Abstract Submitted
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Confinement Scaling and Transport Physics in NSTX[1] S. KAYE, R. BELL, R. BUDNY, PPPL, Princeton University, W. HORTON, IFS, Univ. of Texas, F. LEVINTON, Nova Photonics, J. KIM, IFS, Univ. of Texas, J. MENARD, D. MUELLER, B. LEBLANC, E. MAZZUCATO, D. MIKKELSEN, H. PARK, G. REWOLDT, D. SMITH, W. WANG, PPPL, Princeton University, H. YUH, Nova Photonics — The confinement time trends in high power NSTX neutral beam heated discharges exhibit significant differences from those at conventional aspect ratio; the scaling with toroidal magnetic field is stronger while that with plasma current is weaker. The improvement of confinement with increasing field is due primarily to a reduction of the electron transport. The electron transport is the dominant anomalous loss mechanism in NSTX, with the ion transport can be close to neoclassical levels. Predictions from linear GS2 gyrokinetic calculations and from analytic theory indicate that ETG modes may play a role at low field. Details of the parametric trends of confinement and transport, along with the relation to changes in the high-k fluctuations and methods for improving the electron confinement, will be discussed.

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