

# Joint DIII-D/EAST research demonstrated active control of detachment compatible with improved core plasma

- **DIII-D: Integration of full detachment + ITB + ETB in high  $\beta_p$  scenario**
  - $T_{e,div} \leq 5\text{eV}$ ,  $H_{98} \sim 1.5$ ,  $\beta_N \sim 3$ ,  $\beta_p > 2$  and very low divertor particle flux
  - Excellent core-edge-divertor integration [L. Wang et al., Nature Commun. 12, 1365 (2021)]
- **EAST: A series of active detach. controllers compatible with H-mode**
  - $P_{rad}$  (2017),  $J_{sat}$  (2018),  $T_{e,div}$  (2019),  $T_{e,div} + P_{rad, X\text{-point}}$  (2019),  $T_{IR}$  (2019)
  - $T_{e,div} \sim 5\text{eV}$  &  $H_{98} > 1$  in standard H-mode, grassy ELMy H-mode, high  $\beta_p$  scenario

## EAST

- ITER-like W divertor
- RF heating
- Long pulse
- ...



## DIII-D

- High performance
- Control & Phys.
- Full diagnostics
- ...

**High  $\beta_p$  scenario: a promising candidate for ITER's steady-state operation**