

Abstract Submitted
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Hydrogen Isotope Effect on Particle Transport and Density Fluctuations in the HSX Stellarator¹ C.B. DENG, D.L. BROWER, Department of Physics and Astronomy, University of California, Los Angeles, D.T. ANDERSON, F.S.B. ANDERSON, A. BADER, S.T.A. KUMAR, K.M. LIKIN, J.N. TALMADGE, HSX Plasma Laboratory, University of Wisconsin-Madison, K. TANAKA, National Institute for Fusion Science, Japan — Plasma particle transport is studied using modulated gas puffing on the HSX stellarator. Isotope effects are investigated in hydrogen and deuterium dominant plasmas. In addition to density perturbation evolution, density fluctuations are simultaneously measured along 7 interferometer chords. Transport coefficients D and V are extracted by comparing measured amplitude and phase of the density modulations using a 1-D cylindrical model. For the model calculations, the particle source rates are estimated using the EMC3-EIRENE code. Results for magnetic configurations with and without quasi-symmetry are investigated. During these studies, the electron density was scanned in range of $(1.5 - 5) \times 10^{12} \text{cm}^{-3}$. Deuterium and hydrogen contents in plasmas are inferred from measured ratio of D_β and H_β emissions.

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Chuanbao Deng
University of California, Los Angeles

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