Abstract Submitted
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Progress in theoretical and numerical modeling of RF/MHD coupling using NIMROD[1] THOMAS G. JENKINS, DALTON D. SCHNACK, CHRIS C. HEGNA, JAMES D. CALLEN, CARL R. SOVINEC, University of Wisconsin-Madison, ERIC D. HELD, JEONG-YOUNG JI, Utah State University, SCOTT E. KRUGER, Tech-X Corporation — Preliminary work relevant to the development of a general framework for the self-consistent inclusion of RF effects in fluid codes is presented; specifically, the stabilization of neoclassical and conventional tearing modes by electron cyclotron current drive is considered. For this particular problem, the effects of the RF drive can be formally captured by a quasilinear diffusion operator which enters the fluid equations on the same footing as the collision operator. Furthermore, a Chapman-Enskog-like method can be used to determine the consequent effects of the RF drive on the fluid closures for the parallel heat flow and stress. We summarize our recent research along these lines and discuss issues relevant to its implementation in the NIMROD code.

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