

Abstract Submitted
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Energetic ion effects on tearing mode stability in tokamaks: magnetic shear and beta are key¹ D.P. BRENNAN, Princeton University, C. AK-CAY, Tibbar Plasma Technologies, Incorporated, C.C. KIM, SLS2 Consulting, J.M. FINN, Tibbar Plasma Technologies, Incorporated — Simulations of the effect of a slowing down distribution of energetic ions on the onset of resistive MHD instabilities are presented where the ions can either stabilize or destabilize disruptive tearing modes, depending on the magnetic shear in the core. The strength of the effect depends on the fraction of beta, the ratio of kinetic energy to magnetic energy, that is in the energetic ions. Two cases are compared, one with monotonic shear throughout the profile ($q_{\min} = 1.1$) and one with reversed shear in the core ($q_{\min} = 1.3$). Outside of the reversal surface the equilibrium profiles are nearly identical between the two cases. The drive from energetic ions is stabilizing in monotonic shear and destabilizing in reversed shear, consistent with previous theory.

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