

# New High Performance “Super H-Mode” Regime Predicted by EPED, Observed on DIII-D

Snyder TH/2-2

- EPED model combines peeling-ballooning and KBM physics to predict pedestal height & width
  - Successfully tested on >300 cases, 5 devices
- Pedestal height prediction becomes multi-valued at high triangularity and high density
  - H-mode root at low pedestal pressure
  - Super H-mode root sits above at very high pressure (red line)
    - Accessible via dynamic density variation (arrow)
- Super H regime accessed on DIII-D
  - High pedestal and confinement
  - Record  $\beta_N$  with quiescent edge
- Prospect for improved fusion performance on ITER/DEMO ( $P_{fus} \sim p_{ped}^2$ )

EPED Prediction of Super H-Mode at High Triangularity

