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Gyrokinetic Simulations of Diluted Plasmas in the LOC regime in Alcator C-Mod[1] M. PORKOLAB, P. ENNEVER, M.L. REINKE, J. RICE, C. ROST, N. TSUJII, E. DAVIS, D. ERNST, C. FIORE, M. GREENWALD, A. HUBBARD, J. HUGHES, E. MARMAR, MIT PSFC, J. CANDY, G.M. STAEBLER, R. WALTZ, GA, AND ALCATOR C-MOD TEAM — Previous investigations of ITG and TEM/ETG turbulence using the reduced gyro-landau fluid code TGLF, and gyrokinetic code GYRO have predicted that in the linear ohmic confinement (LOC) regime in Alcator C-Mod the dilution of the main D ion species by low-Z impurities reduces the ion transport to experimentally observed levels. This analysis assumed an average impurity ion charge Zi= 8. Recent spectroscopic measurements of the impurity ion species in the LOC regime in C-Mod have shown that the average Zi is approximately 9, which at the measured Zeff values (2-4) results in a significant dilution (>10%) of the majority D ion species. By puffing in nitrogen while using a cryopump to keep the density constant, new experiments enabled us to lower Zi to values near 8, thus further increasing dilution. To account for the sensitivity of the turbulent transport on the density (Lne) and temperature (LTe) gradient scale lengths, recently we used TGYRO to improve the agreement between theory and the measurements. The results of such simulations will be presented.

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Stephen Wukitch
MIT PSFC

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