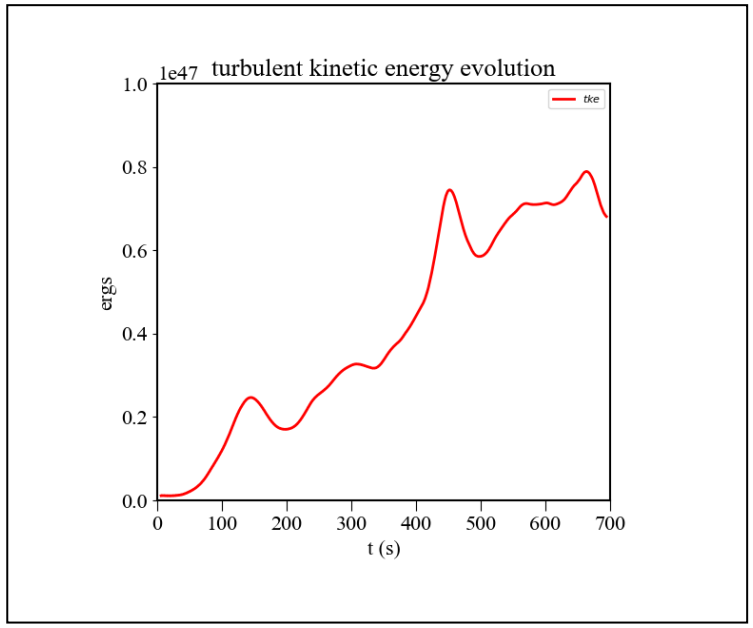
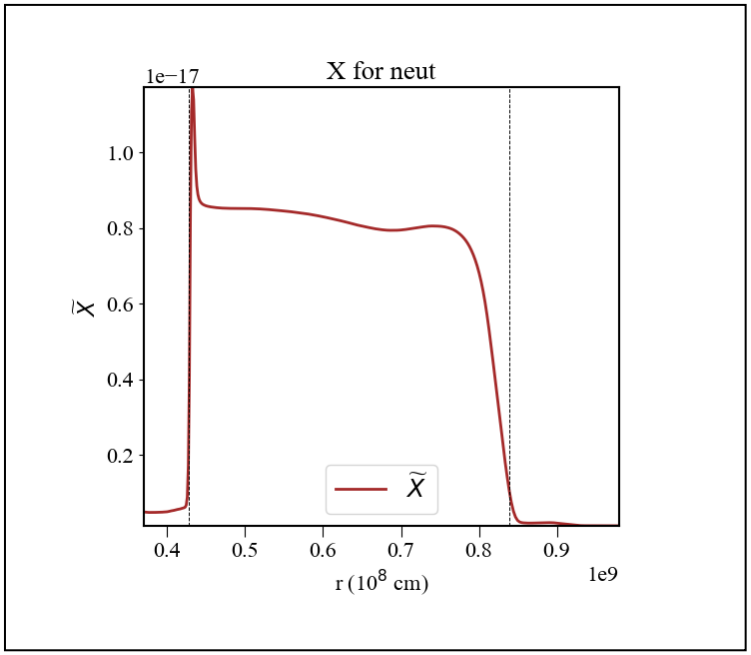
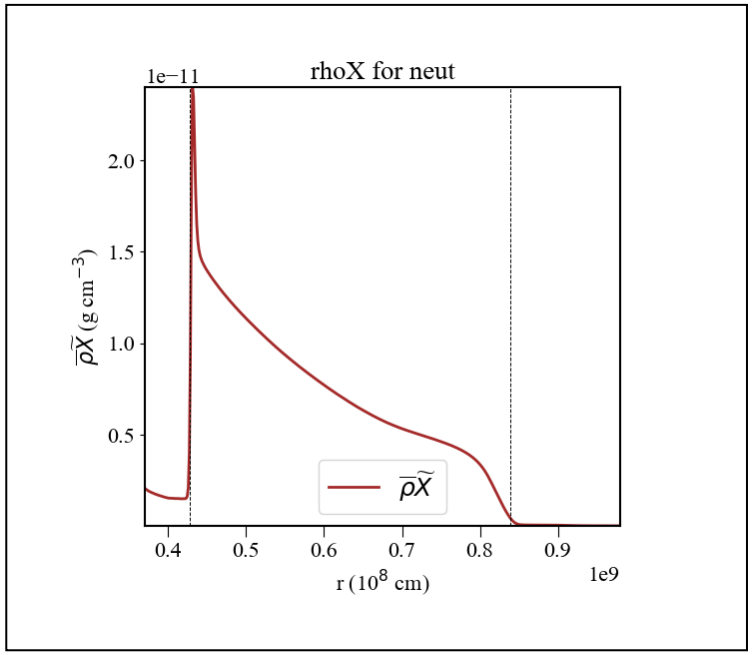
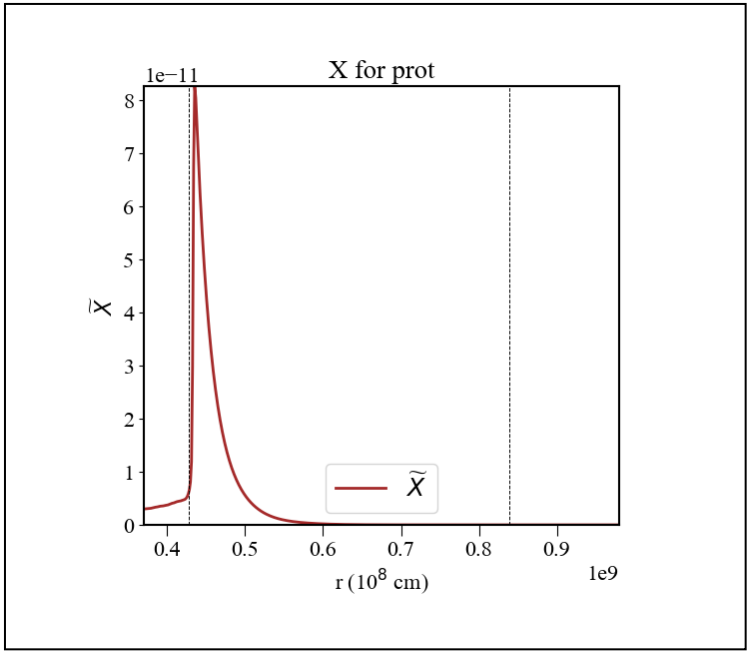
OBURN MLREZ (384x192x192)

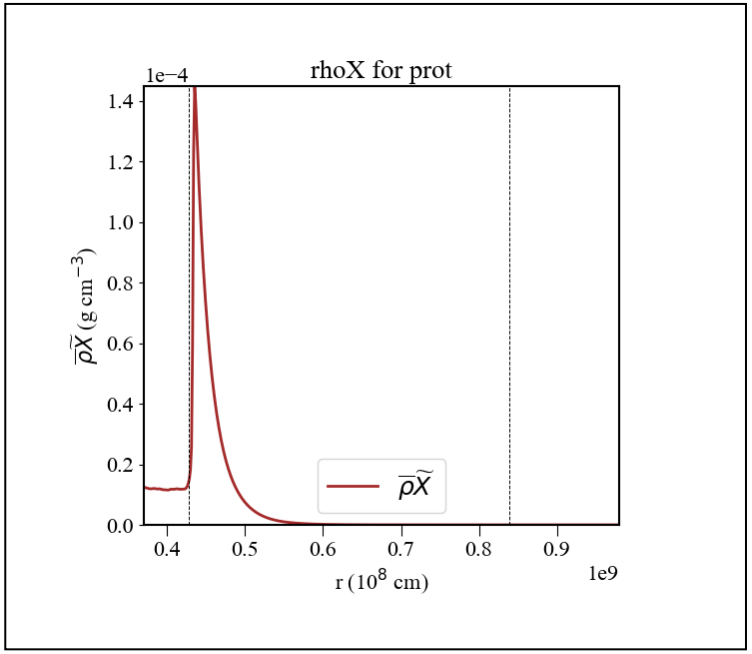
```
In [1]: run ransX.py
#-------------------------------------------------#
('Datafile with space-time averages: ', 'DATA/TSERIES/tseries_ransout_mlrezoburn.npy')
('Central time (in s): ', 494.3)
('Averaging windows (in s): ', 400.0)
('Time range (in s from-to): ', 290.0, 700.0)
---------------
Resolution: 384 192 192
Radial size of computational domain (in cm): 3.00e+08 1.00e+09
Radial size of convection zone (in cm):  4.27e+08 8.39e+08
Extent of convection zone (in Hp): 1.917783
Averaging time window (in s): 400.000000
RMS velocities in convection zone (in cm/s):  8.17e+06
Convective turnover timescale (in s)  1.01e+02
P_turb o P_gas 2.23e-04
Dissipation length scale (in cm): 7.99e+08
Total nuclear luminosity (in erg/s): 1.19e+46
Rate of TKE dissipation (in erg/s): 1.17e+45
Dissipation timescale for TKE (in s): 48.858122
Reynolds number: 1288
```

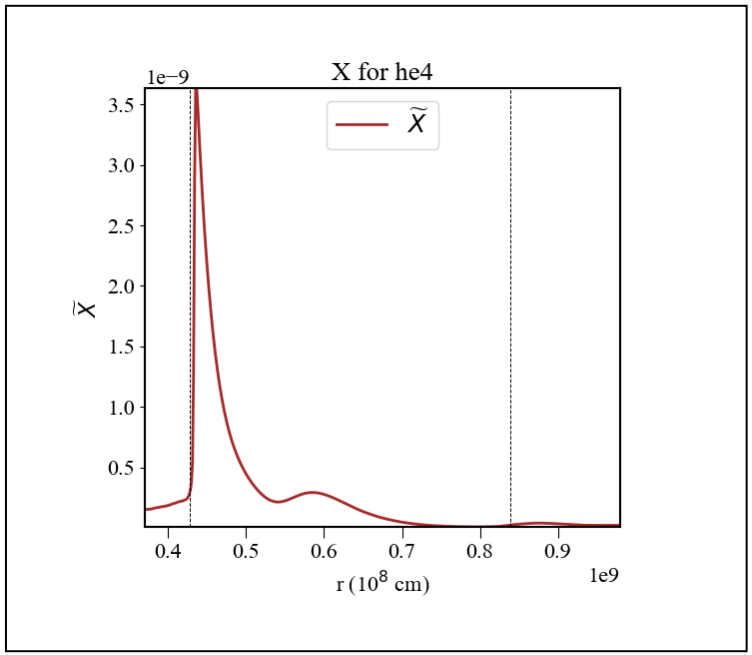


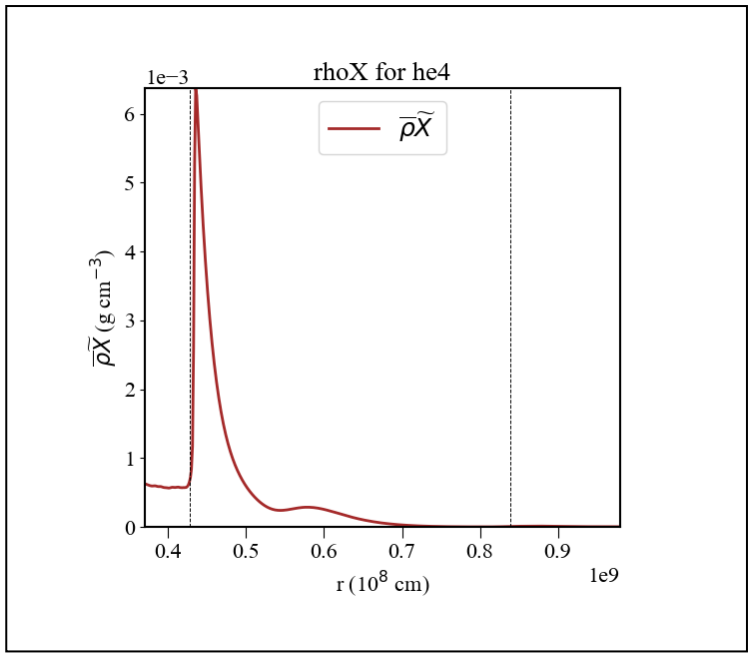

X for neut
1e−17
1.0
0.8
0.6
0.4
0.2
$\widetilde{X}$
$\widetilde{X}$
0.4
0.5
0.6
0.7
0.8
0.9
1e9
r (10^8 cm)

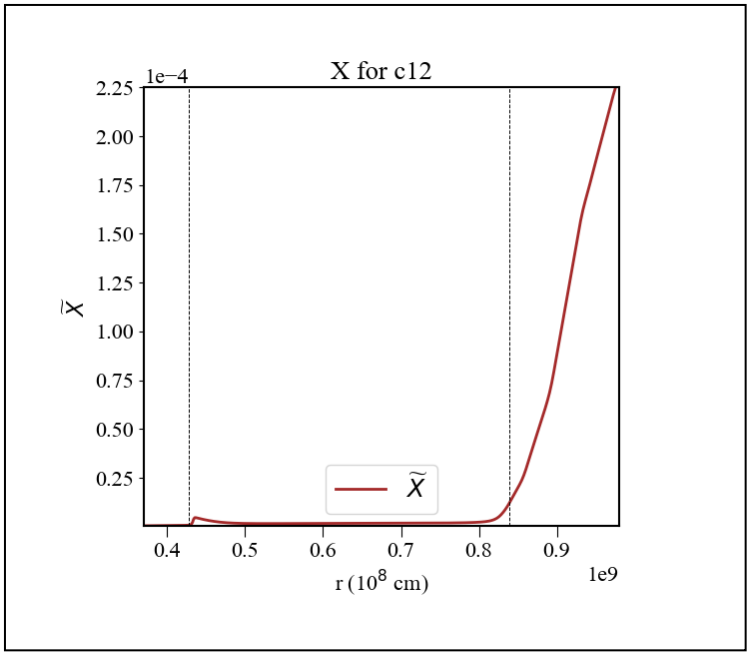

rhoX for neut
1e−11
2.0
1.5
1.0
0.5
$\overline{\rho}\widetilde{X}$ (g cm^{-3})
$\overline{\rho}\widetilde{X}$
0.4
0.5
0.6
0.7
0.8
0.9
1e9
r (10^8 cm)

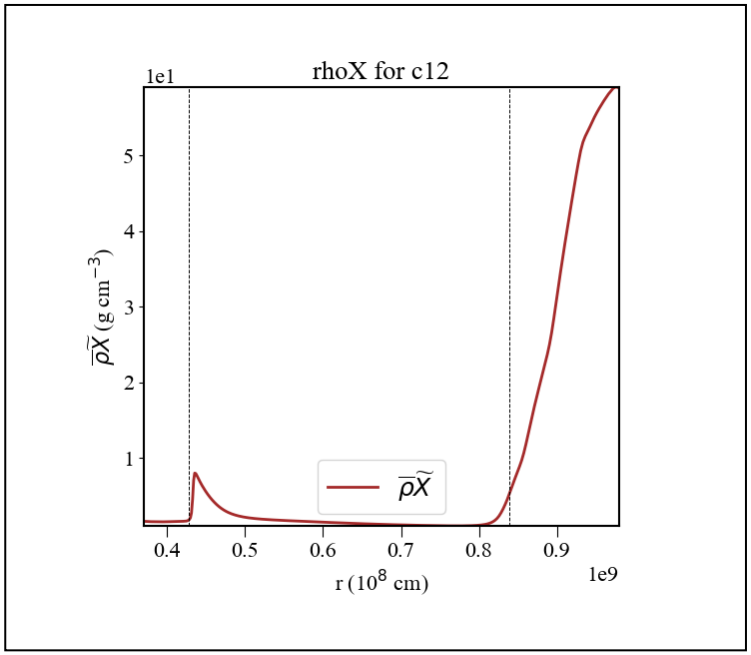

X for prot
1e−11
8
7
6
5
4
3
2
1
0
$\widetilde{X}$
$\widetilde{X}$
0.4
0.5
0.6
0.7
0.8
0.9
1e9
r (10^8 cm)

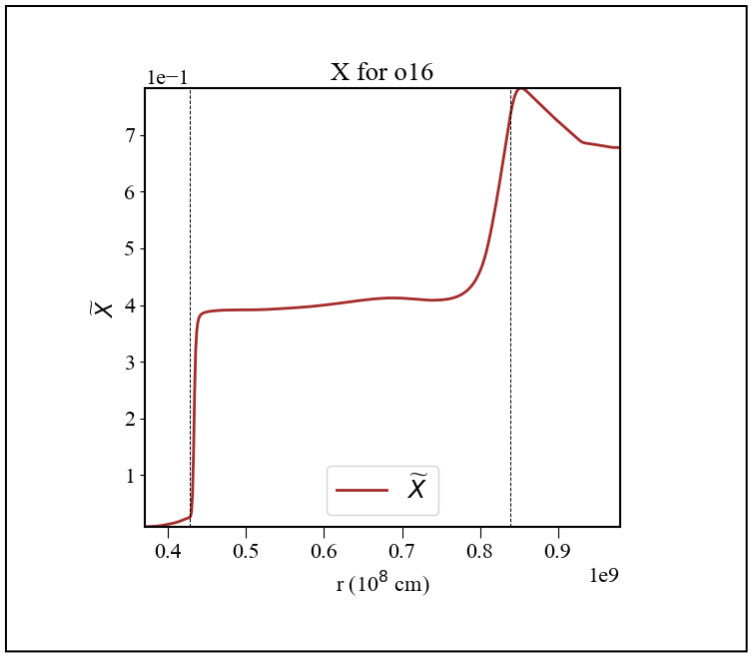

rhoX for prot
1e−4
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
$\overline{\rho}\widetilde{X}$ (g cm^{-3})
$\overline{\rho}\widetilde{X}$
0.4
0.5
0.6
0.7
0.8
0.9
1e9
r (10^8 cm)

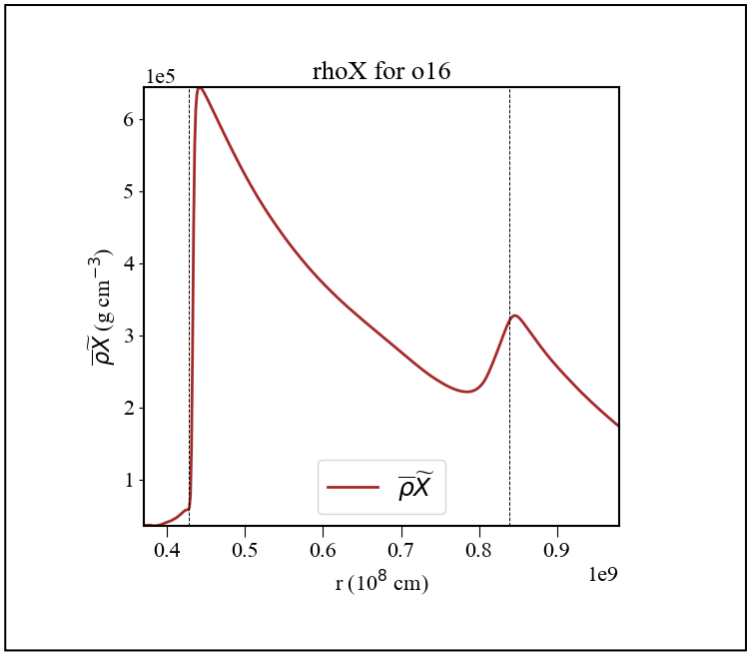

X for he4
1e−9
$\widetilde{X}$
$\widetilde{X}$
r (10^8 cm)
1e9

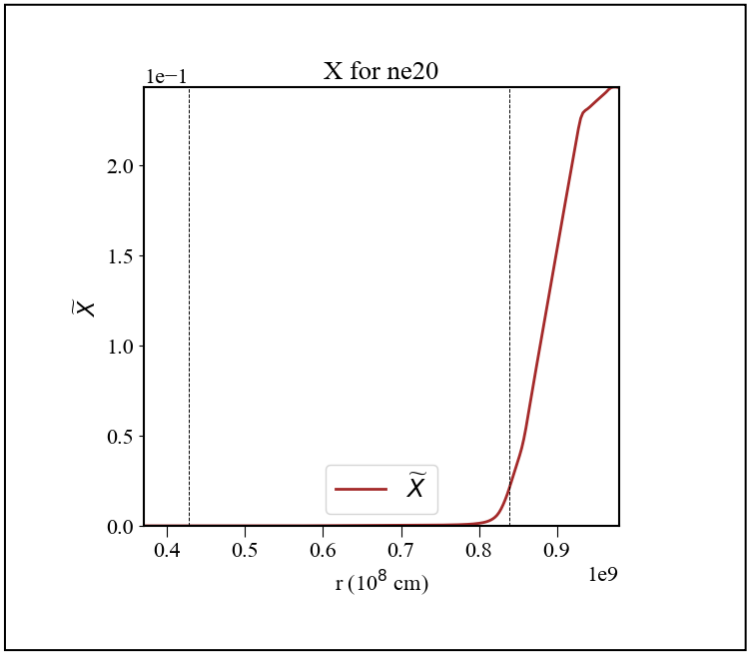

rhoX for he4
1e−3
$\overline{\rho}\widetilde{X}$
$\overline{\rho}\widetilde{X}$ (g cm^{-3})
r (10^8 cm)
1e9

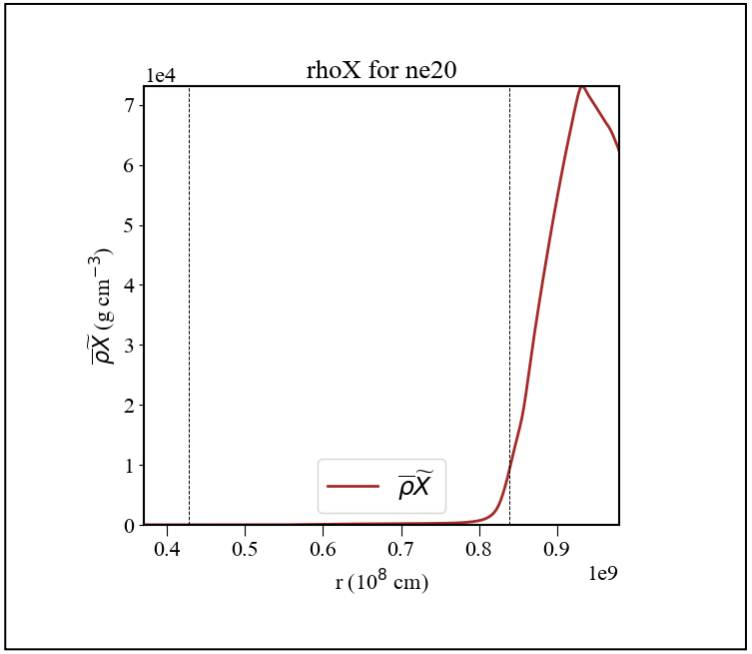

X for c12
1e−4
$\widetilde{X}$
$\widetilde{X}$
r (10^8 cm)
1e9

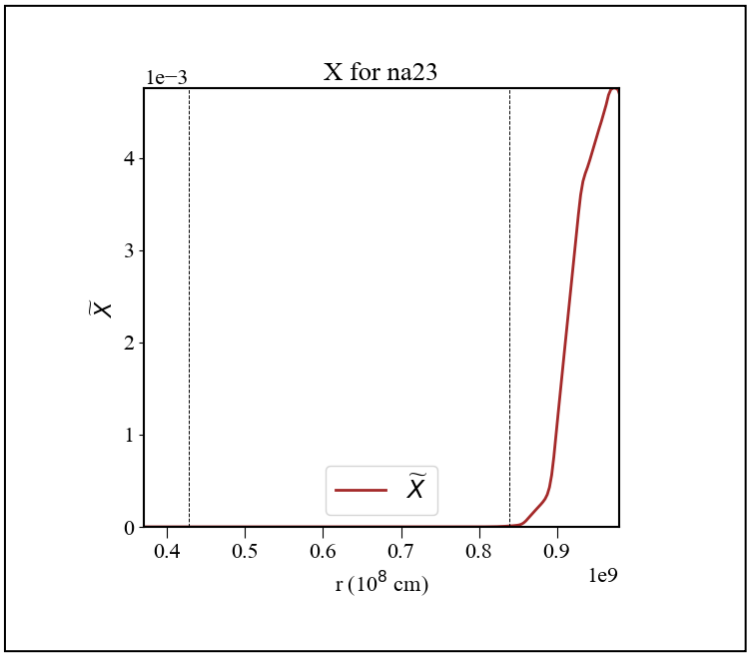

rhoX for c12
1e1
$\overline{\rho}\widetilde{X}$
$\overline{\rho}\widetilde{X}$ (g cm^{-3})
r (10^8 cm)
1e9

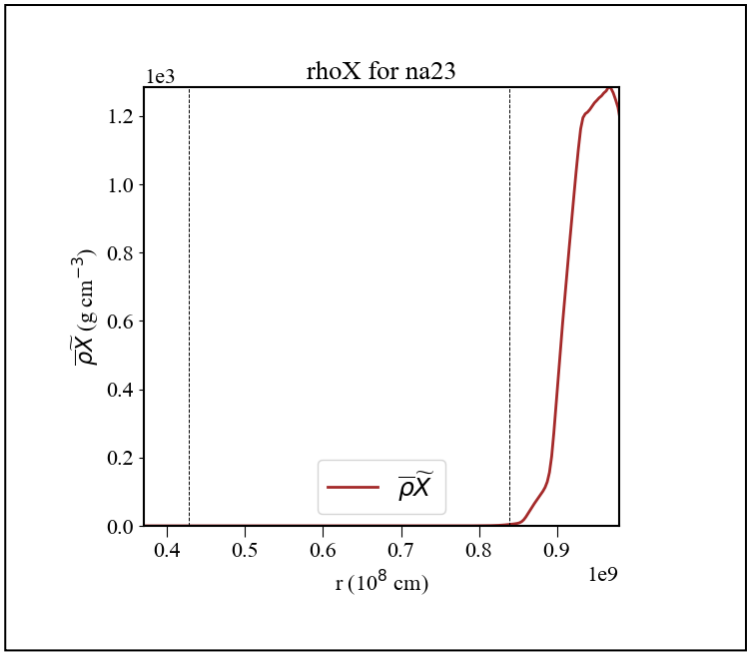

X for o16
1e−1
$\widetilde{X}$
$\widetilde{X}$
r (10^8 cm)
1e9

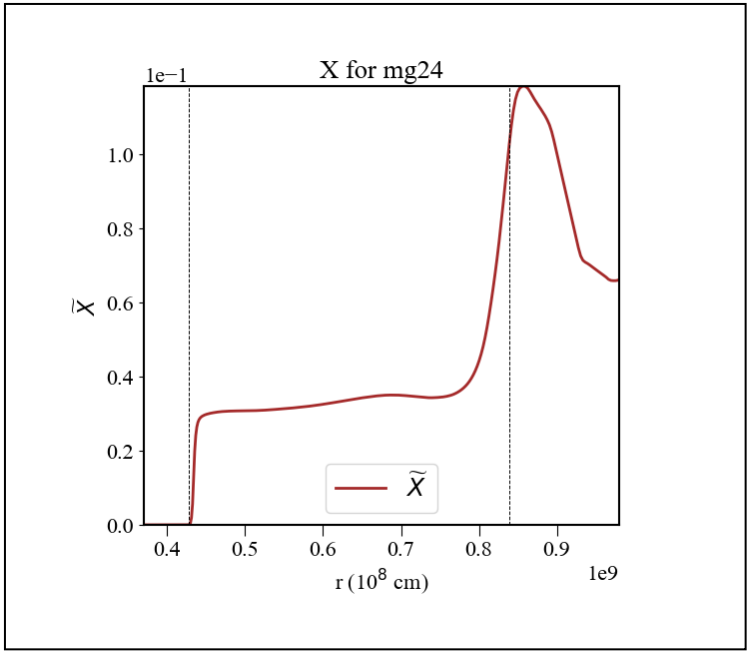

rhoX for o16
1e5
$\overline{\rho}\widetilde{X}$ (g cm^{-3})
$\overline{\rho}\widetilde{X}$
r (10^8 cm)
1e9

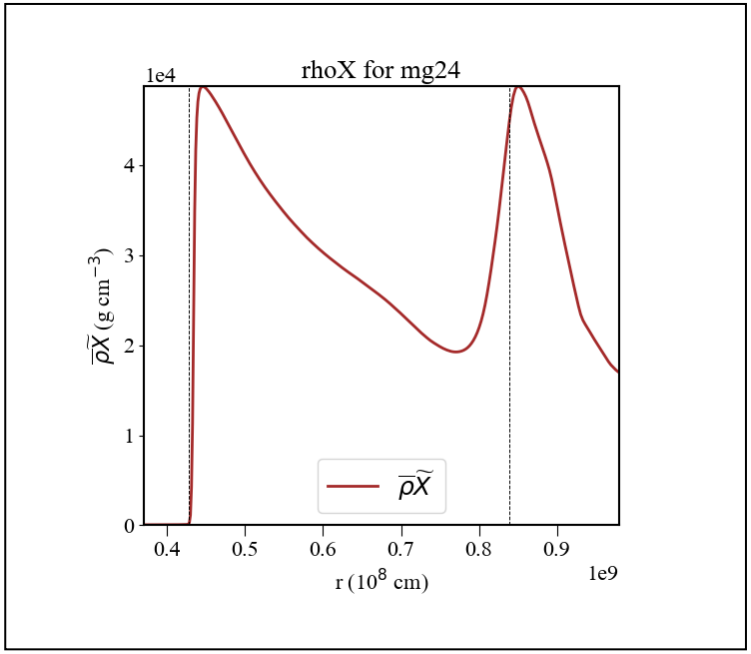

X for ne20
1e−1
$\widetilde{X}$
$\widetilde{X}$
r (10^8 cm)
1e9

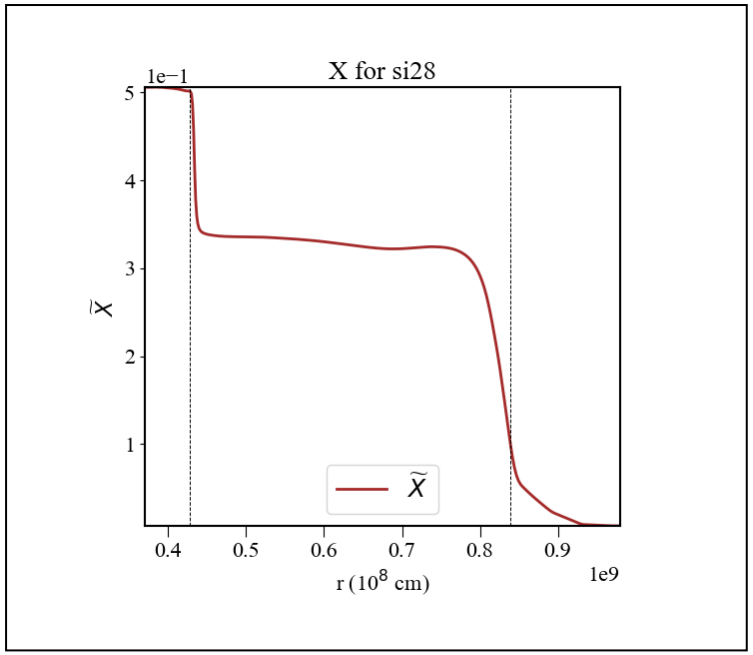

rhoX for ne20
1e4
$\overline{\rho}\widetilde{X}$ (g cm^{-3})
$\overline{\rho}\widetilde{X}$
r (10^8 cm)
1e9

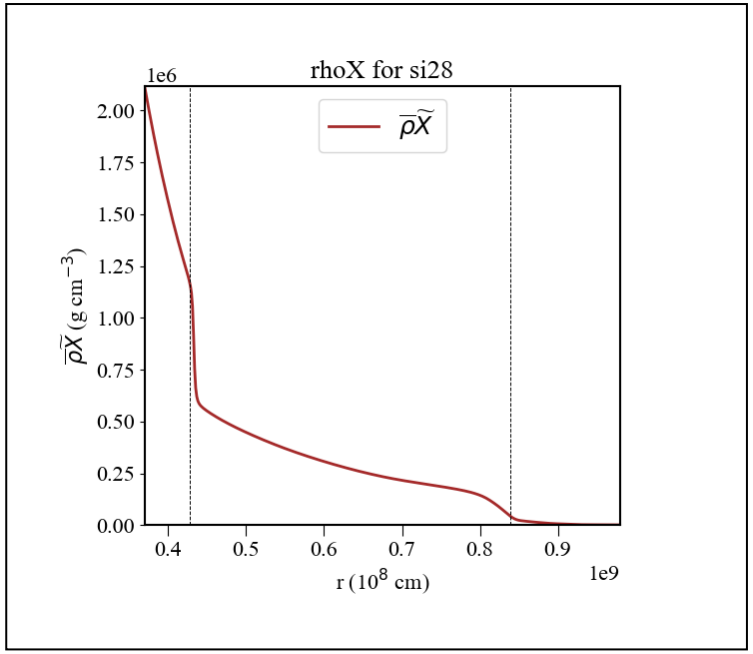

X for na23
1e−3
$\widetilde{X}$
r (10^8 cm)
1e9
$\widetilde{X}$

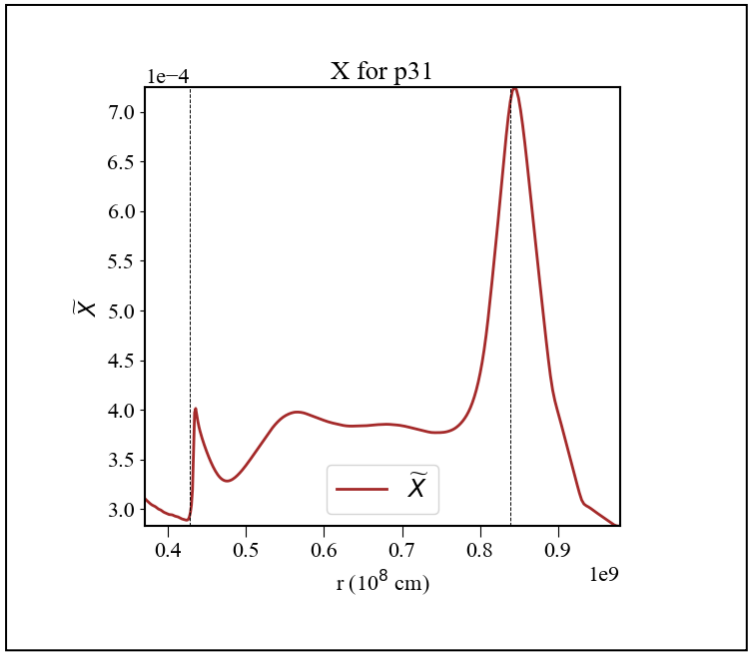

rhoX for na23
1e3
$\overline{\rho}\widetilde{X}$ (g cm^{-3})
r (10^8 cm)
1e9
$\overline{\rho}\widetilde{X}$

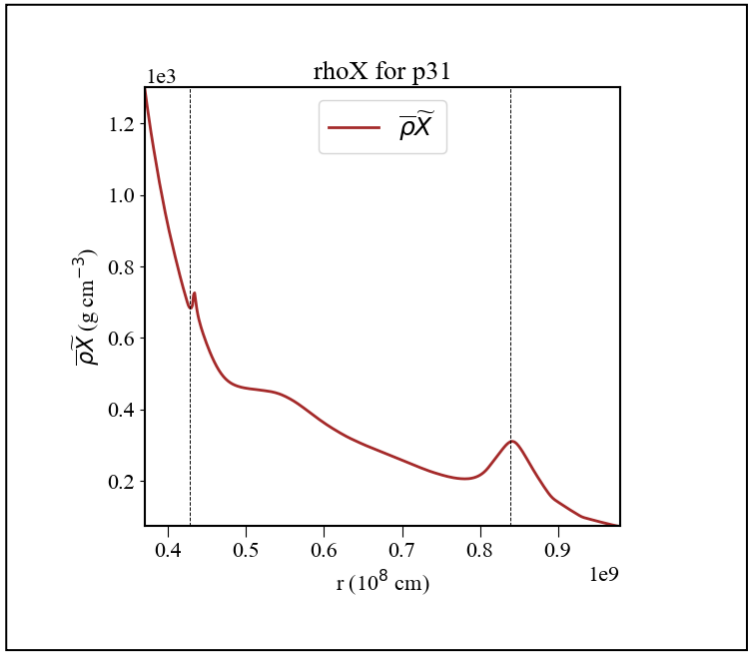

X for mg24
1e−1
$\widetilde{X}$
r (10^8 cm)
1e9
$\widetilde{X}$

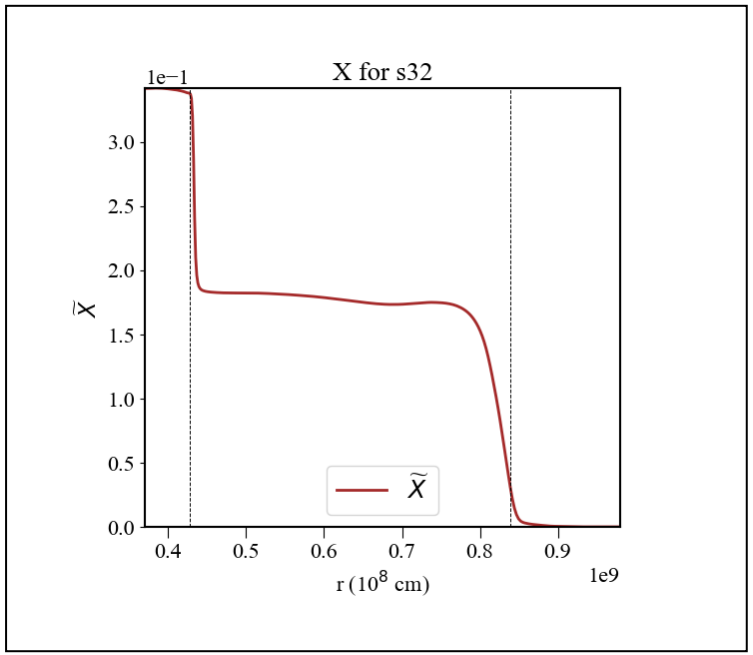

rhoX for mg24
1e4
$\overline{\rho}\widetilde{X}$ (g cm^{-3})
r (10^8 cm)
1e9
$\overline{\rho}\widetilde{X}$

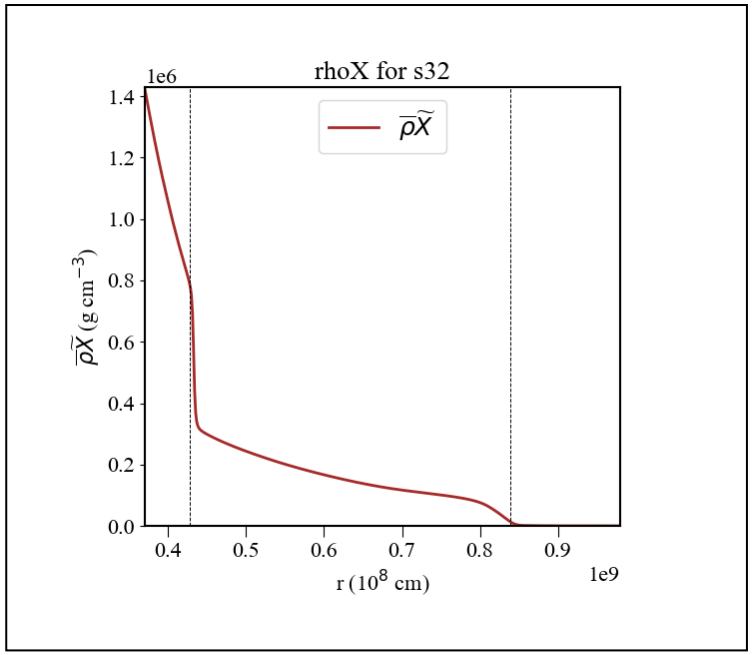

X for si28
1e−1
5
4
3
2
1
$\widetilde{X}$
0.4
0.5
0.6
0.7
0.8
0.9
1e9
r (10^8 cm)
$\widetilde{X}$

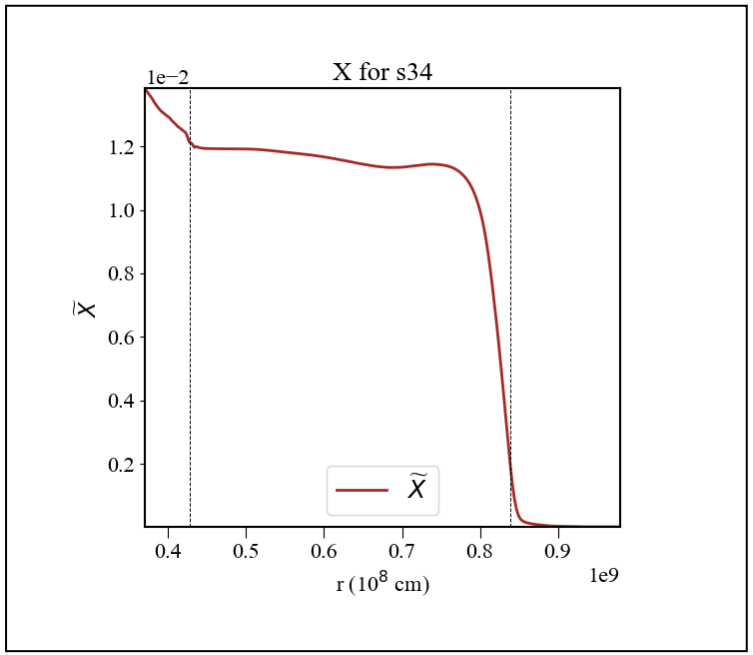

rhoX for si28
1e6
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
$\overline{\rho}\widetilde{X}$ (g cm^{-3})
0.4
0.5
0.6
0.7
0.8
0.9
1e9
r (10^8 cm)
$\overline{\rho}\widetilde{X}$

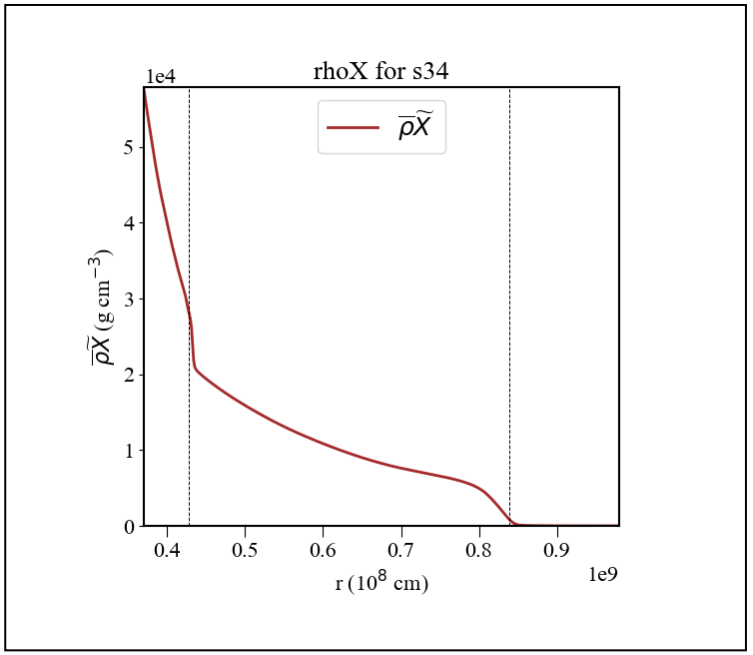

X for p31
1e−4
7.0
6.5
6.0
5.5
5.0
4.5
4.0
3.5
3.0
$\widetilde{X}$
0.4
0.5
0.6
0.7
0.8
0.9
1e9
r (10^8 cm)
$\widetilde{X}$

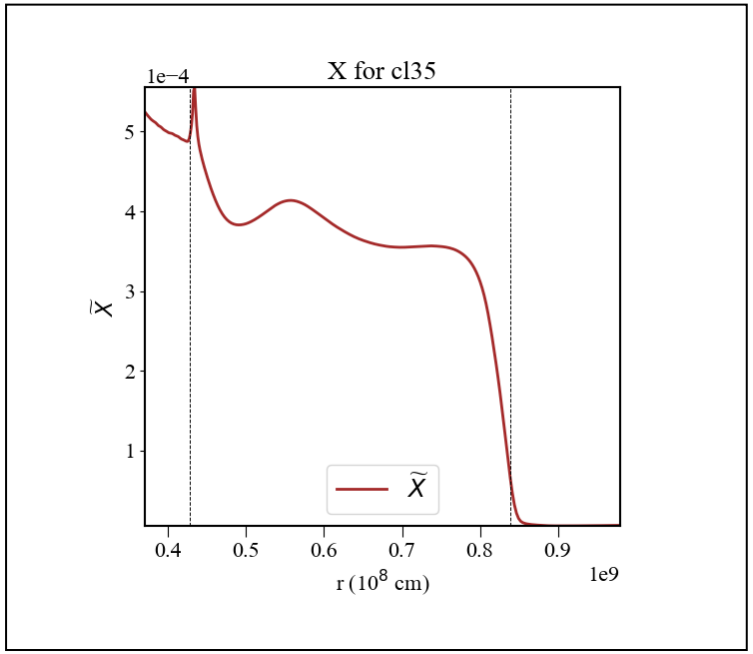

rhoX for p31
1e3
1.2
1.0
0.8
0.6
0.4
0.2
$\overline{\rho}\widetilde{X}$ (g cm^{-3})
0.4
0.5
0.6
0.7
0.8
0.9
1e9
r (10^8 cm)
$\overline{\rho}\widetilde{X}$

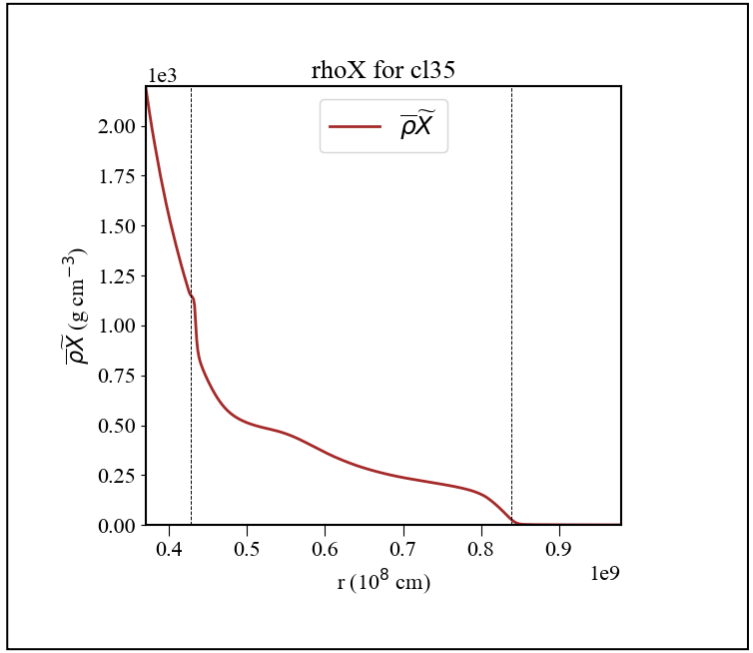

X for s32
1e−1
3.0
2.5
2.0
1.5
1.0
0.5
0.0
$\widetilde{X}$
0.4
0.5
0.6
0.7
0.8
0.9
1e9
r (10^8 cm)
$\widetilde{X}$

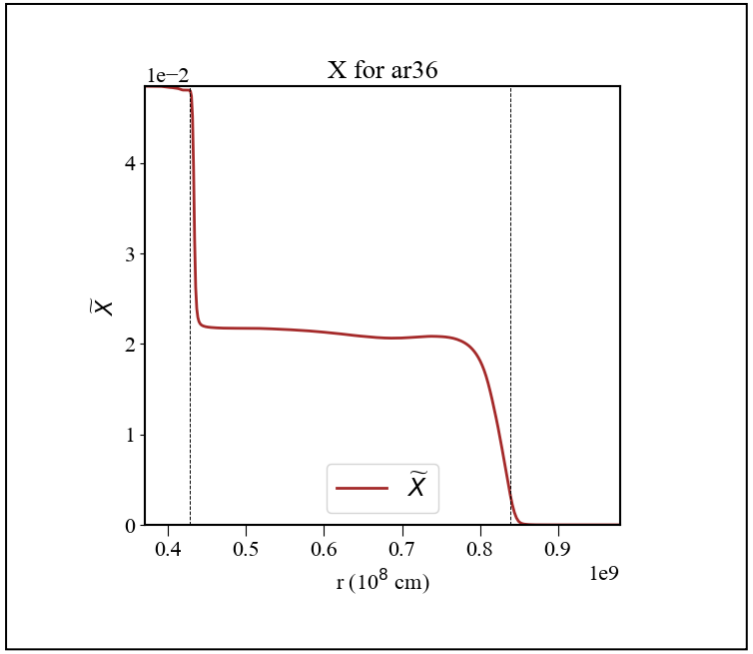

rhoX for s32
1e6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
$\overline{\rho}\widetilde{X}$ (g cm^{-3})
0.4
0.5
0.6
0.7
0.8
0.9
1e9
r (10^8 cm)
$\overline{\rho}\widetilde{X}$

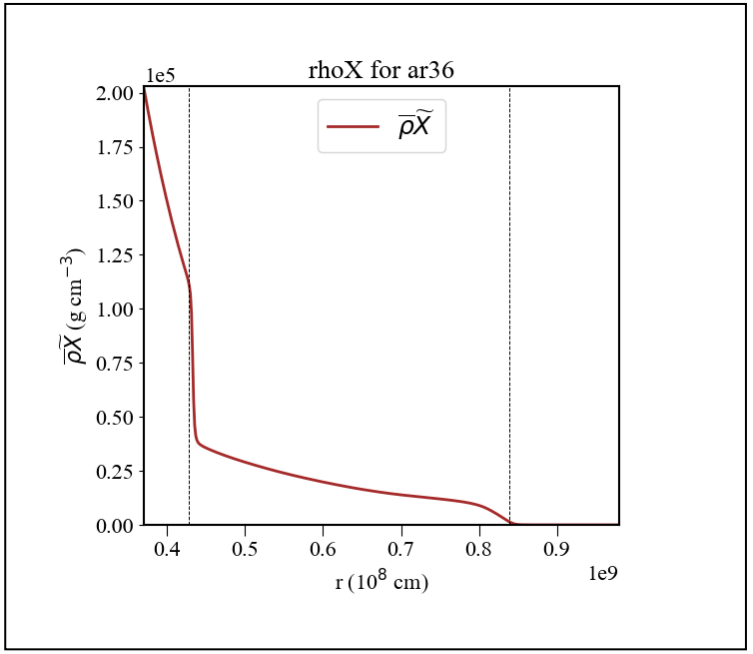

X for s34
1e−2
1.2
1.0
0.8
0.6
0.4
0.2
$\widetilde{X}$
0.4
0.5
0.6
0.7
0.8
0.9
1e9
r (10^8 cm)
$\widetilde{X}$

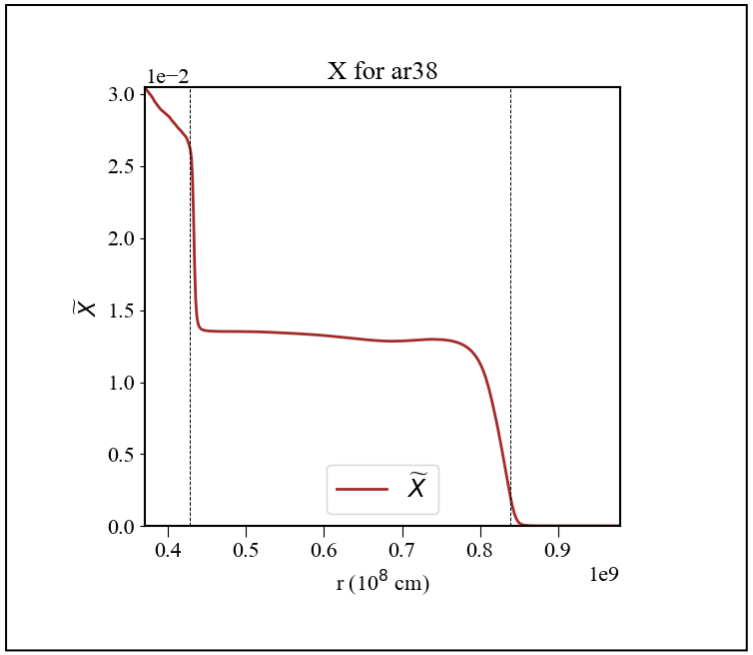

rhoX for s34
1e4
5
4
3
2
1
0
$\overline{\rho}\widetilde{X}$ (g cm^{-3})
0.4
0.5
0.6
0.7
0.8
0.9
1e9
r (10^8 cm)
$\overline{\rho}\widetilde{X}$

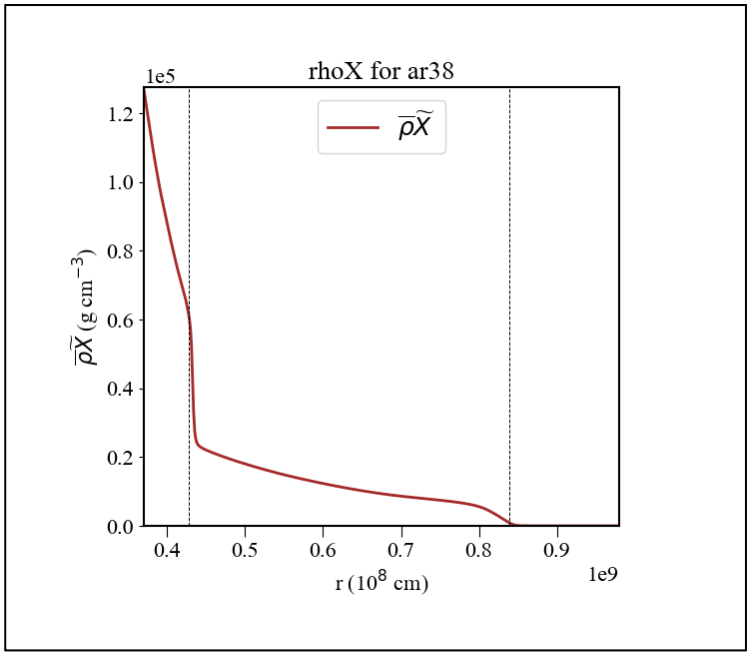

X for cl35
1e−4
5
4
3
2
1
$\widetilde{X}$
0.4
0.5
0.6
0.7
0.8
0.9
1e9
r (10^8 cm)
$\widetilde{X}$

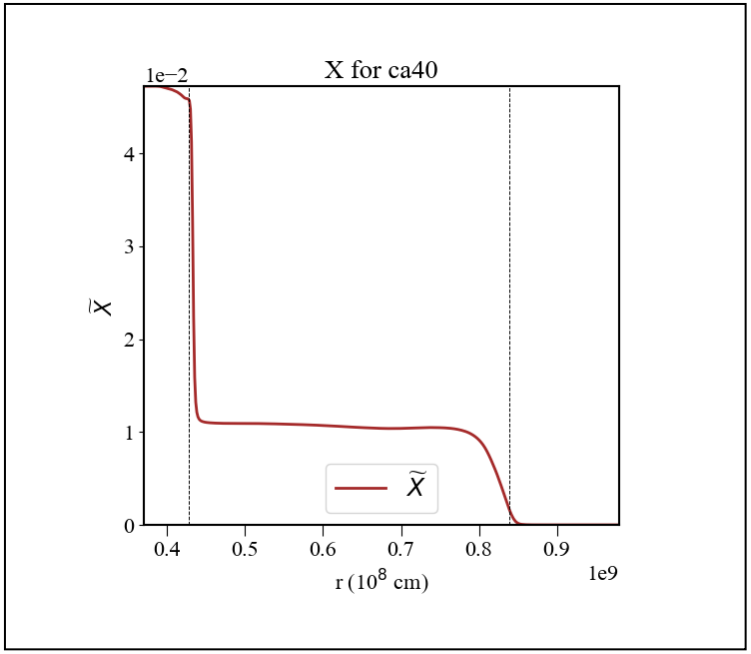

rhoX for cl35
1e3
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
$\overline{\rho}\widetilde{X}$ (g cm^{-3})
0.4
0.5
0.6
0.7
0.8
0.9
1e9
r (10^8 cm)
$\overline{\rho}\widetilde{X}$

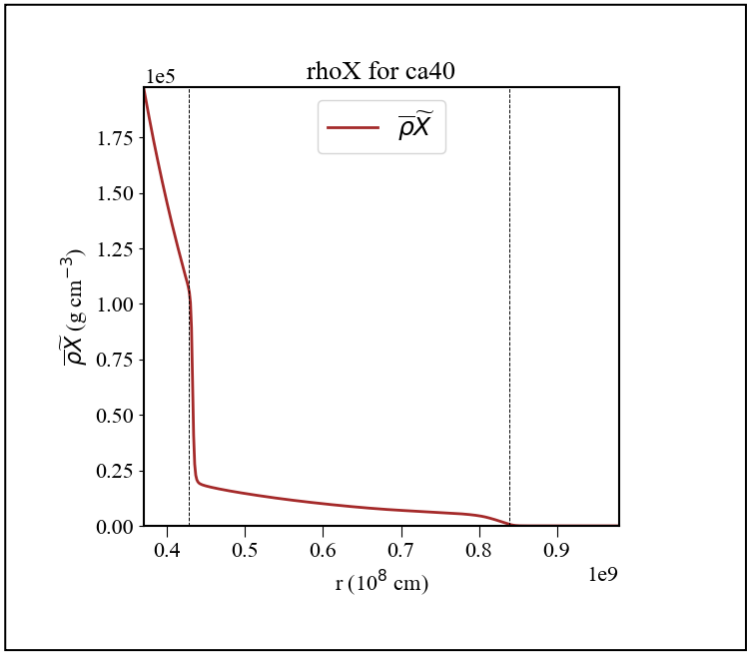

X for ar36
1e−2
4
3
2
1
0
$\widetilde{X}$
0.4
0.5
0.6
0.7
0.8
0.9
1e9
r (10^8 cm)
$\widetilde{X}$

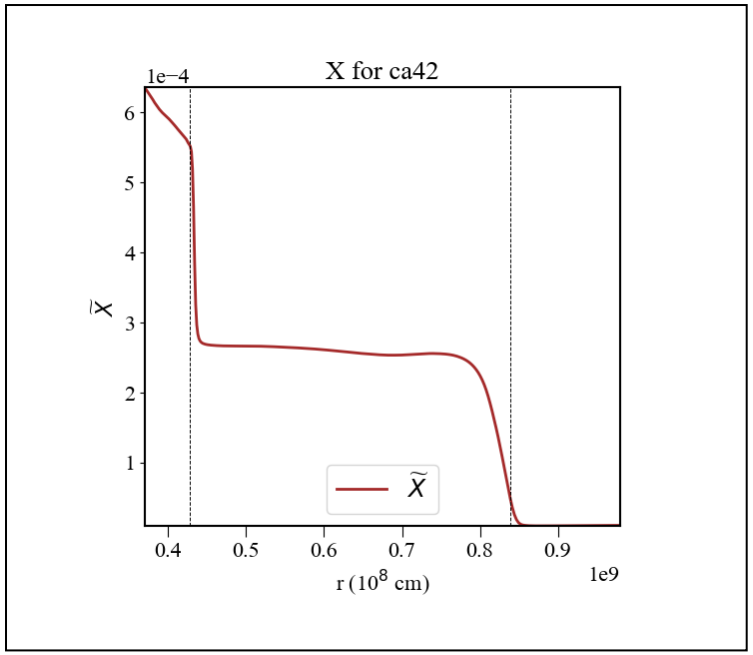

rhoX for ar36
1e5
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
$\overline{\rho}\widetilde{X}$ (g cm^{-3})
0.4
0.5
0.6
0.7
0.8
0.9
1e9
r (10^8 cm)
$\overline{\rho}\widetilde{X}$

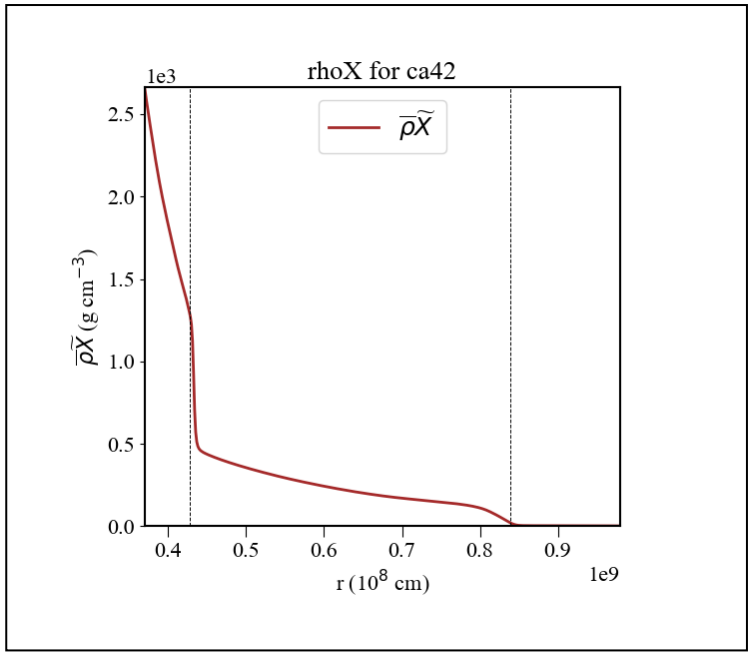

X for ar38
1e−2
3.0
2.5
2.0
1.5
1.0
0.5
0.0
$\widetilde{X}$
0.4
0.5
0.6
0.7
0.8
0.9
1e9
r (10^8 cm)
$\widetilde{X}$

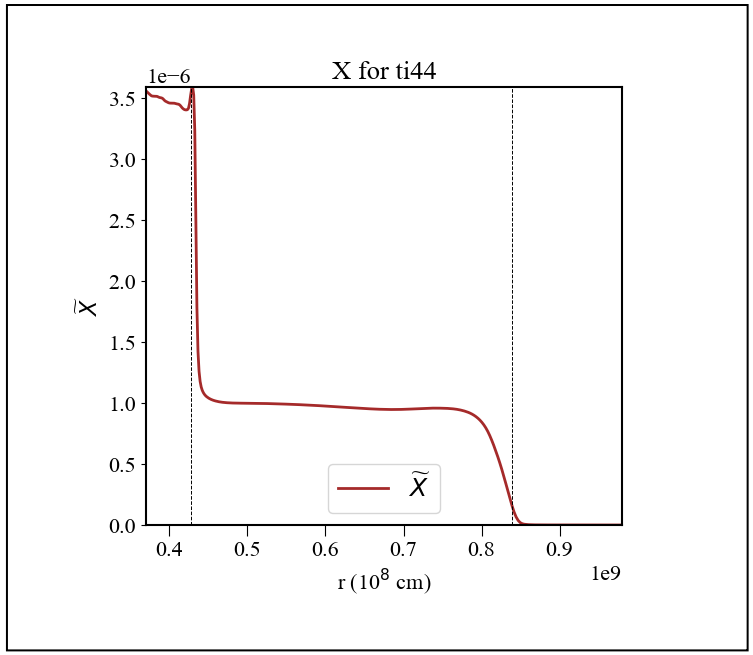

rhoX for ar38
1e5
1.2
1.0
0.8
0.6
0.4
0.2
0.0
$\overline{\rho}\widetilde{X}$ (g cm^{-3})
0.4
0.5
0.6
0.7
0.8
0.9
1e9
r (10^8 cm)
$\overline{\rho}\widetilde{X}$

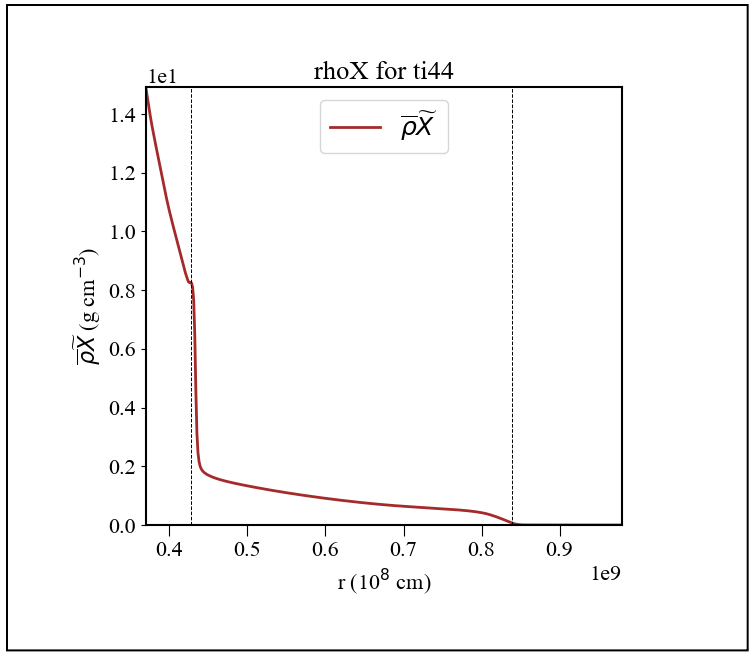

X for ca40
1e−2
4
3
2
1
0
$\widetilde{X}$
0.4
0.5
0.6
0.7
0.8
0.9
1e9
r (10^8 cm)
$\widetilde{X}$

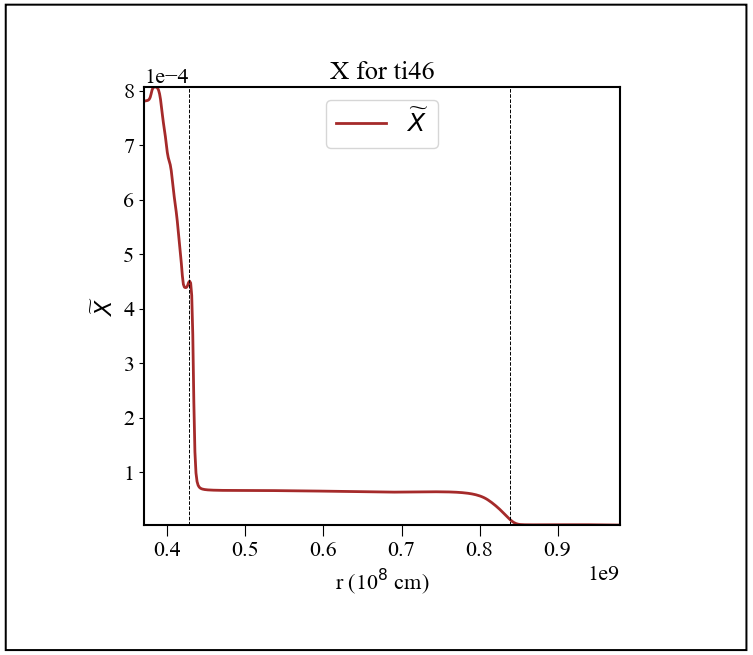

rhoX for ca40
1e5
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
$\overline{\rho}\widetilde{X}$ (g cm^{-3})
0.4
0.5
0.6
0.7
0.8
0.9
1e9
r (10^8 cm)
$\overline{\rho}\widetilde{X}$

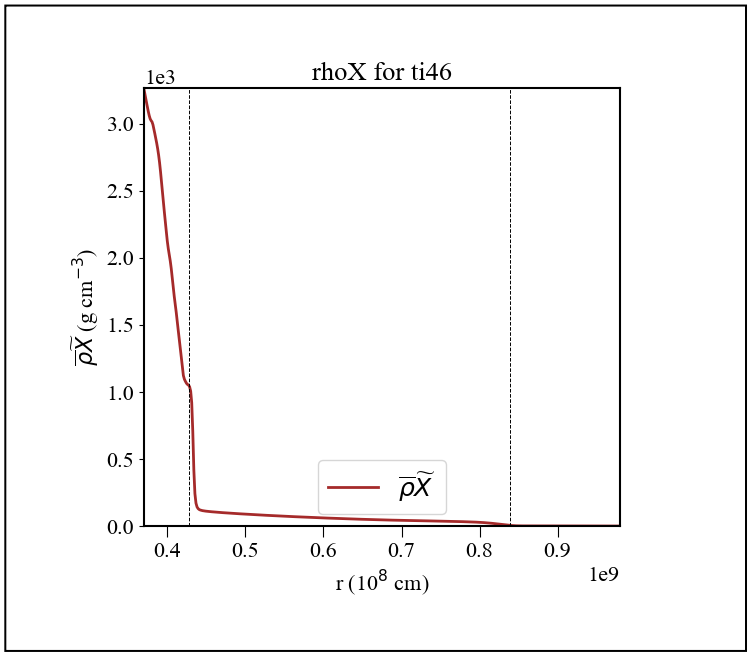

X for ca42
1e−4
$\widetilde{X}$
$\widetilde{X}$
r (10^8 cm)
1e9

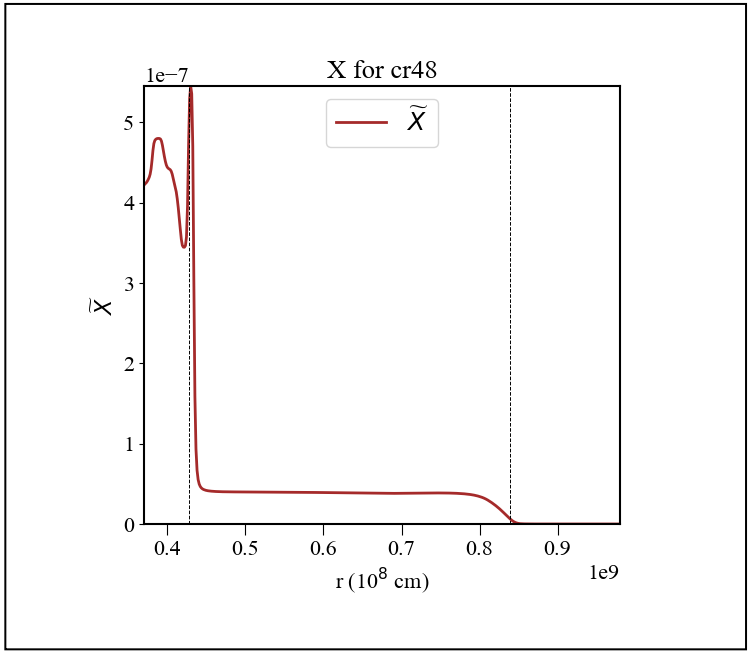

rhoX for ca42
1e3
$\overline{\rho}\widetilde{X}$
$\overline{\rho}\widetilde{X}$ (g cm^{-3})
r (10^8 cm)
1e9

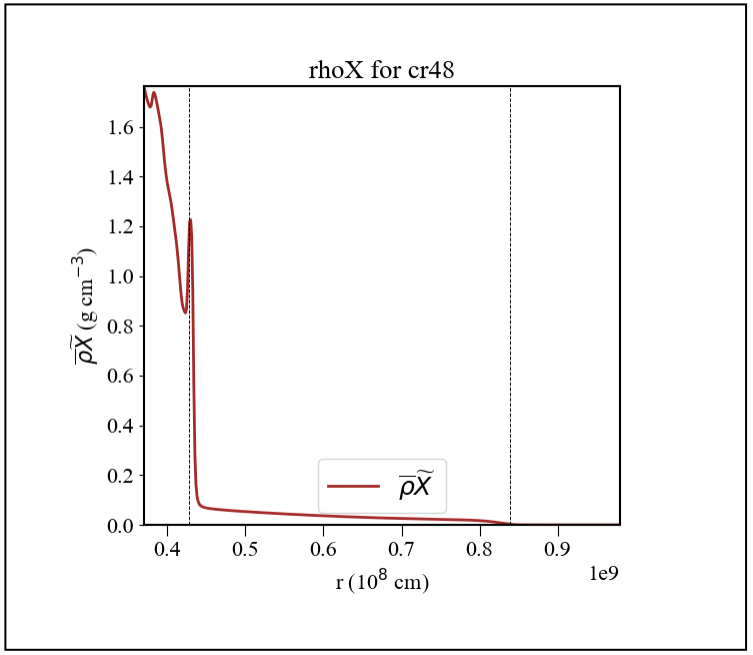

X for ti44
1e−6
$\widetilde{X}$
$\widetilde{X}$
r (10^8 cm)
1e9

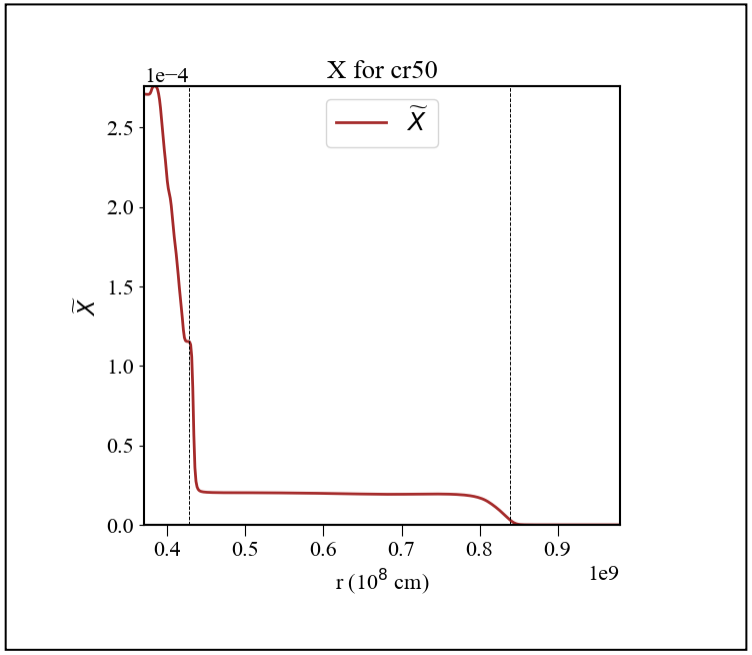

rhoX for ti44
1e1
$\overline{\rho}\widetilde{X}$
$\overline{\rho}\widetilde{X}$ (g cm^{-3})
r (10^8 cm)
1e9

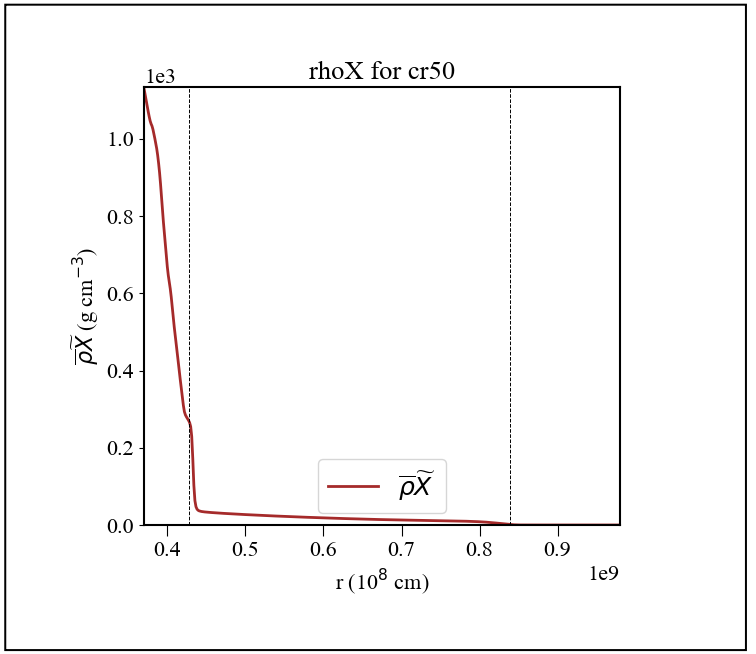

X for ti46
1e−4
$\widetilde{X}$
$\widetilde{X}$
r (10^8 cm)
1e9

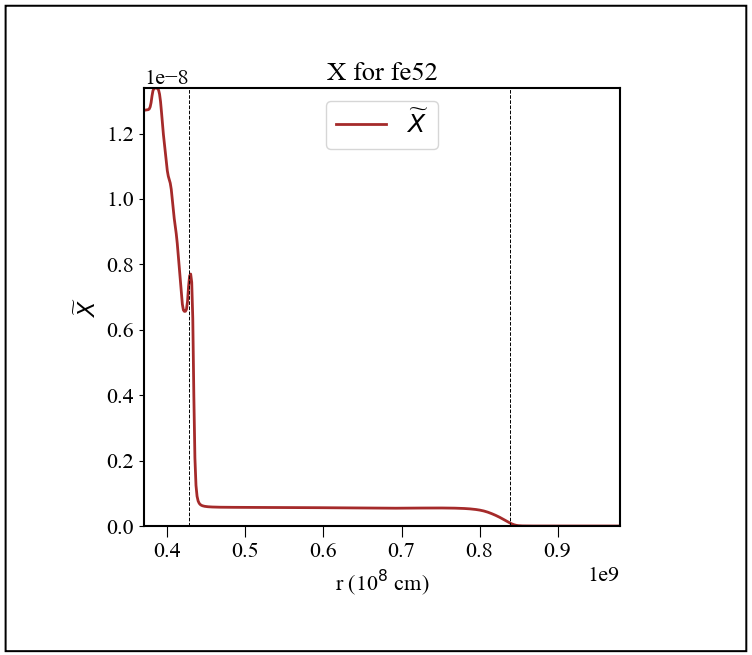

rhoX for ti46
1e3
$\overline{\rho}\widetilde{X}$ (g cm^{-3})
$\overline{\rho}\widetilde{X}$
r (10^8 cm)
1e9

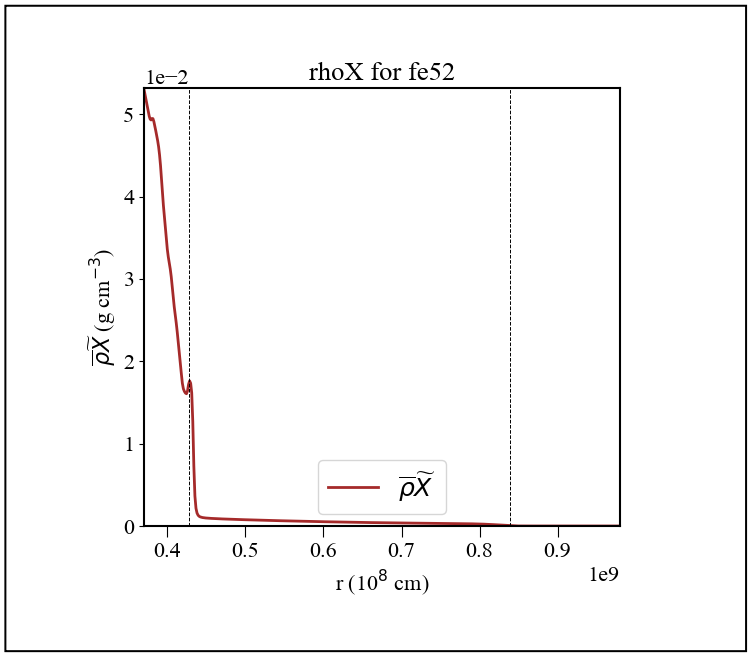

X for cr48
1e−7
$\widetilde{X}$
$\widetilde{X}$
r (10^8 cm)
1e9

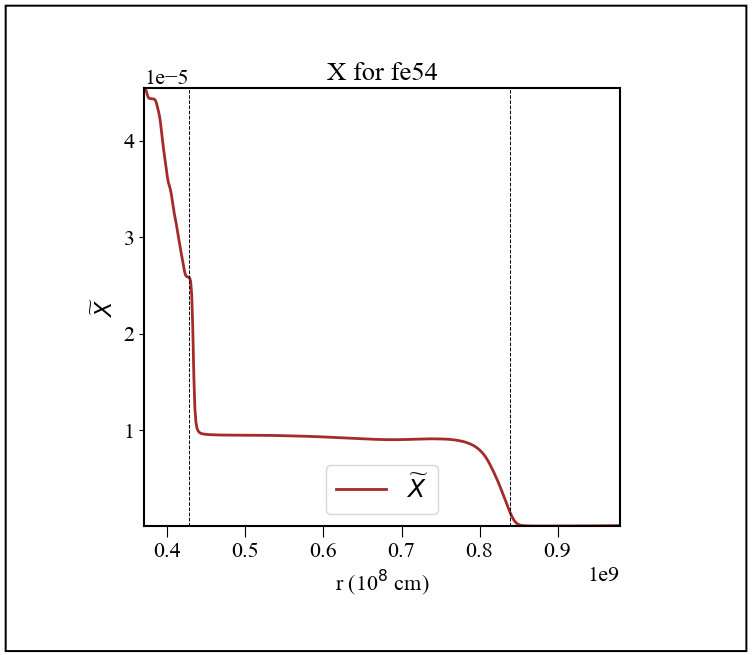

rhoX for cr48
$\overline{\rho}\widetilde{X}$ (g cm^{-3})
$\overline{\rho}\widetilde{X}$
r (10^8 cm)
1e9

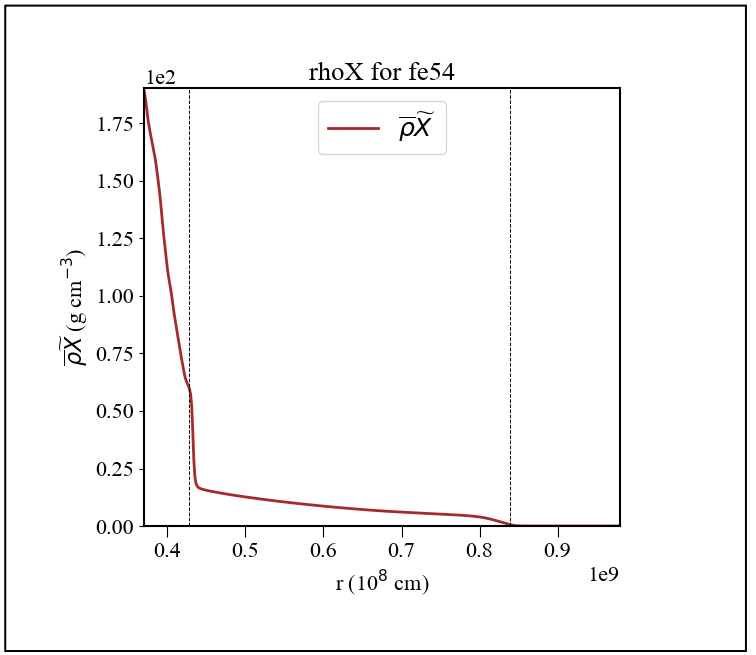

X for cr50
1e−4
$\widetilde{X}$
$\widetilde{X}$
r (10^8 cm)
1e9

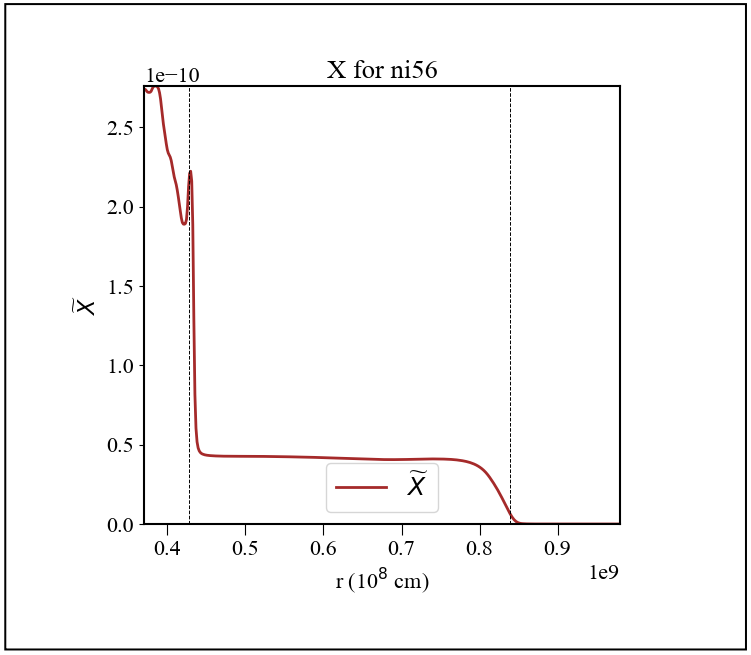

rhoX for cr50
1e3
$\overline{\rho}\widetilde{X}$ (g cm^{-3})
$\overline{\rho}\widetilde{X}$
r (10^8 cm)
1e9

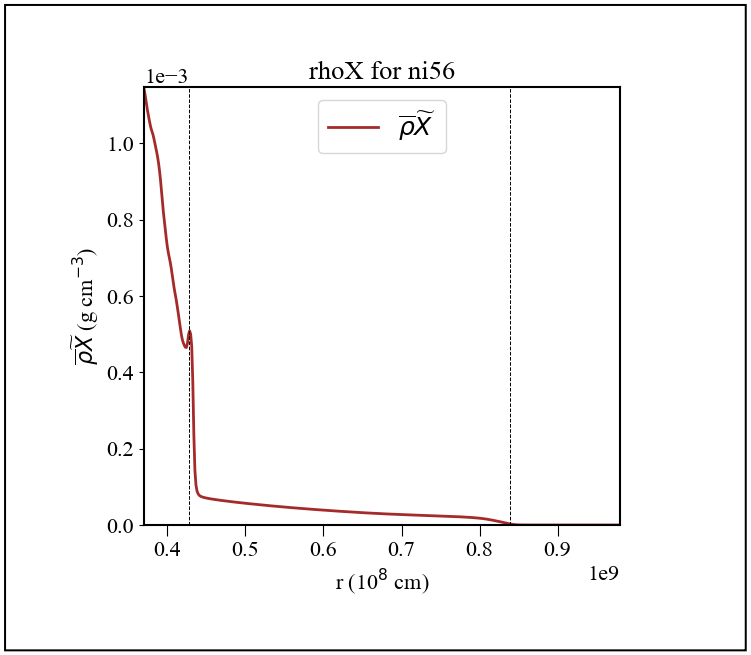

X for fe52
1e−8
$\widetilde{X}$
$\widetilde{X}$
r (10^8 cm)
1e9


rhoX for fe52
1e−2
$\overline{\rho}\widetilde{X}$ (g cm^{-3})
$\overline{\rho}\widetilde{X}$
r (10^8 cm)
1e9


X for fe54
1e−5
4
3
2
1
$\widetilde{X}$
$\widetilde{X}$
0.4
0.5
0.6
0.7
0.8
0.9
r (10^8 cm)
1e9


rhoX for fe54
1e2
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
$\overline{\rho}\widetilde{X}$ (g cm^{-3})
$\overline{\rho}\widetilde{X}$
0.4
0.5
0.6
0.7
0.8
0.9
r (10^8 cm)
1e9


X for ni56
1e−10
2.5
2.0
1.5
1.0
0.5
0.0
$\widetilde{X}$
$\widetilde{X}$
0.4
0.5
0.6
0.7
0.8
0.9
r (10^8 cm)
1e9


rhoX for ni56
1e−3
1.0
0.8
0.6
0.4
0.2
0.0
$\overline{\rho}\widetilde{X}$ (g cm^{-3})
$\overline{\rho}\widetilde{X}$
0.4
0.5
0.6
0.7
0.8
0.9
r (10^8 cm)
1e9