

Abstract Submitted  
for the TSS14 Meeting of  
The American Physical Society

**Investigating the effects of a purely y-component IMF on the ionosphere, using new linear superposition techniques** ROBERT BRUNTZ, SHREE BHATTARAI, RAMON LOPEZ, Univ. of Texas at Arlington — One of the major means by which the Sun transfers energy to the Earth is through the solar wind. The efficiency of that transfer is controlled by the orientation of the interplanetary magnetic field (IMF). Recent work has shown that the Lyon-Fedder-Mobarry (LFM) magnetohydrodynamic (MHD) simulation can simulate effects of the y and z components of the IMF ( $B_y$  and  $B_z$ ) separately, as well as the viscous interaction (which is mostly independent of the IMF orientation), then linearly combine the three to produce the equivalent of a run with the full IMF. We are now reversing that process, to subtract out the effects of the viscous interaction from simulation runs with a purely- $B_y$  IMF. With this technique, we are investigating ionospheric circulation patterns and potentials due only to the y component of the IMF, which has been difficult to deduce from observations. We will present our latest results and their implications for magnetospheric research.

Robert Bruntz  
Univ. of Texas at Arlington

Date submitted: 03 Mar 2014

Electronic form version 1.4