

Abstract Submitted
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Power loss mechanisms in a helicon plasma DANIEL F. BERISFORD, ROGER D. BENGTON, L.L. RAJA, University of Texas at Austin — We present a series of experiments designed to quantify the relative importance of power loss through radiation or particle transport in an argon helicon plasma. The experiments were performed on the 6cm diameter, 1kW argon helicon source at the University of Texas at Austin. A set of bolometric probes, located at the plasma edge downstream from the antenna, measures the total heat flux density leaving the plasma radially at several discrete axial locations. A UV photodiode measures the total power loss due only to radiation at similar locations. We present a comparison of the two measurements and a set of preliminary results indicate that radiation and particle loss account for roughly the same power loss. We will also complete the power loss measurements with an infrared camera viewing the heating of the dielectric containment tube near the antenna to give a power balance for the helicon plasma.

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