

Abstract Submitted
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Disruption Mitigation of Plasmas with Locked Modes¹ R. GRANETZ, A. TINGUELY, I. FAUST, T. GOLFINOPOULOS, A. KUANG, MIT Plasma Science and Fusion Center, M.L. REINKE, ORNL — Disruption mitigation using massive gas injection (MGI) has been studied in a number of tokamaks, and has been shown to be very successful. But these studies have been done by using MGI to trigger disruptions of stable plasmas. In actuality, active disruption mitigation in ITER will be used on plasmas that are experiencing warning signs of an impending disruption, such as NTMs, locked modes, etc. ITER has requested that experiments using MGI on such plasmas be carried out to gauge its effectiveness compared to MGI on stable plasmas. On Alcator C-Mod, we use a set of external coils to apply $m=2/n=1$ error fields in order to controllably generate locked modes. MGI has been used on these MHD-unstable plasmas, and compared to MGI on similar plasmas without locked modes. We find no significant differences in any mitigation-relevant parameters, including fraction of energy converted to radiation, energy deposition to the divertor, extent of vertical motion, halo current, $n=1$ MHD activity, or degree of Prad asymmetry. We conclude that MGI works equally well on plasmas with and without locked modes.

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