



Discontinuity in Jupiter's main auroral oval.

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The main auroral oval at Jupiter is associated with the ionosphere-magnetosphere coupling current system which is related to the breakdown of corotation in the middle magnetosphere. Earlier studies showed that the oval brightness varies with magnetic local time, while theoretical work suggests that its intensity is regulated by the extent to which the equatorial plasma departs from rigid corotation. Based on a series of HST STIS images obtained between 1997 and 2003 we show that there is a segment of the oval where the emission drops down to a few kR, forming a break in the oval. This break appears to be fixed in the prenoon magnetic local time sector, that is in a region where Galileo Energetic Particles Detector measurements in the equatorial plane show evidence of corotational flow. We associate the discontinuity in the auroral oval emission with the equatorial corotational flow and we discuss to what extent the oval brightness is affected by the flow velocities.