

# The Role of Drifts and Radiating Species in Detached Divertor Operation at DIII-D

- A comprehensive experimental campaign at DIII-D has advanced understanding and modeling of the effects of drifts and radiating species in divertor discharges up to ITER relevant collisionality at the outboard separatrix

## 1. $\mathbf{E} \times \mathbf{B}$ drifts lead to in/out asymmetries, and shifts in radial profiles

- Revealed with unique 2D divertor Thomson scattering (DTS) on DIII-D
- Important factor for predicting detachment onset, and particle and heat fluxes

## 2. UEDGE modeling of H-mode discharges with full drifts achieved

- Confirms important role of radial and poloidal  $\mathbf{E} \times \mathbf{B}$  drifts for target asymmetries

## 3. SOLPS modeling of Helium discharges with divertor conditions matched to DTS reproduces experiment

- But upstream density is higher than experiment, suggesting role of parallel physics as well
- Radiation shortfall found in JET, ASDEX-U and DIII-D with matched upstream parameters

