

Abstract Submitted
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Alfven Eigenmode Control in DIII-D.¹ W. HU, ASIPP, E. OLOFSSON, A. WELANDER, M. VAN ZEELAND, C. COLLINS, General Atomics, W. HEIDBRINK, UCI — Alfven eigenmodes (AE) driven by fast ions from neutral beam and ion cyclotron heating are common in present day tokamak plasmas and are expected to be destabilized by alpha particles in future burning plasma experiments. Because these waves have been shown to cause loss and redistribution of fast ions which can impact plasma performance and potentially device integrity, developing control techniques for AEs is of paramount importance. In the DIII-D plasma control system, spectral analysis of real-time ECE data is used as a monitor of AE amplitude, frequency, and location. These values are then used for feedback control of the neutral beam power to control Alfven waves and reduce fast ion loss. This work describes tests of AE control experiments in the current ramp up phase, during which multiple Alfven eigenmodes are typically unstable and fast ion confinement is degraded significantly. Comparisons of neutron emission and confined fast ion profiles with and without active AE control will be made.

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