Abstract Submitted
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Investigation of CAE/GAE-induced electron thermal transport for NSTX-U[1] KEVIN TRITZ, D. STUTMAN, M. FINKENTHAL, Johns Hopkins University, N.N. GORELENKOV, R. WHITE, E. BELOVA, E. FREDRICKSON, S. KAYE, PPPL, N. CROCKER, UCLA — High values of core electron thermal transport (several 10's m^2/s) resulting in flat core temperature profiles in high power H-mode spherical tokamak plasmas remain unexplained. One hypothesis is high frequency fast ion modes GAE/CAEs driven by strong, super-Alfvénic neutral beam heating can increase electron thermal transport in the core and cause the observed high χ_e [D. Stutman, *et al.*, Phys. Rev. Lett., **102**, 115002 (2009)]. Additional work using ORBIT modeling and ad-hoc models of the fast ion modes demonstrates that the interaction of multiple modes with different m/n numbers at a single location can induce stochastic transport of the electrons, and can also exhibit a strong scaling of transport with mode amplitude [N.N. Gorelenkov, *et al.*, Nucl. Fusion, **50**, 084012 (2010)]. This modeling work is extended to include measured mode structure, and modes located at multiple radial locations, as observed in experimental discharges, to improve the comparison to measured χ_e, and also extended to NSTX-U parameters and plasma conditions to predict core electron thermal transport in the upgraded device.

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