

Abstract Submitted  
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**Plasma Response and Transport Associated with RMP ELM Suppression on DIII-D**<sup>1</sup> M.R. WADE, GA, DIII-D ELM CONTROL TASK FORCE TEAM — Recent experiments on DIII-D have focused on improving the understanding of the plasma response and associated transport changes leading to ELM suppression when resonant magnetic perturbation (RMPs) are applied. ELM suppression has been obtained in ITER Similar Shape discharges when applying either  $n = 3$  (either with two or a single row of internal coils) or  $n = 2$  RMP fields. While a substantive density decrease is generally observed, ELM suppression is limited to a narrow range in  $q_{95}$  that is consistent with expectations based on vacuum field modeling. However, the  $q_{95}$  ELM suppression range is  $\beta$  dependent, suggesting sensitivity to the ideal MHD plasma response. Modulating the RMP has revealed nearly instantaneous responses in the edge toroidal rotation, radial electric field, and turbulence levels. Experiments are planned to differentiate the vacuum and ideal responses by varying the effective magnetic spectrum over a wide range utilizing a variety of tools (e.g.,  $n = 2$ ,  $n = 3$  single-row vs two rows, single null vs double null) and to further characterize the edge profile and turbulence changes during fine-scale  $q_{95}$  scans, with and without RMP modulation.

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