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## Maximum-J properties for finite-β collisionless microinstabilities in general geometry

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Within the gyrokinetic formalism [1-2], we present the equations for an explicit treatment of the electromagnetic version of the collisionless Universal/Trapped-Electron, and Microtearing modes, in general geometry. The gradient of the plasma, the ratio of kinetic to magnetic pressure, is taken to be small enough to avoid perturbations of the magnetic field strength [3]. We highlight the role of trapped electrons in the resonant destabilization, or damping, via electromagnetic corrections to ideal Ohms's law, for electron-temperaturegradient driven modes whose frequency relates to the bounce-averaged electron curvature drift. We then investigate the stability properties of maximum-J devices [4] (where J is the second adiabatic invariant) at finite , that is, in the regime in which the maximum-J condition is more likely to be satisfied. Nonlinear energetic arguments will also be given.

References:

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[3] A. Zocco, P. Helander, and J. W. Connor Plasma Phys. Control. Fusion 57 085003 (2015)

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