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[] Theory [X] Experiment

ELM Triggering Dependence on Deuterium Pellet Size on DIII-D,* L.R. Baylor, N. Commaux, S.J. Meitner, *ORNL*; C.J. Lasnier, M.E. Fenstermacher, S.L. Allen, *LLNL*; A.W. Leonard, P.B. Parks, *GA*; R.A. Moyer, *UCSD* – The triggering of small ELMs by pellet injection has been demonstrated as a method to prevent large ELMs that can erode plasma facing components [1]. Small deuterium pellets < 1mm in size have been shown to reliably trigger ELMs on the DIII-D tokamak in the ITER like scenario plasmas. A variation in pellet size and speed was used to determine the minimum pellet size needed to trigger ELMs as a function of edge pedestal pressure. Pellets < 0.8 mm in size were found to be insufficient to trigger ELMs. These results show smaller pellets than predicted by nonlinear MHD simulations can destabilize high-n ballooning modes from a local pressure perturbation well in excess of the pedestal pressure [2]. The implications of these results for pellet ELM mitigation and the design of the pellet injection system for ITER will be discussed.

[1] L.R. Baylor *et al.*, *Phys. Rev. Lett.* 245001 (2013)

[2] S. Futatani *et al.*, *Nucl. Fusion.* **54**, 073008 (2014).

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