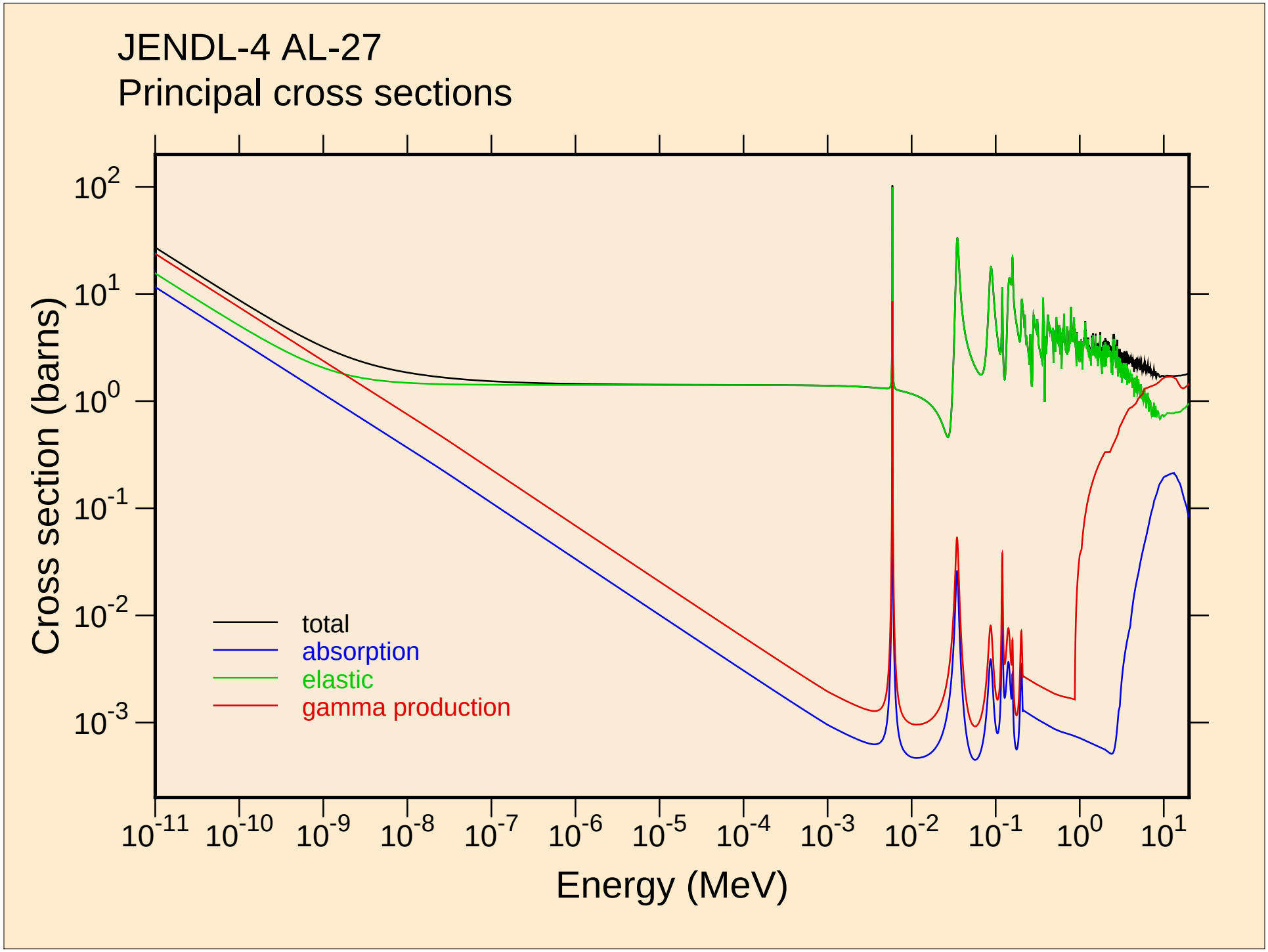
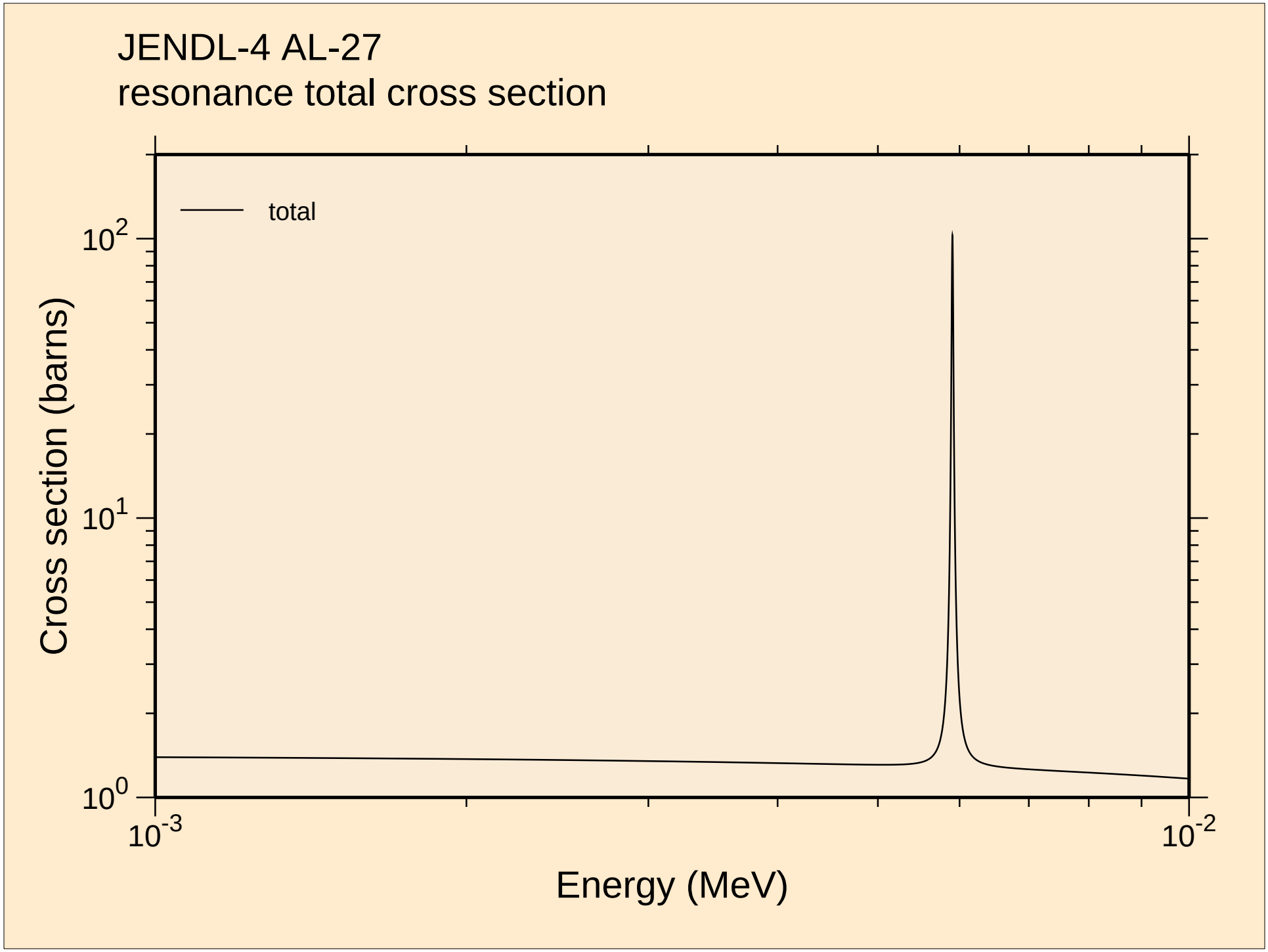
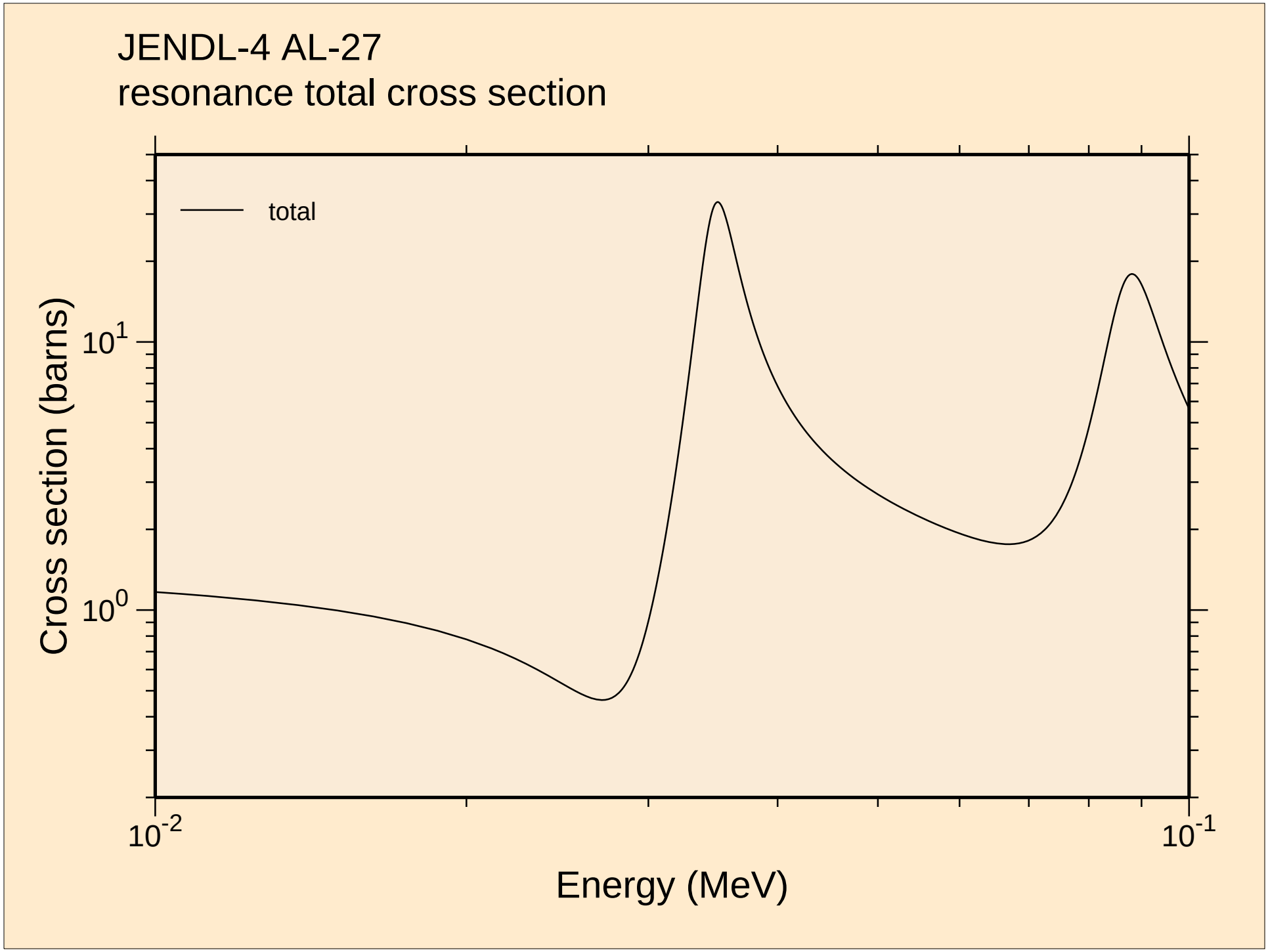
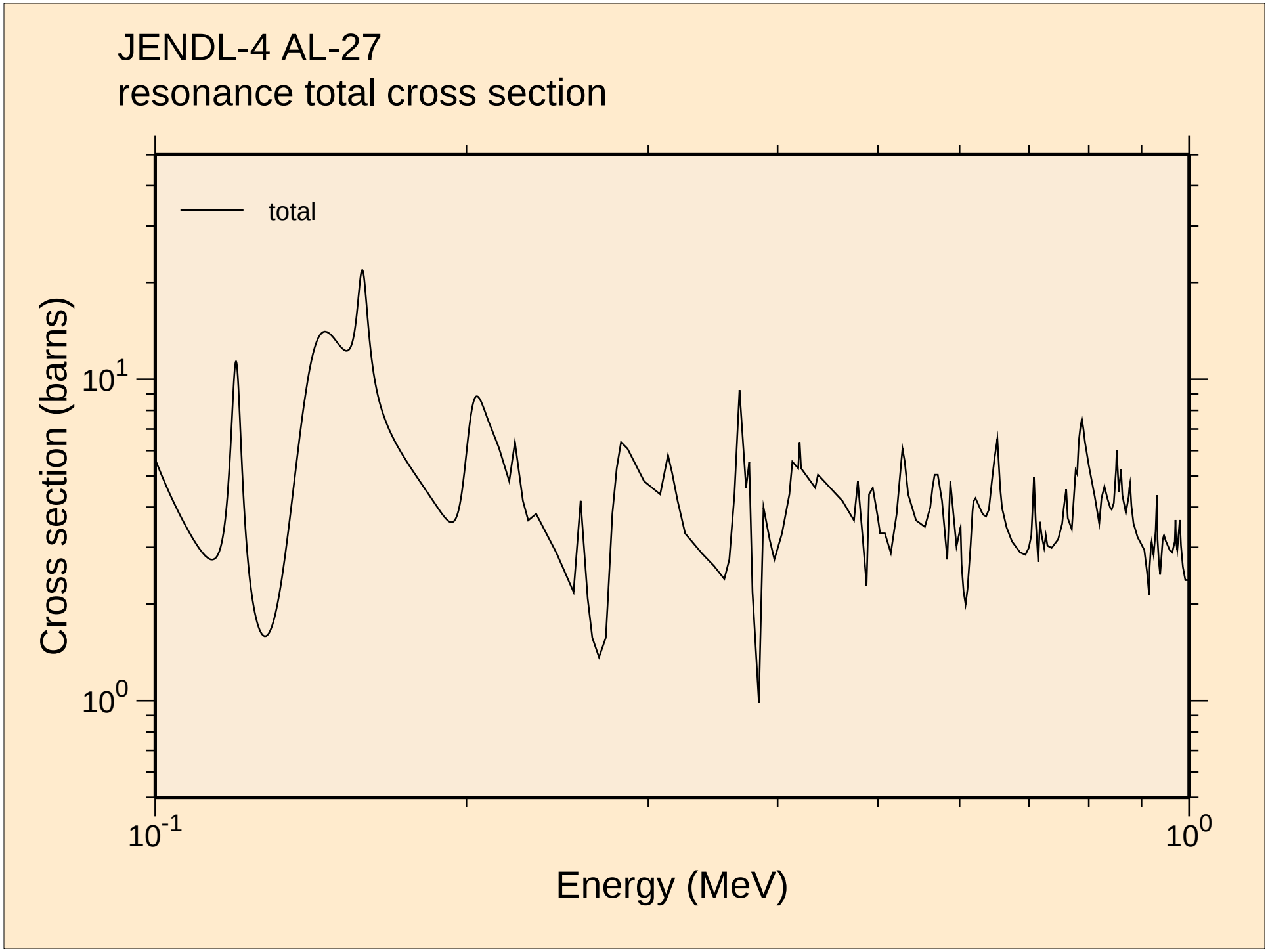
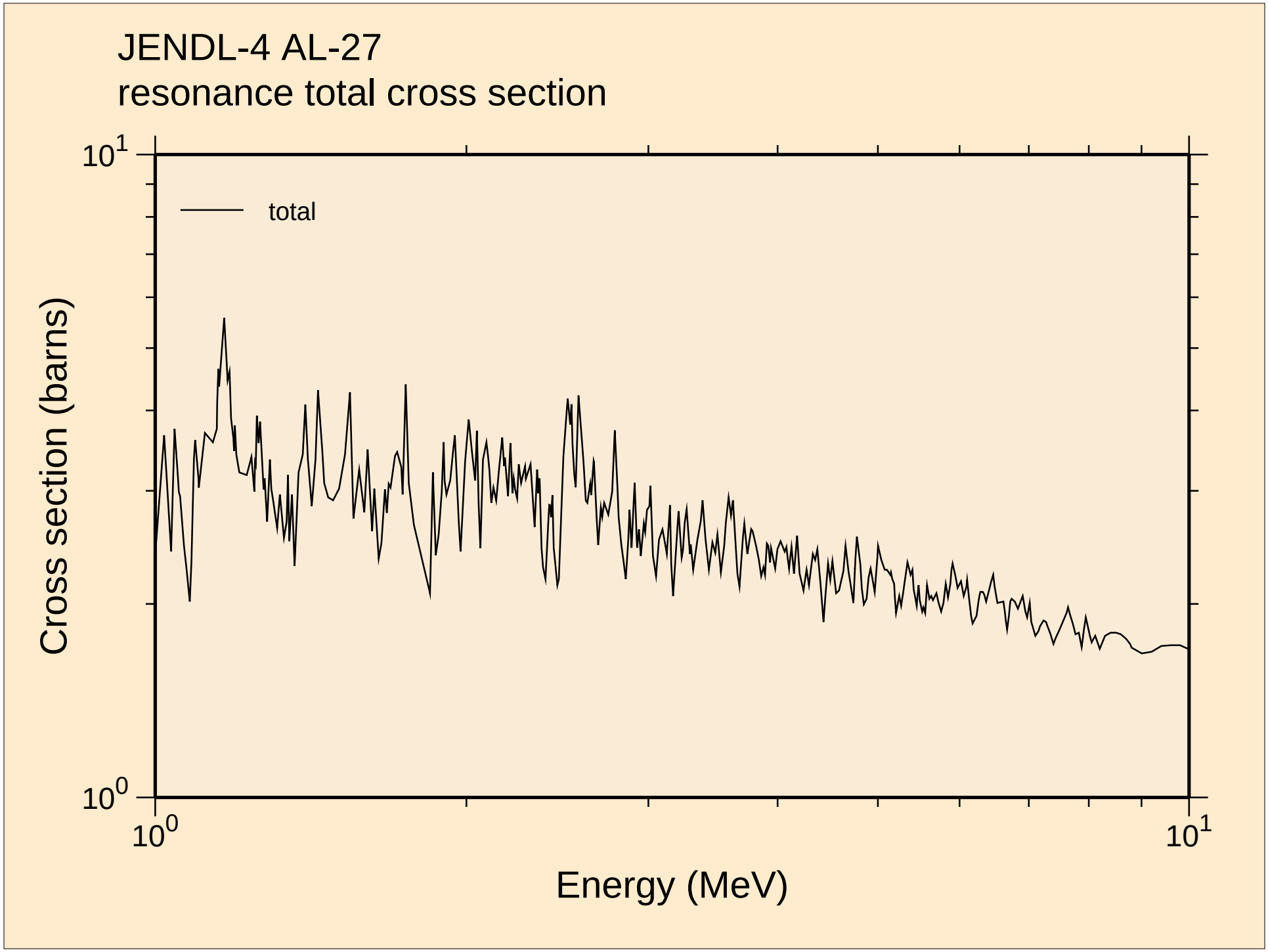
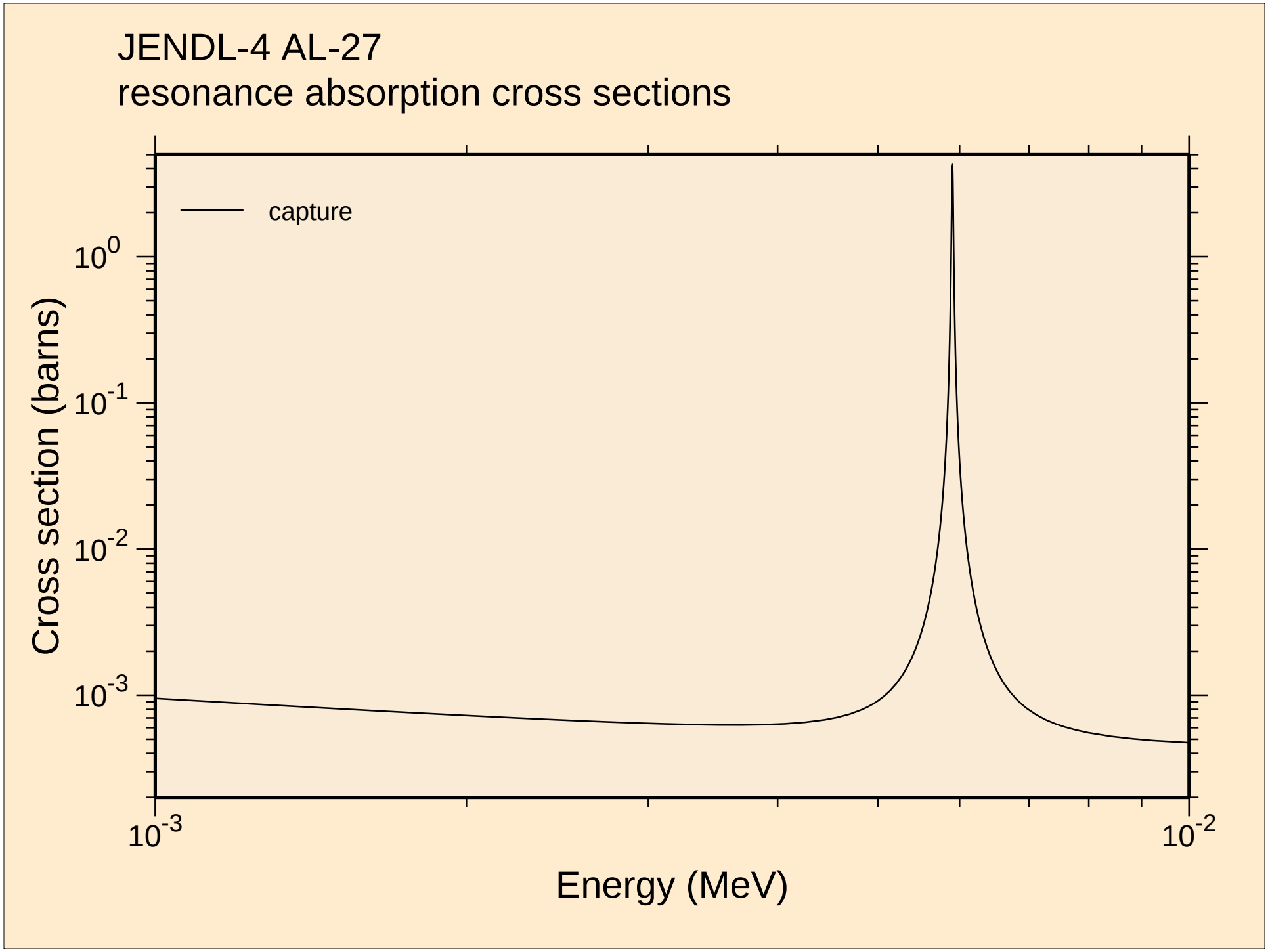

JENDL-4 AL-27
Principal cross sections
Cross section (barns)
Energy (MeV)
total
absorption
elastic
gamma production

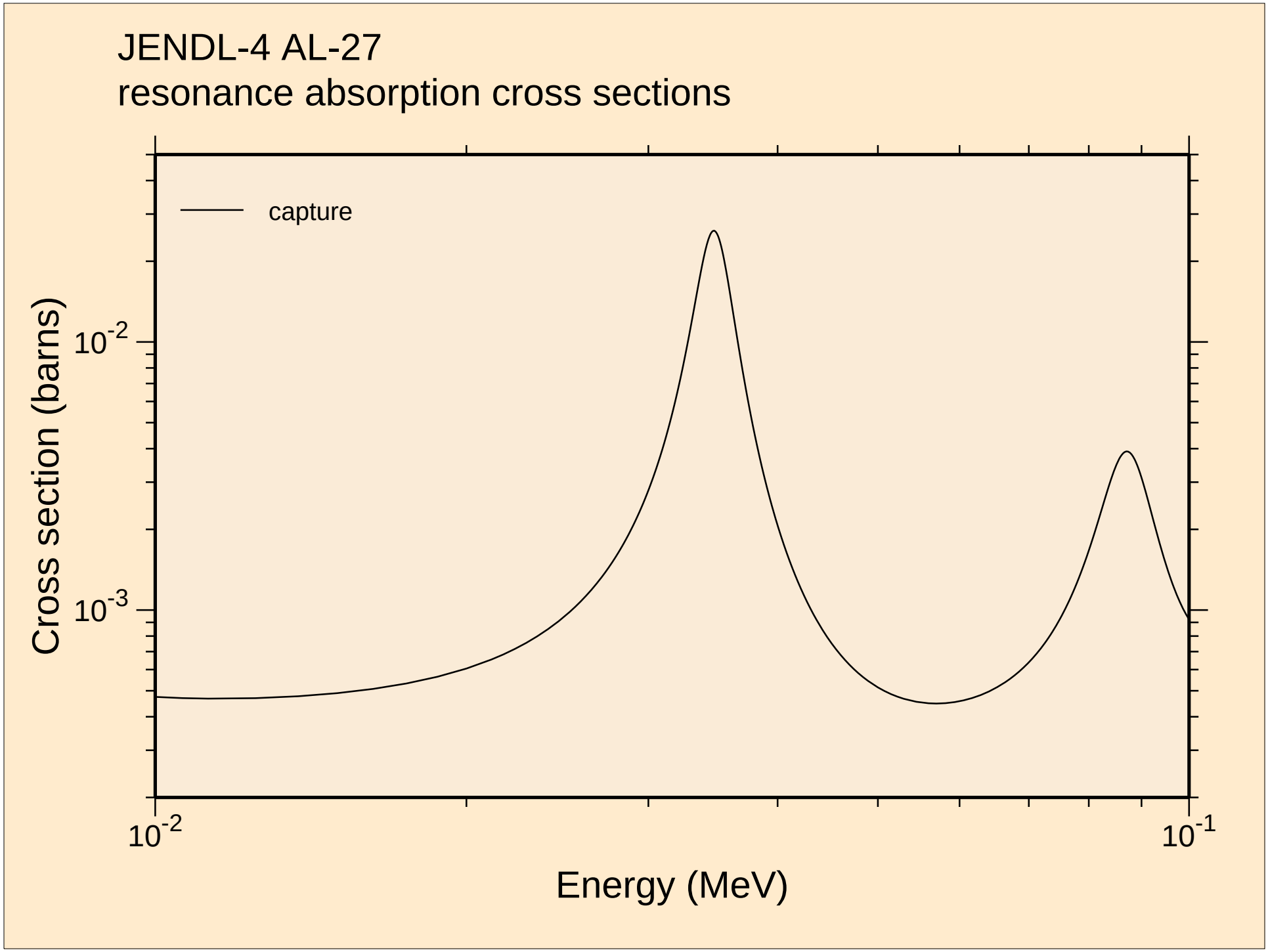

JENDL-4 AL-27
resonance total cross section
total
Cross section (barns)
10^2
10^1
10^0
10^{-3}
10^{-2}
Energy (MeV)


JENDL-4 AL-27
resonance total cross section
total
Cross section (barns)
10^1
10^0
10^{-2}
10^{-1}
Energy (MeV)

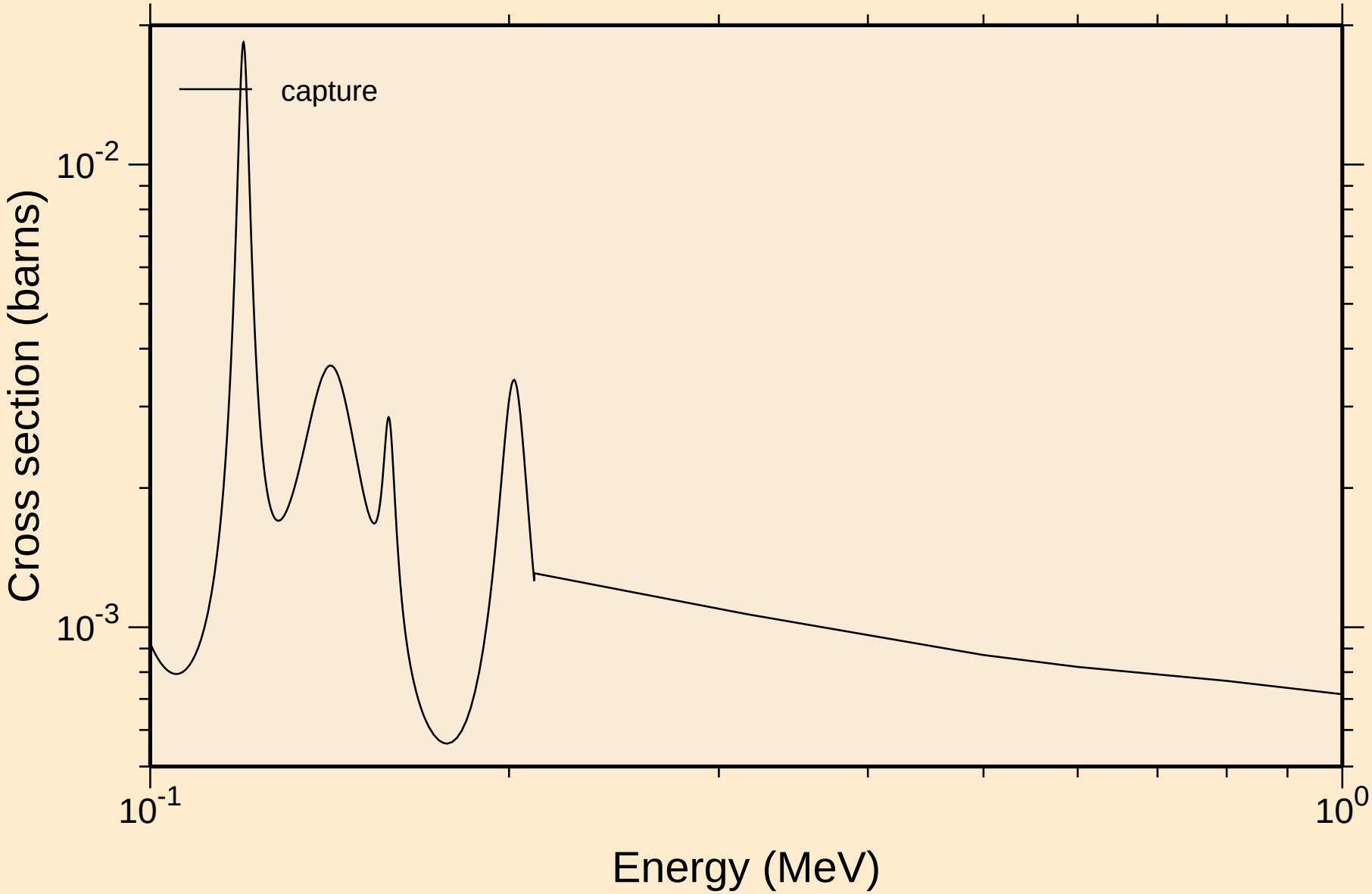

JENDL-4 AL-27
resonance total cross section
total
Cross section (barns)
10^1
10^0
10^{-1}
10^0
Energy (MeV)

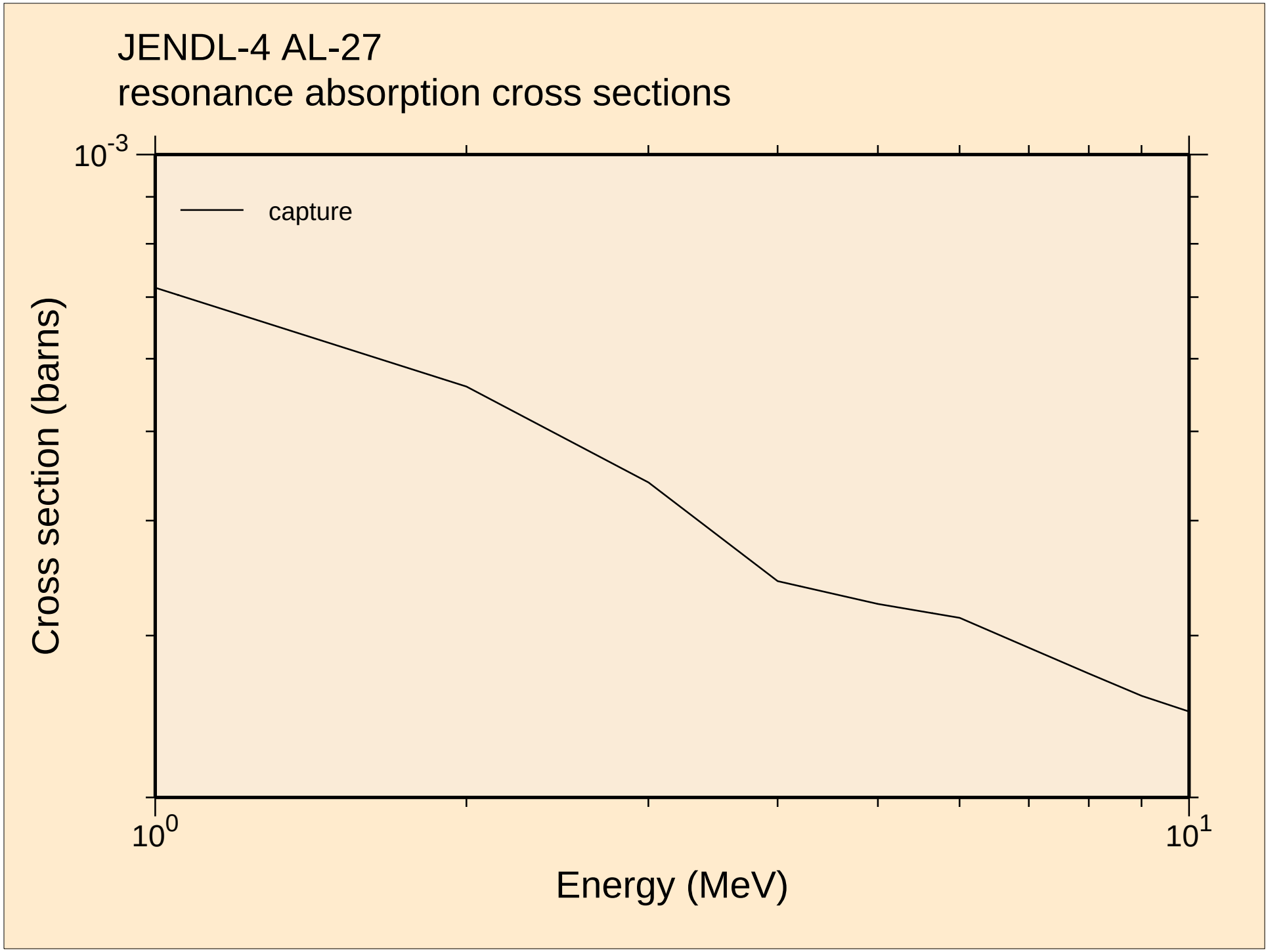

JENDL-4 AL-27
resonance total cross section
total
Cross section (barns)
Energy (MeV)
10^1
10^0
10^0
10^1

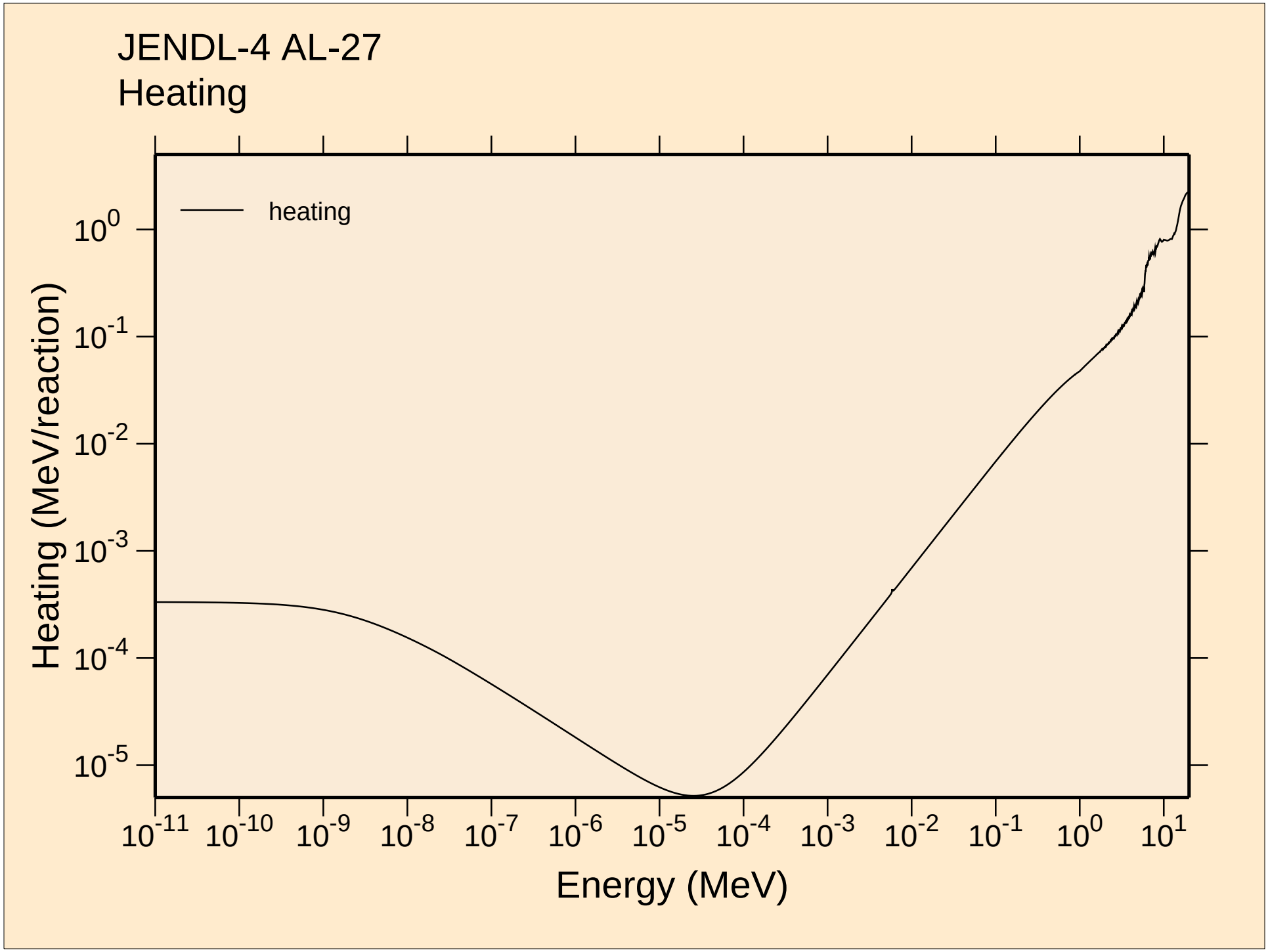

JENDL-4 AL-27
resonance absorption cross sections
capture
Cross section (barns)
10^{0}
10^{-1}
10^{-2}
10^{-3}
10^{-3}
10^{-2}
Energy (MeV)

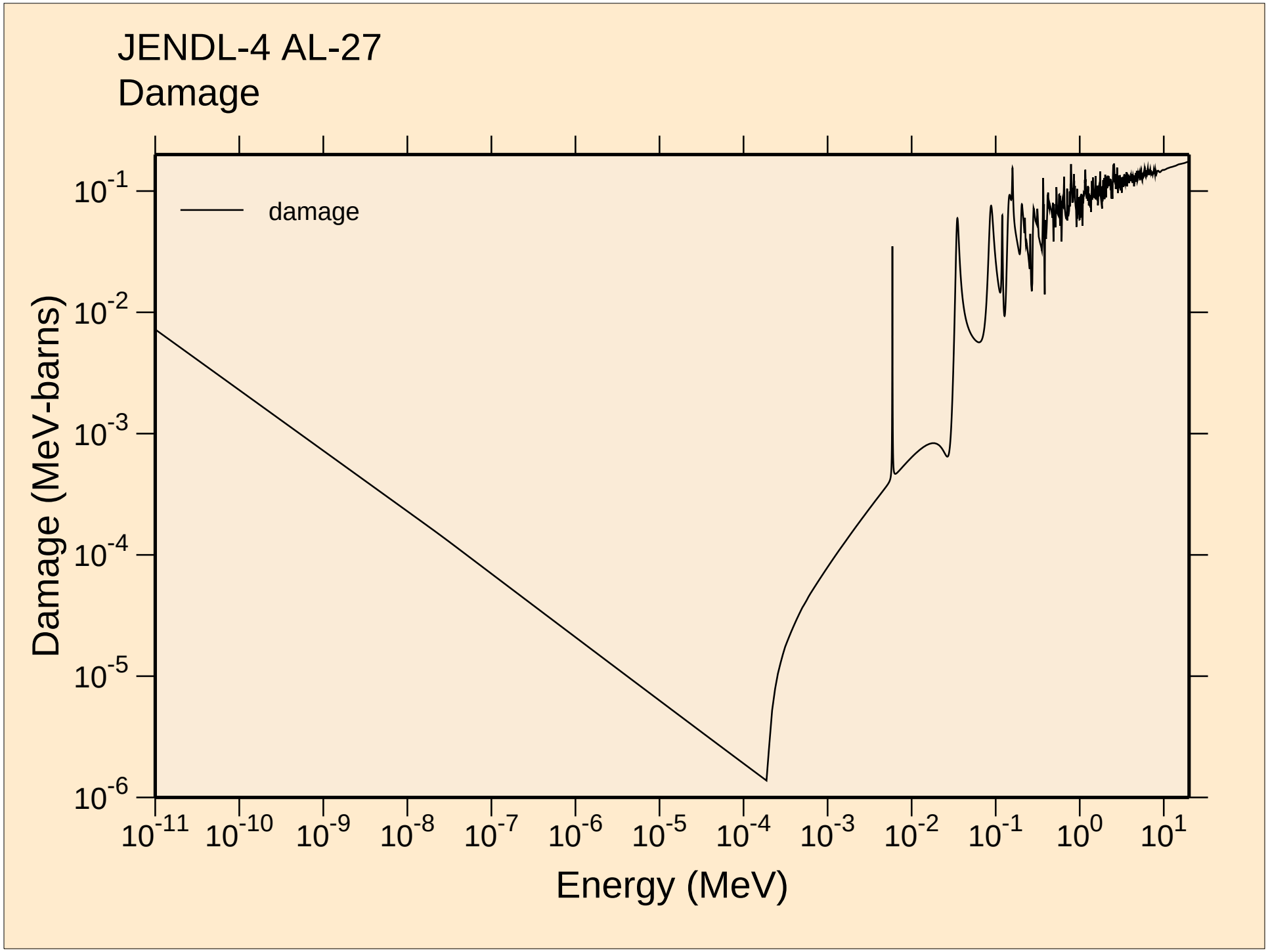

JENDL-4 AL-27
resonance absorption cross sections
capture
Cross section (barns)
10-2
10-3
10-2
10-1
Energy (MeV)

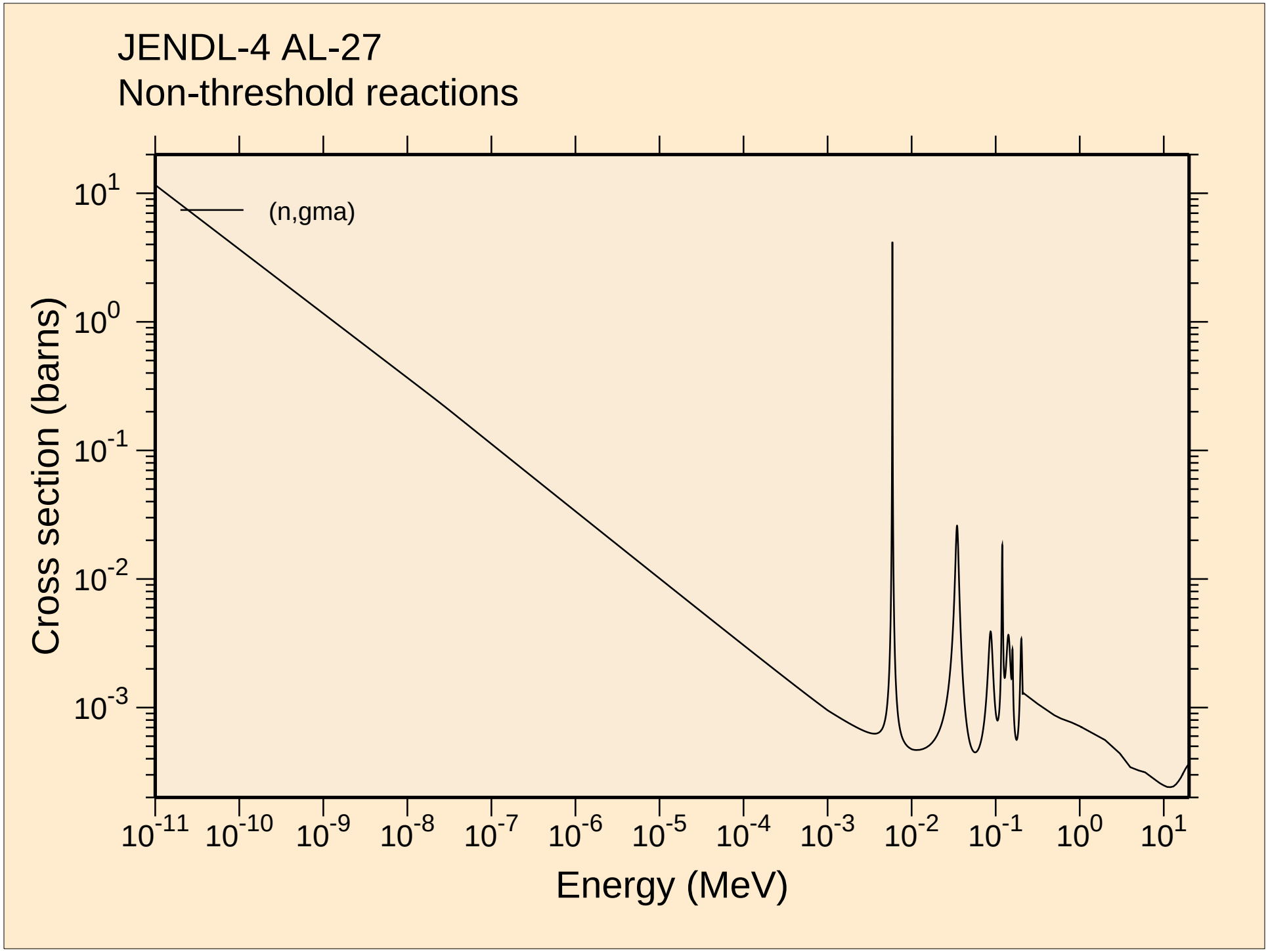
JENDL-4 AL-27
resonance absorption cross sections

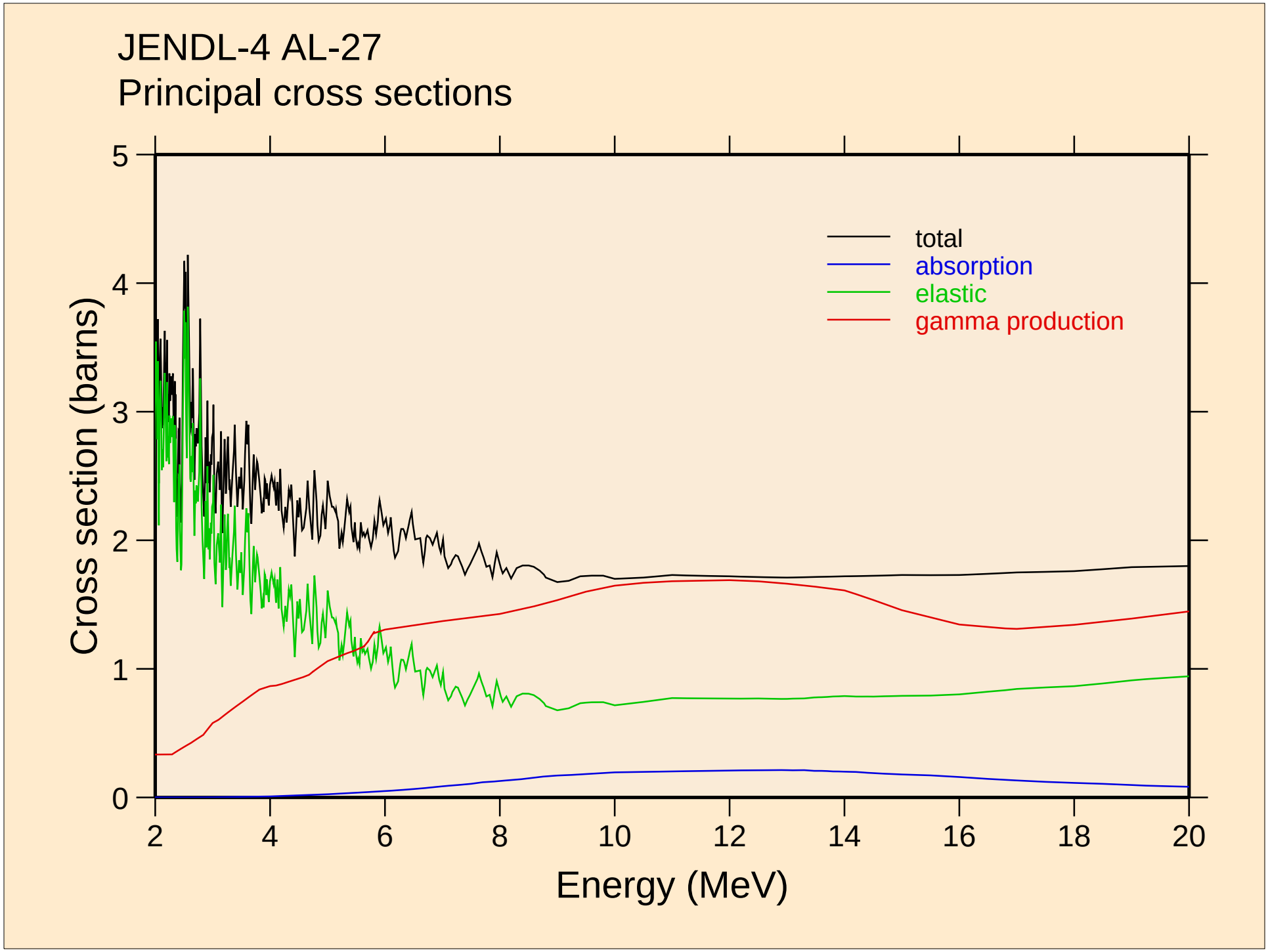


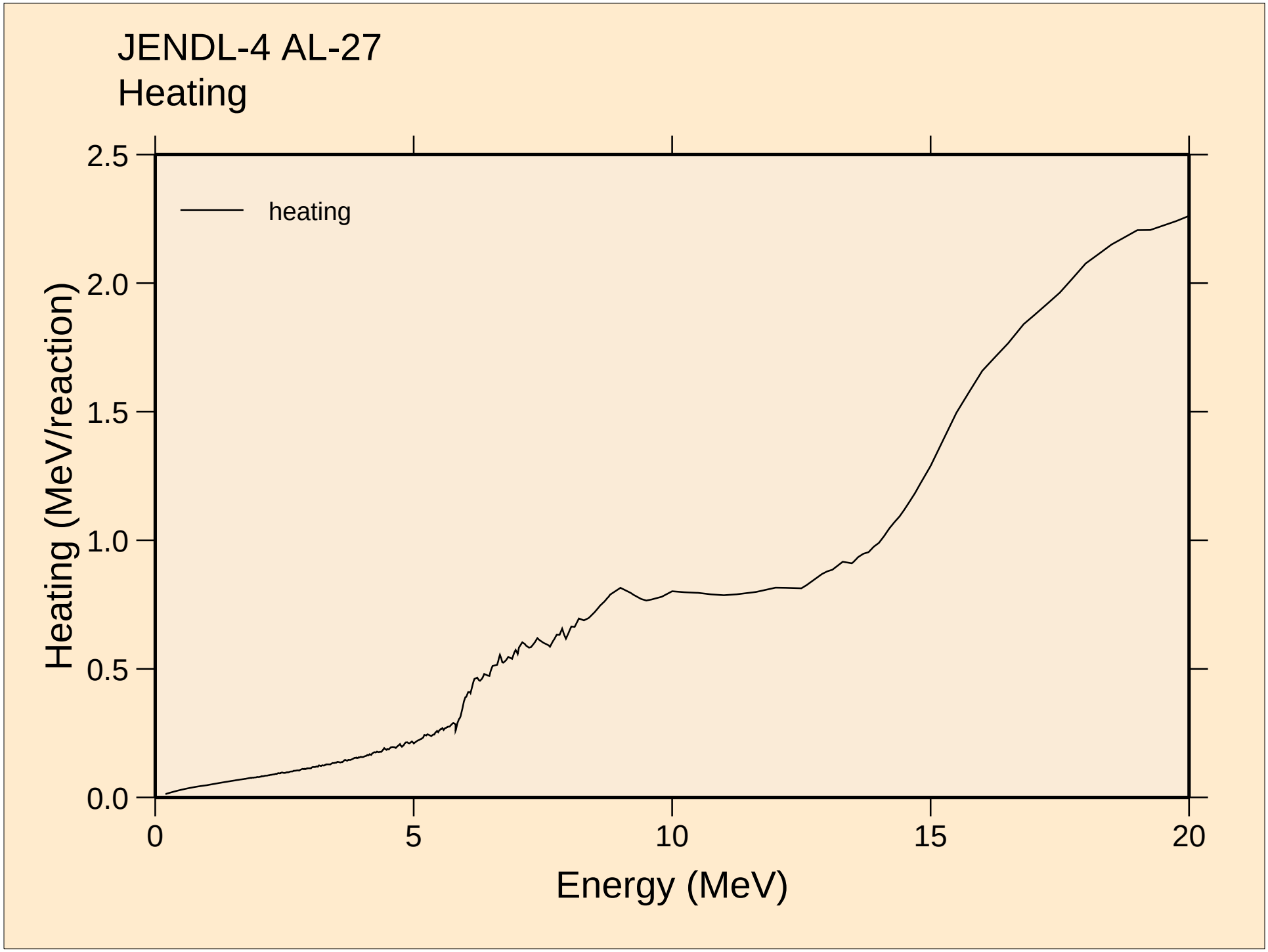

JENDL-4 AL-27
resonance absorption cross sections
capture
Cross section (barns)
Energy (MeV)
10^-3
10^0
10^1

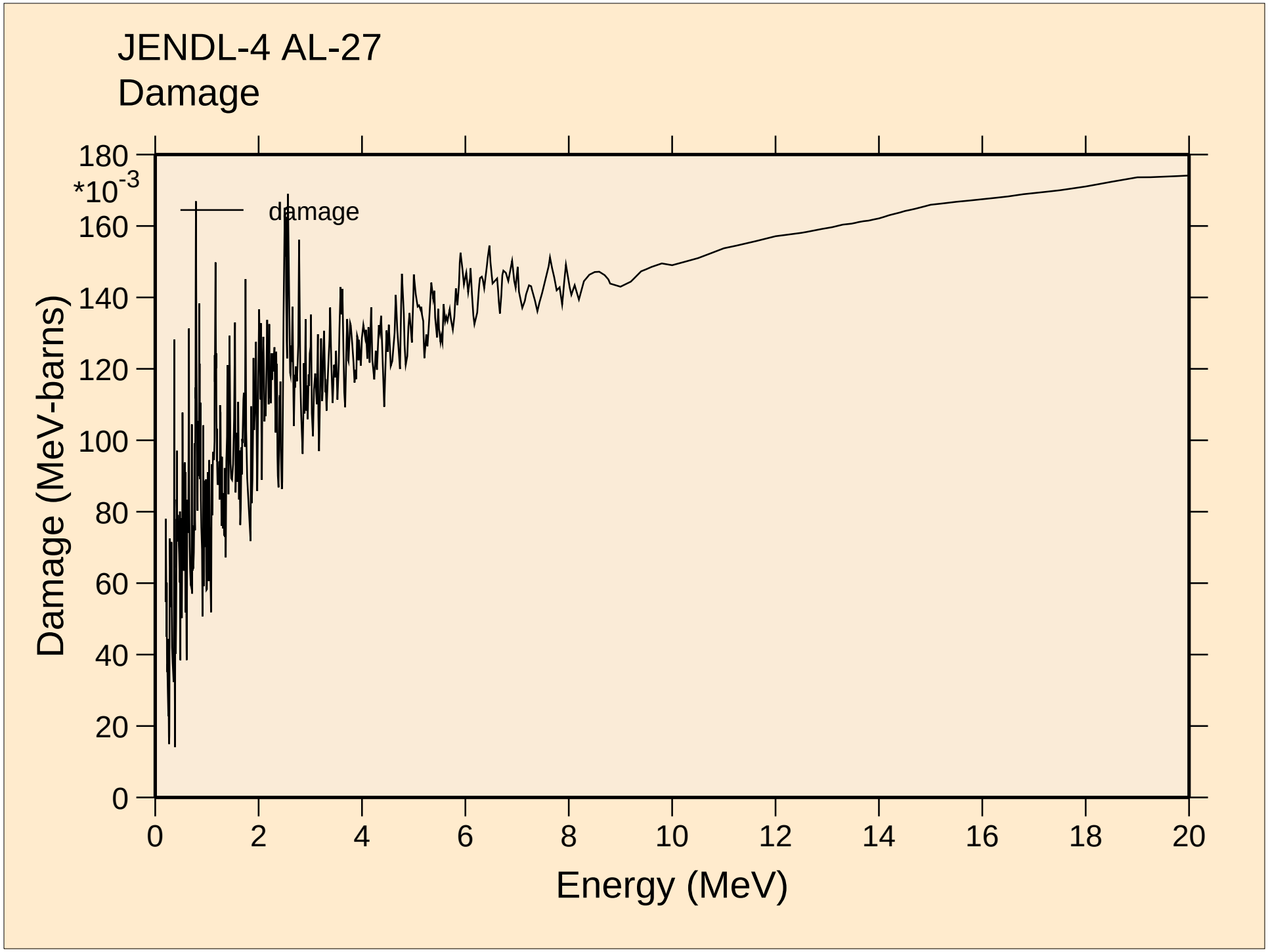

JENDL-4 AL-27
Heating
heating
Heating (MeV/reaction)
Energy (MeV)
10^{0}
10^{-1}
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-11} 10^{-10} 10^{-9} 10^{-8} 10^{-7} 10^{-6} 10^{-5} 10^{-4} 10^{-3} 10^{-2} 10^{-1} 10^{0} 10^{1}

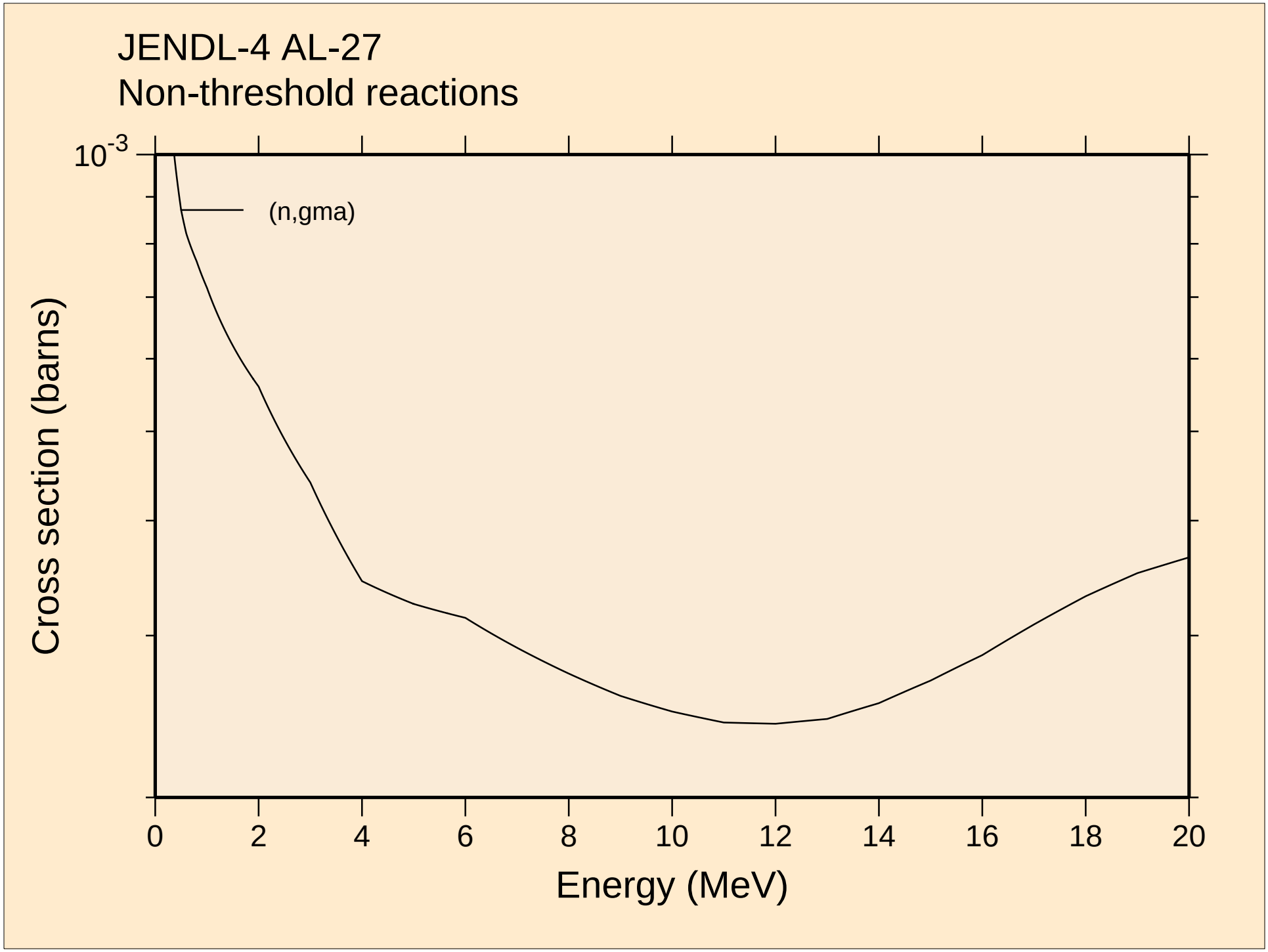

JENDL-4 AL-27
Damage
damage
Damage (MeV-barns)
Energy (MeV)
10^-1
10^-2
10^-3
10^-4
10^-5
10^-6
10^-11
10^-10
10^-9
10^-8
10^-7
10^-6
10^-5
10^-4
10^-3
10^-2
10^-1
10^0
10^1

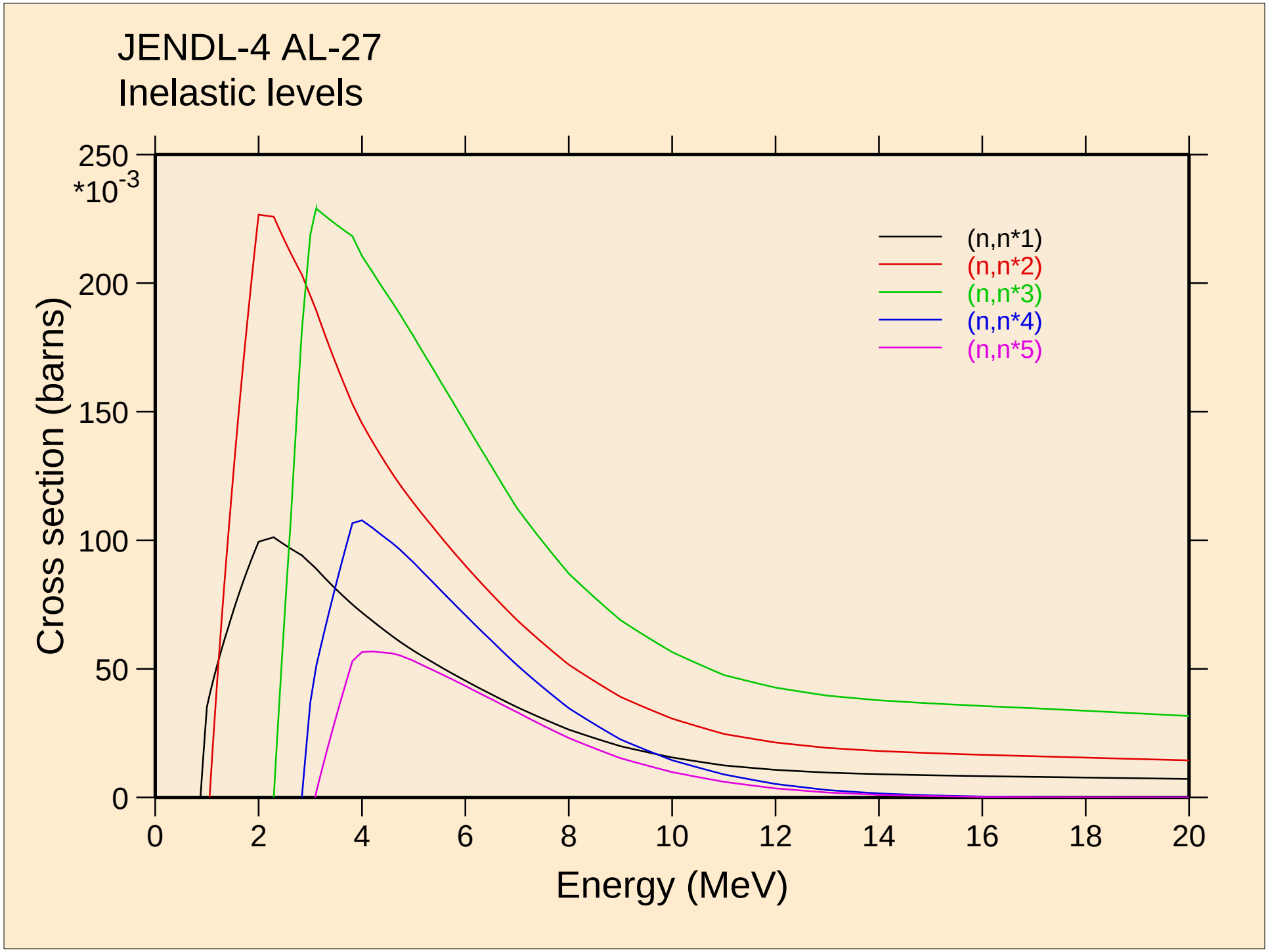

JENDL-4 AL-27
Non-threshold reactions
(n,gma)
Cross section (barns)
Energy (MeV)
10^1
10^0
10^-1
10^-2
10^-3
10^-11
10^-10
10^-9
10^-8
10^-7
10^-6
10^-5
10^-4
10^-3
10^-2
10^-1
10^0
10^1

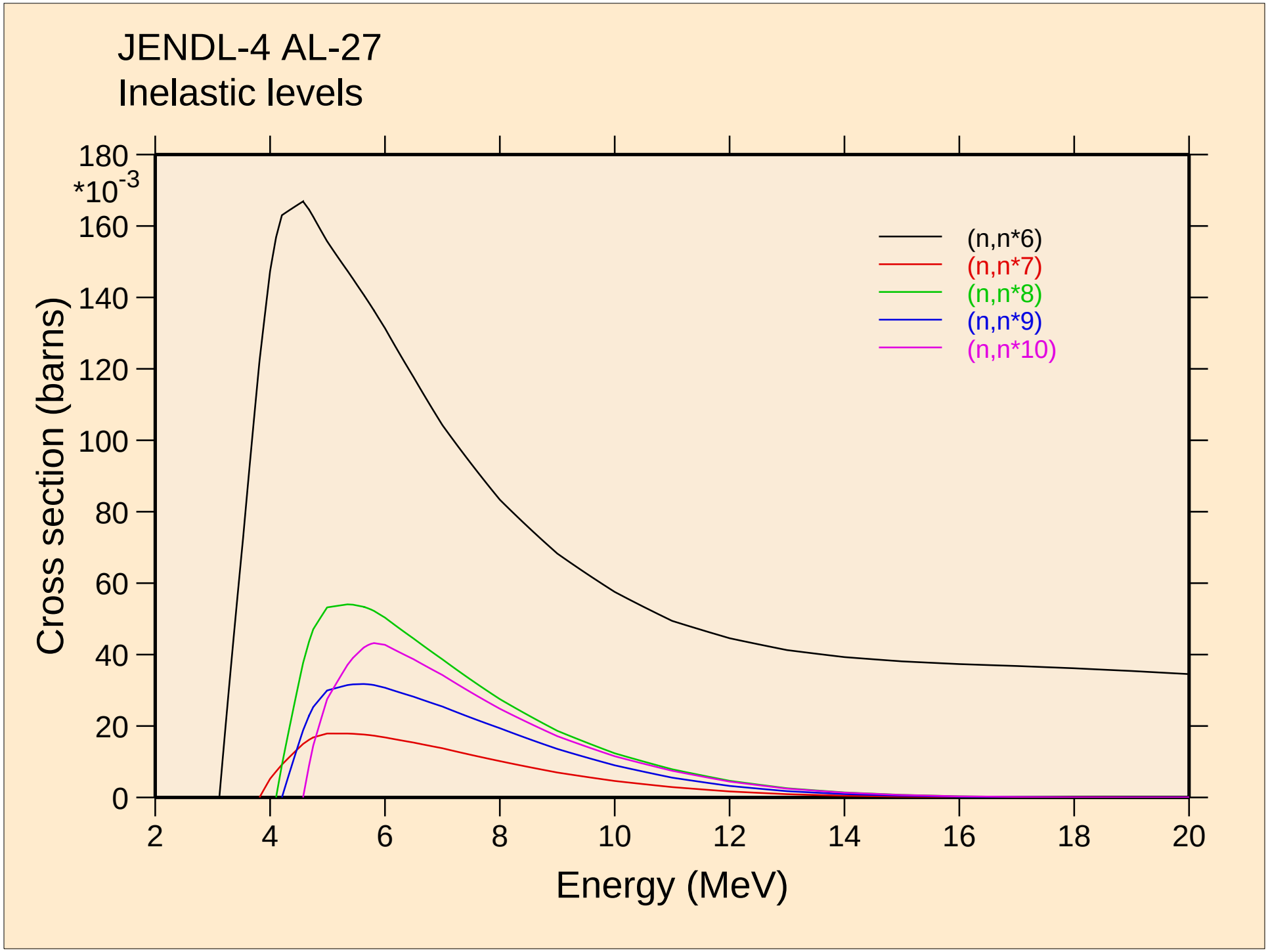

JENDL-4 AL-27
Principal cross sections
total
absorption
elastic
gamma production
Cross section (barns)
Energy (MeV)
0
1
2
3
4
5
2
4
6
8
10
12
14
16
18
20

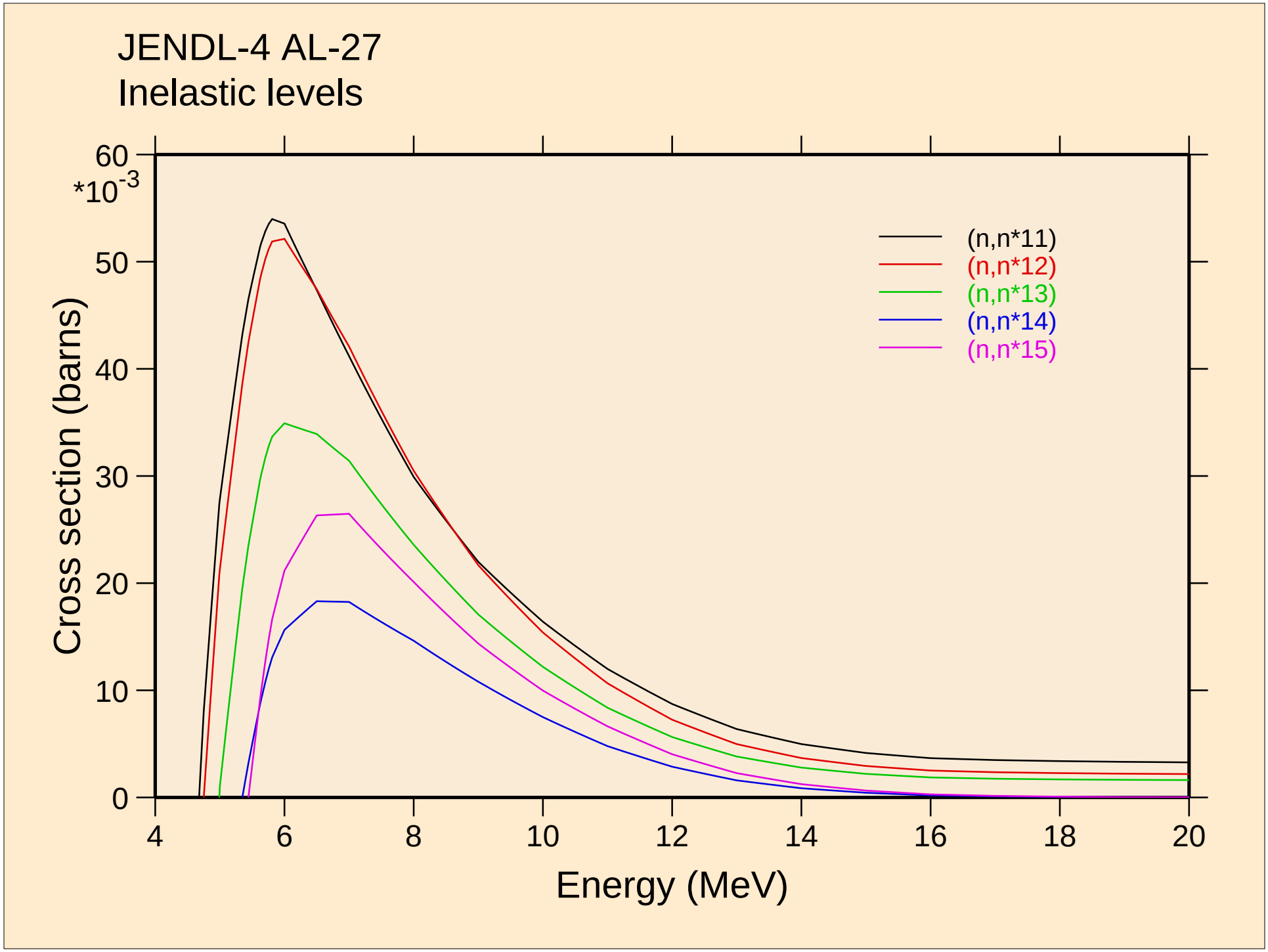

JENDL-4 AL-27
Heating
heating
Heating (MeV/reaction)
Energy (MeV)
0.0
0.5
1.0
1.5
2.0
2.5
0
5
10
15
20

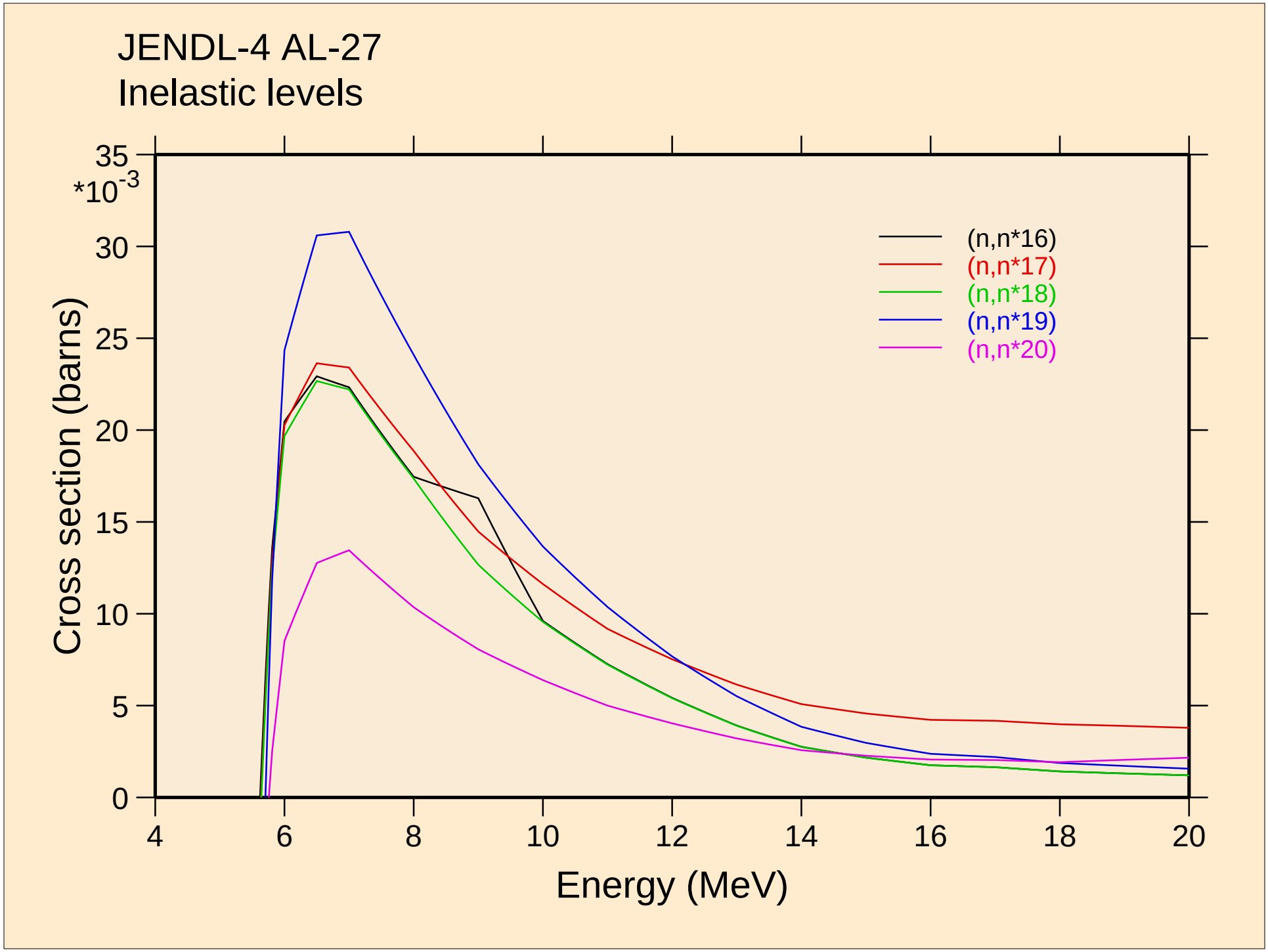

JENDL-4 AL-27
Damage
damage
*10-3
180
160
140
120
100
80
60
40
20
0
Damage (MeV-barns)
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

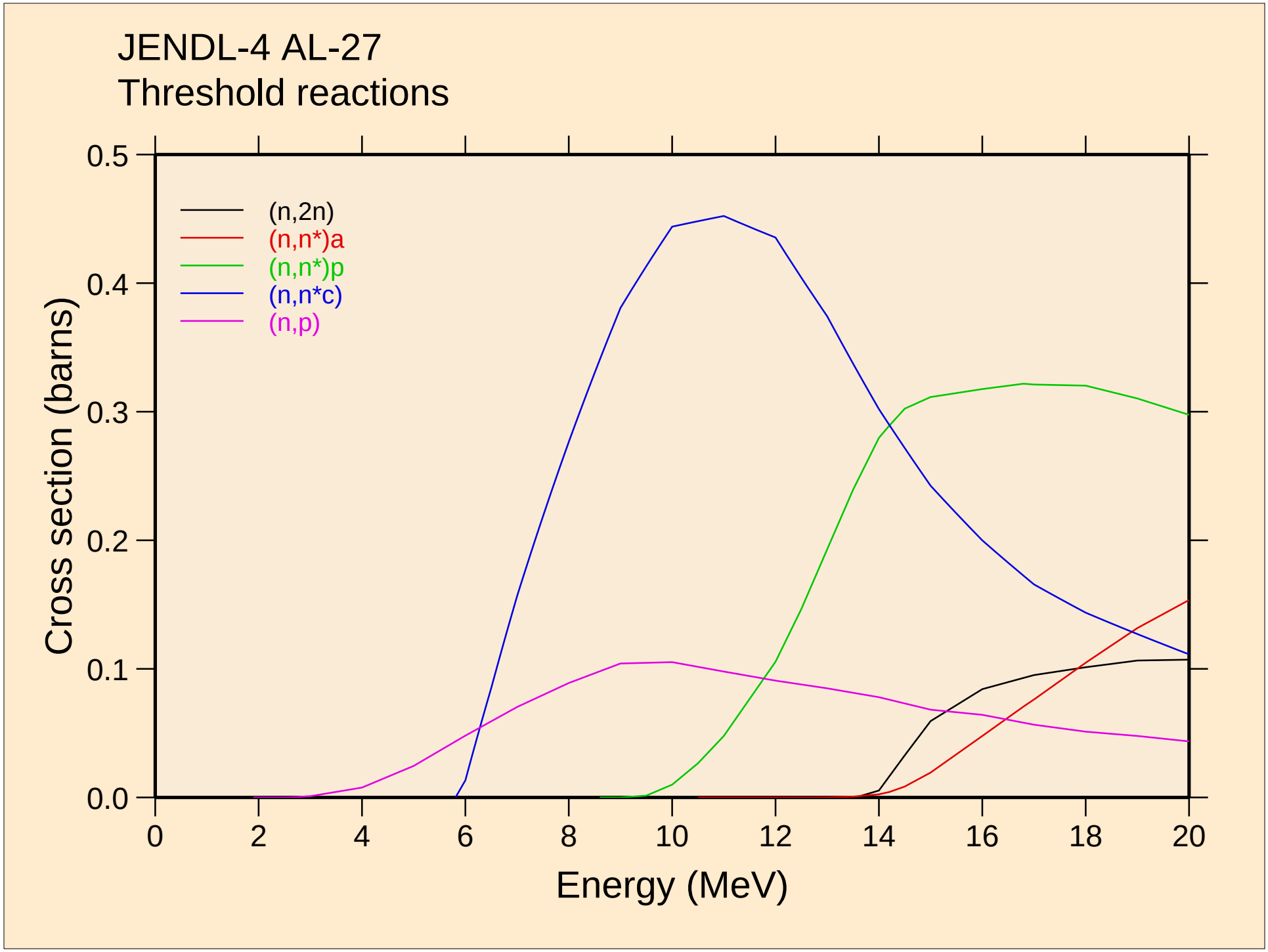

JENDL-4 AL-27
Non-threshold reactions
10-3
(n,gma)
Cross section (barns)
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

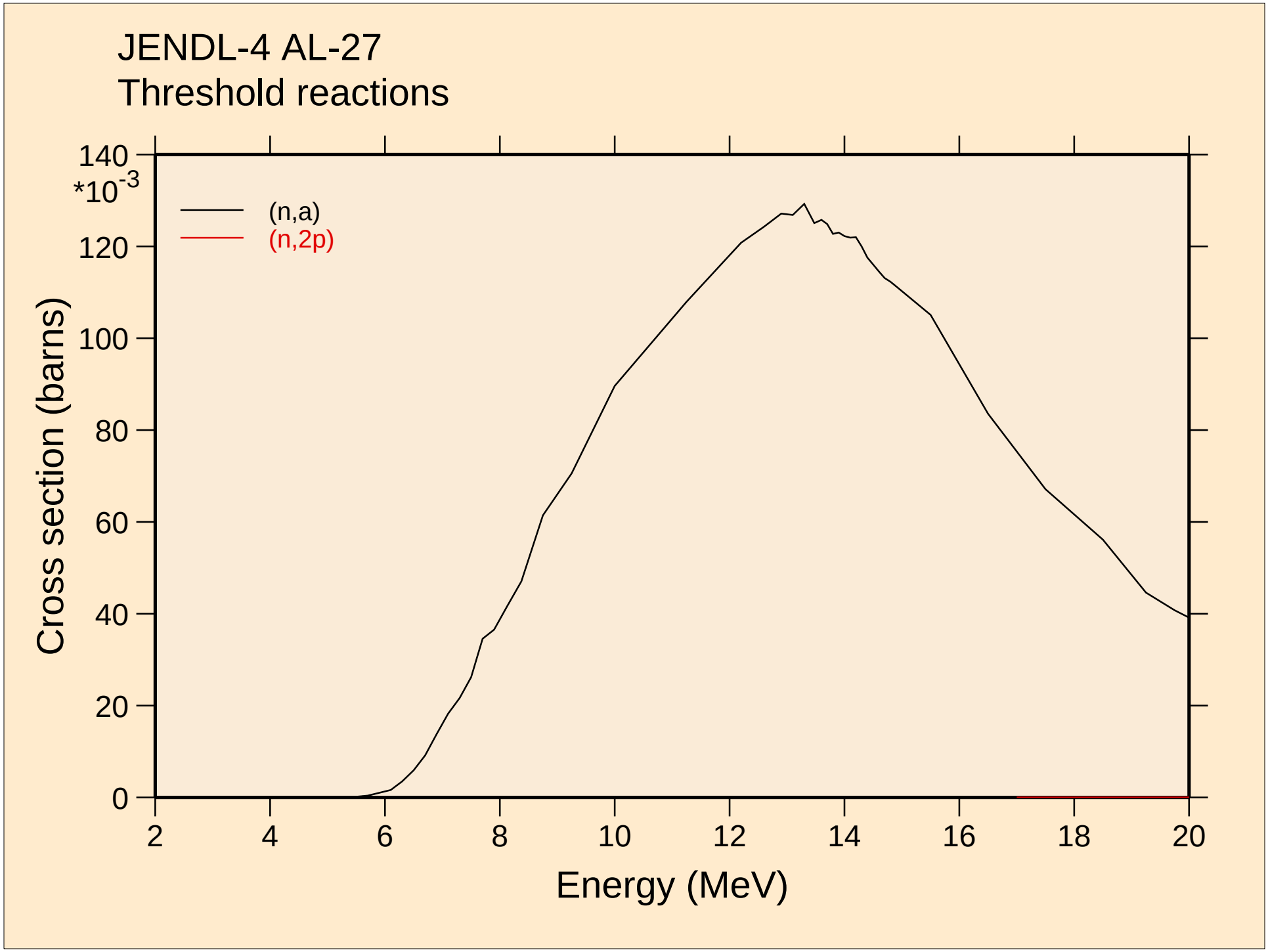

JENDL-4 AL-27
Inelastic levels
Cross section (barns)
*10^-3
250
200
150
100
50
0
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)
(n,n*1)
(n,n*2)
(n,n*3)
(n,n*4)
(n,n*5)

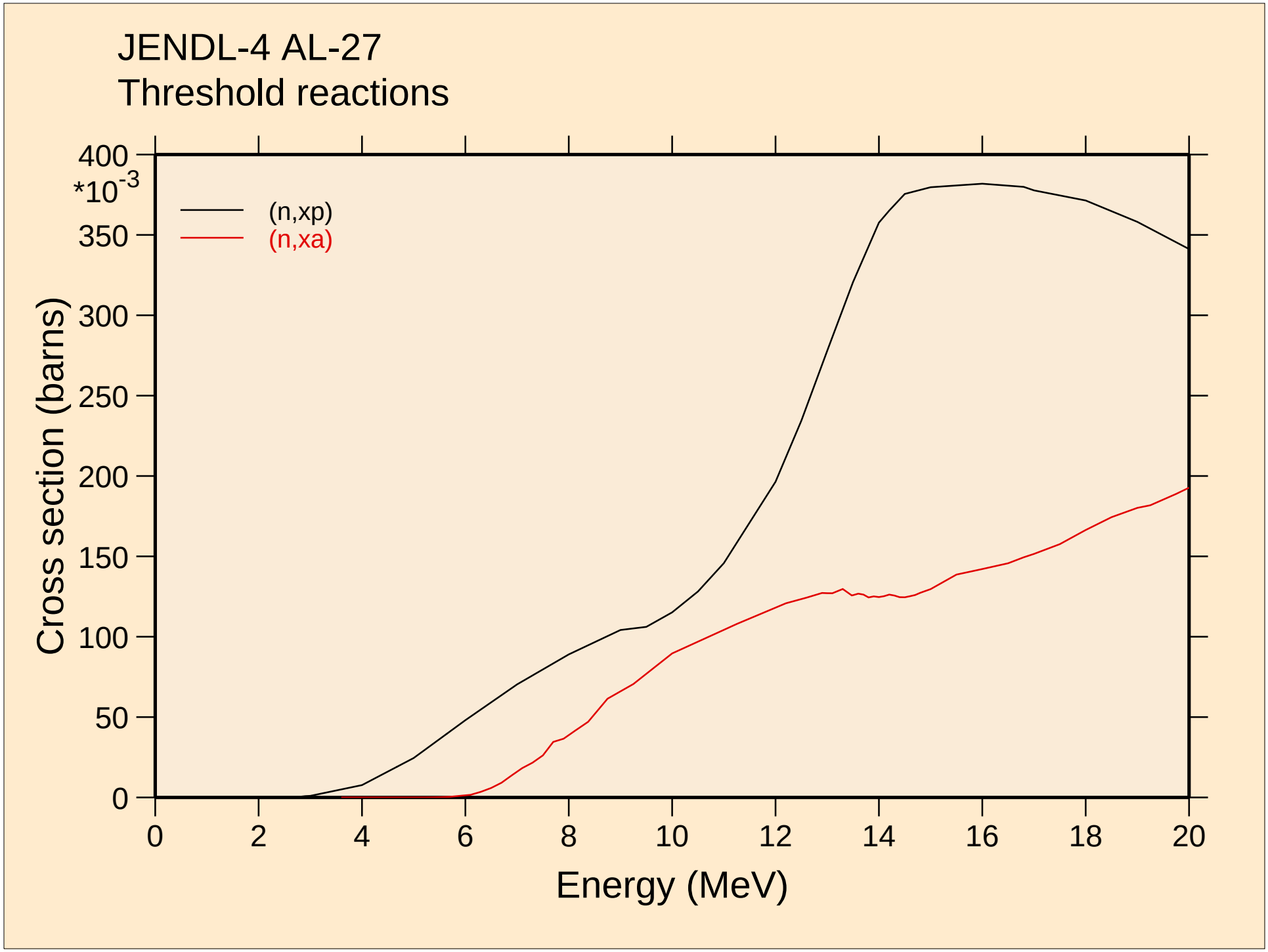

JENDL-4 AL-27
Inelastic levels
Cross section (barns)
*10^-3
180
160
140
120
100
80
60
40
20
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)
(n,n*6)
(n,n*7)
(n,n*8)
(n,n*9)
(n,n*10)

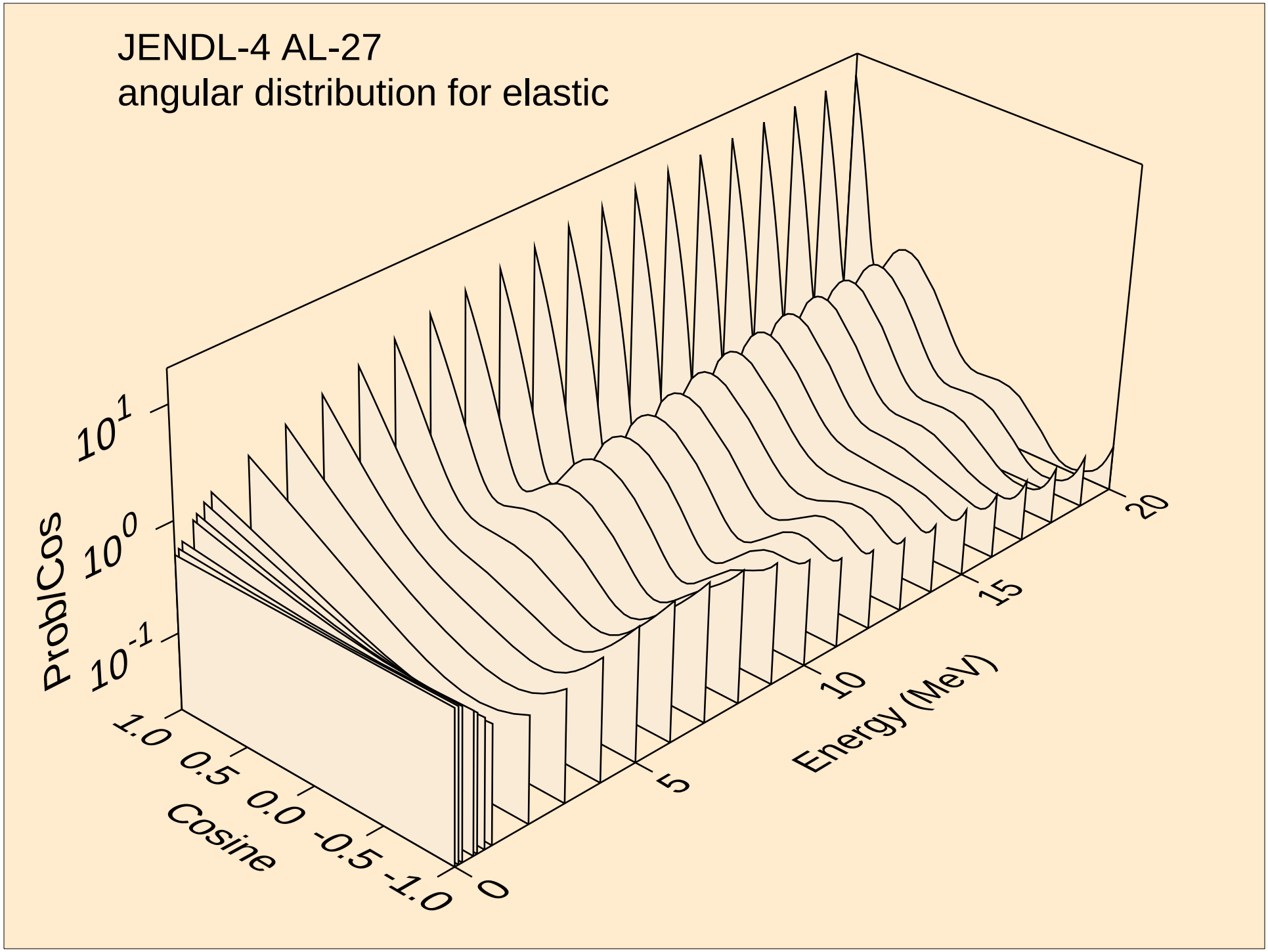

JENDL-4 AL-27
Inelastic levels
*10-3
60
50
40
30
20
10
0
Cross section (barns)
4
6
8
10
12
14
16
18
20
Energy (MeV)
(n,n*11)
(n,n*12)
(n,n*13)
(n,n*14)
(n,n*15)

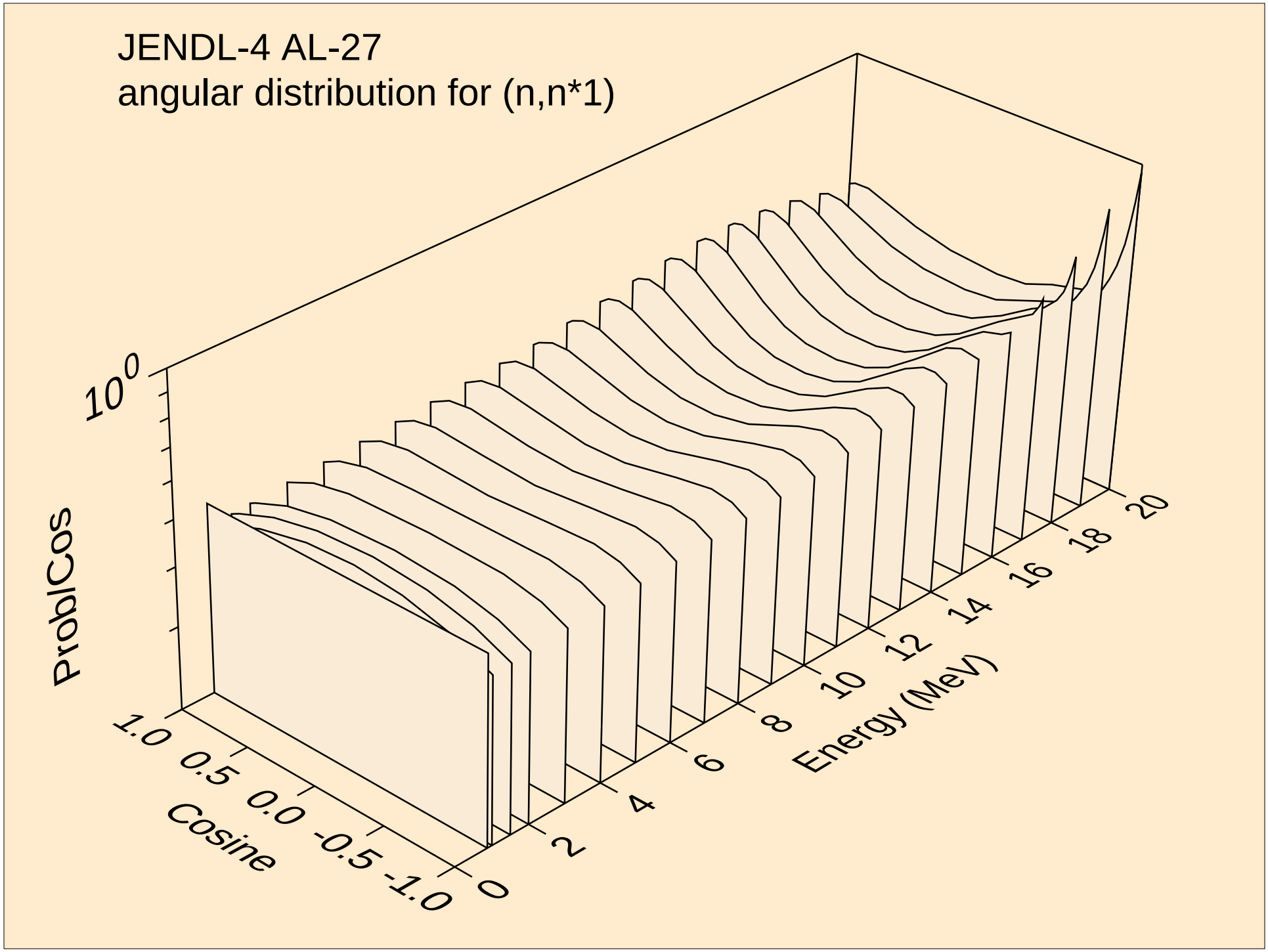

JENDL-4 AL-27
Inelastic levels
*10-3
35
30
25
20
15
10
5
0
Cross section (barns)
4
6
8
10
12
14
16
18
20
Energy (MeV)
(n,n*16)
(n,n*17)
(n,n*18)
(n,n*19)
(n,n*20)

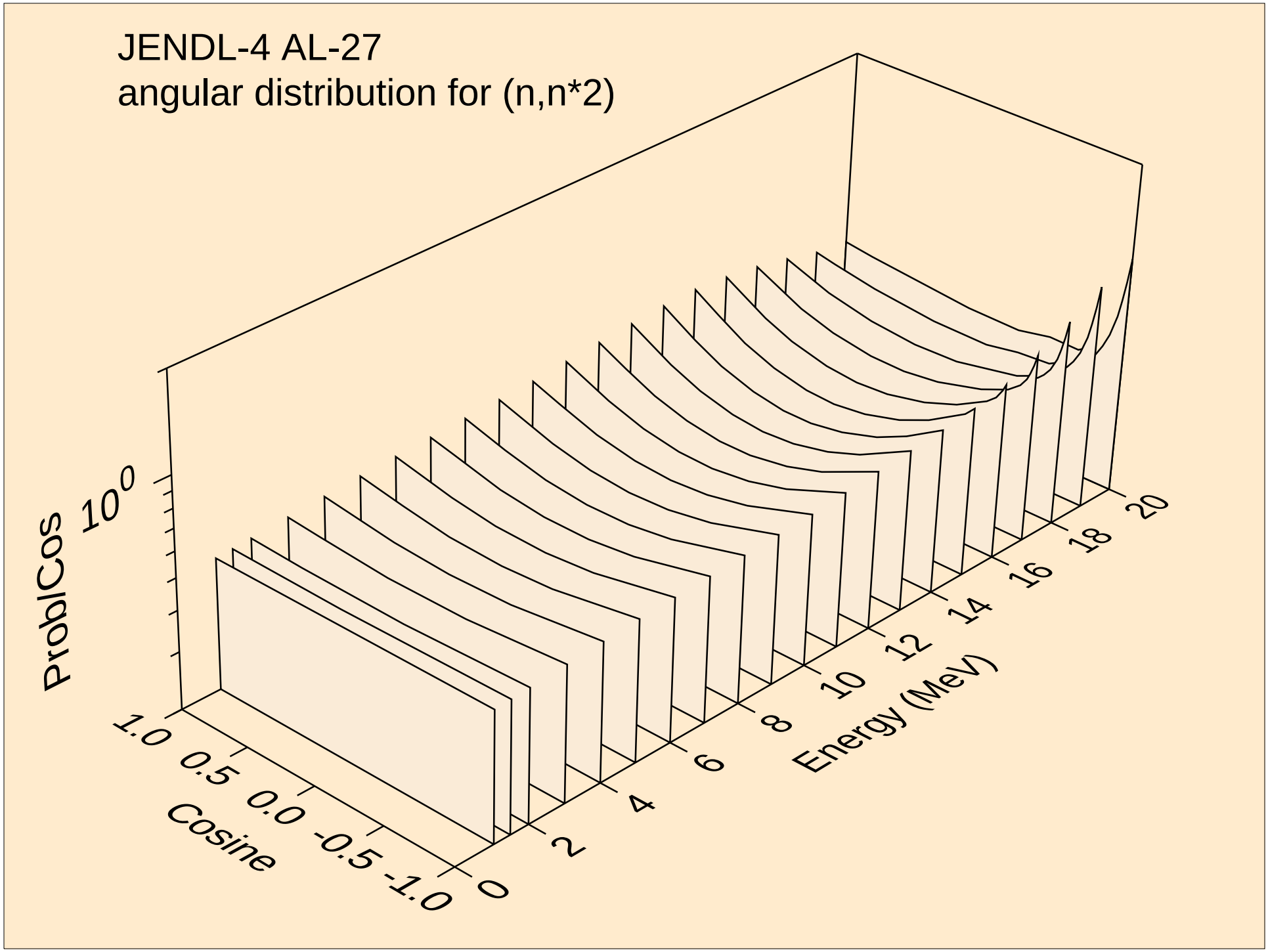

JENDL-4 AL-27
Threshold reactions
(n,2n)
(n,n*)a
(n,n*)p
(n,n*c)
(n,p)
Cross section (barns)
0.0
0.1
0.2
0.3
0.4
0.5
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

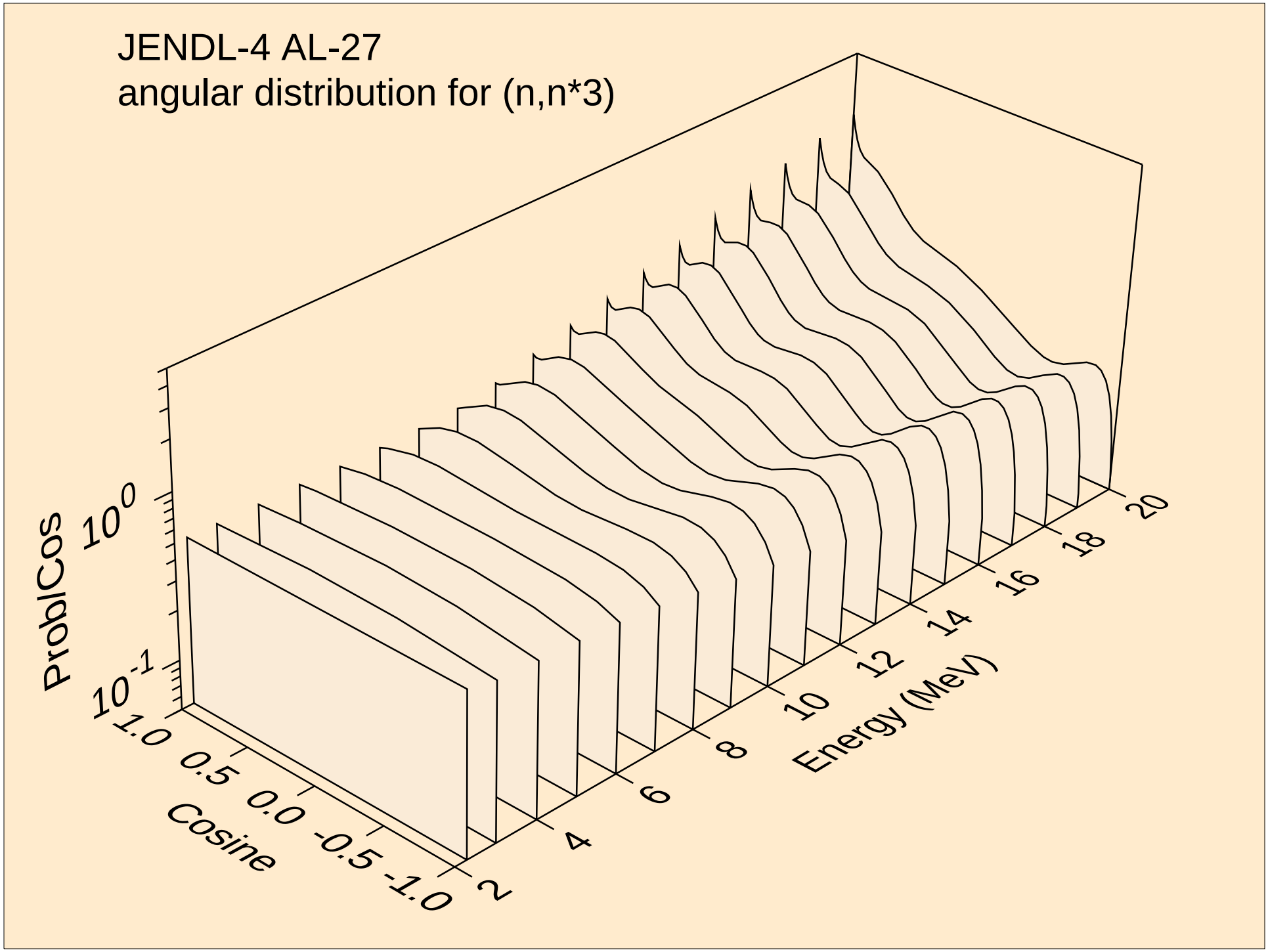

JENDL-4 AL-27
Threshold reactions
(n,a)
(n,2p)
*10-3
140
120
100
80
60
40
20
0
Cross section (barns)
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

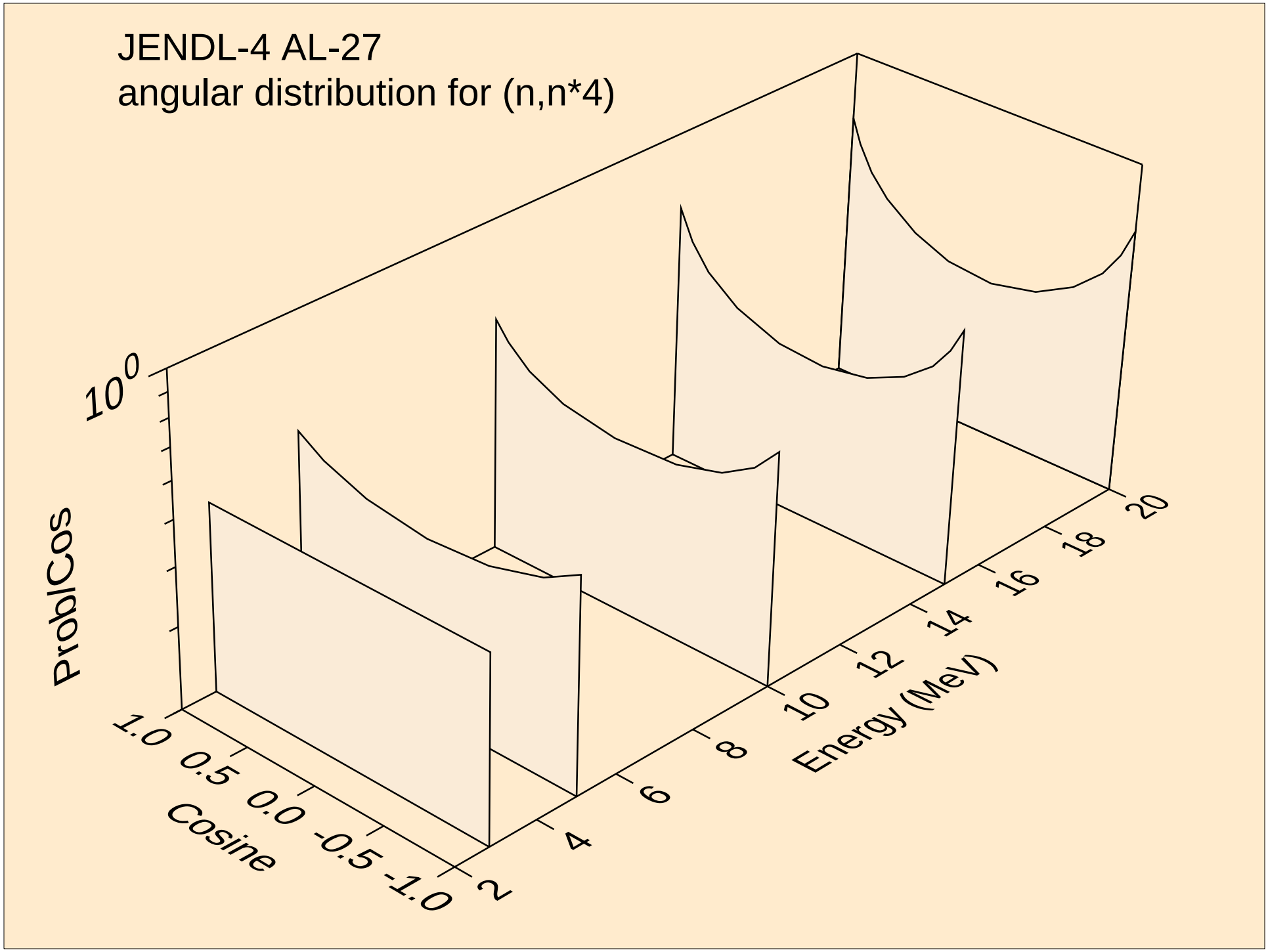

JENDL-4 AL-27
Threshold reactions
(n,xp)
(n,xa)
Cross section (barns)
*10-3
400
350
300
250
200
150
100
50
0
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

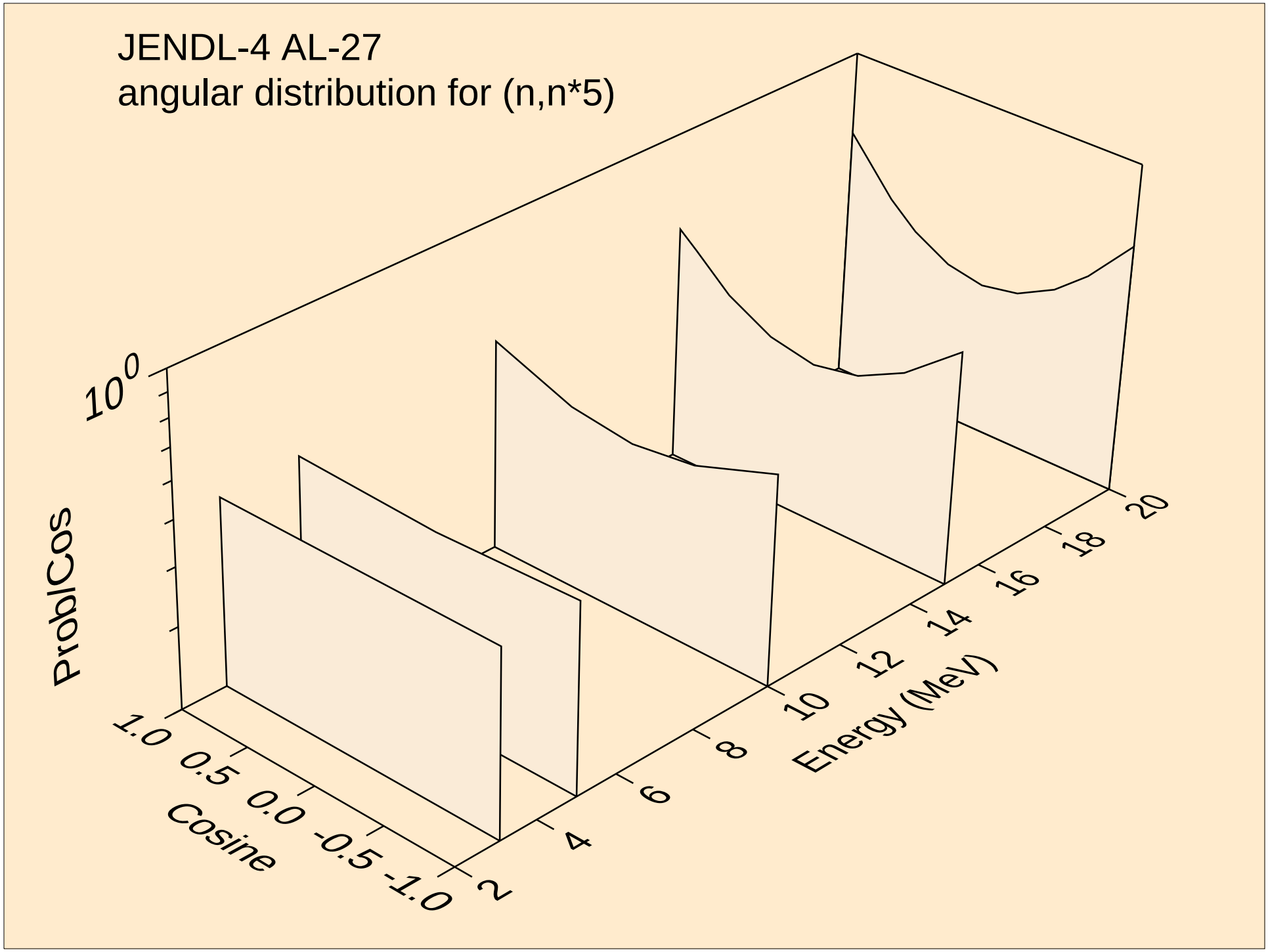

JENDL-4 AL-27
angular distribution for elastic
ProblCos
10^{1}
10^{0}
10^{-1}
Cosine
1.0
0.5
0.0
-0.5
-1.0
Energy (MeV)
0
5
10
15
20

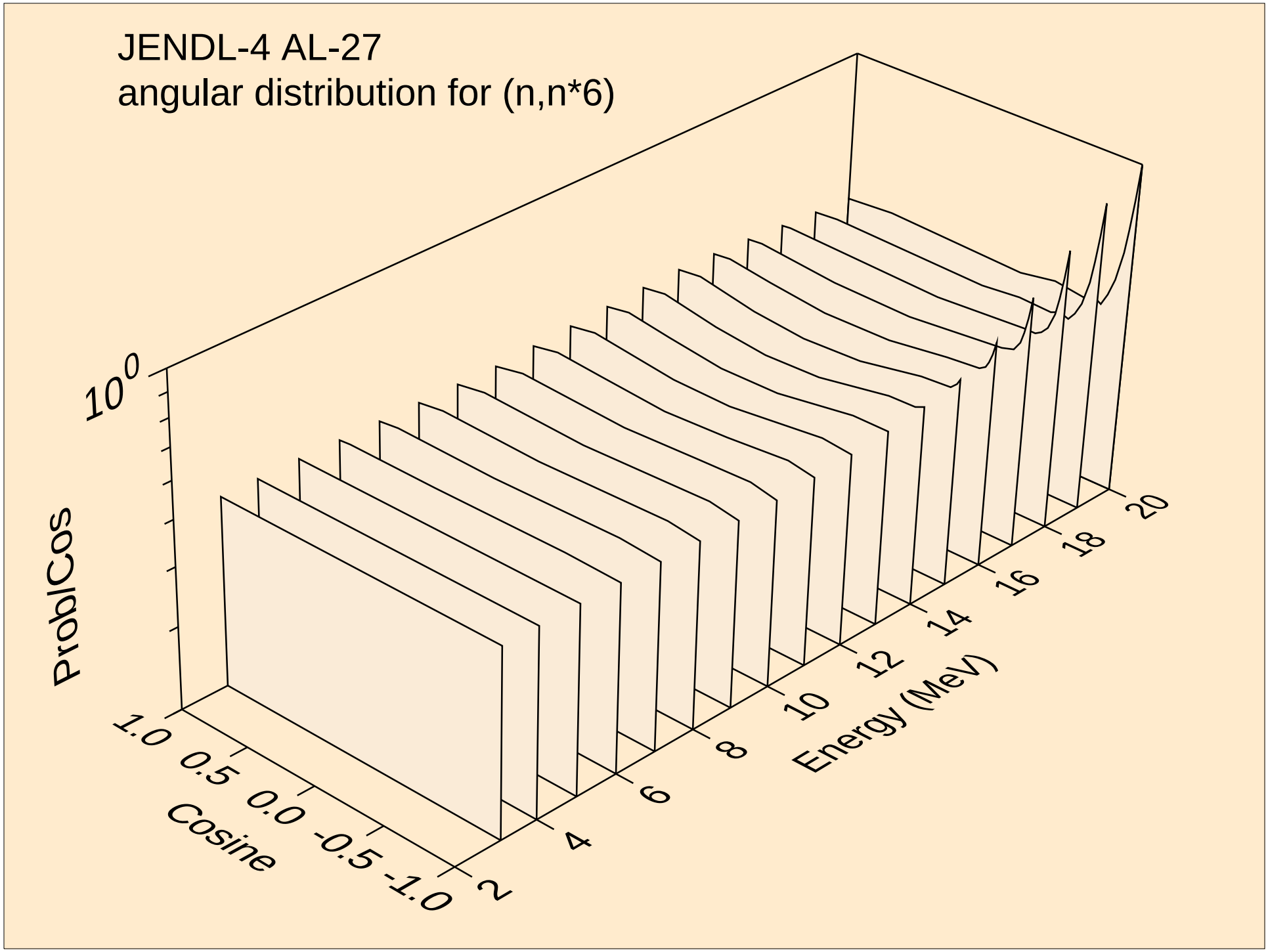

JENDL-4 AL-27
angular distribution for (n,n*1)
10^0
ProbCos
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

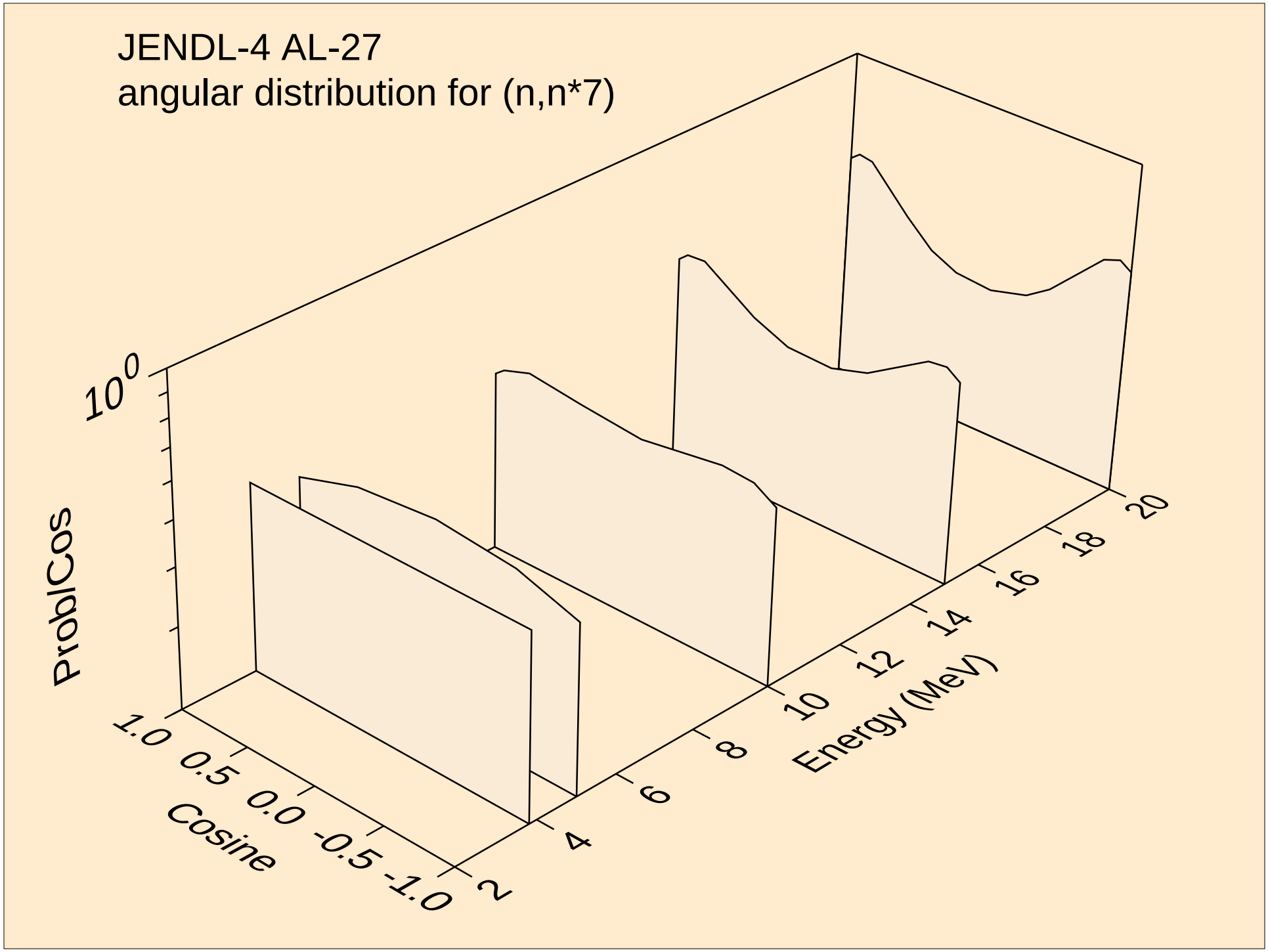

JENDL-4 AL-27
angular distribution for (n,n*2)
ProblCos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

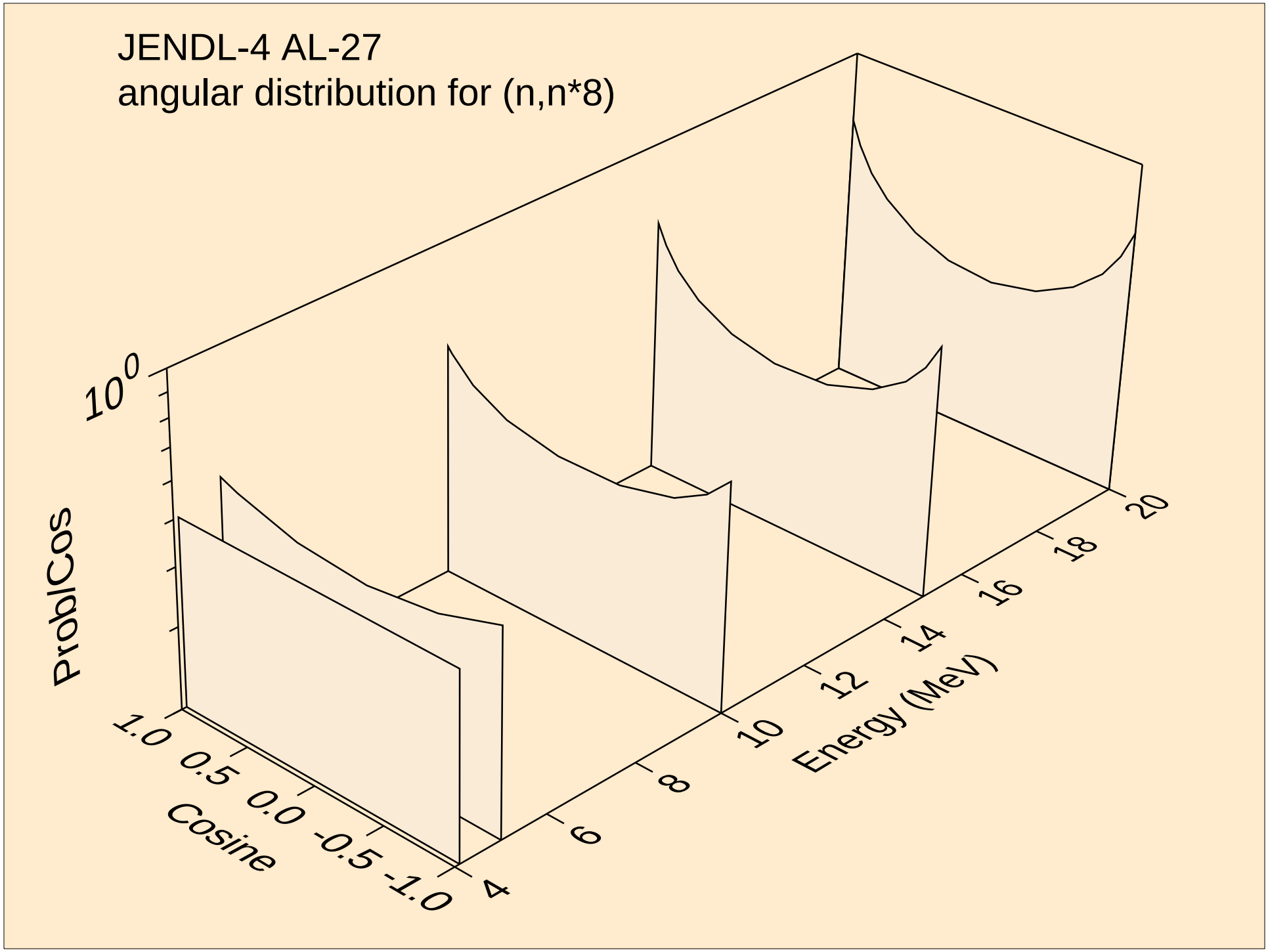

JENDL-4 AL-27
angular distribution for (n,n*3)
ProblCos
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

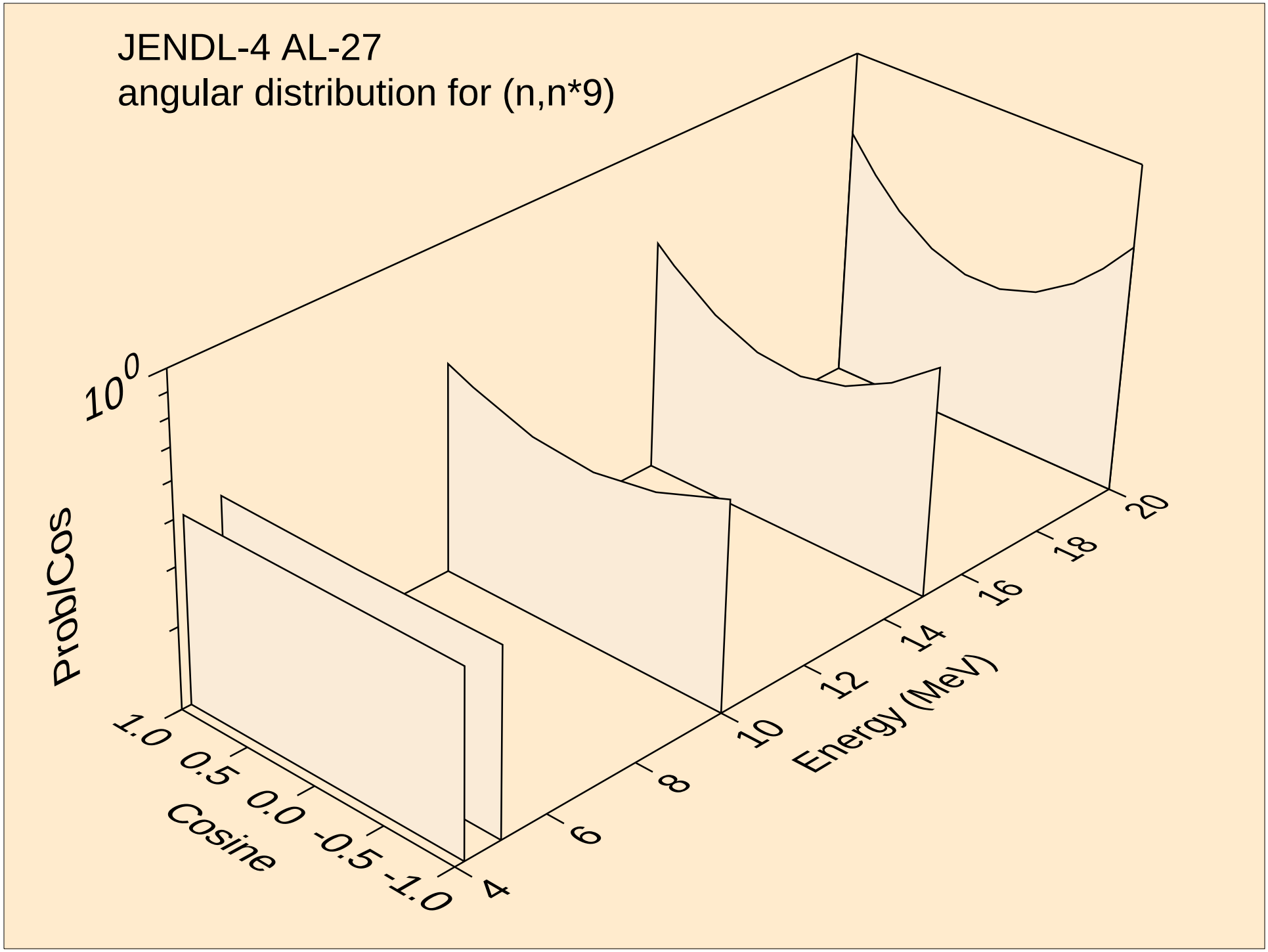

JENDL-4 AL-27
angular distribution for (n,n*4)
10^0
Prob/Cos
1.0
0.5
0.0
-0.5
-1.0
Cosine
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

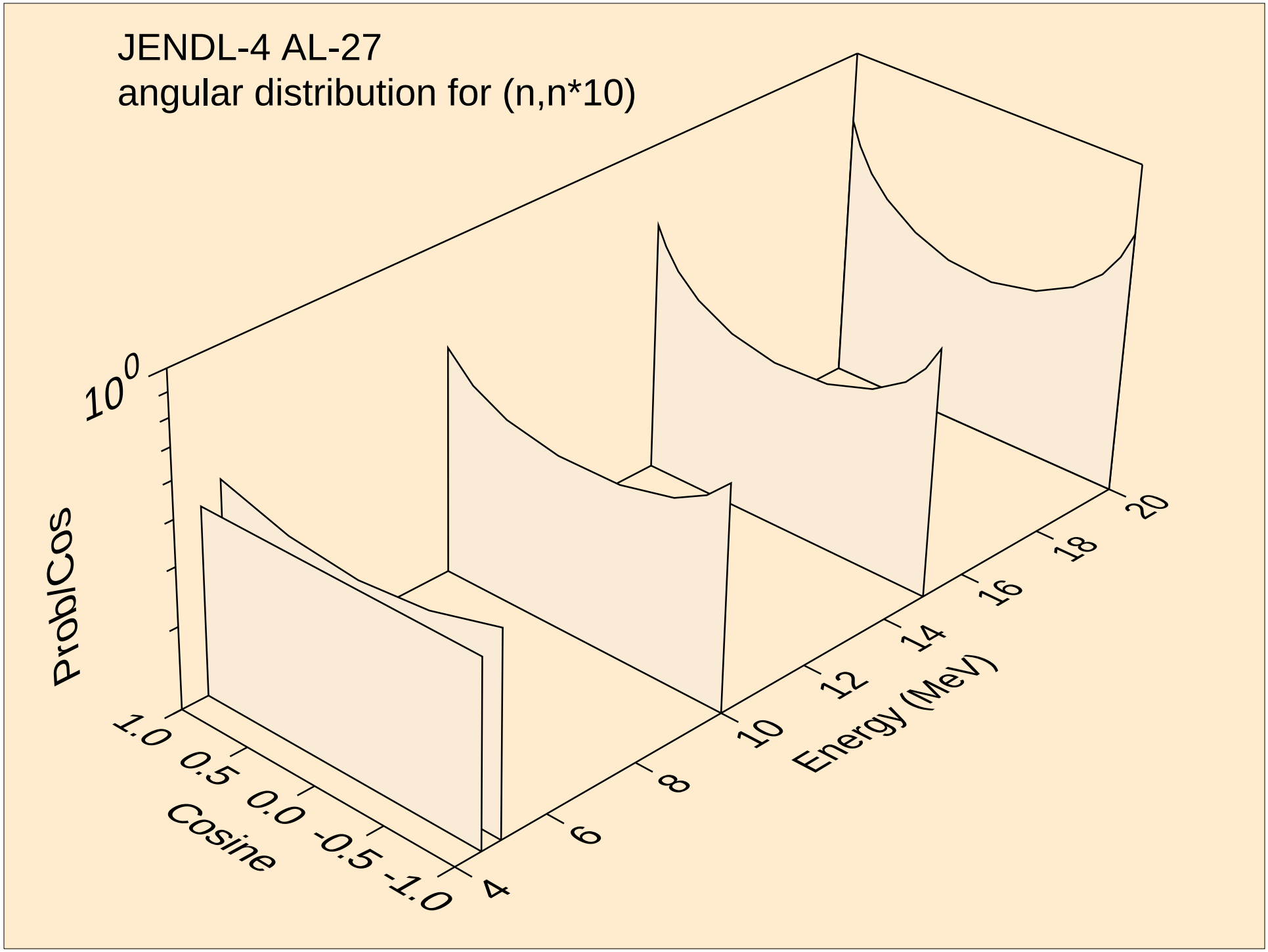

JENDL-4 AL-27
angular distribution for (n,n*5)
10^0
Prob/Cos
1.0
0.5
0.0
-0.5
-1.0
Cosine
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

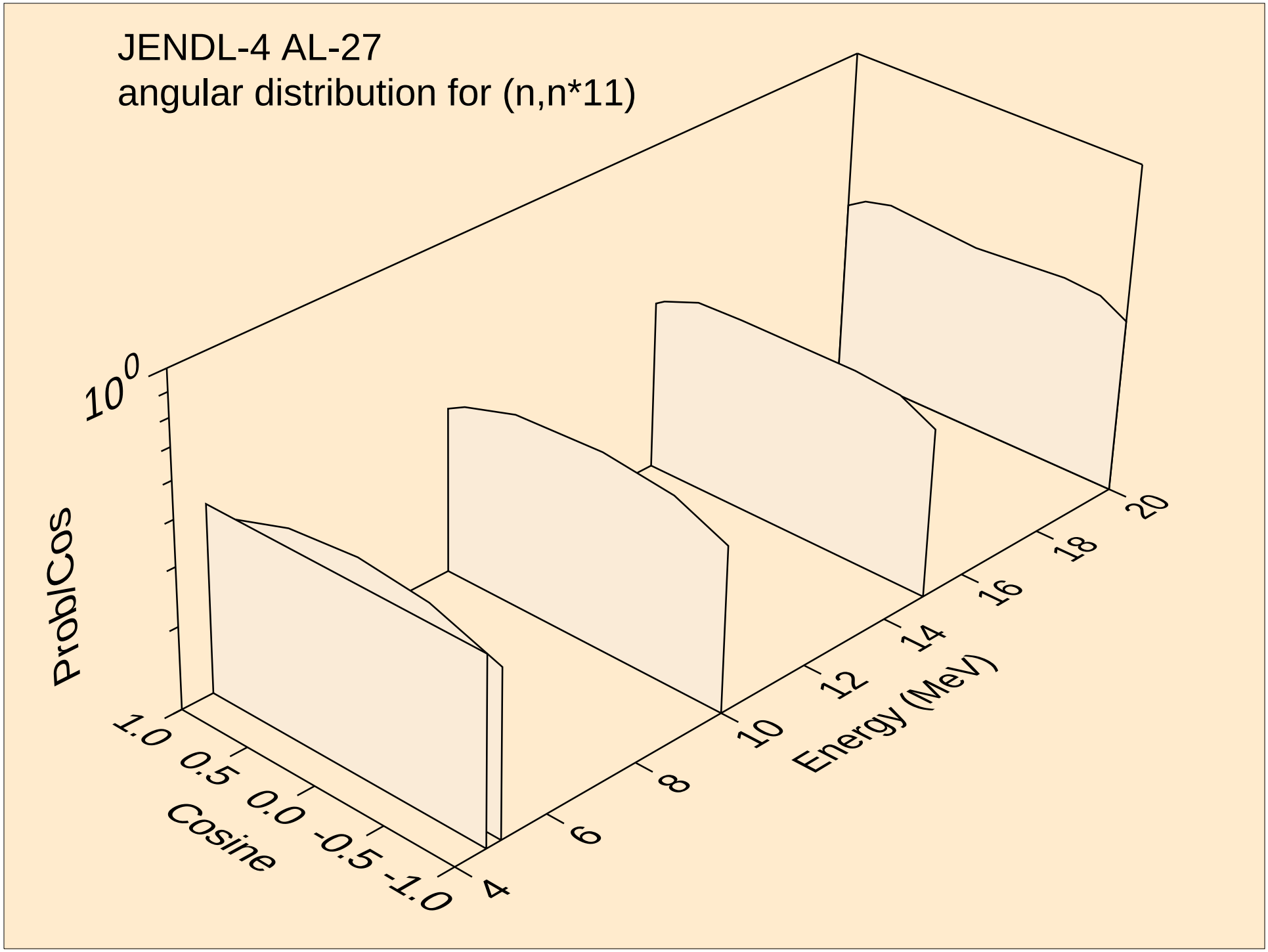

JENDL-4 AL-27
angular distribution for (n,n*6)
10^0
ProbCos
1.0
0.5
0.0
-0.5
-1.0
Cosine
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

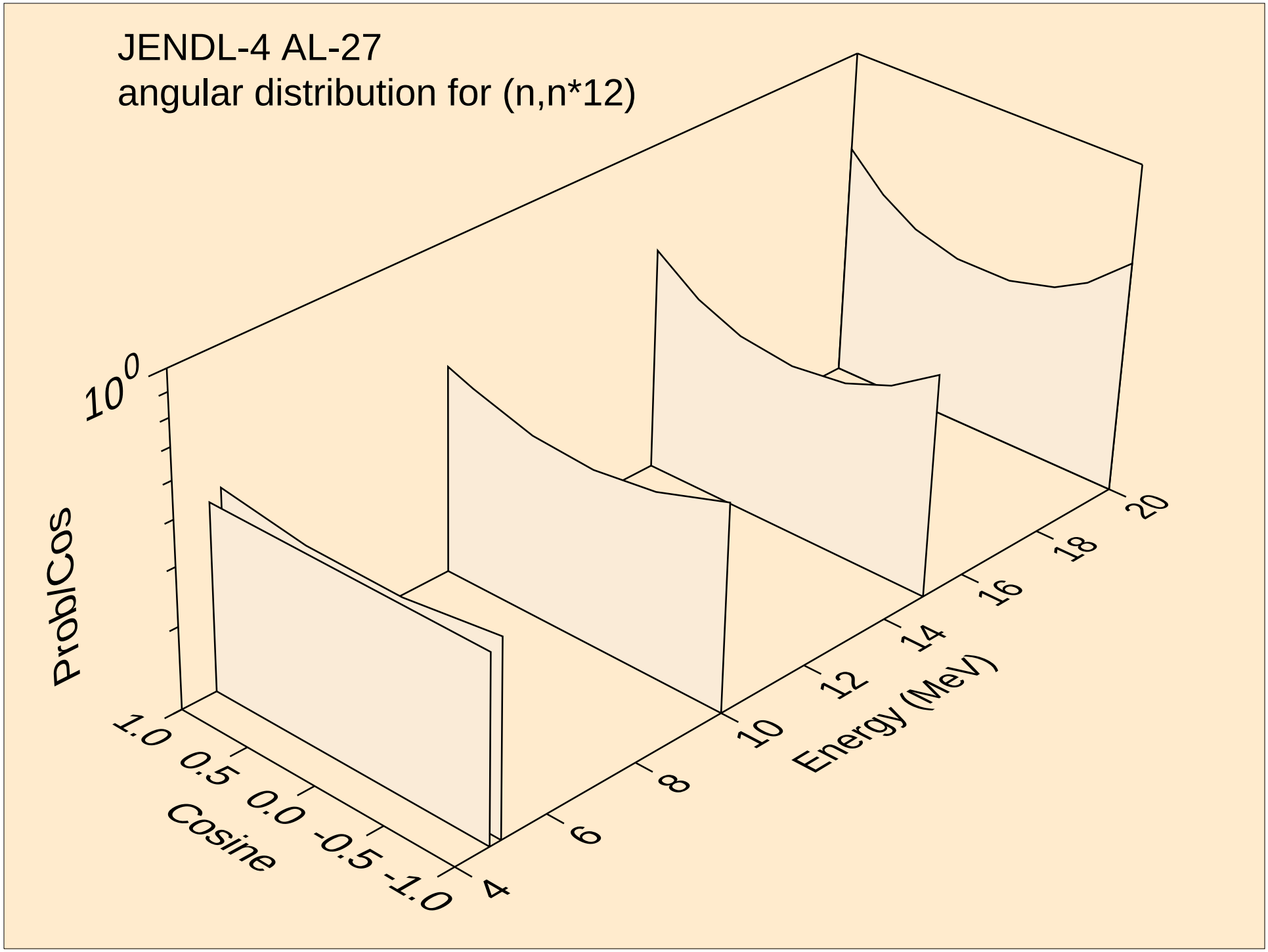

JENDL-4 AL-27
angular distribution for (n,n*7)
10^0
ProbCos
1.0
0.5
0.0
-0.5
-1.0
Cosine
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

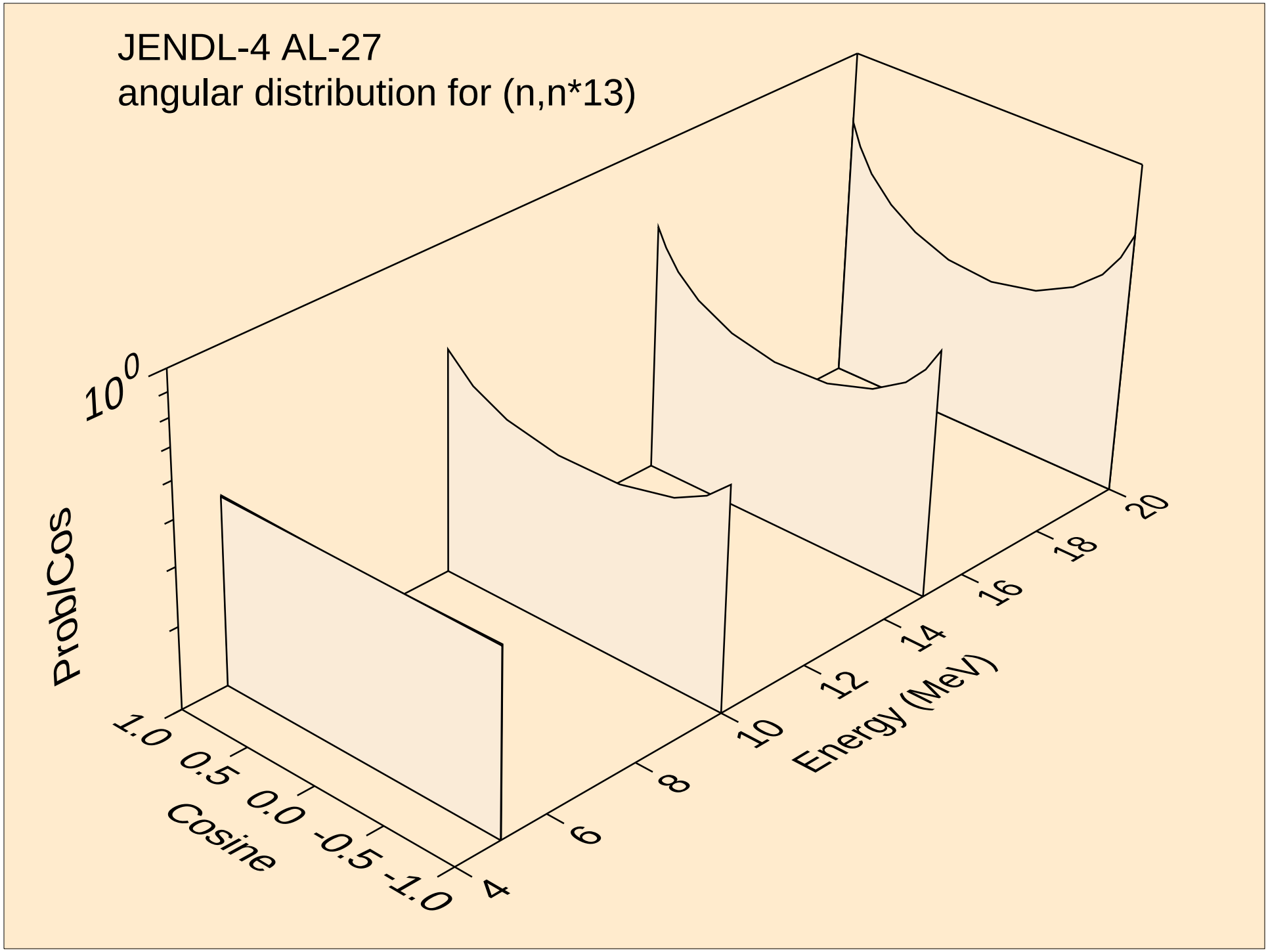

JENDL-4 AL-27
angular distribution for (n,n*8)
10^0
ProbCos
1.0
0.5
0.0
-0.5
-1.0
Cosine
4
6
8
10
12
14
16
18
20
Energy (MeV)

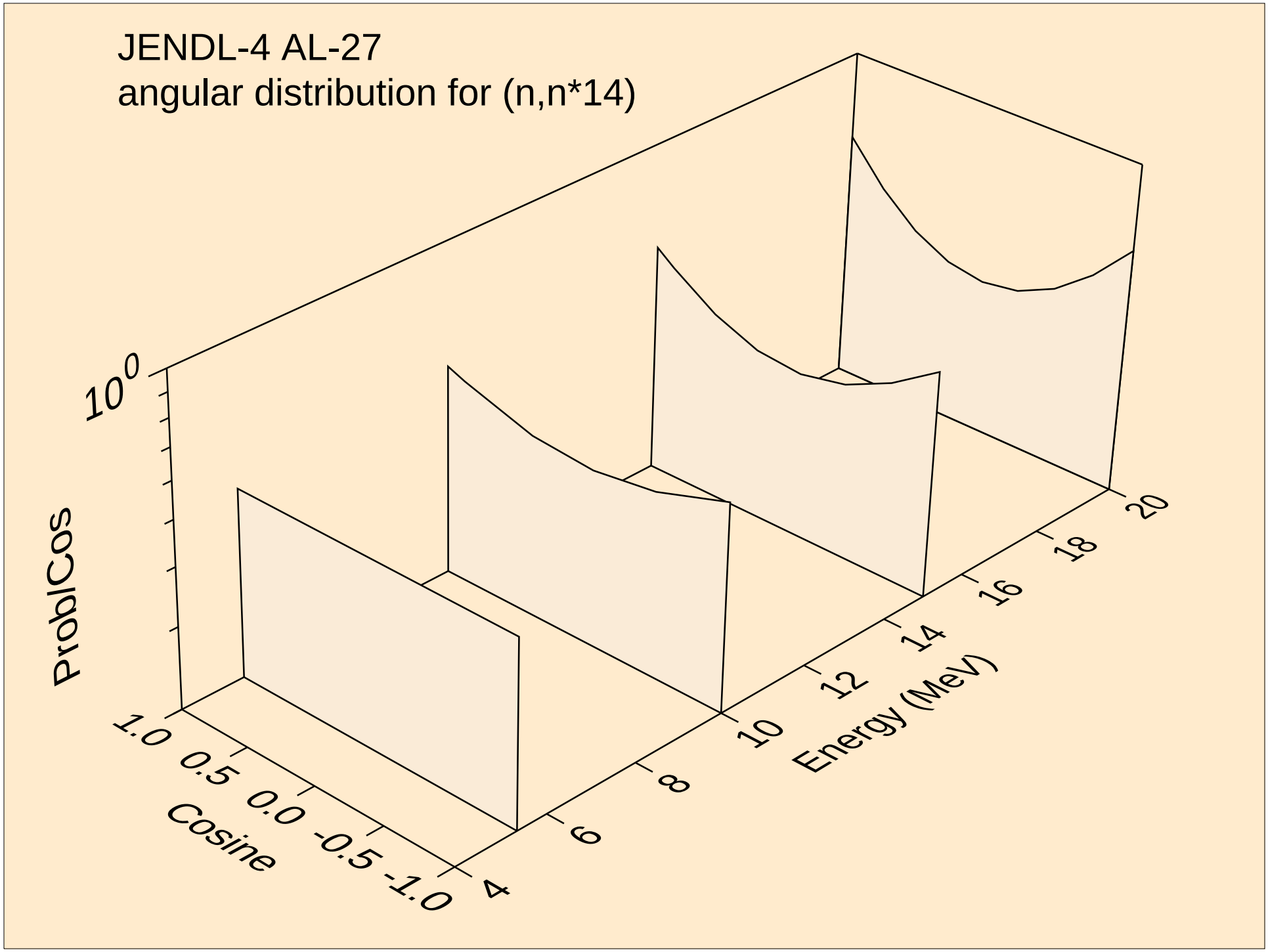

JENDL-4 AL-27
angular distribution for (n,n*9)
10^0
ProbCos
1.0
0.5
0.0
-0.5
-1.0
Cosine
4
6
8
10
12
14
16
18
20
Energy (MeV)

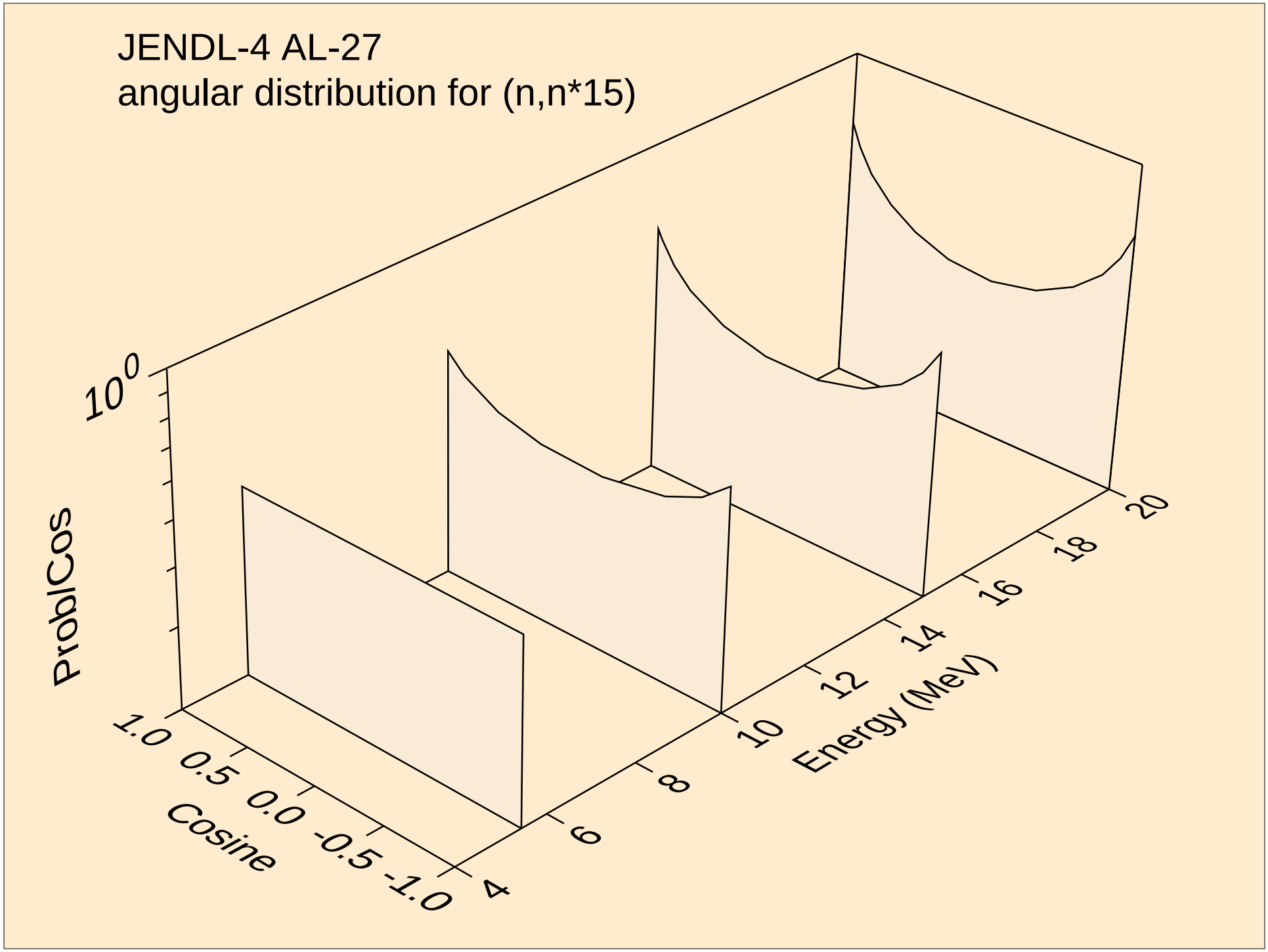

JENDL-4 AL-27
angular distribution for (n,n*10)
10^0
ProbCos
1.0
0.5
0.0
-0.5
-1.0
Cosine
4
6
8
10
12
14
16
18
20
Energy (MeV)

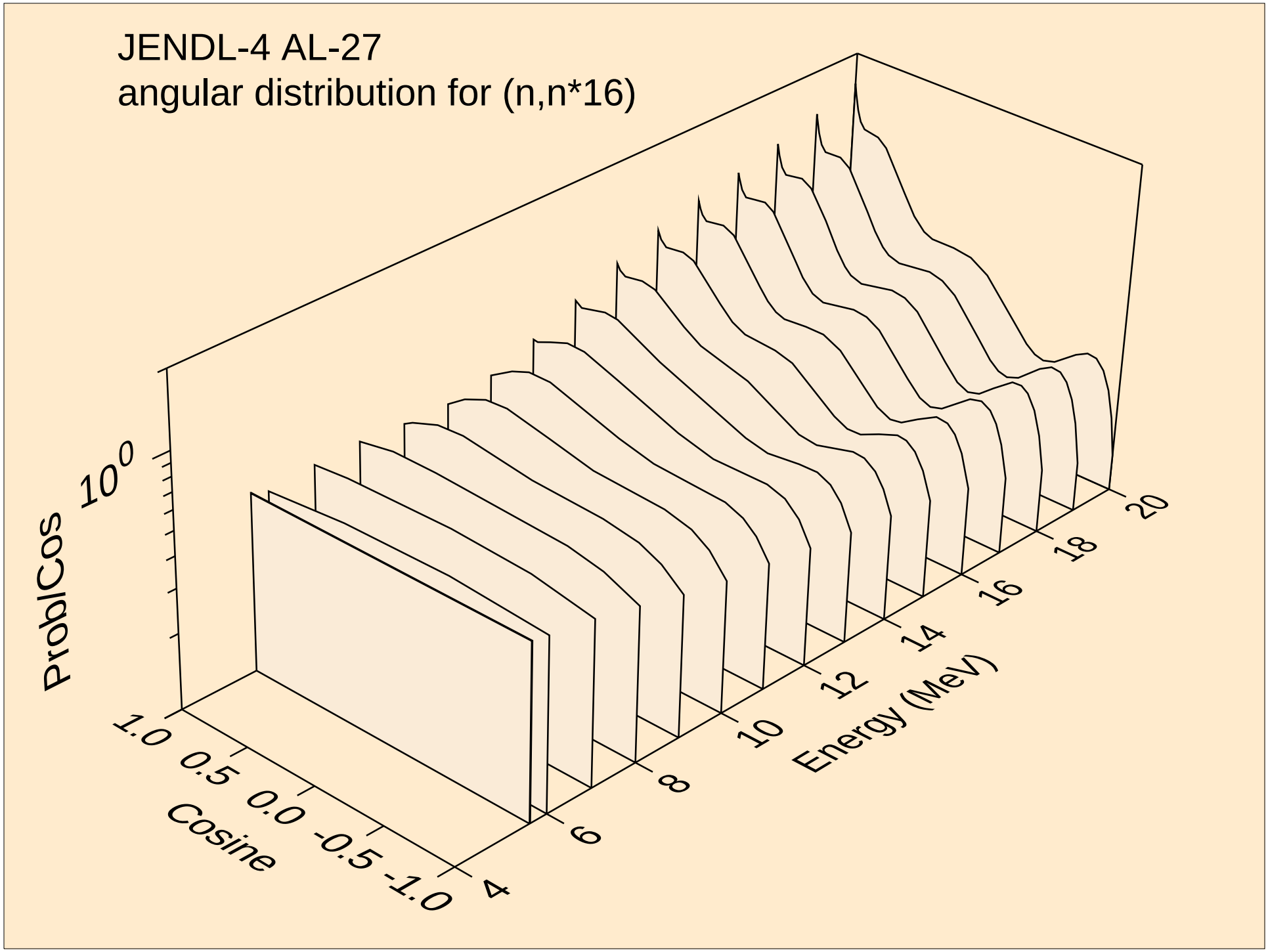

JENDL-4 AL-27
angular distribution for (n,n*11)
10^0
ProbCos
1.0
0.5
0.0
-0.5
-1.0
Cosine
4
6
8
10
12
14
16
18
20
Energy (MeV)

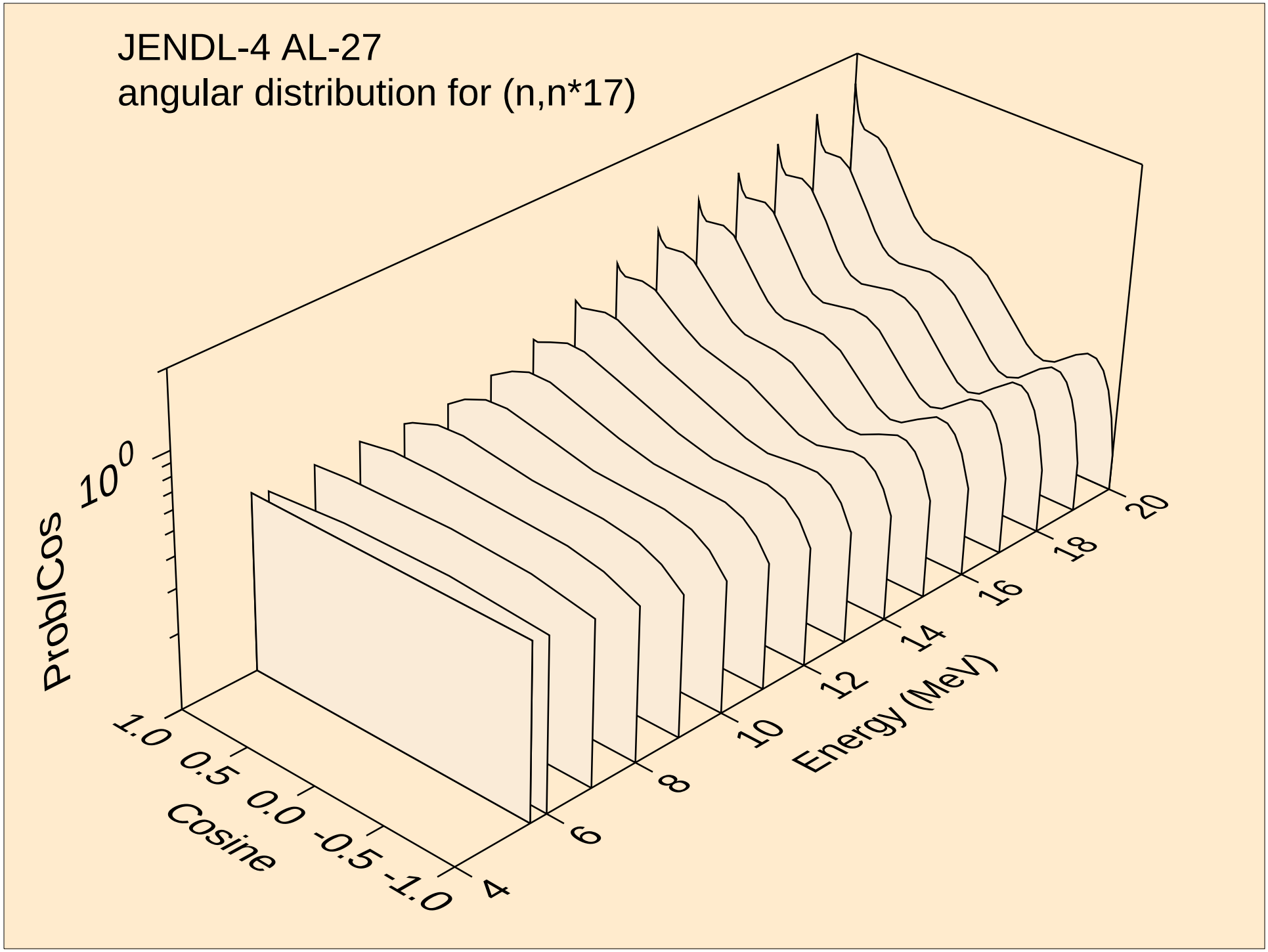

JENDL-4 AL-27
angular distribution for (n,n*12)
10^0
ProbCos
1.0
0.5
0.0
-0.5
-1.0
Cosine
4
6
8
10
12
14
16
18
20
Energy (MeV)

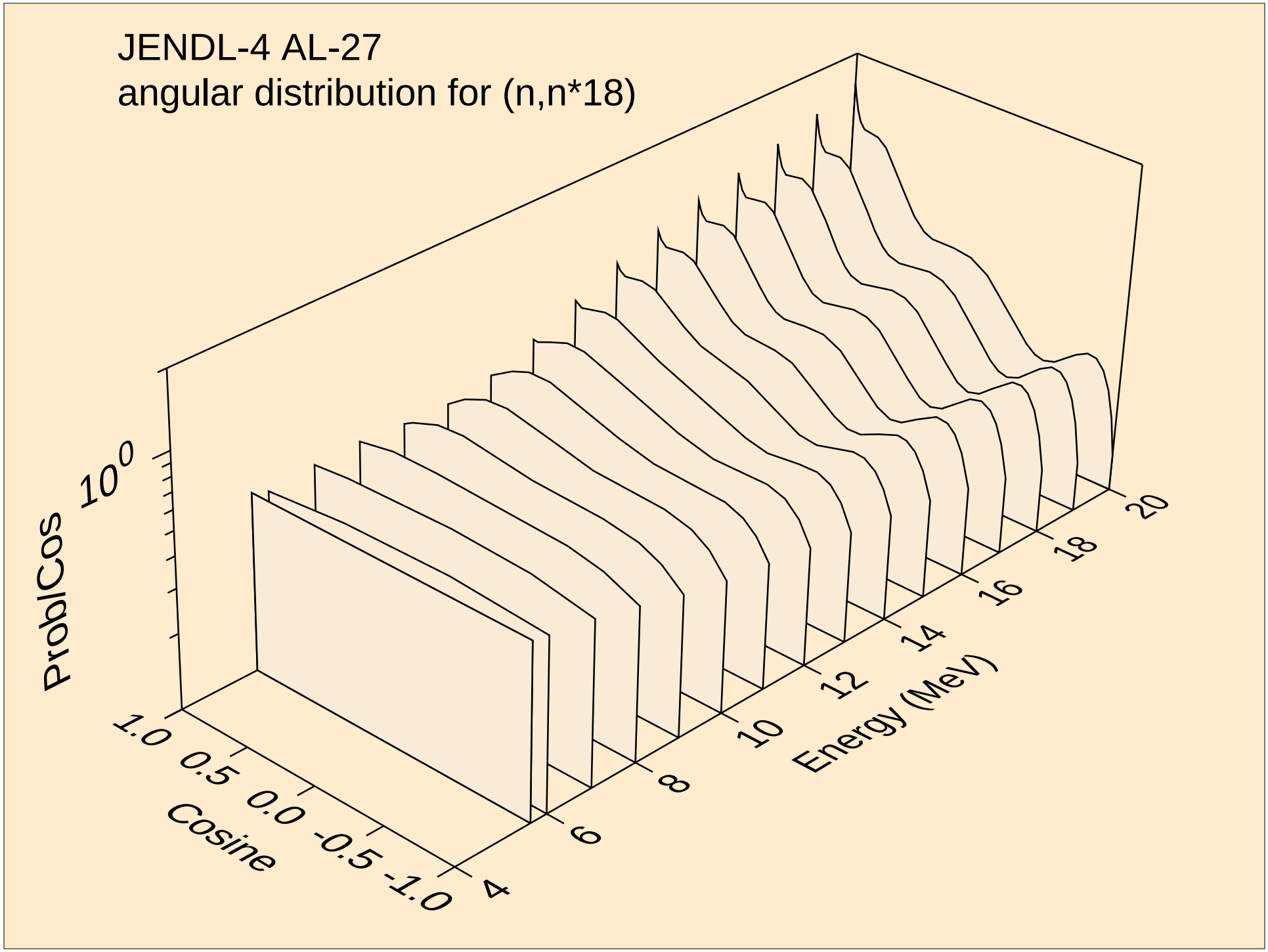

JENDL-4 AL-27
angular distribution for (n,n*13)
10^0
ProbCos
1.0
0.5
0.0
-0.5
-1.0
Cosine
4
6
8
10
12
14
16
18
20
Energy (MeV)

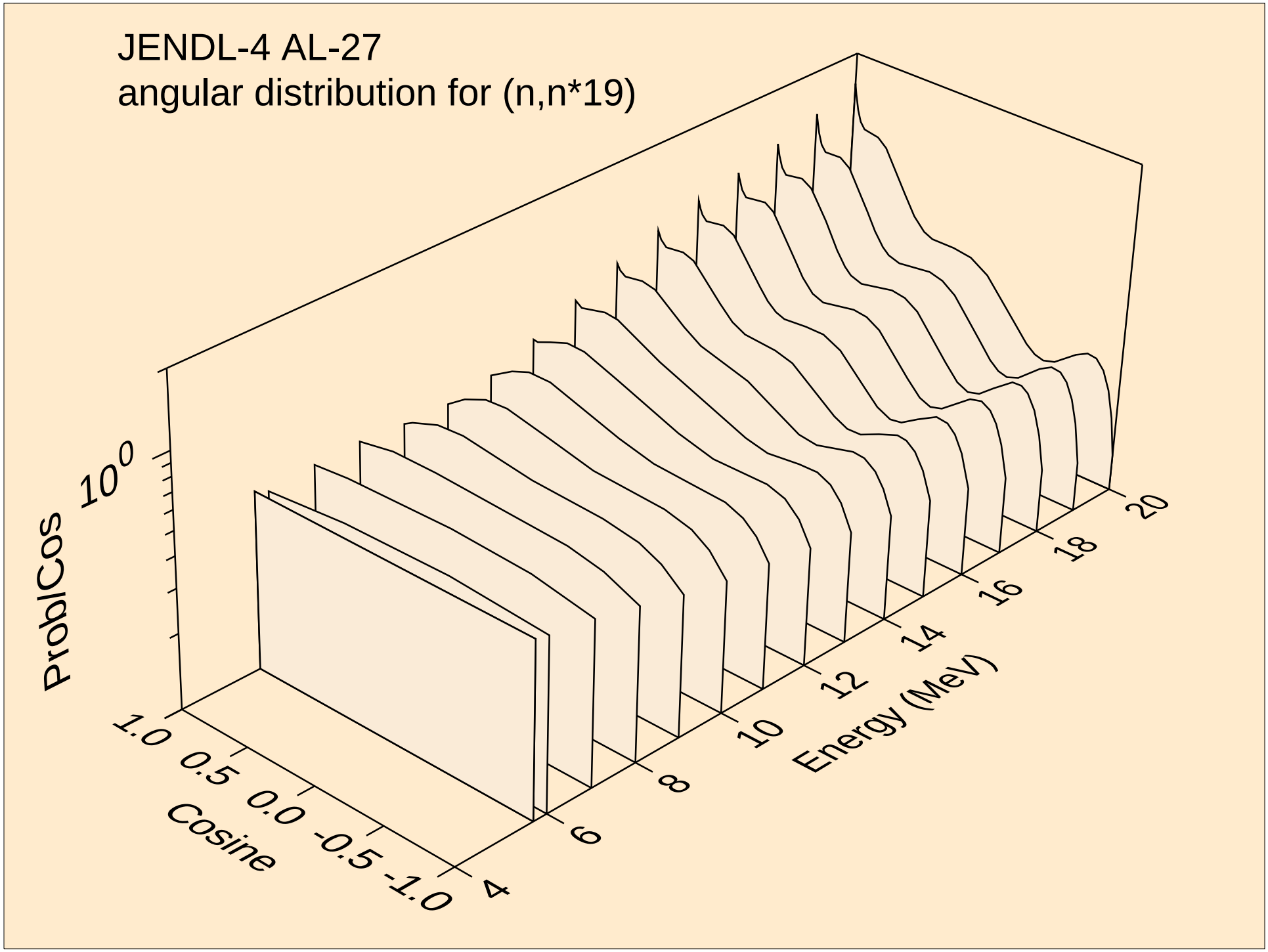

JENDL-4 AL-27
angular distribution for (n,n*14)
10^0
ProbCos
1.0
0.5
0.0
-0.5
-1.0
Cosine
4
6
8
10
12
14
16
18
20
Energy (MeV)

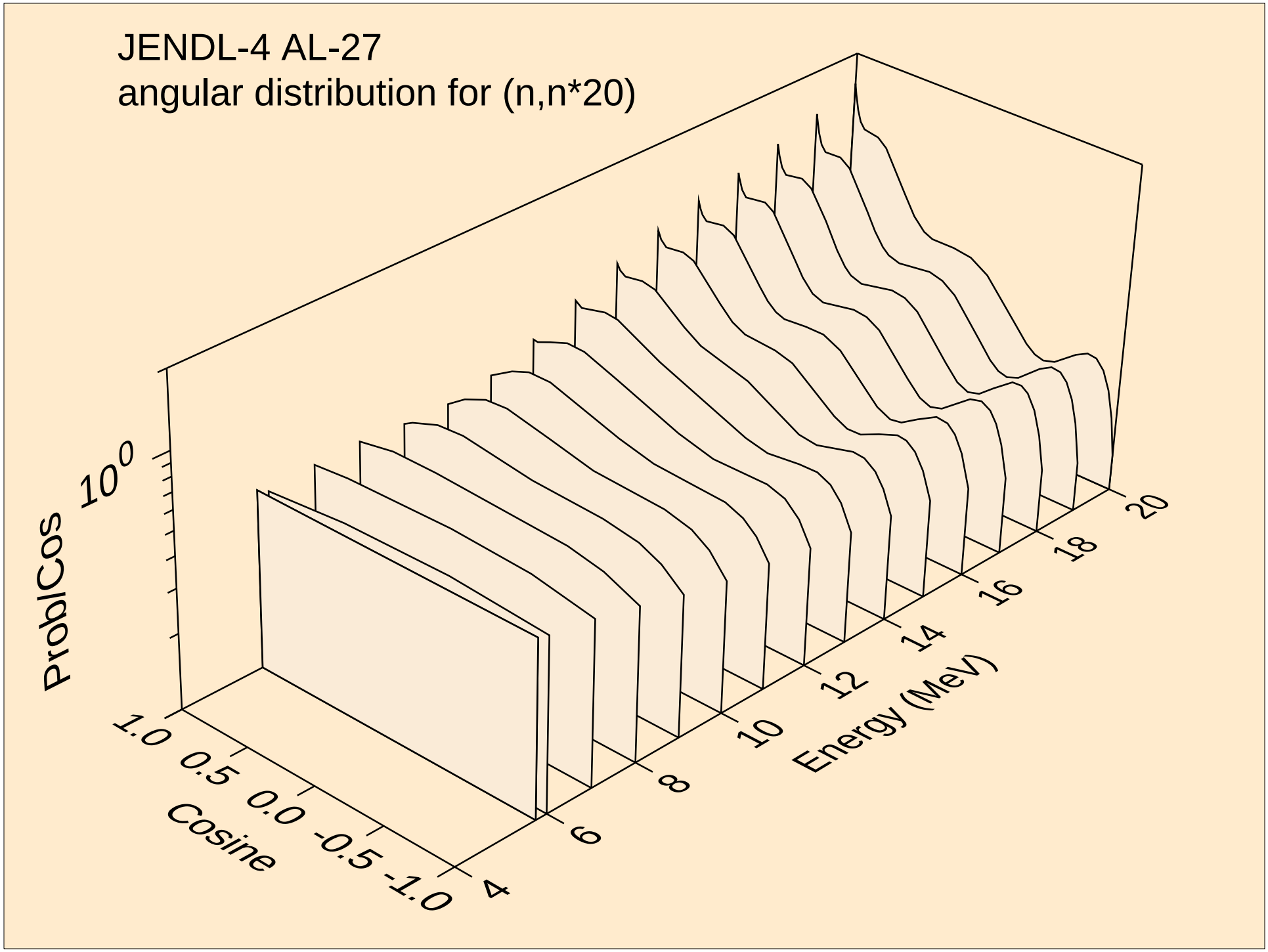

JENDL-4 AL-27
angular distribution for (n,n*15)
10^0
ProbCos
1.0
0.5
0.0
-0.5
-1.0
Cosine
4
6
8
10
12
14
16
18
20
Energy (MeV)

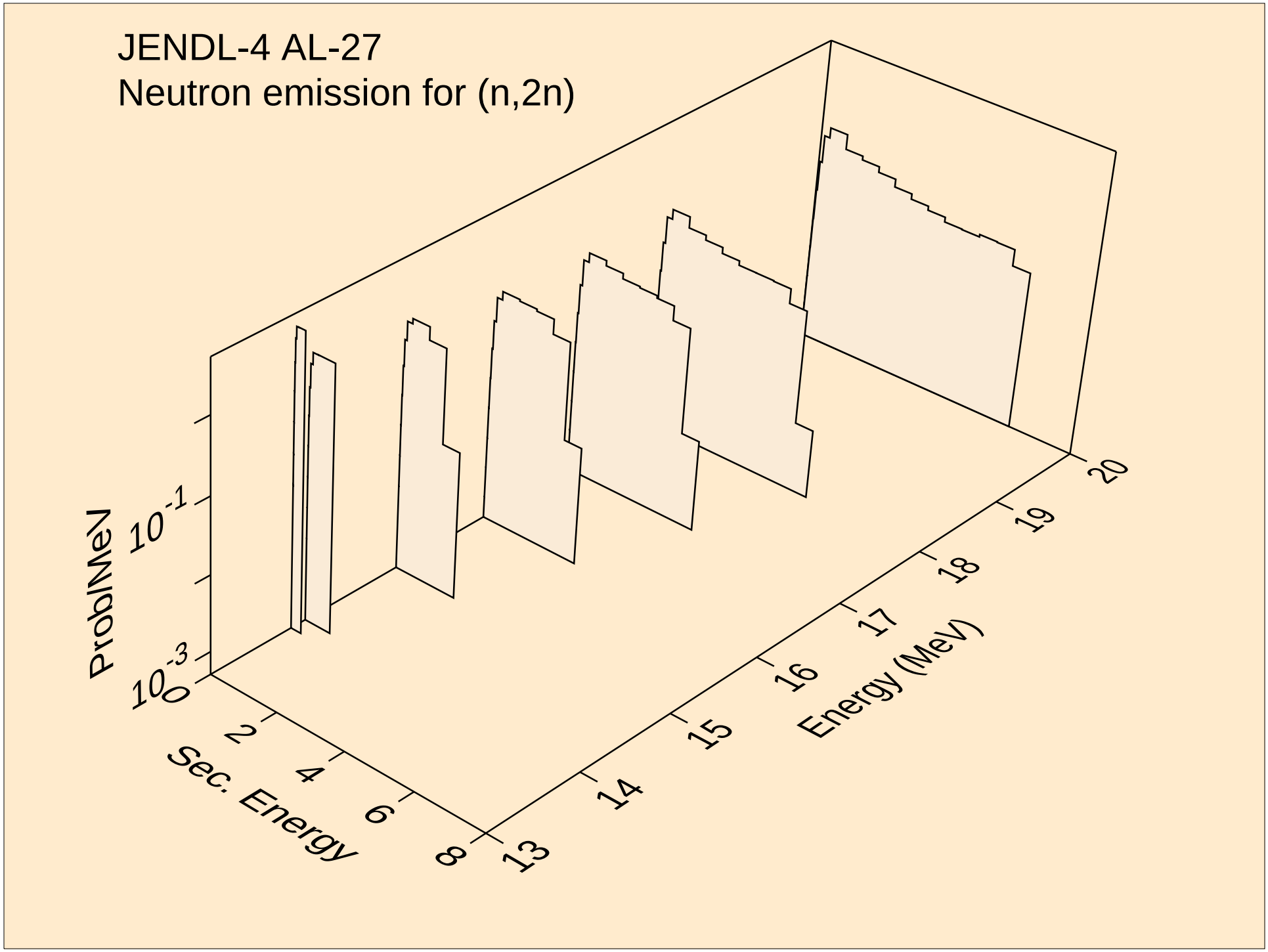

JENDL-4 AL-27
angular distribution for (n,n*16)
ProblCos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
4
6
8
10
12
14
16
18
20
Energy (MeV)

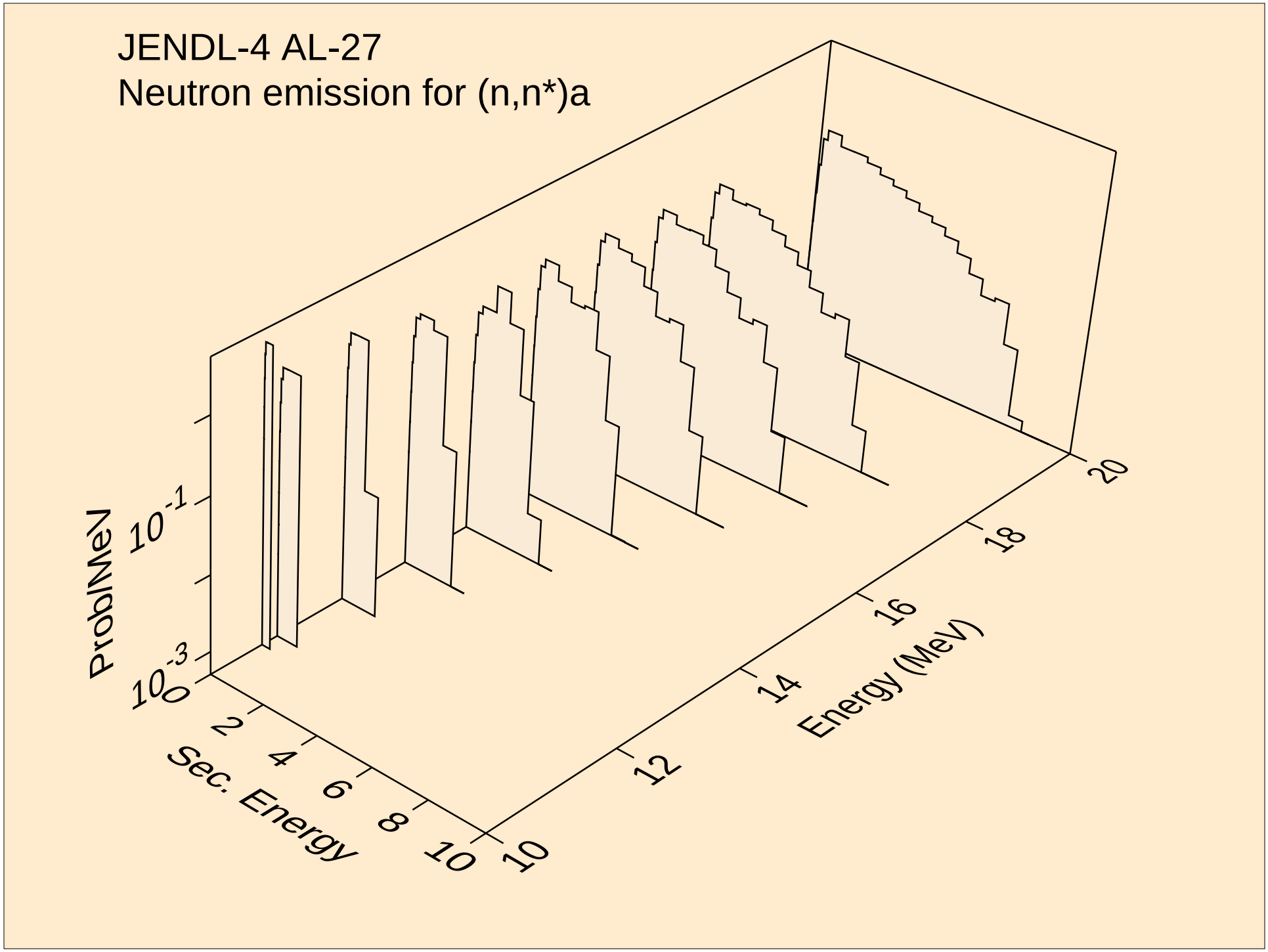

JENDL-4 AL-27
angular distribution for (n,n*17)
ProblCos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
4
6
8
10
12
14
16
18
20
Energy (MeV)

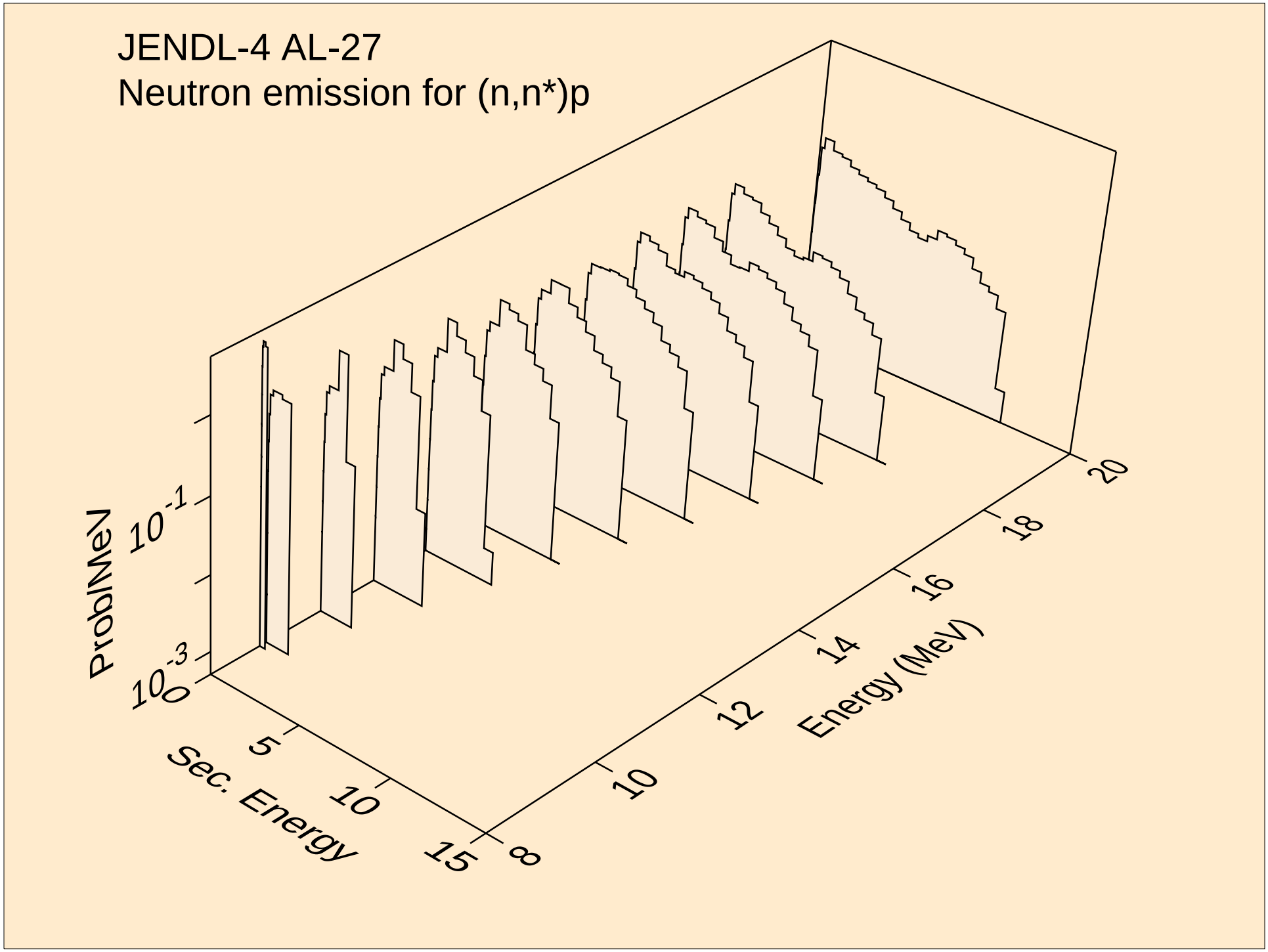

JENDL-4 AL-27
angular distribution for (n,n*18)
ProblCos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
4
6
8
10
12
14
16
18
20
Energy (MeV)

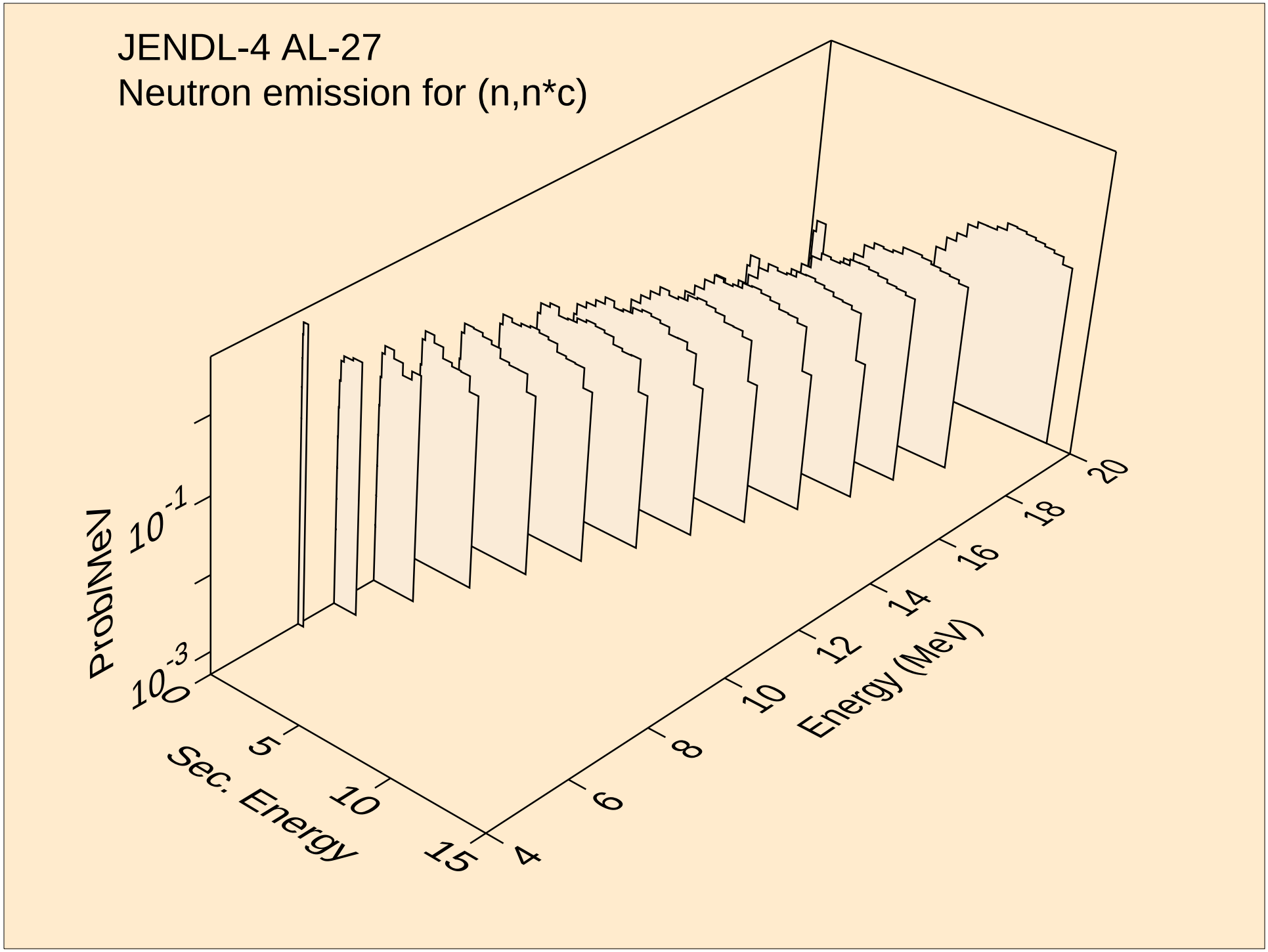

JENDL-4 AL-27
angular distribution for (n,n*19)
ProblCos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
4
6
8
10
12
14
16
18
20
Energy (MeV)

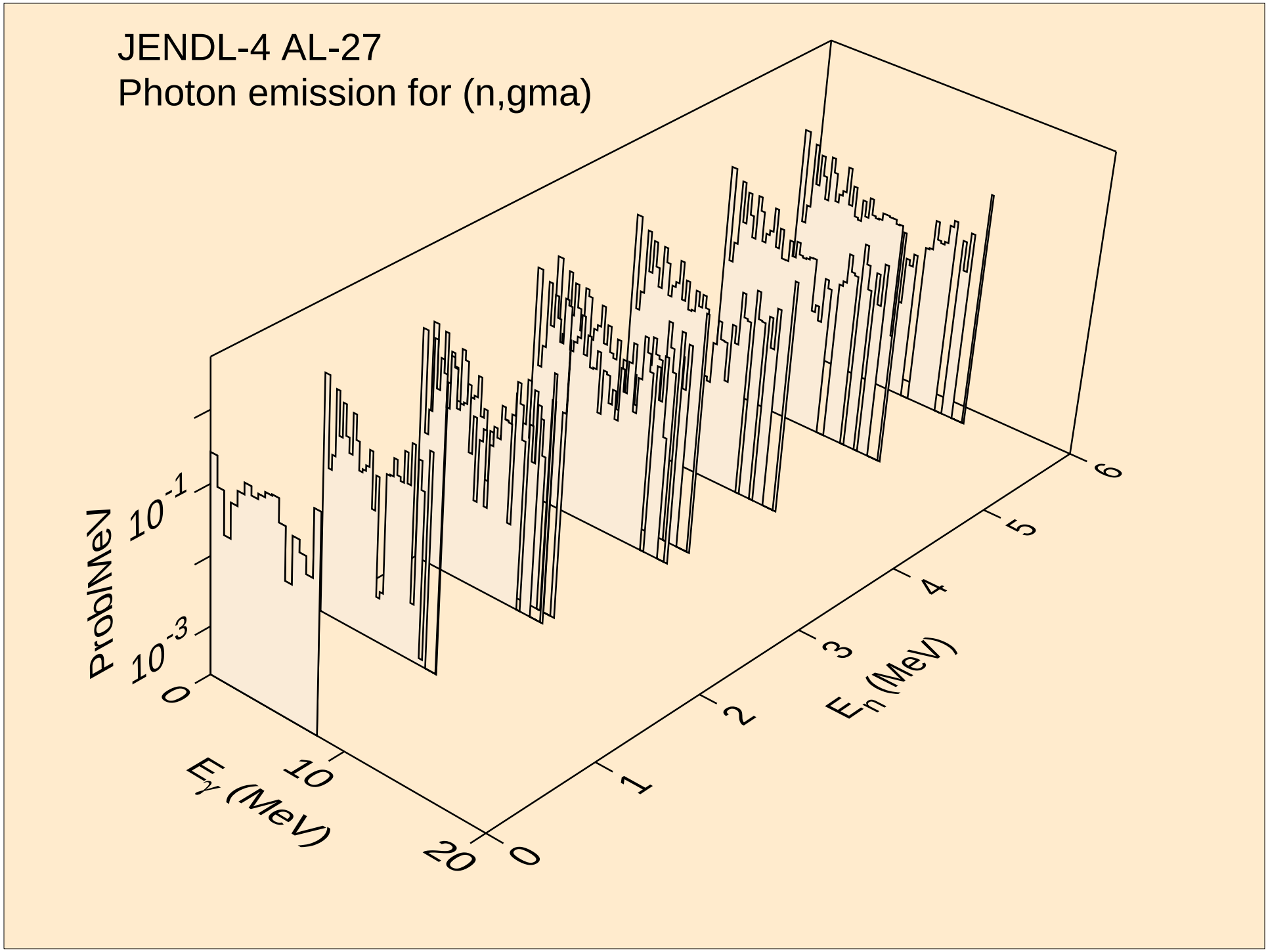

JENDL-4 AL-27
angular distribution for (n,n*20)
ProblCos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
4
6
8
10
12
14
16
18
20
Energy (MeV)


JENDL-4 AL-27
Neutron emission for (n,2n)
Prob/MeV
10^{-1}
10^{-3}
0
2
4
6
8
Sec. Energy
13
14
15
16
17
18
19
20
Energy (MeV)

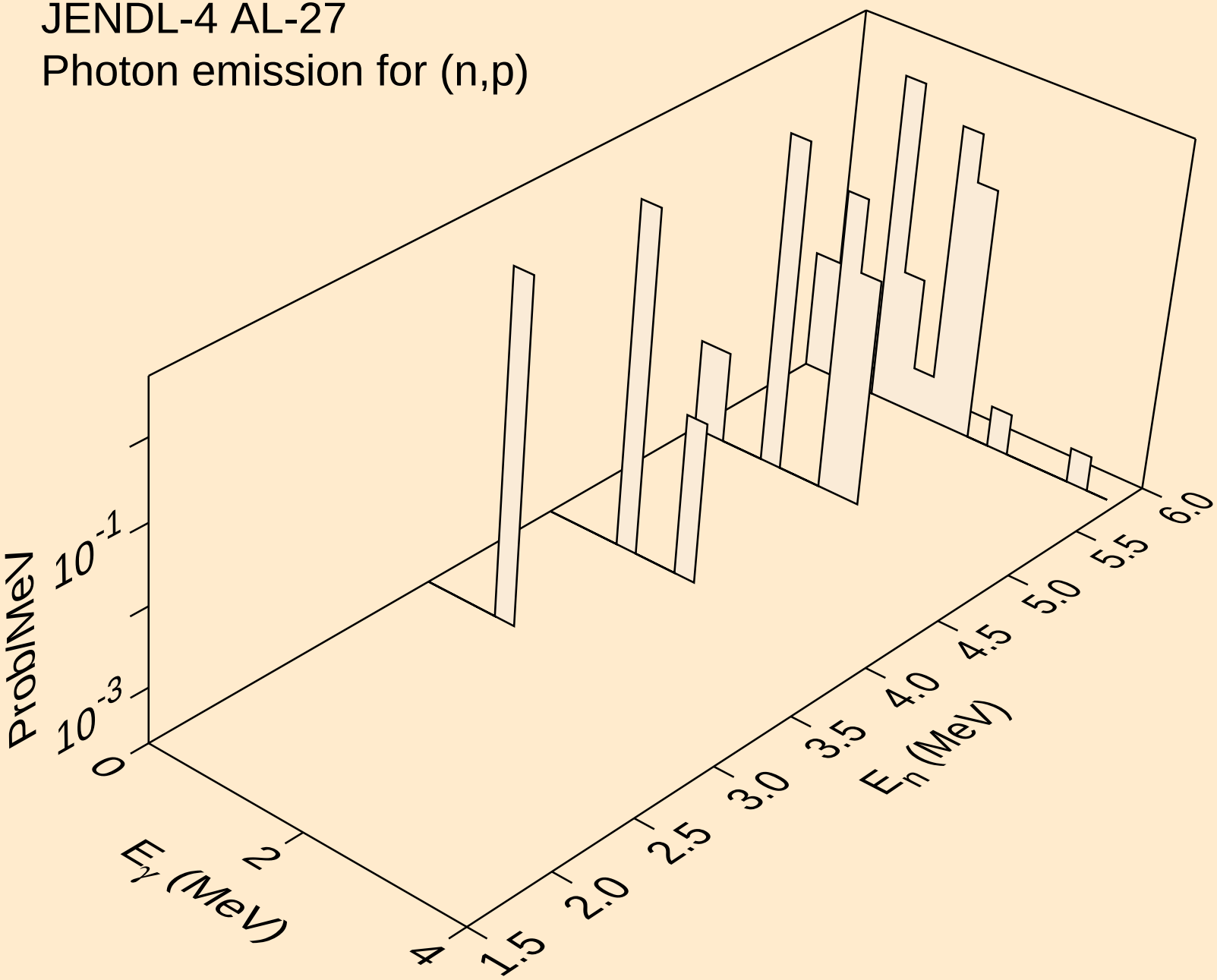

JENDL-4 AL-27
Neutron emission for (n,n*)a
Prob/MeV
10^-1
10^-3
0
2
4
6
8
10
Sec. Energy
10
12
14
16
18
20
Energy (MeV)


JENDL-4 AL-27
Neutron emission for (n,n*)p
Prob/MeV
10^-1
10^-3
0
5
10
15
Sec. Energy
8
10
12
14
16
18
20
Energy (MeV)

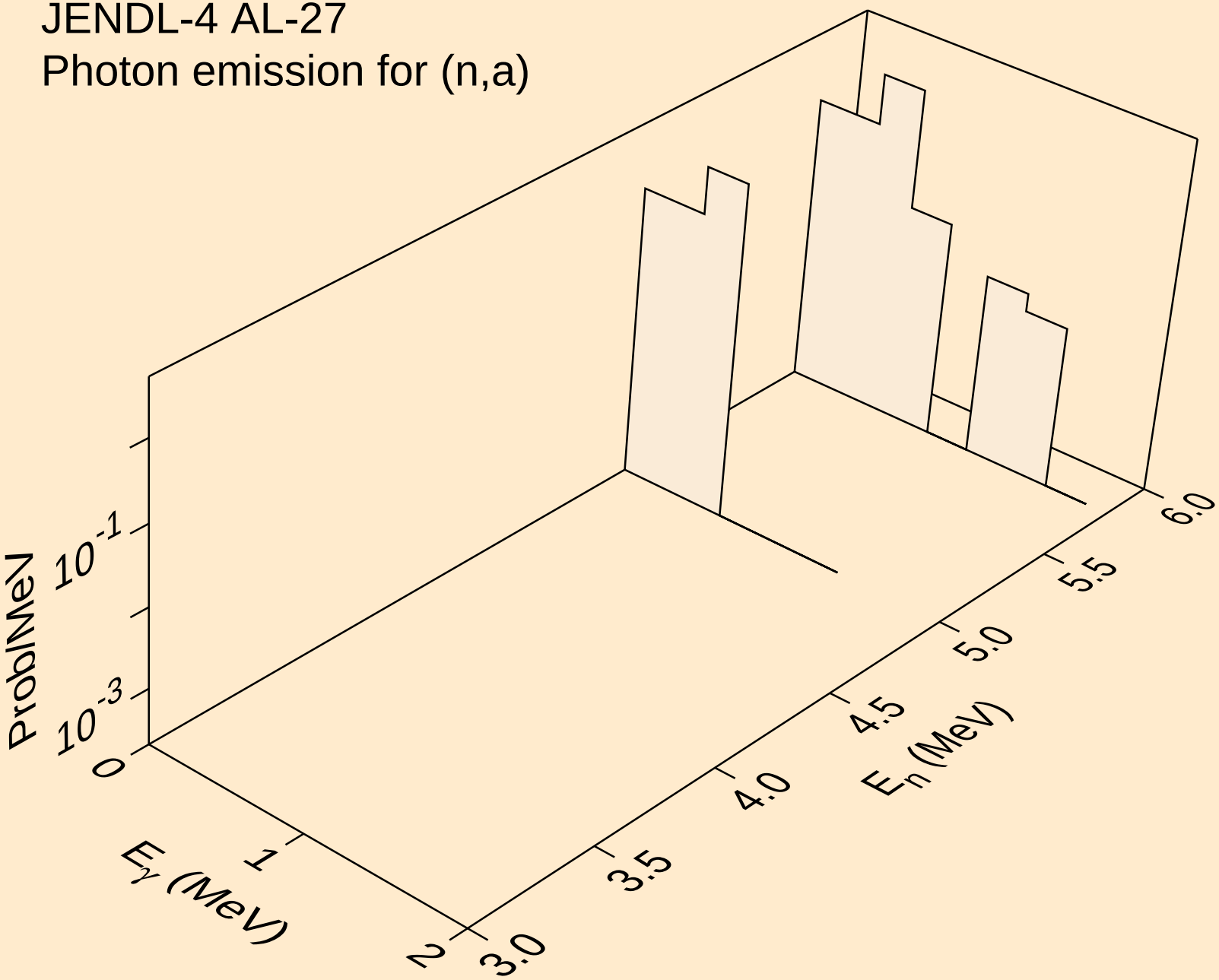

JENDL-4 AL-27
Neutron emission for (n,n*c)
Prob/MeV
10^{-1}
10^{-3}
0
5
10
15
Sec. Energy
4
6
8
10
12
14
16
18
20
Energy (MeV)


JENDL-4 AL-27
Photon emission for (n,gma)
Prob/MeV
10^{-1}
10^{-3}
0
10
20
E_γ (MeV)
0
1
2
3
4
5
6
E_n (MeV)

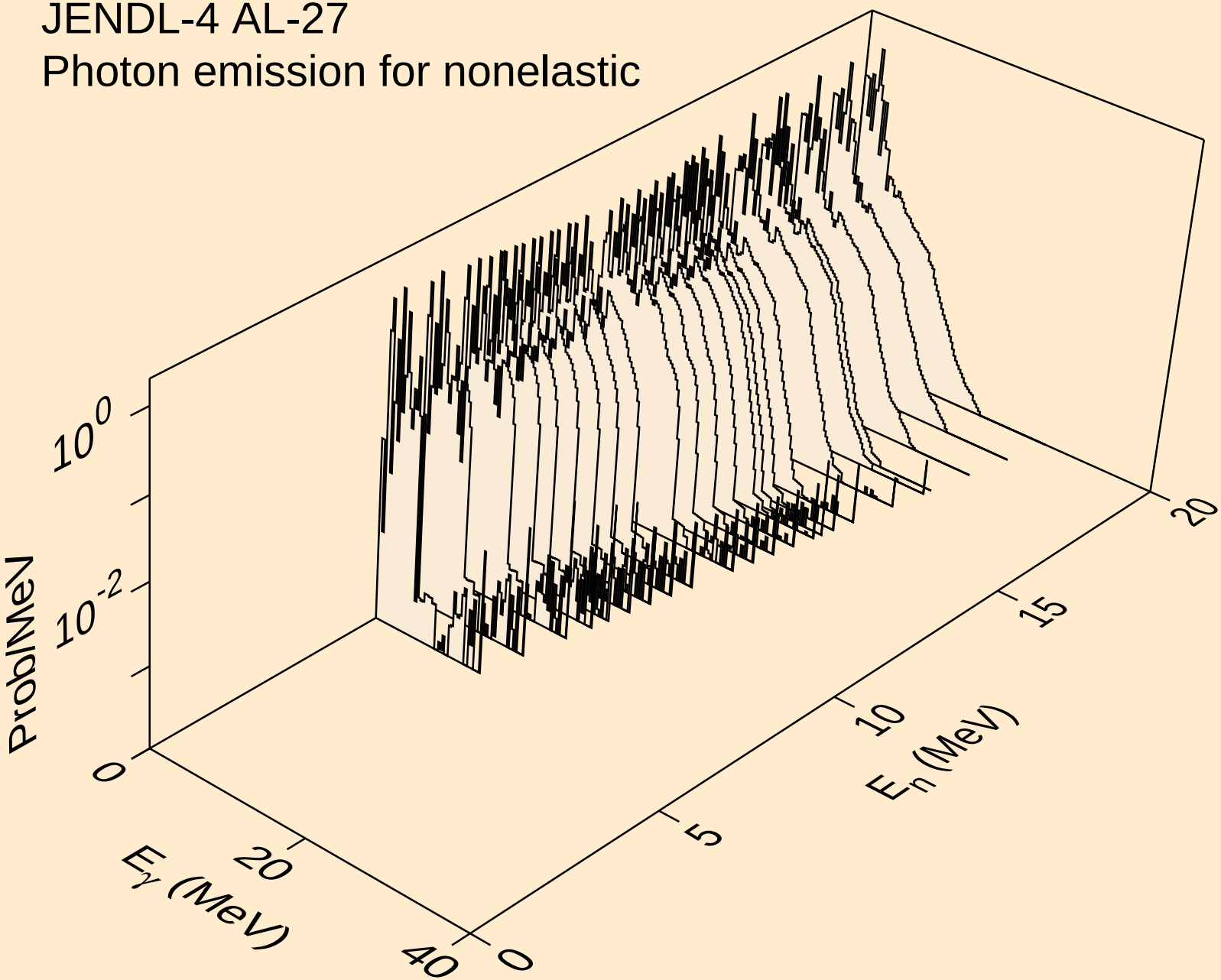
JENDL-4 AL-27
Photon emission for (n,p)

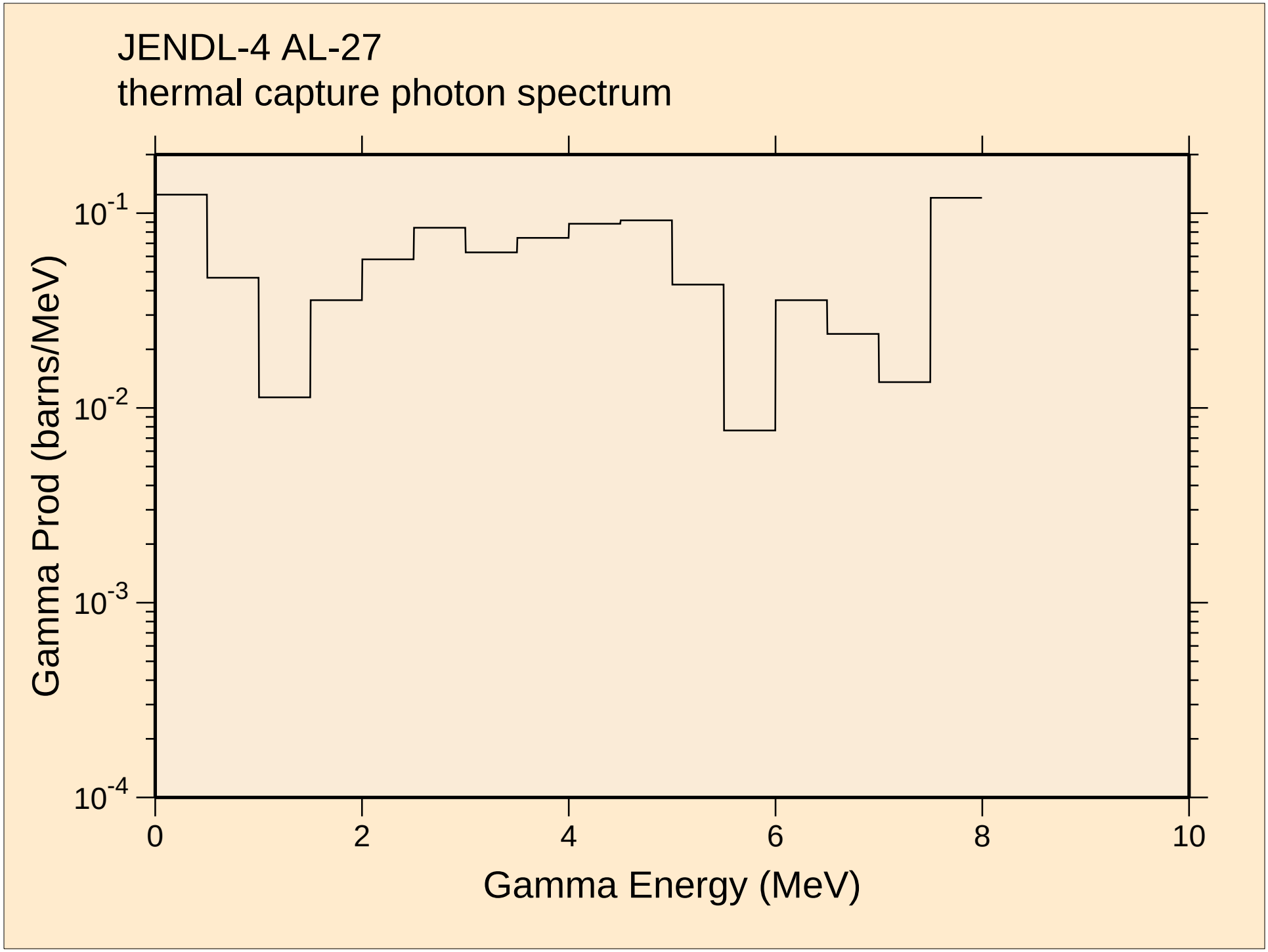


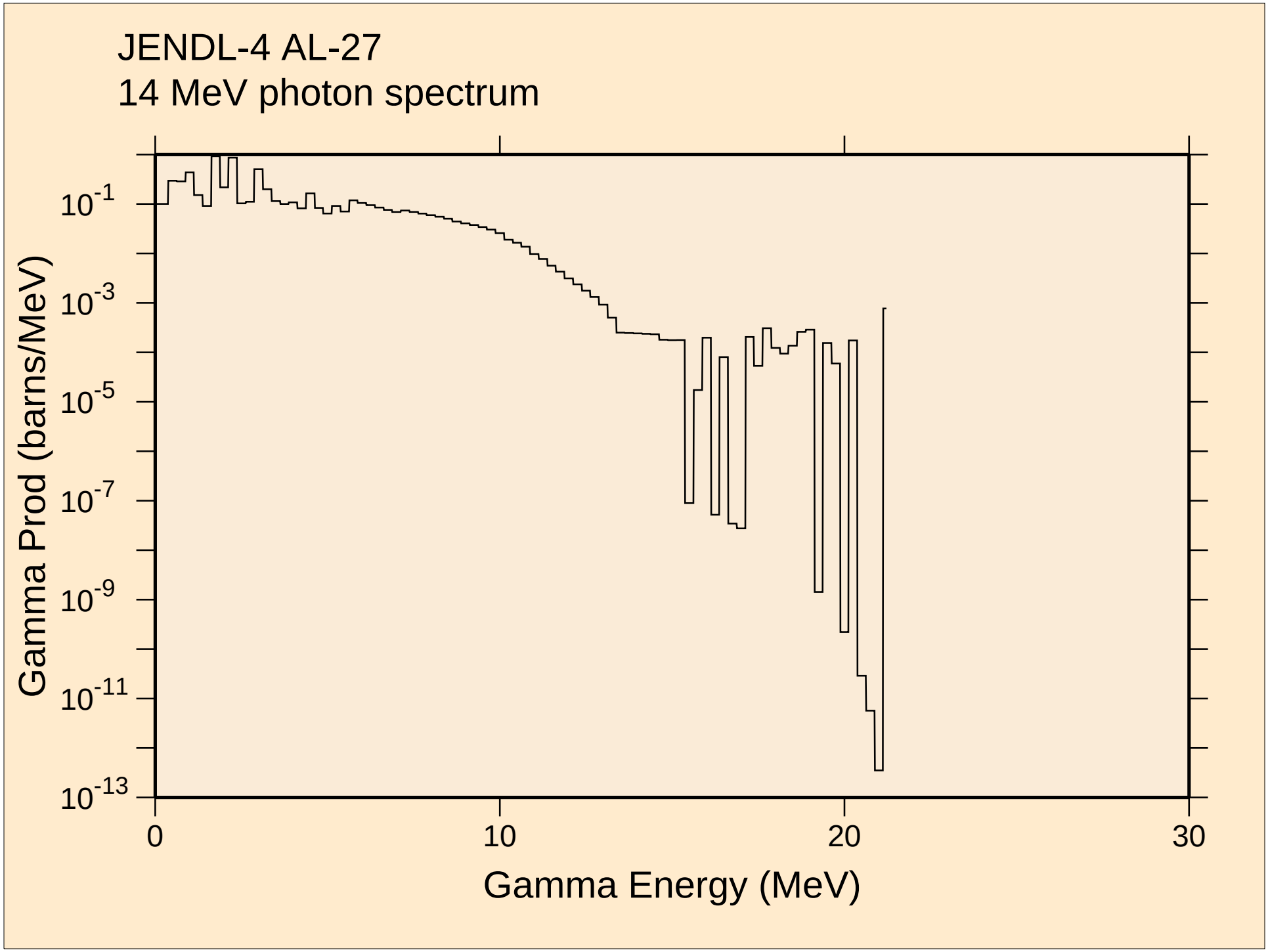
JENDL-4 AL-27
Photon emission for (n,a)

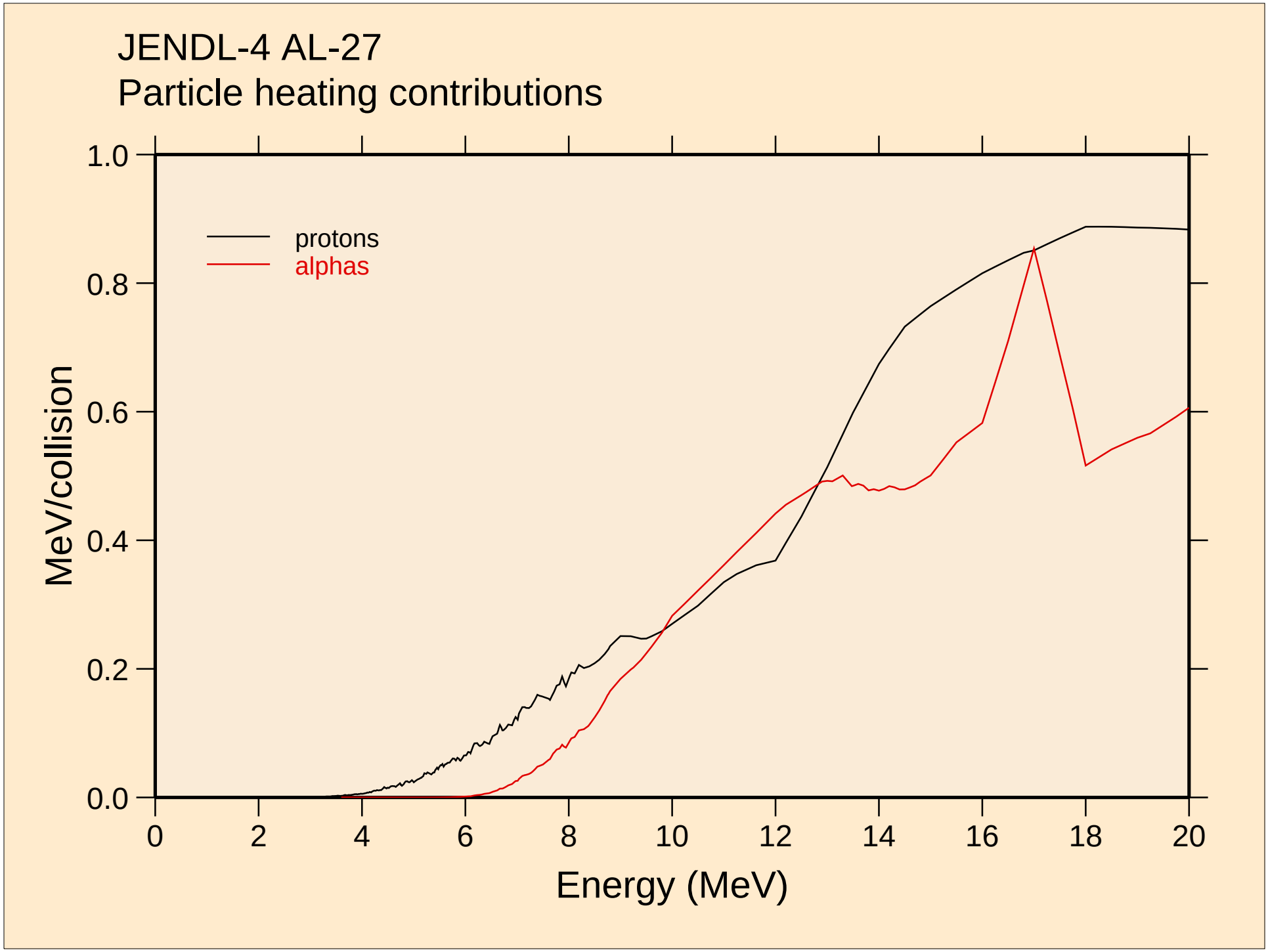


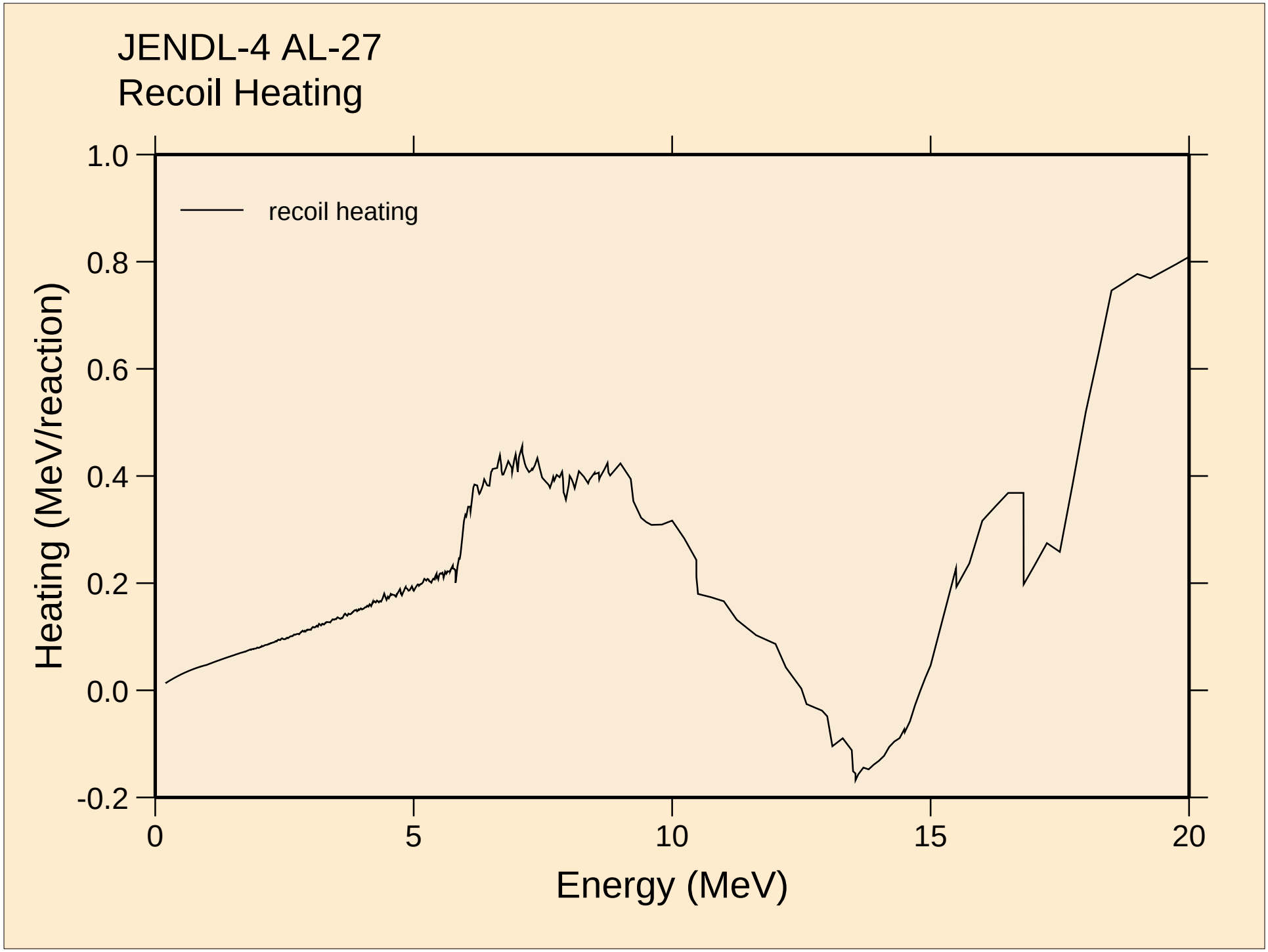
JENDL-4 AL-27
Photon emission for nonelastic

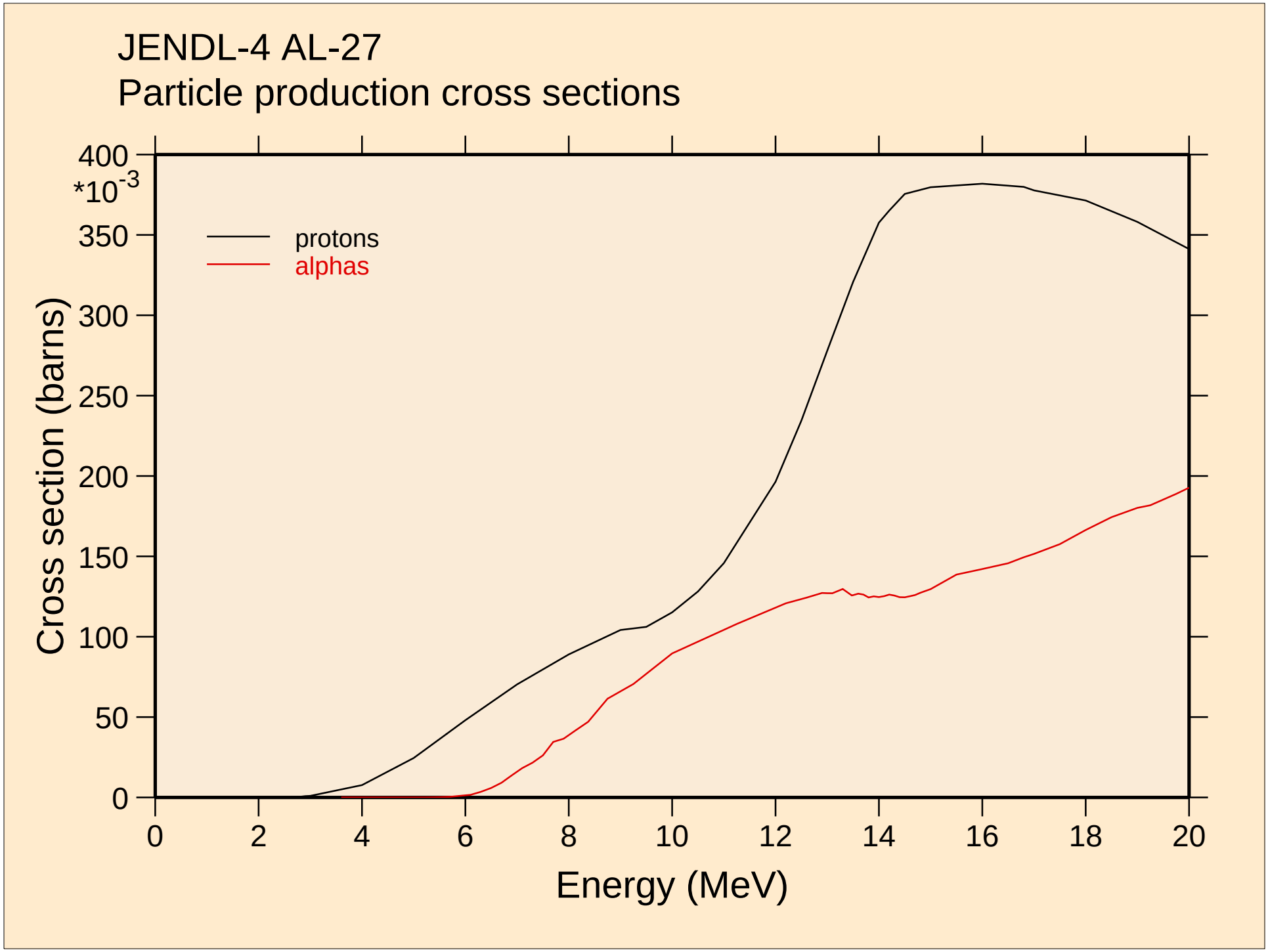


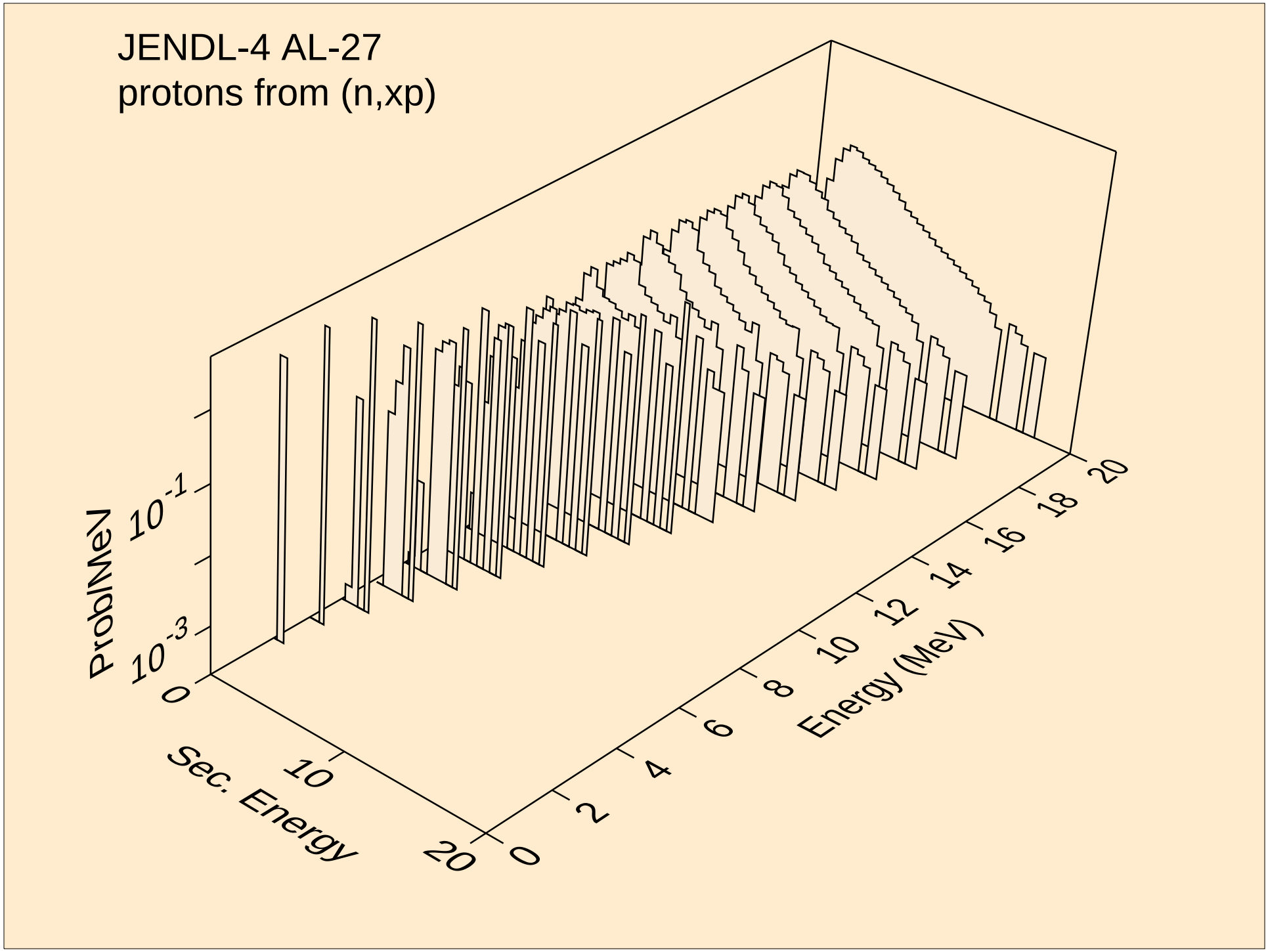

JENDL-4 AL-27
thermal capture photon spectrum
Gamma Prod (barns/MeV)
10-1
10-2
10-3
10-4
0
2
4
6
8
10
Gamma Energy (MeV)

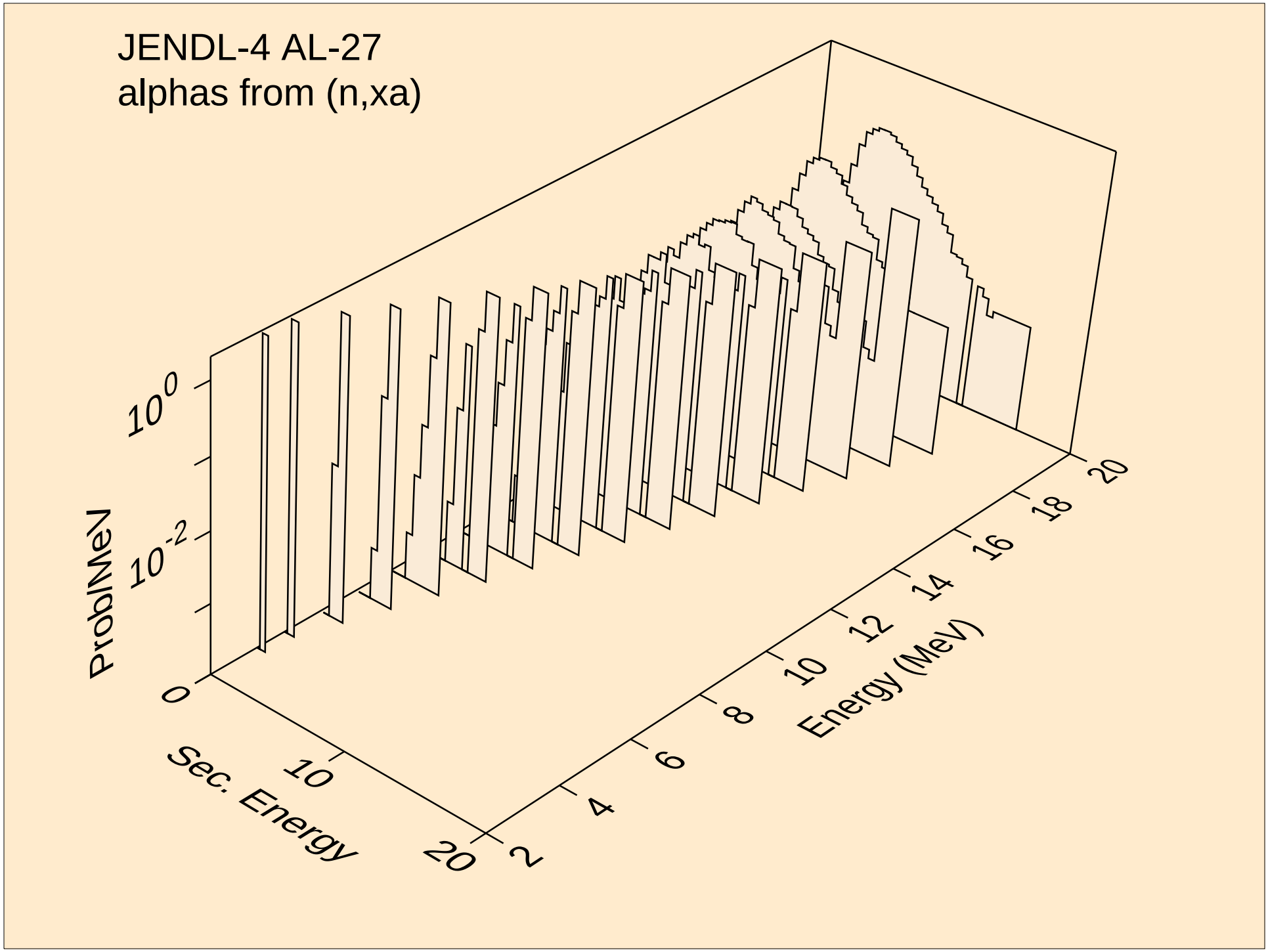

JENDL-4 AL-27
14 MeV photon spectrum
Gamma Prod (barns/MeV)
10-1
10-3
10-5
10-7
10-9
10-11
10-13
0
10
20
30
Gamma Energy (MeV)


JENDL-4 AL-27
Particle heating contributions
protons
alphas
MeV/collision
Energy (MeV)
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 AL-27
Recoil Heating
recoil heating
Heating (MeV/reaction)
1.0
0.8
0.6
0.4
0.2
0.0
-0.2
0
5
10
15
20
Energy (MeV)


JENDL-4 AL-27
Particle production cross sections
protons
alphas
Cross section (barns)
*10^-3
400
350
300
250
200
150
100
50
0
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)


JENDL-4 AL-27
protons from (n,xp)
Prob/MeV
10^-1
10^-3
0
Sec. Energy
10
20
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)


JENDL-4 AL-27
alphas from (n,xa)
Prob/MeV
10^0
10^{-2}
0
Sec. Energy
10
20
2
4
6
8
10
12
14
16
18
20
Energy (MeV)