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Category Number and Subject: 5.6.2. DIII-D Tokamak

[ ] Theory [X] Experiment

Pellet ELM Pacing Results from DIII-D,* L.R. Baylor, T.C. Jernigan, N. Commaux, *Oak Ridge National Laboratory*; T.E. Evans, T.H. Osborne, P.B. Parks, E.J. Strait, *General Atomics*; M.E. Fenstermacher, C.J. Lasnier, *LLNL*; R.A. Moyer, J.H. Yu, *UCSD* –
Small deuterium pellets have been injected into DIII-D H-mode plasmas from the low field side to trigger ELMs at a higher frequency than natural occurring 5 Hz ELMs. The resulting 25 Hz ELM frequency leads to smaller stored energy loss per ELM by a factor of 4 and reduced peak heat flux to the divertor by a factor of 2.5. The pellets result in no increase in plasma density with a modest ~10% decrease in energy confinement compared to an identical non-pellet discharge. Fast camera images of the pellet injection event show that a single filament of plasma becomes visible at the front edge of the pellet perturbation as the pellet reaches the separatrix. The filament is rapidly ejected during the ELM release and hits the vessel wall locally near the pellet injection location within 200 microseconds. Implications for controlled ELM triggering on ITER will be discussed.

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