

Abstract Submitted
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A Comparison of Emissive Probe Techniques for Electric Potential Measurements in a Complex Plasma¹ J.P. SHEEHAN, University of Wisconsin - Madison, YEVGENY RAITSES, Princeton Plasma Physics Laboratory, NOAH HERSHKOWITZ, University of Wisconsin - Madison, IGOR KAGANOVICH, NAT FISCH, Princeton Plasma Physics Laboratory, DOE PLASMA SCIENCE CENTER COLLABORATION — Accurate measurements of the plasma potential is a critical challenge especially for complex plasmas such as magnetized and flowing. We compare emissive probe techniques for measurements of the plasma potential in a low-pressure magnetized discharge of the Hall thruster. The thruster was operated with xenon gas in subkilowatt power range and the discharge voltage range of 200-450 V. The probe was placed at the channel exit where, the electron temperature is in the range of 10 to 60 eV and the plasma potential is in the range of 50 to 250 V. The floating point method is expected to give a value $\sim T_e/e$ below the plasma potential. The experimental results are consistent with these expectations. Specifically, it is shown that the floating potential of the emissive probe is $\sim 2T_e/e$ below the plasma potential. It is observed that the separation technique varies wildly and does not give a good measure of the plasma potential.

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