COLD PLASMA DIAGNOSTICS IN THE JOVIAN SYSTEM:

BRIEF SCIENTIFIC CASE AND INSTRUMENTATION OVERVIEW

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ABSTRACT

in-situ

in situ

1. SCIENTIFIC CASE IN BRIEF

1.1 Basic Properties of the Galilean Moons Atmospheres and Ionospheres

1.2 Dynamic Interaction with the Jovian Magnetosphere

2. INSTRUMENTATION OVERVIEW

2.1 Principles of Measurement

λ

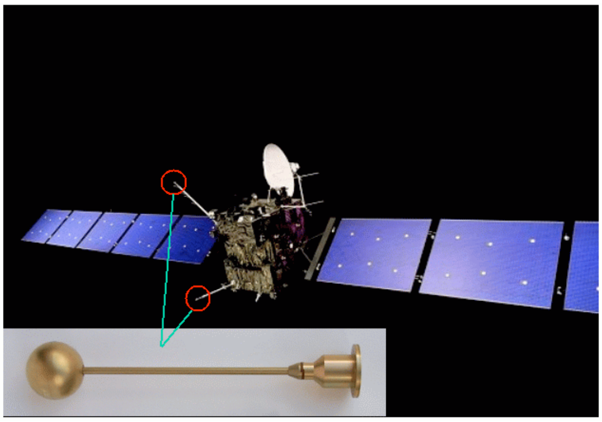

Fig. 1: The dual Langmuir probe instrument on board Rosetta that will arrive at a comet in 2014.

λ

λ

Table 1. Basic plasma properties derivable from Langmuir probe operations.

Potential Sweep	√ ϕ	
δn/n, interferometer	δ	

**) Depending on plasma density. Lower if density falls below 1,000 cm^{-3}*

***) Depending on sampling frequency and probe separation*

Fig 2. The RPWS Langmuir probe on board Cassini operates successfully in most regions of the Kronian magnetosphere even if its main objective is to carry out measurements in the ionosphere/upper atmosphere of Titan.

√

√

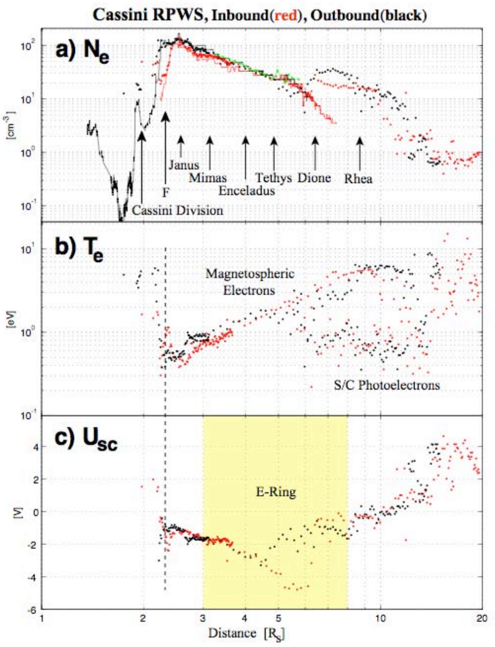

Fig 3. Derived parameters from Cassini RPWS Langmuir probe potential sweeps during the flyby of the inner magnetosphere of Saturn [34].

2.2 High Time Resolution Δn/n and T_e

δ

2.3 Δn/n Interferometry

δ

2.4 Probe Surface Coating

3. SUMMARY

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