Abstract Submitted
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Comparison of RWM Stabilization Strategies in DIII-D[1] S. YANG, E. SCHUSTER, Lehigh University, D.A. HUMPHREYS, M.L. WALKER, General Atomics, Y. IN, J.S. KIM, FAR-TECH, Inc. — One of the major non-axisymmetric instabilities under study in the DIII-D tokamak is the resistive wall mode (RWM), a form of plasma kink instability whose growth rate is moderated by the influence of a resistive wall. The FAR-TECH/General Atomics RWM dynamic model represents the plasma surface as a toroidal current sheet and represents the wall using an eigenmode approach. This dynamic model is used for the design of model-based controllers that have the potential of outperforming present proportional-derivative (PD) controllers. We report on validation of this dynamic model, a required step before implementation of any model-based controller in the DIII-D plasma control system. In addition, simulation results are presented comparing the performance of advanced controllers synthesized using the validated dynamic model and present non-model-based PD controllers.

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S. Yang
Lehigh University

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