Abstract Submitted
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**Modeling the effects of plasma rotation on RWM stability in high current and high $\beta_N$ DIII-D plasmas**[1] F. TURCO, J.M. HANSON, G.A. NAVRATIL, Columbia U., A.D. TURNBULL, C. PAZ-SOLDAN, GA — Operation at ITER relevant $q_{95}$ ~3 and torque (<1 Nm) is challenging, despite the moderate $\beta_N$ values (30-40% below the no-wall limit). Measurements obtained with active MHD spectroscopy in ITER baseline discharges in DIII-D show a large increase in the n=1 plasma response to a low frequency applied field, when the rotation decreases to <10 krad/s. This increased plasma response, along with an abrupt change in the response phase, usually indicates the approach to an ideal stability limit, despite the low $\beta_N < \beta_{N,nowall}$. Modeling with the MARS-K code allows us to test the hypothesis that non-ideal effects become important for RWM stability at very low rotation. Initial modeling results reproduce the high to moderate rotation measurements correctly when collisionality and drift kinetic effects are included, but the code does not predict the rise in amplitude and change in phase at low rotation. These results will be compared to rotation scans at higher $\beta_N > \beta_{N,nowall}$, to complement the model validation for ITER stability predictions.

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