Abstract Submitted
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Impurity Transport Research at the HSX Stellarator[1] C. CLARK, D.T. ANDERSON, F.S.B. ANDERSON, K.M. LIKIN, J.N. TALMADGE, K. ZHAI, HSX Plasma Lab, University of Wisconsin, Madison — Predictive models of impurity transport are required to ensure the successful operation of future magnetic confinement fusion devices. As a step towards the creation and validation of such models for stellarator devices, experiments are under way to measure the impurity transport properties of HSX, the first quasisymmetric stellarator. A laser blow-off impurity injection system is used to rapidly deposit a small, controlled, quantity of aluminum into the confinement volume. AXUV photodiode arrays, some of which are equipped with filters that block visible light, but transmit ultra-violet and soft x-ray light, are used to take time-resolved measurements of the impurity radiation. One-dimensional emissivity profiles are recovered from the measurement using an inversion process that accounts for the fully three-dimensional detector views. Impurity confinement times measured during an HSX density scan will be presented, along with data that demonstrates the improvement in impurity injection that occurs when a 10nm layer of chromium is present between the glass and the aluminum.

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