

Abstract Submitted
for the DPP16 Meeting of
The American Physical Society

Recent progress in understanding electron thermal transport in NSTX and NSTX-U¹ Y. REN, E. BELOVA, W. GUTTENFELDER, N. GORELENKOV, S.M. KAYE, E. MAZZUCATO, W.X. WANG, PPPL, K. TRITZ, JHU, R.E. BELL, B.P. LEBLANC, PPPL, C.W. DOMIER, UC-Davis, D.R. SMITH, UW-Madison, H. YUH, Nova Photonics, K.C. LEE, NFRI, THE NSTX-U TEAM TEAM — The National Spherical Torus eXperiment (NSTX) provides a unique laboratory for studying plasma instabilities and their relation to electron thermal transport due to its low toroidal field, high plasma beta, low aspect ratio and large ExB flow shear. Recently commissioned NSTX-Upgrade (NSTX-U) has doubled toroidal field, plasma current and NBI heating power, which allows it to reach new parameter regimes more relevant to future devices and to have new capabilities, e.g. modifying current and flow profiles. This upgrade makes it possible to make new turbulence measurements and to isolate/determine the regime of validity of a variety of instabilities in driving electron thermal transport. In addition, enhanced turbulence diagnostics measuring both large and small wavenumbers on NSTX-U will allow more detailed comparisons with nonlinear gyrokinetic simulations. We will present recent progress in understanding the roles of a variety of instabilities in driving electron thermal transport in NSTX and NSTX-U, and associated future plans for NSTX-U will also be presented.

¹The work is supported by DOE and computational resource is provided by NERSC.

Y. Ren
PPPL

Date submitted: 11 Jul 2016

Electronic form version 1.4