

Abstract Submitted  
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**Characterizing the Performance of the Princeton Advanced Test Stand Ion Source**<sup>1</sup> A. STEPANOV, E.P. GILSON, L. GRISHAM, I. KAGANOVICH, R.C. DAVIDSON, PPPL — The Princeton Advanced Test Stand (PATS) is a compact experimental facility for studying the physics of intense beam-plasma interactions relevant to the Neutralized Drift Compression Experiment - II (NDCX-II). The PATS facility consists of a multicusp RF ion source mounted on a 2 m-long vacuum chamber with numerous ports for diagnostic access. Ar<sup>+</sup> beams are extracted from the source plasma with three-electrode (accel-decel) extraction optics. The RF power and extraction voltage (30 - 100 kV) are pulsed to produce 100  $\mu$ sec duration beams at 0.5 Hz with excellent shot-to-shot repeatability. Diagnostics include Faraday cups, a double-slit emittance scanner, and scintillator imaging. This work reports measurements of beam parameters for a range of beam energies (30 - 50 keV) and currents to characterize the behavior of the ion source and extraction optics. Emittance scanner data is used to calculate the beam trace-space distribution and corresponding transverse emittance. If the plasma density is changing during a beam pulse, time-resolved emittance scanner data has been taken to study the corresponding evolution of the beam trace-space distribution.

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