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**Effects of Energetic Beam Ions on Stability Properties of Field-Reversed Configurations**[1] E.V. BELOVA, R.C. DAVIDSON, PPPL — Stability properties of prolate Field-Reversed Configurations (FRCs) have been studied numerically using the nonlinear hybrid and MHD simulation code HYM, including the effects of energetic neutral beam ions. It is shown that the beam ions can have a stabilizing or destabilizing effect on the global modes in FRCs, depending on the toroidal mode number n, the mode polarization, and the beam parameters. Linear simulation results are compared with a qualitative analysis based on a generalized energy principle. Nonlinear simulations are used to study the nonlinear saturation of the beam-driven instabilities due to nonlinear changes in the distribution function of the beam ions.

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