



Laboratoire LEPRINCE-RINGUET
Ecole polytechnique IN2P3/CNRS

Séminaire

Using ions to maneuver satellites in space

Space propulsion is an essential subsystem in many different missions allowing satellites and space probes to change orbit, change their attitude, compensate for atmospheric drag, between many other maneuvers. Between the many different types of propulsion systems, plasma-based thrusters, and especially the gridded ion engines, play an important role in modern space missions, since it requires considerably less propellant to generate a given velocity change when compared to more traditional chemical thrusters. ThrustMe is a startup spinning off from LPP, which has its main focus on the development of innovative propulsion systems based on gridded ion thrusters and other technologies, with the objective of providing “plug-and-play” systems for small and medium-sized satellites. Its main product is the NPT30, which is a compact propulsion system that integrates all the required subsystems for its operation, including all the electronics, propellant tank, and thruster. One of the major innovations of the NPT30 is that it uses iodine as its propellant, which can be stored in solid-state in contrast with xenon, which is the typical propellant used for plasma-based thrusters. In November 2020, the NPT30 was launched onboard the Beihangkongshi-1 satellite and became the first iodine electric propulsion system to be tested in space. Besides the NPT30, ThrustMe continues to work on different technology and science research projects, including the RF grid biasing for co-extraction of ions and electrons from the same plasma source for neutralization, the understanding of iodine plasma physics, the development of the higher-power NPT300 propulsion system which will be used on larger satellites, and the usage of water as a propellant, especially for spacecraft attitude control.

Lui Habl

ThrustMe et
Laboratoire de Physique
des Plasmas (LPP)

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Responsables séminaires

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