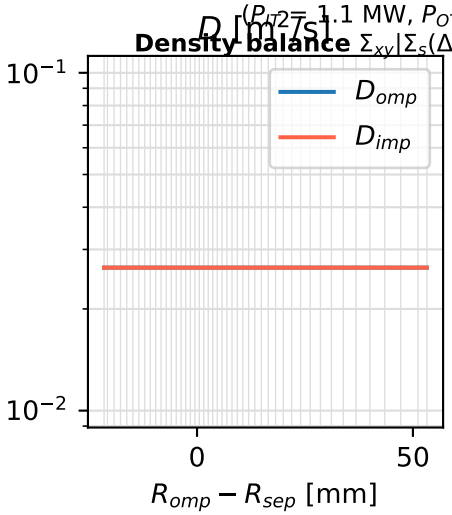
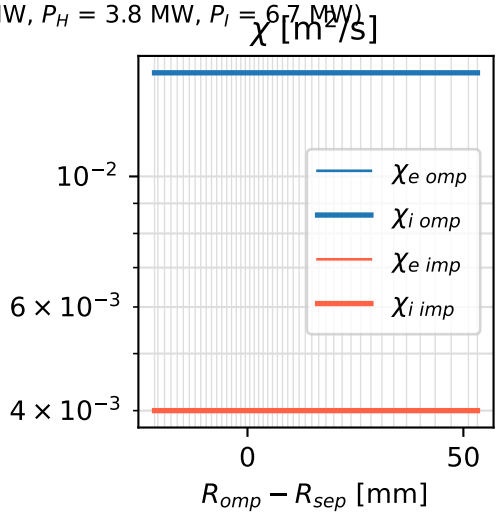
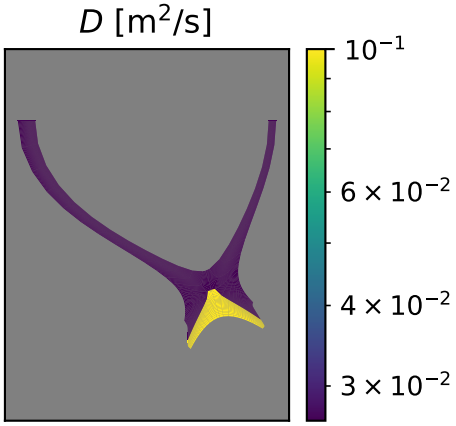
Run label base_ITback_chi15e2_4e3pfr_D26_P26_imp3e3
Path /home/millerma/arcnt_uedge/final_baseline
Plots created 11:31 AM Thu 18 Jan 2024
UEDGE version 7.0.9.2.2

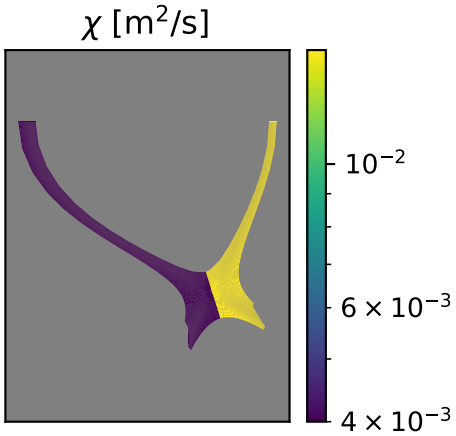
Grid nx = 64, ny = 44, 0 cells are invalid polygons
Core n_i fixed uniform 1.5e+20 m^{-3}
Core n_n set loc flux = -(1-albedoc)*ng*vtg/4
Core T_e, T_i or P_e, P_i fixed P_e = 6.5 MW, P_i = 6.5 MW
Core ion $v_\parallel$ (up) d(up)/dy = 0 at core boundary
Uniform coeffs D = 0 m^2/s, χ_e = 0 m^2/s, χ_i = 0 m^2/s
CF wall T_e extrapolated
PF wall T_e fixed 2 eV
CF wall T_i extrapolated
PF wall T_i fixed 2 eV
CF wall n_i extrapolated
PF wall n_i fixed 1e+18 m^{-3}
Flux limits unknown
Recycling coefficient 1 (plates), 1 (walls)
Neutral model inertial neutrals
Impurity Z 10
Impurity model fixed-fraction model
Impurity fraction spatially varying (mean = 0.003, std = 2.06e-19, min = 0.003, max = 0.003)
Potential equation off

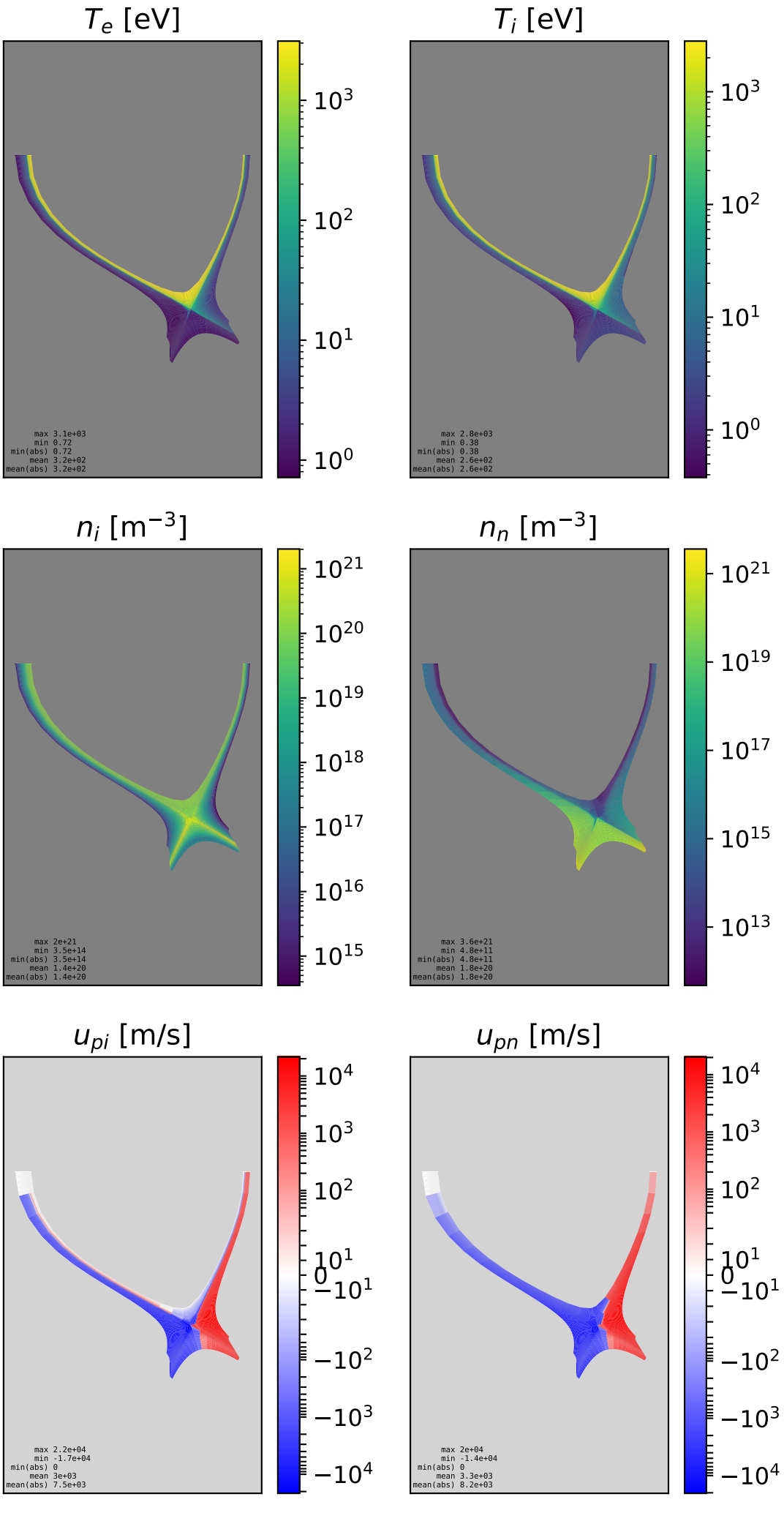
Converged yes, sim. time 0 s
Field line angle 3.17° inner target, 3.28° outer target
Separatrix n_i = 8.7e+19 m^{-3}, n_n = 4.4e+12 m^{-3}, T_i = 320 eV, T_e = 353 eV
Fall off lengths λ_n = 6.7 mm, λ_{T_e} = 2.5 mm, λ_{T_i} = 0.68 mm
Outer PF corner p_n 412 Pa
Power sharing 1:2.3, $P_{LCFS\ inboard}$ = 3.9 MW, $P_{LCFS\ outboard}$ = 9 MW
$P_{rad\ imp}$ P_{tot} = 6.7 MW, P_{xpt} = 2.1 MW, P_{ileg} = 0.014 MW, P_{oleg} = 3.7 MW,
$P_{main\ chamber\ SOL}$ = 1.2 MW, P_{core} = 0.12 MW
Power balance P_{loss} = 15 MW = P_{core}+14%
(P_{HT} = 1.1 MW, P_{OT} = 3.6 MW, P_{CFW} = 0.18 MW, P_{PFW} = -0.51 MW, P_H = 3.8 MW, P_I = 6.7 MW)
Density balance $\Sigma_{xy}|\Sigma_s(\Delta n)_s^{xy}|/\Sigma_{xy}\Sigma_s|(\Delta n)_s^{xy}|$ = 8.8e-09%

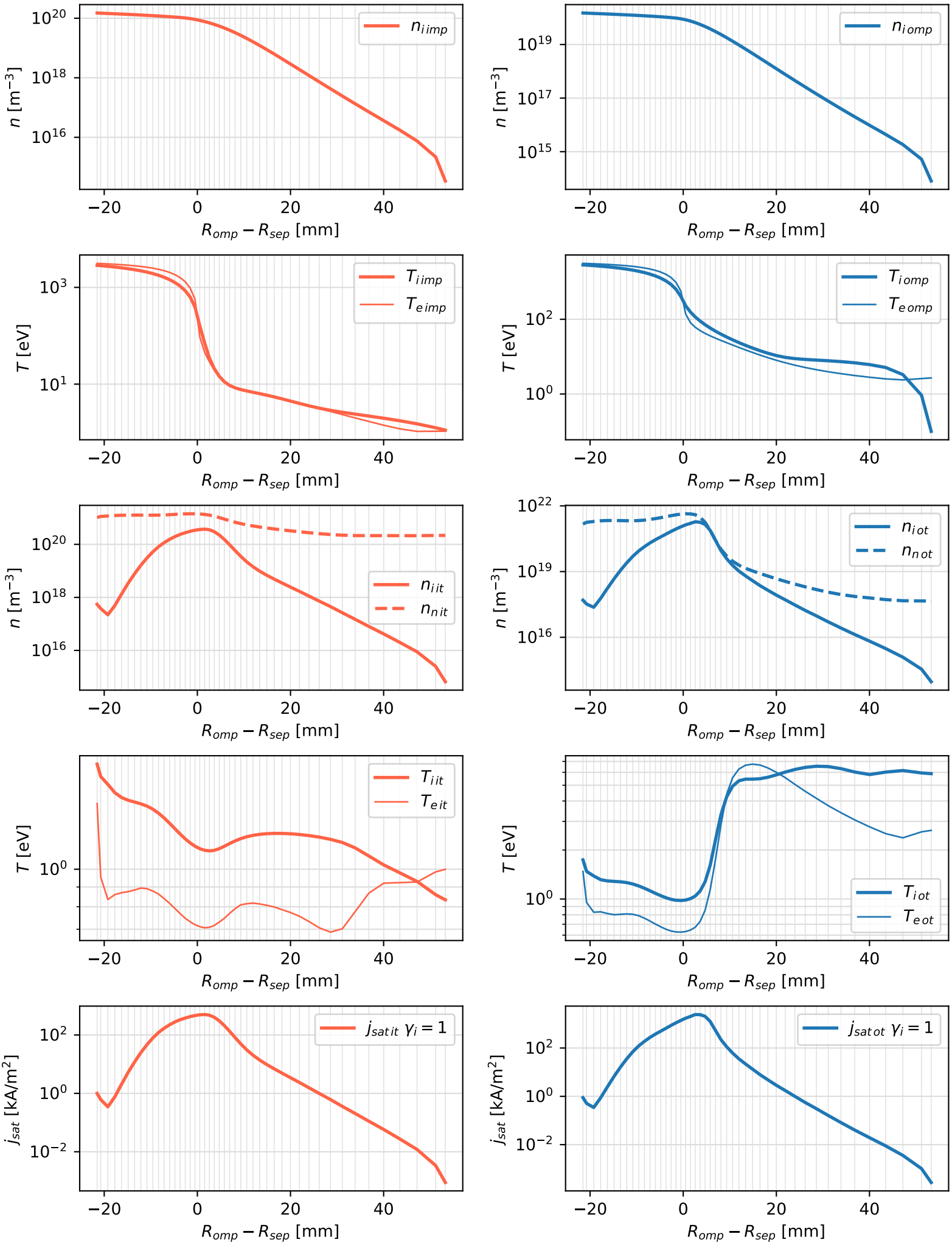


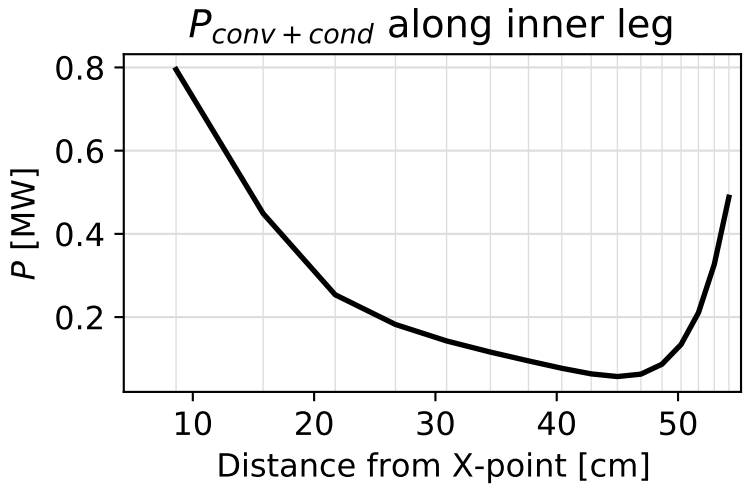


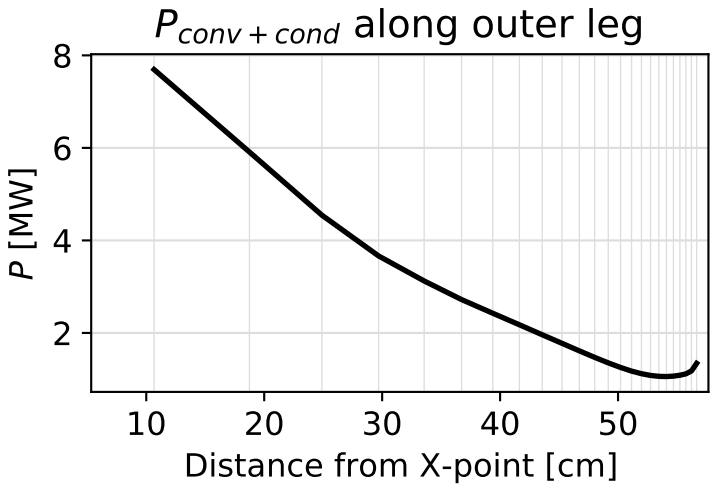


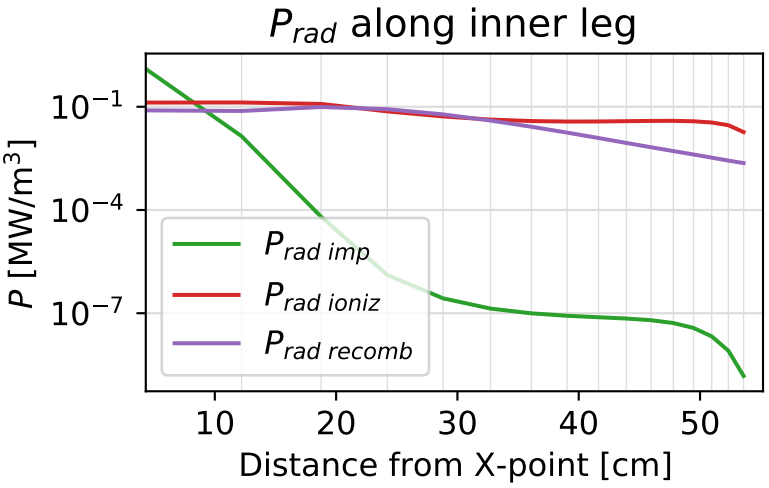


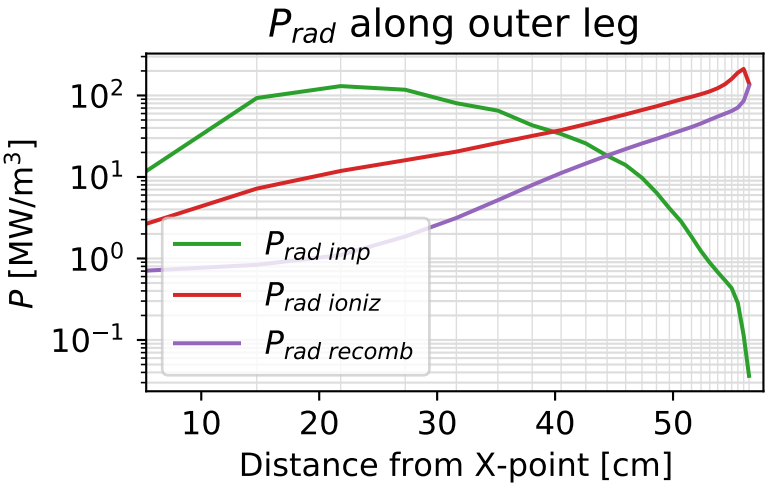

T_e [eV]
max 3.1e+03
min 0.72
min(abs) 0.72
mean 3.2e+02
mean(abs) 3.2e+02
10^3
10^2
10^1
10^0
T_i [eV]
max 2.8e+03
min 0.38
min(abs) 0.38
mean 2.6e+02
mean(abs) 2.6e+02
10^3
10^2
10^1
10^0
n_i [m^{-3}]
max 2e+21
min 3.5e+14
min(abs) 3.5e+14
mean 1.4e+20
mean(abs) 1.4e+20
10^{21}
10^{20}
10^{19}
10^{18}
10^{17}
10^{16}
10^{15}
n_n [m^{-3}]
max 3.6e+21
min 4.8e+11
min(abs) 4.8e+11
mean 1.8e+20
mean(abs) 1.8e+20
10^{21}
10^{19}
10^{17}
10^{15}
10^{13}
u_{pi} [m/s]
max 2.2e+04
min -1.7e+04
min(abs) 0
mean 3e+03
mean(abs) 7.5e+03
10^4
10^3
10^2
10^1
0
-10^1
-10^2
-10^3
-10^4
u_{pn} [m/s]
max 2e+04
min -1.4e+04
min(abs) 0
mean 3.3e+03
mean(abs) 8.2e+03
10^4
10^3
10^2
10^1
0
-10^1
-10^2
-10^3
-10^4

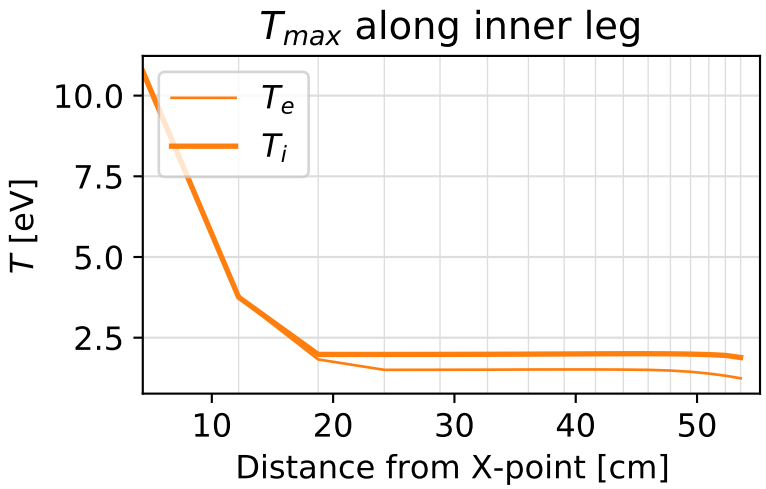

n_{iimp}
n [m^{-3}]
$R_{omp} - R_{sep}$ [mm]
n_{iomp}
T_{iimp}
T_{eimp}
T [eV]
T_{iomp}
T_{eomp}
n_{iit}
n_{nit}
n_{iot}
n_{not}
T_{iit}
T_{eit}
T_{iot}
T_{eot}
j_{satit} $\gamma_i = 1$
j_{sat} [kA/m^2]
j_{satot} $\gamma_i = 1$

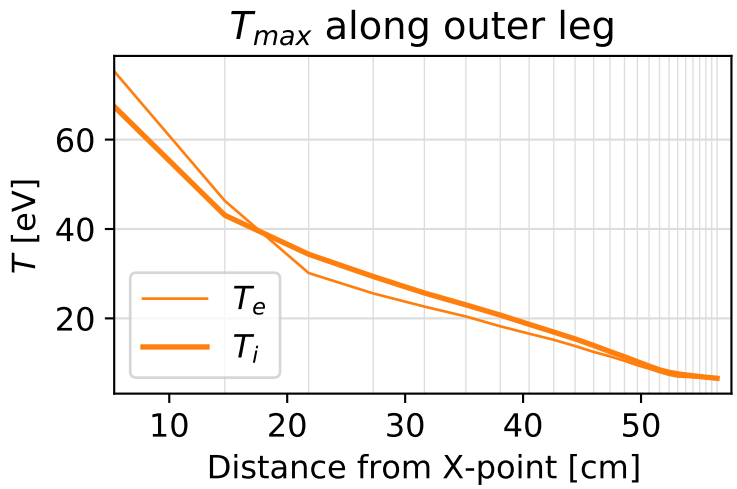

$P_{conv+cond}$ along inner leg
P [MW]
0.8
0.6
0.4
0.2
10
20
30
40
50
Distance from X-point [cm]

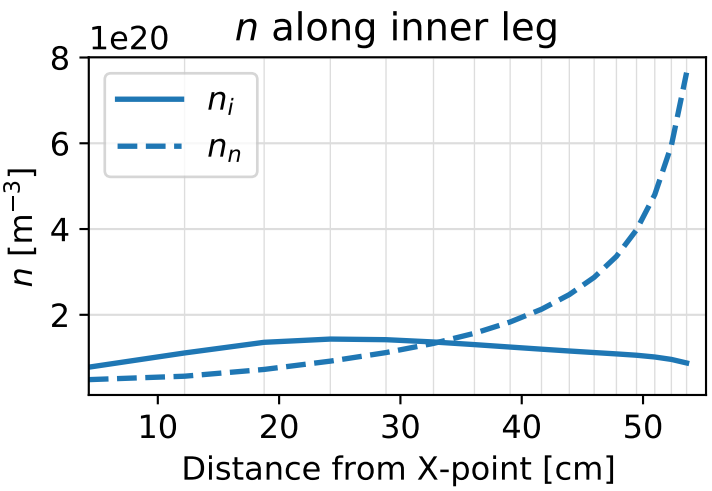

$P_{conv+cond}$ along outer leg
P [MW]
8
6
4
2
10
20
30
40
50
Distance from X-point [cm]

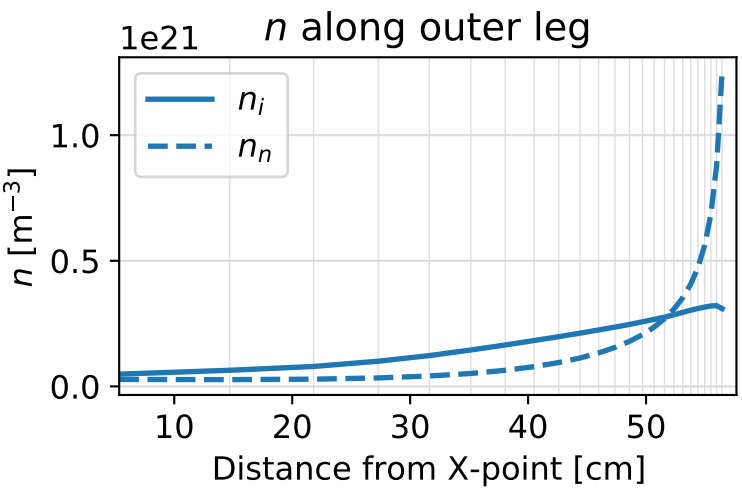

P_{rad} along inner leg
P [MW/m^3]
10^{-1}
10^{-4}
10^{-7}
$P_{rad\ imp}$
$P_{rad\ ioniz}$
$P_{rad\ recomb}$
10
20
30
40
50
Distance from X-point [cm]

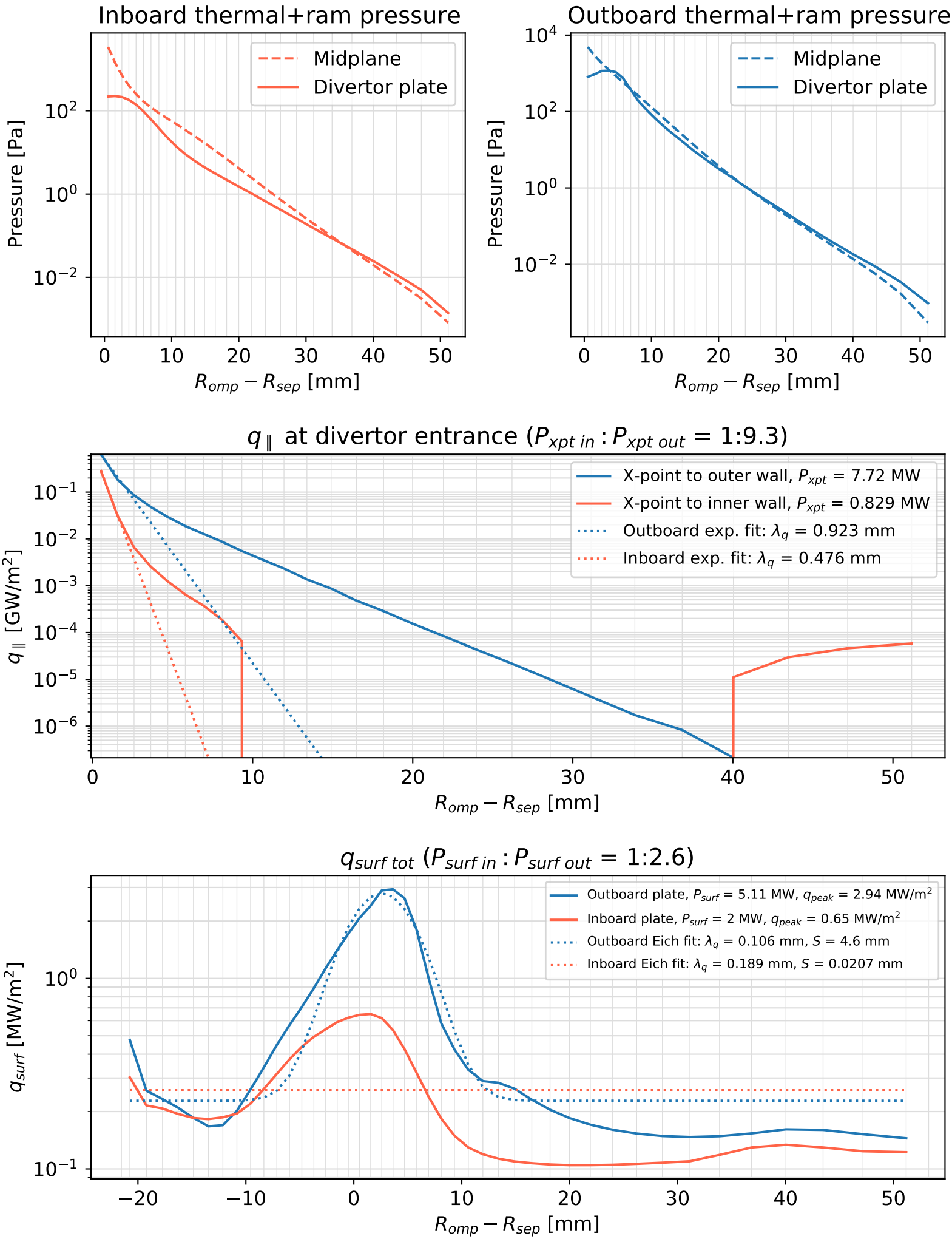

P_{rad} along outer leg
P [MW/m^3]
10^{2}
10^{1}
10^{0}
10^{-1}
$P_{rad\ imp}$
$P_{rad\ ioniz}$
$P_{rad\ recomb}$
10
20
30
40
50
Distance from X-point [cm]

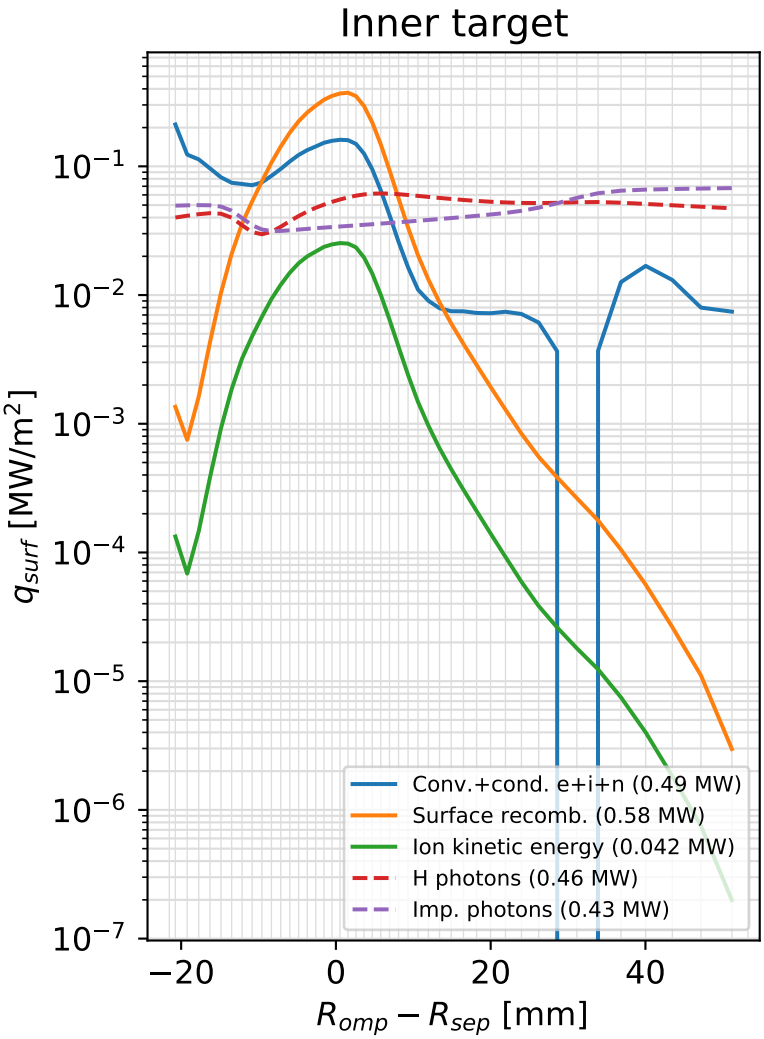

T_{max} along inner leg
T [eV]
10.0
7.5
5.0
2.5
T_e
T_i
10
20
30
40
50
Distance from X-point [cm]

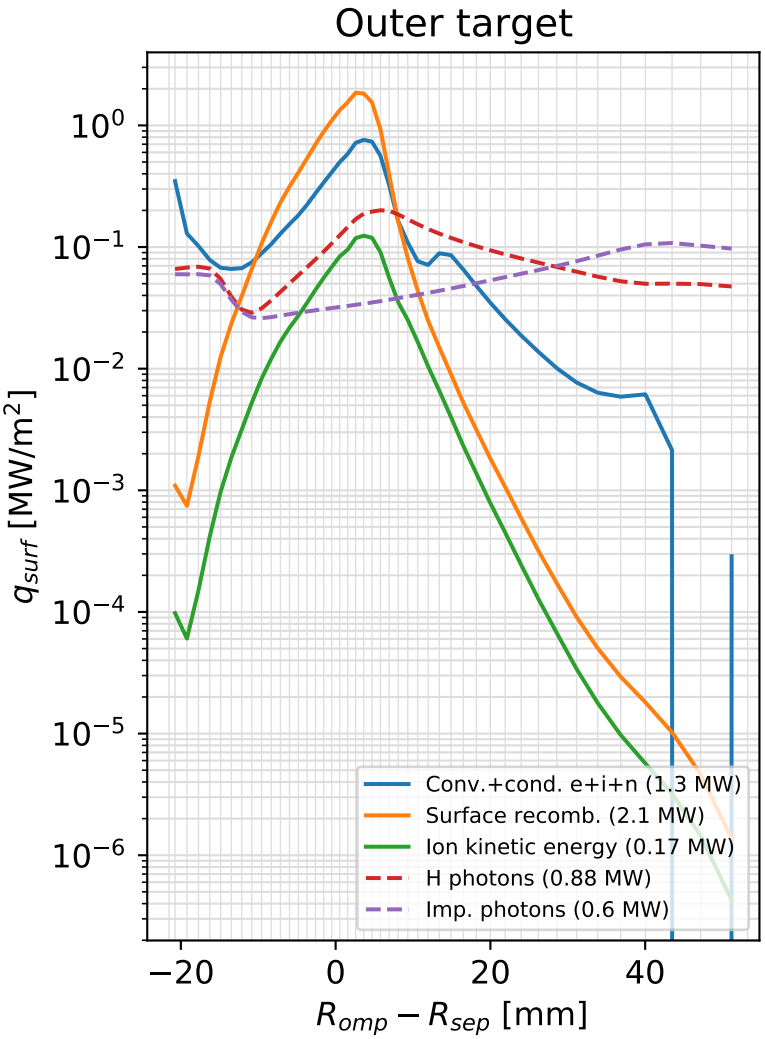

T_{max} along outer leg
T [eV]
60
40
20
T_e
T_i
10
20
30
40
50
Distance from X-point [cm]

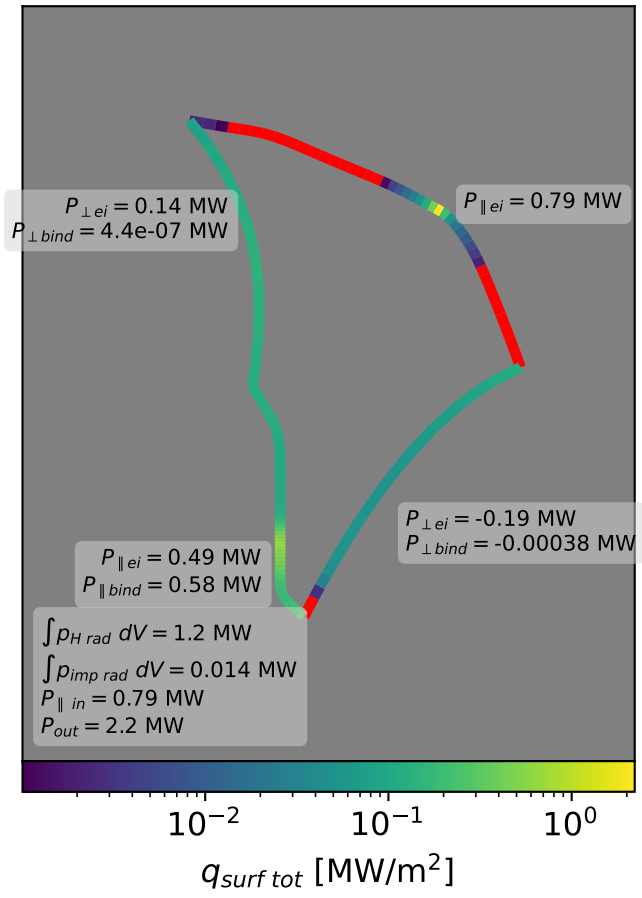

n along inner leg
1e20
n [m^{-3}]
8
6
4
2
n_i
n_n
10
20
30
40
50
Distance from X-point [cm]

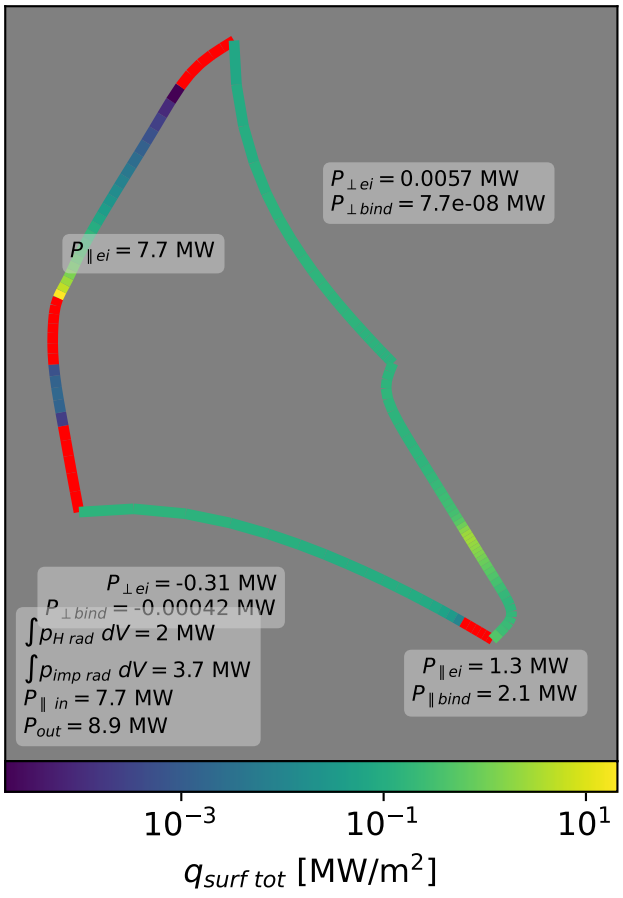

n along outer leg
1e21
n [m^{-3}]
1.0
0.5
0.0
n_i
n_n
10
20
30
40
50
Distance from X-point [cm]


Inboard thermal+ram pressure
Midplane
Divertor plate
Pressure [Pa]
10^2
10^0
10^{-2}
0
10
20
30
40
50
$R_{omp} - R_{sep}$ [mm]
Outboard thermal+ram pressure
Midplane
Divertor plate
Pressure [Pa]
10^4
10^2
10^0
10^{-2}
0
10
20
30
40
50
$R_{omp} - R_{sep}$ [mm]
$q_\parallel$ at divertor entrance ($P_{xpt\ in} : P_{xpt\ out}$ = 1:9.3)
X-point to outer wall, P_{xpt} = 7.72 MW
X-point to inner wall, P_{xpt} = 0.829 MW
Outboard exp. fit: λ_q = 0.923 mm
Inboard exp. fit: λ_q = 0.476 mm
$q_\parallel$ [GW/m^2]
10^{-1}
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
0
10
20
30
40
50
$R_{omp} - R_{sep}$ [mm]
$q_{surf\ tot}$ ($P_{surf\ in} : P_{surf\ out}$ = 1:2.6)
Outboard plate, P_{surf} = 5.11 MW, q_{peak} = 2.94 MW/m^2
Inboard plate, P_{surf} = 2 MW, q_{peak} = 0.65 MW/m^2
Outboard Eich fit: λ_q = 0.106 mm, S = 4.6 mm
Inboard Eich fit: λ_q = 0.189 mm, S = 0.0207 mm
q_{surf} [MW/m^2]
10^0
10^{-1}
−20
−10
0
10
20
30
40
50
$R_{omp} - R_{sep}$ [mm]

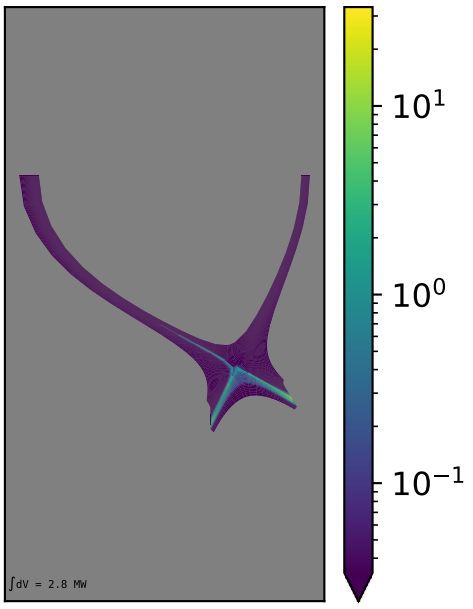

Inner target
q_{surf} [MW/m^2]
$R_{omp} - R_{sep}$ [mm]
Conv.+cond. e+i+n (0.49 MW)
Surface recomb. (0.58 MW)
Ion kinetic energy (0.042 MW)
H photons (0.46 MW)
Imp. photons (0.43 MW)


Outer target
q_{surf} [MW/m^2]
$R_{omp} - R_{sep}$ [mm]
Conv.+cond. e+i+n (1.3 MW)
Surface recomb. (2.1 MW)
Ion kinetic energy (0.17 MW)
H photons (0.88 MW)
Imp. photons (0.6 MW)

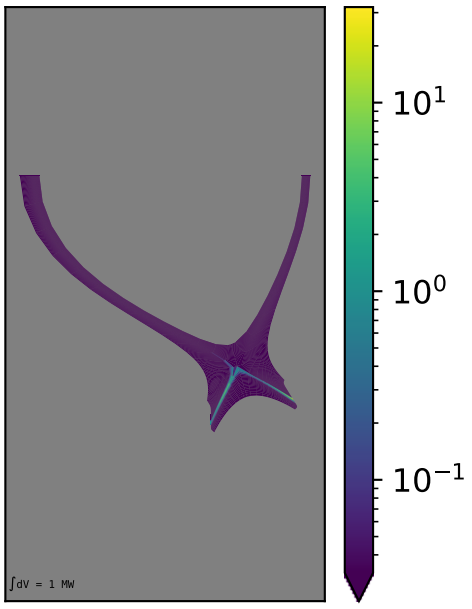

Inner leg
$P_{\perp ei}$ = 0.14 MW
$P_{\perp bind}$ = 4.4e-07 MW
$P_{\parallel ei}$ = 0.79 MW
$P_{\perp ei}$ = -0.19 MW
$P_{\perp bind}$ = -0.00038 MW
$P_{\parallel ei}$ = 0.49 MW
$P_{\parallel bind}$ = 0.58 MW
$\int p_{H\ rad}\ dV$ = 1.2 MW
$\int p_{imp\ rad}\ dV$ = 0.014 MW
$P_{\parallel\ in}$ = 0.79 MW
P_{out} = 2.2 MW
$q_{surf\ tot}$ [MW/m^2]


Outer leg
$P_{\perp ei}$ = 0.0057 MW
$P_{\perp bind}$ = 7.7e-08 MW
$P_{\parallel ei}$ = 7.7 MW
$P_{\perp ei}$ = -0.31 MW
$P_{\perp bind}$ = -0.00042 MW
$\int p_{H\ rad}\ dV$ = 2 MW
$\int p_{imp\ rad}\ dV$ = 3.7 MW
$P_{\parallel\ in}$ = 7.7 MW
P_{out} = 8.9 MW
$P_{\parallel ei}$ = 1.3 MW
$P_{\parallel bind}$ = 2.1 MW
$q_{surf\ tot}$ [MW/m^2]

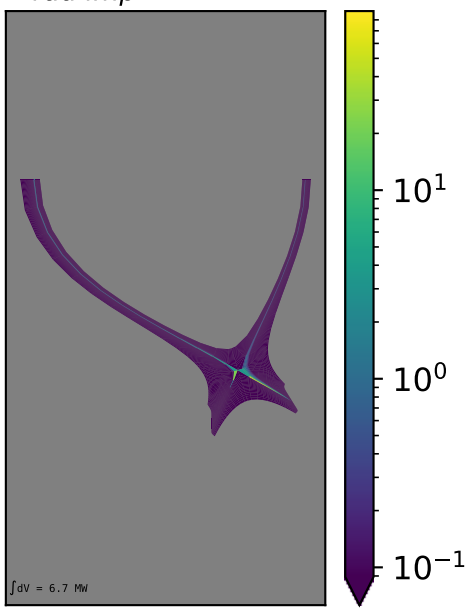
$P_{rad\ ioniz}$ [MW/m^3]



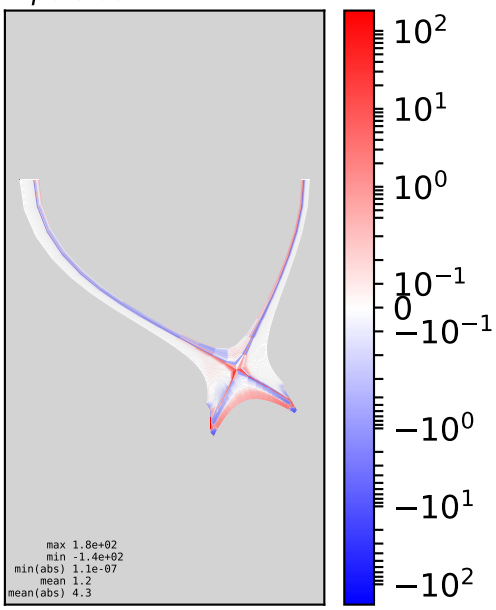
$P_{rad\ recomb}$ [MW/m^3]



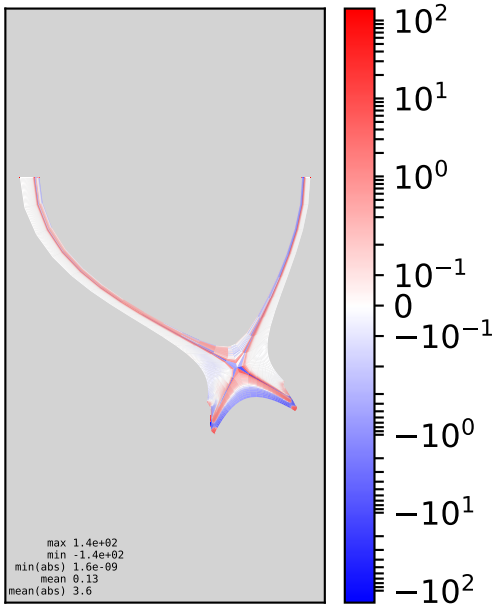
$P_{rad\ imp}$ [MW/m^3]



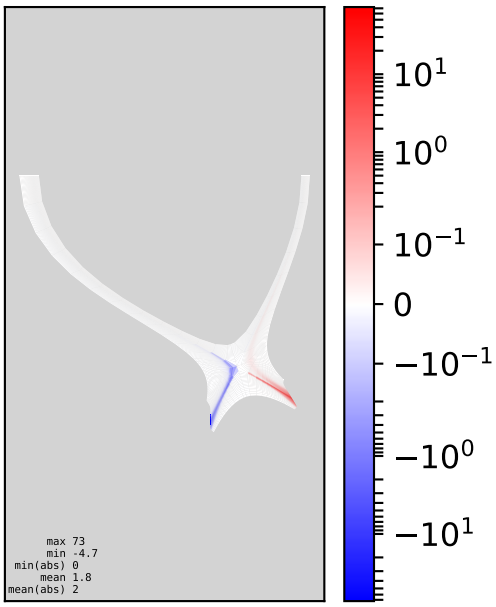
$P_{poloidal}$ [MW/m^3]



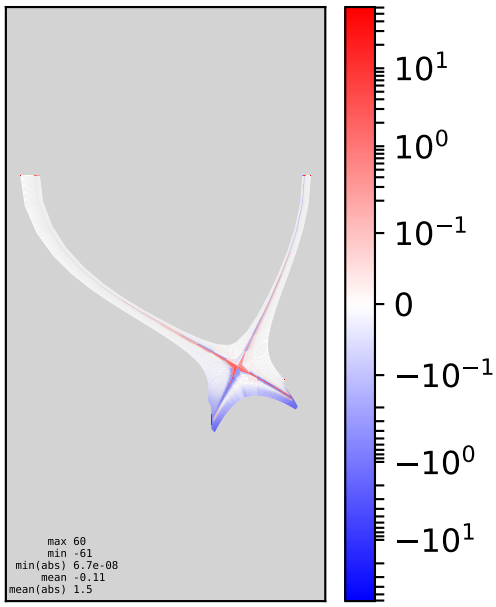
P_{radial} [MW/m^3]



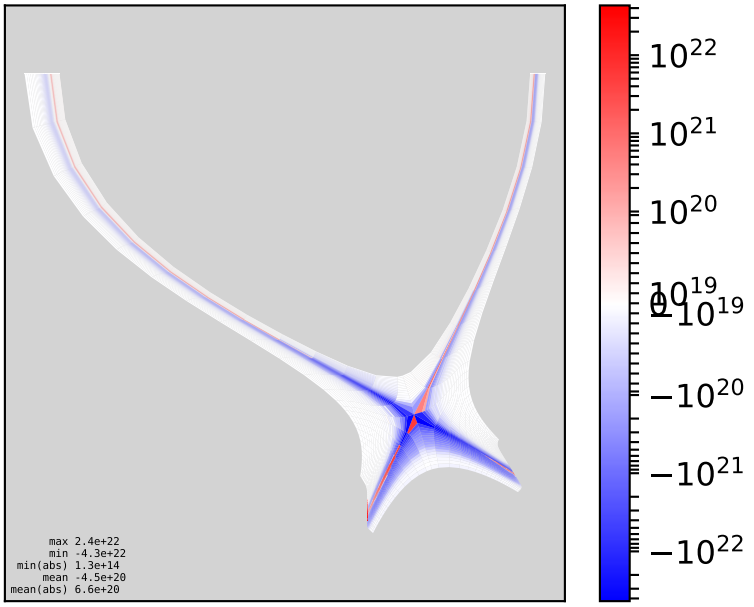
$P_{ion\ KE}$ [MW/m^3]



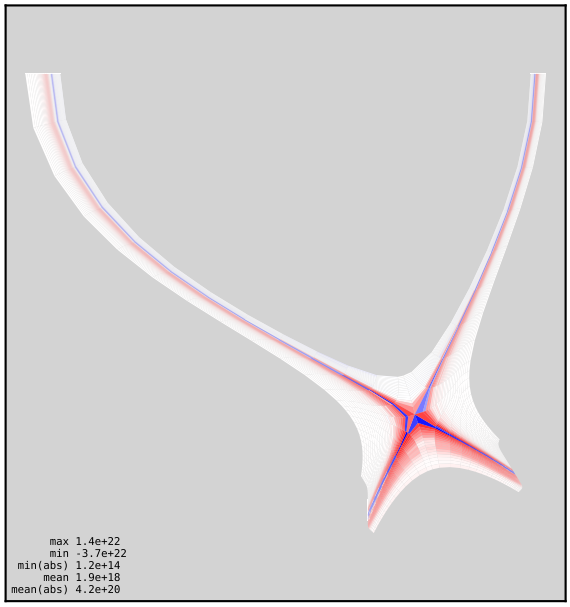
Power balance [MW/m^3]

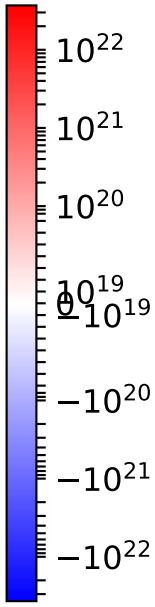


Poloidal source [s^{-1}]

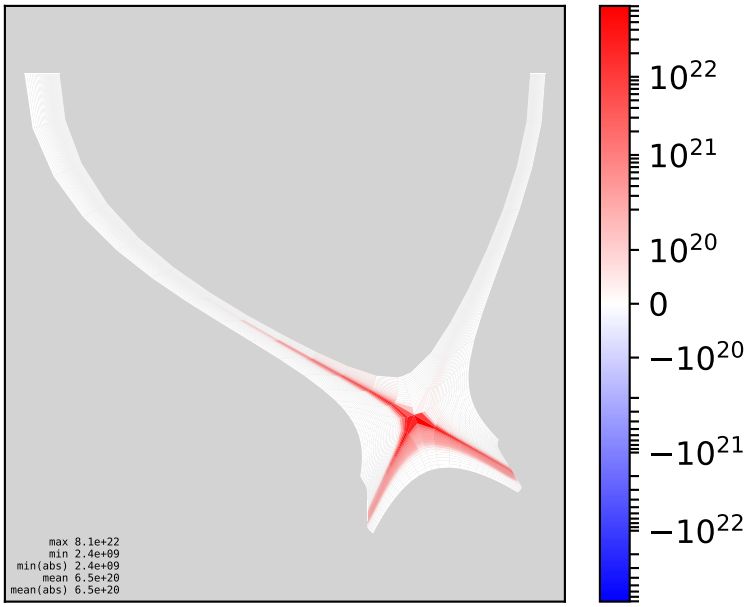


Radial source [s^{-1}]

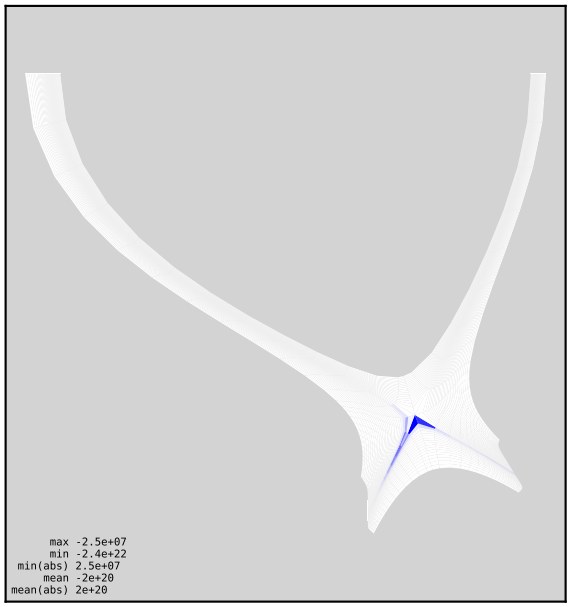


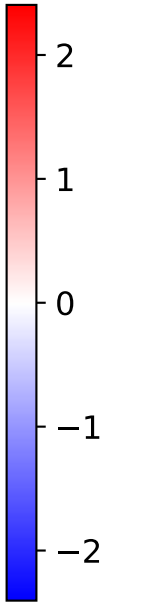


Ionization source [s^{-1}]

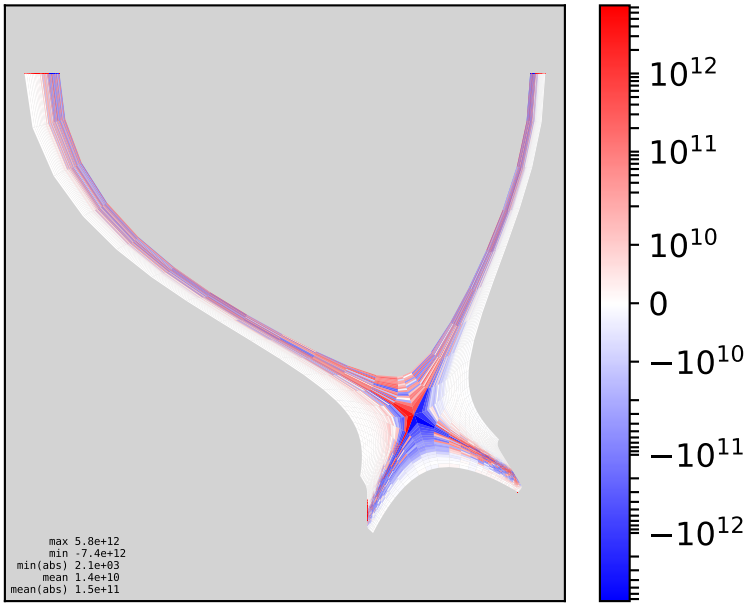


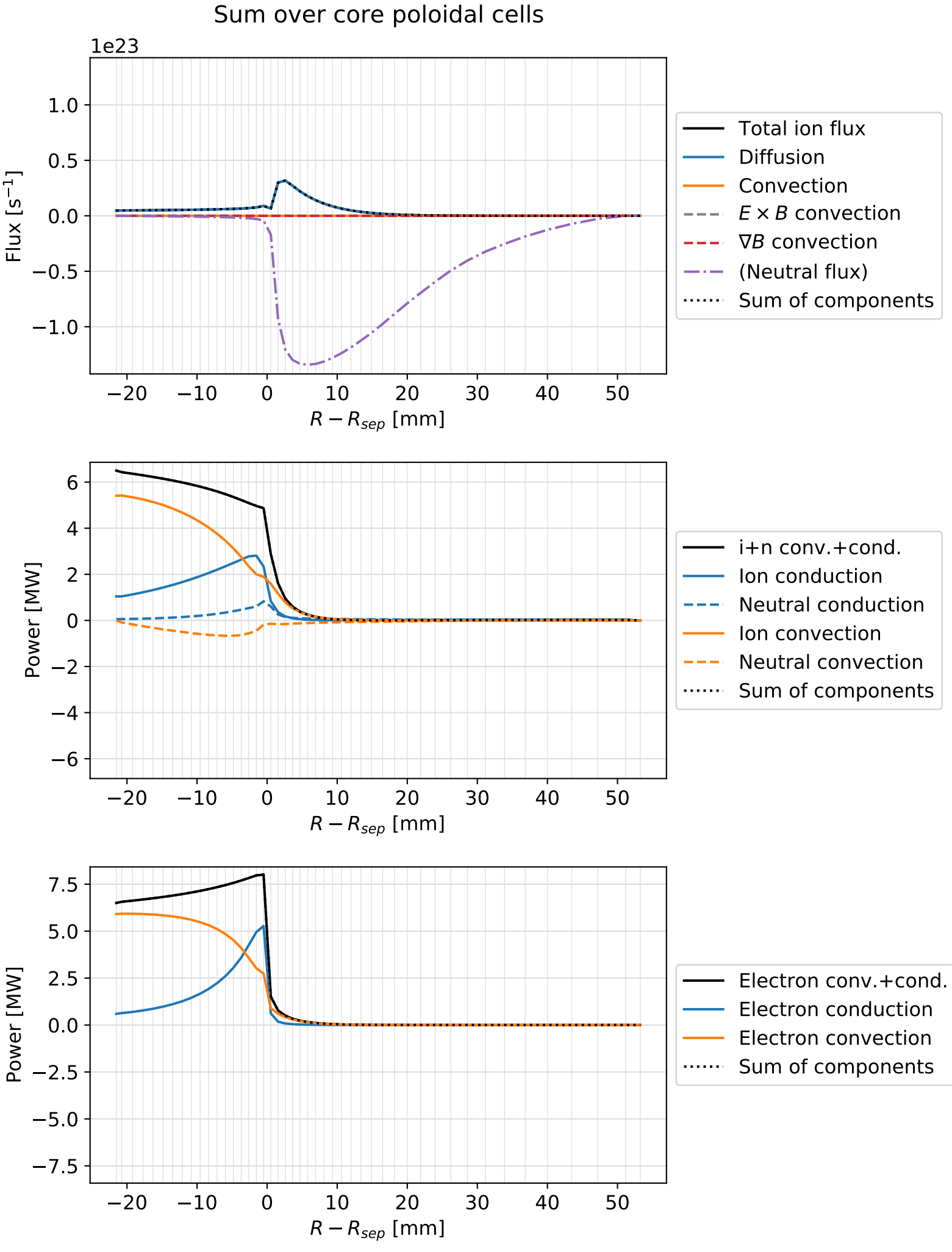
Recombination source [s^{-1}]





Particle balance [s^{-1}]




Sum over core poloidal cells
1e23
Flux [s^{-1}]
1.0
0.5
0.0
−0.5
−1.0
−20
−10
0
10
20
30
40
50
$R - R_{sep}$ [mm]
Total ion flux
Diffusion
Convection
$E \times B$ convection
∇B convection
(Neutral flux)
Sum of components
Power [MW]
6
4
2
0
−2
−4
−6
$R - R_{sep}$ [mm]
i+n conv.+cond.
Ion conduction
Neutral conduction
Ion convection
Neutral convection
Sum of components
Power [MW]
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
$R - R_{sep}$ [mm]
Electron conv.+cond.
Electron conduction
Electron convection
Sum of components