

FIRST ANALYSIS OF THE UPDATED ITPA GLOBAL H-MODE CONFINEMENT DATABASE



- ITPA Global H-mode Confinement Database ongoing update:
 - Focus on ITER conditions
 - Expansion of parameter range and new variables
 - JET ITER-like wall (ILW): 627 new H-mode plasmas
 - ASDEX Upgrade (AUG) full W wall: 825 new H-mode points
 - DB5: 13,913 data points from 19 tokamaks
- Global confinement scaling is being studied using regression analysis:
 - Data selection criteria have been updated
 - Alternative regression techniques are being tested to address uncertainties and data weighting
 - Stepwise approach going from simple models (e.g. standard power law) to more complex/realistic models
- Single-device scalings:
 - Dependence on B_t , \bar{n}_e weakest in ITER-like devices
 - Power degradation weaker in full-metal devices
- Multi-machine scalings:
 - Vs. IPB98(y,2): stronger I_p scaling, weaker dependence on B_t , \bar{n}_e
 - Triangularity δ may have considerable influence on confinement

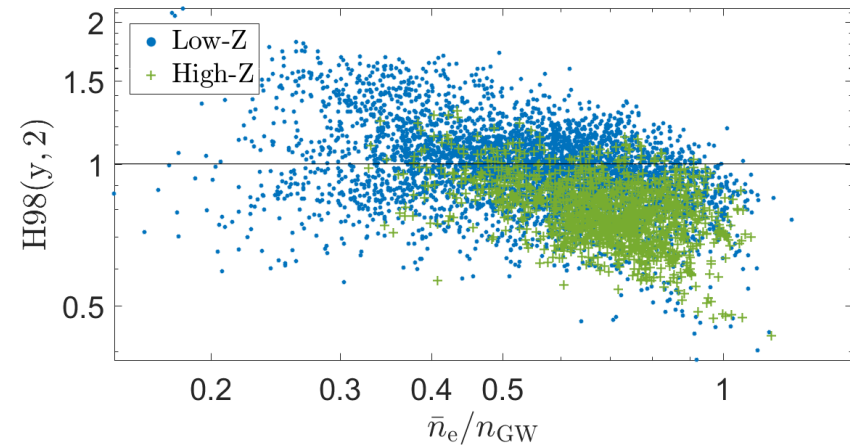


FIG. 1. $H98(y,2)$ in DB5 subselection vs. Greenwald fraction. Points from fully metallic devices (“high-Z”) are highlighted.

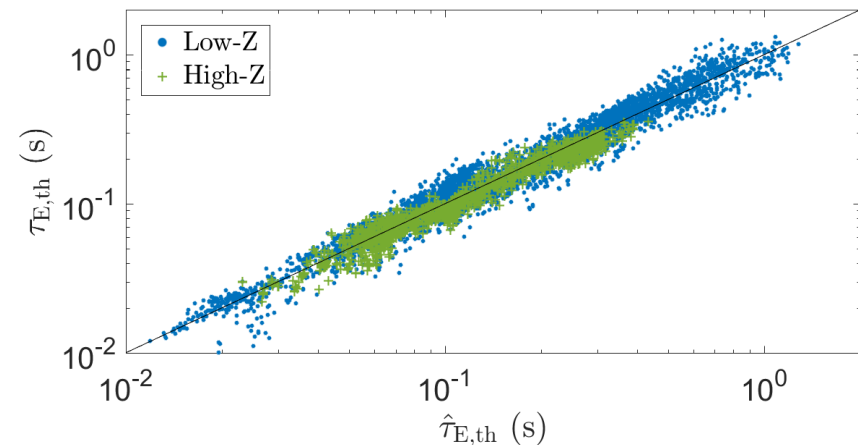


FIG. 2. Experimental $\tau_{E,th}$ vs. predictions $\hat{\tau}_{E,th}$ using least squares regression on DB5 subselection.