Simulations and control feedback based on the VALEN RWM model[1] M. CLEMENT, UCSD, G. NAVRATIL, J. HANSON, J. BIALEK, Columbia University — The VALEN Resistive Wall Mode (RWM) model [1] has been used to gauge the effectiveness of RWM control algorithms in tokamaks. VALEN models the perturbed magnetic field from a single MHD instability and its interaction with surrounding conducting structures as a series of coupled circuit equations. Results of experiments to develop control of a rotating $n = 1$ perturbation using external coils will be presented. Results from high β_N experiments also suggest that advanced feedback techniques using external control coils may be as effective as internal control coil feedback using classical control techniques. Simulations used to inform the design of feedback control algorithms based on VALEN will also be presented.

[1] Bialek, James. 2001, Physics of Plasmas, Vol. 8.

M. Clement
UCSD

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