Abstract Submitted
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Time evolution of the EEDF in the plasma plume of a Hall thruster[1] STEPHANE MAZOUFFRE, KAETHE DANNENMAYER, ICARE - CNRS, Orleans, France, PAVEL KUDRNA, MILAN TICHY, Charles University, Prague, Czech Republic — A Hall thruster (HT) is one type of electric engine currently in use onboard geosynchronous satellites and scientific space probes. In a HT, the electric field at the origin of ion acceleration is generated in a low-pressure magnetized discharge in cross-field configuration. As no grid are employed for beam formation, such a thruster is not current limited and a relatively large thrust, in comparison with gridded ion engines, is achieved, which makes this technology of great interest for orbit transfer maneuvers and deep-space exploration missions. One important issue in the field of electric propulsion is the interaction between the host spacecraft and the plasma plume. Up to now, a large amount of studies has been performed on ion flow properties. Recently we carried out time-averaged measurements of the electron properties in a HT plume by means of Langmuir probe. The goal was to provide accurate data for validation of plume numerical simulations. Nevertheless, as the discharge of a HT is highly non stationary, it appeared necessary to turn to time-resolved measurements. In this contribution we present measurements of the time-varying EEDF at a microsecond time-scale in the plasma plume of two HTs of different sizes and power levels.

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