

Abstract Submitted
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Enhancement of Helium exhaust by resonant magnetic perturbations in DIII-D¹ E. T. HINSON, O. SCHMITZ, University of Wisconsin-Madison, C. COLLINS, C. PAZ-SOLDAN, General Atomics, I. BYKOV, R. A. MOYER, University of California-San Diego, E. A. UNTERBERG, A. BRIESEMEISTER, Oak Ridge National Laboratory, A. G. MCLEAN, Lawrence Livermore National Laboratory, J. WATKINS, H. WANG, Sandia National Laboratory — Clear evidence of enhanced He exhaust during RMP ELM suppression has been obtained for the first time in a series of lower single null H-mode discharges with and without RMP in DIII-D. During RMP, reduced midplane He density measurements from CER and faster neutral He decay times after a 100ms He puff provided evidence for faster outward transport. Additionally, during RMP, neutral He pressure in the lower pumping plenum increased, while D₂ pressure was similar to the no RMP case. A spectrometer viewing the divertor shelf in the scrape off layer measured consistently increased He-I light during RMP ELM suppression. These two measurements indicate an improved retention of He in the unconfined region, which is important for enhanced He removal. Consequently, the effective helium confinement time, $\tau_{p,He}^*$, measured for conditions in this work was reduced by >35% when RMP ELM suppression was obtained.

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