Abstract Submitted
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Effect of asymmetric magnetic islands on profiles, flows, turbulence and transport in nonlinear gyrokinetic simulations ALEJANDRO BANON NAVARRO, LASZLO BARDOCZI, TROY CARTER, FRANK JENKO, TERRY RHODES, University of California, Los Angeles — Neoclassical Tearing Modes (NTMs) are a major impediment in the development of operating scenarios of present toroidal fusion devices. We study the effect of radially asymmetric magnetic islands on profiles, flows, turbulence and transport via nonlinear gyrokinetic simulations with the GENE code for the first time. Gradients, turbulence as well as cross-field transport levels progressively decrease at the O-point as the island width is increased in qualitative agreement with recent DIII-D experiments [1]. The island asymmetry plays a key role in the strength of perpendicular shear flows developing just outside the island separatrices. The effect of these shear flows on turbulent structures entering the island interior as well as their effect on cross-field transport and NTM dynamics are discussed.
[1] L. Bardóczi *et al*, PRL **116** 215001 (2016)

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