

# The effect of the fast-ion profile on Alfvén eigenmode stability

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**Abstract.** Different combinations of on-axis and off-axis neutral beams are injected into DIII-D plasmas that are unstable to reversed shear Alfvén eigenmodes (RSAE) and toroidal Alfvén eigenmodes (TAE). The variations alter the classically expected fast-ion gradient  $\nabla\beta_f$  in the plasma interior. Off-axis injection reduces the amplitude of RSAE activity an order of magnitude. Core TAEs are also strongly stabilized. In contrast, at larger minor radius, the fast-ion gradient is similar for on- and off-axis injection and switching the angle of injection has a weaker effect on the stability of TAEs. The average mode amplitude correlates strongly with the classically expected profile but the measured profile relaxes to similar values independent of the fraction of off-axis beams. The observations agree qualitatively with a “critical gradient” model of fast-ion transport.

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