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The effects of main ion dilution on turbulence and transport in Alcator C-Mod and comparisons with gyrokinetic simulations PAUL ENNEVER, MIKLOS PORKOLAB, MATTHEW REINK, JOHN RICE, J. CHRIS ROST, EVAN DAVIS, DARIN ERNST, CATHERINE FIORE, AMANDA HUBBARD, JERRY HUGHES, JIM TERRY, MIT, NAOTO TSUII, Max Plank Institute of Plasma Physics - Garching, GARY STAEBLER, JEFF CANDY, General Atomics, AND THE ALCATOR C-MOD TEAM — In previous studies of C-Mod experiments with gyrokinetic codes it was found that ion turbulence and transport was reduced when the main ions were diluted by introducing low-Z impurities. In recent experiments on C-Mod, nitrogen (Z=7) was injected into ohmic plasmas at a range of densities across the LOC-SOC transition. Experimentally it was observed that the ion thermal diffusivity decreased with nitrogen seeding, but the ion temperature gradient also increased such that the ion heat flux remained the same. It was also observed that the seeding induced a rotation reversal, similar to spontaneous reversals observed previously by lowering the density in unseeded ohmic plasmas. Simulations of these plasmas have been carried out with TGLF and non-linear GYRO. The energy transport, momentum transport, and turbulent density fluctuations simulated by these codes will be compared with experimental measurements. *Work supported by US DOE awards DE-FG02-94-ER54235 and DE-FC02-99-ER54512.

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