

Abstract Submitted
for the DPP14 Meeting of
The American Physical Society

Effects of TAE Avalanches on the neutral beam driven current profile and fast ion loss in NSTX and NSTX-U plasmas¹ DOUGLASS DARROW, PPPL, ALESSANDRO BORTOLON, Univ. Tenn. Knoxville, NEAL CROCKER, UCLA, ERIC FREDRICKSON, NIKOLAI GORELENKOV, MARINA GORELENKOVA, GERRIT KRAMER, PPPL, SHIGEYUKI KUBOTA, UCLA, MARIO PODESTA, ROSCOE WHITE, PPPL — Strong bursts of TAEs with multiple n numbers present, termed TAE avalanches, are observed in NSTX plasmas, including early in the discharge, when the plasma current is being ramped up. These avalanches cause radial redistribution, slowing down, and loss of beam ions from the plasma. Losses are often particularly pronounced during these events. All of these changes in the beam ion distribution can affect the beam driven current profile. Measurements and modeling of the beam ion population and driven currents in NSTX, using the ORBIT and SPIRAL codes will be compared, including the effects of avalanches and associated MHD activity during the current ramp up phase. In addition, since NSTX-U will utilize additional neutral beams with different orientations from the set on NSTX, modeling of the effects of avalanches on the distribution of beam ions and associated beam driven current from the new beam lines will also be discussed.

¹This work supported by US DoE contract DE-ACO2-09CH11466

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Date submitted: 11 Jul 2014

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