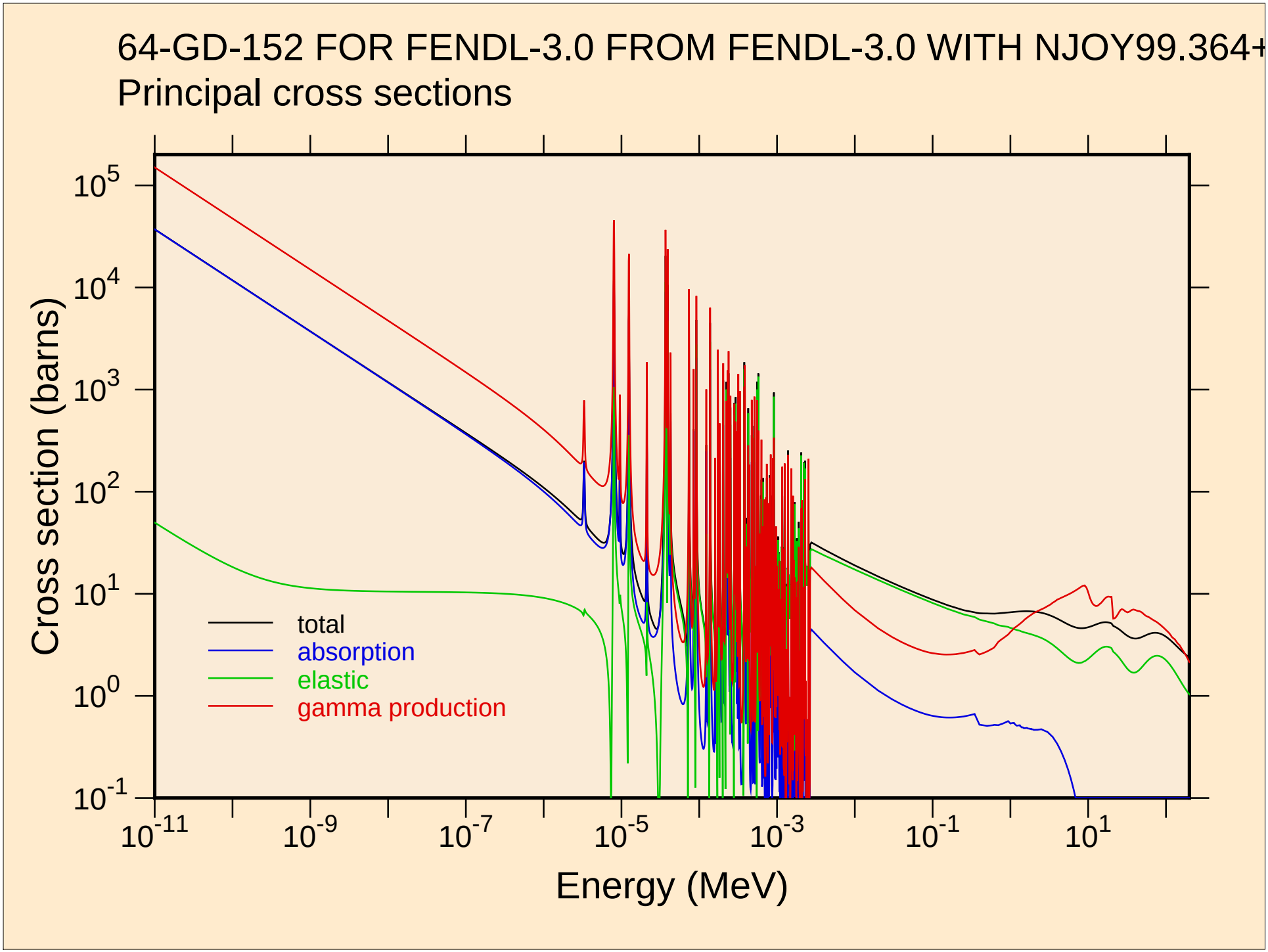
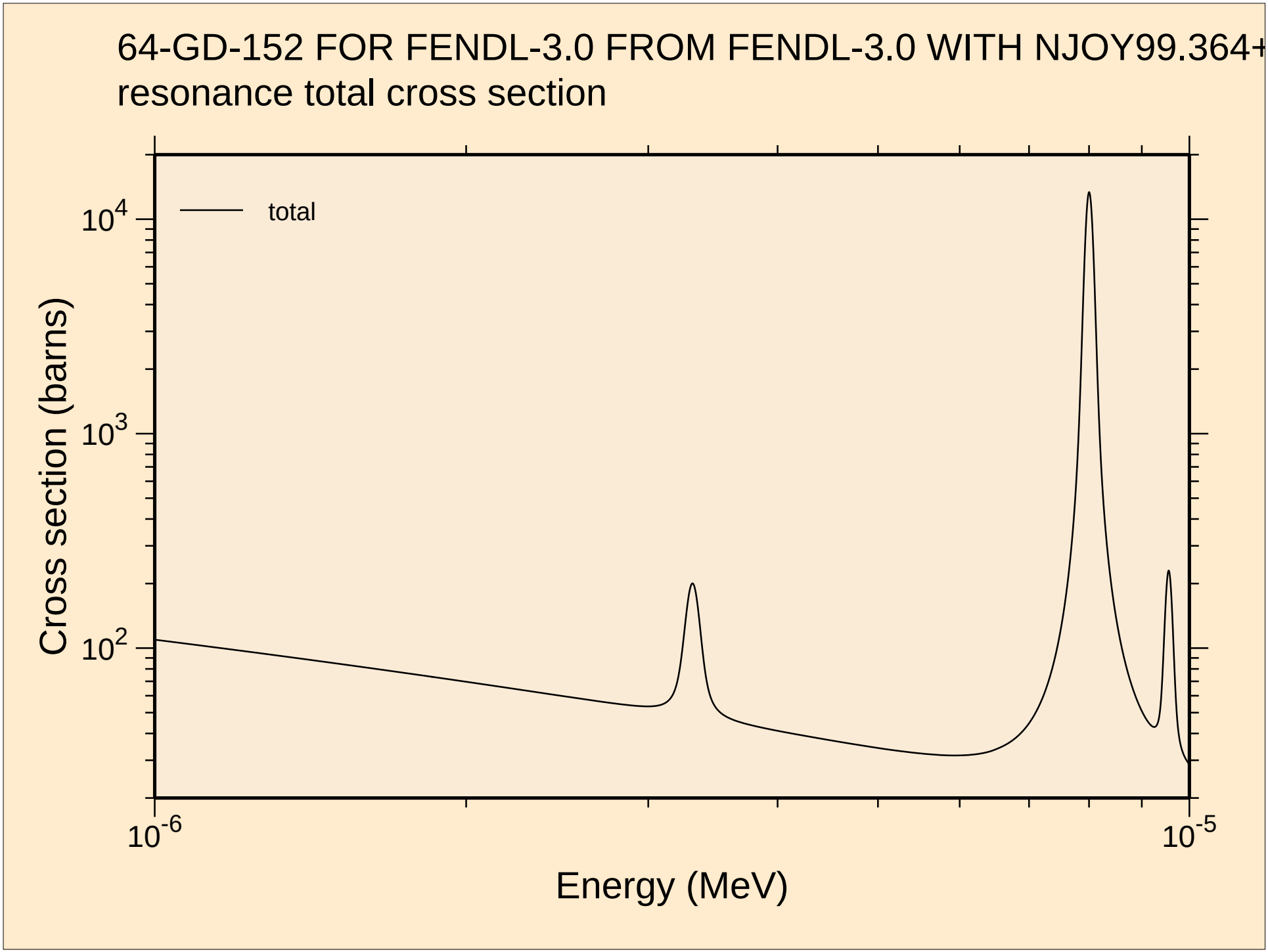
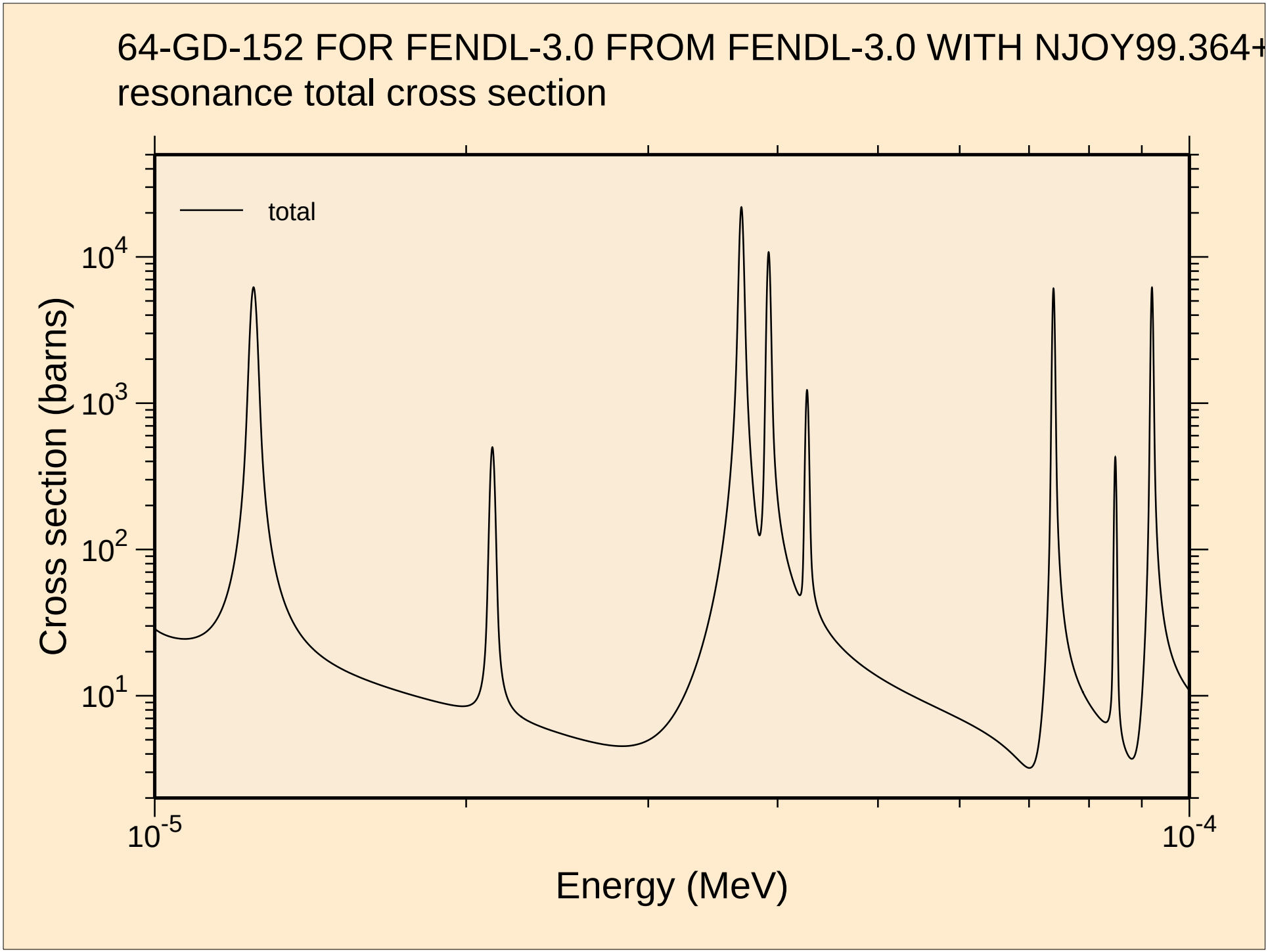
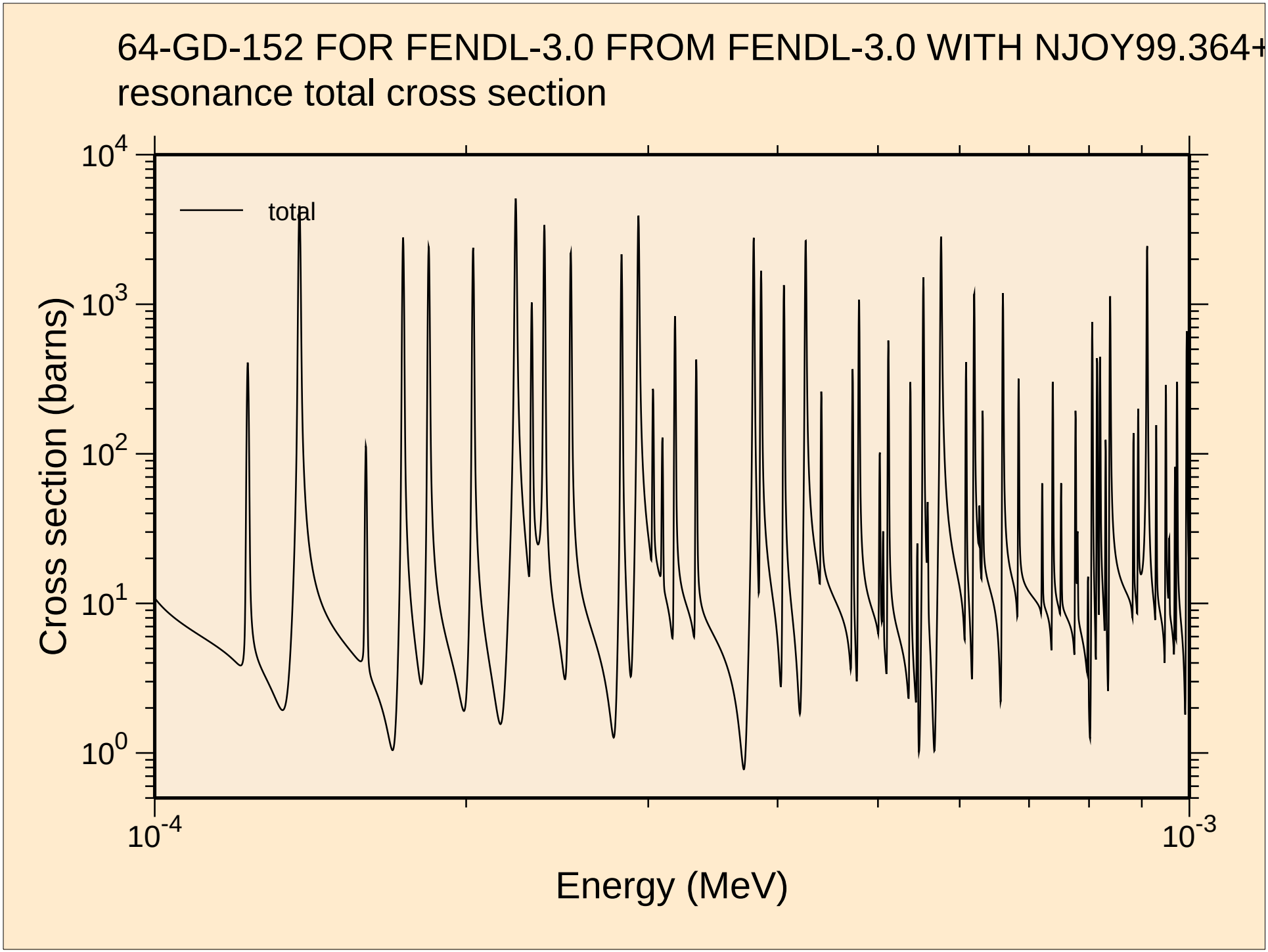
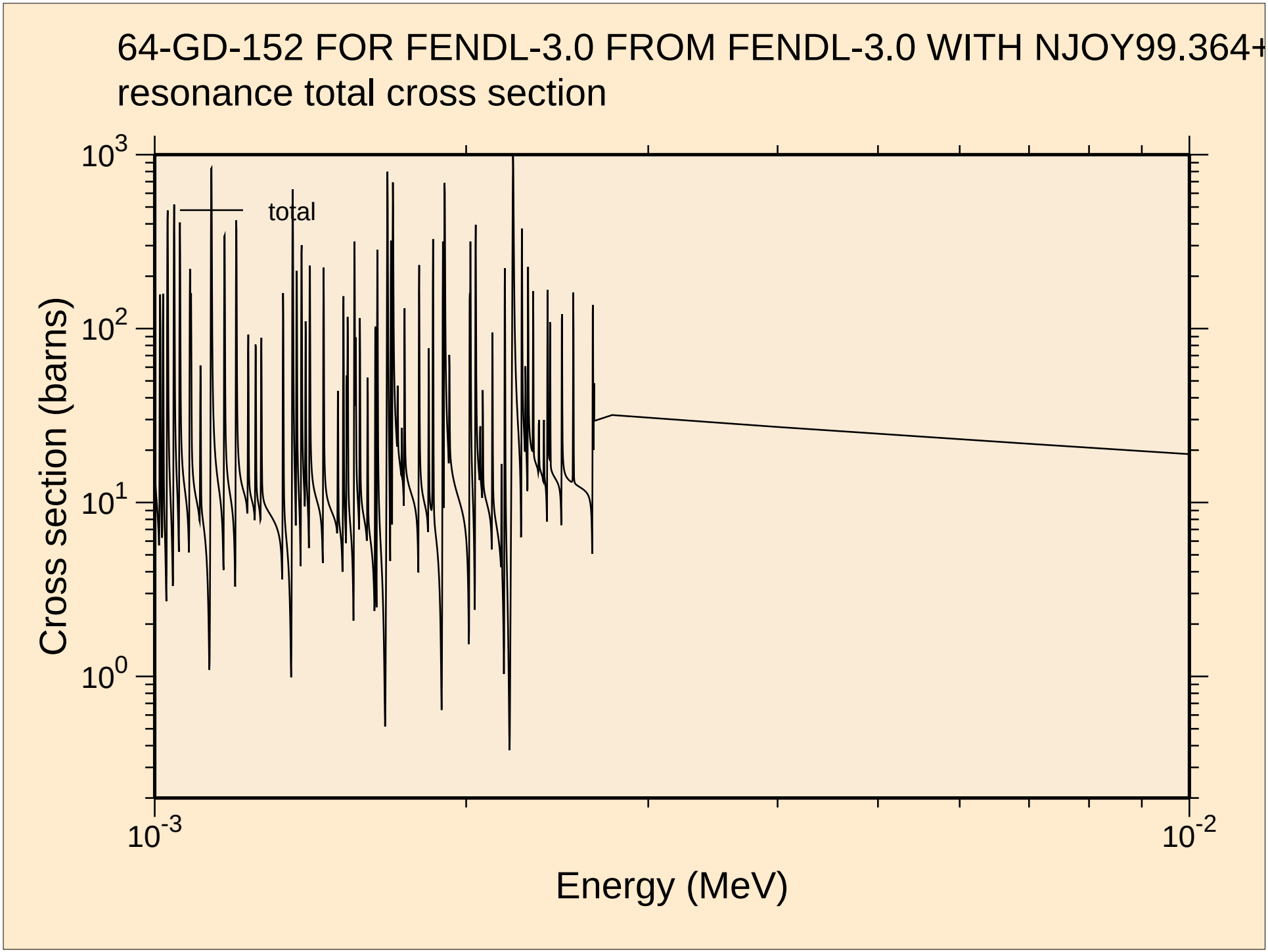
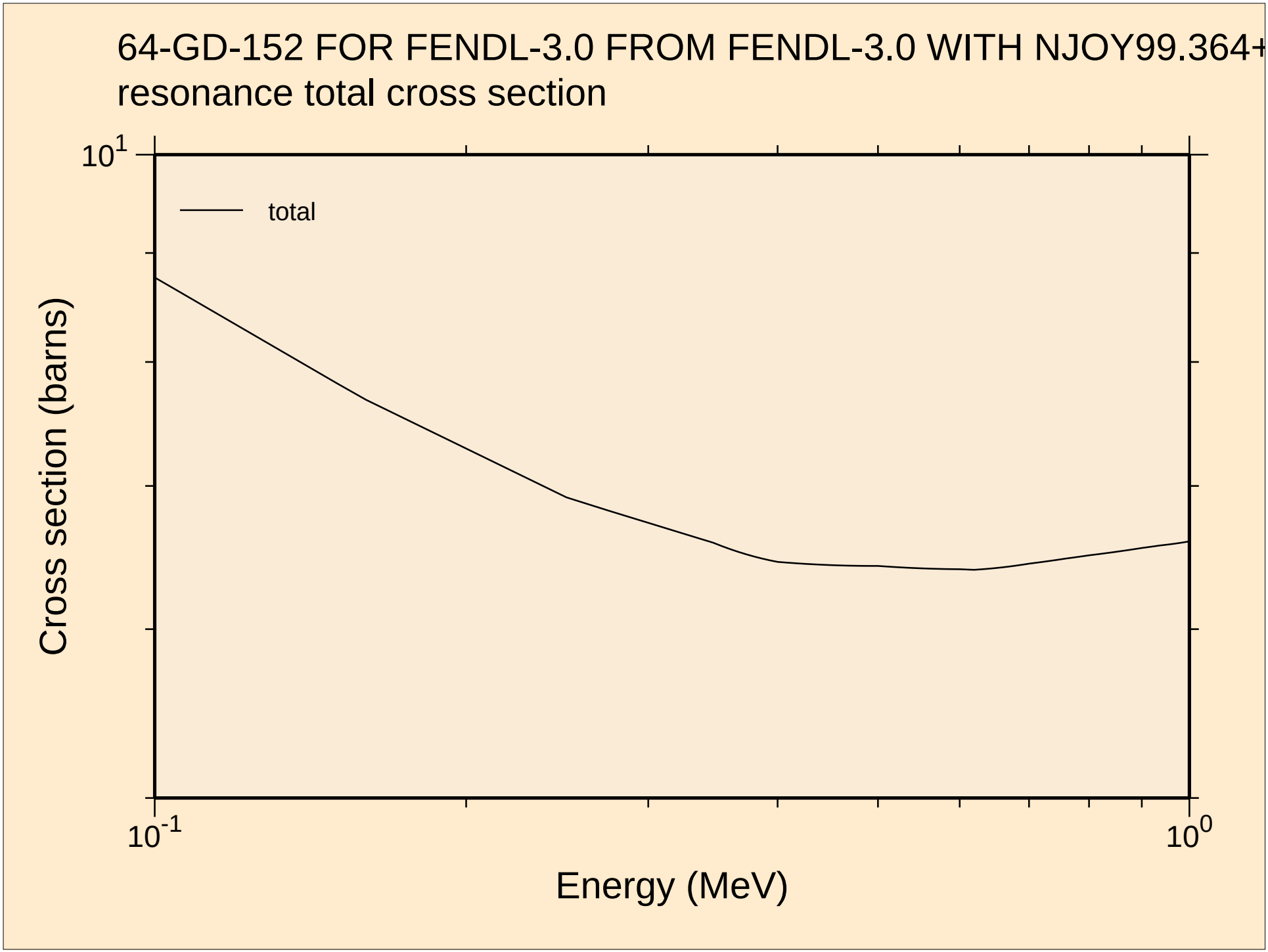

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Principal cross sections
Cross section (barns)
Energy (MeV)
total
absorption
elastic
gamma production
10^5
10^4
10^3
10^2
10^1
10^0
10^-1
10^-11
10^-9
10^-7
10^-5
10^-3
10^-1
10^1

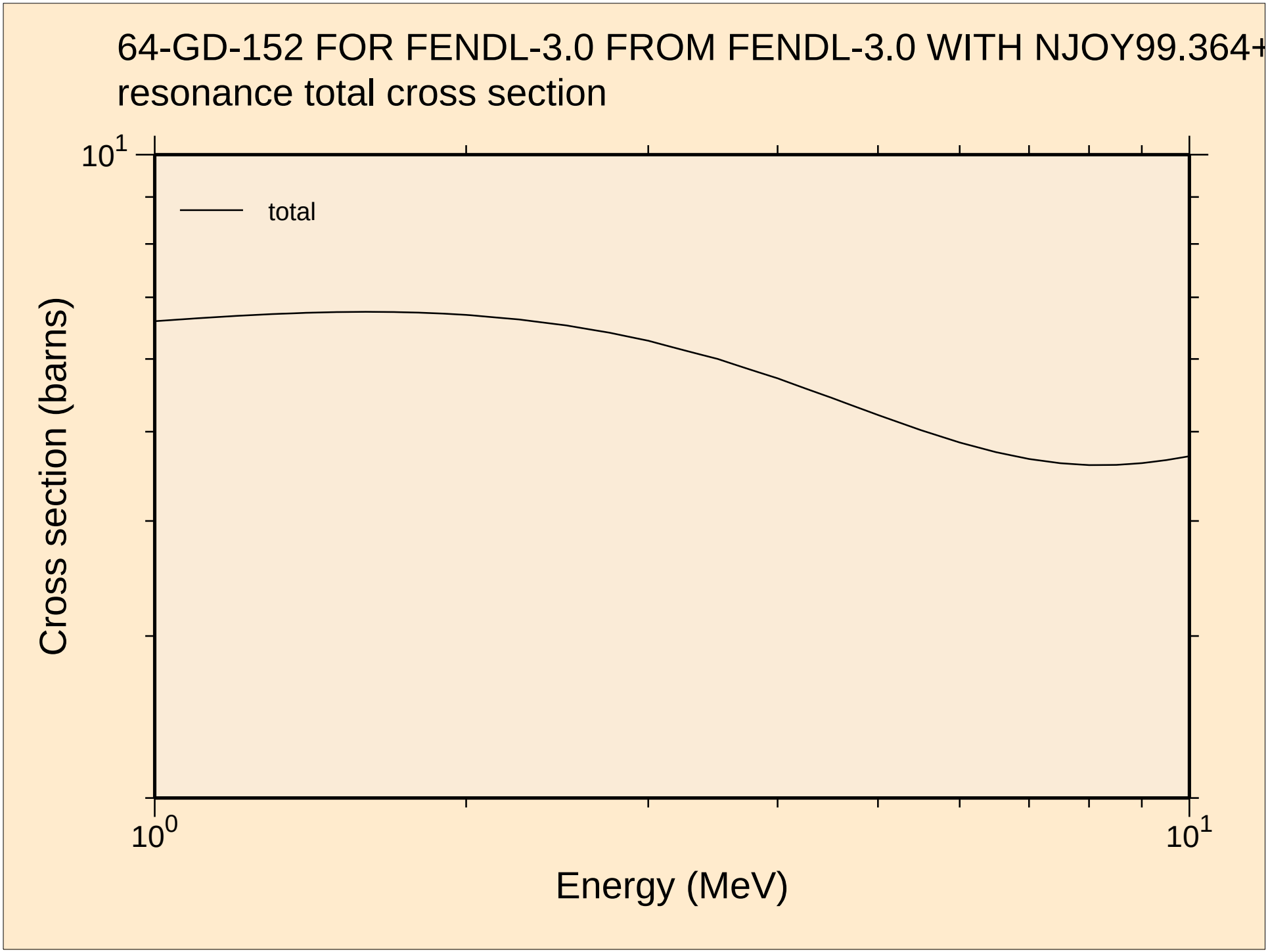

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
resonance total cross section
total
Cross section (barns)
10^4
10^3
10^2
10^-6
10^-5
Energy (MeV)

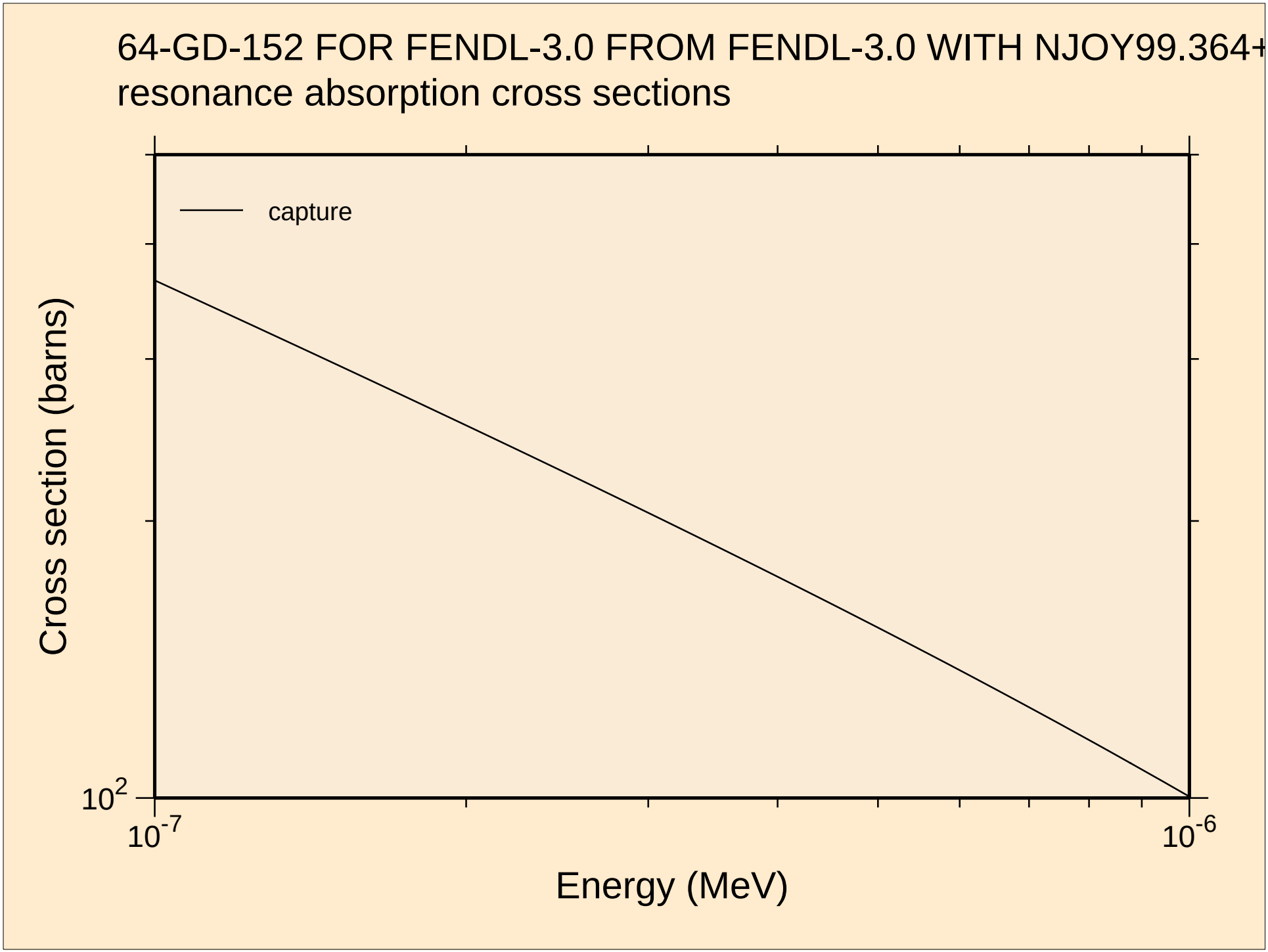

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
resonance total cross section
total
Cross section (barns)
10^4
10^3
10^2
10^1
10^-5
10^-4
Energy (MeV)

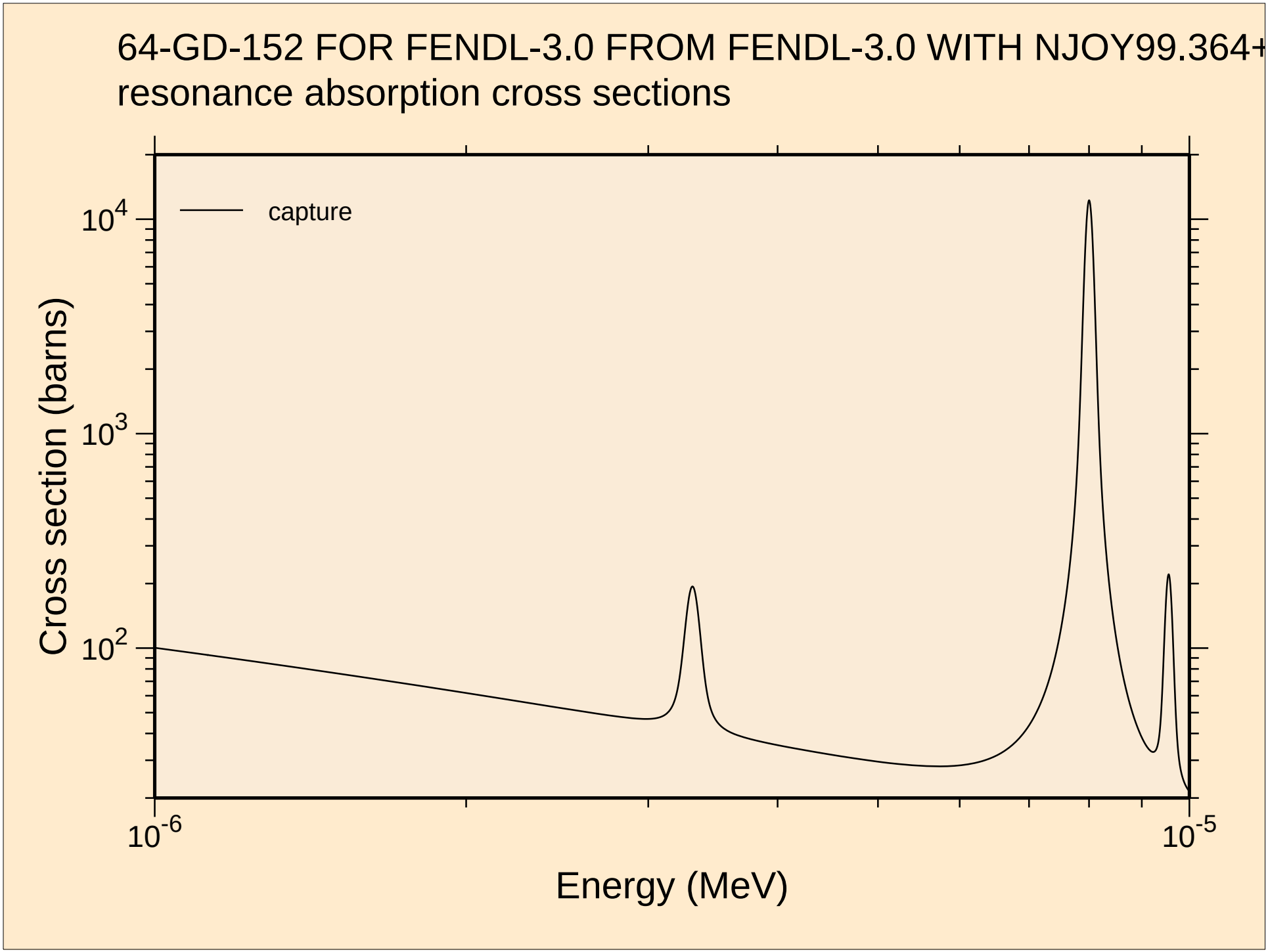

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
resonance total cross section
total
Cross section (barns)
$10^4$
$10^3$
$10^2$
$10^1$
$10^0$
$10^{-4}$
$10^{-3}$
Energy (MeV)

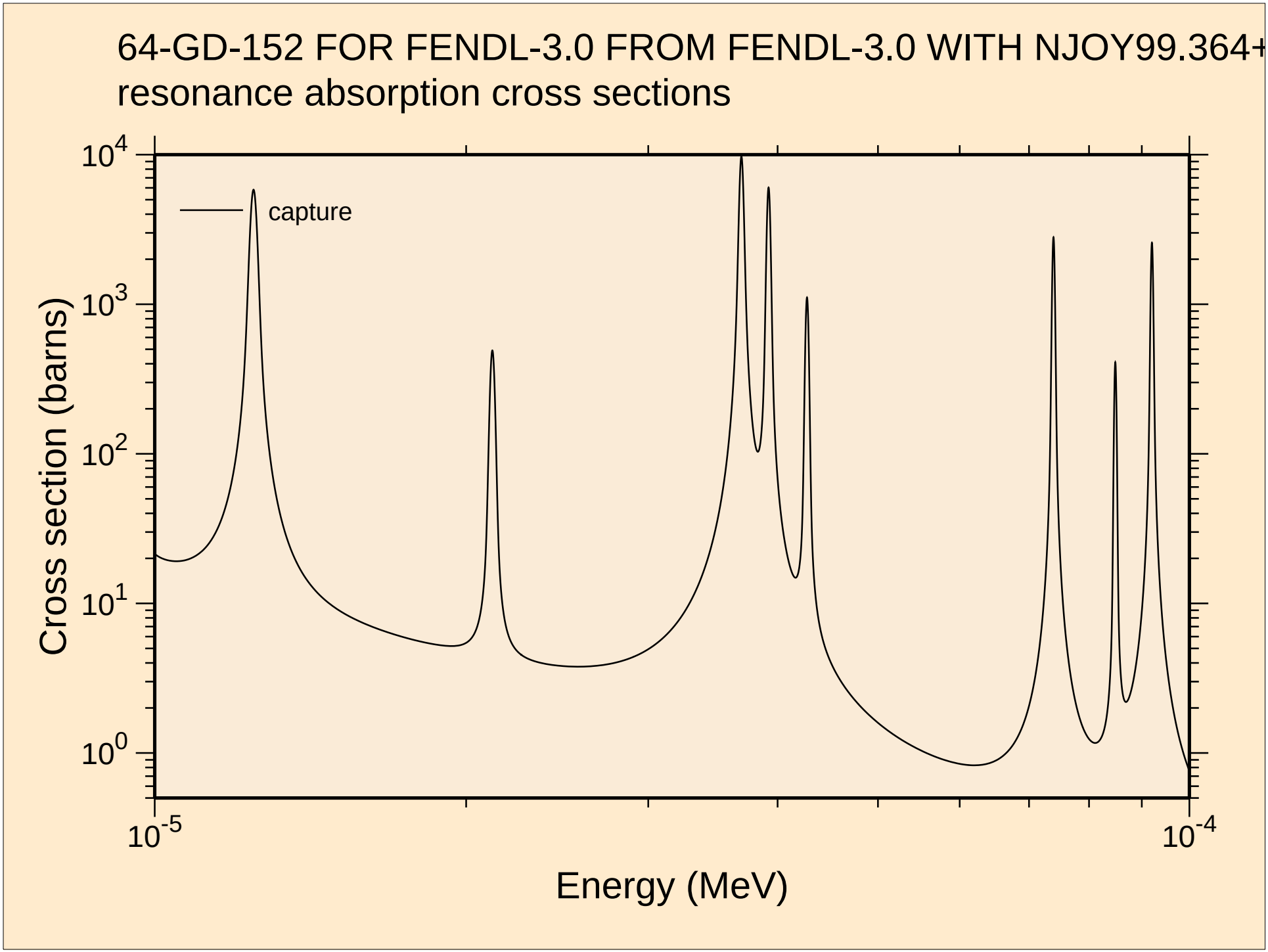

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
resonance total cross section
total
Cross section (barns)
$10^3$
$10^2$
$10^1$
$10^0$
$10^{-3}$
$10^{-2}$
Energy (MeV)

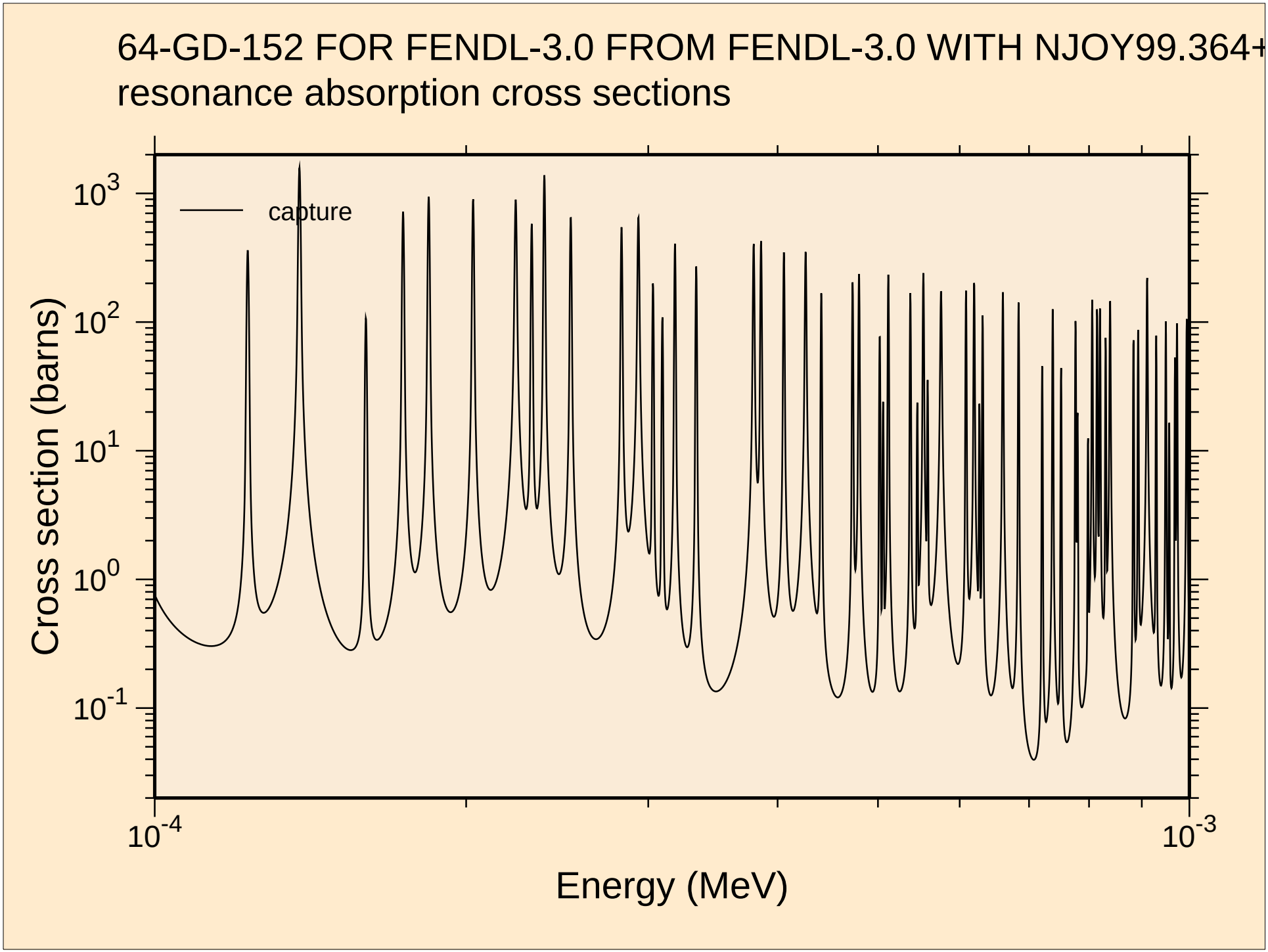

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
resonance total cross section
$10^1$
total
Cross section (barns)
$10^{-1}$
$10^0$
Energy (MeV)

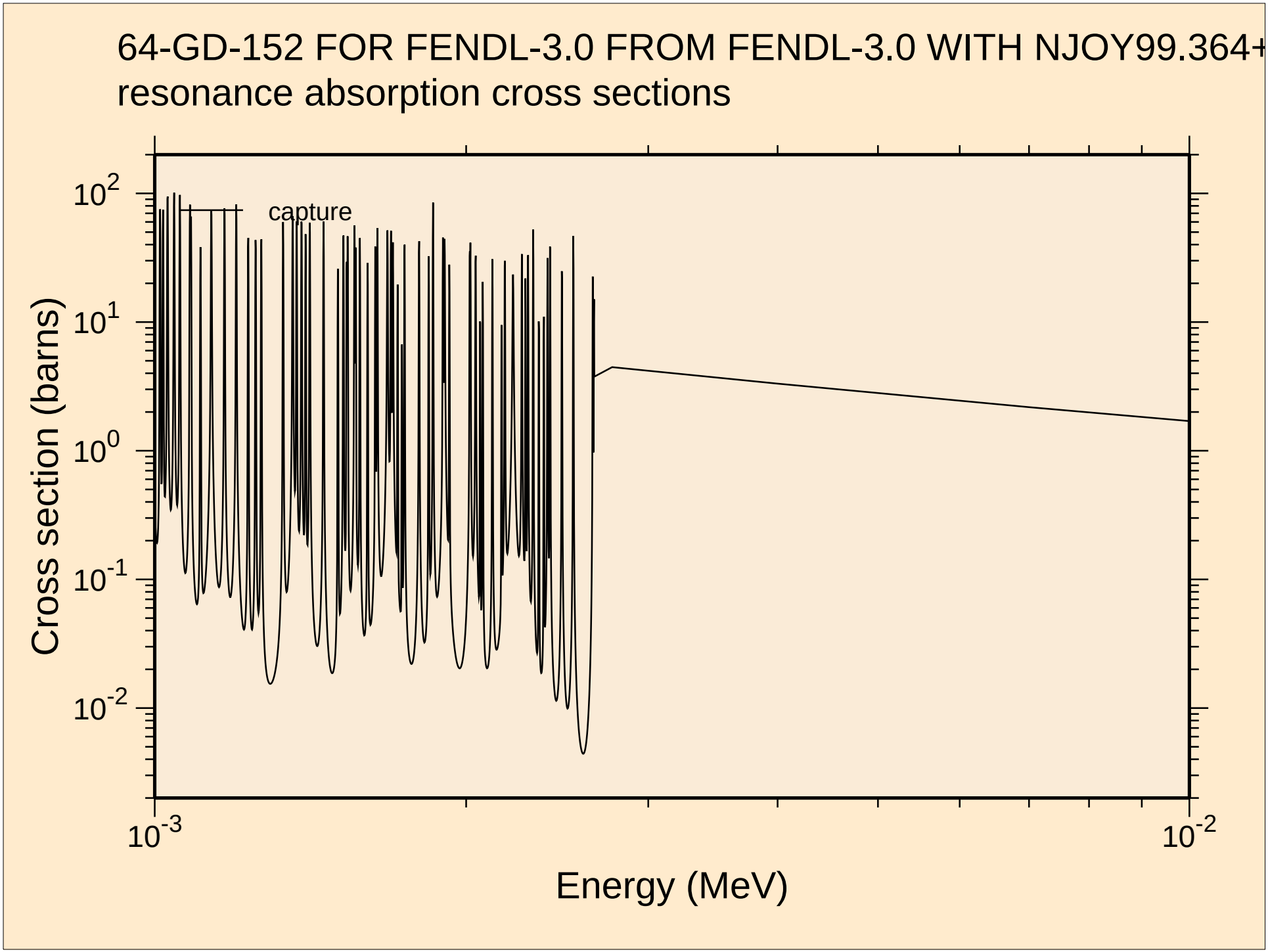

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
resonance total cross section
$10^1$
total
Cross section (barns)
$10^0$
$10^1$
Energy (MeV)

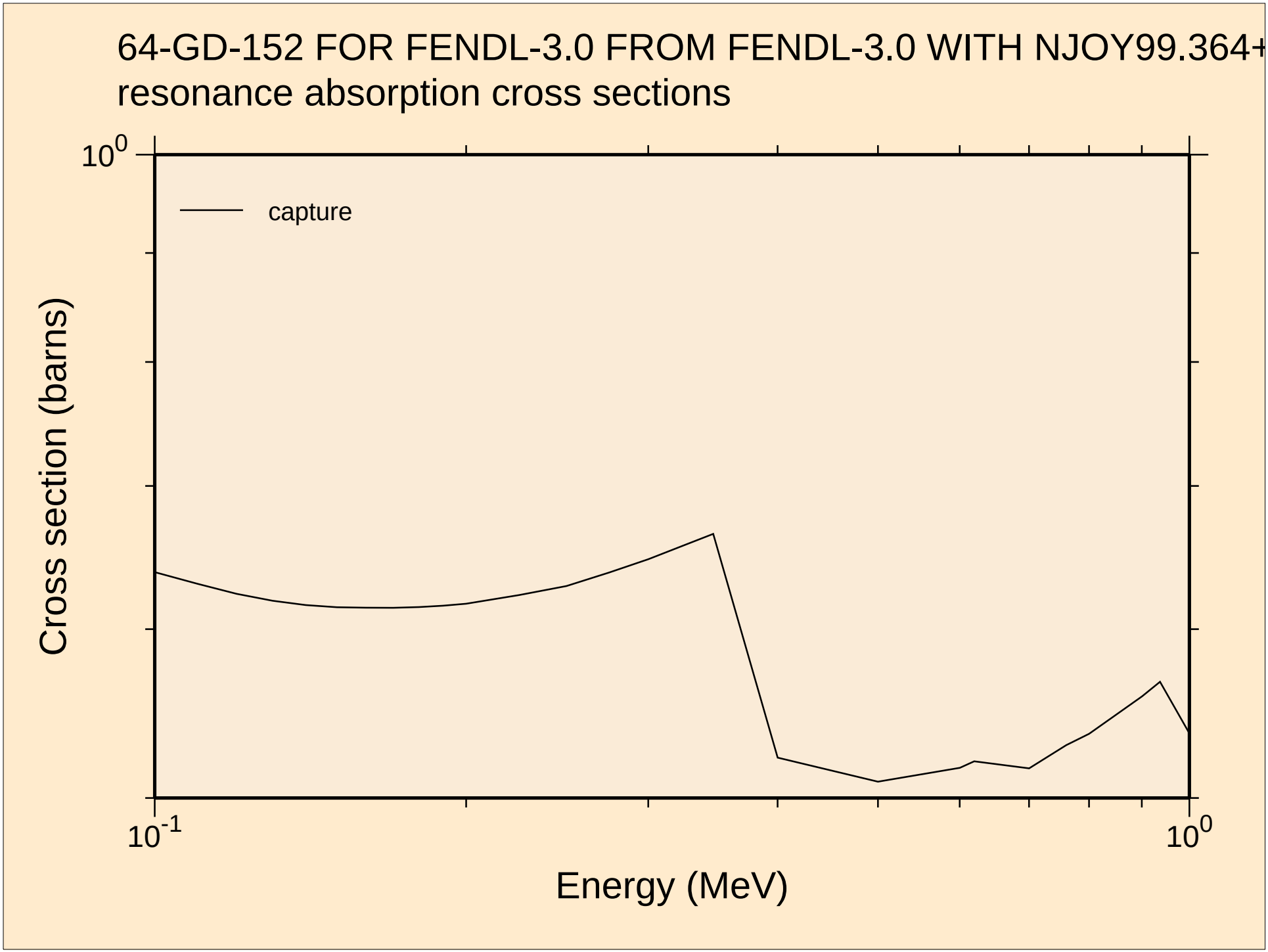

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
resonance absorption cross sections
capture
Cross section (barns)
$10^2$
$10^{-7}$
$10^{-6}$
Energy (MeV)

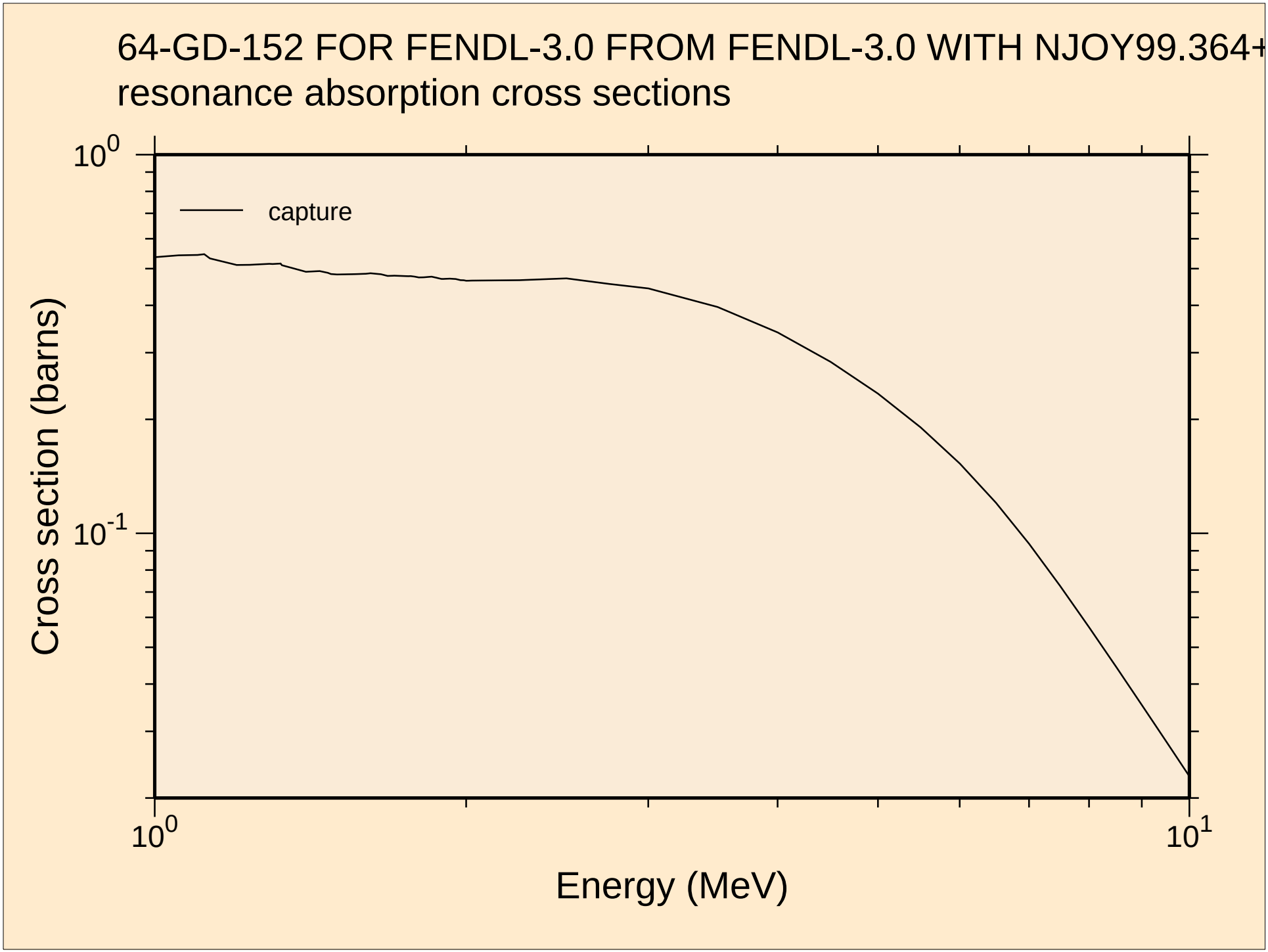

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
resonance absorption cross sections
capture
Cross section (barns)
10^4
10^3
10^2
10^-6
10^-5
Energy (MeV)

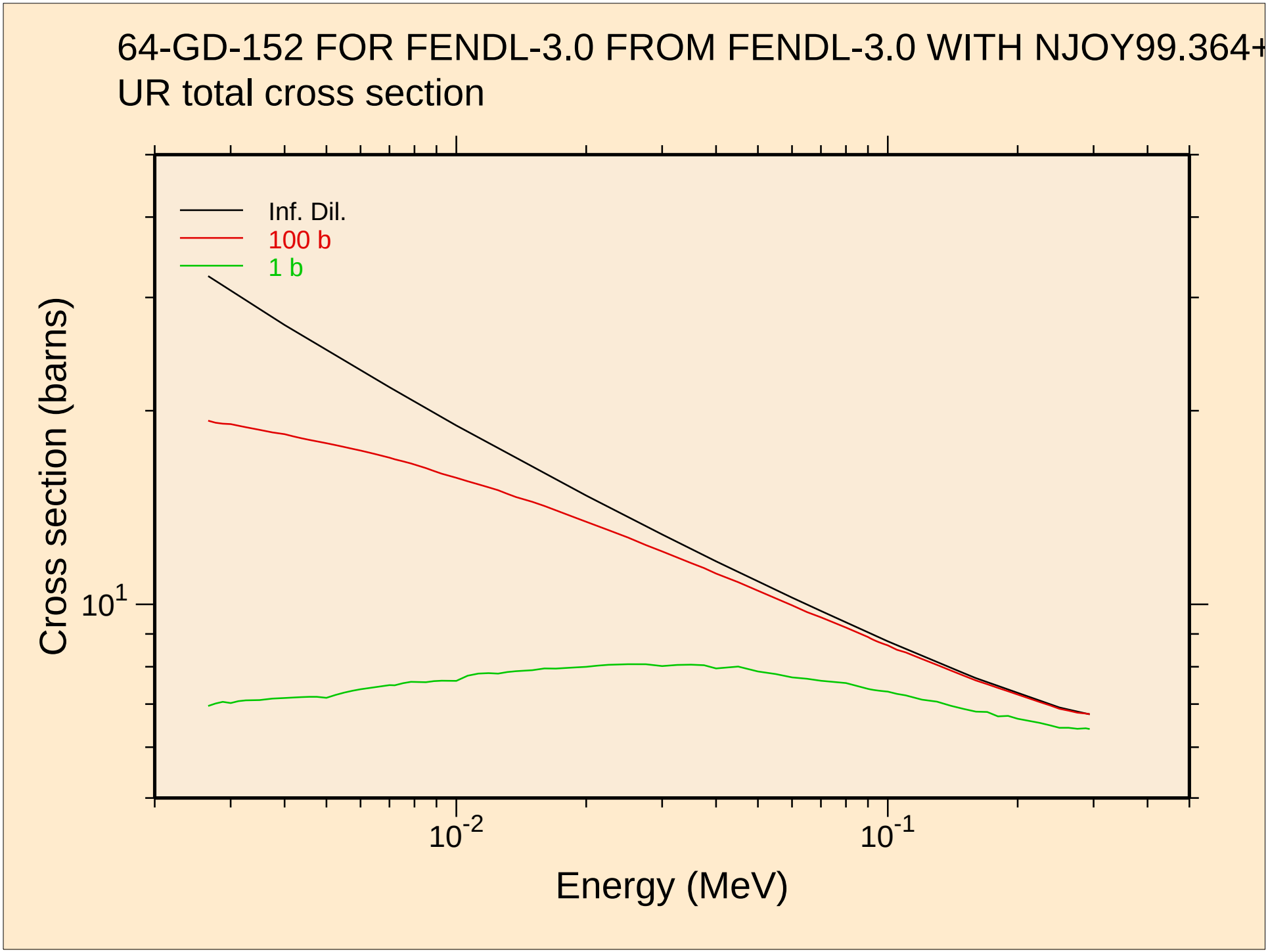

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
resonance absorption cross sections
capture
Cross section (barns)
$10^4$
$10^3$
$10^2$
$10^1$
$10^0$
$10^{-5}$
$10^{-4}$
Energy (MeV)

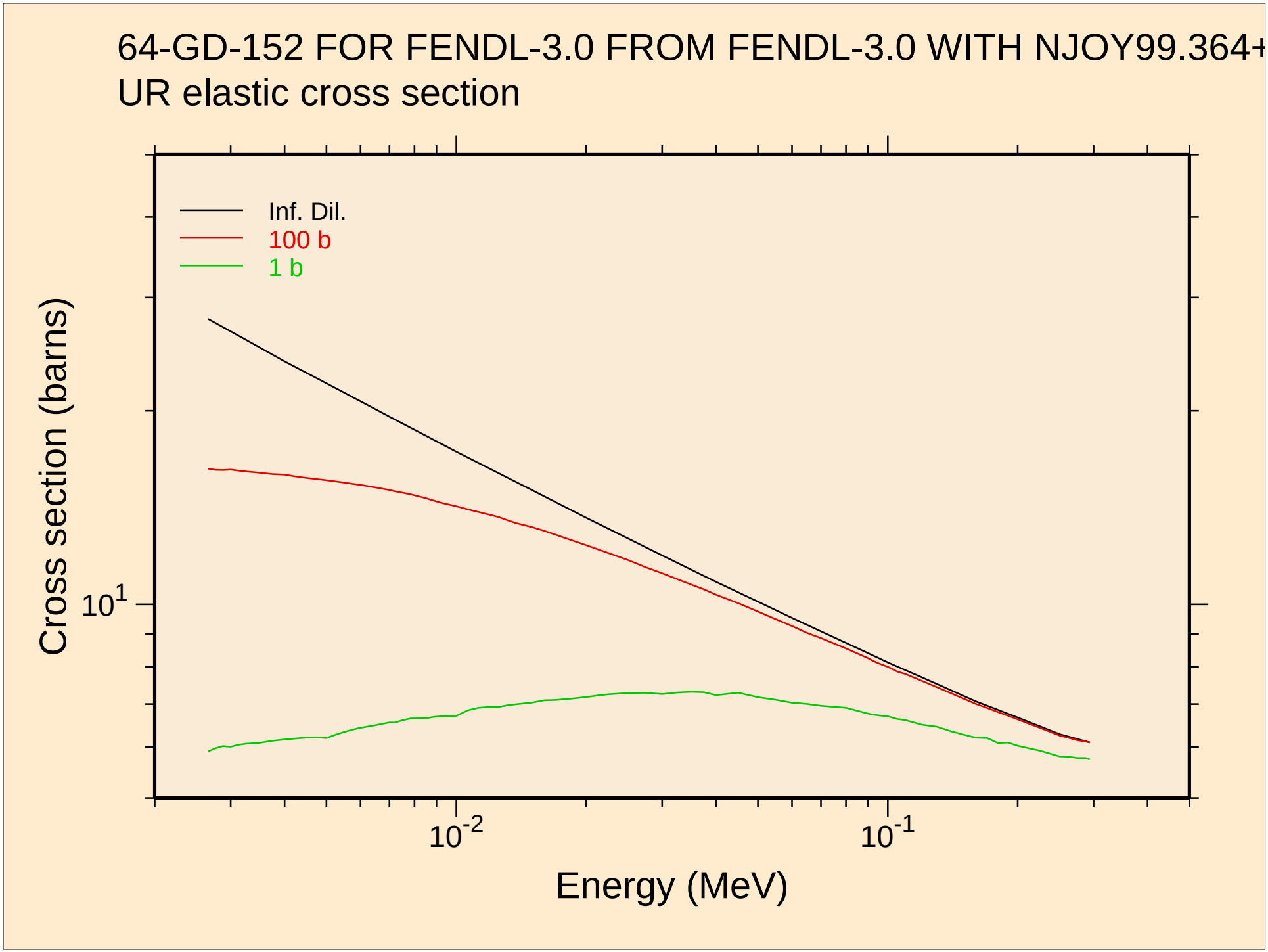

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
resonance absorption cross sections
capture
Cross section (barns)
10^3
10^2
10^1
10^0
10^-1
10^-4
10^-3
Energy (MeV)

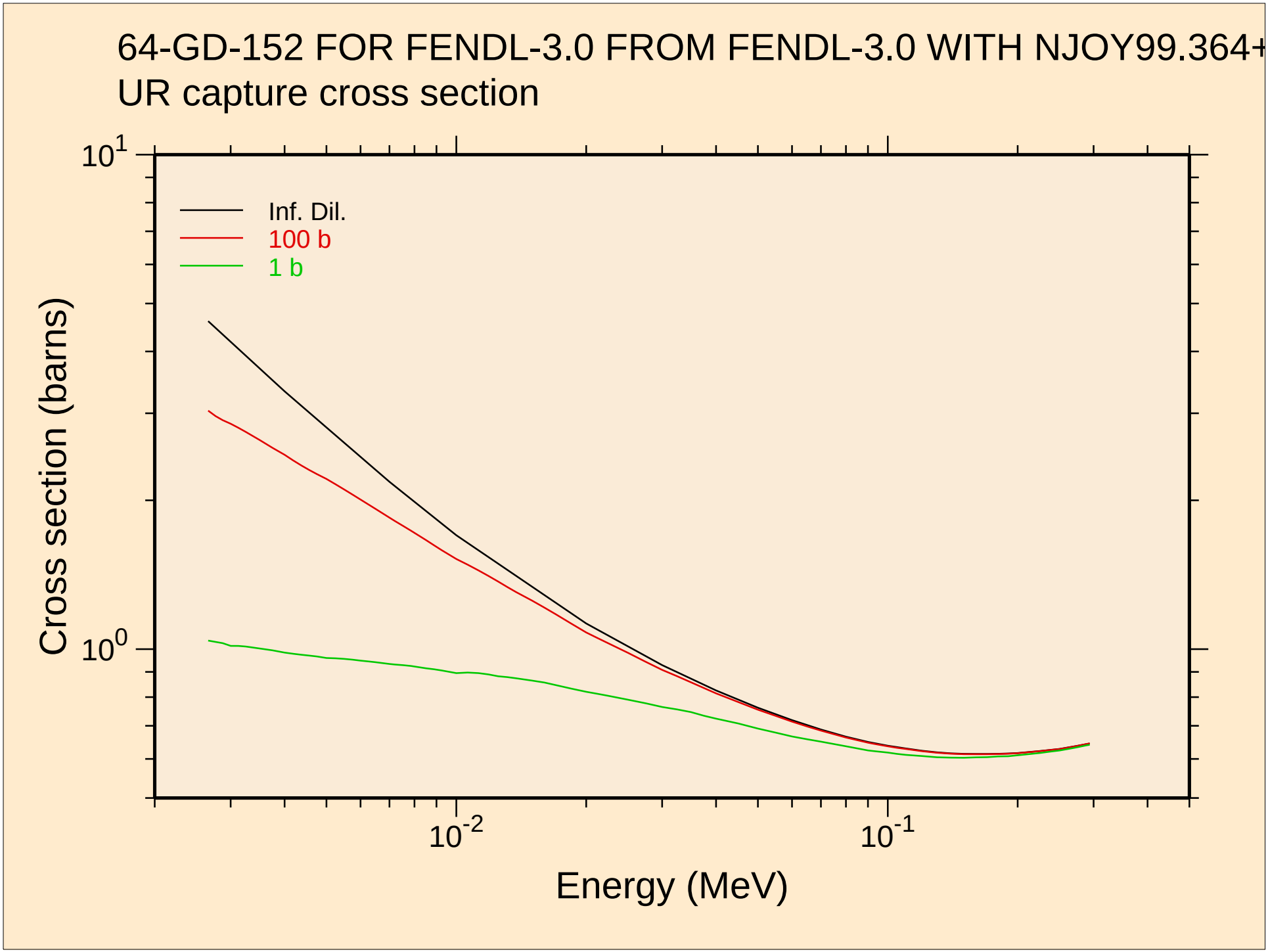

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
resonance absorption cross sections
capture
Cross section (barns)
10^2
10^1
10^0
10^-1
10^-2
10^-3
10^-2
Energy (MeV)

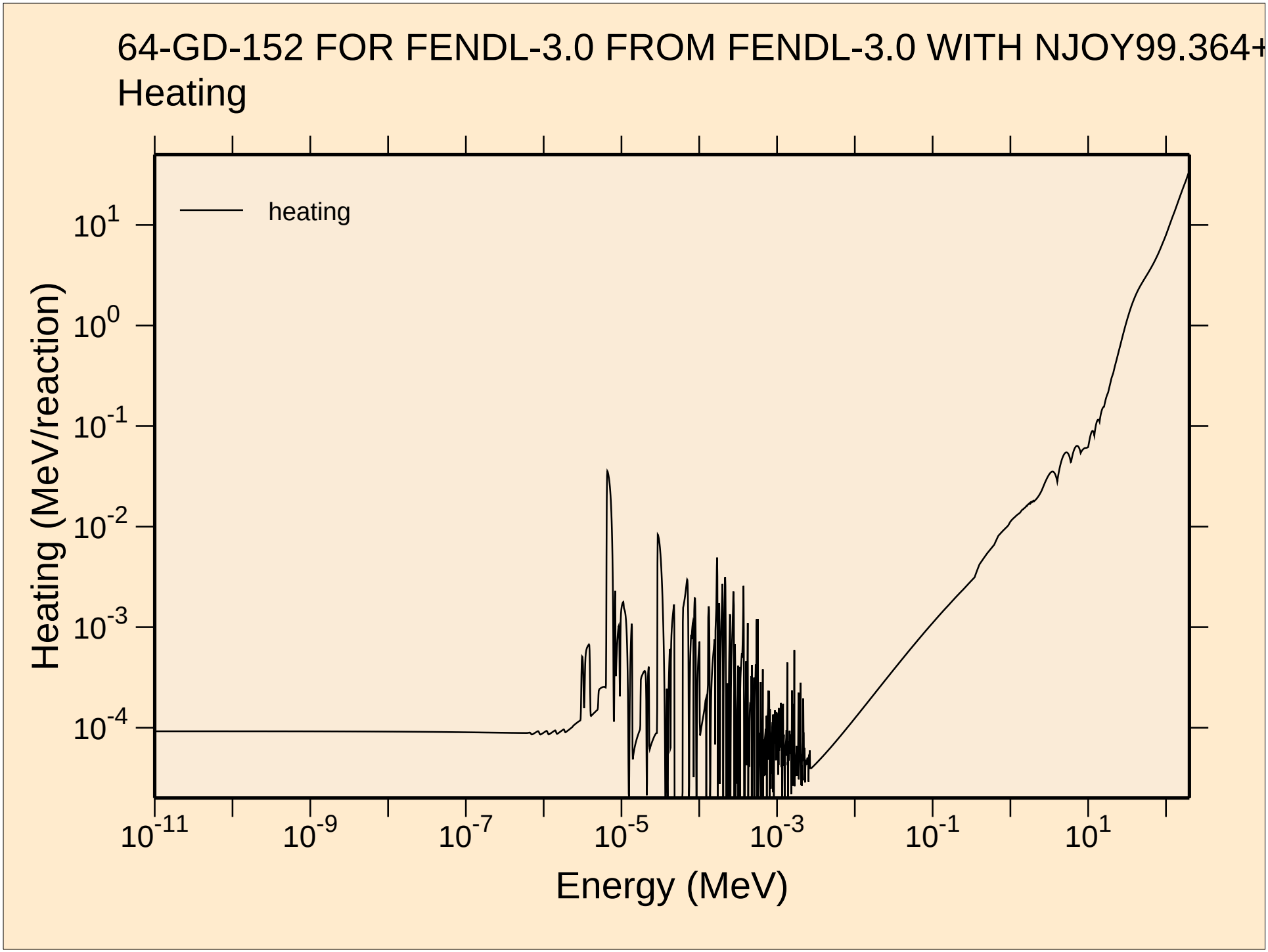

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
resonance absorption cross sections
capture
Cross section (barns)
Energy (MeV)
10^0
10^-1
10^0

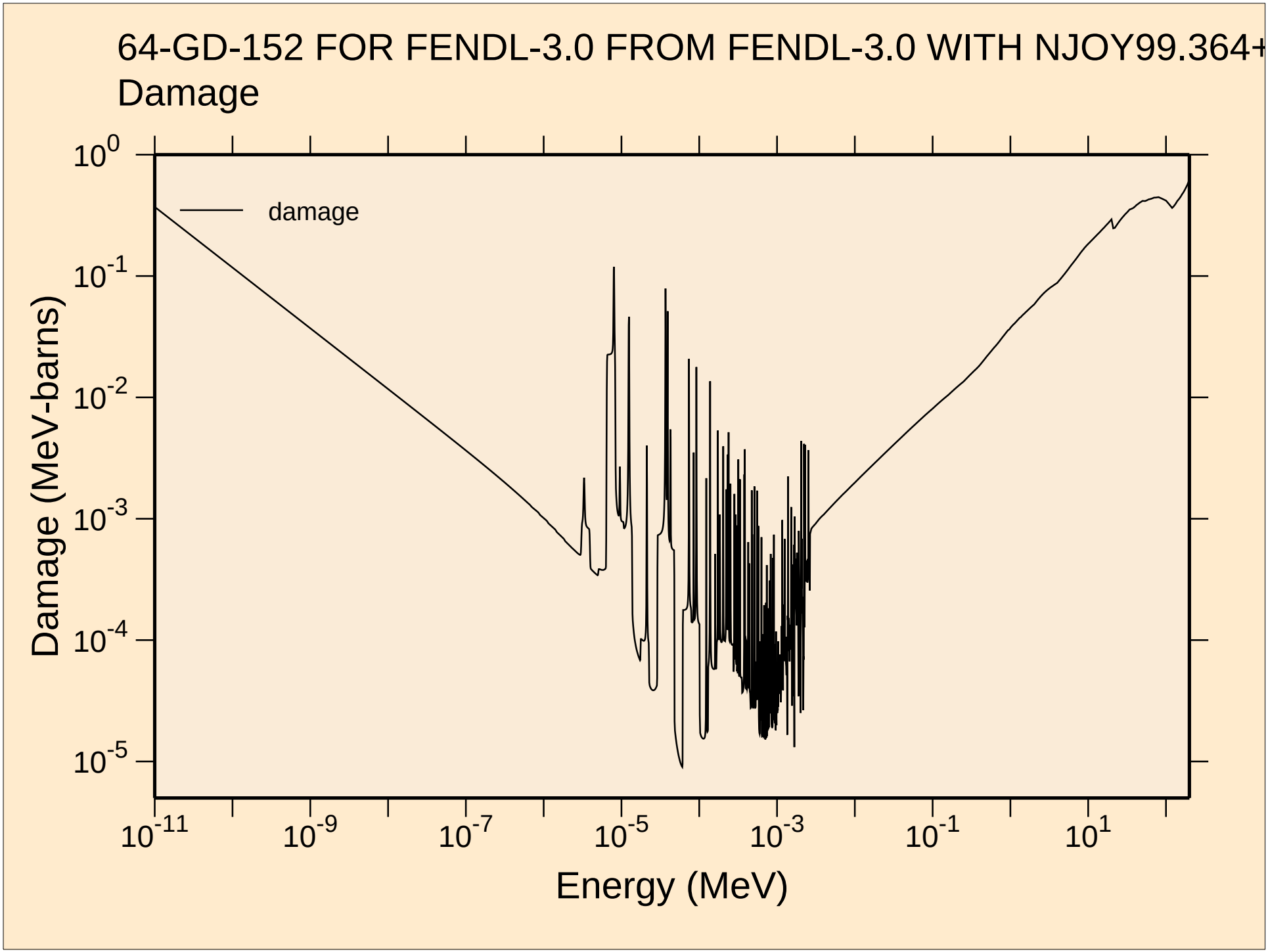

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
resonance absorption cross sections
capture
Cross section (barns)
$10^{0}$
$10^{-1}$
$10^{0}$
$10^{1}$
Energy (MeV)

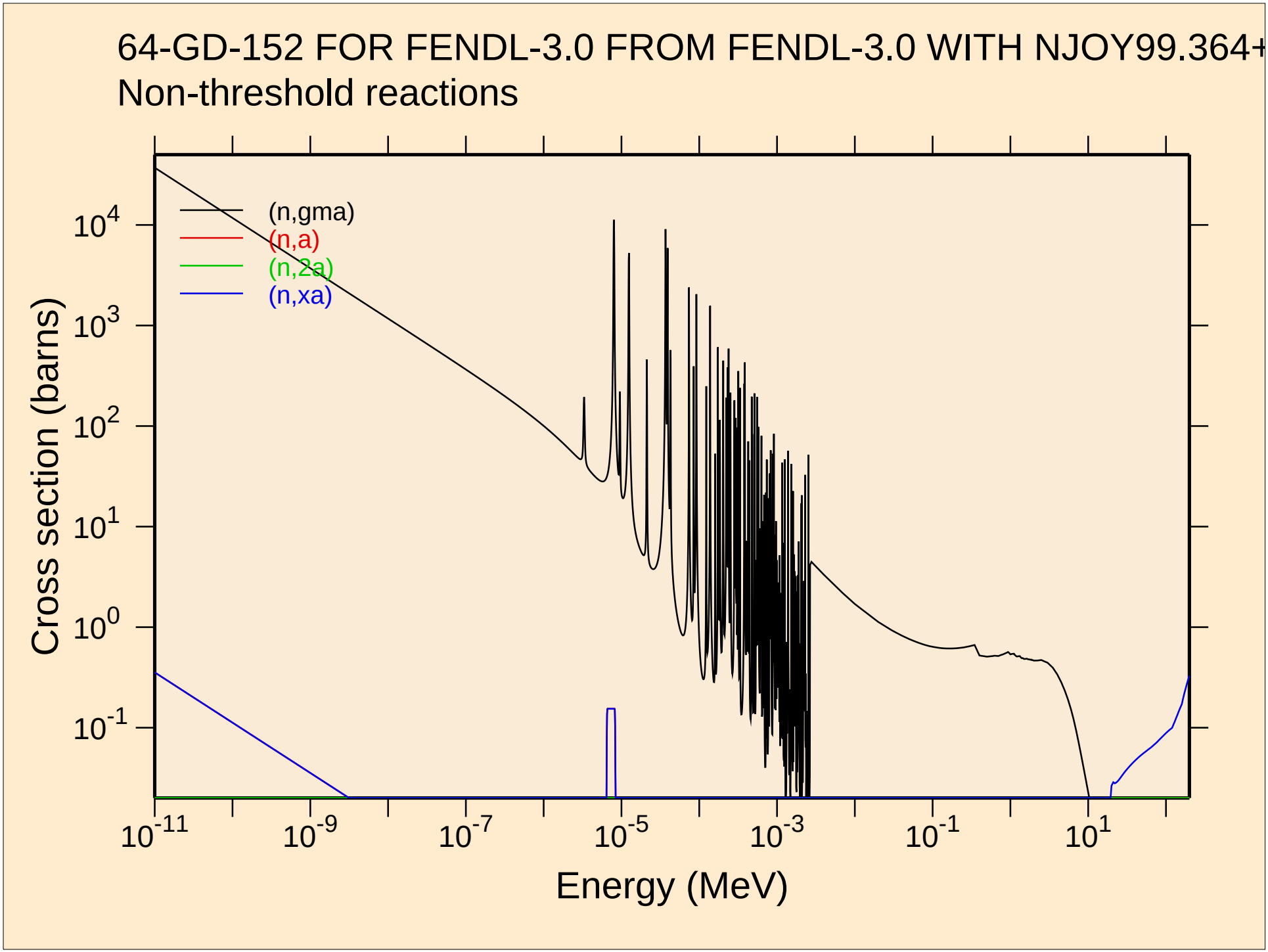

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
UR total cross section
Inf. Dil.
100 b
1 b
Cross section (barns)
10^1
10^-2
10^-1
Energy (MeV)

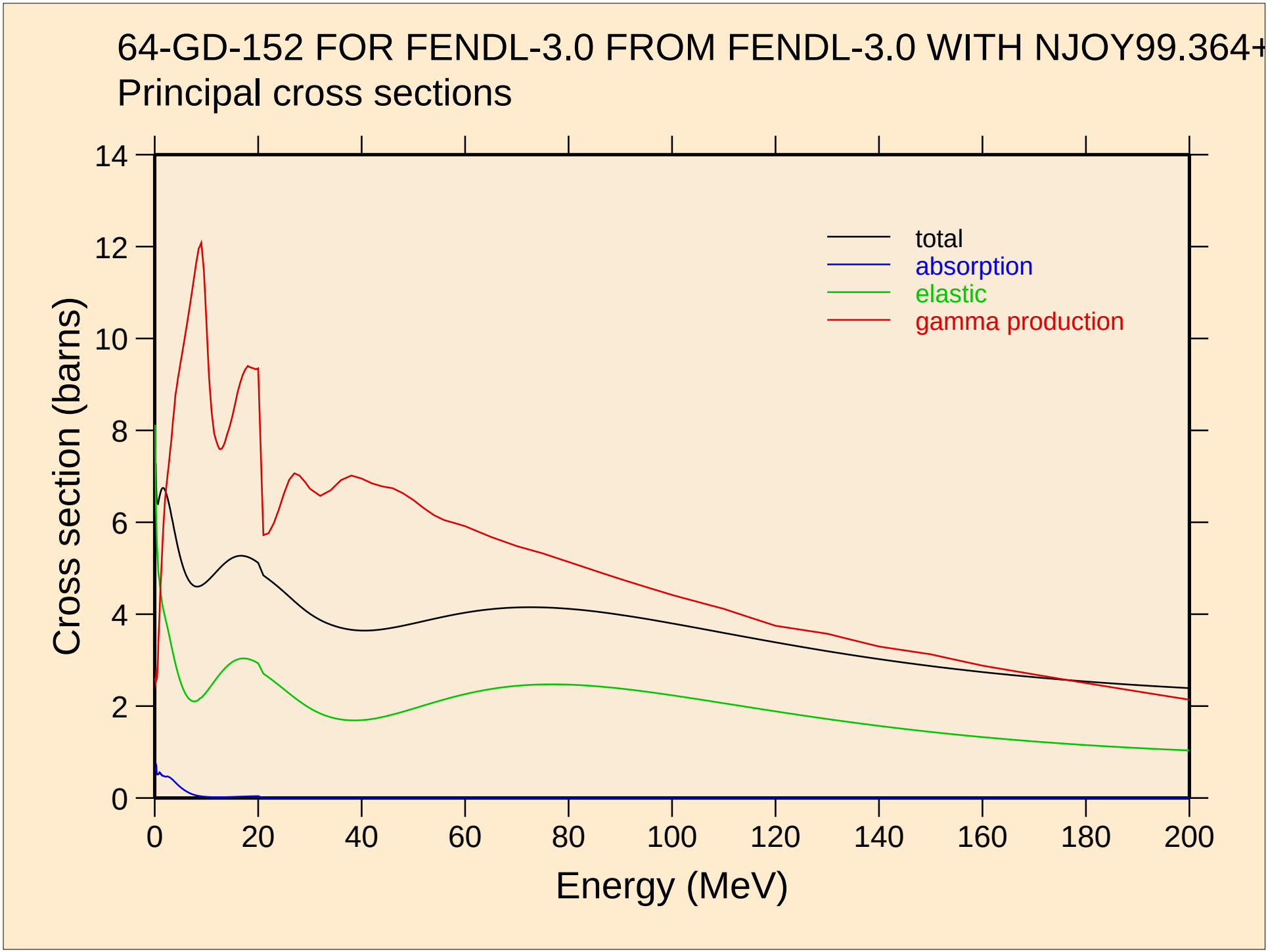

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
UR elastic cross section
Inf. Dil.
100 b
1 b
Cross section (barns)
10^1
10^-2
10^-1
Energy (MeV)

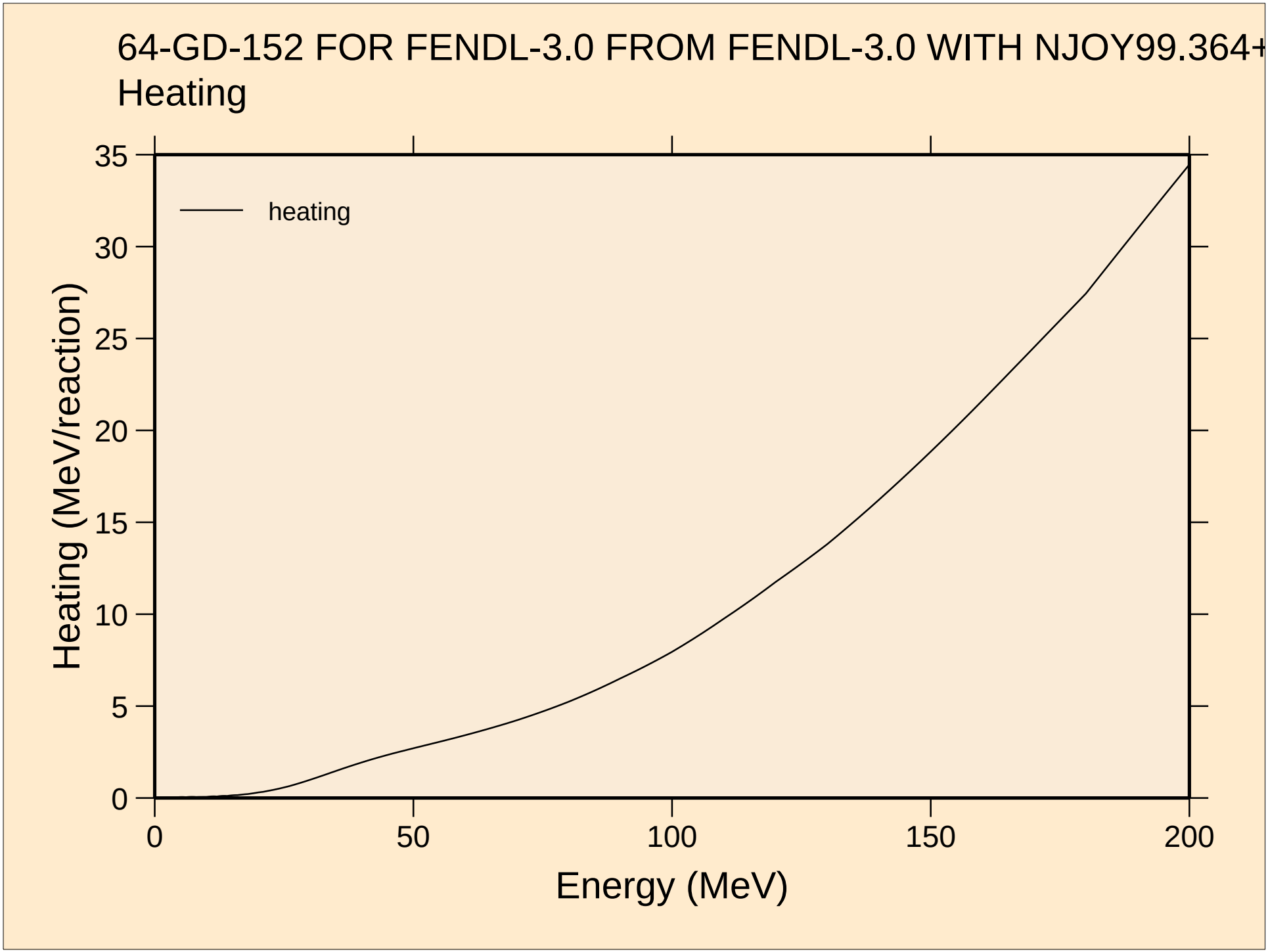

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
UR capture cross section
Inf. Dil.
100 b
1 b
Cross section (barns)
10^1
10^0
10^-2
10^-1
Energy (MeV)

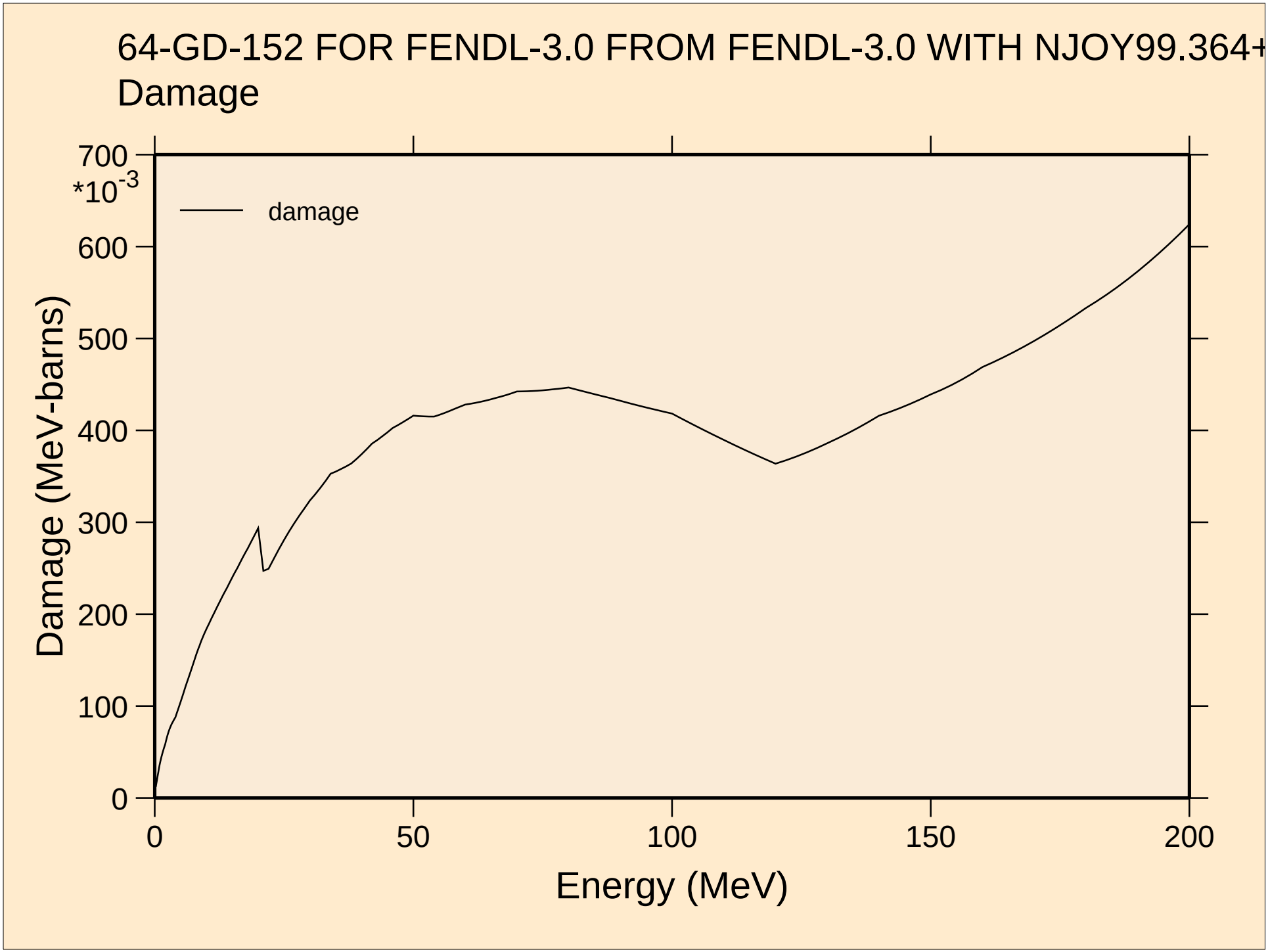

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Heating
heating
Heating (MeV/reaction)
$10^{1}$
$10^{0}$
$10^{-1}$
$10^{-2}$
$10^{-3}$
$10^{-4}$
$10^{-11}$
$10^{-9}$
$10^{-7}$
$10^{-5}$
$10^{-3}$
$10^{-1}$
$10^{1}$
Energy (MeV)

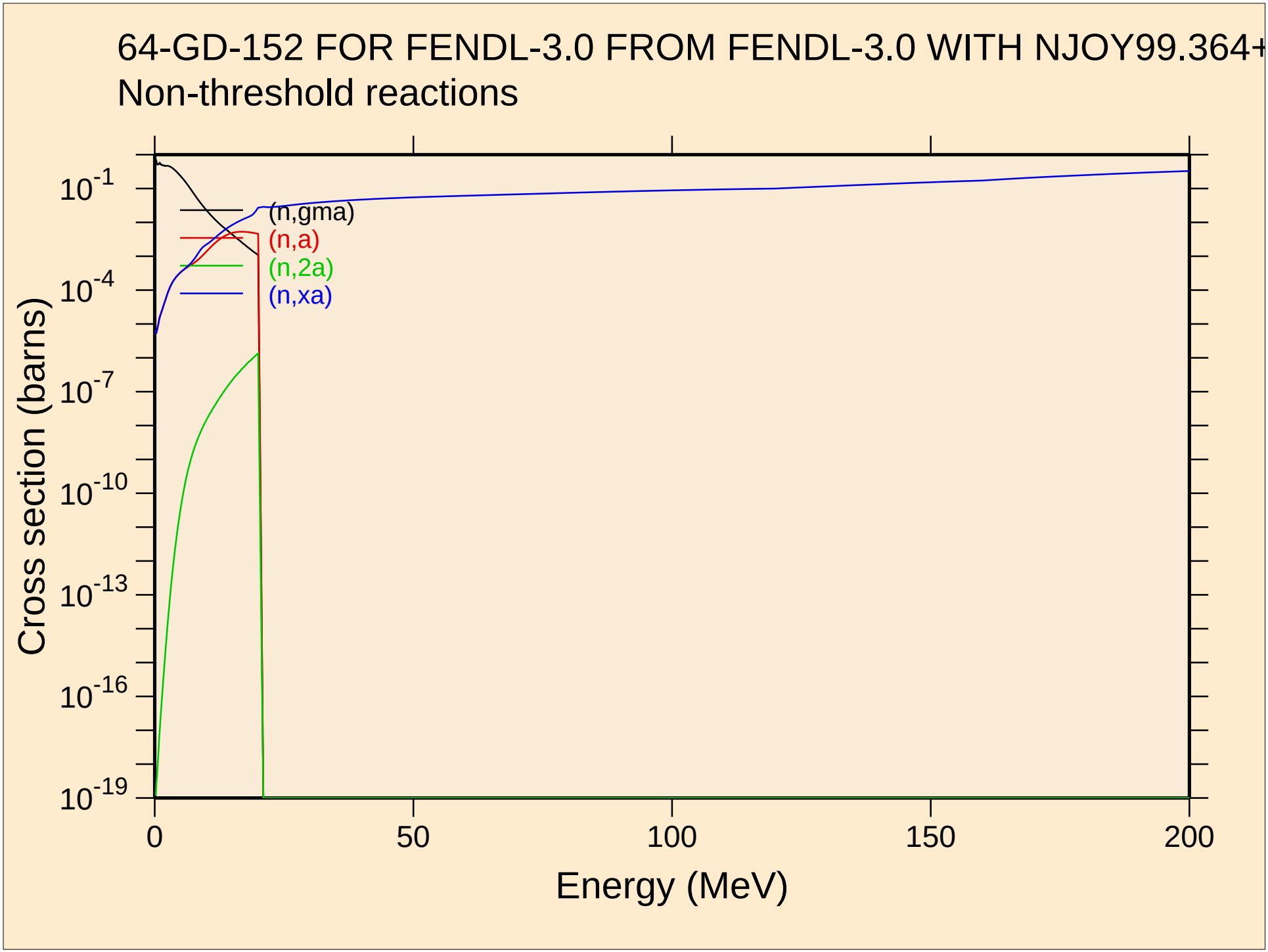

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Damage
damage
Damage (MeV-barns)
Energy (MeV)
10^0
10^-1
10^-2
10^-3
10^-4
10^-5
10^-11
10^-9
10^-7
10^-5
10^-3
10^-1
10^1

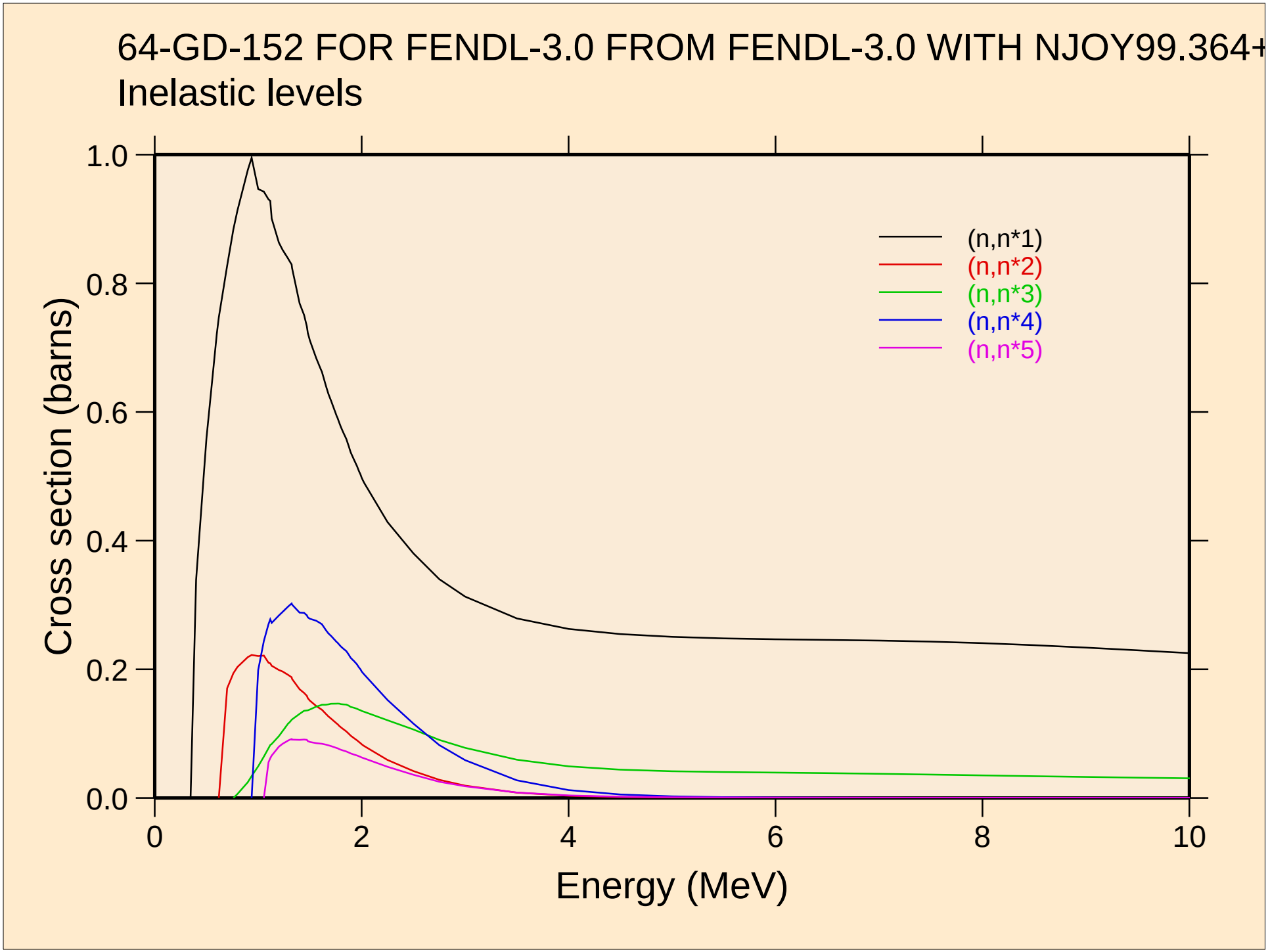

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Non-threshold reactions
(n,gma)
(n,a)
(n,2a)
(n,xa)
Cross section (barns)
10^4
10^3
10^2
10^1
10^0
10^-1
10^-11
10^-9
10^-7
10^-5
10^-3
10^-1
10^1
Energy (MeV)

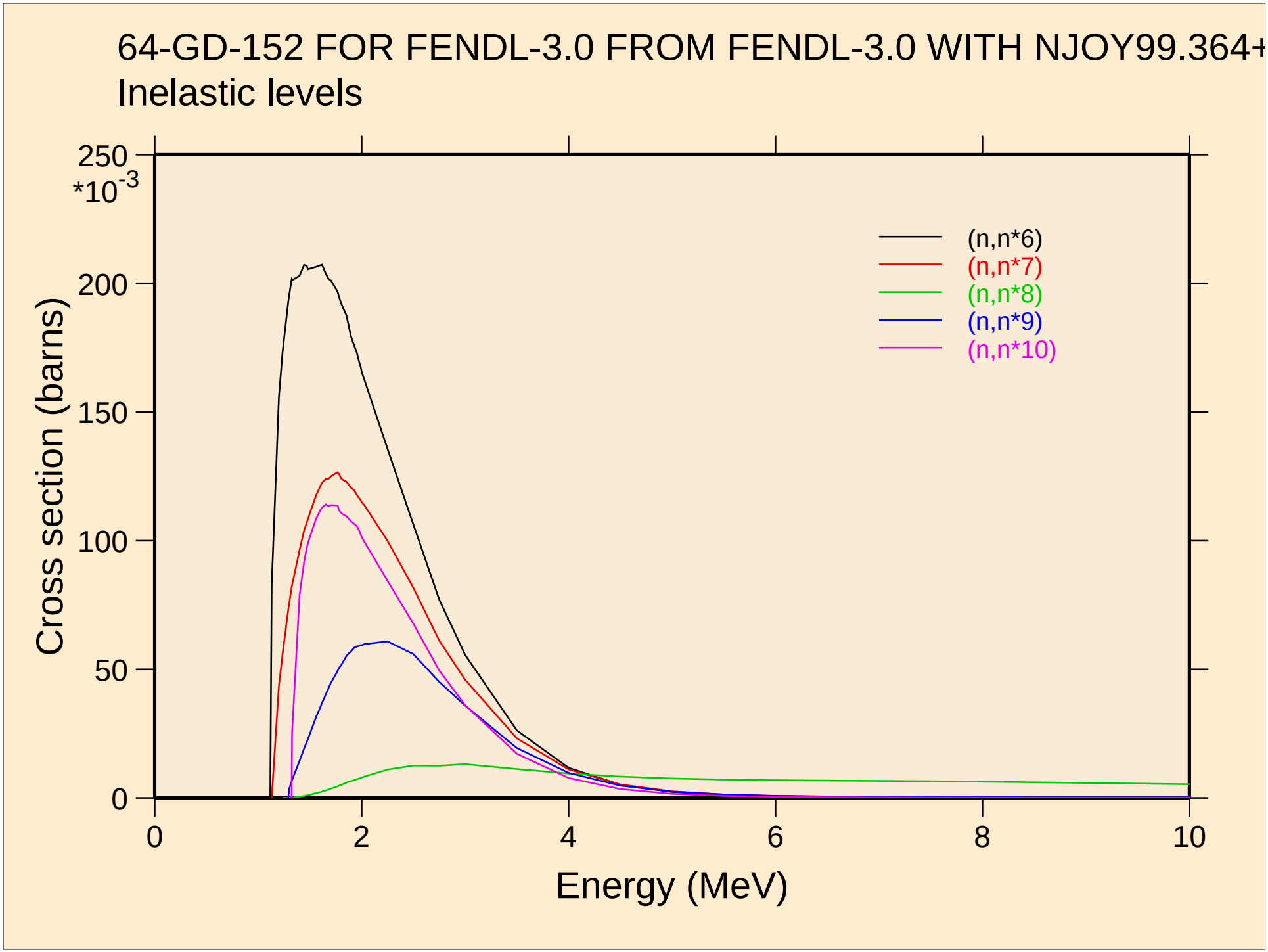

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Principal cross sections
Cross section (barns)
Energy (MeV)
0
2
4
6
8
10
12
14
0
20
40
60
80
100
120
140
160
180
200
total
absorption
elastic
gamma production

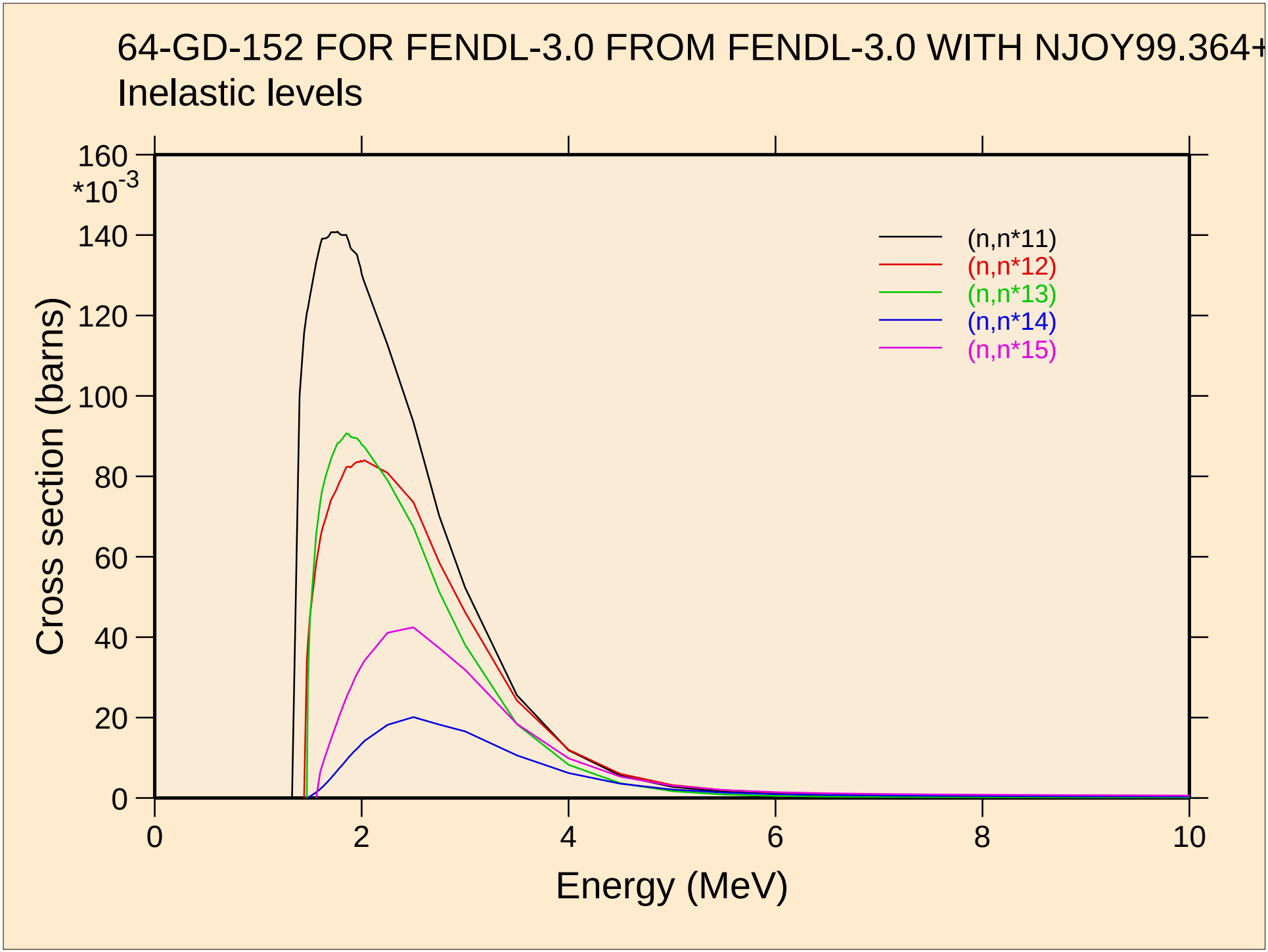

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Heating
heating
Heating (MeV/reaction)
Energy (MeV)
0
5
10
15
20
25
30
35
0
50
100
150
200

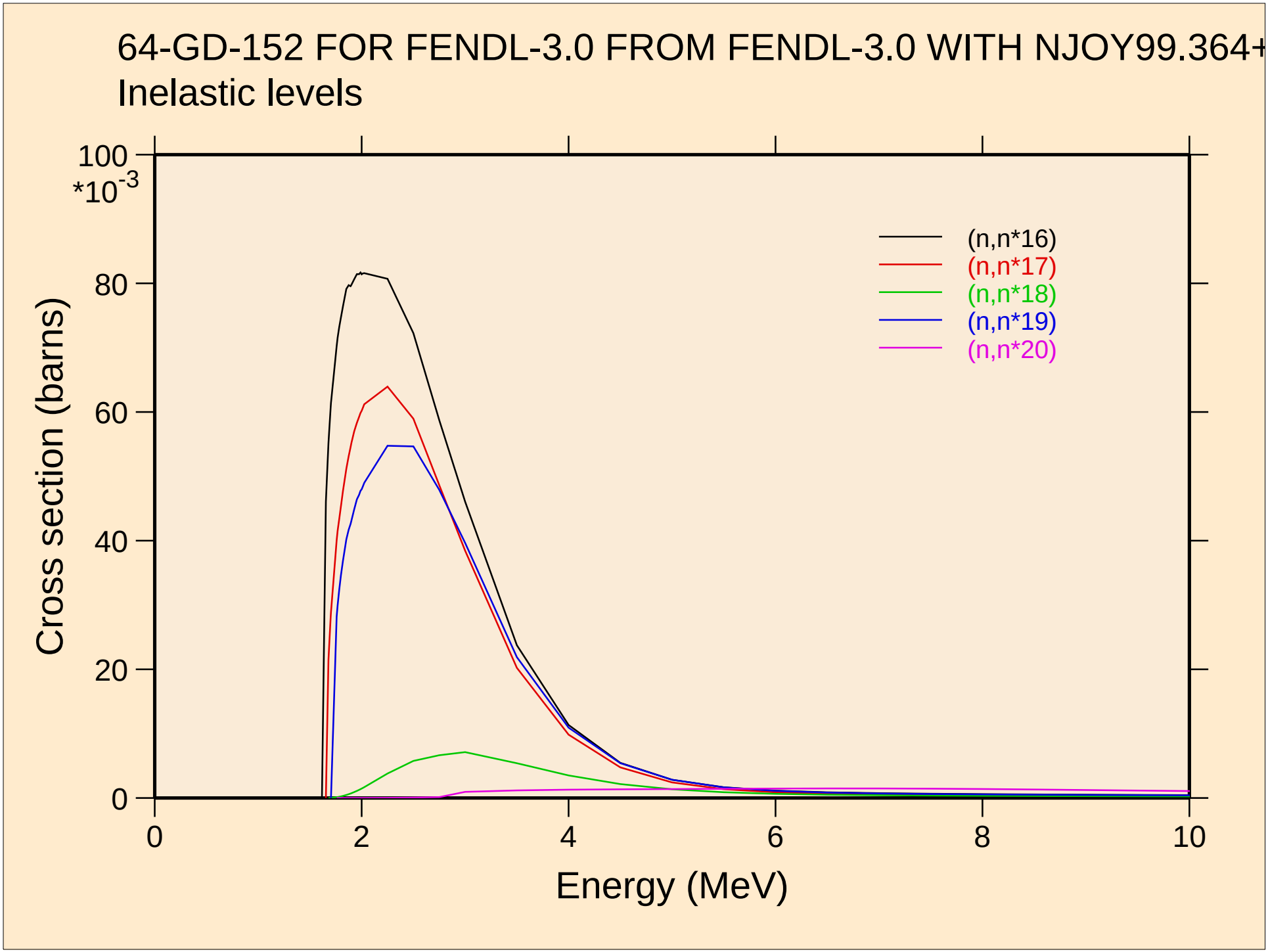

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Damage
700
*10-3
600
500
400
300
200
100
0
damage
Damage (MeV-barns)
0
50
100
150
200
Energy (MeV)

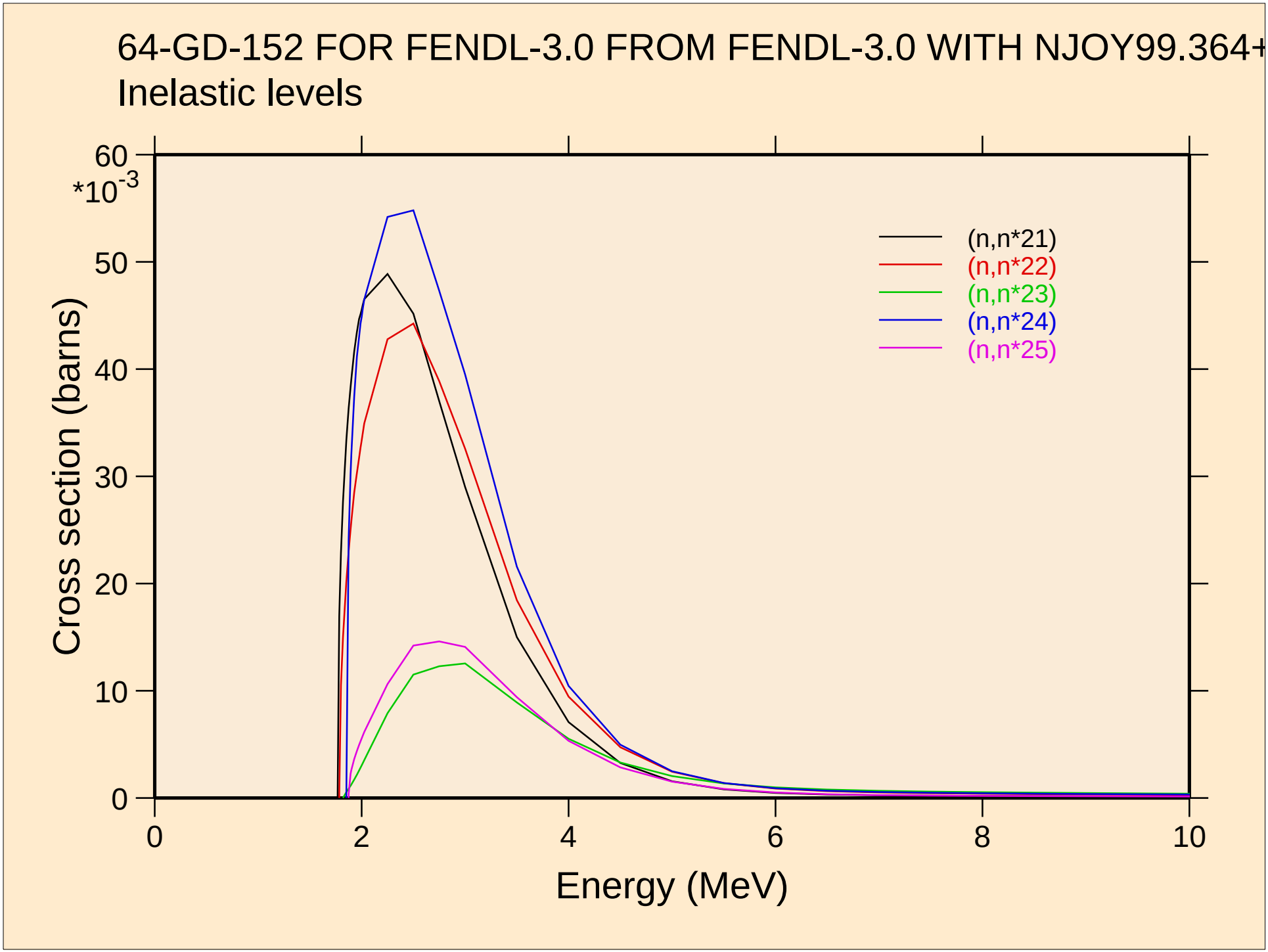

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Non-threshold reactions
Cross section (barns)
10-1
10-4
10-7
10-10
10-13
10-16
10-19
(n,gma)
(n,a)
(n,2a)
(n,xa)
0
50
100
150
200
Energy (MeV)

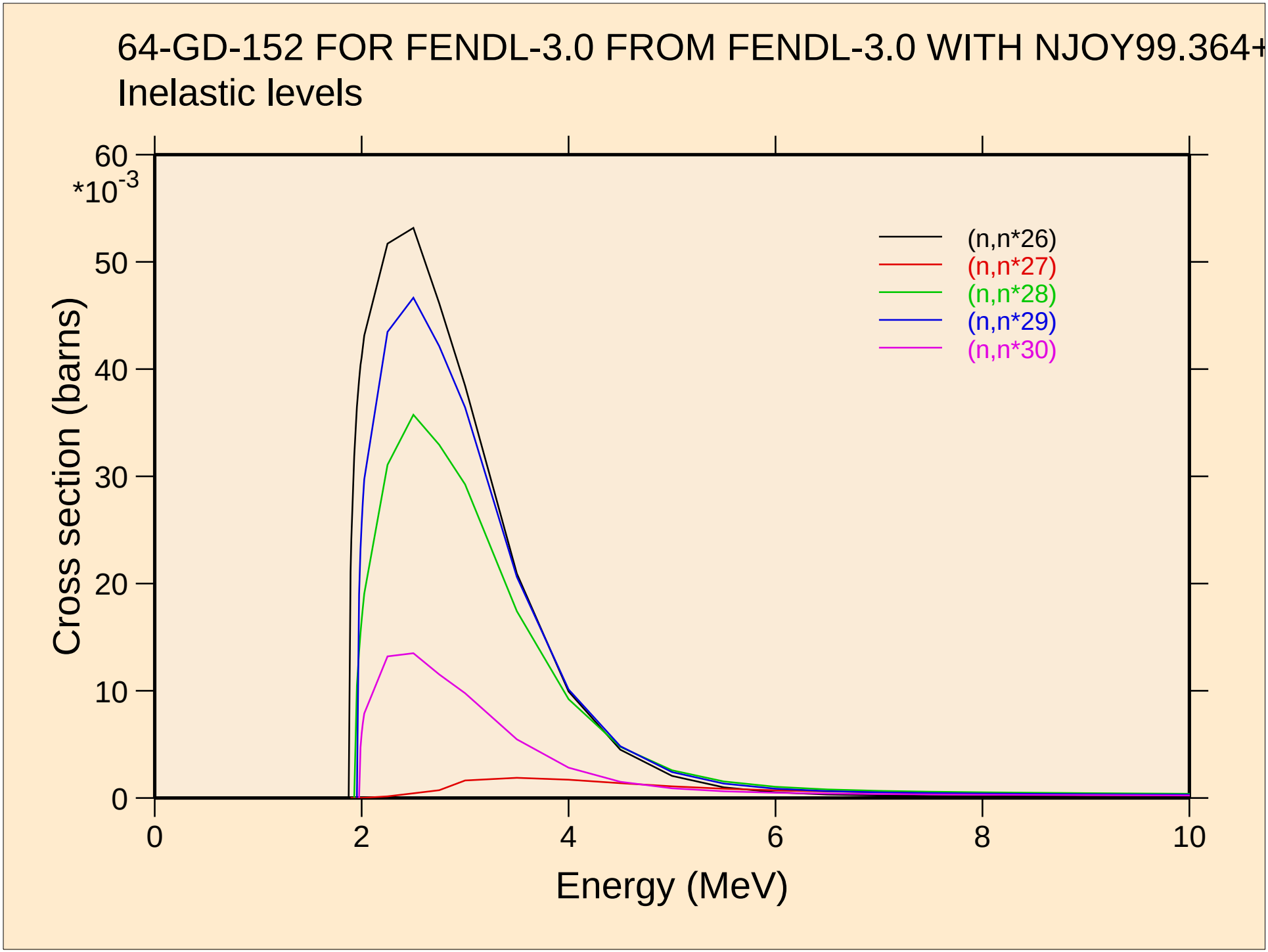

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Inelastic levels
Cross section (barns)
Energy (MeV)
1.0
0.8
0.6
0.4
0.2
0.0
0
2
4
6
8
10
(n,n*1)
(n,n*2)
(n,n*3)
(n,n*4)
(n,n*5)

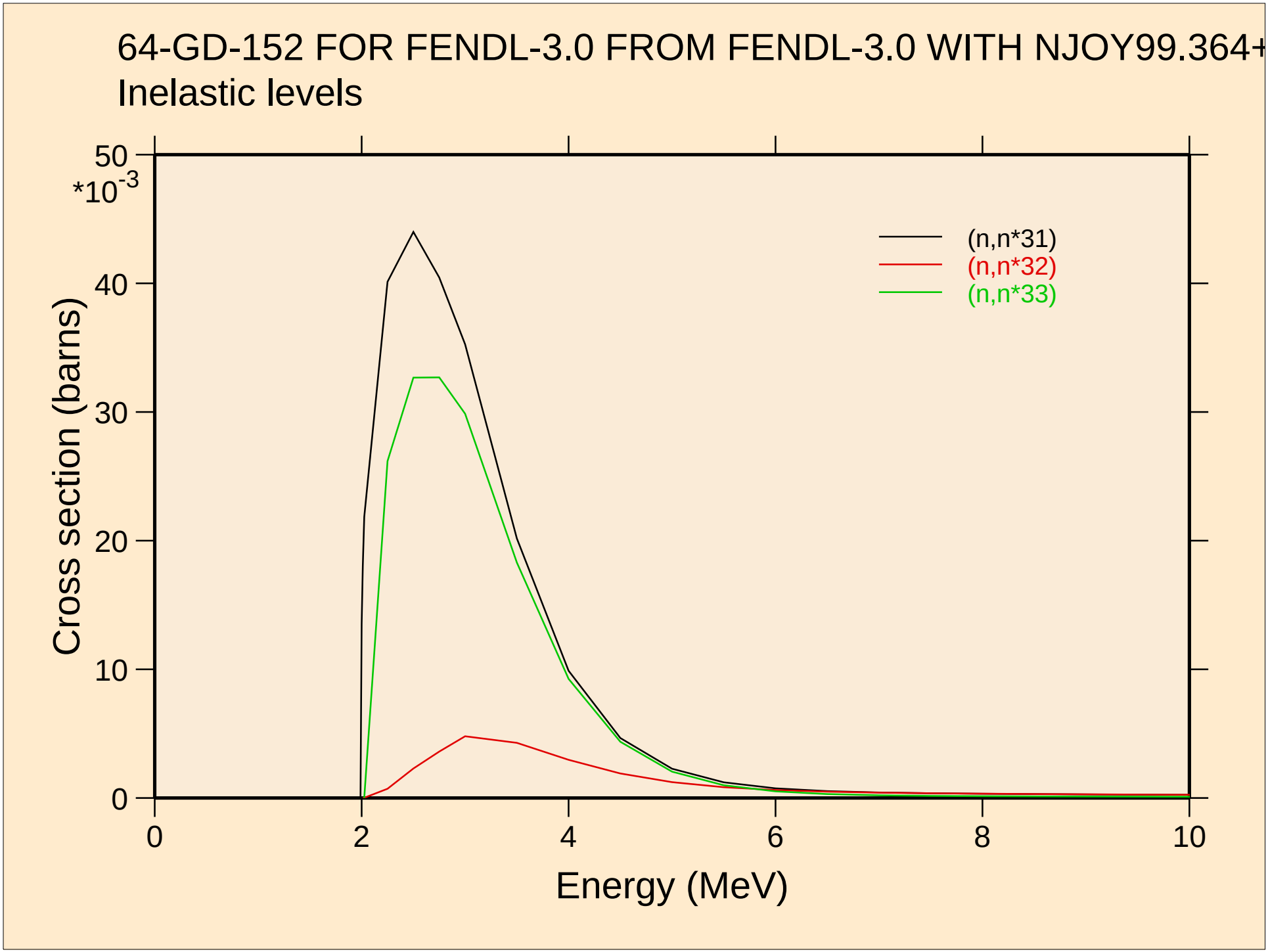

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Inelastic levels
250
*10-3
200
150
100
50
0
Cross section (barns)
0
2
4
6
8
10
Energy (MeV)
(n,n*6)
(n,n*7)
(n,n*8)
(n,n*9)
(n,n*10)

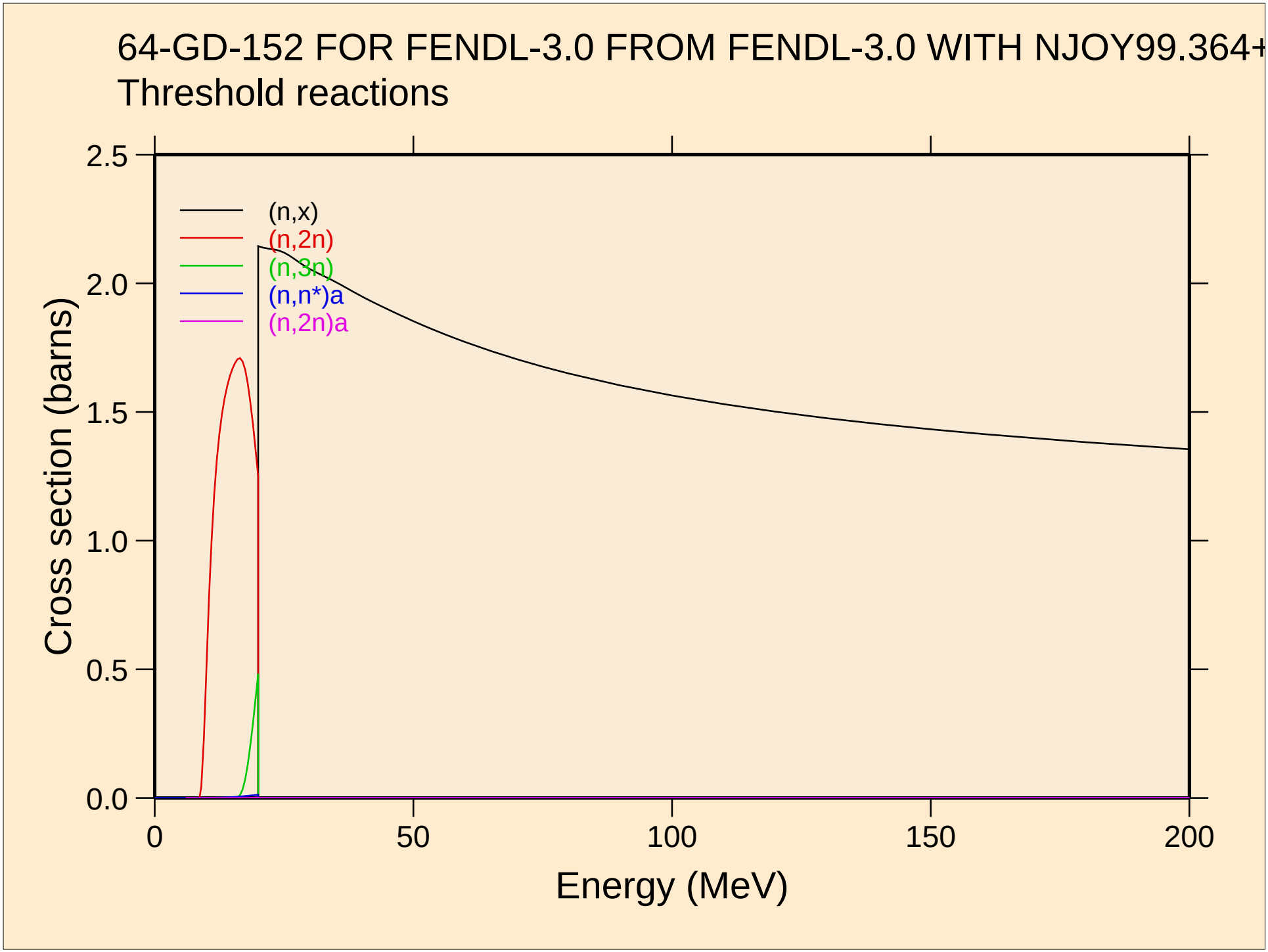

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Inelastic levels
Cross section (barns)
*10-3
160
140
120
100
80
60
40
20
0
0
2
4
6
8
10
Energy (MeV)
(n,n*11)
(n,n*12)
(n,n*13)
(n,n*14)
(n,n*15)

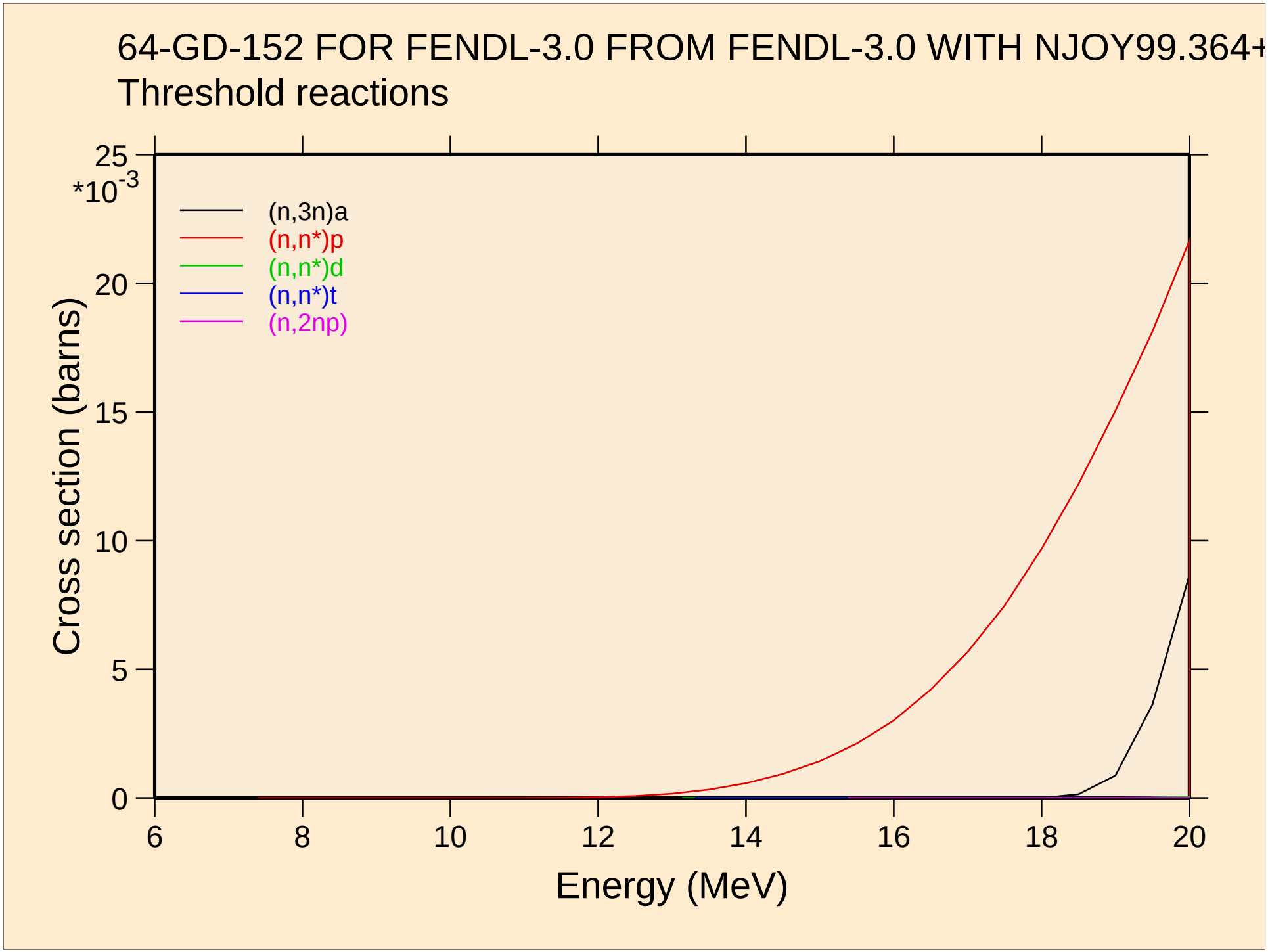

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Inelastic levels
100
*10-3
80
60
40
20
0
Cross section (barns)
0
2
4
6
8
10
Energy (MeV)
(n,n*16)
(n,n*17)
(n,n*18)
(n,n*19)
(n,n*20)

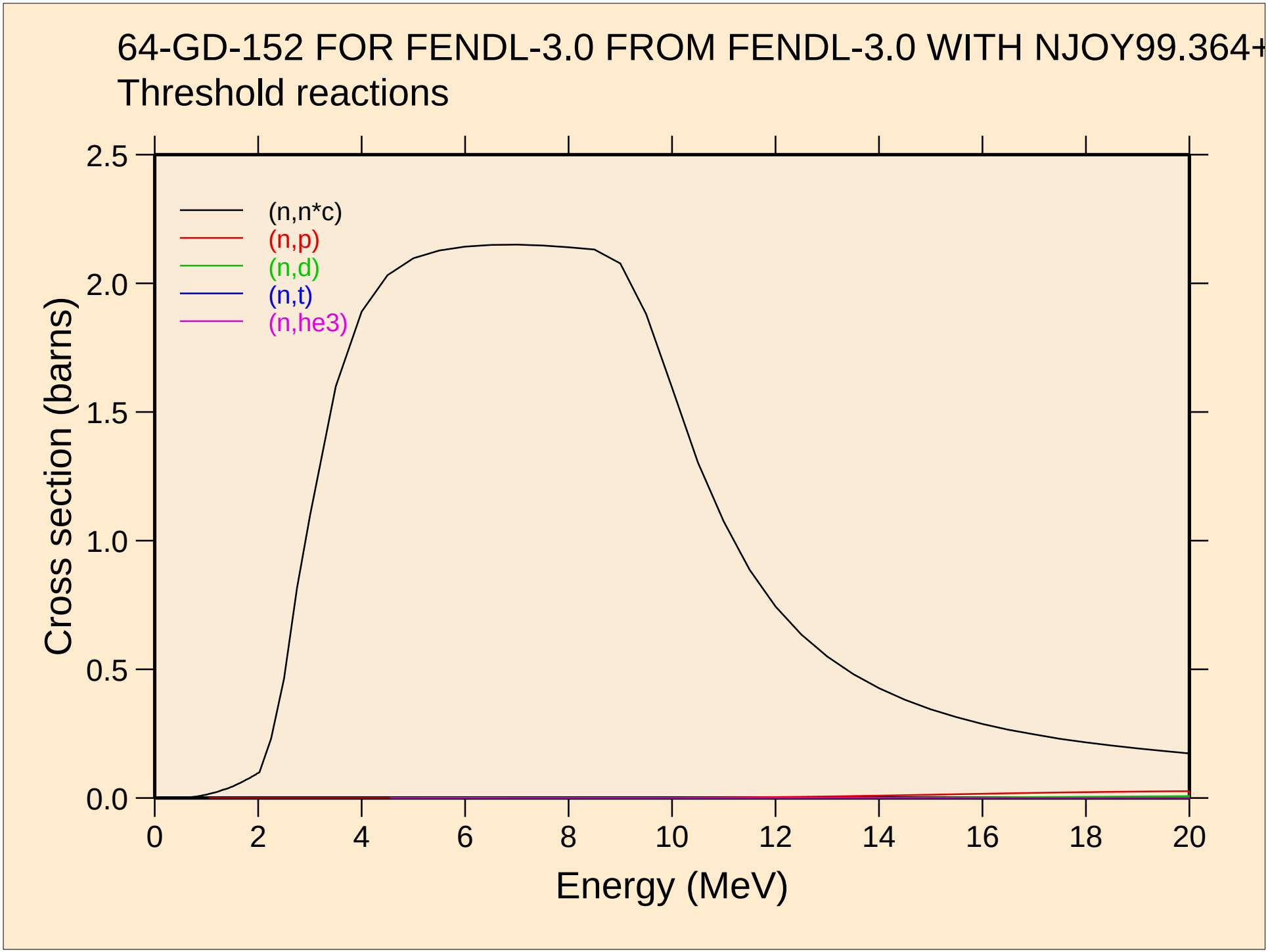

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Inelastic levels
Cross section (barns)
*10-3
60
50
40
30
20
10
0
0
2
4
6
8
10
Energy (MeV)
(n,n*21)
(n,n*22)
(n,n*23)
(n,n*24)
(n,n*25)

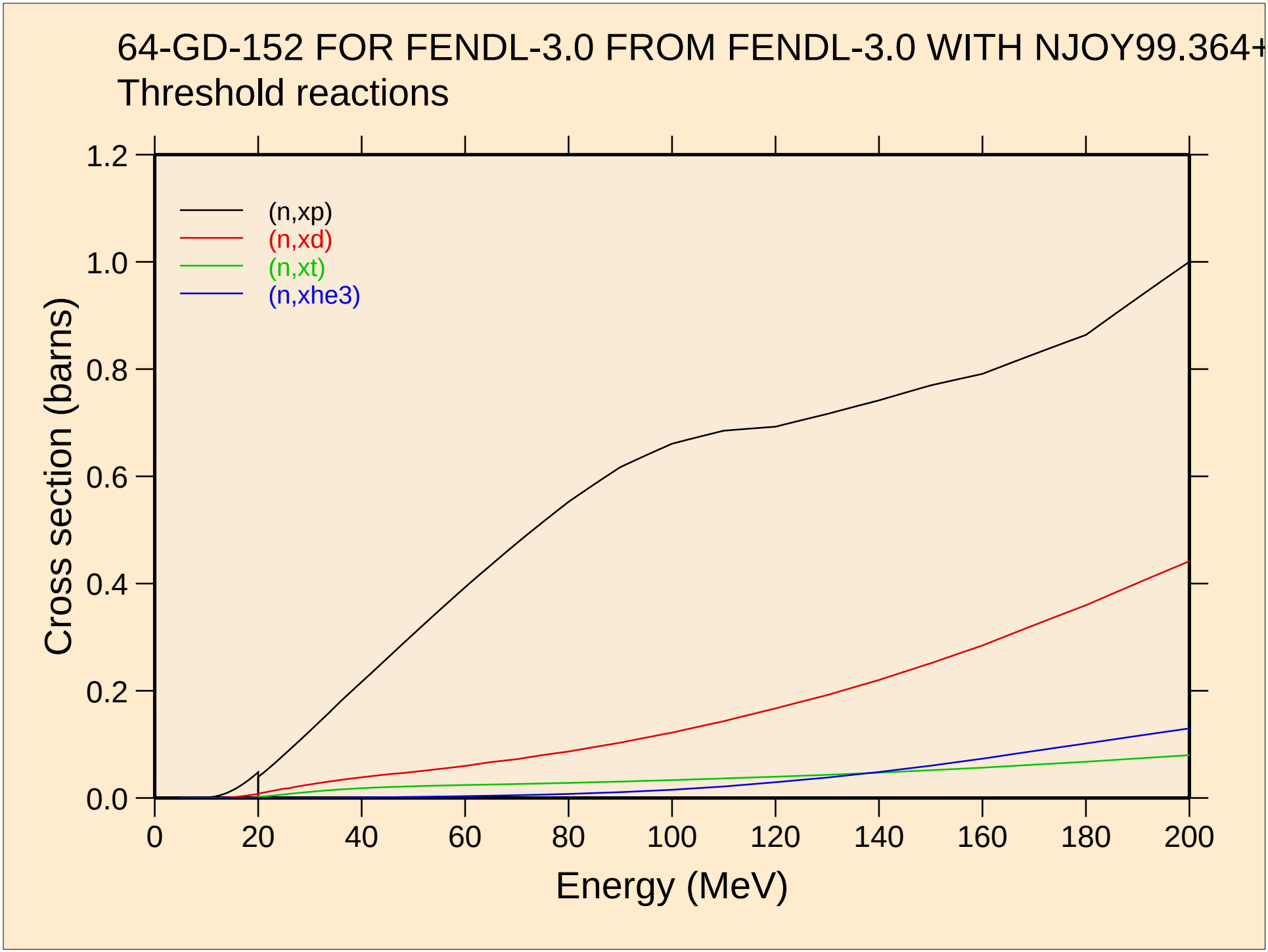

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Inelastic levels
Cross section (barns)
*10-3
60
50
40
30
20
10
0
0
2
4
6
8
10
Energy (MeV)
(n,n*26)
(n,n*27)
(n,n*28)
(n,n*29)
(n,n*30)

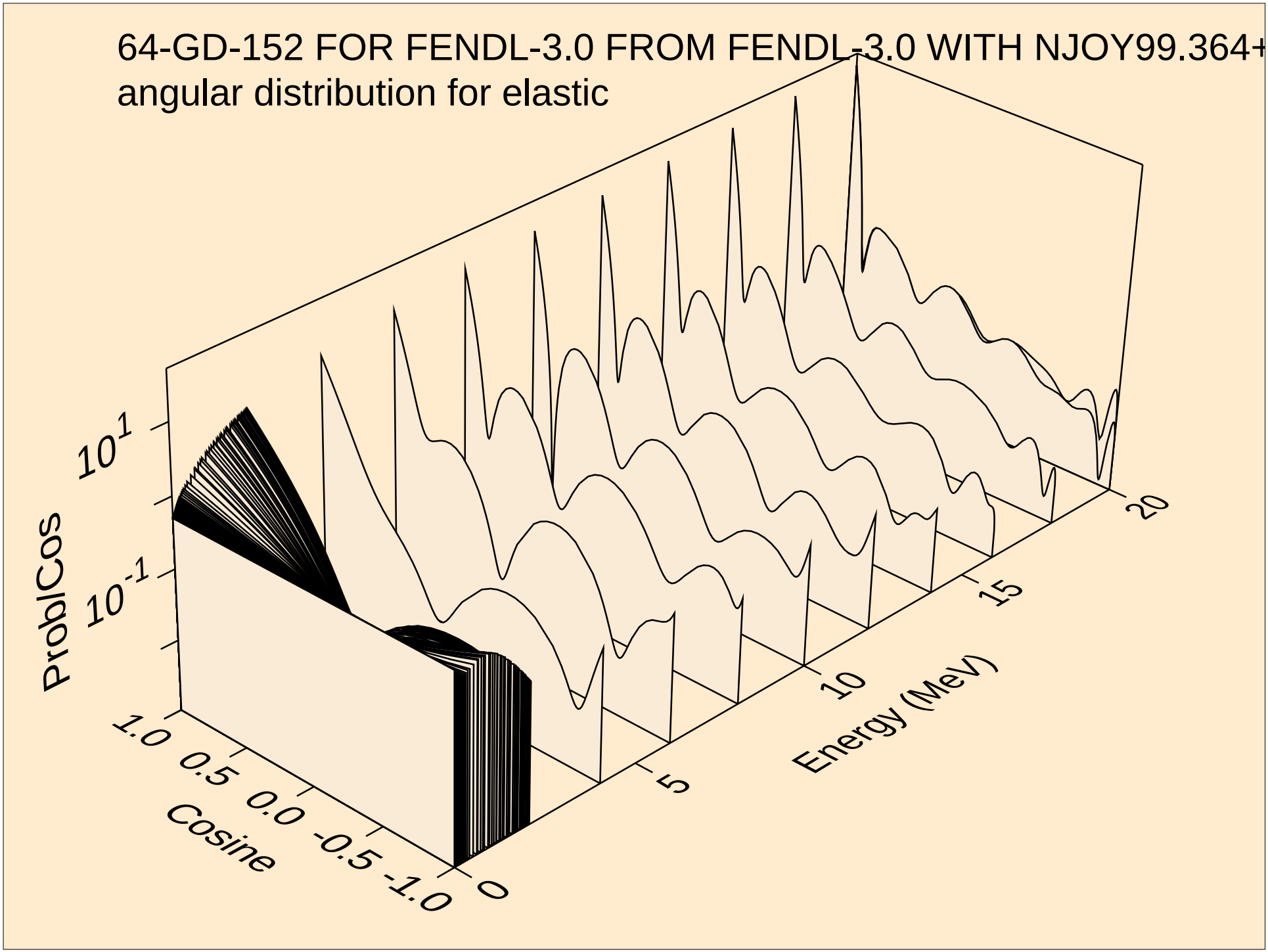

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Inelastic levels
*10-3
50
40
30
20
10
0
Cross section (barns)
0
2
4
6
8
10
Energy (MeV)
(n,n*31)
(n,n*32)
(n,n*33)

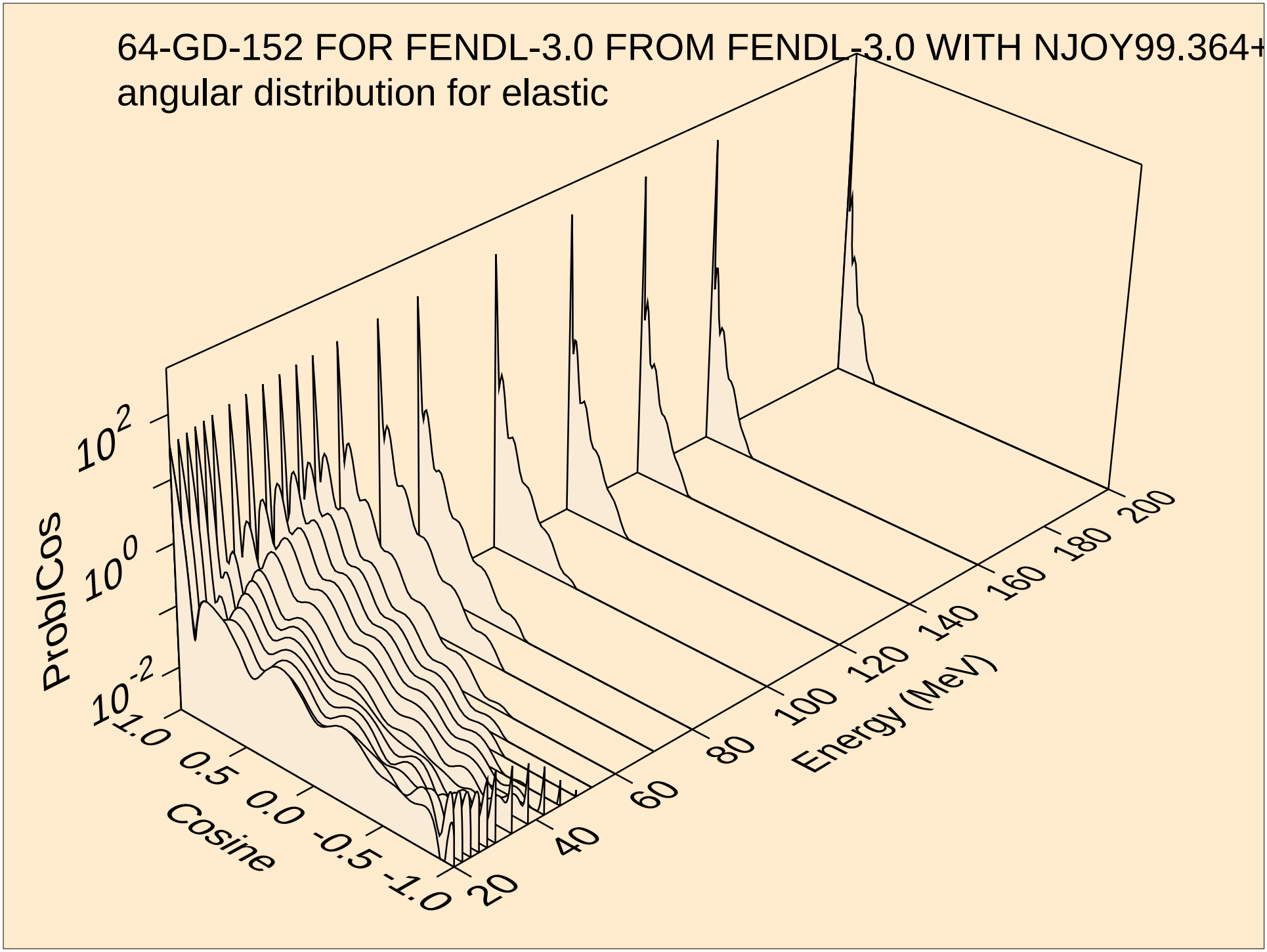

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Threshold reactions
Cross section (barns)
Energy (MeV)
(n,x)
(n,2n)
(n,3n)
(n,n*)a
(n,2n)a
0.0
0.5
1.0
1.5
2.0
2.5
0
50
100
150
200

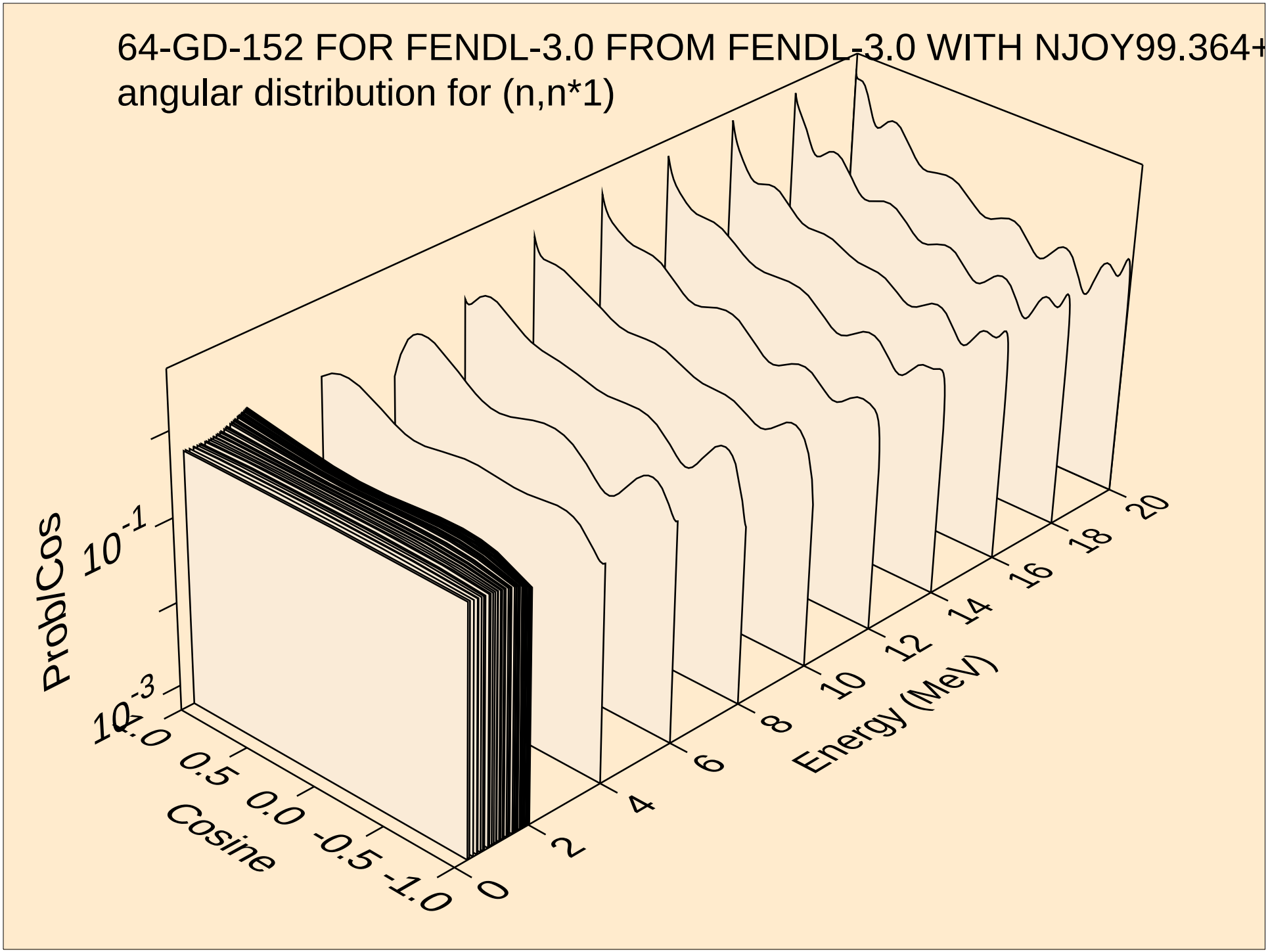

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Threshold reactions
*10-3
25
20
15
10
5
0
Cross section (barns)
(n,3n)a
(n,n*)p
(n,n*)d
(n,n*)t
(n,2np)
6
8
10
12
14
16
18
20
Energy (MeV)

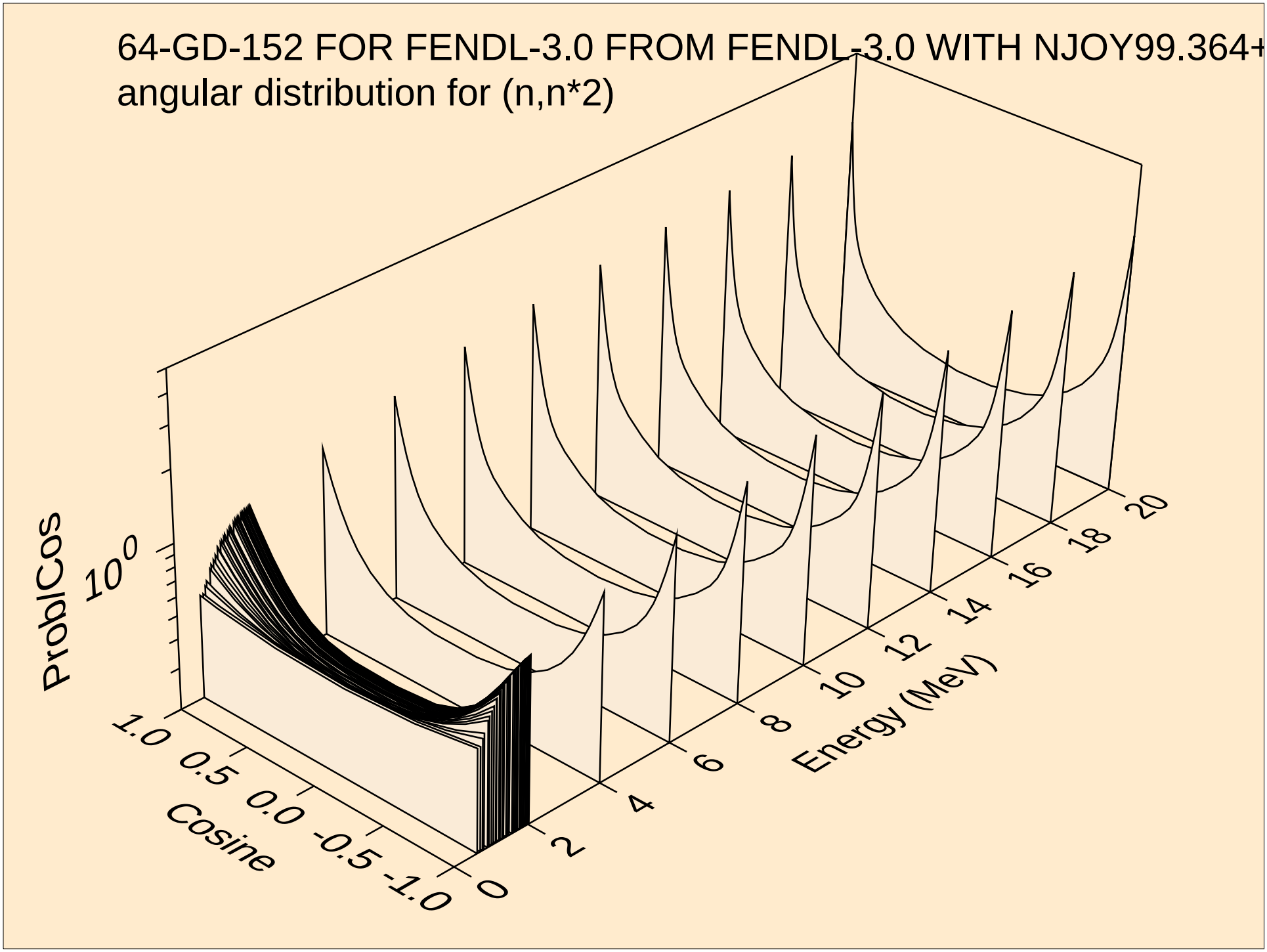

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Threshold reactions
(n,n*c)
(n,p)
(n,d)
(n,t)
(n,he3)
Cross section (barns)
Energy (MeV)
0.0
0.5
1.0
1.5
2.0
2.5
0
2
4
6
8
10
12
14
16
18
20

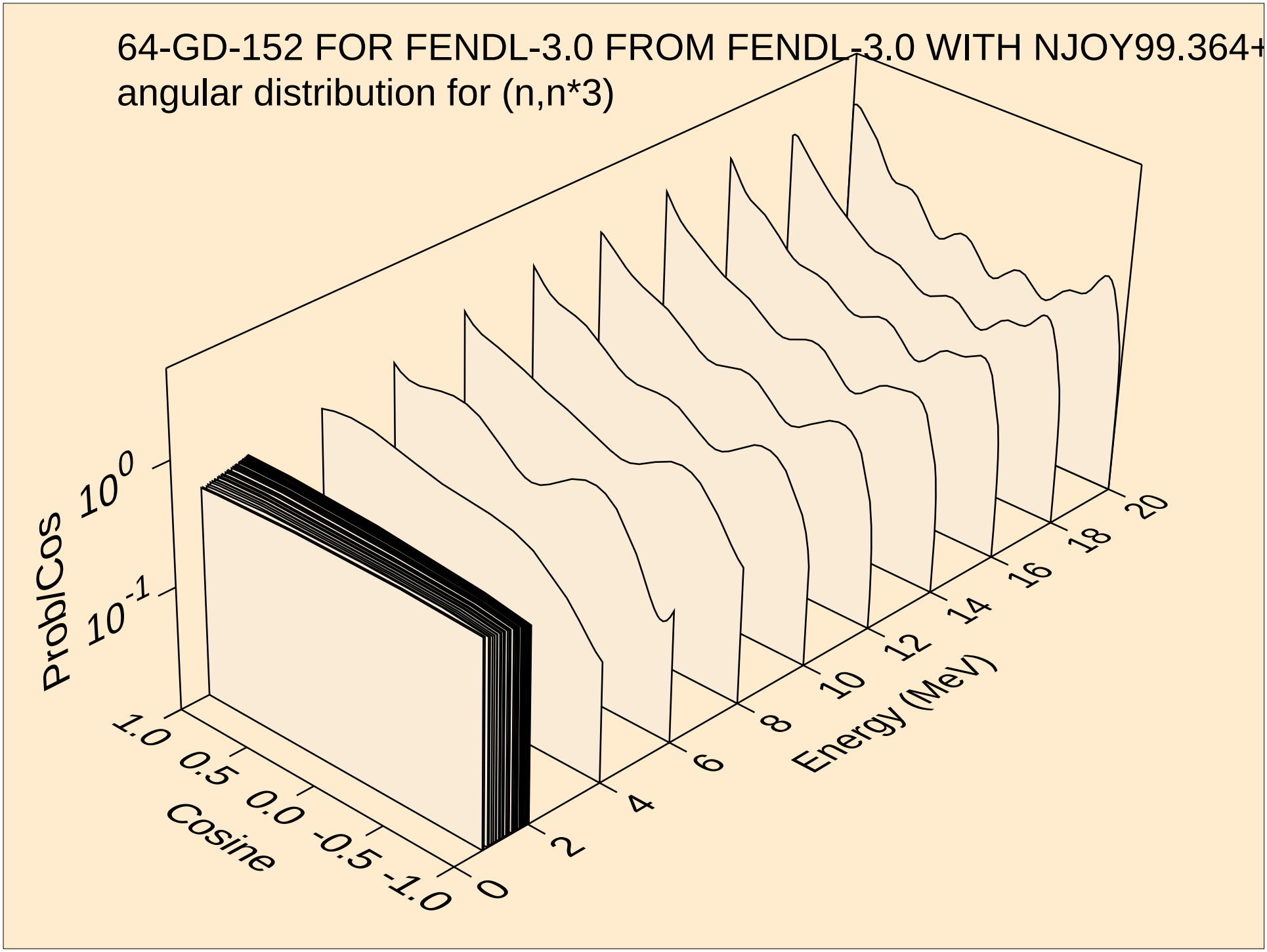

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Threshold reactions
(n,xp)
(n,xd)
(n,xt)
(n,xhe3)
Cross section (barns)
Energy (MeV)
0.0
0.2
0.4
0.6
0.8
1.0
1.2
0
20
40
60
80
100
120
140
160
180
200

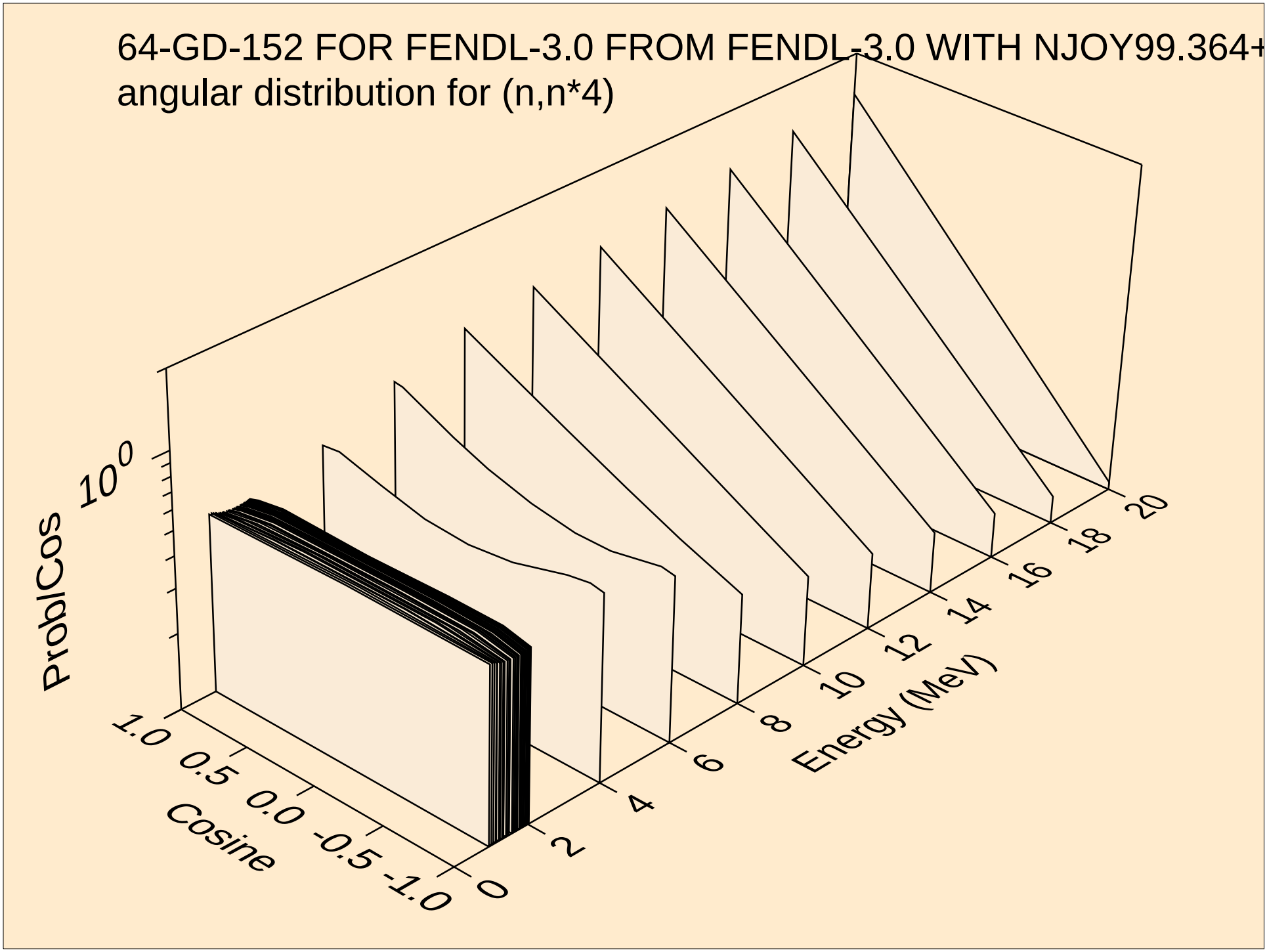

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
angular distribution for elastic
ProbICos
10^1
10^-1
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
Energy (MeV)

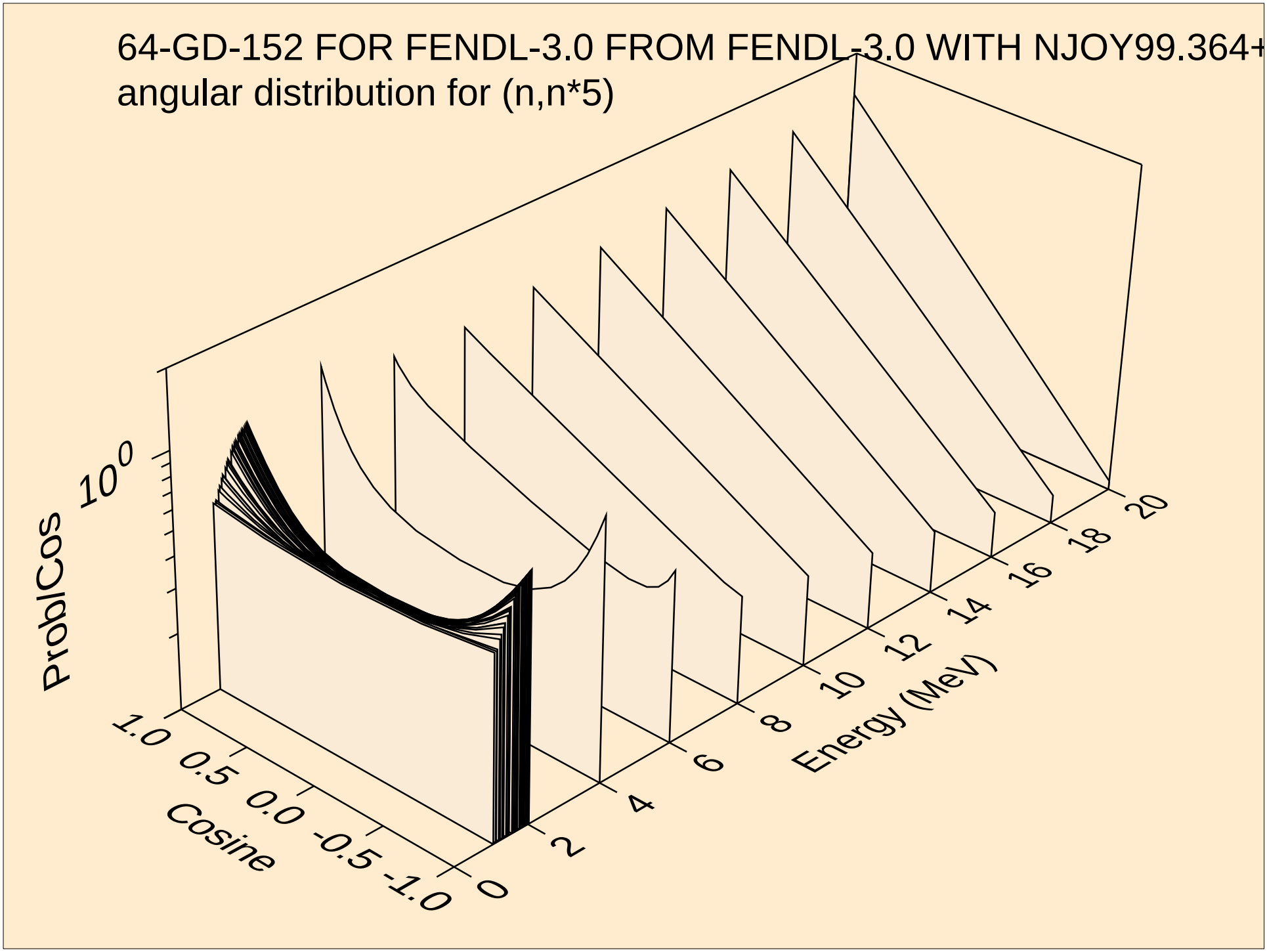

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
angular distribution for elastic
ProblCos
$10^{2}$
$10^{0}$
$10^{-2}$
1.0
0.5
0.0
-0.5
-1.0
Cosine
20
40
60
80
100
120
140
160
180
200
Energy (MeV)

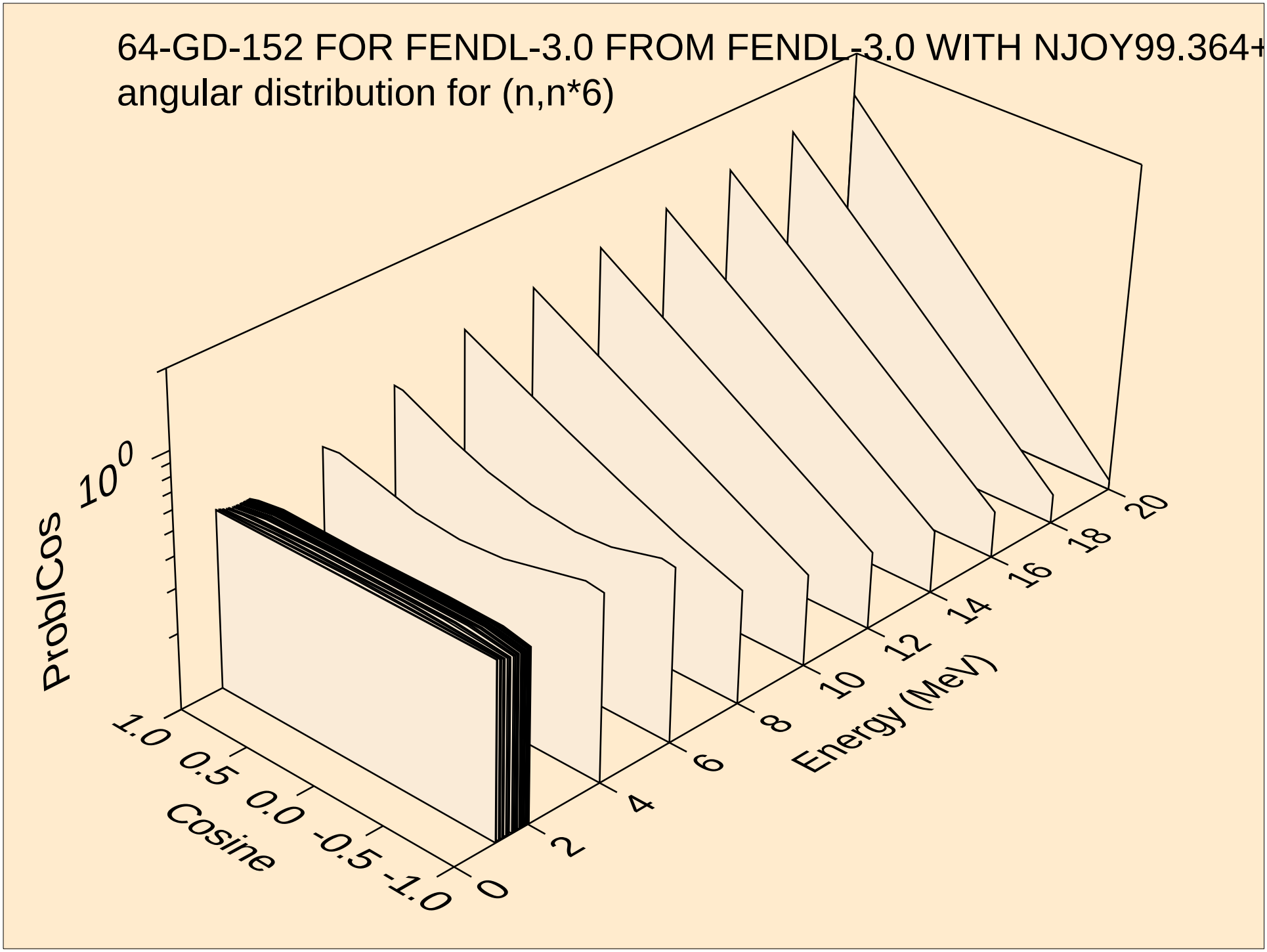

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
angular distribution for (n,n*1)
ProblCos
10-1
10-3
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

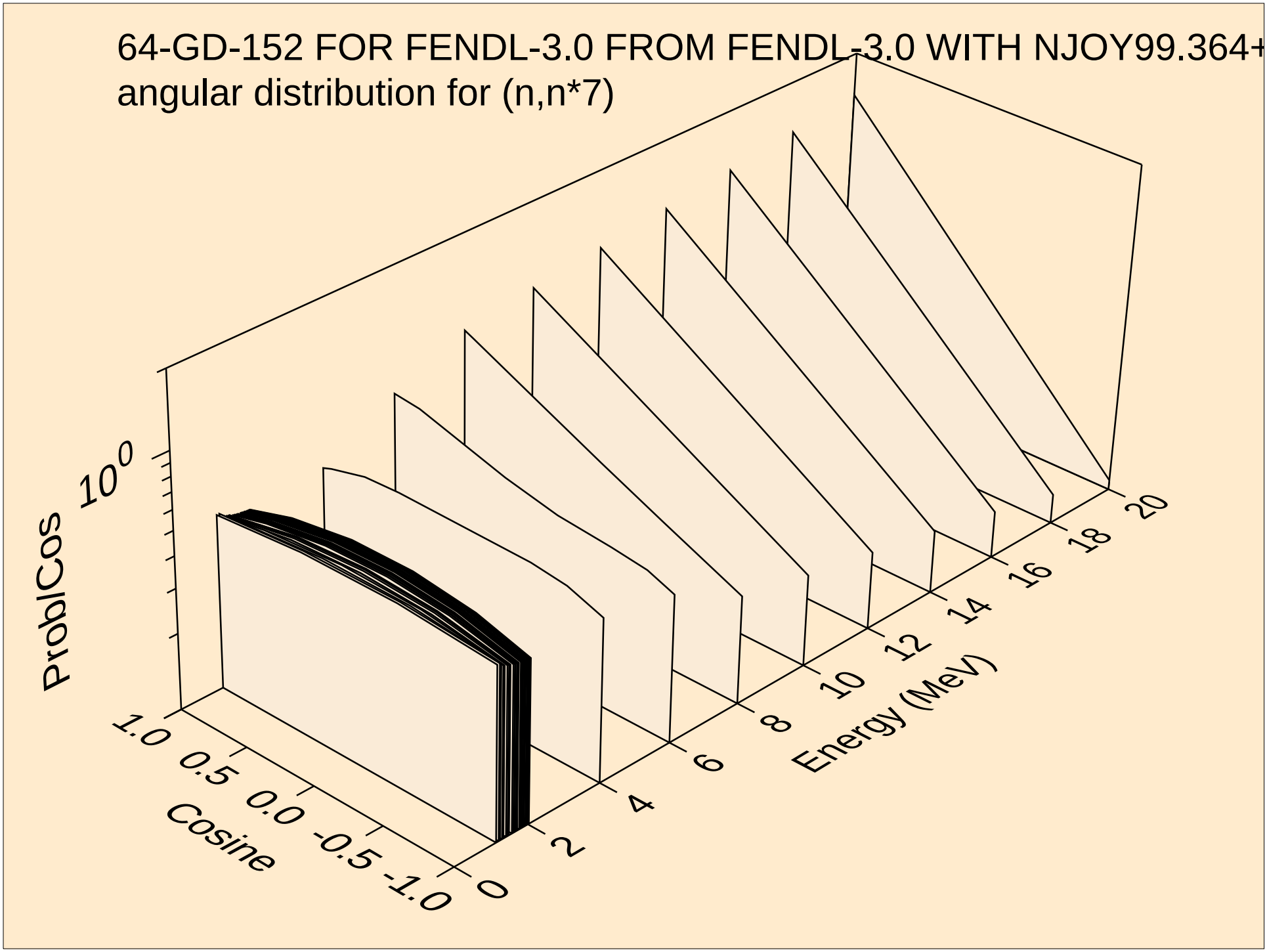

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
angular distribution for (n,n*2)
ProblCos
$10^0$
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

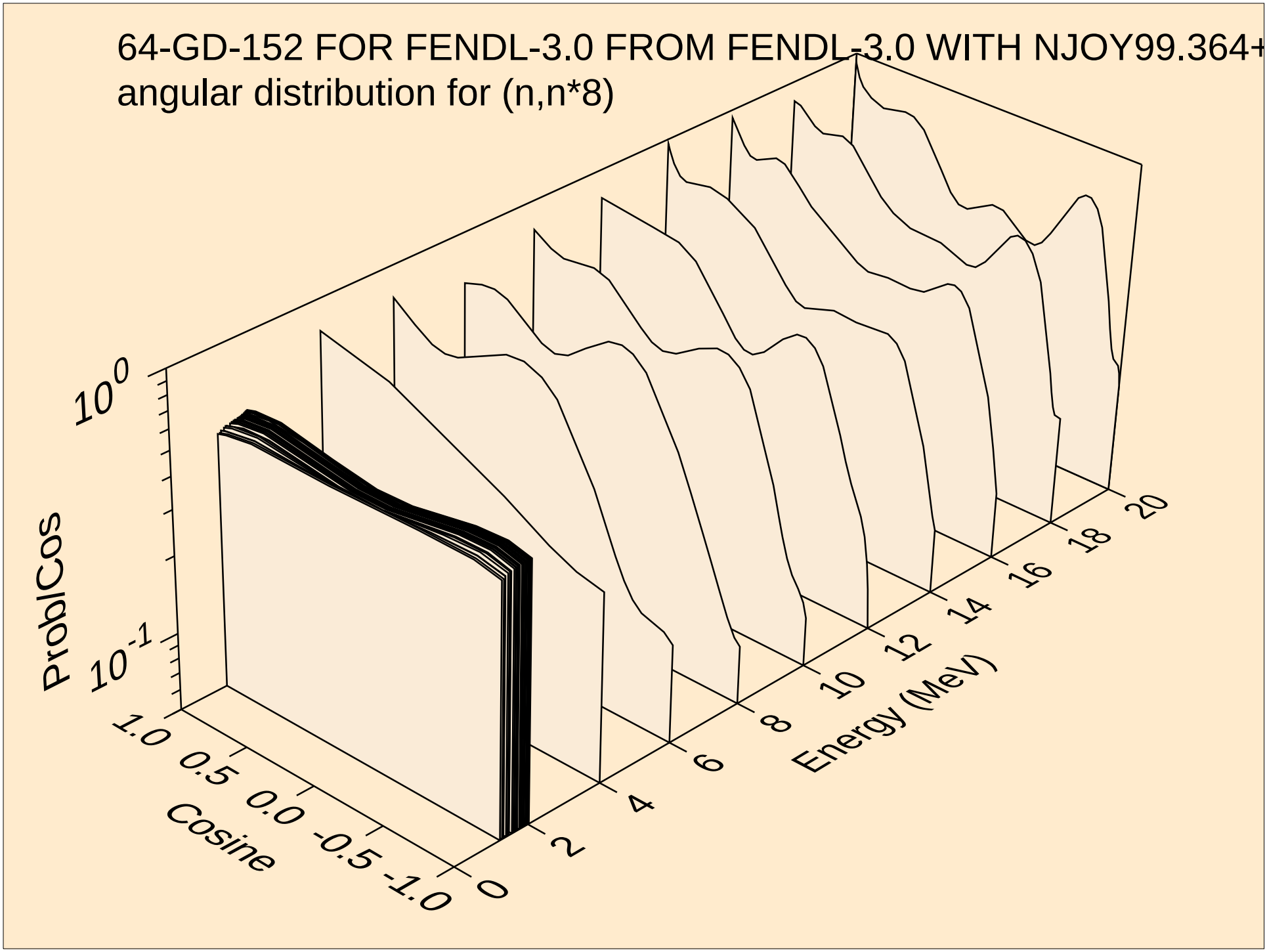

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
angular distribution for (n,n*3)
ProbICos
$10^{0}$
$10^{-1}$
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

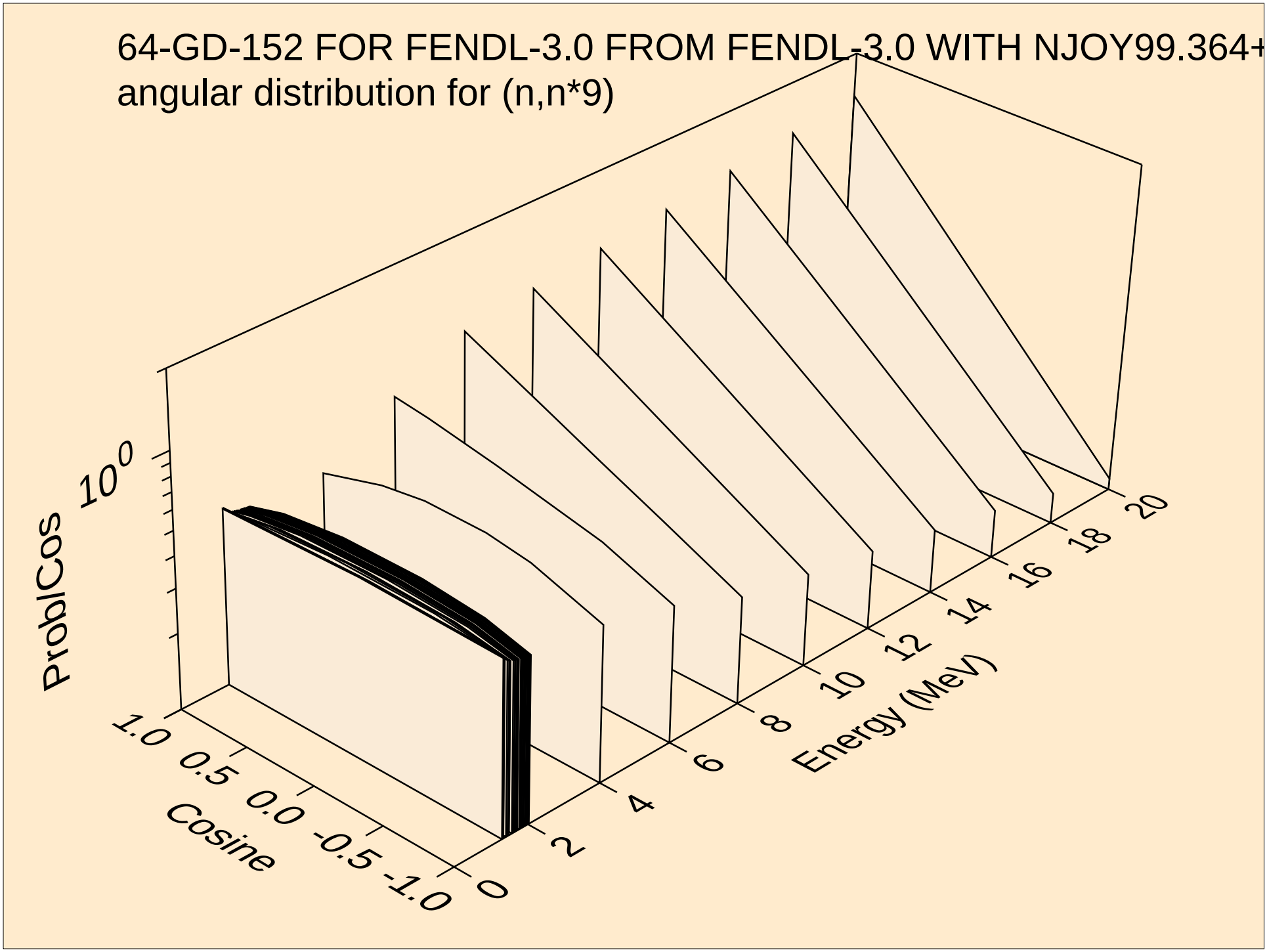

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
angular distribution for (n,n*4)
ProbICos
$10^0$
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

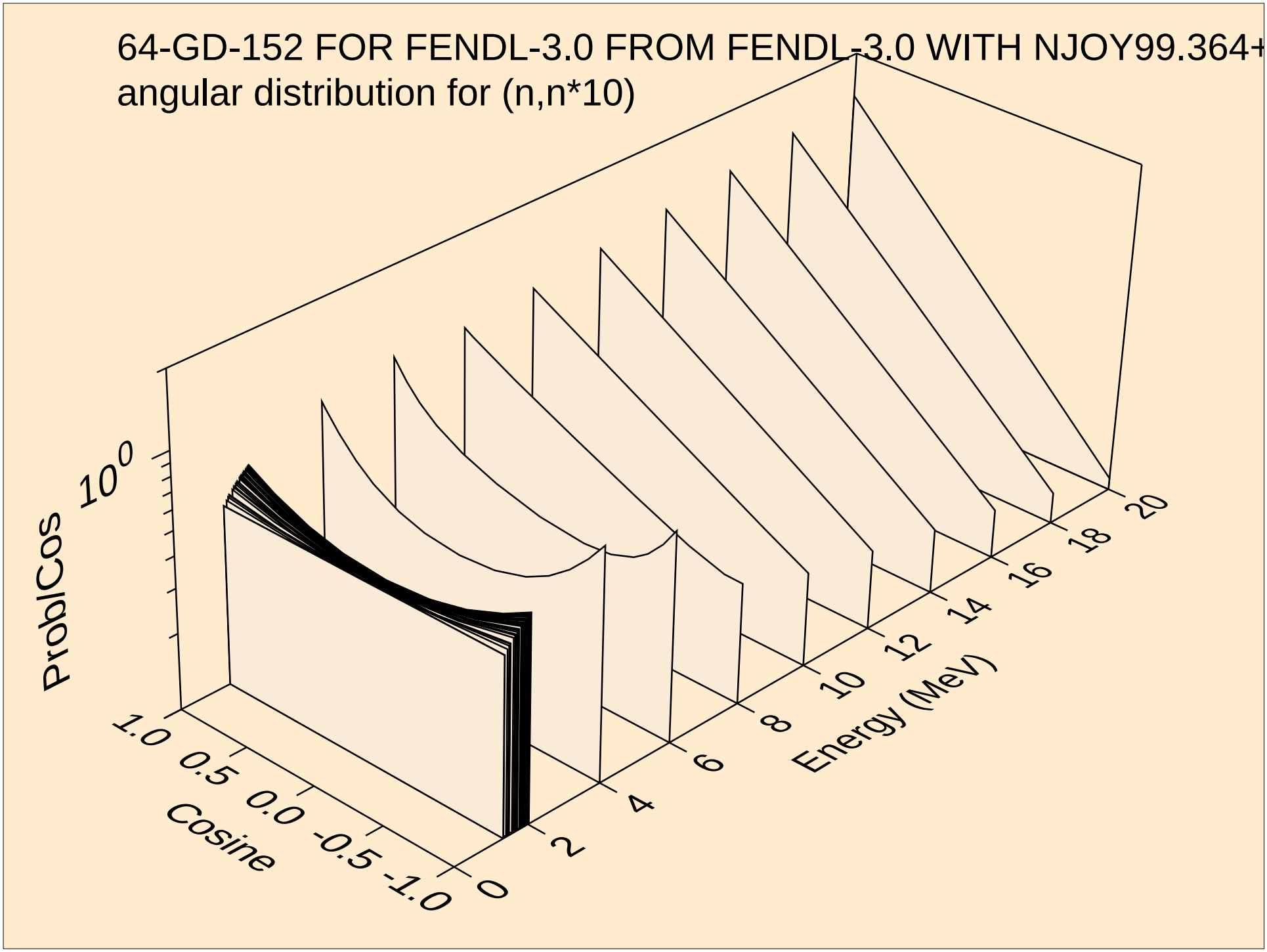

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
angular distribution for (n,n*5)
ProbICos
$10^0$
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

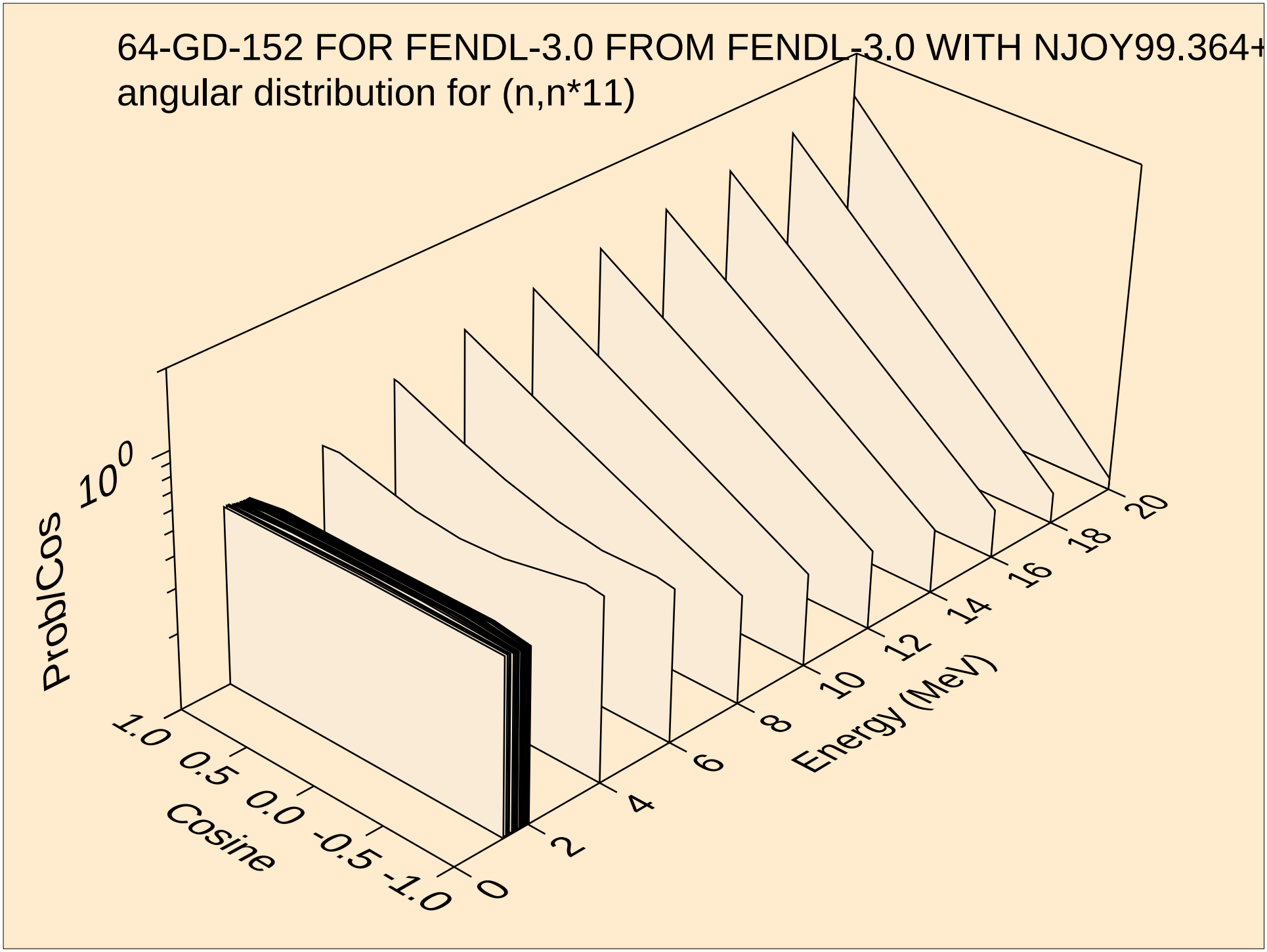

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
angular distribution for (n,n*6)
ProbICos
$10^0$
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

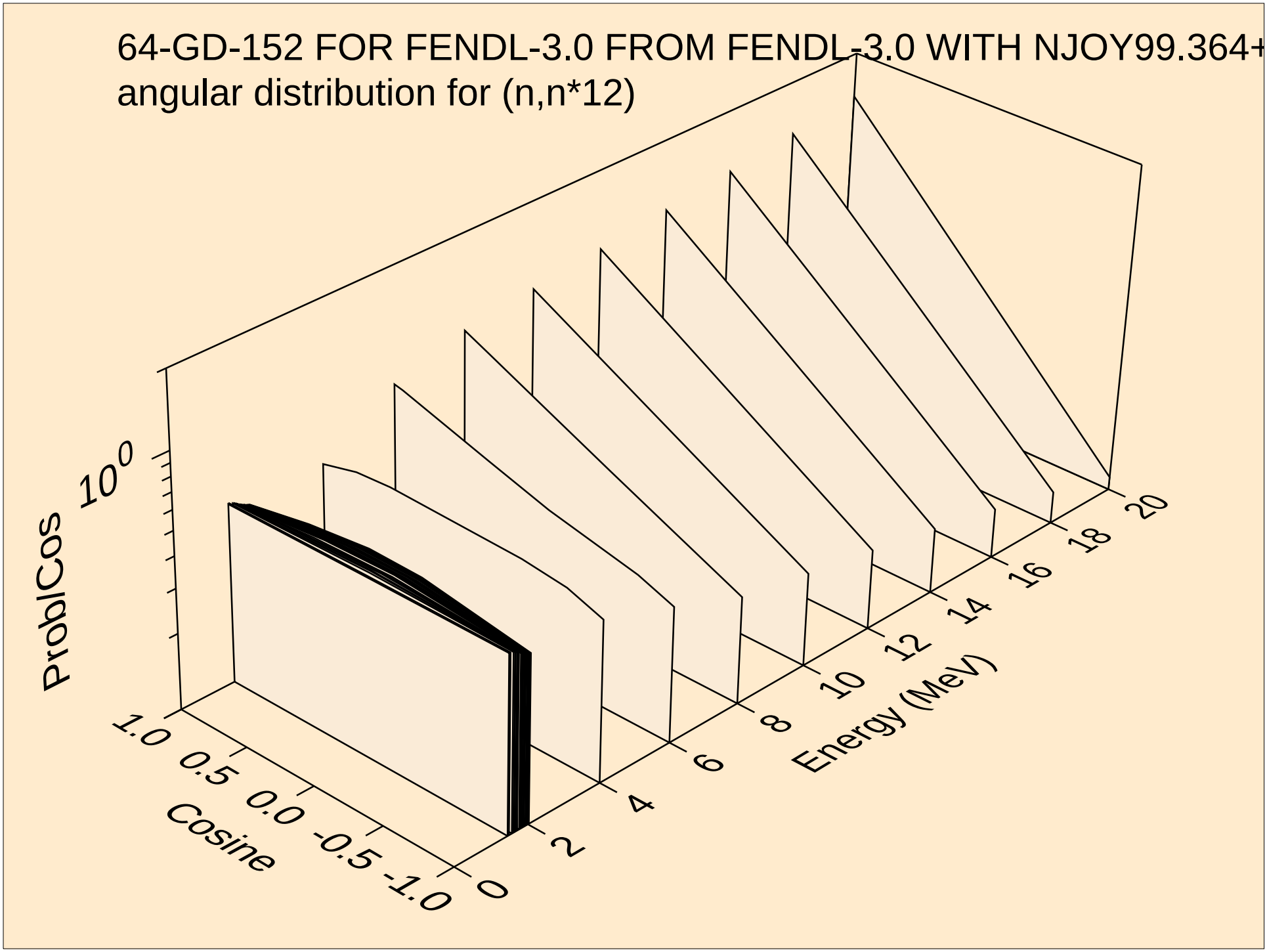

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
angular distribution for (n,n*7)
ProbICos
$10^0$
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

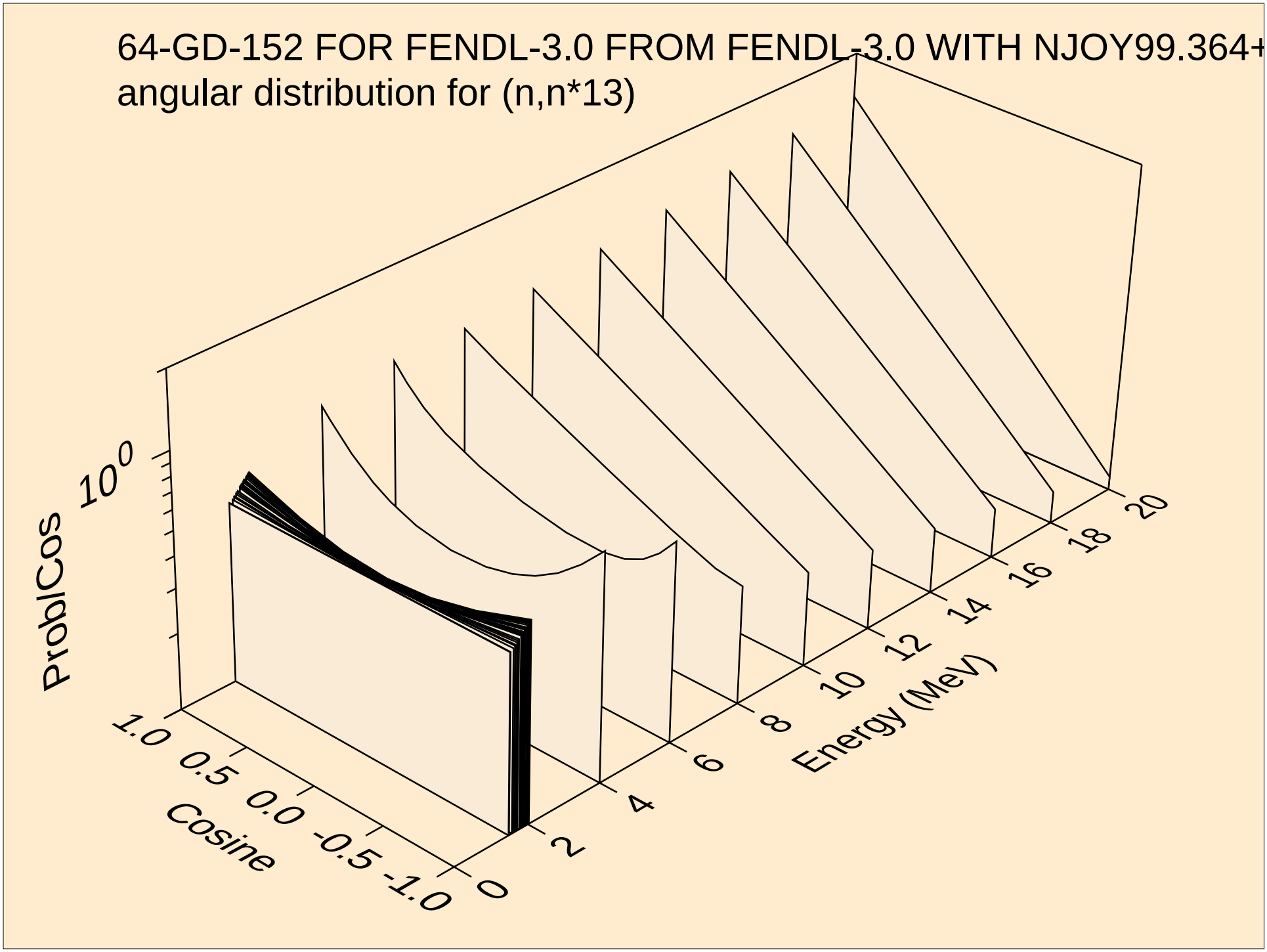

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
angular distribution for (n,n*8)
ProbICos
$10^{0}$
$10^{-1}$
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

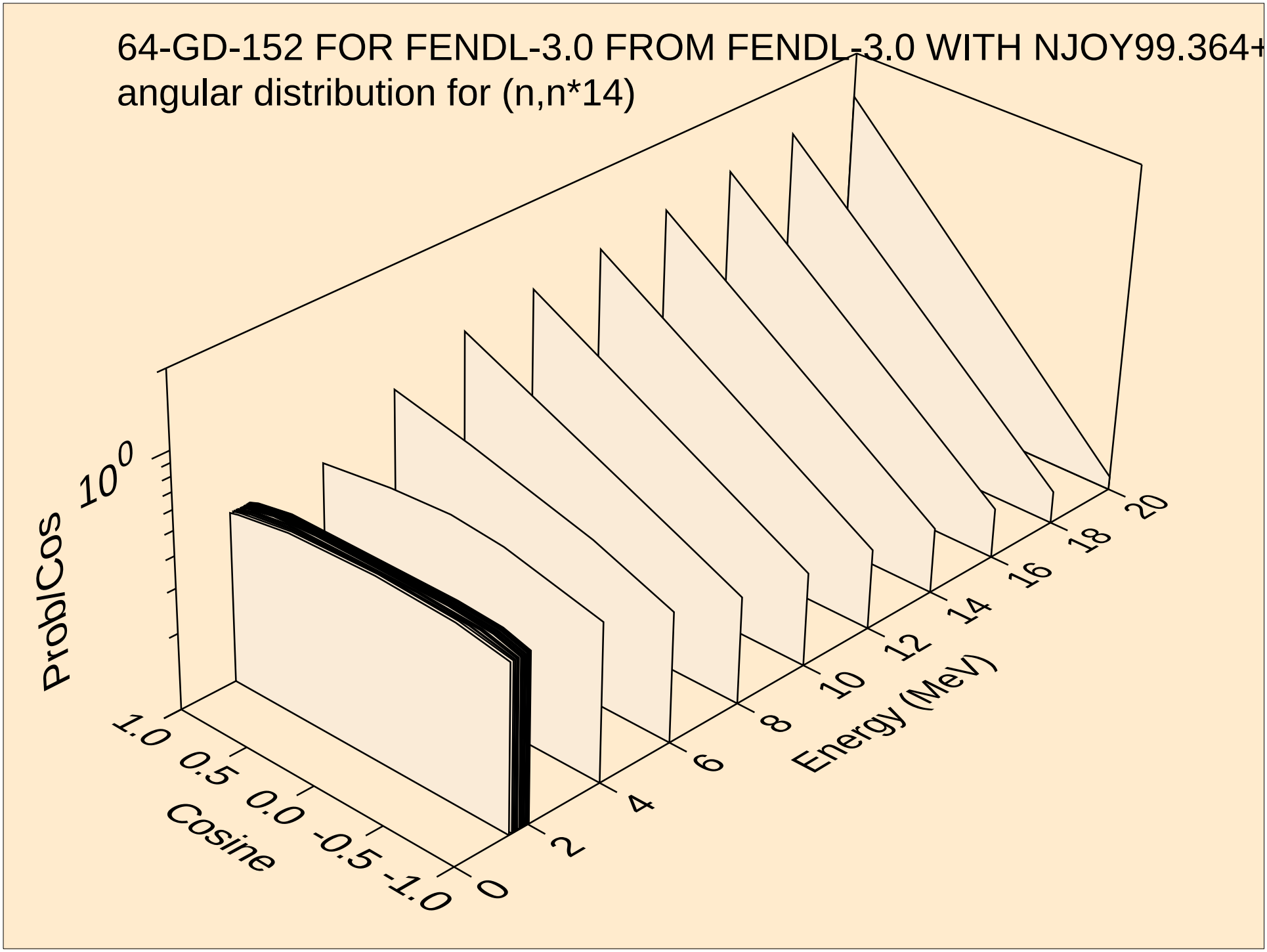

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
angular distribution for (n,n*9)
ProbICos
$10^0$
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

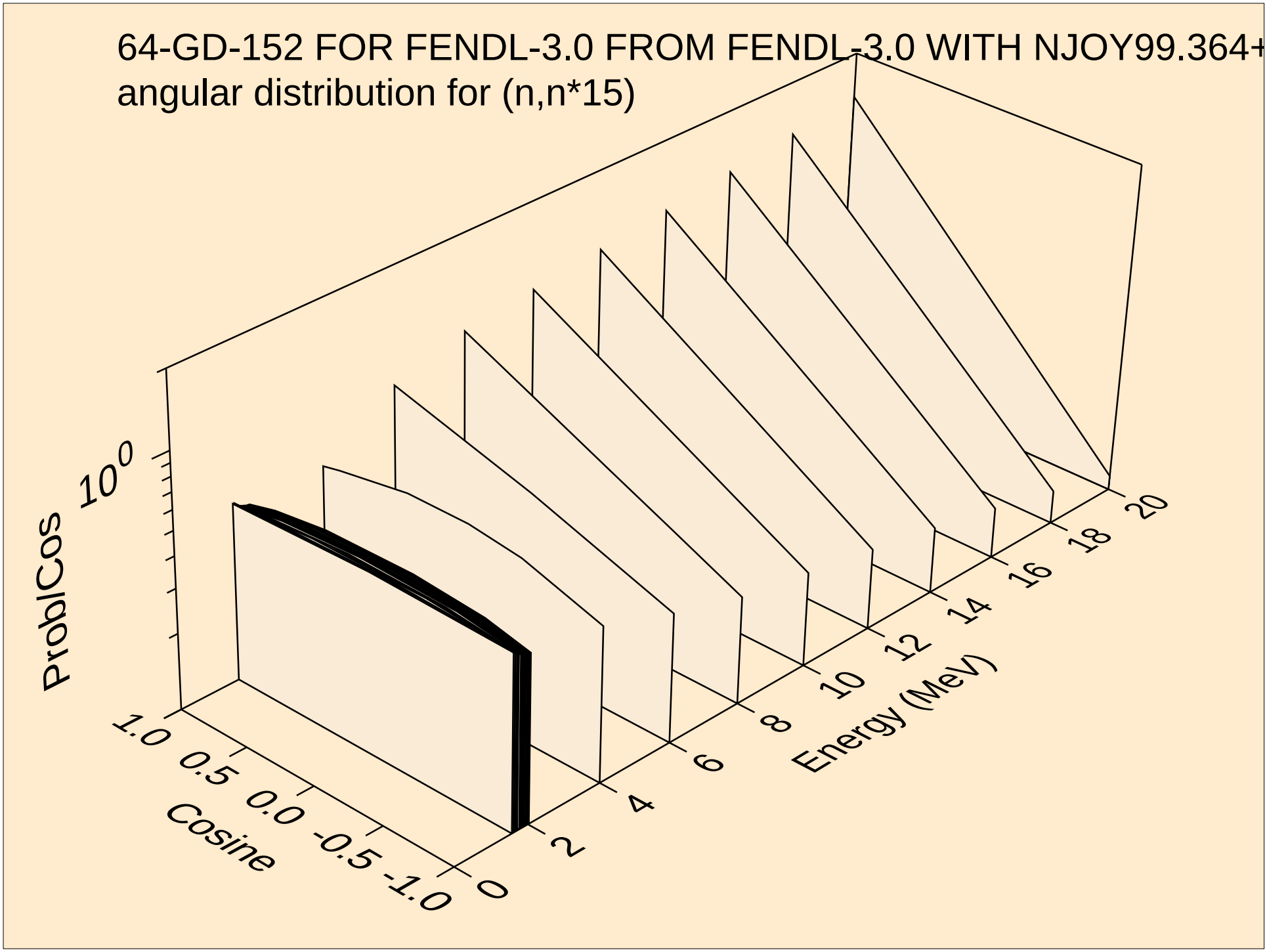

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
angular distribution for (n,n*10)
ProbICos
$10^0$
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

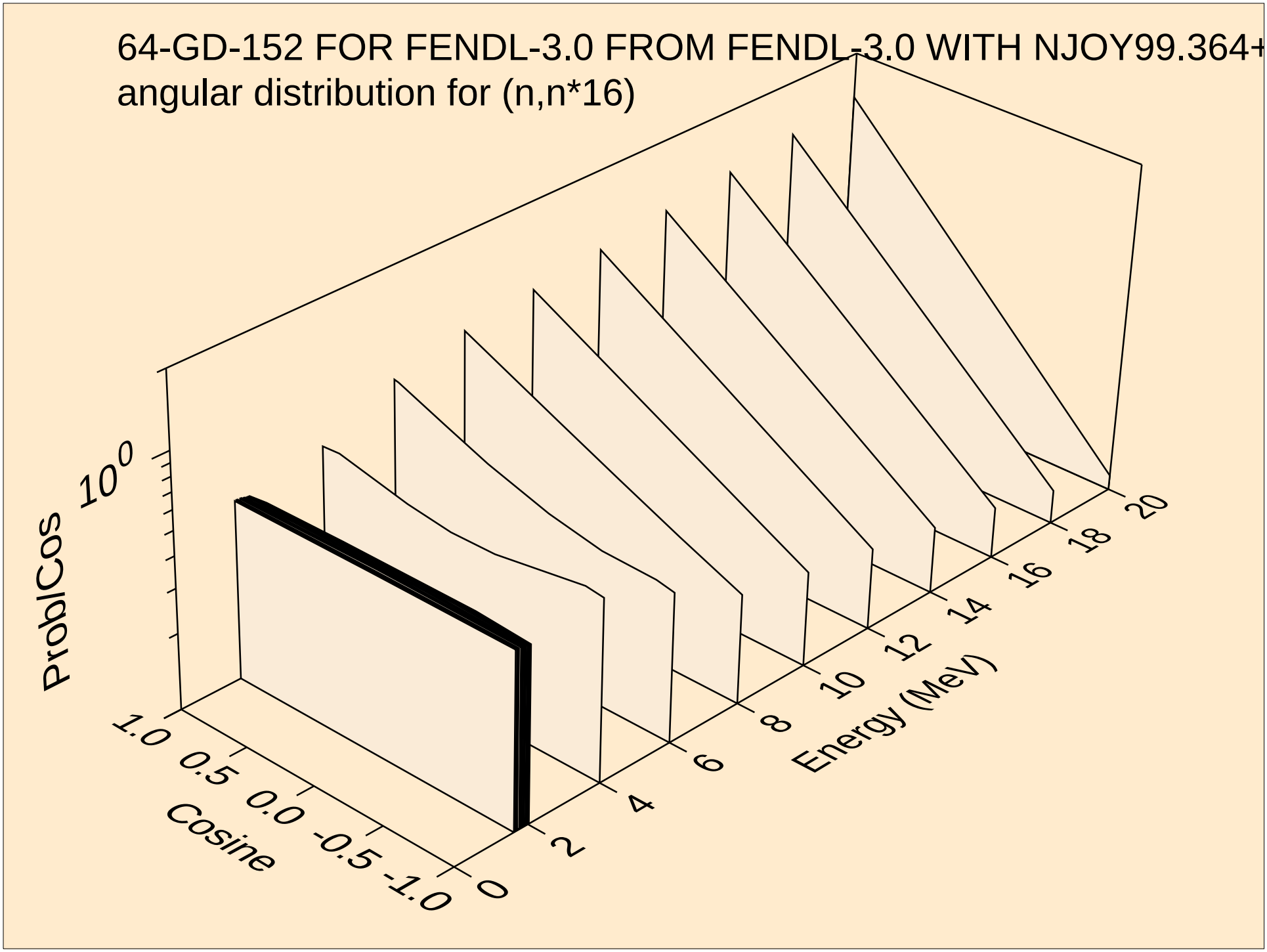

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
angular distribution for (n,n*11)
ProbICos
$10^0$
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

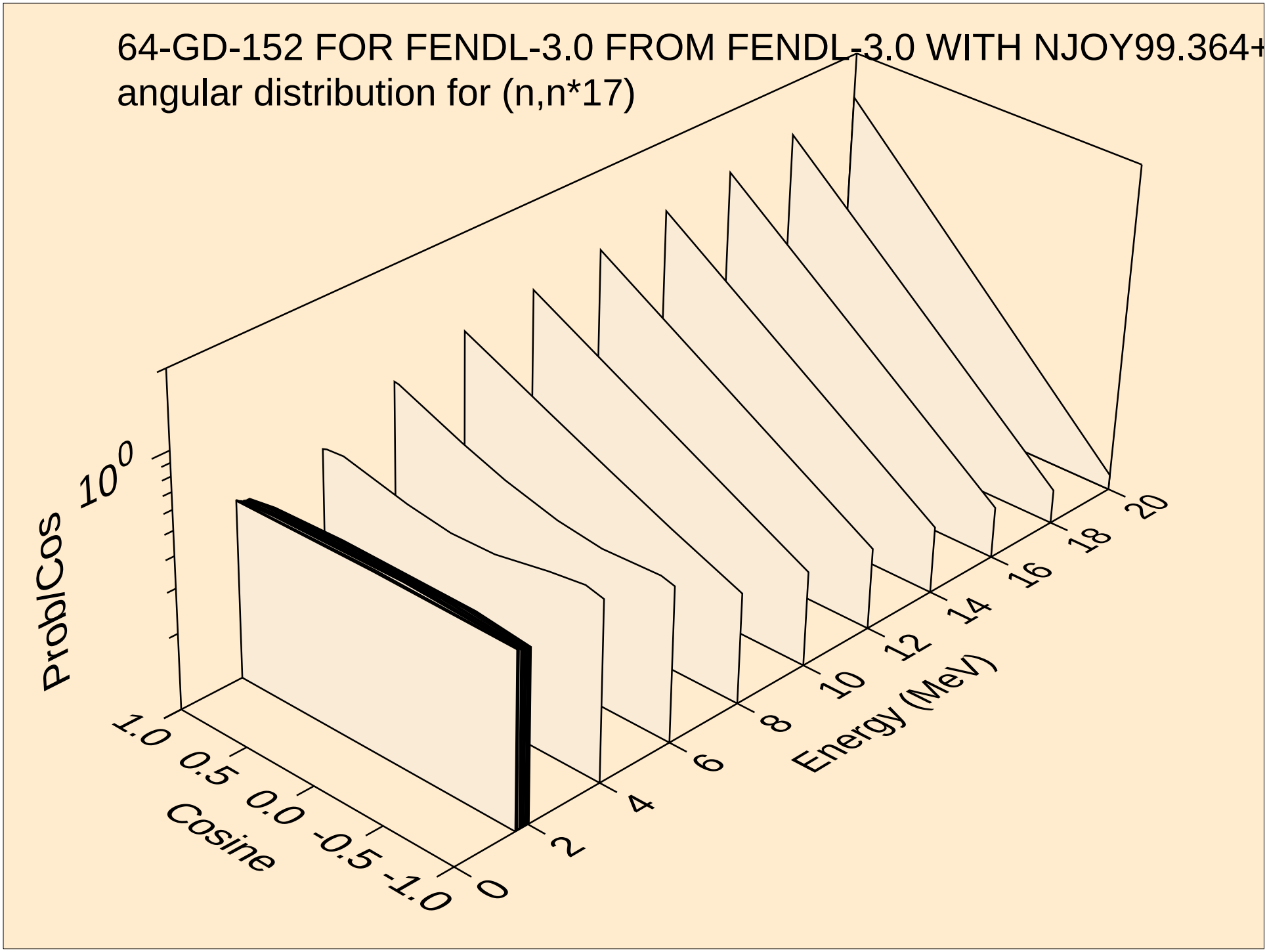

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
angular distribution for (n,n*12)
ProbICos
$10^0$
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

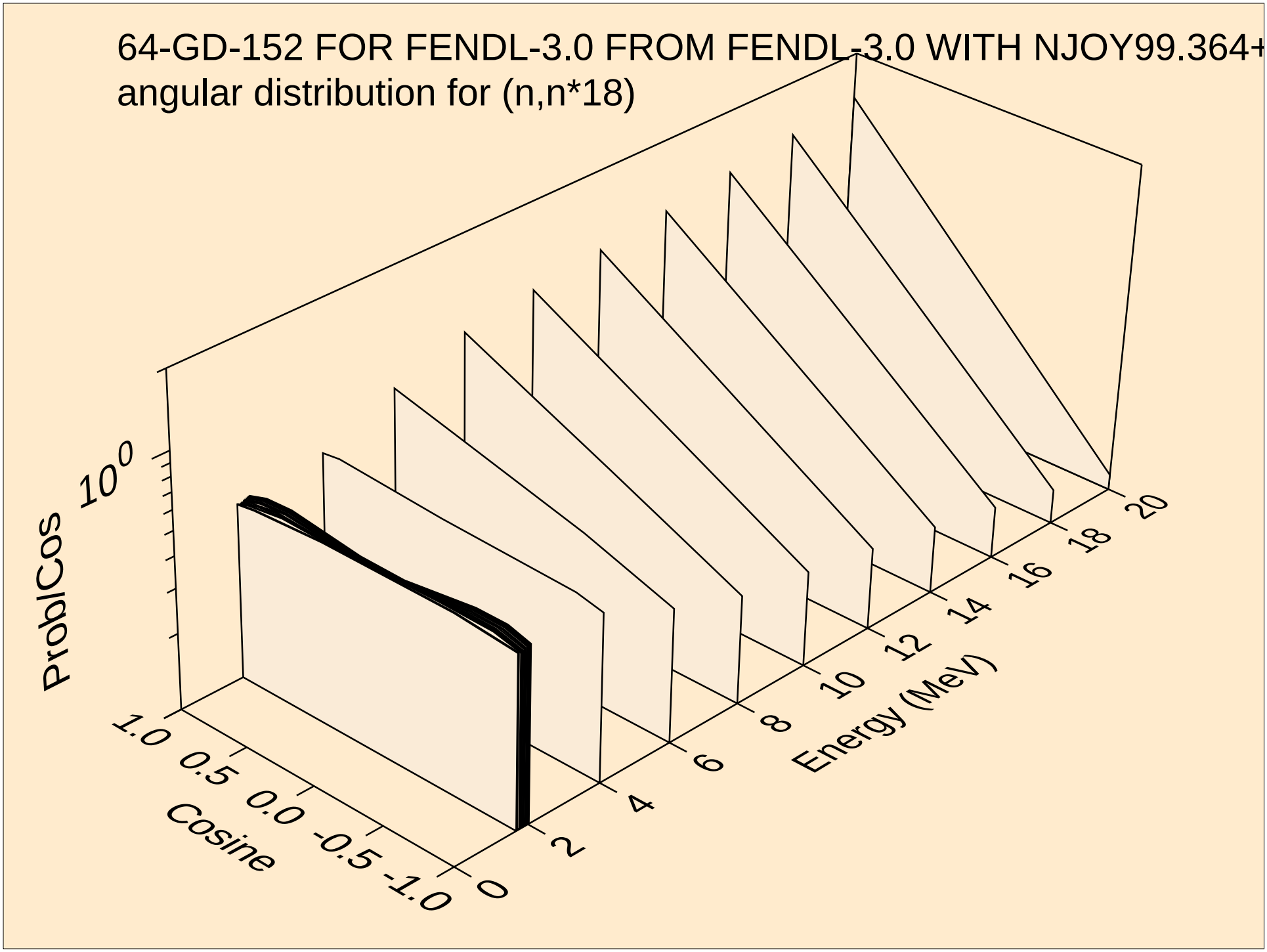

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
angular distribution for (n,n*13)
ProbICos
$10^0$
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

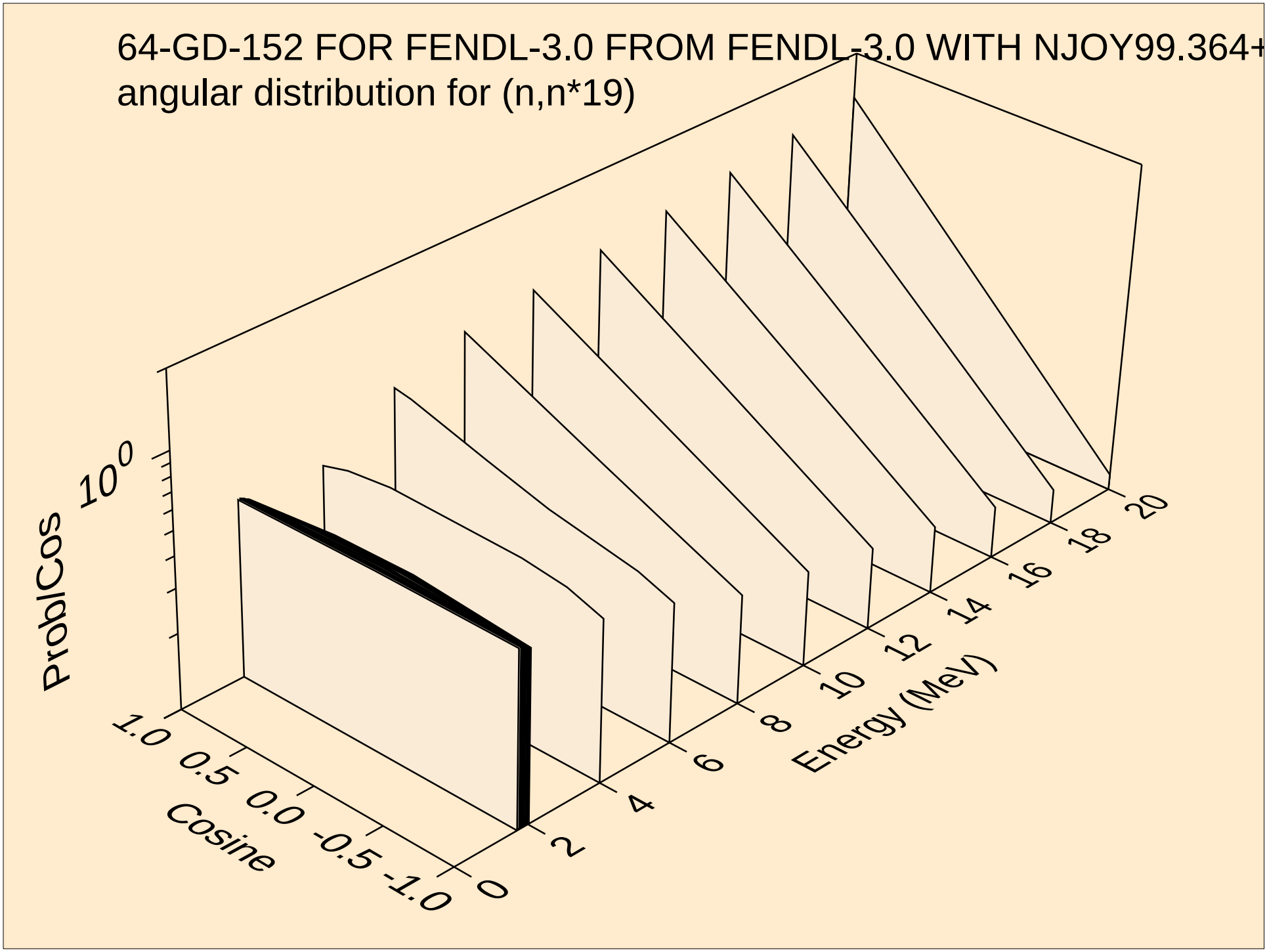

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
angular distribution for (n,n*14)
ProbICos
$10^0$
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

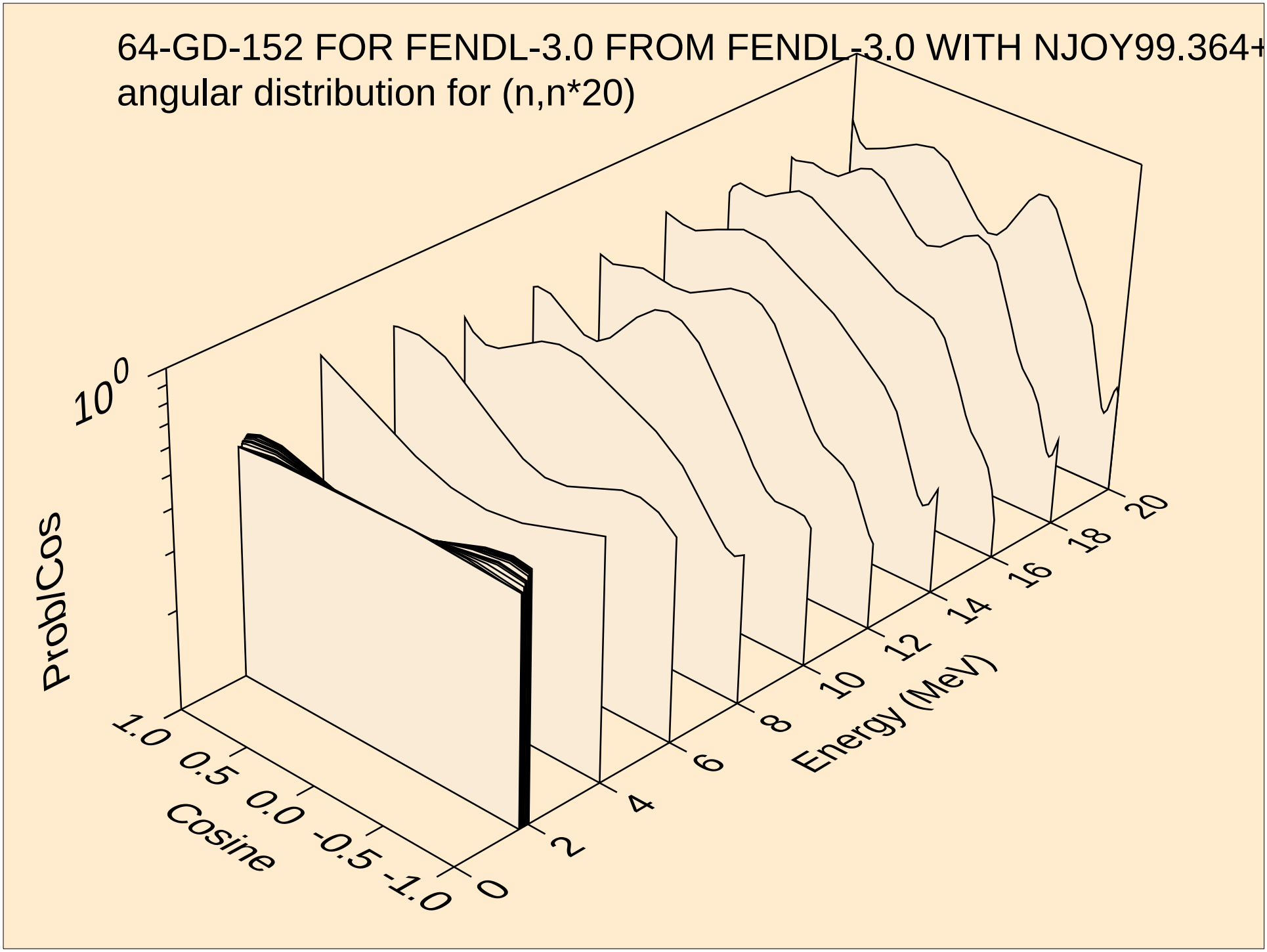

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
angular distribution for (n,n*15)
ProbICos
$10^0$
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

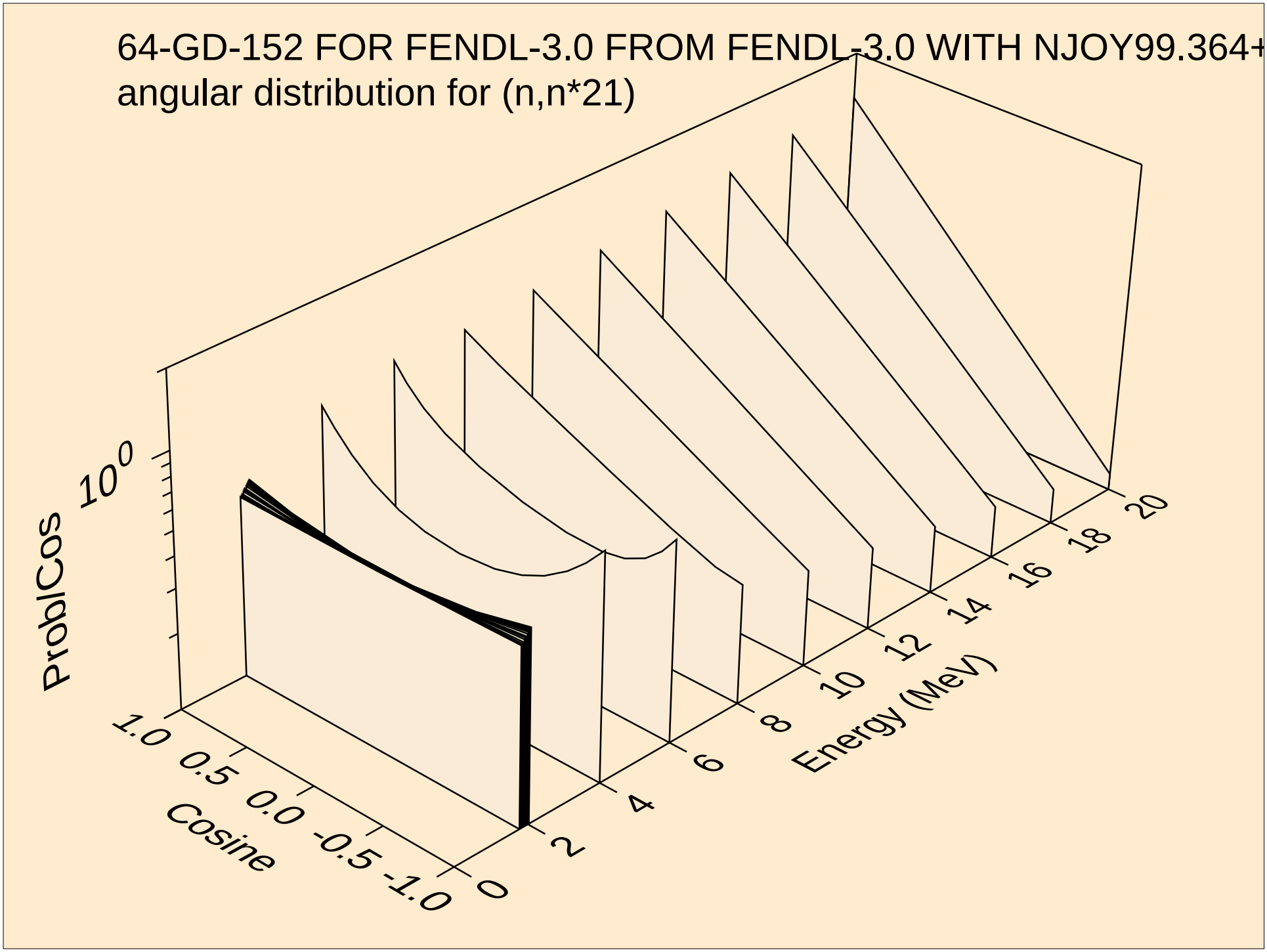

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
angular distribution for (n,n*16)
ProbICos
$10^0$
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

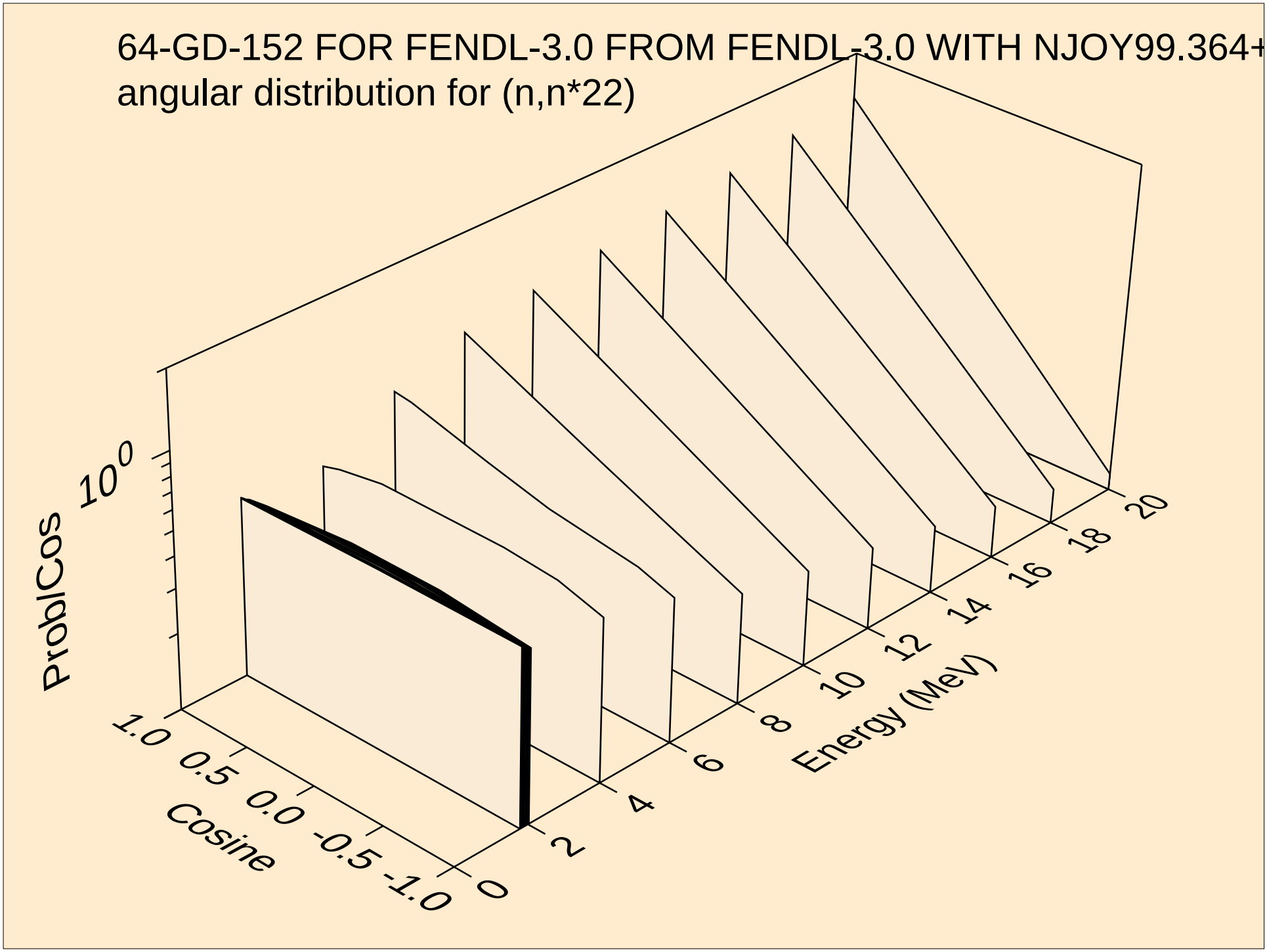

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
angular distribution for (n,n*17)
ProbICos
$10^0$
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

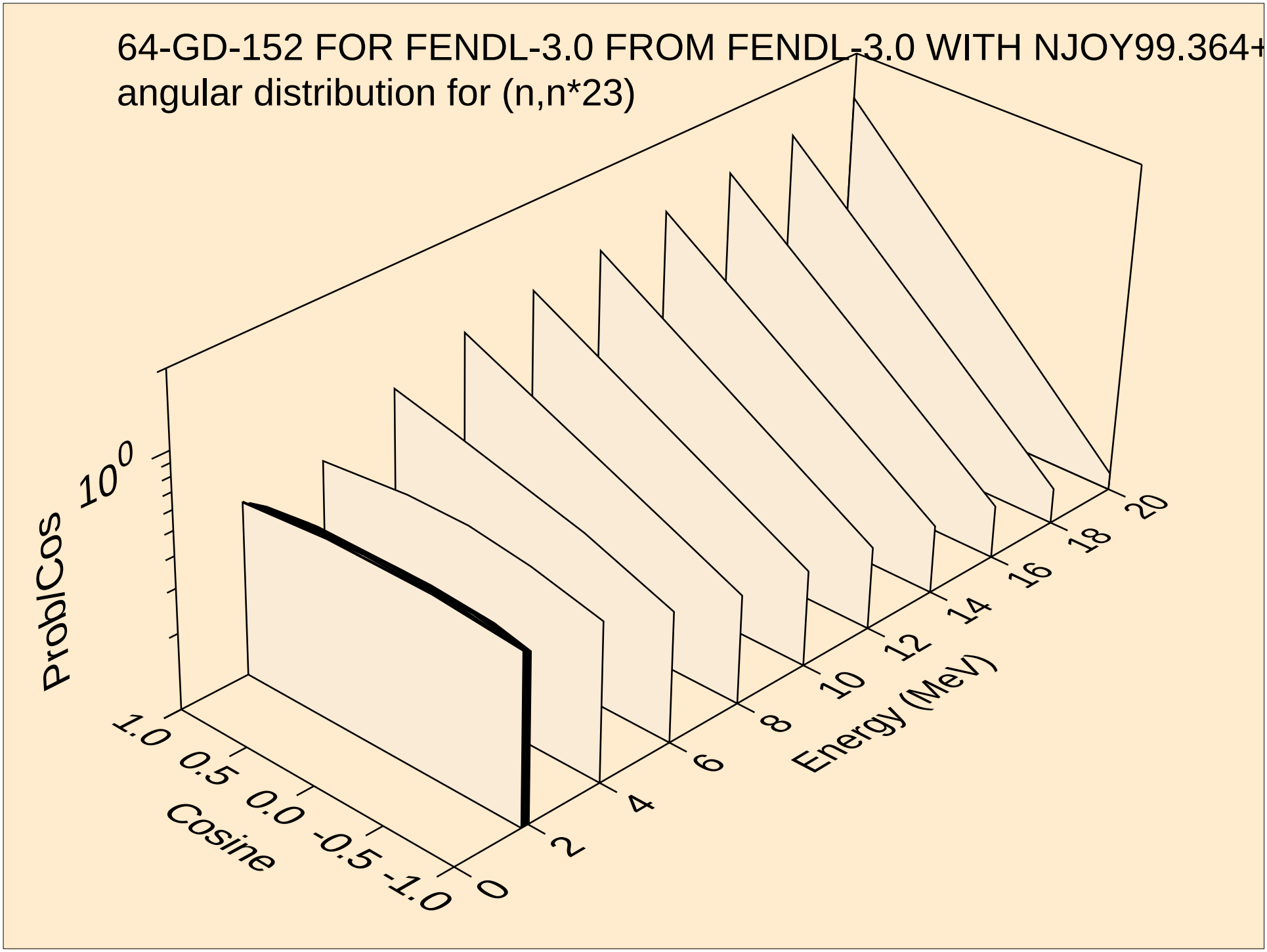

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
angular distribution for (n,n*18)
ProbICos
$10^0$
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

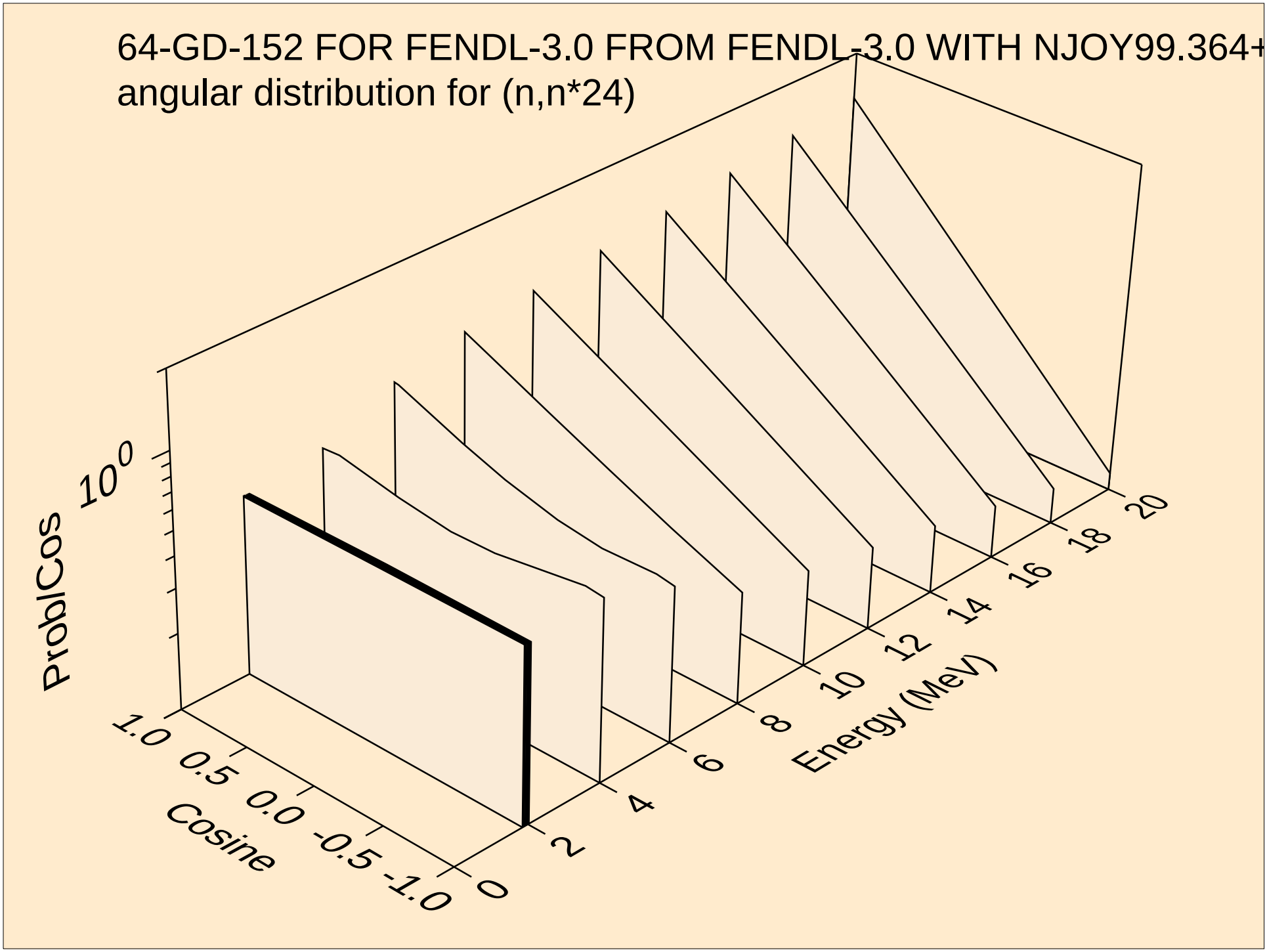

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
angular distribution for (n,n*19)
ProbICos
$10^0$
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

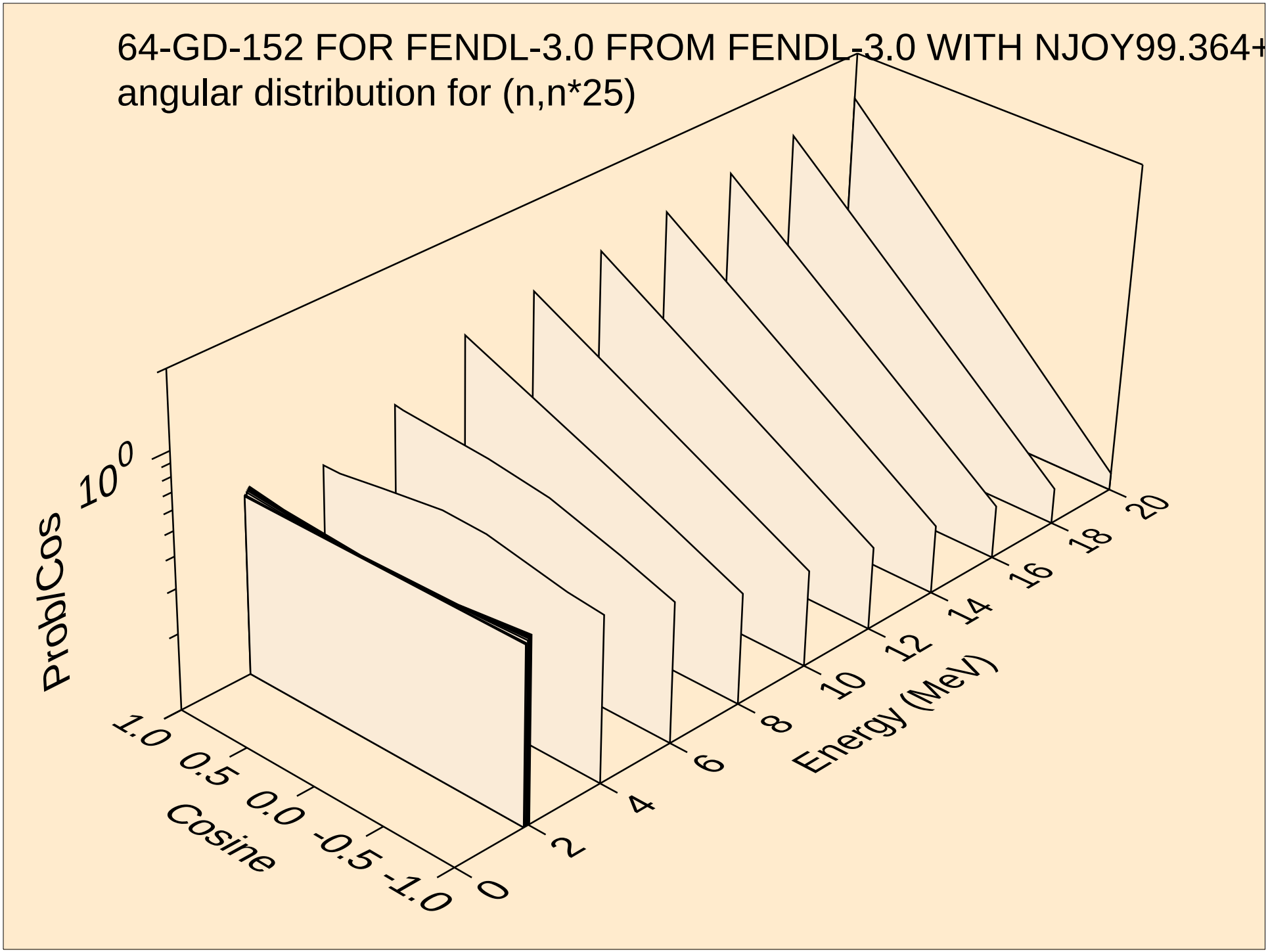

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
angular distribution for (n,n*20)
ProblCos
$10^0$
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

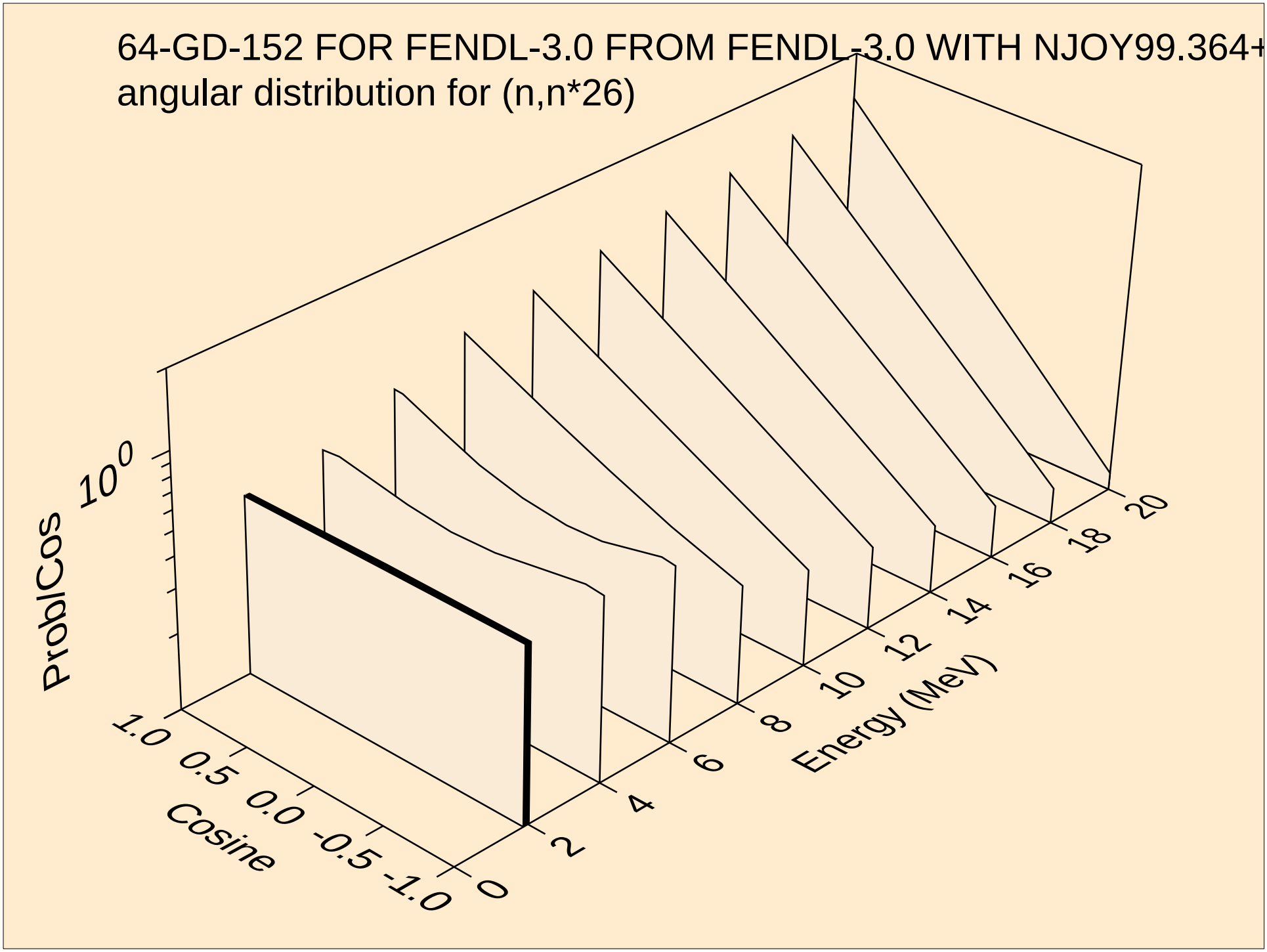

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
angular distribution for (n,n*21)
ProbICos
$10^0$
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

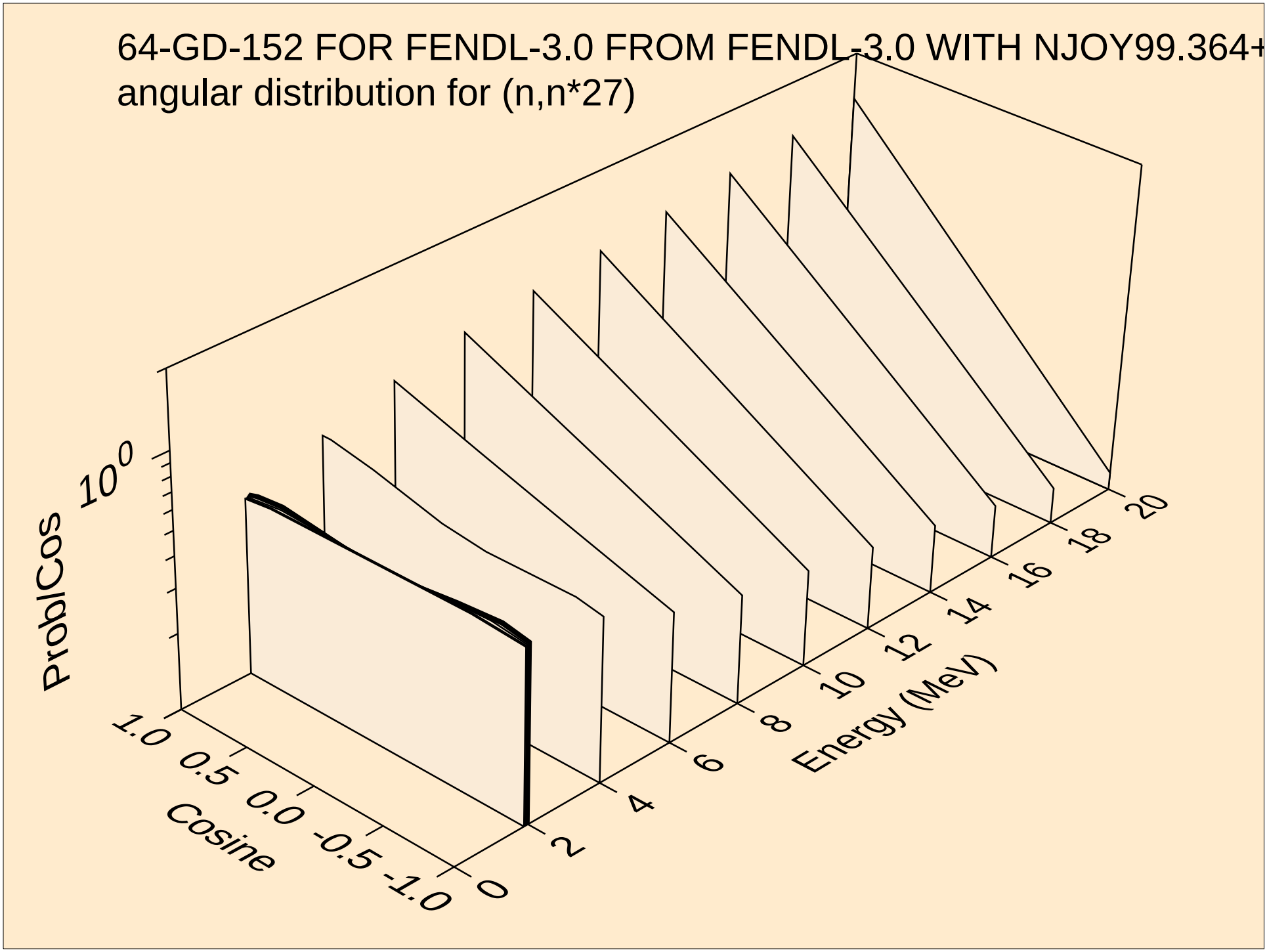

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
angular distribution for (n,n*22)
ProbICos
$10^0$
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

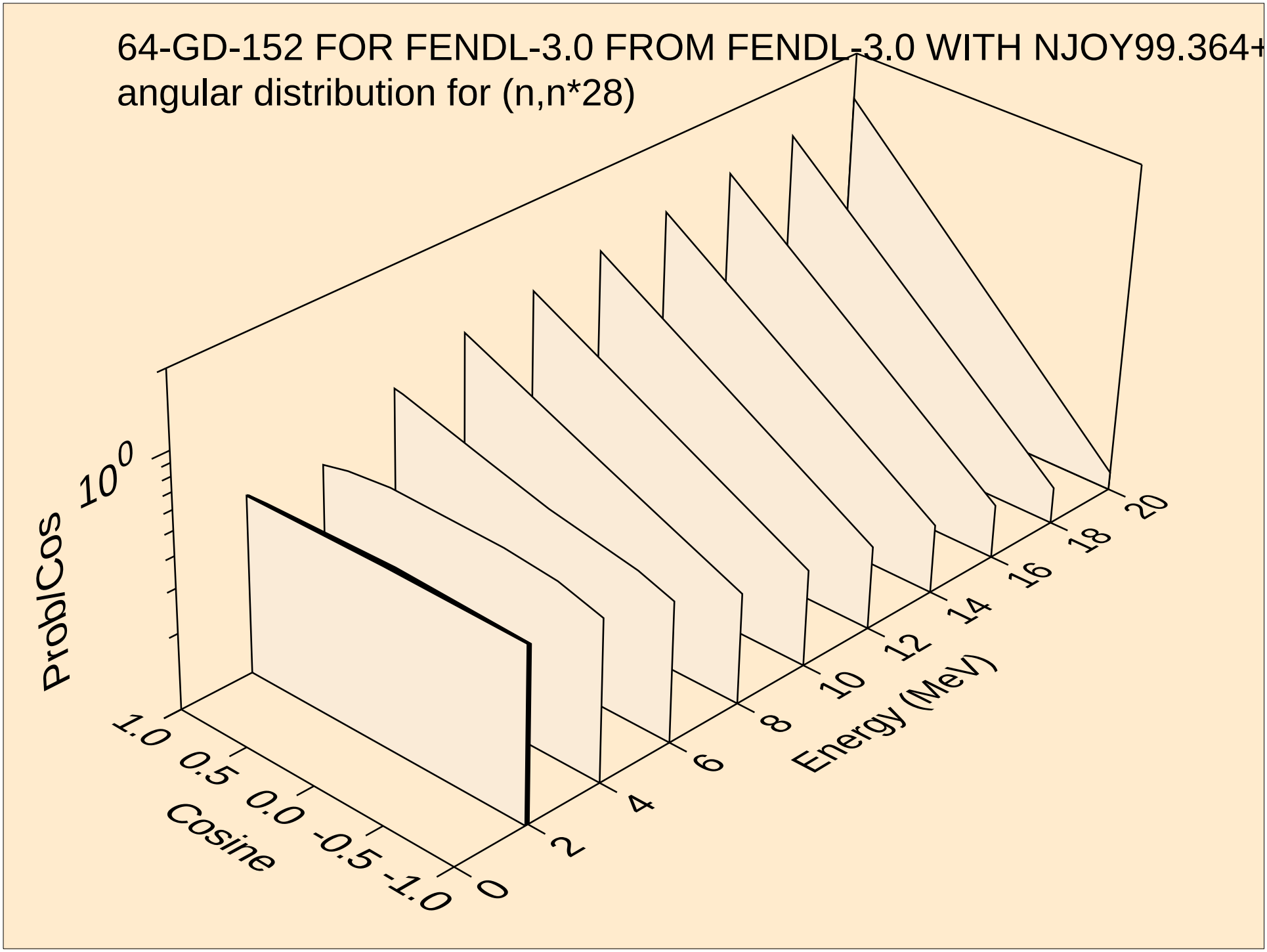

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
angular distribution for (n,n*23)
ProbICos
$10^0$
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

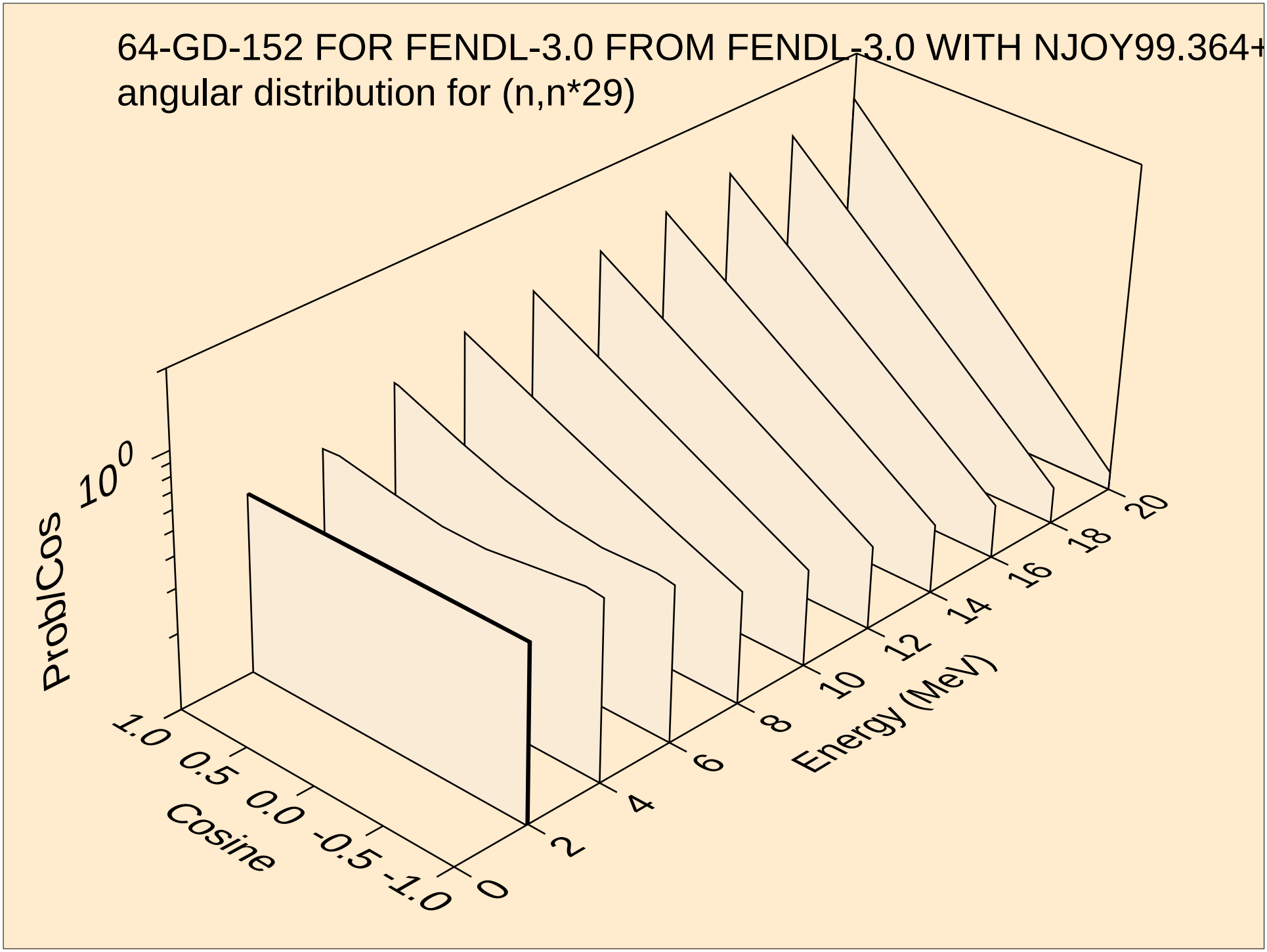

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
angular distribution for (n,n*24)
ProbICos
$10^0$
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

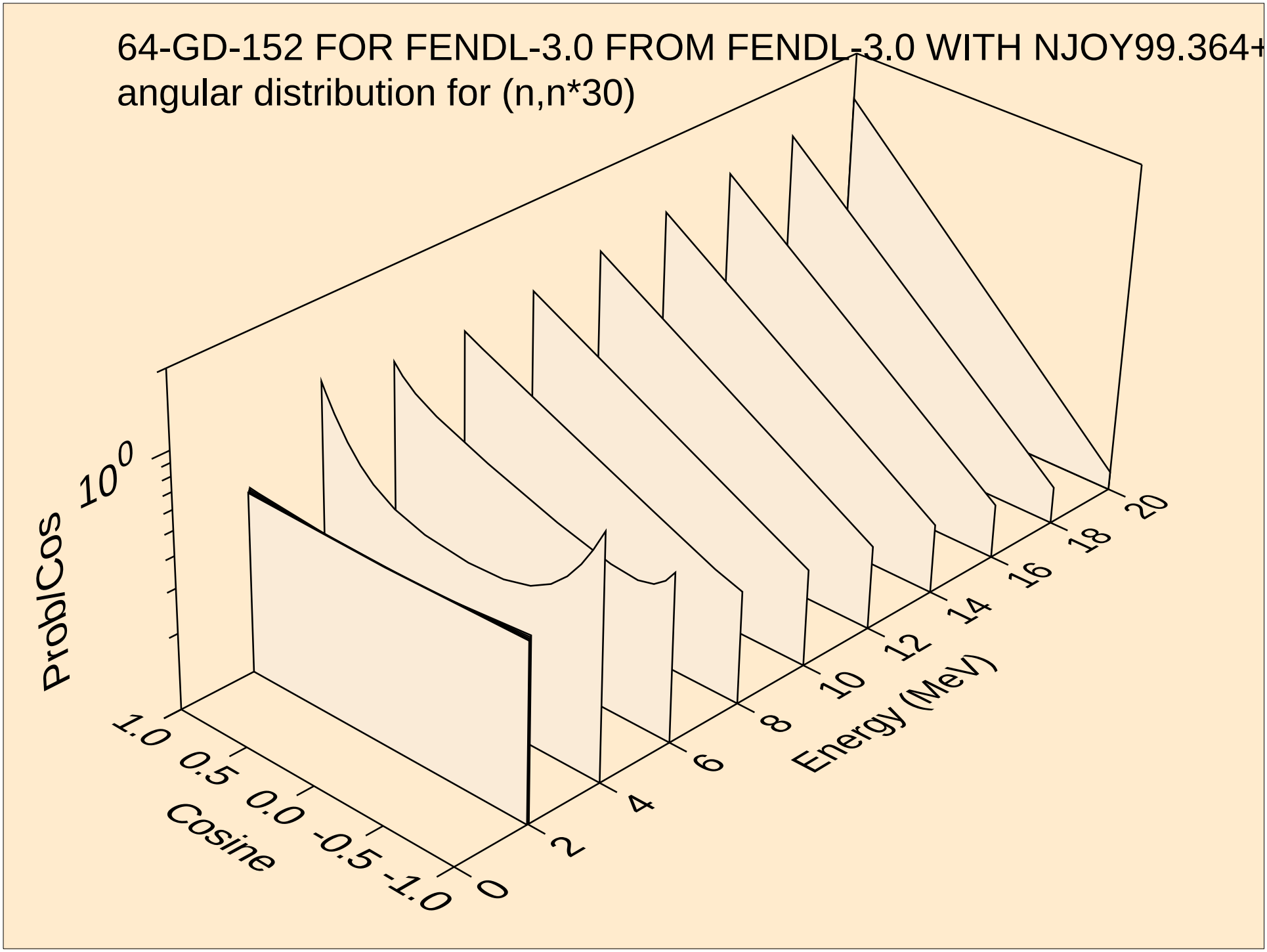

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
angular distribution for (n,n*25)
ProbICos
$10^0$
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

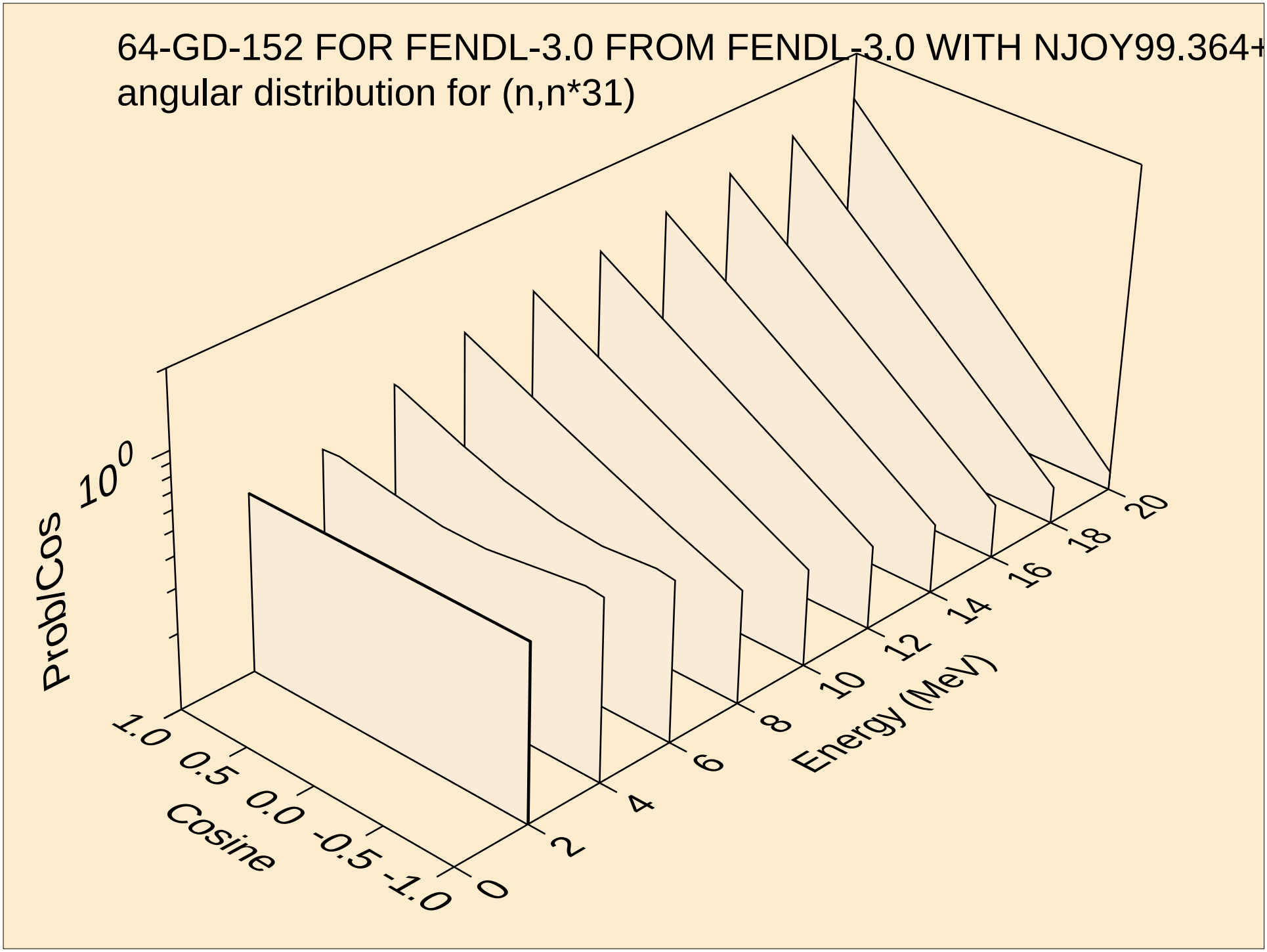

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
angular distribution for (n,n*26)
ProbICos
$10^0$
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

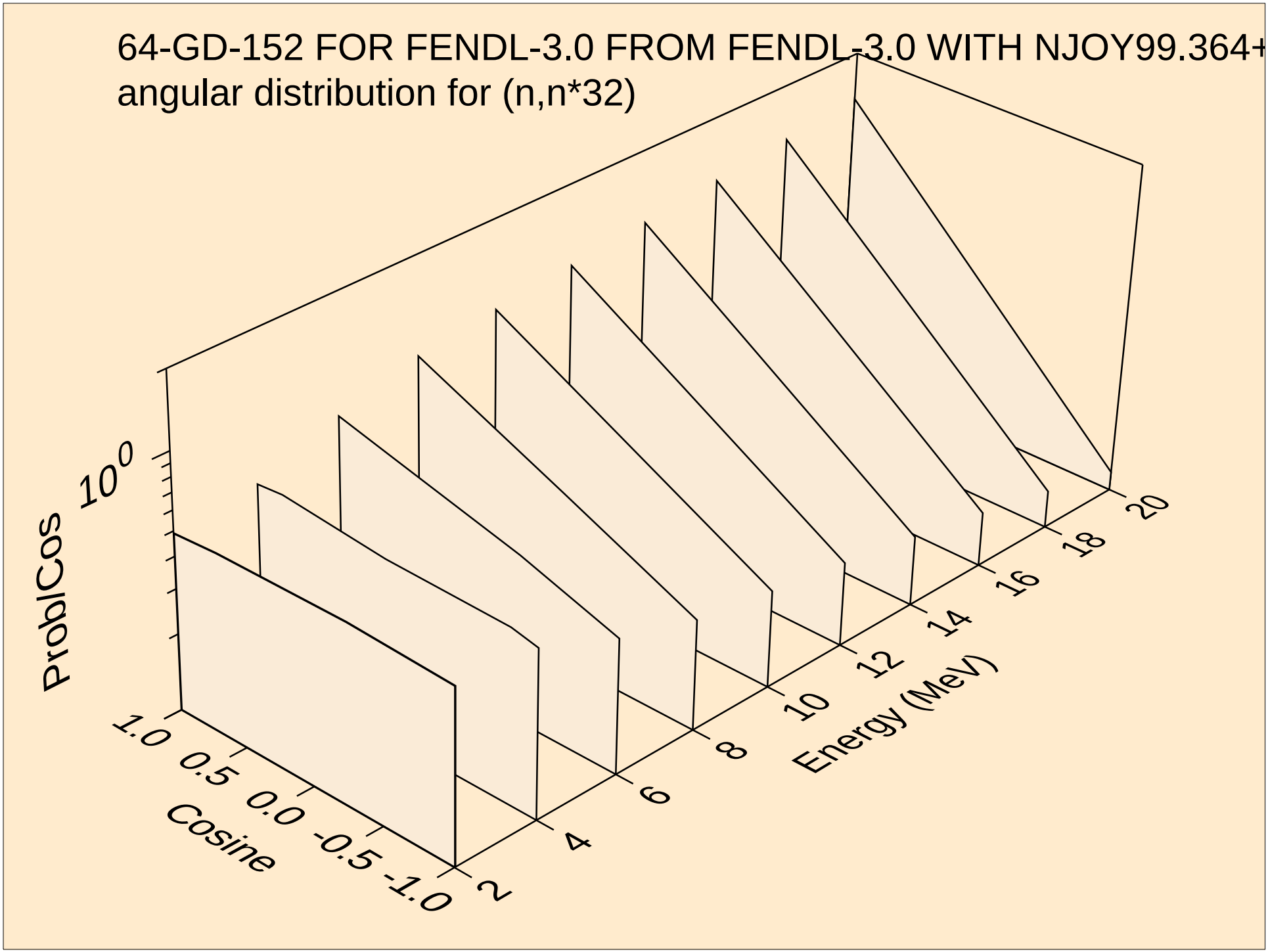

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
angular distribution for (n,n*27)
ProbICos
$10^0$
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

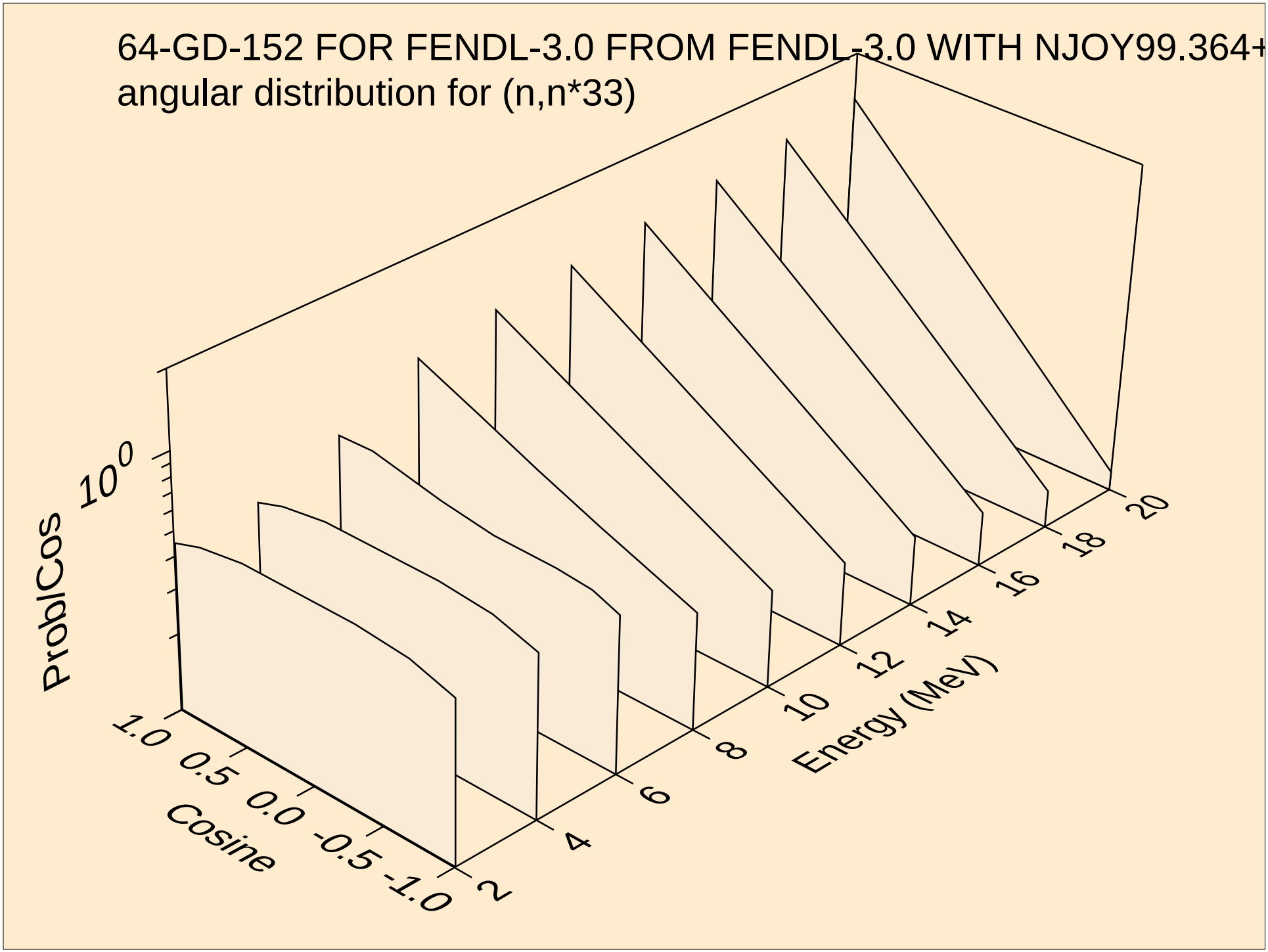

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
angular distribution for (n,n*28)
ProbICos
$10^0$
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

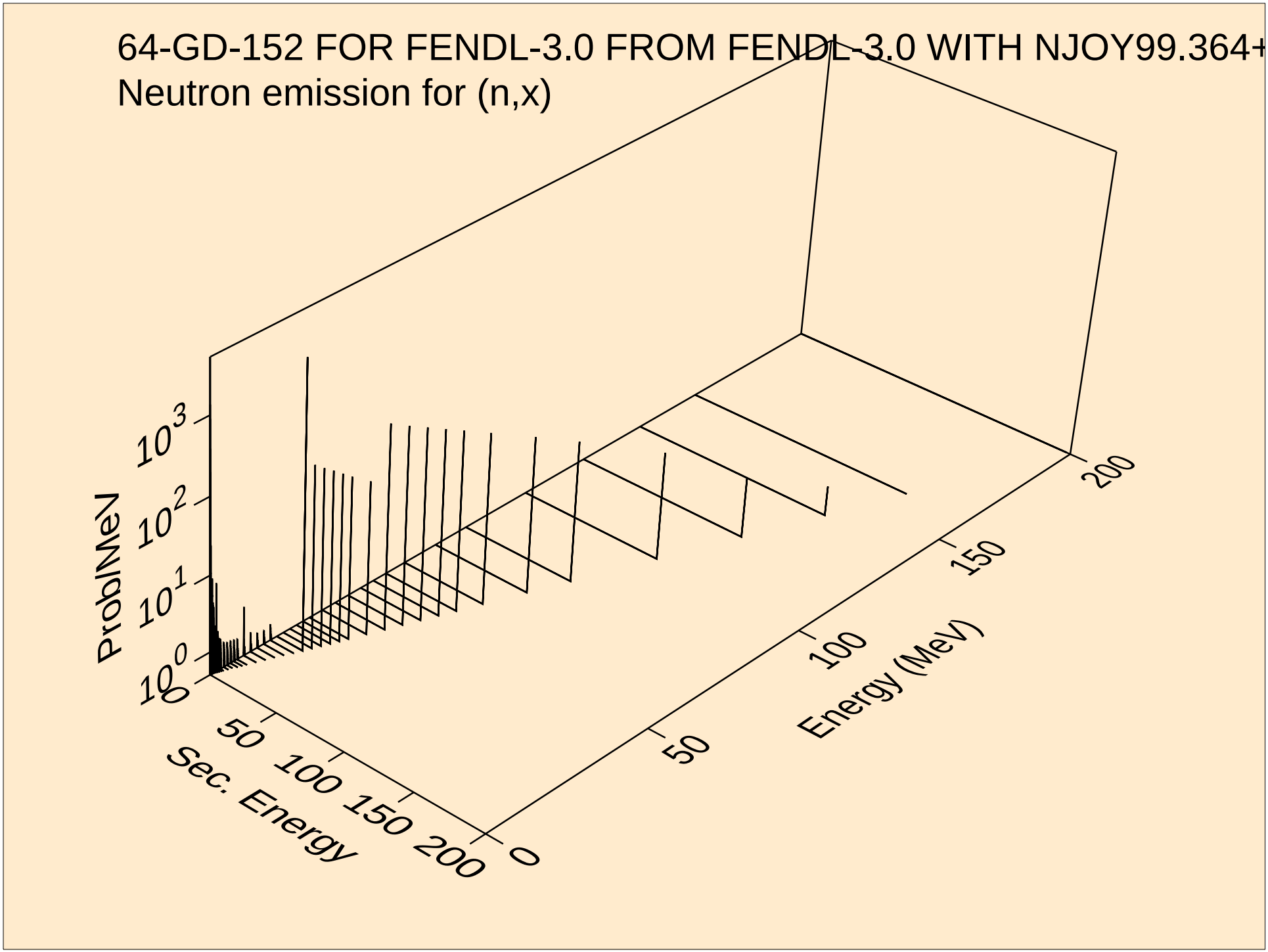

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
angular distribution for (n,n*29)
ProbICos
$10^0$
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

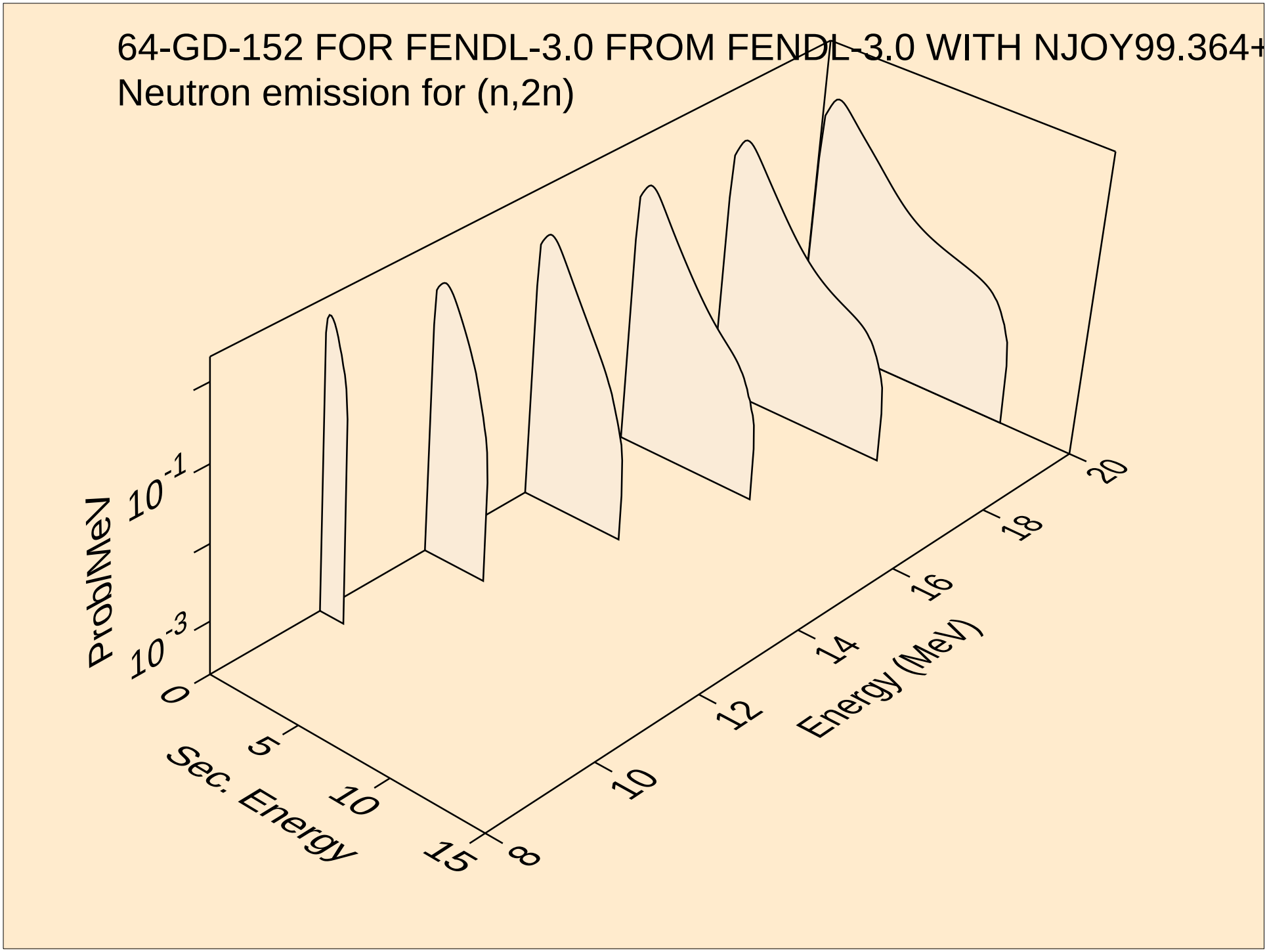

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
angular distribution for (n,n*30)
ProbICos
$10^0$
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

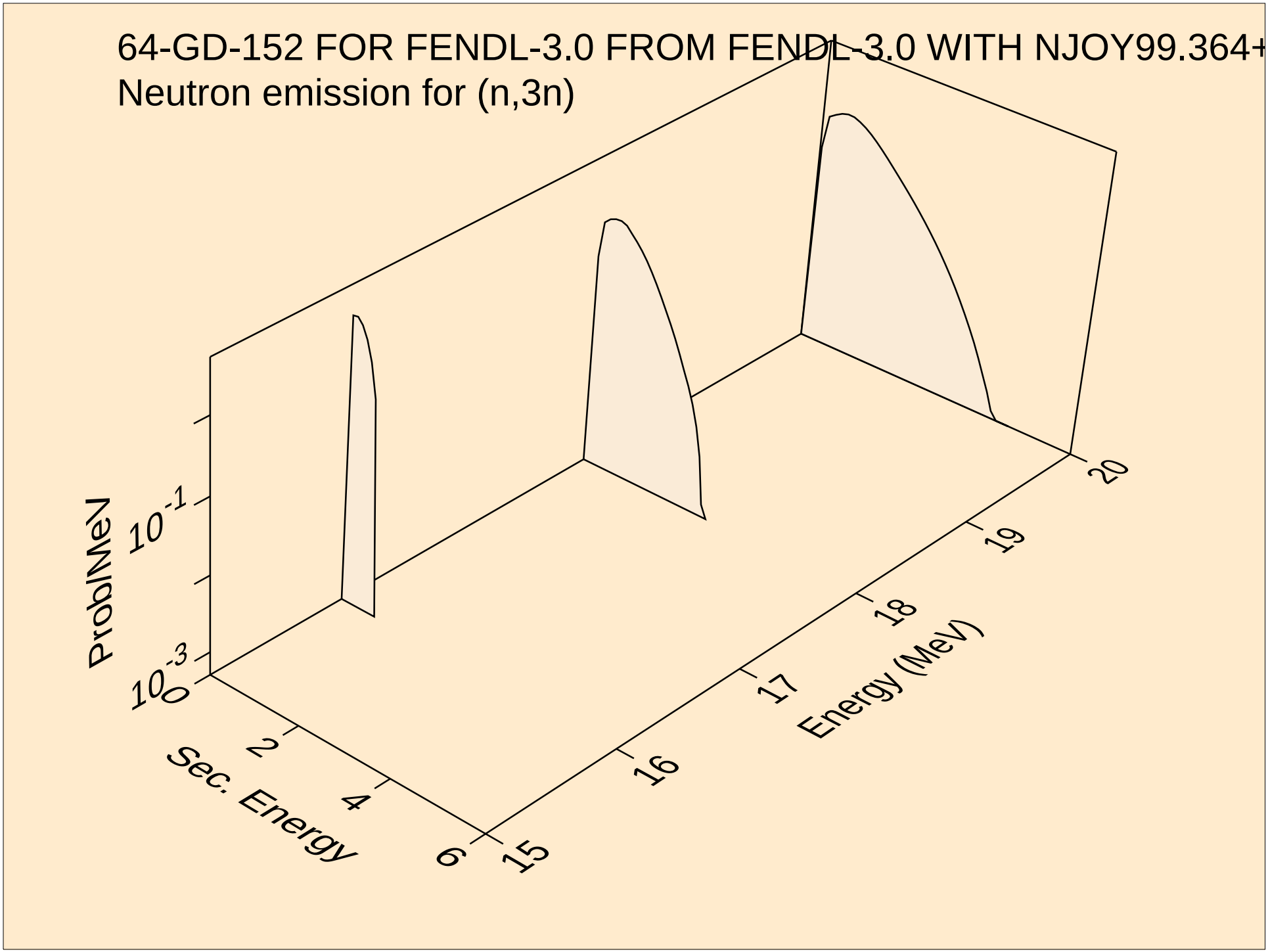

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
angular distribution for (n,n*31)
ProbICos
$10^0$
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

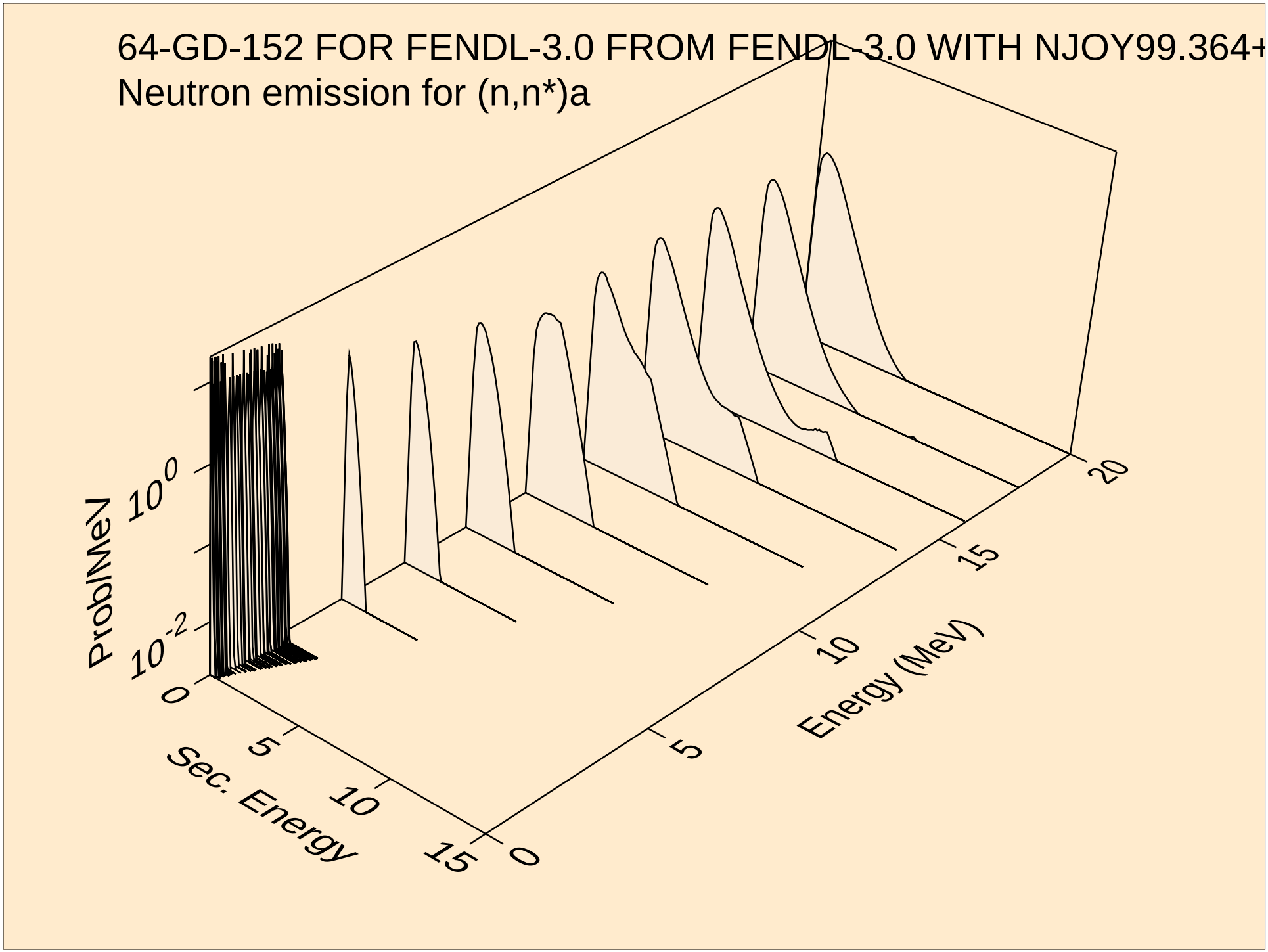

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
angular distribution for (n,n*32)
ProbICos
$10^0$
1.0
0.5
0.0
-0.5
-1.0
Cosine
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

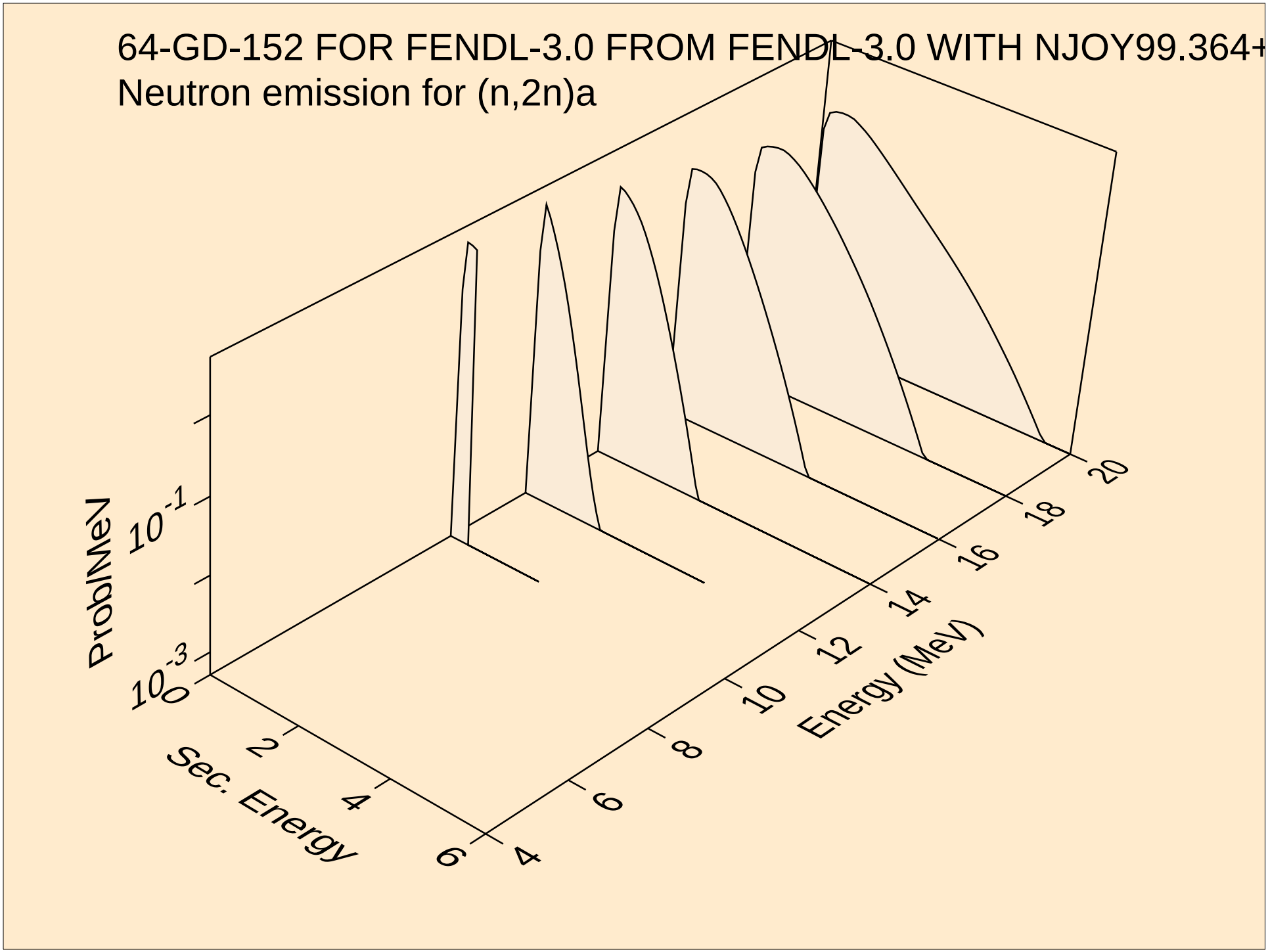

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
angular distribution for (n,n*33)
ProbICos
$10^0$
1.0
0.5
0.0
-0.5
-1.0
Cosine
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

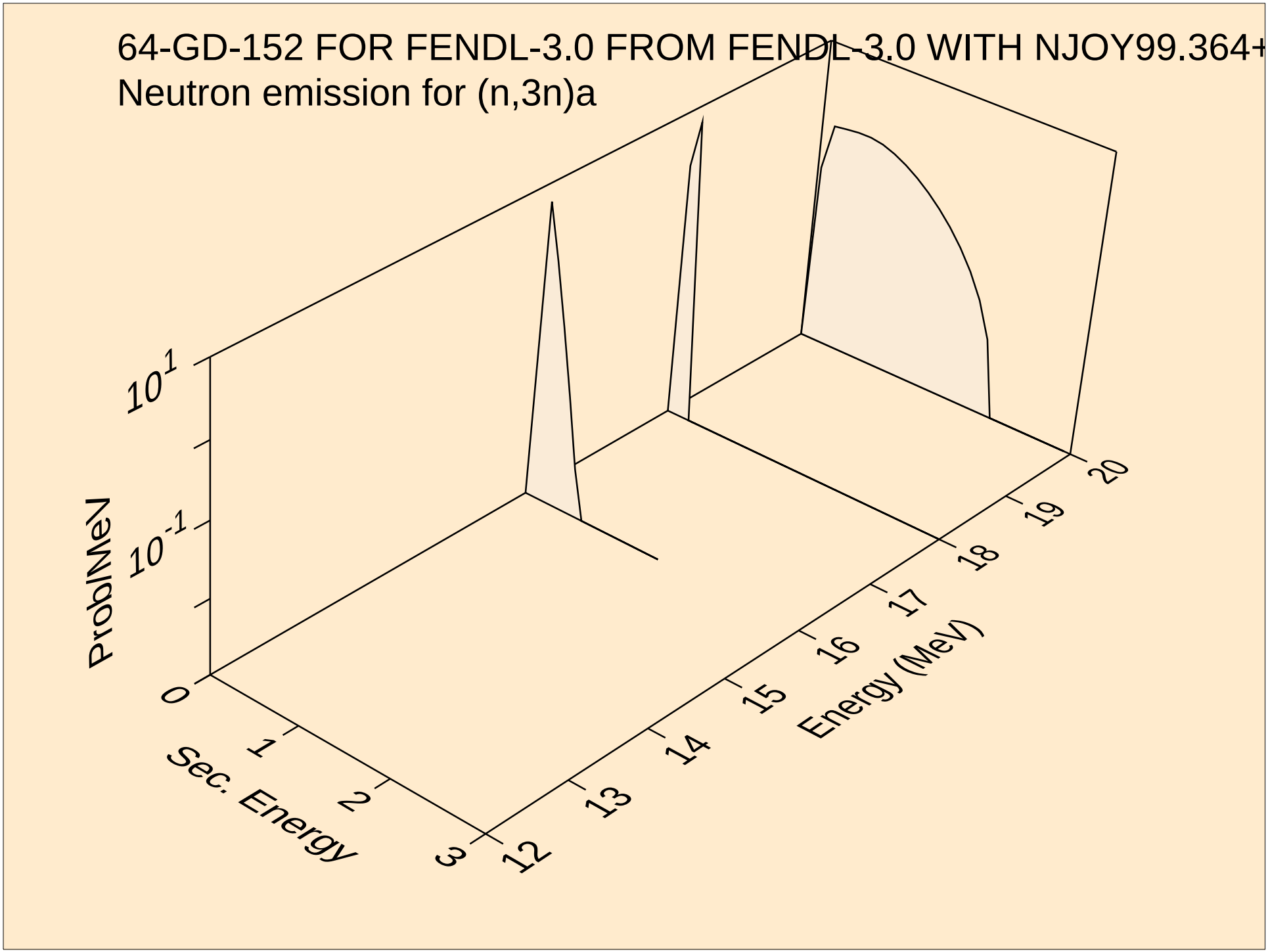

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Neutron emission for (n,x)
Prob/MeV
$10^3$
$10^2$
$10^1$
$10^0$
Sec. Energy
0
50
100
150
200
Energy (MeV)
50
100
150
200

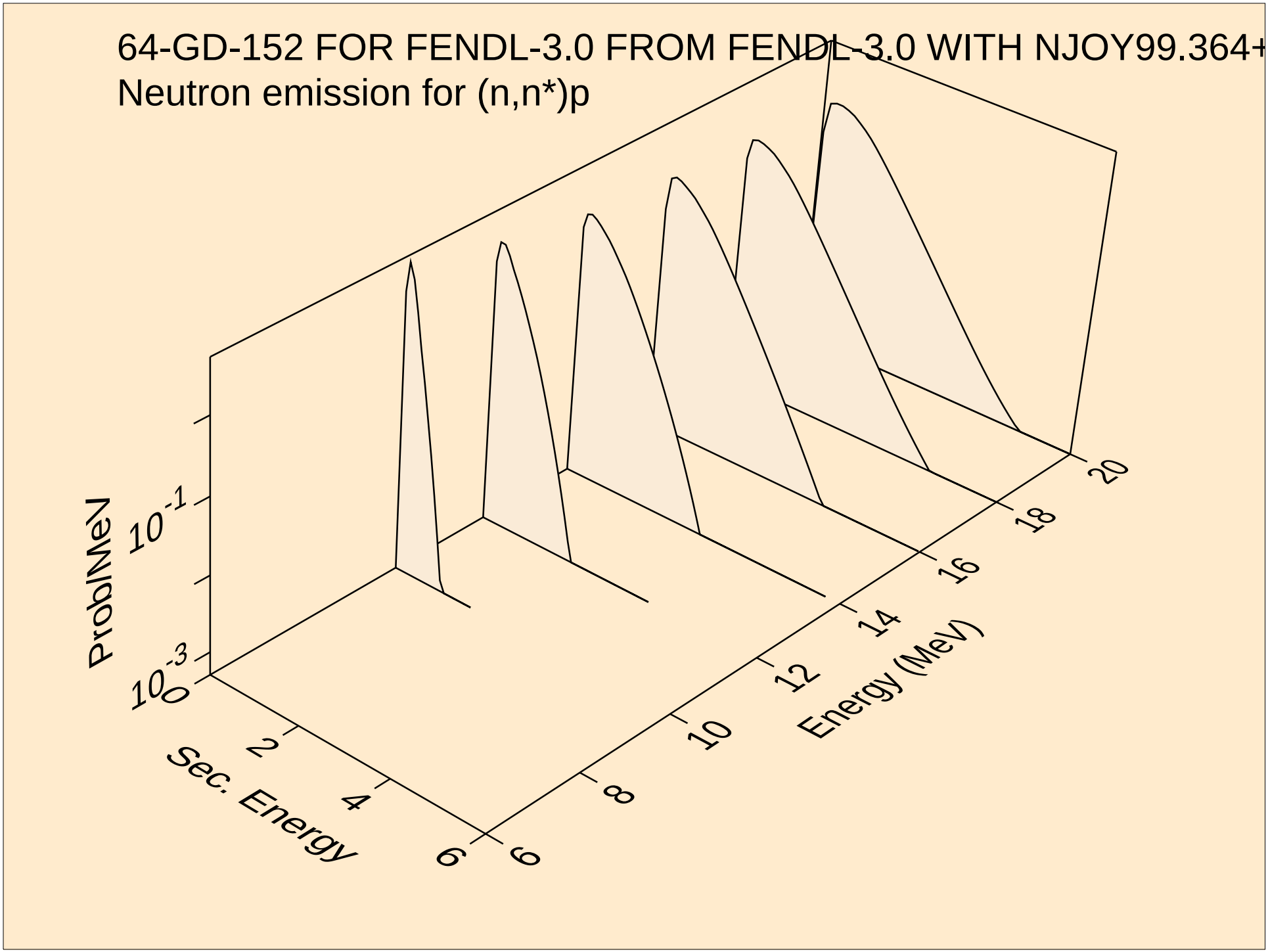

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Neutron emission for (n,2n)
Prob/MeV
10-1
10-3
0
5
10
15
Sec. Energy
8
10
12
14
16
18
20
Energy (MeV)

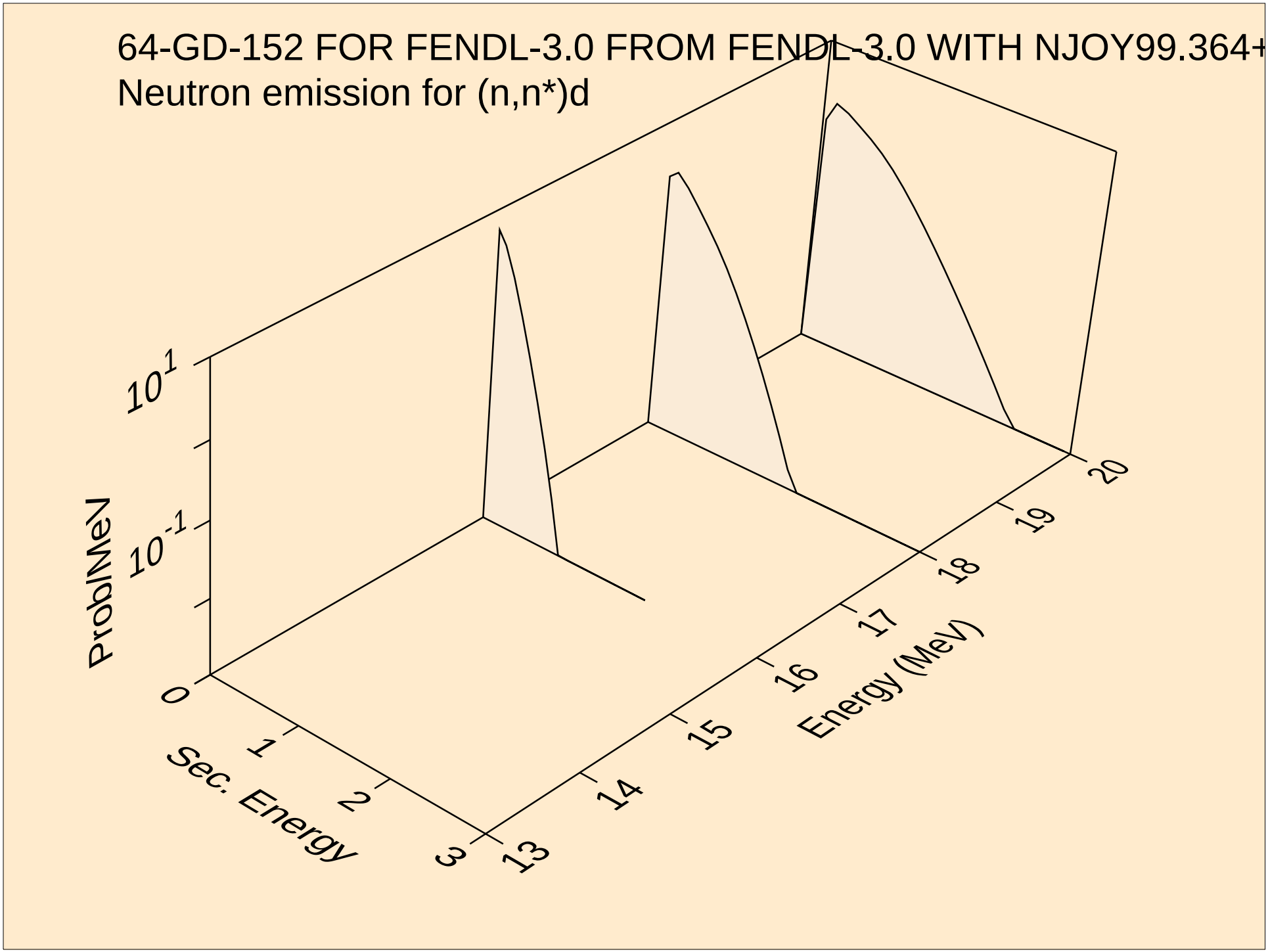

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Neutron emission for (n,3n)
Prob/MeV
10-1
10-3
0
2
4
6
Sec. Energy
15
16
17
18
19
20
Energy (MeV)

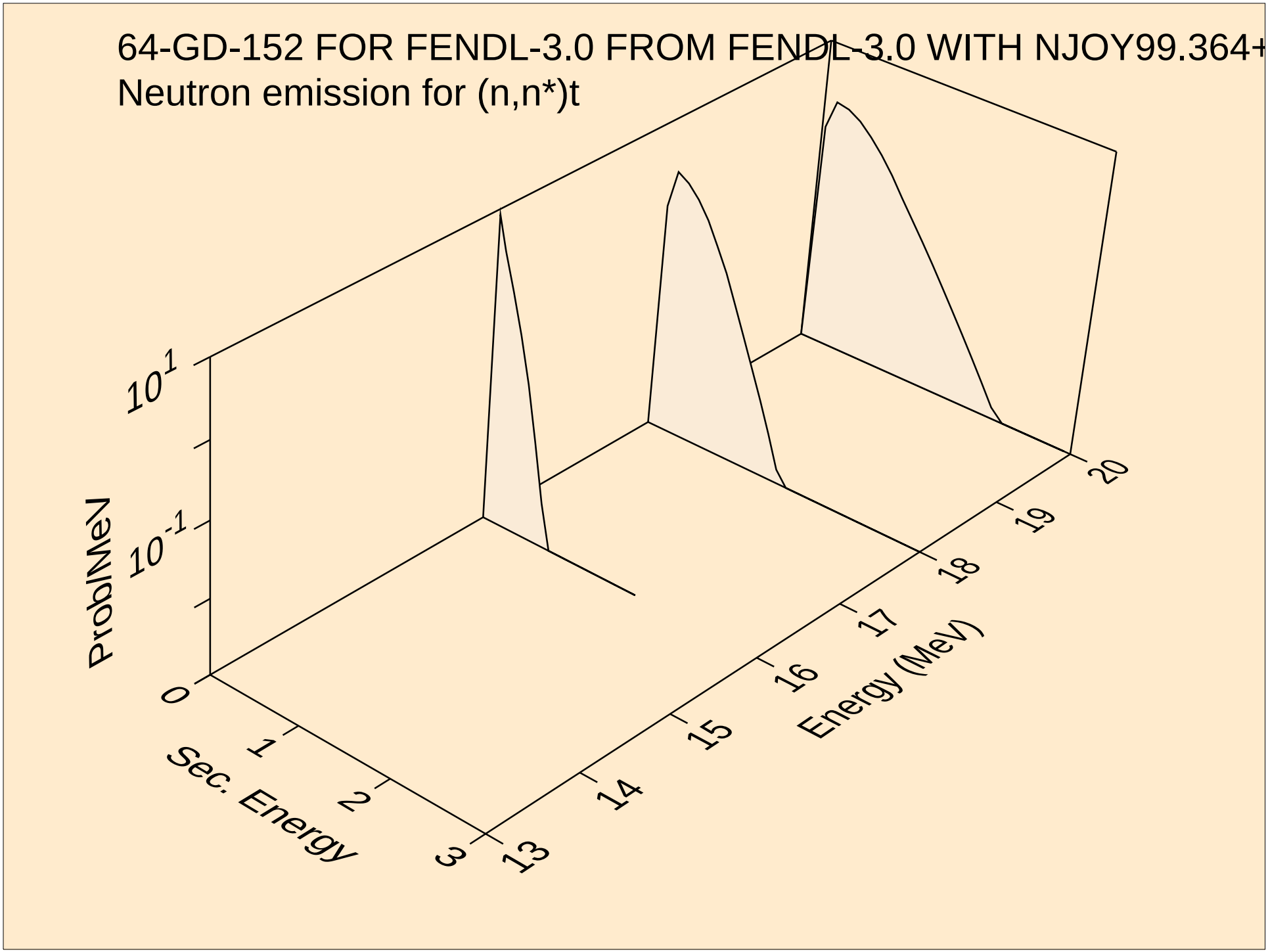

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Neutron emission for (n,n*)a
Prob/MeV
10^0
10^-2
0
5
10
15
Sec. Energy
0
5
10
15
20
Energy (MeV)

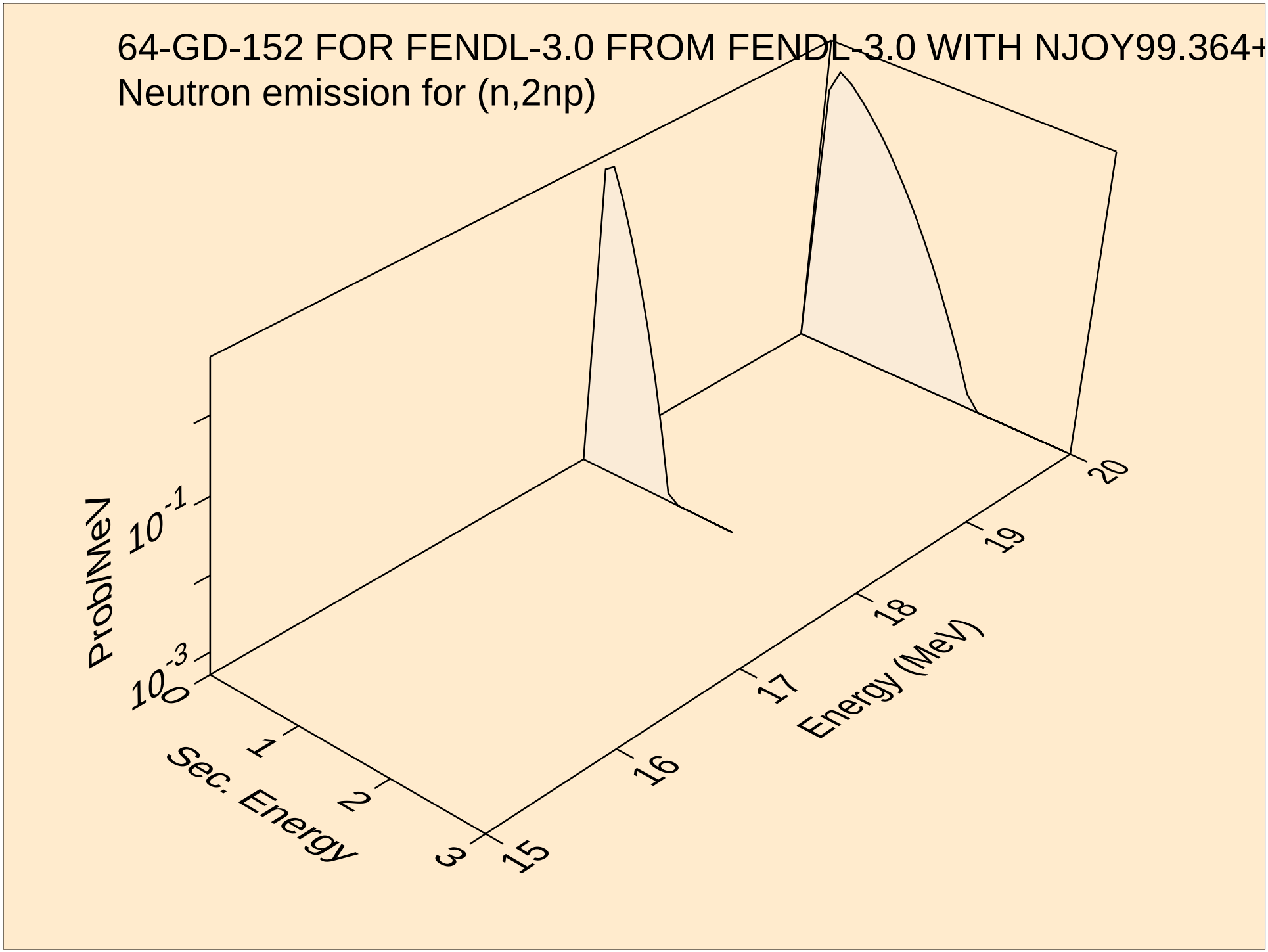

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Neutron emission for (n,2n)a
Prob/MeV
10-1
10-3
0
2
4
6
Sec. Energy
4
6
8
10
12
14
16
18
20
Energy (MeV)

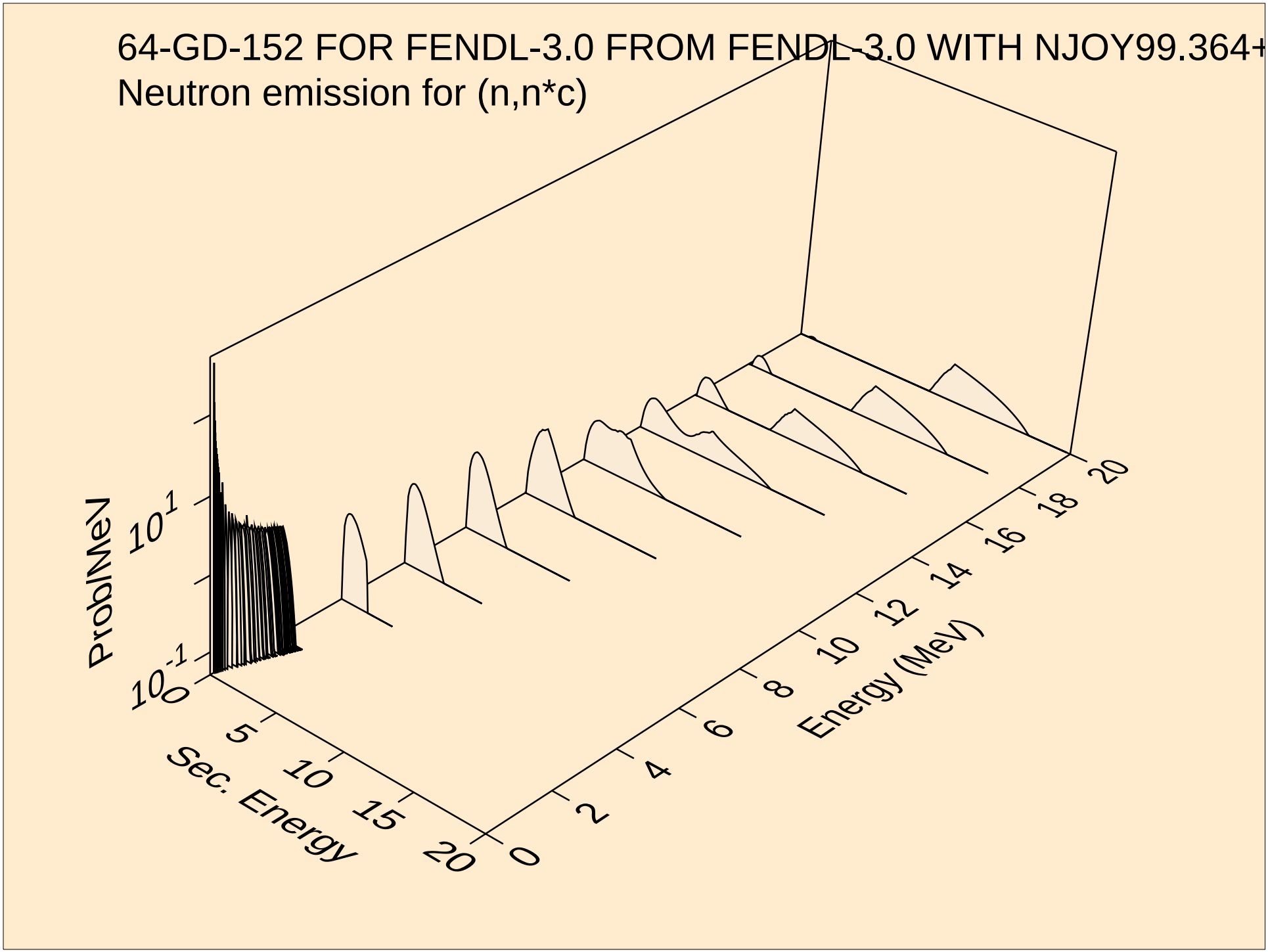

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Neutron emission for (n,3n)a
Prob/MeV
10^1
10^-1
0
Sec. Energy
1
2
3
Energy (MeV)
12
13
14
15
16
17
18
19
20

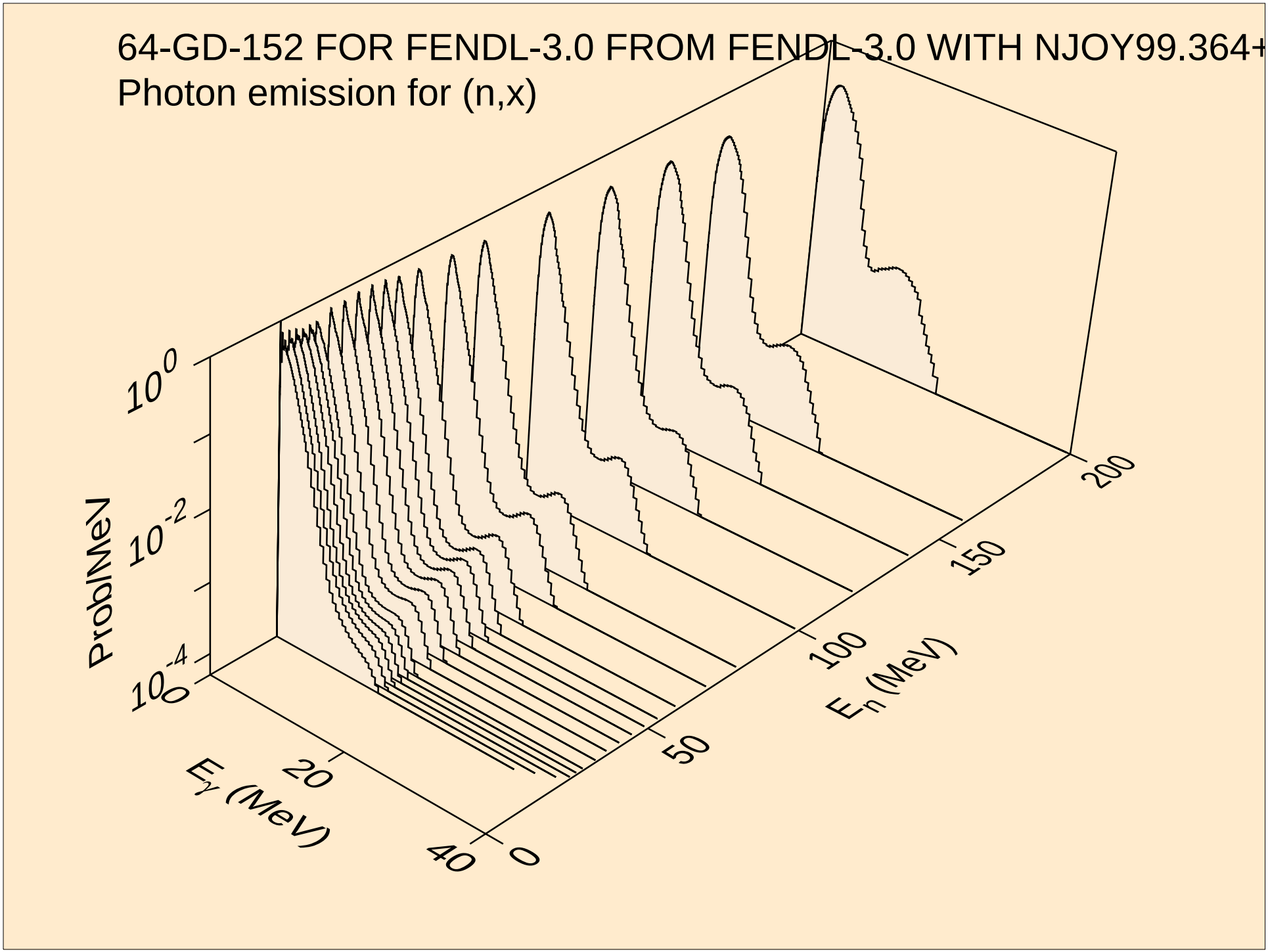

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Neutron emission for (n,n*)p
Prob/MeV
10-1
10-3
0
2
4
6
Sec. Energy
8
10
12
14
16
18
20
Energy (MeV)

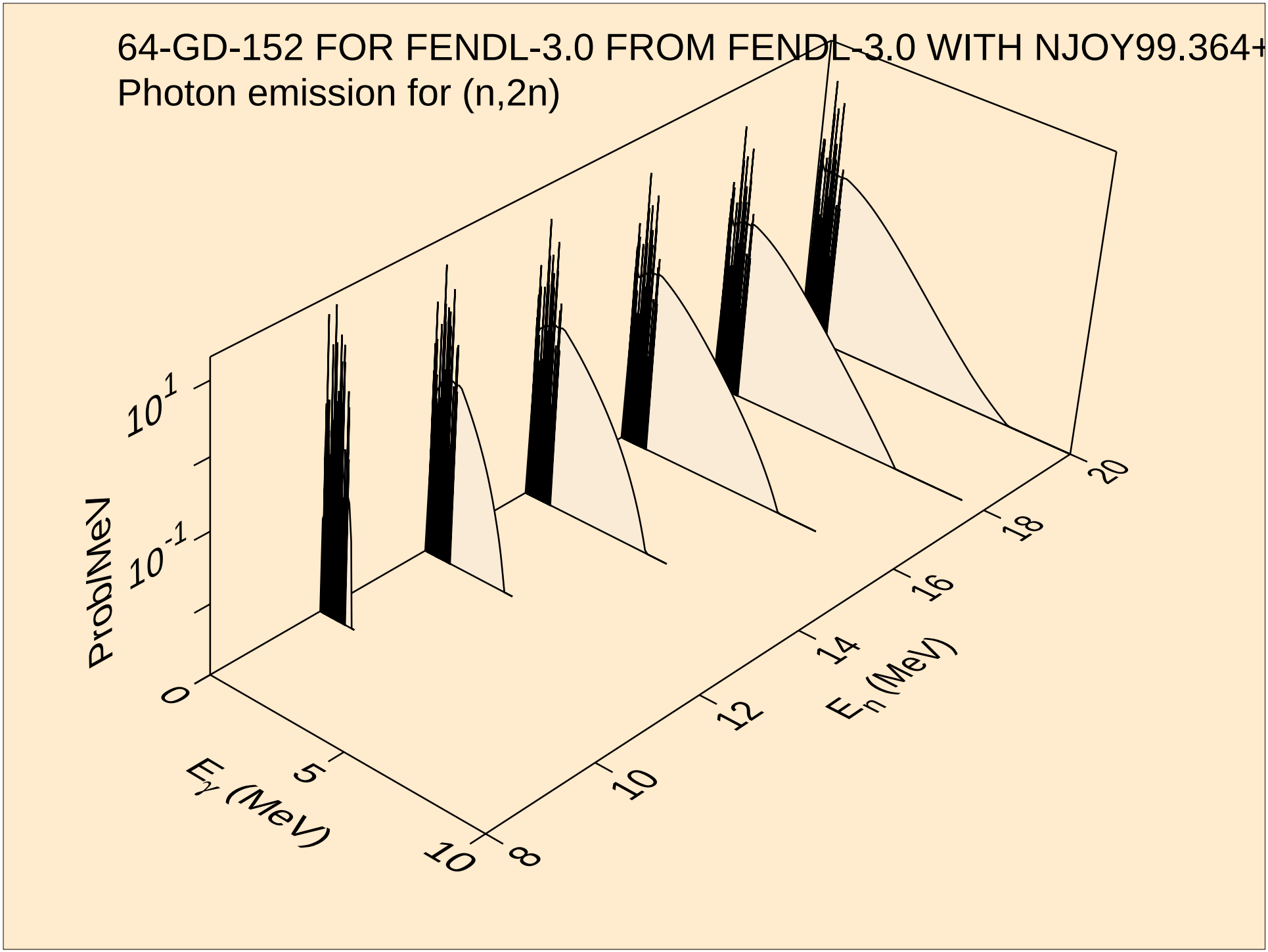

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Neutron emission for (n,n*)d
Prob/MeV
10^1
10^-1
0
Sec. Energy
1
2
3
13
14
15
16
17
18
19
20
Energy (MeV)

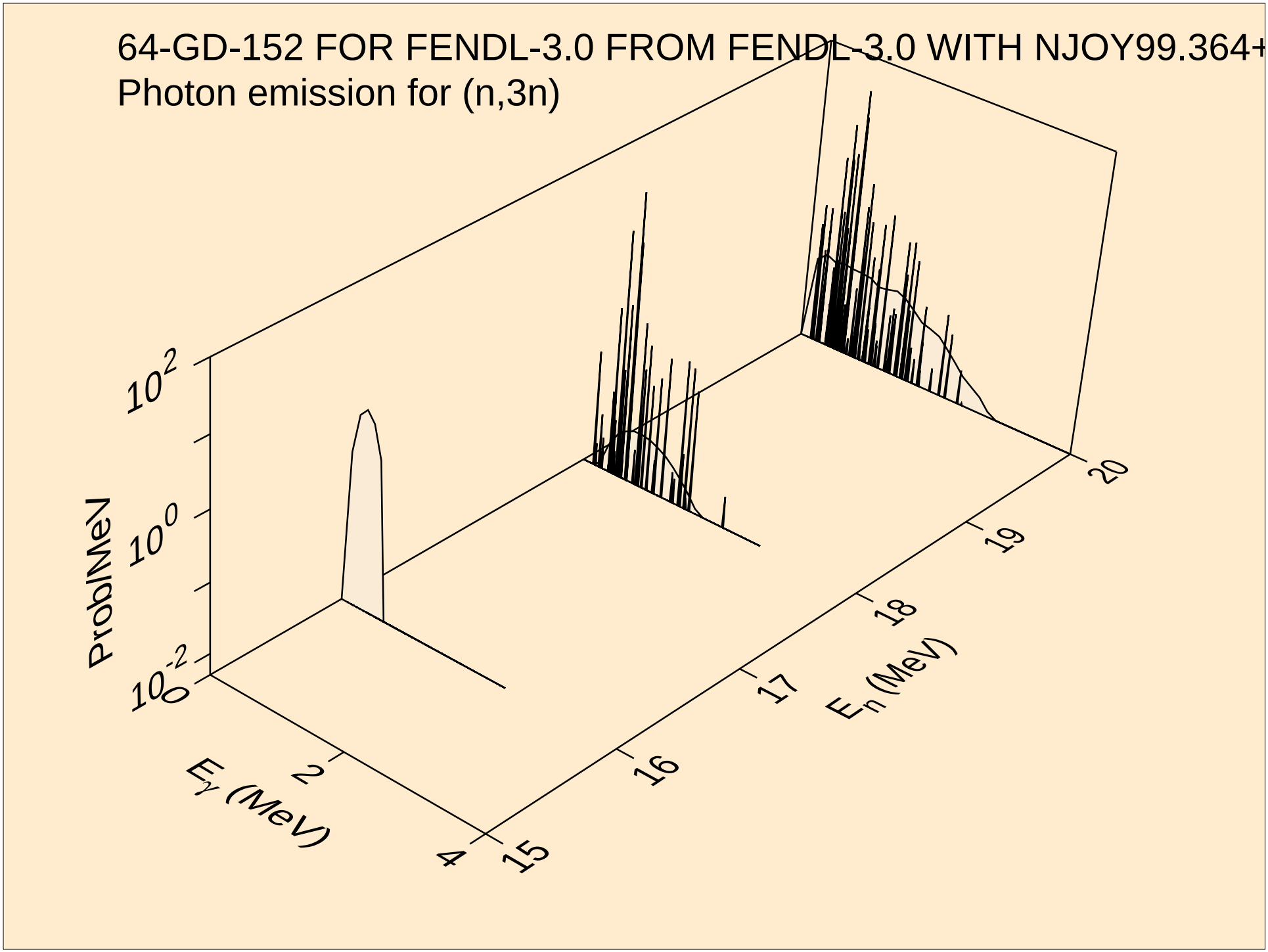

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Neutron emission for (n,n*)t
Prob/MeV
10^1
10^-1
0
Sec. Energy
1
2
3
13
14
15
16
17
18
19
20
Energy (MeV)

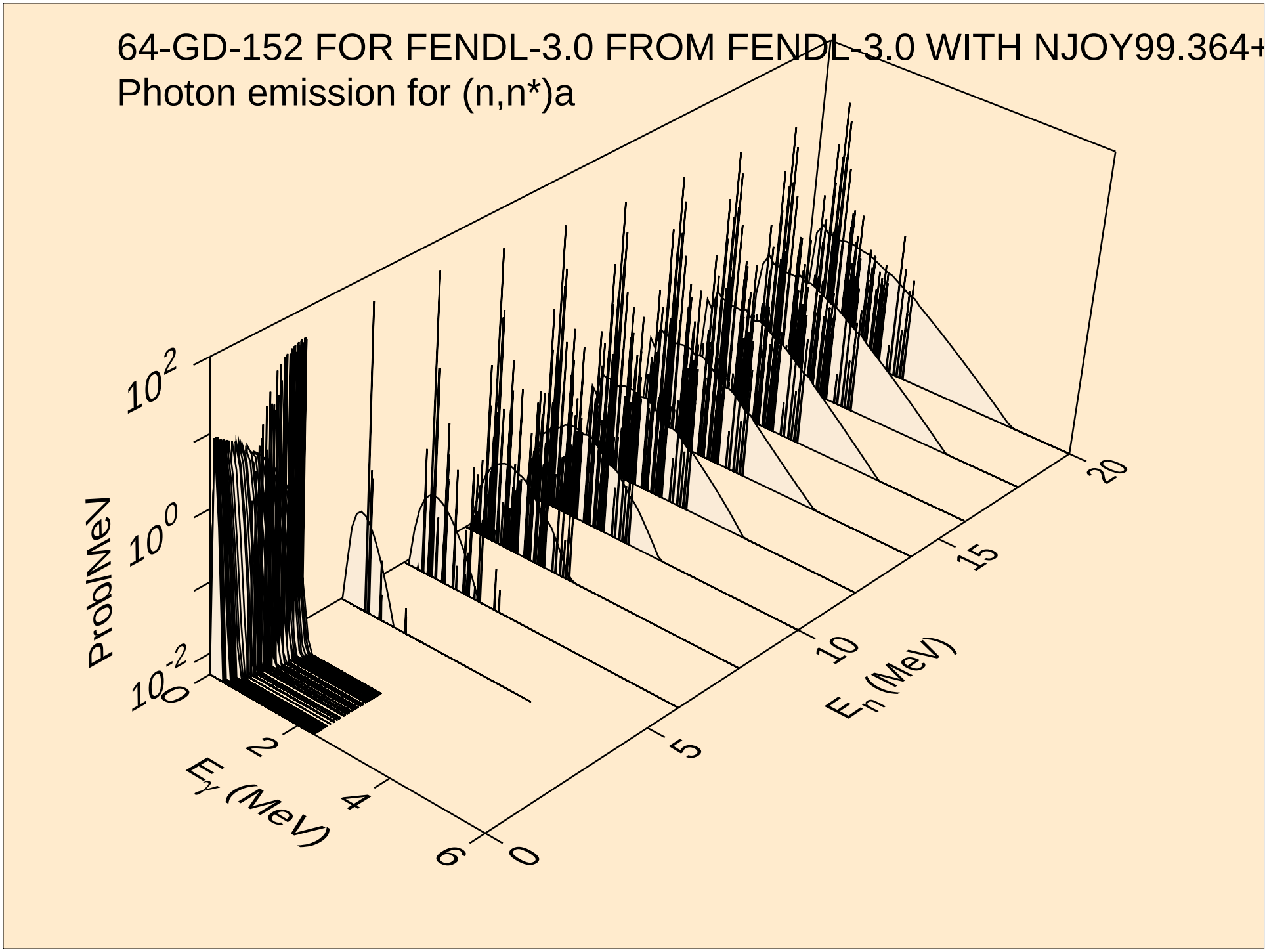

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Neutron emission for (n,2np)
Prob/MeV
10-1
10-3
0
1
2
3
Sec. Energy
15
16
17
18
19
20
Energy (MeV)

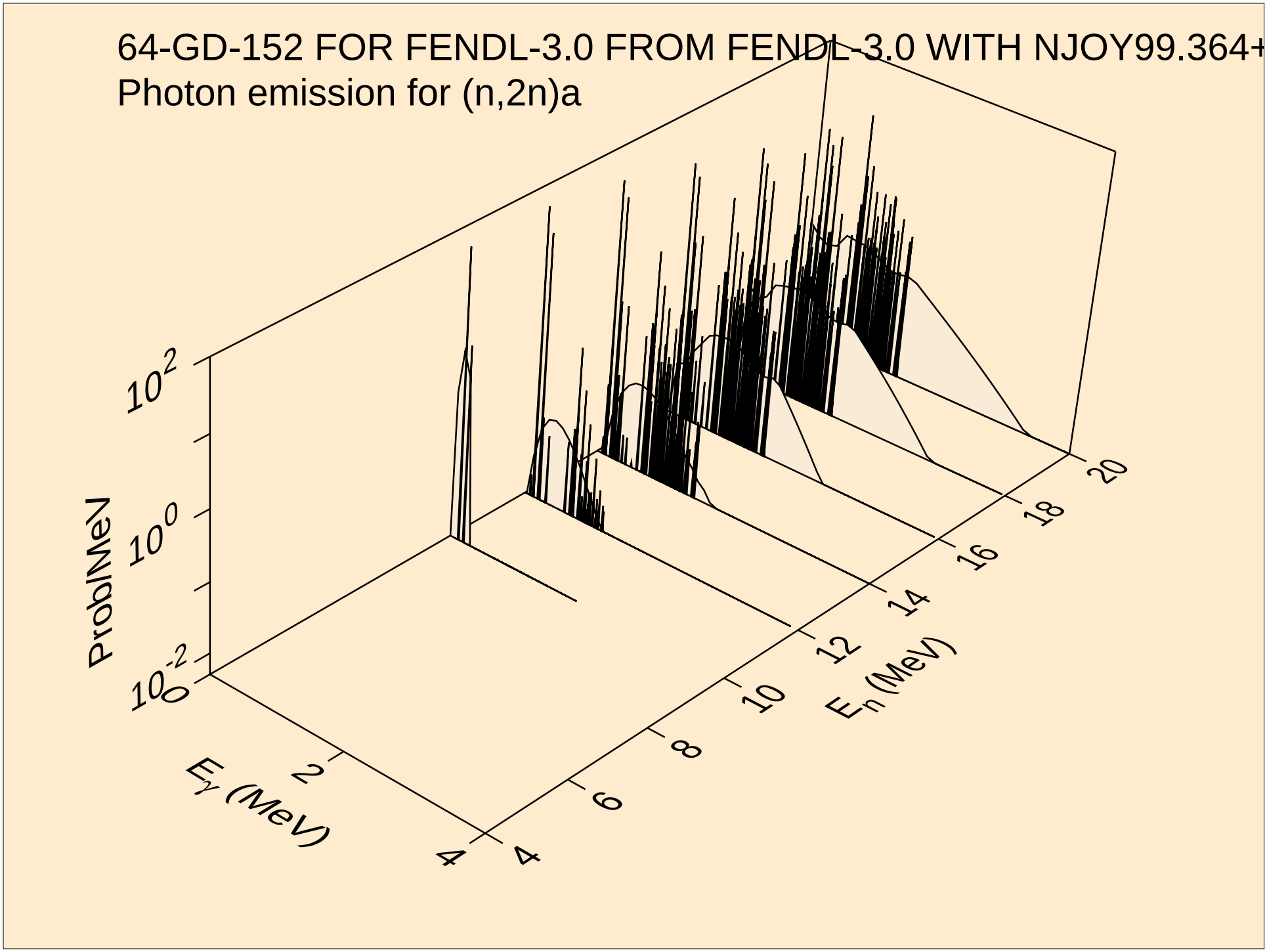

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Neutron emission for (n,n*c)
Prob/MeV
10^1
10^-1
0
5
10
15
20
Sec. Energy
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

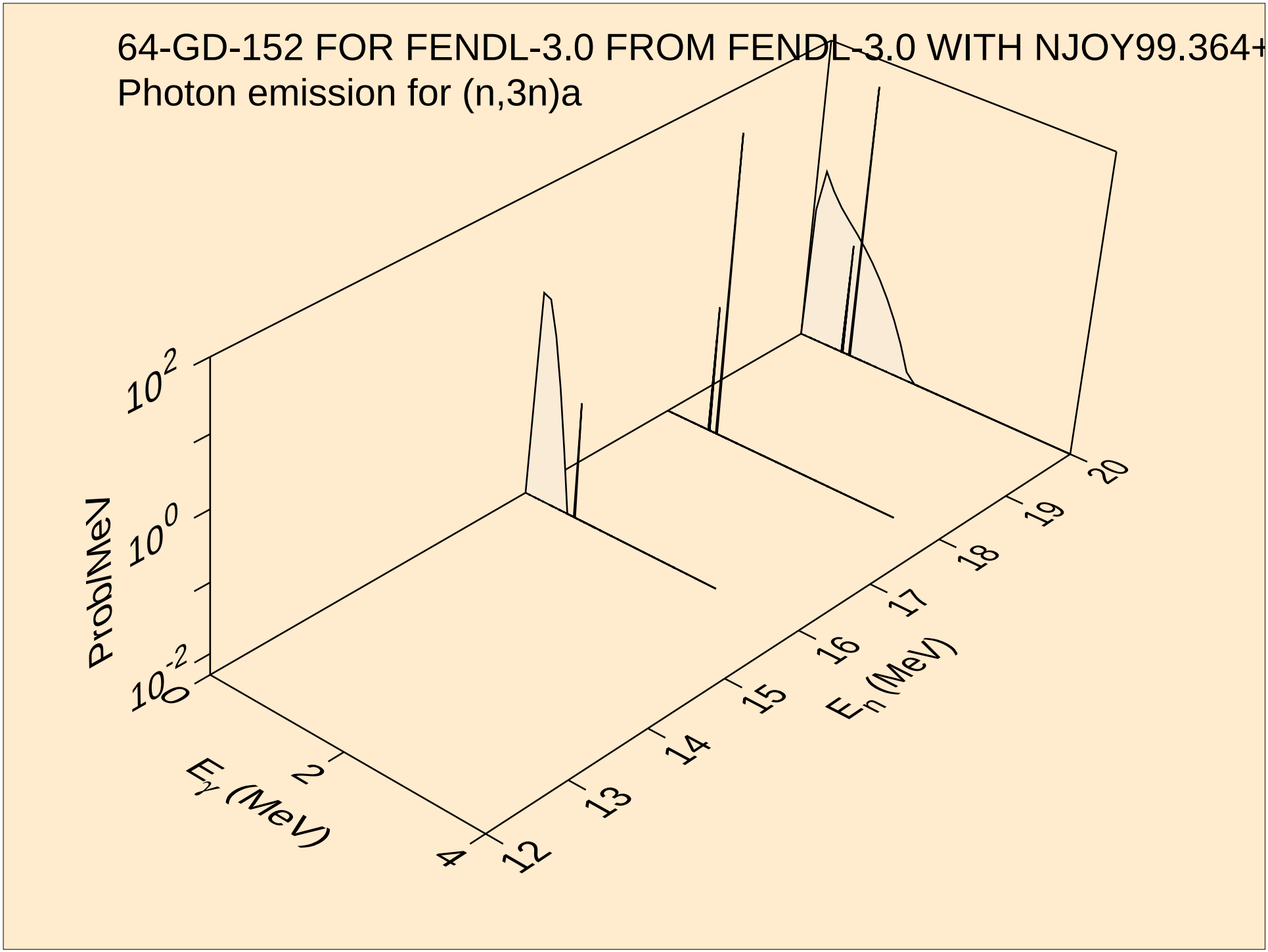

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Photon emission for (n,x)
Prob/MeV
$10^{0}$
$10^{-2}$
$10^{-4}$
$E_\gamma$ (MeV)
0
20
40
$E_n$ (MeV)
0
50
100
150
200

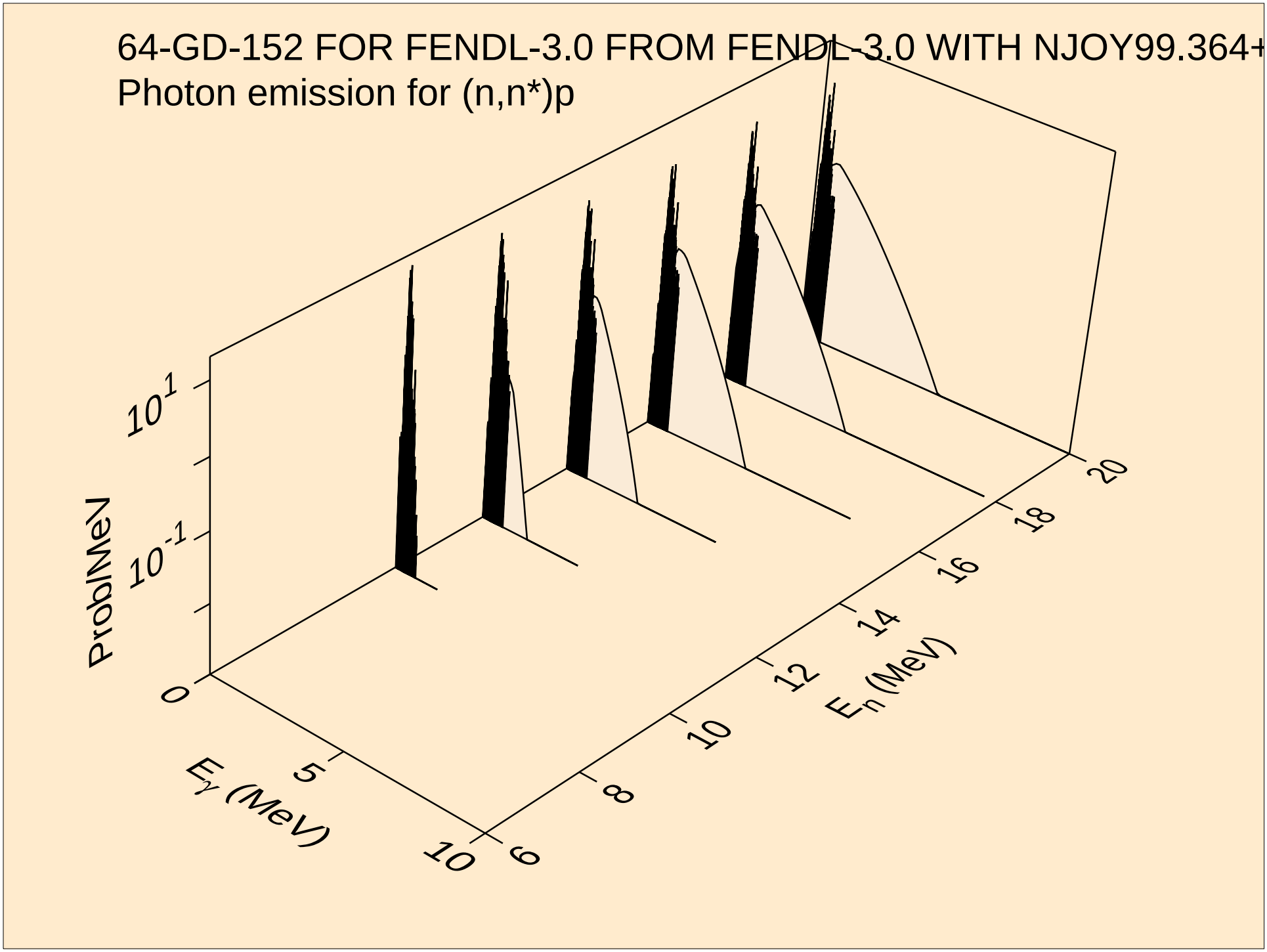

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Photon emission for (n,2n)
Prob/MeV
$10^{1}$
$10^{-1}$
0
5
10
$E_\gamma$ (MeV)
8
10
12
14
16
18
20
$E_n$ (MeV)

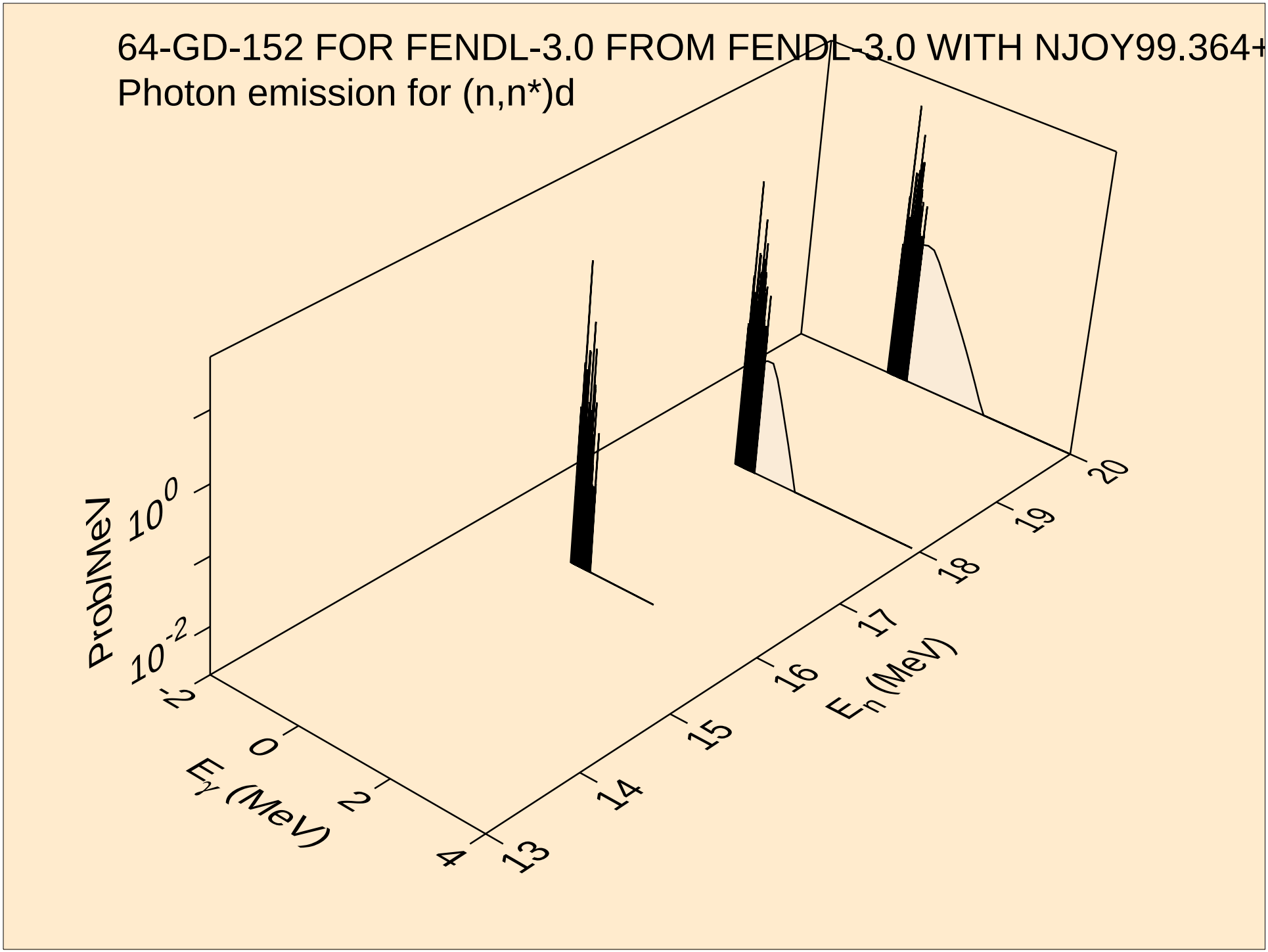

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Photon emission for (n,3n)
Prob/MeV
$10^{2}$
$10^{0}$
$10^{-2}$
0
2
4
$E_\gamma$ (MeV)
15
16
17
18
19
20
$E_n$ (MeV)

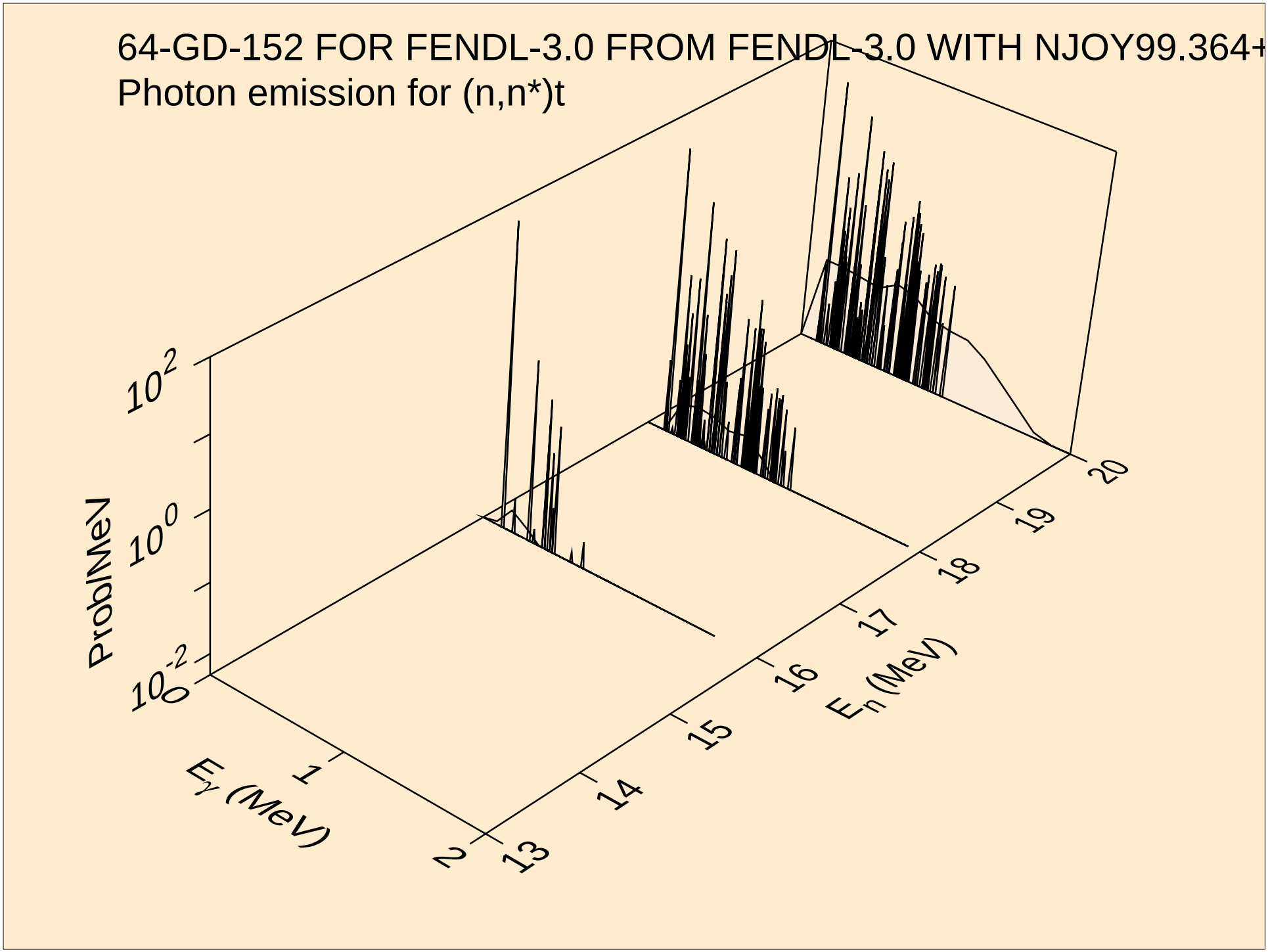

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Photon emission for (n,n*)a
Prob/MeV
$10^{2}$
$10^{0}$
$10^{-2}$
0
2
4
6
$E_\gamma$ (MeV)
0
5
10
15
20
$E_n$ (MeV)

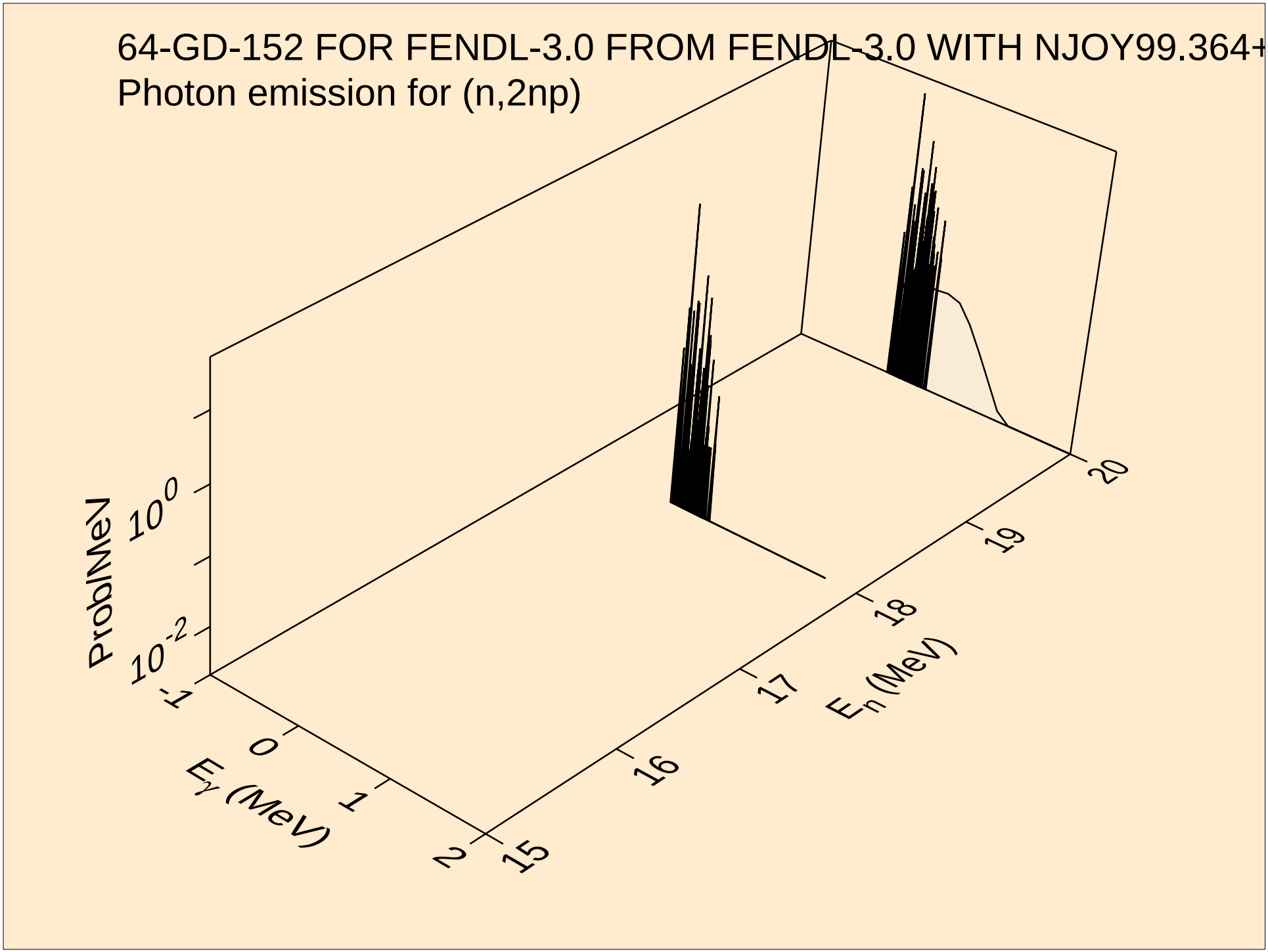

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Photon emission for (n,2n)a
Prob/MeV
$10^{2}$
$10^{0}$
$10^{-2}$
0
2
4
$E_\gamma$ (MeV)
4
6
8
10
12
14
16
18
20
$E_n$ (MeV)

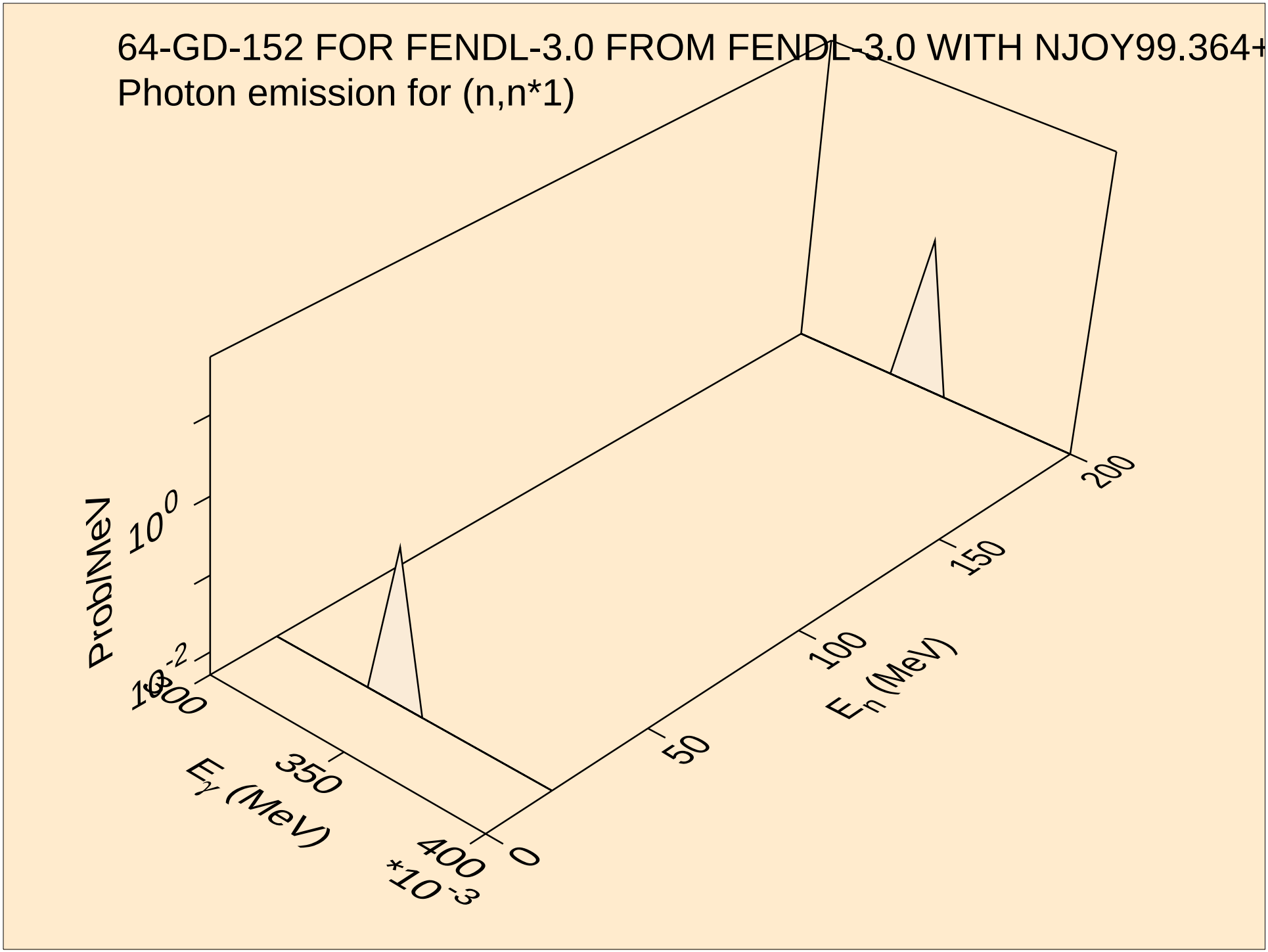

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Photon emission for (n,3n)a
Prob/MeV
$10^{2}$
$10^{0}$
$10^{-2}$
$E_\gamma$ (MeV)
2
4
$E_n$ (MeV)
12
13
14
15
16
17
18
19
20

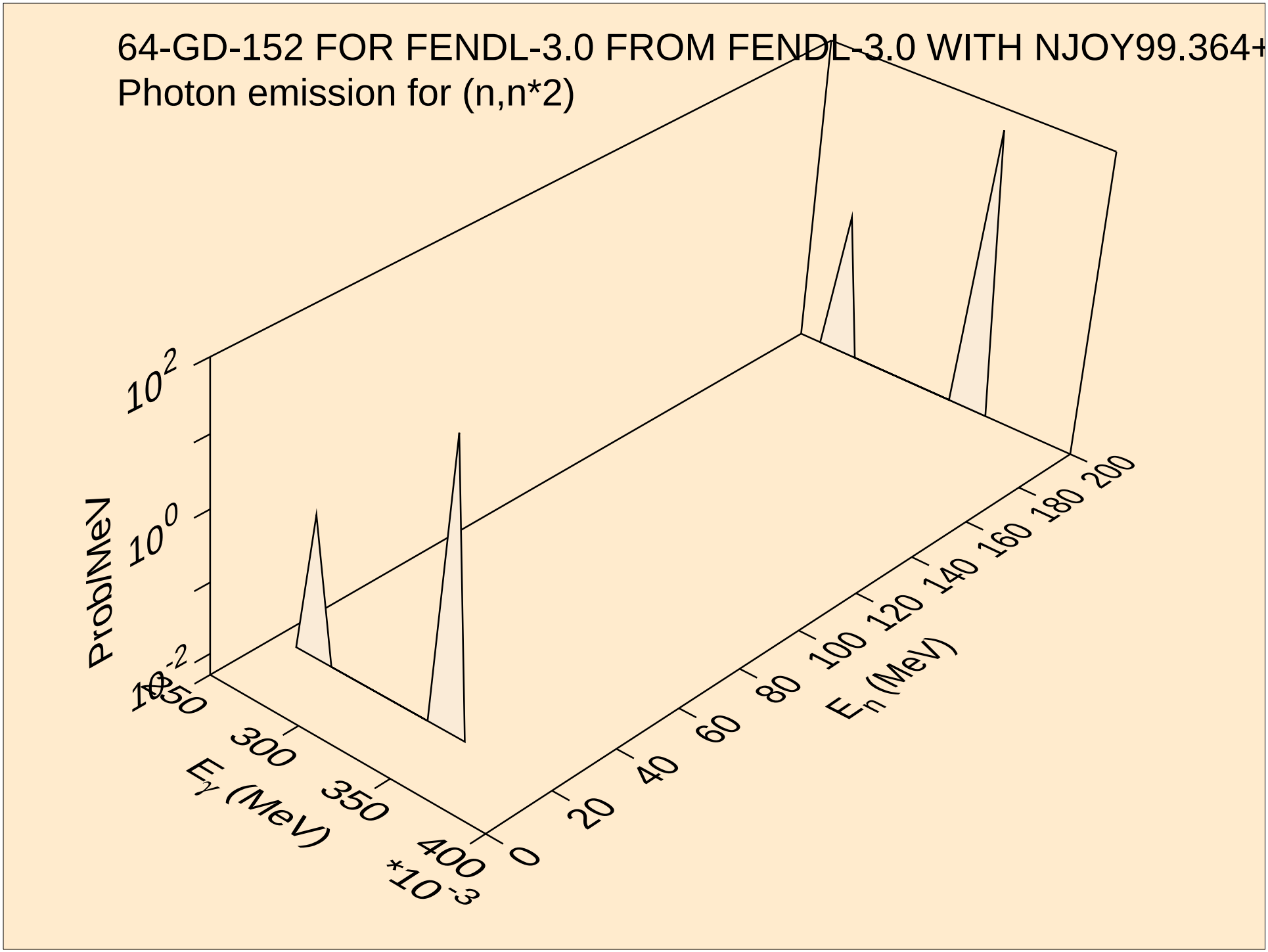

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Photon emission for (n,n*)p
Prob/MeV
$10^{1}$
$10^{-1}$
0
5
10
$E_\gamma$ (MeV)
6
8
10
12
14
16
18
20
$E_n$ (MeV)

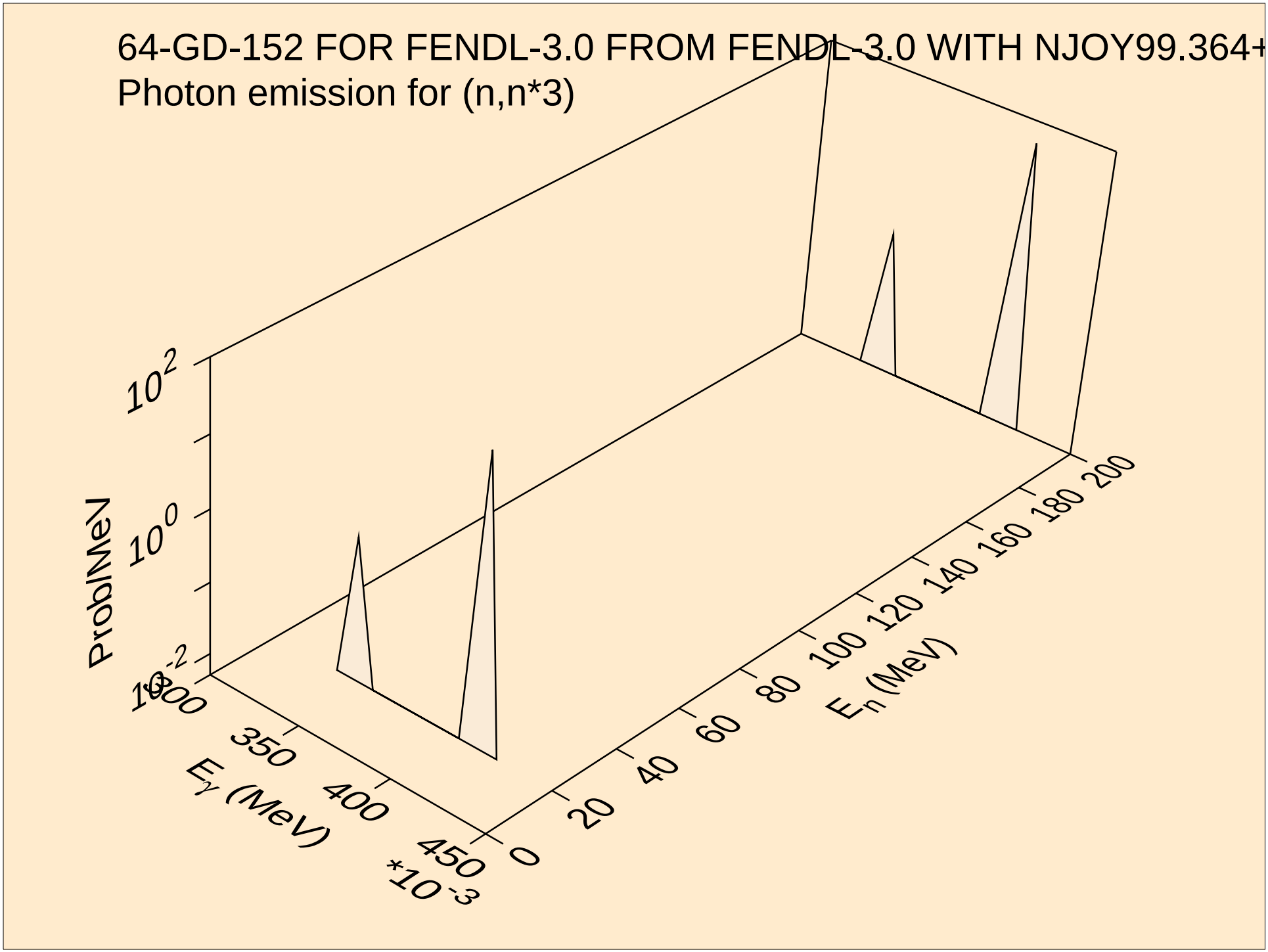

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Photon emission for (n,n*)d
Prob/MeV
$10^{0}$
$10^{-2}$
-2
0
2
4
$E_\gamma$ (MeV)
13
14
15
16
17
18
19
20
$E_n$ (MeV)

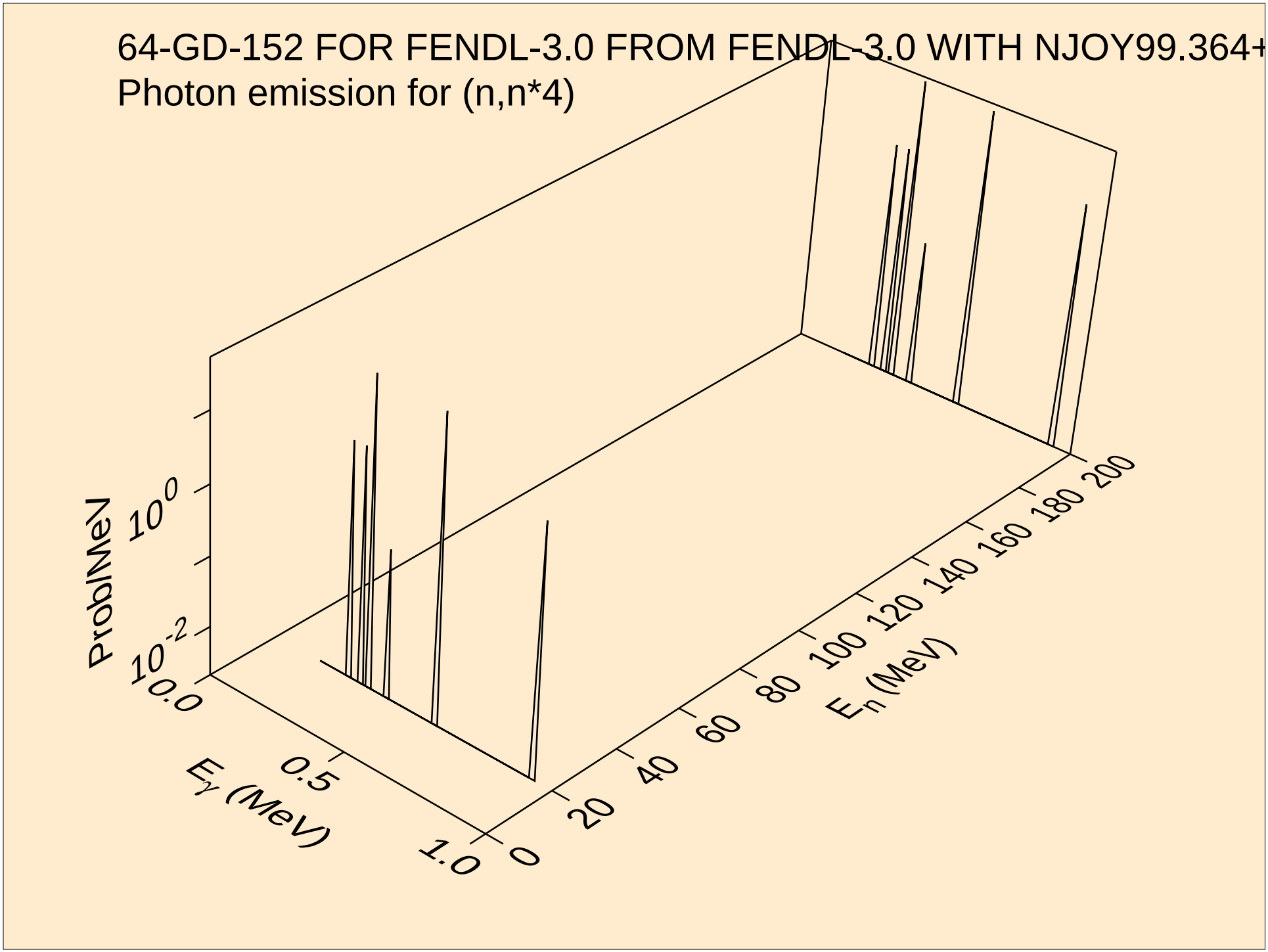

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Photon emission for (n,n*)t
Prob/MeV
$10^{2}$
$10^{0}$
$10^{-2}$
0
1
2
$E_\gamma$ (MeV)
13
14
15
16
17
18
19
20
$E_n$ (MeV)

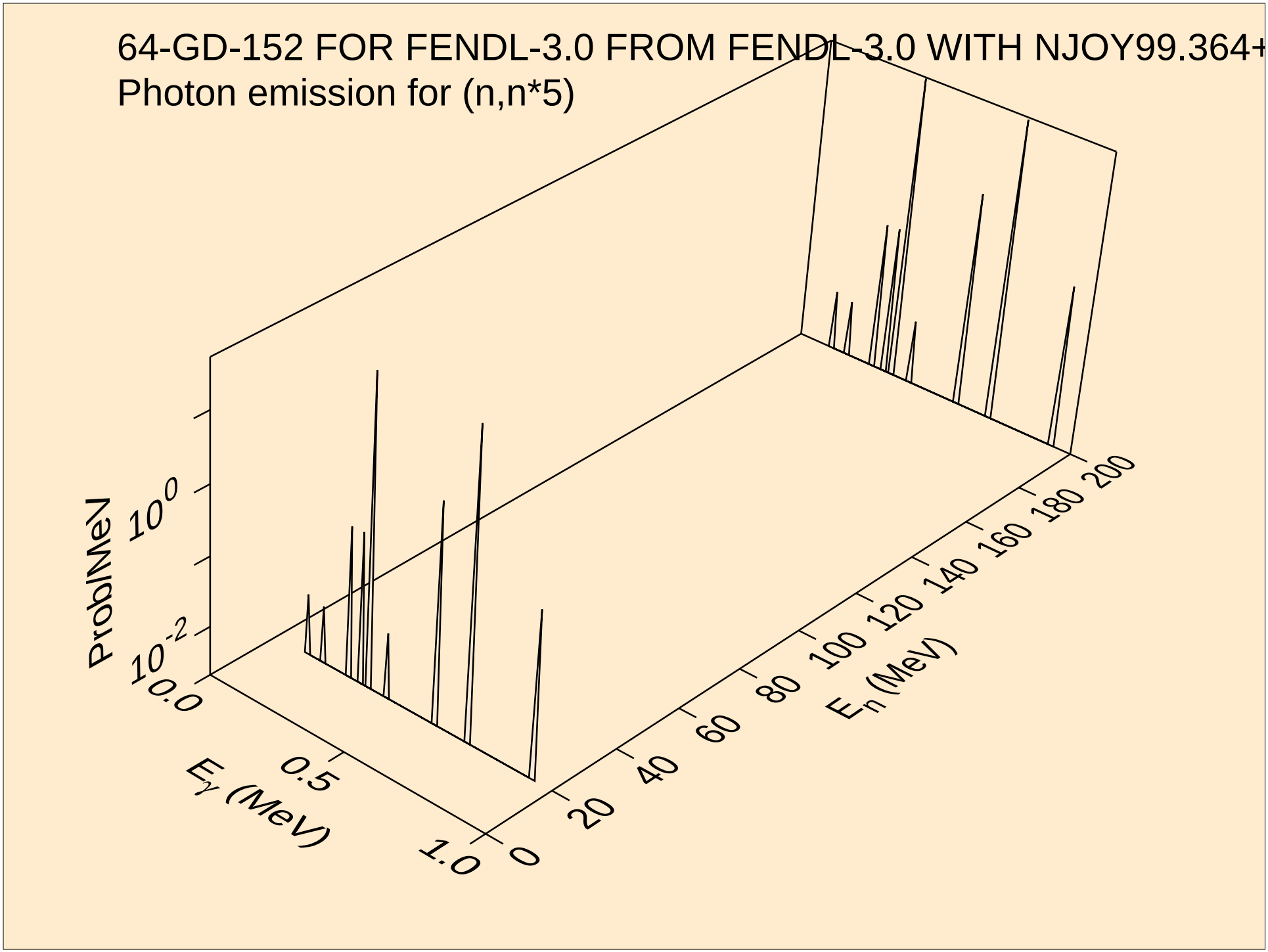

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Photon emission for (n,2np)
Prob/MeV
$10^{0}$
$10^{-2}$
-1
0
1
2
$E_\gamma$ (MeV)
15
16
17
18
19
20
$E_n$ (MeV)

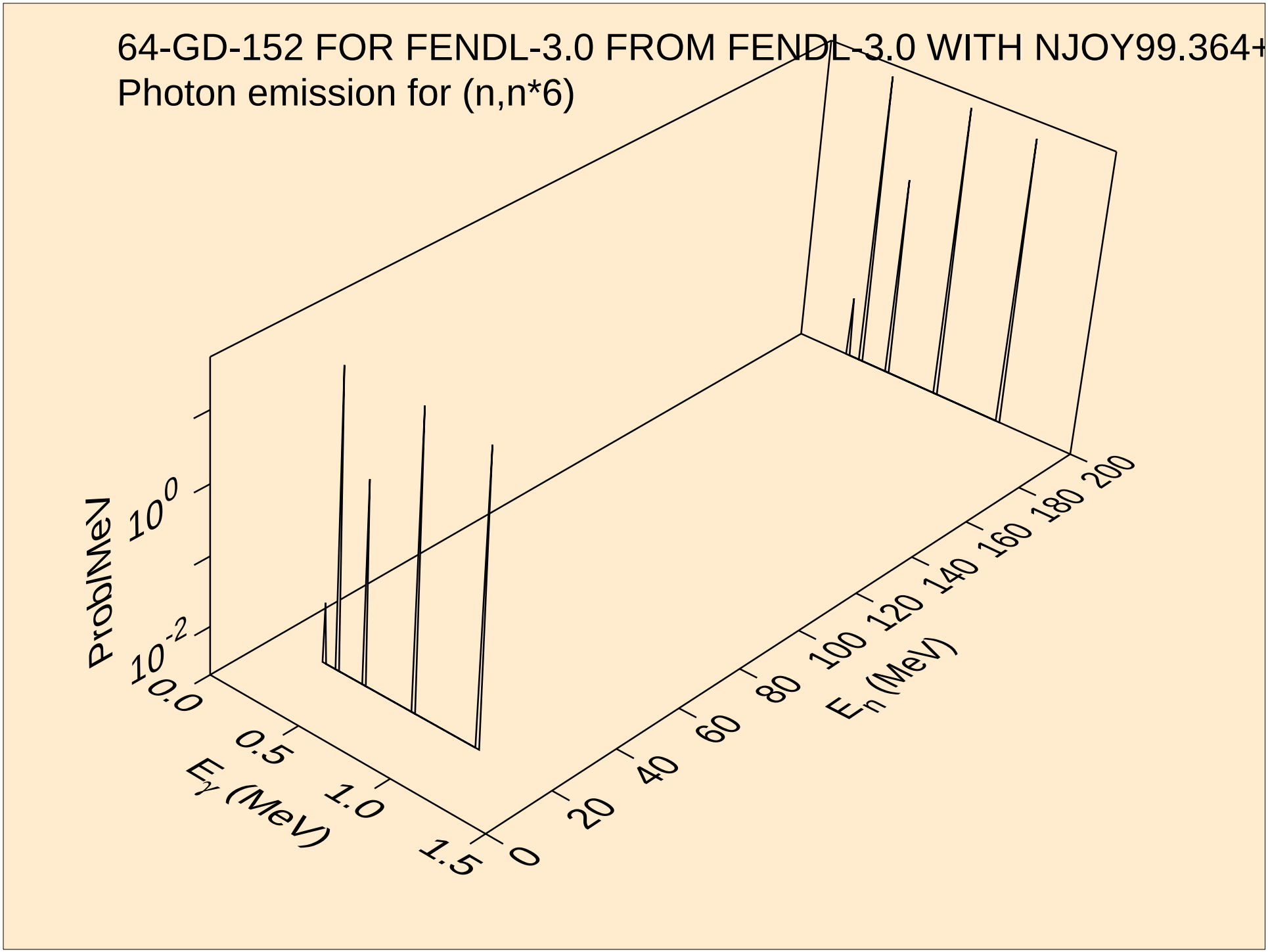

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Photon emission for (n,n*1)
Prob/MeV
10^0
10^-2
0
50
100
150
200
E_n (MeV)
0
350
400
E_γ (MeV)
*10^-3

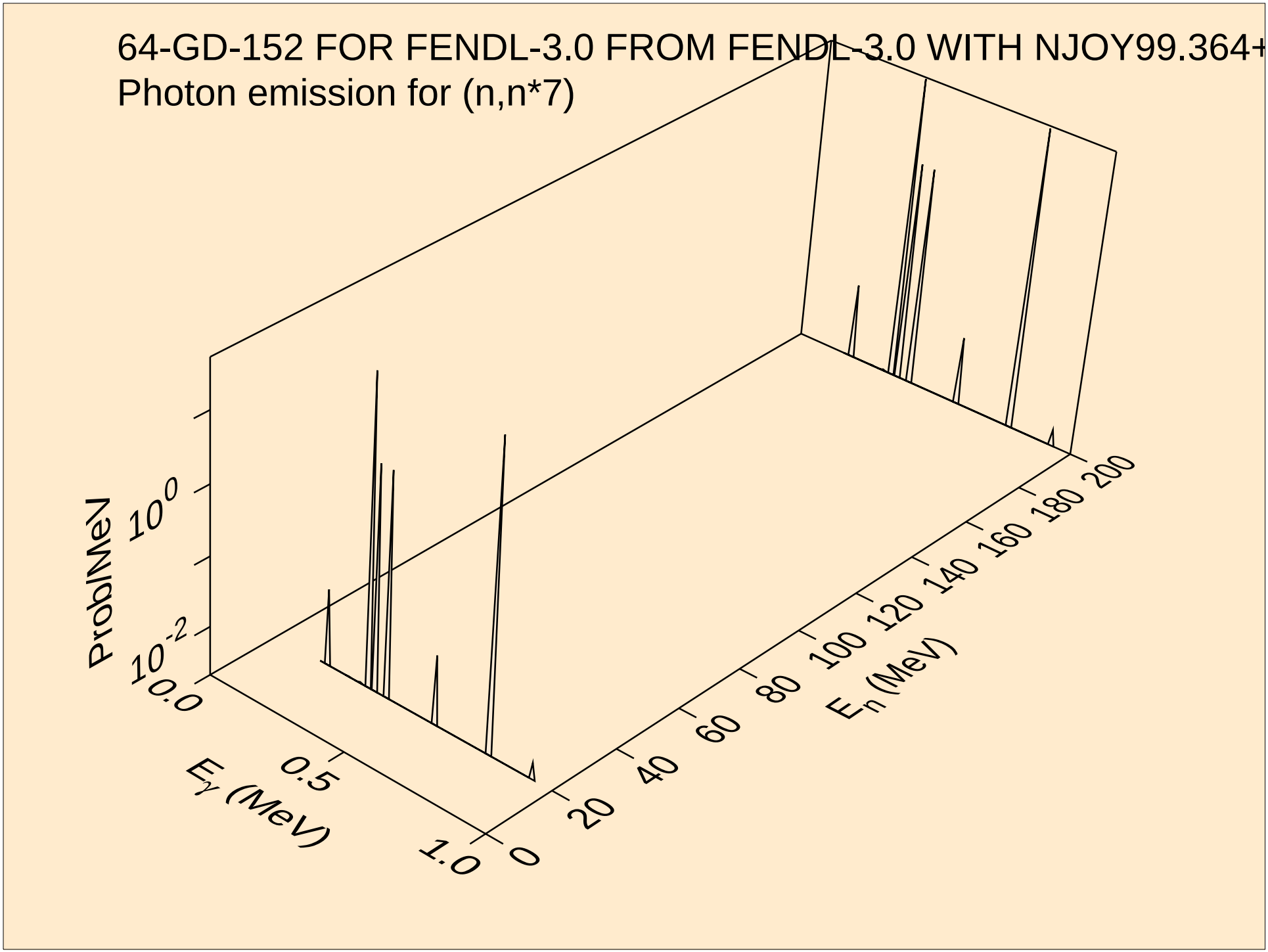

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Photon emission for (n,n*2)
Prob/MeV
$10^2$
$10^0$
$10^{-2}$
250
300
350
400
$E_\gamma$ (MeV)
*10 -3
0
20
40
60
80
100
120
140
160
180
200
$E_n$ (MeV)

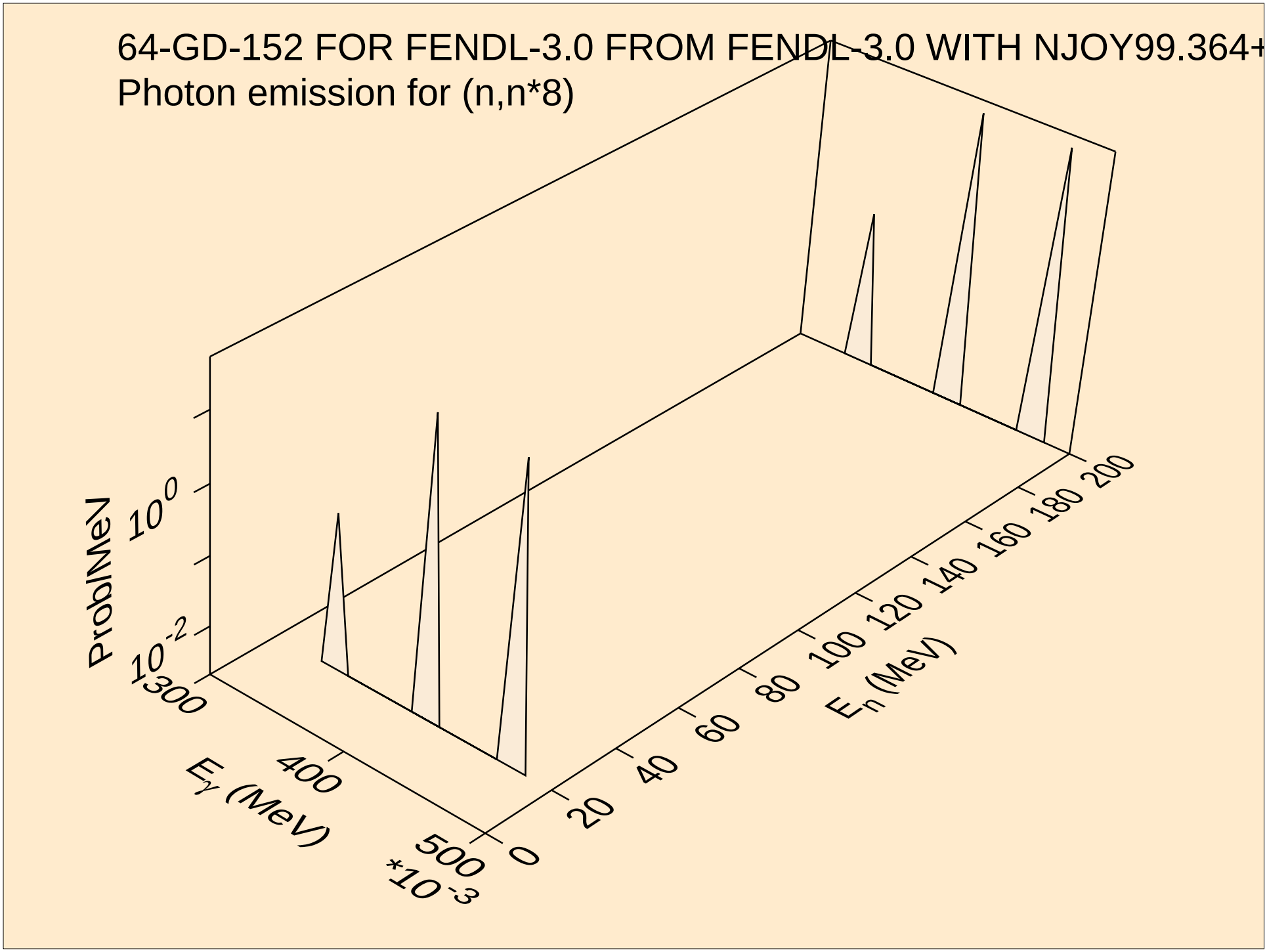

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Photon emission for (n,n*3)
Prob/MeV
$10^{2}$
$10^{0}$
$10^{-2}$
300
350
400
450
$E_\gamma$ (MeV)
*10 -3
0
20
40
60
80
100
120
140
160
180
200
$E_n$ (MeV)

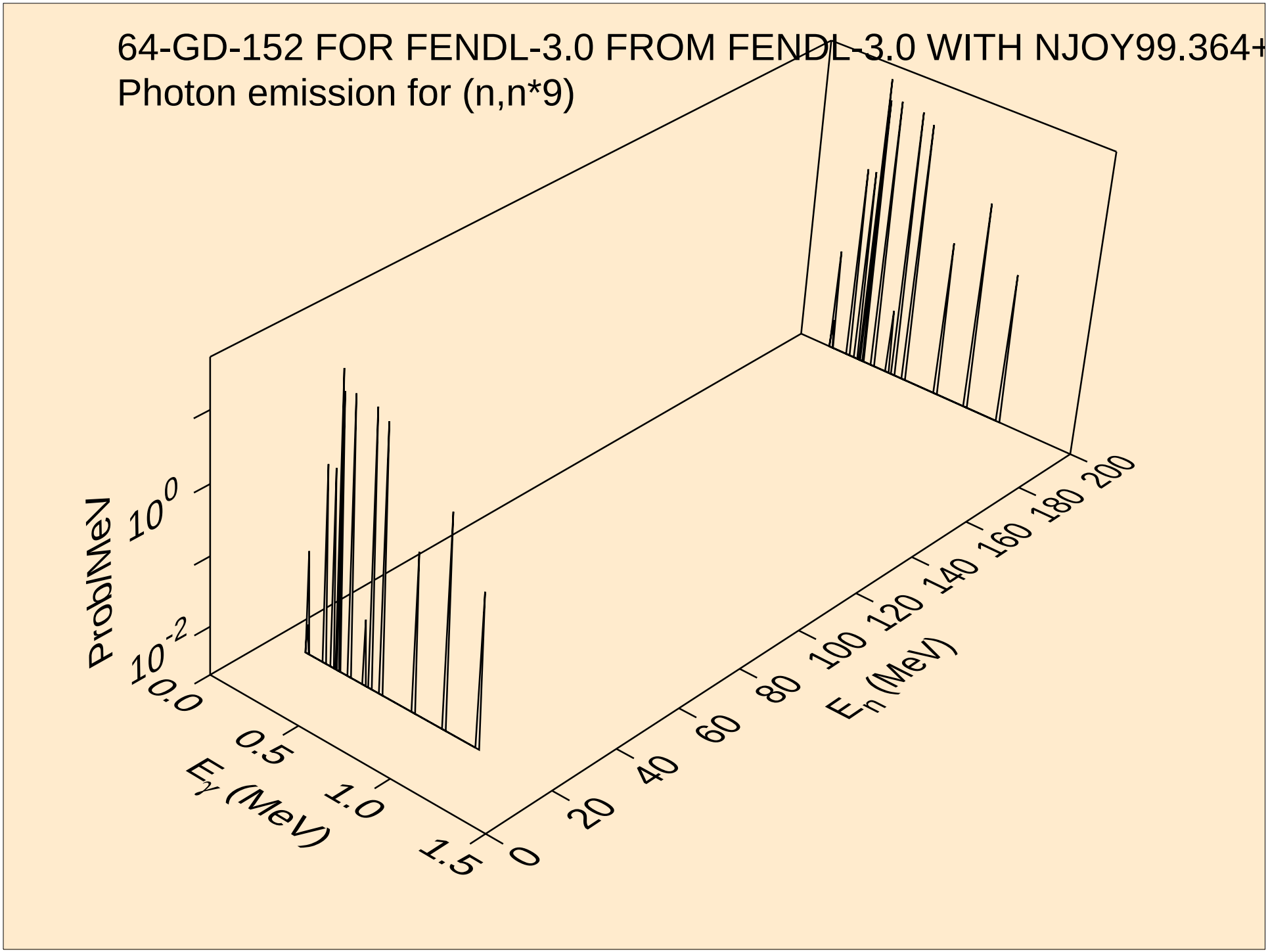

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Photon emission for (n,n*4)
Prob/MeV
10^0
10^-2
0.0
0.5
1.0
E_γ (MeV)
0
20
40
60
80
100
120
140
160
180
200
E_n (MeV)

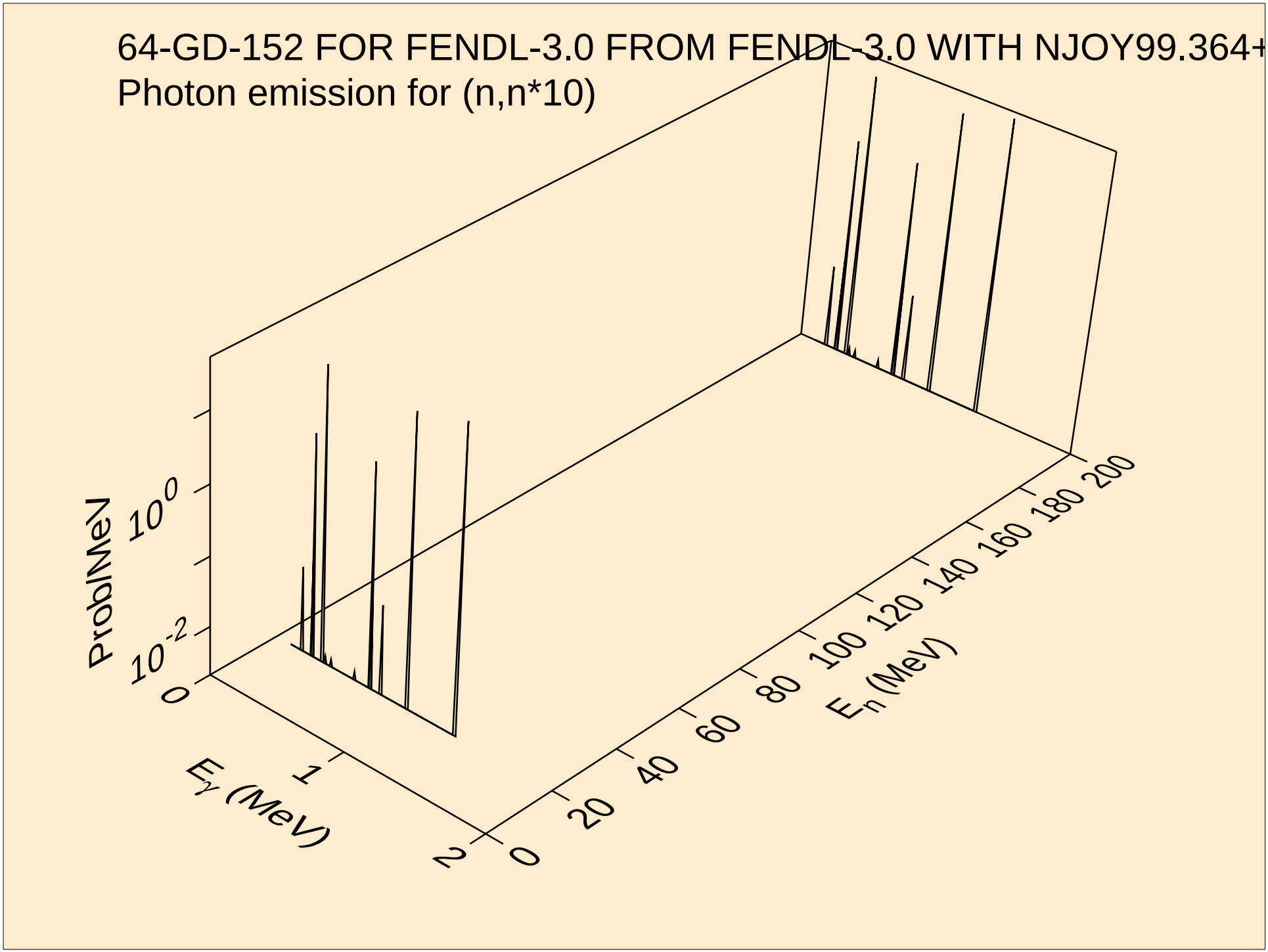

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Photon emission for (n,n*5)
Prob/MeV
$10^{0}$
$10^{-2}$
0.0
0.5
1.0
$E_\gamma$ (MeV)
0
20
40
60
80
100
120
140
160
180
200
$E_n$ (MeV)

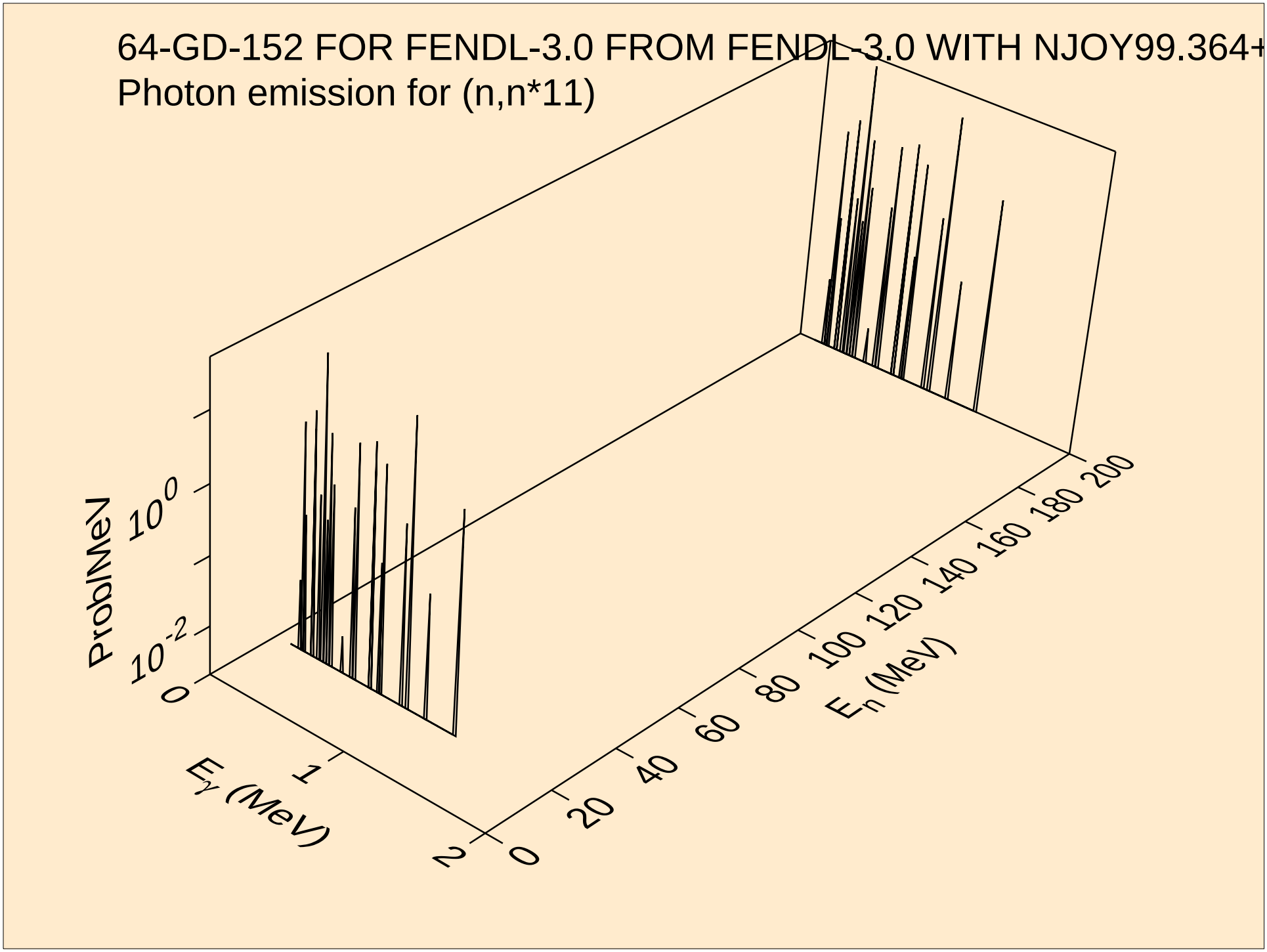

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Photon emission for (n,n*6)
Prob/MeV
$10^{0}$
$10^{-2}$
0.0
0.5
1.0
1.5
$E_\gamma$ (MeV)
0
20
40
60
80
100
120
140
160
180
200
$E_n$ (MeV)

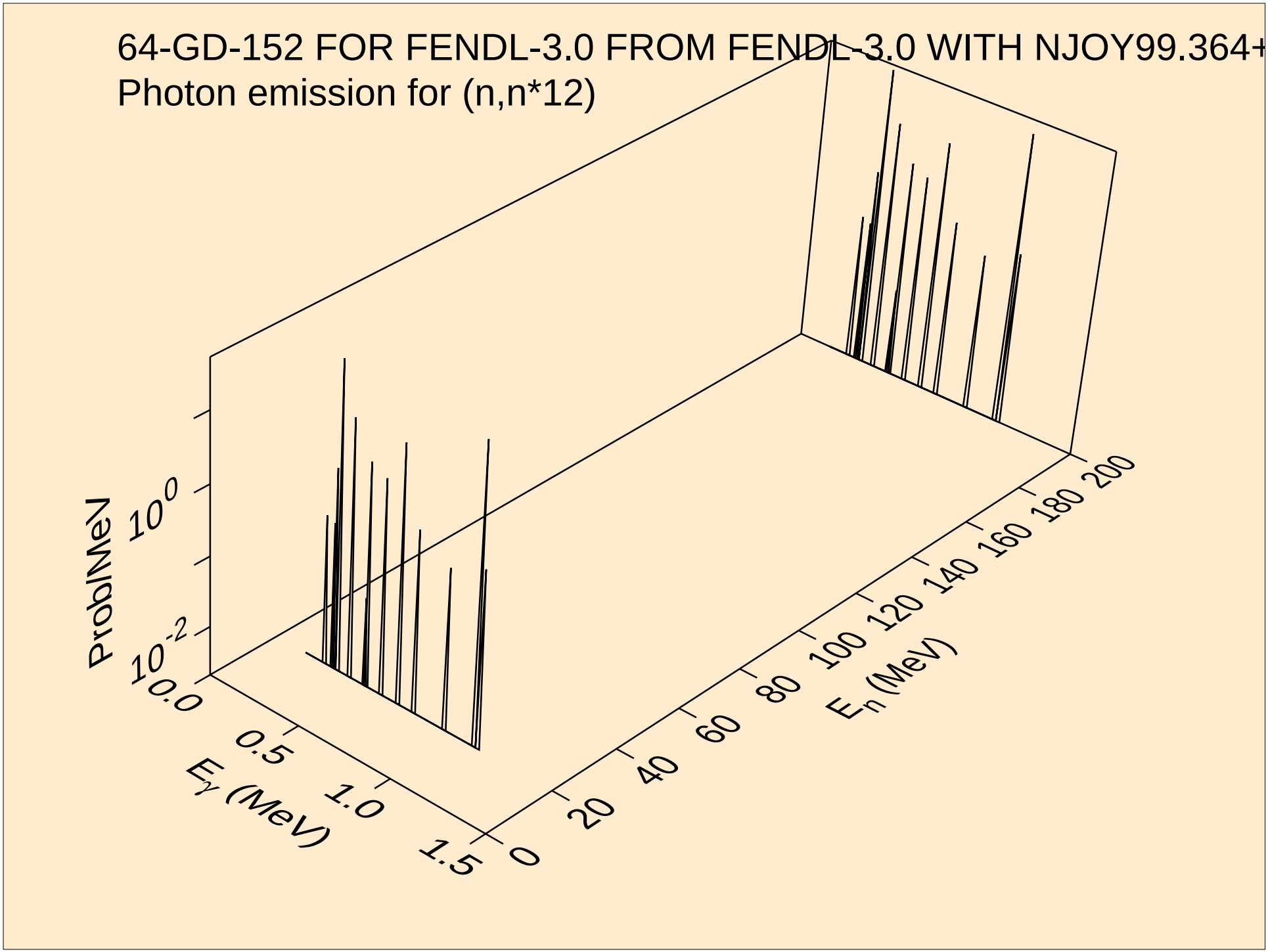

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Photon emission for (n,n*7)
Prob/MeV
$10^{0}$
$10^{-2}$
0.0
0.5
1.0
$E_\gamma$ (MeV)
0
20
40
60
80
100
120
140
160
180
200
$E_n$ (MeV)

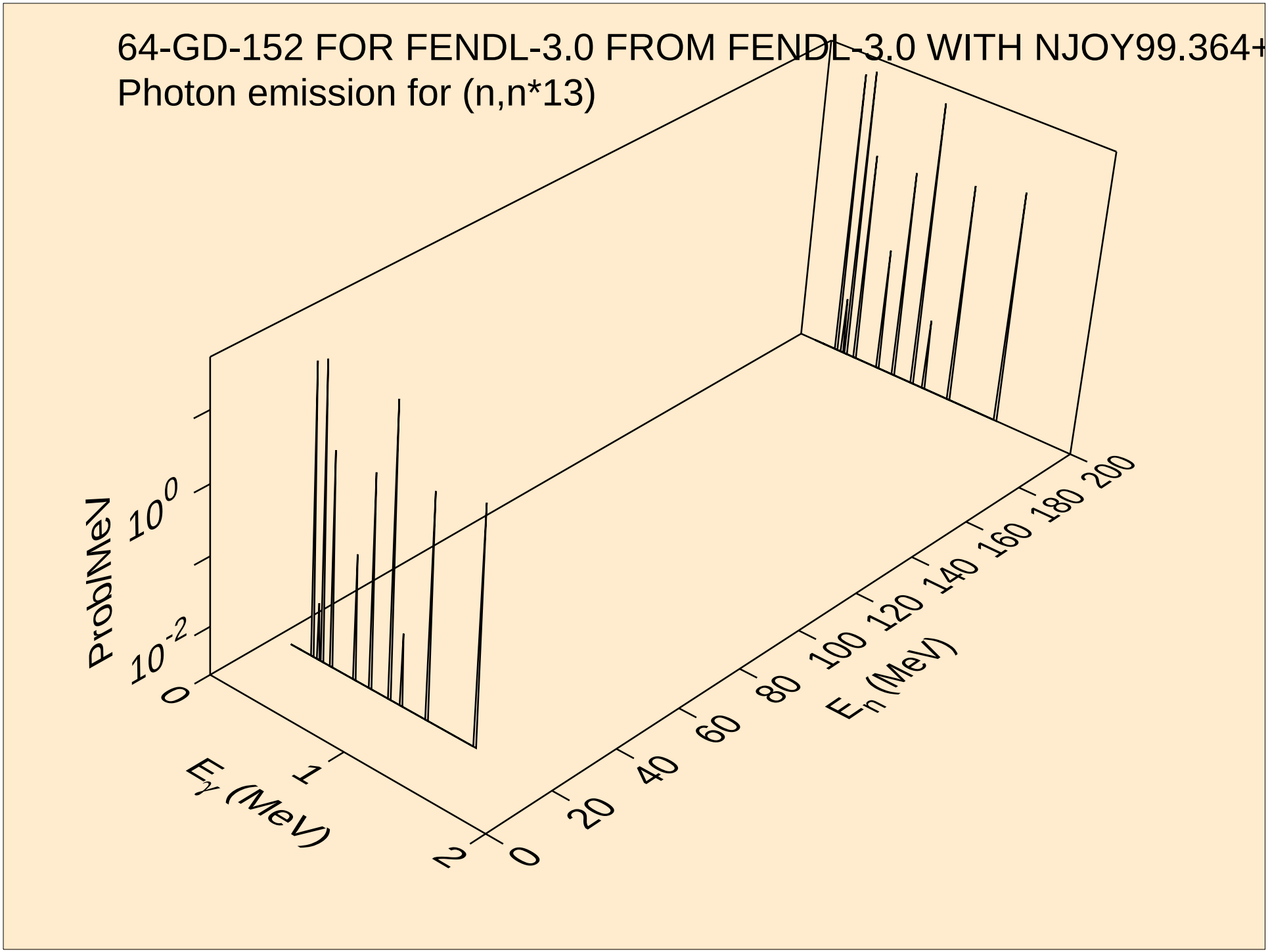

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Photon emission for (n,n*8)
Prob/MeV
10^0
10^-2
300
400
500
E_γ (MeV)
*10^-3
0
20
40
60
80
100
120
140
160
180
200
E_n (MeV)

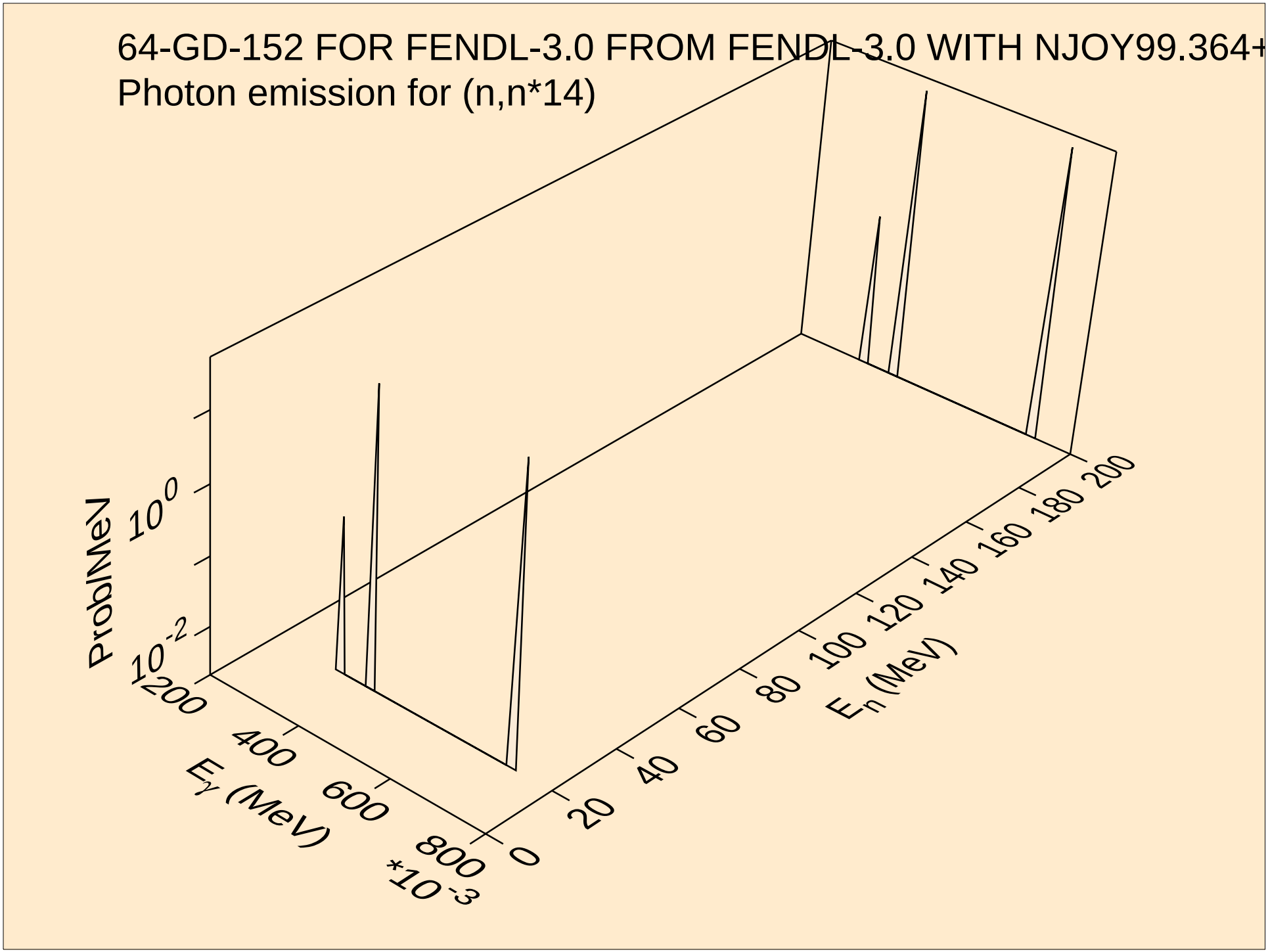

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Photon emission for (n,n*9)
Prob/MeV
$10^{0}$
$10^{-2}$
0.0
0.5
1.0
1.5
$E_\gamma$ (MeV)
0
20
40
60
80
100
120
140
160
180
200
$E_n$ (MeV)

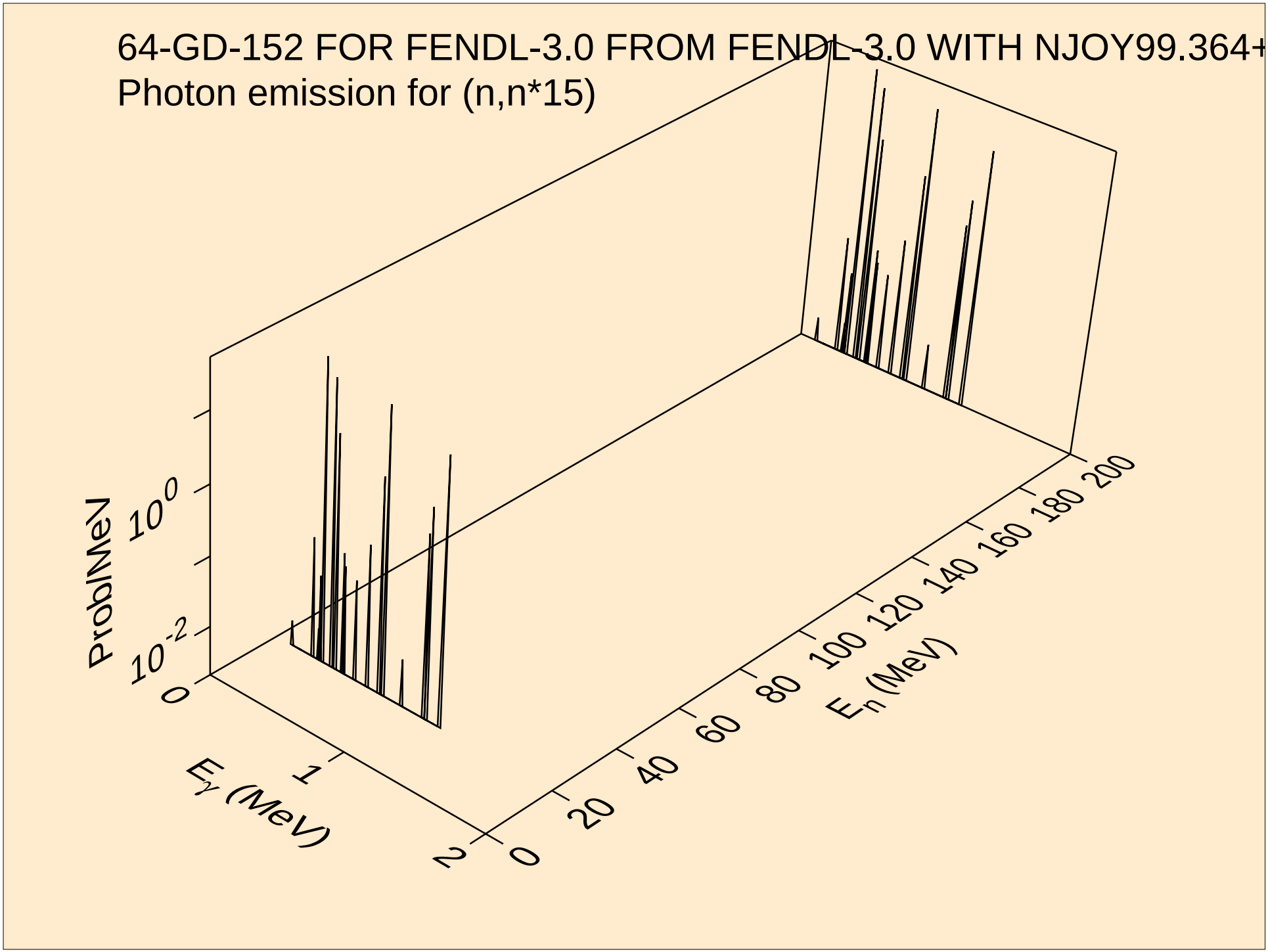

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Photon emission for (n,n*10)
Prob/MeV
$10^{0}$
$10^{-2}$
0
1
2
$E_\gamma$ (MeV)
0
20
40
60
80
100
120
140
160
180
200
$E_n$ (MeV)

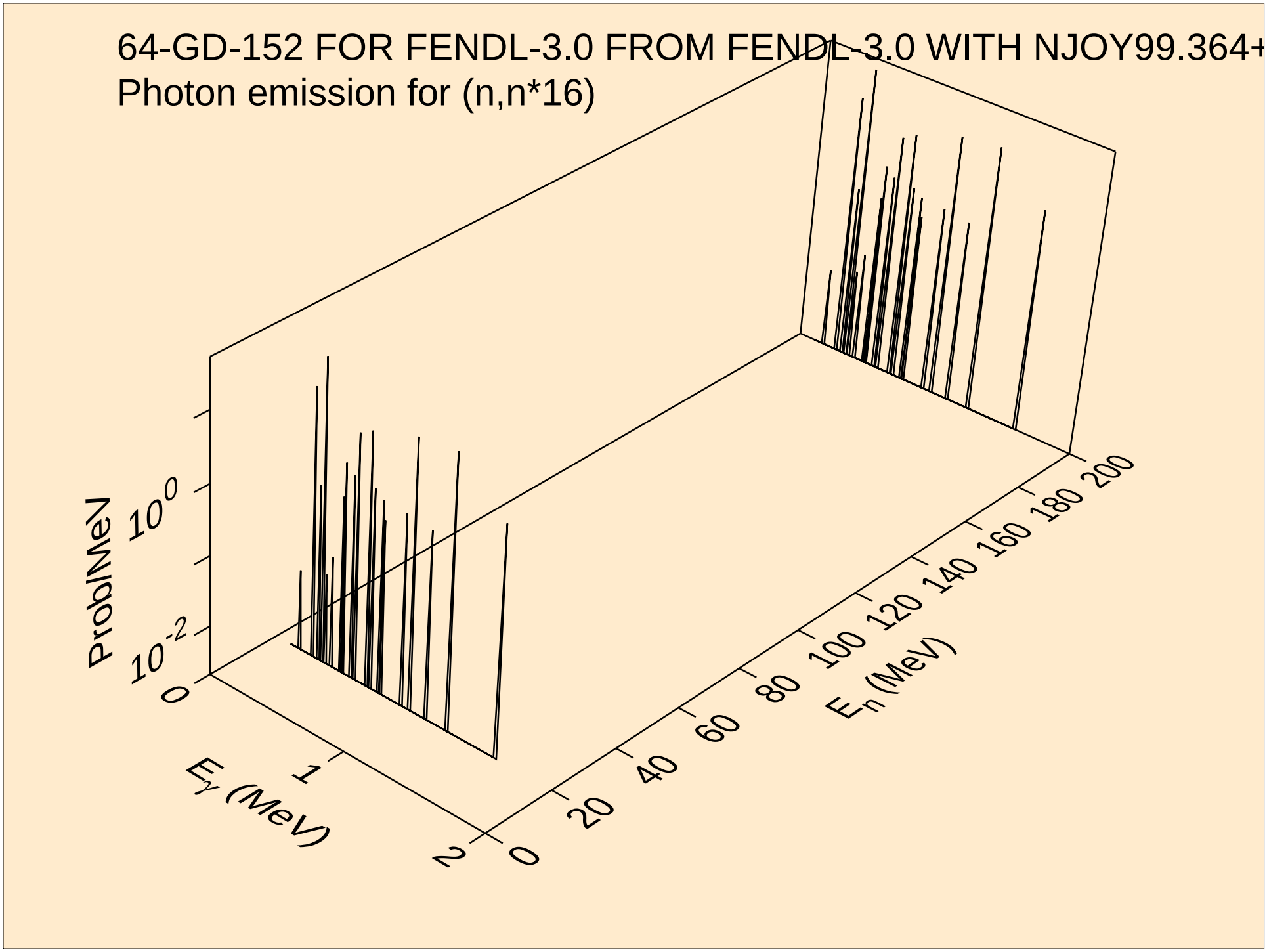

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Photon emission for (n,n*11)
Prob/MeV
10^0
10^-2
0
1
2
Eγ (MeV)
0
20
40
60
80
100
120
140
160
180
200
En (MeV)

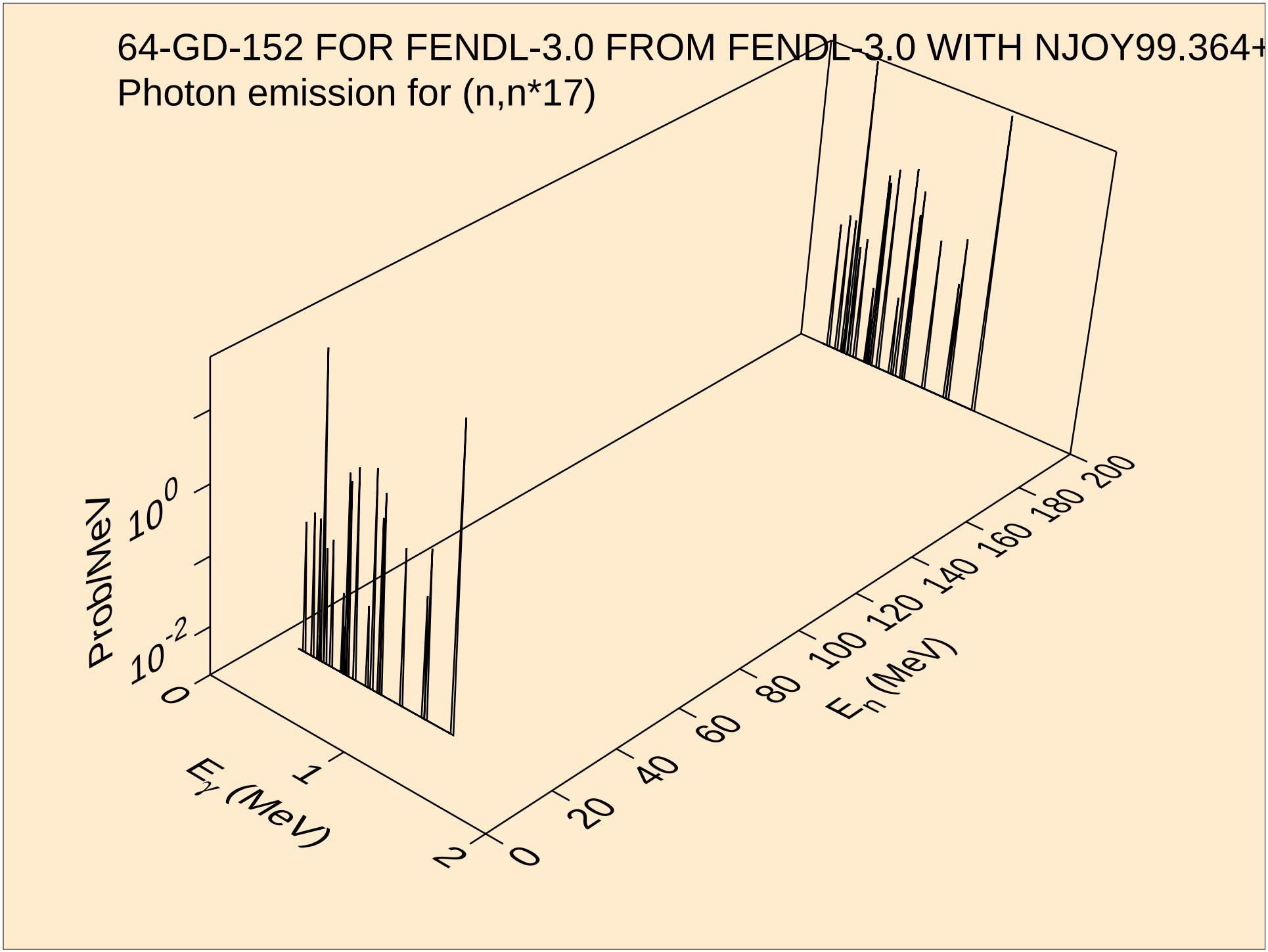

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Photon emission for (n,n*12)
Prob/MeV
$10^{0}$
$10^{-2}$
0.0
0.5
1.0
1.5
$E_\gamma$ (MeV)
0
20
40
60
80
100
120
140
160
180
200
$E_n$ (MeV)

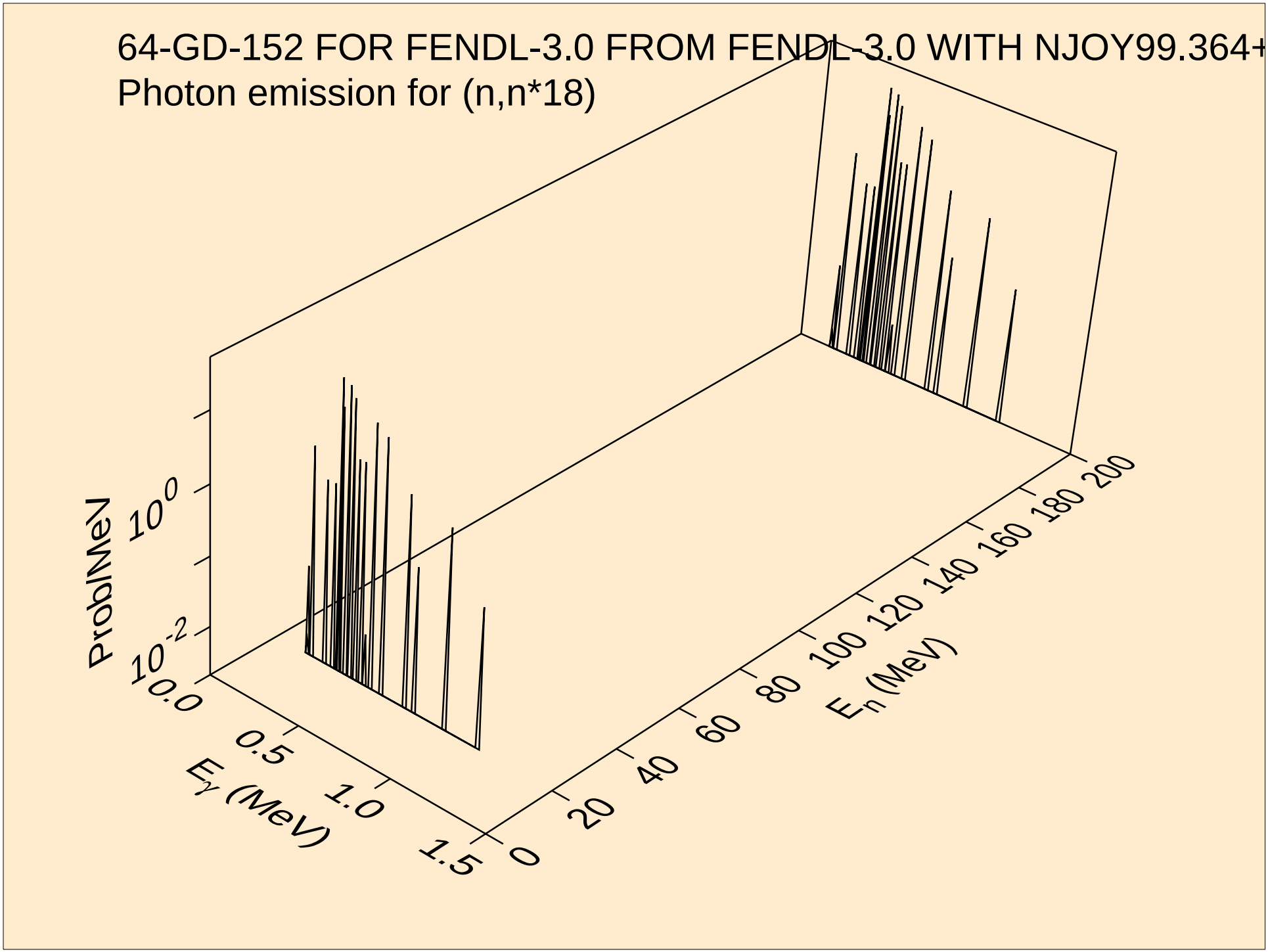

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Photon emission for (n,n*13)
Prob/MeV
$10^{0}$
$10^{-2}$
0
1
2
$E_\gamma$ (MeV)
0
20
40
60
80
100
120
140
160
180
200
$E_n$ (MeV)

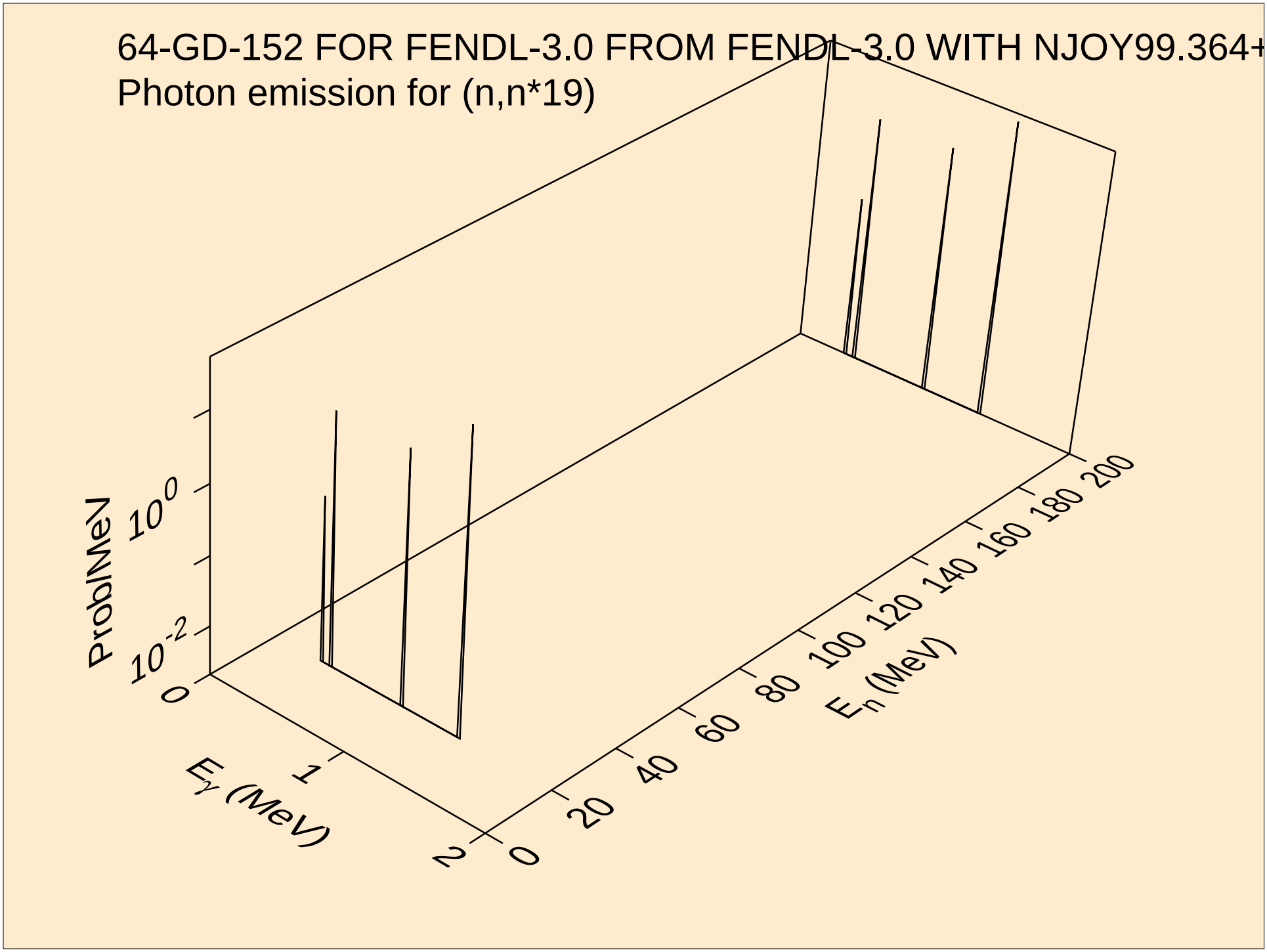

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Photon emission for (n,n*14)
Prob/MeV
10^0
10^-2
200
400
600
800
*10^-3
Eγ (MeV)
0
20
40
60
80
100
120
140
160
180
200
En (MeV)

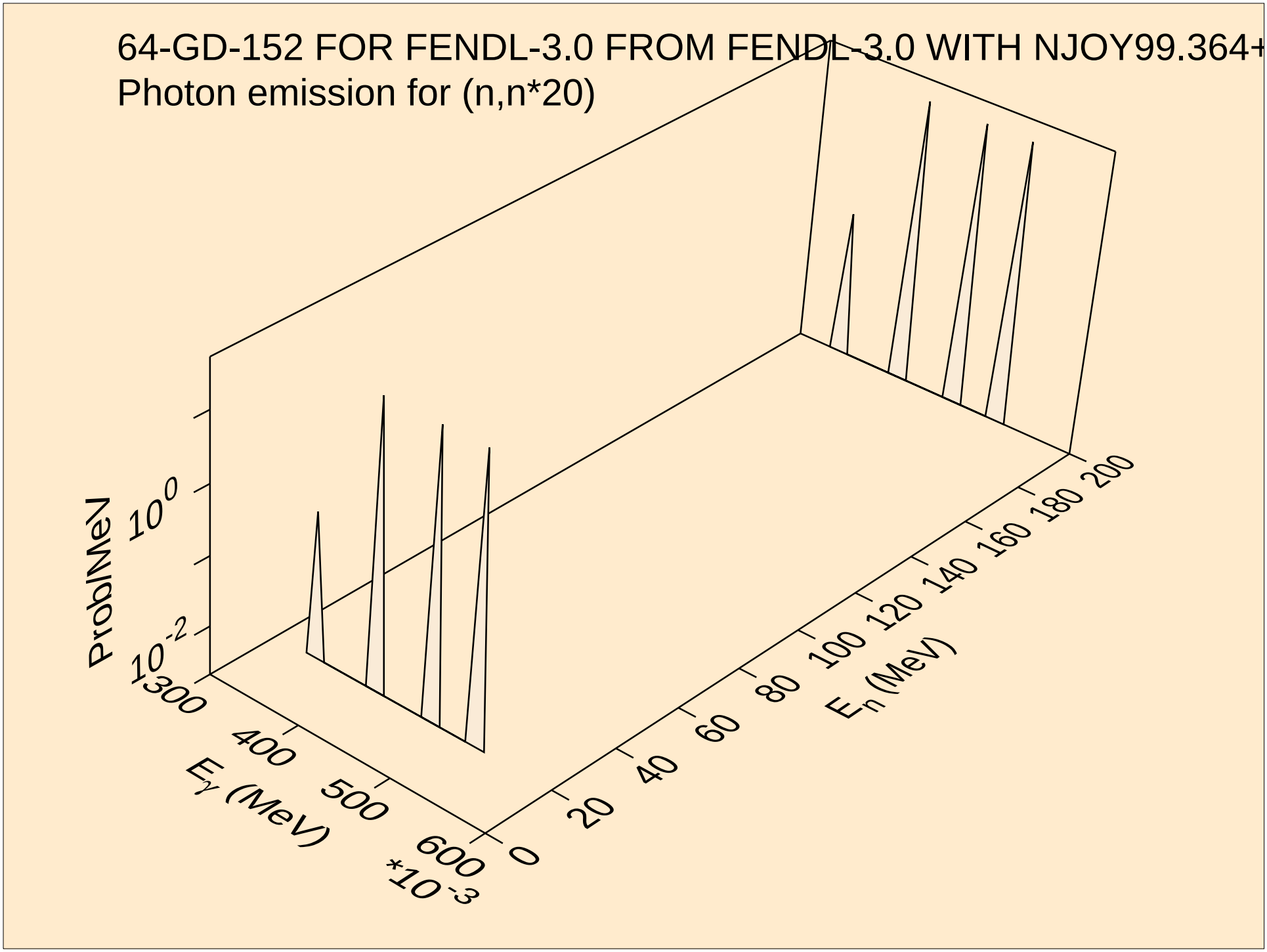

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Photon emission for (n,n*15)
Prob/MeV
10^0
10^-2
0
1
2
Eγ (MeV)
0
20
40
60
80
100
120
140
160
180
200
En (MeV)

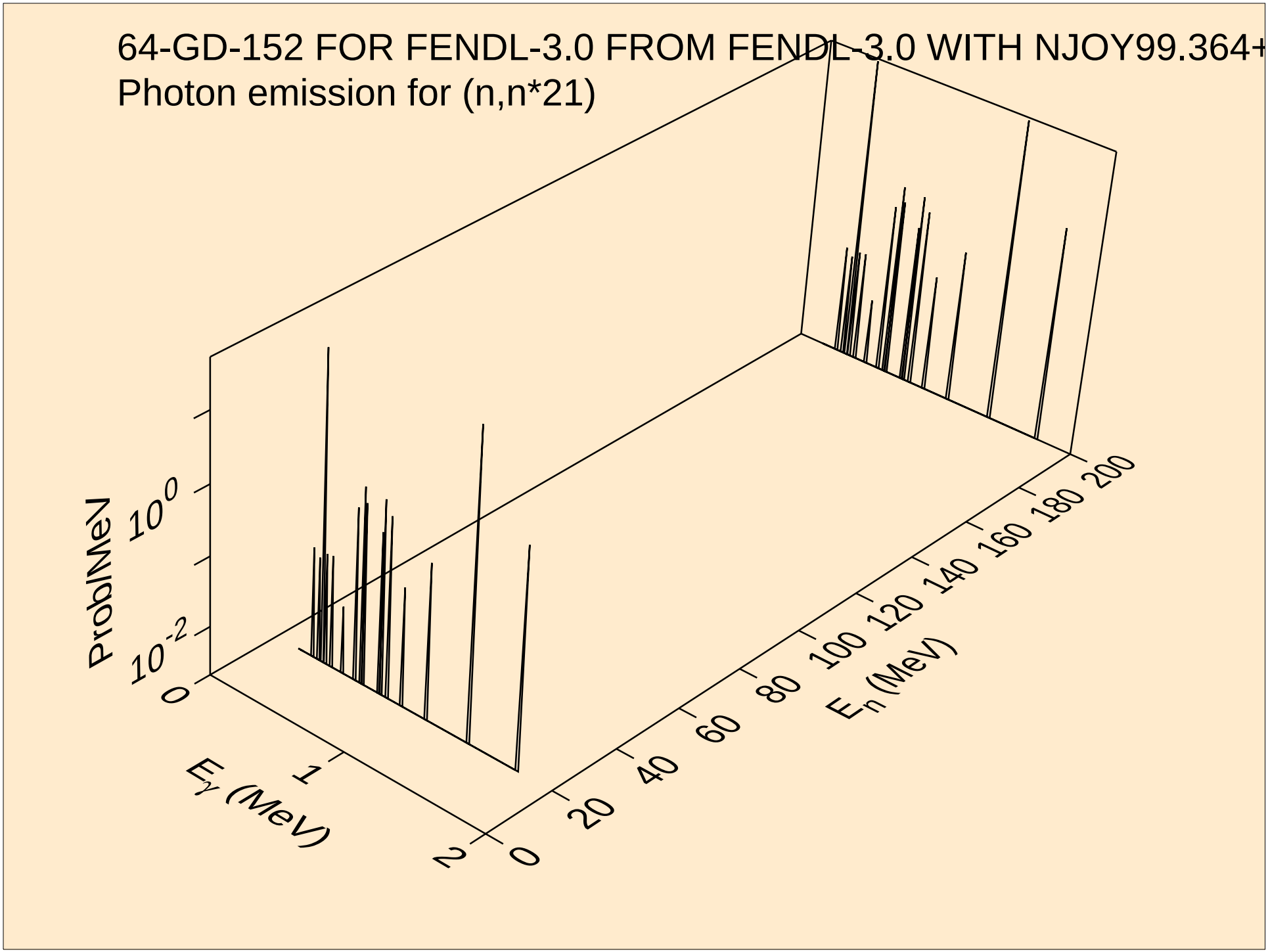

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Photon emission for (n,n*16)
Prob/MeV
$10^{0}$
$10^{-2}$
0
1
2
$E_\gamma$ (MeV)
0
20
40
60
80
100
120
140
160
180
200
$E_n$ (MeV)

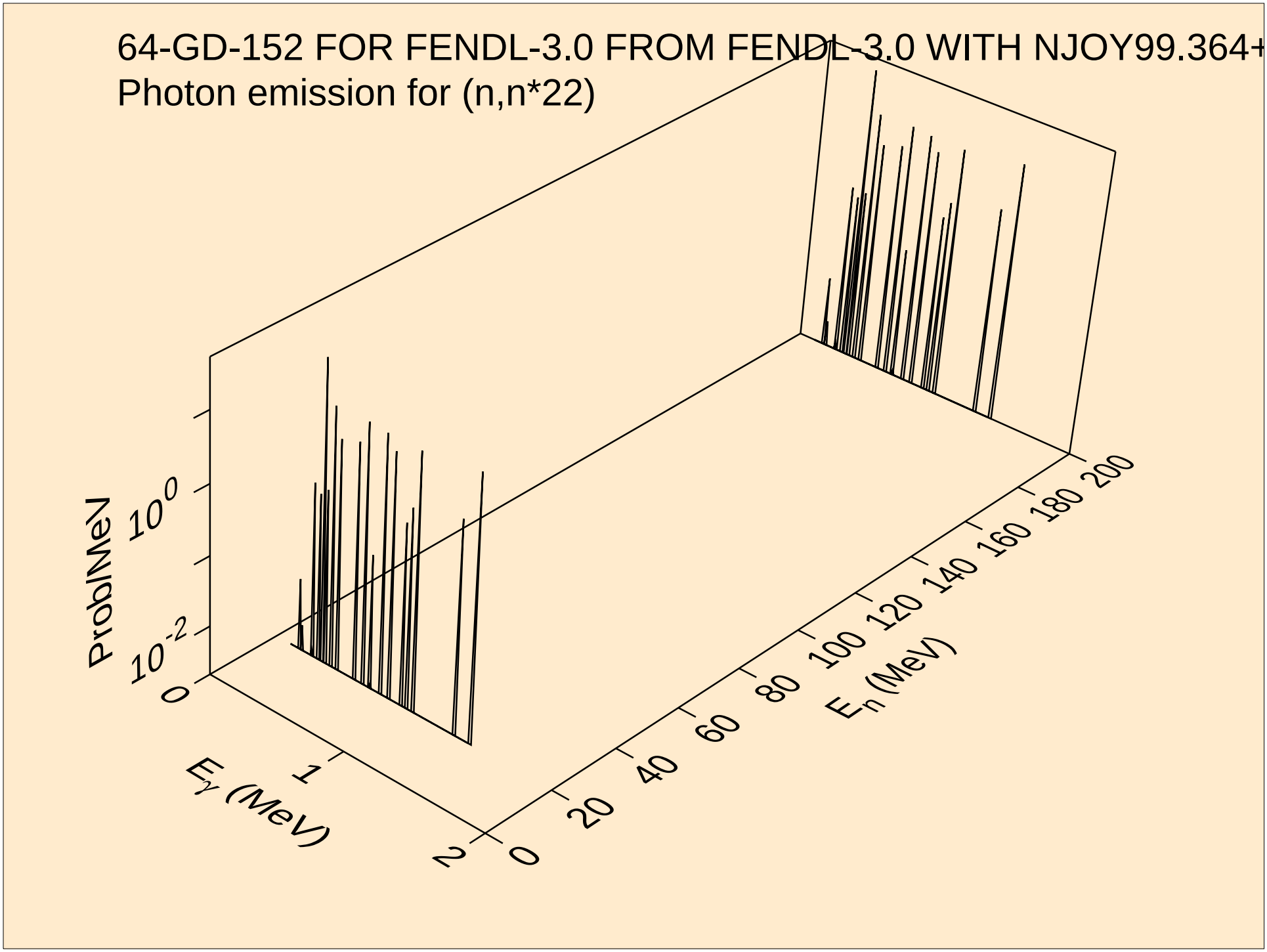

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Photon emission for (n,n*17)
Prob/MeV
$10^{0}$
$10^{-2}$
0
1
2
$E_\gamma$ (MeV)
0
20
40
60
80
100
120
140
160
180
200
$E_n$ (MeV)

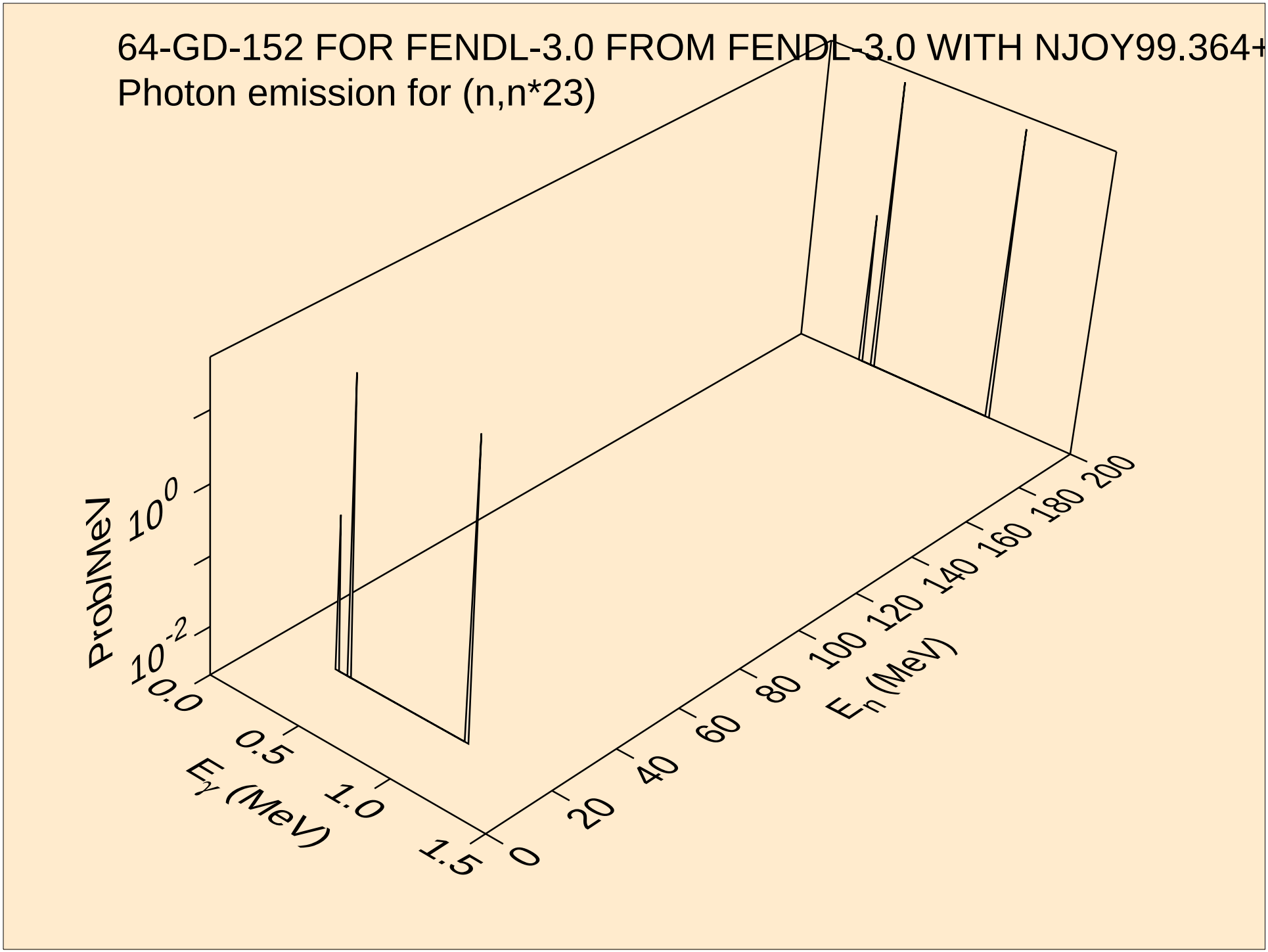

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Photon emission for (n,n*18)
Prob/MeV
$10^{0}$
$10^{-2}$
0.0
0.5
1.0
1.5
$E_\gamma$ (MeV)
0
20
40
60
80
100
120
140
160
180
200
$E_n$ (MeV)

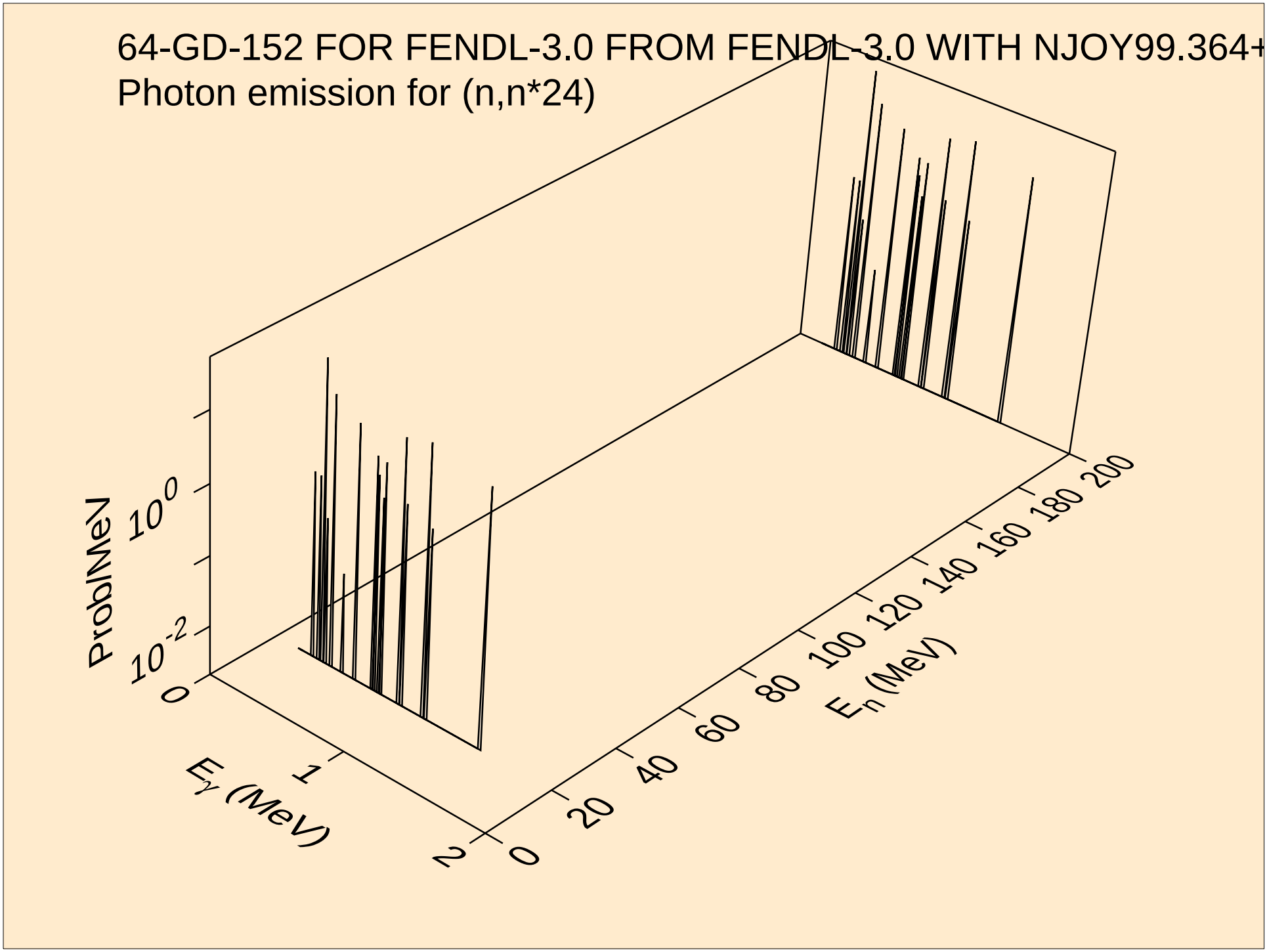

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Photon emission for (n,n*19)
Prob/MeV
10^0
10^-2
0
1
2
Eγ (MeV)
0
20
40
60
80
100
120
140
160
180
200
En (MeV)

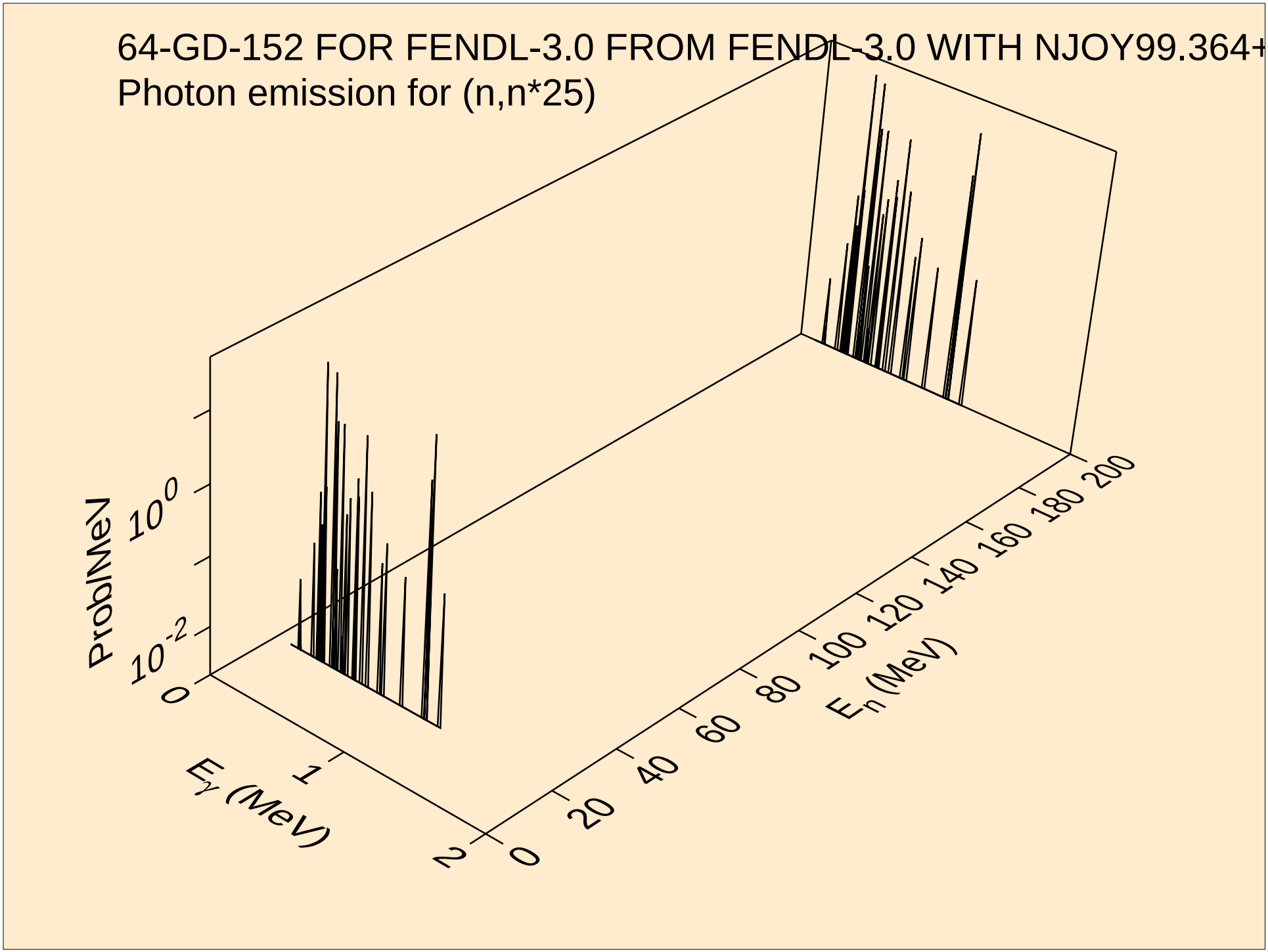

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Photon emission for (n,n*20)
Prob/MeV
10^0
10^-2
300
400
500
600
*10^-3
Eγ (MeV)
0
20
40
60
80
100
120
140
160
180
200
En (MeV)

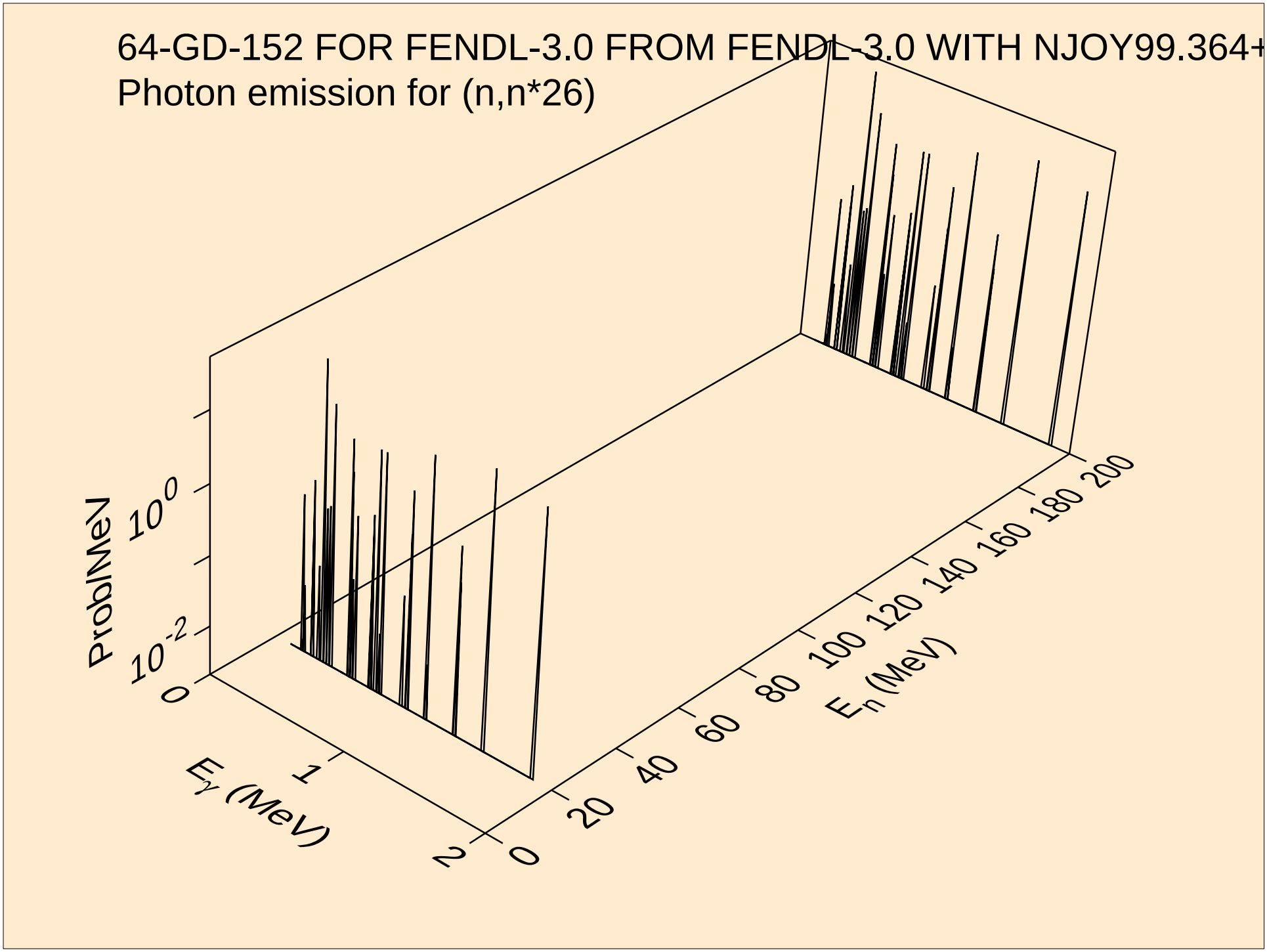

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Photon emission for (n,n*21)
Prob/MeV
$10^{0}$
$10^{-2}$
0
1
2
$E_\gamma$ (MeV)
0
20
40
60
80
100
120
140
160
180
200
$E_n$ (MeV)

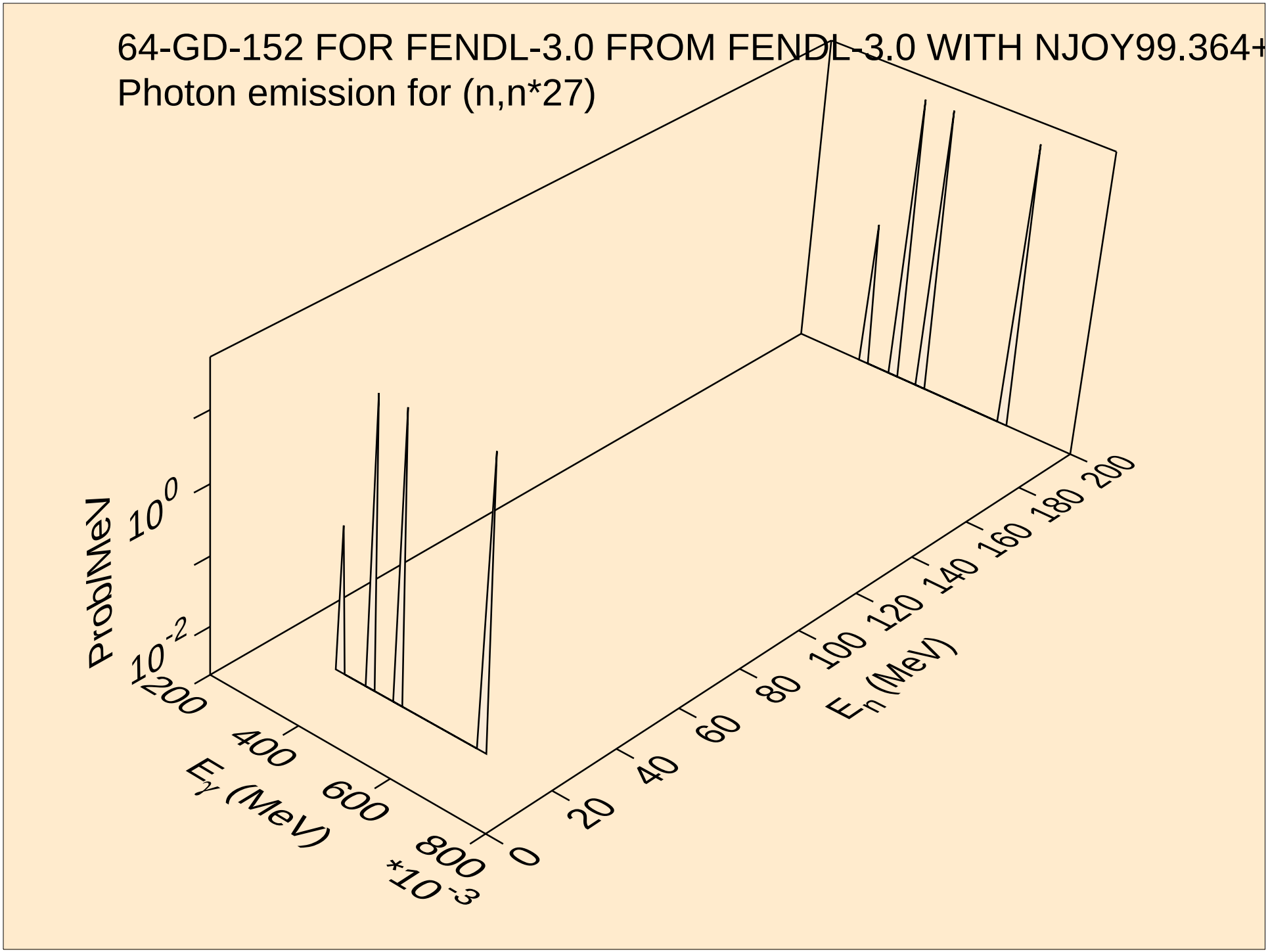

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Photon emission for (n,n*22)
Prob/MeV
10^0
10^-2
0
1
2
E_γ (MeV)
0
20
40
60
80
100
120
140
160
180
200
E_n (MeV)

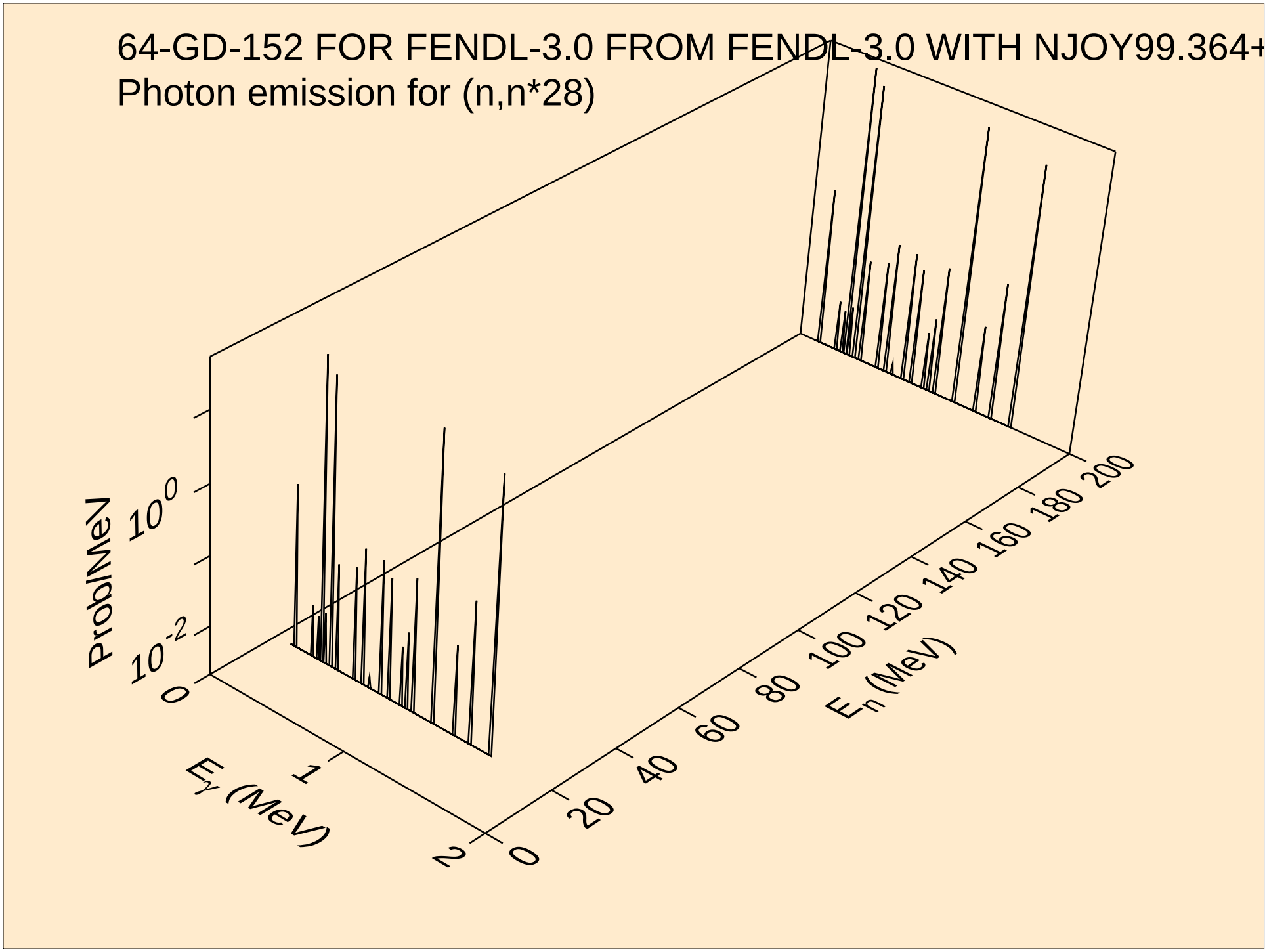

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Photon emission for (n,n*23)
Prob/MeV
$10^{0}$
$10^{-2}$
0.0
0.5
1.0
1.5
$E_\gamma$ (MeV)
0
20
40
60
80
100
120
140
160
180
200
$E_n$ (MeV)

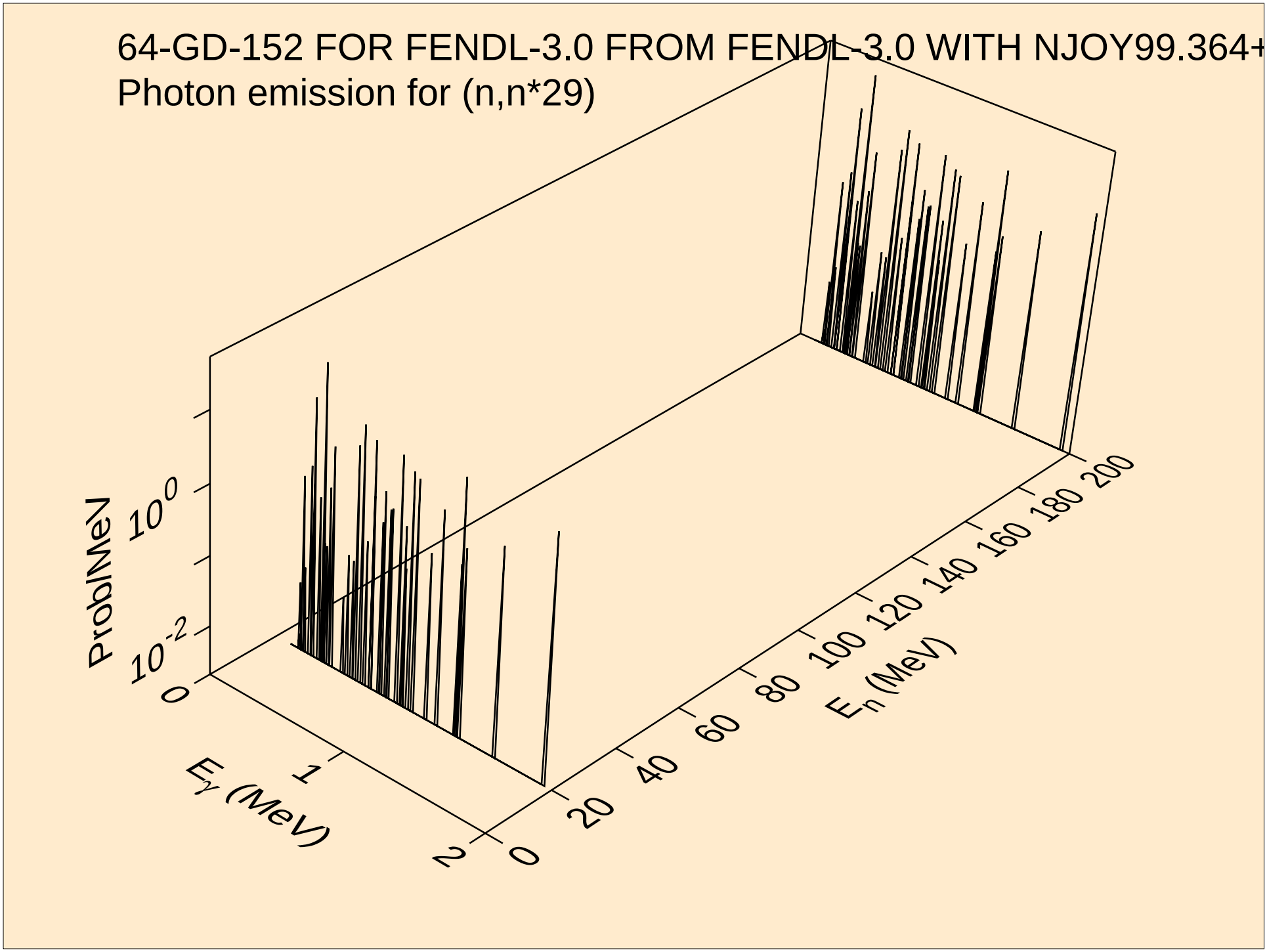

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Photon emission for (n,n*24)
Prob/MeV
10^0
10^-2
0
E_γ (MeV)
1
2
0
20
40
60
80
100
120
140
160
180
200
E_n (MeV)

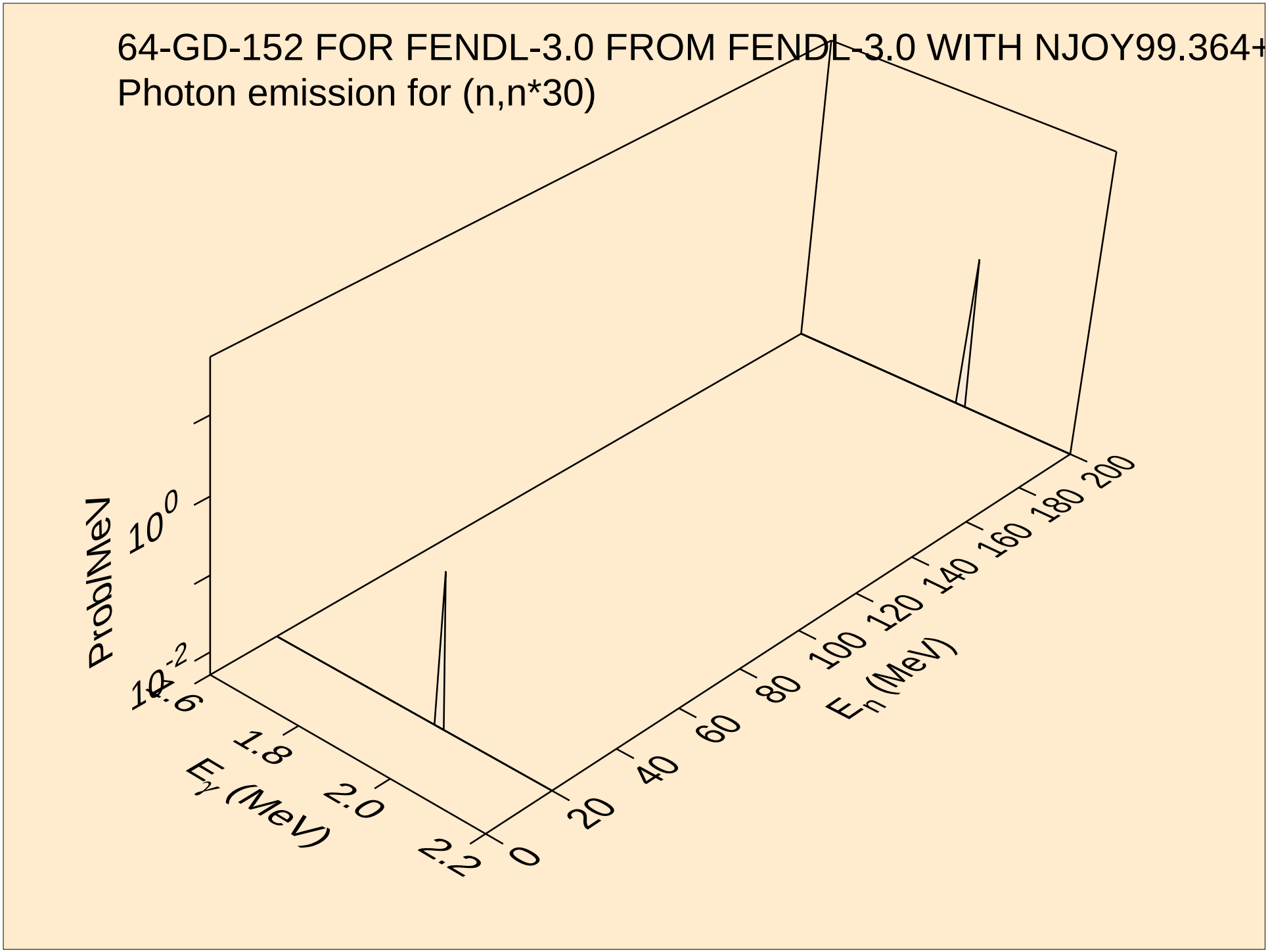

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Photon emission for (n,n*25)
Prob/MeV
10^0
10^-2
0
1
2
Eγ (MeV)
0
20
40
60
80
100
120
140
160
180
200
En (MeV)

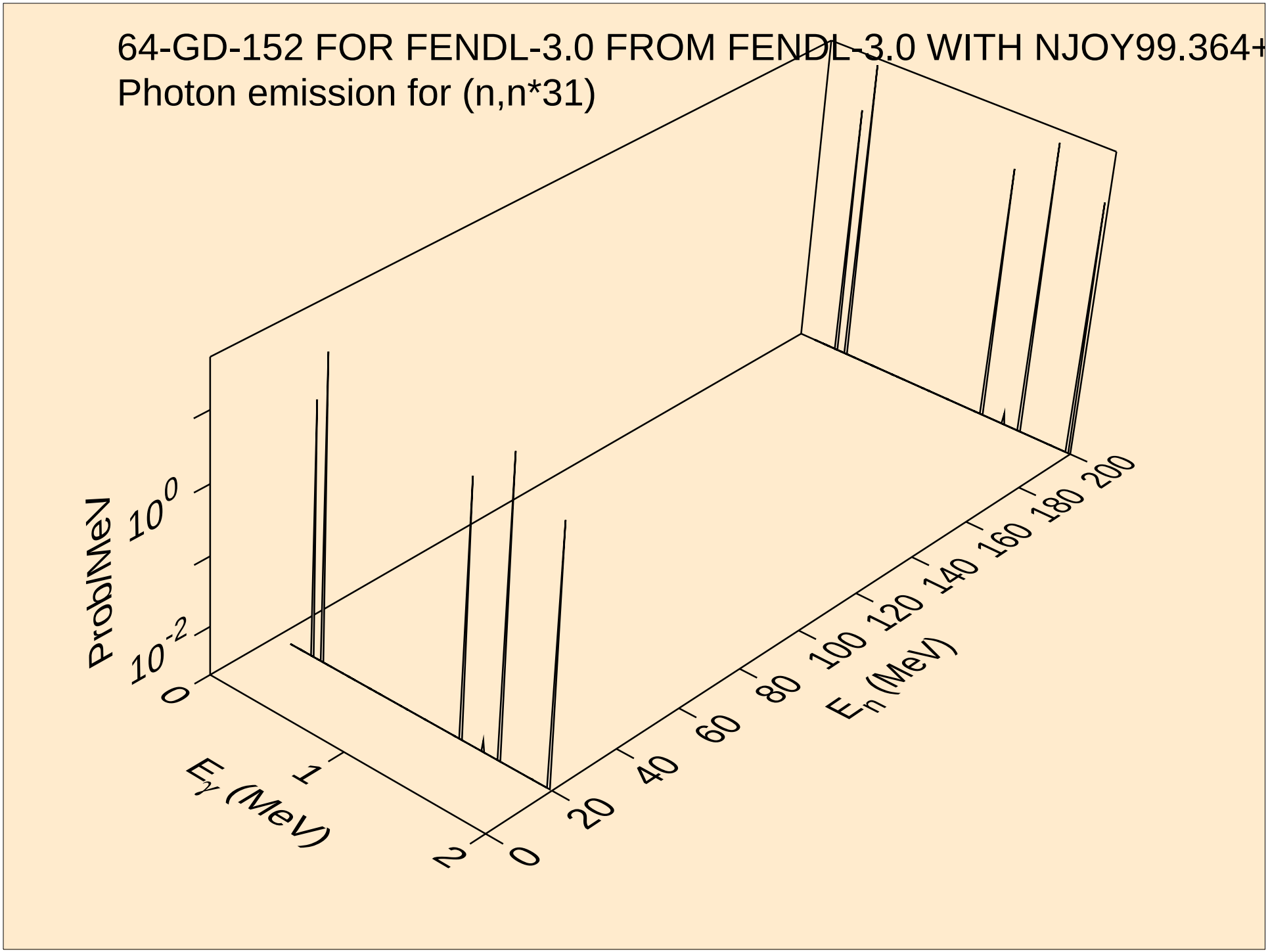

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Photon emission for (n,n*26)
Prob/MeV
10^0
10^-2
0
1
2
Eγ (MeV)
0
20
40
60
80
100
120
140
160
180
200
En (MeV)

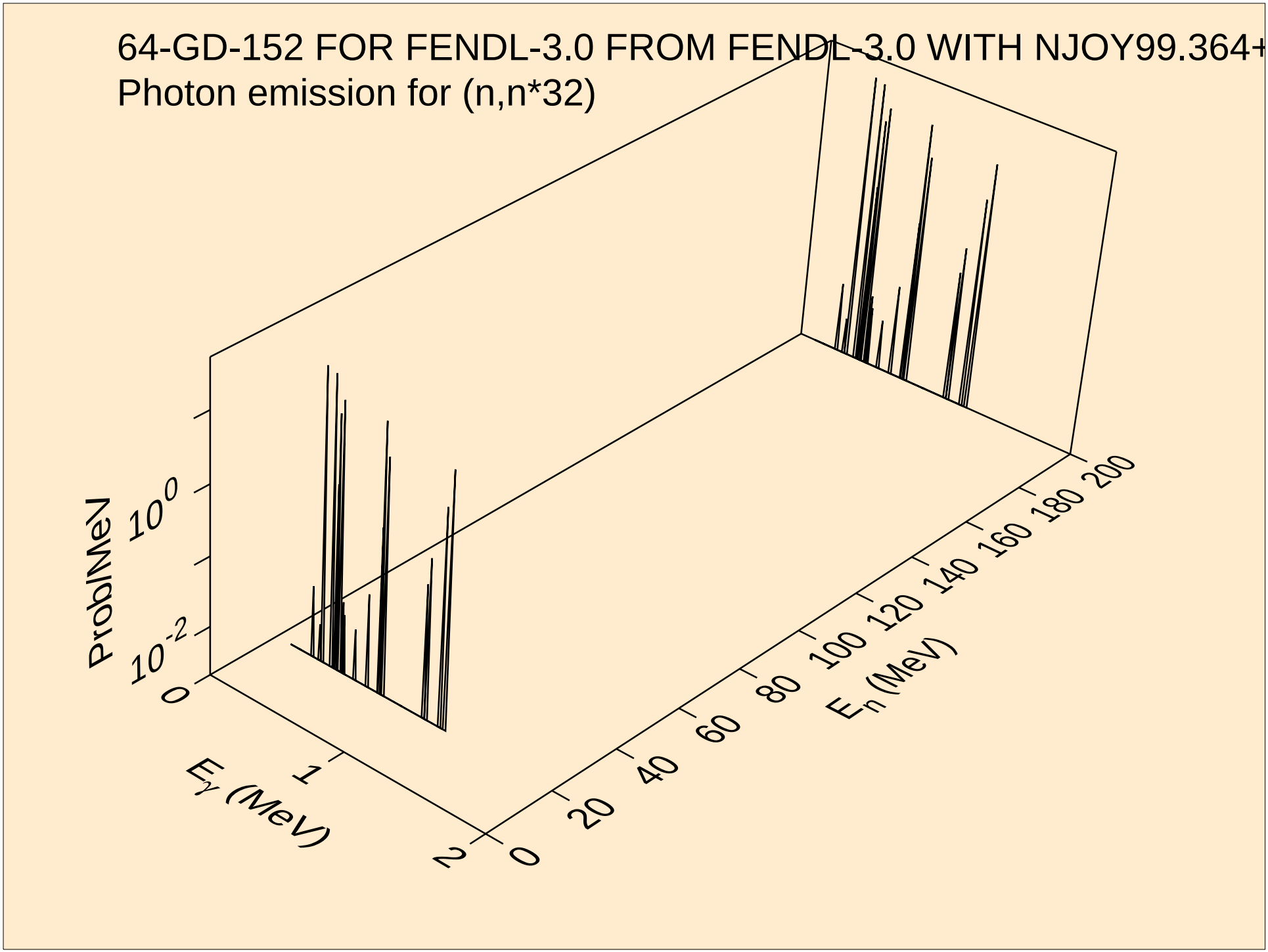

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Photon emission for (n,n*27)
Prob/MeV
10^0
10^-2
200
400
600
800
*10^-3
Eγ (MeV)
0
20
40
60
80
100
120
140
160
180
200
En (MeV)

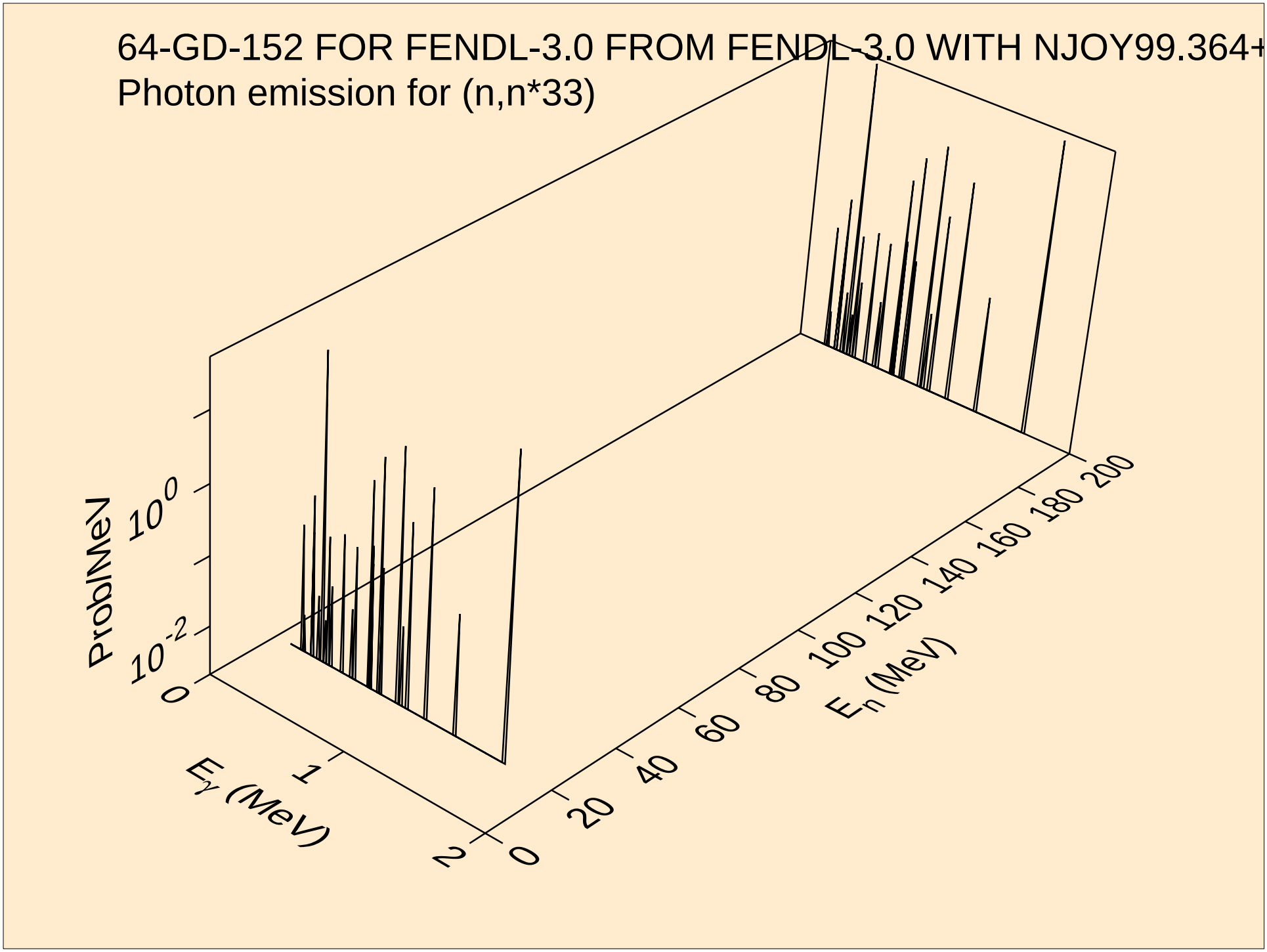

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Photon emission for (n,n*28)
Prob/MeV
10^0
10^-2
0
1
2
Eγ (MeV)
0
20
40
60
80
100
120
140
160
180
200
En (MeV)

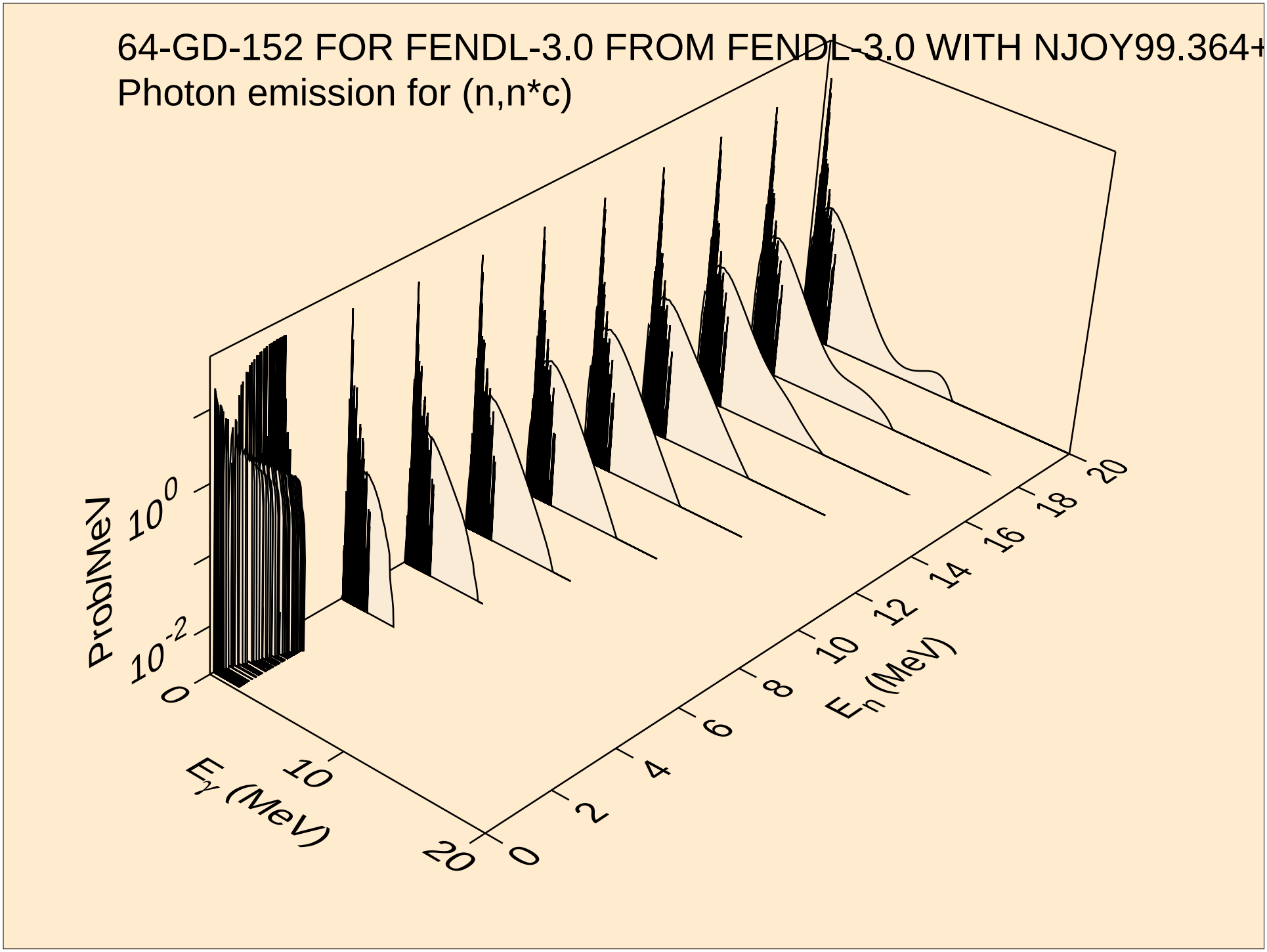

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Photon emission for (n,n*29)
Prob/MeV
$10^{0}$
$10^{-2}$
0
1
2
$E_\gamma$ (MeV)
0
20
40
60
80
100
120
140
160
180
200
$E_n$ (MeV)

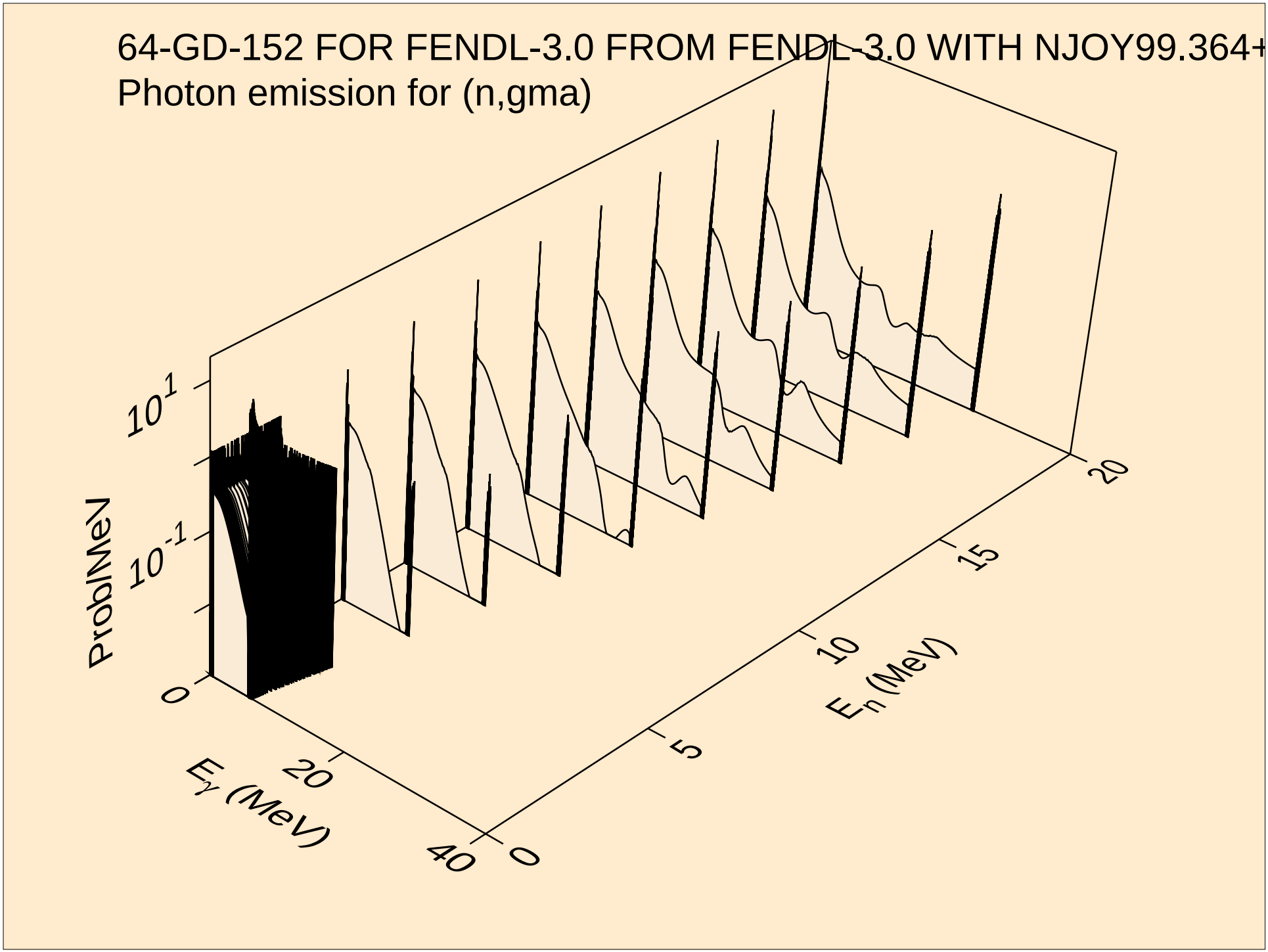

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Photon emission for (n,n*30)
Prob/MeV
$10^{0}$
$10^{-2}$
1.6
1.8
2.0
2.2
$E_\gamma$ (MeV)
0
20
40
60
80
100
120
140
160
180
200
$E_n$ (MeV)

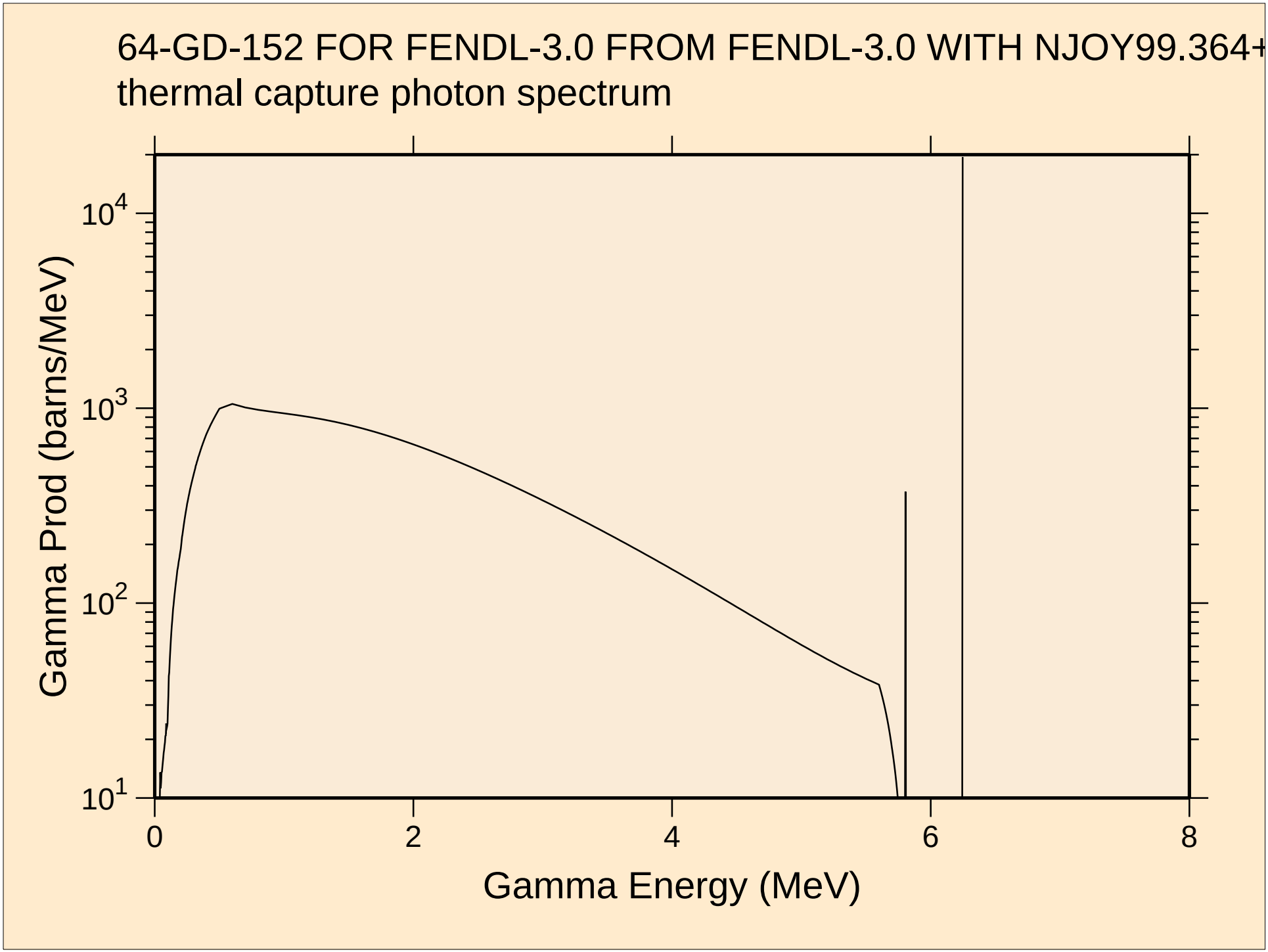

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Photon emission for (n,n*31)
Prob/MeV
10^0
10^-2
0
1
2
E_γ (MeV)
0
20
40
60
80
100
120
140
160
180
200
E_n (MeV)

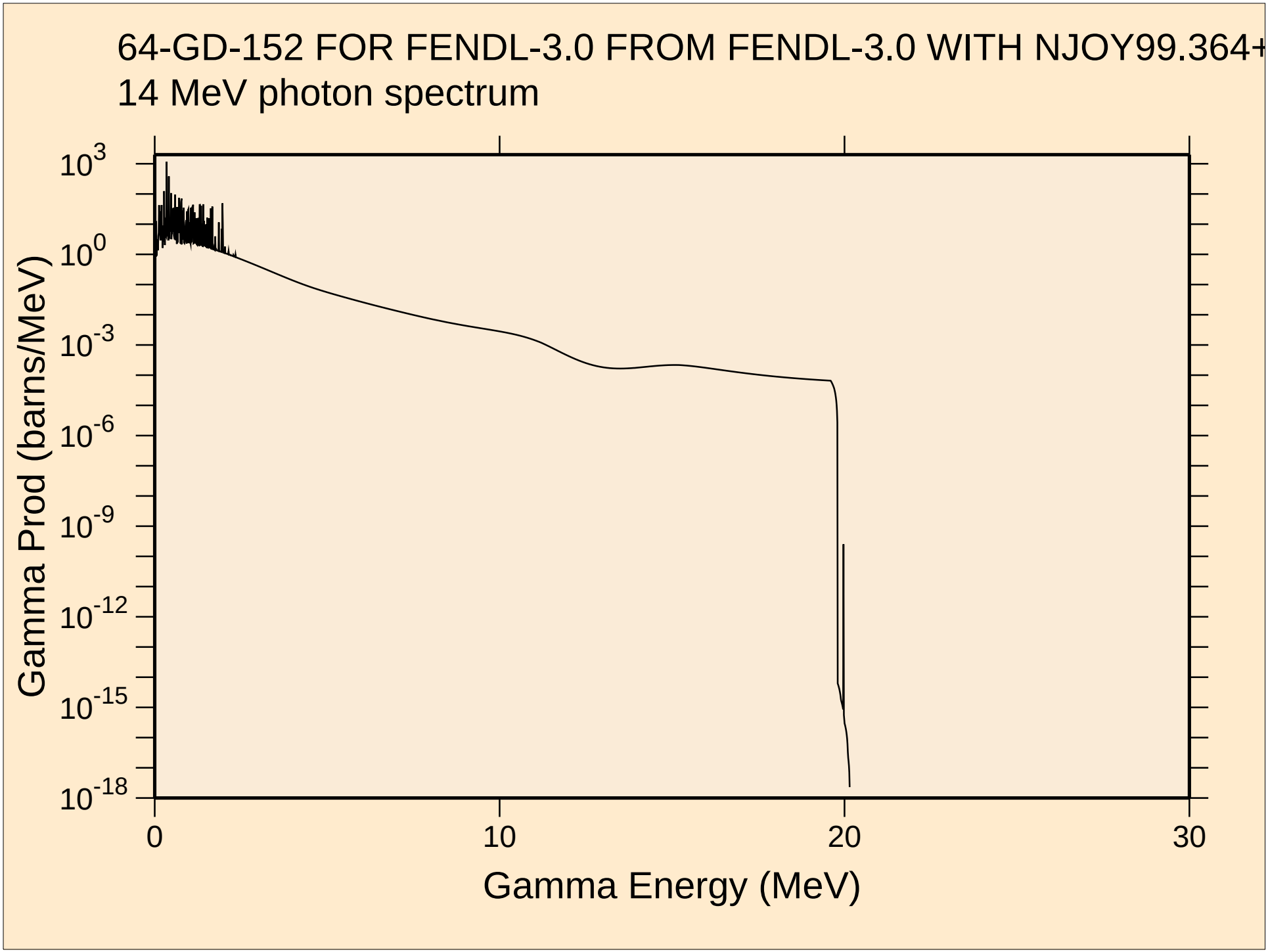

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Photon emission for (n,n*32)
Prob/MeV
10^0
10^-2
0
1
2
Eγ (MeV)
0
20
40
60
80
100
120
140
160
180
200
En (MeV)

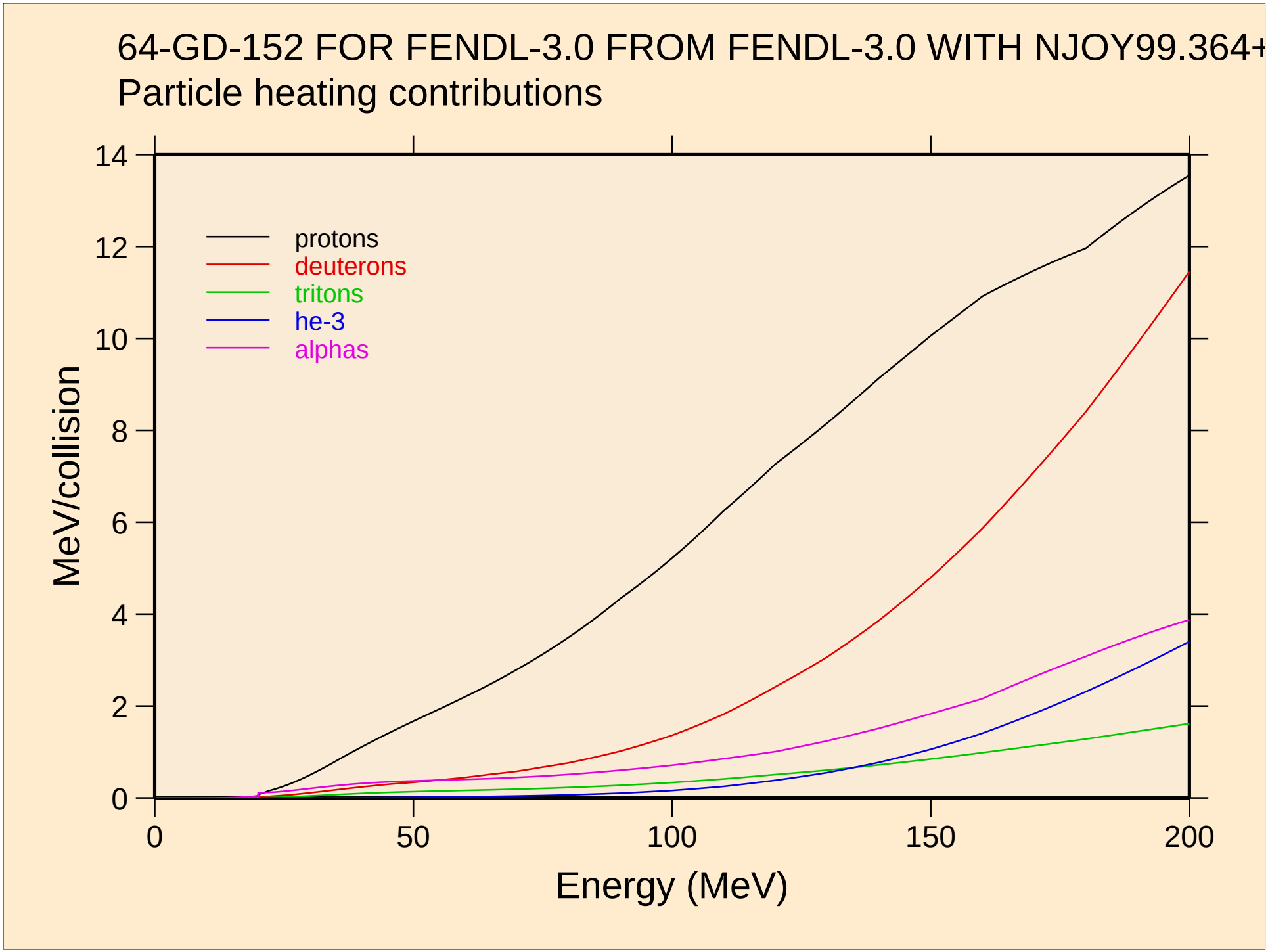

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Photon emission for (n,n*33)
Prob/MeV
10^0
10^-2
0
1
2
Eγ (MeV)
0
20
40
60
80
100
120
140
160
180
200
En (MeV)

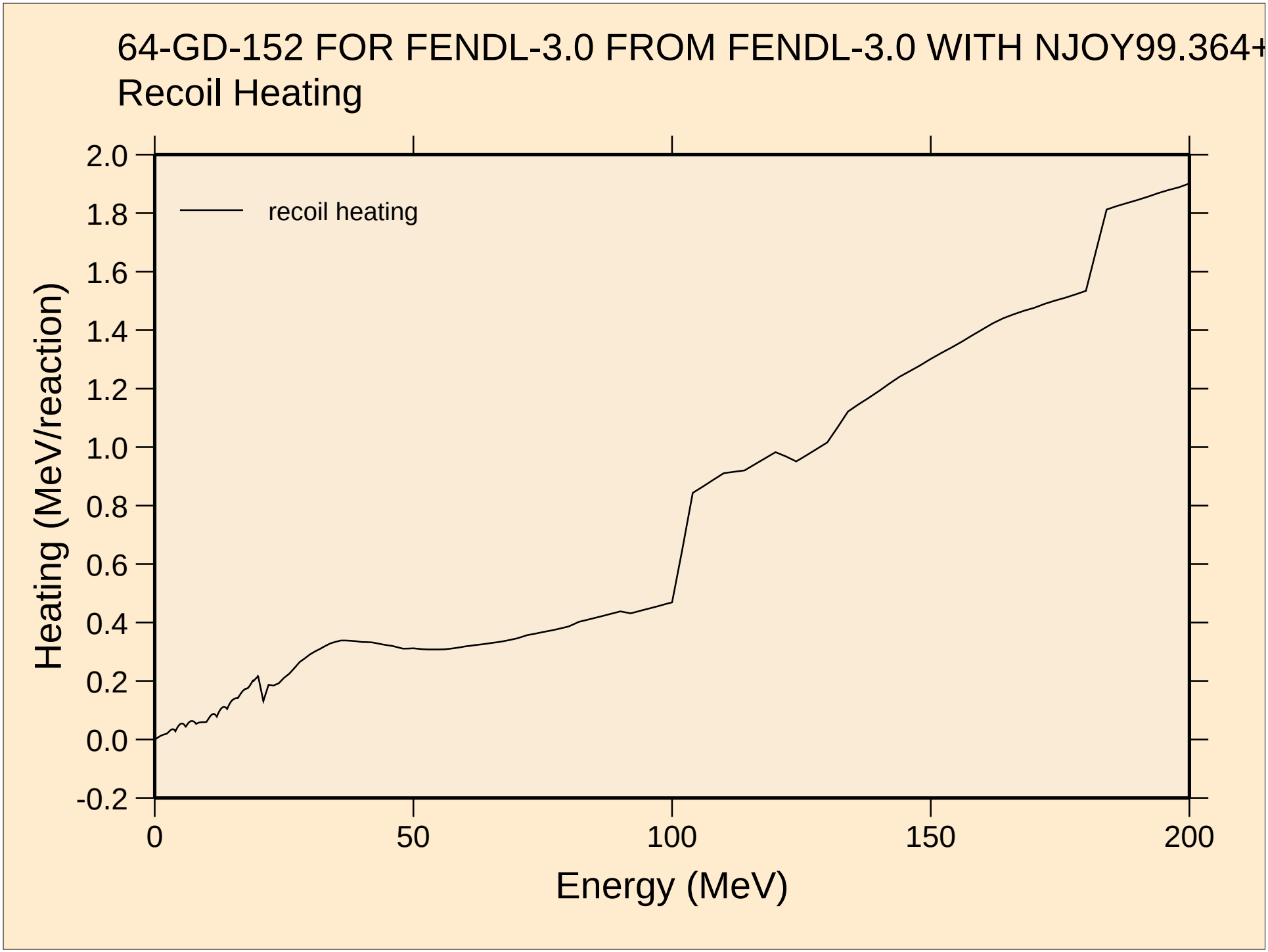

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Photon emission for (n,n*c)
Prob/MeV
10^0
10^-2
0
E_γ (MeV)
10
20
0
2
4
6
8
10
12
14
16
18
20
E_n (MeV)

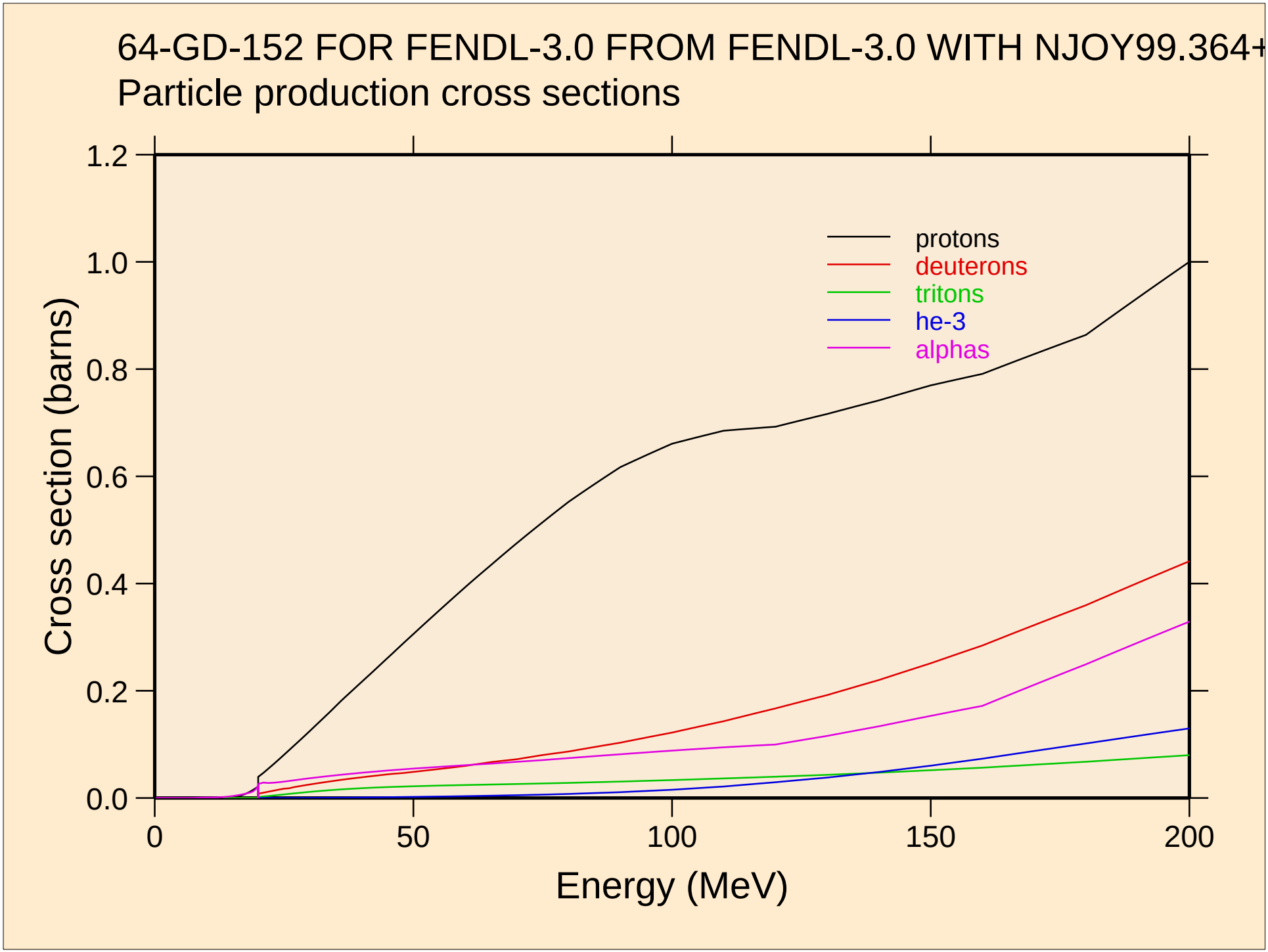

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Photon emission for (n,gma)
Prob/MeV
$10^{1}$
$10^{-1}$
0
20
$E_\gamma$ (MeV)
40
0
5
10
15
20
$E_n$ (MeV)

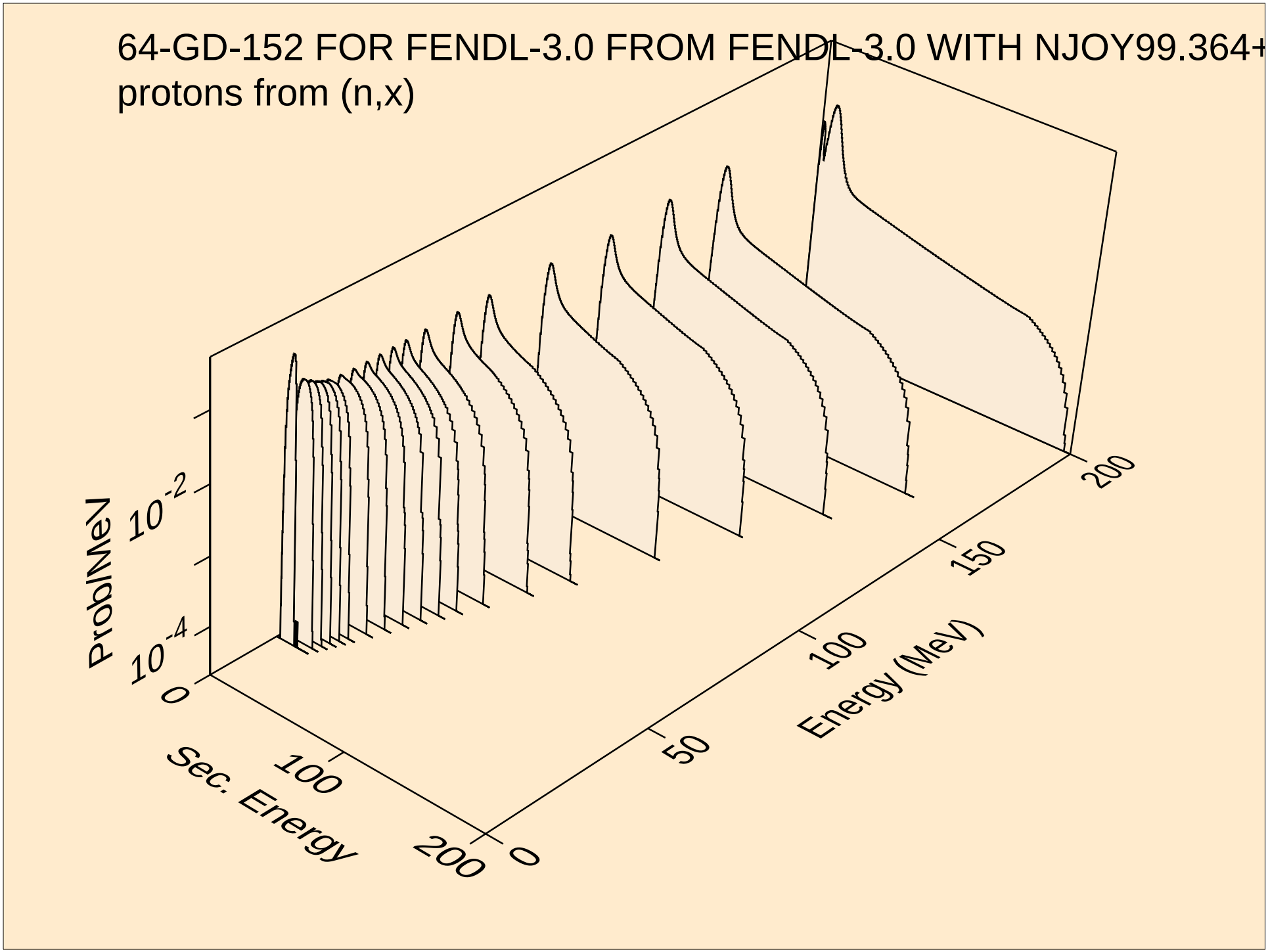

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
thermal capture photon spectrum
Gamma Prod (barns/MeV)
10^4
10^3
10^2
10^1
0
2
4
6
8
Gamma Energy (MeV)

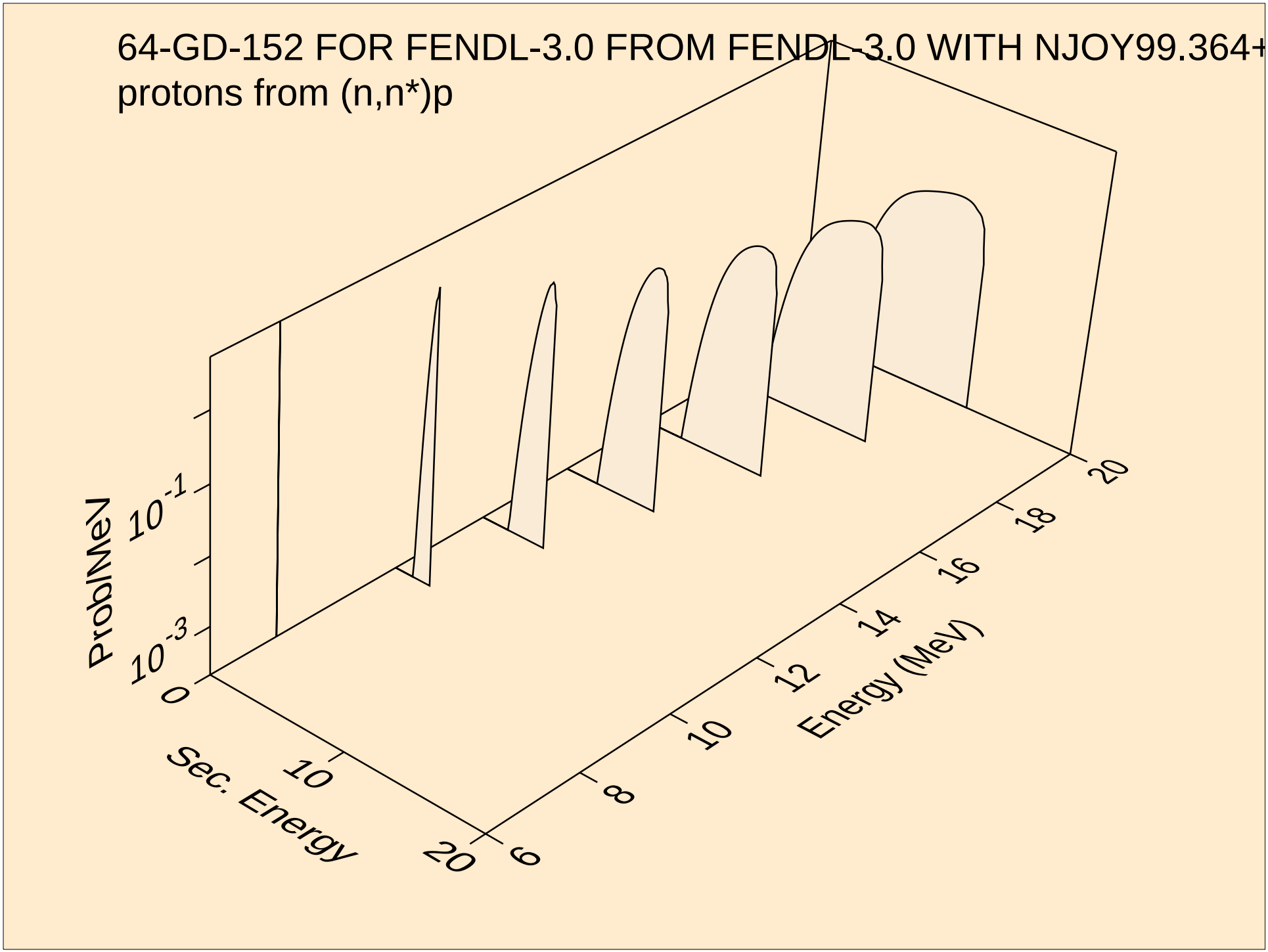

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
14 MeV photon spectrum
Gamma Prod (barns/MeV)
10^3
10^0
10^-3
10^-6
10^-9
10^-12
10^-15
10^-18
0
10
20
30
Gamma Energy (MeV)

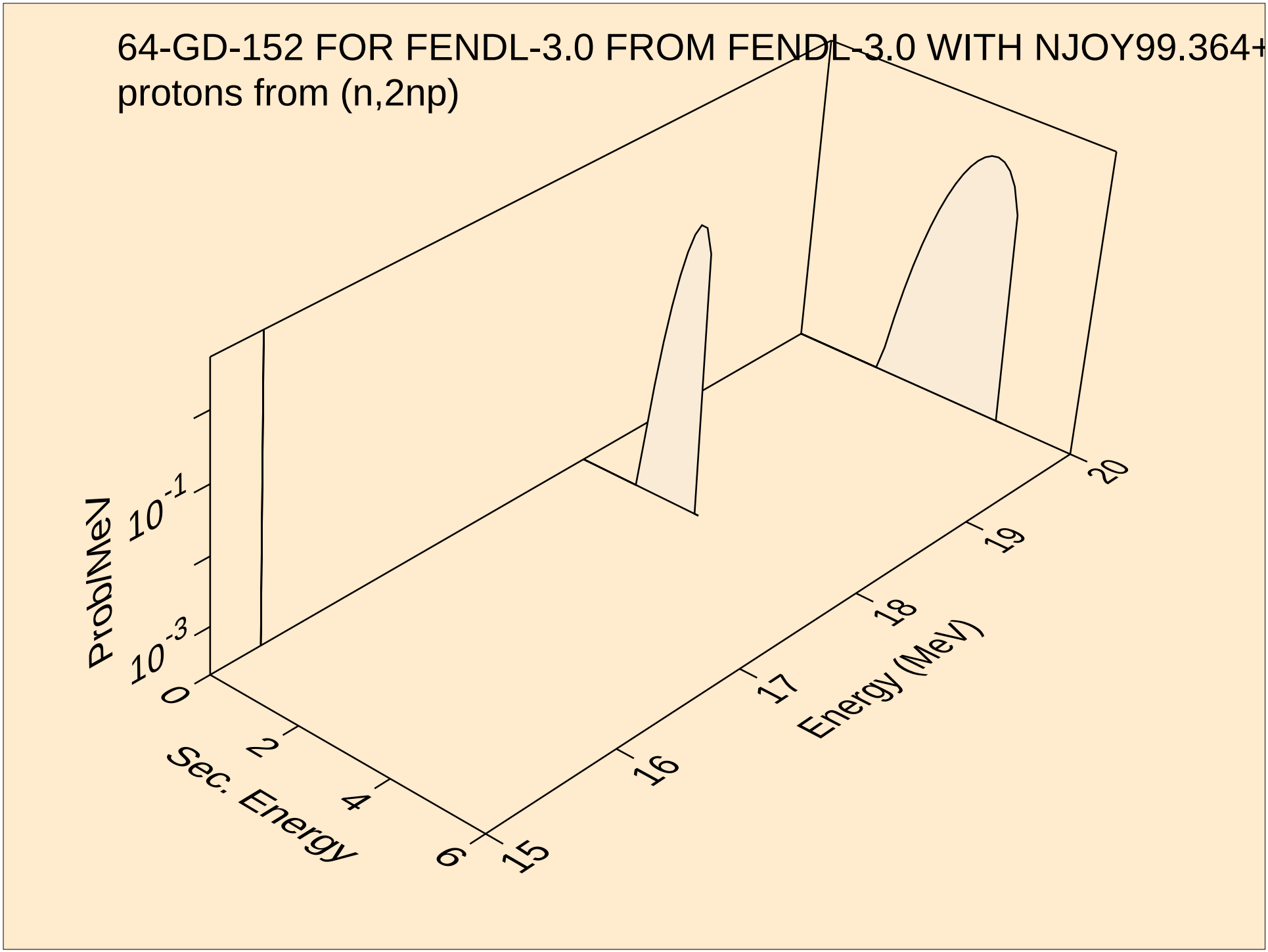

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Particle heating contributions
protons
deuterons
tritons
he-3
alphas
MeV/collision
Energy (MeV)
0
2
4
6
8
10
12
14
0
50
100
150
200

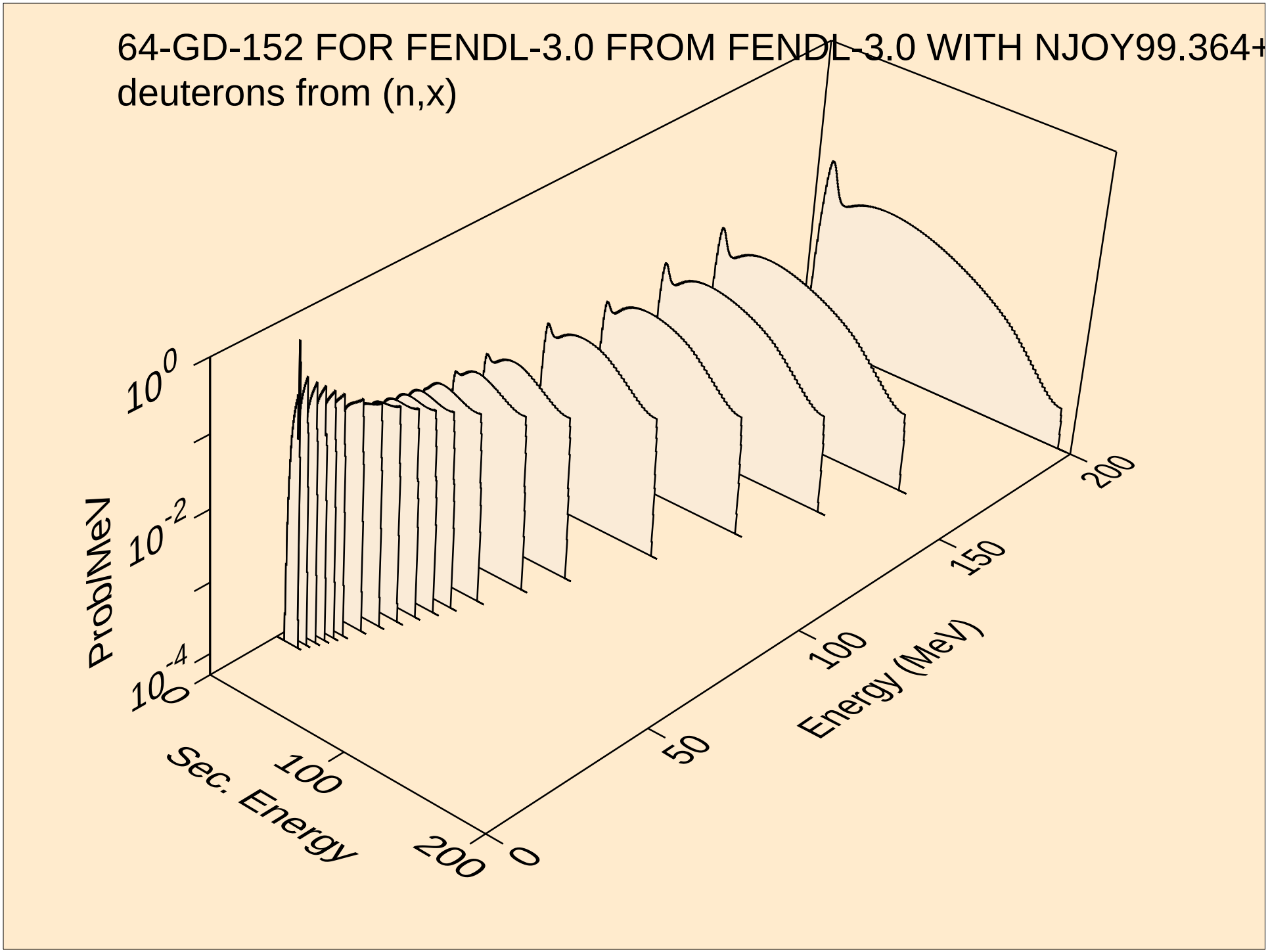

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Recoil Heating
recoil heating
Heating (MeV/reaction)
Energy (MeV)
2.0
1.8
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
-0.2
0
50
100
150
200

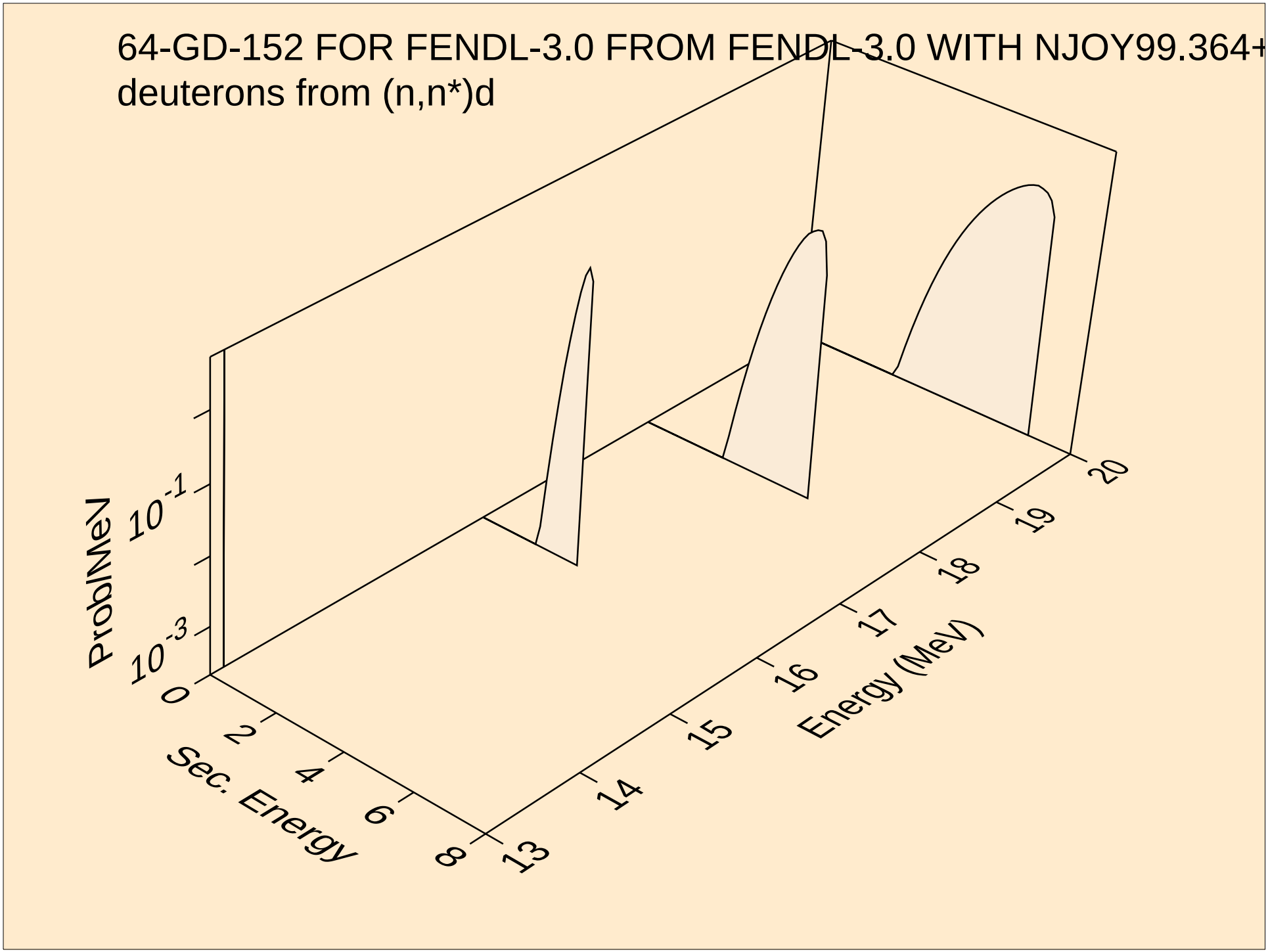

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Particle production cross sections
Cross section (barns)
Energy (MeV)
0.0
0.2
0.4
0.6
0.8
1.0
1.2
0
50
100
150
200
protons
deuterons
tritons
he-3
alphas

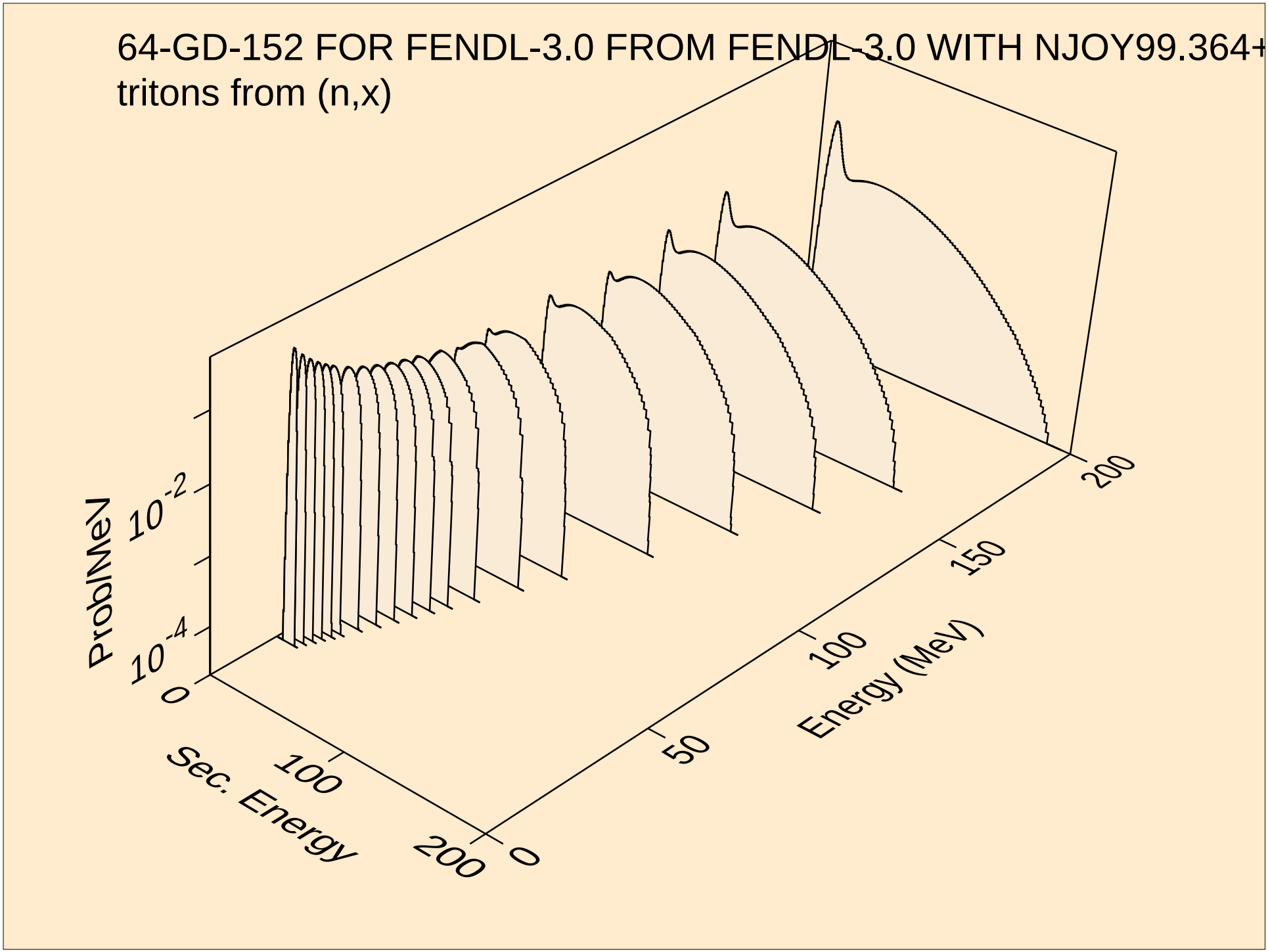

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
protons from (n,x)
Prob/MeV
10-2
10-4
0
Sec. Energy
100
200
0
50
100
150
200
Energy (MeV)

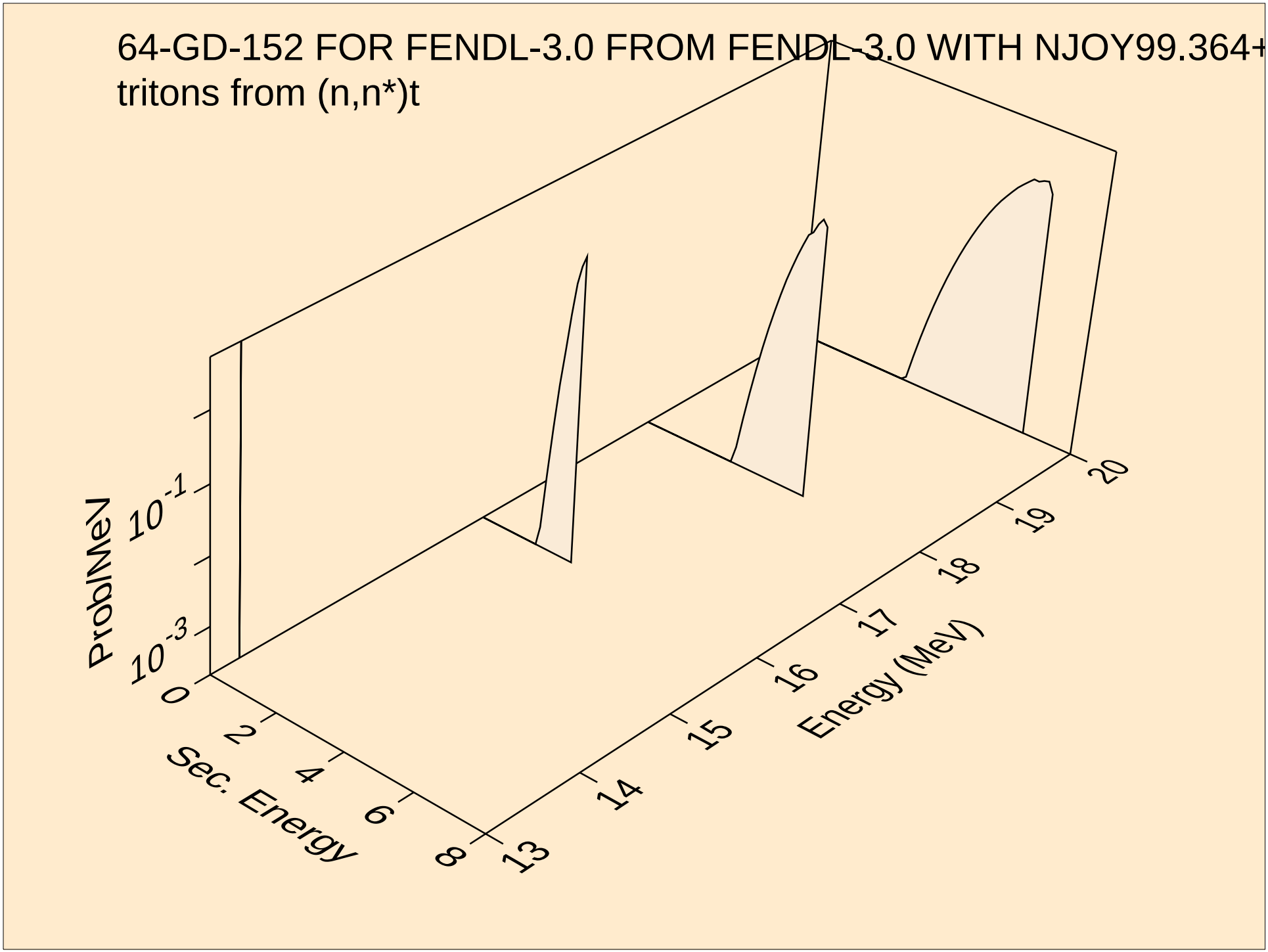

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
protons from (n,n*)p
Prob/MeV
10-1
10-3
0
Sec. Energy
10
20
6
8
10
12
14
16
18
20
Energy (MeV)

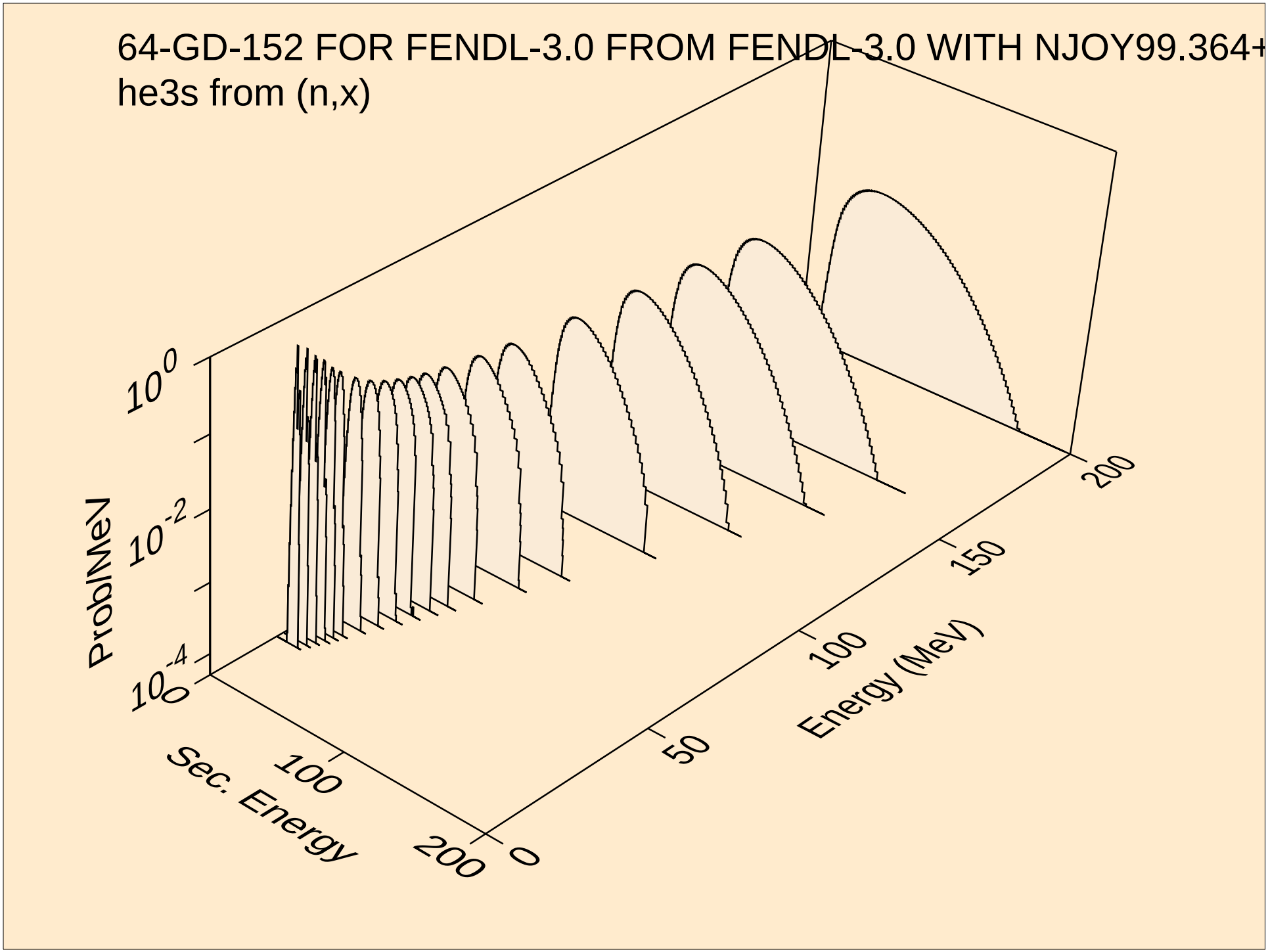

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
protons from (n,2np)
Prob/MeV
10-1
10-3
0
2
4
6
Sec. Energy
15
16
17
18
19
20
Energy (MeV)

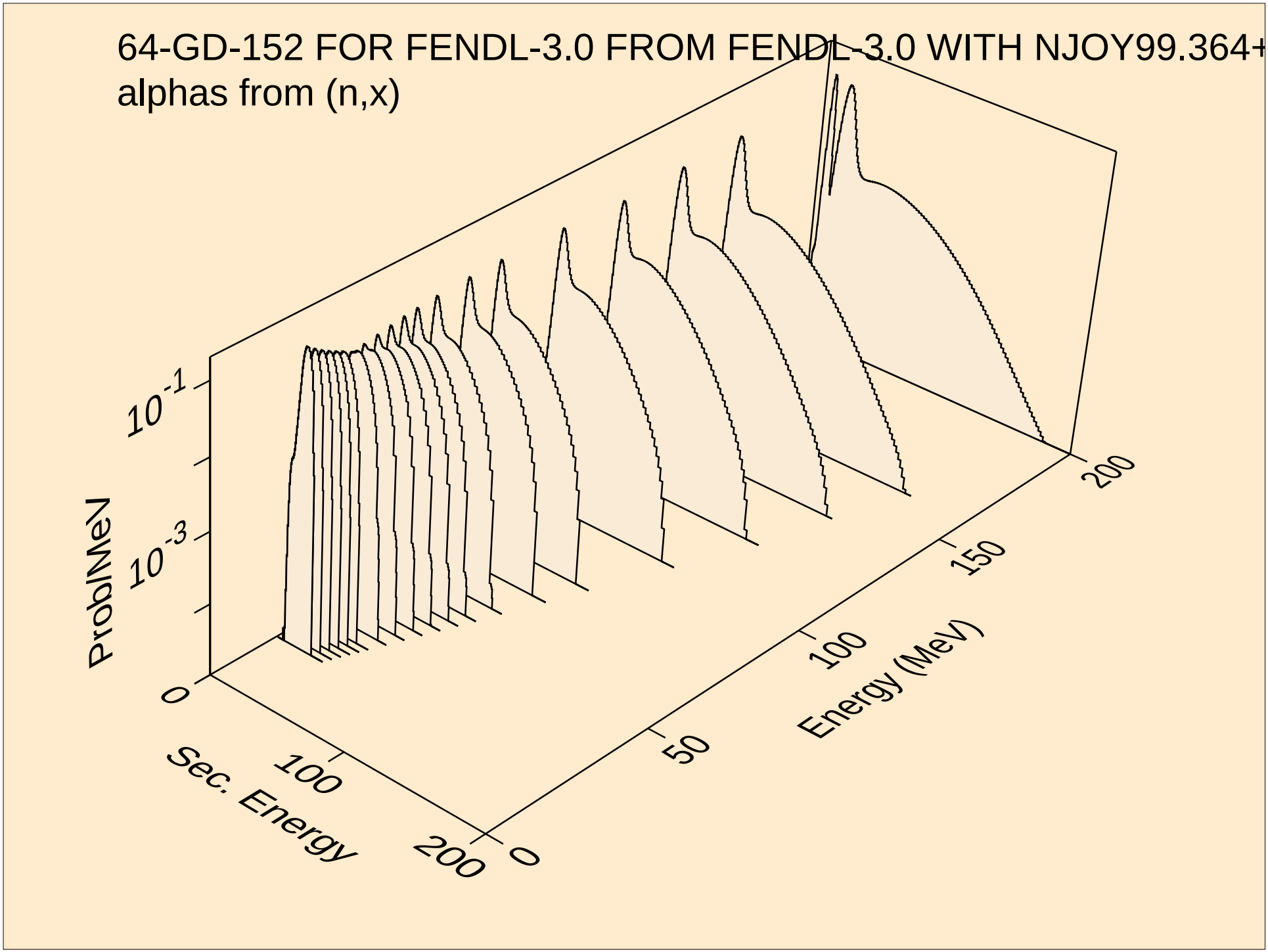

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
deuterons from (n,x)
Prob/MeV
10^0
10^-2
10^-4
0
100
200
Sec. Energy
0
50
100
150
200
Energy (MeV)

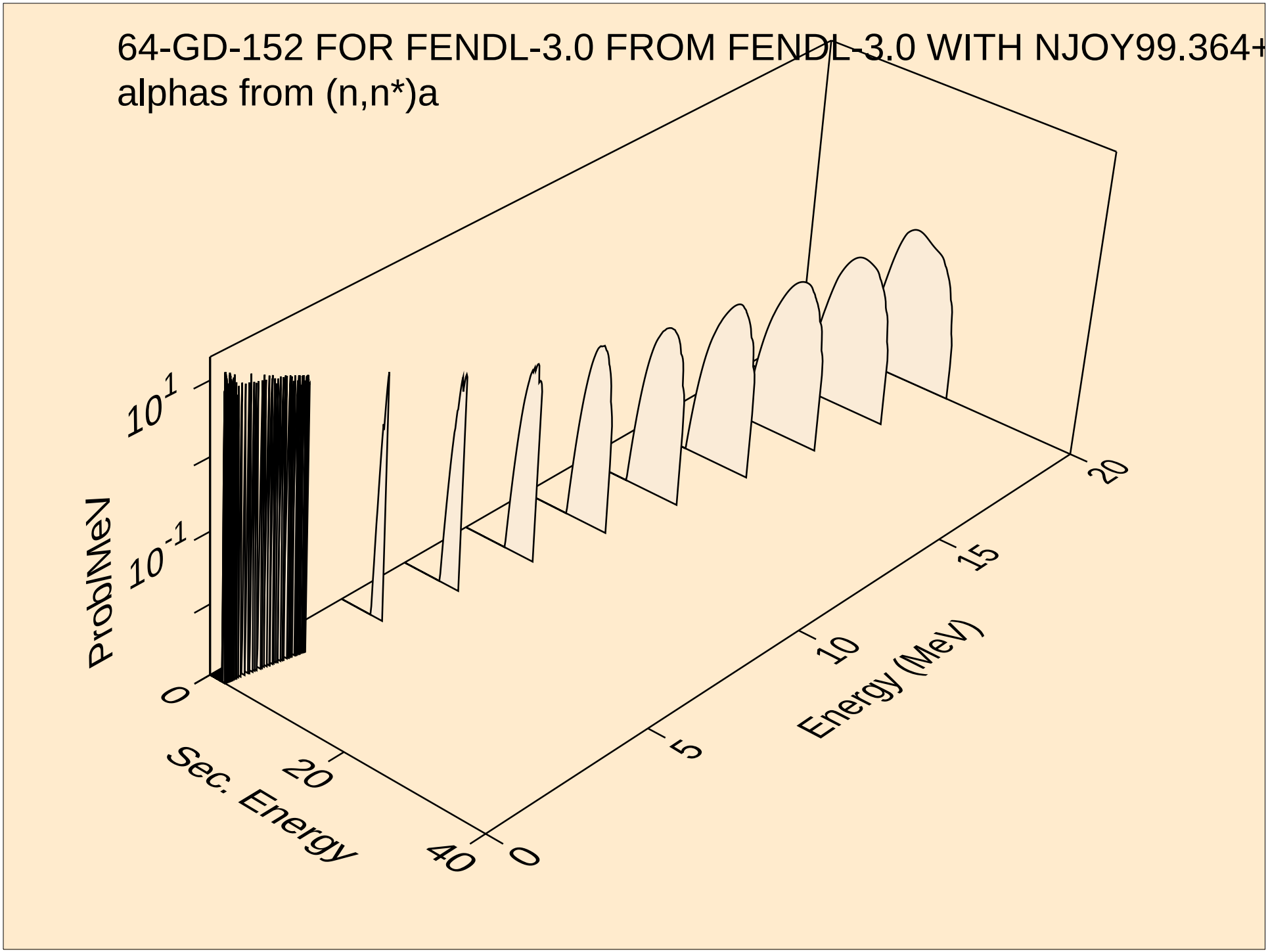

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
deuterons from (n,n*)d
Prob/MeV
10-1
10-3
0
2
4
6
8
Sec. Energy
13
14
15
16
17
18
19
20
Energy (MeV)

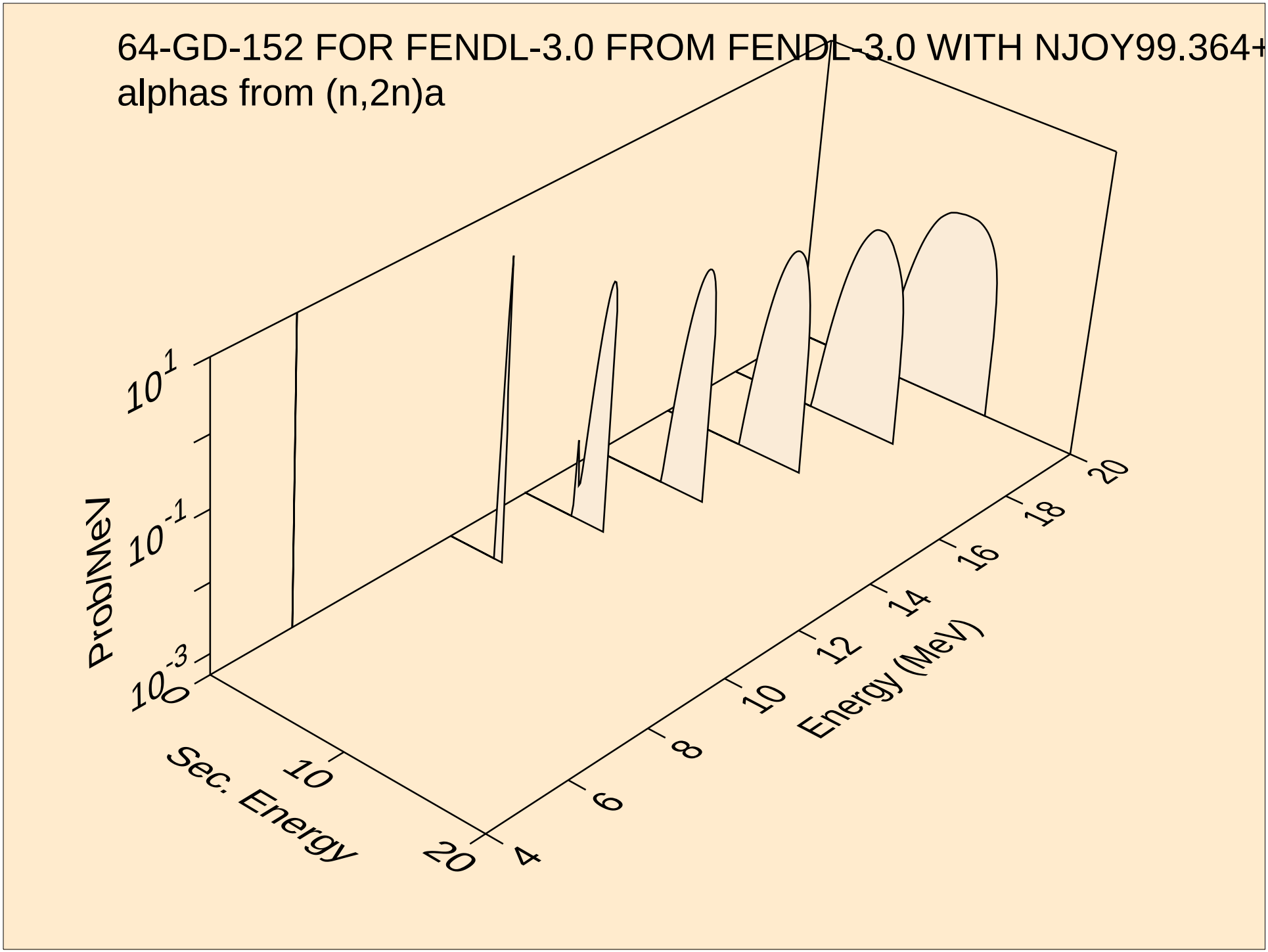

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
tritons from (n,x)
Prob/MeV
10-2
10-4
0
Sec. Energy
100
200
0
50
100
150
200
Energy (MeV)

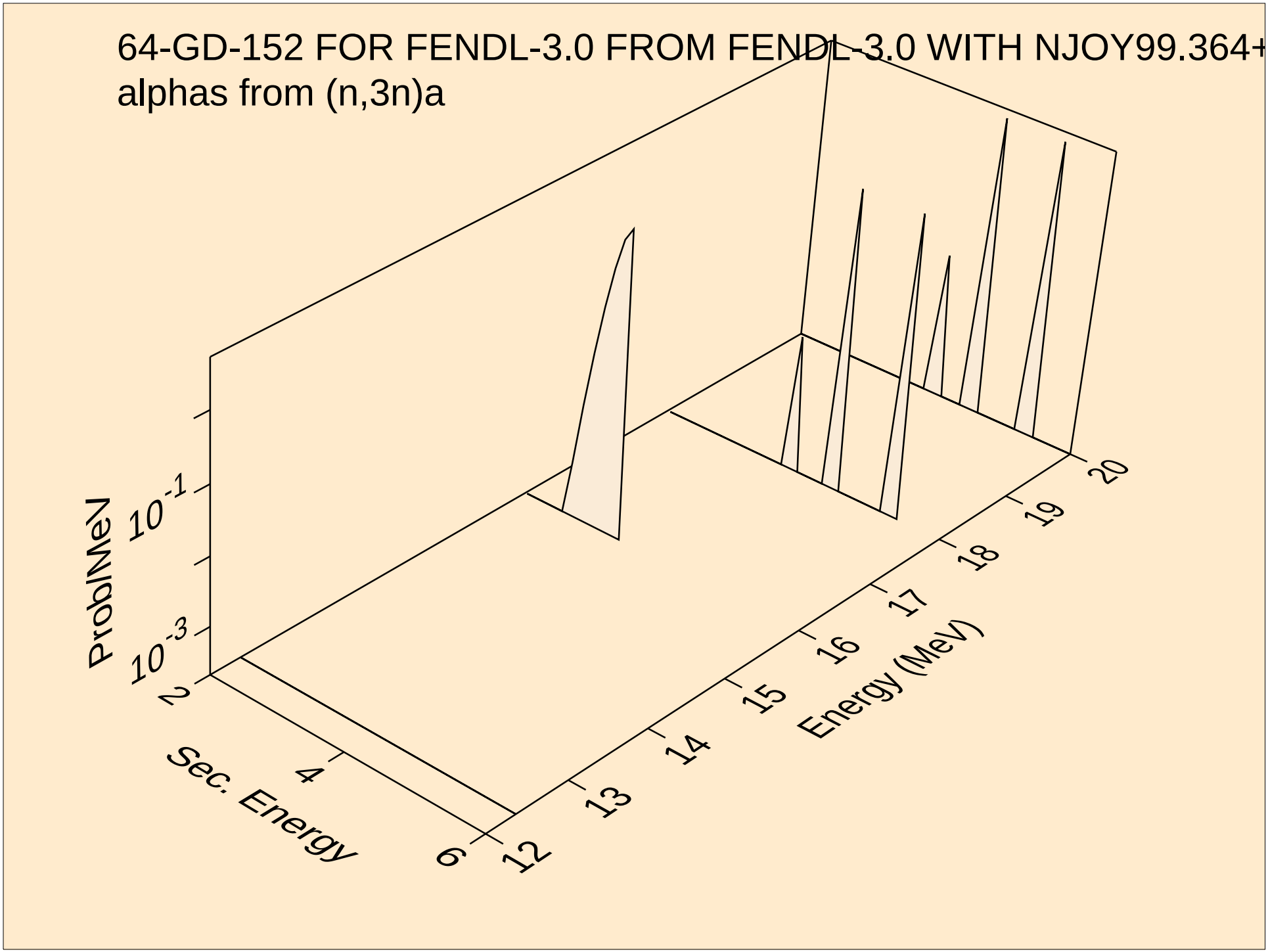

64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
tritons from (n,n*)t
Prob/MeV
10-1
10-3
0
2
4
6
8
Sec. Energy
13
14
15
16
17
18
19
20
Energy (MeV)


64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
he3s from (n,x)
Prob/MeV
10^0
10^-2
10^-4
Sec. Energy
0
100
200
Energy (MeV)
0
50
100
150
200


64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
alphas from (n,x)
Prob/MeV
10-1
10-3
0
Sec. Energy
100
200
0
50
100
150
200
Energy (MeV)


64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
alphas from (n,n*)a
Prob/MeV
10^1
10^-1
0
Sec. Energy
20
40
0
5
10
15
20
Energy (MeV)


64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
alphas from (n,2n)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)


64-GD-152 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
alphas from (n,3n)a
Prob/MeV
10-1
10-3
2
4
6
Sec. Energy
12
13
14
15
16
17
18
19
20
Energy (MeV)