

Abstract Submitted  
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**Edge density and temperature measurements on the Pegasus toroidal experiment using Langmuir probe arrays**<sup>1</sup> E.T. HINSON, D.J. BATTAGLIA, M.W. BONGARD, A.J. REDD, A.C. SONTAG, G.W. WINZ, University of Wisconsin - Madison — Langmuir probes are being deployed on the Pegasus Toroidal Experiment to measure the edge electron density and temperature in both Ohmic and plasma gun-driven plasmas. Typical edge temperatures in the region of interest are expected to be less than 50 eV, and edge densities are estimated to be on the order of  $10^{19} \text{ m}^{-3}$ . Each probe has four 1 mm diameter tungsten tips, extending several millimeters into the plasma, and is protected by a graphite housing. This first setup can be employed as a swept probe or a triple probe. Future efforts will focus on deploying an array of such probes. The first probe is mounted on a sliding shaft 10 cm below the outboard midplane, enabling the probe tips to be positioned several centimeters within the scrape-off layer. The probe provides a high time resolution measurement of the edge plasma parameters, including fluctuations, up to the megahertz scale. In Ohmic discharges, the Langmuir probe measurements will support edge stability studies. In helicity-driven plasmas, the Langmuir probes will be used to characterize the plasma edge in unrelaxed plasma streams, gun-driven edge current sheets, and in relaxed tokamak-like equilibria.

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