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The Effect of the Beam-Ion Distribution Function on Energetic Particle Modes¹ B.H. HYUN, W.W. HEIDBRINK, University of California, Irvine, N.N. GORELENKOV, Princeton Plasma Physics Laboratory — During beam injection in the DIII-D tokamak, modes with lower frequencies than expected for toroidicity-induced Alfvén eigenmodes (TAE) are often observed. A previous study with the nonperturbative high- n stability code HINST [1] suggests that the instabilities are two types of energetic particle modes known as the resonant TAE and the resonant kinetic ballooning mode [2]. In this study, the stability of discharges with nearly identical plasma parameters but different beam distribution functions are compared to test the hypothesis that the observed instabilities are energetic particle modes. Experimentally, the distribution function is altered by selecting different angles of beam injection and different injection voltages. The theoretical stability is calculated with HINST.

[1] N.N. Gorelenkov et al., Phys. Plasmas **5**, 3389 (1998).

[2] N.N. Gorelenkov and W.W. Heidbrink, Nucl. Fusion **42**, 150 (2002).

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Prefer Oral Session
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