

**DPS 34th Meeting, October 2002***Session 35. Outer Planet Satellites (other than Titan)**Poster, Chair(s): , Thursday, October 10, 2002, 4:00-6:30pm, Exhibit Hall*[\[Previous\]](#) | [\[Session 35\]](#) | [\[Next\]](#)

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## **[35.10] Galileo Radio Occultations of the Galilean Satellites**

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Between 1997 and 1999, the S-band (2.5 GHz) radio signal of the Galileo orbiter was used to obtain radio occultation data on the ionospheres and plasma environments of Io, Europa, Ganymede, and Callisto. These data revealed the existence of ionospheres on Europa (Kliore, et al., *Science*, 277, 355 (1997)), Callisto (Kliore, et al., *JGR-Sp. Phys.*, in press), and Ganymede (c.f., Kliore, Anabtawi, and Nagy, *BAAS*, 33, 1084 (2001)), in addition to providing more comprehensive measurements of the ionosphere of Io (Hinson, et al., *JGR-Sp. Phys.*, 103, 29343 (1998)).

These measurements were made at various positions of the Earth relative to the Sun and Jupiter, ranging from near opposition to near superior conjunction. The effects of solar plasma on the radio signal are maximal at conjunction, and minimal at opposition, which is apparent from the baseline noise in the radio occultation data. When expressed as the standard deviation of the electron density fluctuations, this amounts to about  $500 \text{ cm}^{-3}$  near opposition, and more than  $1500 \text{ cm}^{-3}$  at conjunction. In addition to the solar plasma effects, local plasma fluctuations are also apparent, especially at Europa and the downstream side of Io.

This research was performed at the Jet Propulsion Laboratory, California Institute of Technology, with NASA funding from the Galileo project.

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