Abstract Submitted
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The Effect of ITG/TEM mix on Gyrokinetic Modeling of an Alcator C-Mod Current Scan[1] NATHAN HOWARD, CHRIS HOLLAND, University of California - San Diego, ANNE WHITE, MATT REINKE, MIT-PSFC, TERRY RHODES, University of California - Los Angeles, MARTIN GREENWALD, MIT-PSFC, JEFF CANDY, General Atomics, ALCATOR C-MOD TEAM — A gyrokinetic modeling study of an Alcator C-Mod I_p scan using the GYRO code has been conducted, to assess the ability of low-k (k_y rho_s < 1) gyrokinetics to accurately reproduce the observed scaling of core transport with changes in the q-profile. The analysis focuses upon comparisons of gyrokinetic flux predictions with the experimental values at three radial locations (r/a = 0.5, 0.65, 0.8) in four L-mode discharges (0.6, 0.8, 1.0, 1.2 MA). Linear gyrokinetic analysis of both dominant and subdominant modes is combined with sensitivity analysis of the nonlinear predictions to quantify differences in the mix of ITG and TEM turbulence at each condition. We find that these low-k simulations accurately predict the experimental fluxes only when both ITG and TEM modes are unstable at low k. Discrepancies between simulated and experimental electron heat flux were robustly identified using sensitivity scans and appear correlated with the absence of low-k electron turbulence in the simulations. Initial experimental and modeling results from a sister scan performed on DIII-D will also be presented.

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