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Recent upgrades to Thomson scattering diagnostics on Alcator C-Mod for improved core spatial resolution[1] Y. MA, J.W. HUGHES, K. ZHUROVICH, A. HUBBARD, MIT PSFC — The Thomson Scattering (TS) diagnostics on C-Mod employ two Nd:YAG lasers, each with a nominal 1.3J, 8ns pulse and 30Hz pulse rate, directed along the same vertical path to measure the electron temperature and density profiles. The core TS diagnostic set has recently been upgraded by adding 8 new compact polychromators in order to deliver core plasma measurements with improved spatial resolution. Up to 16 core detector channels are now available, with each T_e, n_e measurement localized to 4mm in radial coordinates. Optimal positioning of collection fibers concentrates the measurement locations in the internal transport barrier region (typically centered at r/a 0.5), yielding an approximate spatial resolution of 15mm, allowing more accurate study of the plasma gradient scale lengths in this regime. The new polychromators demonstrate high signal-to-noise ratio (S/N) when operated during C-Mod discharges. Calibration results, analysis and plasma measurements will be presented.

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