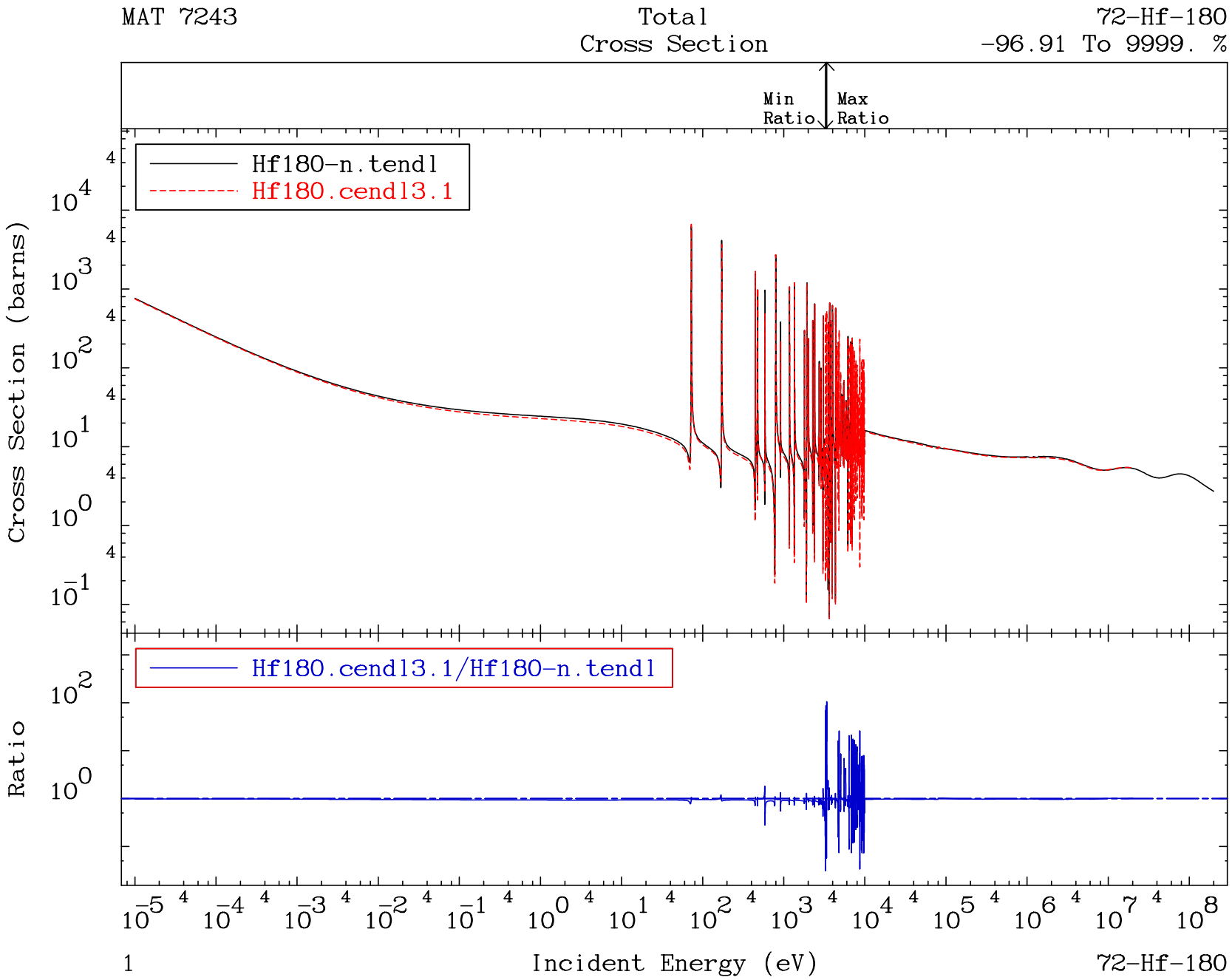
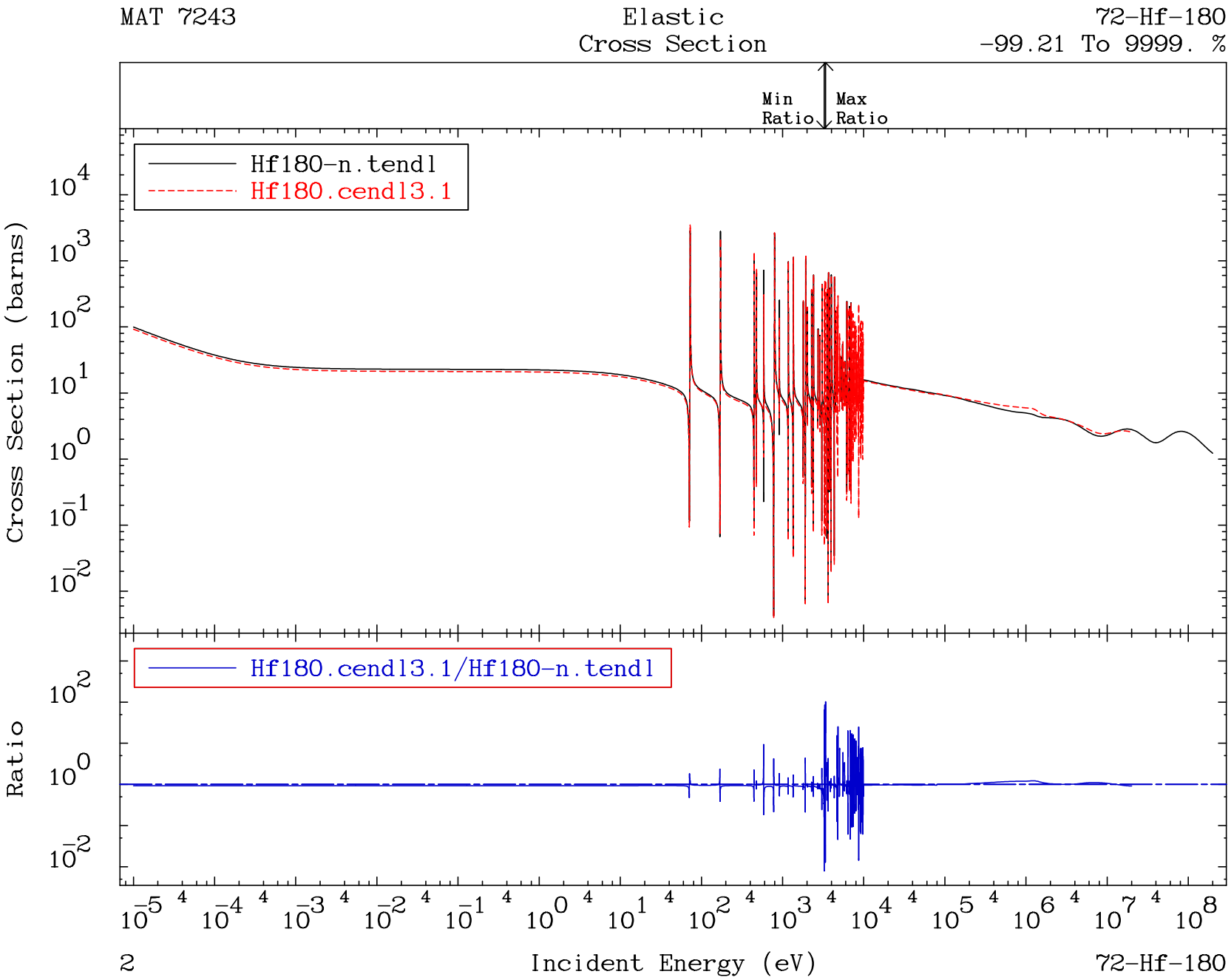
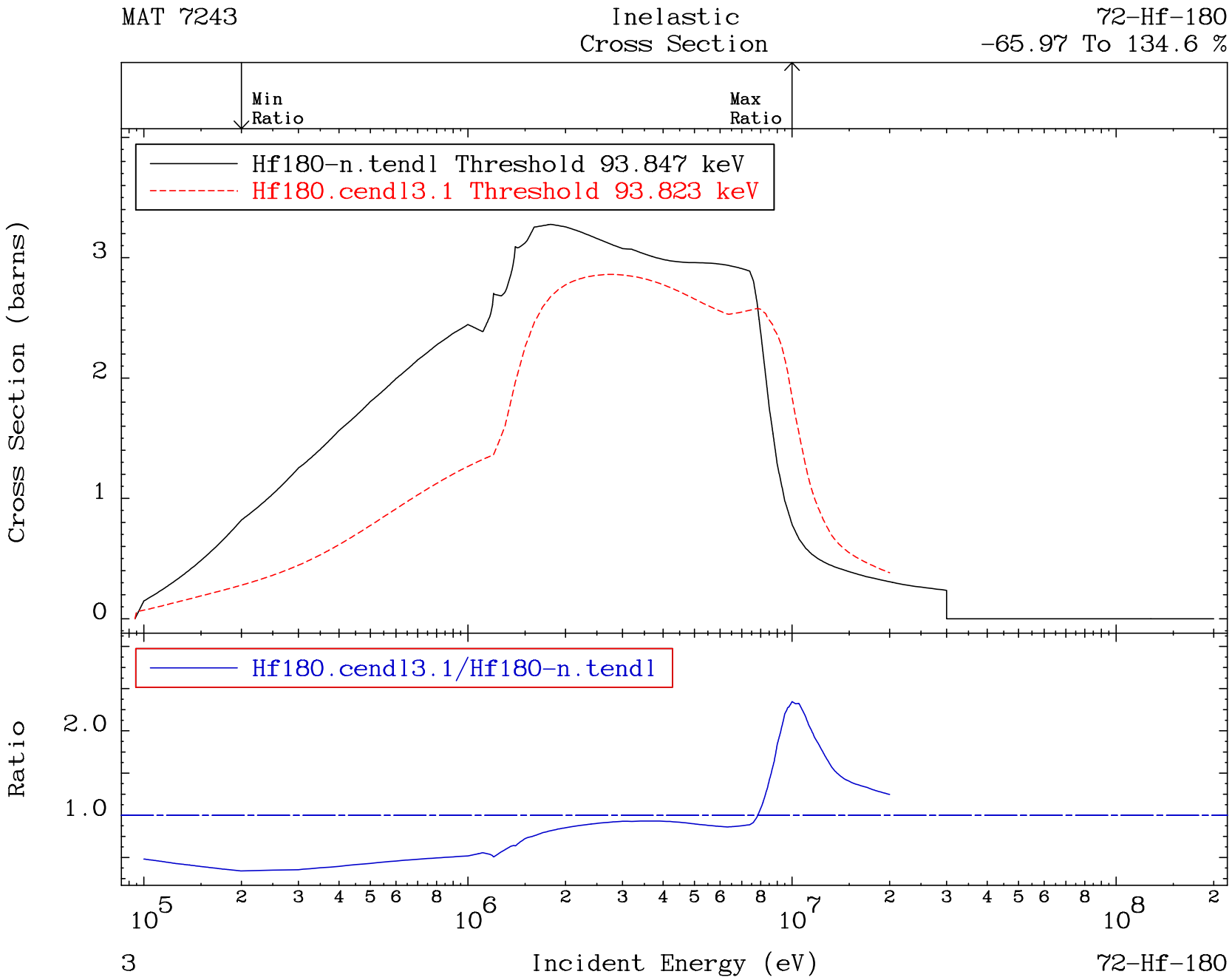
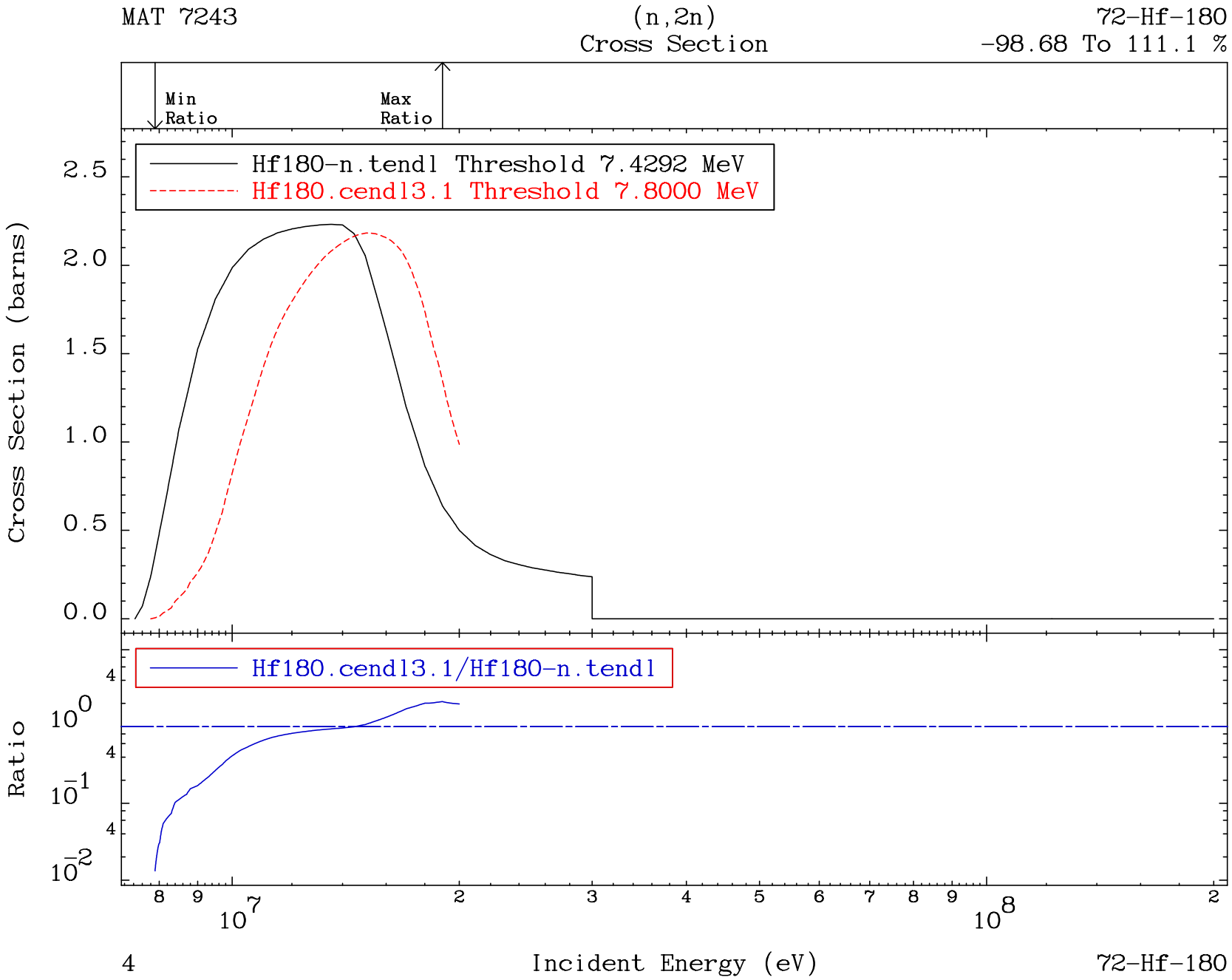
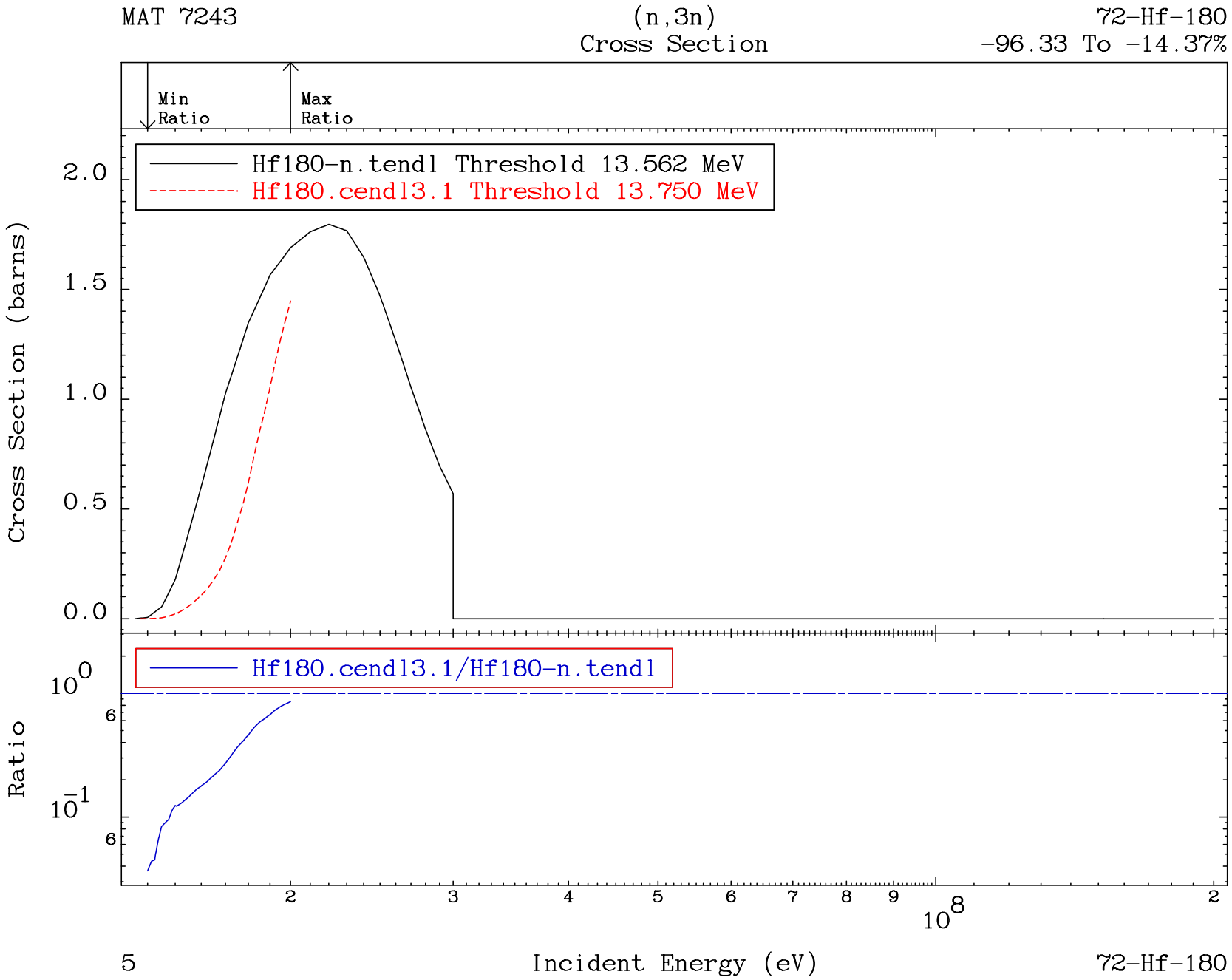
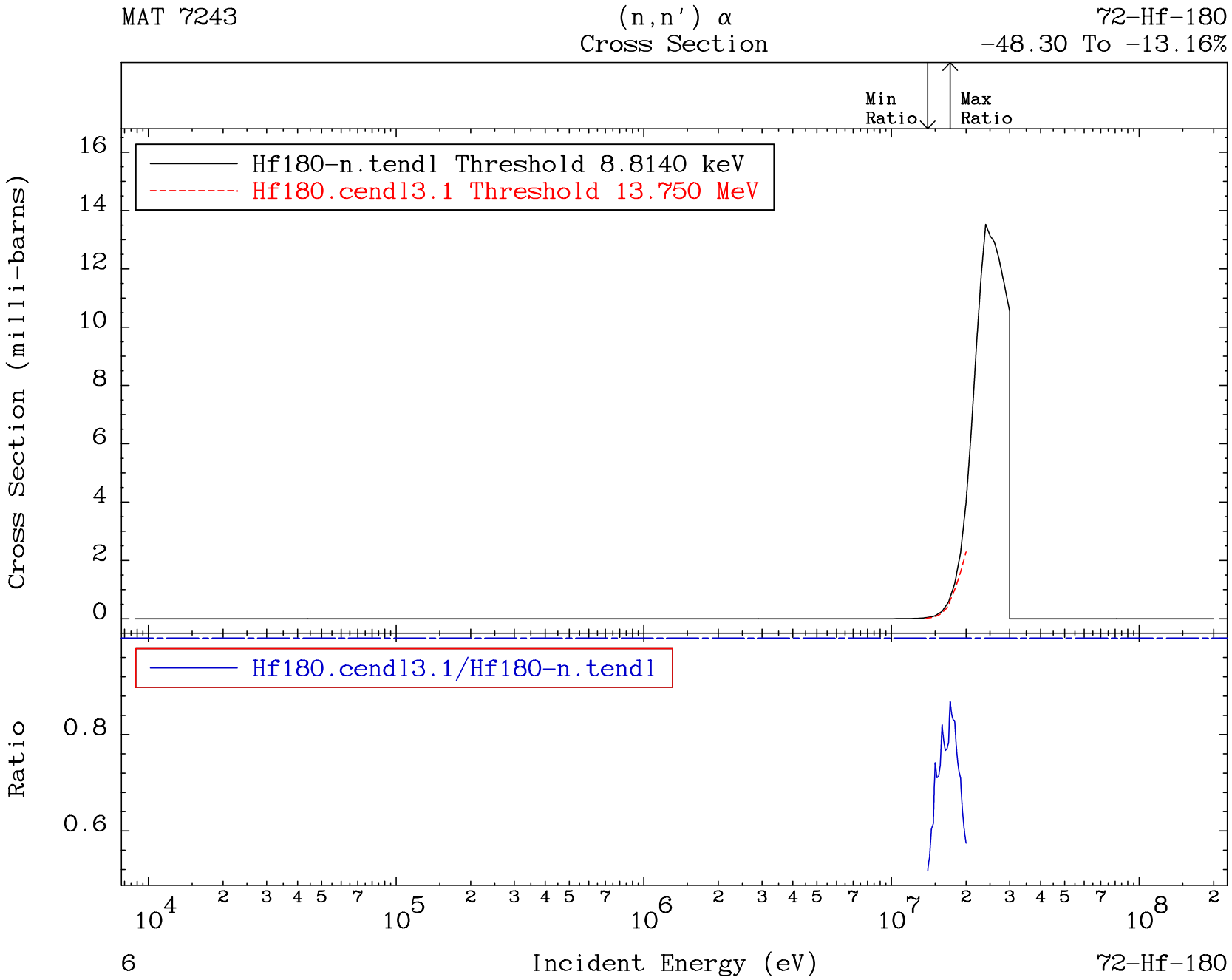

MAT 7243
Total
Cross Section
72-Hf-180
-96.91 To 9999. %
Min Ratio
Max Ratio
Hf180-n.tendl
Hf180.cendl3.1
Cross Section (barns)
Hf180.cendl3.1/Hf180-n.tendl
Ratio
Incident Energy (eV)
1
72-Hf-180

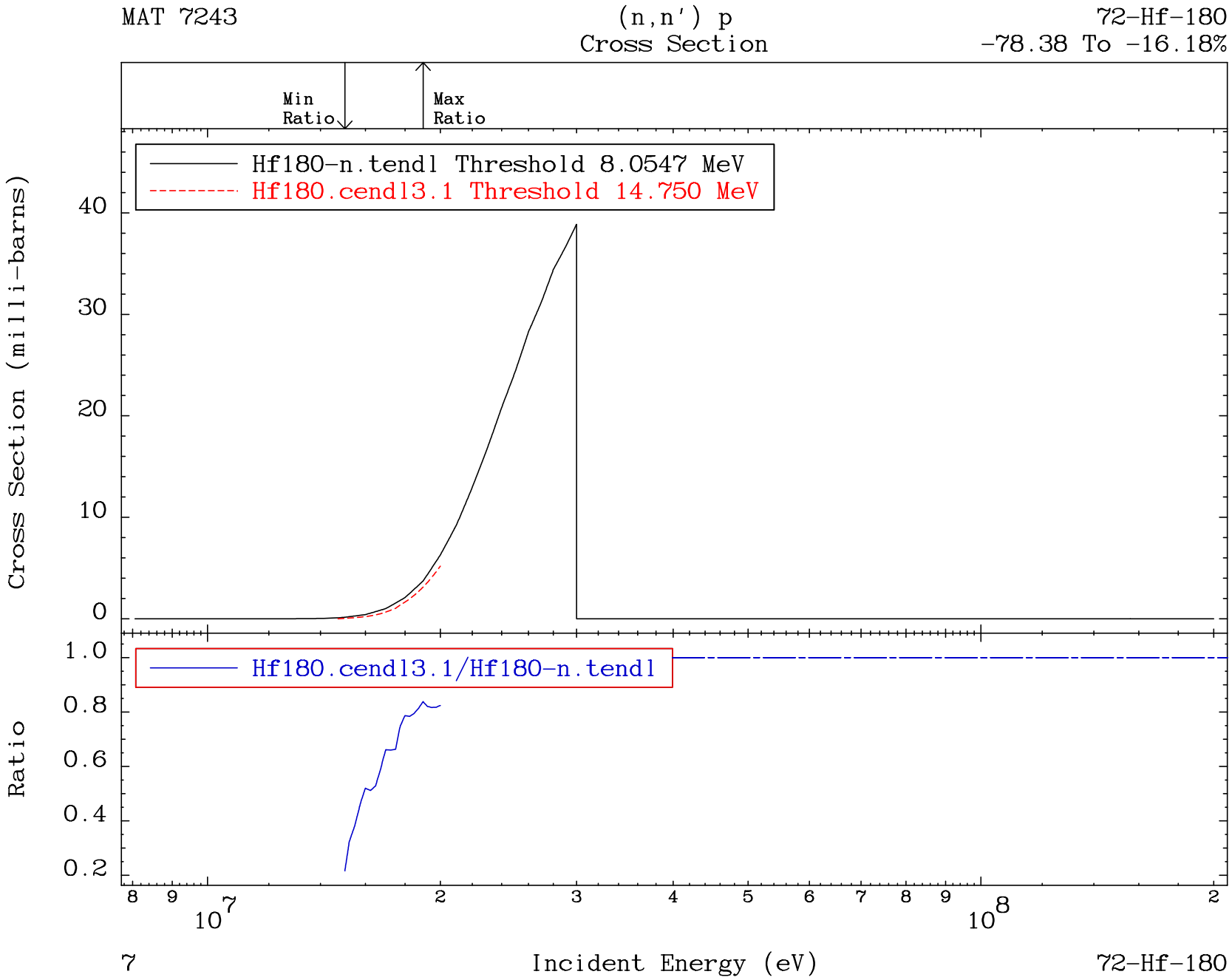

MAT 7243
Elastic
Cross Section
72-Hf-180
-99.21 To 9999. %
Min Ratio
Max Ratio
Hf180-n.tendl
Hf180.cendl3.1
Cross Section (barns)
Hf180.cendl3.1/Hf180-n.tendl
Ratio
Incident Energy (eV)
2
72-Hf-180

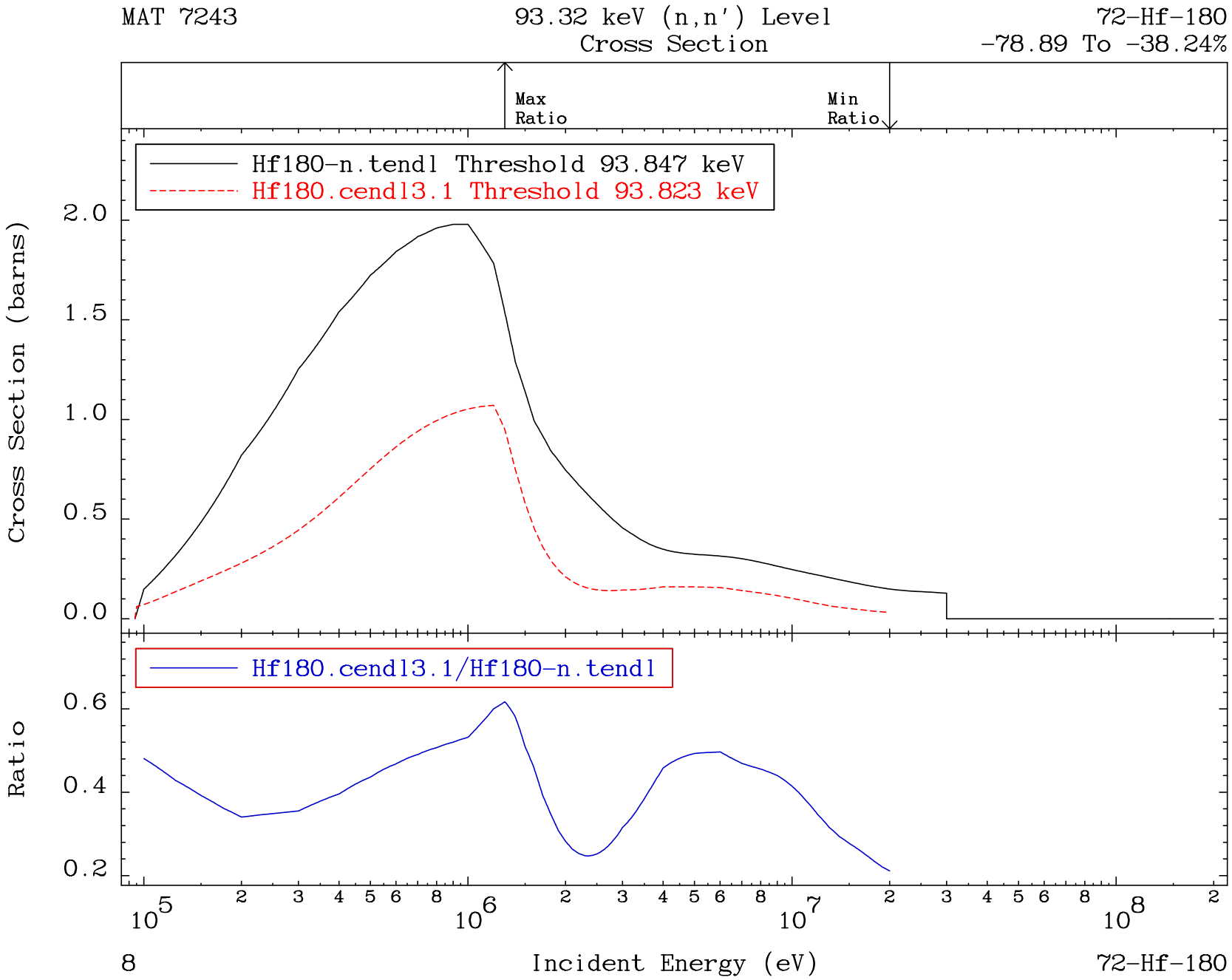

MAT 7243
Inelastic
Cross Section
72-Hf-180
-65.97 To 134.6 %
Min
Ratio
Max
Ratio
Hf180-n.tendl Threshold 93.847 keV
Hf180.cendl3.1 Threshold 93.823 keV
Cross Section (barns)
0
1
2
3
Hf180.cendl3.1/Hf180-n.tendl
Ratio
1.0
2.0
10^5
10^6
10^7
10^8
Incident Energy (eV)
3
72-Hf-180

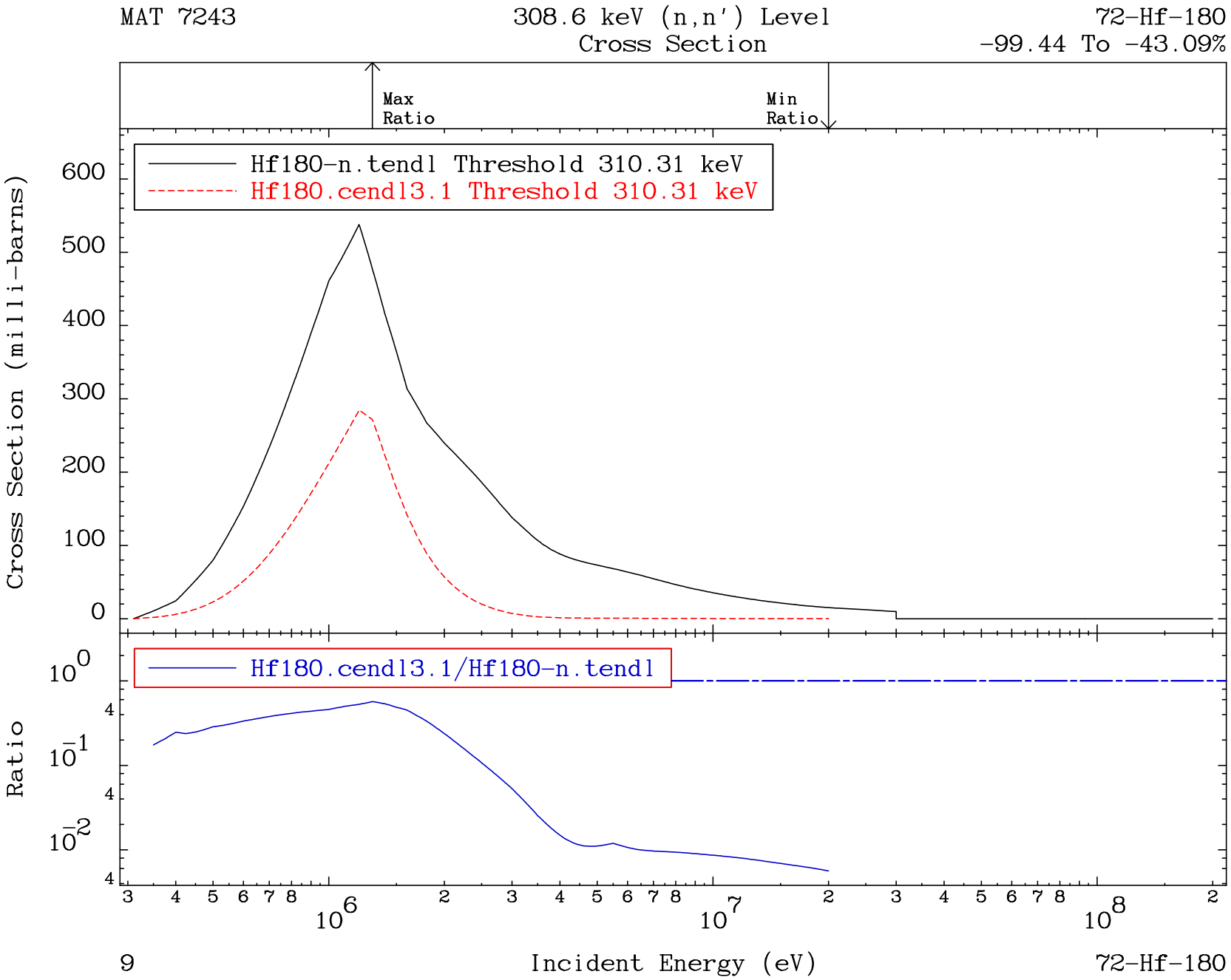

MAT 7243
(n,2n)
Cross Section
72-Hf-180
-98.68 To 111.1 %
Min Ratio
Max Ratio
Hf180-n.tendl Threshold 7.4292 MeV
Hf180.cendl3.1 Threshold 7.8000 MeV
Cross Section (barns)
2.5
2.0
1.5
1.0
0.5
0.0
Hf180.cendl3.1/Hf180-n.tendl
Ratio
10^0
10^-1
10^-2
8 9 10^7 2 3 4 5 6 7 8 9 10^8 2
4
Incident Energy (eV)
72-Hf-180

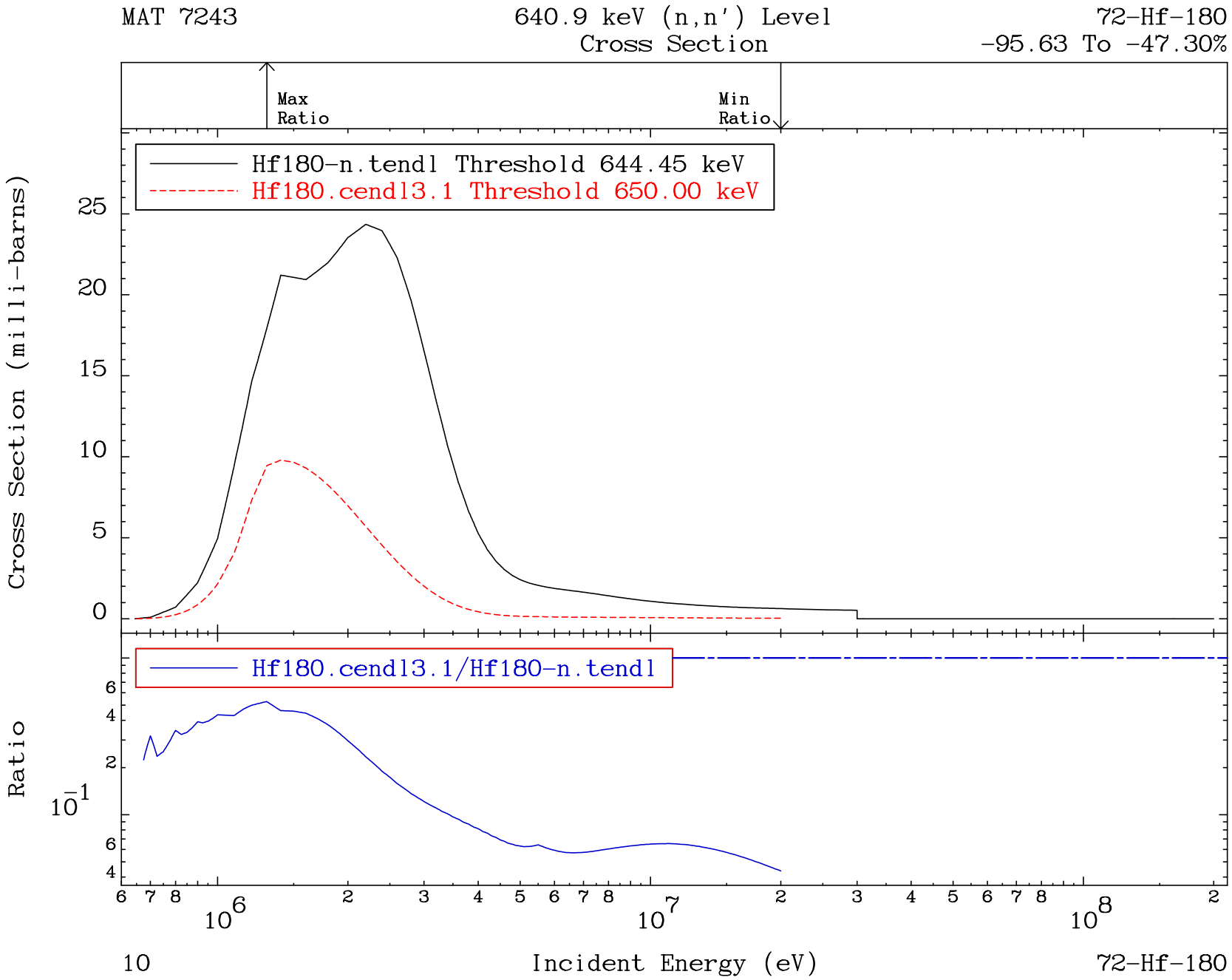

MAT 7243
(n,3n)
Cross Section
72-Hf-180
-96.33 To -14.37%
Min Ratio
Max Ratio
Hf180-n.tendl Threshold 13.562 MeV
Hf180.cendl3.1 Threshold 13.750 MeV
Cross Section (barns)
2.0
1.5
1.0
0.5
0.0
Hf180.cendl3.1/Hf180-n.tendl
Ratio
10^0
10^-1
6
2
3
4
5
6
7
8
9
10^8
Incident Energy (eV)
5
72-Hf-180

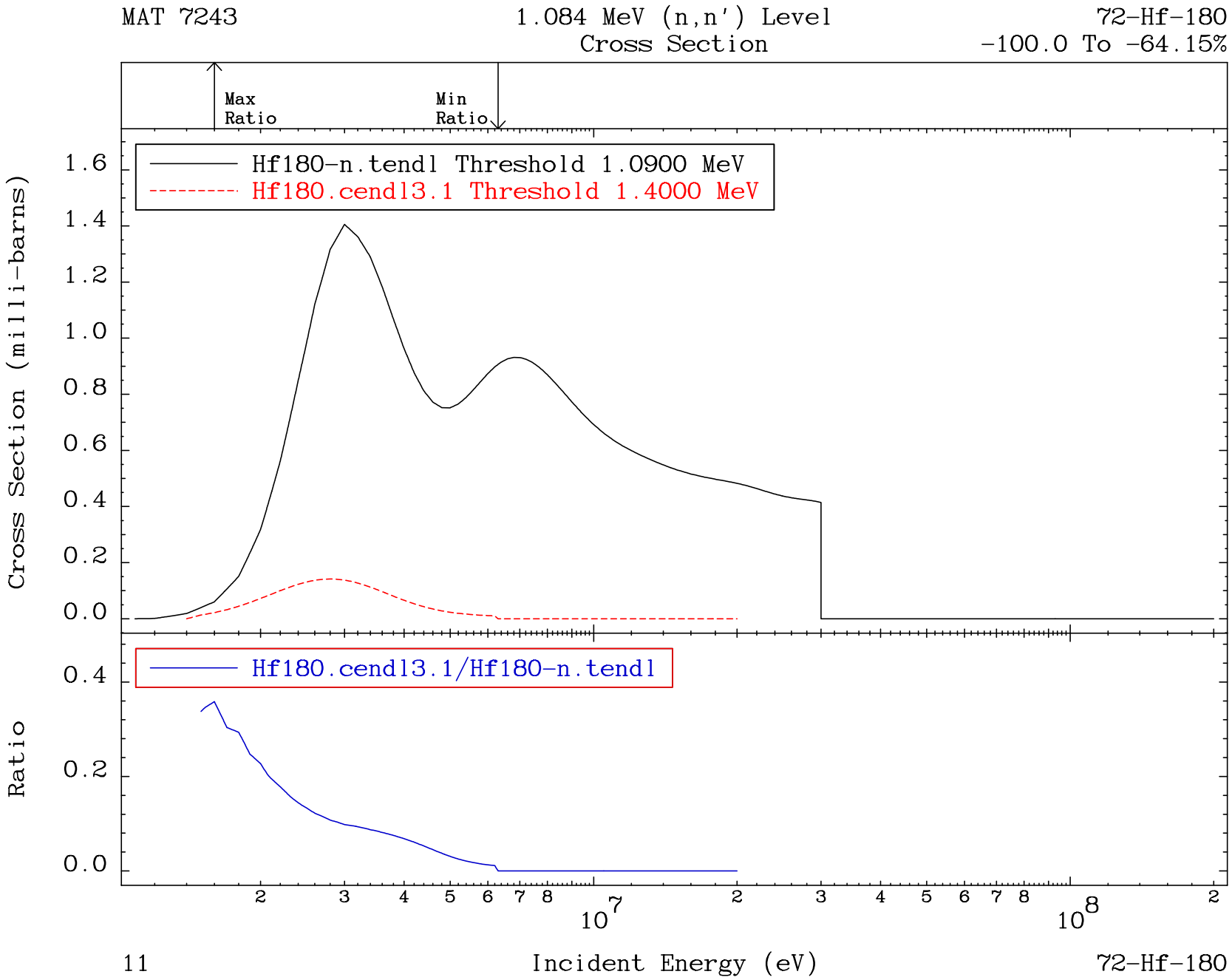

MAT 7243
(n,n') α
Cross Section
72-Hf-180
-48.30 To -13.16%
Min Ratio
Max Ratio
Hf180-n.tendl Threshold 8.8140 keV
Hf180.cendl3.1 Threshold 13.750 MeV
Cross Section (milli-barns)
16
14
12
10
8
6
4
2
0
Hf180.cendl3.1/Hf180-n.tendl
Ratio
0.8
0.6
10^4
10^5
10^6
10^7
10^8
Incident Energy (eV)
6
72-Hf-180

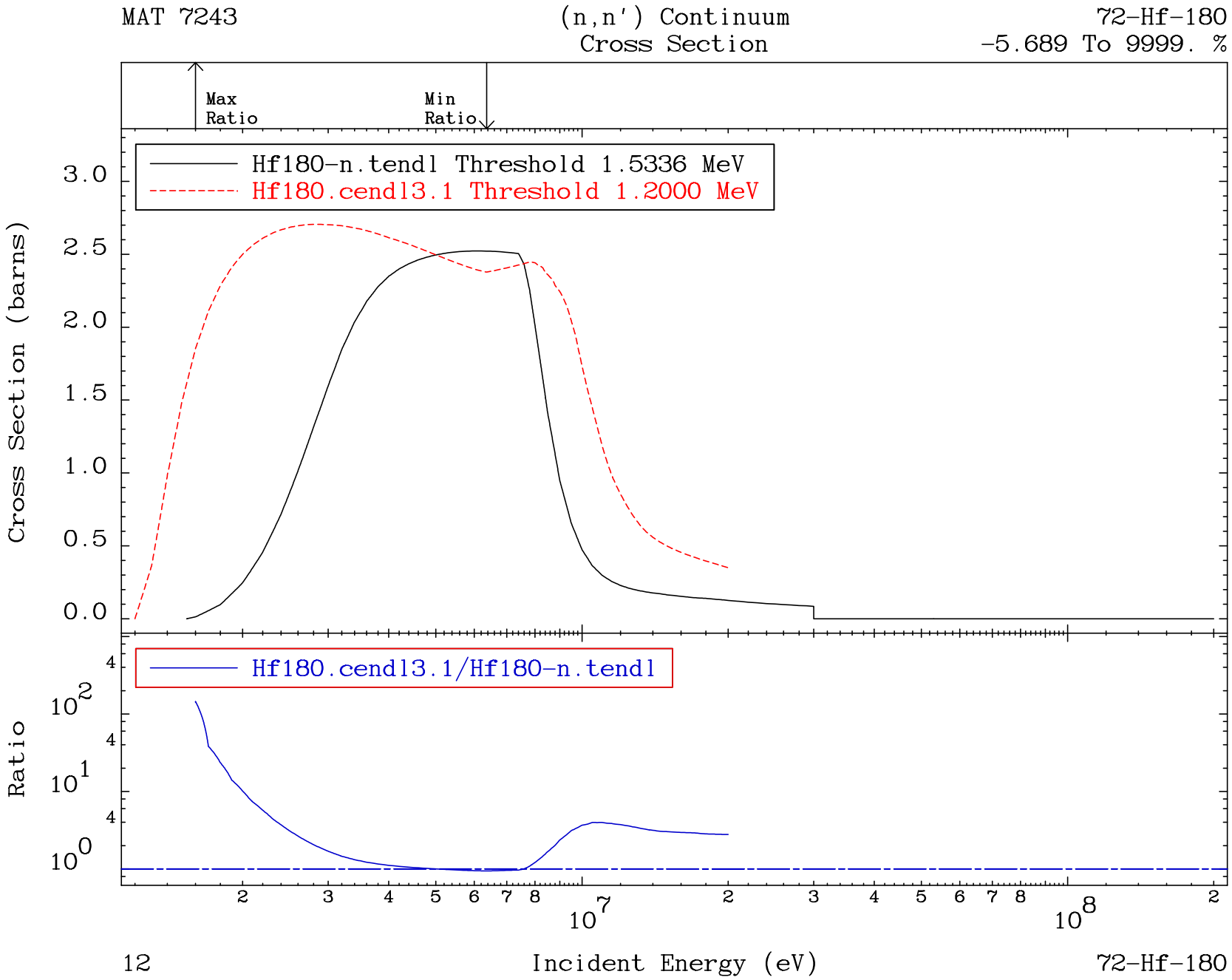

MAT 7243
(n,n') p
Cross Section
72-Hf-180
-78.38 To -16.18%
Min Ratio
Max Ratio
Hf180-n.tendl Threshold 8.0547 MeV
Hf180.cendl3.1 Threshold 14.750 MeV
Cross Section (milli-barns)
40
30
20
10
0
Hf180.cendl3.1/Hf180-n.tendl
Ratio
1.0
0.8
0.6
0.4
0.2
8 9 10^7 2 3 4 5 6 7 8 9 10^8 2
7
Incident Energy (eV)
72-Hf-180

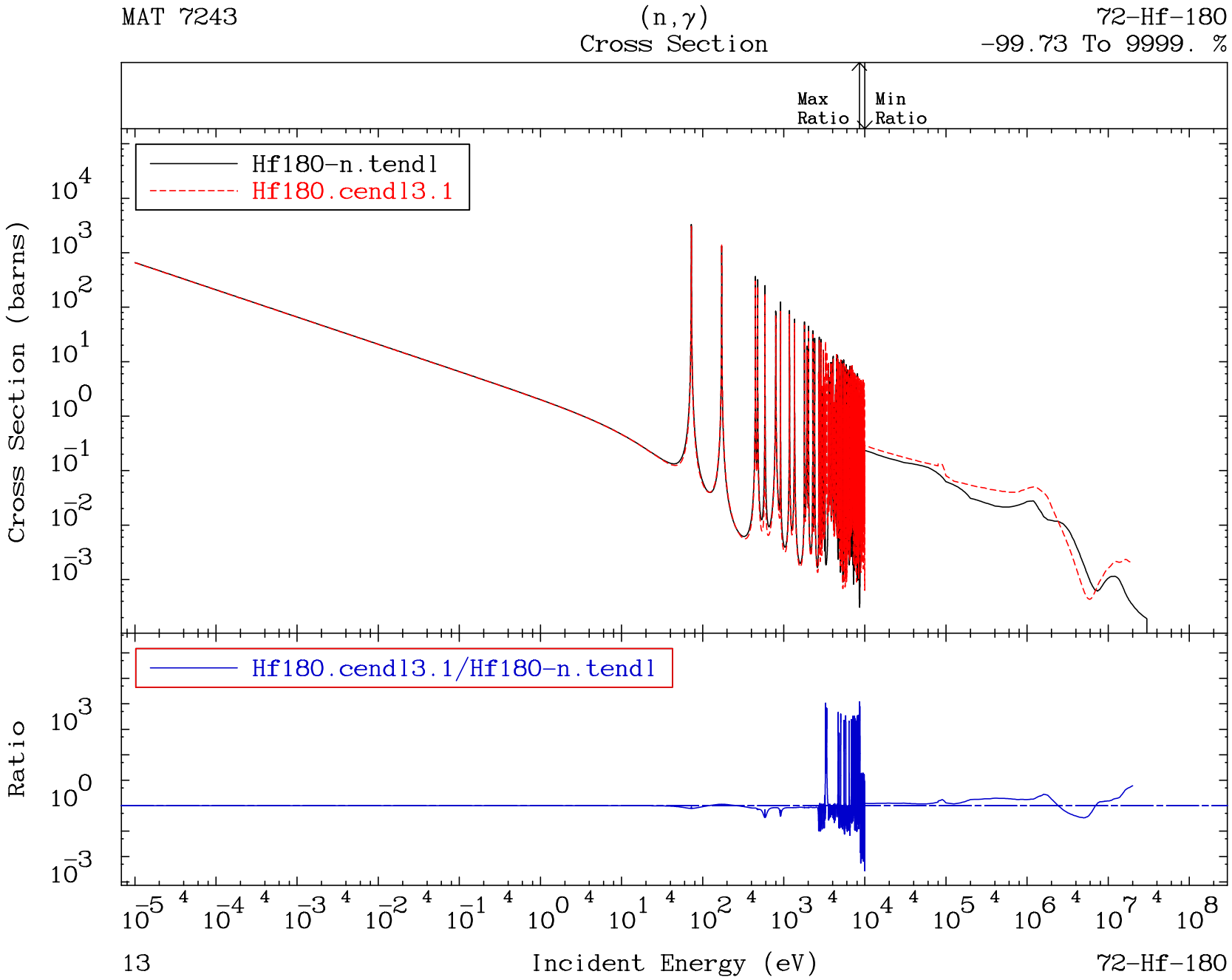

MAT 7243
93.32 keV (n,n') Level
Cross Section
72-Hf-180
-78.89 To -38.24%
Max Ratio
Min Ratio
Hf180-n.tendl Threshold 93.847 keV
Hf180.cendl3.1 Threshold 93.823 keV
Cross Section (barns)
2.0
1.5
1.0
0.5
0.0
Hf180.cendl3.1/Hf180-n.tendl
Ratio
0.6
0.4
0.2
10^5
10^6
10^7
10^8
Incident Energy (eV)
8
72-Hf-180

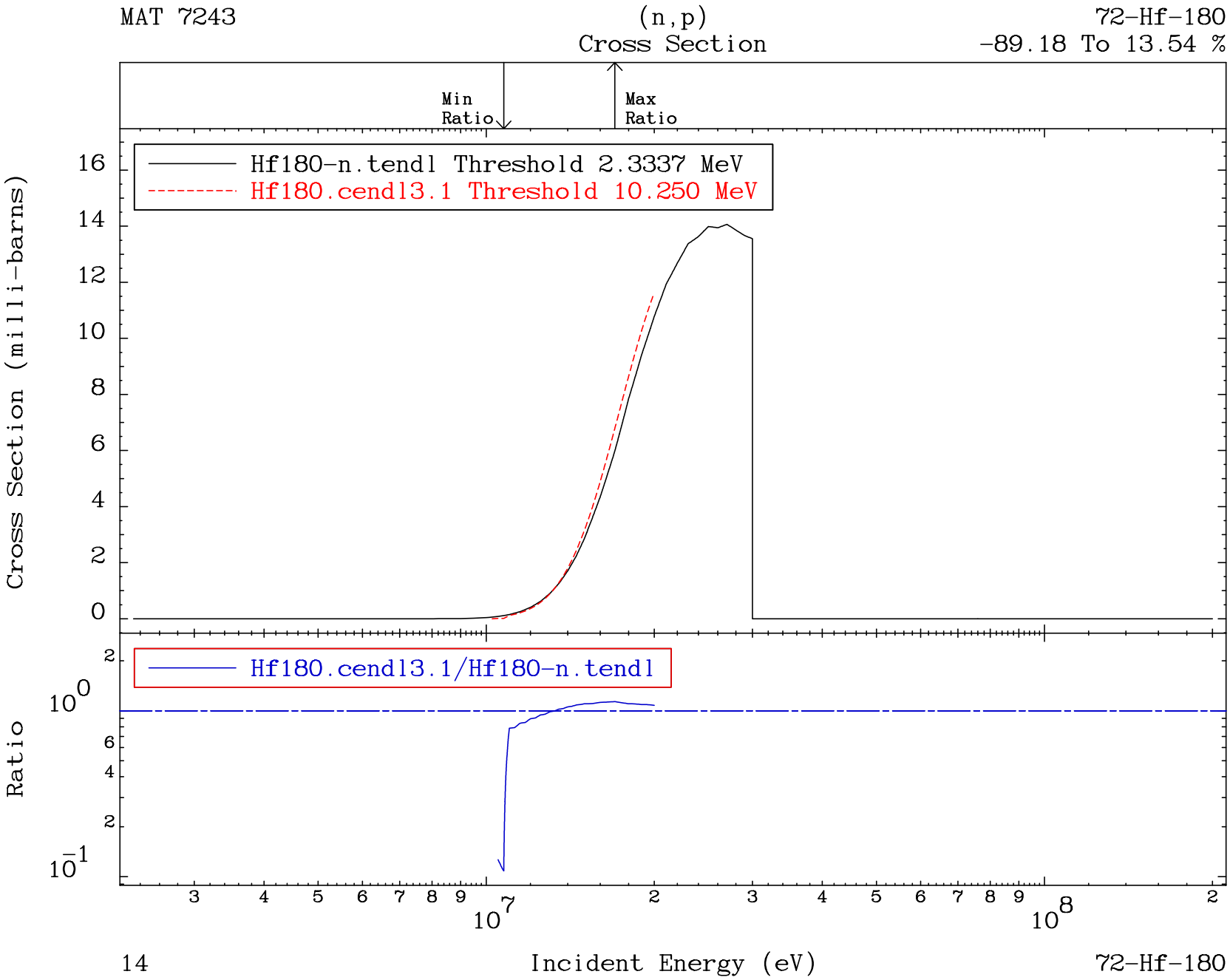

MAT 7243
308.6 keV (n,n') Level
Cross Section
72-Hf-180
-99.44 To -43.09%
Max Ratio
Min Ratio
Hf180-n.tendl Threshold 310.31 keV
Hf180.cendl3.1 Threshold 310.31 keV
Cross Section (milli-barns)
600
500
400
300
200
100
0
Hf180.cendl3.1/Hf180-n.tendl
Ratio
10^0
10^-1
10^-2
3 4 5 6 7 8 10^6 2 3 4 5 6 7 8 10^7 2 3 4 5 6 7 8 10^8 2
9
Incident Energy (eV)
72-Hf-180

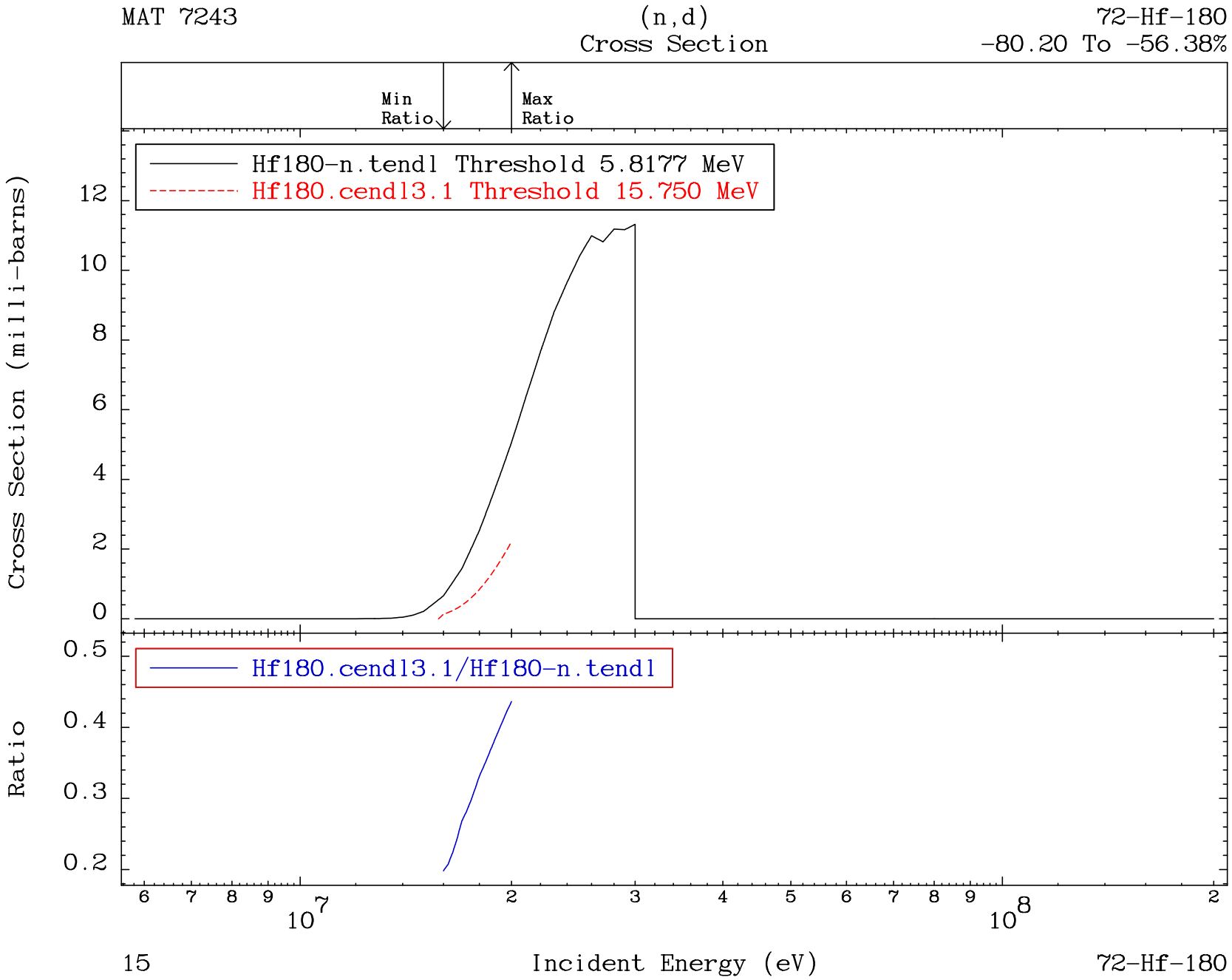

MAT 7243
640.9 keV (n,n') Level
Cross Section
72-Hf-180
-95.63 To -47.30%
Max Ratio
Min Ratio
Hf180-n.tendl Threshold 644.45 keV
Hf180.cendl3.1 Threshold 650.00 keV
Cross Section (milli-barns)
25
20
15
10
5
0
Hf180.cendl3.1/Hf180-n.tendl
Ratio
6
4
2
10^{-1}
6
4
6 7 8
10^{6}
2 3 4 5 6 7 8
10^{7}
2 3 4 5 6 7 8
10^{8}
2
10
Incident Energy (eV)
72-Hf-180

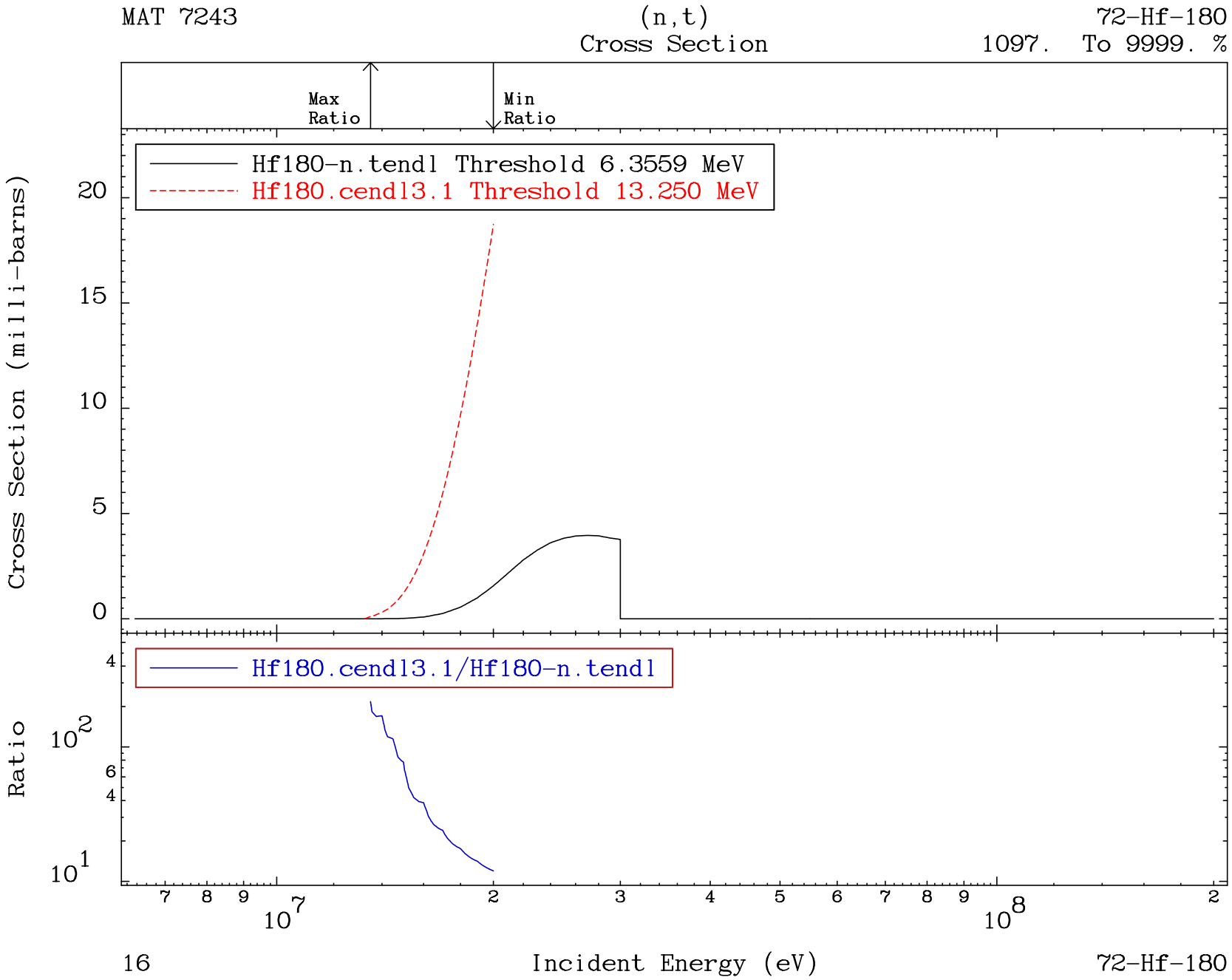

MAT 7243
1.084 MeV (n,n') Level
Cross Section
72-Hf-180
-100.0 To -64.15%
Max Ratio
Min Ratio
Hf180-n.tendl Threshold 1.0900 MeV
Hf180.cendl3.1 Threshold 1.4000 MeV
Cross Section (milli-barns)
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
Hf180.cendl3.1/Hf180-n.tendl
Ratio
0.4
0.2
0.0
2 3 4 5 6 7 8 10^7 2 3 4 5 6 7 8 10^8 2
11
Incident Energy (eV)
72-Hf-180

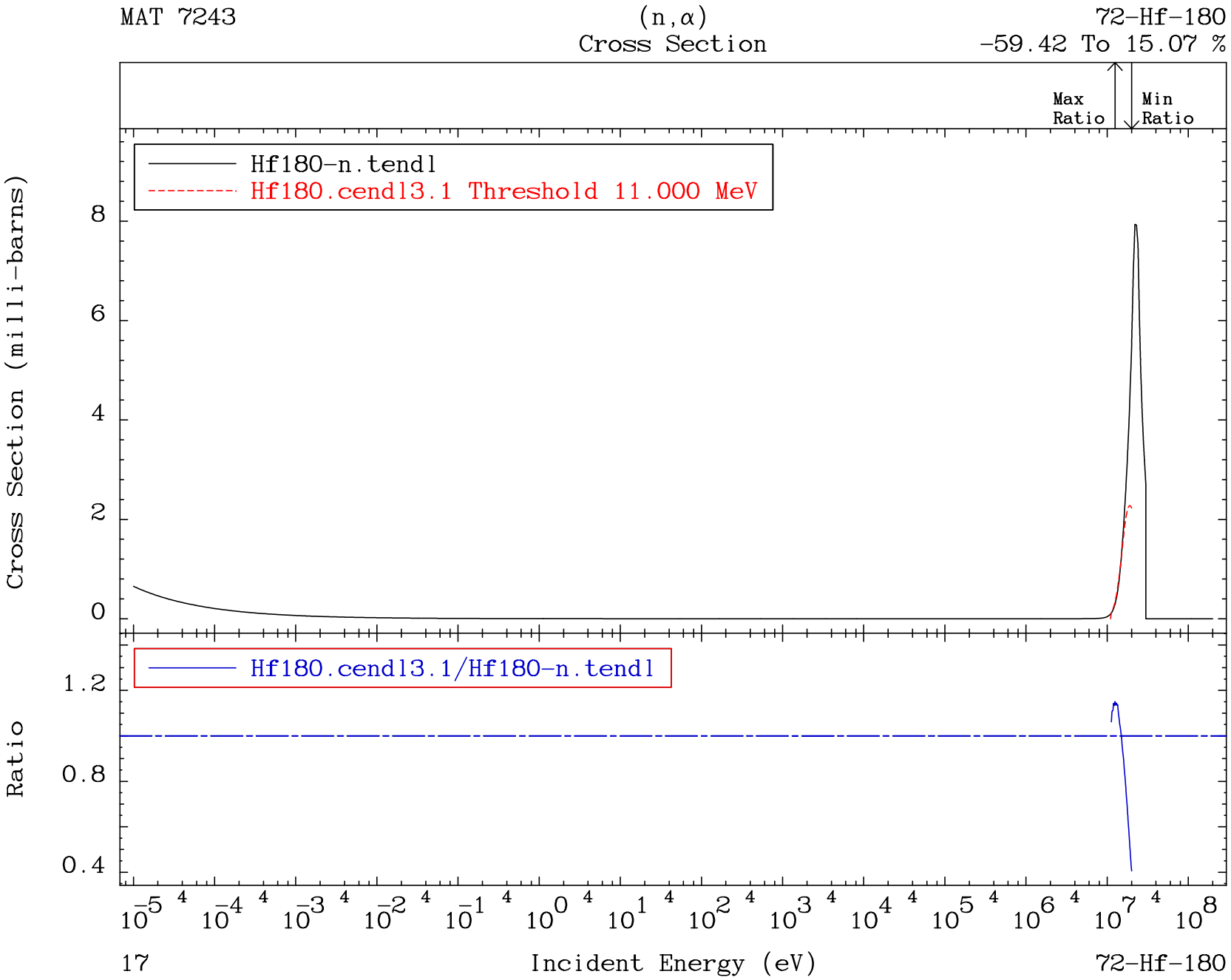

MAT 7243
(n,n') Continuum
Cross Section
72-Hf-180
-5.689 To 9999. %
Max Ratio
Min Ratio
Hf180-n.tendl Threshold 1.5336 MeV
Hf180.cendl3.1 Threshold 1.2000 MeV
Cross Section (barns)
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Hf180.cendl3.1/Hf180-n.tendl
Ratio
10^2
10^1
10^0
2 3 4 5 6 7 8
10^7
2 3 4 5 6 7 8
10^8
2
12
Incident Energy (eV)
72-Hf-180

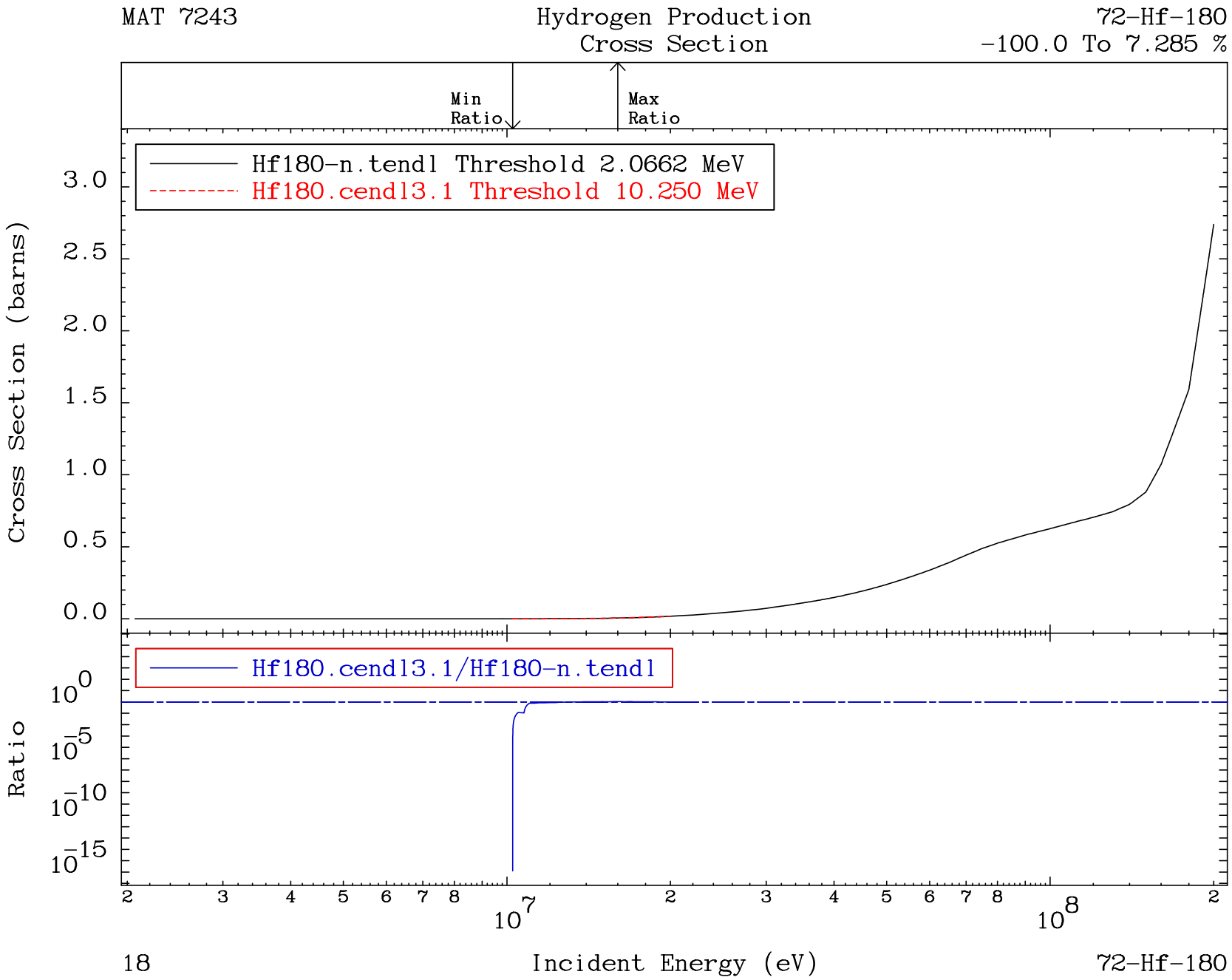

MAT 7243
(n,γ)
Cross Section
72-Hf-180
-99.73 To 9999. %
Max Ratio
Min Ratio
Hf180-n.tendl
Hf180.cendl3.1
Cross Section (barns)
Hf180.cendl3.1/Hf180-n.tendl
Ratio
Incident Energy (eV)
13
72-Hf-180

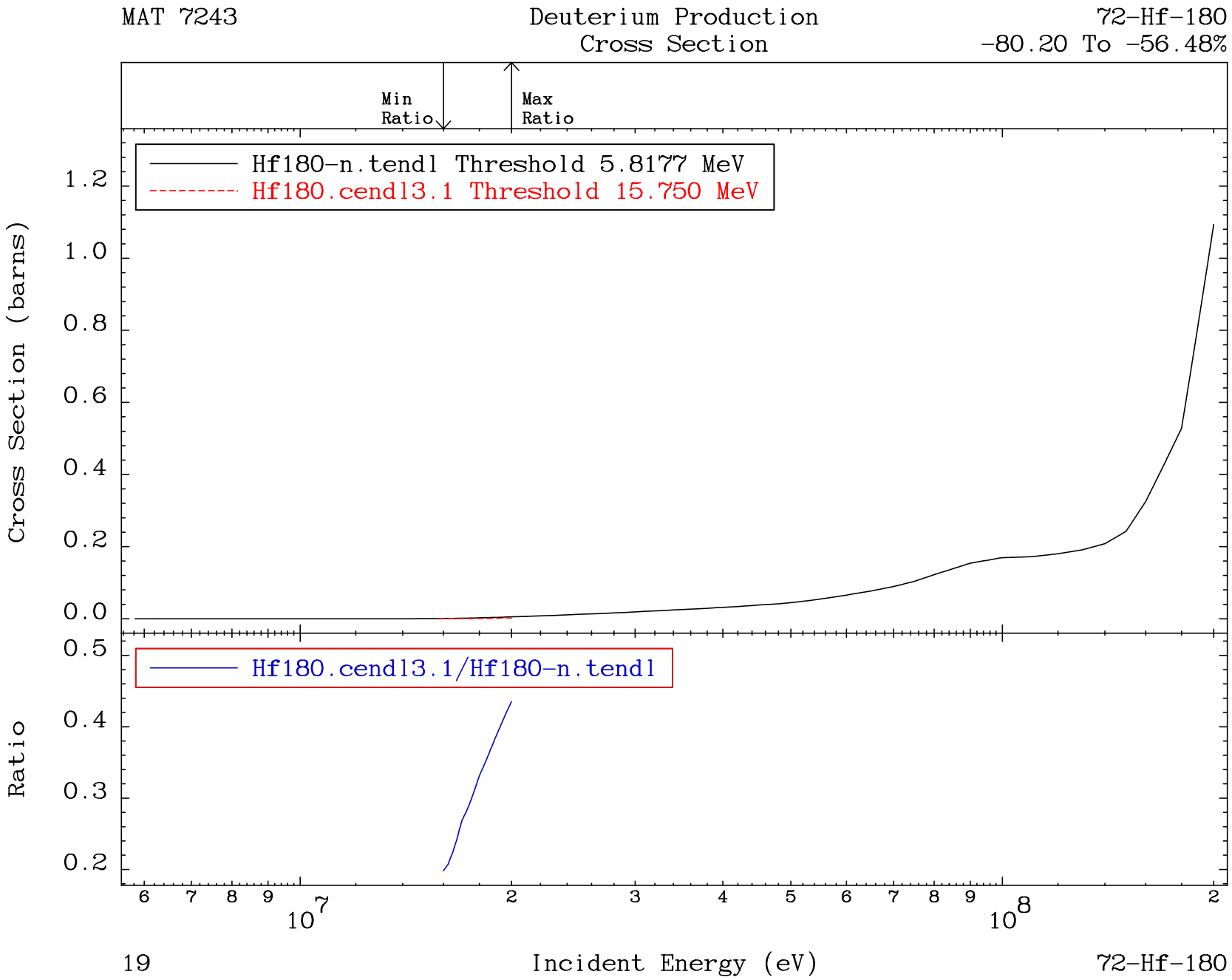

MAT 7243
(n,p)
Cross Section
72-Hf-180
-89.18 To 13.54 %
Min Ratio
Max Ratio
Hf180-n.tendl Threshold 2.3337 MeV
Hf180.cendl3.1 Threshold 10.250 MeV
Cross Section (milli-barns)
Hf180.cendl3.1/Hf180-n.tendl
Ratio
Incident Energy (eV)
14
72-Hf-180

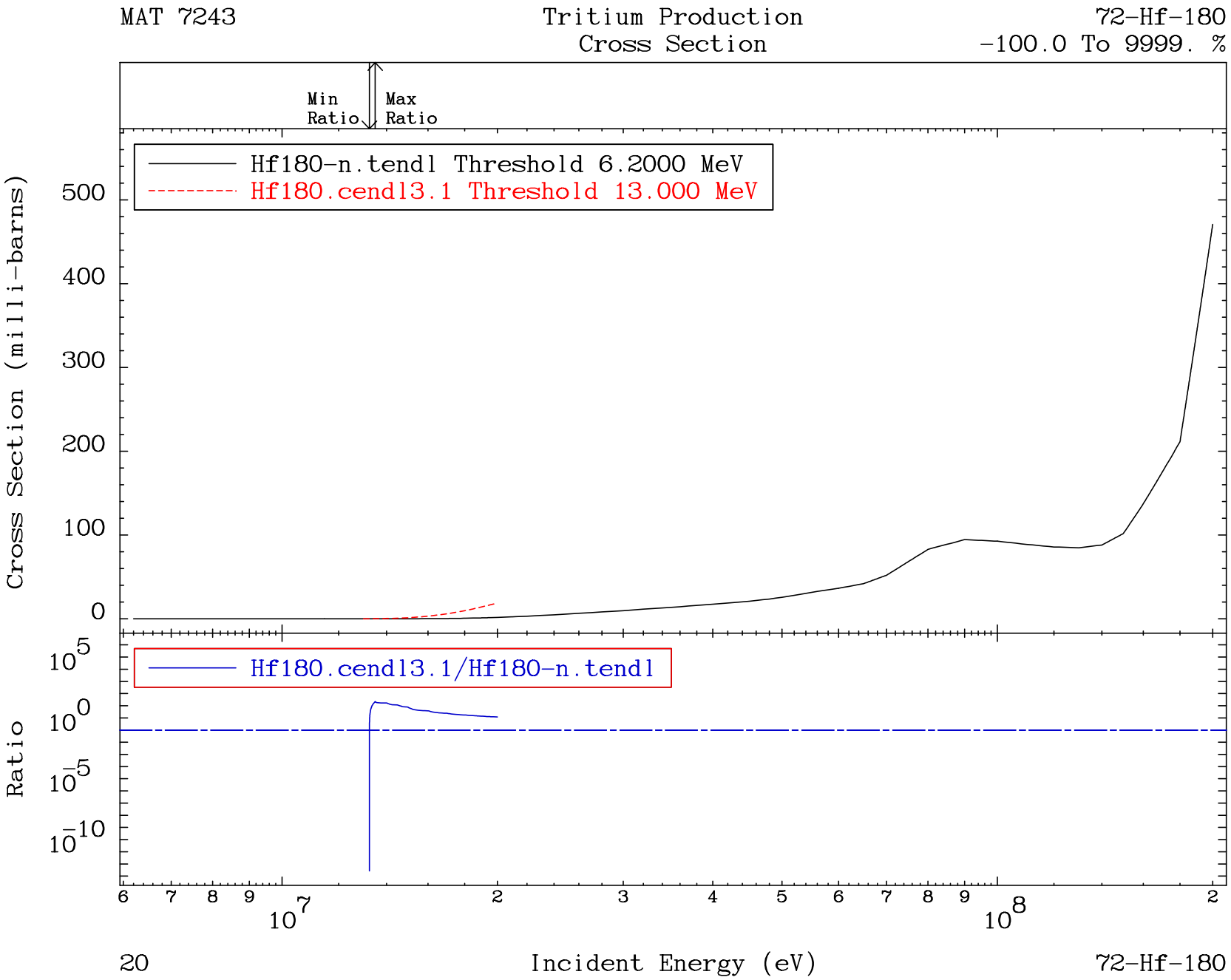

MAT 7243
(n,d)
Cross Section
72-Hf-180
-80.20 To -56.38%
Min Ratio
Max Ratio
Hf180-n.tendl Threshold 5.8177 MeV
Hf180.cendl3.1 Threshold 15.750 MeV
Cross Section (milli-barns)
0
2
4
6
8
10
12
Hf180.cendl3.1/Hf180-n.tendl
Ratio
0.2
0.3
0.4
0.5
6 7 8 9 10^7 2 3 4 5 6 7 8 9 10^8 2
15
Incident Energy (eV)
72-Hf-180

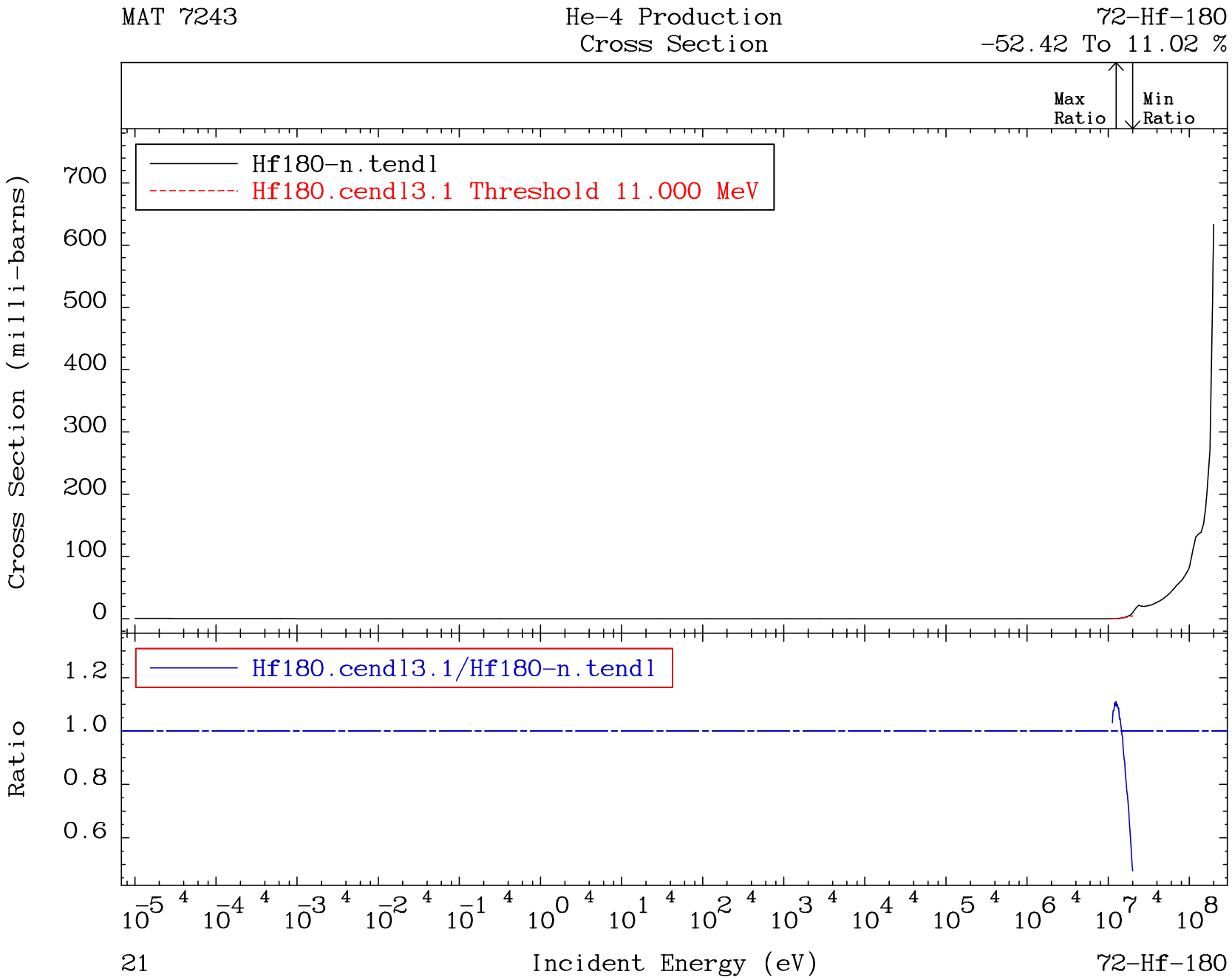

MAT 7243
(n,t)
Cross Section
72-Hf-180
1097. To 9999. %
Max Ratio
Min Ratio
Hf180-n.tendl Threshold 6.3559 MeV
Hf180.cendl3.1 Threshold 13.250 MeV
Cross Section (milli-barns)
20
15
10
5
0
Hf180.cendl3.1/Hf180-n.tendl
Ratio
4
10^2
6
4
10^1
7 8 9 10^7 2 3 4 5 6 7 8 9 10^8 2
16
Incident Energy (eV)
72-Hf-180

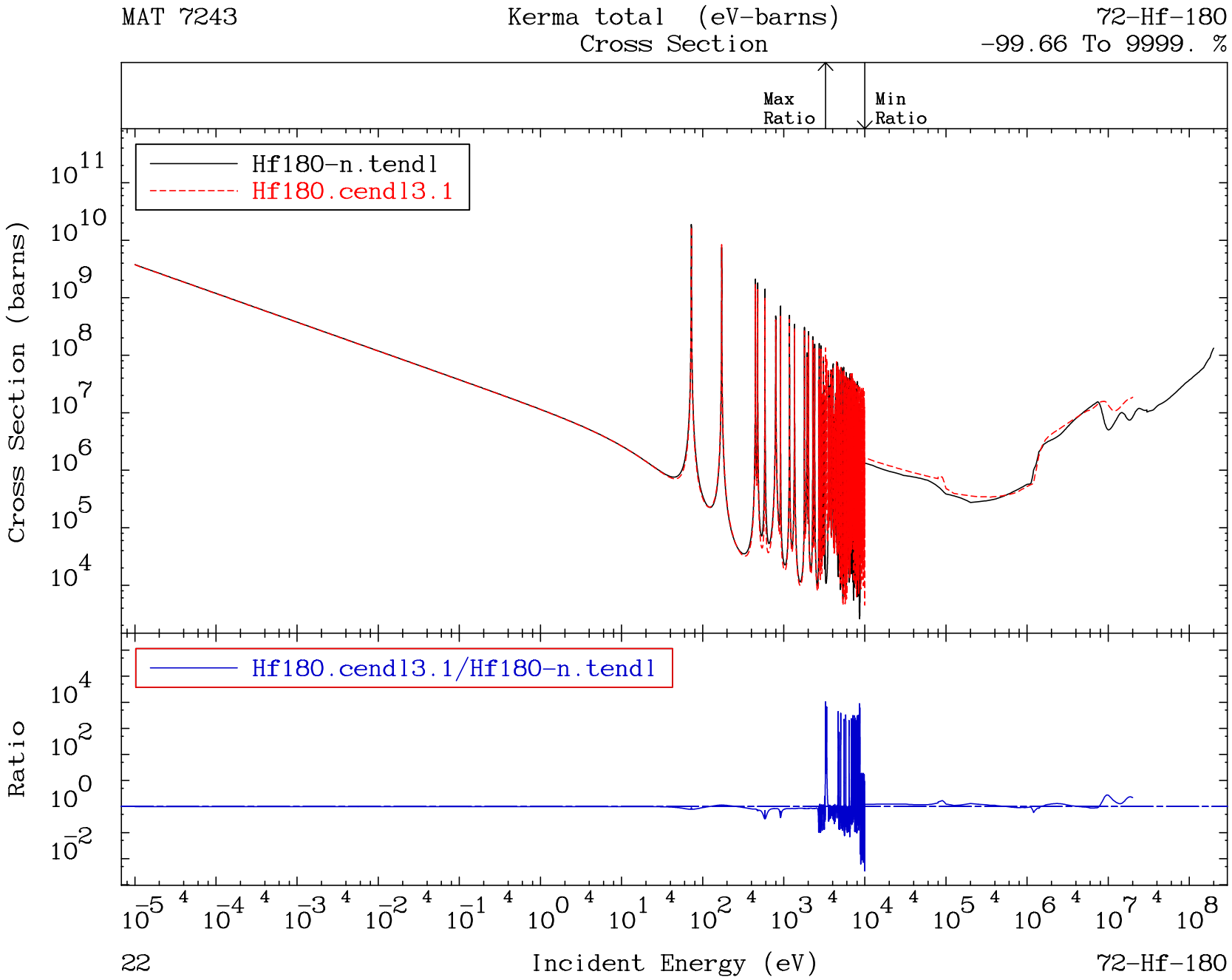

MAT 7243
(n,α)
Cross Section
72-Hf-180
-59.42 To 15.07 %
Max Ratio
Min Ratio
Hf180-n.tendl
Hf180.cendl3.1 Threshold 11.000 MeV
Cross Section (milli-barns)
0
2
4
6
8
Hf180.cendl3.1/Hf180-n.tendl
Ratio
0.4
0.8
1.2
10^-5 10^-4 10^-3 10^-2 10^-1 10^0 10^1 10^2 10^3 10^4 10^5 10^6 10^7 10^8
17
Incident Energy (eV)
72-Hf-180

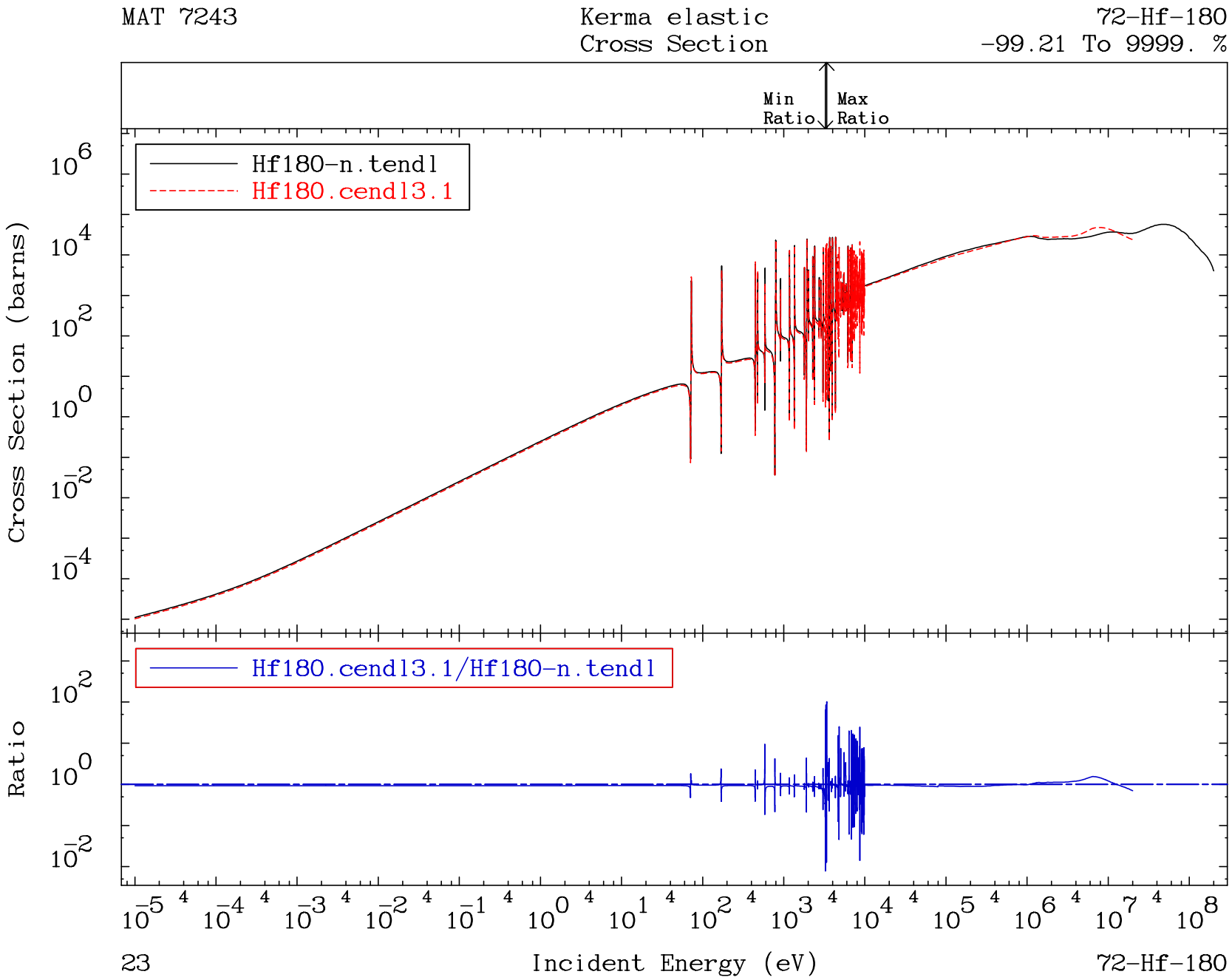

MAT 7243
Hydrogen Production
Cross Section
72-Hf-180
-100.0 To 7.285 %
Min Ratio
Max Ratio
Hf180-n.tendl Threshold 2.0662 MeV
Hf180.cendl3.1 Threshold 10.250 MeV
Cross Section (barns)
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Hf180.cendl3.1/Hf180-n.tendl
Ratio
10^0
10^-5
10^-10
10^-15
2 3 4 5 6 7 8 10^7 2 3 4 5 6 7 8 10^8 2
18
Incident Energy (eV)
72-Hf-180

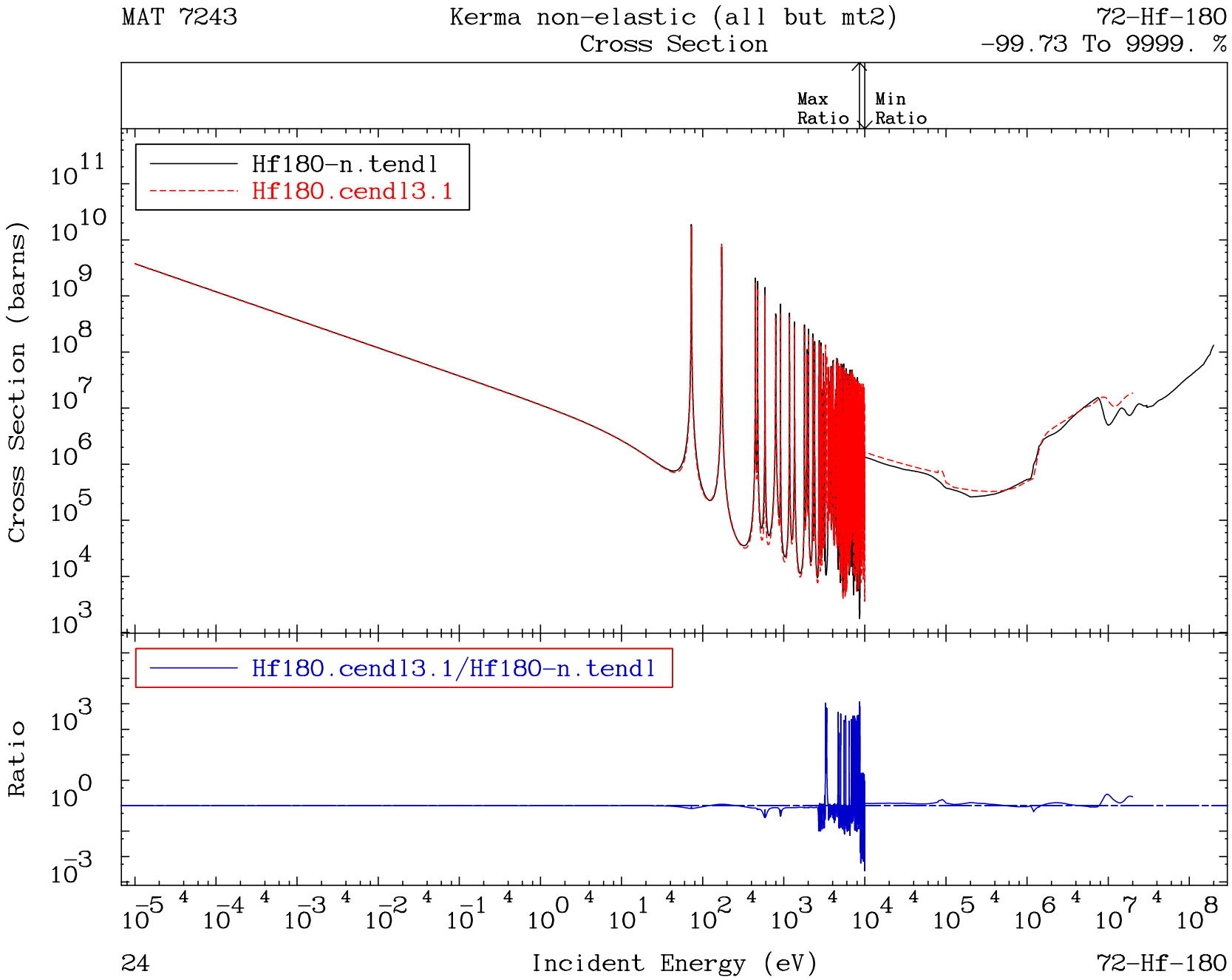

MAT 7243
Deuterium Production
Cross Section
72-Hf-180
-80.20 To -56.48%
Min Ratio
Max Ratio
Hf180-n.tendl Threshold 5.8177 MeV
Hf180.cendl3.1 Threshold 15.750 MeV
Cross Section (barns)
1.2
1.0
0.8
0.6
0.4
0.2
0.0
Hf180.cendl3.1/Hf180-n.tendl
Ratio
0.5
0.4
0.3
0.2
6 7 8 9 10^7 2 3 4 5 6 7 8 9 10^8 2
19
Incident Energy (eV)
72-Hf-180

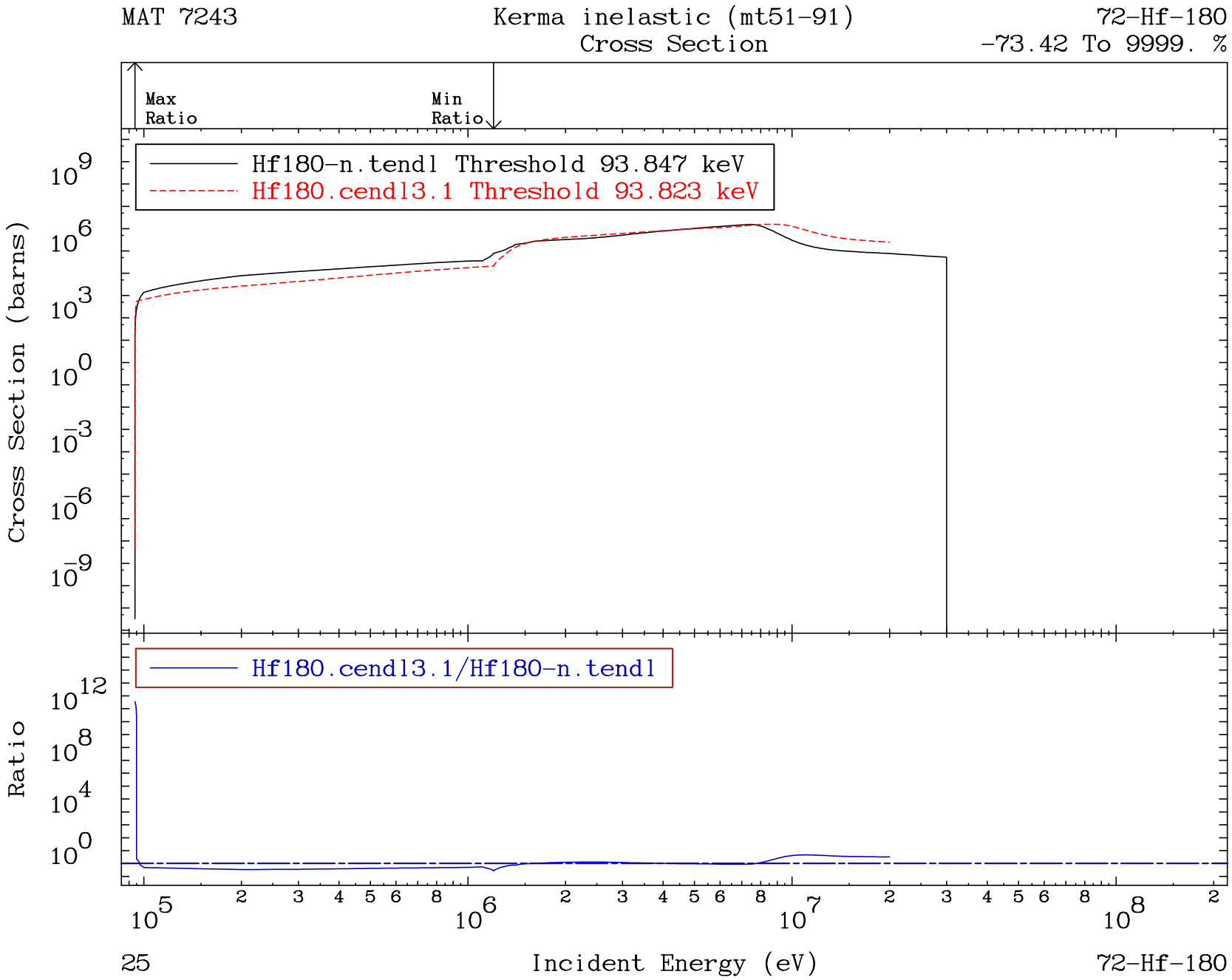

MAT 7243
Tritium Production
Cross Section
72-Hf-180
-100.0 To 9999. %
Min Ratio
Max Ratio
Hf180-n.tendl Threshold 6.2000 MeV
Hf180.cendl3.1 Threshold 13.000 MeV
Cross Section (milli-barns)
500
400
300
200
100
0
Hf180.cendl3.1/Hf180-n.tendl
Ratio
10^5
10^0
10^-5
10^-10
6 7 8 9 10^7 2 3 4 5 6 7 8 9 10^8 2
20
Incident Energy (eV)
72-Hf-180

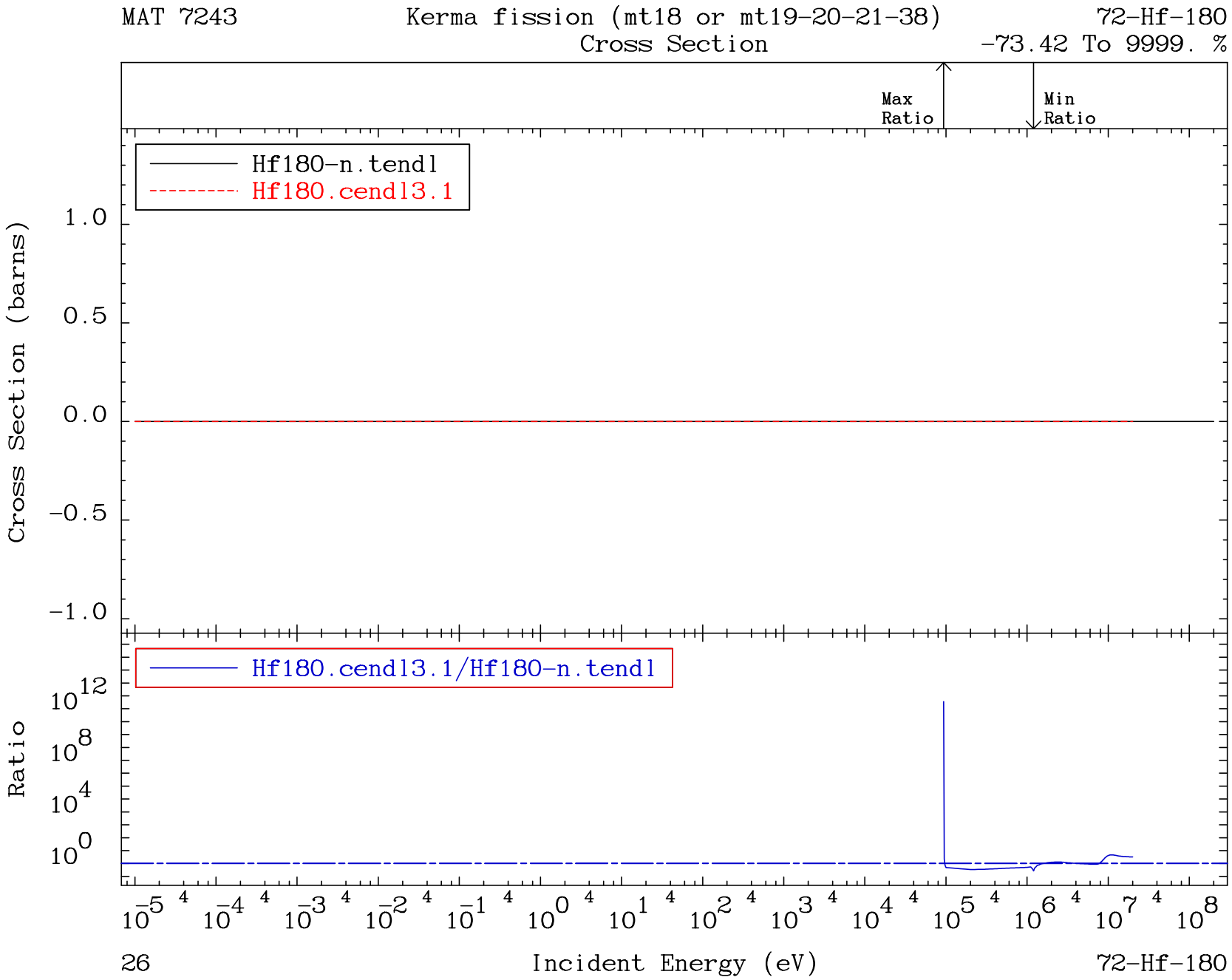

MAT 7243
He-4 Production
Cross Section
72-Hf-180
-52.42 To 11.02 %
Max Ratio
Min Ratio
Hf180-n.tendl
Hf180.cendl3.1 Threshold 11.000 MeV
Cross Section (milli-barns)
700
600
500
400
300
200
100
0
Hf180.cendl3.1/Hf180-n.tendl
Ratio
1.2
1.0
0.8
0.6
10^-5 10^-4 10^-3 10^-2 10^-1 10^0 10^1 10^2 10^3 10^4 10^5 10^6 10^7 10^8
21
Incident Energy (eV)
72-Hf-180

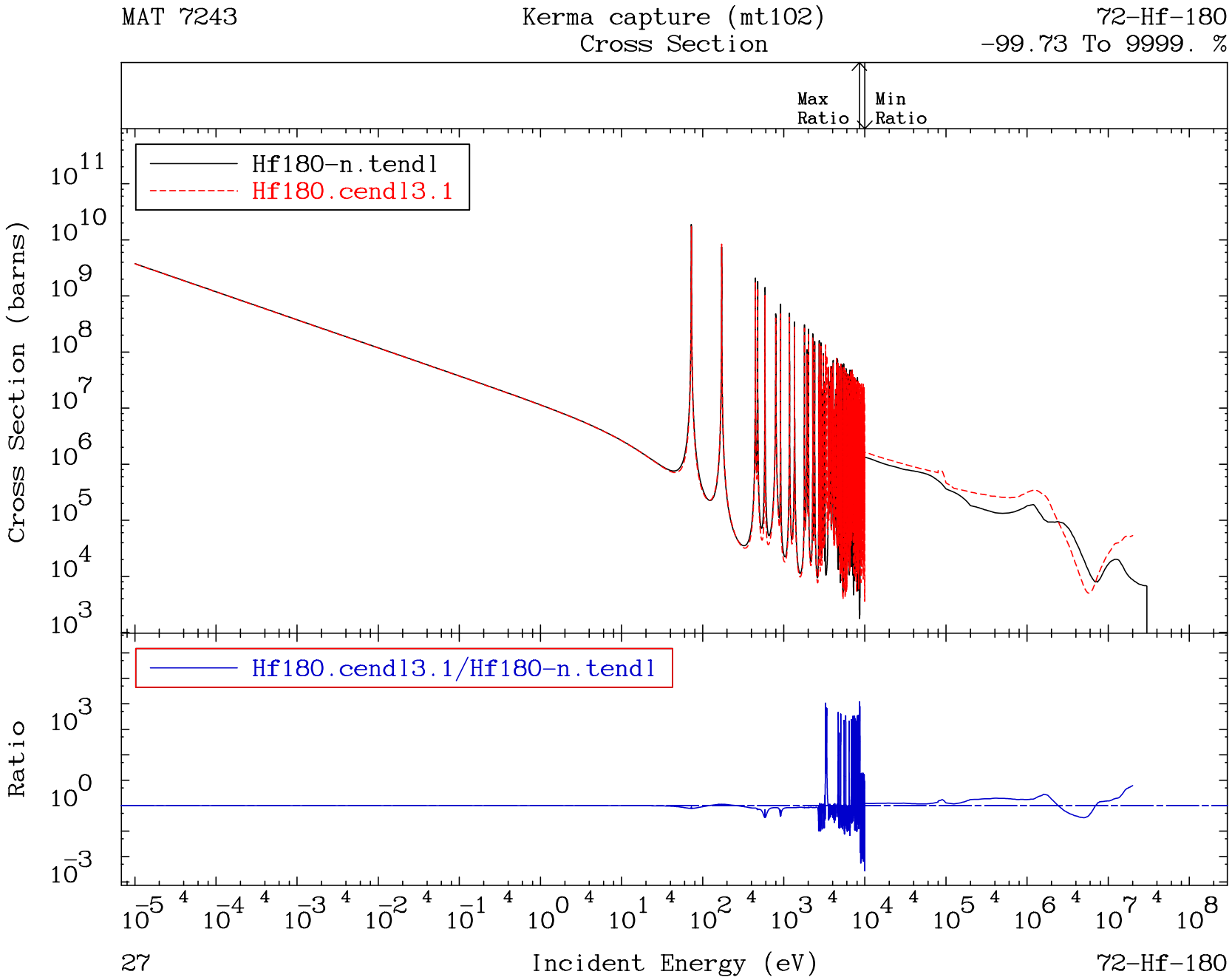

MAT 7243
Kerma total (eV-barns)
Cross Section
72-Hf-180
-99.66 To 9999. %
Max Ratio
Min Ratio
Hf180-n.tendl
Hf180.cendl3.1
Cross Section (barns)
Hf180.cendl3.1/Hf180-n.tendl
Ratio
Incident Energy (eV)
22
72-Hf-180

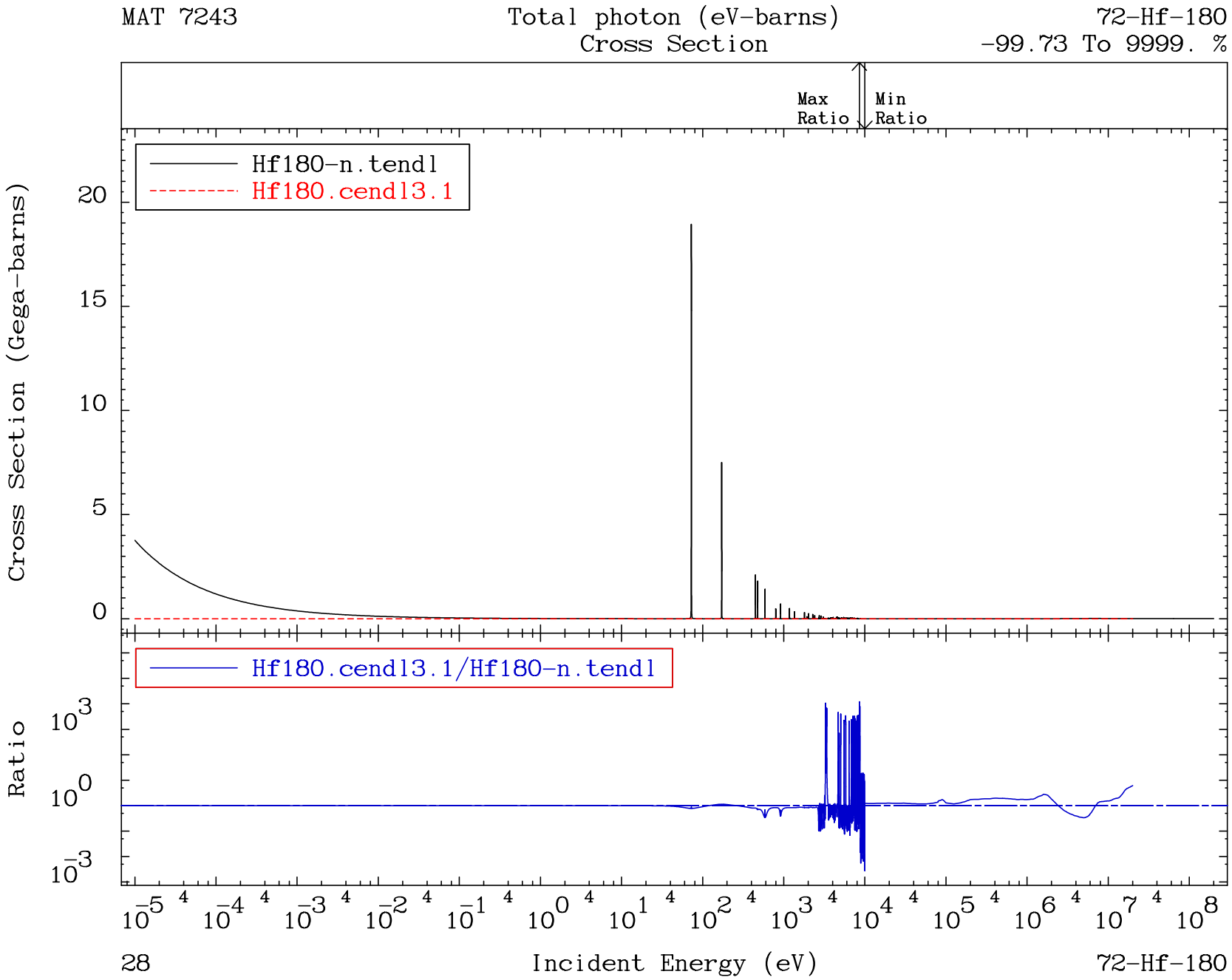

MAT 7243
Kerma elastic
Cross Section
72-Hf-180
-99.21 To 9999. %
Min Ratio
Max Ratio
Hf180-n.tendl
Hf180.cendl3.1
Cross Section (barns)
Hf180.cendl3.1/Hf180-n.tendl
Ratio
Incident Energy (eV)
23
72-Hf-180

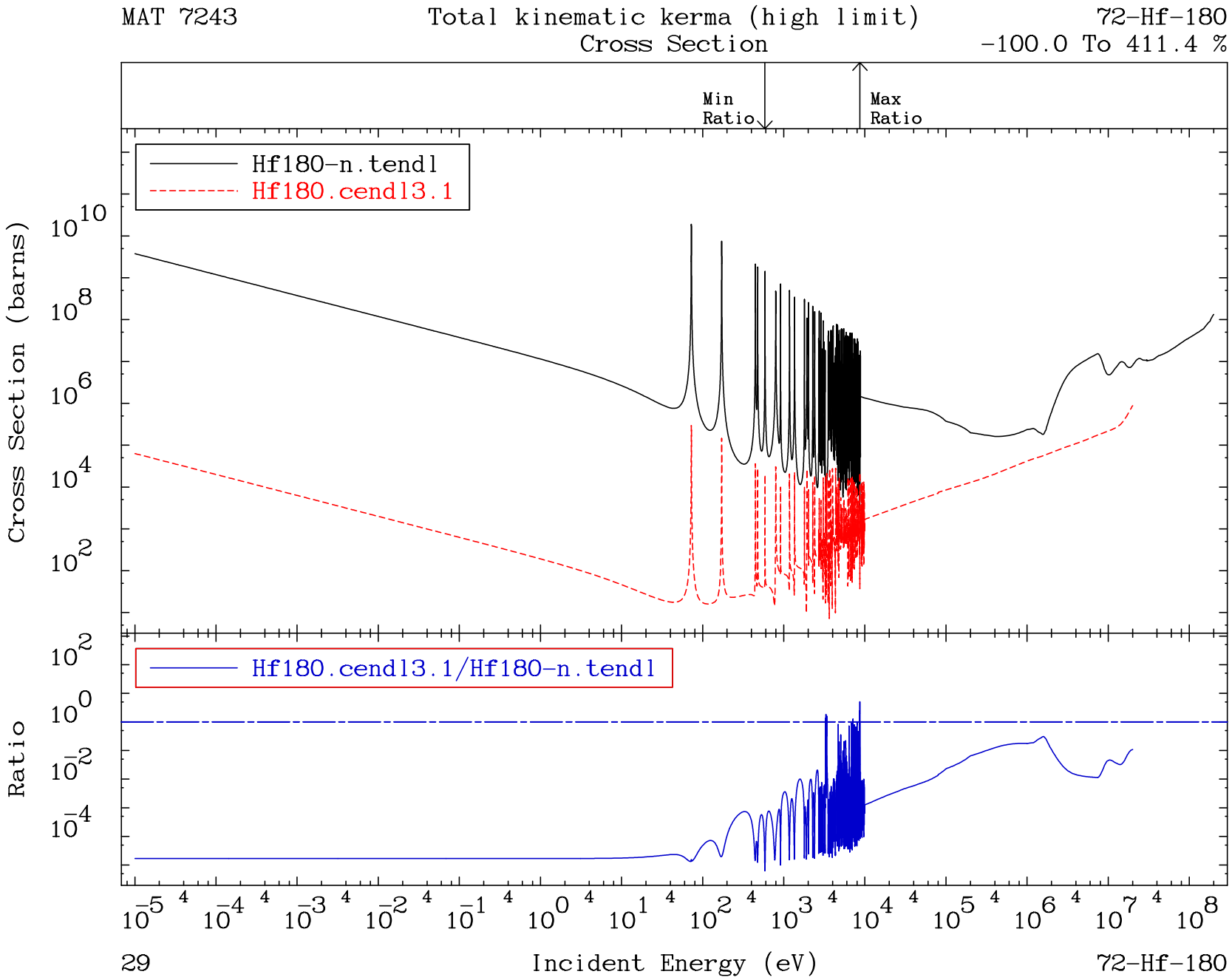

MAT 7243
Kerma non-elastic (all but mt2)
Cross Section
72-Hf-180
-99.73 To 9999. %
Max Ratio
Min Ratio
Hf180-n.tendl
Hf180.cendl3.1
Cross Section (barns)
Hf180.cendl3.1/Hf180-n.tendl
Ratio
Incident Energy (eV)
24
72-Hf-180

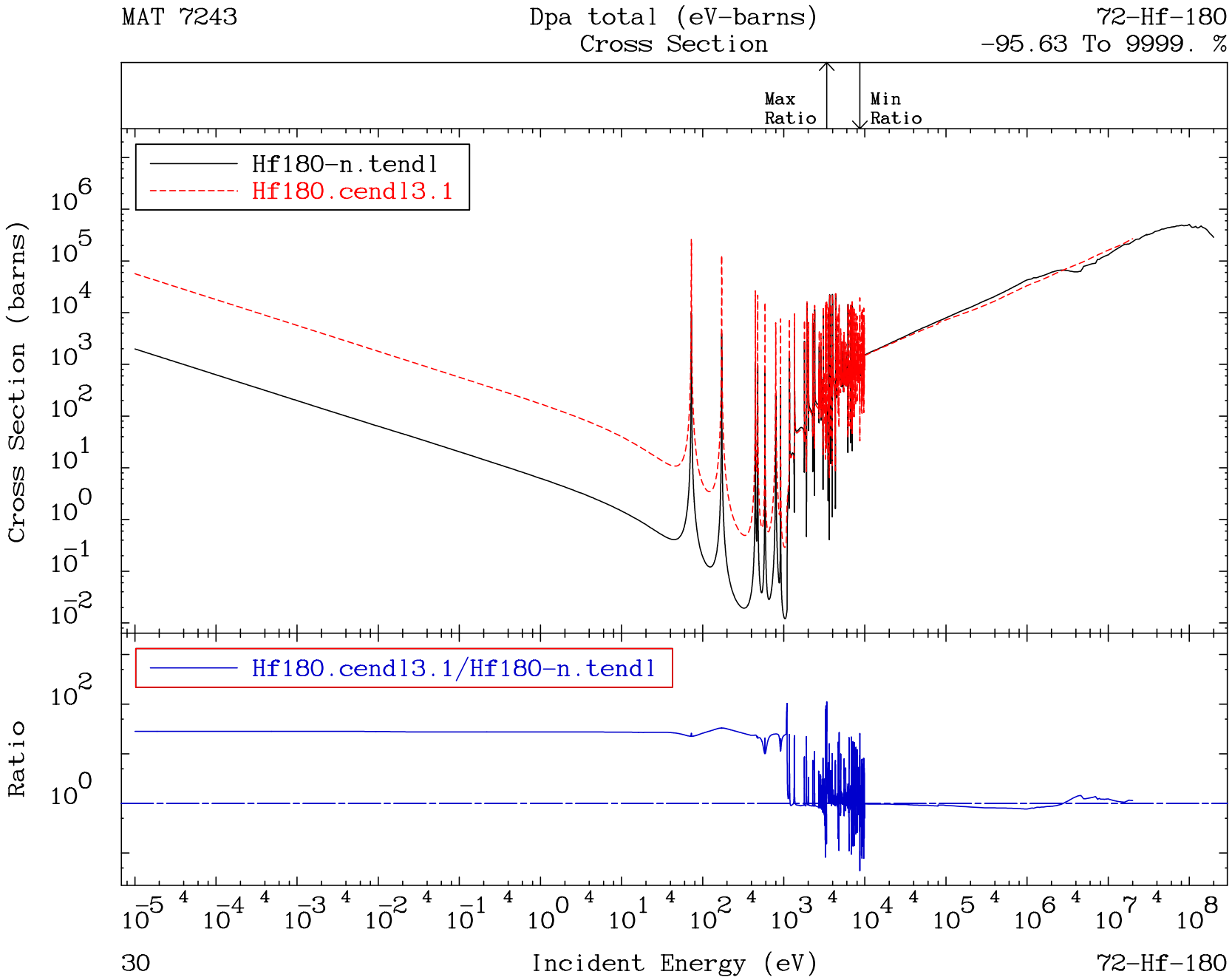

MAT 7243
Kerma inelastic (mt51-91)
Cross Section
72-Hf-180
-73.42 To 9999. %
Max Ratio
Min Ratio
Hf180-n.tendl Threshold 93.847 keV
Hf180.cendl3.1 Threshold 93.823 keV
Cross Section (barns)
Hf180.cendl3.1/Hf180-n.tendl
Ratio
Incident Energy (eV)
25
72-Hf-180

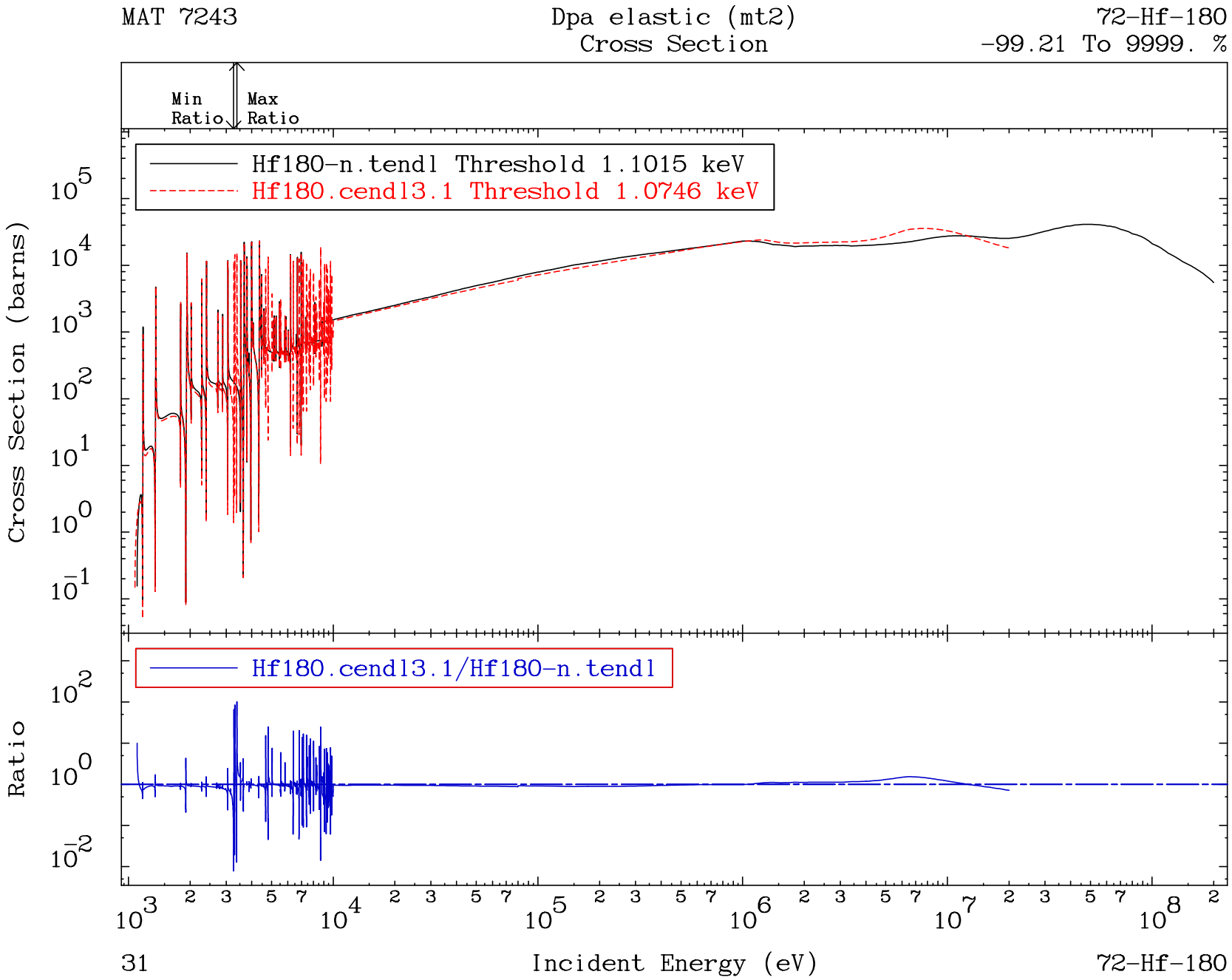

MAT 7243
Kerma fission (mt18 or mt19-20-21-38)
Cross Section
72-Hf-180
-73.42 To 9999. %
Max Ratio
Min Ratio
Hf180-n.tendl
Hf180.cendl3.1
Cross Section (barns)
1.0
0.5
0.0
-0.5
-1.0
Hf180.cendl3.1/Hf180-n.tendl
Ratio
10^12
10^8
10^4
10^0
10^-5 10^-4 10^-3 10^-2 10^-1 10^0 10^1 10^2 10^3 10^4 10^5 10^6 10^7 10^8
26
Incident Energy (eV)
72-Hf-180

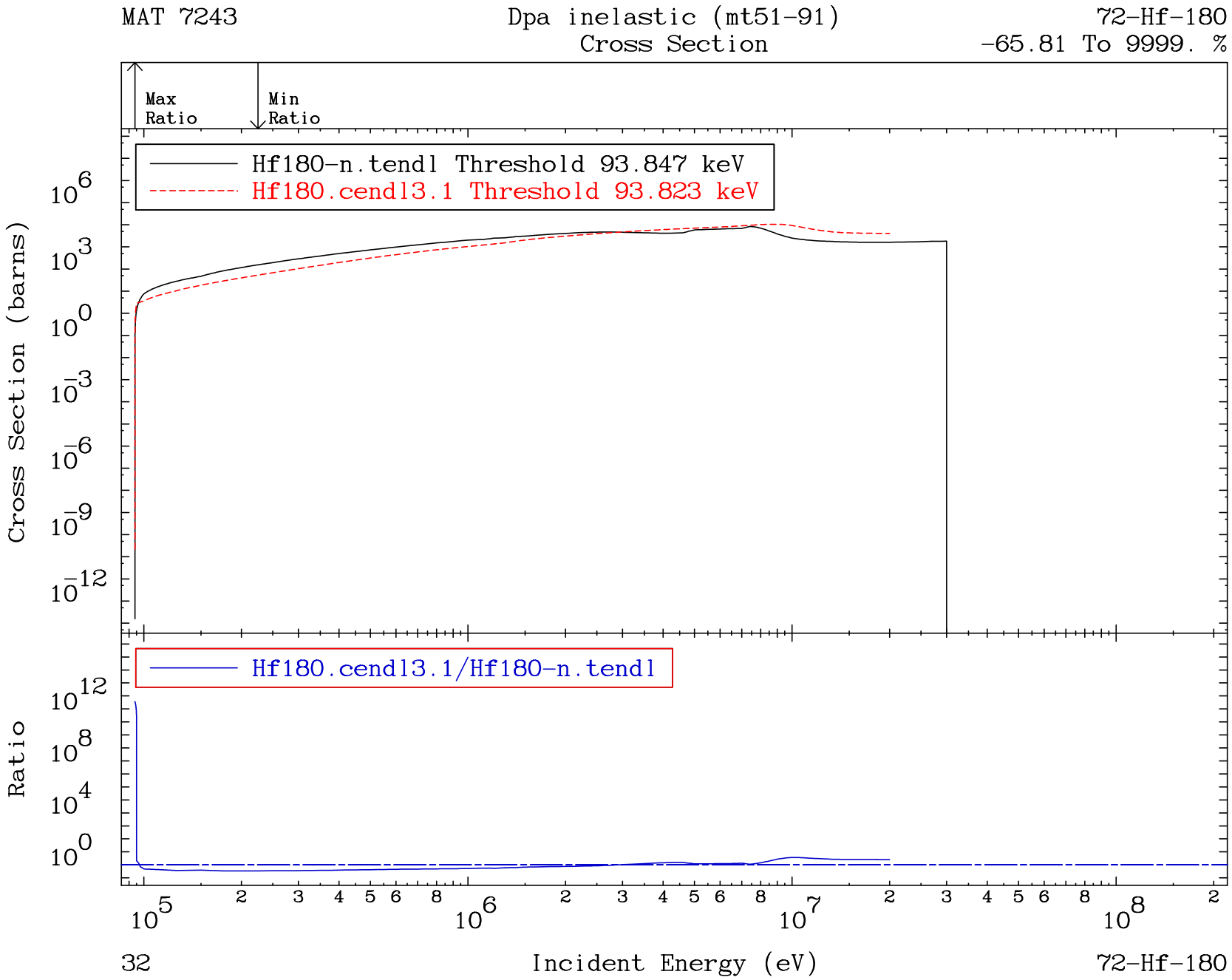

MAT 7243
Kerma capture (mt102)
Cross Section
72-Hf-180
-99.73 To 9999. %
Max Ratio
Min Ratio
Hf180-n.tendl
Hf180.cendl3.1
Cross Section (barns)
Hf180.cendl3.1/Hf180-n.tendl
Ratio
Incident Energy (eV)
27
72-Hf-180

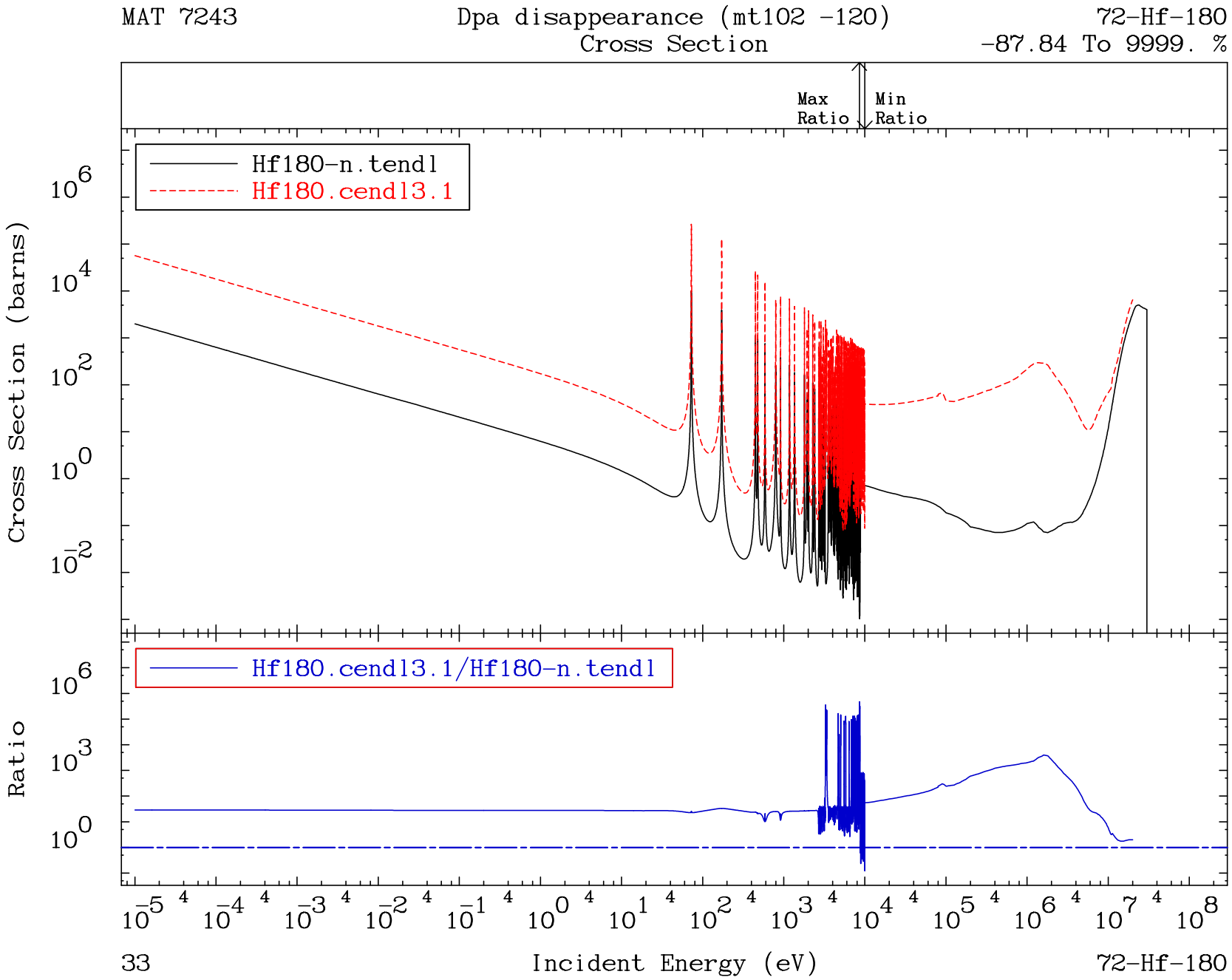

MAT 7243
Total photon (eV-barns)
Cross Section
72-Hf-180
-99.73 To 9999. %
Max Ratio
Min Ratio
Hf180-n.tendl
Hf180.cendl3.1
Cross Section (Giga-barns)
20
15
10
5
0
Hf180.cendl3.1/Hf180-n.tendl
Ratio
10^3
10^0
10^-3
10^-5 10^-4 10^-3 10^-2 10^-1 10^0 10^1 10^2 10^3 10^4 10^5 10^6 10^7 10^8
28
Incident Energy (eV)
72-Hf-180


MAT 7243
Total kinematic kerma (high limit)
Cross Section
72-Hf-180
-100.0 To 411.4 %
Min Ratio
Max Ratio
Hf180-n.tendl
Hf180.cendl3.1
Cross Section (barns)
Hf180.cendl3.1/Hf180-n.tendl
Ratio
Incident Energy (eV)
29
72-Hf-180


MAT 7243
Dpa total (eV-barns)
Cross Section
72-Hf-180
-95.63 To 9999. %
Max Ratio
Min Ratio
Hf180-n.tendl
Hf180.cendl3.1
Cross Section (barns)
Hf180.cendl3.1/Hf180-n.tendl
Ratio
Incident Energy (eV)
30
72-Hf-180


MAT 7243
Dpa elastic (mt2)
Cross Section
72-Hf-180
-99.21 To 9999. %
Min Ratio
Max Ratio
Hf180-n.tendl Threshold 1.1015 keV
Hf180.cendl3.1 Threshold 1.0746 keV
Cross Section (barns)
Hf180.cendl3.1/Hf180-n.tendl
Ratio
Incident Energy (eV)
31
72-Hf-180


MAT 7243
Dpa inelastic (mt51-91)
Cross Section
72-Hf-180
-65.81 To 9999. %
Max Ratio
Min Ratio
Hf180-n.tendl Threshold 93.847 keV
Hf180.cendl3.1 Threshold 93.823 keV
Cross Section (barns)
Hf180.cendl3.1/Hf180-n.tendl
Ratio
Incident Energy (eV)
32
72-Hf-180


MAT 7243
Dpa disappearance (mt102 -120)
Cross Section
72-Hf-180
-87.84 To 9999. %
Max Ratio
Min Ratio
Hf180-n.tendl
Hf180.cendl3.1
Cross Section (barns)
Hf180.cendl3.1/Hf180-n.tendl
Ratio
Incident Energy (eV)
33
72-Hf-180