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Thermal transport and Plasma Rotation during cold pulse experiments in Ohmic L-mode plasmas C. GAO, J.E. RICE, PSFC, MIT, H.J. SUN, SWIP, M.L. REINKE, N.T. HOWARD, Y.A. PODPALY[1], PSFC, MIT, L. DELGADO-APARICIO, PPPL, M. CHILENSKI, J.W. HUGHES, Y. MA, A. HUBBARD, M. GREENWALD, N. TSUJII, P. ENNEVER, M. PORKOLAB, PSFC, MIT, W. ROWAN, IFS, The University of Texas at Austin, AND ALCATOR C-MOD GROUP TEAM — Thermal transport is studied by laser blow-off impurity (CaF2) injection. The non-local effect, a cooling of the edge electron temperature with a rapid rise of the central electron temperature, which contradicts the "local" assumption of transport, was observed in low density linear Ohmic confinement (LOC) regime plasmas. Simulation shows this phenomenon can be explained either by a fast drop of the core diffusivity, or by a sudden appearance of an inward heat convection. In high density saturated Ohmic confinement (SOC) regime plasmas, the thermal transport becomes "local": central electron temperature drops in response to the edge cooling. The transition density is very close to the rotation reversal critical density. This indicates the possible correlation between thermal and momentum transport, which is also linked to the trapped electron mode (TEM) to ion temperature gradient mode (ITG) transition. Cold pulse modulation experiments show in LOC the thermal transport is not purely diffusive, while in SOC the thermal transport is more diffusive like. Linear Gyro-kinetic simulations will be performed to characterize the turbulent transport in these experiments.

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