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Energy and Particle Transport in Long Pulse High Performance Discharges[1] P.A. POLITZER, C.C. PETTY, D.R. BAKER, T.C. LUCE, C.M. GREENFIELD, G.M. STAEBLER, R.E. WALTZ, GA, J.E. KINSEY, Lehigh U., M.R. WADE, ORNL, T.L. RHODES, L. ZENG, C.L. RETTIG, E.J. DOYLE, UCLA, G.R. MCKEE, C. FENZI, U. Wisconsin — Long-pulse high performance ($\beta_N H_{89} \lesssim 10$) discharges have been demonstrated in the DIII-D tokamak for many energy confinement times. The global energy confinement is significantly better than that predicted by standard scaling laws; e.g., $H_{89} \lesssim 3$. The paradigm of stabilization of drift turbulence by shear in the ExB flow is usually invoked to explain the enhancement in confinement. Two approaches to evaluating this model will be presented — comparison of linear growth rates and ExB shearing rate derived from fitted kinetic profiles and direct simulation of the kinetic profiles using a theory-based model. Only the second approach can give information about the fluctuation level. High confinement regimes may also lead to impurity accumulation. Data on transport of the main intrinsic impurity (carbon) will be presented.

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☐ Prefer Oral Session
☒ Prefer Poster Session

Special instructions: 3b poster in Transport Core Session (between Austin and Jayakumar)

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