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ID-NR: EAE03-A-06466

New Galileo and VLA/DSN Observations of Jupiter's Radiation Belts near the vicinity of Amalthea

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On November 5, 2002, the Galileo spacecraft trajectory provided a close flyby of Amalthea, one of Jupiter's inner most moons (~2.4 RJ). During this pass, Galileo entered into a region rarely explored by spacecraft, the inner radiation belts of Jupiter. This region also contains the outer rings of Jupiter, known as the Gossamer rings. We present VLA/DSN observations of Jupiter's synchrotron emission obtained simultaneously with Galileo's flyby of Amalthea. We compare in-situ measurements from Galileo's Energetic Particle Detector, Plasma Wave Subsystem and Plasma Subsystem with model results based on the synchrotron emission maps at 6 and 20 cm wavelengths. We will also include data from the Galileo dust detector as an additional constraint for the model analysis. The total measurement set provides new constraints for the high-energy electron distribution functions near Amalthea and the role of plasma waves in maintaining the particle distribution in the vicinity of Amalthea. These observations represent the first opportunity for direct comparison of Jupiter's radiation belts by both in-situ and remote observations near Amalthea.

The JPL contribution to this paper was performed at the Jet Propulsion Laboratory, California Institute of Technology, under contract with the National Aeronautics and Space Administration.

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