

Abstract Submitted  
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**ELM Destabilization by Magnetic Perturbations at NSTX<sup>1</sup>** J. CANIK, R. MAINGI, ORNL, T. EVANS, T. OSBORNE, GA, S.P. GERHARDT, J.-K. PARK, PPPL, S. SABBAGH, Columbia U., Z. UNTERBERG, ORISE/ORNL — The destabilization of edge-localized modes (ELMs) by the application of magnetic perturbations using external coils has been observed on the National Spherical Torus Experiment. The perturbation is applied using a set of midplane coils external to the vacuum vessel, in an  $n=3$  configuration. When the external field is applied during an otherwise ELM-free period of a discharge, ELMs begin within 50 ms, with an apparent threshold perturbation level necessary for the triggering to occur. Although calculations predict an ergodization of the edge magnetic field due to the perturbation, no strong changes in the pedestal temperature and density profile are observed. However, the toroidal rotation is reduced due to braking by the applied field. The effect is dependent on plasma shape, with triggered ELMs being larger and less frequent at lower elongation. This magnetic triggering has been used as an ELM-pacing technique to reduce impurity accumulation in the high-confinement, ELM-free H-modes that occur with lithium evaporation.

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