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Analysis of Beam-Driven "BAE" Modes,[1] E. RUSKOV, W.W. HEIDBRINK, M.A. VANZEELAND, *University of California, Irvine* — Instabilities that resemble the "beta-induced Alfvén eigenmodes" (BAE modes) seen in low-field high-beta DIII-D plasmas[2] are observed under many different conditions in DIII–D and TFTR. An IDL-based graphical user interface was developed for rapid analysis of a large number ($\sim$ 200 DIII–D and 7 TFTR) of cases. It provides visual information about the Alfvén continuum and gap structure, with overlaid Doppler corrected measured mode frequencies and the expected frequencies of kinetic ballooning modes (KBM) ω_{*pi}. Preliminary analysis suggests that the experimental "BAE" instability is really a hybrid mode with a frequency that depends upon both the Alfvén speed and the KBM frequency. Comparison of discharges with negative, weak, and positive shear elucidates the dependence on ballooning stability and on the Alfvén gap structure. The importance of the finite thermal ion temperature gradient ($\eta_{\rm i}$) in coupling kinetic ballooning modes to low-frequency Alfvén eigenmodes is also explored. Analysis of the neutron emission shows that the instabilities degrade confinement.

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[2]W.W. Heidbrink *et al.*, Phys. Rev. Lett. **71** (1993) 855.

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