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The dependence of discharge performance on pre-discharge lithium evaporation in high triangularity H-mode discharges in NSTX[1]
R. MAINGI, S.M. KAYE, PPPL, NSTX TEAM — Lithium wall conditioning on graphite plasma facing components has been shown to reduce recycling and edge transport [1], improve energy confinement, and suppress edge localized modes in the NSTX. These benefits increased nearly continuously with the amount of pre-discharge lithium evaporation in medium triangularity discharges [2-5], consistent with cross-field transport increasing with collisionality [6]. Here we show similar results for a comparable dataset with increasing pre-discharge lithium evaporation in high triangularity, high performance discharges in NSTX. We observed a nearly monotonic reduction in recycling, neutral pressure, and increase in H-mode confinement factor with increasing evaporation. The ELM frequency was clearly reduced with increasing lithium, although complete ELM-free operation was not observed in this particular sequence. This suggests that the benefits of lithium conditioning should also apply to the highly shaped plasmas planned in NSTX-U. Comparisons between the high and (previously analyzed) medium triangularity boundary shapes will be presented.

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[6] S.M. Kaye, *et al. Nucl. Fusion* **53,** 063005 (2013).

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