



2010 AGU Fall Meeting

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Attempts to Simulate Anisotropies of Solar Wind Fluctuations using MHD with a Turning Magnetic Field

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We examine a "two-component" model of the solar wind to see if any of the observed anisotropies of the fields can be explained in light of the need for various quantities, such as the magnetic minimum variance direction, to turn along with the Parker spiral. Previous results used a 3-D MHD spectral code to show that neither Q2D nor slab-wave components will turn their wave vectors in a turning Parker-like field, and that nonlinear interactions between the components are required to reproduce observations. In these new simulations we use higher resolution in both decaying and driven cases, and with and without a turning background field, to see what, if any, conditions lead to variance anisotropies similar to observations. We focus especially on the middle spectral range, and not the energy-containing scales, of the simulation for comparison with the solar wind. Preliminary results have shown that it is very difficult to produce the required variances with a turbulent cascade.

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