

Abstract Submitted
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ELM Triggering Dependence on Deuterium Pellet Size on DIII-D¹ 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 < 1 mm 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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