

Abstract Submitted  
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**Modeling Neutral Hydrogen in the HSX Stellarator**<sup>1</sup> L. STEPHEY, HSX Plasma Lab, University of Wisconsin, Madison, A. BADER, University of Wisconsin, Madison, D.T. ANDERSON, J.N. TALMADGE, HSX Plasma Lab, University of Wisconsin, Madison, C. HEGNA, University of Wisconsin, Madison, F.S.B. ANDERSON, HSX Plasma Lab, University of Wisconsin, Madison — Efforts to improve the understanding of neutral hydrogen in the HSX stellarator are ongoing. The DEGAS code [1], a fully 3D Monte-Carlo neutral particle code, is used to simulate neutral particle density and synthetic H-alpha emission in HSX. DEGAS simulations are compared to EMC3-EIRENE [2] simulations in an effort to understand the similarities and differences in how each code predicts neutral physics in the unique HSX geometry and relatively low operating density. Additionally, experimentally motivated DEGAS simulations are presented of a supersonic gas injection system that will be installed on HSX. Finally, simulations of many different wall recycling scenarios are presented in an effort to develop a plasma wall interaction model that more closely matches experimental H-alpha measurements.

[1] D. B. Heifetz et al, J. Comp. Phys. Vol. 46 (1982) p. 309.

[2] Y. Feng et al, Contribution Plasma Physics, 44 1-3 (2004) p. 57-69.

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L. Stephey  
HSX Plasma Lab, University of Wisconsin, Madison

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