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Stability Analysis of Resistive Wall Mode in Rotating High-beta Plasmas in DIII-D[1] V.A. SVIDZINSKI, Y. IN, J.S. KIM, FAR-TECH, Inc., M.S. CHU, GA, Y.Q. LIU, UKAEA, DIII-D RWM PHYSICS TEAM — Stability of resistive wall modes (RWM) in rotating high beta DIII-D discharges is analyzed using the MARS-F code. The modes are calculated in axisymmetric toroidal equilibrium using the MHD plasma model with kinetic damping effects. RWM are analyzed for different spacing between the resistive wall and the plasma boundary and for different toroidal rotation profiles. Sensitivity study of the mode's stability on the plasma edge q-profile is made by varying both the edge current profile and the proximity of the plasma boundary to the real X-point geometry. The importance of the edge modeling on accurate RWM stability analysis is revisited. Scans of the mode's growth rate and frequency are made in these settings, and the mode's structure is explored. Quasilinear toroidal torque driven by $j \times B$ force due to current and magnetic field perturbations in the RWM is estimated and compared with the experimental estimate of the total toroidal torque on plasma. The dependencies of the RWM growth rate and frequency on the stability and torque parameters are presented.

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