Abstract Submitted
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Modeling of Anomalous Transport in ECRH Plasmas at HSX W. GUTTENFELDER, D.T. ANDERSON, J.M. CANIK, K.M. LIKIN, J. LORE, J.N. TALMADGE, HSX Plasma Laboratory, U. of Wisconsin-Madison, W. DORLAND, M. BARNES, U. of Maryland — The Weiland ITG/TEM anomalous transport model [1] is used to predict density and temperature profiles in ECRH plasmas at HSX. The local geometry approximation in [1] is replaced by the local geometry in the low-field, bad curvature region of HSX, where curvature/∇B scale lengths ($\sim$R/3) and magnetic ripple (ε_H) differ from those of a tokamak (R & ε_T, respectively). This is justified by GS2 3D [2] calculations, which demonstrate that the dominant linear instabilities (TEM) in HSX are spatially localized in this region. Growth rates from the Weiland model in this limit agree within 30% of growth rates predicted by GS2 for 3D HSX plasmas. Predicted profiles agree with a number of experimental profiles. Predicted confinement times agree within $\sim$20% of experimental confinement times. Confinement times predicted without the local geometry approximation of HSX (κ/∇B, ε_H) are 2-3$\times$ larger. This work is supported by DOE grant number DE-FG02-93ER54222. [1] H. Nordman et al., Nucl. Fusion **30**, 983 (1990) [2] E.A. Belli et al., Bull. Am. Phys. Soc. **46**, No. 8, 232 (2001)

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