3D Edge Transport Modeling Shows Linear MHD Solutions Do Not Simultaneously Match Pedestal and Divertor Conditions
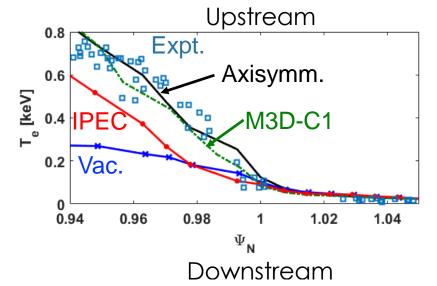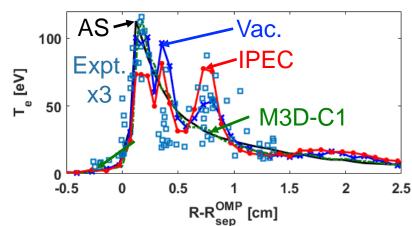
EMC3-EIRENE Energy Equation Solutions

- **Plasma response required to support measured pedestal gradient ➔**

  – Vacuum fields show too much stochasticity

  – Ideal MHD solution matches core gradient, but flattened near separatrix

- **Strong screening in extended MHD solutions removes downstream lobes and T_e peaking**

  – Results sensitive to edge rotation

  ✓ **No B-field model tested can explain pedestal and divertor data simultaneously**

Upstream

Downstream

DIII–D
NATIONAL FUSION FACILITY

OAK RIDGE
National Laboratory