Abstract Submitted
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Runaway Electrons in the Presence of MHD Instabilities in DIII-D[1] M. KORNBLUTH, Yeshiva Univ., D.A. HUMPHREYS, A.W. HYATT, A.D. TURNBULL, A.S. WELANDER, General Atomics, N. COMMAUX, T.C. JERNIGAN, ORNL, E.M. HOLLMANN, A.N. JAMES, J.H. YU, UCSD — Runaway electrons (REs) accelerated from a seed nonthermal electron population during tokamak disruptions can damage plasma-facing components. Recent experiments at DIII-D correlate post-disruption RE current and pre-disruption magnetic topology. Diverted plasmas rarely produce REs, while limited plasmas almost invariably do. Applying an external nonaxisymmetric magnetic field before the thermal quench significantly reduces RE likelihood. These distinctions may result from variations in the MHD instabilities assumed to deconfine the seed electrons during the thermal quench, averting REs. We report results of linear MHD stability analysis correlating the spectrum of eigenmodes with varying RE current. Although the resistive modes that follow ideal instability growth cause reconnection and RE loss, correlation of widely varying ideal MHD eigenspectra with RE current indicates differences in the resistive phase as well.

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