

Abstract Submitted
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Simultaneous Control of Multiple Resistive Wall Modes on the DIII-D Tokamak¹ ALEXANDER BATTEY, JEREMY HANSON, JIM BIALEK, GERALD NAVRATIL, Columbia University, COLUMBIA UNIVERSITY COLLABORATION — Resistive wall modes (RWM) with toroidal mode number greater than one have been observed on the DIII-D tokamak following the successful stabilization of the $n=1$ mode. This implies a need to understand the role of multiple unstable modes on RWM control as well as a strategy for multiple mode control. We have simulated successful, simultaneous control of $n=1$ and $n=2$ RWMs on DIII-D using the VALEN code. It has also been shown that modes may couple through induced currents in the vessel wall. This coupling can affect both the growth and rotation of both stable and unstable modes, but is small enough so that each mode can be approximated as independent of one another. This allows each RWM to be controlled through independent feedback relationships. Several multi-mode feedback strategies are presented and their ability to raise the normalized beta limit is discussed.

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