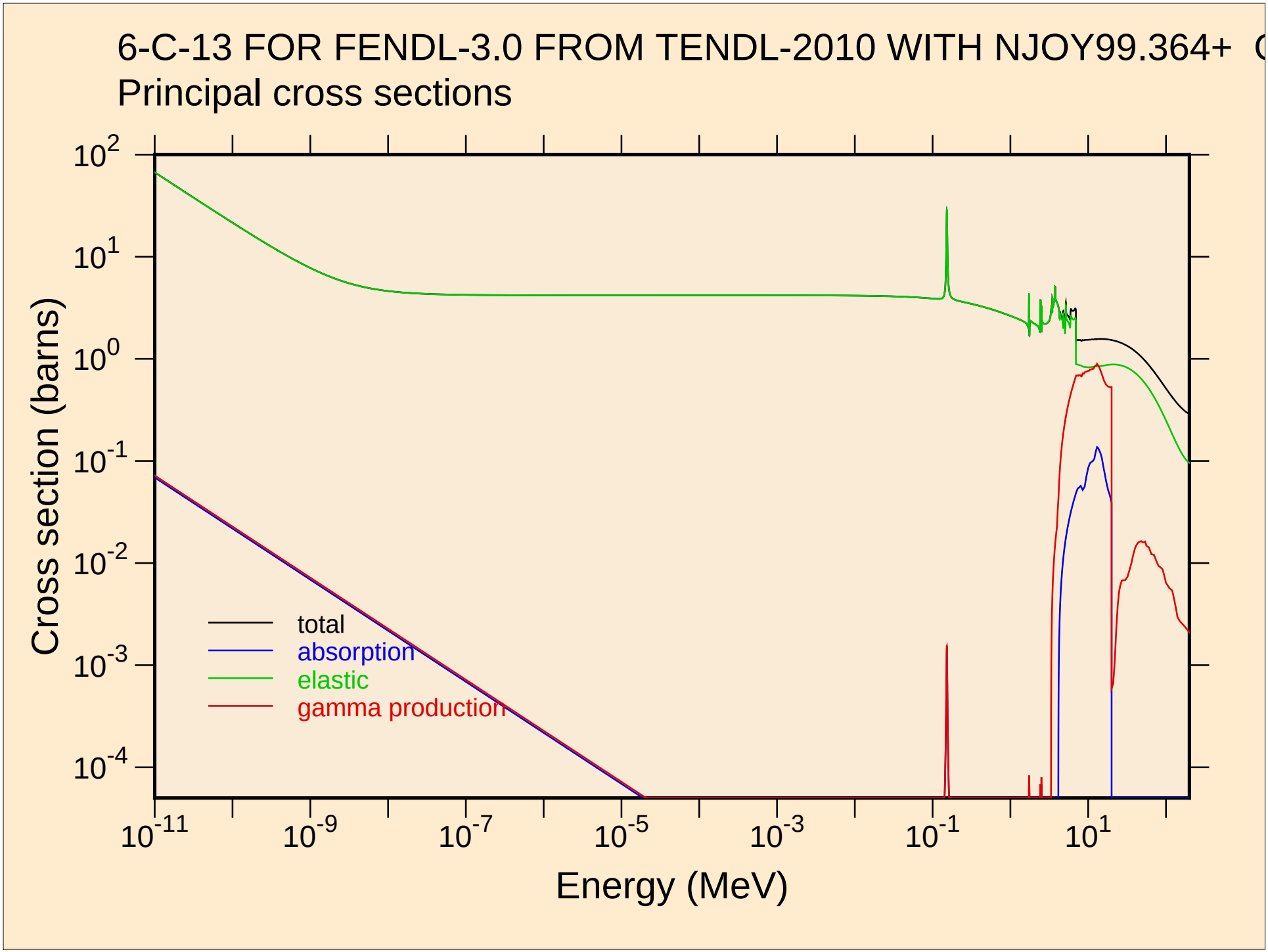
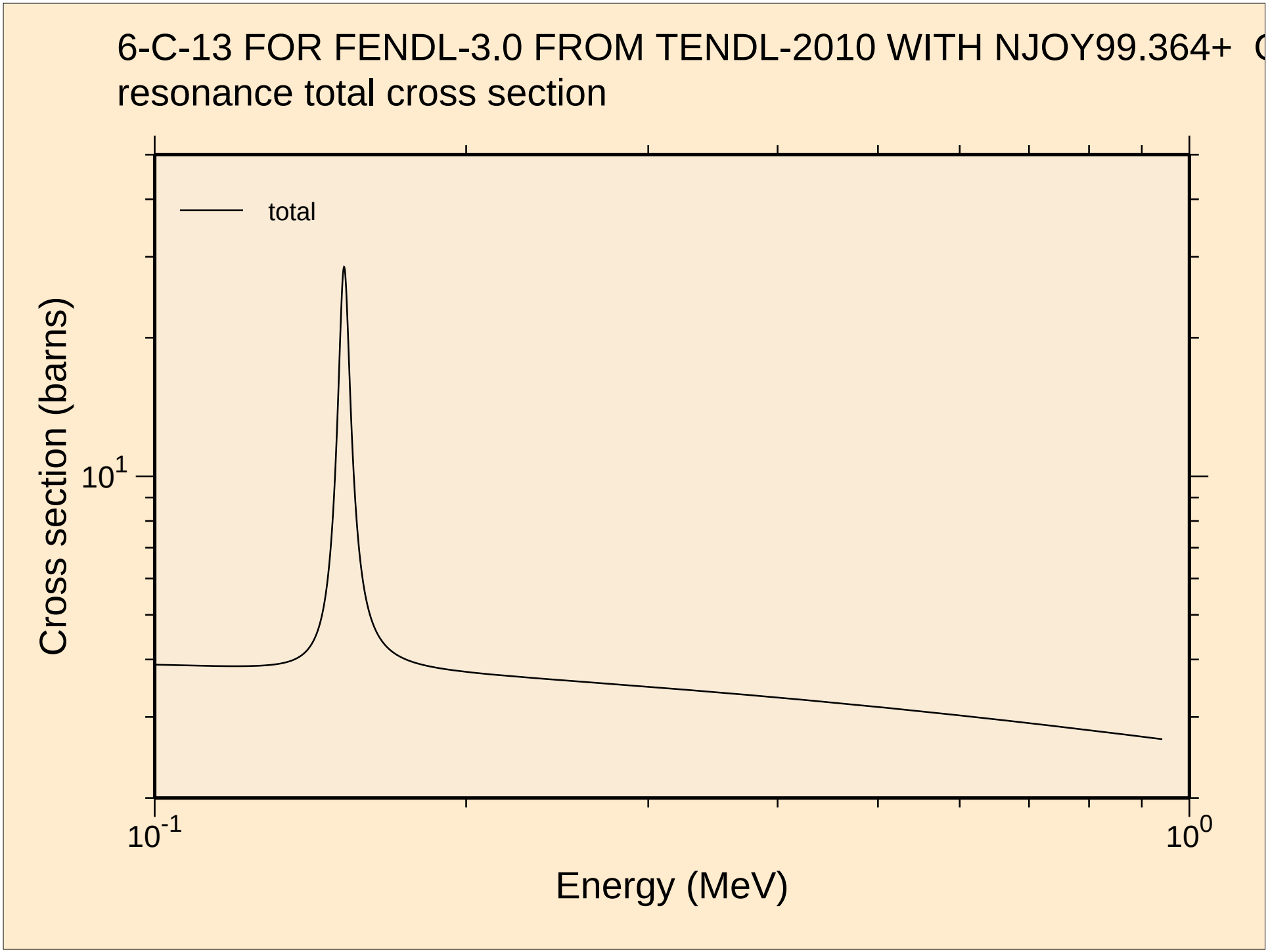
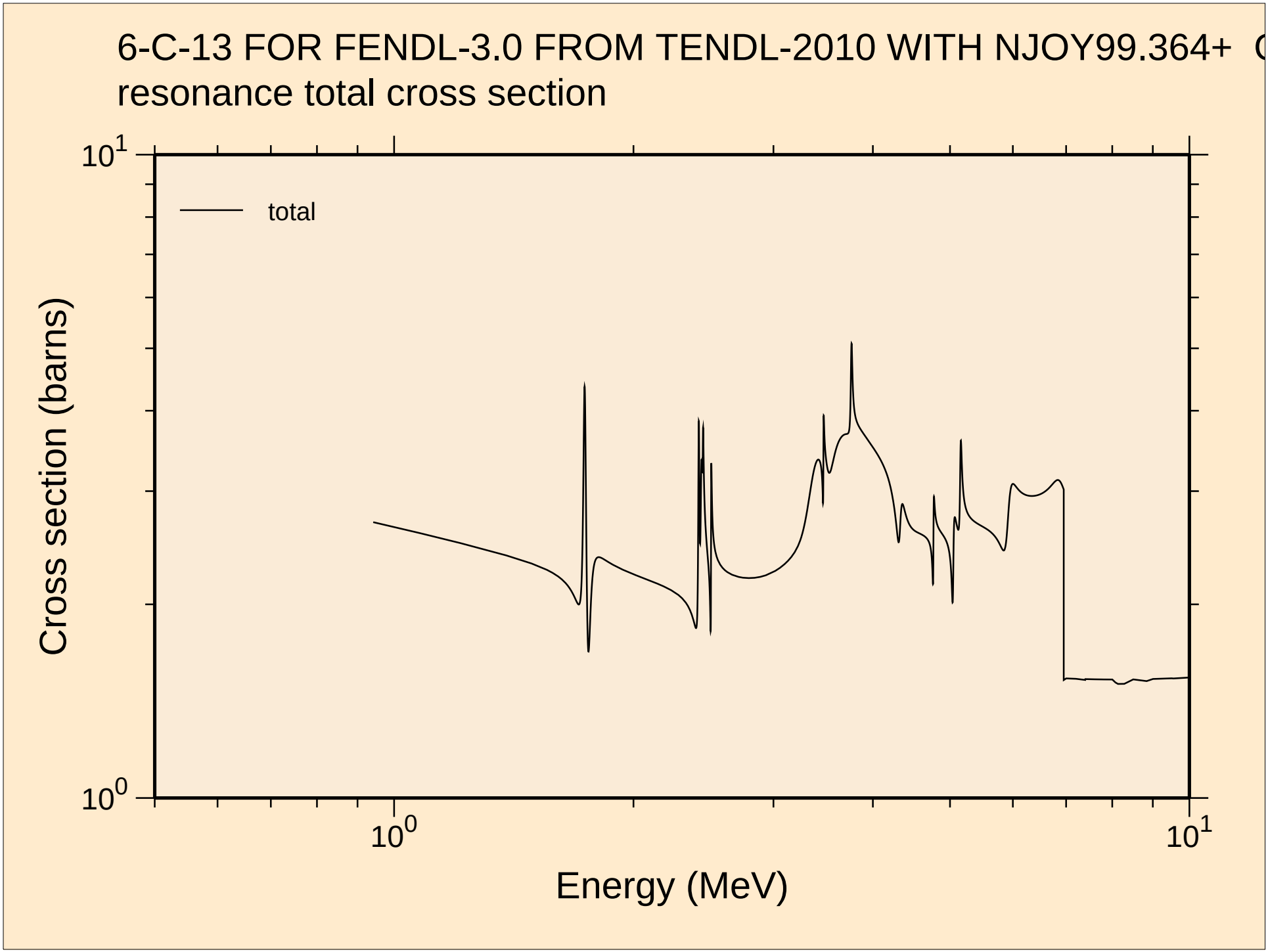
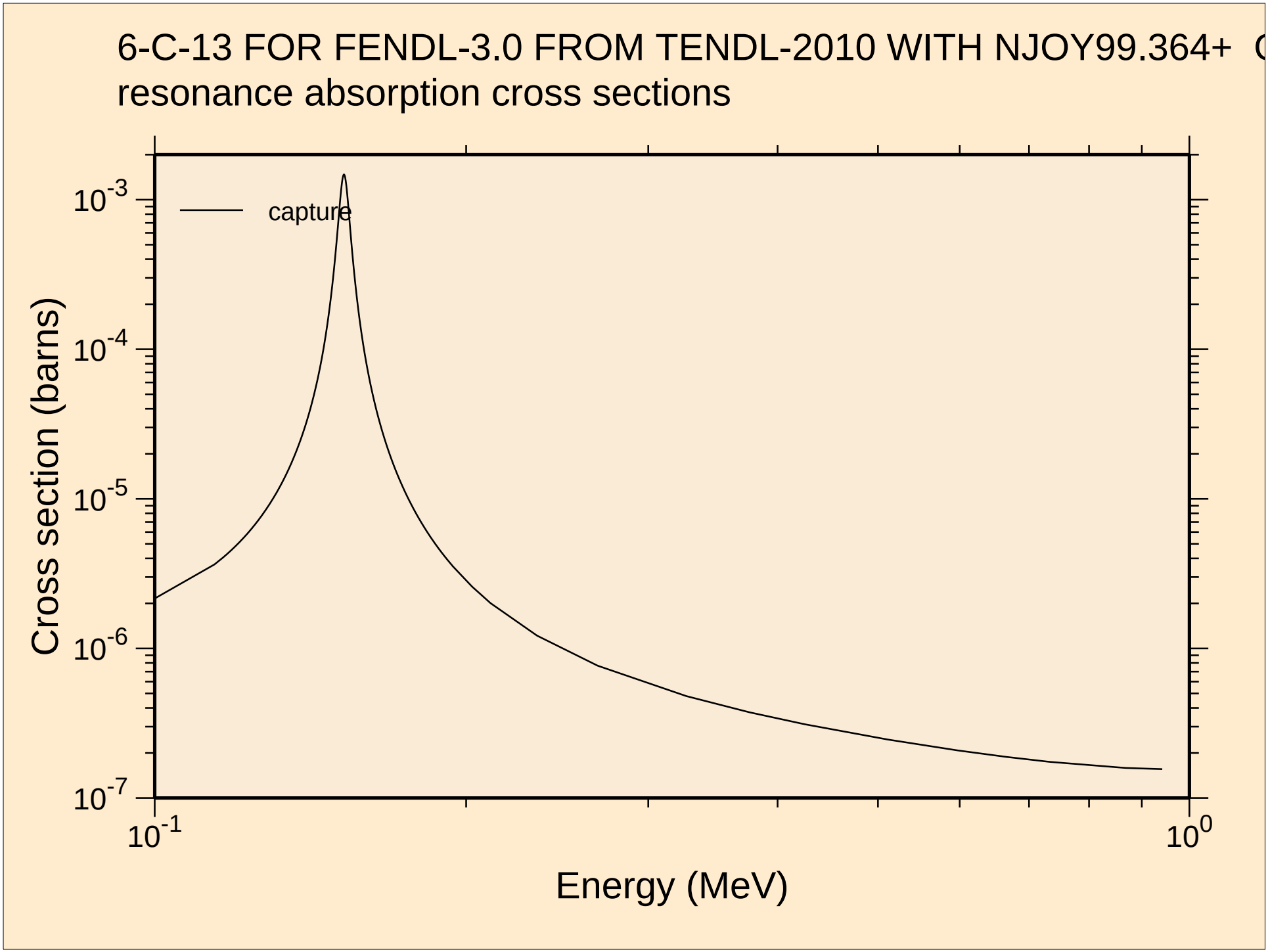
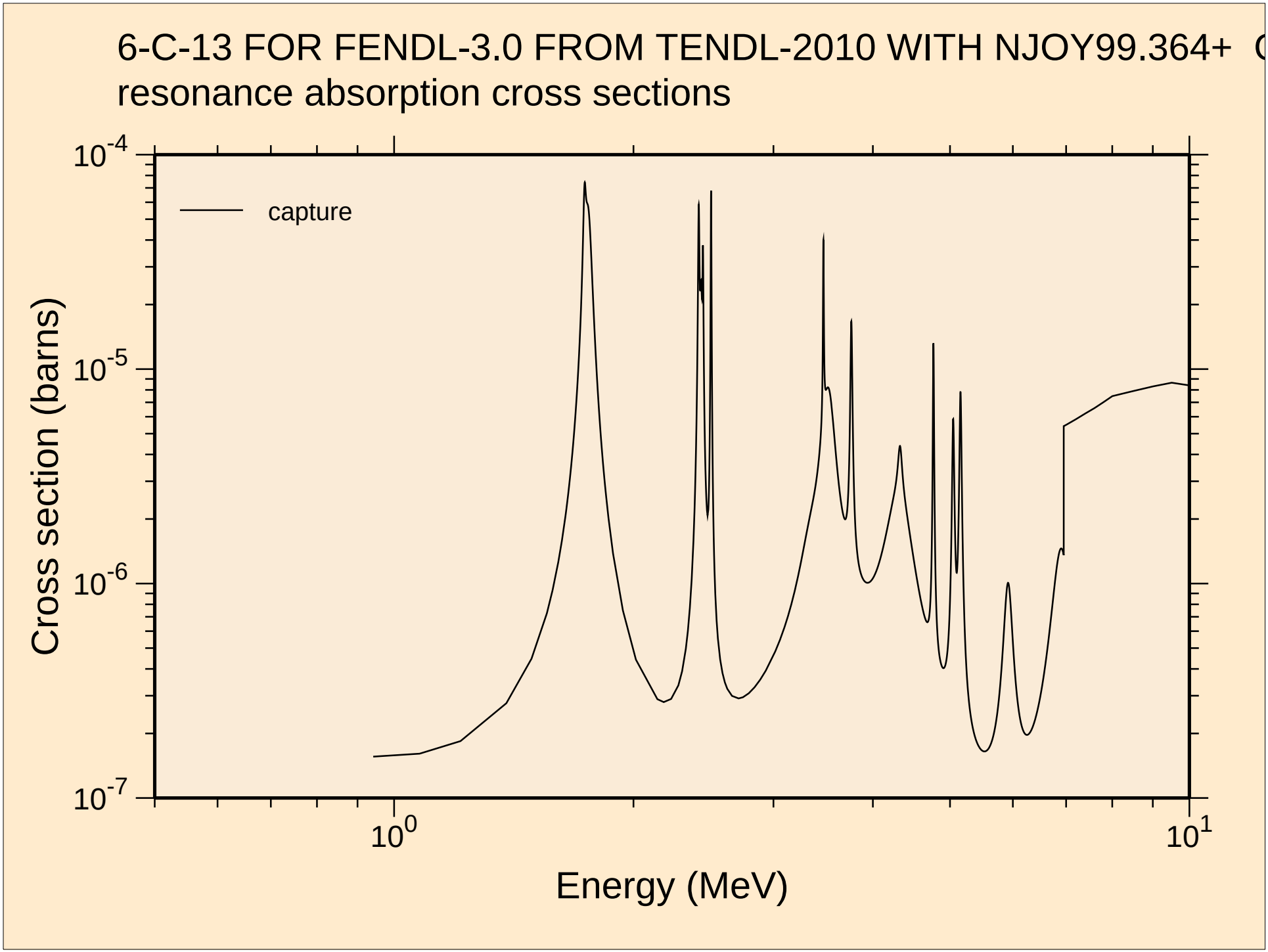
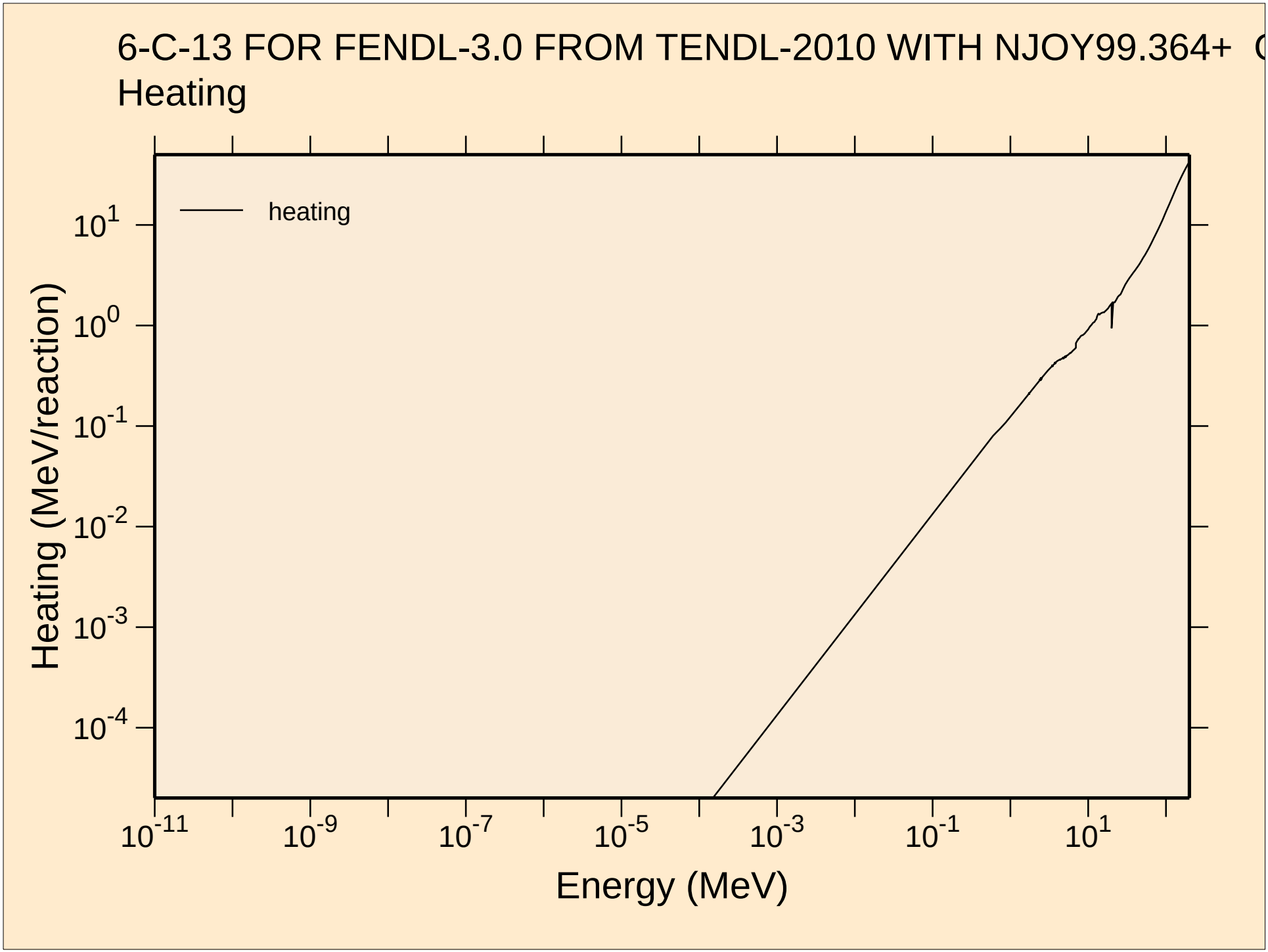

6-C-13 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+ C
Principal cross sections
Cross section (barns)
Energy (MeV)
total
absorption
elastic
gamma production

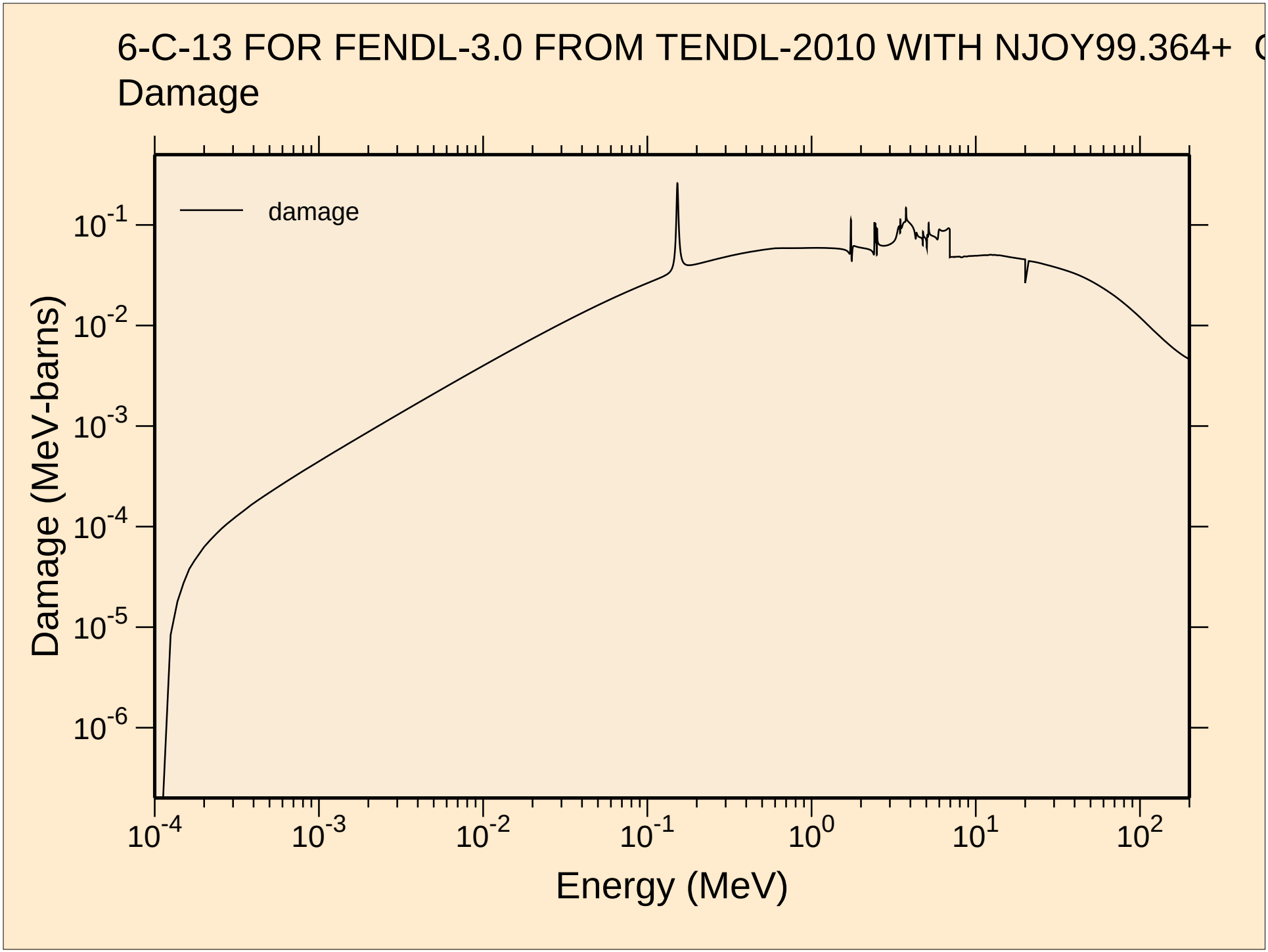

6-C-13 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+ C
resonance total cross section
total
Cross section (barns)
10^1
10^-1
10^0
Energy (MeV)

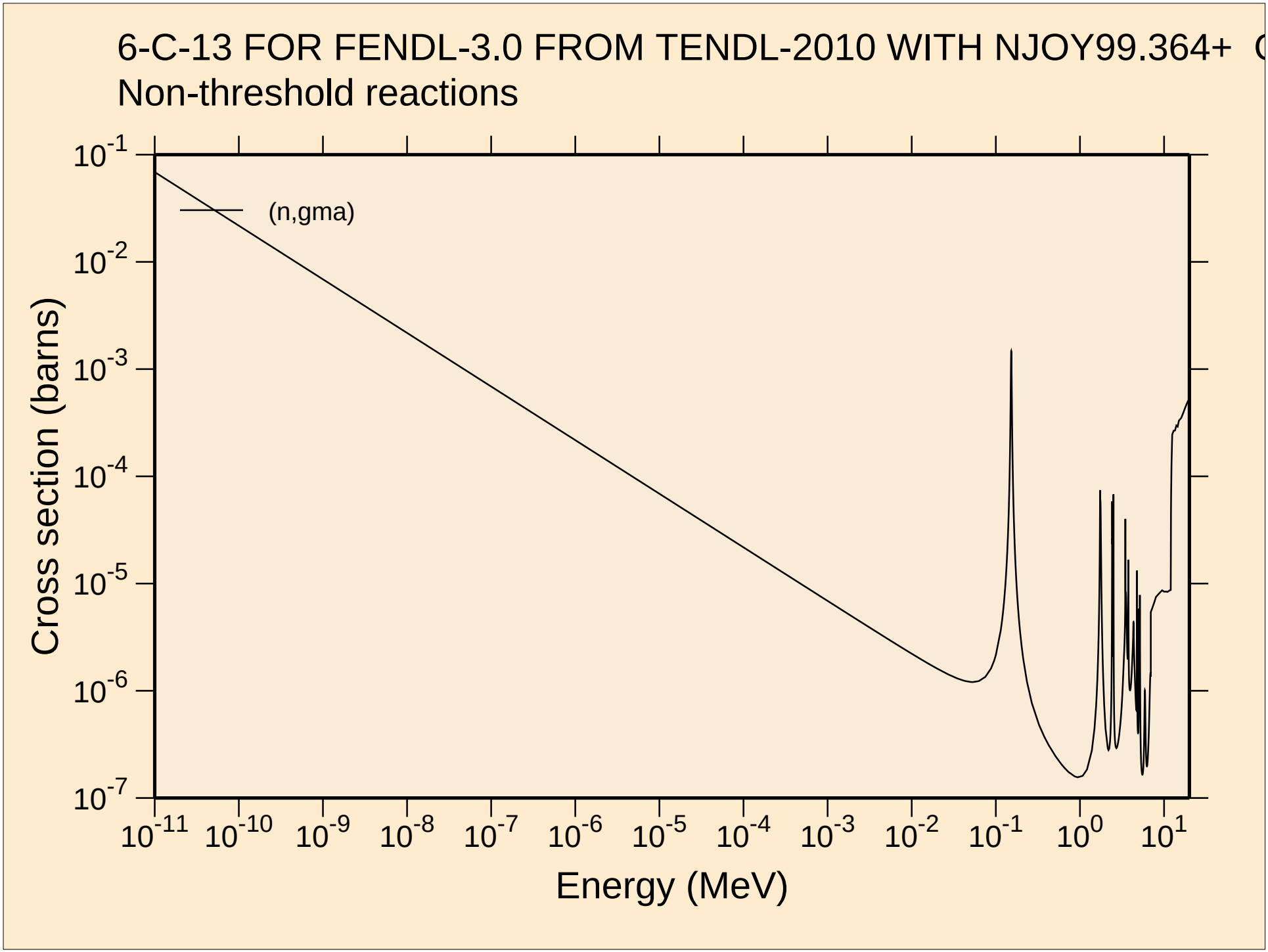

6-C-13 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+ C
resonance total cross section
total
Cross section (barns)
Energy (MeV)
10^1
10^0
10^0
10^1

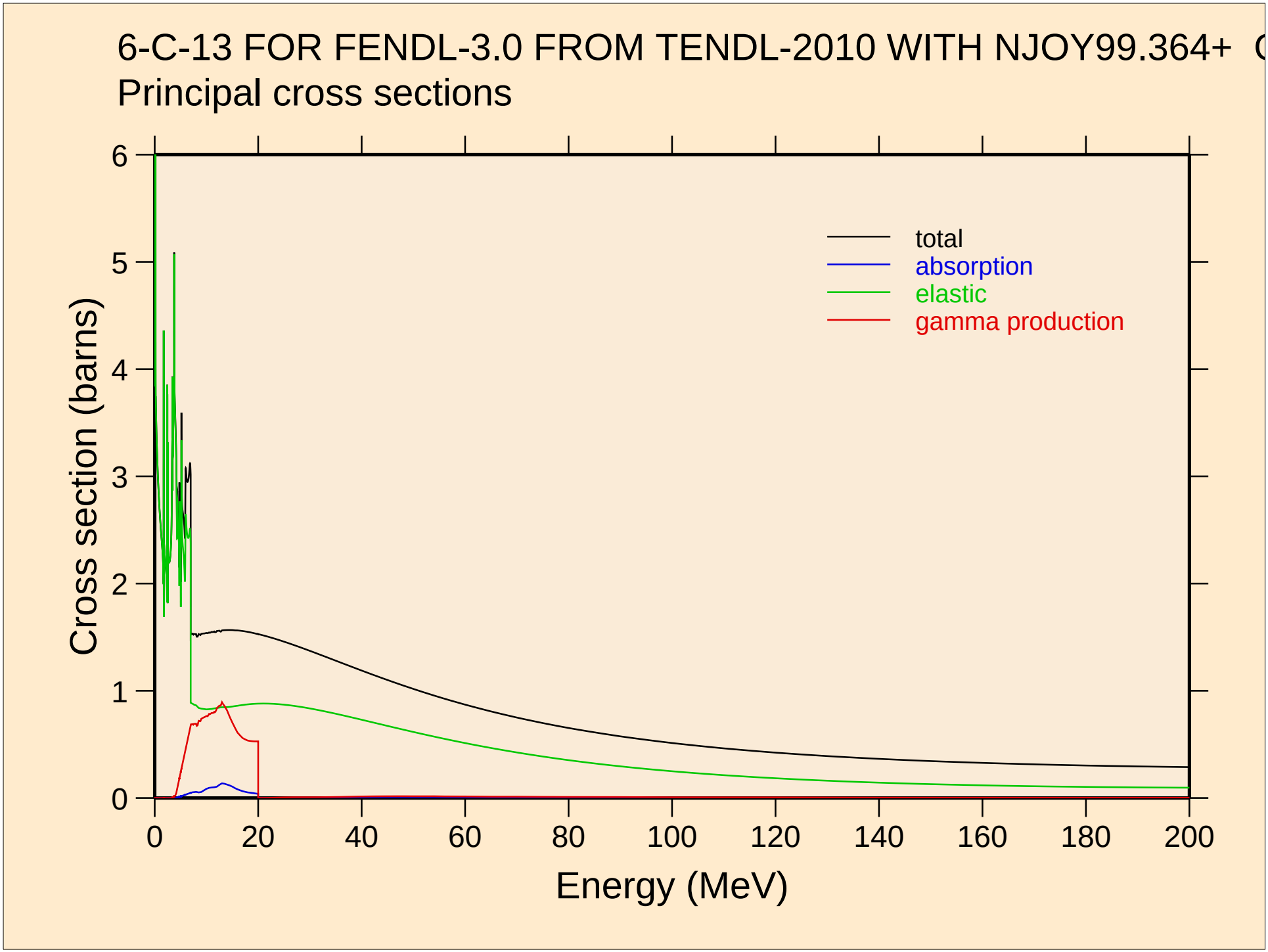

6-C-13 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+ C
resonance absorption cross sections
capture
Cross section (barns)
10-3
10-4
10-5
10-6
10-7
10-1
100
Energy (MeV)

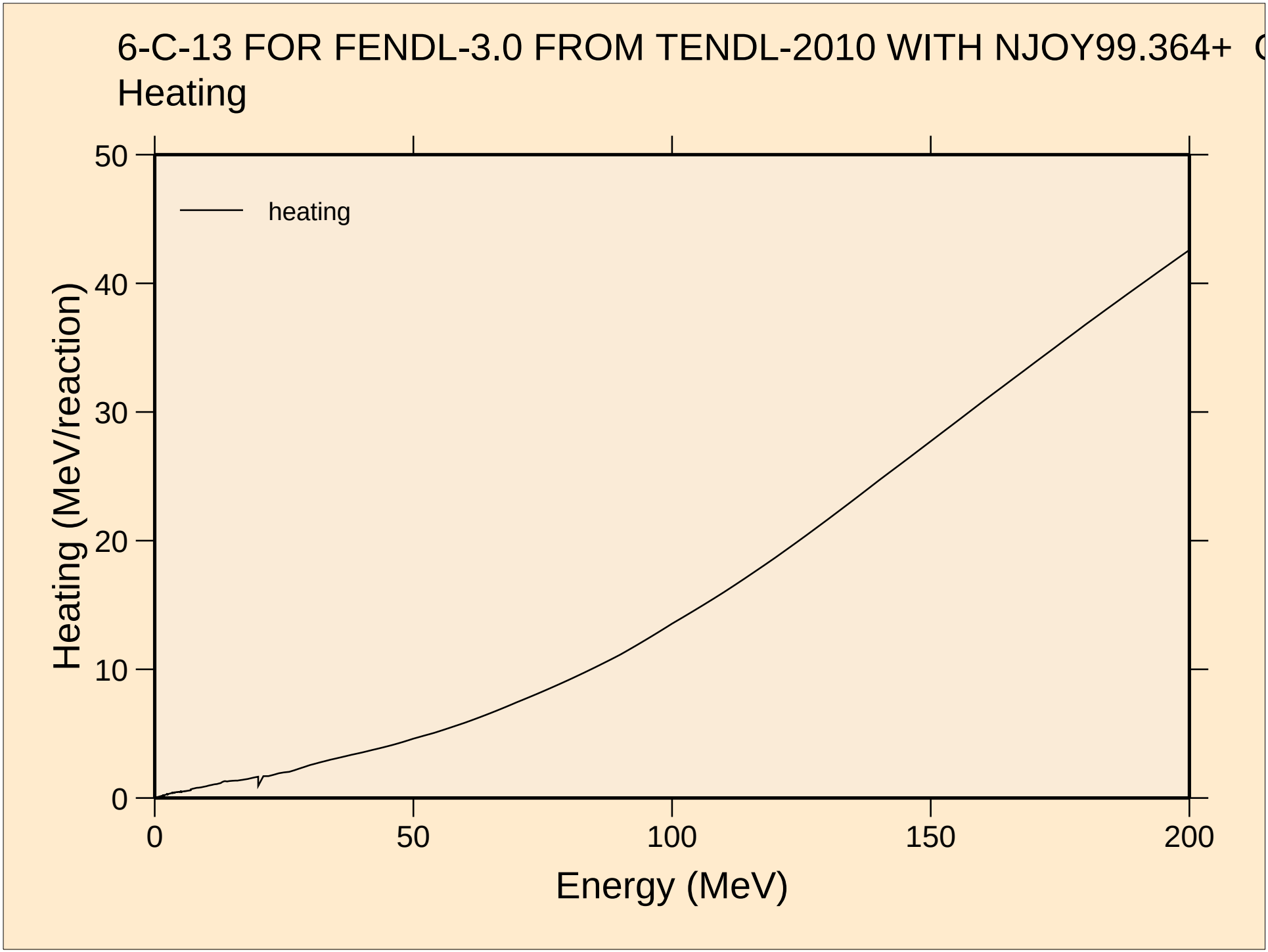

6-C-13 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+ C
resonance absorption cross sections
capture
Cross section (barns)
10-4
10-5
10-6
10-7
100
101
Energy (MeV)

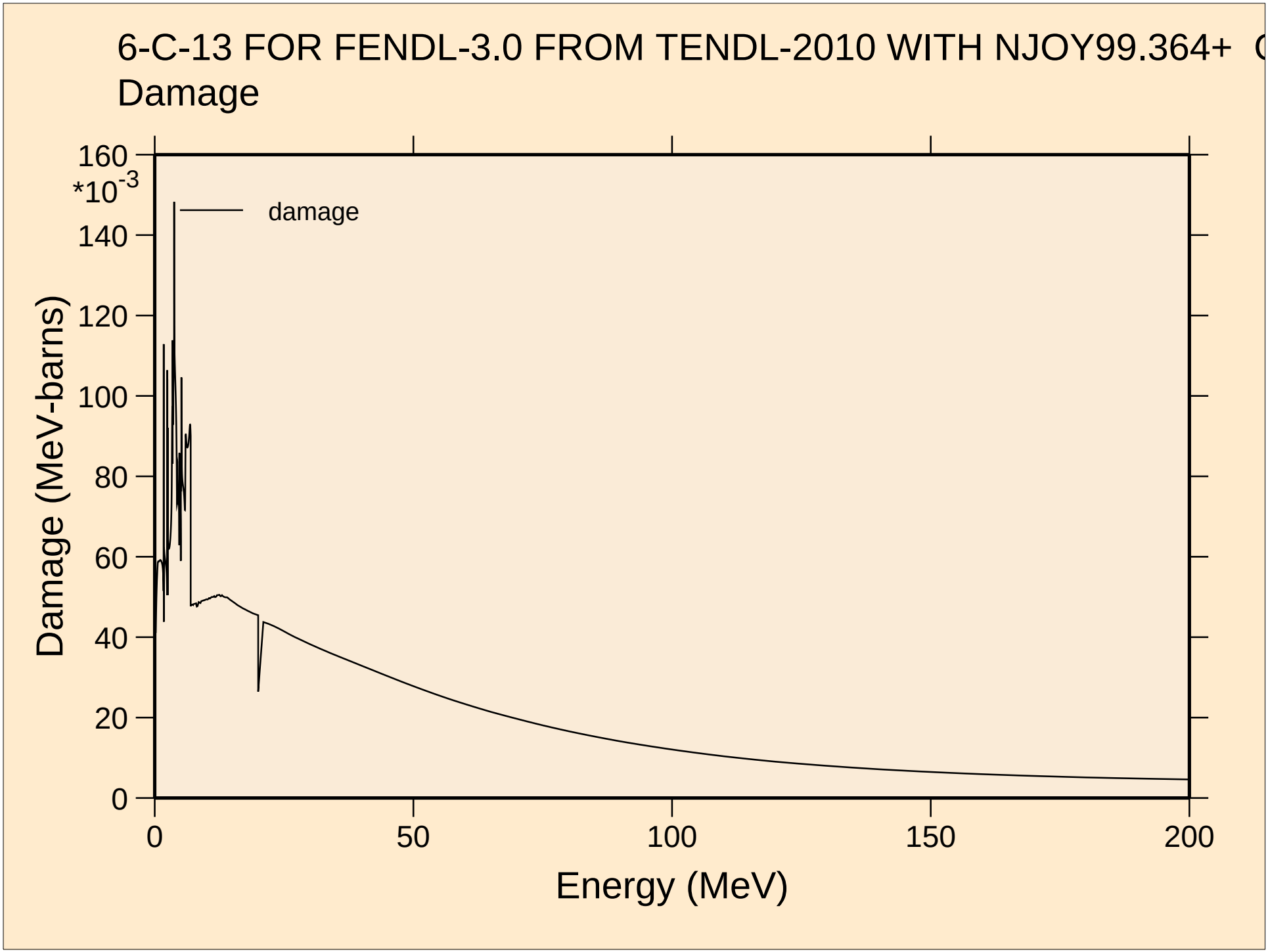

6-C-13 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+ C
Heating
heating
Heating (MeV/reaction)
10^{1}
10^{0}
10^{-1}
10^{-2}
10^{-3}
10^{-4}
10^{-11}
10^{-9}
10^{-7}
10^{-5}
10^{-3}
10^{-1}
10^{1}
Energy (MeV)

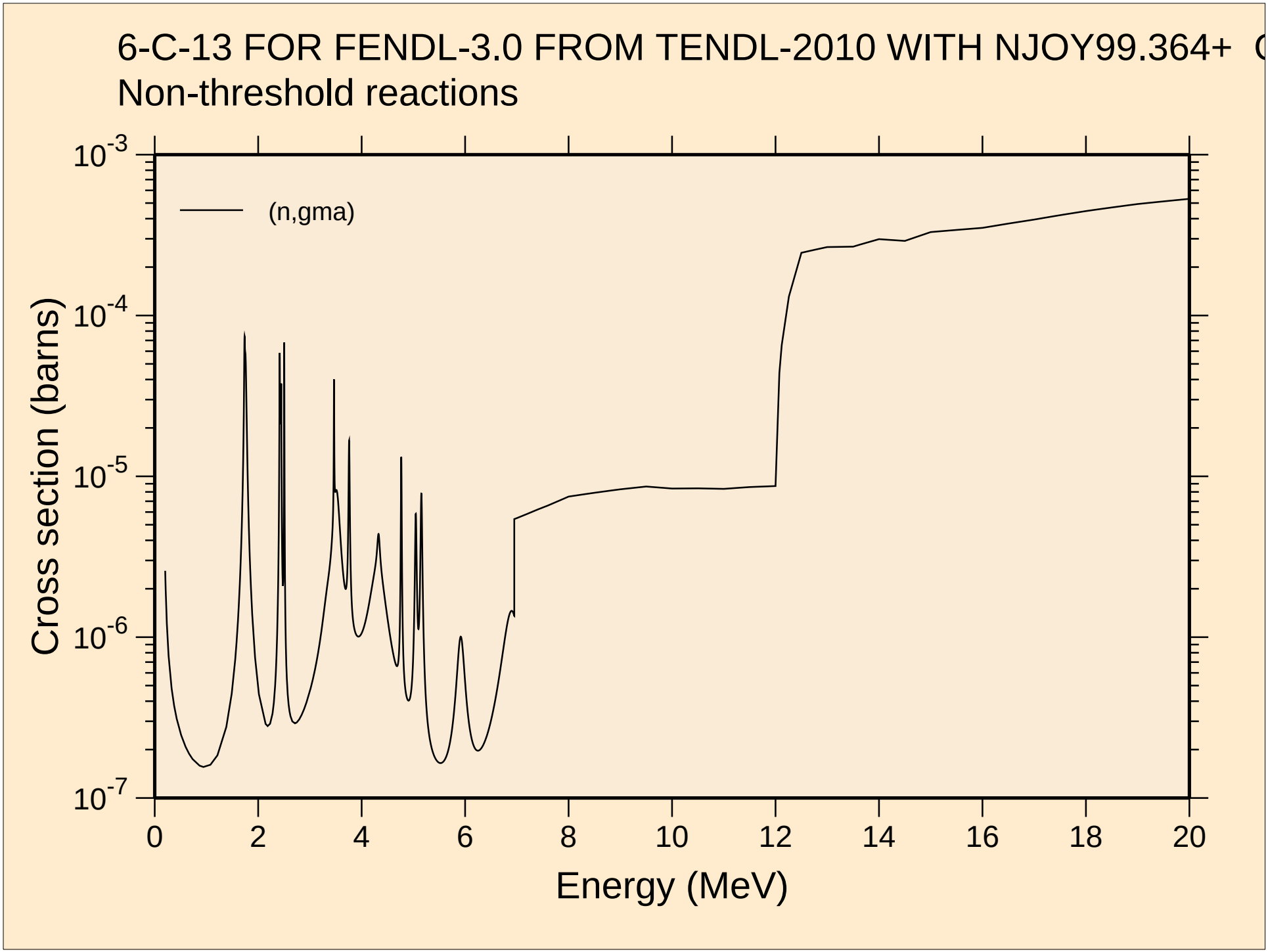

6-C-13 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+ C
Damage
damage
Damage (MeV-barns)
10-1
10-2
10-3
10-4
10-5
10-6
10-4
10-3
10-2
10-1
100
101
102
Energy (MeV)

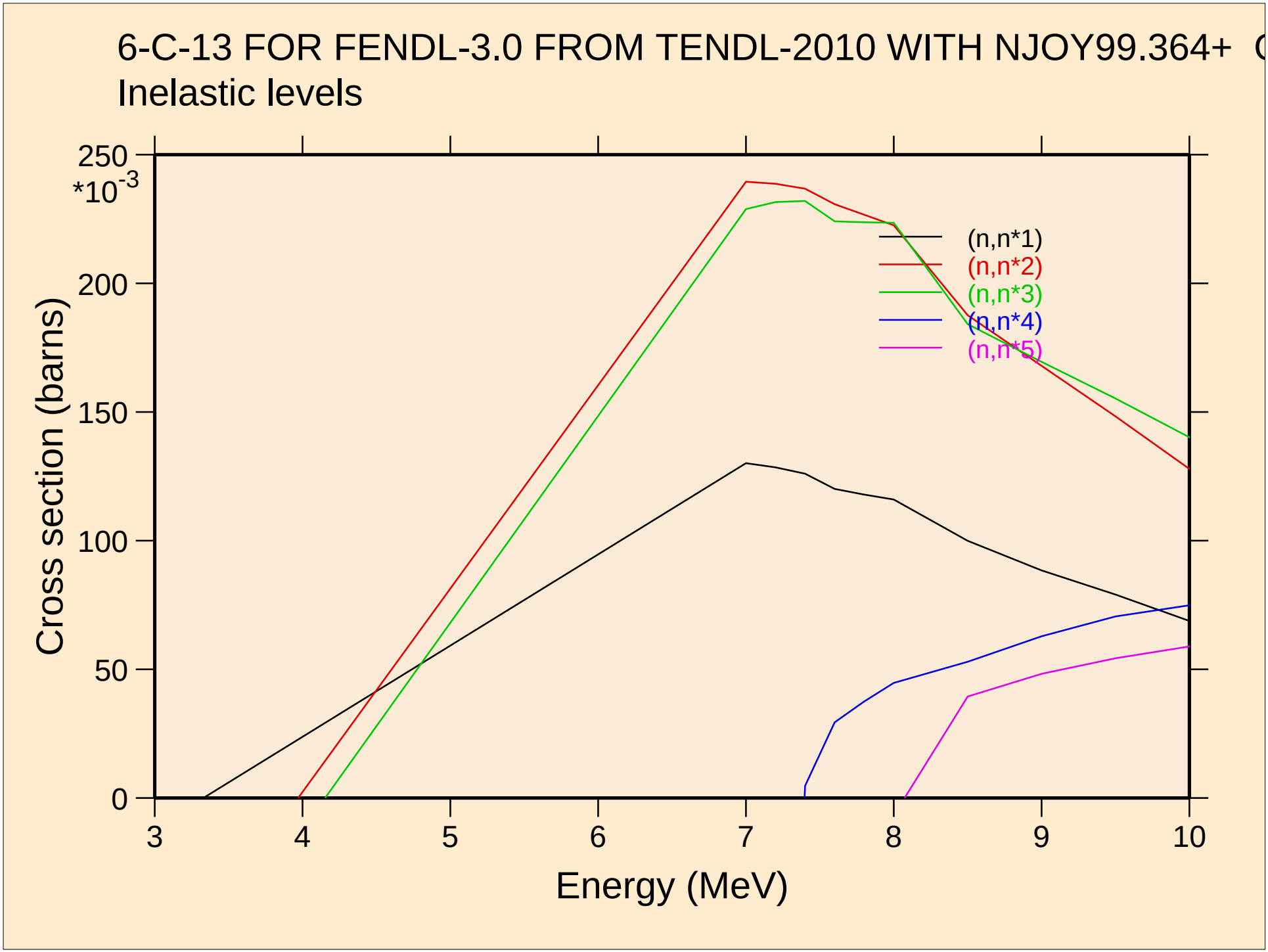

6-C-13 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+ C
Non-threshold reactions
(n,gma)
Cross section (barns)
Energy (MeV)
10-1
10-2
10-3
10-4
10-5
10-6
10-7
10-11 10-10 10-9 10-8 10-7 10-6 10-5 10-4 10-3 10-2 10-1 100 101

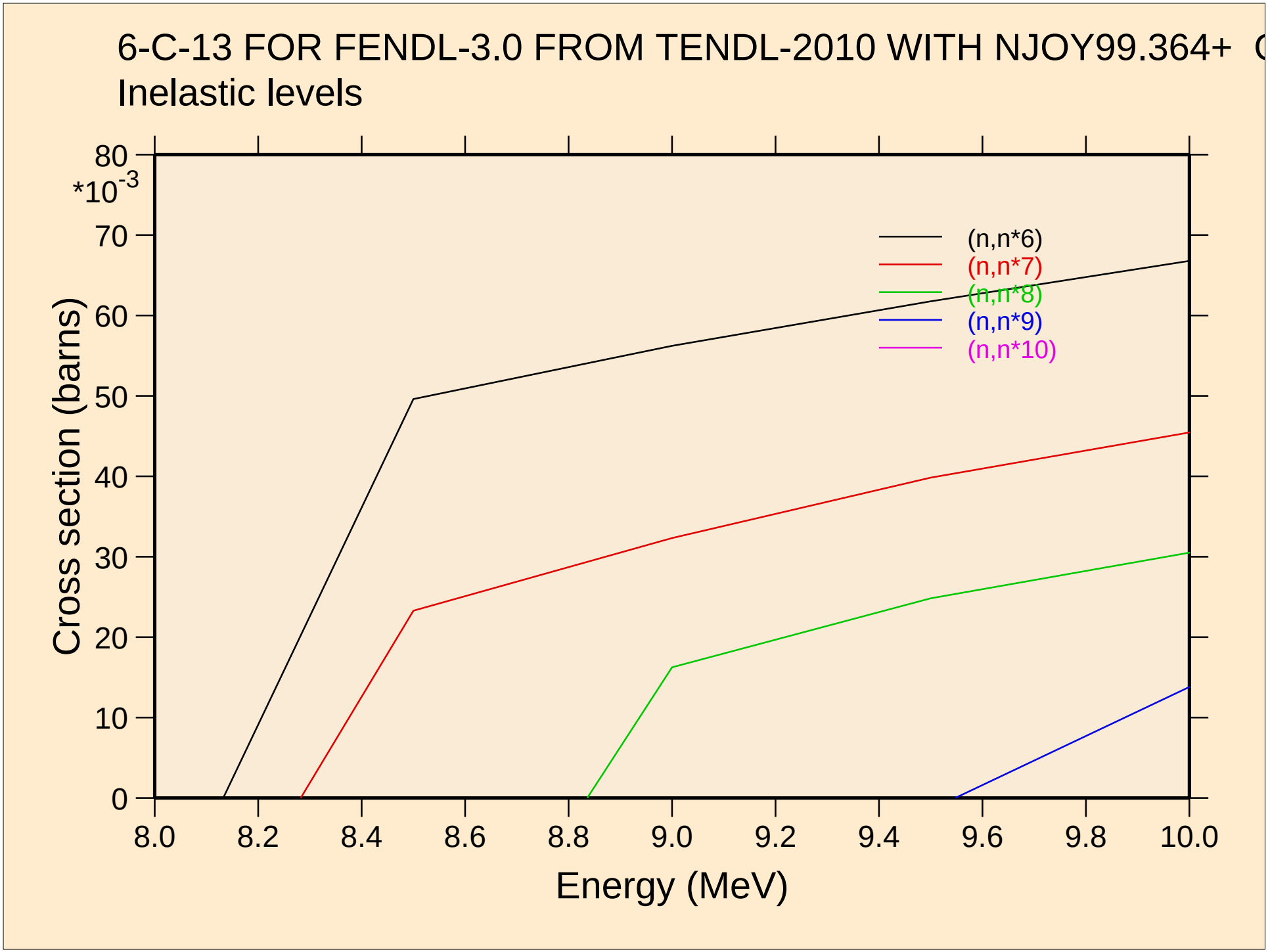

6-C-13 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+
Principal cross sections
Cross section (barns)
Energy (MeV)
0
1
2
3
4
5
6
0
20
40
60
80
100
120
140
160
180
200
total
absorption
elastic
gamma production

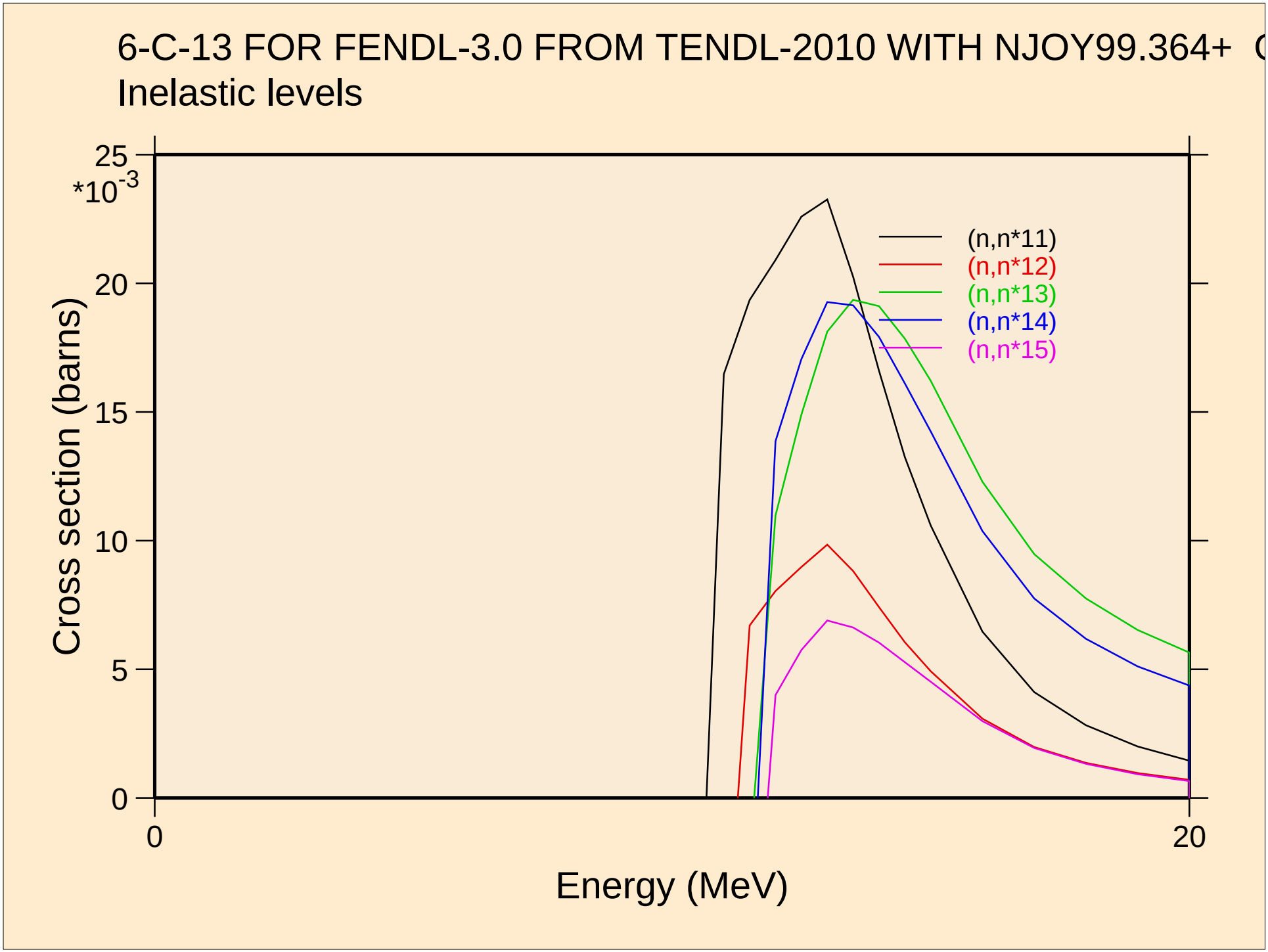

6-C-13 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+ C
Heating
heating
Heating (MeV/reaction)
Energy (MeV)
0
10
20
30
40
50
0
50
100
150
200

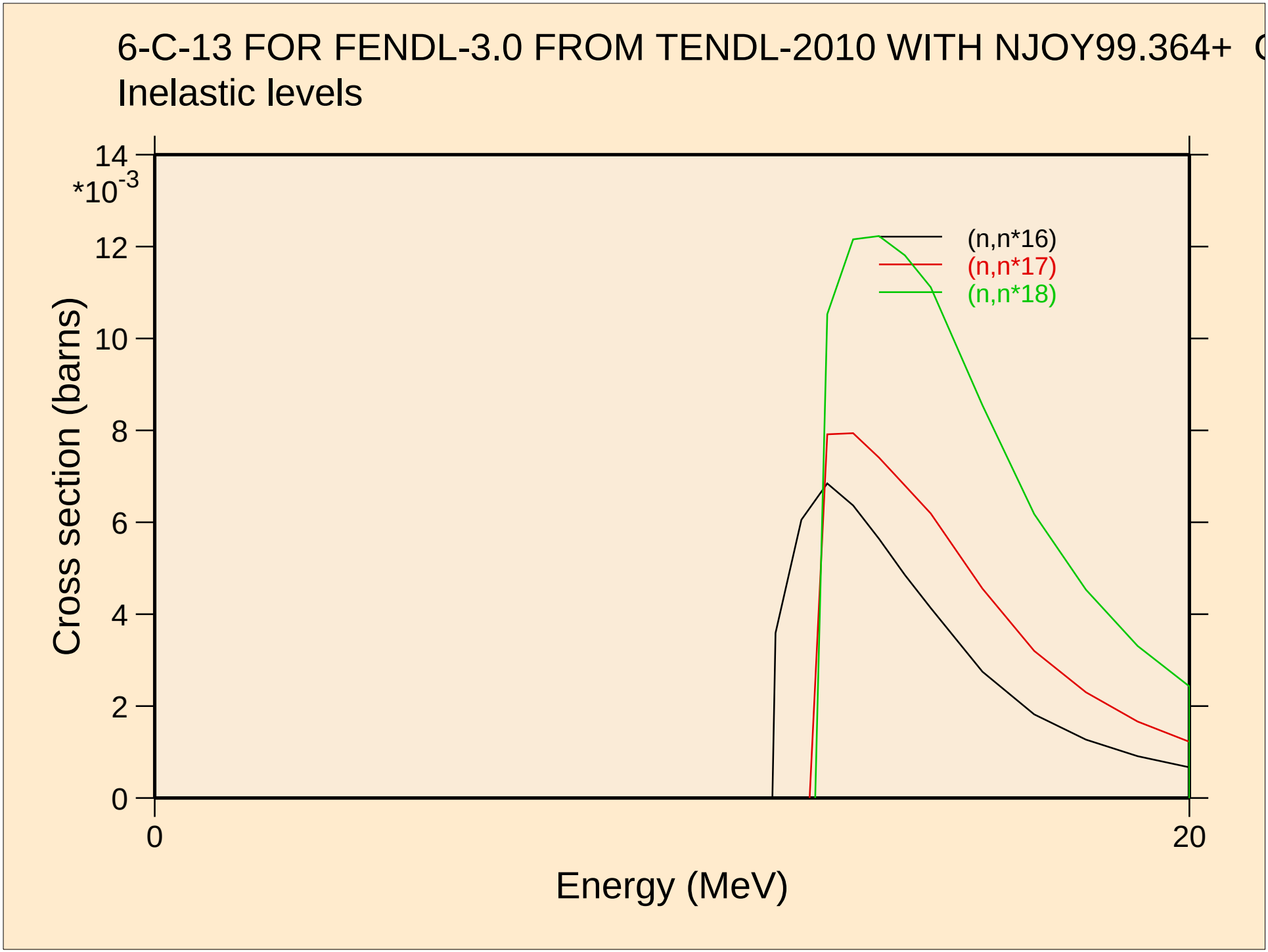

6-C-13 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+ C
Damage
160
*10-3
140
120
100
80
60
40
20
0
damage
Damage (MeV-barns)
0
50
100
150
200
Energy (MeV)

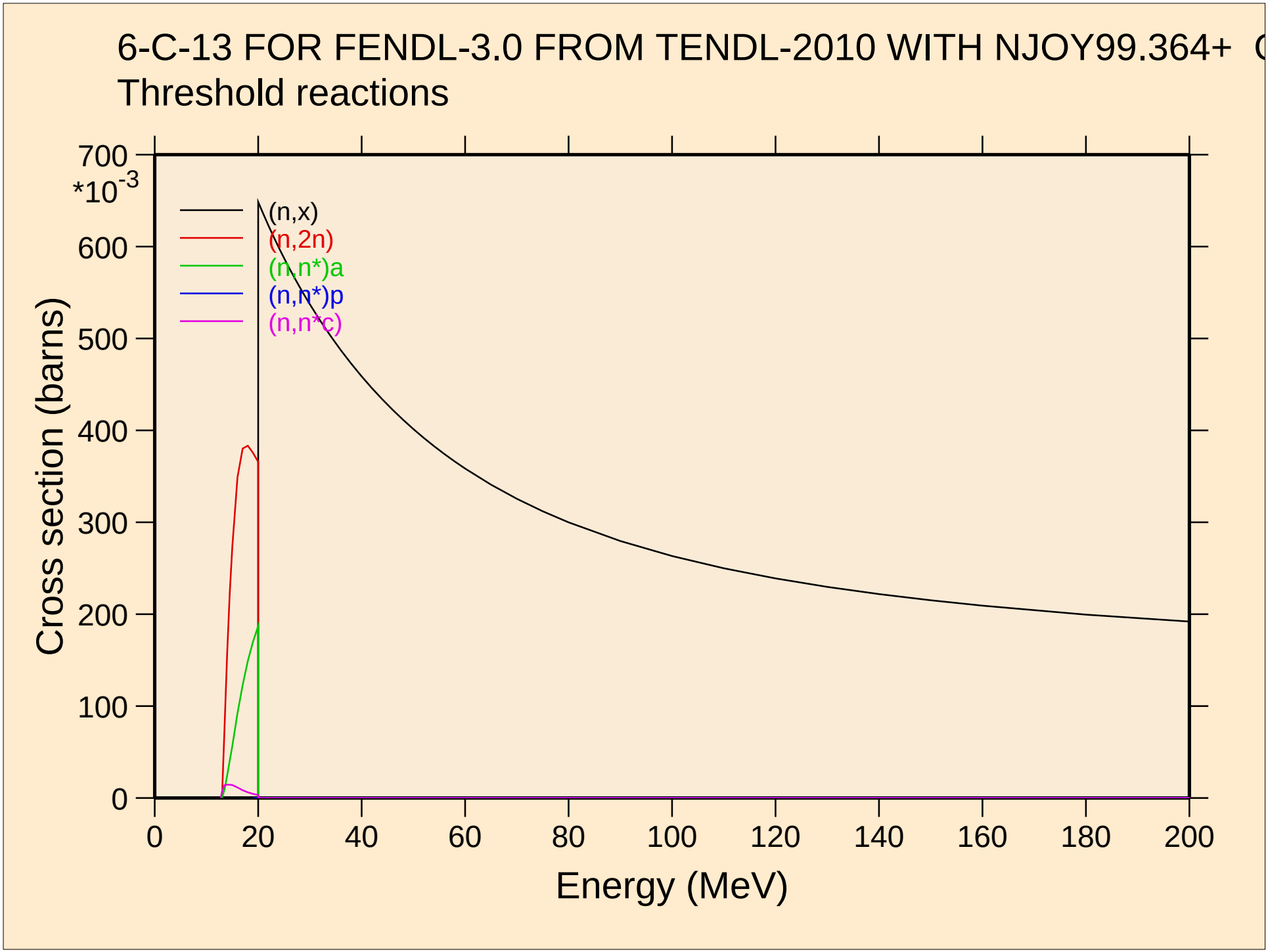

6-C-13 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+ C
Non-threshold reactions
(n,gma)
Cross section (barns)
10-3
10-4
10-5
10-6
10-7
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

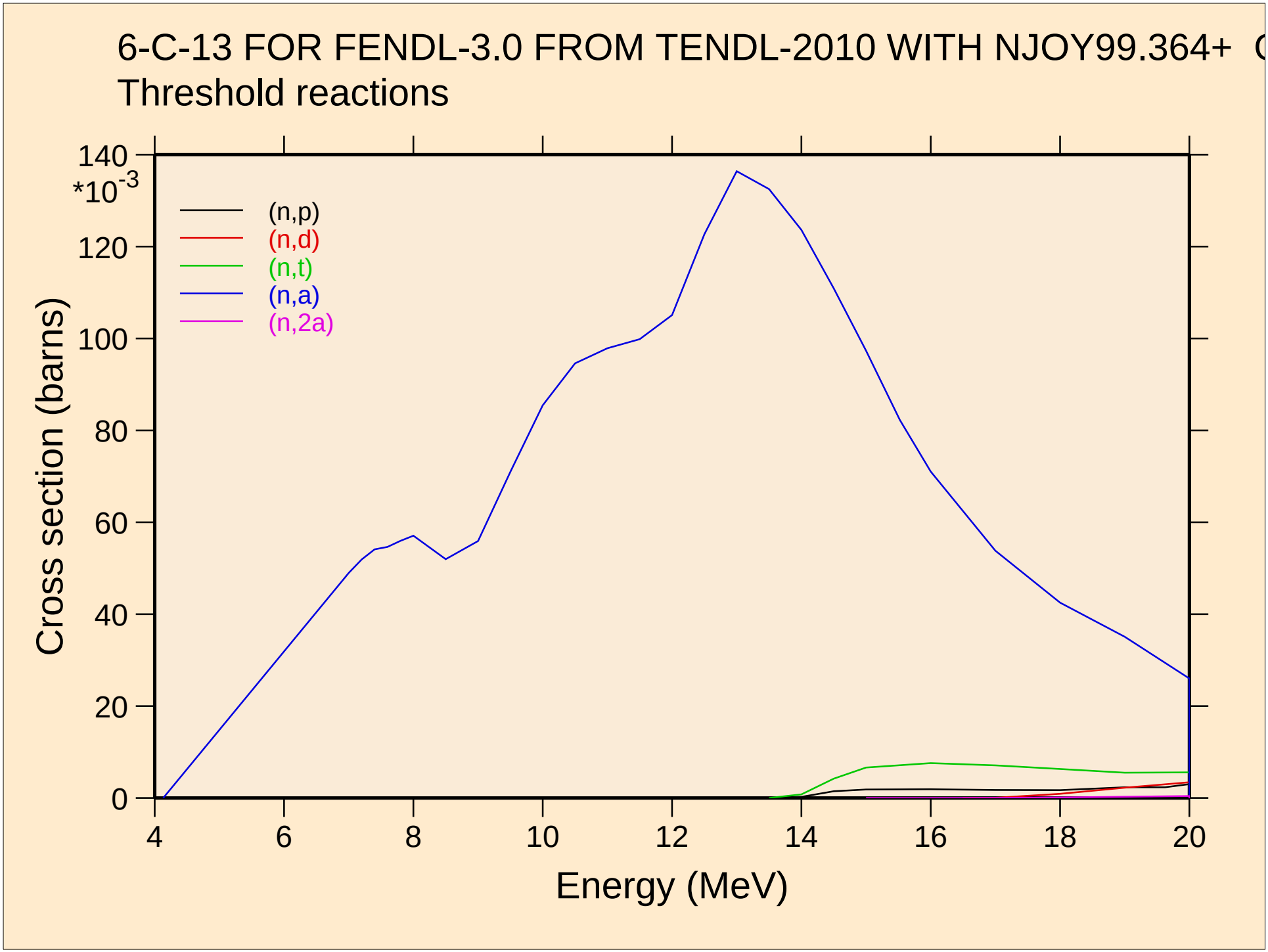

6-C-13 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+
Inelastic levels
250
*10-3
200
150
100
50
0
Cross section (barns)
3
4
5
6
7
8
9
10
Energy (MeV)
(n,n*1)
(n,n*2)
(n,n*3)
(n,n*4)
(n,n*5)

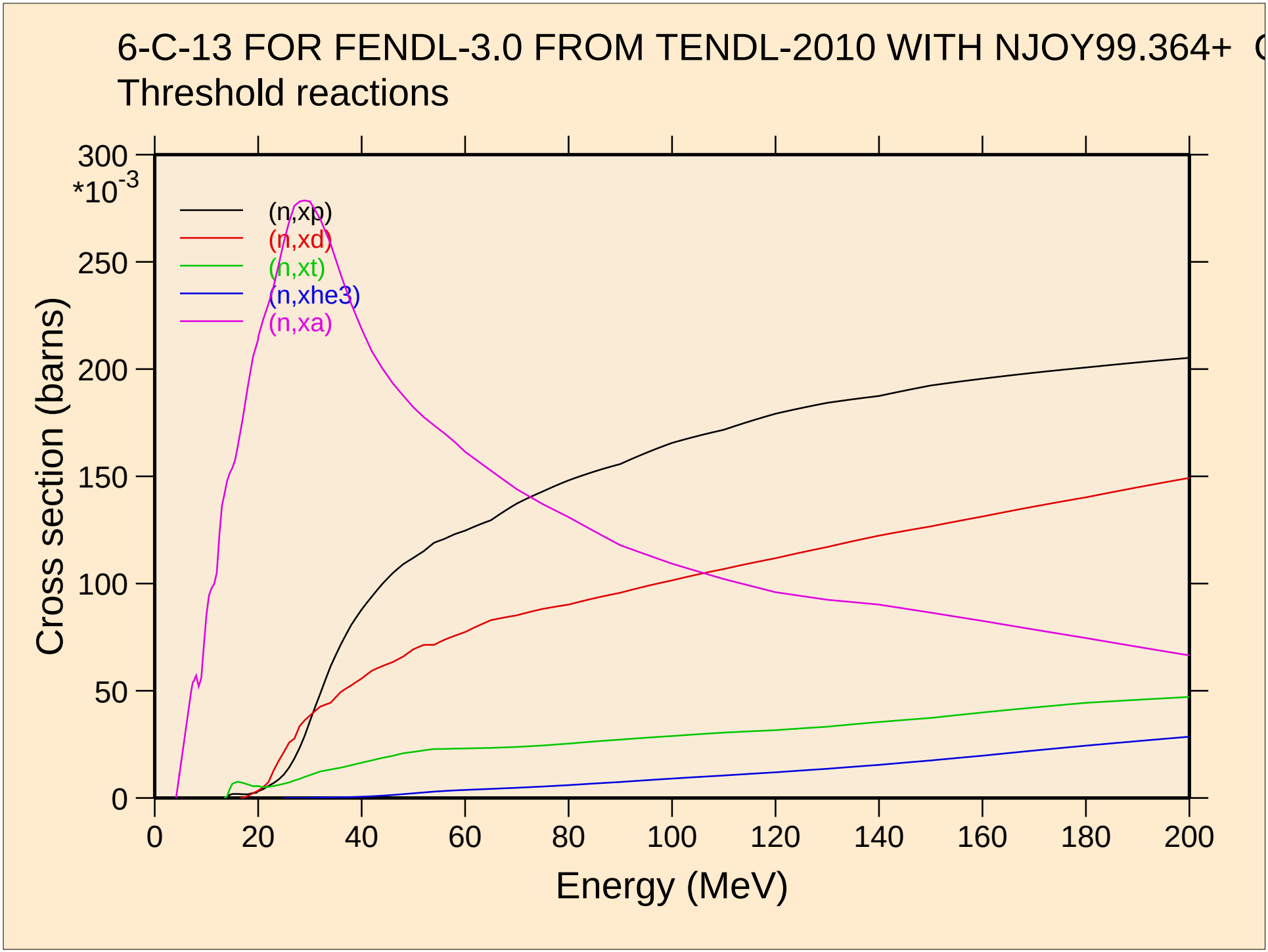

6-C-13 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+
Inelastic levels
Cross section (barns)
*10-3
80
70
60
50
40
30
20
10
0
8.0
8.2
8.4
8.6
8.8
9.0
9.2
9.4
9.6
9.8
10.0
Energy (MeV)
(n,n*6)
(n,n*7)
(n,n*8)
(n,n*9)
(n,n*10)

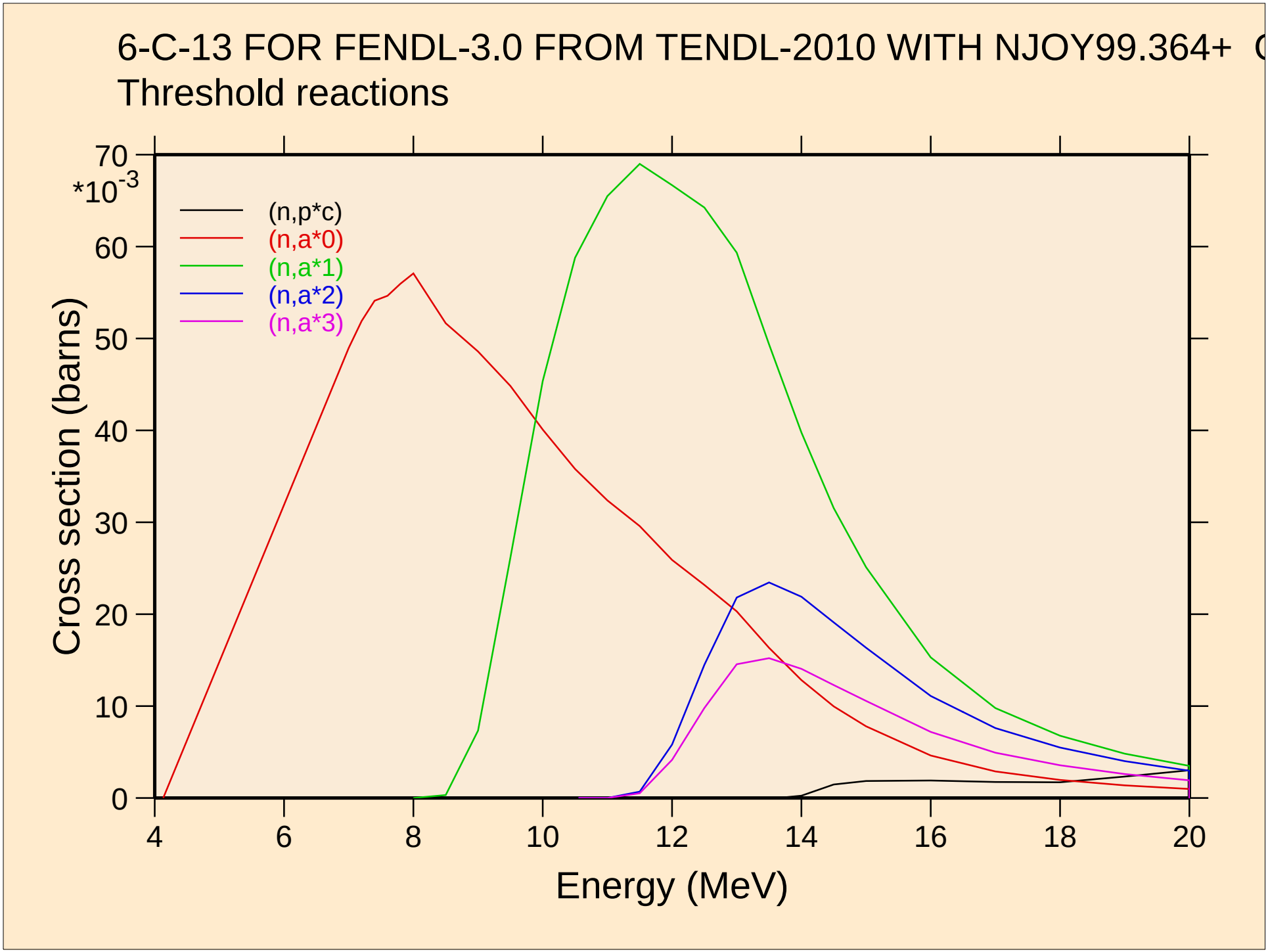

6-C-13 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+
Inelastic levels
25
*10-3
20
15
10
5
0
Cross section (barns)
0
20
Energy (MeV)
(n,n*11)
(n,n*12)
(n,n*13)
(n,n*14)
(n,n*15)

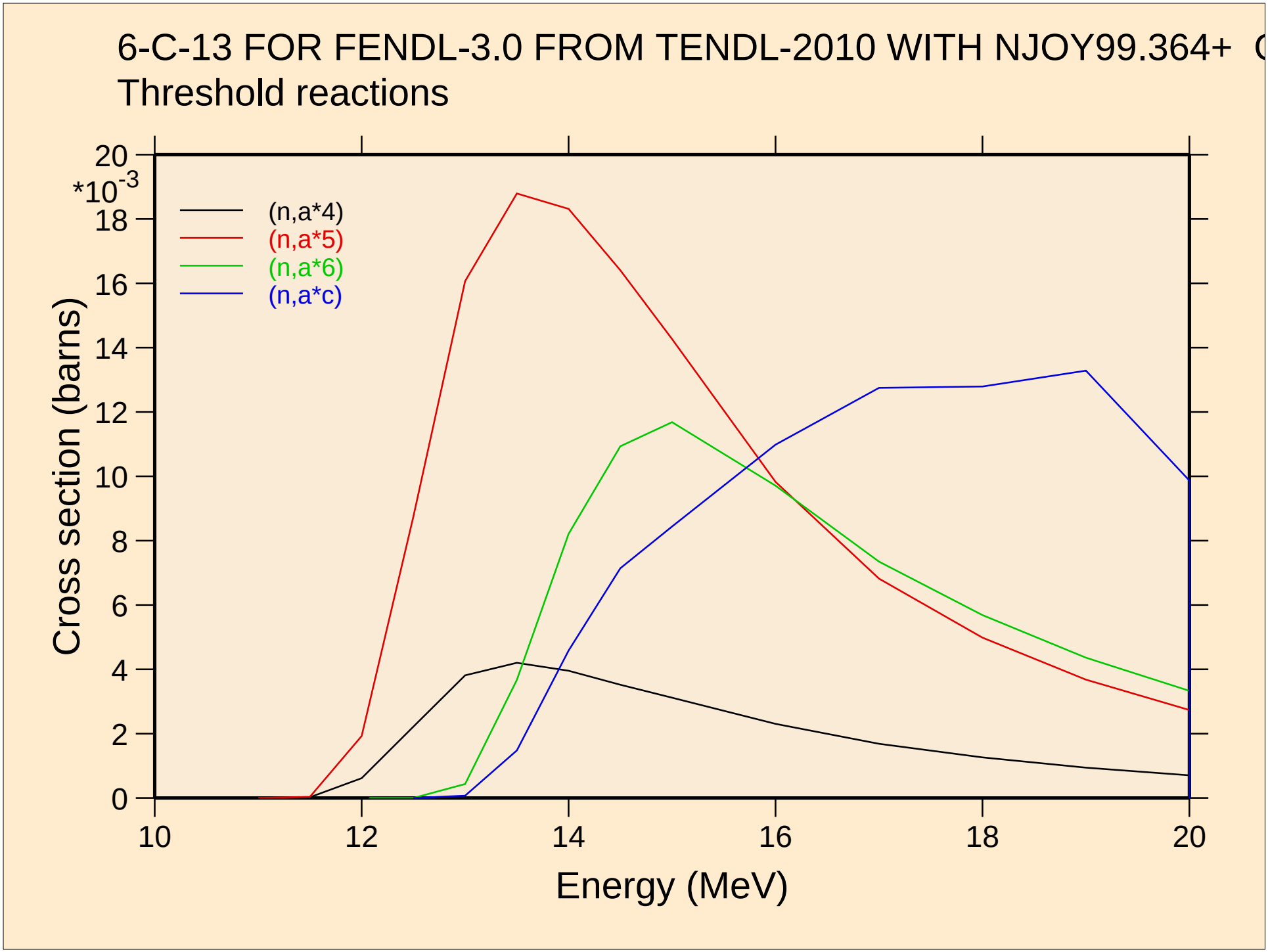

6-C-13 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+
Inelastic levels
14
*10-3
12
10
8
6
4
2
0
Cross section (barns)
0
20
Energy (MeV)
(n,n*16)
(n,n*17)
(n,n*18)

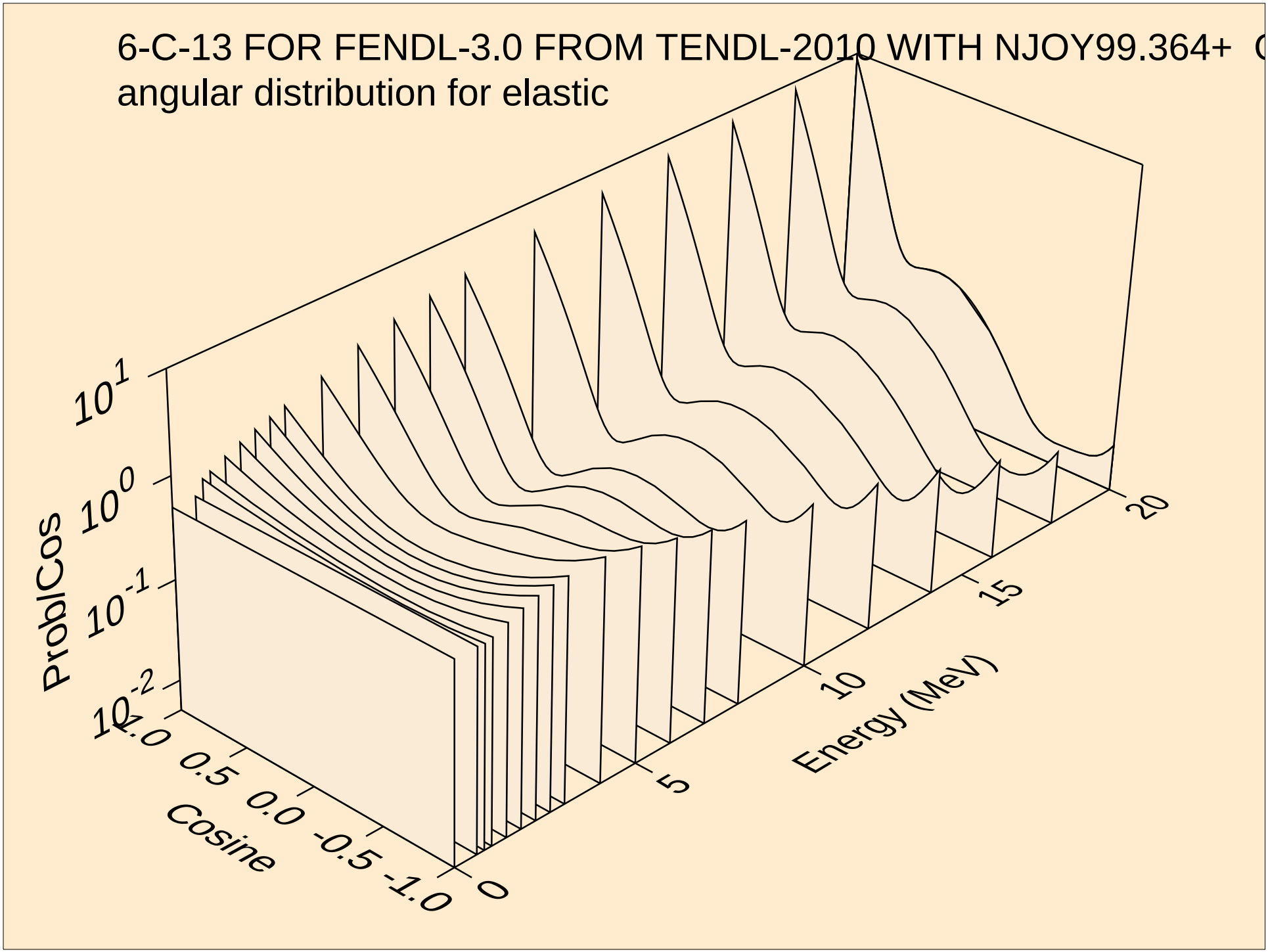

6-C-13 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+
Threshold reactions
700
*10-3
600
500
400
300
200
100
0
Cross section (barns)
(n,x)
(n,2n)
(n,n*)a
(n,n*)p
(n,n*c)
0
20
40
60
80
100
120
140
160
180
200
Energy (MeV)

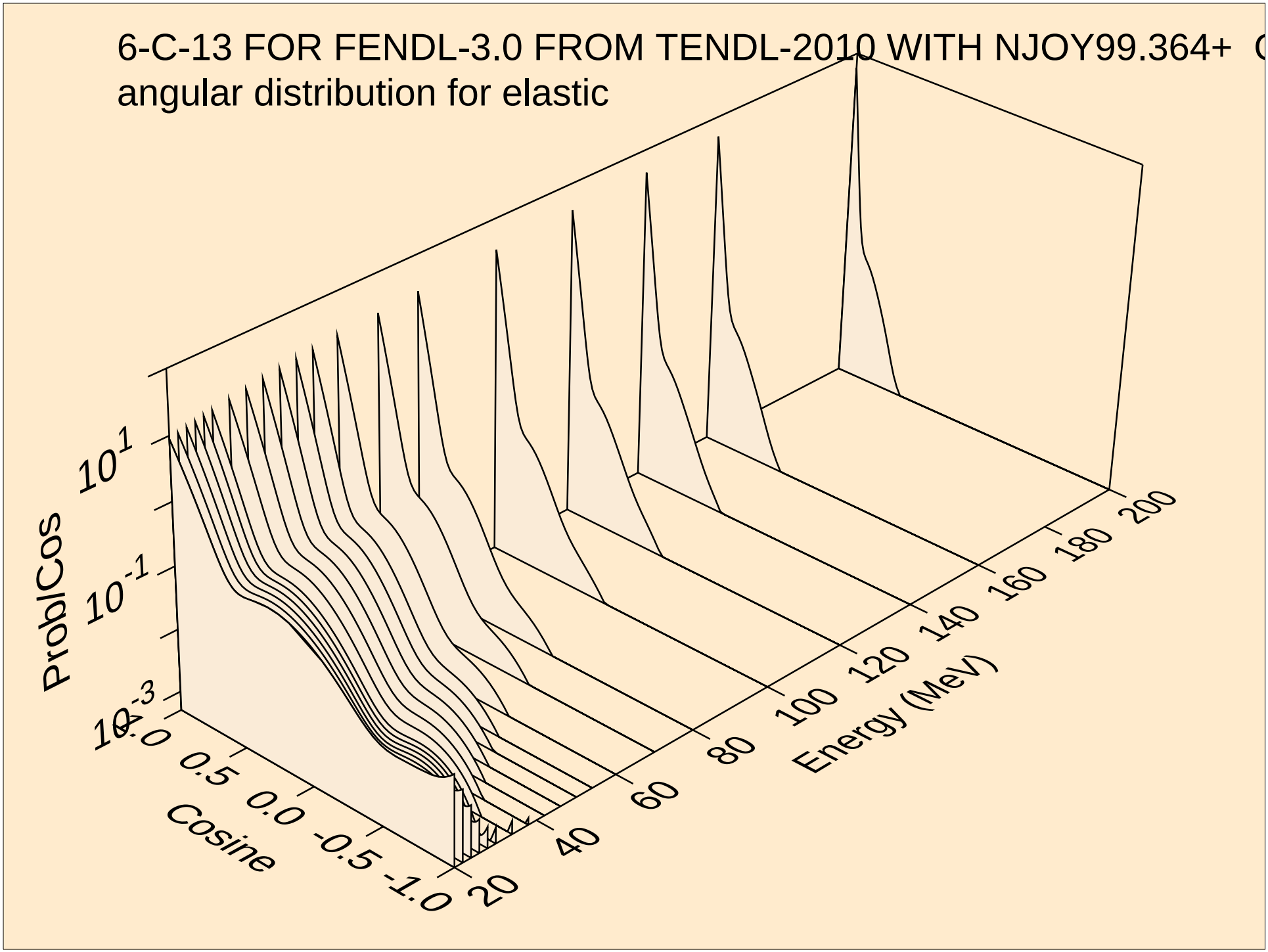

6-C-13 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+
Threshold reactions
140
*10-3
120
100
80
60
40
20
0
Cross section (barns)
(n,p)
(n,d)
(n,t)
(n,a)
(n,2a)
4
6
8
10
12
14
16
18
20
Energy (MeV)

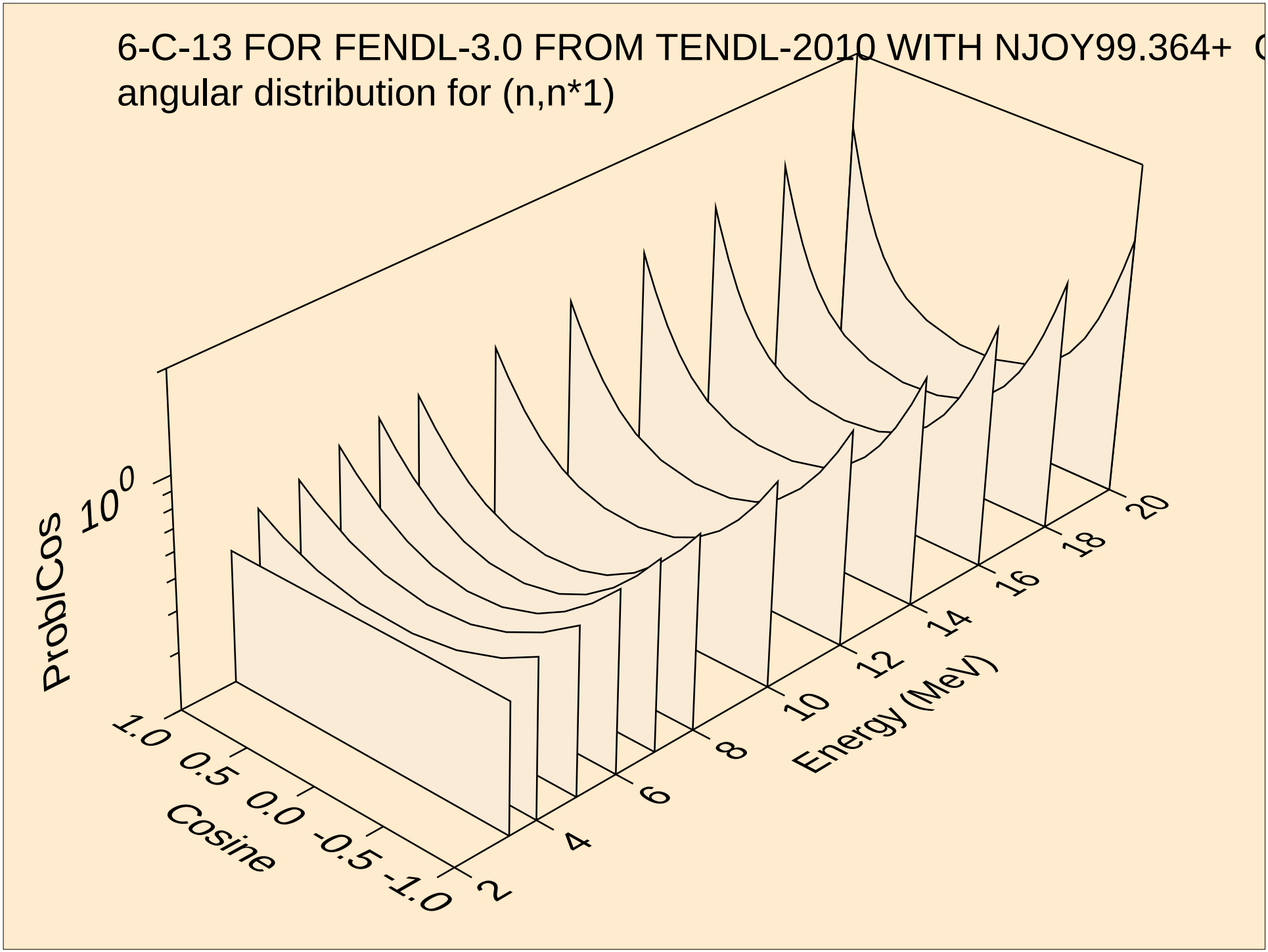

6-C-13 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+
Threshold reactions
300
*10-3
250
200
150
100
50
0
Cross section (barns)
(n,xp)
(n,xd)
(n,xt)
(n,xhe3)
(n,xa)
0
20
40
60
80
100
120
140
160
180
200
Energy (MeV)

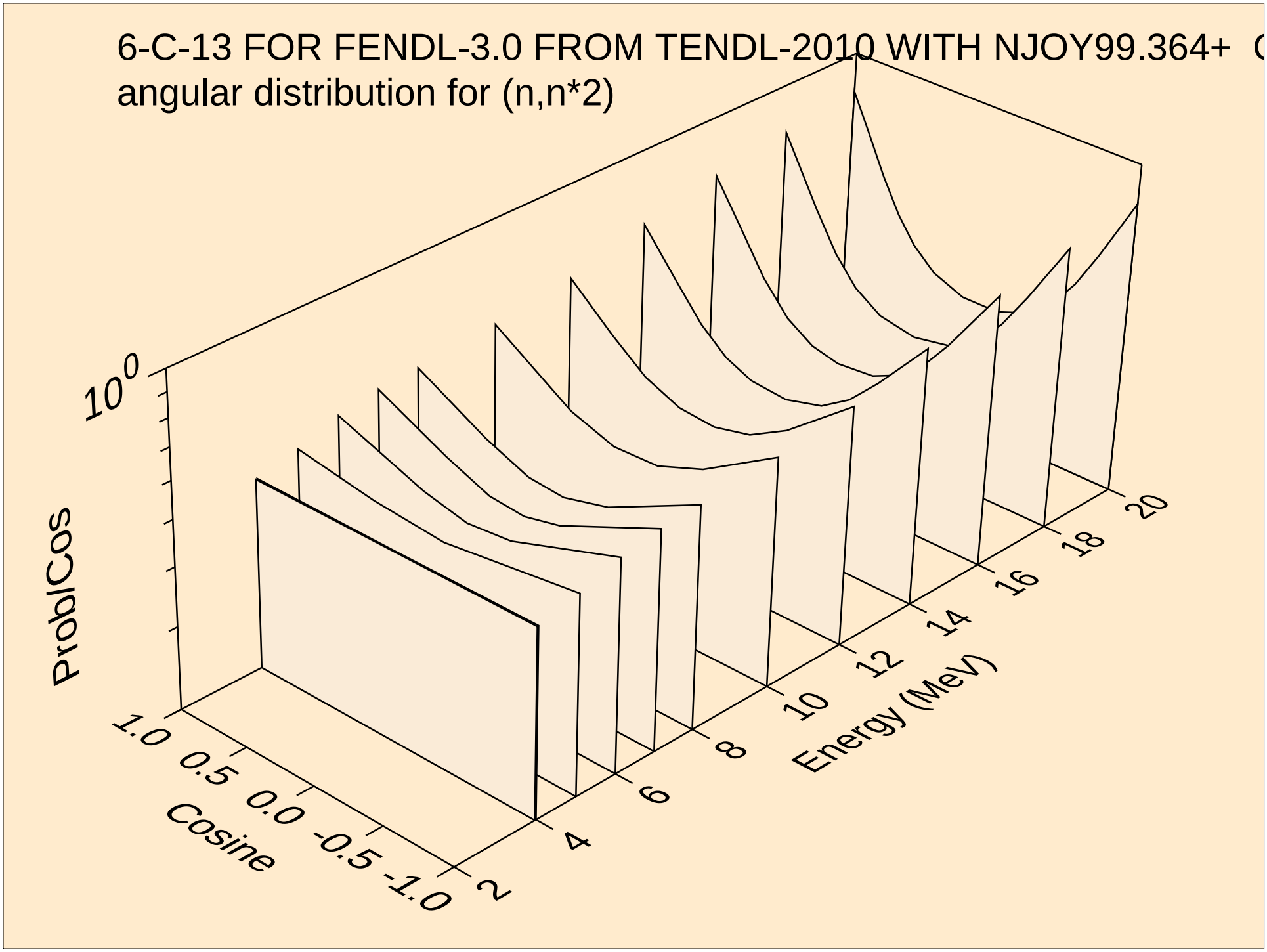

6-C-13 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+
Threshold reactions
*10-3
Cross section (barns)
Energy (MeV)
(n,p*c)
(n,a*0)
(n,a*1)
(n,a*2)
(n,a*3)
0
10
20
30
40
50
60
70
4
6
8
10
12
14
16
18
20

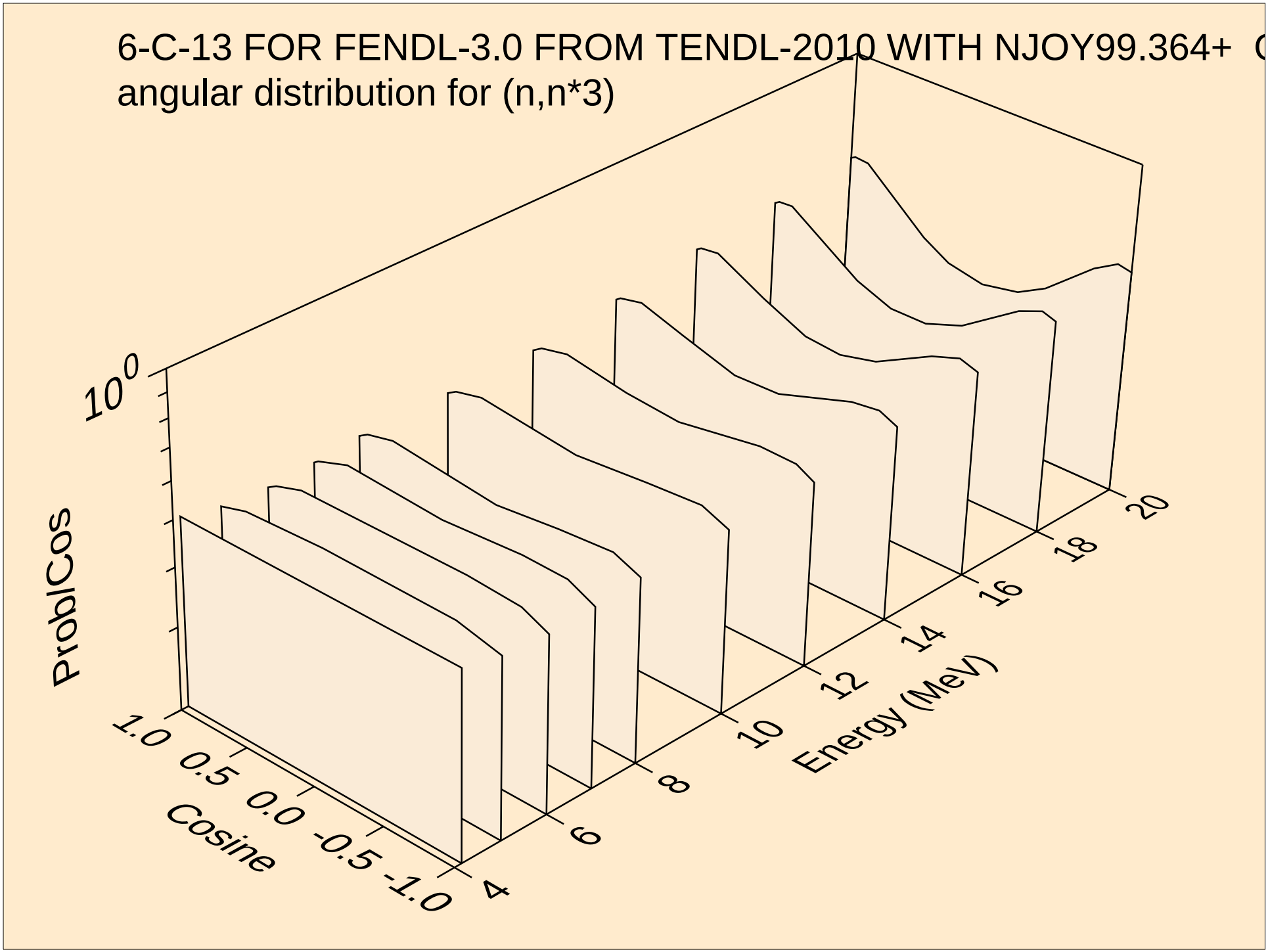

6-C-13 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+ C
Threshold reactions
*10-3
Cross section (barns)
Energy (MeV)
(n,a*4)
(n,a*5)
(n,a*6)
(n,a*c)
0
2
4
6
8
10
12
14
16
18
20
10
12
14
16
18
20

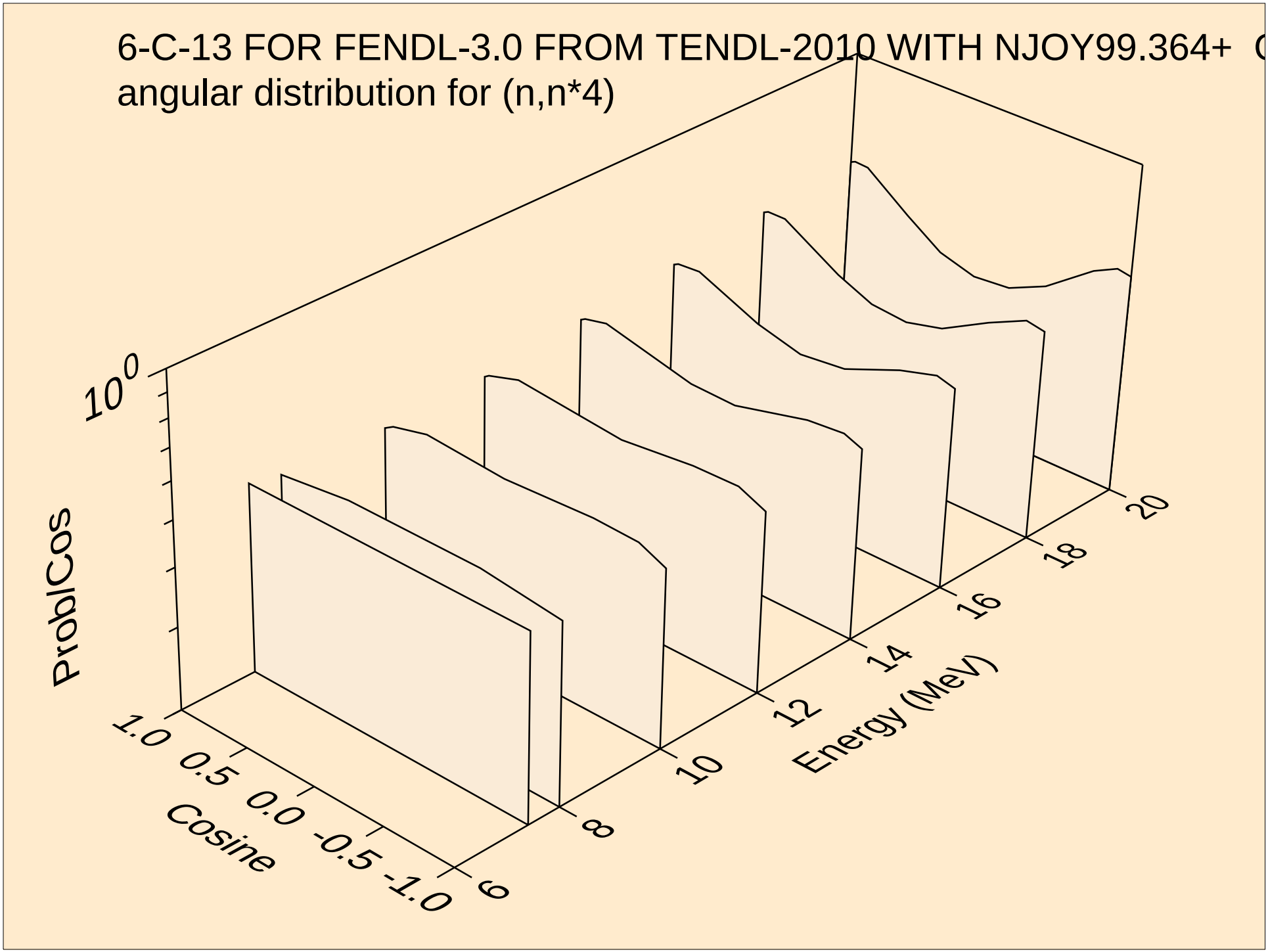

6-C-13 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+ C
angular distribution for elastic
Prob\Cos
10^{1}
10^{0}
10^{-1}
10^{-2}
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
Energy (MeV)

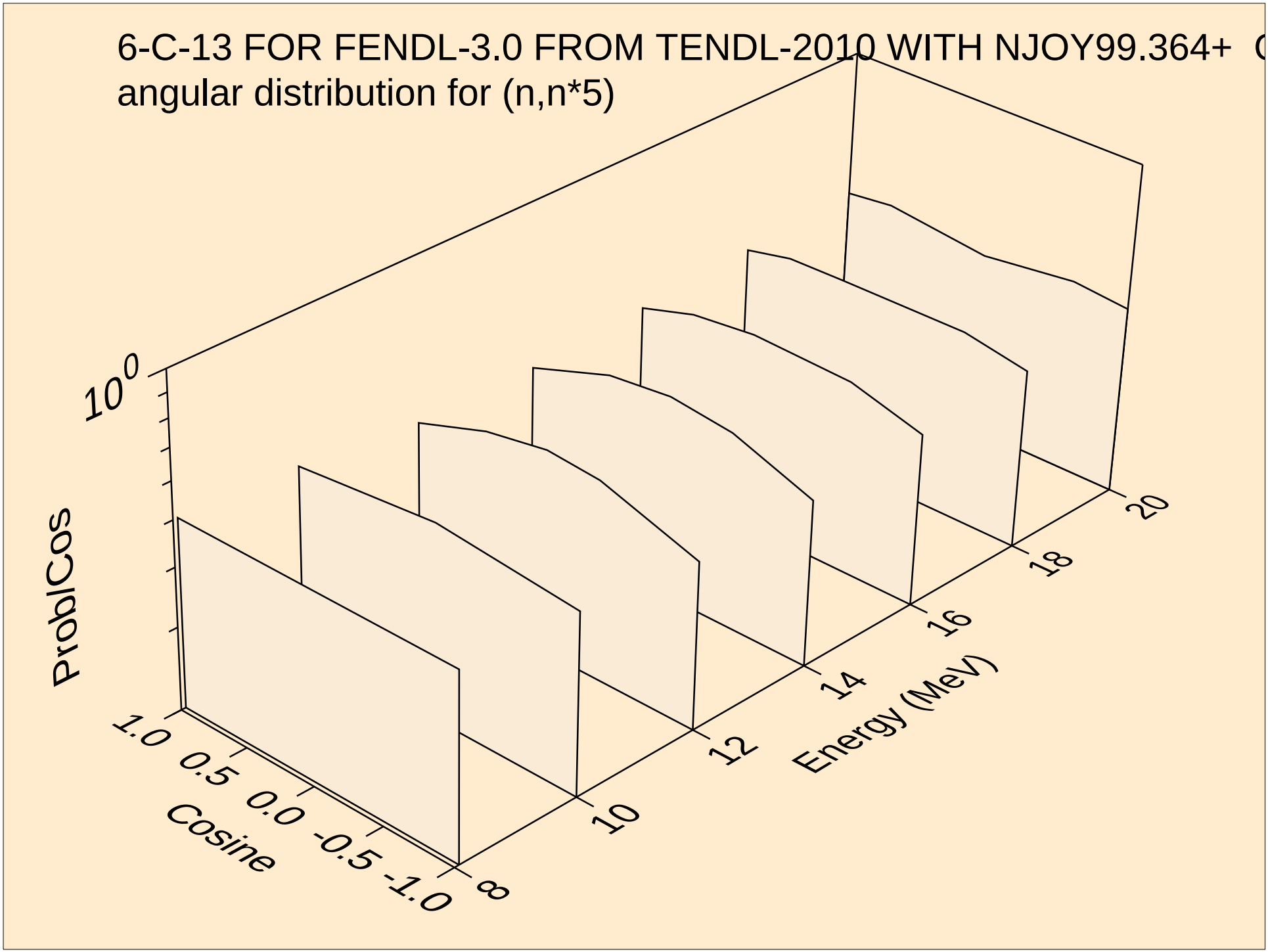

6-C-13 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+ C
angular distribution for elastic
ProbICos
10^1
10^-1
10^-3
1.0
0.5
0.0
-0.5
-1.0
Cosine
20
40
60
80
100
120
140
160
180
200
Energy (MeV)

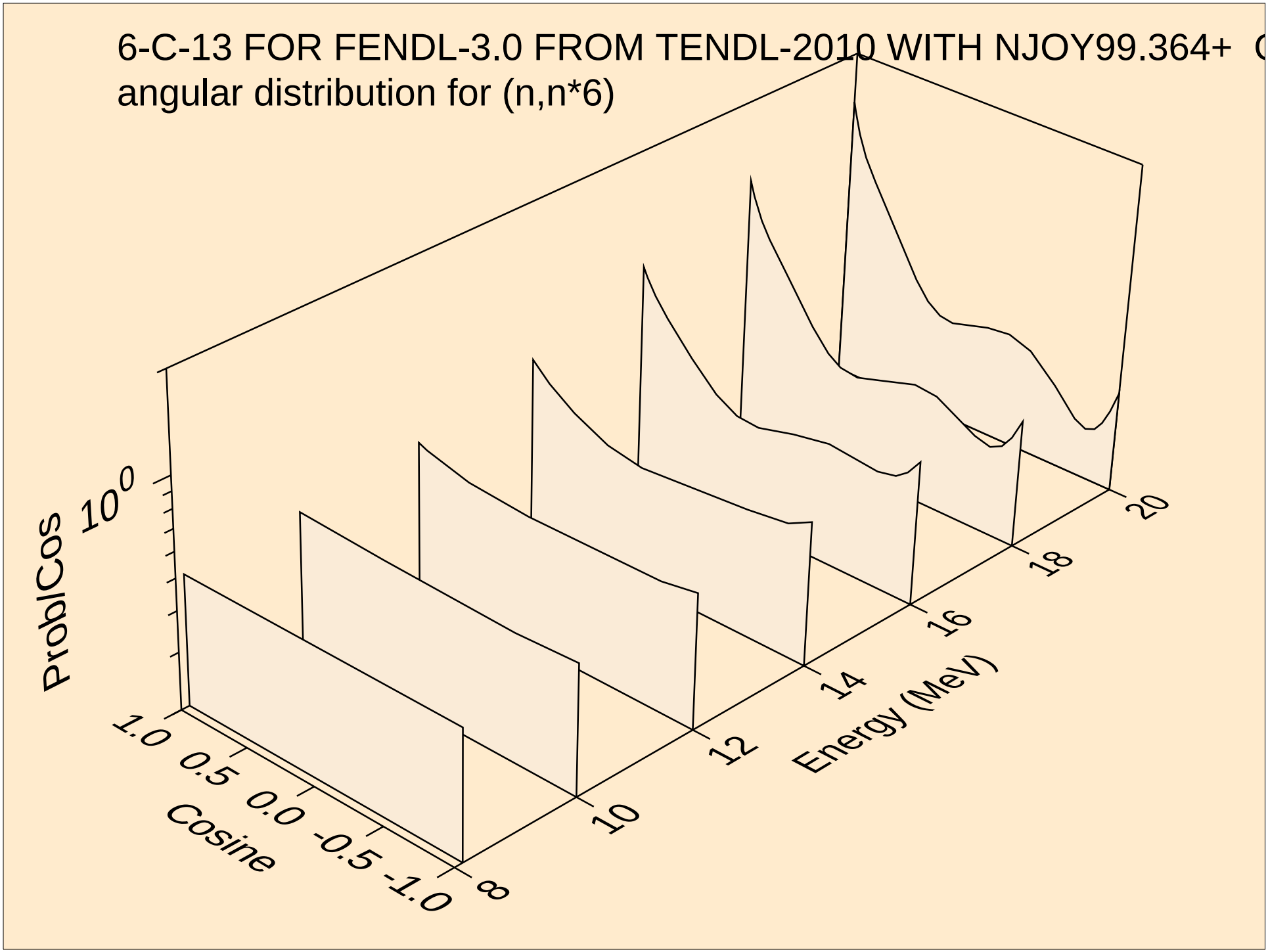

6-C-13 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+ C
angular distribution for (n,n*1)
ProblCos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

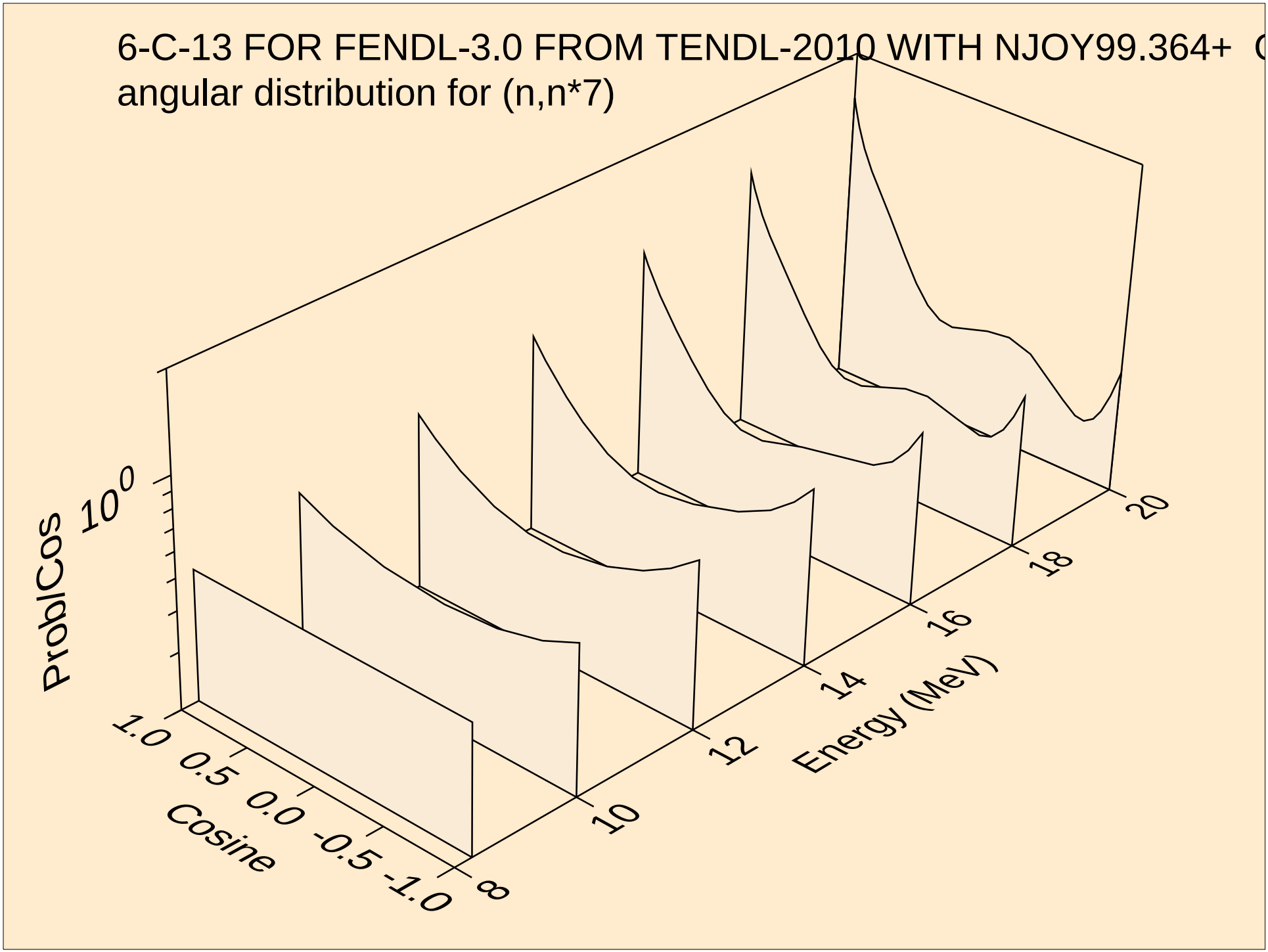

6-C-13 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+ C
angular distribution for (n,n*2)
10^0
ProbICos
1.0
0.5
0.0
-0.5
-1.0
Cosine
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

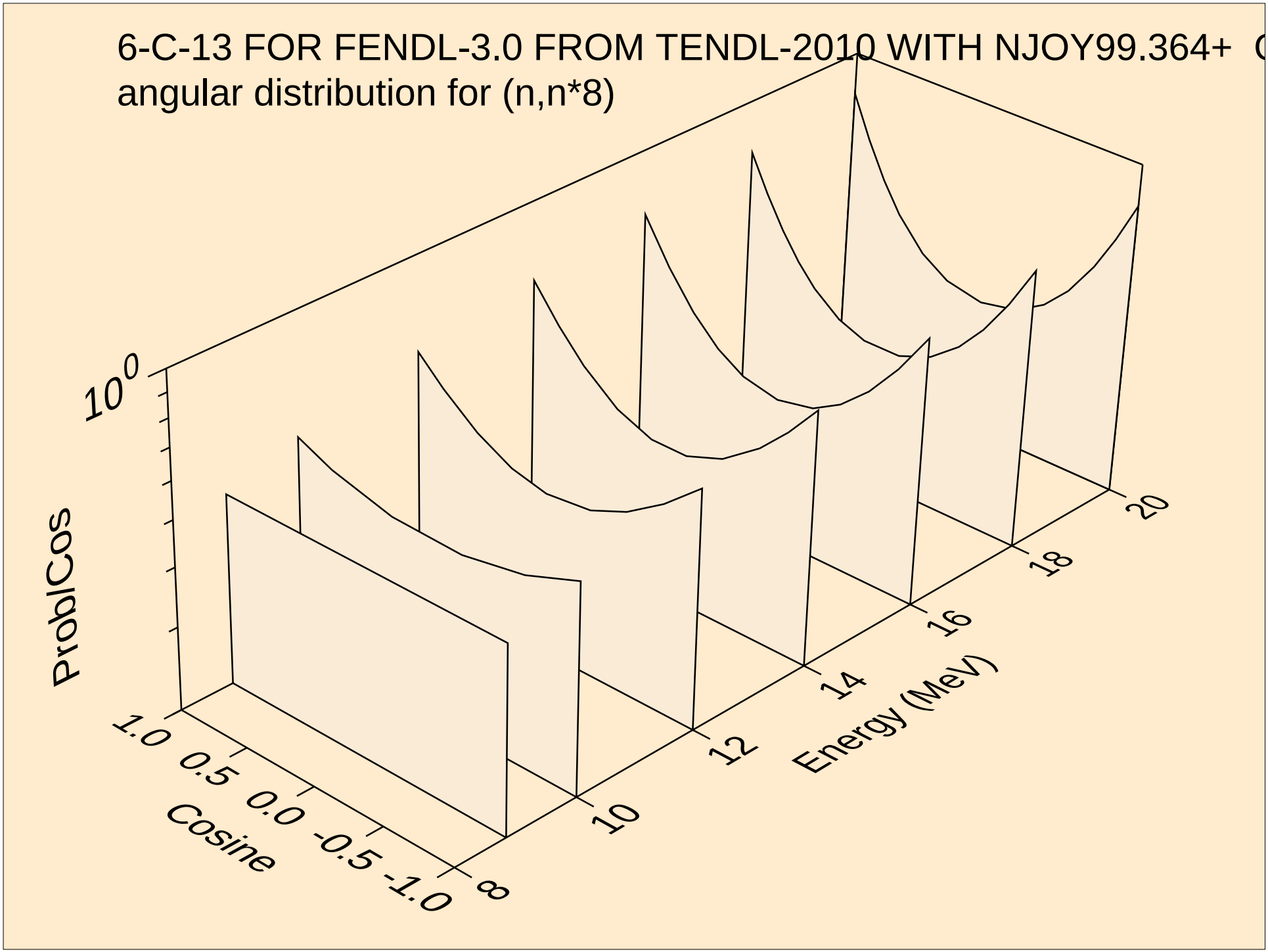

6-C-13 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+ C
angular distribution for (n,n*3)
10^0
ProbICos
1.0
0.5
0.0
-0.5
-1.0
Cosine
4
6
8
10
12
14
16
18
20
Energy (MeV)

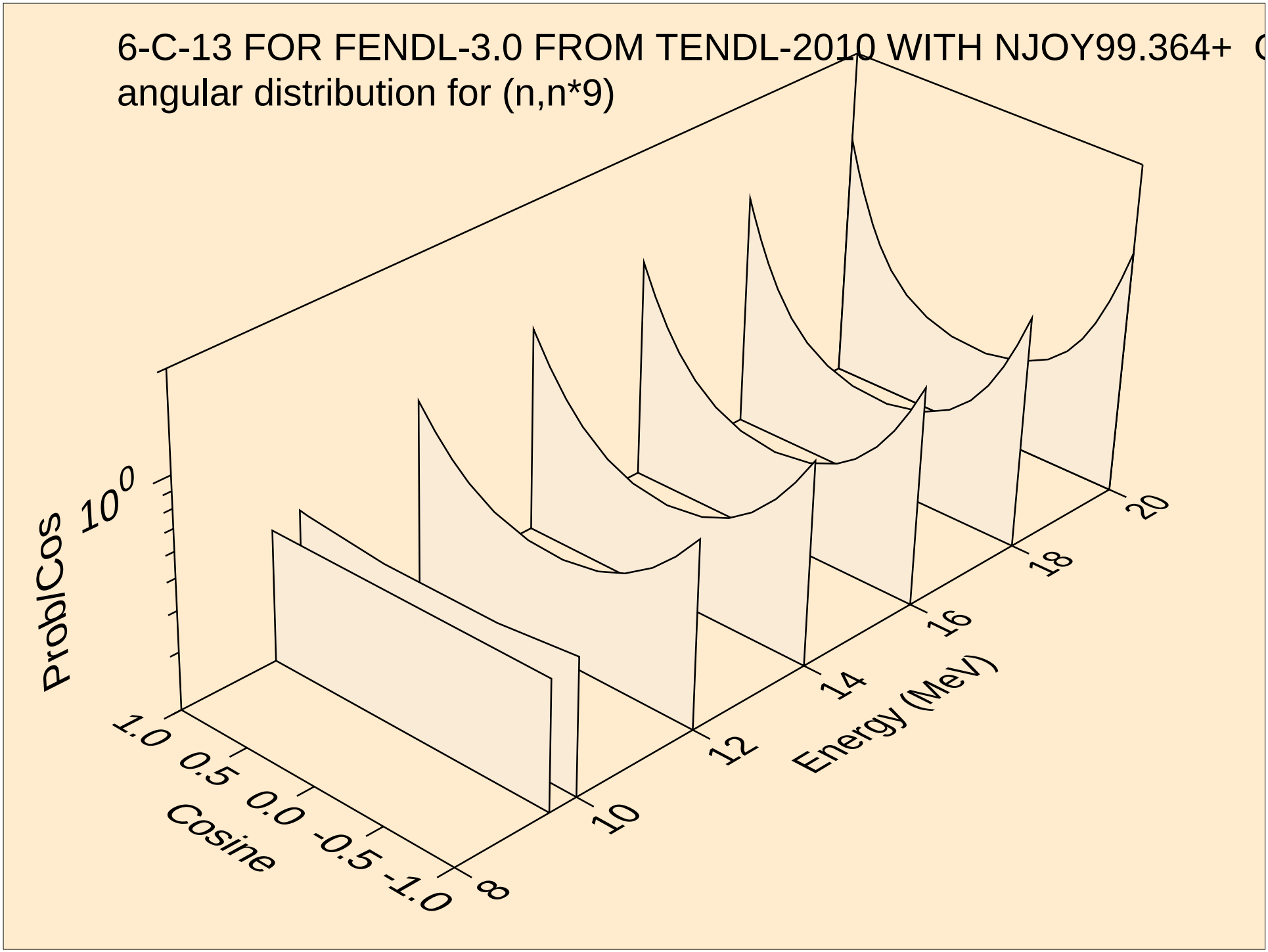

6-C-13 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+ C
angular distribution for (n,n*4)
10^0
ProbICos
1.0
0.5
0.0
-0.5
-1.0
Cosine
6
8
10
12
14
16
18
20
Energy (MeV)

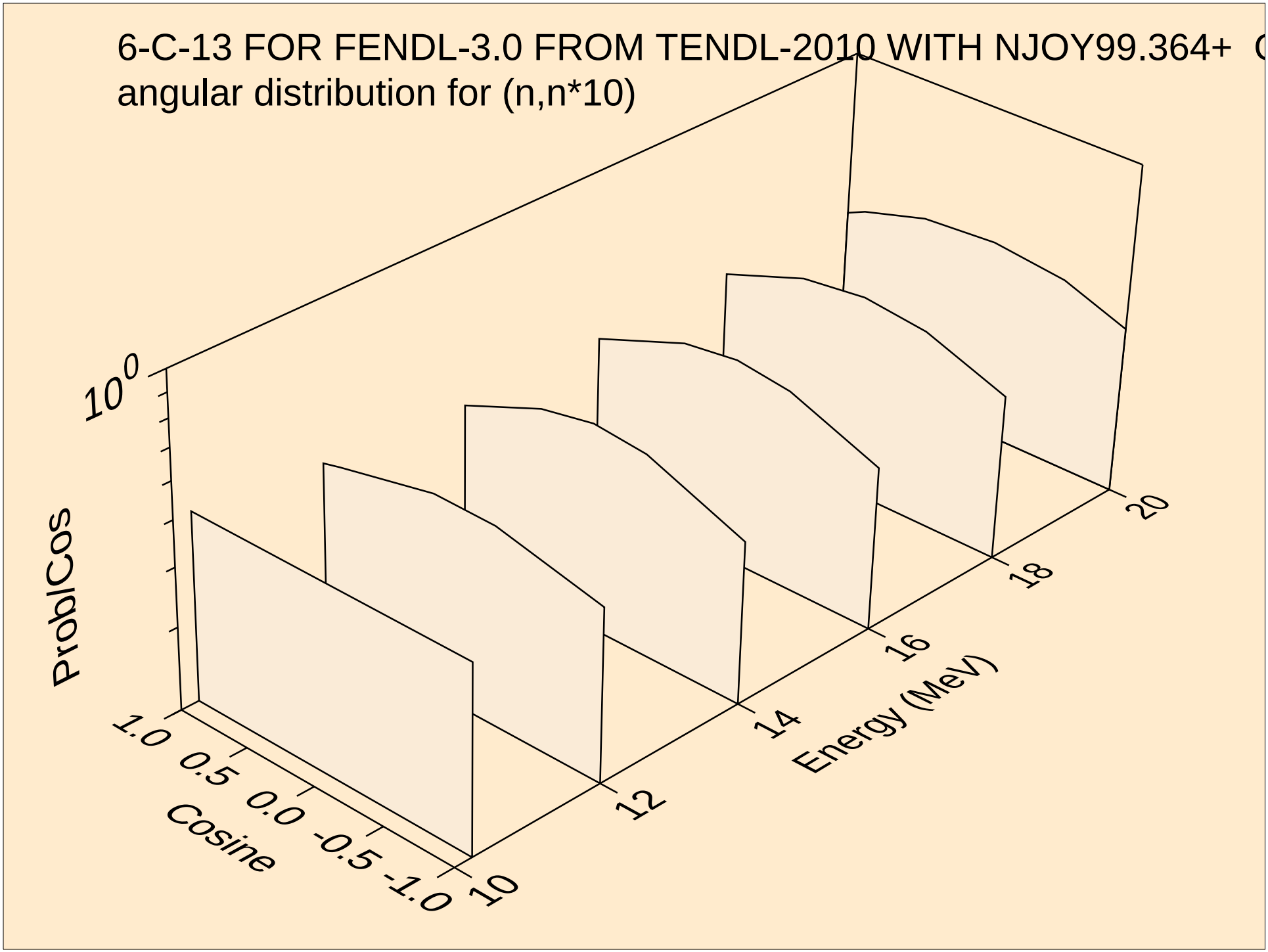

6-C-13 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+ C
angular distribution for (n,n*5)
10^0
ProbICos
1.0
0.5
0.0
-0.5
-1.0
Cosine
8
10
12
14
16
18
20
Energy (MeV)

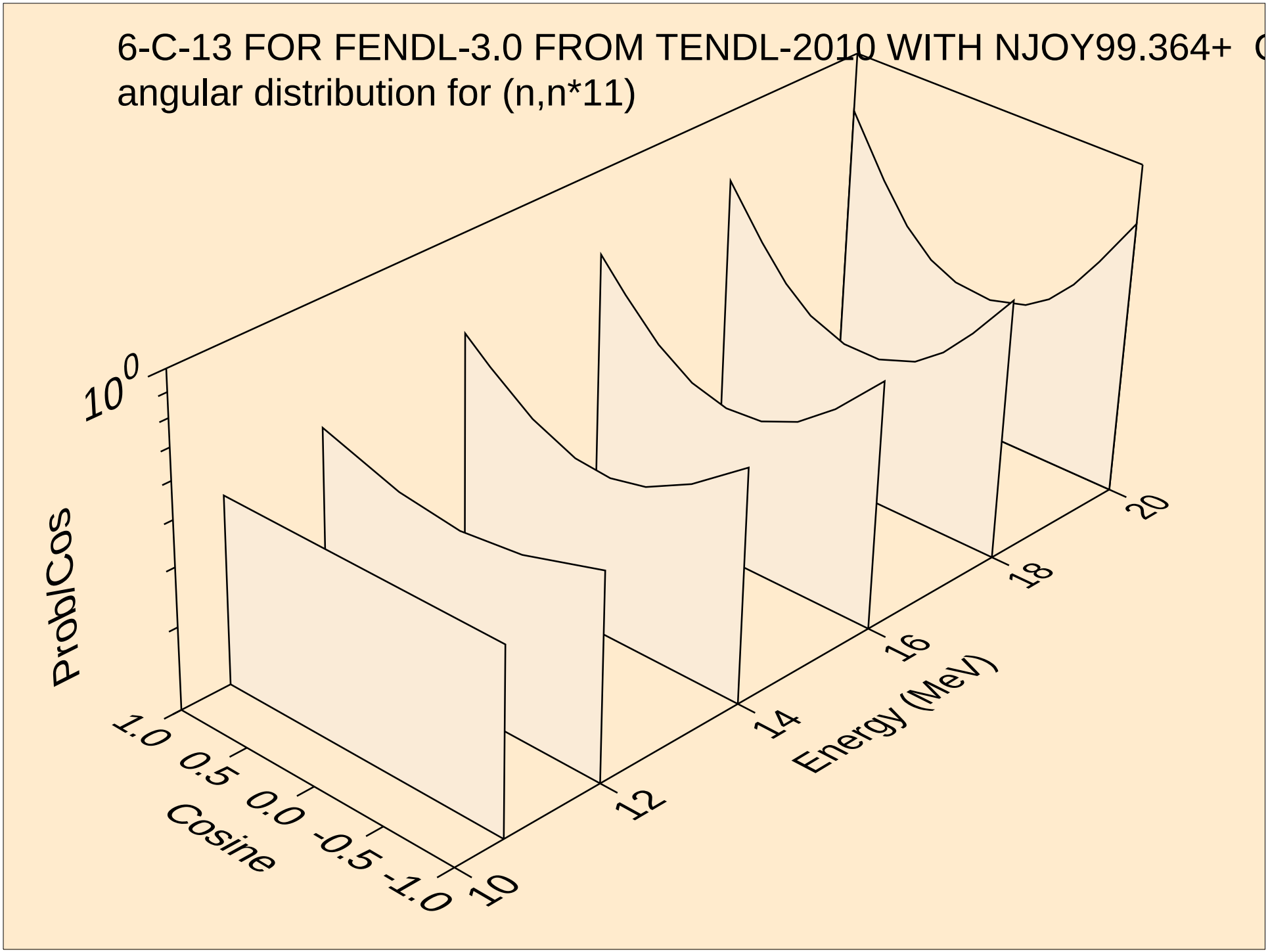

6-C-13 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+ C
angular distribution for (n,n*6)
ProbICos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
8
10
12
14
16
18
20
Energy (MeV)

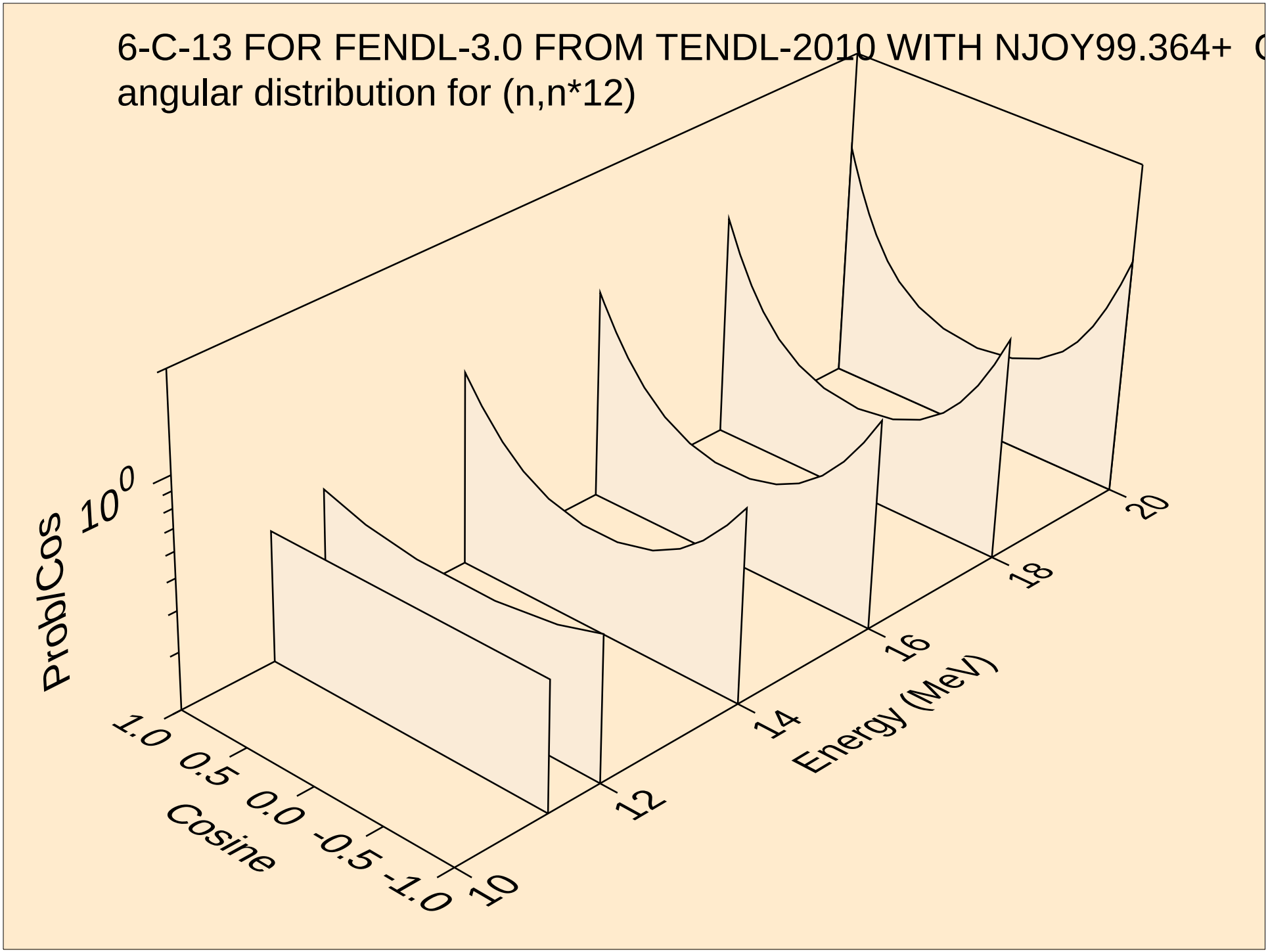

6-C-13 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+ C
angular distribution for (n,n*7)
ProbICos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
8
10
12
14
16
18
20
Energy (MeV)

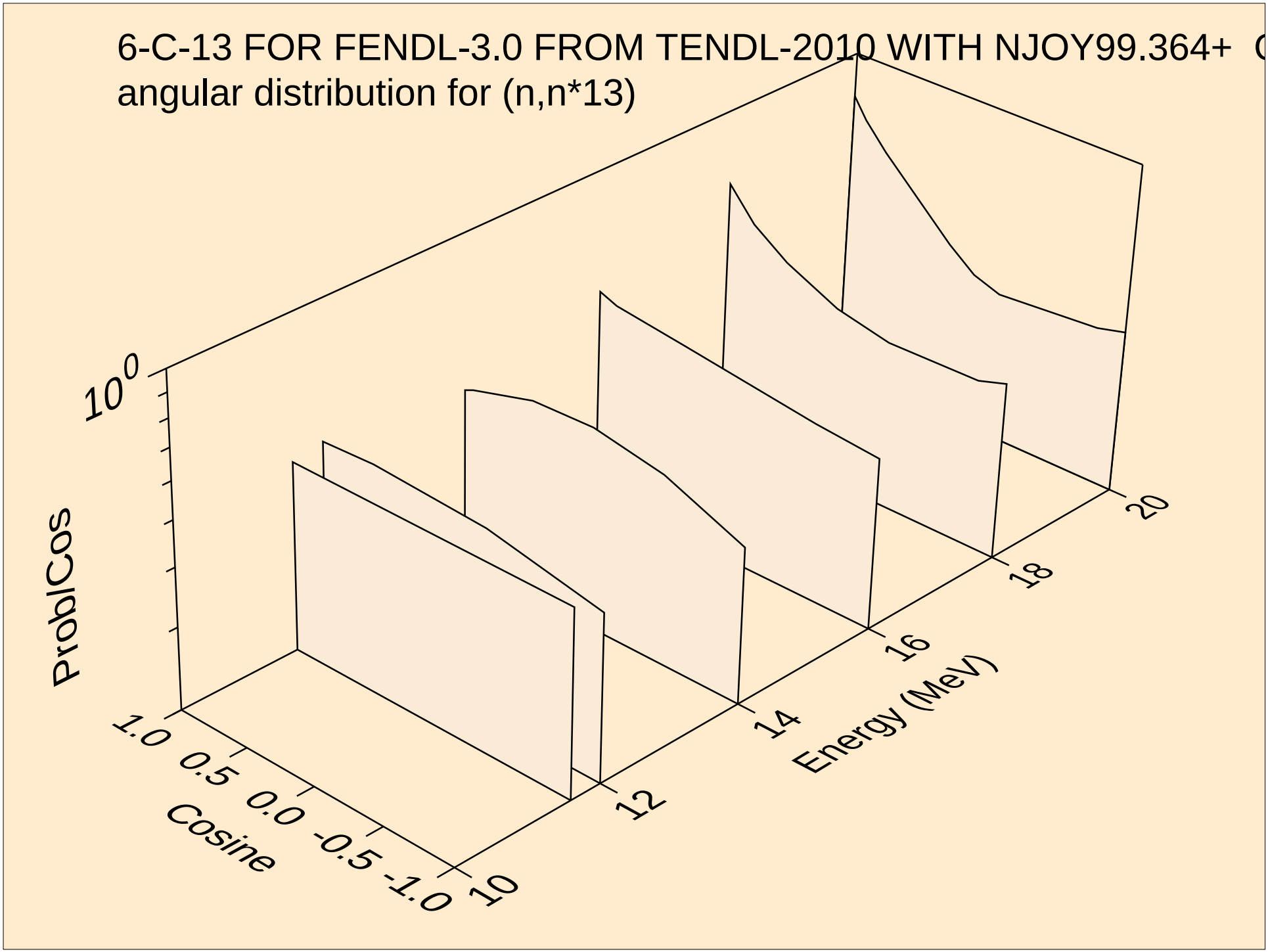

6-C-13 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+ C
angular distribution for (n,n*8)
10^0
ProbICos
1.0
0.5
0.0
-0.5
-1.0
Cosine
8
10
12
14
16
18
20
Energy (MeV)

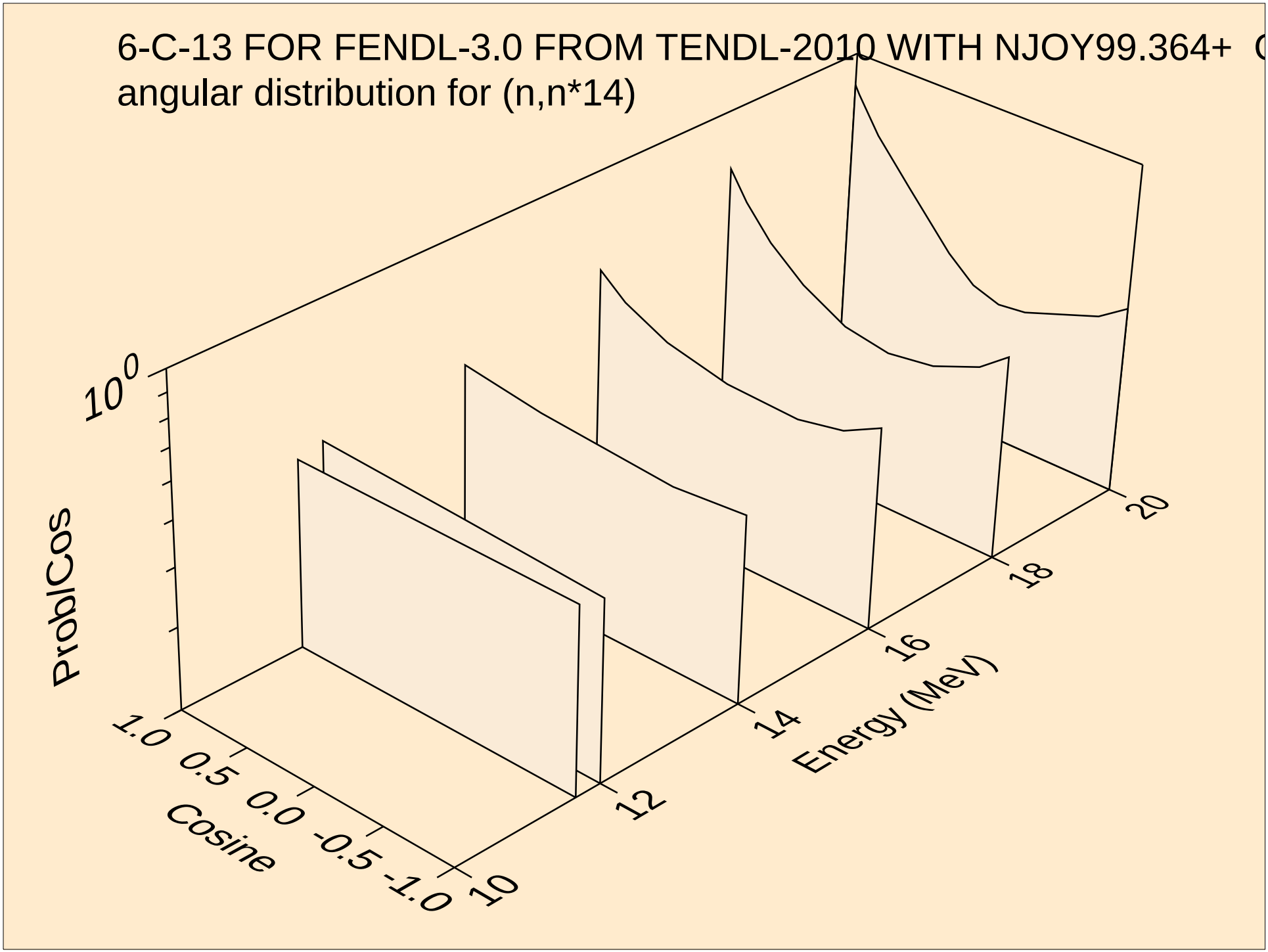

6-C-13 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+ C
angular distribution for (n,n*9)
ProbICos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
8
10
12
14
16
18
20
Energy (MeV)

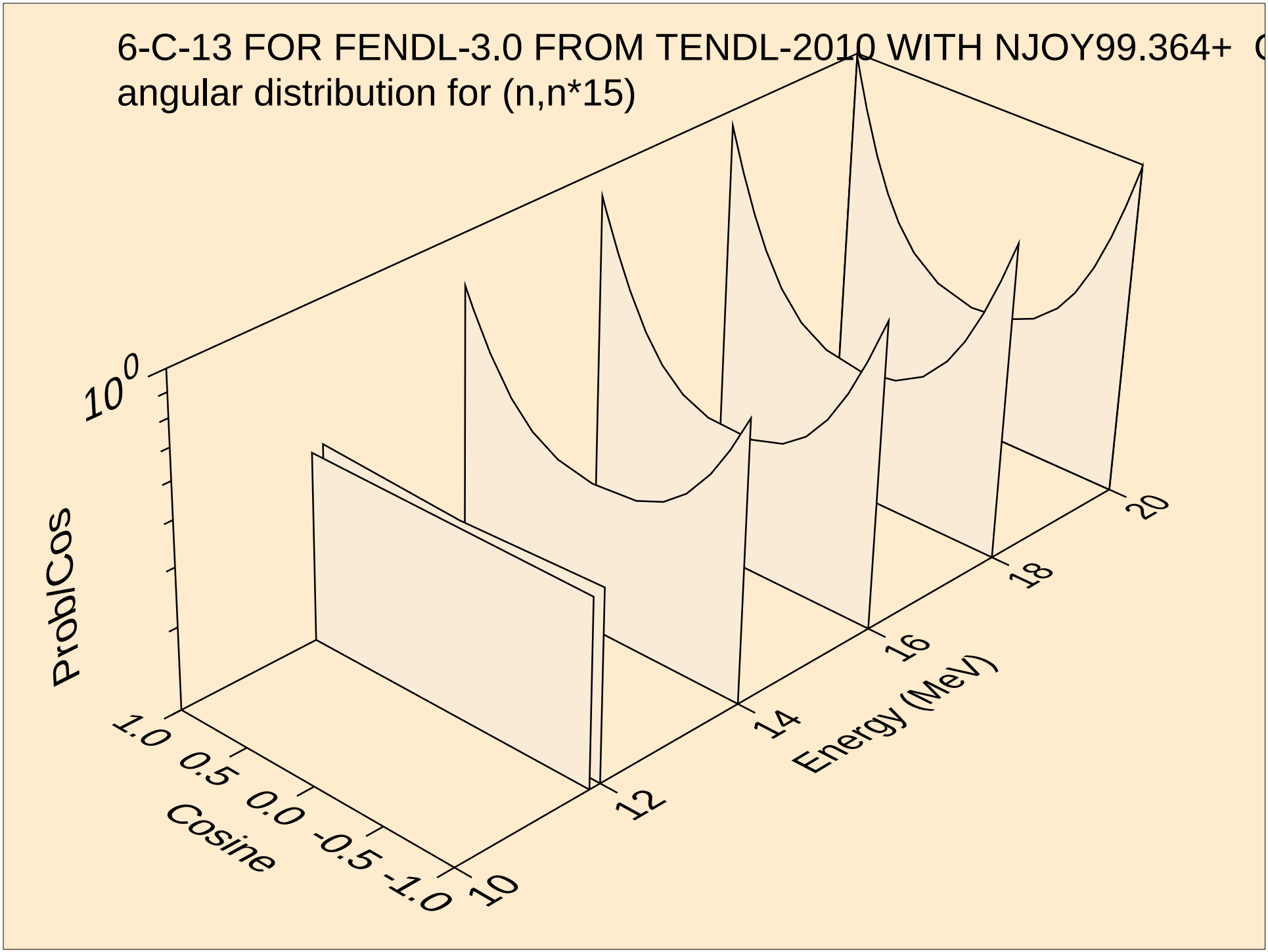

6-C-13 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+ C
angular distribution for (n,n*10)
10^0
ProbICos
1.0
0.5
0.0
-0.5
-1.0
Cosine
10
12
14
16
18
20
Energy (MeV)

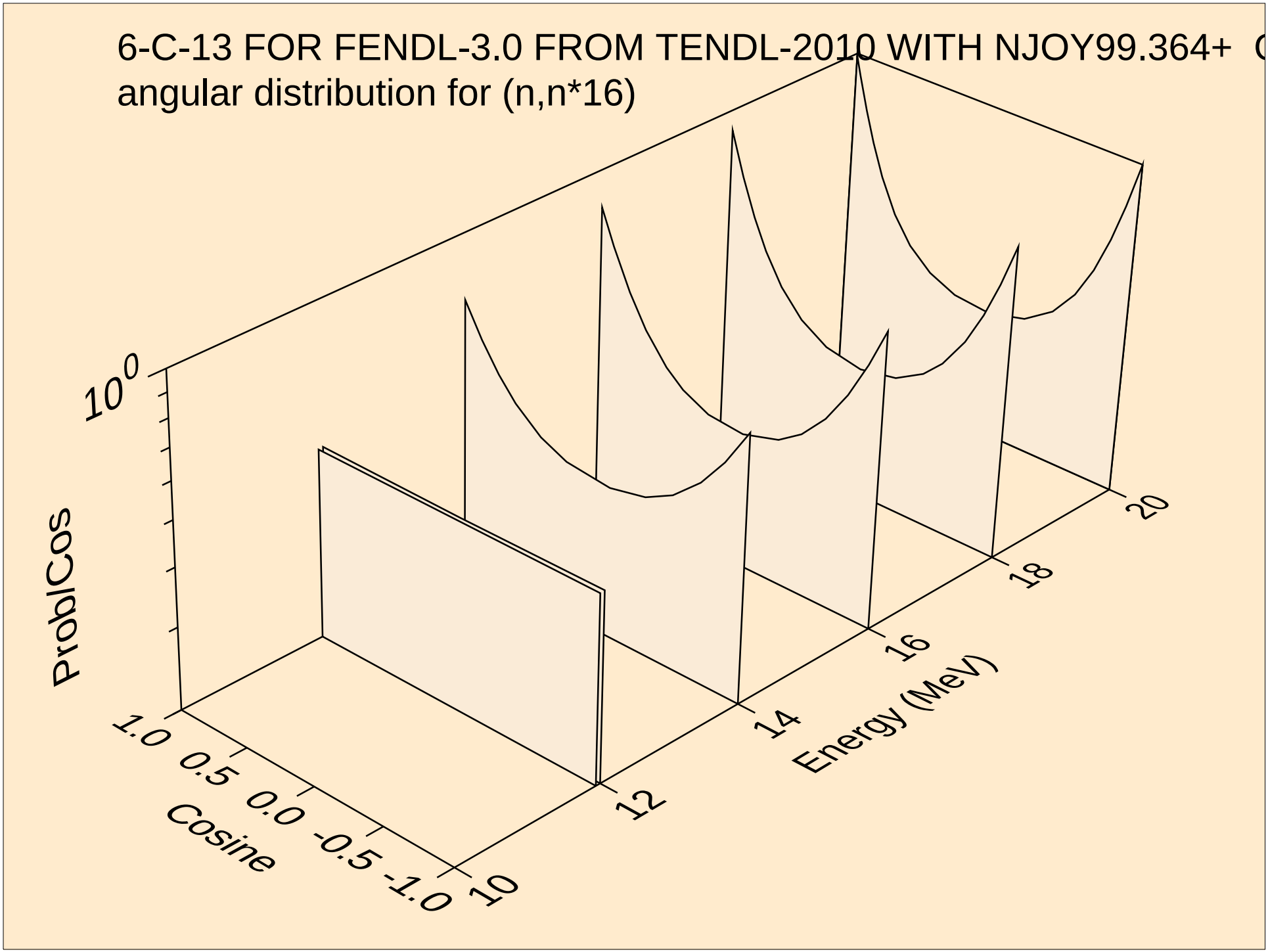

6-C-13 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+ C
angular distribution for (n,n*11)
10^0
ProbICos
1.0
0.5
0.0
-0.5
-1.0
Cosine
10
12
14
16
18
20
Energy (MeV)

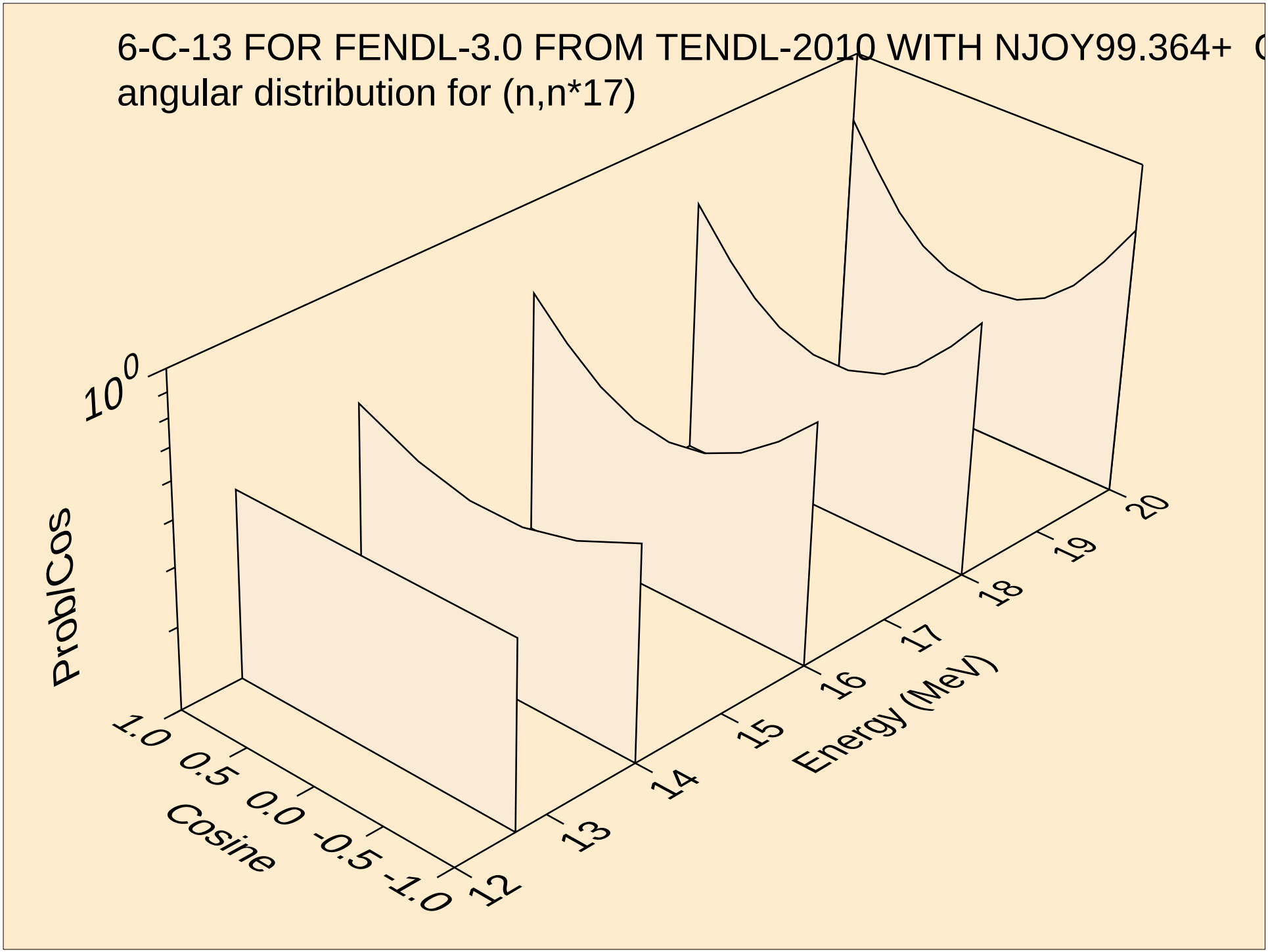

6-C-13 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+ C
angular distribution for (n,n*12)
ProbICos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
10
12
14
16
18
20
Energy (MeV)

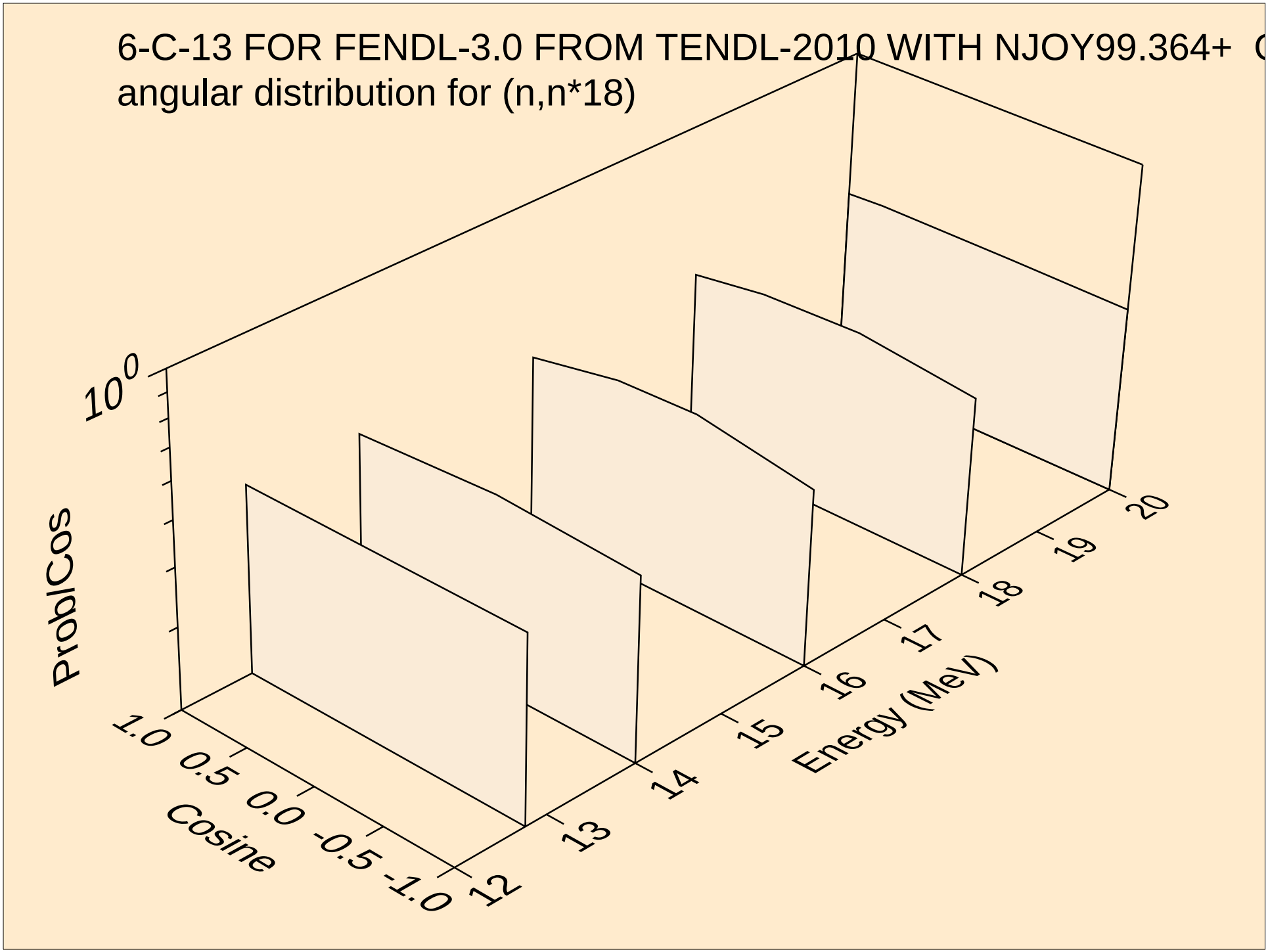

6-C-13 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+ C
angular distribution for (n,n*13)
10^0
ProbICos
1.0
0.5
0.0
-0.5
-1.0
Cosine
10
12
14
16
18
20
Energy (MeV)

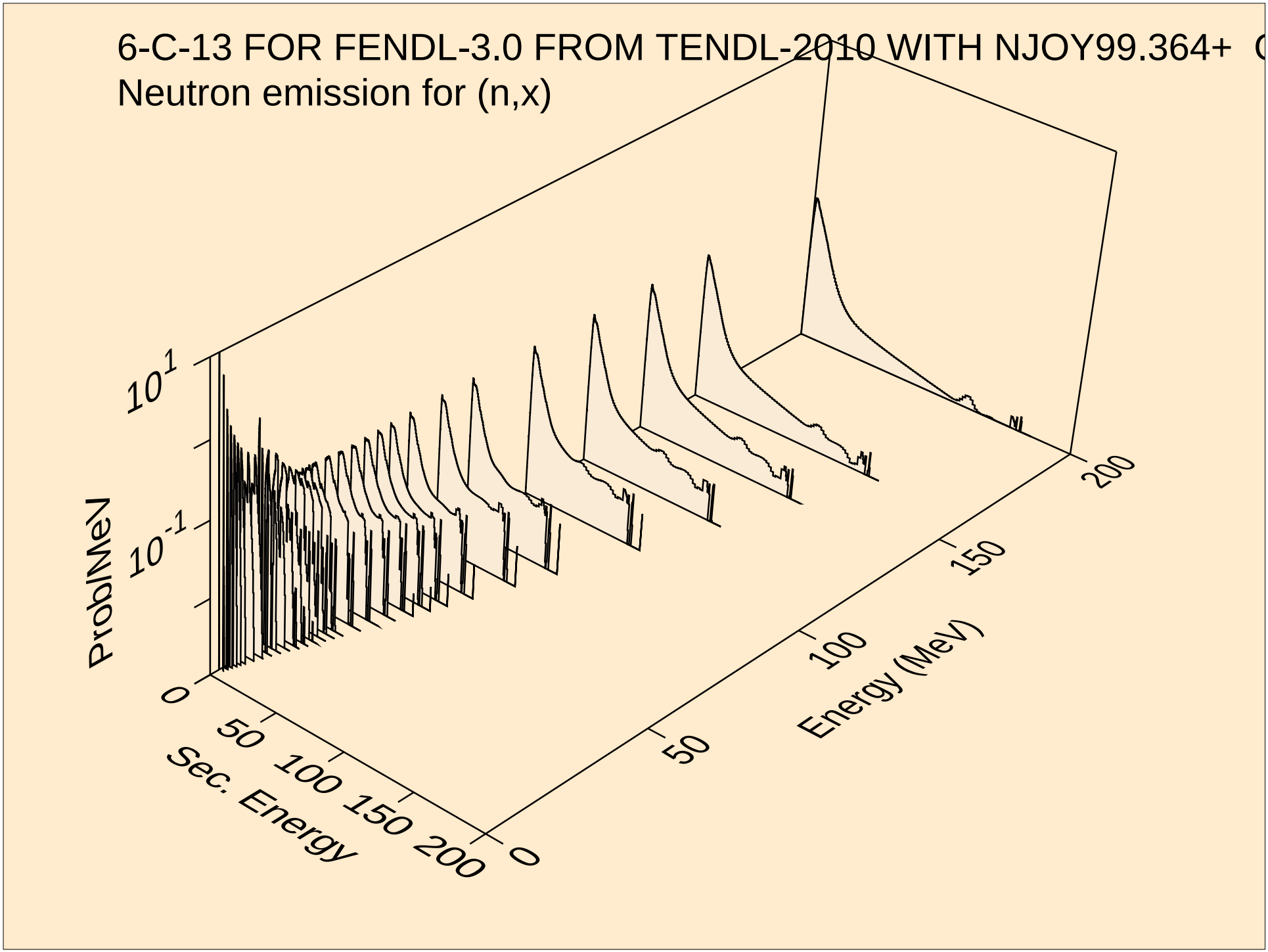

6-C-13 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+ C
angular distribution for (n,n*14)
10^0
ProbICos
1.0
0.5
0.0
-0.5
-1.0
Cosine
10
12
14
16
18
20
Energy (MeV)

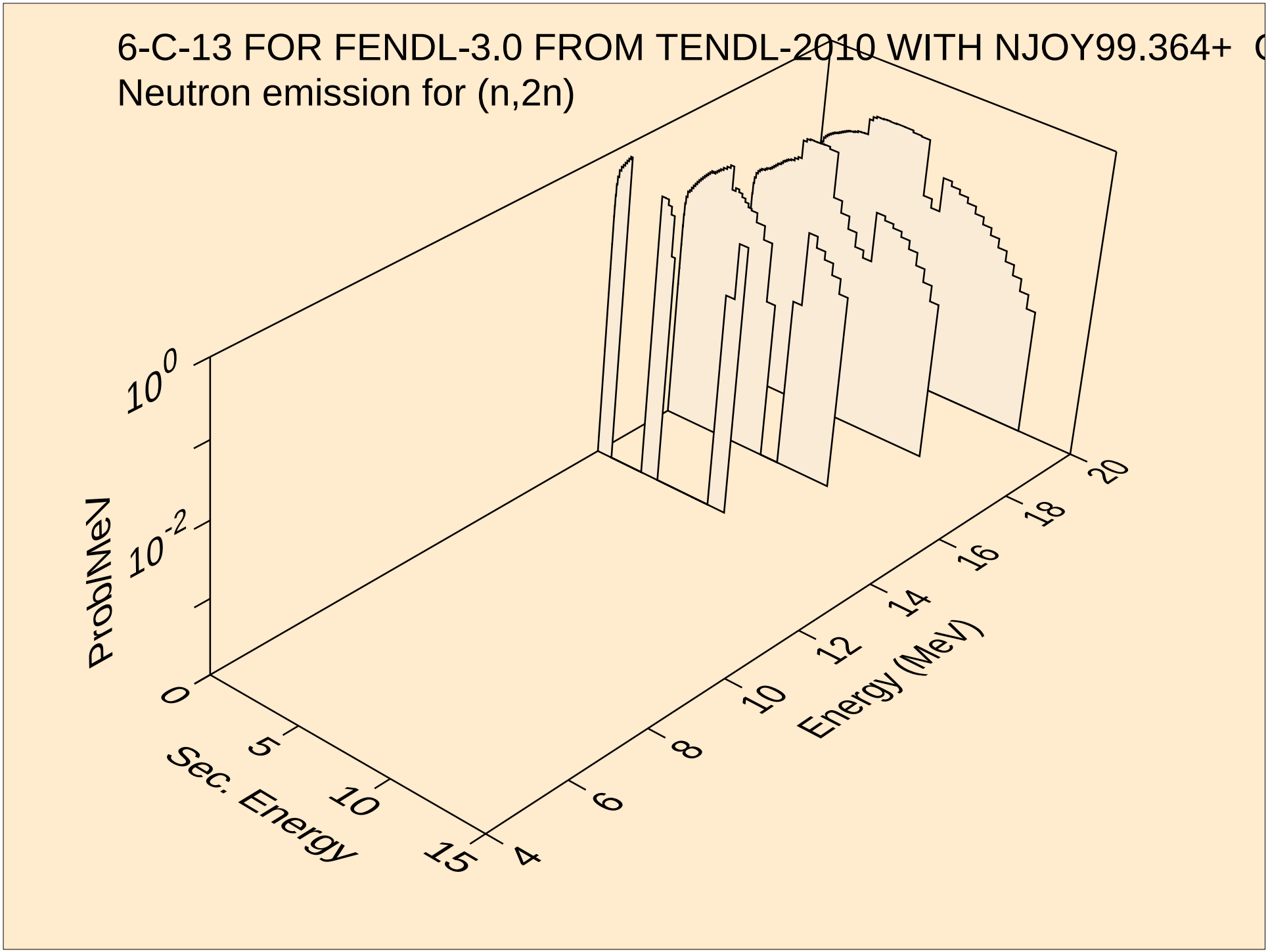

6-C-13 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+ C
angular distribution for (n,n*15)
10^0
ProbICos
1.0
0.5
0.0
-0.5
-1.0
Cosine
10
12
14
16
18
20
Energy (MeV)

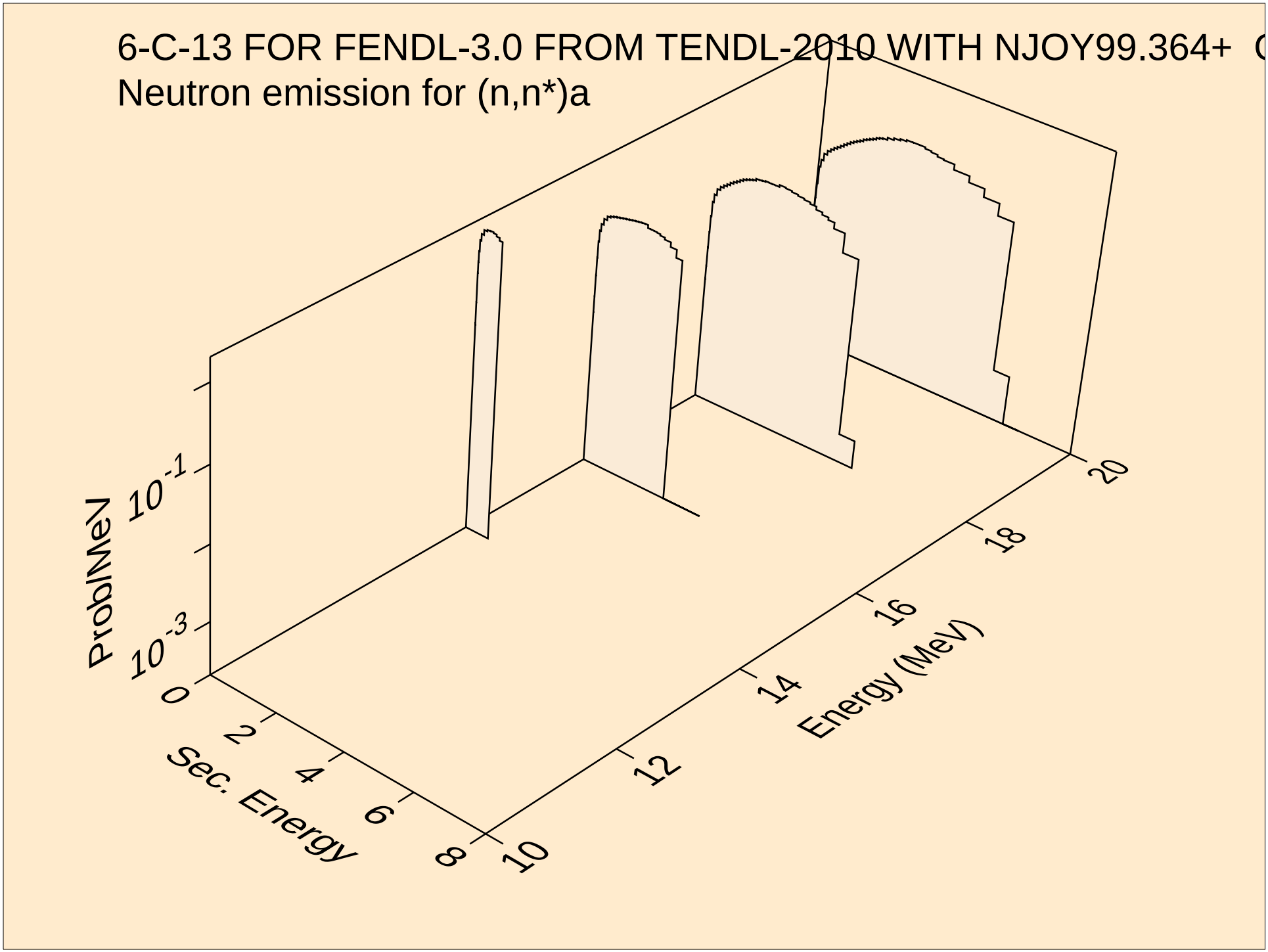

6-C-13 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+ C
angular distribution for (n,n*16)
10^0
ProbICos
1.0
0.5
0.0
-0.5
-1.0
Cosine
10
12
14
16
18
20
Energy (MeV)

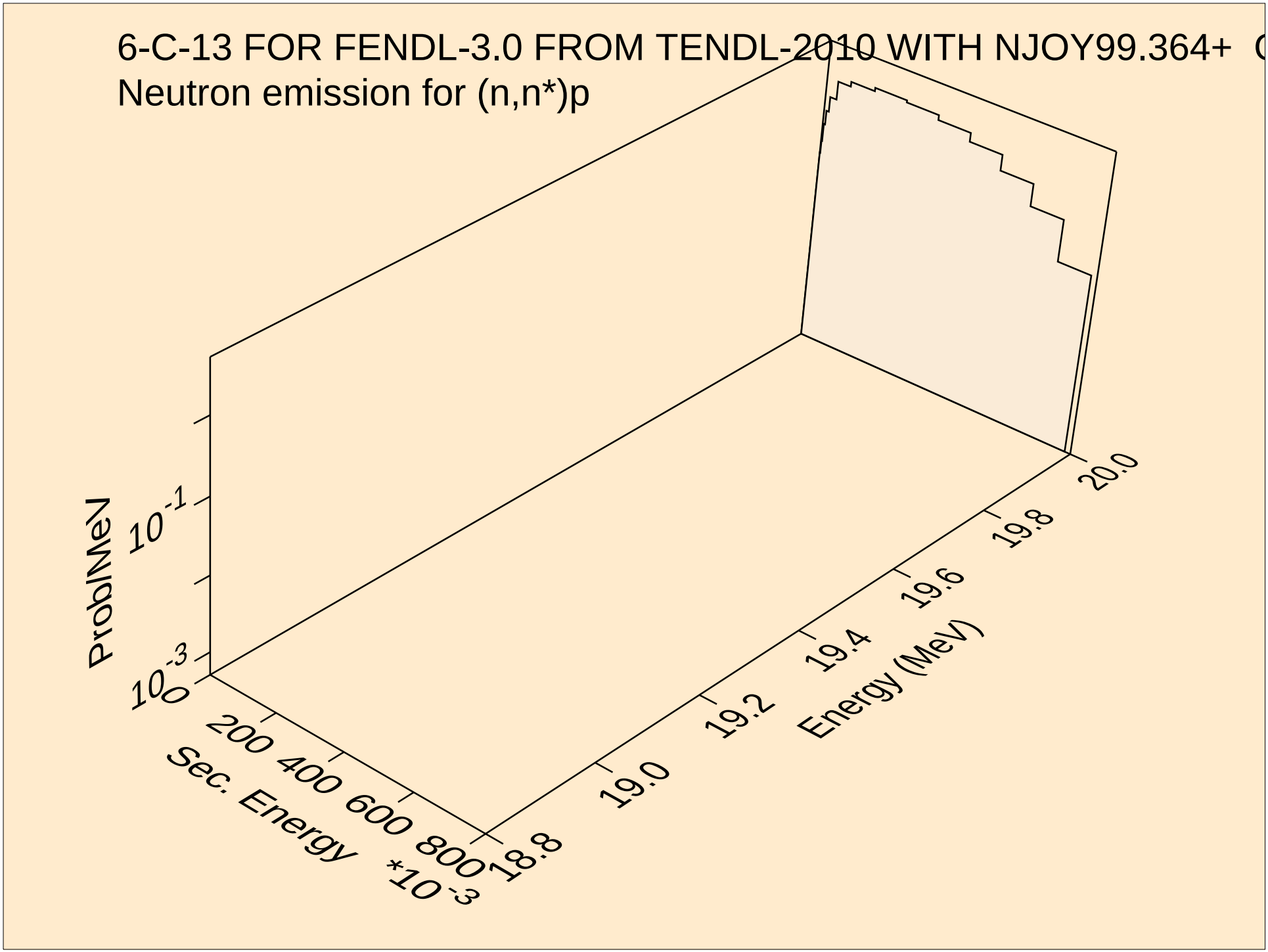

6-C-13 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+ C
angular distribution for (n,n*17)
10^0
Prob\Cos
1.0
0.5
0.0
-0.5
-1.0
Cosine
12
13
14
15
16
17
18
19
20
Energy (MeV)

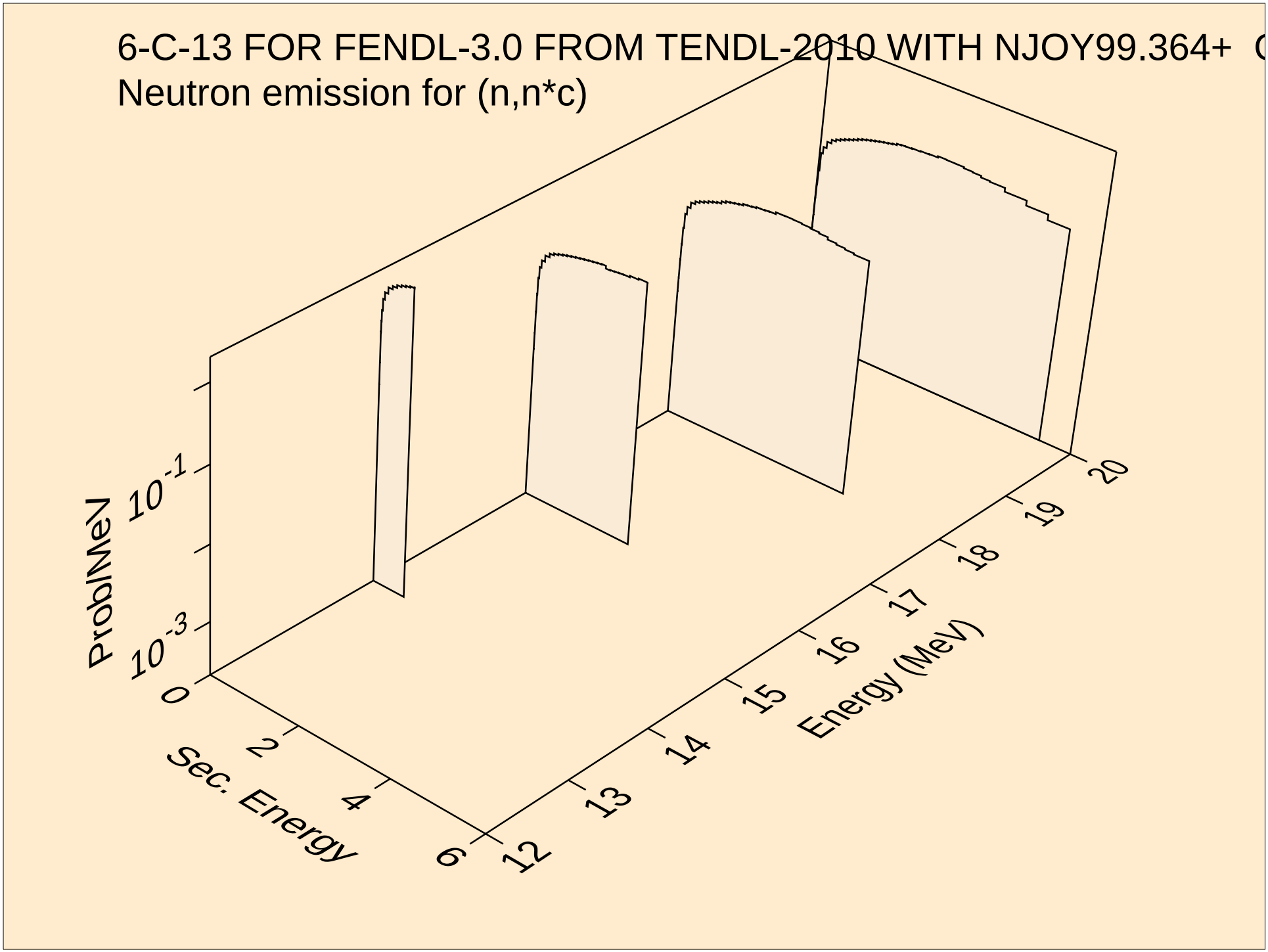

6-C-13 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+ C
angular distribution for (n,n*18)
10^0
ProbICos
1.0
0.5
0.0
-0.5
-1.0
Cosine
12
13
14
15
16
17
18
19
20
Energy (MeV)

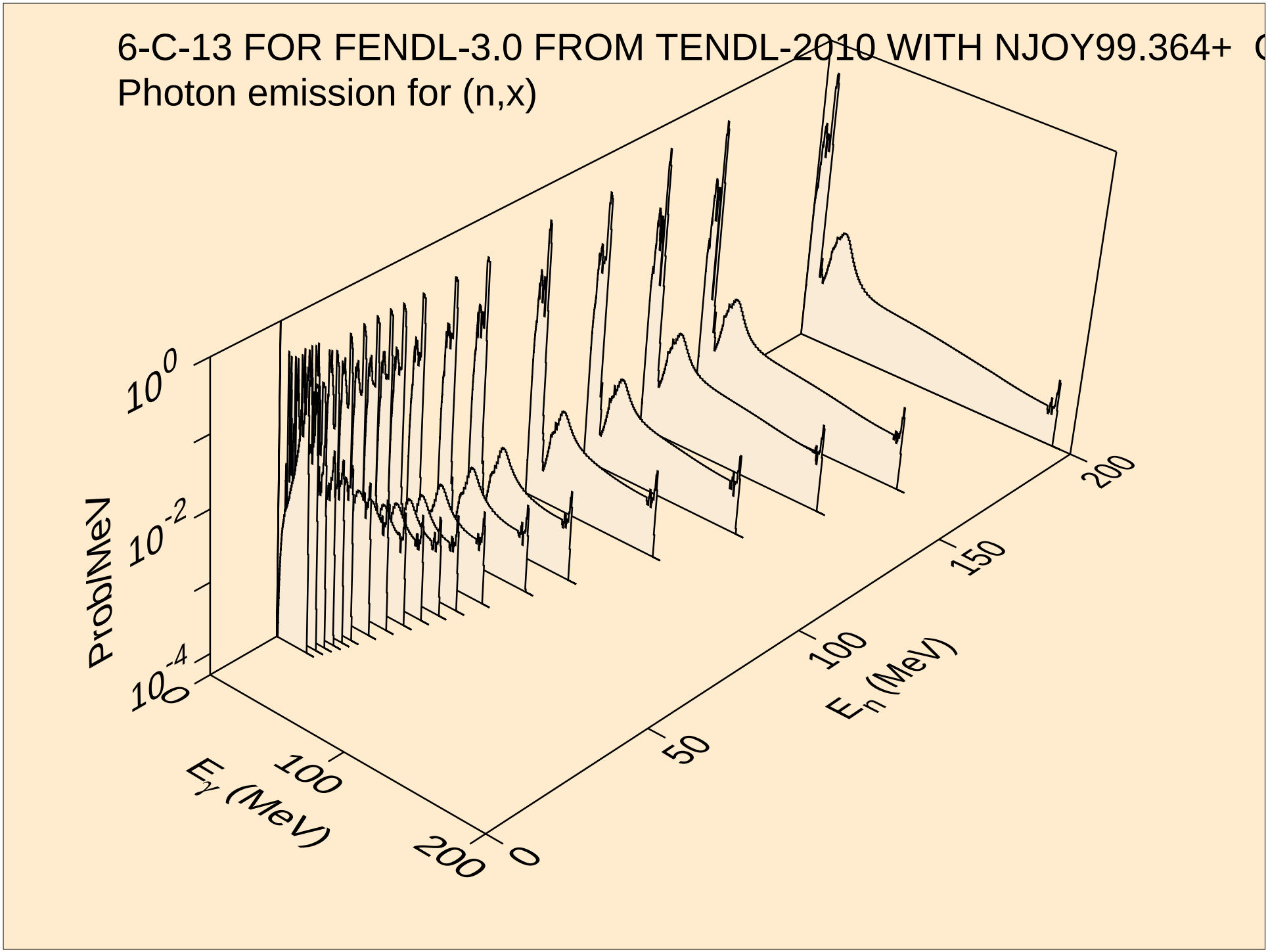

6-C-13 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+ C
Neutron emission for (n,x)
Prob/MeV
10^{1}
10^{-1}
0
50
100
150
200
Sec. Energy
0
50
100
150
200
Energy (MeV)

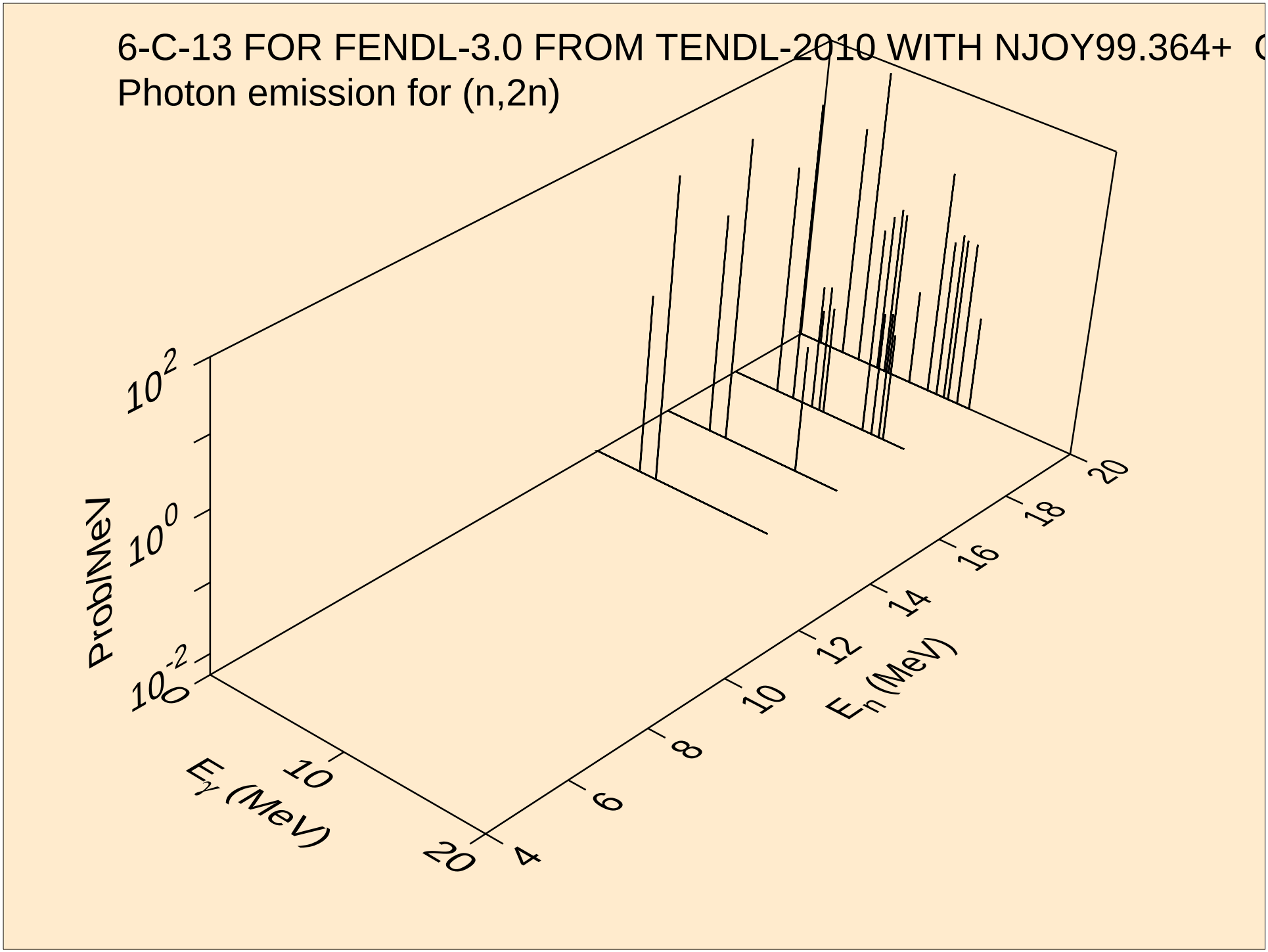

6-C-13 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+ C
Neutron emission for (n,2n)
Prob/MeV
10^{0}
10^{-2}
0
Sec. Energy
5
10
15
4
6
8
10
12
14
16
18
20
Energy (MeV)

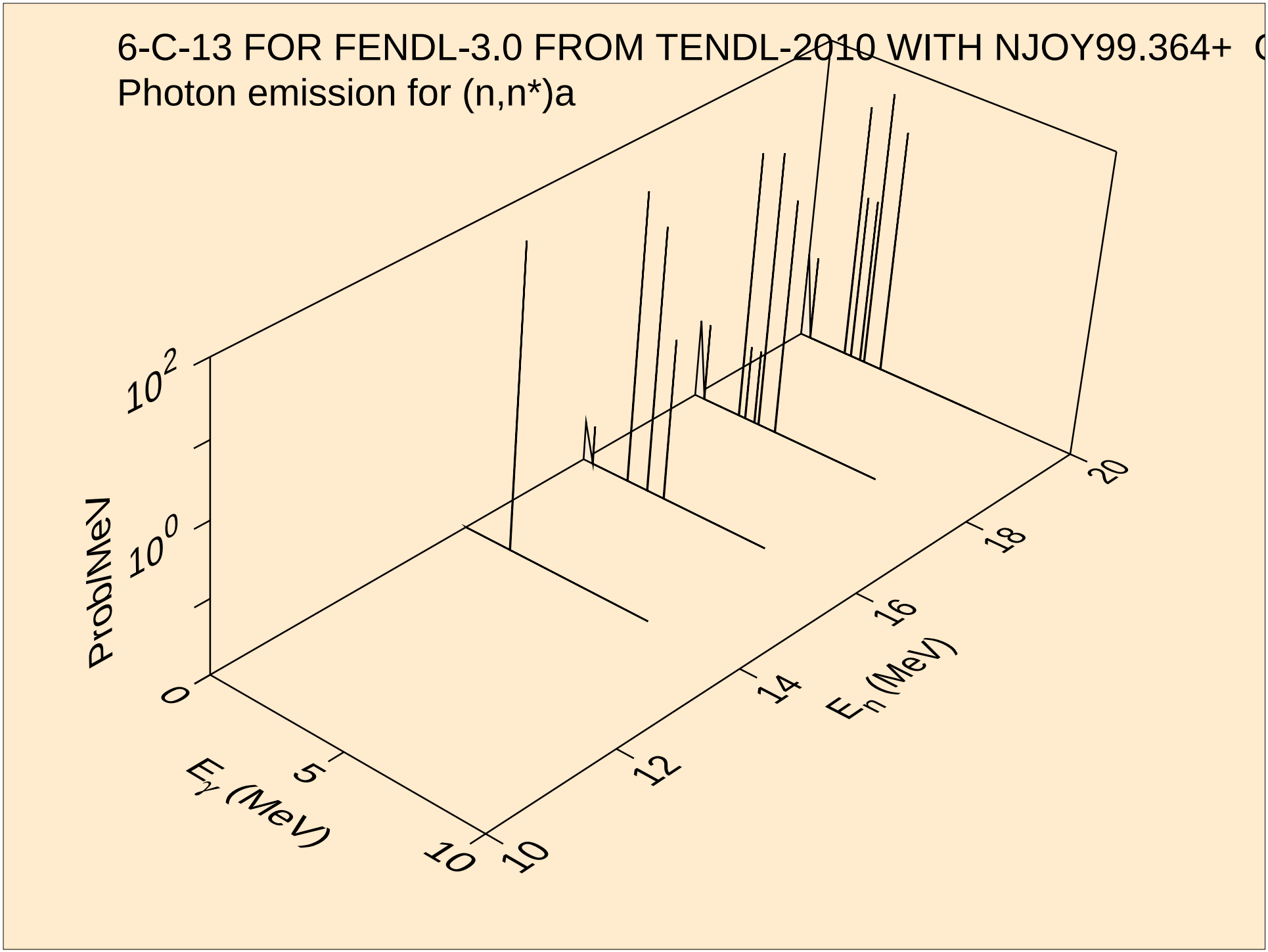

6-C-13 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+ C
Neutron emission for (n,n*)a
Prob/MeV
10-1
10-3
0
2
4
6
8
10
Sec. Energy
12
14
16
18
20
Energy (MeV)

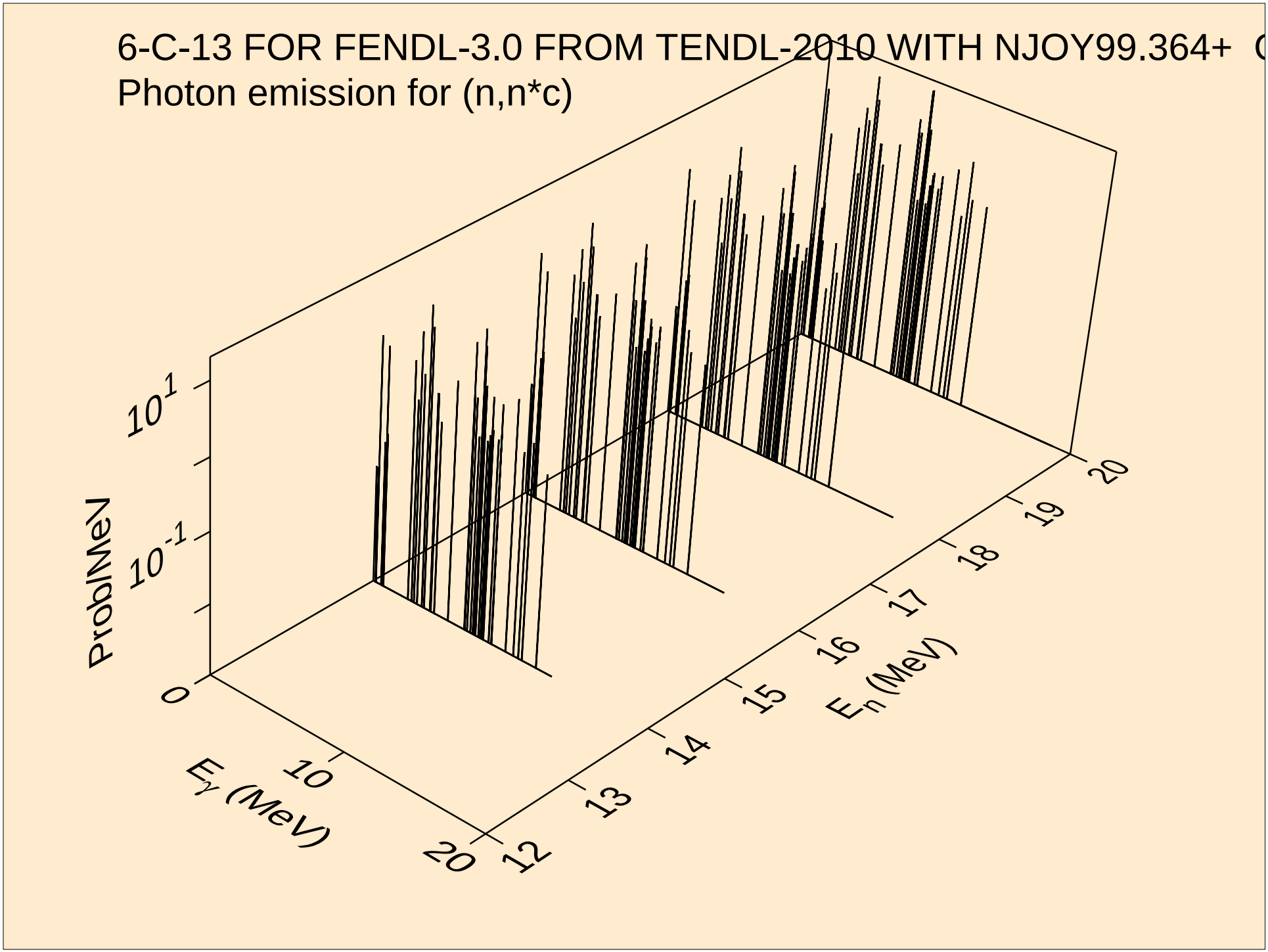

6-C-13 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+ C
Neutron emission for (n,n*)p
Prob/MeV
10-1
10-3
0
200
400
600
800
Sec. Energy *10-3
18.8
19.0
19.2
19.4
19.6
19.8
20.0
Energy (MeV)

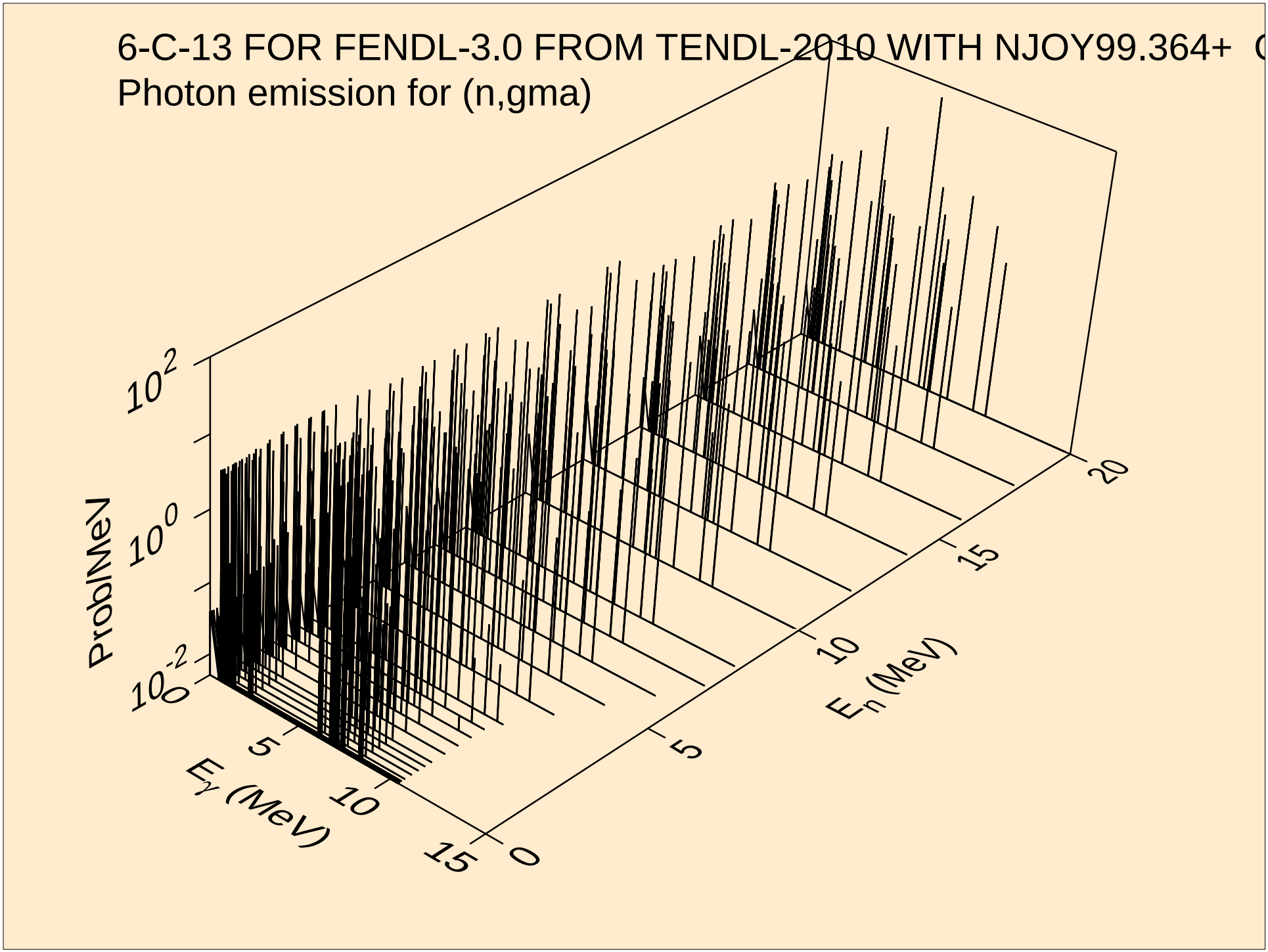

6-C-13 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+ C
Neutron emission for (n,n*c)
Prob/MeV
10-1
10-3
0
2
4
6
Sec. Energy
12
13
14
15
16
17
18
19
20
Energy (MeV)

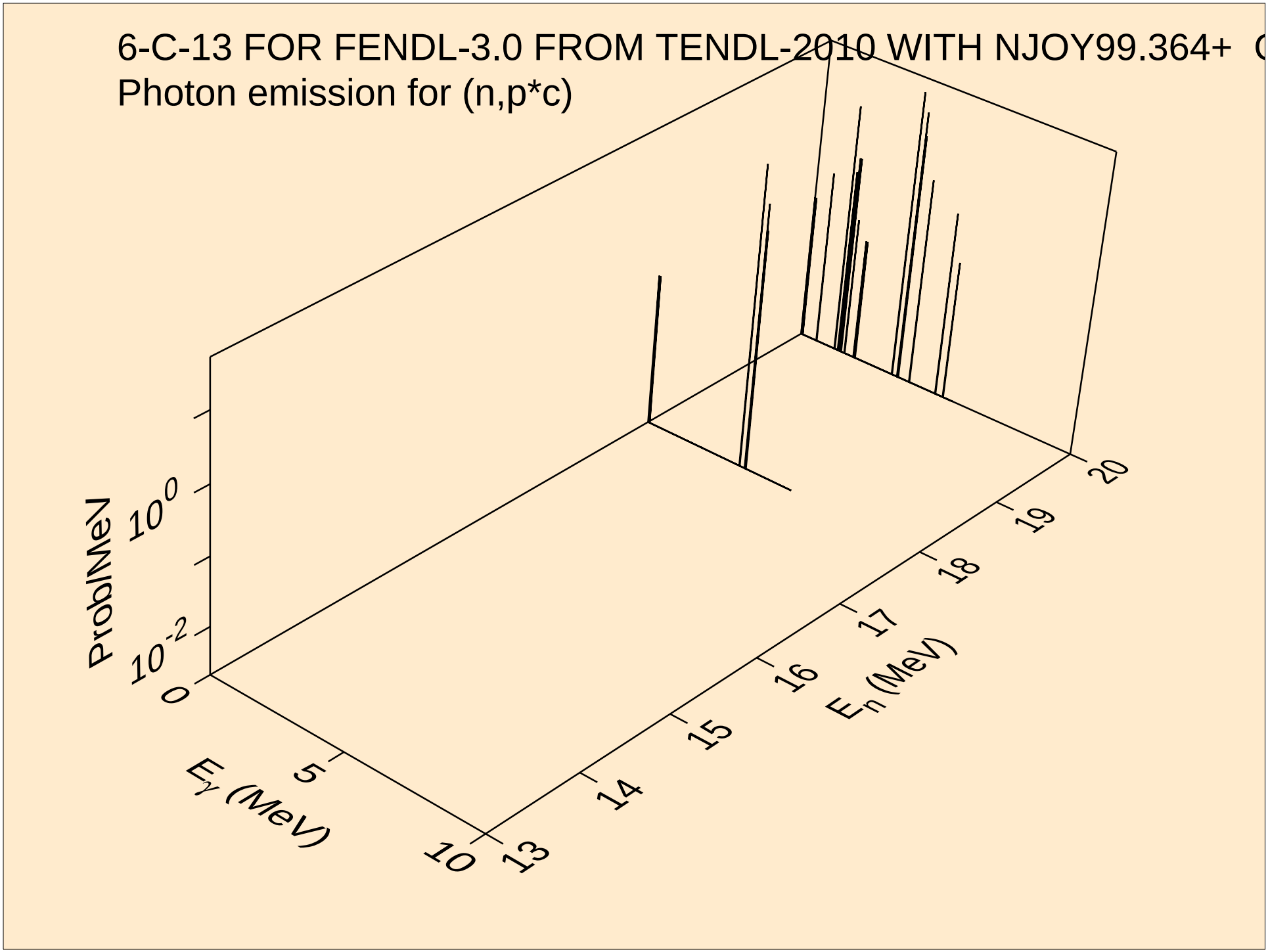

6-C-13 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+ C
Photon emission for (n,x)
Prob/MeV
10^{0}
10^{-2}
10^{-4}
E_γ (MeV)
0
100
200
E_n (MeV)
0
50
100
150
200

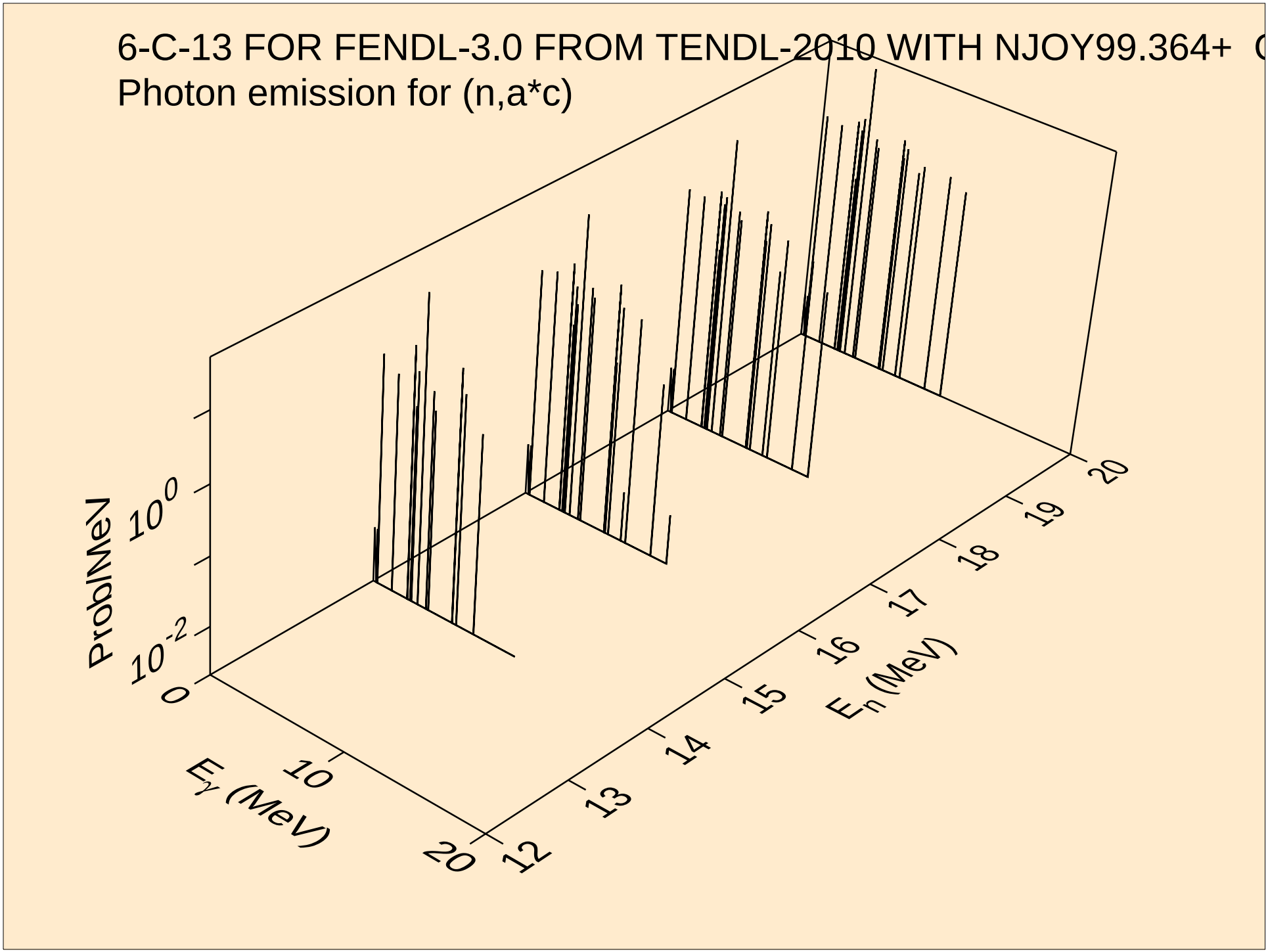

6-C-13 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+ C
Photon emission for (n,2n)
Prob/MeV
10^{2}
10^{0}
10^{-2}
0
10
20
E_γ (MeV)
4
6
8
10
12
14
16
18
20
E_n (MeV)

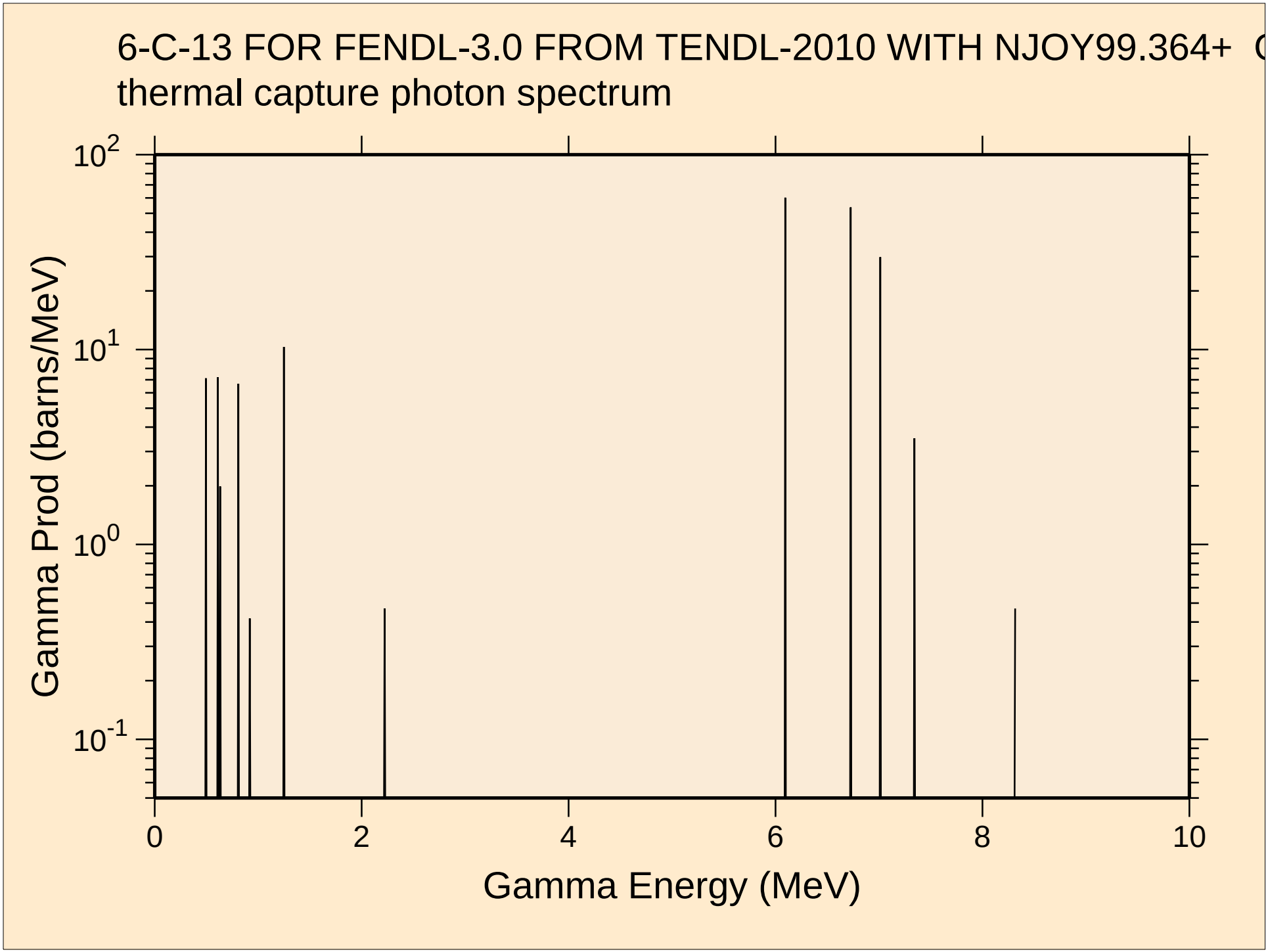

6-C-13 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+ C
Photon emission for (n,n*)a
Prob/MeV
10^2
10^0
0
E_γ (MeV)
5
10
10
12
14
16
18
20
E_n (MeV)

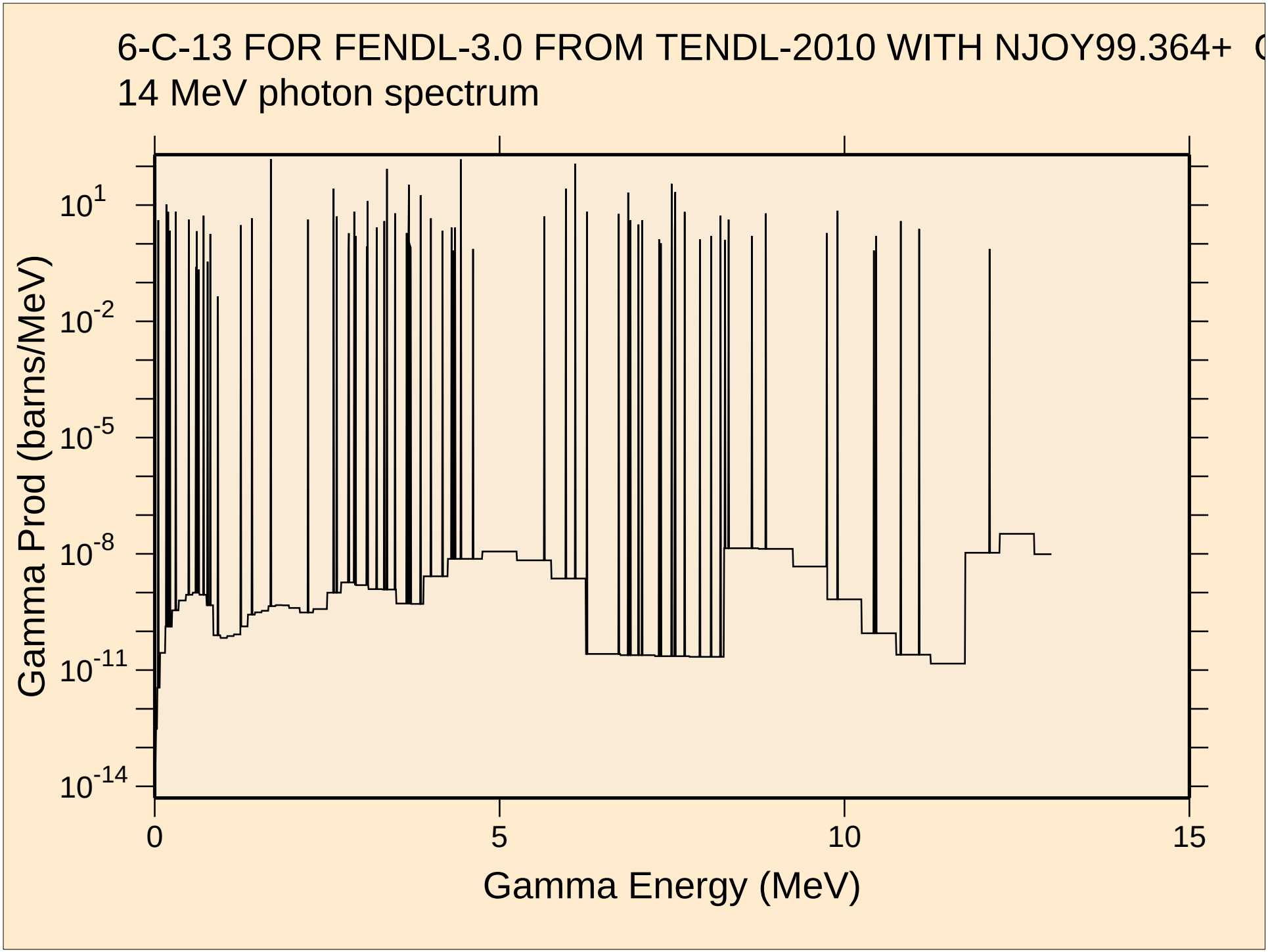

6-C-13 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+ C
Photon emission for (n,n*c)
Prob/MeV
10^{1}
10^{-1}
0
10
20
E_γ (MeV)
12
13
14
15
16
17
18
19
20
E_n (MeV)

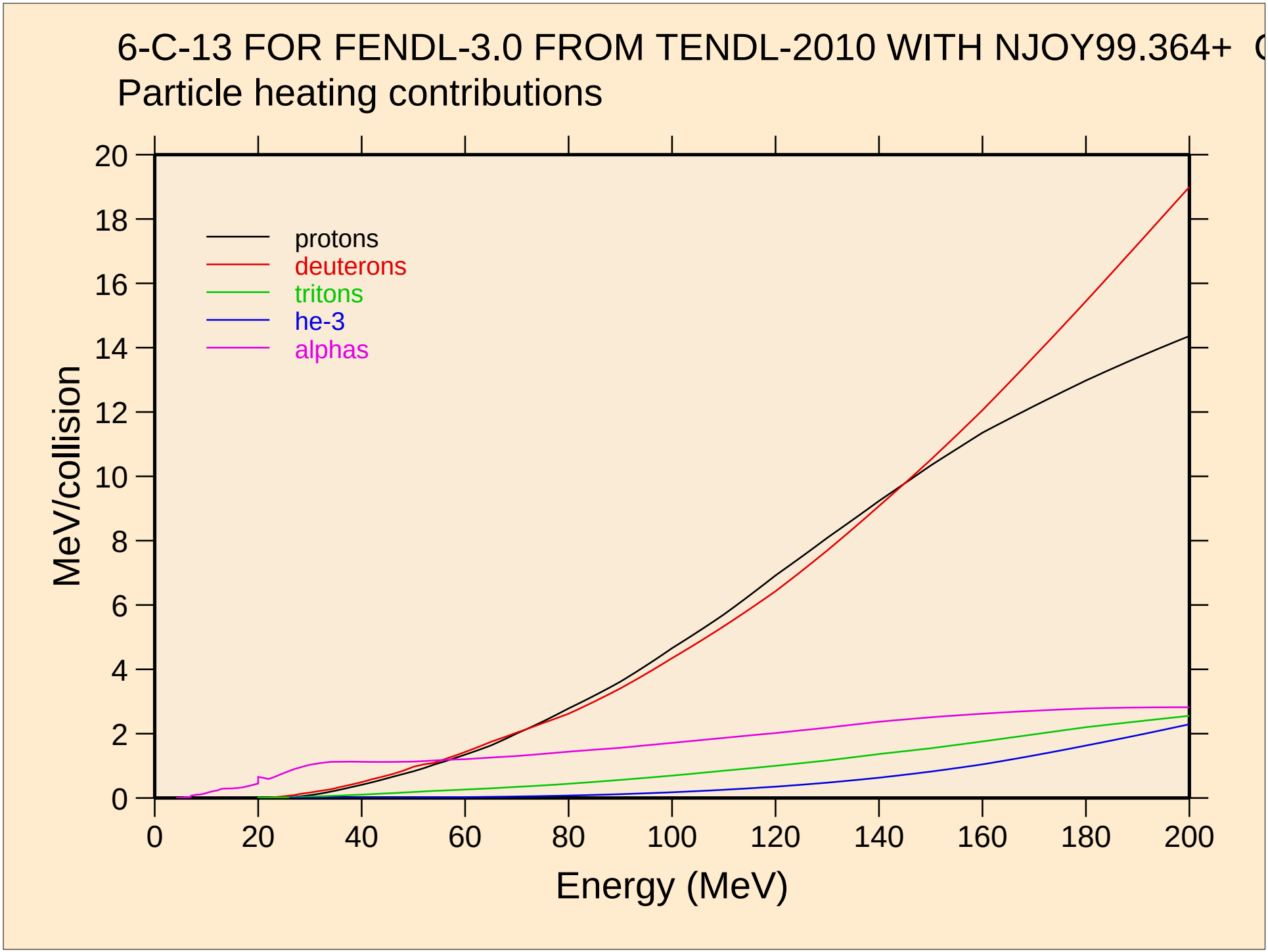

6-C-13 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+ C
Photon emission for (n,gma)
Prob/MeV
10^{2}
10^{0}
10^{-2}
0
5
10
15
E_γ (MeV)
0
5
10
15
20
E_n (MeV)

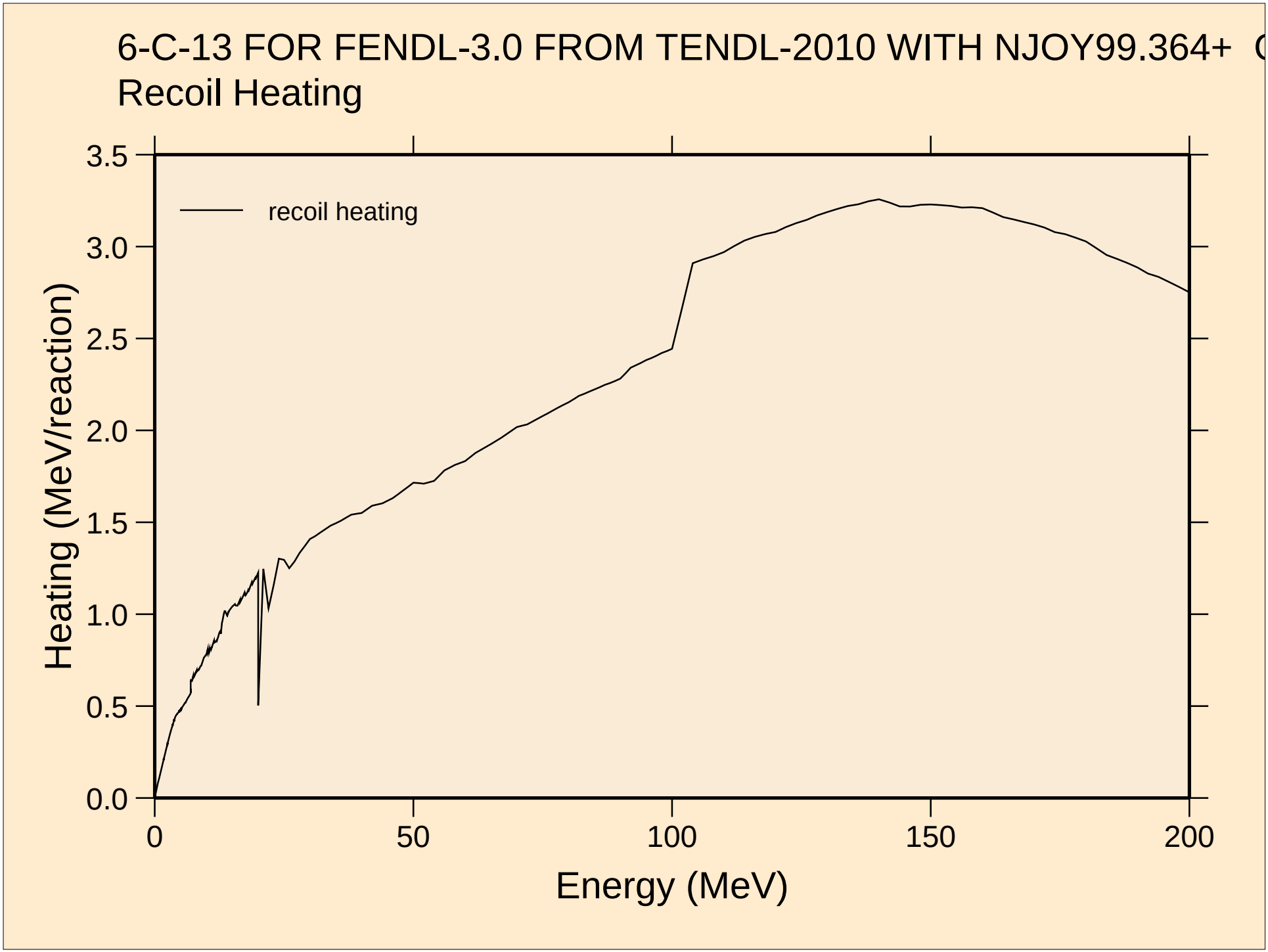

6-C-13 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+ C
Photon emission for (n,p*c)
Prob/MeV
10^0
10^-2
0
5
10
Eγ (MeV)
13
14
15
16
17
18
19
20
En (MeV)

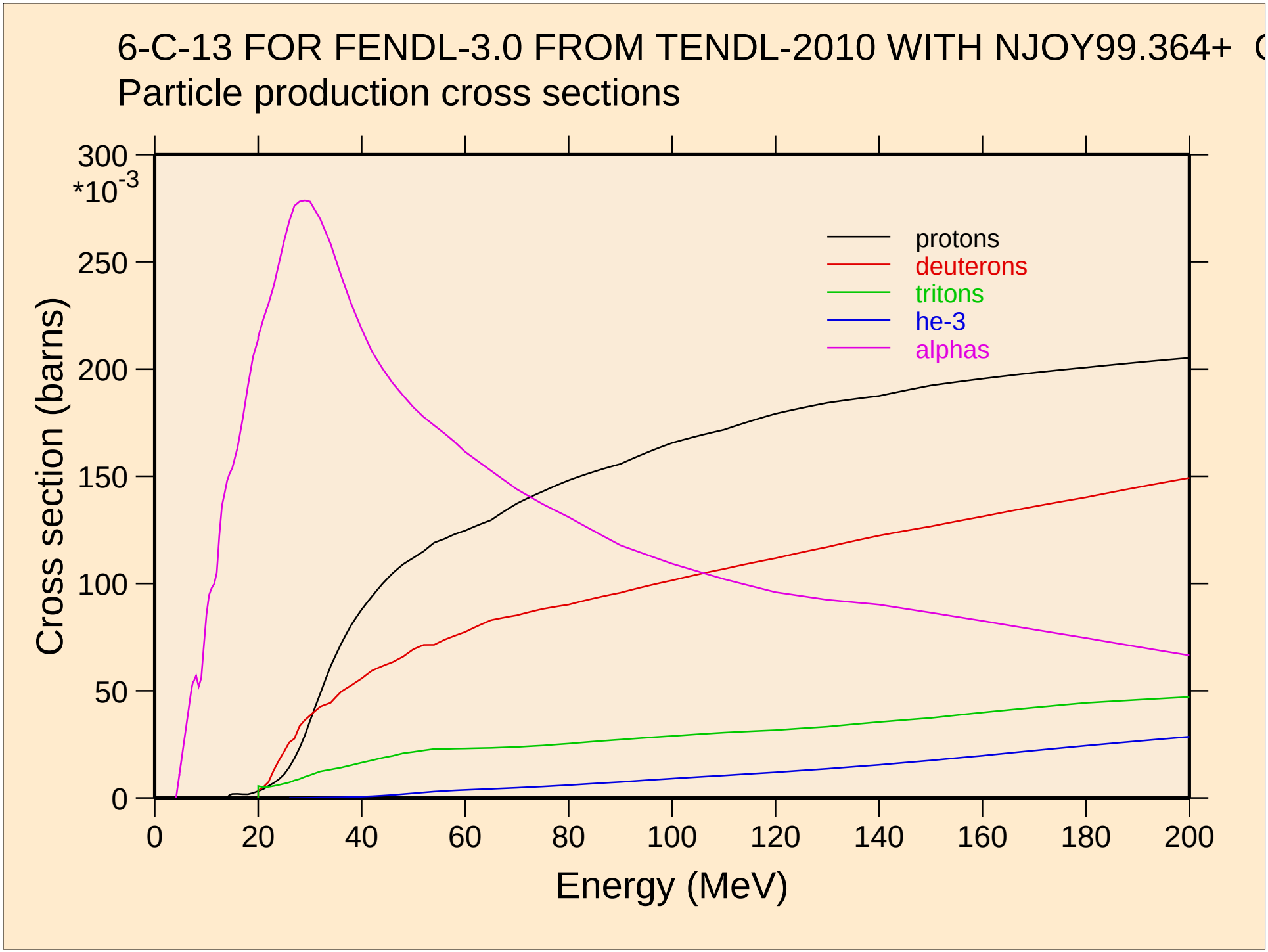

6-C-13 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+ C
Photon emission for (n,a*c)
Prob/MeV
10^0
10^-2
0
10
20
Eγ (MeV)
12
13
14
15
16
17
18
19
20
En (MeV)

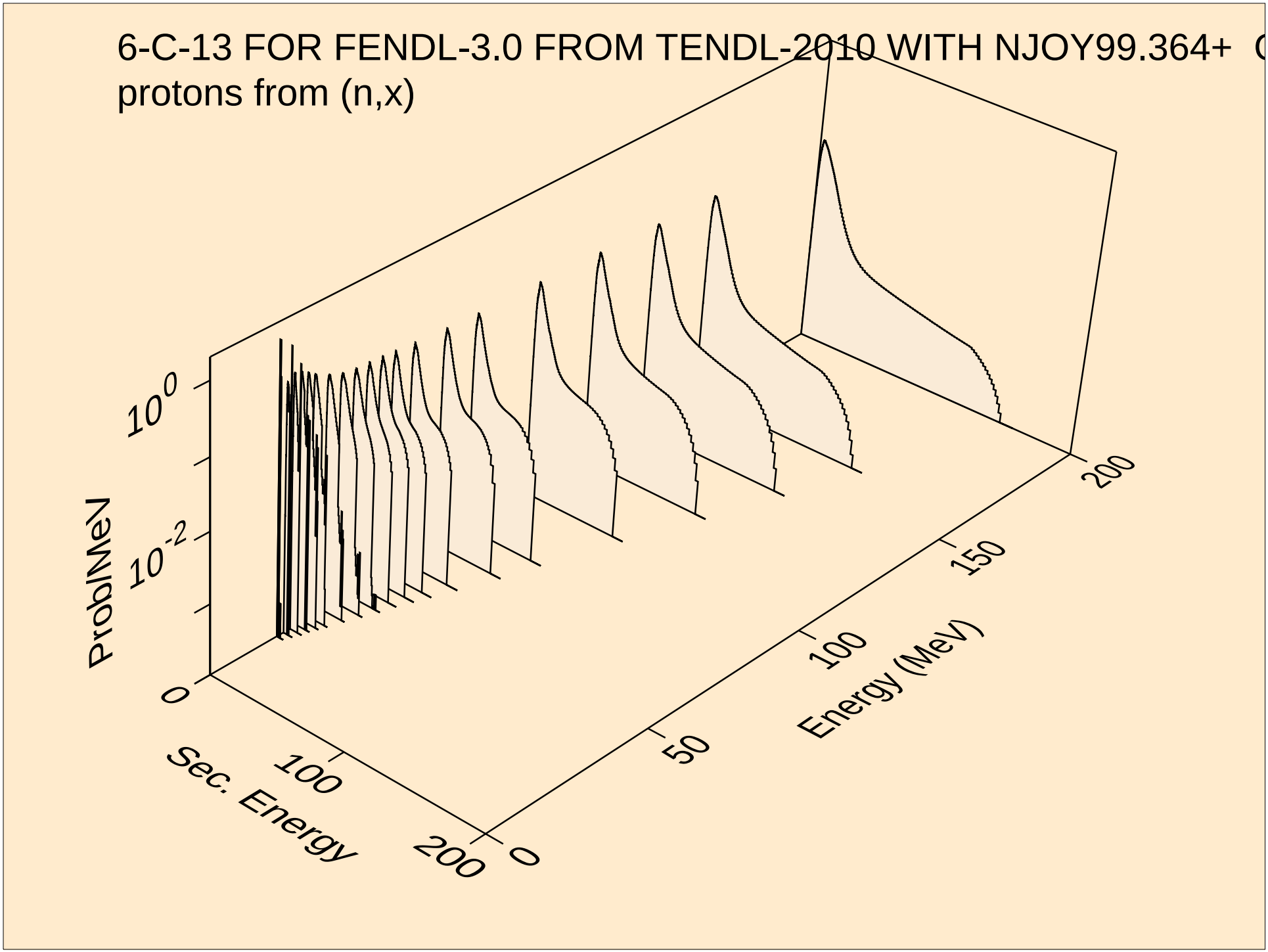

6-C-13 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+ C
thermal capture photon spectrum
Gamma Prod (barns/MeV)
10^2
10^1
10^0
10^{-1}
0
2
4
6
8
10
Gamma Energy (MeV)

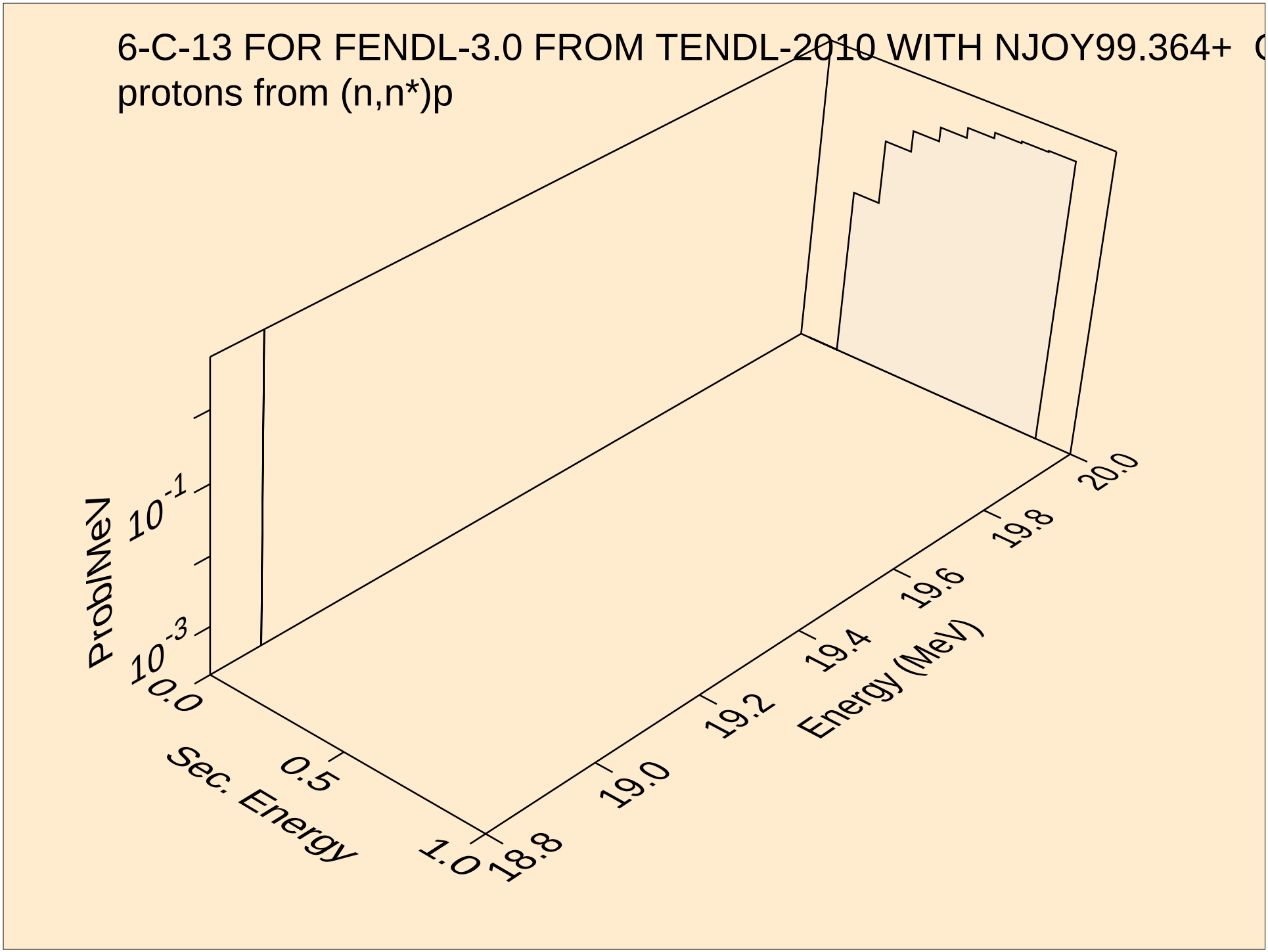

6-C-13 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+ C
14 MeV photon spectrum
Gamma Prod (barns/MeV)
10^1
10^-2
10^-5
10^-8
10^-11
10^-14
0
5
10
15
Gamma Energy (MeV)

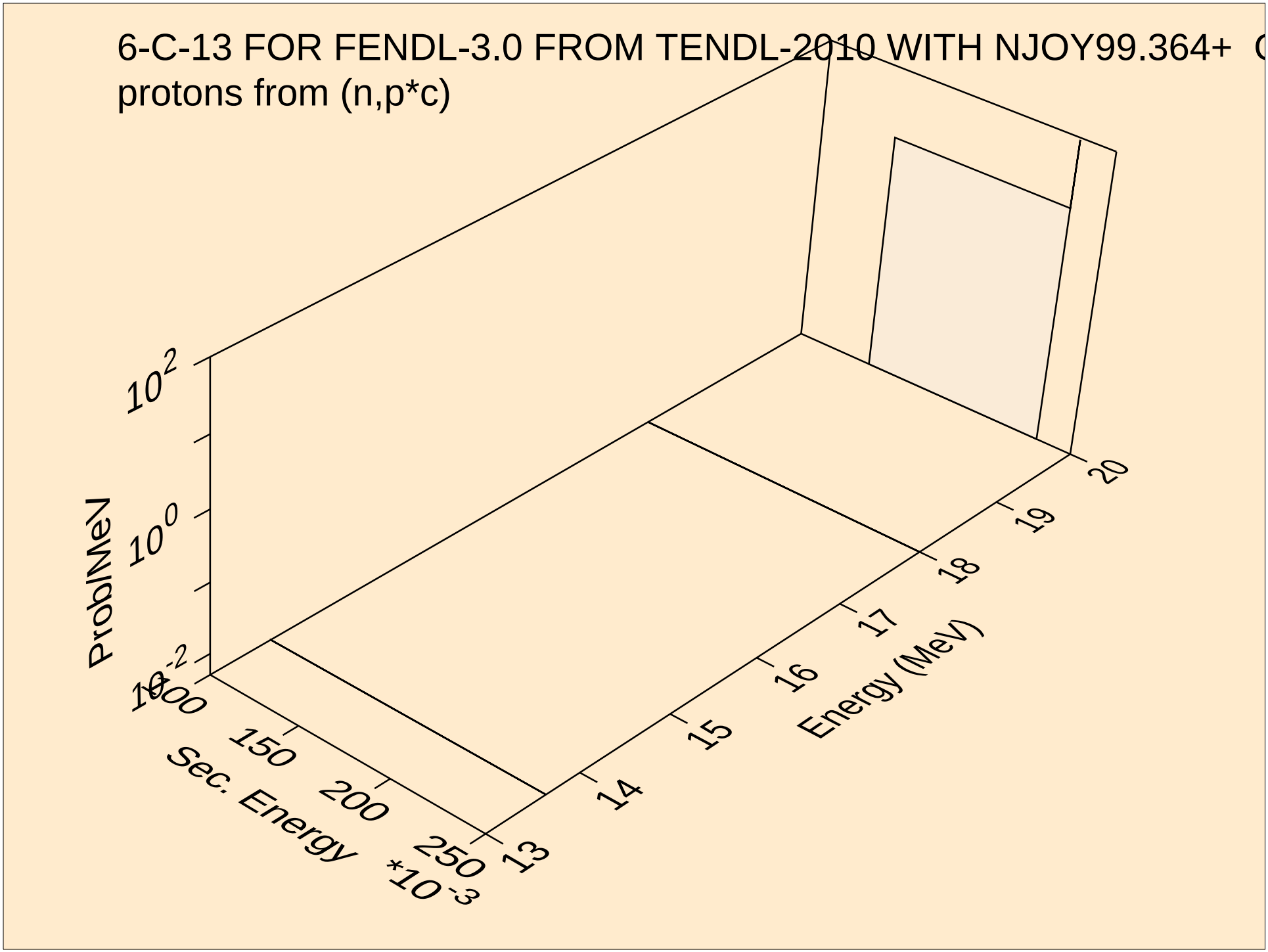

6-C-13 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+ C
Particle heating contributions
protons
deuterons
tritons
he-3
alphas
MeV/collision
Energy (MeV)
0
2
4
6
8
10
12
14
16
18
20
0
20
40
60
80
100
120
140
160
180
200

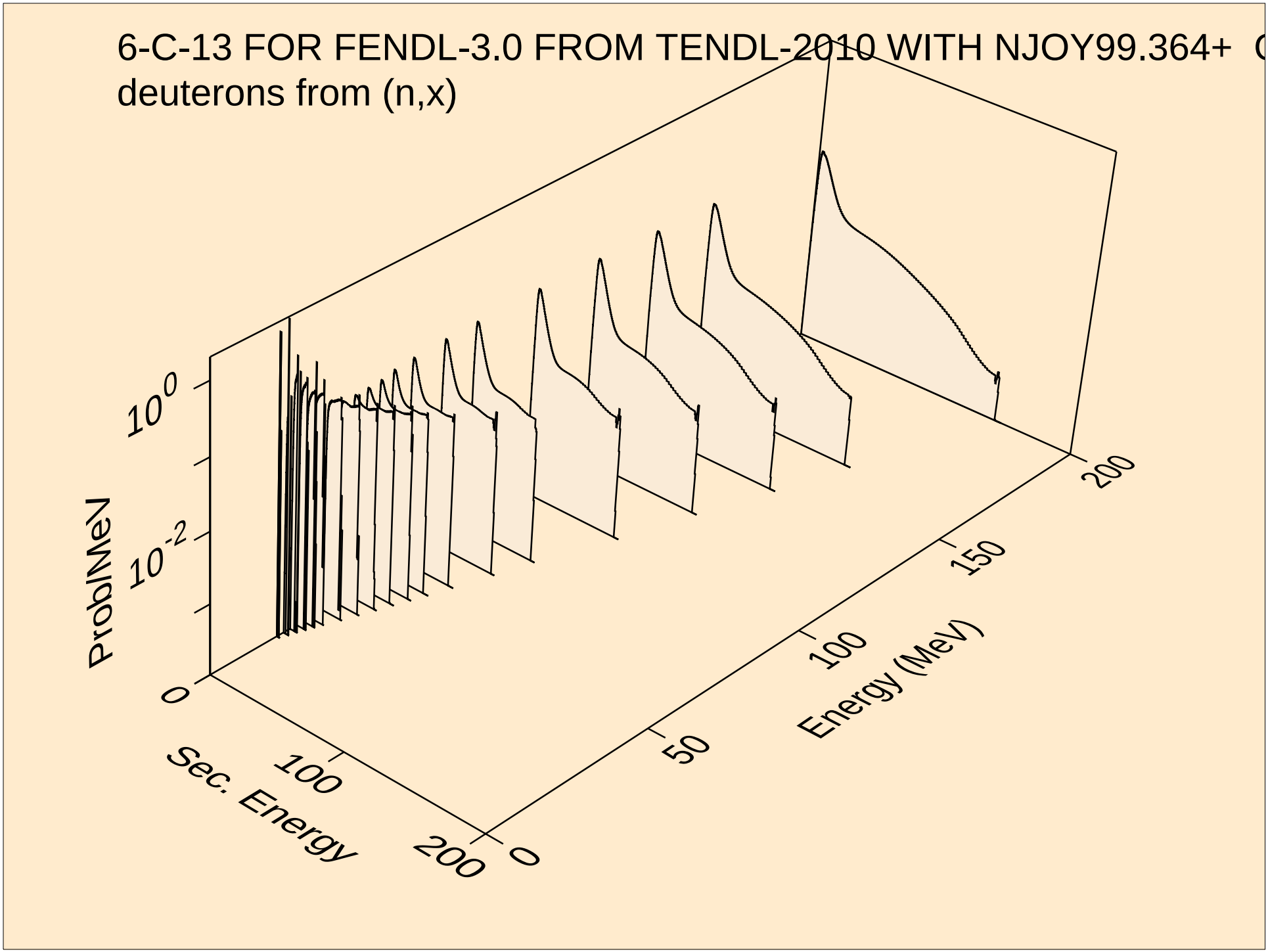

6-C-13 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+ C
Recoil Heating
recoil heating
Heating (MeV/reaction)
Energy (MeV)
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
0
50
100
150
200

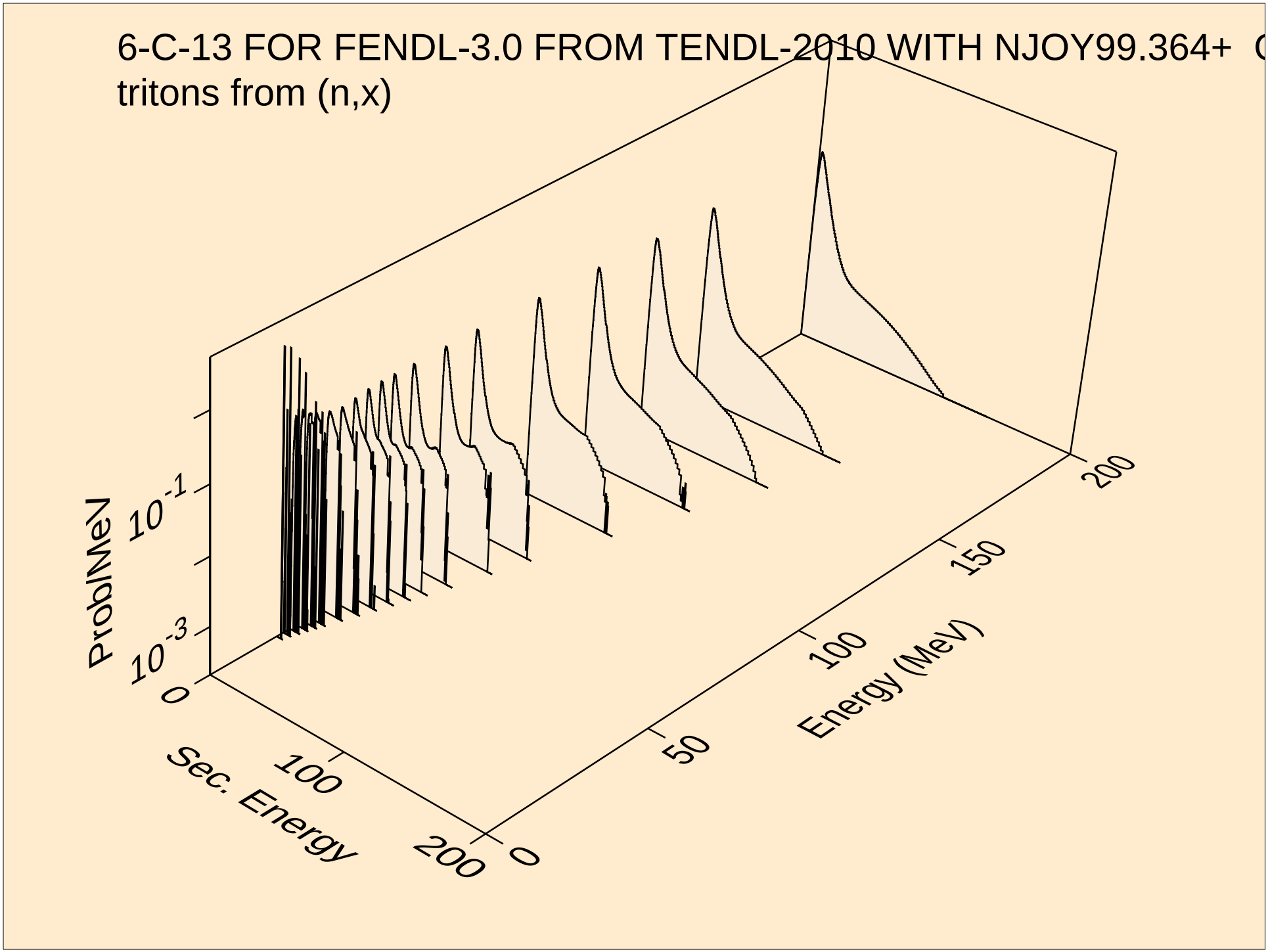

6-C-13 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+ C
Particle production cross sections
Cross section (barns)
*10-3
300
250
200
150
100
50
0
0
20
40
60
80
100
120
140
160
180
200
Energy (MeV)
protons
deuterons
tritons
he-3
alphas

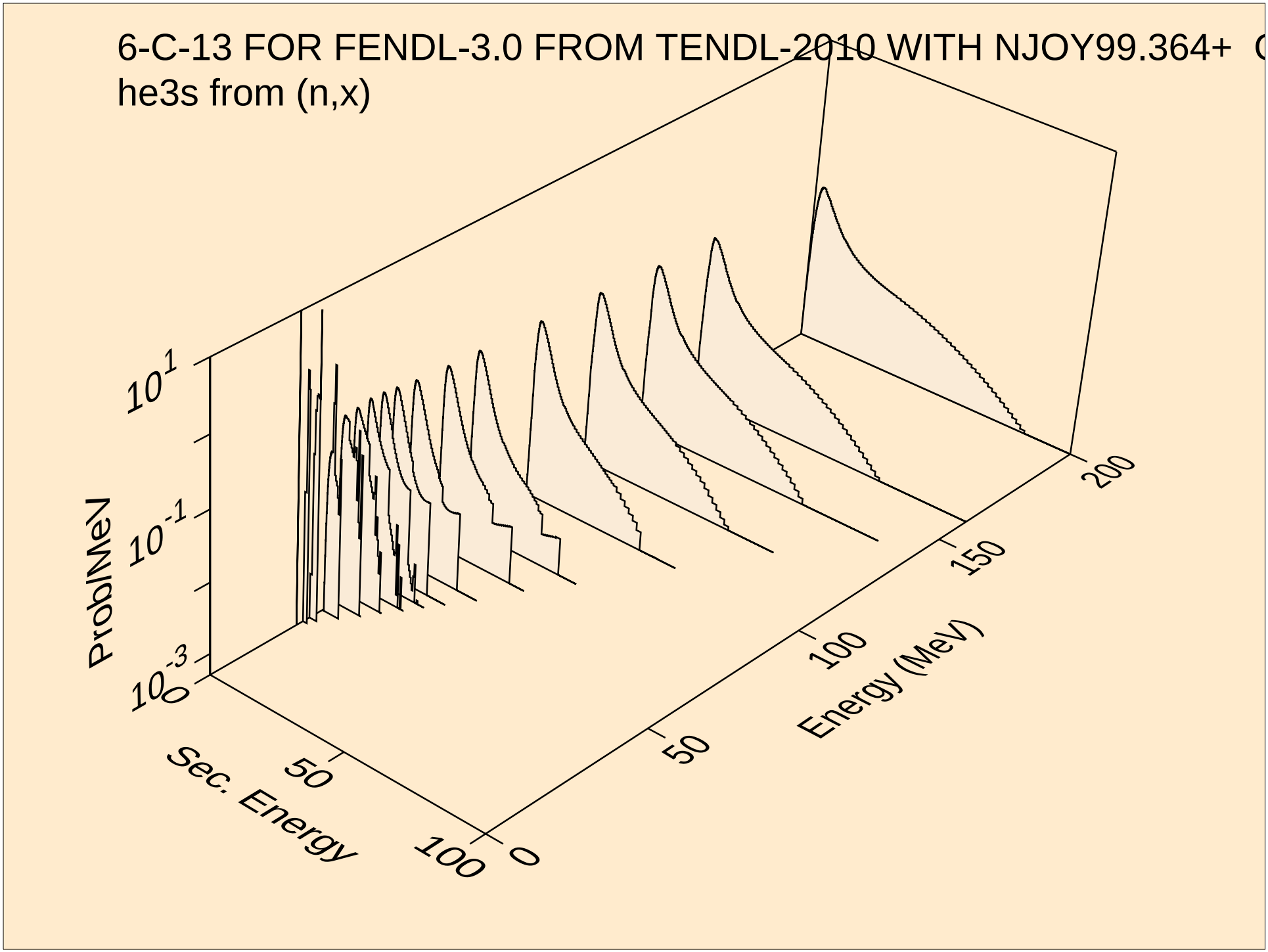

6-C-13 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+ C
protons from (n,x)
Prob/MeV
10^0
10^-2
0
Sec. Energy
100
200
0
50
100
150
200
Energy (MeV)

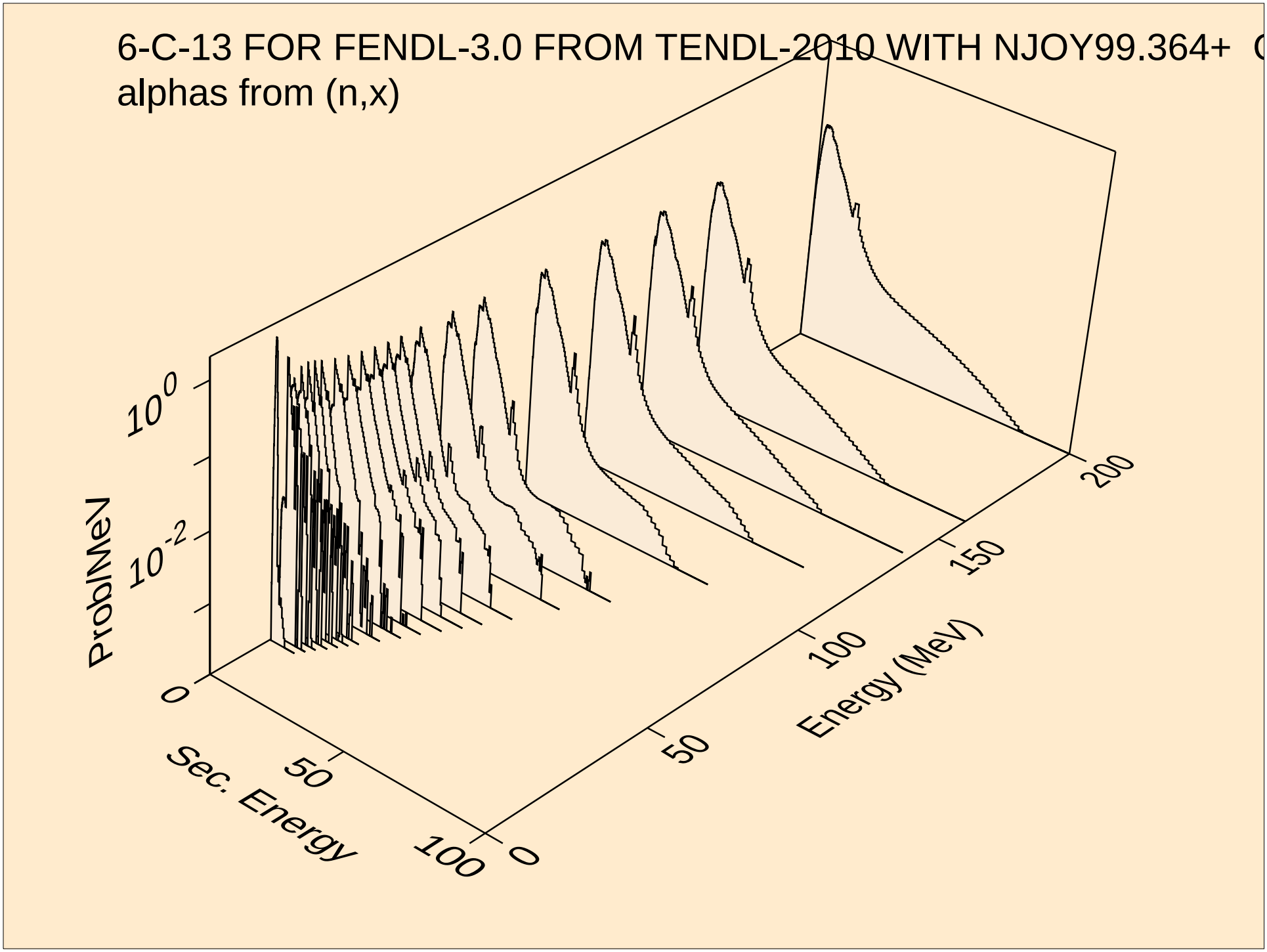

6-C-13 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+ C
protons from (n,n*)p
Prob/MeV
10-1
10-3
0.0
0.5
1.0
Sec. Energy
18.8
19.0
19.2
19.4
19.6
19.8
20.0
Energy (MeV)

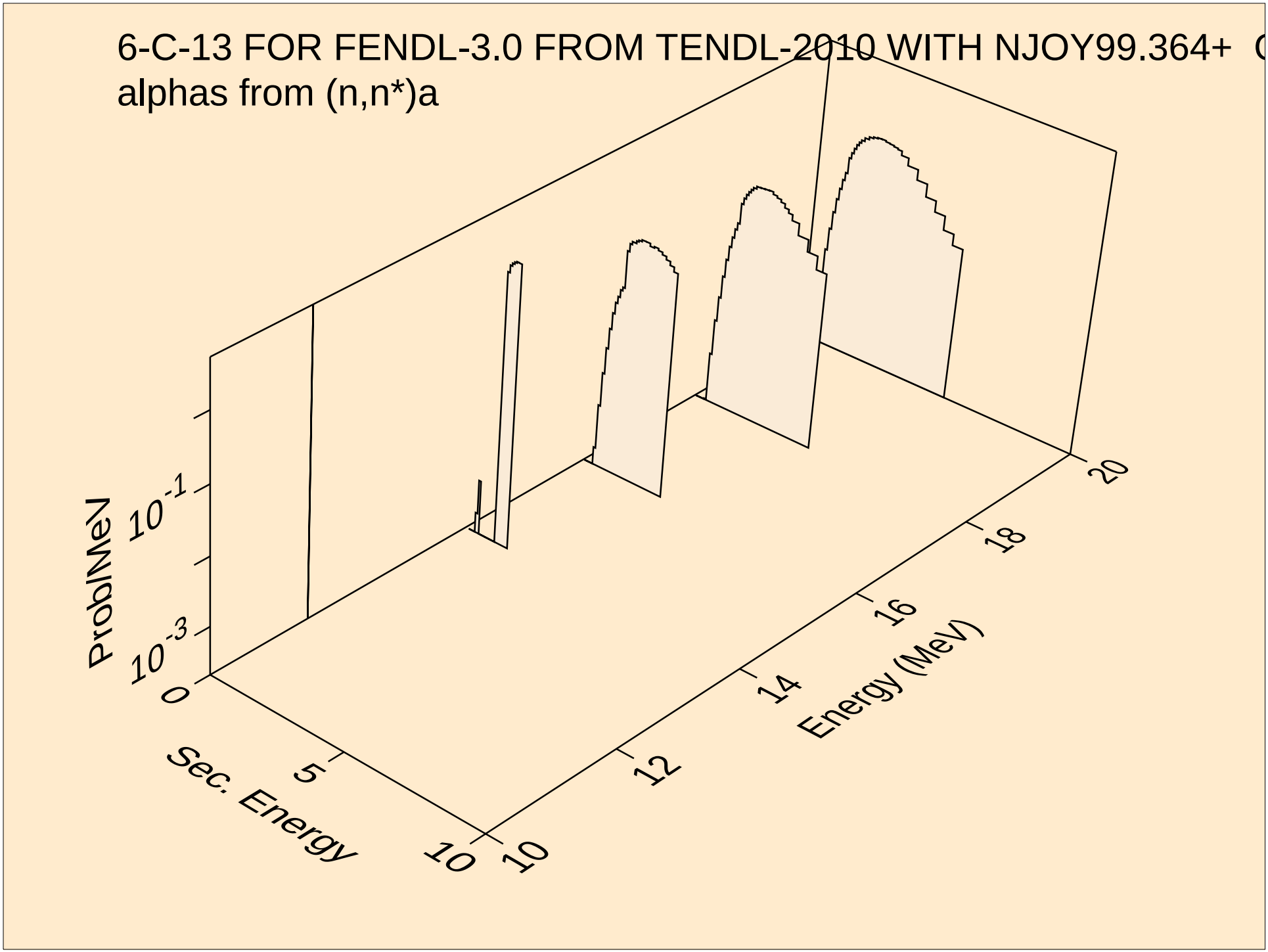

6-C-13 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+ C
protons from (n,p*c)
Prob/MeV
10^{2}
10^{0}
10^{-2}
100
150
200
250
Sec. Energy *10 -3
13
14
15
16
17
18
19
20
Energy (MeV)

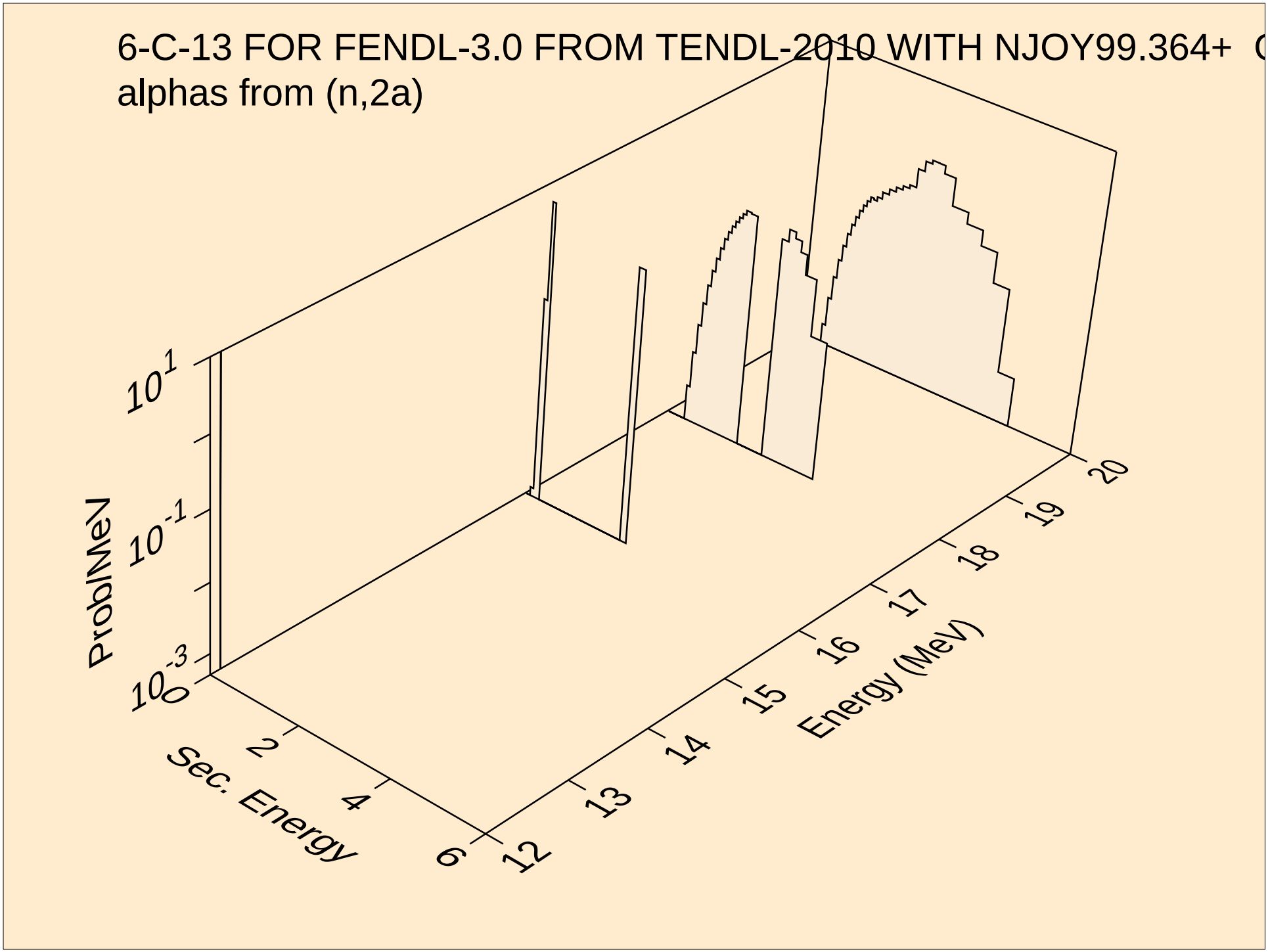

6-C-13 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+ C
deuterons from (n,x)
Prob/MeV
10^0
10^-2
0
Sec. Energy
100
200
0
50
100
150
200
Energy (MeV)

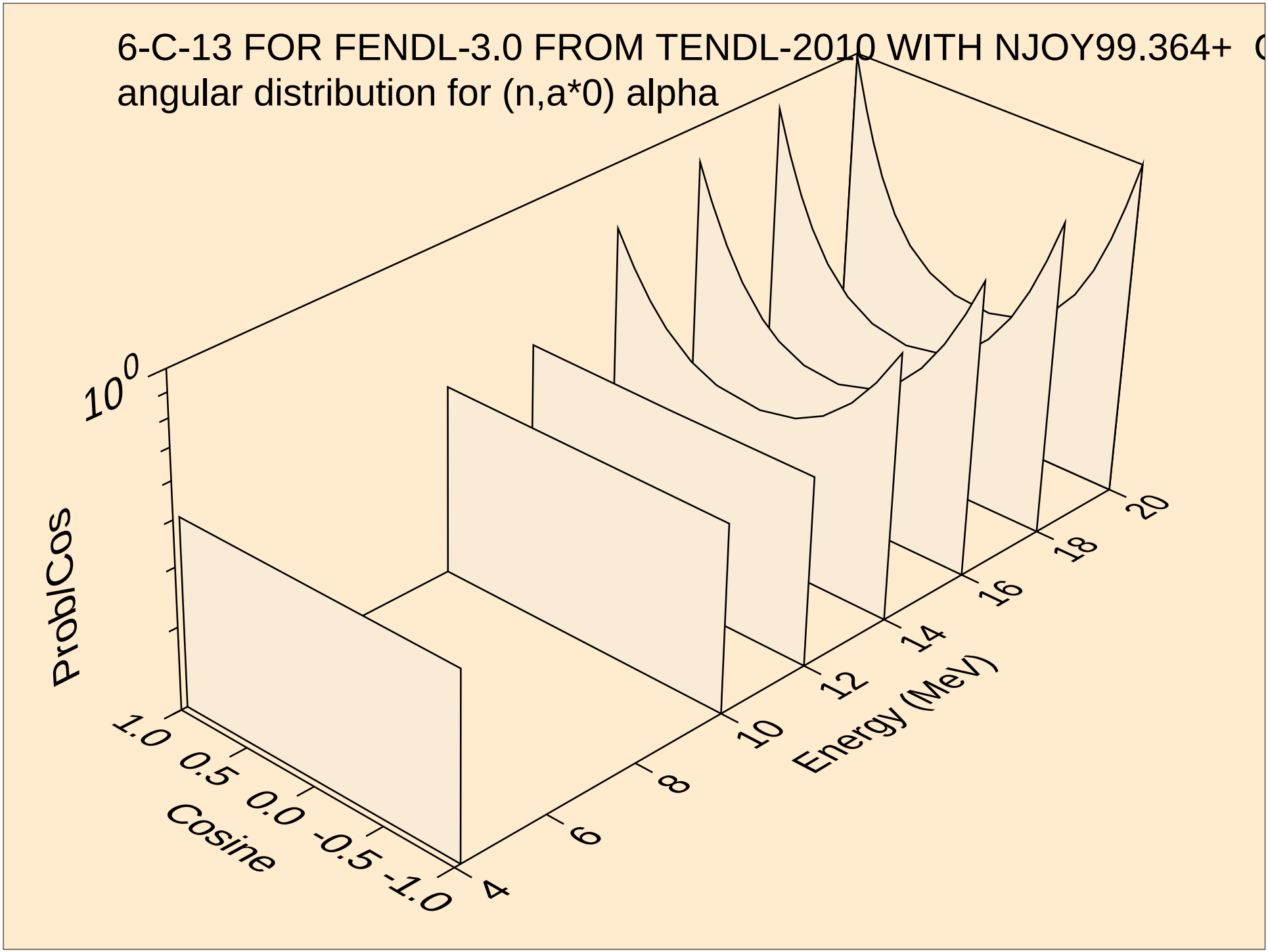

6-C-13 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+ C
tritons from (n,x)
Prob/MeV
10-1
10-3
0
100
200
Sec. Energy
0
50
100
150
200
Energy (MeV)

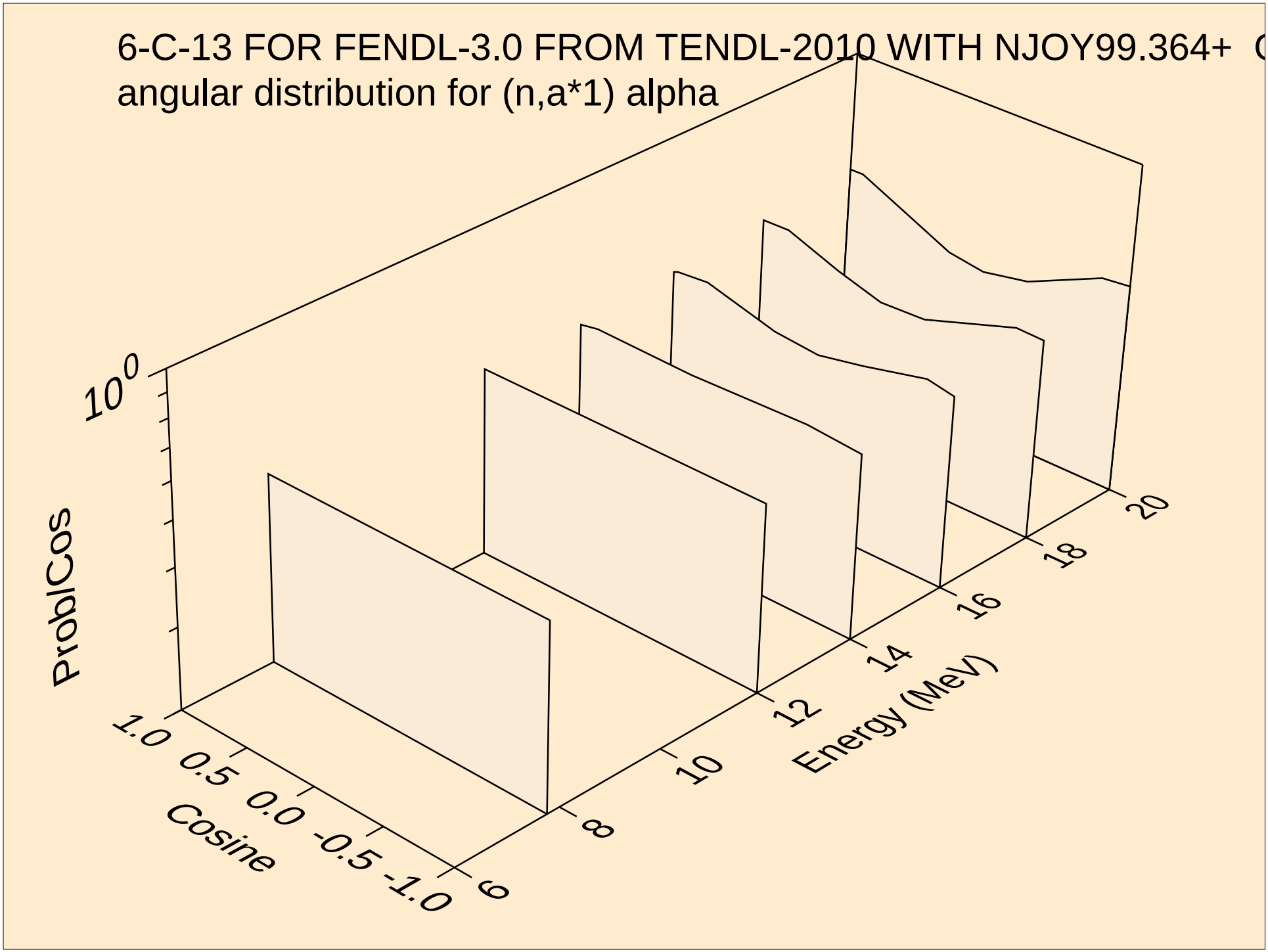

6-C-13 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+ C
he3s from (n,x)
Prob/MeV
10^1
10^-1
10^-3
0
50
100
Sec. Energy
0
50
100
150
200
Energy (MeV)

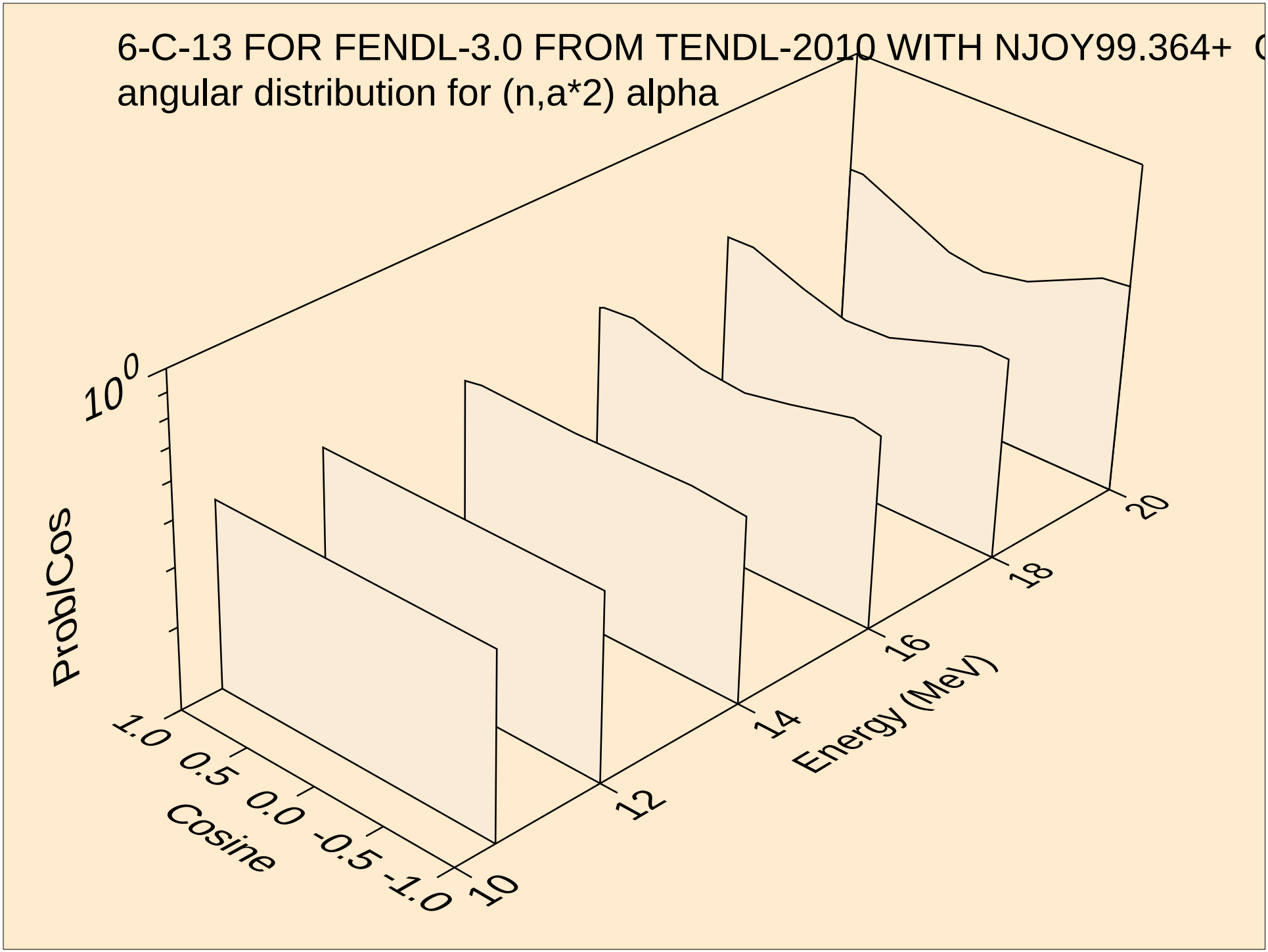

6-C-13 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+ C
alphas from (n,x)
Prob/MeV
10^0
10^-2
0
50
100
Sec. Energy
0
50
100
150
200
Energy (MeV)

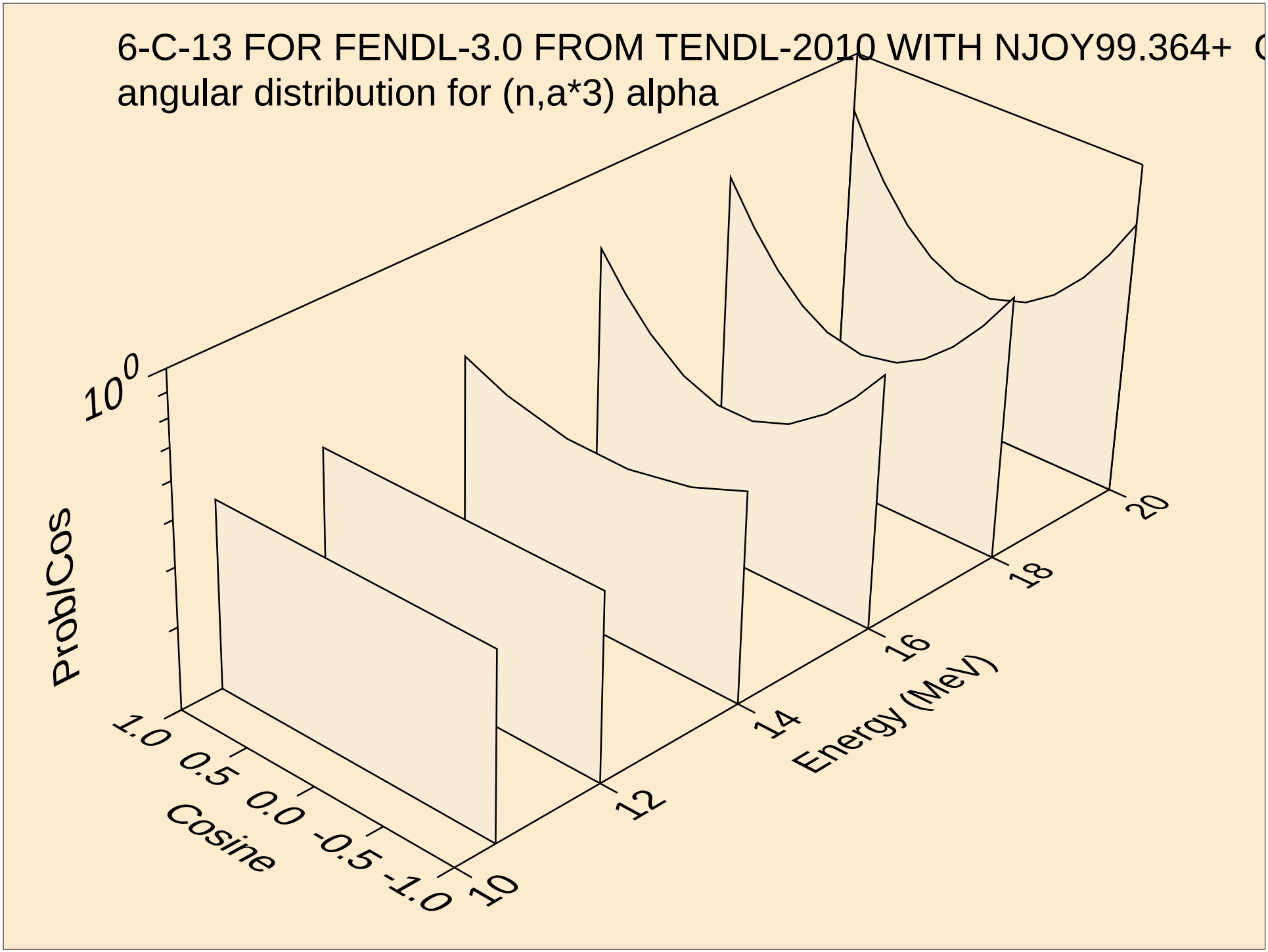

6-C-13 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+ C
alphas from (n,n*)a
Prob/MeV
10-1
10-3
0
Sec. Energy
5
10
10
12
14
16
18
20
Energy (MeV)

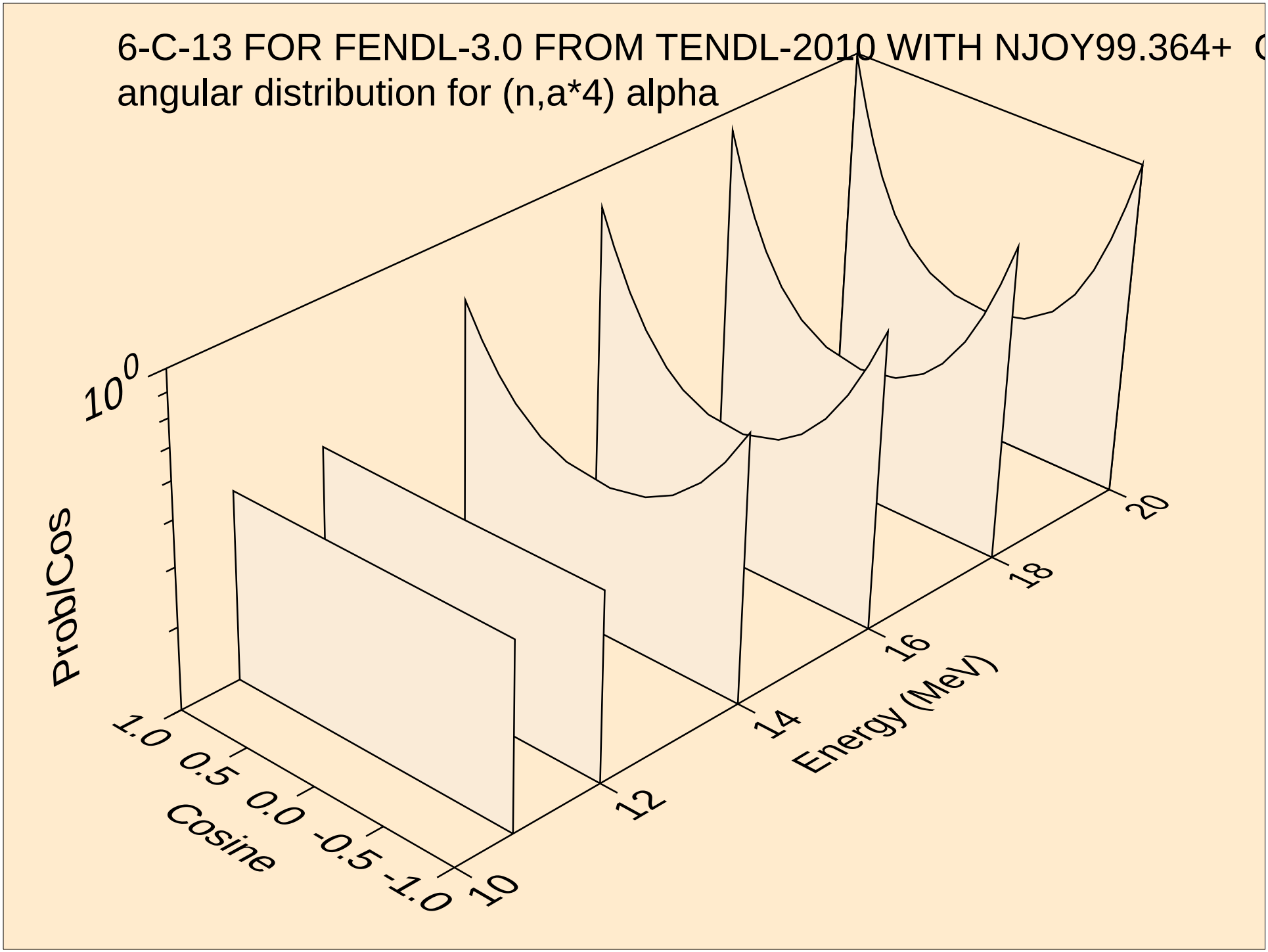

6-C-13 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+ C
alphas from (n,2a)
Prob/MeV
10^{1}
10^{-1}
10^{-3}
0
2
4
6
Sec. Energy
12
13
14
15
16
17
18
19
20
Energy (MeV)

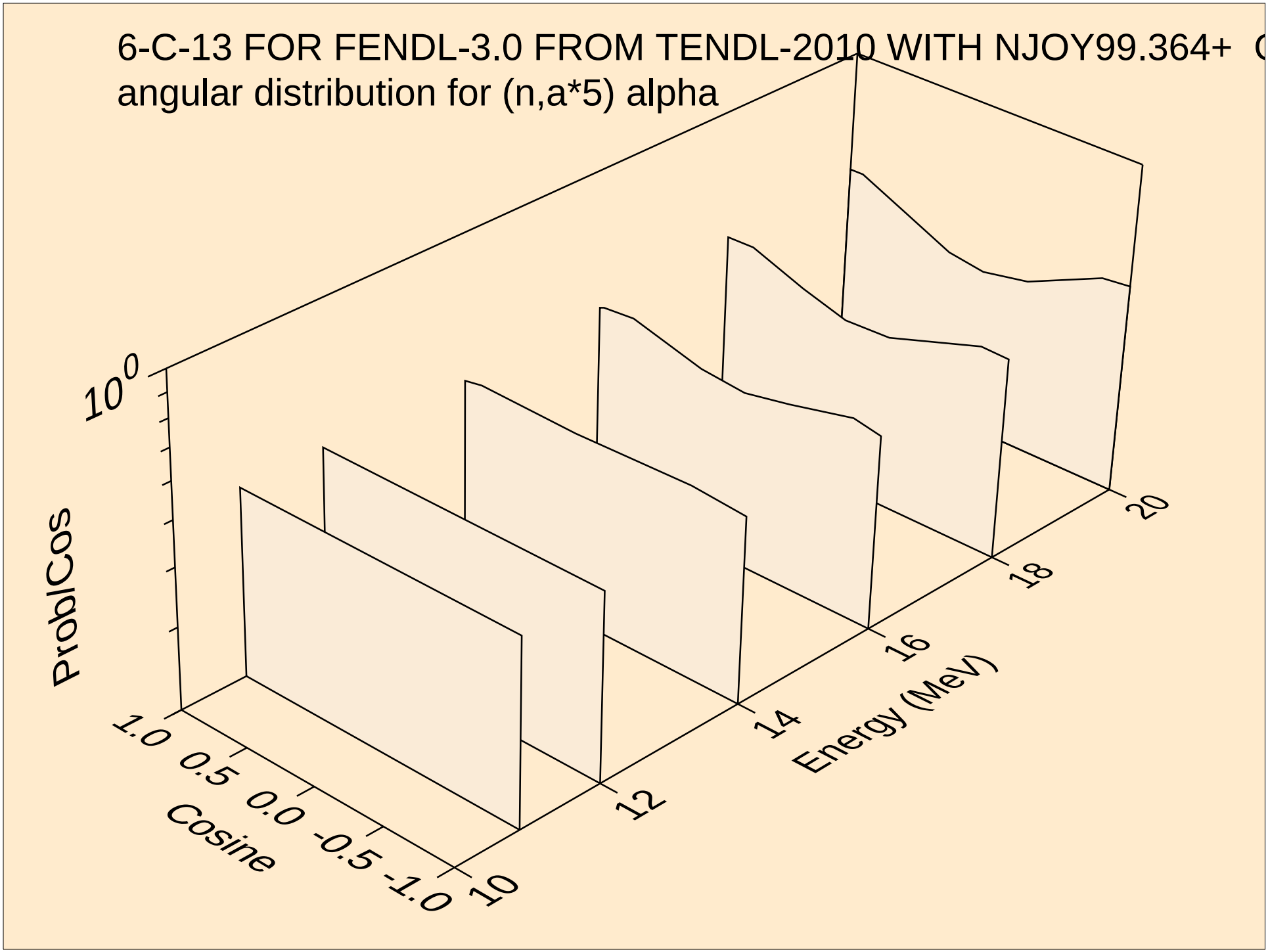

6-C-13 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+ C
angular distribution for (n,a*0) alpha
10^0
ProbCos
1.0
0.5
0.0
-0.5
-1.0
Cosine
4
6
8
10
12
14
16
18
20
Energy (MeV)

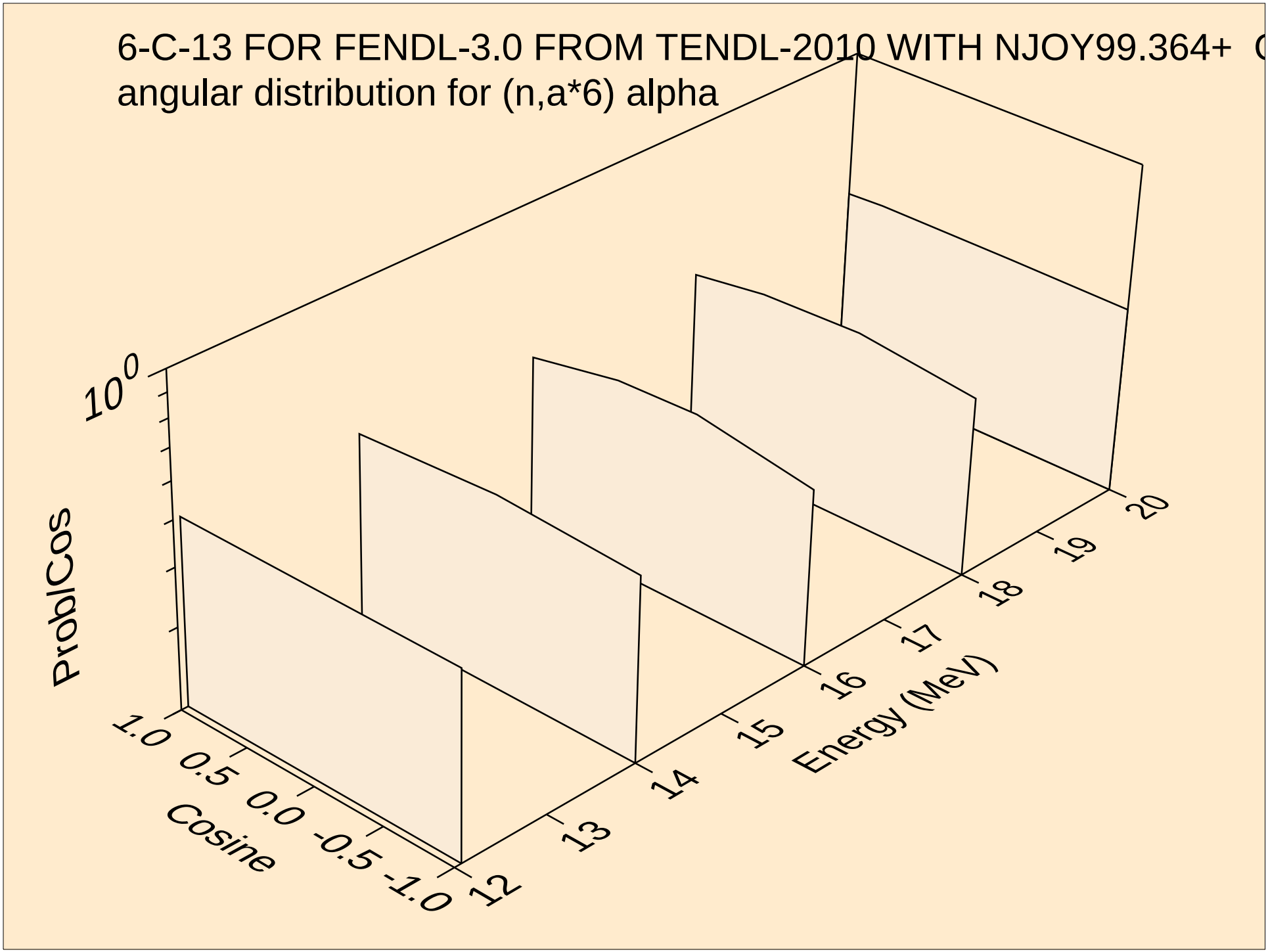

6-C-13 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+ C
angular distribution for (n,a*1) alpha
ProbICos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
6
8
10
12
14
16
18
20
Energy (MeV)

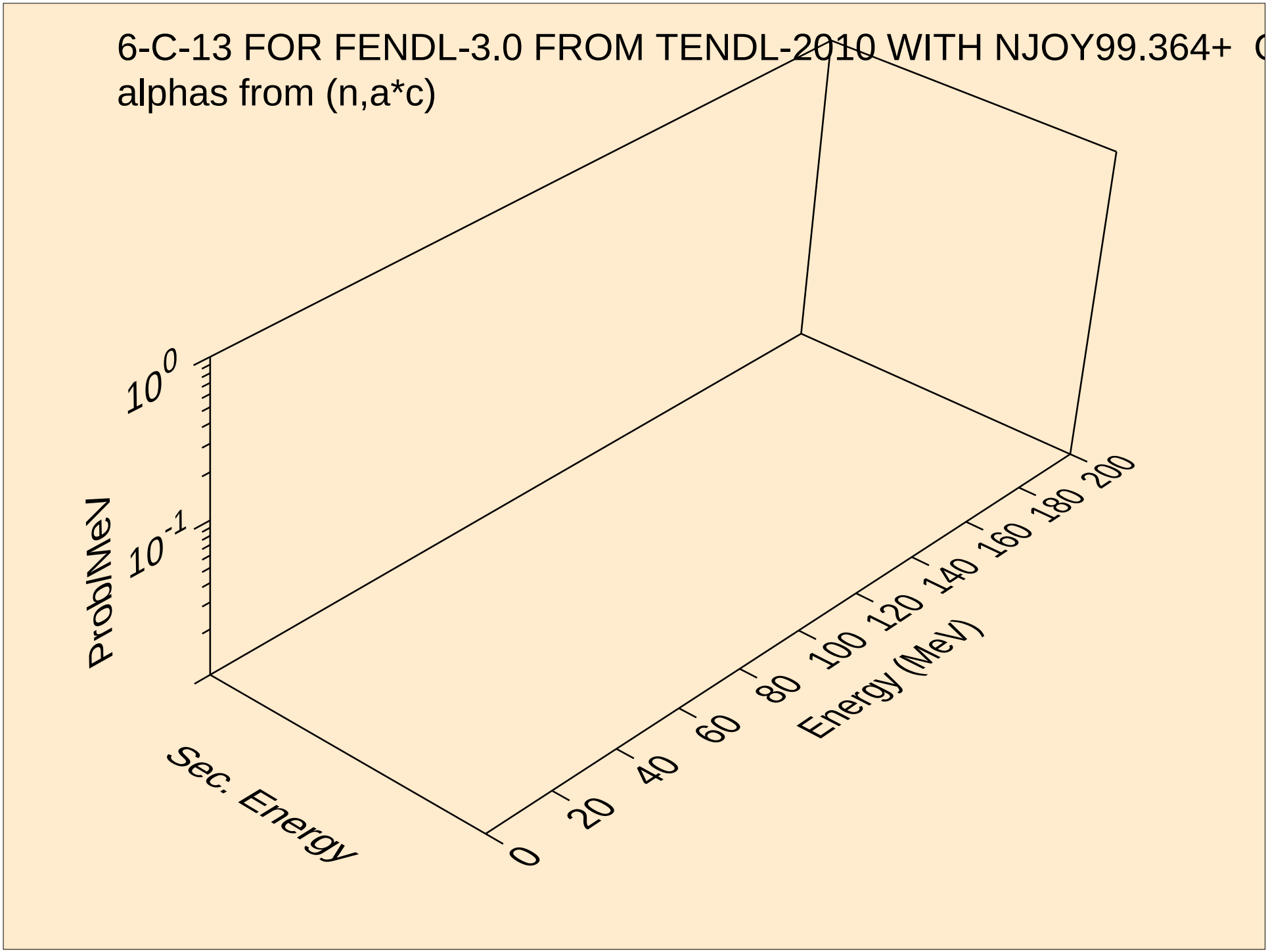

6-C-13 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+ C
angular distribution for (n,a*2) alpha
ProbICos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
10
12
14
16
18
20
Energy (MeV)


6-C-13 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+ C
angular distribution for (n,a*3) alpha
10^0
Prob\Cos
1.0
0.5
0.0
-0.5
-1.0
Cosine
10
12
14
16
18
20
Energy (MeV)


6-C-13 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+ C
angular distribution for (n,a*4) alpha
10^0
ProbICos
1.0
0.5
0.0
-0.5
-1.0
Cosine
10
12
14
16
18
20
Energy (MeV)


6-C-13 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+ C
angular distribution for (n,a*5) alpha
10^0
ProbICos
1.0
0.5
0.0
-0.5
-1.0
Cosine
10
12
14
16
18
20
Energy (MeV)


6-C-13 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+ C
angular distribution for (n,a*6) alpha
10^0
ProbICos
1.0
0.5
0.0
-0.5
-1.0
Cosine
12
13
14
15
16
17
18
19
20
Energy (MeV)


6-C-13 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+ C
alphas from (n,a*c)
10^{0}
10^{-1}
Prob/MeV
Sec. Energy
0
20
40
60
80
100
120
140
160
180
200
Energy (MeV)