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Confinement in Advanced Inductive Plasmas – Gyroradius and Rotation, T.C. Luce, P.A. Politzer, *GA*; C.D. Challis, *Euratom/CCFE*; E. Joffrin, *Euratom/CEA*; W.M. Solomon, *PPPL* –
Advanced inductive (AI) plasmas promise long pulse operation and high fusion yield. We address issues of extrapolation to ITER and beyond. First, joint JET & DIII-D work studies the scaling of transport with size (ρ*). Preliminary 0-D analysis indicates that global scaling is close to Bohm-like: $B\tau_E \propto \rho^{*-\alpha}$ with $\alpha \approx 2.16$. For matched discharges H_{98y2} depends weakly if at all on ρ*. Second, the dependence of confinement on rotation and on the presence of an NTM island was studied in DIII-D. Rotation was varied by a factor of ~4.6 in plasmas with similar n_e and β, with $3.1 \le q_{95} \le 4.9$. H_{89} increased from ~2.0 to ~2.5, with weak q_{95} dependence. Increasing *ExB* flow shear is dominant, accompanied by a decrease in turbulence. Decreasing NTM island width is less important, but not negligible. Third, with added ECH, T_e/T_i increases but energy and momentum transport increase as well. Matching NBI and ECH heated plasmas shows that the reduction in density with ECH is a consequence of reduced rotation rather than changing T_e/T_i.

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