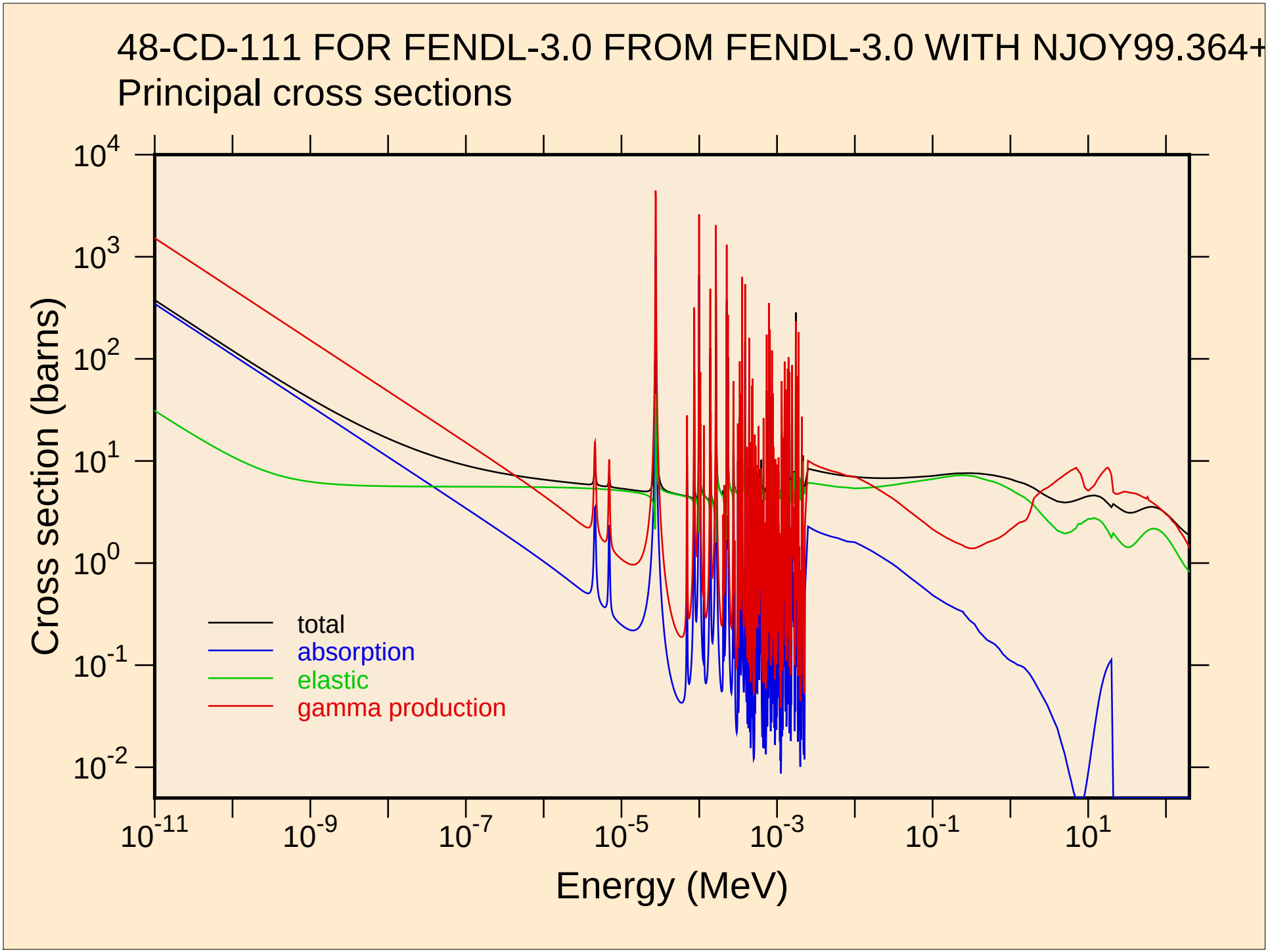
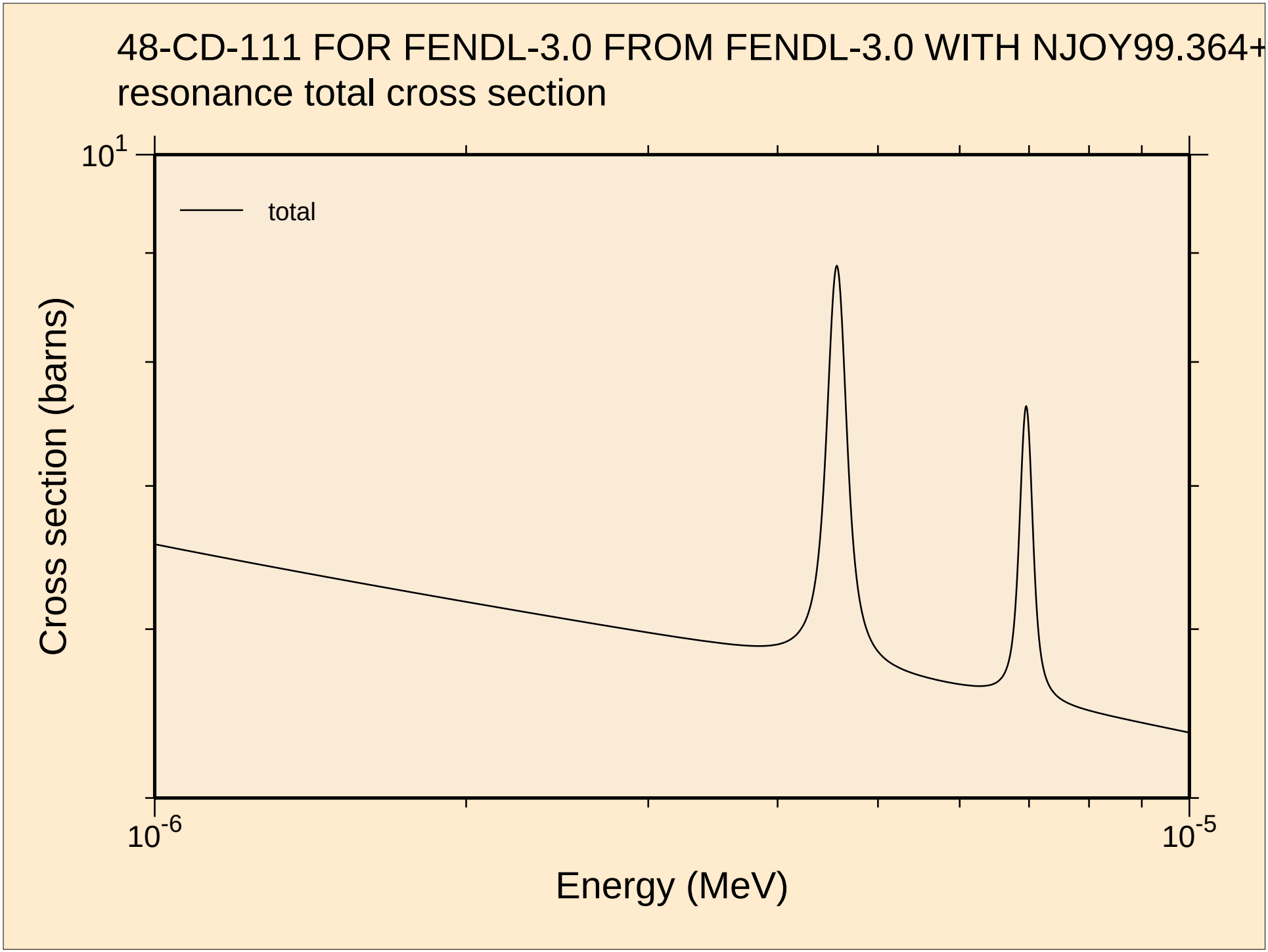
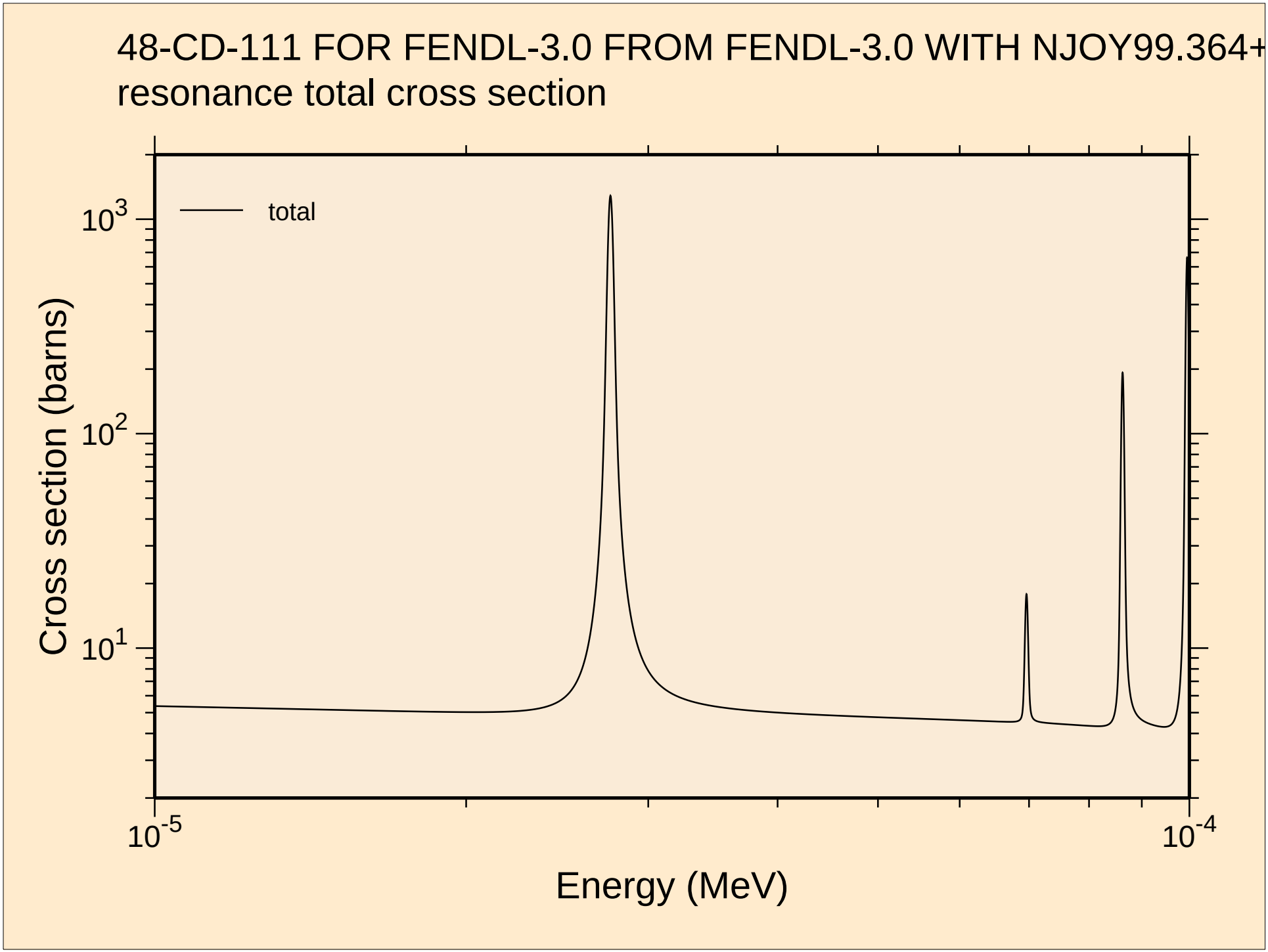
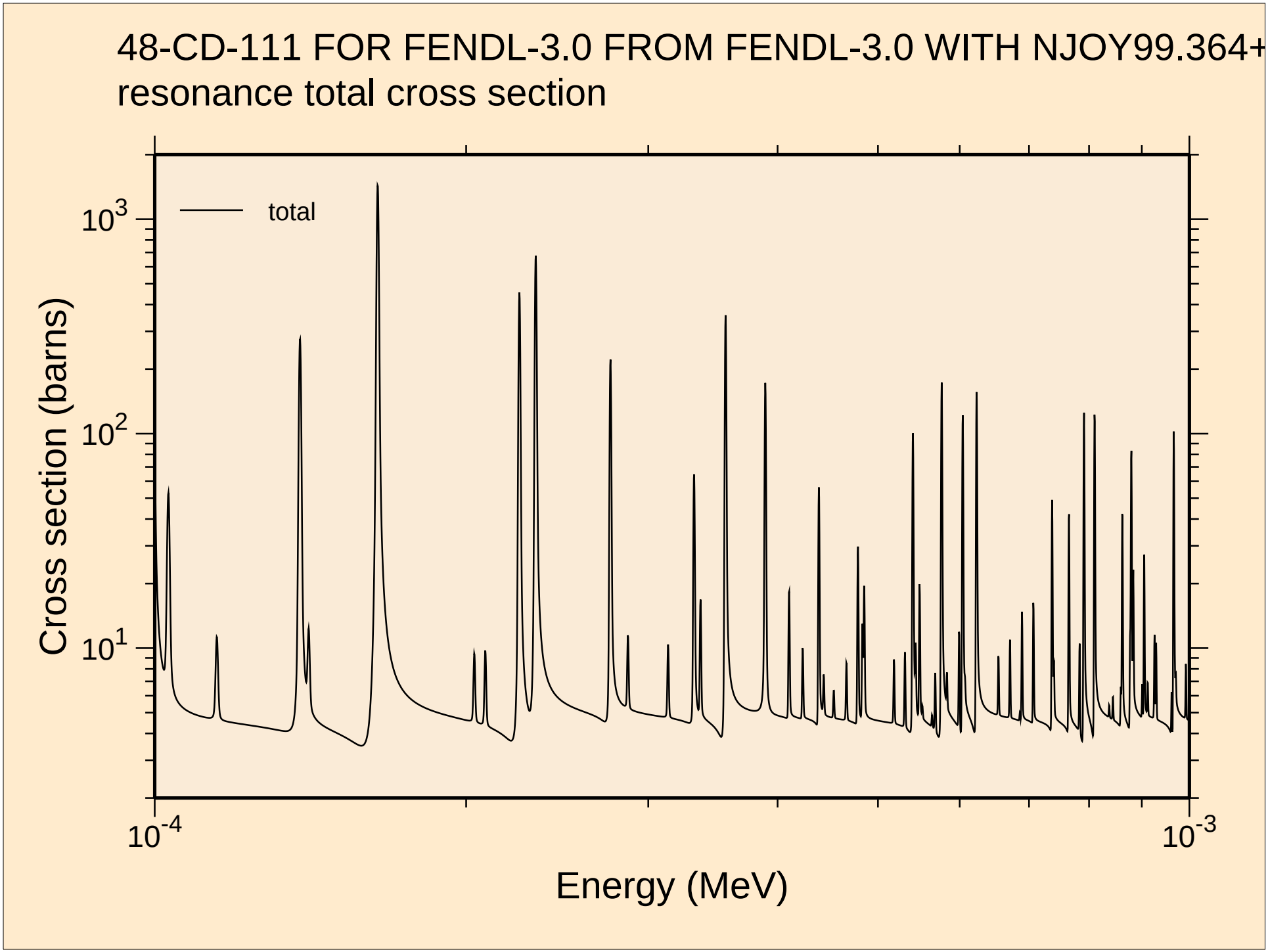
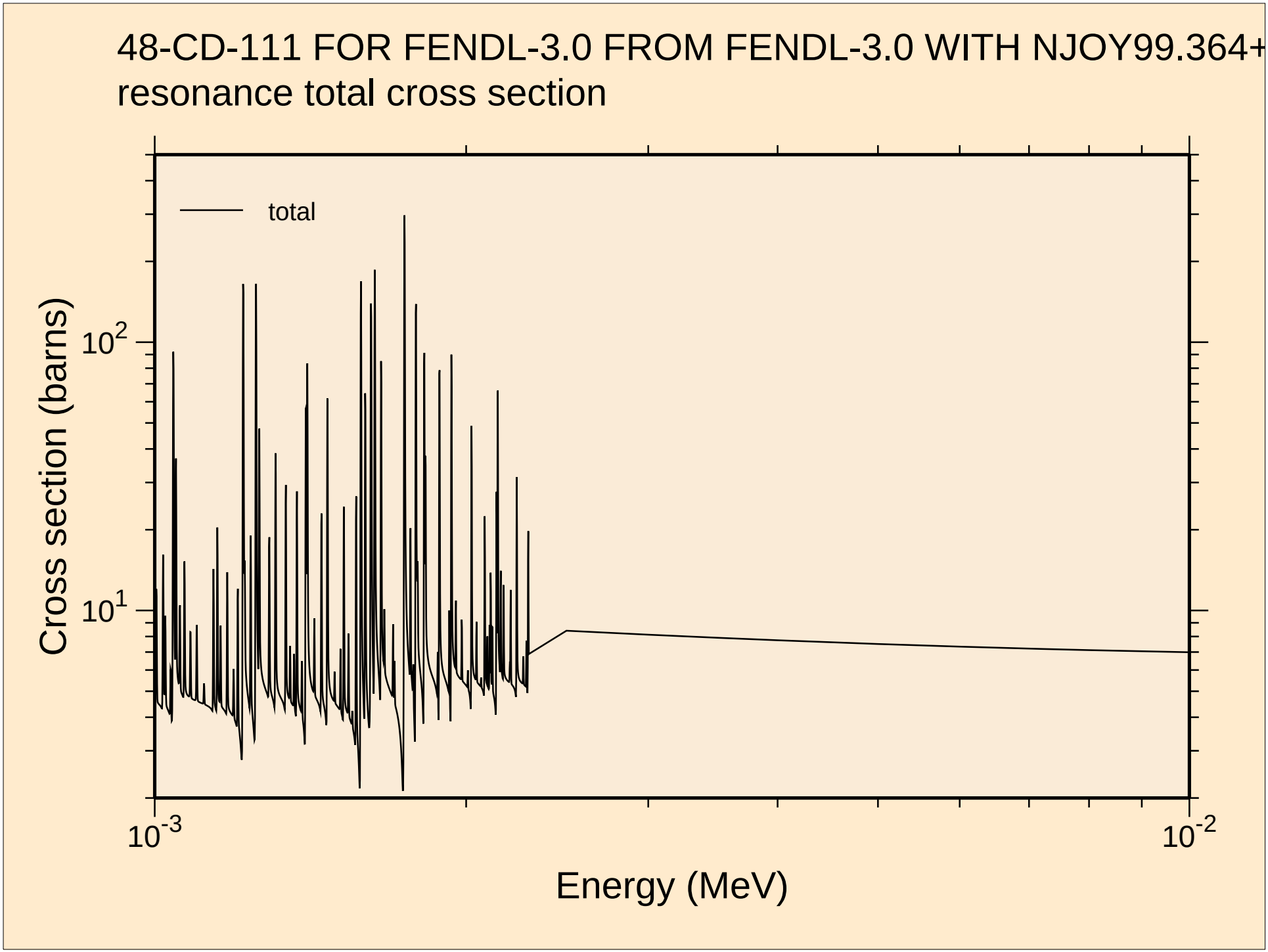
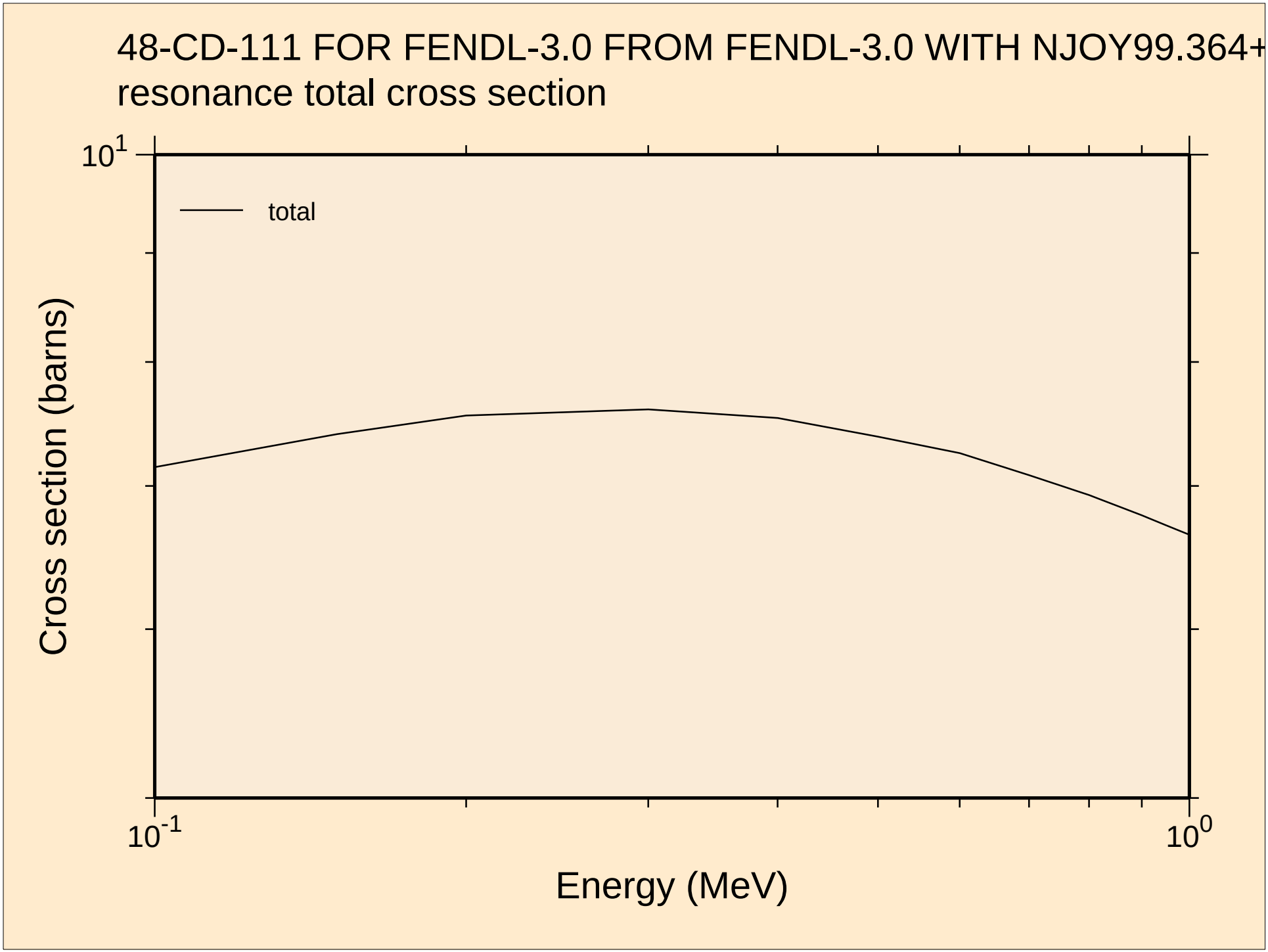

48-CD-111 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Principal cross sections
Cross section (barns)
Energy (MeV)
total
absorption
elastic
gamma production

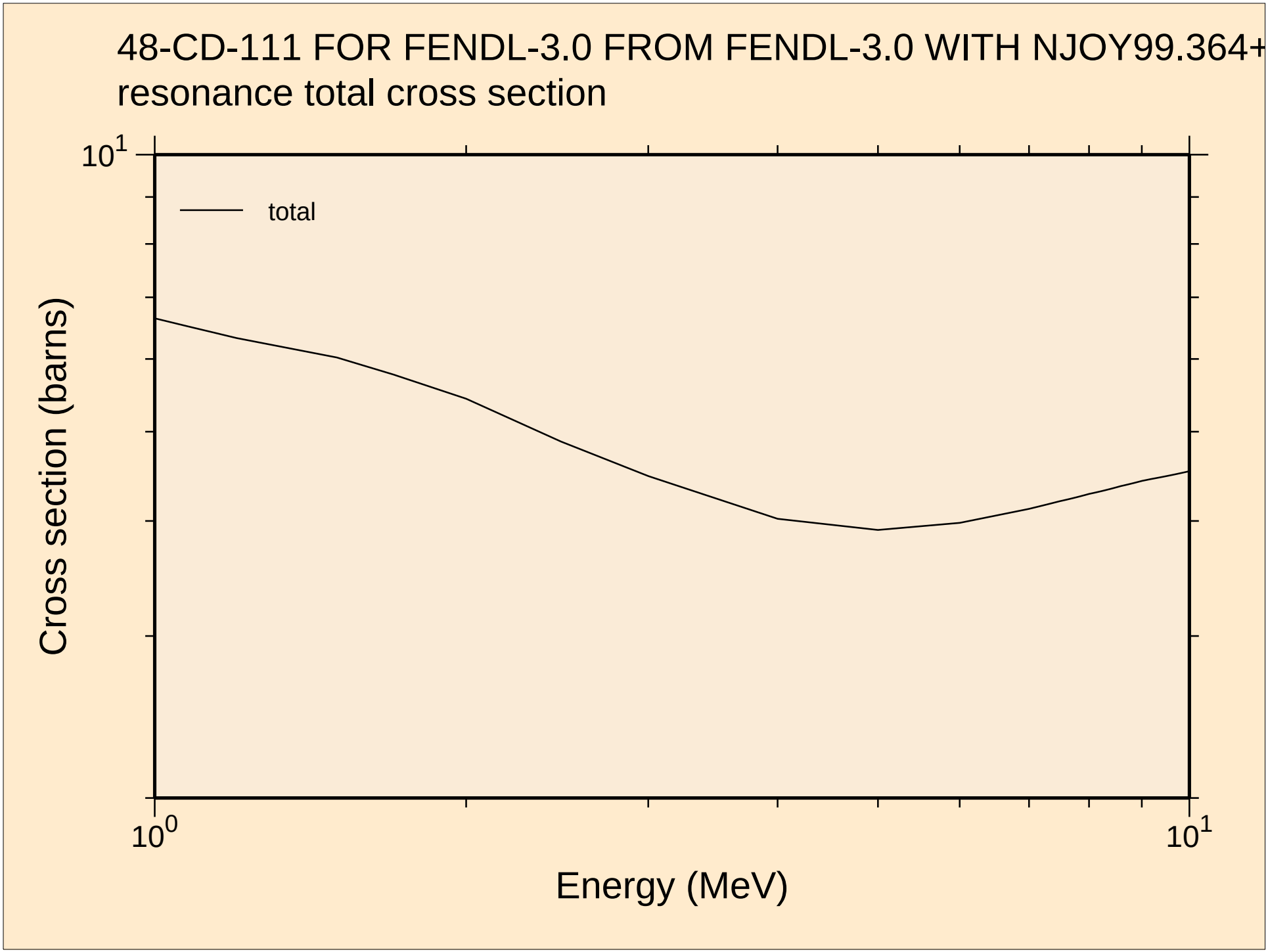

48-CD-111 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
resonance total cross section
10^{1}
total
Cross section (barns)
10^{-6}
10^{-5}
Energy (MeV)

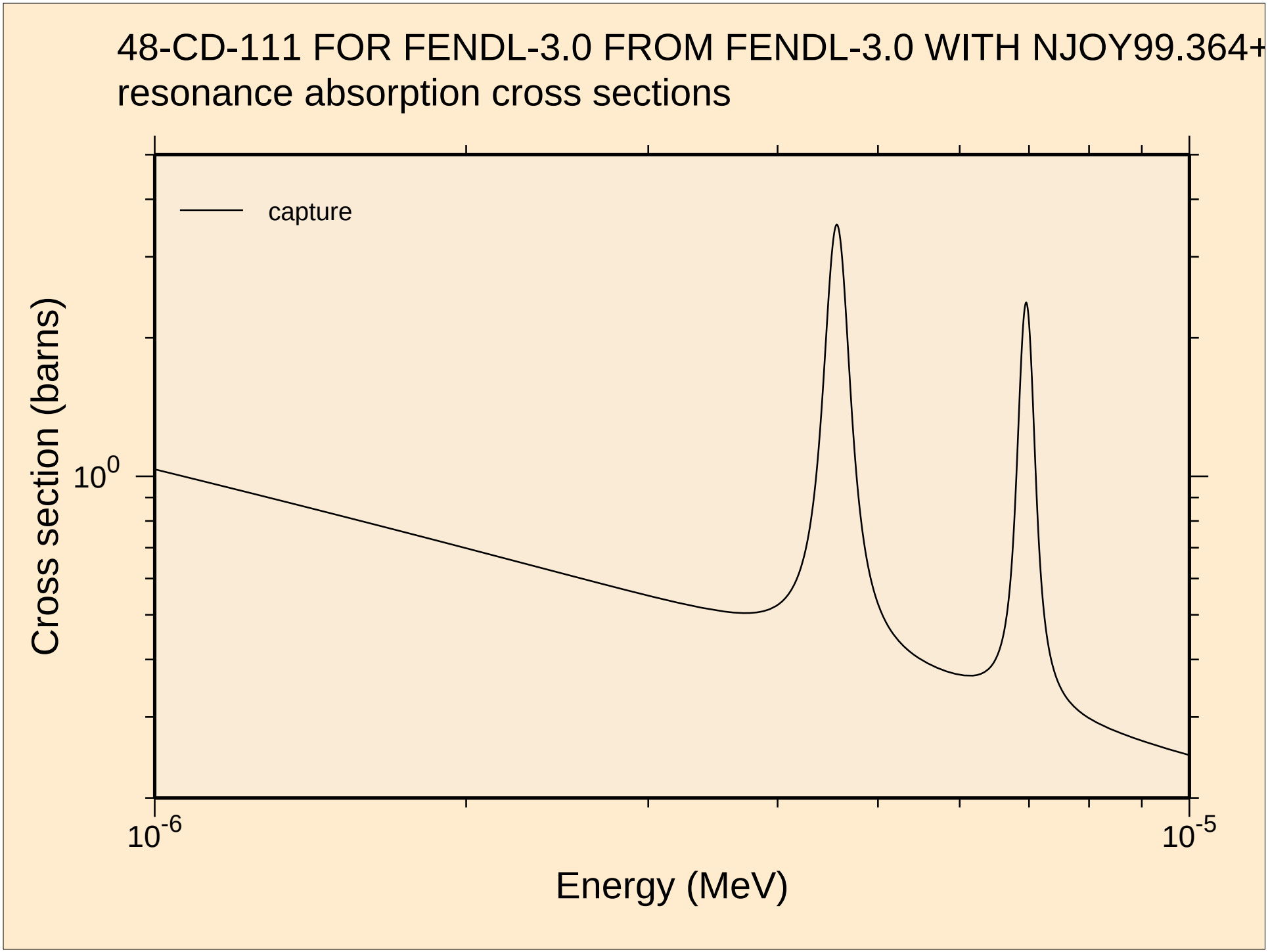

48-CD-111 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
resonance total cross section
total
Cross section (barns)
10^3
10^2
10^1
10^-5
10^-4
Energy (MeV)

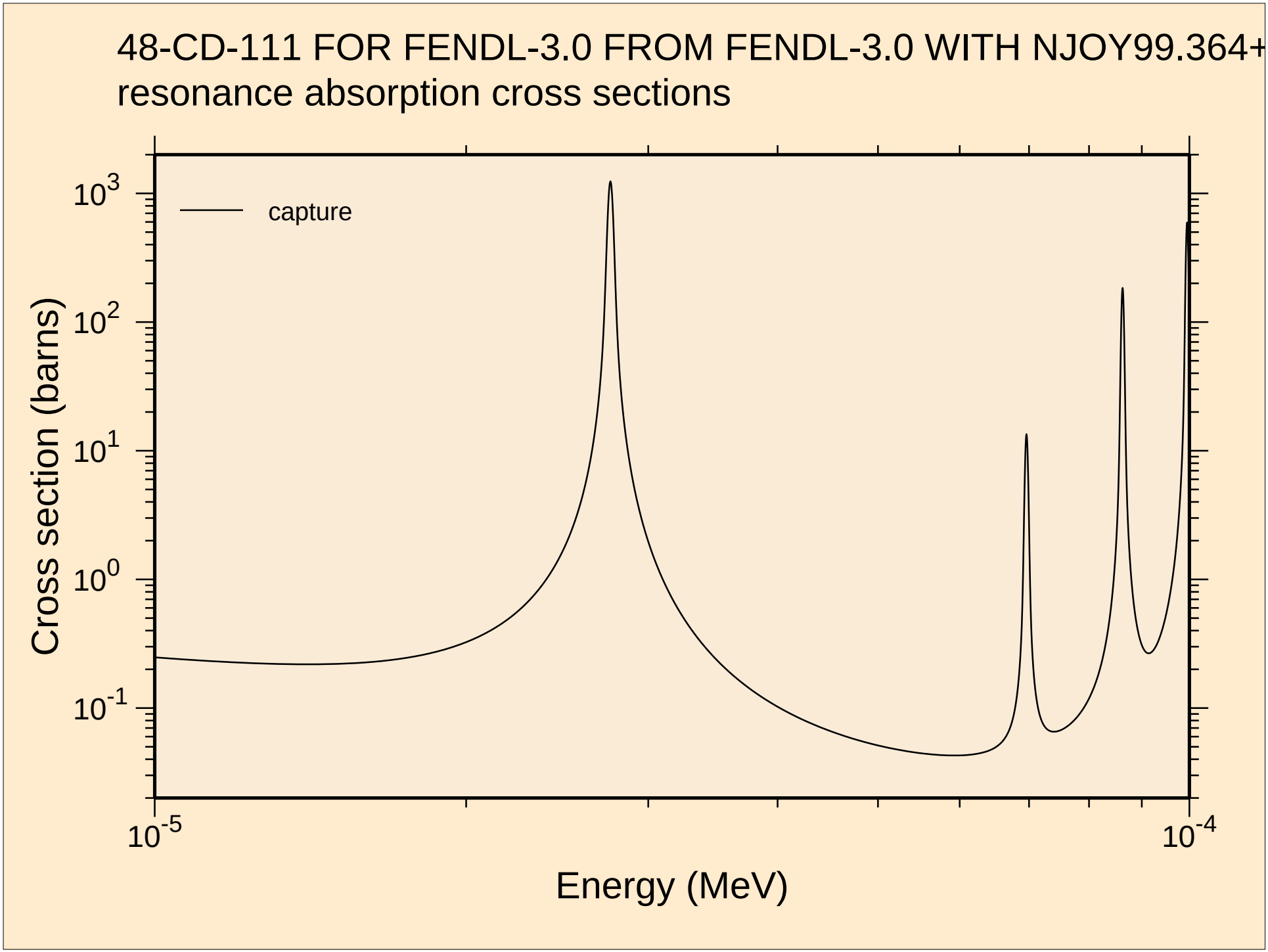

48-CD-111 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
resonance total cross section
total
Cross section (barns)
10^3
10^2
10^1
10^-4
10^-3
Energy (MeV)

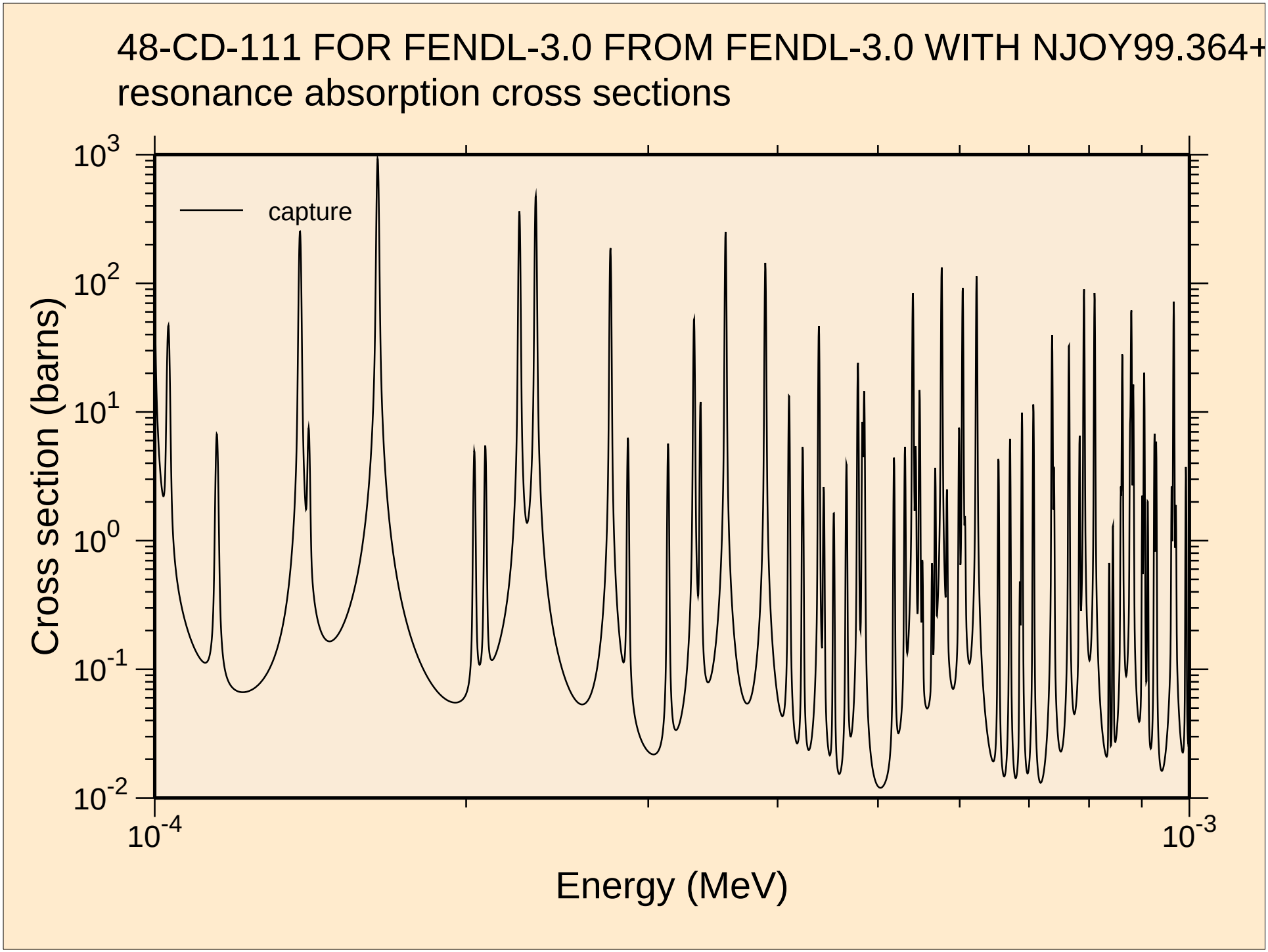

48-CD-111 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
resonance total cross section
total
Cross section (barns)
10^2
10^1
10^-3
10^-2
Energy (MeV)

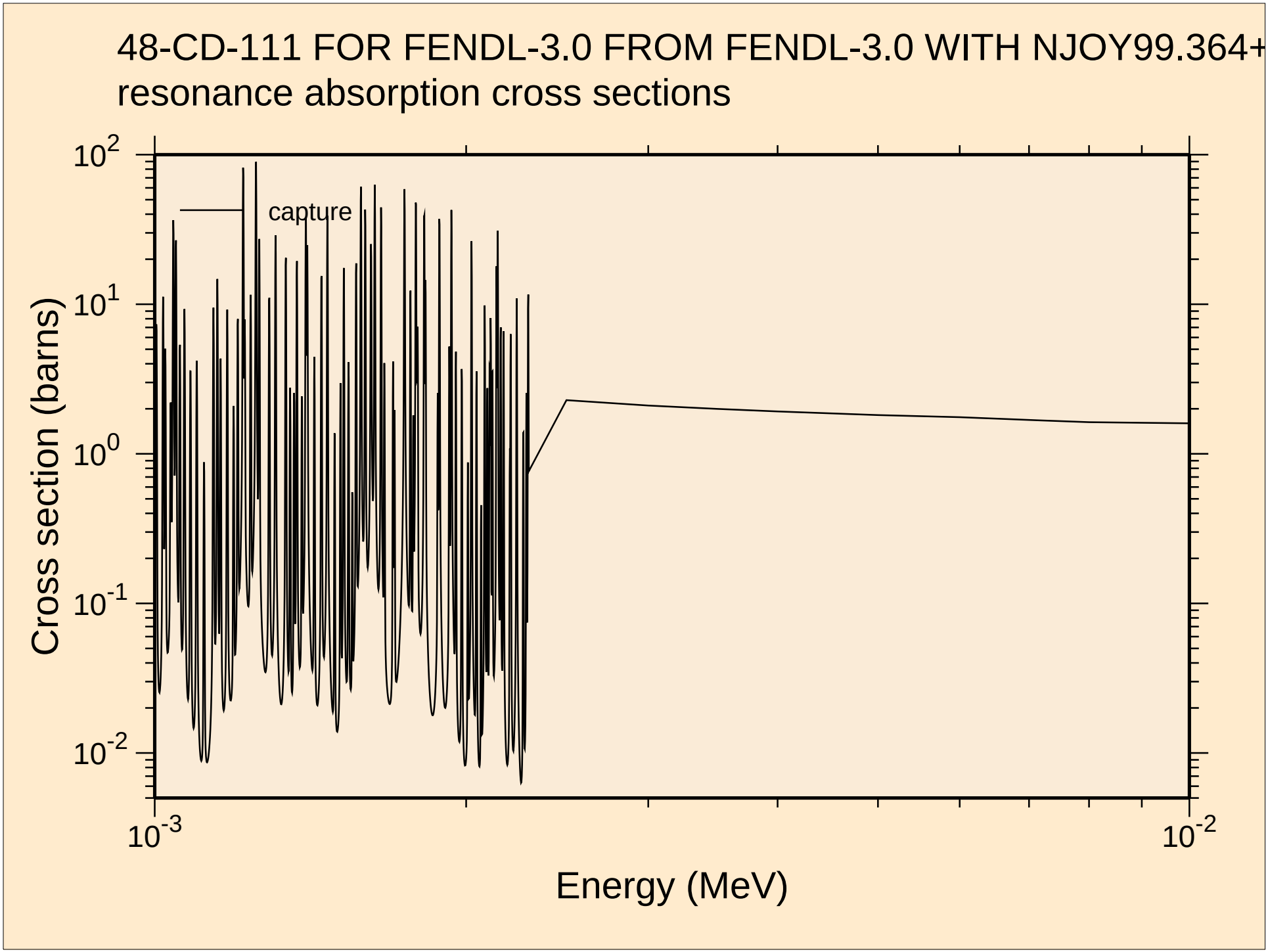

48-CD-111 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
resonance total cross section
10^1
total
Cross section (barns)
10^{-1}
10^0
Energy (MeV)

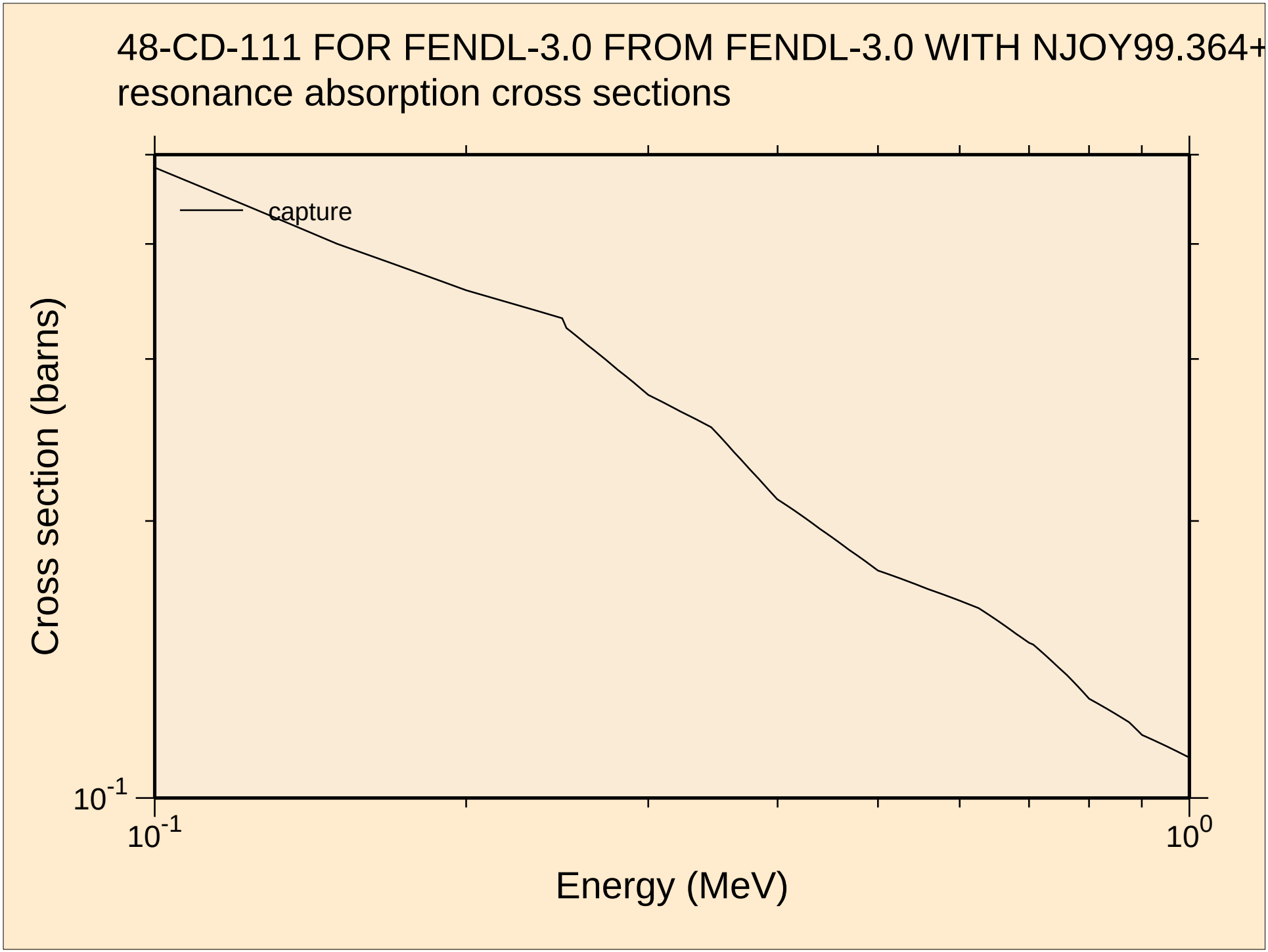

48-CD-111 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
resonance total cross section
10^1
total
Cross section (barns)
10^0
10^1
Energy (MeV)

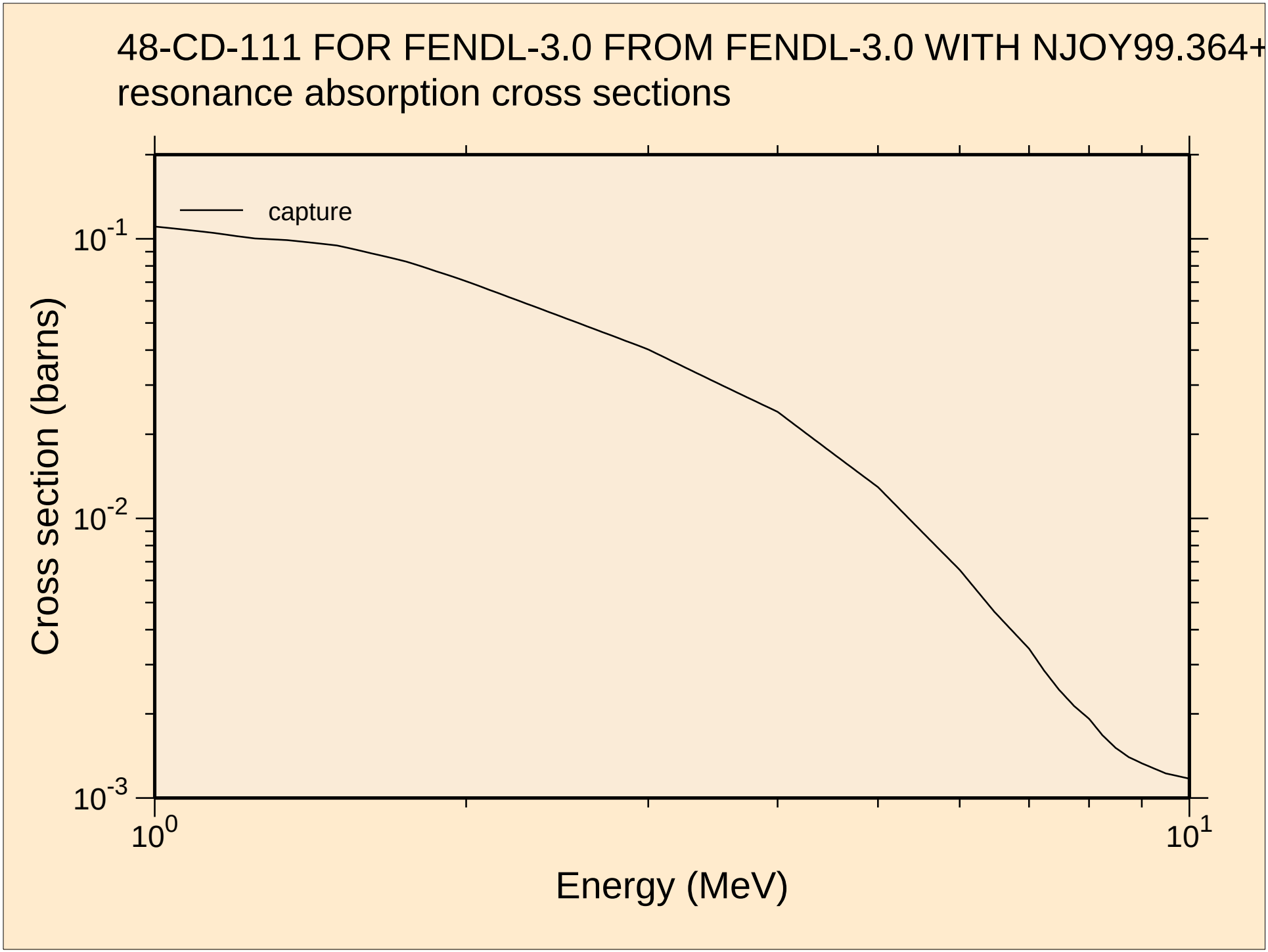

48-CD-111 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
resonance absorption cross sections
capture
Cross section (barns)
10^0
10^-6
10^-5
Energy (MeV)

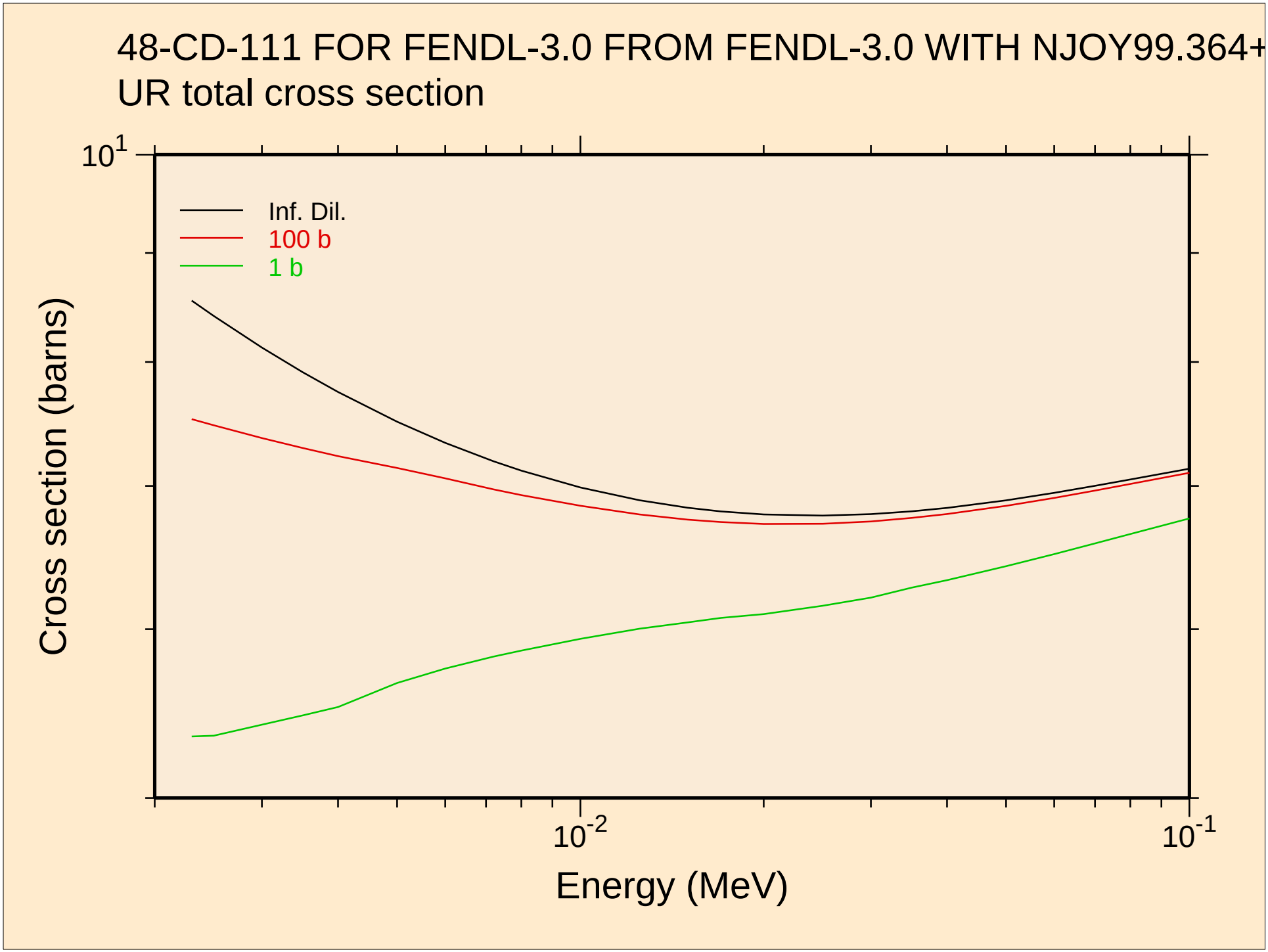

48-CD-111 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
resonance absorption cross sections
capture
Cross section (barns)
10^3
10^2
10^1
10^0
10^-1
10^-5
10^-4
Energy (MeV)

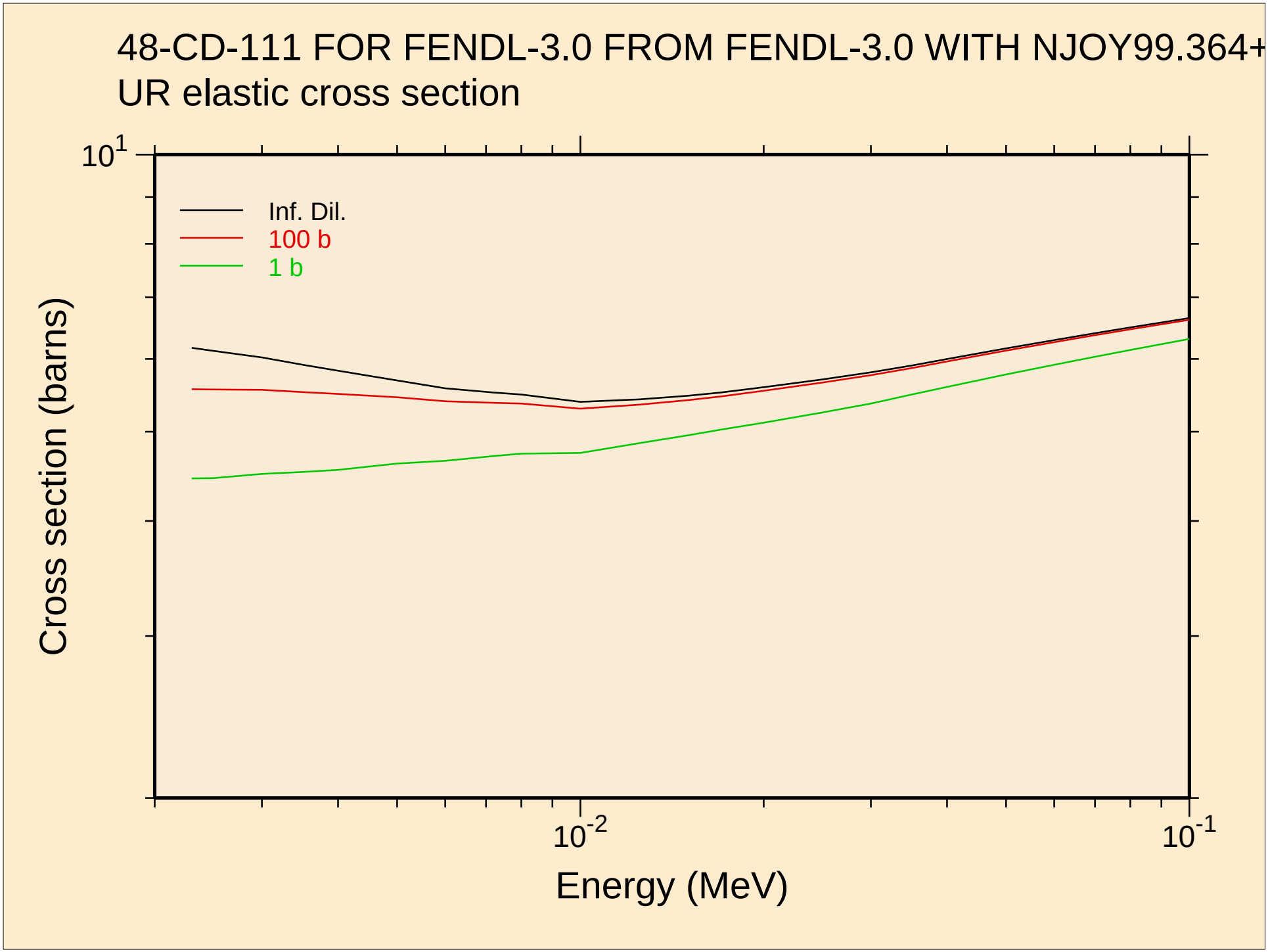

48-CD-111 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
resonance absorption cross sections
capture
Cross section (barns)
10^3
10^2
10^1
10^0
10^-1
10^-2
10^-4
10^-3
Energy (MeV)

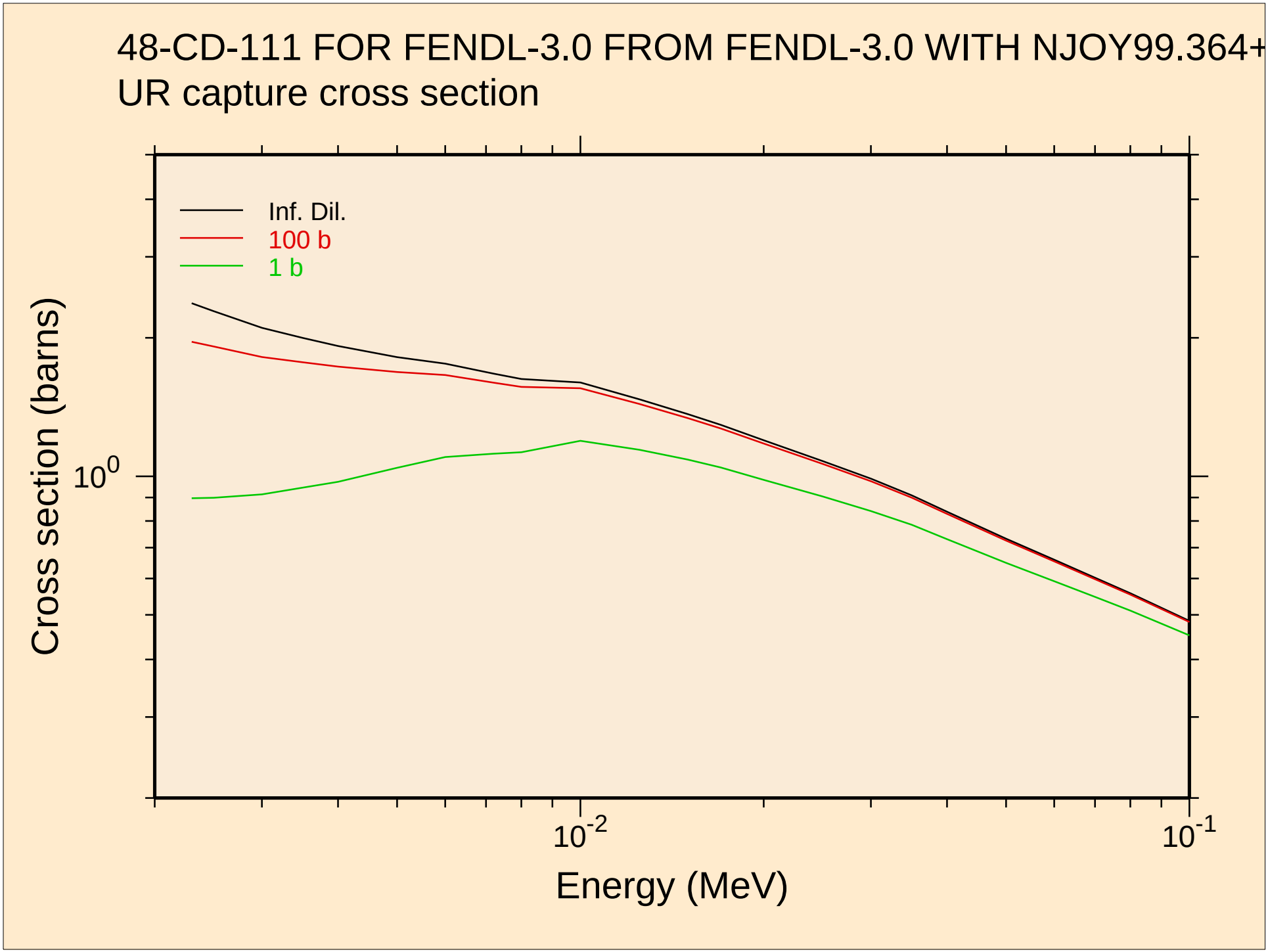

48-CD-111 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
resonance absorption cross sections
capture
Cross section (barns)
10^{2}
10^{1}
10^{0}
10^{-1}
10^{-2}
10^{-3}
10^{-2}
Energy (MeV)

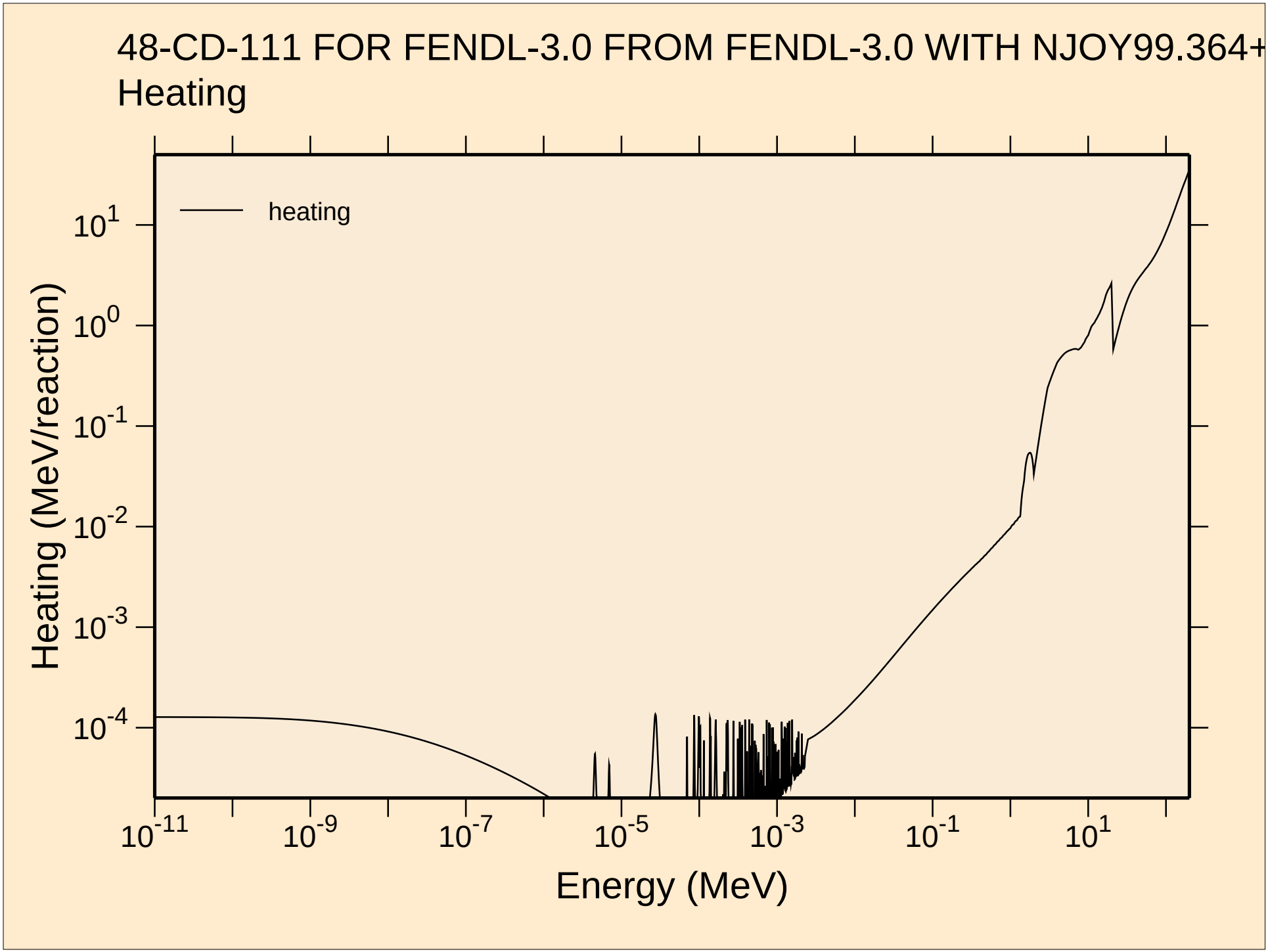

48-CD-111 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
resonance absorption cross sections
capture
Cross section (barns)
10-1
10-1
100
Energy (MeV)

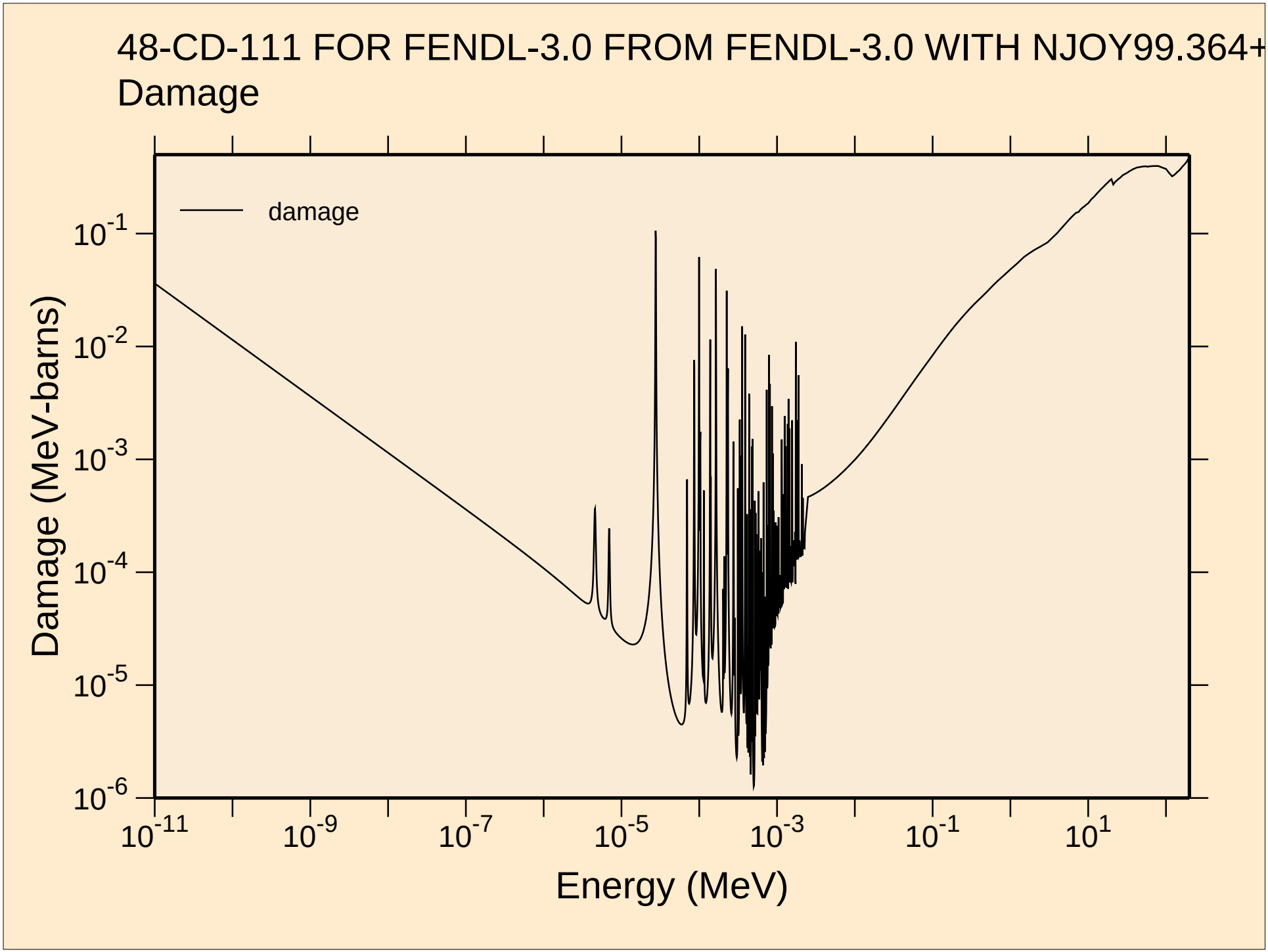

48-CD-111 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
resonance absorption cross sections
capture
Cross section (barns)
10-1
10-2
10-3
100
101
Energy (MeV)

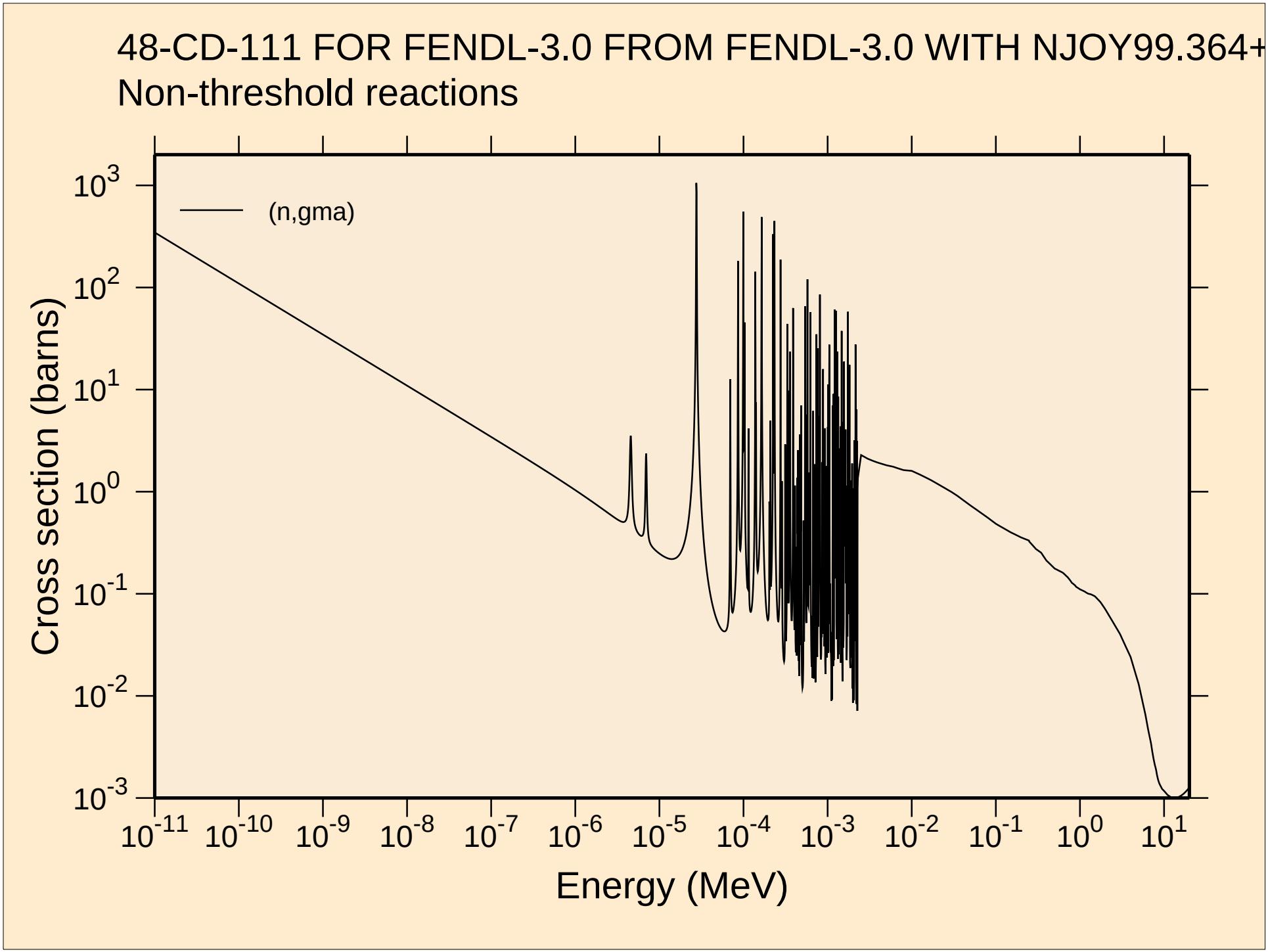

48-CD-111 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
UR total cross section
10^1
Inf. Dil.
100 b
1 b
Cross section (barns)
10^{-2}
10^{-1}
Energy (MeV)

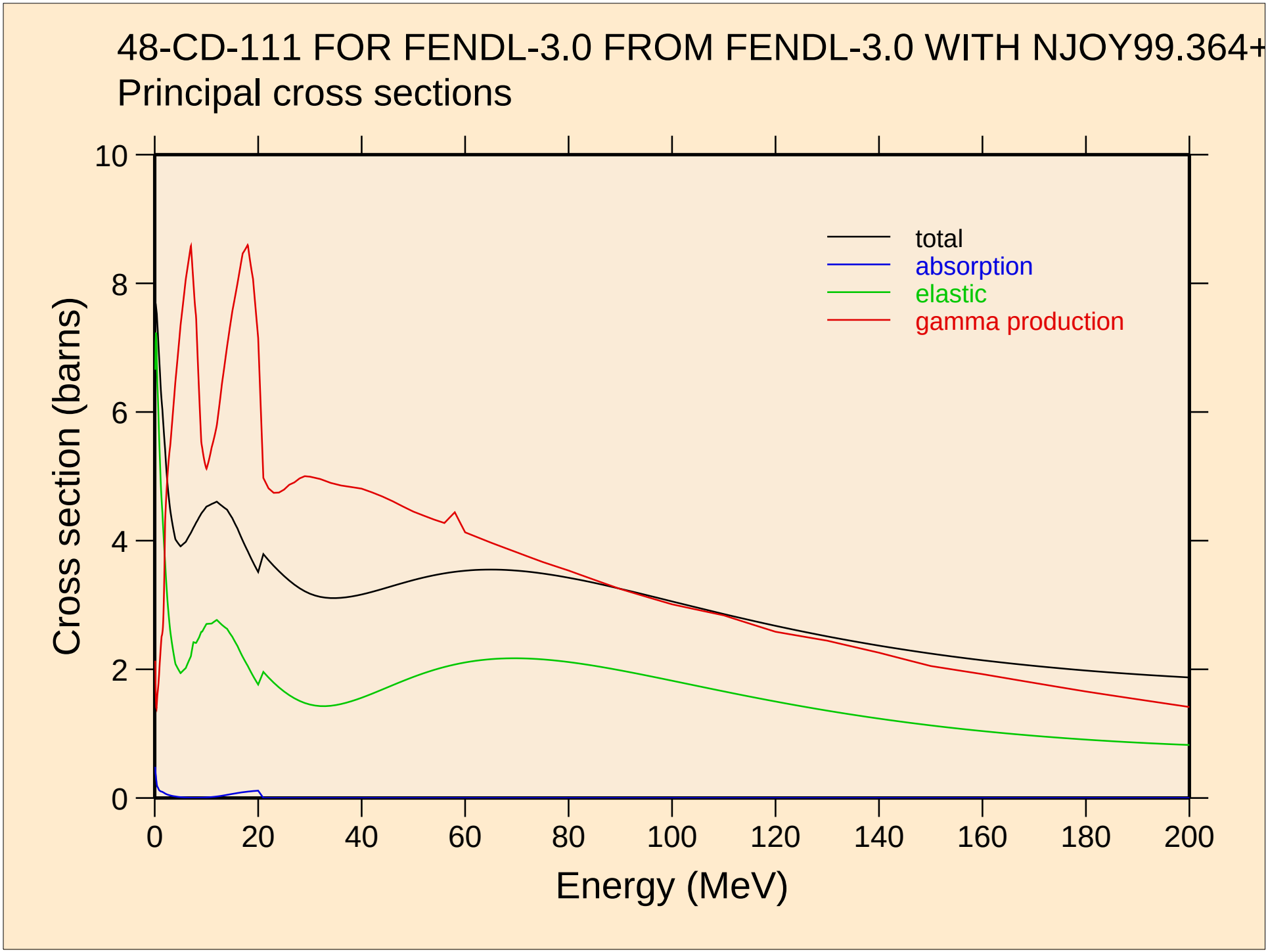

48-CD-111 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
UR elastic cross section
10^1
Inf. Dil.
100 b
1 b
Cross section (barns)
10^{-2}
10^{-1}
Energy (MeV)

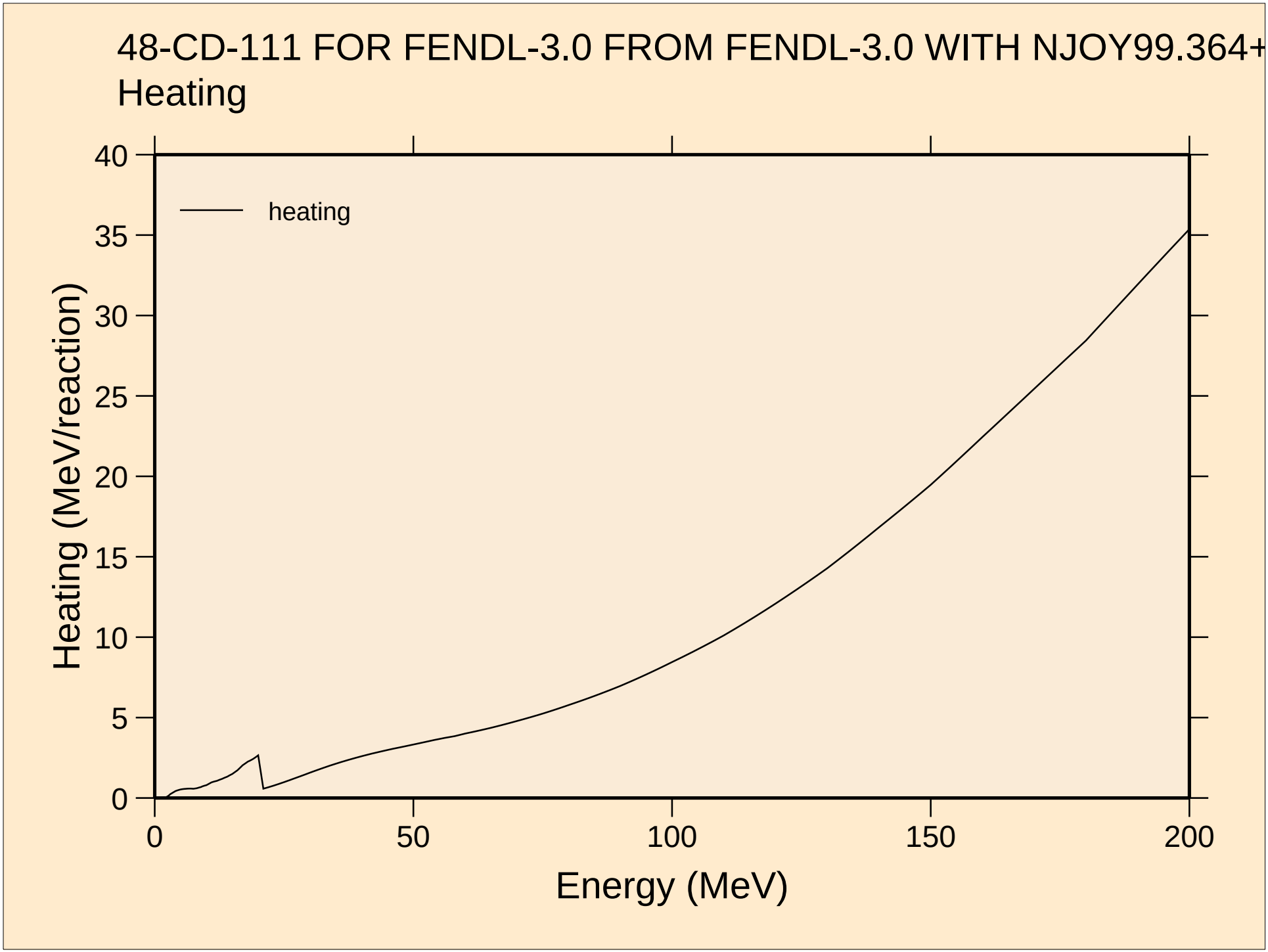

48-CD-111 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
UR capture cross section
Inf. Dil.
100 b
1 b
Cross section (barns)
10^0
10^-2
10^-1
Energy (MeV)

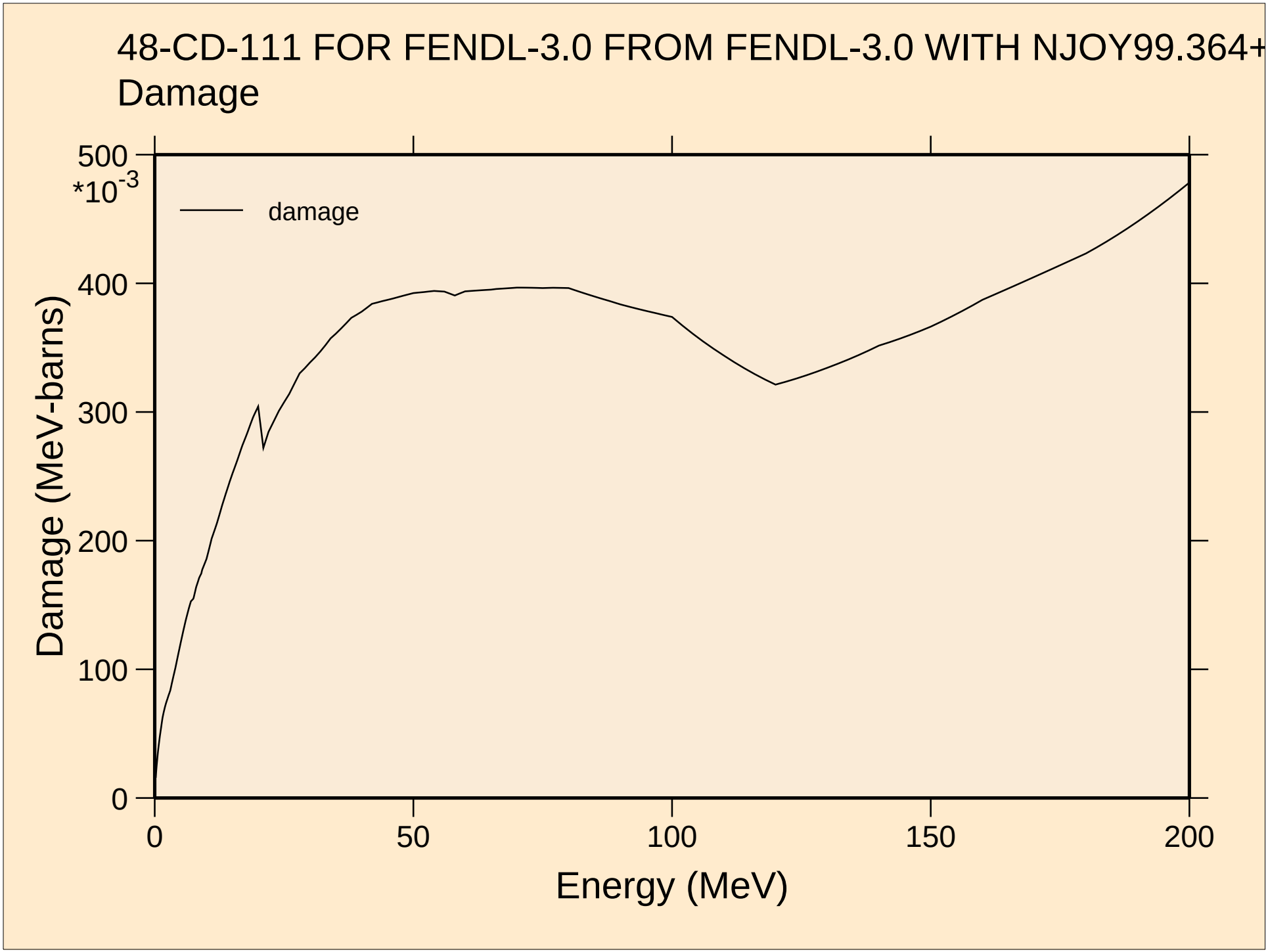

48-CD-111 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Heating
heating
Heating (MeV/reaction)
10^1
10^0
10^-1
10^-2
10^-3
10^-4
10^-11
10^-9
10^-7
10^-5
10^-3
10^-1
10^1
Energy (MeV)

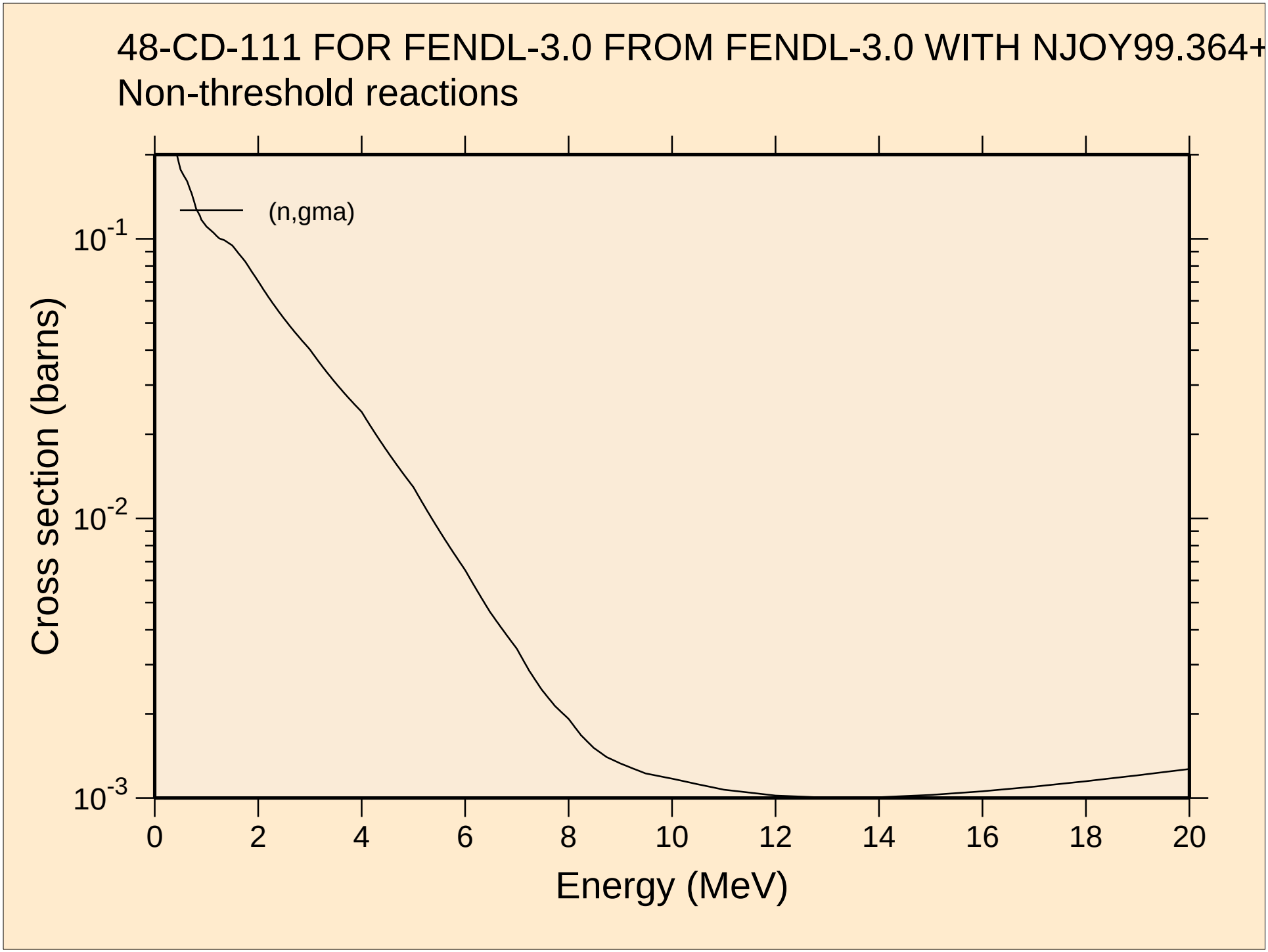

48-CD-111 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Damage
damage
Damage (MeV-barns)
10-1
10-2
10-3
10-4
10-5
10-6
10-11
10-9
10-7
10-5
10-3
10-1
101
Energy (MeV)

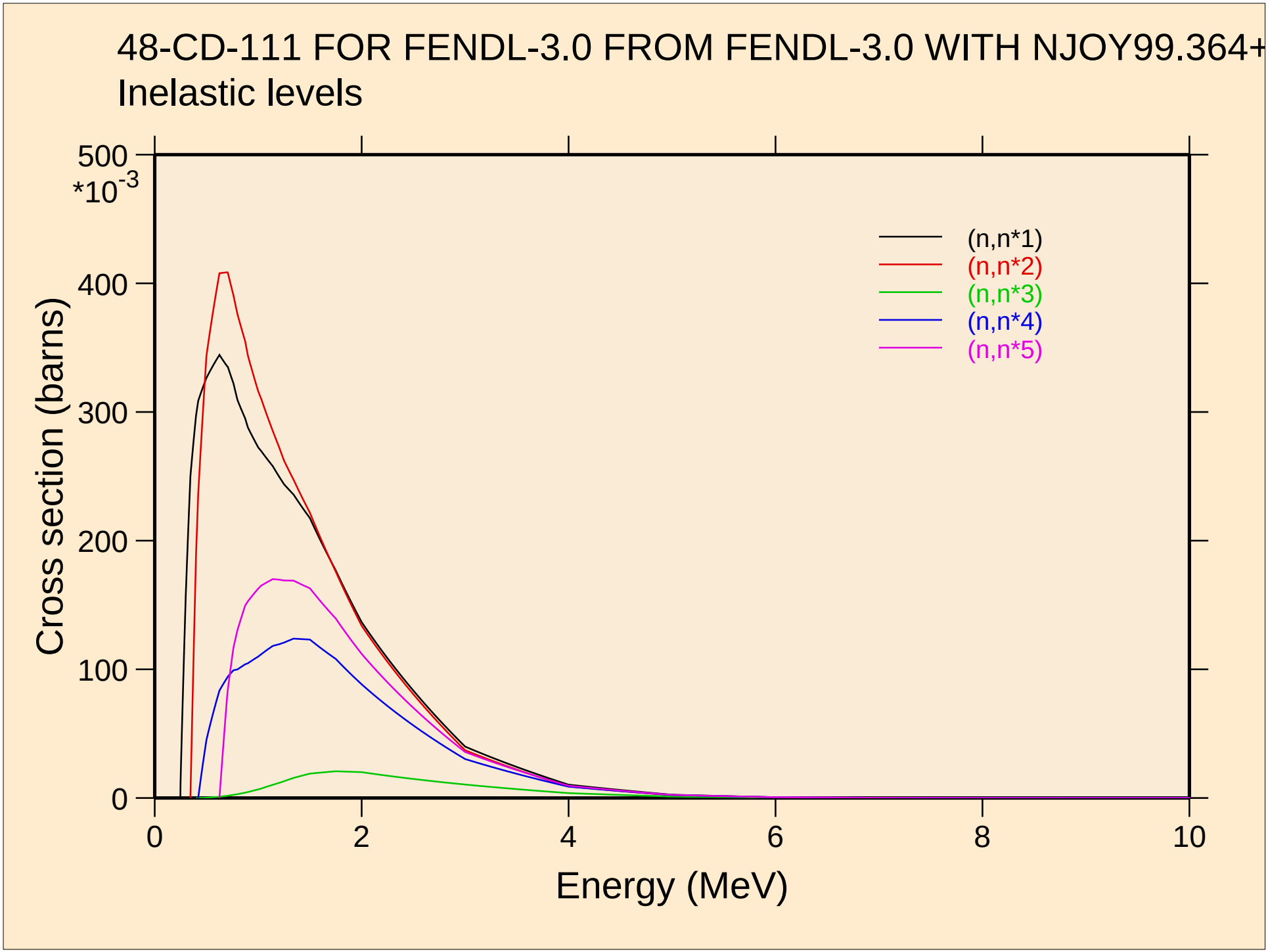

48-CD-111 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Non-threshold reactions
(n,gma)
Cross section (barns)
Energy (MeV)
10^3
10^2
10^1
10^0
10^-1
10^-2
10^-3
10^-11
10^-10
10^-9
10^-8
10^-7
10^-6
10^-5
10^-4
10^-3
10^-2
10^-1
10^0
10^1

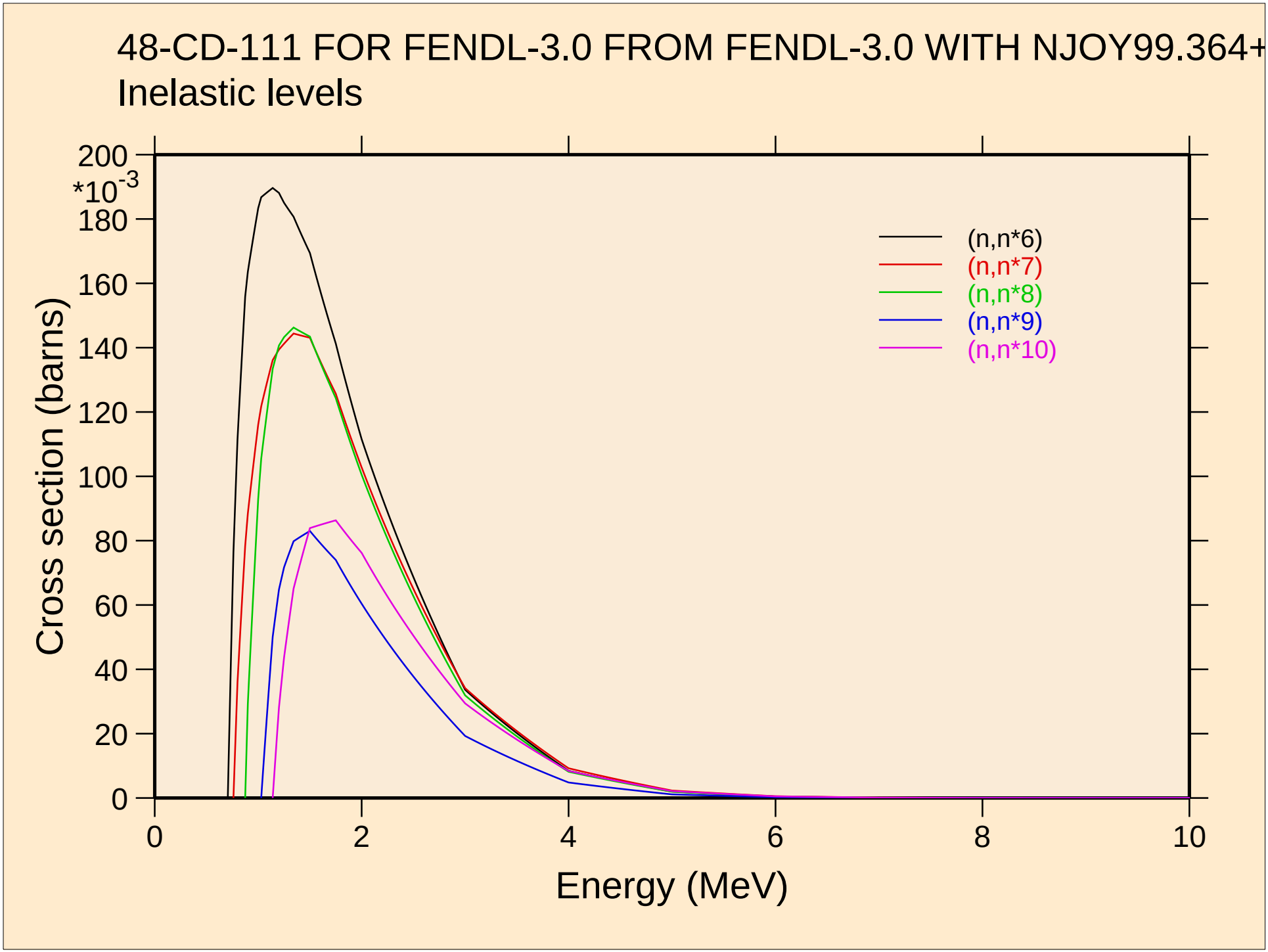

48-CD-111 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Principal cross sections
Cross section (barns)
Energy (MeV)
total
absorption
elastic
gamma production
0
2
4
6
8
10
0
20
40
60
80
100
120
140
160
180
200

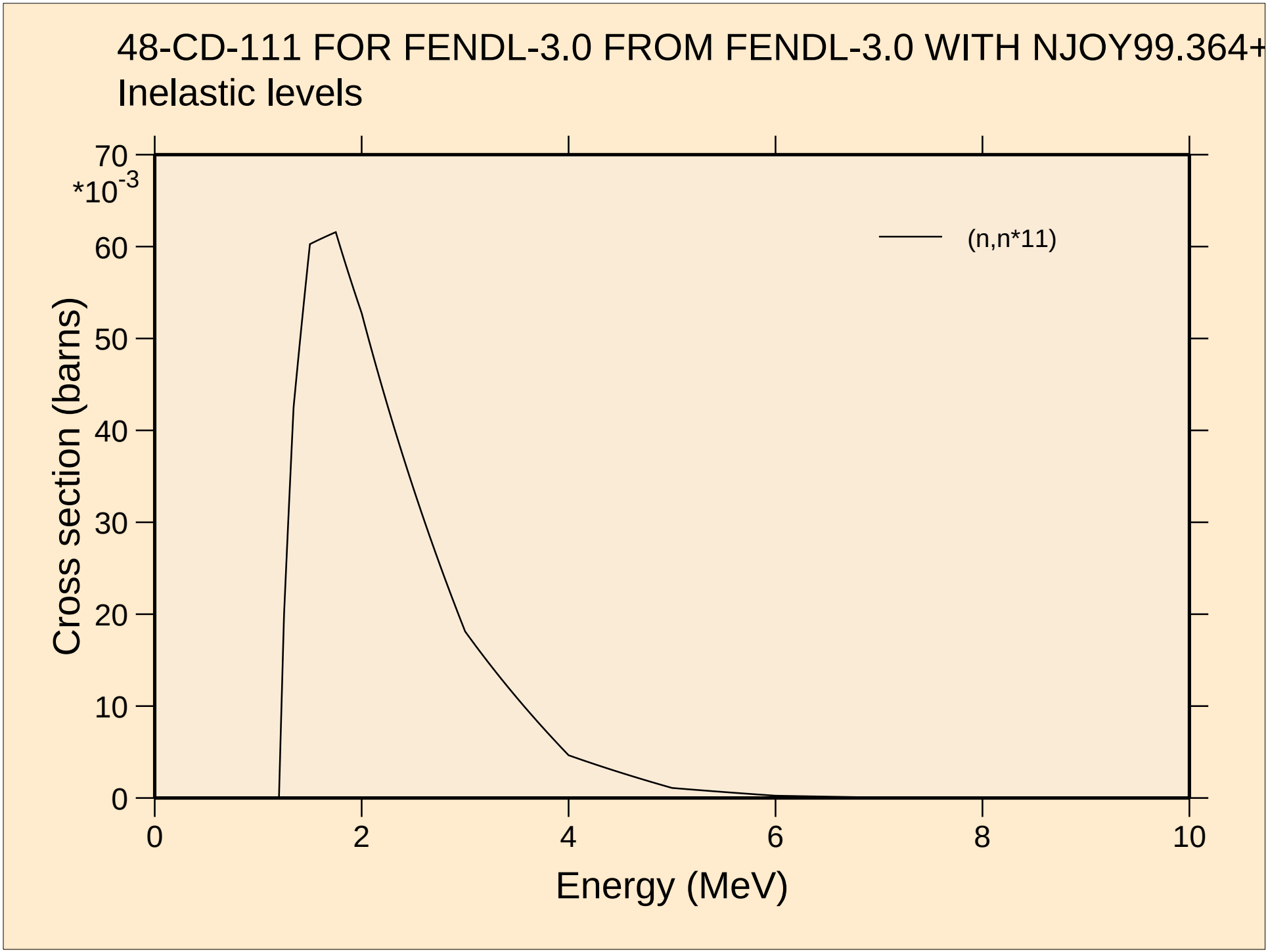

48-CD-111 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Heating
heating
Heating (MeV/reaction)
Energy (MeV)
0
5
10
15
20
25
30
35
40
0
50
100
150
200

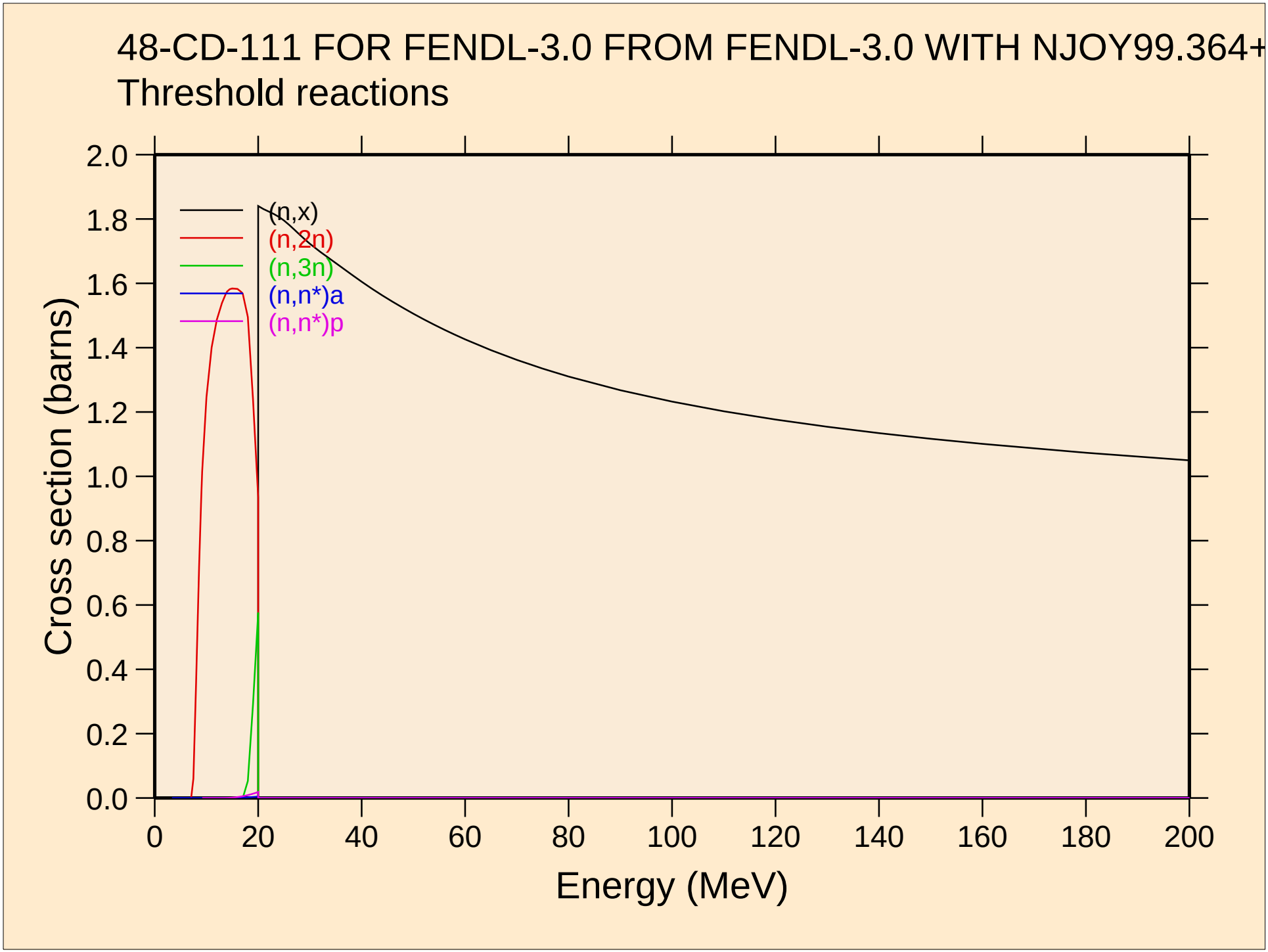

48-CD-111 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Damage
500
*10-3
damage
400
300
200
100
0
Damage (MeV-barns)
0
50
100
150
200
Energy (MeV)

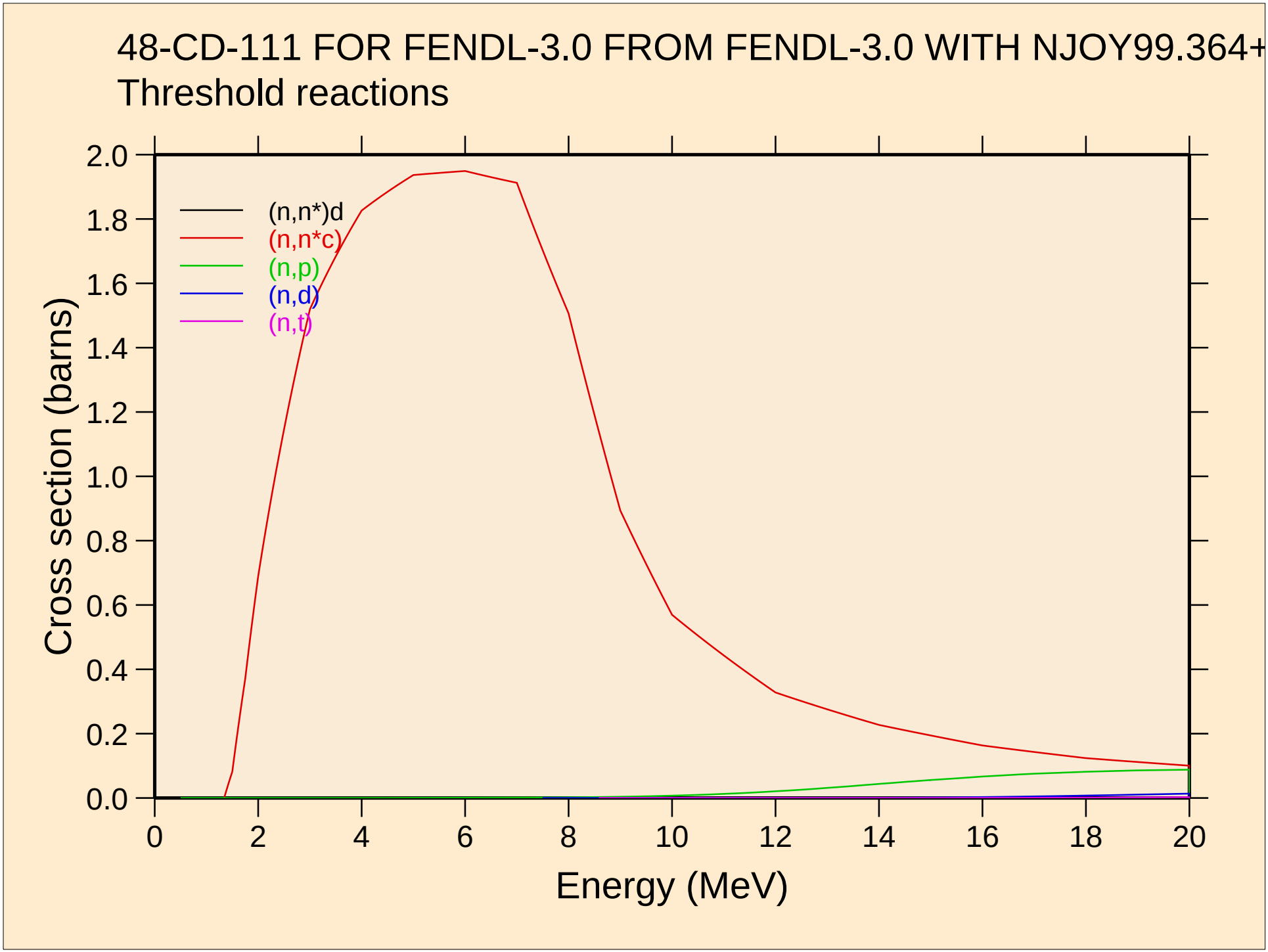

48-CD-111 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Non-threshold reactions
(n,gma)
Cross section (barns)
10-1
10-2
10-3
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

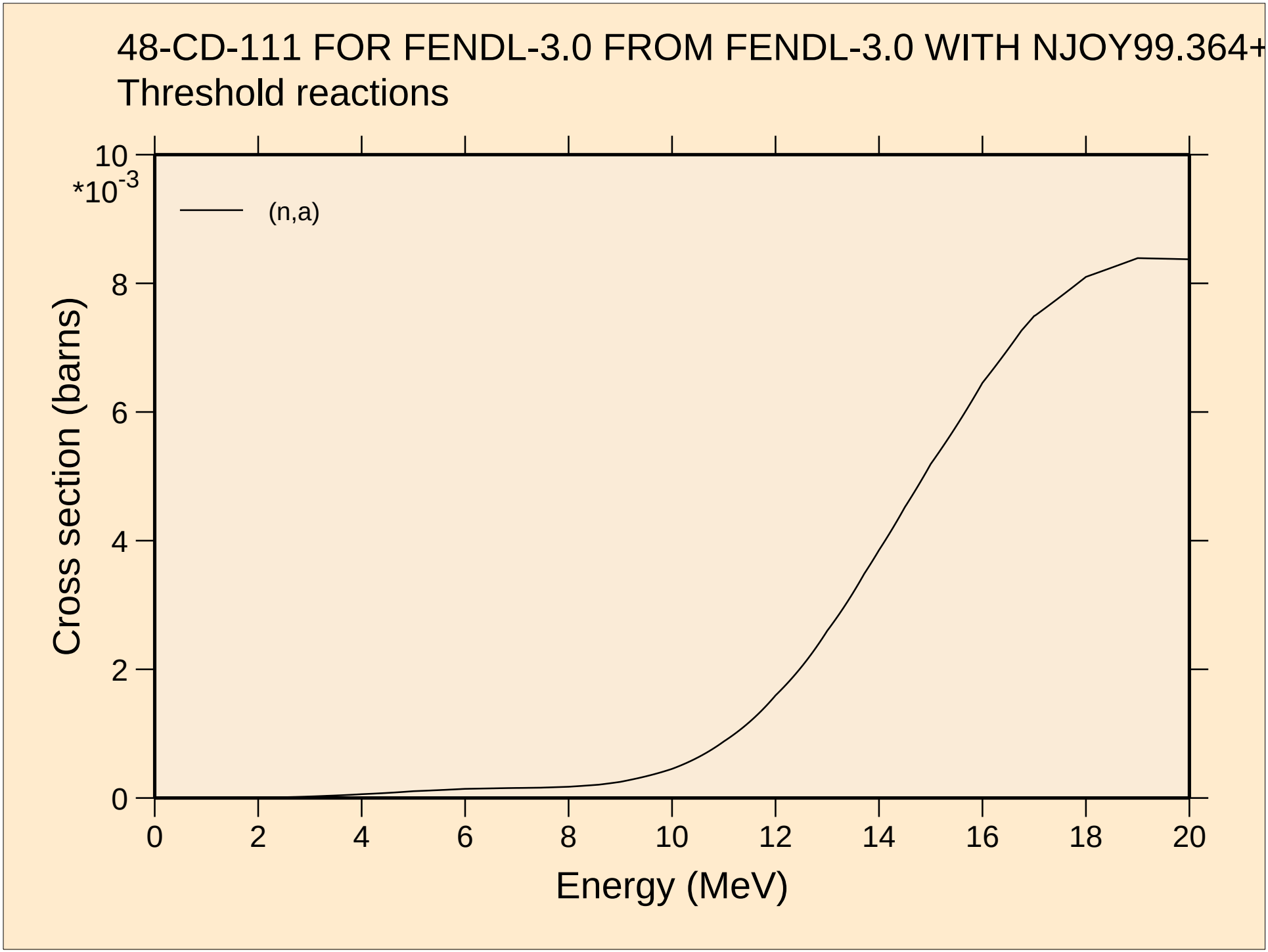

48-CD-111 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Inelastic levels
500
*10-3
400
300
200
100
0
Cross section (barns)
0
2
4
6
8
10
Energy (MeV)
(n,n*1)
(n,n*2)
(n,n*3)
(n,n*4)
(n,n*5)

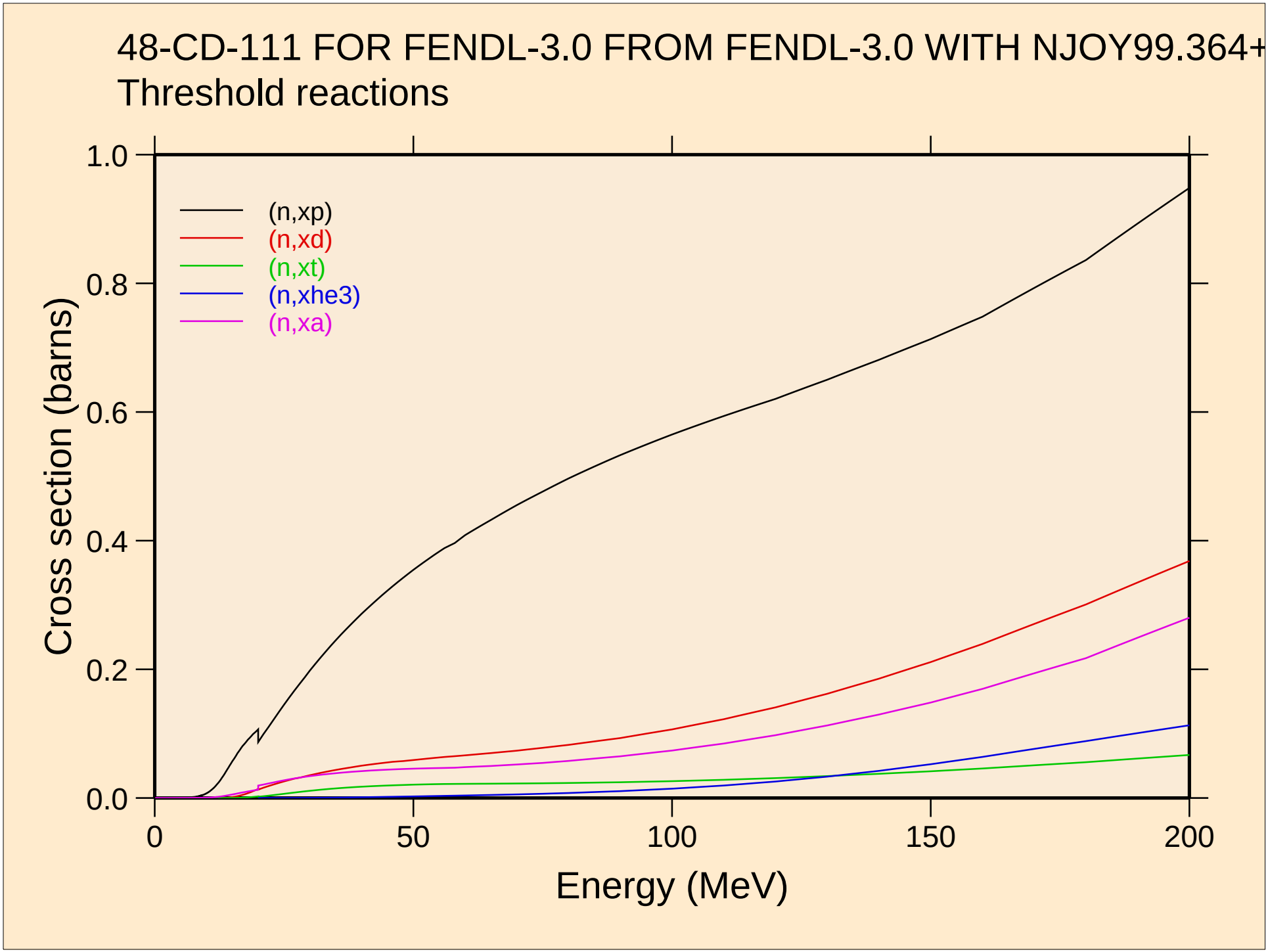

48-CD-111 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Inelastic levels
Cross section (barns)
*10-3
200
180
160
140
120
100
80
60
40
20
0
0
2
4
6
8
10
Energy (MeV)
(n,n*6)
(n,n*7)
(n,n*8)
(n,n*9)
(n,n*10)

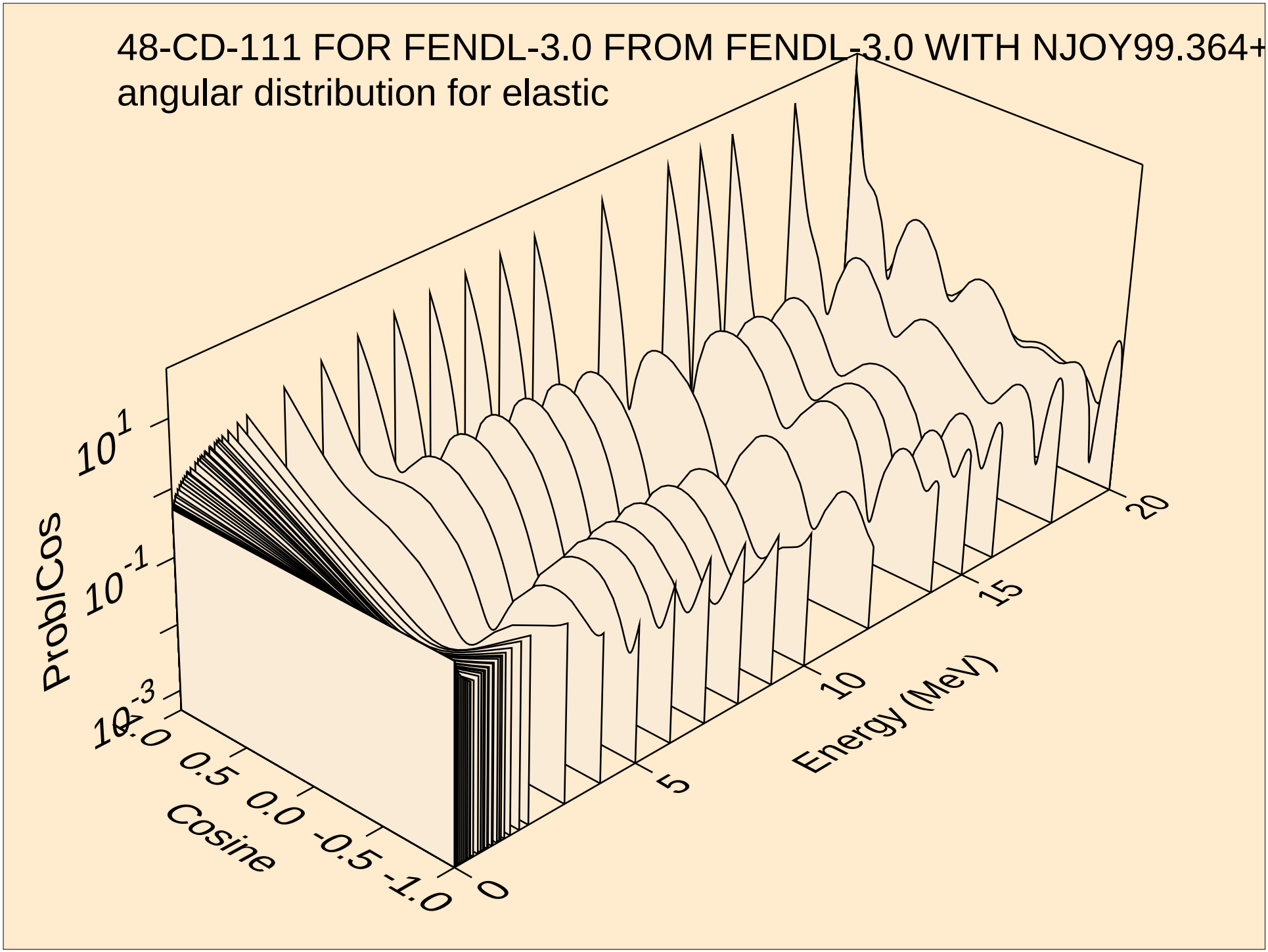

48-CD-111 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Inelastic levels
*10-3
70
60
50
40
30
20
10
0
Cross section (barns)
(n,n*11)
0
2
4
6
8
10
Energy (MeV)

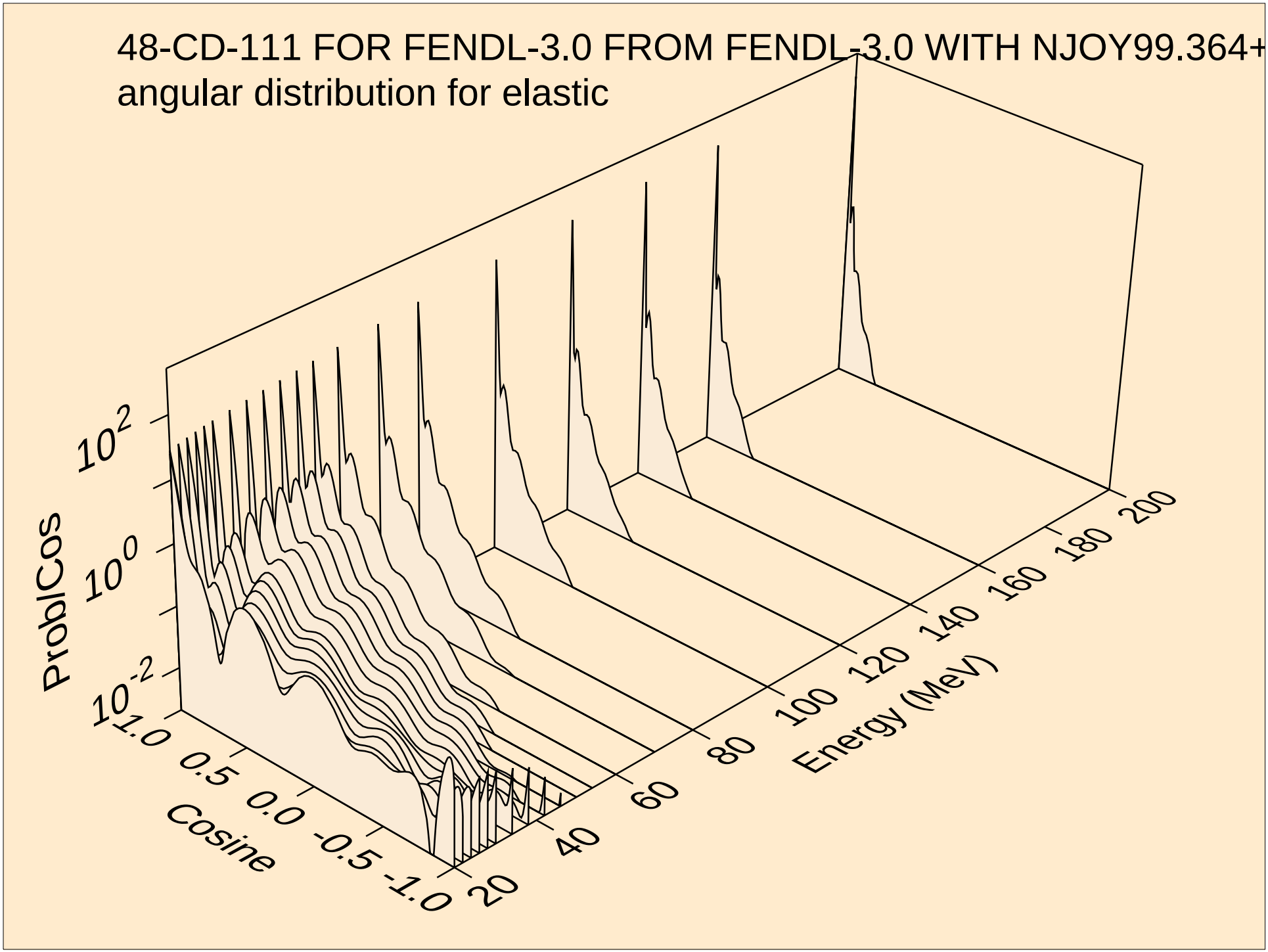

48-CD-111 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Threshold reactions
Cross section (barns)
Energy (MeV)
(n,x)
(n,2n)
(n,3n)
(n,n*)a
(n,n*)p
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
1.6
1.8
2.0
0
20
40
60
80
100
120
140
160
180
200

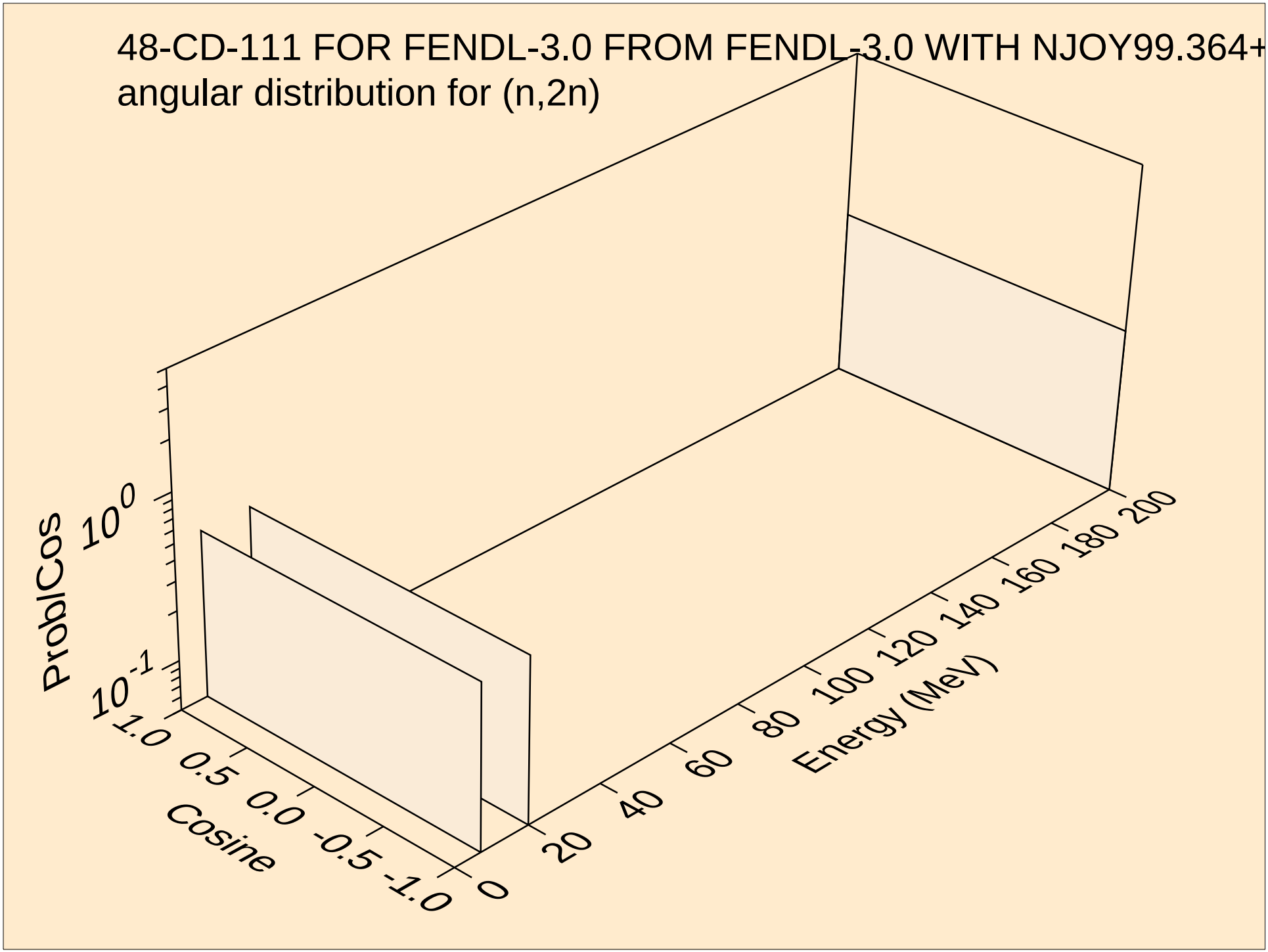

48-CD-111 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Threshold reactions
(n,n*)d
(n,n*c)
(n,p)
(n,d)
(n,t)
Cross section (barns)
Energy (MeV)
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
1.6
1.8
2.0
0
2
4
6
8
10
12
14
16
18
20

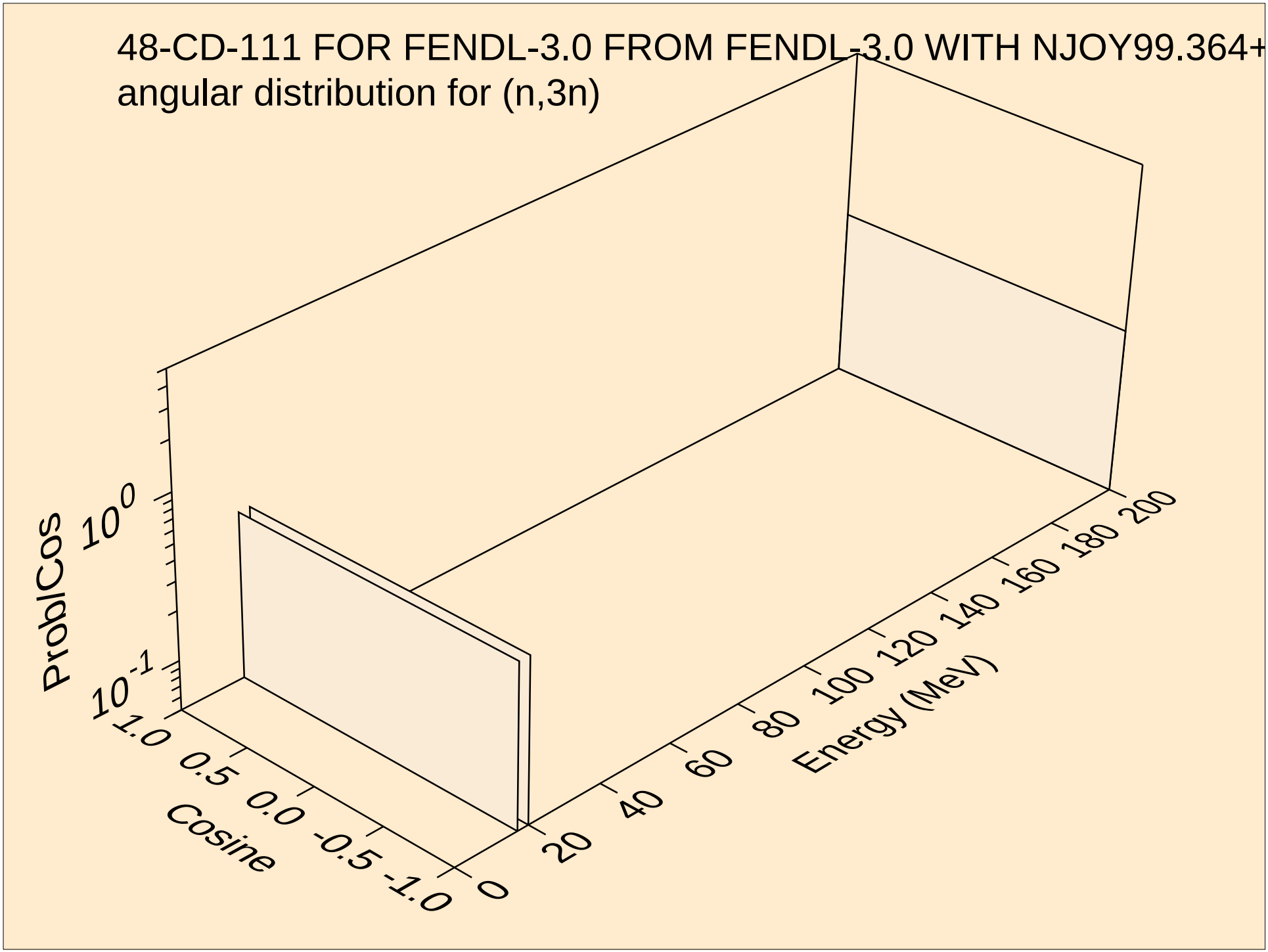

48-CD-111 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Threshold reactions
10
*10-3
8
6
4
2
0
(n,a)
Cross section (barns)
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

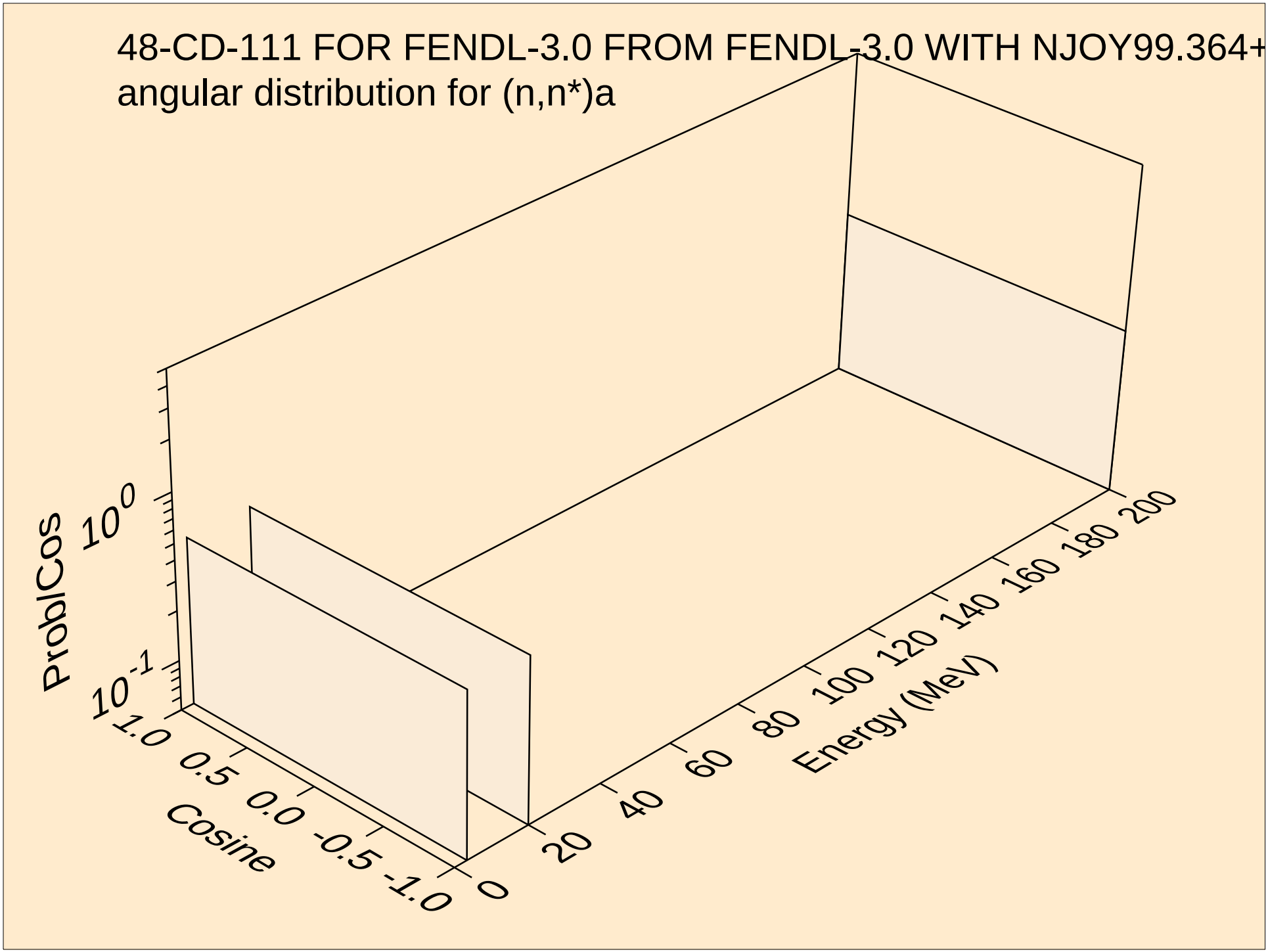

48-CD-111 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Threshold reactions
(n,xp)
(n,xd)
(n,xt)
(n,xhe3)
(n,xa)
Cross section (barns)
1.0
0.8
0.6
0.4
0.2
0.0
0
50
100
150
200
Energy (MeV)

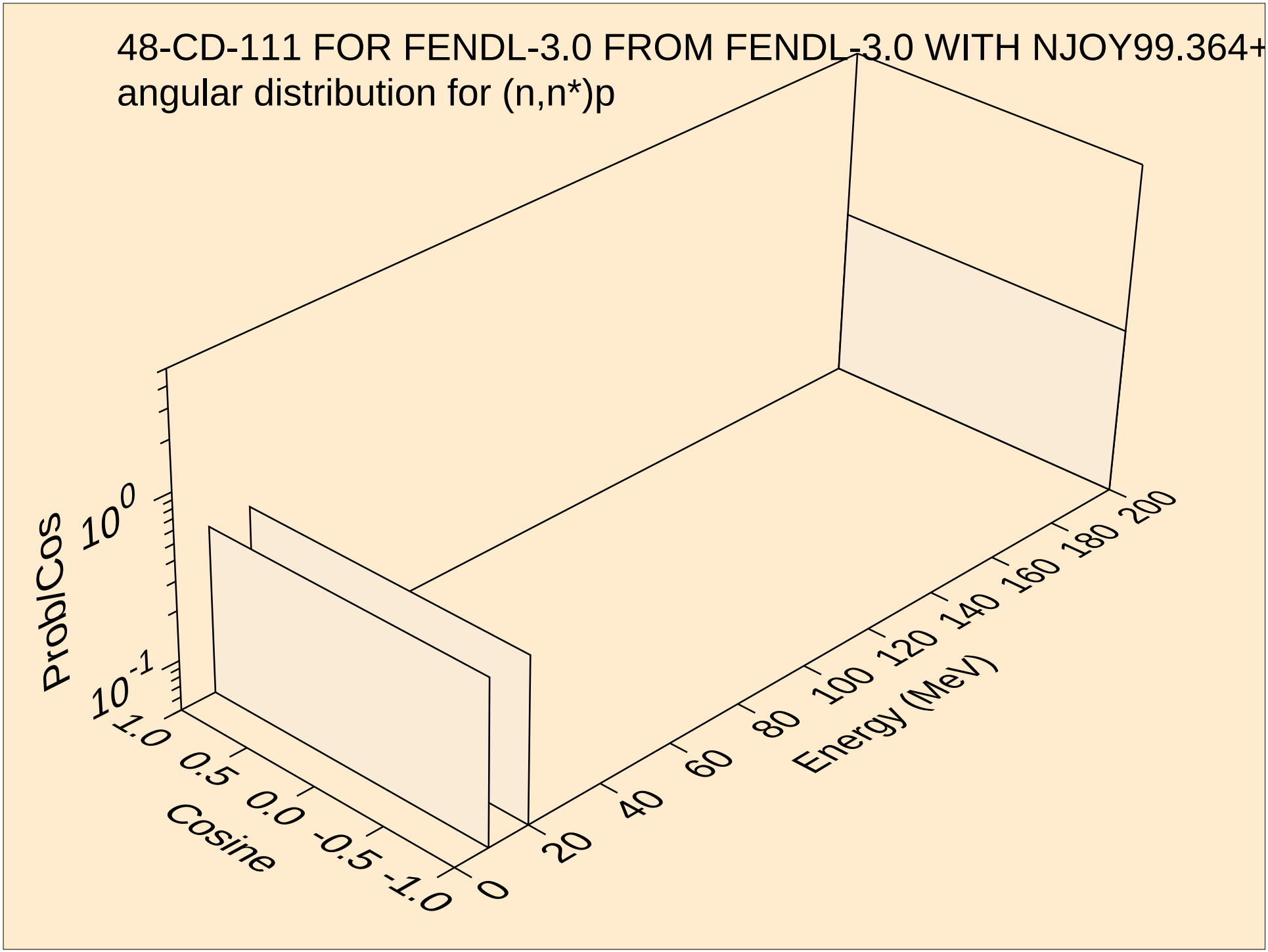

48-CD-111 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
angular distribution for elastic
Prob\Cos
10^{1}
10^{-1}
10^{-3}
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
Energy (MeV)

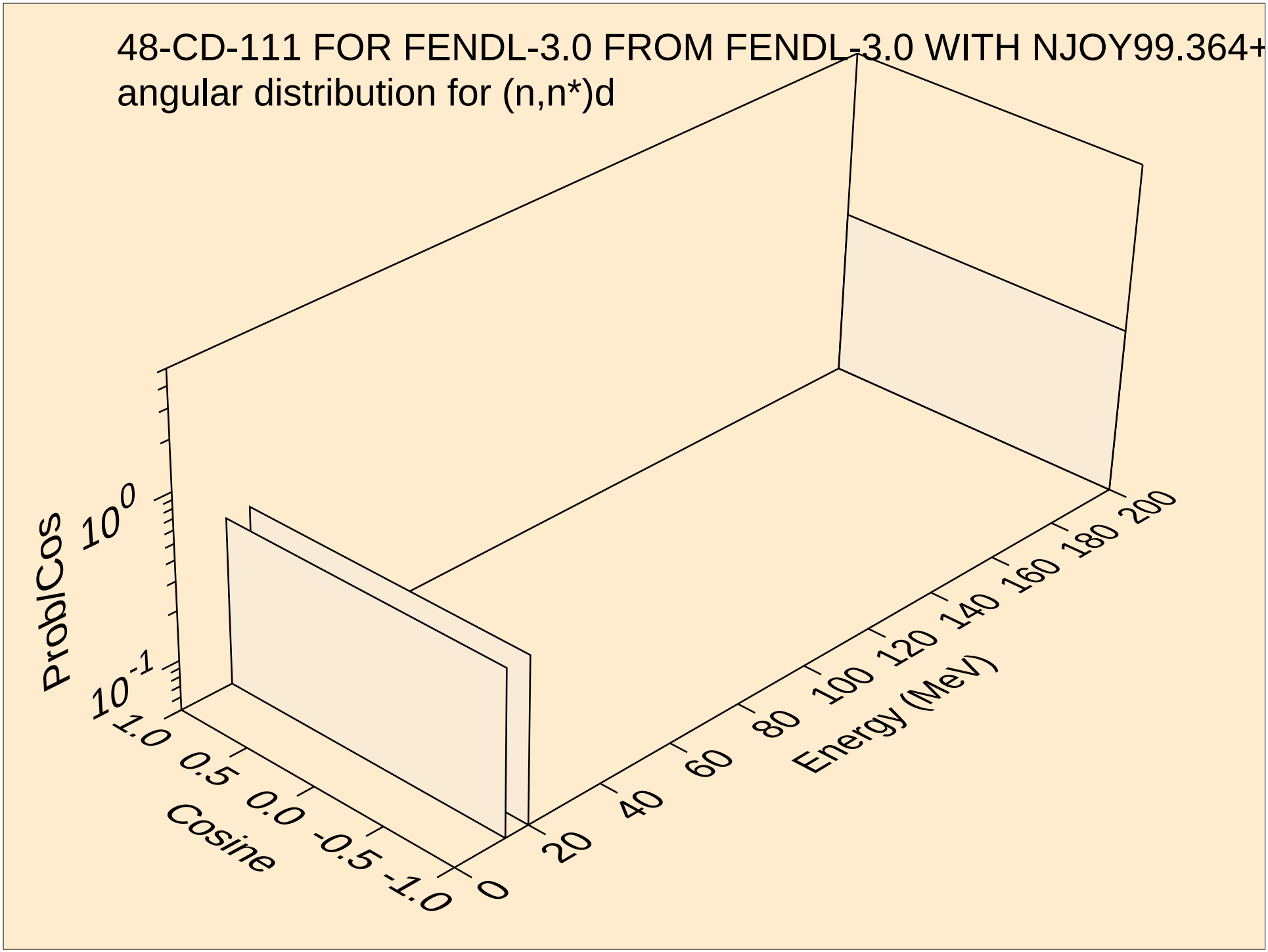

48-CD-111 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
angular distribution for elastic
ProblCos
10^{2}
10^{0}
10^{-2}
1.0
0.5
0.0
-0.5
-1.0
Cosine
20
40
60
80
100
120
140
160
180
200
Energy (MeV)

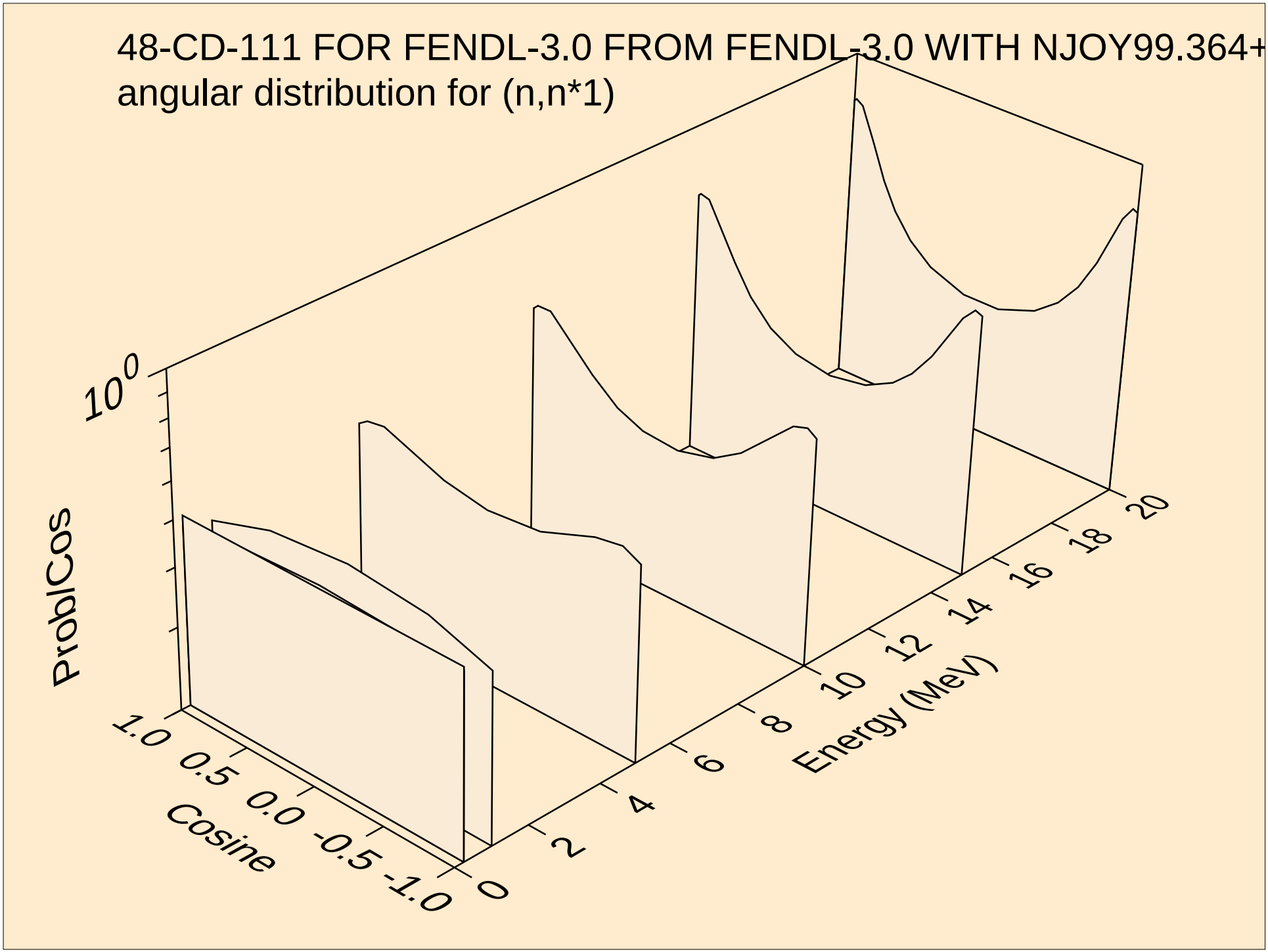

48-CD-111 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
angular distribution for (n,2n)
ProbICos
10^0
10^-1
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
20
40
60
80
100
120
140
160
180
200
Energy (MeV)

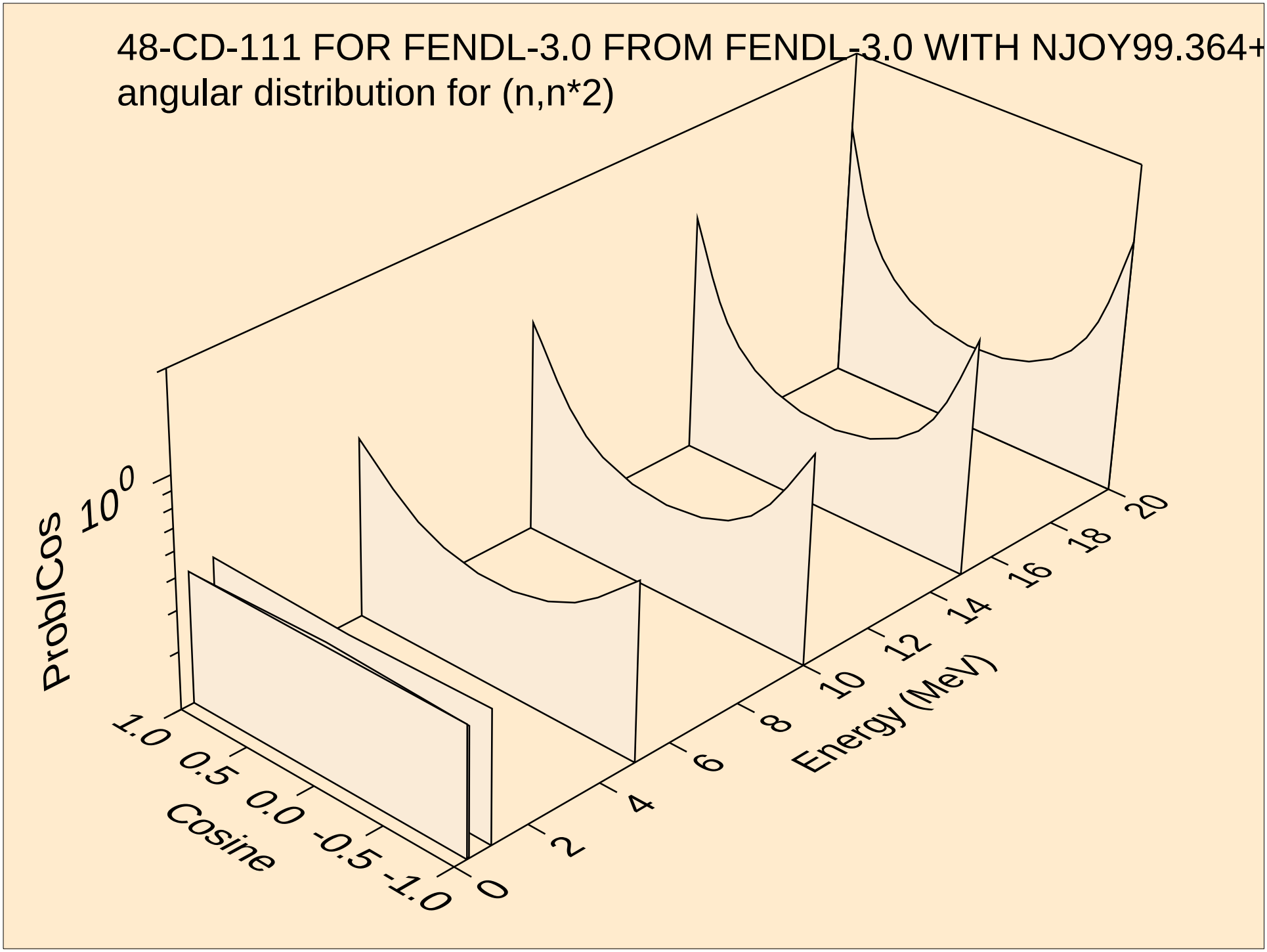

48-CD-111 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
angular distribution for (n,3n)
ProblCos
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
20
40
60
80
100
120
140
160
180
200
Energy (MeV)

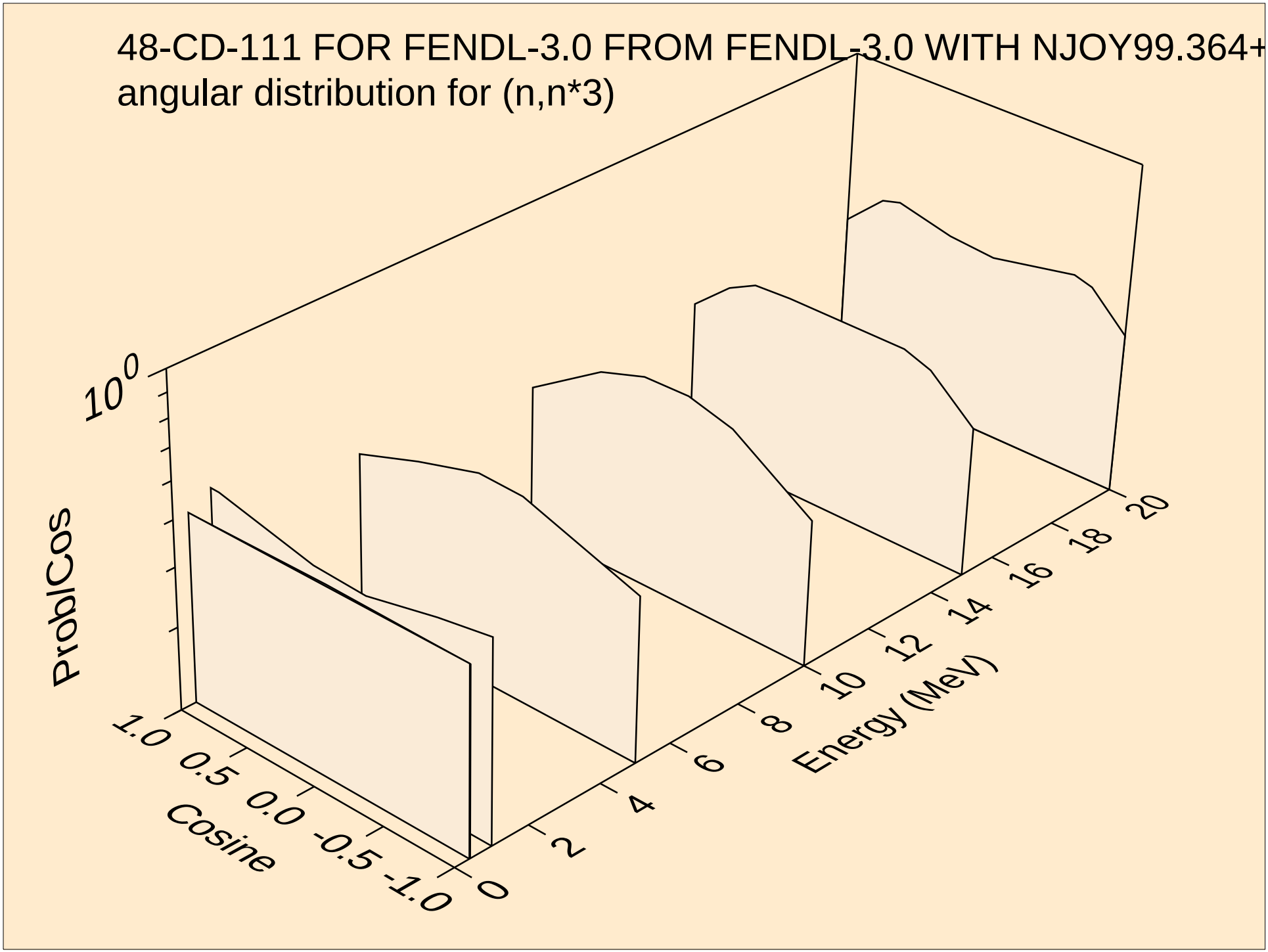

48-CD-111 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
angular distribution for (n,n*)a
ProbICos
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
20
40
60
80
100
120
140
160
180
200
Energy (MeV)

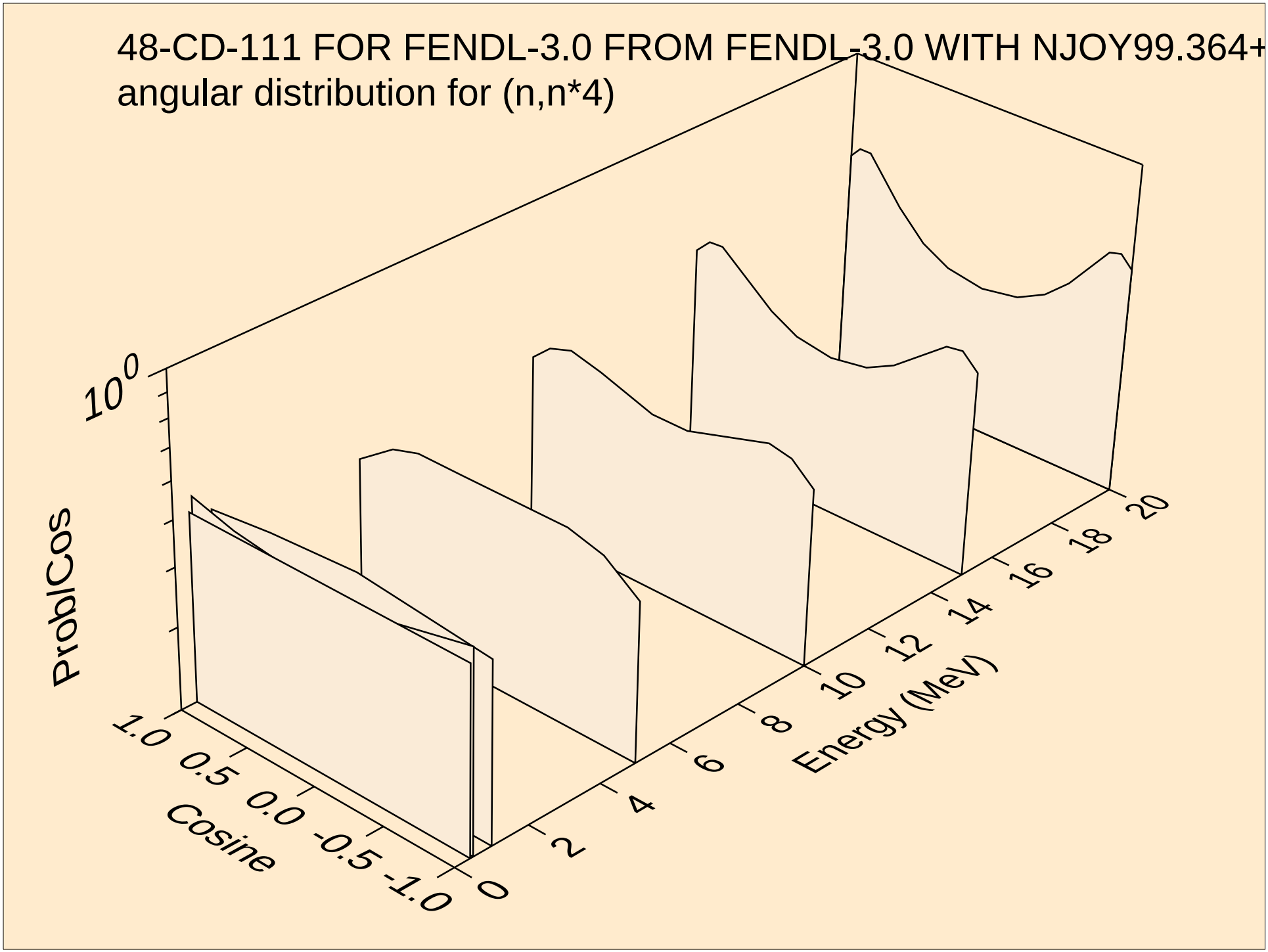

48-CD-111 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
angular distribution for (n,n*)p
ProbICos
10^0
10^-1
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
20
40
60
80
100
120
140
160
180
200
Energy (MeV)

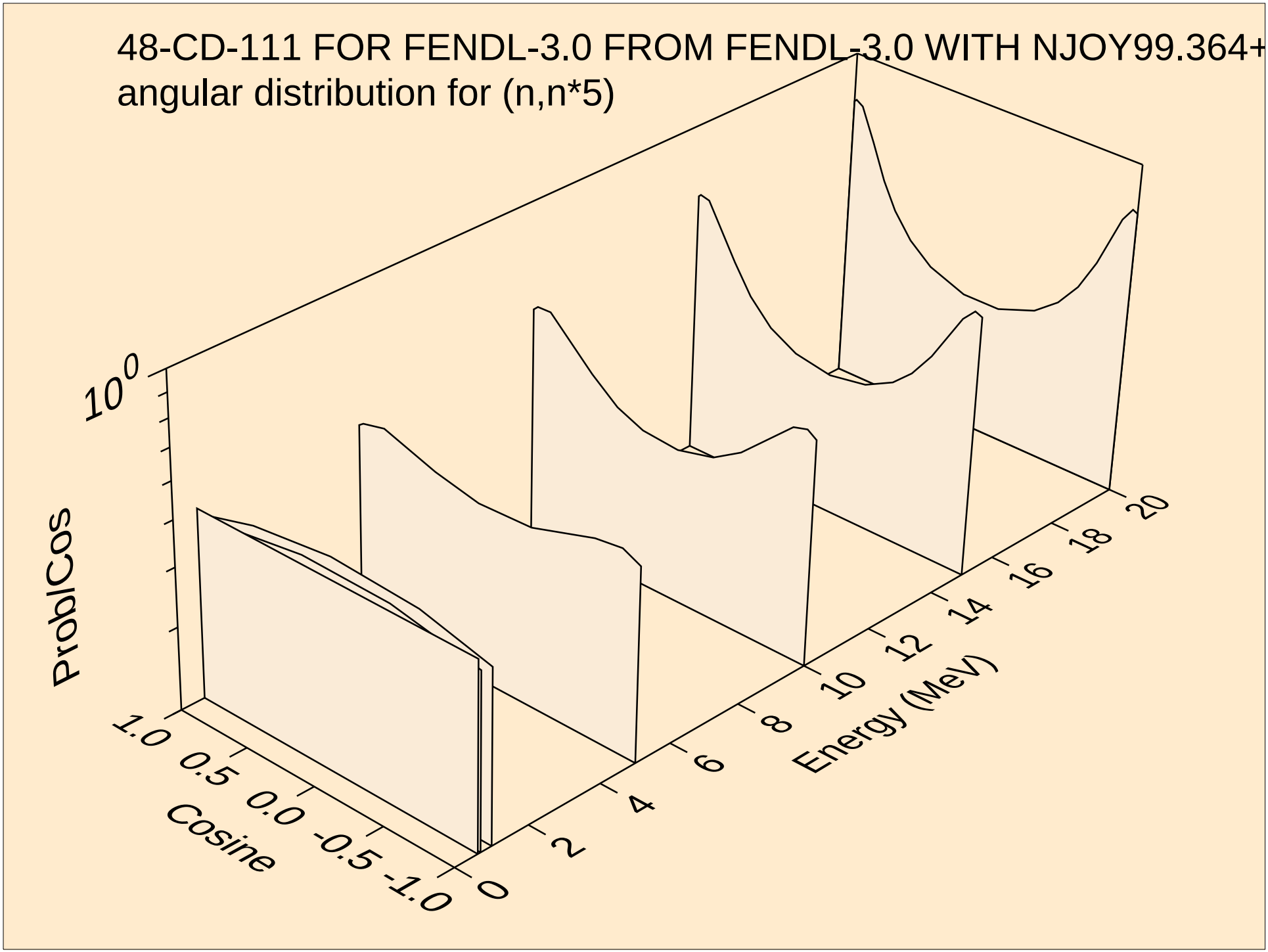

48-CD-111 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
angular distribution for (n,n*)d
ProbICos
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
20
40
60
80
100
120
140
160
180
200
Energy (MeV)

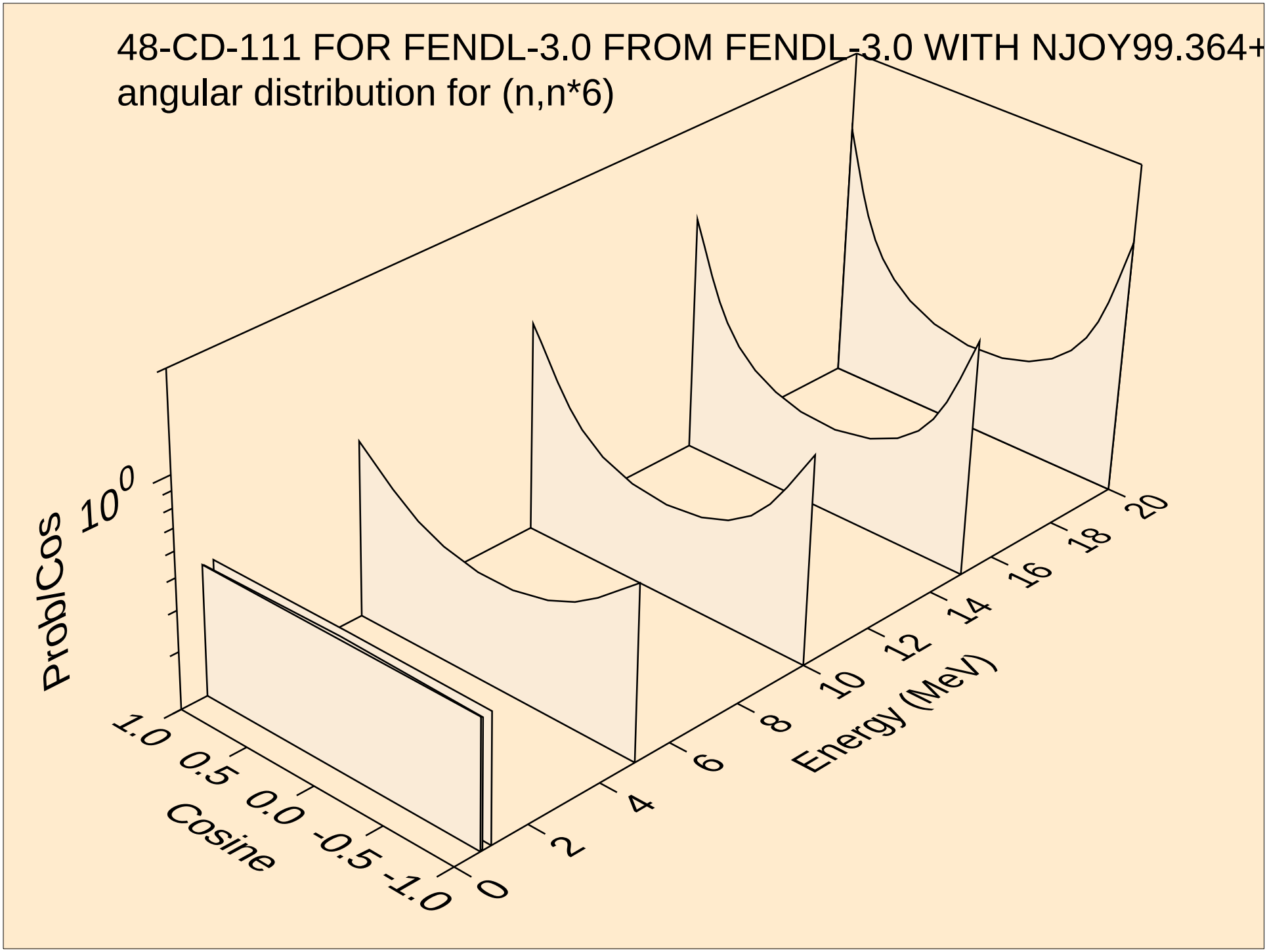

48-CD-111 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
angular distribution for (n,n*1)
10^0
ProbICos
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

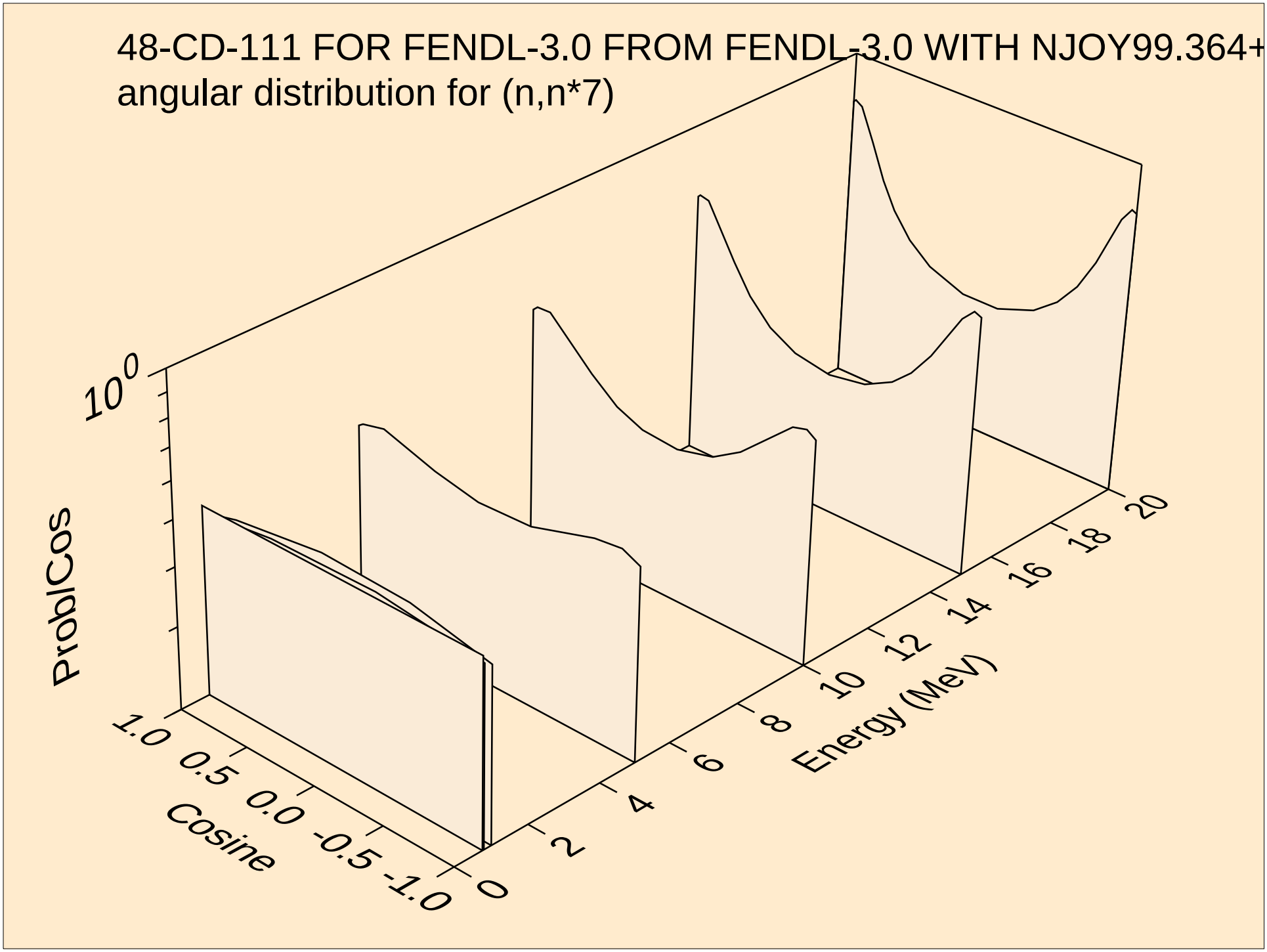

48-CD-111 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
angular distribution for (n,n*2)
ProbICos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

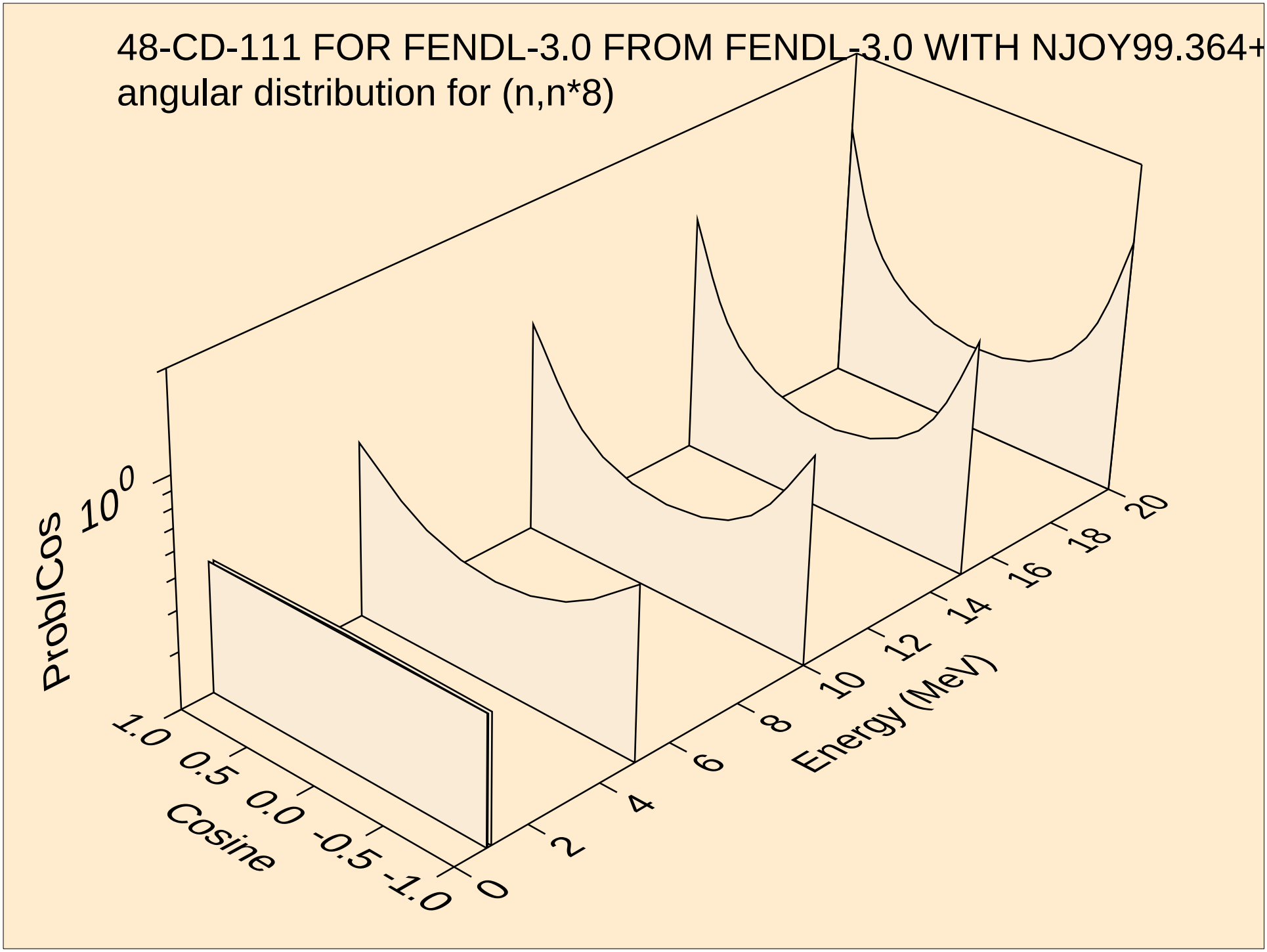

48-CD-111 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
angular distribution for (n,n*3)
10^0
ProbICos
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

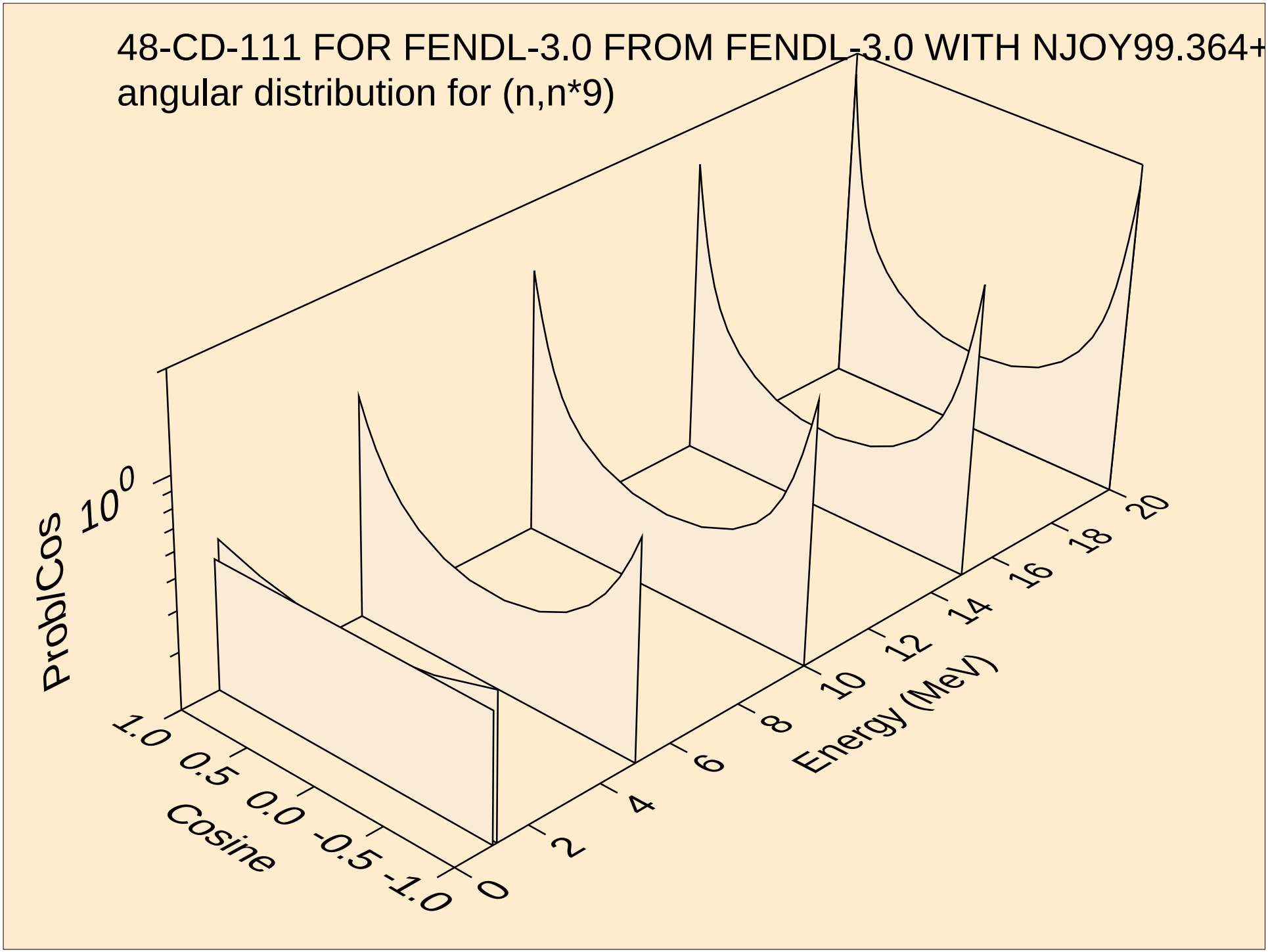

48-CD-111 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
angular distribution for (n,n*4)
10^0
Prob\Cos
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

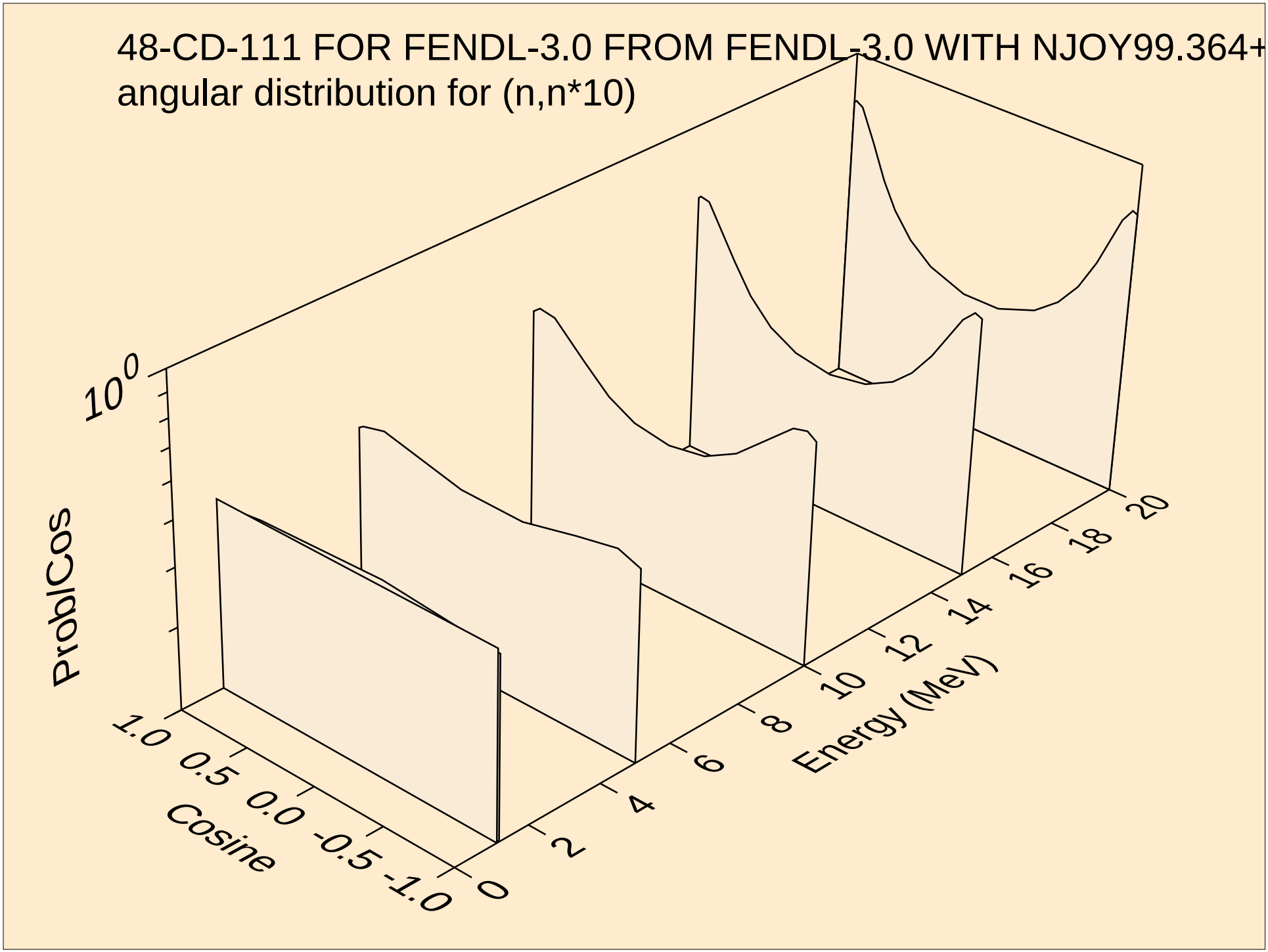

48-CD-111 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
angular distribution for (n,n*5)
10^0
Prob\Cos
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

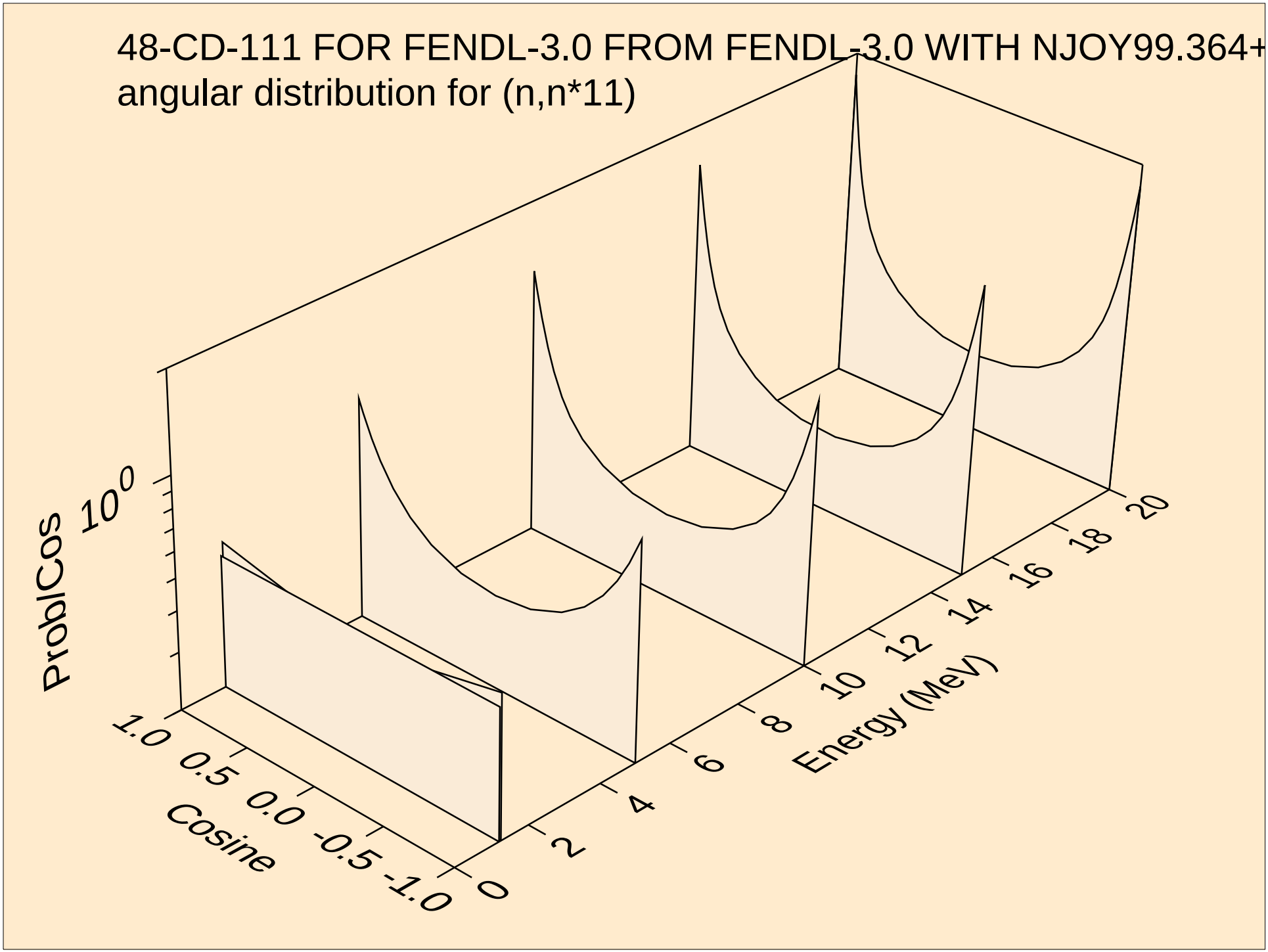

48-CD-111 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
angular distribution for (n,n*6)
ProbICos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

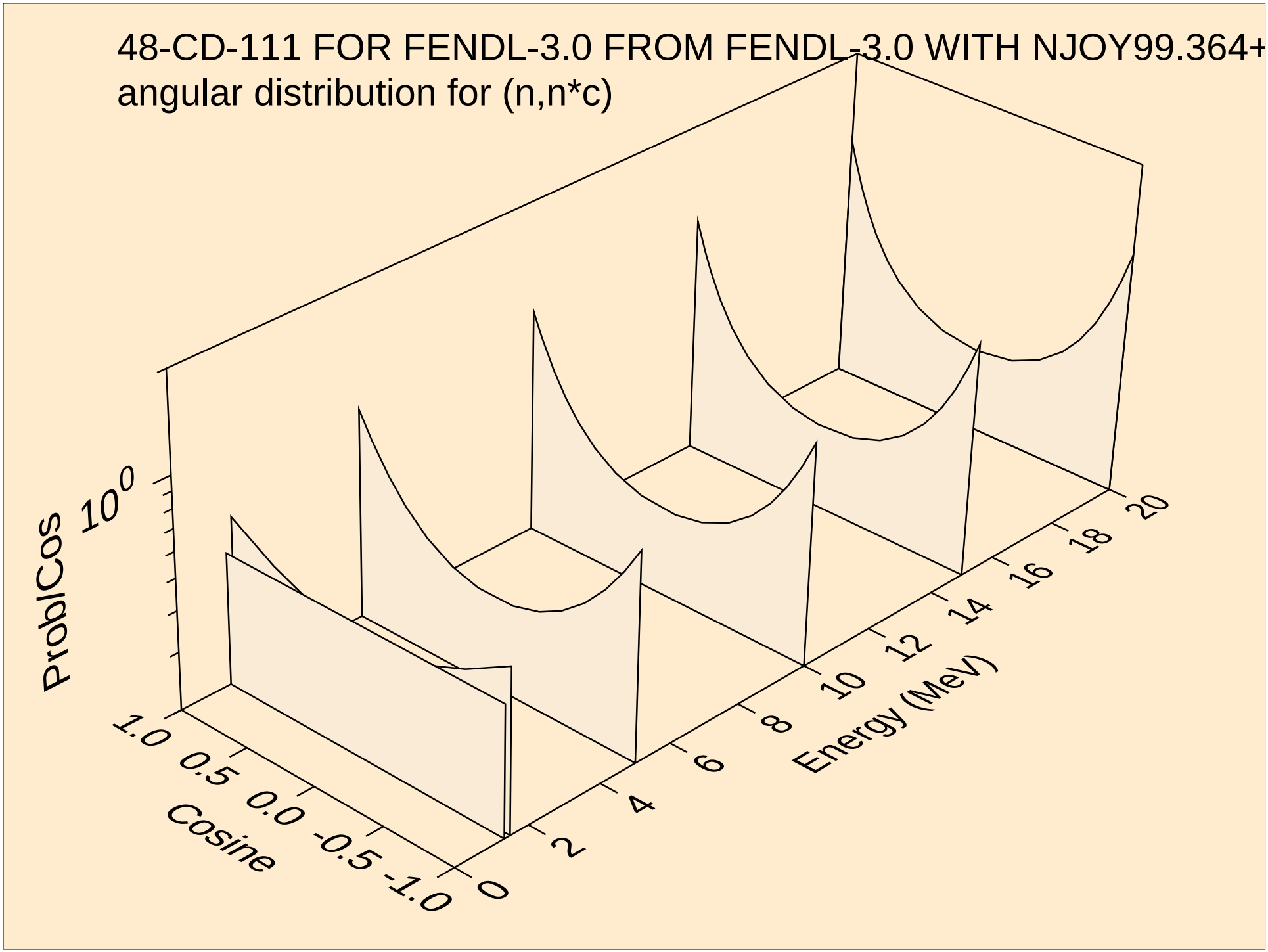

48-CD-111 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
angular distribution for (n,n*7)
10^0
ProbICos
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

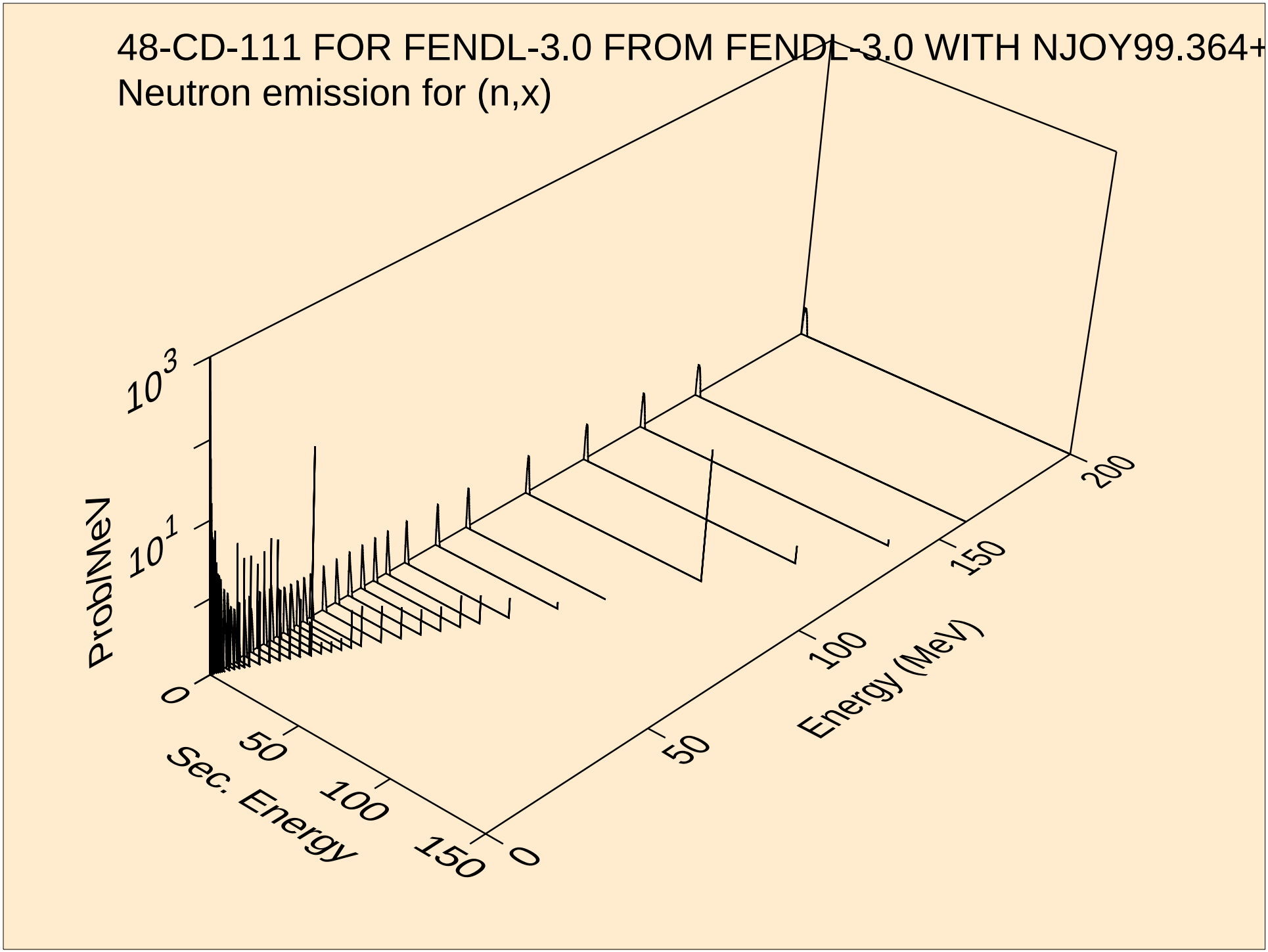

48-CD-111 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
angular distribution for (n,n*8)
ProbICos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

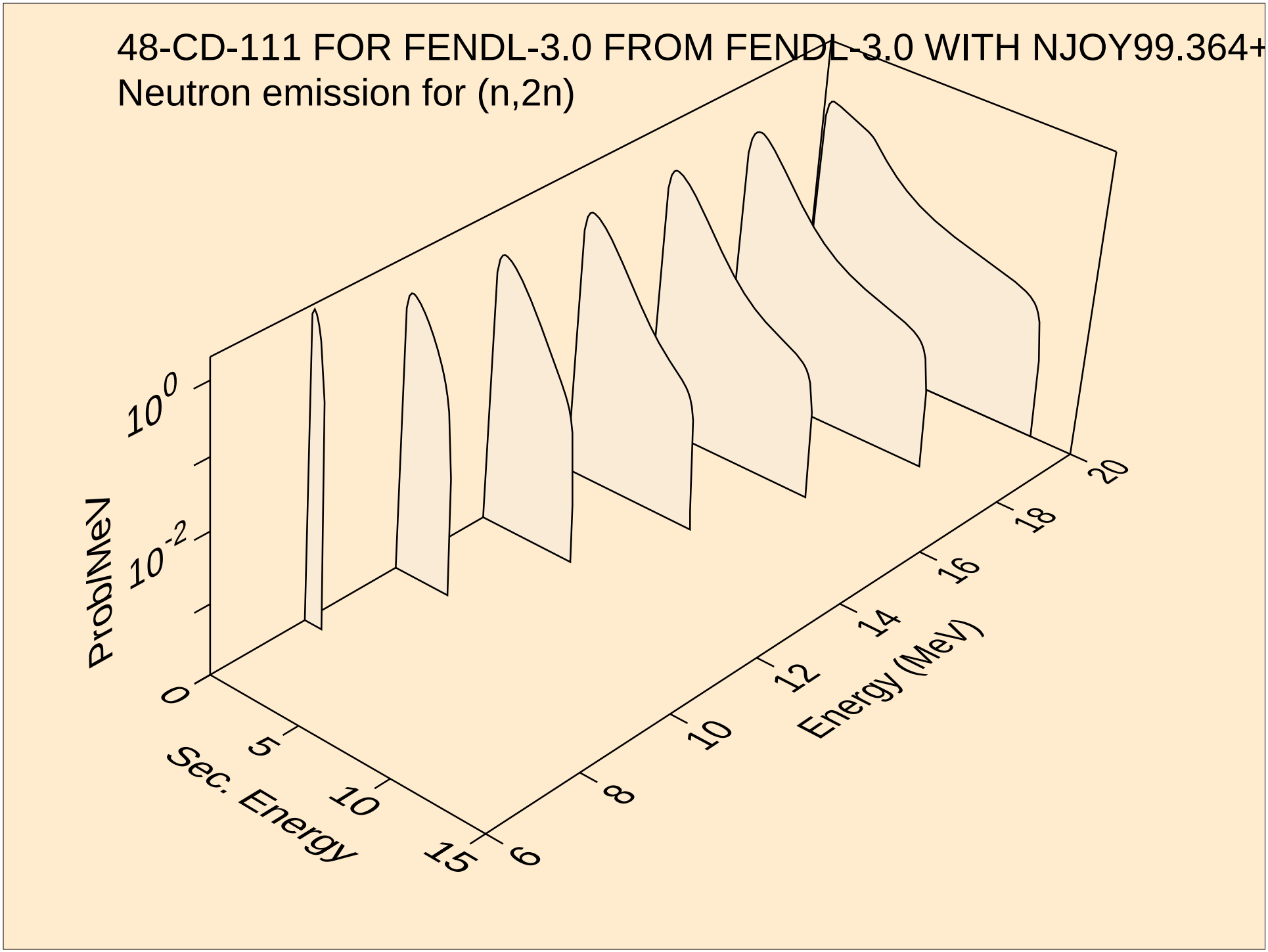

48-CD-111 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
angular distribution for (n,n*9)
ProbICos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

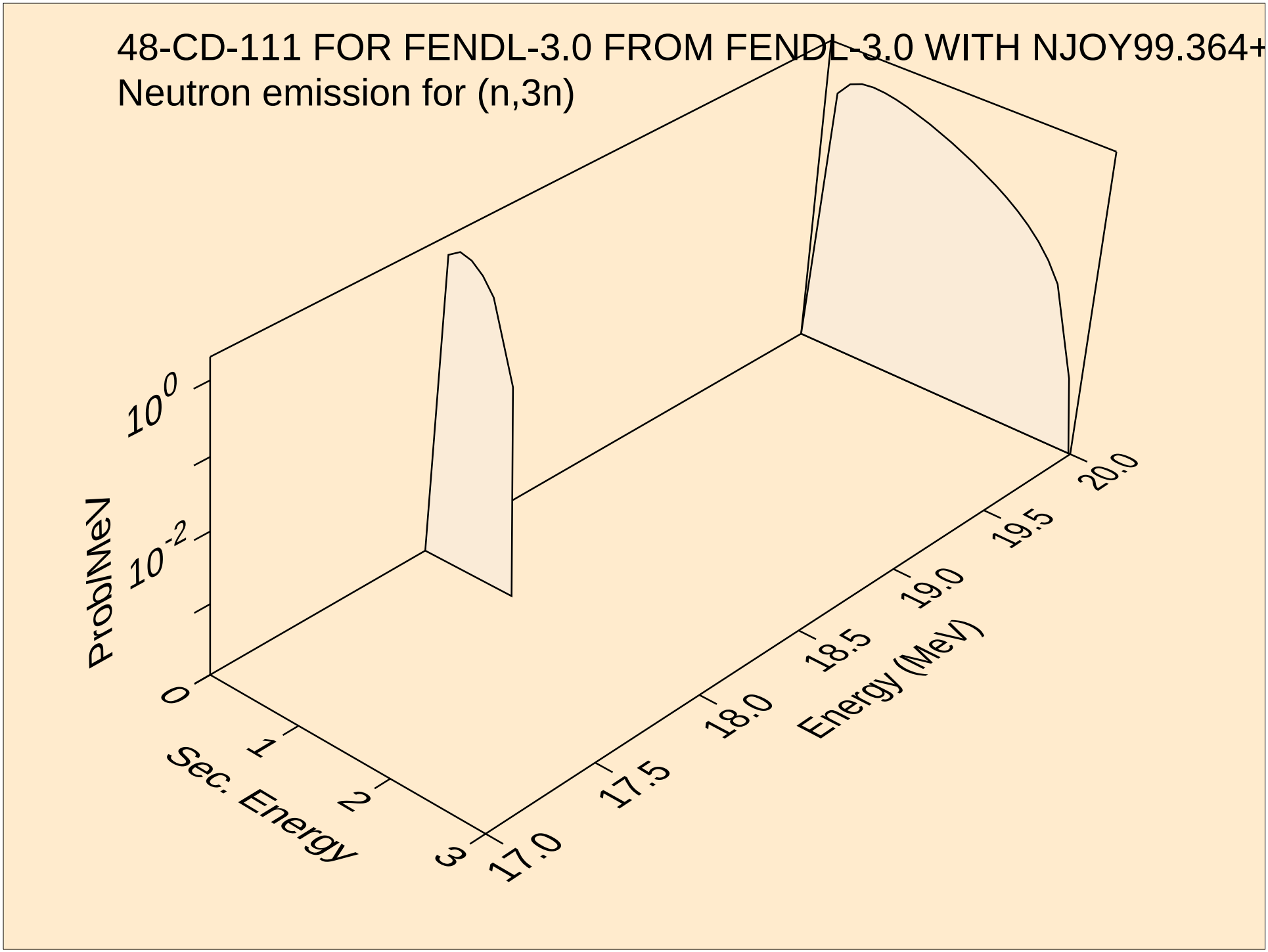

48-CD-111 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
angular distribution for (n,n*10)
10^0
ProbICos
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

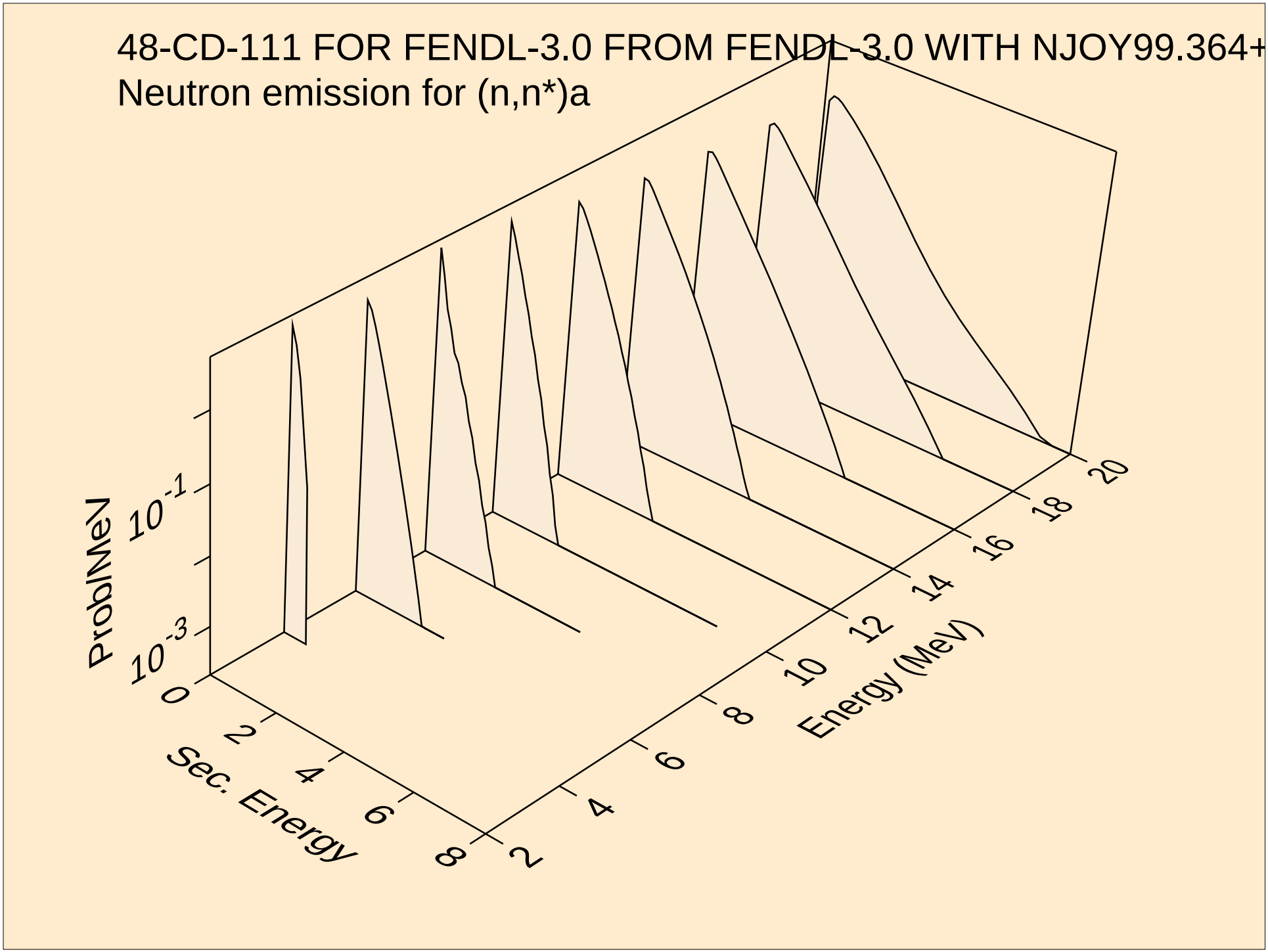

48-CD-111 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
angular distribution for (n,n*11)
ProbICos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

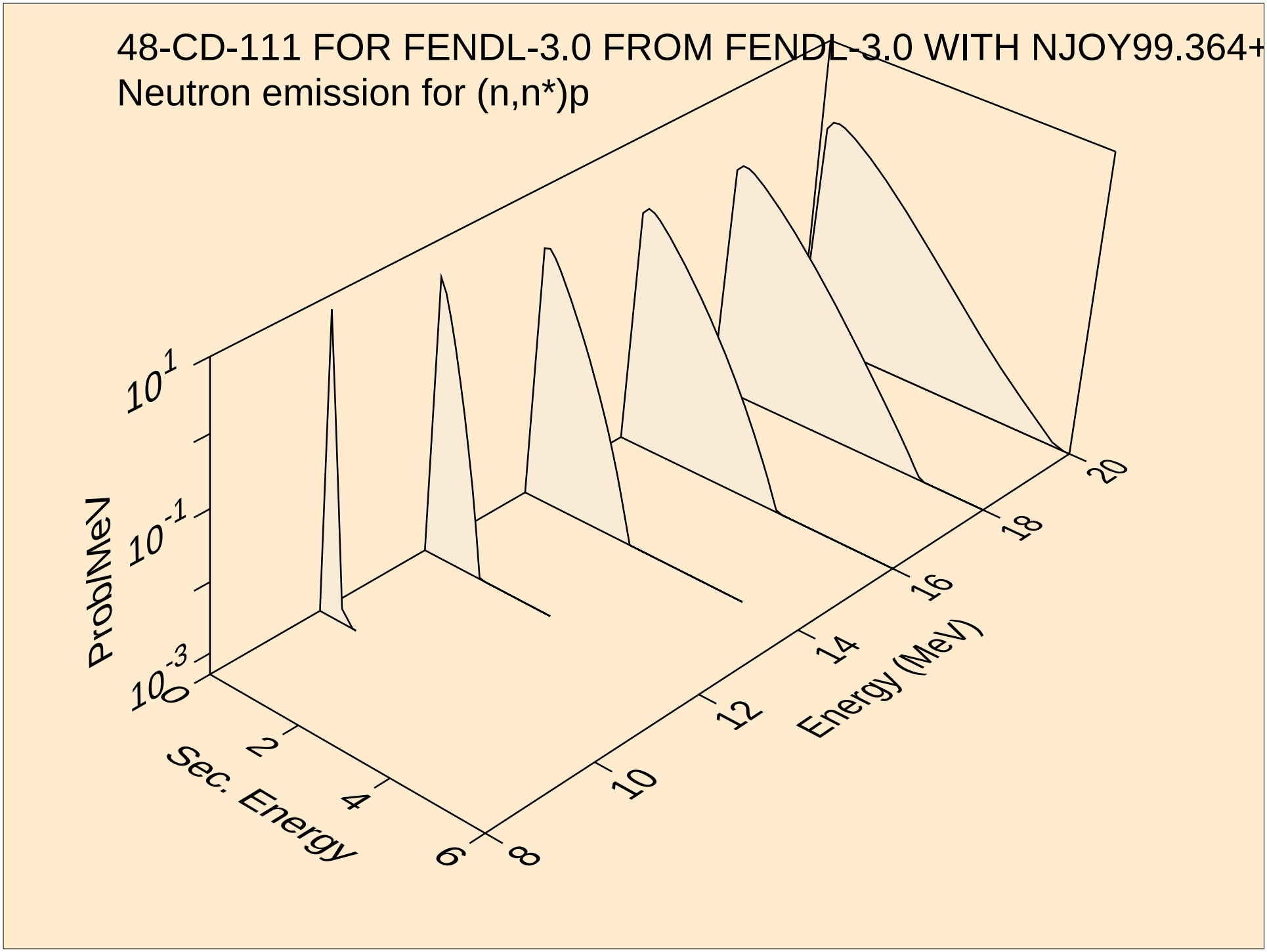

48-CD-111 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
angular distribution for (n,n*c)
ProbICos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

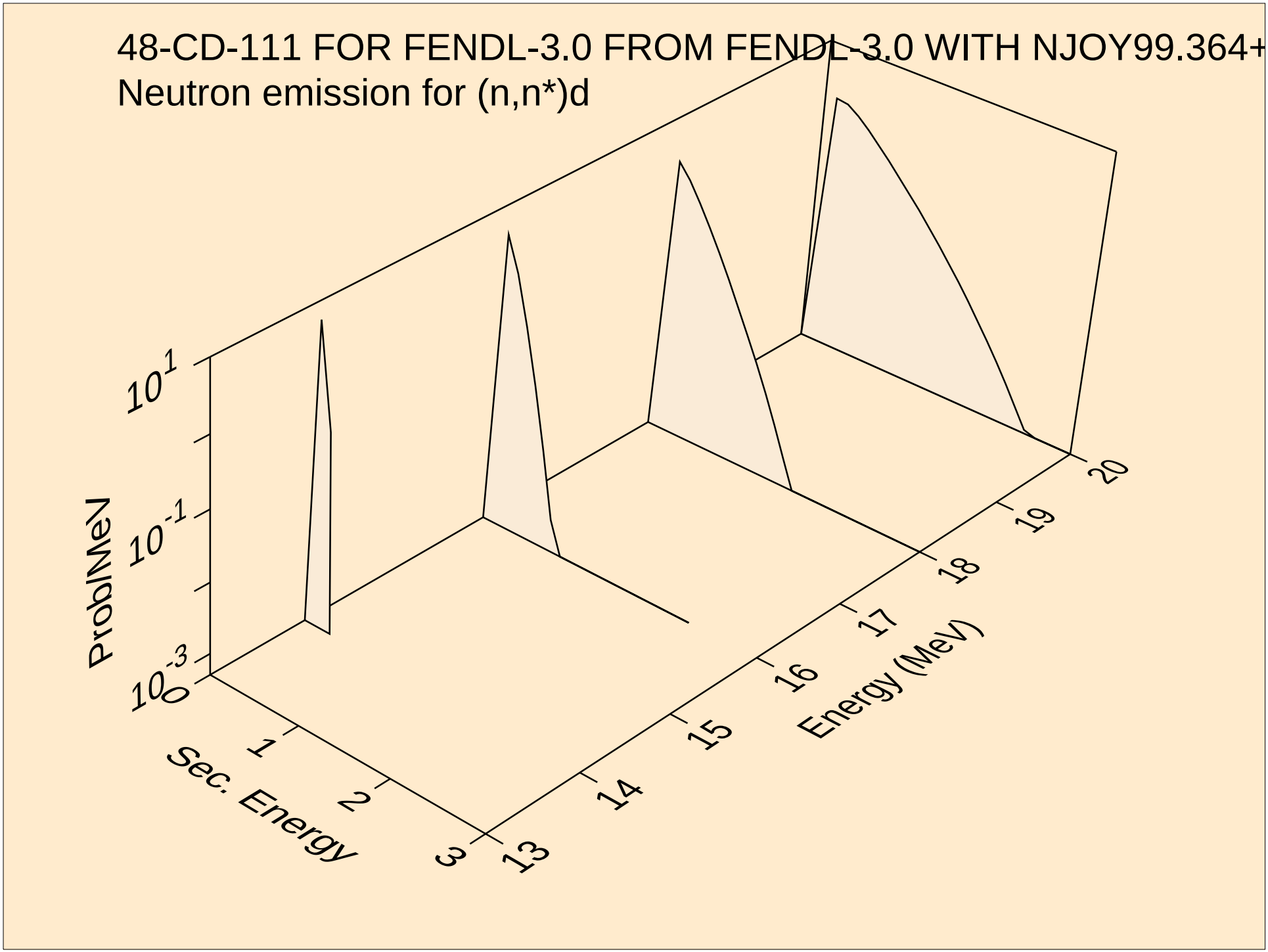

48-CD-111 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Neutron emission for (n,x)
Prob/MeV
10^3
10^1
0
50
100
150
Sec. Energy
0
50
100
150
200
Energy (MeV)

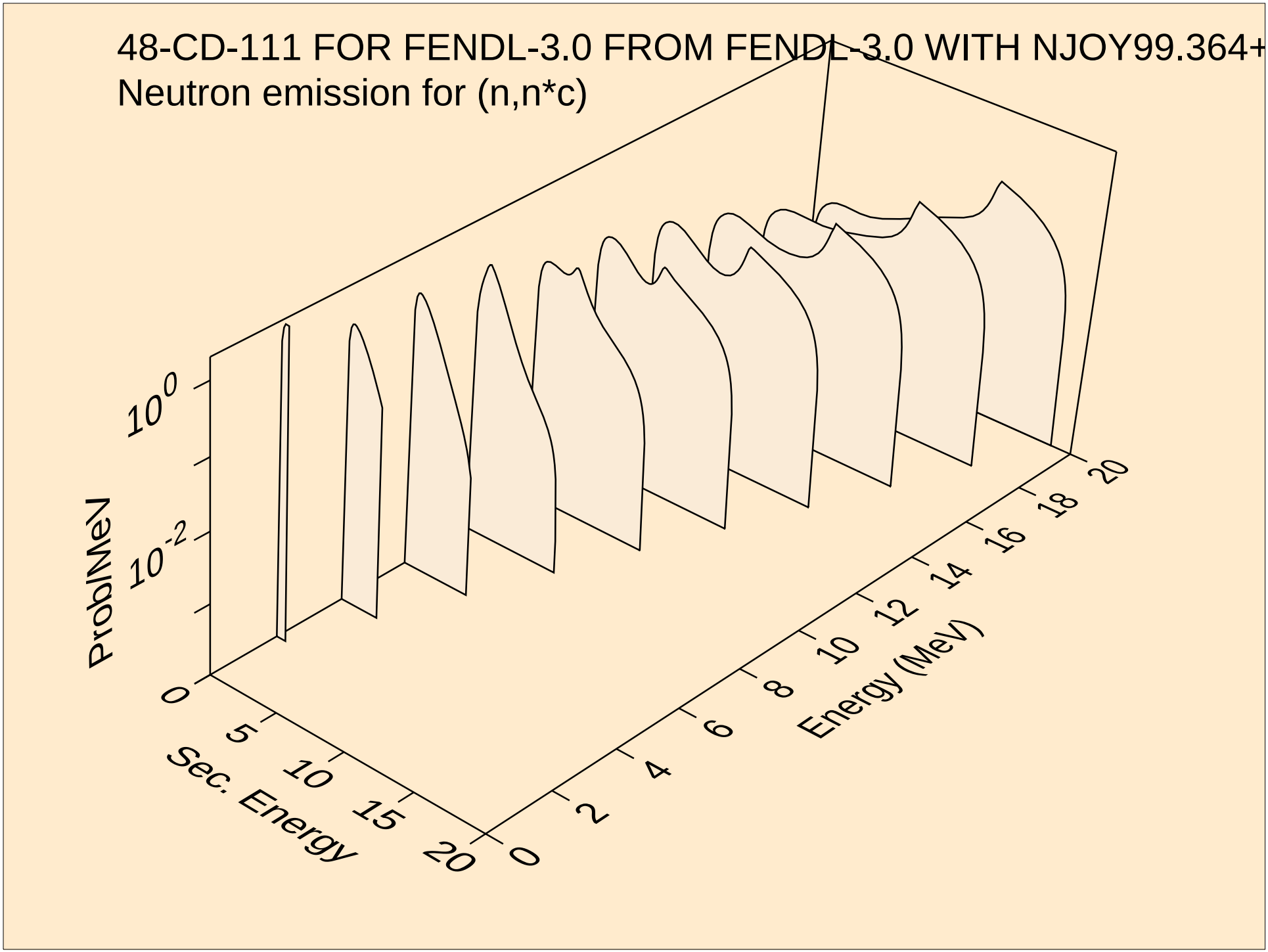

48-CD-111 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Neutron emission for (n,2n)
Prob/MeV
10^{0}
10^{-2}
0
5
10
15
Sec. Energy
6
8
10
12
14
16
18
20
Energy (MeV)

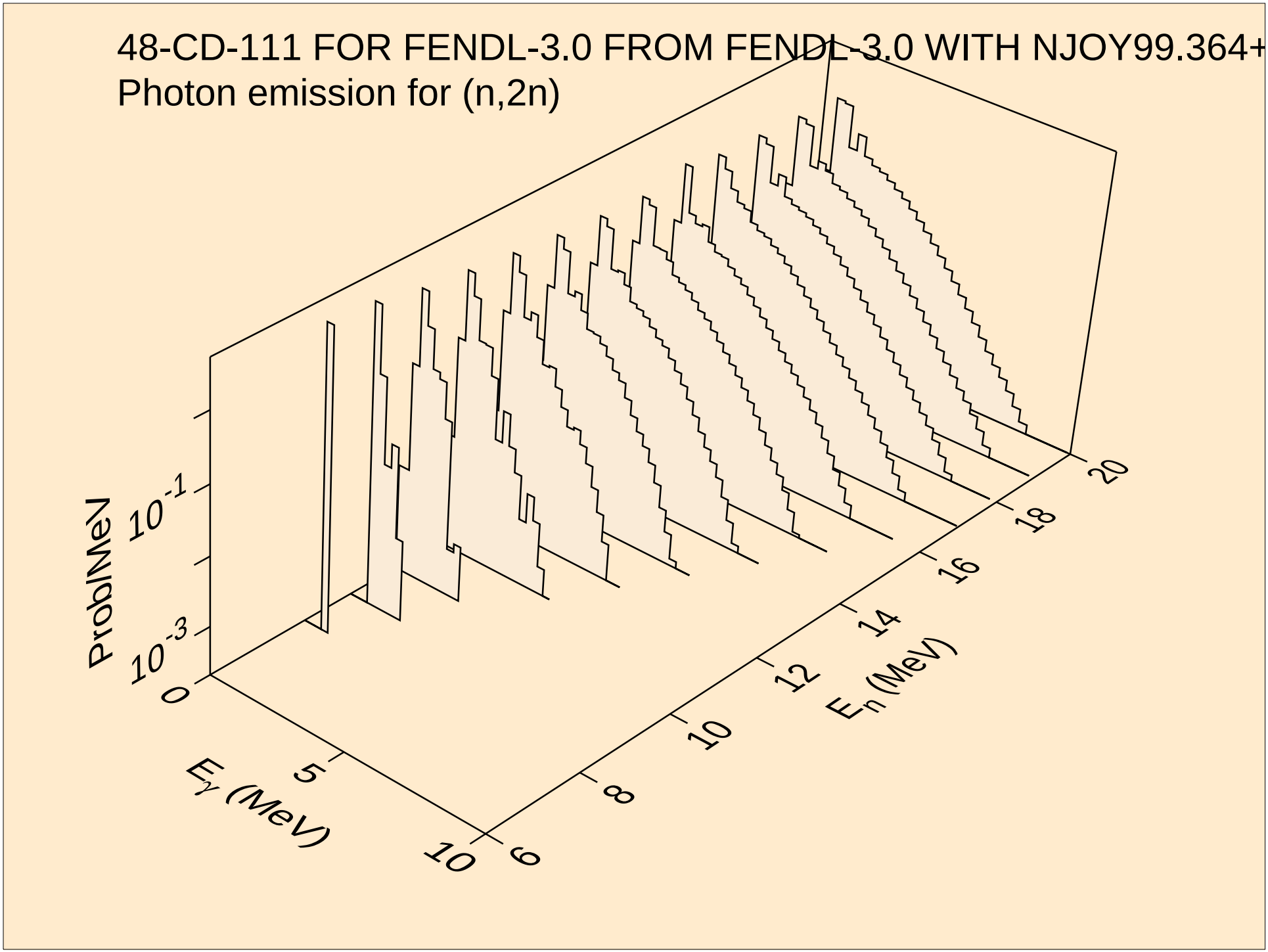

48-CD-111 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Neutron emission for (n,3n)
Prob/MeV
10^0
10^-2
0
Sec. Energy
1
2
3
17.0
17.5
18.0
18.5
19.0
19.5
20.0
Energy (MeV)

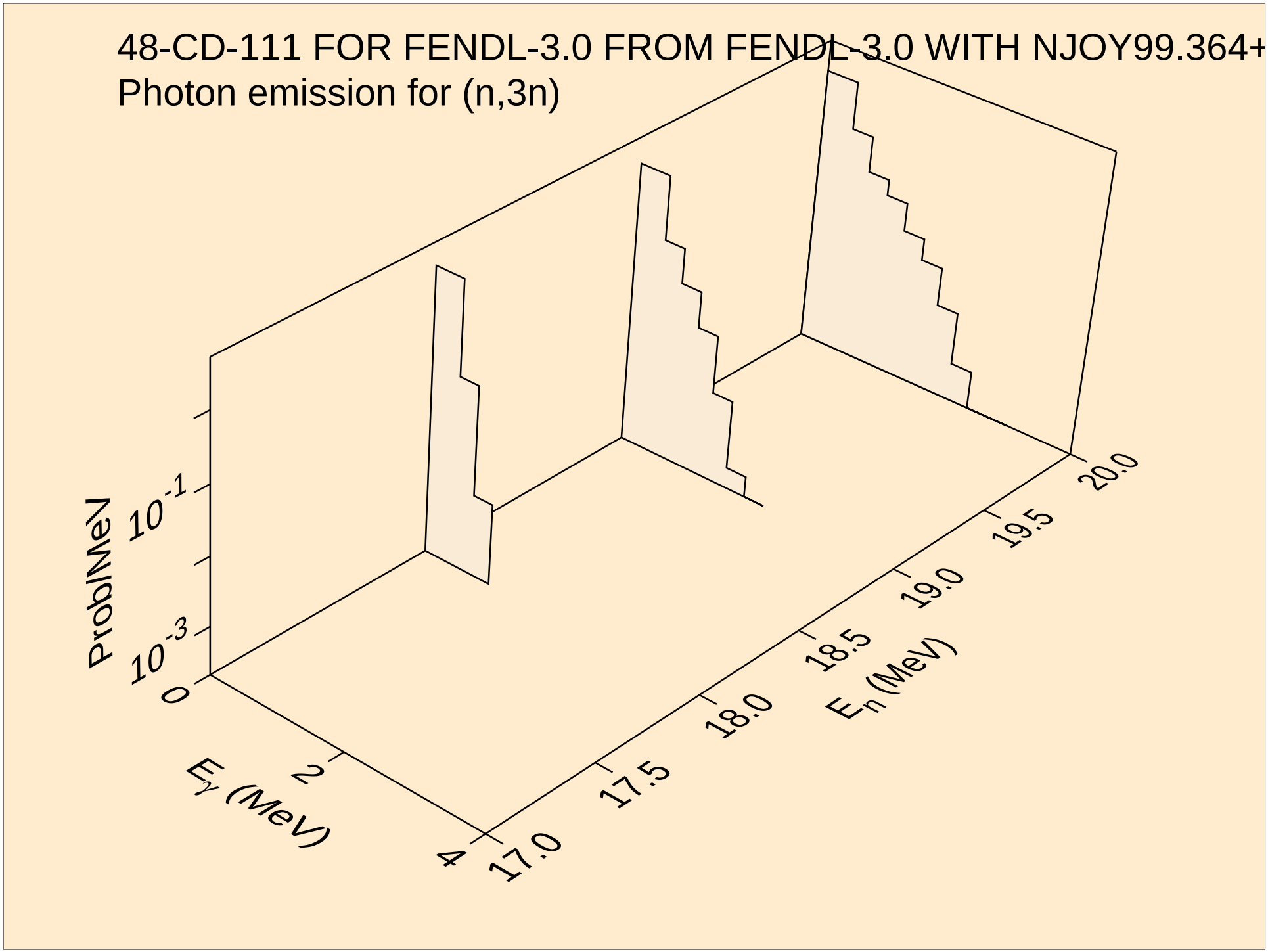

48-CD-111 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Neutron emission for (n,n*)a
Prob/MeV
10-1
10-3
0
2
4
6
8
Sec. Energy
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

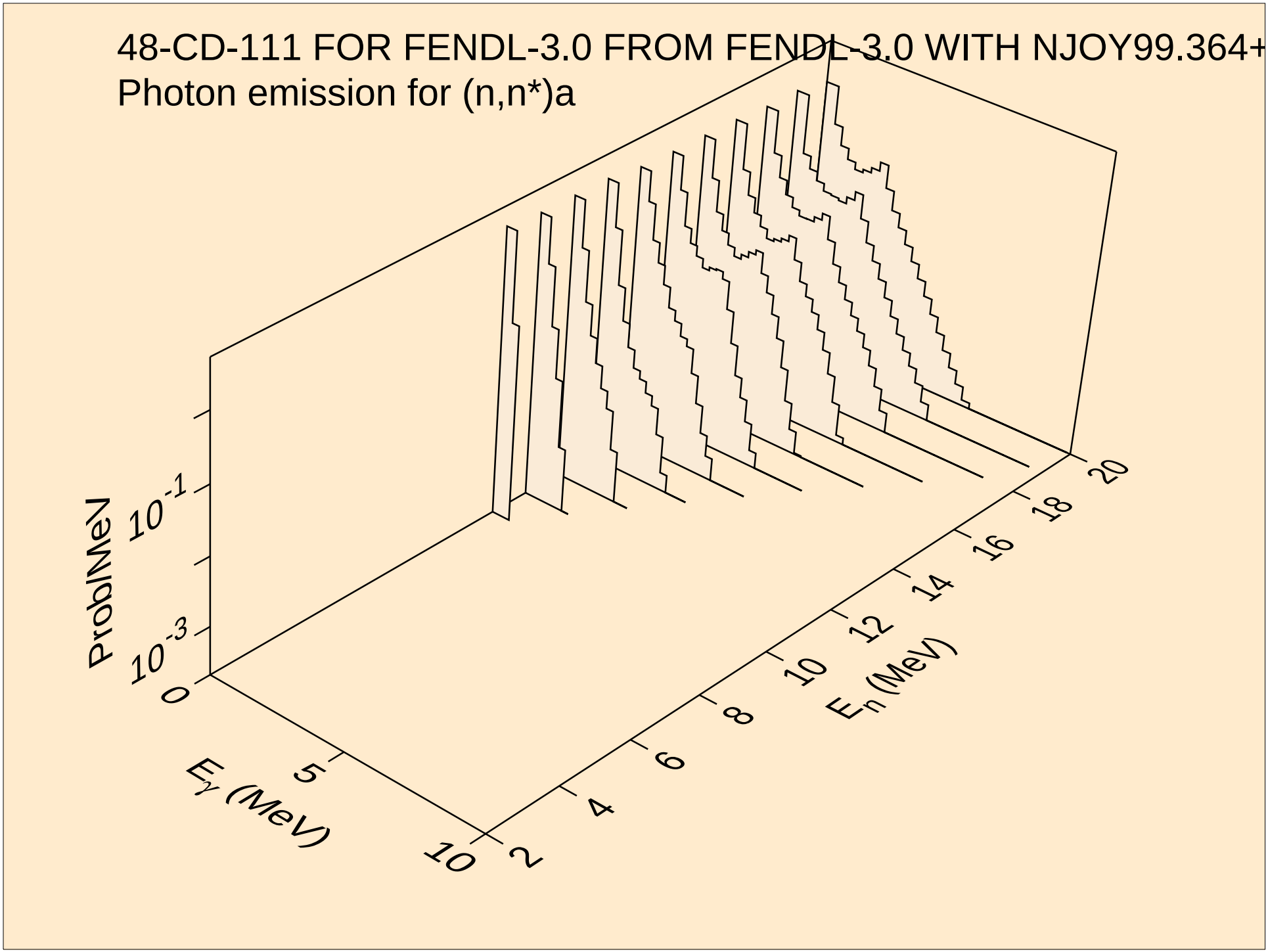

48-CD-111 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Neutron emission for (n,n*)p
Prob/MeV
10^{1}
10^{-1}
10^{-3}
0
2
4
6
8
Sec. Energy
10
12
14
16
18
20
Energy (MeV)

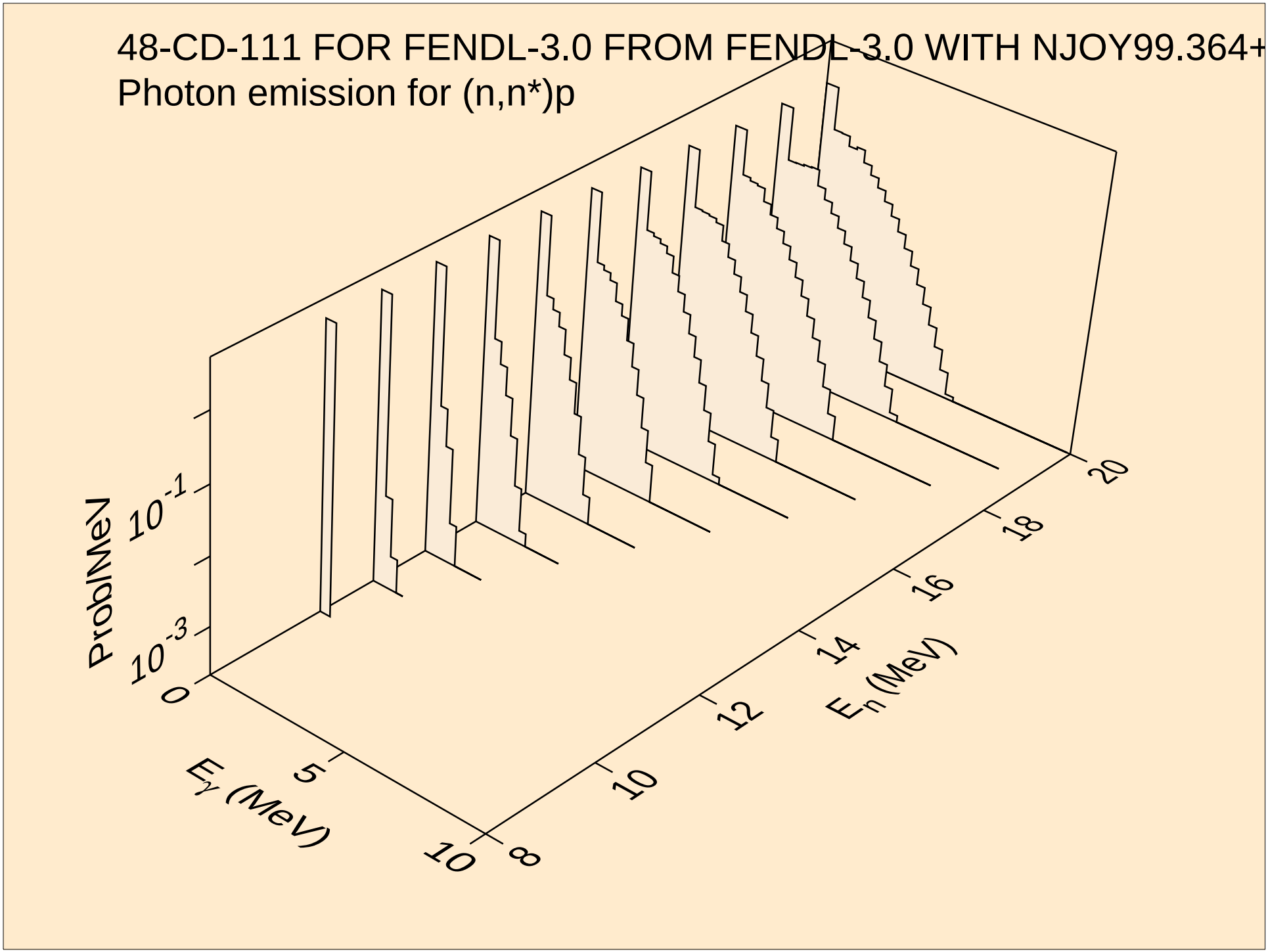

48-CD-111 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Neutron emission for (n,n*)d
Prob/MeV
10^1
10^-1
10^-3
0
Sec. Energy
1
2
3
Energy (MeV)
13
14
15
16
17
18
19
20

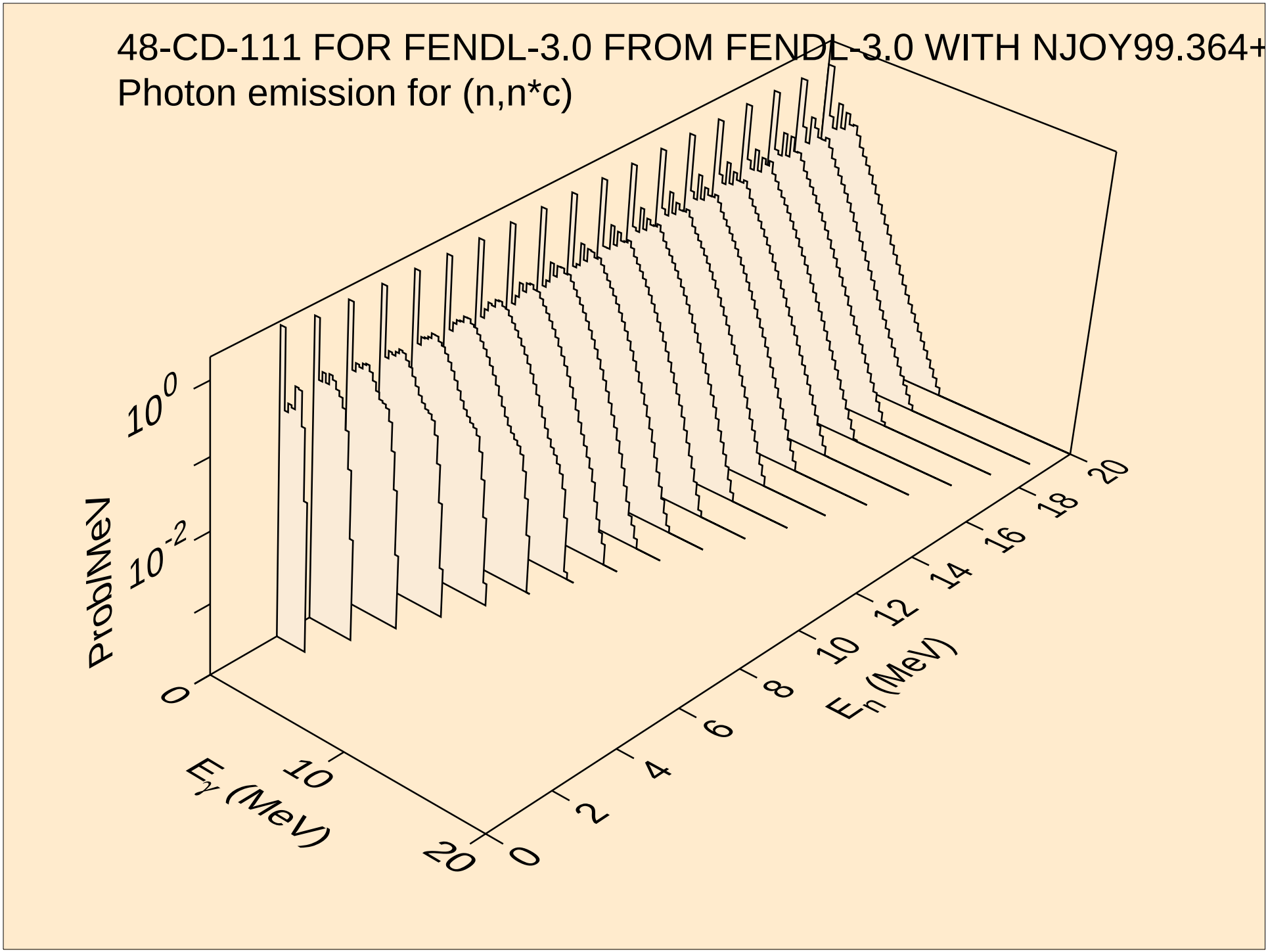

48-CD-111 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Neutron emission for (n,n*c)
Prob/MeV
10^{0}
10^{-2}
0
5
10
15
20
Sec. Energy
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

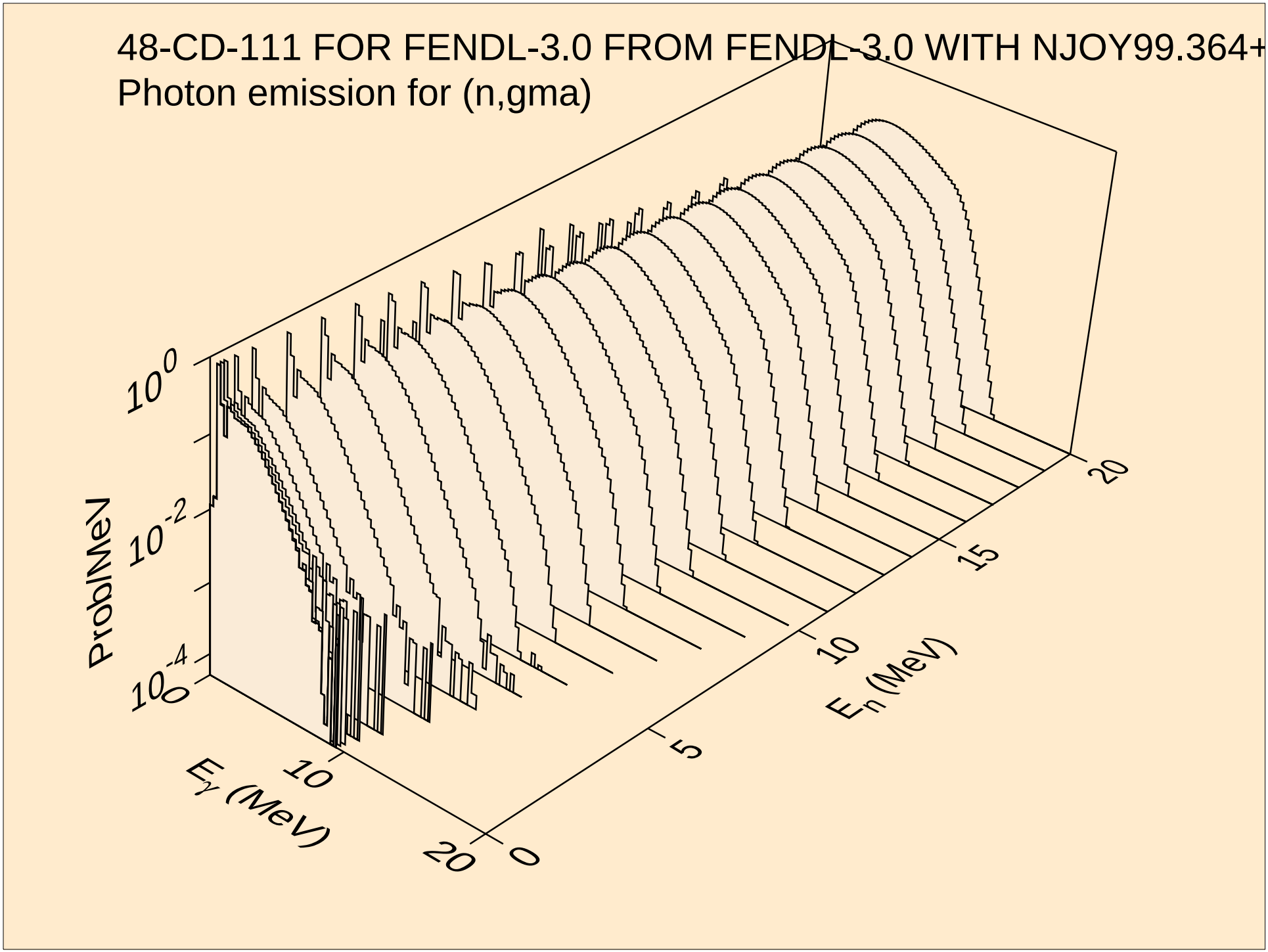

48-CD-111 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Photon emission for (n,2n)
Prob/MeV
10-1
10-3
0
5
10
Eγ (MeV)
6
8
10
12
14
16
18
20
En (MeV)

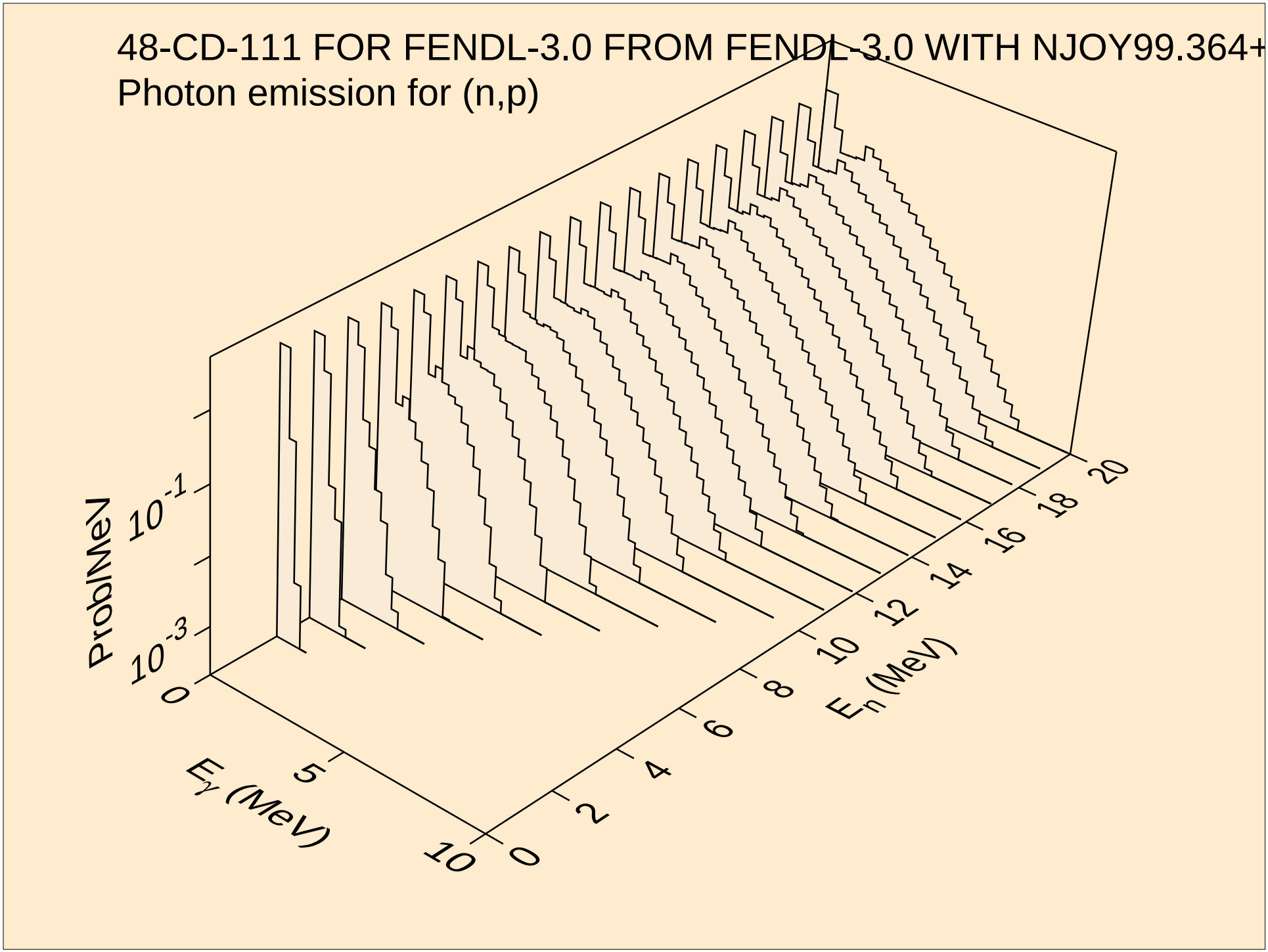

48-CD-111 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Photon emission for (n,3n)
Prob/MeV
10-1
10-3
0
2
4
Eγ (MeV)
17.0
17.5
18.0
18.5
19.0
19.5
20.0
En (MeV)

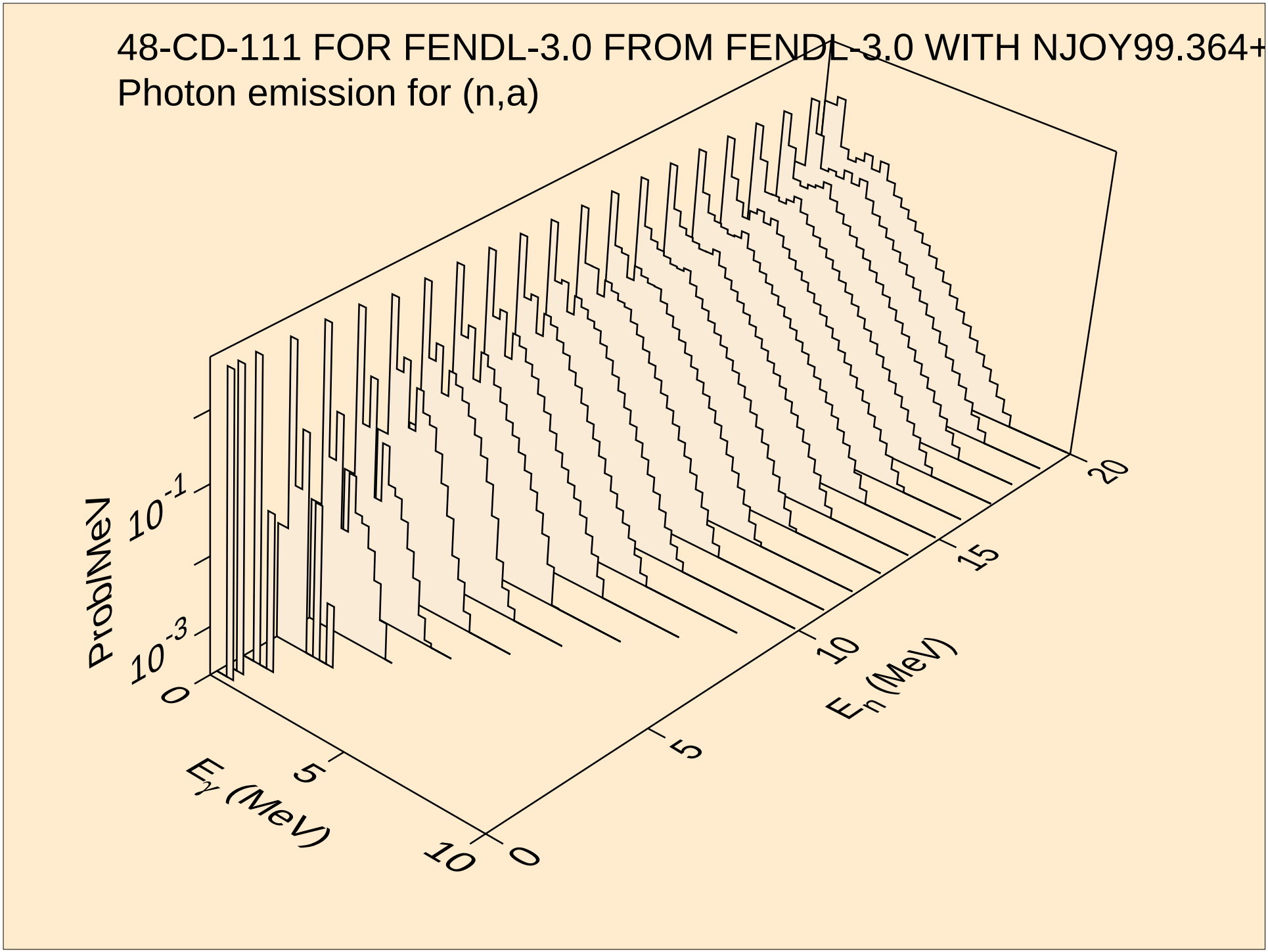

48-CD-111 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Photon emission for (n,n*)a
Prob/MeV
10-1
10-3
0
Eγ (MeV)
5
10
2
4
6
8
10
12
14
16
18
20
En (MeV)

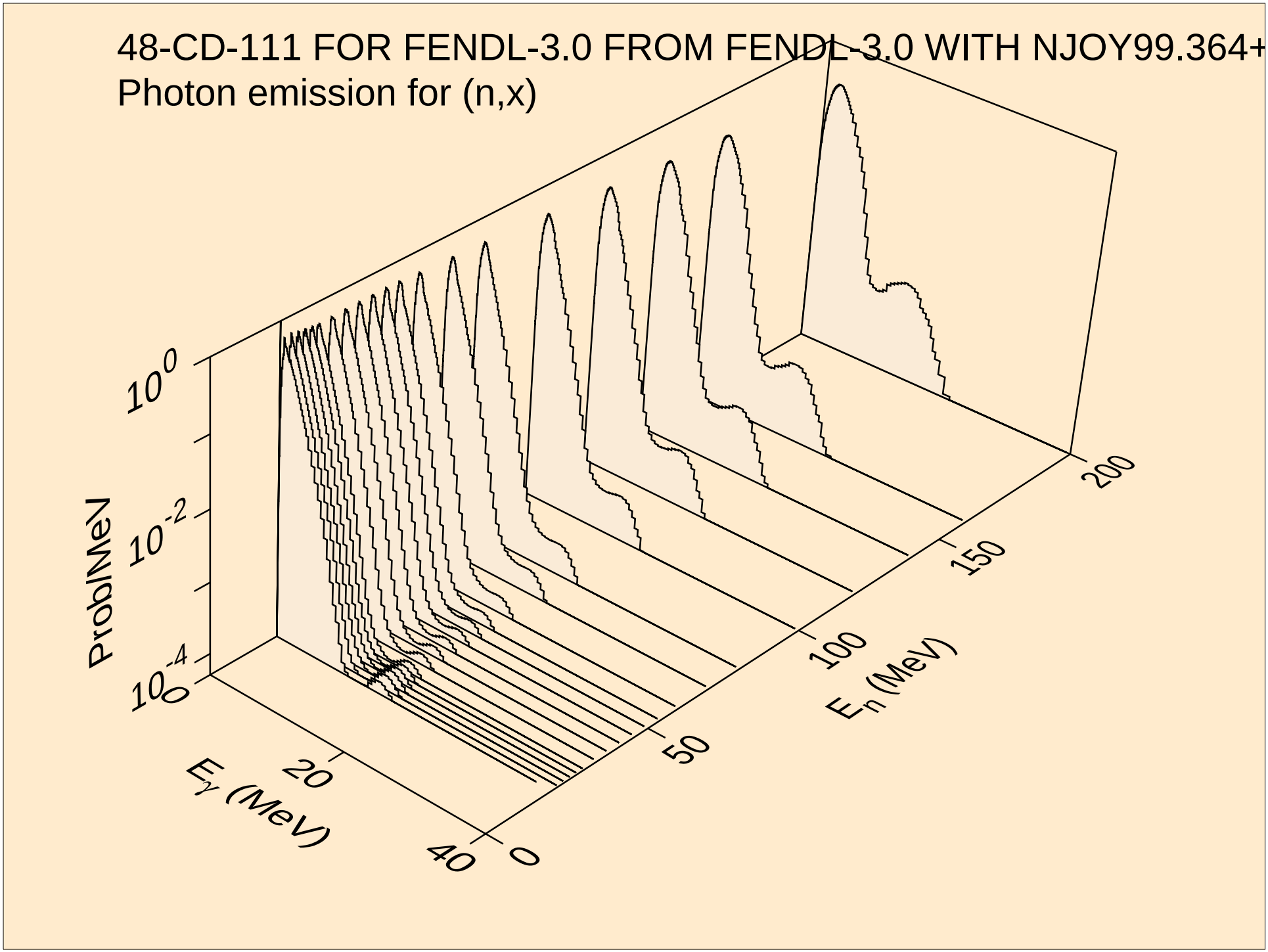

48-CD-111 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Photon emission for (n,n*)p
Prob/MeV
10-1
10-3
0
Eγ (MeV)
5
10
8
10
12
14
16
18
20
En (MeV)

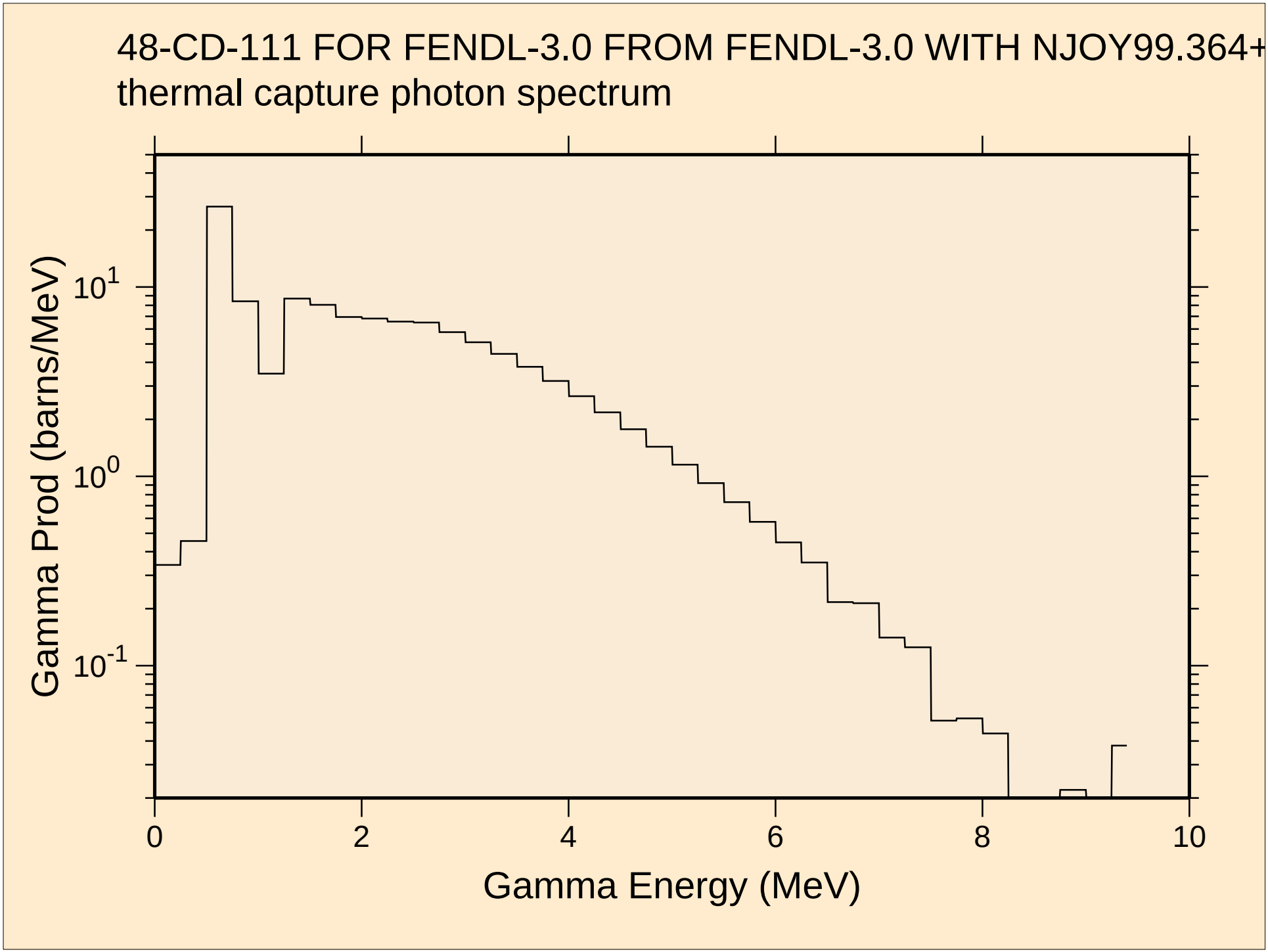

48-CD-111 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Photon emission for (n,n*c)
Prob/MeV
10^{0}
10^{-2}
0
10
20
E_γ (MeV)
0
2
4
6
8
10
12
14
16
18
20
E_n (MeV)

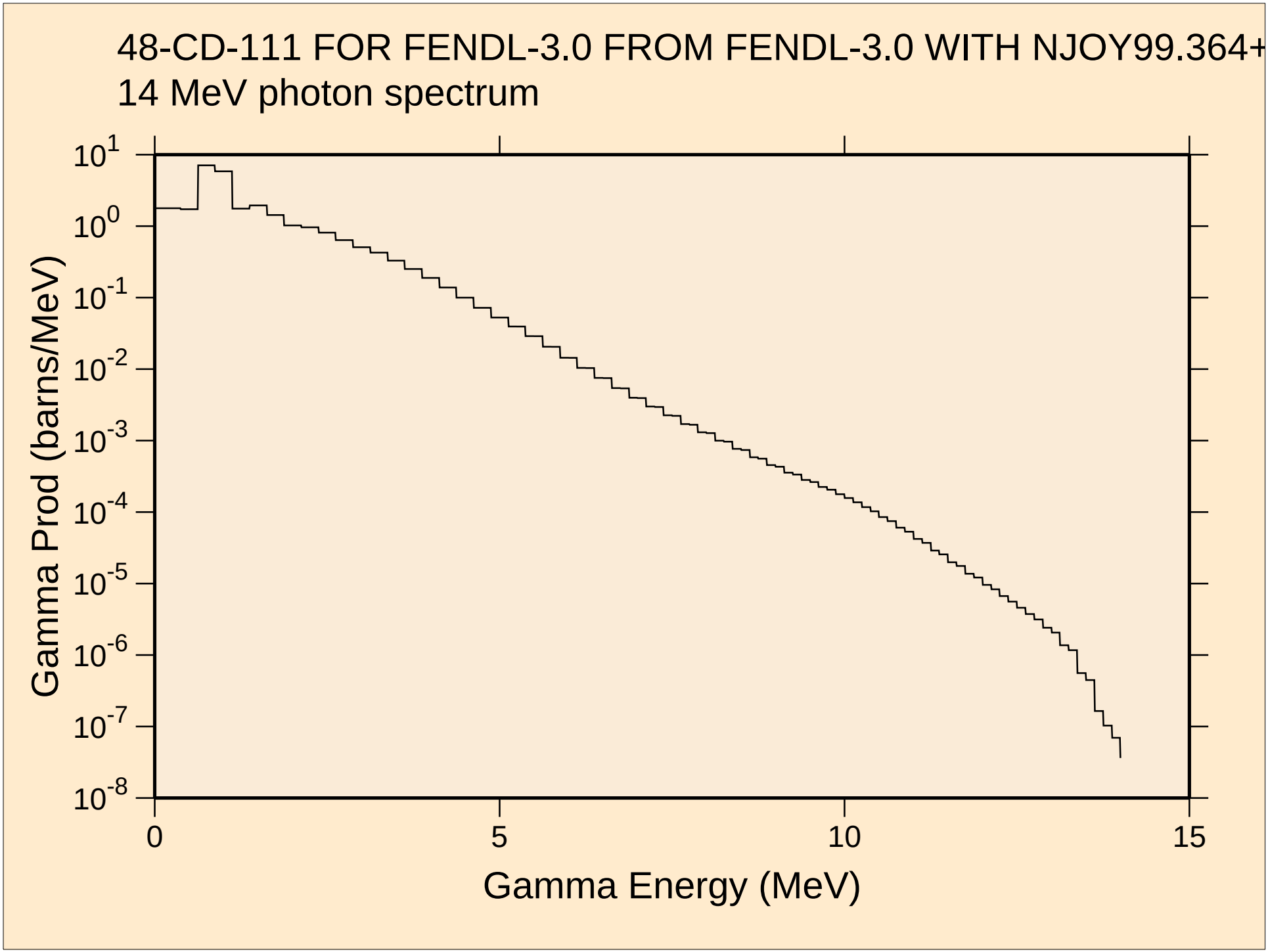

48-CD-111 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Photon emission for (n,gma)
Prob/MeV
10^{0}
10^{-2}
10^{-4}
0
10
20
E_γ (MeV)
0
5
10
15
20
E_n (MeV)

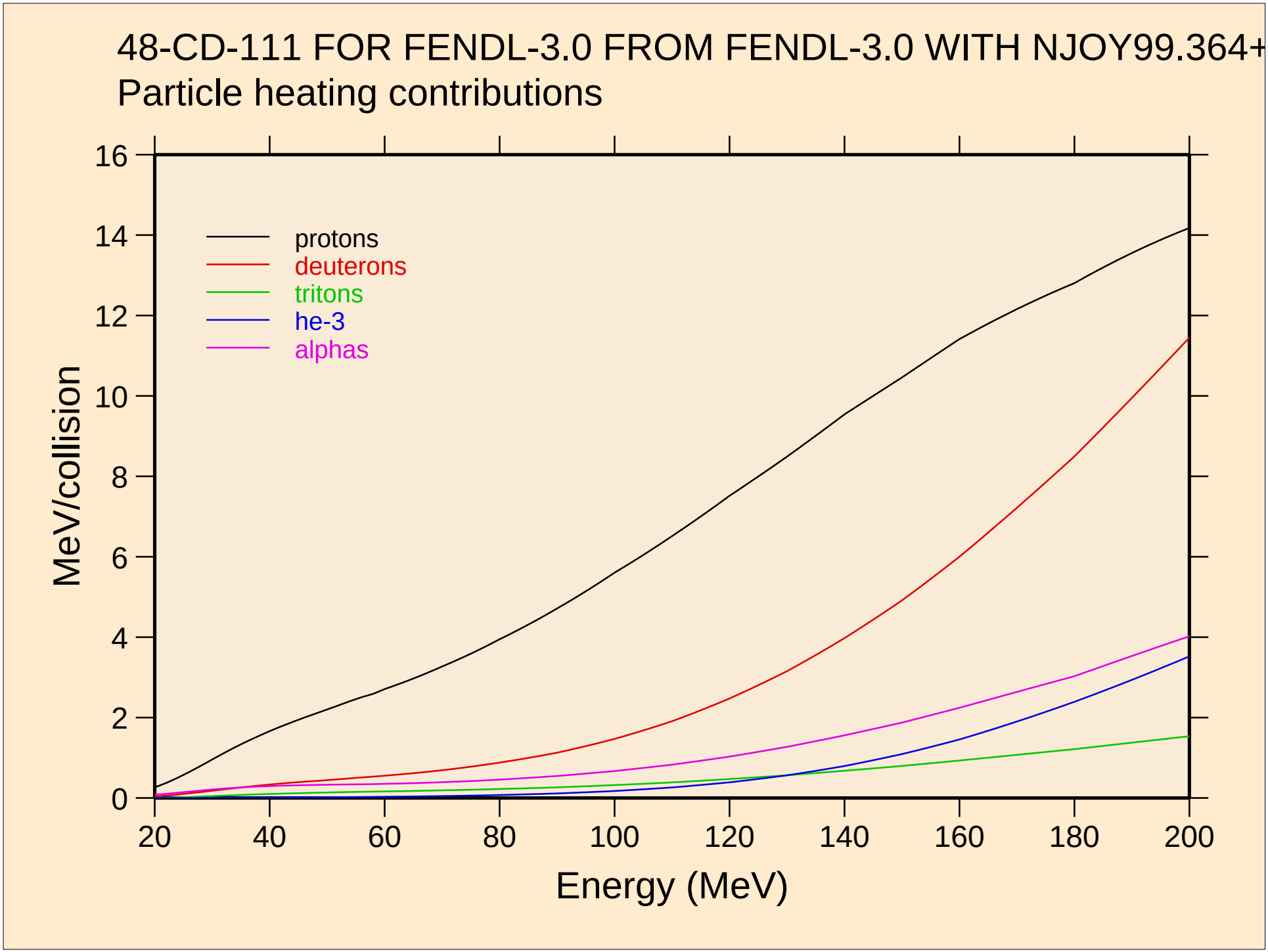

48-CD-111 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Photon emission for (n,p)
Prob/MeV
10-1
10-3
0
Eγ (MeV)
0
5
10
En (MeV)
0
2
4
6
8
10
12
14
16
18
20

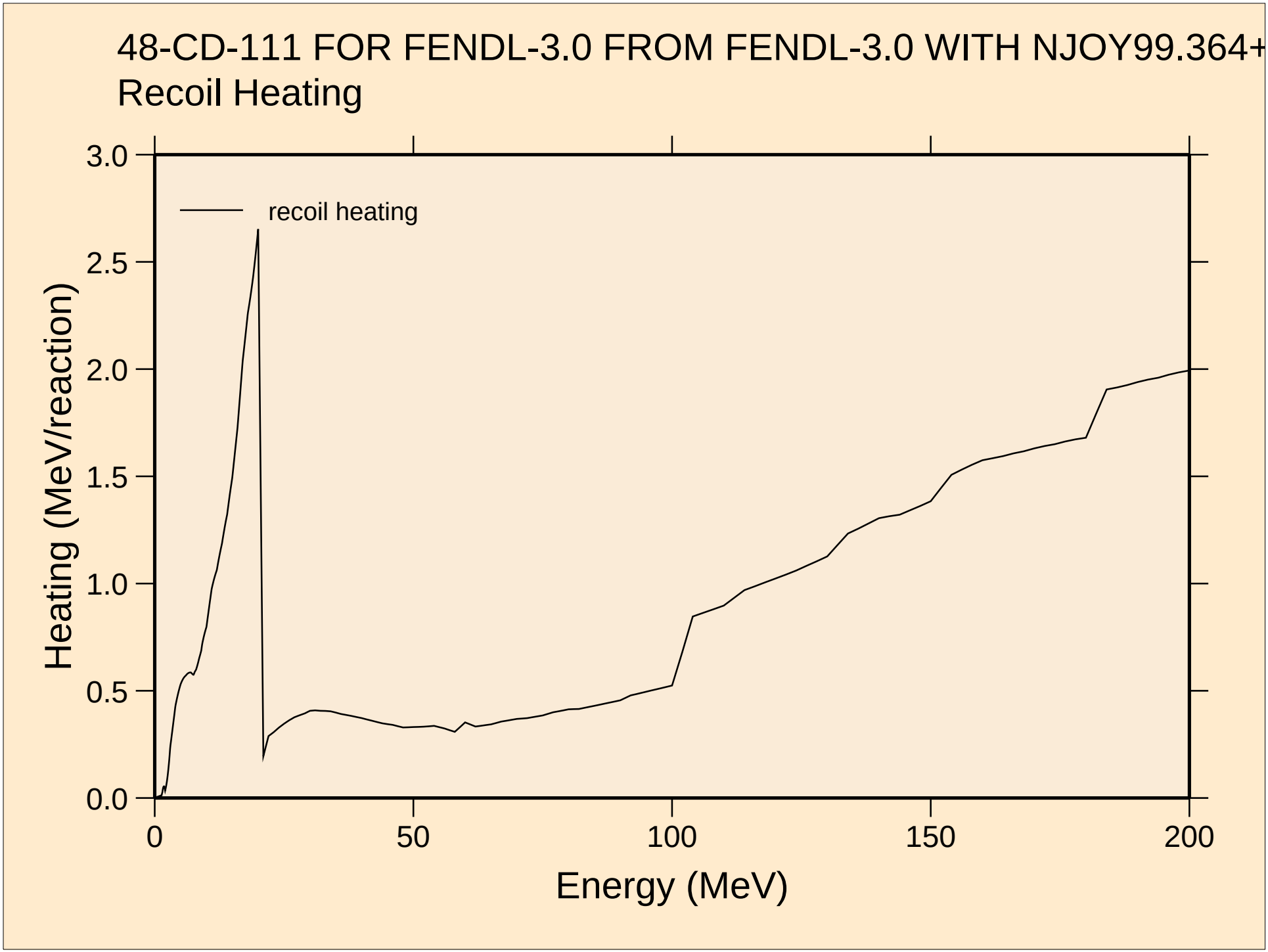

48-CD-111 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Photon emission for (n,a)
Prob/MeV
10-1
10-3
0
Eγ (MeV)
5
10
0
5
10
15
20
En (MeV)

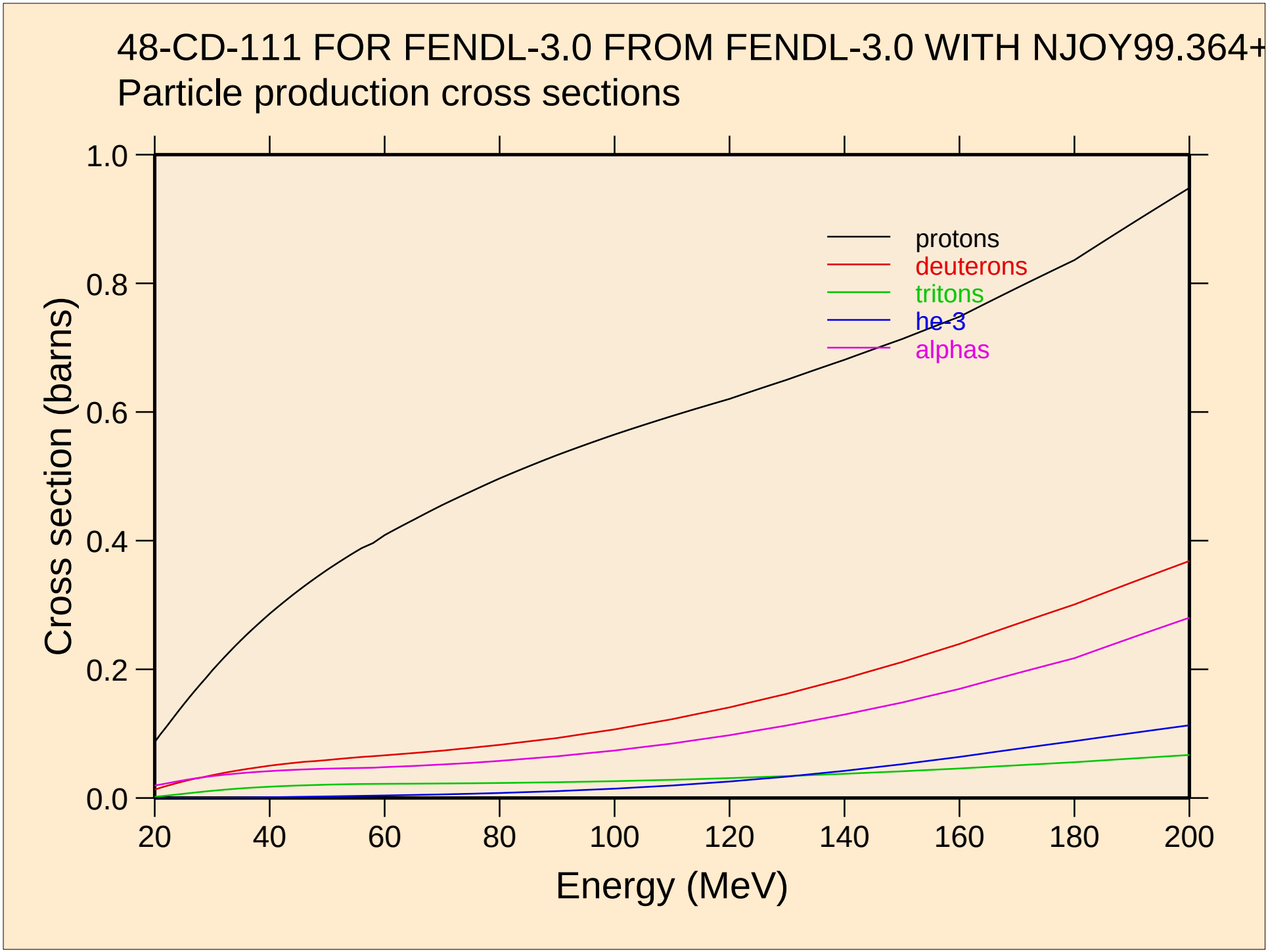

48-CD-111 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Photon emission for (n,x)
Prob/MeV
10^{0}
10^{-2}
10^{-4}
E_γ (MeV)
0
20
40
E_n (MeV)
0
50
100
150
200

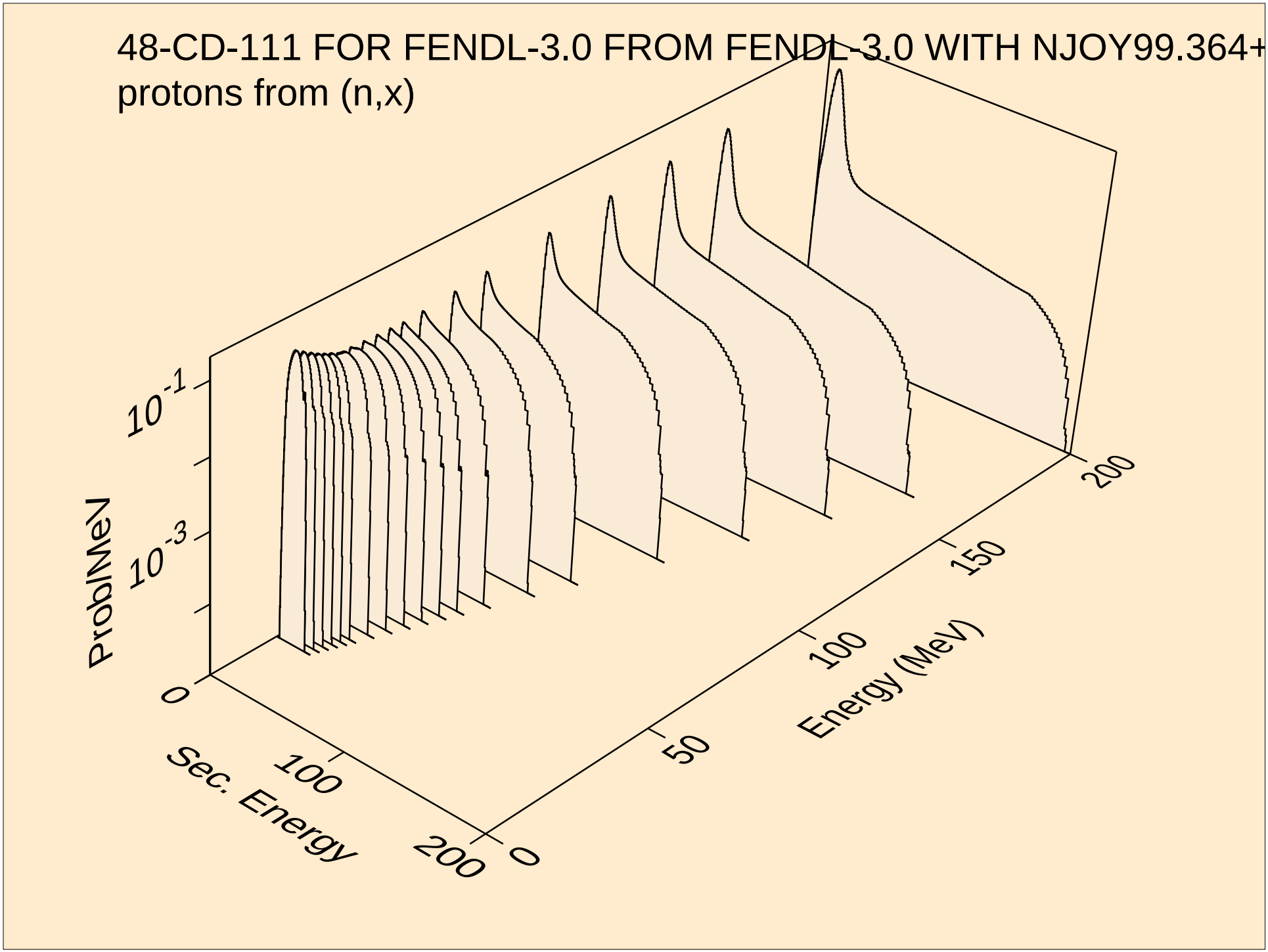

48-CD-111 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
thermal capture photon spectrum
Gamma Prod (barns/MeV)
10^1
10^0
10^-1
0
2
4
6
8
10
Gamma Energy (MeV)

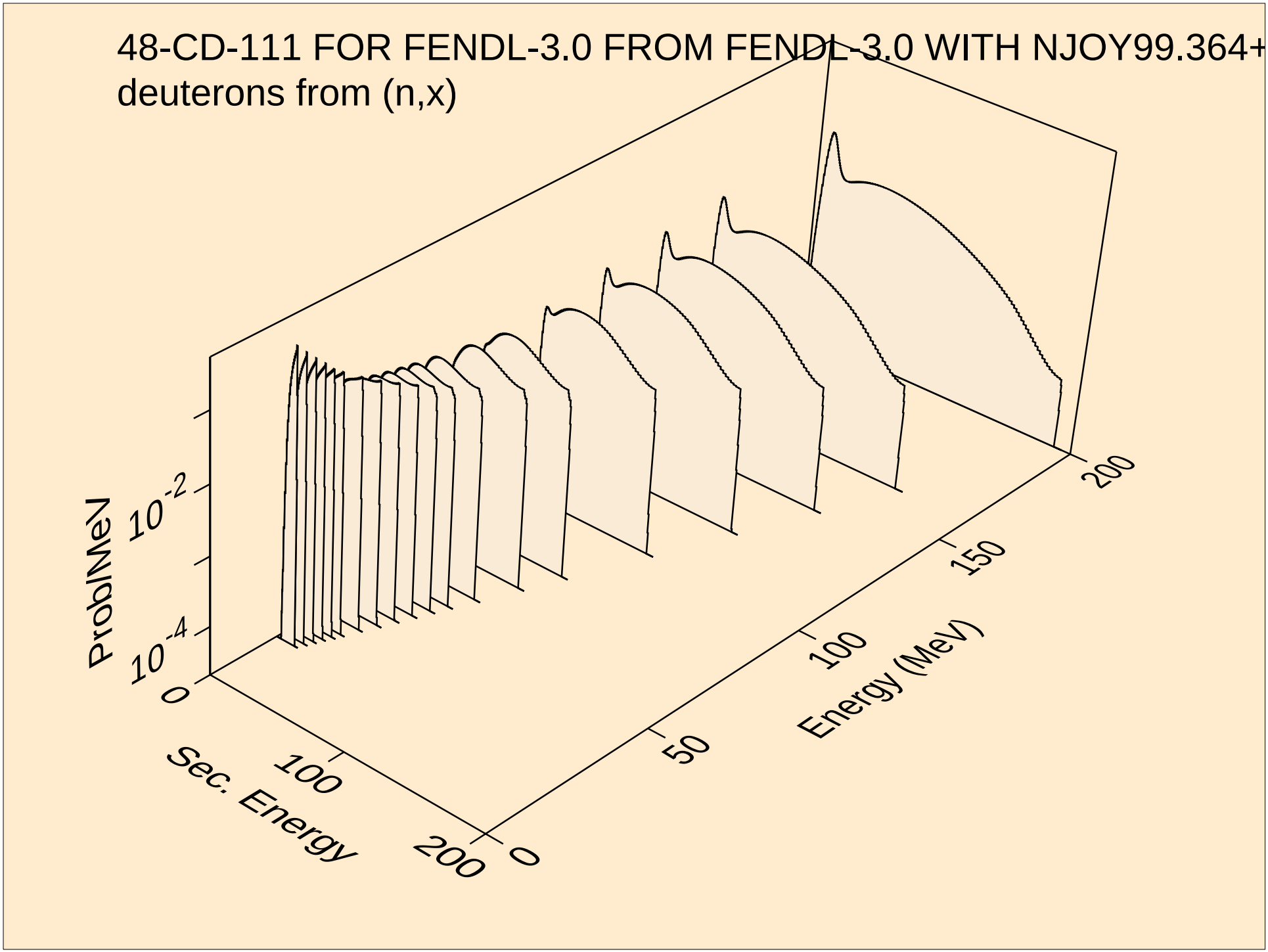

48-CD-111 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
14 MeV photon spectrum
Gamma Prod (barns/MeV)
10^1
10^0
10^-1
10^-2
10^-3
10^-4
10^-5
10^-6
10^-7
10^-8
0
5
10
15
Gamma Energy (MeV)

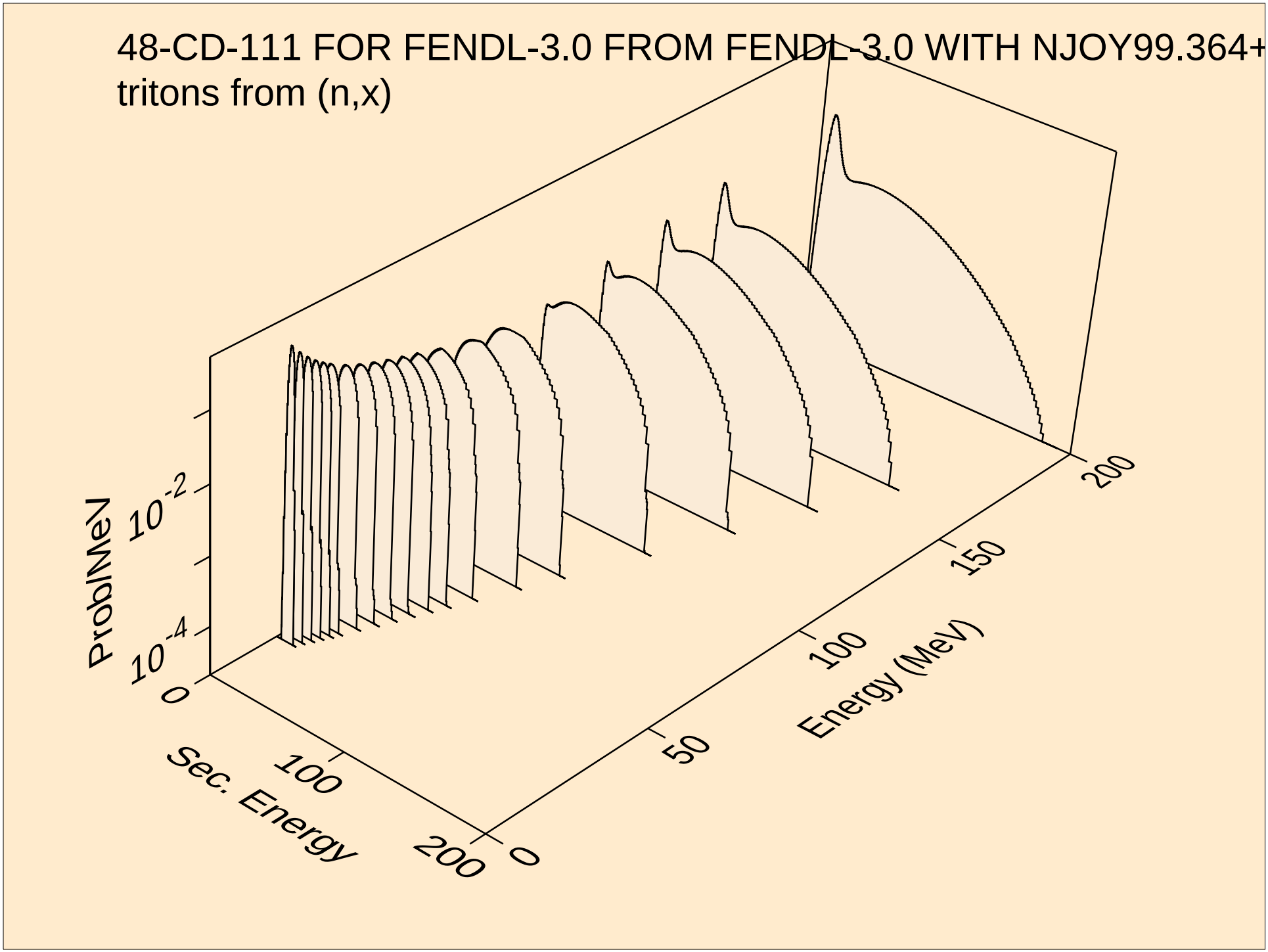

48-CD-111 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Particle heating contributions
protons
deuterons
tritons
he-3
alphas
MeV/collision
Energy (MeV)
0
2
4
6
8
10
12
14
16
20
40
60
80
100
120
140
160
180
200

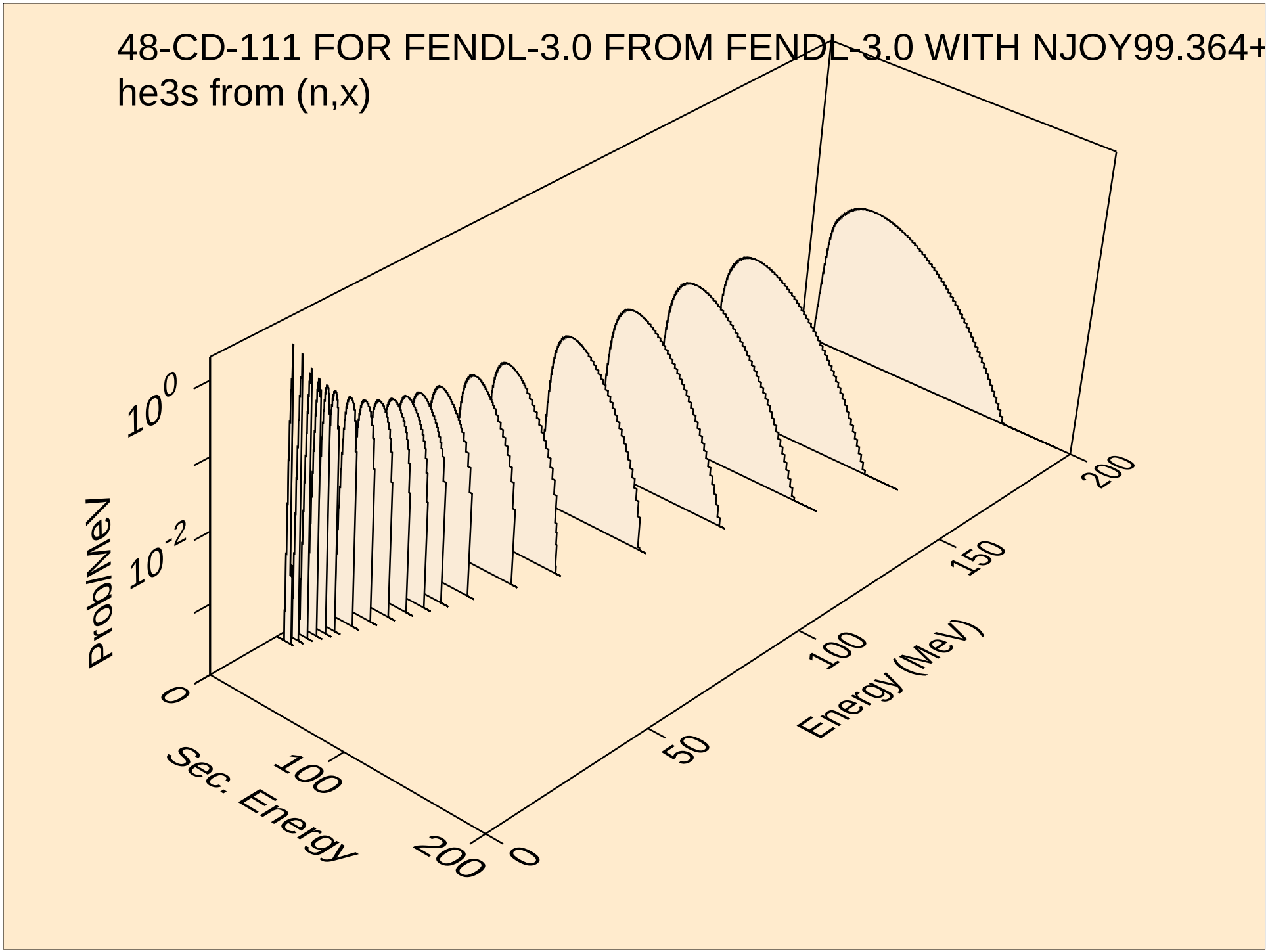

48-CD-111 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Recoil Heating
recoil heating
Heating (MeV/reaction)
Energy (MeV)
0.0
0.5
1.0
1.5
2.0
2.5
3.0
0
50
100
150
200

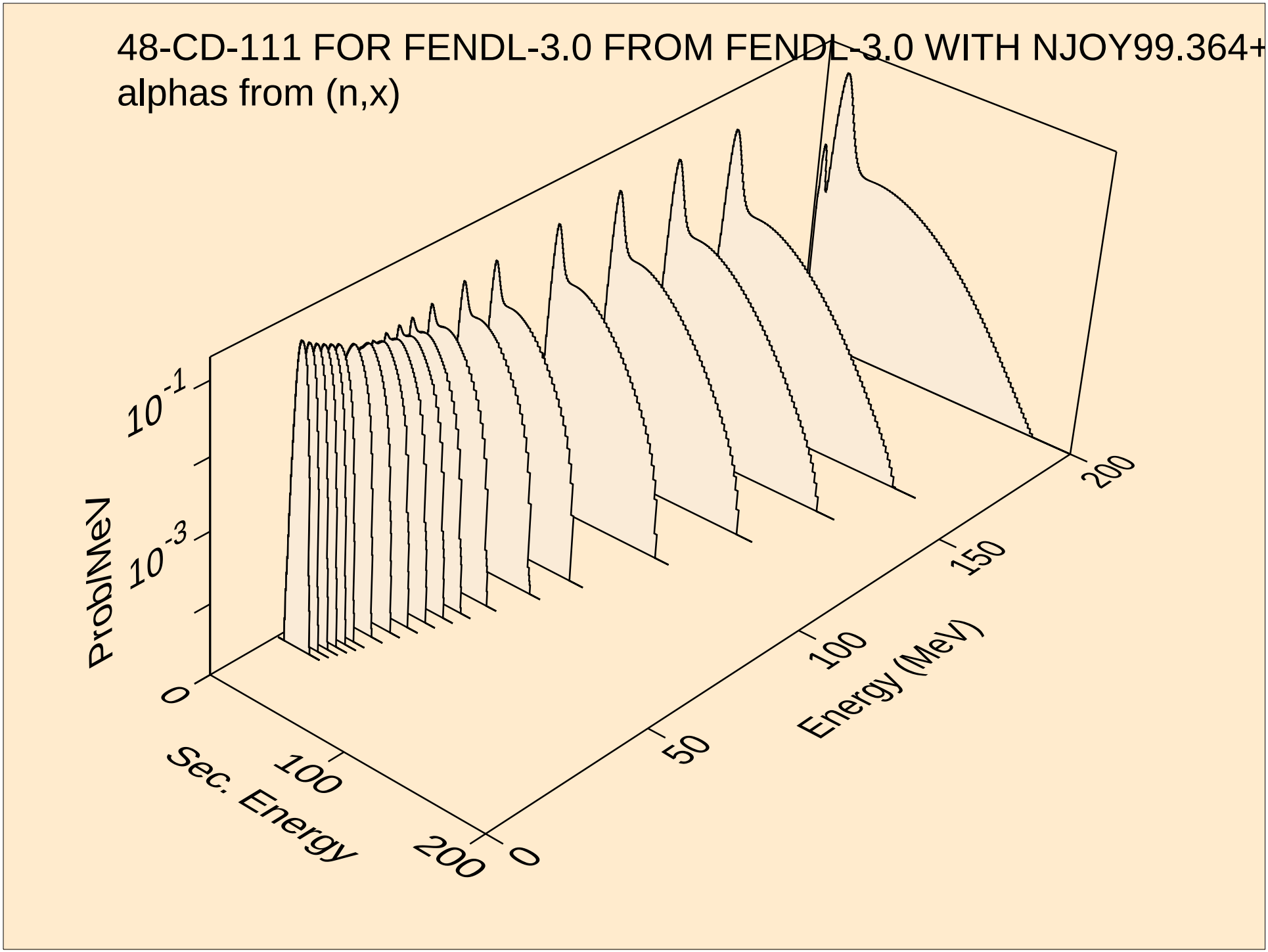

48-CD-111 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
Particle production cross sections
Cross section (barns)
Energy (MeV)
1.0
0.8
0.6
0.4
0.2
0.0
20
40
60
80
100
120
140
160
180
200
protons
deuterons
tritons
he-3
alphas


48-CD-111 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
protons from (n,x)
Prob/MeV
10-1
10-3
0
Sec. Energy
100
200
0
50
100
150
200
Energy (MeV)


48-CD-111 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
deuterons from (n,x)
Prob/MeV
10-2
10-4
0
Sec. Energy
100
200
0
50
100
150
200
Energy (MeV)


48-CD-111 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)


48-CD-111 FOR FENDL-3.0 FROM FENDL-3.0 WITH NJOY99.364+
he3s from (n,x)
Prob/MeV
10^0
10^-2
0
Sec. Energy
100
200
0
50
100
150
200
Energy (MeV)


48-CD-111 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)