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Development and Validation of a Critical Gradient Energetic Particle Driven Alfvén Eigenmode Transport Model for DIII-D Tilted Neutral Beam Experiments[1] R.E. WALTZ, General Atomics, E.M. BASS, UCSD — Recent experiments on DIII-D with tilted neutral beam injection (NBI), which significantly vary the beam energetic particle (EP) source profiles, have provided strong evidence that unstable Alfvén eigenmodes (AE) drive stiff EP transport at a critical EP density gradient [1]. We hope to identify the critical gradient with the condition that the maximum local AE growth rate falls to the local ion temperature gradient (ITG)/trapped electron mode (TEM) rate at the same low toroidal mode number. This condition was supported by early nonlinear local GYRO simulations [2] and more is more optimistic than stiff EP transport at the AE marginal stability gradient used in a recent ITER projection of AE driven alpha confinement losses [3]. The AE and ITG/TEM growth rates are from GYRO with comparison of Maxwellian and slowing down beam-like EP distributions.

[1] W.W. Heidbrink, et al., Nucl. Fusion **53**, 093006 (2013).
[2] E.M. Bass and R.E. Waltz, Phys. Plasmas **17**, 112319 (2010).
[3] E.M. Bass, Bull. Am. Phys. Soc. **58**, 168 (2013).

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