

Abstract Submitted
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Infrared Radiometry and Heat Flux Calculation for a Helicon Plasma¹ DANIEL BERISFORD, CHARLES A. LEE, L.L. RAJA, ROGER D. BENGTON, University of Texas at Austin — Using an infrared camera, we measured the external temperature of a quartz tube containing a 1 kW helicon Argon plasma. An Inframetrics model 600 IR camera connected to a computer DAQ system records the temperature evolution of the quartz tube surface in the vicinity of the antenna during and after the pulse. Using these measurements, we estimated the heat flux profile from the plasma into the quartz tube walls. A MATLAB code uses pre- and post- pulse snapshot images from the video to estimate the heat flux into the quartz from the plasma. Initial results have shown a broad heating profile with localized power input into the quartz under the helical antenna. We find approximately 30% of the total RF power deposited into the tube as heat, and heating directly under the antenna accounts for about 30% of this heat input.

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