

On the roles of direct feedback and error field correction in stabilizing resistive-wall modes

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Abstract

Active feedback control in the DIII-D tokamak has fully stabilized the current-driven ideal kink resistive-wall mode (RWM). While complete stabilization is known to require both low frequency error field correction (EFC) and high frequency feedback, unambiguous identification has been made about the distinctive role of each in a fully feedback-stabilized discharge. Specifically, the role of direct RWM feedback, which nullifies the RWM perturbation in a time scale faster than the mode growth time, cannot be replaced by low frequency EFC, which minimizes the lack of axisymmetry of external magnetic fields.

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