

What is the “Beta-Induced Alfvén Eigenmode?”

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ABSTRACT. An instability with a lower frequency than the toroidicity-induced Alfvén eigenmode was initially identified as a beta-induced Alfvén eigenmode (BAE). Instabilities with the characteristic spectral features of this “BAE” are observed in a wide variety of tokamak plasmas, including plasmas with negative magnetic shear. These modes are destabilized by circulating beam ions and they transport circulating beam ions from the plasma core. The frequency scalings of these “BAEs” are compared to theoretical predictions for Alfvén modes, kinetic ballooning modes, ion thermal velocity modes, and energetic particle modes. None of these simple theories match the data.

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