

Abstract Submitted
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A Fully Noninductive, ELM-Suppressed Scenario for ITER¹ C.C. PETTY, T.W. PETRIE, GA, R. NAZIKIAN, PPPL, F. TURCO, COLUMBIA U, C. LASNIER, LLNL — An attractive regime with beta, collisionality and plasma shape relevant to the ITER steady-state mission has been attained in DIII-D using the hybrid scenario, including complete ELM suppression using resonant magnetic perturbation (RMP) coils. Fully noninductive hybrids with simultaneous high beta ($\beta_N \leq 3.1$) and high confinement ($H_{98y2} \leq 1.4$) have achieved zero surface loop voltage for up to two current relaxation times using efficient central current drive from ECCD and NBCD. This steady-state regime has been successfully integrated with ELM suppression by applying an odd parity n=3 RMP, which has only a minor impact on the pedestal pressure ($\sim 15\%$) and H_{98y2} ($\sim 10\%$) In radiating divertor experiments in hybrids, the combination of Argon seeding and strong Deuterium puffing more than doubles the plasma radiative power, up to 55% of the input power, with less than 10% increase in Z_{eff} . IR camera measurements find that the peak heat flux in the upper, outer divertor falls by a factor of 2 (from 4.6 to 2.3 MW/m^2).

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