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Enhanced Vacuum Arc Thruster with Pulsed Magnetic Fields

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The implementation of a pulsed magnetic field to the plasma of a vacuum arc thruster allows the increased collimation of ions with the plasma plume and increases the thrust directed along the normal of the thrusters. The magnetic field is generated with a capacitive discharge coil which can achieve magnetic field strengths up to 300mT. The coaxial design of the Vacuum Arc Thruster allows for the adjustment of the magnetic field alignment in order to direct the ions within the plasma plume and induce thrust vectoring. Numerical simulations using Particle-In-Cell methods and Experimental methods show a good agreement. We will discuss the correlation between the plasma plume ion distribution and the magnetic field strength at various angles of alignment, and show how the magnetic field configurations effect the overall thrust performance of the Vacuum Arc Thruster.

Apply to be considered for a student ; award (Yes / No)?

Yes

Level for award;(Hons, MSc, PhD, N/A)?

MSc

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