Abstract Submitted
for the DPP20 Meeting of
The American Physical Society

Statistical Electron Transport Analysis during T_e Crash and Recovery Events[1] BINGZHE ZHAO, University of Texas at Austin, MAX E. ASUTIN COLLABORATION, CRAIG C. PETTY COLLABORATION — Large electron temperature crash and recovery events are observed in the outer core region in some DIII-D hybrid mode discharges with modulated NBI. Some characteristics of these events include an ELM-like T_e recovery curve and stationary density. A statistical analysis process is developed in order to investigate different transport properties in this scenario and potentially other scenarios with similar characteristics. The underlying physics model is the Braginskii energy conservation equation for electrons, which provides a connection between T_e, and temporal and spatial differentiations of T_e. Local transport properties can be statistically determined by fitting all T_{e-} related data, which is given by the ECE system, into the physics model. The work includes benchmarking of this analysis process with modulated electron cyclotron heating (MECH) discharges, which have similar characteristics in terms of electron temperature and density history, and the transport properties of MECH discharges are better understood in comparison with hybrid discharges. Events from MNBI hybrid discharges are analyzed with a similar process, and the results are compared with global power balance. .

[1]Work supported by US DOE under DE-FG02-97ER54415 and DE-FC02-04ER54698

Bingzhe Zhao
University of Texas at Austin

Date submitted: 23 Jun 2020 Electronic form version 1.4