

Goals:

- Targeting detachment** matching experimental conditions.
- Investigating how **turbulence does re-organize in high density regimes** w/r a lower density case.

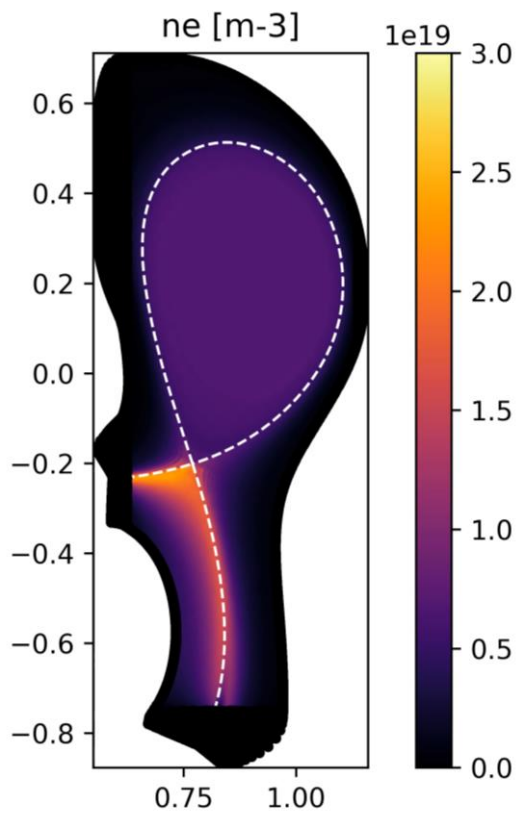
Experimental conditions:

- detached case $n_{sep} \approx 1.2E19 m^{-3}$, attached case $n_{sep} \approx 5.E18 m^{-3}$
- forward field configuration
- $P_{sep} = 140$ kW

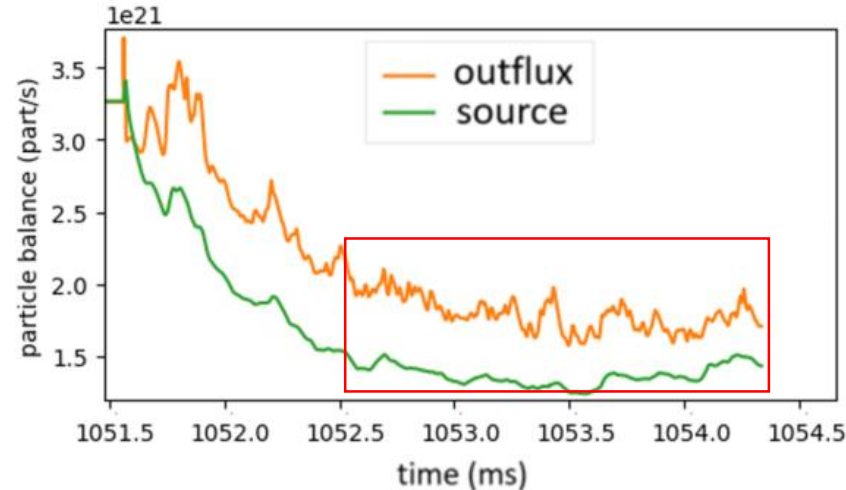
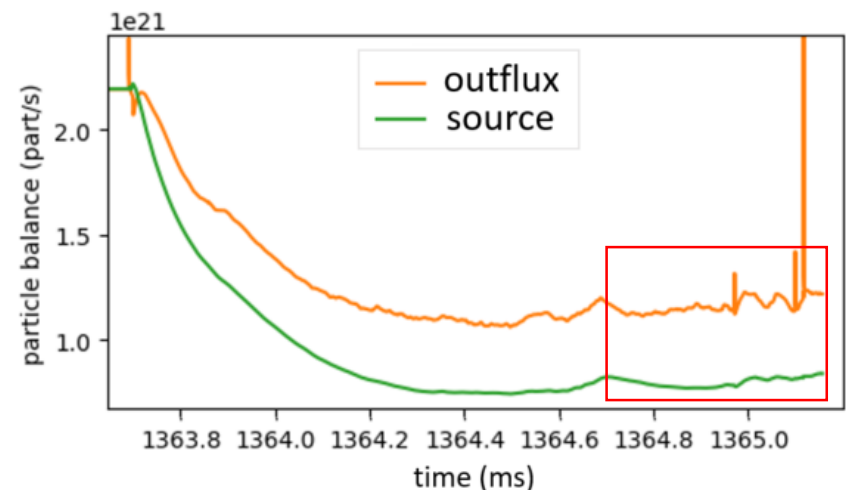
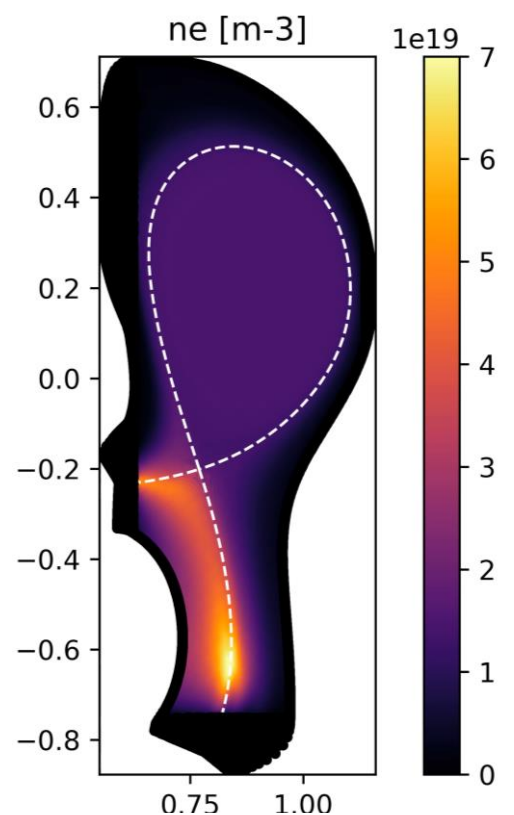
Updates: *We got the data we need!*

- Statistical properties of turbulence
- Discussion on heat – fluxes widths

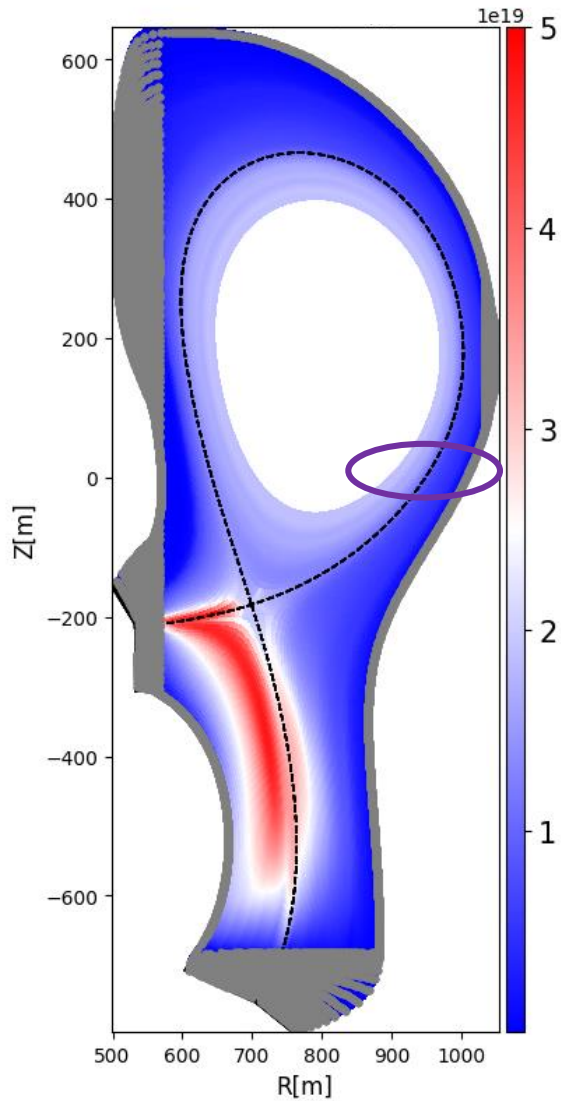
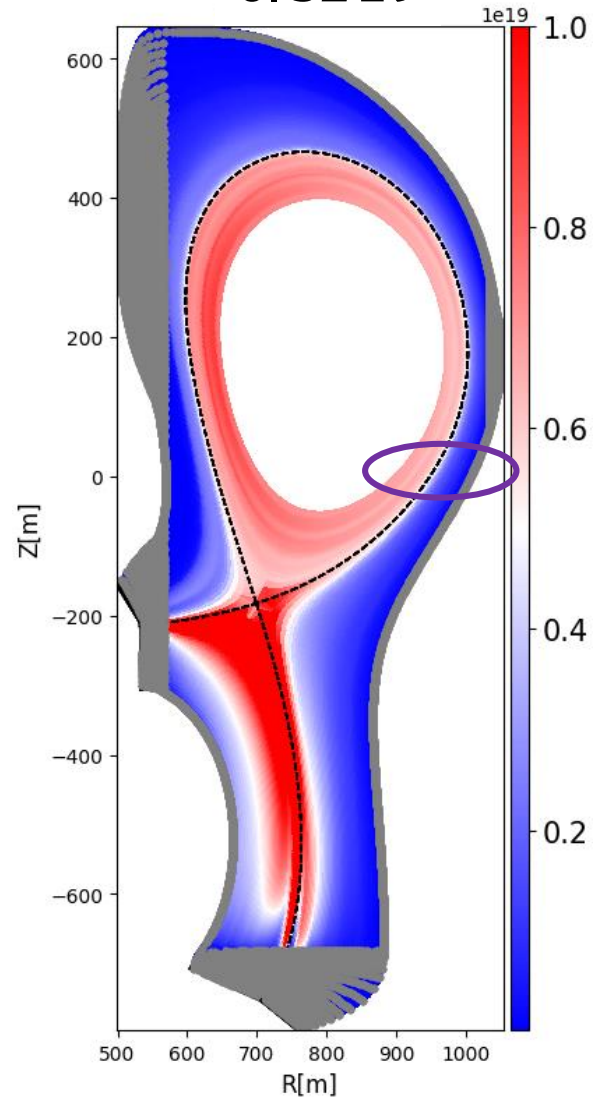
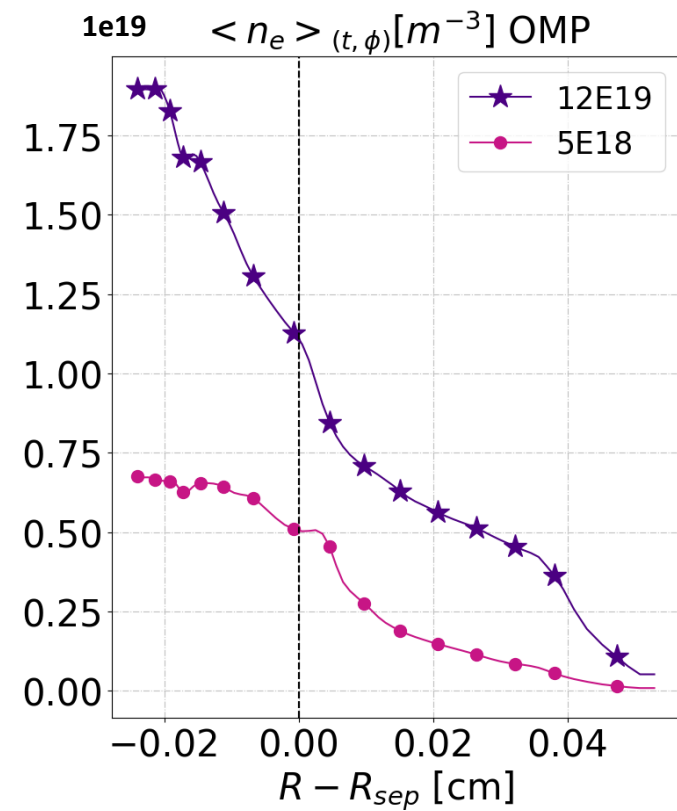
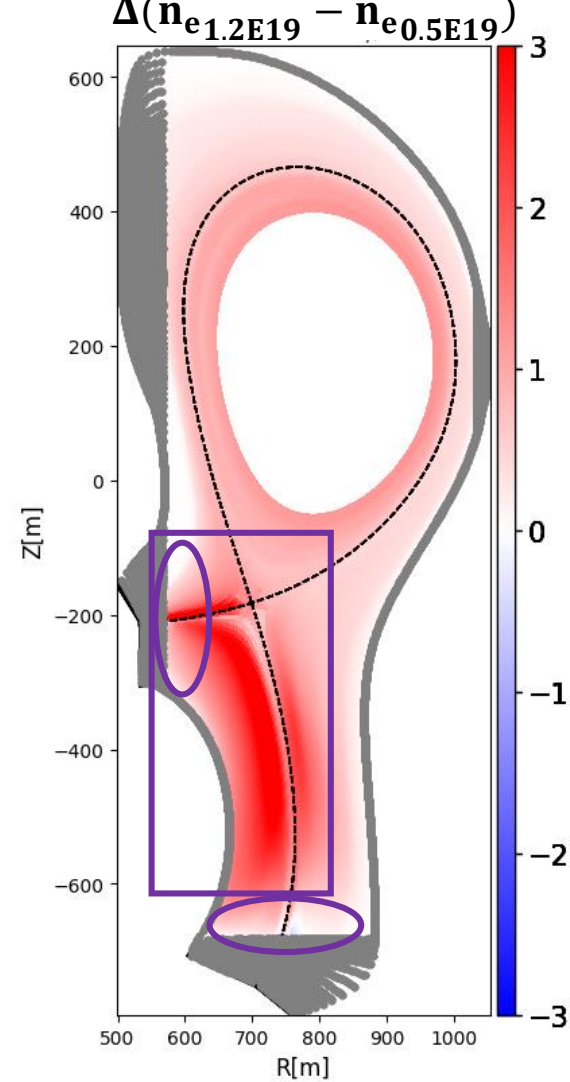
$n_{sep} = 0.5E19$



$n_{sep} = 1.2E19$



$$\langle n_e \rangle_{t\phi}$$

 $1.2E19$

 $0.5E19$

 $\Delta(n_{e1.2E19} - n_{e0.5E19})$


$std(n_e)_{t\phi}$

$1.2E19$

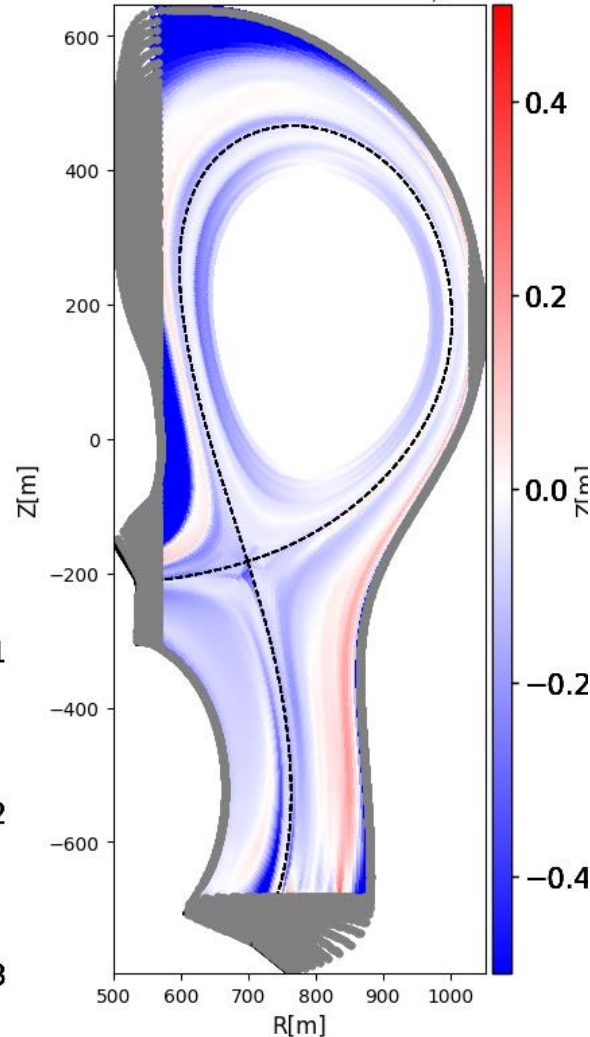
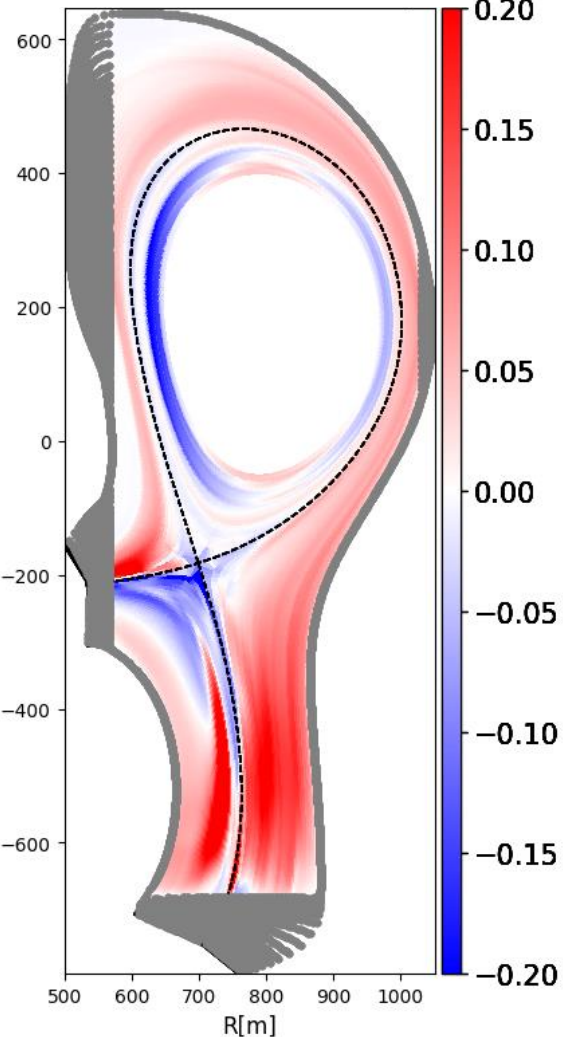
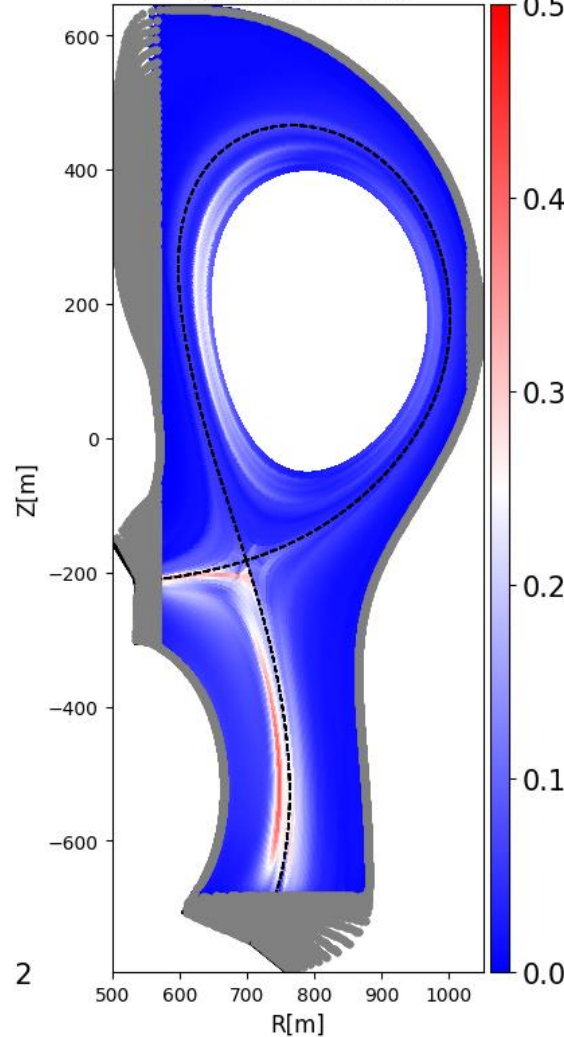
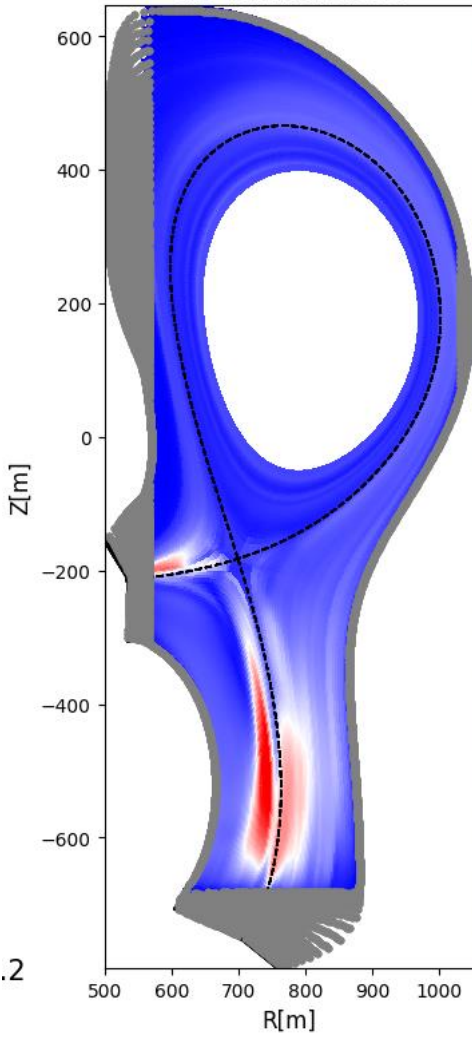
$0.5E19$

Absolute fluc level

Relative fluc level

$\Delta(std_{1.2E19} - std_{0.5E19})$

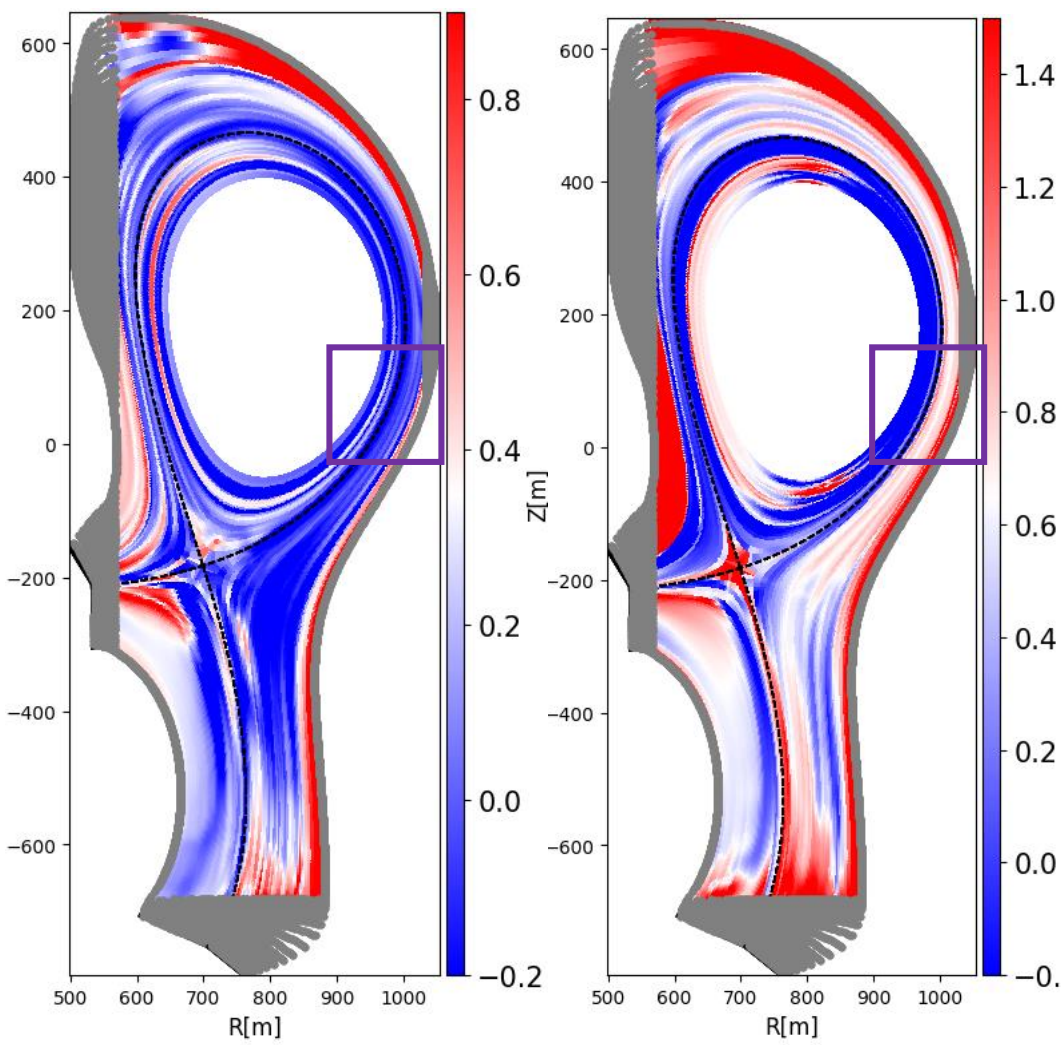
$\Delta([\frac{std}{\langle n_e \rangle_{t\phi}}]_{1.2E19} - [\frac{std}{\langle n_e \rangle_{t\phi}}]_{0.5E19})$



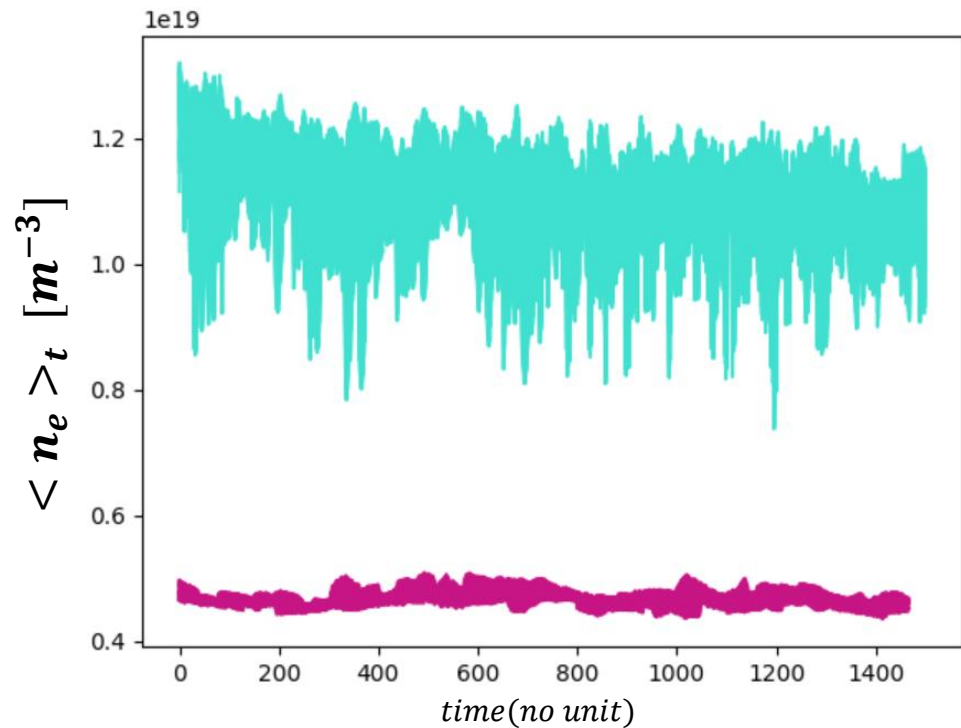
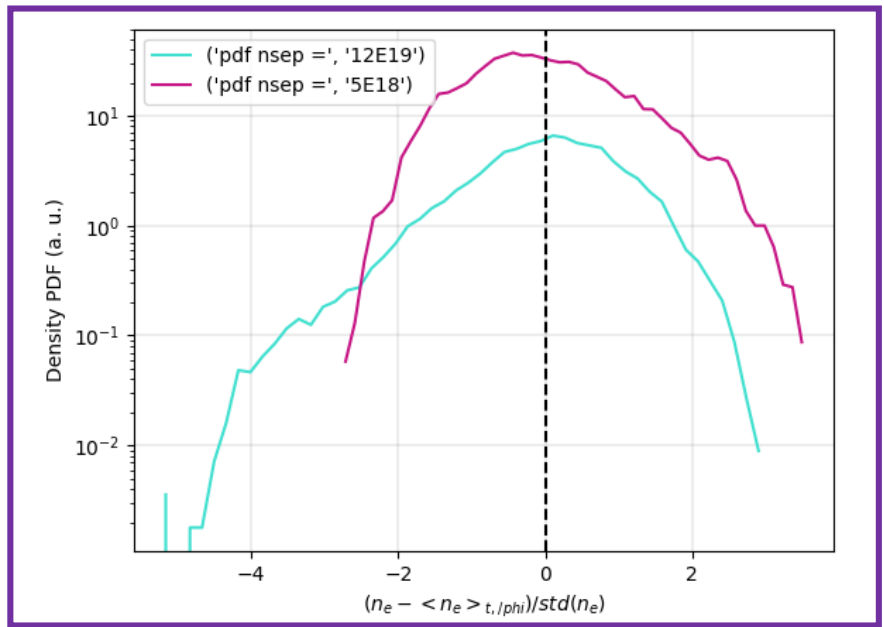
$skew(n_e)_{t\phi}$

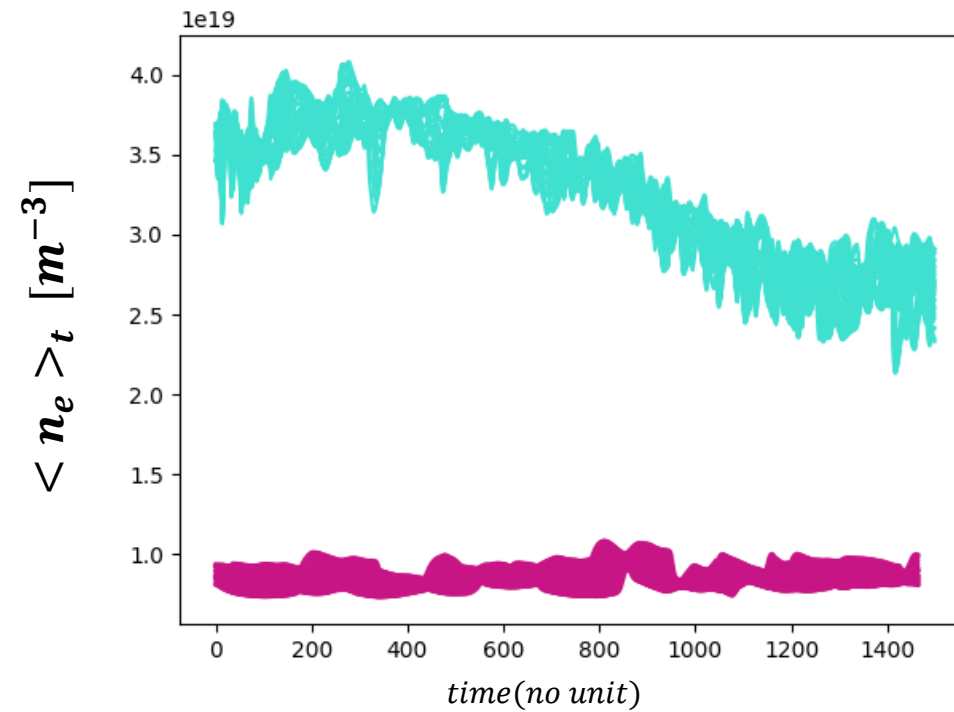
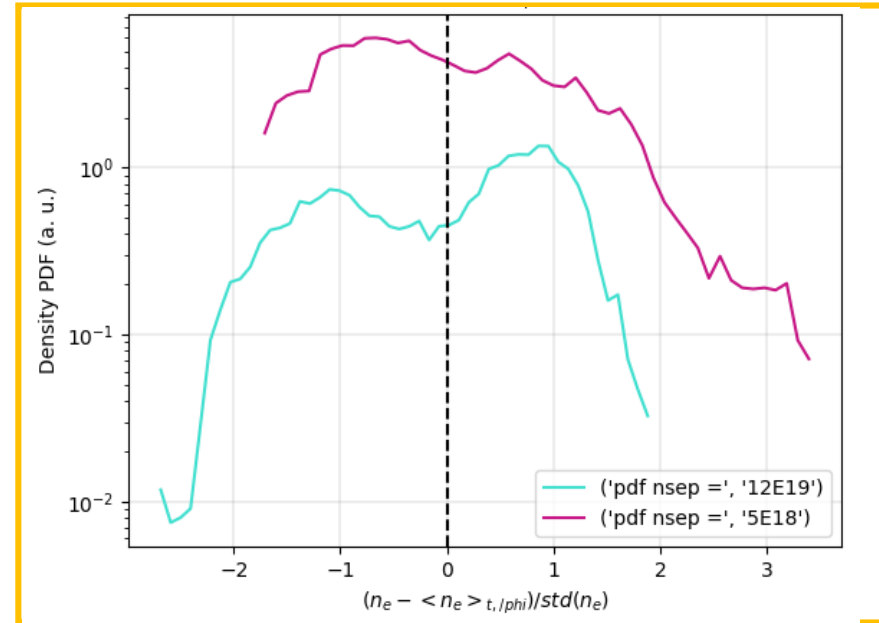
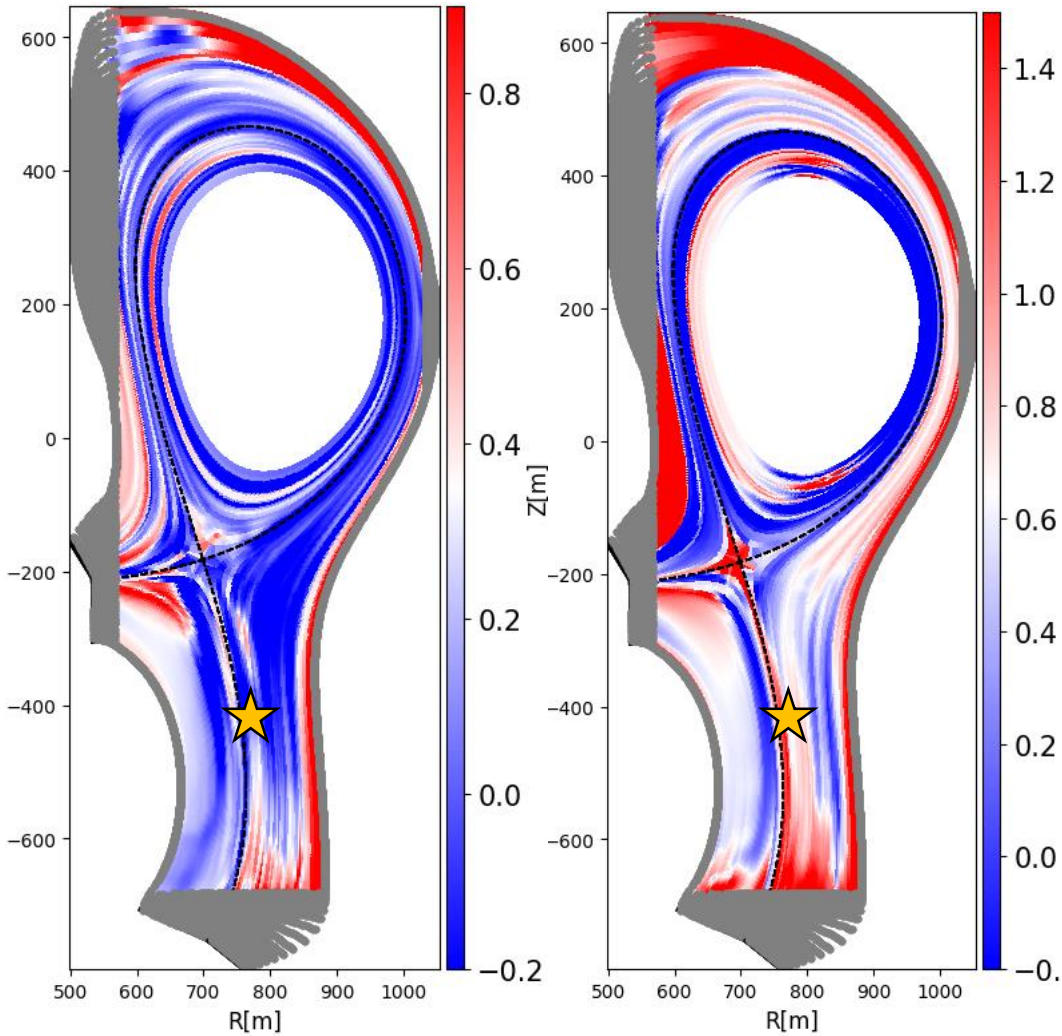
$1.2E19$

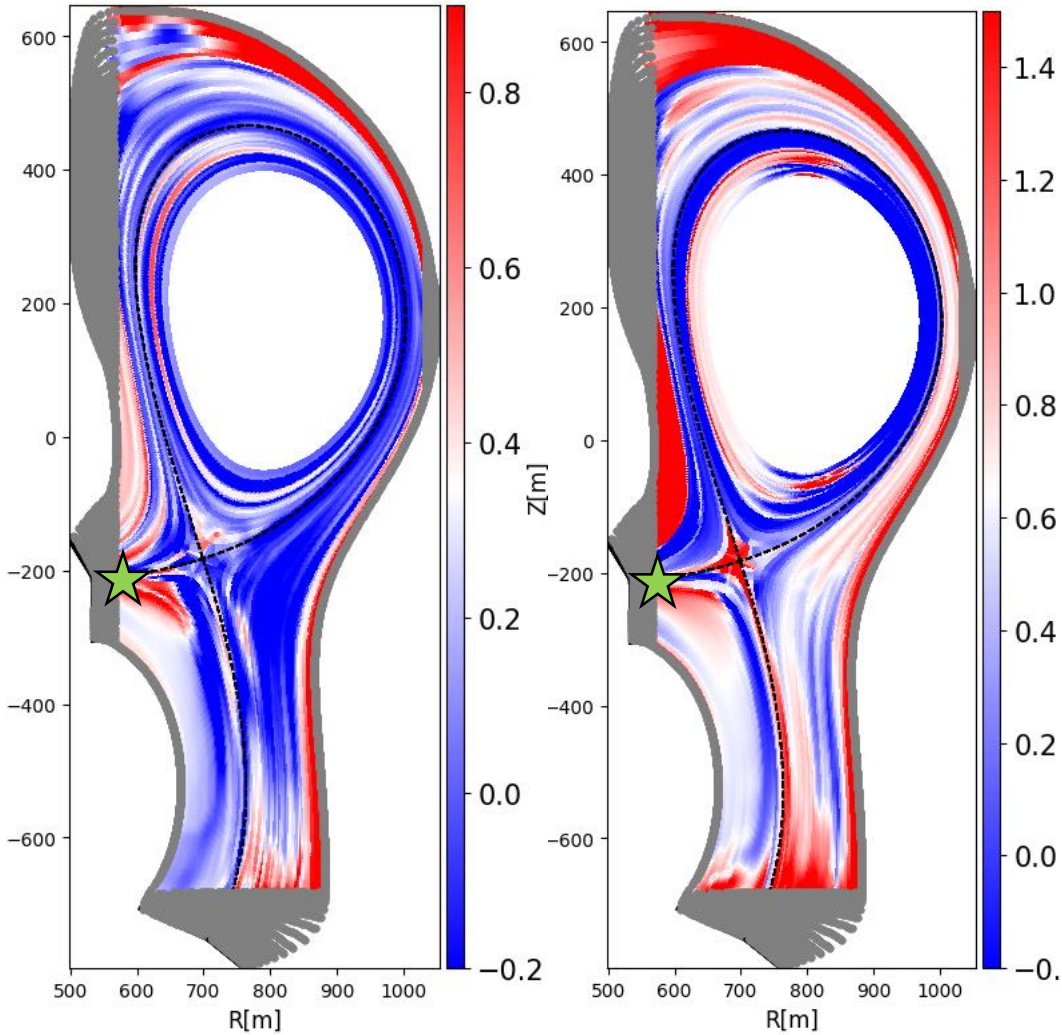
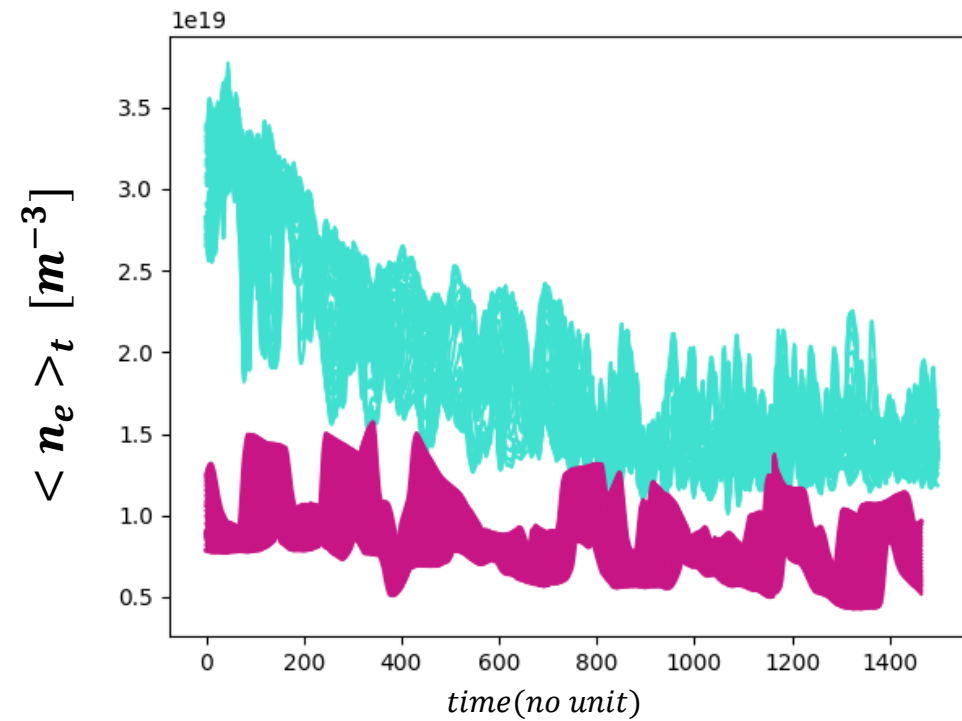
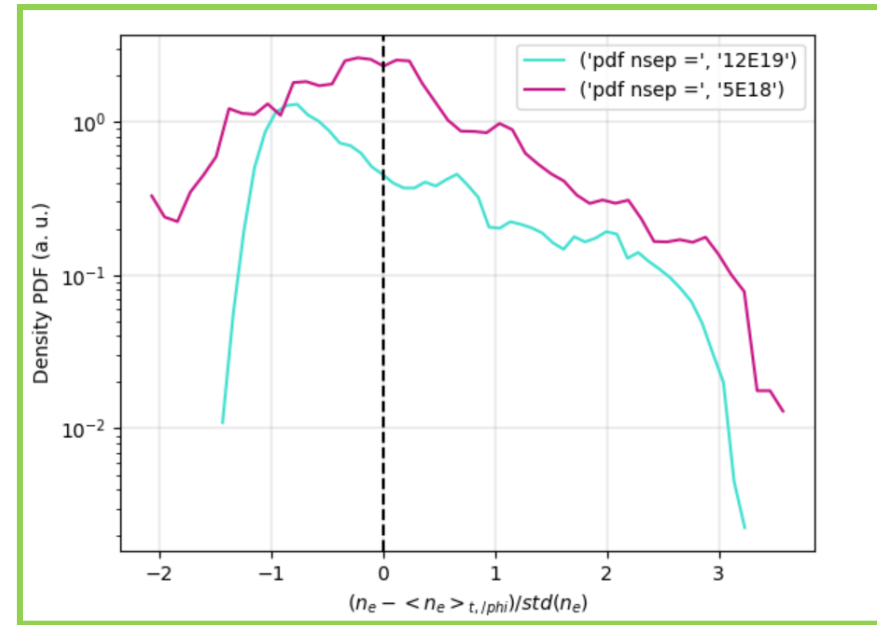
$0.5E19$

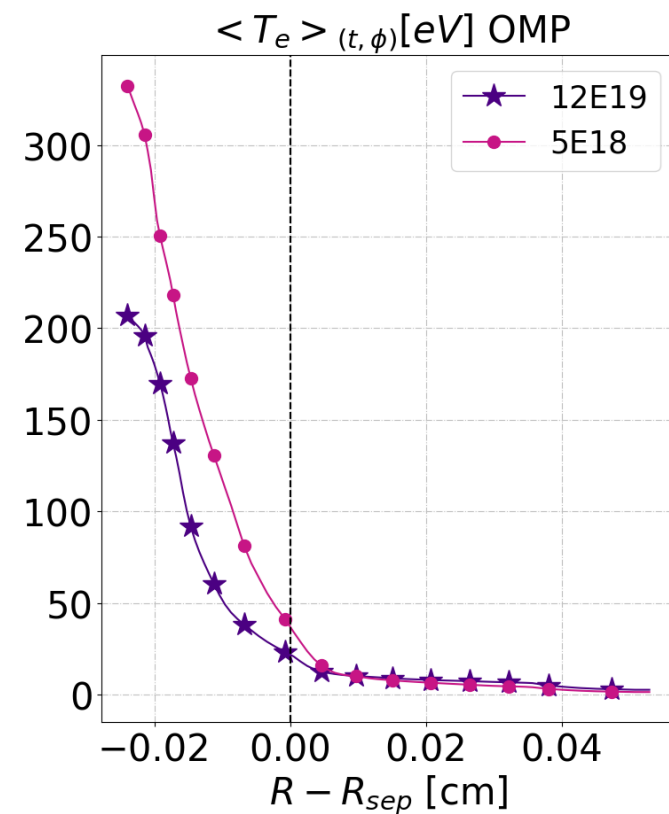
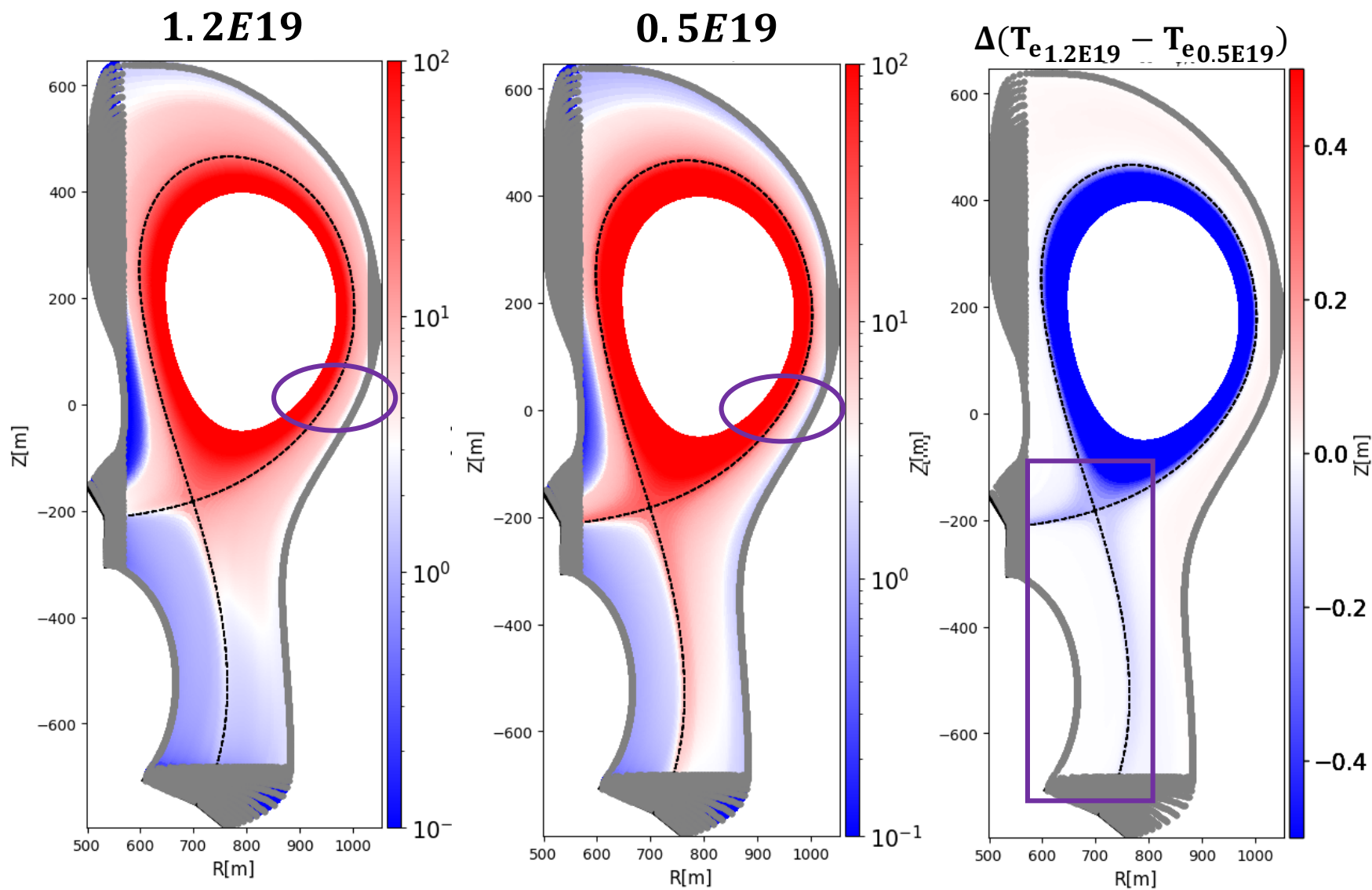


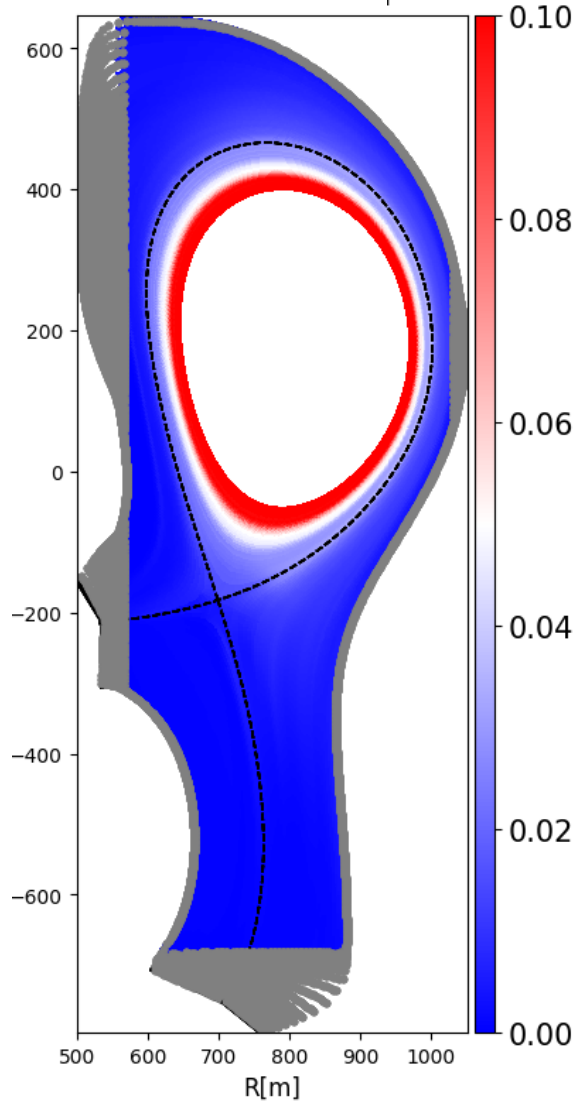
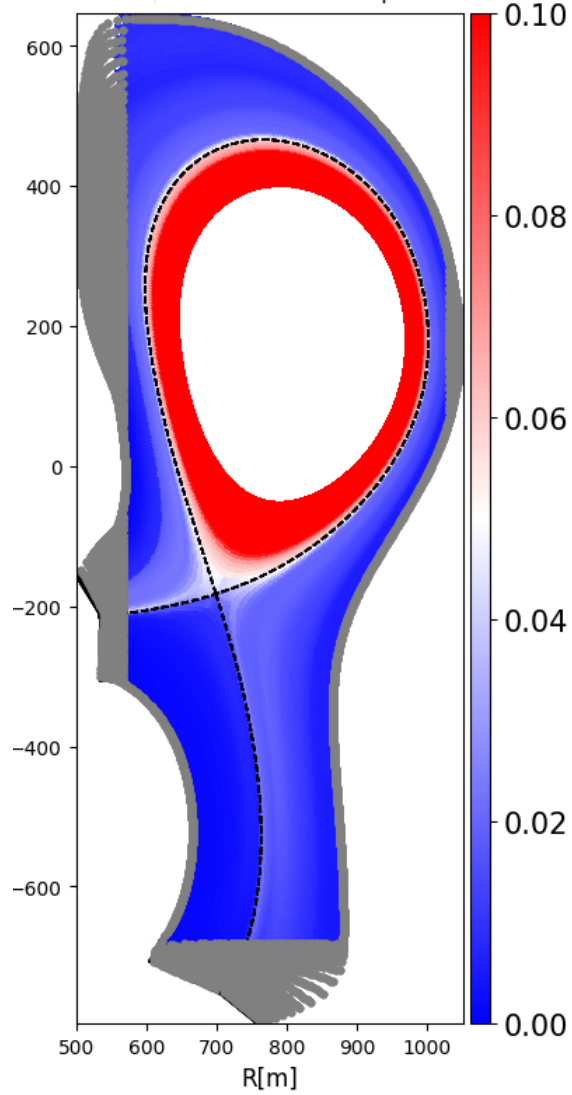
OMP, near SOL ($r - r_{sep} \approx 0.3cm$)



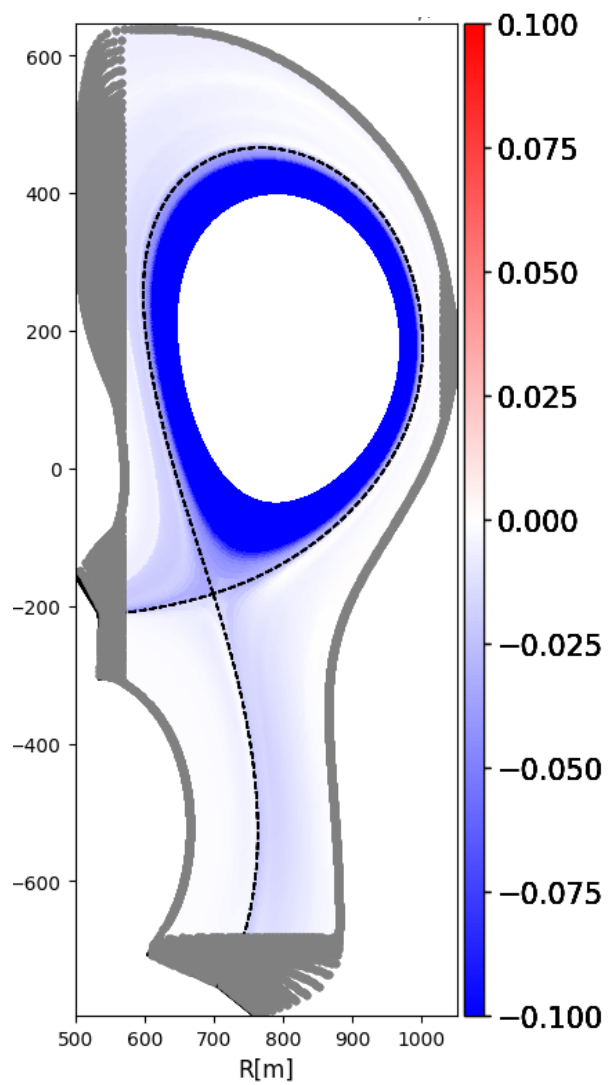
Middle outer leg, near SOL ($r - r_{sep} \approx 0.3\text{cm}$) $skew(n_e)_{t\phi}$ $1.2E19$ $0.5E19$ 

$skew(n_e)_{t\phi}$ $1.2E19$ $0.5E19$ Inner SP, near SOL ($r - r_{sep} \approx 0.3cm$)

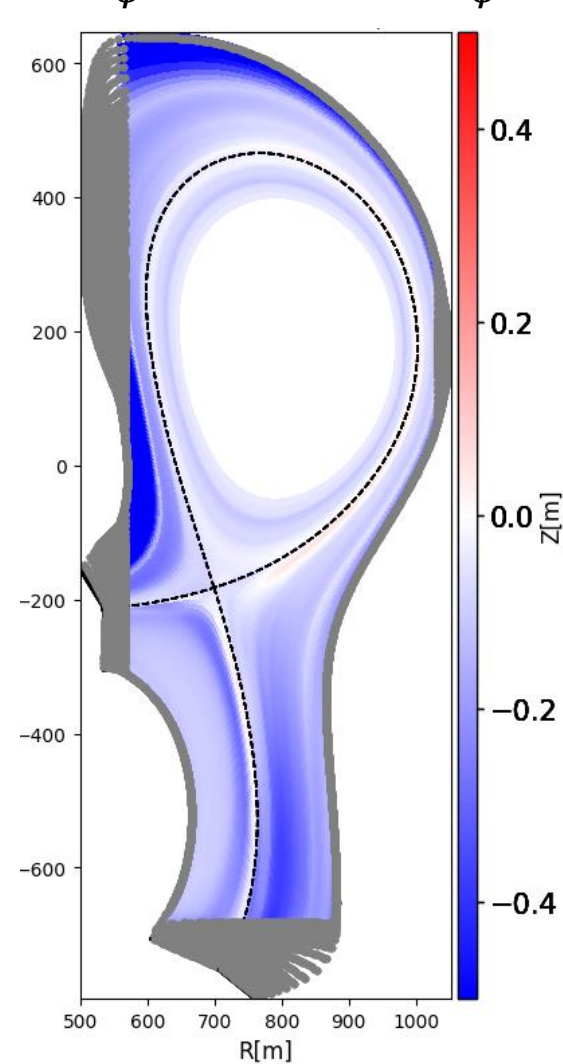


$std(T_e)_{t_\phi}$ $1.2E19$  $0.5E19$ 

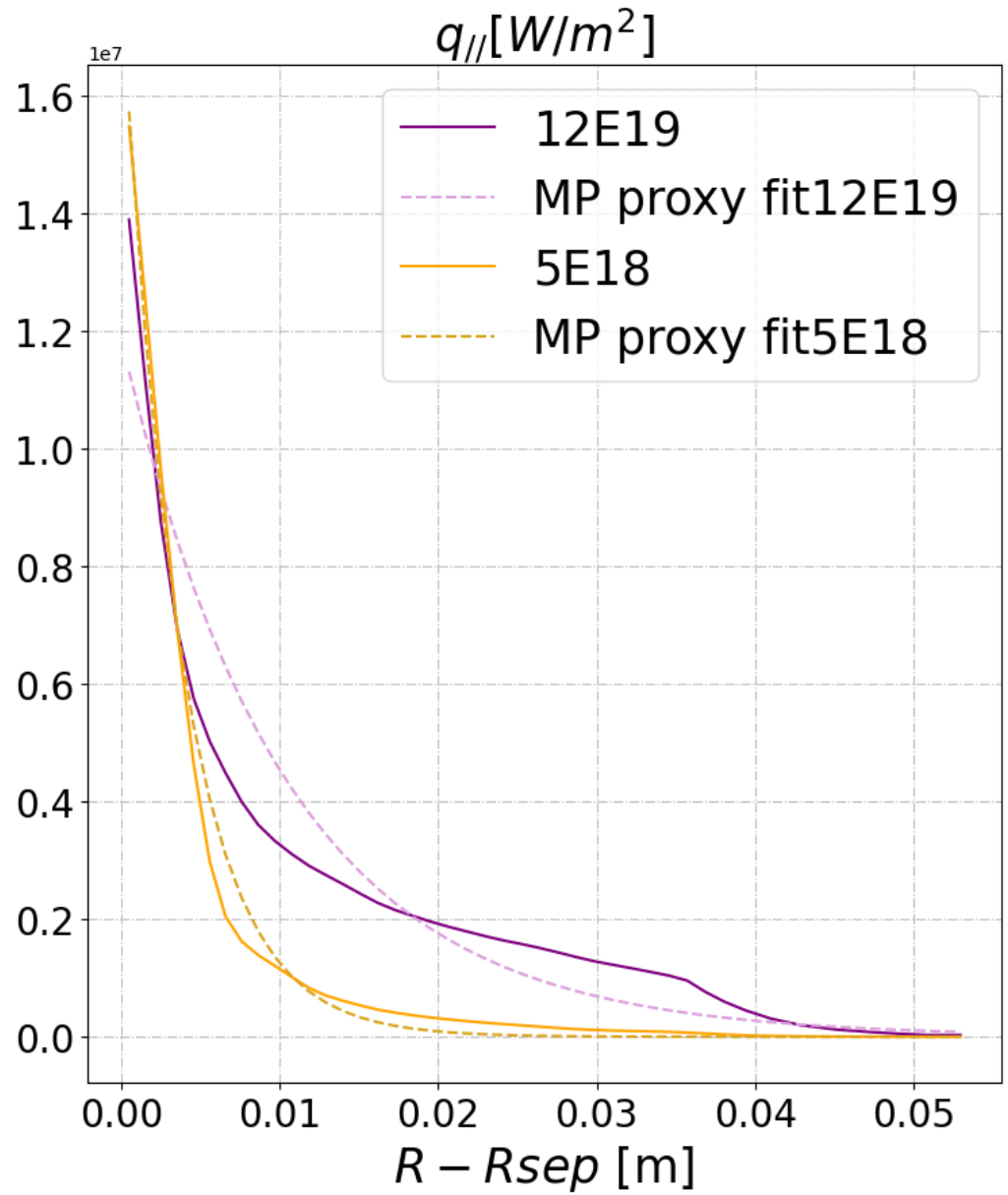
absolute

 $\Delta(std_{1.2E19} - std_{0.5E19})$ 

relative

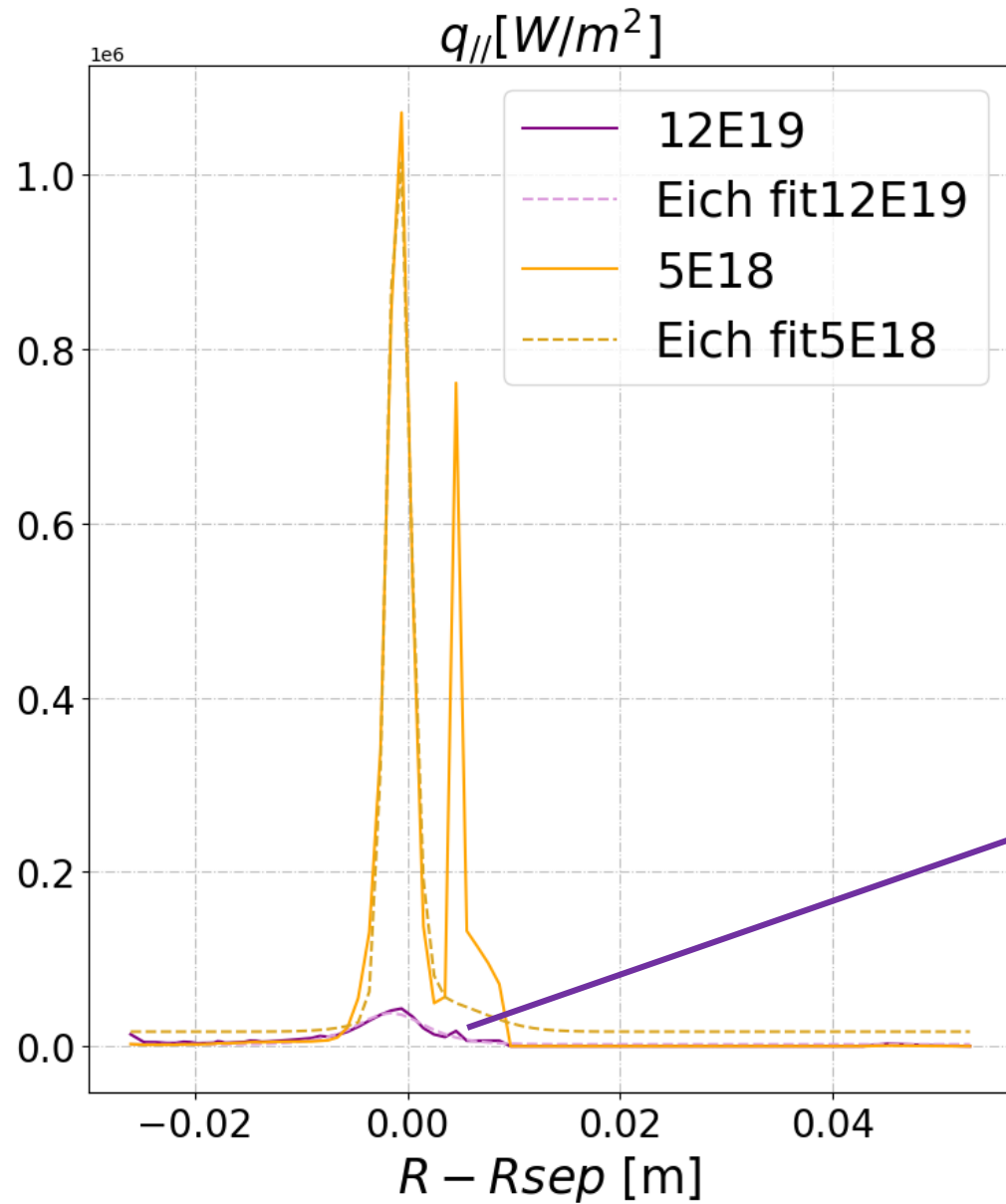
 $\Delta\left(\left[\frac{std}{\langle T_e \rangle_{t_\phi}}\right]_{1.2E19} - \left[\frac{std}{\langle T_e \rangle_{t_\phi}}\right]_{0.5E19}\right)$ 

OMP



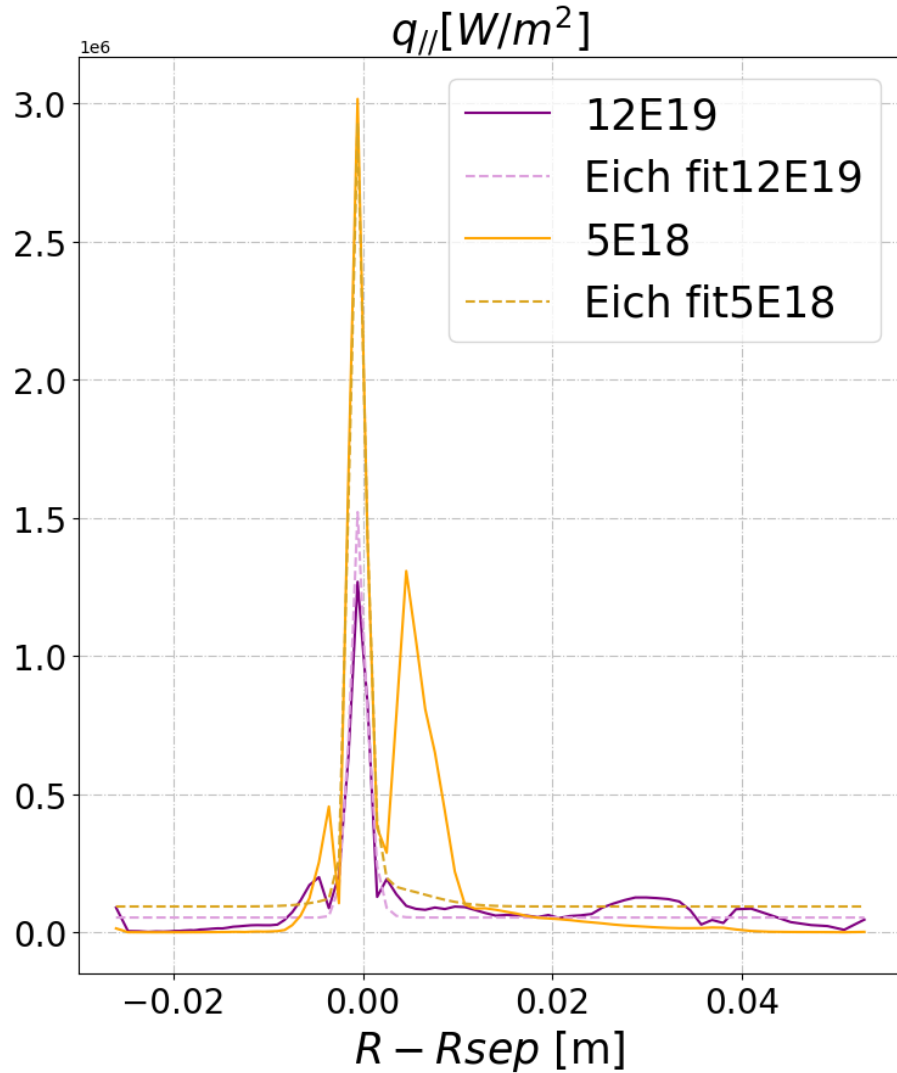
MP proxy λ_q [mm] 1.2E19 = 9.556781469200242
MP proxy λ_q [mm] 0.5E19 = 3.431489379128334

Outer target



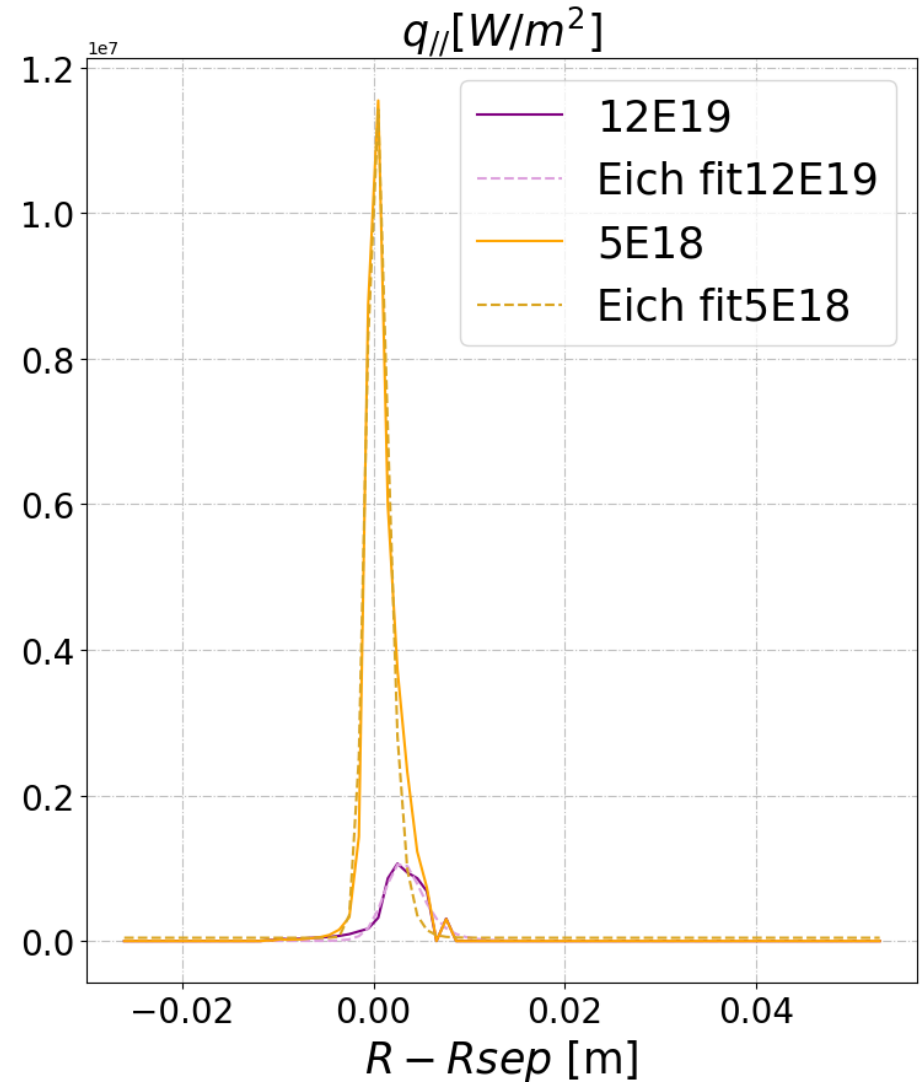
In the high density case as there is no flux getting there anymore

Middle outer leg



Eich λ_q [mm] 1.2E19 = 0.4995750313924522
 Eich λ_q [mm] 0.5E19 = 0.4525746226787128

Inner SP



Eich λ_q [mm] 1.2E19 = 1.5298310657202538
 Eich λ_q [mm] 0.5E19 = 0.83338294396775

Some outlooks and next steps:

- Colder plasma seems to lead to negative skewness (which is not what we expect in terms of resistivity)
 - Understanding the role of the particle source redistribution
 - Follow the same approach for T_e
- The variation of λ_q is in the expected direction with the proxy MP fit
- Deepen the investigation on the heat – fluxes
 - Mid-divertor is not much more informative than looking at the target directly.
 - The parallel heat flux in the middle of the leg is extremely small compared to the MP one