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Resistive wall mode stability and plasma response modeling of DIII-D plasmas[1] F. TURCO, J.M. BIALEK, J.M. HANSON, G.A. NAVRATIL, S.A. SABBAGH, Columbia U., M.J. LANCTOT, Lawrence Livermore National Laboratory, H. REIMERDES, CRPP, Y. LIU, Euratom/CCFE — Recent DIII-D experiments have shown the effect of off-axis neutral beam injection (NBI) on the resistive wall mode (RWM) stability, evaluated by means of active MHD spectroscopy. This work is focused on new modeling efforts aimed at investigating the role of kinetic damping in the stabilization of the RWM. In DIII-D experiments, the latter is affected by the changes in the fast ion distribution, due to varying on- and off-axis beam combinations used to sustain the plasma current. The MARS code is used to evaluate the ideal stability and the predicted plasma response using modeled experimental equilibria, which are compared to experimental results. Results on pressure, frequency and plasma rotation scans are presented, comparing equilibria with constant beta, and different fractions of off-axis NBI power. Comparison of the kinetic damping model to experiment will shed light on the role of fast ions in the stability of the RWM at moderate to high beta plasmas.

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