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Type-I ELM Suppression by Resonant Fields in Steady State Hybrid Plasmas on DIII-D[1] R. NAZIKIAN, B.A. GRIERSON, E. KOLEMEN, PPPL, XI CHEN, C. PAZ-SOLDAN, C.C. PETTY, M.A. VAN ZEELAND, GA, F. TURCO, Columbia U., T.L. RHODES, UCLA, G.R. MCKEE, U. Wisconsin — "Steady-state" hybrid plasmas in DIII-D with zero surface loop voltage have been maintained for $\leq$2 current relaxation times with complete suppression of Type-I ELMs using n=3 Resonant Magnetic Perturbations (RMPs). The edge $q_{95} \approx 6$ and q(0) >1 due to anomalous poloidal magnetic flux pumping in the hybrid scenario. The sustained hybrid performance without type-I ELMs indicates an alternative mechanism for flux pumping, possibly due to the interaction of the m/n=3/2 mode with an m=1/n=1 kink displacement. The plasma confinement degradation during ELM suppression is less than 10%, with $H_{98y2} \approx 1.2$ sustained for the duration of the discharge. After ELM suppression is obtained, $\sim$1 kHz D-alpha bursts are observed. The underlying instability may be beneficial for particle and impurity control.

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R. Nazikian
PPPL

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