Abstract Submitted
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Magnetic Flux Conversion in the DIII-D Steady-State Hybrid Scenario* N.Z. TAYLOR, Oak Ridge Associated Universities, T.C. LUCE, R.J. LA HAYE, C.C. PETTY, General Atomics, R. NAZIKIAN, PPPL — The hybrid is a promising high confinement scenario for ITER. The broader current profile aids discharge sustainment by raising $q_{min} > 1$ thereby avoiding sawtooth-triggered 2/1 tearing modes. In DIII-D hybrid scenario discharges, the rate of poloidal magnetic energy consumption is more than the rate of energy flow from the poloidal field coils. This is evidence that there is a conversion of toroidal flux to poloidal flux, which may be responsible for the anomalous broadening of the current profile known as flux pumping. The rate of poloidal flux being provided and consumed was tracked with coil and kinetic flux states [1]. During long stationary intervals (1.5 seconds) with constant stored magnetic energy, a significant flux state deficit rate >10 mV was observed. The inequality in the evolution of the flux states was observed in hybrids that were 100% non-inductive and with successful RMP ELM suppression.
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