SN-NTT is a possible solution for power and particle control as compared to D-shaped $\delta > 0$ tokamak with H-mode optimized for core confinement.

Reactor relevant configuration

- $R/a=9m/3m$, $k=1.8$, $\delta_x=-0.9$, low $\delta_u<0$
- $I_p=21MA$, $B=5.86T$
- Racetrack superconducting TF coils
- Flux tube expansion divertor +/-3MA
- 3GW power for $n_e=6.5x10^{19}m^{-3}$
- $\beta_N=2.1$

Assess negative D to solve power and particle exhaust problem!

- Edge stability $\rightarrow$ different ELM regime (MHD stability)
- Geometry of power handling area: larger $R_{div}$ $\rightarrow$ larger separatrix wetted
- Better confinement: $\delta < 0$ edge transport rather than core
  - Lower pedestal height but electron temperature gradient $R/L_{Te} \sim 10-12$ for $\beta_N \sim 3$ is compatible with core turbulence
  - Wider trapped particle free SOL
  - Technical merits: HFS ECCD, lower background magnetic field for internal PF coils, larger pumping conductance from divertor

Experimental proposals:
TCV, HL-2M, DIII-D

Experimental data from TCV #43872 at $t = 0.7$ and 1.8 s