

## **SESSION: Technology, Instruments, Techniques I**

Wed, Feb 20, 11:00-11:15

**Physical model to improve calculated plasma parameters from Swarm Langmuir probes measurements.**

Pedro Alberto Resendiz Lira

Email: [resendiz@ualberta.ca](mailto:resendiz@ualberta.ca)

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An approach is presented to improve the interpretation of Swarm Langmuir Probes in situ measurements in terms of space plasma parameters. Algorithms based on theoretical model used to interpret data generally do not account for several physical effects present in space, such those related to magnetic field, anisotropic distributions function, ion plasma composition and the proximity of obstacles related to the geometry of the satellite. The reliability and accuracy of the OML theory is evaluated for the interpretation of probe measurements in terms of density and temperature, by applying it to characteristics computed numerically, for which these parameters are known exactly. Examples of the modifications caused by environmental conditions on probe measurements, and their impact on calculated space plasma parameters, demonstrate the necessity to account for more realistic physical processes than can be included in the analytic models. A physical model for the current collected by the Swarm's probes is presented. In this model, effects of lighter ions and edge effects are accounted for in addition to those involved in the OML approach. This improved model is proven to be more accurate in the calculation of plasma parameters inferred from Swarm probes.