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Study of the L-H transition using GPI in NSTX* A. DIALLO, PPPL, S. BANERJEE, IPR, India, S. ZWEBEN, PPPL — The study on a physical mechanism for the L-H transitions is still an active research area. The work presented here is motivated by recent results from Cziegler [1] on C-Mod that show that the time sequence of the L-H transition can be described by the peaking of the Reynolds work, then the collapse of the turbulence, and finally the rise of the diamagnetic electric field shear. In the present work, we apply and extend this analysis using the GPI data on NSTX. The studies focus on about 17 L-H transitions in Ohmic, RF, and NBI discharges. Using an orthogonal programming based particle image velocimetry [2], the GPI images are analyzed to determine the time resolved 2D flow field in the plasma edge of NSTX, assuming the turbulence motion follows the fluid flow. The 2D flow in the radial and vertical directions are used to compute the turbulent kinetic energy transfers in the framework of the K-epsilon model [3]. Detailed discussions of the analysis as well as the analysis of the time resolved Reynolds stress and its impact on turbulence for the set of discharges will be presented. Work supported by the US DoE under DE-AC02-09CH11466.

[1] Cziegler et al. PPCF, **56**075013 (2014)**;**
[2] Banerjee et al. RSI **86**, 033505 (2015);
[3] Manz et al., PoP **1**, 012309 (2012)

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