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Modeling of plasma in a hybrid electric propulsion for small satellites. MANISH JUGROOT, ALEX CHRISTOU, Royal Military College of Canada — As space flight becomes more available and reliable, space-based technology is allowing for smaller and more cost-effective satellites to be produced. Working in large swarms, many small satellites can provide additional capabilities while reducing risk. These satellites require efficient, long term propulsion for manoeuvres, orbit maintenance and de-orbiting. The high exhaust velocity and propellant efficiency of electric propulsion makes it ideally suited for low thrust missions. The two dominant types of electric propulsion, namely ion thrusters and Hall thrusters, excel in different mission types. In this work, a novel electric hybrid propulsion design is modelled to enhance understanding of key phenomena and evaluate performance. Specifically, the modelled hybrid thruster seeks to overcome issues with existing Ion and Hall thruster designs. Scaling issues and optimization of the design will be discussed and will investigate a conceptual design of a hybrid spacecraft plasma engine.

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