

Abstract Submitted
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Simulation and Implementation of HIBP Electric Field Measurements for the HSX Stellarator¹ C. CLARK, D.T. ANDERSON, J. HILLESHEIM, HSX Plasma Lab, U. of Wisconsin-Madison, M. BINGHAM, K. CONNOR, D. DEMERS, A. DUNCKLE, P. SCHOCH, Rensselaer Polytechnic Institute — Understanding the relative roles of neoclassical and anomalous transport in advanced stellarators requires knowledge of the radial electric field. At HSX, work is under way toward measuring the radial electric field using the deflection of a beam of singly charged Cesium ions. In contrast to a typical HIBP, which measures the energy of higher charge state ions created by collisions within the plasma, this technique measures the displacement of the beam due to the plasma electric field. Recent simulations show measurable differences between ion trajectories through the HSX vacuum field and those of a typical HSX plasma with a realistic potential profile. The displacement is a path effect, but scanning the insertion angle of the beam allows the electric field in different radial locations to be diagnosed. Work to map deflected beam trajectories into radial profile scans is also under way. The ion beamline is being tested and optimized.

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