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Disruption Mitigation Experiments with Two Gas Jets on Alcator C-Mod, and Implications for ITER[1] R.S. GRANETZ, G.M. OLYNYK, M.L. REINKE, D.G. WHYTE, J.L. TERRY, B.L. LIPSCHULTZ, MIT Plasma Science and Fusion Center, S.K. COMBS, ORNL — Until recently, all disruption mitigation experiments with massive gas injection have used one injection location at a time, and measurements have shown that the resulting radiated power is often toroidally asymmetric, which could lead to melting of first wall surfaces in ITER. Therefore, the proposed ITER MGI system has multiple gas jets distributed around the torus, but the effectiveness of this needs to be demonstrated on current machines. On Alcator C-Mod, a 2nd gas jet has been installed 154° around the torus from the existing gas jet. The hardware components of both gas jets are nominally identical. A toroidally-distributed set of six AXUV detectors has been added to better measure the toroidal peaking factor (TPF) of the radiated power. Experiments have been carried out to characterize the effect of two jets on the radiation TPF by varying the relative timing between the firing of the gas jets shot-to-shot. Measurements of the radiation asymmetry during the pre-thermal quench, thermal quench, and current quench phases will be presented, as well as correlations with the growth rate of n=1 MHD modes. It will also be shown that very slight differences in hardware between the two gas jet systems are important. Implications for the ITER MGI system will be discussed.

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