

Abstract Submitted
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Measurement of sheath potential by three emissive-probe methods in DC filament plasmas near a biased grid¹ IN-JE KANG, IN-SUN PARK, Dept. Electrical Engineering, Hanyang University, Seoul, Republic of Korea, EUGENE WACKERBARTH, Dept. Physics & Biophysics, University of San Diego, MIN-KEUN BAE, Dept. Electrical Engineering, Hanyang University, Seoul, Republic of Korea, NOAH HERSHKOWITZ, Dept. Engineering Physics, University of Wisconsin, Madison, GREG SEVERN, Dept. Physics & Biophysics, University of San Diego, KYU-SUN CHUNG, Dept. Electrical Engineering, Hanyang University, Seoul, Republic of Korea — Plasma potential structures are measured with an emissive probe near a negatively biased grid ($\approx -100V$, 80mm diam., 40 lines/cm) immersed in a hot filament DC discharge in Kr. Three different methods of analysis are compared: inflection point (IP), floating potential (FP) and separation point (SE) methods. The plasma device at the University of San Diego (length = 64 cm, diameter = 32 cm, source = filament DC discharge) was operated with $5 \times 10^8 < n_e < 5 \times 10^9 cm^{-3}$, $1 < T_e < 5eV$, and $0.05 < P_o < 0.1mTorr$. Plasma potentials of between 5 & 10 volts were measured in the bulk and asymmetric potential drops in sheath and presheath regions between the front and the back side of mesh grid were observed. The differences between plasma potentials inferred by the 3 methods, and the question of validity of the techniques in the region of the sheath are treated in detail.

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