Abstract Submitted
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ELM elimination in high triangularity discharges as a function of Lithium dose in NSTX[1] RAJESH MAINGI, Princeton Plasma Physics Laboratory, JOHN CANIK, Oak Ridge National Laboratory, NSTX TEAM — ELMs were eliminated gradually with increasing lithium dose in NSTX high triangularity, high performance discharges, similar to results from medium triangularity discharges [1-4]. Analysis of the recycling and edge profiles was done with the SOLPS code to ascertain the divertor recycling coefficient with increasing Li pre-discharge deposition in highly shaped plasmas. The divertor peak heat flux, peak D-alpha intensity and measured upstream profiles of electron and ion density and temperature are used to constrain fits. Modeling indicates that the minimum divertor recycling coefficient at maximum pre-discharge lithium deposition is in the 0.85-0.90 range, and that the cross-field transport is strongly induced in a region just inside the separatrix, radially inward of the recycling source deposition region. Edge stability analysis indicates that the profile changes correlated with lithium conditioning increase the current-driven kink/peeling mode stability limit, allowing access to improved stability.

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[3] D.P. Boyle, et. al., Plasma Phys. Contr. Fusion 53 (2011) 105011
[4] R. Maingi, et. al., Nucl. Fusion 52 (2012) 083001

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