

Dust and plasma diagnosis by using RPWS radio antennas during Cassini's Grand Finale

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Among all spacecraft who have explored giant planets, Cassini is unique by achieving direct access to very low altitude planetary regions. Over the two dozen of orbits of the “Grand Finale” phase, Cassini spent hours within Saturn’s topside ionosphere and even, during the last five, flew through lower ionosphere and reached the high atmosphere of the planet. In this talk, we summarize the observations made by using RPWS radio antennas during those flybys. They show signatures of quasi thermal noise emission, allowing determination of plasma density and estimate of suprathermal temperature. The dominant feature is due to the collective contribution of a large population of dust grains around the equator. Due to the high ambient plasma density, the instrumental response is different from other environments. The spectral shape and amplitude show evidence of both micro and nano dust grains at different altitudes and latitudes, with large fluctuations.