

Abstract Submitted  
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**Investigation of possible sheath disappearance near a electrode biased at the plasma potential** CHI-SHUNG YIP, NOAH HERSHKOWITZ, University of Wisconsin - Madison, GREG SEVERN, University of San Diego — It is well established that when an electrode is biased negative with respect to the plasma potential, an ion sheath forms and when it is biased positive with respect to the plasma potential, an electron sheath forms provided that the electrode is small ( $A_{\text{plate}}/A_{\text{chamber}} < (m_e/m_i)^{1/2}$ ) [1]. However, when a small electrode is biased at the plasma potential, it is unknown whether an ion sheath, an electron sheath or no sheath will form. Movable small (3-5cm diameter) plates biased at the plasma potential are immersed in a filament discharge in a multi-dipole chamber. Plasma potential and IVDFs near the plate are measured to determine whether an ion sheath, an electron sheath or no sheath formed. Ion velocities are determined by Laser-Induced Fluorescence, the electron temperature and electron density are measured by a planar Langmuir probe and the plasma potential is measured by an emissive probe.

[1] S. D. Baalrud, N. Hershkowitz and B. Longmier, Phys. Plasmas 14, 042109 (2007)

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