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Global Particle Balances and Wall Recycling Changes During the RMP Induced Density Pump-out in DIII-D H-mode Plasmas[1] E.A. UNTERBERG, ORISE, N.H. BROOKS, T.E. EVANS, General Atomics, M.E. FENSTERMACHER, LLNL, R. MAINGI, ORNL, R.A. MOYER, UCSD — Resonant magnetic perturbations (RMPs) have been shown to successfully suppress ELMs in DIII-D. A drop in electron density up to 30% during application of the RMP field usually precedes the suppression and/or mitigation of ELMs at high and low edge electron collisionality (ν_e^*). Consequently, an understanding of the density response to the RMP is a critical issue for achieving ELM suppression in ITER. Coincident with this drop in the line-integrated and pedestal densities, the pedestal T_e increases modestly and T_i increases as much as 50%-70% depending on the pre-RMP discharge conditions, which contradicts known stochastic transport theory. Global particle balances show that the pump-out magnitude is directly correlated to the particle wall inventory before the RMP. It is observed that the magnitude of the pump-out trends directly with increasing β_N and inversely with pedestal collisionality. Recent experimental results where wall conditions were systematically varied will also be presented.

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