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Electron Temperature Gradient Mode Driven Transport in Alcator C-Mod Plasmas SAMUEL BAUMAN, MIT, NATHAN HOWARD, UCSD, FELIX PARRA, CHOONGKI SUNG, JUSTIN BALL, MARTIN GREENWALD, ANNE WHITE, MIT — A series of unique multi-scale (ITG/TEM/ETG) turbulence simulations is currently being performed to investigate the role of Electron Temperature Gradient driven electron heat transport in Alcator C-Mod plasmas where electron heat flux, but not ion heat flux, is underpredicted [Howard Phys. Plasmas 20, 032510 (2013)]. This poster will present detailed linear stability analysis, using the GYRO and GS2 codes, to investigate a hypothesis that the ratio of ETG and ITG/TEM growth rates in two k-ranges can be used to track whether or not ETG driven heat flux is experimentally relevant. Nonlinear GENE simulations [Jenko Phys. Plasmas, 7,1904 (2000)] of ion and electron-scale turbulence show that when the ratio of the growth rates in the two k-ranges is close to the square root of the mass ratio significant electron heat flux is driven by ETG turbulence. Initial investigations indicate that C-Mod plasmas exhibiting underpredictions of electron heat flux satisfy this growth rate ratio criterion.

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