

Abstract Submitted
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Linear Stability of the Slab Micro-Tearing Mode With a More Comprehensive Conductivity Model¹ JOEL LARAKERS, RICHARD HAZELTINE, SWADESH MAHAJAN, University of Texas at Austin: Institute of Fusion Studies — Gyrokinetic simulations have built a strong case that the micro-tearing mode (MTM) may be the principal instability responsible for the observed magnetic fluctuations in the pedestal region of an H-mode tokamak. To aid this development, we revisit and improve the semi-analytic studies of the linear stability of the MTM in slab geometry, performed 40 years ago. These former studies used two simplifying approximations: (i) Electron-electron collisions are neglected (ii) The mode width does not sample the structure of the profiles. In this study, we do not make these assumptions. We begin by describing a new comprehensive conductivity model derived from kinetic theory including the full Fokker Plank collision operator. The MTM electromagnetic equations are solved with this new conductivity and the stability is studied with pedestal features in mind.

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Joel Larakers
University of Texas at Austin

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