

Abstract Submitted
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Detailed drive balance for NTMs on the MAST tokamak¹ JACK SNAPE, KIERAN GIBSON, THOMAS O’GORMAN, HOWARD WILSON, University of York, MAST TEAM² — The neoclassical tearing mode (NTM) is a performance limiting instability for tokamaks. Though well established, many uncertainties remain in the modified Rutherford equation for NTM evolution. We build on previous work [1,2], focussing on 2/1 NTMs (the most detrimental) and making use of a large suite of diagnostics, including upgraded Thomson scattering and charge exchange systems. Novel diagnostic triggering techniques are used to capture temperature and density profiles at specific NTM phases and amplitudes. Using this data as an input for the Fitzpatrick transport model we directly measure the transport threshold width [2], usually obtained by a simple heuristic formula. We extend this model to include the asymmetric nature of the NTMs that are observed on MAST. We combine these measurements with information from equilibrium codes and present a detailed drive balance calculation to determine the relative significance of different terms in the Rutherford equation.

[1] R J Buttery et al, PRL, 88 (2002) 125005

[2] K J Gibson et al, PPCF, 52 (2010) 124041

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