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Modifications of Nonlinear interactions in the Pedestal leading to ELM onset_[1] AHMED DIALLO, JULIEN DOMINSKI, Princeton Plasma Physics Laboratory, MAYUR SHARMA, Watchung Hills Regional High School, 108 Stirling Rd, Warren, NJ, ALESSANDRO BORTOLON, Princeton Plasma Physics Laboratory, MATTHIAS KNOLKER, General Atomics, San Diego CA, KSHITSH BARADA, University of California, Los Angeles,, FLORIAN LAGGNER, BRIAN GRIERSON, Princeton Plasma Physics Laboratory, GEORGE MCKEE, University of Wisconsin, Madison, WI — Edge Localized Modes (ELM) are bursty relaxations of the pedestal. The nonlinear mechanism describing the onset of these bursty relaxations remains elusive. We investigate the relationship between the occurrence of ELMs and the associated inter-ELM pedestal localized modes on DIII-D. Specifically, we will discuss cases where NBI-induced pedestal perturbations modify the nonlinear interactions that systematically lead the ELM onset. We report analysis of the effects of the NBI (at fixed applied counter-torque) on the inter-ELM fluctuations, the ELM onset, and accordingly on the ELM frequency. First, we observe that single ELMs occur at multiples of the beam modulation periods. Second, we find that the NBI (low frequency modulation) leads to the bifurcation of pedestal localized low frequency modes (˜50 kHz), consistent with the alteration of the mode's drive. Third, we identified using BES a beam-induced density perturbation localized to the pedestal leading to the ELM onset. Connections of these three observations with the ELM onset will be proposed, and similarities with other actuators will also be discussed.

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Ahmed Diallo
Princeton Plasma Physics Laboratory

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