

Abstract Submitted  
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**The Effect of Main-Ion Dilution on Turbulence and Transport in Alcator C-Mod** PAUL ENNEVER, MIKLOS PORKOLAB, MATTHEW REINKE, JOHN RICE, CHRIS ROST, NAOTO TSUJII, EVAN DAVIS, DARIN ERNST, CATHERINE FIORE, MARTIN GREENWALD, AMANDA HUBBARD, JERRY HUGHES, EARL MARMAR, MIT, JEFF CANDY, GARY STAEBLER, RON WALTZ, General Atomics, CHRIS HOLLAND, UCSD, THE ALCATOR C-MOD TEAM — Previous studies of turbulence using the reduced gyro-landau fluid code TGLF, and the gyrokinetic code GYRO, have predicted that in C-Mod ohmic plasmas a dilution of the main ions by a significant amount causes a reduction of turbulent transport in the ion channel [1]. This could be a factor in the LOC-SOC transition. To test this effect, experiments were performed where nitrogen was puffed into ohmic target plasmas with the density kept constant. This seeding reduced the turbulence in the ion diamagnetic direction as measured by phase contrast imaging. To determine impurity concentrations in the plasma, line brightnesses for the relevant impurity species (N, O, Ar, and Mo) were compared to  $Z_{\text{eff}}$  from neoclassical conductivity and from continuum measurements. The turbulence and transport simulated with GYRO and TGLF were compared to that measured experimentally. Work supported by US DOE awards DE-FG02-94-ER54235 and DE-FC02-99-ER54512.

[1] M. Porkolab, et al, Bull. Am Phys. Soc. 56, no 12 139 (2011).

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