

## Effects of Resonant Magnetic Perturbations on Edge Turbulence and Profiles in DIII-D \*

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Resonant magnetic perturbations (RMPs) are applied to the boundary of DIII-D with a variety of global effects such as edge localized mode (ELM) suppression and global density increase/decrease. How the applied perturbations affect the transport and the plasma edge stability and thus suppress the ELMs, are among the fundamental questions to be answered because of the high heat load created by the ELMs on the plasma facing components.

We present fast probe measurements of the effects of applying RMPs to: 1) low power (ohmic) and 2) H-mode DIII-D discharges. In the low power discharges, the effect of islands is clearly seen in the edge plasma as structures in the profiles and changes in the fluctuations as far as 4 cm inside the separatrix. These observations compare well to calculations using 3D field mapping codes, indicating that the island structures modulate the edge parameters and transport.

On the high power discharges, measurements of probes and other diagnostics (such as BES) are made at various points in the edge and changes in the profiles and fluctuations are compared. We find that fluctuations can be affected (enhanced or reduced) in narrow (1-2 cm) regions in the pedestal and in the scrape-off layer. The changes in the profiles and fluctuations are dependent on the structure of the applied fields that can be varied in both intensity and mode number.

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