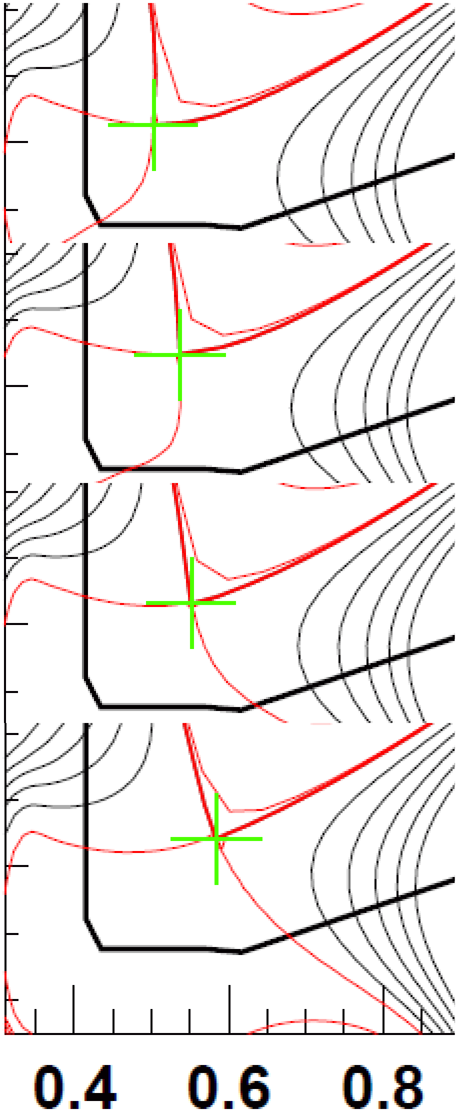
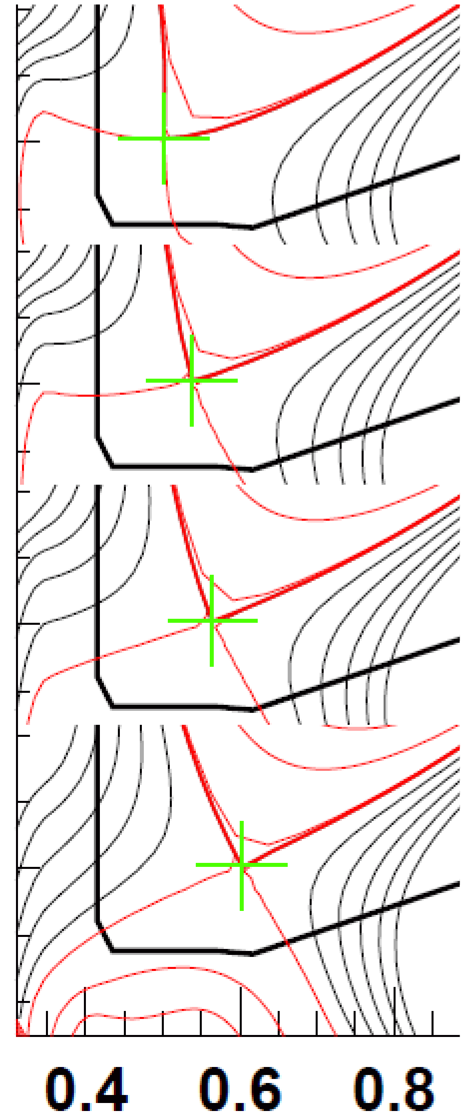
Divertor designs should aim to be compatible with boundary shapes most likely to be utilized in NSTX-U



Snowflake divertors

Standard divertors



- What is optimal radius for entrance to cryo-pump?
  - Estimate: R_{ent} = 0.7 to 0.85m
  - Should assess with SOLPS
- LLD on OBD could have large surface area for particle & power exhaust
  - Potentially less sensitive to strike-point radius

Assumptions, scans to perform

- 10MW NBI power for particle fueling = 20 Torr-l/s
- P=1mTorr at T_e=10.0eV → g~4cm, h~5cm, q~1MW/m^2
- Account for pressure drop from baffle entrance to cryo-pump
- Density range:
  - Highest core density: I_P = 2MA, $f_{Greenwald}$ = 1.0 → 2 × $10^{20}/m^3$
  - Lowest core density: I_P = 0.6MA, $f_{Greenwald}$ = 0.5 → 0.3 × $10^{20}/m^3$
  - Scan core n_e: 3, 7, 9, 12, 15, 20 × $10^{19}/m^3$
- Scan D and χ to match SOL width variation with I_P
  - Assume λ = 9mm / $I_P[MA]^{1.6}$
  - Scan I_P = 0.6, 0.8, 1, 1.2, 1.5, 2MA → λ = 20, 13, 9, 7, 5, 3mm
    - or choose λ = 18, 12, 9, 6, 3mm → I_P = 0.65, 0.85, 1, 1.3, 2MA
- Scan baffle length to vary radius of baffle/pump entrance:
  - $R_{entrance}$ = 0.7, 0.75, 0.8, 0.85m
- GEQDSK files & plots for 4 snowflake & 4 standard cases:

http://nstx.pppl.gov/DragNDrop/Five_Year_Plans/2014_2018/design_studies/cryopumps/technical_files/geqdsk/