

## **Properties of Alfvén Waves in High Latitude Coronal Mass Ejections and Solar Wind**

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As shown by Ulysses, a characteristic feature of the high speed solar wind issuing from the polar coronal holes is the continuous presence of large amplitude transverse fluctuations. Also observed at high heliolatitudes were a small number of Coronal Mass Ejections. A comparison of transverse fluctuations found inside the CMEs with those of the surrounding solar wind was carried out over a range of heliolatitudes.

The preliminary analysis shows that most of the high latitude CMEs in our data set contain fluctuations similar (levels and spectra) to the surrounding solar wind, with a power spectral density  $\approx f^{-5/3}$  indicating turbulent conditions. However, we found several cases at lower latitude, but still in the high speed solar wind, where the transverse fluctuations inside the CME were quite different from those outside. In fact they had not decayed to turbulence as the power spectral density  $\approx f^{-1.3}$  indicates. This agrees with the picture of the fast solar wind, which originated on the open field lines of the coronal hole, as coming from a different place on the sun than the CMEs, expected to have originated in regions with closed field lines typical of lower latitudes. Presumably the CMEs expanded into the high latitudes occupied by the transverse waves.