CONTROL ID: 1811396

TITLE: Magnetopause Boundary Normal Analysis at Jupiter and Saturn: Evidence of Kelvin Hemholtz Vorticies

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ABSTRACT BODY: Identification of surface waves and Kelvin Hemholtz (KH) vorticies at the magnetopause boundary at Jupiter and Saturn is critical to understanding interaction between the solar wind and their planetary magnetospheres. The rapid rotation of those planets coincides with a co-rotating plasma that creates an asymmetry between the formation and evolution of surface waves on either side of the sub-solar point. Minimum variance analysis and other techniques are performed on hundreds of select crossings of Saturn's magnetopause from 2004 to 2012 by the Cassini spacecraft and 47 crossings at Jupiter's magnetopause by the Galileo spacecraft. It is compared to the boundary normals of a simple magnetopause model. The wide range in angular difference between the model and the analysis is evidence of the presence of KH instability vorticies at the magnetopause boundary. Furthermore, boundary crossings from the magnetosheath into the magnetosphere on the dusk flanks are dominated by shallower angles, consistent with MHD simulations of variable shear flows on the dayside magnetopause boundary.

KEYWORDS: 2756 MAGNETOSPHERIC PHYSICS Planetary magnetospheres, 2752 MAGNETOSPHERIC PHYSICS MHD waves and instabilities, 2728 MAGNETOSPHERIC PHYSICS Magnetosheath, 2724 MAGNETOSPHERIC PHYSICS Magnetopause and boundary layers.

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