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**Background pressure effects on Hall thruster discharge plasma using a full particle simulation** KENTARO HARA, Texas A&M University, SHINATORA CHO, Japan Aerospace Exploration Agency — Facility effects play an important role when testing space propulsion devices in laboratory, which can be problematic because measurements in laboratory may significantly differ from how the device would operate in space. It has been often observed experimentally that the thruster performance, namely, specific impulse, thrust, and efficiency, increases as the background pressure in vacuum chamber increases. In this talk, we present a two-dimensional particle-in-cell simulation with Monte Carlo collision algorithm to model the discharge plasma of a Hall thruster in the presence of ingested neutral atoms from the vacuum chamber. A half-Maxwellian at room temperature is assumed for the ingested neutral atom flow. Numerical results show that ionization and acceleration regions are pushed upstream as the background pressure increases. This suggests that the distribution function of the ingested flow, i.e., non-Maxwellian distribution of the neutral atoms, affects the discharge plasma.

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