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## PARTICLE-IN-CELL NUMERICAL SIMULATIONS OF A PULSED PLASMA THRUSTER (PPT)

**Abstract**

We present results from numerical simulations of a pulsed plasma thruster (PPT). The PPT is an electric space propulsion device mainly used in the maintenance of orbit and attitude control of space vehicles. Such a device has a solid propellant known as poly-tetra fluor ethylene instead of a gas system with a low cost and simple configuration prevailing. A prototype of the PPT is being developed at the Aerospace Systems Laboratory at the University of Brasilia. We use the FEMM software to obtain the magnetic field generated, and the particle-in cell approach implemented in XOOPIC to simulate the plasma dynamics in the PPT. Both FEMM and XOOPIC are available under a free software license. Our model can be used to obtain an optimal configuration of the PPT. We also discuss strategies to enhance the efficiency of the laboratory device based on our numerical simulations.