

Abstract Submitted
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Particle Exhaust and Scrape-off Layer Conditions During RMPs in Deuterium and Helium Discharges on DIII-D¹ E.A. UNTERBERG, ORISE, T.E. EVANS, General Atomics, J.M. CANIK, ORNL, O. SCHMITZ, Forschungszentrum Julich, R. MAINGI, ORNL, N.H. BROOKS, General Atomics — The complete suppression of ELMs in a tokamak using the resonant component of a 3D magnetic perturbing field (RMP) has been demonstrated on DIII-D at ITER similar pedestal- ν_e^* and cross-sectional shapes. Recent analysis using global particle balance and measurements of the D_α poloidal distribution show that the wall inventory can be strongly affected by changing the average triangularity of the plasma. Further investigations using vacuum field-line tracing identified a bifurcation in edge plasma conditions and divertor pumping due to a difference in the perturbed separatrix in the two configurations and an apparent increase in the scrape-off layer neutral density. Comparisons with helium discharges will also be made. These results support a goal of understanding the role of particle sources and sinks during the RMP and demonstrate ELM suppression without significant wall pumping, a feature that is essential in long-pulse reactors with saturated walls.

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