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Simulations of gas jet disruption mitigation V.A. IZZO, R.S. GRANETZ, MIT, D.G. WHYTE, M. BAKHTIARI, Univ. of Wisconsin, Madison — MHD simulations of Alcator C-Mod [V.A Izzo, *Nucl. Fusion* **46** (2006) 541] have shown that shallow penetration of a high pressure gas jet can lead to a thermal quench of the plasma triggered by growth of an m=2/n=1 instability. Further investigation of this disruption mitigation strategy is carried out through simulations that include a more sophisticated gas jet model and accurate atomic/radiation physics. We seek both to produce a predictive code applicable beyond C-Mod, and to answer specific questions pertaining to the C-Mod experiments, such as the relative importance of impurity mixing and heat transport, the mixing efficiency of low vs. high Z impurities, and the relationship between radiation efficiency, jet penetration speed, and MHD onset. The code deposits neutrals on the grid and tracks each charge state as impurities ionize, recombine, and radiate. Plasma density and temperature are self-consistently evolved, and impurity ions are advected along with the bulk deuterium plasma. Both short simulations at the true C-Mod parameters and longer simulations at reduced Lundquist number are carried out for argon and helium. Preliminary results are presented.

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