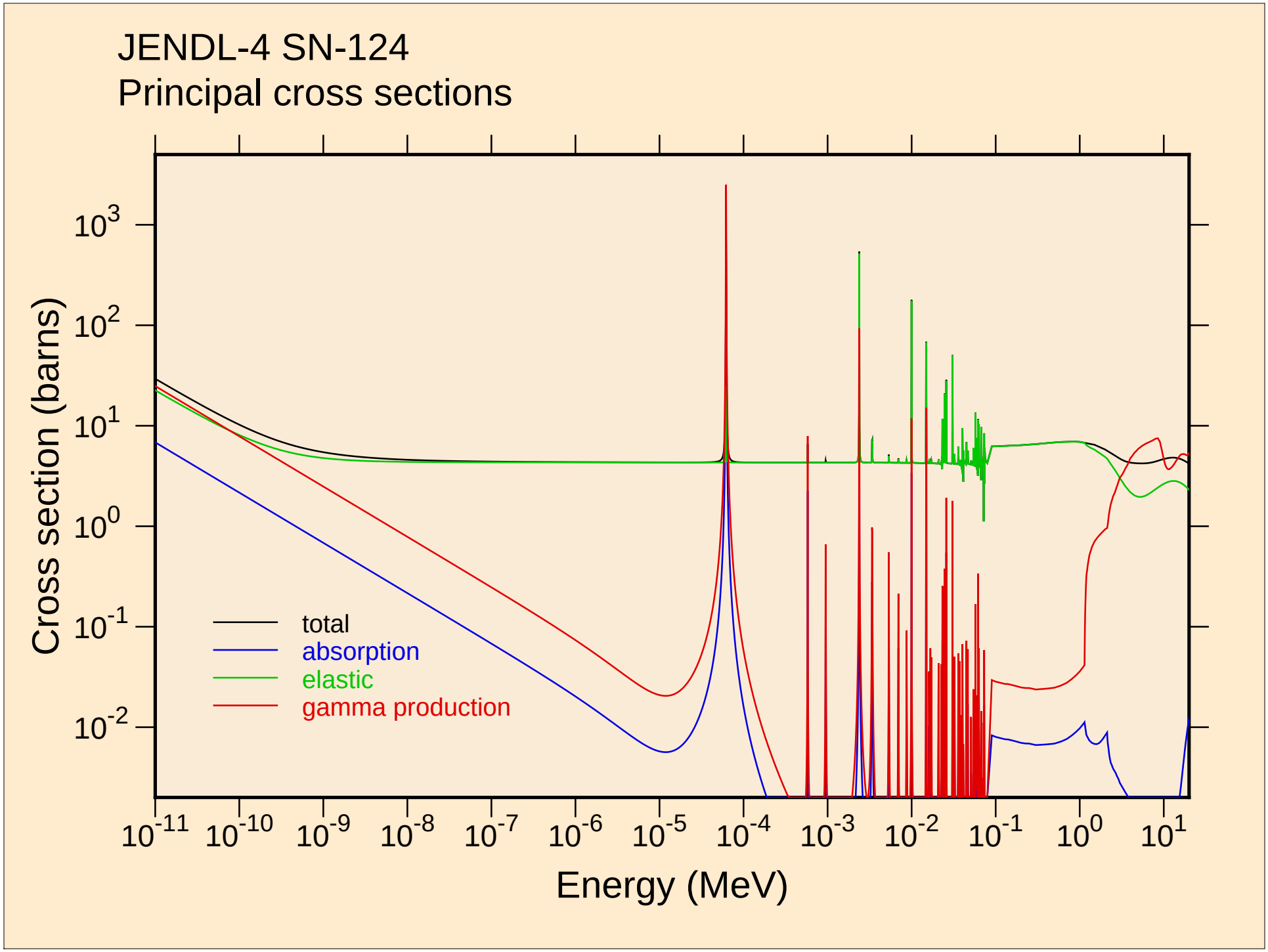
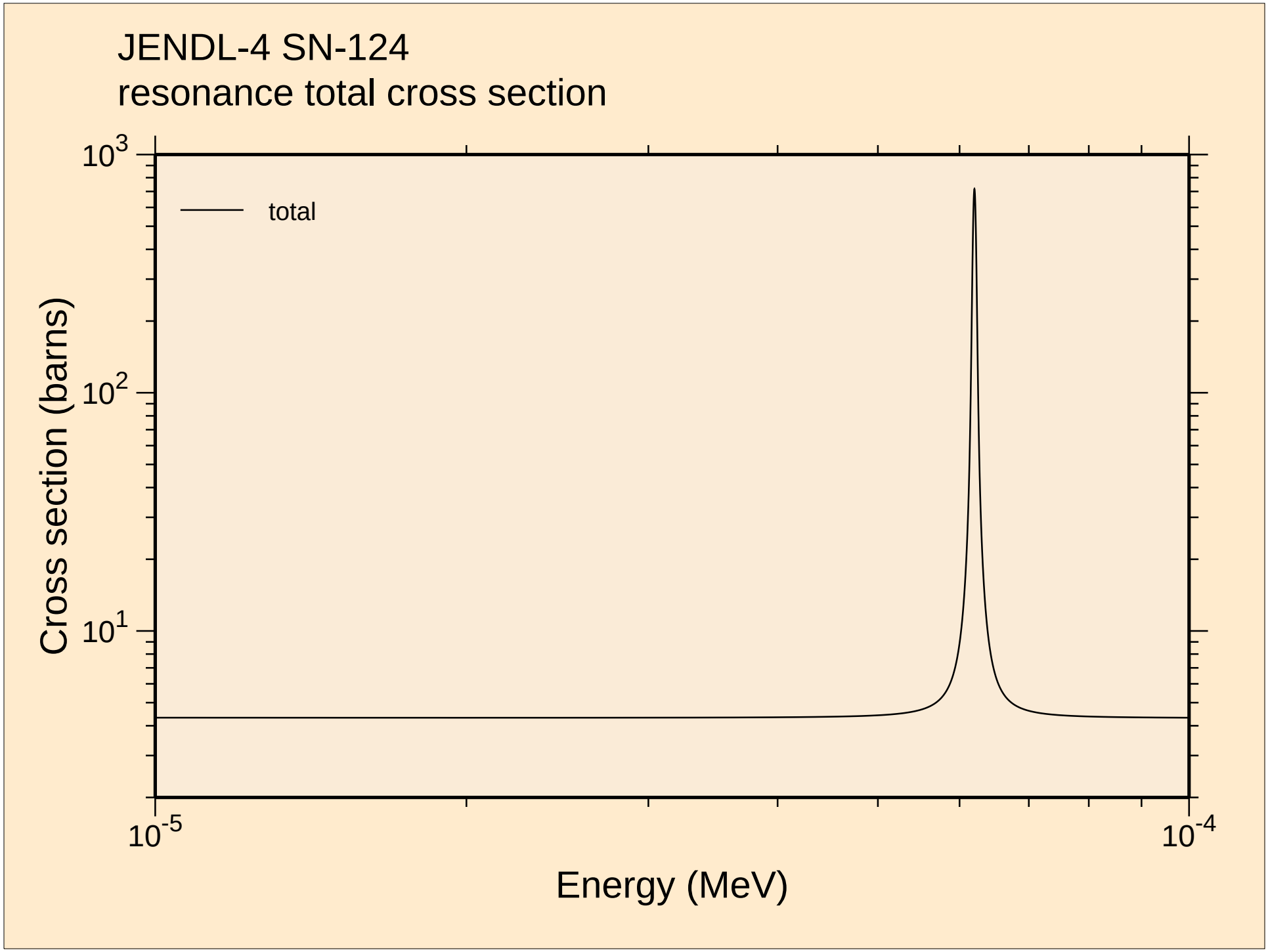
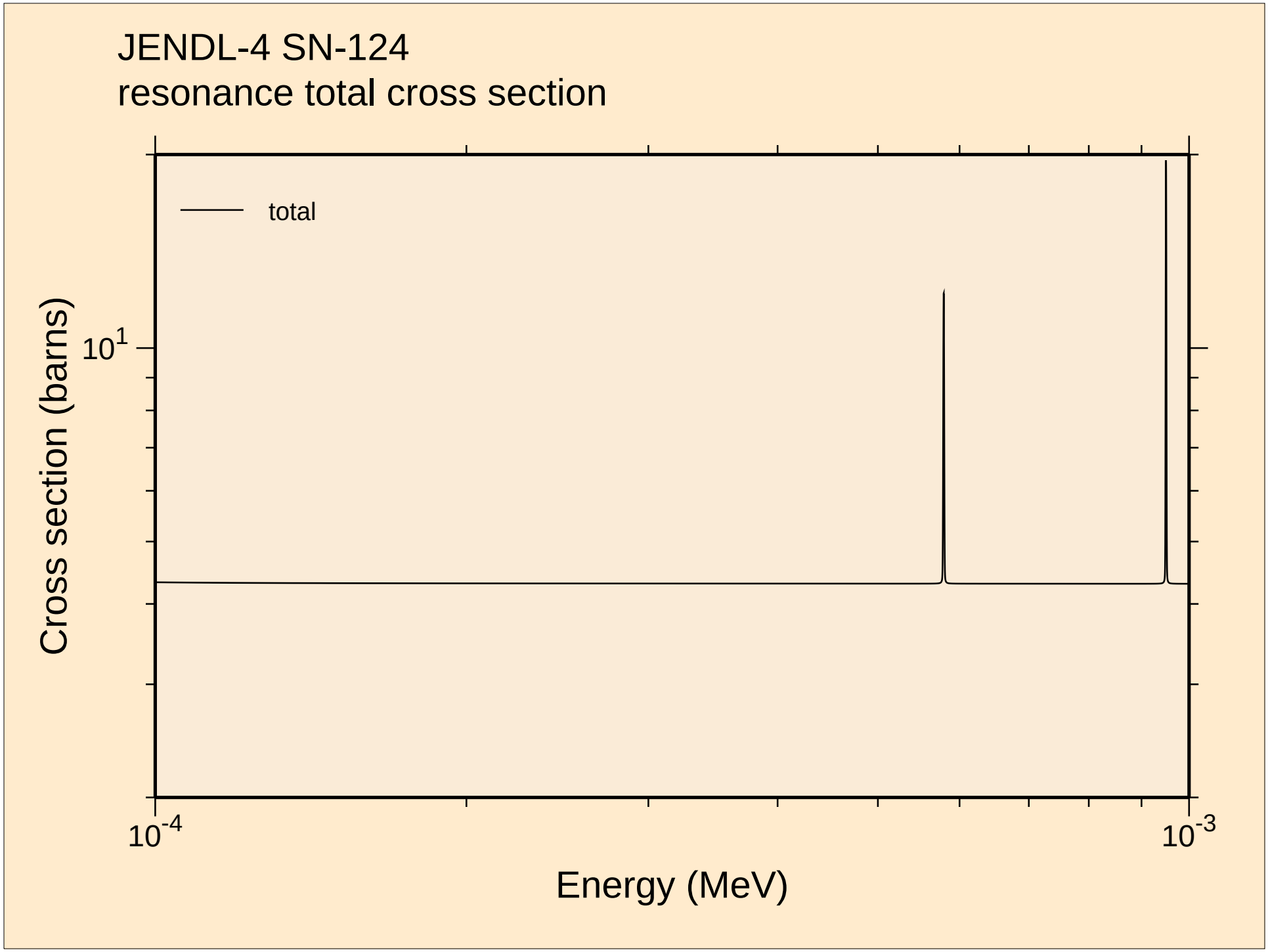
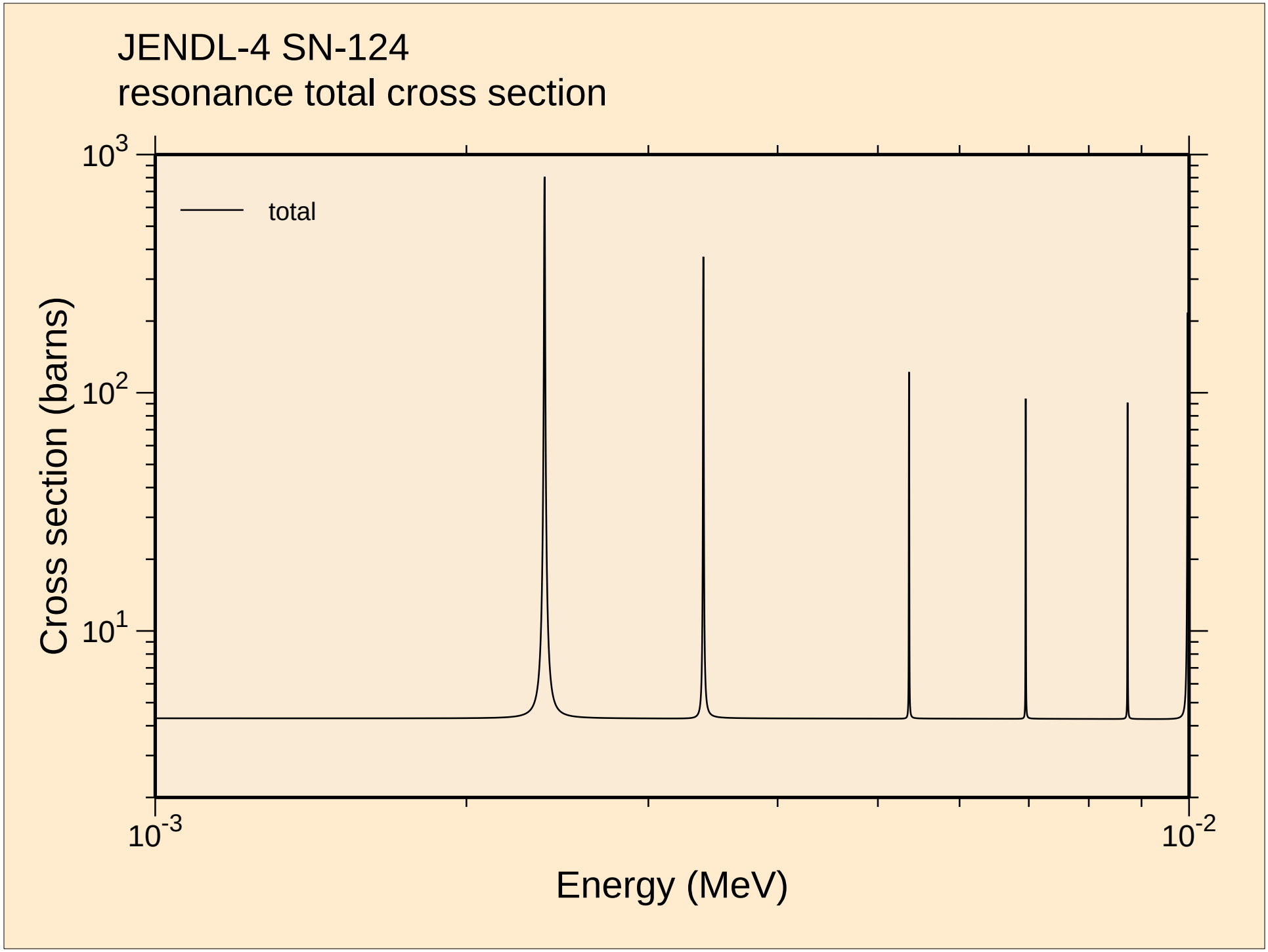
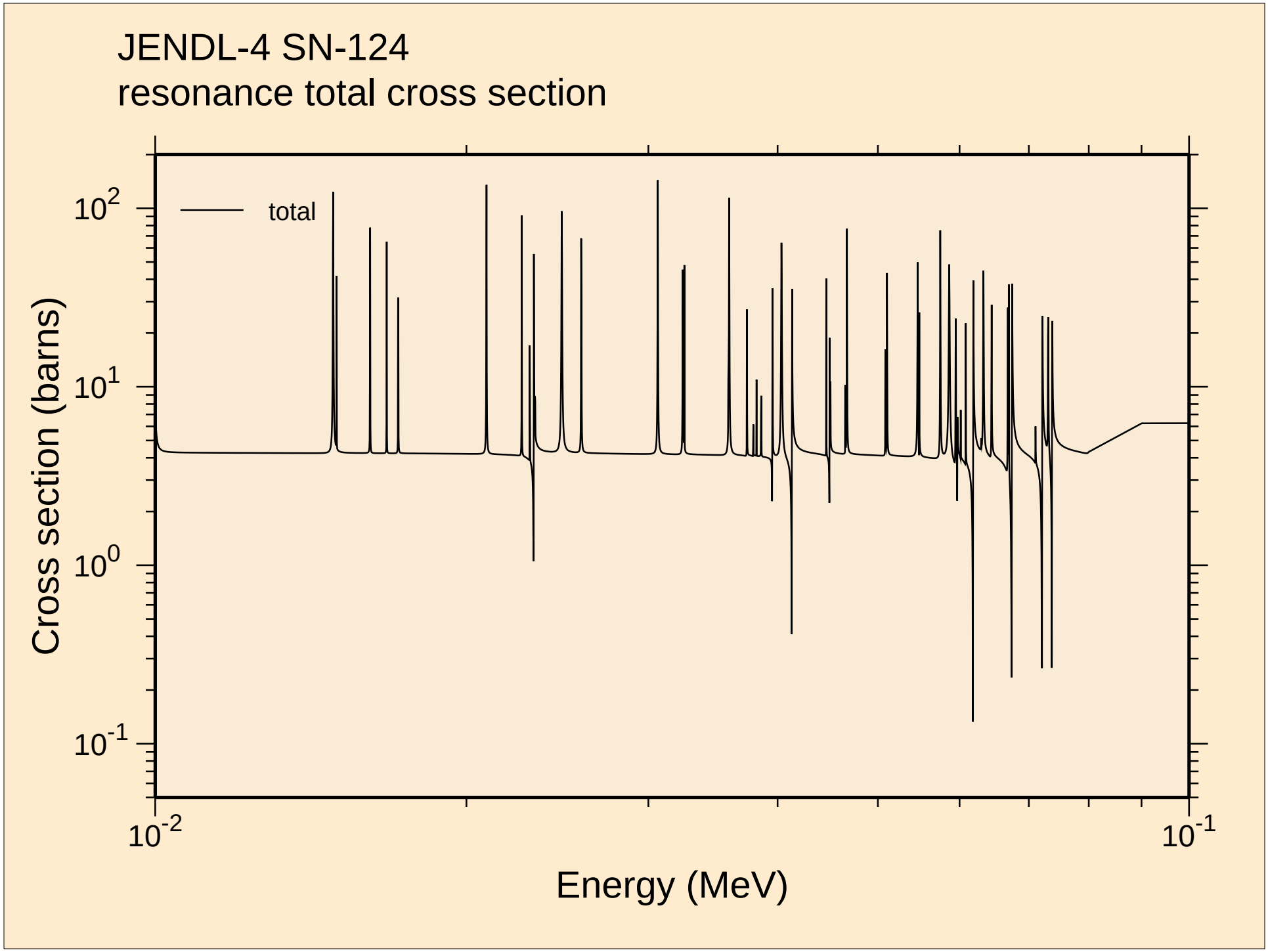
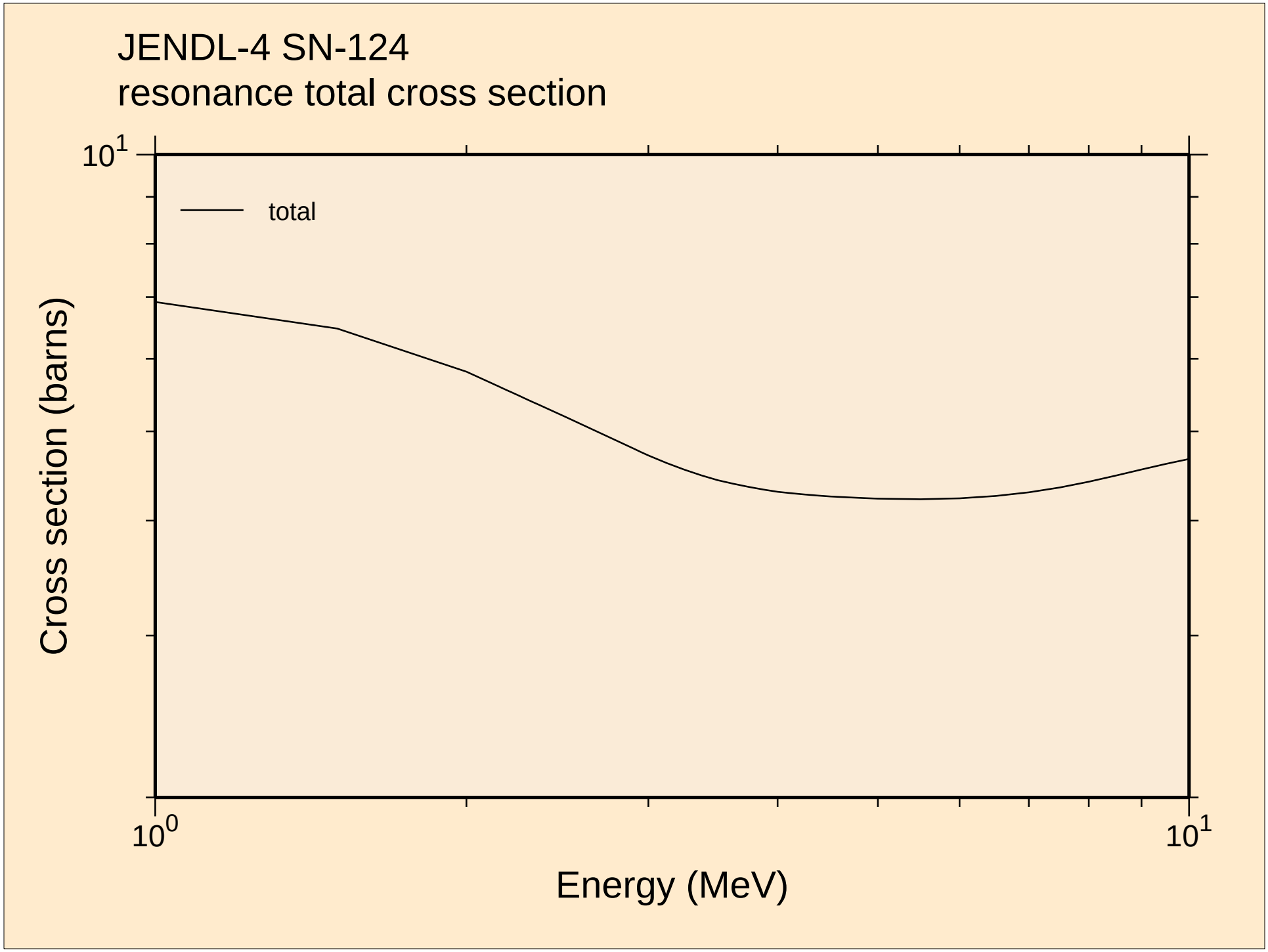

JENDL-4 SN-124
Principal cross sections
Cross section (barns)
Energy (MeV)
total
absorption
elastic
gamma production

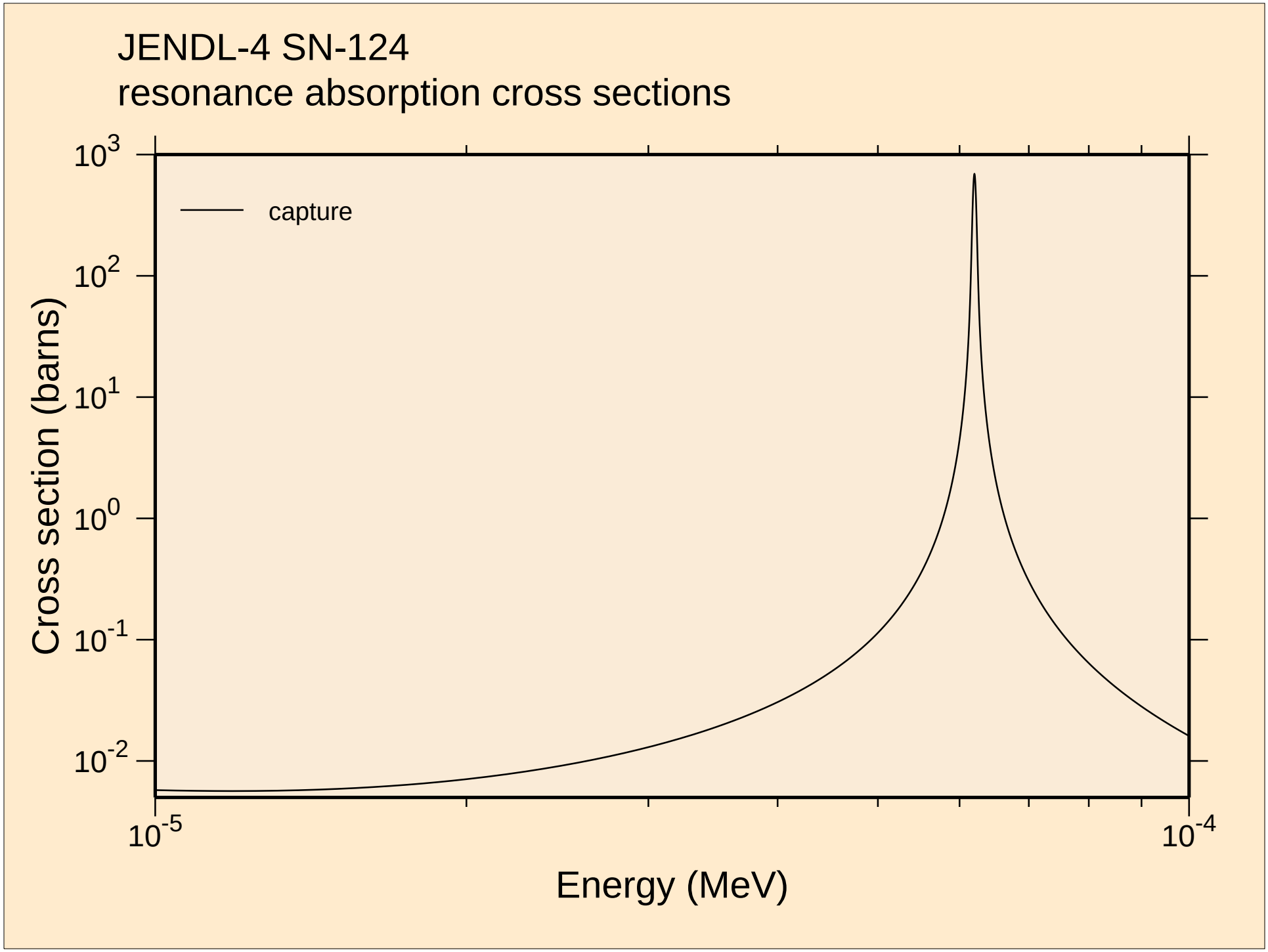

JENDL-4 SN-124
resonance total cross section
total
Cross section (barns)
10^3
10^2
10^1
10^{-5}
10^{-4}
Energy (MeV)

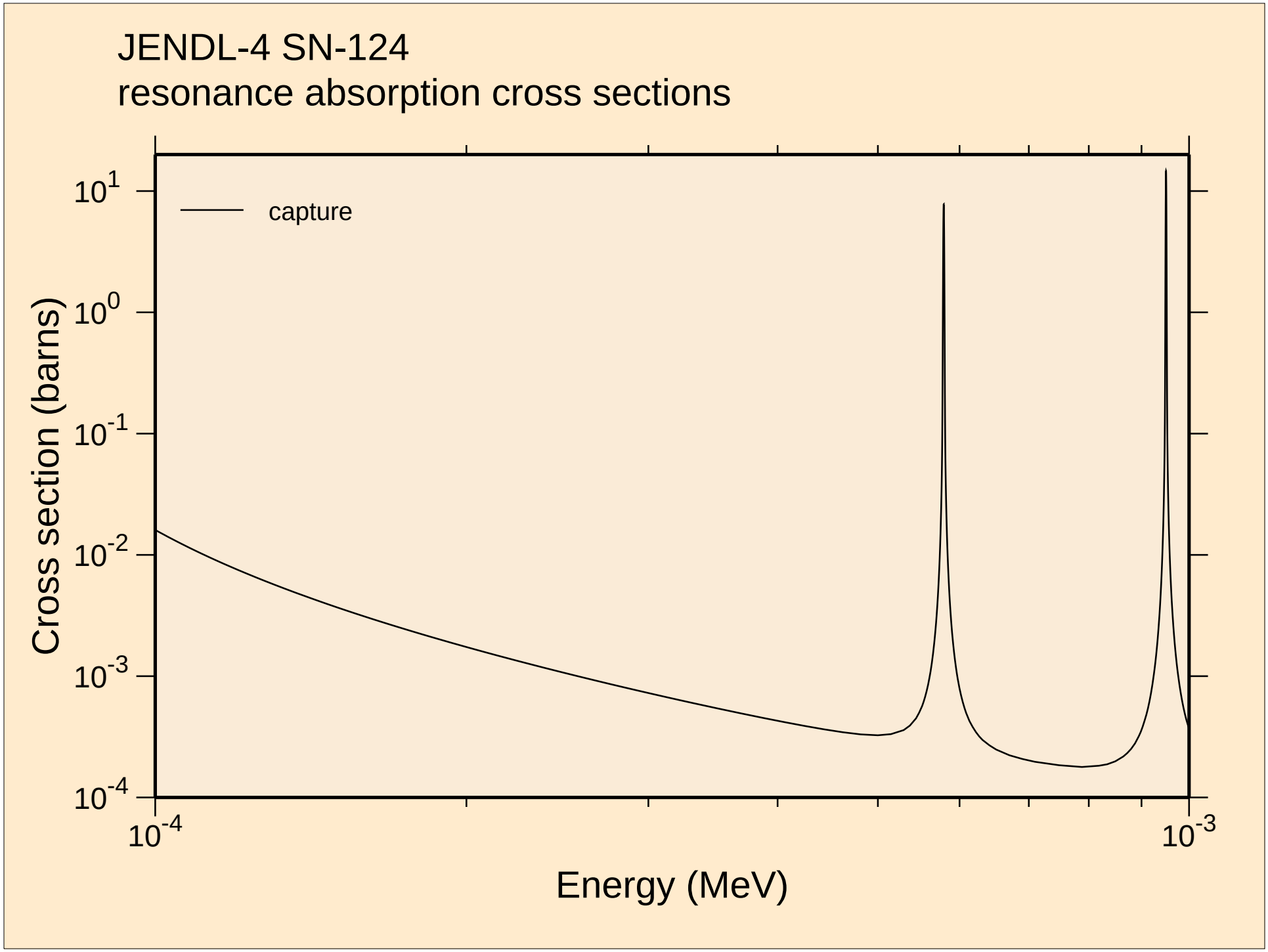

JENDL-4 SN-124
resonance total cross section
total
Cross section (barns)
10^1
10^{-4}
10^{-3}
Energy (MeV)

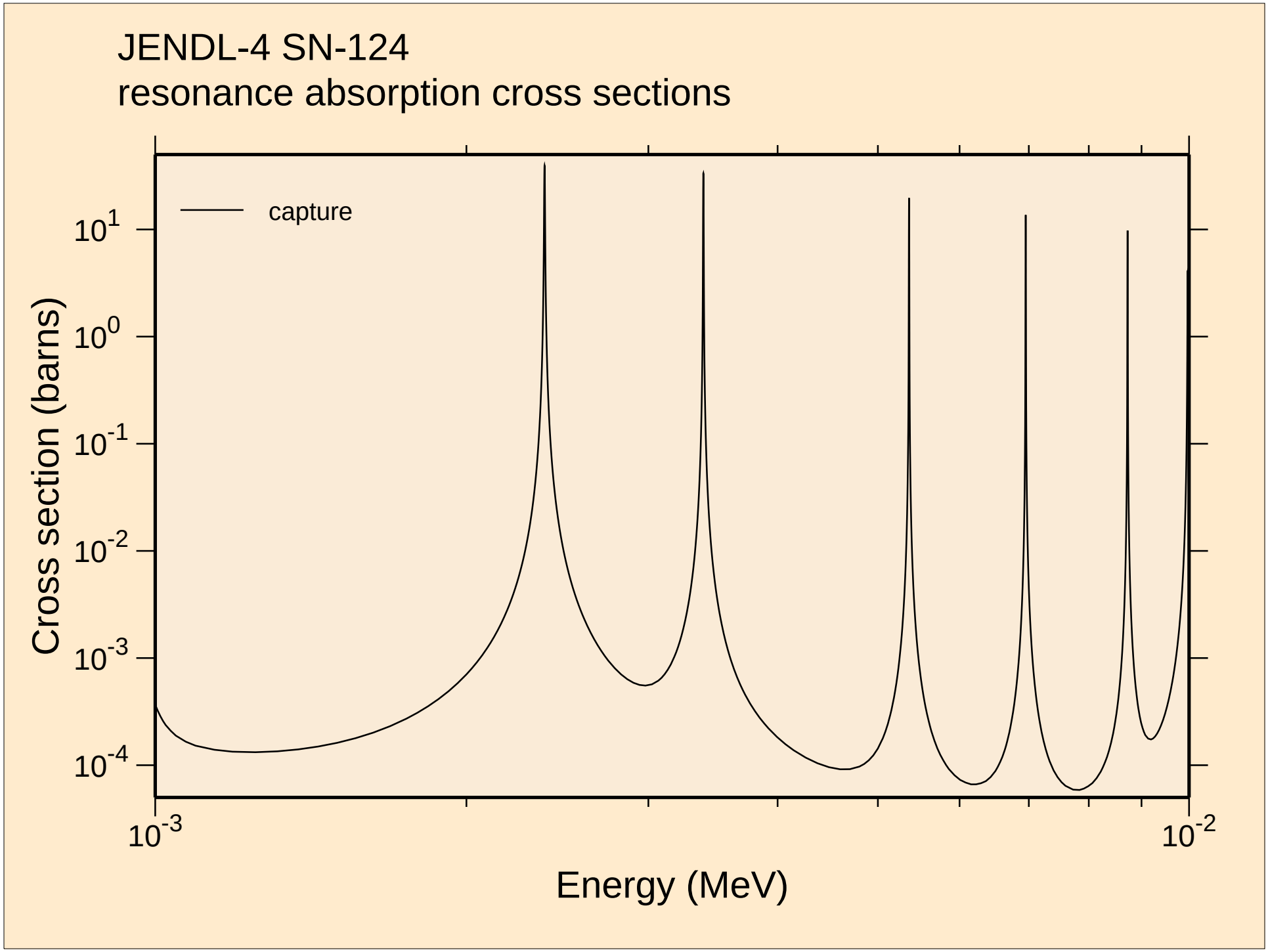

JENDL-4 SN-124
resonance total cross section
total
Cross section (barns)
10^3
10^2
10^1
10^{-3}
10^{-2}
Energy (MeV)

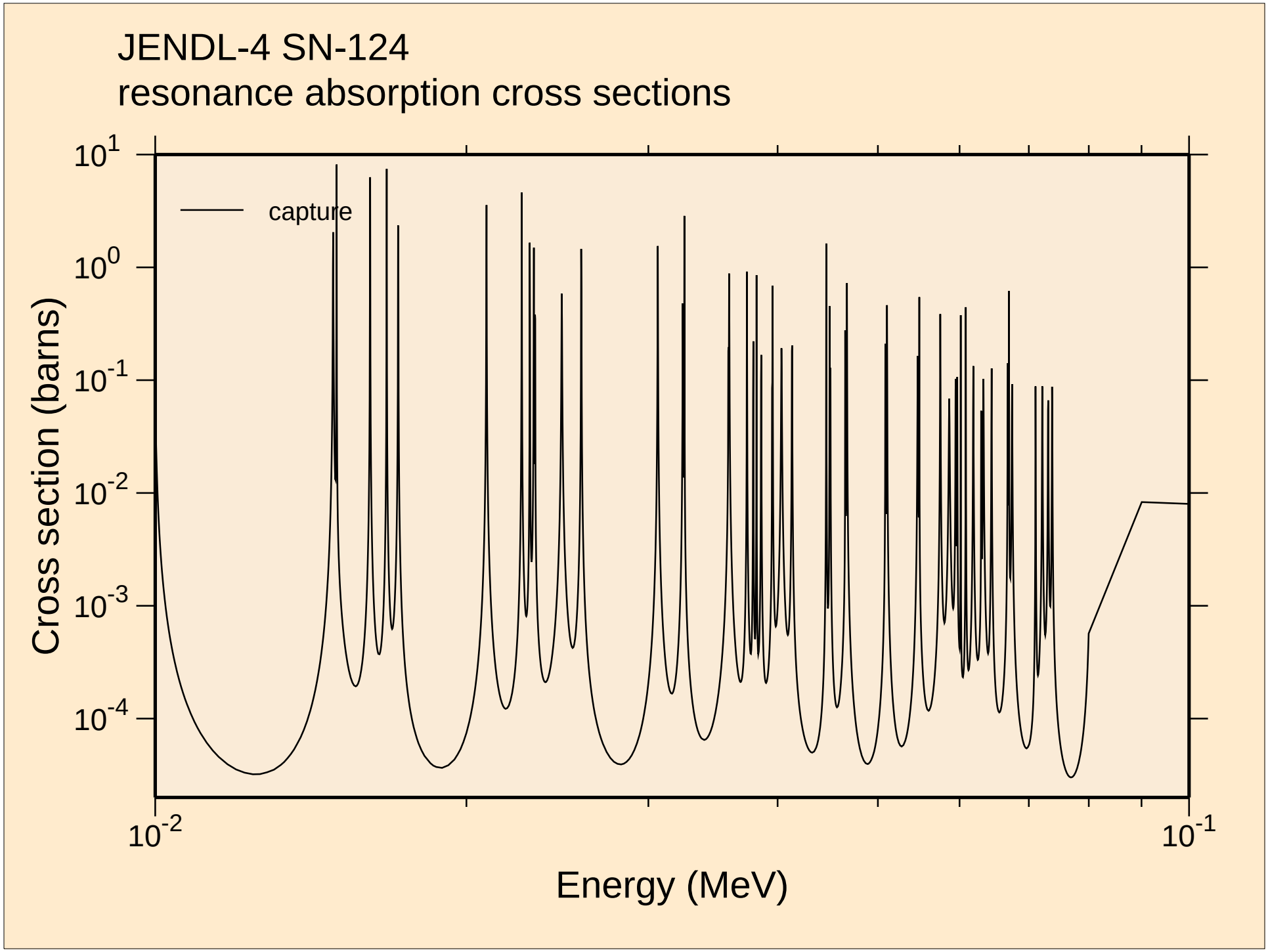

JENDL-4 SN-124
resonance total cross section
total
Cross section (barns)
10^{2}
10^{1}
10^{0}
10^{-1}
10^{-2}
10^{-1}
Energy (MeV)

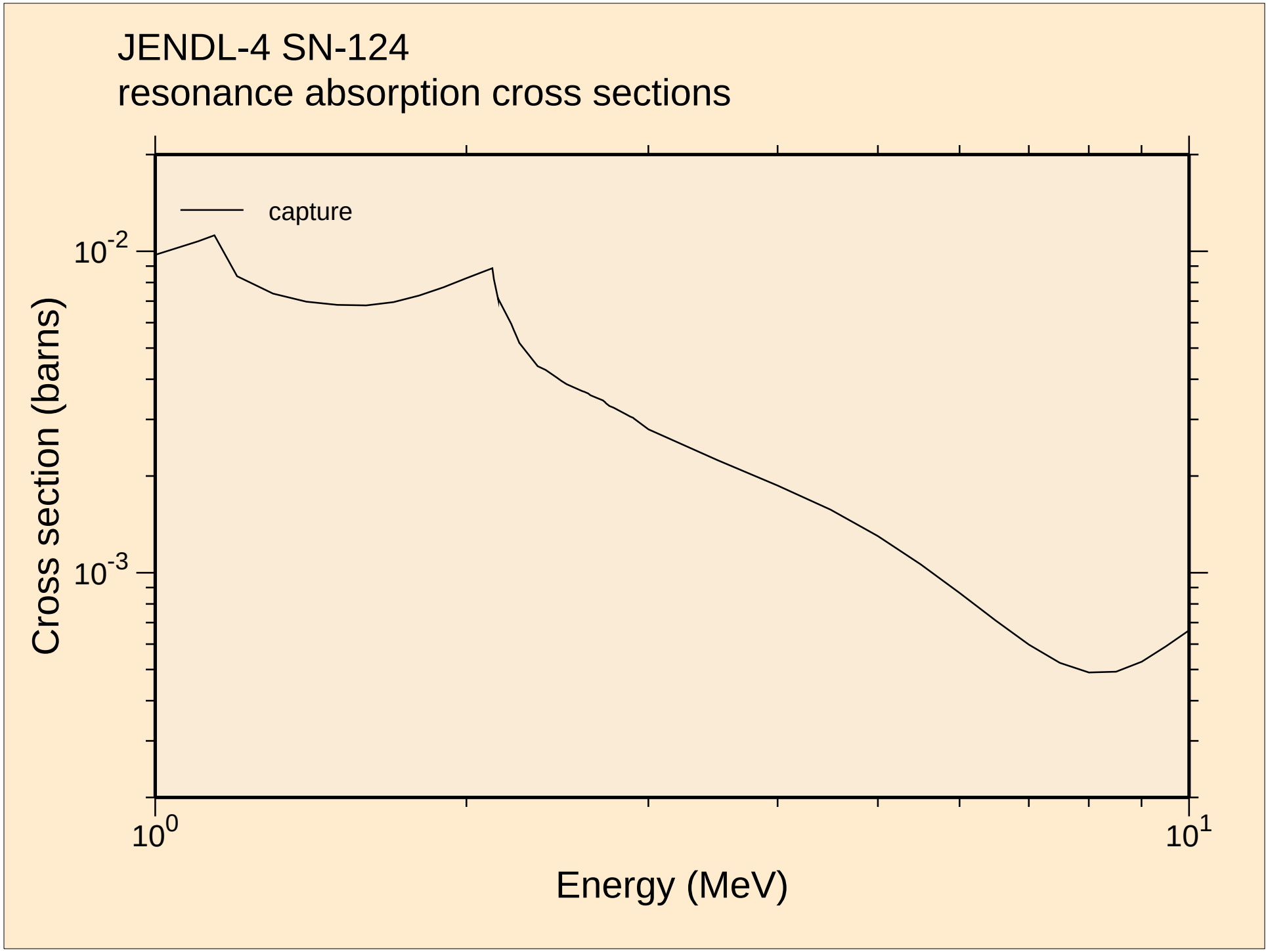

JENDL-4 SN-124
resonance total cross section
total
Cross section (barns)
Energy (MeV)
10^1
10^0
10^1

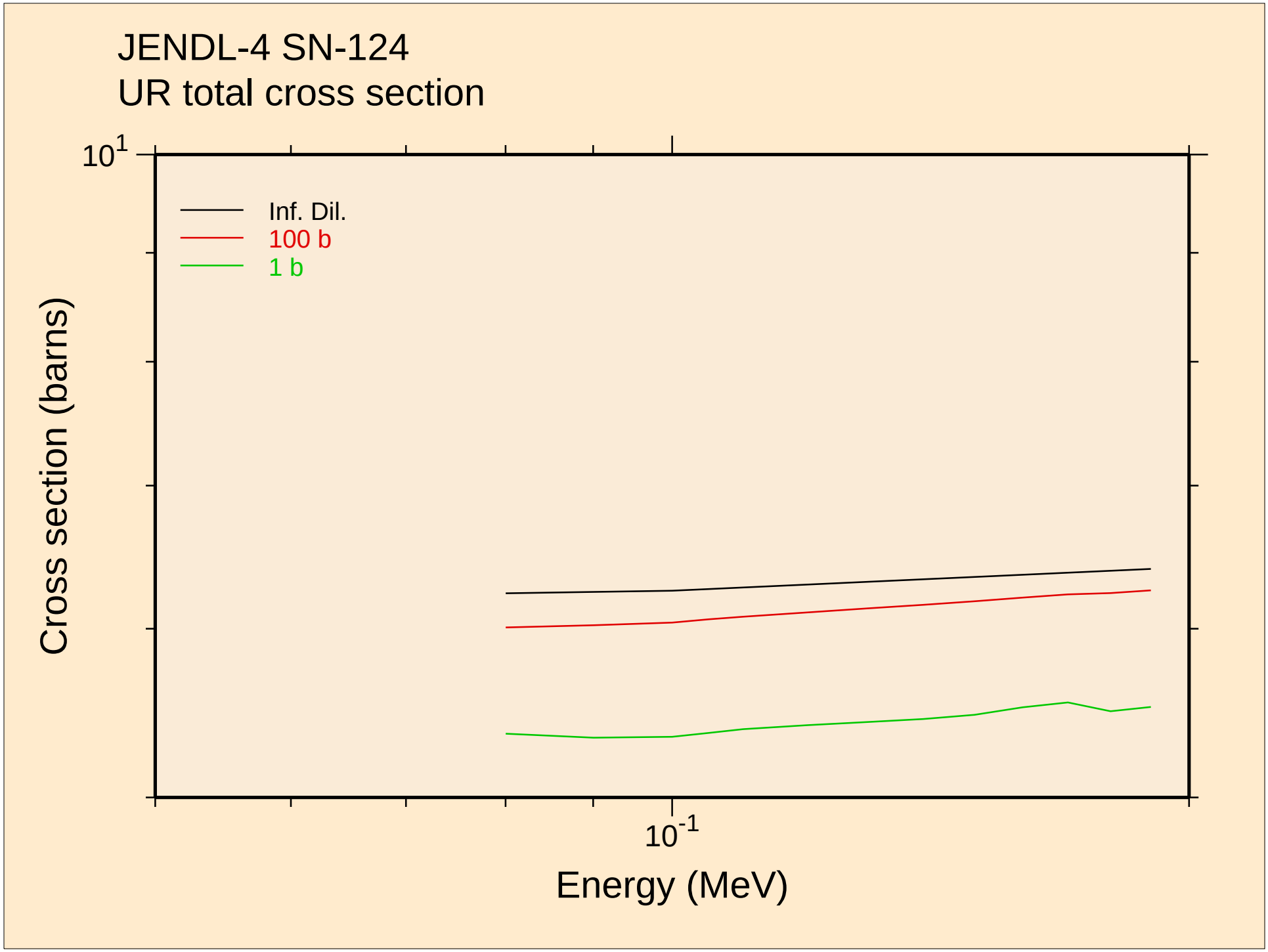

JENDL-4 SN-124
resonance absorption cross sections
capture
Cross section (barns)
10^{3}
10^{2}
10^{1}
10^{0}
10^{-1}
10^{-2}
10^{-5}
10^{-4}
Energy (MeV)

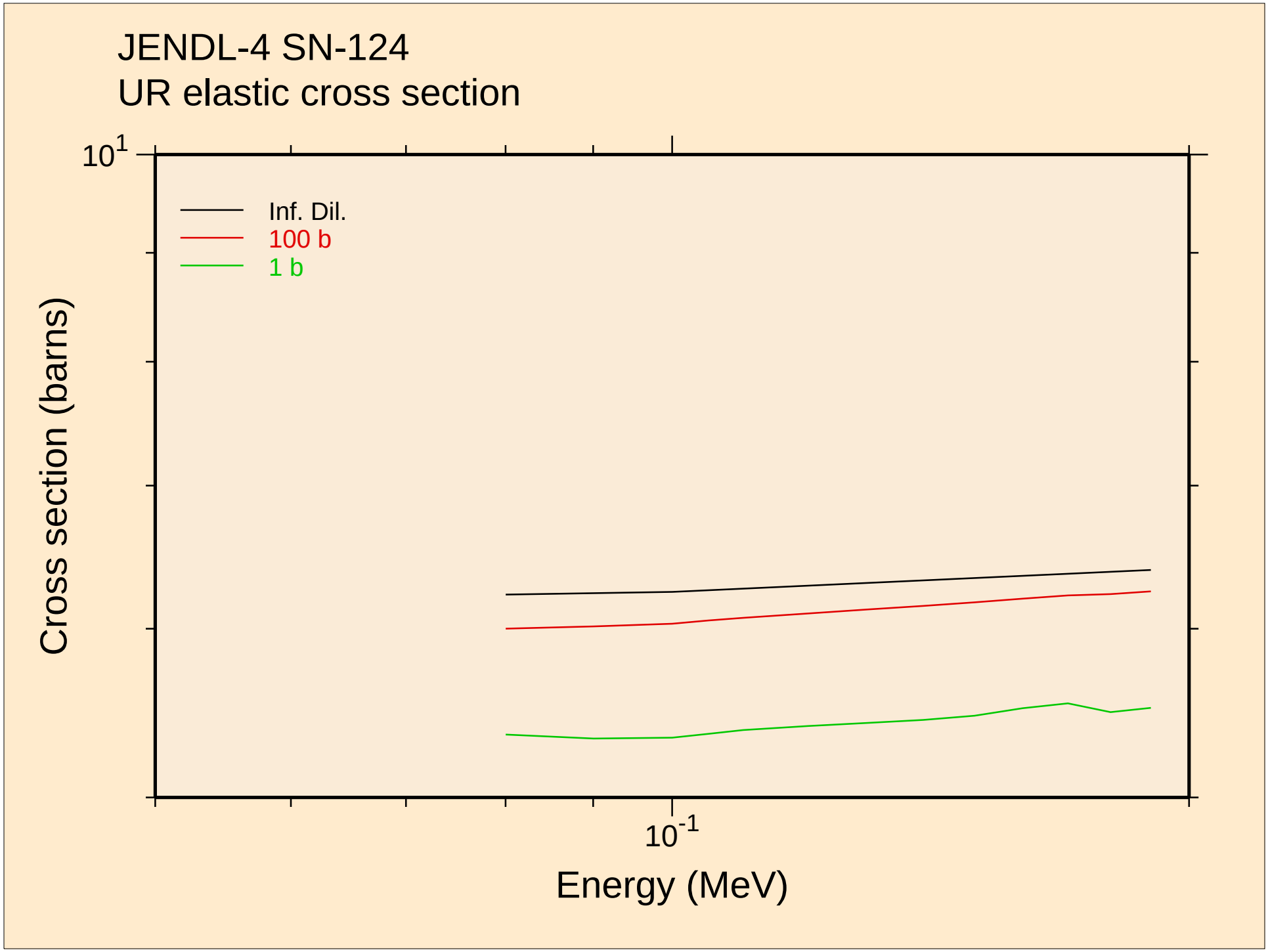

JENDL-4 SN-124
resonance absorption cross sections
capture
Cross section (barns)
10^{1}
10^{0}
10^{-1}
10^{-2}
10^{-3}
10^{-4}
10^{-4}
10^{-3}
Energy (MeV)

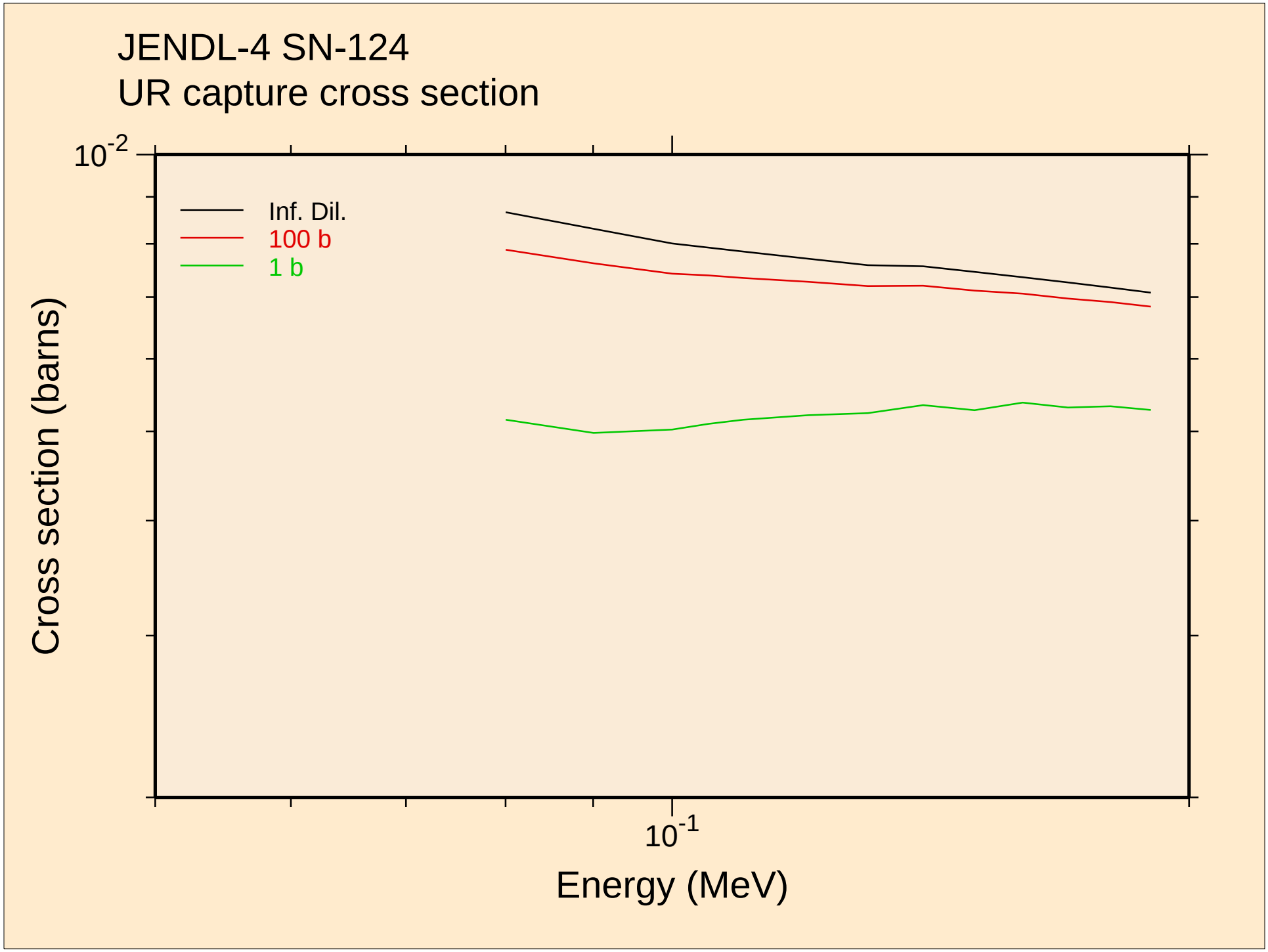

JENDL-4 SN-124
resonance absorption cross sections
capture
Cross section (barns)
10^{1}
10^{0}
10^{-1}
10^{-2}
10^{-3}
10^{-4}
10^{-3}
10^{-2}
Energy (MeV)

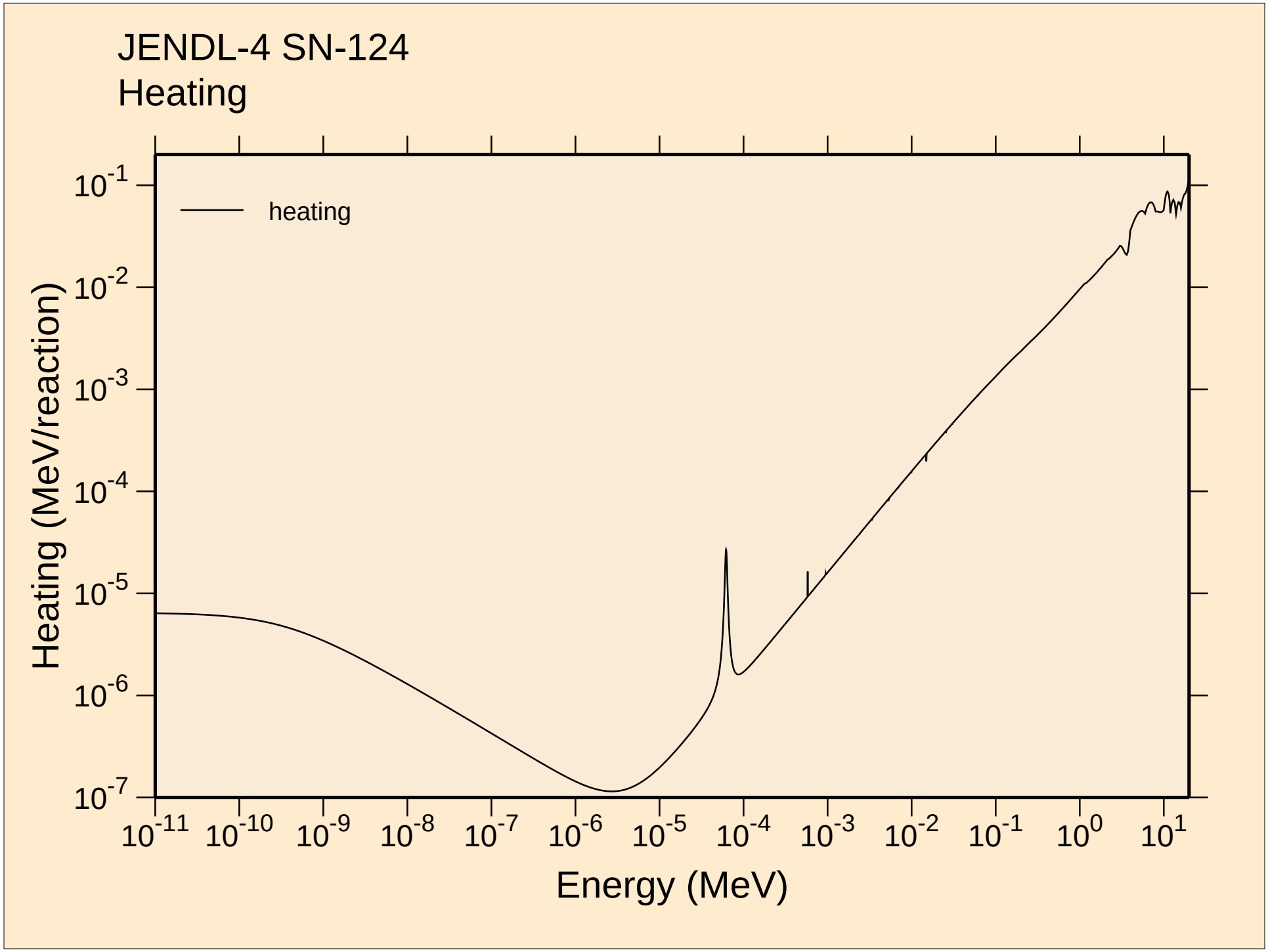

JENDL-4 SN-124
resonance absorption cross sections
capture
Cross section (barns)
Energy (MeV)
10^1
10^0
10^-1
10^-2
10^-3
10^-4
10^-2
10^-1

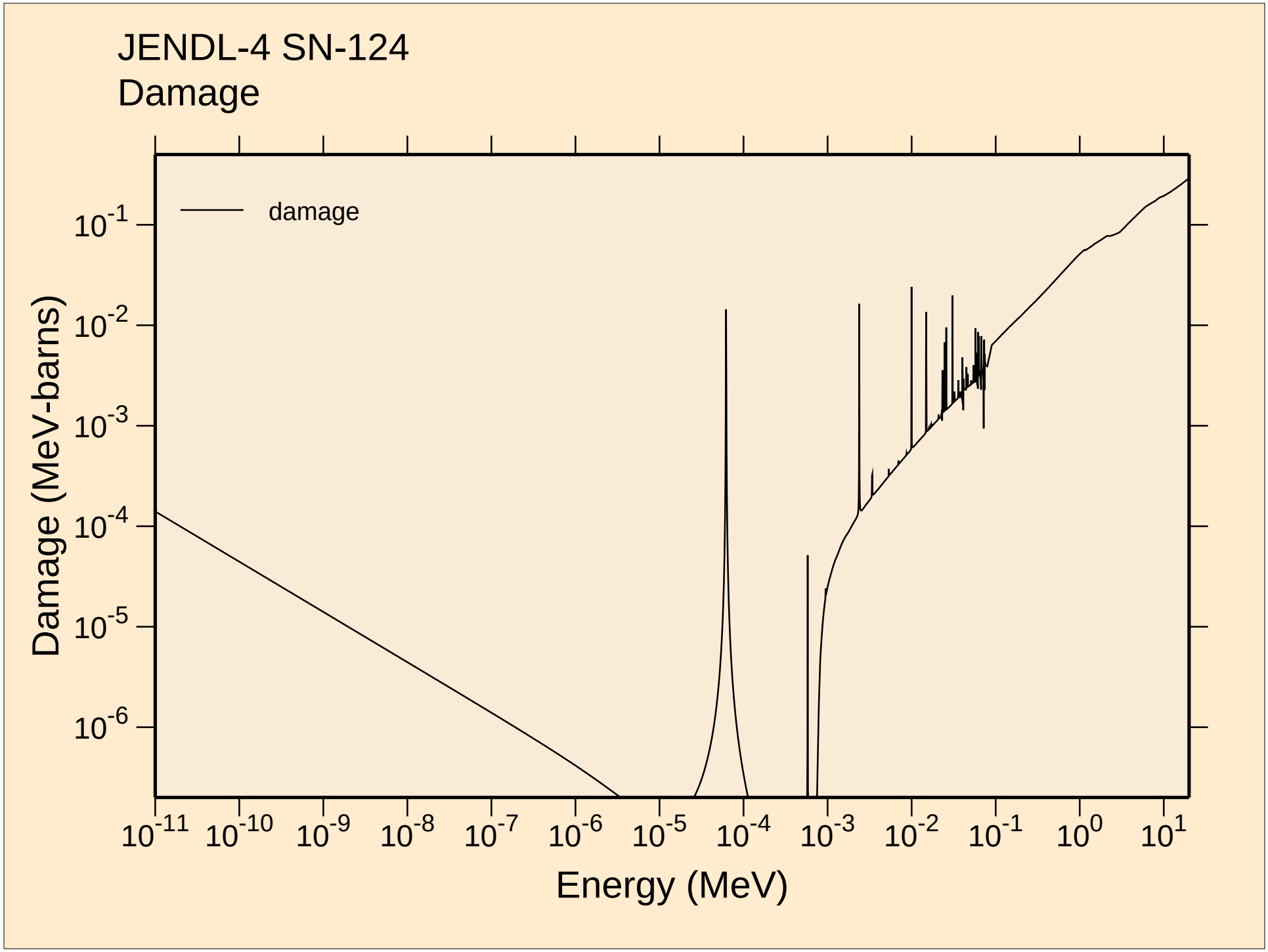

JENDL-4 SN-124
resonance absorption cross sections
capture
10^{-2}
10^{-3}
Cross section (barns)
10^{0}
10^{1}
Energy (MeV)

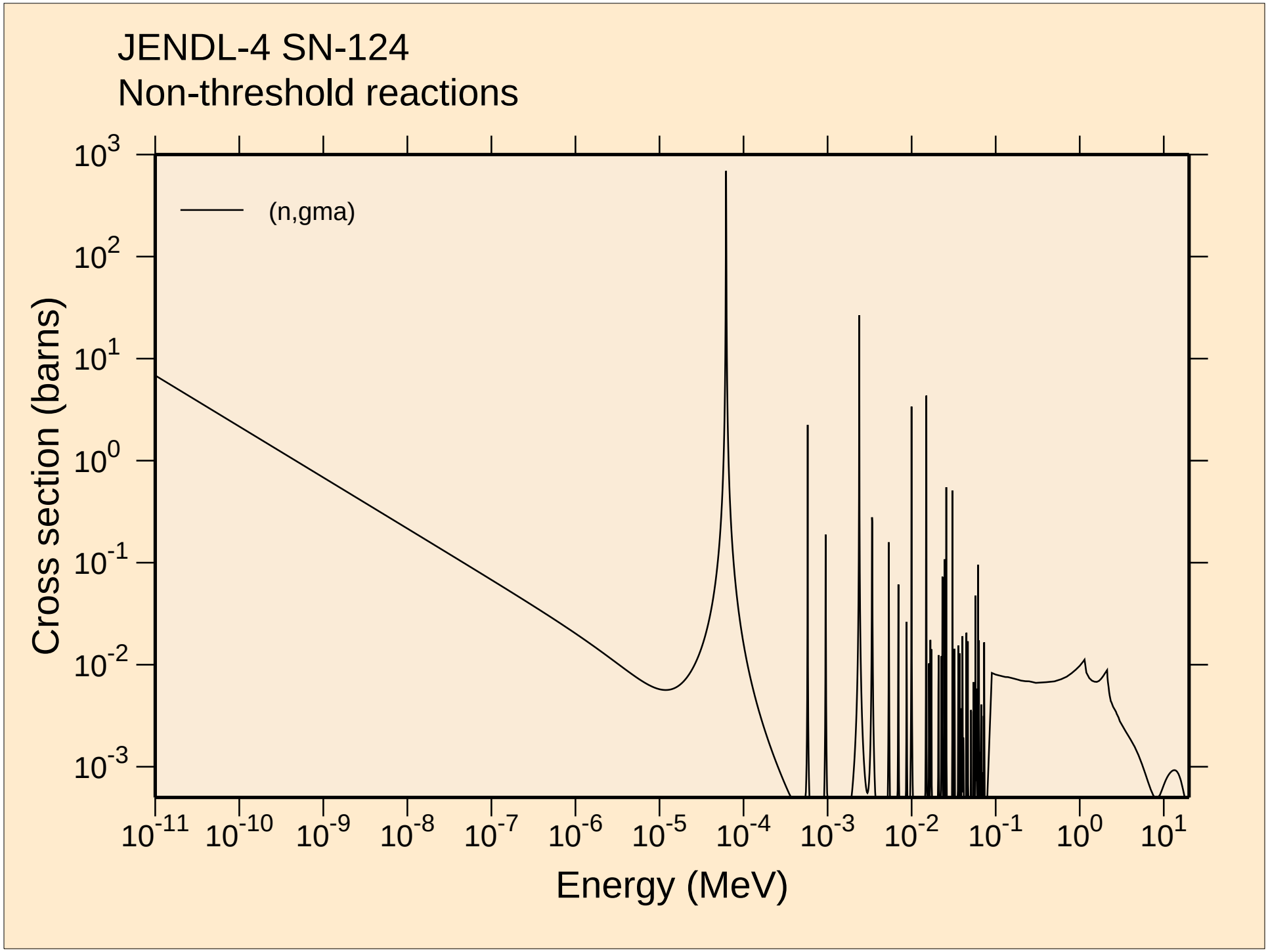

JENDL-4 SN-124
UR total cross section
Inf. Dil.
100 b
1 b
Cross section (barns)
Energy (MeV)
10^1
10^-1

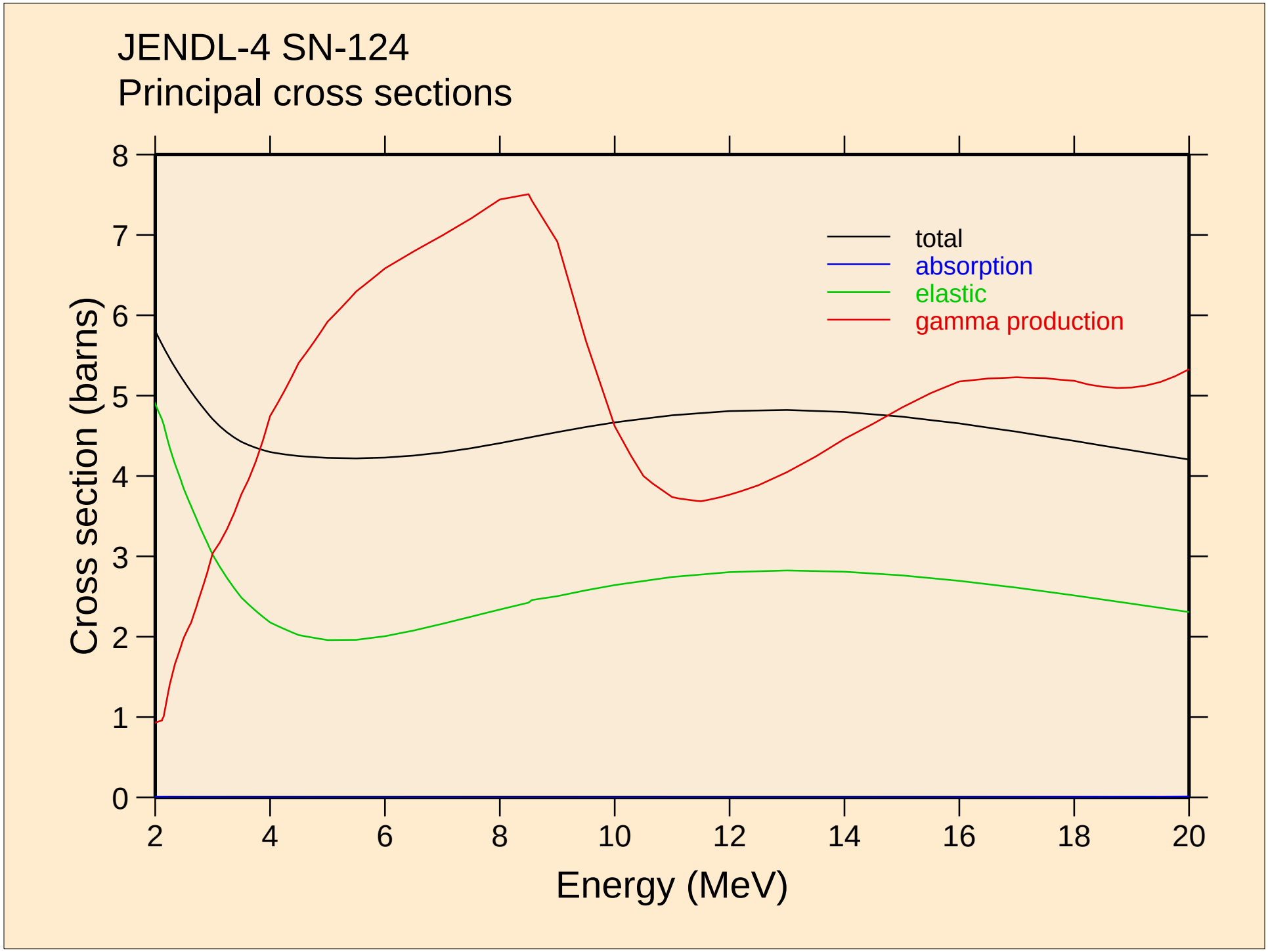

JENDL-4 SN-124
UR elastic cross section
Inf. Dil.
100 b
1 b
Cross section (barns)
Energy (MeV)
10^1
10^-1

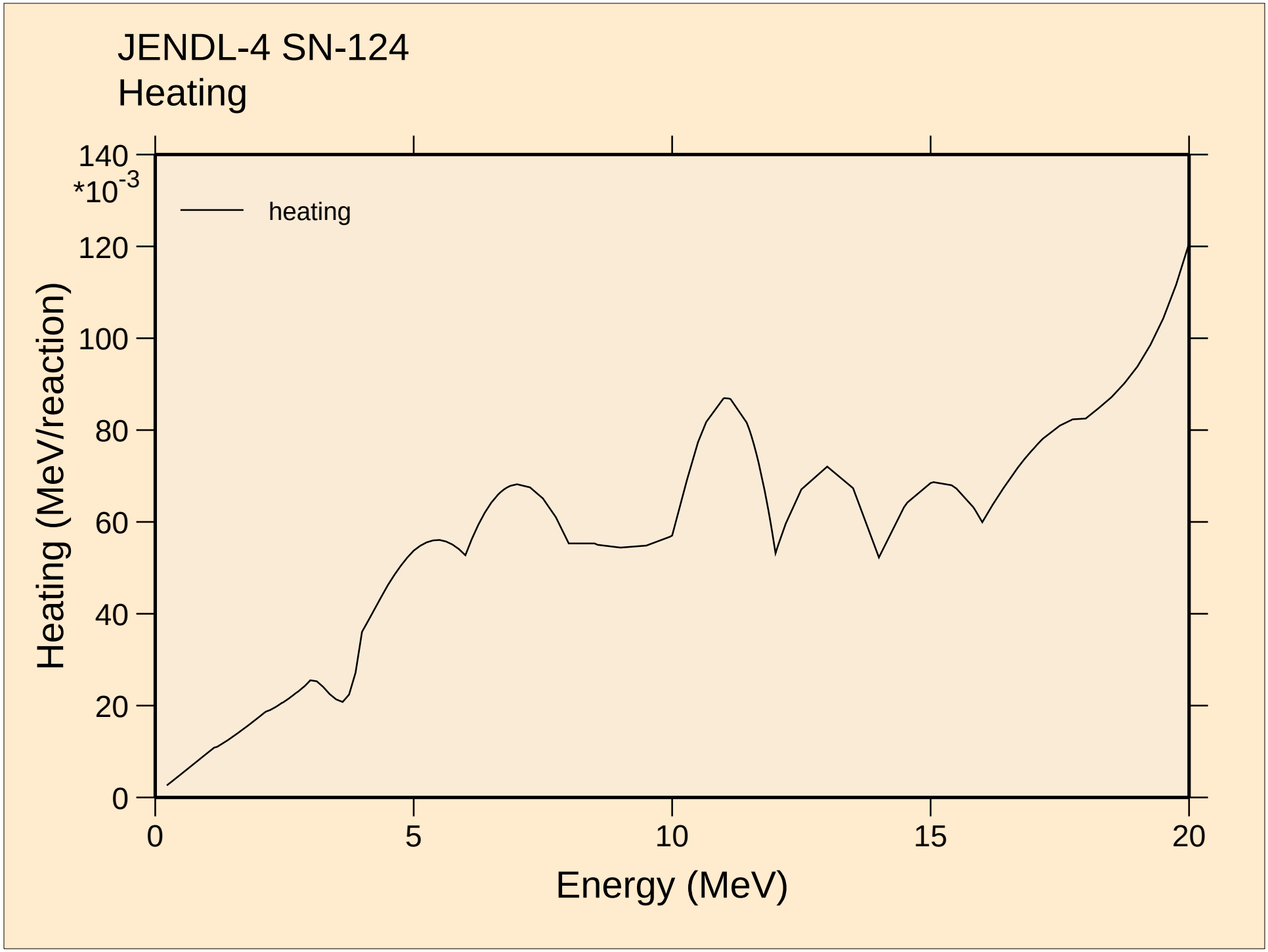

JENDL-4 SN-124
UR capture cross section
Inf. Dil.
100 b
1 b
Cross section (barns)
10^-2
10^-1
Energy (MeV)

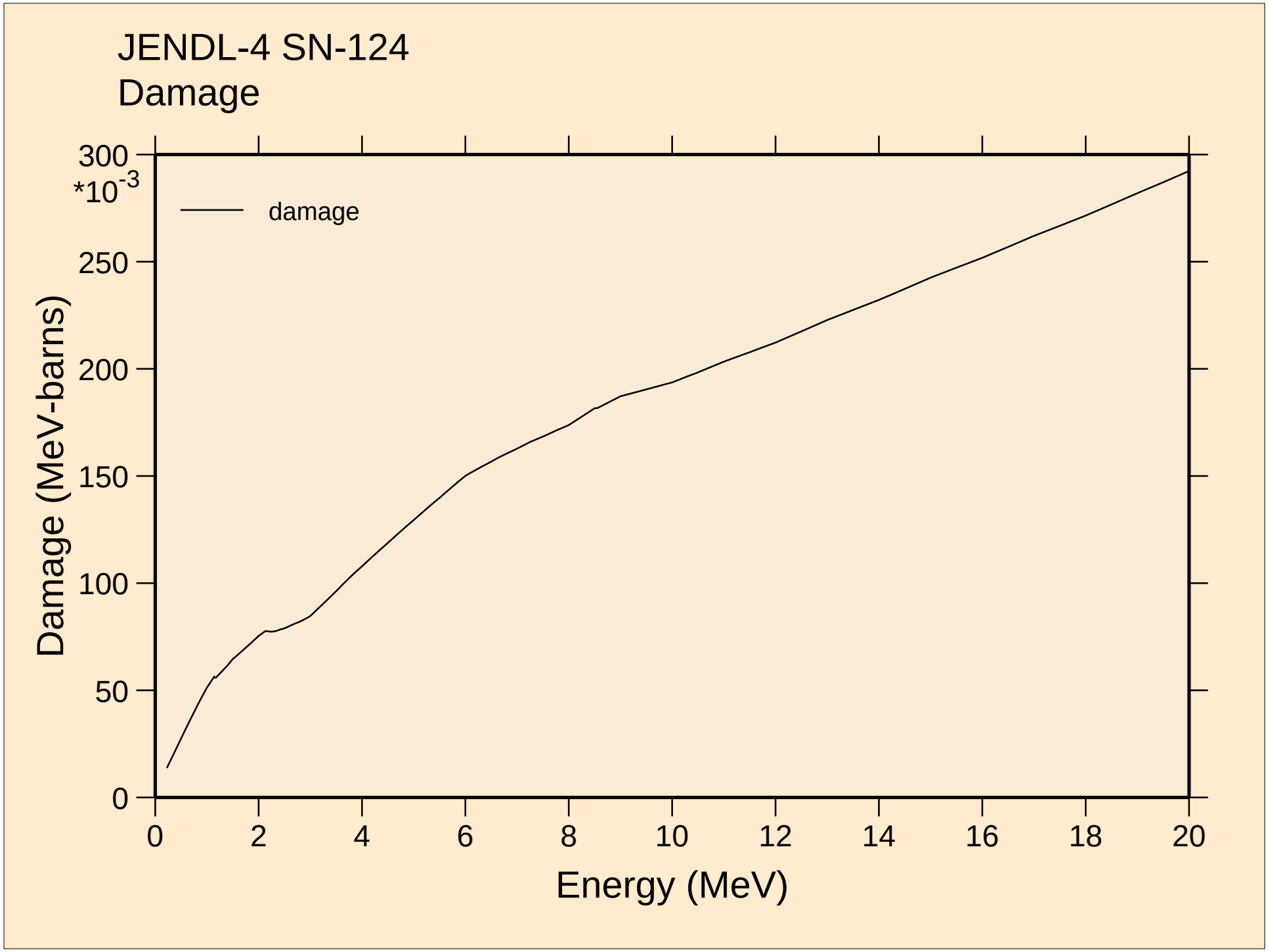

JENDL-4 SN-124
Heating
heating
Heating (MeV/reaction)
Energy (MeV)
10-1
10-2
10-3
10-4
10-5
10-6
10-7
10-11
10-10
10-9
10-8
10-7
10-6
10-5
10-4
10-3
10-2
10-1
100
101

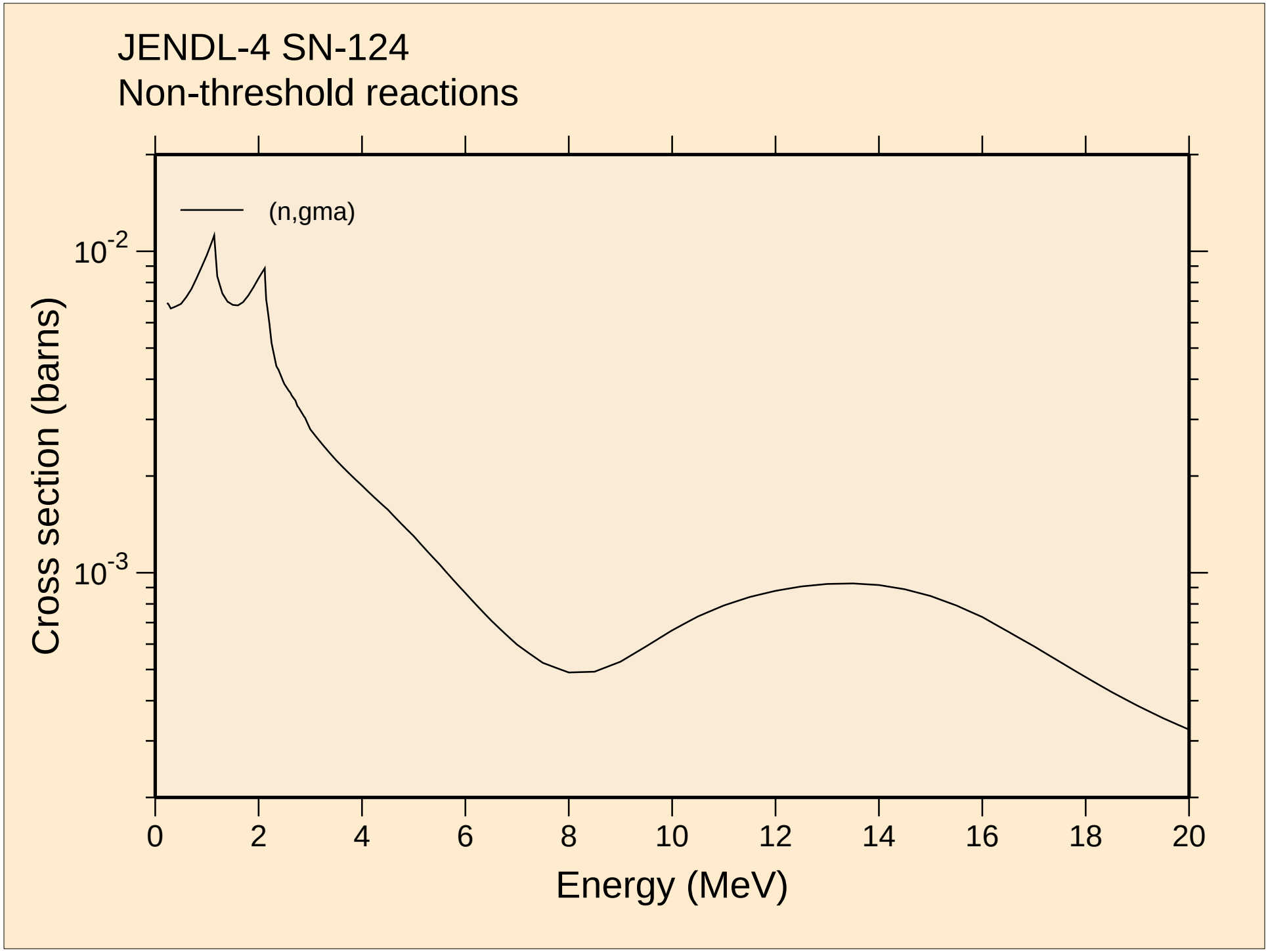

JENDL-4 SN-124
Damage
damage
Damage (MeV-barns)
Energy (MeV)
10^-1
10^-2
10^-3
10^-4
10^-5
10^-6
10^-11
10^-10
10^-9
10^-8
10^-7
10^-6
10^-5
10^-4
10^-3
10^-2
10^-1
10^0
10^1

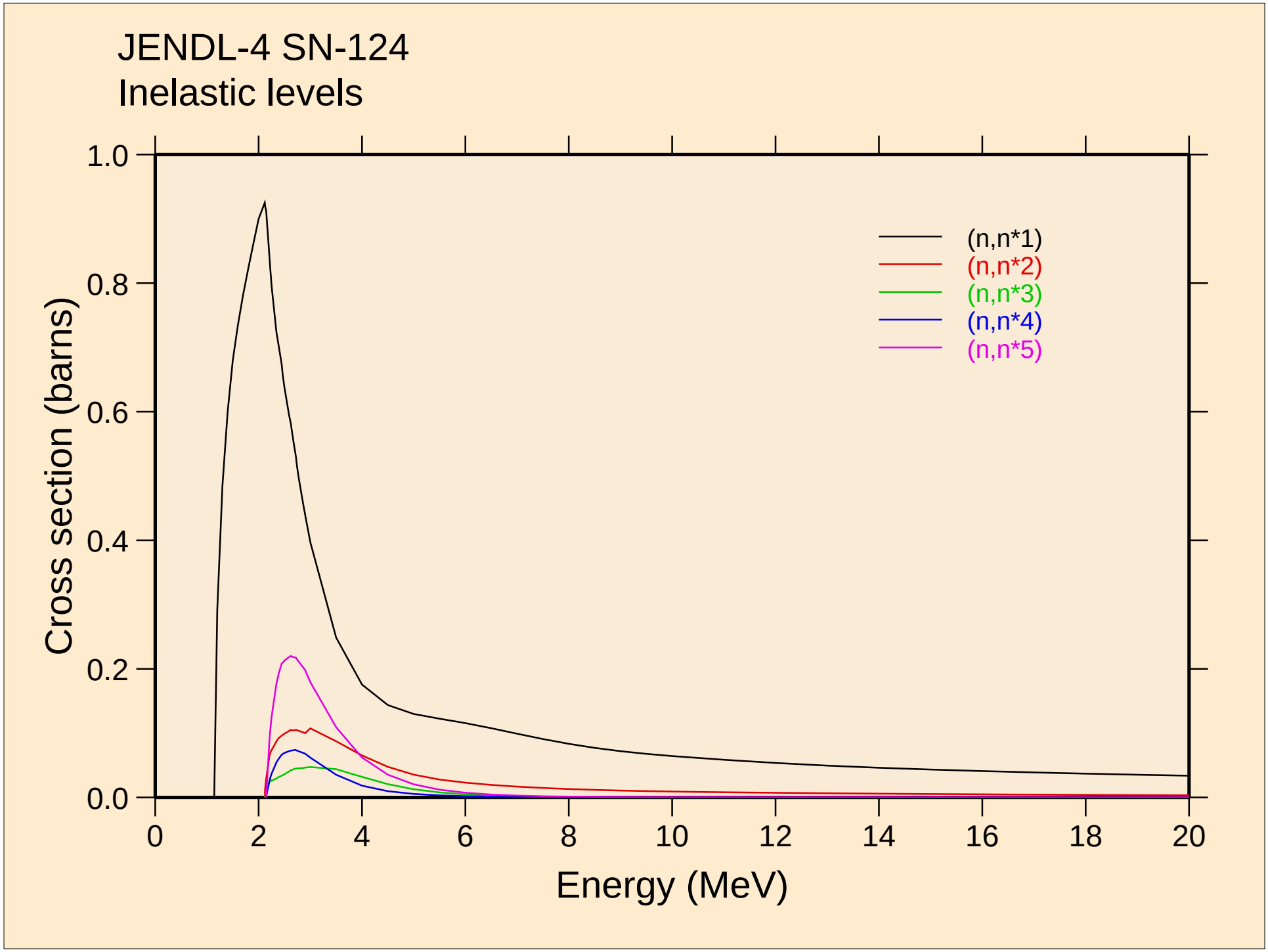

JENDL-4 SN-124
Non-threshold reactions
(n,gma)
Cross section (barns)
Energy (MeV)
10^3
10^2
10^1
10^0
10^-1
10^-2
10^-3
10^-11
10^-10
10^-9
10^-8
10^-7
10^-6
10^-5
10^-4
10^-3
10^-2
10^-1
10^0
10^1

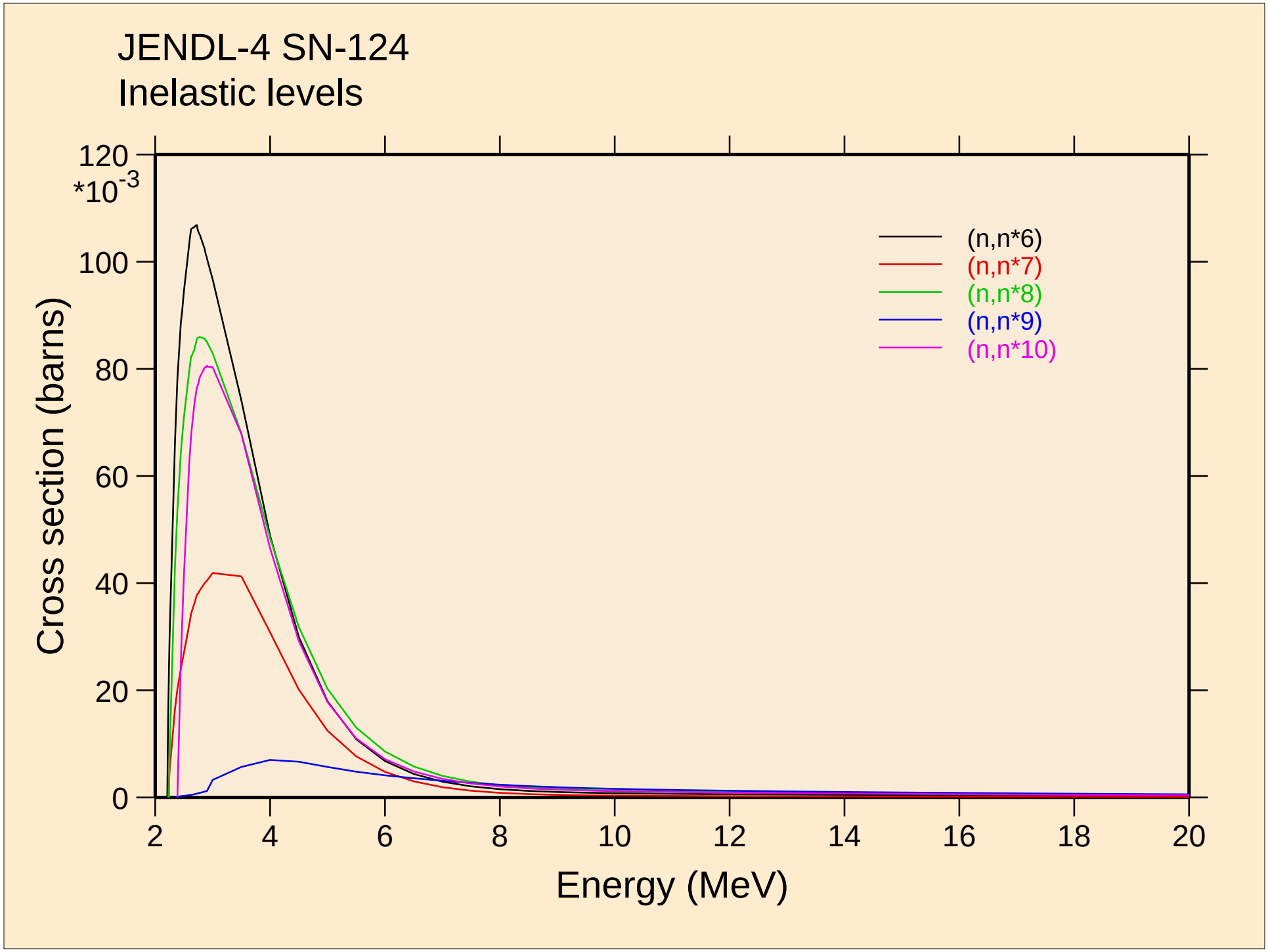

JENDL-4 SN-124
Principal cross sections
Cross section (barns)
Energy (MeV)
total
absorption
elastic
gamma production
0
1
2
3
4
5
6
7
8
2
4
6
8
10
12
14
16
18
20

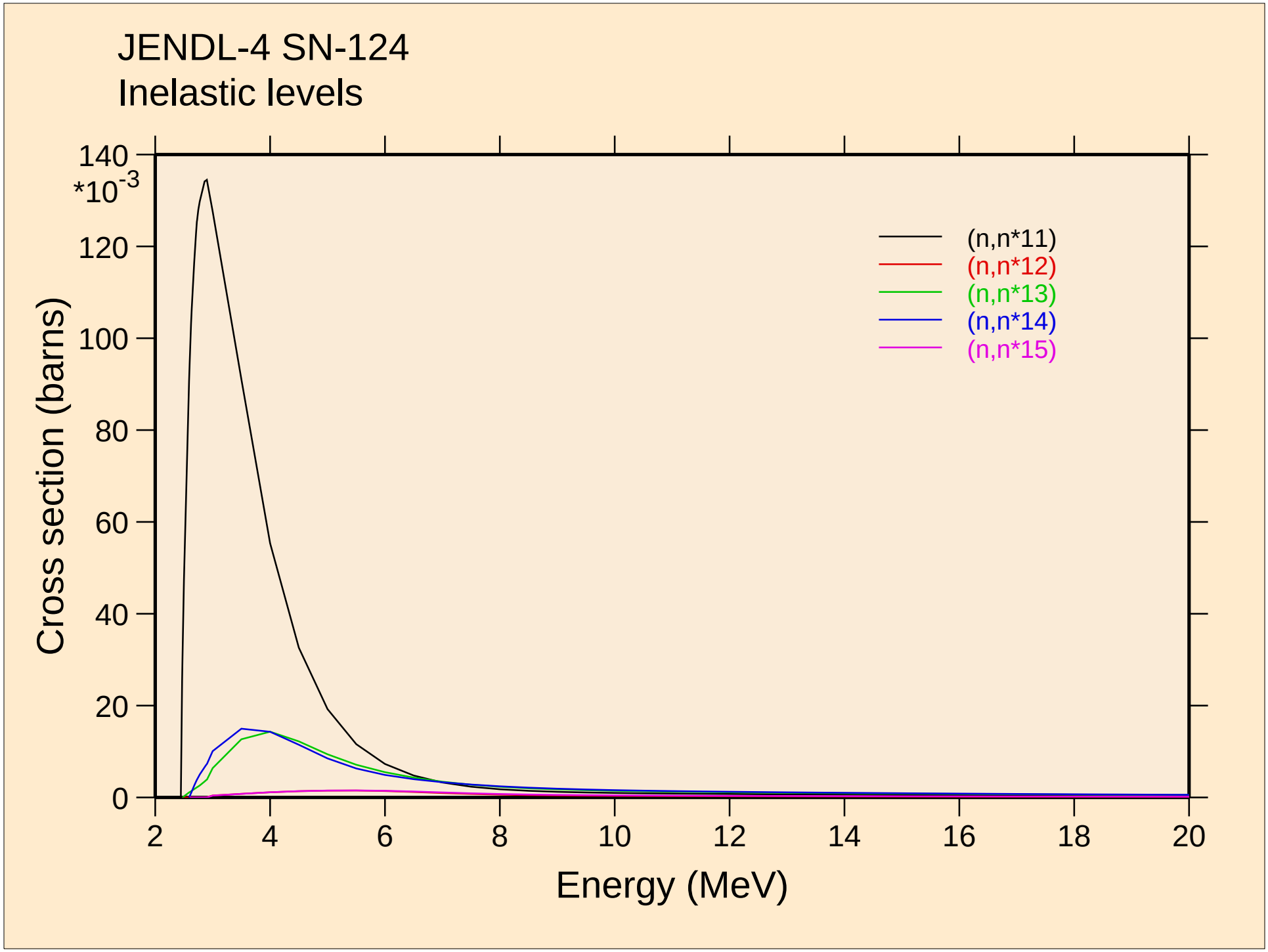

JENDL-4 SN-124
Heating
heating
*10-3
140
120
100
80
60
40
20
0
Heating (MeV/reaction)
0
5
10
15
20
Energy (MeV)

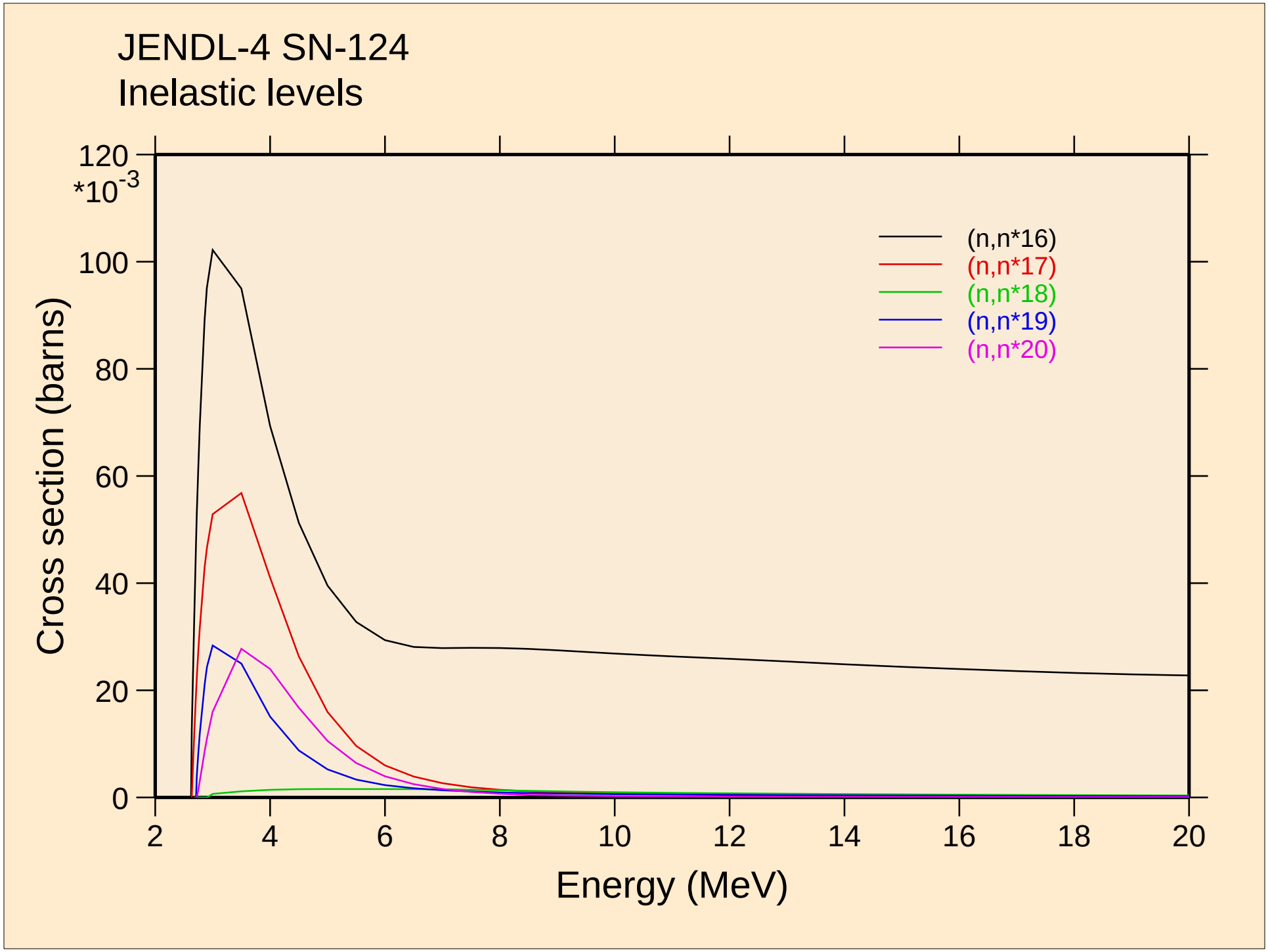

JENDL-4 SN-124
Damage
damage
Damage (MeV-barns)
*10^-3
300
250
200
150
100
50
0
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

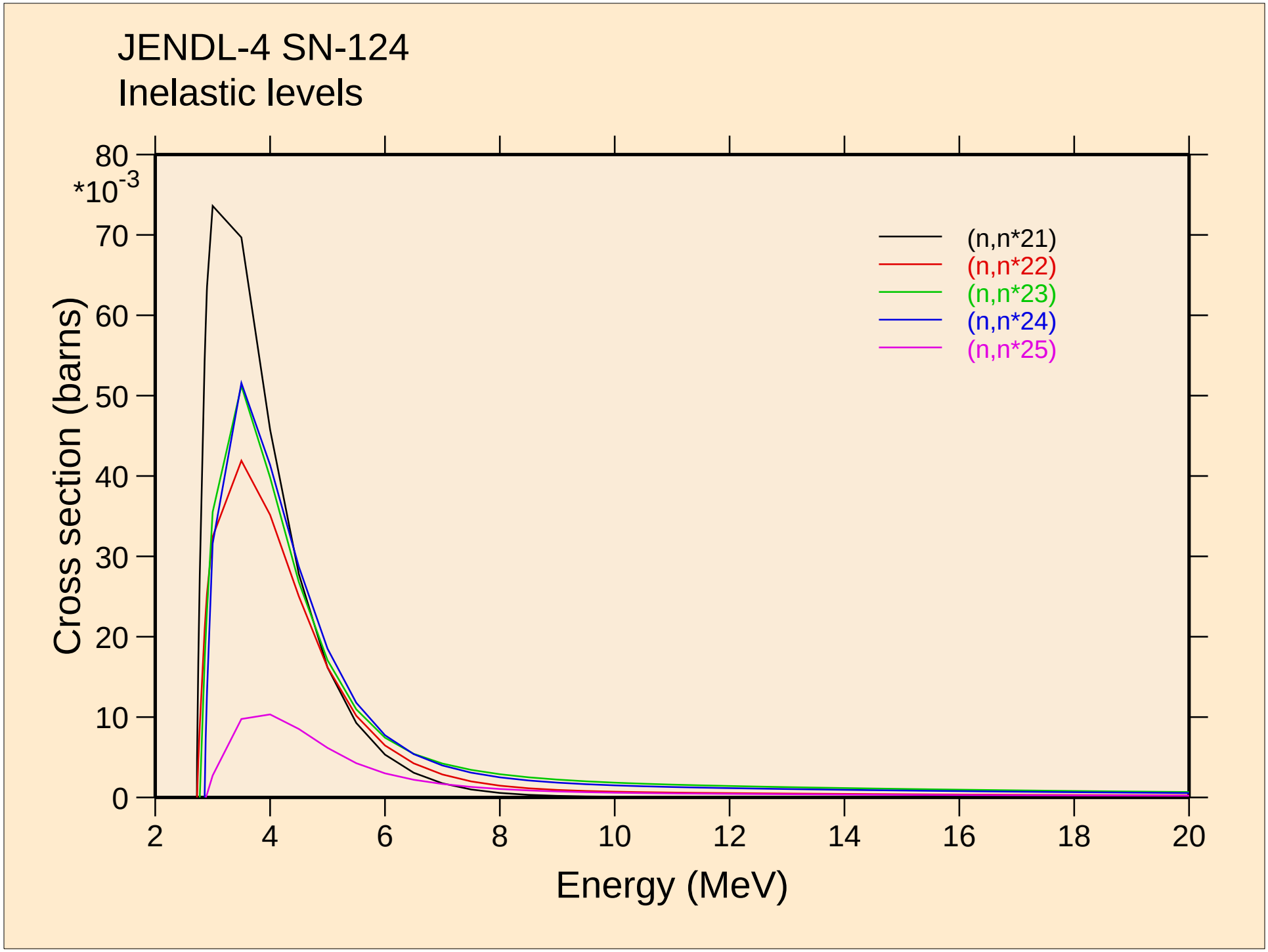

JENDL-4 SN-124
Non-threshold reactions
(n,gma)
Cross section (barns)
10-2
10-3
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

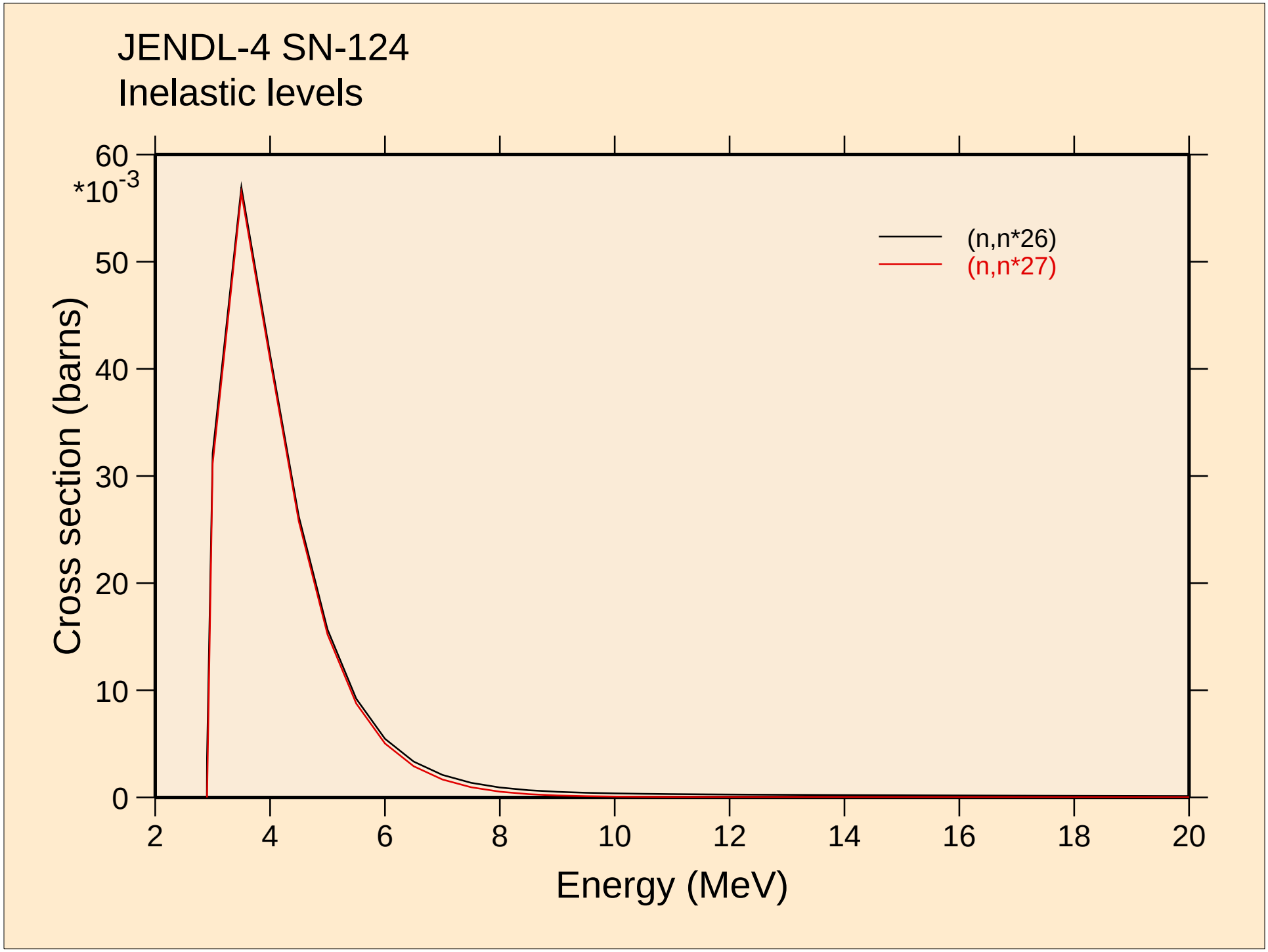

JENDL-4 SN-124
Inelastic levels
Cross section (barns)
Energy (MeV)
(n,n*1)
(n,n*2)
(n,n*3)
(n,n*4)
(n,n*5)
0.0
0.2
0.4
0.6
0.8
1.0
0
2
4
6
8
10
12
14
16
18
20

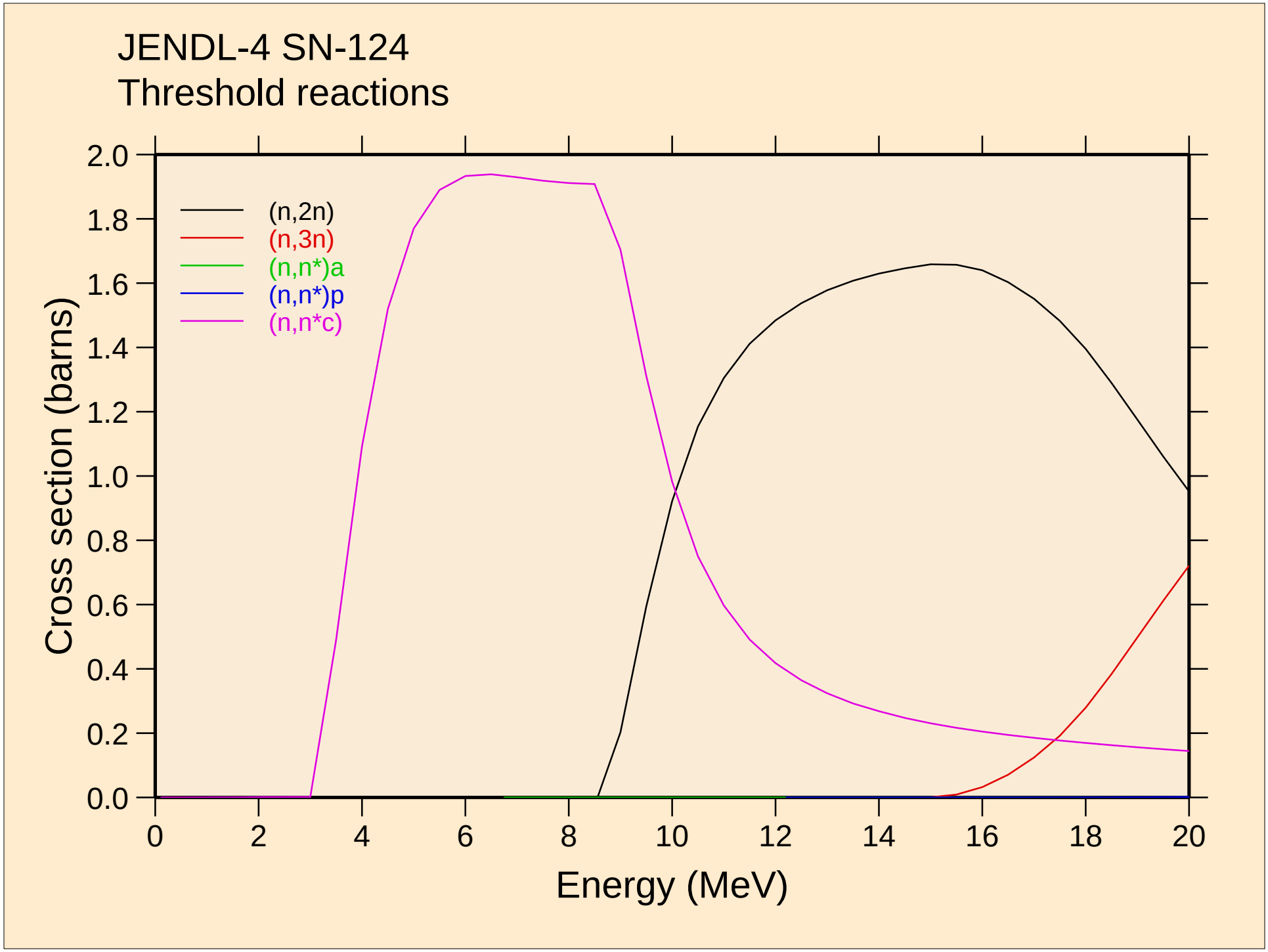

JENDL-4 SN-124
Inelastic levels
120
*10-3
100
80
60
40
20
0
Cross section (barns)
2
4
6
8
10
12
14
16
18
20
Energy (MeV)
(n,n*6)
(n,n*7)
(n,n*8)
(n,n*9)
(n,n*10)

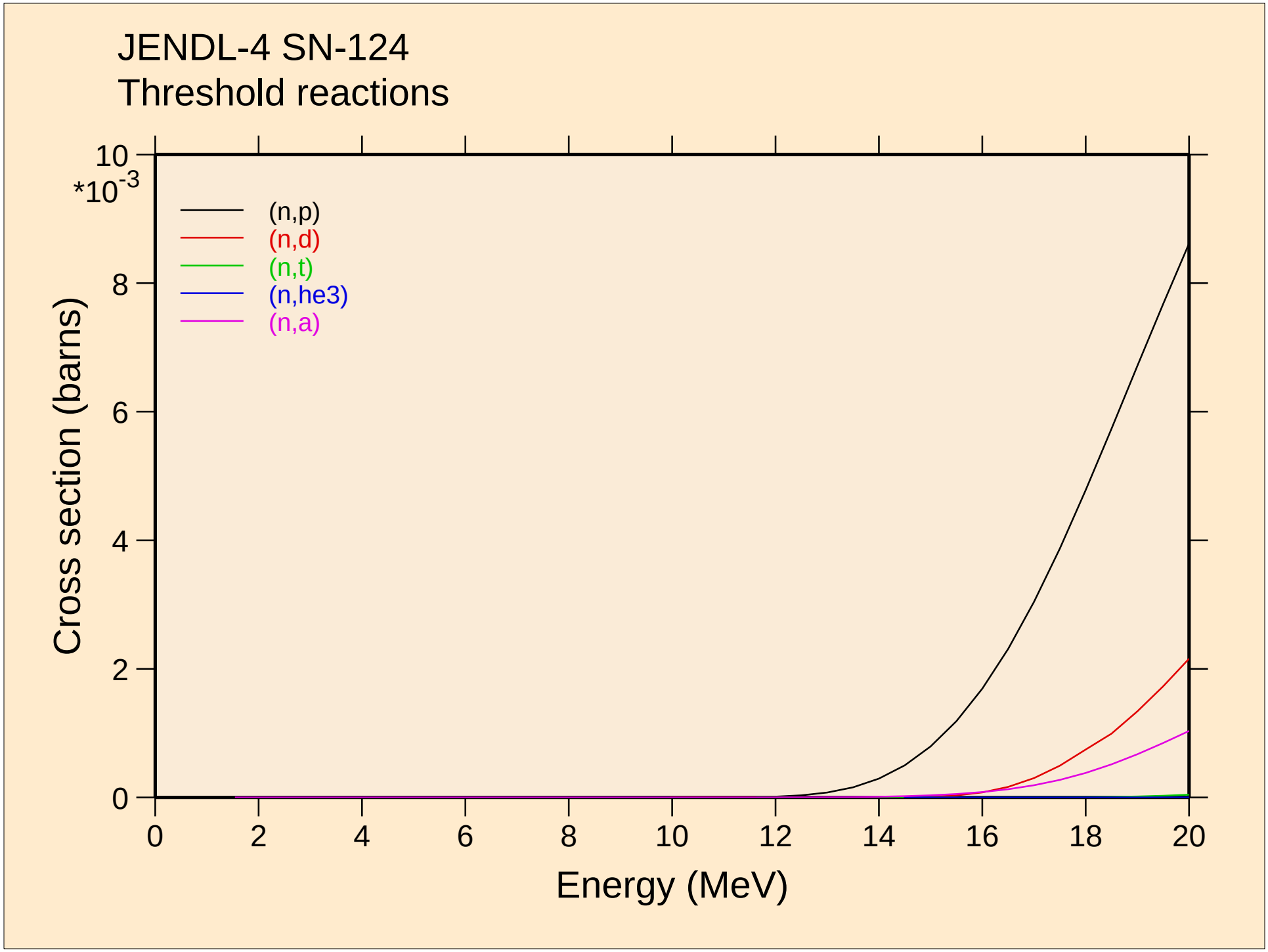

JENDL-4 SN-124
Inelastic levels
140
*10-3
120
100
80
60
40
20
0
Cross section (barns)
2
4
6
8
10
12
14
16
18
20
Energy (MeV)
(n,n*11)
(n,n*12)
(n,n*13)
(n,n*14)
(n,n*15)

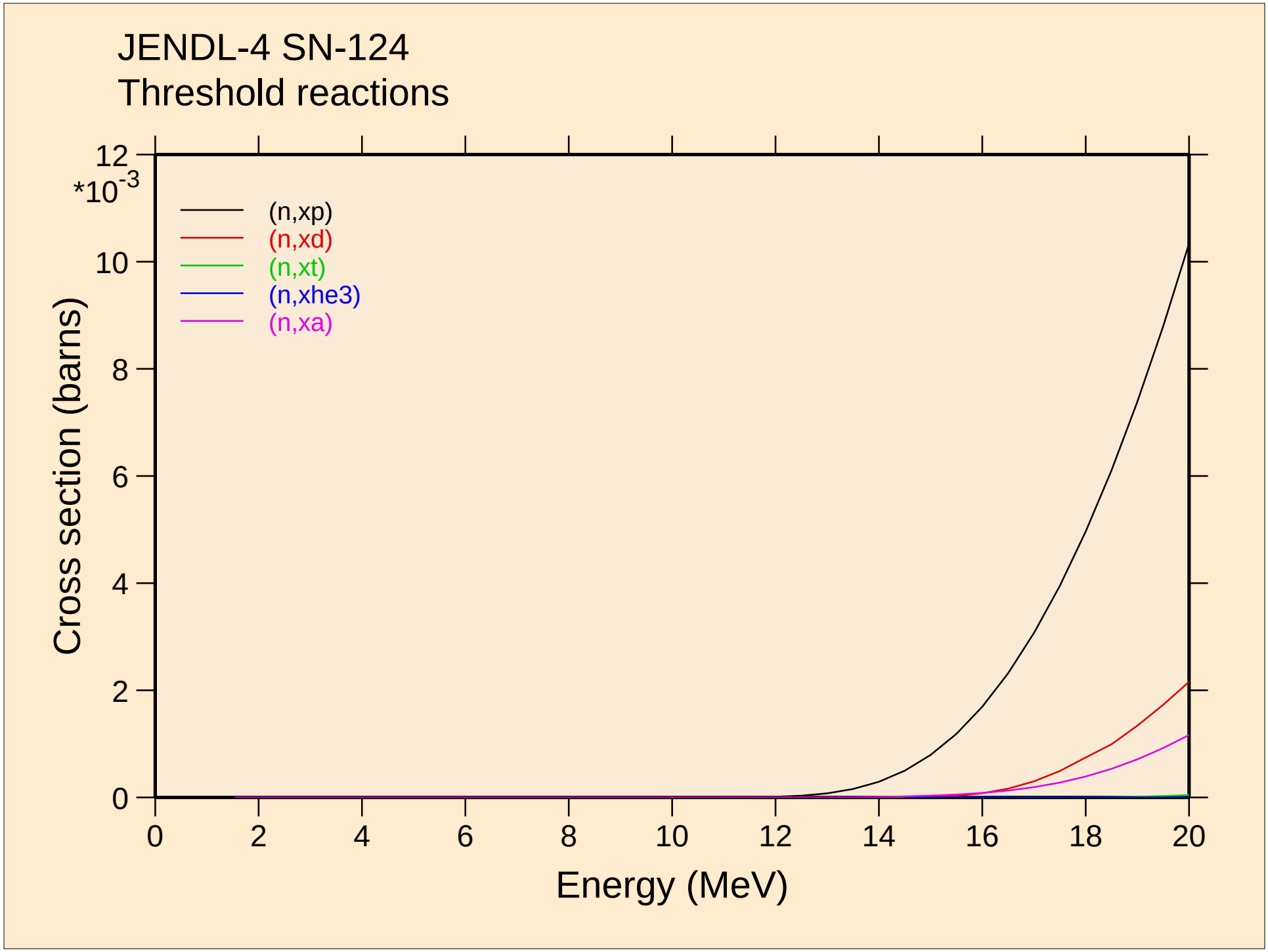

JENDL-4 SN-124
Inelastic levels
120
*10-3
100
80
60
40
20
0
Cross section (barns)
2
4
6
8
10
12
14
16
18
20
Energy (MeV)
(n,n*16)
(n,n*17)
(n,n*18)
(n,n*19)
(n,n*20)

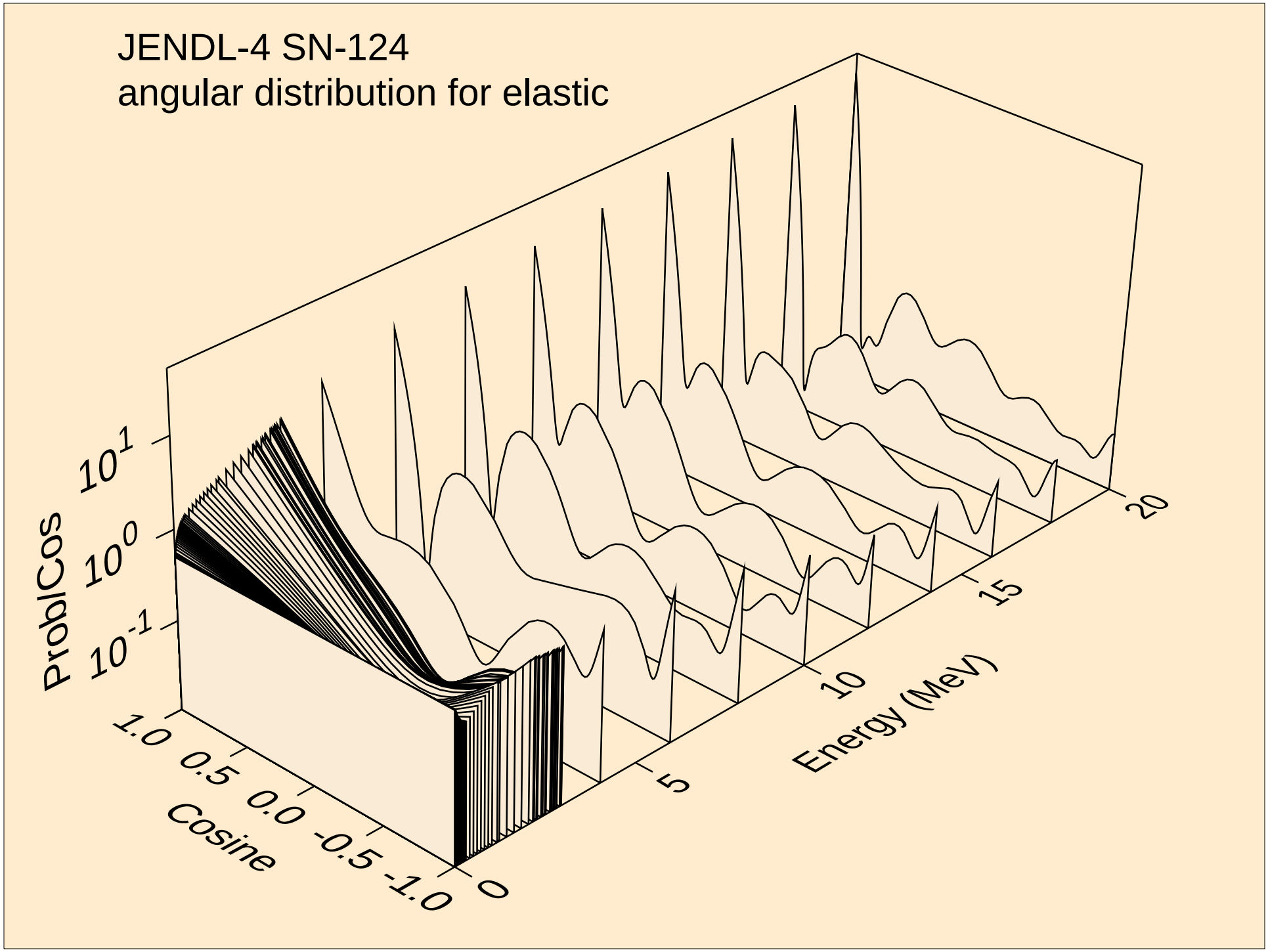

JENDL-4 SN-124
Inelastic levels
*10-3
80
70
60
50
40
30
20
10
0
Cross section (barns)
2
4
6
8
10
12
14
16
18
20
Energy (MeV)
(n,n*21)
(n,n*22)
(n,n*23)
(n,n*24)
(n,n*25)

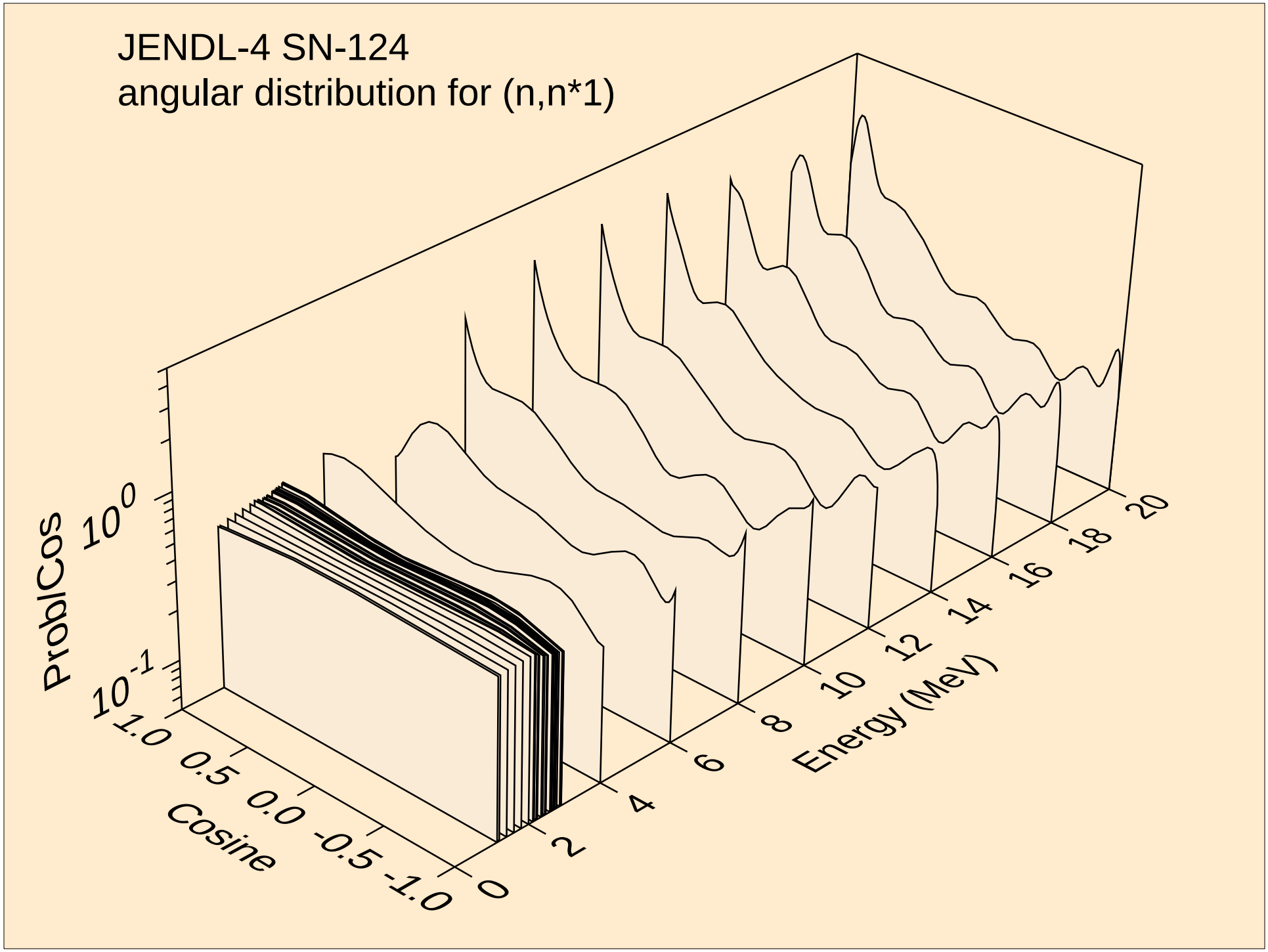

JENDL-4 SN-124
Inelastic levels
*10-3
60
50
40
30
20
10
0
Cross section (barns)
2
4
6
8
10
12
14
16
18
20
Energy (MeV)
(n,n*26)
(n,n*27)

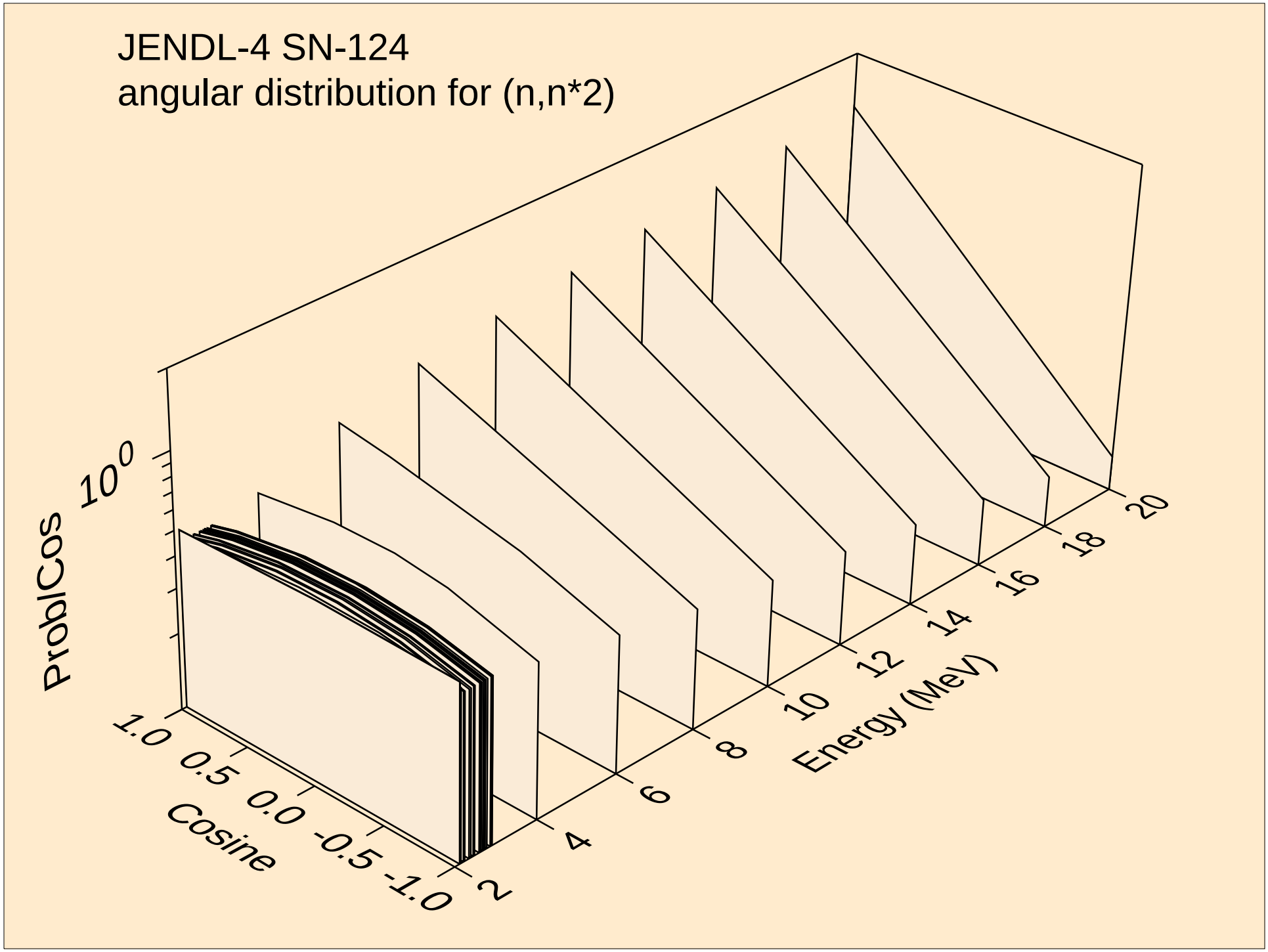

JENDL-4 SN-124
Threshold reactions
(n,2n)
(n,3n)
(n,n*)a
(n,n*)p
(n,n*c)
Cross section (barns)
Energy (MeV)
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
1.6
1.8
2.0
0
2
4
6
8
10
12
14
16
18
20

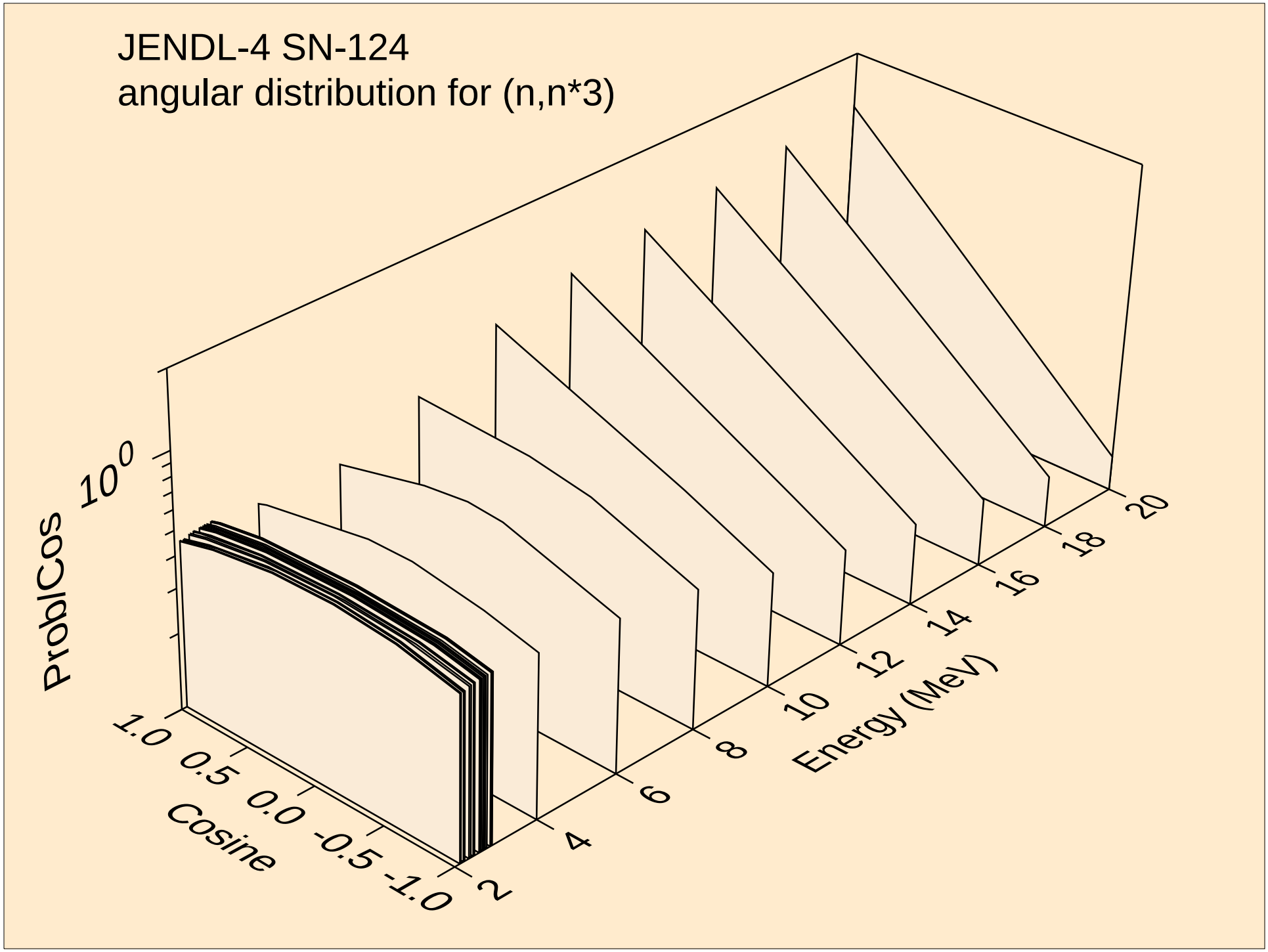

JENDL-4 SN-124
Threshold reactions
*10-3
10
8
6
4
2
0
Cross section (barns)
(n,p)
(n,d)
(n,t)
(n,he3)
(n,a)
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

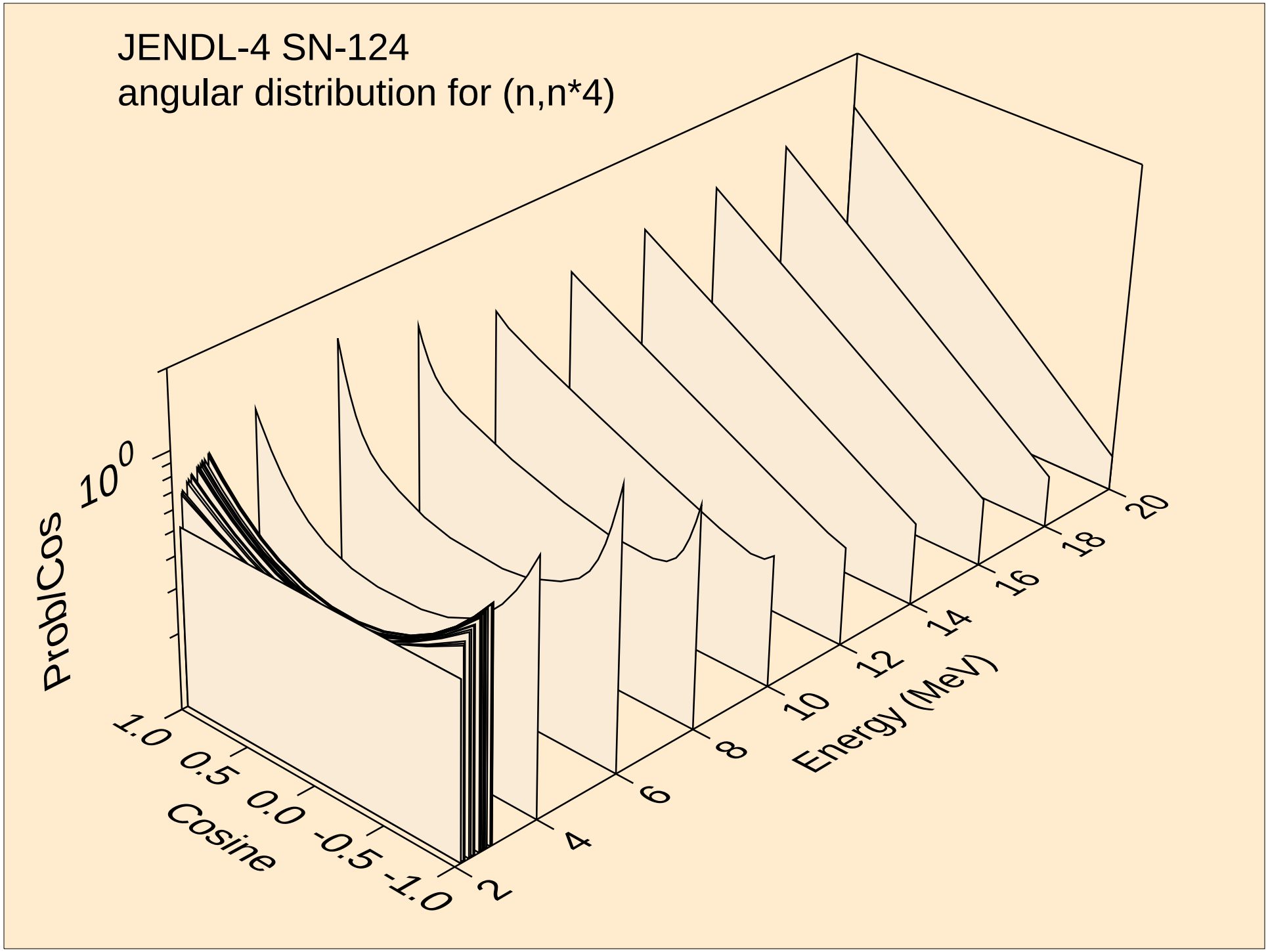

JENDL-4 SN-124
Threshold reactions
*10-3
12
10
8
6
4
2
0
Cross section (barns)
(n,xp)
(n,xd)
(n,xt)
(n,xhe3)
(n,xa)
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

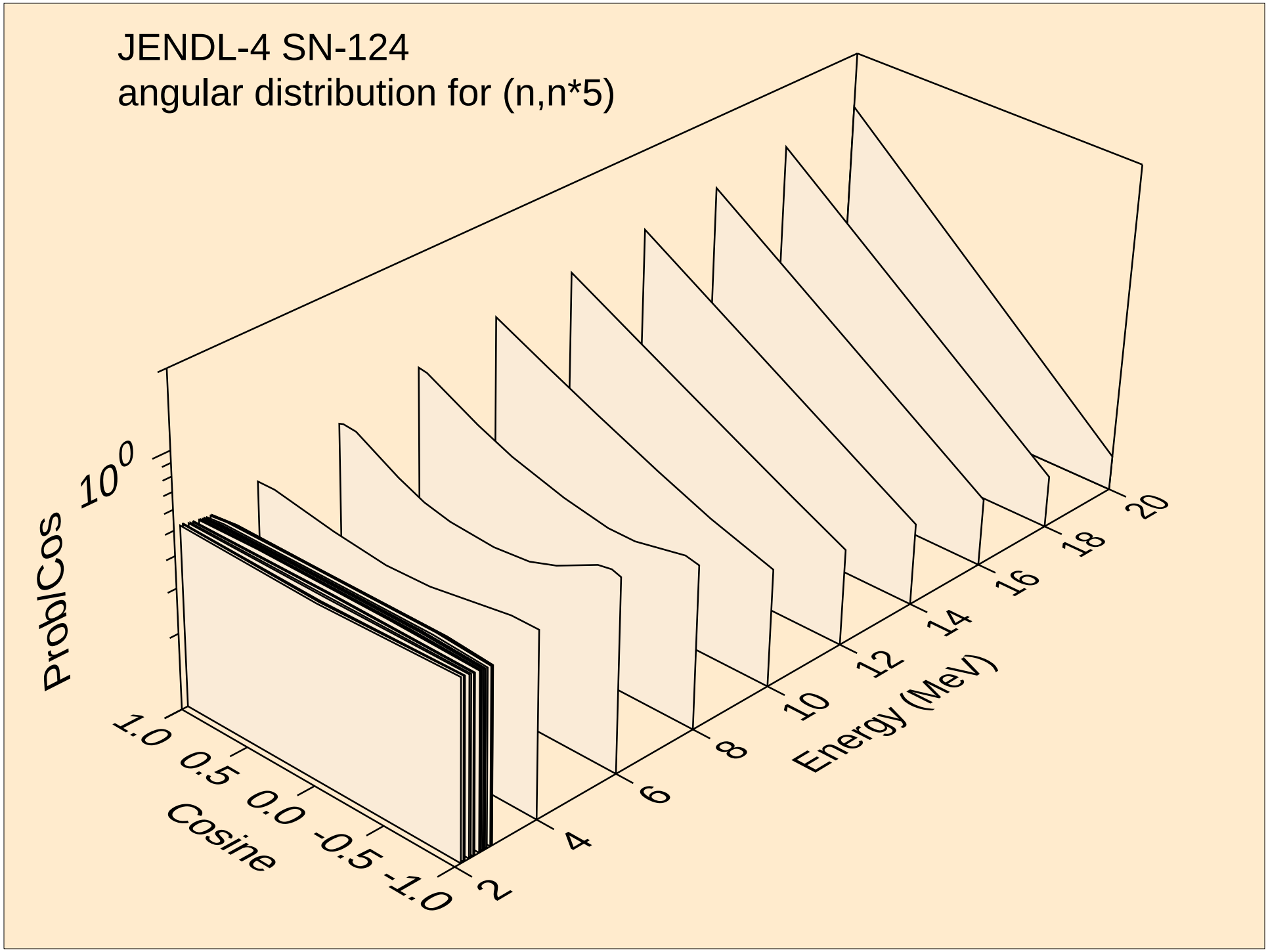

JENDL-4 SN-124
angular distribution for elastic
ProblCos
10^{1}
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
Energy (MeV)

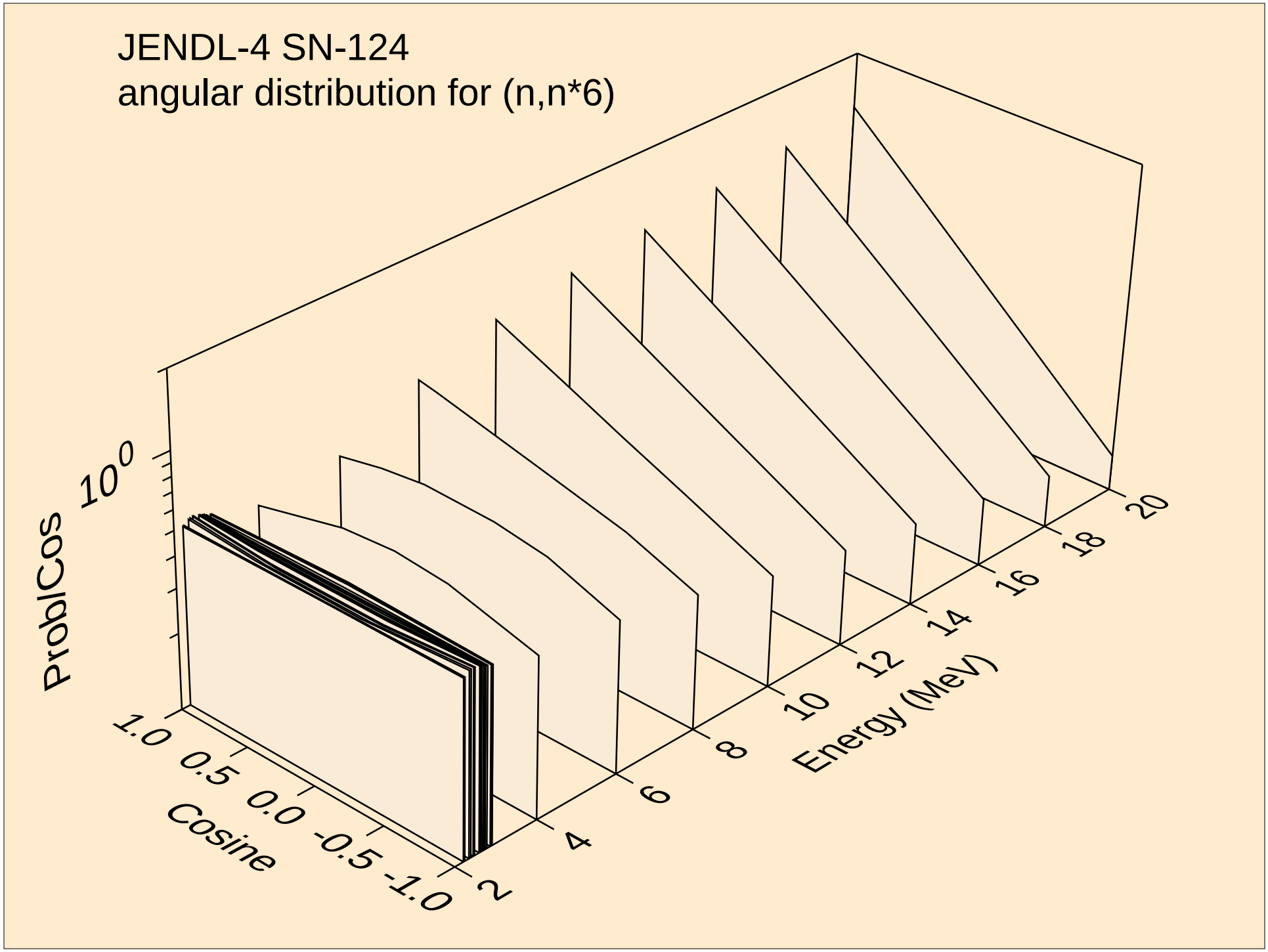

JENDL-4 SN-124
angular distribution for (n,n*1)
ProbCos
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

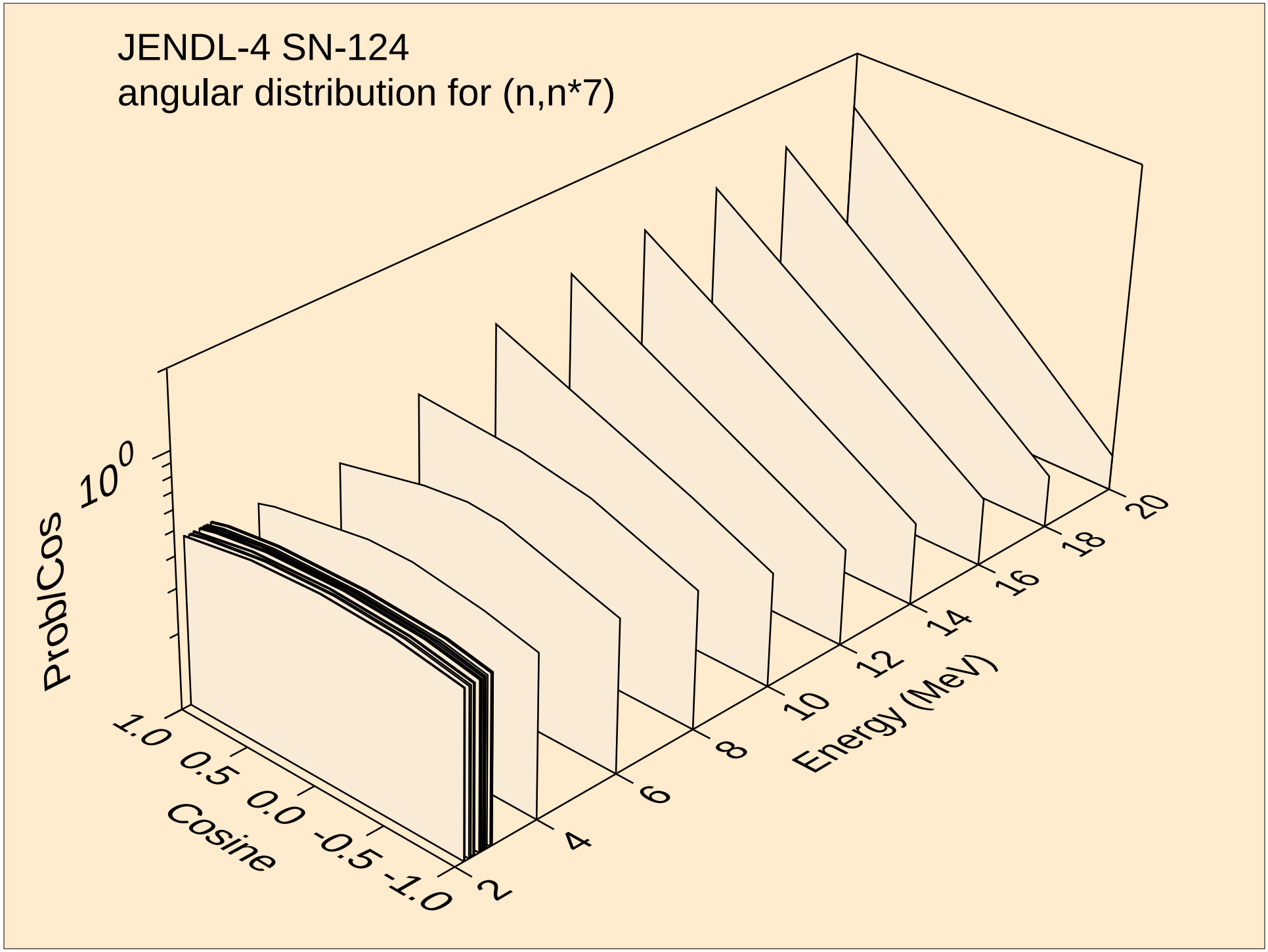

JENDL-4 SN-124
angular distribution for (n,n*2)
ProbCos
10^0
Cosine
1.0
0.5
0.0
-0.5
-1.0
Energy (MeV)
2
4
6
8
10
12
14
16
18
20

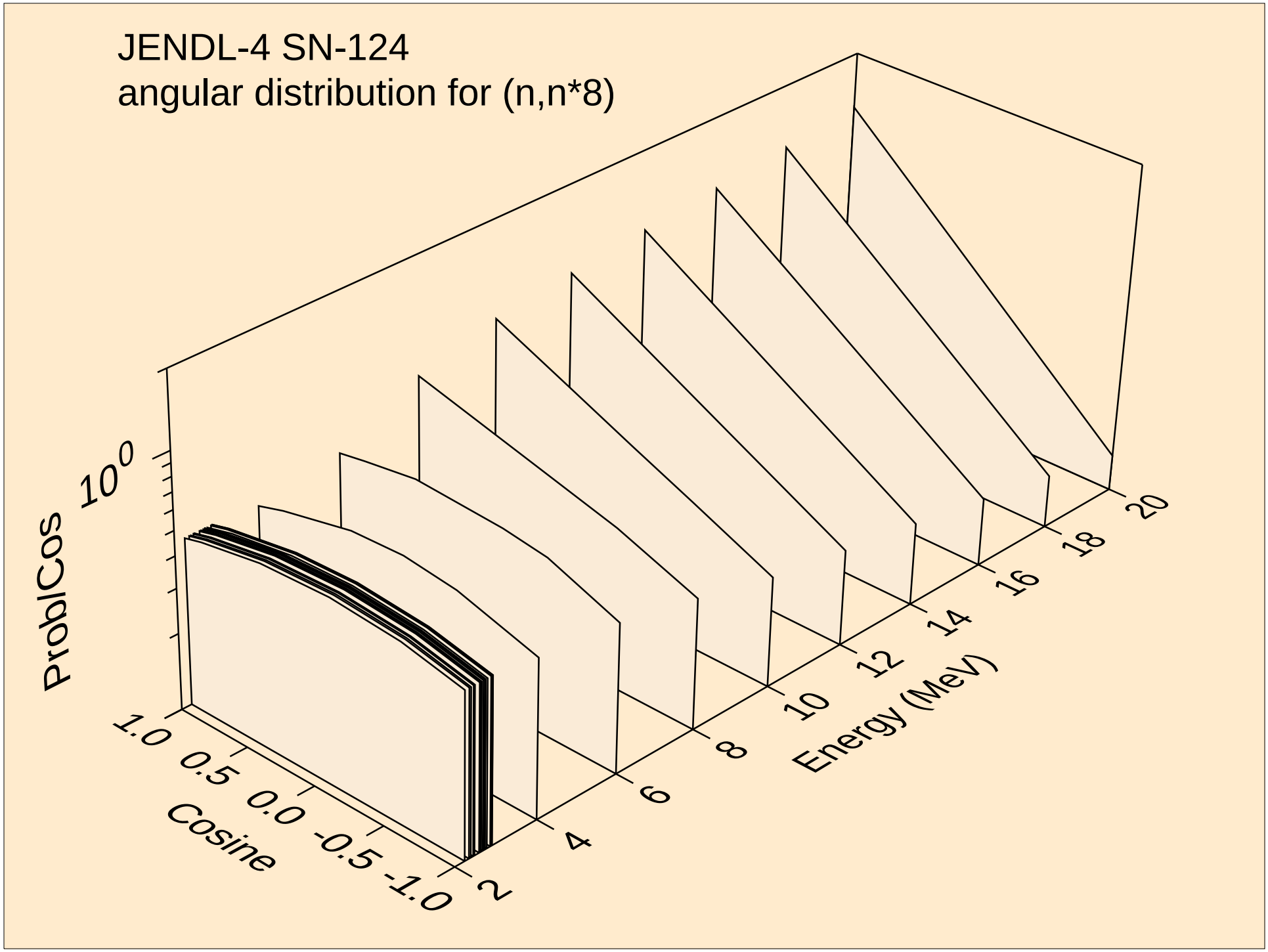

JENDL-4 SN-124
angular distribution for (n,n*3)
ProbCos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

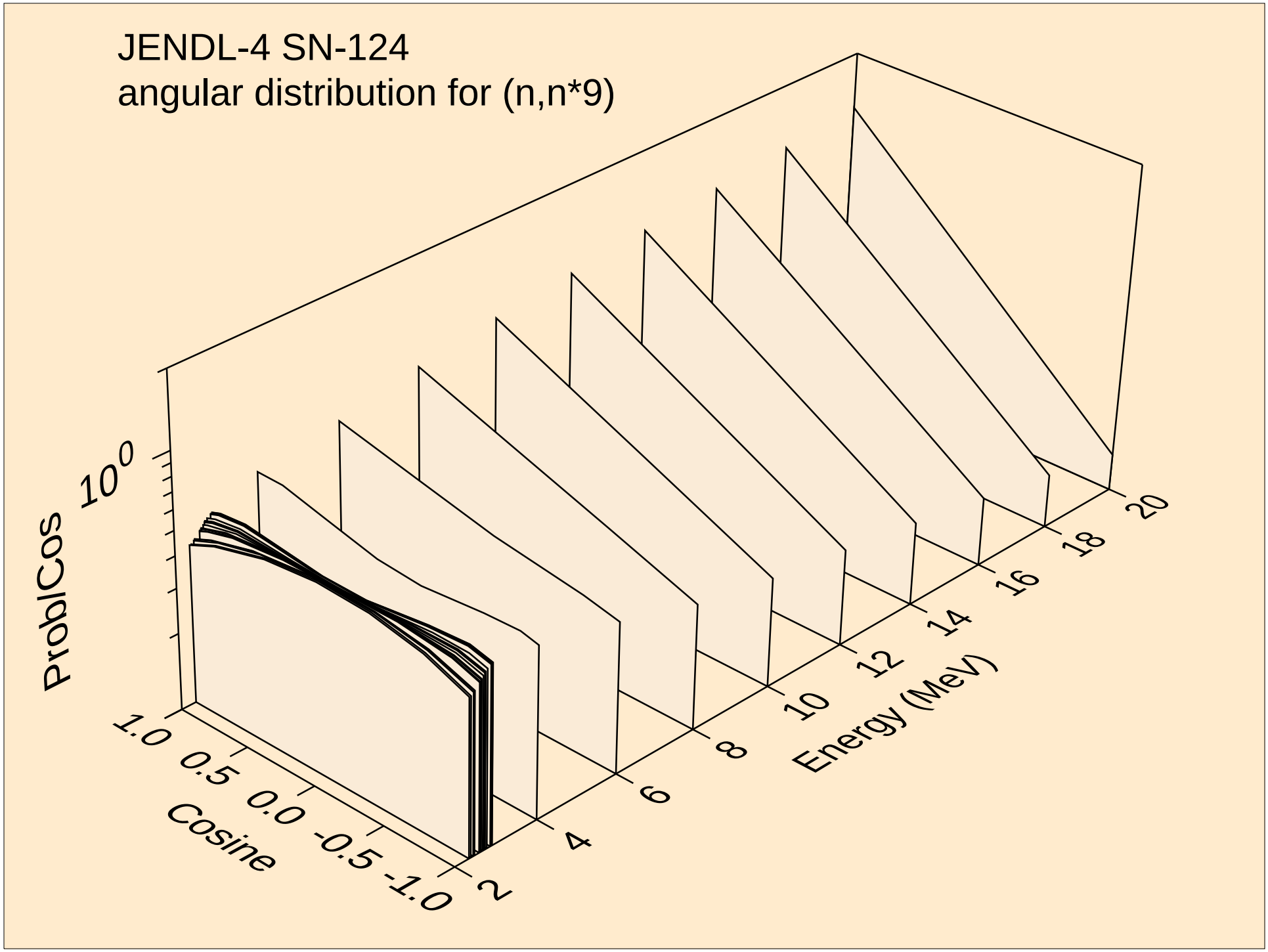

JENDL-4 SN-124
angular distribution for (n,n*4)
ProbCos
10^0
Cosine
1.0
0.5
0.0
-0.5
-1.0
Energy (MeV)
2
4
6
8
10
12
14
16
18
20

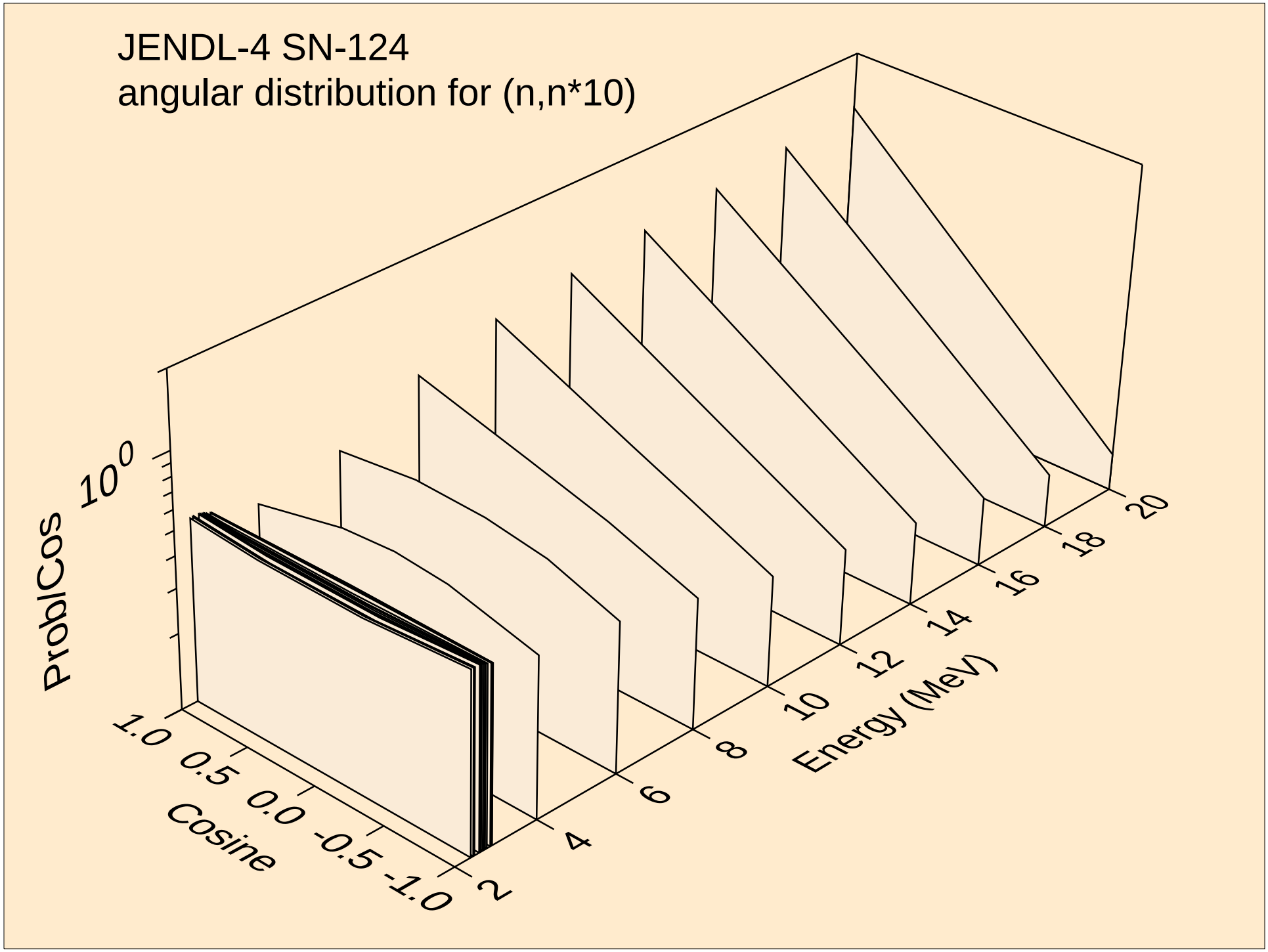

JENDL-4 SN-124
angular distribution for (n,n*5)
ProbCos
10^0
Cosine
1.0
0.5
0.0
-0.5
-1.0
Energy (MeV)
2
4
6
8
10
12
14
16
18
20

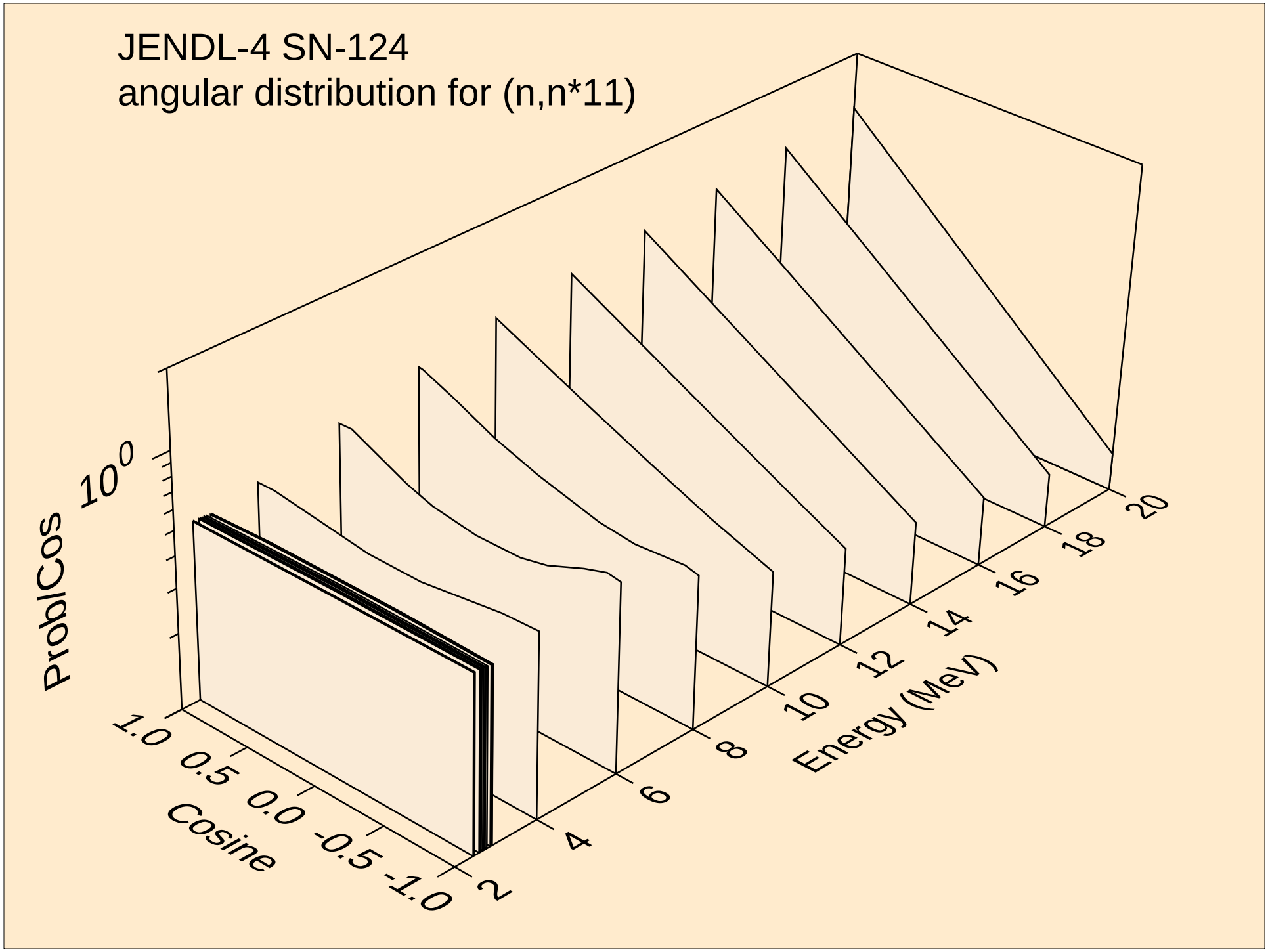

JENDL-4 SN-124
angular distribution for (n,n*6)
ProbCos
10^0
Cosine
1.0
0.5
0.0
-0.5
-1.0
Energy (MeV)
2
4
6
8
10
12
14
16
18
20

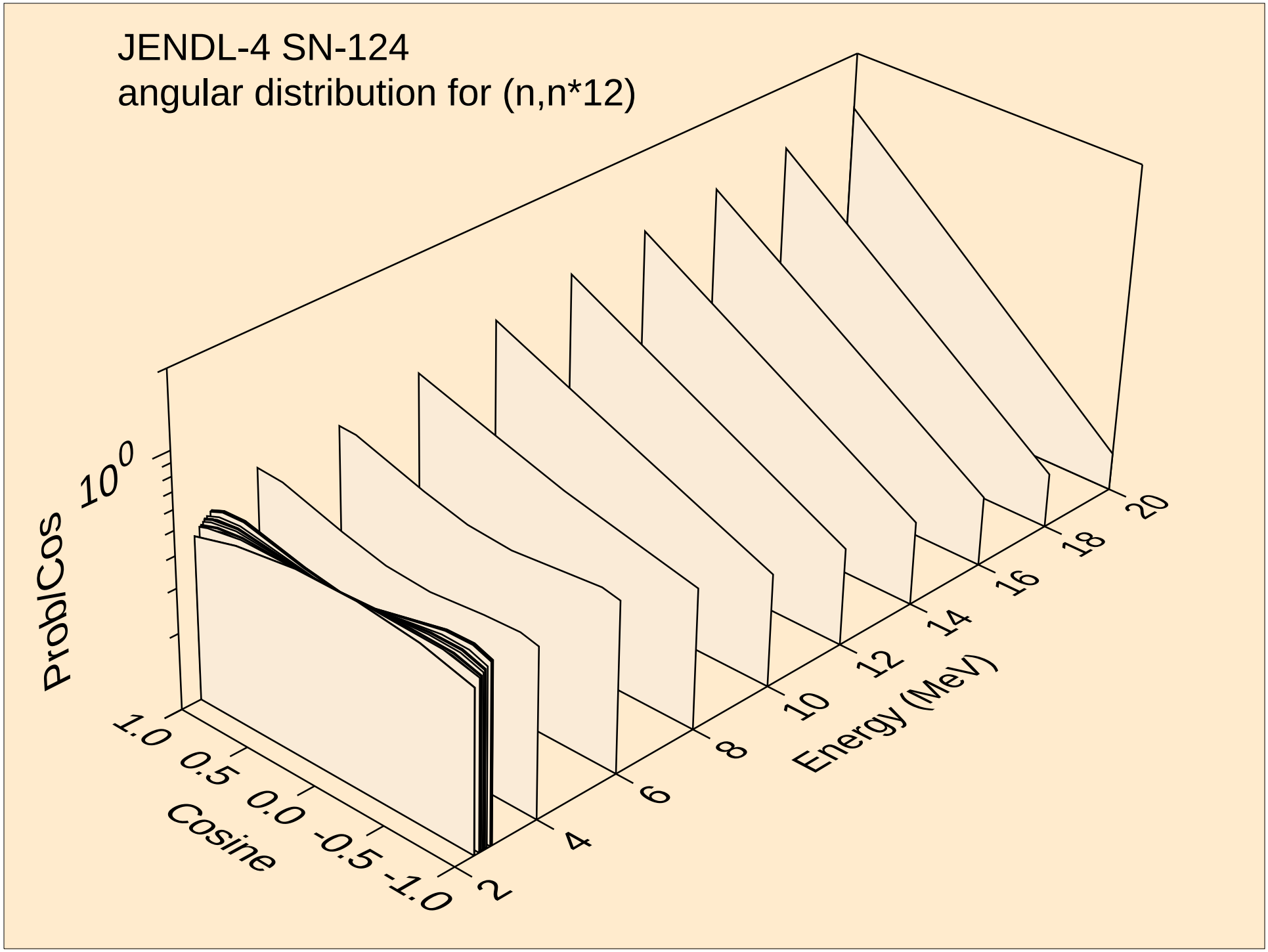

JENDL-4 SN-124
angular distribution for (n,n*7)
ProbCos
10^0
Cosine
1.0
0.5
0.0
-0.5
-1.0
Energy (MeV)
2
4
6
8
10
12
14
16
18
20

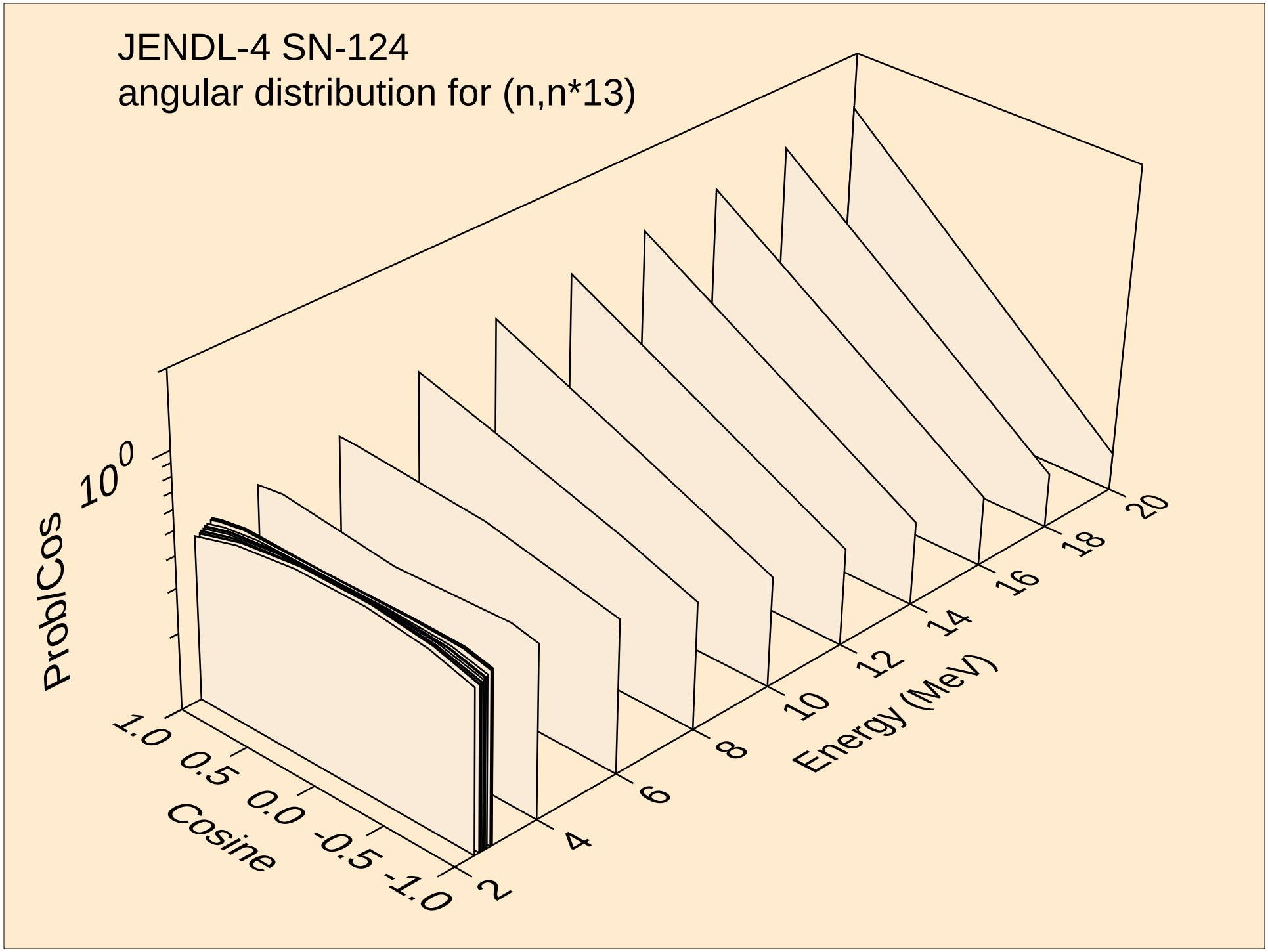

JENDL-4 SN-124
angular distribution for (n,n*8)
ProbCos
10^0
Cosine
1.0
0.5
0.0
-0.5
-1.0
Energy (MeV)
2
4
6
8
10
12
14
16
18
20

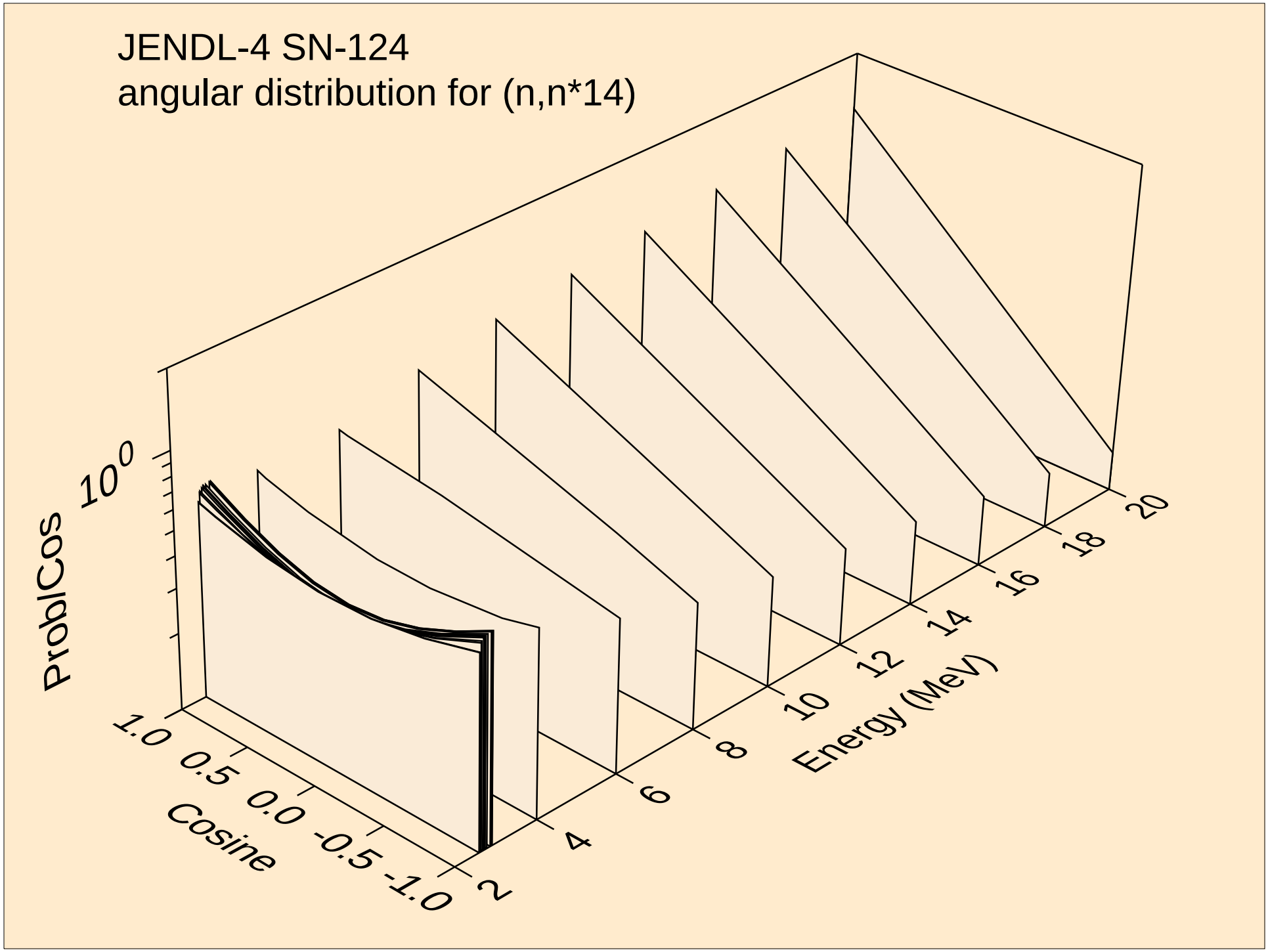

JENDL-4 SN-124
angular distribution for (n,n*9)
ProbCos
10^0
Cosine
1.0
0.5
0.0
-0.5
-1.0
Energy (MeV)
2
4
6
8
10
12
14
16
18
20

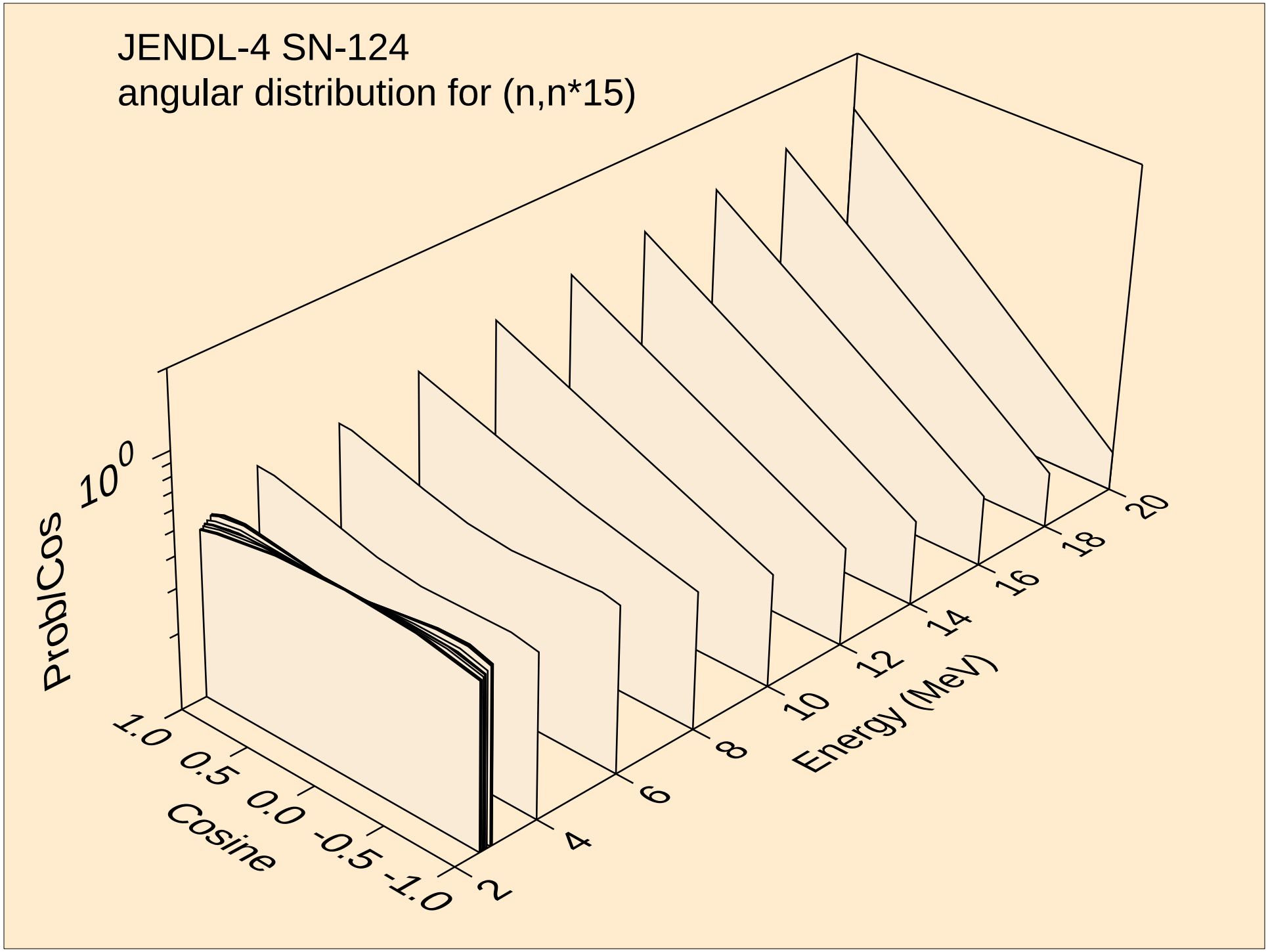

JENDL-4 SN-124
angular distribution for (n,n*10)
ProbCos
10^0
Cosine
1.0
0.5
0.0
-0.5
-1.0
Energy (MeV)
2
4
6
8
10
12
14
16
18
20

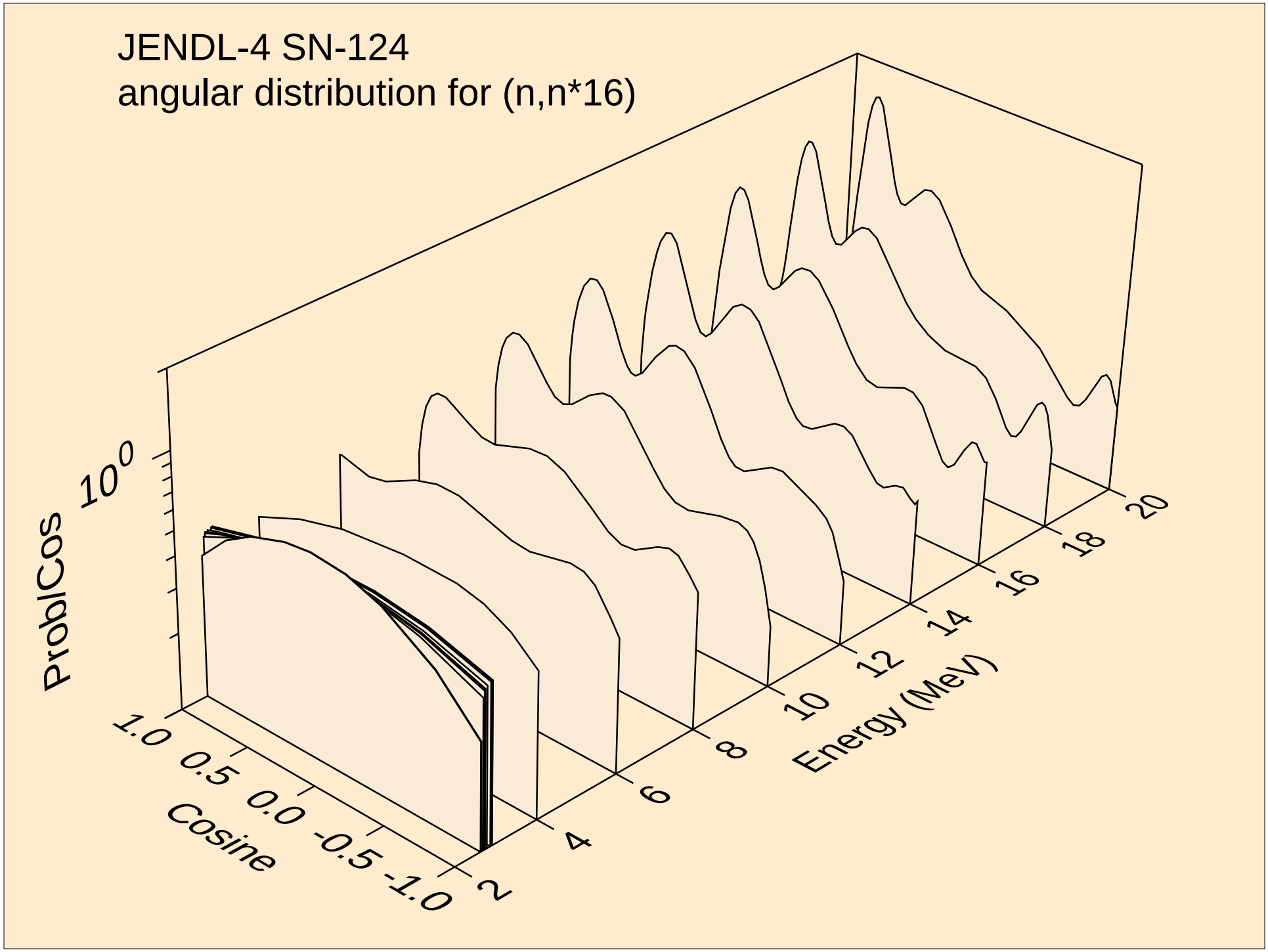

JENDL-4 SN-124
angular distribution for (n,n*11)
ProbCos
10^0
Cosine
1.0
0.5
0.0
-0.5
-1.0
Energy (MeV)
2
4
6
8
10
12
14
16
18
20

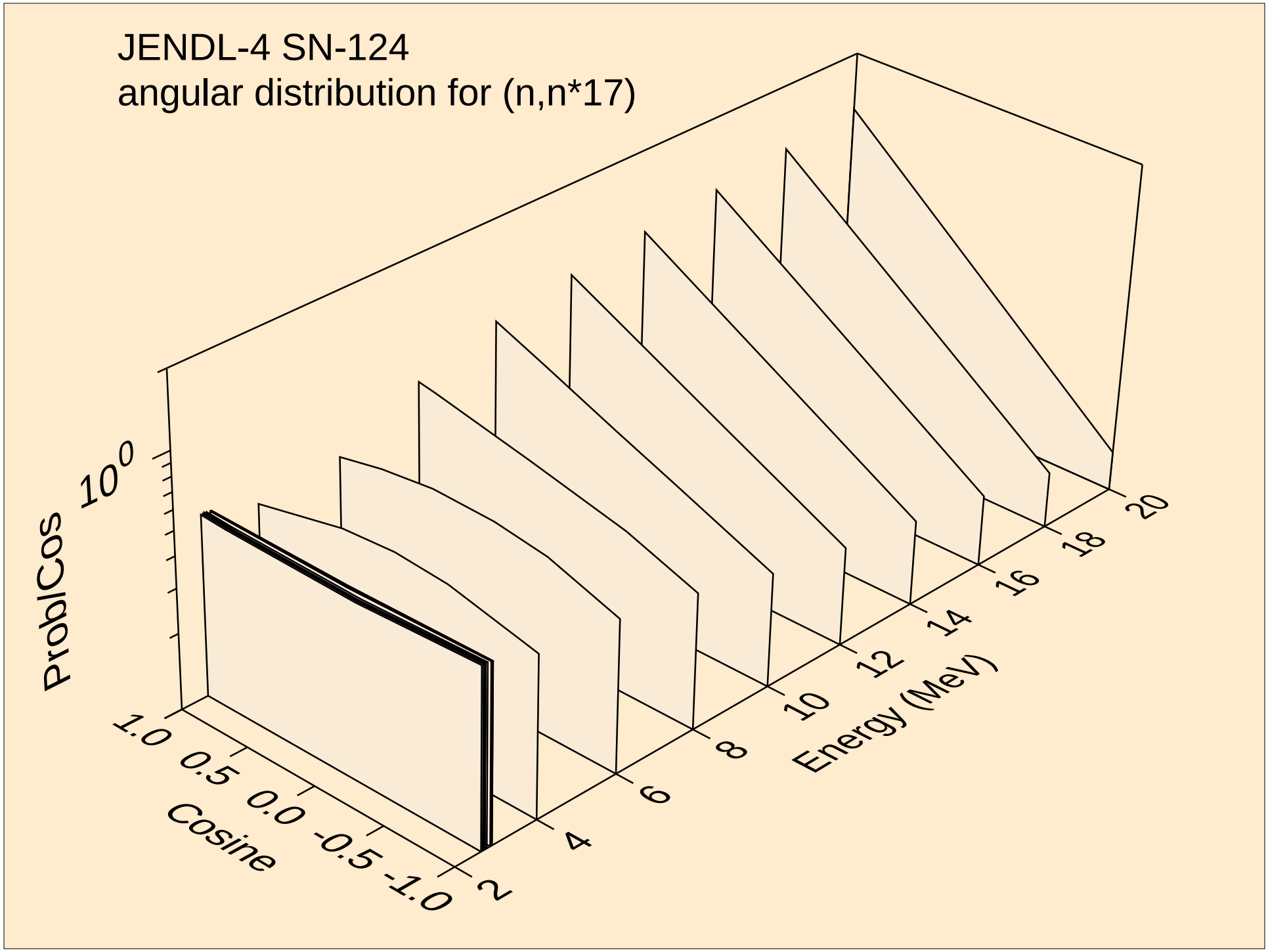

JENDL-4 SN-124
angular distribution for (n,n*12)
ProblCos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

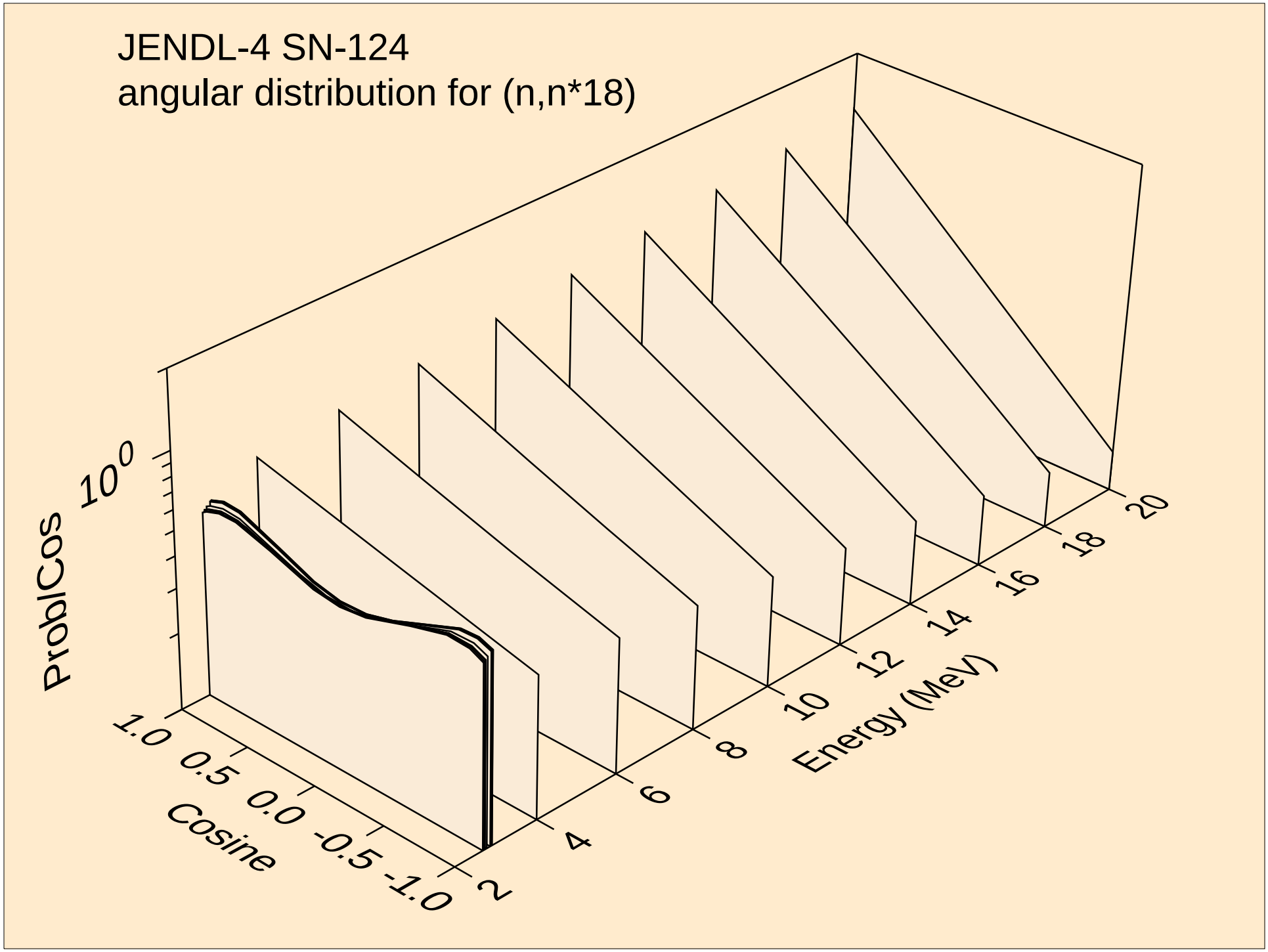

JENDL-4 SN-124
angular distribution for (n,n*13)
ProbCos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

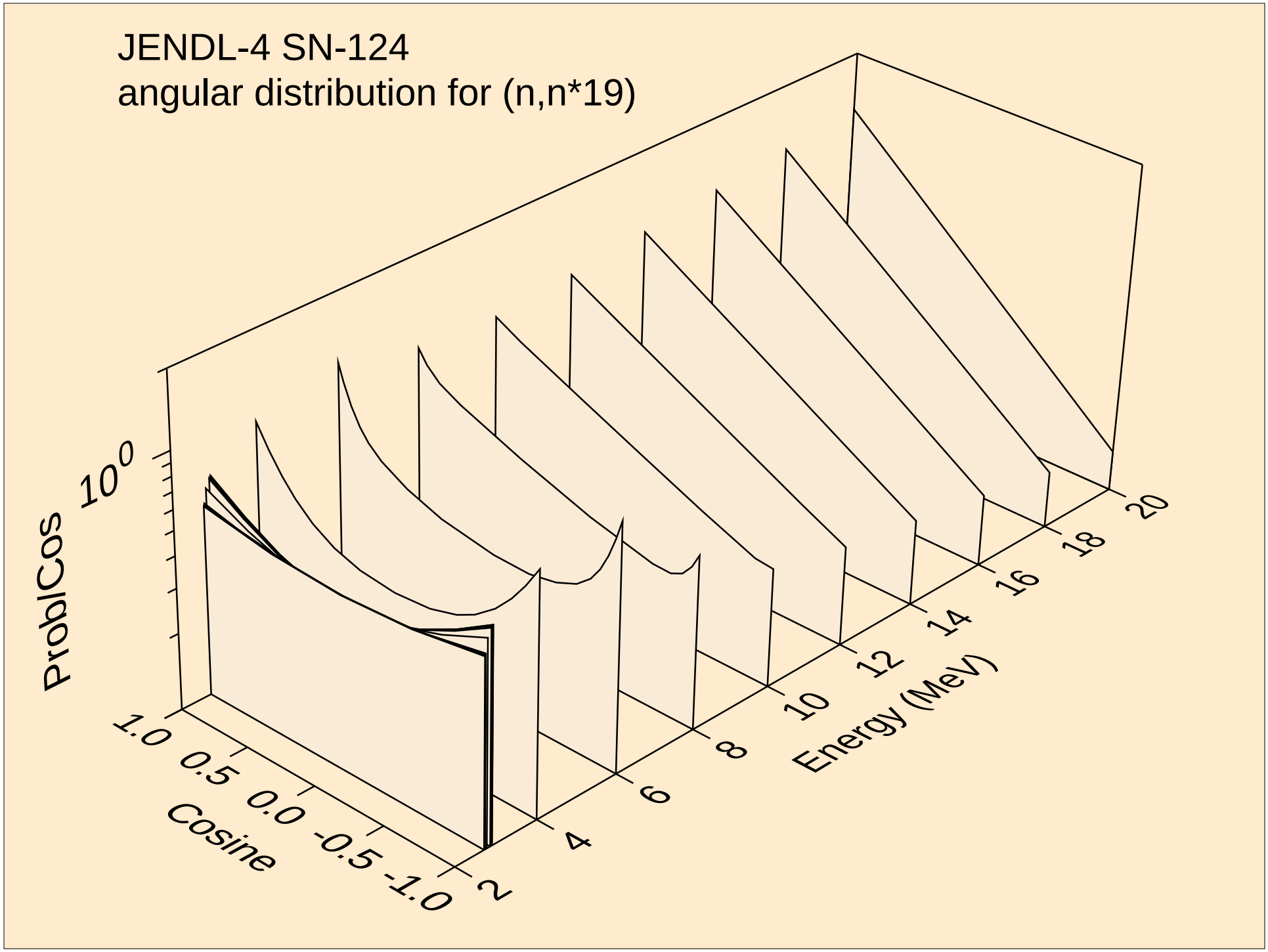

JENDL-4 SN-124
angular distribution for (n,n*14)
ProbCos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

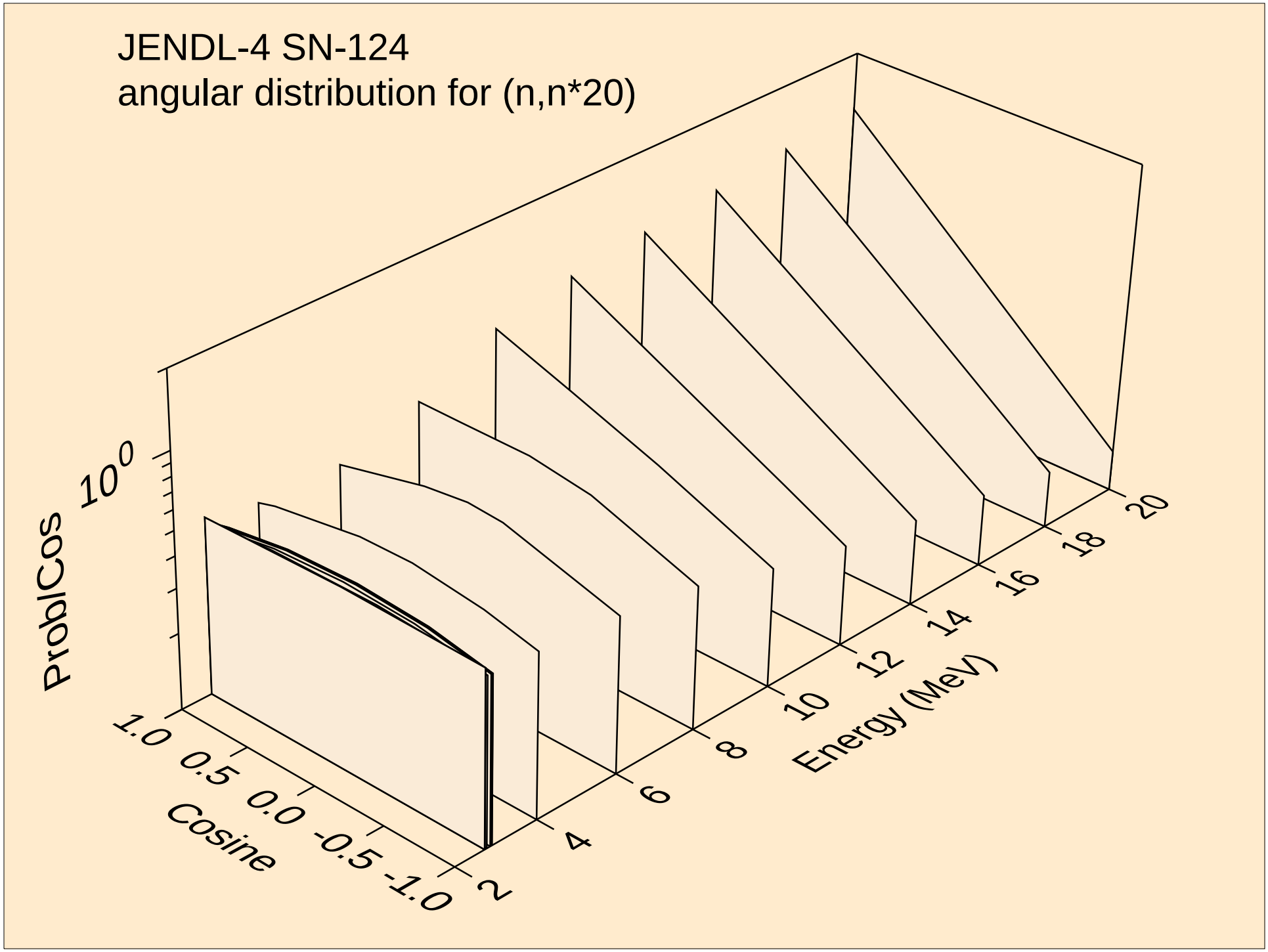

JENDL-4 SN-124
angular distribution for (n,n*15)
ProbCos
10^0
Cosine
1.0
0.5
0.0
-0.5
-1.0
Energy (MeV)
2
4
6
8
10
12
14
16
18
20

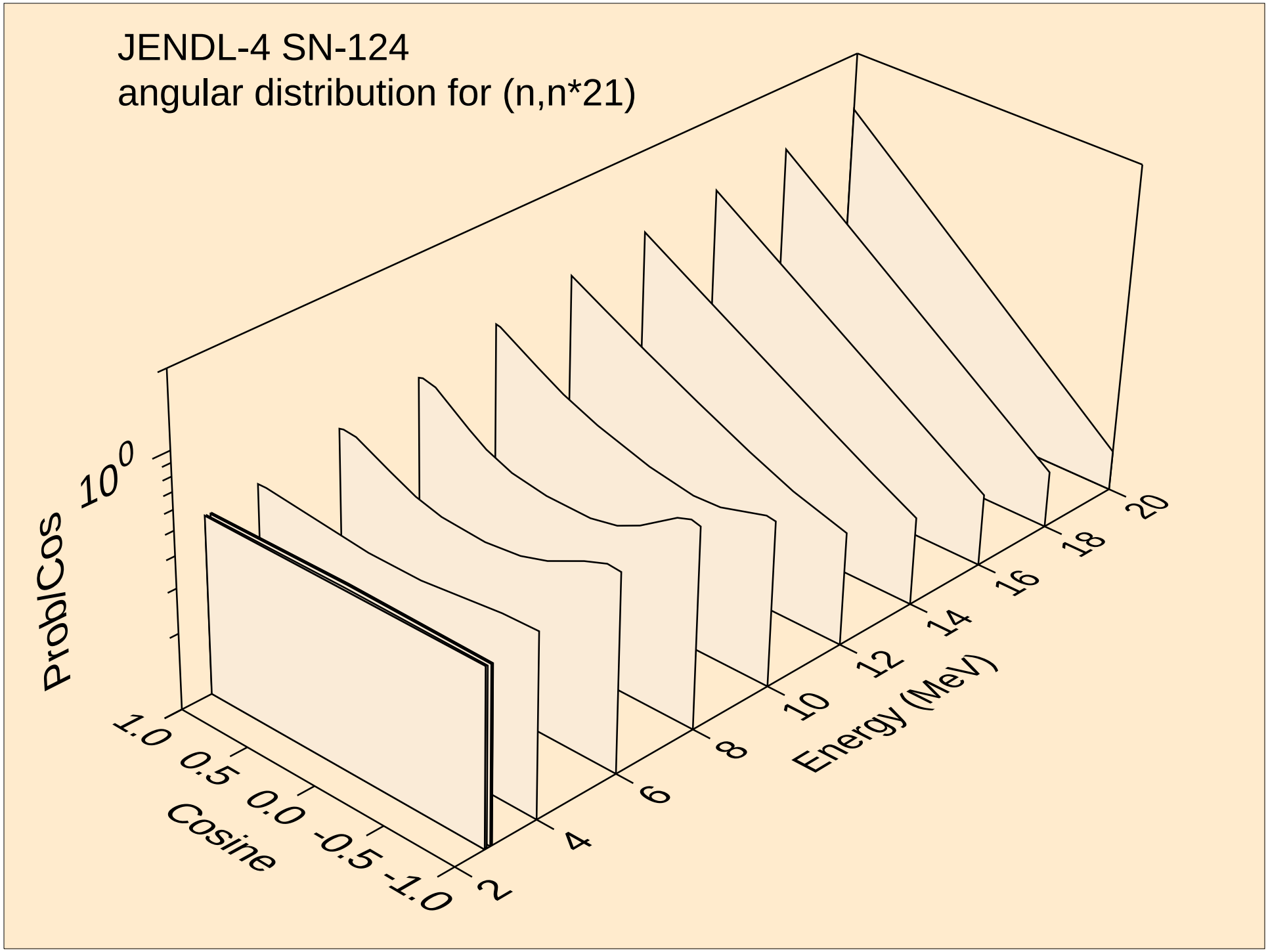

JENDL-4 SN-124
angular distribution for (n,n*16)
ProblCos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

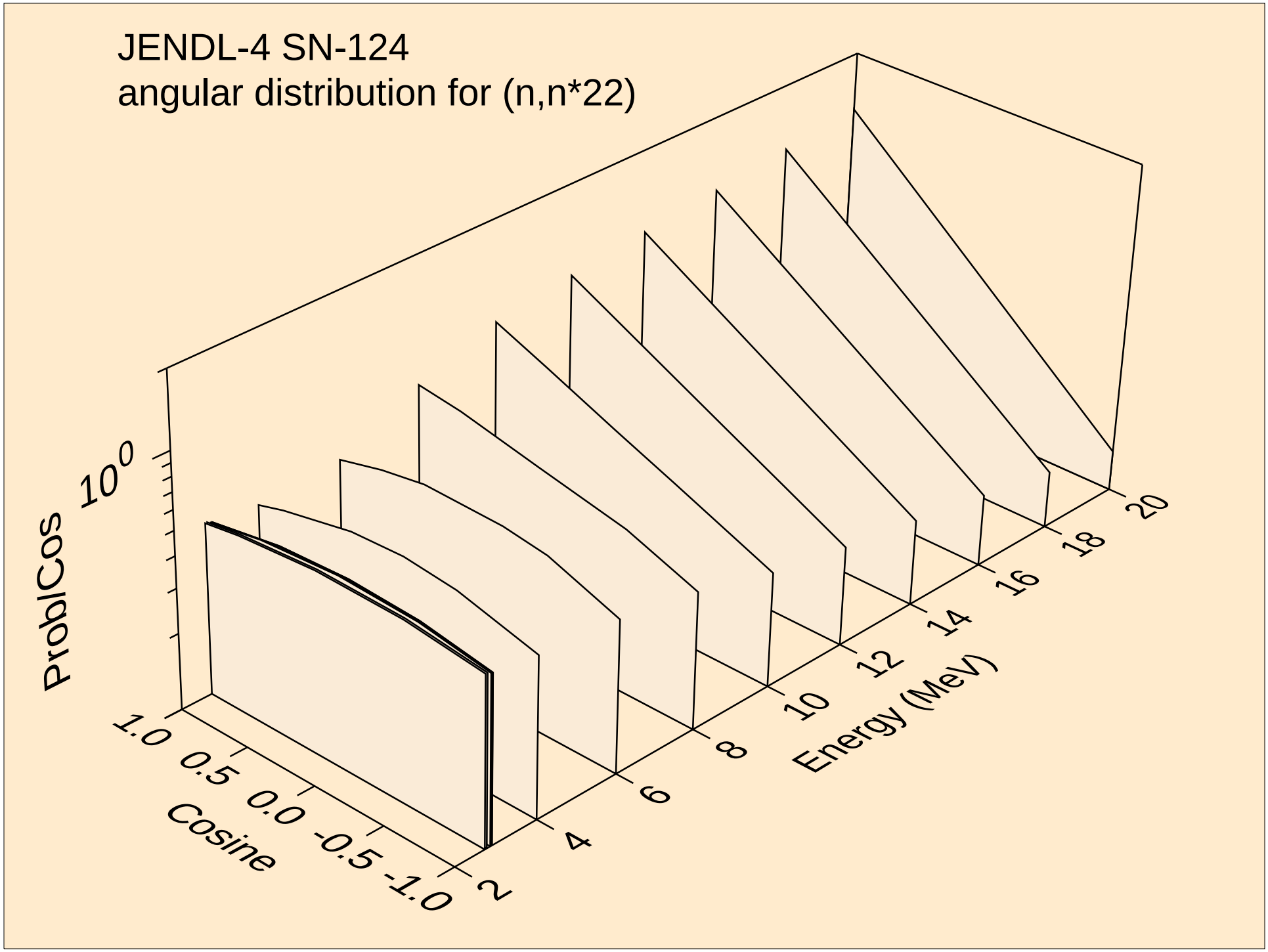

JENDL-4 SN-124
angular distribution for (n,n*17)
Prob/Cos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

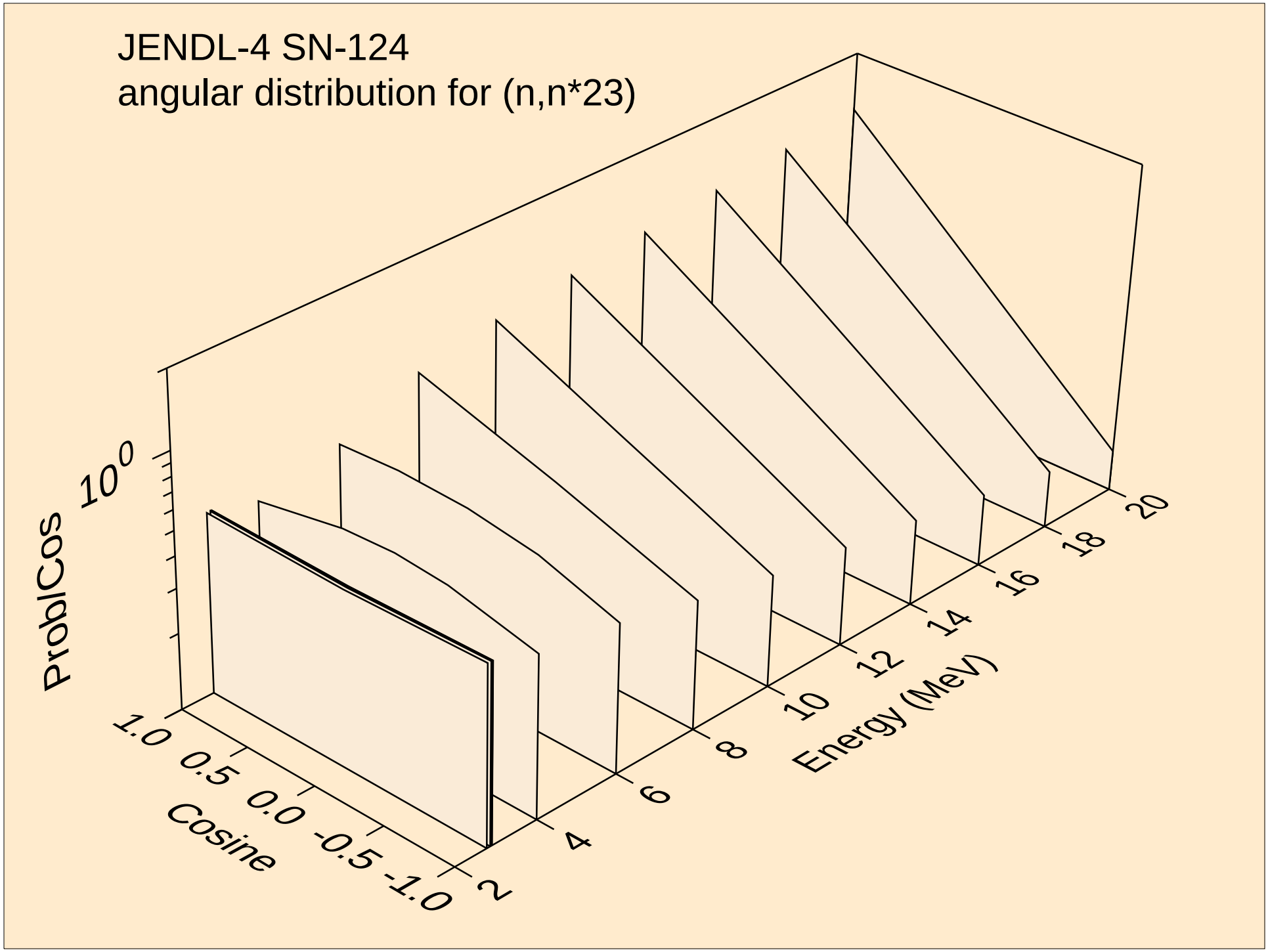

JENDL-4 SN-124
angular distribution for (n,n*18)
ProbCos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

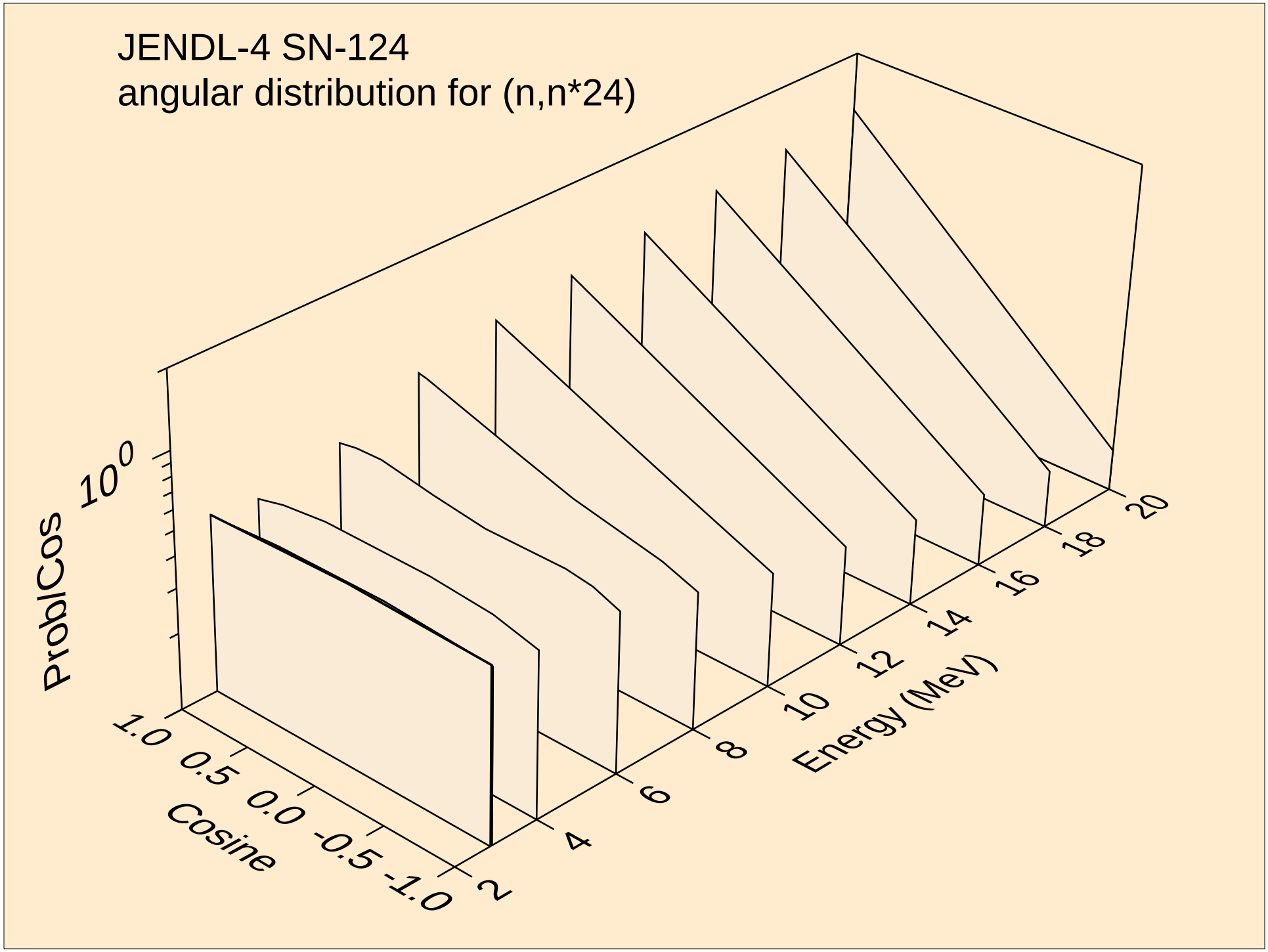

JENDL-4 SN-124
angular distribution for (n,n*19)
ProblCos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

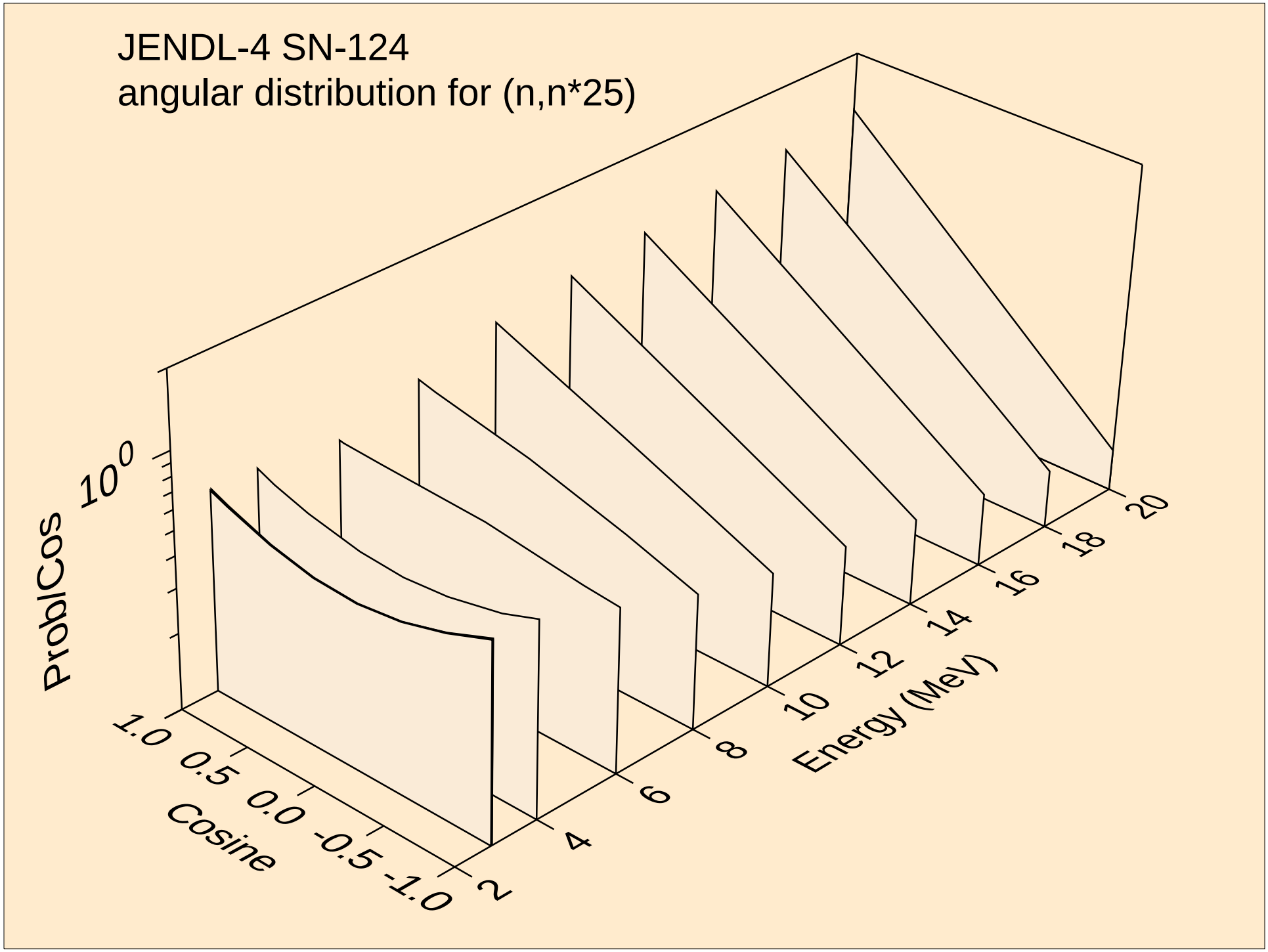

JENDL-4 SN-124
angular distribution for (n,n*20)
ProbCos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

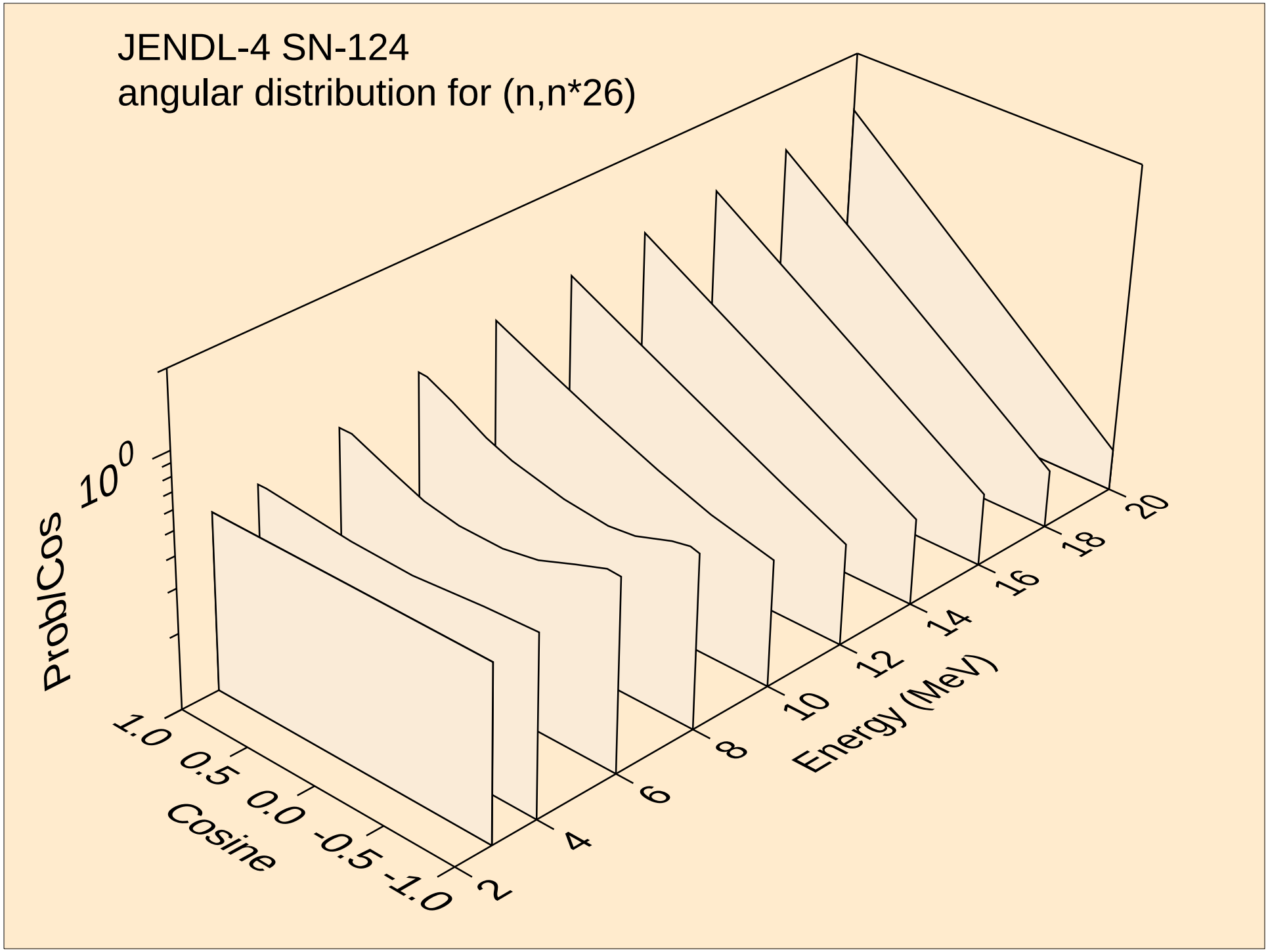

JENDL-4 SN-124
angular distribution for (n,n*21)
ProblCos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

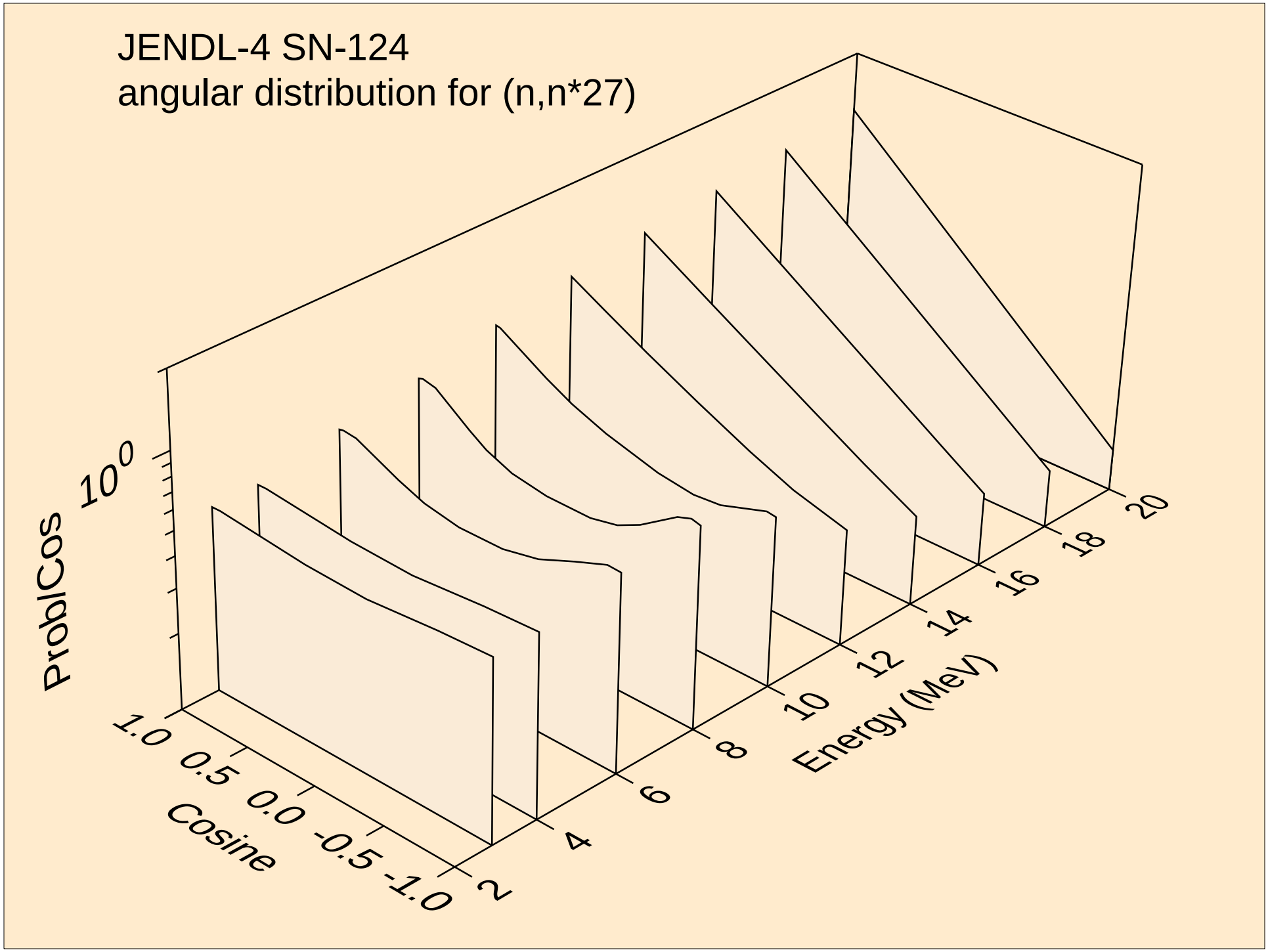

JENDL-4 SN-124
angular distribution for (n,n*22)
ProbCos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

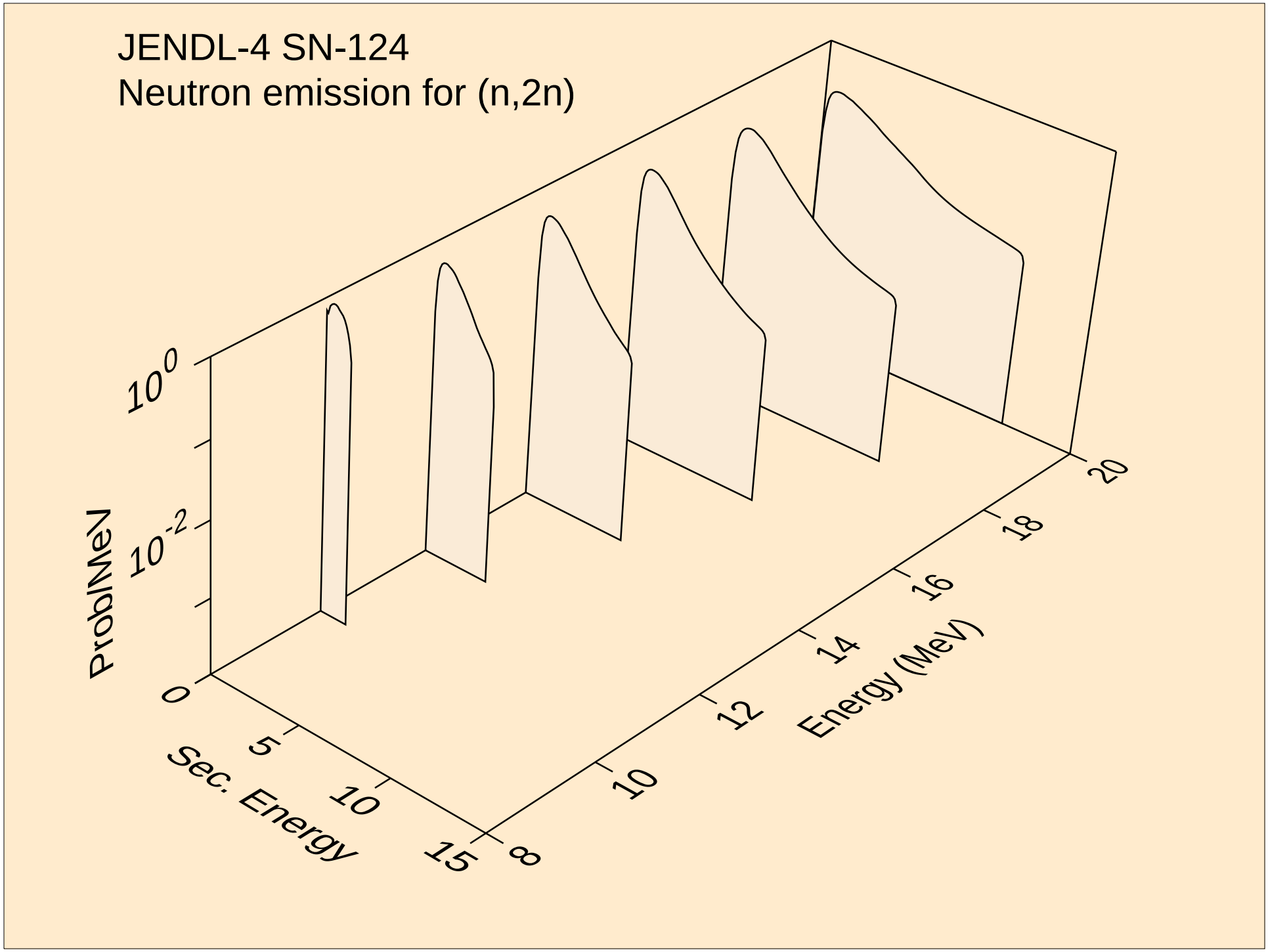

JENDL-4 SN-124
angular distribution for (n,n*23)
ProbCos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

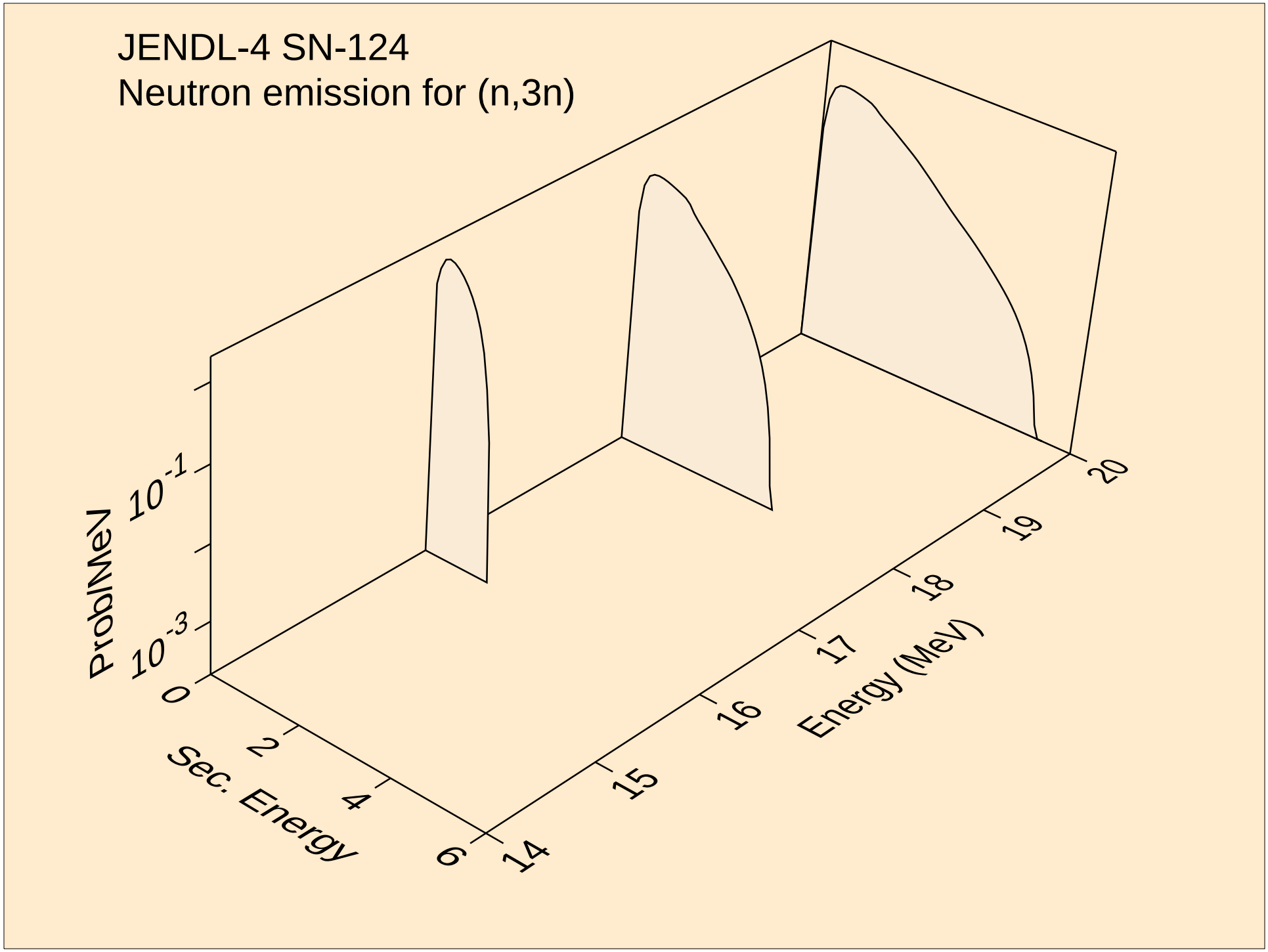

JENDL-4 SN-124
angular distribution for (n,n*24)
ProblCos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
2
4
6
8
10
12
14
16
18
20
Energy (MeV)


JENDL-4 SN-124
angular distribution for (n,n*25)
ProbCos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

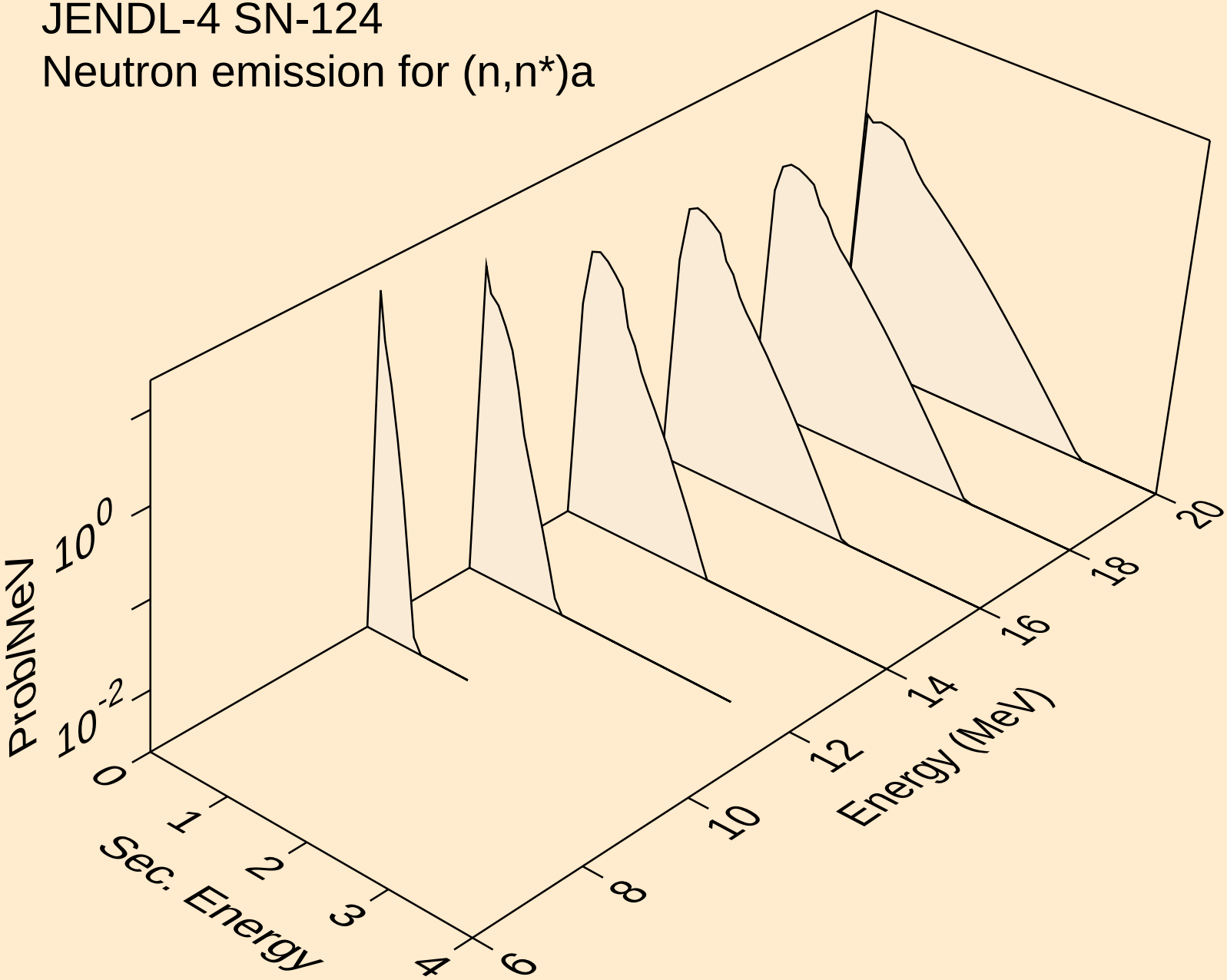

JENDL-4 SN-124
angular distribution for (n,n*26)
ProblCos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

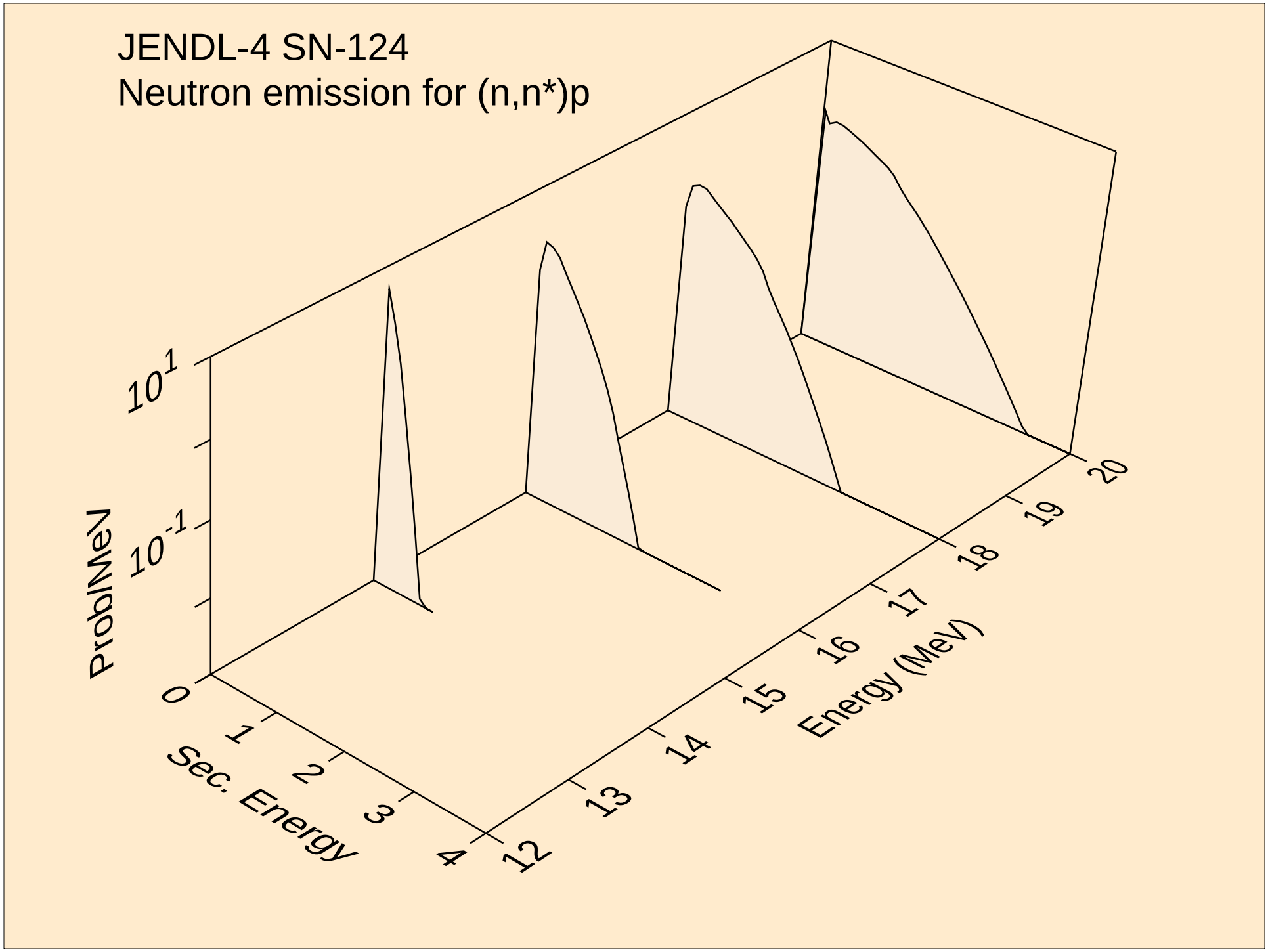

JENDL-4 SN-124
angular distribution for (n,n*27)
ProblCos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

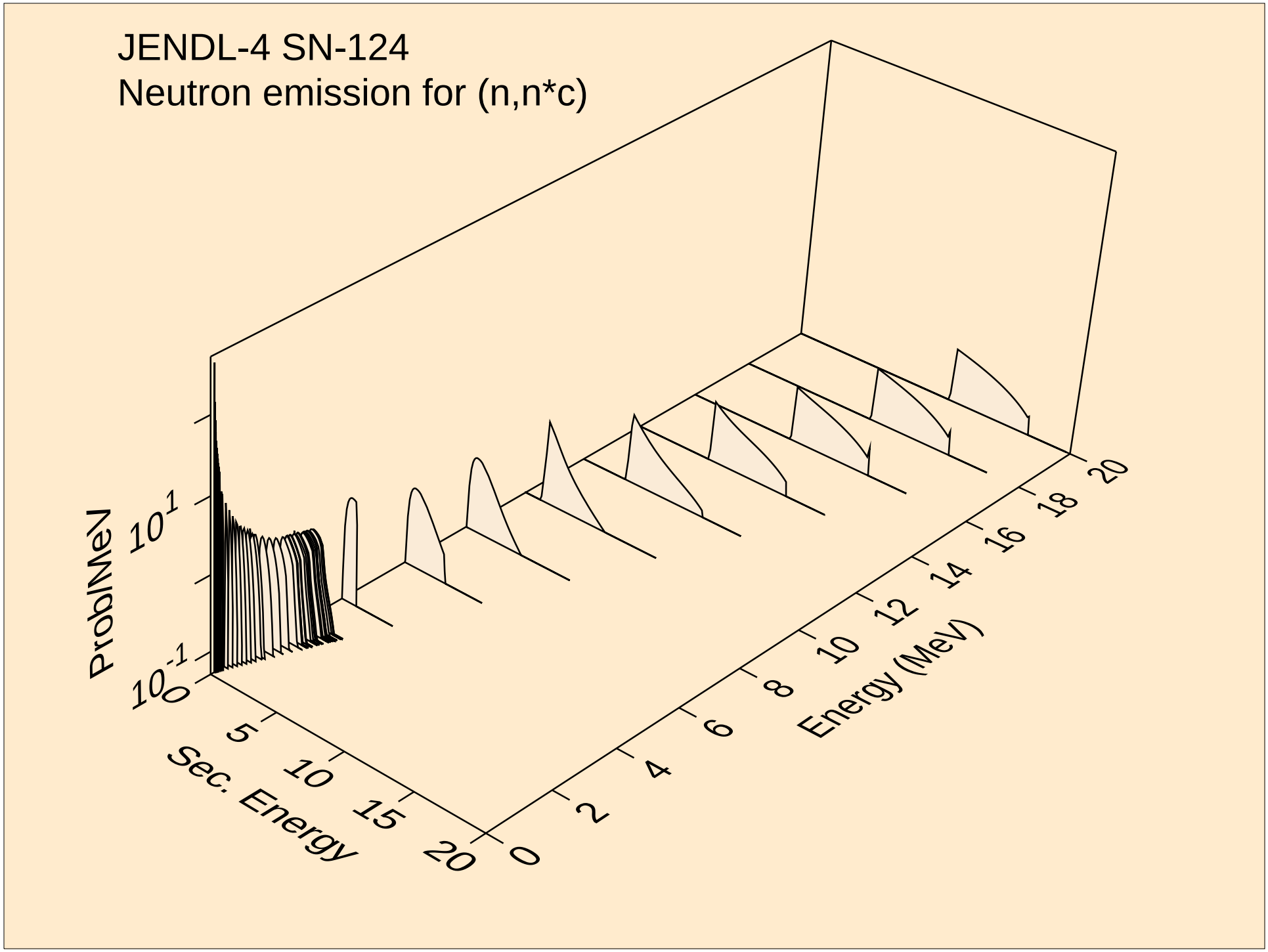

JENDL-4 SN-124
Neutron emission for (n,2n)
Prob/MeV
10^0
10^{-2}
0
Sec. Energy
5
10
15
Energy (MeV)
8
10
12
14
16
18
20

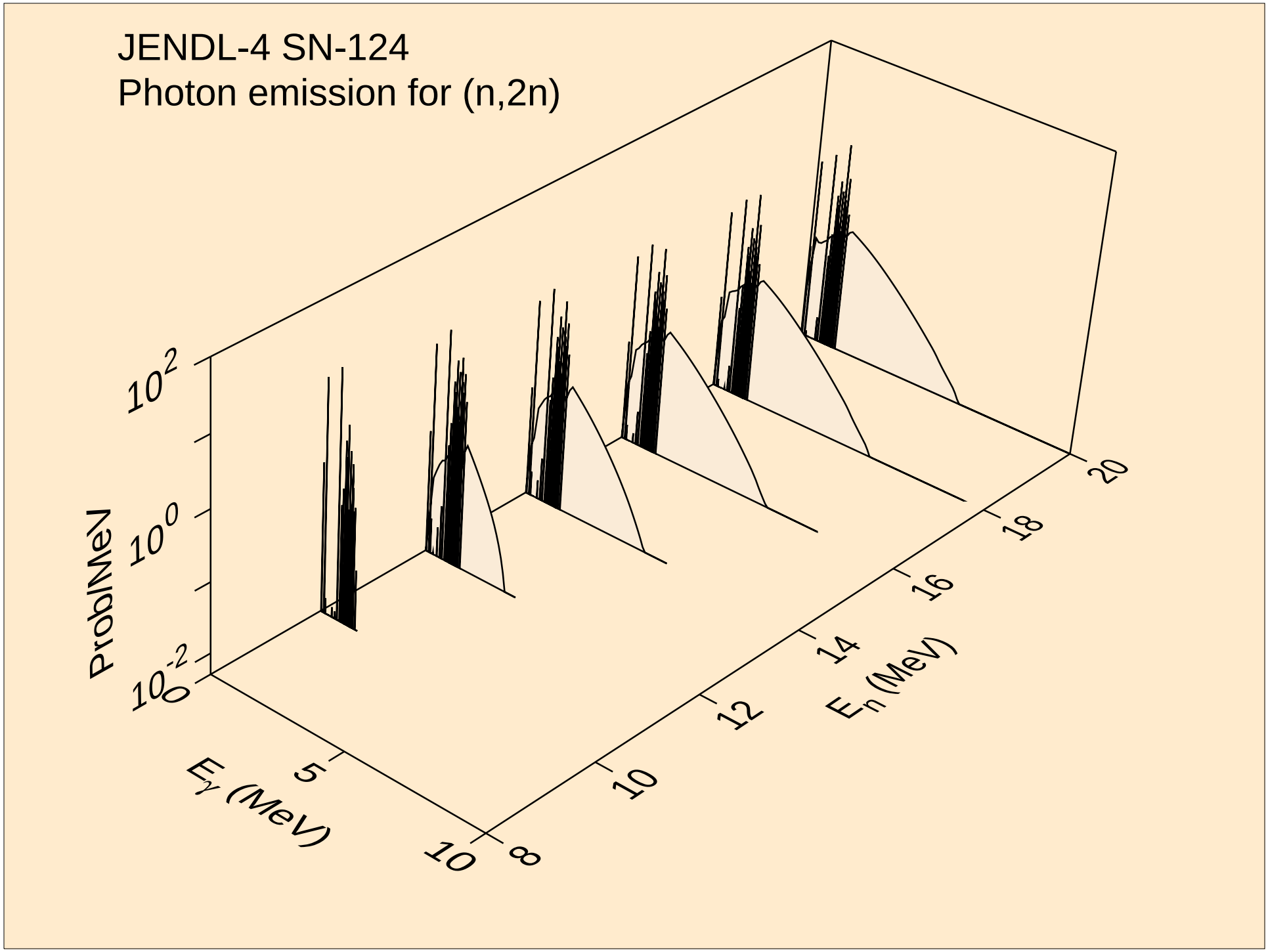

JENDL-4 SN-124
Neutron emission for (n,3n)
Prob/MeV
10^-1
10^-3
0
Sec. Energy
2
4
6
Energy (MeV)
14
15
16
17
18
19
20

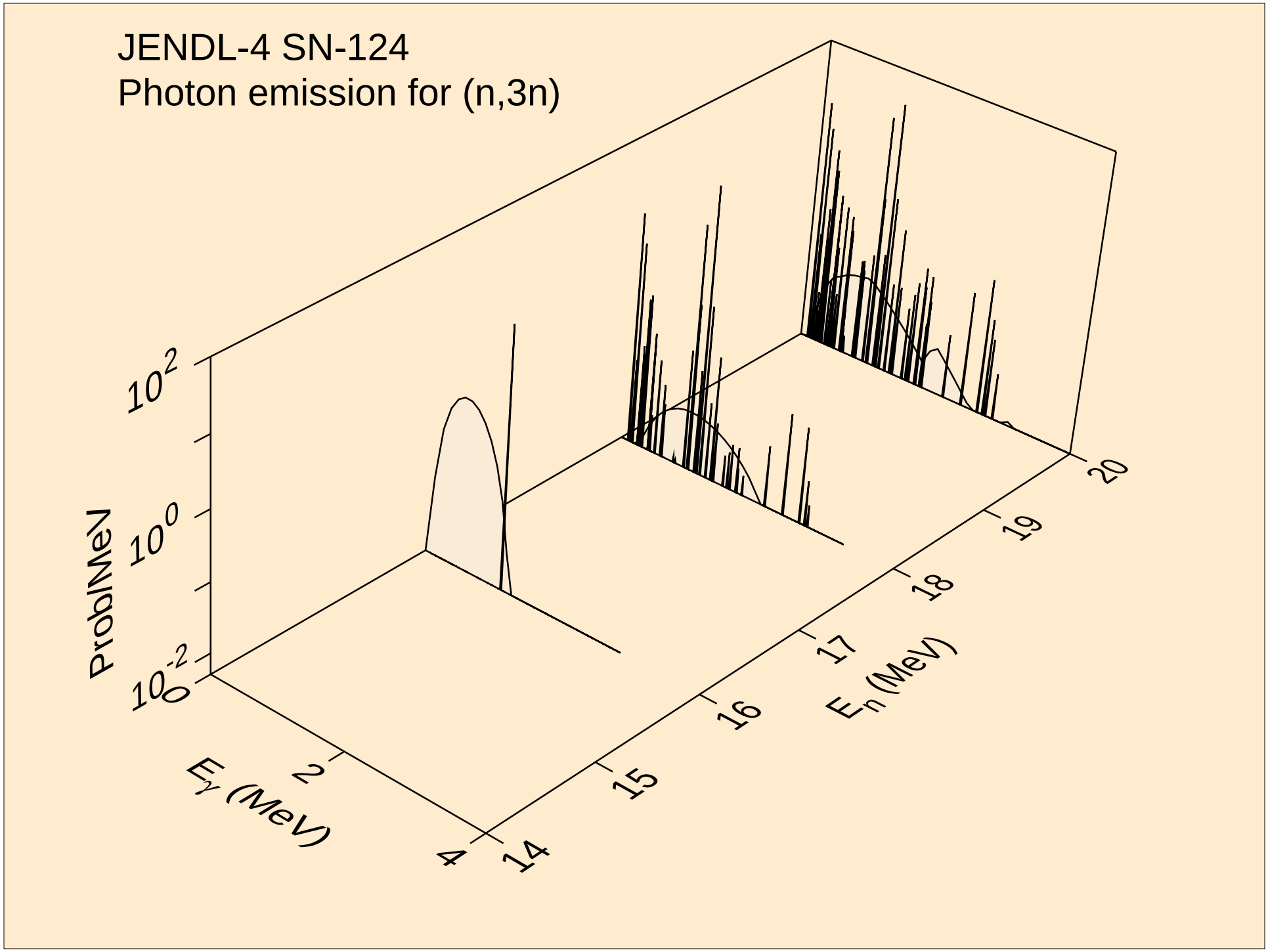
JENDL-4 SN-124
Neutron emission for (n,n*)a



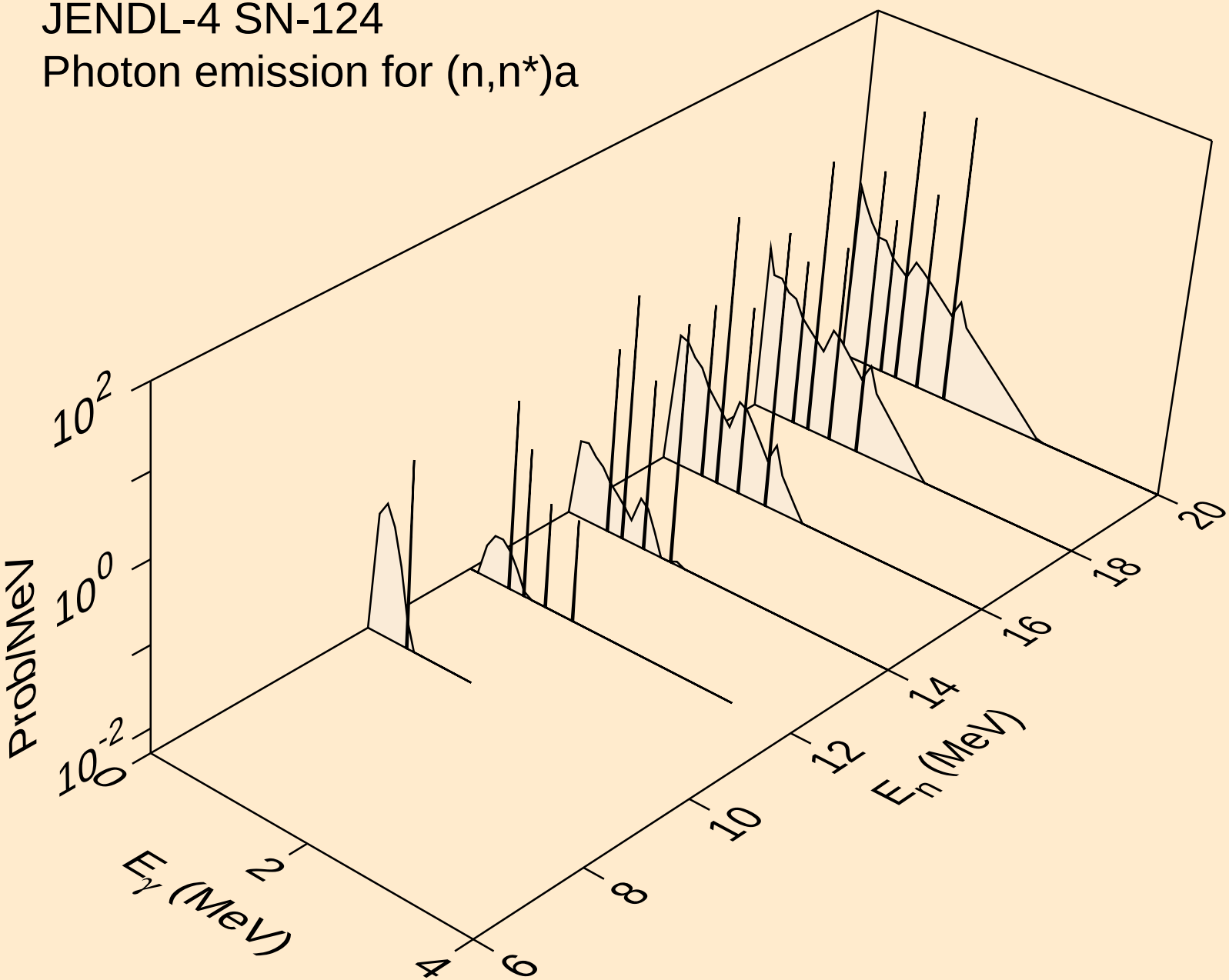

JENDL-4 SN-124
Neutron emission for (n,n*)p
Prob/MeV
10^1
10^-1
0
Sec. Energy
1
2
3
4
Energy (MeV)
12
13
14
15
16
17
18
19
20

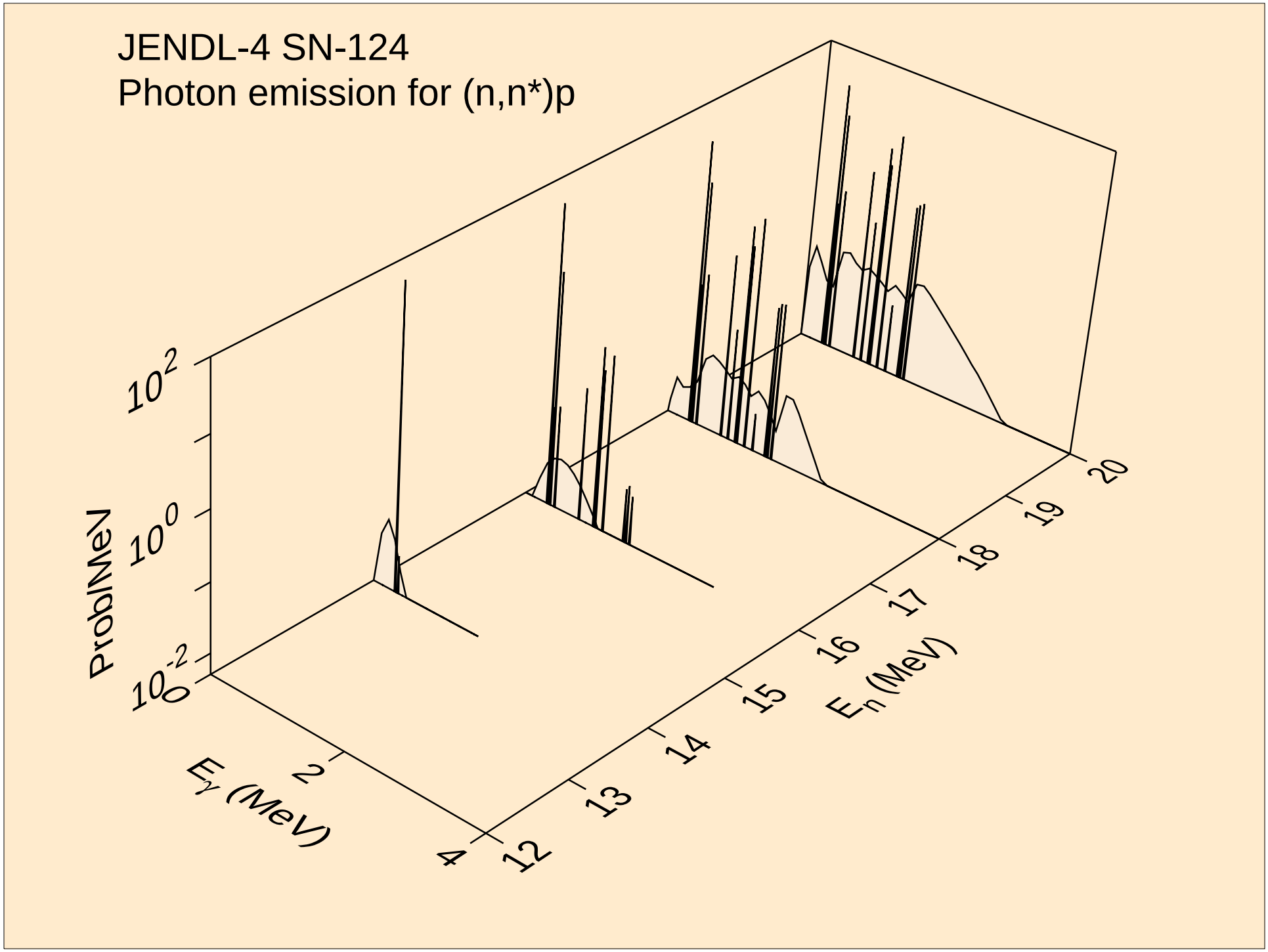

JENDL-4 SN-124
Neutron emission for (n,n*c)
Prob/MeV
10^{1}
10^{-1}
0
5
10
15
20
Sec. Energy
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)


JENDL-4 SN-124
Photon emission for (n,2n)
Prob/MeV
10^{2}
10^{0}
10^{-2}
0
5
10
E_γ (MeV)
8
10
12
14
16
18
20
E_n (MeV)

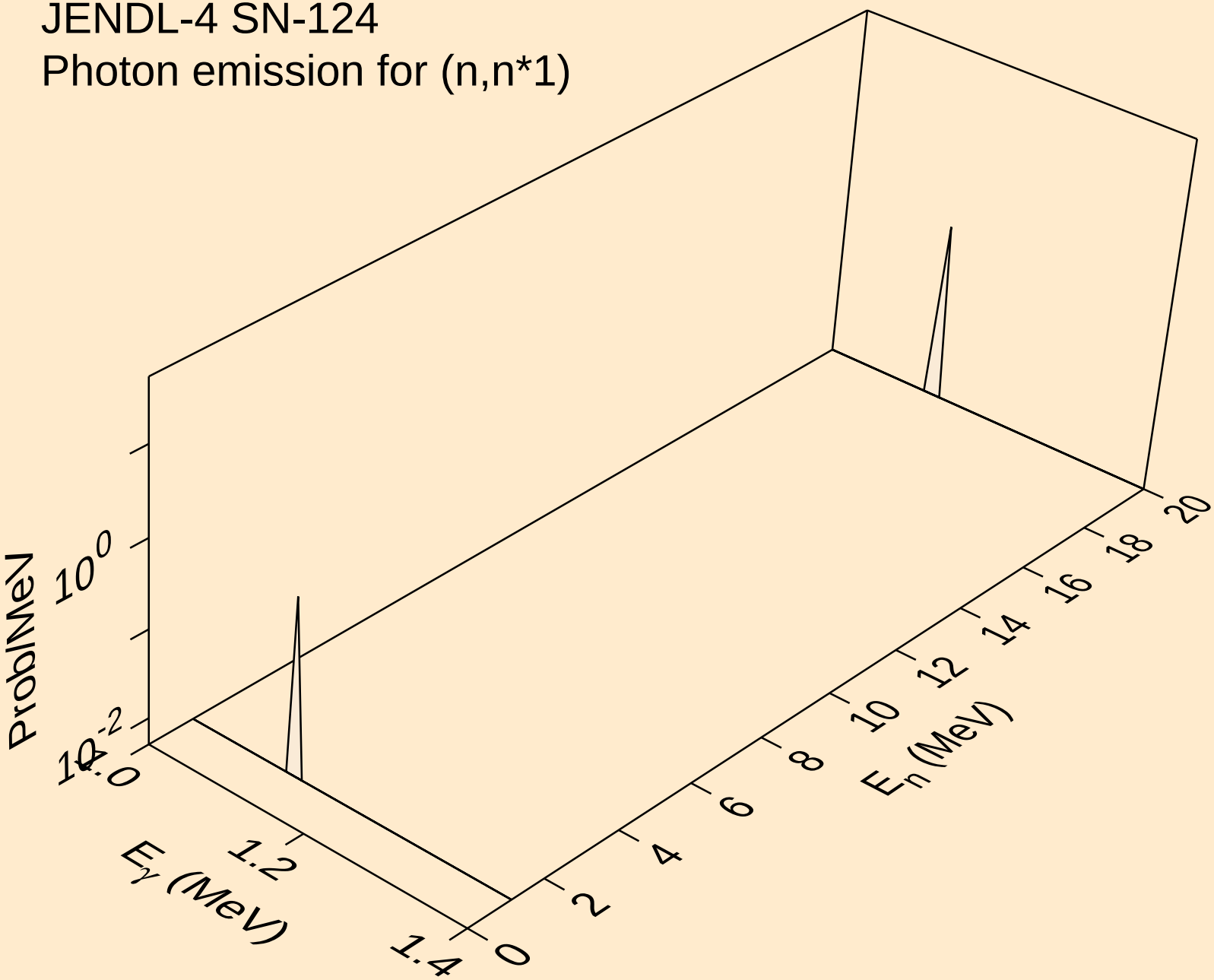

JENDL-4 SN-124
Photon emission for (n,3n)
Prob/MeV
10^{2}
10^{0}
10^{-2}
0
2
4
E_γ (MeV)
14
15
16
17
18
19
20
E_n (MeV)

JENDL-4 SN-124
Photon emission for (n,n*)a

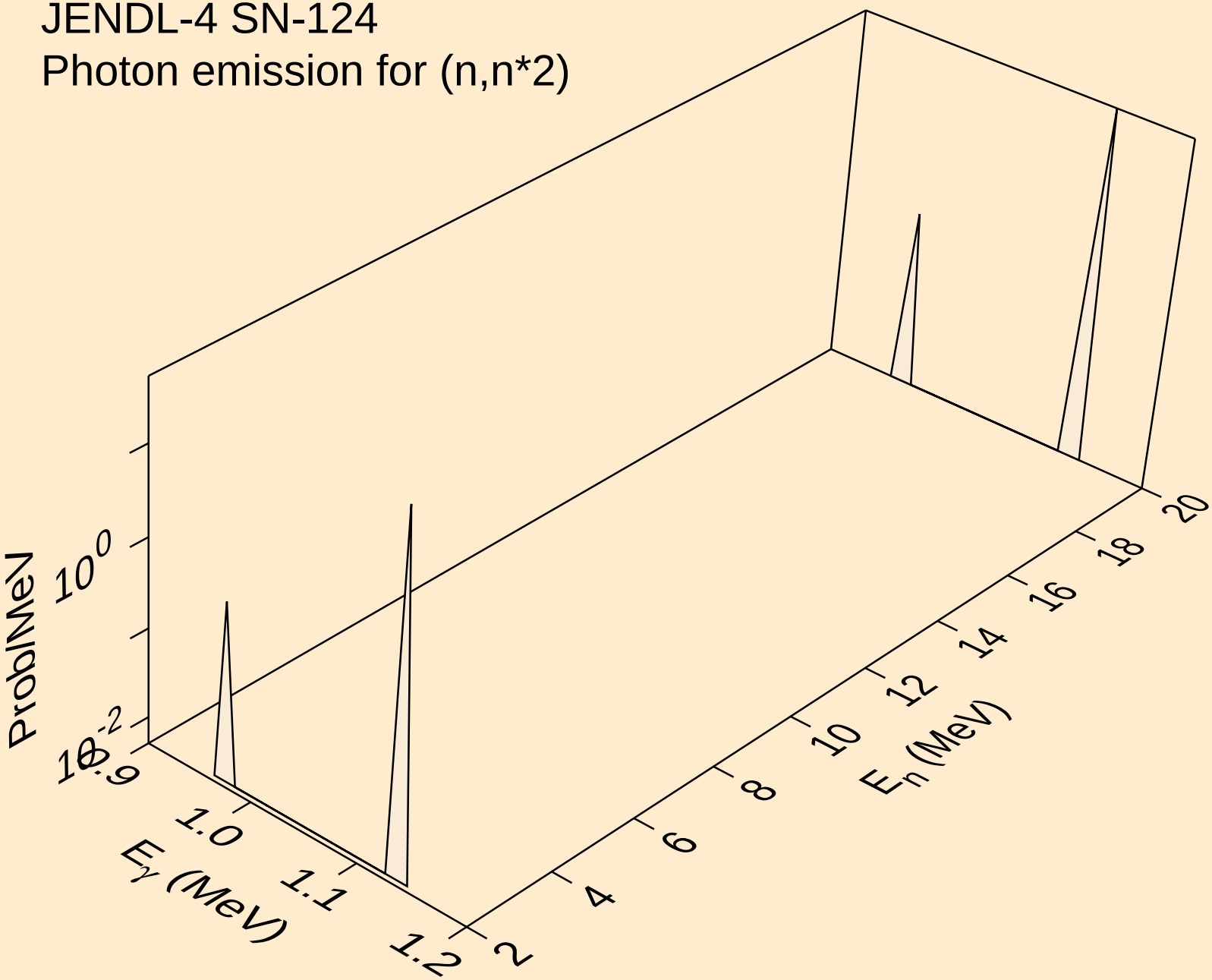



JENDL-4 SN-124
Photon emission for (n,n*)p
Prob/MeV
10^{2}
10^{0}
10^{-2}
0
2
4
E_γ (MeV)
12
13
14
15
16
17
18
19
20
E_n (MeV)

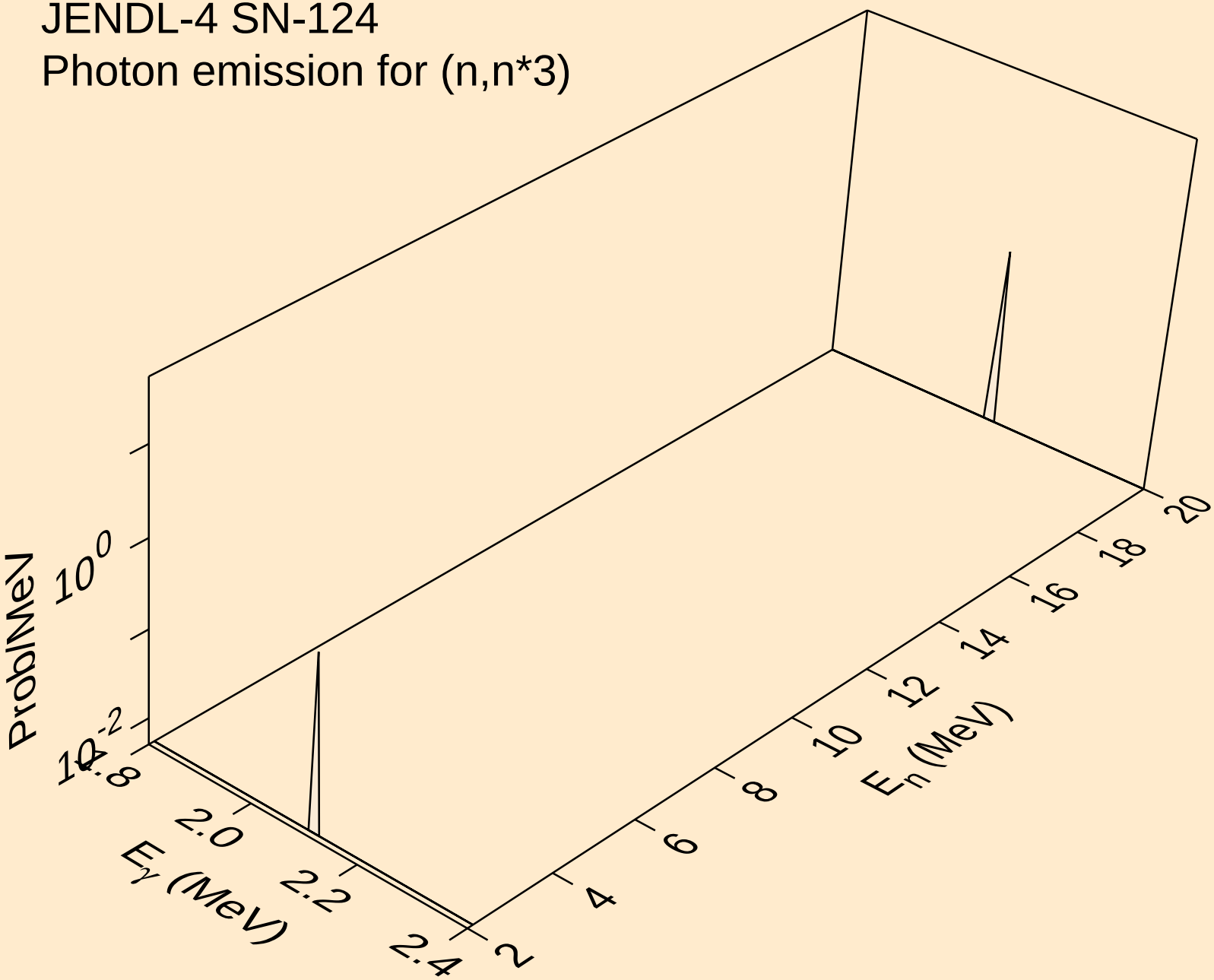
JENDL-4 SN-124
Photon emission for (n,n*1)



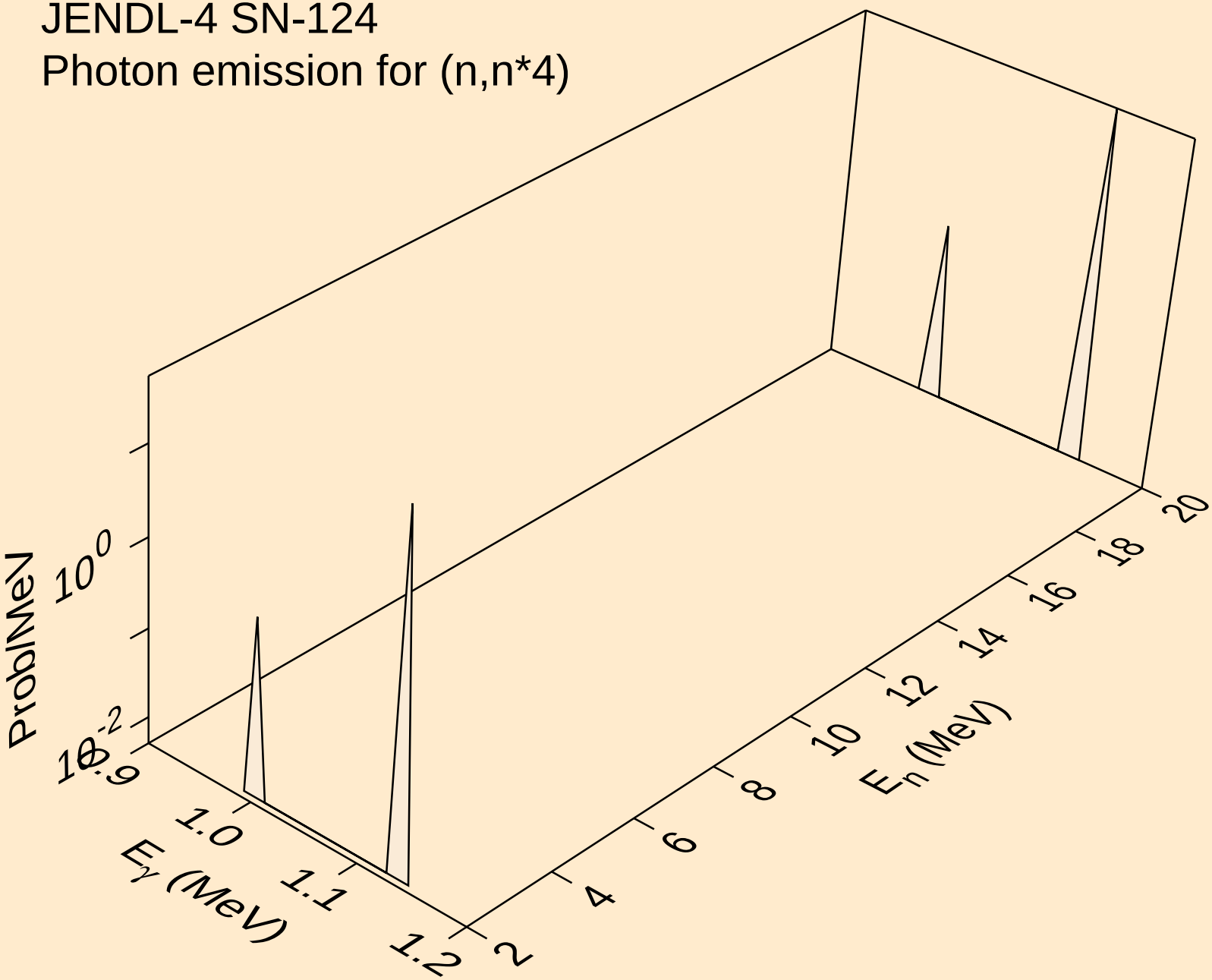
JENDL-4 SN-124
Photon emission for (n,n*2)



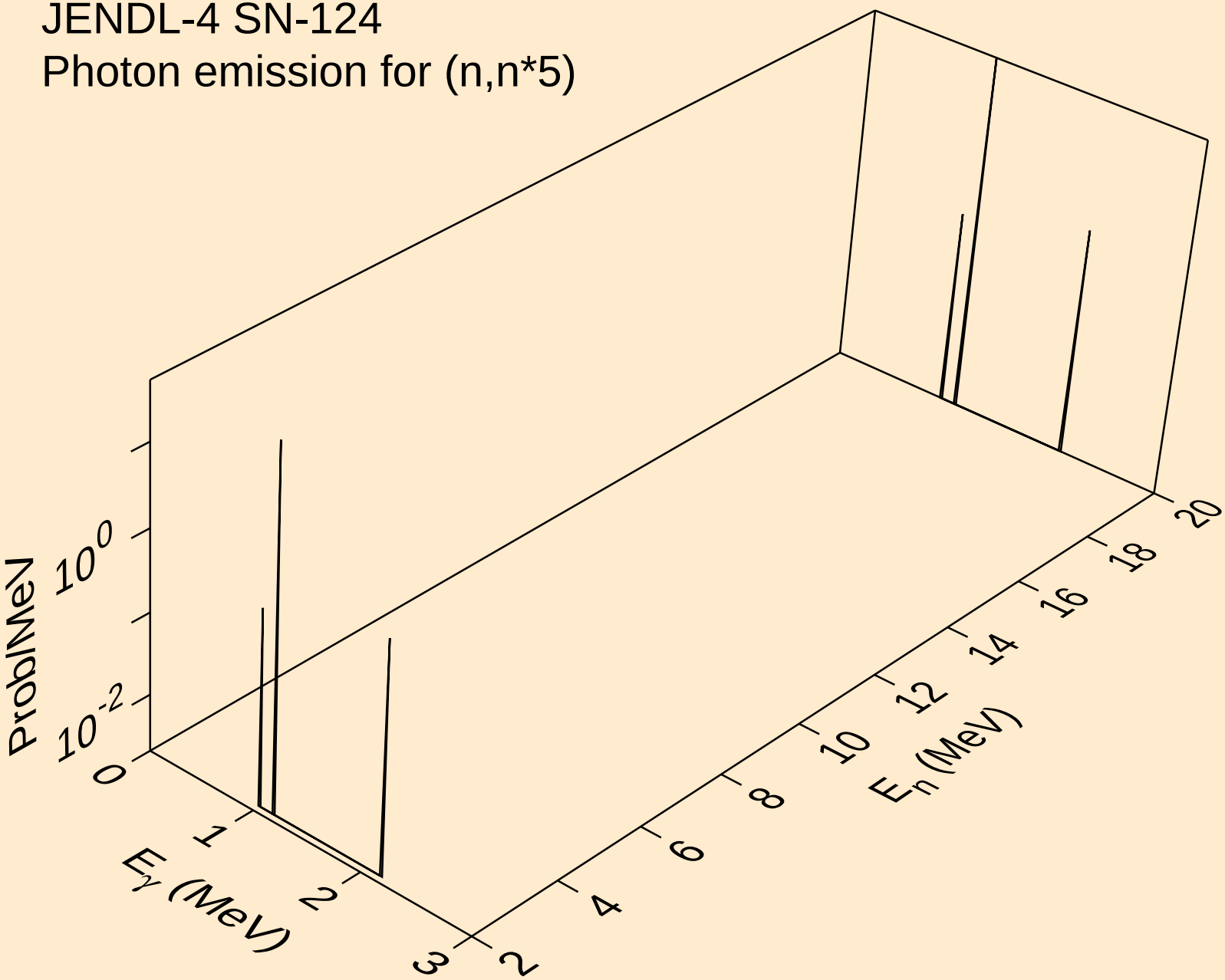
JENDL-4 SN-124
Photon emission for (n,n*3)



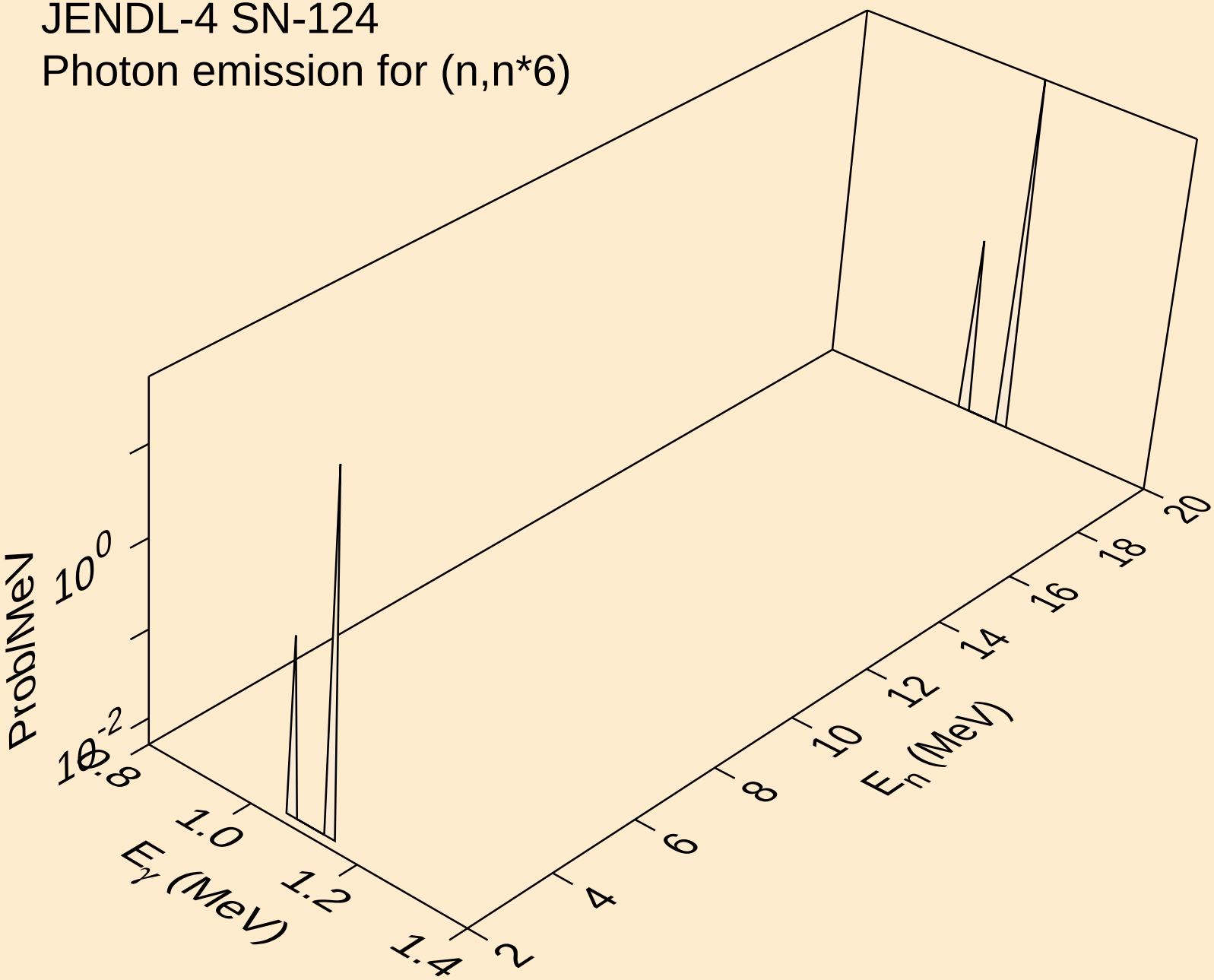
JENDL-4 SN-124
Photon emission for (n,n*4)



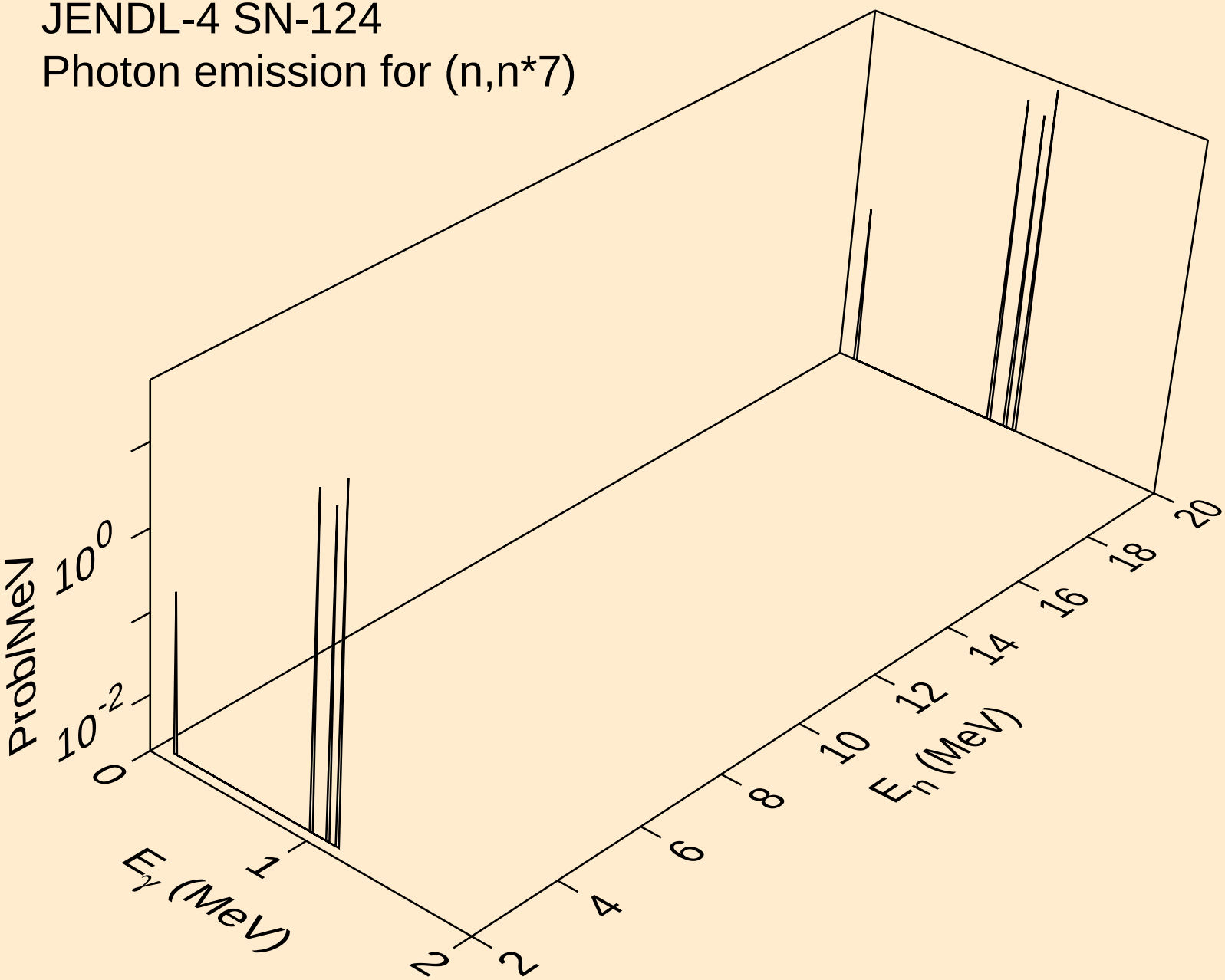
JENDL-4 SN-124
Photon emission for (n,n*5)



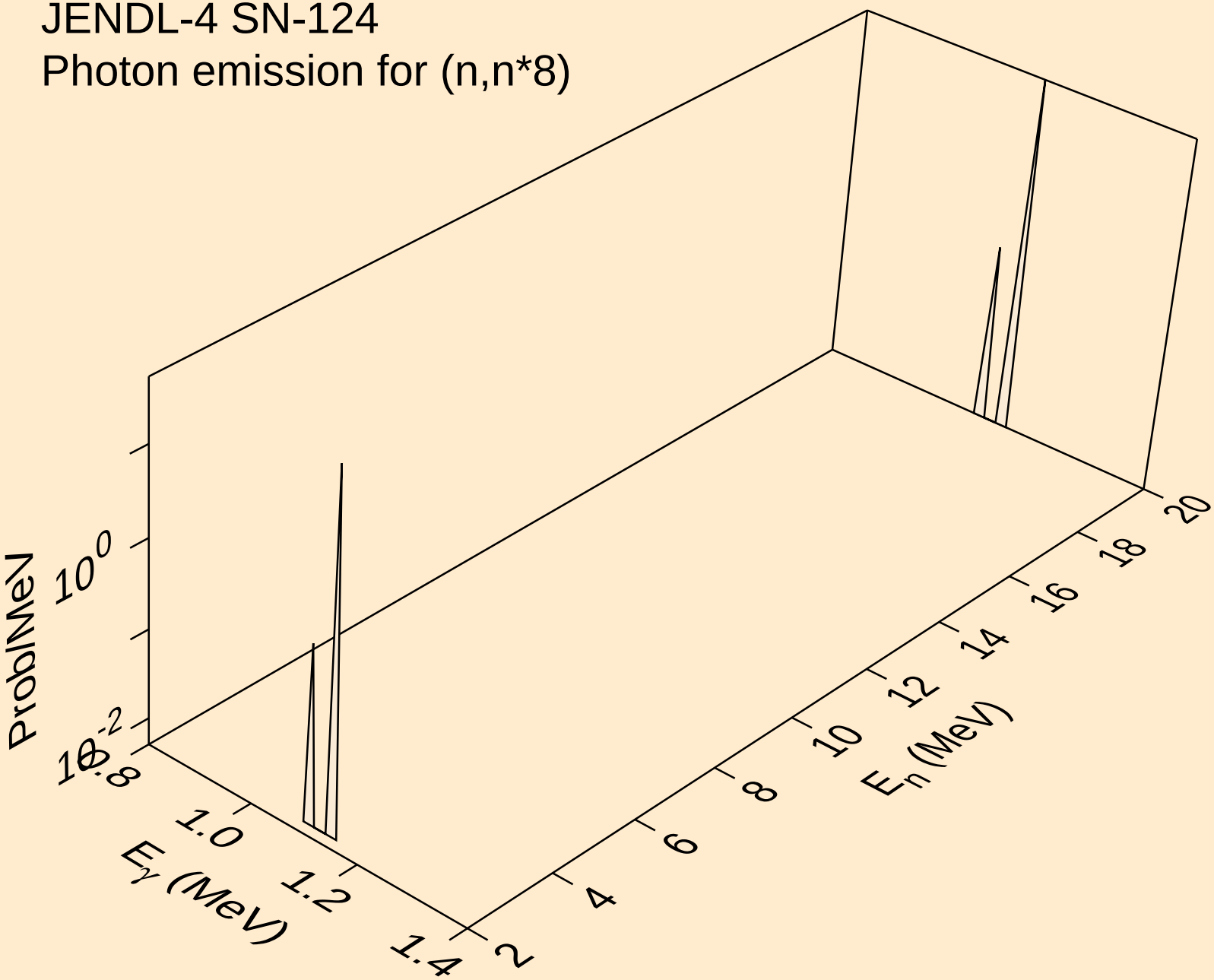
JENDL-4 SN-124
Photon emission for (n,n*6)



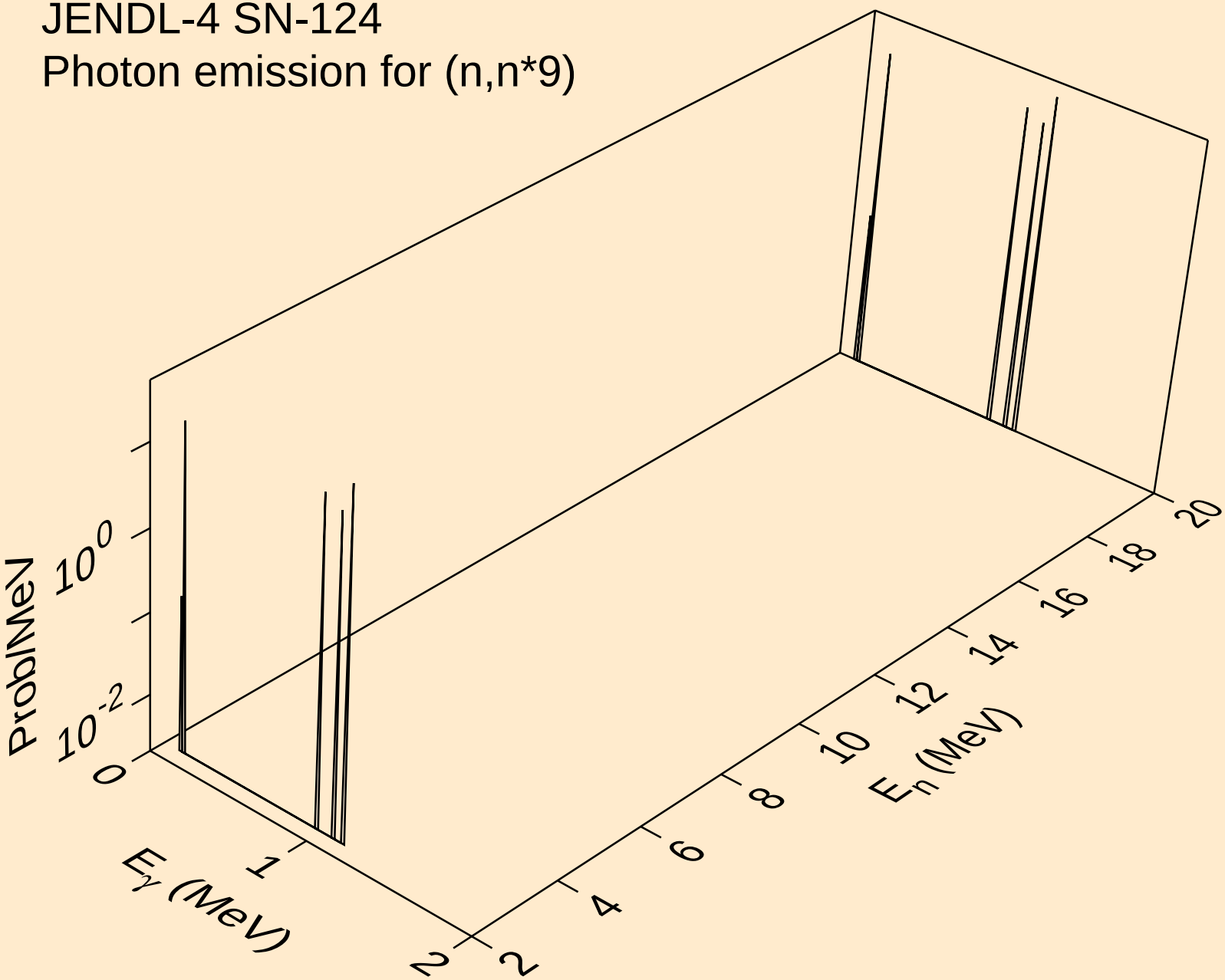
JENDL-4 SN-124
Photon emission for (n,n*7)



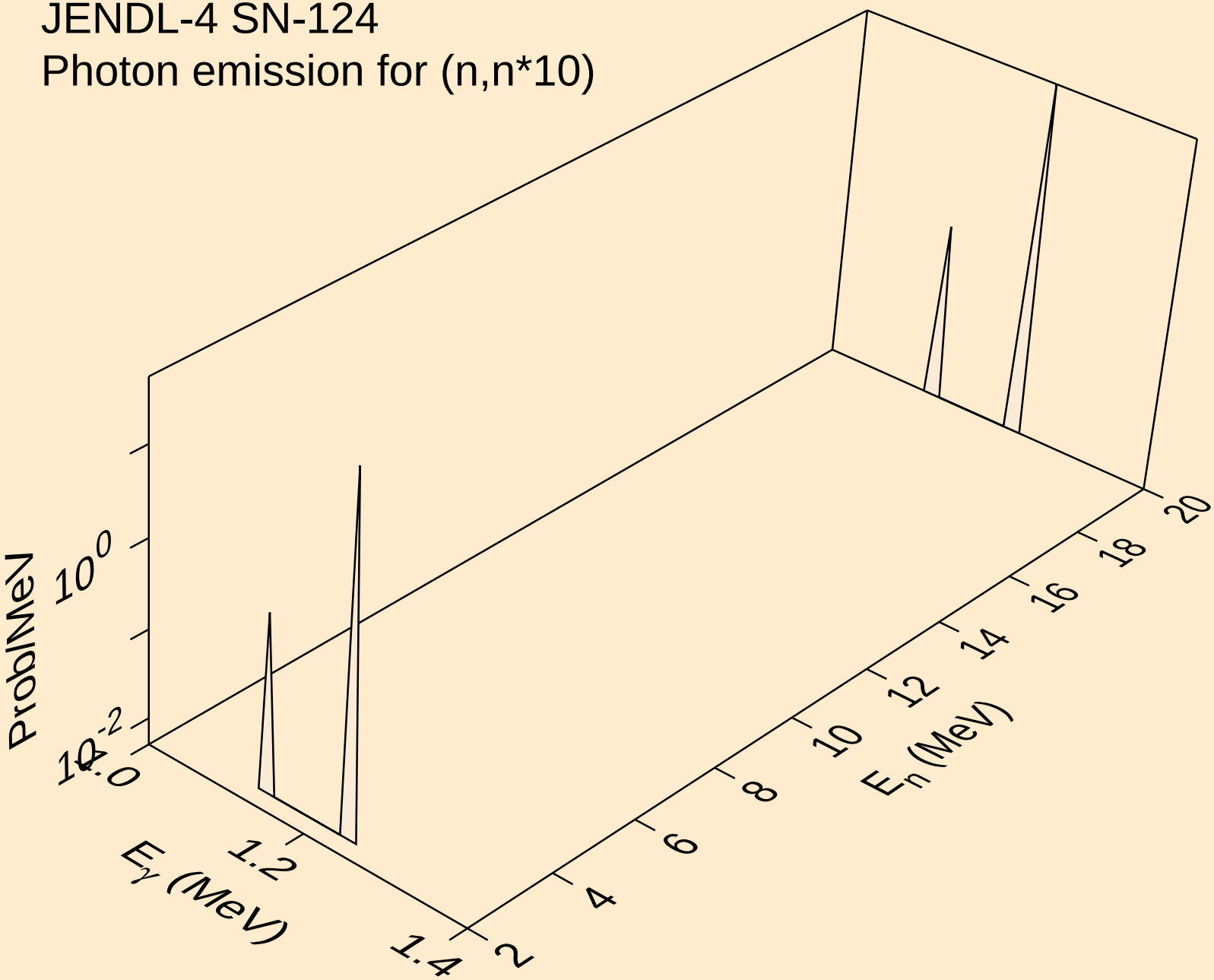
JENDL-4 SN-124
Photon emission for (n,n*8)



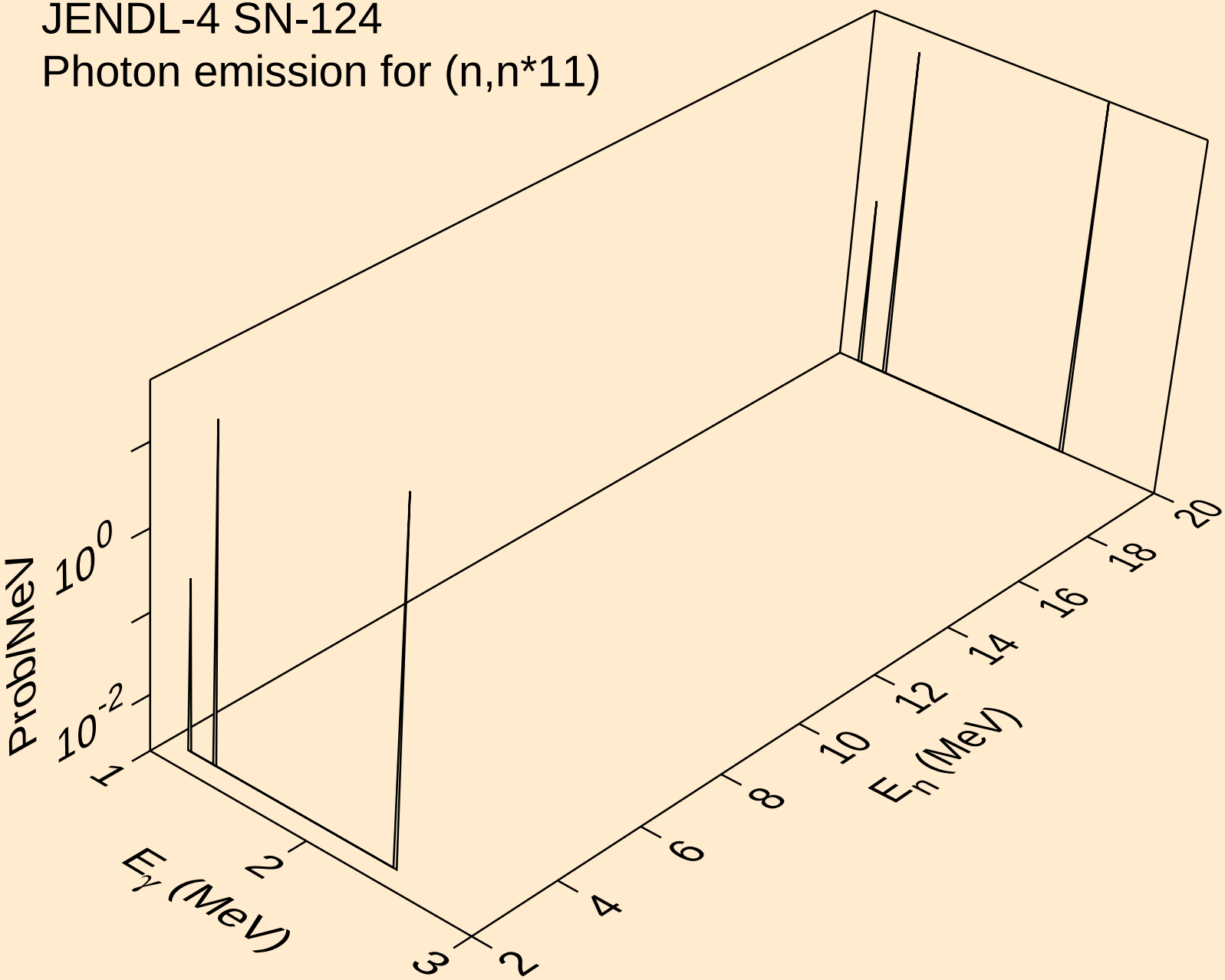
JENDL-4 SN-124
Photon emission for (n,n*9)



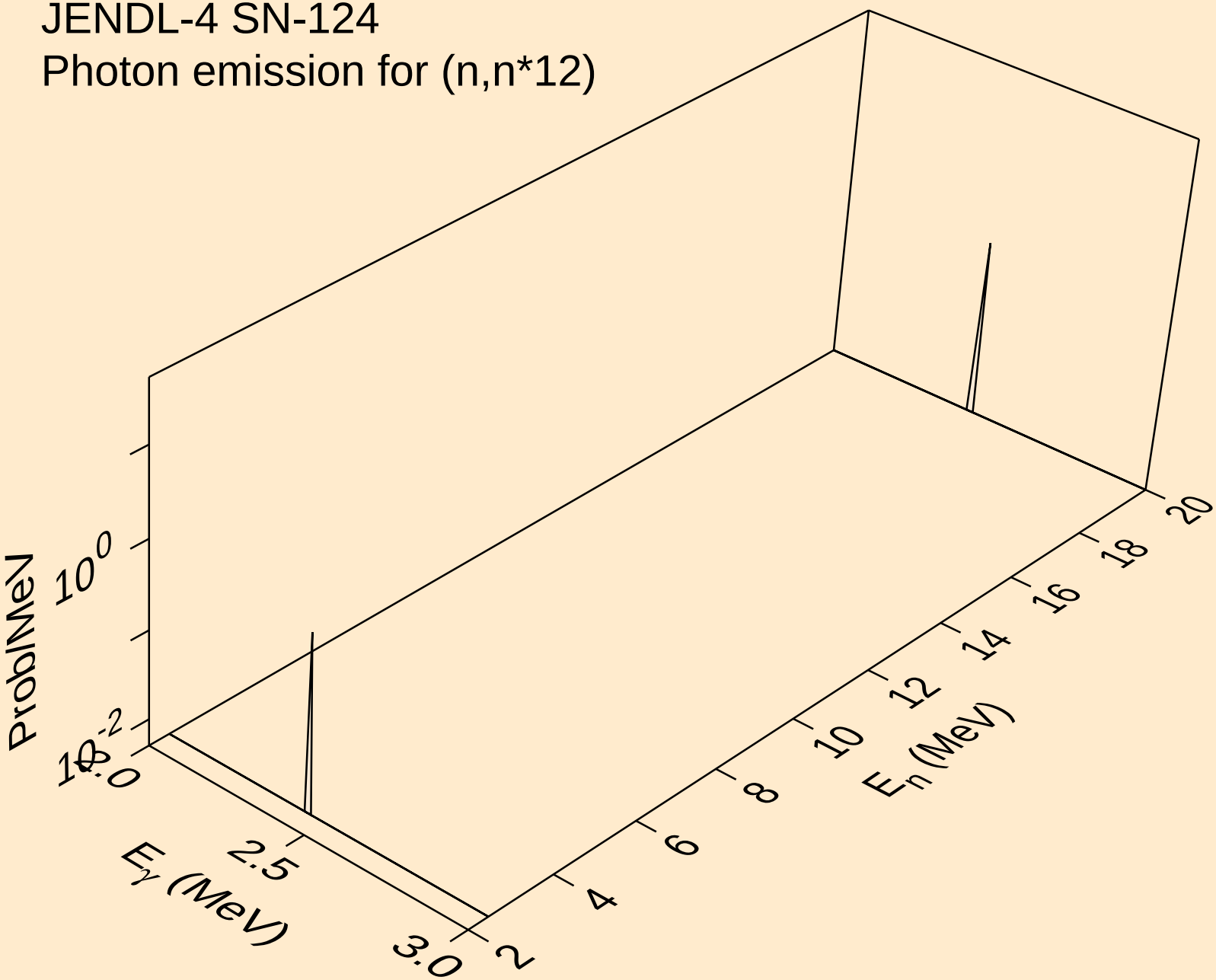
JENDL-4 SN-124
Photon emission for (n,n*10)

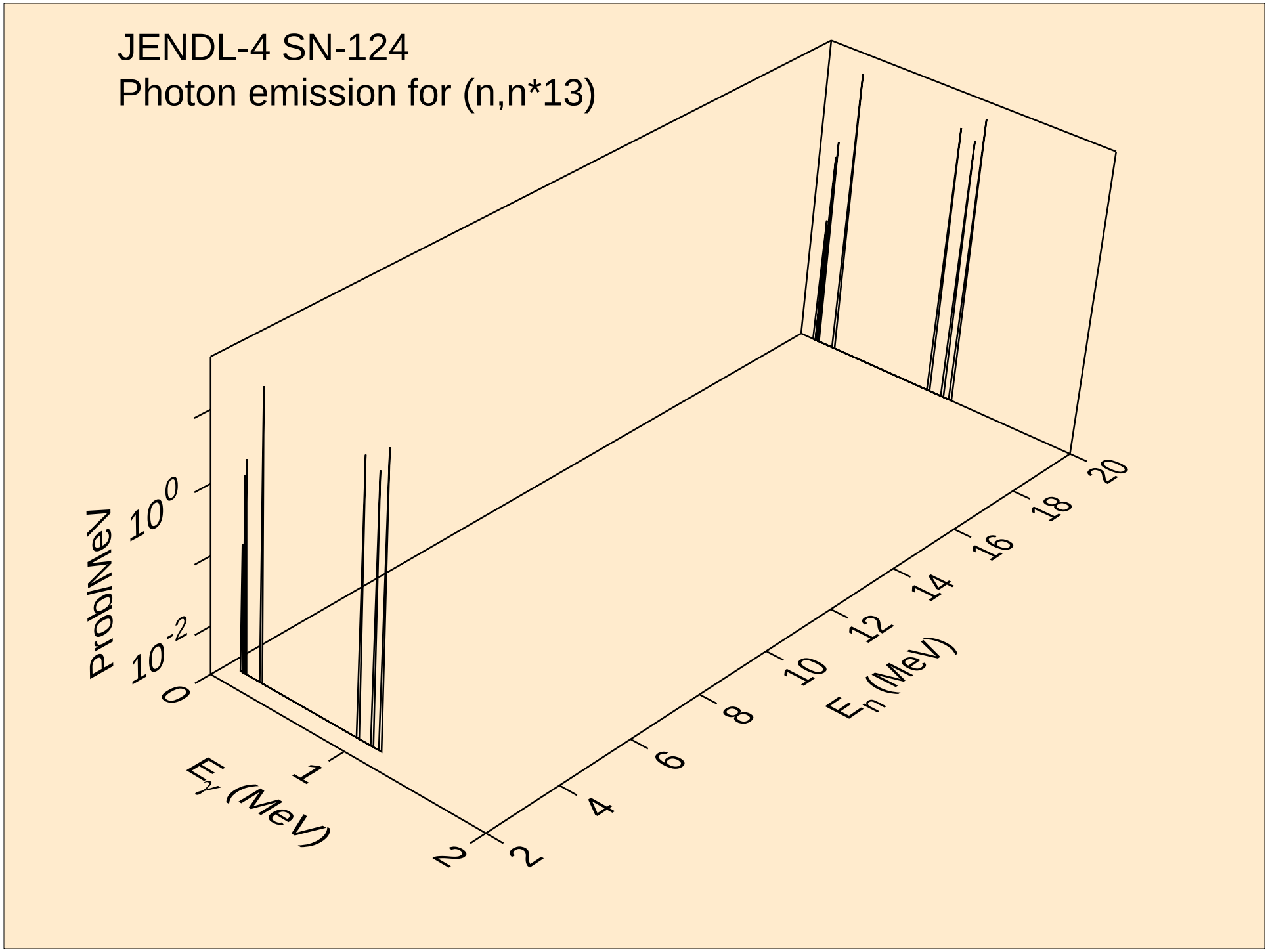


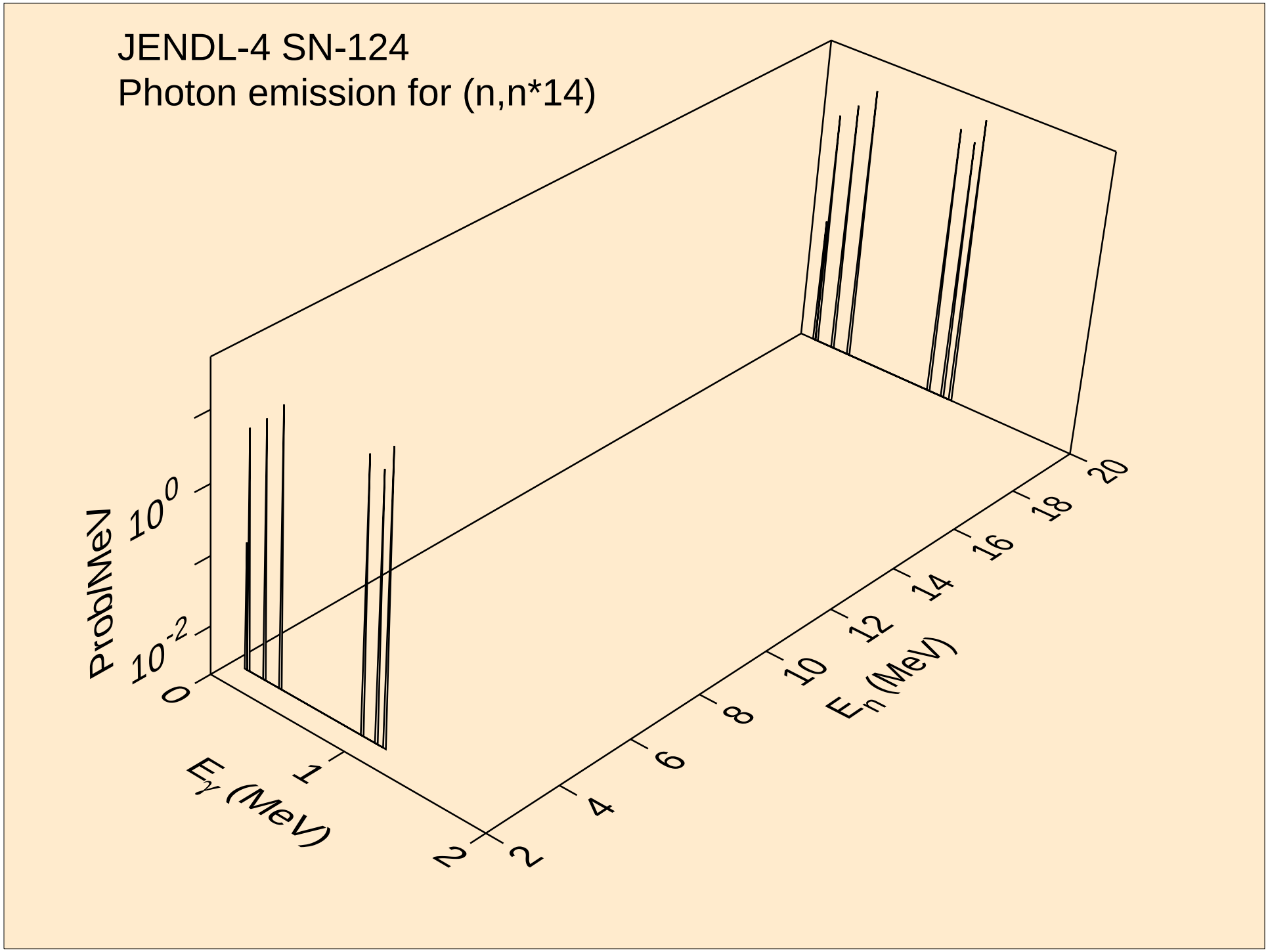
JENDL-4 SN-124
Photon emission for (n,n*11)

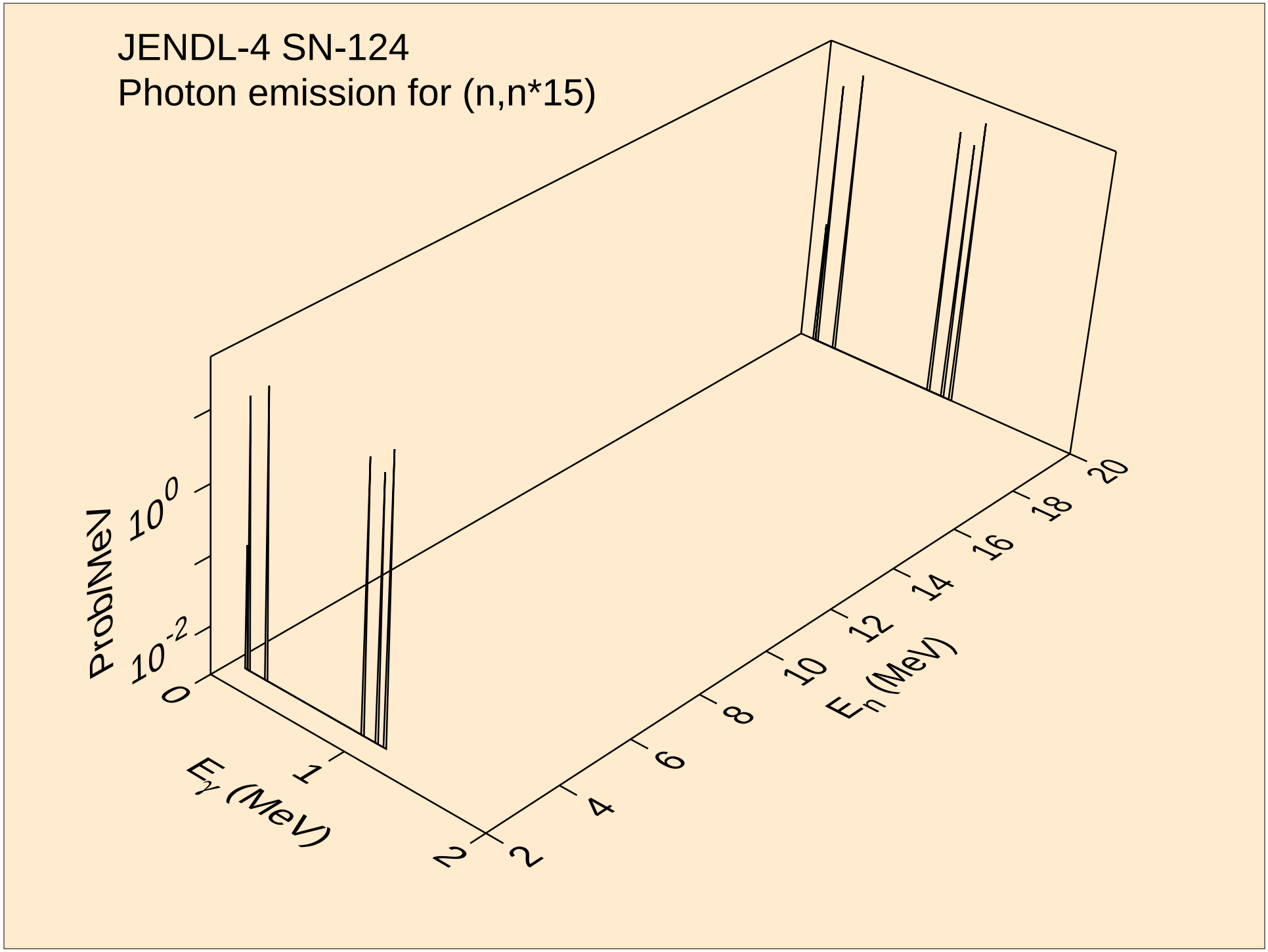


JENDL-4 SN-124
Photon emission for (n,n*12)

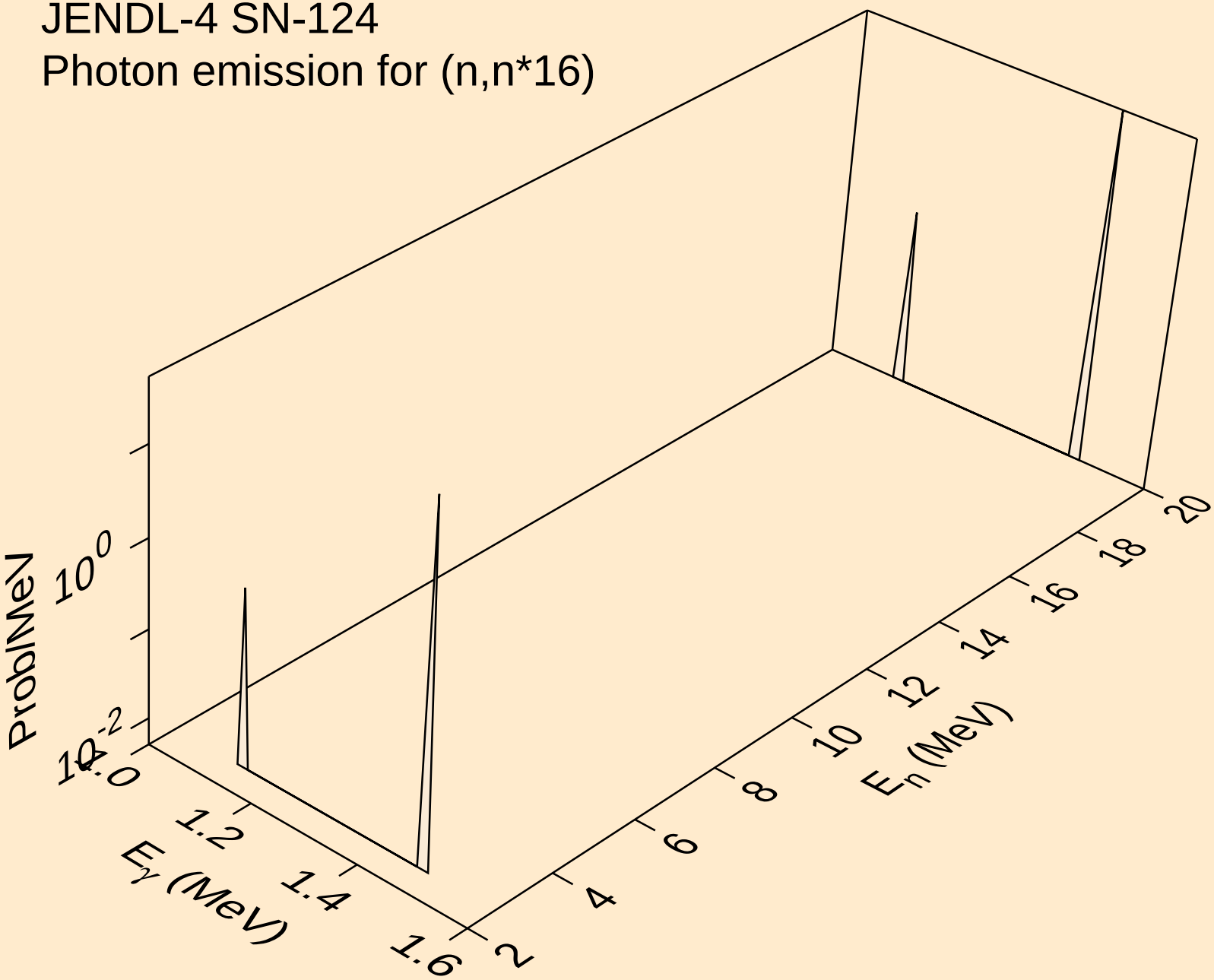


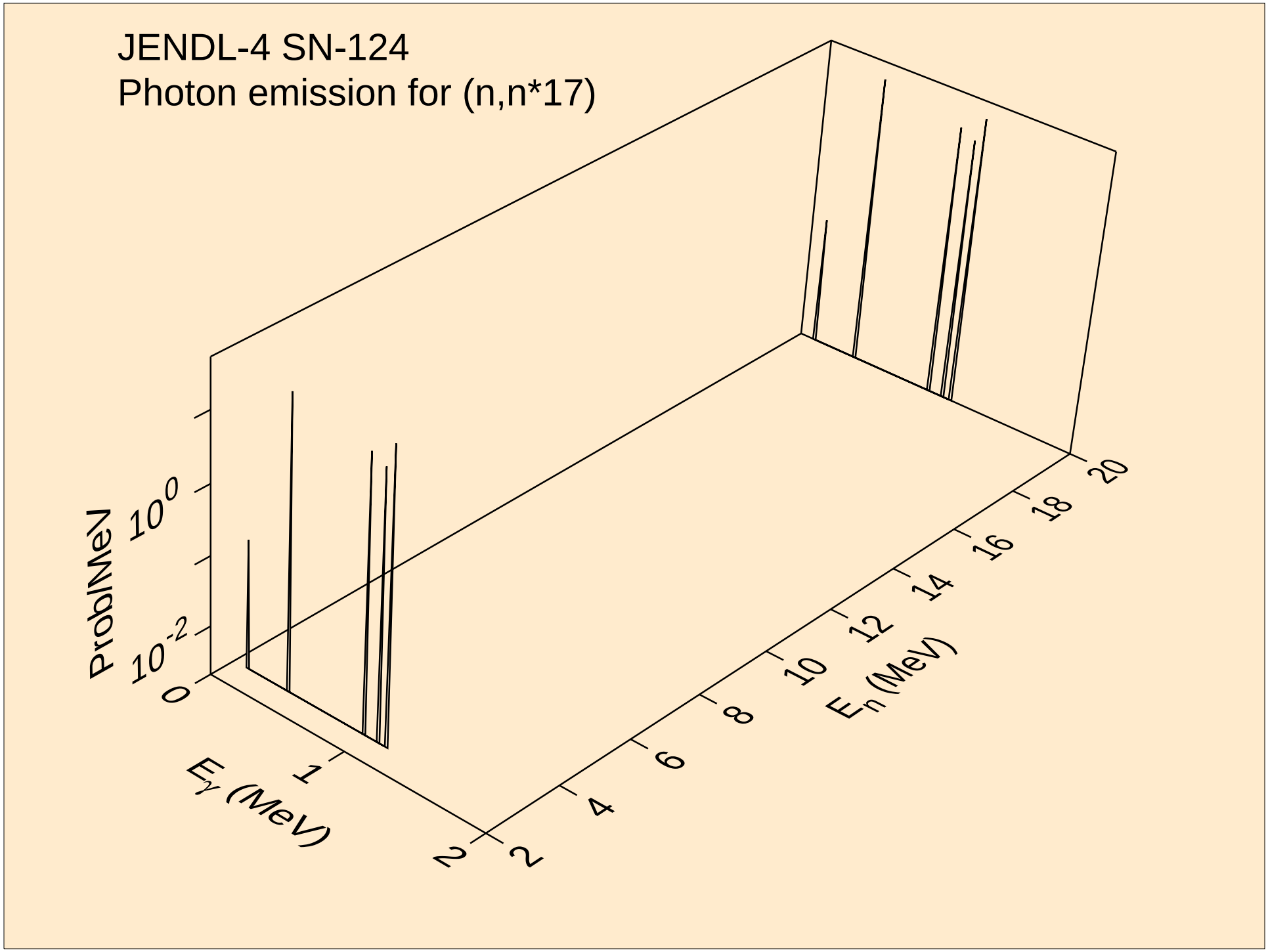

JENDL-4 SN-124
Photon emission for (n,n*13)
Prob/MeV
10^0
10^{-2}
0
E_γ (MeV)
1
2
2
4
6
8
10
12
14
16
18
20
E_n (MeV)

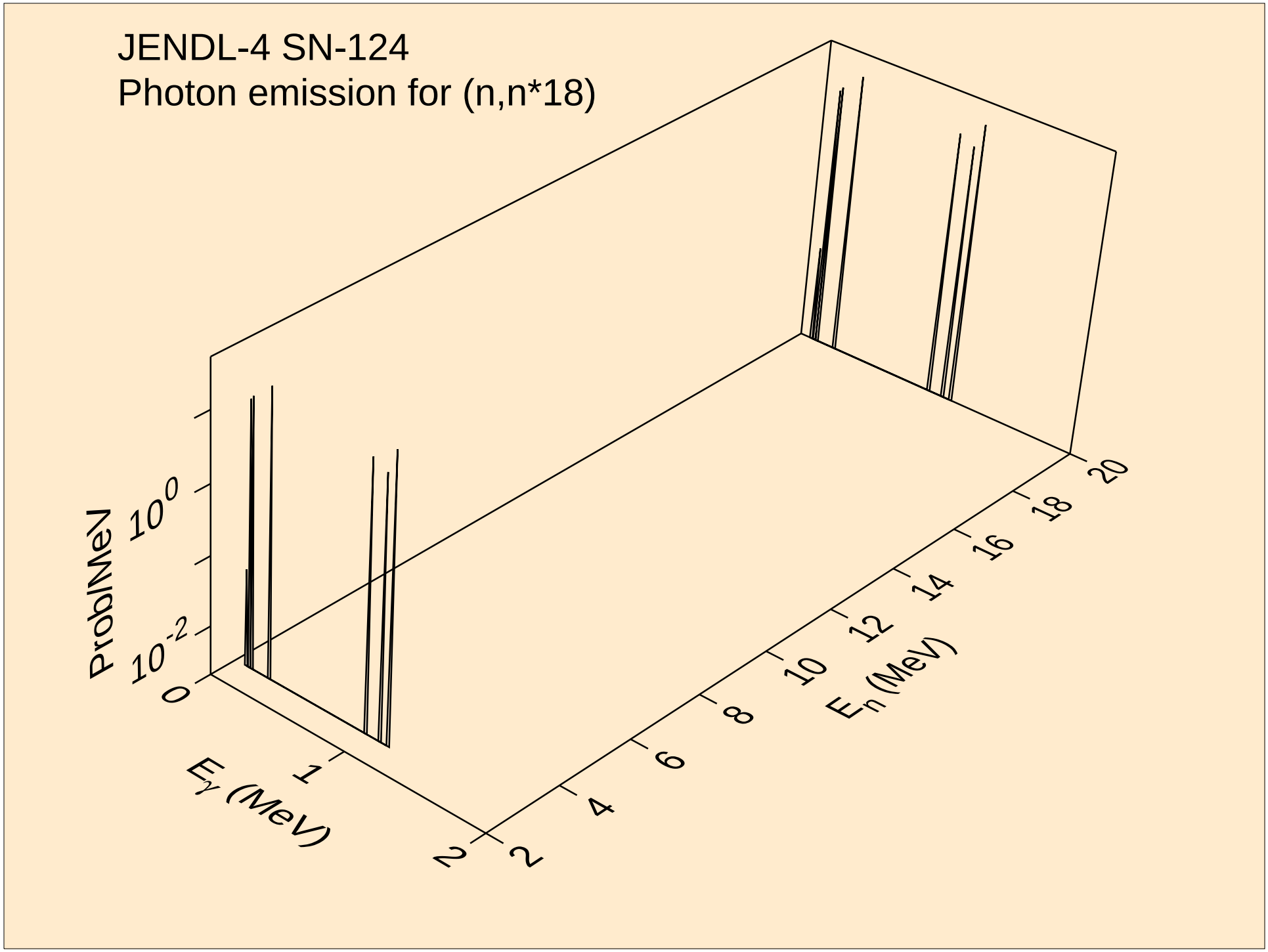

JENDL-4 SN-124
Photon emission for (n,n*14)
Prob/MeV
10^0
10^{-2}
0
E_γ (MeV)
1
2
2
4
6
8
10
12
14
16
18
20
E_n (MeV)

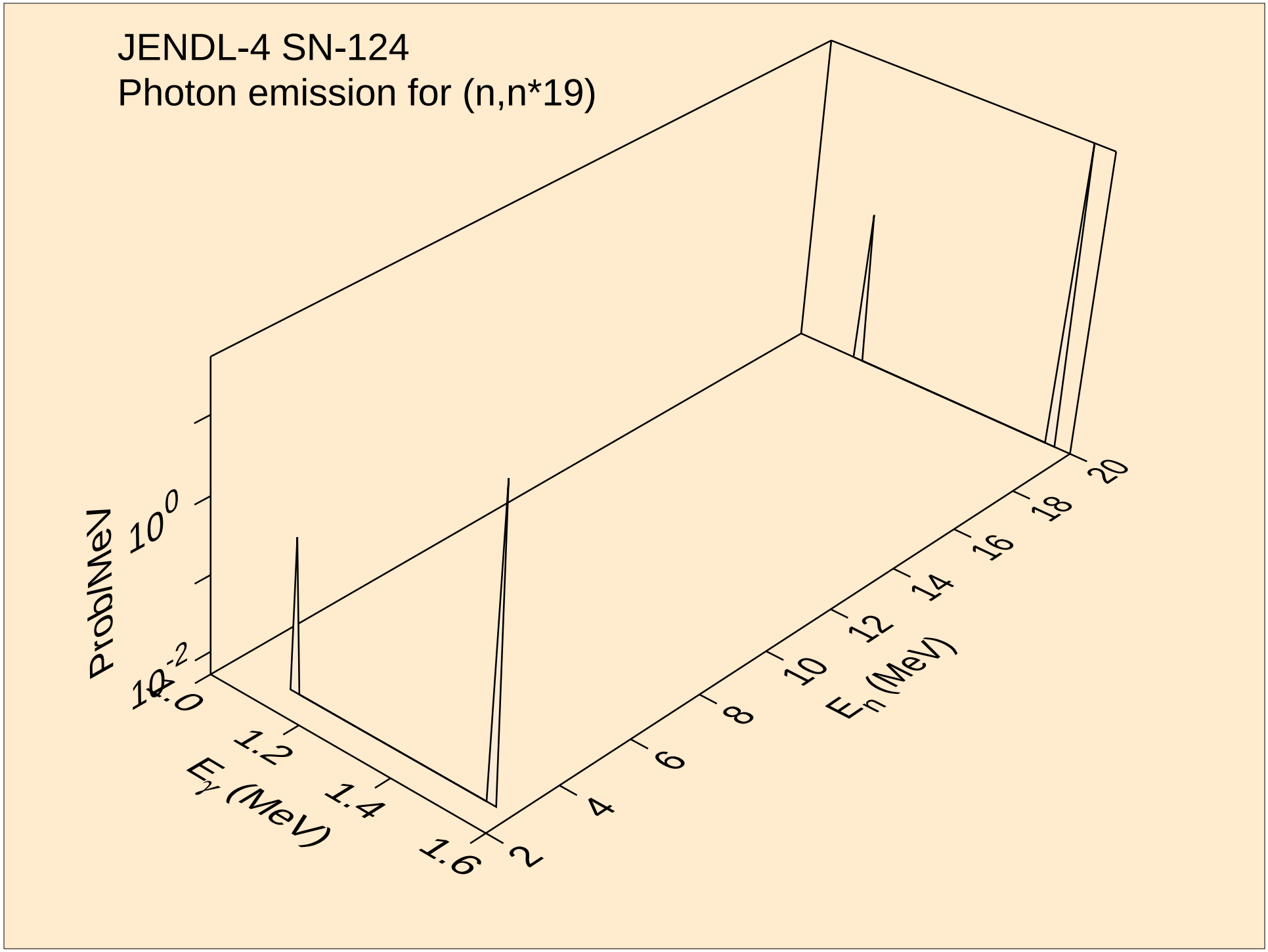

JENDL-4 SN-124
Photon emission for (n,n*15)
Prob/MeV
10^0
10^{-2}
0
E_γ (MeV)
1
2
E_n (MeV)
2
4
6
8
10
12
14
16
18
20

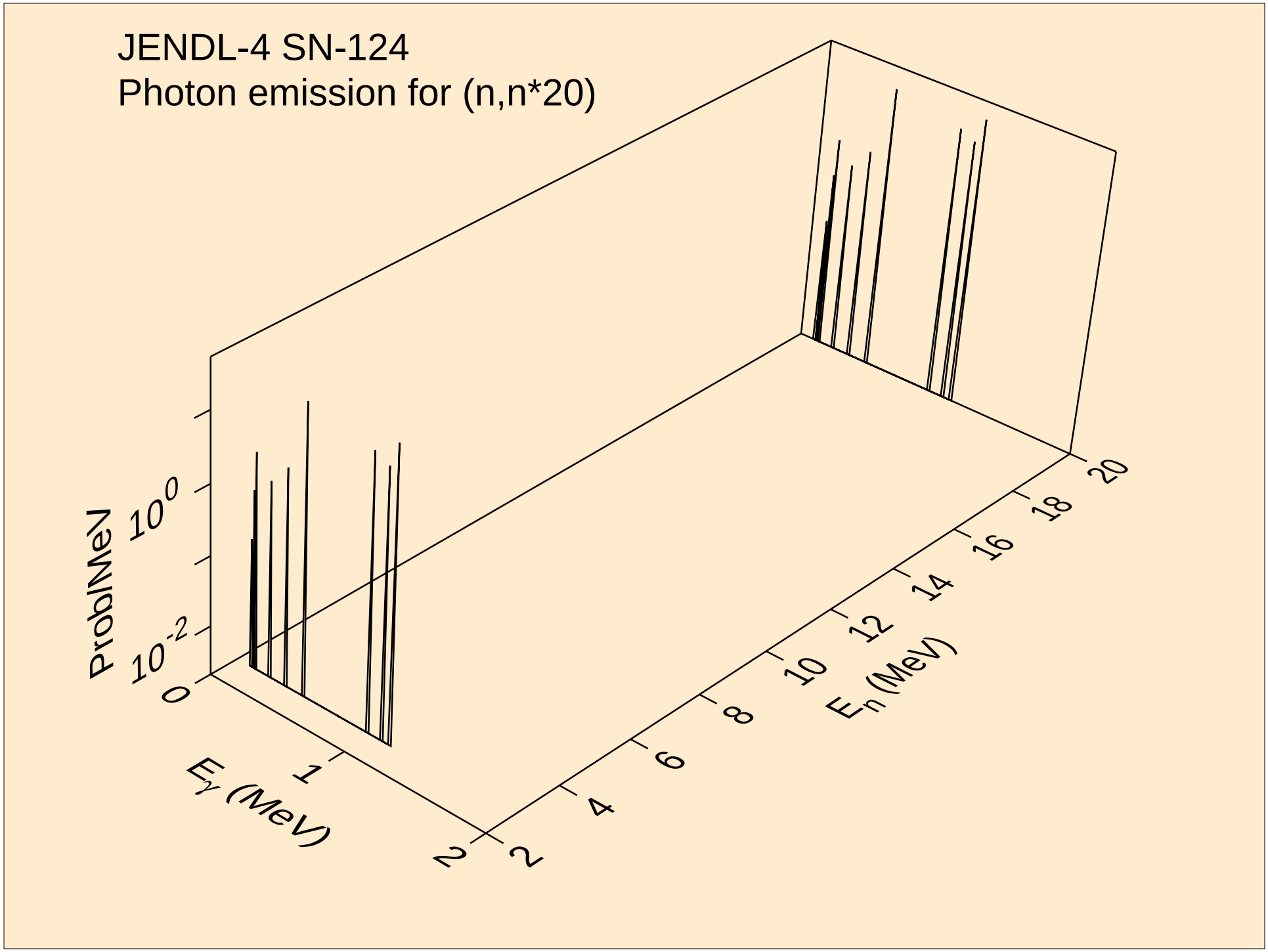
JENDL-4 SN-124
Photon emission for (n,n*16)



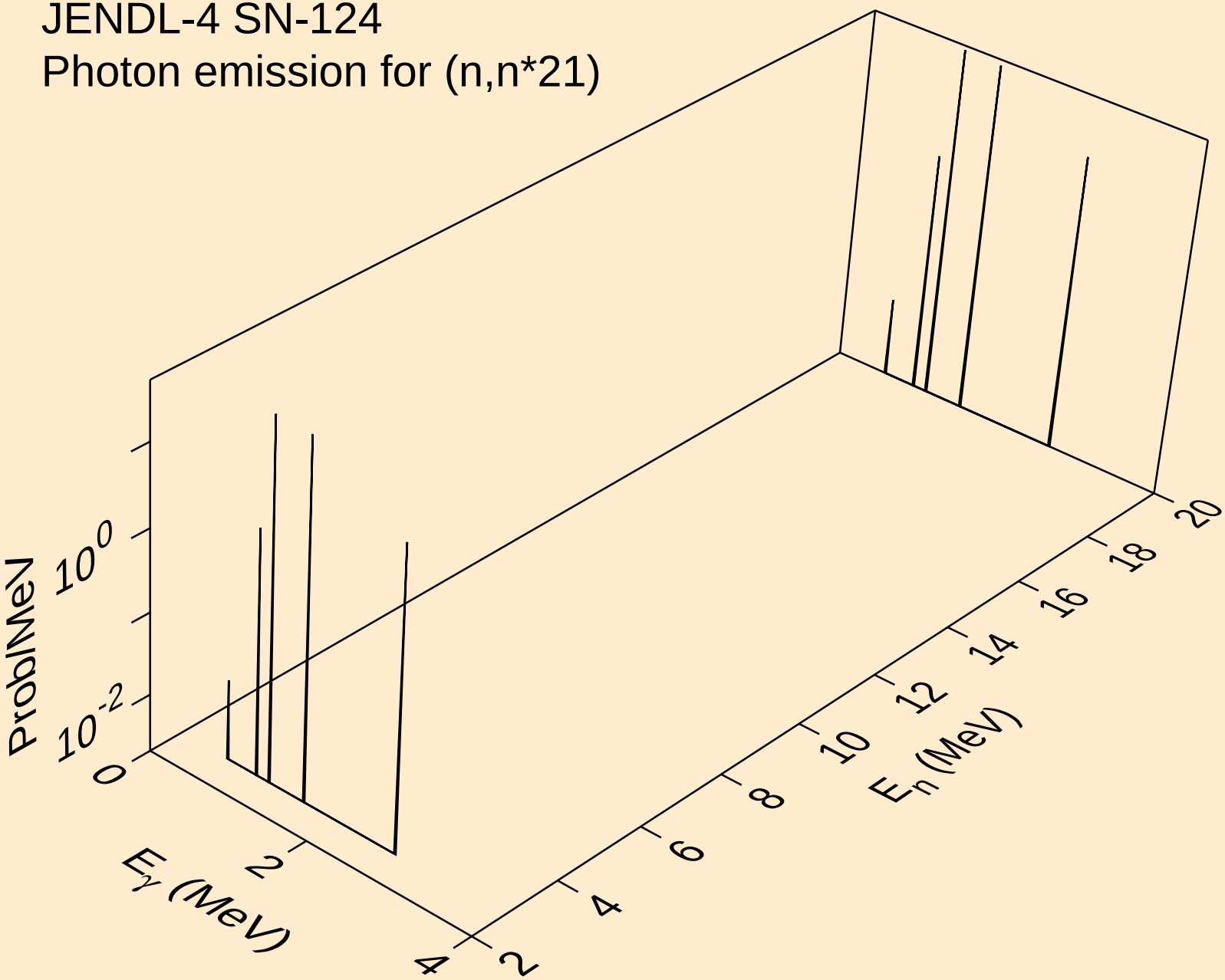

JENDL-4 SN-124
Photon emission for (n,n*17)
Prob/MeV
10^0
10^{-2}
0
E_γ (MeV)
1
2
2
4
6
8
10
12
14
16
18
20
E_n (MeV)


JENDL-4 SN-124
Photon emission for (n,n*18)
Prob/MeV
10^0
10^{-2}
0
E_γ (MeV)
1
2
E_n (MeV)
2
4
6
8
10
12
14
16
18
20

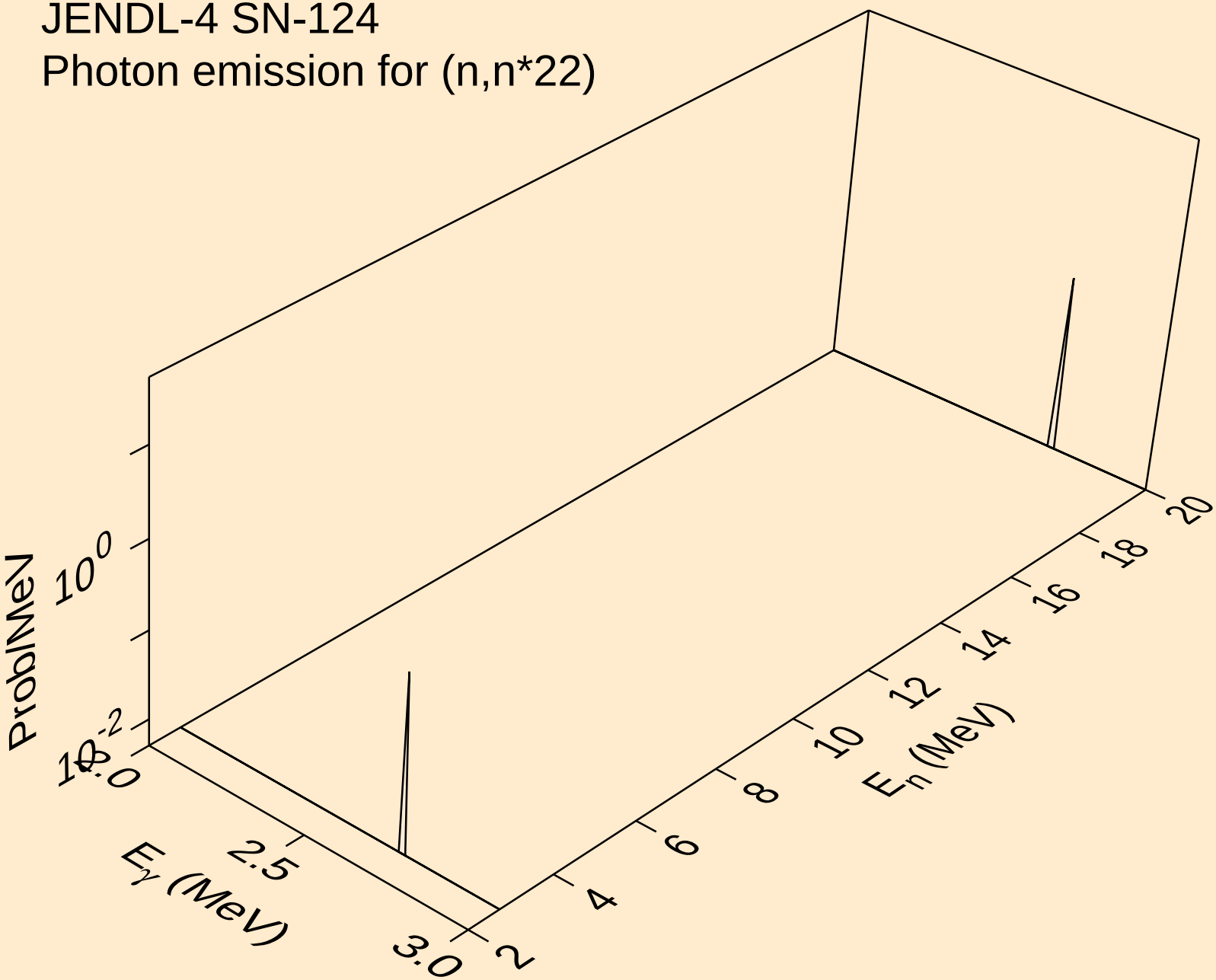

JENDL-4 SN-124
Photon emission for (n,n*19)
Prob/MeV
10^0
10^{-2}
1.0
1.2
1.4
1.6
E_γ (MeV)
2
4
6
8
10
12
14
16
18
20
E_n (MeV)

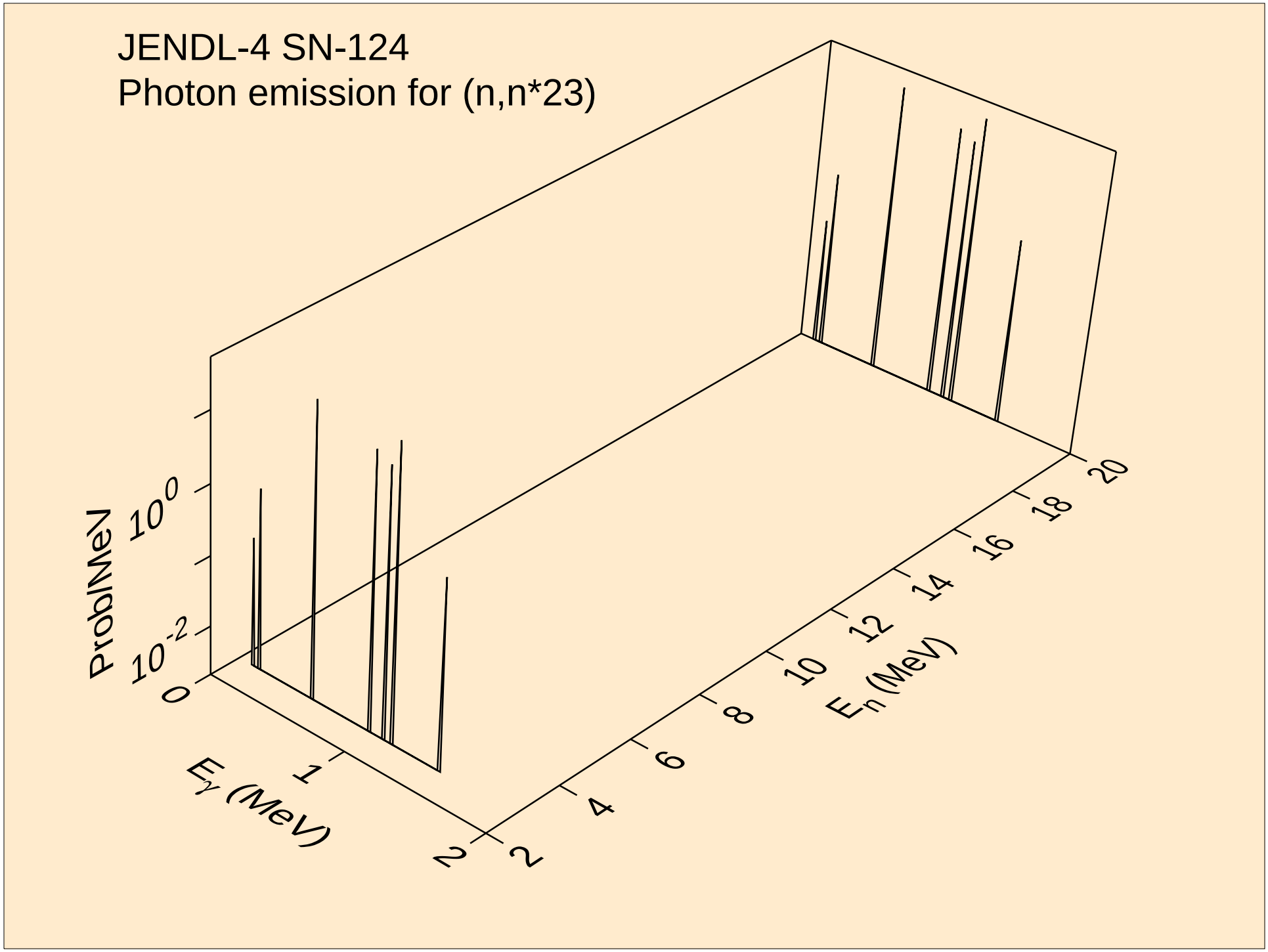

JENDL-4 SN-124
Photon emission for (n,n*20)
Prob/MeV
10^0
10^{-2}
0
E_γ (MeV)
1
2
2
4
6
8
10
12
14
16
18
20
E_n (MeV)

JENDL-4 SN-124
Photon emission for (n,n*21)

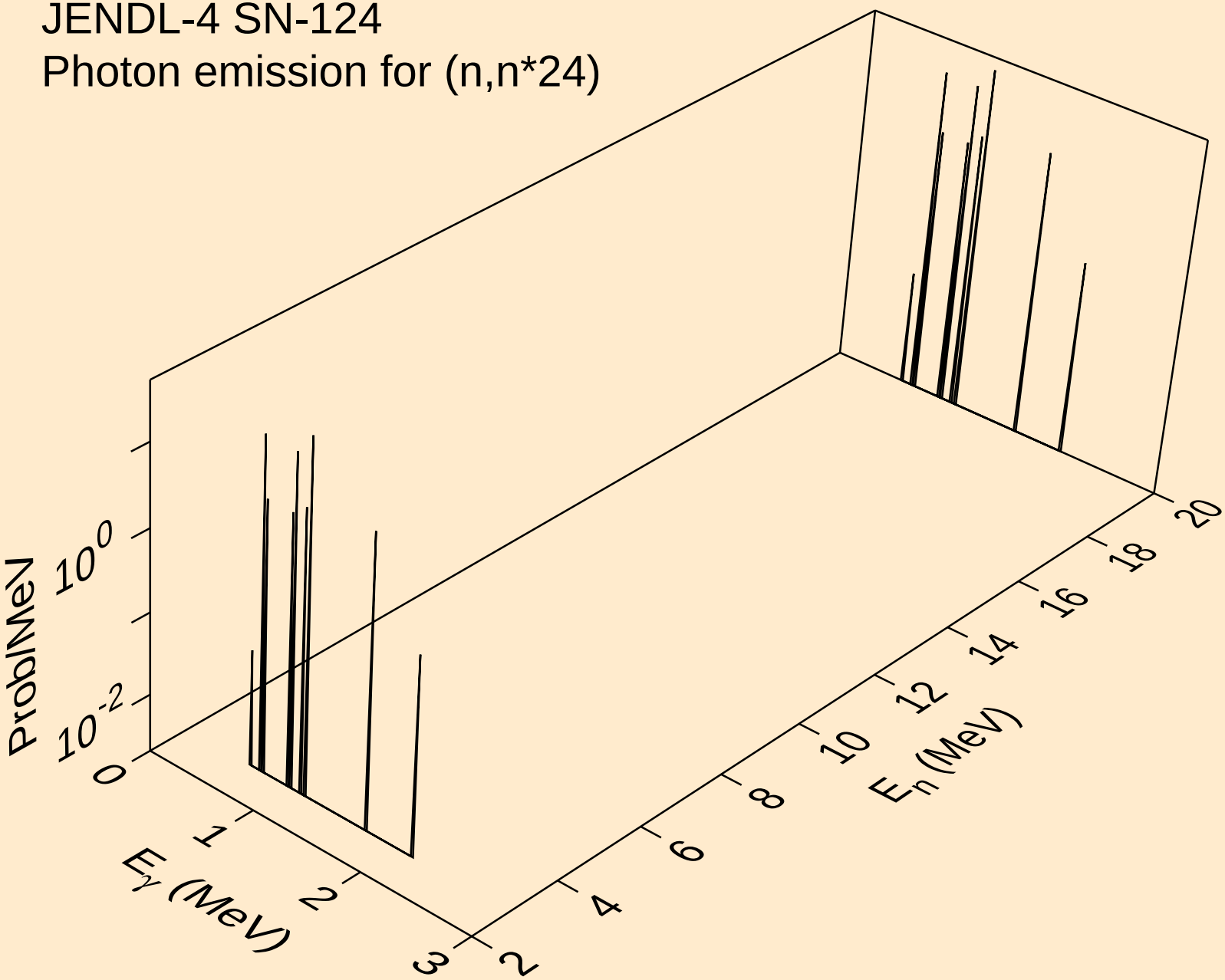


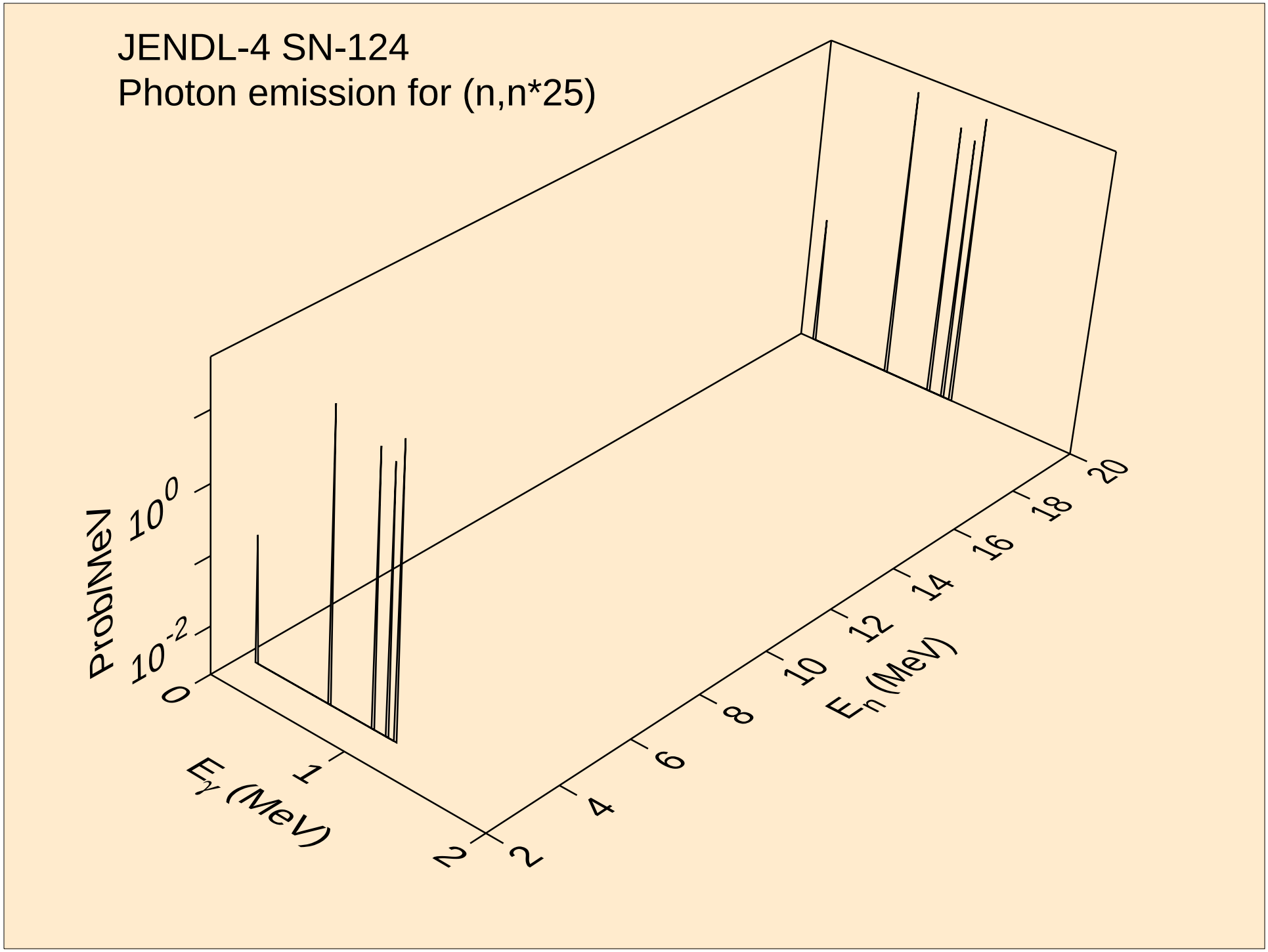
JENDL-4 SN-124
Photon emission for (n,n*22)

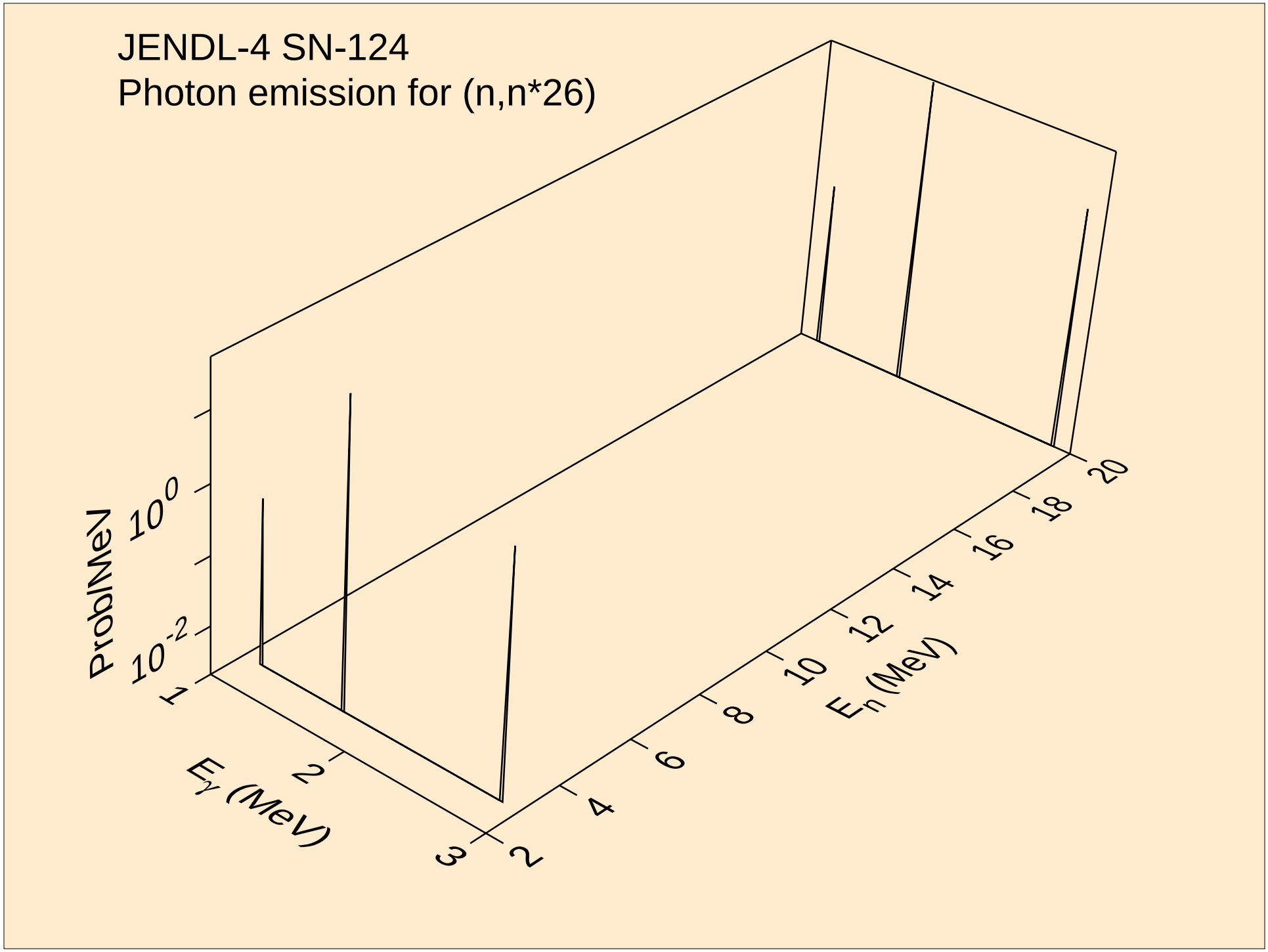


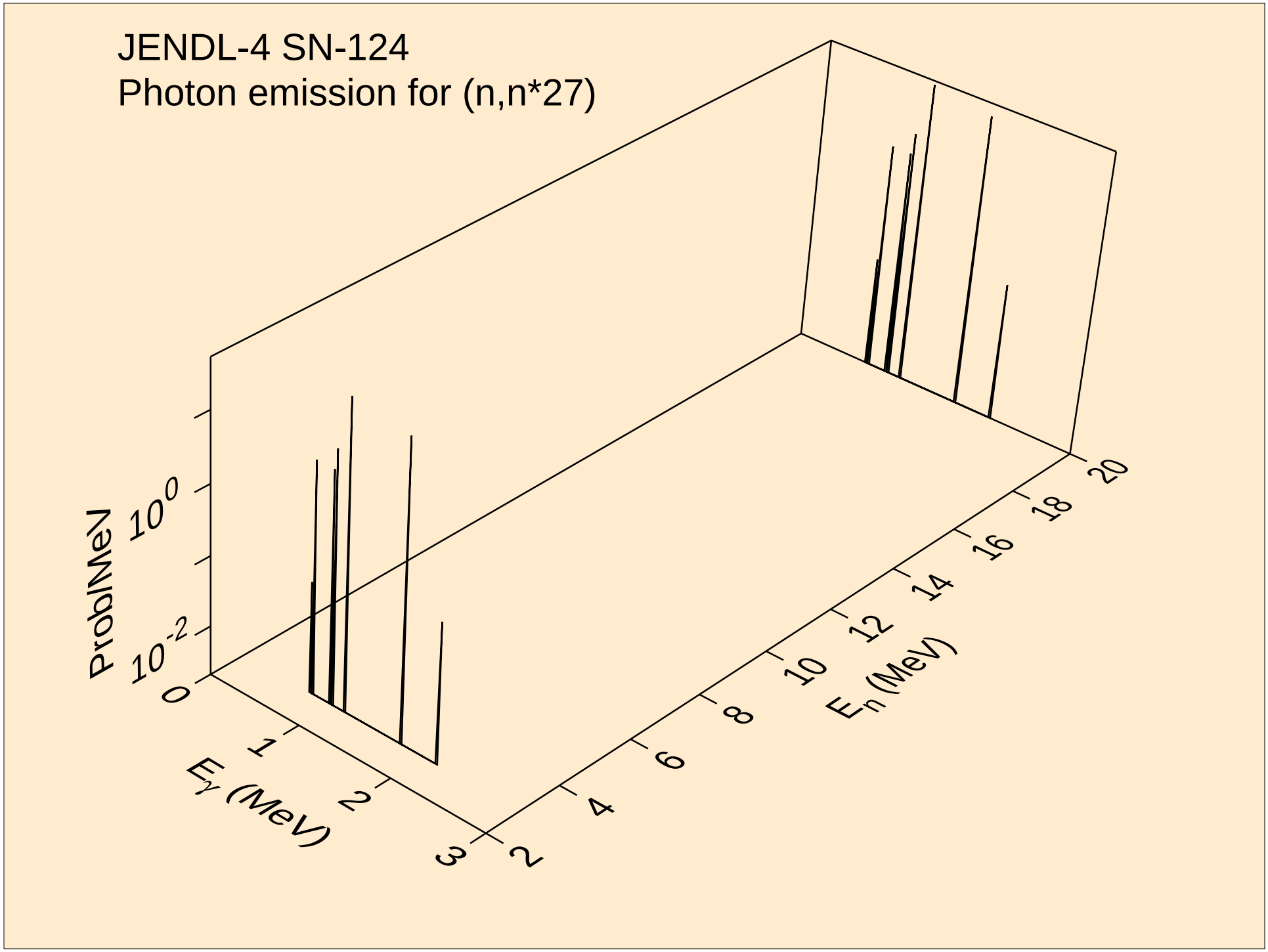

JENDL-4 SN-124
Photon emission for (n,n*23)
Prob/MeV
10^0
10^{-2}
0
E_γ (MeV)
1
2
E_n (MeV)
2
4
6
8
10
12
14
16
18
20

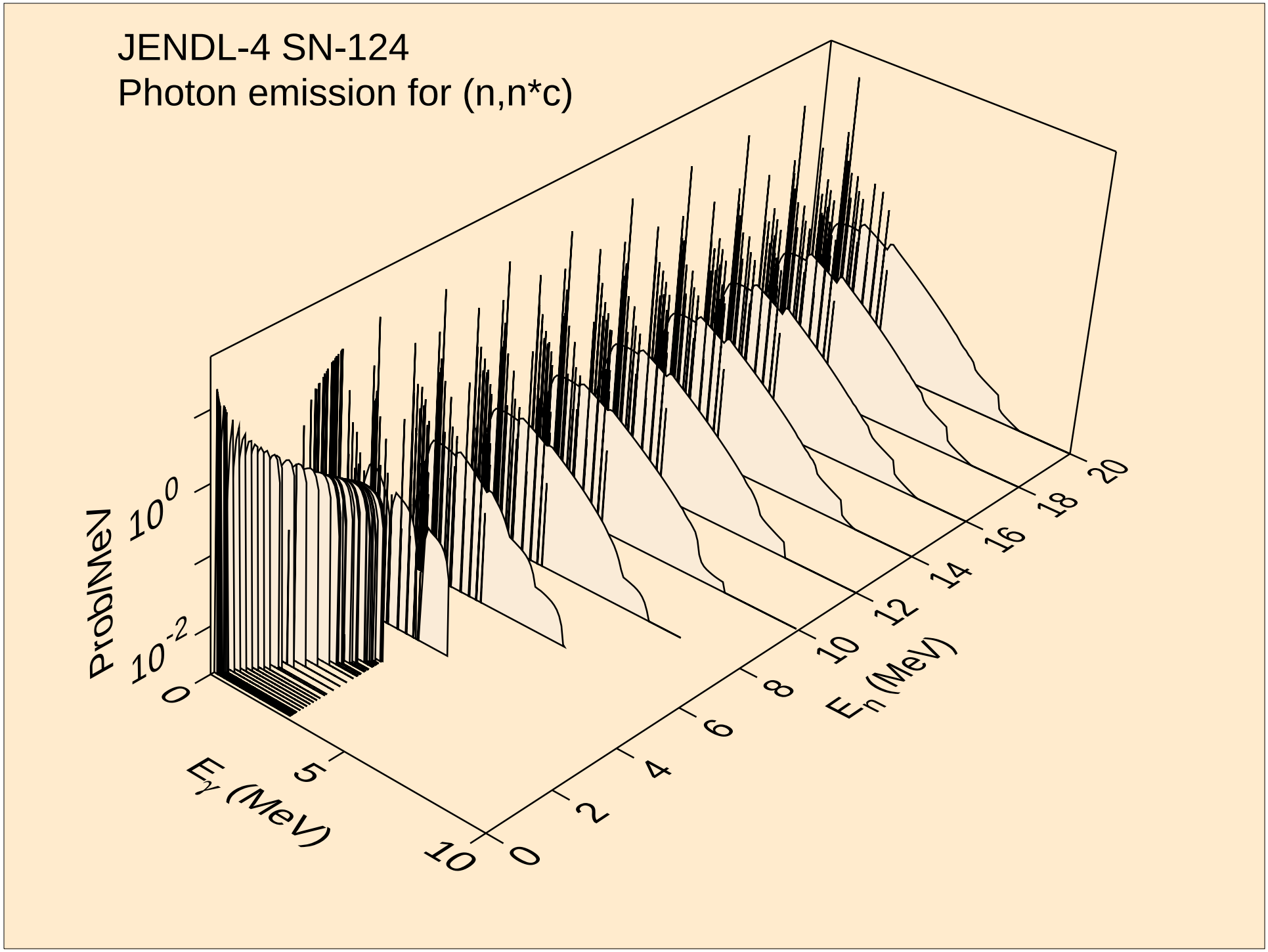
JENDL-4 SN-124
Photon emission for (n,n*24)

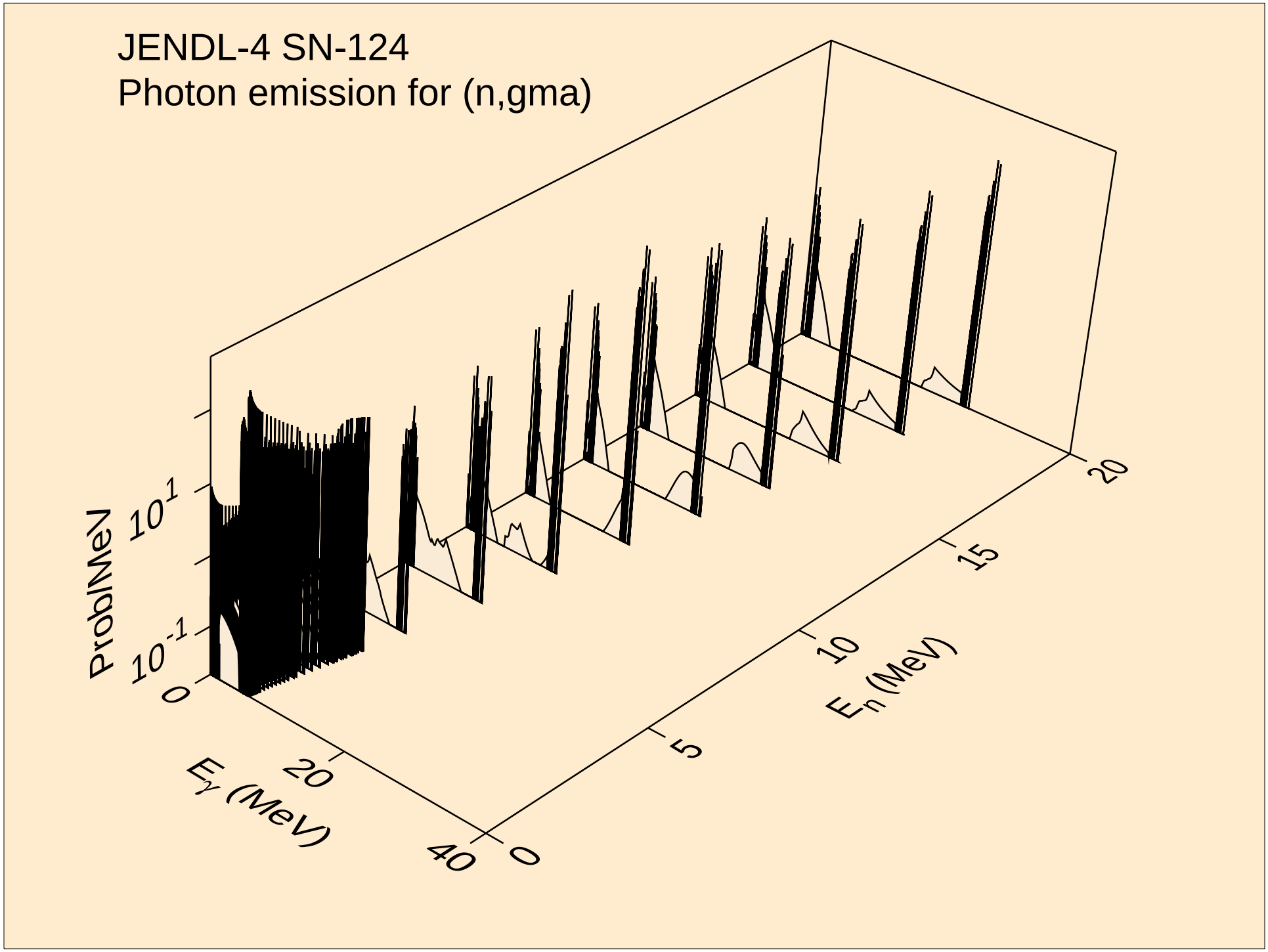


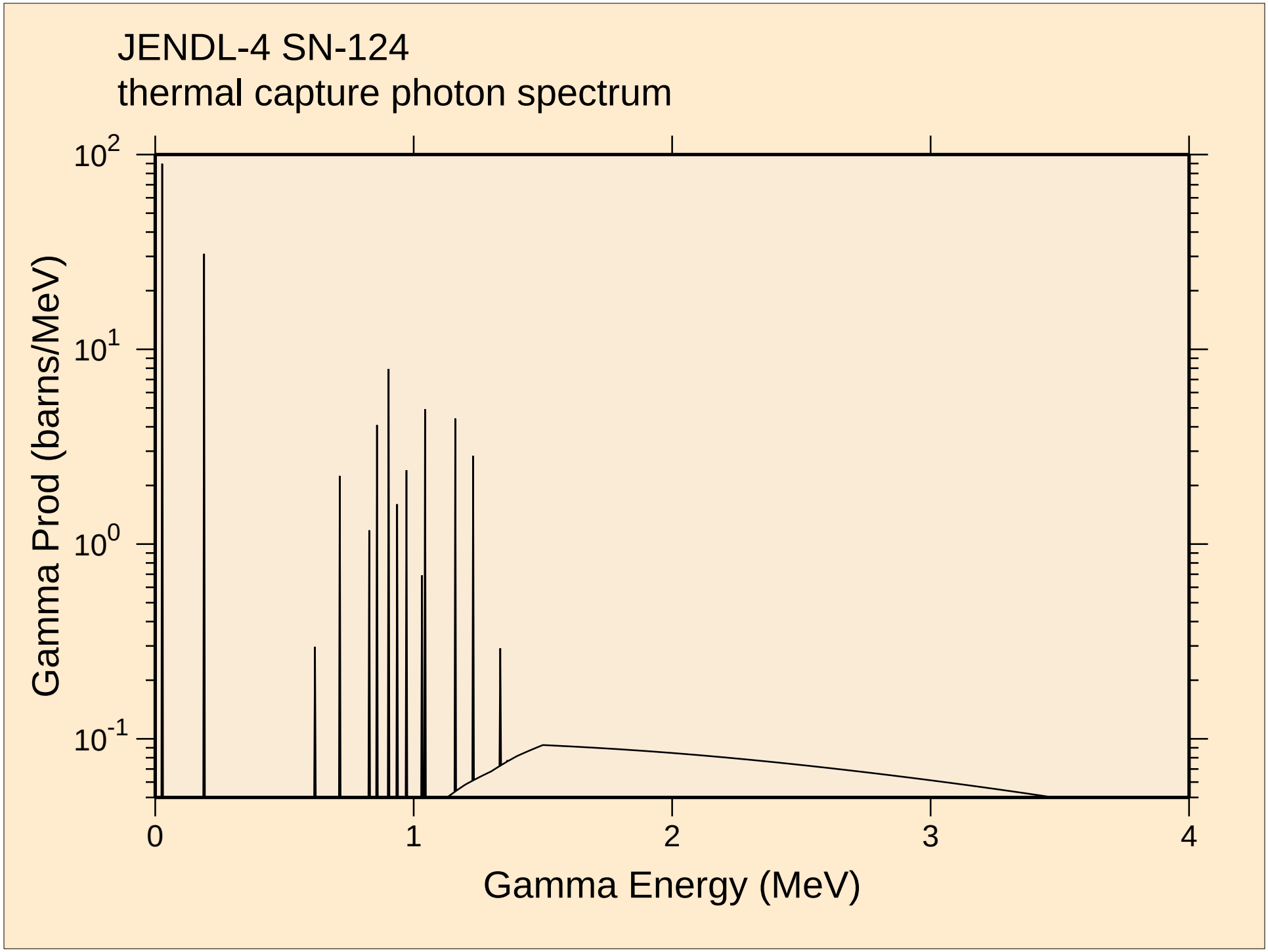

JENDL-4 SN-124
Photon emission for (n,n*25)
Prob/MeV
10^0
10^{-2}
0
E_γ (MeV)
1
2
2
4
6
8
10
12
14
16
18
20
E_n (MeV)

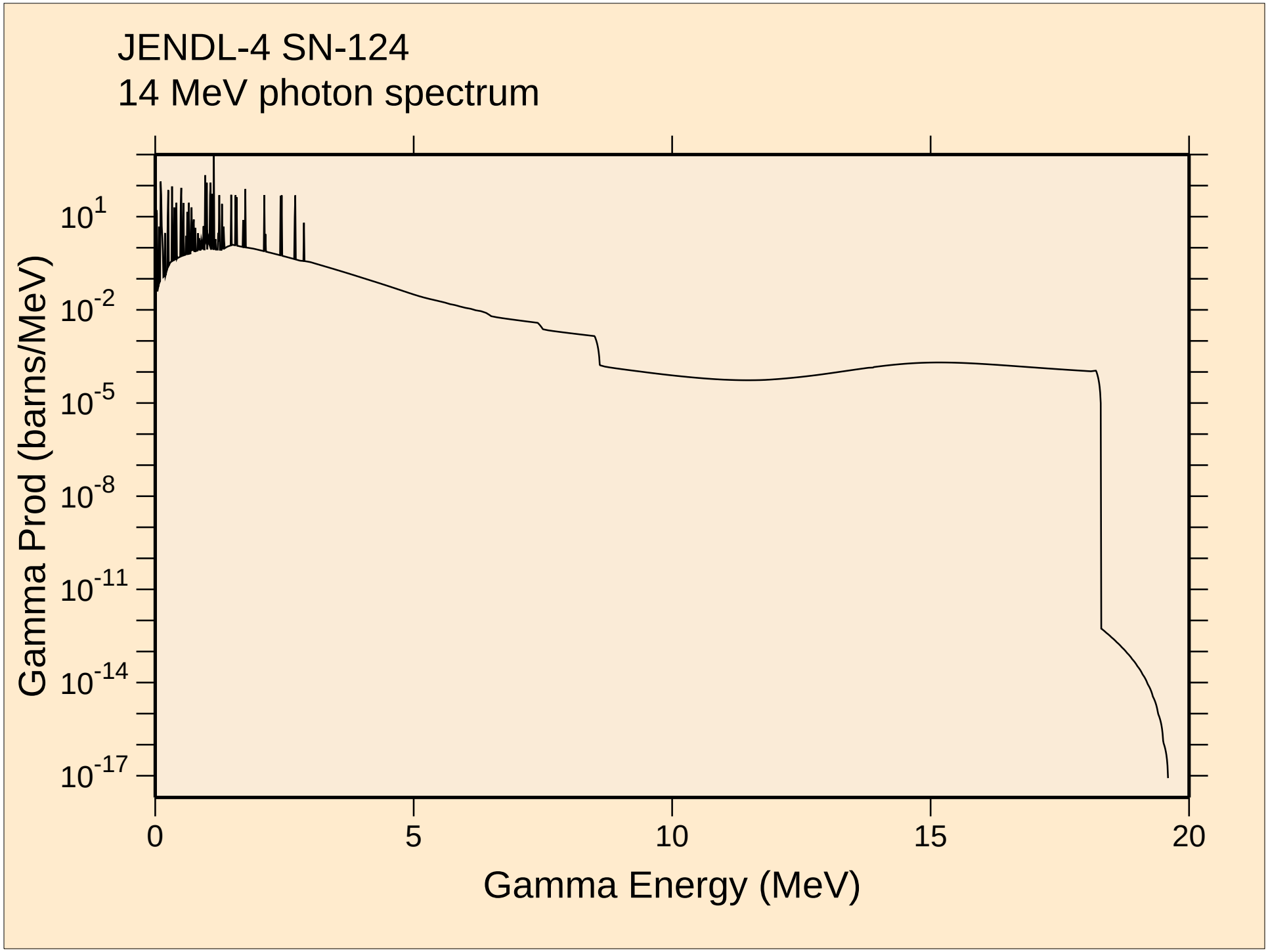

JENDL-4 SN-124
Photon emission for (n,n*26)
Prob/MeV
10^0
10^{-2}
1
2
3
E_γ (MeV)
2
4
6
8
10
12
14
16
18
20
E_n (MeV)

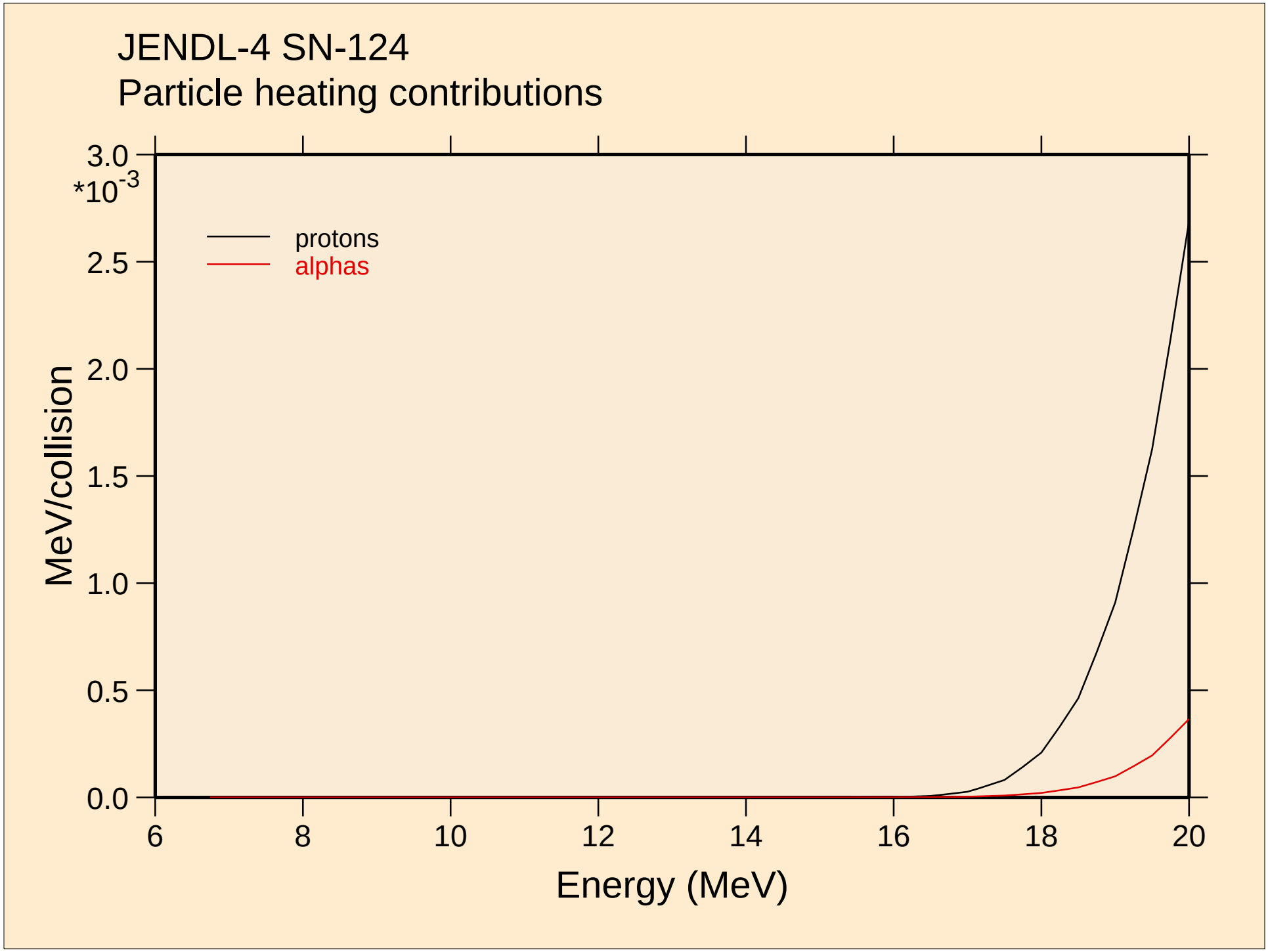

JENDL-4 SN-124
Photon emission for (n,n*27)
Prob/MeV
10^0
10^{-2}
0
1
2
3
E_γ (MeV)
2
4
6
8
10
12
14
16
18
20
E_n (MeV)

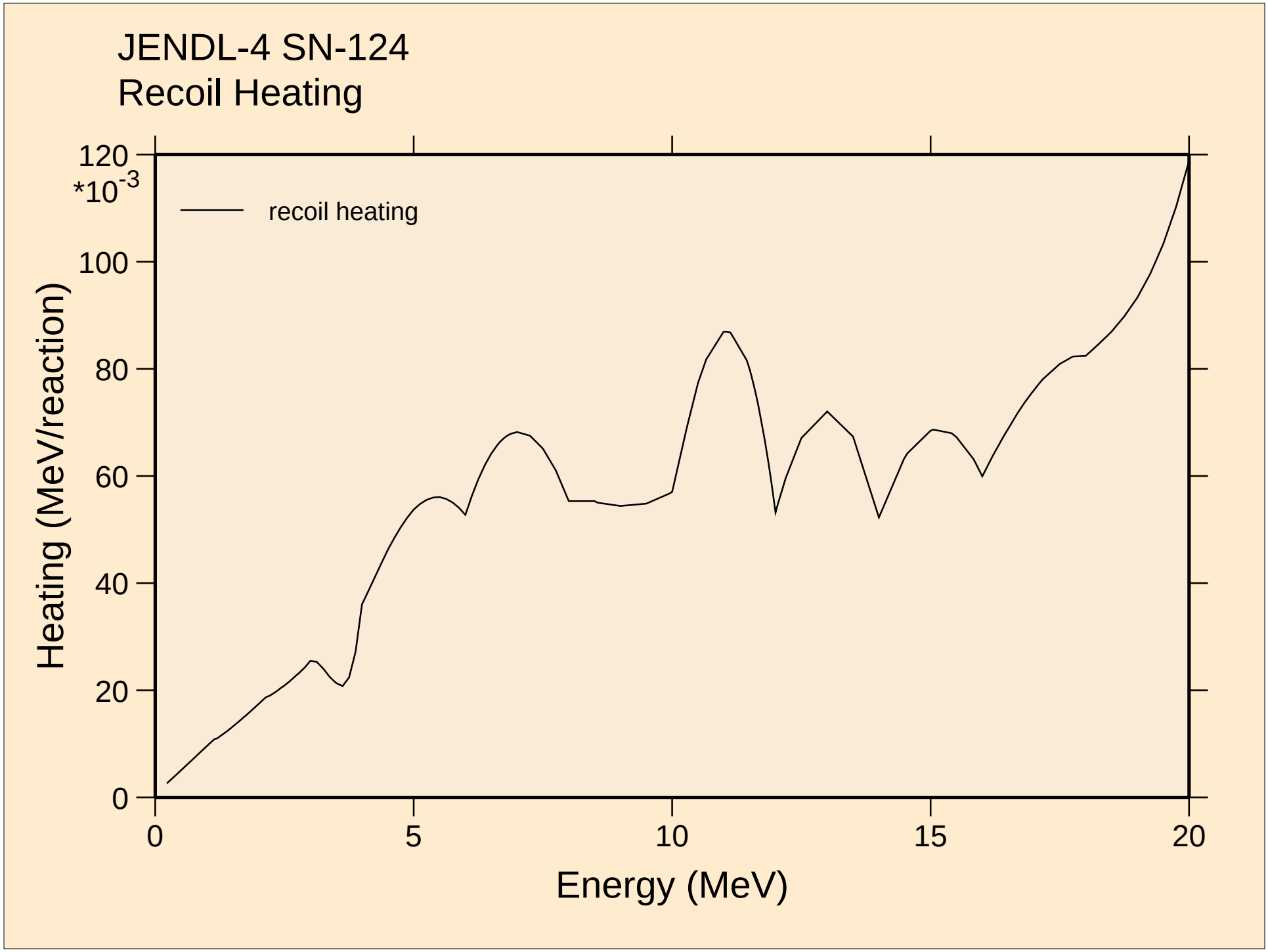

JENDL-4 SN-124
Photon emission for (n,n*c)
Prob/MeV
10^0
10^{-2}
0
5
10
E_γ (MeV)
0
2
4
6
8
10
12
14
16
18
20
E_n (MeV)

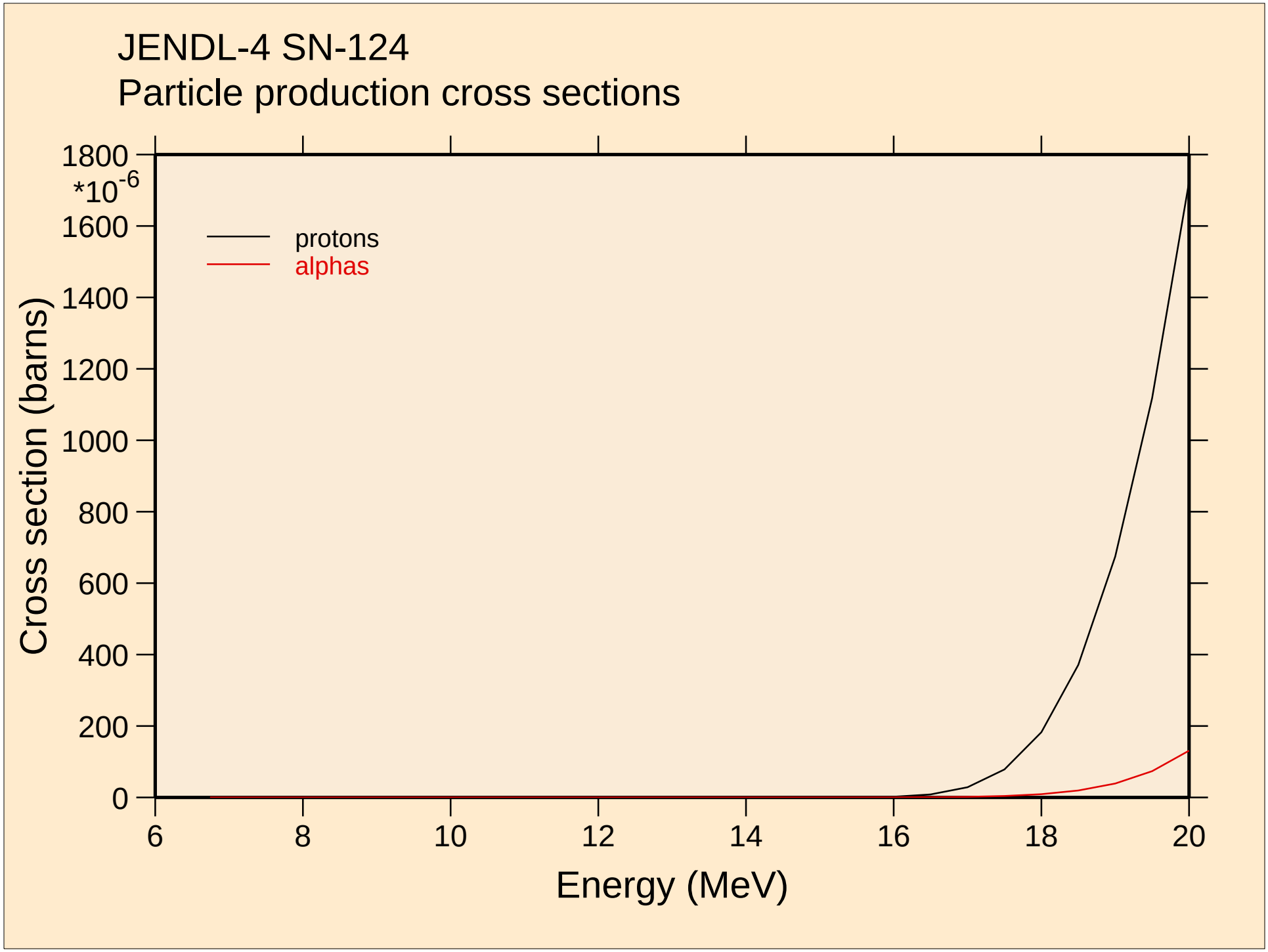

JENDL-4 SN-124
Photon emission for (n,gma)
Prob/MeV
10^{1}
10^{-1}
0
20
40
E_γ (MeV)
0
5
10
15
20
E_n (MeV)

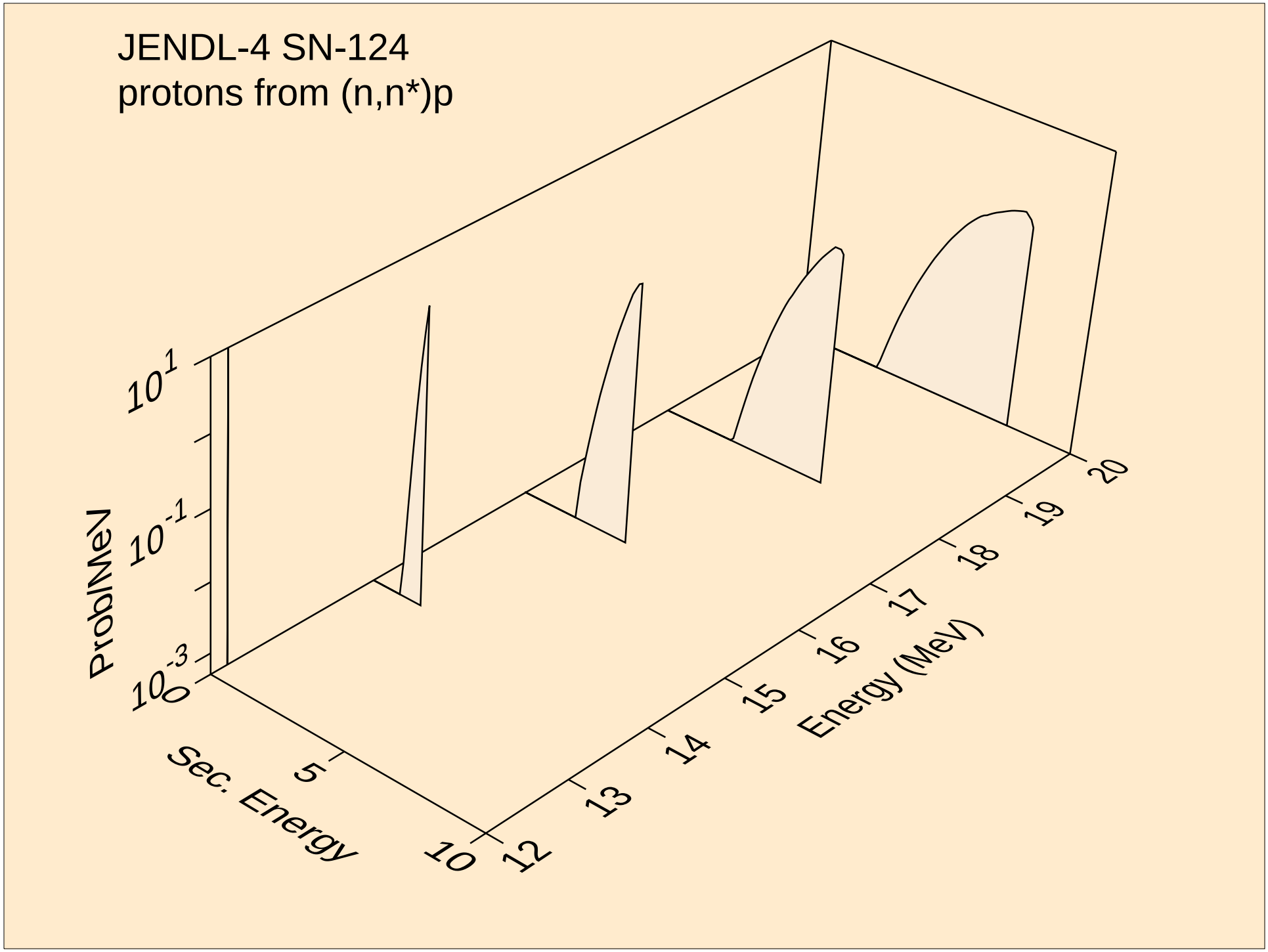

JENDL-4 SN-124
thermal capture photon spectrum
Gamma Prod (barns/MeV)
10^{2}
10^{1}
10^{0}
10^{-1}
0
1
2
3
4
Gamma Energy (MeV)

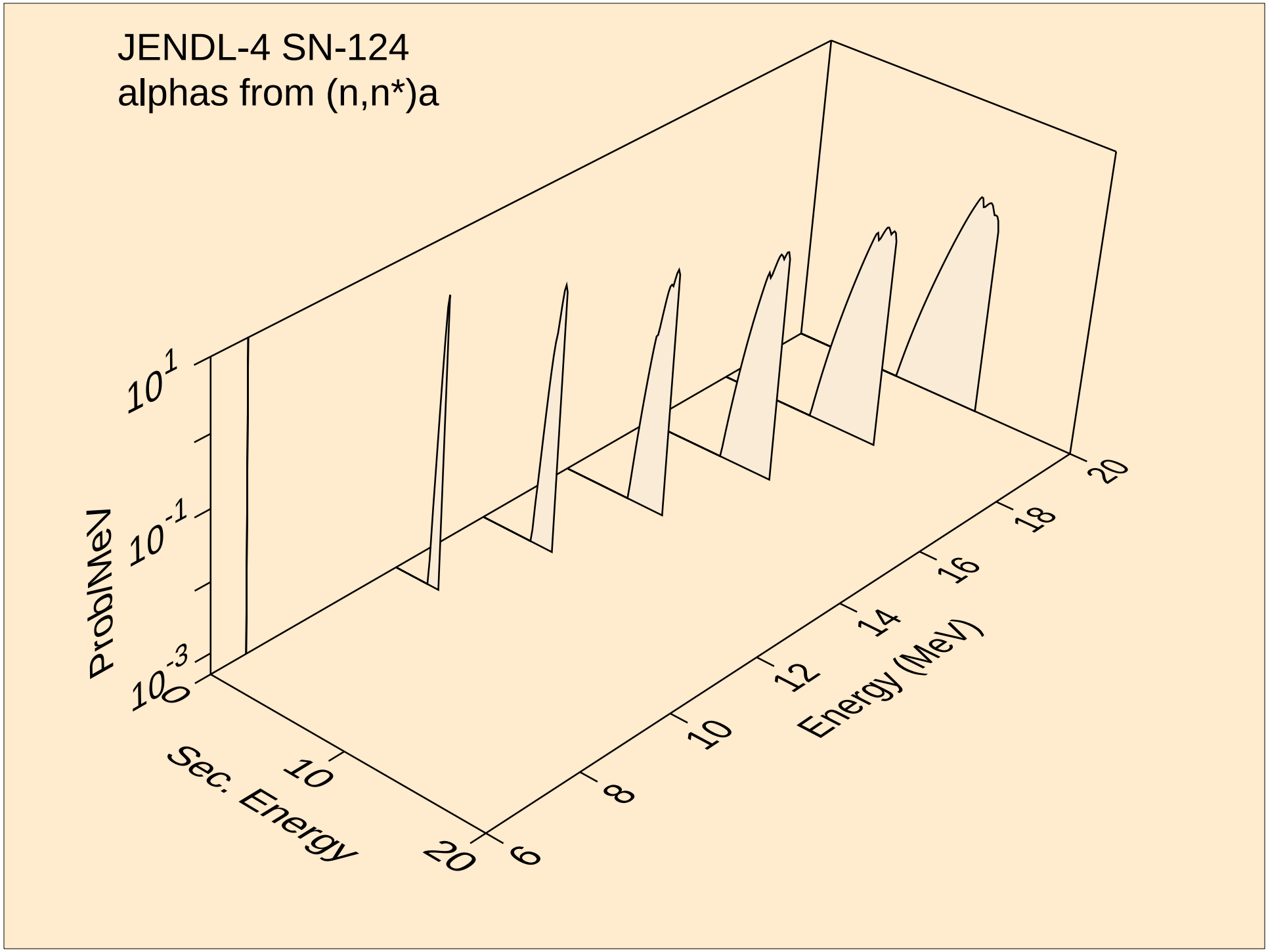

JENDL-4 SN-124
14 MeV photon spectrum
Gamma Prod (barns/MeV)
10^1
10^-2
10^-5
10^-8
10^-11
10^-14
10^-17
0
5
10
15
20
Gamma Energy (MeV)


JENDL-4 SN-124
Particle heating contributions
protons
alphas
MeV/collision
*10^-3
3.0
2.5
2.0
1.5
1.0
0.5
0.0
6
8
10
12
14
16
18
20
Energy (MeV)


JENDL-4 SN-124
Recoil Heating
recoil heating
Heating (MeV/reaction)
*10-3
120
100
80
60
40
20
0
0
5
10
15
20
Energy (MeV)


JENDL-4 SN-124
Particle production cross sections
1800
*10-6
1600
1400
1200
1000
800
600
400
200
0
Cross section (barns)
protons
alphas
6
8
10
12
14
16
18
20
Energy (MeV)


JENDL-4 SN-124
protons from (n,n*)p
Prob/MeV
10^1
10^-1
10^-3
Sec. Energy
0
5
10
Energy (MeV)
12
13
14
15
16
17
18
19
20


JENDL-4 SN-124
alphas from (n,n*)a
Prob/MeV
10^1
10^-1
10^-3
0
10
20
Sec. Energy
6
8
10
12
14
16
18
20
Energy (MeV)