



## Abstract

Magnetopause crossings were observed over a 48 hour period from 14 July 2007 to 15 July occurring at around 1700hrs SLT at low latitudes above the equatorial plane on the inbound leg of revolution (Rev.) 48. They were analysed using minimum variance analysis (MVA) of the magnetic field vector samples over the crossing interval to determine the direction of the boundary normal at each crossing. The crossings were split into three sets, distinguished via high temporal frequency and average normal direction. By performing MVA on the boundary normals, a clear preferred direction of variance was observed for the second two sets, but not the first. The normals in set 2 were found to deviate by an average of

30° about the average normal direction in the plane of maximum variance, but only by 12° in the perpendicular plane. The normals in set 2 exhibited consecutive oscillation about the average direction, similar to that observed on the dawn flank (*Masters et al.*, 2009), providing clear evidence of wave activity on the magnetopause dawn flank. These waves were found to be travelling tailward along the magnetopause boundary. The magnetic field orientation with respect to wave propagation direction suggests the Kelvin Helmholtz (K-H) instability as the most likely driving mechanism responsible for the waves. If these waves are forming locally, we suggest that the magnetopause can sometimes become K-H unstable far along the dusk flank, contrary to the conclusion of previous reports.