

Abstract Submitted
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Investigation of ELM magnetic precursors in NSTX discharges with and without lithium wall coatings¹ FREDERICK KELLY, Unaffiliated, ERIC FREDRICKSON, STEFAN GERHARDT, PPPL, RAJESH MAINGI, ORNL, JON MENARD, PPPL, STEVE SABBAGH, Columbia U., HIRO TAKAHASHI, PPPL, NSTX TEAM — The evolution of ELM magnetic precursors in a series of NSTX discharges without lithium and with increasing lithium deposition [1, 2] are examined. Data from the high-n Mirnov array was used to estimate the toroidal mode number (n) of the precursors. ELMs were observed to have $n=1$ and/or $n=2$ magnetic precursors with some delayed modes in the range from $n=3$ to $n=6$, which persist as the lithium coating is increased and ELMs become partially suppressed. The D-alpha signal of a few ELMs is preceded by a slow growing plateau period which appear to be dominated by $n=3$ to $n=6$ modes, however, $n=1$ and/or $n=2$ modes appear as precursors to the main ELM peak. The observed $n=1$ precursors may be evidence of SOL currents in NSTX, similar to those observed in DIII-D [3]. [1] R. Maingi, et al., 36th Eur. Phys. Soc. Conf. on Plasma Physics (Sofia, Bulgaria), P2.175. [2] R. Maingi, et al., Phys. Rev. Lett. (2009) at press. [3] H. Takahashi, et al., Nucl. Fusion 44 (2004) 1075.

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