four-field equations for low-beta collisionless plasmas originally derived by Hazeltine, Hsu, and Morrison. The four-field variables are: magnetic flux, electrostatic potential, electron pressure, and parallel ion flow. It is shown that the parallel ion flow, although significantly smaller than the electron flow, causes a crucial coupling between shear-Alfvén and slow (sound) modes. The new model improves upon the predictive capabilities of earlier two-field models. In particular, due to the coupling of the shear Alfvén mode to the slow mode in the four-field system, it is now possible to account for the observed low frequencies of field-line resonances. Furthermore, parallel electric fields can be large in this model without requiring the field-aligned current density to be unrealistically large. Numerical results are presented in slab as well as realistic dipole geometry for collisionless plasma parameters (without anomalous resistivity). Qualitative implications for recent FAST and ground-based observations are discussed. This work is supported by NASA

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DE: 2411 Electric fields (2712)
DE: 2712 Electric fields (2411)
DE: 2736 Magnetosphere/ionosphere interactions
DE: 2752 MHD waves and instabilities
SC: SM
MN: 1999 AGU Fall Meeting

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