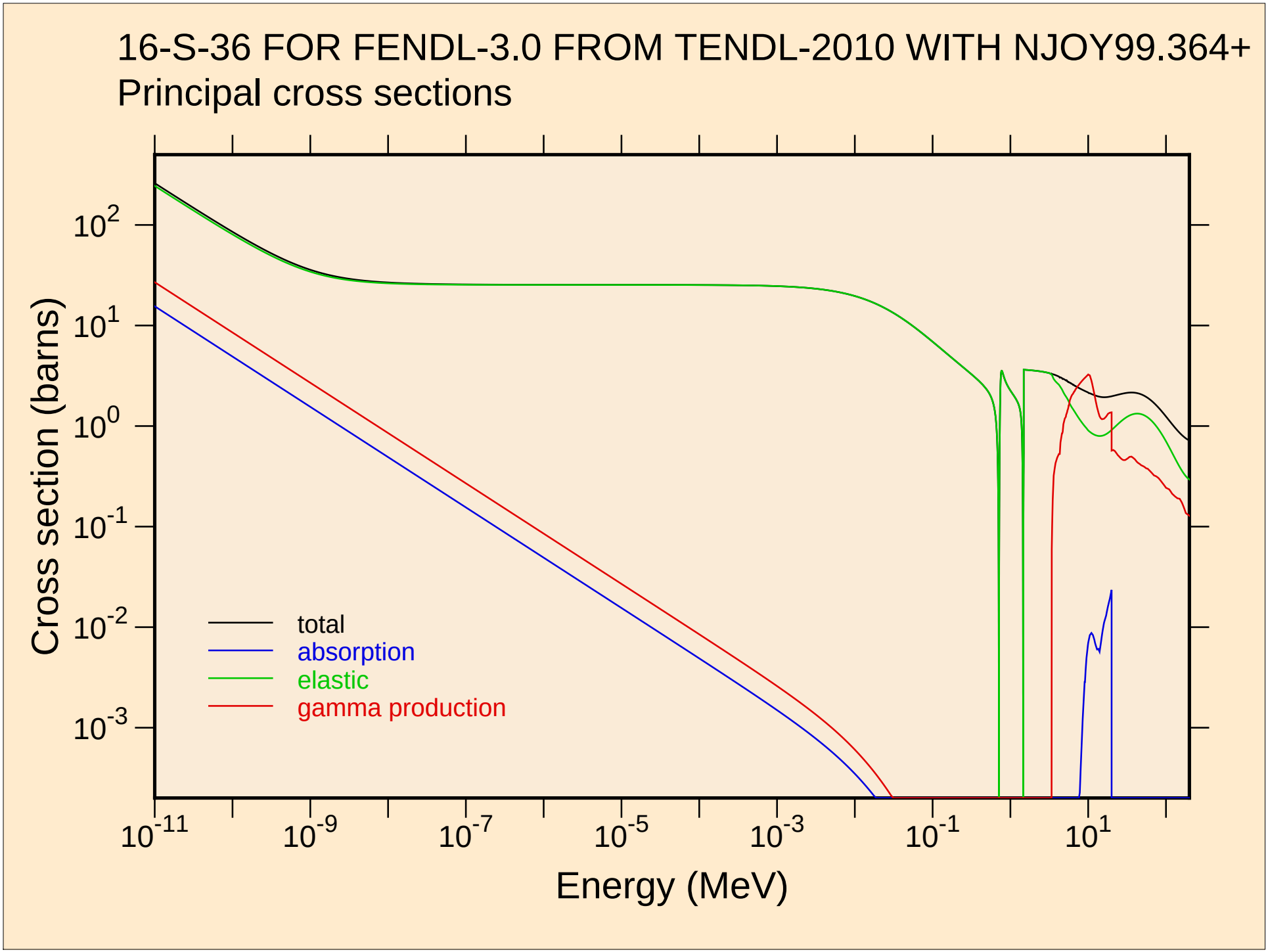
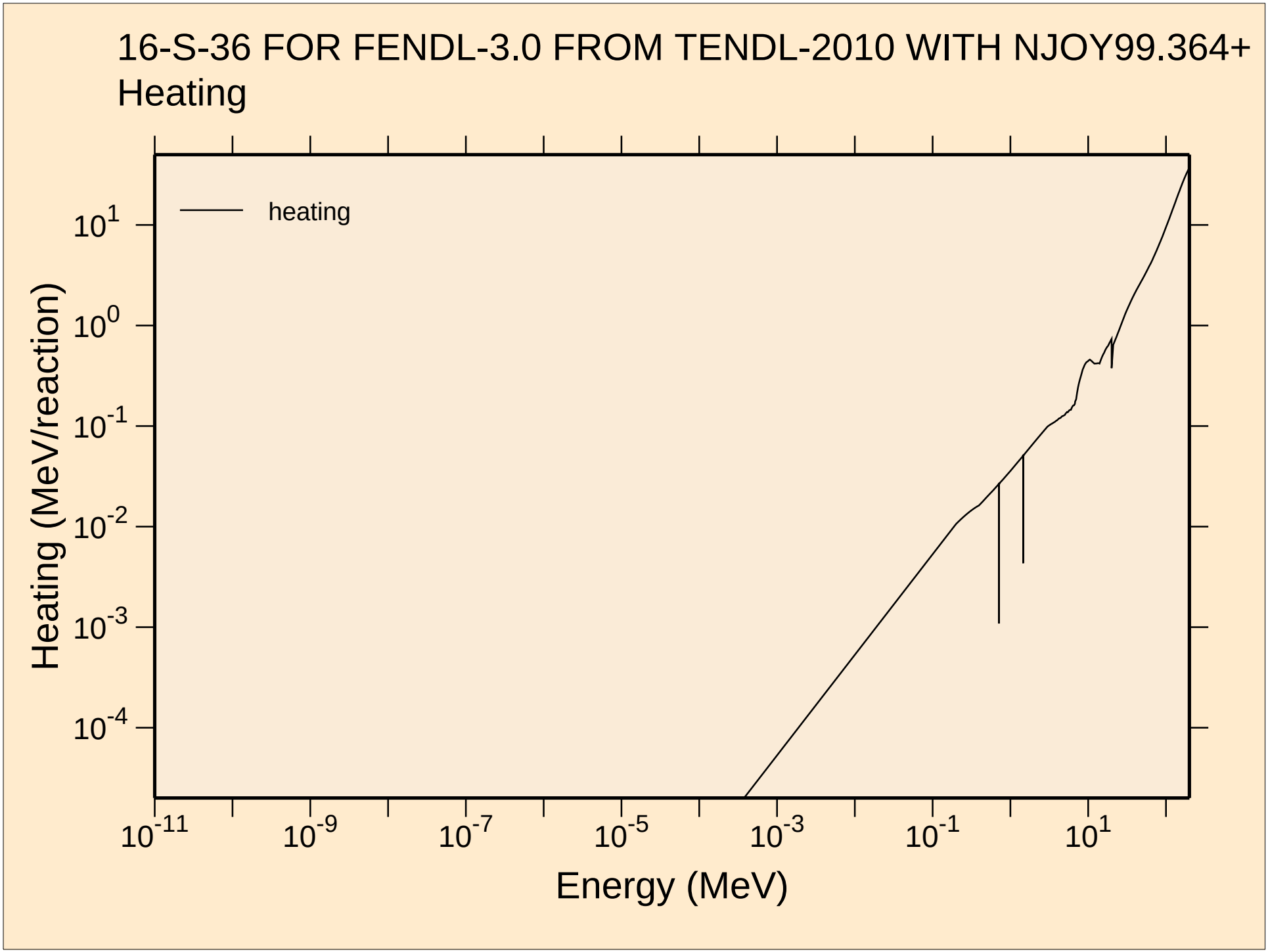
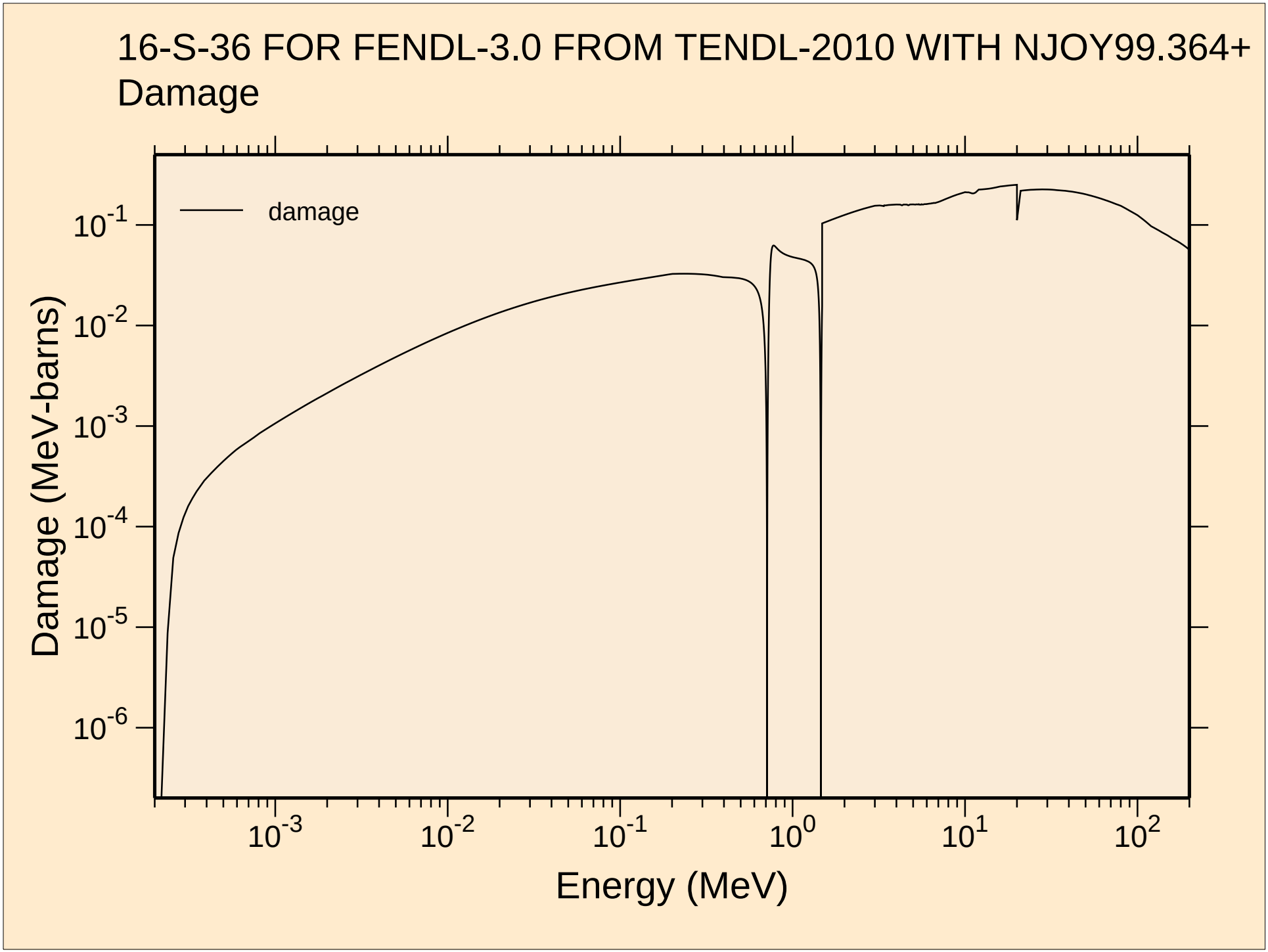
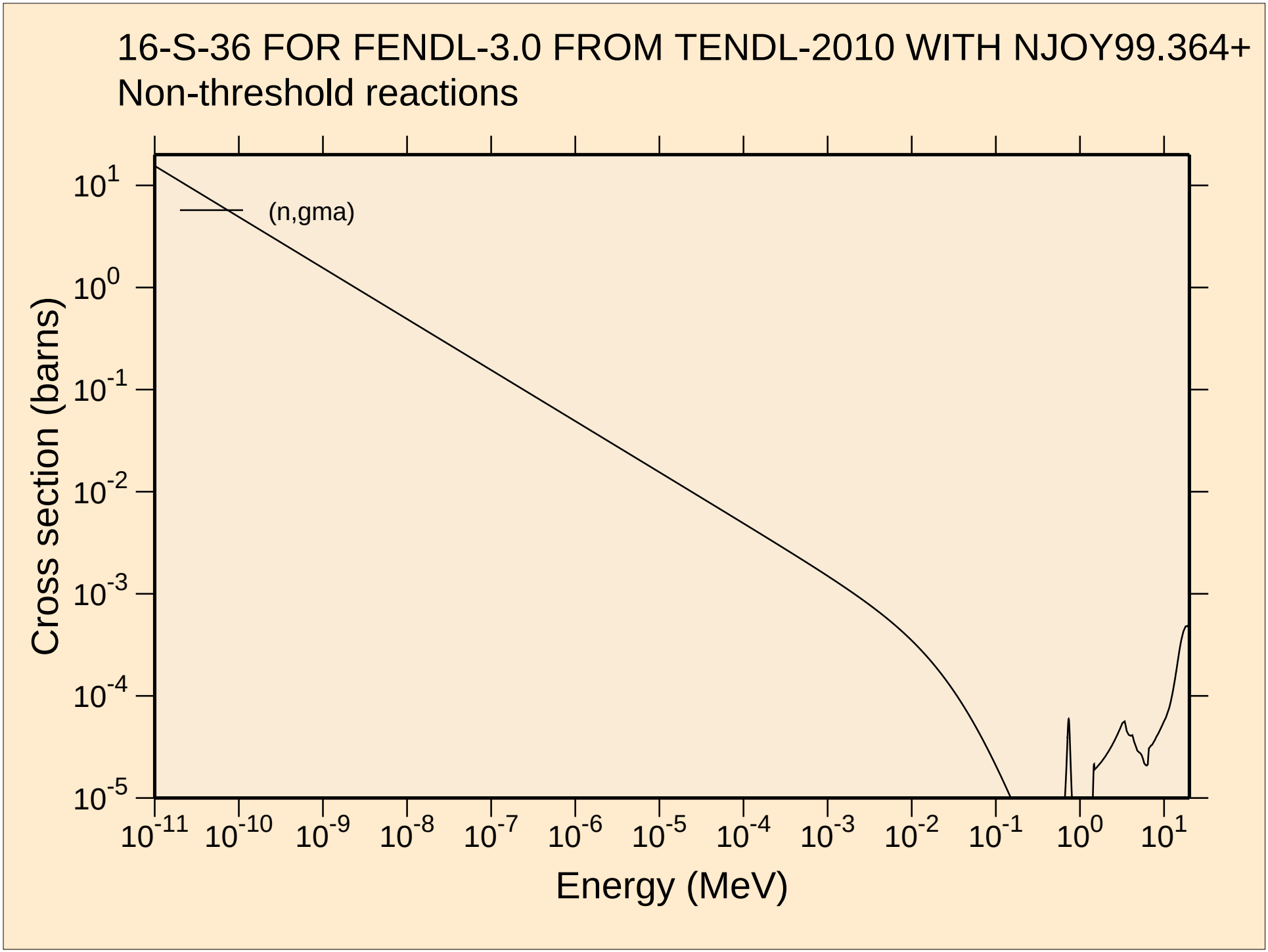
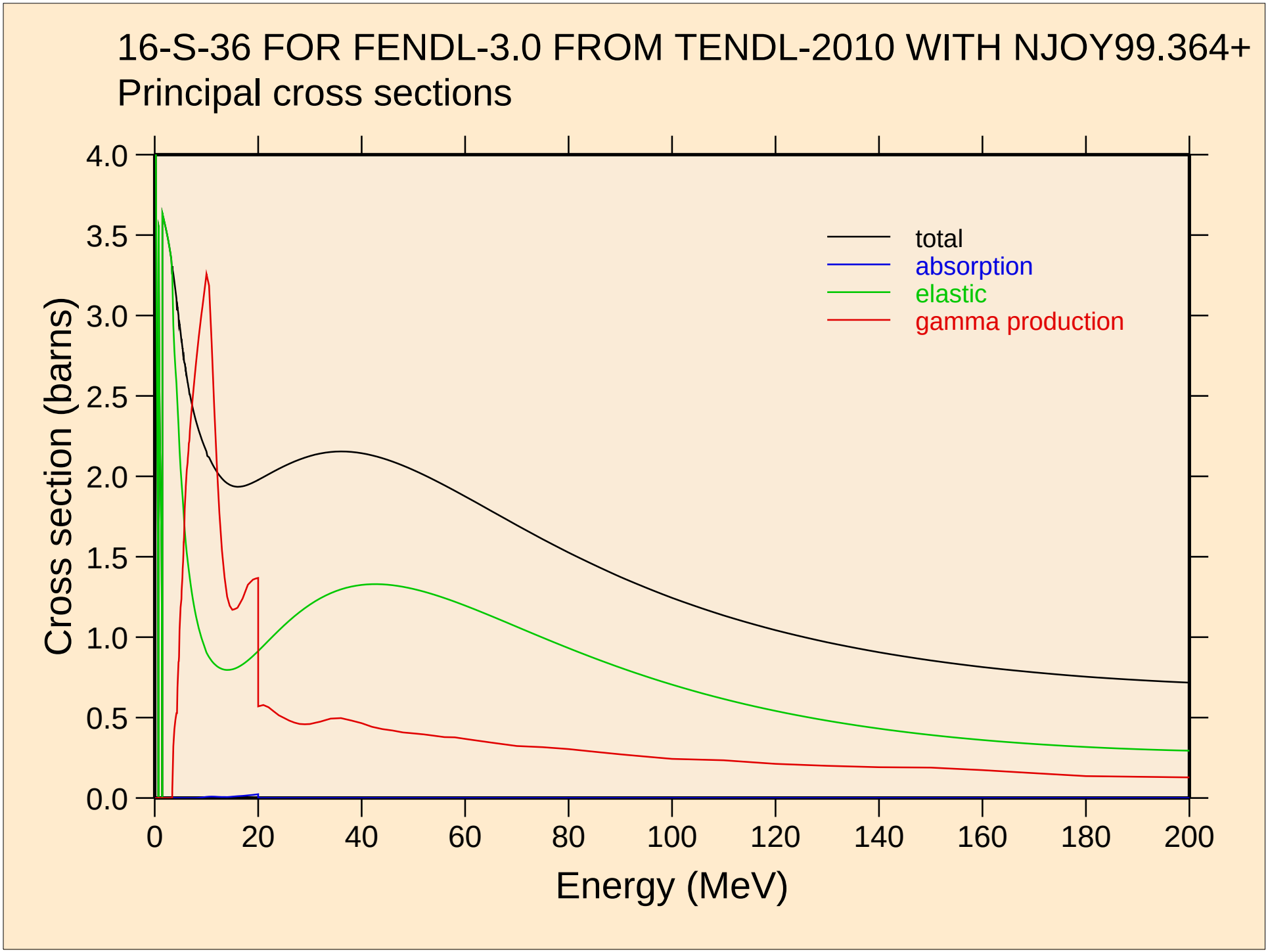
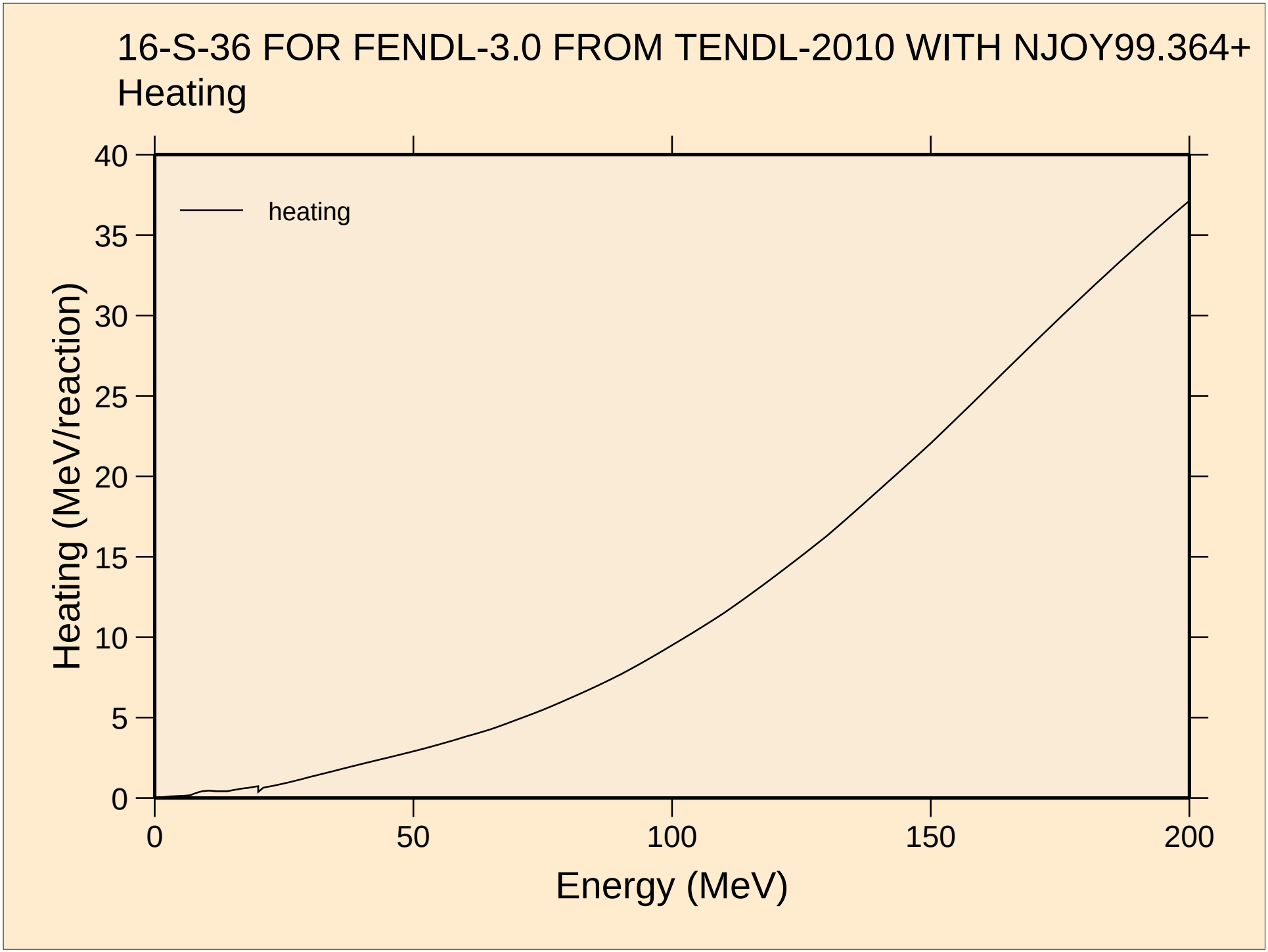

16-S-36 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+
Principal cross sections
Cross section (barns)
10^2
10^1
10^0
10^-1
10^-2
10^-3
total
absorption
elastic
gamma production
10^-11
10^-9
10^-7
10^-5
10^-3
10^-1
10^1
Energy (MeV)

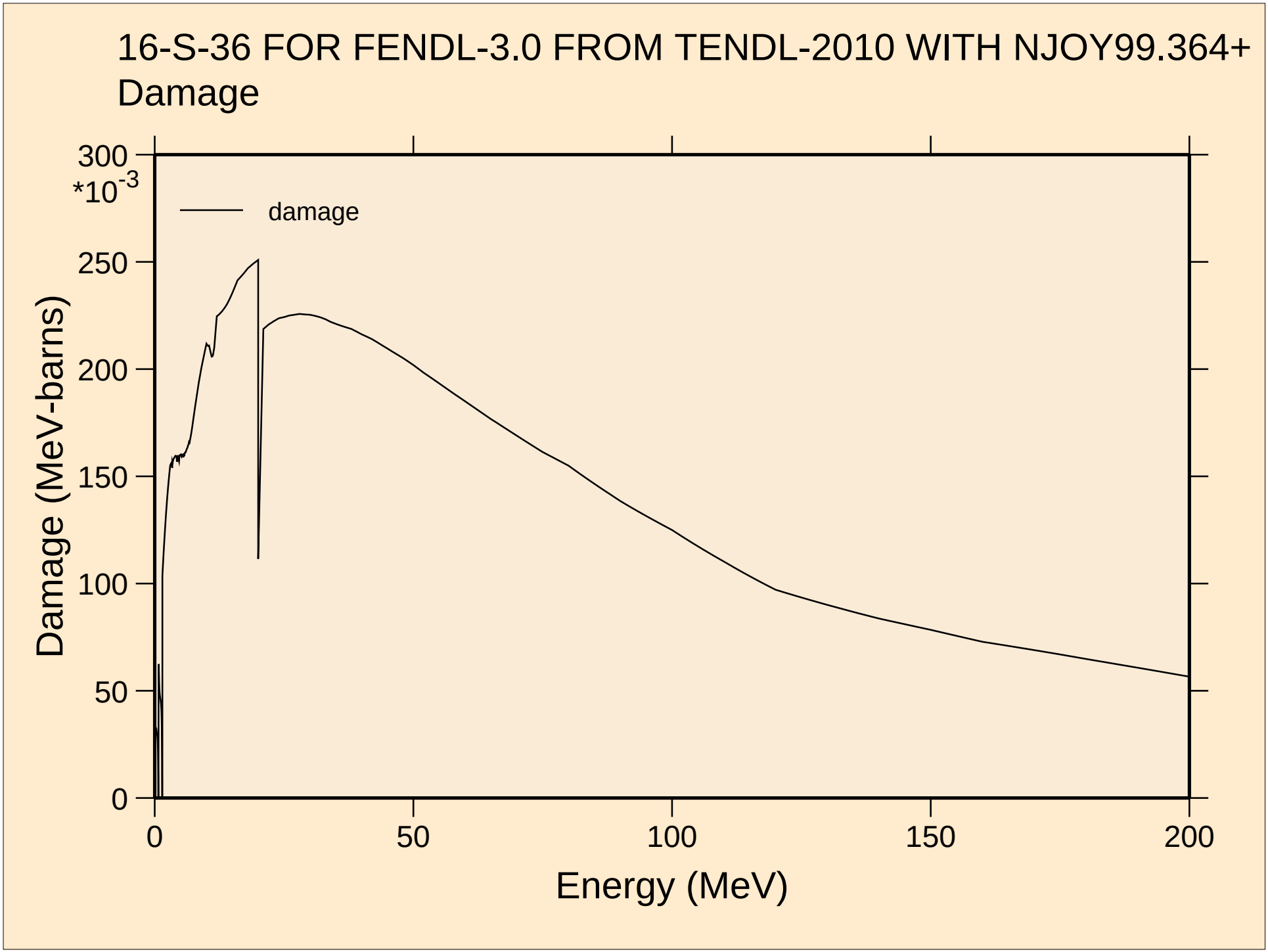

16-S-36 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+
Heating
heating
Heating (MeV/reaction)
10^1
10^0
10^-1
10^-2
10^-3
10^-4
10^-11
10^-9
10^-7
10^-5
10^-3
10^-1
10^1
Energy (MeV)

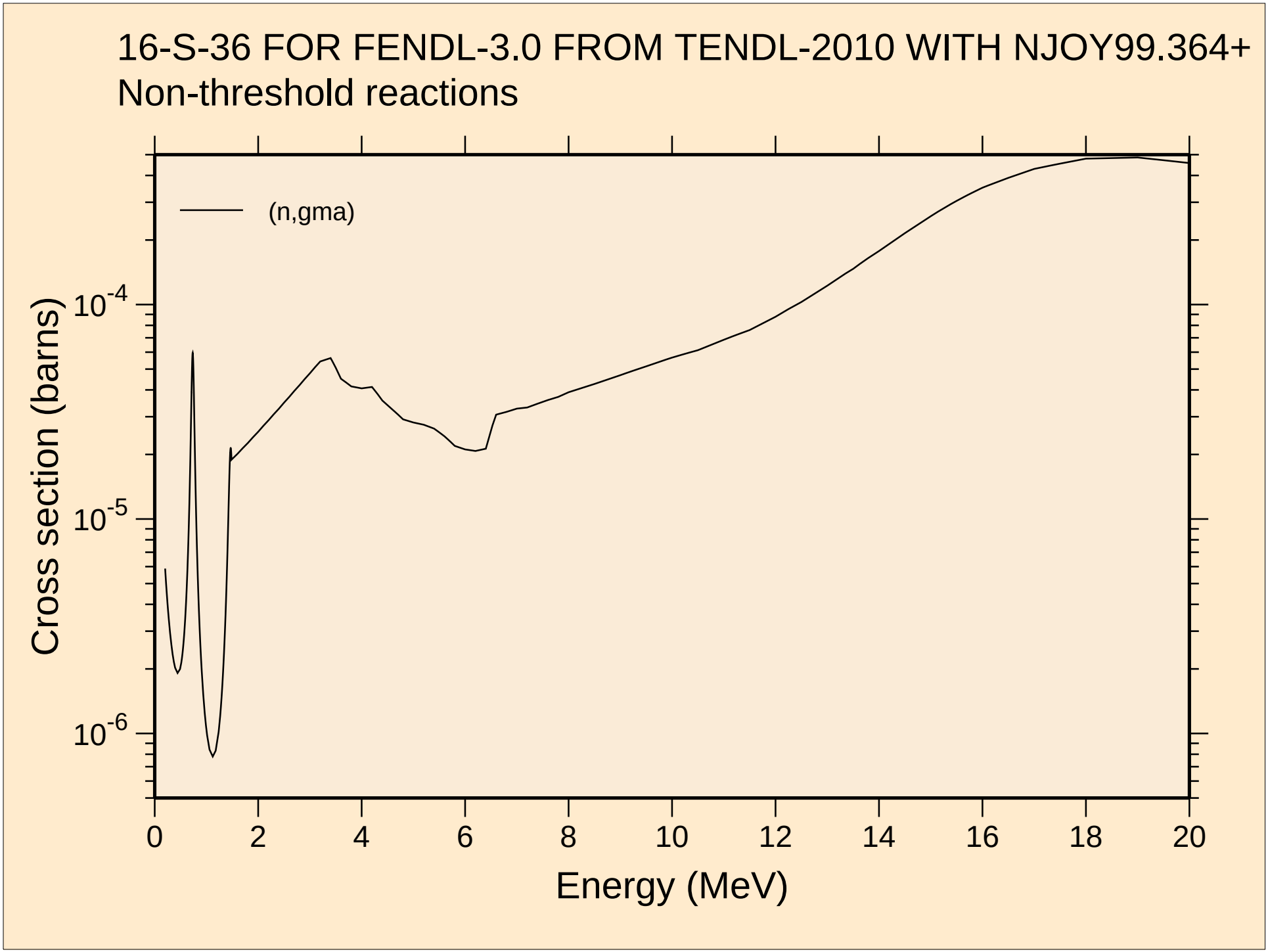

16-S-36 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+
Damage
damage
Damage (MeV-barns)
10-1
10-2
10-3
10-4
10-5
10-6
10-3
10-2
10-1
100
101
102
Energy (MeV)

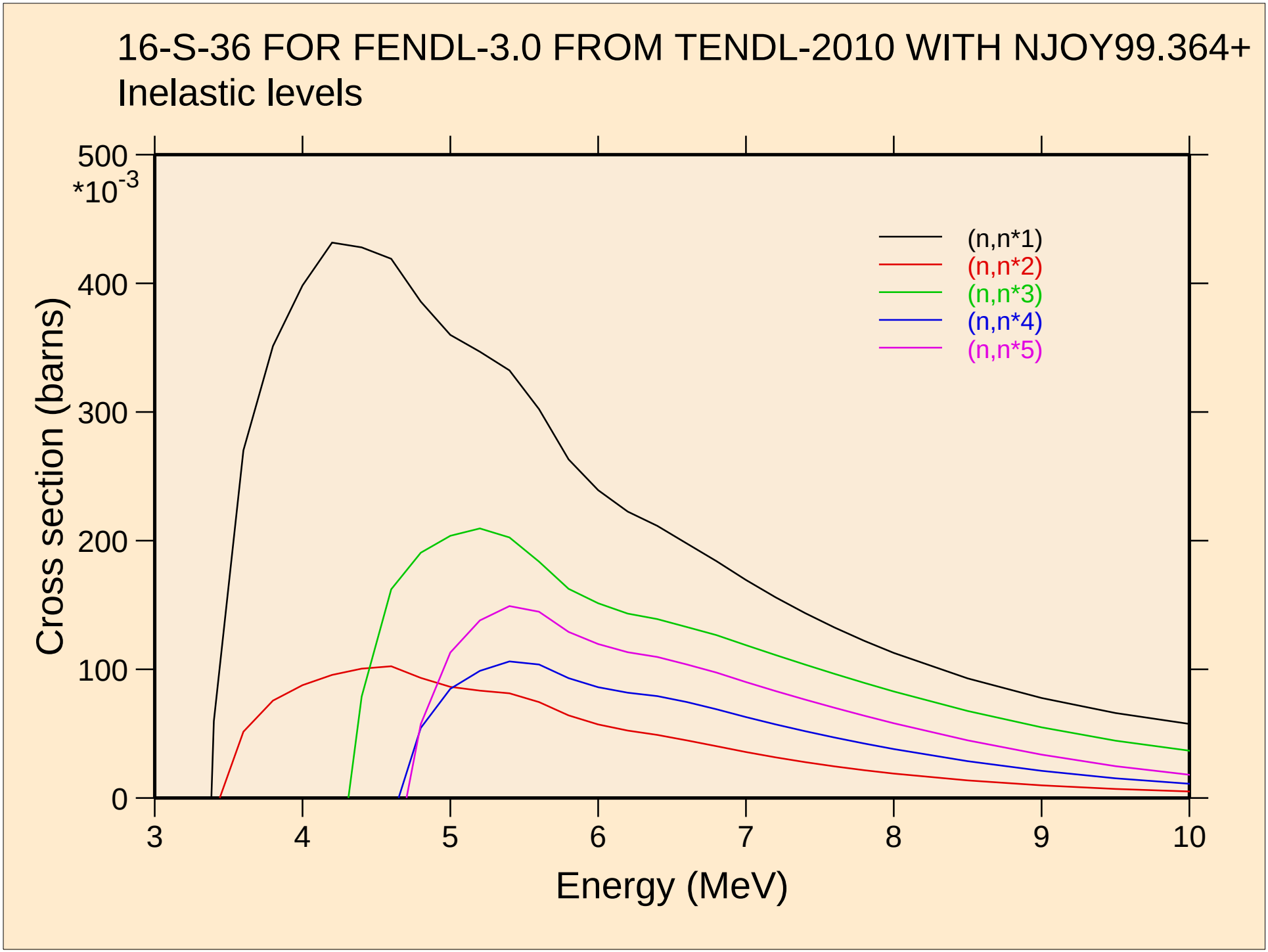

16-S-36 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+
Non-threshold reactions
(n,gma)
Cross section (barns)
Energy (MeV)
10^1
10^0
10^-1
10^-2
10^-3
10^-4
10^-5
10^-11
10^-10
10^-9
10^-8
10^-7
10^-6
10^-5
10^-4
10^-3
10^-2
10^-1
10^0
10^1

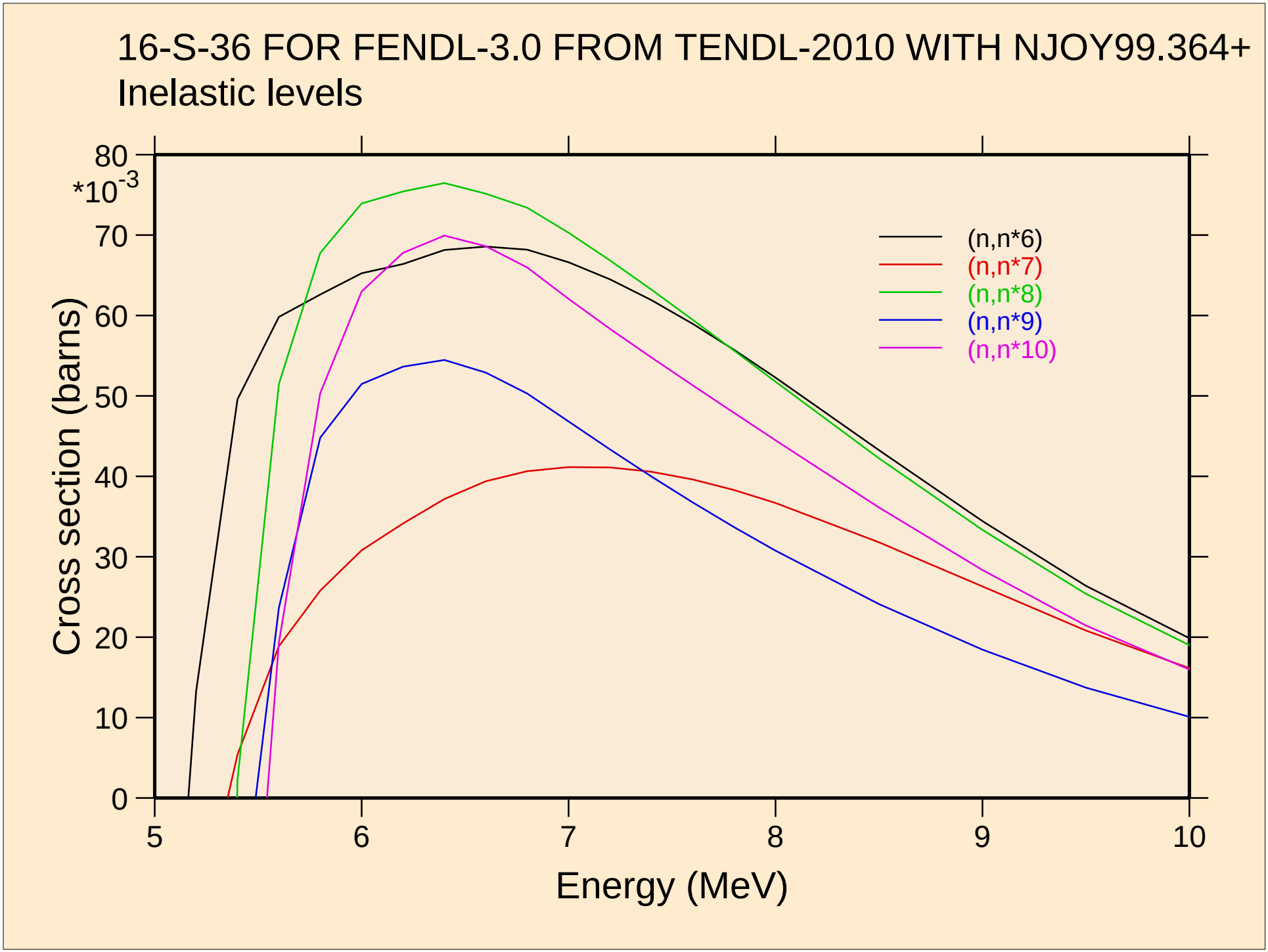

16-S-36 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+
Principal cross sections
Cross section (barns)
Energy (MeV)
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
0
20
40
60
80
100
120
140
160
180
200
total
absorption
elastic
gamma production

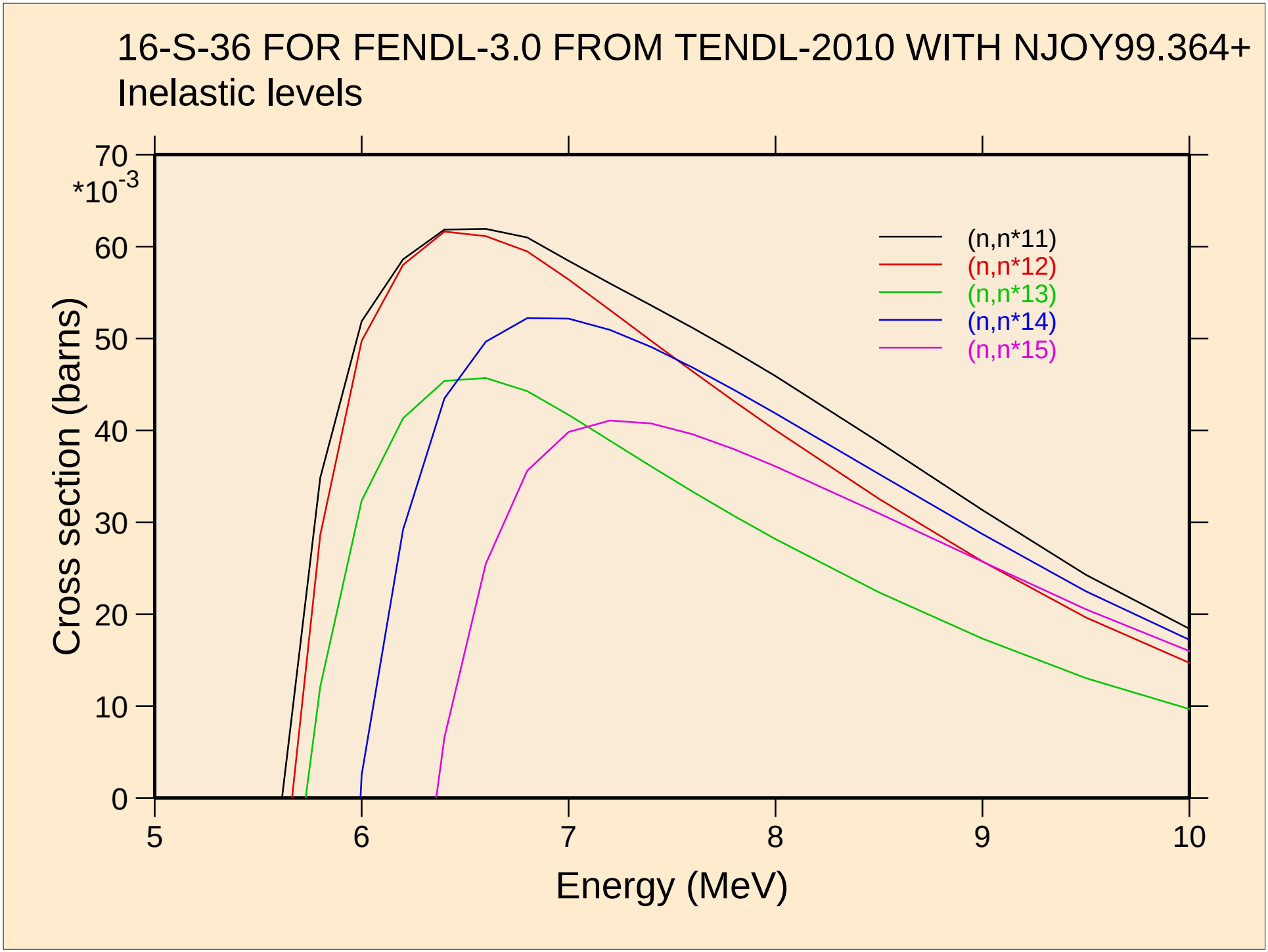

16-S-36 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+
Heating
heating
Heating (MeV/reaction)
Energy (MeV)
0
5
10
15
20
25
30
35
40
0
50
100
150
200

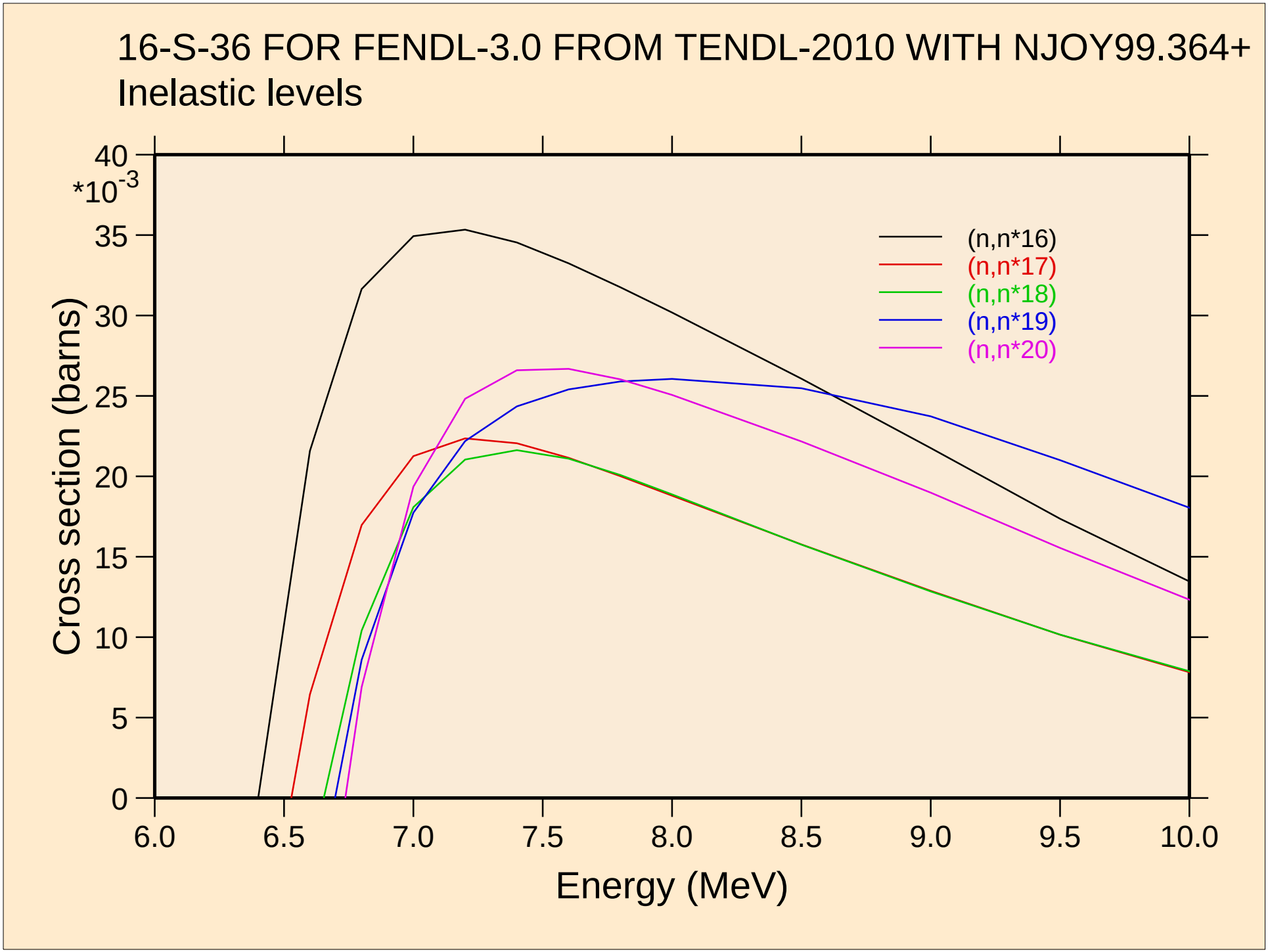

16-S-36 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+
Damage
300
*10-3
damage
250
200
150
100
50
0
Damage (MeV-barns)
0
50
100
150
200
Energy (MeV)

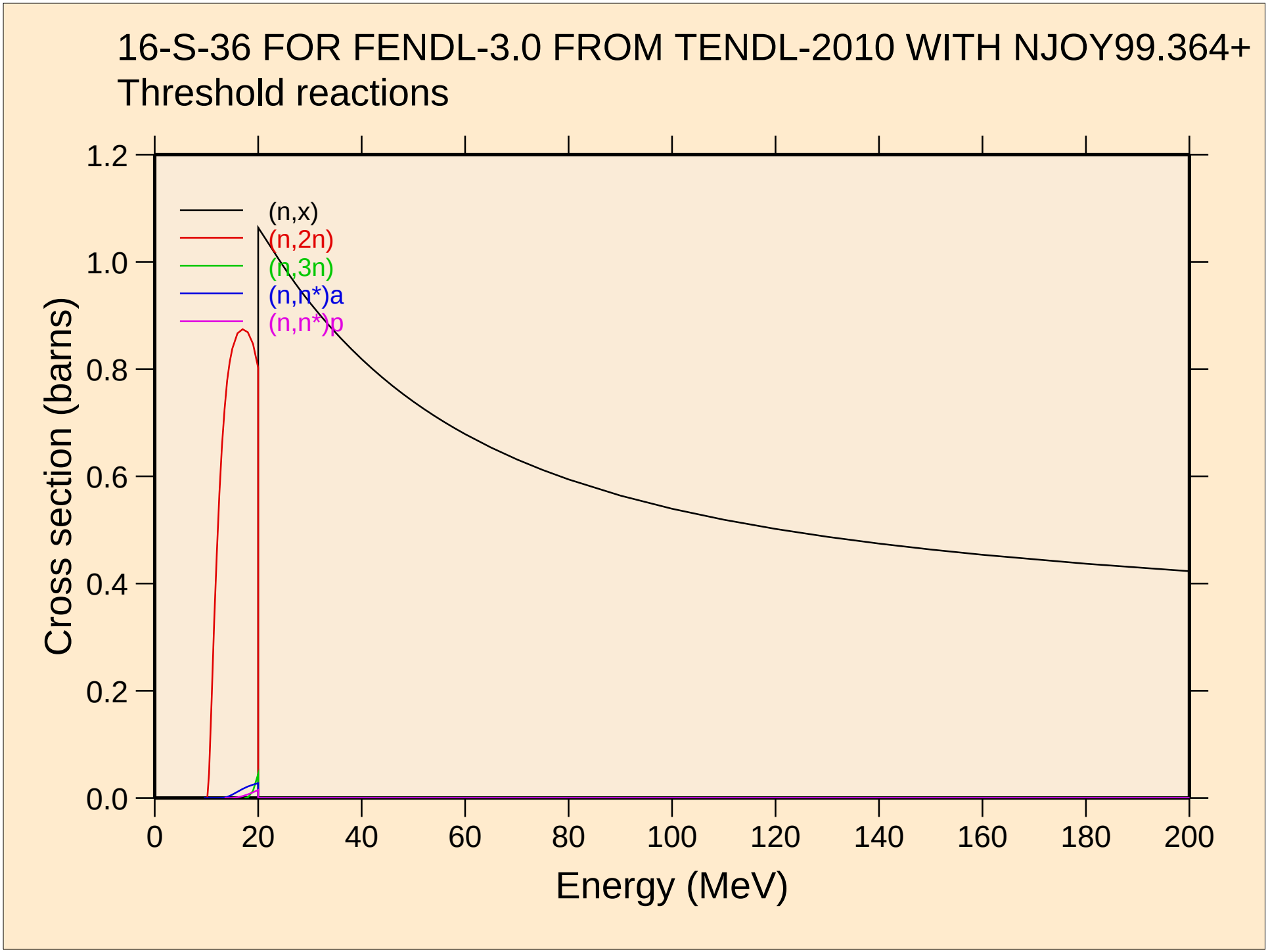

16-S-36 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+
Non-threshold reactions
(n,gma)
Cross section (barns)
10-4
10-5
10-6
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

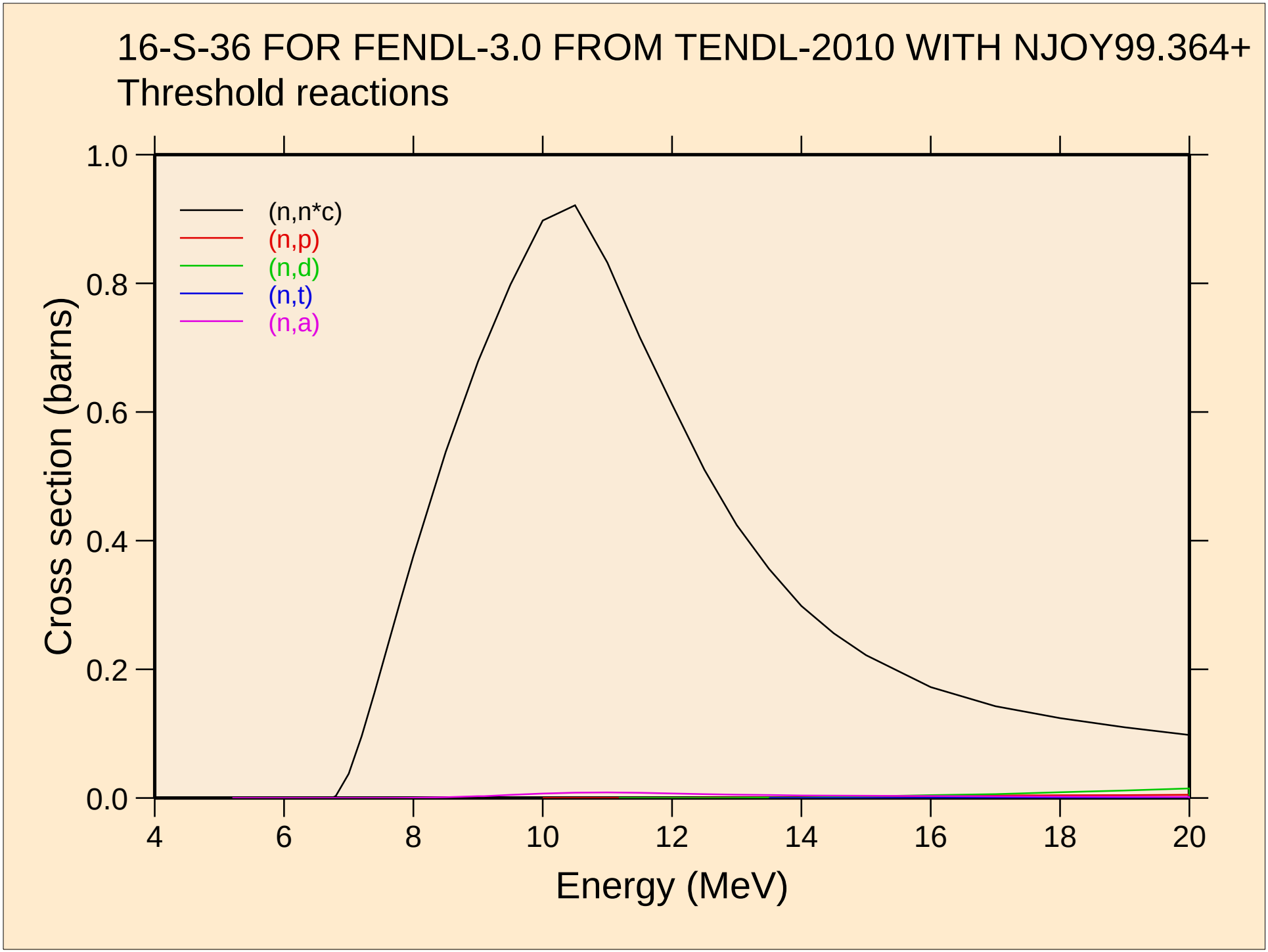

16-S-36 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+
Inelastic levels
Cross section (barns)
*10-3
500
400
300
200
100
0
3
4
5
6
7
8
9
10
Energy (MeV)
(n,n*1)
(n,n*2)
(n,n*3)
(n,n*4)
(n,n*5)

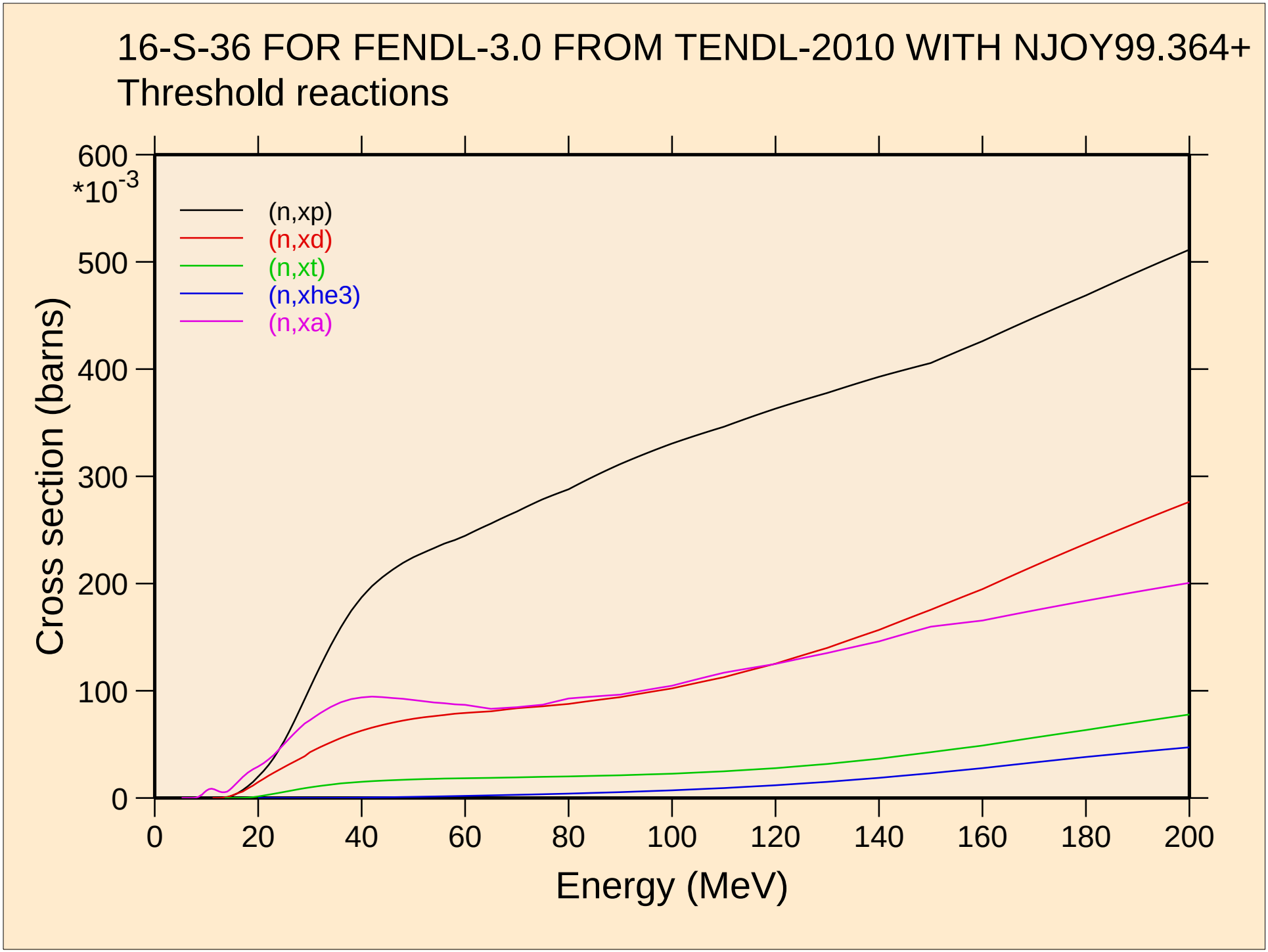

16-S-36 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+
Inelastic levels
Cross section (barns)
*10-3
80
70
60
50
40
30
20
10
0
5
6
7
8
9
10
Energy (MeV)
(n,n*6)
(n,n*7)
(n,n*8)
(n,n*9)
(n,n*10)

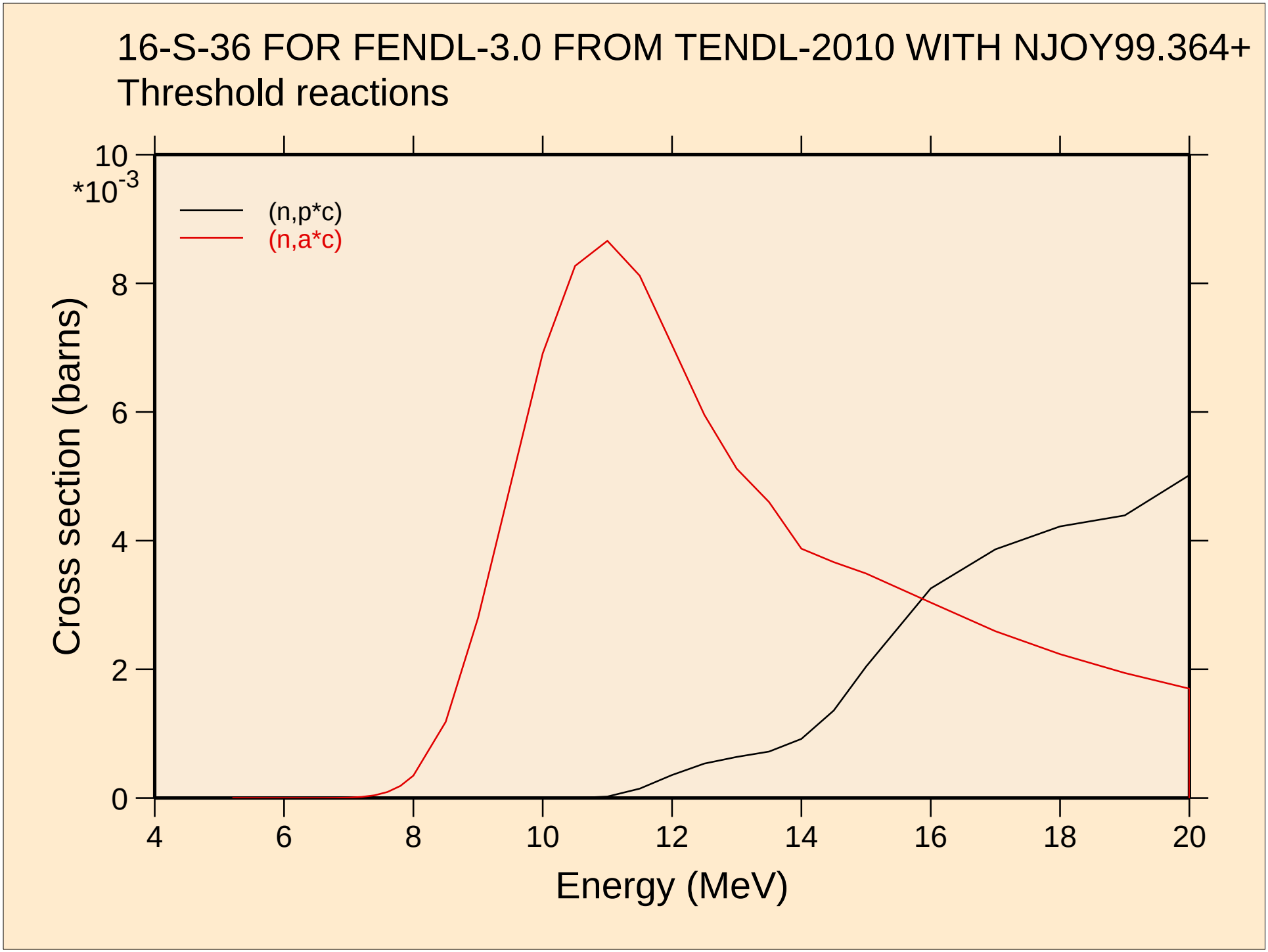

16-S-36 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+
Inelastic levels
Cross section (barns)
*10-3
70
60
50
40
30
20
10
0
5
6
7
8
9
10
Energy (MeV)
(n,n*11)
(n,n*12)
(n,n*13)
(n,n*14)
(n,n*15)

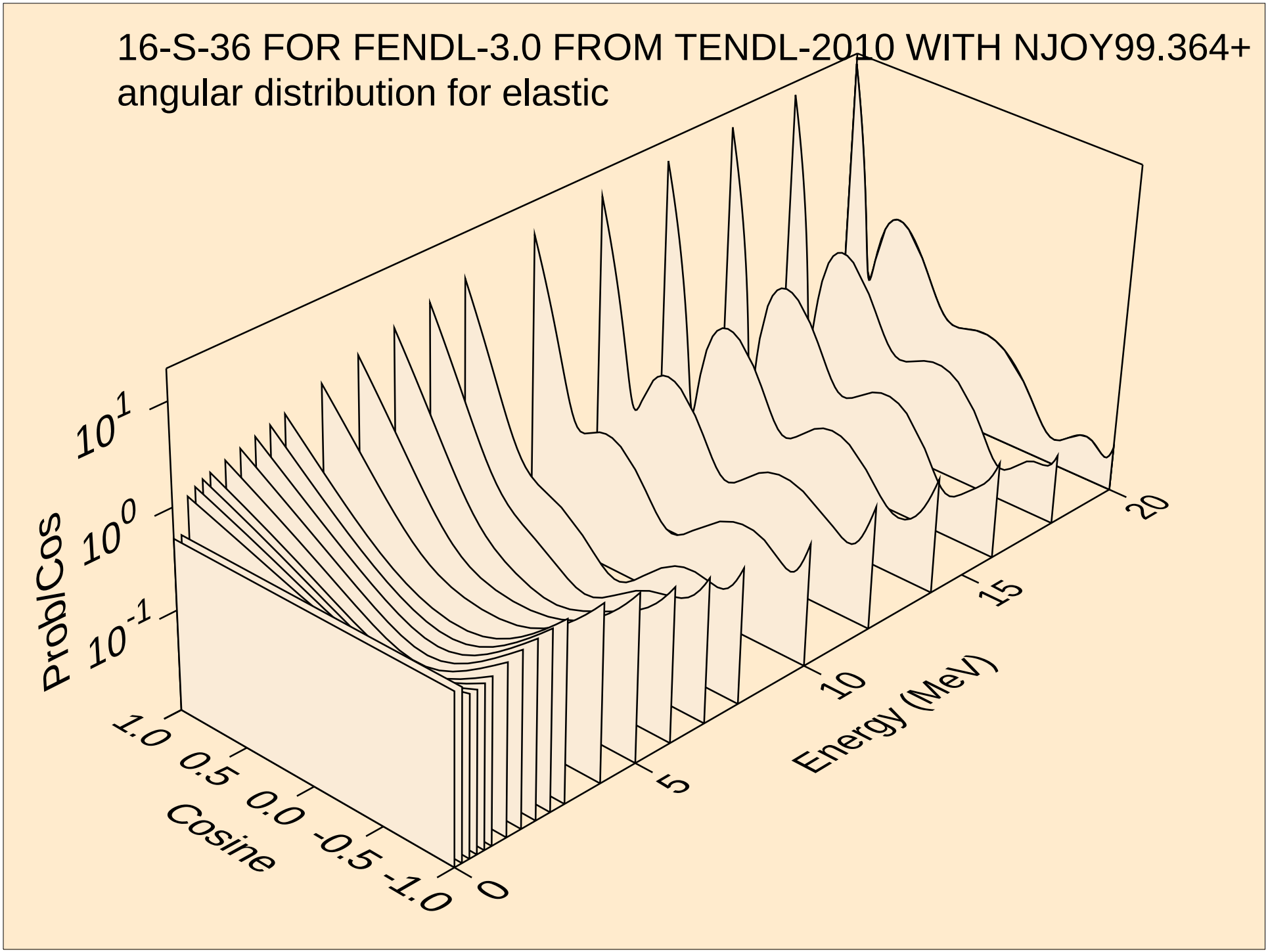

16-S-36 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+
Inelastic levels
Cross section (barns)
*10-3
40
35
30
25
20
15
10
5
0
6.0
6.5
7.0
7.5
8.0
8.5
9.0
9.5
10.0
Energy (MeV)
(n,n*16)
(n,n*17)
(n,n*18)
(n,n*19)
(n,n*20)

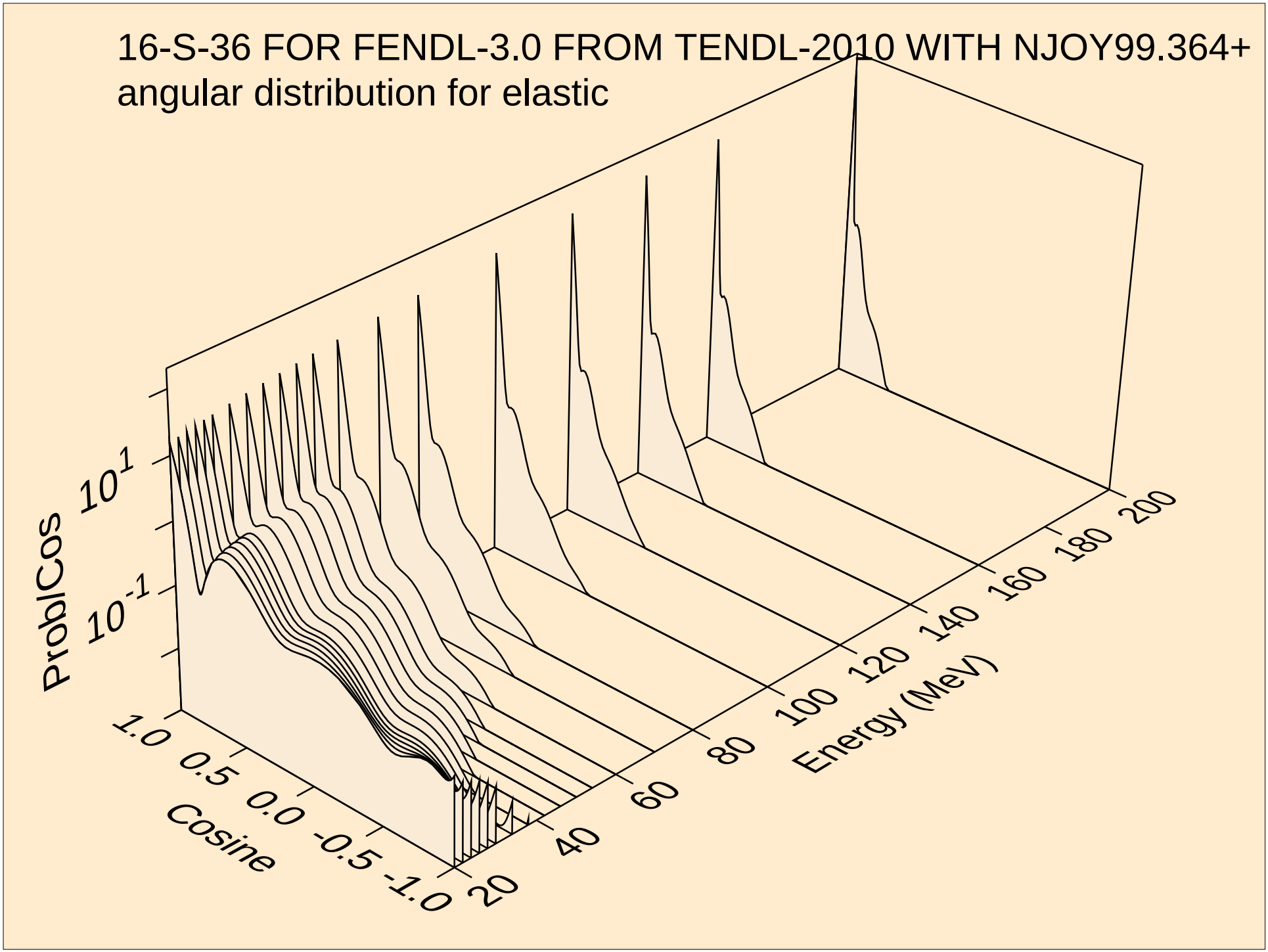

16-S-36 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+
Threshold reactions
Cross section (barns)
Energy (MeV)
(n,x)
(n,2n)
(n,3n)
(n,n*)a
(n,n*)p
0.0
0.2
0.4
0.6
0.8
1.0
1.2
0
20
40
60
80
100
120
140
160
180
200

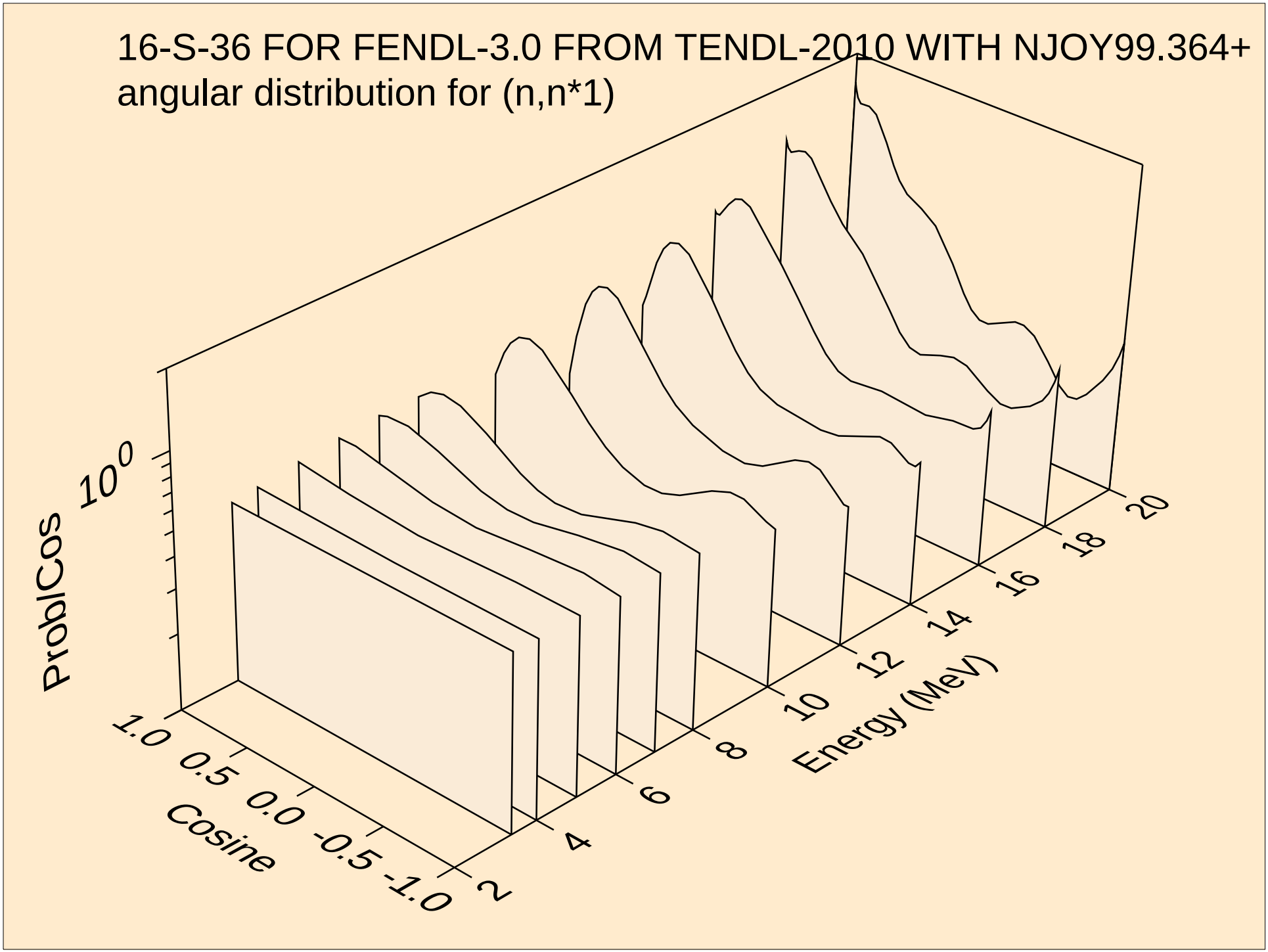

16-S-36 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+
Threshold reactions
(n,n*c)
(n,p)
(n,d)
(n,t)
(n,a)
Cross section (barns)
1.0
0.8
0.6
0.4
0.2
0.0
4
6
8
10
12
14
16
18
20
Energy (MeV)

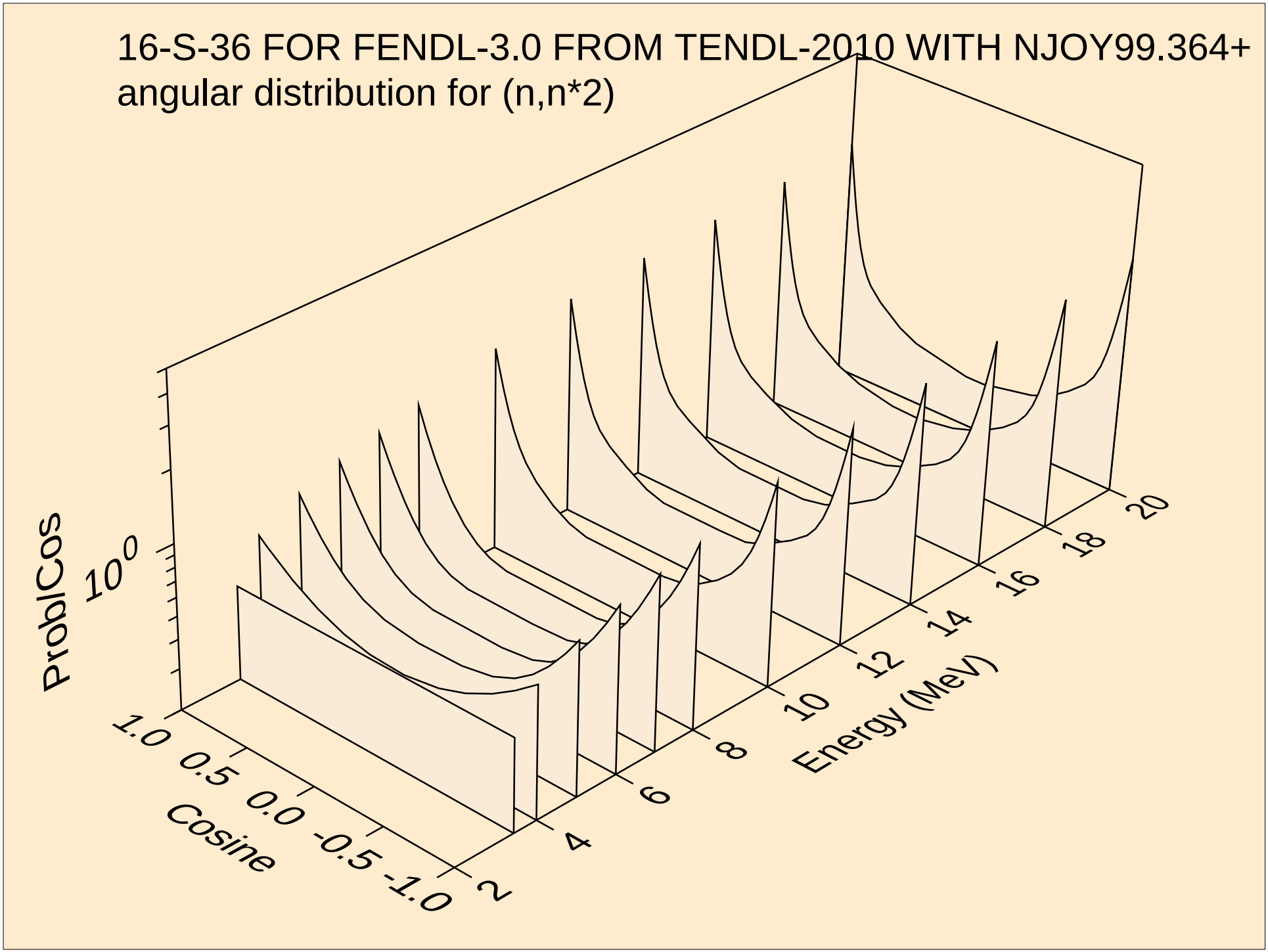

16-S-36 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+
Threshold reactions
600
*10-3
500
400
300
200
100
0
Cross section (barns)
(n,xp)
(n,xd)
(n,xt)
(n,xhe3)
(n,xa)
0
20
40
60
80
100
120
140
160
180
200
Energy (MeV)

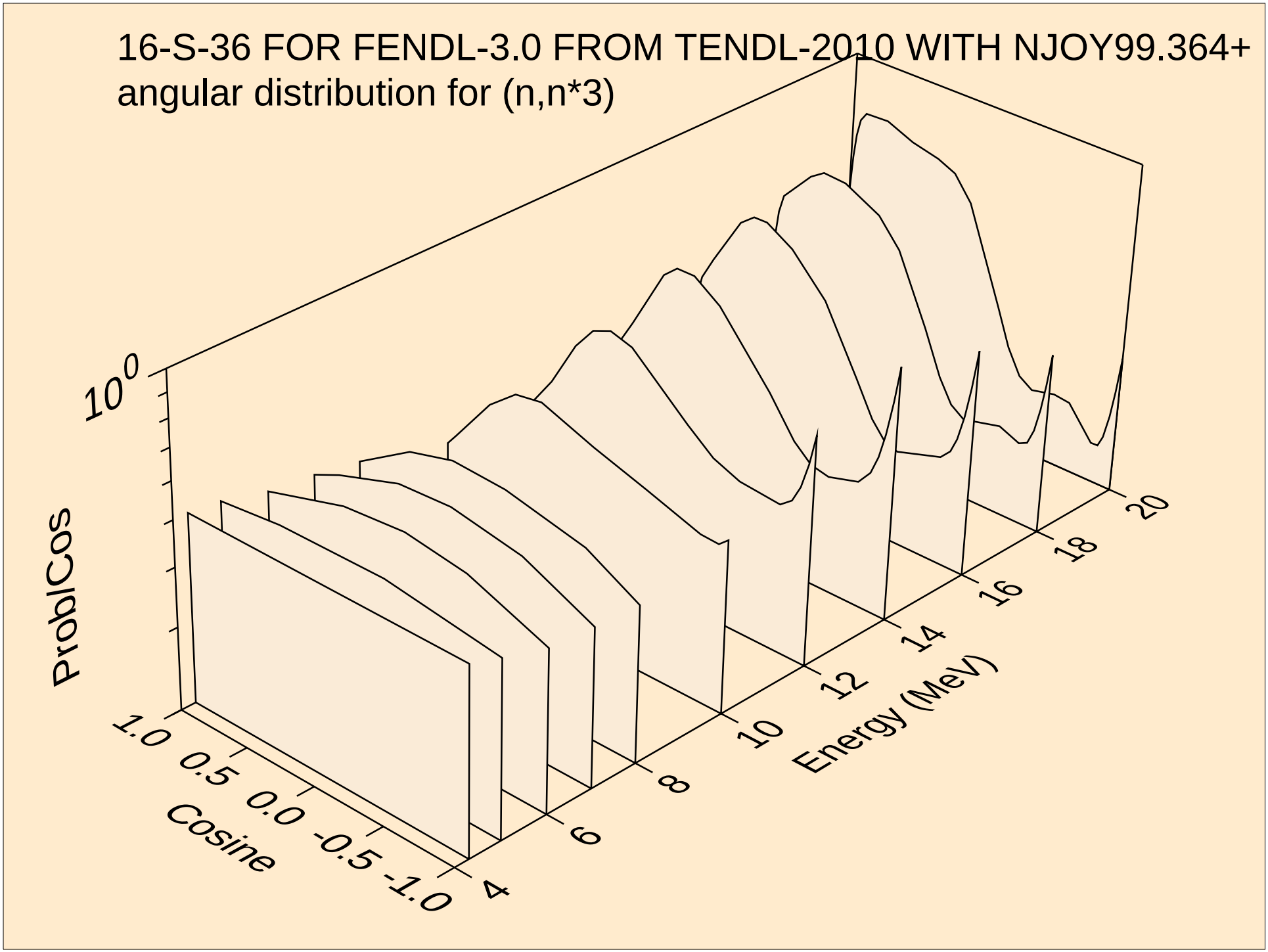

16-S-36 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+
Threshold reactions
10
*10-3
8
6
4
2
0
(n,p*c)
(n,a*c)
Cross section (barns)
4
6
8
10
12
14
16
18
20
Energy (MeV)

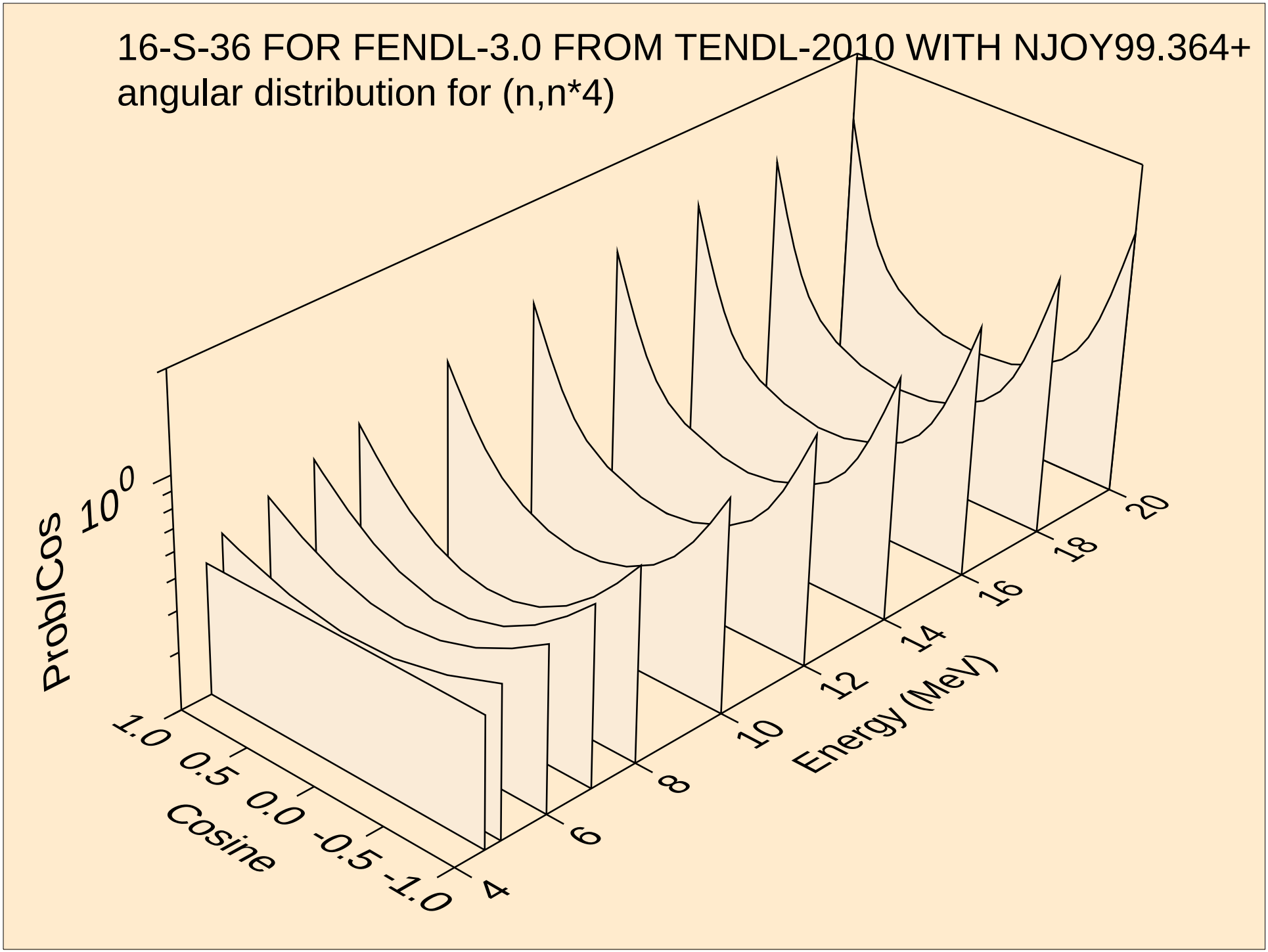

16-S-36 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+
angular distribution for elastic
ProbICos
10^{1}
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
Energy (MeV)

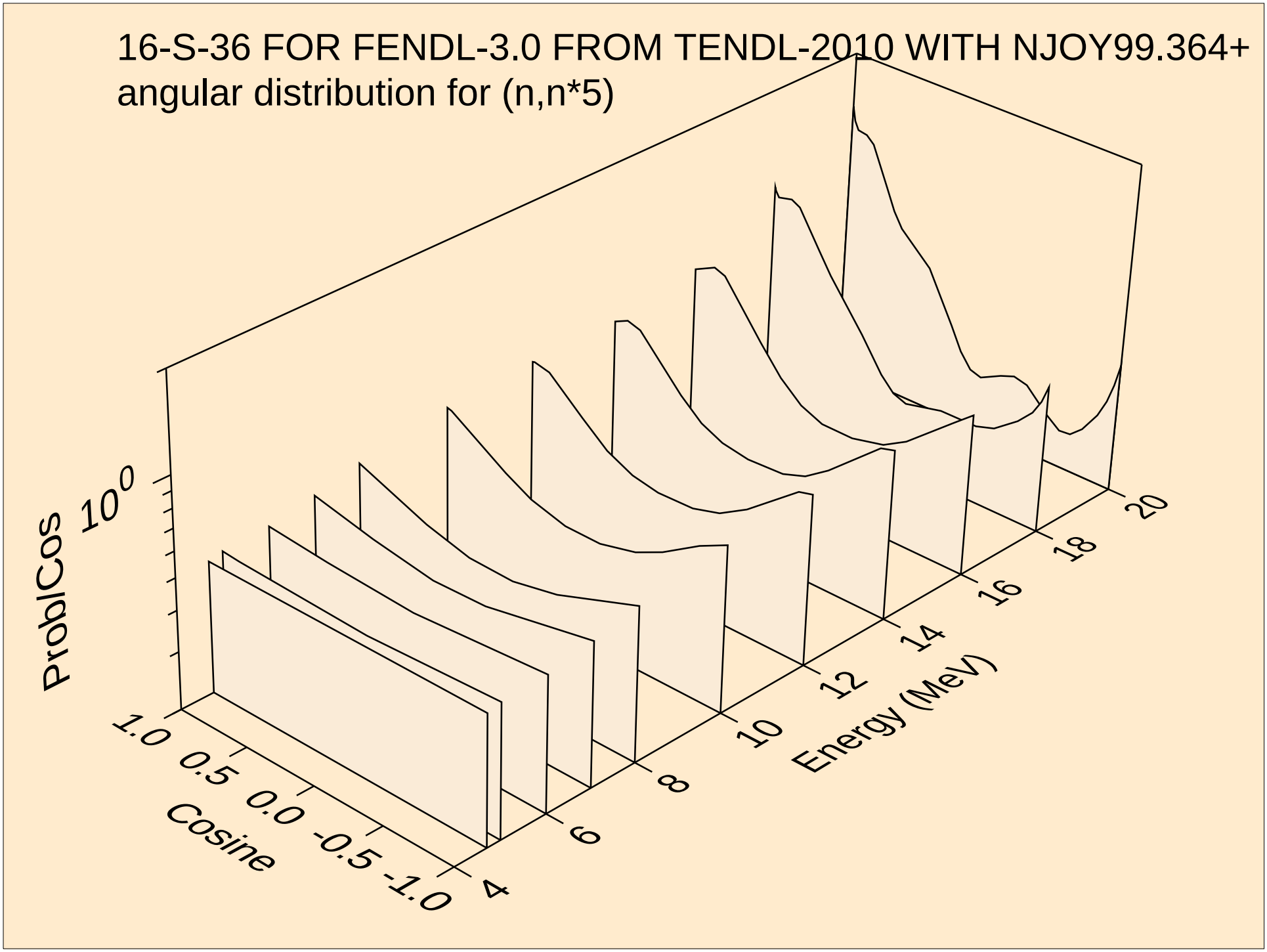

16-S-36 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+
angular distribution for elastic
ProbICos
10^1
10^-1
1.0
0.5
0.0
-0.5
-1.0
Cosine
20
40
60
80
100
120
140
160
180
200
Energy (MeV)

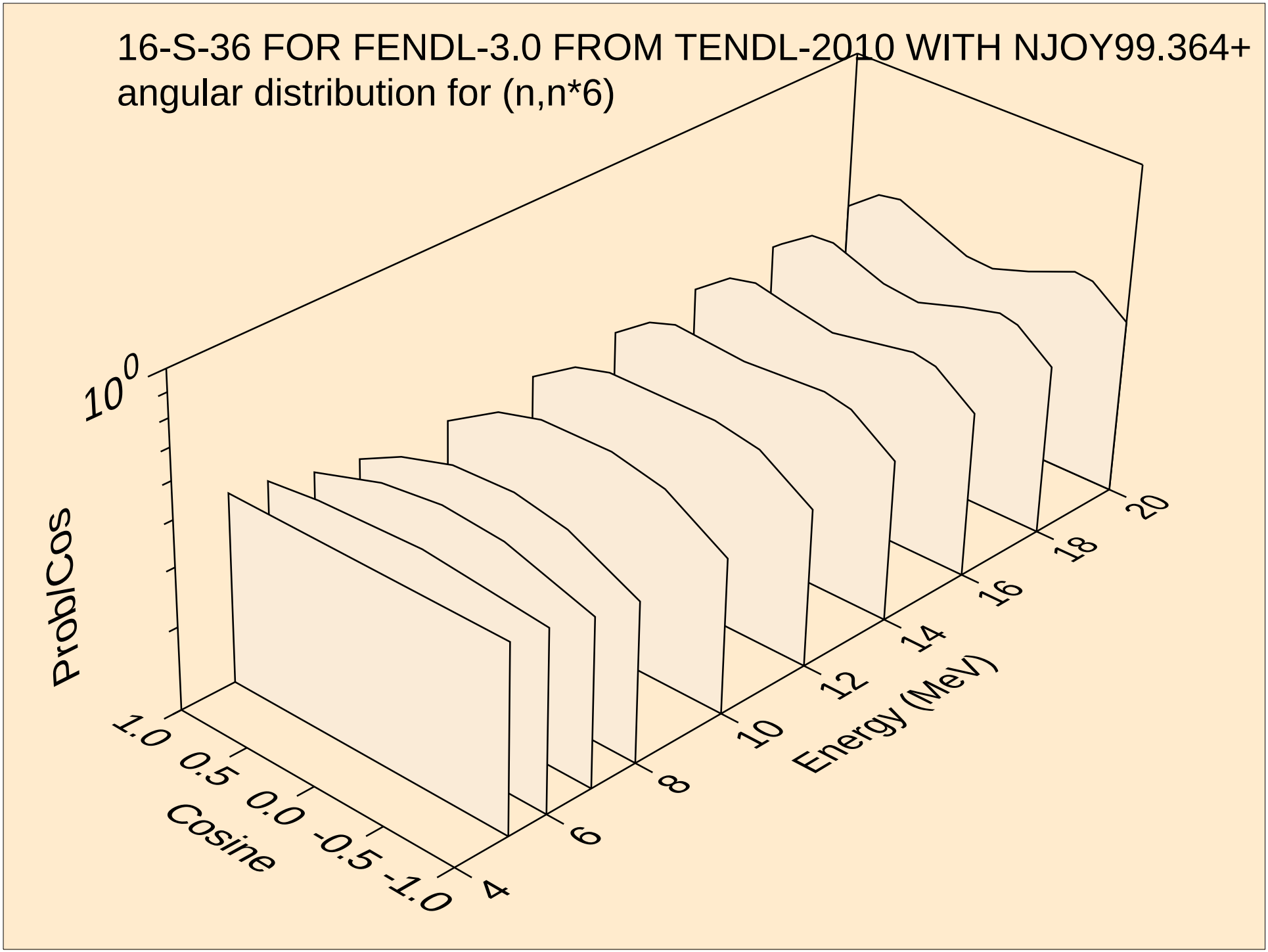

16-S-36 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+
angular distribution for (n,n*1)
ProblCos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

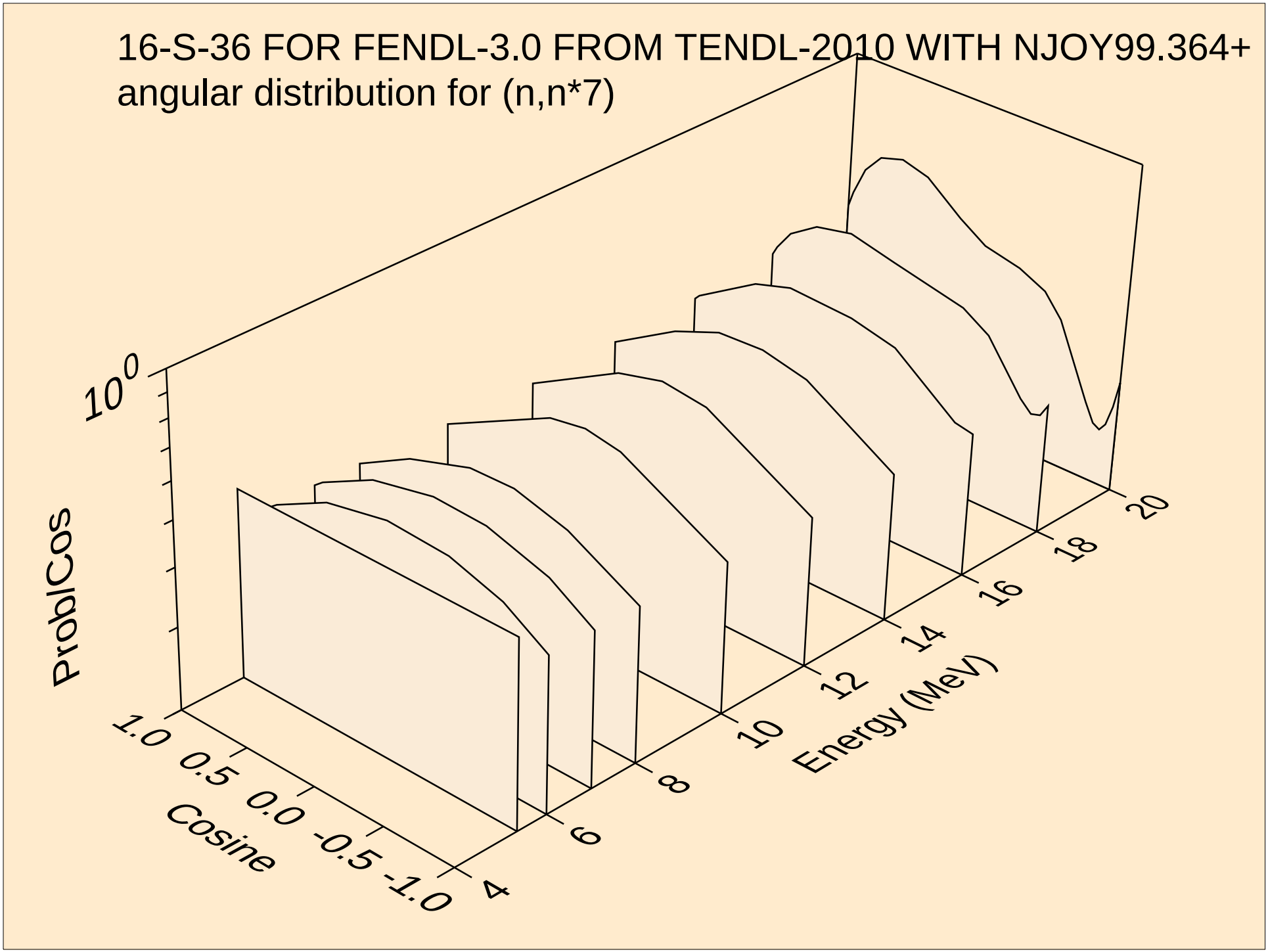

16-S-36 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+
angular distribution for (n,n*2)
ProbICos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

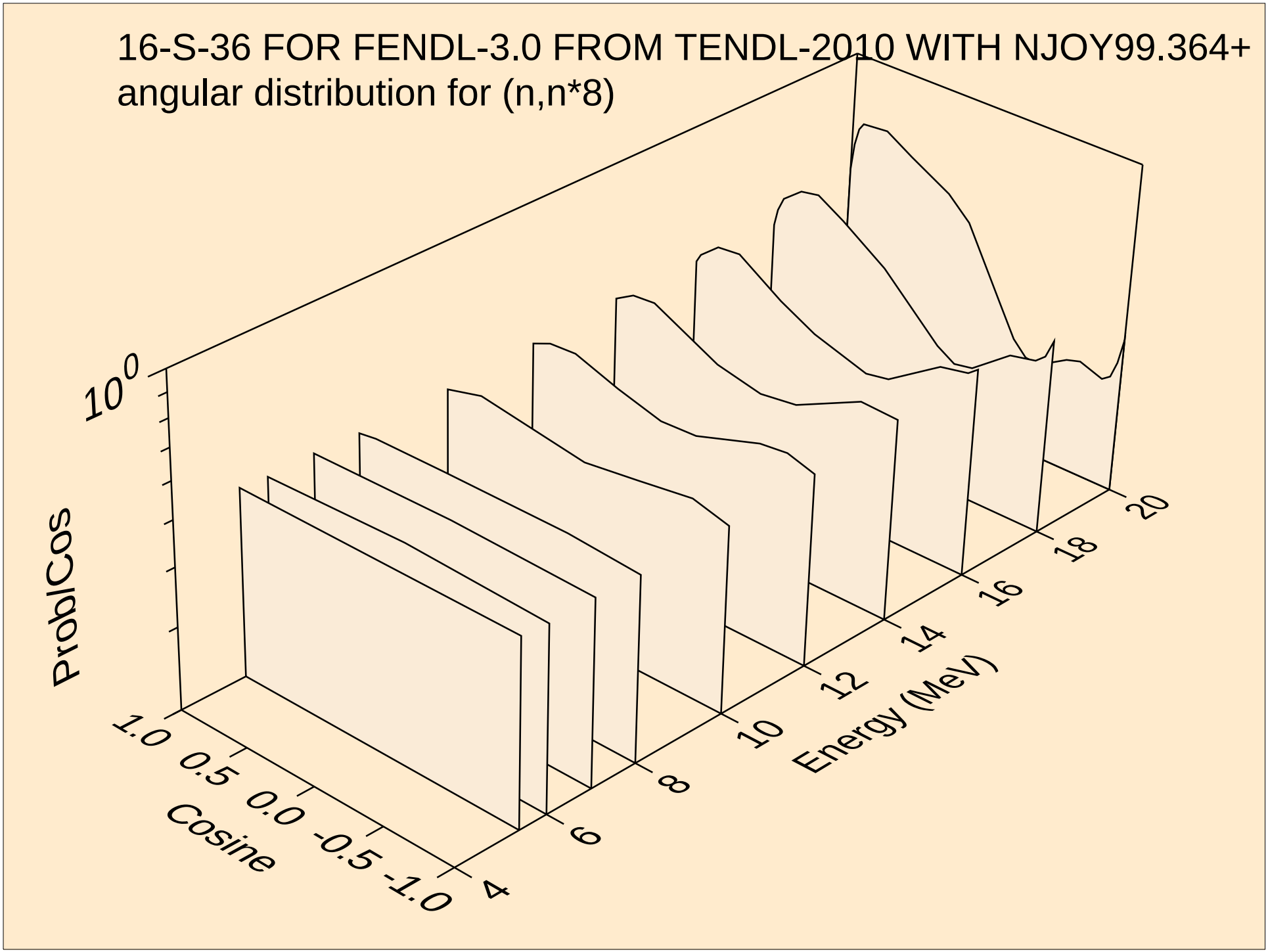

16-S-36 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+
angular distribution for (n,n*3)
10^0
ProbICos
1.0
0.5
0.0
-0.5
-1.0
Cosine
4
6
8
10
12
14
16
18
20
Energy (MeV)

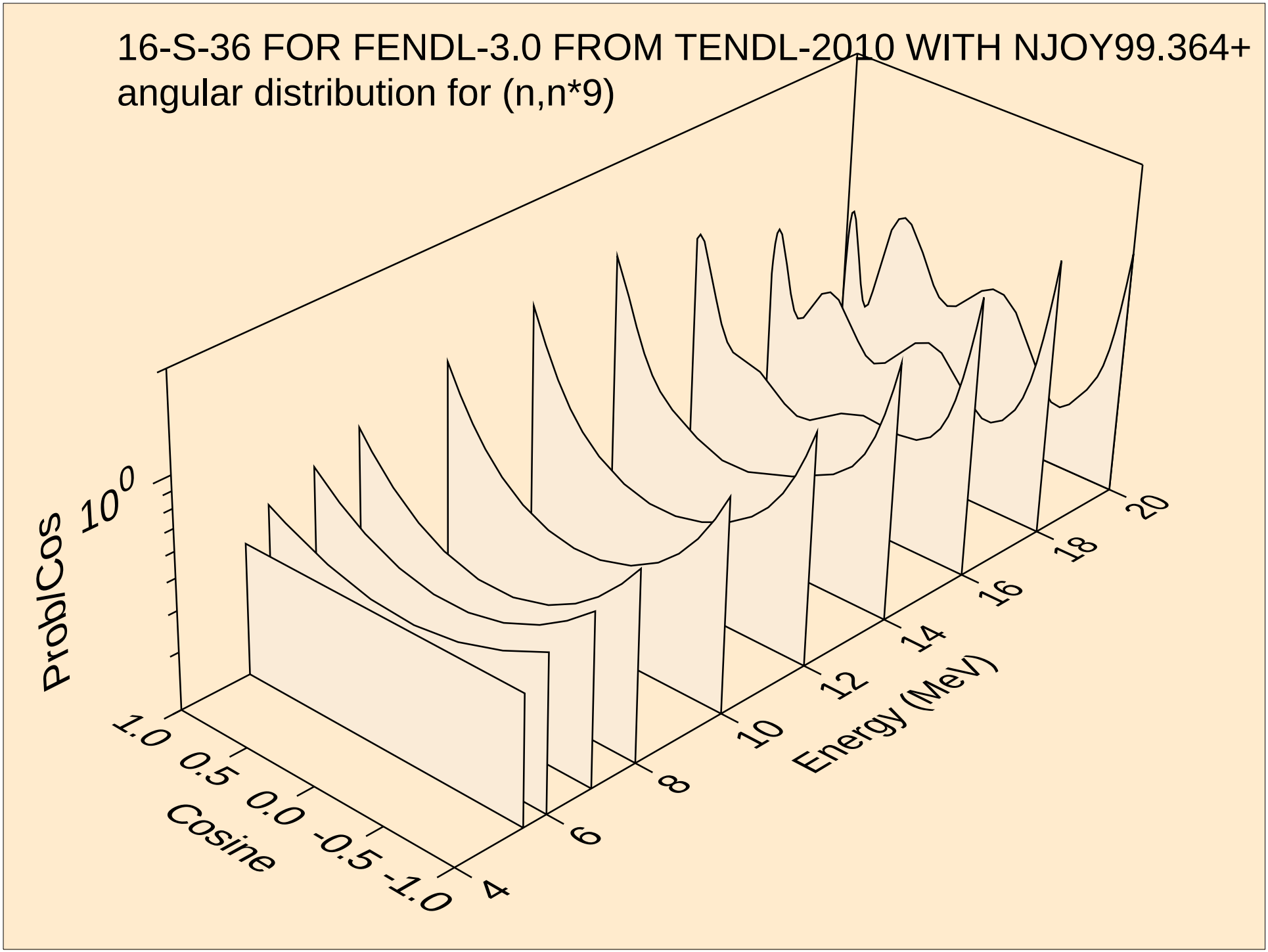

16-S-36 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+
angular distribution for (n,n*4)
ProbICos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
4
6
8
10
12
14
16
18
20
Energy (MeV)

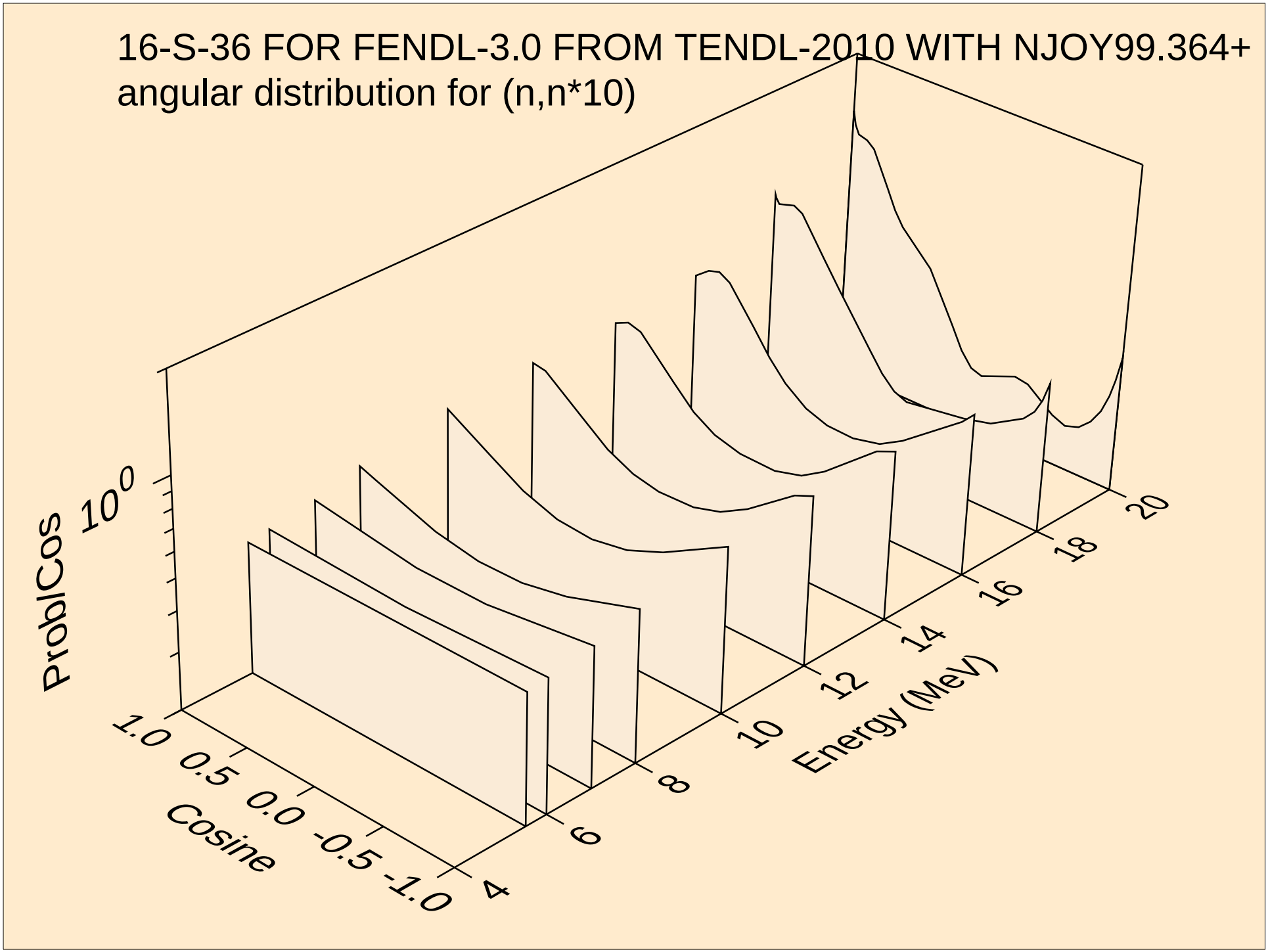

16-S-36 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+
angular distribution for (n,n*5)
ProblCos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
4
6
8
10
12
14
16
18
20
Energy (MeV)

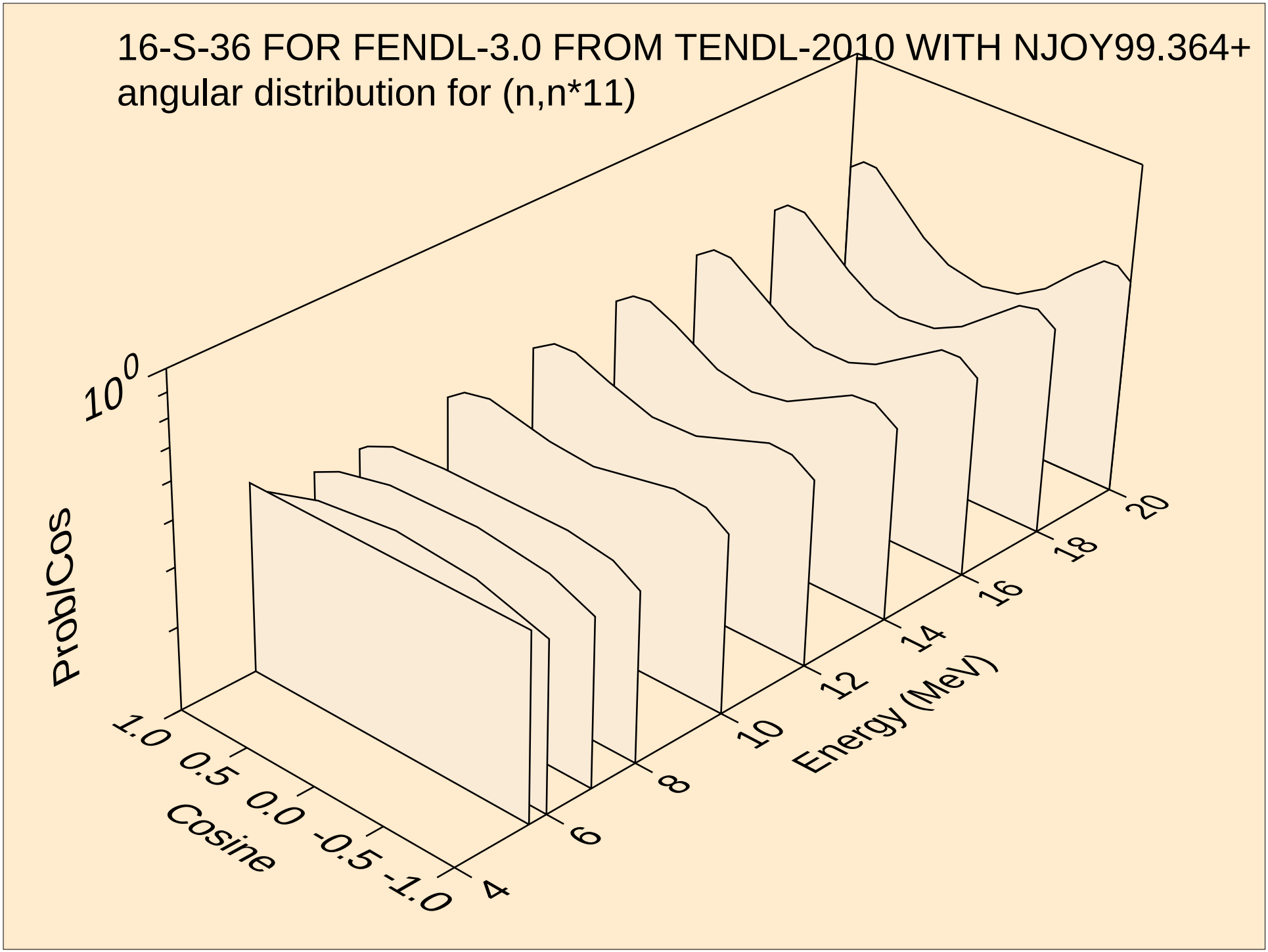

16-S-36 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+
angular distribution for (n,n*6)
10^0
ProbICos
1.0
0.5
0.0
-0.5
-1.0
Cosine
4
6
8
10
12
14
16
18
20
Energy (MeV)

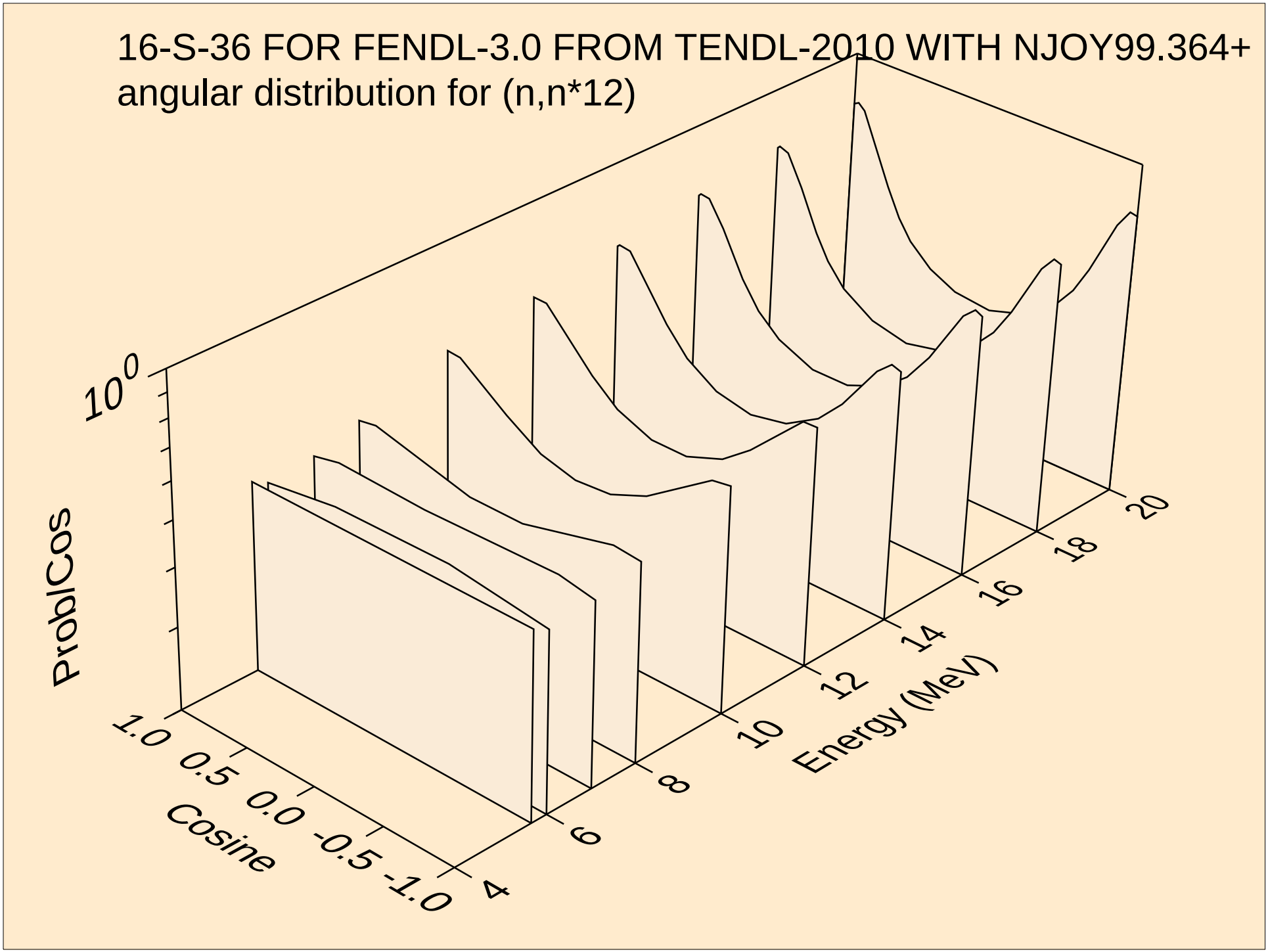

16-S-36 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+
angular distribution for (n,n*7)
10^0
ProbICos
1.0
0.5
0.0
-0.5
-1.0
Cosine
4
6
8
10
12
14
16
18
20
Energy (MeV)

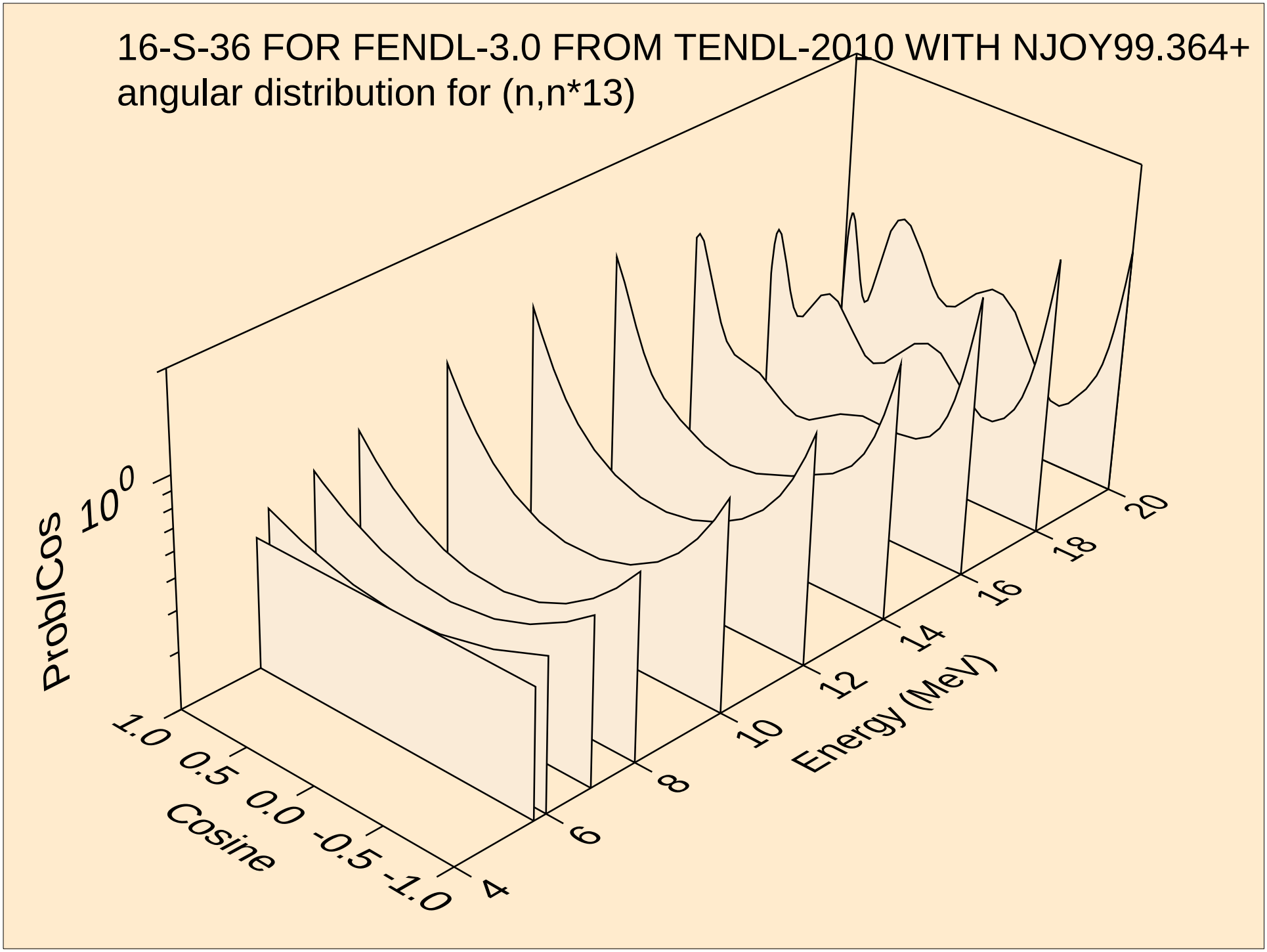

16-S-36 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+
angular distribution for (n,n*8)
10^0
ProbICos
1.0
0.5
0.0
-0.5
-1.0
Cosine
4
6
8
10
12
14
16
18
20
Energy (MeV)

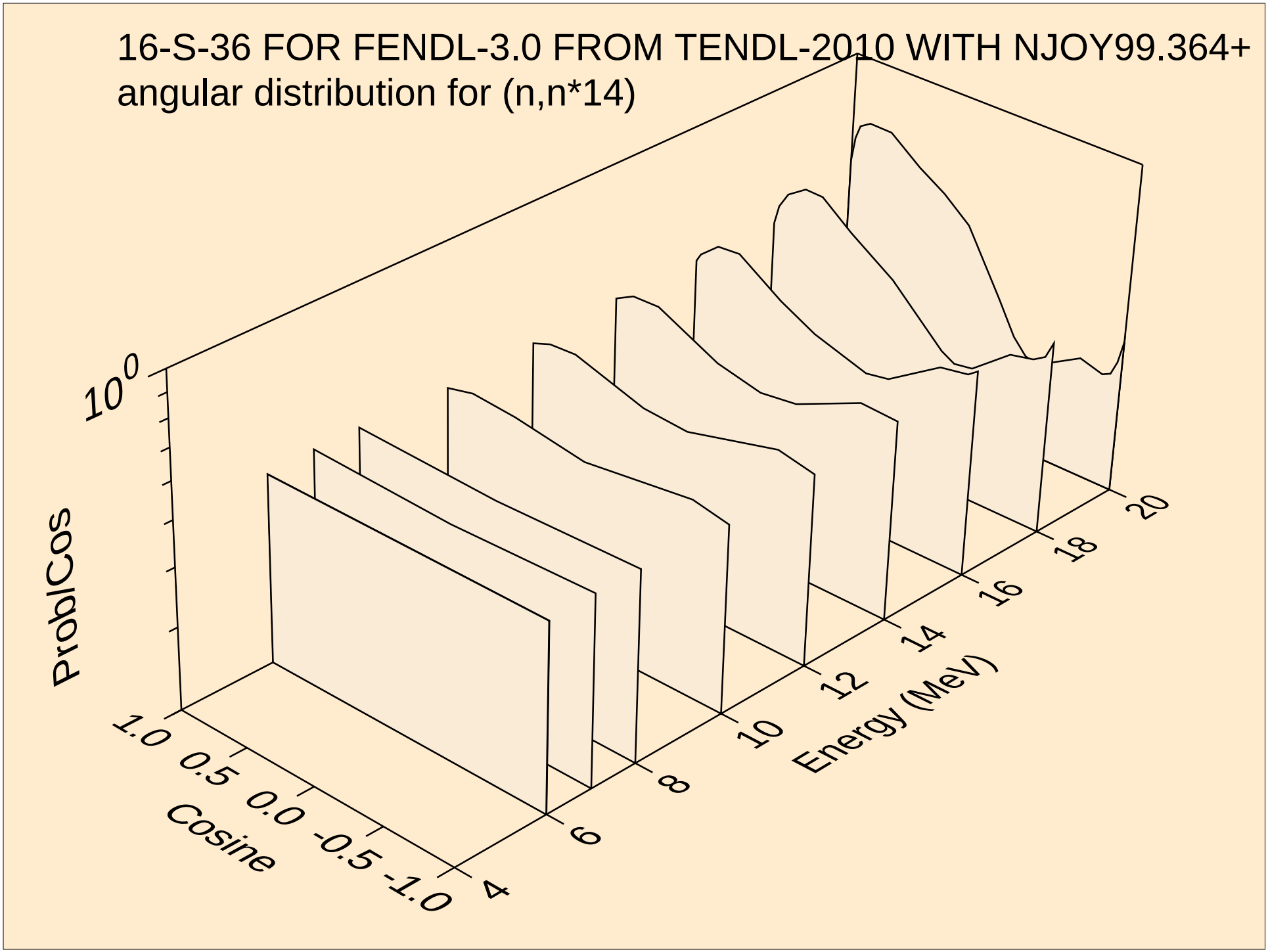

16-S-36 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+
angular distribution for (n,n*9)
ProbICos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
4
6
8
10
12
14
16
18
20
Energy (MeV)

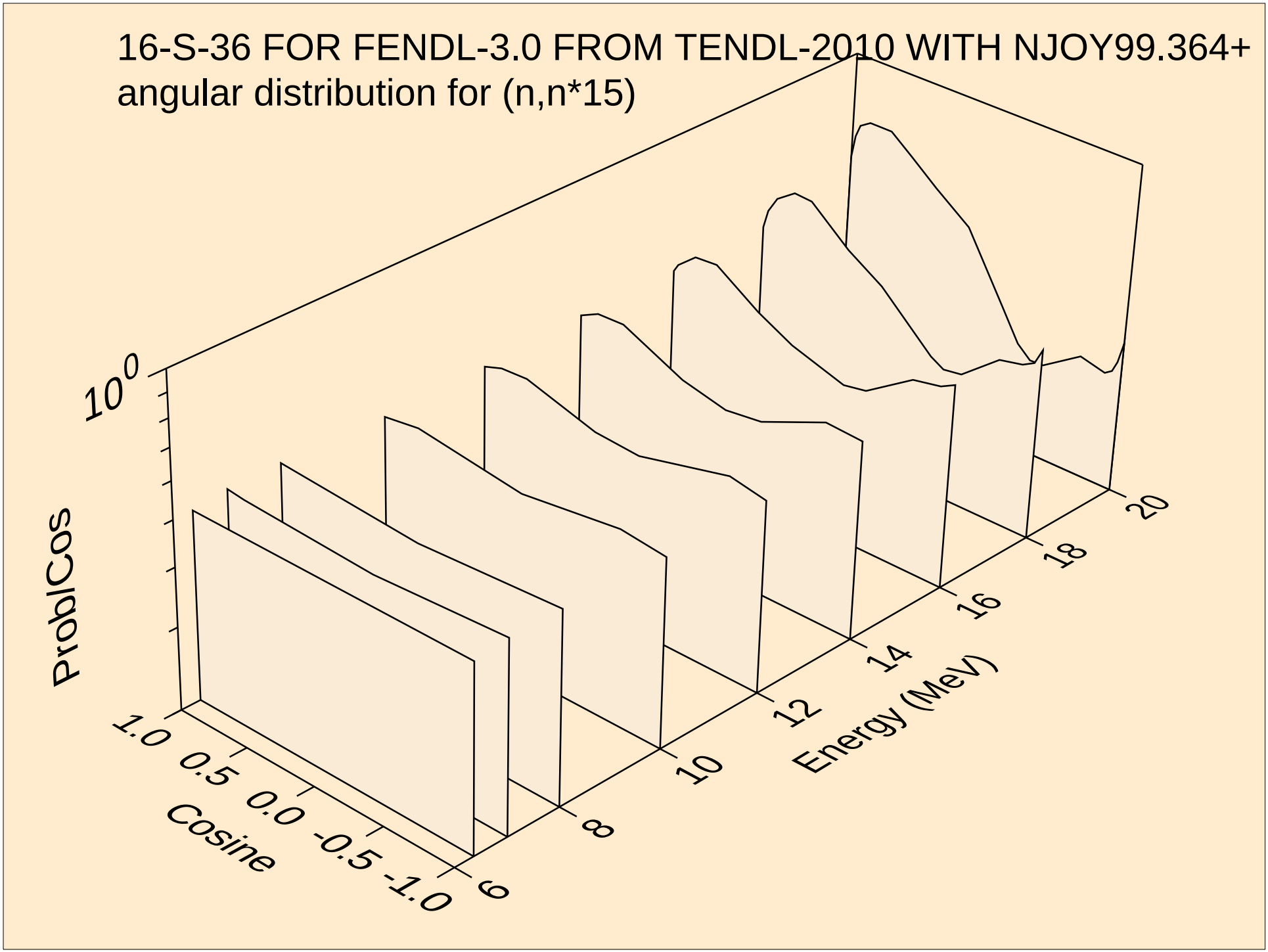

16-S-36 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+
angular distribution for (n,n*10)
ProbICos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
4
6
8
10
12
14
16
18
20
Energy (MeV)

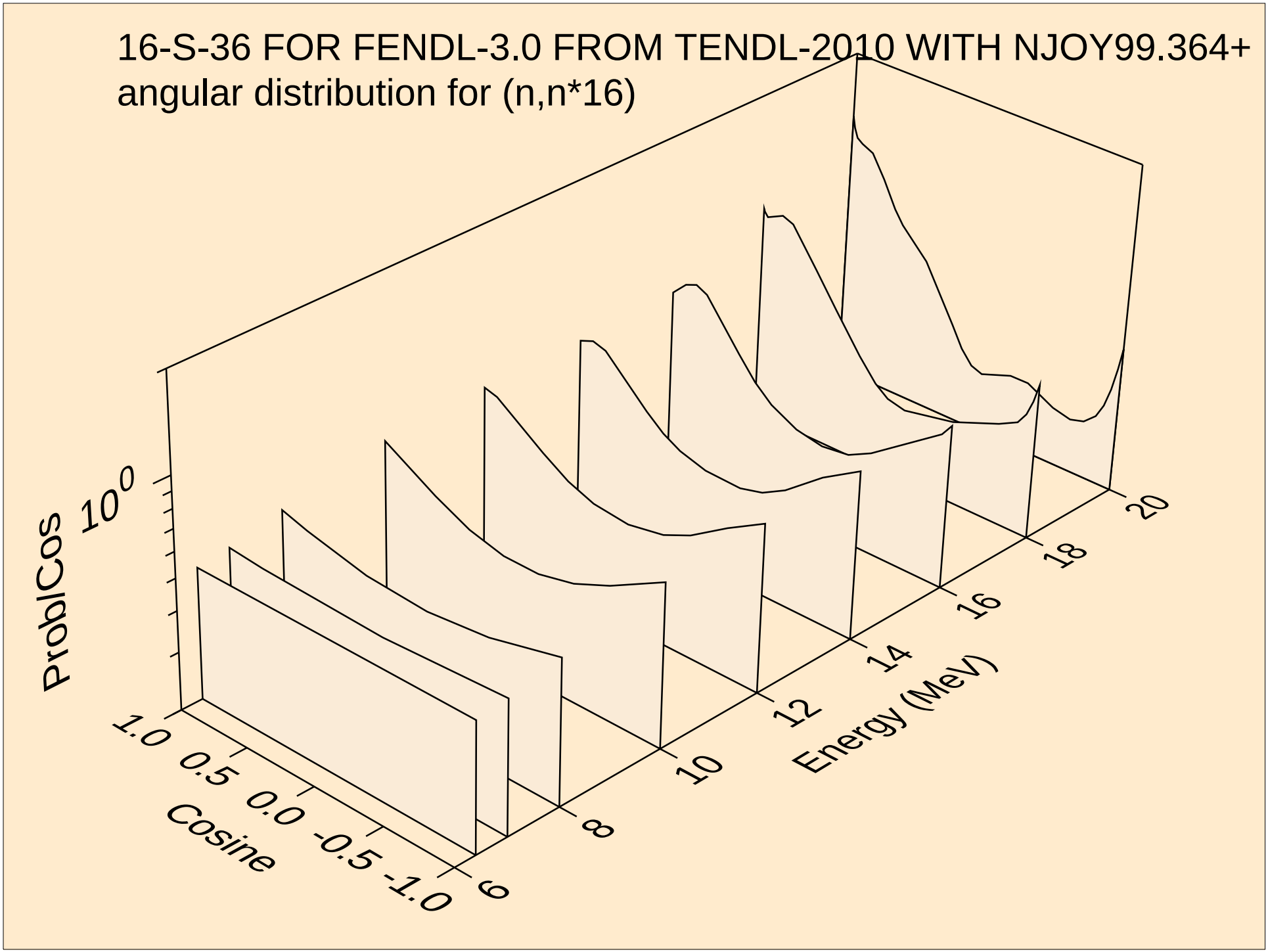

16-S-36 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+
angular distribution for (n,n*11)
ProbICos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
4
6
8
10
12
14
16
18
20
Energy (MeV)

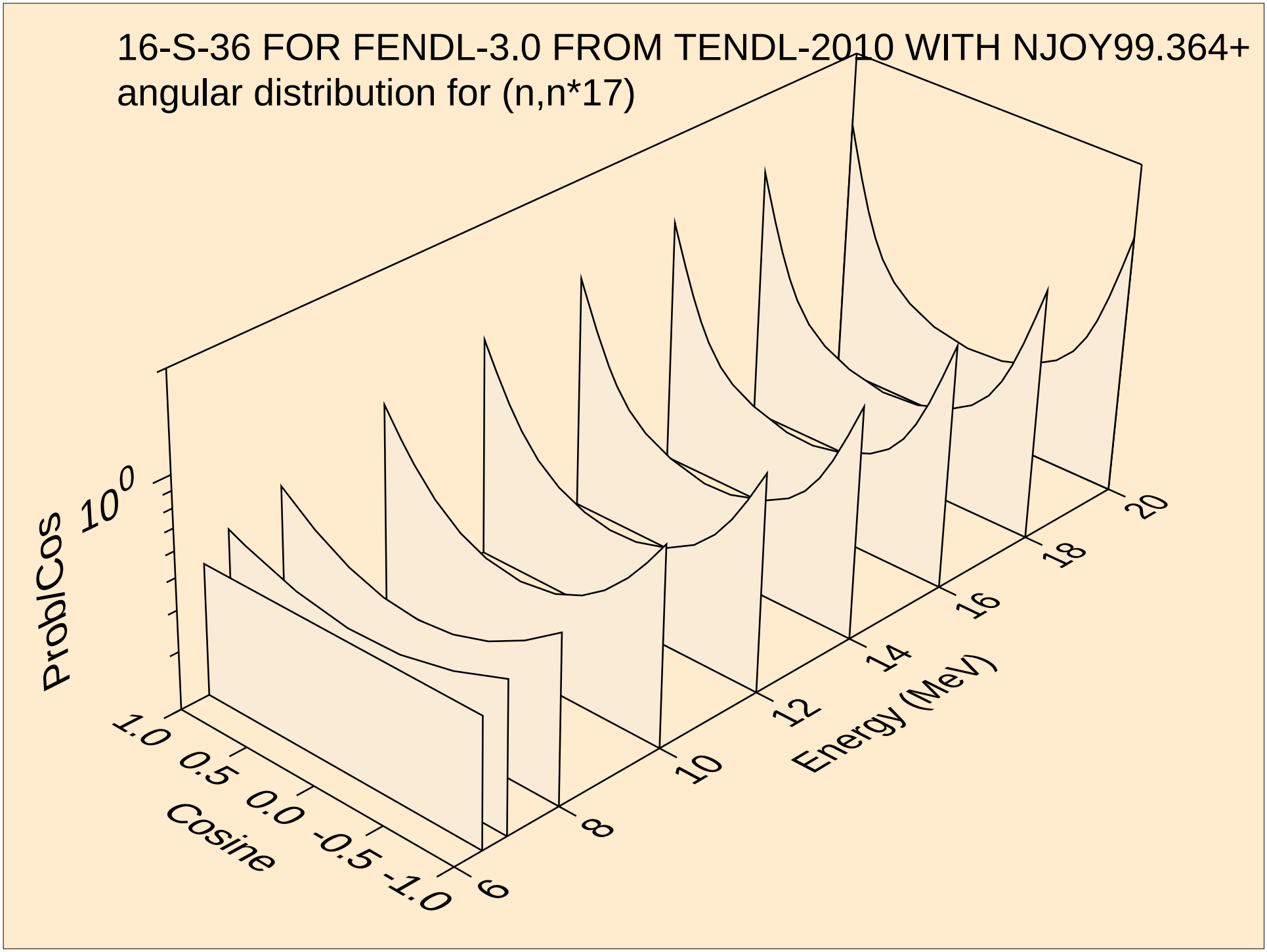

16-S-36 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+
angular distribution for (n,n*12)
10^0
ProbICos
1.0
0.5
0.0
-0.5
-1.0
Cosine
4
6
8
10
12
14
16
18
20
Energy (MeV)

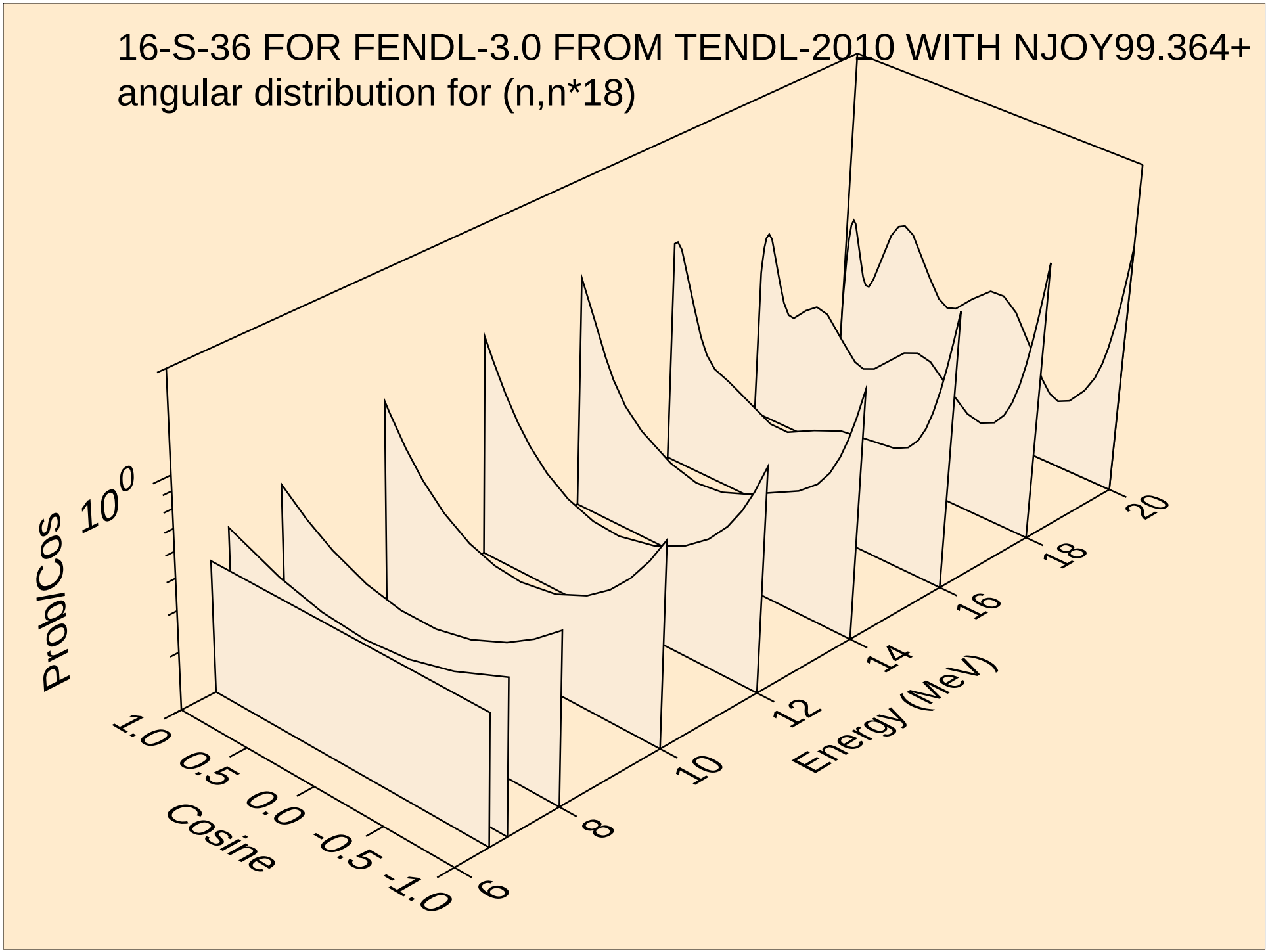

16-S-36 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+
angular distribution for (n,n*13)
ProbICos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
4
6
8
10
12
14
16
18
20
Energy (MeV)

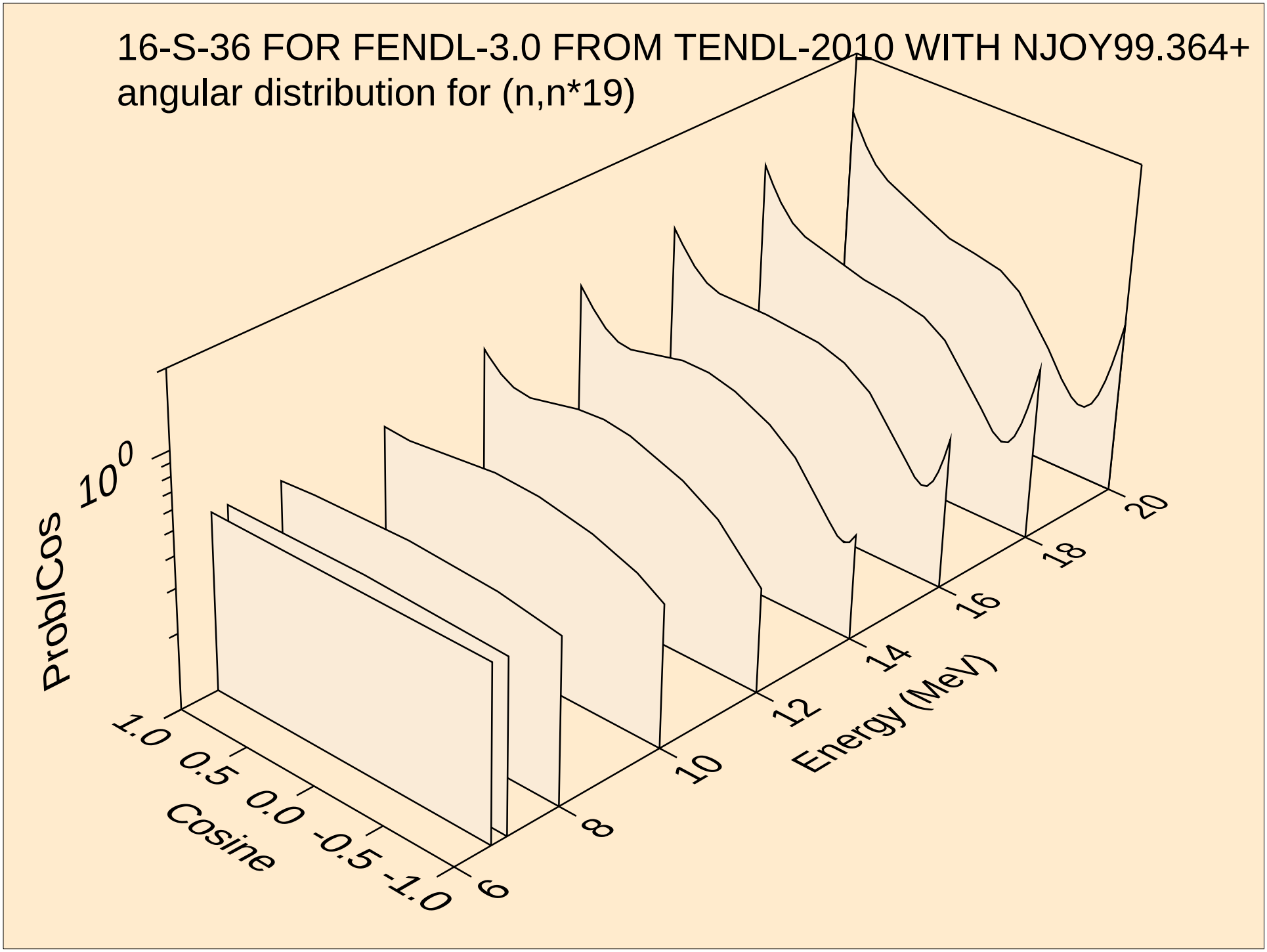

16-S-36 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+
angular distribution for (n,n*14)
10^0
ProbICos
1.0
0.5
0.0
-0.5
-1.0
Cosine
4
6
8
10
12
14
16
18
20
Energy (MeV)

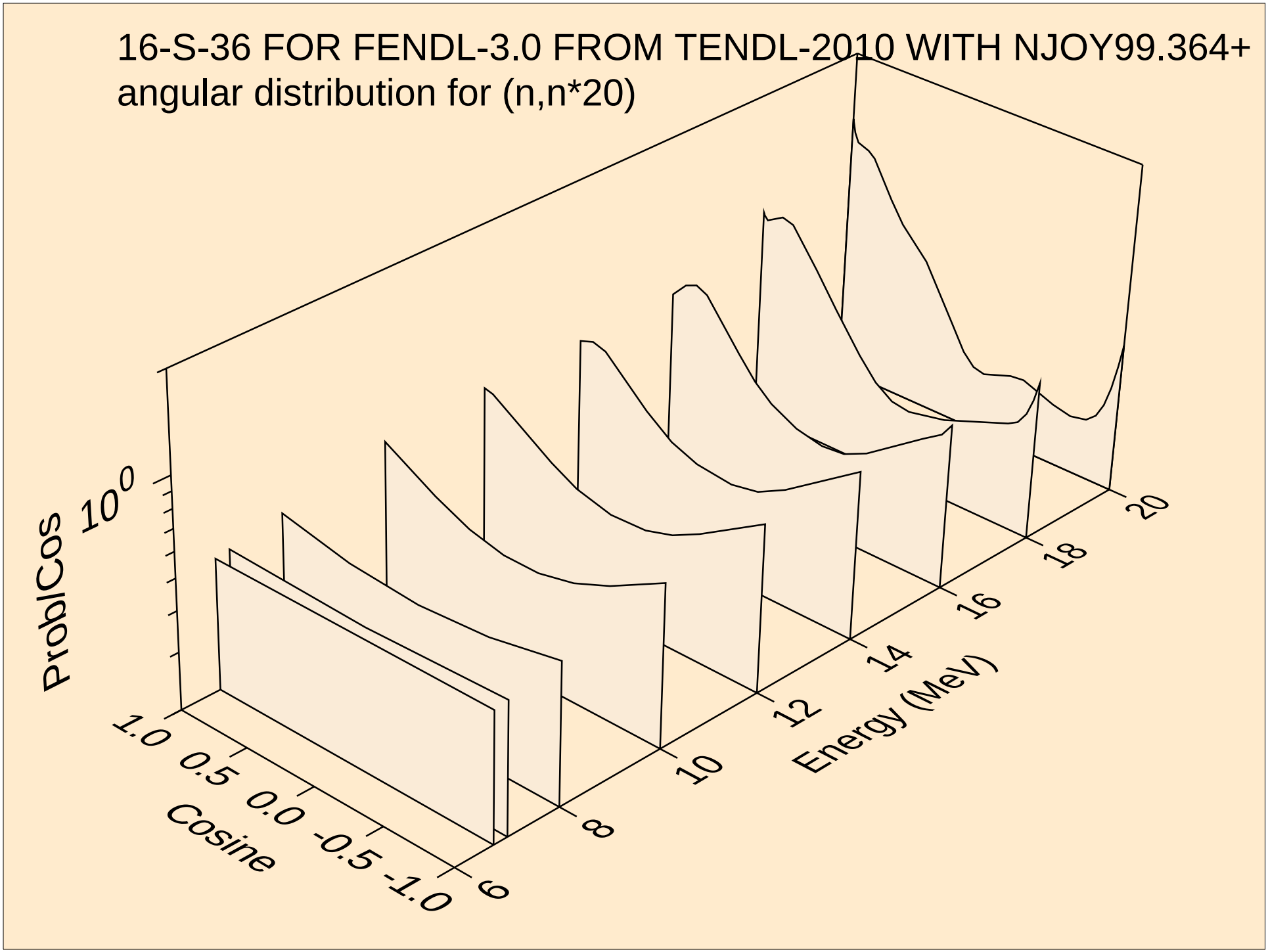

16-S-36 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+
angular distribution for (n,n*15)
10^0
ProbICos
1.0
0.5
0.0
-0.5
-1.0
Cosine
6
8
10
12
14
16
18
20
Energy (MeV)

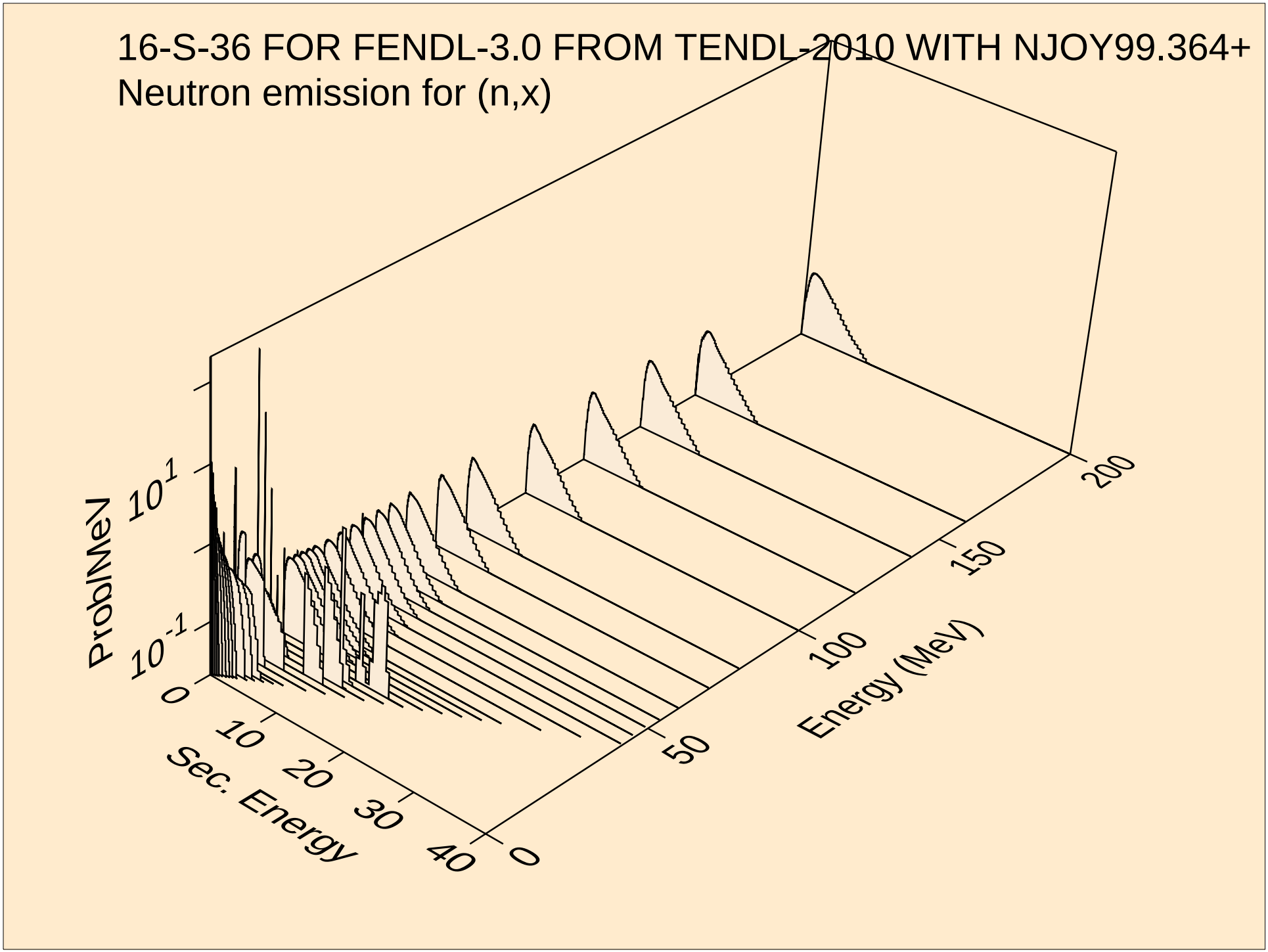

16-S-36 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+
angular distribution for (n,n*16)
ProbICos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
6
8
10
12
14
16
18
20
Energy (MeV)

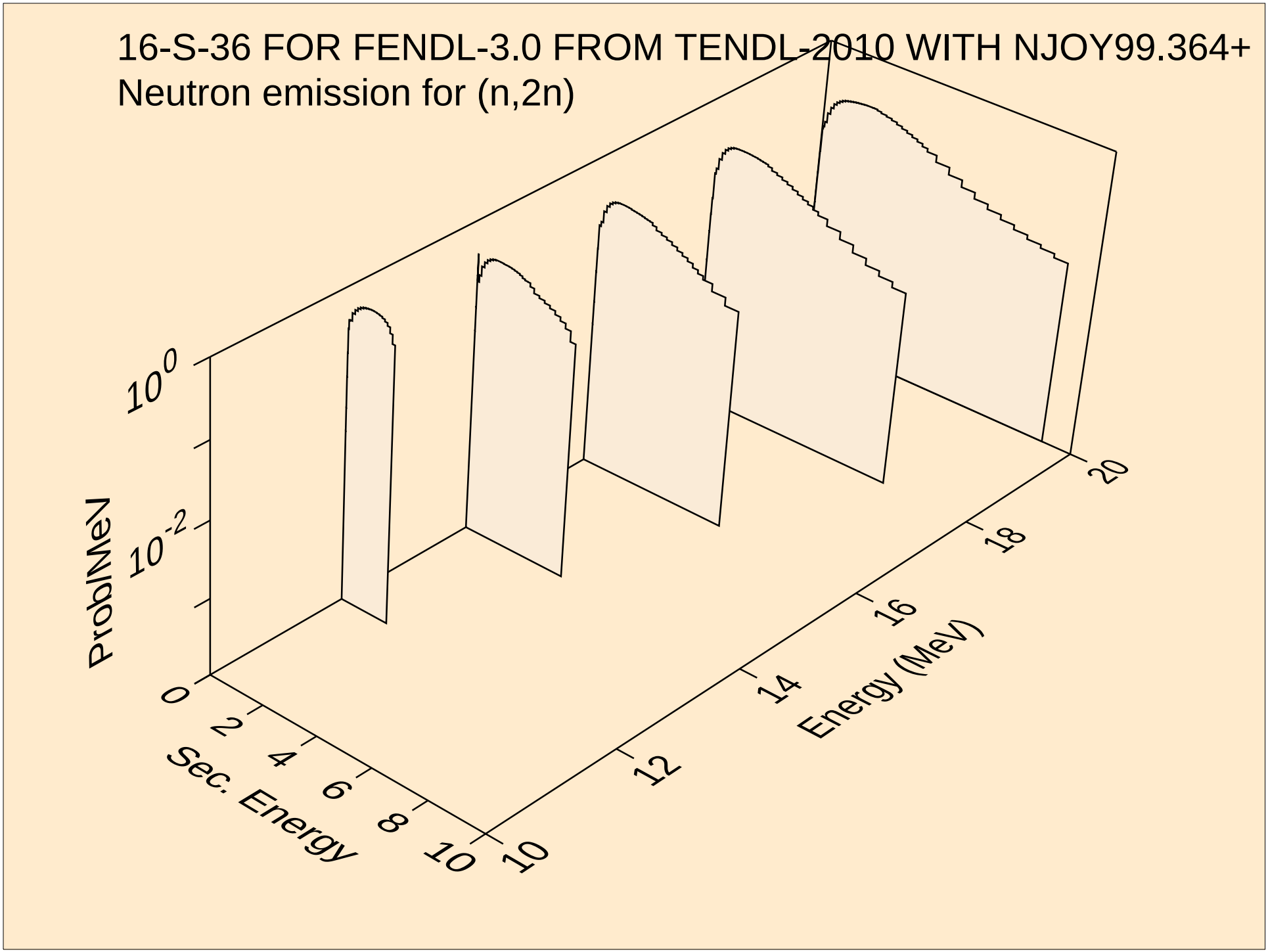

16-S-36 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+
angular distribution for (n,n*17)
ProbICos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
6
8
10
12
14
16
18
20
Energy (MeV)

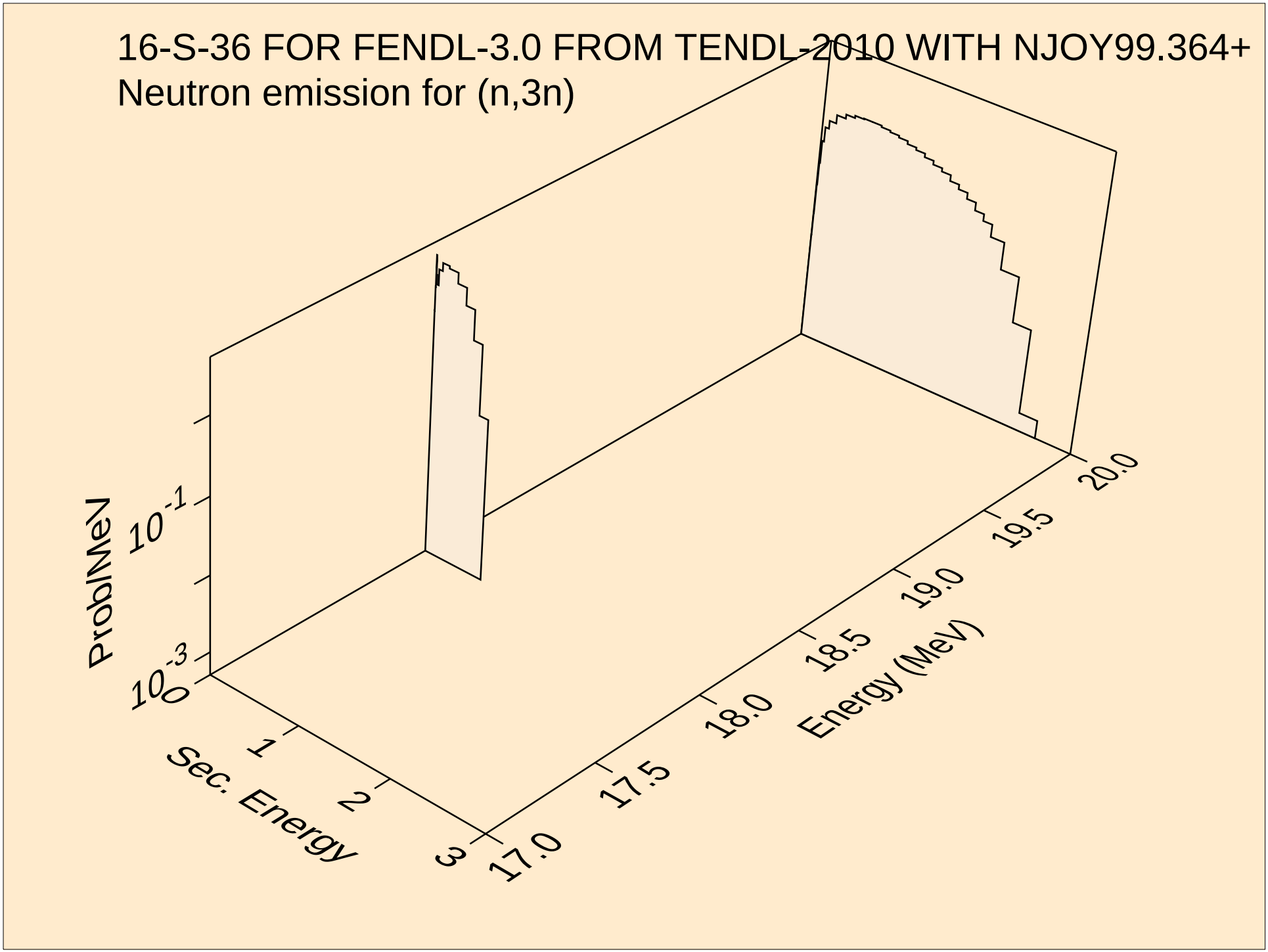

16-S-36 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+
angular distribution for (n,n*18)
ProbICos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
6
8
10
12
14
16
18
20
Energy (MeV)

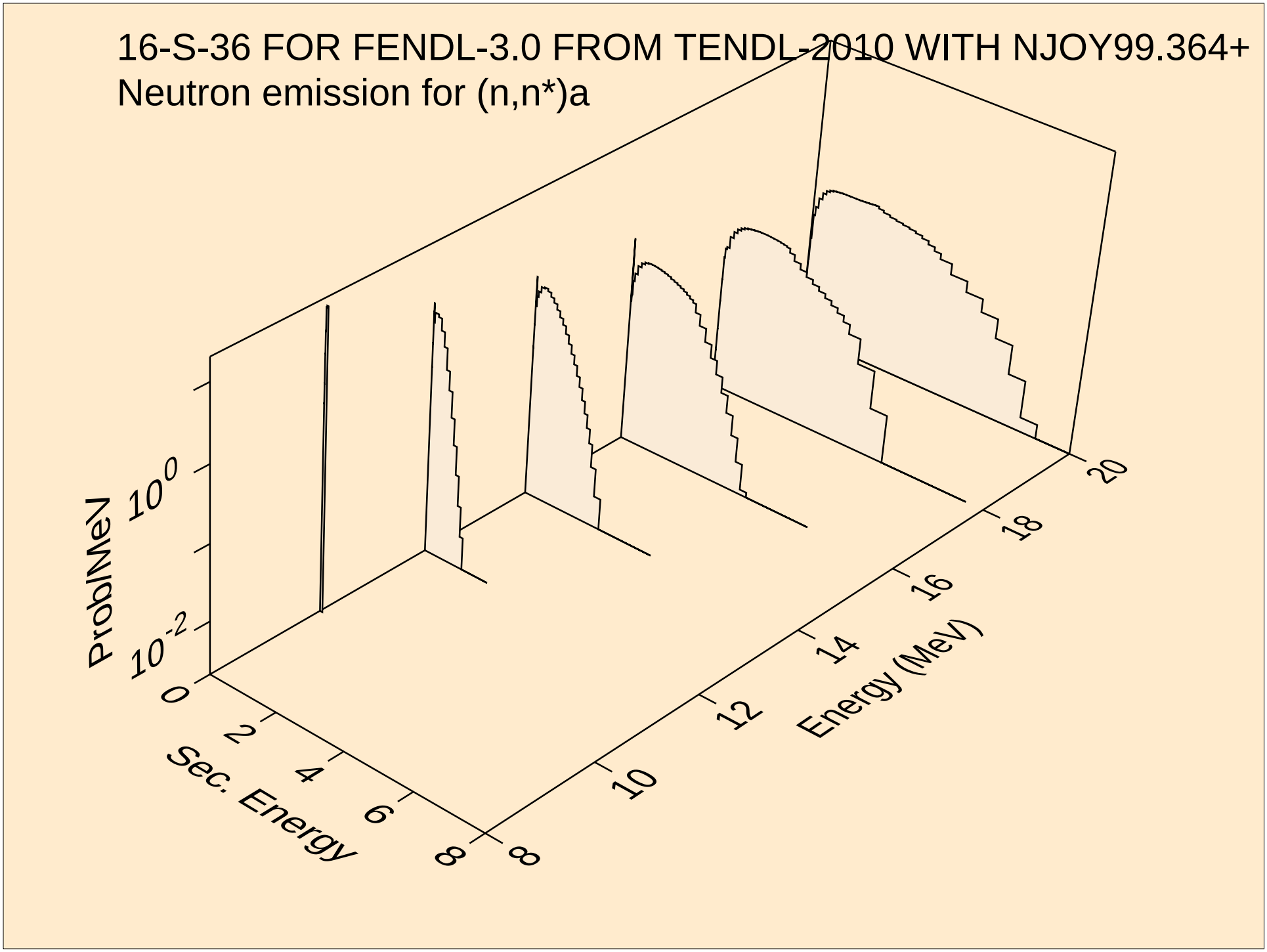

16-S-36 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+
angular distribution for (n,n*19)
ProbICos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
6
8
10
12
14
16
18
20
Energy (MeV)

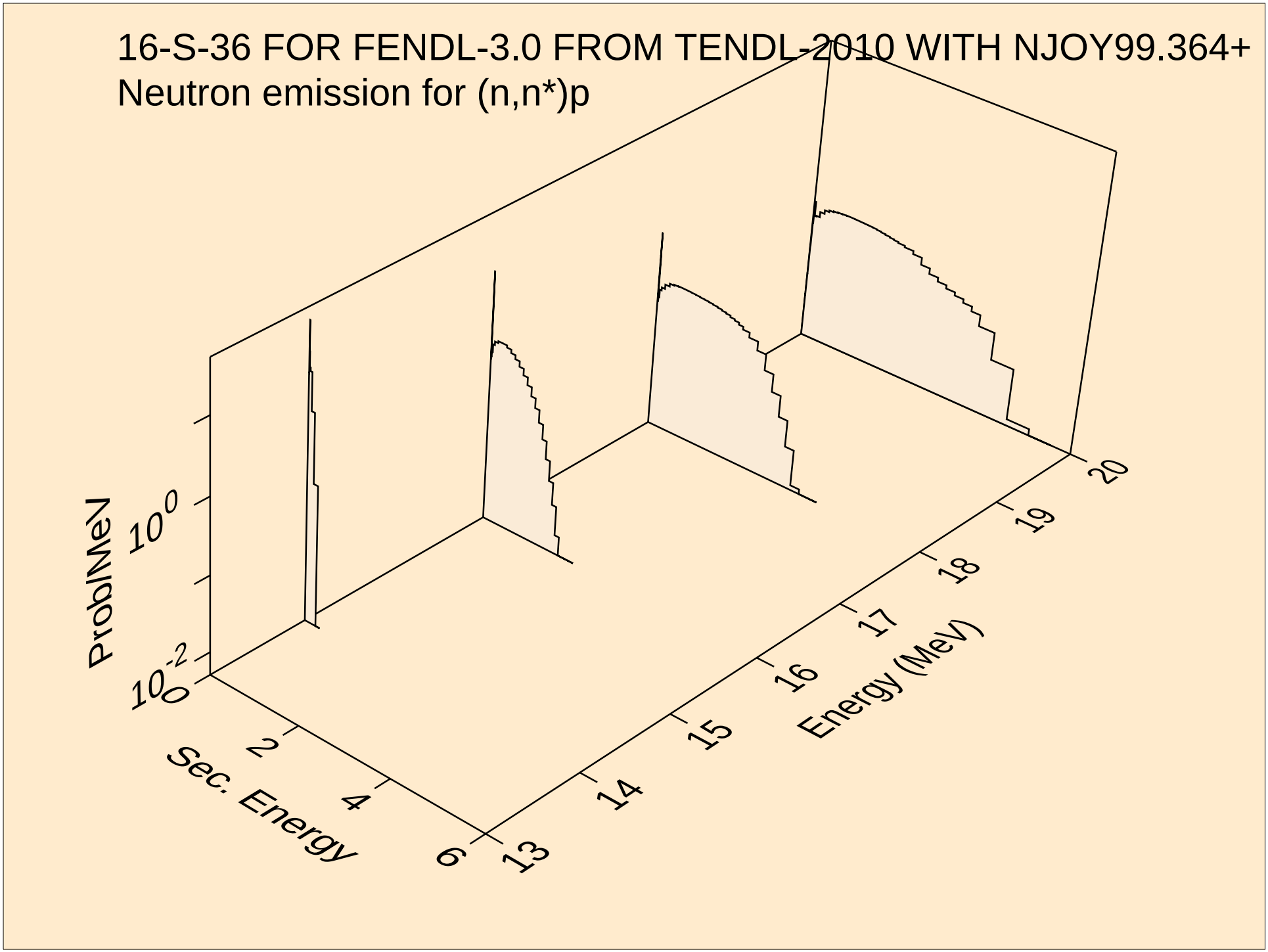

16-S-36 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+
angular distribution for (n,n*20)
ProbICos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
6
8
10
12
14
16
18
20
Energy (MeV)

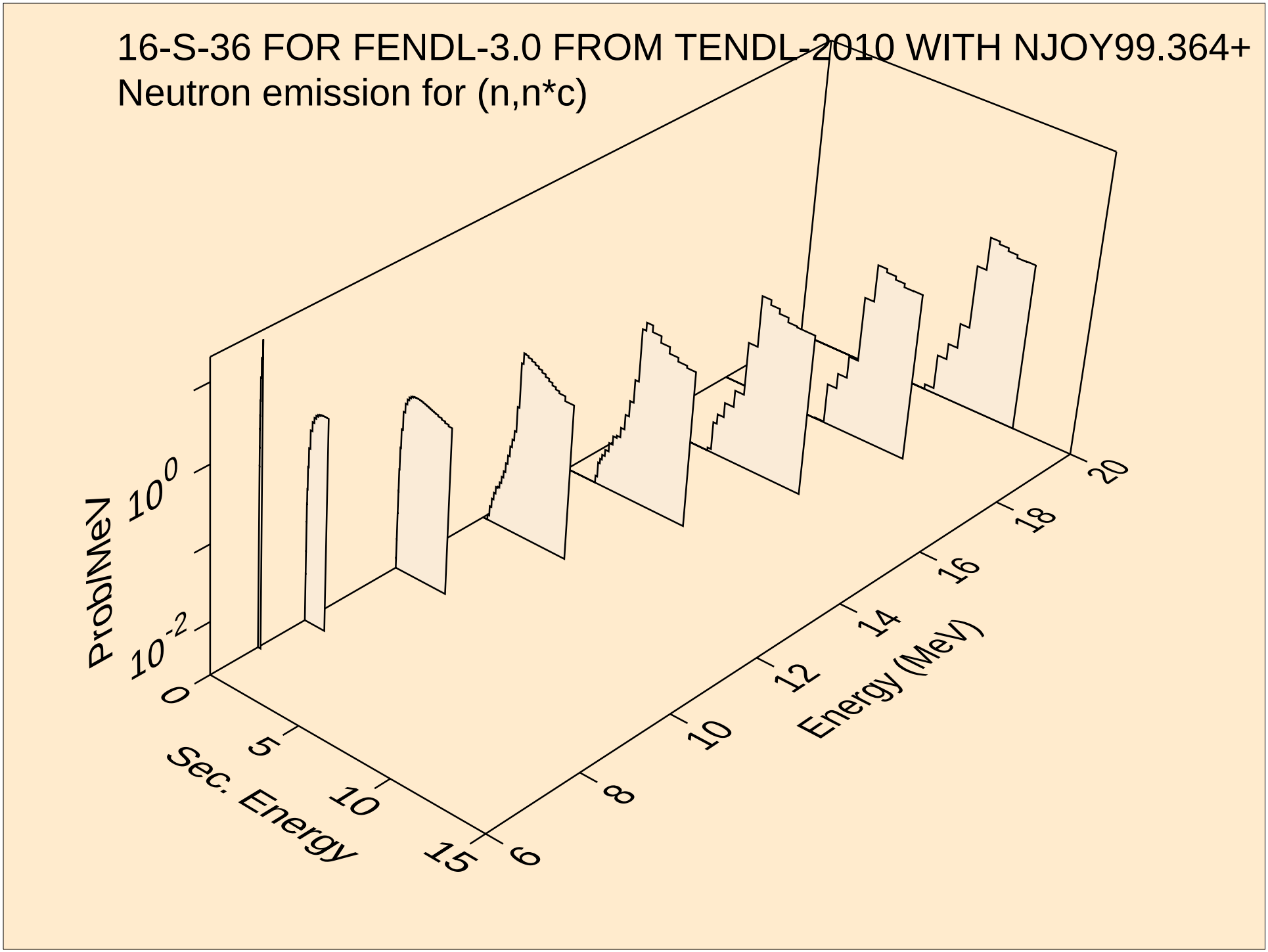

16-S-36 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+
Neutron emission for (n,x)
Prob/MeV
10^1
10^-1
0
10
20
30
40
Sec. Energy
0
50
100
150
200
Energy (MeV)

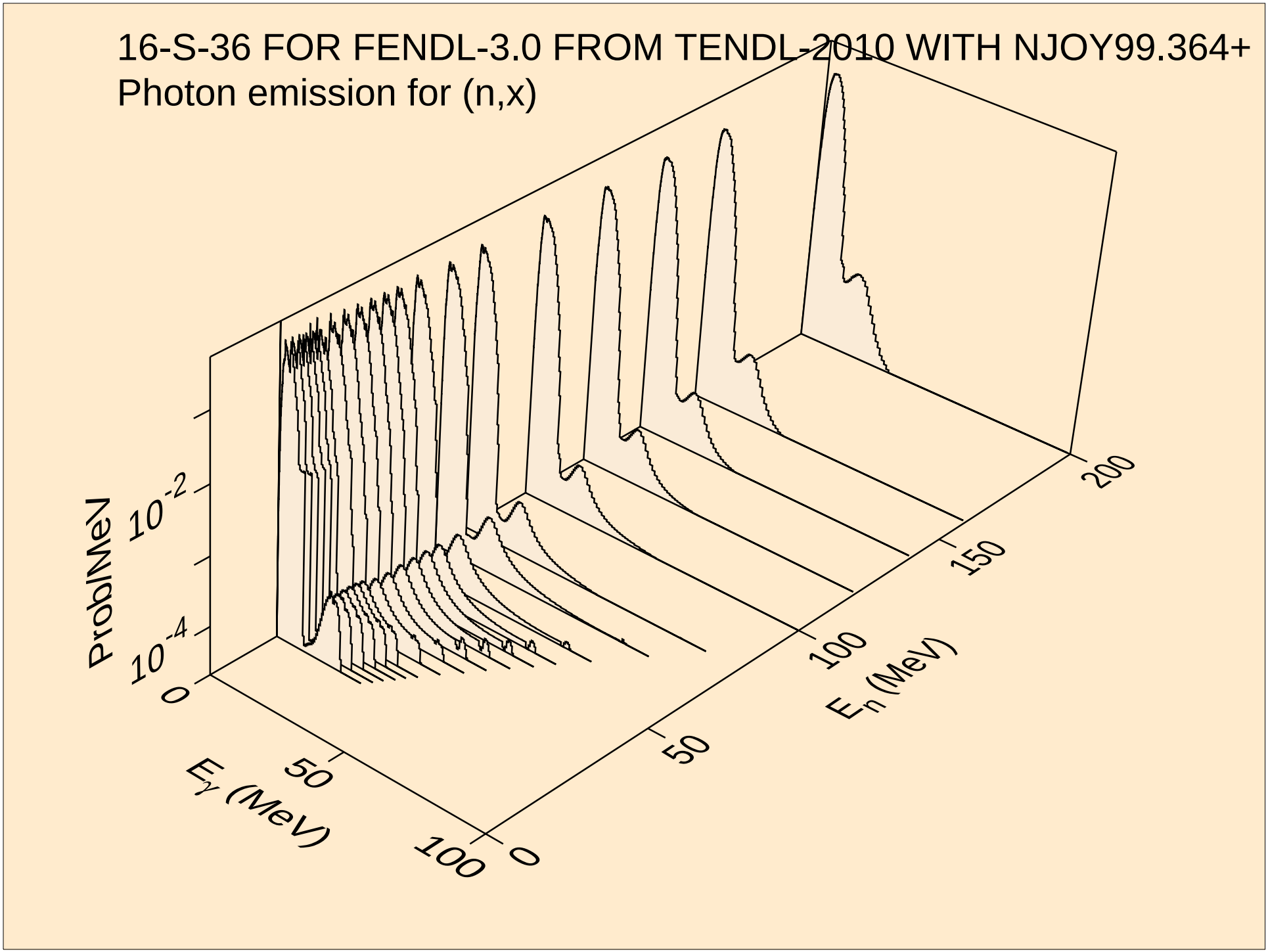

16-S-36 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+
Neutron emission for (n,2n)
Prob/MeV
10^0
10^-2
0
2
4
6
8
10
Sec. Energy
10
12
14
16
18
20
Energy (MeV)

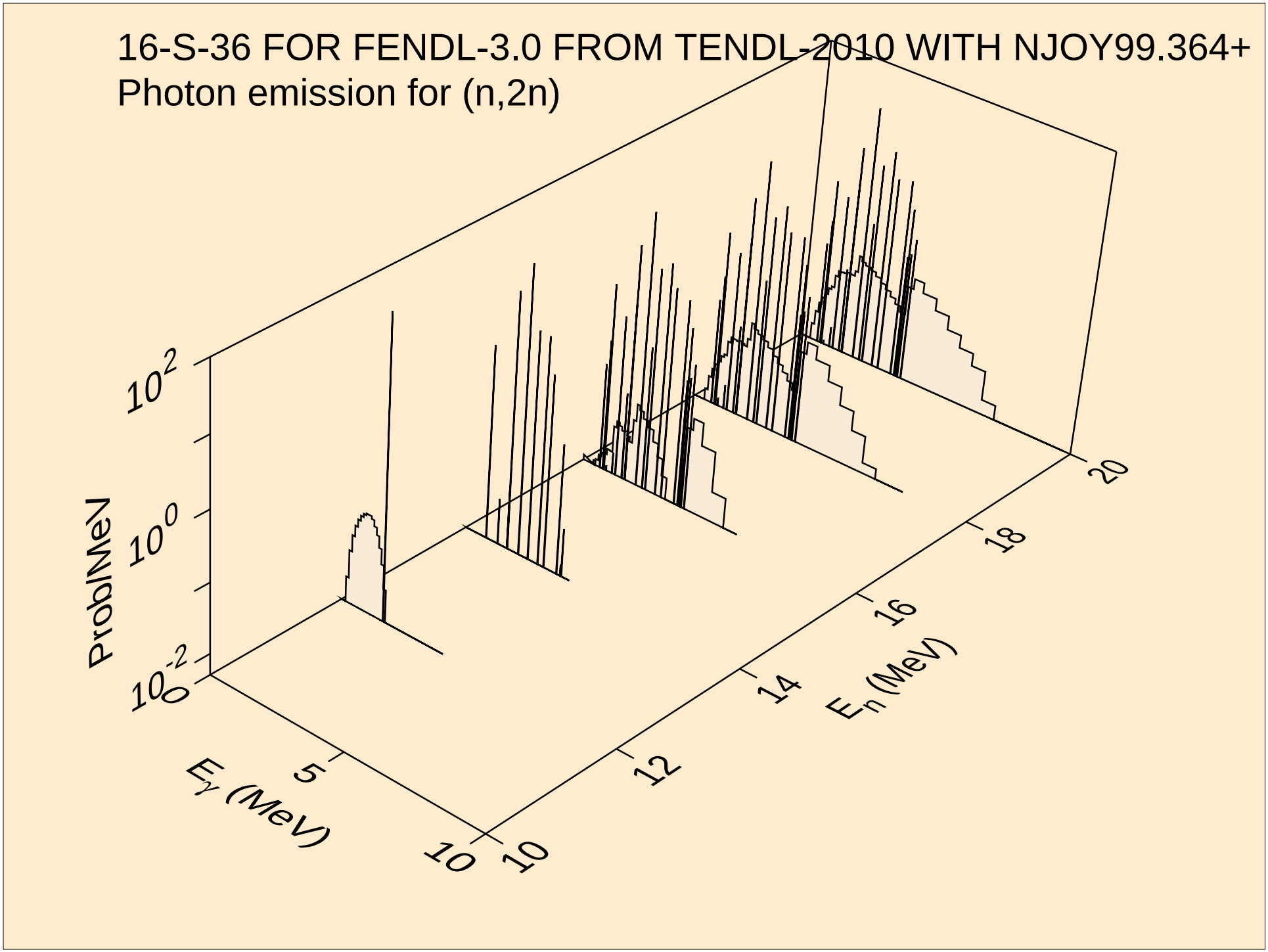

16-S-36 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+
Neutron emission for (n,3n)
Prob/MeV
10-1
10-3
0
1
2
3
Sec. Energy
17.0
17.5
18.0
18.5
19.0
19.5
20.0
Energy (MeV)

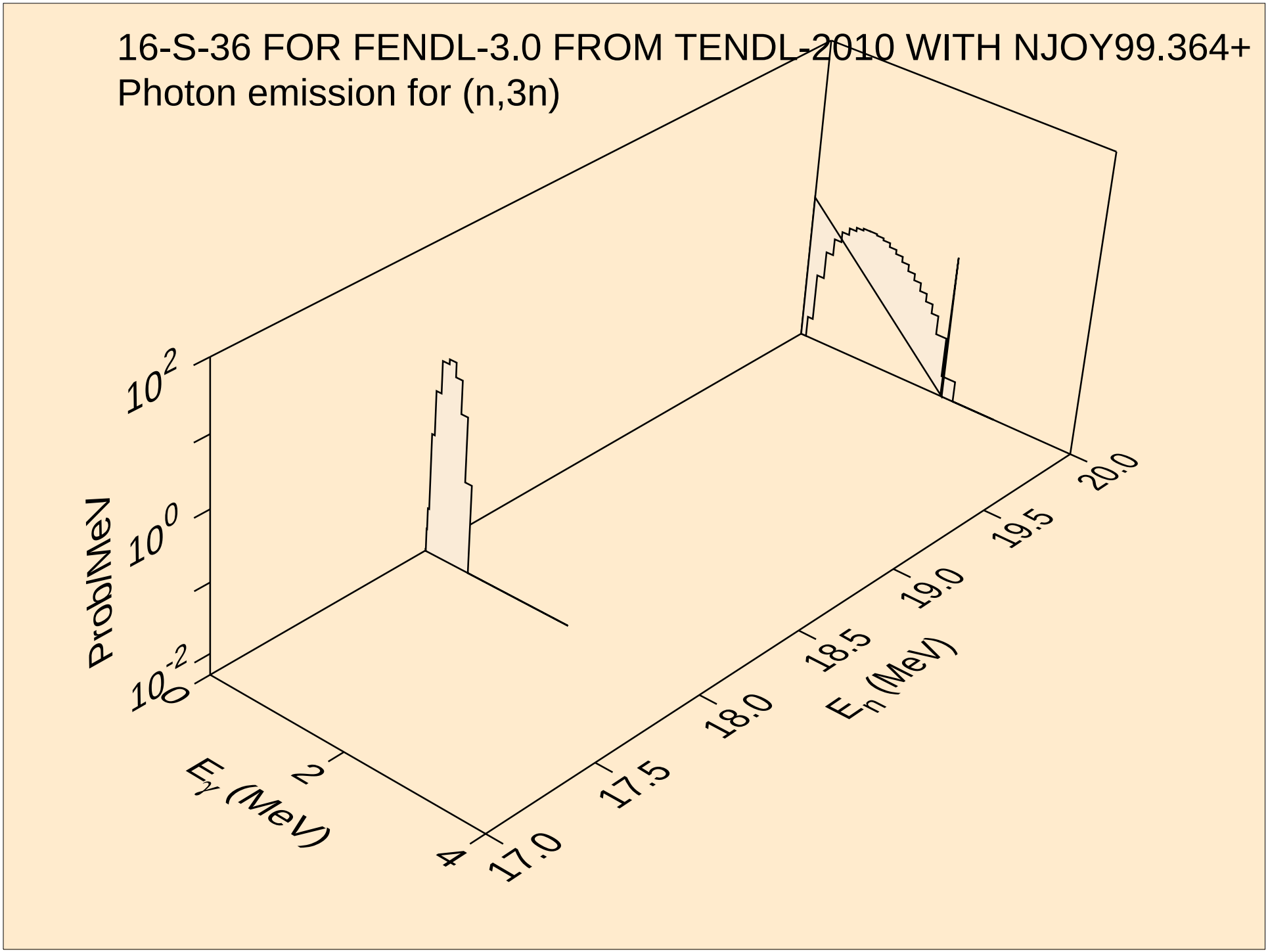

16-S-36 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+
Neutron emission for (n,n*)a
Prob/MeV
10^0
10^-2
0
2
4
6
8
Sec. Energy
8
10
12
14
16
18
20
Energy (MeV)

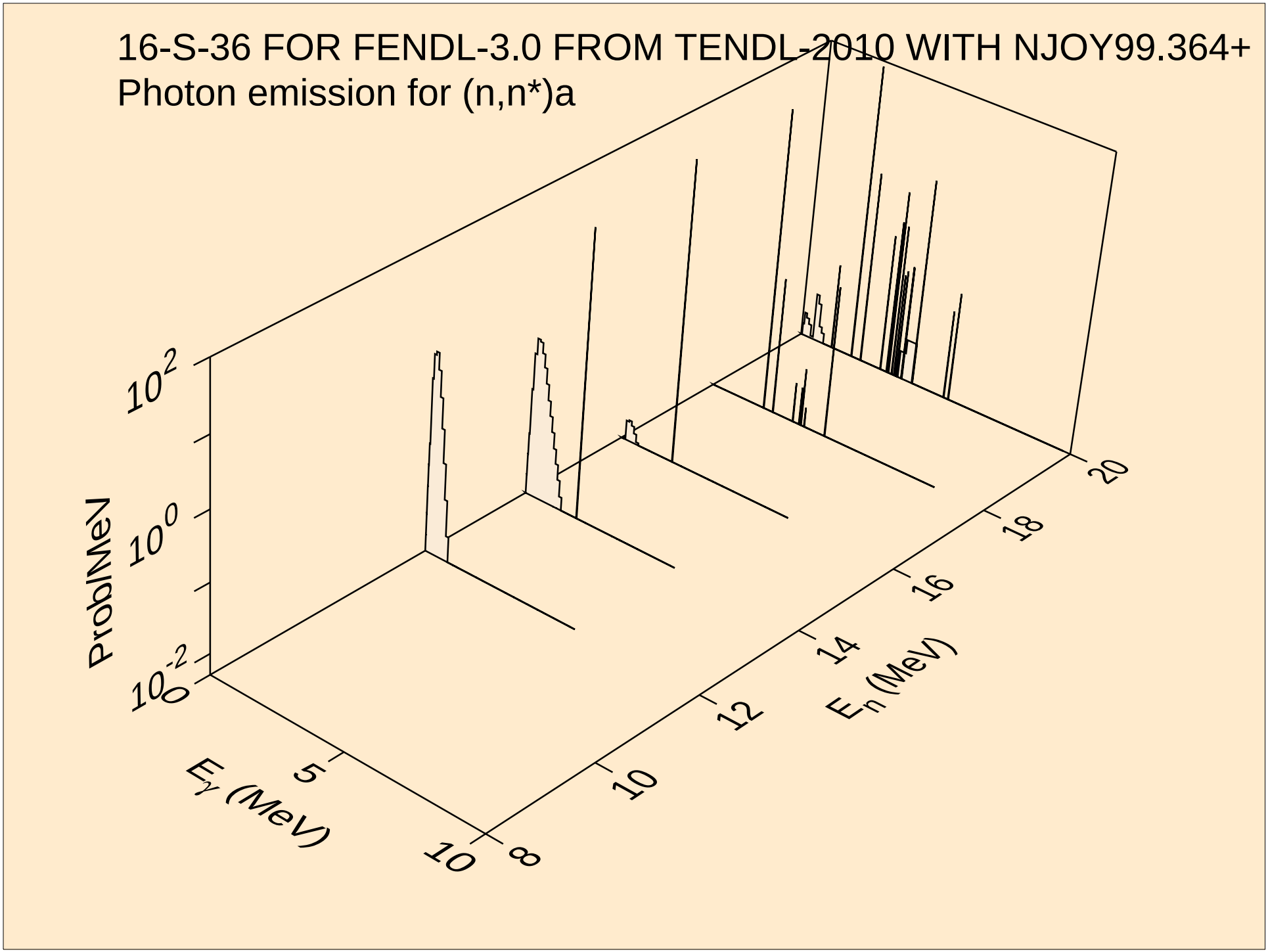

16-S-36 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+
Neutron emission for (n,n*)p
Prob/MeV
10^0
10^-2
0
2
4
6
Sec. Energy
13
14
15
16
17
18
19
20
Energy (MeV)

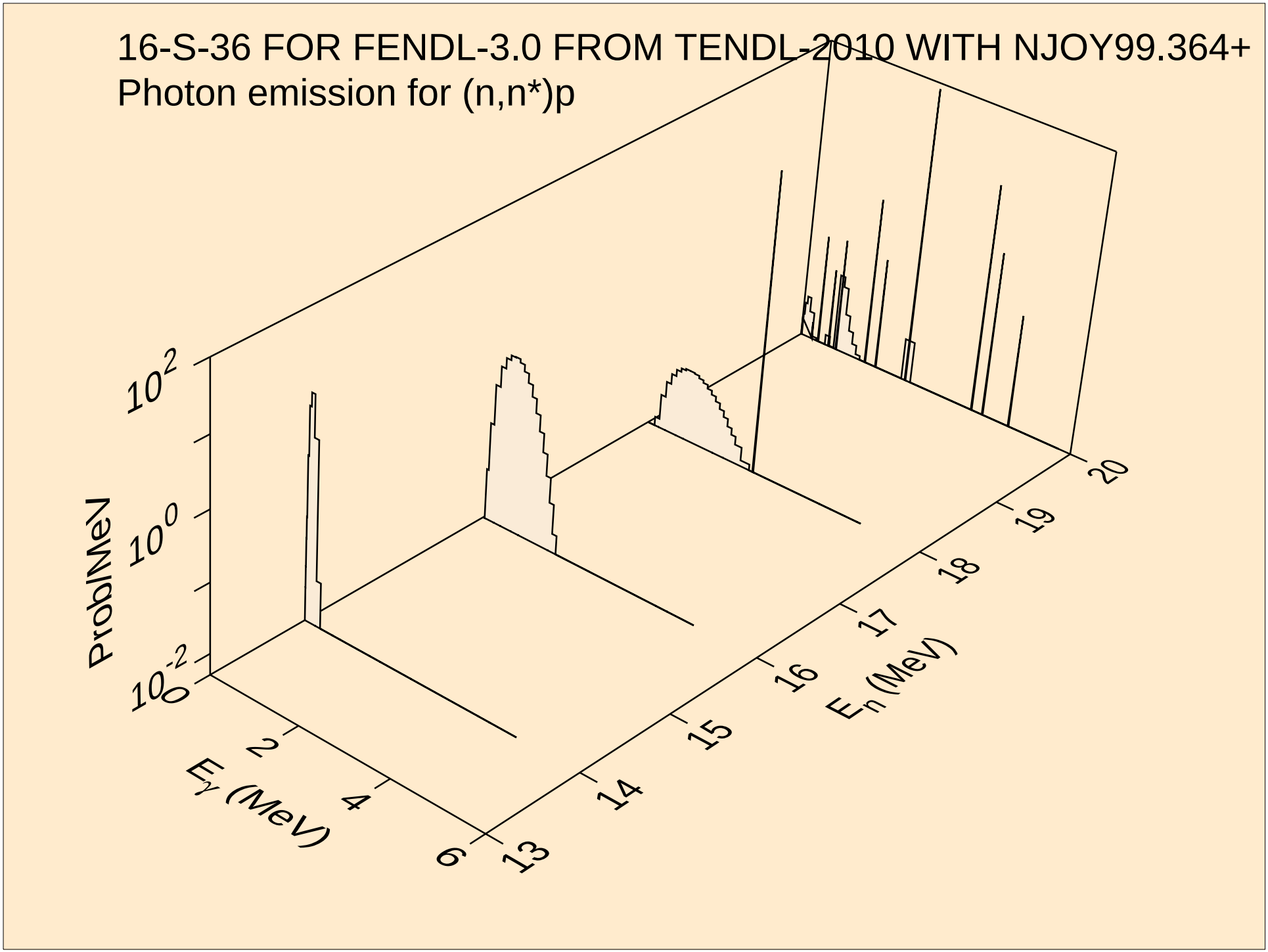

16-S-36 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+
Neutron emission for (n,n*c)
Prob/MeV
10^0
10^-2
0
5
10
15
Sec. Energy
6
8
10
12
14
16
18
20
Energy (MeV)

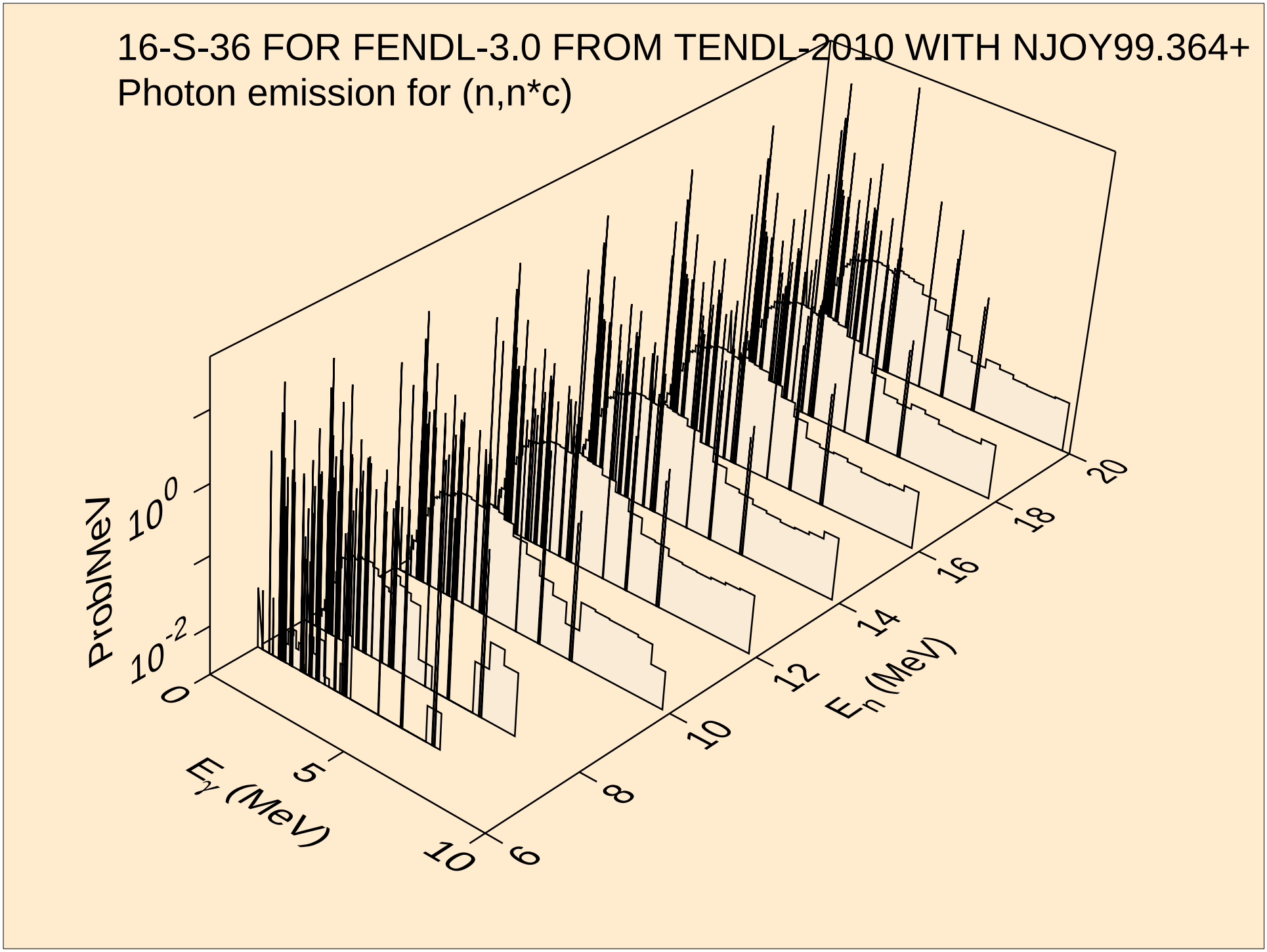

16-S-36 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+
Photon emission for (n,x)
Prob/MeV
10-2
10-4
0
50
100
Eγ (MeV)
0
50
100
150
200
En (MeV)

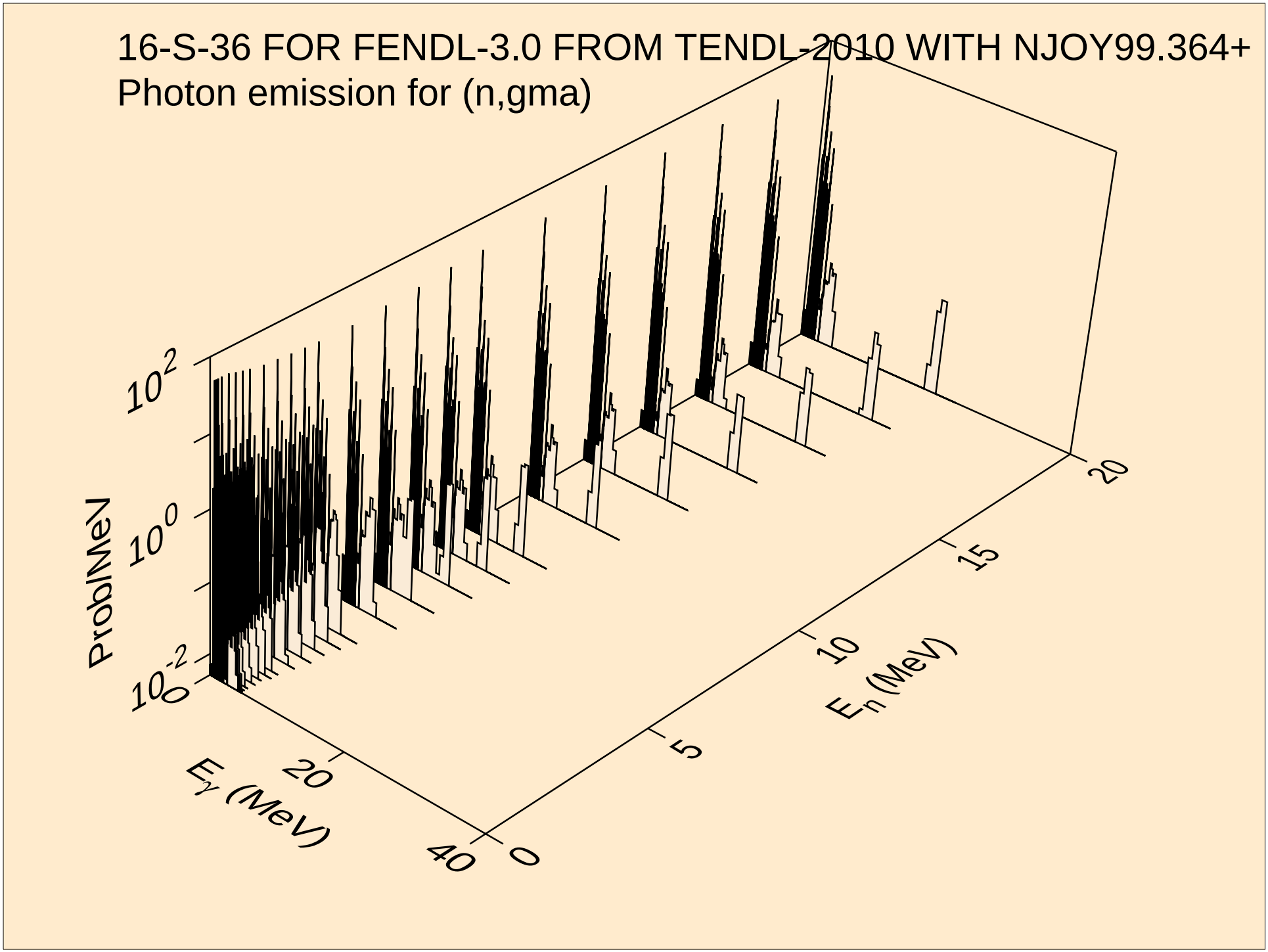

16-S-36 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+
Photon emission for (n,2n)
Prob/MeV
10^{2}
10^{0}
10^{-2}
0
5
10
E_γ (MeV)
10
12
14
16
18
20
E_n (MeV)

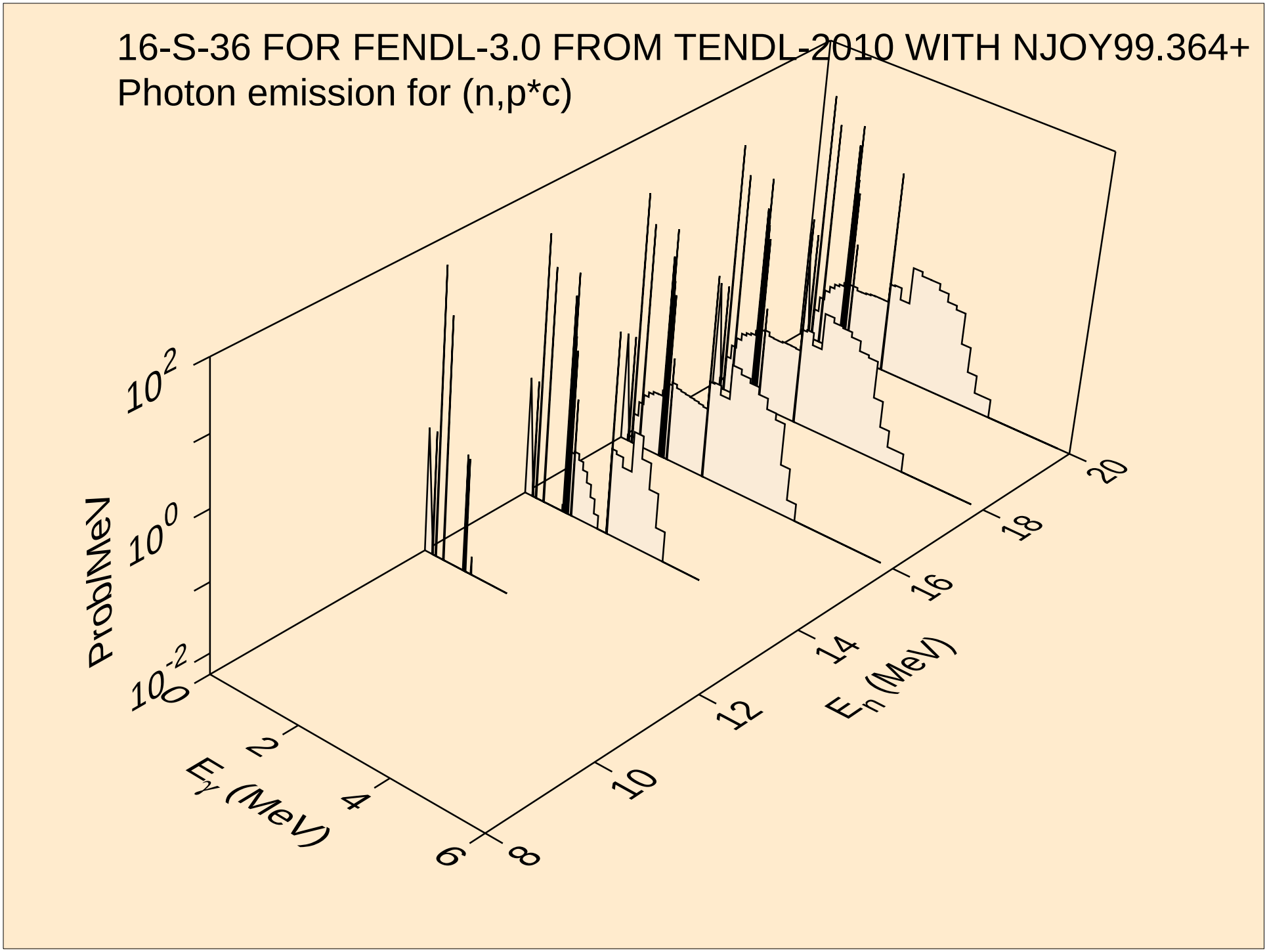

16-S-36 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+
Photon emission for (n,3n)
Prob/MeV
10^{2}
10^{0}
10^{-2}
0
2
4
E_γ (MeV)
17.0
17.5
18.0
18.5
19.0
19.5
20.0
E_n (MeV)

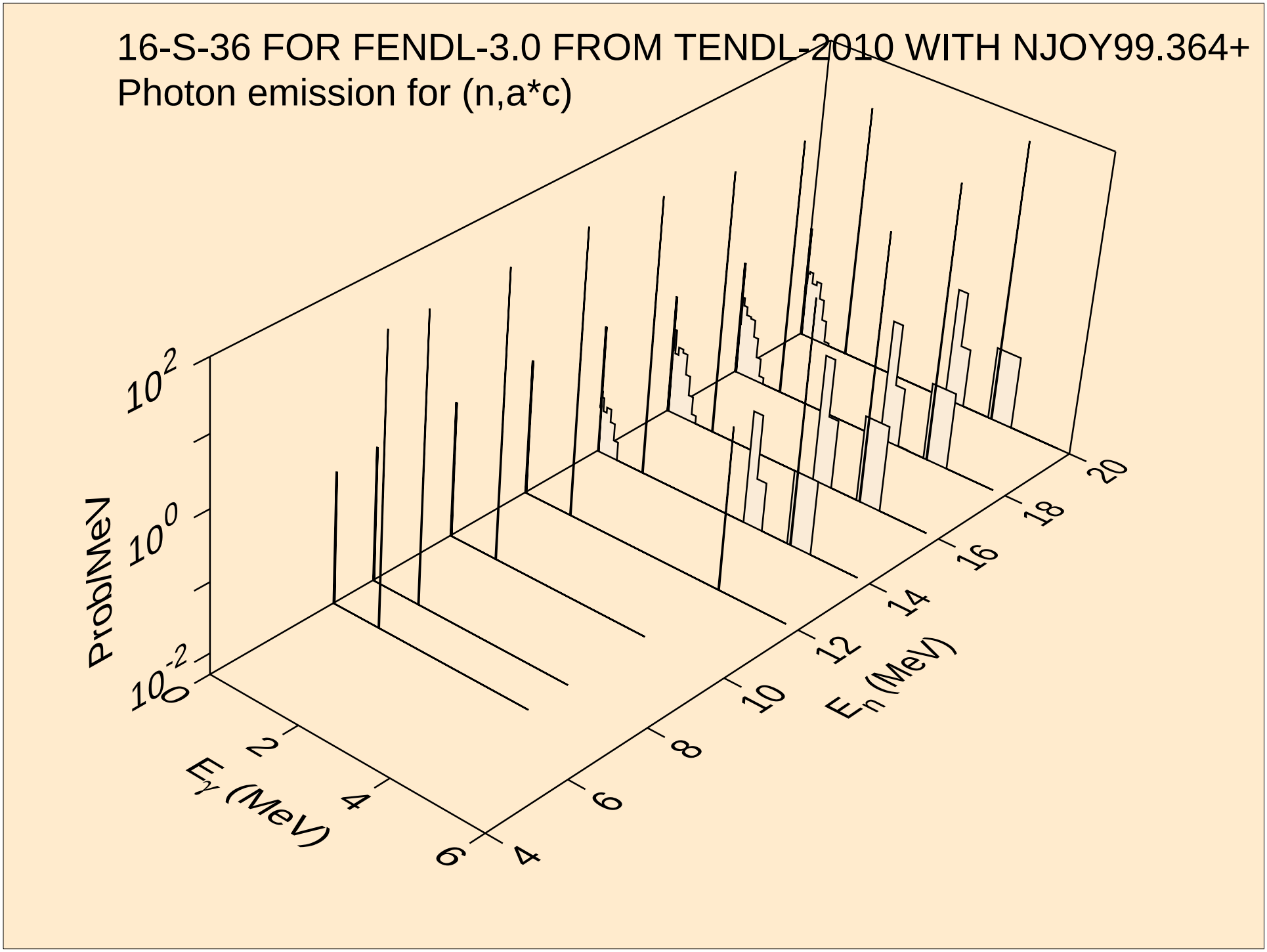

16-S-36 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+
Photon emission for (n,n*)a
Prob/MeV
10^{2}
10^{0}
10^{-2}
0
5
10
E_γ (MeV)
8
10
12
14
16
18
20
E_n (MeV)

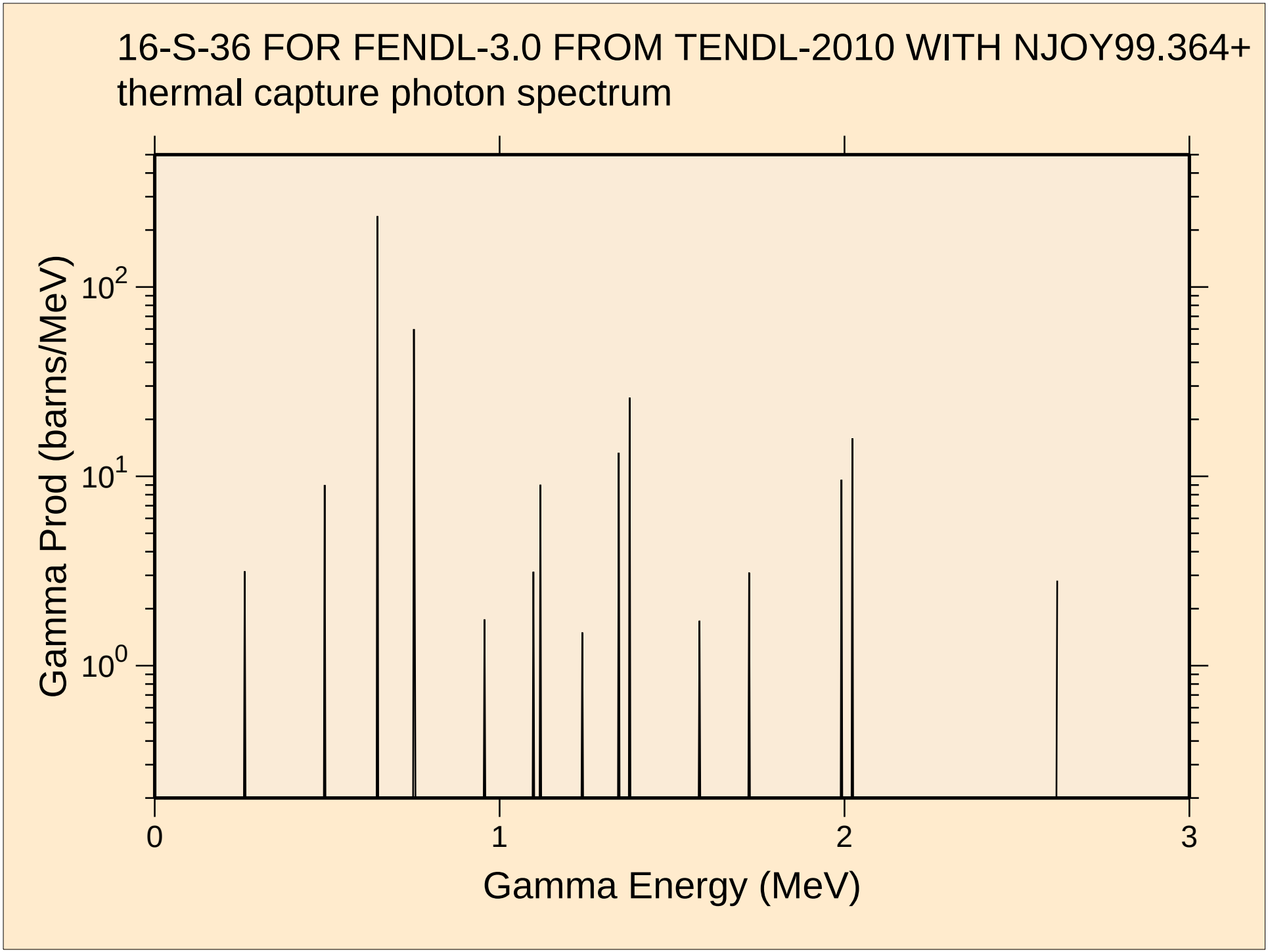

16-S-36 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+
Photon emission for (n,n*)p
Prob/MeV
10^{2}
10^{0}
10^{-2}
0
2
4
6
E_γ (MeV)
13
14
15
16
17
18
19
20
E_n (MeV)

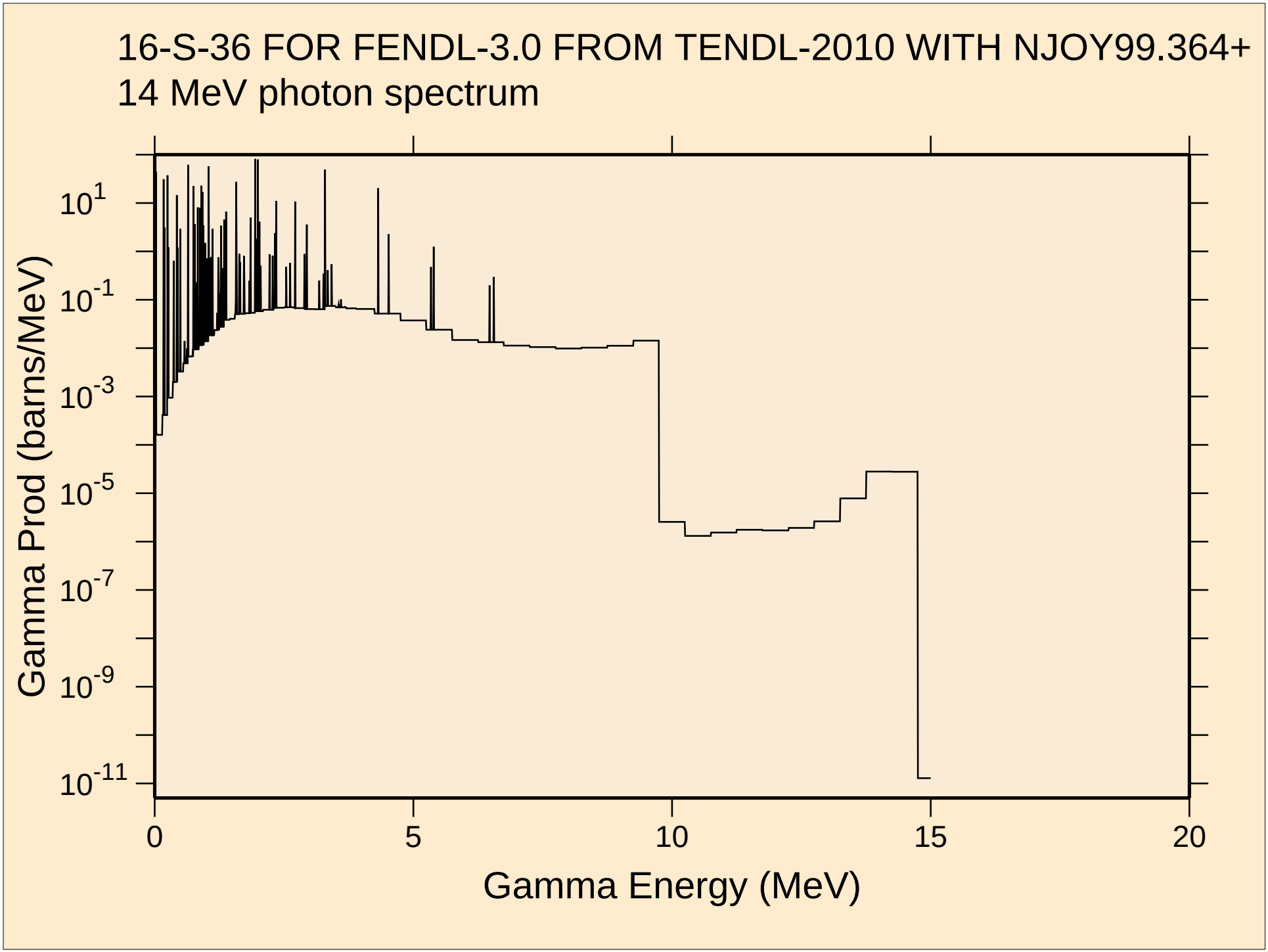

16-S-36 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+
Photon emission for (n,n*c)
Prob/MeV
10^0
10^-2
0
5
10
E_γ (MeV)
6
8
10
12
14
16
18
20
E_n (MeV)

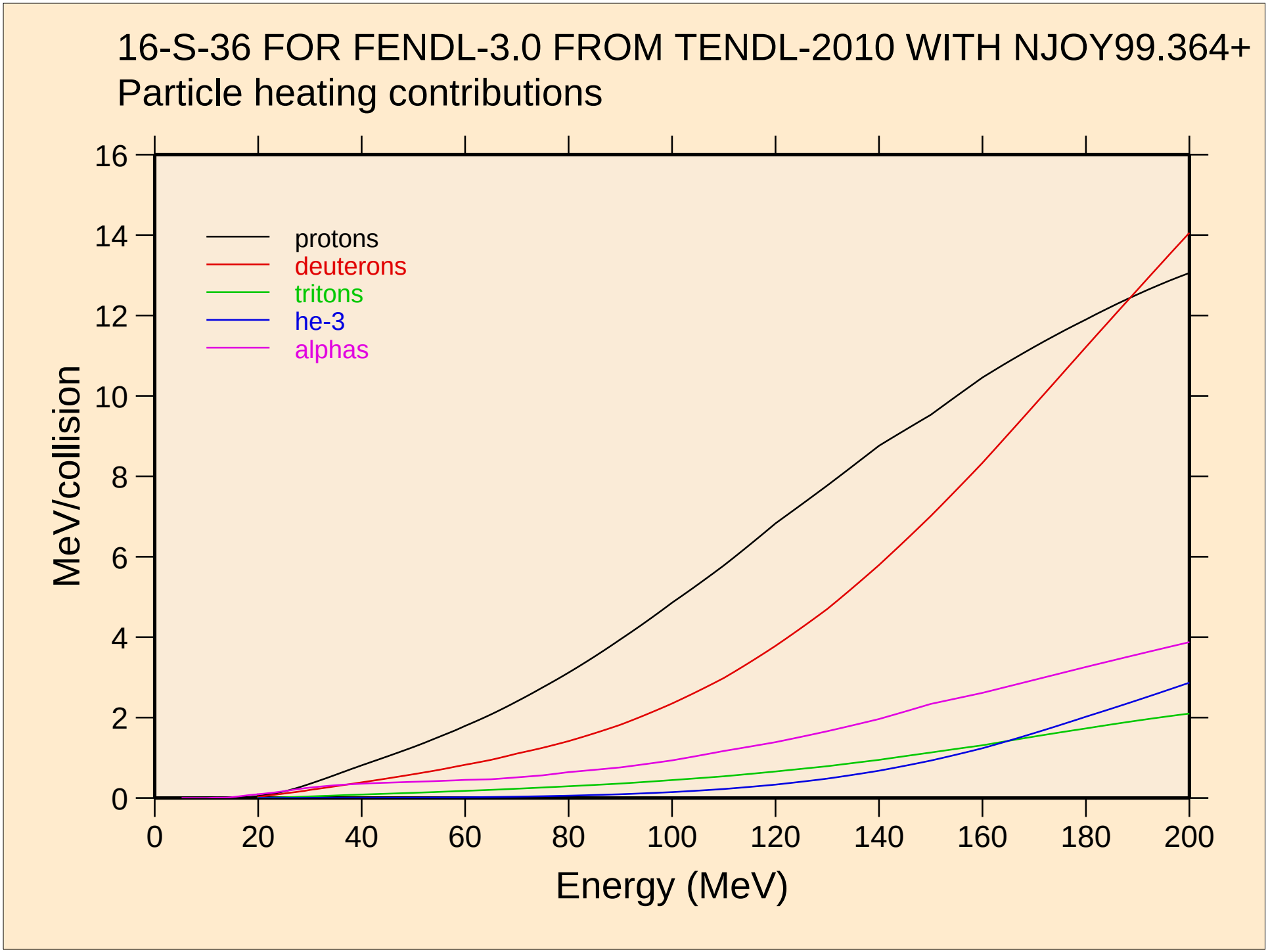

16-S-36 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+
Photon emission for (n,gma)
Prob/MeV
10^{2}
10^{0}
10^{-2}
0
20
40
E_γ (MeV)
5
10
15
20
E_n (MeV)

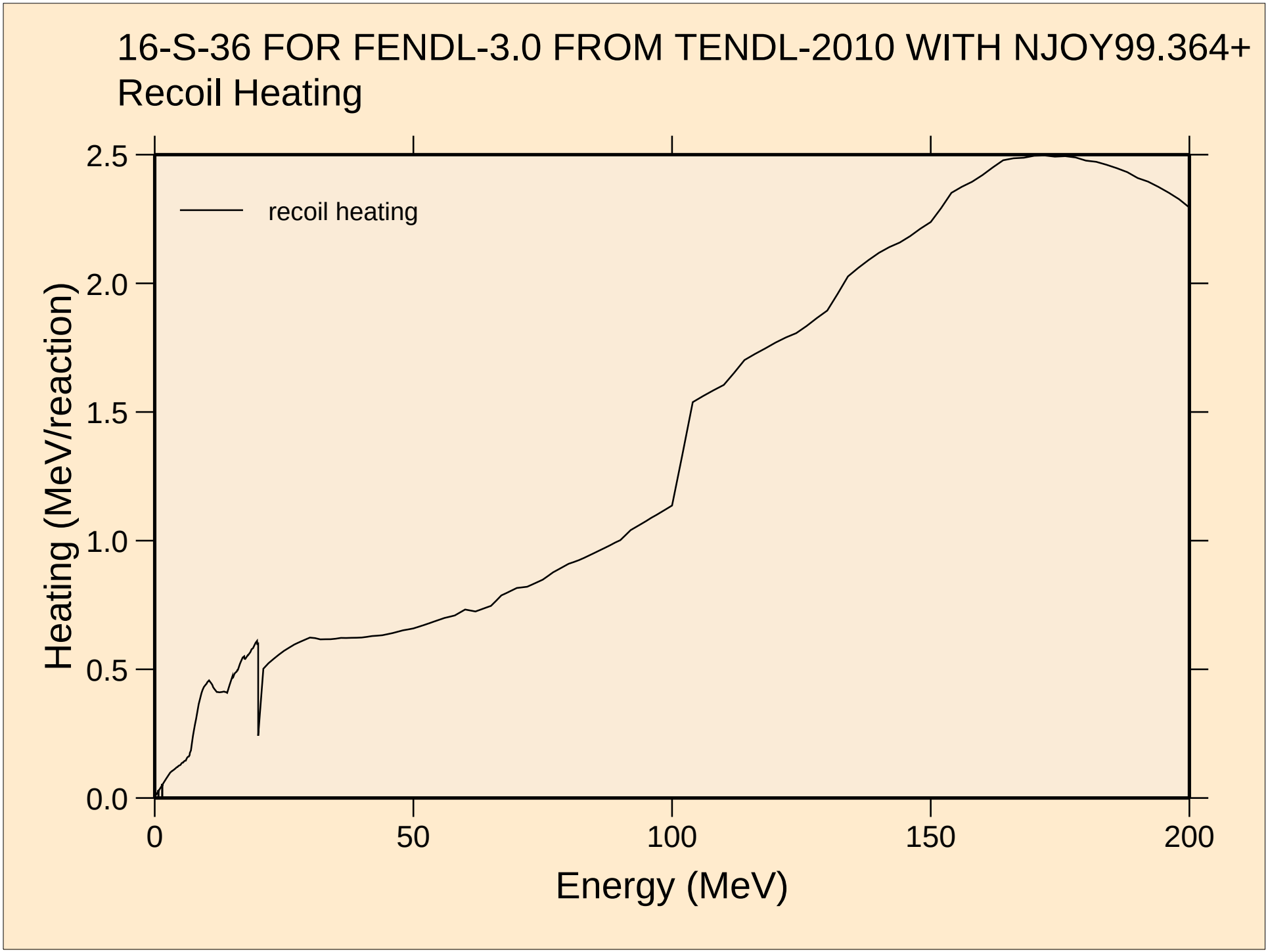

16-S-36 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+
Photon emission for (n,p*c)
Prob/MeV
10^{2}
10^{0}
10^{-2}
0
2
4
6
8
E_γ (MeV)
10
12
14
16
18
20
E_n (MeV)

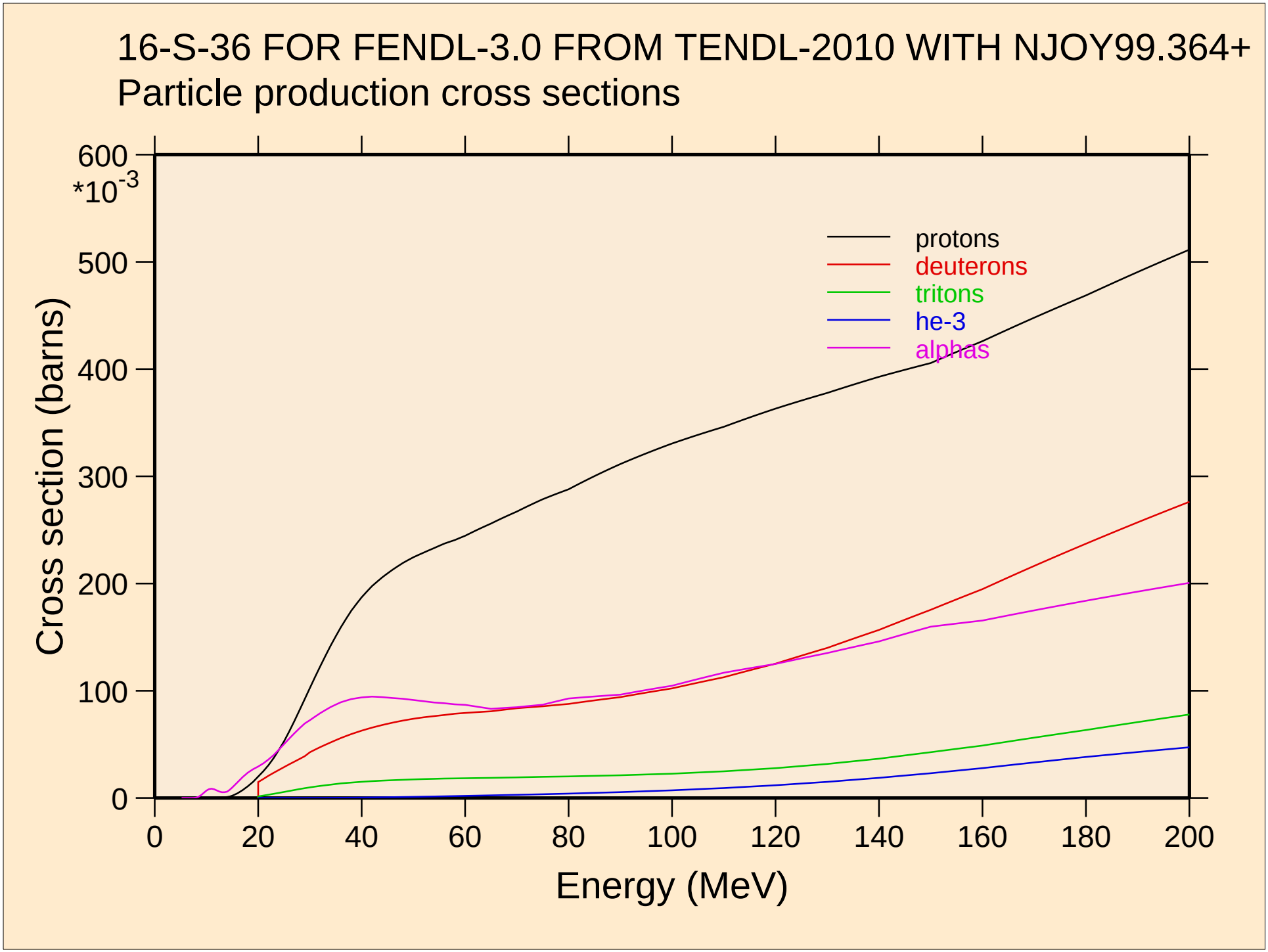

16-S-36 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+
Photon emission for (n,a*c)
Prob/MeV
10^{2}
10^{0}
10^{-2}
E_γ (MeV)
2
4
6
E_n (MeV)
4
6
8
10
12
14
16
18
20

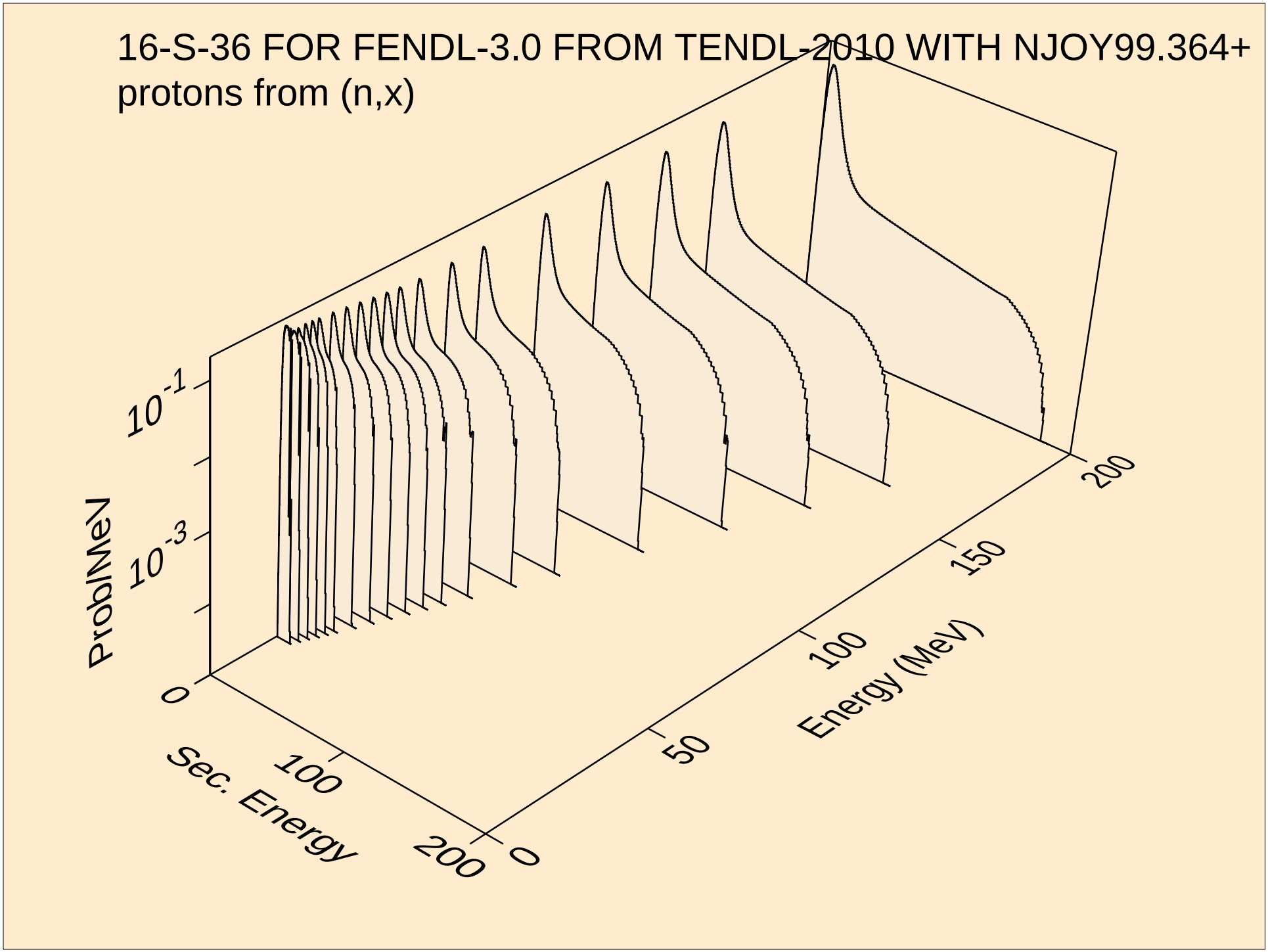

16-S-36 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+
thermal capture photon spectrum
Gamma Prod (barns/MeV)
10^2
10^1
10^0
0
1
2
3
Gamma Energy (MeV)

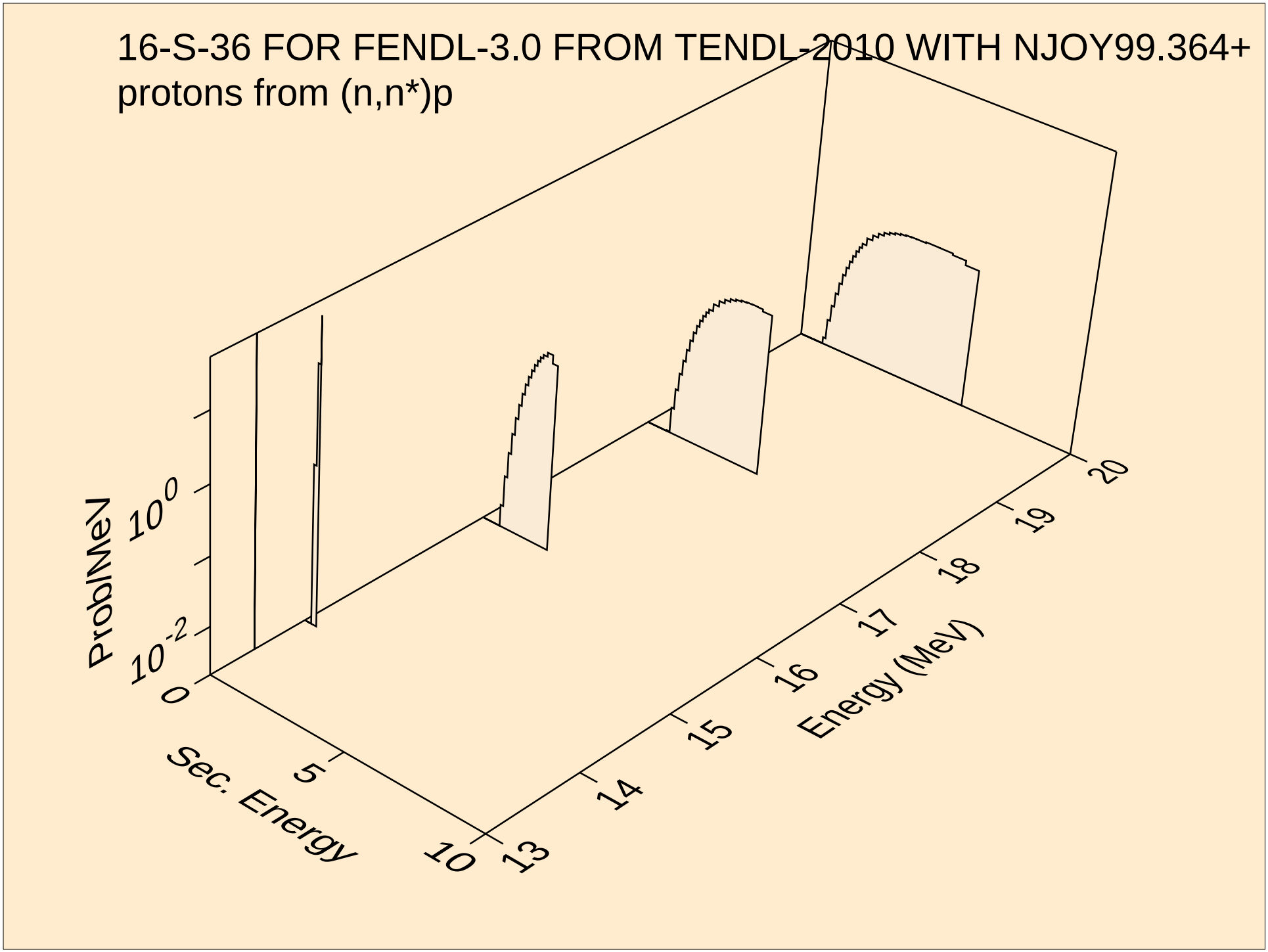

16-S-36 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+
14 MeV photon spectrum
Gamma Prod (barns/MeV)
10^1
10^-1
10^-3
10^-5
10^-7
10^-9
10^-11
0
5
10
15
20
Gamma Energy (MeV)

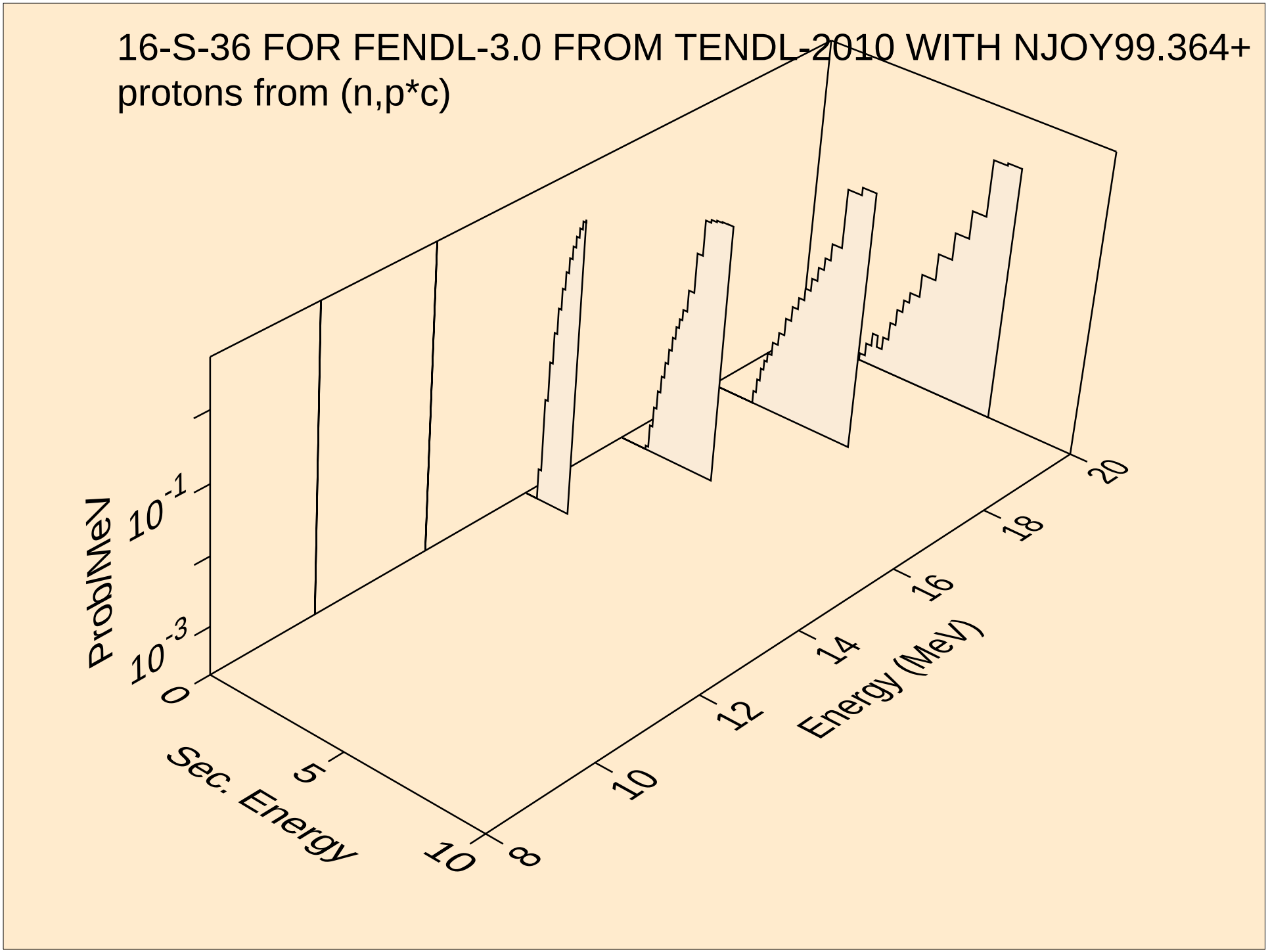

16-S-36 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+
Particle heating contributions
protons
deuterons
tritons
he-3
alphas
MeV/collision
Energy (MeV)
0
2
4
6
8
10
12
14
16
0
20
40
60
80
100
120
140
160
180
200

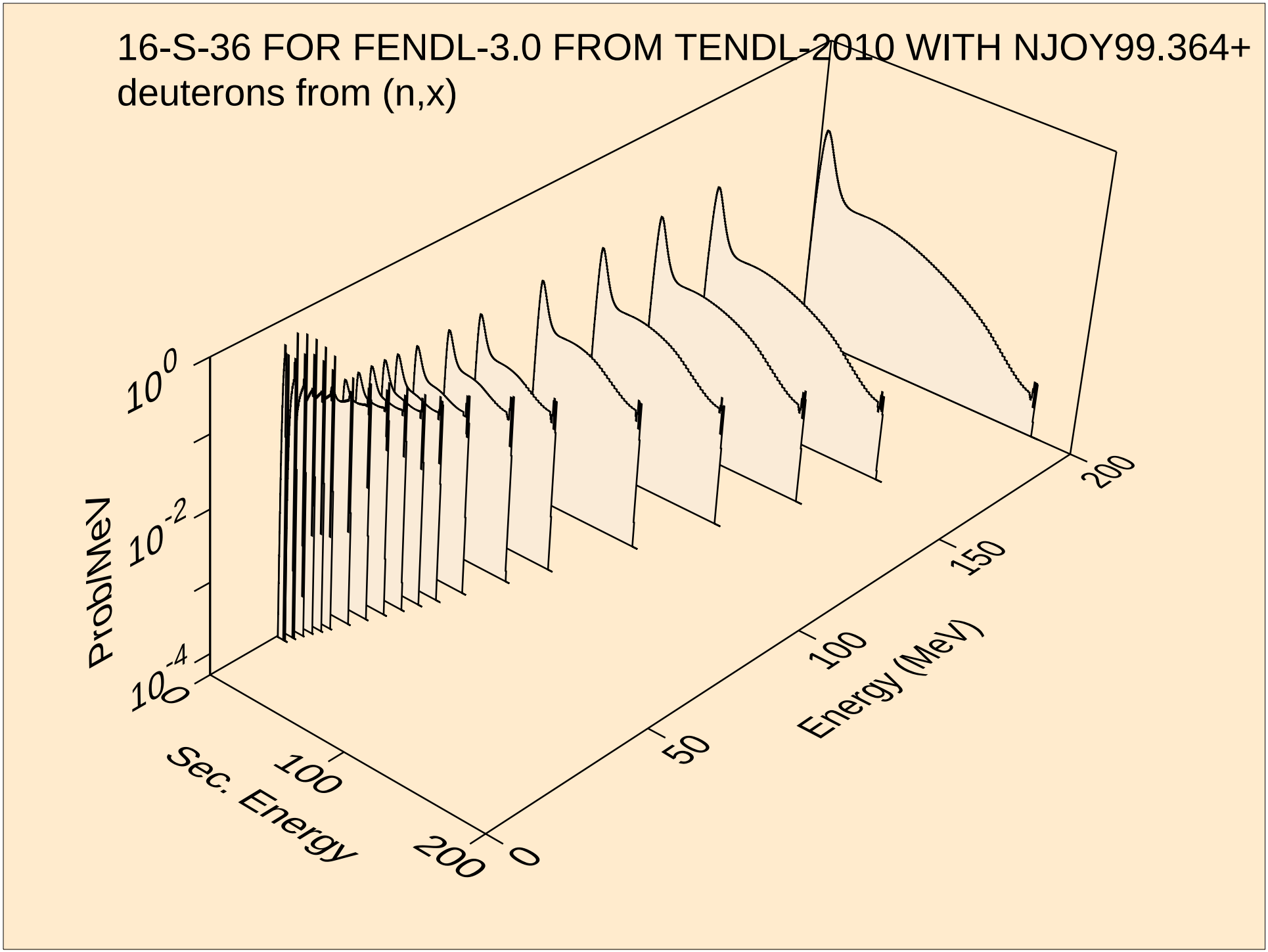

16-S-36 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+
Recoil Heating
recoil heating
Heating (MeV/reaction)
Energy (MeV)
0.0
0.5
1.0
1.5
2.0
2.5
0
50
100
150
200

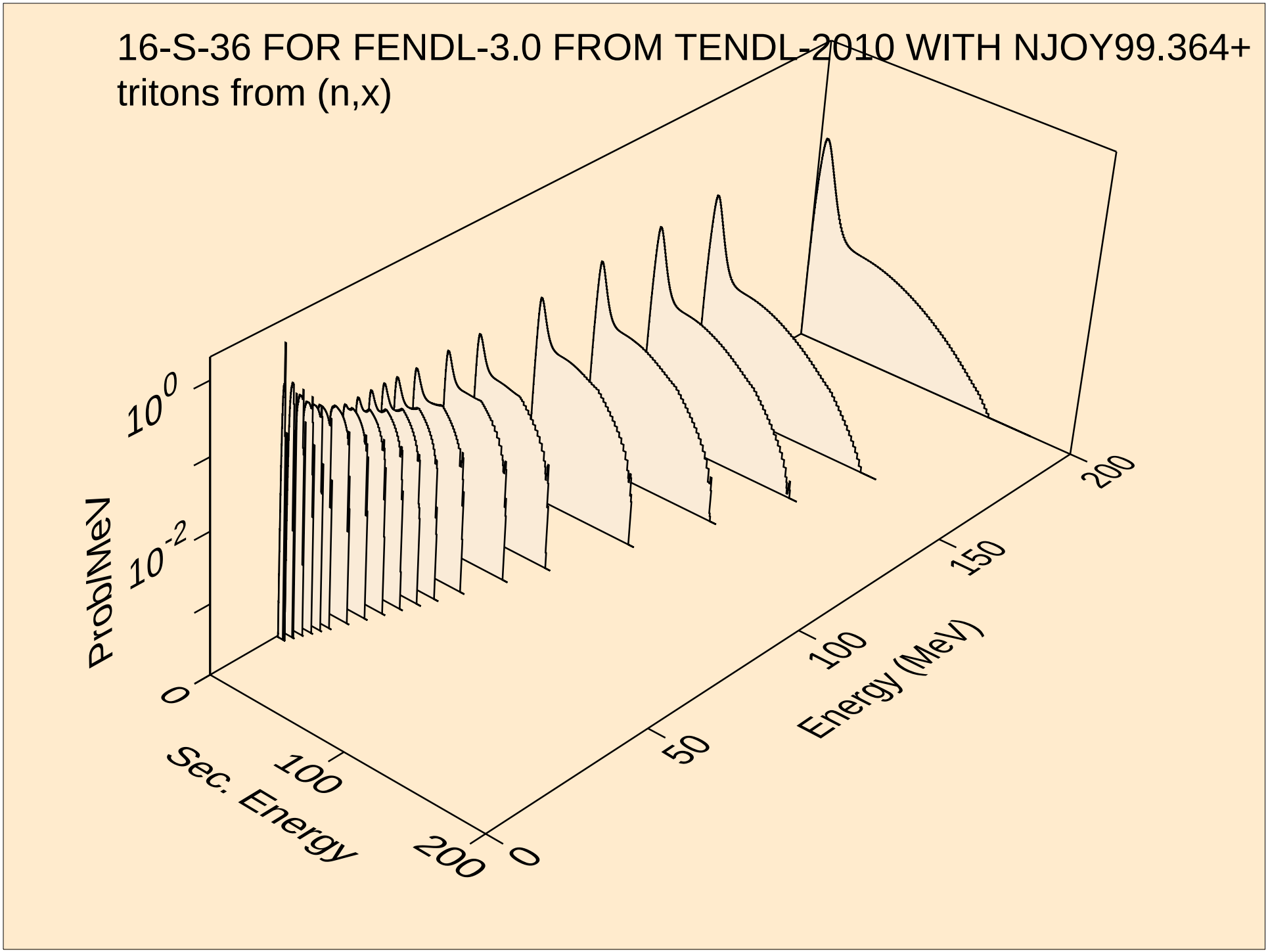

16-S-36 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+
Particle production cross sections
Cross section (barns)
*10-3
600
500
400
300
200
100
0
0
20
40
60
80
100
120
140
160
180
200
Energy (MeV)
protons
deuterons
tritons
he-3
alphas

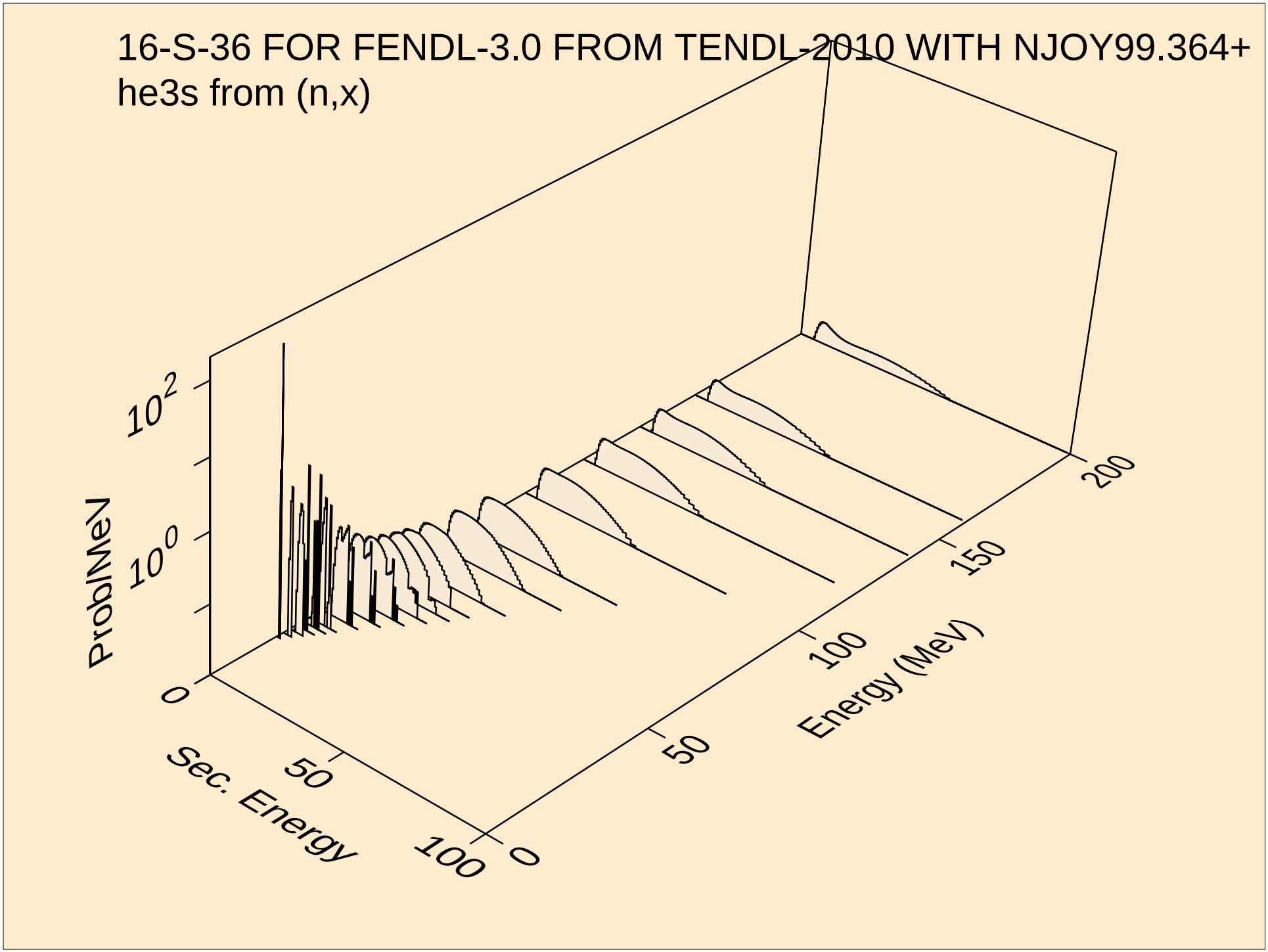

16-S-36 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+
protons from (n,x)
Prob/MeV
10-1
10-3
0
Sec. Energy
100
200
0
50
100
150
200
Energy (MeV)

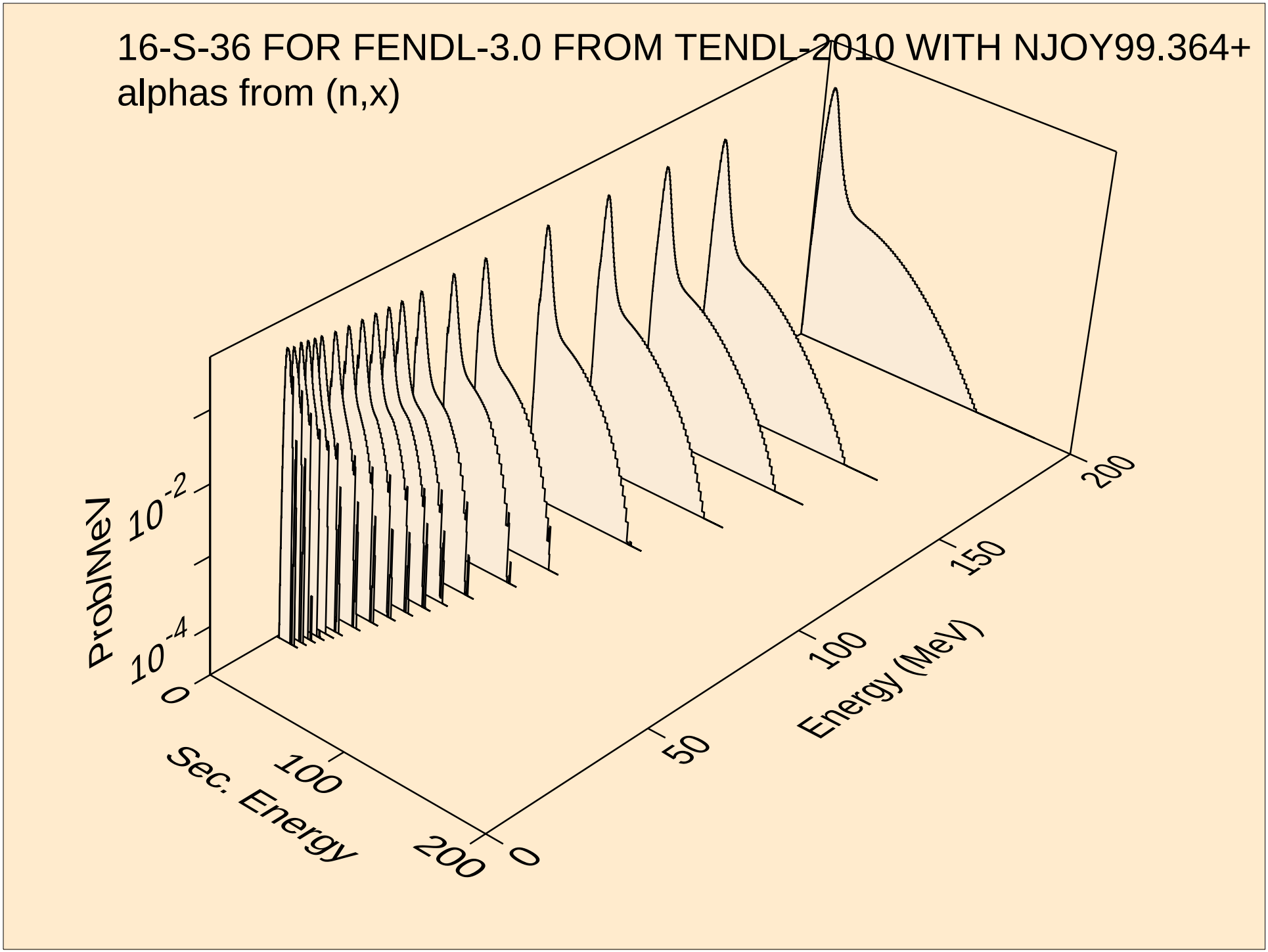

16-S-36 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+
protons from (n,n*)p
Prob/MeV
10^0
10^-2
0
Sec. Energy
5
10
13
14
15
16
17
18
19
20
Energy (MeV)

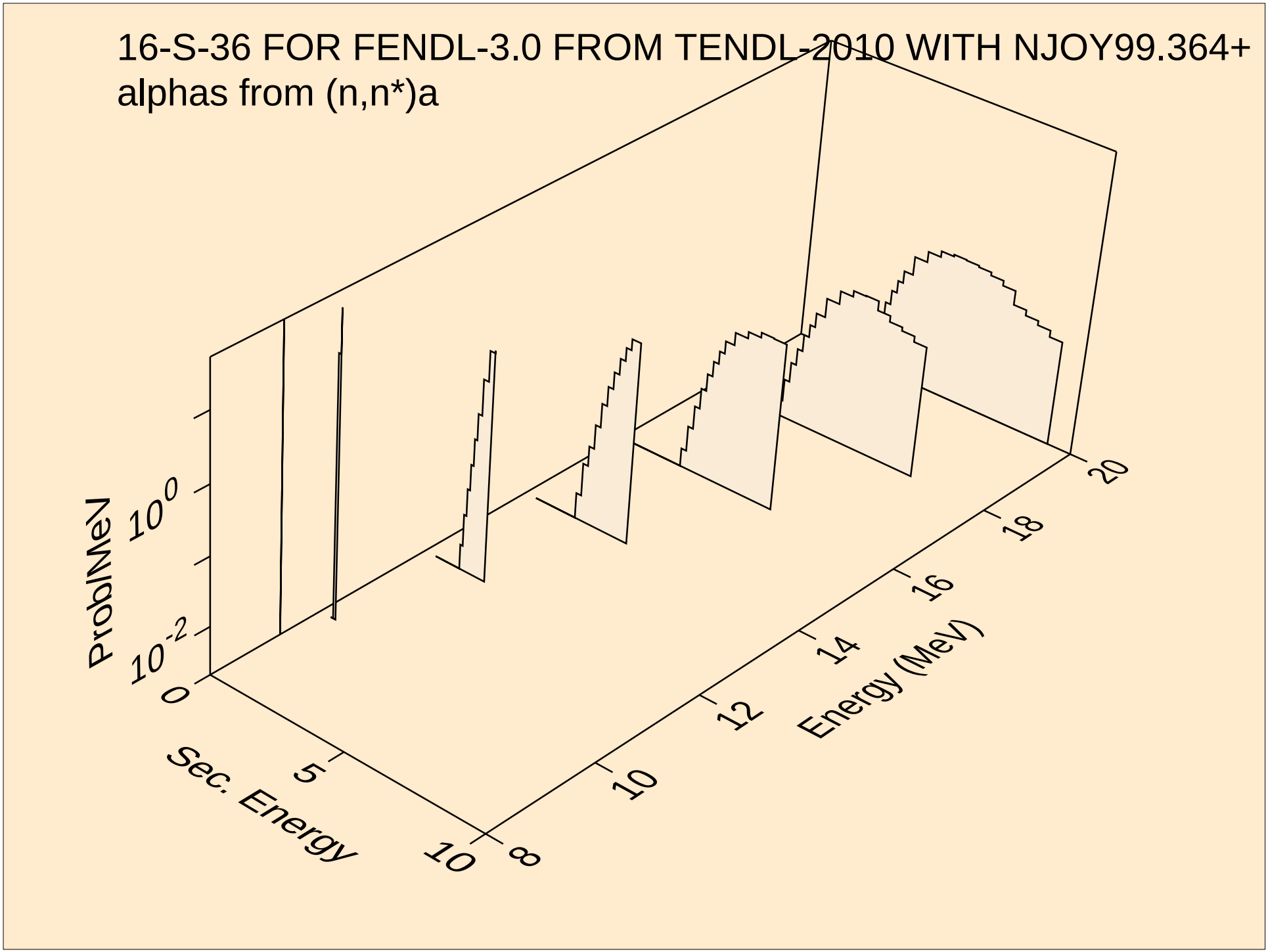

16-S-36 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+
protons from (n,p*c)
Prob/MeV
10-1
10-3
0
Sec. Energy
5
10
8
10
12
14
16
18
20
Energy (MeV)

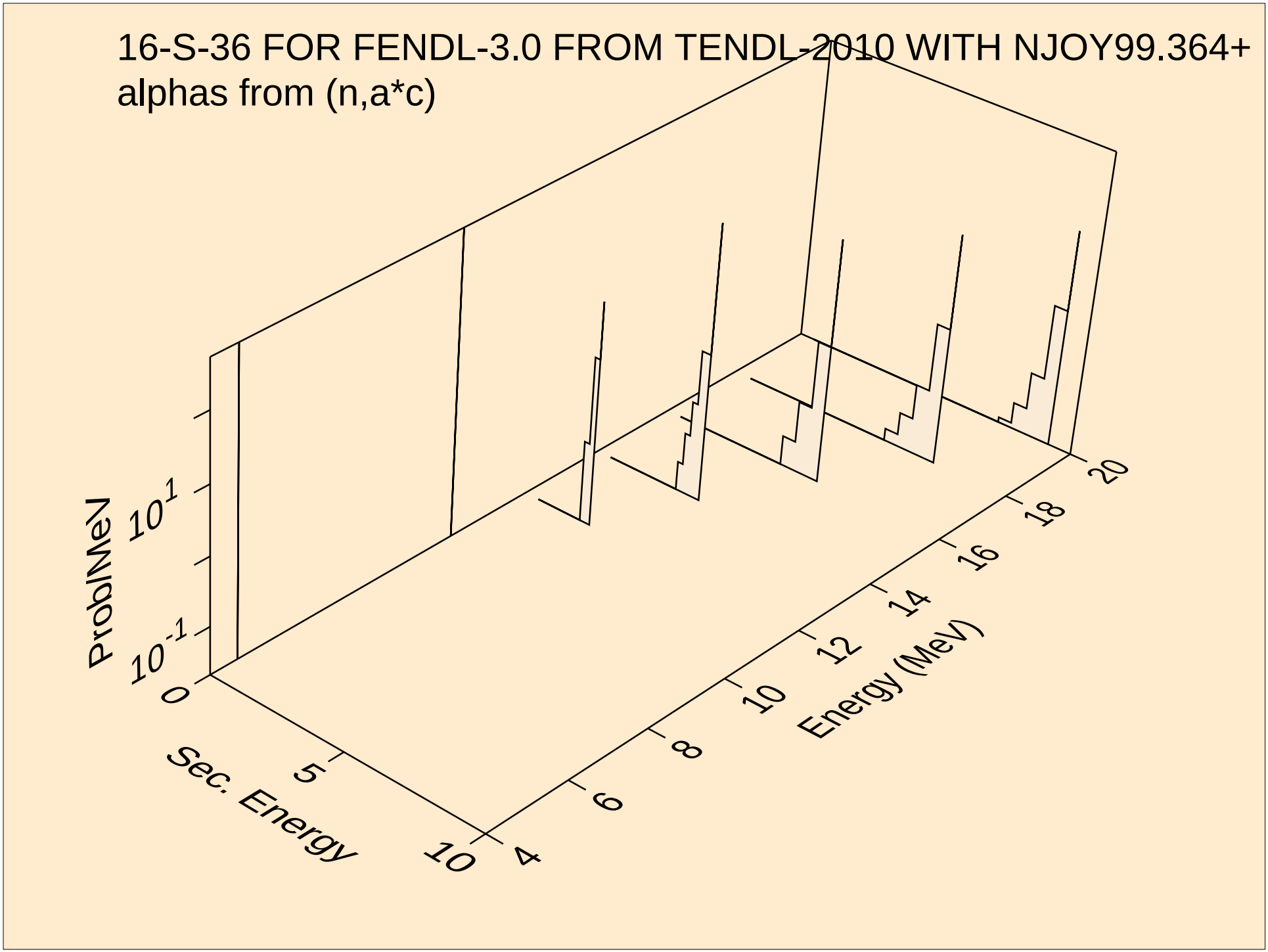

16-S-36 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+
deuterons from (n,x)
Prob/MeV
10^0
10^-2
10^-4
0
100
200
Sec. Energy
0
50
100
150
200
Energy (MeV)


16-S-36 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+
tritons from (n,x)
Prob/MeV
10^{0}
10^{-2}
0
100
200
Sec. Energy
0
50
100
150
200
Energy (MeV)


16-S-36 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+
he3s from (n,x)
Prob/MeV
10^2
10^0
0
50
100
Sec. Energy
0
50
100
150
200
Energy (MeV)


16-S-36 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+
alphas from (n,x)
Prob/MeV
10-2
10-4
0
Sec. Energy
100
200
0
50
100
150
200
Energy (MeV)


16-S-36 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+
alphas from (n,n*)a
Prob/MeV
10^0
10^-2
0
Sec. Energy
5
10
8
10
12
14
16
18
20
Energy (MeV)


16-S-36 FOR FENDL-3.0 FROM TENDL-2010 WITH NJOY99.364+
alphas from (n,a*c)
Prob/MeV
10^1
10^-1
0
Sec. Energy
5
10
4
6
8
10
12
14
16
18
20
Energy (MeV)