

Vertical Displacement of the Core of Saturn's F Ring from Cassini RPX Observations

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Abstract

In a 24-hour-long observation by Cassini on Dec 1-2, 2005, the spacecraft traveled from a ring-opening angle of 0.014° above the main rings (the dark side) to -0.016° below the main rings (the side lit by the Sun), imaging the west ring ansa with the Wide-Angle Camera, Narrow-Angle Camera and Visual and Infrared Mapping Spectrometer (VIMS). Near ring-plane crossing (RPX), the far side of the F ring was slowly revealed from behind the main rings. An analysis of the resulting changes in the observed ring brightness in VIMS images reveals that a portion of the F ring core is displaced vertically by several kilometers, possibly as a result of perturbations by the inclined moon Prometheus.