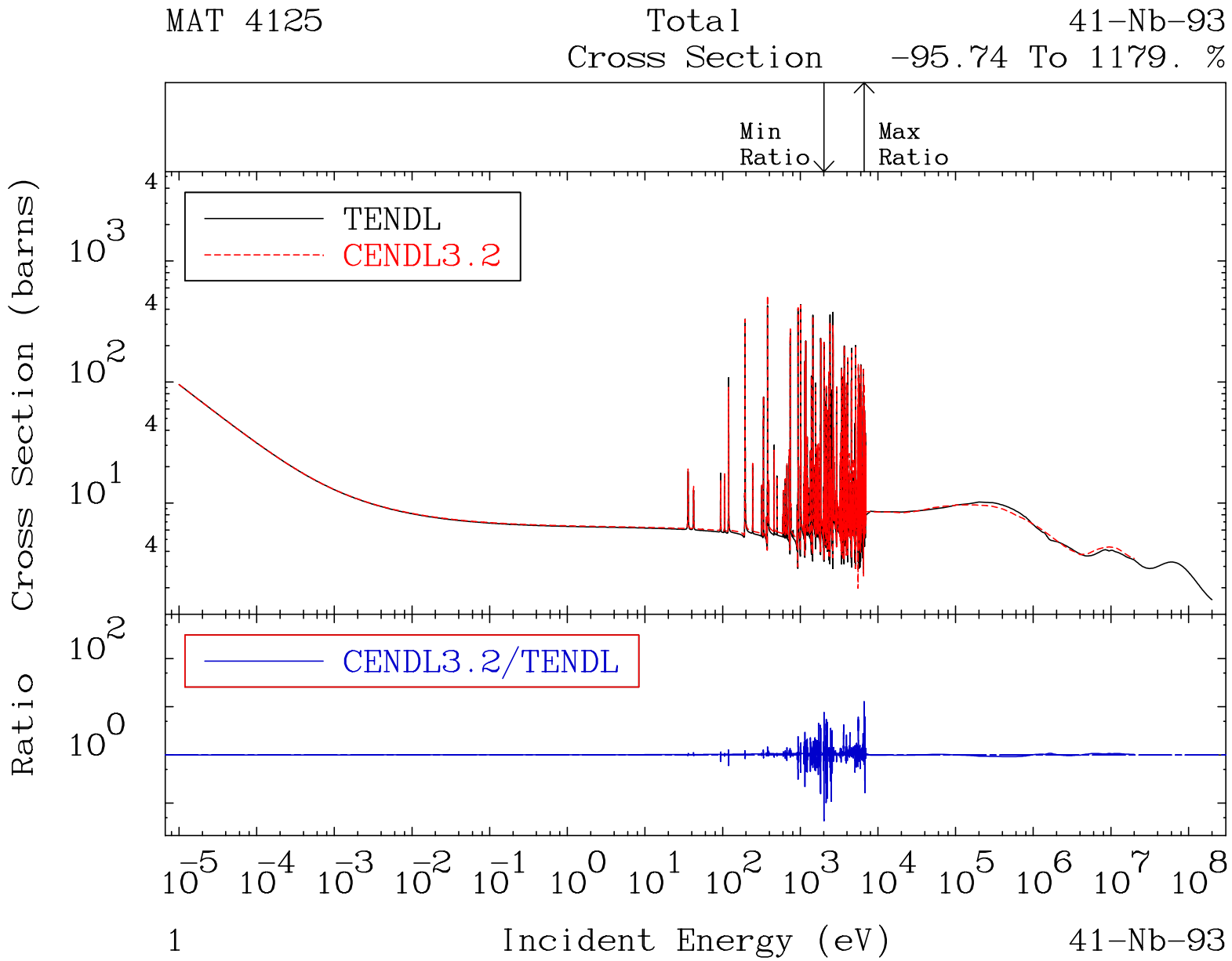
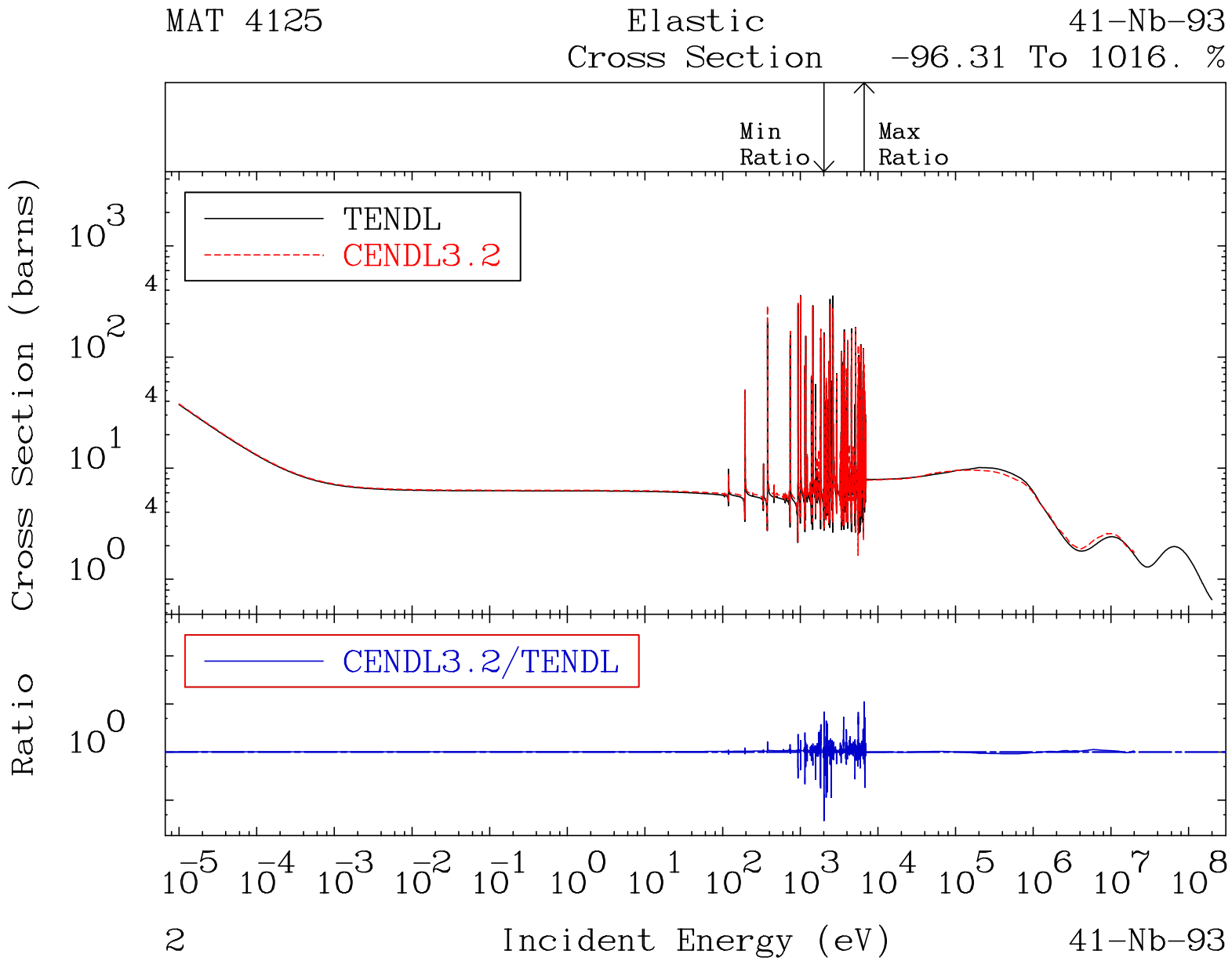
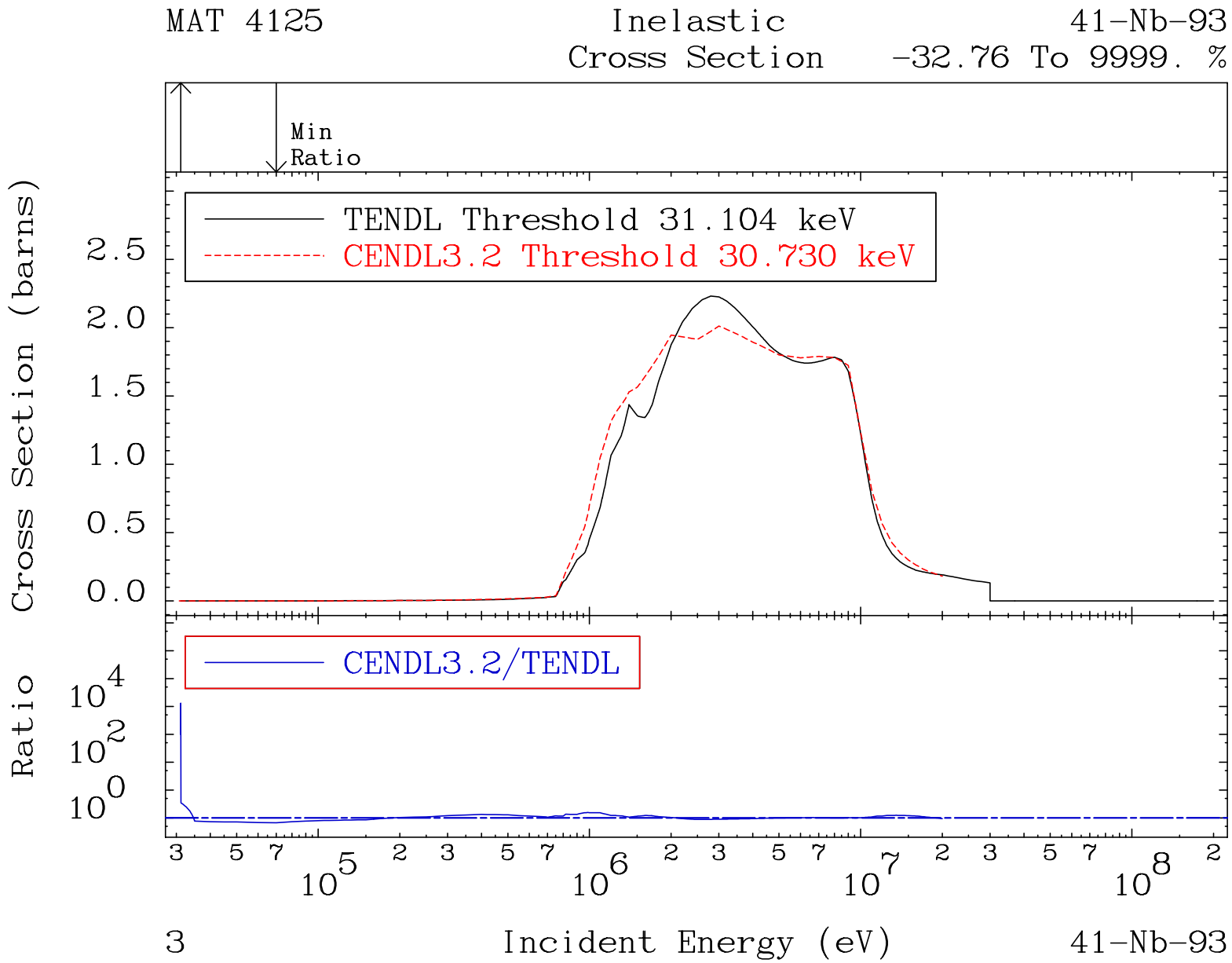
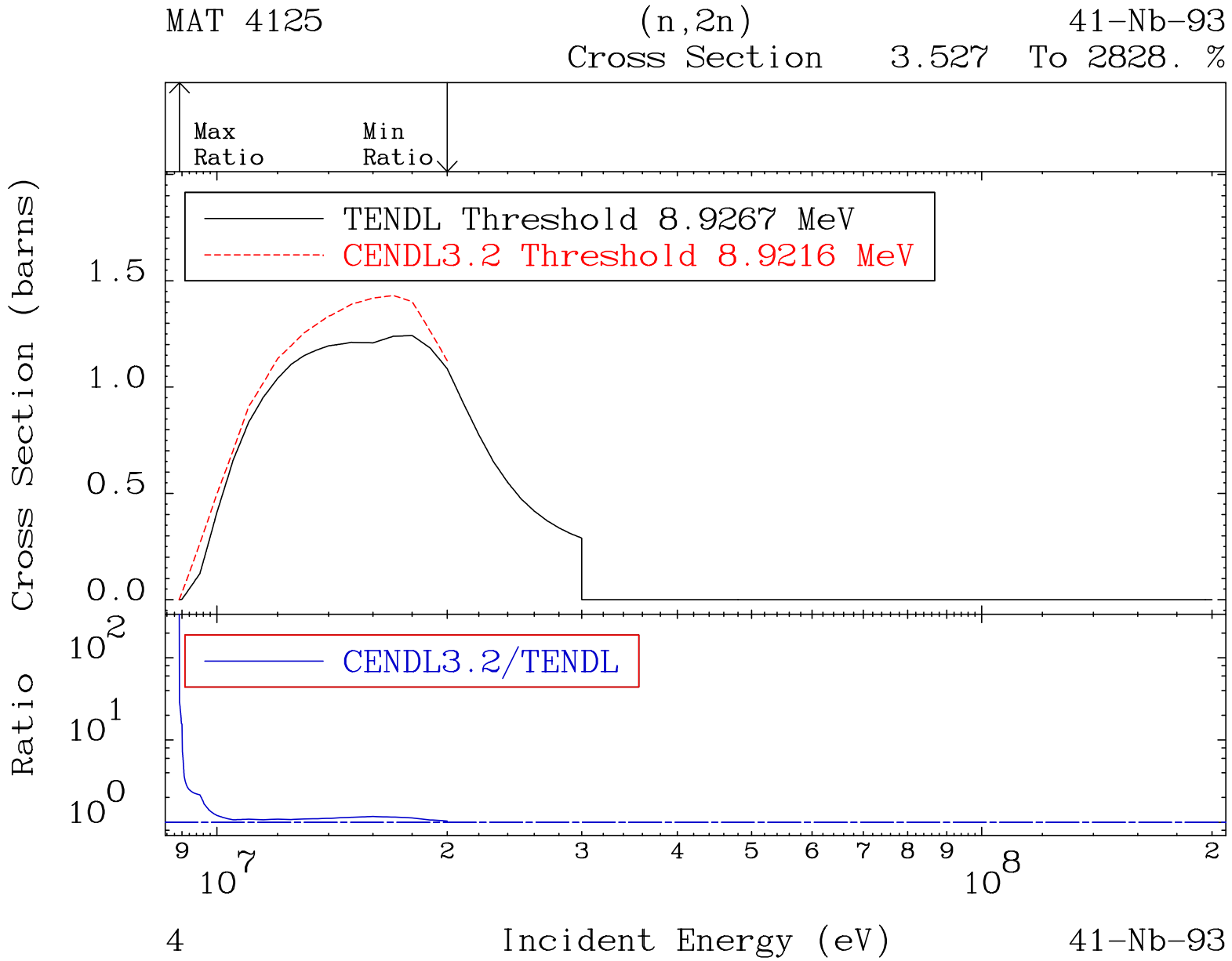
Program Complot
(Version 2021-1)
by
Dermott E. Cullen
(Present Contact Information)
Dermott E. Cullen
1466 Hudson Way
Livermore, CA 94550
U.S.A.
Tele: 925-443-1911
E.Mail:redcullen1@comcast.net
Web:redcullen1.net/HOMEPAGE.NEW

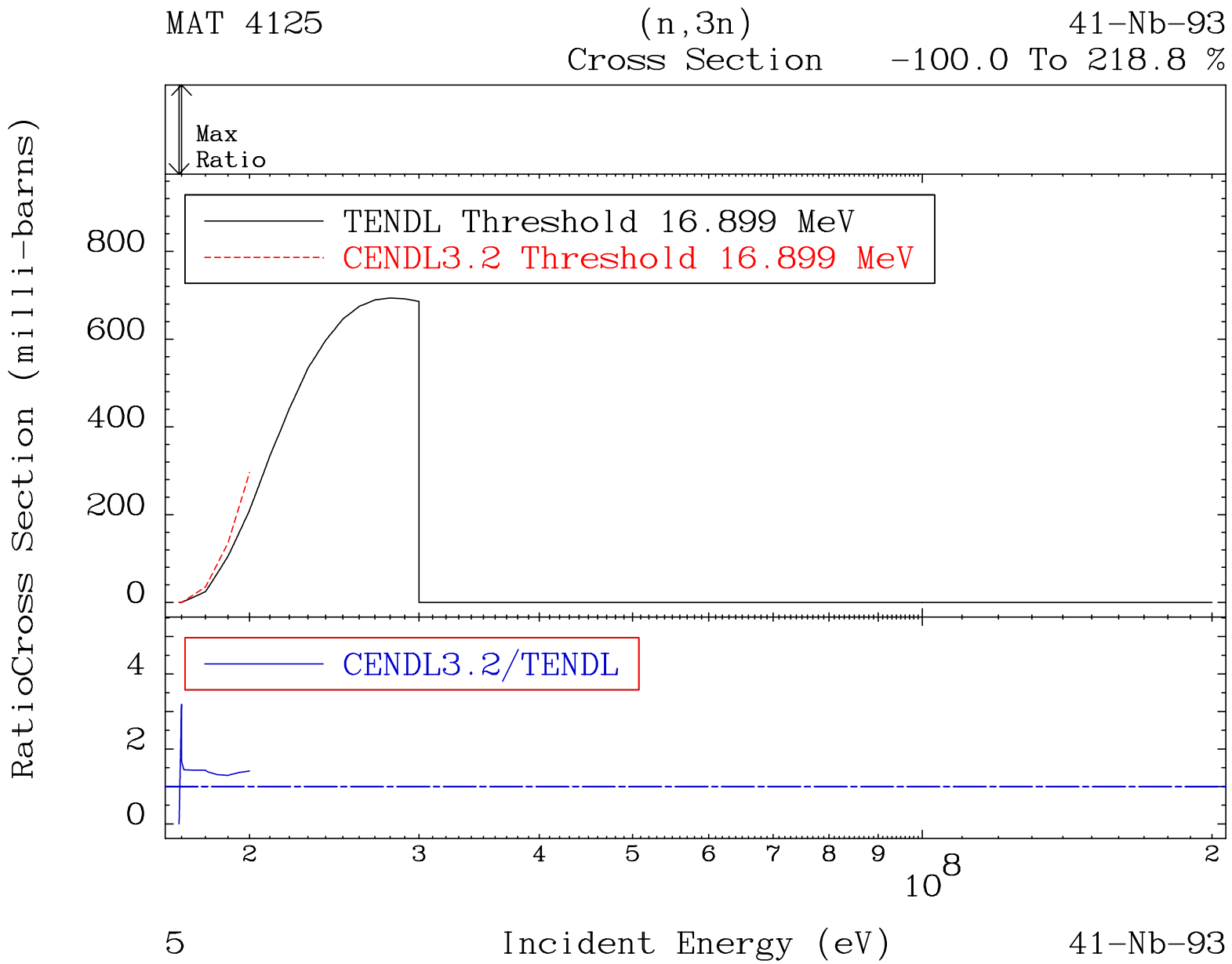
Press Mouse Button to Start

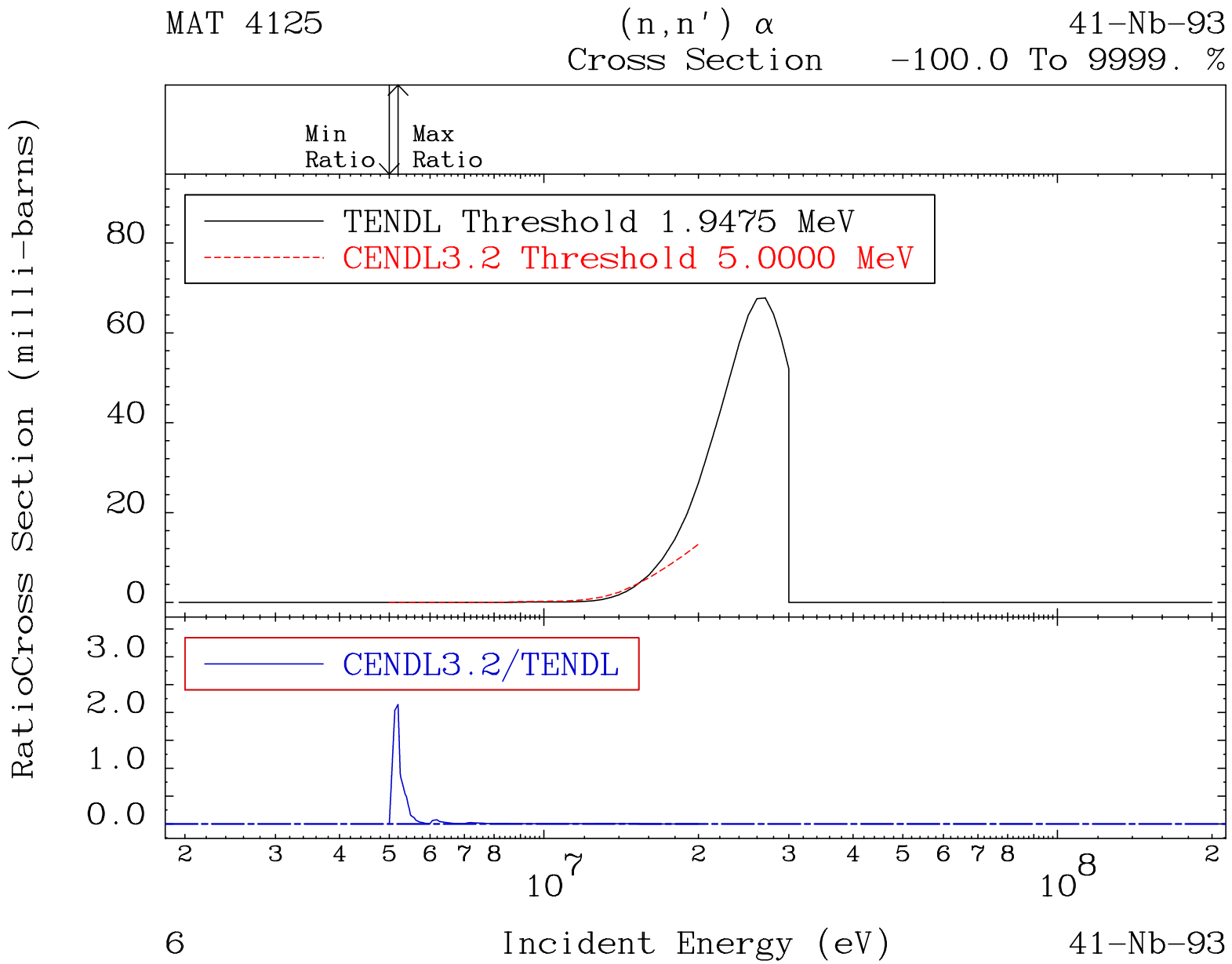

MAT 4125
Total
Cross Section
41-Nb-93
-95.74 To 1179. %
Min Ratio
Max Ratio
TENDL
CENDL3.2
CENDL3.2/TENDL
Cross Section (barns)
Ratio
Incident Energy (eV)
41-Nb-93
1

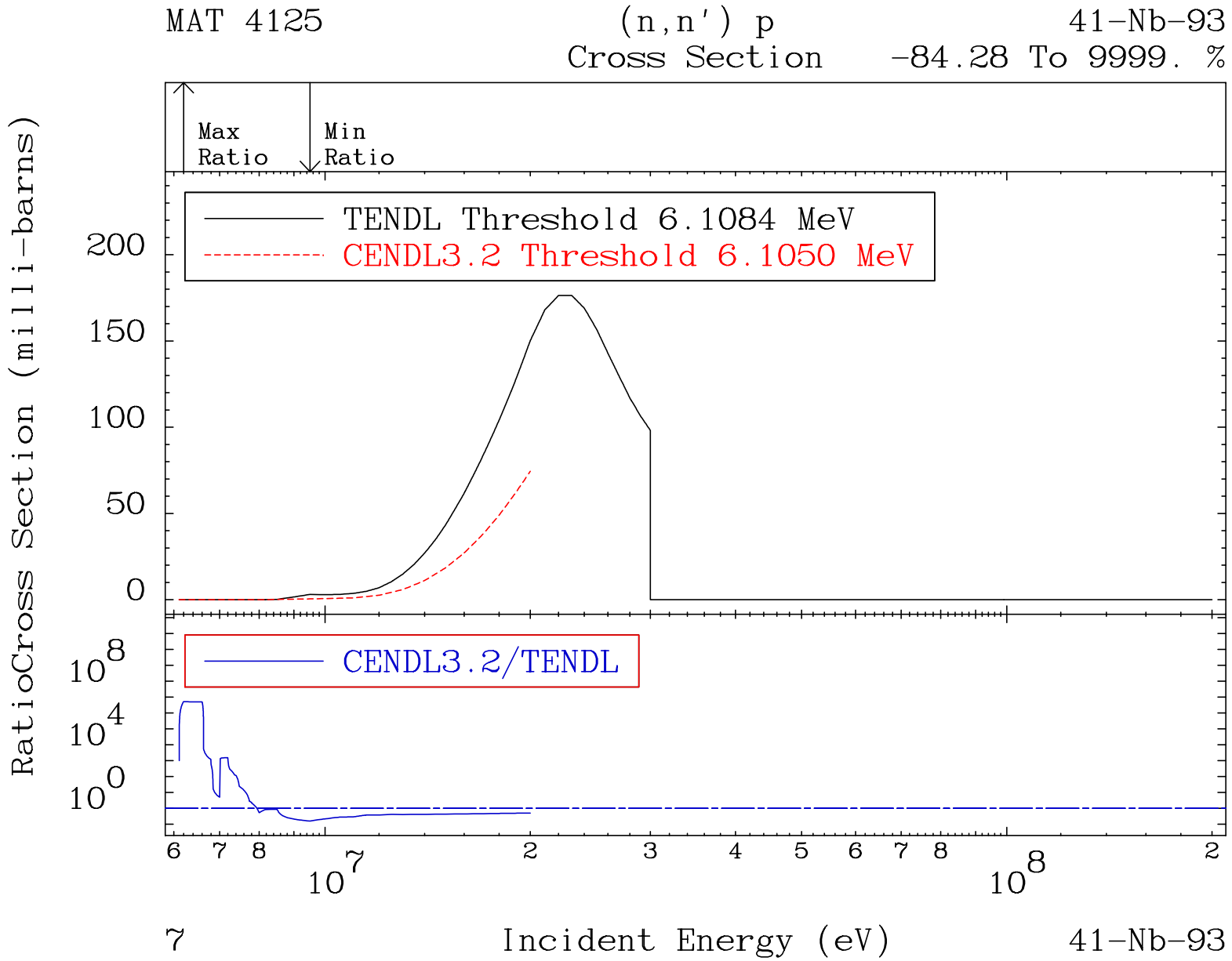

MAT 4125
Elastic
Cross Section
41-Nb-93
-96.31 To 1016. %
Min Ratio
Max Ratio
TENDL
CENDL3.2
CENDL3.2/TENDL
Cross Section (barns)
Ratio
Incident Energy (eV)
41-Nb-93
2

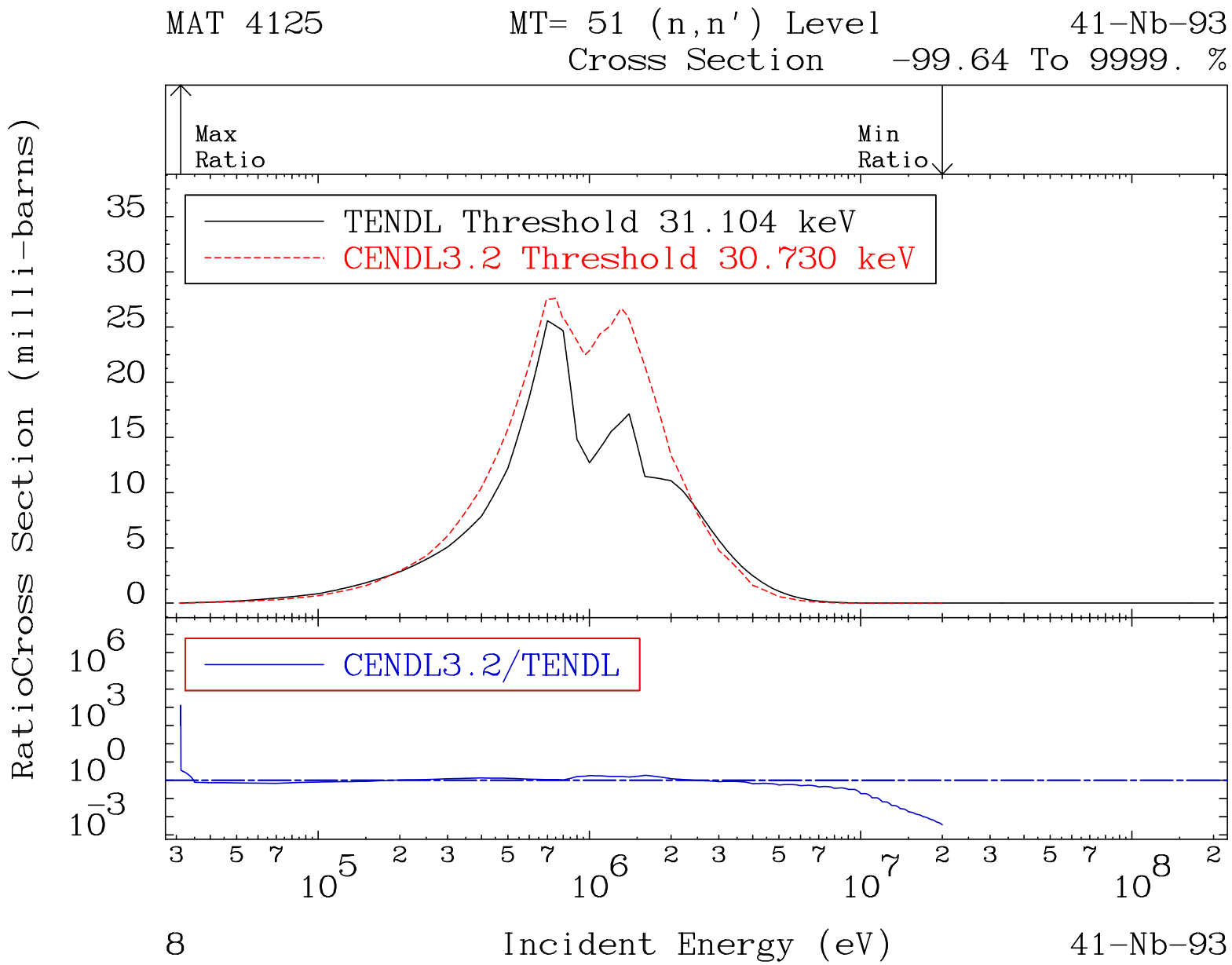

MAT 4125
Inelastic
Cross Section
41-Nb-93
-32.76 To 9999. %
Min
Ratio
TENDL Threshold 31.104 keV
CENDL3.2 Threshold 30.730 keV
Cross Section (barns)
2.5
2.0
1.5
1.0
0.5
0.0
CENDL3.2/TENDL
Ratio
10^4
10^2
10^0
3 5 7 10^5 2 3 5 7 10^6 2 3 5 7 10^7 2 3 5 7 10^8 2
3
Incident Energy (eV)
41-Nb-93

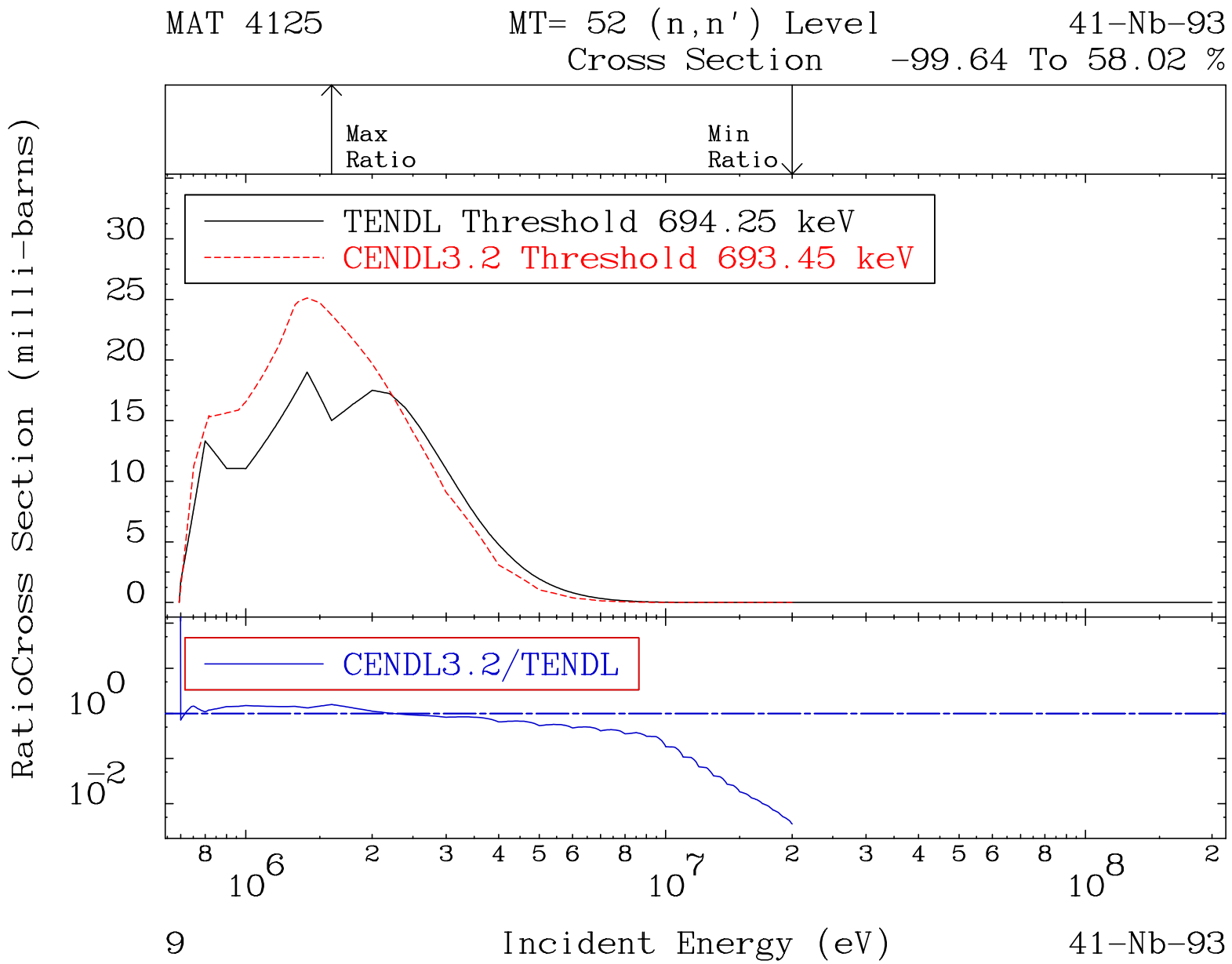

MAT 4125
(n,2n)
41-Nb-93
Cross Section 3.527 To 2828. %
Max Ratio
Min Ratio
TENDL Threshold 8.9267 MeV
CENDL3.2 Threshold 8.9216 MeV
CENDL3.2/TENDL
Cross Section (barns)
Ratio
1.5
1.0
0.5
0.0
10^2
10^1
10^0
9
10^7
2
3
4
5
6
7
8
9
10^8
2
4
Incident Energy (eV)
41-Nb-93

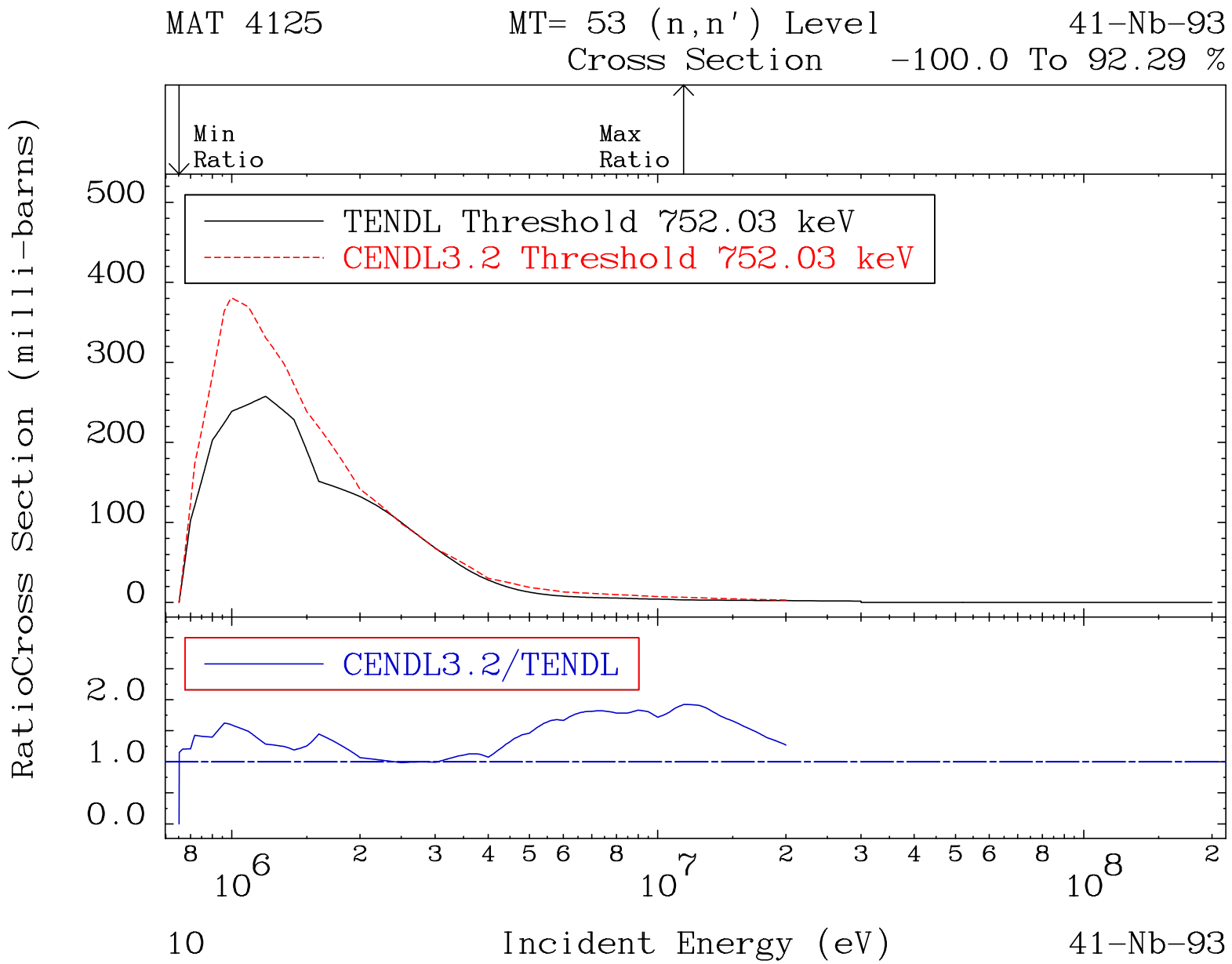

MAT 4125
(n,3n)
41-Nb-93
Cross Section
-100.0 To 218.8 %
Max
Ratio
TENDL Threshold 16.899 MeV
CENDL3.2 Threshold 16.899 MeV
CENDL3.2/TENDL
RatioCross Section (milli-barns)
800
600
400
200
0
4
2
0
2
3
4
5
6
7
8
9
10^8
2
5
Incident Energy (eV)
41-Nb-93

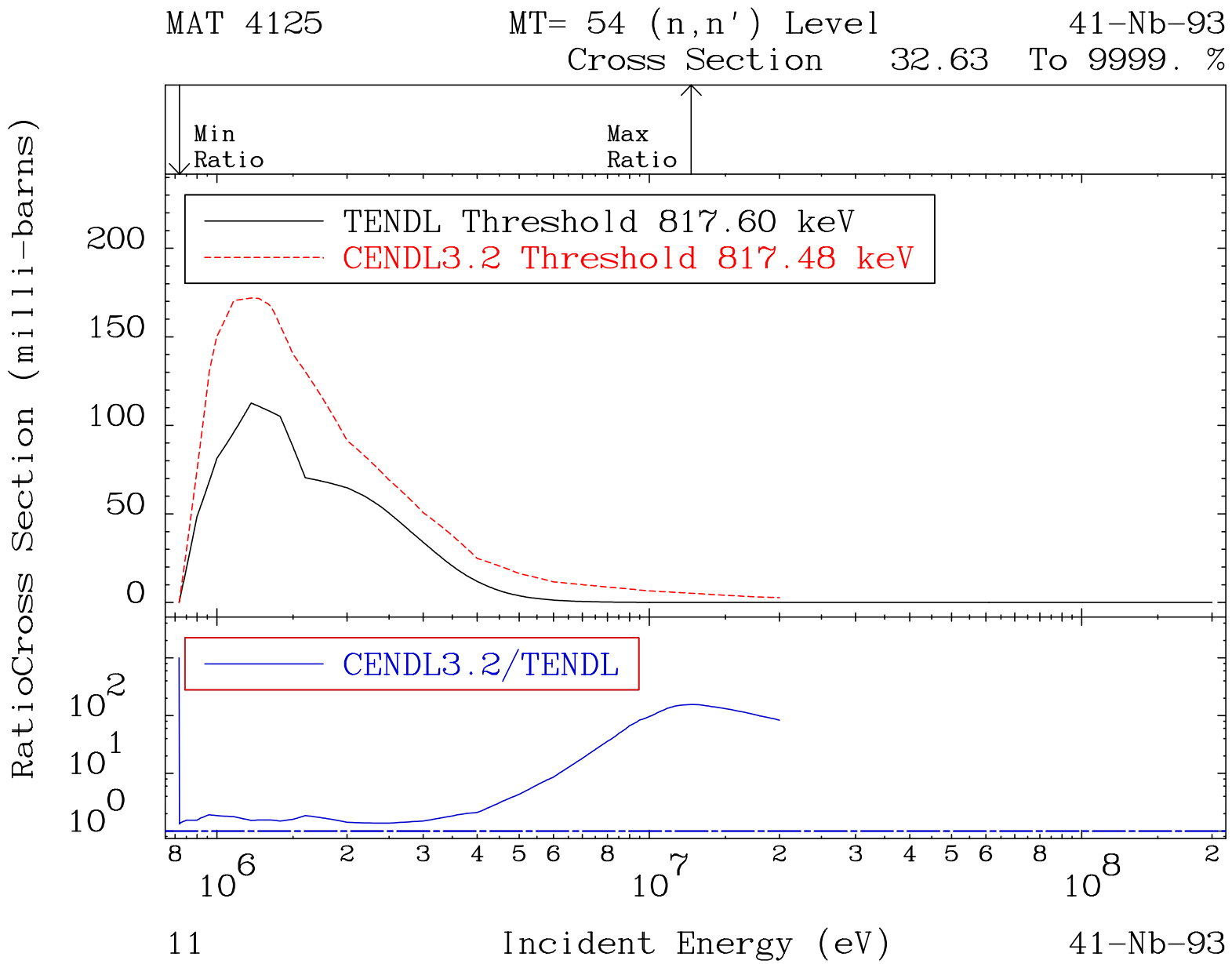

MAT 4125
(n,n') α
Cross Section
41-Nb-93
-100.0 To 9999. %
Min Ratio
Max Ratio
TENDL Threshold 1.9475 MeV
CENDL3.2 Threshold 5.0000 MeV
CENDL3.2/TENDL
RatioCross Section (milli-barns)
80
60
40
20
0
3.0
2.0
1.0
0.0
2 3 4 5 6 7 8
10^7
2 3 4 5 6 7 8
10^8
2
6
Incident Energy (eV)
41-Nb-93

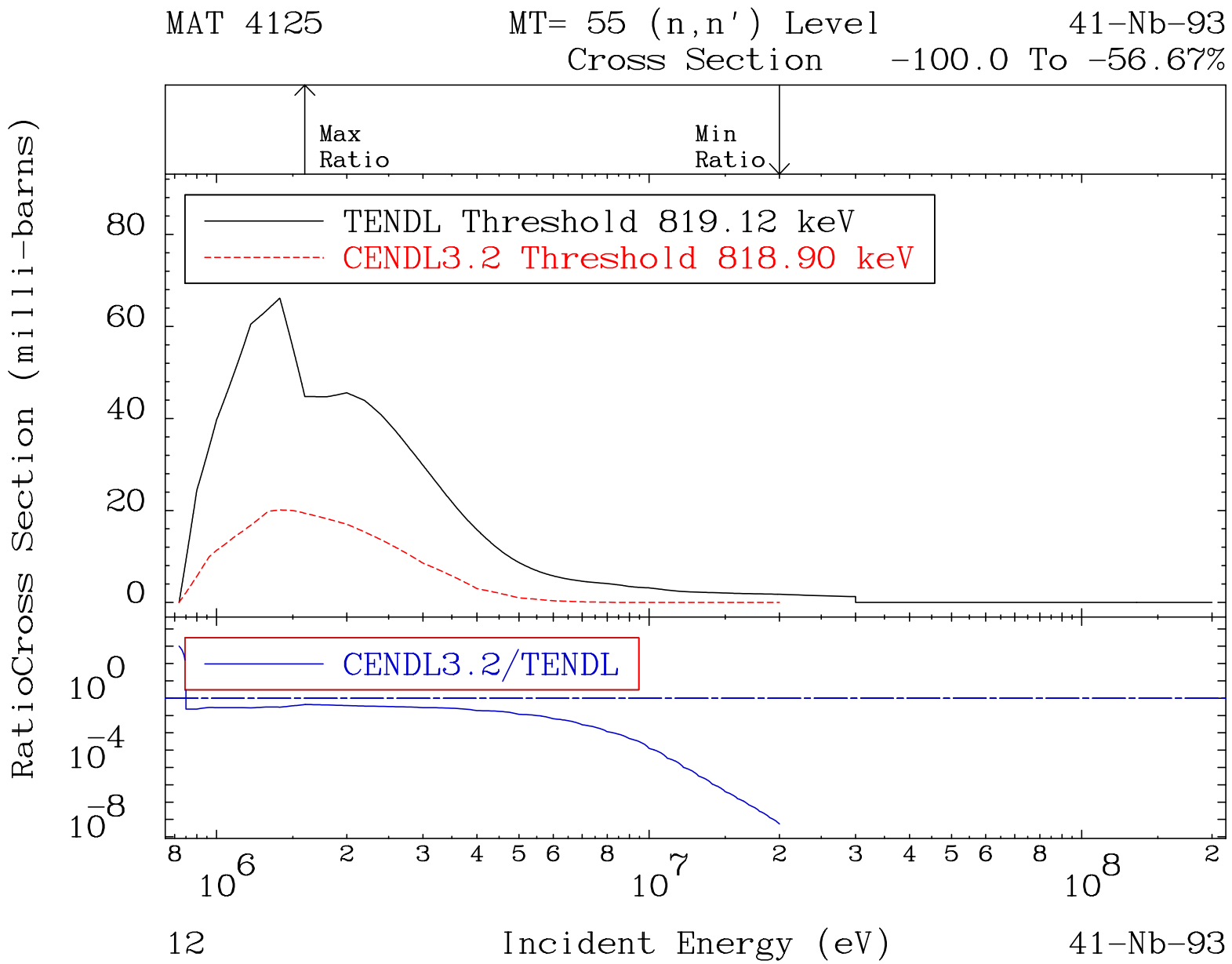

MAT 4125
(n,n') p
Cross Section
41-Nb-93
-84.28 To 9999. %
Max Ratio
Min Ratio
TENDL Threshold 6.1084 MeV
CENDL3.2 Threshold 6.1050 MeV
CENDL3.2/TENDL
RatioCross Section (milli-barns)
200
150
100
50
0
10^8
10^4
10^0
6 7 8 10^7 2 3 4 5 6 7 8 10^8 2
7
Incident Energy (eV)
41-Nb-93

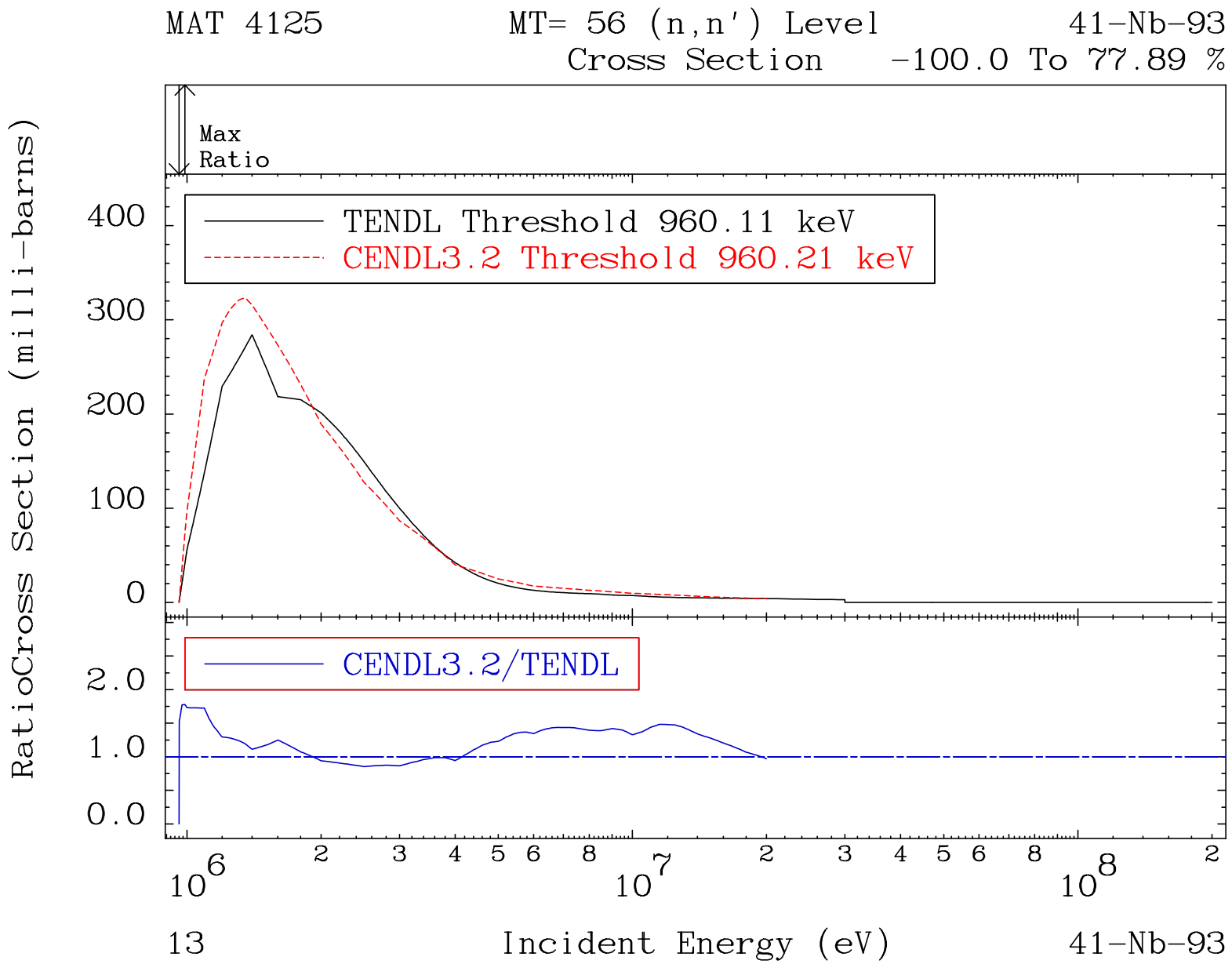

MAT 4125
MT= 51 (n,n') Level
41-Nb-93
Cross Section -99.64 To 9999. %
Max Ratio
Min Ratio
TENDL Threshold 31.104 keV
CENDL3.2 Threshold 30.730 keV
CENDL3.2/TENDL
RatioCross Section (milli-barns)
Incident Energy (eV)
8
41-Nb-93

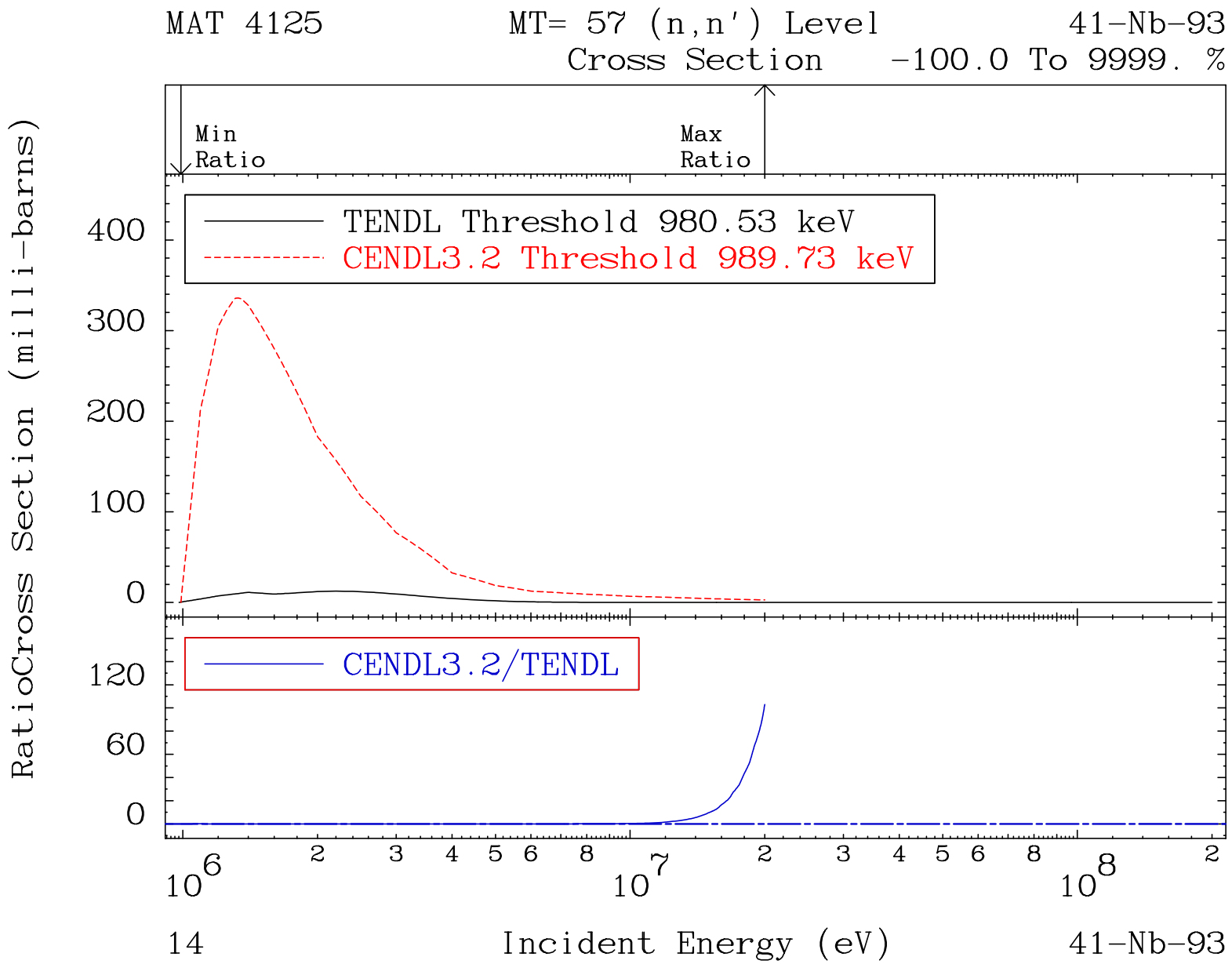

MAT 4125
MT= 52 (n,n') Level
41-Nb-93
Cross Section
-99.64 To 58.02 %
Max Ratio
Min Ratio
TENDL Threshold 694.25 keV
CENDL3.2 Threshold 693.45 keV
CENDL3.2/TENDL
RatioCross Section (milli-barns)
30
25
20
15
10
5
0
10^0
10^-2
8
10^6
2
3
4
5
6
8
10^7
2
3
4
5
6
8
10^8
2
9
Incident Energy (eV)
41-Nb-93

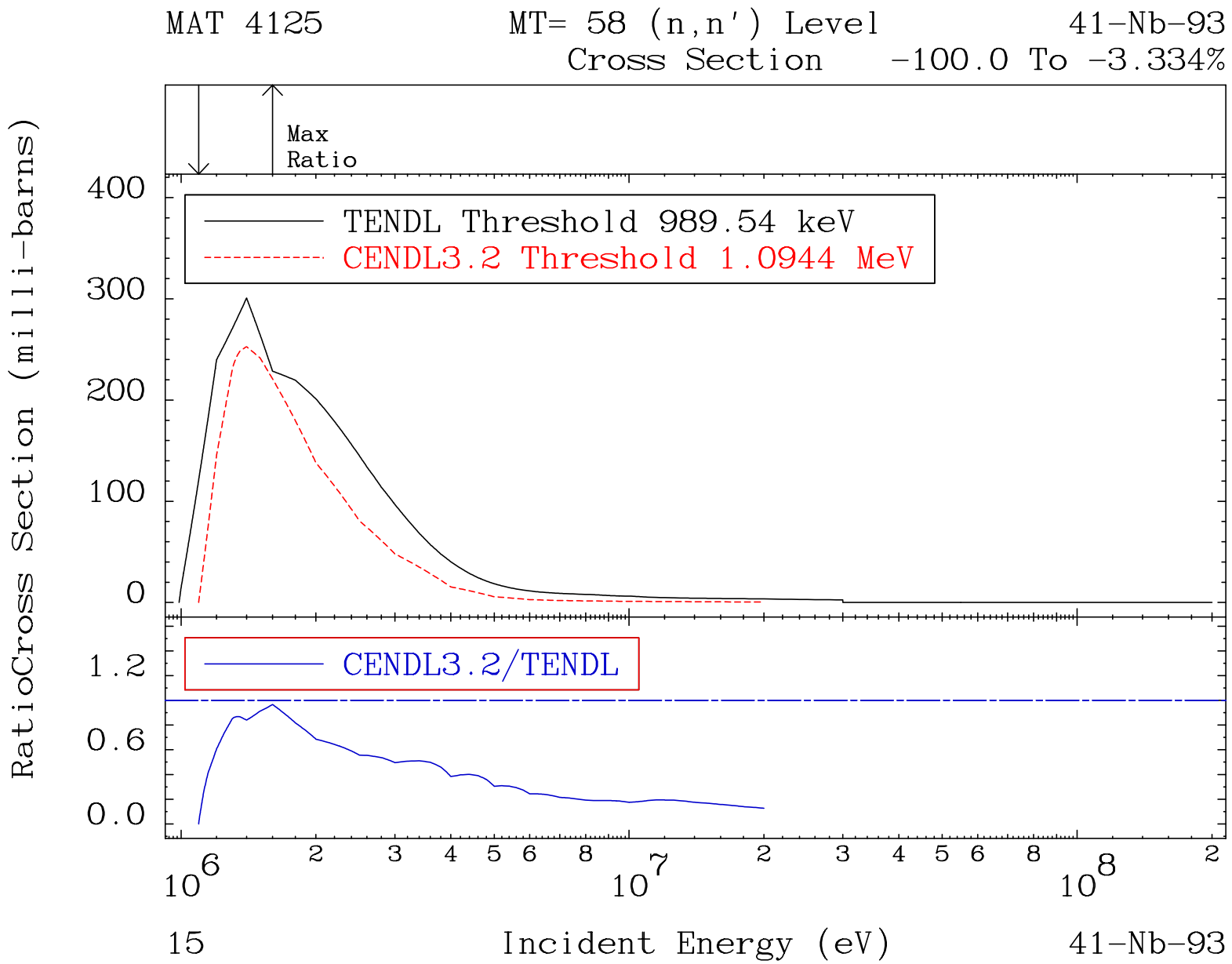

MAT 4125
MT= 53 (n,n') Level
41-Nb-93
Cross Section -100.0 To 92.29 %
Min Ratio
Max Ratio
TENDL Threshold 752.03 keV
CENDL3.2 Threshold 752.03 keV
CENDL3.2/TENDL
RatioCross Section (milli-barns)
500
400
300
200
100
0
2.0
1.0
0.0
8
10^6
2
3
4
5
6
8
10^7
2
3
4
5
6
8
10^8
2
10
Incident Energy (eV)
41-Nb-93

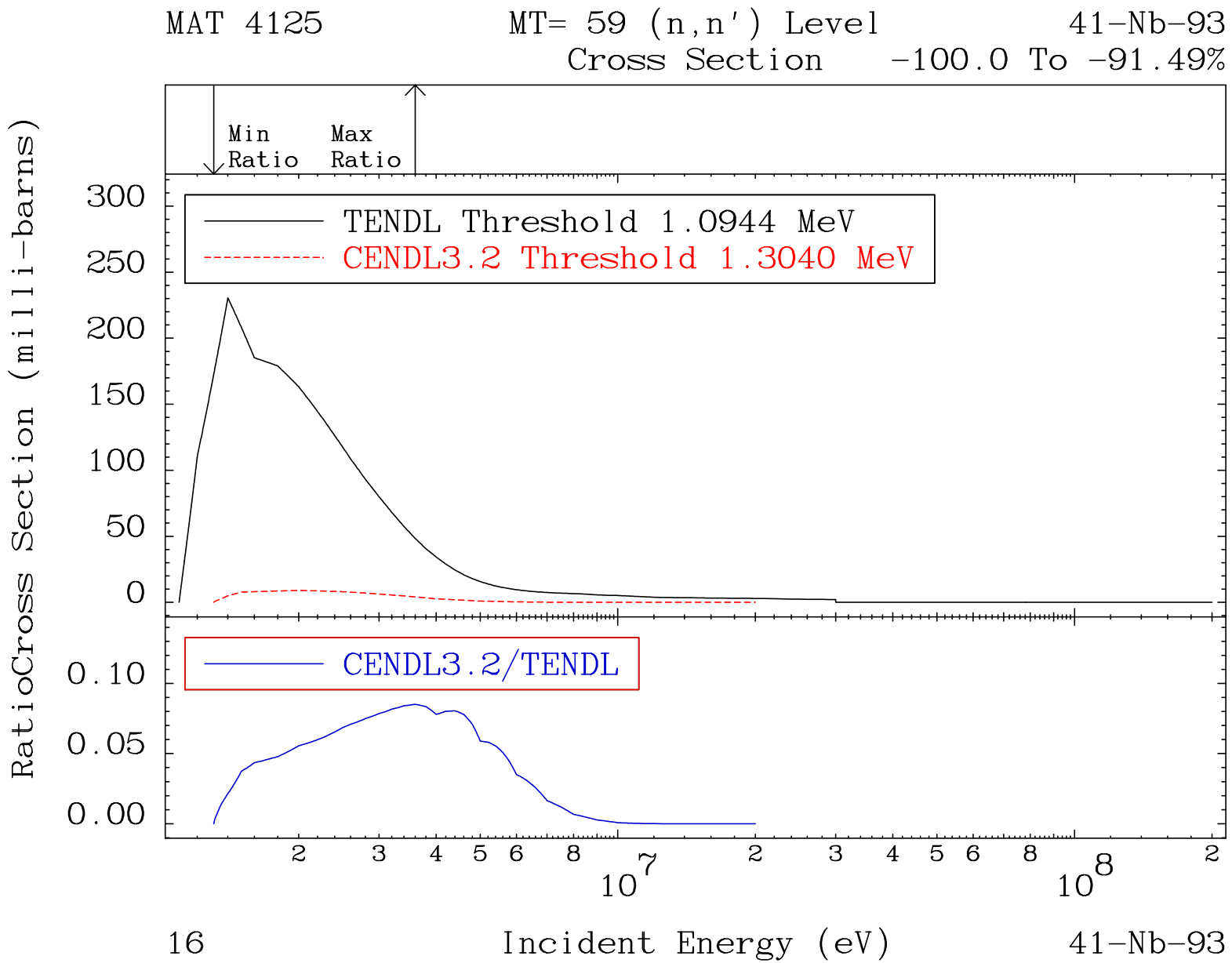

MAT 4125
MT= 54 (n,n') Level
41-Nb-93
Cross Section 32.63 To 9999. %
Min Ratio
Max Ratio
TENDL Threshold 817.60 keV
CENDL3.2 Threshold 817.48 keV
CENDL3.2/TENDL
RatioCross Section (milli-barns)
200
150
100
50
0
10^2
10^1
10^0
8 2 3 4 5 6 8 10^6 2 3 4 5 6 8 10^7 2 3 4 5 6 8 10^8 2
11
Incident Energy (eV)
41-Nb-93

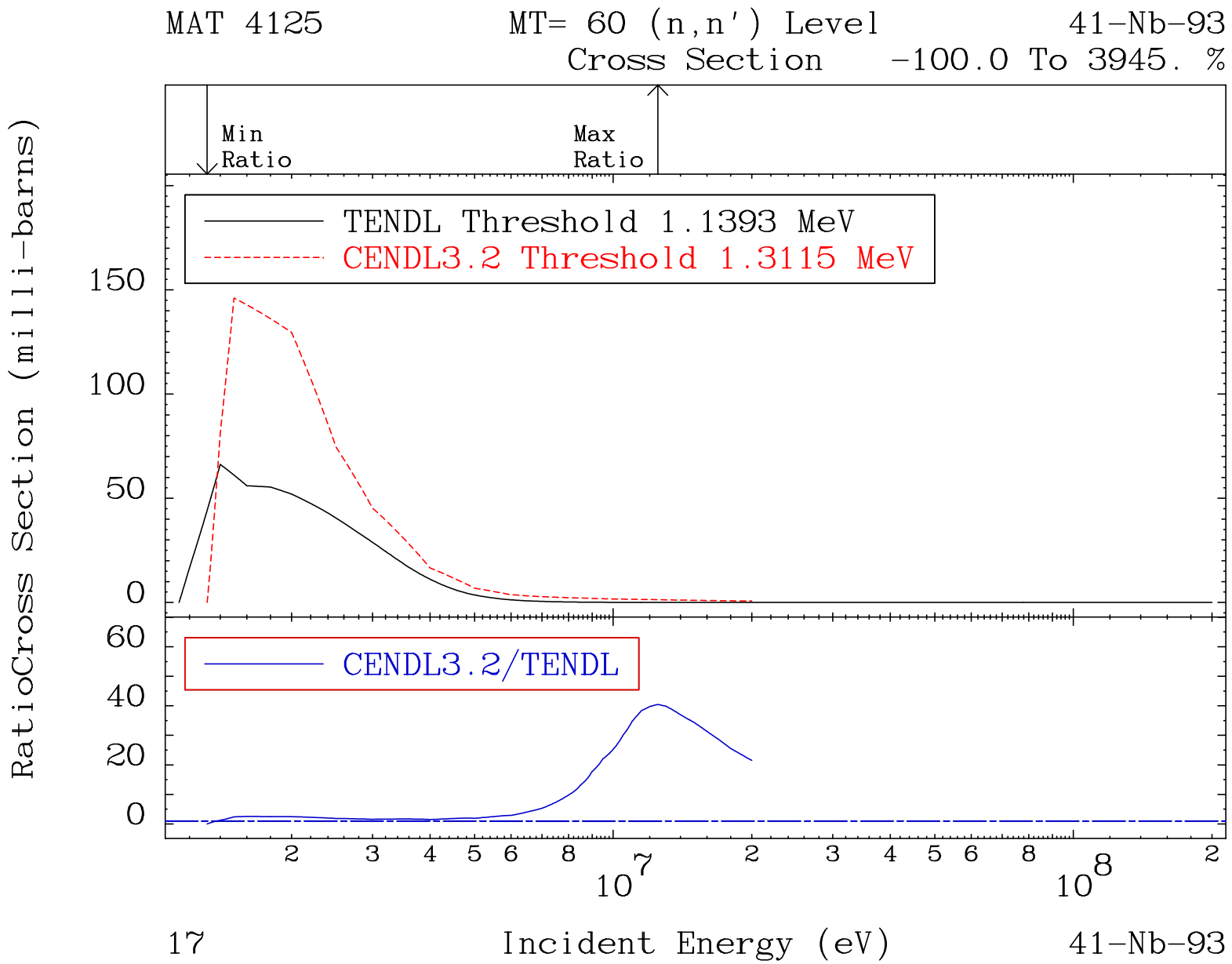

MAT 4125
MT= 55 (n,n') Level
41-Nb-93
Cross Section
-100.0 To -56.67%
Max Ratio
Min Ratio
TENDL Threshold 819.12 keV
CENDL3.2 Threshold 818.90 keV
CENDL3.2/TENDL
RatioCross Section (milli-barns)
80
60
40
20
0
10^0
10^-4
10^-8
8
10^6
2
3
4
5
6
8
10^7
2
3
4
5
6
8
10^8
2
12
Incident Energy (eV)
41-Nb-93

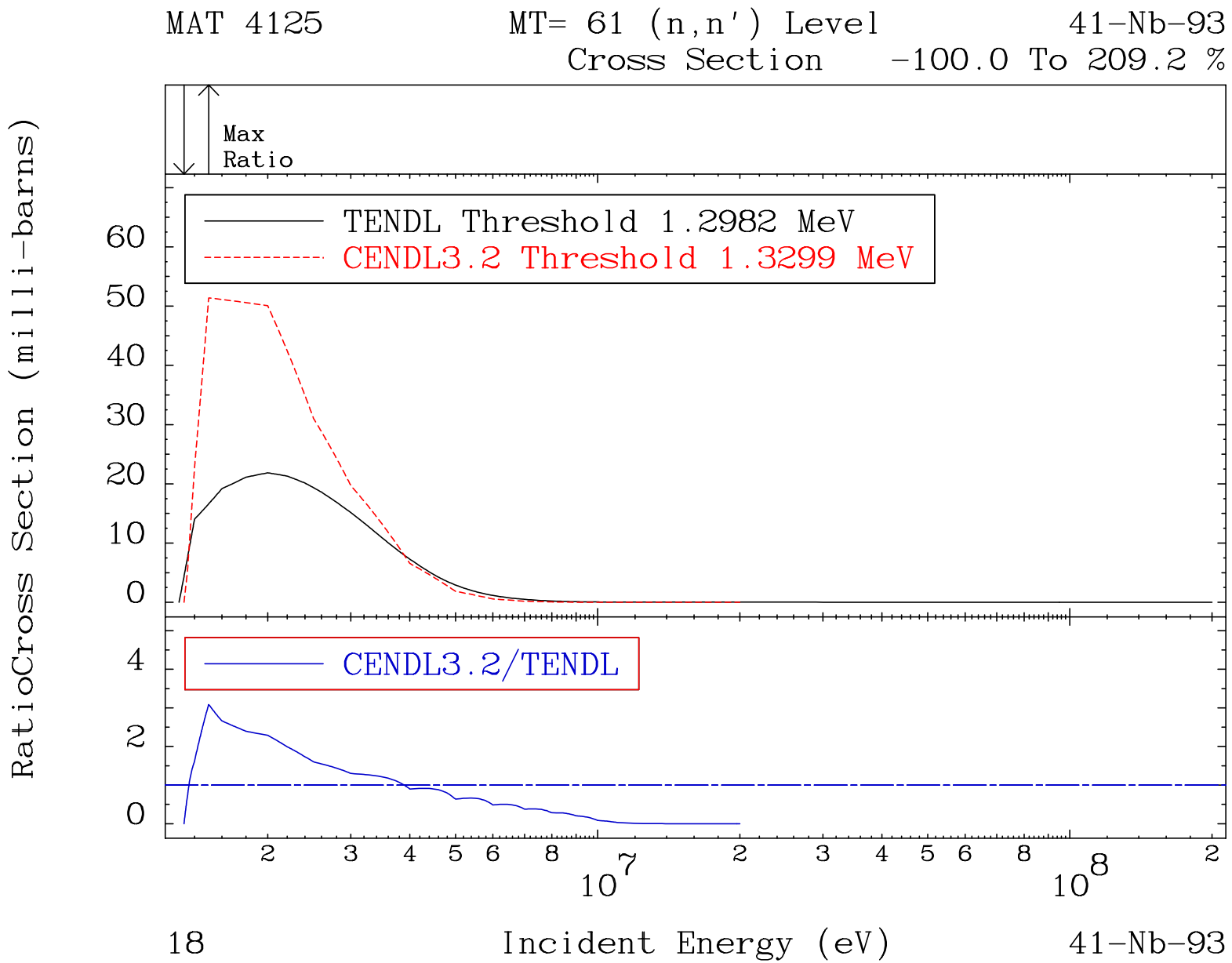

MAT 4125
MT= 56 (n,n') Level
Cross Section
41-Nb-93
-100.0 To 77.89 %
Max
Ratio
TENDL Threshold 960.11 keV
CENDL3.2 Threshold 960.21 keV
CENDL3.2/TENDL
RatioCross Section (milli-barns)
400
300
200
100
0
2.0
1.0
0.0
10^6
10^7
10^8
Incident Energy (eV)
13
41-Nb-93

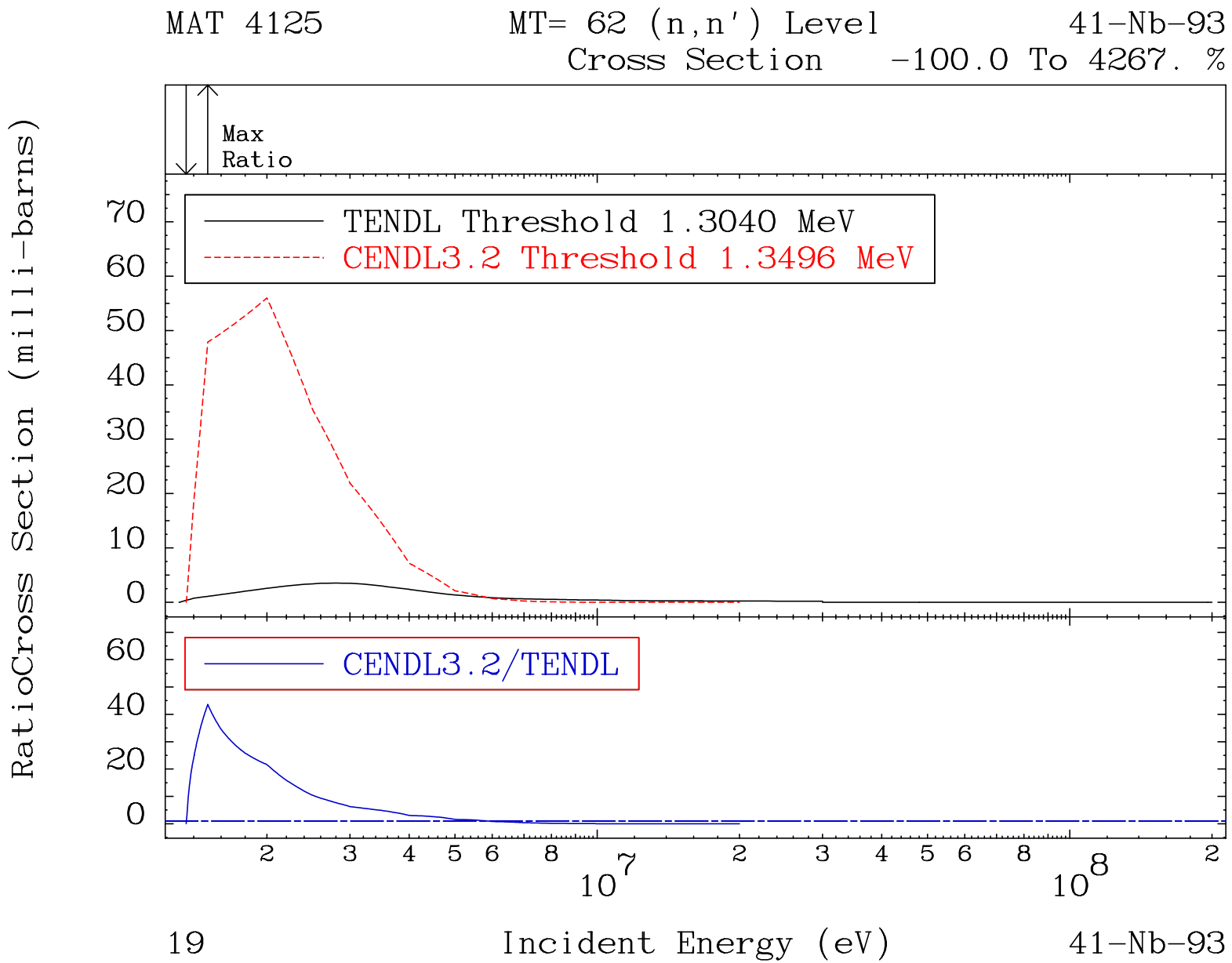

MAT 4125
MT= 57 (n,n') Level
41-Nb-93
Cross Section -100.0 To 9999. %
Min Ratio
Max Ratio
TENDL Threshold 980.53 keV
CENDL3.2 Threshold 989.73 keV
CENDL3.2/TENDL
RatioCross Section (milli-barns)
400
300
200
100
0
120
60
0
10^6
10^7
10^8
2 3 4 5 6 8
14
Incident Energy (eV)
41-Nb-93

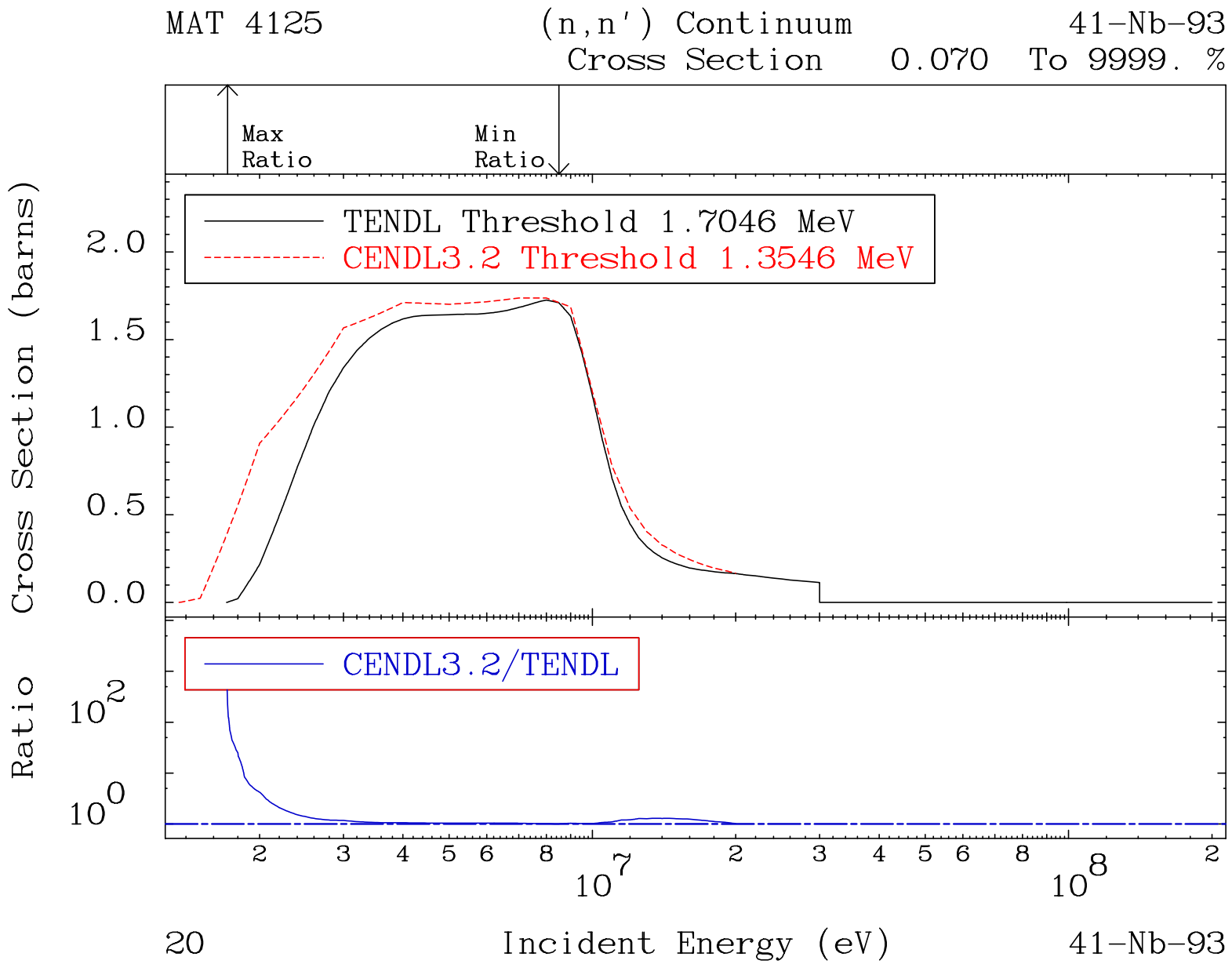

MAT 4125
MT= 58 (n,n') Level
41-Nb-93
Cross Section
-100.0 To -3.334%
Max
Ratio
TENDL Threshold 989.54 keV
CENDL3.2 Threshold 1.0944 MeV
CENDL3.2/TENDL
RatioCross Section (milli-barns)
400
300
200
100
0
1.2
0.6
0.0
10^6
10^7
10^8
Incident Energy (eV)
15
41-Nb-93

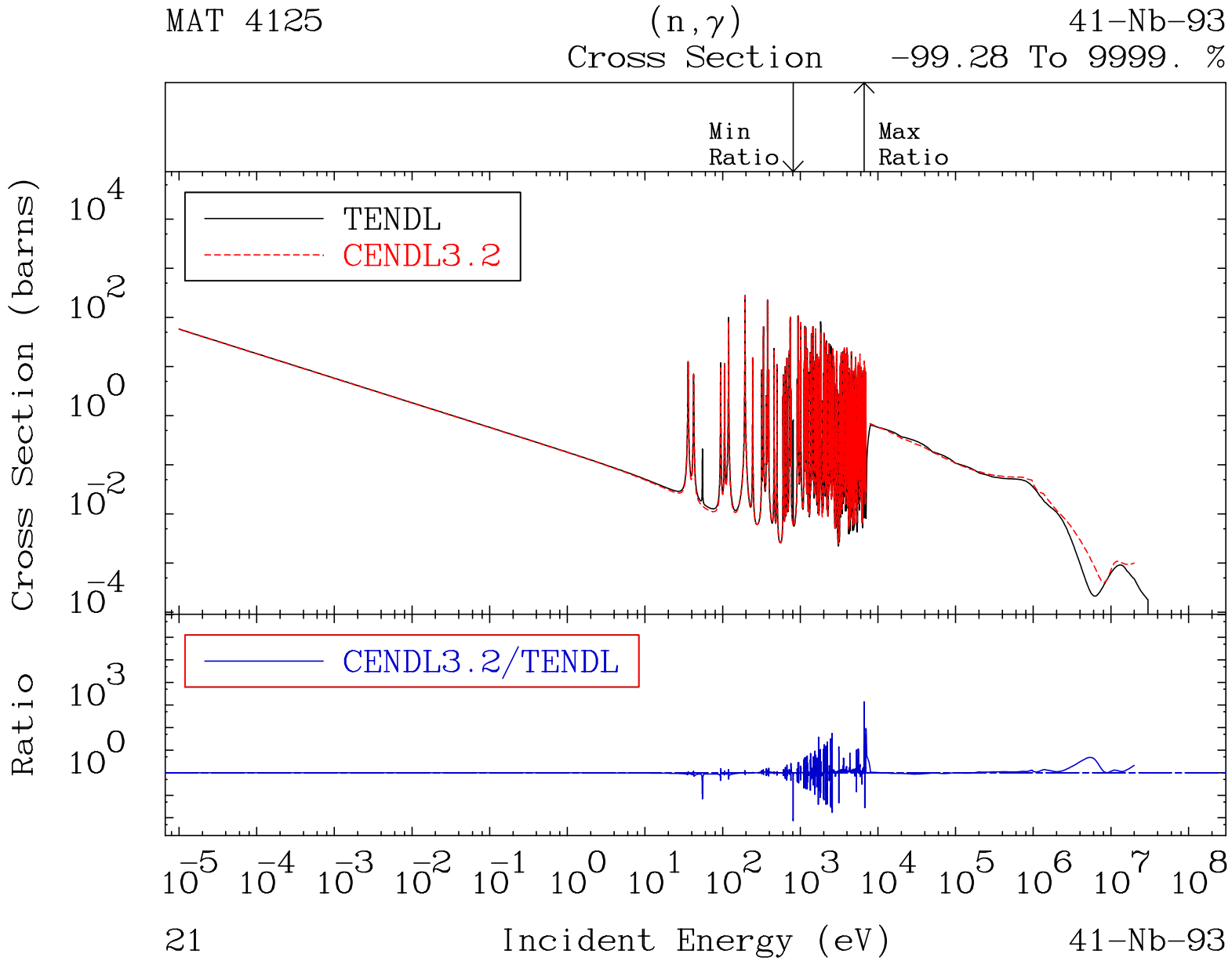

MAT 4125
MT= 59 (n,n') Level
41-Nb-93
Cross Section -100.0 To -91.49%
Min Ratio
Max Ratio
TENDL Threshold 1.0944 MeV
CENDL3.2 Threshold 1.3040 MeV
CENDL3.2/TENDL
RatioCross Section (milli-barns)
300
250
200
150
100
50
0
0.10
0.05
0.00
2 3 4 5 6 8 10^7 2 3 4 5 6 8 10^8 2
16
Incident Energy (eV)
41-Nb-93

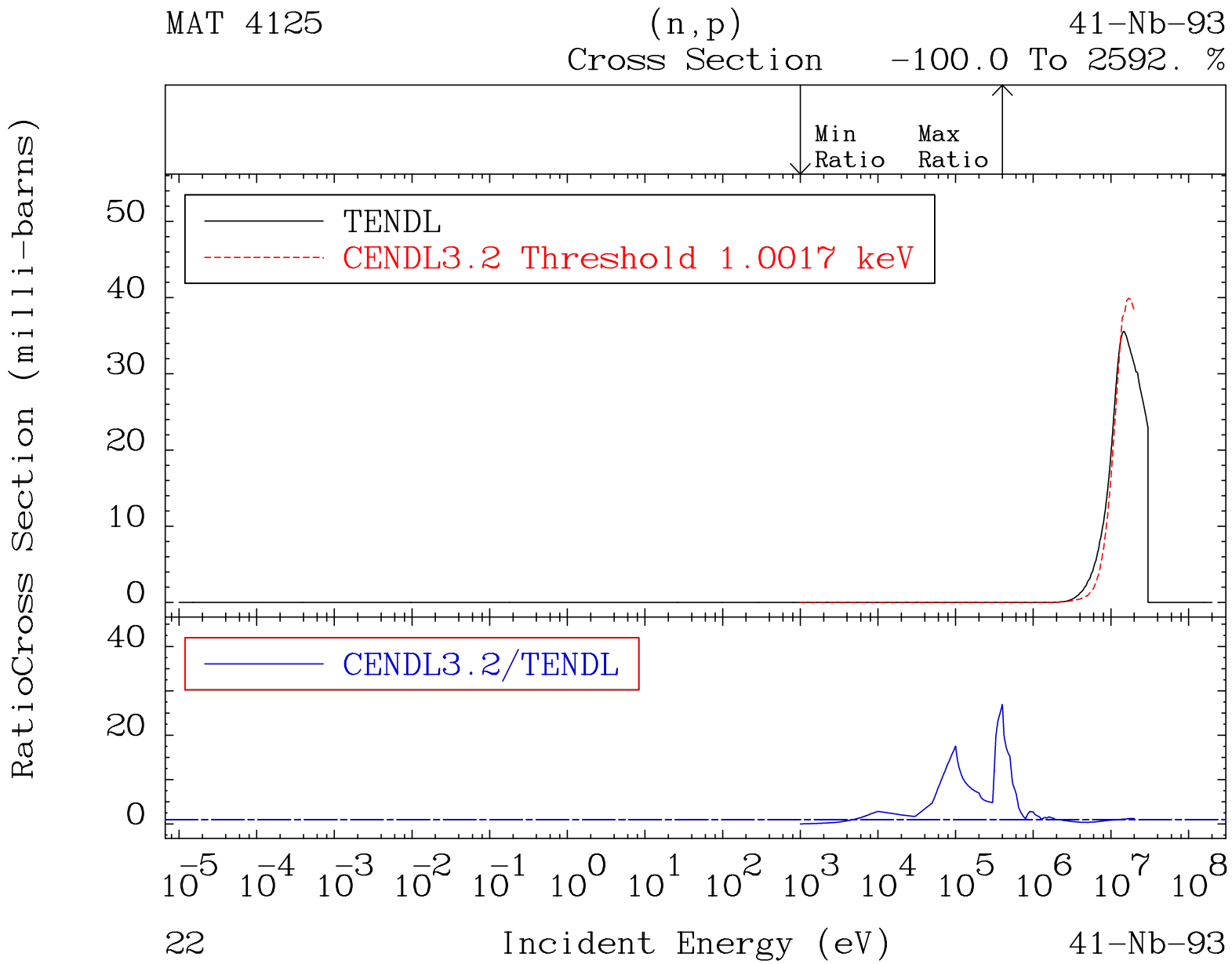

MAT 4125
MT= 60 (n,n') Level
41-Nb-93
Cross Section -100.0 To 3945. %
Min Ratio
Max Ratio
TENDL Threshold 1.1393 MeV
CENDL3.2 Threshold 1.3115 MeV
CENDL3.2/TENDL
RatioCross Section (milli-barns)
150
100
50
0
60
40
20
0
2 3 4 5 6 8 10^7 2 3 4 5 6 8 10^8 2
17
Incident Energy (eV)
41-Nb-93

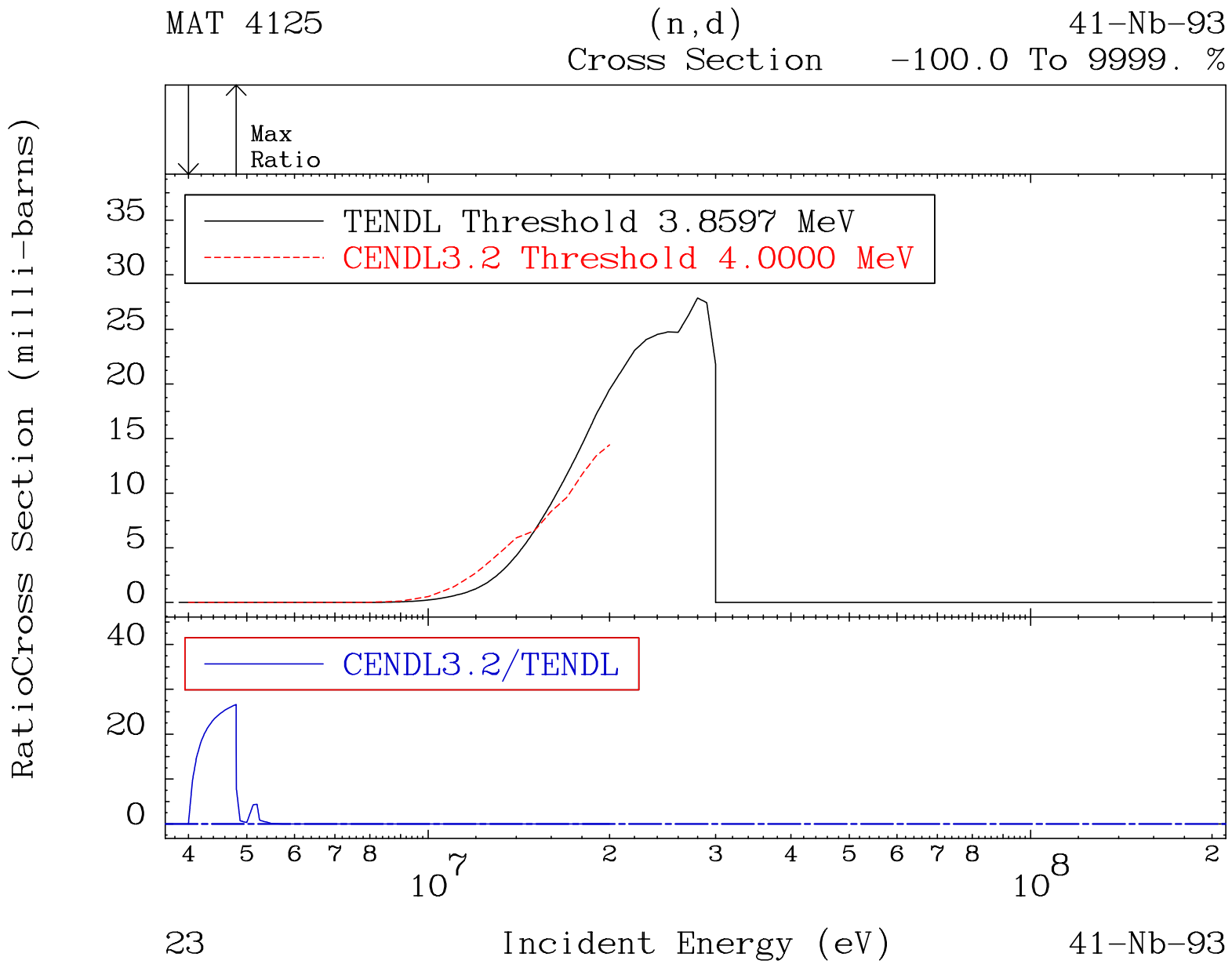

MAT 4125
MT= 61 (n,n') Level
41-Nb-93
Cross Section
-100.0 To 209.2 %
Max
Ratio
TENDL Threshold 1.2982 MeV
CENDL3.2 Threshold 1.3299 MeV
CENDL3.2/TENDL
RatioCross Section (milli-barns)
60
50
40
30
20
10
0
4
2
0
2
3
4
5
6
8
10^7
2
3
4
5
6
8
10^8
2
18
Incident Energy (eV)
41-Nb-93

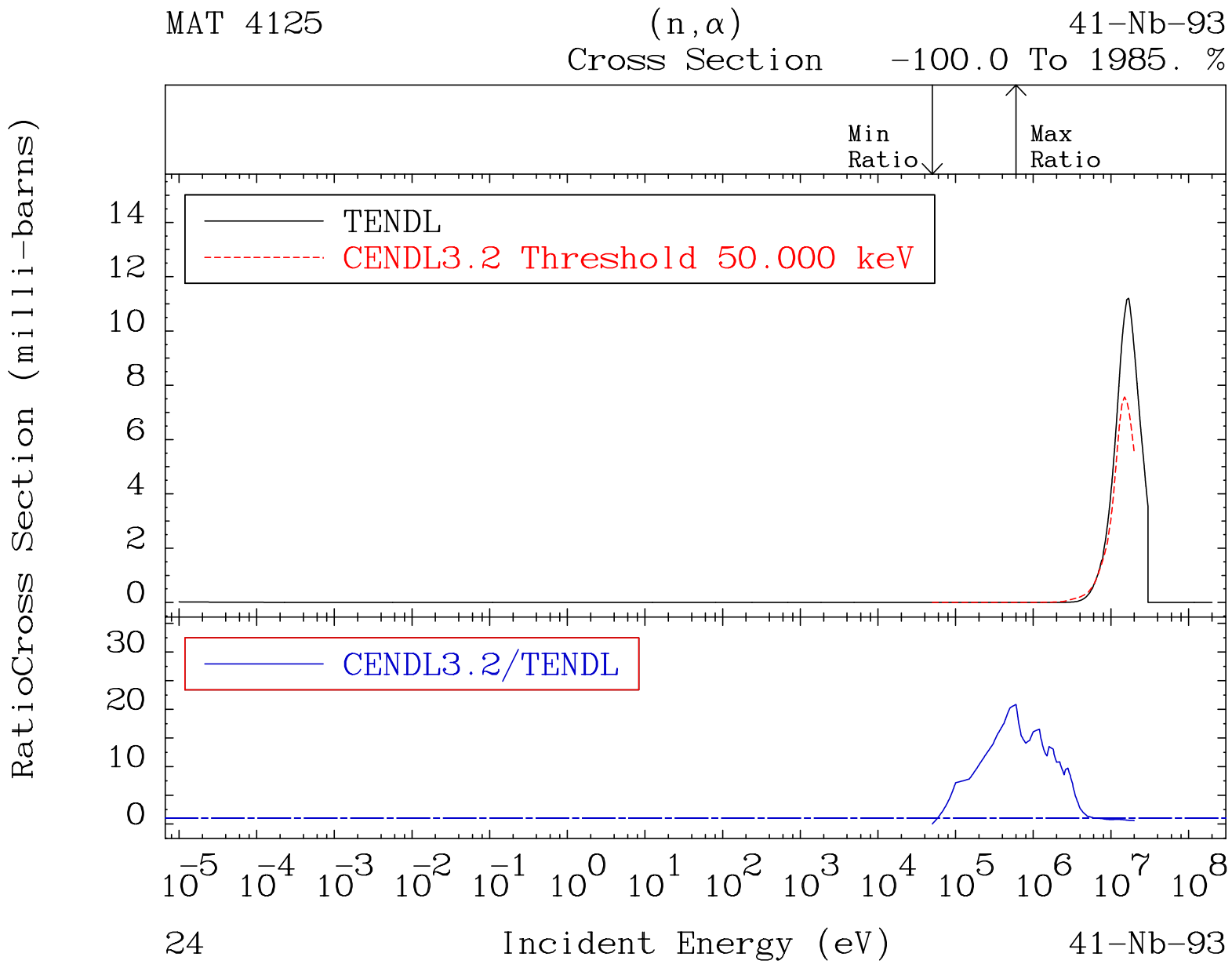

MAT 4125
MT= 62 (n,n') Level
41-Nb-93
Cross Section -100.0 To 4267. %
Max
Ratio
TENDL Threshold 1.3040 MeV
CENDL3.2 Threshold 1.3496 MeV
CENDL3.2/TENDL
RatioCross Section (milli-barns)
70
60
50
40
30
20
10
0
60
40
20
0
2
3
4
5
6
8
10^7
2
3
4
5
6
8
10^8
2
19
Incident Energy (eV)
41-Nb-93

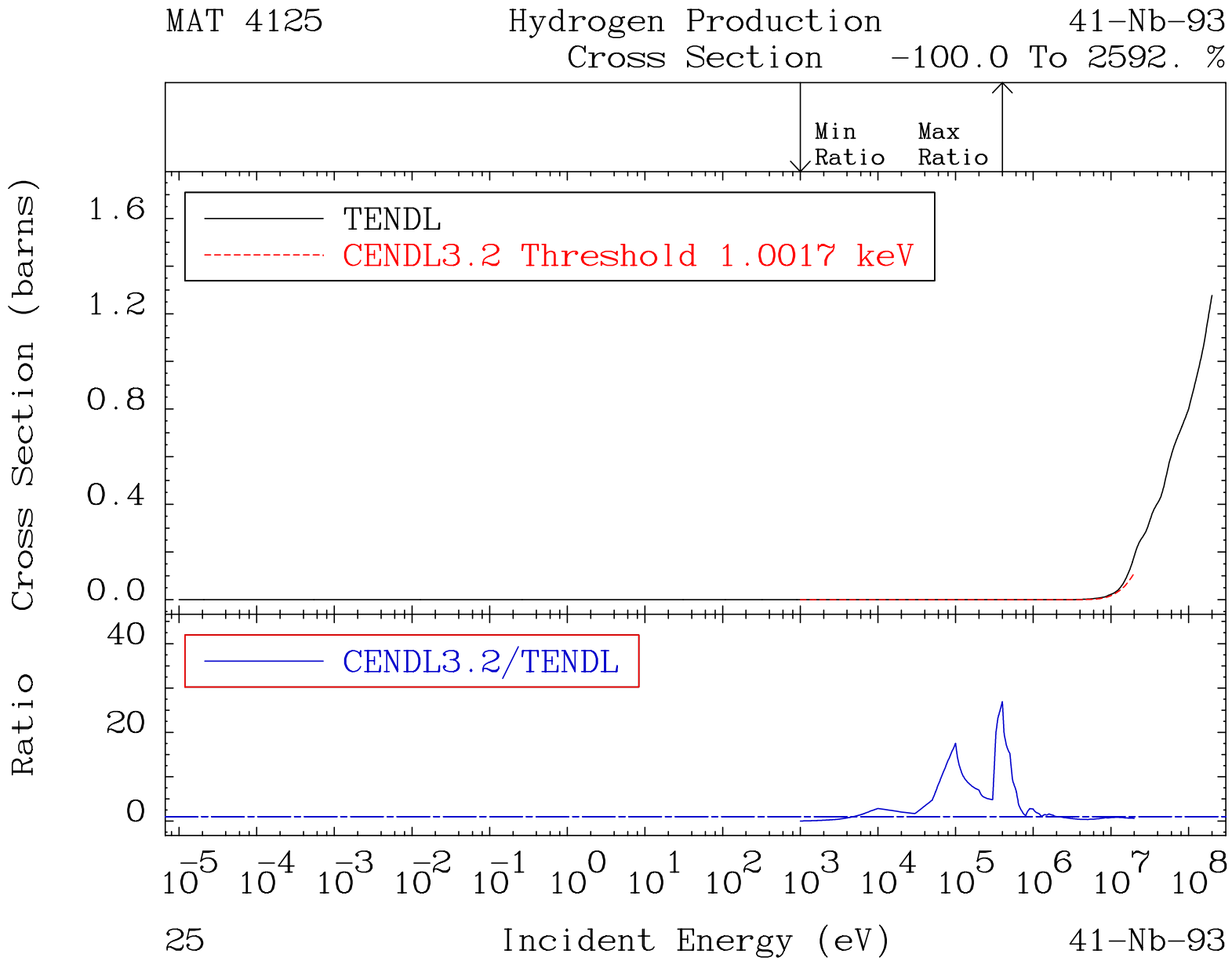

MAT 4125
(n,n') Continuum
Cross Section
41-Nb-93
0.070
To 9999. %
Max Ratio
Min Ratio
TENDL Threshold 1.7046 MeV
CENDL3.2 Threshold 1.3546 MeV
CENDL3.2/TENDL
Cross Section (barns)
Ratio
2.0
1.5
1.0
0.5
0.0
10^2
10^0
2 3 4 5 6 8 10^7 2 3 4 5 6 8 10^8 2
Incident Energy (eV)
20
41-Nb-93

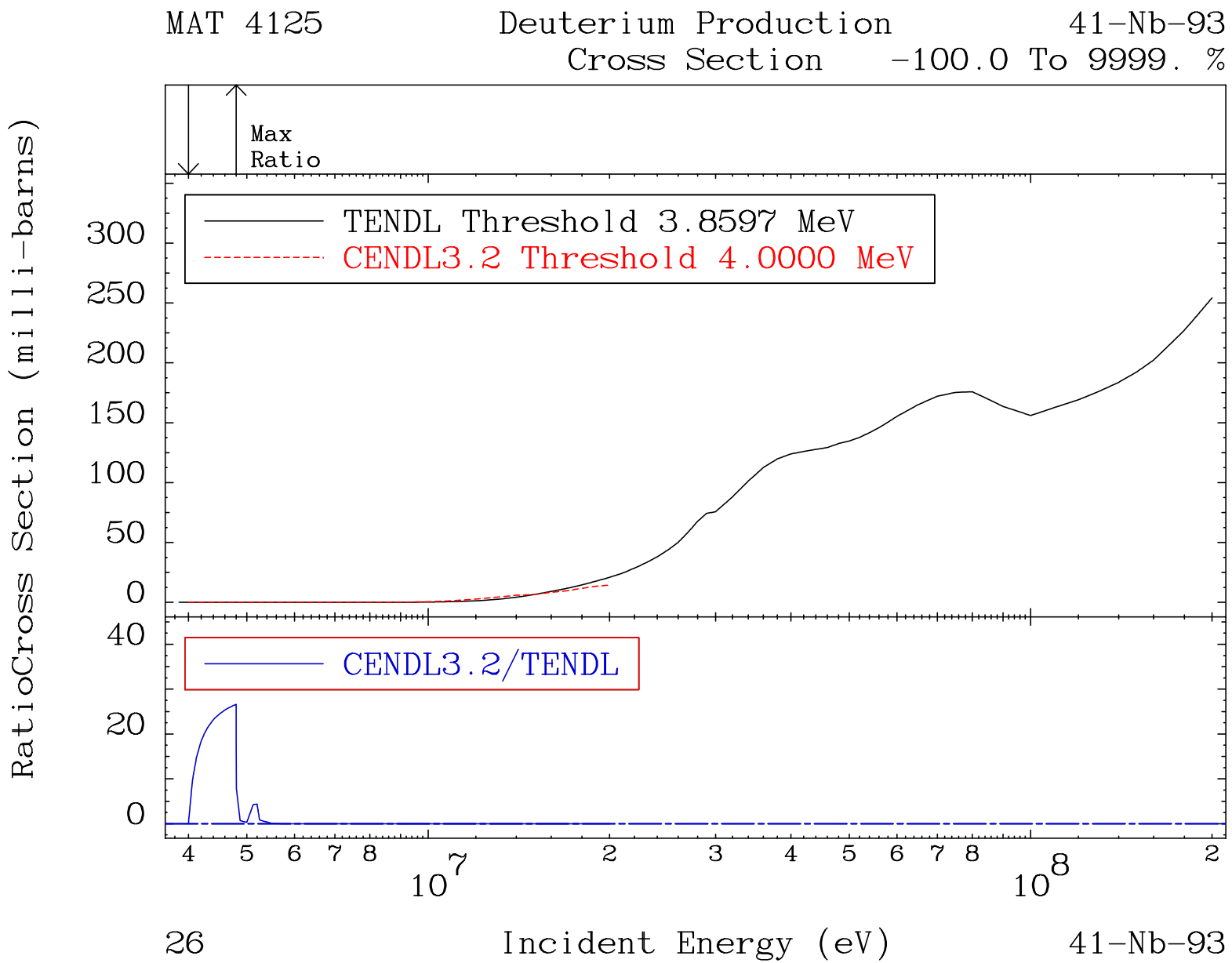

MAT 4125
(n,γ)
Cross Section
41-Nb-93
-99.28 To 9999. %
Min Ratio
Max Ratio
TENDL
CENDL3.2
CENDL3.2/TENDL
Cross Section (barns)
Ratio
Incident Energy (eV)
21
41-Nb-93

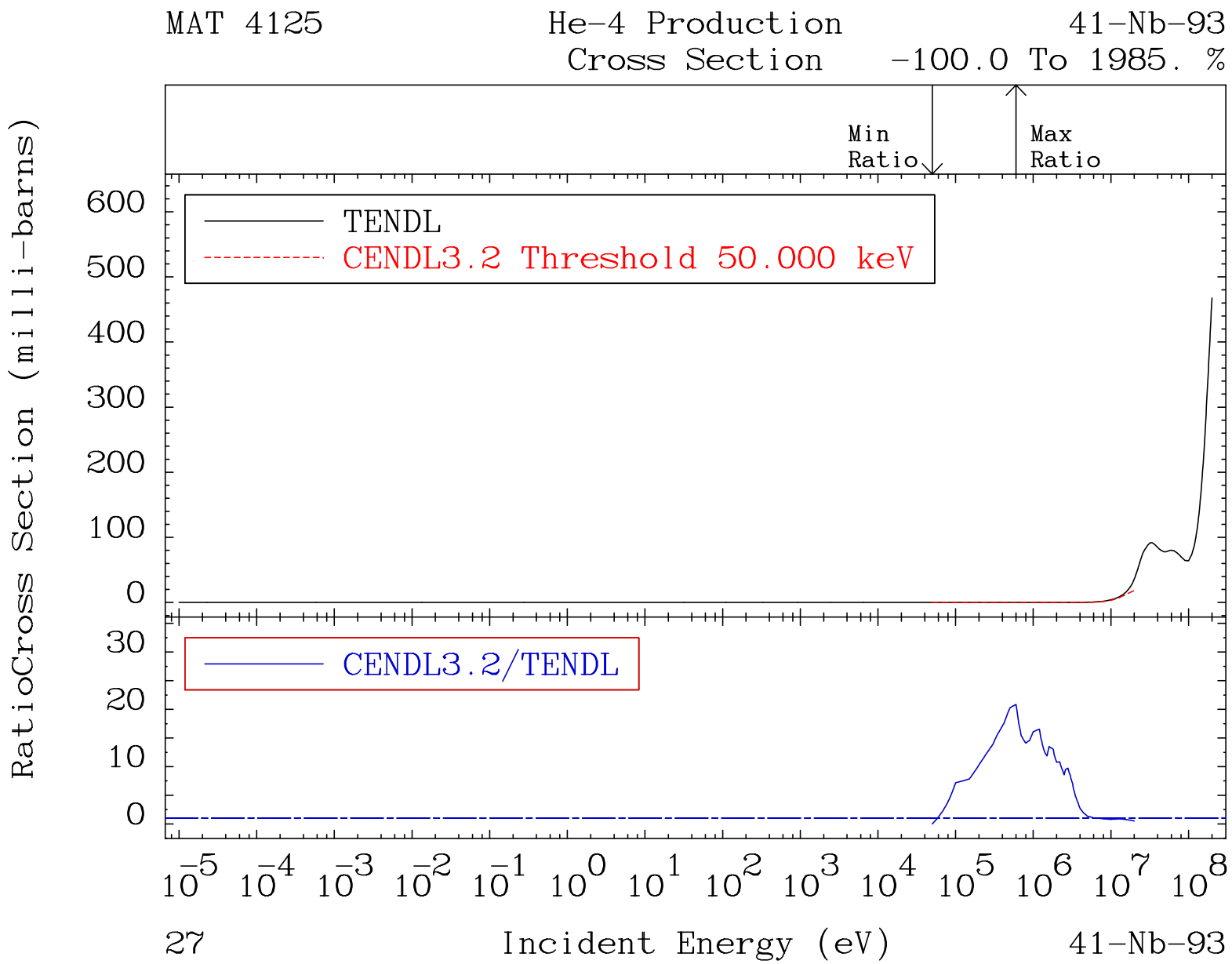

MAT 4125
(n,p)
41-Nb-93
Cross Section
-100.0 To 2592. %
Min Ratio
Max Ratio
TENDL
CENDL3.2 Threshold 1.0017 keV
CENDL3.2/TENDL
RatioCross Section (milli-barns)
50
40
30
20
10
0
40
20
0
10^{-5} 10^{-4} 10^{-3} 10^{-2} 10^{-1} 10^{0} 10^{1} 10^{2} 10^{3} 10^{4} 10^{5} 10^{6} 10^{7} 10^{8}
22
Incident Energy (eV)
41-Nb-93

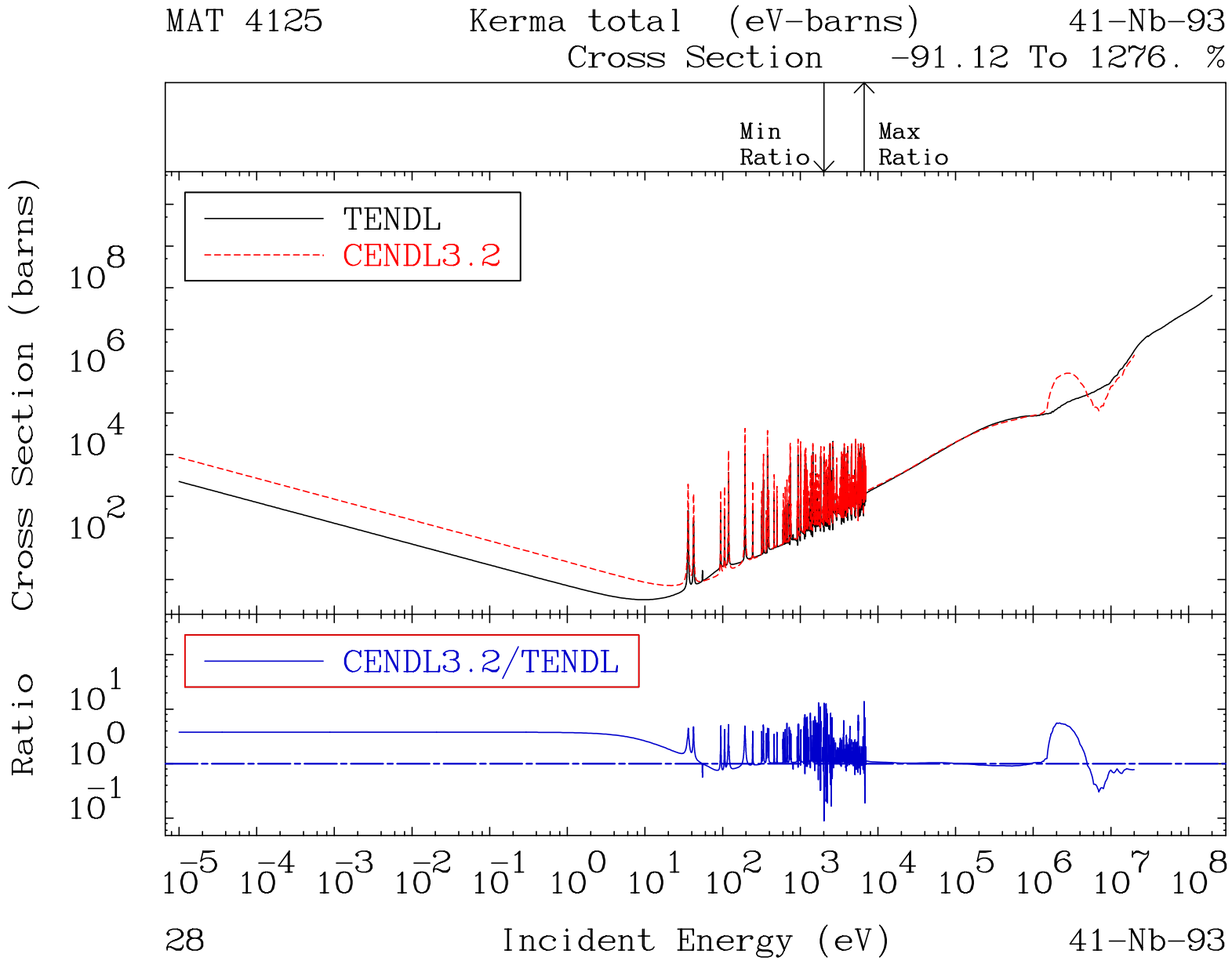

MAT 4125
(n,d)
Cross Section
41-Nb-93
-100.0 To 9999. %
Max
Ratio
TENDL Threshold 3.8597 MeV
CENDL3.2 Threshold 4.0000 MeV
CENDL3.2/TENDL
RatioCross Section (milli-barns)
35
30
25
20
15
10
5
0
40
20
0
4 5 6 7 8
10^7
2 3 4 5 6 7 8
10^8
2
23
Incident Energy (eV)
41-Nb-93

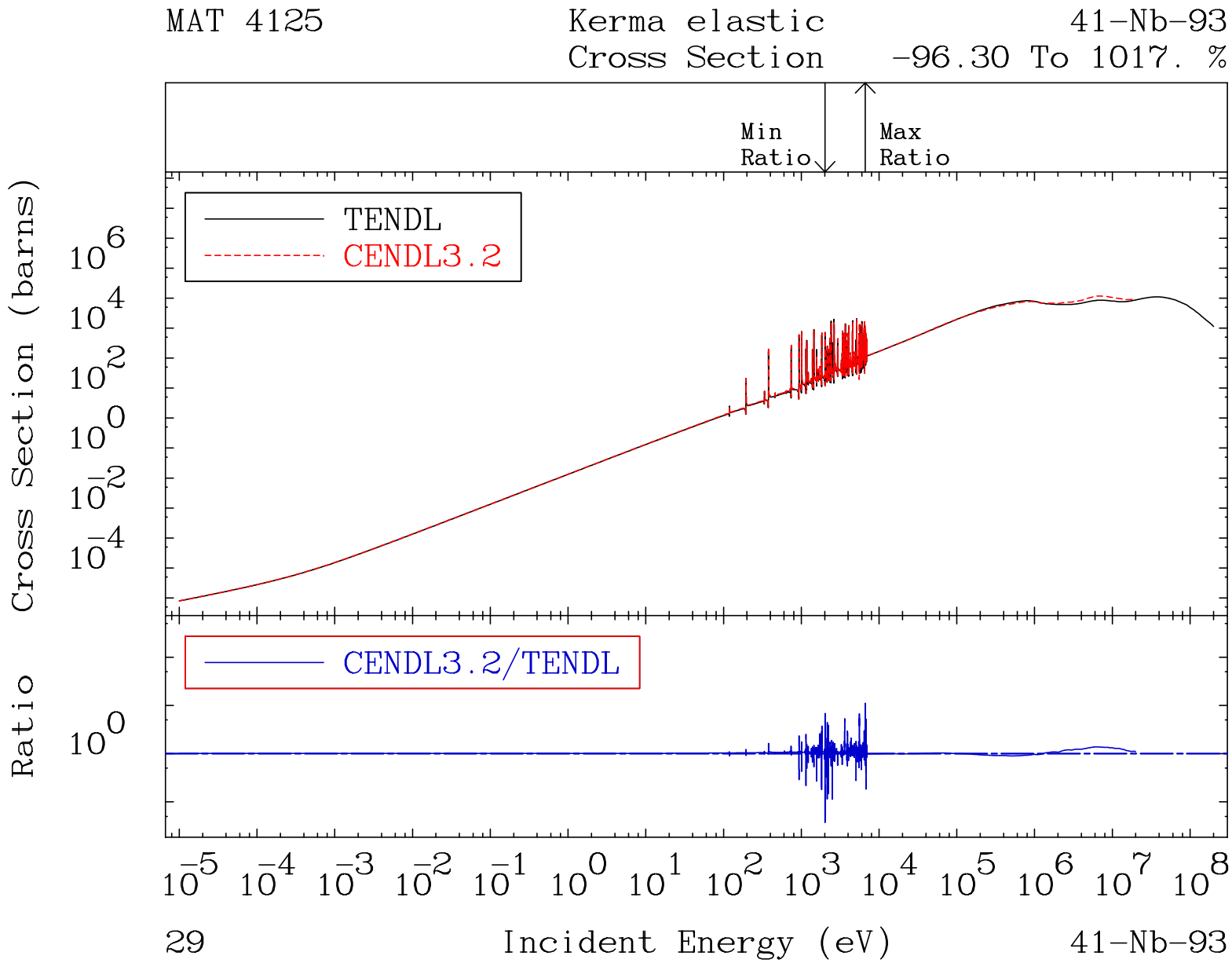

MAT 4125
(n,α)
Cross Section
41-Nb-93
-100.0 To 1985. %
Min Ratio
Max Ratio
TENDL
CENDL3.2 Threshold 50.000 keV
CENDL3.2/TENDL
RatioCross Section (milli-barns)
Incident Energy (eV)
24
41-Nb-93

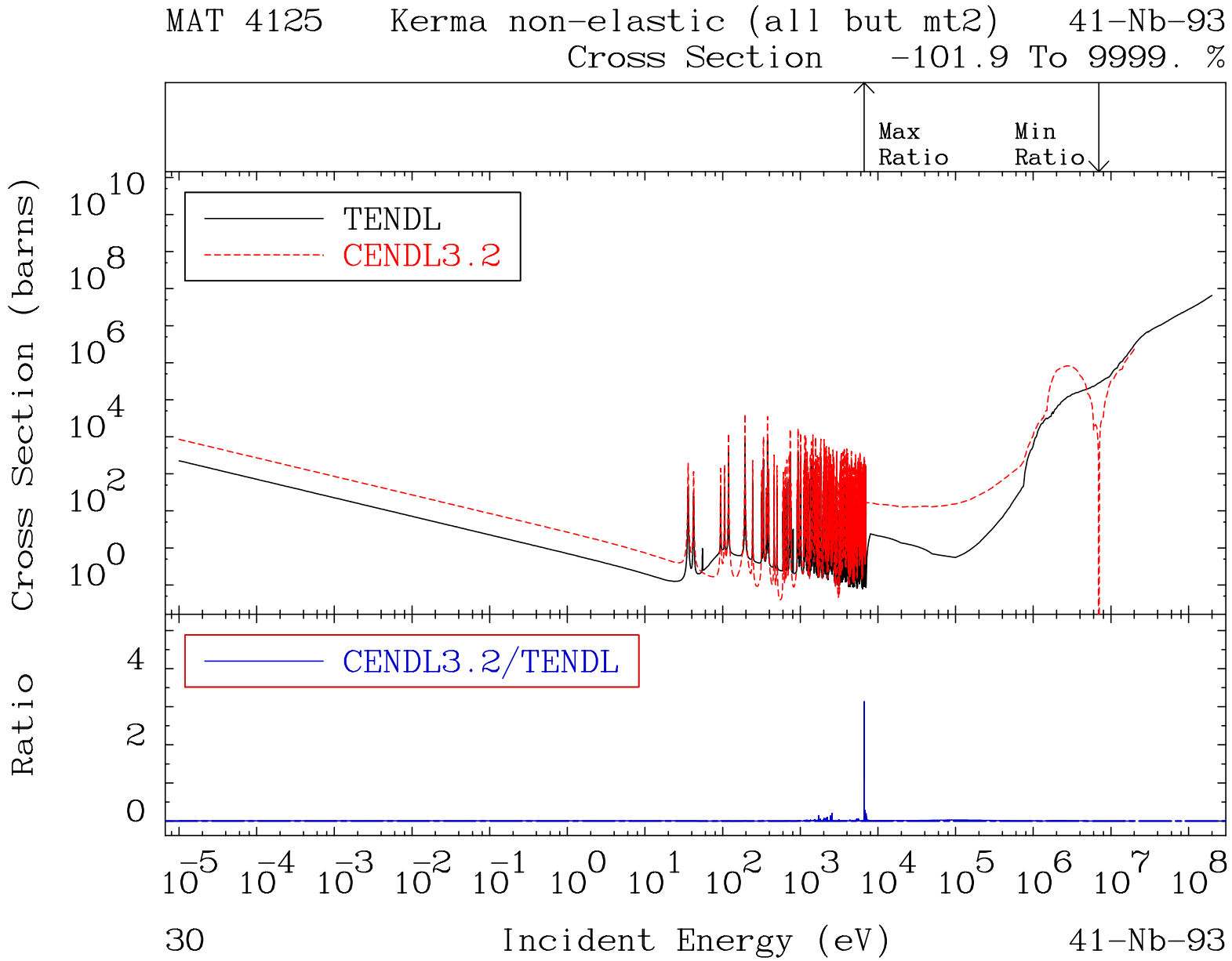

MAT 4125
Hydrogen Production
41-Nb-93
Cross Section -100.0 To 2592. %
Min Ratio
Max Ratio
TENDL
CENDL3.2 Threshold 1.0017 keV
CENDL3.2/TENDL
Ratio Cross Section (barns)
1.6
1.2
0.8
0.4
0.0
40
20
0
10^{-5} 10^{-4} 10^{-3} 10^{-2} 10^{-1} 10^{0} 10^{1} 10^{2} 10^{3} 10^{4} 10^{5} 10^{6} 10^{7} 10^{8}
25
Incident Energy (eV)
41-Nb-93

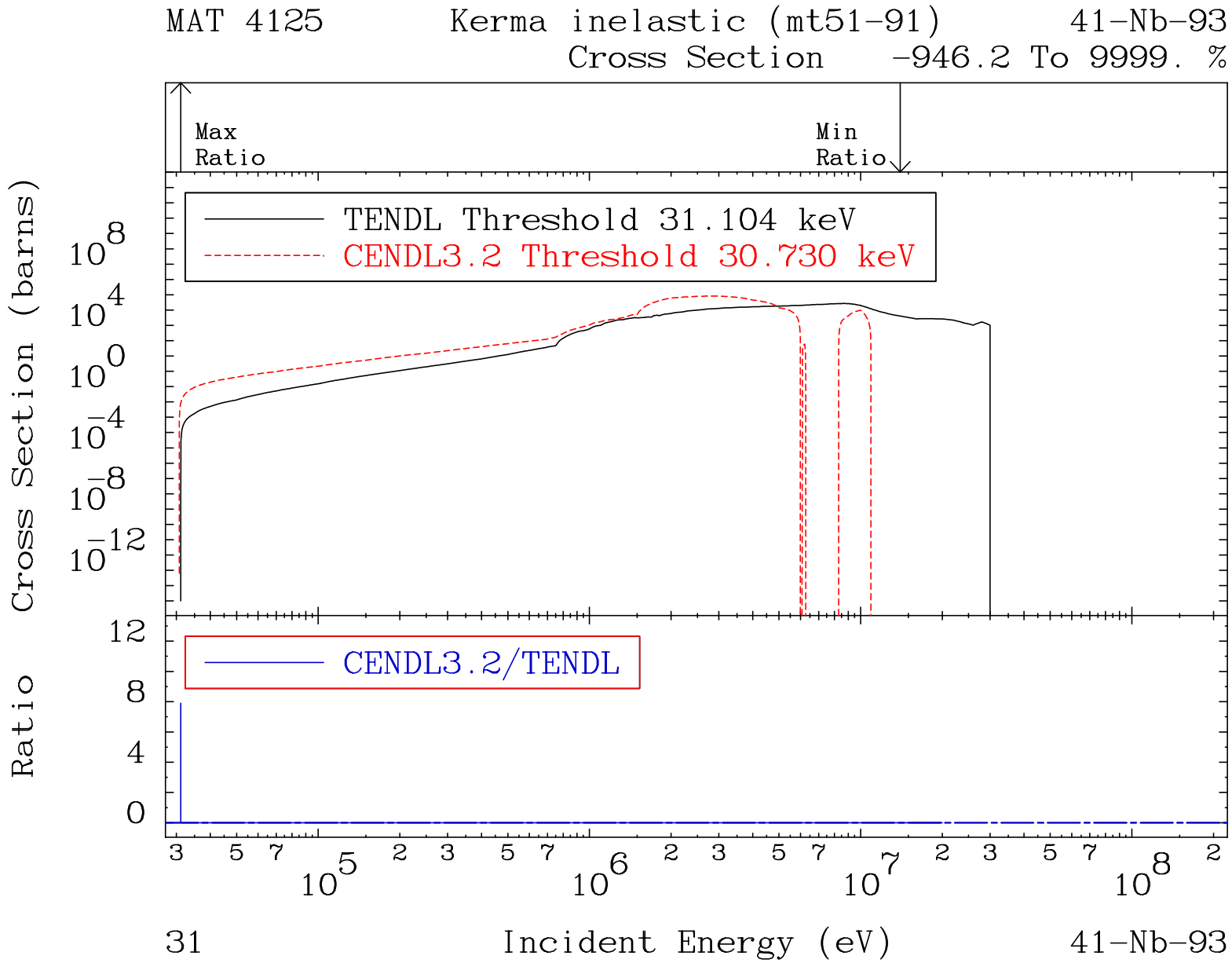

MAT 4125
Deuterium Production
41-Nb-93
Cross Section -100.0 To 9999. %
Max
Ratio
TENDL Threshold 3.8597 MeV
CENDL3.2 Threshold 4.0000 MeV
CENDL3.2/TENDL
RatioCross Section (milli-barns)
300
250
200
150
100
50
0
40
20
0
4 5 6 7 8 10^7 2 3 4 5 6 7 8 10^8 2
26
Incident Energy (eV)
41-Nb-93

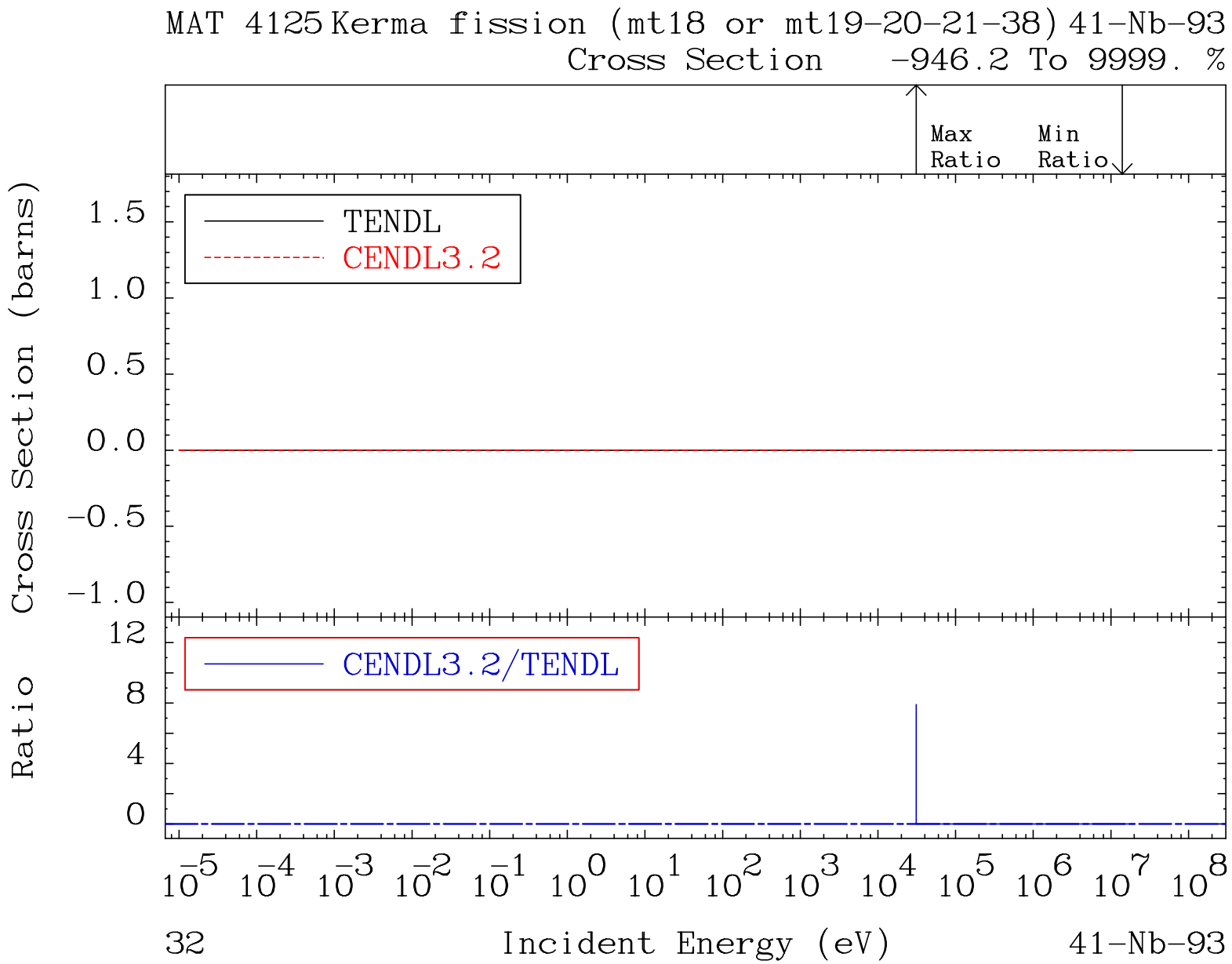

MAT 4125
He-4 Production
Cross Section
41-Nb-93
-100.0 To 1985. %
Min Ratio
Max Ratio
TENDL
CENDL3.2 Threshold 50.000 keV
CENDL3.2/TENDL
RatioCross Section (milli-barns)
600
500
400
300
200
100
0
30
20
10
0
10^-5 10^-4 10^-3 10^-2 10^-1 10^0 10^1 10^2 10^3 10^4 10^5 10^6 10^7 10^8
27
Incident Energy (eV)
41-Nb-93

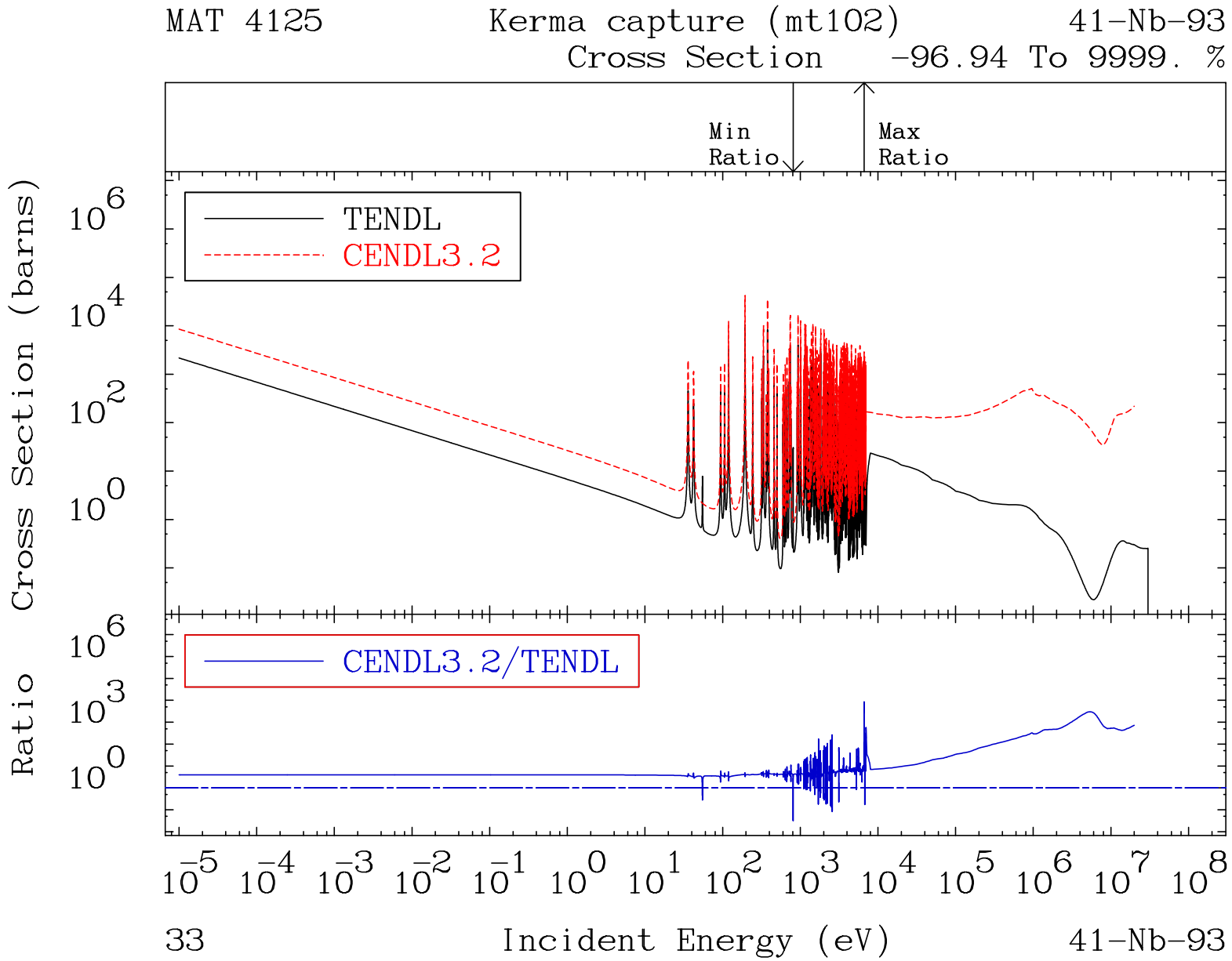

MAT 4125
Kerma total (eV-barns)
41-Nb-93
Cross Section -91.12 To 1276. %
Min Ratio
Max Ratio
TENDL
CENDL3.2
Cross Section (barns)
CENDL3.2/TENDL
Ratio
Incident Energy (eV)
28
41-Nb-93

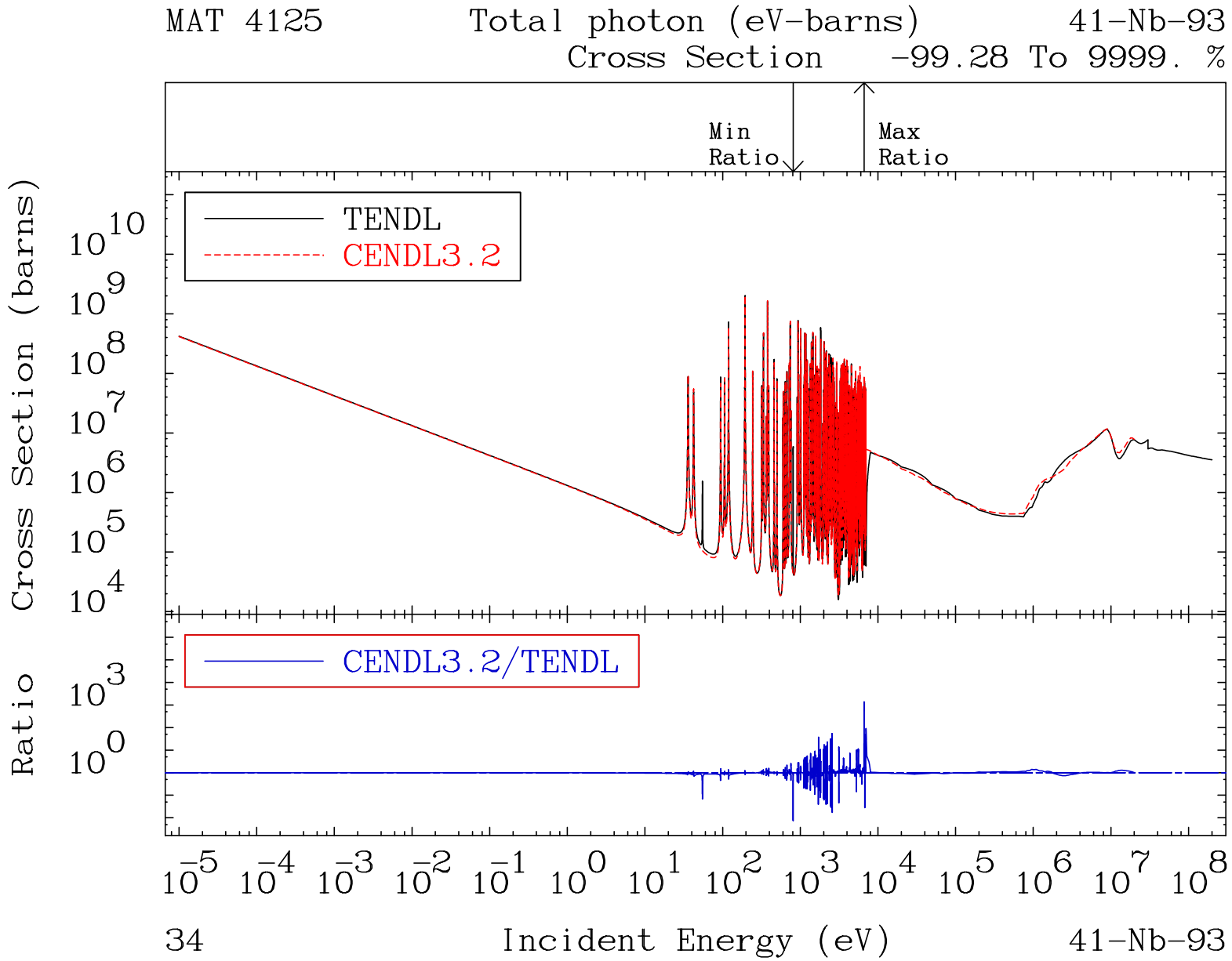

MAT 4125
Kerma elastic
Cross Section
41-Nb-93
-96.30 To 1017. %
Min Ratio
Max Ratio
TENDL
CENDL3.2
CENDL3.2/TENDL
Cross Section (barns)
Ratio
Incident Energy (eV)
29
41-Nb-93

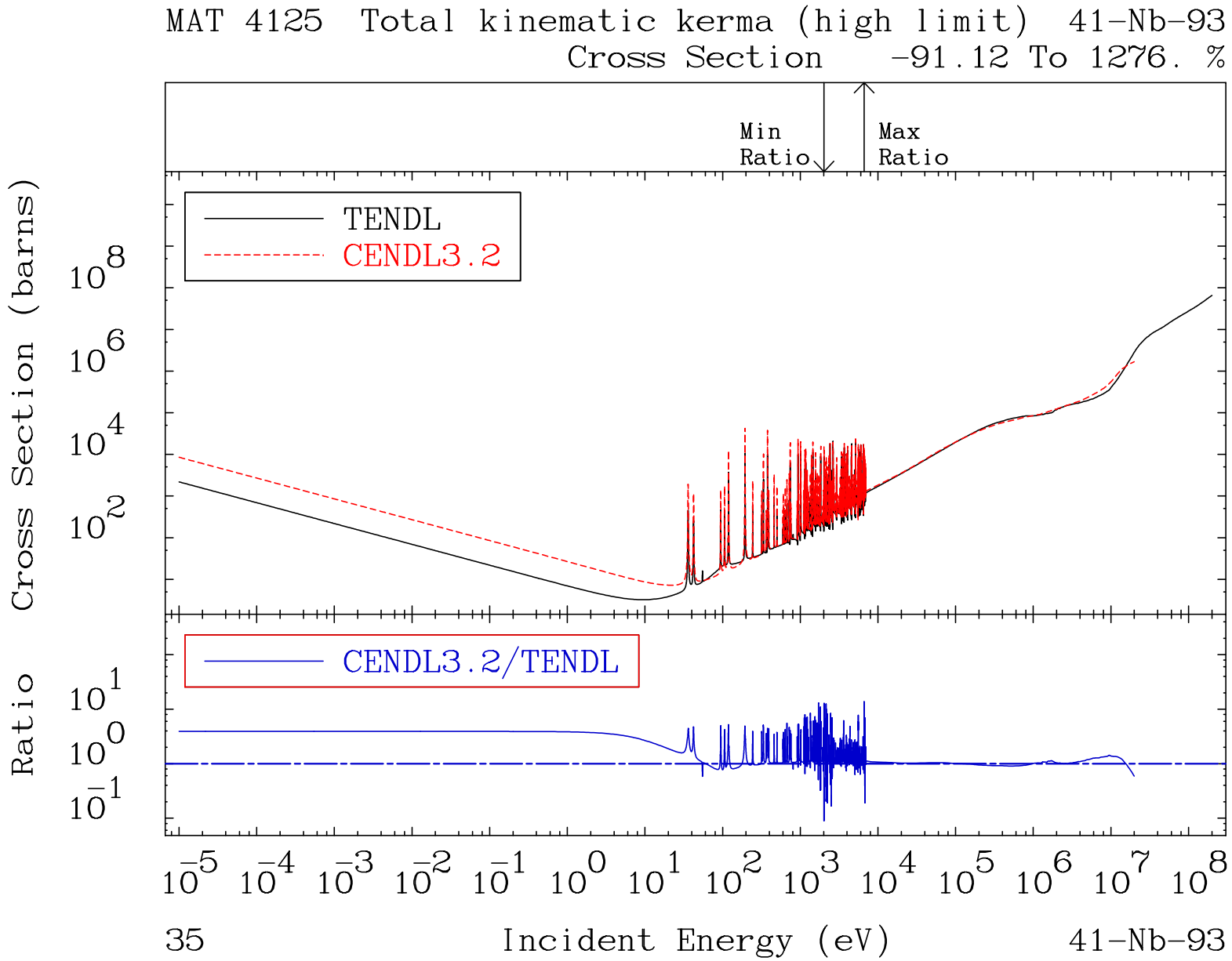

MAT 4125 Kerma non-elastic (all but mt2) 41-Nb-93
Cross Section -101.9 To 9999. %
Max Ratio
Min Ratio
TENDL
CENDL3.2
CENDL3.2/TENDL
Cross Section (barns)
Ratio
Incident Energy (eV)
30
41-Nb-93

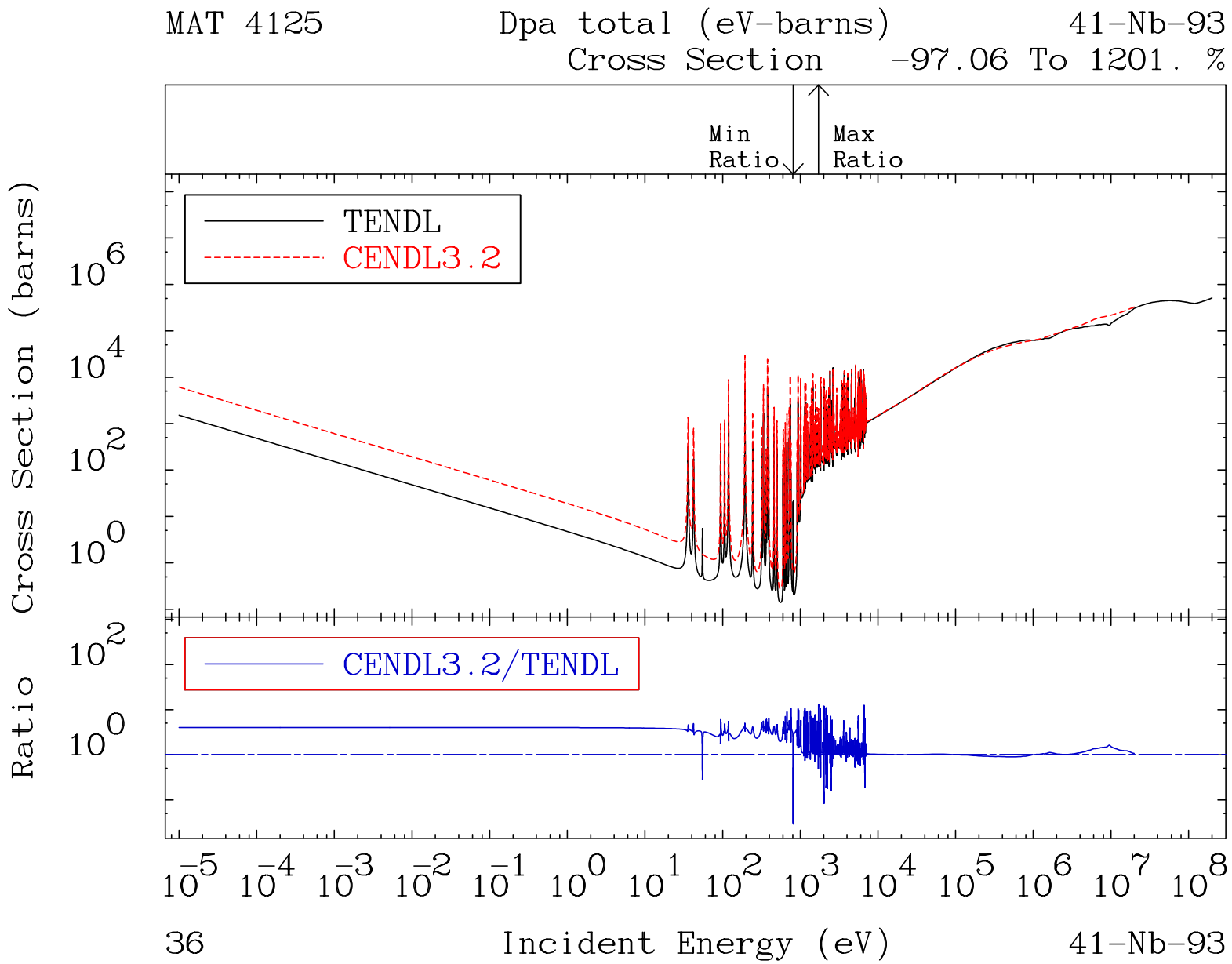

MAT 4125
Kerma inelastic (mt51-91)
41-Nb-93
Cross Section -946.2 To 9999. %
Max Ratio
Min Ratio
TENDL Threshold 31.104 keV
CENDL3.2 Threshold 30.730 keV
CENDL3.2/TENDL
Cross Section (barns)
Ratio
Incident Energy (eV)
31
41-Nb-93

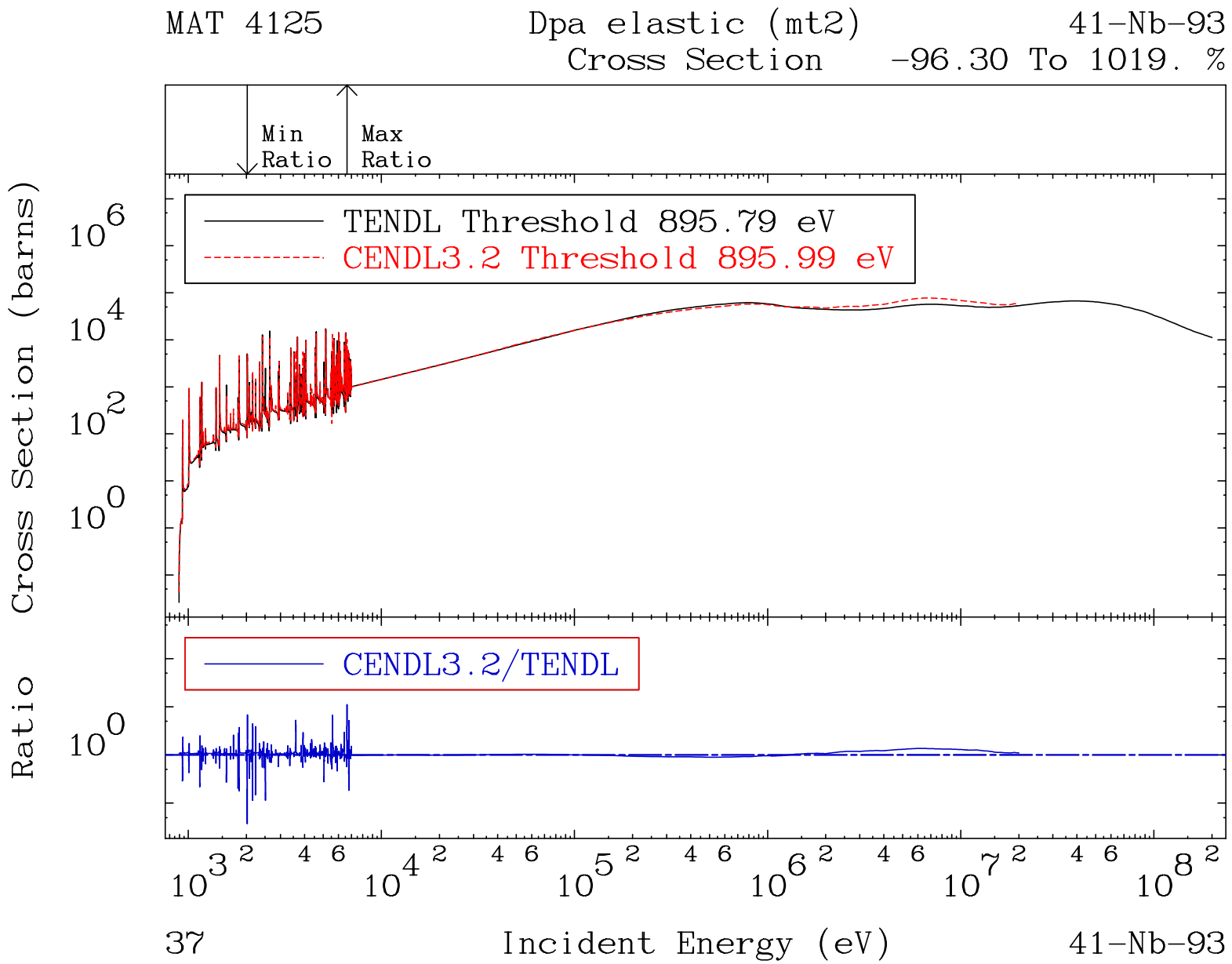

MAT 4125 Kerma fission (mt18 or mt19-20-21-38) 41-Nb-93
Cross Section -946.2 To 9999. %
Max Ratio
Min Ratio
TENDL
CENDL3.2
CENDL3.2/TENDL
Cross Section (barns)
Ratio
1.5
1.0
0.5
0.0
-0.5
-1.0
12
8
4
0
10^{-5} 10^{-4} 10^{-3} 10^{-2} 10^{-1} 10^{0} 10^{1} 10^{2} 10^{3} 10^{4} 10^{5} 10^{6} 10^{7} 10^{8}
32
Incident Energy (eV)
41-Nb-93

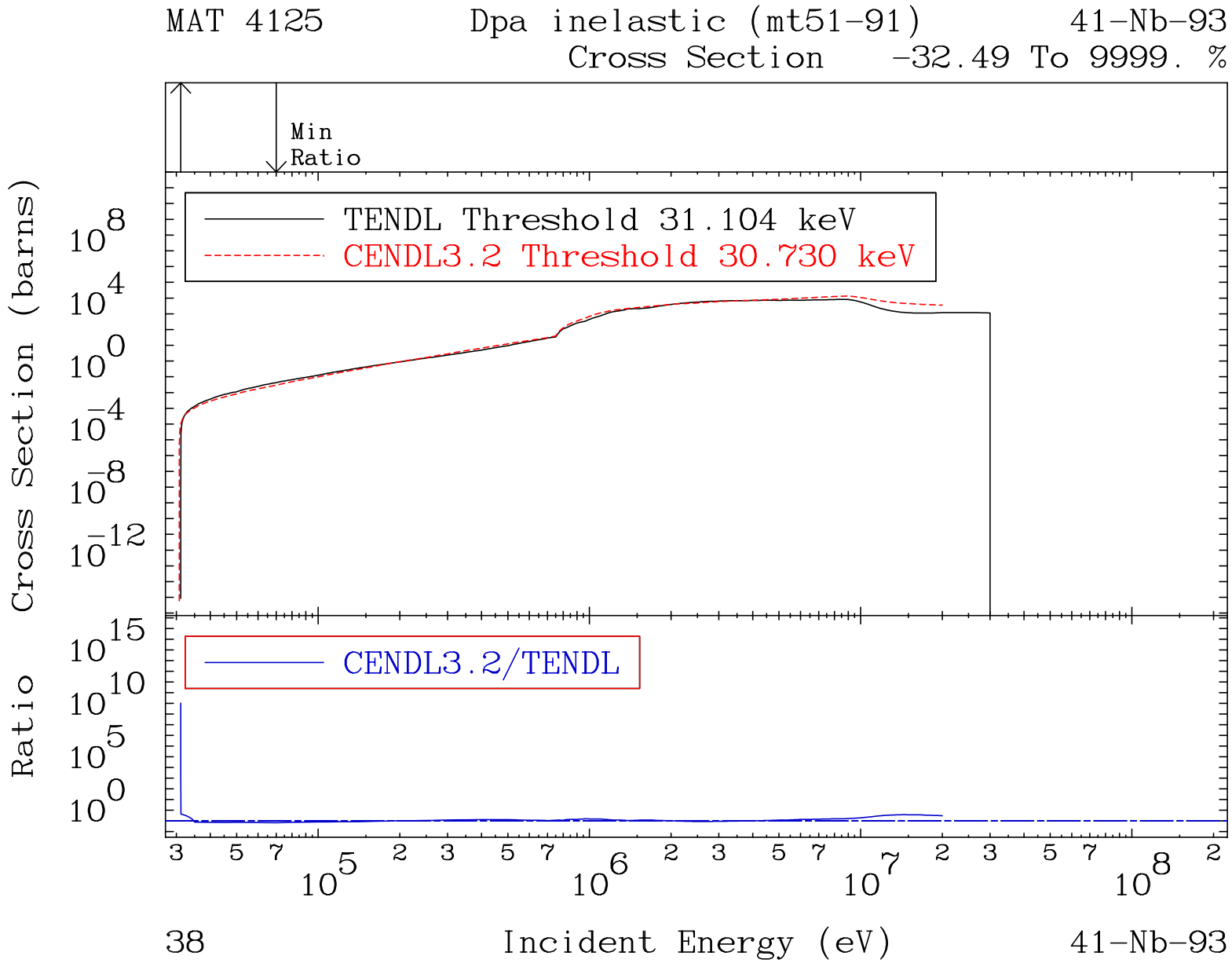

MAT 4125
Kerma capture (mt102)
41-Nb-93
Cross Section -96.94 To 9999. %
Min Ratio
Max Ratio
TENDL
CENDL3.2
CENDL3.2/TENDL
Cross Section (barns)
Ratio
Incident Energy (eV)
33
41-Nb-93

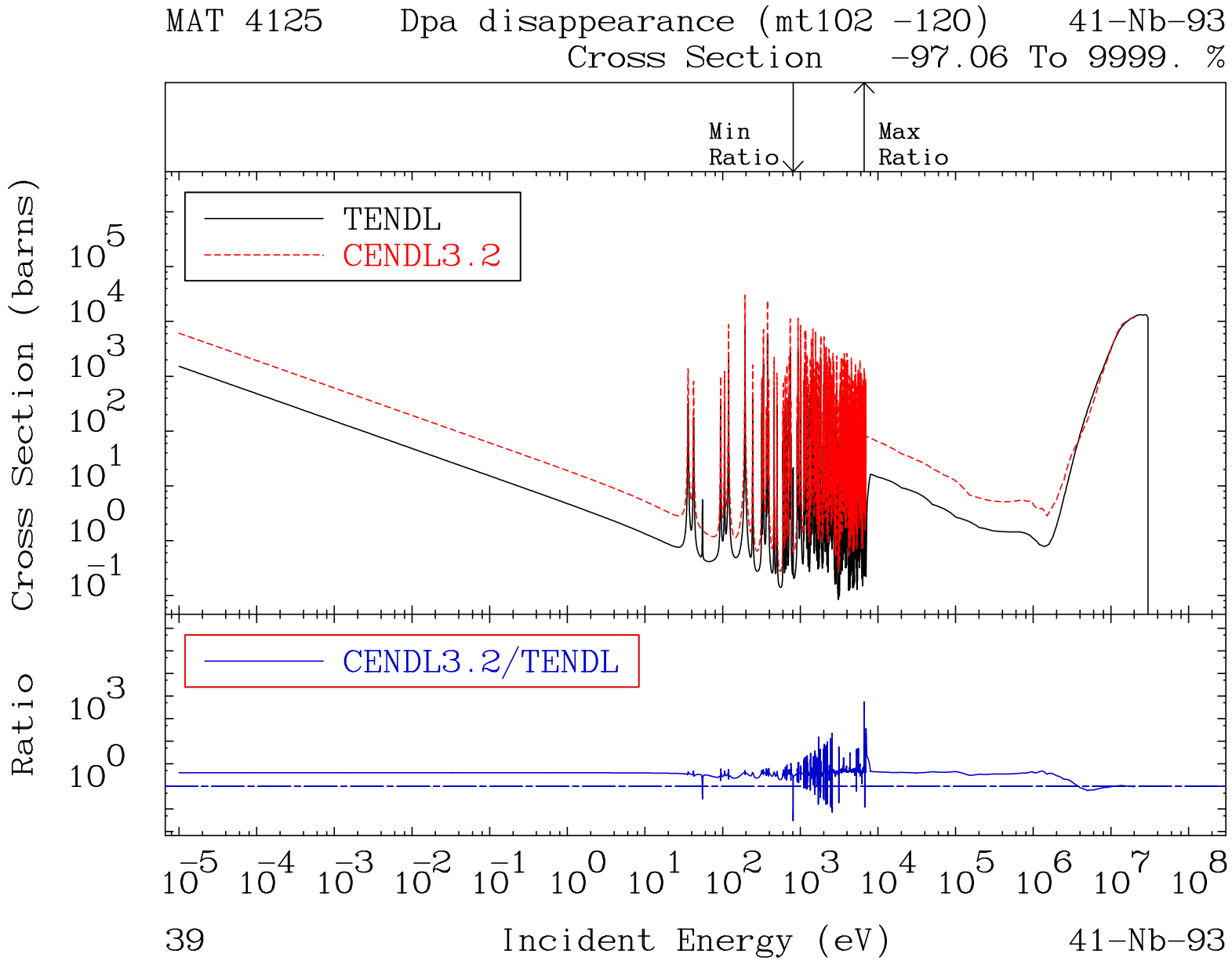

MAT 4125
Total photon (eV-barns)
41-Nb-93
Cross Section -99.28 To 9999. %
Min Ratio
Max Ratio
TENDL
CENDL3.2
CENDL3.2/TENDL
Cross Section (barns)
Ratio
Incident Energy (eV)
34
41-Nb-93

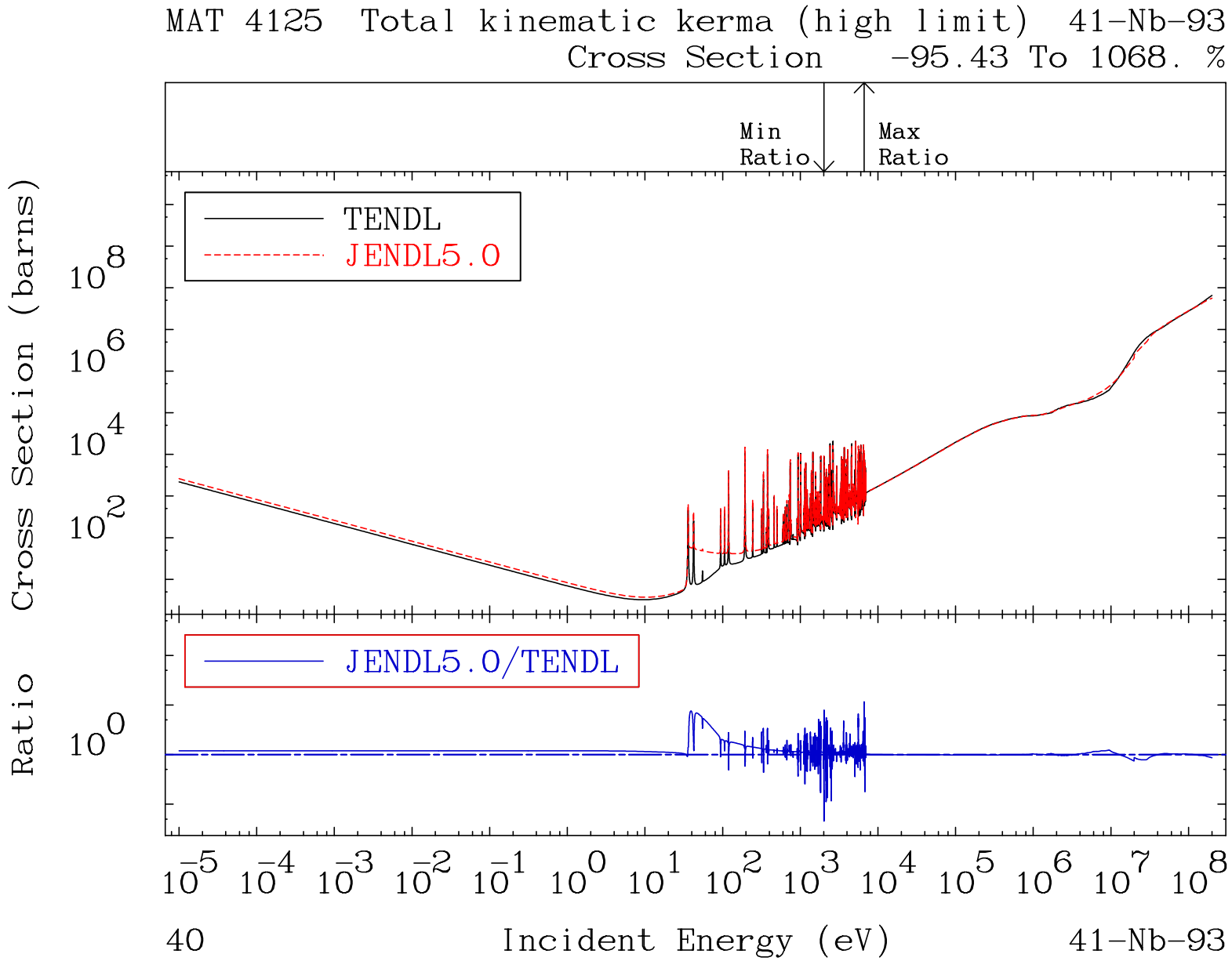

MAT 4125 Total kinematic kerma (high limit) 41-Nb-93
Cross Section -91.12 To 1276. %
Min Ratio
Max Ratio
TENDL
CENDL3.2
Cross Section (barns)
CENDL3.2/TENDL
Ratio
Incident Energy (eV)
35
41-Nb-93

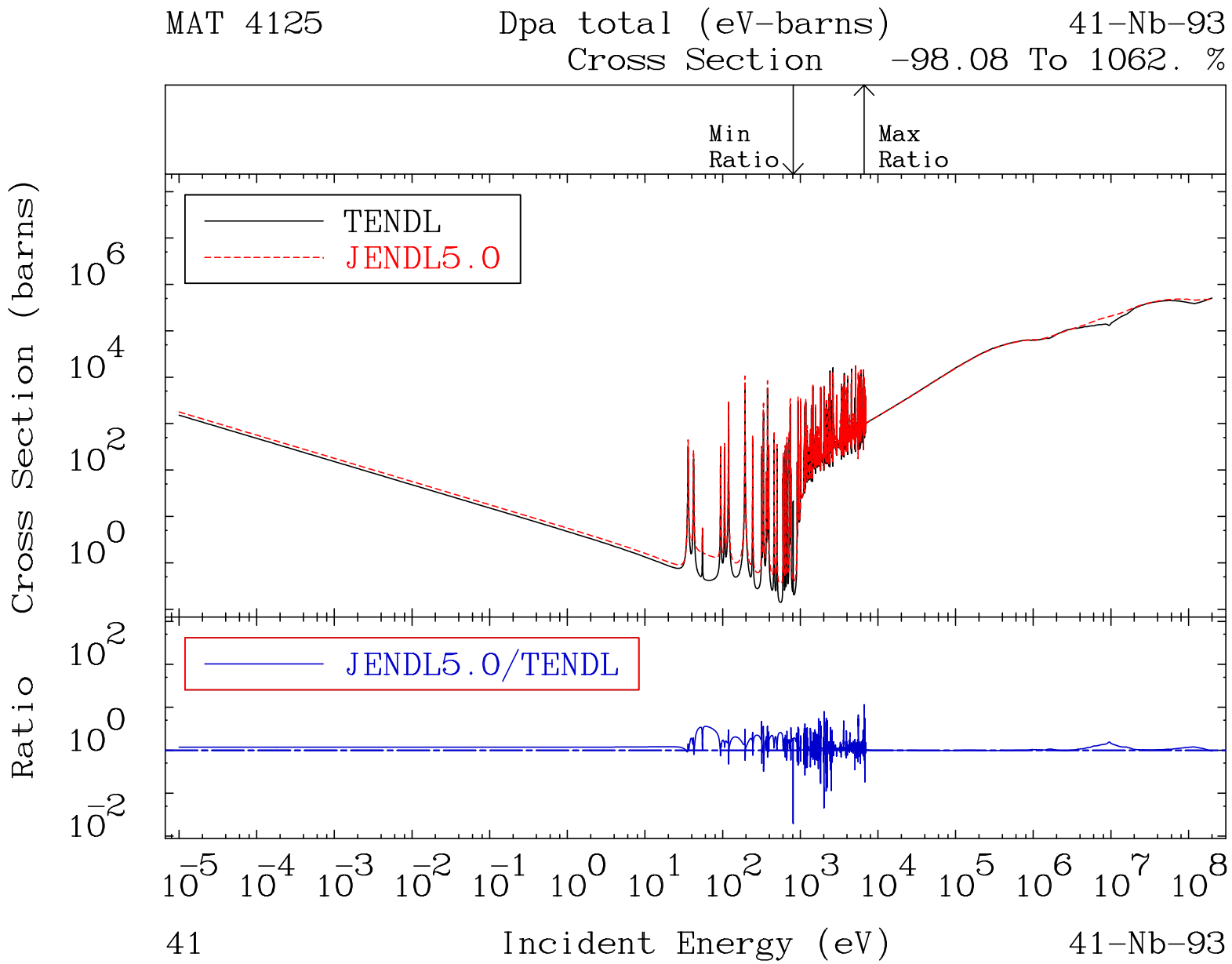

MAT 4125
Dpa total (eV-barns)
41-Nb-93
Cross Section -97.06 To 1201. %
Min Ratio
Max Ratio
TENDL
CENDL3.2
CENDL3.2/TENDL
Cross Section (barns)
Ratio
Incident Energy (eV)
36
41-Nb-93

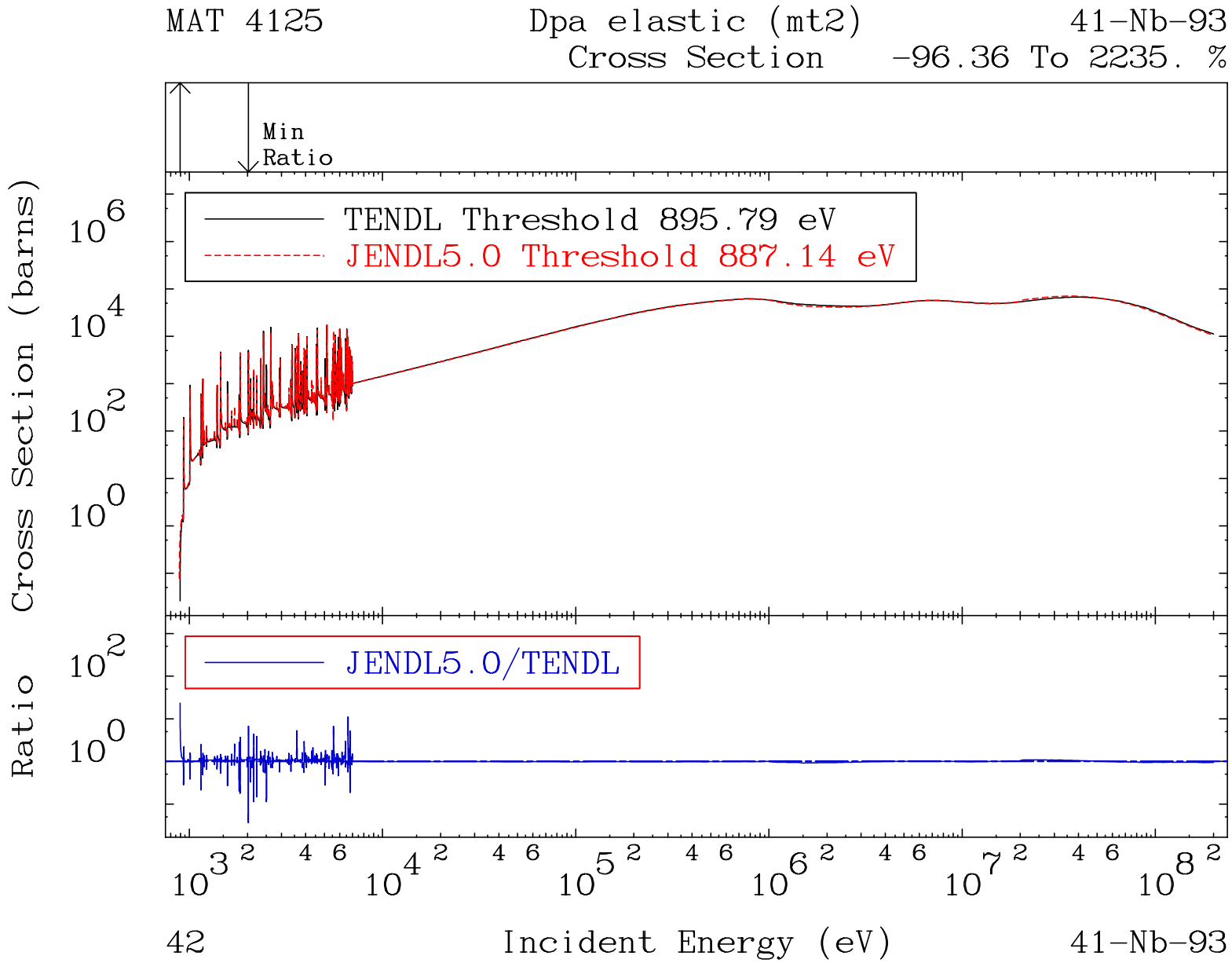

MAT 4125
Dpa elastic (mt2)
Cross Section
41-Nb-93
-96.30 To 1019. %
Min Ratio
Max Ratio
TENDL Threshold 895.79 eV
CENDL3.2 Threshold 895.99 eV
CENDL3.2/TENDL
Cross Section (barns)
Ratio
Incident Energy (eV)
37
41-Nb-93

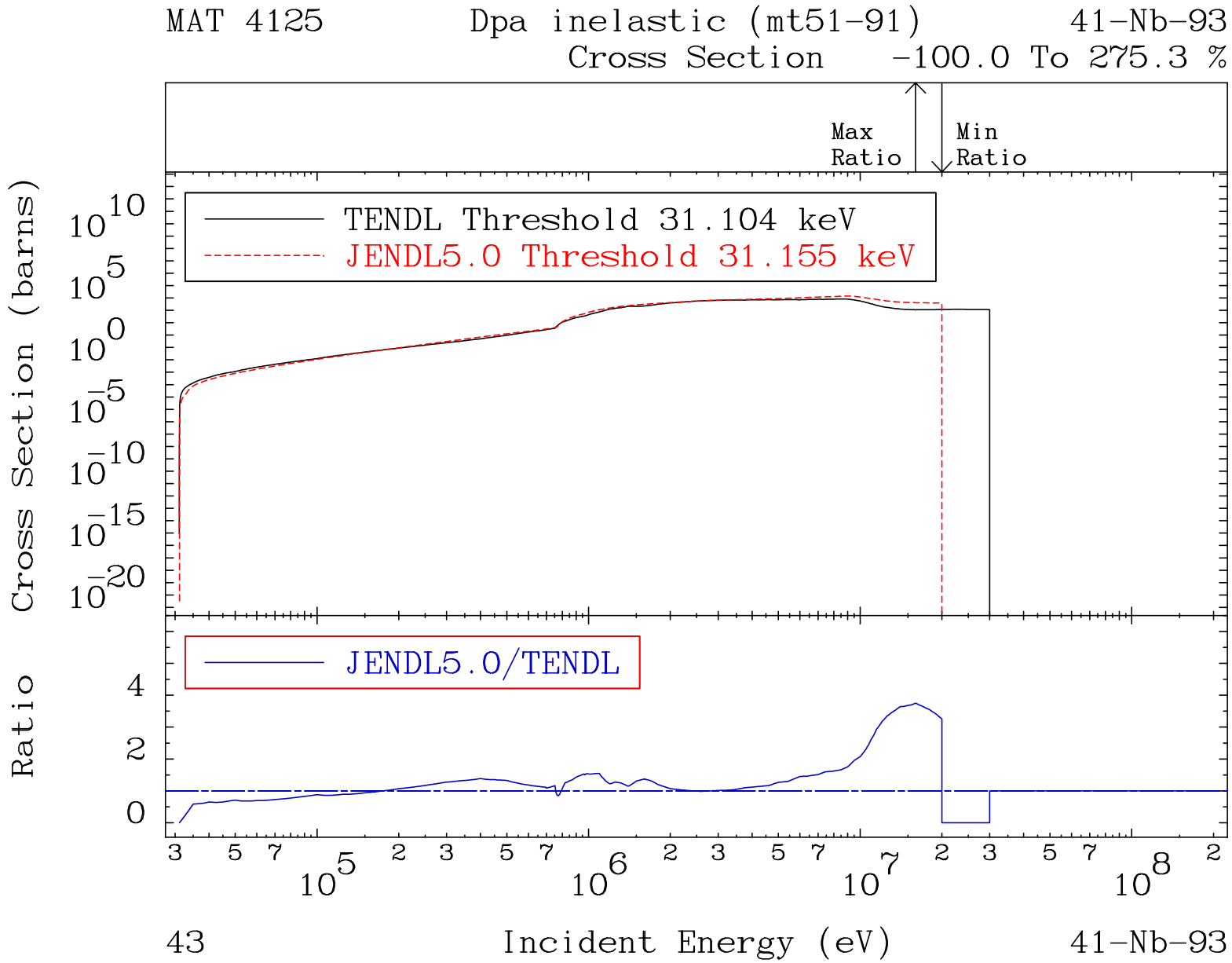

MAT 4125
Dpa inelastic (mt51-91)
41-Nb-93
Cross Section -32.49 To 9999. %
Min
Ratio
TENDL Threshold 31.104 keV
CENDL3.2 Threshold 30.730 keV
CENDL3.2/TENDL
Cross Section (barns)
Ratio
Incident Energy (eV)
38
41-Nb-93

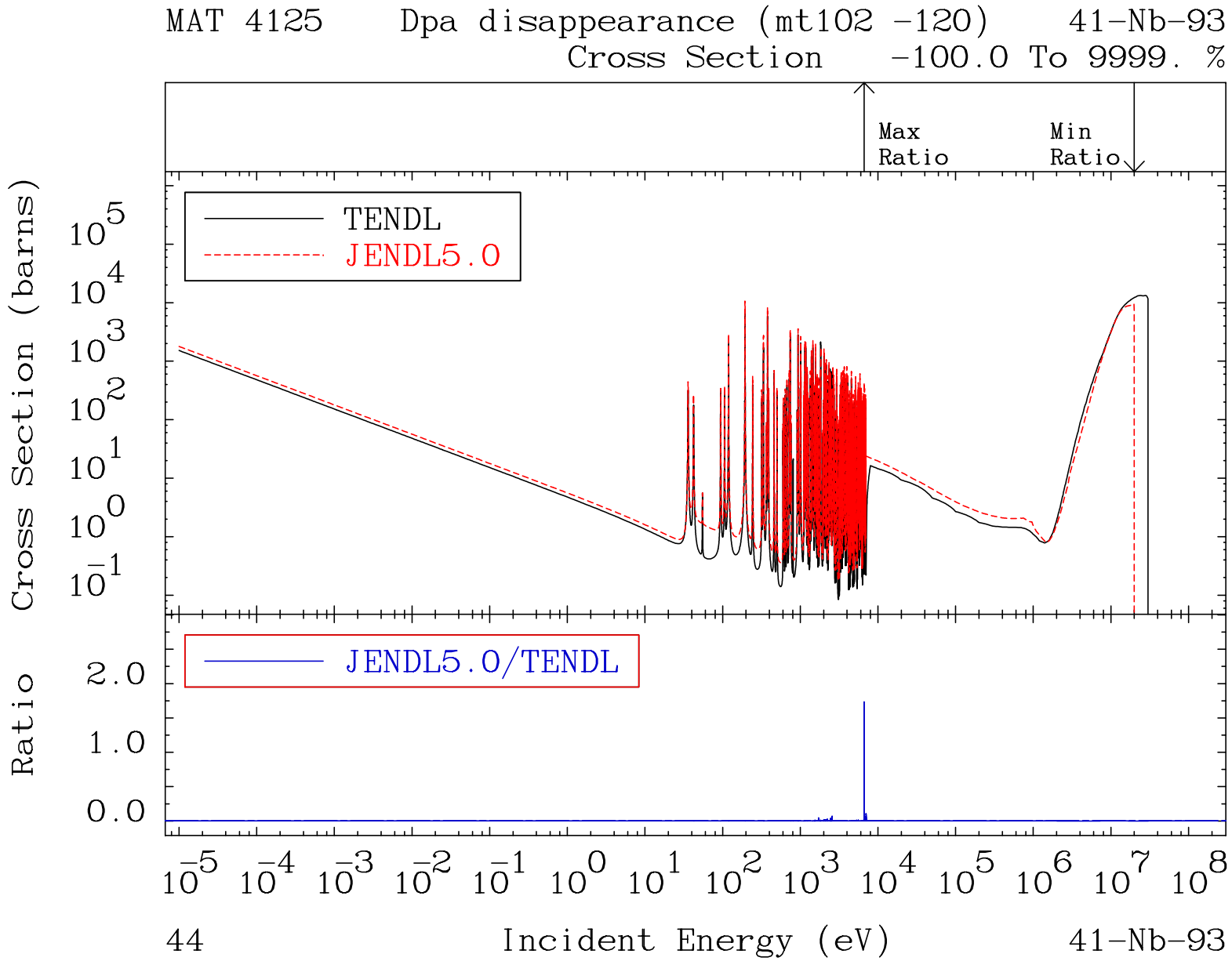

MAT 4125 Dpa disappearance (mt102 -120) 41-Nb-93
Cross Section -97.06 To 9999. %
Min Ratio
Max Ratio
TENDL
CENDL3.2
Cross Section (barns)
CENDL3.2/TENDL
Ratio
Incident Energy (eV)
39
41-Nb-93

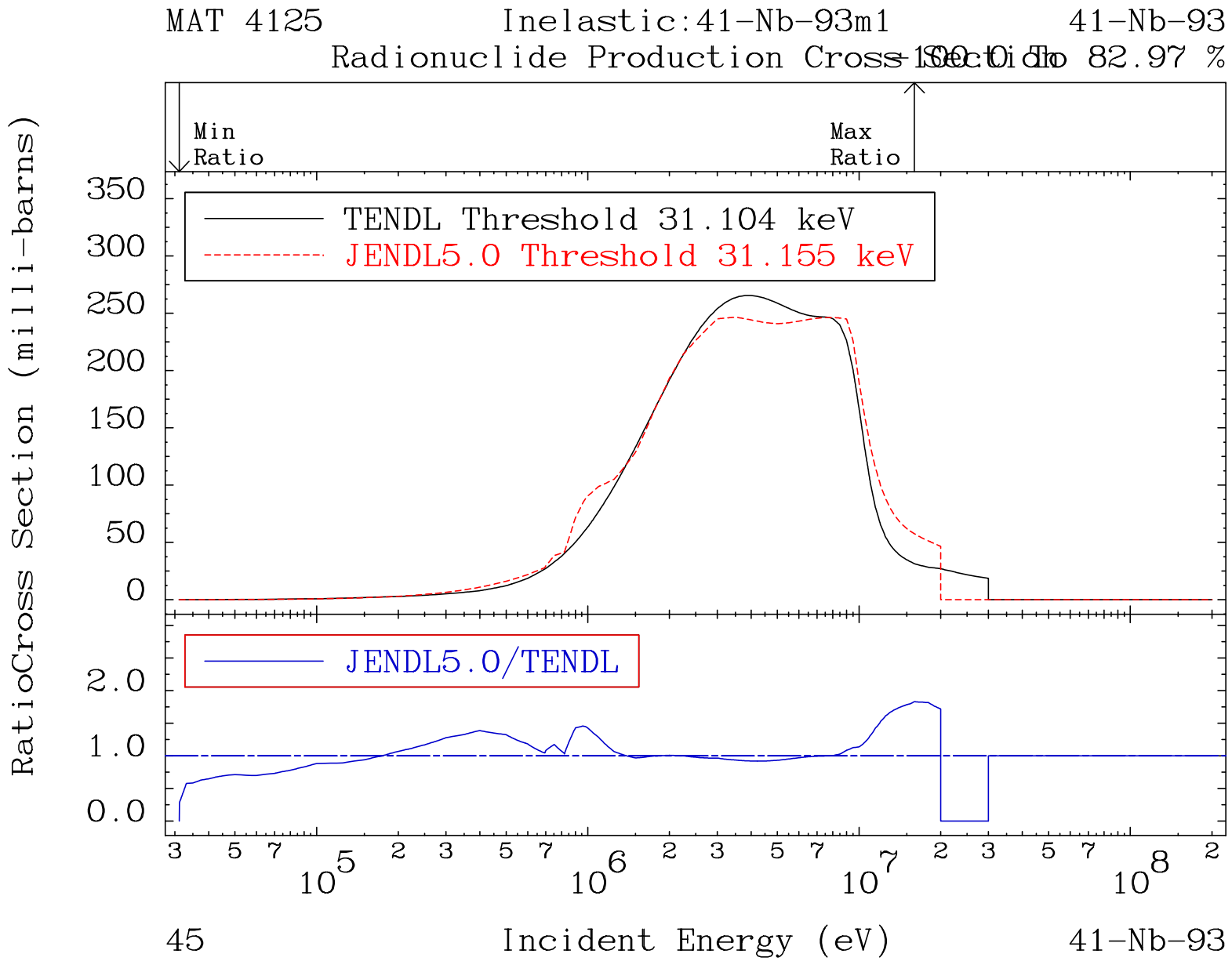

MAT 4125 Total kinematic kerma (high limit) 41-Nb-93
Cross Section -95.43 To 1068. %
Min Ratio
Max Ratio
TENDL
JENDL5.0
JENDL5.0/TENDL
Cross Section (barns)
Ratio
Incident Energy (eV)
40
41-Nb-93

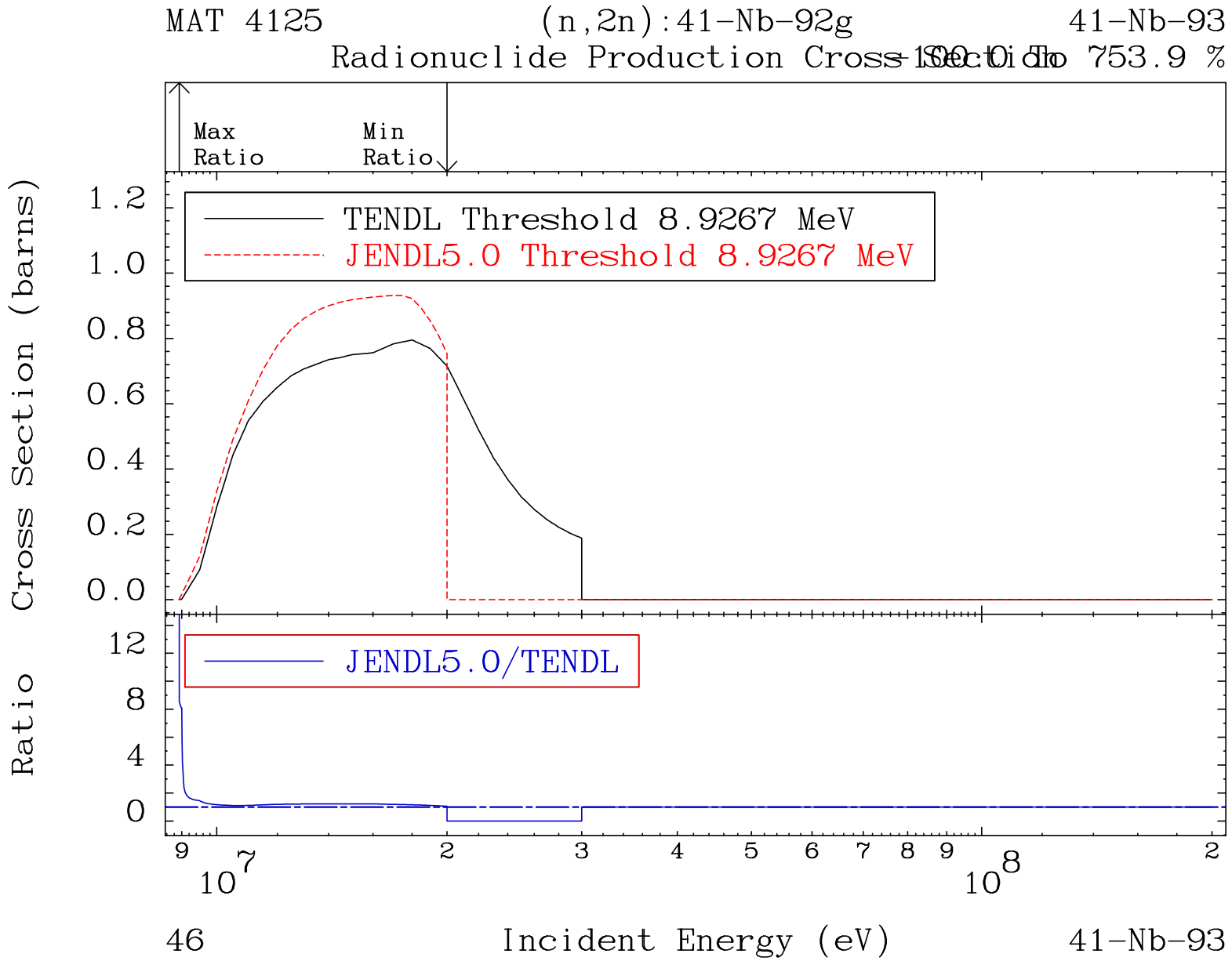

MAT 4125
Dpa total (eV-barns)
41-Nb-93
Cross Section -98.08 To 1062. %
Min Ratio
Max Ratio
TENDL
JENDL5.0
JENDL5.0/TENDL
Cross Section (barns)
Ratio
Incident Energy (eV)
41
41-Nb-93

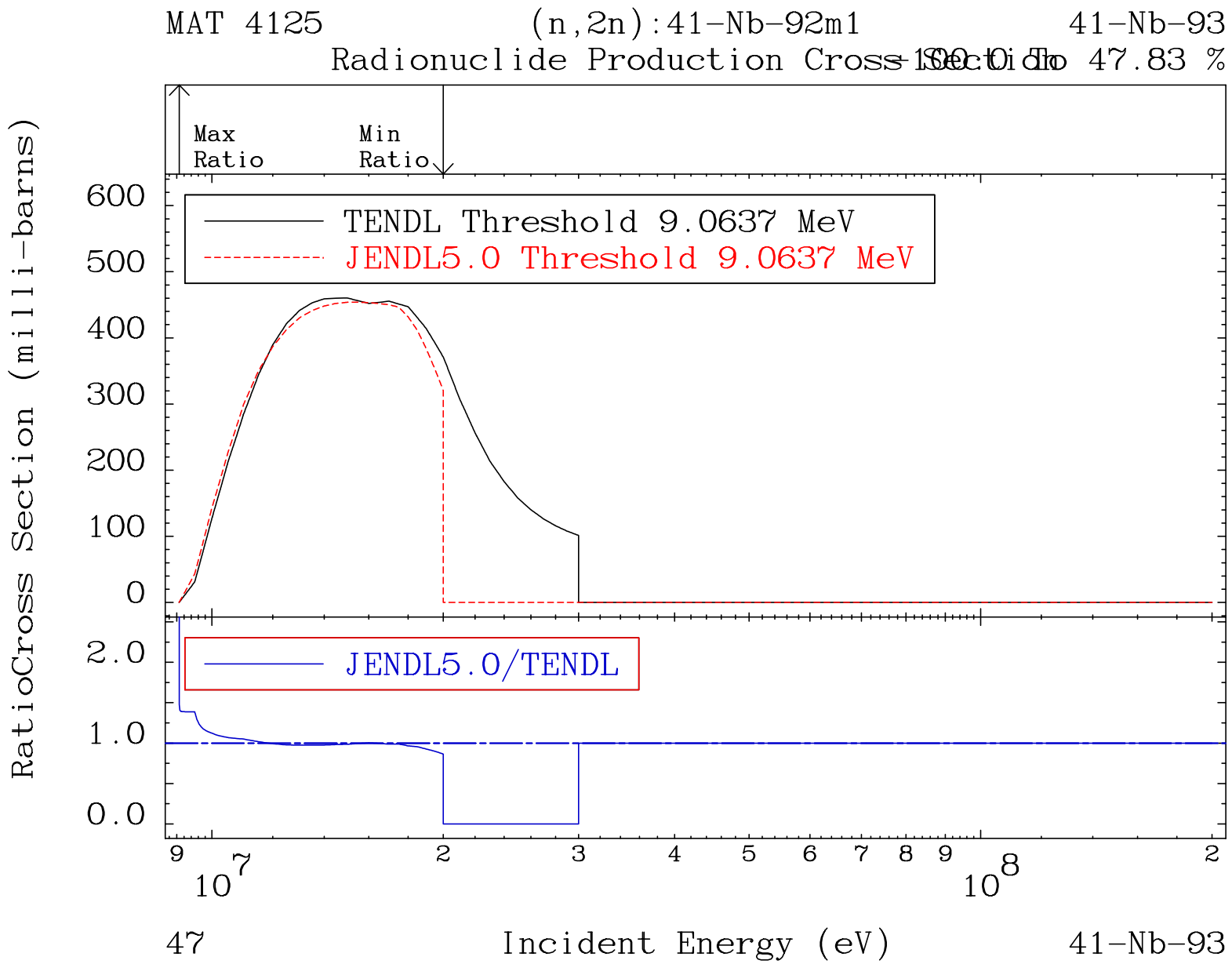

MAT 4125
Dpa elastic (mt2)
Cross Section
41-Nb-93
-96.36 To 2235. %
Min
Ratio
TENDL Threshold 895.79 eV
JENDL5.0 Threshold 887.14 eV
JENDL5.0/TENDL
Cross Section (barns)
Ratio
Incident Energy (eV)
42
41-Nb-93

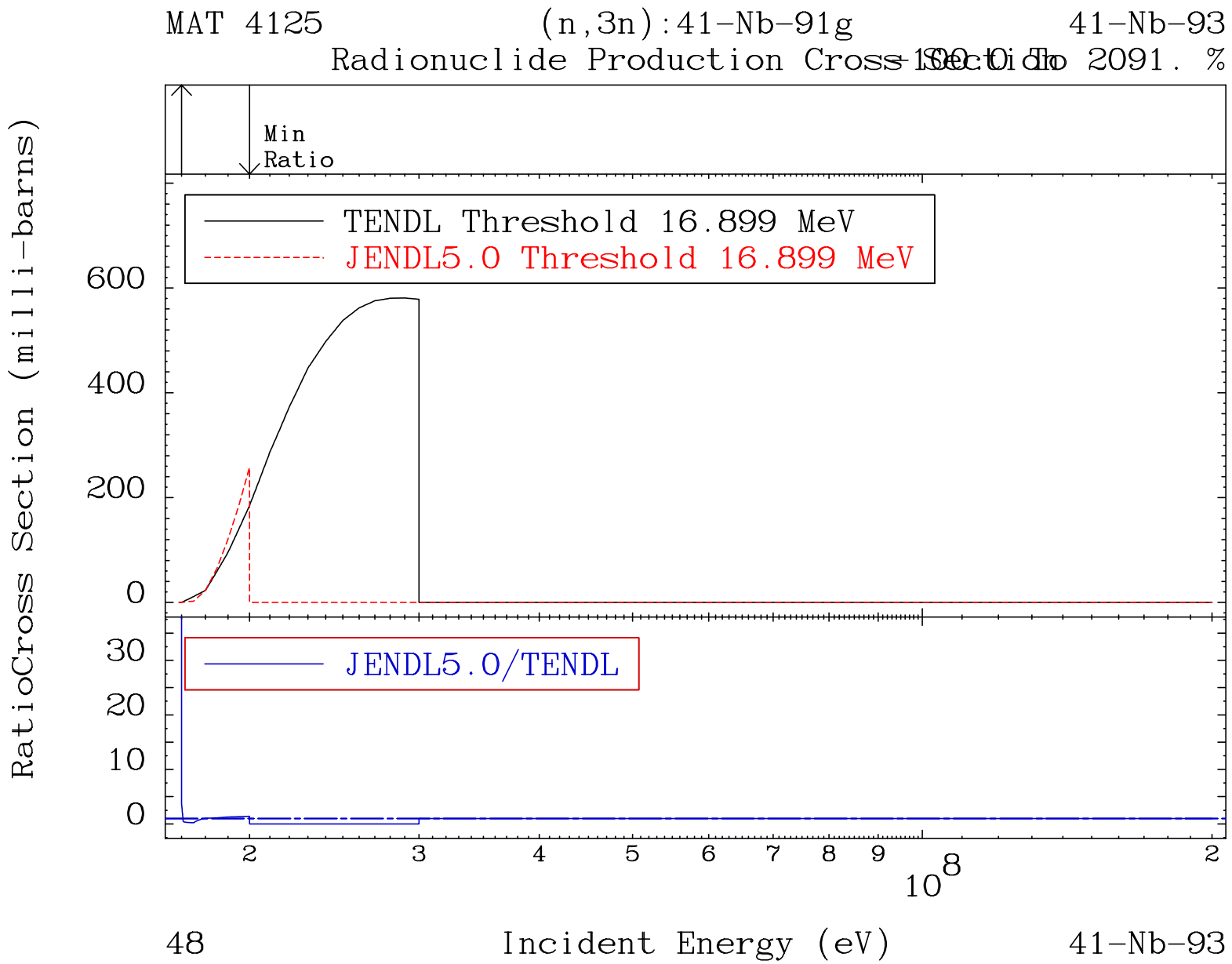

MAT 4125
Dpa inelastic (mt51-91)
41-Nb-93
Cross Section
-100.0 To 275.3 %
Max Ratio
Min Ratio
TENDL Threshold 31.104 keV
JENDL5.0 Threshold 31.155 keV
Cross Section (barns)
JENDL5.0/TENDL
Ratio
Incident Energy (eV)
43
41-Nb-93

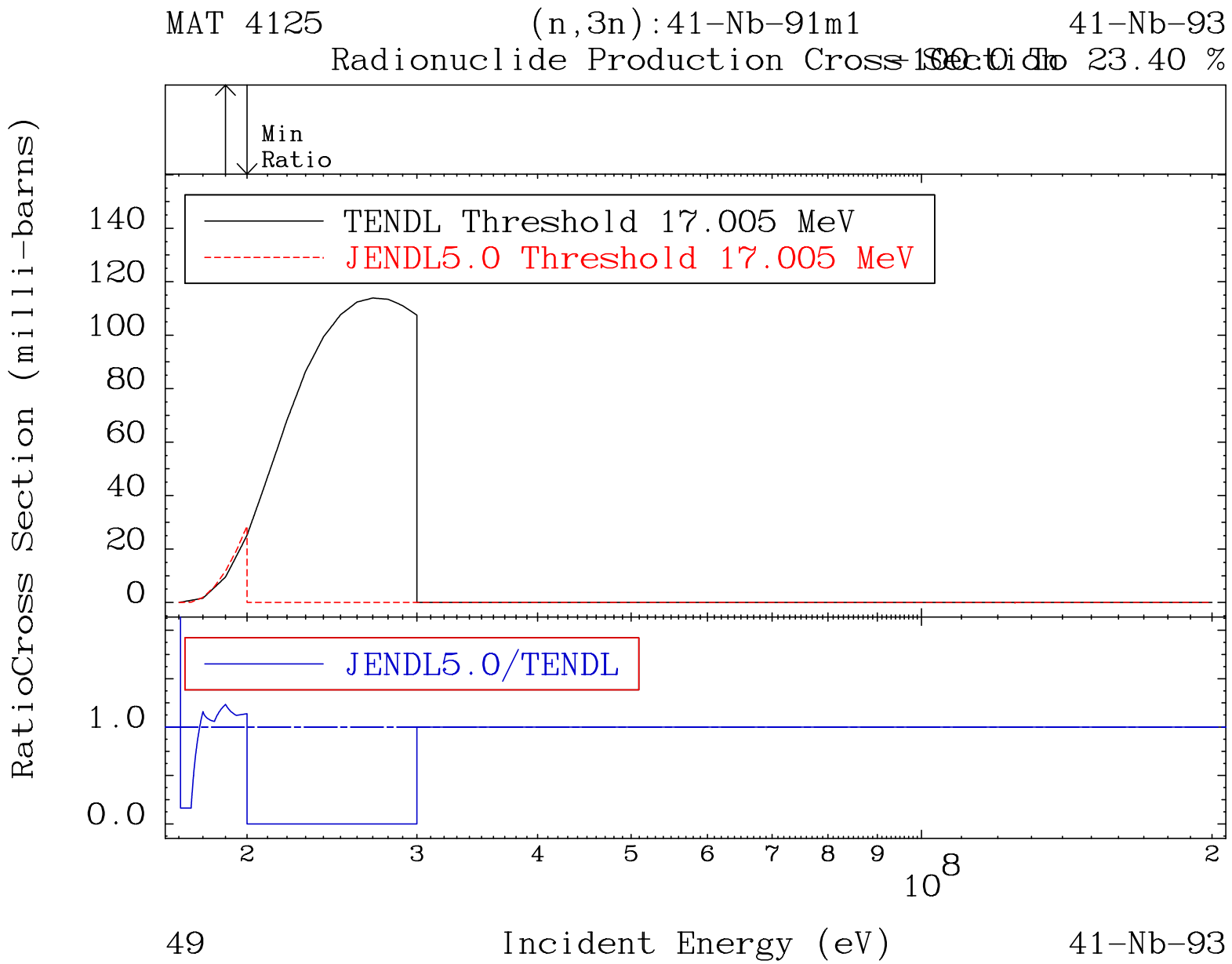

MAT 4125 Dpa disappearance (mt102 -120) 41-Nb-93
Cross Section -100.0 To 9999. %
Max Ratio
Min Ratio
TENDL
JENDL5.0
Cross Section (barns)
JENDL5.0/TENDL
Ratio
Incident Energy (eV)
44
41-Nb-93

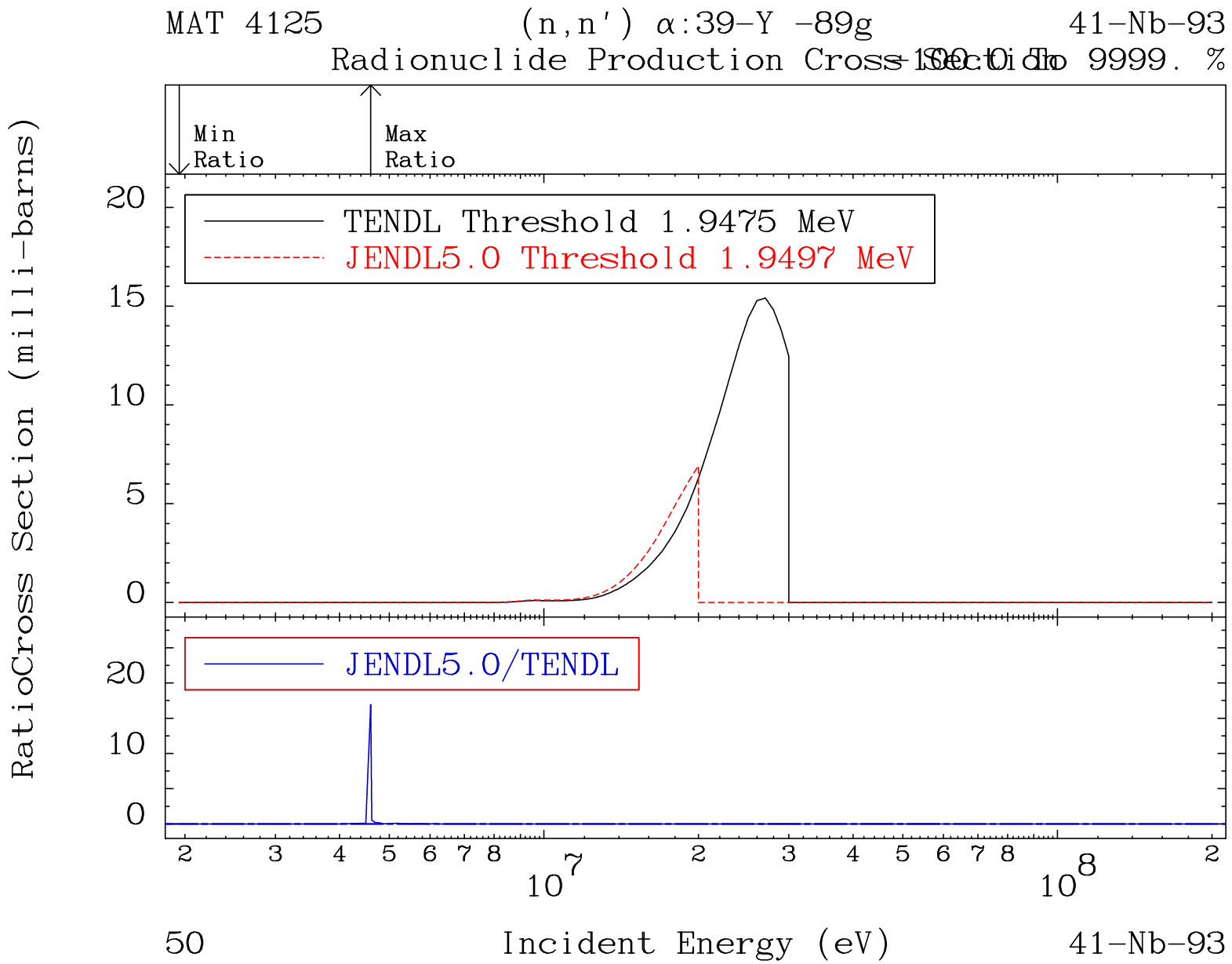

MAT 4125
Inelastic:41-Nb-93m1
41-Nb-93
Radionuclide Production Cross Section To 82.97 %
Min Ratio
Max Ratio
TENDL Threshold 31.104 keV
JENDL5.0 Threshold 31.155 keV
JENDL5.0/TENDL
RatioCross Section (milli-barns)
350
300
250
200
150
100
50
0
2.0
1.0
0.0
3 5 7 10^5 2 3 5 7 10^6 2 3 5 7 10^7 2 3 5 7 10^8 2
45
Incident Energy (eV)
41-Nb-93

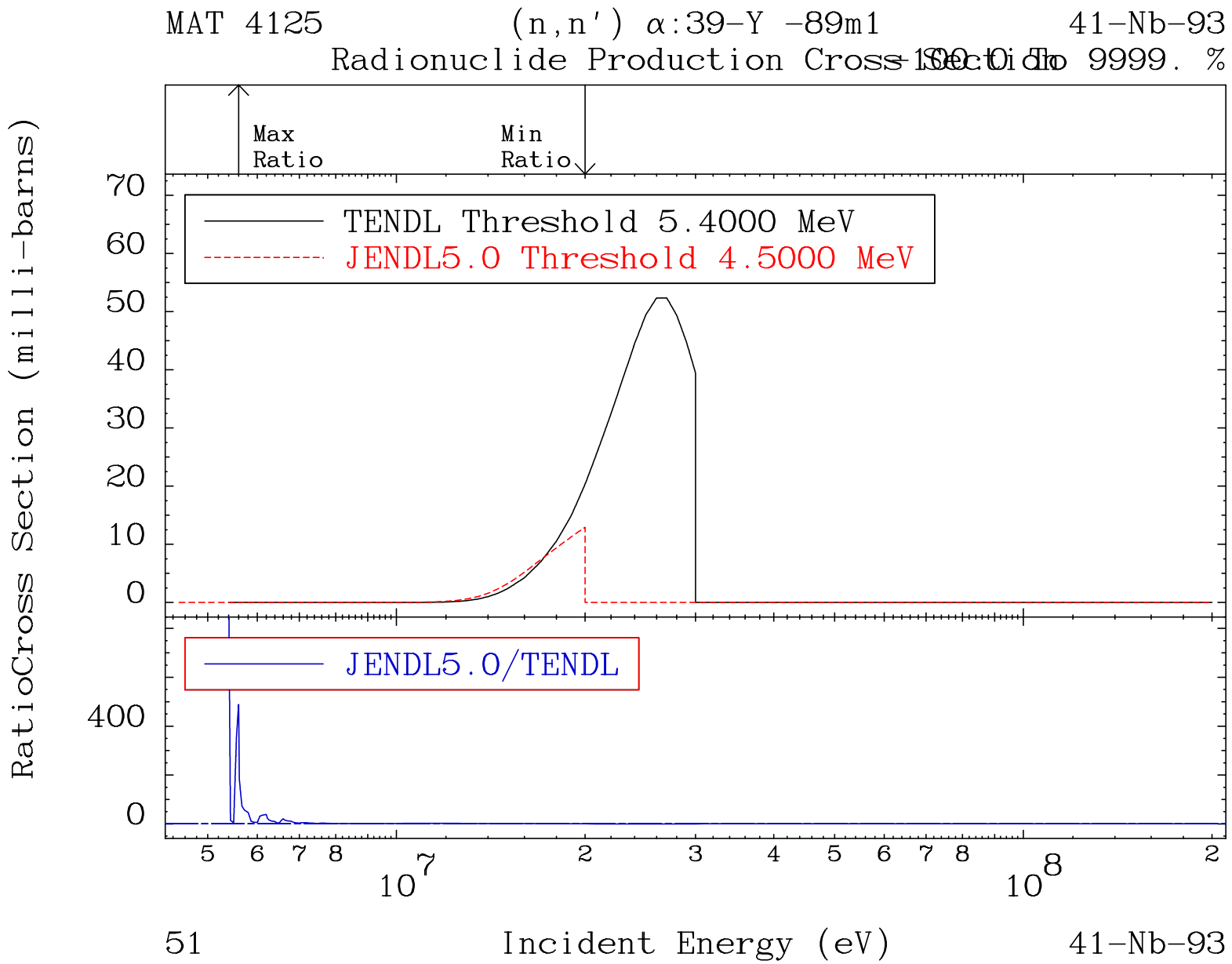

MAT 4125
(n,2n):41-Nb-92g
41-Nb-93
Radionuclide Production Cross Section To 753.9 %
Max Ratio
Min Ratio
TENDL Threshold 8.9267 MeV
JENDL5.0 Threshold 8.9267 MeV
JENDL5.0/TENDL
Cross Section (barns)
Ratio
1.2
1.0
0.8
0.6
0.4
0.2
0.0
12
8
4
0
9
10^7
2
3
4
5
6
7
8
9
10^8
2
46
Incident Energy (eV)
41-Nb-93

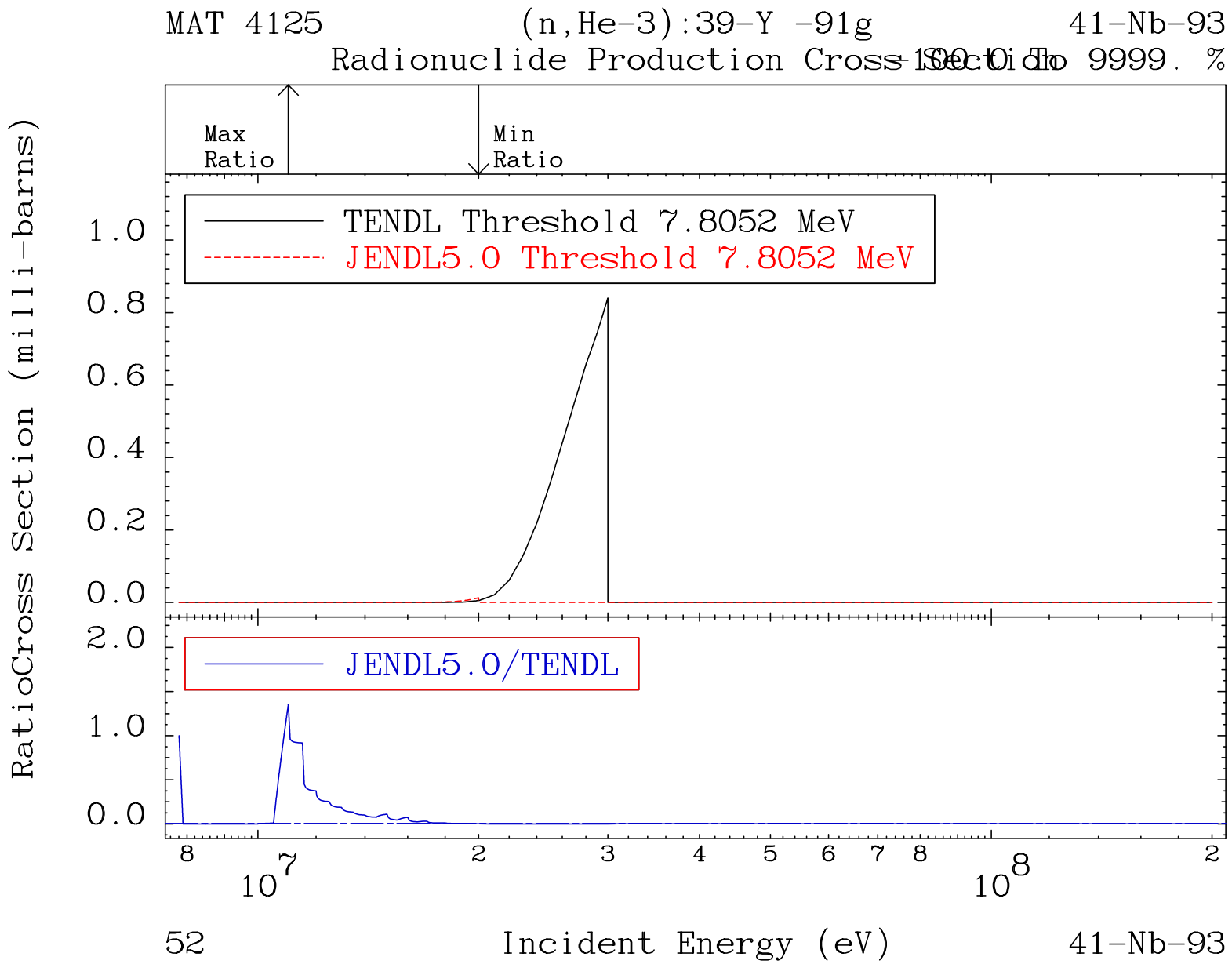

MAT 4125
(n,2n):41-Nb-92m1
41-Nb-93
Radionuclide Production Cross Section To 47.83 %
Max Ratio
Min Ratio
TENDL Threshold 9.0637 MeV
JENDL5.0 Threshold 9.0637 MeV
JENDL5.0/TENDL
RatioCross Section (milli-barns)
600
500
400
300
200
100
0
2.0
1.0
0.0
9
2
3
4
5
6
7
8
9
2
10^7
10^8
47
Incident Energy (eV)
41-Nb-93

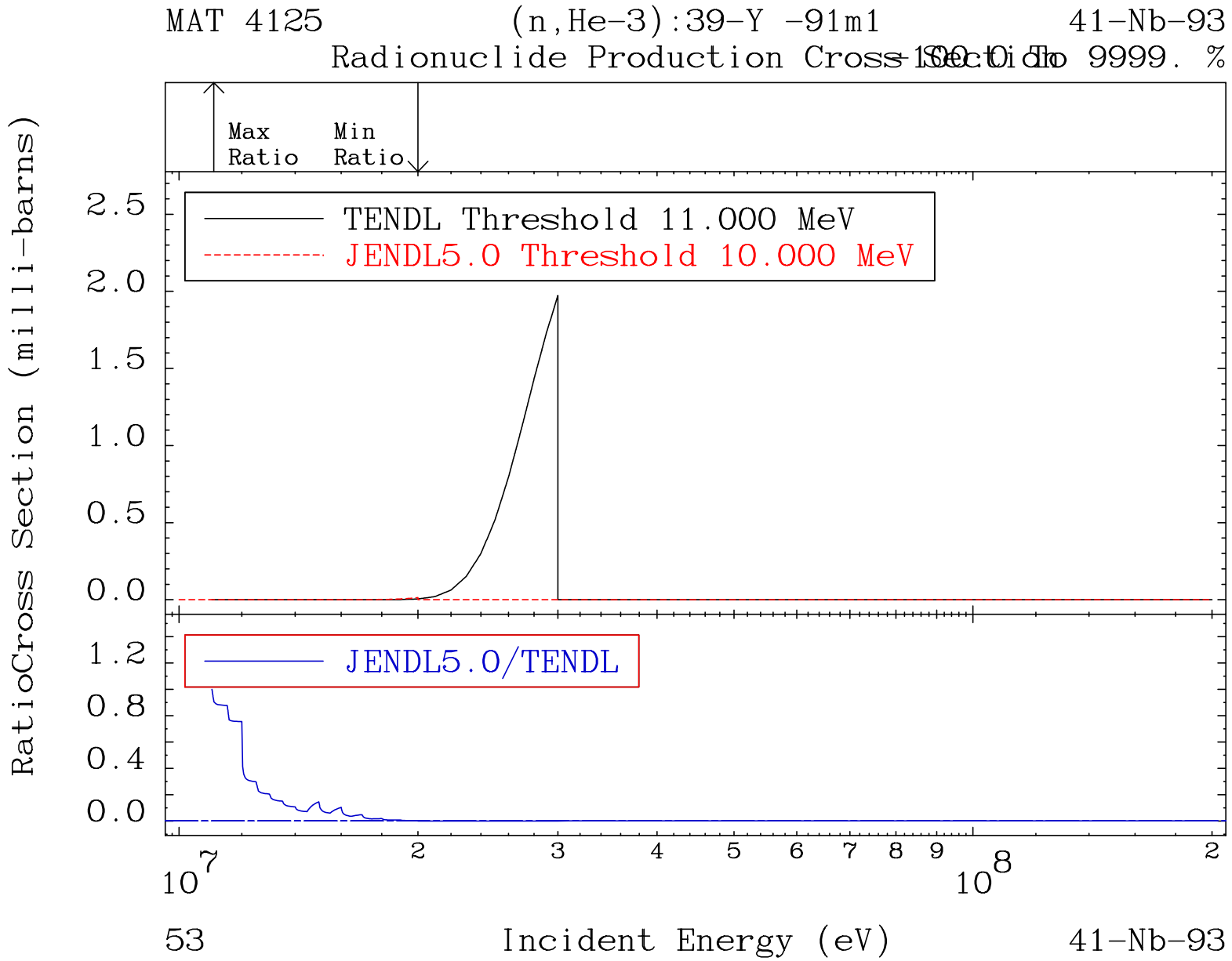

MAT 4125
(n,3n):41-Nb-91g
41-Nb-93
Radionuclide Production Cross Section To 2091. %
Min
Ratio
TENDL Threshold 16.899 MeV
JENDL5.0 Threshold 16.899 MeV
600
400
200
0
JENDL5.0/TENDL
30
20
10
0
RatioCross Section (milli-barns)
2
3
4
5
6
7
8
9
10^8
2
48
Incident Energy (eV)
41-Nb-93

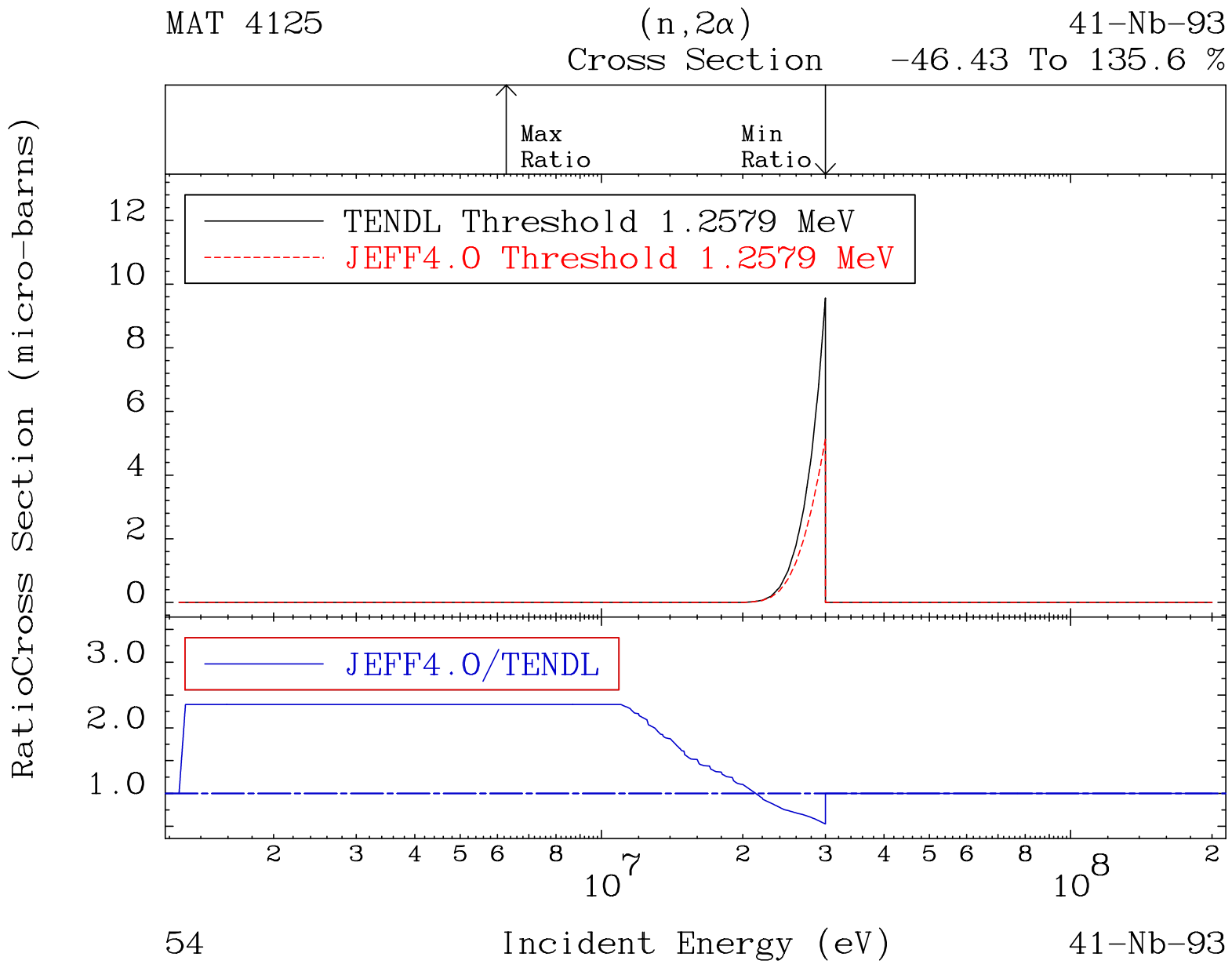

MAT 4125
(n,3n):41-Nb-91m1
41-Nb-93
Radionuclide Production Cross Section
Uncertainty 23.40 %
Min
Ratio
TENDL Threshold 17.005 MeV
JENDL5.0 Threshold 17.005 MeV
JENDL5.0/TENDL
RatioCross Section (milli-barns)
140
120
100
80
60
40
20
0
1.0
0.0
2
3
4
5
6
7
8
9
2
10^8
49
Incident Energy (eV)
41-Nb-93

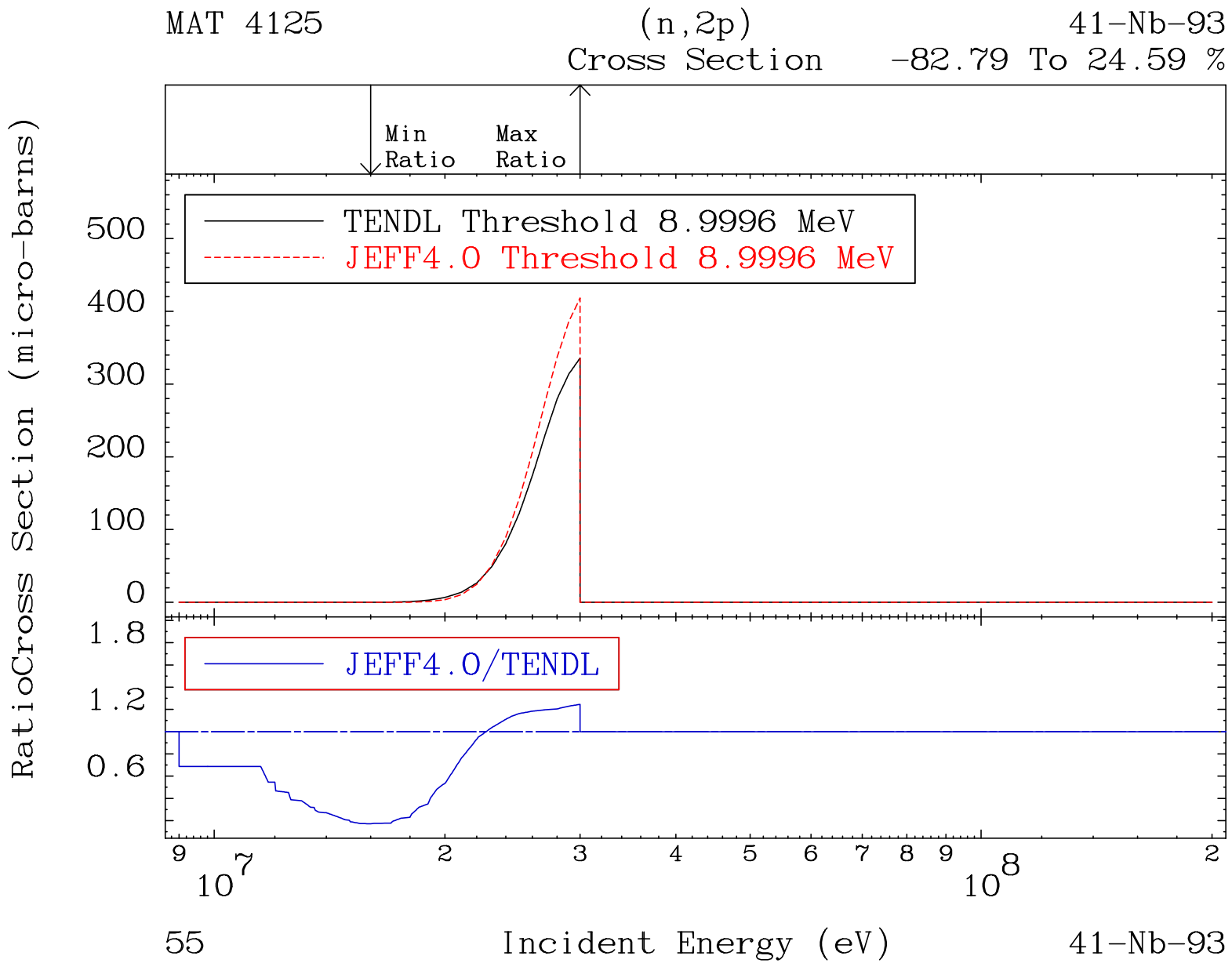

MAT 4125
(n,n') α:39-Y -89g
41-Nb-93
Radionuclide Production Cross Section To 9999. %
Min Ratio
Max Ratio
TENDL Threshold 1.9475 MeV
JENDL5.0 Threshold 1.9497 MeV
JENDL5.0/TENDL
RatioCross Section (milli-barns)
Incident Energy (eV)
50
41-Nb-93

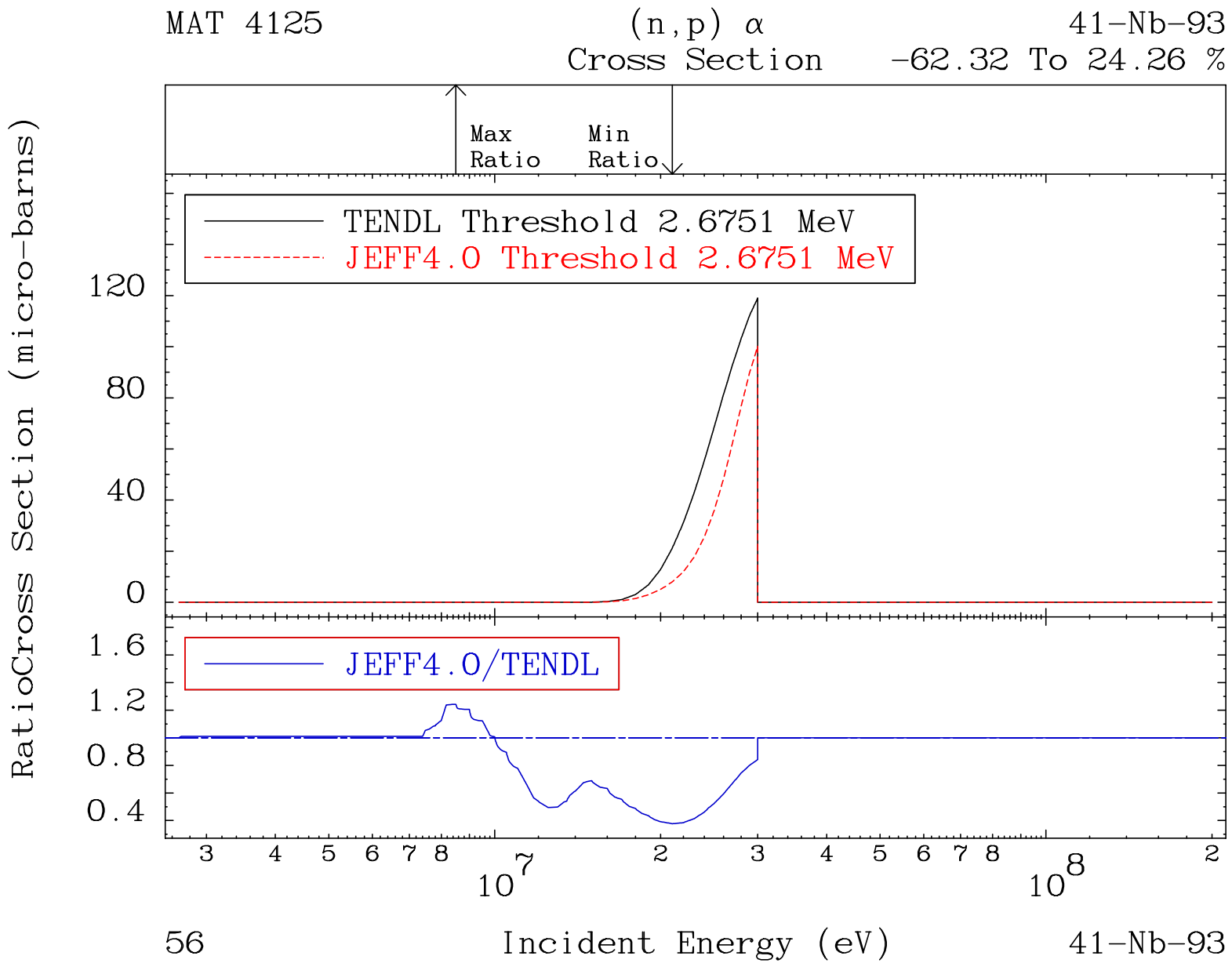

MAT 4125
(n,n') α:39-Y -89m1
41-Nb-93
Radionuclide Production Cross Section
Uncertainty 9999. %
Max Ratio
Min Ratio
TENDL Threshold 5.4000 MeV
JENDL5.0 Threshold 4.5000 MeV
JENDL5.0/TENDL
RatioCross Section (milli-barns)
70
60
50
40
30
20
10
0
400
0
5 6 7 8
10^7
2 3 4 5 6 7 8
10^8
2
51
Incident Energy (eV)
41-Nb-93

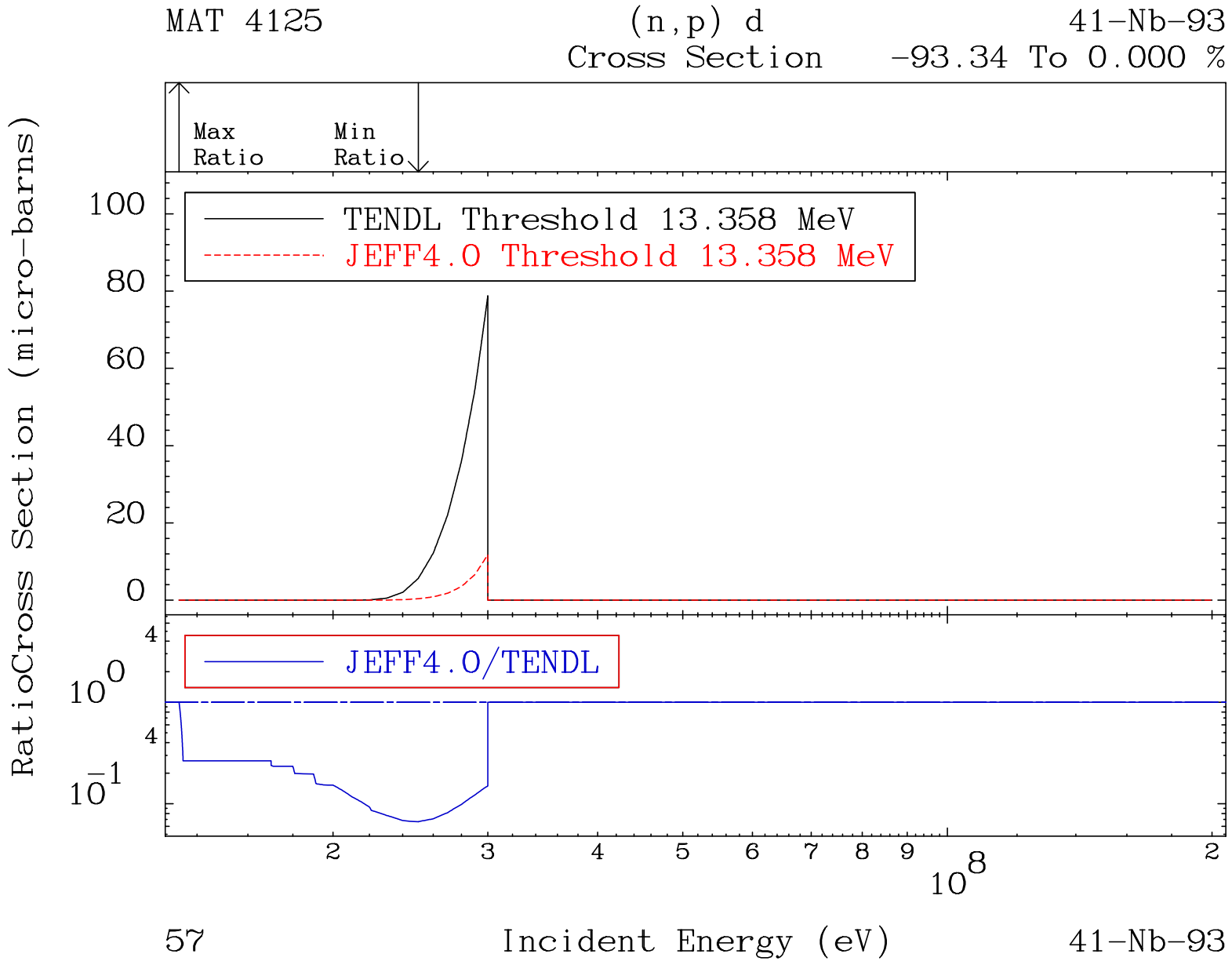

MAT 4125
(n,He-3):39-Y -91g
41-Nb-93
Radionuclide Production Cross Section
Max Ratio
Min Ratio
TENDL Threshold 7.8052 MeV
JENDL5.0 Threshold 7.8052 MeV
JENDL5.0/TENDL
RatioCross Section (milli-barns)
1.0
0.8
0.6
0.4
0.2
0.0
2.0
1.0
0.0
8
10^7
2
3
4
5
6
7
8
10^8
2
52
Incident Energy (eV)
41-Nb-93

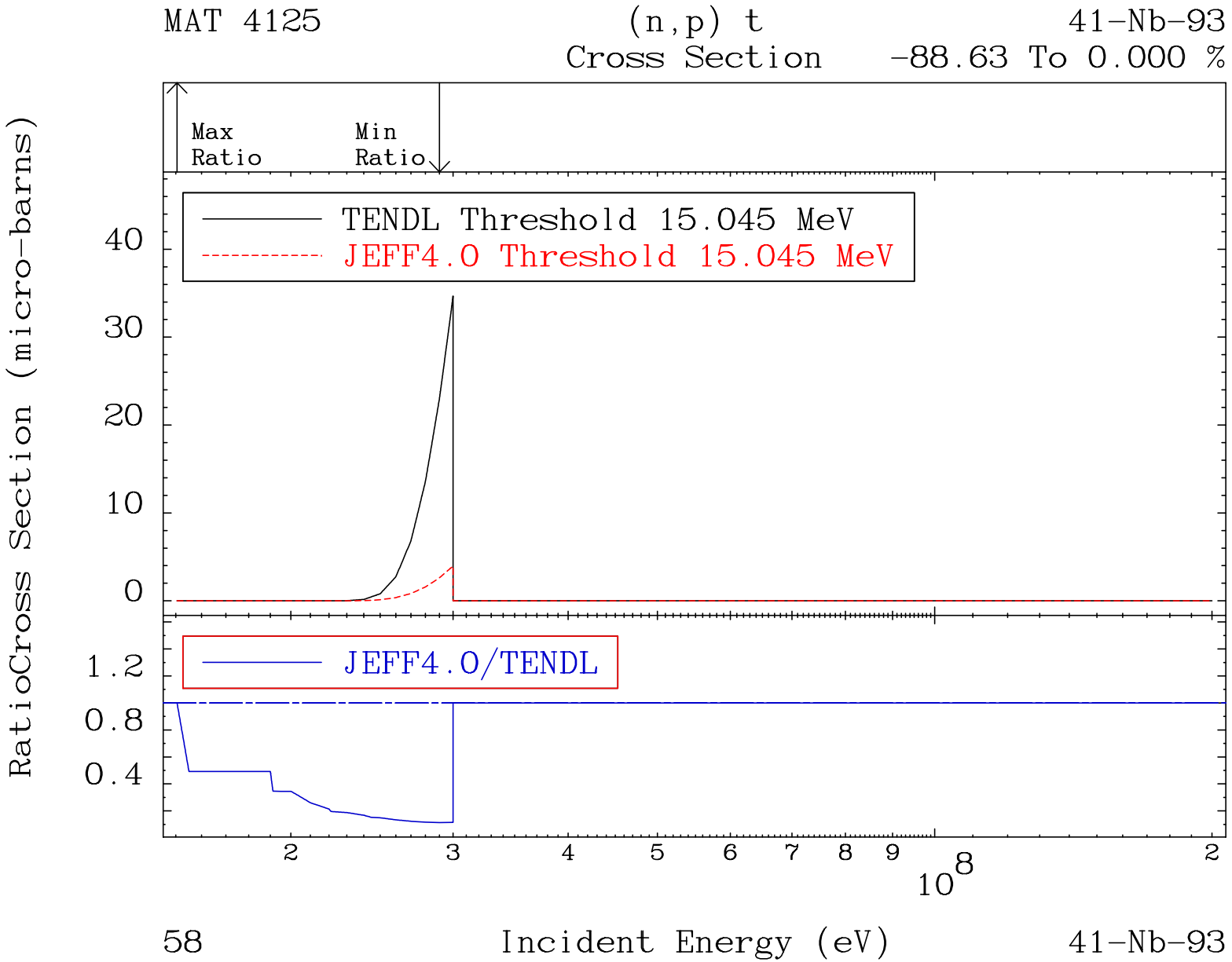

MAT 4125
(n,He-3):39-Y -91m1
41-Nb-93
Radionuclide Production Cross Section To 9999. %
Max Ratio
Min Ratio
TENDL Threshold 11.000 MeV
JENDL5.0 Threshold 10.000 MeV
JENDL5.0/TENDL
RatioCross Section (milli-barns)
2.5
2.0
1.5
1.0
0.5
0.0
1.2
0.8
0.4
0.0
10^7
2
3
4
5
6
7
8
9
10^8
2
53
Incident Energy (eV)
41-Nb-93

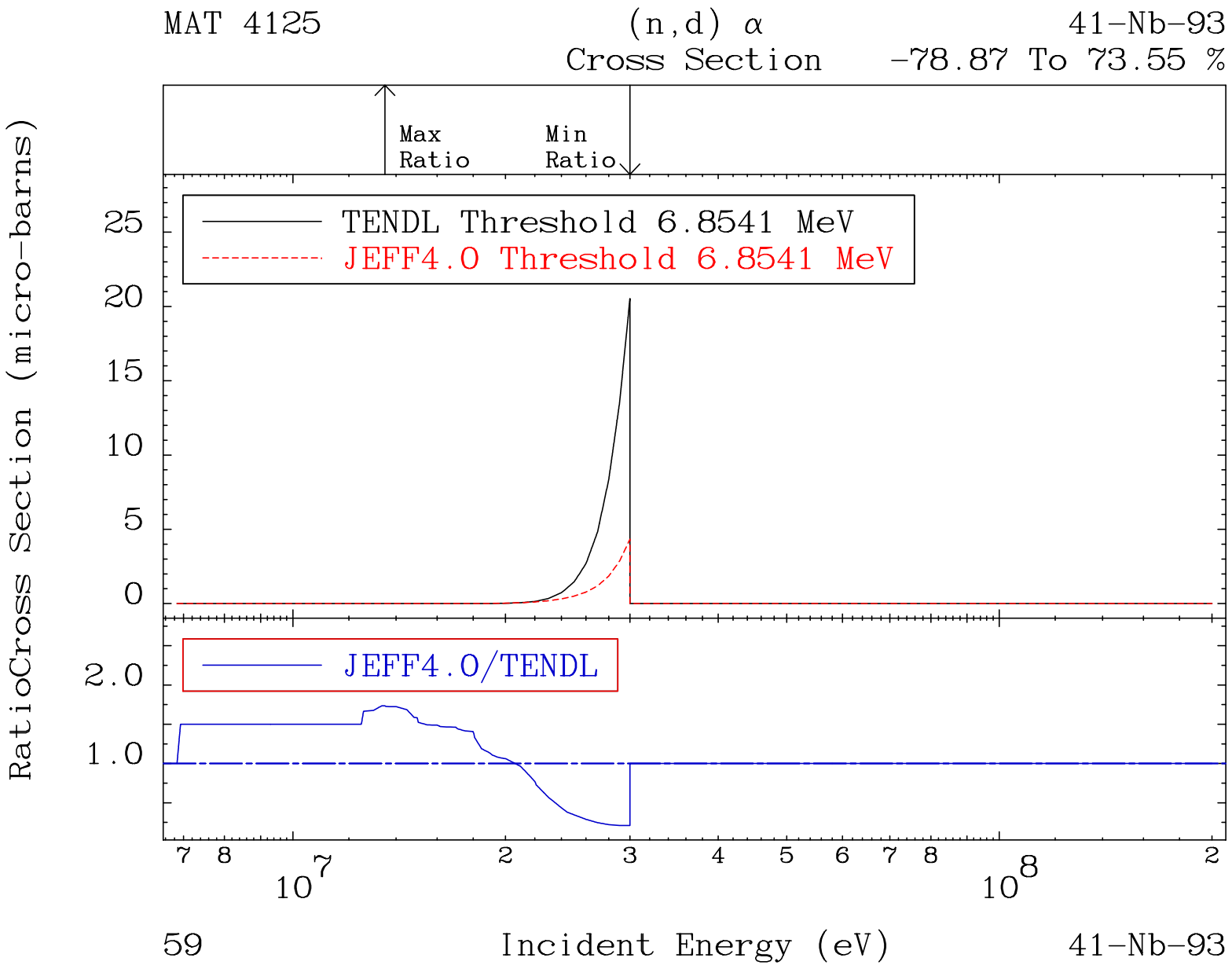

MAT 4125
(n,2α)
41-Nb-93
Cross Section
-46.43 To 135.6 %
Max Ratio
Min Ratio
TENDL Threshold 1.2579 MeV
JEFF4.0 Threshold 1.2579 MeV
JEFF4.0/TENDL
RatioCross Section (micro-barns)
Incident Energy (eV)
54
41-Nb-93

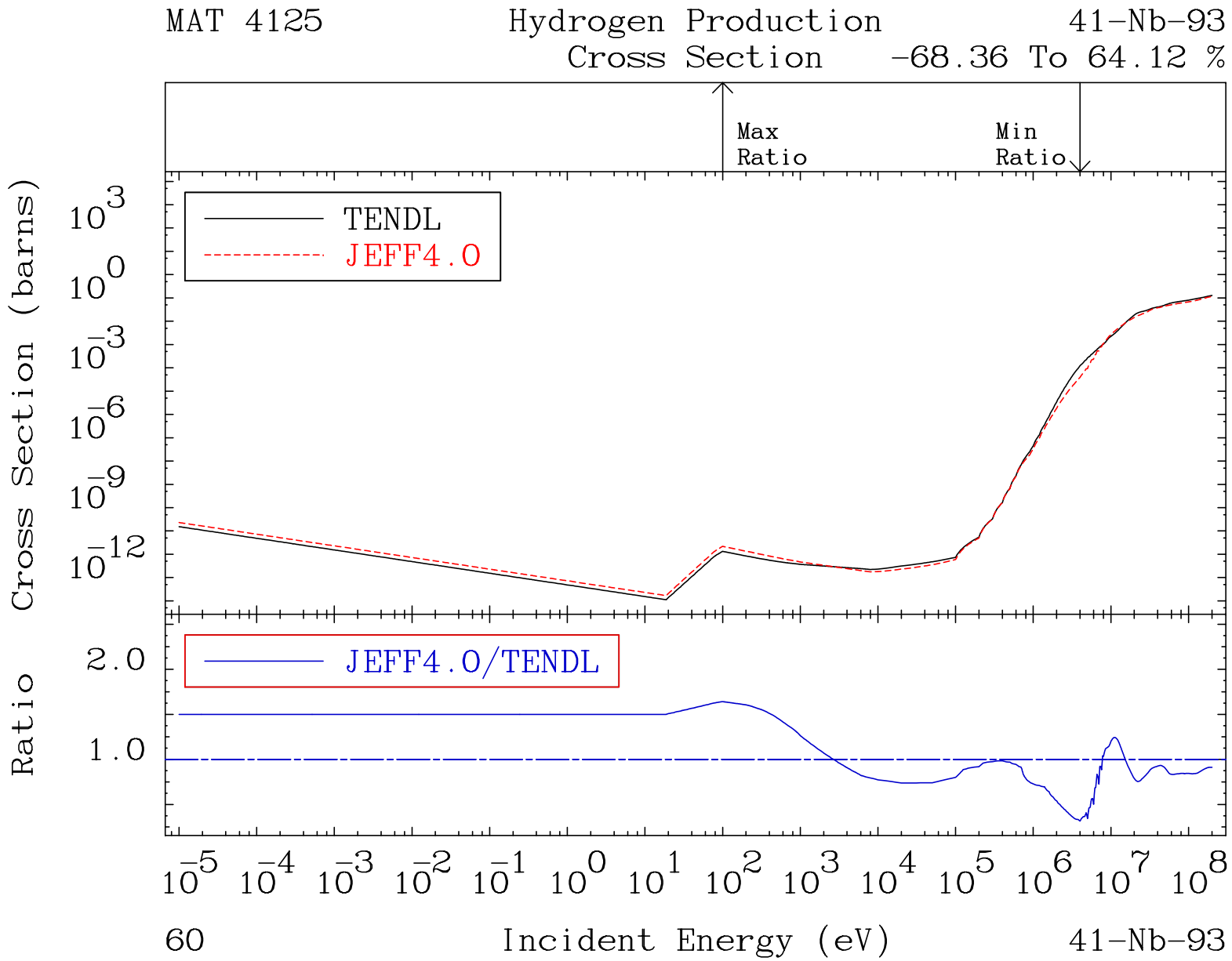

MAT 4125
(n,2p)
41-Nb-93
Cross Section
-82.79 To 24.59 %
Min Ratio
Max Ratio
TENDL Threshold 8.9996 MeV
JEFF4.0 Threshold 8.9996 MeV
JEFF4.0/TENDL
RatioCross Section (micro-barns)
500
400
300
200
100
0
1.8
1.2
0.6
9
10^7
2
3
4
5
6
7
8
9
10^8
2
55
Incident Energy (eV)
41-Nb-93

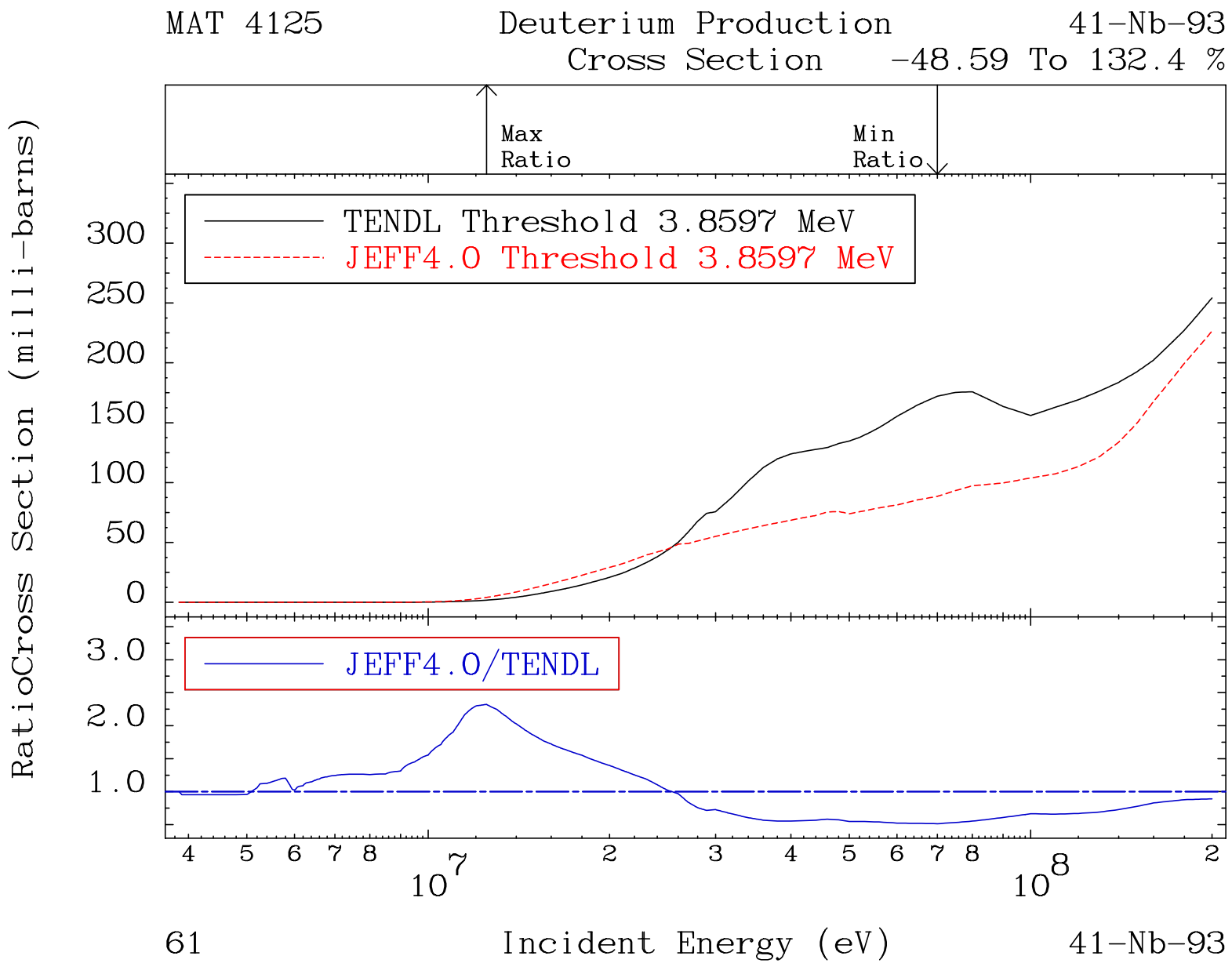

MAT 4125
(n,p) α
Cross Section
41-Nb-93
-62.32 To 24.26 %
Max Ratio
Min Ratio
TENDL Threshold 2.6751 MeV
JEFF4.0 Threshold 2.6751 MeV
120
80
40
0
1.6
1.2
0.8
0.4
JEFF4.0/TENDL
3 4 5 6 7 8 10^7 2 3 4 5 6 7 8 10^8 2
RatioCross Section (micro-barns)
56
Incident Energy (eV)
41-Nb-93

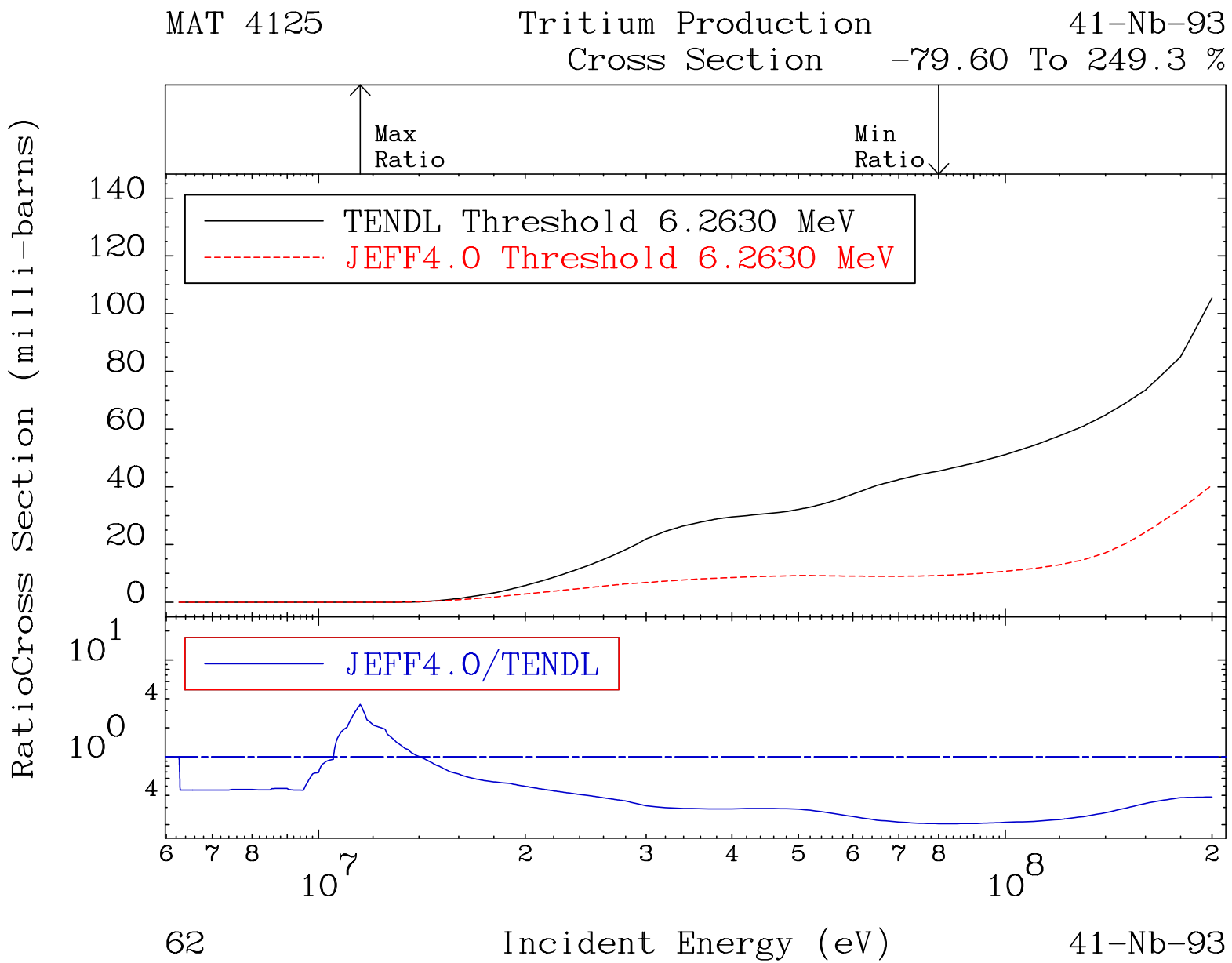

MAT 4125
(n,p) d
Cross Section
41-Nb-93
-93.34 To 0.000 %
Max Ratio
Min Ratio
TENDL Threshold 13.358 MeV
JEFF4.0 Threshold 13.358 MeV
JEFF4.0/TENDL
RatioCross Section (micro-barns)
100
80
60
40
20
0
4
10^{0}
4
10^{-1}
2
3
4
5
6
7
8
9
10^{8}
2
57
Incident Energy (eV)
41-Nb-93

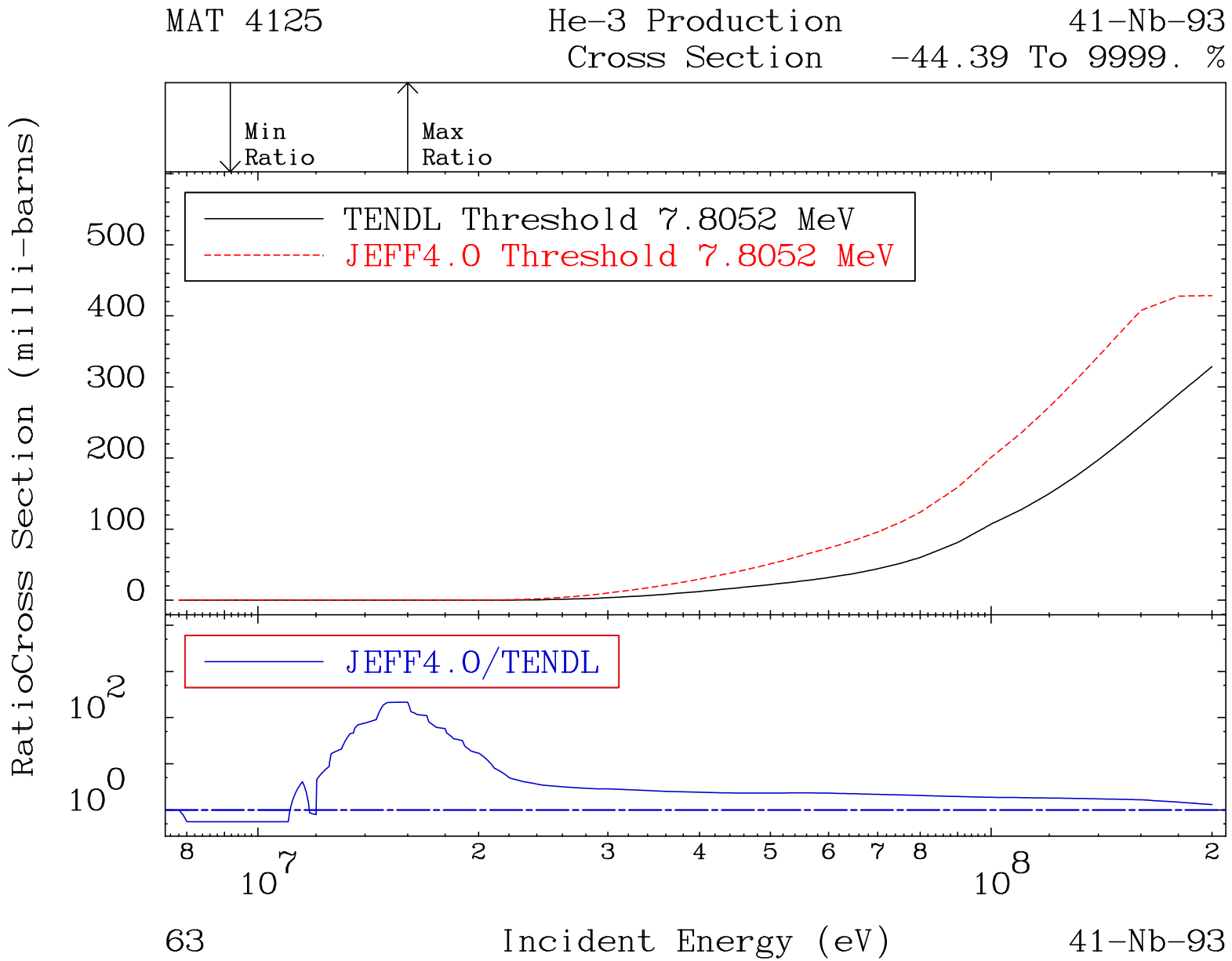

MAT 4125
(n,p) t
Cross Section
41-Nb-93
-88.63 To 0.000 %
Max Ratio
Min Ratio
TENDL Threshold 15.045 MeV
JEFF4.0 Threshold 15.045 MeV
JEFF4.0/TENDL
RatioCross Section (micro-barns)
40
30
20
10
0
1.2
0.8
0.4
2
3
4
5
6
7
8
9
10^8
2
58
Incident Energy (eV)
41-Nb-93

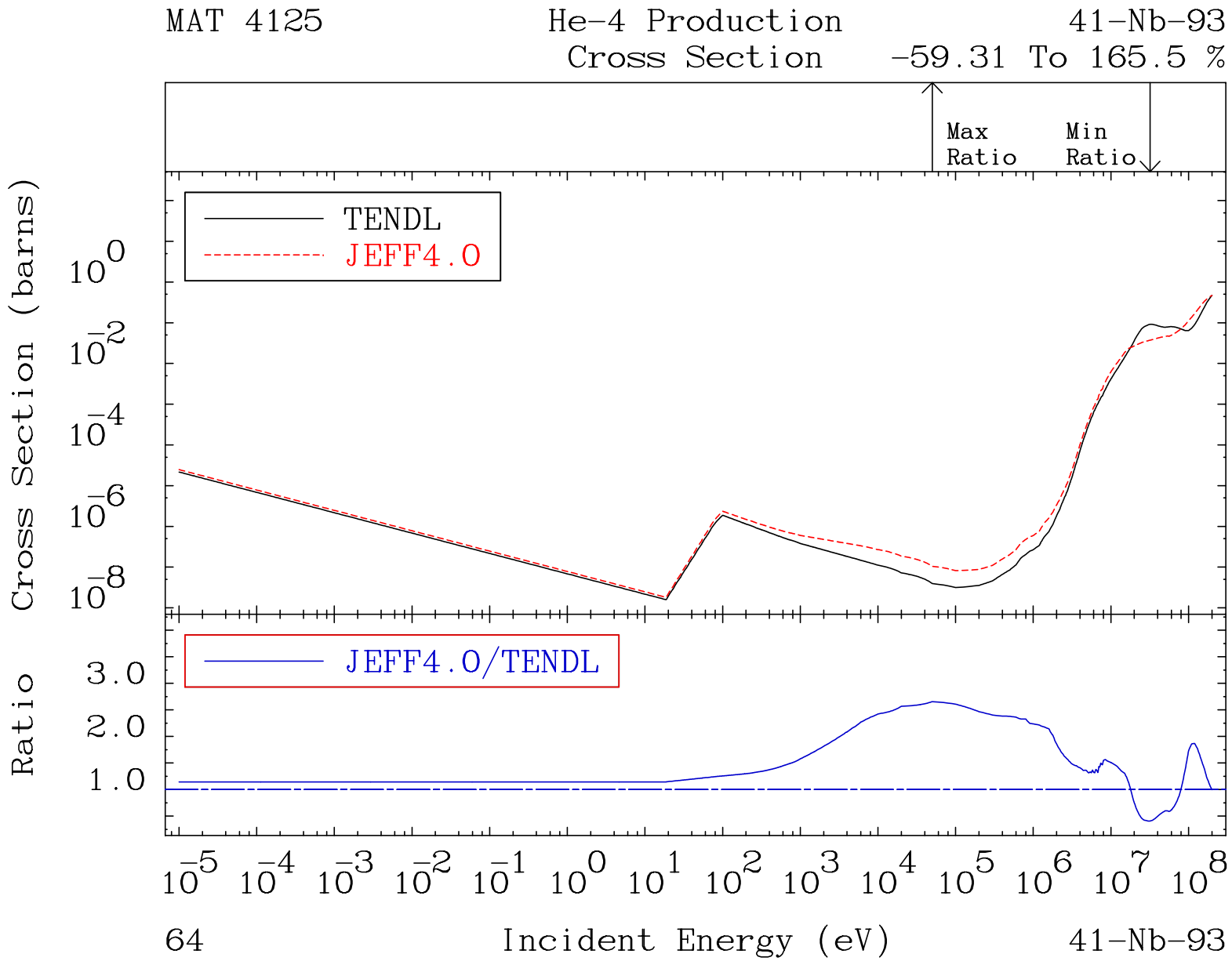

MAT 4125
(n,d) α
Cross Section
41-Nb-93
-78.87 To 73.55 %
Max Ratio
Min Ratio
TENDL Threshold 6.8541 MeV
JEFF4.0 Threshold 6.8541 MeV
JEFF4.0/TENDL
RatioCross Section (micro-barns)
25
20
15
10
5
0
2.0
1.0
7 8 10^7 2 3 4 5 6 7 8 10^8 2
59
Incident Energy (eV)
41-Nb-93

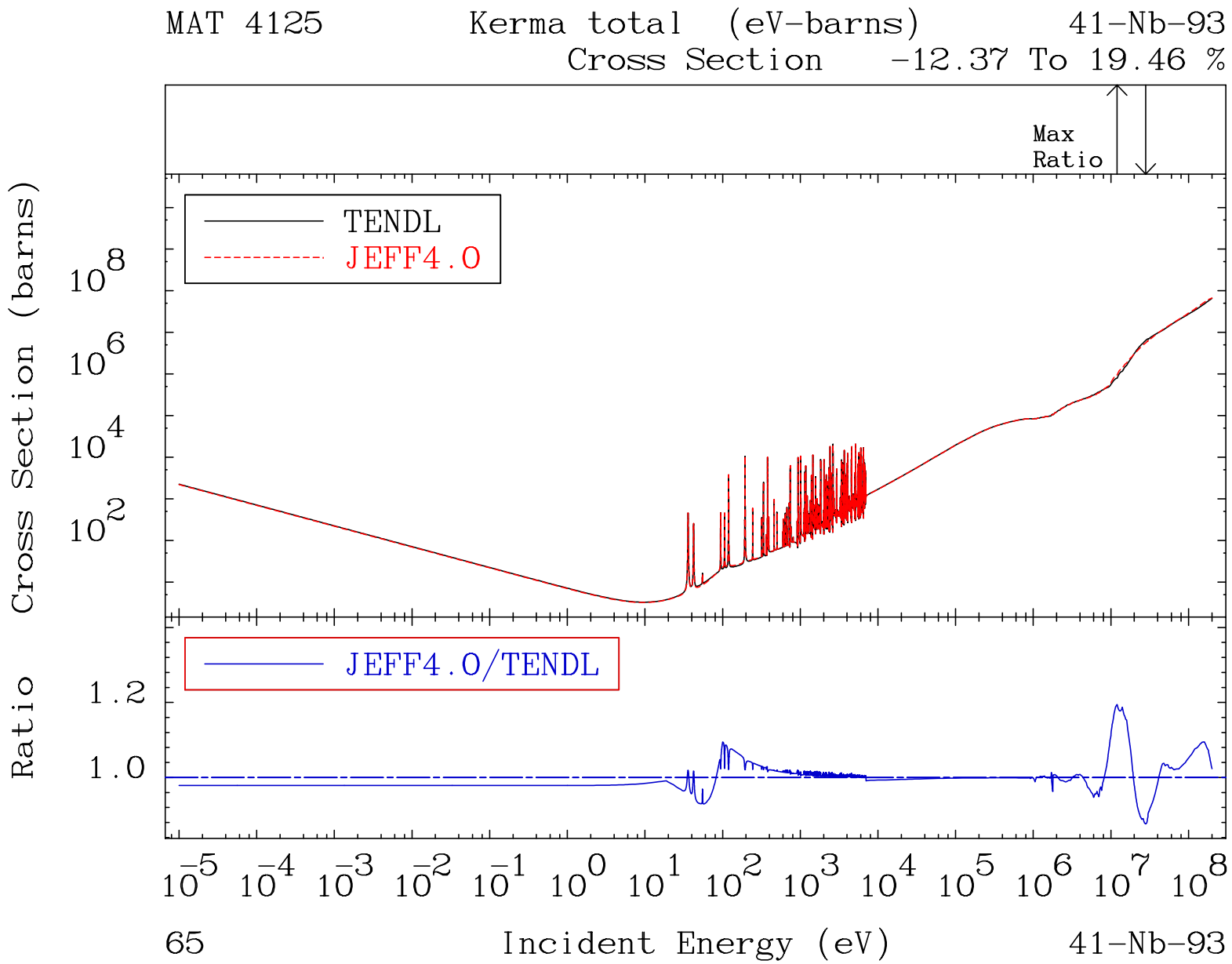

MAT 4125
Hydrogen Production
41-Nb-93
Cross Section
-68.36 To 64.12 %
Max Ratio
Min Ratio
TENDL
JEFF4.0
JEFF4.0/TENDL
Cross Section (barns)
Ratio
Incident Energy (eV)
60
41-Nb-93

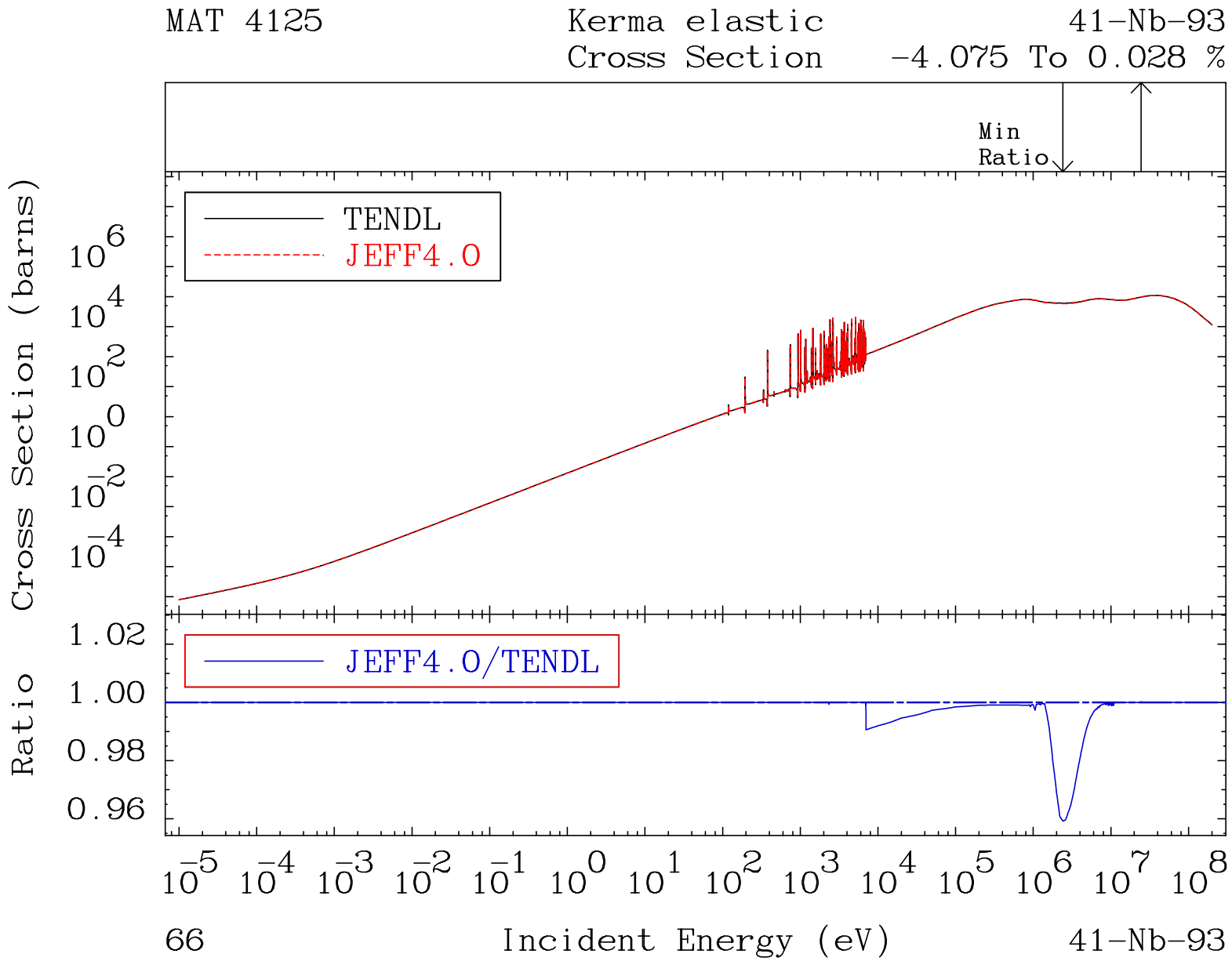

MAT 4125
Deuterium Production
41-Nb-93
Cross Section -48.59 To 132.4 %
Max Ratio
Min Ratio
TENDL Threshold 3.8597 MeV
JEFF4.0 Threshold 3.8597 MeV
JEFF4.0/TENDL
RatioCross Section (milli-barns)
300
250
200
150
100
50
0
3.0
2.0
1.0
4 5 6 7 8
10^7
2 3 4 5 6 7 8
10^8
2
61
Incident Energy (eV)
41-Nb-93

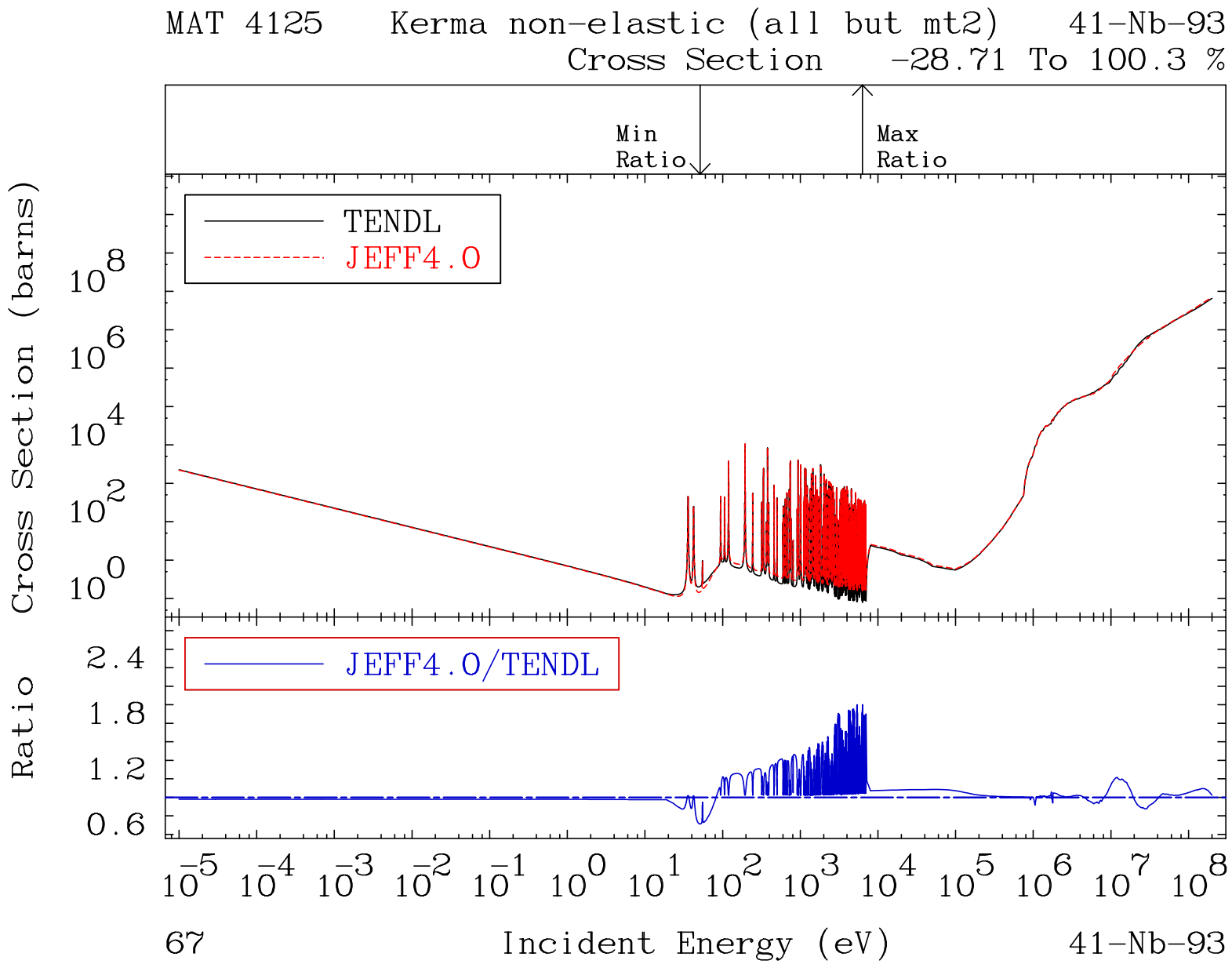

MAT 4125
Tritium Production
41-Nb-93
Cross Section
-79.60 To 249.3 %
Max
Ratio
Min
Ratio
TENDL Threshold 6.2630 MeV
JEFF4.0 Threshold 6.2630 MeV
JEFF4.0/TENDL
RatioCross Section (milli-barns)
140
120
100
80
60
40
20
0
10^1
4
10^0
4
6 7 8
10^7
2 3 4 5 6 7 8
10^8
2
62
Incident Energy (eV)
41-Nb-93

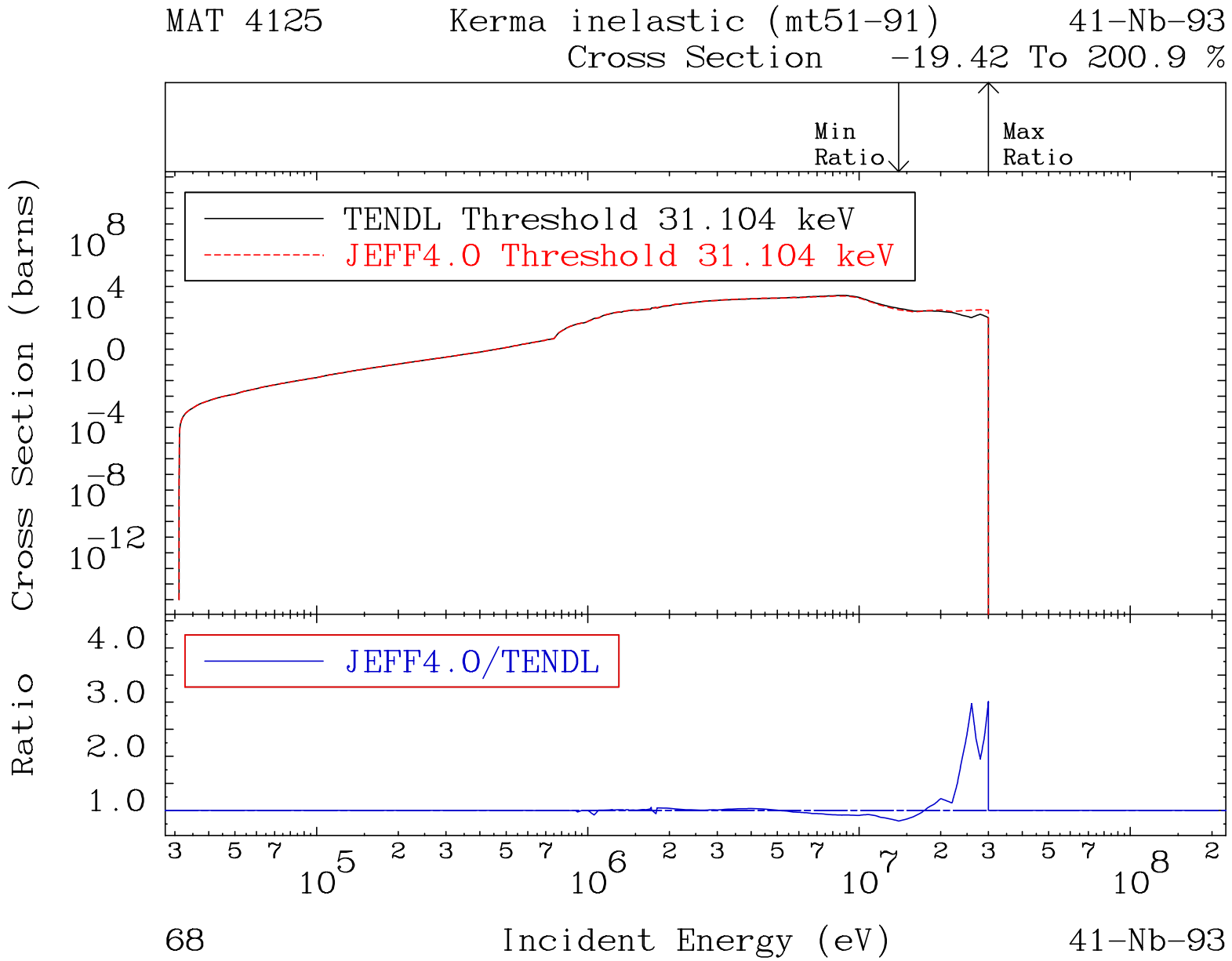

MAT 4125
He-3 Production
Cross Section
41-Nb-93
-44.39 To 9999. %
Min Ratio
Max Ratio
TENDL Threshold 7.8052 MeV
JEFF4.0 Threshold 7.8052 MeV
JEFF4.0/TENDL
RatioCross Section (milli-barns)
500
400
300
200
100
0
10^2
10^0
8
10^7
2
3
4
5
6
7
8
10^8
2
63
Incident Energy (eV)
41-Nb-93

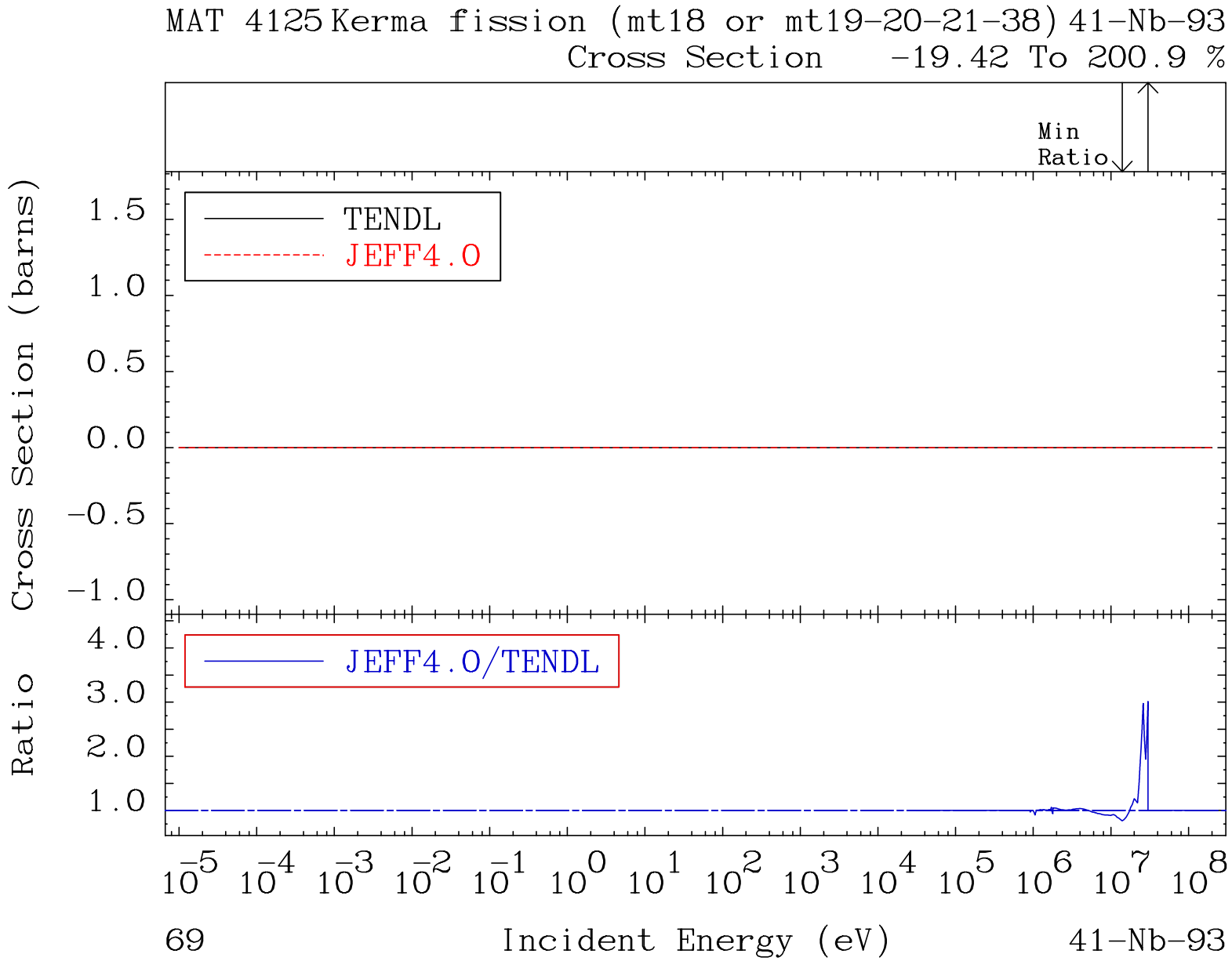

MAT 4125
He-4 Production
Cross Section
41-Nb-93
-59.31 To 165.5 %
Max Ratio
Min Ratio
TENDL
JEFF4.0
Cross Section (barns)
Ratio
JEFF4.0/TENDL
Incident Energy (eV)
64
41-Nb-93

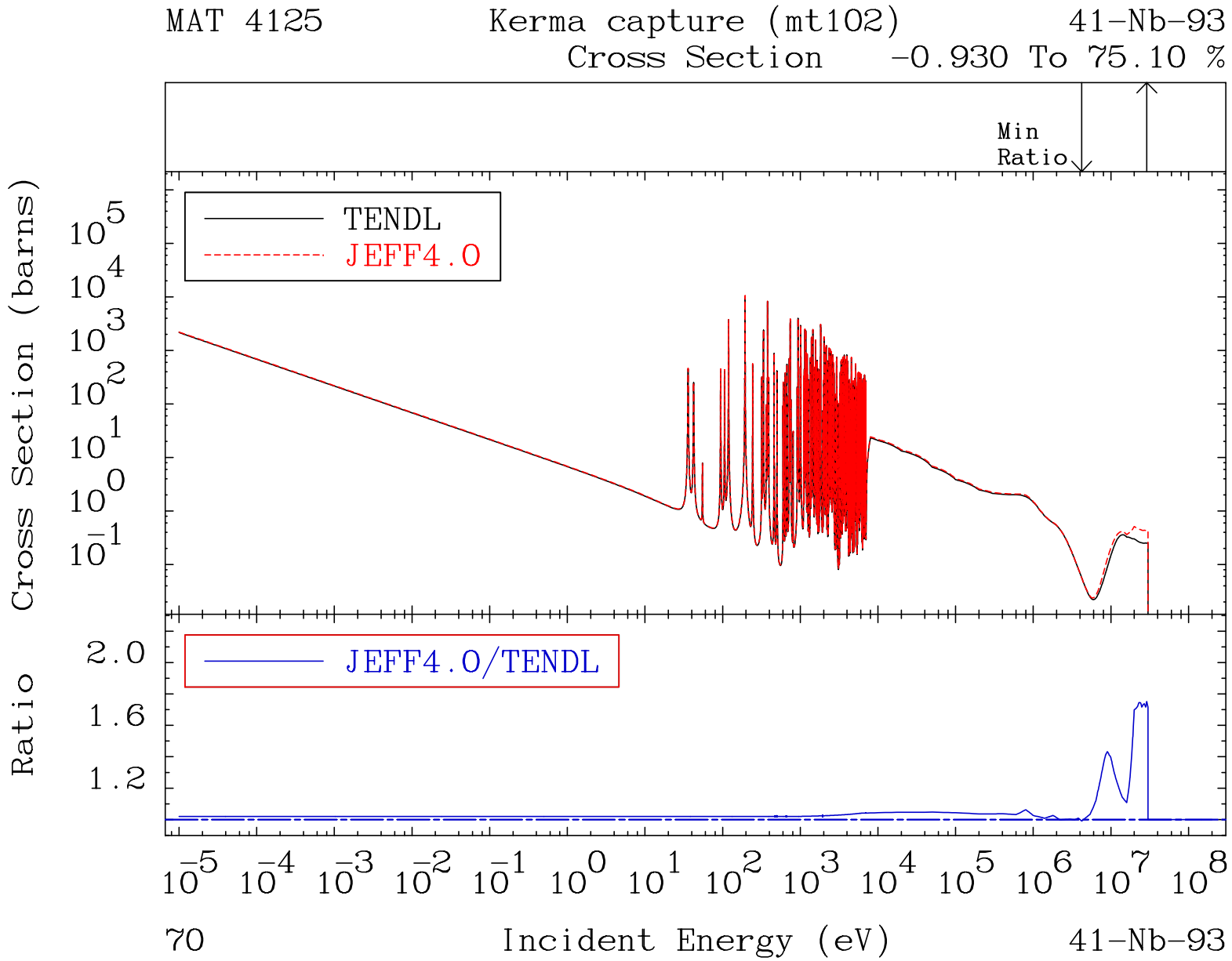

MAT 4125
Kerma total (eV-barns)
41-Nb-93
Cross Section -12.37 To 19.46 %
Max
Ratio
TENDL
JEFF4.0
Cross Section (barns)
10^8
10^6
10^4
10^2
JEFF4.0/TENDL
Ratio
1.2
1.0
10^{-5} 10^{-4} 10^{-3} 10^{-2} 10^{-1} 10^0 10^1 10^2 10^3 10^4 10^5 10^6 10^7 10^8
65
Incident Energy (eV)
41-Nb-93

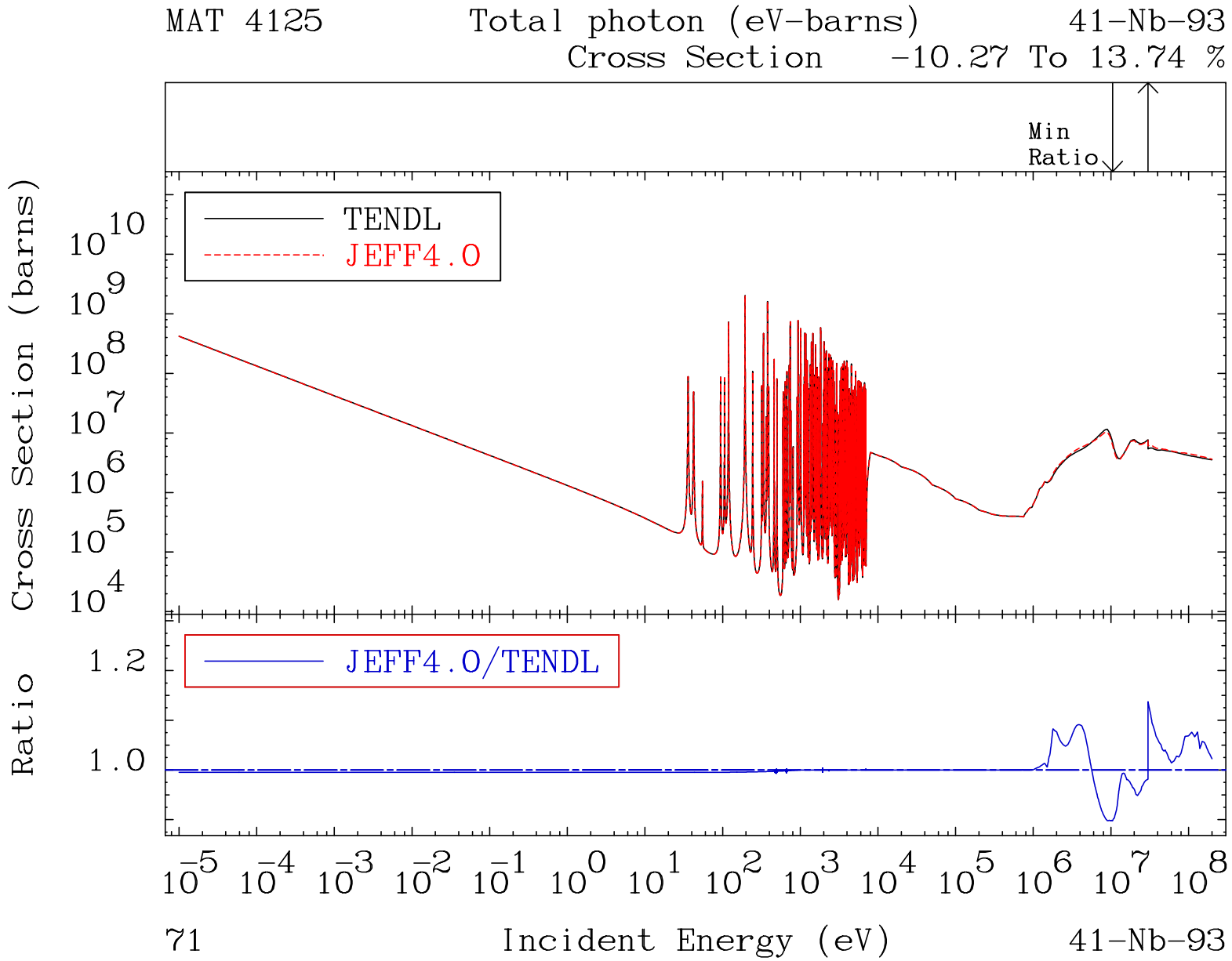

MAT 4125
Kerma elastic
Cross Section
41-Nb-93
-4.075 To 0.028 %
Min
Ratio
TENDL
JEFF4.0
JEFF4.0/TENDL
Cross Section (barns)
Ratio
Incident Energy (eV)
66
41-Nb-93

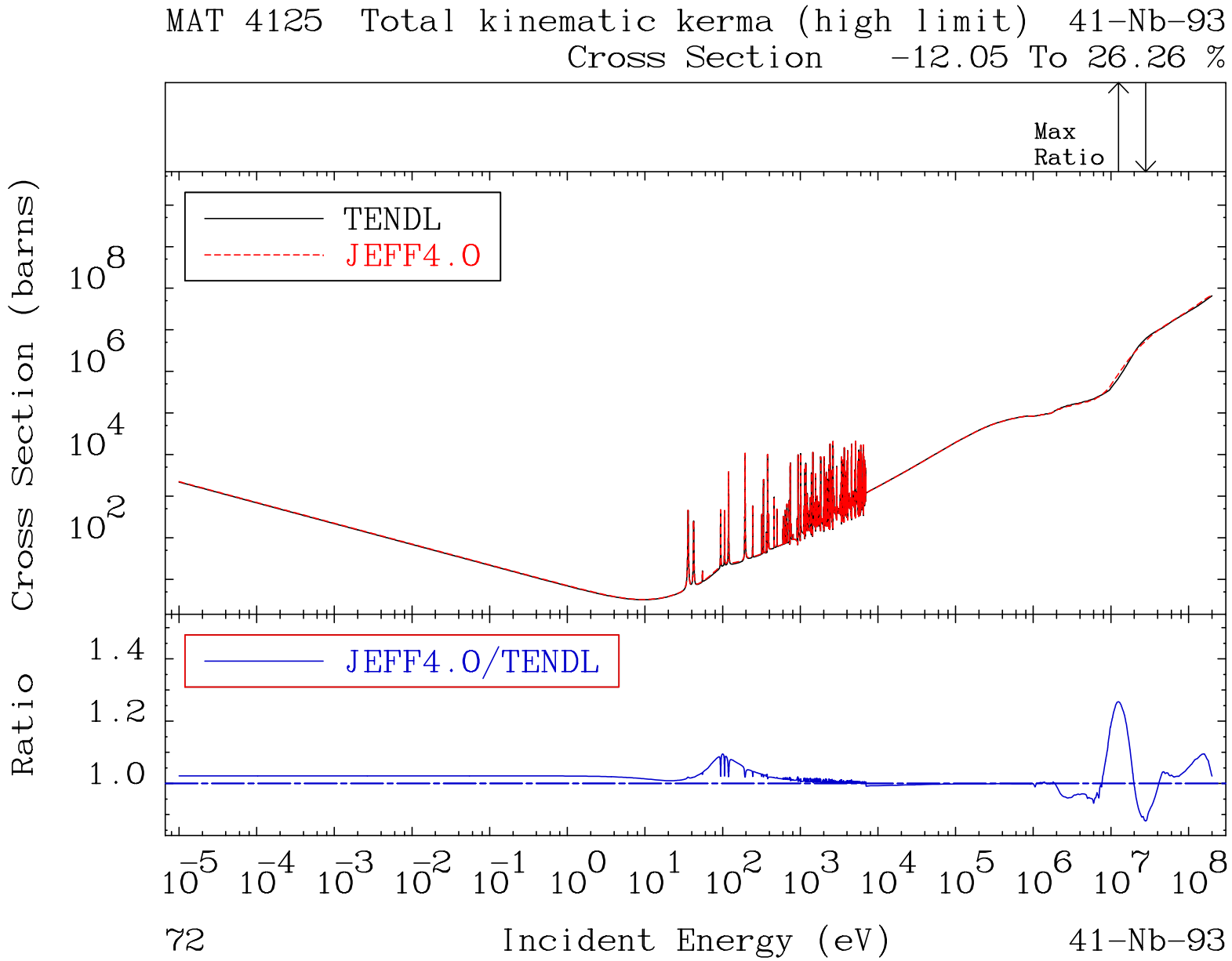

MAT 4125 Kerma non-elastic (all but mt2) 41-Nb-93
Cross Section -28.71 To 100.3 %
Min Ratio
Max Ratio
TENDL
JEFF4.0
Cross Section (barns)
JEFF4.0/TENDL
Ratio
Incident Energy (eV)
67
41-Nb-93

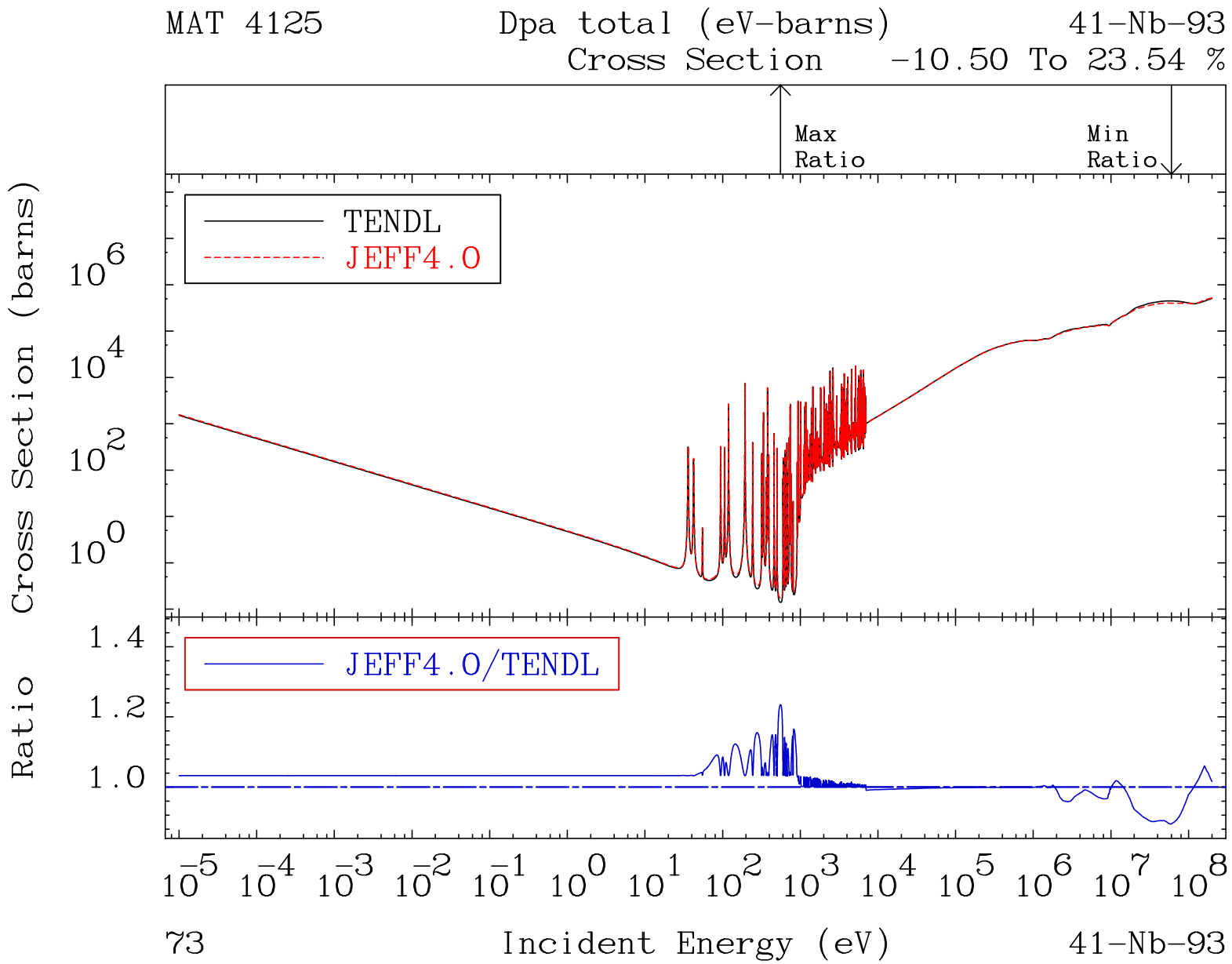

MAT 4125
Kerma inelastic (mt51-91)
41-Nb-93
Cross Section -19.42 To 200.9 %
Min Ratio
Max Ratio
TENDL Threshold 31.104 keV
JEFF4.0 Threshold 31.104 keV
Cross Section (barns)
JEFF4.0/TENDL
Ratio
68
Incident Energy (eV)
41-Nb-93

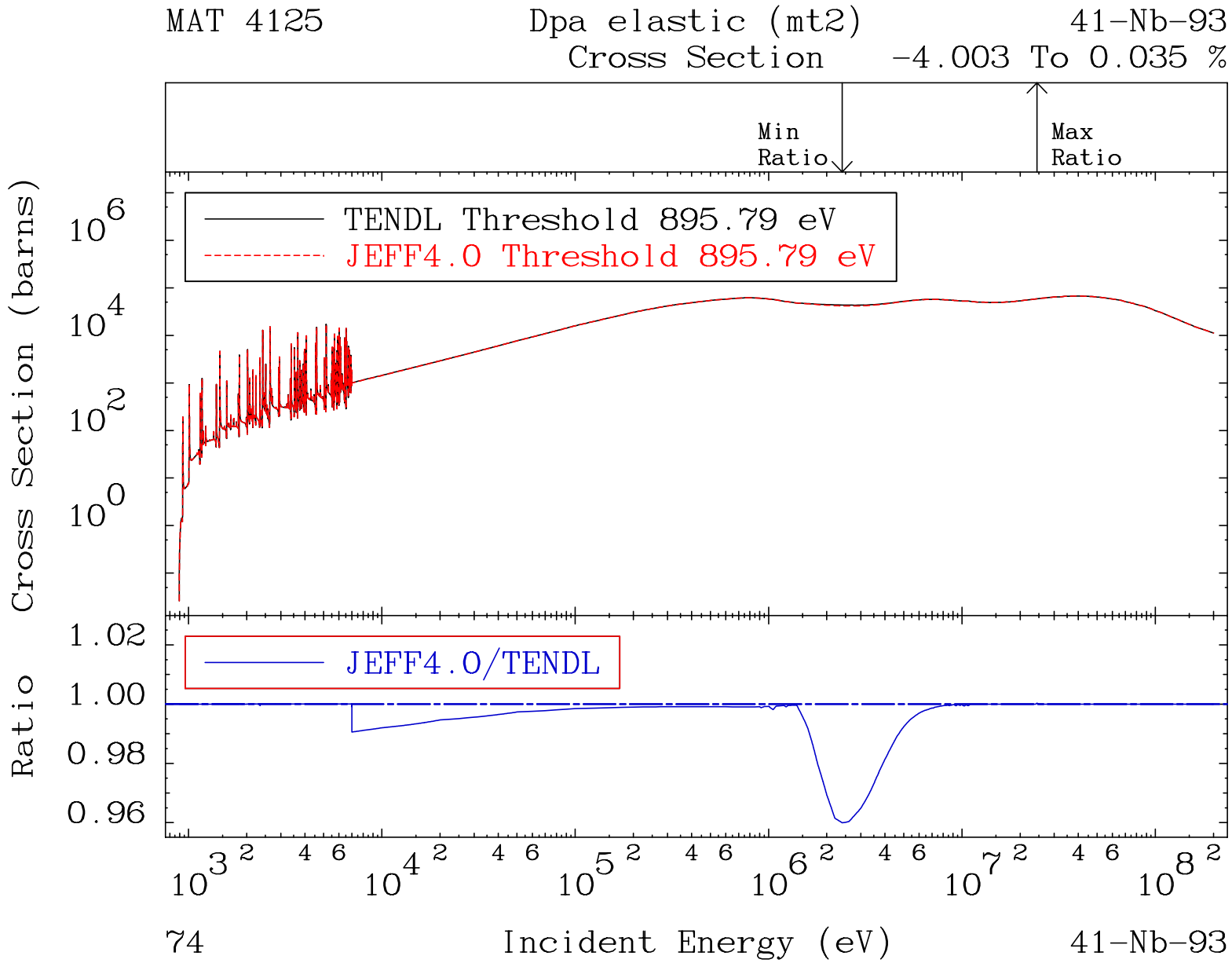

MAT 4125 Kerma fission (mt18 or mt19-20-21-38) 41-Nb-93
Cross Section -19.42 To 200.9 %
Min
Ratio
TENDL
JEFF4.0
JEFF4.0/TENDL
Cross Section (barns)
Ratio
1.5
1.0
0.5
0.0
-0.5
-1.0
4.0
3.0
2.0
1.0
10^-5 10^-4 10^-3 10^-2 10^-1 10^0 10^1 10^2 10^3 10^4 10^5 10^6 10^7 10^8
69
Incident Energy (eV)
41-Nb-93

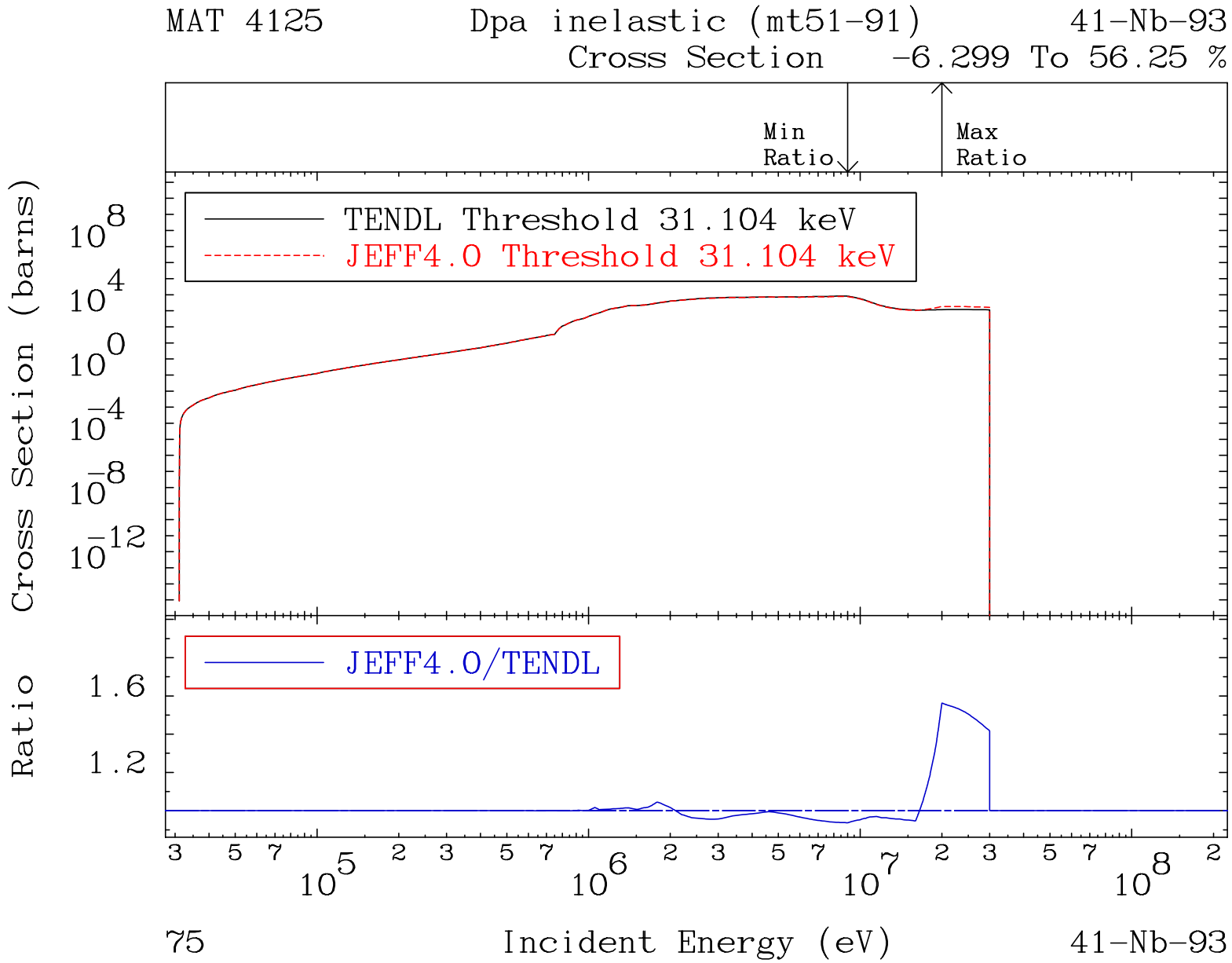

MAT 4125
Kerma capture (mt102)
41-Nb-93
Cross Section -0.930 To 75.10 %
Min
Ratio
TENDL
JEFF4.0
Cross Section (barns)
JEFF4.0/TENDL
Ratio
Incident Energy (eV)
70
41-Nb-93

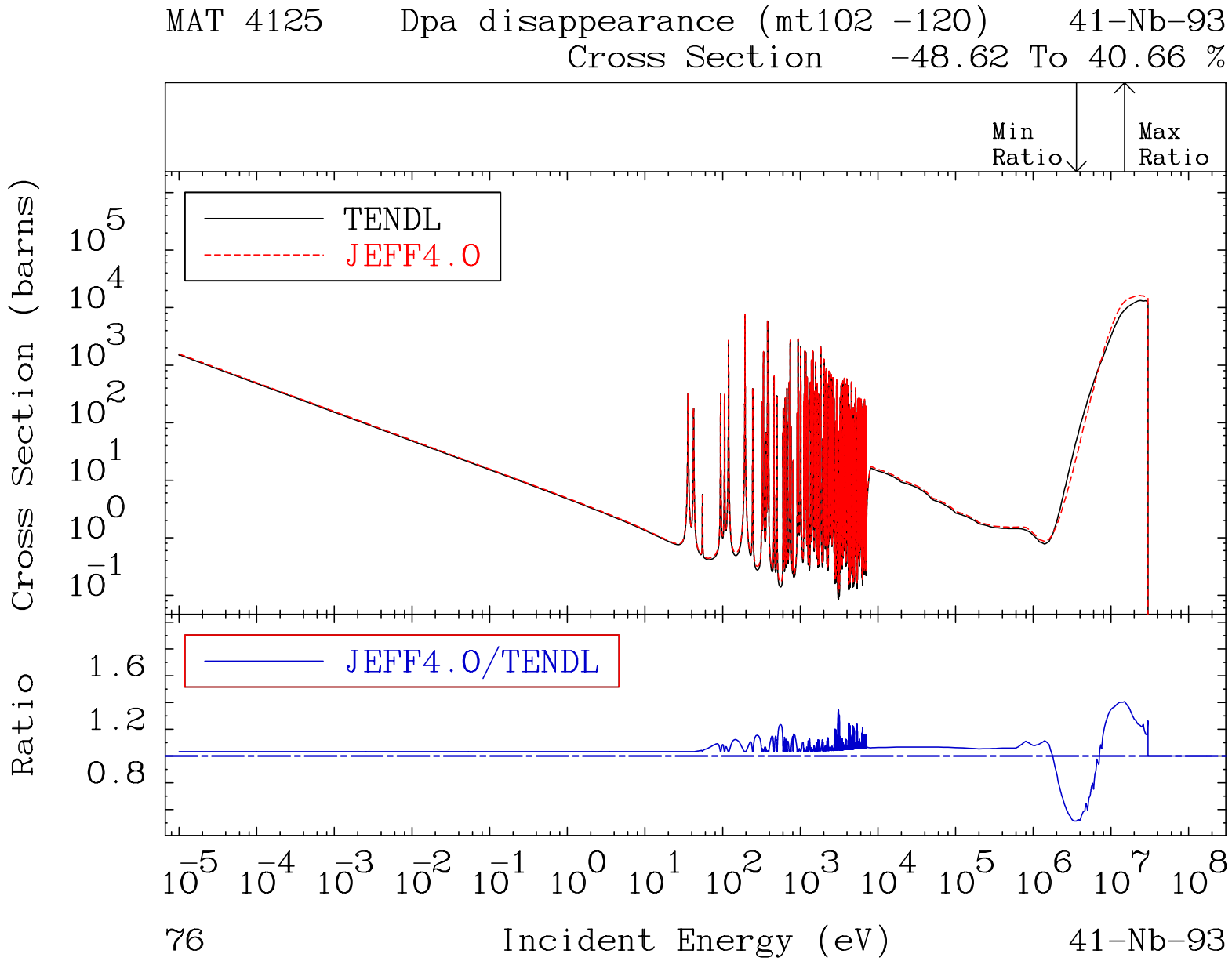

MAT 4125
Total photon (eV-barns)
41-Nb-93
Cross Section
-10.27 To 13.74 %
Min
Ratio
TENDL
JEFF4.0
Cross Section (barns)
JEFF4.0/TENDL
Ratio
Incident Energy (eV)
71
41-Nb-93

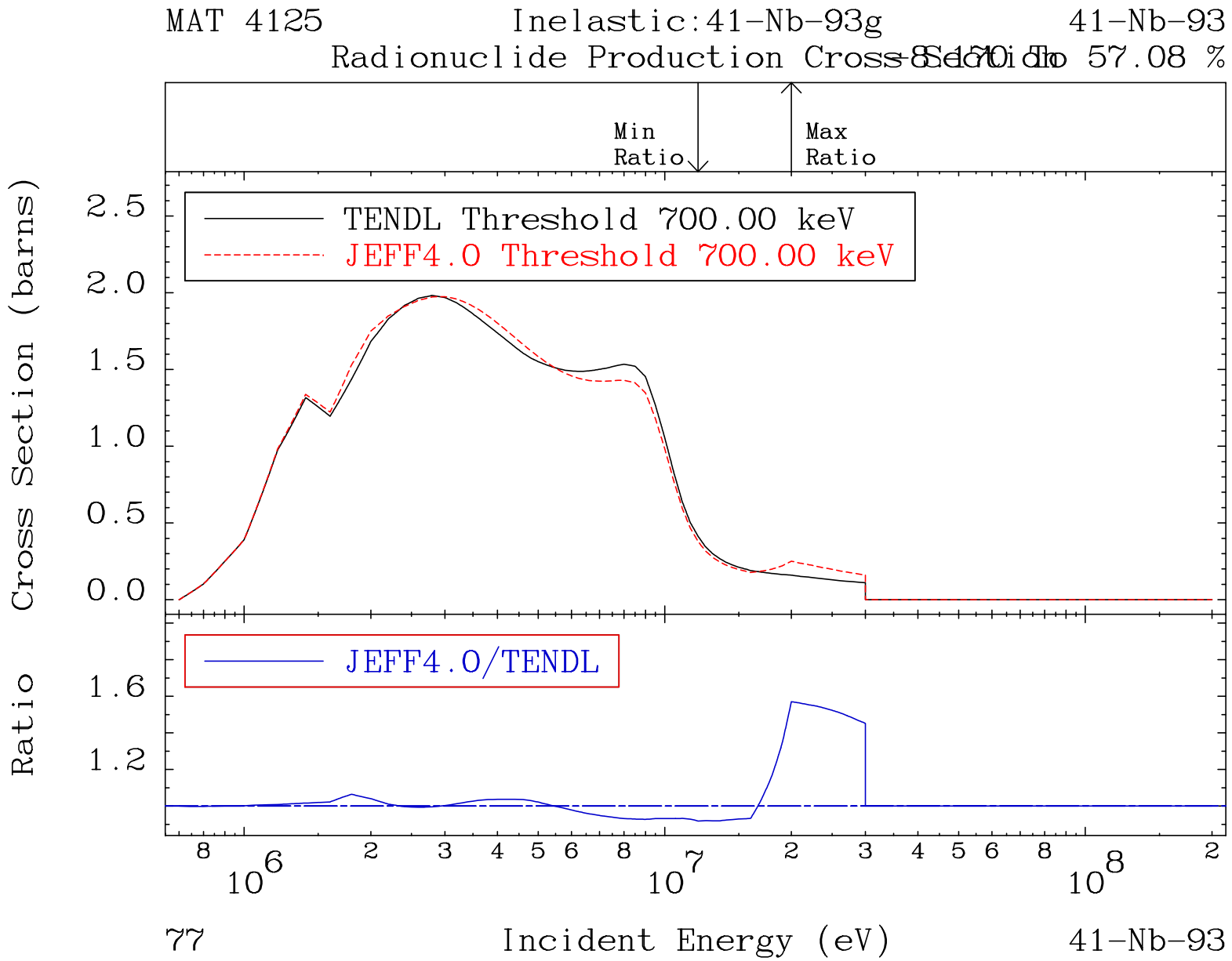

MAT 4125 Total kinematic kerma (high limit) 41-Nb-93
Cross Section -12.05 To 26.26 %
Max
Ratio
TENDL
JEFF4.0
Cross Section (barns)
10^8
10^6
10^4
10^2
JEFF4.0/TENDL
Ratio
1.4
1.2
1.0
10^-5 10^-4 10^-3 10^-2 10^-1 10^0 10^1 10^2 10^3 10^4 10^5 10^6 10^7 10^8
72
Incident Energy (eV)
41-Nb-93

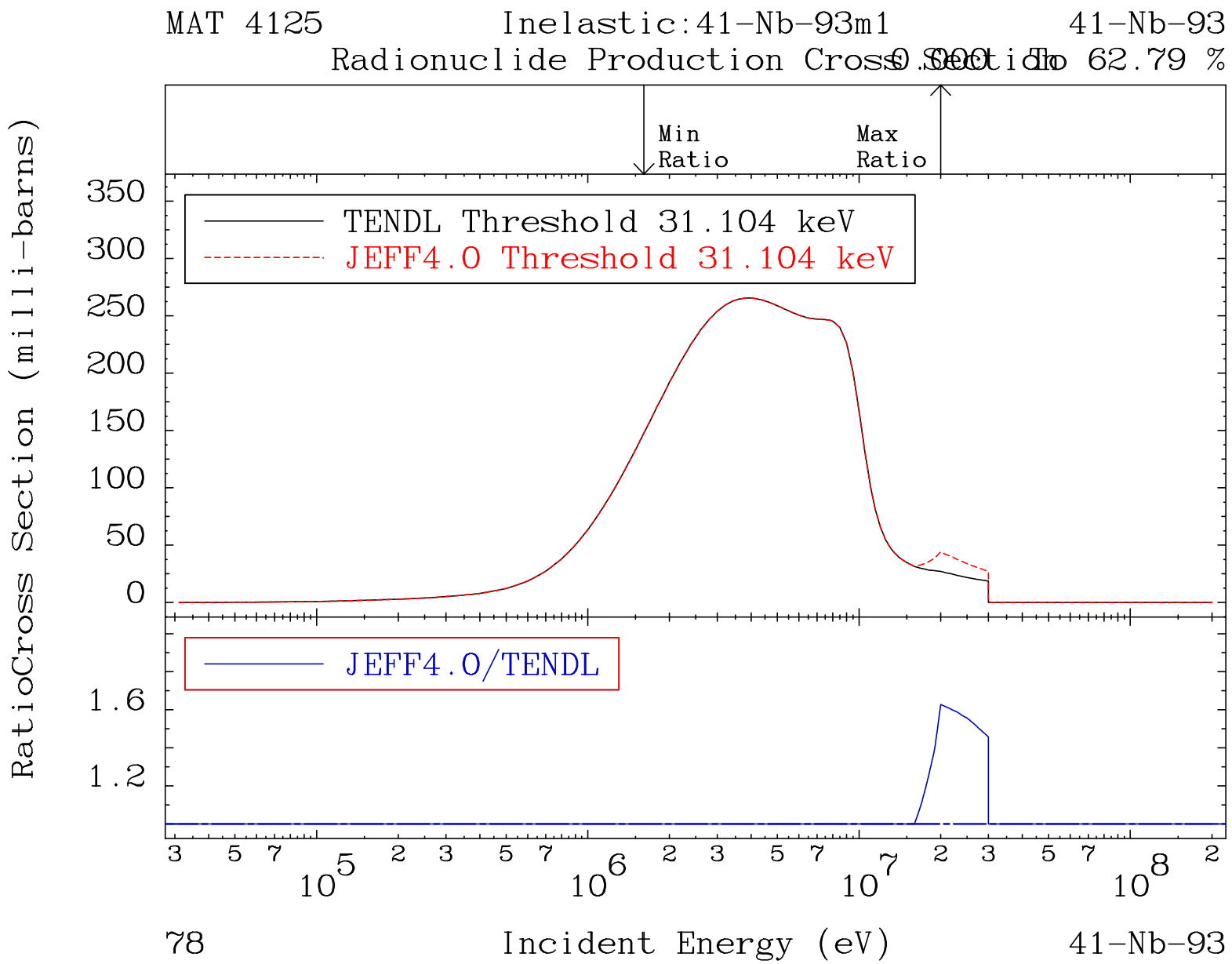

MAT 4125
Dpa total (eV-barns)
41-Nb-93
Cross Section -10.50 To 23.54 %
Max Ratio
Min Ratio
TENDL
JEFF4.0
Cross Section (barns)
JEFF4.0/TENDL
Ratio
Incident Energy (eV)
73
41-Nb-93

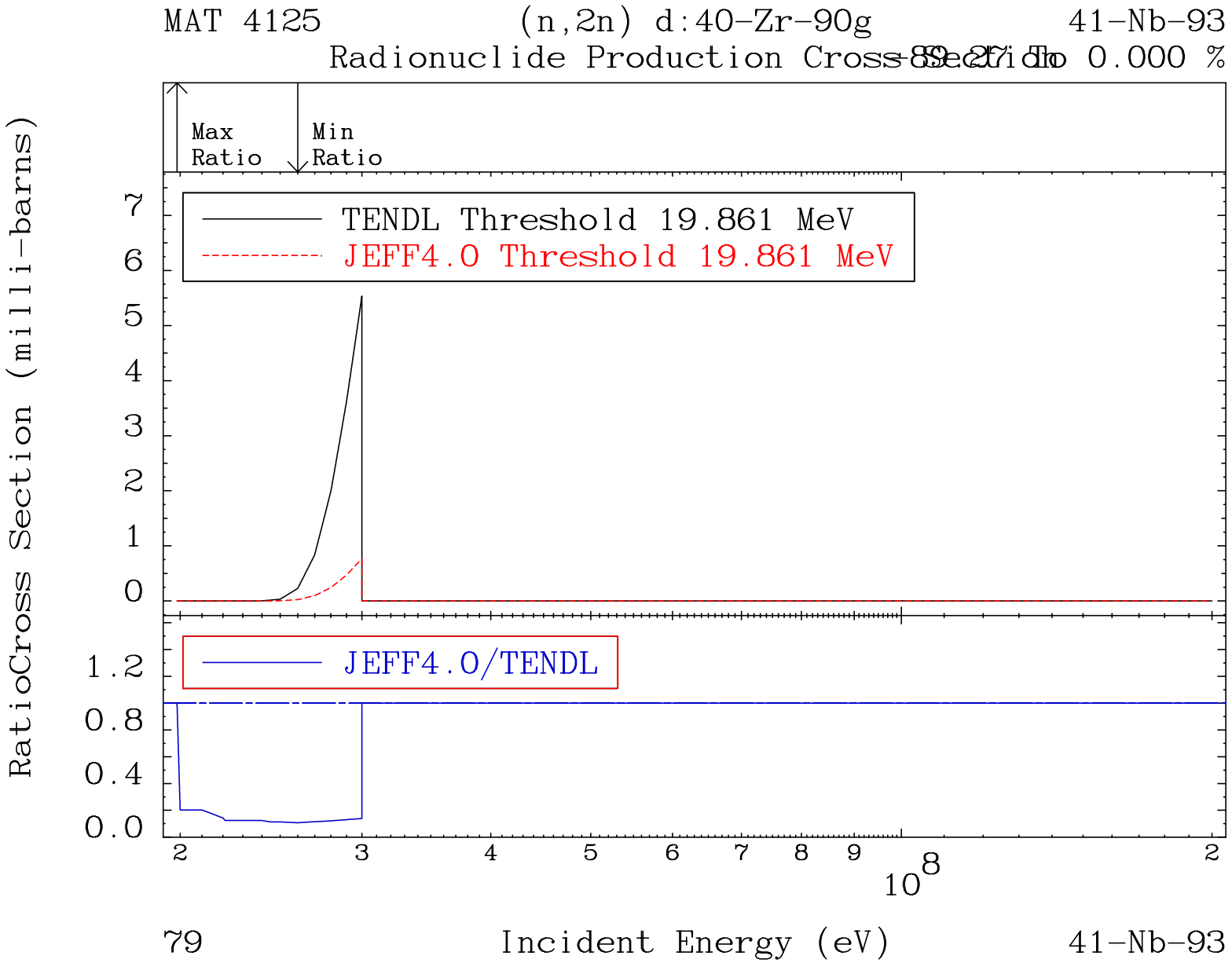

MAT 4125
Dpa elastic (mt2)
Cross Section
41-Nb-93
-4.003 To 0.035 %
Min Ratio
Max Ratio
TENDL Threshold 895.79 eV
JEFF4.0 Threshold 895.79 eV
JEFF4.0/TENDL
Cross Section (barns)
Ratio
Incident Energy (eV)
74
41-Nb-93

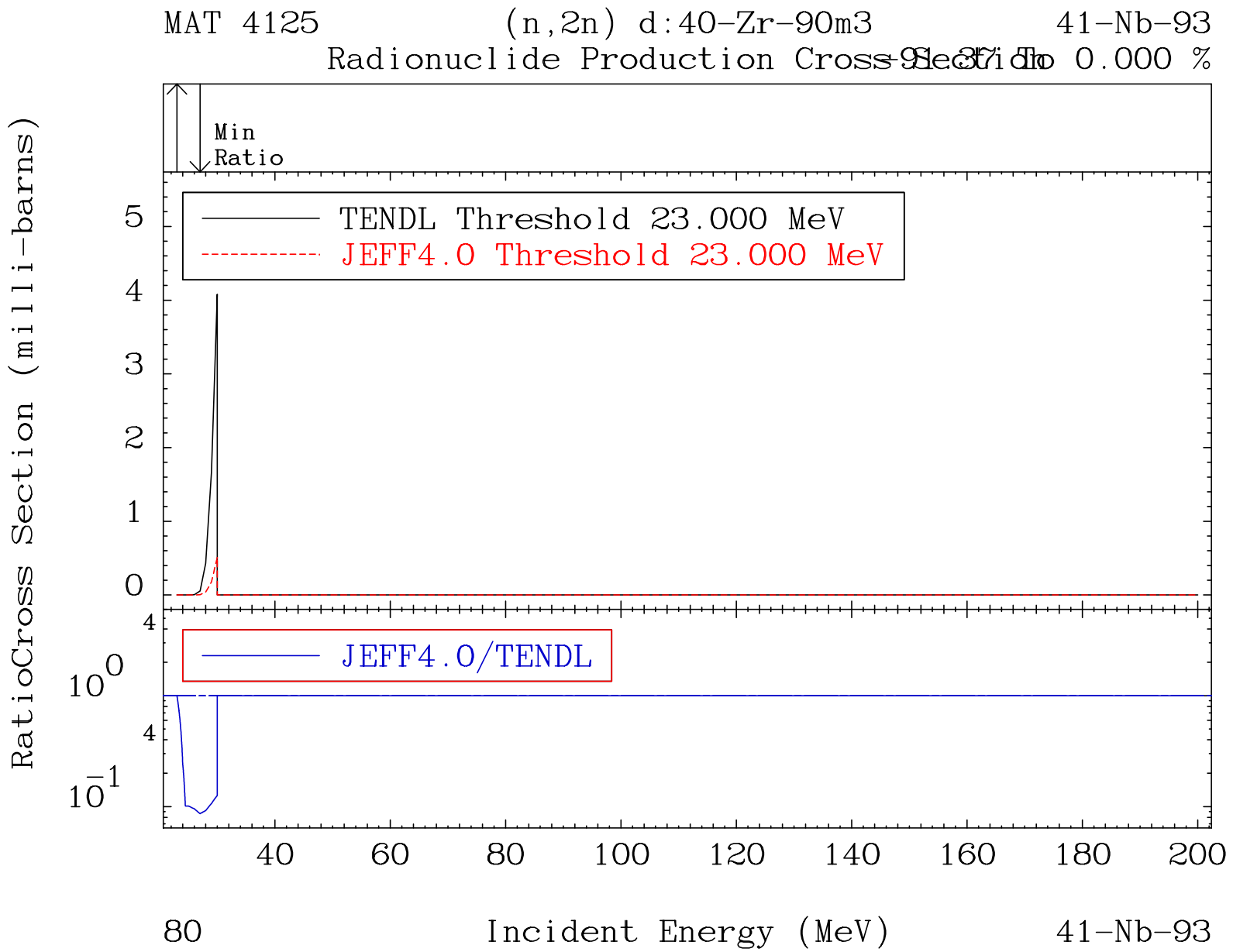

MAT 4125
Dpa inelastic (mt51-91)
41-Nb-93
Cross Section
-6.299 To 56.25 %
Min Ratio
Max Ratio
TENDL Threshold 31.104 keV
JEFF4.0 Threshold 31.104 keV
Cross Section (barns)
JEFF4.0/TENDL
Ratio
Incident Energy (eV)
75
41-Nb-93

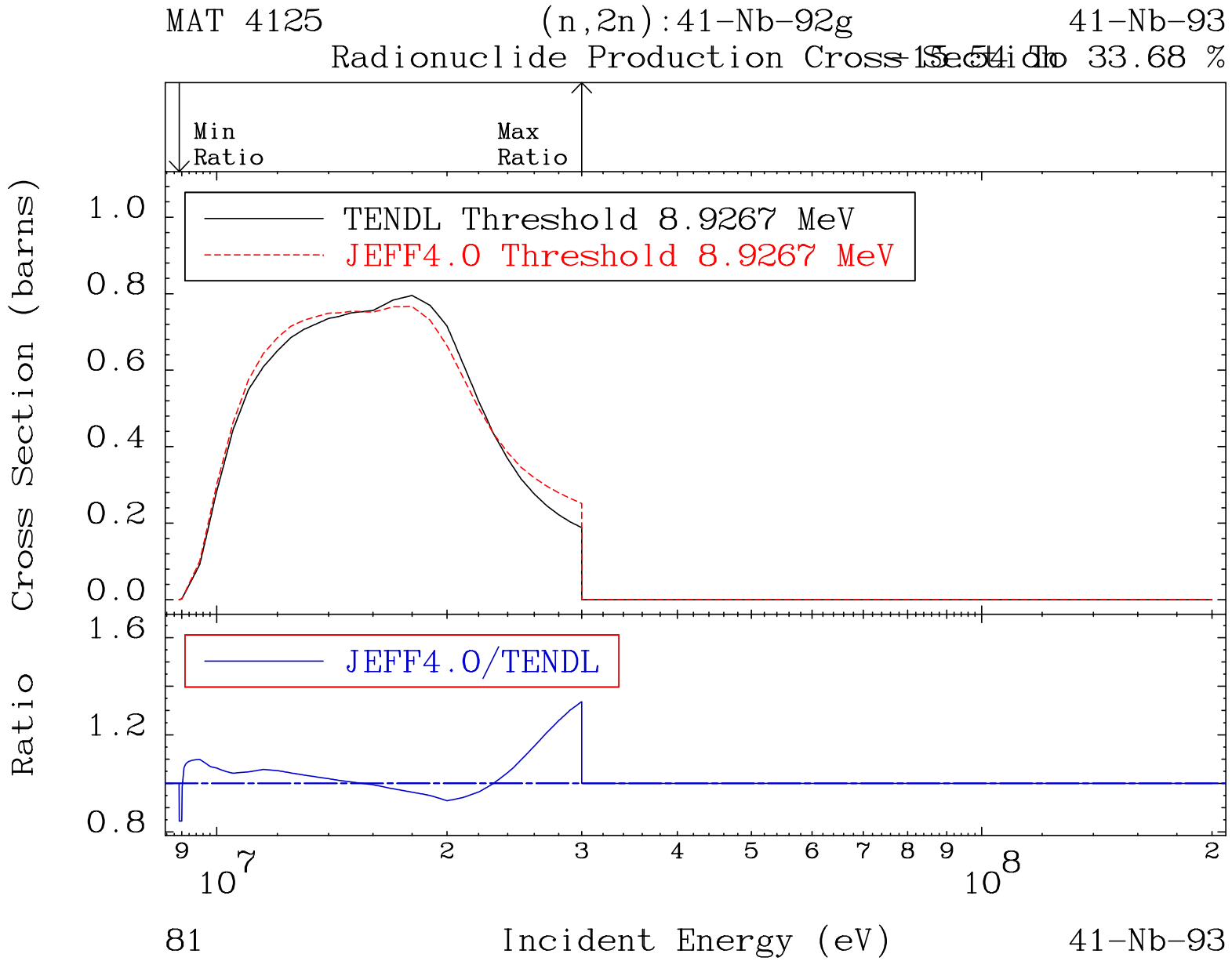

MAT 4125 Dpa disappearance (mt102 -120) 41-Nb-93
Cross Section -48.62 To 40.66 %
Min Ratio
Max Ratio
TENDL
JEFF4.0
Cross Section (barns)
JEFF4.0/TENDL
Ratio
Incident Energy (eV)
76
41-Nb-93

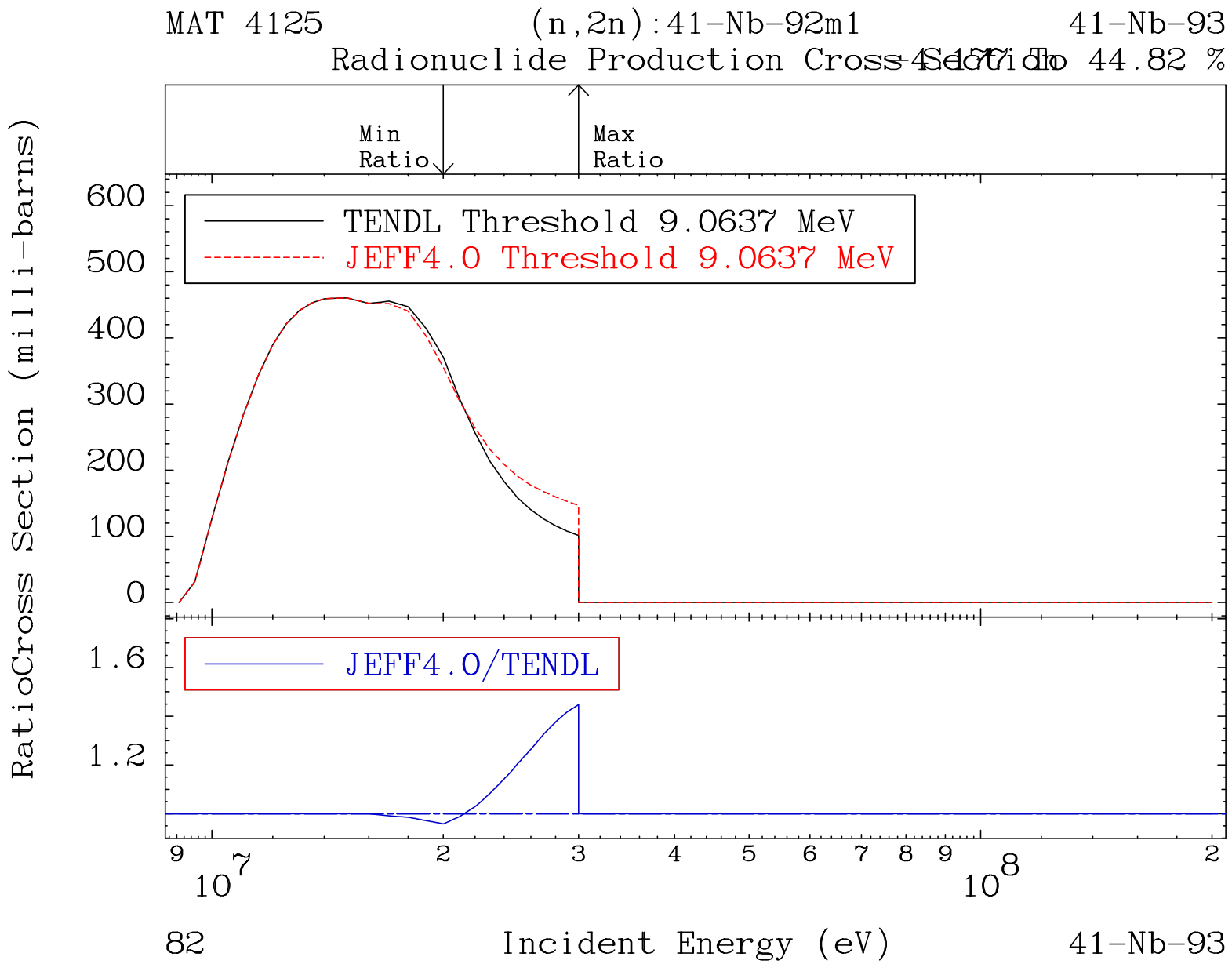

MAT 4125
Inelastic:41-Nb-93g
41-Nb-93
Radionuclide Production Cross-Section
Min Ratio
Max Ratio
TENDL Threshold 700.00 keV
JEFF4.0 Threshold 700.00 keV
JEFF4.0/TENDL
Cross Section (barns)
Ratio
Incident Energy (eV)
77
41-Nb-93

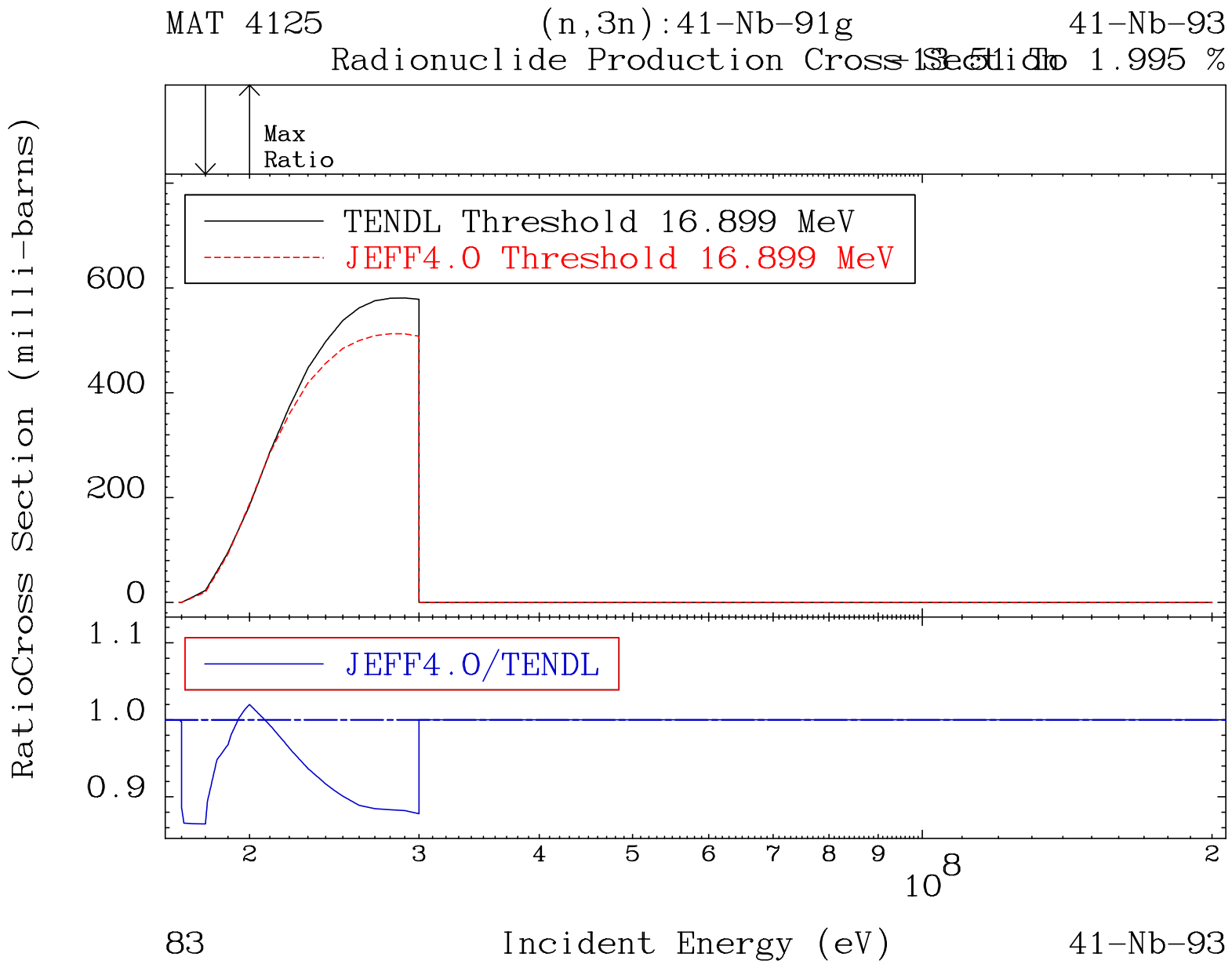

MAT 4125
Inelastic:41-Nb-93m1
41-Nb-93
Radionuclide Production Cross Section
0.000 To 62.79 %
Min Ratio
Max Ratio
TENDL Threshold 31.104 keV
JEFF4.0 Threshold 31.104 keV
JEFF4.0/TENDL
RatioCross Section (milli-barns)
350
300
250
200
150
100
50
0
1.6
1.2
3 5 7 10^5 2 3 5 7 10^6 2 3 5 7 10^7 2 3 5 7 10^8 2
78
Incident Energy (eV)
41-Nb-93

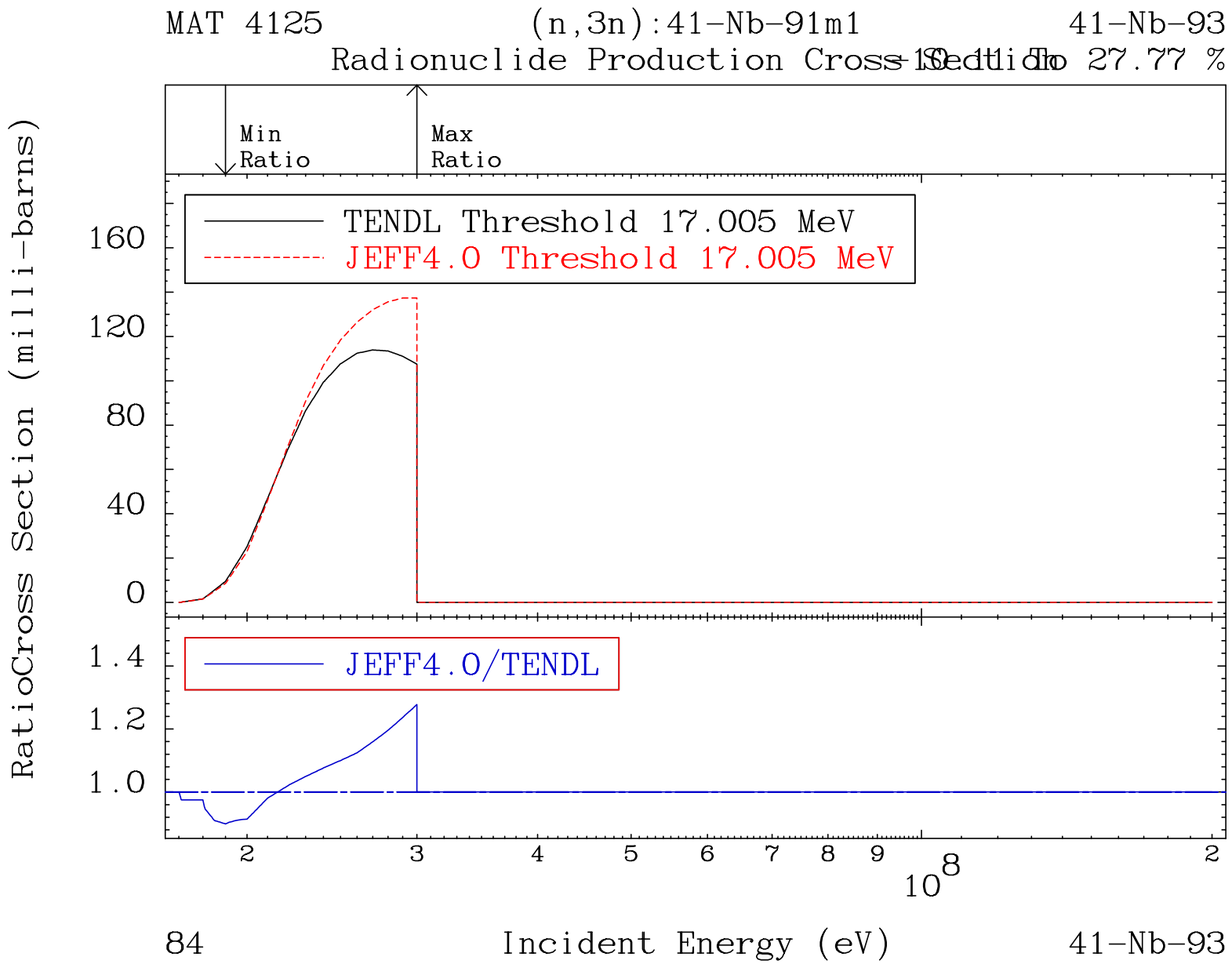

MAT 4125
(n,2n) d:40-Zr-90g
41-Nb-93
Radionuclide Production Cross Section To 0.000 %
Max Ratio
Min Ratio
TENDL Threshold 19.861 MeV
JEFF4.0 Threshold 19.861 MeV
JEFF4.0/TENDL
RatioCross Section (milli-barns)
Incident Energy (eV)
79
41-Nb-93

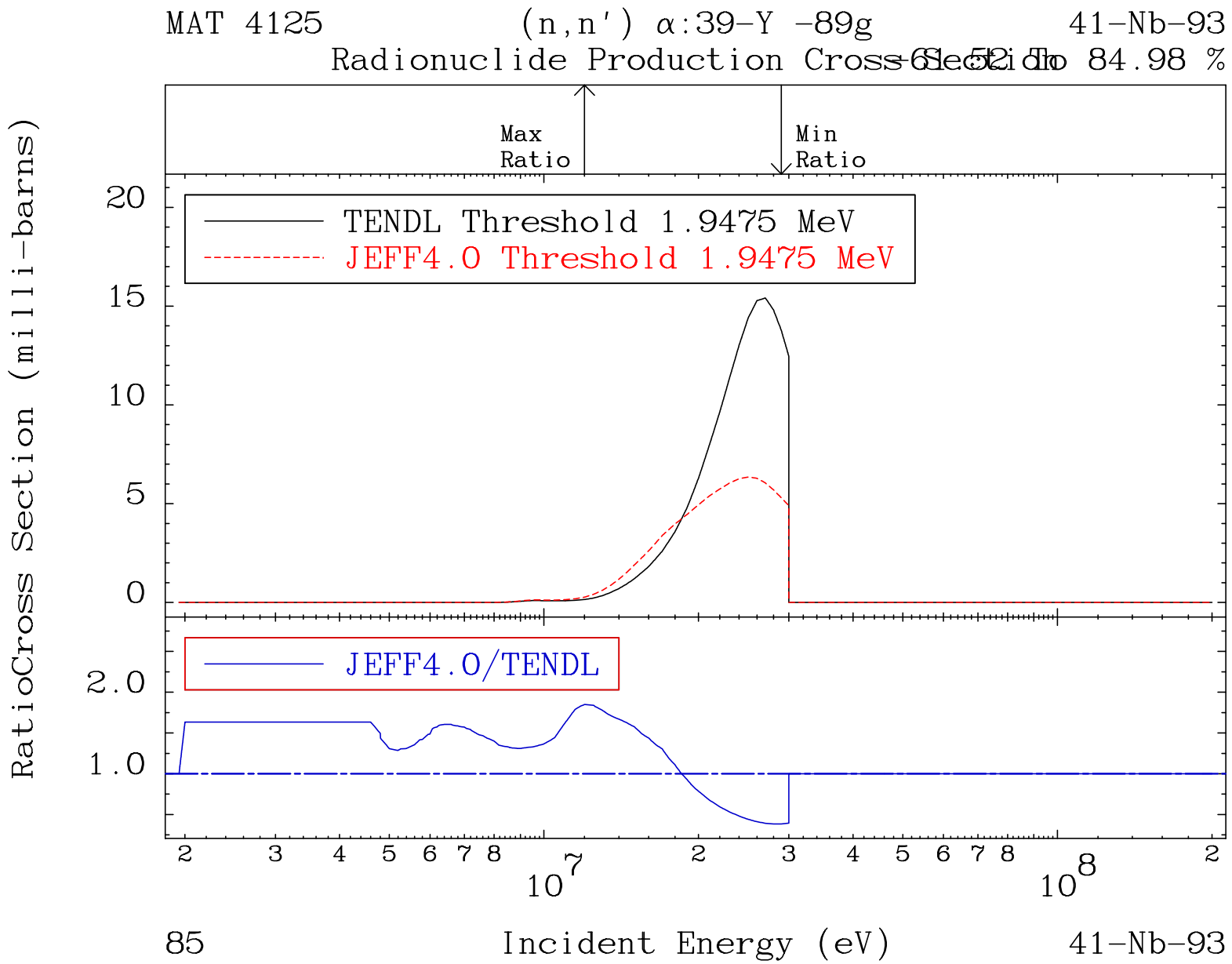

MAT 4125
(n,2n) d:40-Zr-90m3
41-Nb-93
Radionuclide Production Cross Section To 0.000 %
Min
Ratio
TENDL Threshold 23.000 MeV
JEFF4.0 Threshold 23.000 MeV
JEFF4.0/TENDL
RatioCross Section (milli-barns)
Incident Energy (MeV)
80
41-Nb-93

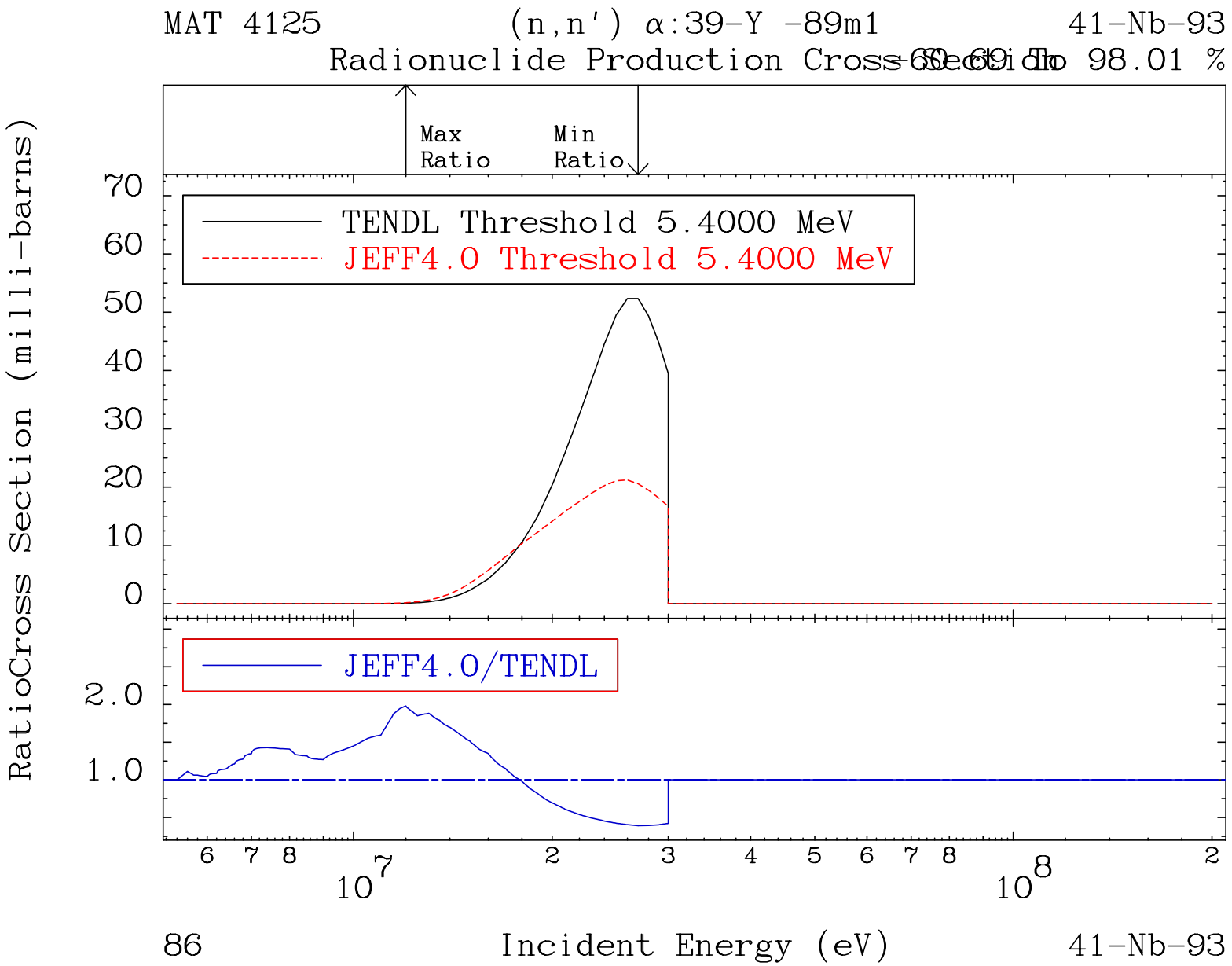

MAT 4125
(n,2n):41-Nb-92g
41-Nb-93
Radionuclide Production Cross Section
Min Ratio
Max Ratio
TENDL Threshold 8.9267 MeV
JEFF4.0 Threshold 8.9267 MeV
JEFF4.0/TENDL
Cross Section (barns)
Ratio
Incident Energy (eV)
81
41-Nb-93

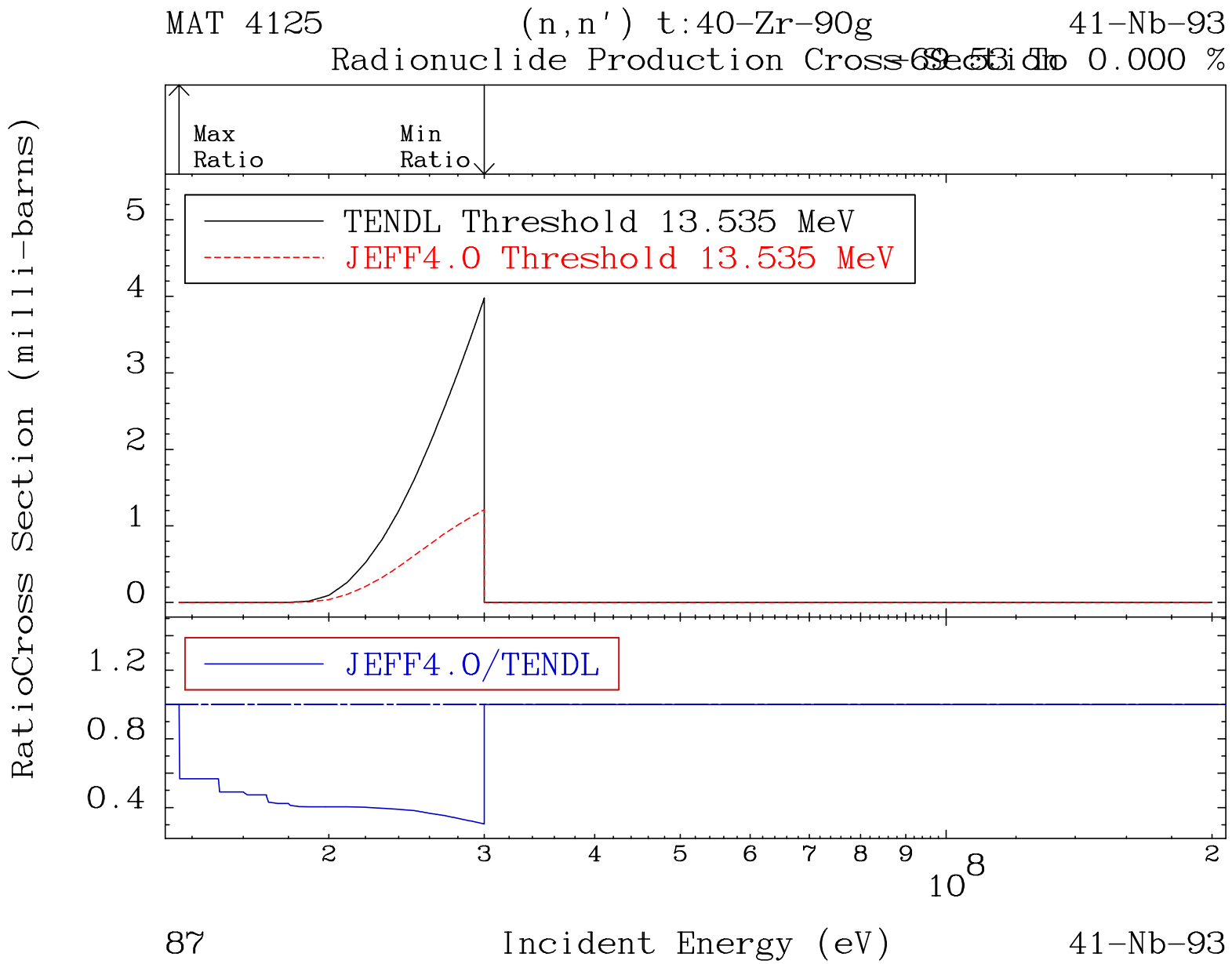

MAT 4125
(n,2n):41-Nb-92m1
41-Nb-93
Radionuclide Production Cross Section
Min Ratio
Max Ratio
TENDL Threshold 9.0637 MeV
JEFF4.0 Threshold 9.0637 MeV
JEFF4.0/TENDL
RatioCross Section (milli-barns)
Incident Energy (eV)
82
41-Nb-93

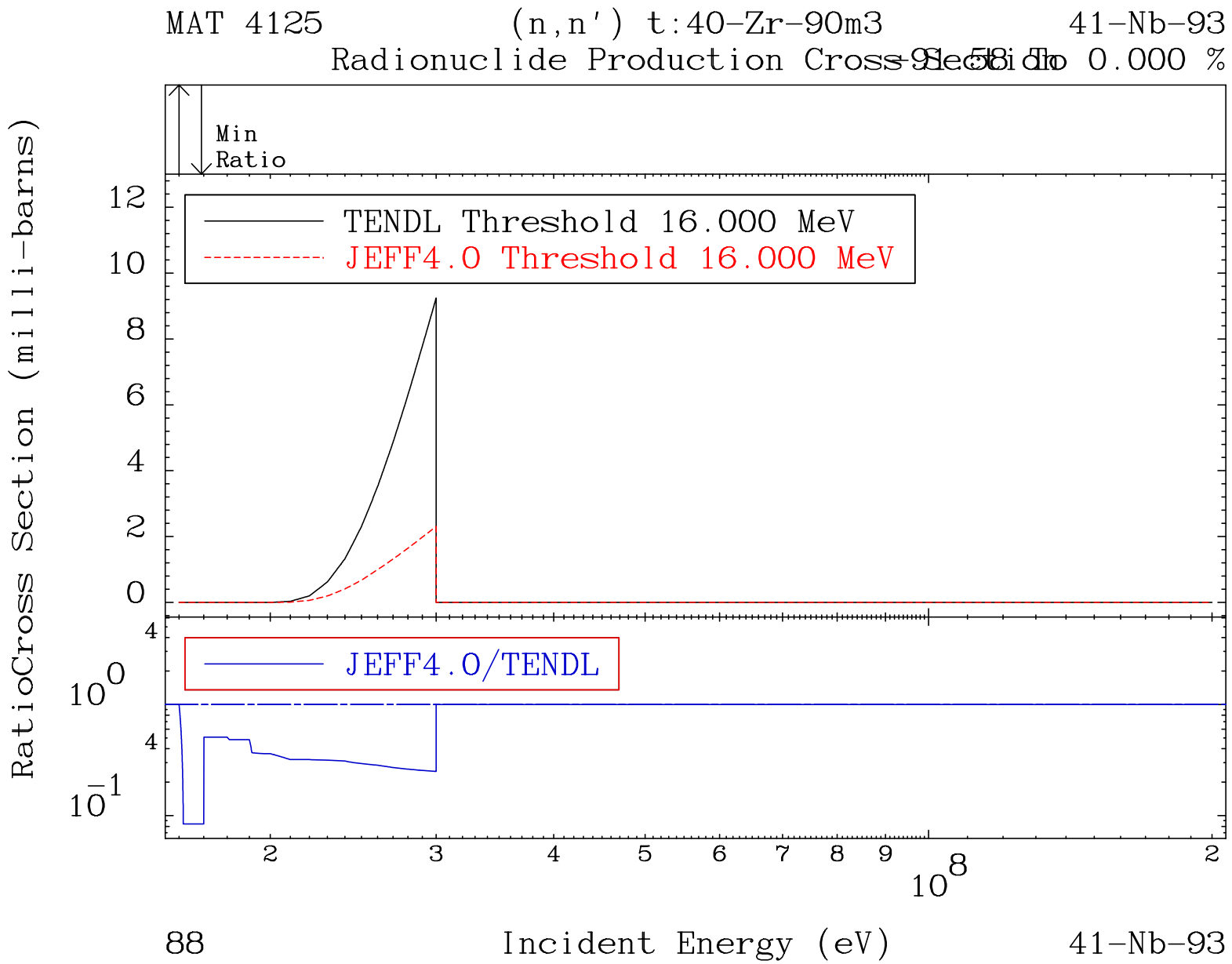

MAT 4125
(n,3n):41-Nb-91g
41-Nb-93
Radionuclide Production Cross Section To 1.995 %
Max
Ratio
TENDL Threshold 16.899 MeV
JEFF4.0 Threshold 16.899 MeV
600
400
200
0
1.1
1.0
0.9
JEFF4.0/TENDL
2
3
4
5
6
7
8
9
10^8
2
RatioCross Section (milli-barns)
83
Incident Energy (eV)
41-Nb-93

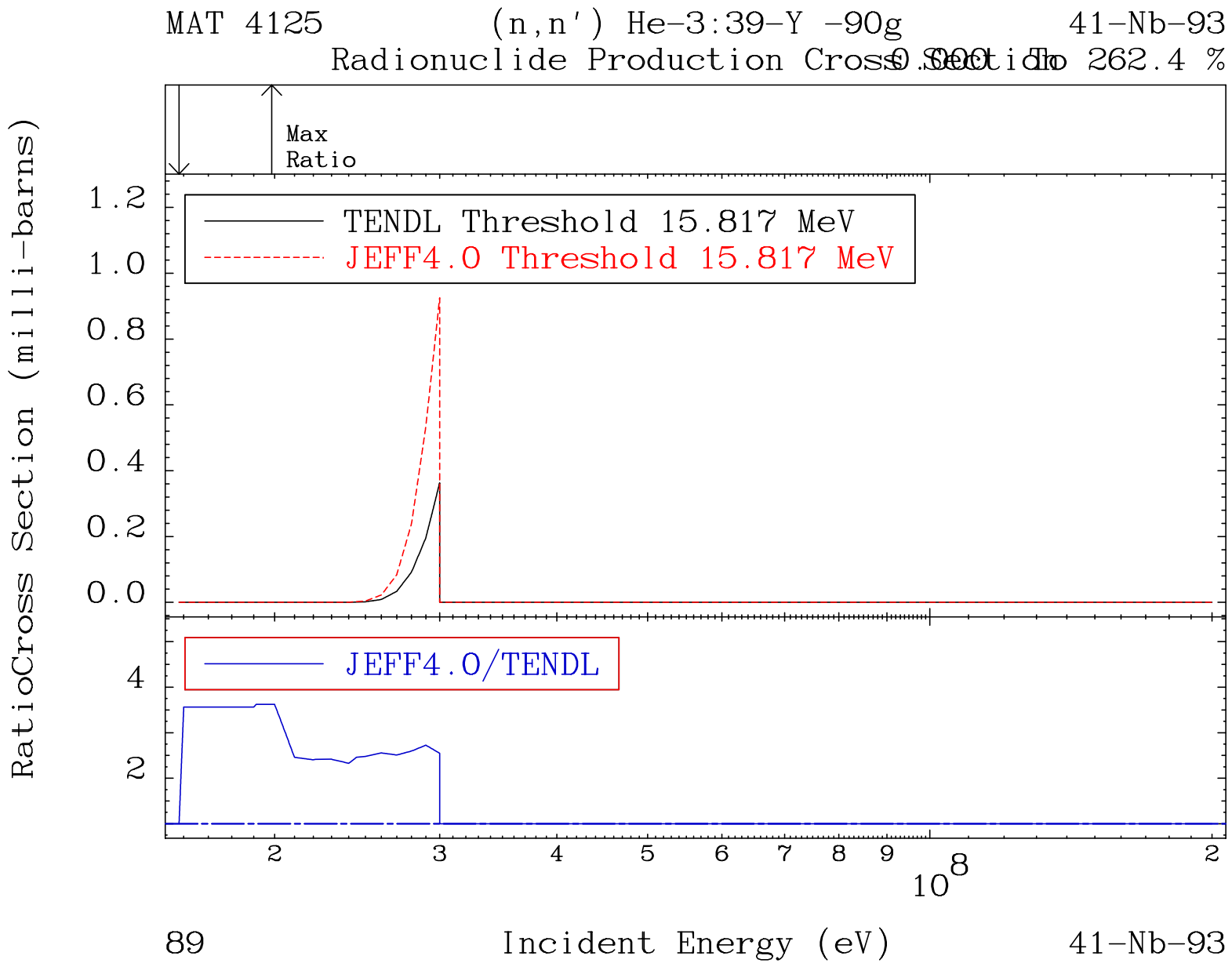

MAT 4125
(n,3n):41-Nb-91m1
41-Nb-93
Radionuclide Production Cross Section
Min Ratio
Max Ratio
TENDL Threshold 17.005 MeV
JEFF4.0 Threshold 17.005 MeV
JEFF4.0/TENDL
RatioCross Section (milli-barns)
160
120
80
40
0
1.4
1.2
1.0
2
3
4
5
6
7
8
9
10^8
2
84
Incident Energy (eV)
41-Nb-93

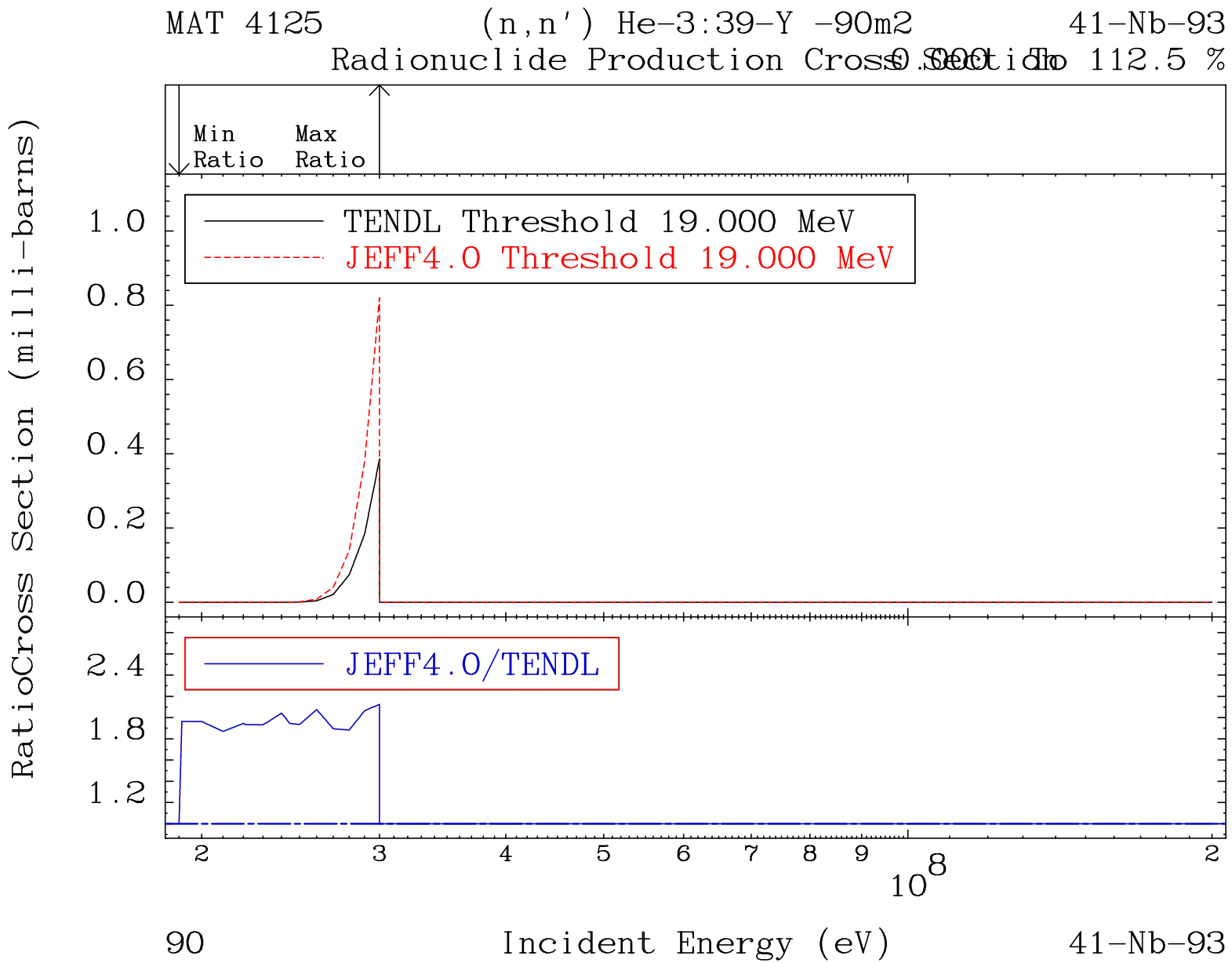

MAT 4125
(n,n') α:39-Y -89g
41-Nb-93
Radionuclide Production Cross-Section To 84.98 %
Max Ratio
Min Ratio
TENDL Threshold 1.9475 MeV
JEFF4.0 Threshold 1.9475 MeV
JEFF4.0/TENDL
RatioCross Section (milli-barns)
20
15
10
5
0
2.0
1.0
2 3 4 5 6 7 8
10^7
2 3 4 5 6 7 8
10^8
2
85
Incident Energy (eV)
41-Nb-93

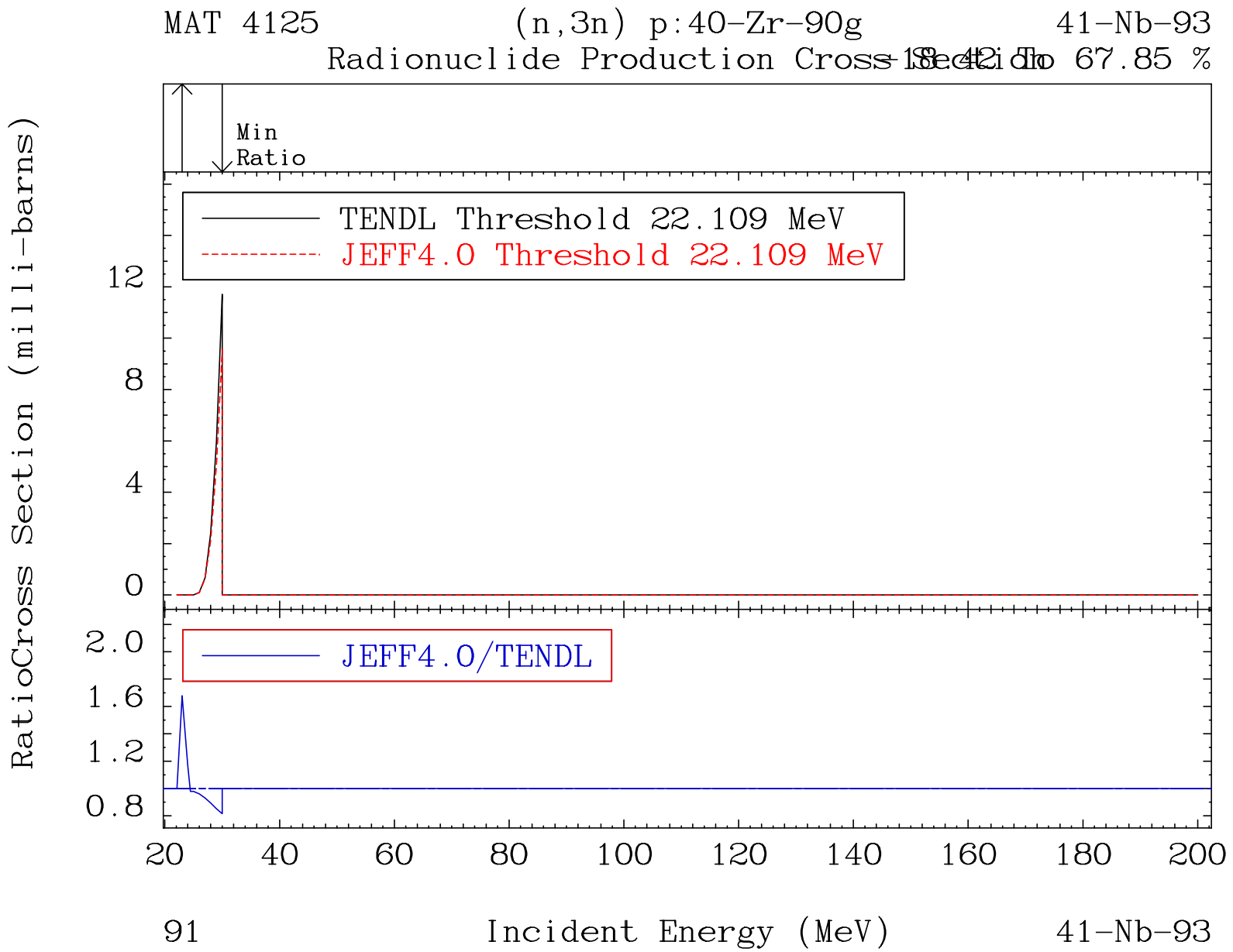

MAT 4125
(n,n') α:39-Y -89m1
41-Nb-93
Radionuclide Production Cross-Section To 98.01 %
Max Ratio
Min Ratio
TENDL Threshold 5.4000 MeV
JEFF4.0 Threshold 5.4000 MeV
JEFF4.0/TENDL
RatioCross Section (milli-barns)
70
60
50
40
30
20
10
0
2.0
1.0
6 7 8
10^7
2 3 4 5 6 7 8
10^8
2
86
Incident Energy (eV)
41-Nb-93

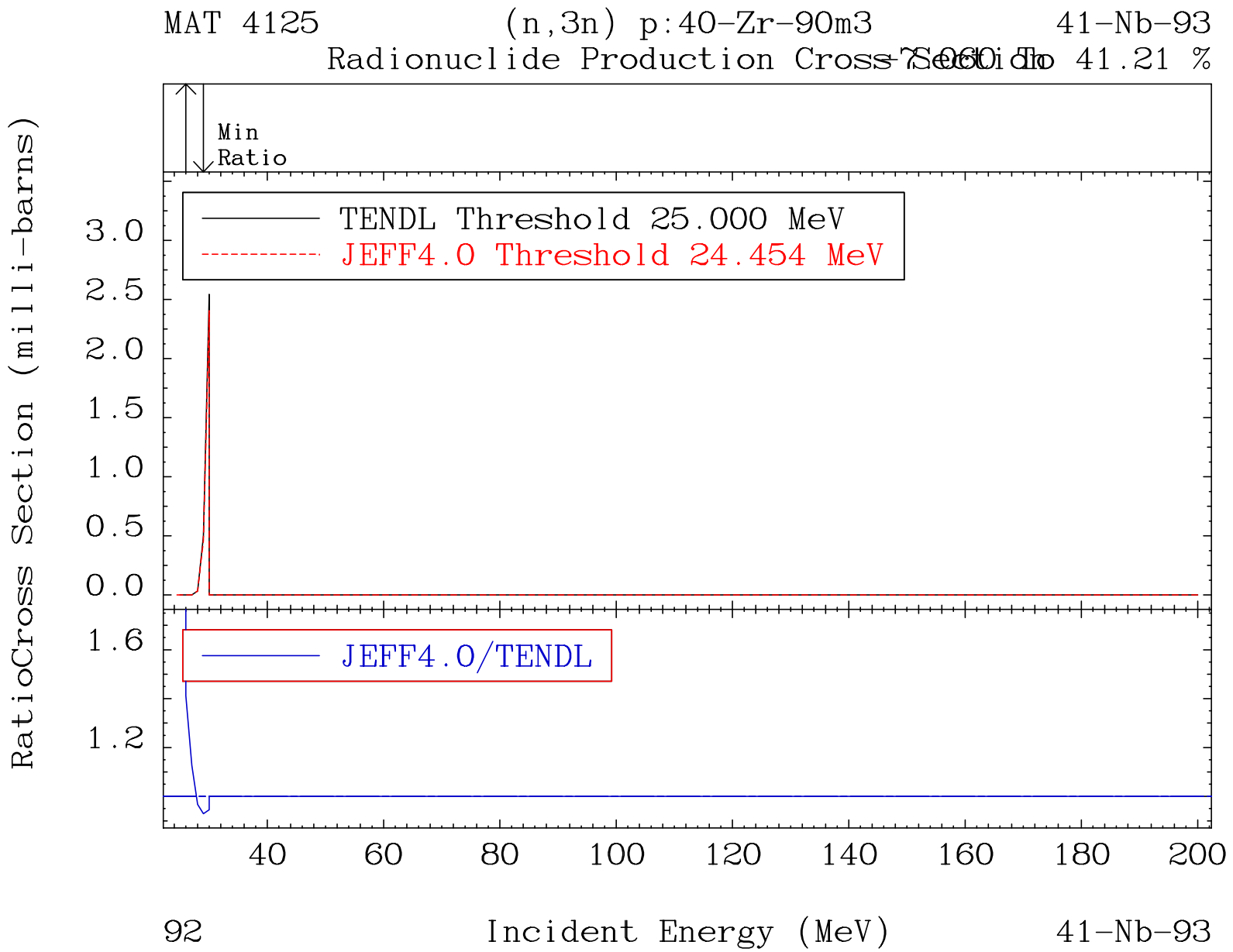

MAT 4125
(n,n') t:40-Zr-90g
41-Nb-93
Radionuclide Production Cross Section To 0.000 %
Max Ratio
Min Ratio
TENDL Threshold 13.535 MeV
JEFF4.0 Threshold 13.535 MeV
JEFF4.0/TENDL
RatioCross Section (milli-barns)
5
4
3
2
1
0
1.2
0.8
0.4
2
3
4
5
6
7
8
9
10^8
2
87
Incident Energy (eV)
41-Nb-93

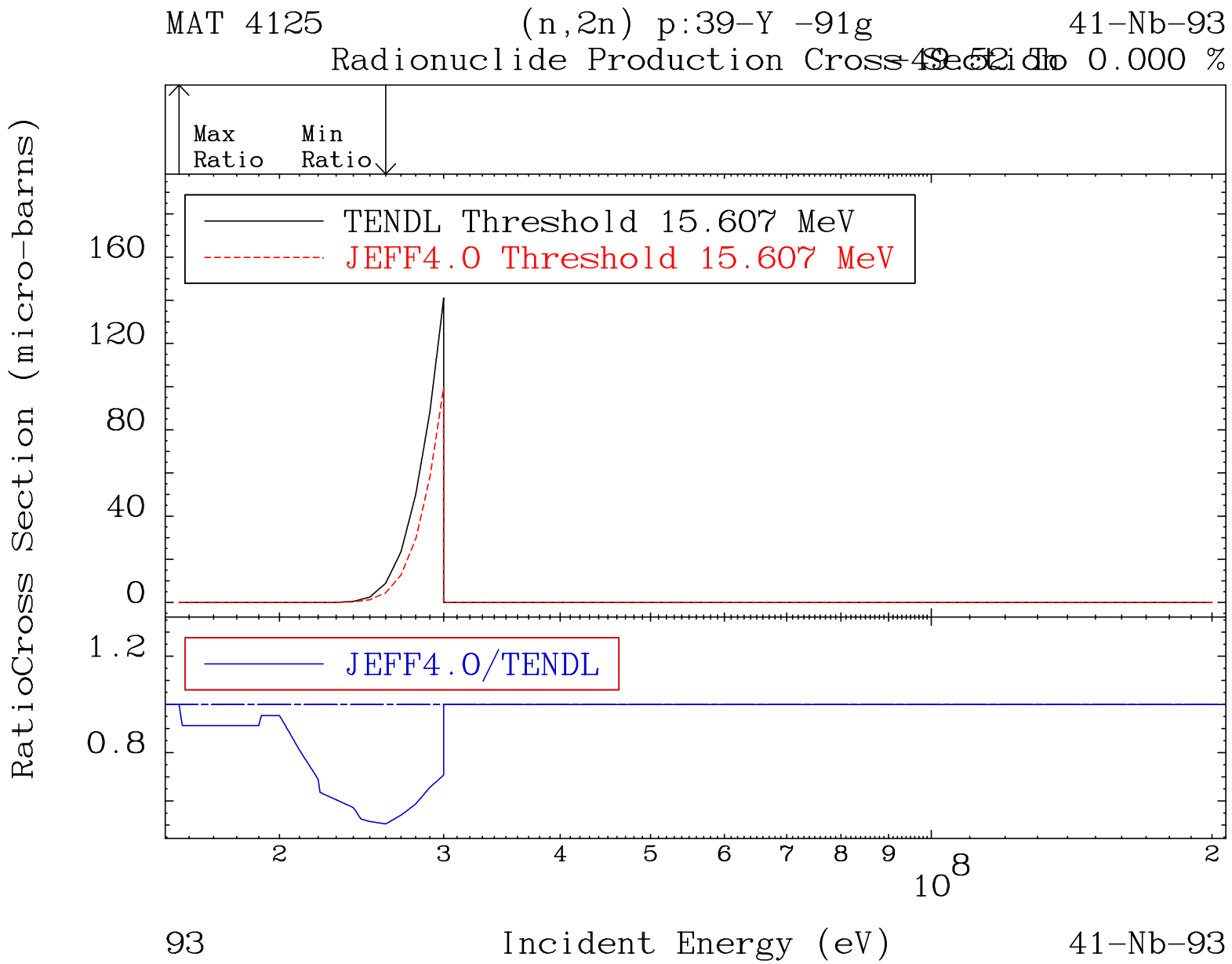

MAT 4125
(n,n') t:40-Zr-90m3
41-Nb-93
Radionuclide Production Cross Section To 0.000 %
Min
Ratio
TENDL Threshold 16.000 MeV
JEFF4.0 Threshold 16.000 MeV
JEFF4.0/TENDL
RatioCross Section (milli-barns)
12
10
8
6
4
2
0
4
10^{0}
4
10^{-1}
2
3
4
5
6
7
8
9
10^{8}
2
88
Incident Energy (eV)
41-Nb-93

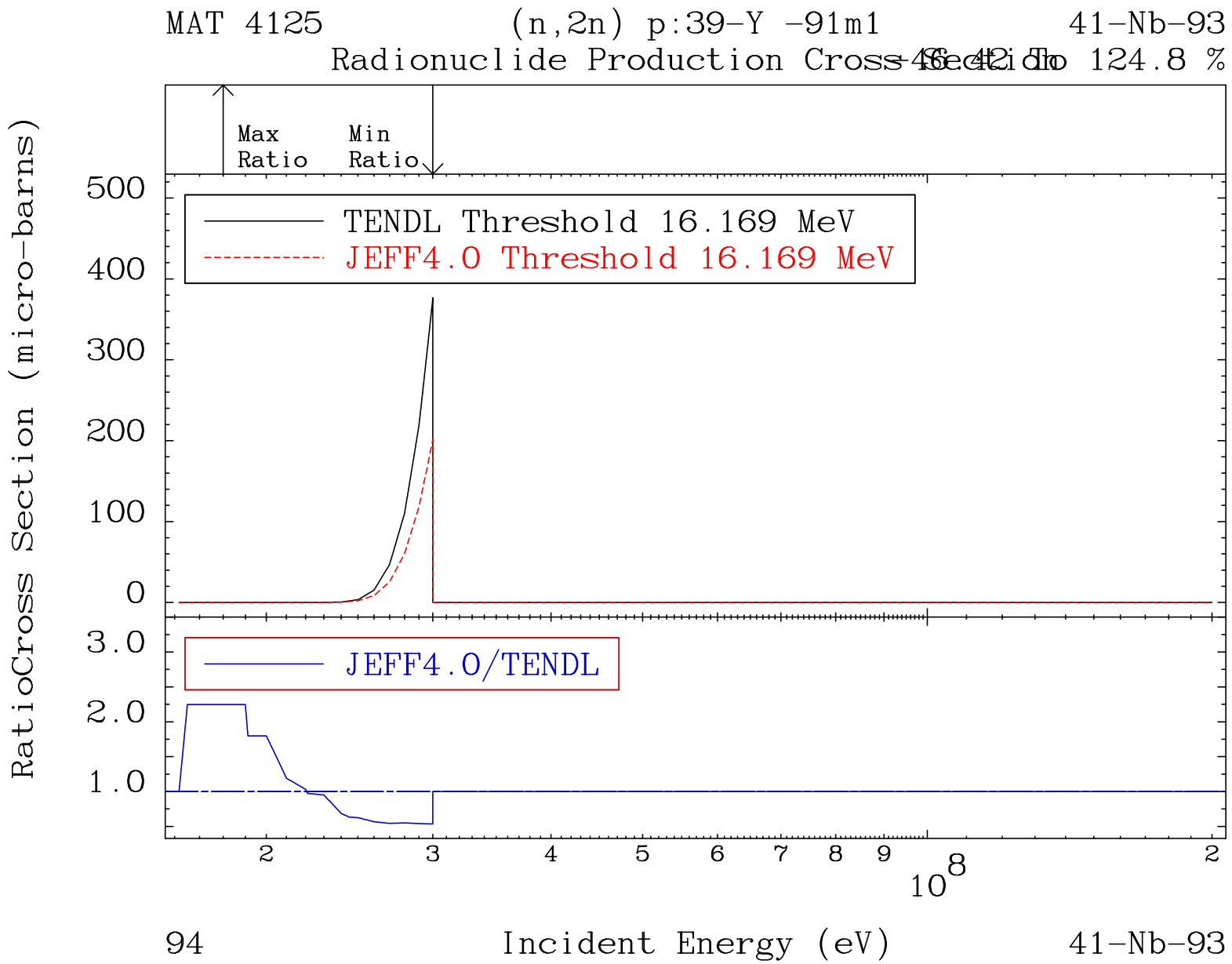

MAT 4125 (n,n') He-3:39-Y -90g 41-Nb-93
Radionuclide Production Cross Section To 262.4 %
Max
Ratio
TENDL Threshold 15.817 MeV
JEFF4.0 Threshold 15.817 MeV
JEFF4.0/TENDL
RatioCross Section (milli-barns)
1.2
1.0
0.8
0.6
0.4
0.2
0.0
4
2
2
3
4
5
6
7
8
9
10^8
2
89
Incident Energy (eV)
41-Nb-93

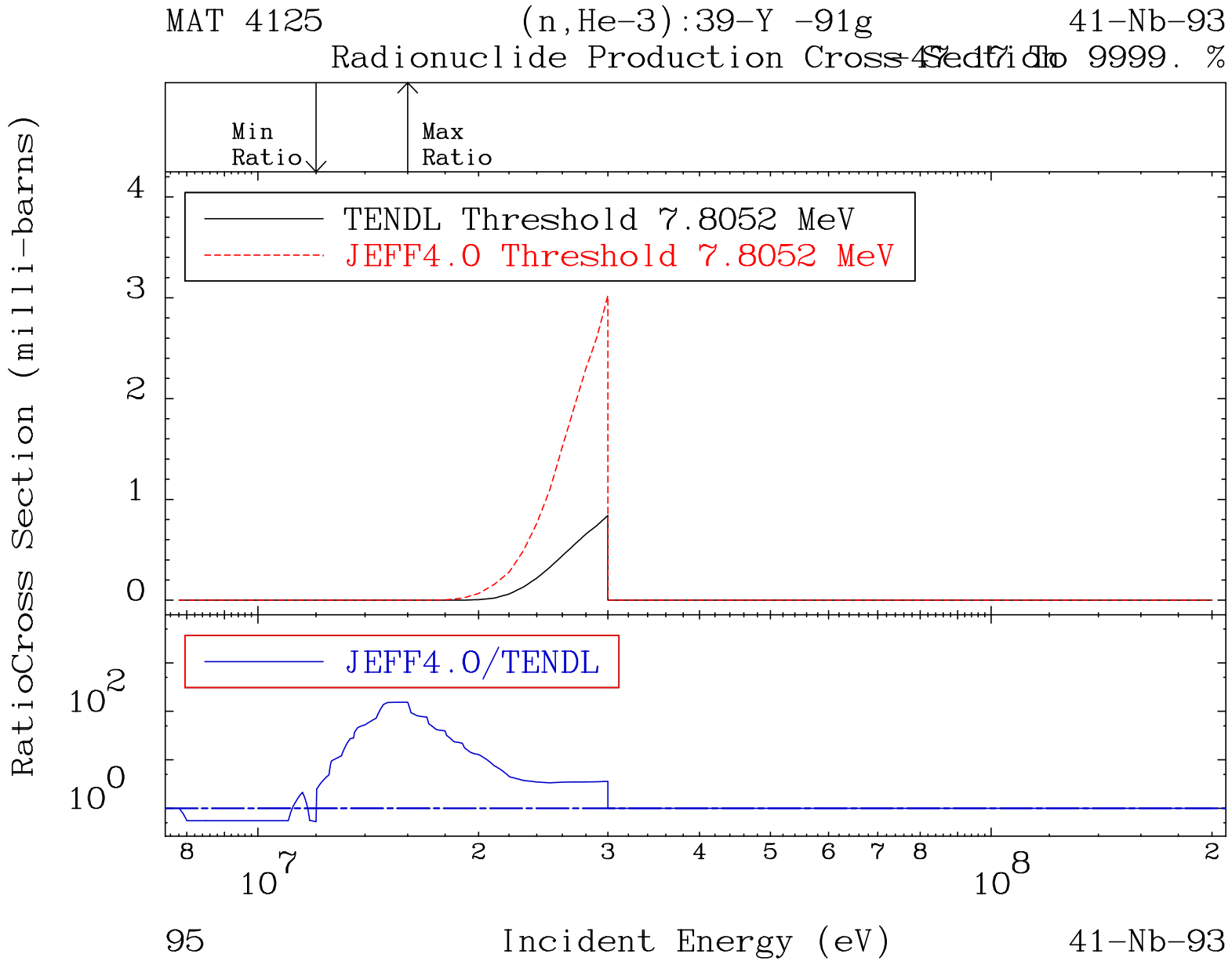

MAT 4125 (n,n') He-3:39-Y -90m2 41-Nb-93
Radionuclide Production Cross Section To 112.5 %
Min Ratio
Max Ratio
TENDL Threshold 19.000 MeV
JEFF4.0 Threshold 19.000 MeV
JEFF4.0/TENDL
RatioCross Section (milli-barns)
1.0
0.8
0.6
0.4
0.2
0.0
2.4
1.8
1.2
2
3
4
5
6
7
8
9
10^8
2
90
Incident Energy (eV)
41-Nb-93

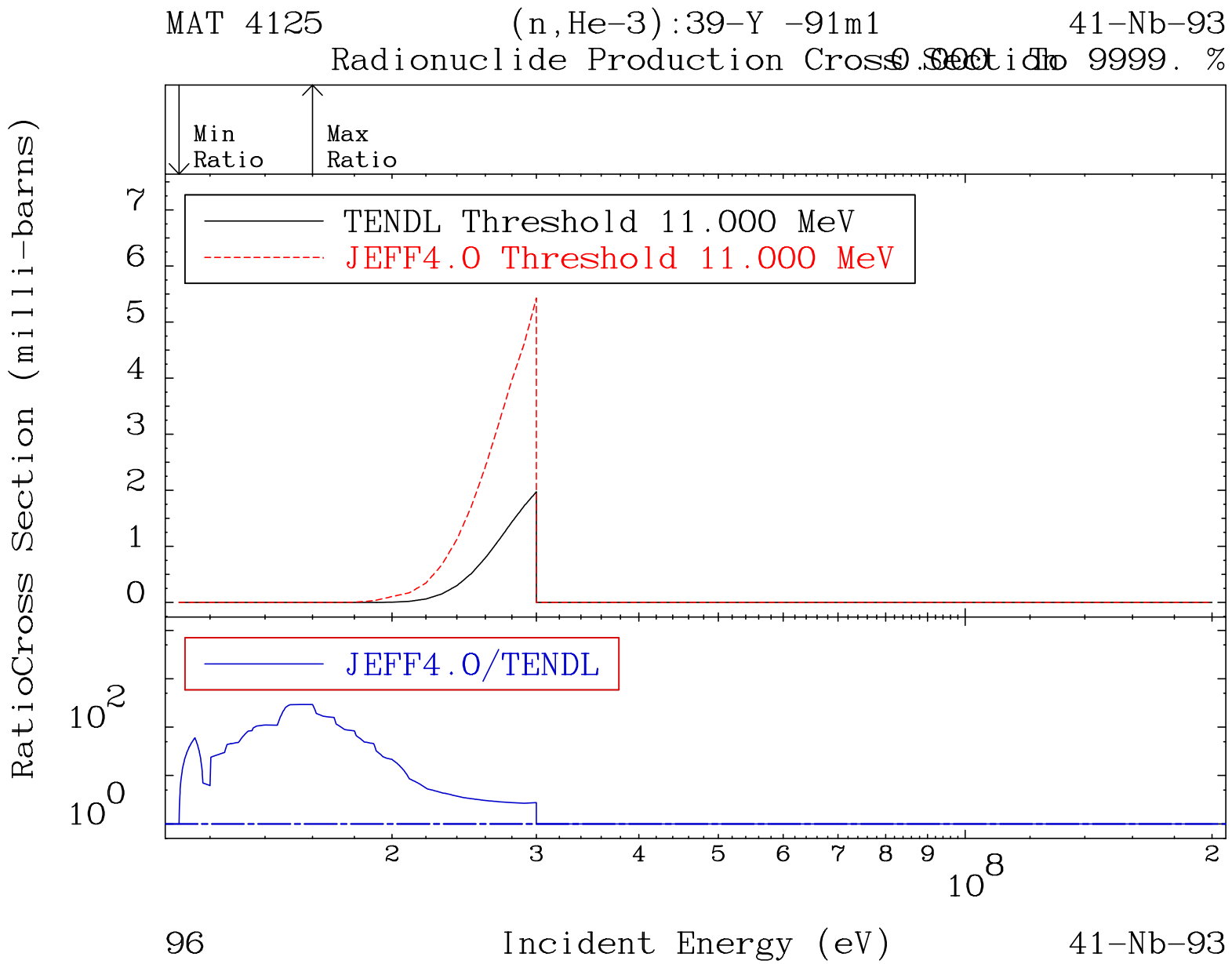

MAT 4125
(n,3n) p:40-Zr-90g
41-Nb-93
Radionuclide Production Cross Section
Min
Ratio
TENDL Threshold 22.109 MeV
JEFF4.0 Threshold 22.109 MeV
JEFF4.0/TENDL
RatioCross Section (milli-barns)
Incident Energy (MeV)
91
41-Nb-93

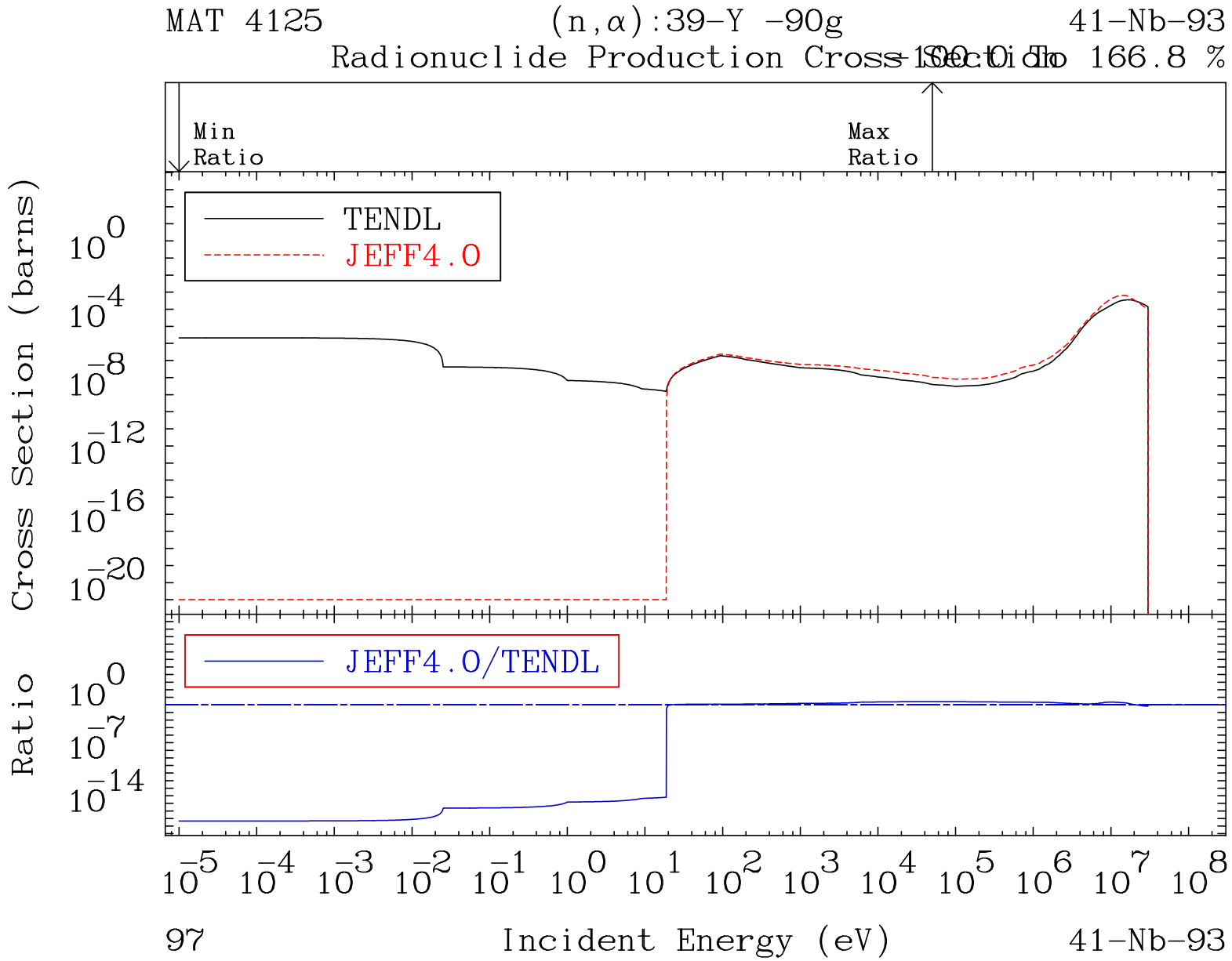

MAT 4125
(n,3n) p:40-Zr-90m3
41-Nb-93
Radionuclide Production Cross Section To 41.21 %
Min
Ratio
TENDL Threshold 25.000 MeV
JEFF4.0 Threshold 24.454 MeV
JEFF4.0/TENDL
RatioCross Section (milli-barns)
3.0
2.5
2.0
1.5
1.0
0.5
0.0
1.6
1.2
40
60
80
100
120
140
160
180
200
92
Incident Energy (MeV)
41-Nb-93

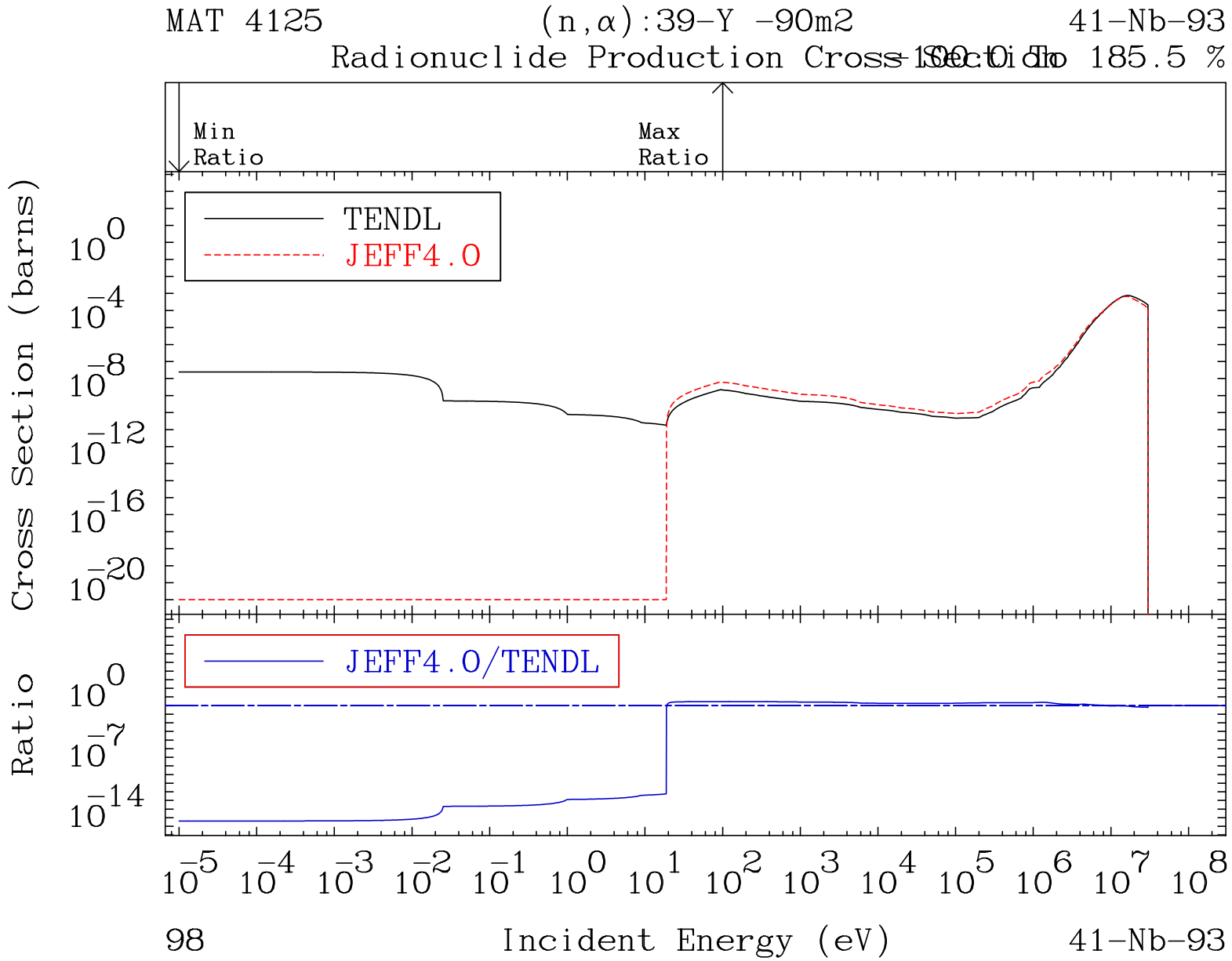

MAT 4125
(n,2n) p:39-Y -91g
41-Nb-93
Radionuclide Production Cross Section
Max Ratio
Min Ratio
TENDL Threshold 15.607 MeV
JEFF4.0 Threshold 15.607 MeV
JEFF4.0/TENDL
RatioCross Section (micro-barns)
160
120
80
40
0
1.2
0.8
2
3
4
5
6
7
8
9
10^8
2
93
Incident Energy (eV)
41-Nb-93

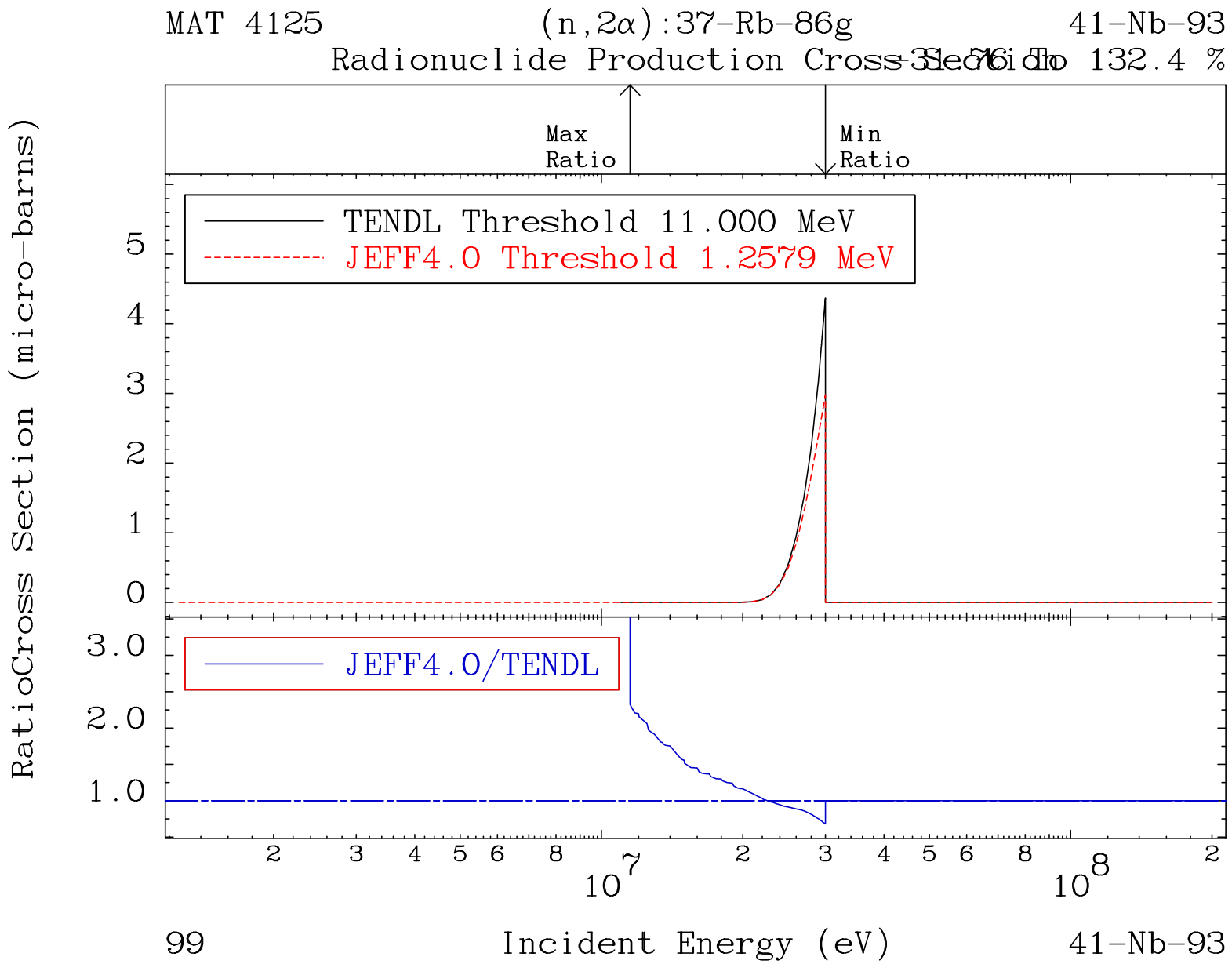

MAT 4125
(n,2n) p:39-Y -91m1
41-Nb-93
Radionuclide Production Cross Section
Max Ratio
Min Ratio
TENDL Threshold 16.169 MeV
JEFF4.0 Threshold 16.169 MeV
JEFF4.0/TENDL
RatioCross Section (micro-barns)
Incident Energy (eV)
94
41-Nb-93

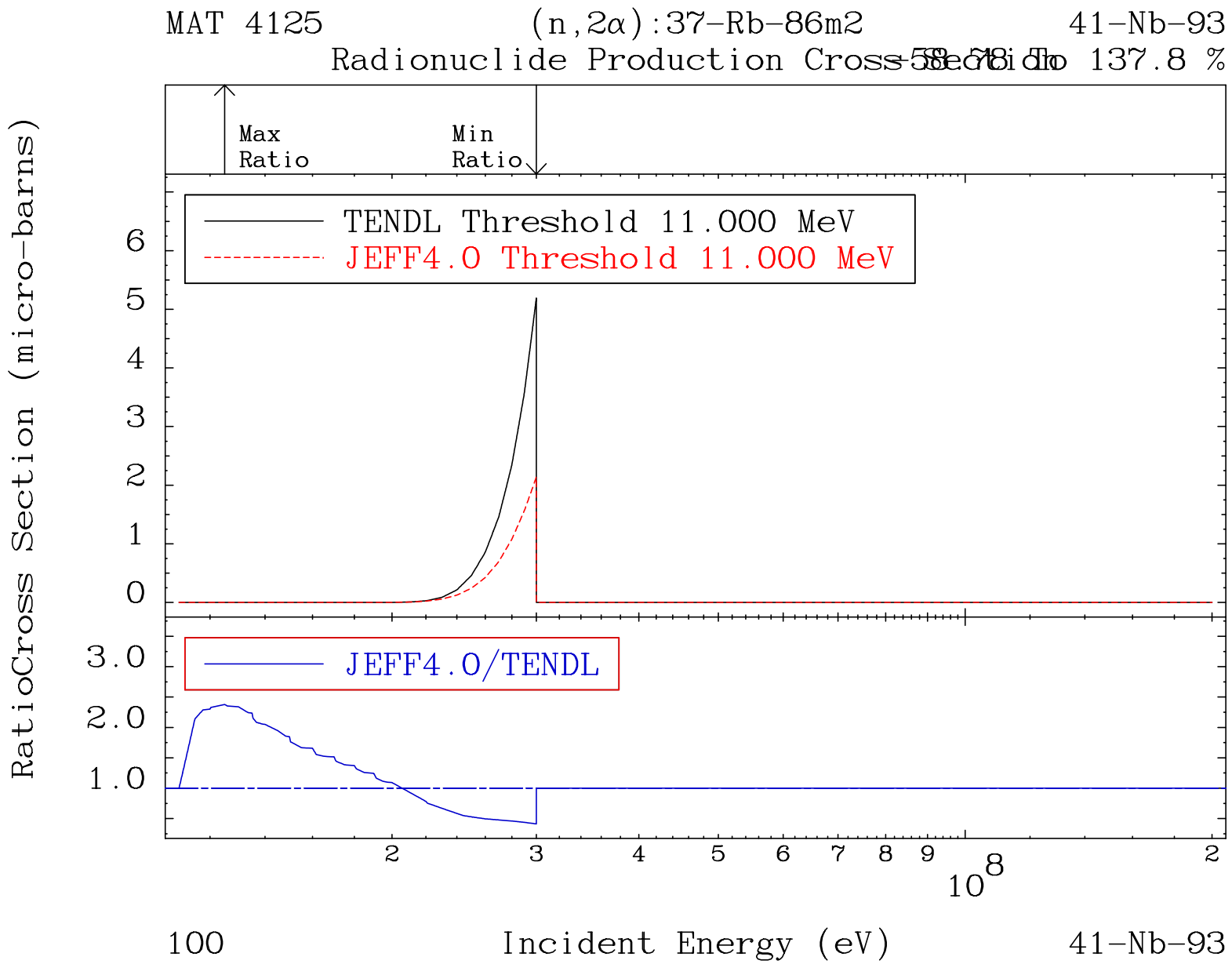

MAT 4125
(n,He-3):39-Y -91g
41-Nb-93
Radionuclide Production Cross-Section To 9999. %
Min Ratio
Max Ratio
TENDL Threshold 7.8052 MeV
JEFF4.0 Threshold 7.8052 MeV
JEFF4.0/TENDL
RatioCross Section (milli-barns)
Incident Energy (eV)
95
41-Nb-93

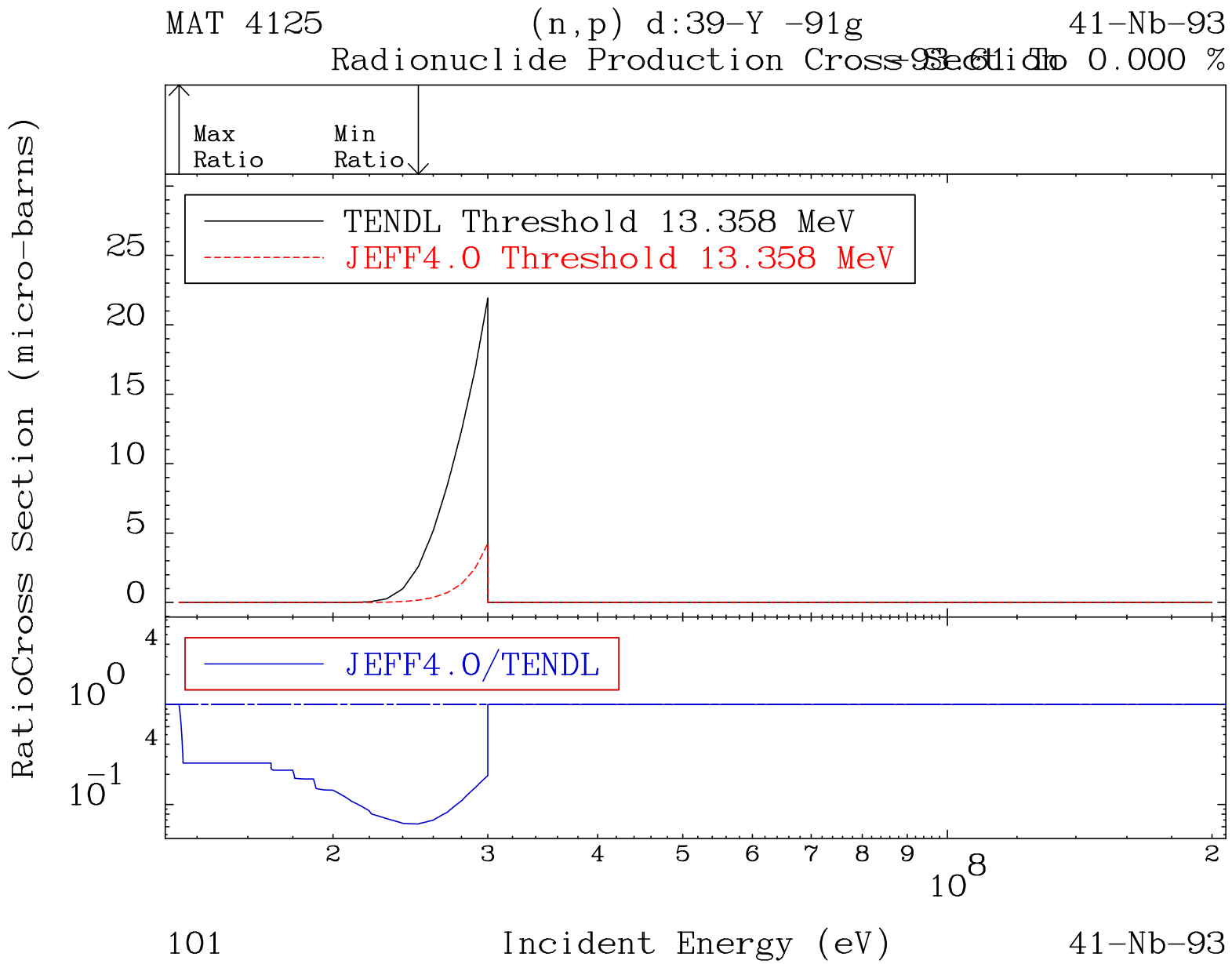

MAT 4125
(n,He-3):39-Y -91m1
41-Nb-93
Radionuclide Production Cross Section
0.000 To 9999. %
Min Ratio
Max Ratio
TENDL Threshold 11.000 MeV
JEFF4.0 Threshold 11.000 MeV
JEFF4.0/TENDL
RatioCross Section (milli-barns)
Incident Energy (eV)
96
41-Nb-93

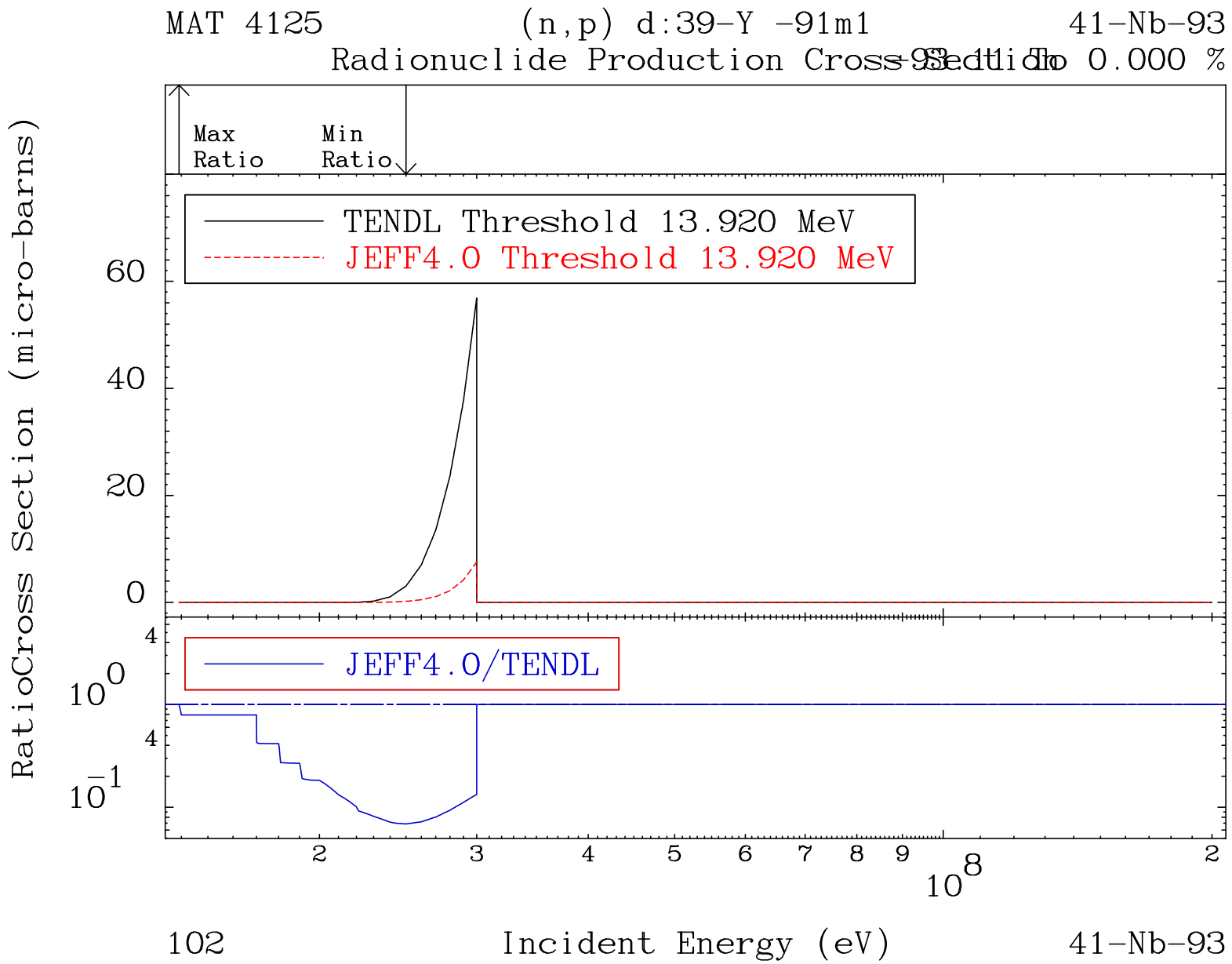

MAT 4125
(n,α):39-Y -90g
41-Nb-93
Radionuclide Production Cross Section To 166.8 %
Min Ratio
Max Ratio
TENDL
JEFF4.0
JEFF4.0/TENDL
Cross Section (barns)
Ratio
Incident Energy (eV)
97
41-Nb-93

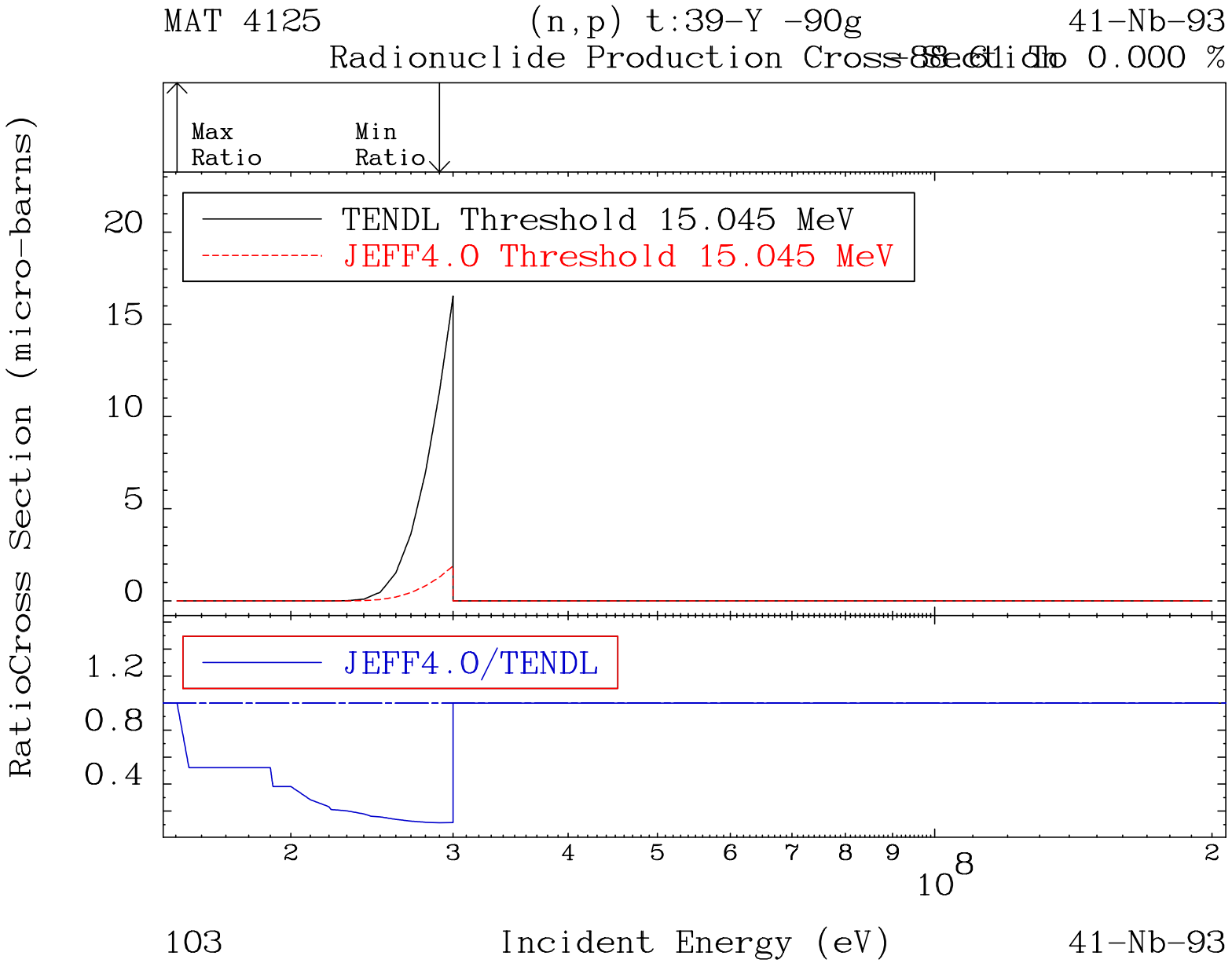

MAT 4125
(n,α):39-Y -90m2
41-Nb-93
Radionuclide Production Cross Section
Min Ratio
Max Ratio
TENDL
JEFF4.0
JEFF4.0/TENDL
Cross Section (barns)
Ratio
Incident Energy (eV)
98
41-Nb-93

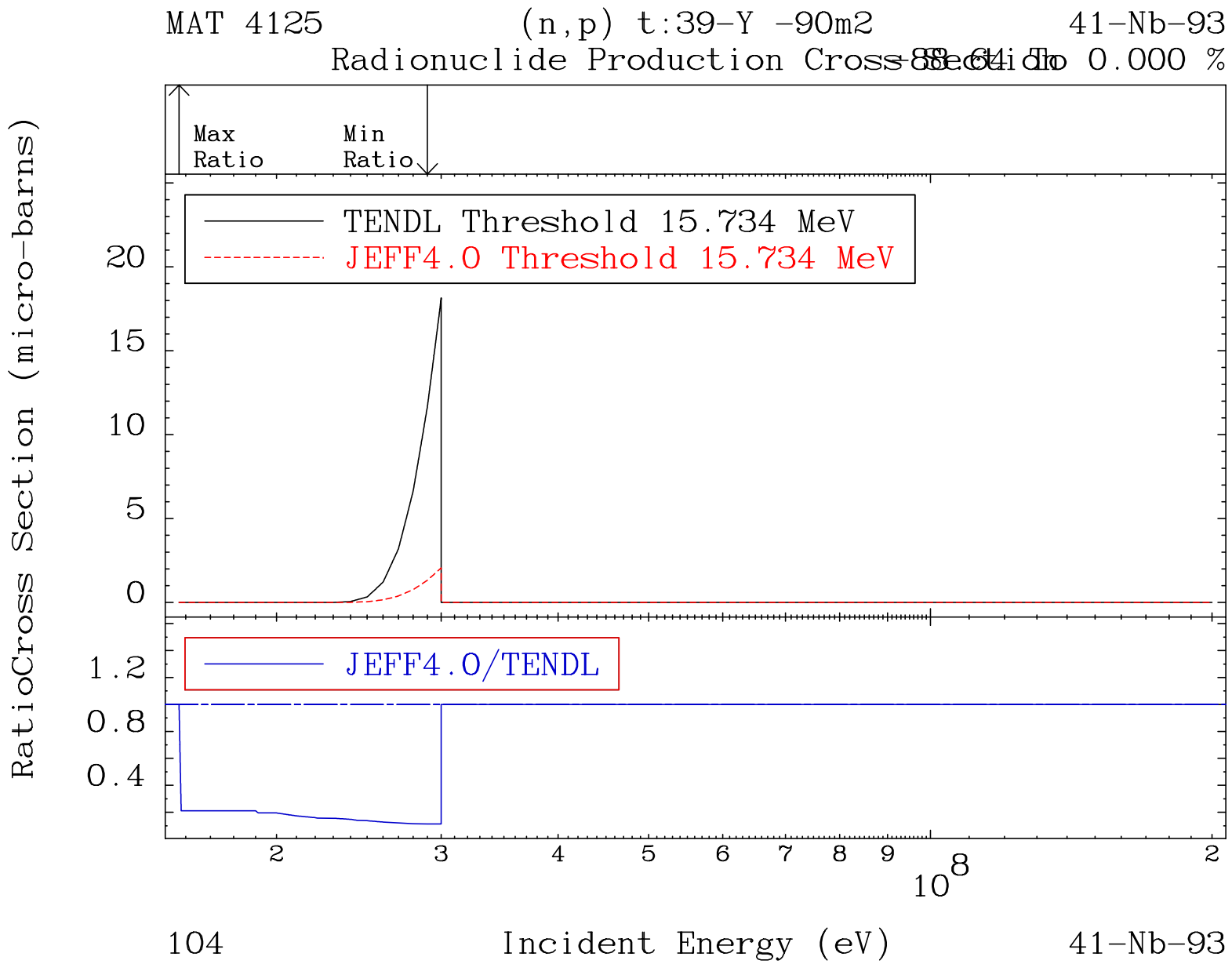

MAT 4125
(n,2α):37-Rb-86g
41-Nb-93
Radionuclide Production Cross-Section To 132.4 %
Max Ratio
Min Ratio
TENDL Threshold 11.000 MeV
JEFF4.0 Threshold 1.2579 MeV
JEFF4.0/TENDL
RatioCross Section (micro-barns)
Incident Energy (eV)
99
41-Nb-93


MAT 4125
(n,2α):37-Rb-86m2
41-Nb-93
Radionuclide Production Cross Section
Max Ratio
Min Ratio
TENDL Threshold 11.000 MeV
JEFF4.0 Threshold 11.000 MeV
JEFF4.0/TENDL
RatioCross Section (micro-barns)
Incident Energy (eV)
100
41-Nb-93


MAT 4125
(n,p) d:39-Y -91g
41-Nb-93
Radionuclide Production Cross Section To 0.000 %
Max Ratio
Min Ratio
TENDL Threshold 13.358 MeV
JEFF4.0 Threshold 13.358 MeV
JEFF4.0/TENDL
RatioCross Section (micro-barns)
Incident Energy (eV)
101
41-Nb-93


MAT 4125
(n,p) d:39-Y -91m1
41-Nb-93
Radionuclide Production Cross Section To 0.000 %
Max Ratio
Min Ratio
TENDL Threshold 13.920 MeV
JEFF4.0 Threshold 13.920 MeV
JEFF4.0/TENDL
RatioCross Section (micro-barns)
60
40
20
0
4
10^{0}
4
10^{-1}
2
3
4
5
6
7
8
9
10^{8}
2
102
Incident Energy (eV)
41-Nb-93


MAT 4125
(n,p) t:39-Y -90g
41-Nb-93
Radionuclide Production Cross Section To 0.000 %
Max Ratio
Min Ratio
TENDL Threshold 15.045 MeV
JEFF4.0 Threshold 15.045 MeV
JEFF4.0/TENDL
RatioCross Section (micro-barns)
20
15
10
5
0
1.2
0.8
0.4
2
3
4
5
6
7
8
9
10^8
2
103
Incident Energy (eV)
41-Nb-93


MAT 4125
(n,p) t:39-Y -90m2
41-Nb-93
Radionuclide Production Cross Section To 0.000 %
Max Ratio
Min Ratio
TENDL Threshold 15.734 MeV
JEFF4.0 Threshold 15.734 MeV
JEFF4.0/TENDL
RatioCross Section (micro-barns)
20
15
10
5
0
1.2
0.8
0.4
2
3
4
5
6
7
8
9
10^8
2
104
Incident Energy (eV)
41-Nb-93