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Global Particle Balances and Wall Recycling Changes During the RMP Induced Density Pump-out in DIII-D H-mode Plasmas,* E.A. Unterberg, *ORISE*, N.H. Brooks, T.E. Evans, *GA*, M.E. Fenstermacher, *LLNL*, R. Maingi, *ORNL*, and R.A. Moyer, *UCSD* – Resonant magnetic perturbations (RMPs) have been shown to successfully suppress ELMs in the DIII-D tokamak. A drop in electron density of up to 30% during application of the RMP field usually precedes the suppression and/or mitigation of ELMs at both 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 also observed that the magnitude of the pump-out trends directly with increasing β_N and inversely with pedestal collisionality. Results from recent experiments where the wall conditions were systematically varied will also be presented.

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