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Electron Temperature Gradient Scale Measurements in ICRF Heated Plasmas at Alcator C-Mod[1] SAEID HOUSHMANDYAR, PERRY E. PHILLIPS, WILLIAM L. ROWAN, Institute for Fusion Studies, The University of Texas at Austin, NATHANIEL T. HOWARD, MARTIN GREENWALD, PSFC, MIT — It is generally believed that the temperature gradient is a driving mechanism for the turbulent transport in hot and magnetically confined plasmas. A feature of many anomalous transport models is the critical threshold value (L_C) for the gradient scale length, above which both the turbulence and the heat transport increases. This threshold is also predicted by the recent multi-scale gyrokinetic simulations, which are focused on addressing the electron (and ion) heat transport in tokamaks [Howard *et al*, Phys. Plasma **23**, 056109 (2016)]. Recently, we have established an accurate technique ($\mathrm{B_T}$-jog) to directly measure the electron temperature gradient scale length ($L_{Te} = T_e/\nabla T$) profile, using a high-spatial resolution radiometer-based electron cyclotron emission (ECE) diagnostic [Houshmandyar *et al*, RSI (2016)]. For the work presented here, electrons are heated by ion cyclotron range of frequencies (ICRF) through minority heating in L-mode plasmas at different power levels, TRANSP runs determine the electron heat fluxes and the scale lengths are measured through the $\mathrm{B_T}$-jog technique. Furthermore, the experiment is extended for different plasma current and electron densities by which the parametric dependence of L_C on magnetic shear, safety factor and density will be investigated.

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