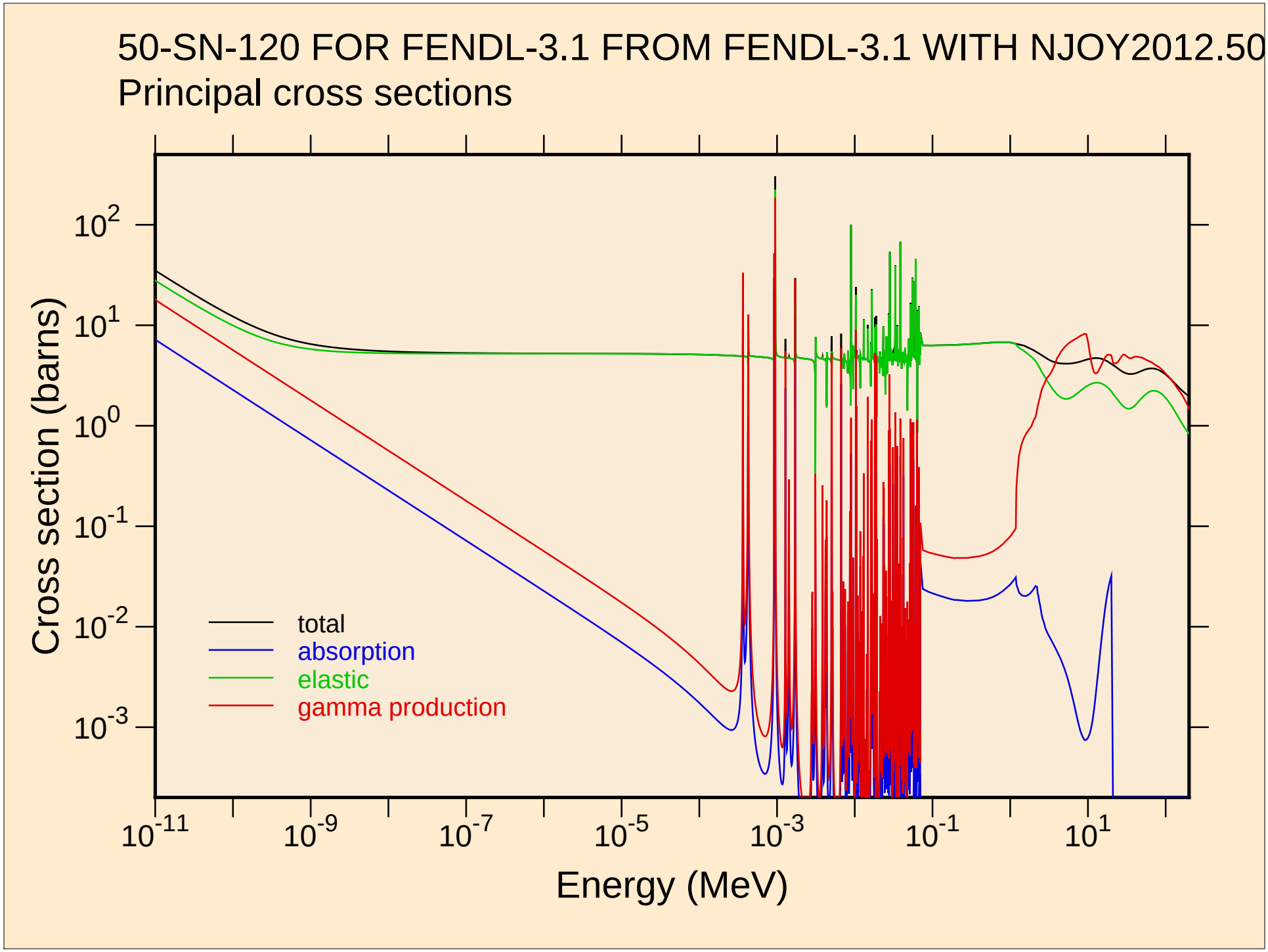
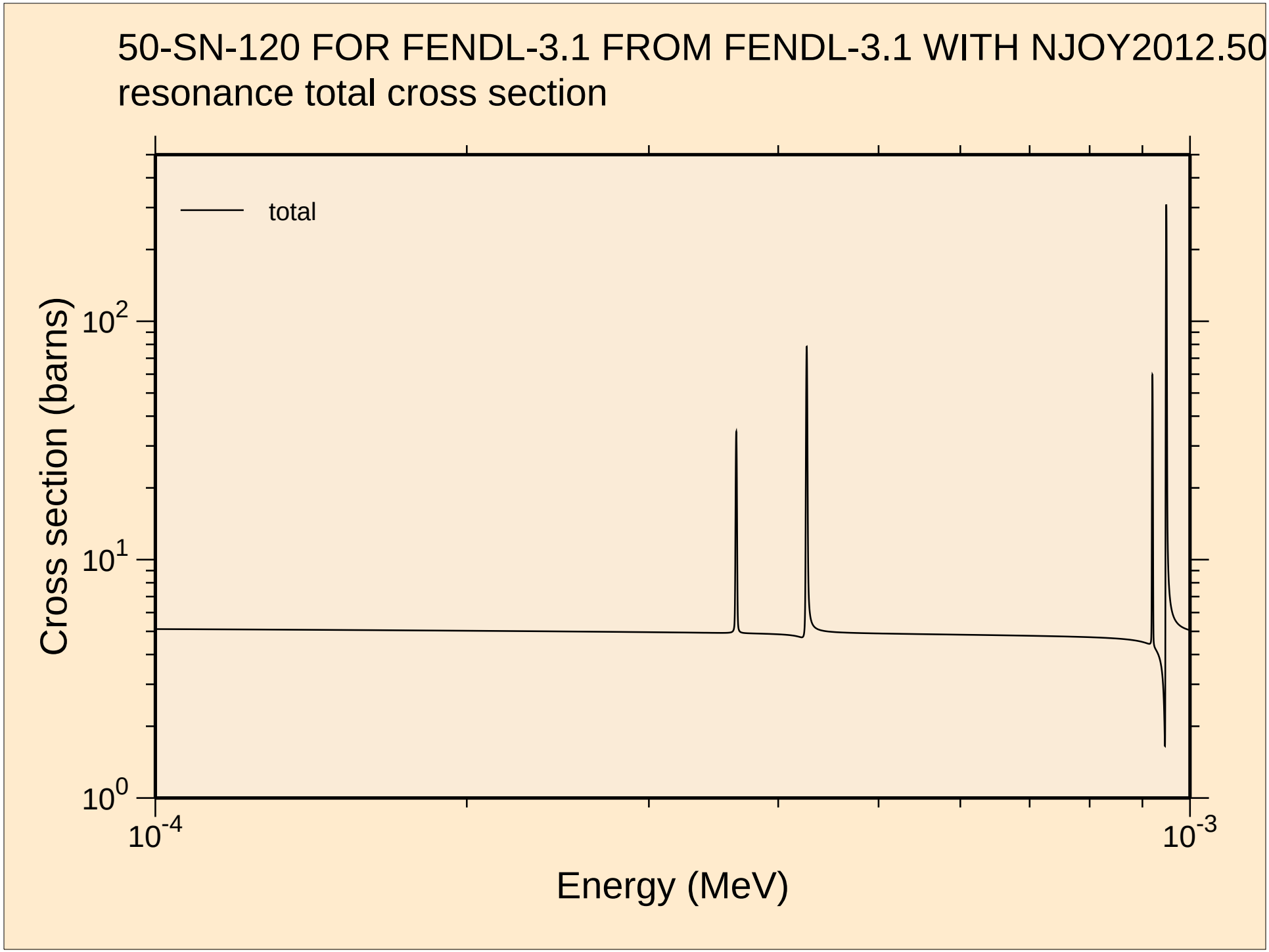
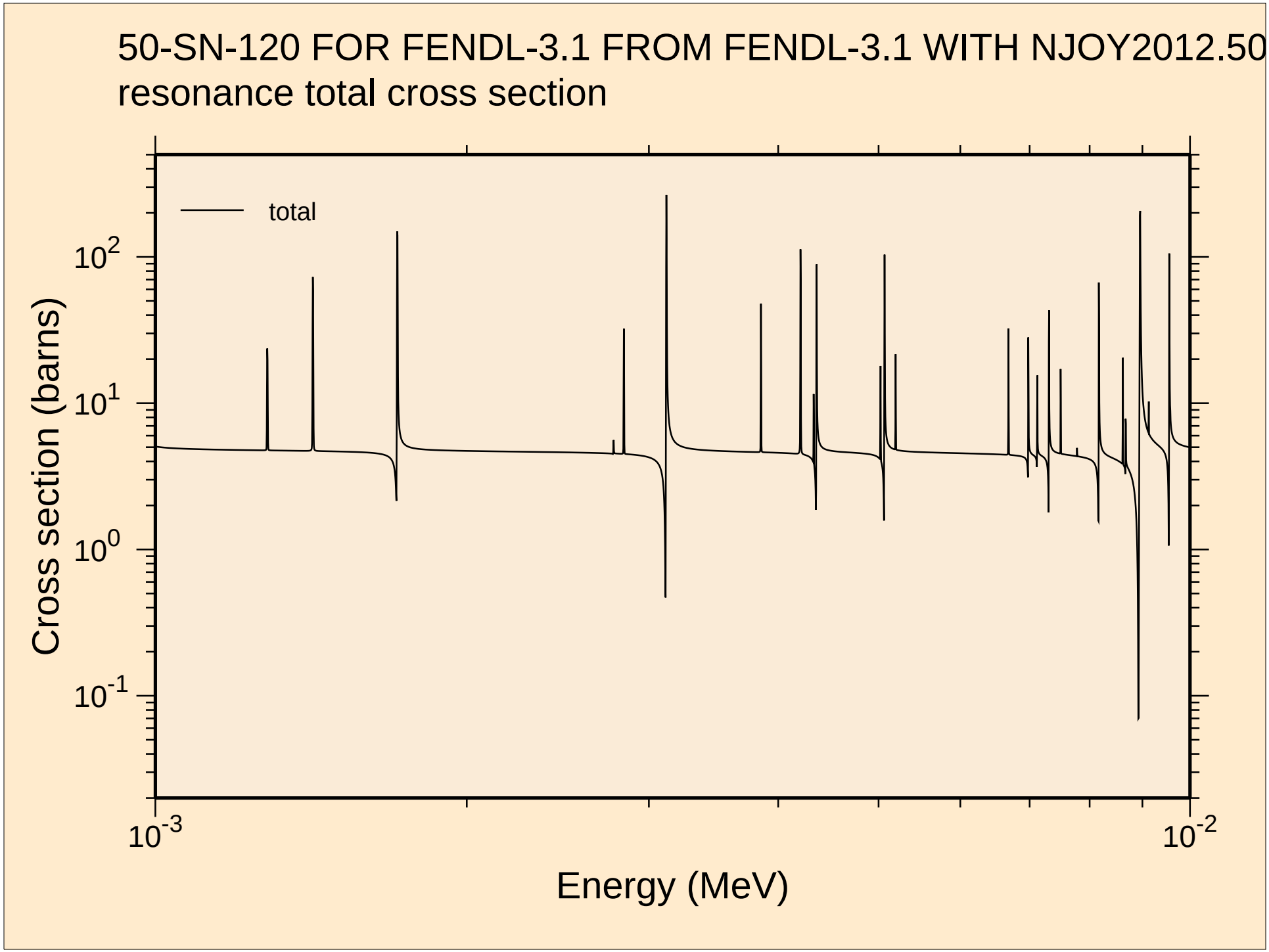
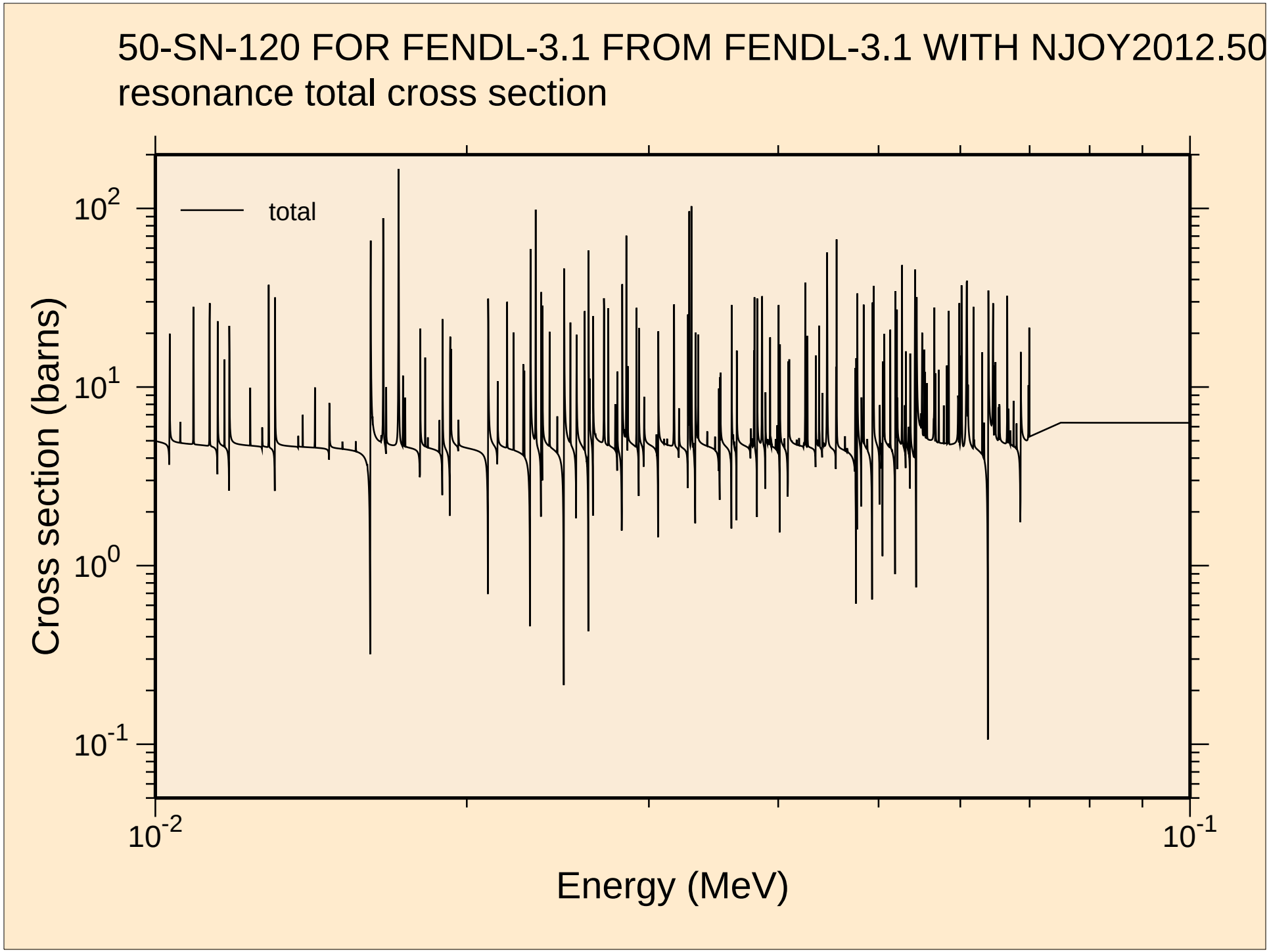
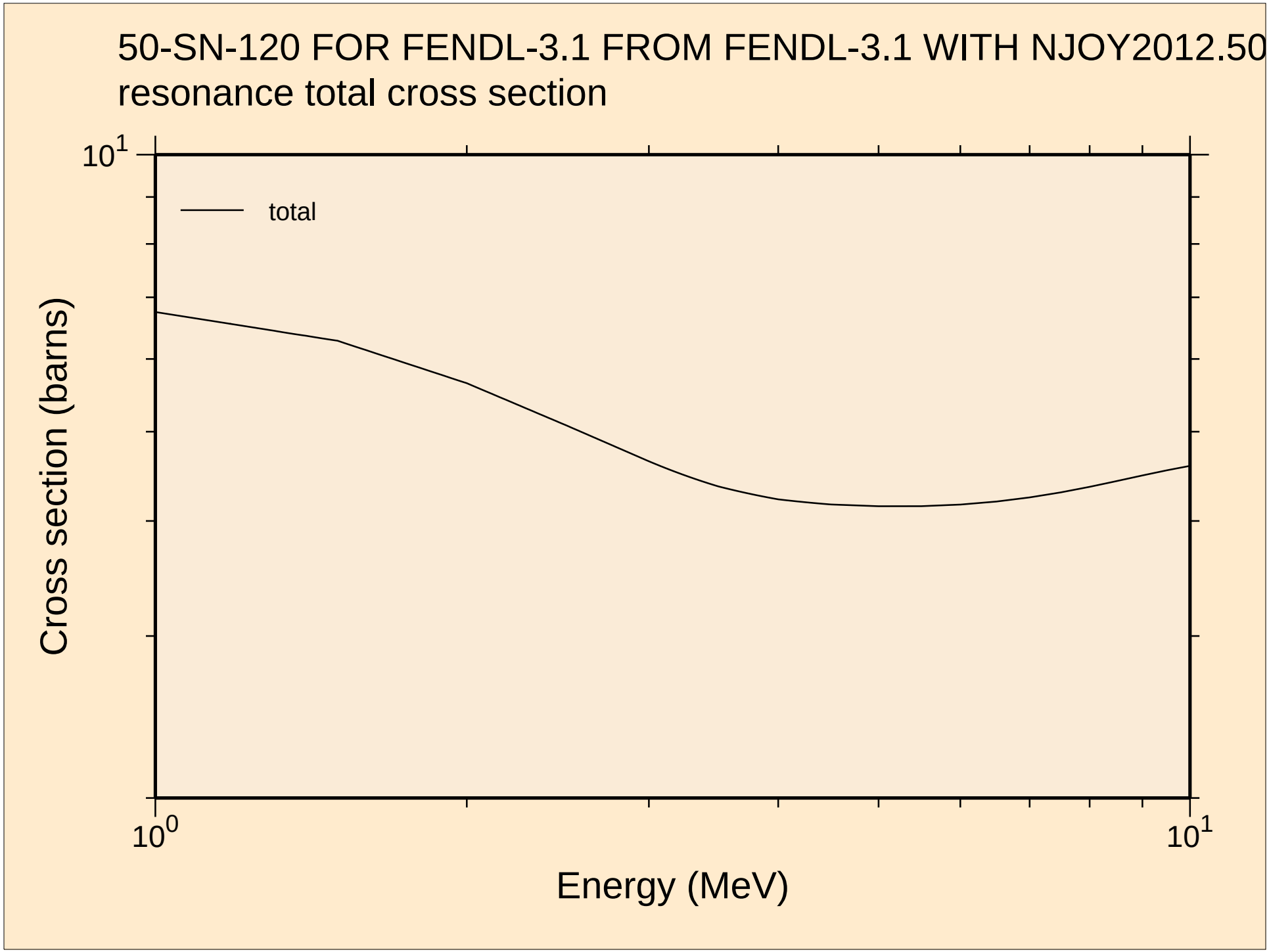
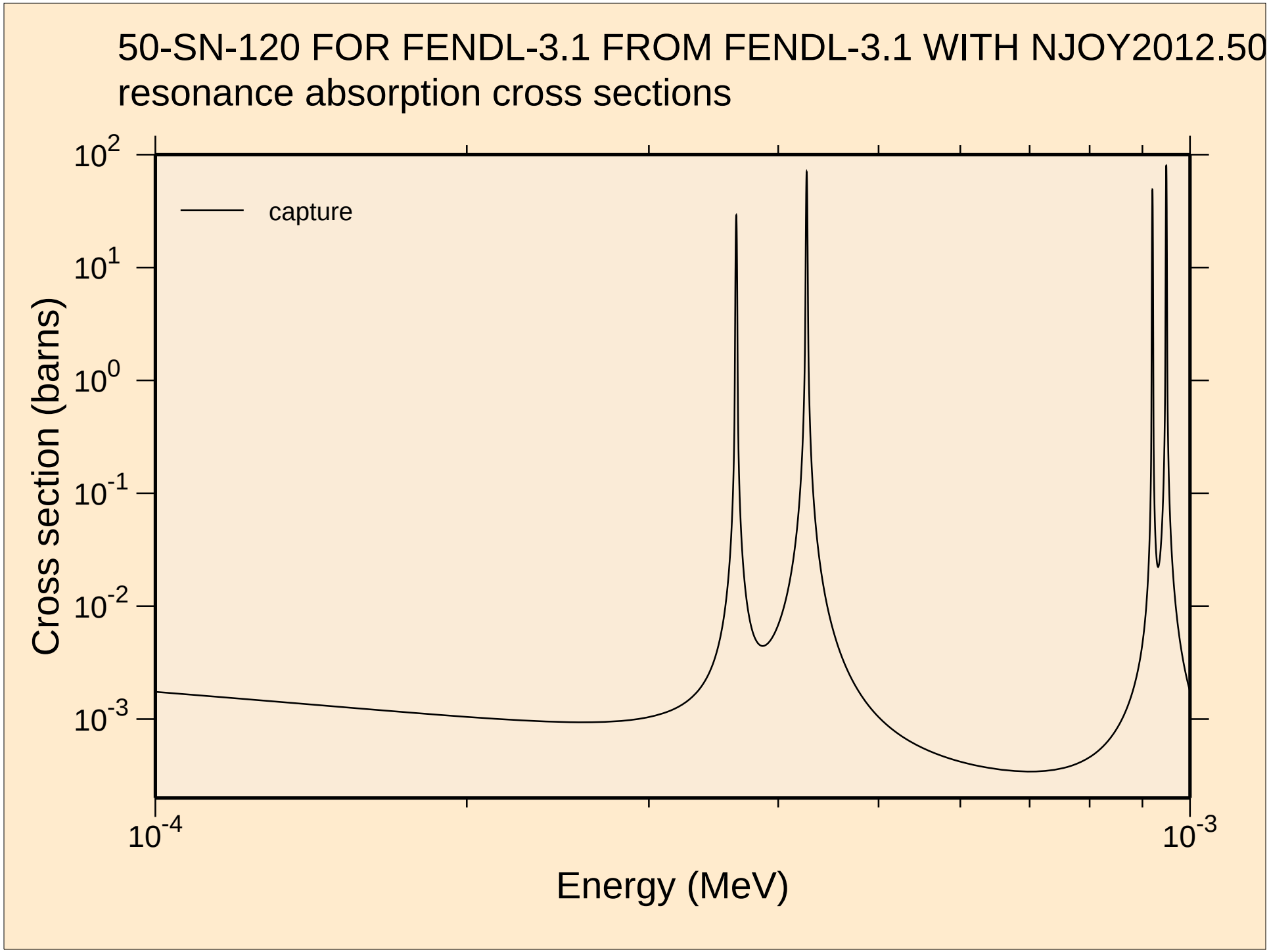

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
Principal cross sections
Cross section (barns)
10^{2}
10^{1}
10^{0}
10^{-1}
10^{-2}
10^{-3}
total
absorption
elastic
gamma production
10^{-11}
10^{-9}
10^{-7}
10^{-5}
10^{-3}
10^{-1}
10^{1}
Energy (MeV)

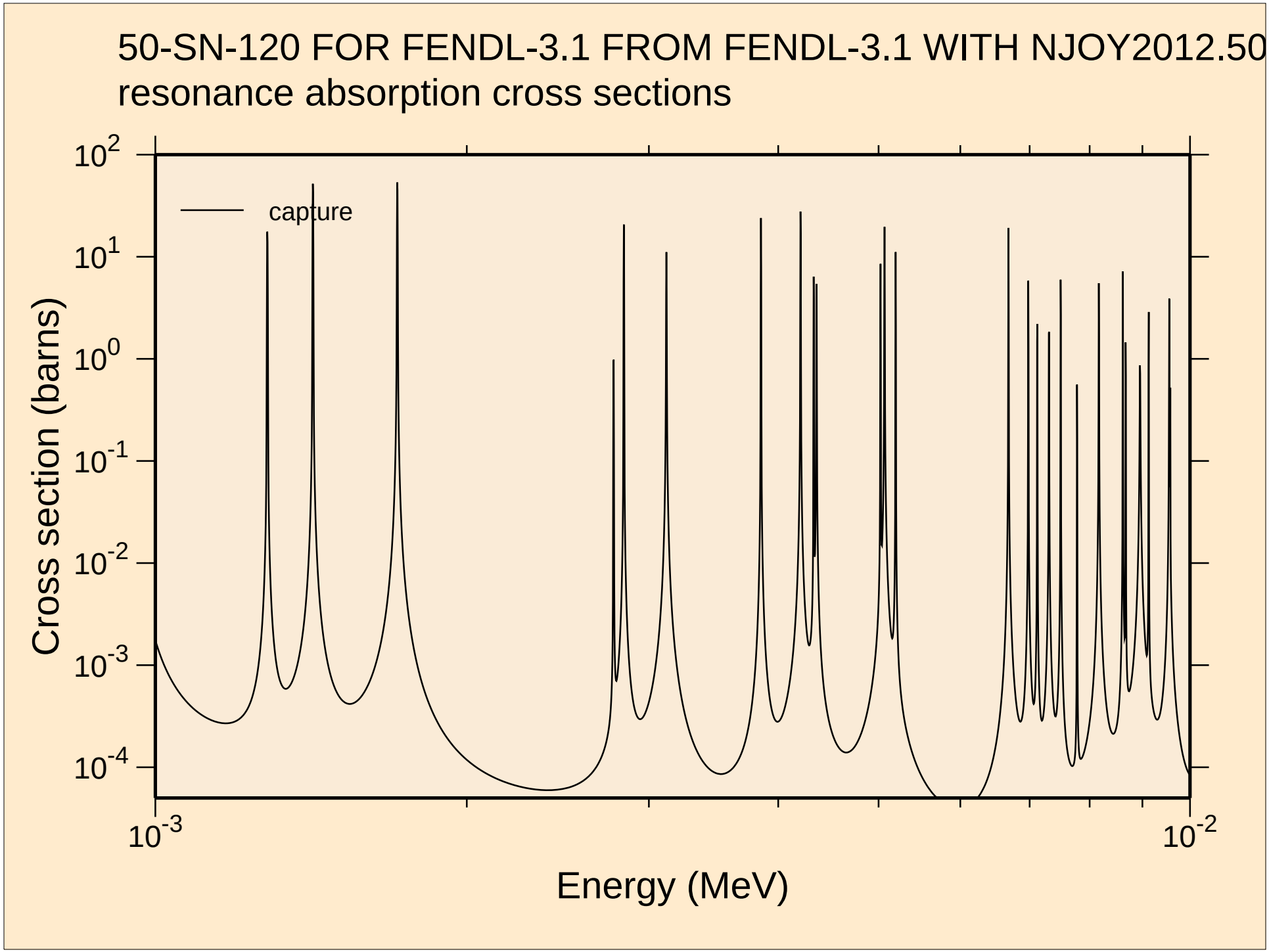

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
resonance total cross section
total
Cross section (barns)
10^2
10^1
10^0
10^-4
10^-3
Energy (MeV)

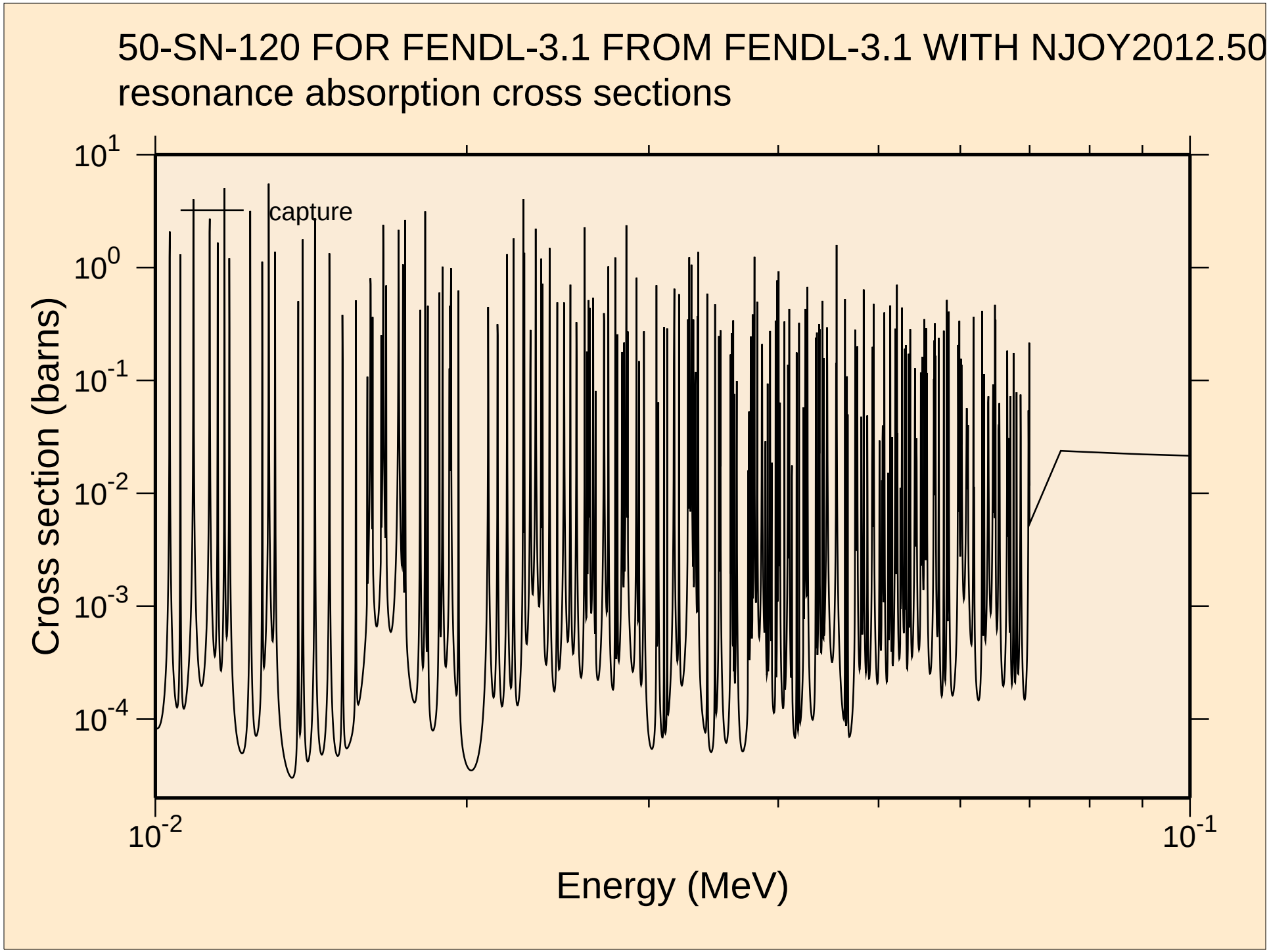

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
resonance total cross section
total
Cross section (barns)
10^2
10^1
10^0
10^-1
10^-3
10^-2
Energy (MeV)


50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
resonance total cross section
total
Cross section (barns)
10^{2}
10^{1}
10^{0}
10^{-1}
10^{-2}
10^{-1}
Energy (MeV)

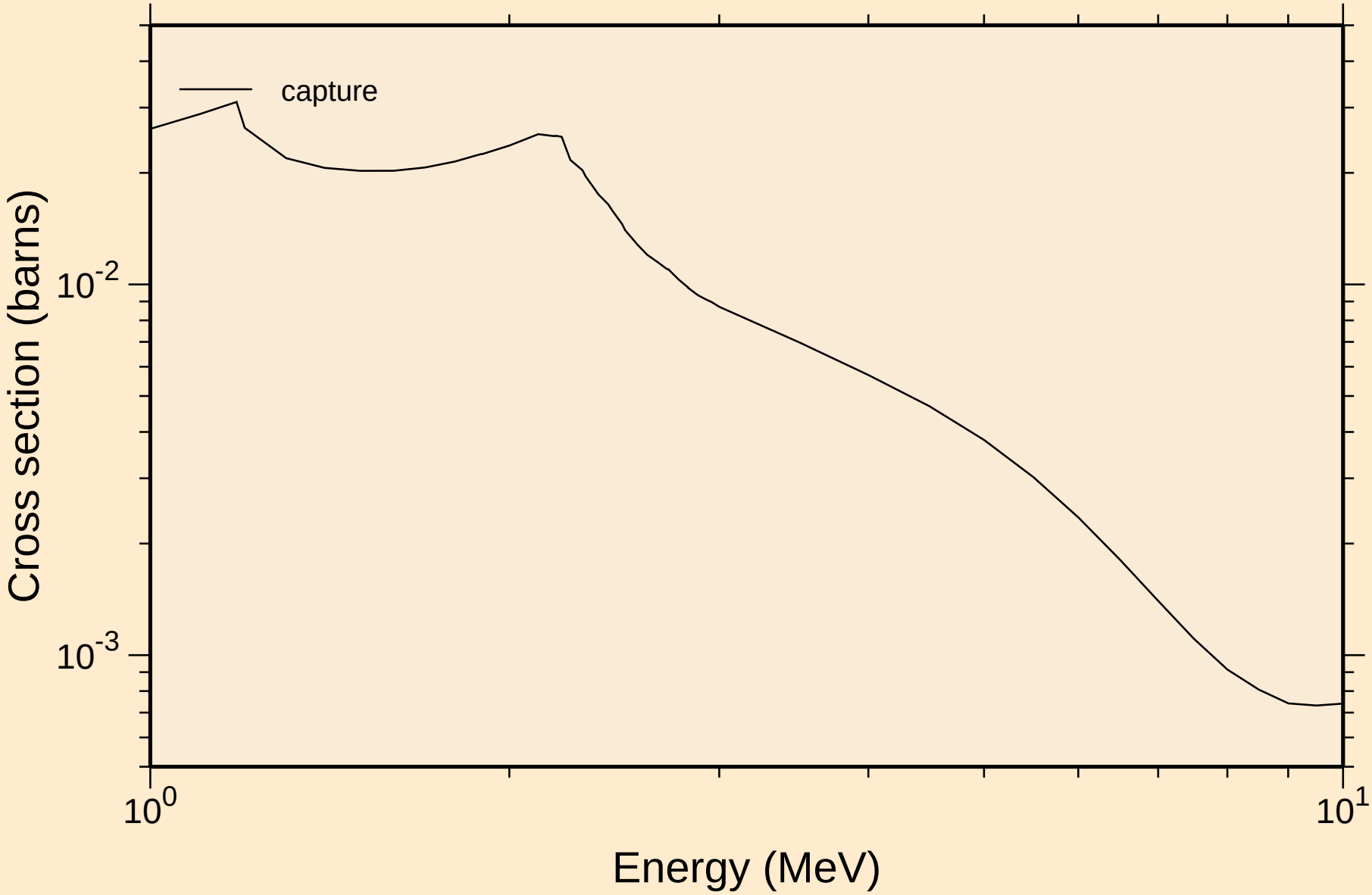

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
resonance total cross section
10^1
total
Cross section (barns)
10^0
10^1
Energy (MeV)

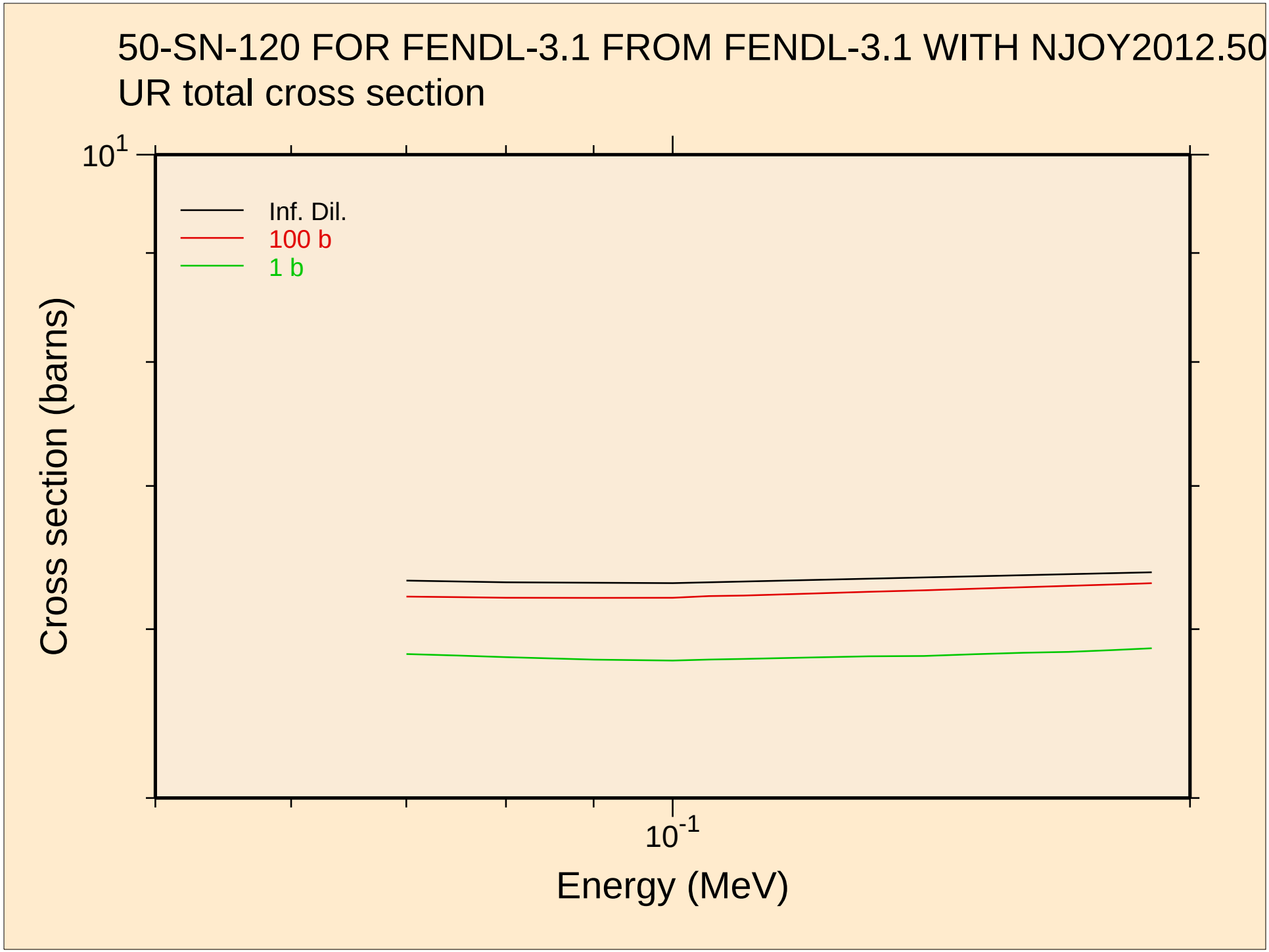

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
resonance absorption cross sections
capture
Cross section (barns)
10^2
10^1
10^0
10^-1
10^-2
10^-3
10^-4
10^-3
Energy (MeV)

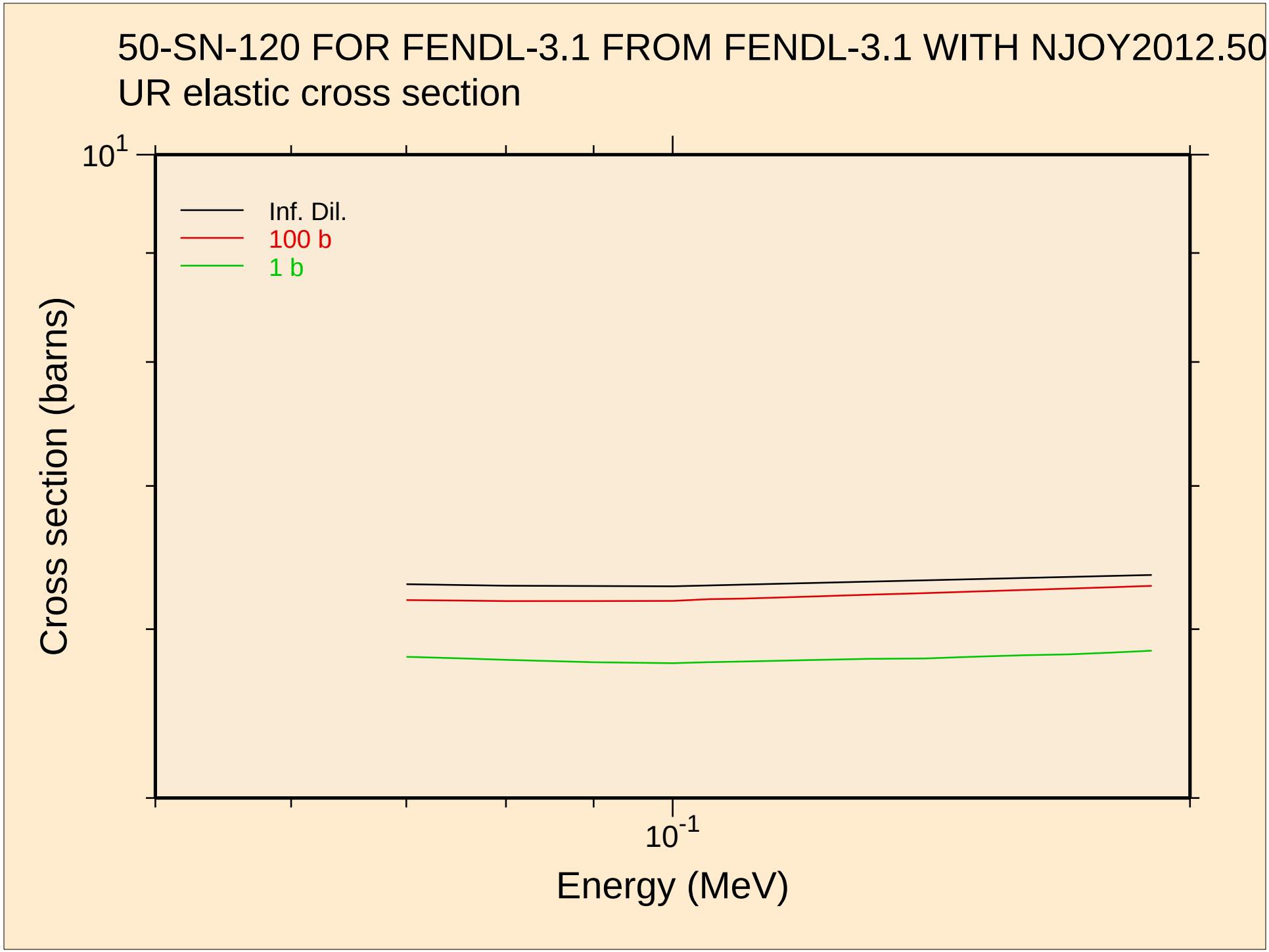

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
resonance absorption cross sections
capture
Cross section (barns)
10^{2}
10^{1}
10^{0}
10^{-1}
10^{-2}
10^{-3}
10^{-4}
10^{-3}
10^{-2}
Energy (MeV)

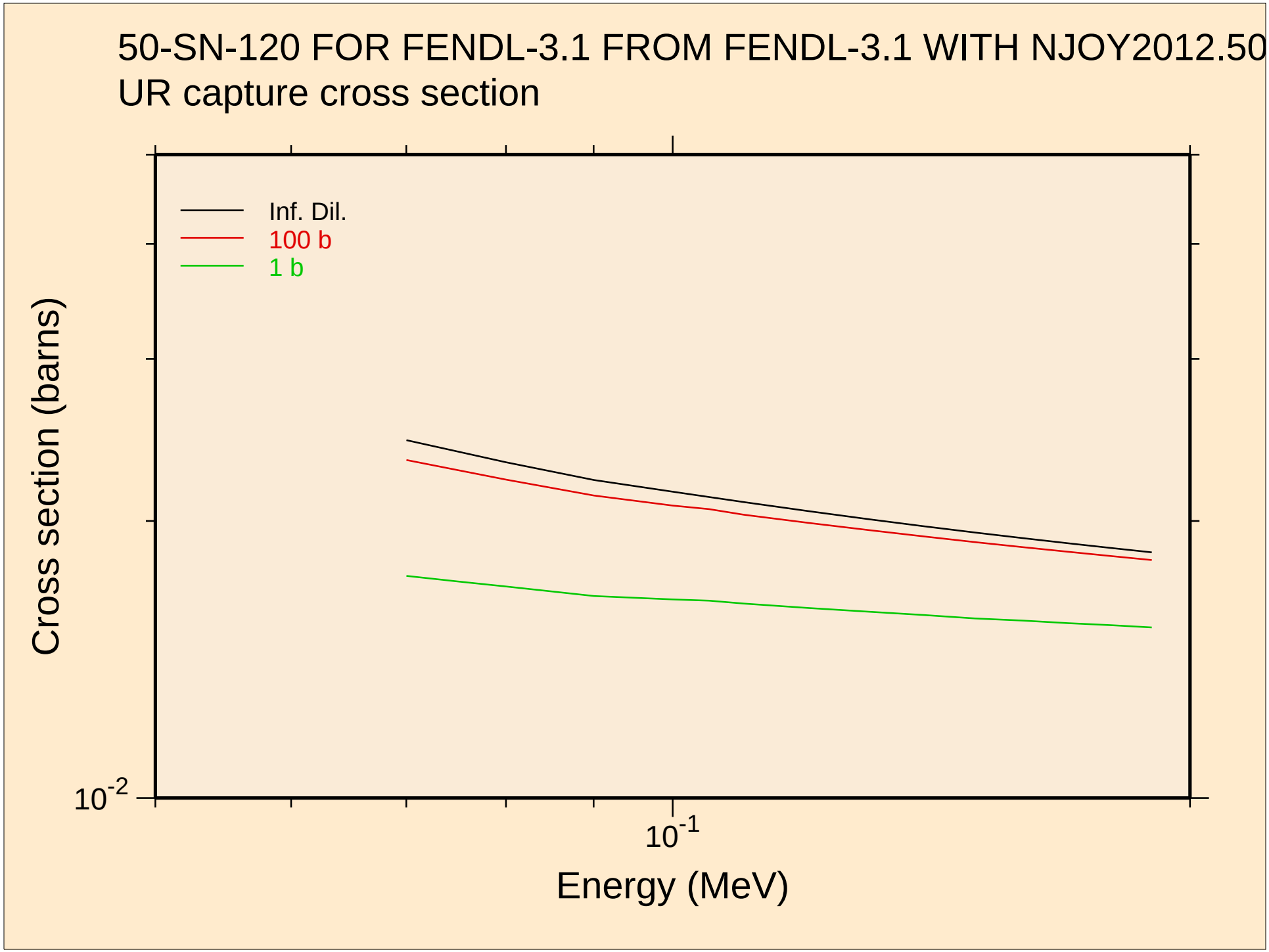

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
resonance absorption cross sections
capture
Cross section (barns)
10^1
10^0
10^-1
10^-2
10^-3
10^-4
10^-2
10^-1
Energy (MeV)

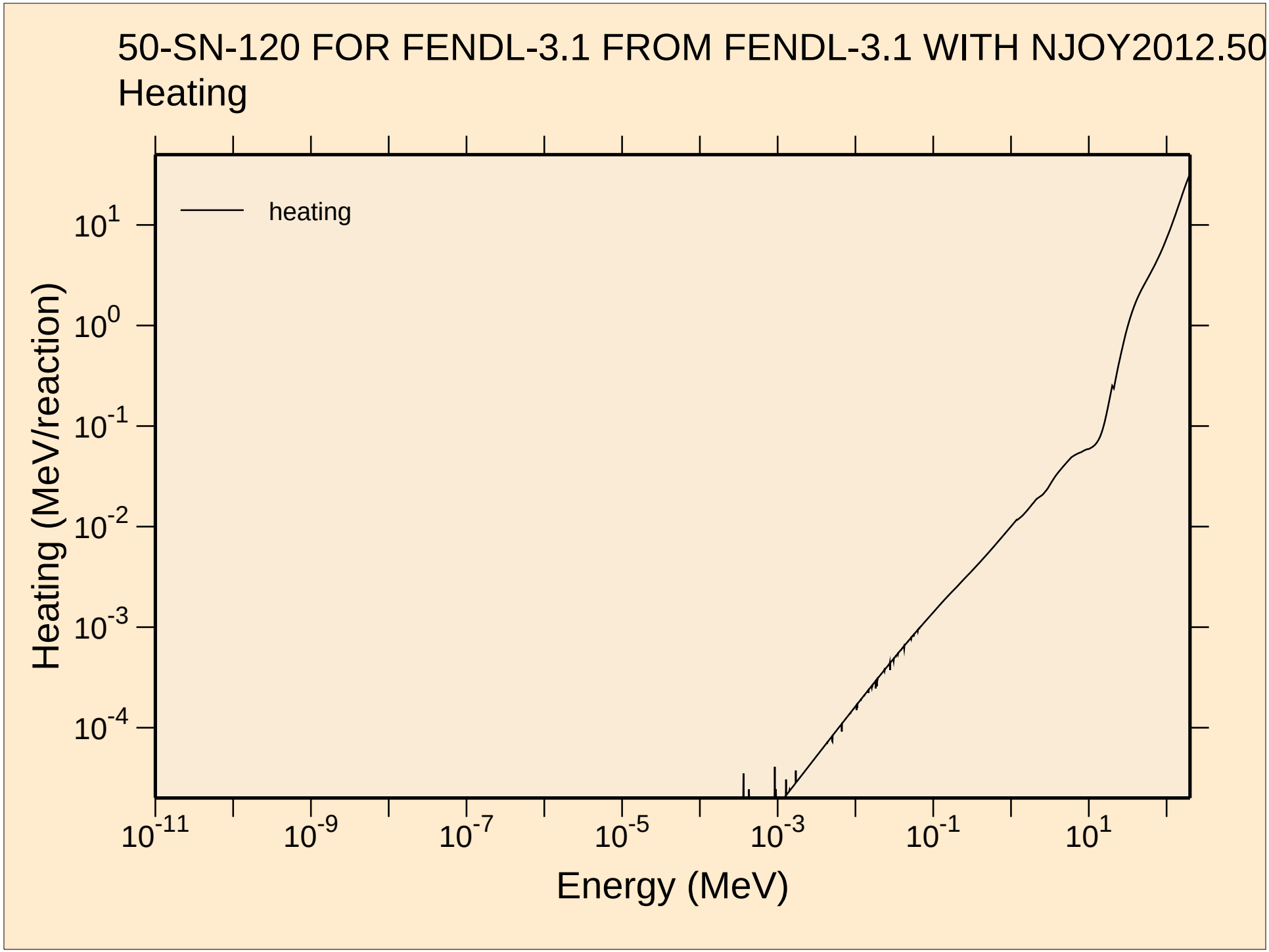
50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
resonance absorption cross sections

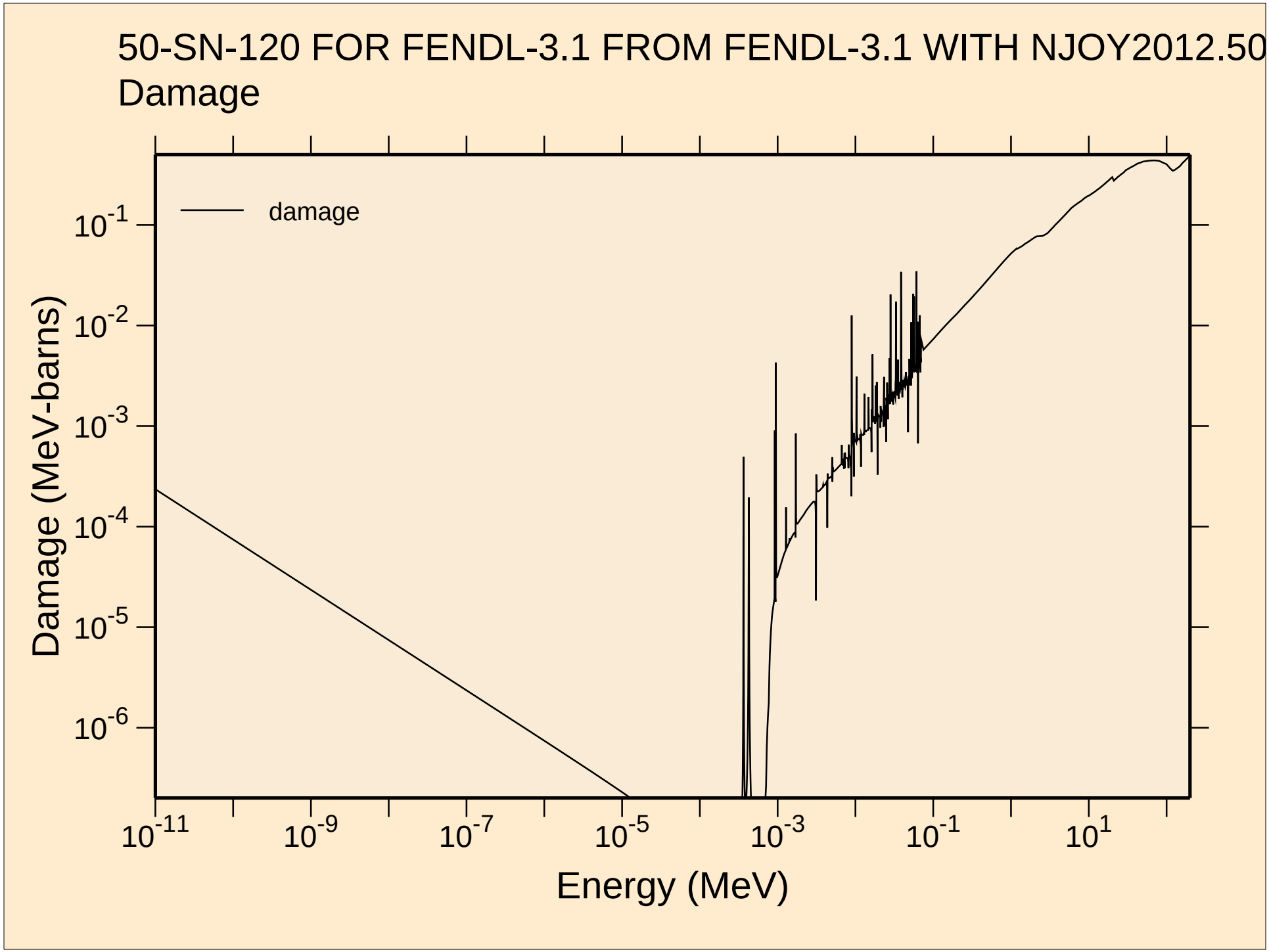


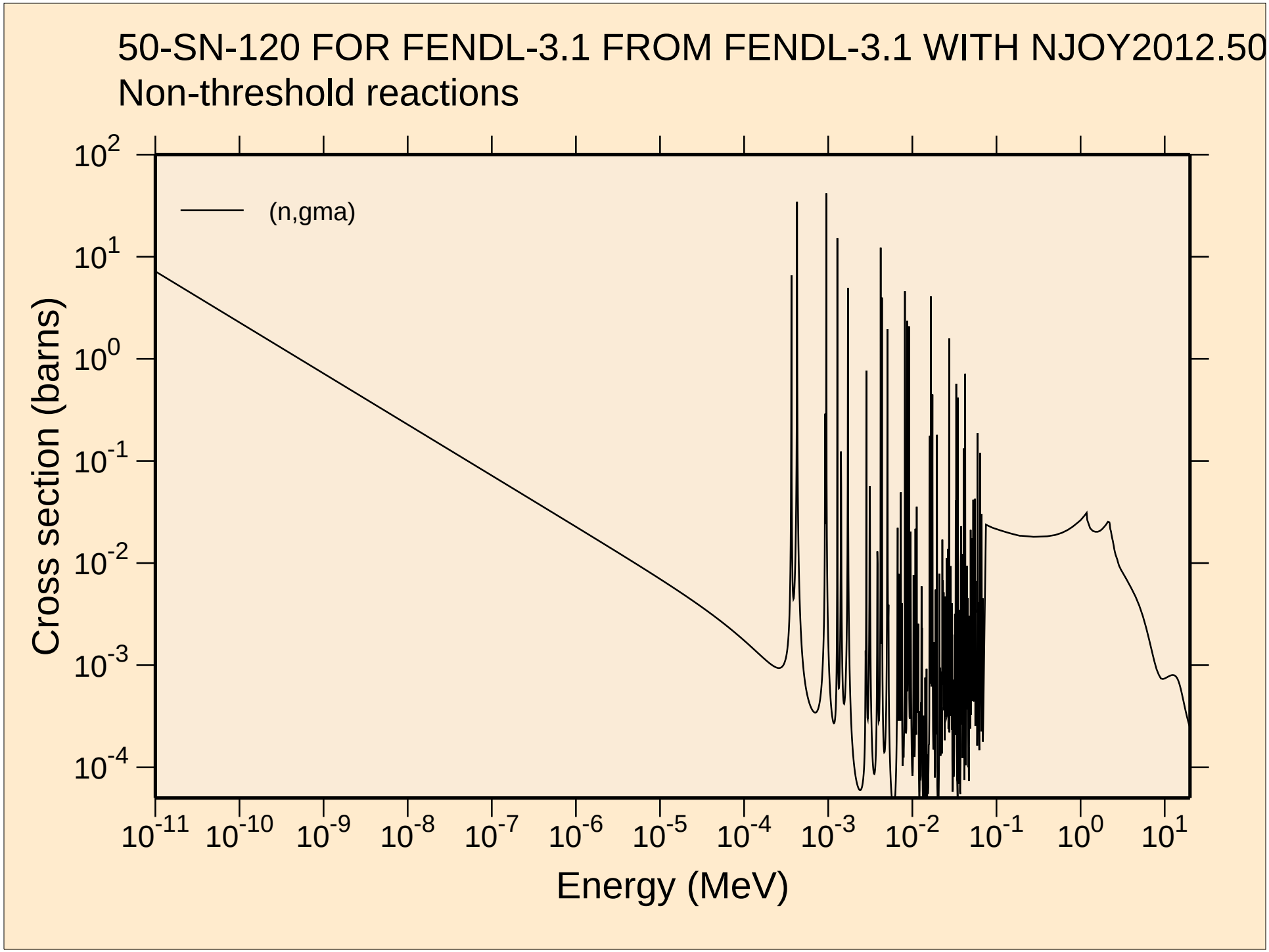

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
UR total cross section
10^1
Inf. Dil.
100 b
1 b
Cross section (barns)
10^{-1}
Energy (MeV)

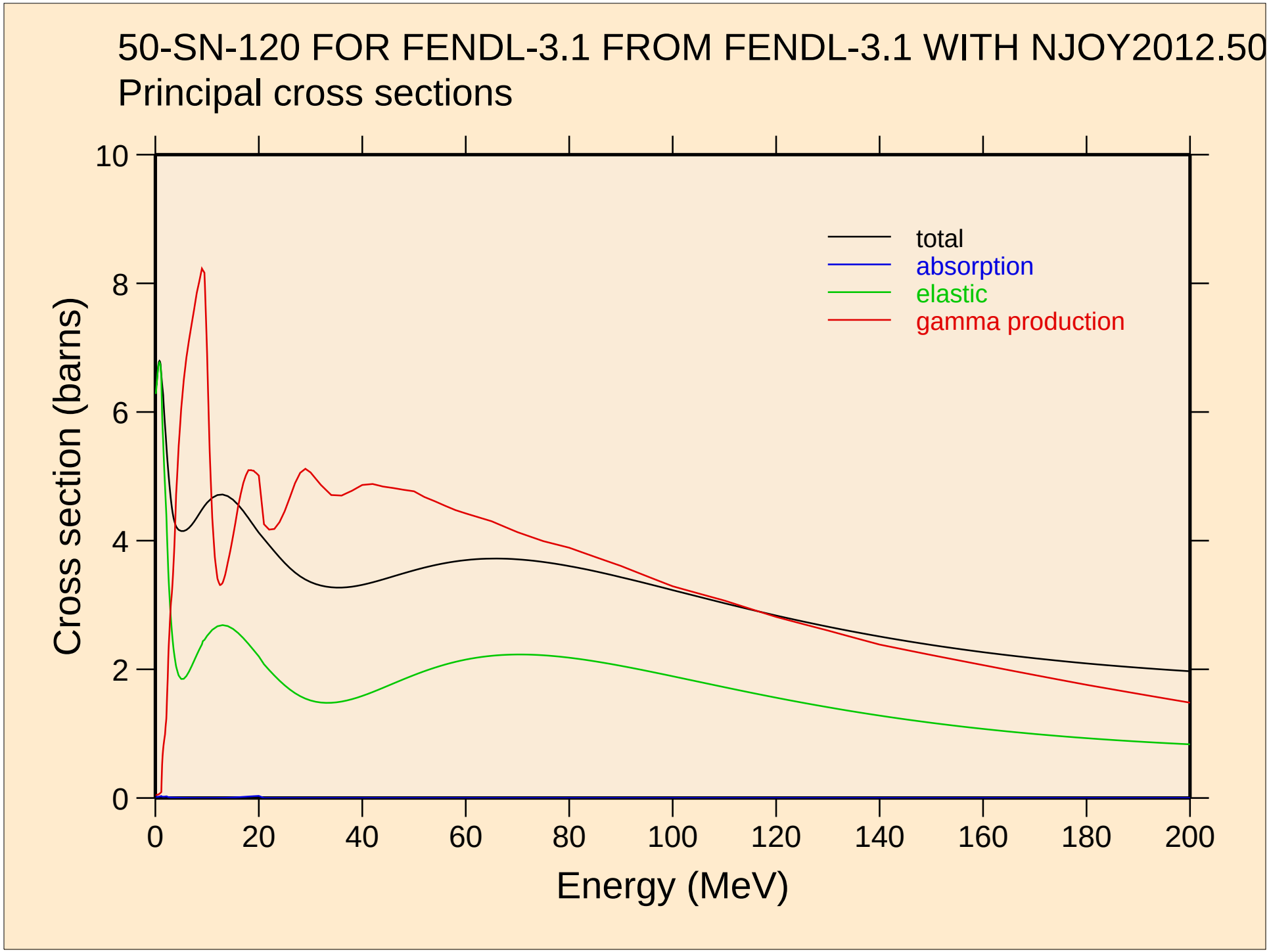

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
UR elastic cross section
10^1
Inf. Dil.
100 b
1 b
Cross section (barns)
10^{-1}
Energy (MeV)

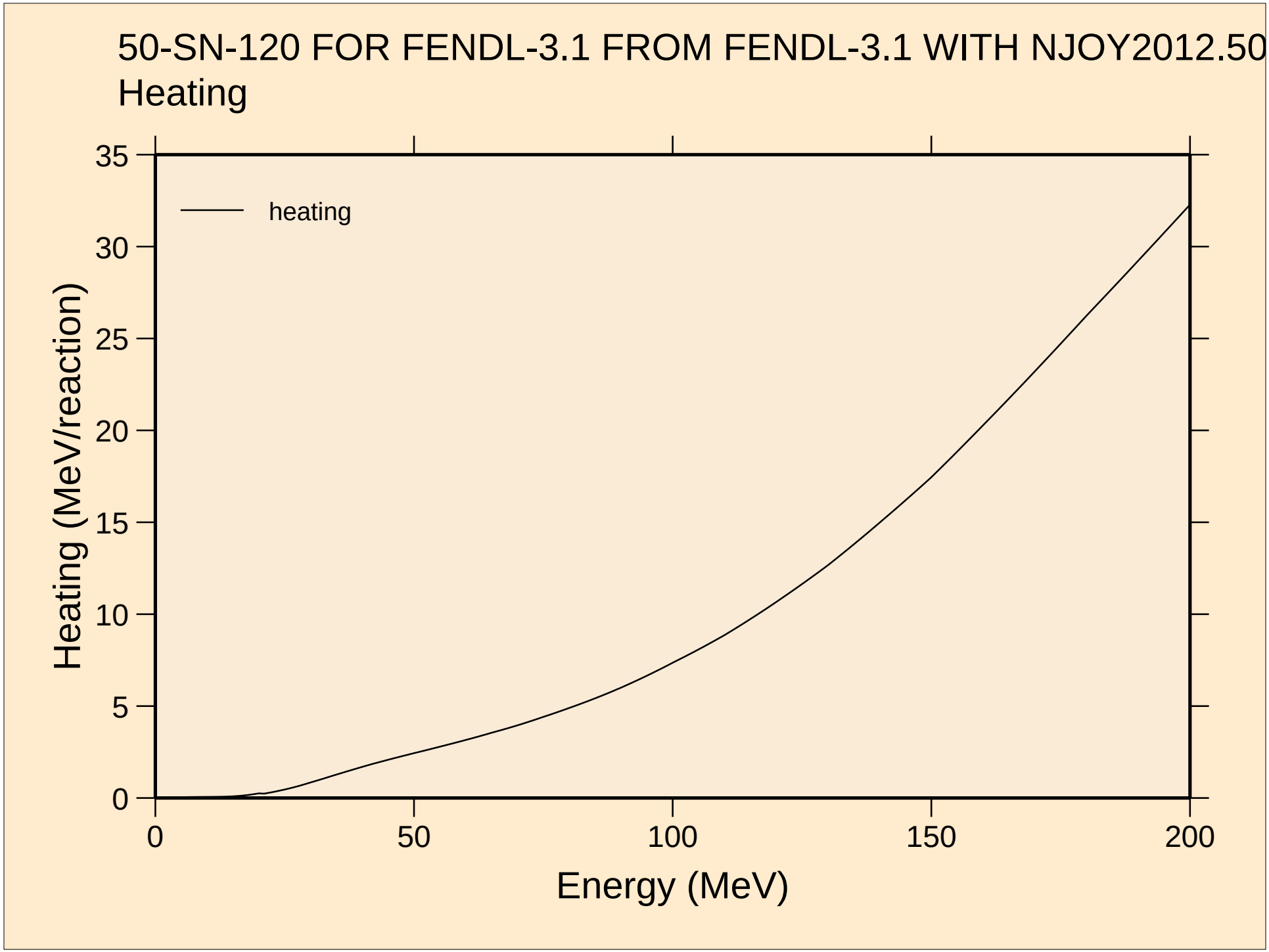

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
UR capture cross section
Inf. Dil.
100 b
1 b
Cross section (barns)
10-2
10-1
Energy (MeV)

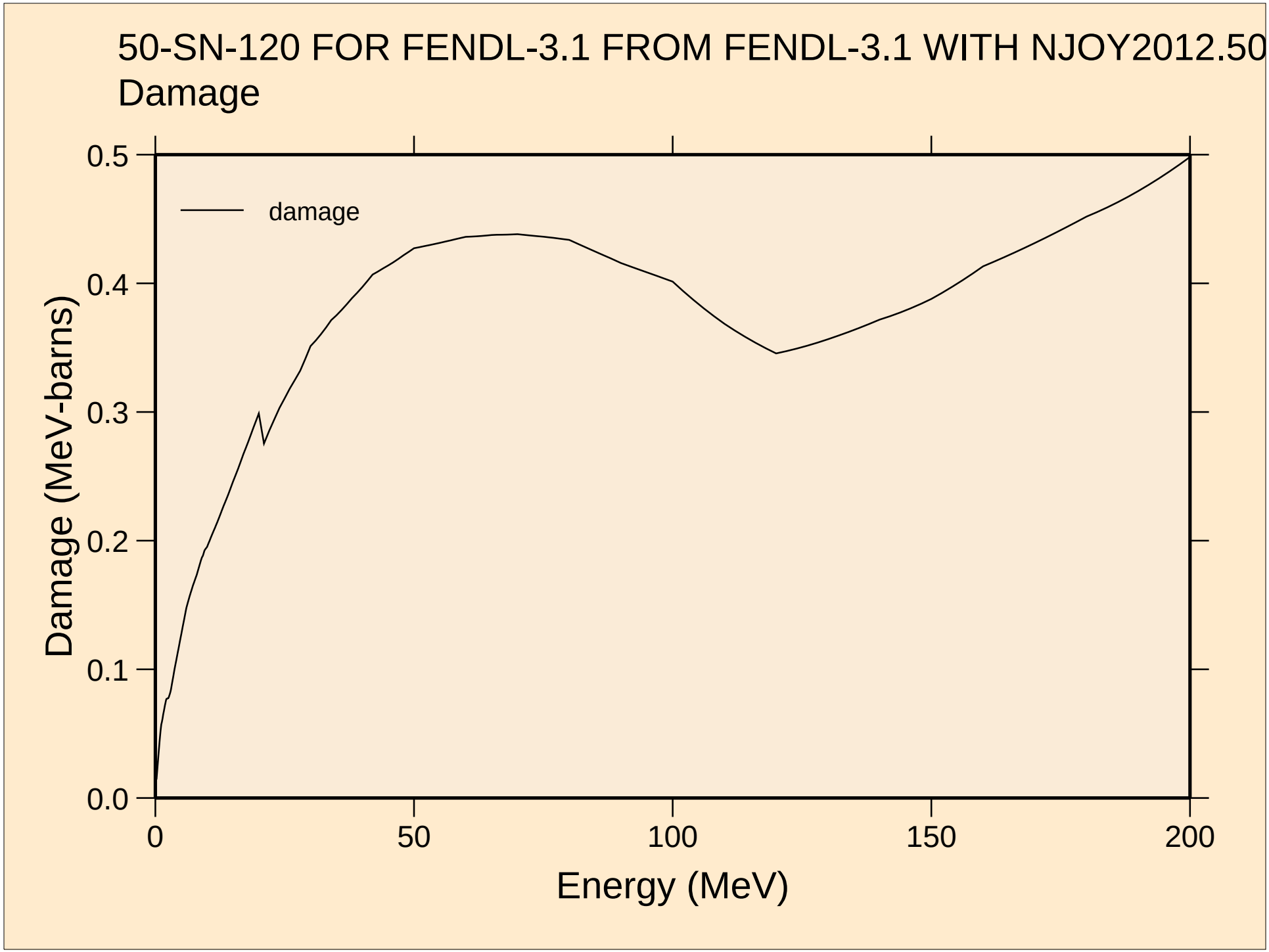

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
Heating
heating
Heating (MeV/reaction)
10^{1}
10^{0}
10^{-1}
10^{-2}
10^{-3}
10^{-4}
10^{-11}
10^{-9}
10^{-7}
10^{-5}
10^{-3}
10^{-1}
10^{1}
Energy (MeV)

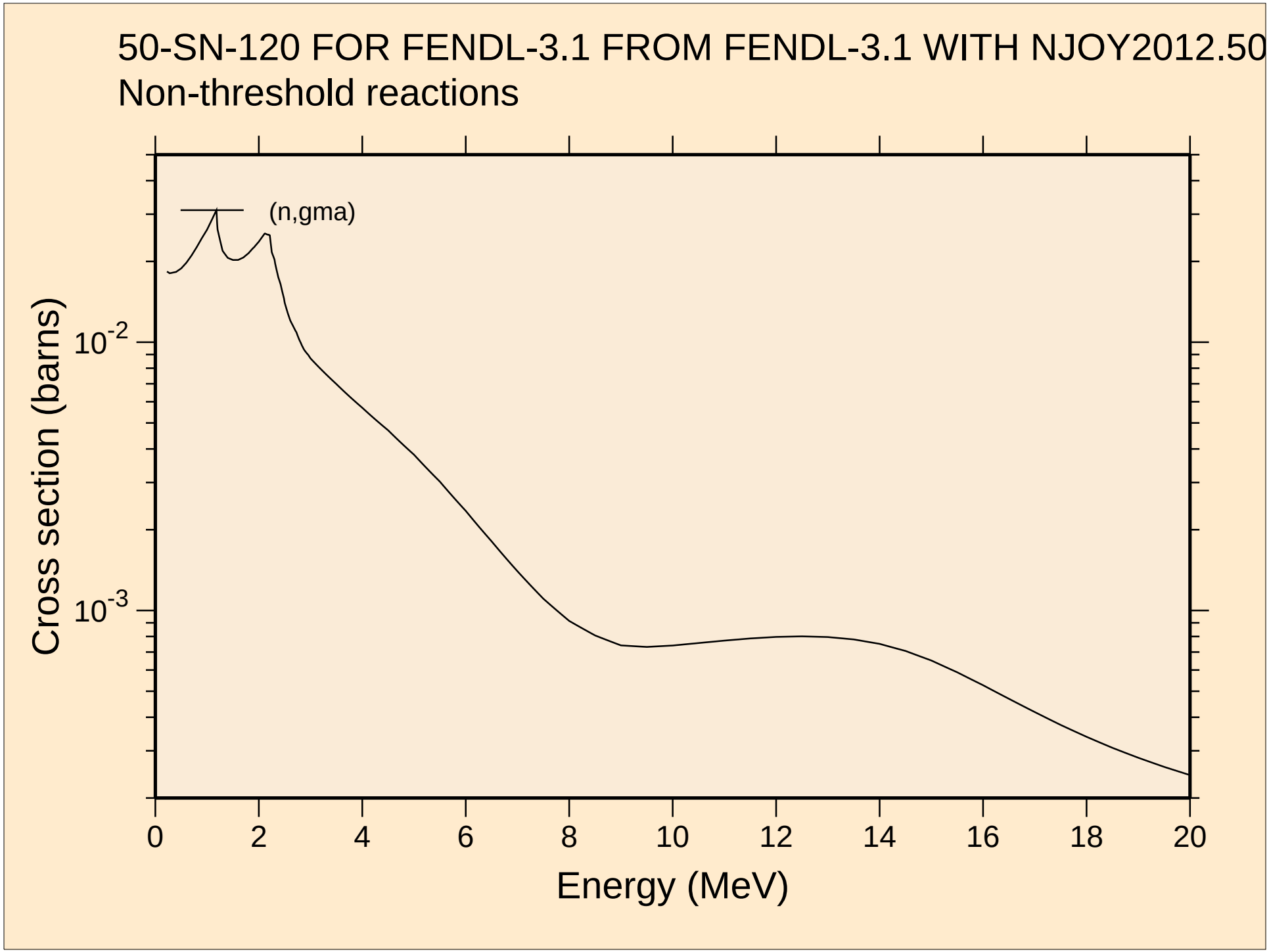

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
Damage
damage
Damage (MeV-barns)
10-1
10-2
10-3
10-4
10-5
10-6
10-11
10-9
10-7
10-5
10-3
10-1
101
Energy (MeV)

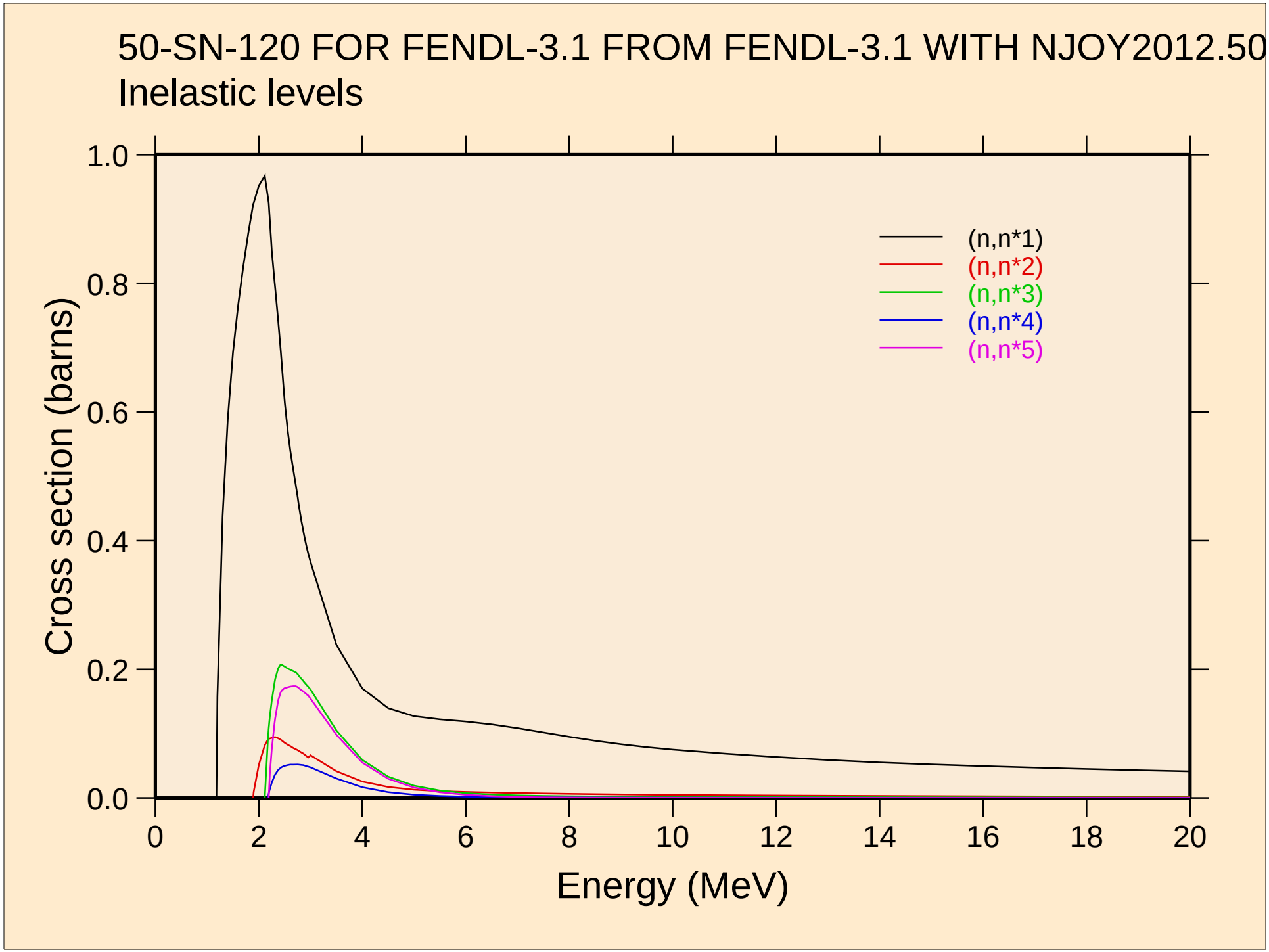

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
Non-threshold reactions
(n,gma)
Cross section (barns)
Energy (MeV)
10^2
10^1
10^0
10^-1
10^-2
10^-3
10^-4
10^-11
10^-10
10^-9
10^-8
10^-7
10^-6
10^-5
10^-4
10^-3
10^-2
10^-1
10^0
10^1

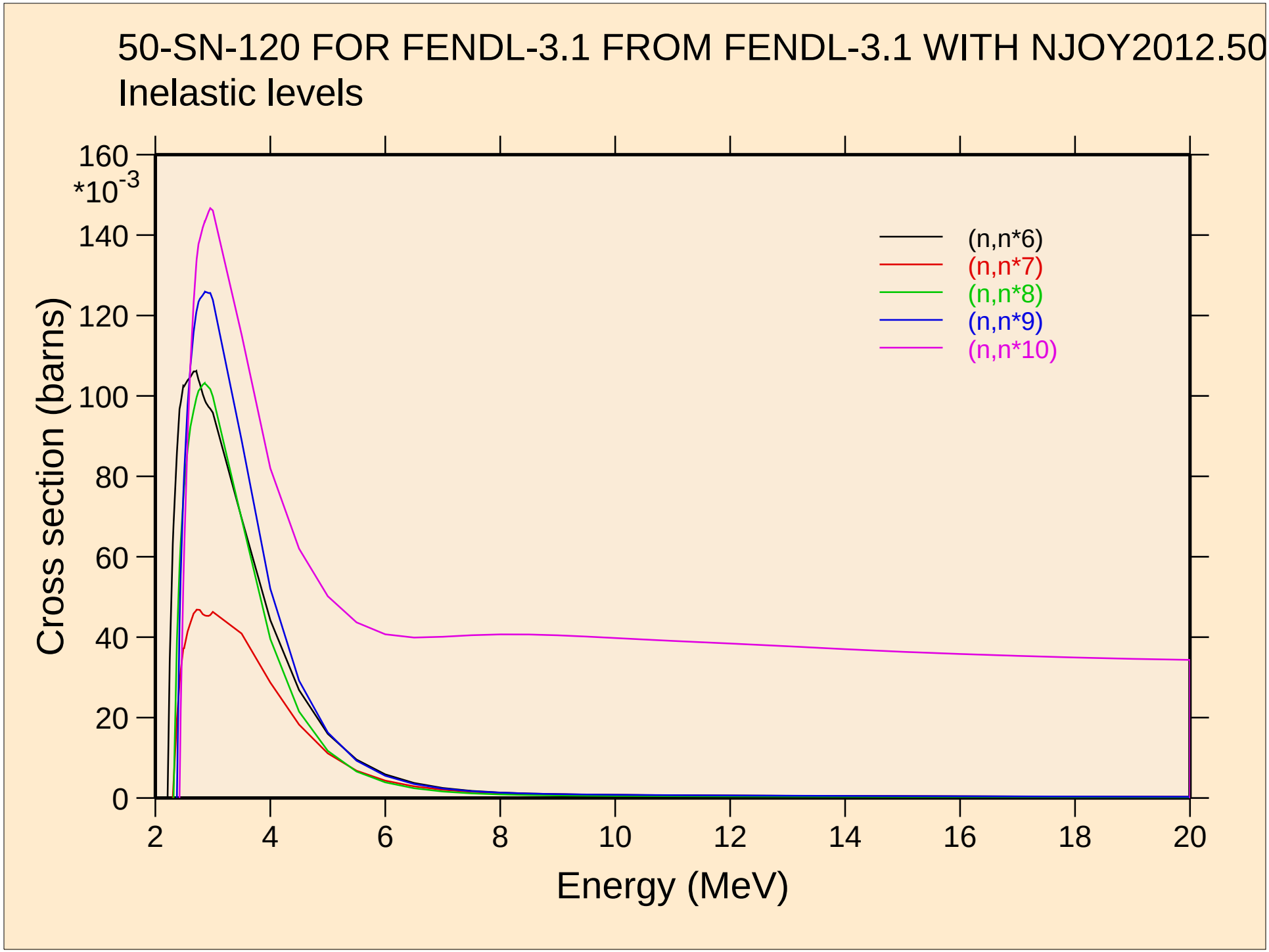

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
Principal cross sections
Cross section (barns)
Energy (MeV)
total
absorption
elastic
gamma production
0
2
4
6
8
10
0
20
40
60
80
100
120
140
160
180
200

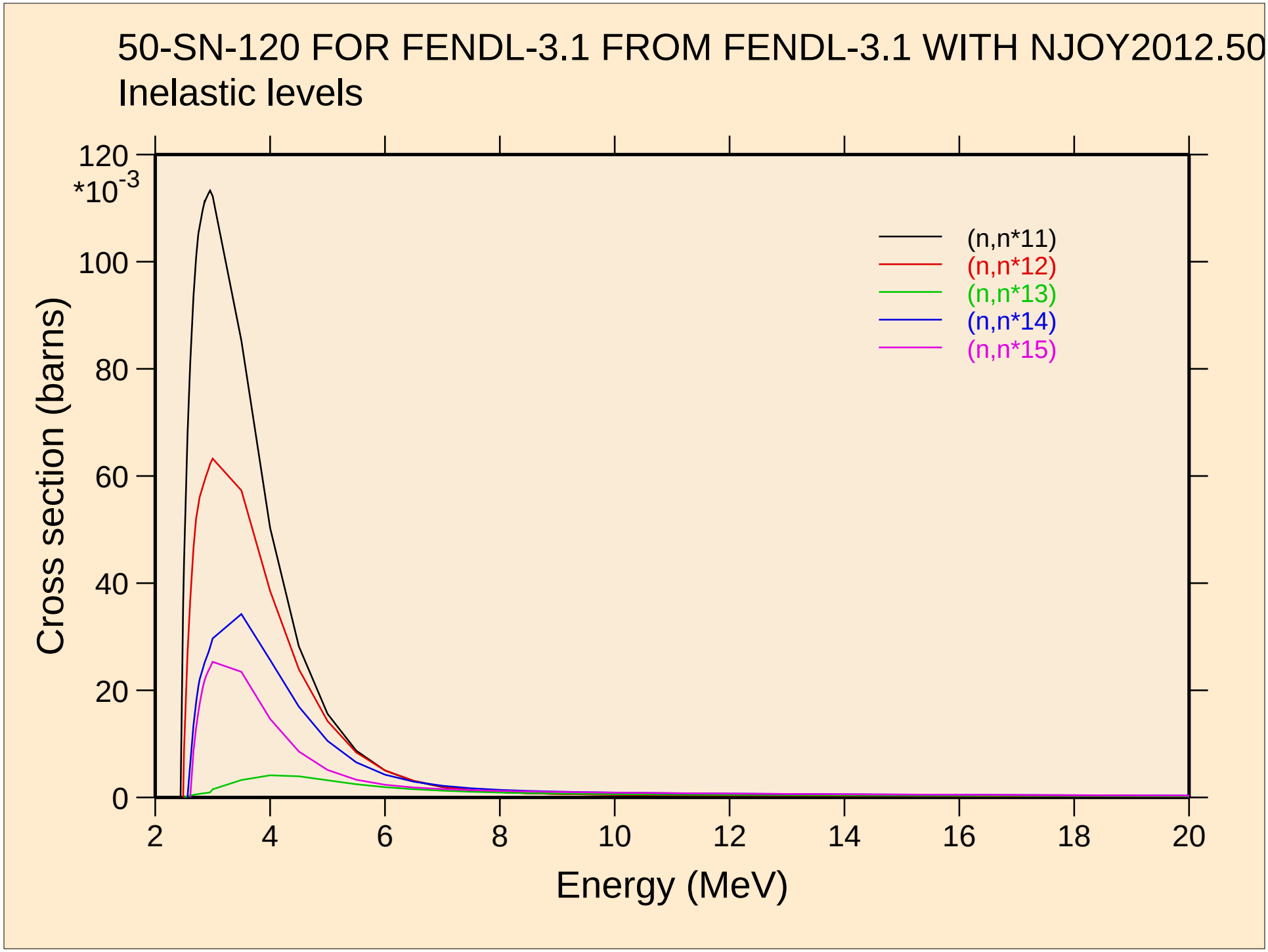

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
Heating
heating
Heating (MeV/reaction)
Energy (MeV)
0
5
10
15
20
25
30
35
0
50
100
150
200

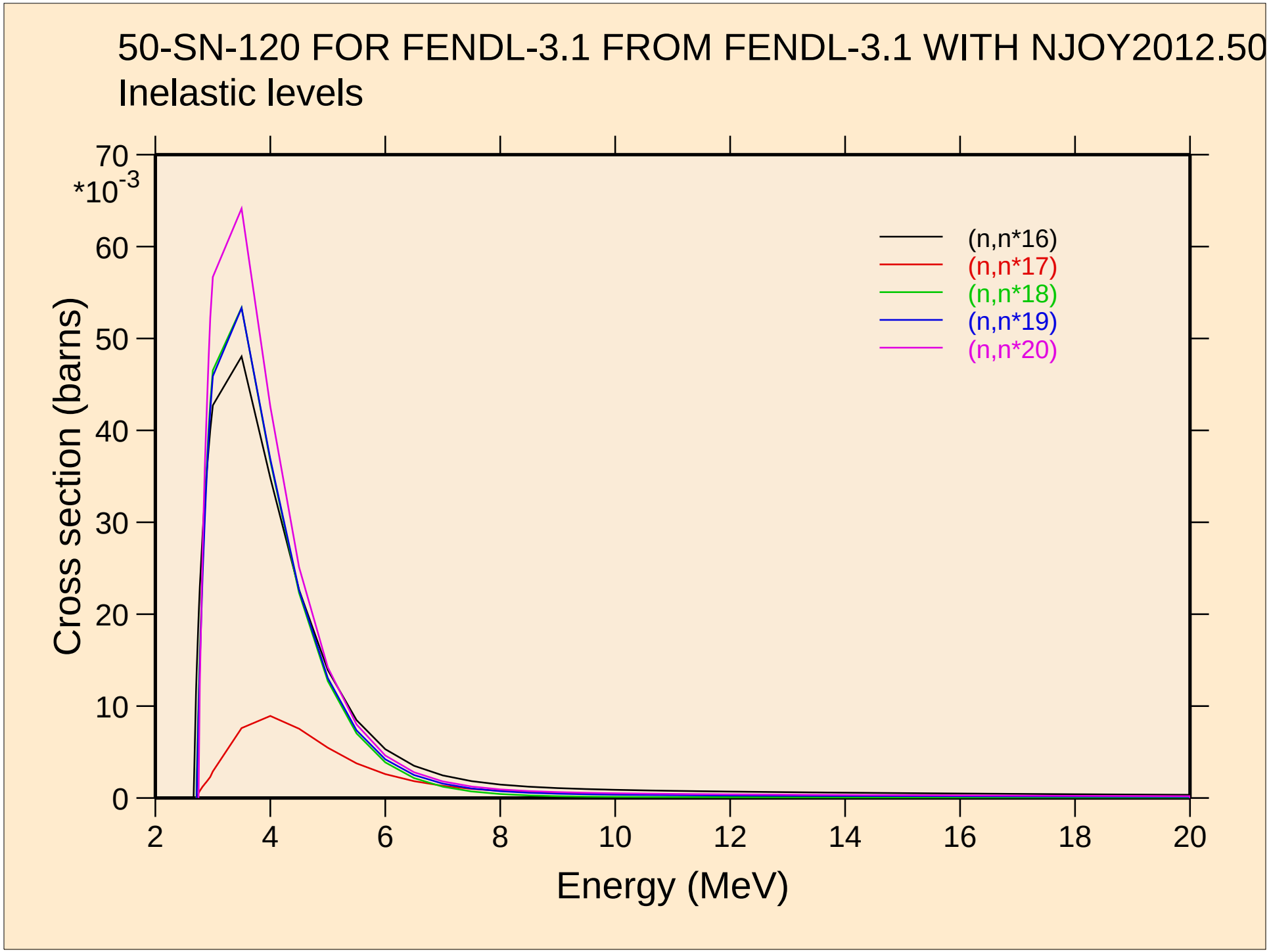

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
Damage
damage
Damage (MeV-barns)
0.0
0.1
0.2
0.3
0.4
0.5
0
50
100
150
200
Energy (MeV)

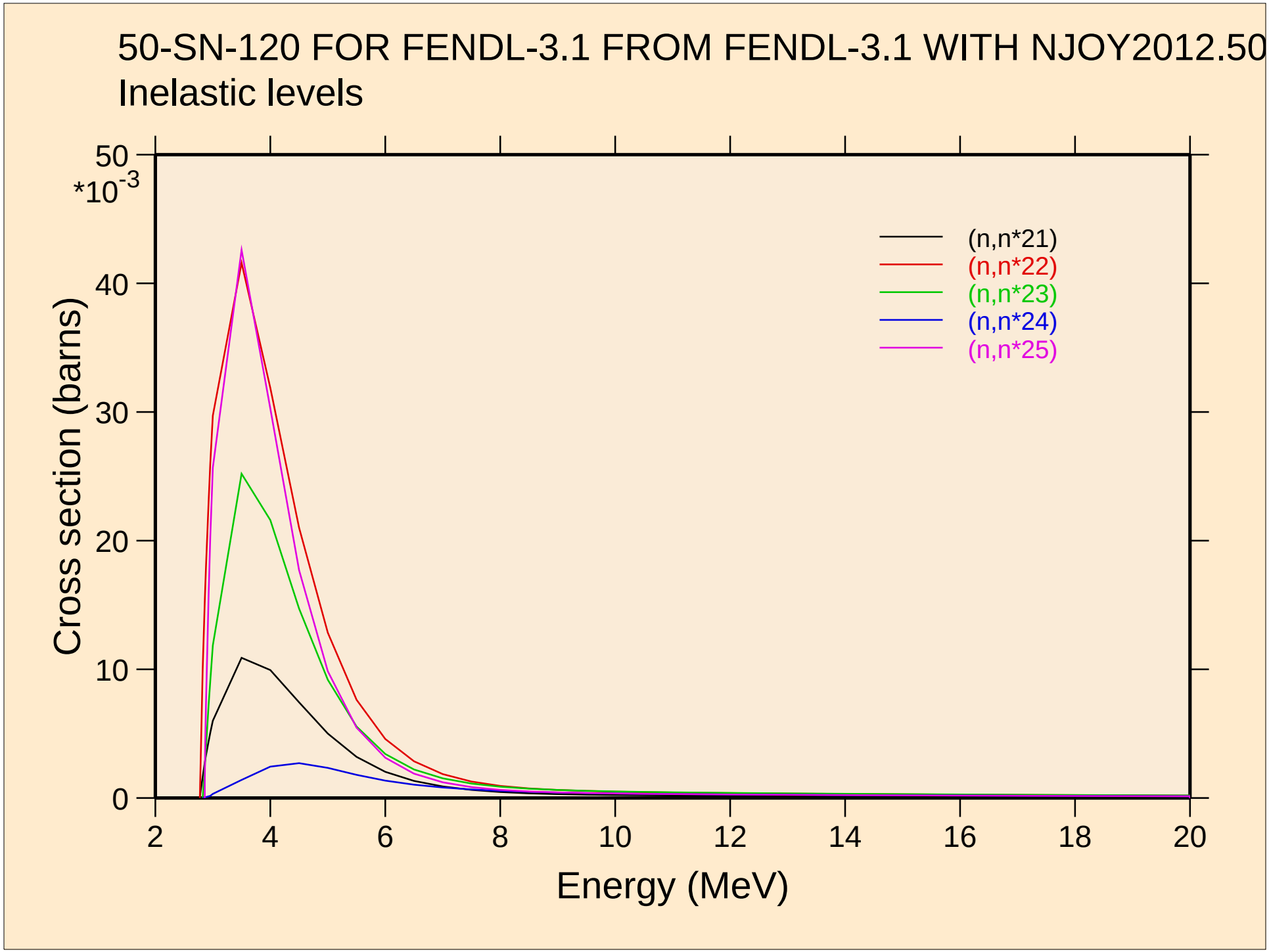

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
Non-threshold reactions
(n,gma)
Cross section (barns)
10-2
10-3
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

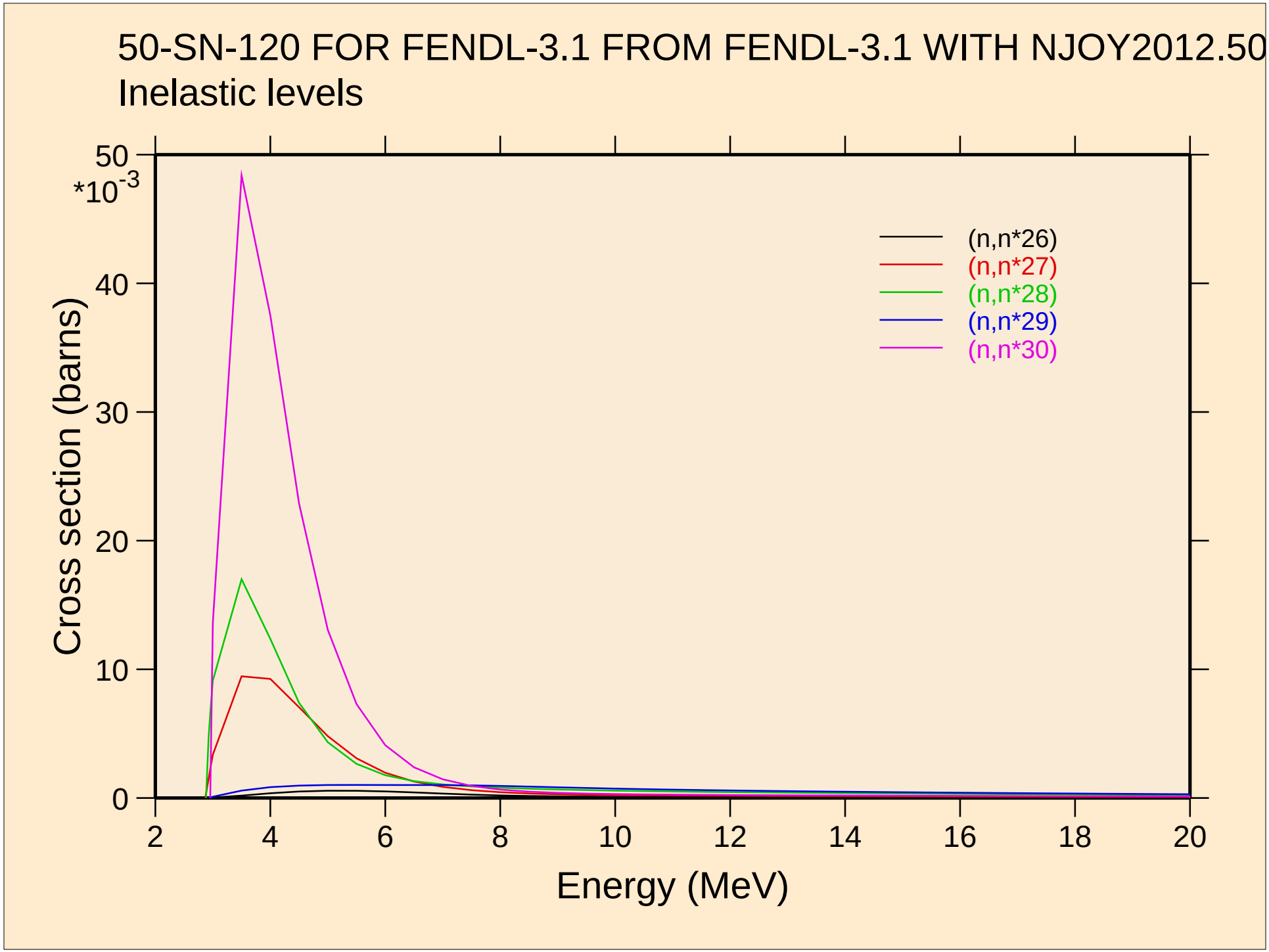

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
Inelastic levels
Cross section (barns)
Energy (MeV)
1.0
0.8
0.6
0.4
0.2
0.0
0
2
4
6
8
10
12
14
16
18
20
(n,n*1)
(n,n*2)
(n,n*3)
(n,n*4)
(n,n*5)

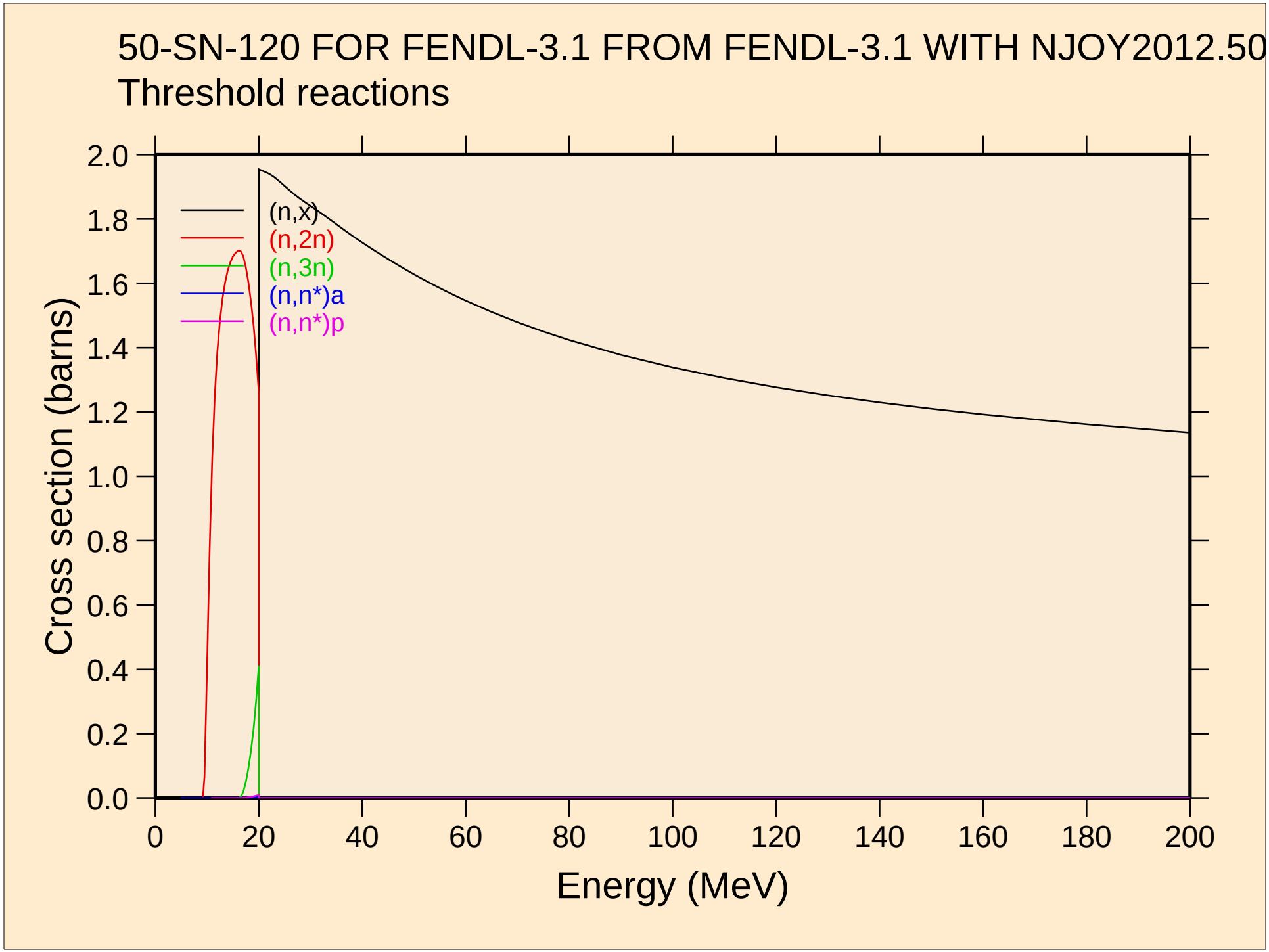

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
Inelastic levels
Cross section (barns)
*10-3
160
140
120
100
80
60
40
20
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)
(n,n*6)
(n,n*7)
(n,n*8)
(n,n*9)
(n,n*10)

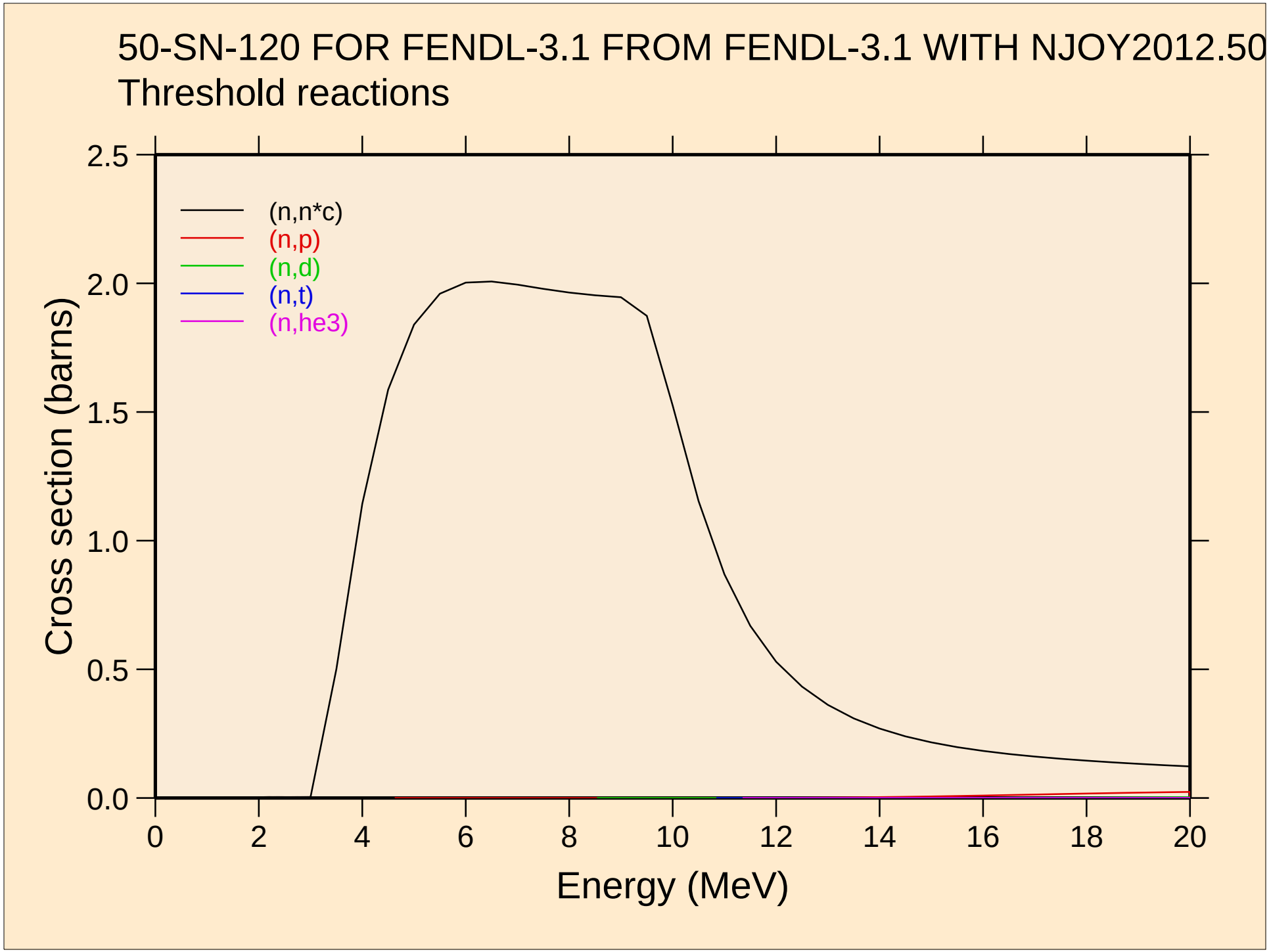

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
Inelastic levels
120
*10-3
100
80
60
40
20
0
Cross section (barns)
2
4
6
8
10
12
14
16
18
20
Energy (MeV)
(n,n*11)
(n,n*12)
(n,n*13)
(n,n*14)
(n,n*15)

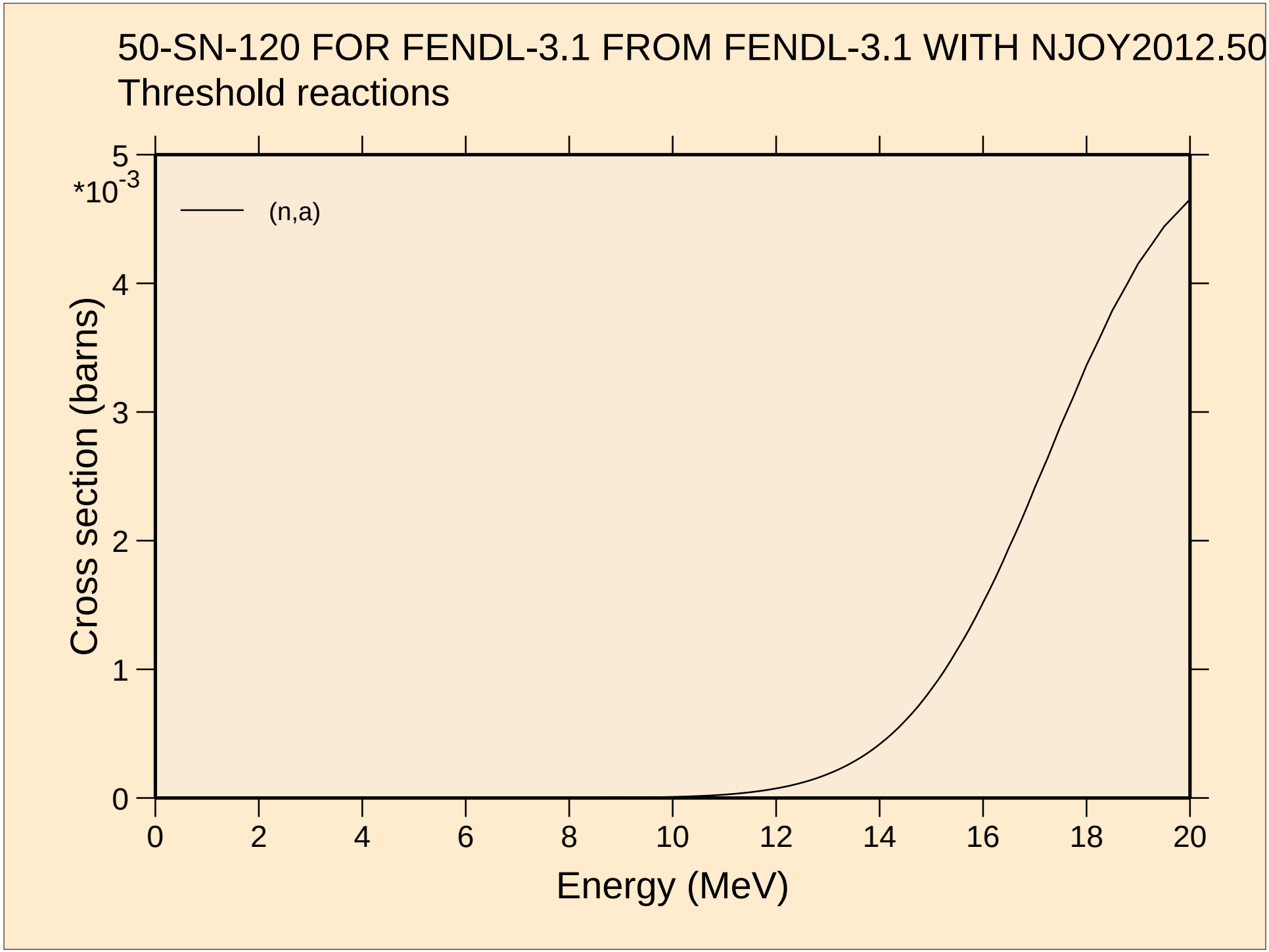

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
Inelastic levels
Cross section (barns)
*10-3
70
60
50
40
30
20
10
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)
(n,n*16)
(n,n*17)
(n,n*18)
(n,n*19)
(n,n*20)

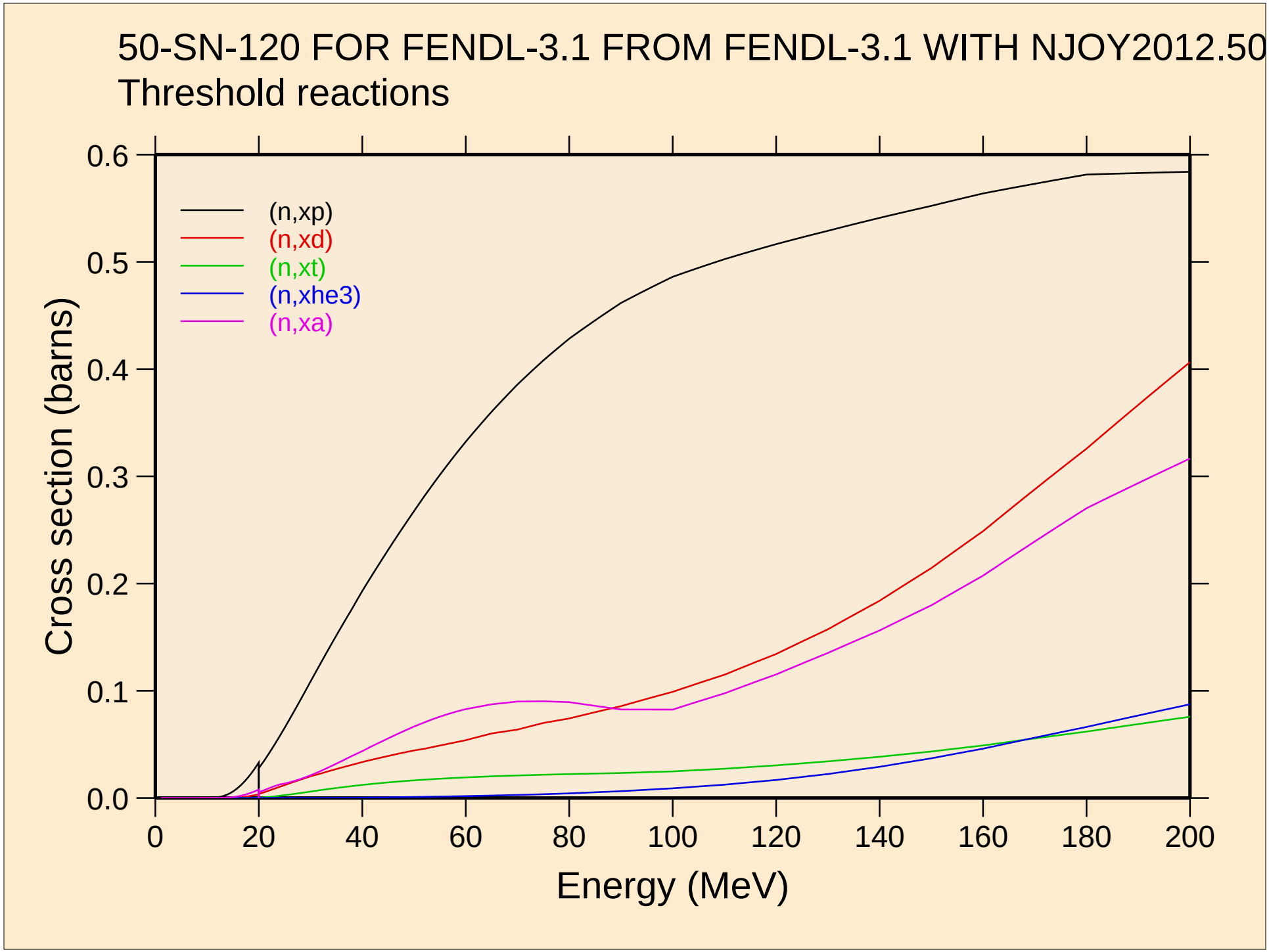

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
Inelastic levels
*10-3
50
40
30
20
10
0
Cross section (barns)
2
4
6
8
10
12
14
16
18
20
Energy (MeV)
(n,n*21)
(n,n*22)
(n,n*23)
(n,n*24)
(n,n*25)

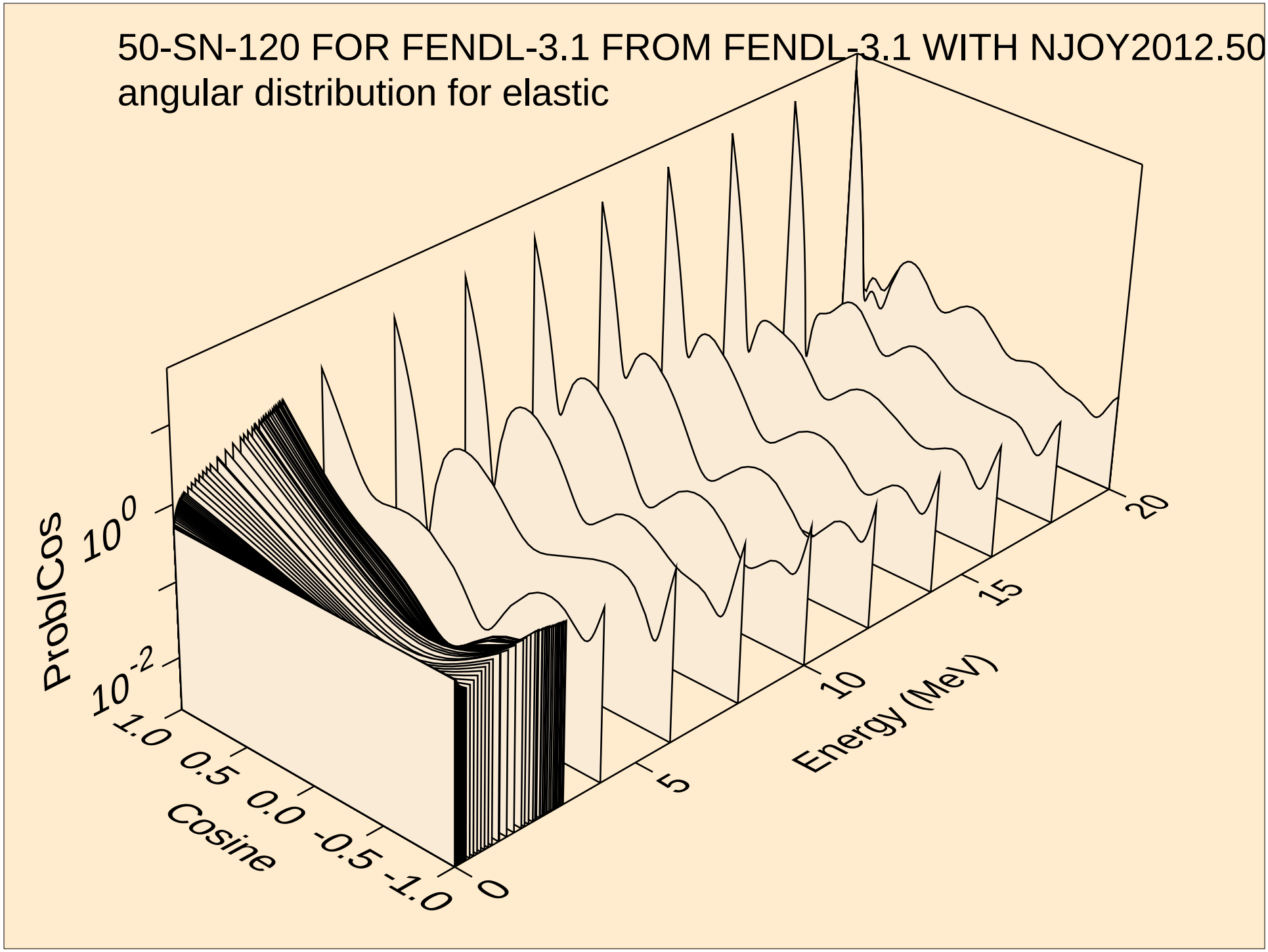

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
Inelastic levels
*10-3
50
40
30
20
10
0
Cross section (barns)
2
4
6
8
10
12
14
16
18
20
Energy (MeV)
(n,n*26)
(n,n*27)
(n,n*28)
(n,n*29)
(n,n*30)

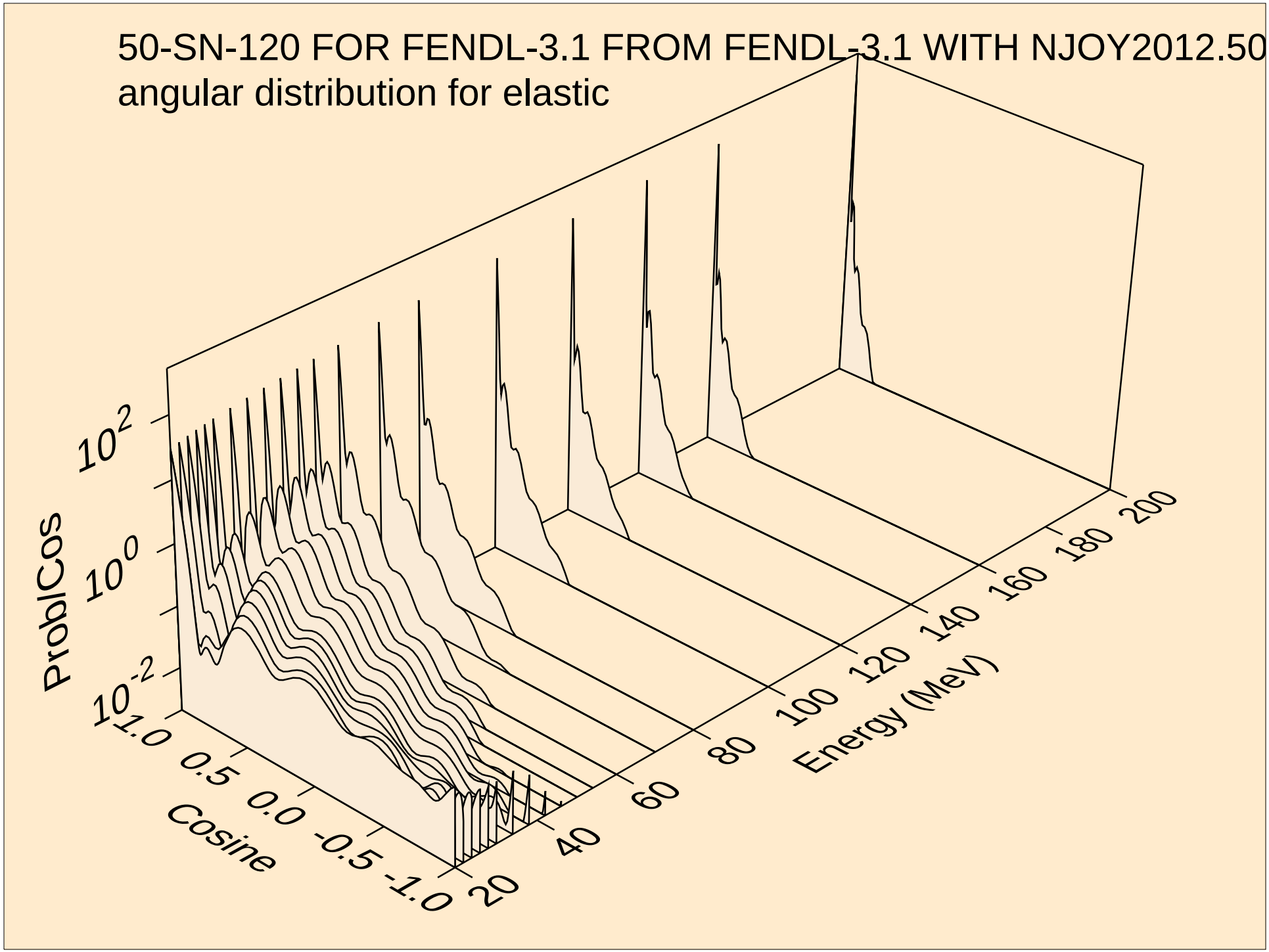

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
Threshold reactions
Cross section (barns)
Energy (MeV)
(n,x)
(n,2n)
(n,3n)
(n,n*)a
(n,n*)p
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
1.6
1.8
2.0
0
20
40
60
80
100
120
140
160
180
200

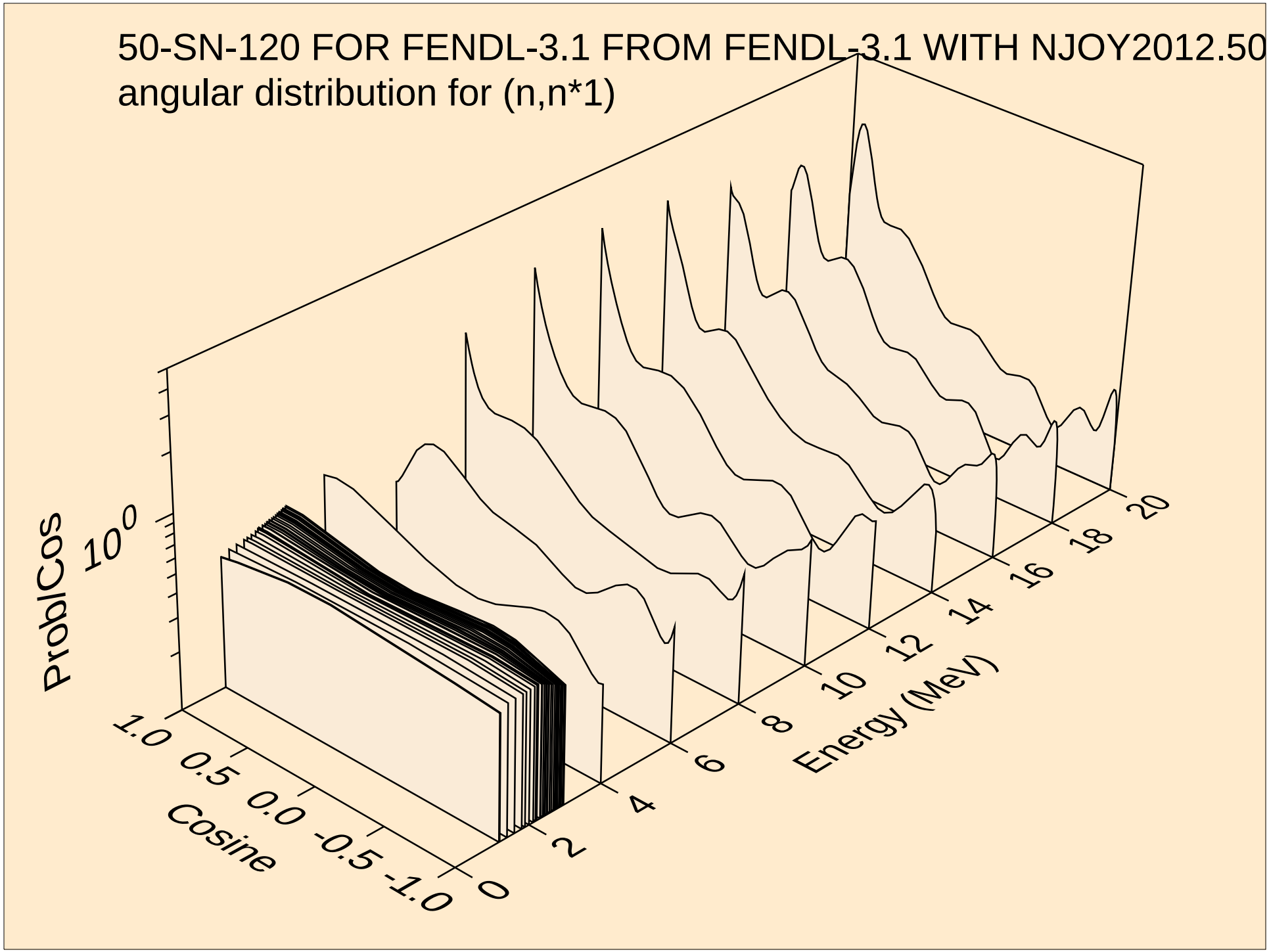

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
Threshold reactions
(n,n*c)
(n,p)
(n,d)
(n,t)
(n,he3)
Cross section (barns)
Energy (MeV)
0.0
0.5
1.0
1.5
2.0
2.5
0
2
4
6
8
10
12
14
16
18
20

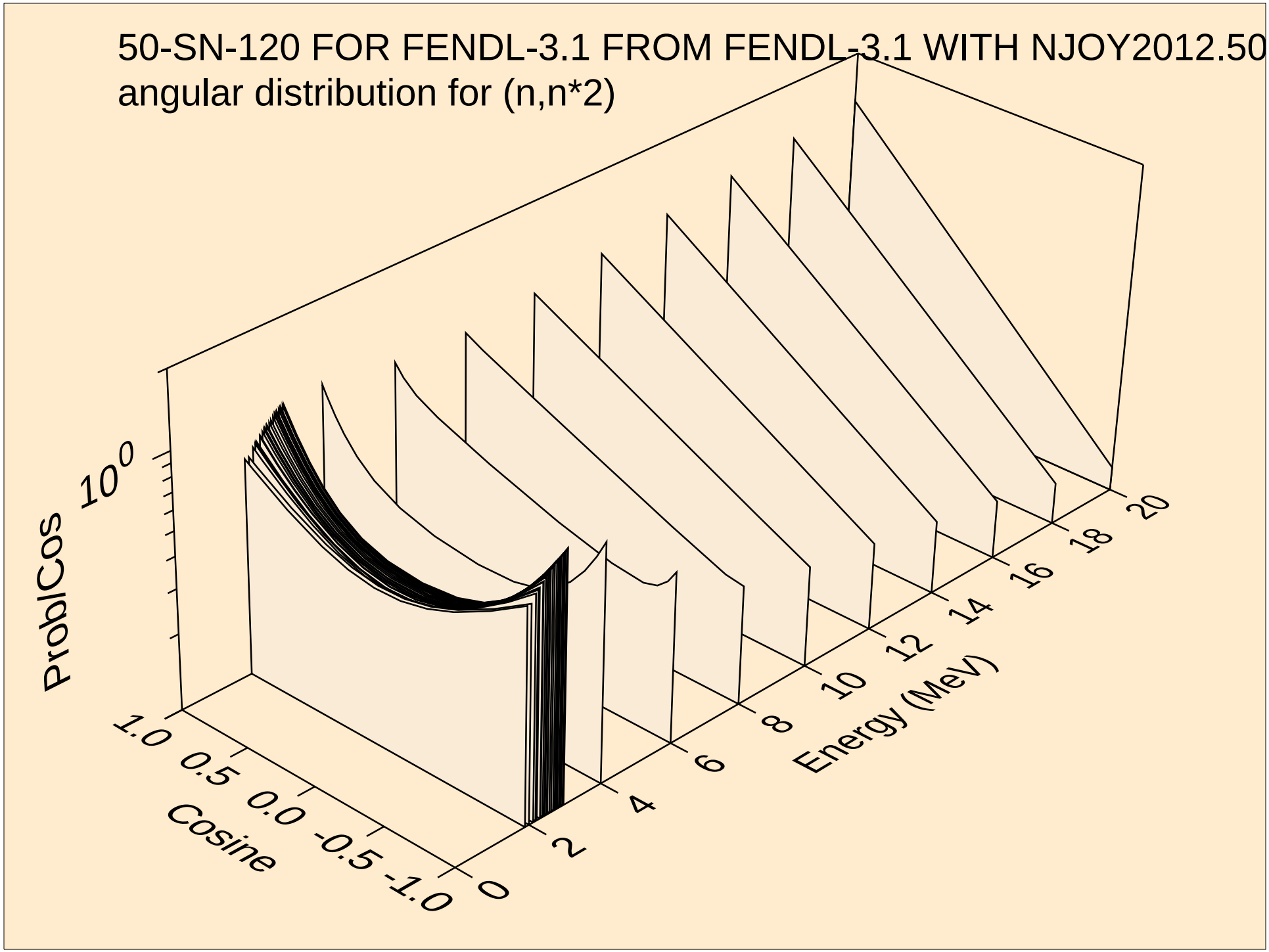

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
Threshold reactions
*10-3
(n,a)
Cross section (barns)
0
1
2
3
4
5
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

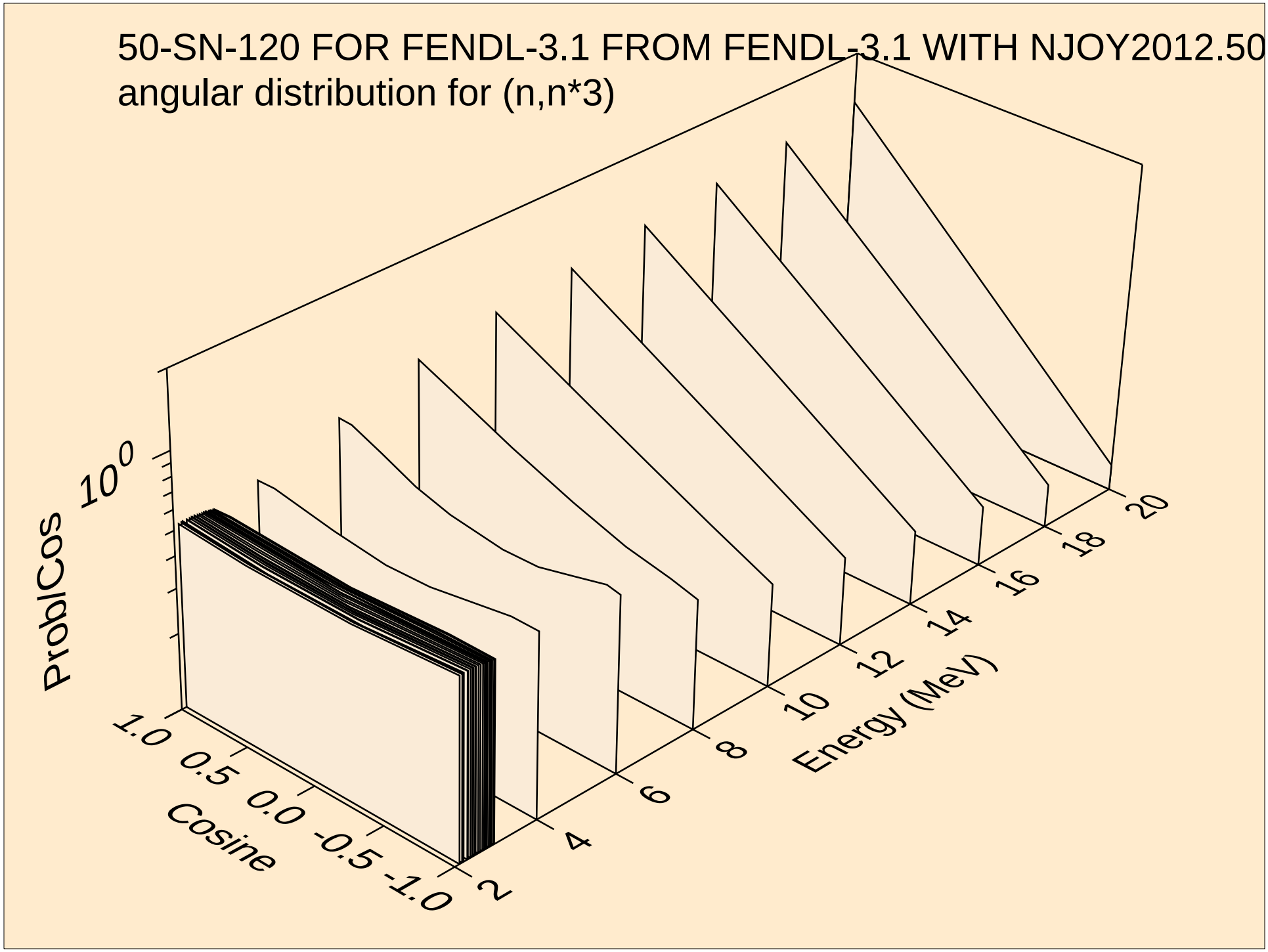

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
Threshold reactions
(n,xp)
(n,xd)
(n,xt)
(n,xhe3)
(n,xa)
Cross section (barns)
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0
20
40
60
80
100
120
140
160
180
200
Energy (MeV)

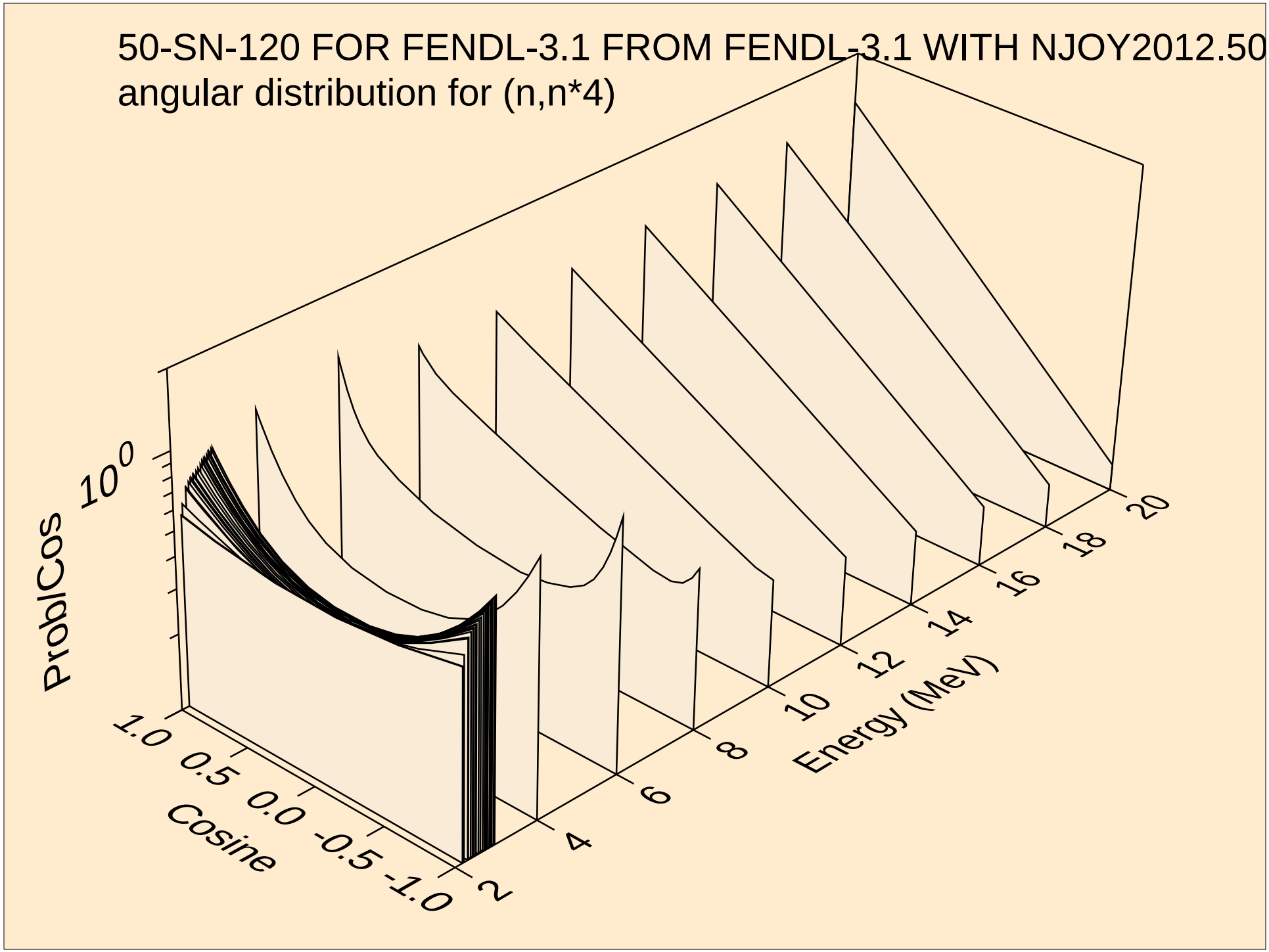

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
angular distribution for elastic
ProbICos
10^{0}
10^{-2}
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
Energy (MeV)

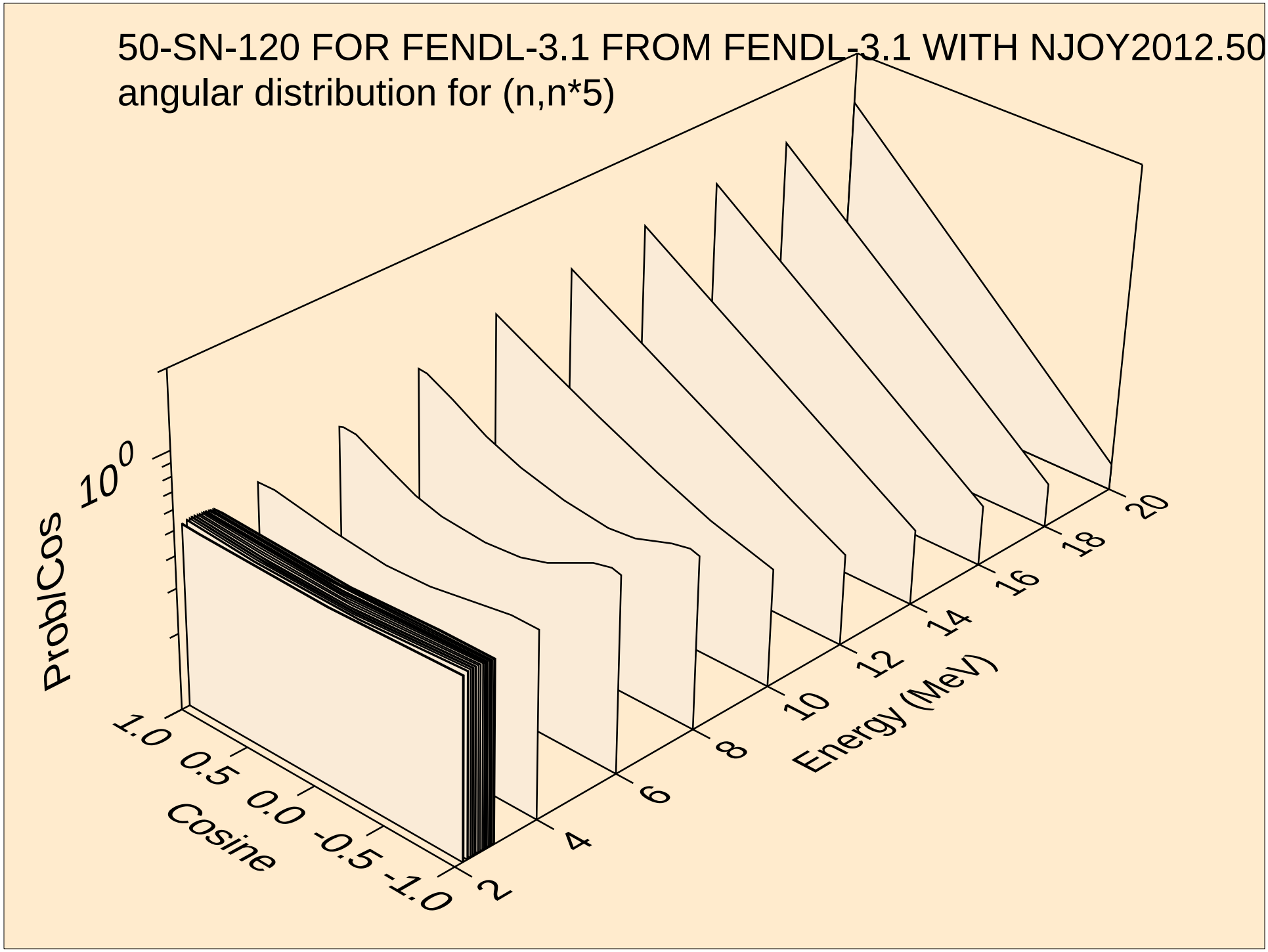

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
angular distribution for elastic
ProblCos
10^{2}
10^{0}
10^{-2}
1.0
0.5
0.0
-0.5
-1.0
Cosine
20
40
60
80
100
120
140
160
180
200
Energy (MeV)

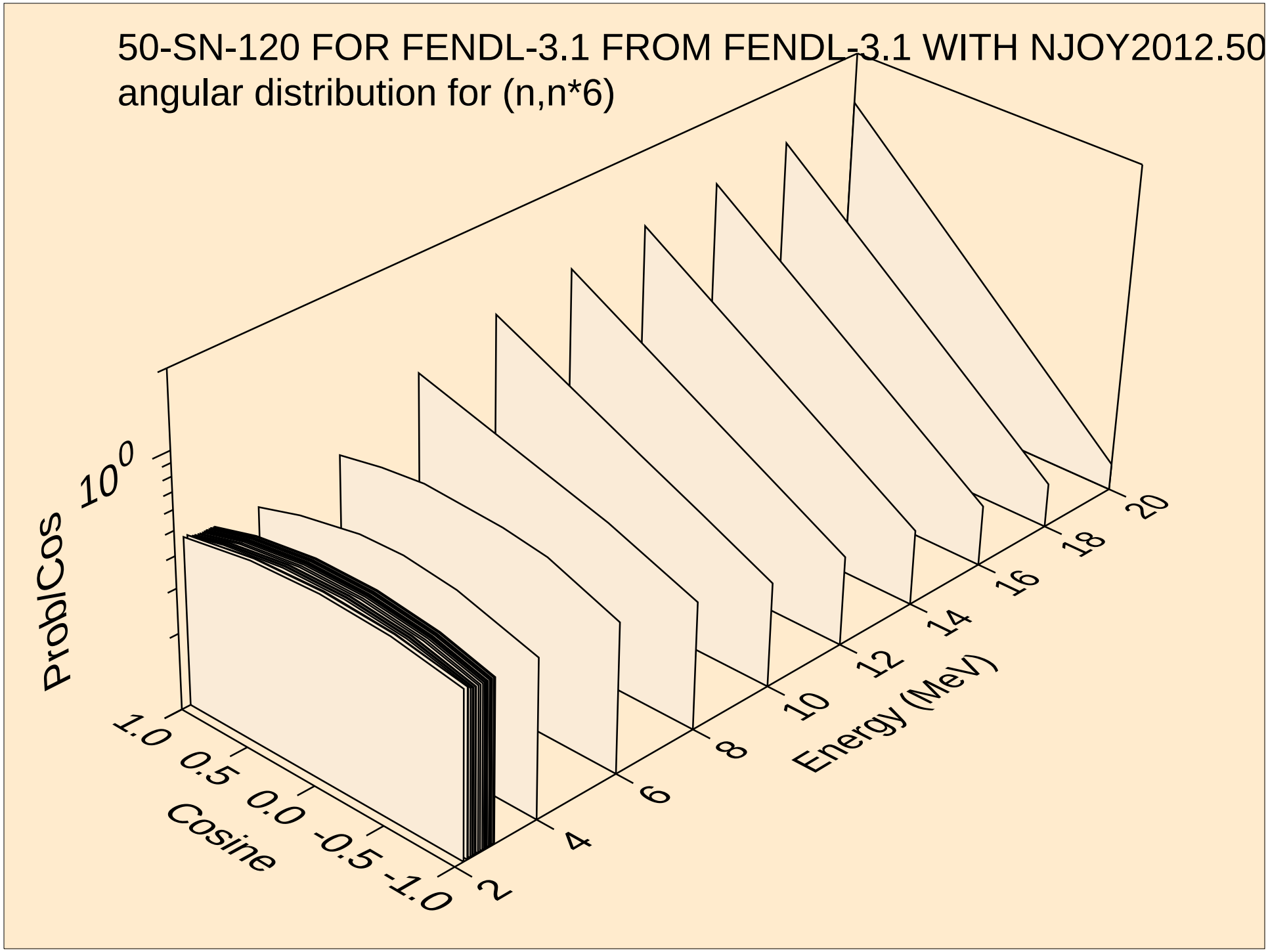

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
angular distribution for (n,n*1)
ProblCos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

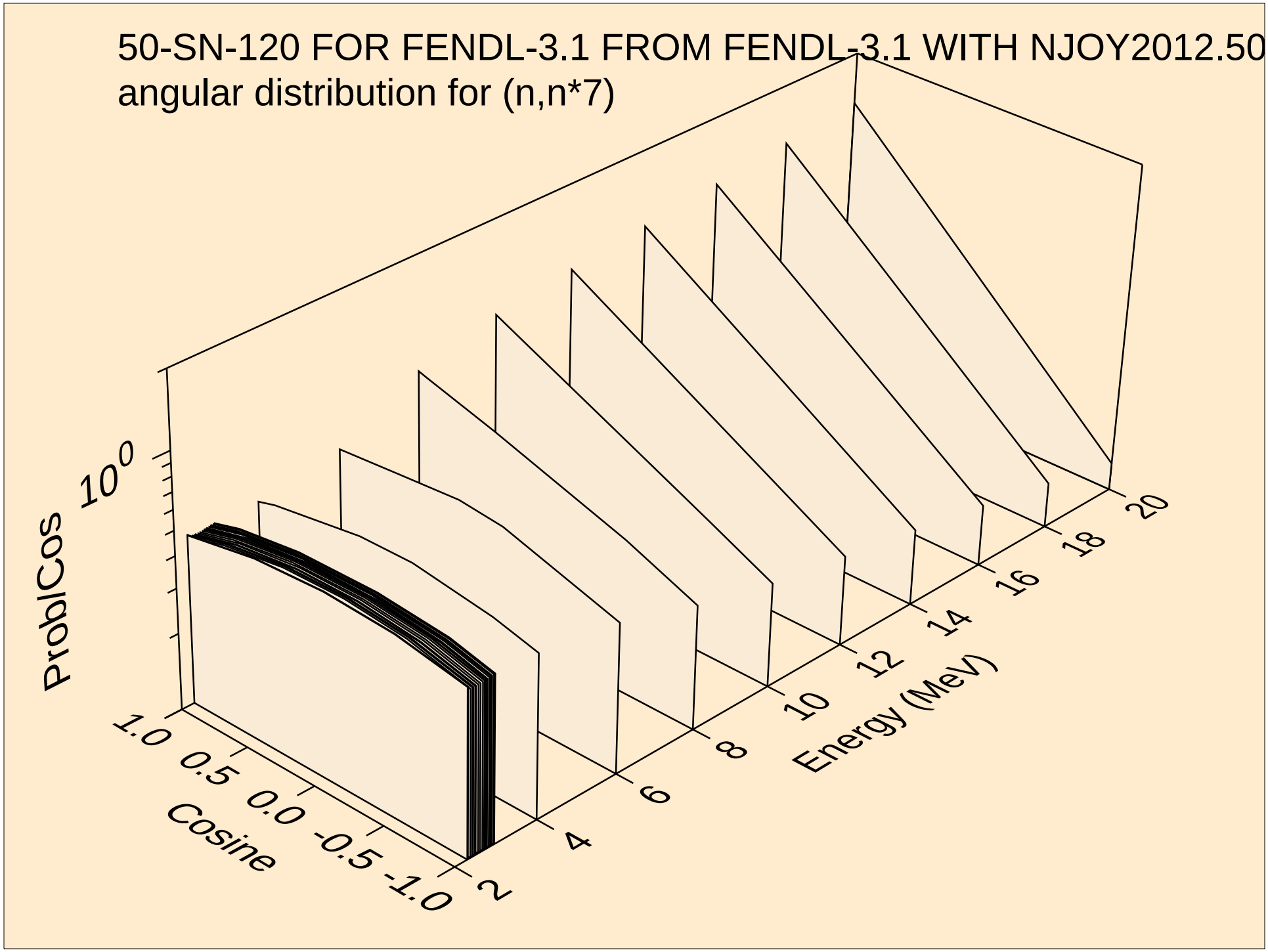

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
angular distribution for (n,n*2)
ProbICos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

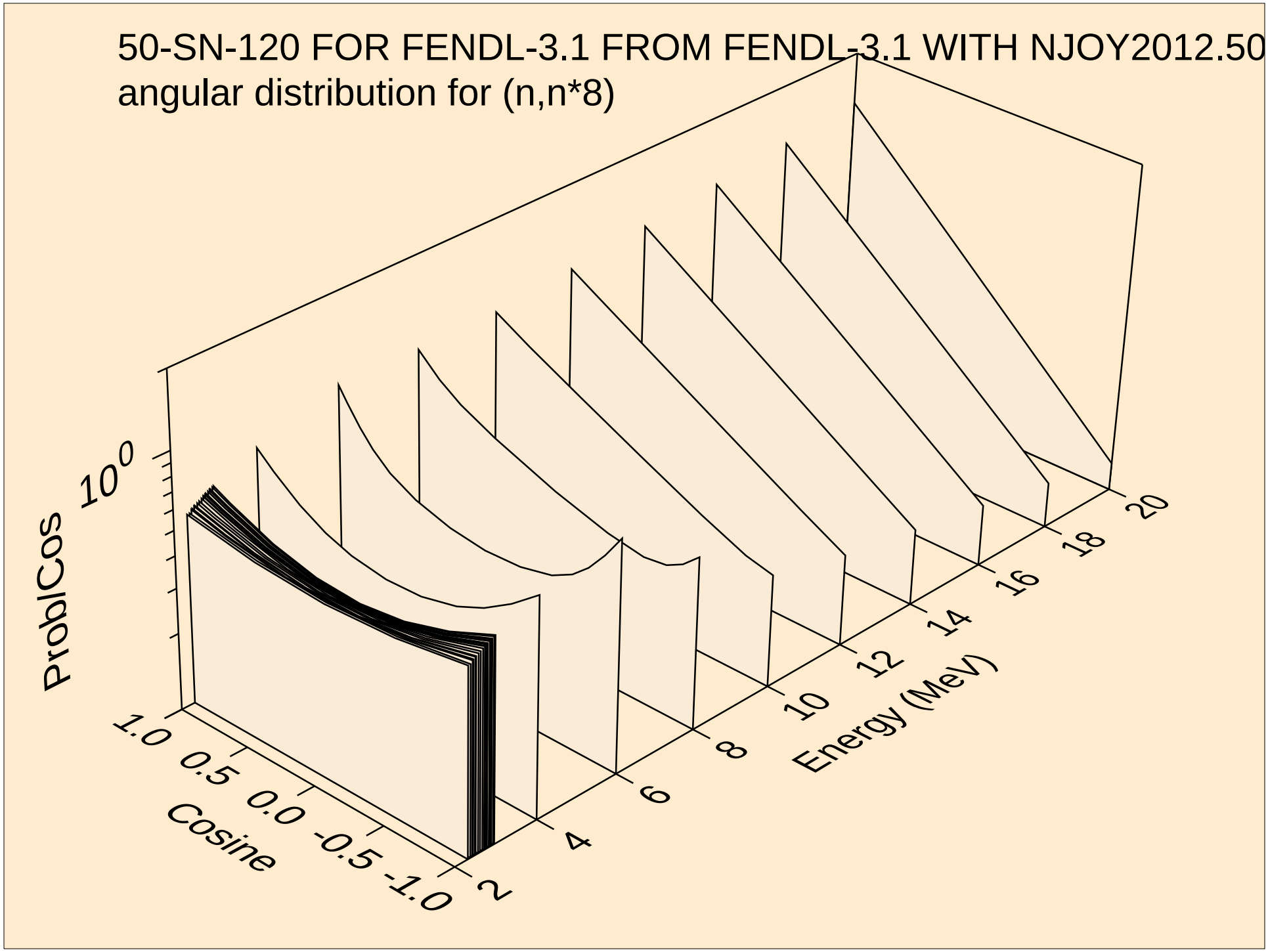

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
angular distribution for (n,n*3)
ProblCos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

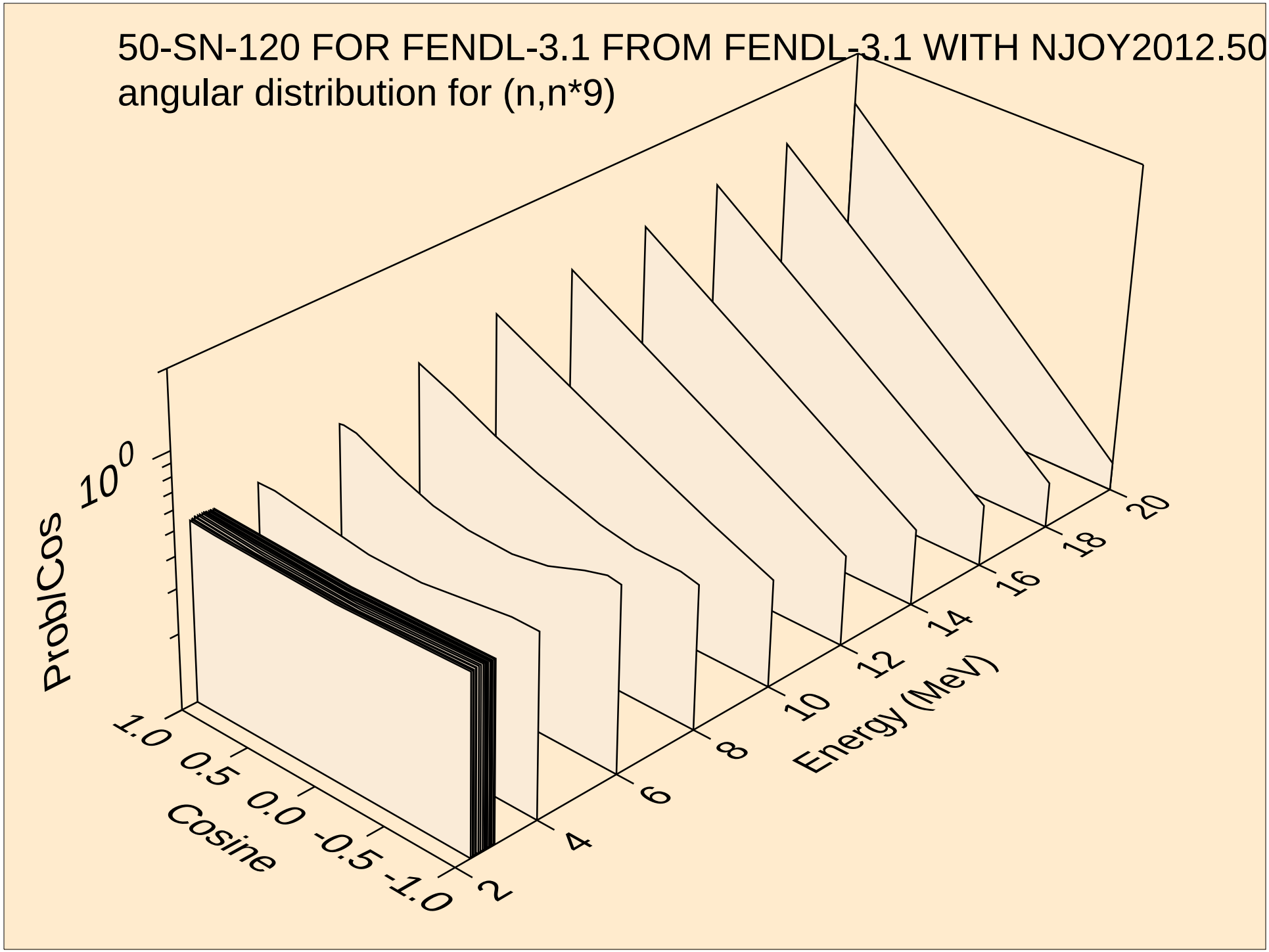

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
angular distribution for (n,n*4)
ProblCos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

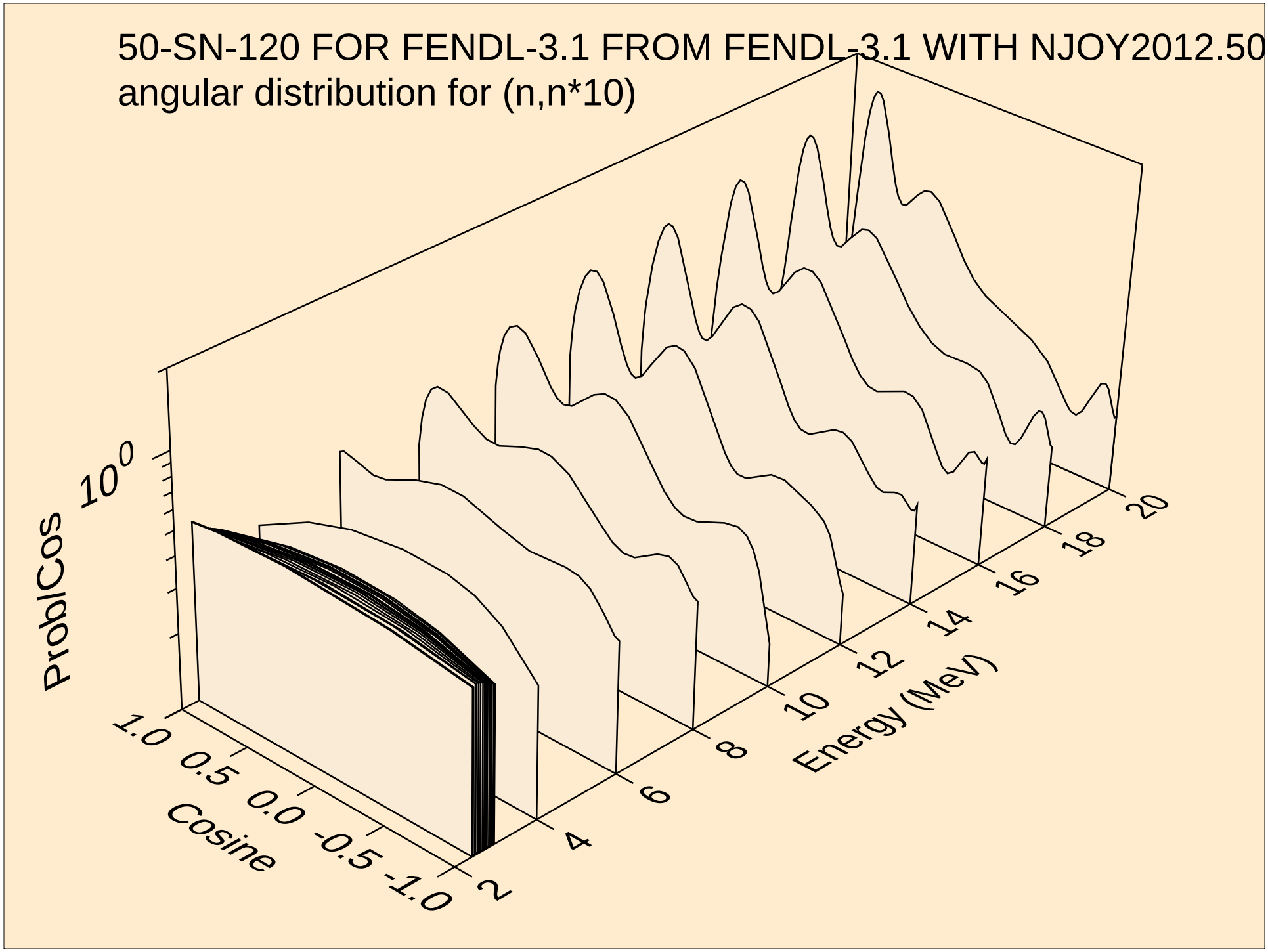

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
angular distribution for (n,n*5)
ProblCos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

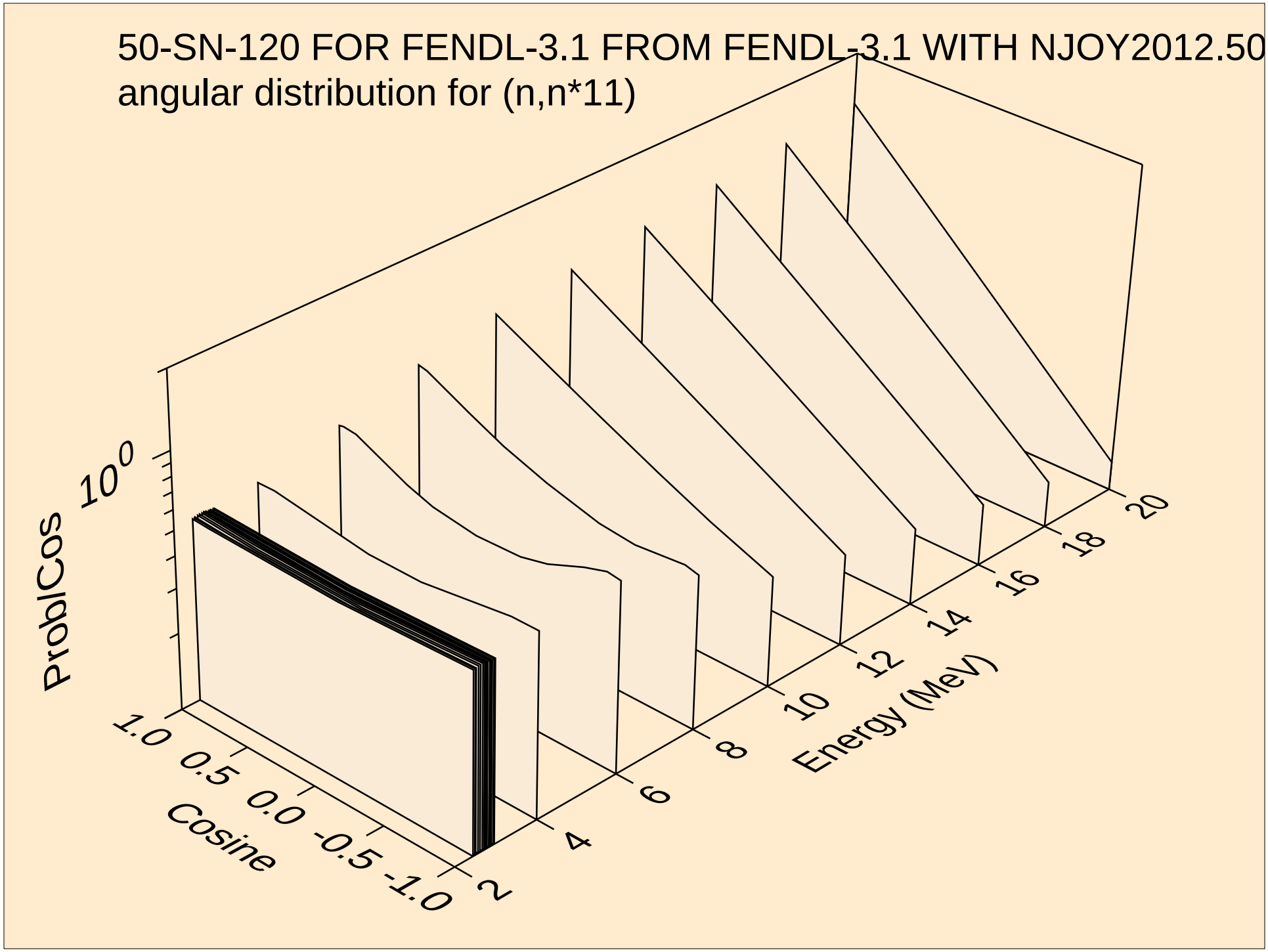

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
angular distribution for (n,n*6)
ProblCos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

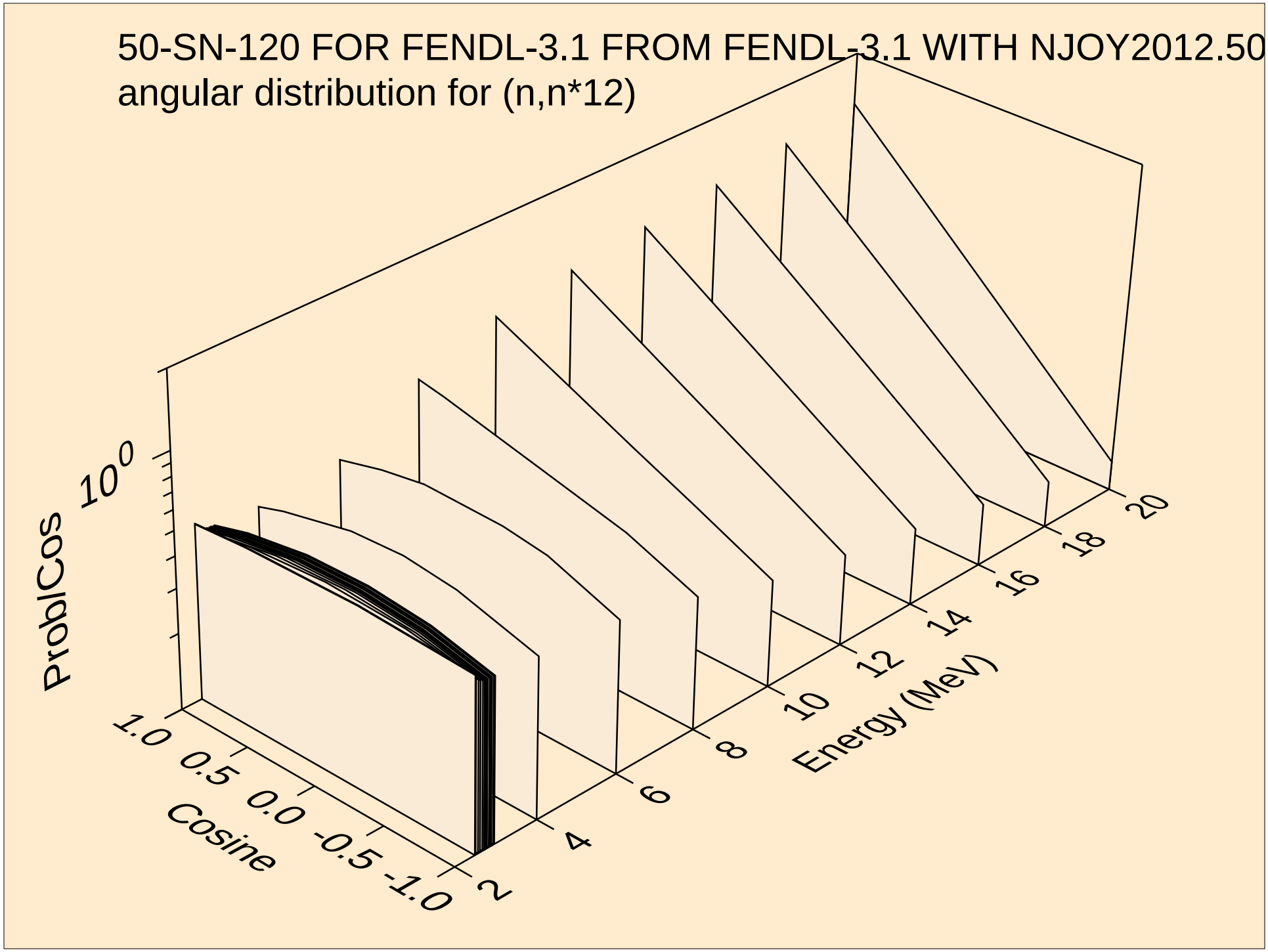

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
angular distribution for (n,n*7)
ProblCos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

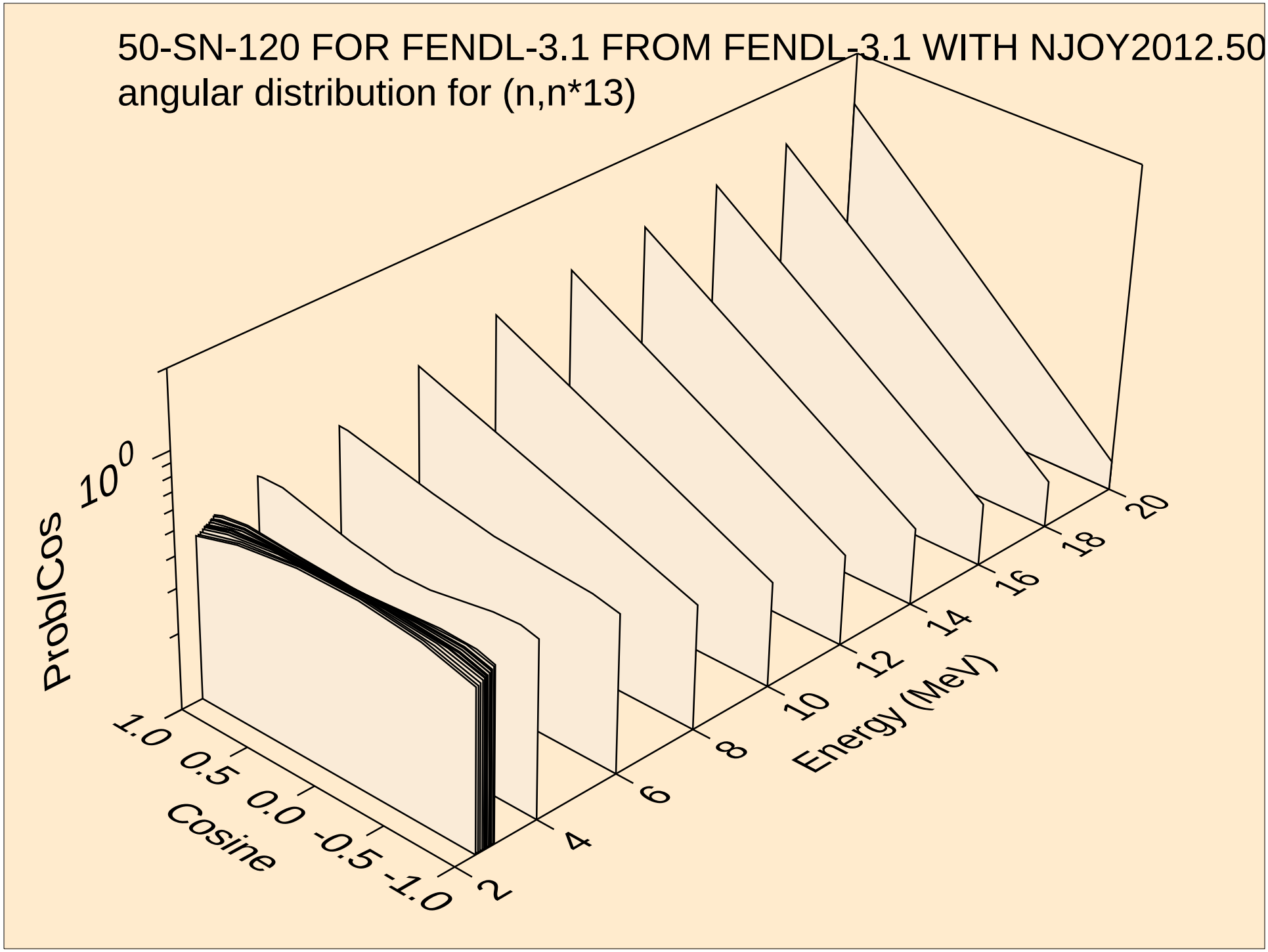

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
angular distribution for (n,n*8)
ProblCos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

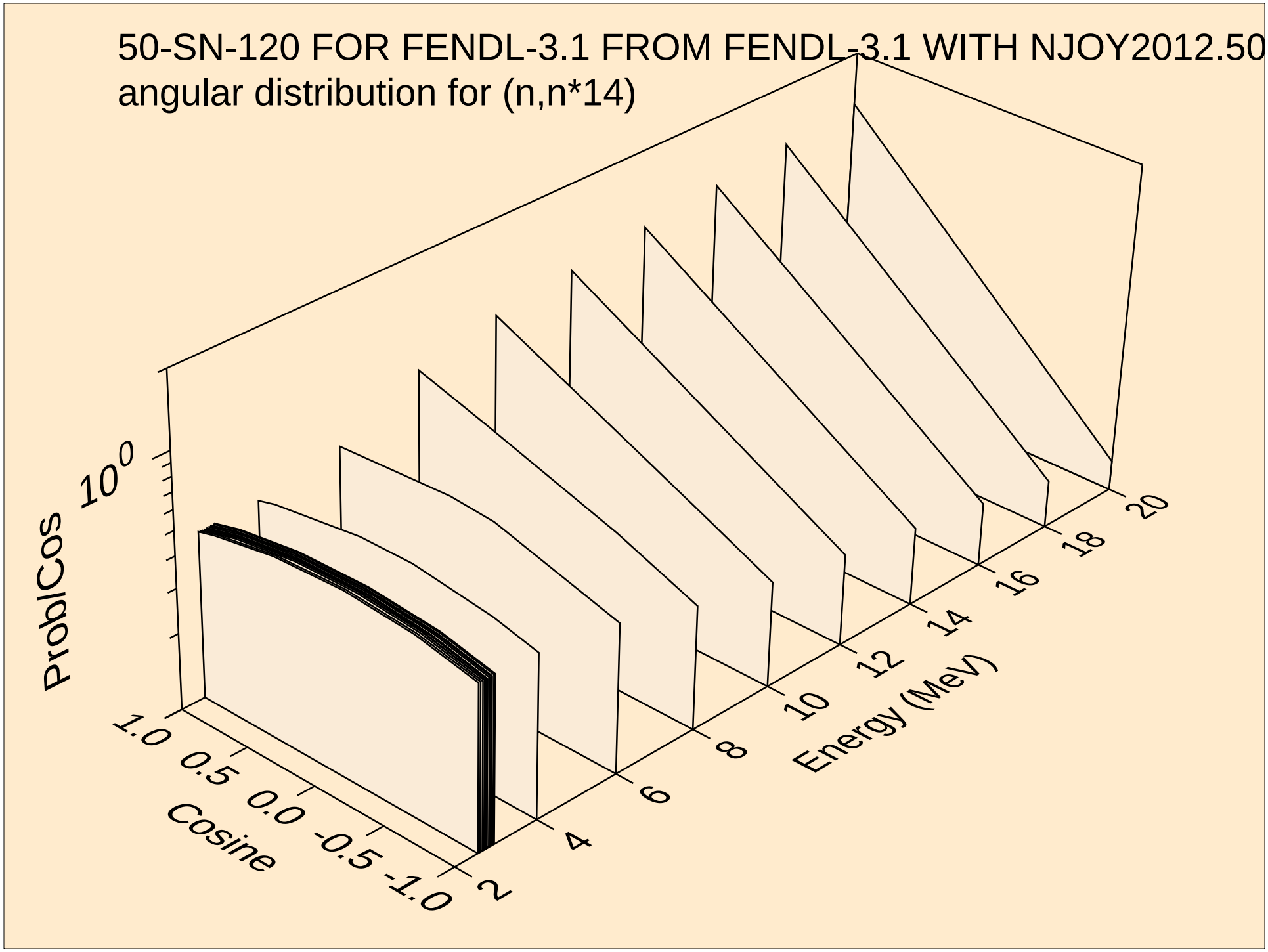

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
angular distribution for (n,n*9)
ProblCos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

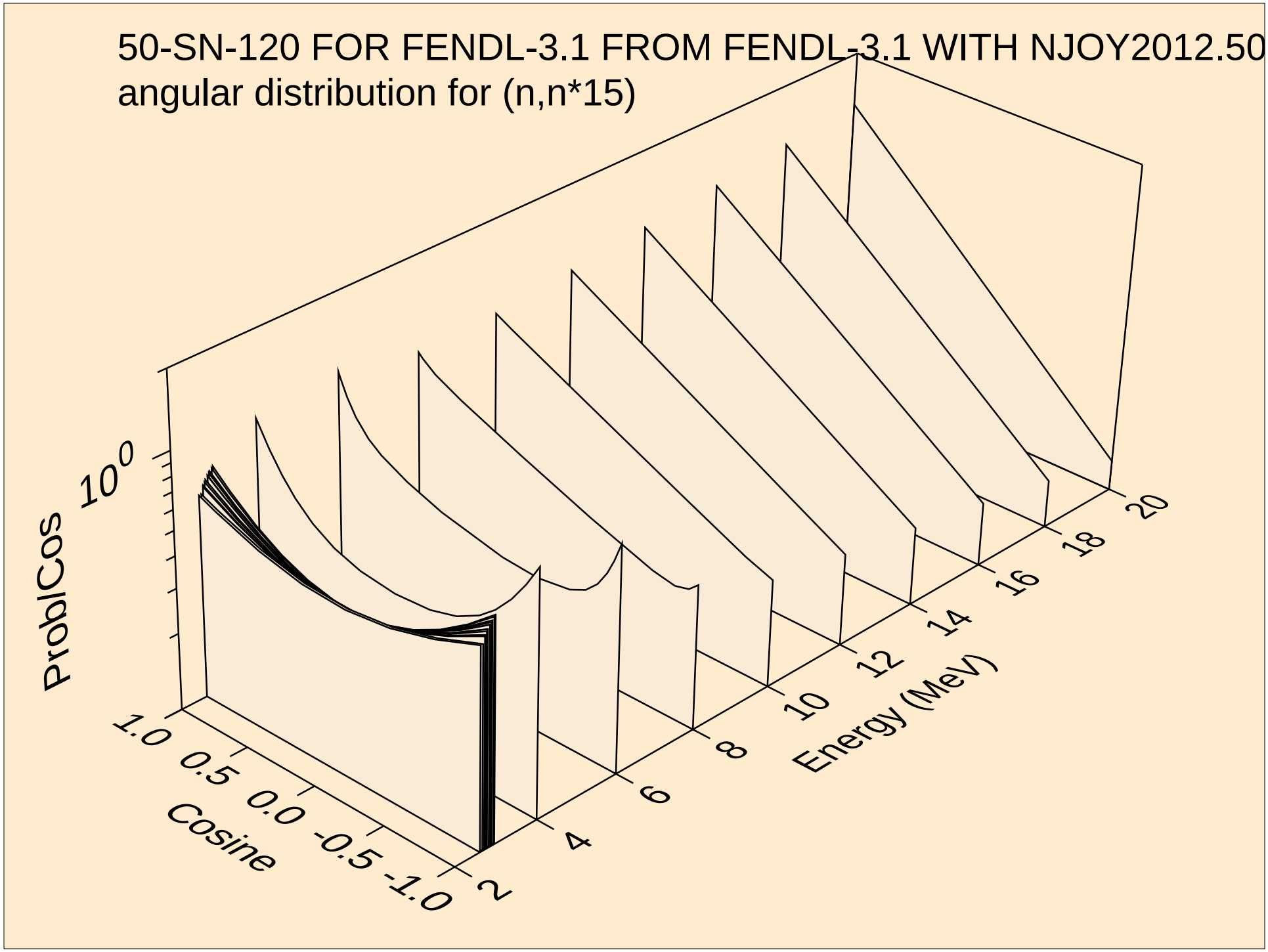

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
angular distribution for (n,n*10)
ProbICos
10^0
Cosine
1.0
0.5
0.0
-0.5
-1.0
Energy (MeV)
2
4
6
8
10
12
14
16
18
20

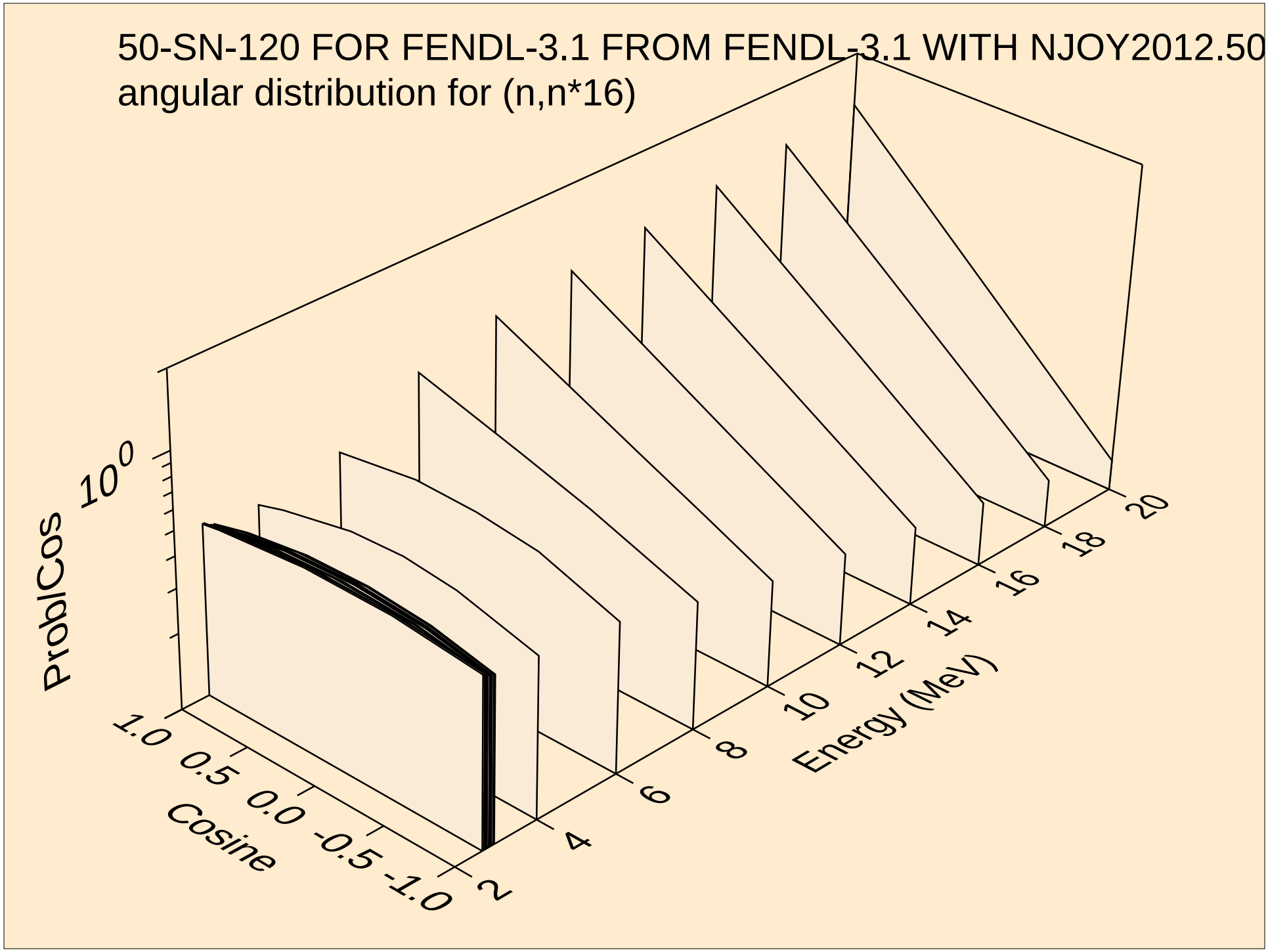

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
angular distribution for (n,n*11)
ProbICos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

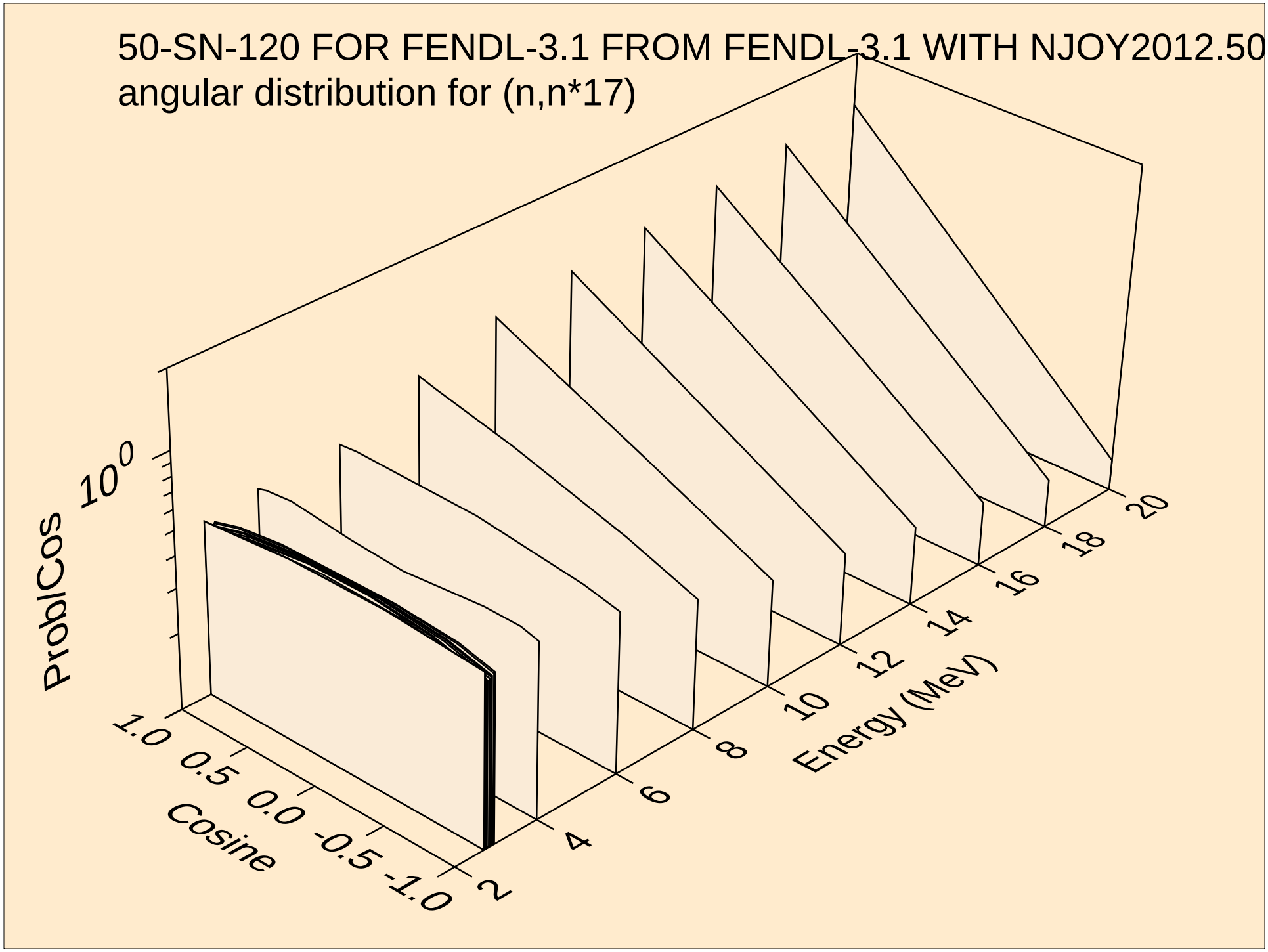

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
angular distribution for (n,n*12)
ProbICos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

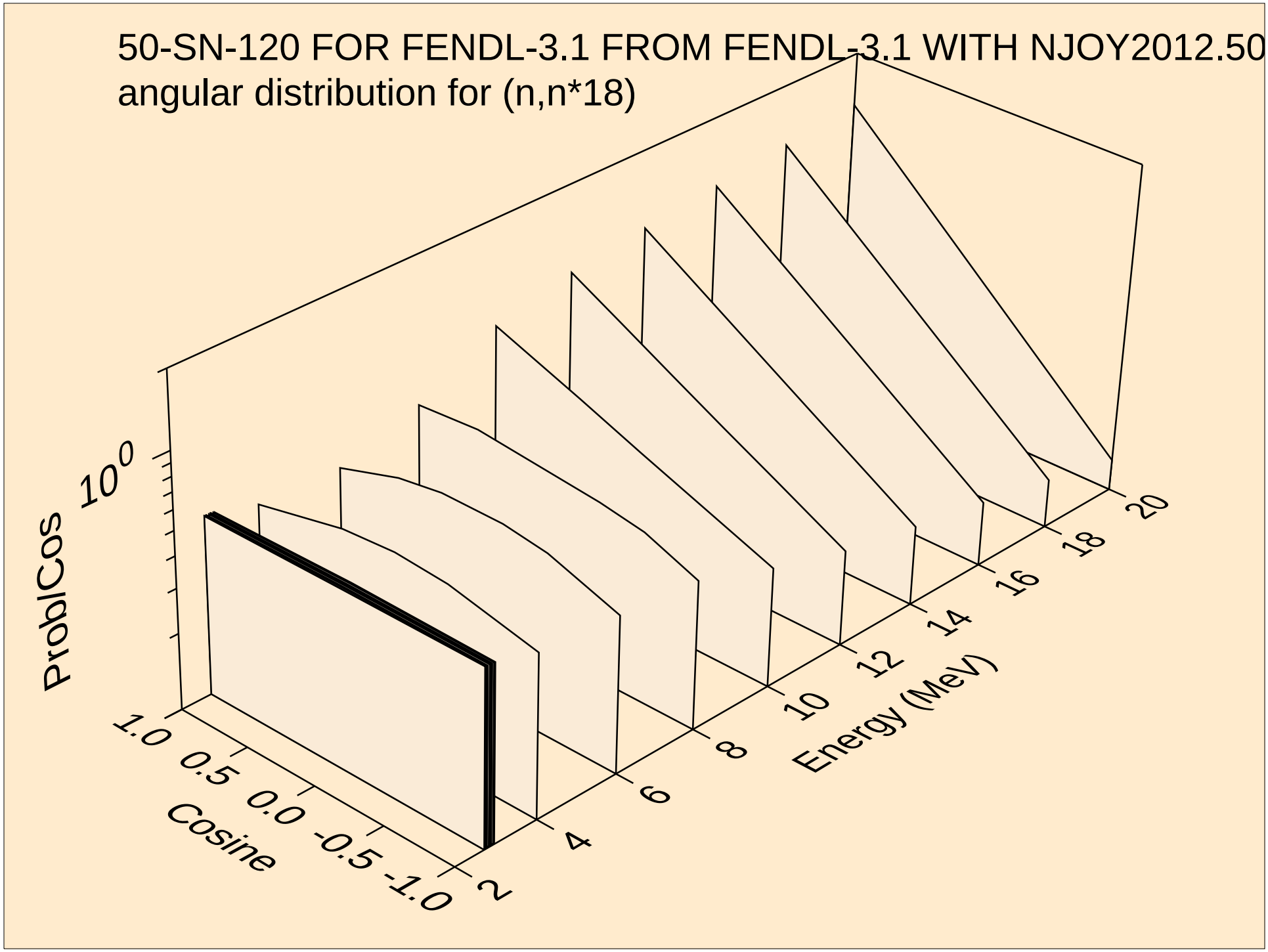

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
angular distribution for (n,n*13)
ProbICos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

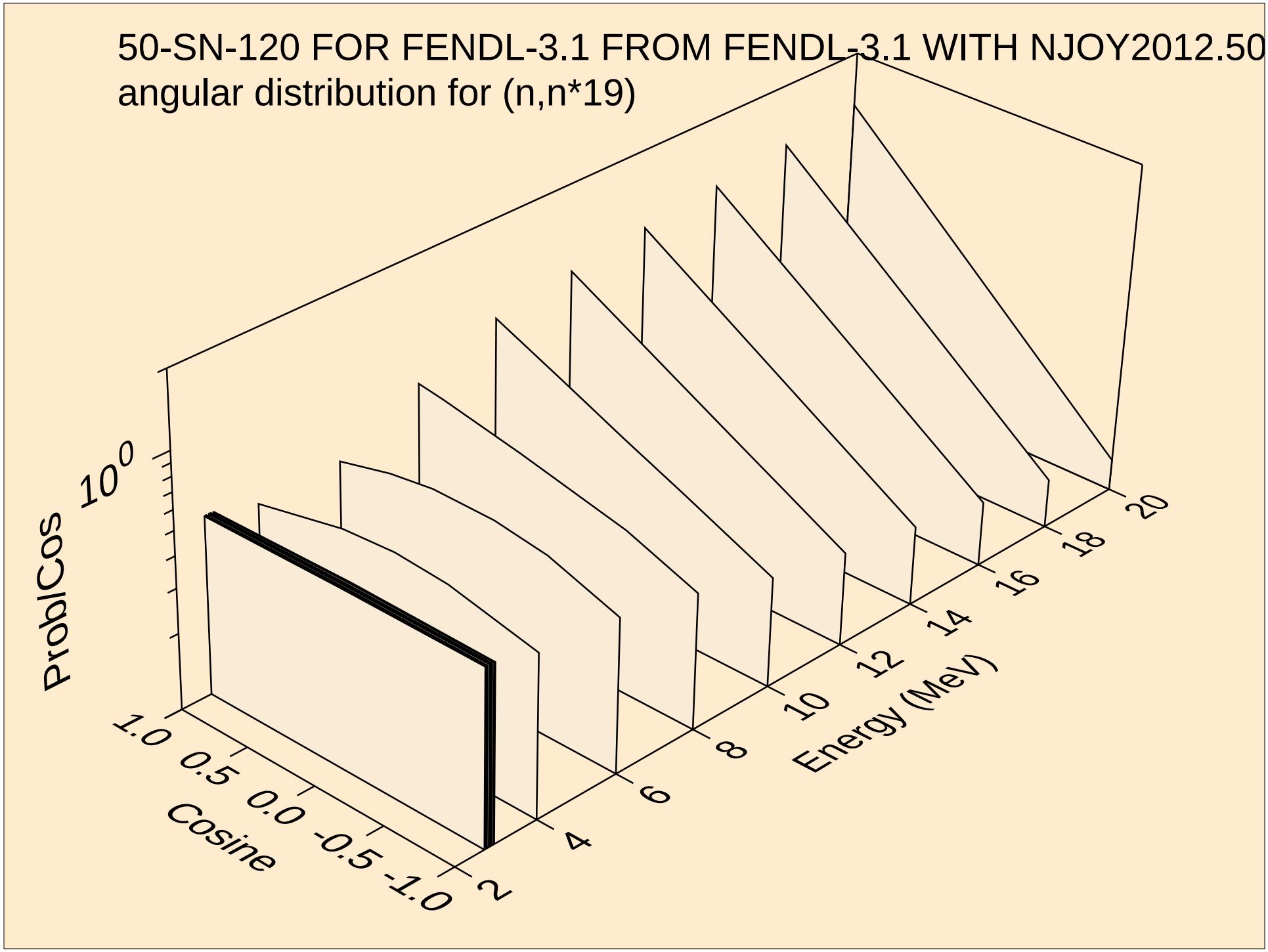

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
angular distribution for (n,n*14)
ProbICos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

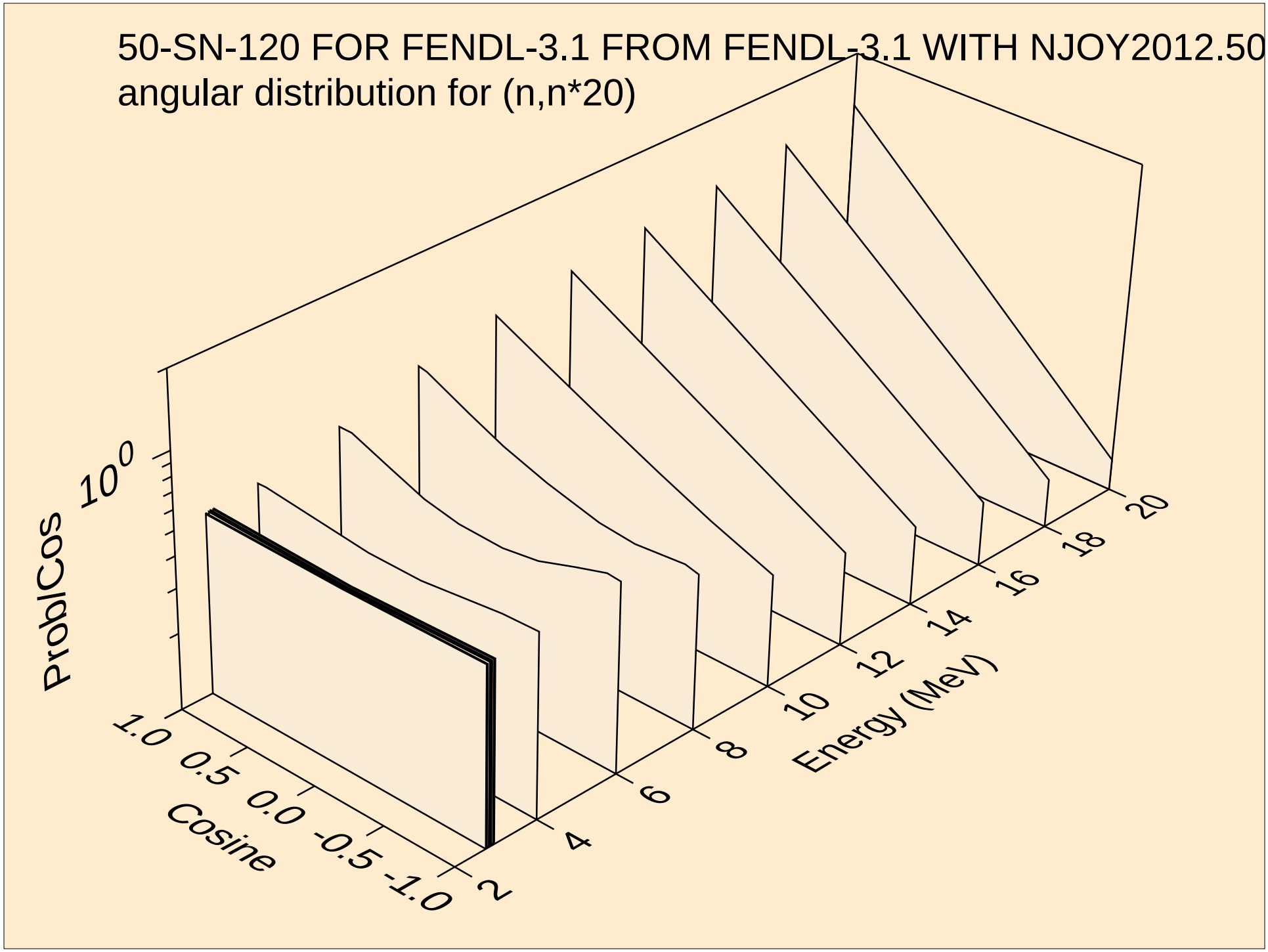

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
angular distribution for (n,n*15)
ProblCos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

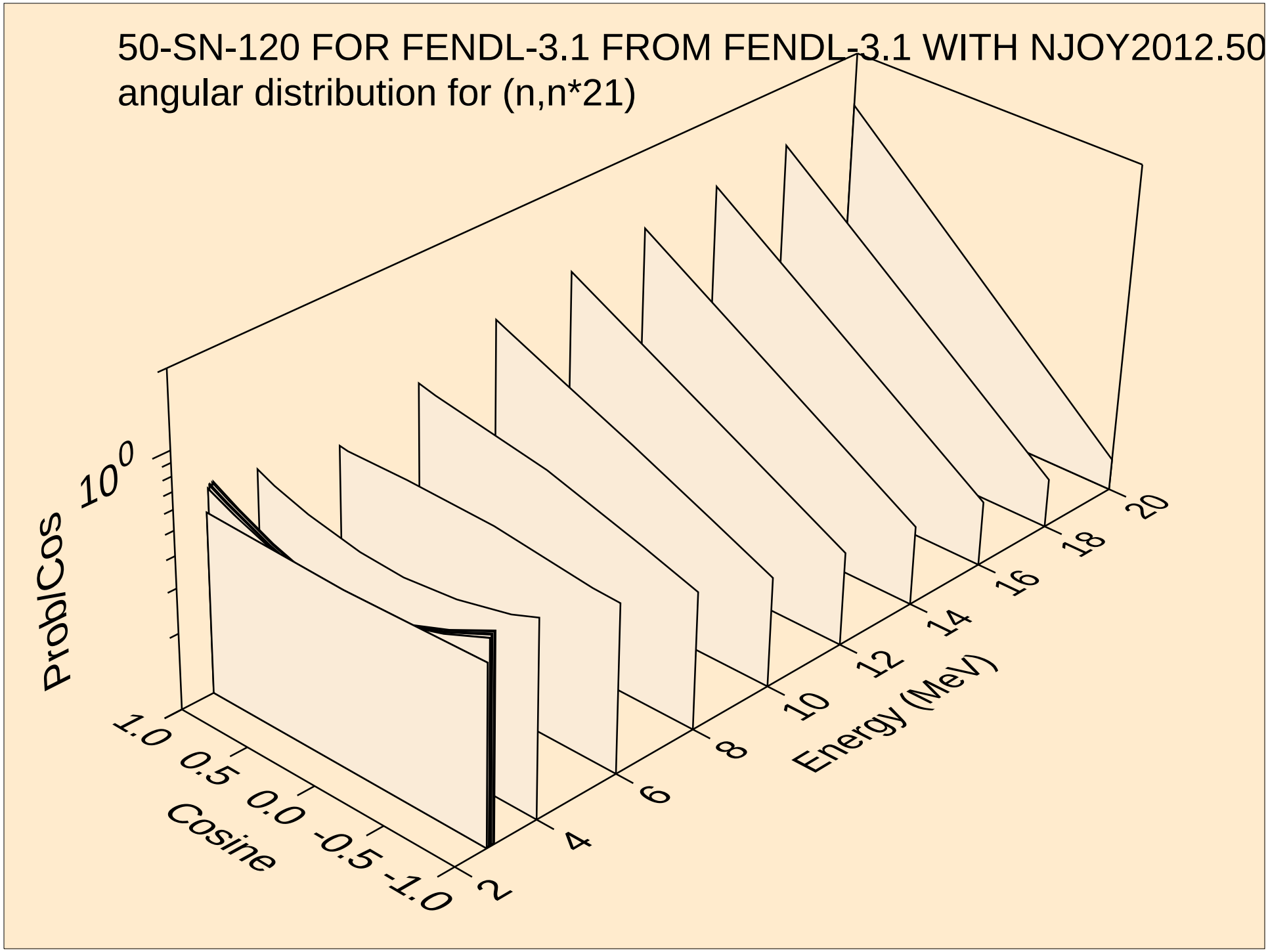

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
angular distribution for (n,n*16)
ProbICos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

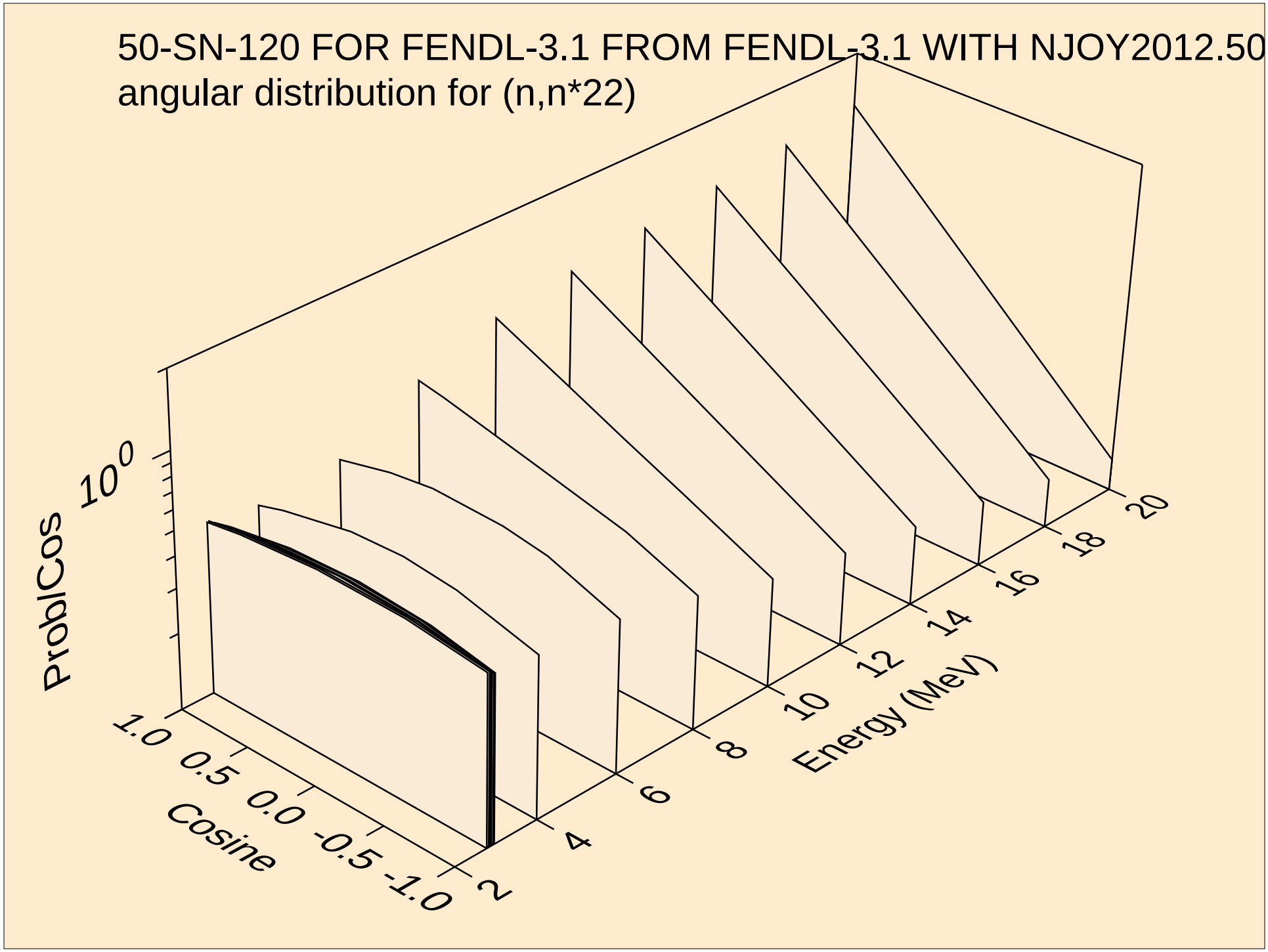

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
angular distribution for (n,n*17)
ProbICos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

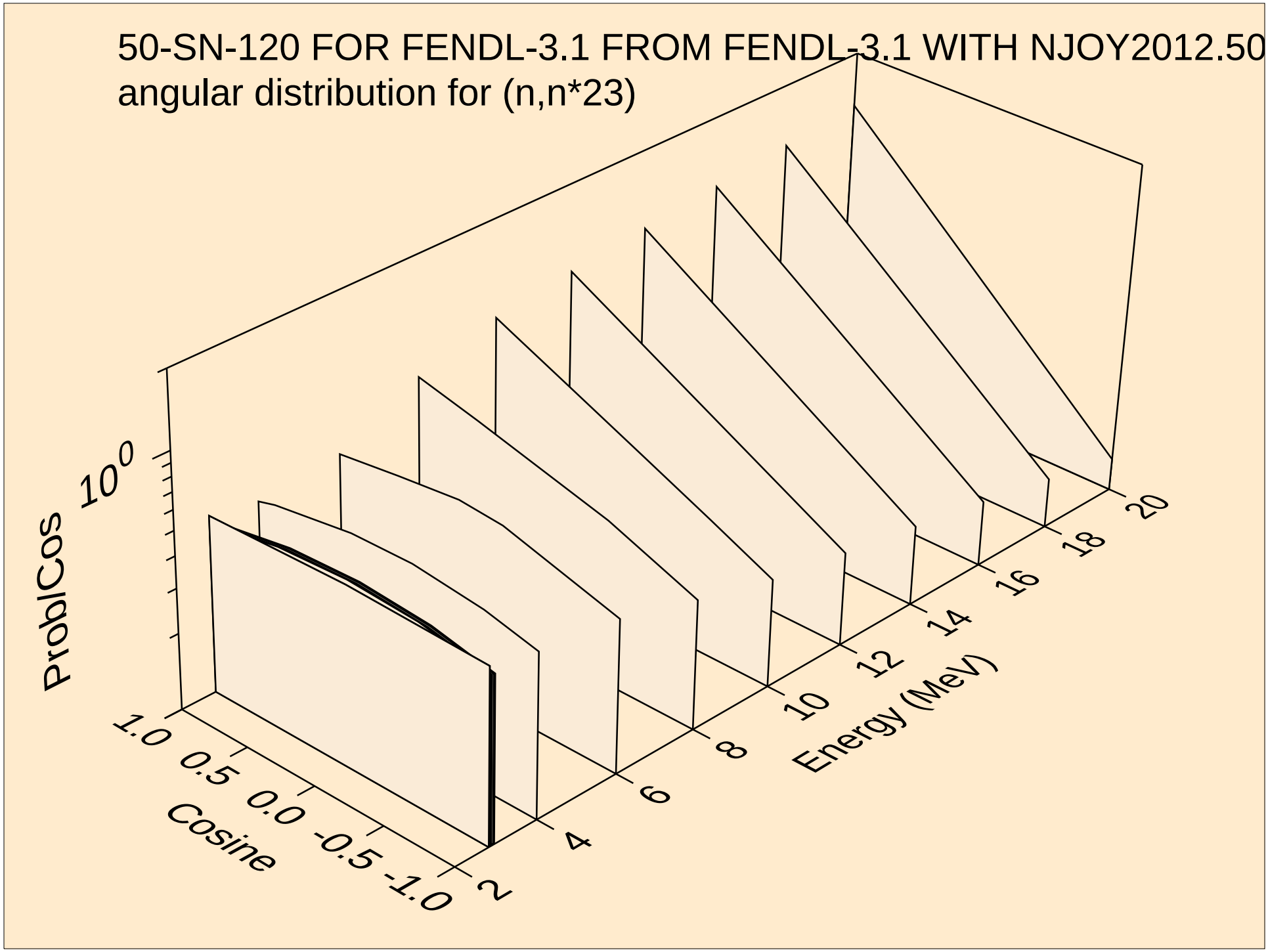

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
angular distribution for (n,n*18)
ProbICos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

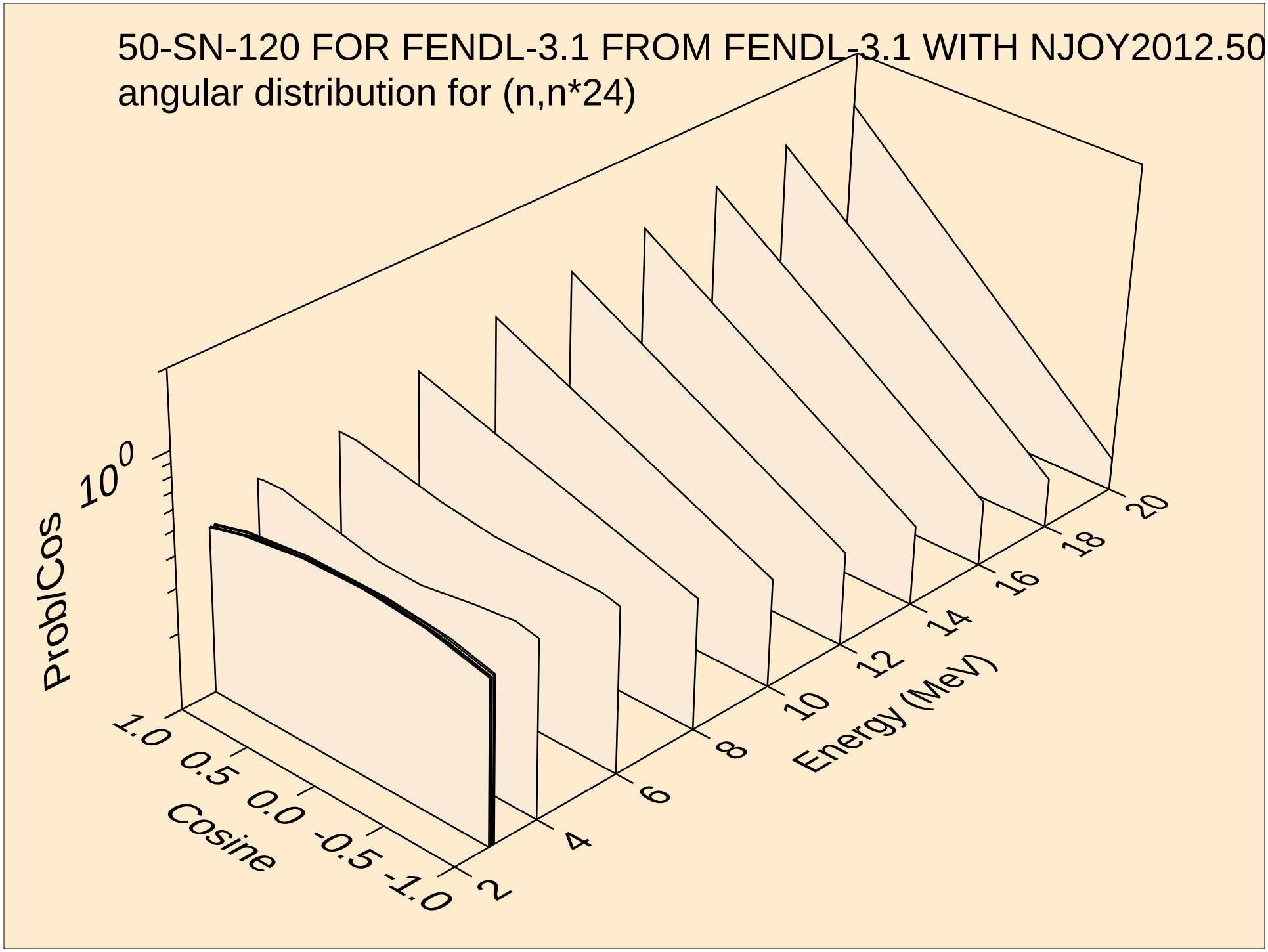

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
angular distribution for (n,n*19)
ProbICos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

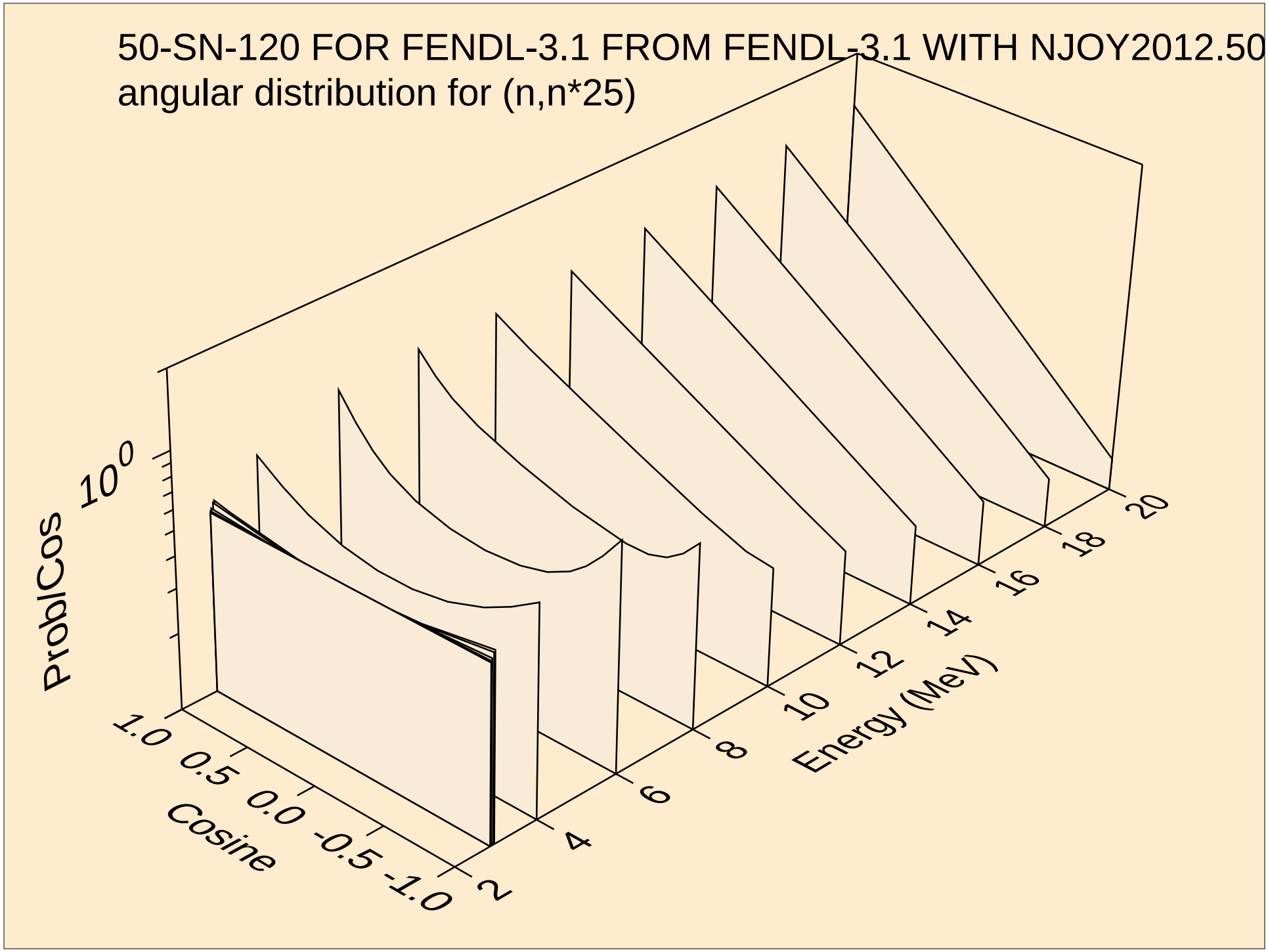

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
angular distribution for (n,n*20)
ProbICos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

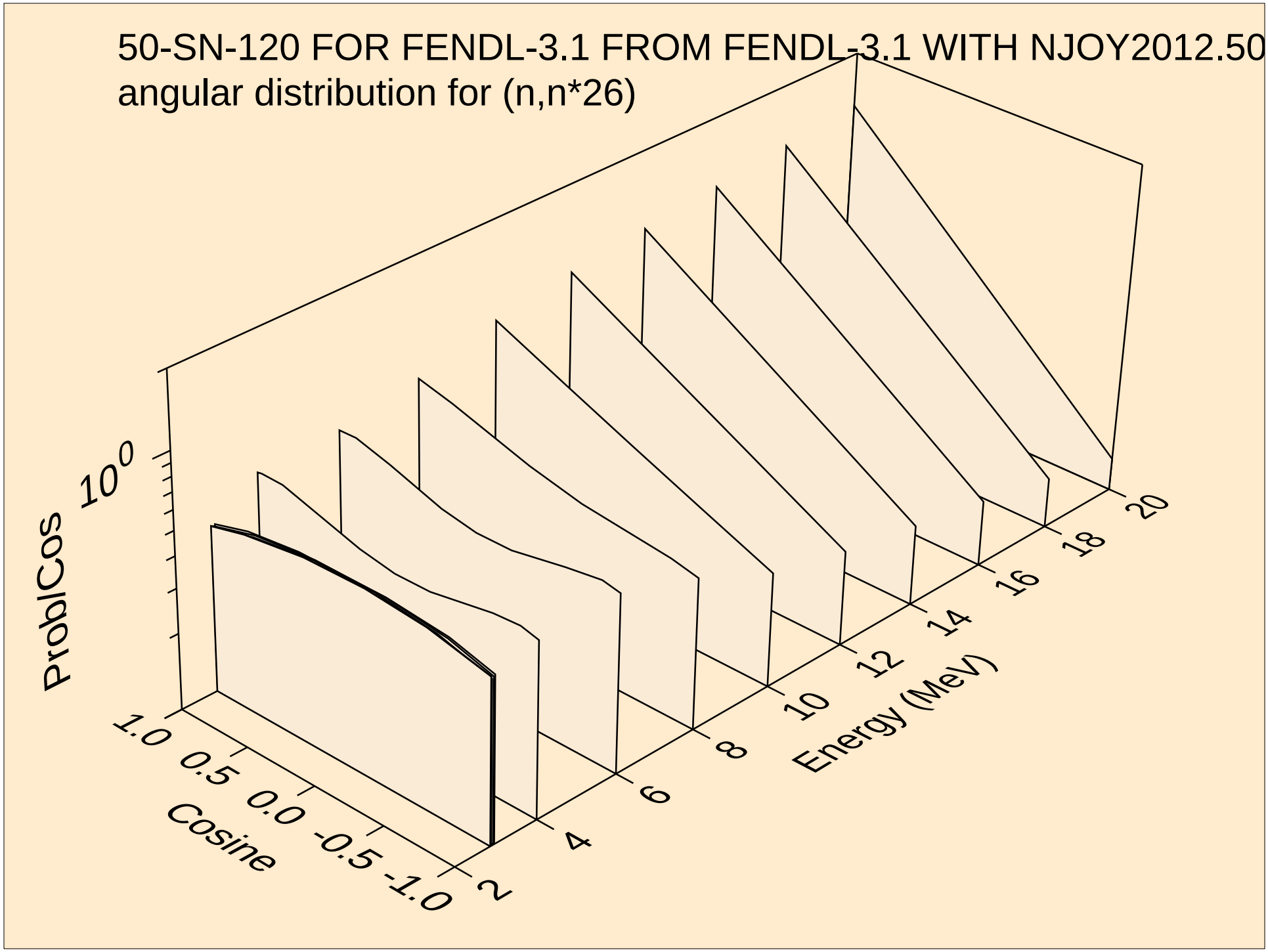

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
angular distribution for (n,n*21)
ProbICos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

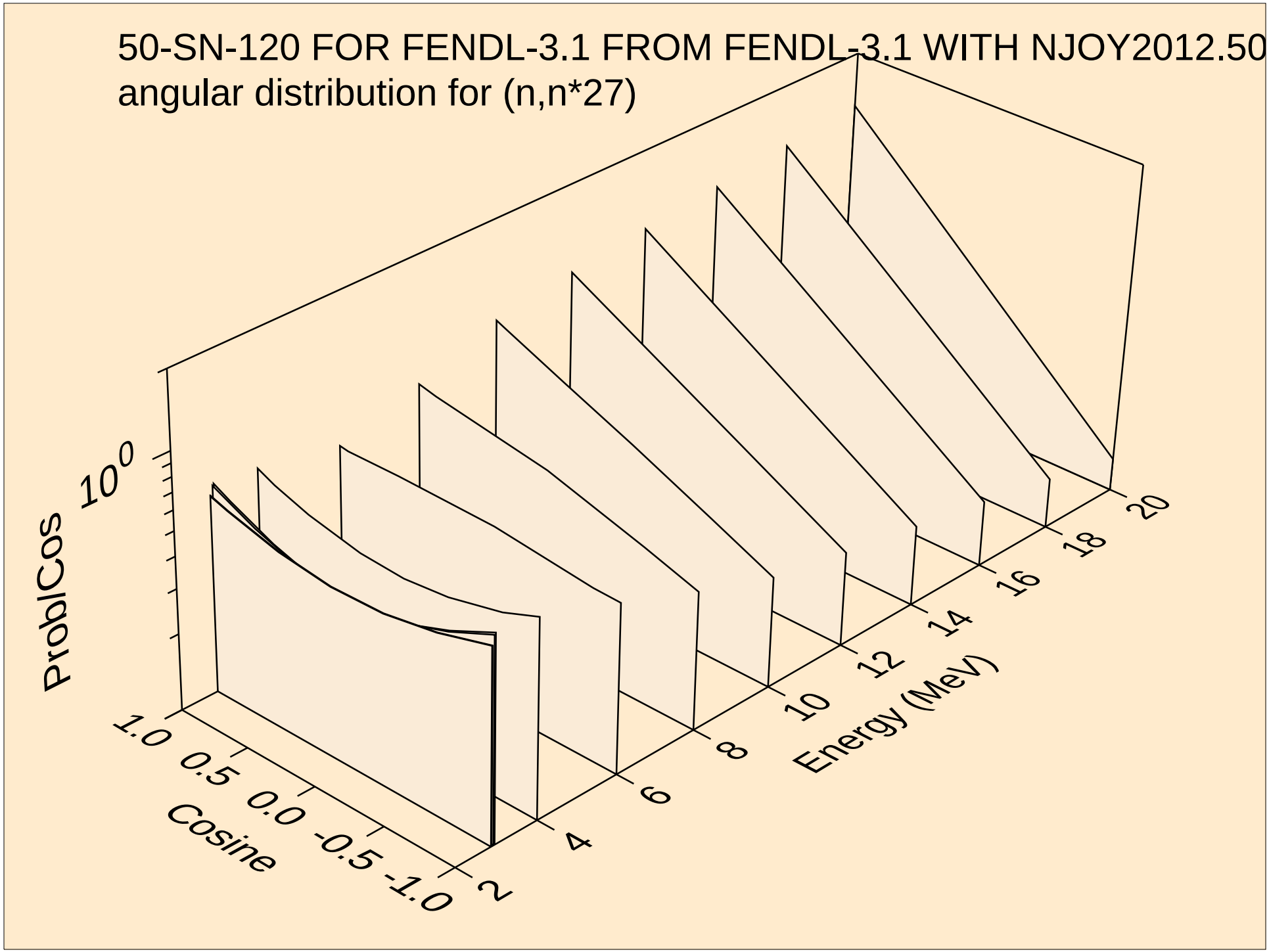

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
angular distribution for (n,n*22)
ProbICos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

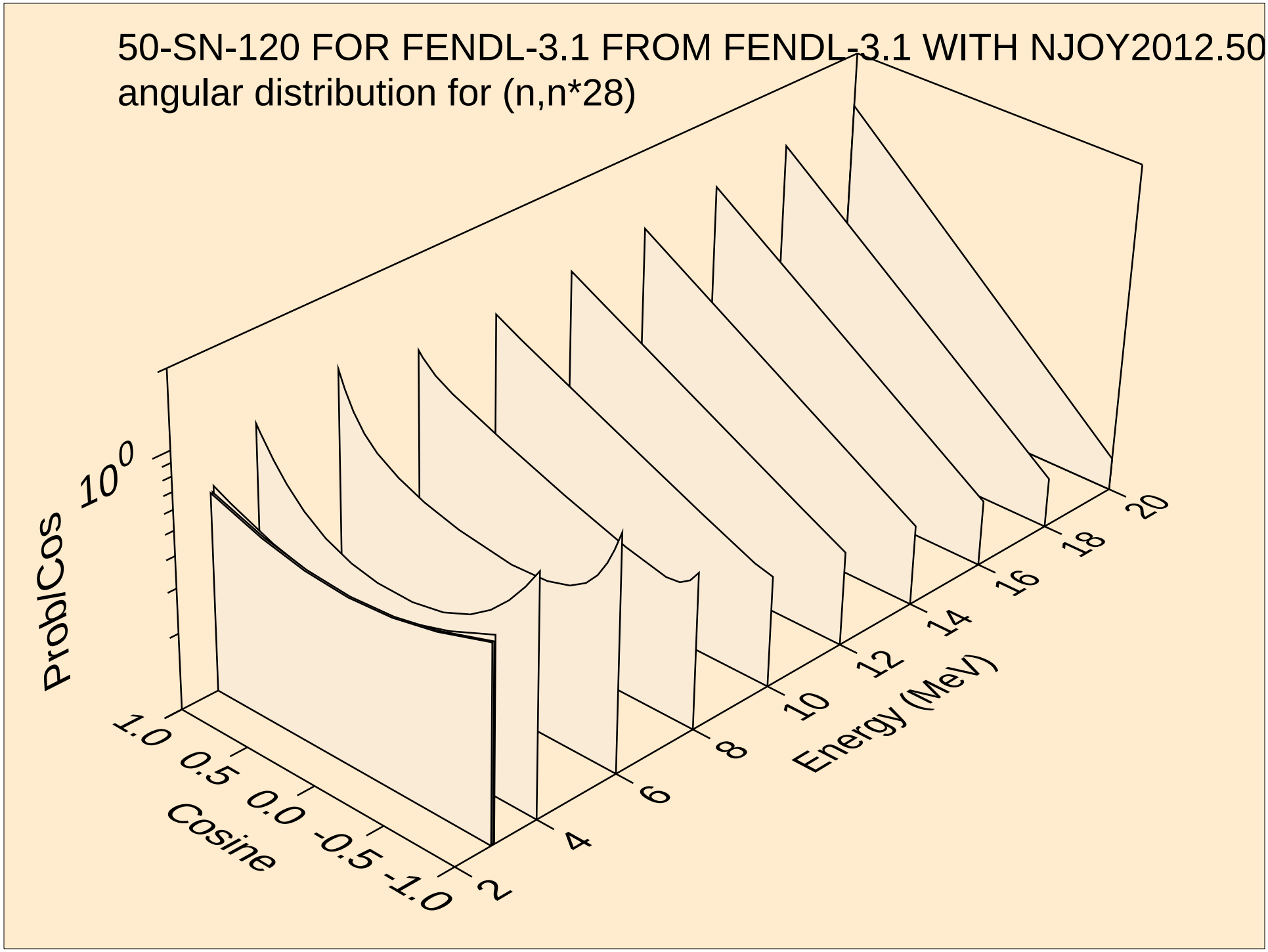

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
angular distribution for (n,n*23)
ProbICos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

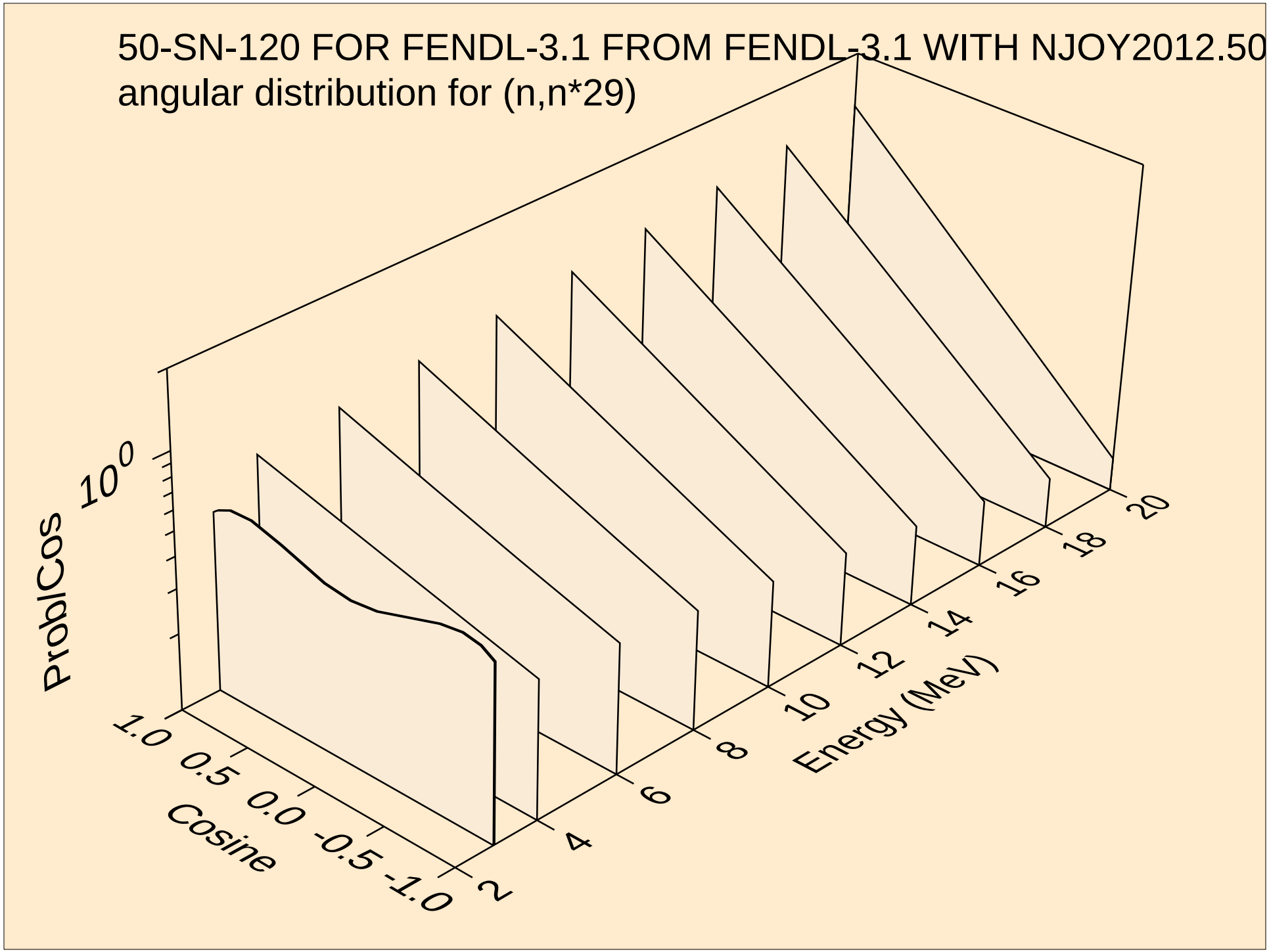

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
angular distribution for (n,n*24)
ProbICos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

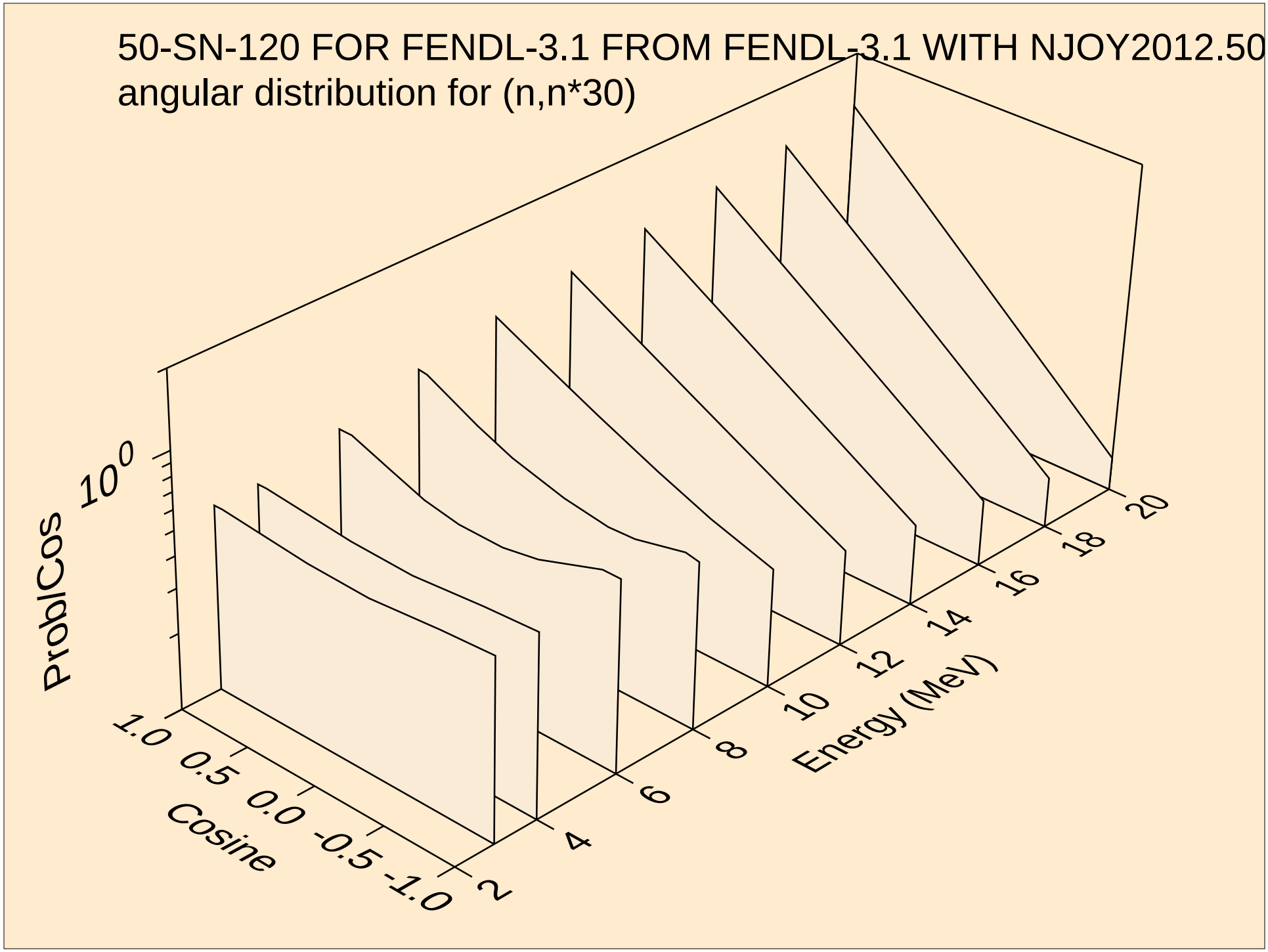

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
angular distribution for (n,n*25)
ProbICos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

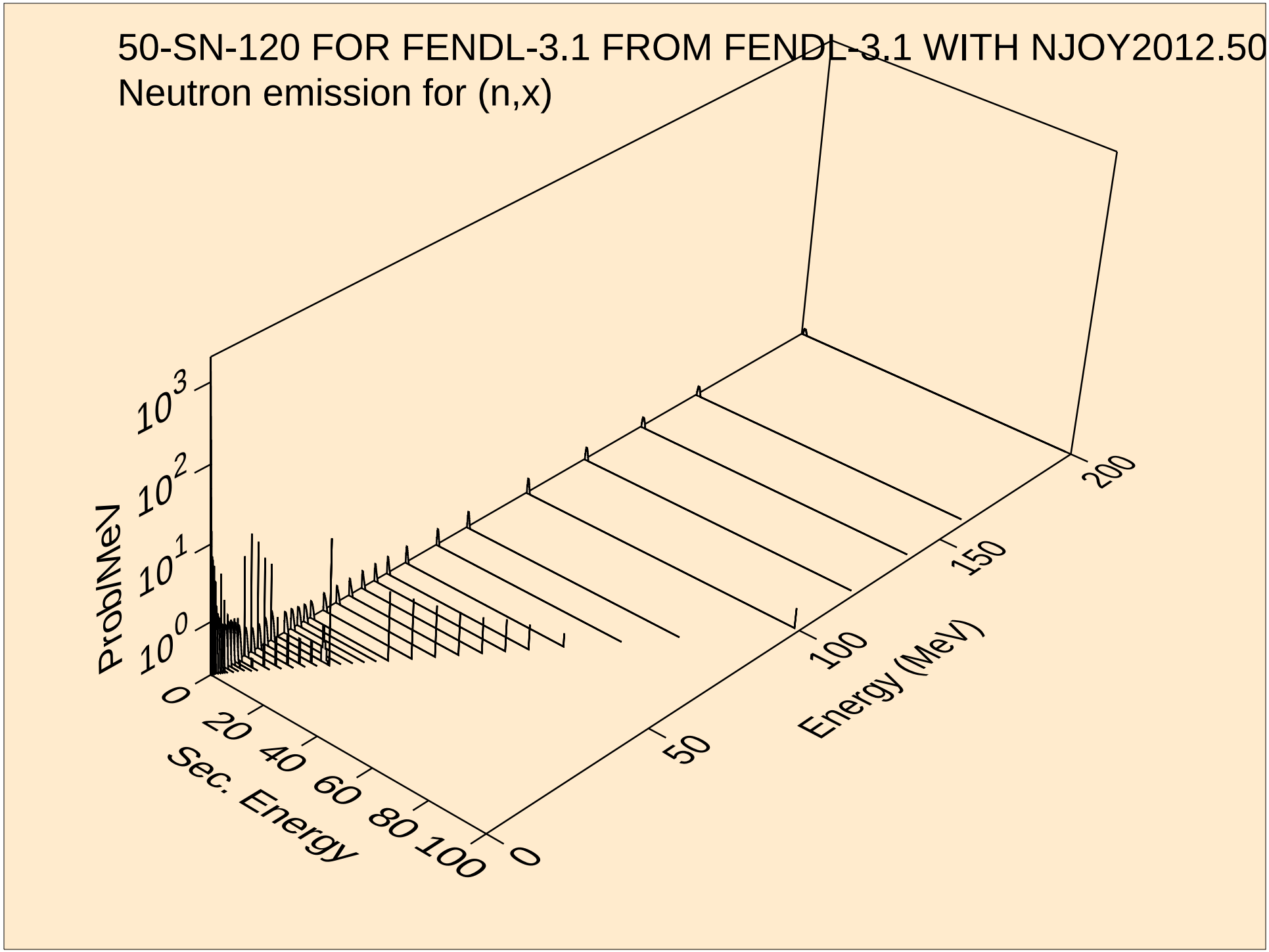

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
angular distribution for (n,n*26)
ProbICos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

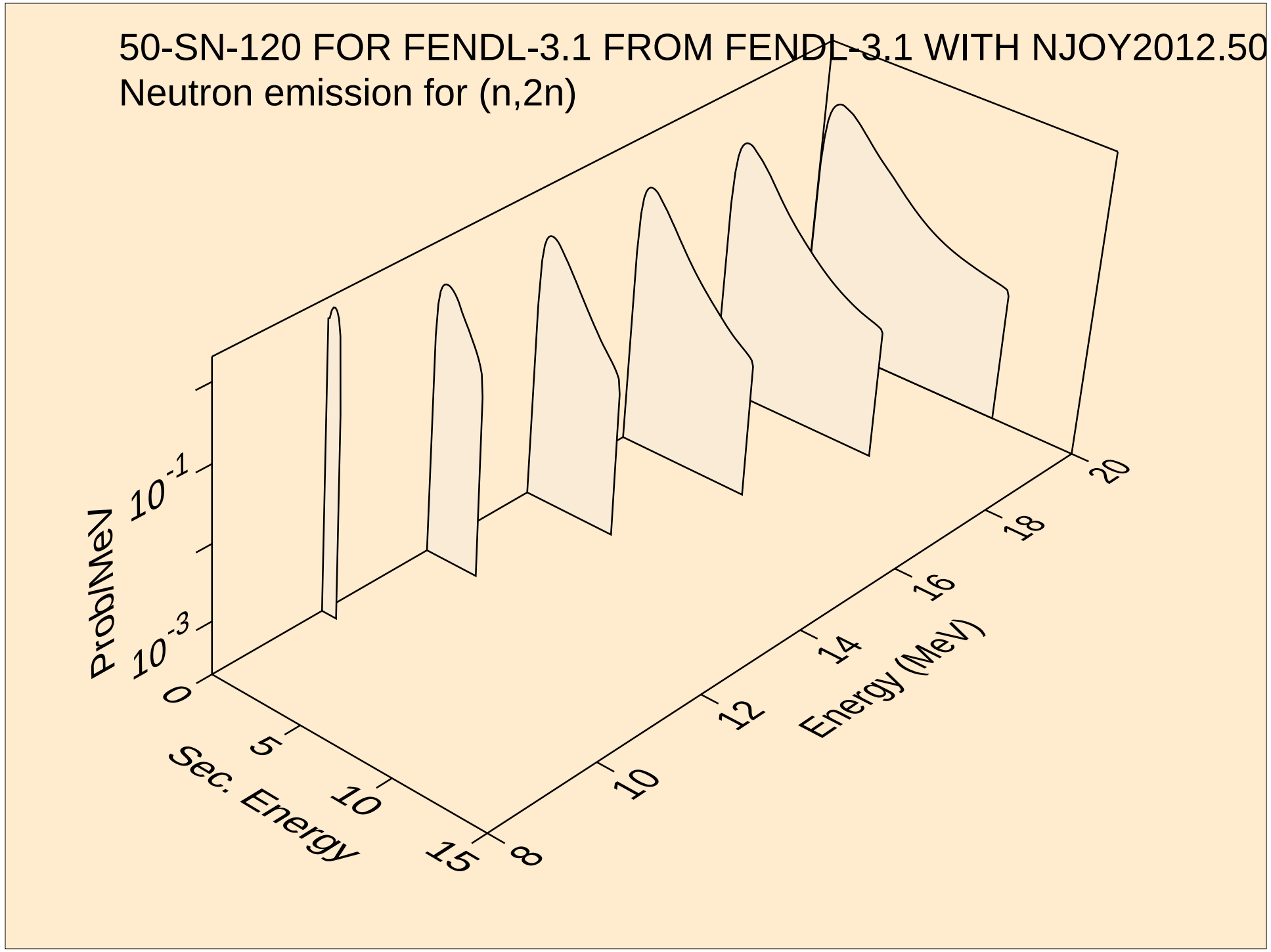

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
angular distribution for (n,n*27)
ProbICos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

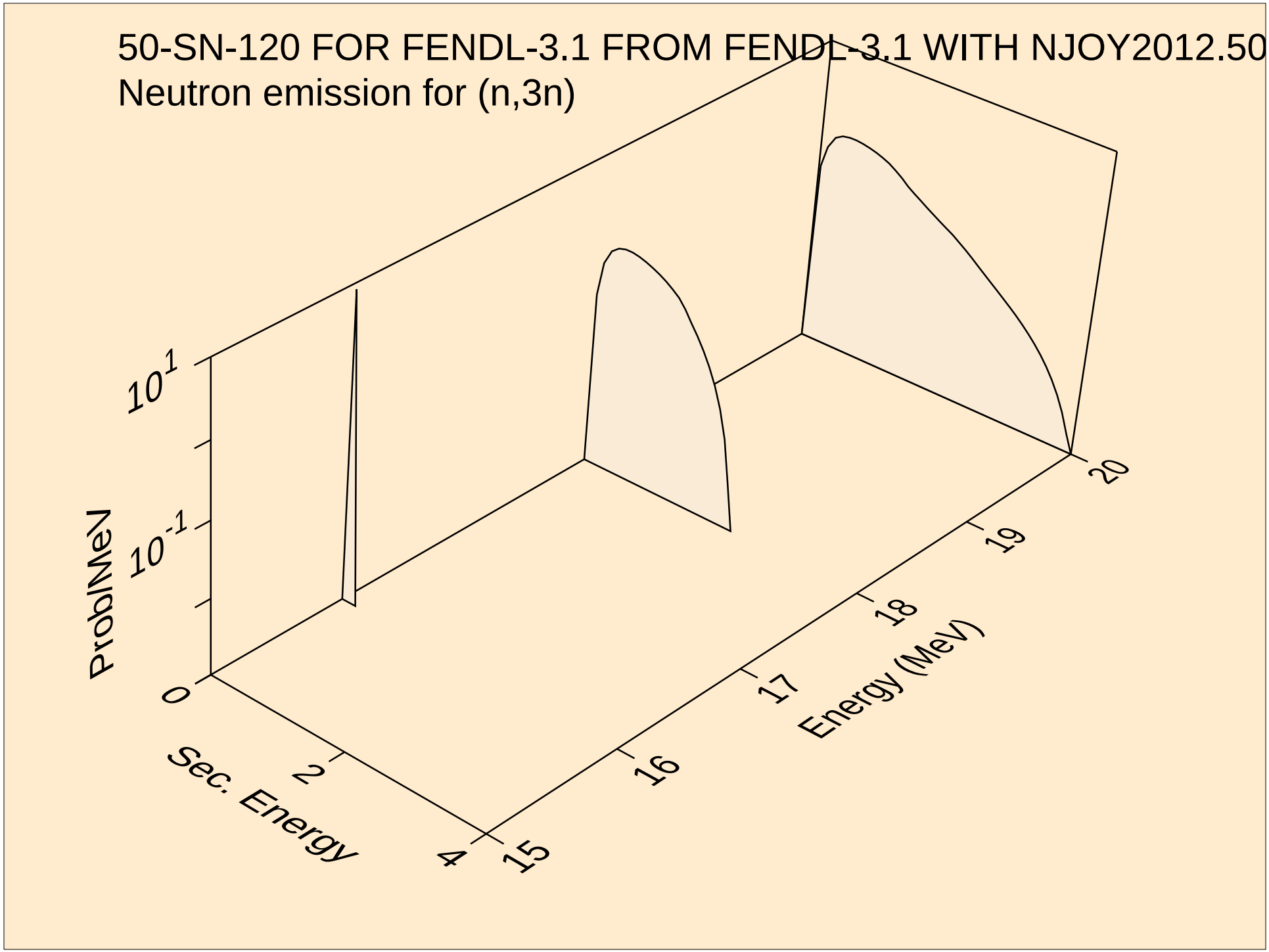

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
angular distribution for (n,n*28)
ProbICos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

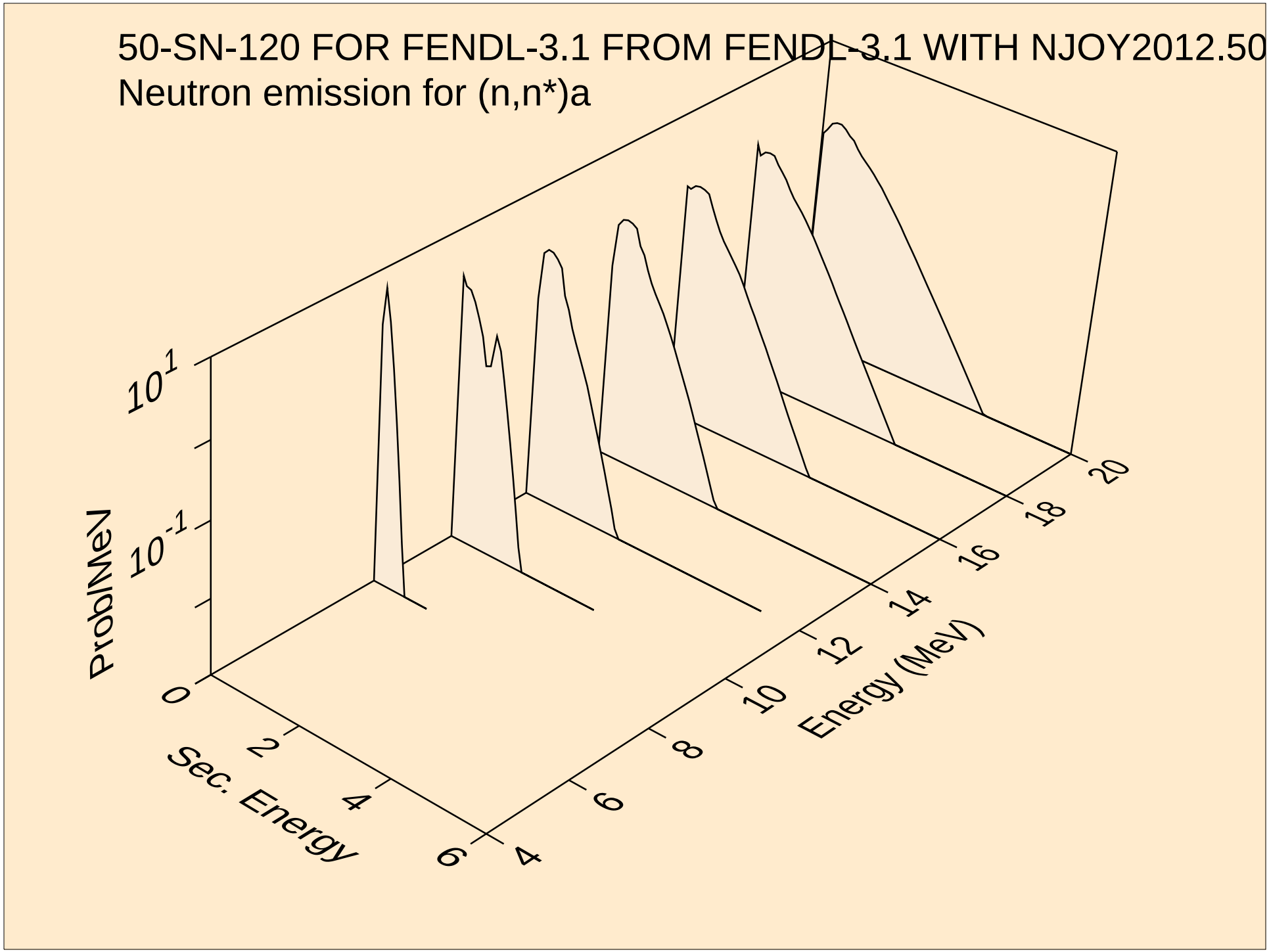

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
angular distribution for (n,n*29)
ProbICos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

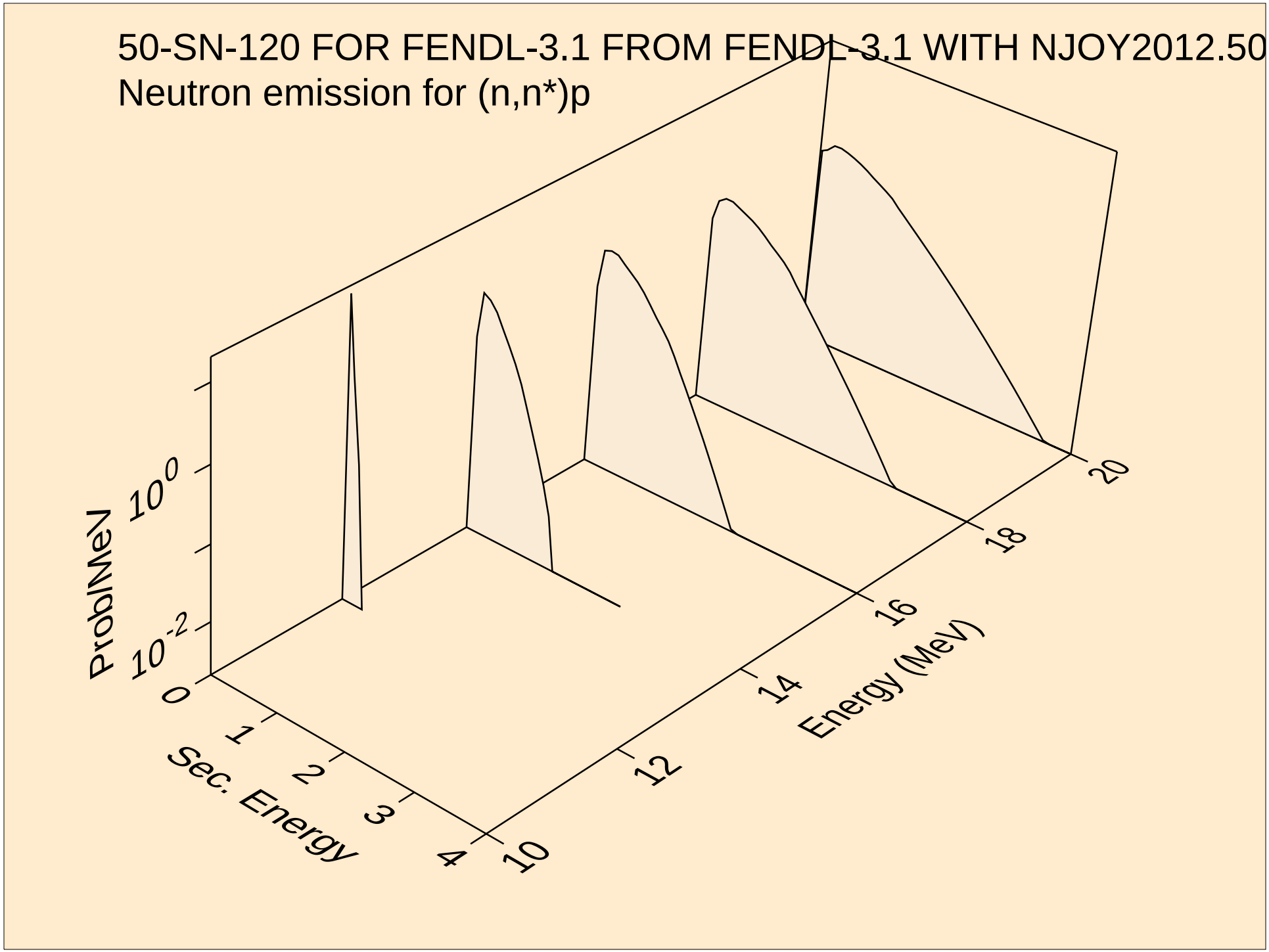

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
angular distribution for (n,n*30)
ProbICos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

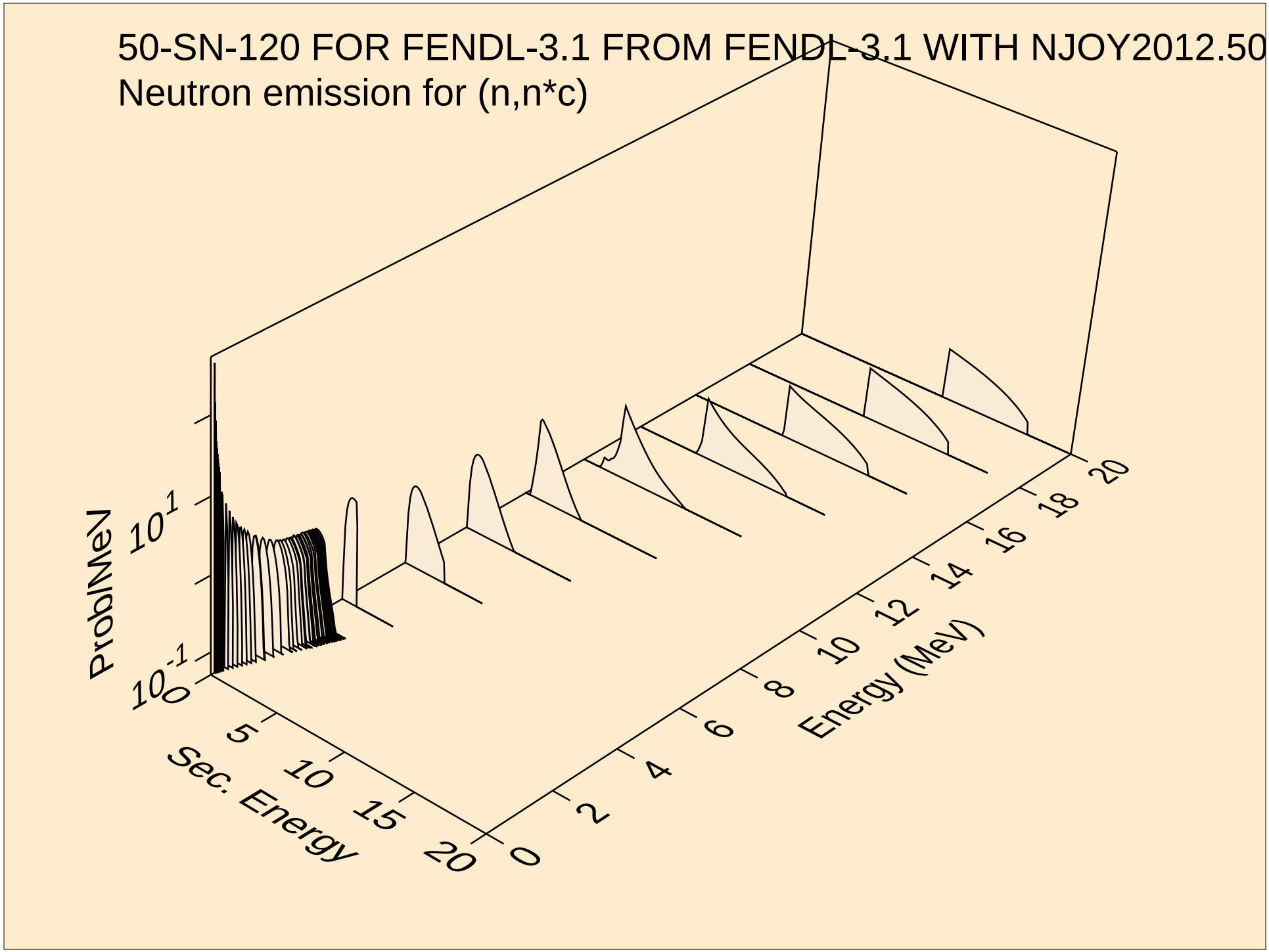

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
Neutron emission for (n,x)
Prob/MeV
10^3
10^2
10^1
10^0
0
20
40
60
80
100
Sec. Energy
0
50
100
150
200
Energy (MeV)

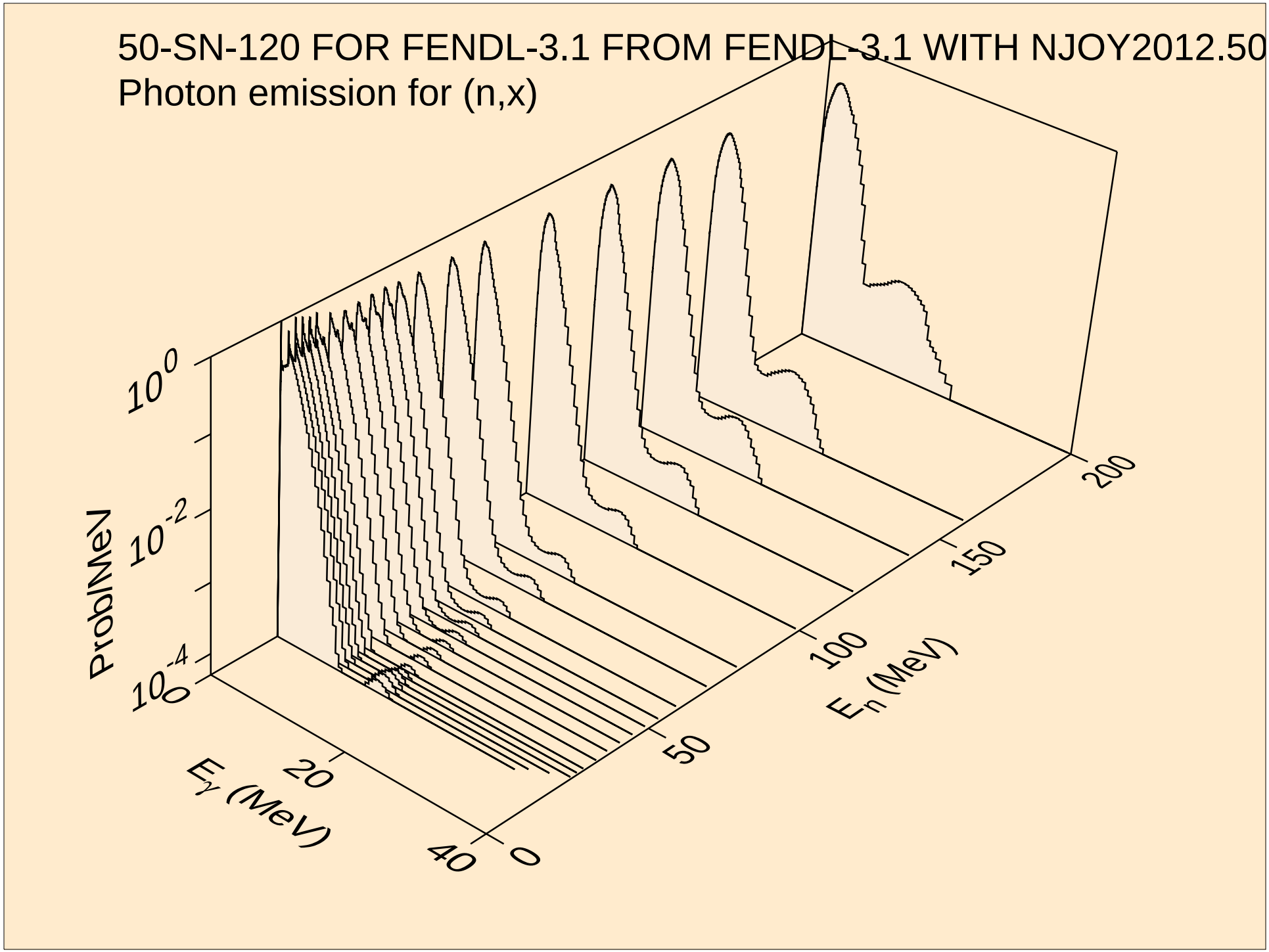

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
Neutron emission for (n,2n)
Prob/MeV
10-1
10-3
0
Sec. Energy
5
10
15
8
10
12
14
16
18
20
Energy (MeV)

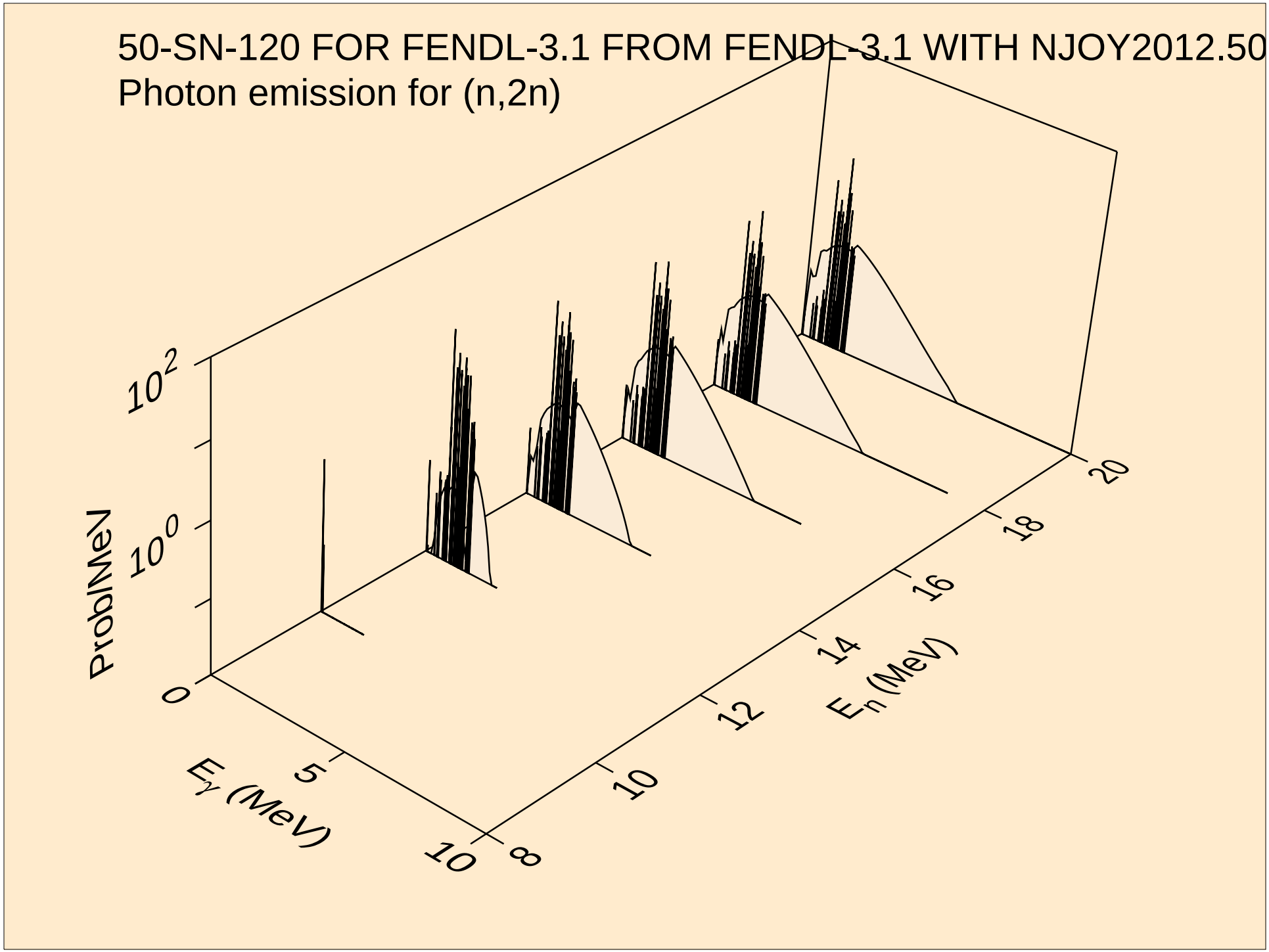

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
Neutron emission for (n,3n)
Prob/MeV
10^{1}
10^{-1}
0
Sec. Energy
2
4
15
16
17
18
19
20
Energy (MeV)

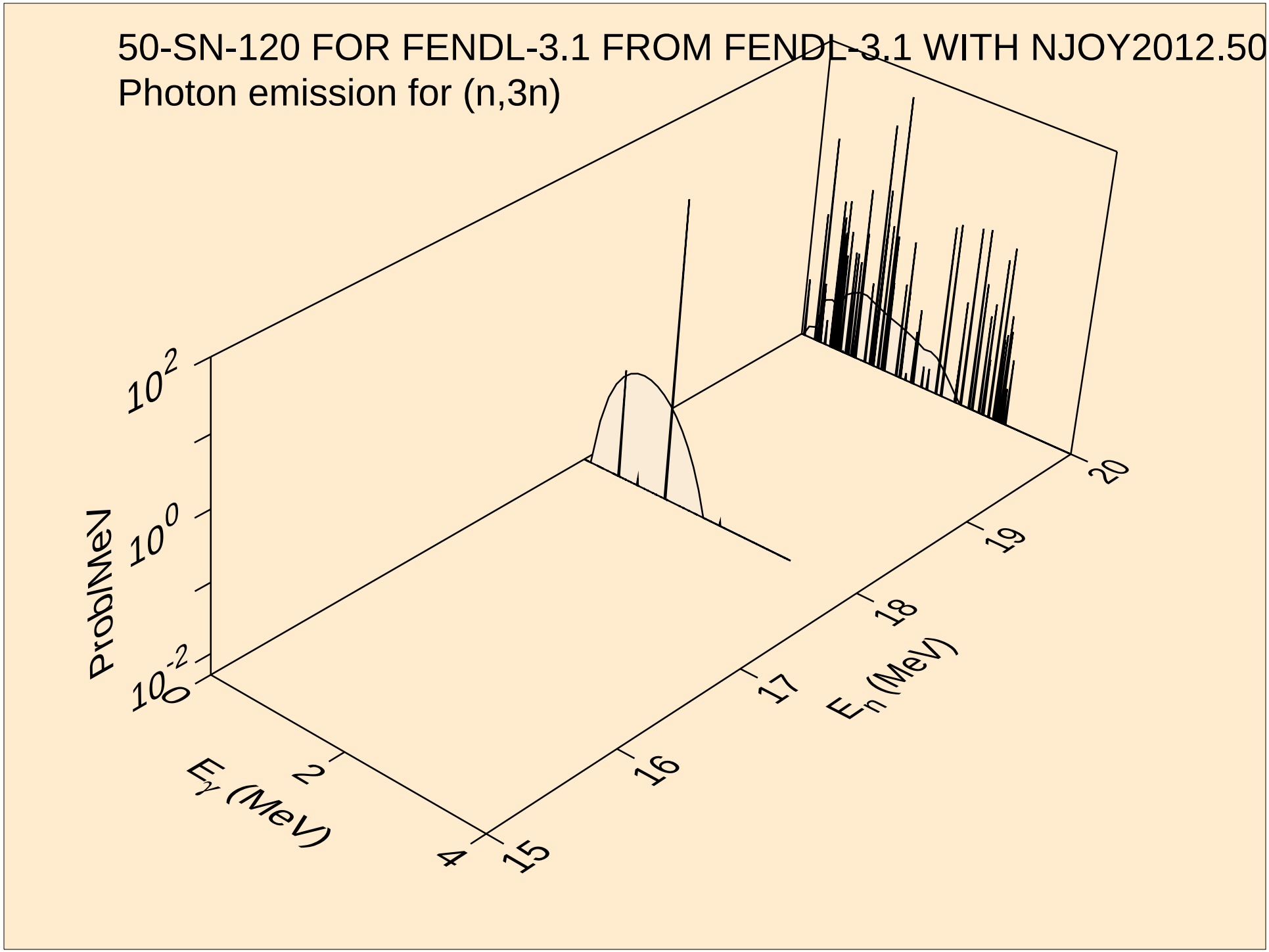

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
Neutron emission for (n,n*)a
Prob/MeV
10^1
10^-1
0
2
4
6
Sec. Energy
4
6
8
10
12
14
16
18
20
Energy (MeV)

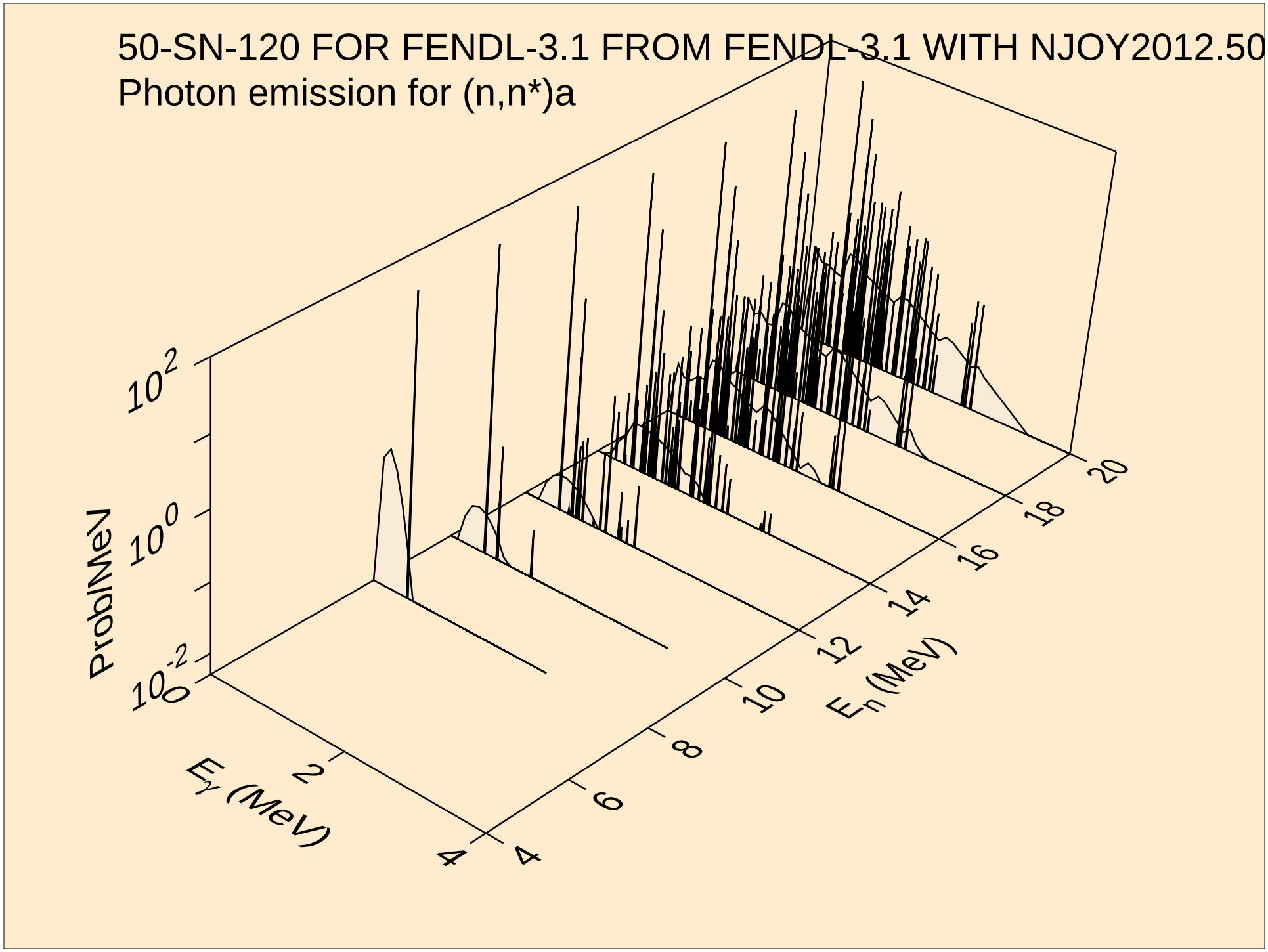

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
Neutron emission for (n,n*)p
Prob/MeV
10^0
10^-2
0
1
2
3
4
Sec. Energy
10
12
14
16
18
20
Energy (MeV)

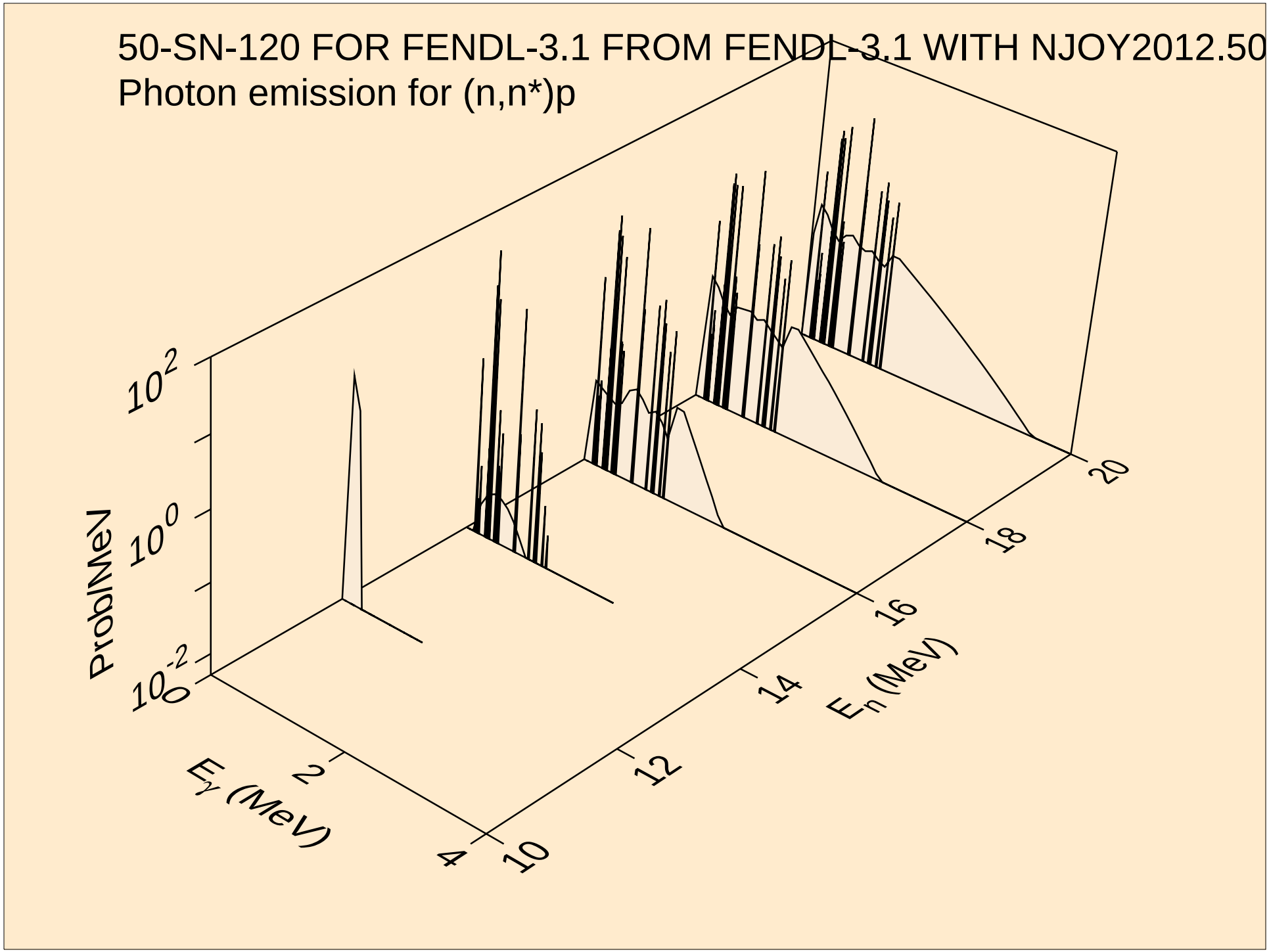

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
Neutron emission for (n,n*c)
Prob/MeV
10^{1}
10^{-1}
0
5
10
15
20
Sec. Energy
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

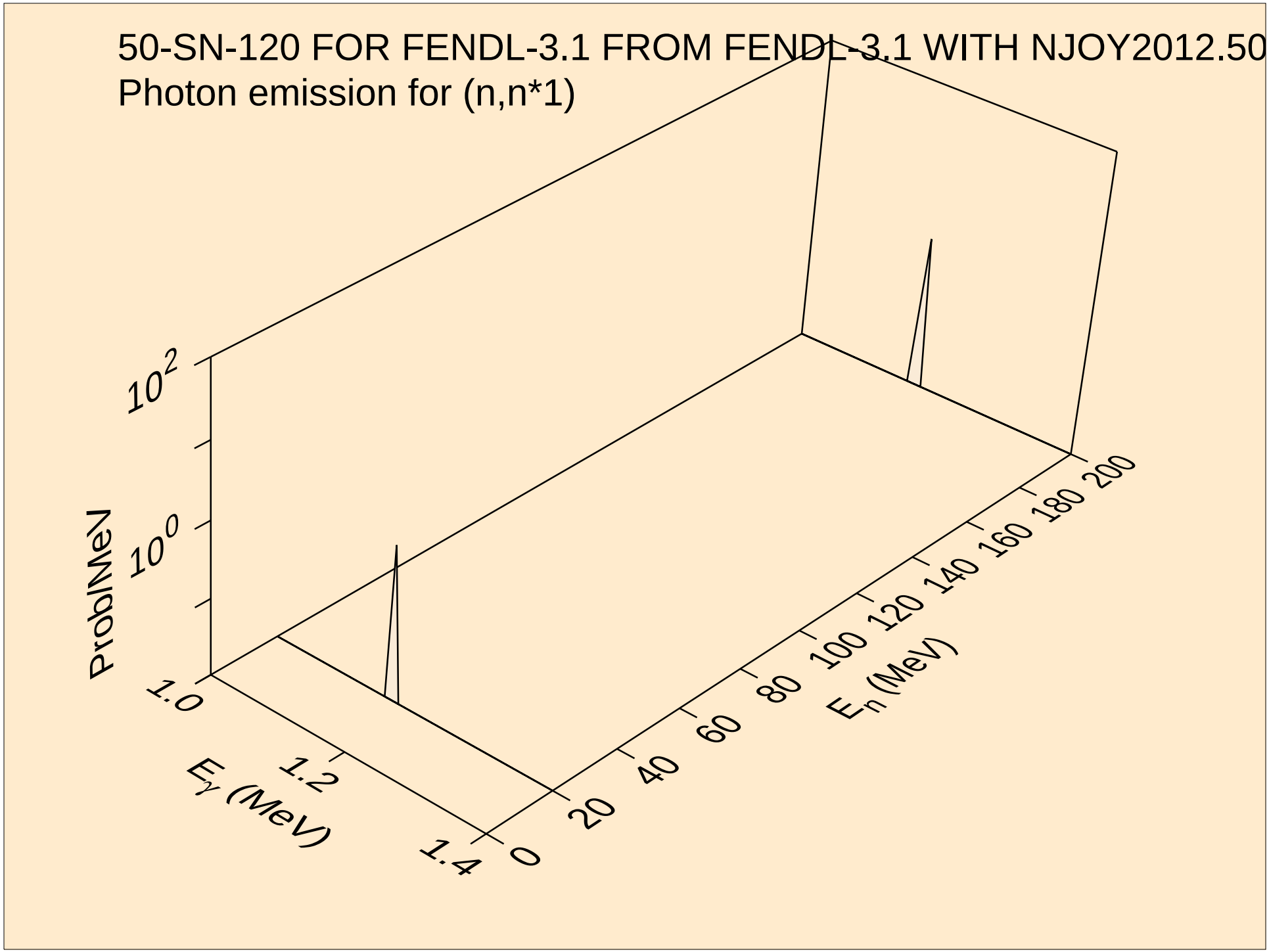

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
Photon emission for (n,x)
Prob/MeV
10^{0}
10^{-2}
10^{-4}
0
20
40
E_γ (MeV)
0
50
100
150
200
E_n (MeV)

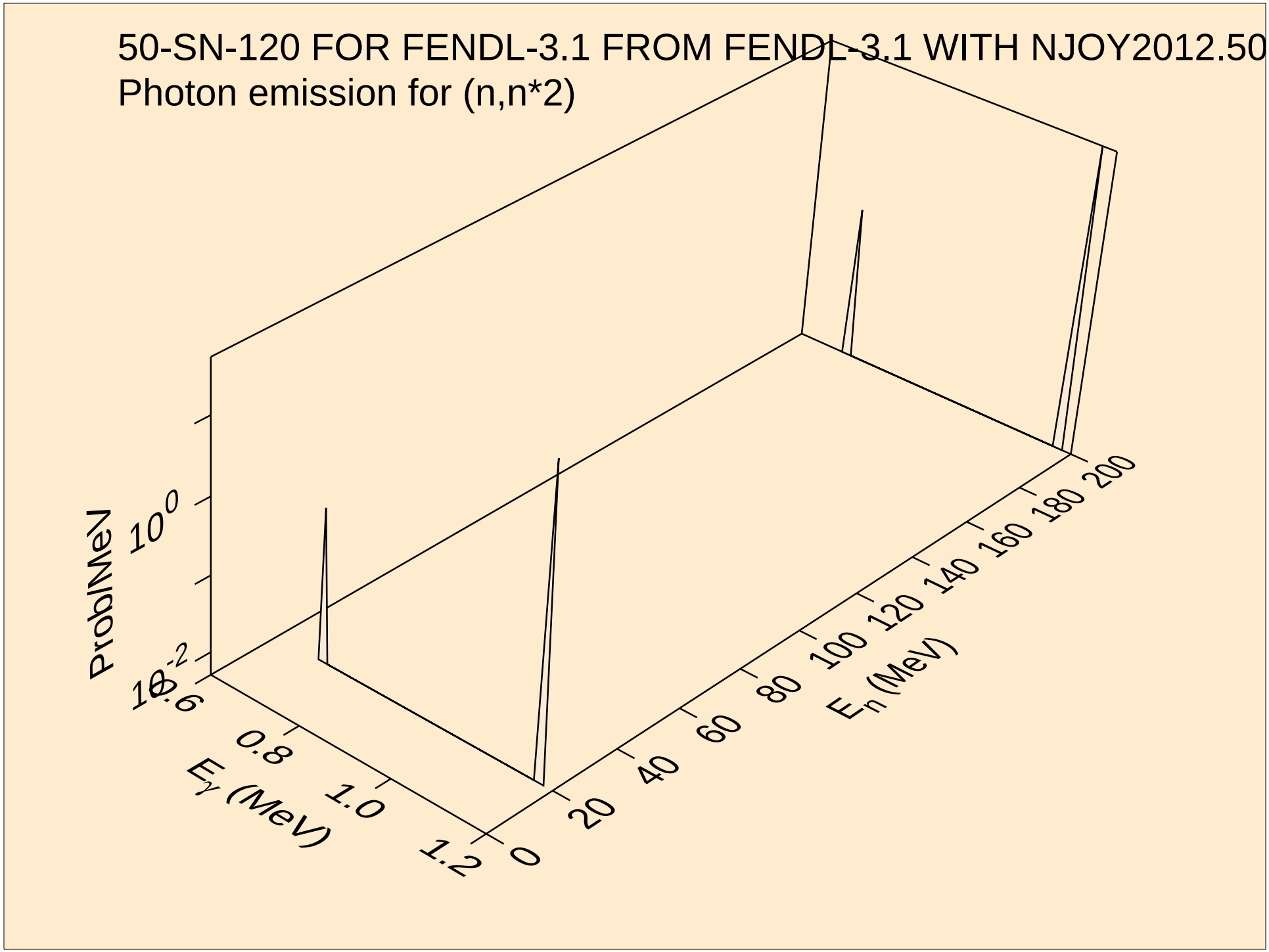

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
Photon emission for (n,2n)
Prob/MeV
10^2
10^0
0
5
10
E_γ (MeV)
8
10
12
14
16
18
20
E_n (MeV)

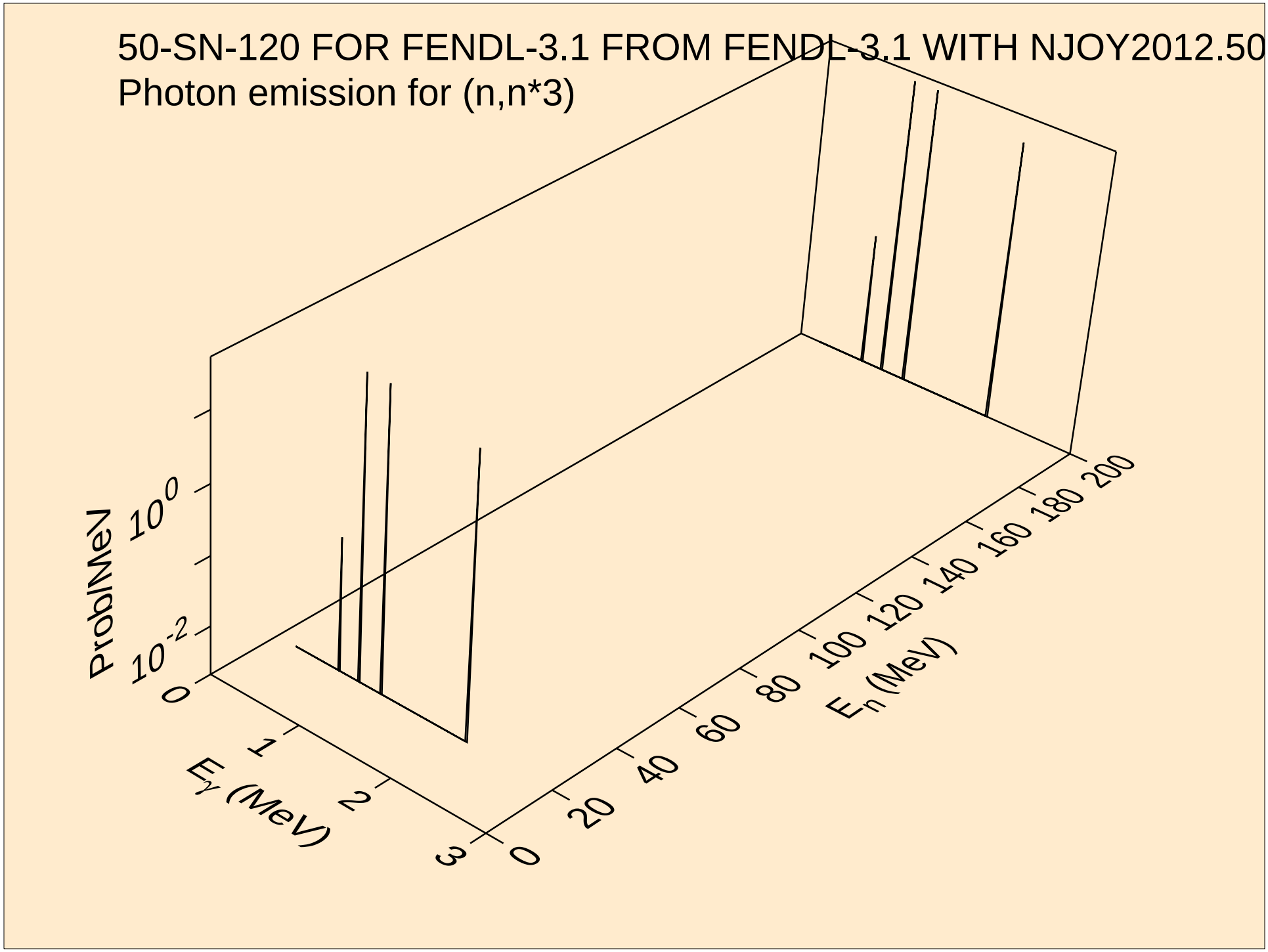

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
Photon emission for (n,3n)
Prob/MeV
10^{2}
10^{0}
10^{-2}
0
2
4
E_γ (MeV)
15
16
17
18
19
20
E_n (MeV)

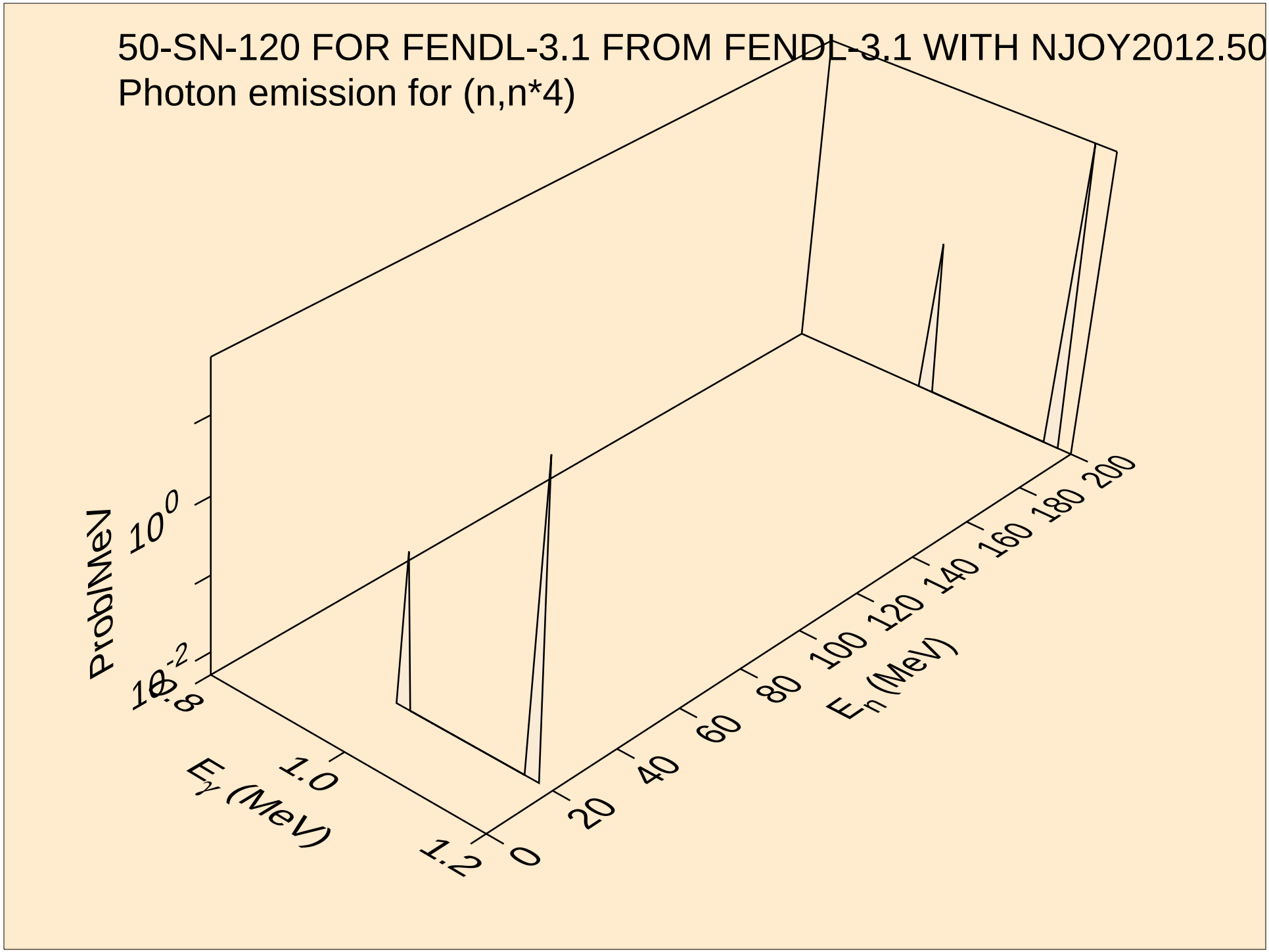

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
Photon emission for (n,n*)a
Prob/MeV
10^{2}
10^{0}
10^{-2}
E_γ (MeV)
0
2
4
E_n (MeV)
4
6
8
10
12
14
16
18
20

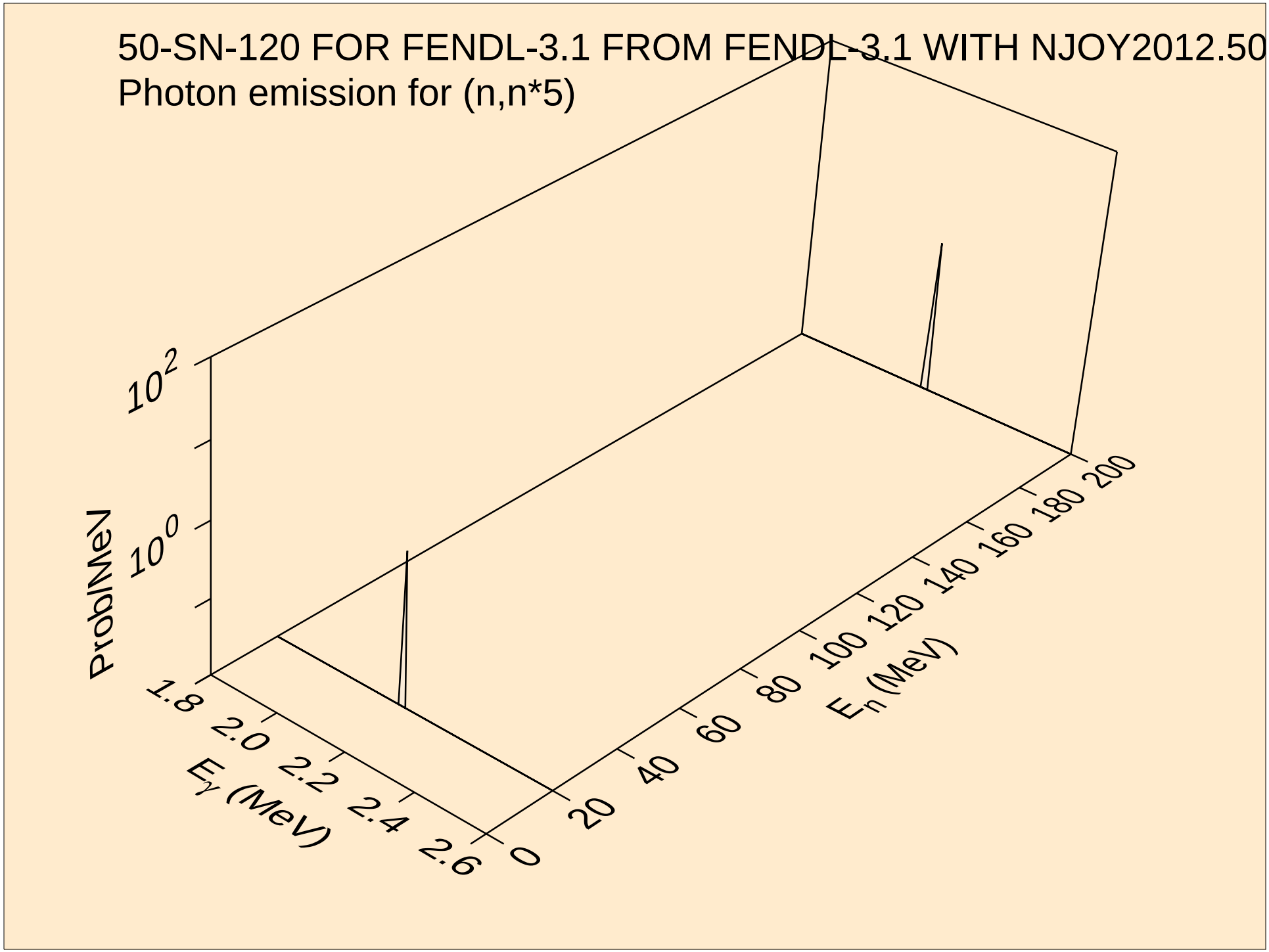

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
Photon emission for (n,n*)p
Prob/MeV
10^{2}
10^{0}
10^{-2}
E_γ (MeV)
0
2
4
10
12
14
16
18
20
E_n (MeV)

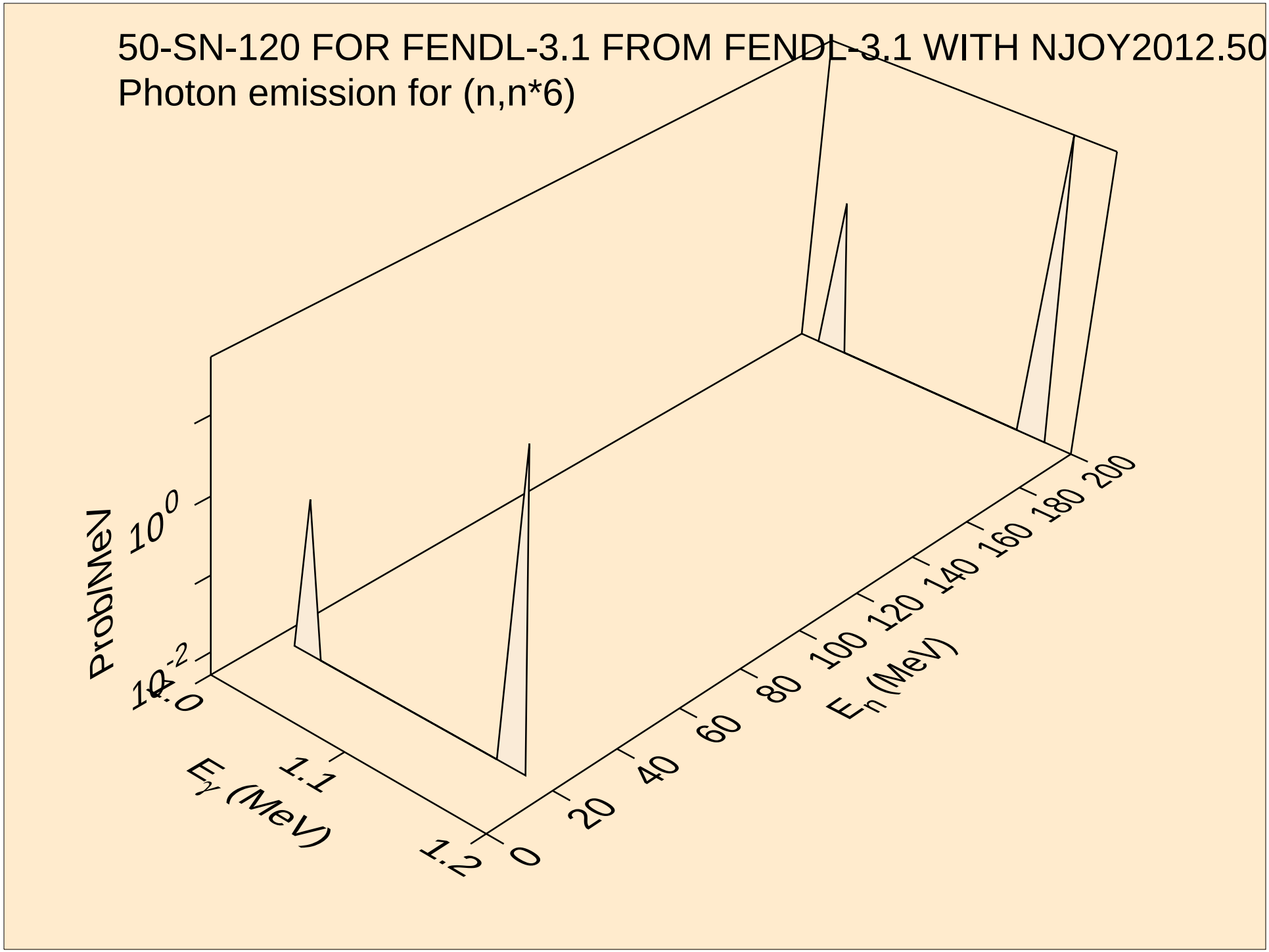

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
Photon emission for (n,n*1)
Prob/MeV
10^2
10^0
1.0
1.2
1.4
E_γ (MeV)
0
20
40
60
80
100
120
140
160
180
200
E_n (MeV)

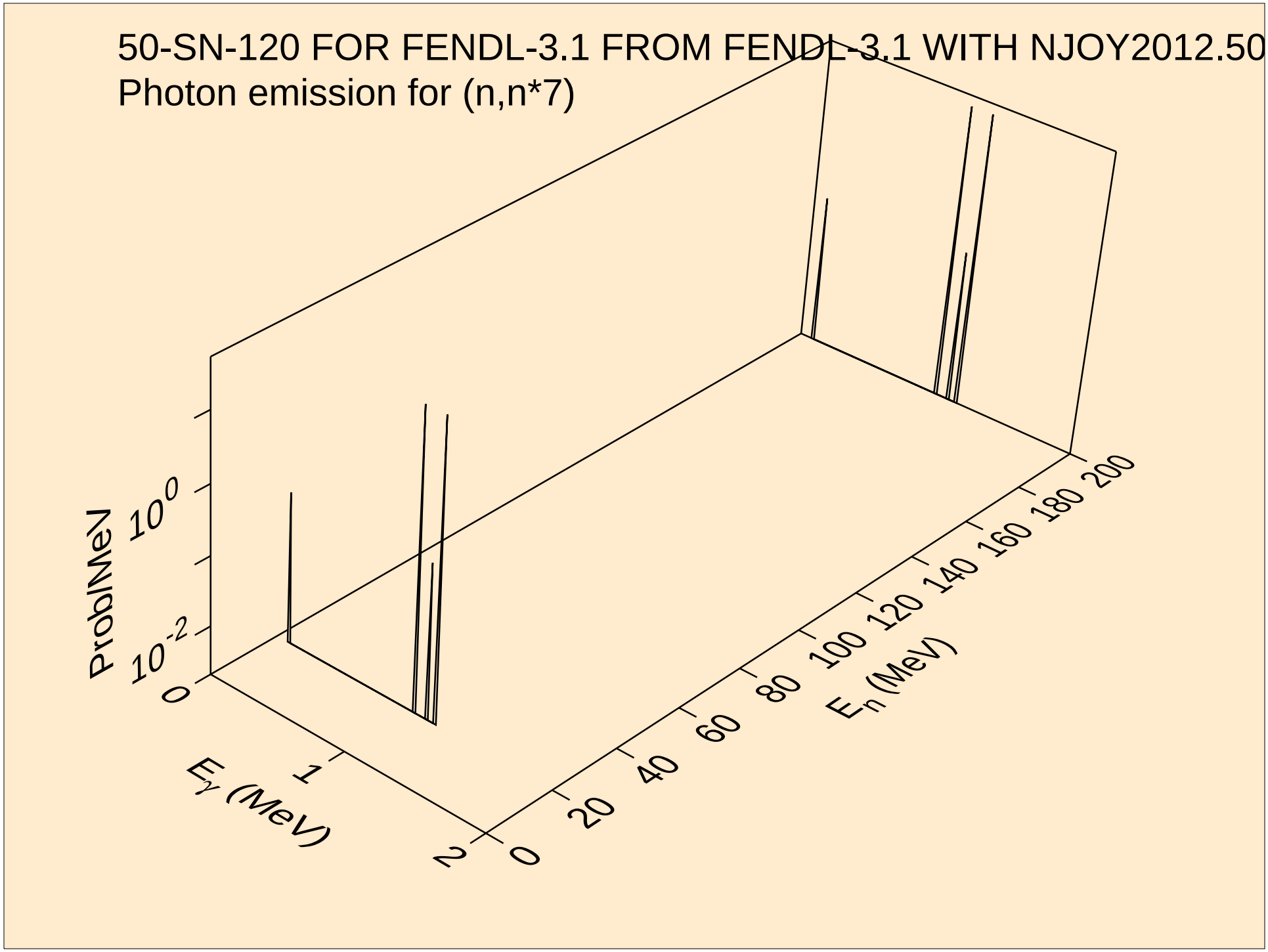

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
Photon emission for (n,n*2)
Prob/MeV
10^{0}
10^{-2}
0.6
0.8
1.0
1.2
E_γ (MeV)
0
20
40
60
80
100
120
140
160
180
200
E_n (MeV)

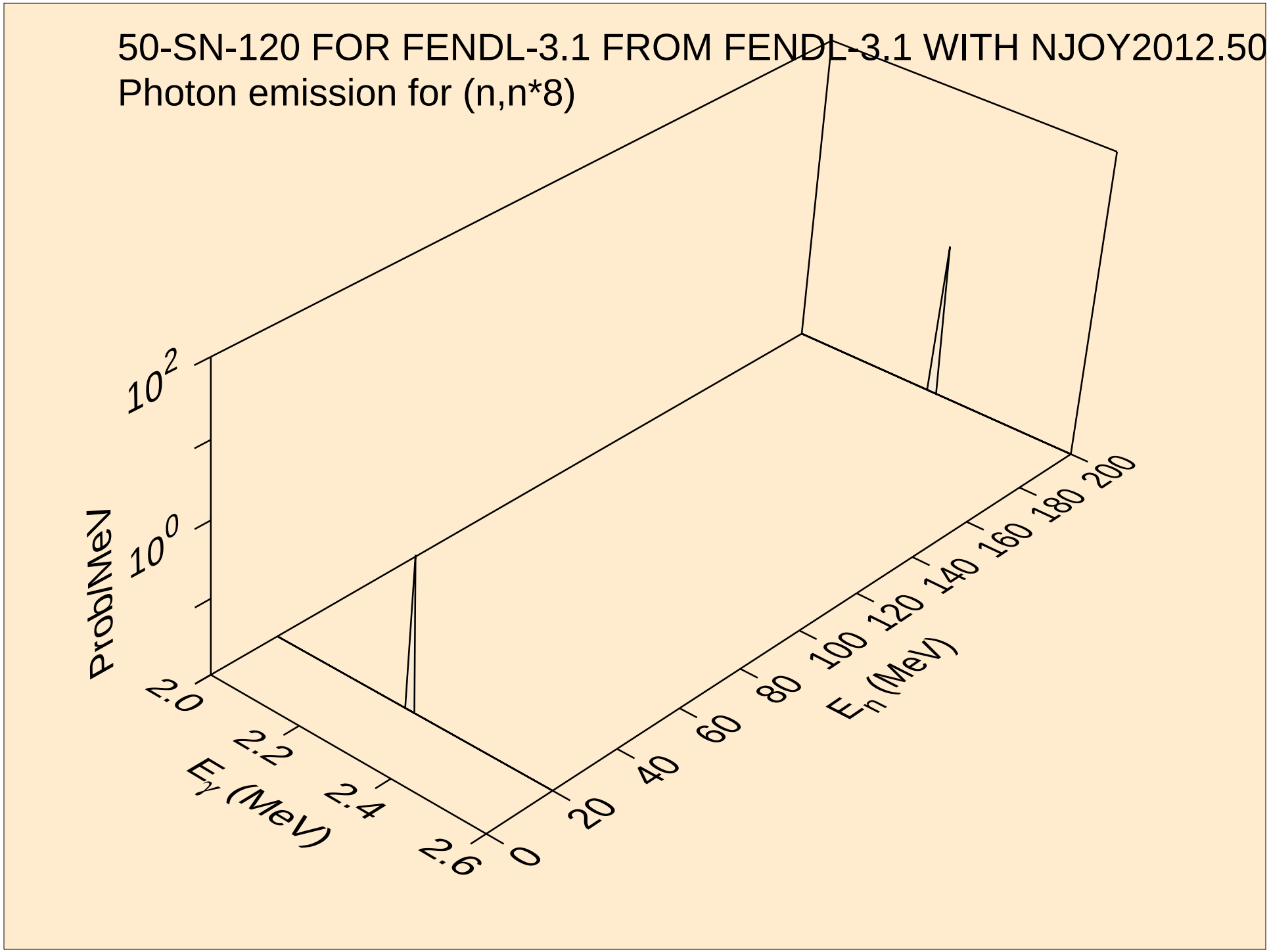

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
Photon emission for (n,n*3)
Prob/MeV
10^{0}
10^{-2}
0
1
2
3
E_γ (MeV)
0
20
40
60
80
100
120
140
160
180
200
E_n (MeV)

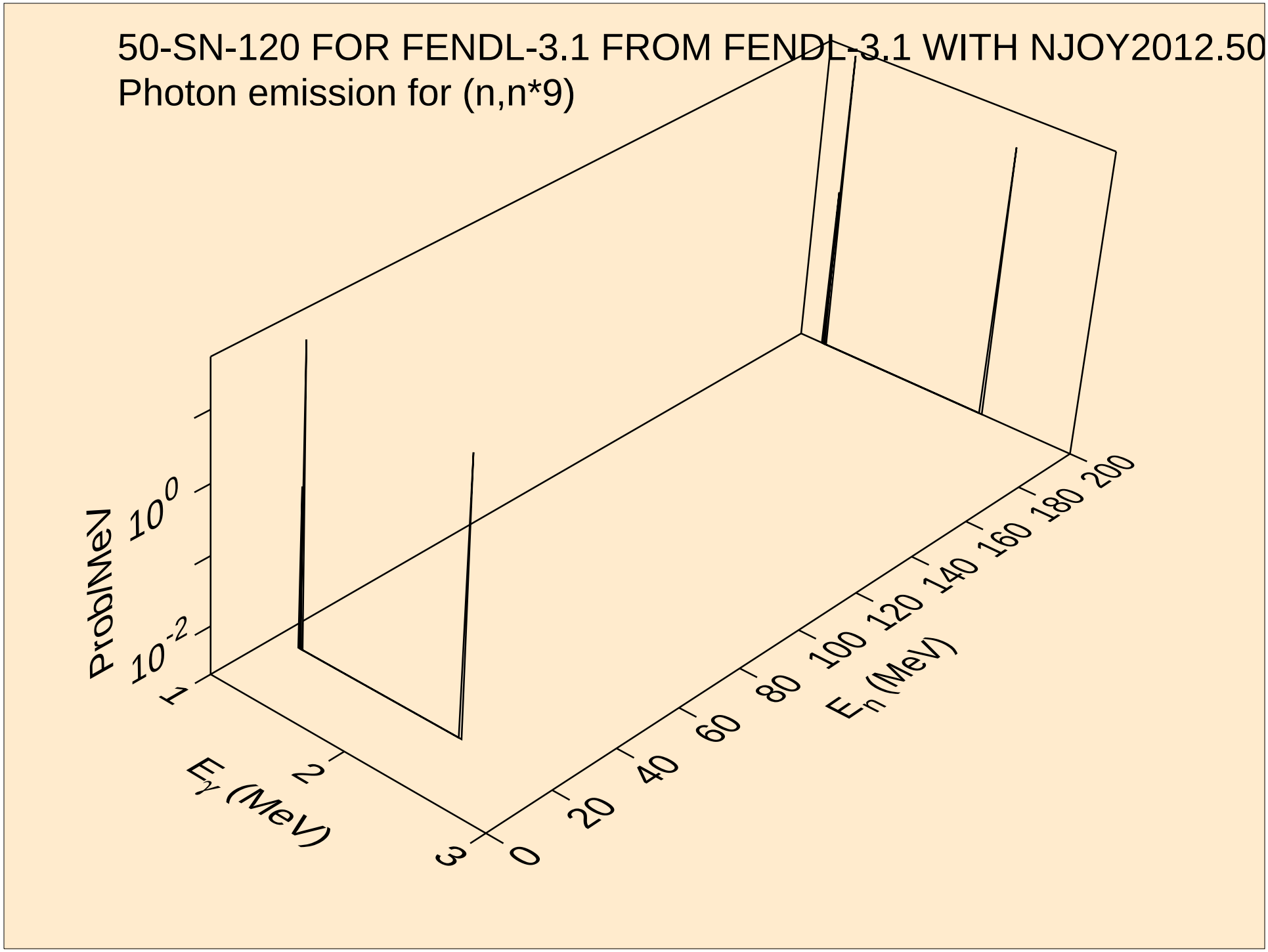

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
Photon emission for (n,n*4)
Prob/MeV
10^{0}
10^{-2}
0.8
1.0
1.2
E_γ (MeV)
0
20
40
60
80
100
120
140
160
180
200
E_n (MeV)

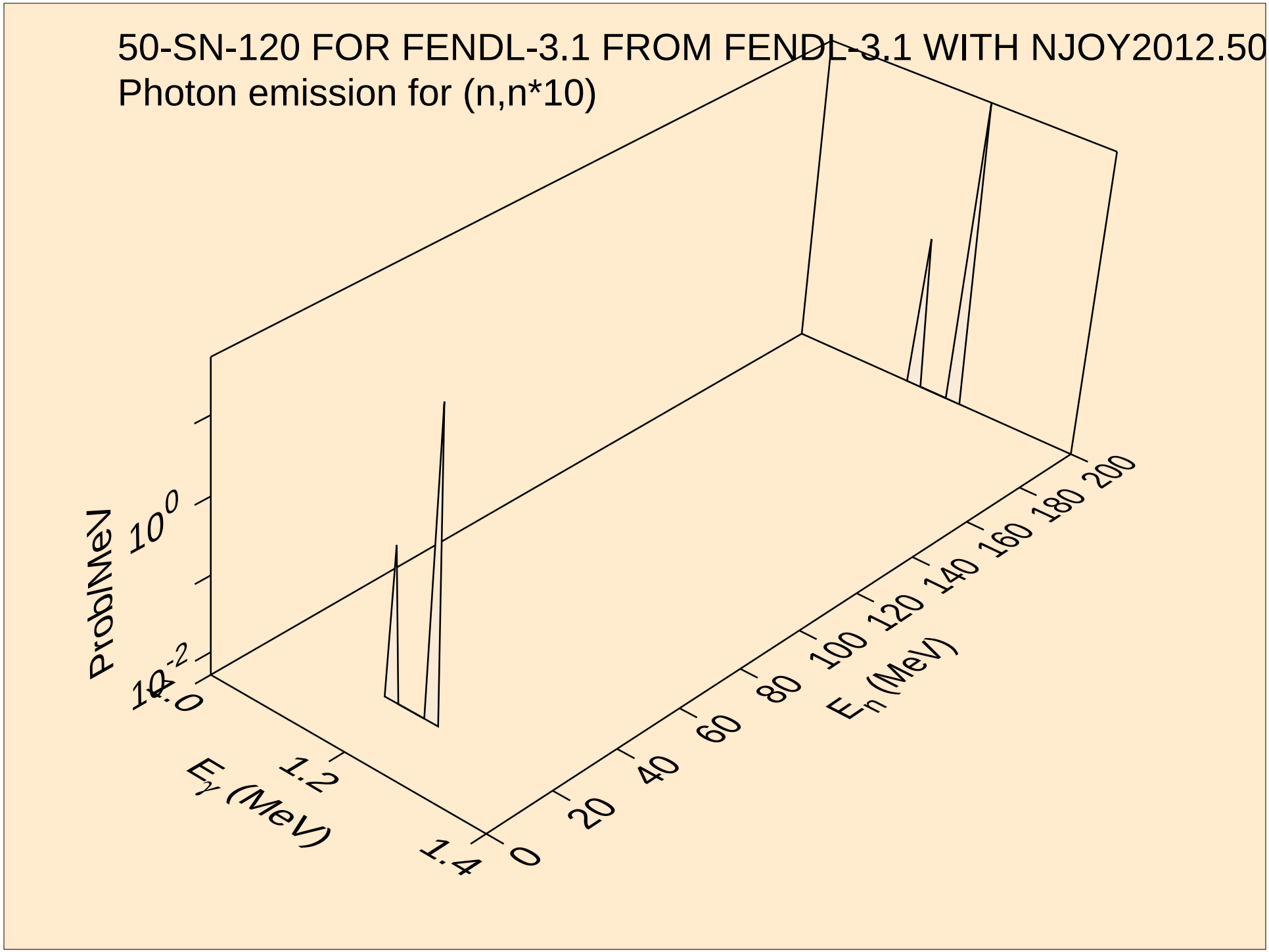

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
Photon emission for (n,n*5)
Prob/MeV
10^2
10^0
1.8
2.0
2.2
2.4
2.6
E_γ (MeV)
0
20
40
60
80
100
120
140
160
180
200
E_n (MeV)

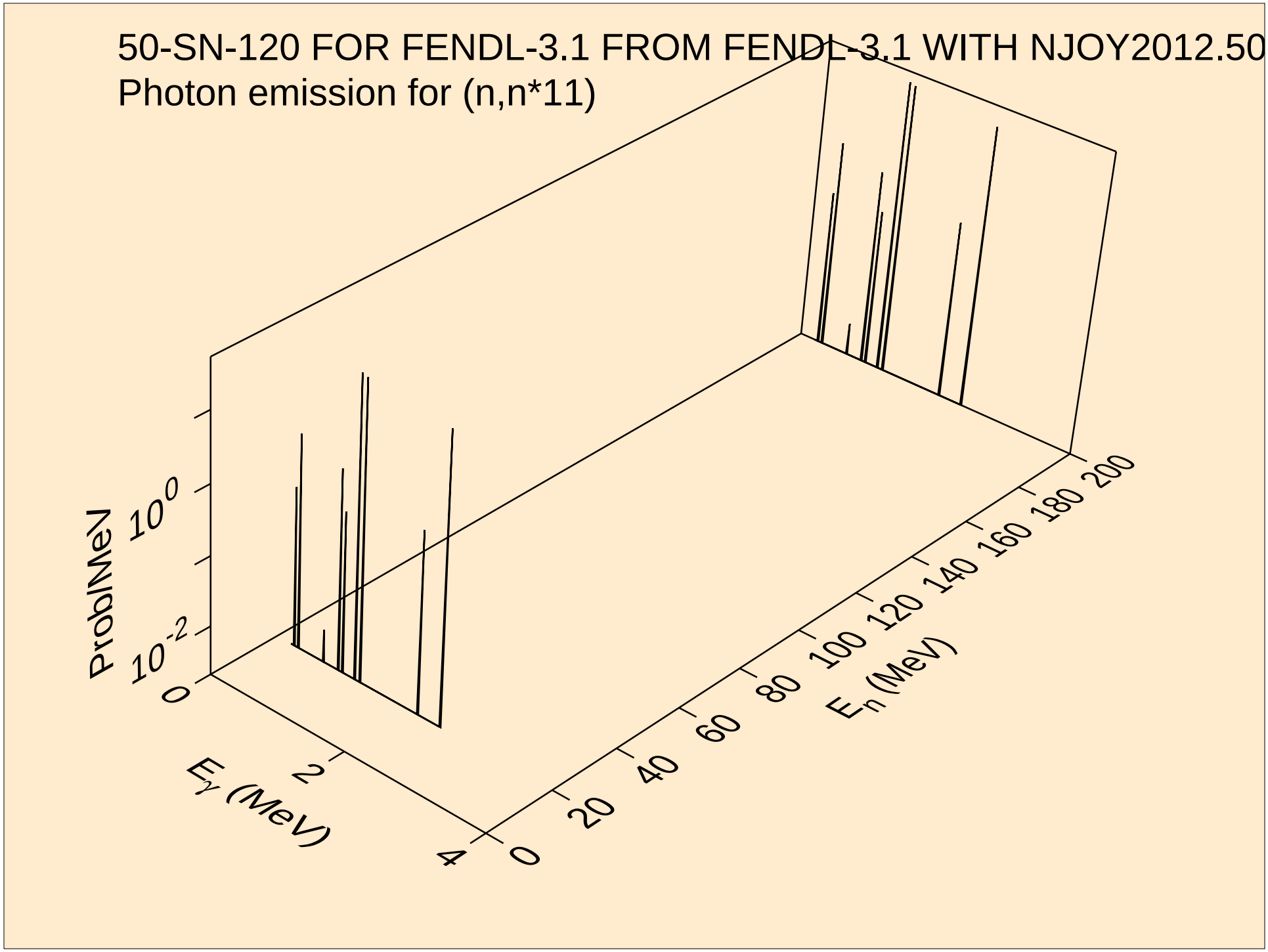

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
Photon emission for (n,n*6)
Prob/MeV
10^0
10^-2
1.0
1.1
1.2
Eγ (MeV)
0
20
40
60
80
100
120
140
160
180
200
En (MeV)

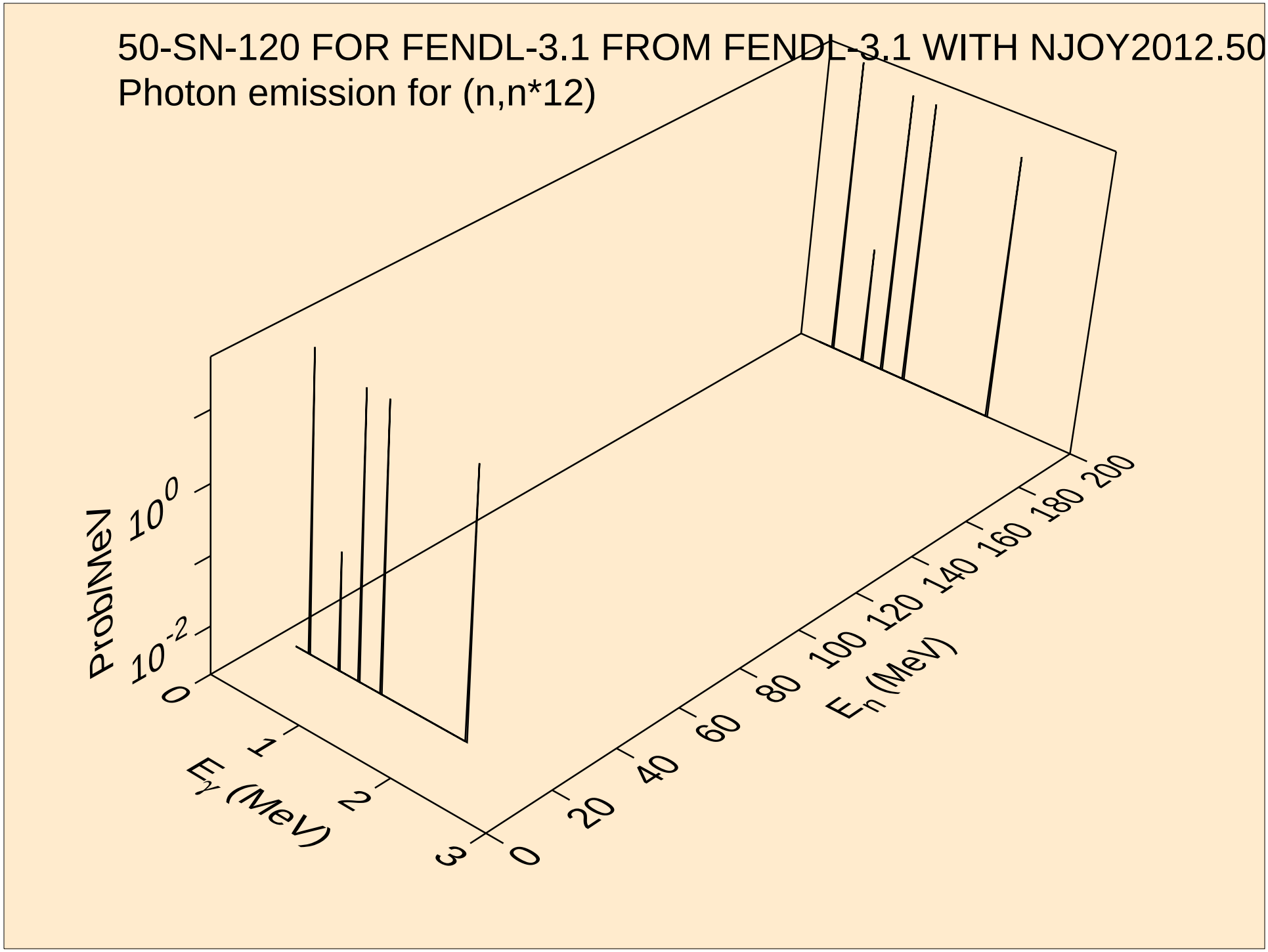

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
Photon emission for (n,n*7)
Prob/MeV
10^{0}
10^{-2}
0
1
2
E_γ (MeV)
0
20
40
60
80
100
120
140
160
180
200
E_n (MeV)

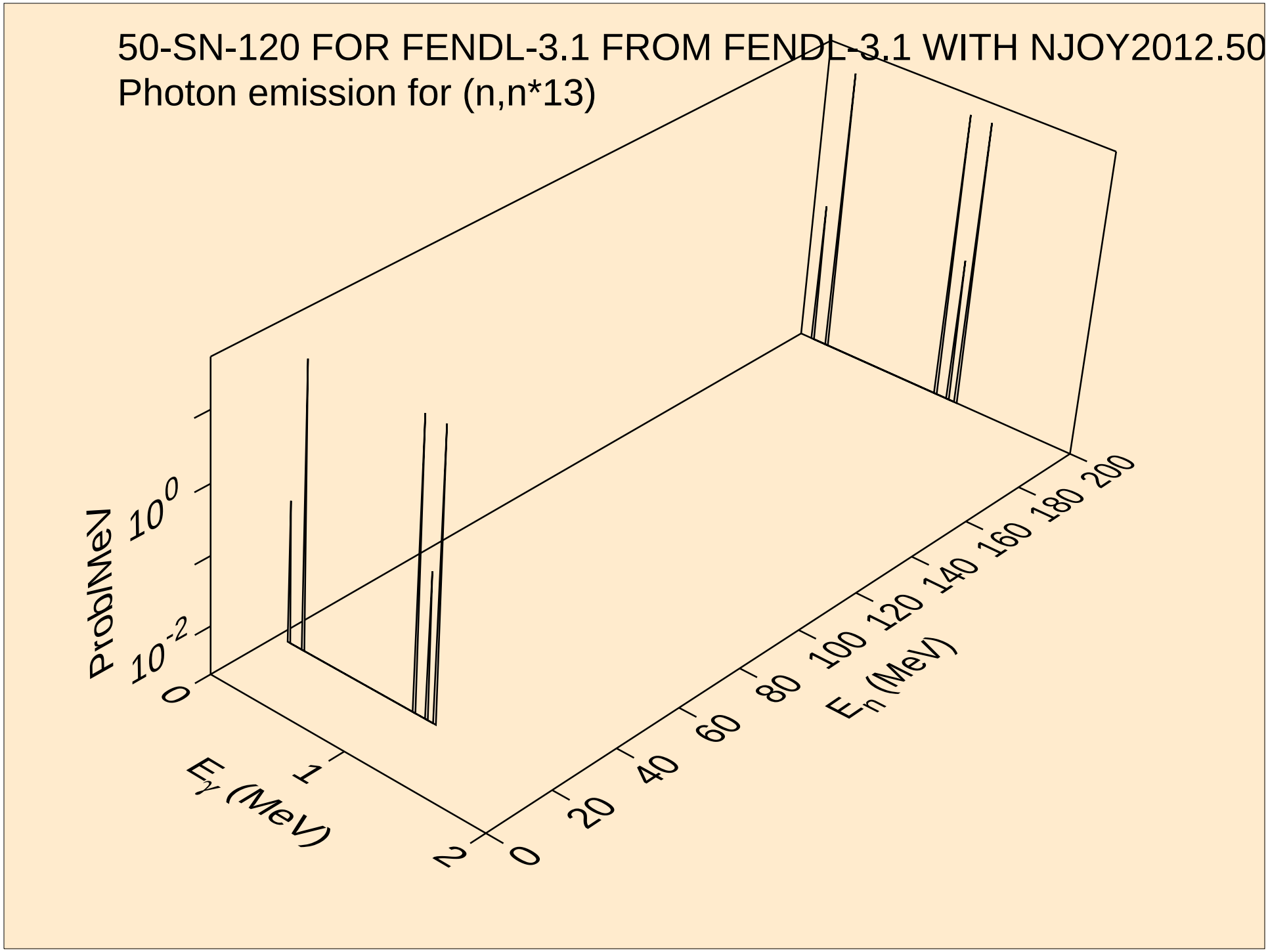

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
Photon emission for (n,n*8)
Prob/MeV
10^2
10^0
2.0
2.2
2.4
2.6
E_γ (MeV)
0
20
40
60
80
100
120
140
160
180
200
E_n (MeV)

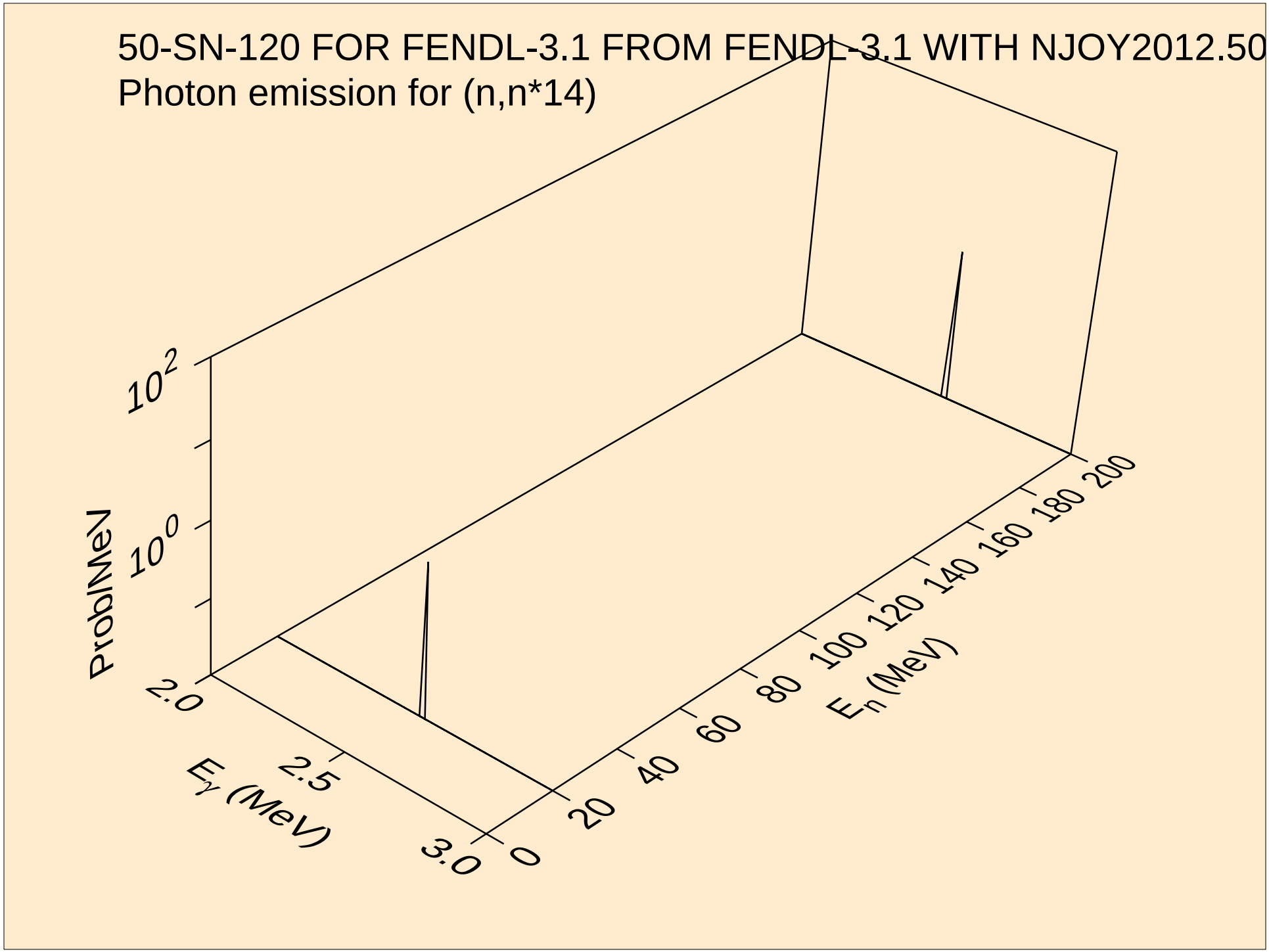

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
Photon emission for (n,n*9)
Prob/MeV
10^{0}
10^{-2}
1
2
3
E_γ (MeV)
0
20
40
60
80
100
120
140
160
180
200
E_n (MeV)

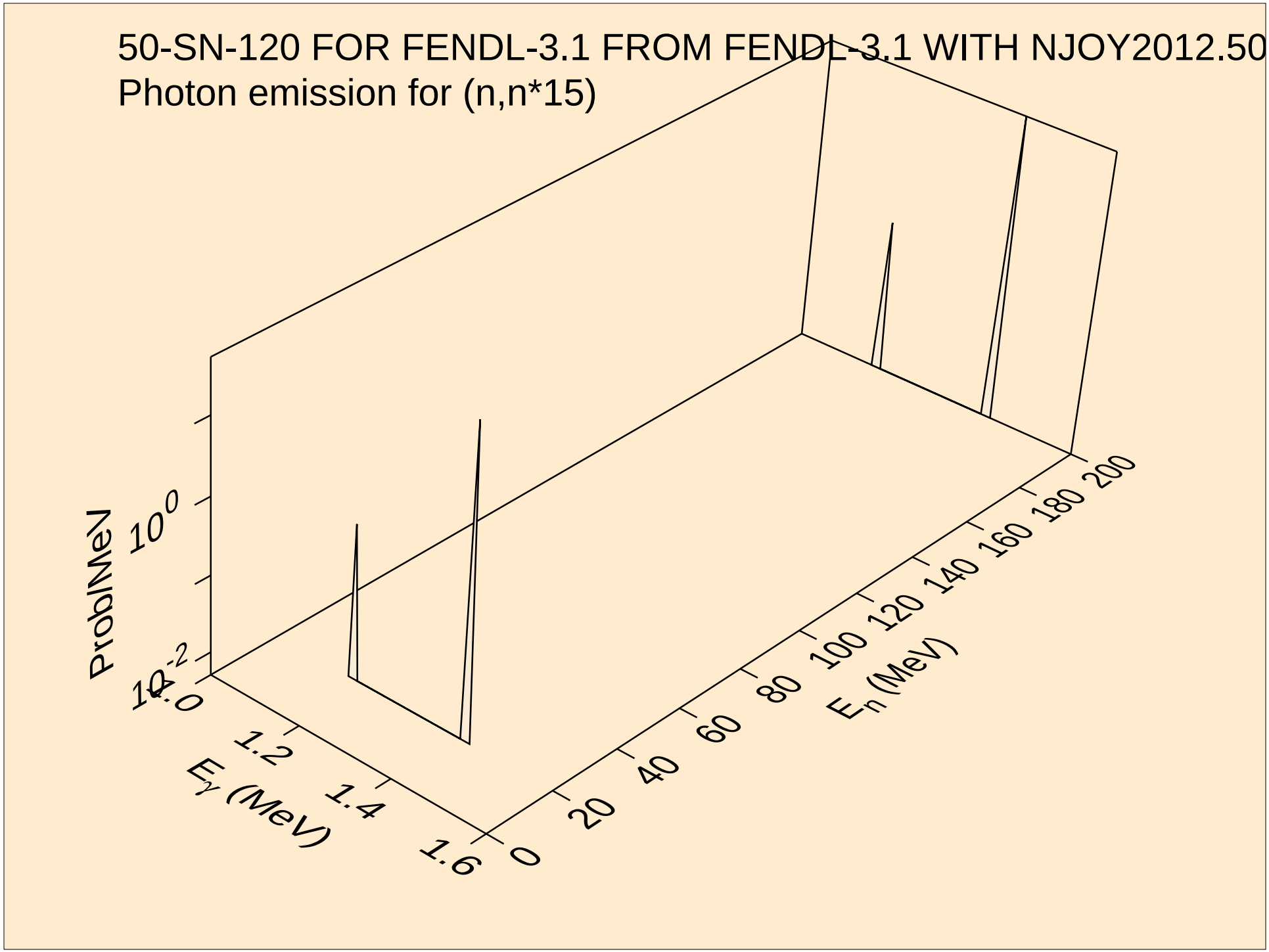

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
Photon emission for (n,n*10)
Prob/MeV
10^{0}
10^{-2}
1.0
1.2
1.4
E_γ (MeV)
0
20
40
60
80
100
120
140
160
180
200
E_n (MeV)

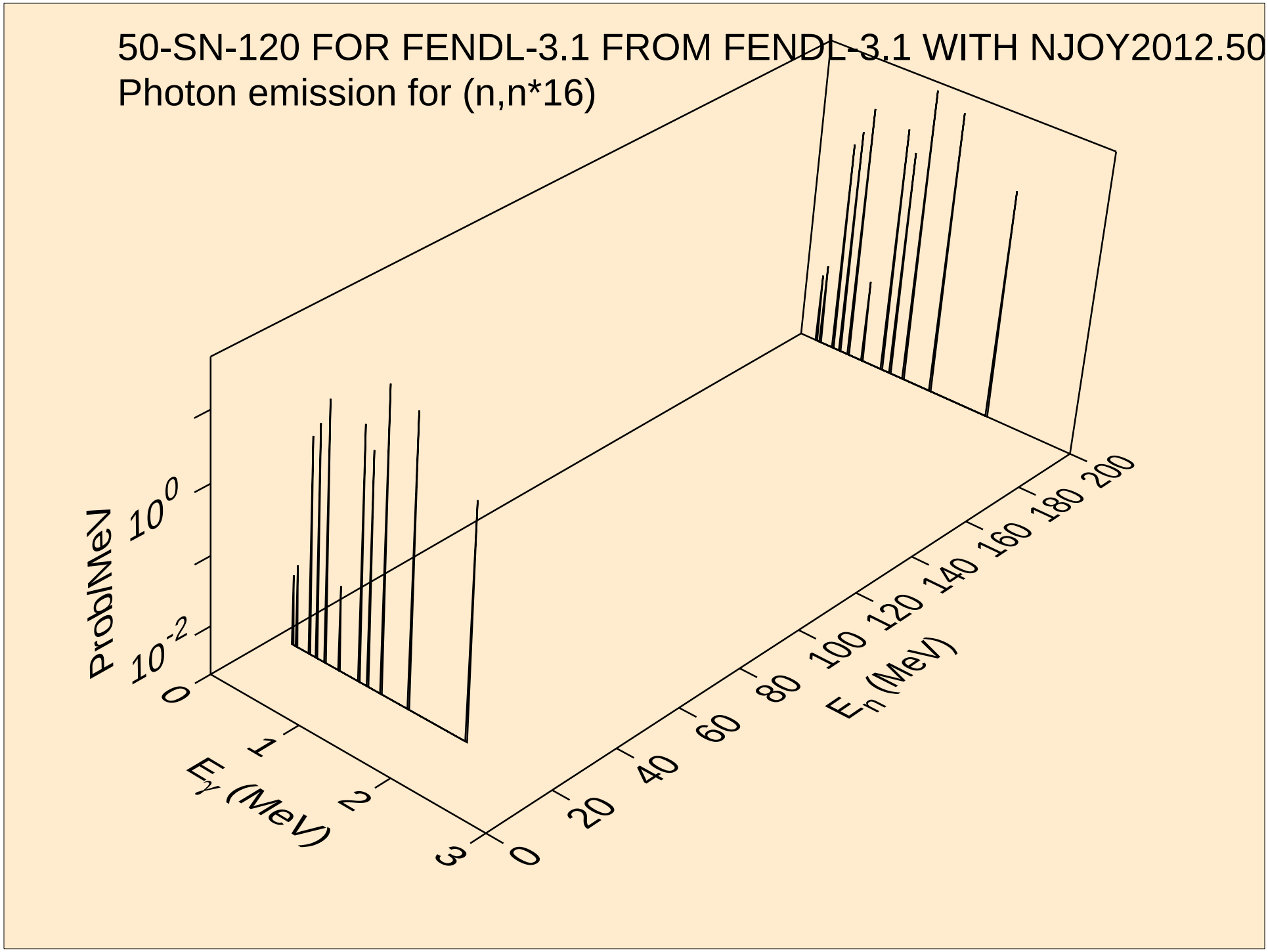

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
Photon emission for (n,n*11)
Prob/MeV
10^{0}
10^{-2}
0
2
4
E_γ (MeV)
0
20
40
60
80
100
120
140
160
180
200
E_n (MeV)

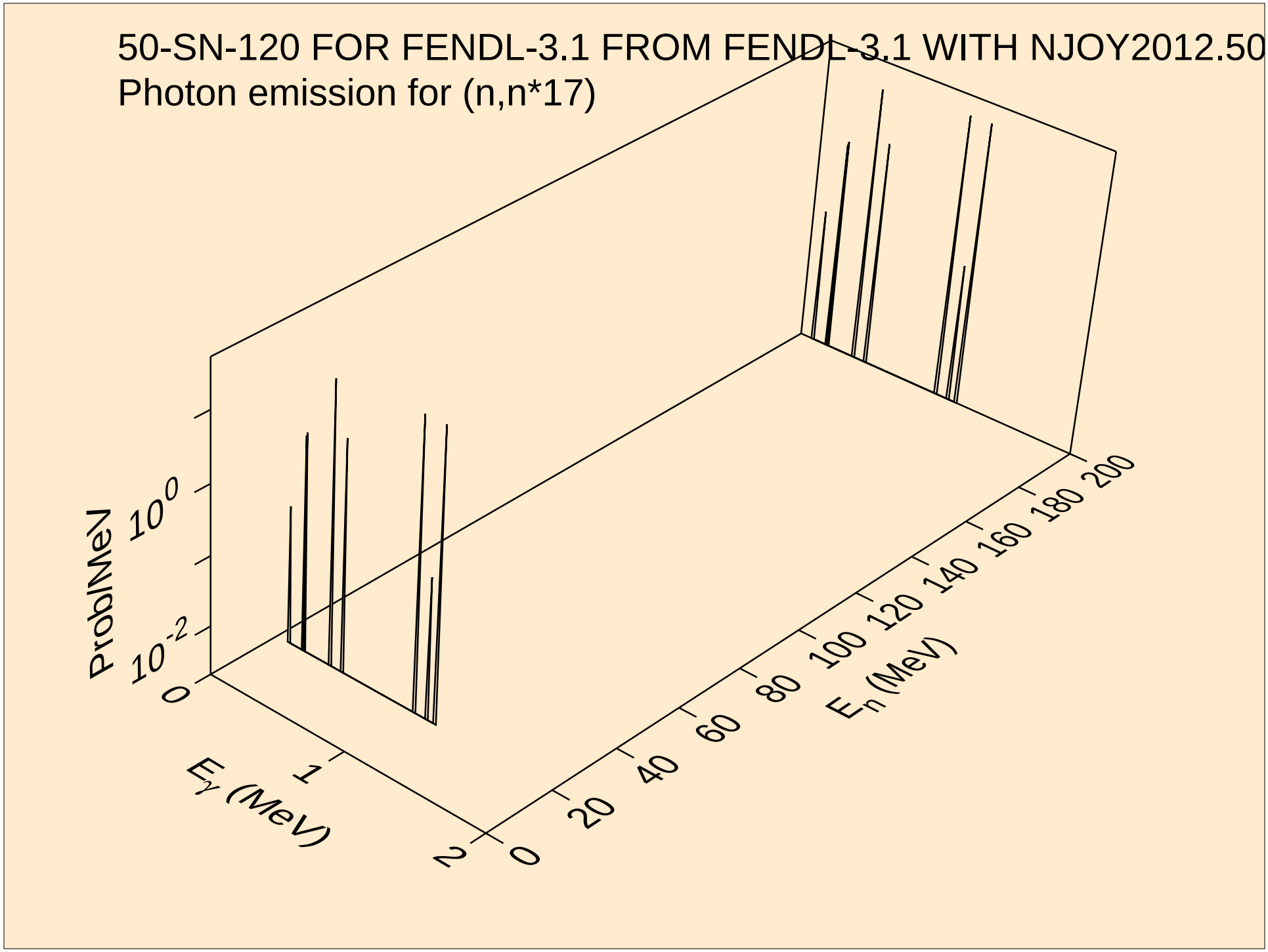

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
Photon emission for (n,n*12)
Prob/MeV
10^{0}
10^{-2}
0
1
2
3
E_γ (MeV)
0
20
40
60
80
100
120
140
160
180
200
E_n (MeV)

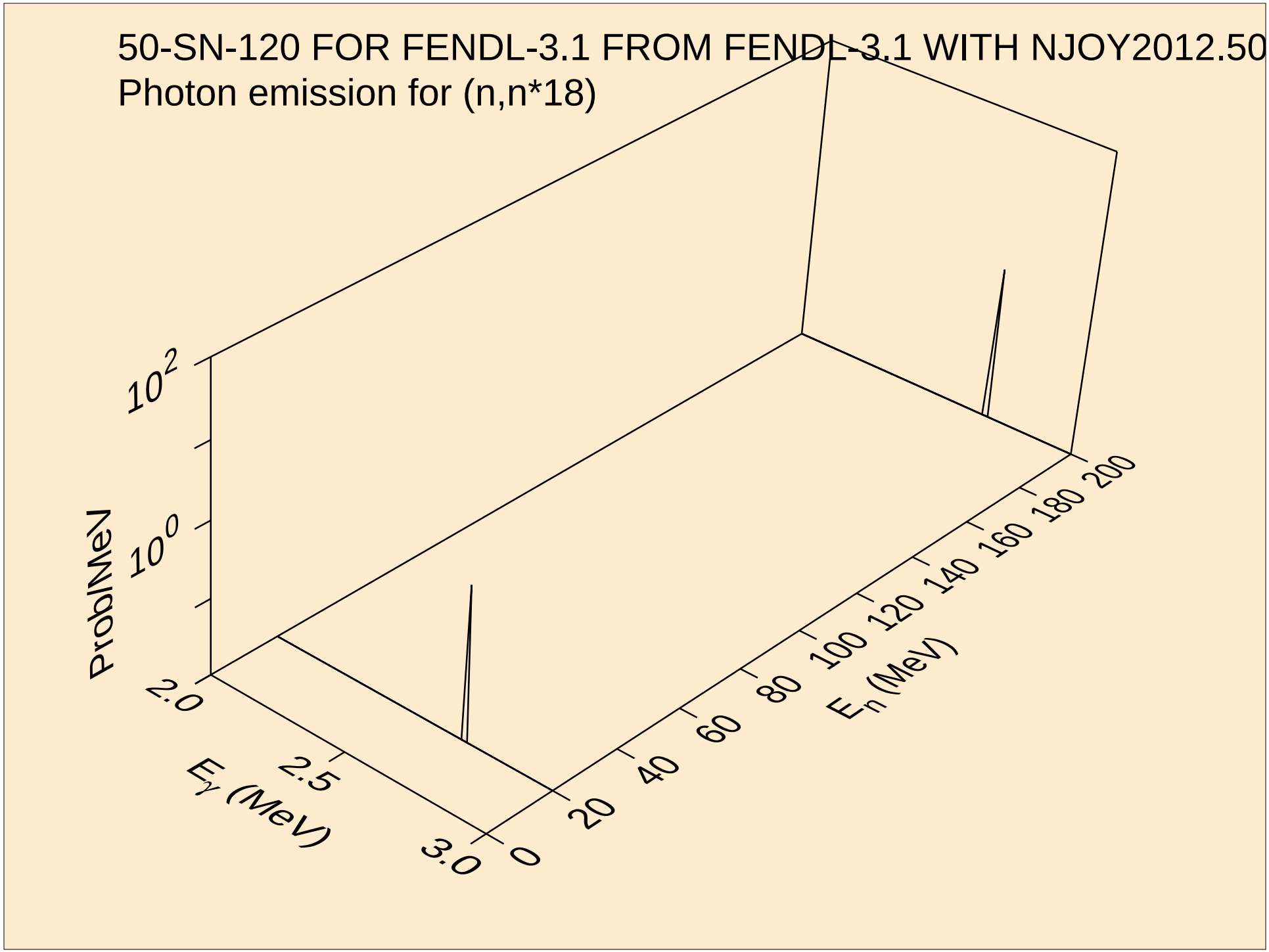

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
Photon emission for (n,n*13)
Prob/MeV
10^{0}
10^{-2}
0
1
2
E_γ (MeV)
0
20
40
60
80
100
120
140
160
180
200
E_n (MeV)

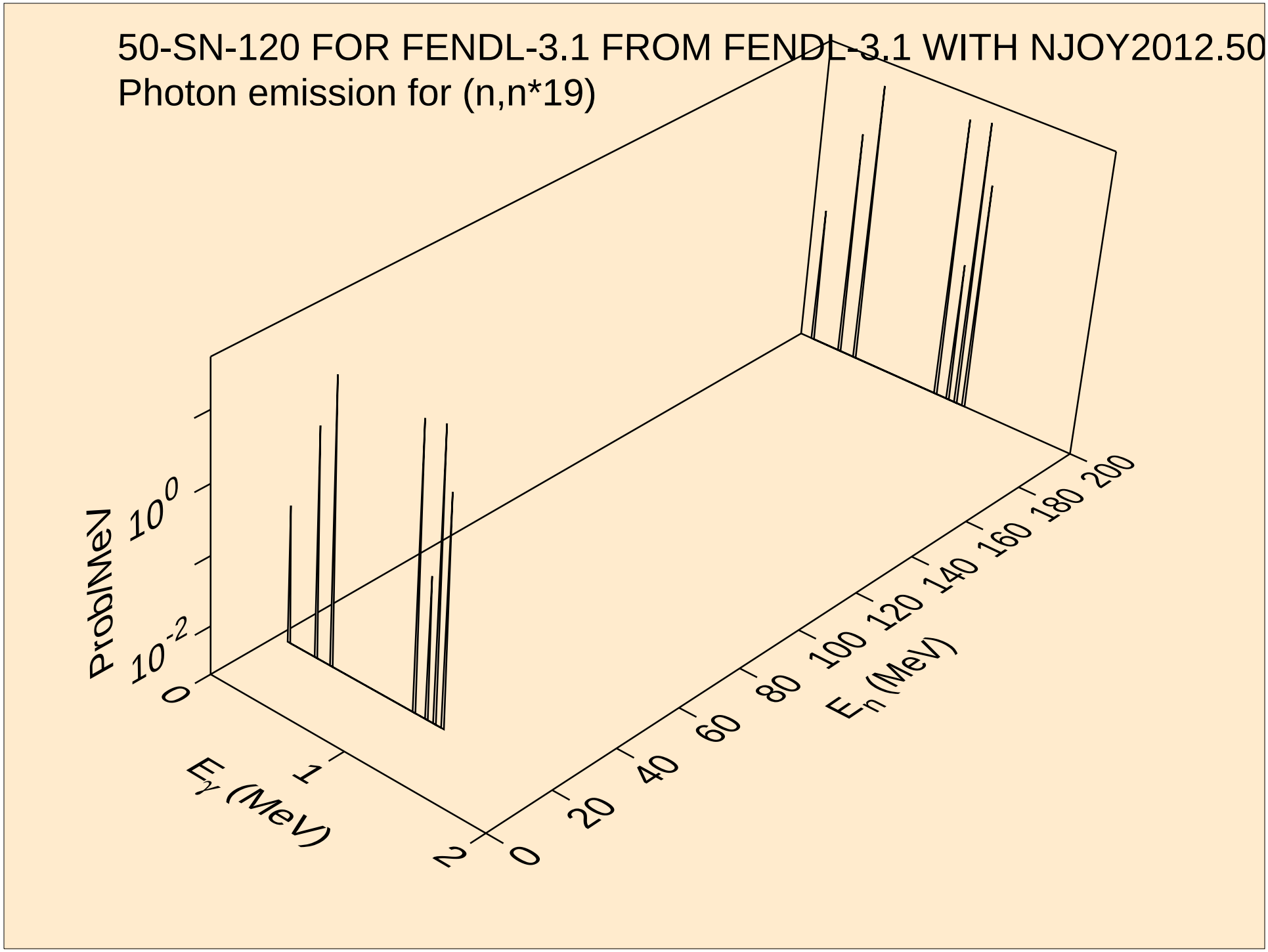

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
Photon emission for (n,n*14)
Prob/MeV
10^2
10^0
2.0
2.5
3.0
E_γ (MeV)
0
20
40
60
80
100
120
140
160
180
200
E_n (MeV)

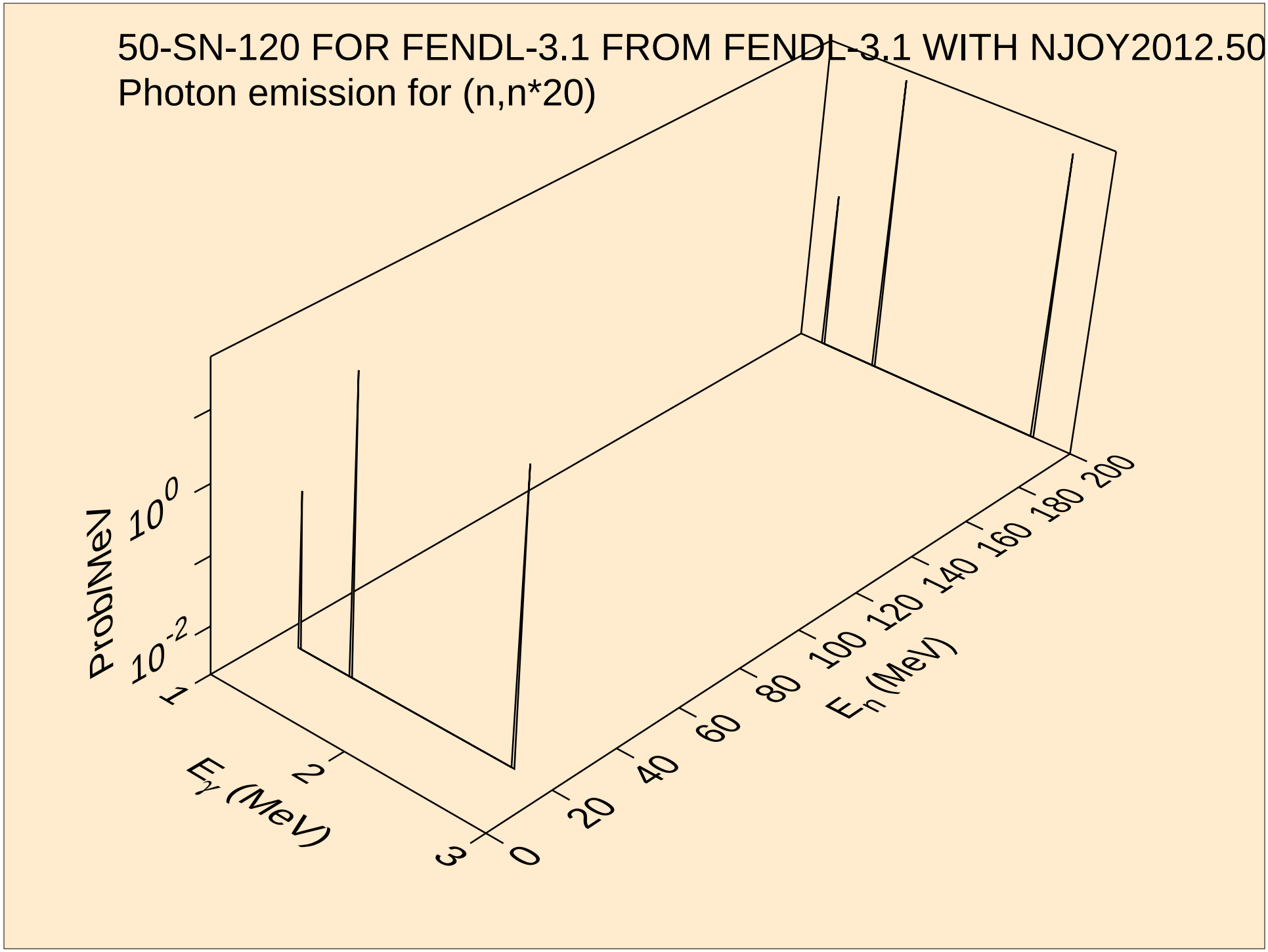

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
Photon emission for (n,n*15)
Prob/MeV
10^0
10^-2
1.0
1.2
1.4
1.6
Eγ (MeV)
0
20
40
60
80
100
120
140
160
180
200
En (MeV)

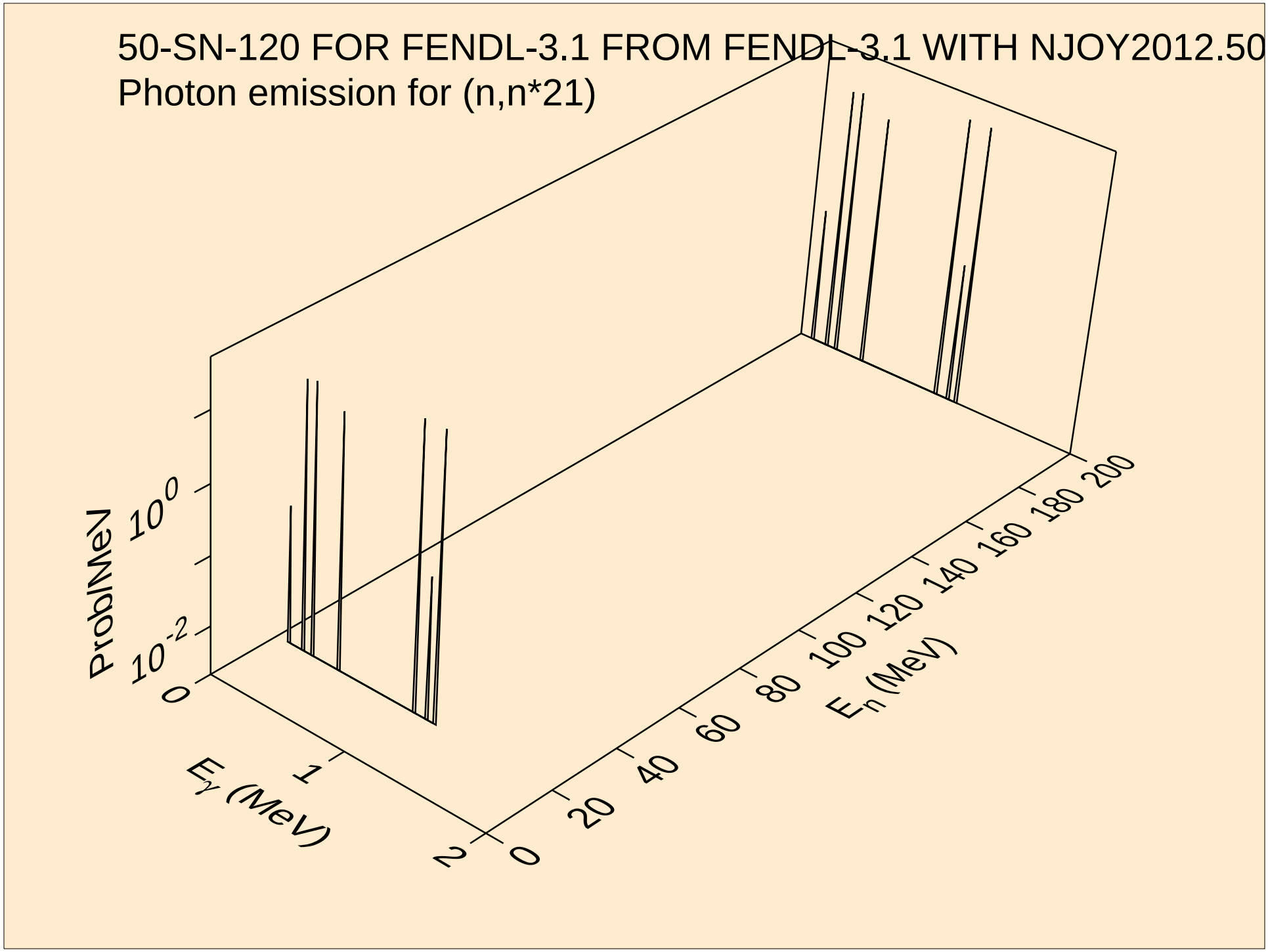

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
Photon emission for (n,n*16)
Prob/MeV
10^{0}
10^{-2}
0
1
2
3
E_γ (MeV)
0
20
40
60
80
100
120
140
160
180
200
E_n (MeV)

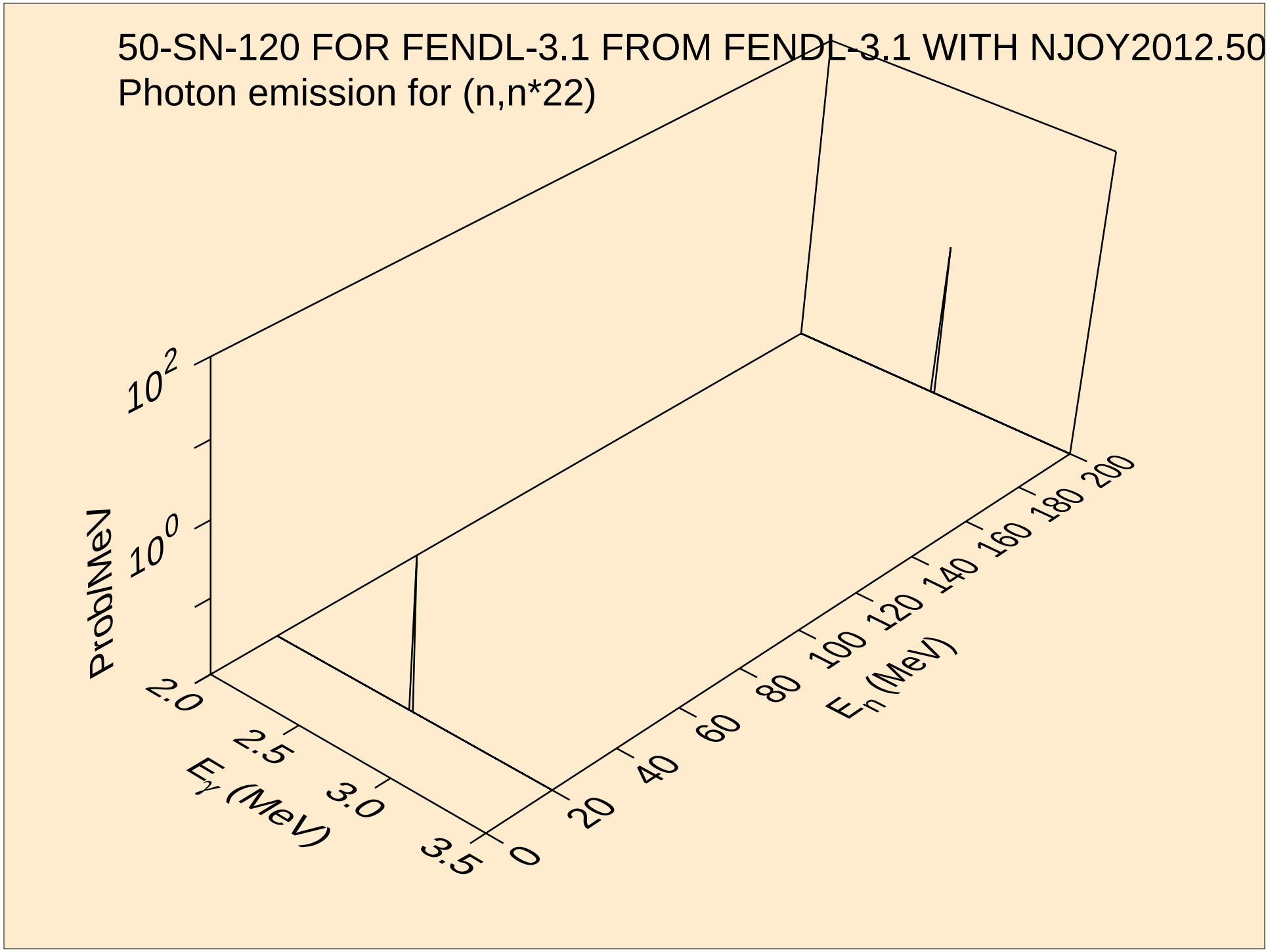

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
Photon emission for (n,n*17)
Prob/MeV
10^{0}
10^{-2}
0
1
2
E_γ (MeV)
0
20
40
60
80
100
120
140
160
180
200
E_n (MeV)

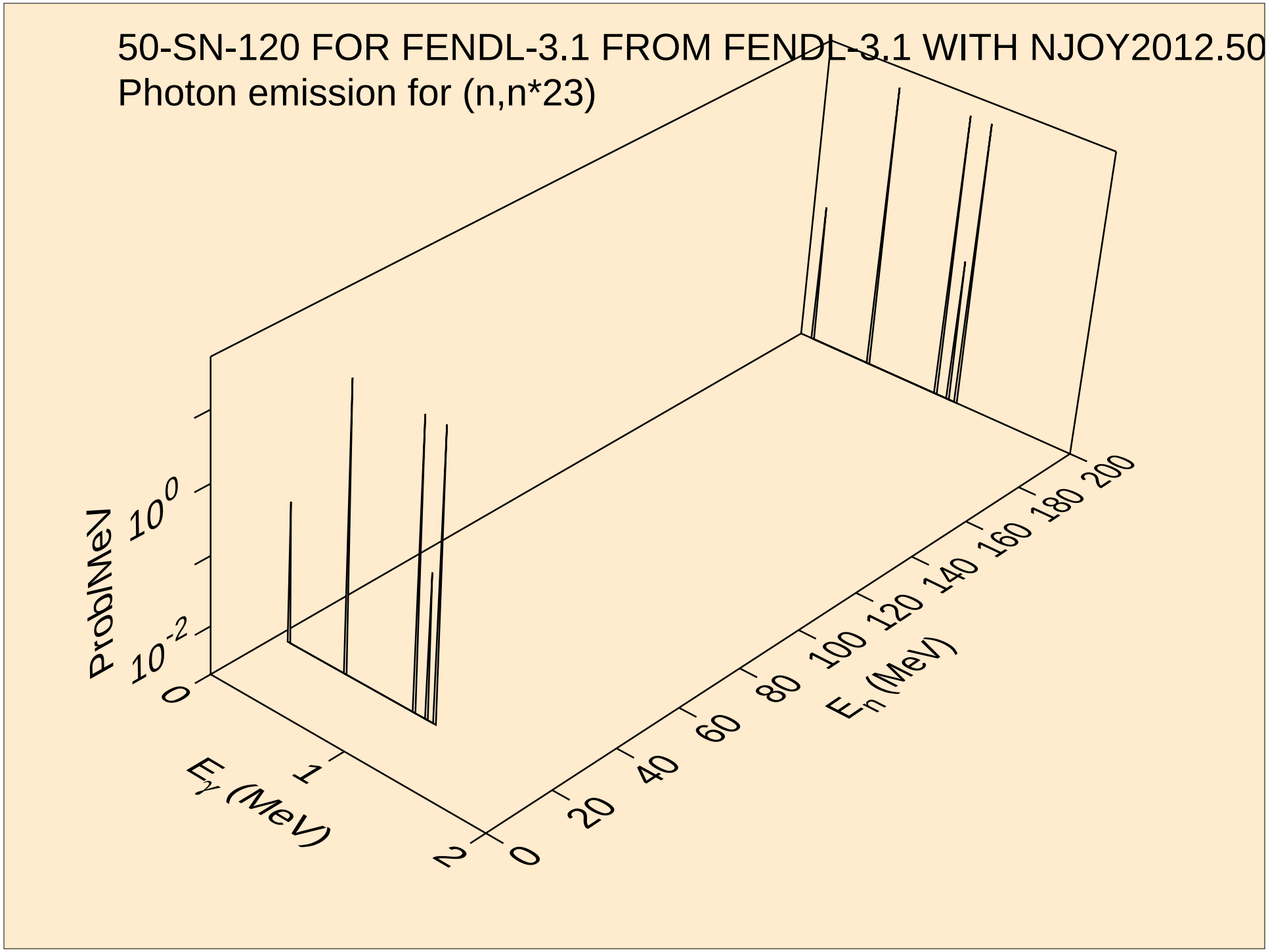

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
Photon emission for (n,n*18)
Prob/MeV
10^2
10^0
2.0
2.5
3.0
E_γ (MeV)
0
20
40
60
80
100
120
140
160
180
200
E_n (MeV)

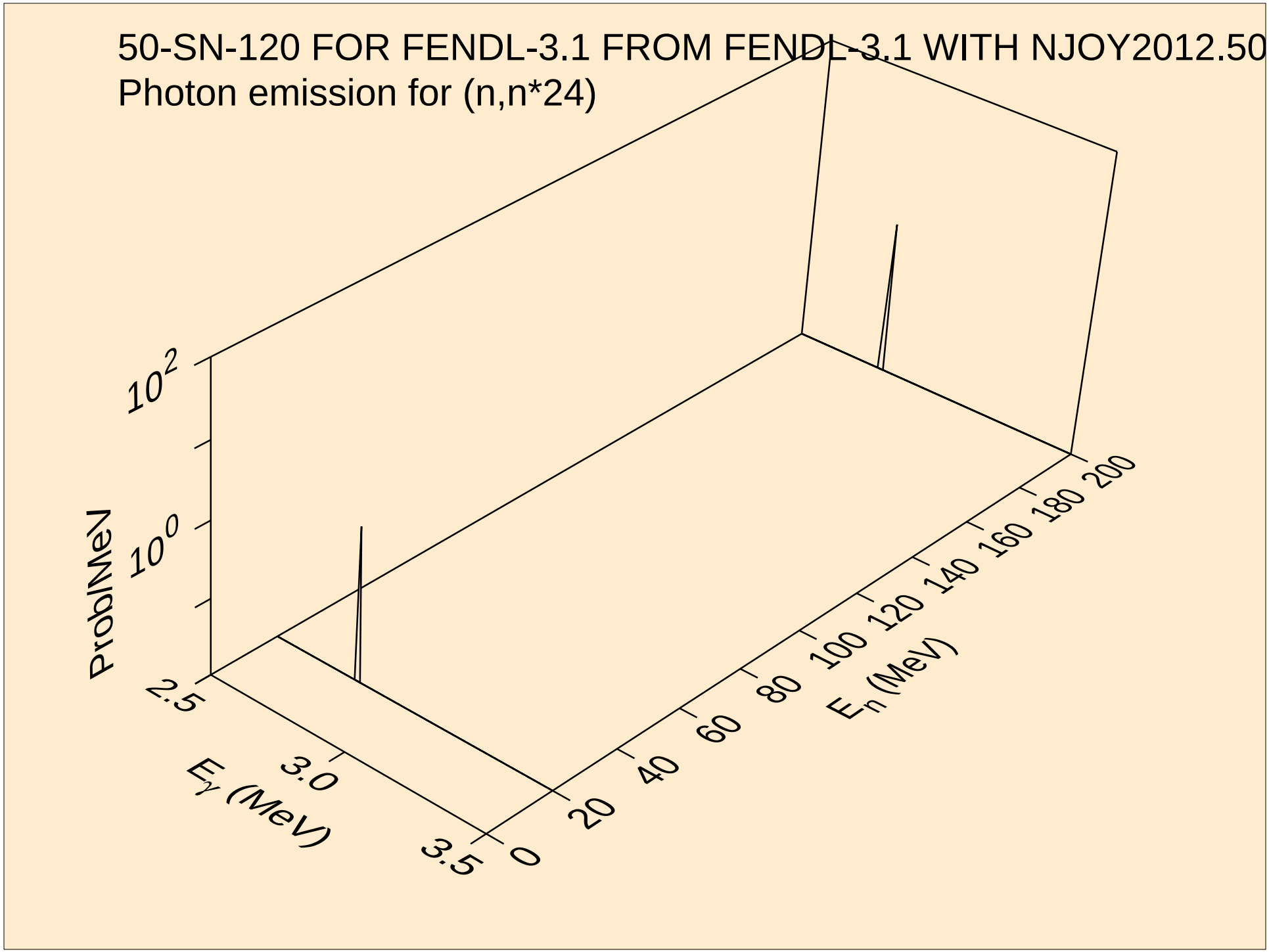

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
Photon emission for (n,n*19)
Prob/MeV
10^{0}
10^{-2}
0
1
2
E_γ (MeV)
0
20
40
60
80
100
120
140
160
180
200
E_n (MeV)

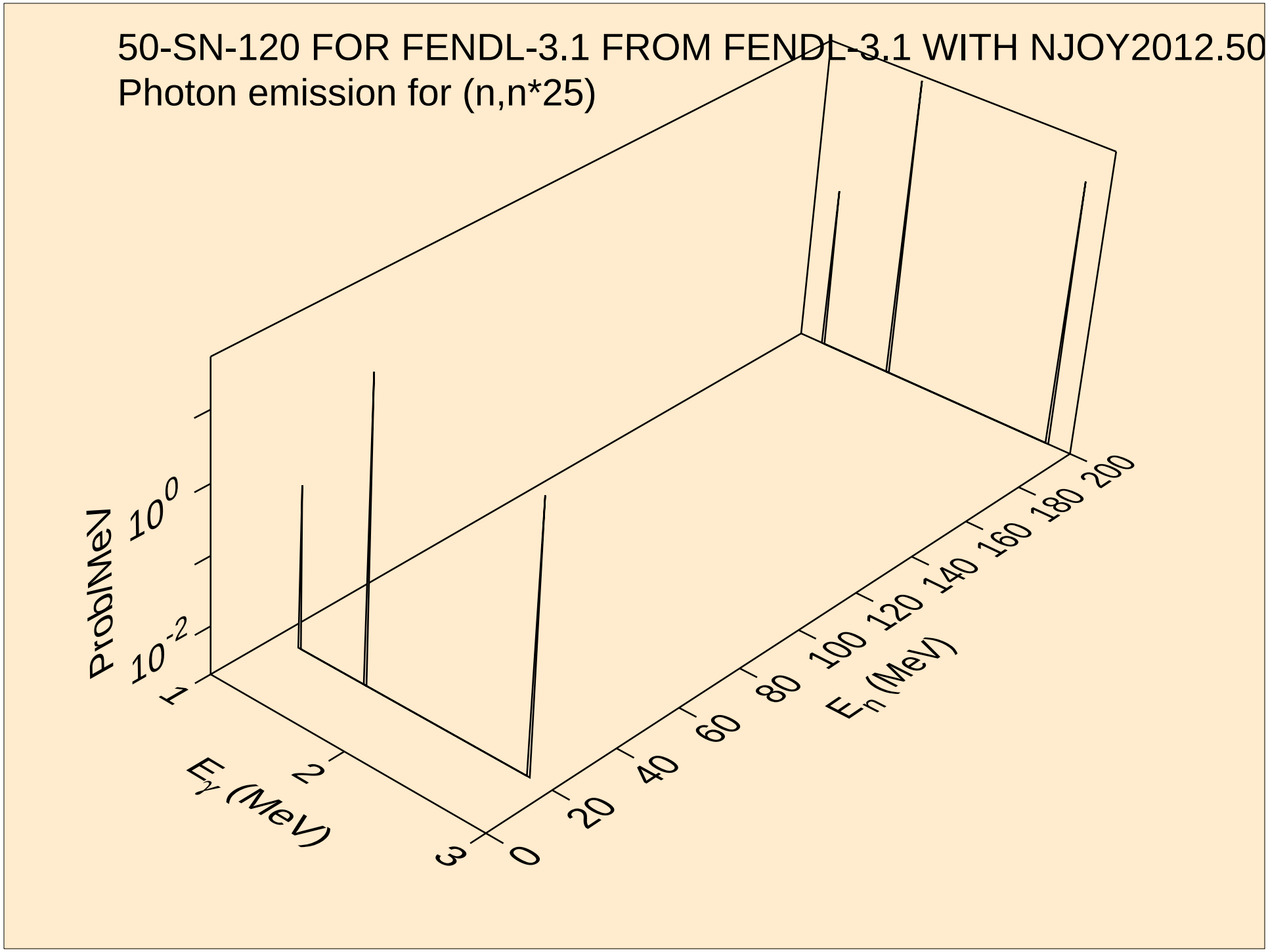

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
Photon emission for (n,n*20)
Prob/MeV
10^{0}
10^{-2}
1
2
3
E_γ (MeV)
0
20
40
60
80
100
120
140
160
180
200
E_n (MeV)

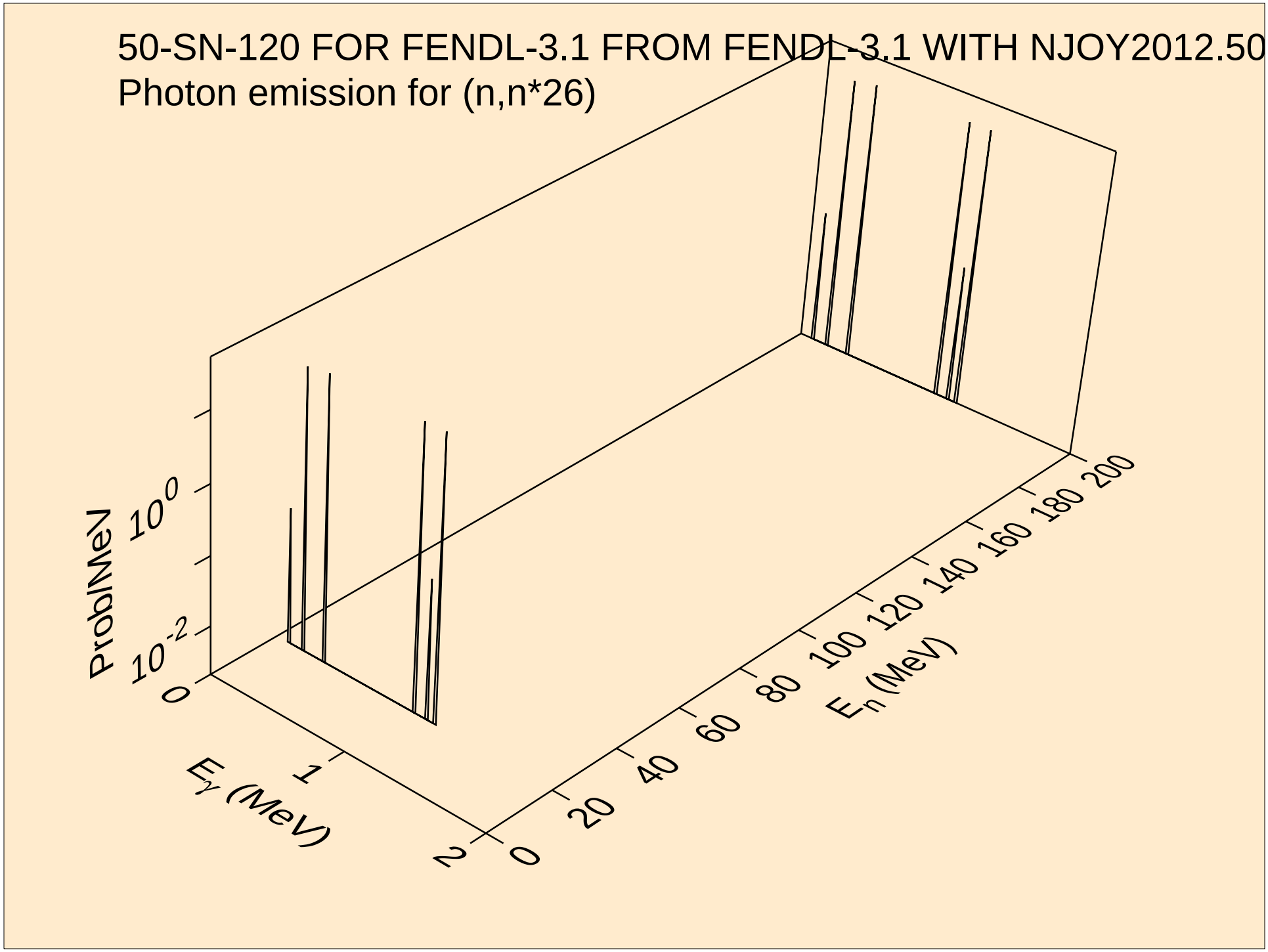

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
Photon emission for (n,n*21)
Prob/MeV
10^0
10^-2
0
1
2
Eγ (MeV)
0
20
40
60
80
100
120
140
160
180
200
En (MeV)

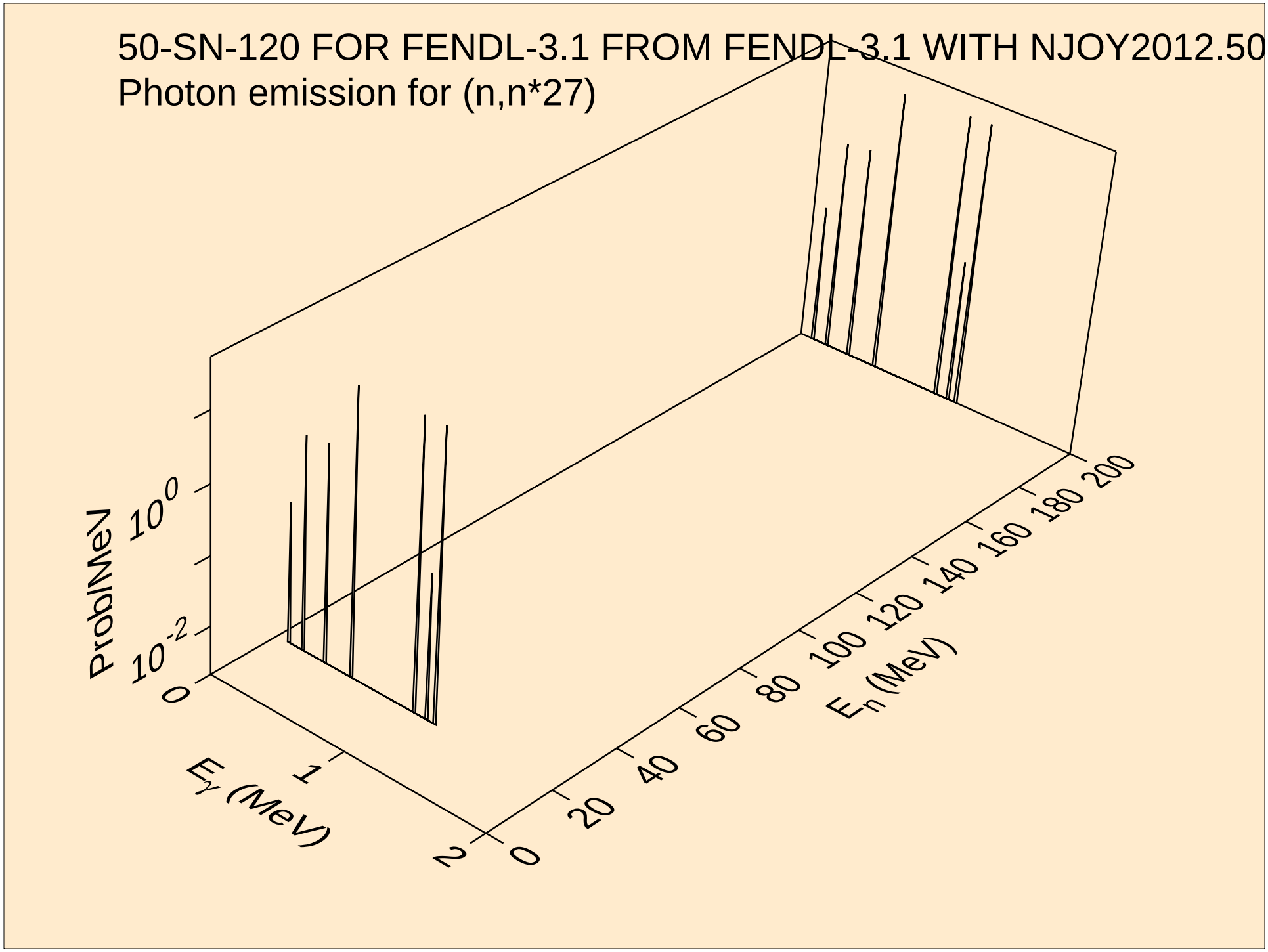

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
Photon emission for (n,n*22)
Prob/MeV
10^2
10^0
2.0
2.5
3.0
3.5
E_γ (MeV)
0
20
40
60
80
100
120
140
160
180
200
E_n (MeV)

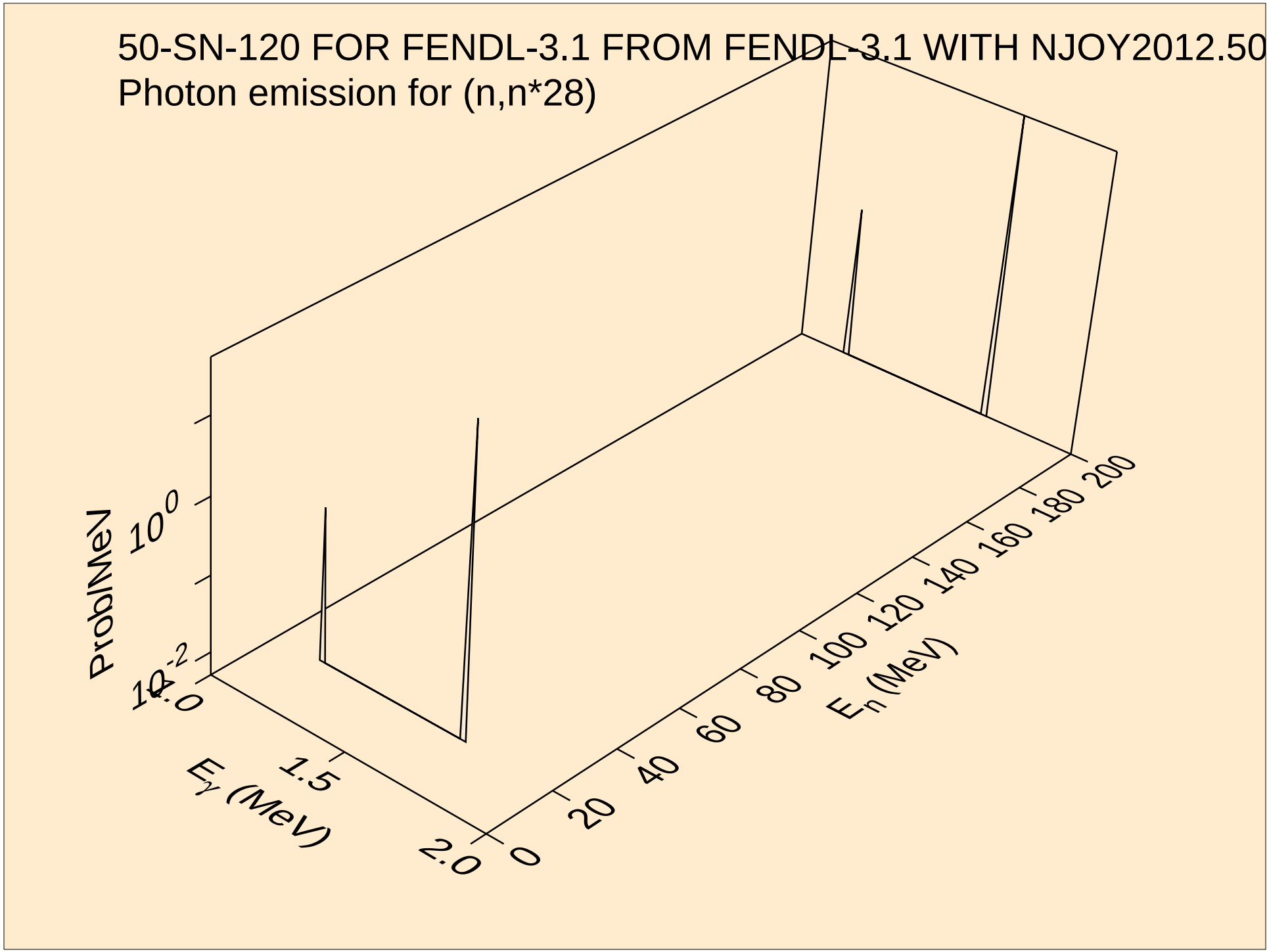

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
Photon emission for (n,n*23)
Prob/MeV
10^{0}
10^{-2}
0
1
2
E_γ (MeV)
0
20
40
60
80
100
120
140
160
180
200
E_n (MeV)

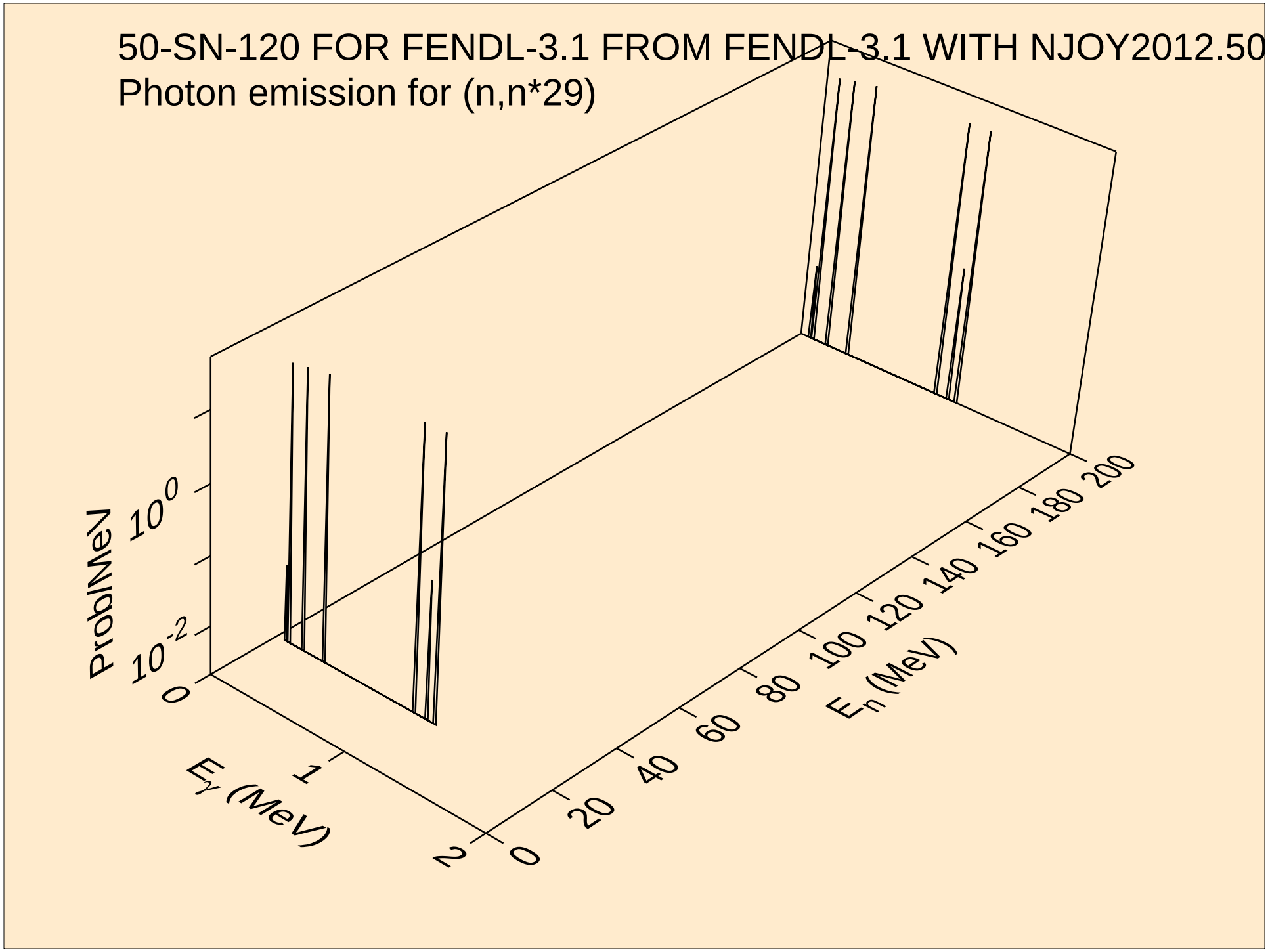

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
Photon emission for (n,n*24)
Prob/MeV
10^2
10^0
2.5
3.0
3.5
E_γ (MeV)
0
20
40
60
80
100
120
140
160
180
200
E_n (MeV)

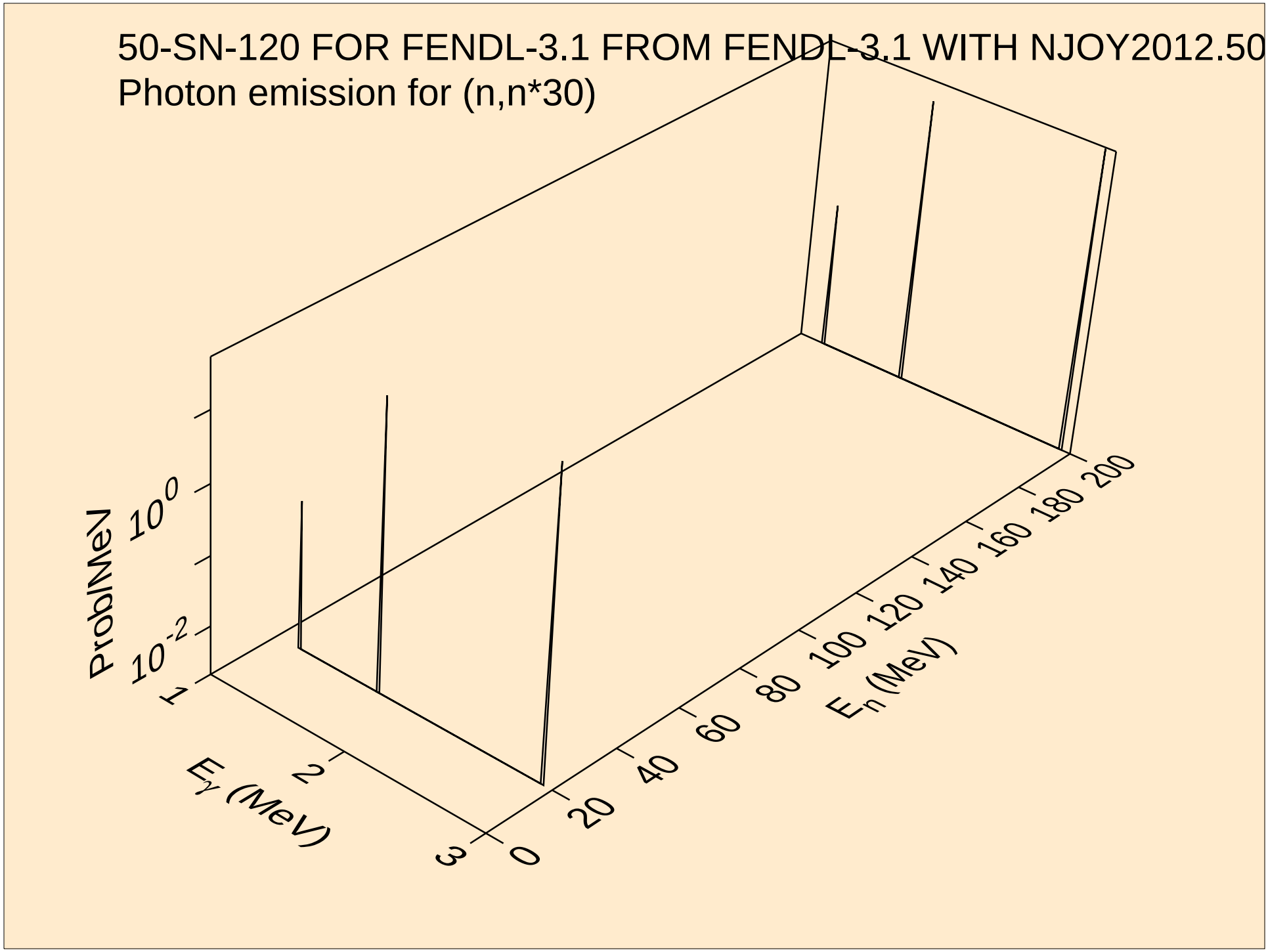

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
Photon emission for (n,n*25)
Prob/MeV
10^{0}
10^{-2}
1
2
3
E_γ (MeV)
0
20
40
60
80
100
120
140
160
180
200
E_n (MeV)

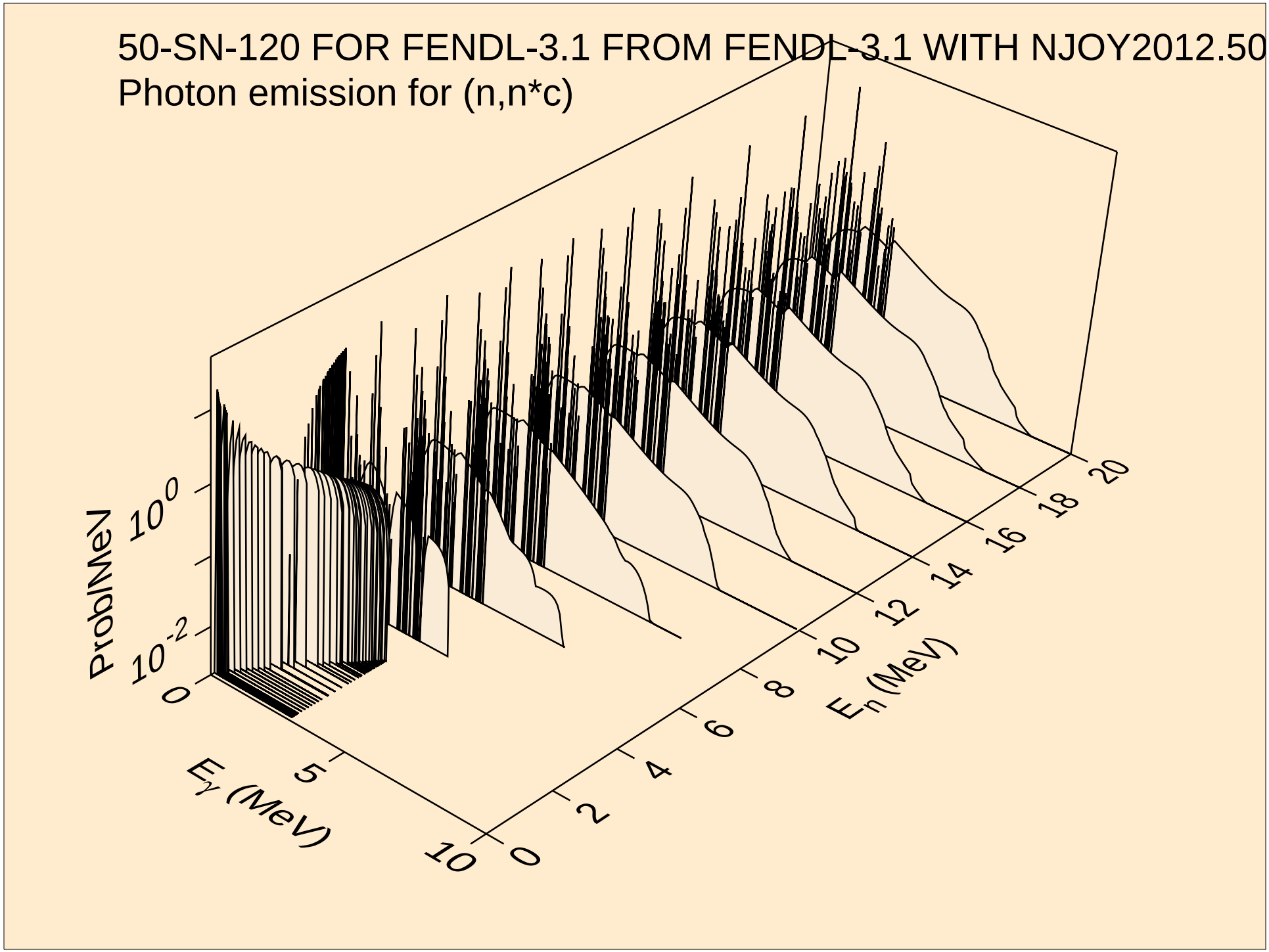

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
Photon emission for (n,n*26)
Prob/MeV
10^{0}
10^{-2}
0
1
2
E_γ (MeV)
0
20
40
60
80
100
120
140
160
180
200
E_n (MeV)

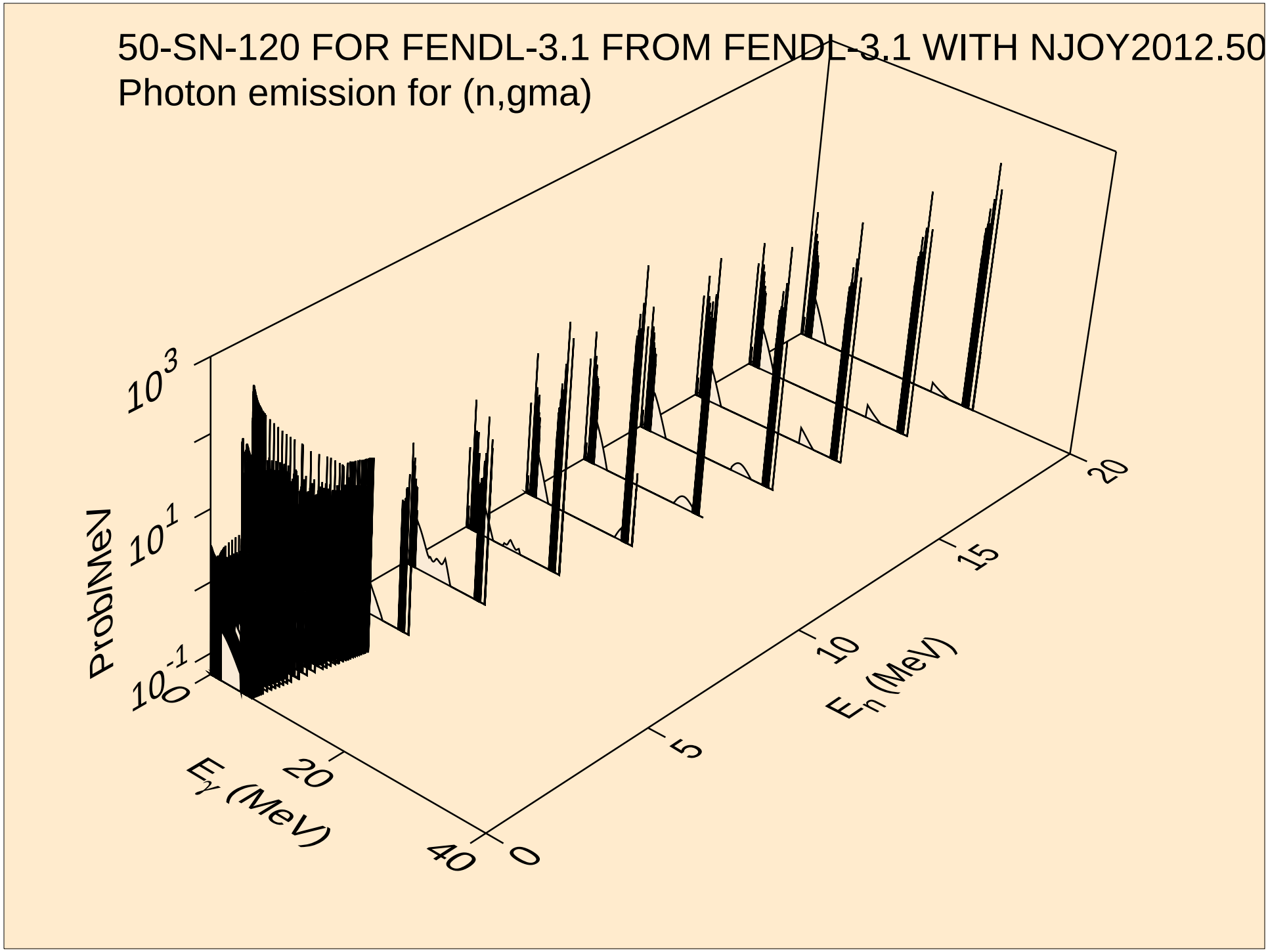

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
Photon emission for (n,n*27)
Prob/MeV
10^0
10^-2
0
1
2
Eγ (MeV)
0
20
40
60
80
100
120
140
160
180
200
En (MeV)

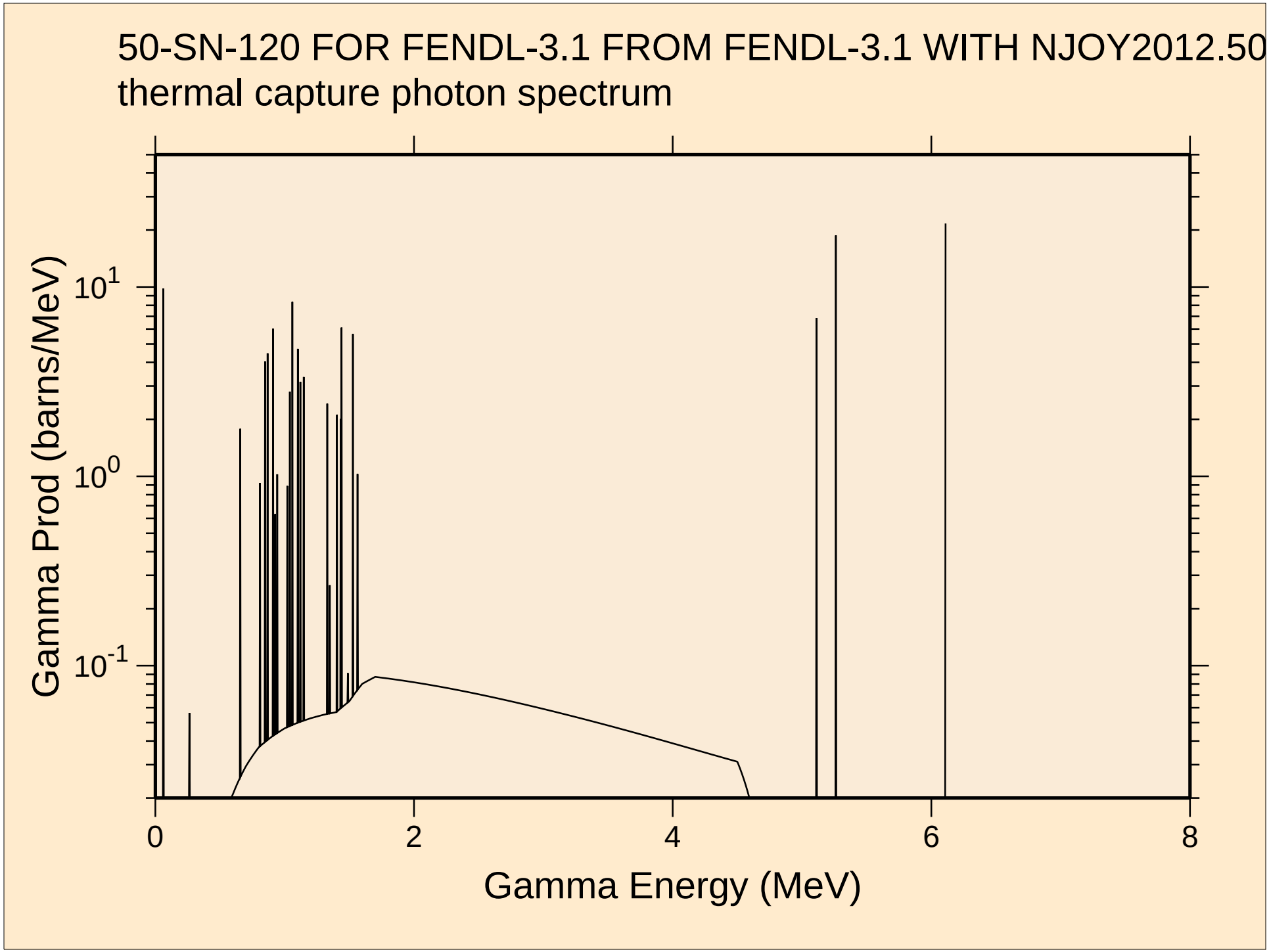

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
Photon emission for (n,n*28)
Prob/MeV
10^0
10^-2
0.0
1.5
2.0
Eγ (MeV)
0
20
40
60
80
100
120
140
160
180
200
En (MeV)

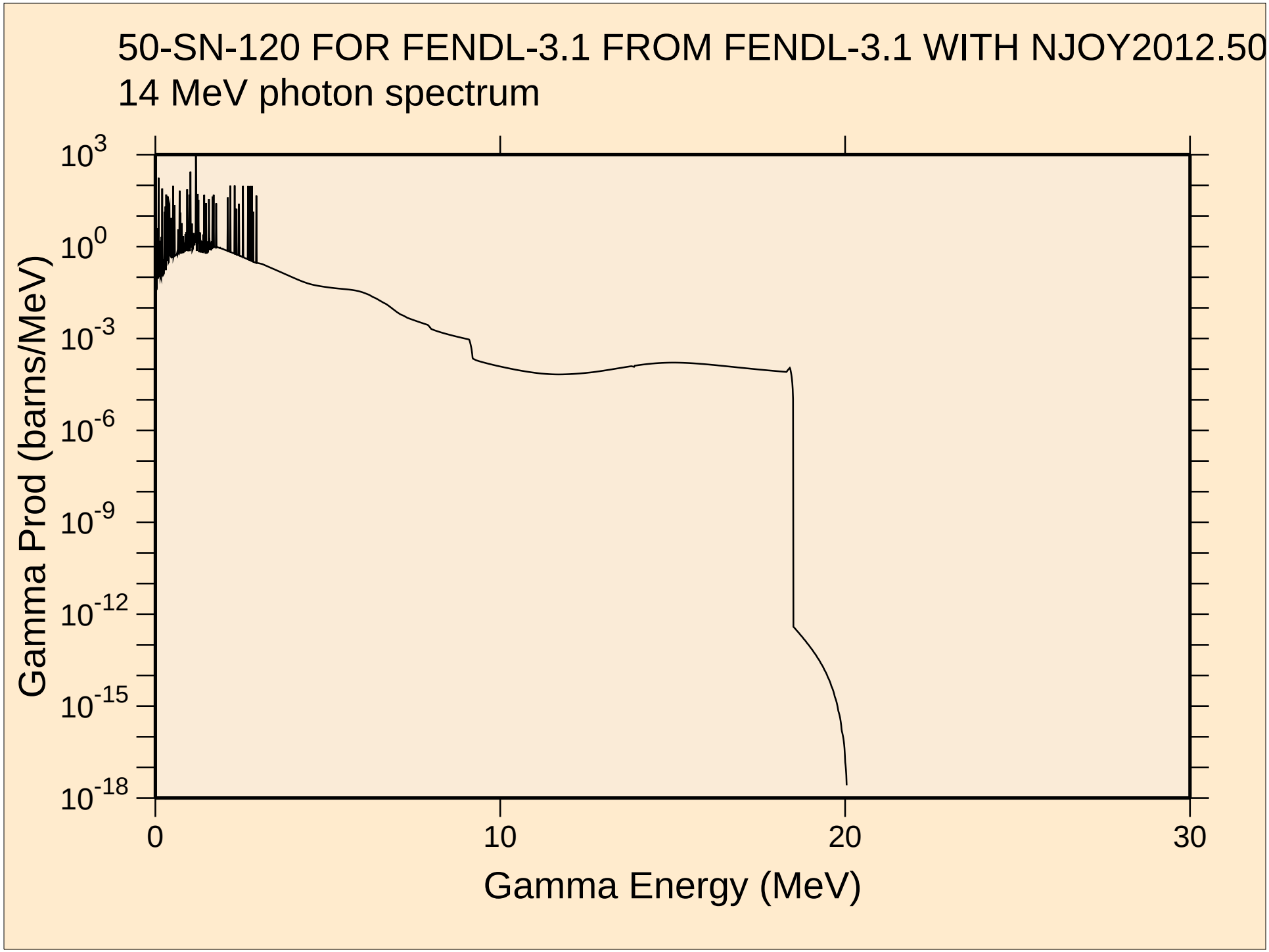

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
Photon emission for (n,n*29)
Prob/MeV
10^{0}
10^{-2}
0
1
2
E_γ (MeV)
0
20
40
60
80
100
120
140
160
180
200
E_n (MeV)

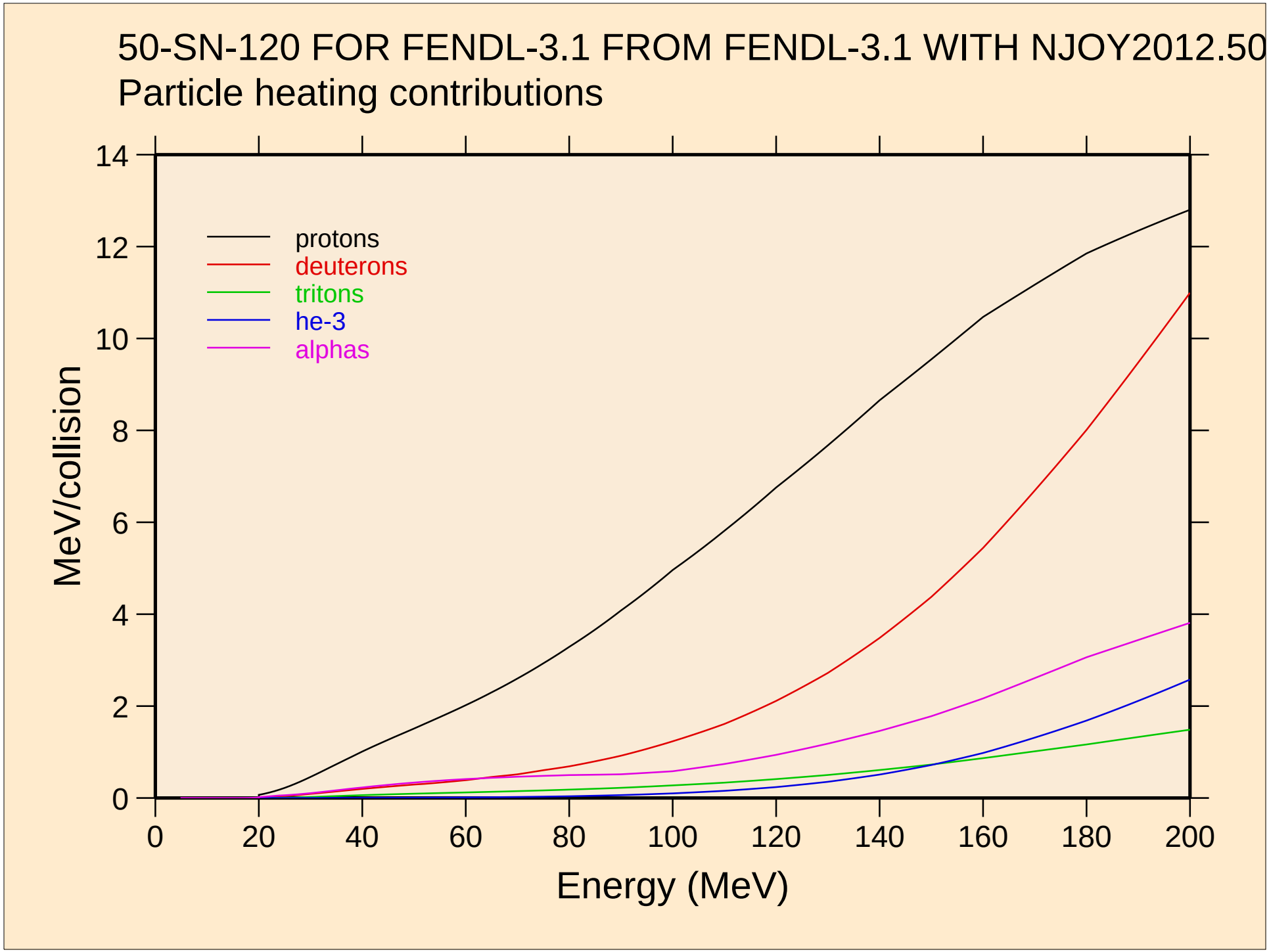

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
Photon emission for (n,n*30)
Prob/MeV
10^{0}
10^{-2}
1
2
3
E_γ (MeV)
0
20
40
60
80
100
120
140
160
180
200
E_n (MeV)

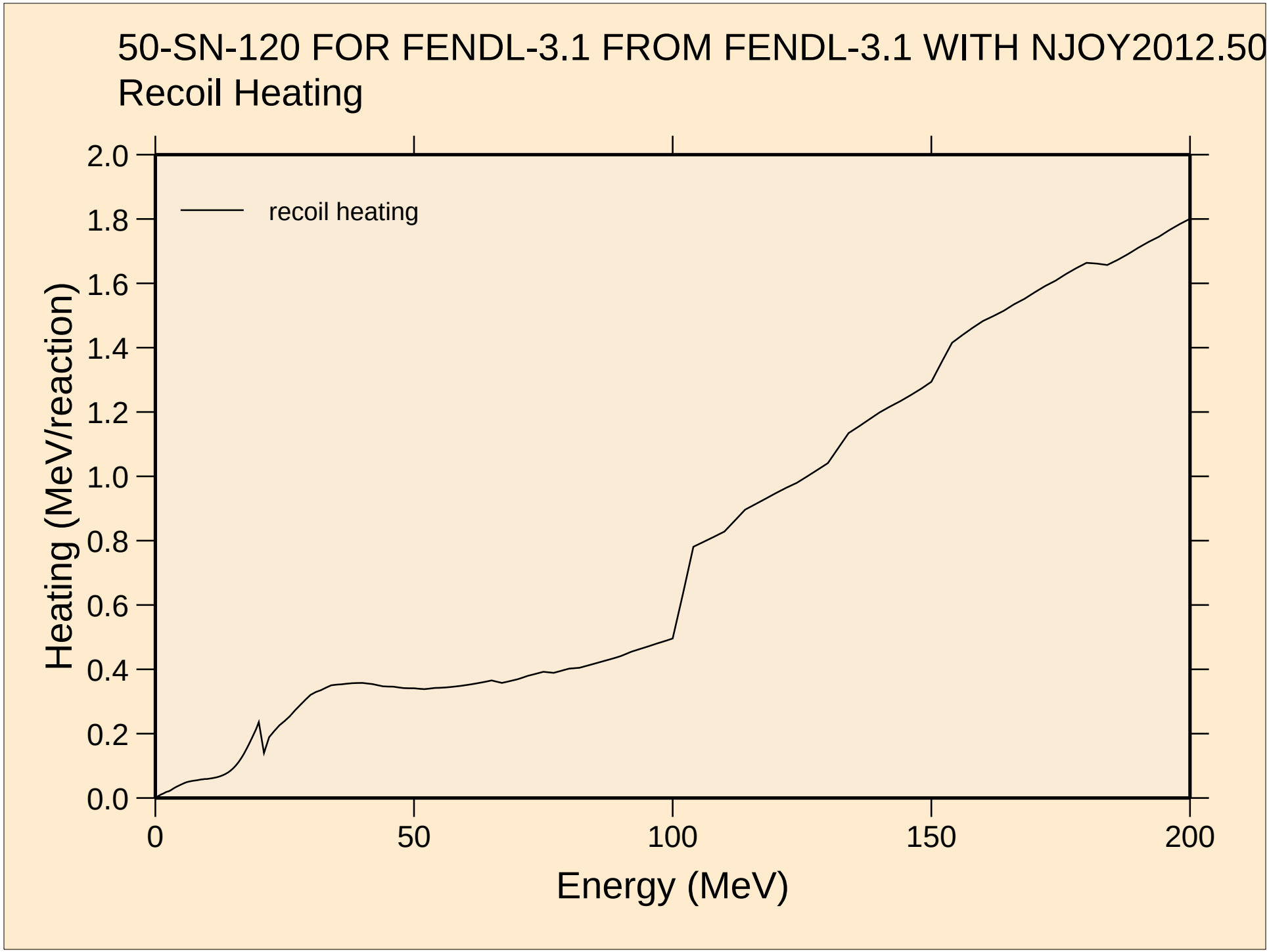

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
Photon emission for (n,n*c)
Prob/MeV
10^{0}
10^{-2}
0
E_γ (MeV)
5
10
0
2
4
6
8
10
12
14
16
18
20
E_n (MeV)

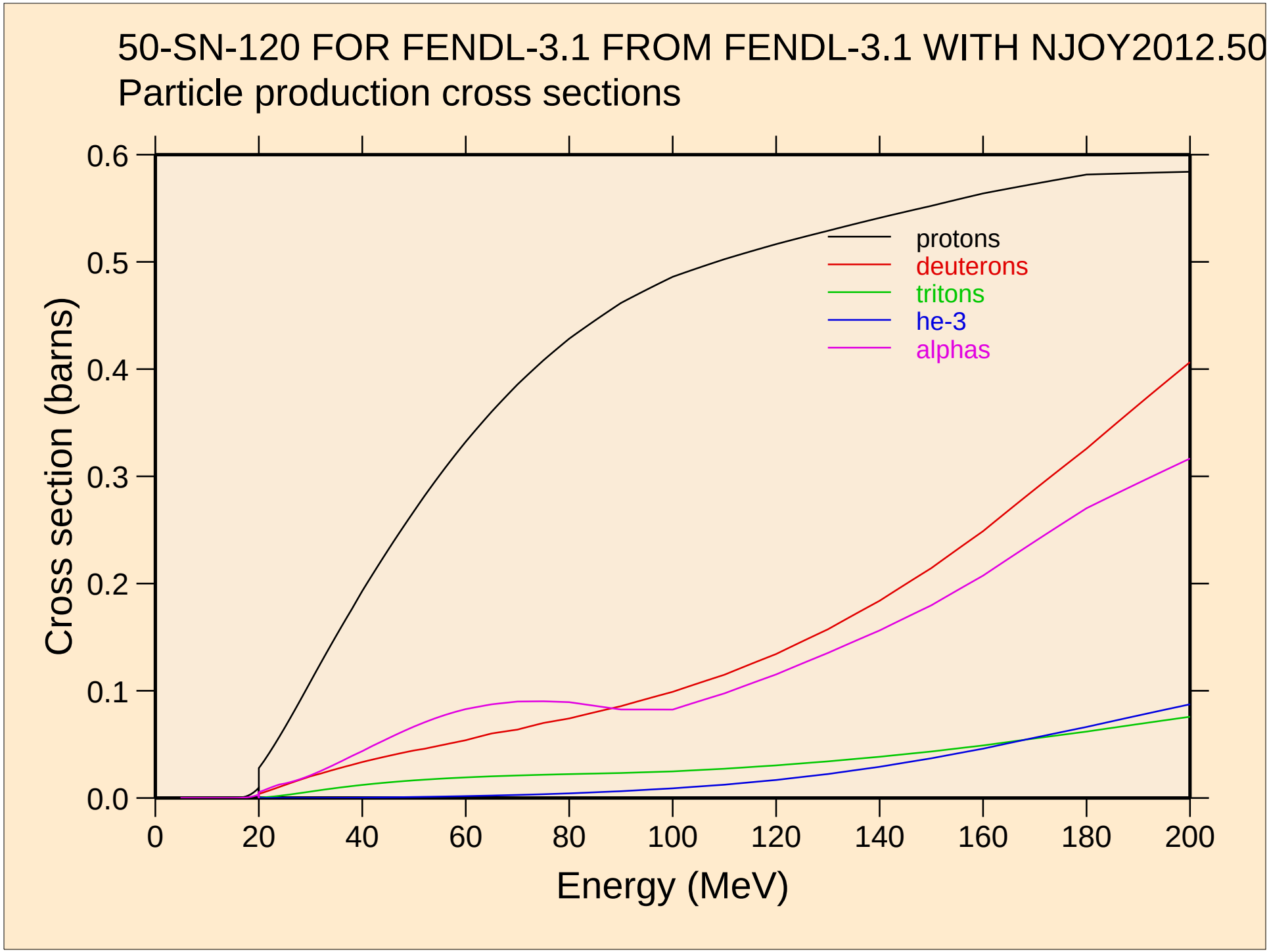

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
Photon emission for (n,gma)
Prob/MeV
10^{3}
10^{1}
10^{-1}
0
20
40
E_γ (MeV)
0
5
10
15
20
E_n (MeV)

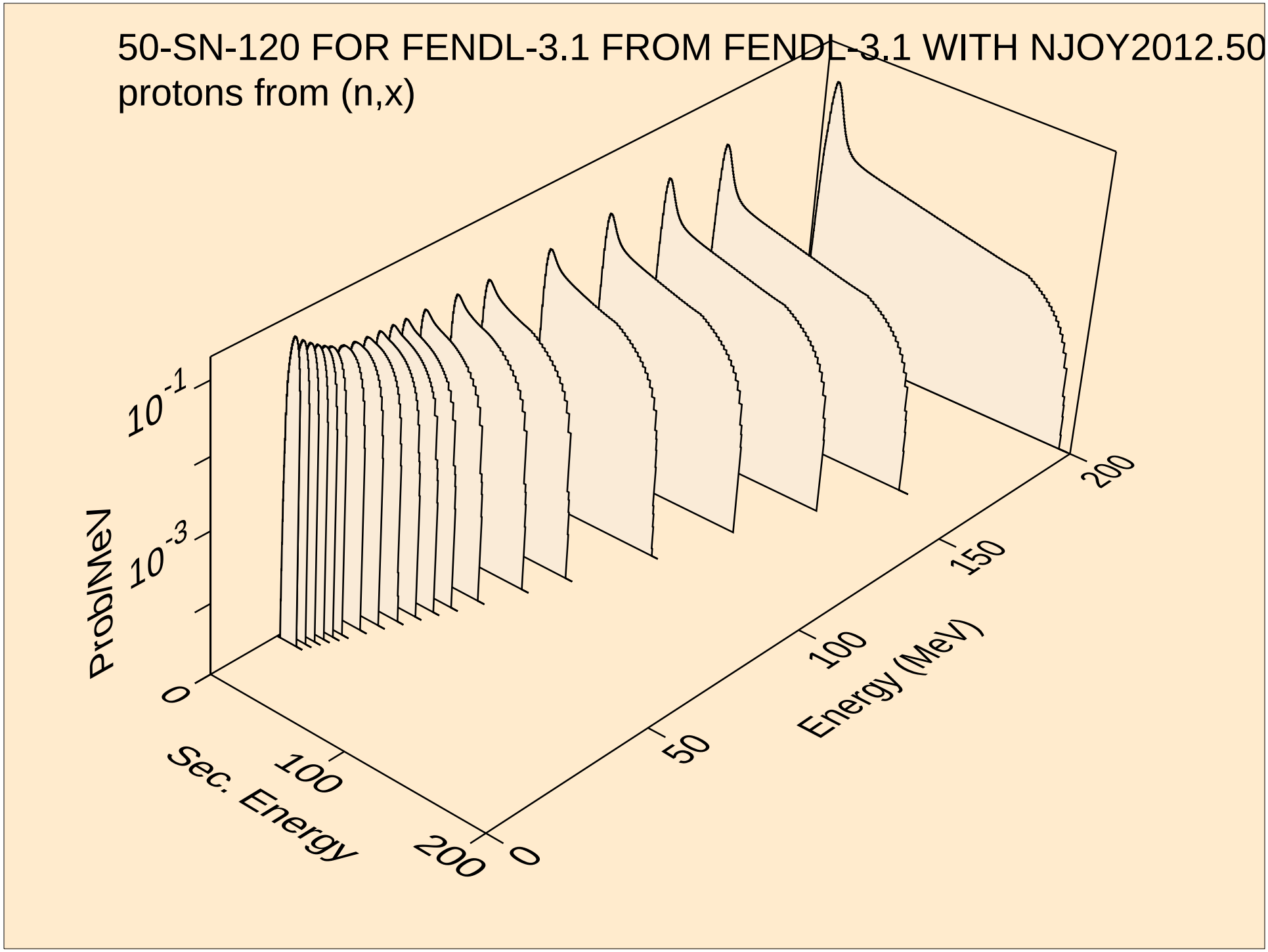

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
thermal capture photon spectrum
Gamma Prod (barns/MeV)
10^1
10^0
10^-1
0
2
4
6
8
Gamma Energy (MeV)

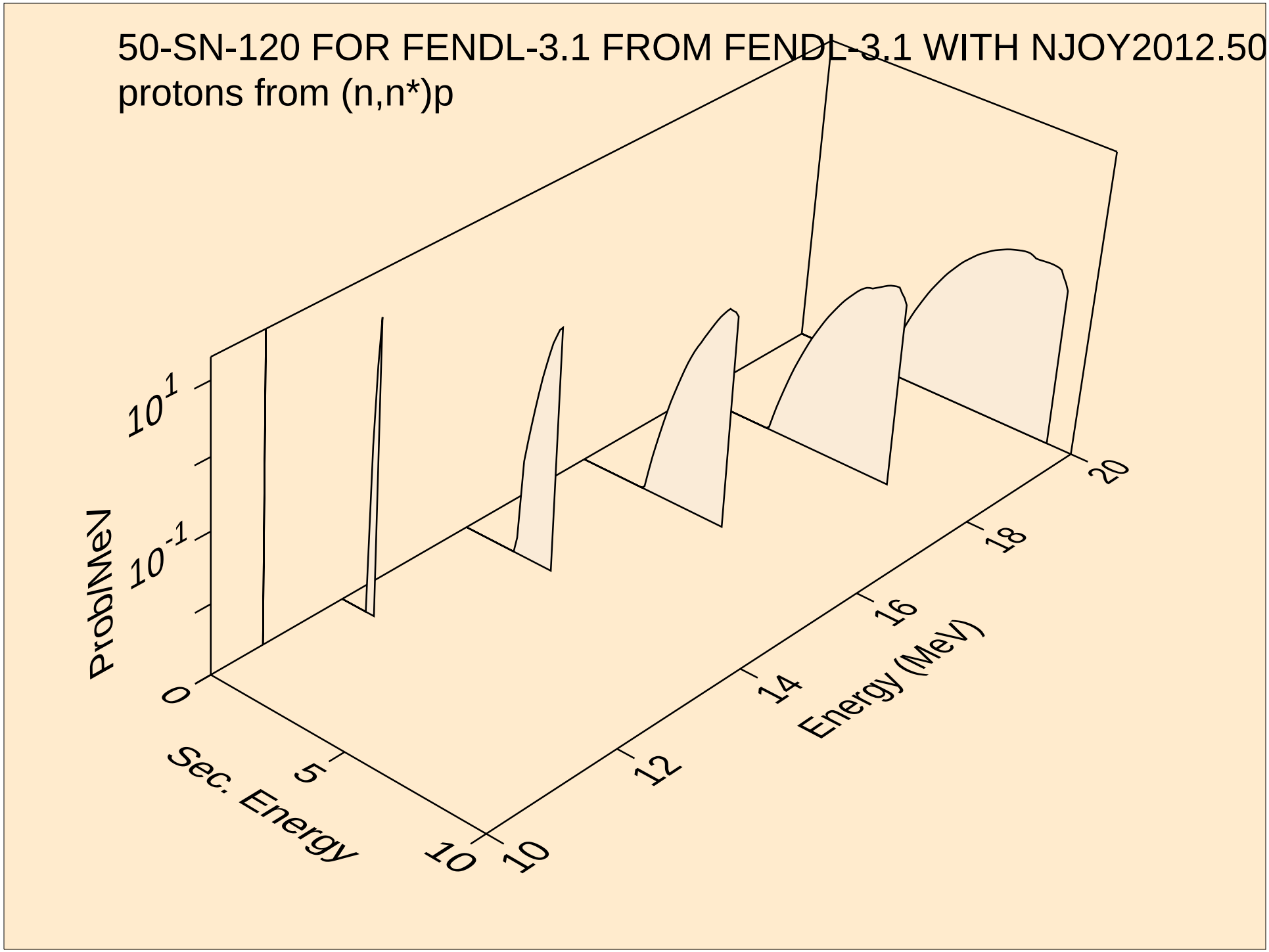

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
14 MeV photon spectrum
Gamma Prod (barns/MeV)
10^3
10^0
10^-3
10^-6
10^-9
10^-12
10^-15
10^-18
0
10
20
30
Gamma Energy (MeV)

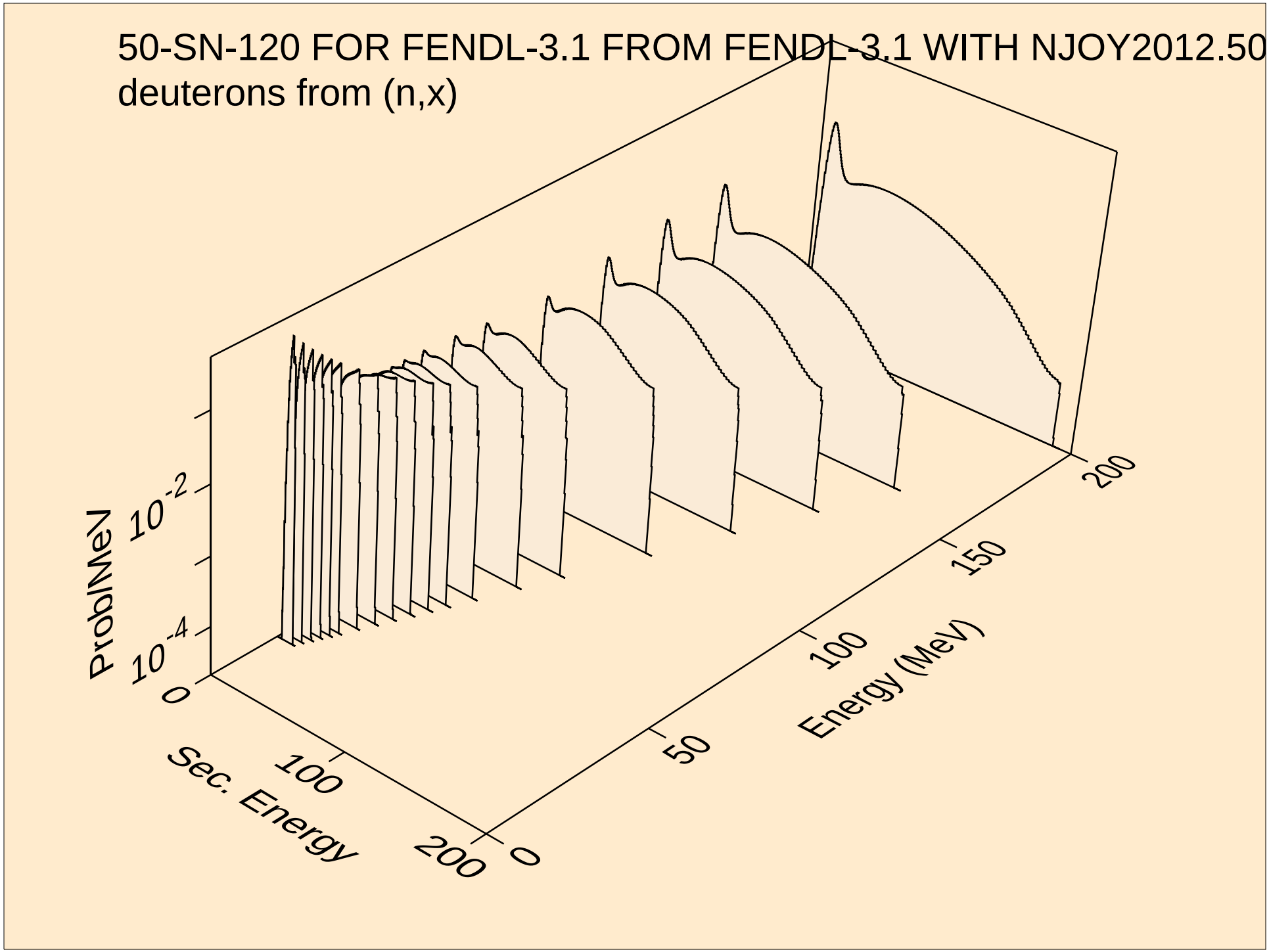

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
Particle heating contributions
protons
deuterons
tritons
he-3
alphas
MeV/collision
Energy (MeV)
0
2
4
6
8
10
12
14
0
20
40
60
80
100
120
140
160
180
200

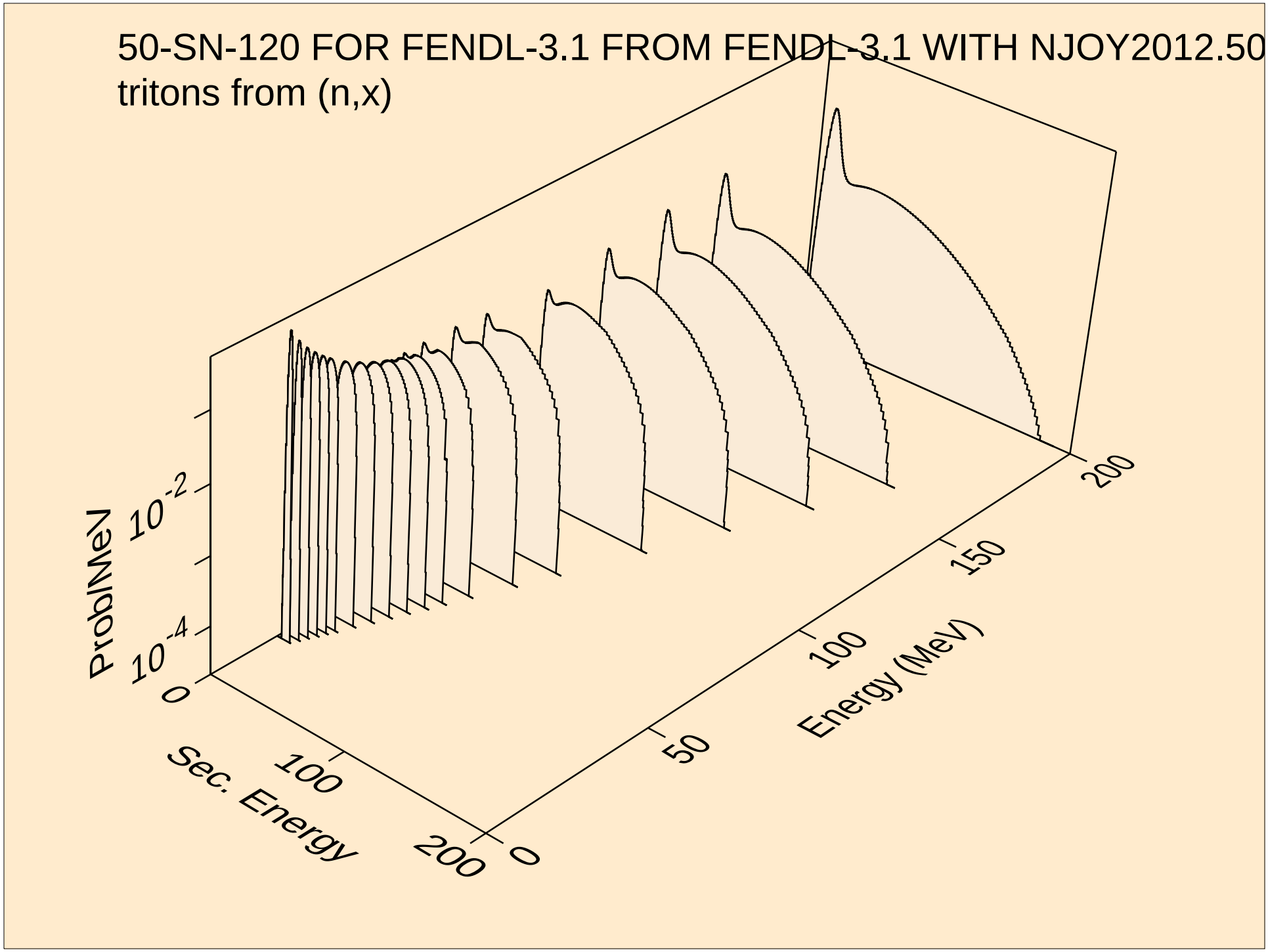

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
Recoil Heating
recoil heating
Heating (MeV/reaction)
Energy (MeV)
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
1.6
1.8
2.0
0
50
100
150
200

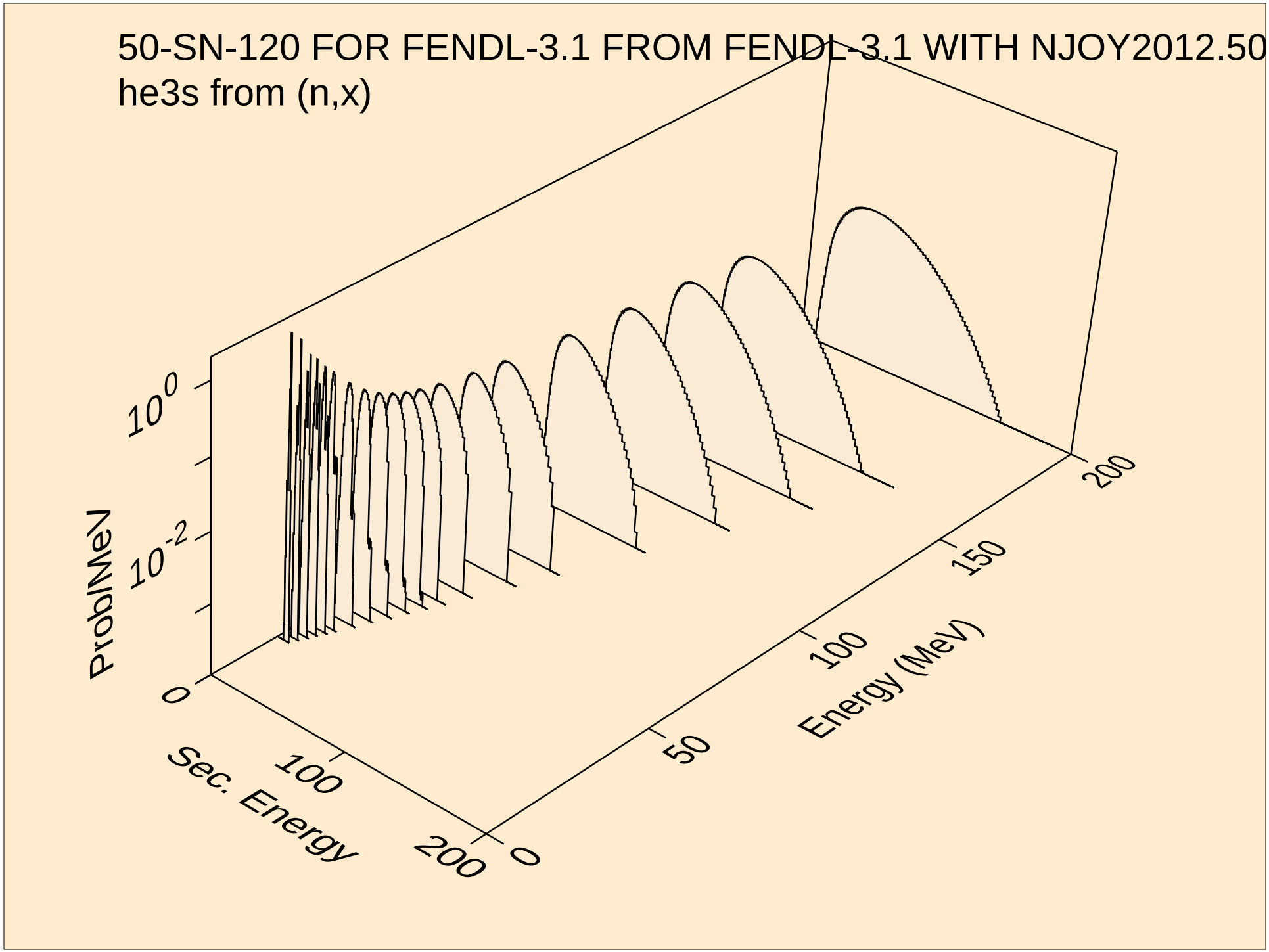

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
Particle production cross sections
Cross section (barns)
Energy (MeV)
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0
20
40
60
80
100
120
140
160
180
200
protons
deuterons
tritons
he-3
alphas

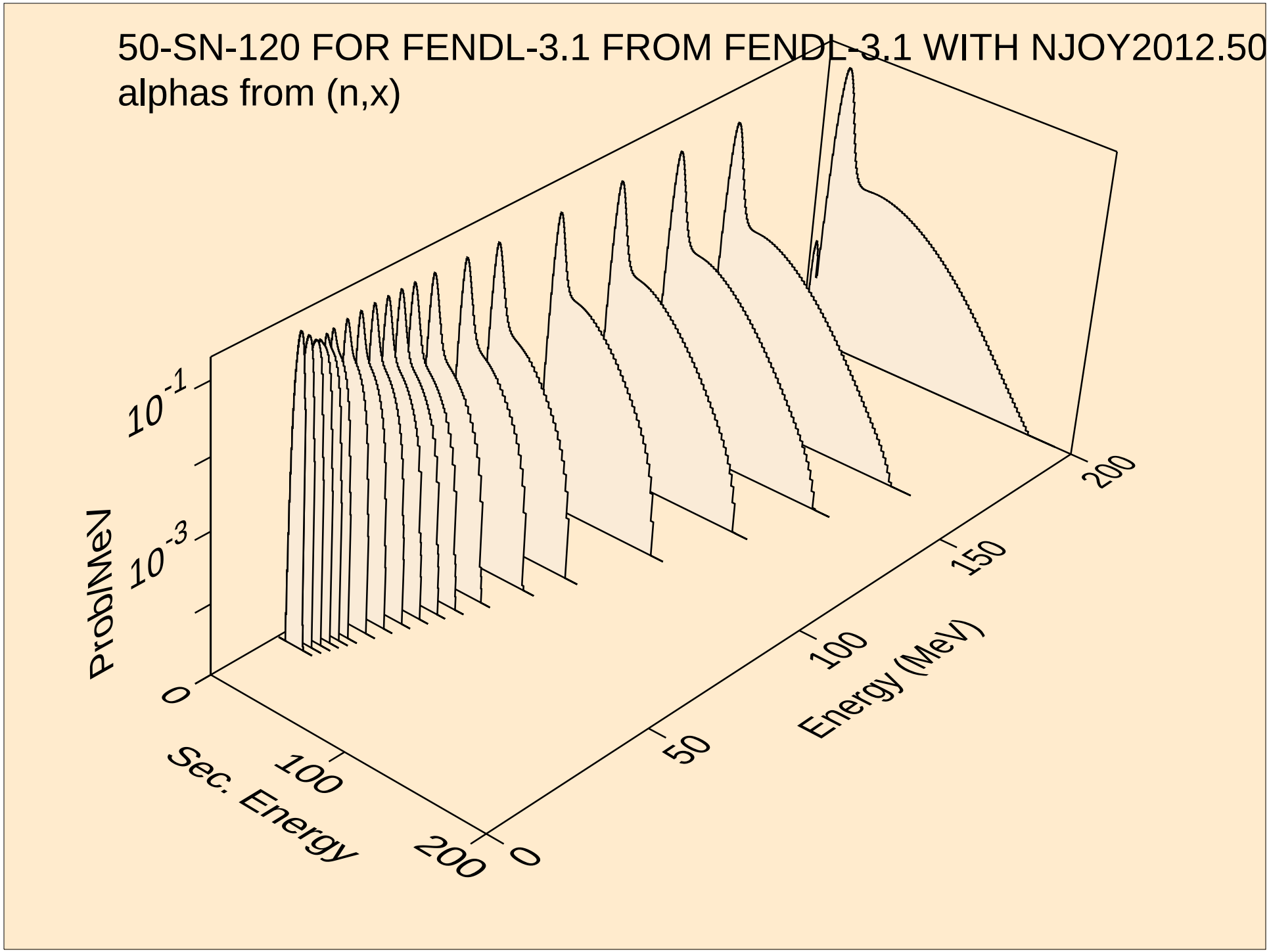

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
protons from (n,x)
Prob/MeV
10-1
10-3
0
Sec. Energy
100
200
0
50
100
150
200
Energy (MeV)

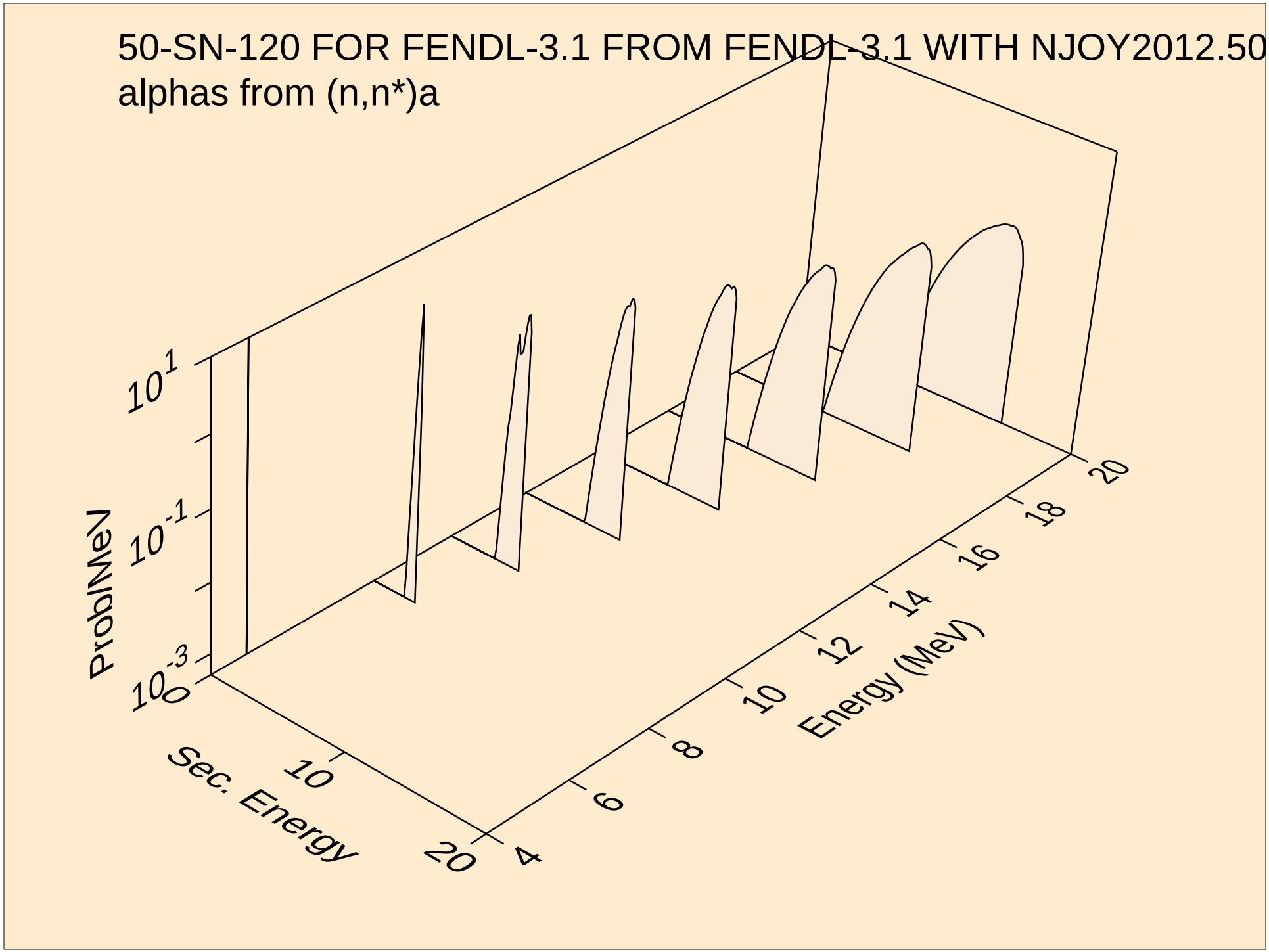

50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
protons from (n,n*)p
Prob/MeV
10^1
10^-1
0
Sec. Energy
5
10
10
12
14
Energy (MeV)
16
18
20


50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
deuterons from (n,x)
Prob/MeV
10-2
10-4
0
100
200
Sec. Energy
0
50
100
150
200
Energy (MeV)


50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
tritons from (n,x)
Prob/MeV
10-2
10-4
0
Sec. Energy
100
200
0
50
100
150
200
Energy (MeV)


50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
he3s from (n,x)
Prob/MeV
10^{0}
10^{-2}
0
Sec. Energy
100
200
0
50
100
150
200
Energy (MeV)


50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
alphas from (n,x)
Prob/MeV
10-1
10-3
0
100
200
Sec. Energy
0
50
100
150
200
Energy (MeV)


50-SN-120 FOR FENDL-3.1 FROM FENDL-3.1 WITH NJOY2012.50
alphas from (n,n*)a
Prob/MeV
10^{1}
10^{-1}
10^{-3}
0
10
20
Sec. Energy
4
6
8
10
12
14
16
18
20
Energy (MeV)