



Results of the first Cassini radio occultation of Titan's ionosphere

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We report initial results on Titan's ionosphere from the March 19, 2006, earth occultation of the Cassini spacecraft. The latitudes of the occultations were 29 S on entry and 49 S on exit. The Cassini radio science system is unprecedented in having three frequencies that can operate simultaneously: S-band (2.3 GHz), X-band (8.4 GHz), and Ka-band (32 GHz). In particular, Ka-band has never been used before to probe Titan's ionosphere, and the signal-to-noise ratios at all frequencies of 42, 54, and 48 dB-Hz., respectively, have never before been achieved. The measurements were made close to the terminator, and the previous radio occultation observations of Titan, by Voyager, made at equatorial latitudes, gave a peak electron density of about 10^3 cm^{-3} .