

Geosci. Instrum. Method. Data Syst. Discuss., author comment AC2
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Reply on RC2

Sylvain Ranvier and Jean-Pierre Lebreton

Author comment on "Laboratory measurements of the performances of the Sweeping Langmuir Probe instrument aboard the PICASSO CubeSat" by Sylvain Ranvier and Jean-Pierre Lebreton, Geosci. Instrum. Method. Data Syst. Discuss.,
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Dear Referee,

Thank you for your comments that will help making the paper clearer.

Comment 1:

The PICASSO mission ended in June 2022 because of issues with the platform. Although a limited amount of time has been allocated to the payload commissioning, it has been possible to validate all the measurement and diagnostic modes of SLP.

Comment 2:

The Orbital-Motion-Limited (OML) collection theory can be applied if, *inter alia*, the cylindrical probe radius is small compared to the Debye length and the length of the probe is much longer than the Debye length (in practice more than 10 times the Debye length). If all assumptions for the OML theory are met, the equations (1) and (2) can be used to determine the electron density and temperature from the I-V characteristics. In principle, the electron retardation region obeys the OML theory, irrespective of the probe geometry, hence it can always be retrieved, if one can properly isolate the electron current contribution to the I-V curve.

Comment 3:

Figure 1 has been replaced by a figure where the scale is kept constant throughout the bias range (no current multiplication).

Comment 4:

The text has been updated for coherence, it is PICASSO everywhere now.

Comment 5:

Surface properties:

Cube: AL2K (Aluminium according to NASCAP-2k). Probe: AL2K (Aluminium according to NASCAP-2k)

No photo emission

Absolute spacecraft capacitance: fixed at 200 pF
plasma density: $2e10 /m^3$

electron and ion temperature: 0.05 eV
flowing plasma ($V= 7.5$ km/s)
Ions treated as PIC
electrons treated as a Maxwell Boltzmann equilibrium distribution