

Reversed shear Alfvén eigenmode stabilization by localized electron cyclotron heating

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Abstract.

Reversed shear Alfvén eigenmode (RSAE) activity in DIII-D is stabilized by electron cyclotron heating applied near the minimum of the magnetic safety factor (q_{min}) in neutral beam heated discharges with reversed magnetic shear. The degree of RSAE stabilization, fast ion density, and the volume averaged neutron production (S_n) are highly dependent on electron cyclotron heating (ECH) deposition location relative to q_{min} . While discharges with ECH stabilization of RSAEs have higher S_n and more peaked fast ion profiles than discharges with significant RSAE activity, neutron production remains strongly reduced (up to 60% relative to TRANSP predictions assuming classical fast-ion transport) even when RSAEs are stabilized.