

Abstract Submitted
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Experimental studies of TAE dynamics and induced fast ion losses on NSTX¹ M. PODESTA, W.W. HEIDBRINK, D. LIU, E. RUSKOV, (UCI), R.E. BELL, D.S. DARROW, E.D. FREDRICKSON, N.N. GORELENKOV, B.P. LEBLANC, (PPPL), N.A. CROCKER, S. KUBOTA, (UCLA) — The dynamics of toroidicity-induced Alfvén eigenmodes (TAEs) is studied in neutral beam heated NSTX plasmas. The results from similar discharges conducted in helium and deuterium plasmas are compared. Emphasis is put on investigating the transition of the modes from a quasi-stationary behavior into a phase characterized by frequency chirps and amplitude bursts as the injected neutral beam power is increased. The fast ion transport associated with bursting TAE activity is measured through Fast Ion D-Alpha spectroscopic diagnostics, neutral particle analyzers, neutron rate measurements and a fast ion loss probe. In particular, drops of the fast ion profile and neutron rate on time scales of ~ 1 ms are observed during so called *TAE avalanches*, i.e. large bursting events accompanied by a frequency down-chirp which involve multiple TAEs.

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