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Towards Multiscale Interactions Between Tearing Modes and Microturbulence Z.R. WILLIAMS, M.J. PUESCHEL, P.W. TERRY, University of Wisconsin, Madison — Work on the Madison Symmetric Torus Reversed-Field Pinch (RFP) has shown that large-scale tearing modes present in standard operation are highly detrimental to confinement. These tearing modes, even when reduced in improved confinement regimes of operation, significantly affect zonal flow activity and play a large role in setting microturbulent-induced transport levels. Previous gyrokinetic work has shown that a small but finite tearing fluctuation amplitude is necessary to produce transport values in agreement with experimental observation. This has previously been implemented via an ad-hoc, constant-in-time $A_{\|}$ perturbation. This work details self-consistent modeling of tearing fluctuations in the RFP using the GENE code via the inclusion of a current gradient drive incorporated into the background distribution function. Tearing mode growth rates calculated from gyrokinetic simulations are benchmarked with results from fluid theory. Additionally, first results from multiscale GENE simulations describing tearing mode interactions with RFP microturbulence are presented. This work is supported by the U.S. Department of Energy, Grant No. DE-FG02-85ER-53121.

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