

Abstract Submitted  
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**Plasma Characteristics of the Ion Source Region In the University of Wisconsin IEC Device** DAVID BORIS, GIL EMMERT, Fusion Technology Institute — The ion source region of the UW-Inertial Electrostatic Confinement device consists of a filament assisted DC discharge plasma that exists between the wall of the IEC vacuum chamber and the grounded spherical steel grid that makes up the anode of the IEC device. The plasma characteristics of the source region have been investigated using a planar Langmuir probe and an antenna used for the propagation of ion acoustic waves. Using these diagnostics the average ion mass of the deuterium source plasma has been measured and is consistent with a mostly  $D_3^+$  plasma. These results are consistent with a 0-D theoretical model of the source plasma. Variations in the floating potential, the plasma potential, and the plasma density have been investigated by varying the radial location of the planar probe. Variations in voltage on the IEC cathode have been shown to affect the floating potential in the source region as well as the spatial extent and density of the plasma in the source region.

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