Abstract Submitted
for the DPP19 Meeting of
The American Physical Society

Statistical validation of anomalous transport Multi-Mode model for high beta and ITB tokamak scenarios in KSTAR[1] TARIQ RAFIQ, EUGENIO SCHUSTER, Lehigh University, ALEXEI PANKIN, Tech-X Corporation, JOHAN ANDERSON, JAN WEILAND, Chalmers University of Technology — The Multi-Mode anomalous transport model [1] is validated employing experimental data for superconducting KSTAR NBI heated tokamak discharges that represent a high beta poloidal, high beta normalized, and ITB long pulse scenarios. The Multi-Mode model computes the anomalous transport driven by the ITG, TEM, ETG, KBM, RBM, and PB modes. In addition, recent modification to the model allows the computation of the anomalous transport driven by the microtearing modes [2]. The validation study is carried out using integrated modeling simulations that employ the numerical PT-SOLVER in the TRANSP code and that utilizes the KSTAR experimental boundary and initial conditions. The equilibrium data is interpolated from EFIT reconstruction. NBI heating and current drive are obtained using NUBEAM. Neoclassical transport is calculated using the Chang-Hinton model. The predicted evolving temperature profiles are compared with the corresponding KSTAR experimental data. The comparison is quantified by calculating the RMS deviations and Offsets.
[1] T. Rafiq, *et al. Phys. Plasmas*, **20**, 032506, 2013. [2] T. Rafiq, *et al.* Phys. Plasmas **23**, 062507, 2016.

[1]Supported by US DoE Grant DE-SC0013977, DE-SC0010537, and DE-FG02-92ER54141.

Tariq Rafiq
Lehigh University

Date submitted: 27 Jun 2019 Electronic form version 1.4