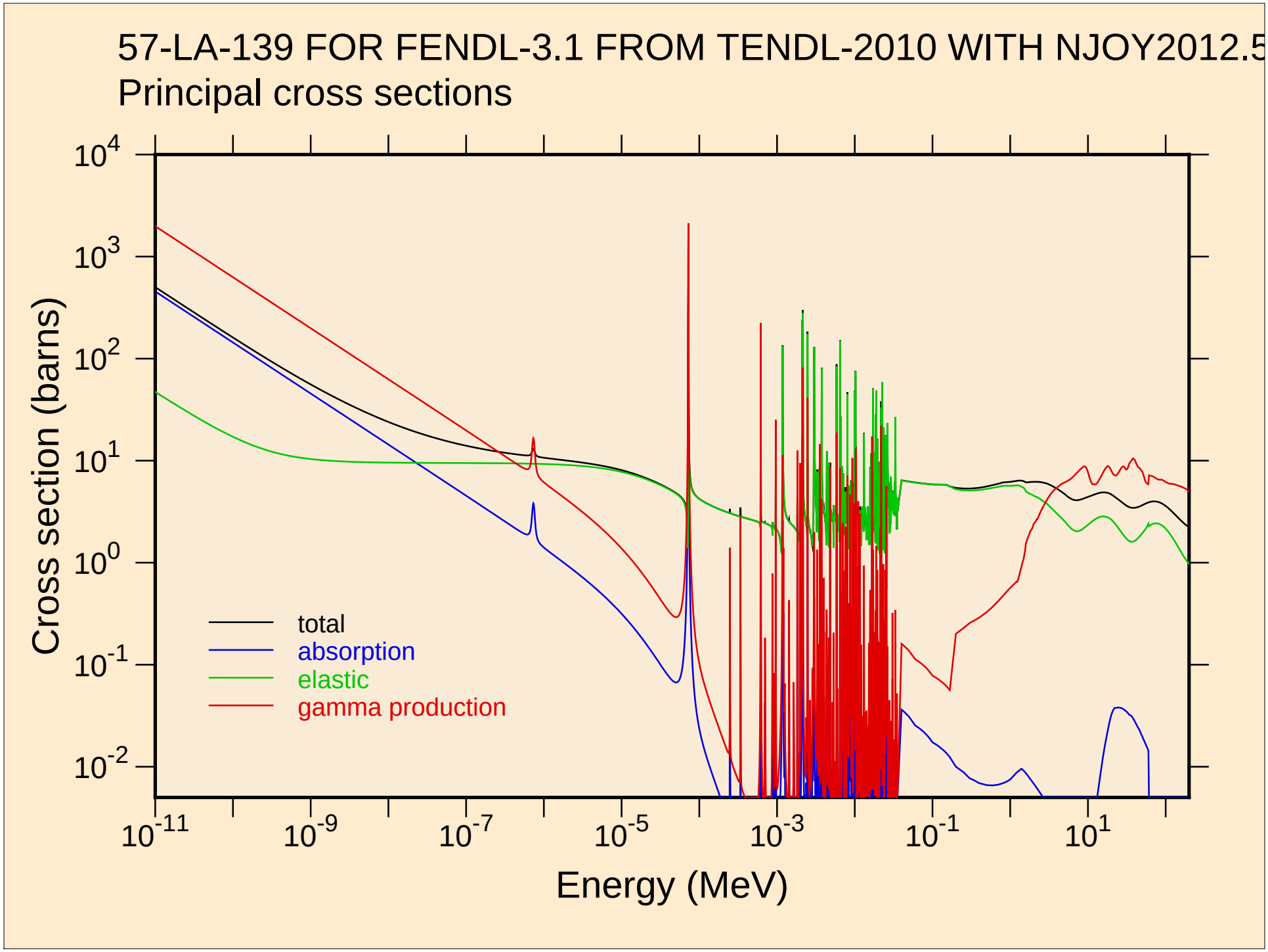
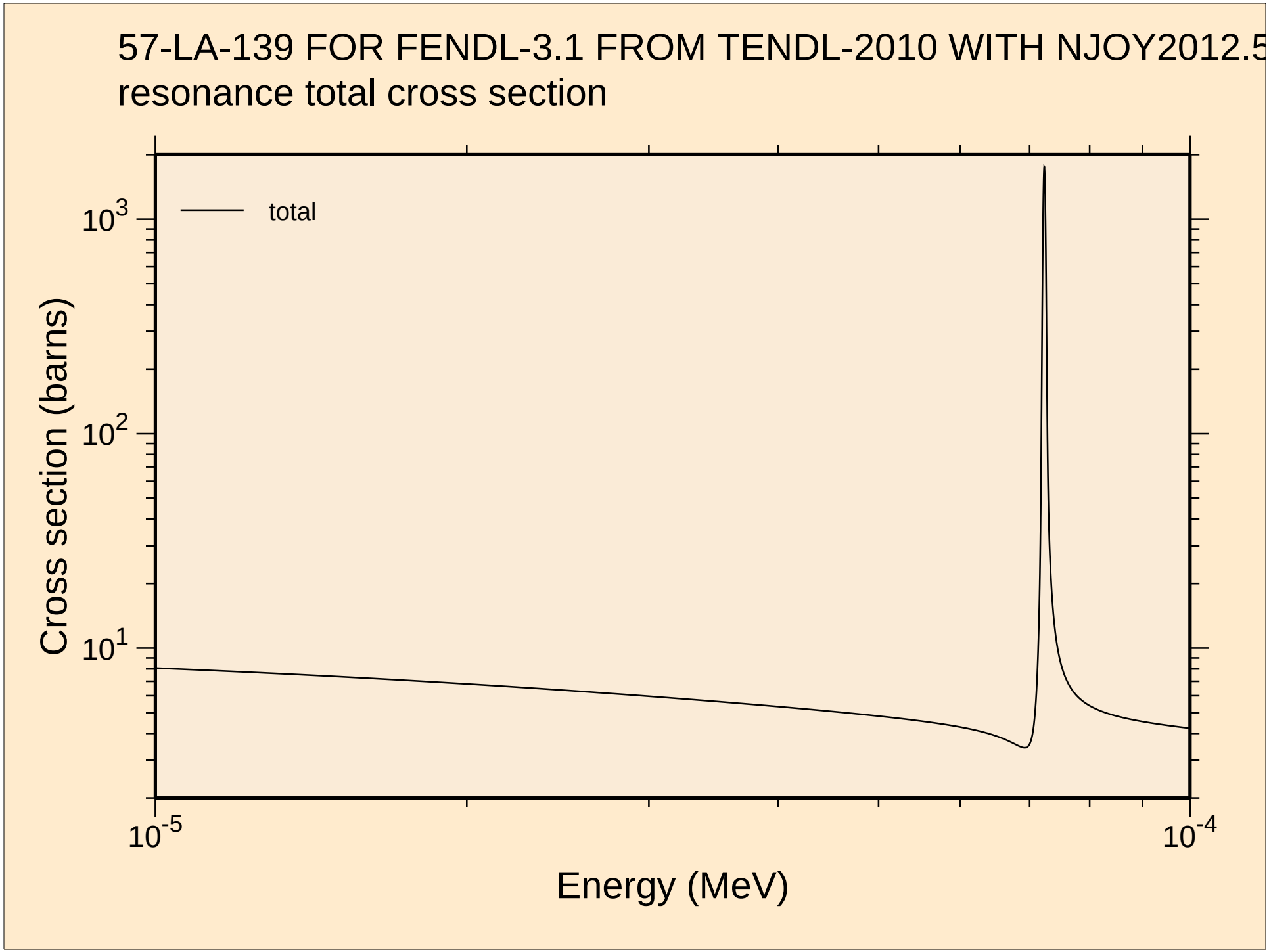
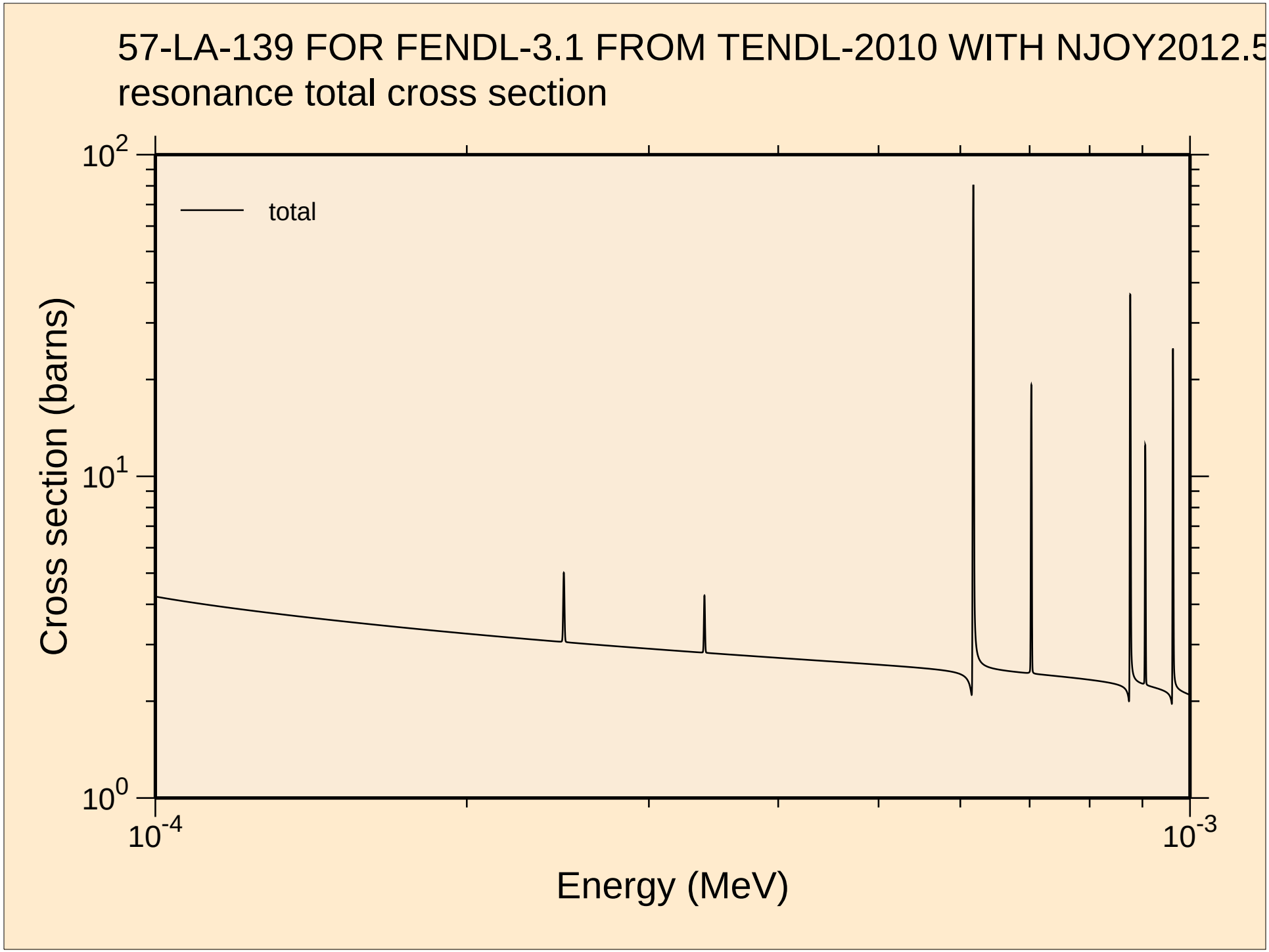
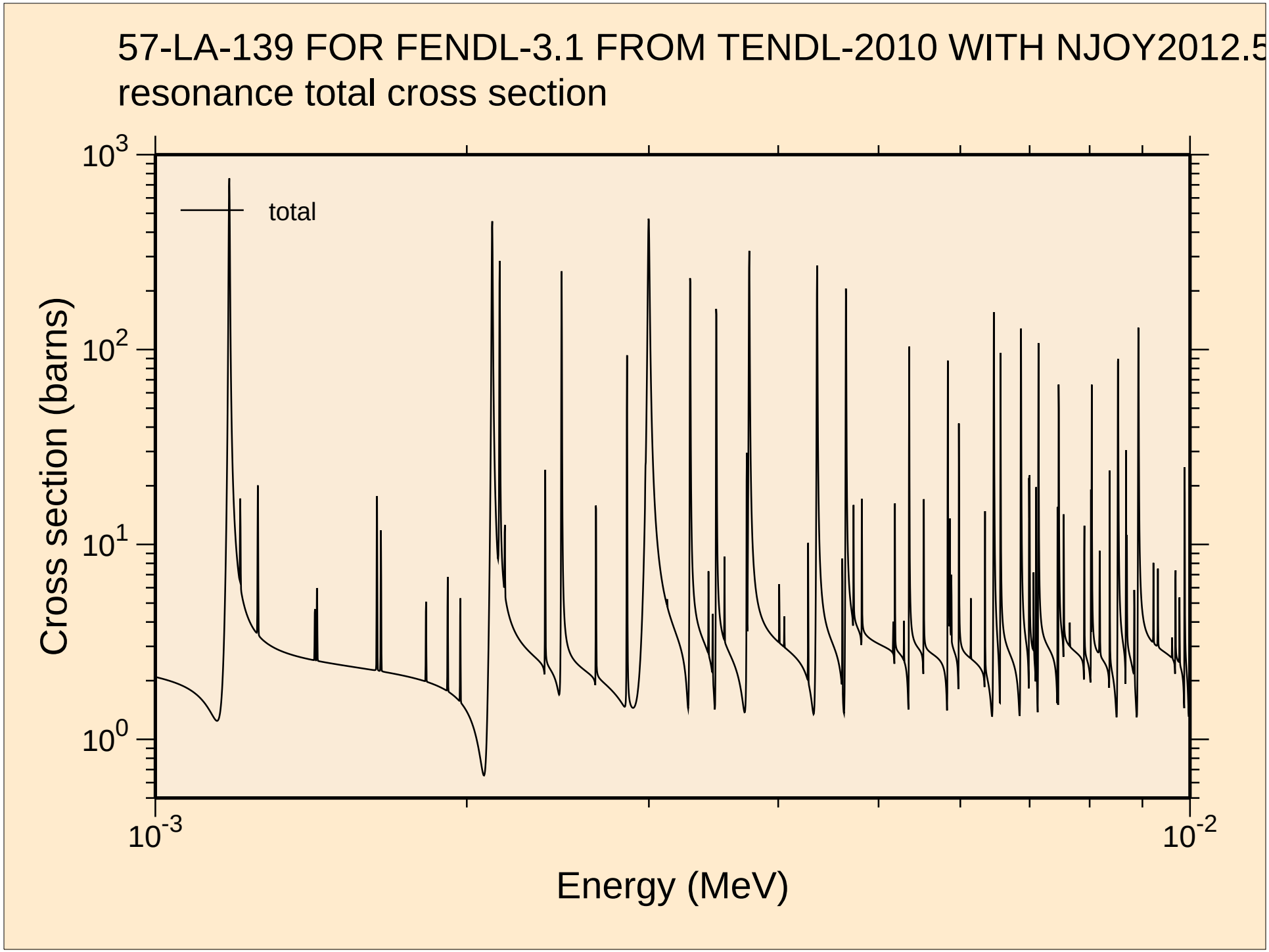
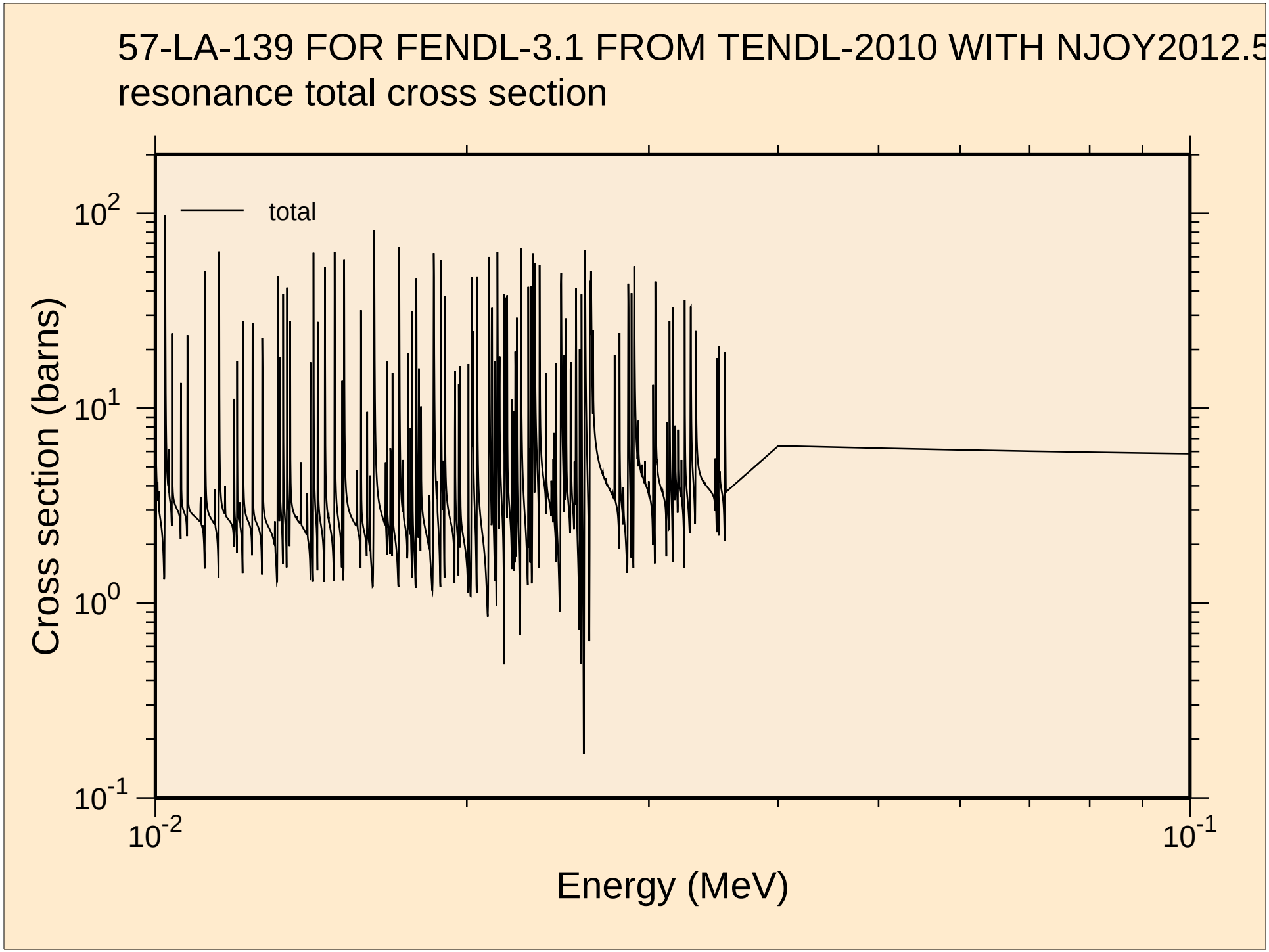
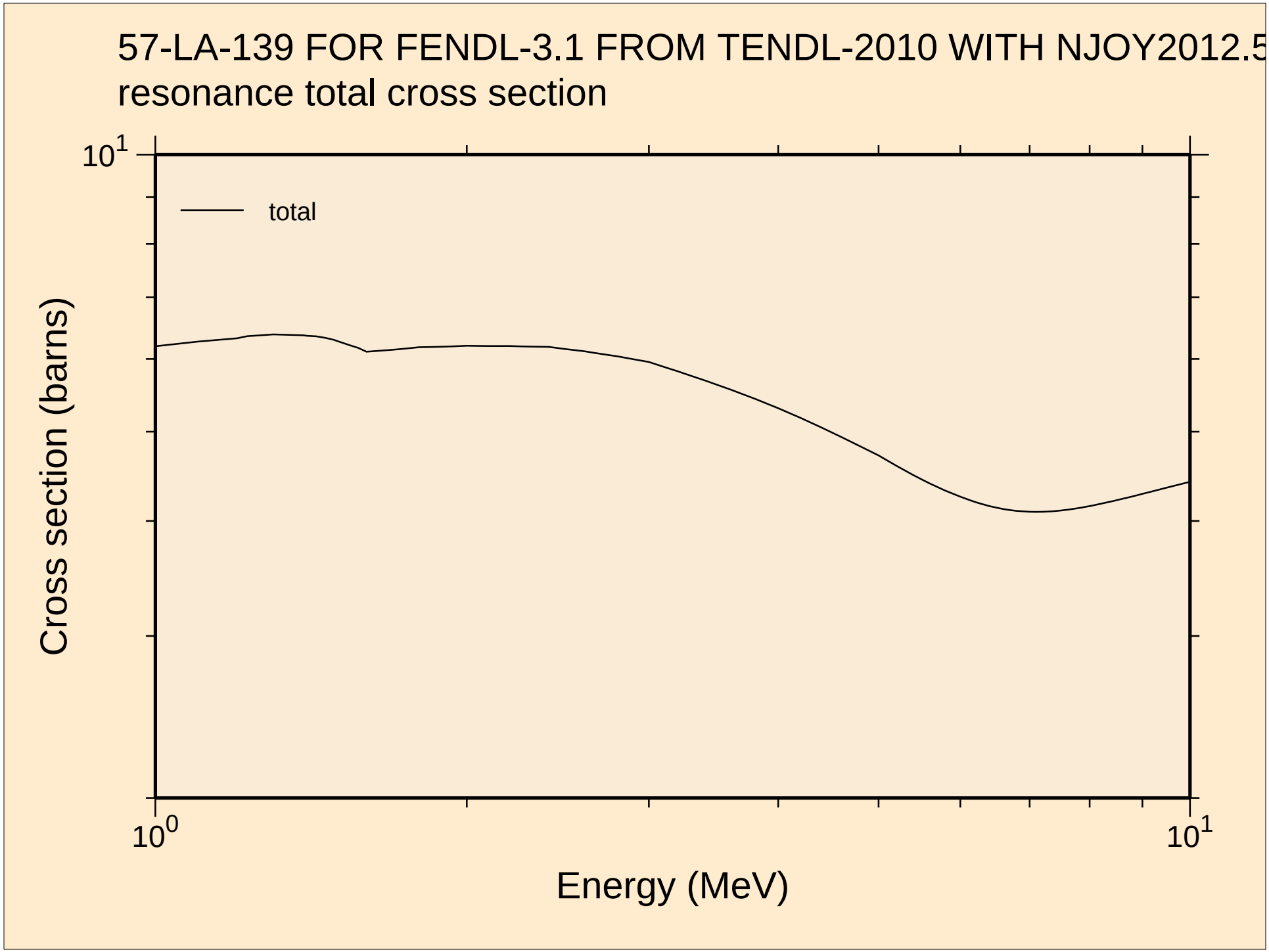

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Principal cross sections
Cross section (barns)
Energy (MeV)
total
absorption
elastic
gamma production

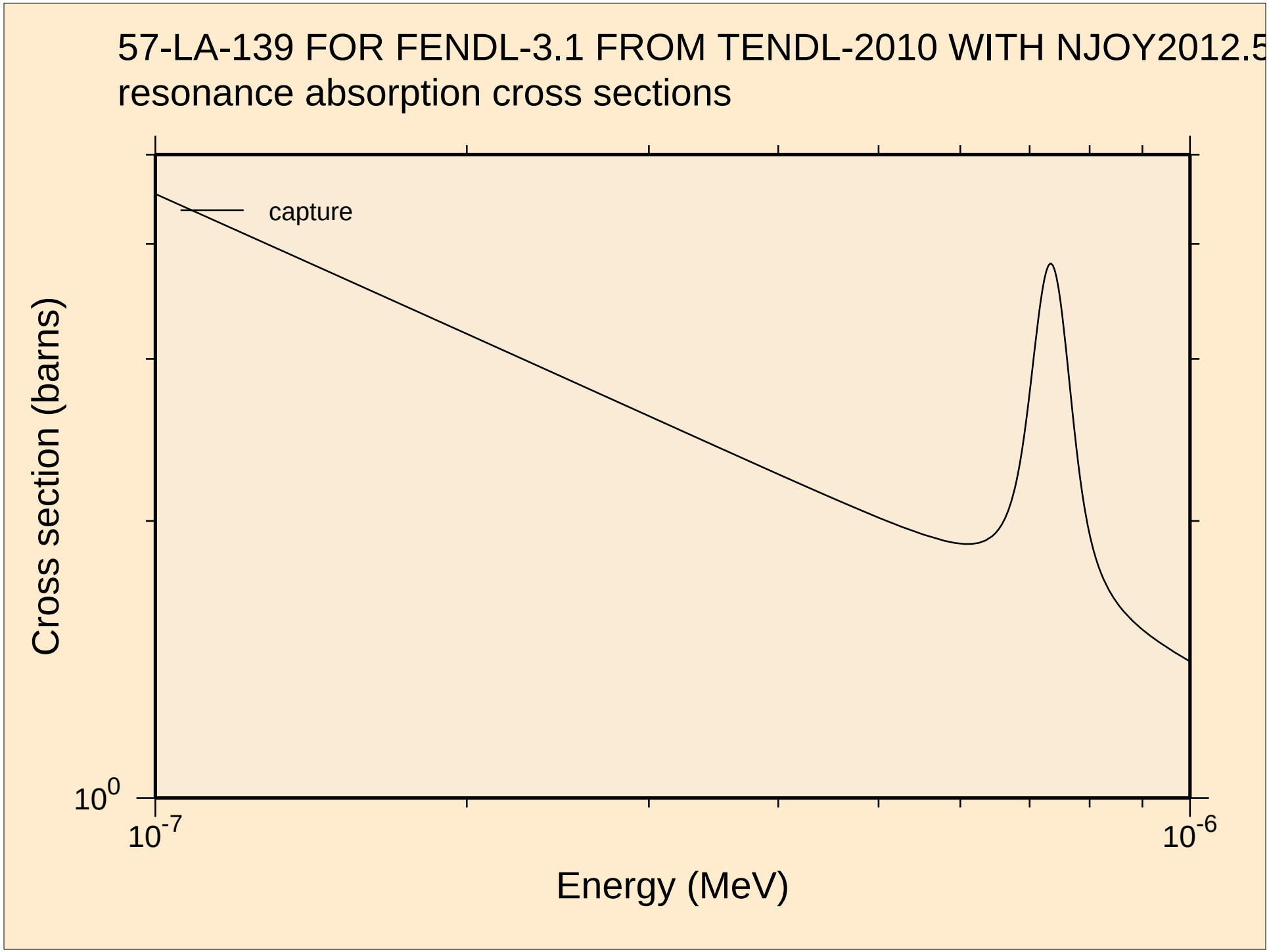

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
resonance total cross section
total
Cross section (barns)
10^3
10^2
10^1
10^-5
10^-4
Energy (MeV)


57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
resonance total cross section
total
Cross section (barns)
10^2
10^1
10^0
10^{-4}
10^{-3}
Energy (MeV)

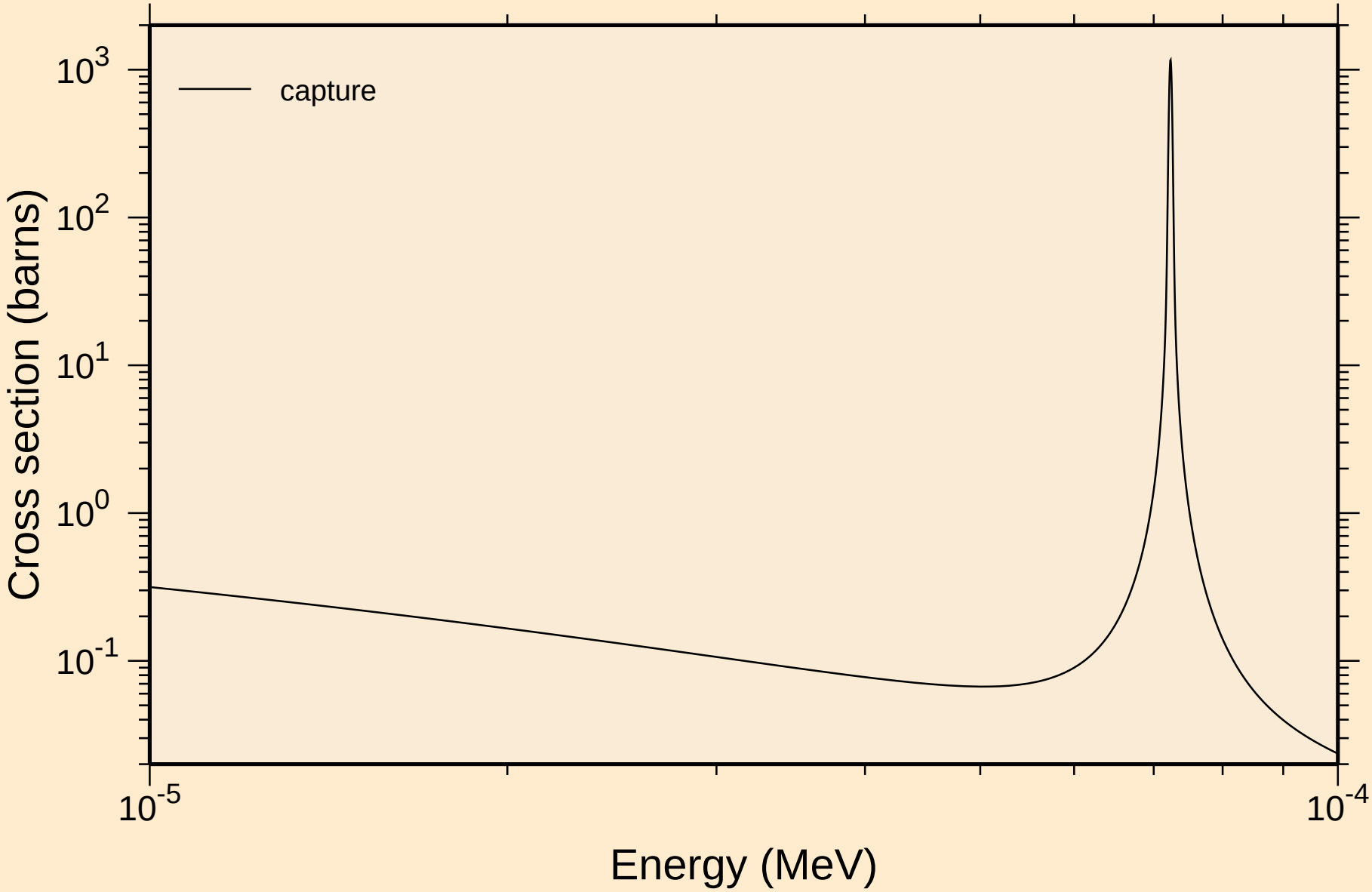

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
resonance total cross section
total
Cross section (barns)
10^3
10^2
10^1
10^0
10^-3
10^-2
Energy (MeV)


57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
resonance total cross section
total
Cross section (barns)
10^2
10^1
10^0
10^-1
10^-2
10^-1
Energy (MeV)

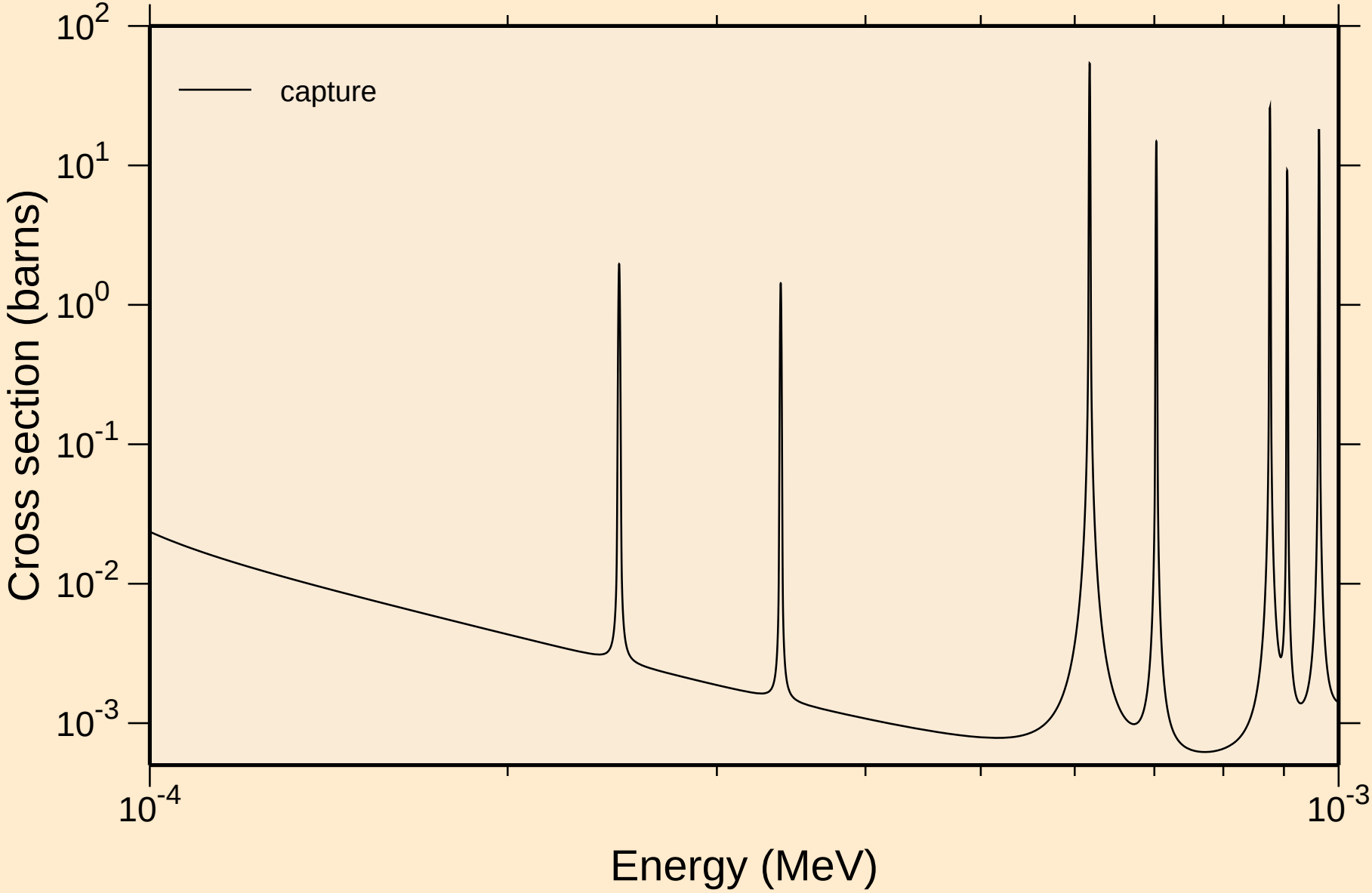

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
resonance total cross section
10^1
total
Cross section (barns)
10^0
10^1
Energy (MeV)

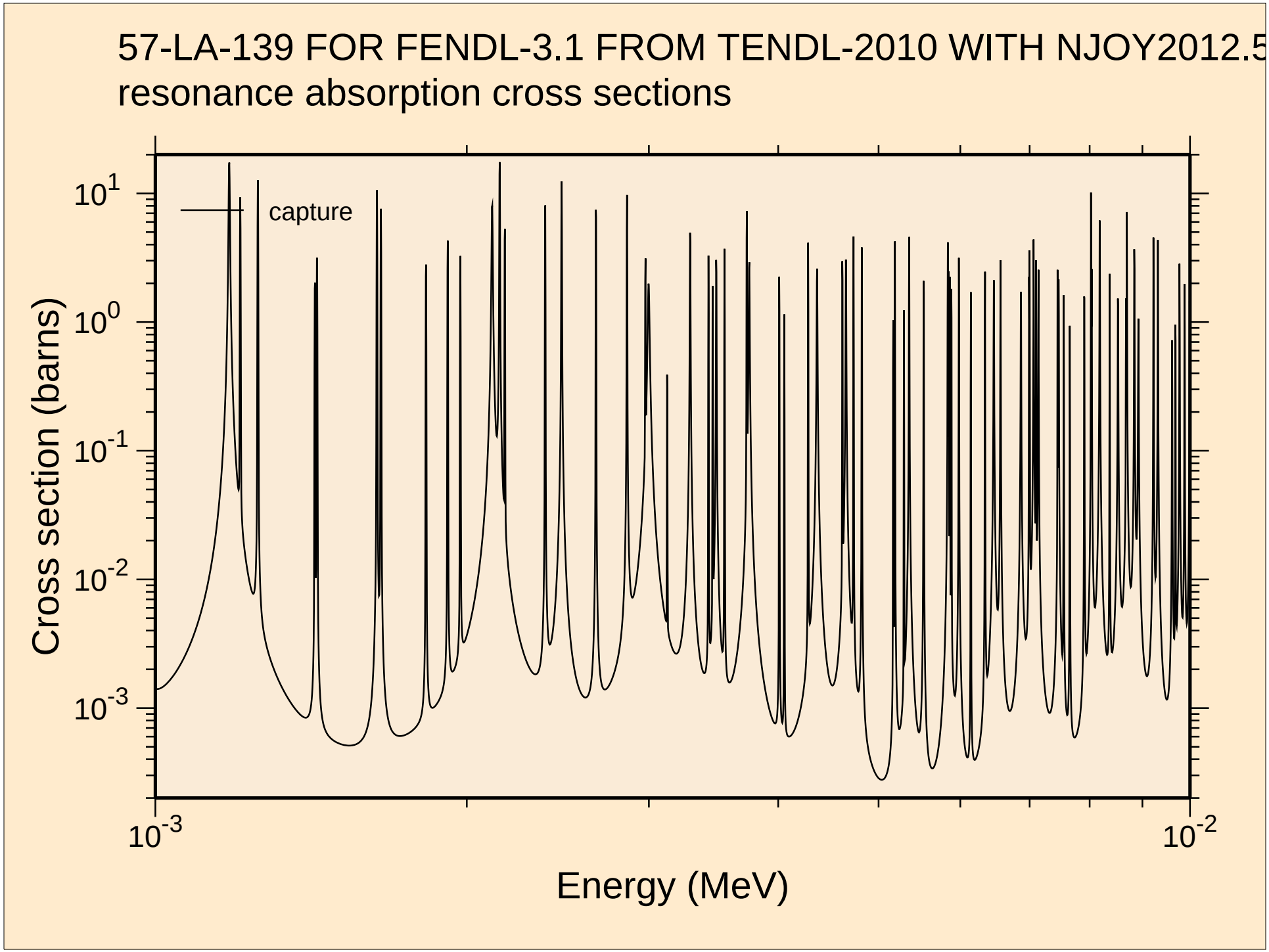

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
resonance absorption cross sections
capture
Cross section (barns)
10^0
10^-7
10^-6
Energy (MeV)

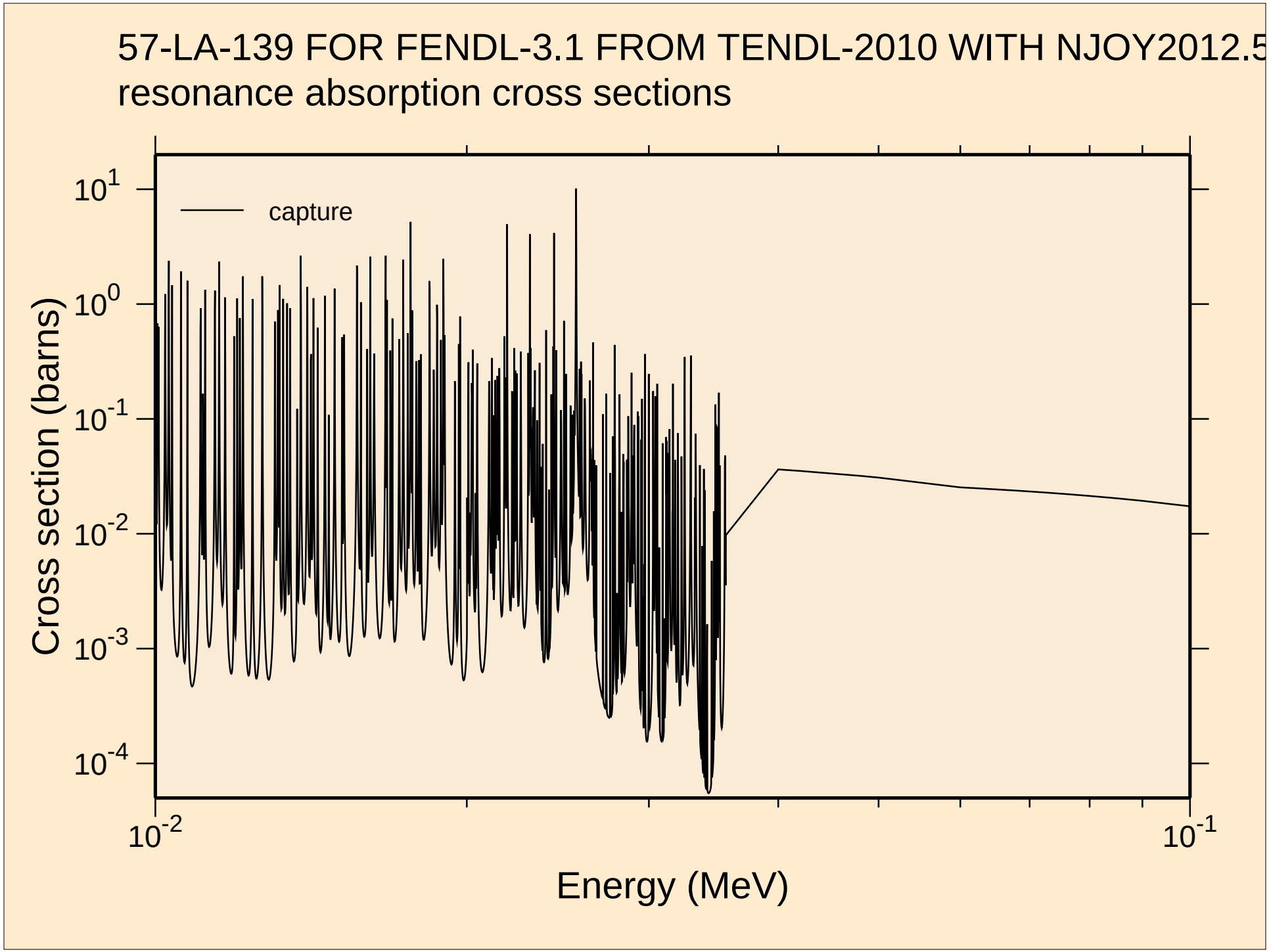
57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
resonance absorption cross sections

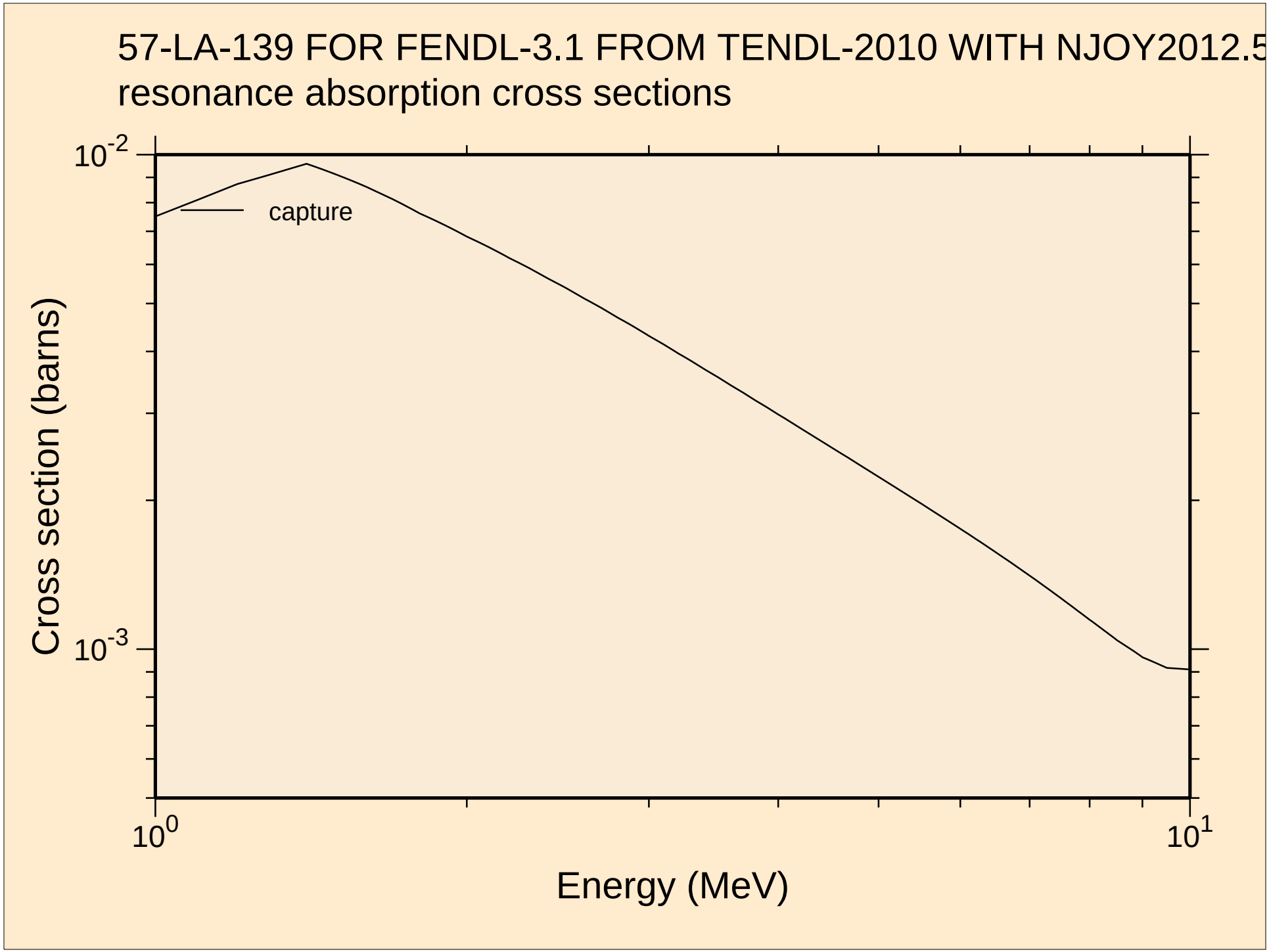


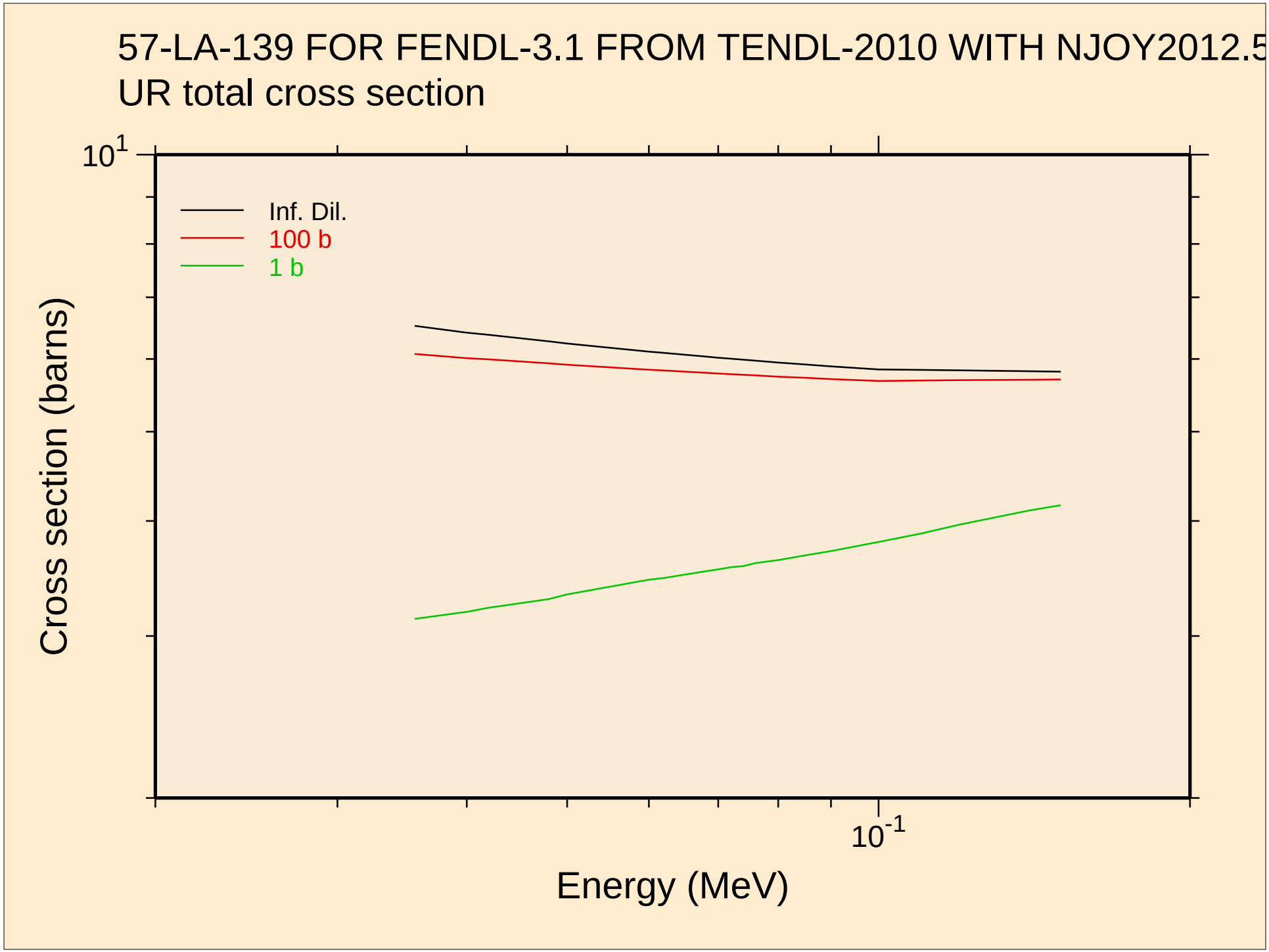
57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
resonance absorption cross sections

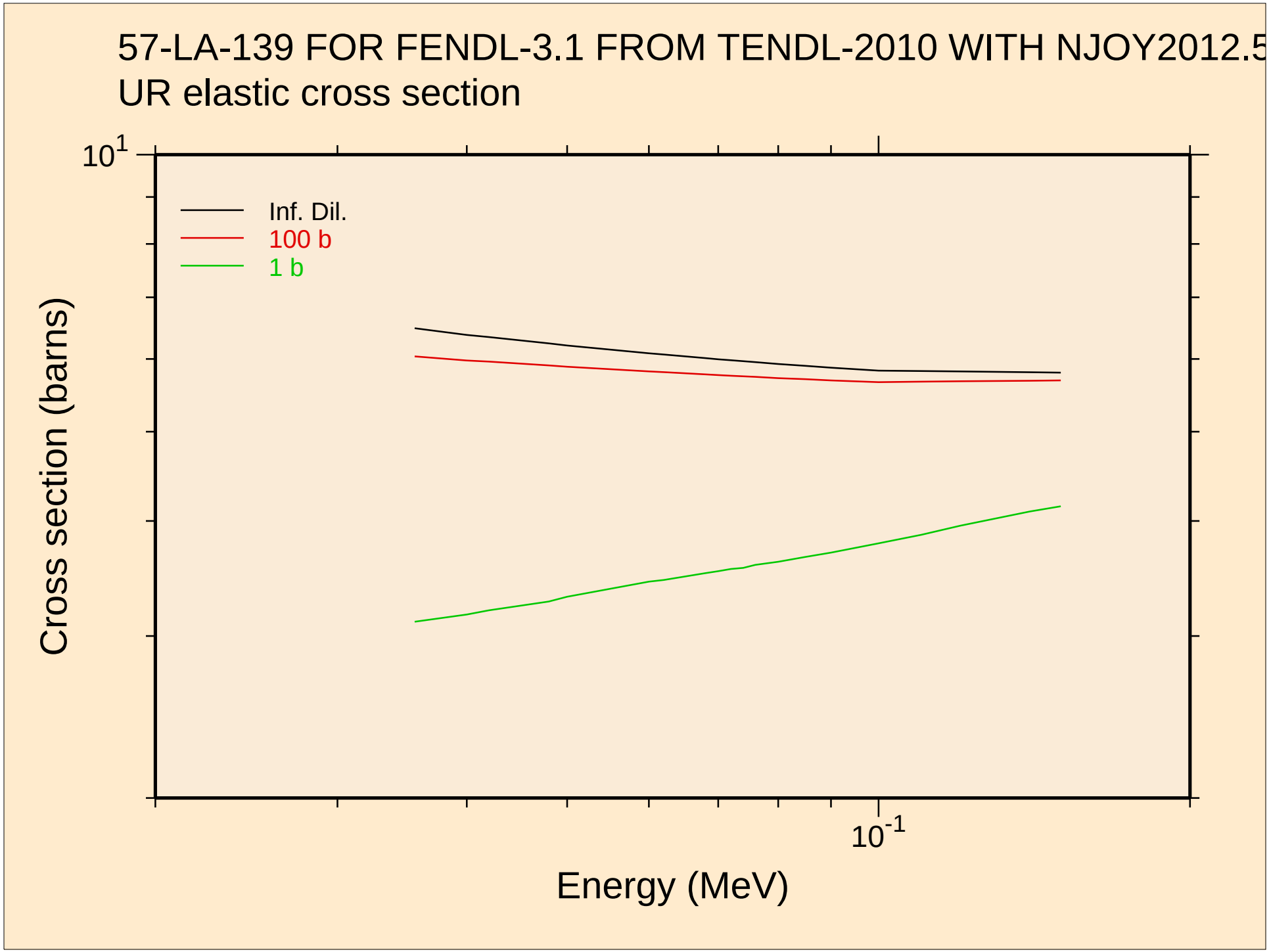


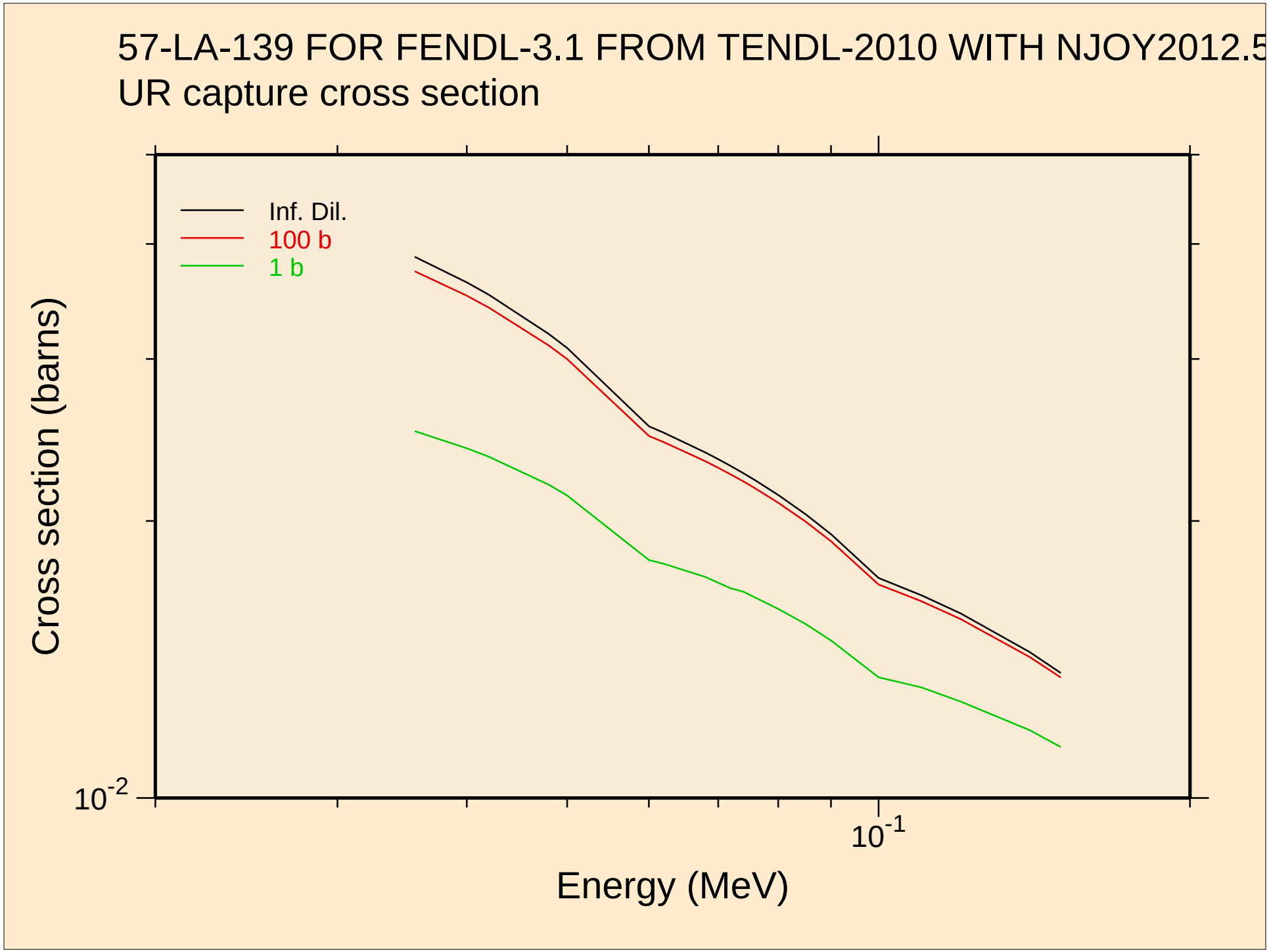

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
resonance absorption cross sections
capture
Cross section (barns)
10^1
10^0
10^-1
10^-2
10^-3
10^-3
10^-2
Energy (MeV)

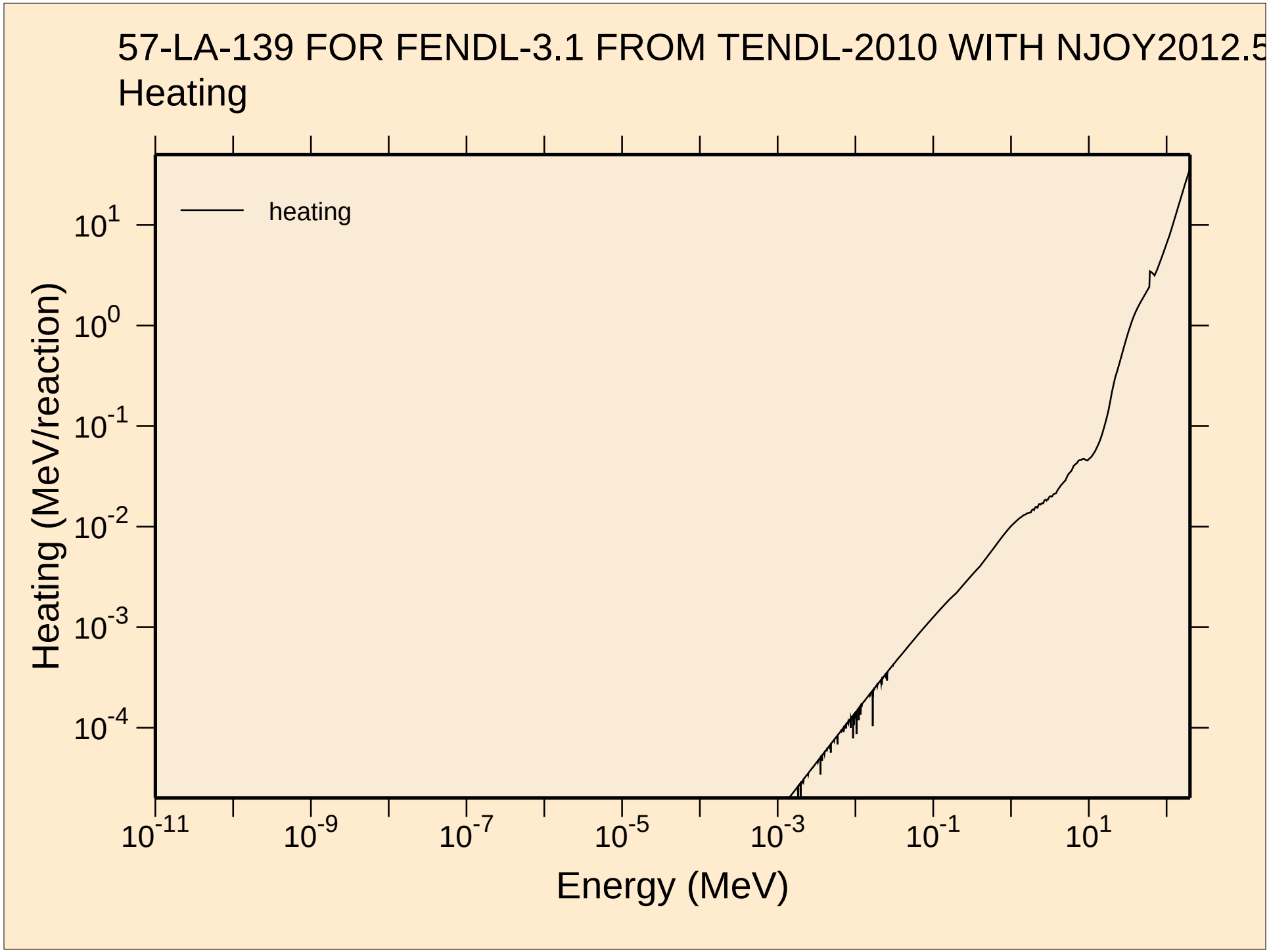

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
resonance absorption cross sections
capture
Cross section (barns)
10^1
10^0
10^-1
10^-2
10^-3
10^-4
10^-2
10^-1
Energy (MeV)

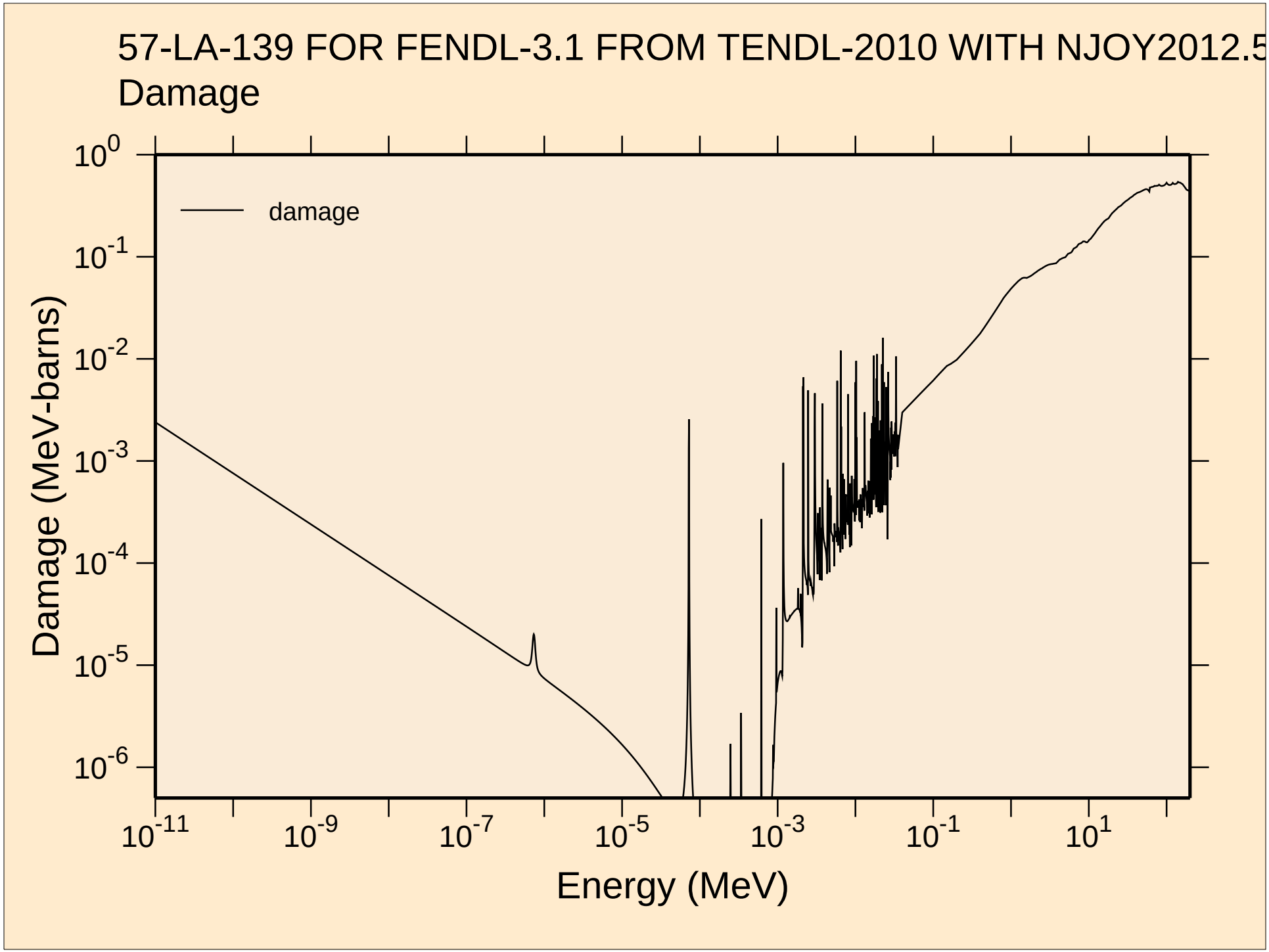

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
resonance absorption cross sections
capture
Cross section (barns)
10-2
10-3
100
101
Energy (MeV)

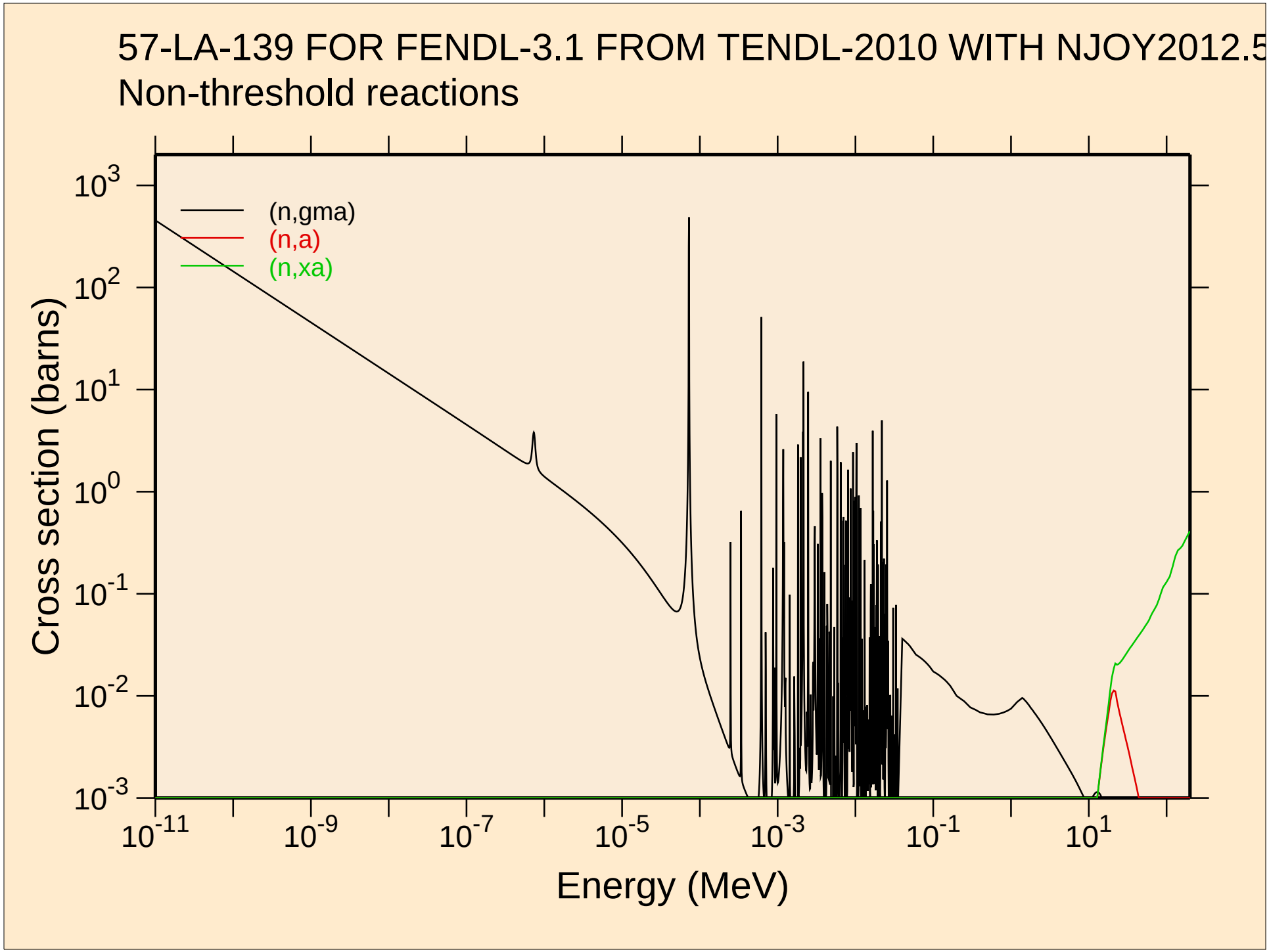

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
UR total cross section
10^1
Inf. Dil.
100 b
1 b
Cross section (barns)
10^{-1}
Energy (MeV)

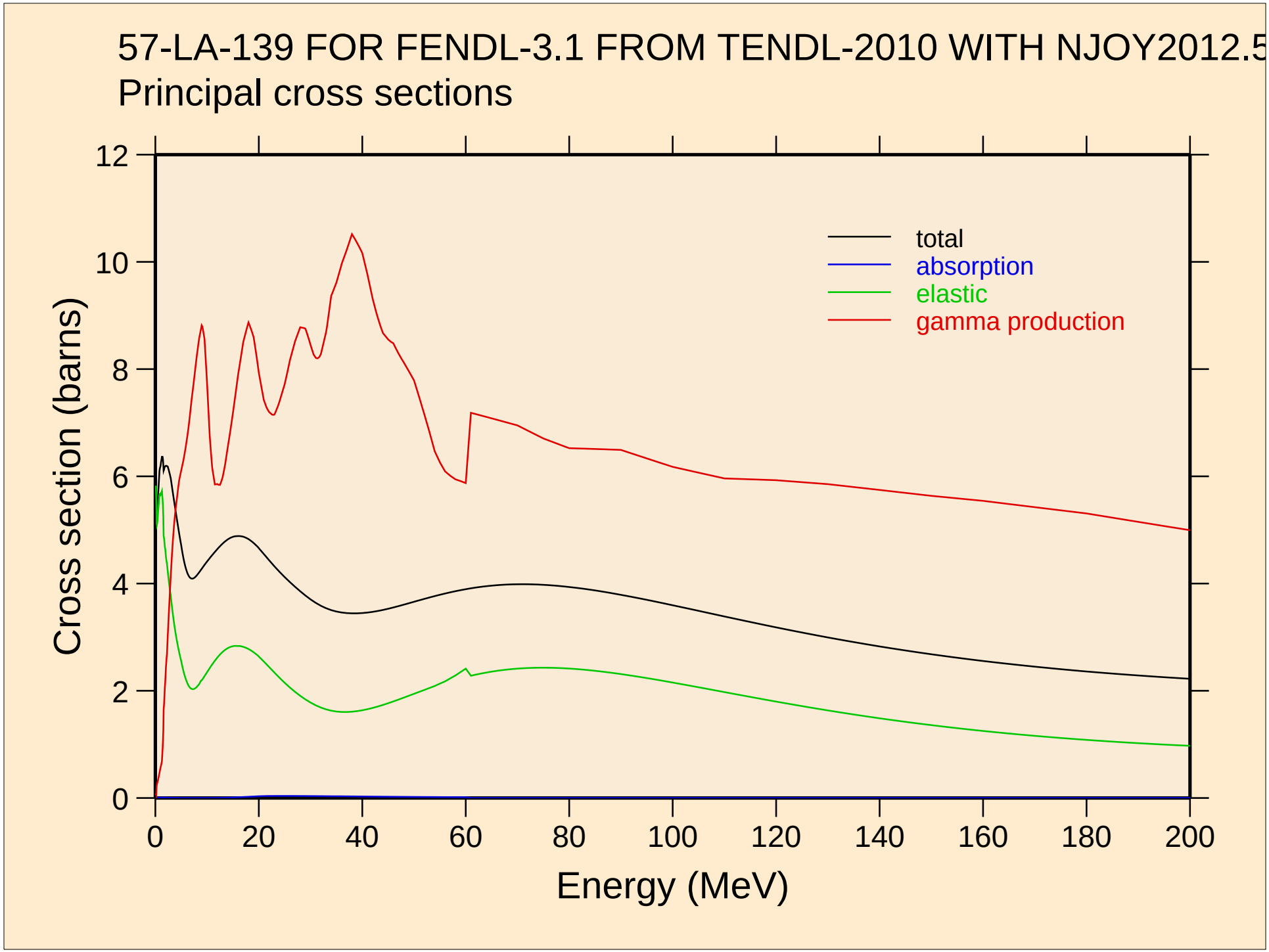

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
UR elastic cross section
10^1
Inf. Dil.
100 b
1 b
Cross section (barns)
10^{-1}
Energy (MeV)

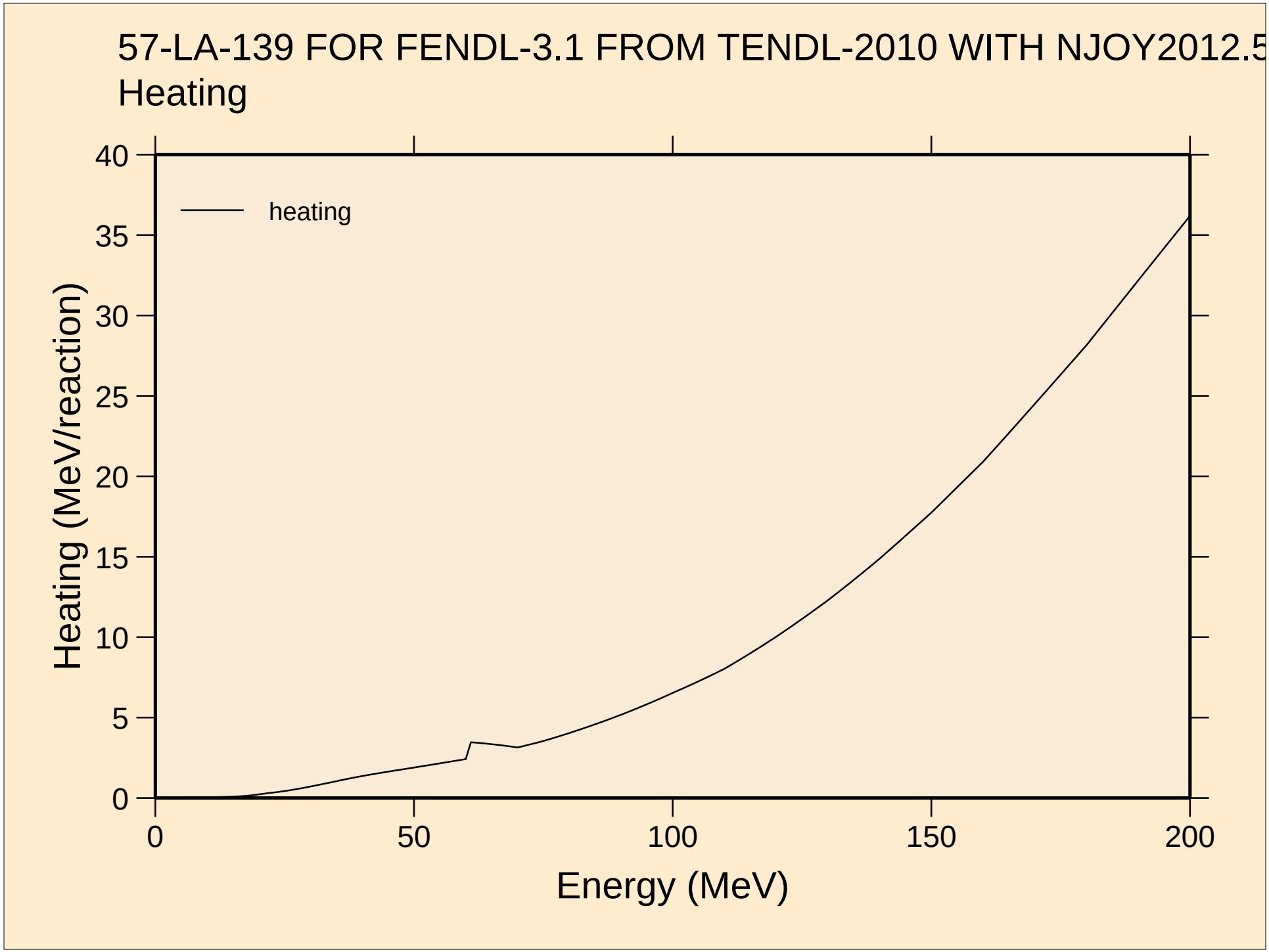

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
UR capture cross section
Inf. Dil.
100 b
1 b
Cross section (barns)
10-2
10-1
Energy (MeV)

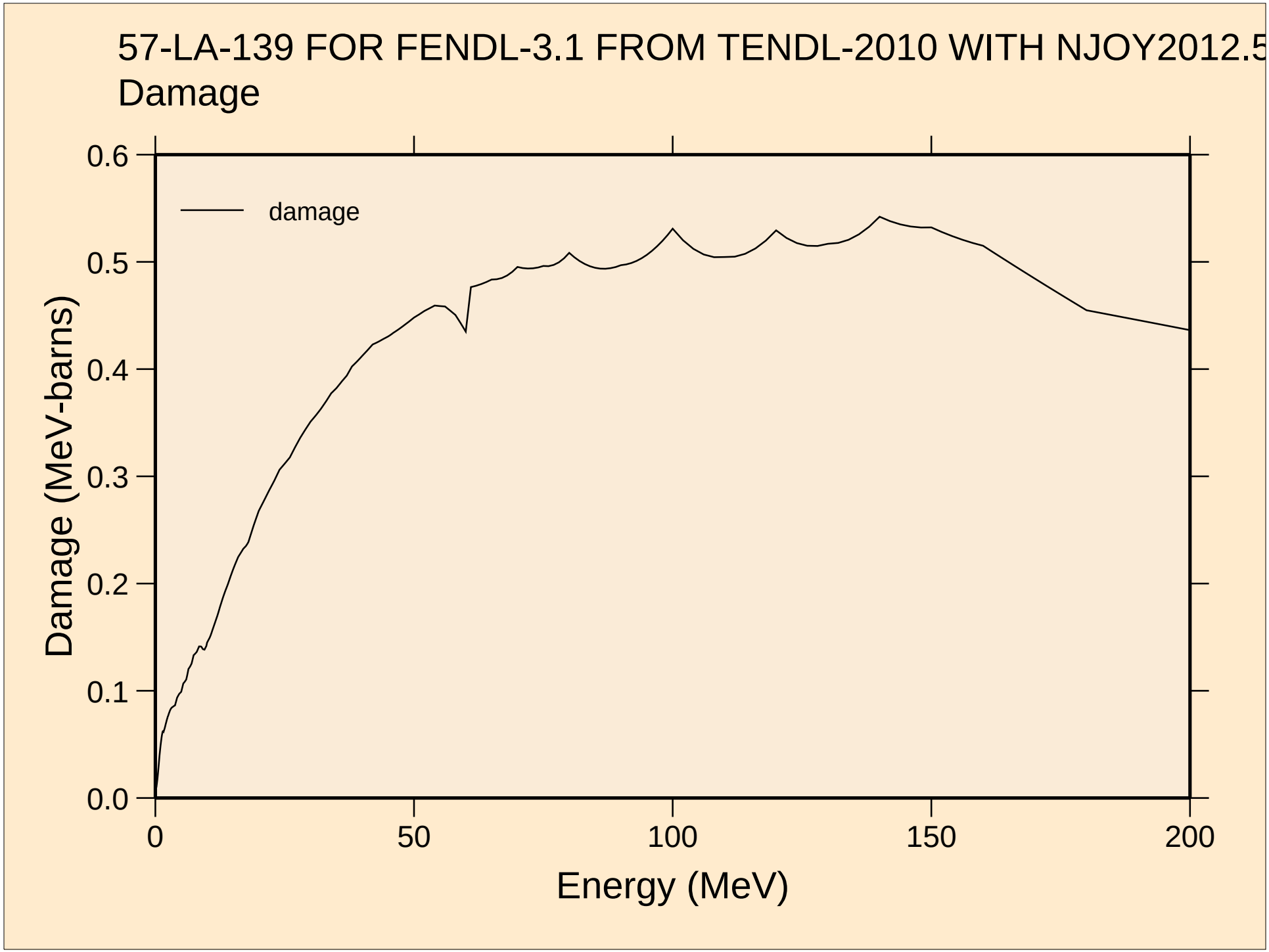

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Heating
heating
Heating (MeV/reaction)
10^{1}
10^{0}
10^{-1}
10^{-2}
10^{-3}
10^{-4}
10^{-11}
10^{-9}
10^{-7}
10^{-5}
10^{-3}
10^{-1}
10^{1}
Energy (MeV)

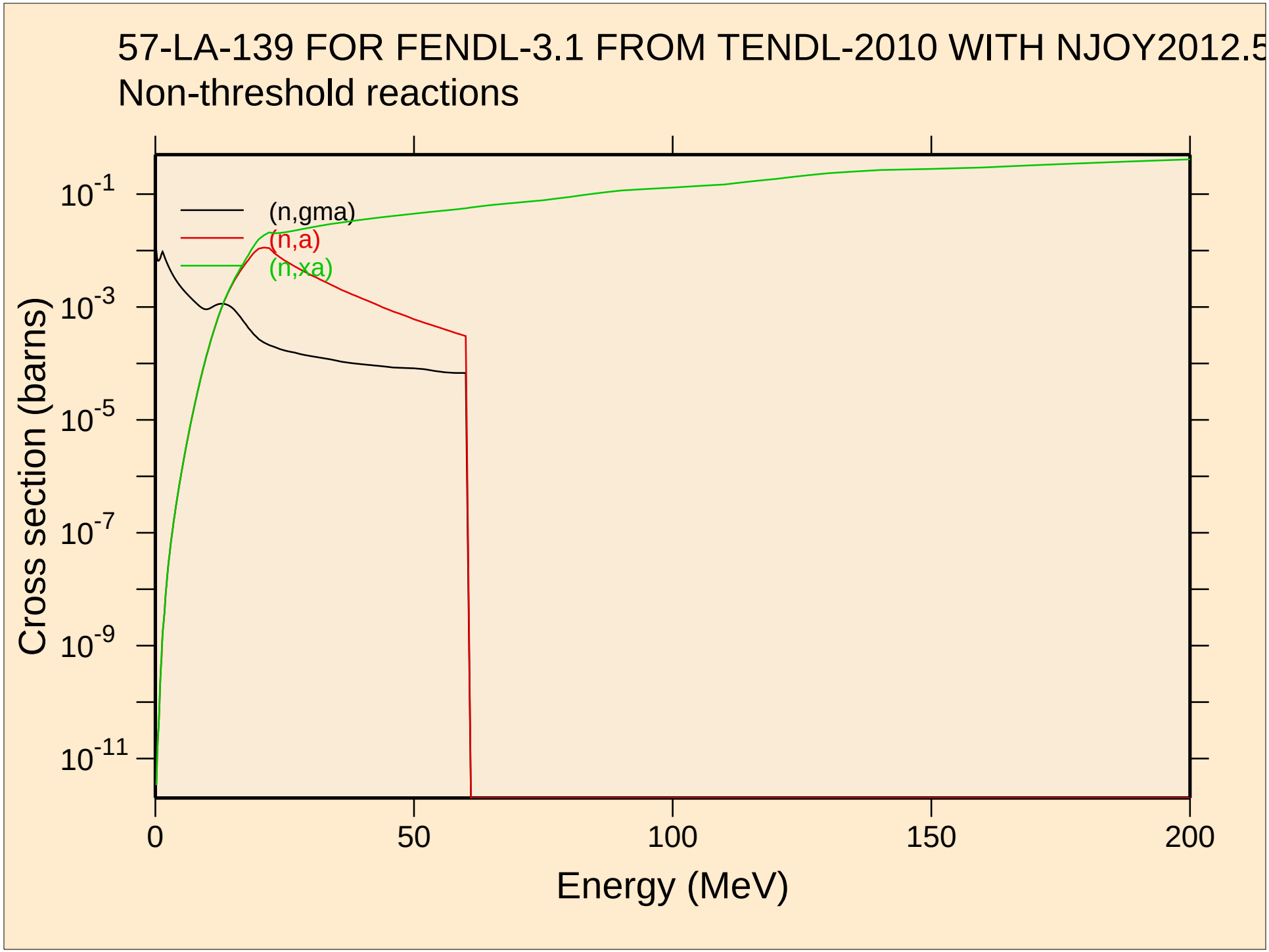

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Damage
damage
Damage (MeV-barns)
Energy (MeV)
10^0
10^-1
10^-2
10^-3
10^-4
10^-5
10^-6
10^-11
10^-9
10^-7
10^-5
10^-3
10^-1
10^1

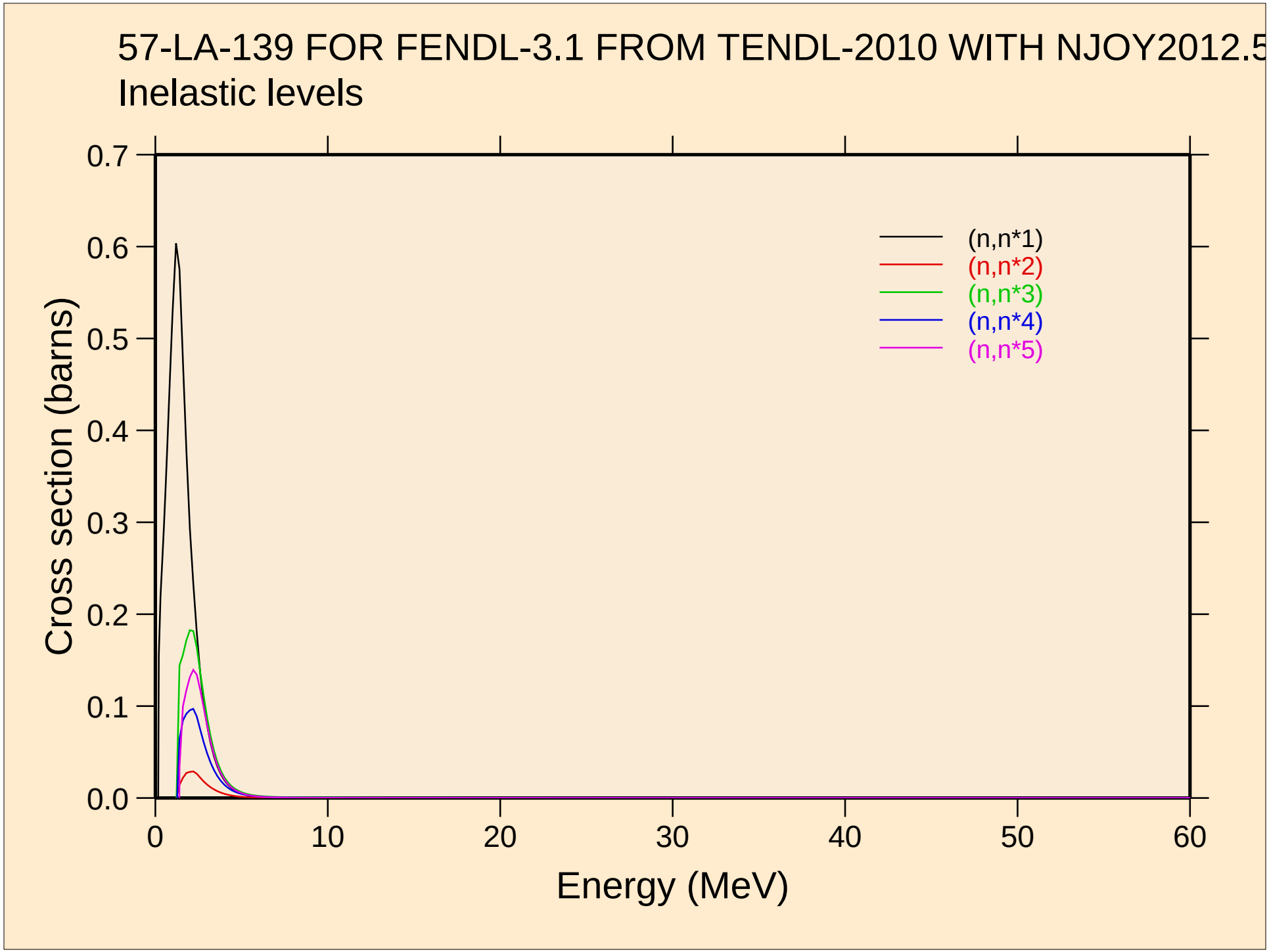

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Non-threshold reactions
(n,gma)
(n,a)
(n,xa)
Cross section (barns)
Energy (MeV)
10^3
10^2
10^1
10^0
10^-1
10^-2
10^-3
10^-11
10^-9
10^-7
10^-5
10^-3
10^-1
10^1

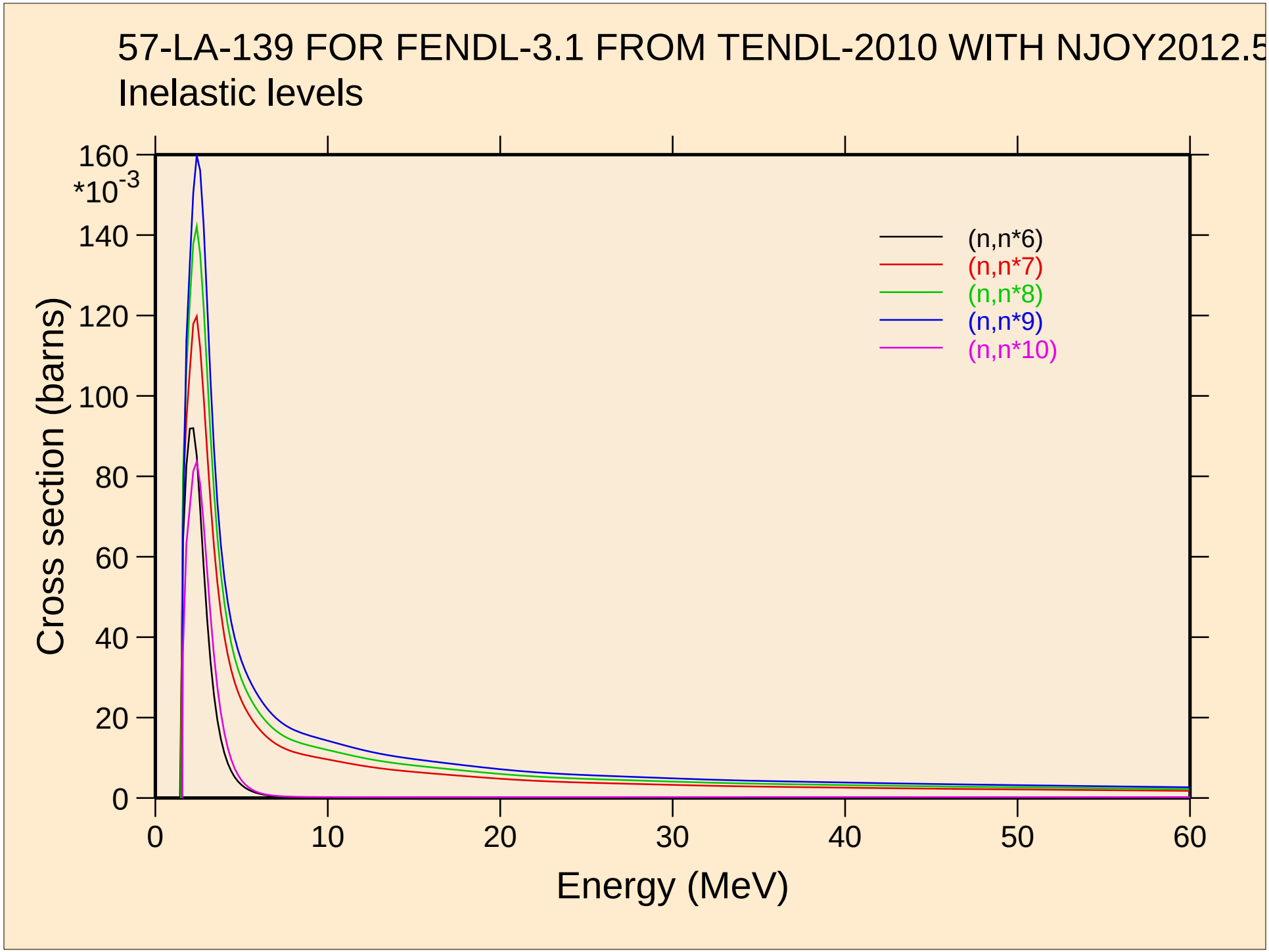

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Principal cross sections
Cross section (barns)
Energy (MeV)
0
2
4
6
8
10
12
0
20
40
60
80
100
120
140
160
180
200
total
absorption
elastic
gamma production

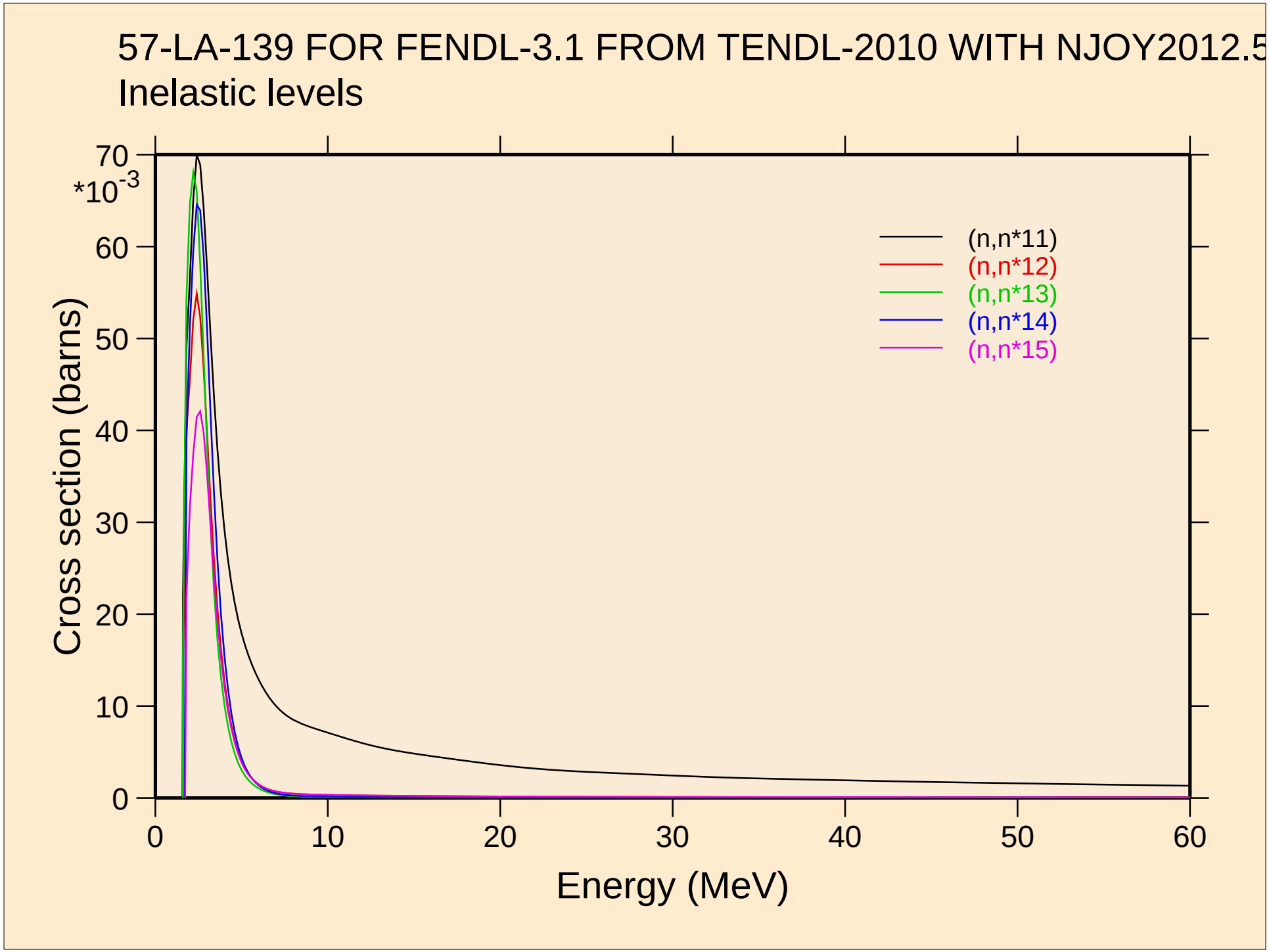

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Heating
heating
Heating (MeV/reaction)
Energy (MeV)
0
5
10
15
20
25
30
35
40
0
50
100
150
200

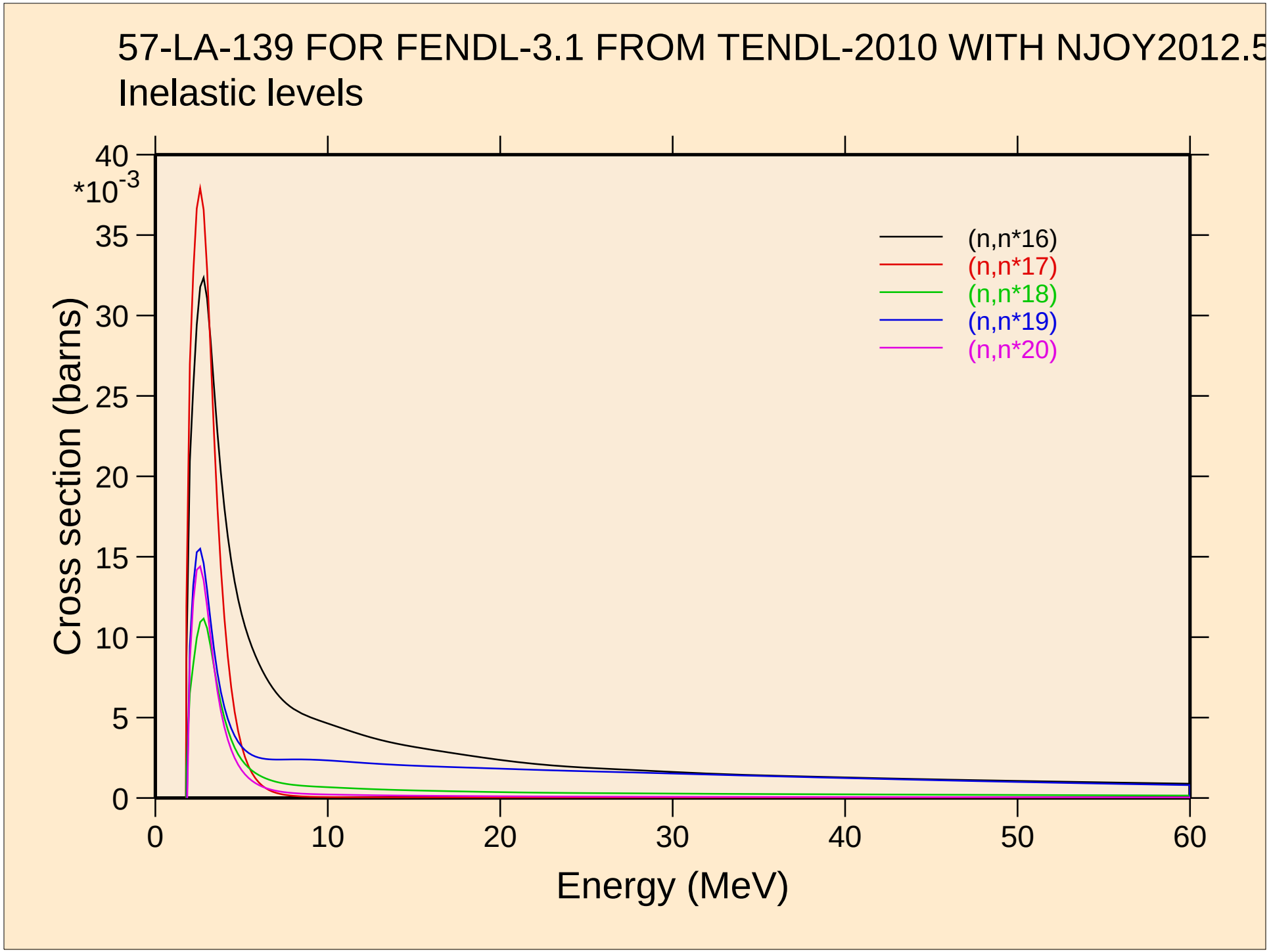

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Damage
damage
Damage (MeV-barns)
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0
50
100
150
200
Energy (MeV)

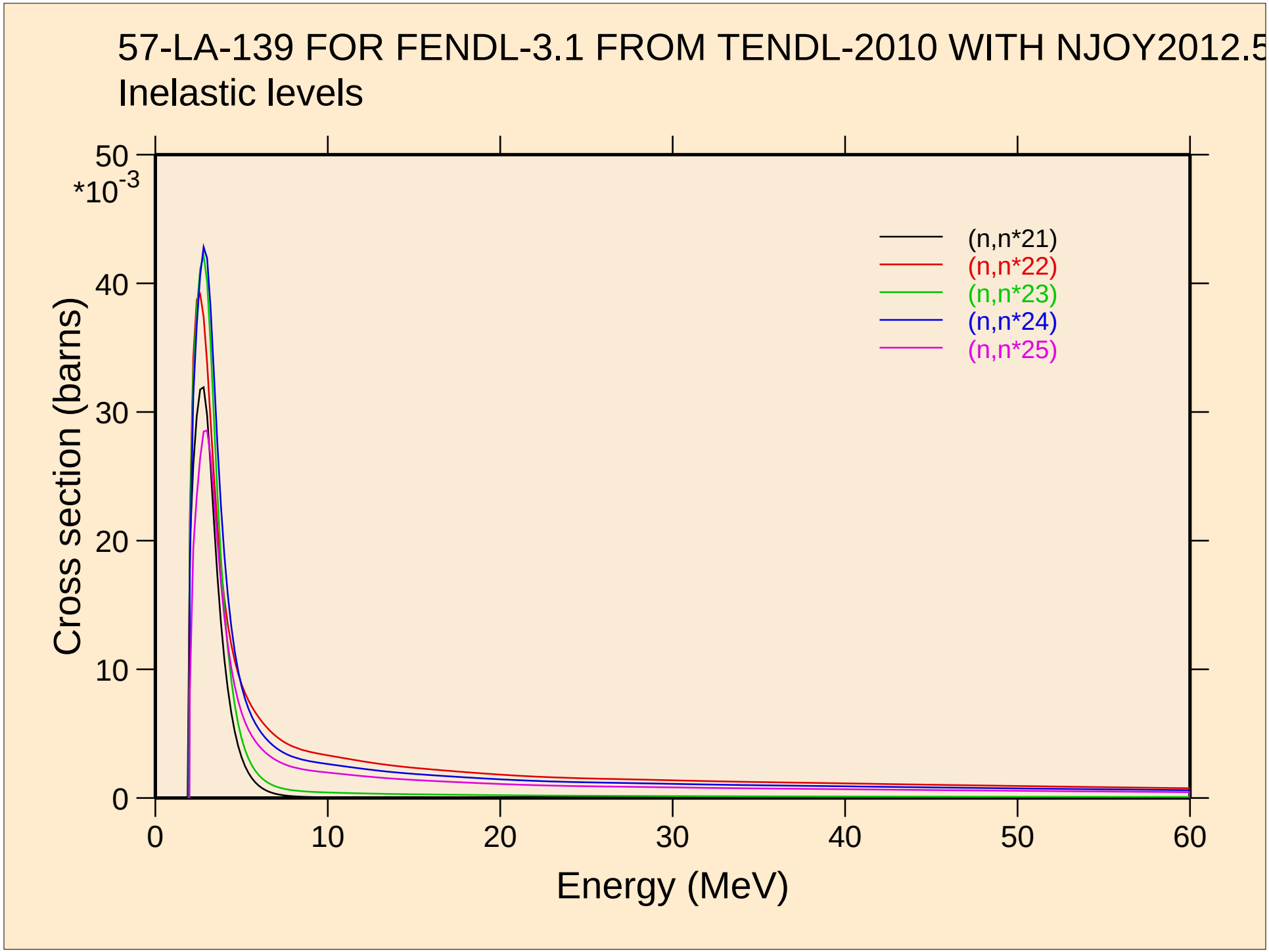

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Non-threshold reactions
(n,gma)
(n,a)
(n,xa)
Cross section (barns)
10-1
10-3
10-5
10-7
10-9
10-11
0
50
100
150
200
Energy (MeV)

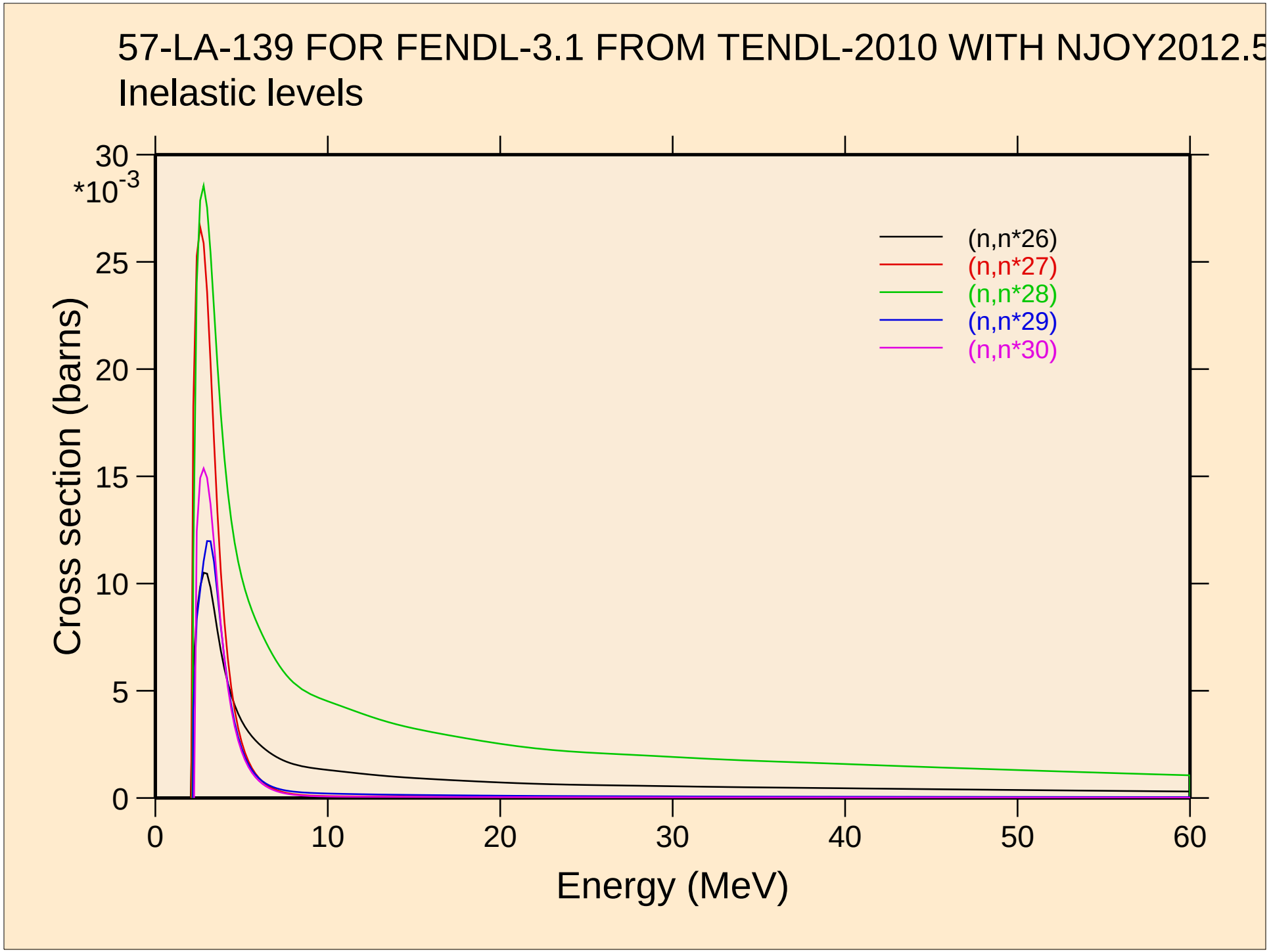

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Inelastic levels
Cross section (barns)
Energy (MeV)
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0
10
20
30
40
50
60
(n,n*1)
(n,n*2)
(n,n*3)
(n,n*4)
(n,n*5)

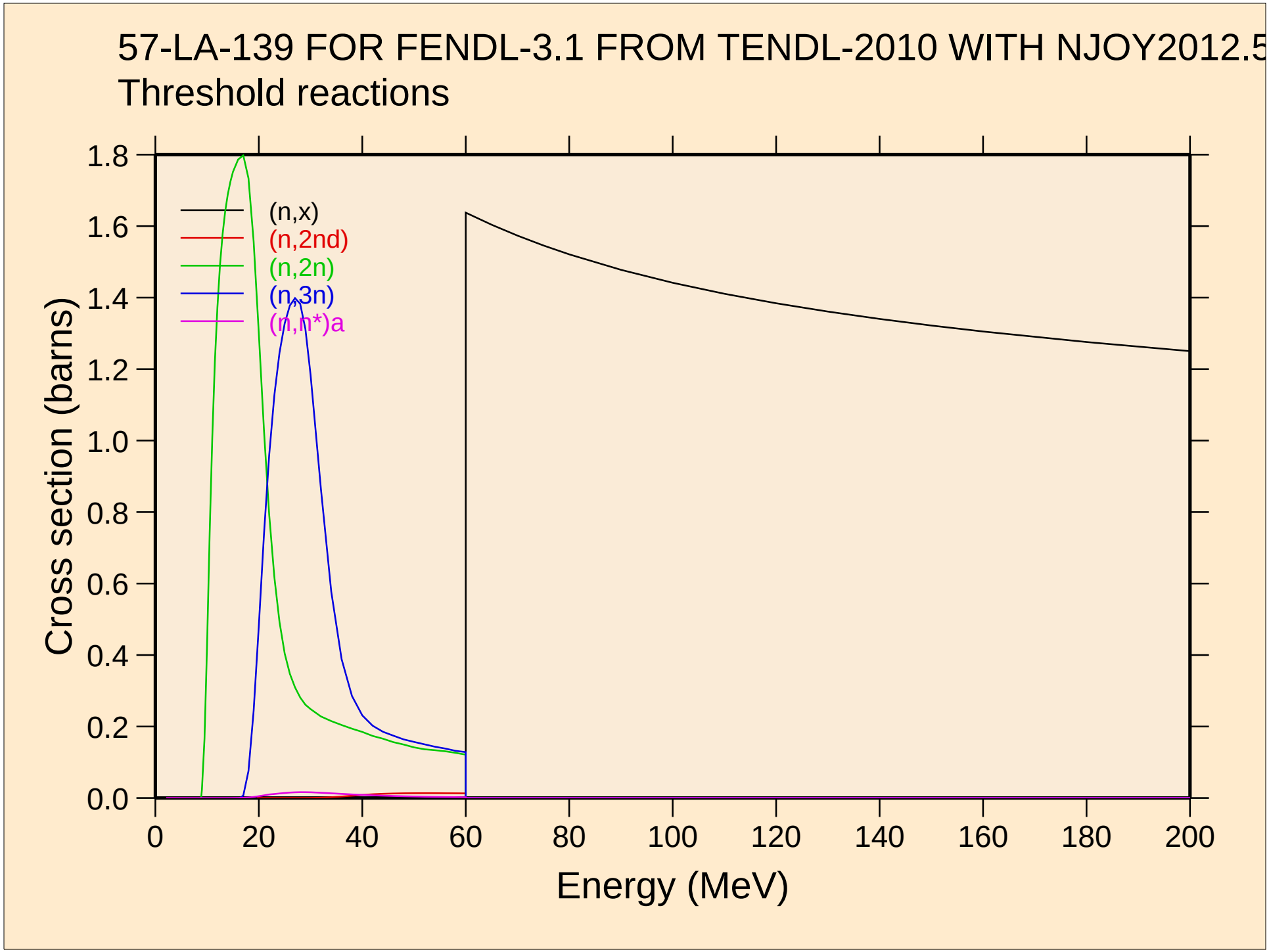

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Inelastic levels
Cross section (barns)
*10-3
160
140
120
100
80
60
40
20
0
0
10
20
30
40
50
60
Energy (MeV)
(n,n*6)
(n,n*7)
(n,n*8)
(n,n*9)
(n,n*10)

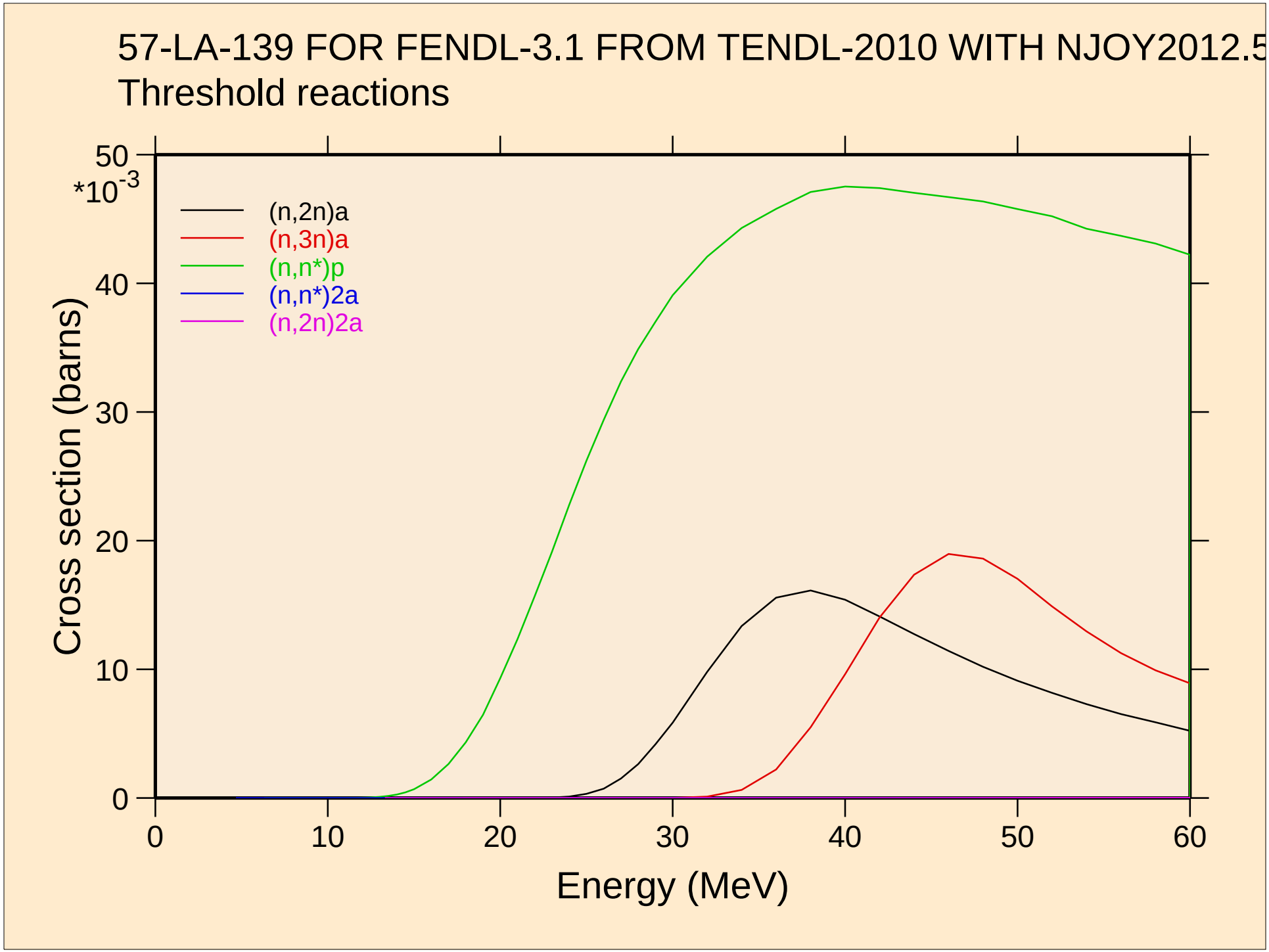

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Inelastic levels
Cross section (barns)
*10-3
70
60
50
40
30
20
10
0
0
10
20
30
40
50
60
Energy (MeV)
(n,n*11)
(n,n*12)
(n,n*13)
(n,n*14)
(n,n*15)

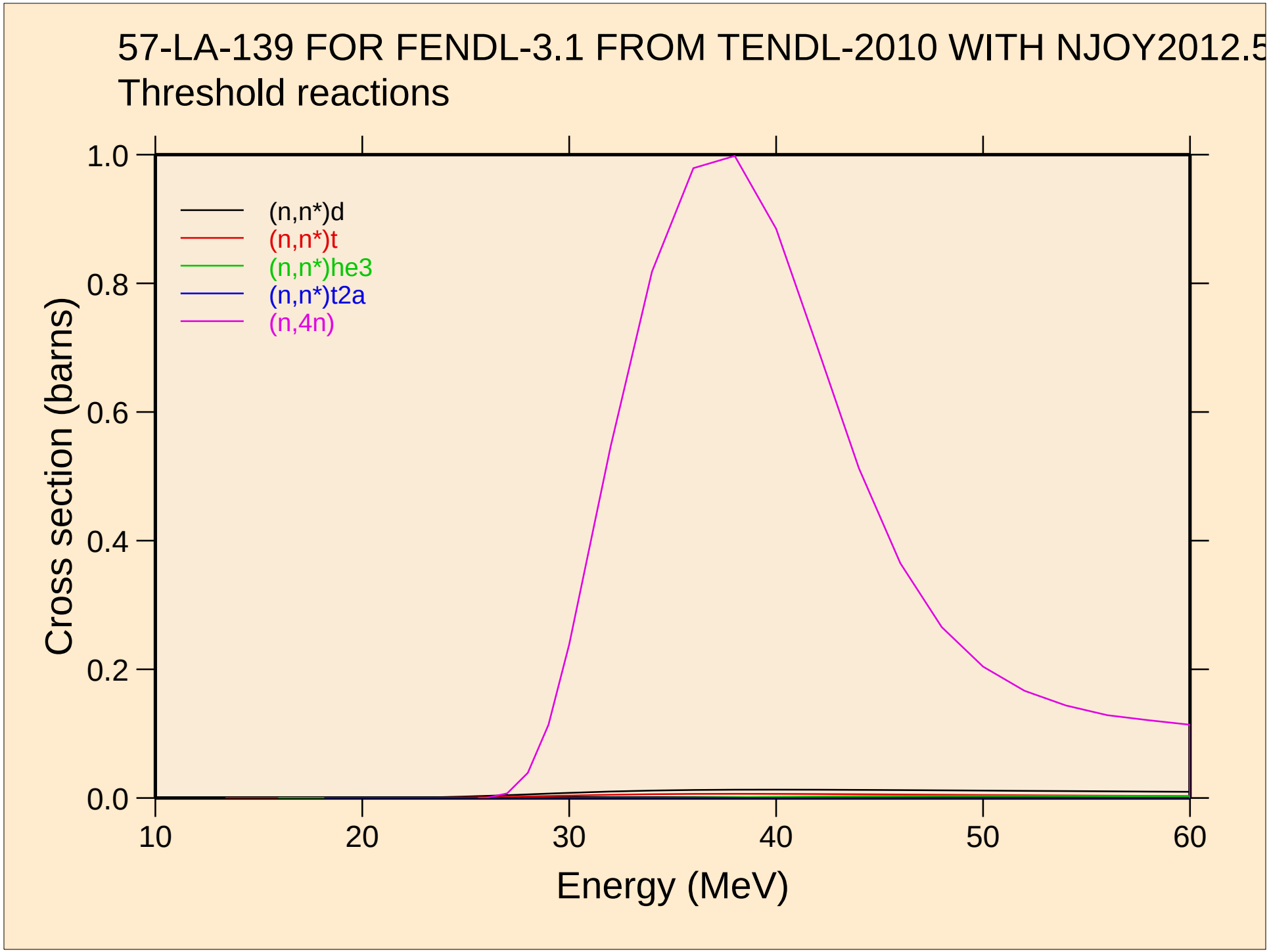

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Inelastic levels
Cross section (barns)
*10-3
40
35
30
25
20
15
10
5
0
0
10
20
30
40
50
60
Energy (MeV)
(n,n*16)
(n,n*17)
(n,n*18)
(n,n*19)
(n,n*20)

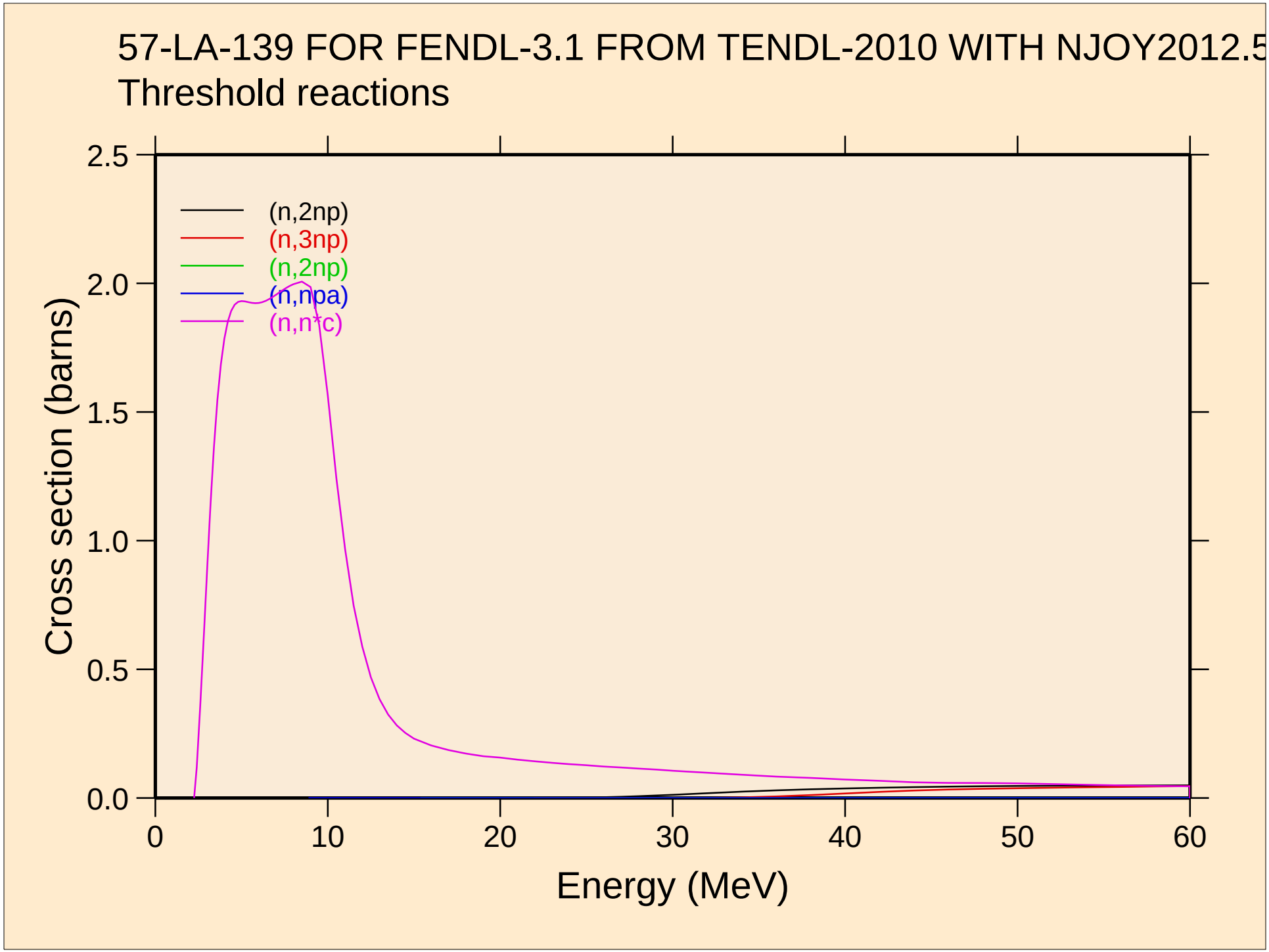

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Inelastic levels
Cross section (barns)
*10-3
50
40
30
20
10
0
0
10
20
30
40
50
60
Energy (MeV)
(n,n*21)
(n,n*22)
(n,n*23)
(n,n*24)
(n,n*25)

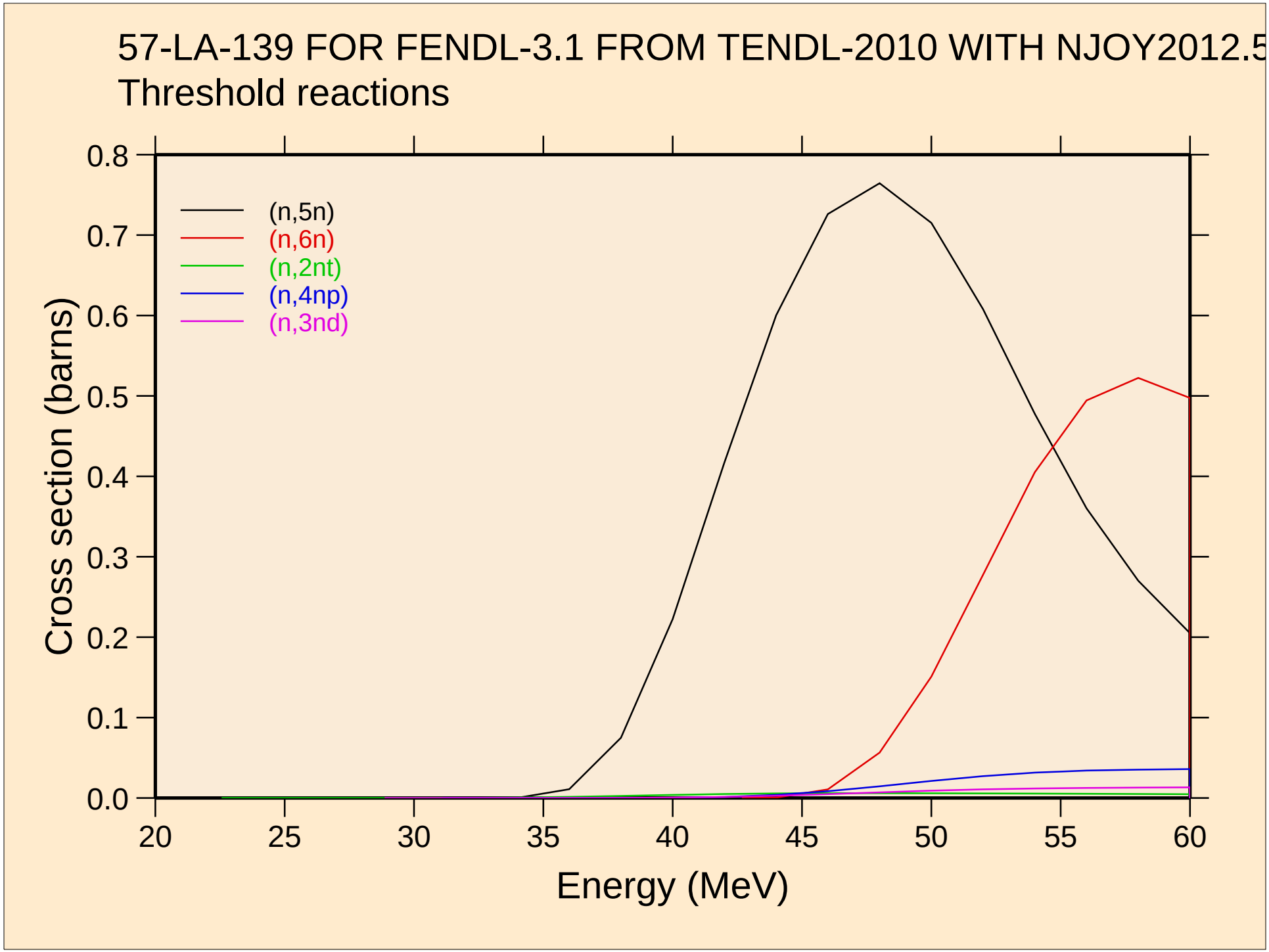

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Inelastic levels
Cross section (barns)
*10-3
30
25
20
15
10
5
0
0
10
20
30
40
50
60
Energy (MeV)
(n,n*26)
(n,n*27)
(n,n*28)
(n,n*29)
(n,n*30)

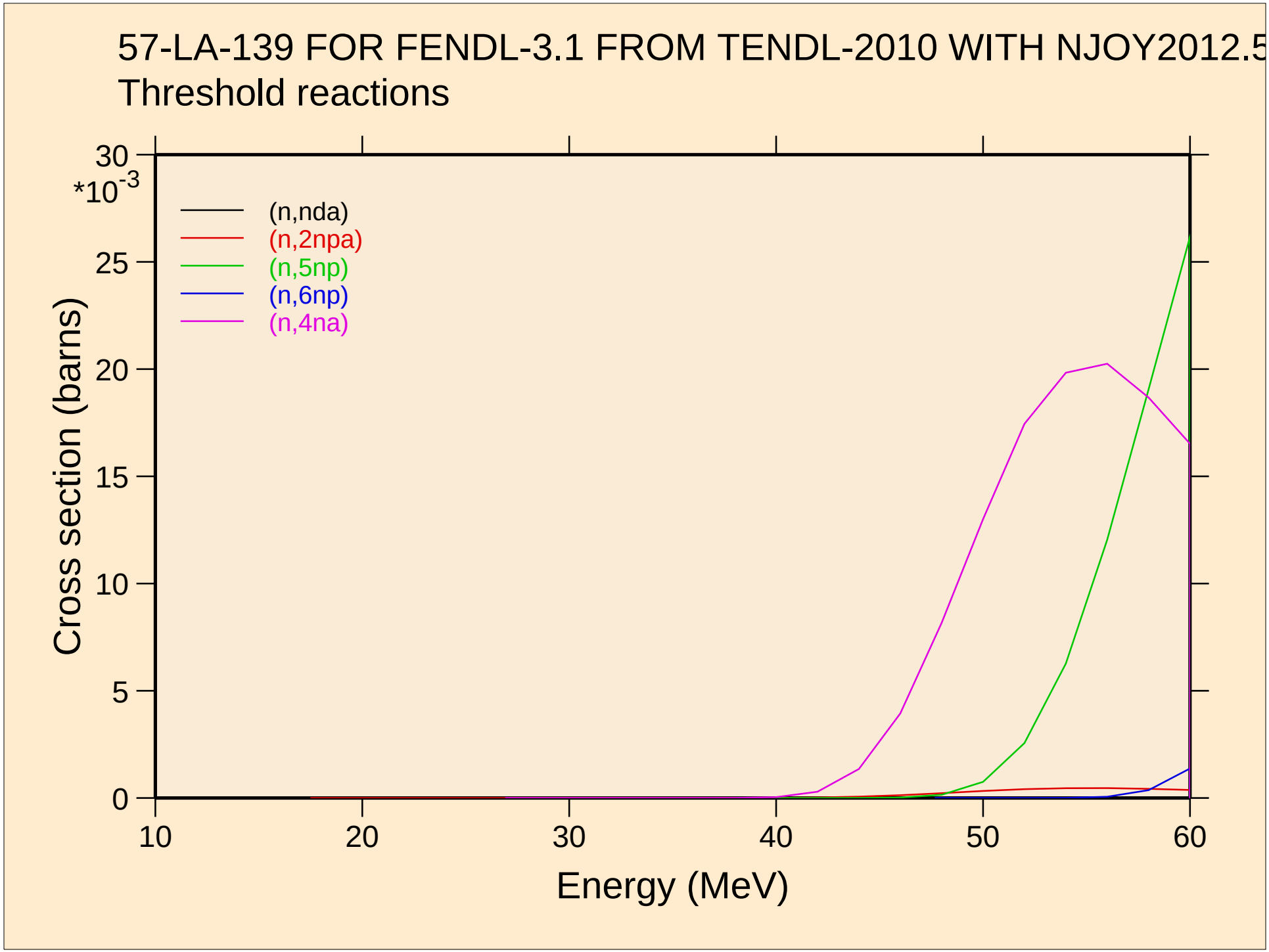

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Threshold reactions
(n,x)
(n,2nd)
(n,2n)
(n,3n)
(n,n*)a
Cross section (barns)
Energy (MeV)
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
1.6
1.8
0
20
40
60
80
100
120
140
160
180
200

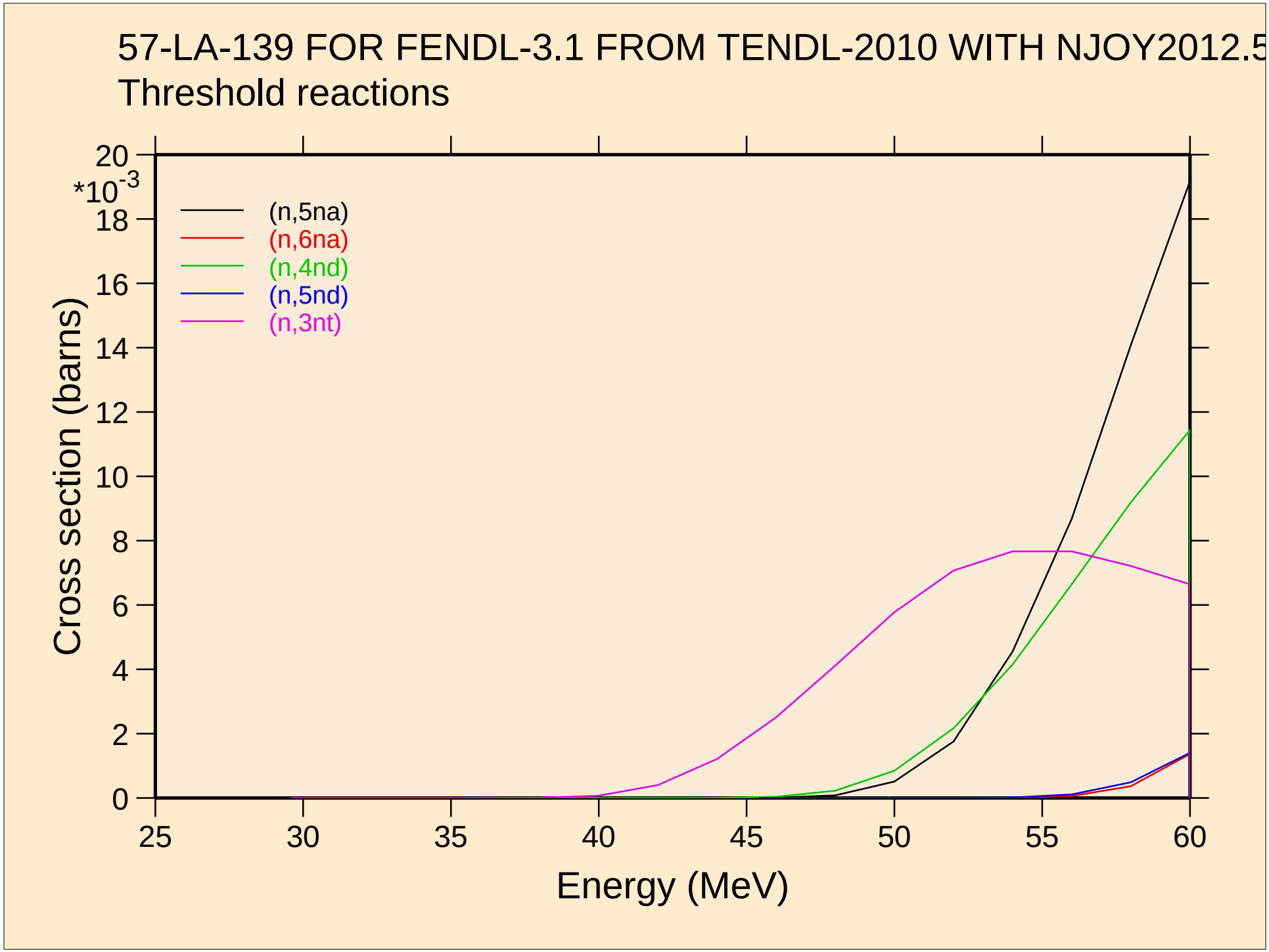

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Threshold reactions
*10-3
Cross section (barns)
Energy (MeV)
(n,2n)a
(n,3n)a
(n,n*)p
(n,n*)2a
(n,2n)2a
0
10
20
30
40
50
60

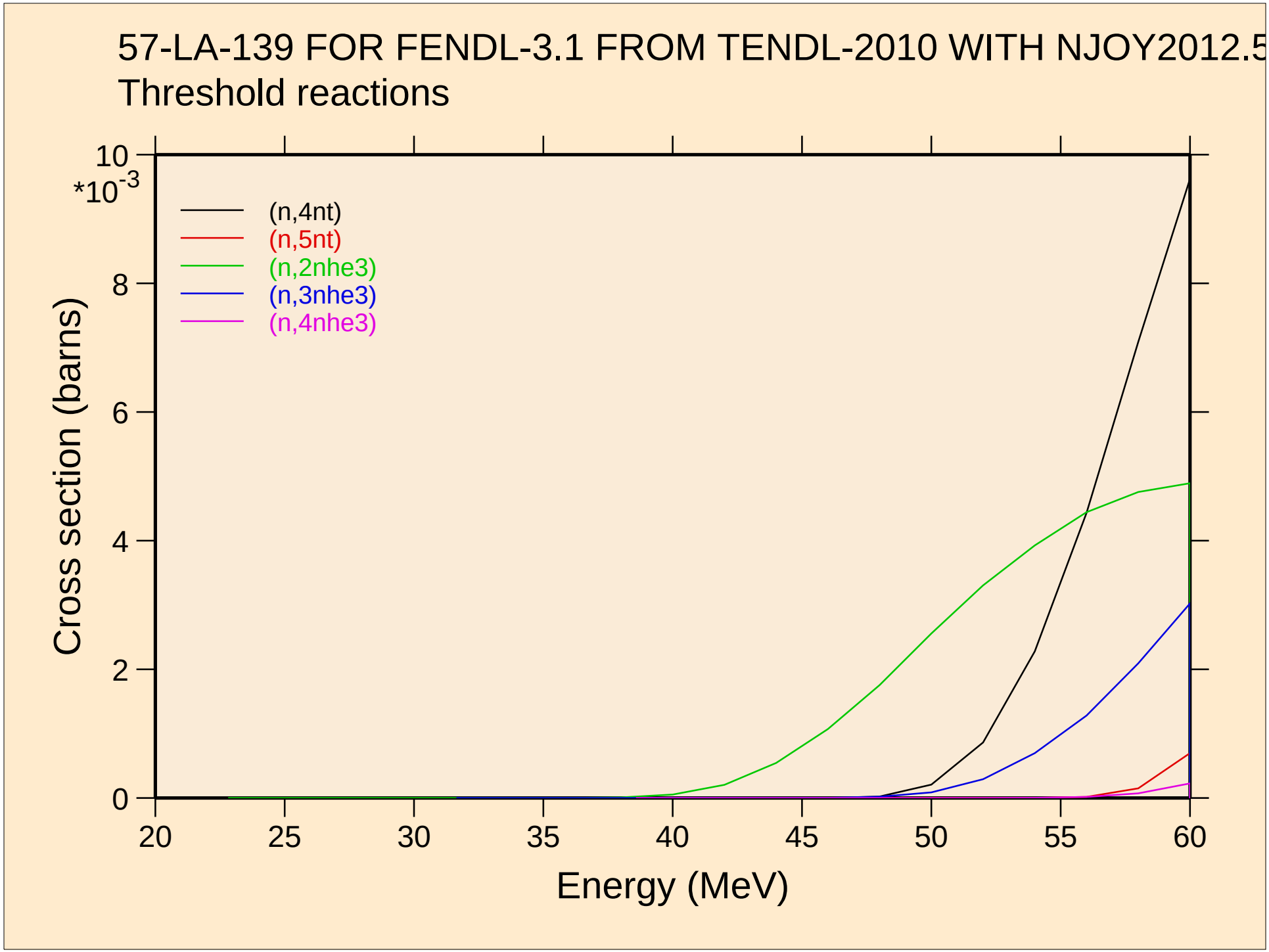

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Threshold reactions
(n,n*)d
(n,n*)t
(n,n*)he3
(n,n*)t2a
(n,4n)
Cross section (barns)
1.0
0.8
0.6
0.4
0.2
0.0
10
20
30
40
50
60
Energy (MeV)

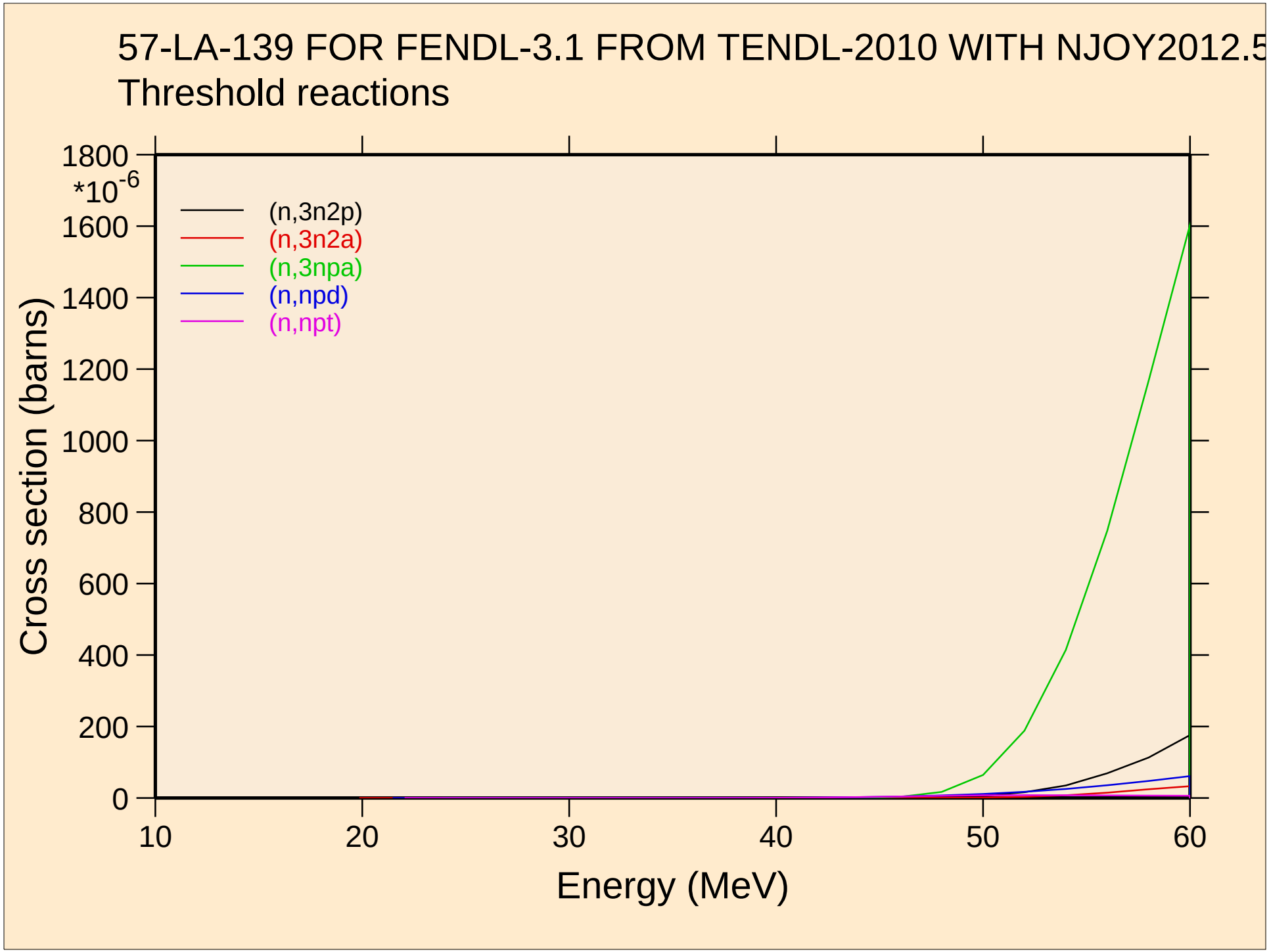

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Threshold reactions
(n,2np)
(n,3np)
(n,2np)
(n,npa)
(n,n*c)
Cross section (barns)
Energy (MeV)
0.0
0.5
1.0
1.5
2.0
2.5
0
10
20
30
40
50
60

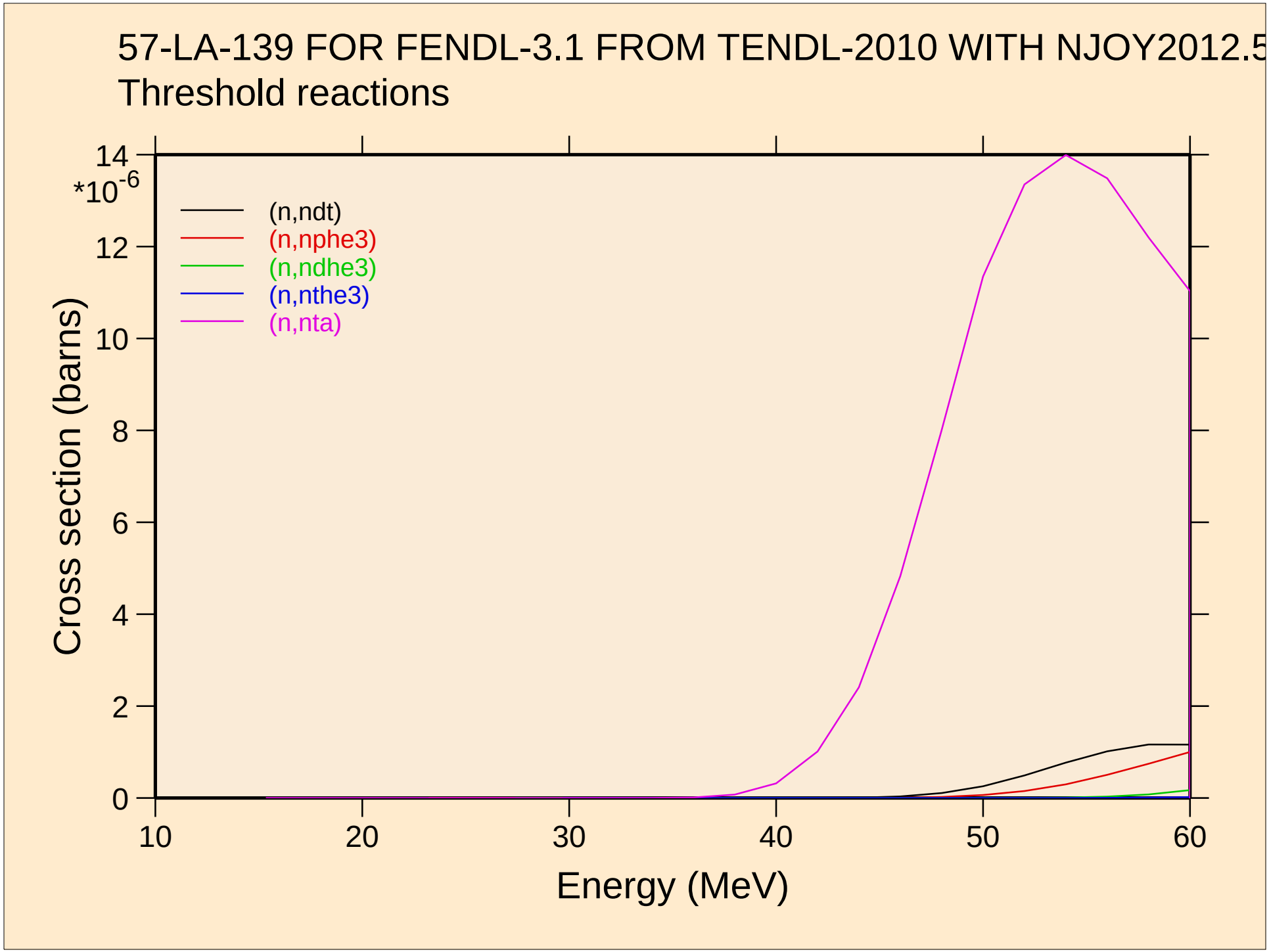

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Threshold reactions
(n,5n)
(n,6n)
(n,2nt)
(n,4np)
(n,3nd)
Cross section (barns)
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
20
25
30
35
40
45
50
55
60
Energy (MeV)

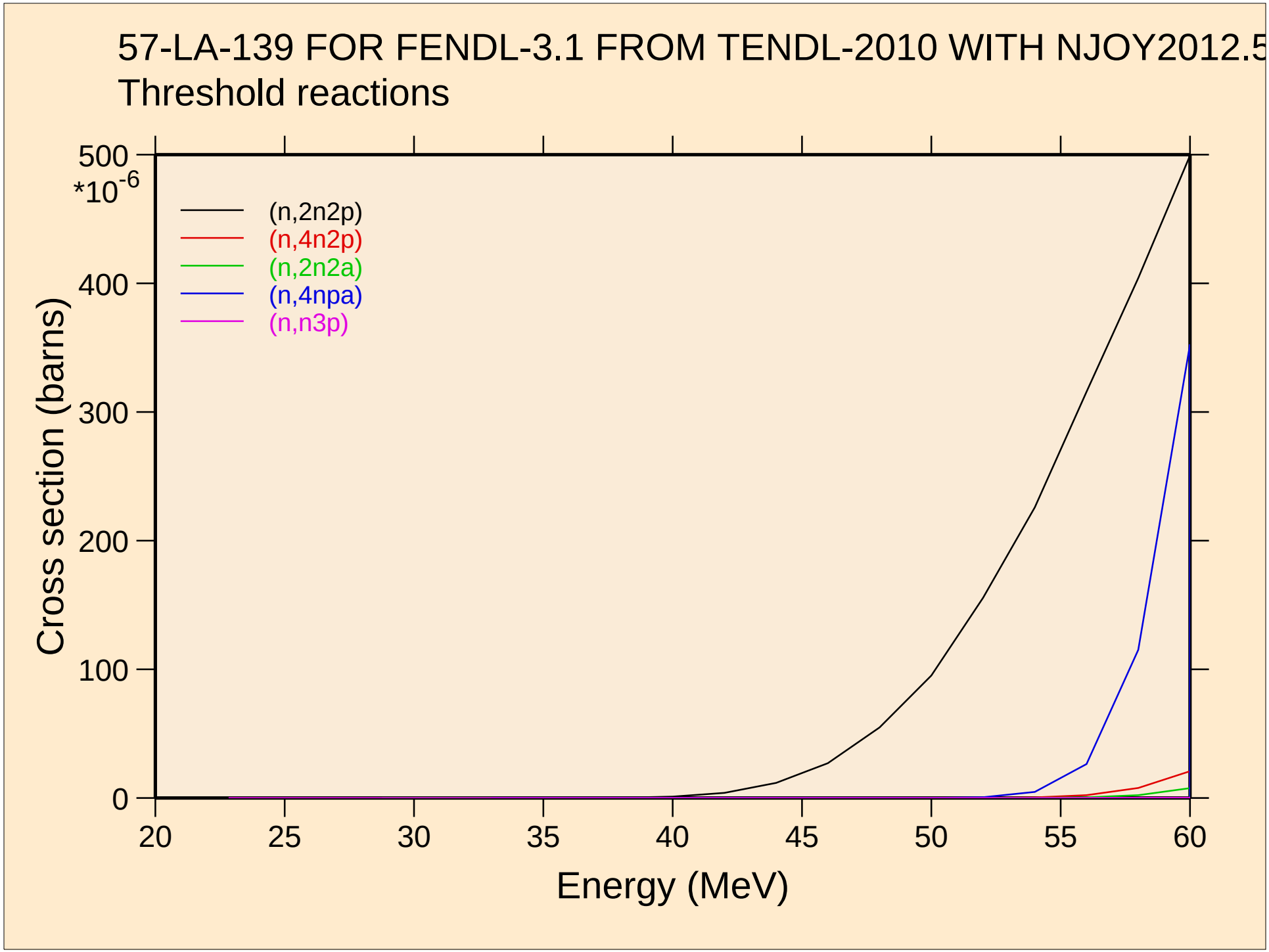

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Threshold reactions
*10-3
30
25
20
15
10
5
0
Cross section (barns)
(n,nda)
(n,2npa)
(n,5np)
(n,6np)
(n,4na)
10
20
30
40
50
60
Energy (MeV)

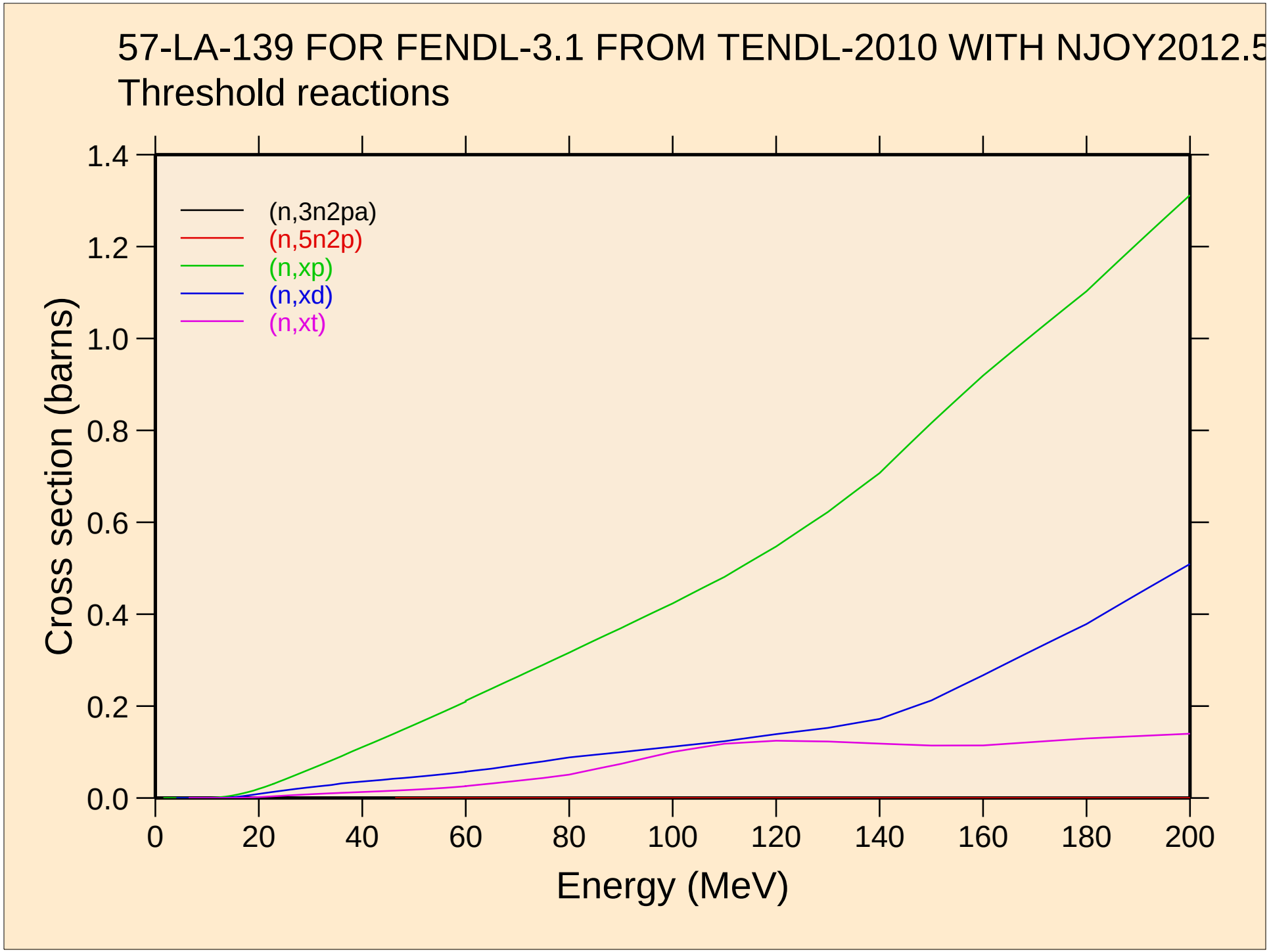

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Threshold reactions
*10-3
Cross section (barns)
Energy (MeV)
(n,5na)
(n,6na)
(n,4nd)
(n,5nd)
(n,3nt)
0
2
4
6
8
10
12
14
16
18
20
25
30
35
40
45
50
55
60

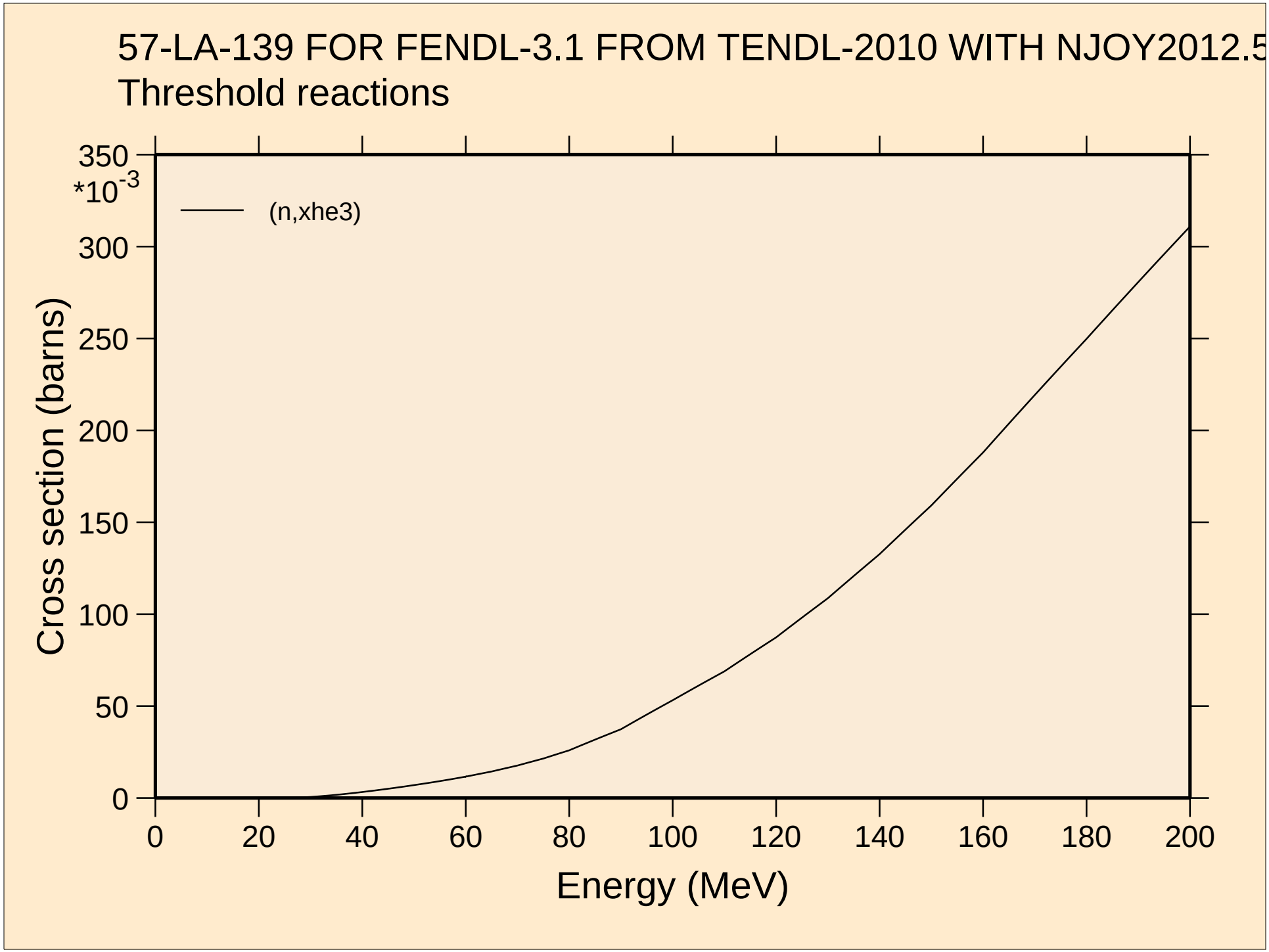

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Threshold reactions
*10-3
10
8
6
4
2
0
Cross section (barns)
(n,4nt)
(n,5nt)
(n,2nhe3)
(n,3nhe3)
(n,4nhe3)
20
25
30
35
40
45
50
55
60
Energy (MeV)

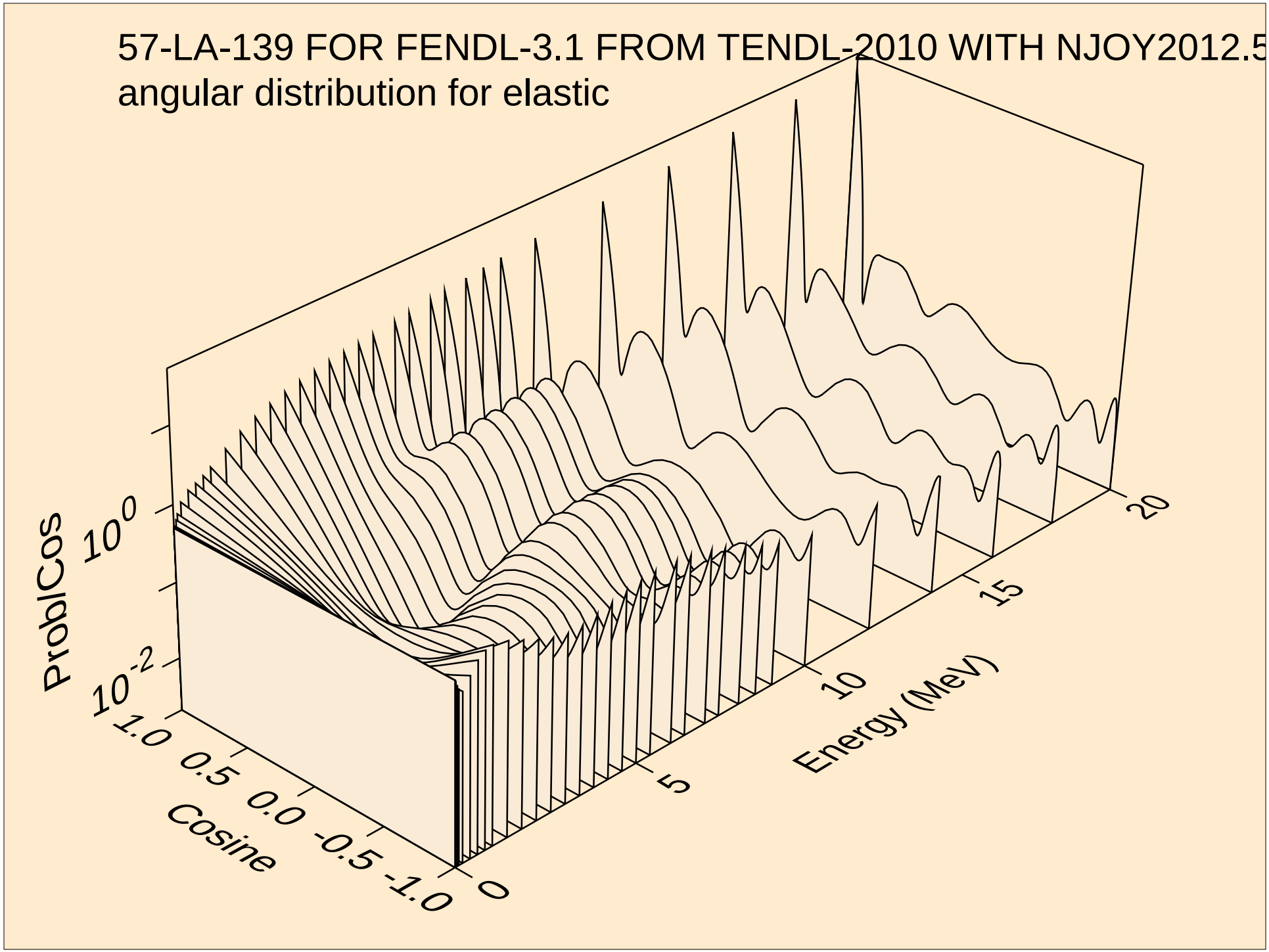

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Threshold reactions
1800
*10-6
1600
1400
1200
1000
800
600
400
200
0
Cross section (barns)
(n,3n2p)
(n,3n2a)
(n,3npa)
(n,npd)
(n,npt)
10
20
30
40
50
60
Energy (MeV)

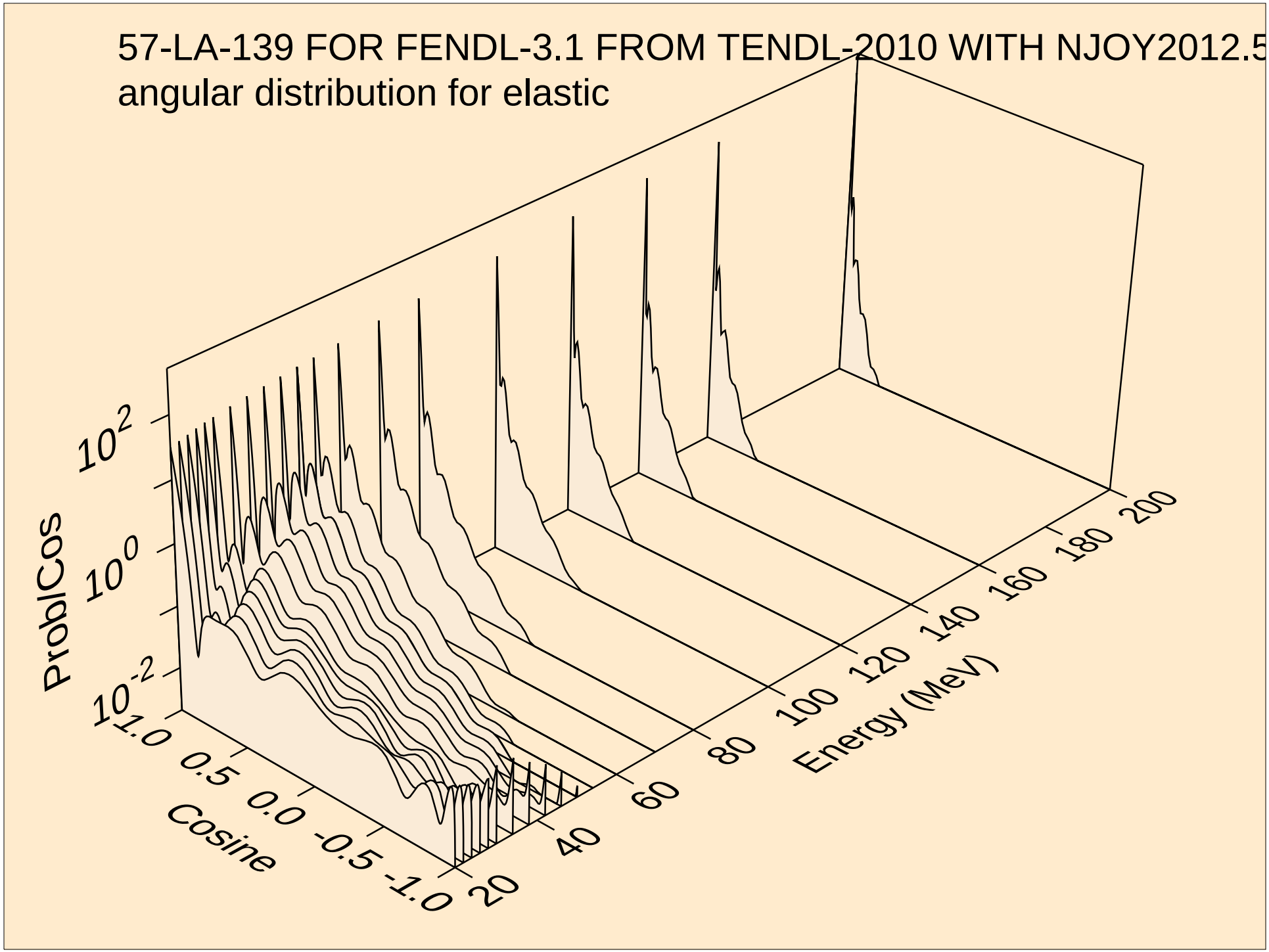

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Threshold reactions
*10-6
14
12
10
8
6
4
2
0
Cross section (barns)
(n,ndt)
(n,nphe3)
(n,ndhe3)
(n,nthe3)
(n,nta)
10
20
30
40
50
60
Energy (MeV)

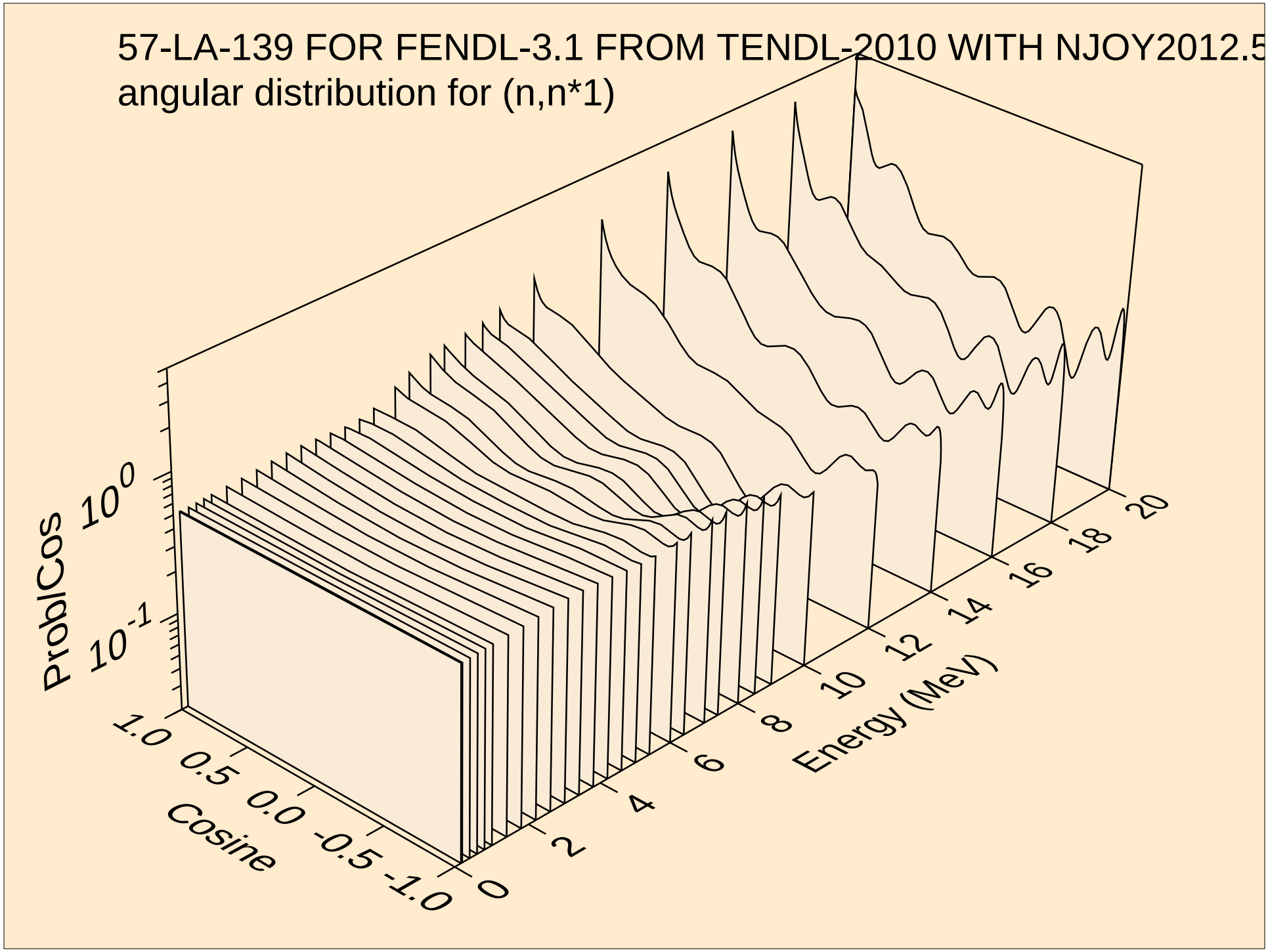

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Threshold reactions
500
*10-6
400
300
200
100
0
Cross section (barns)
(n,2n2p)
(n,4n2p)
(n,2n2a)
(n,4npa)
(n,n3p)
20
25
30
35
40
45
50
55
60
Energy (MeV)

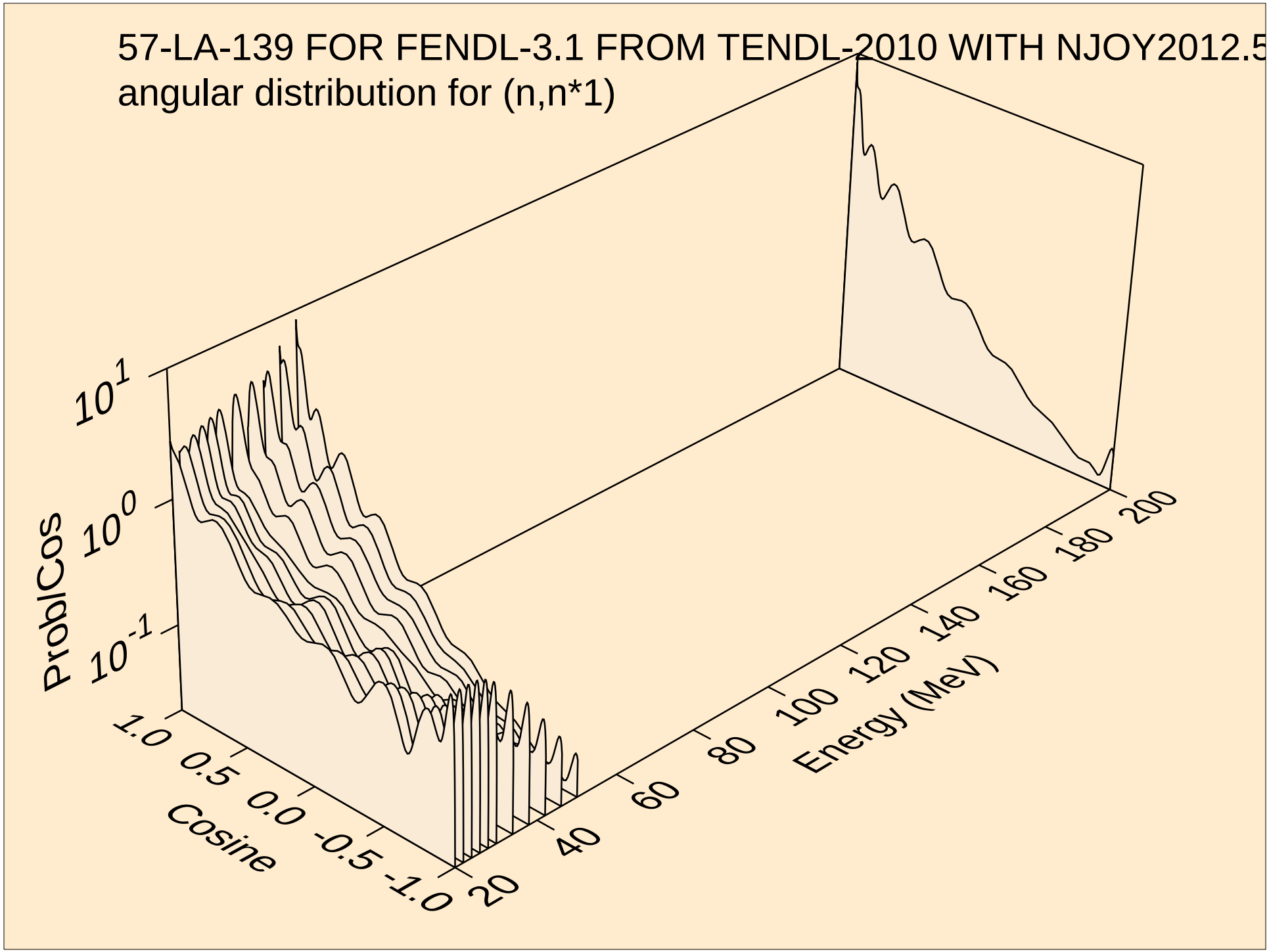

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Threshold reactions
(n,3n2pa)
(n,5n2p)
(n,xp)
(n,xd)
(n,xt)
Cross section (barns)
Energy (MeV)
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
0
20
40
60
80
100
120
140
160
180
200

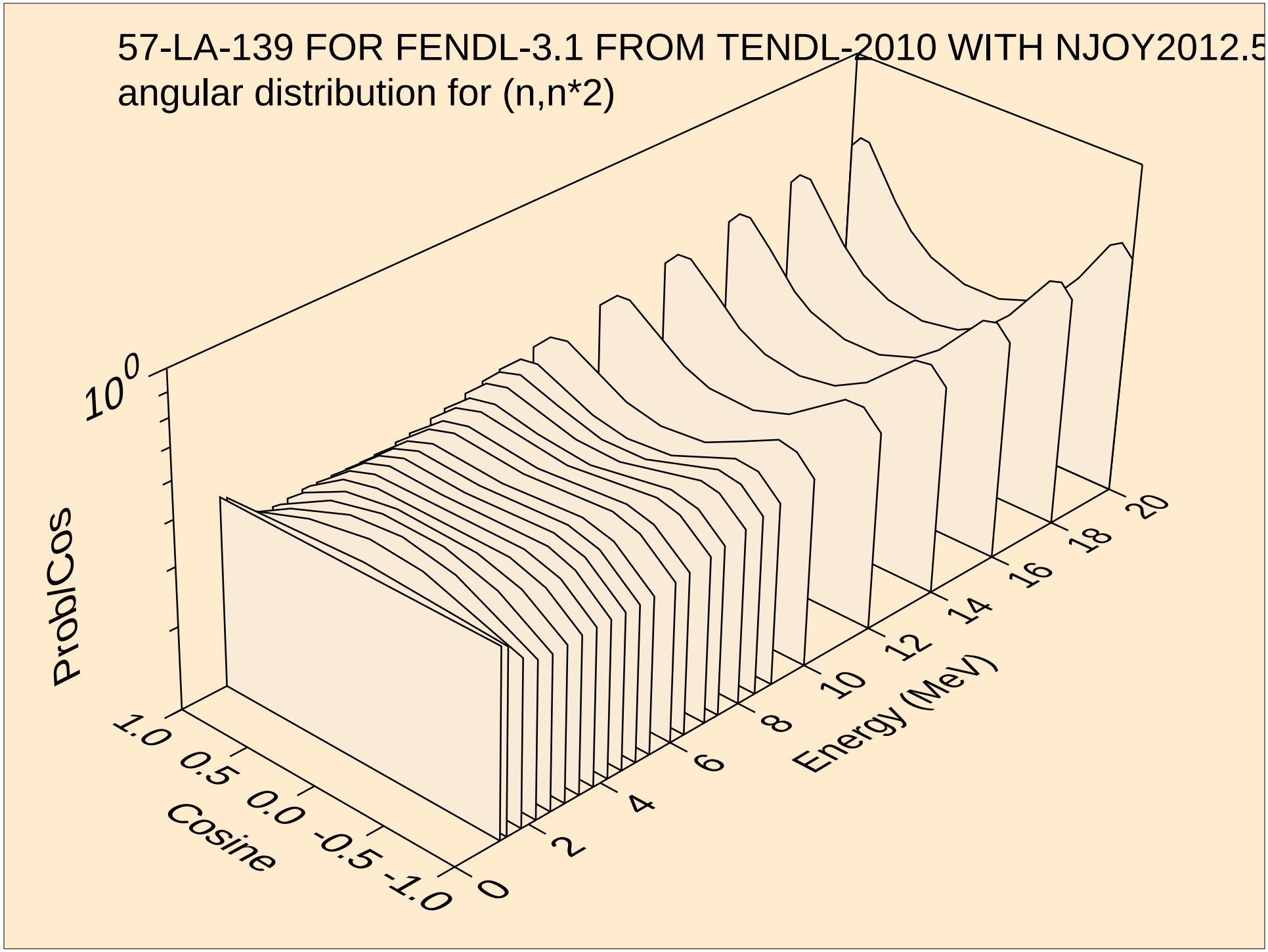

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Threshold reactions
*10-3
(n,xhe3)
Cross section (barns)
350
300
250
200
150
100
50
0
0
20
40
60
80
100
120
140
160
180
200
Energy (MeV)

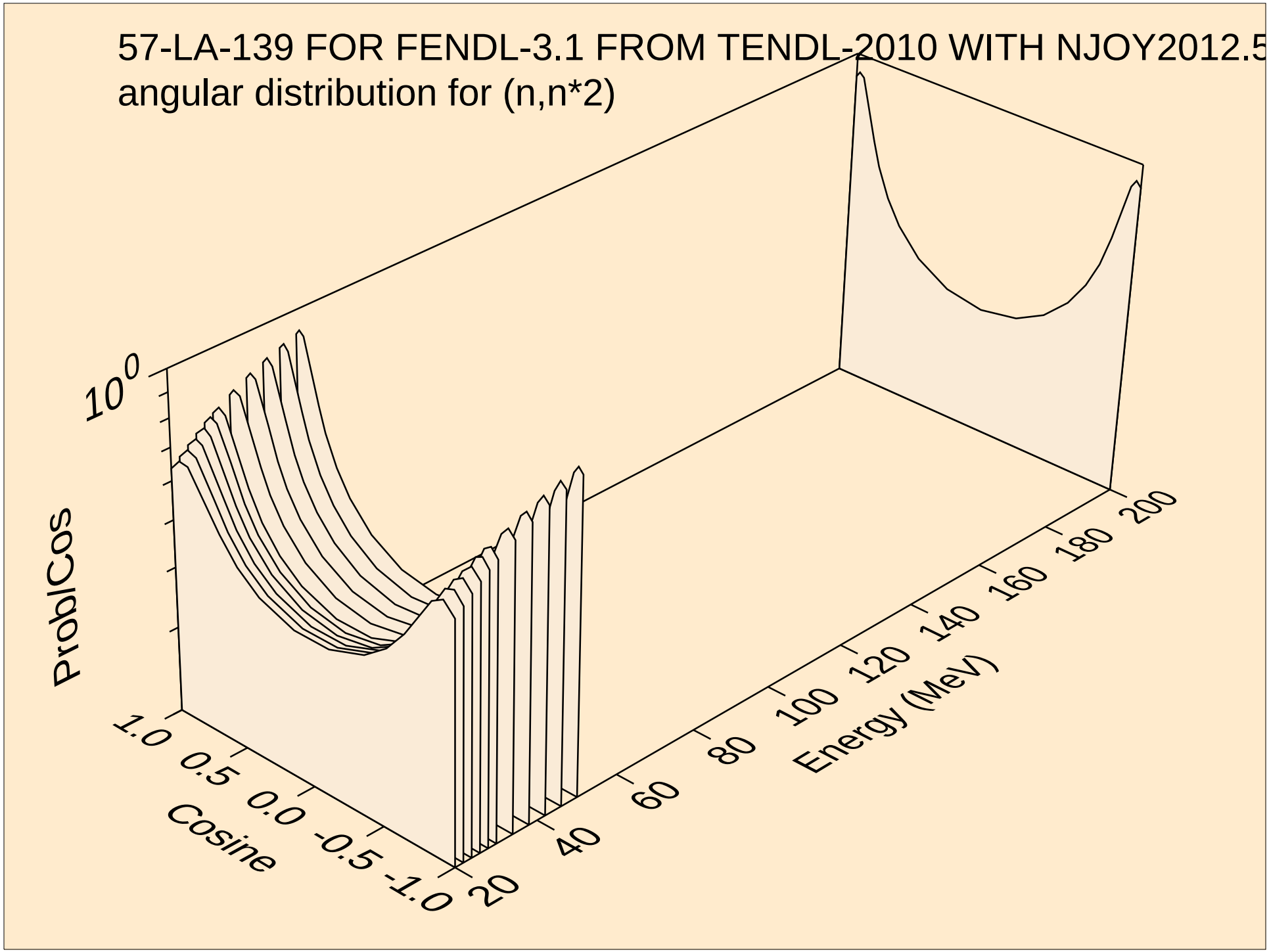

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
angular distribution for elastic
ProbICos
10^{0}
10^{-2}
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
Energy (MeV)

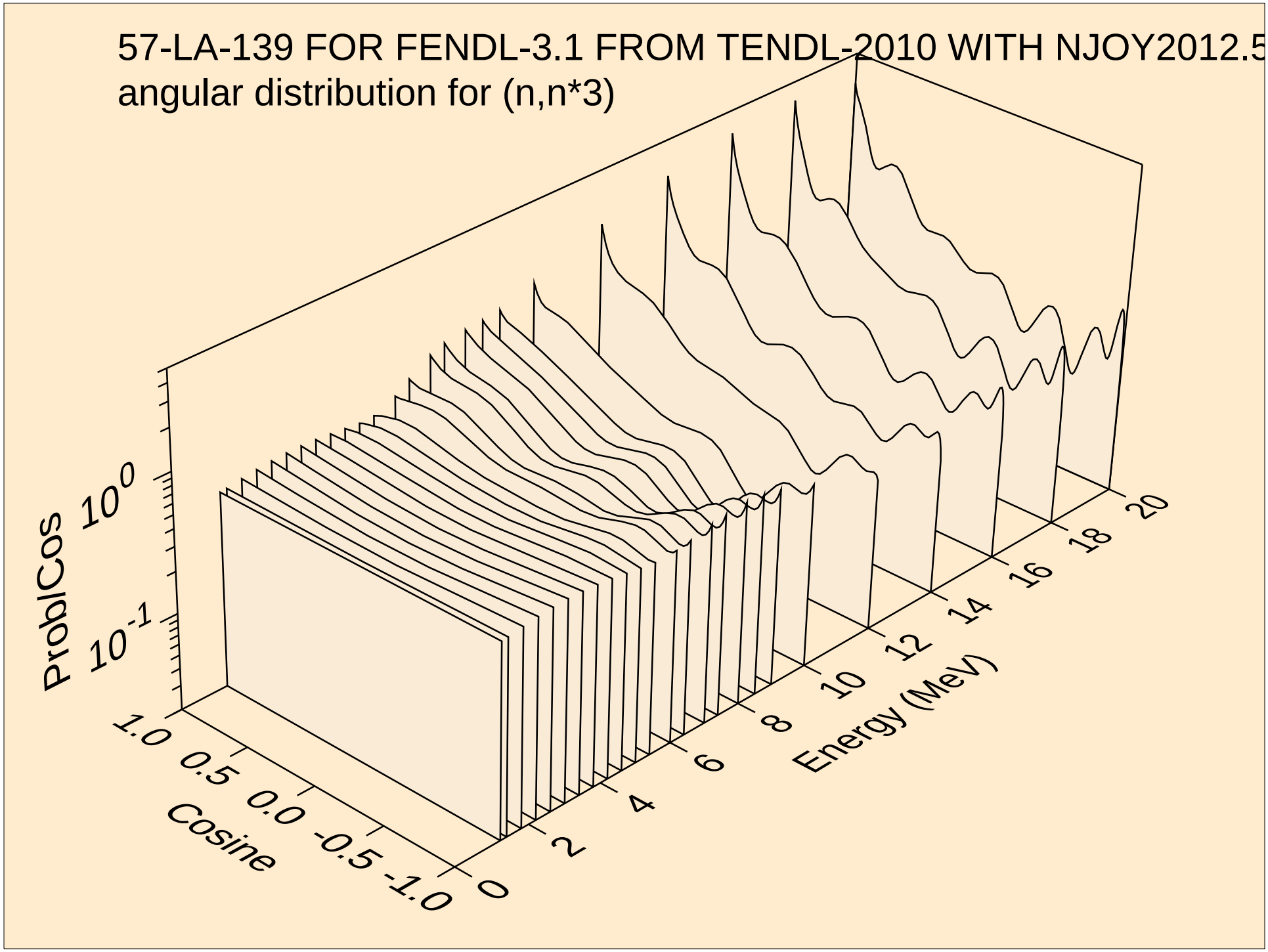

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
angular distribution for elastic
ProbICos
10^{2}
10^{0}
10^{-2}
1.0
0.5
0.0
-0.5
-1.0
Cosine
20
40
60
80
100
120
140
160
180
200
Energy (MeV)

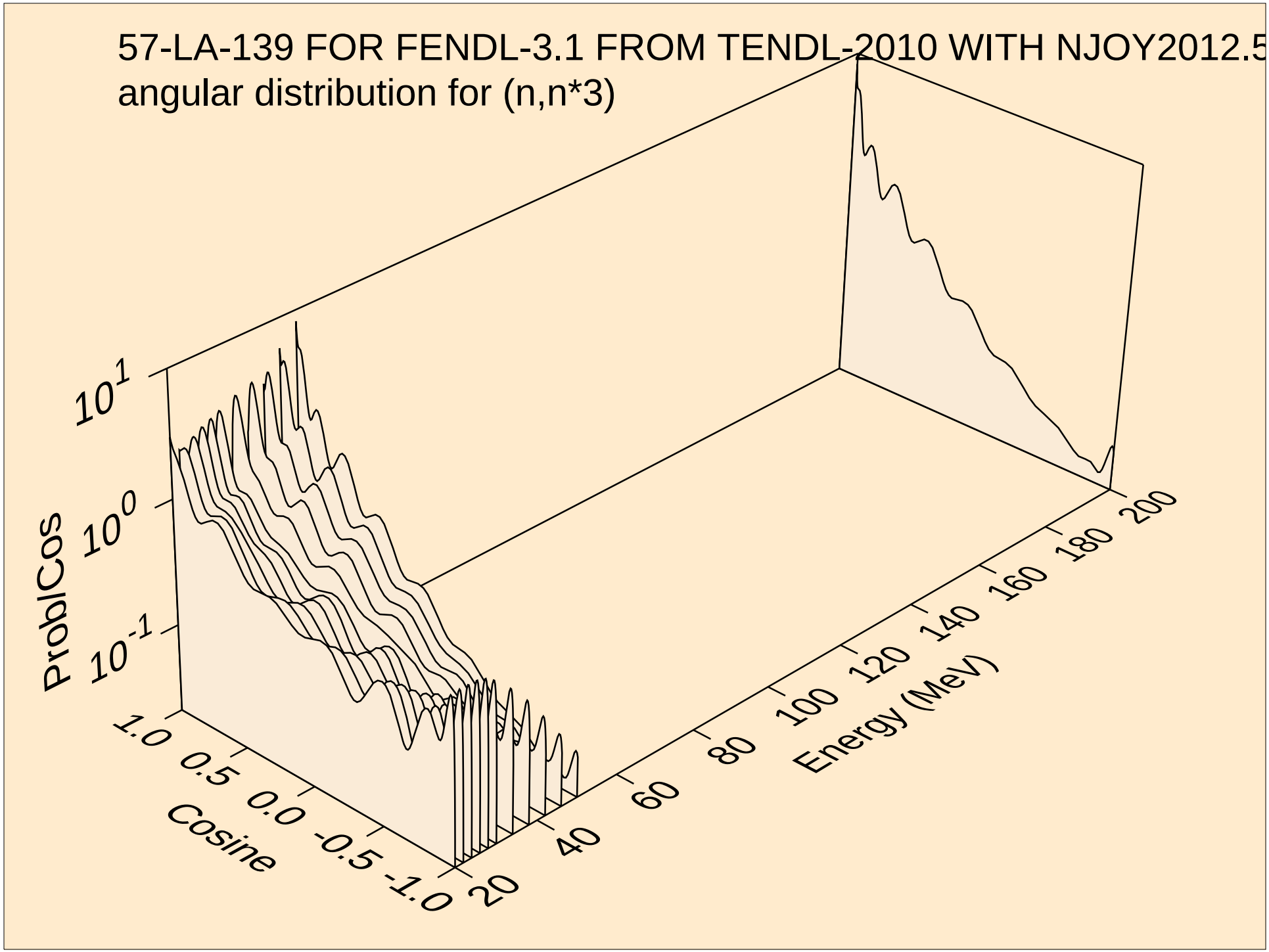

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
angular distribution for (n,n*1)
ProbICos
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

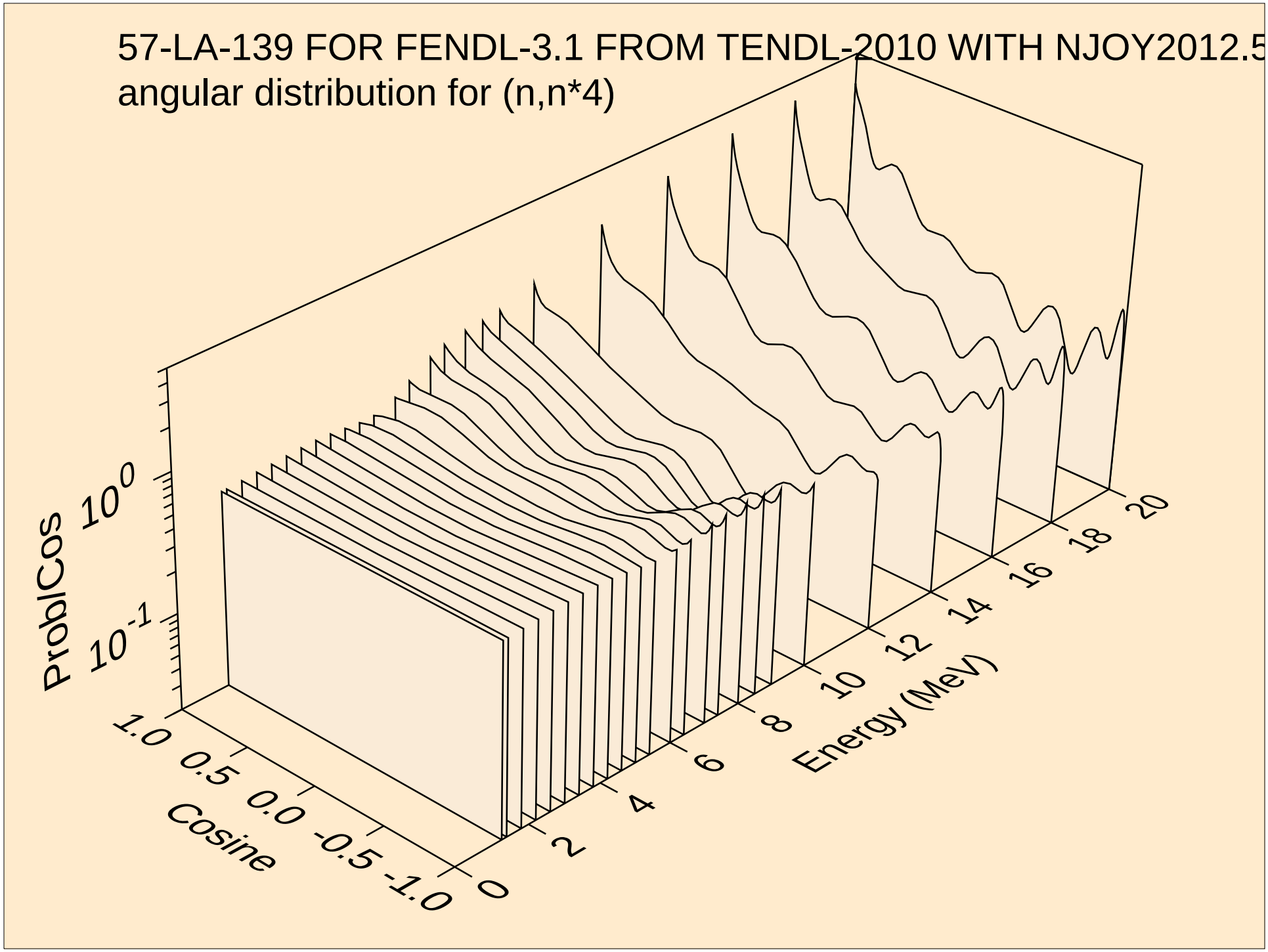

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
angular distribution for (n,n*1)
ProbICos
10^1
10^0
10^-1
1.0
0.5
0.0
-0.5
-1.0
Cosine
20
40
60
80
100
120
140
160
180
200
Energy (MeV)

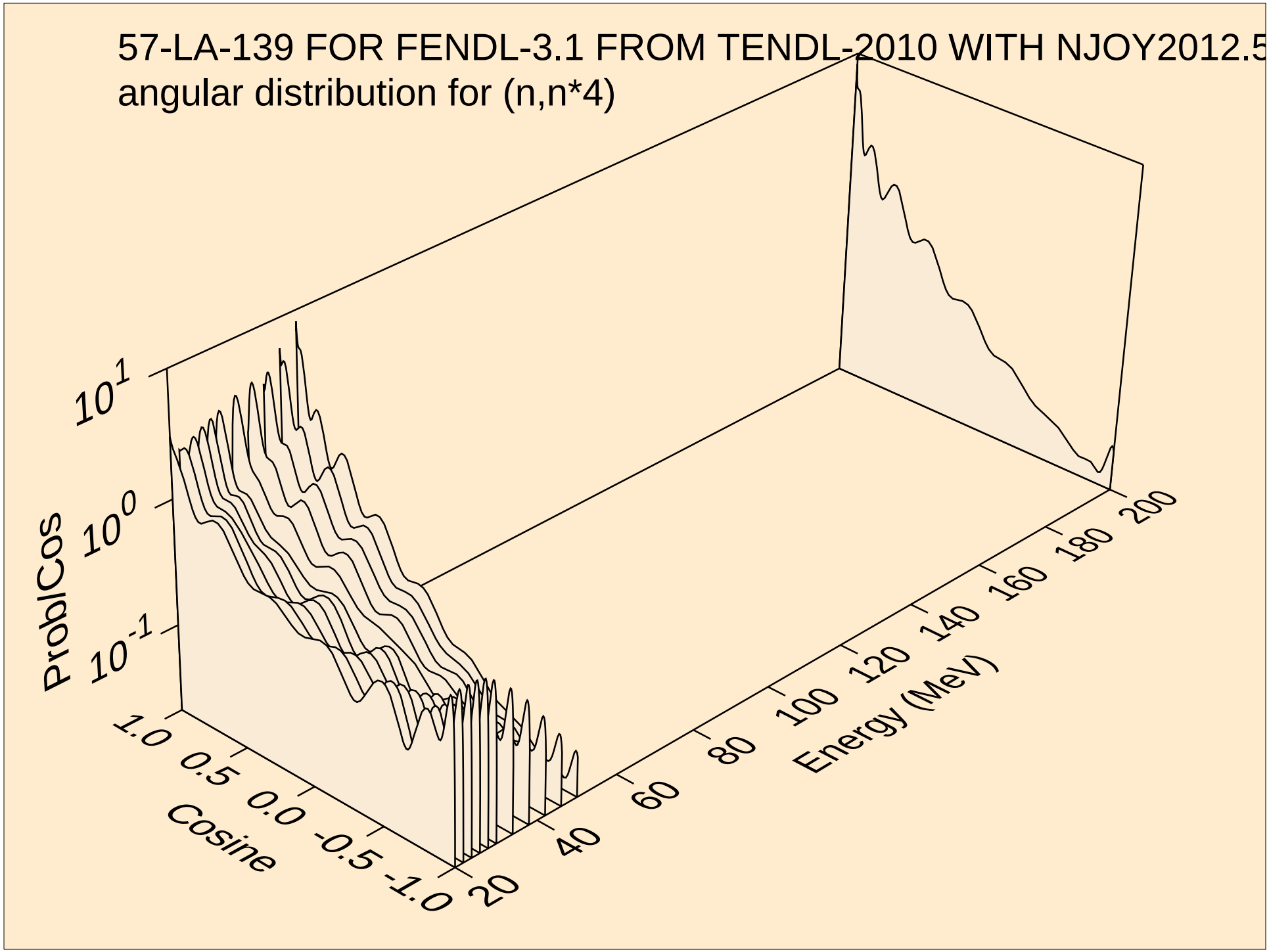

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
angular distribution for (n,n*2)
10^0
ProbICos
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

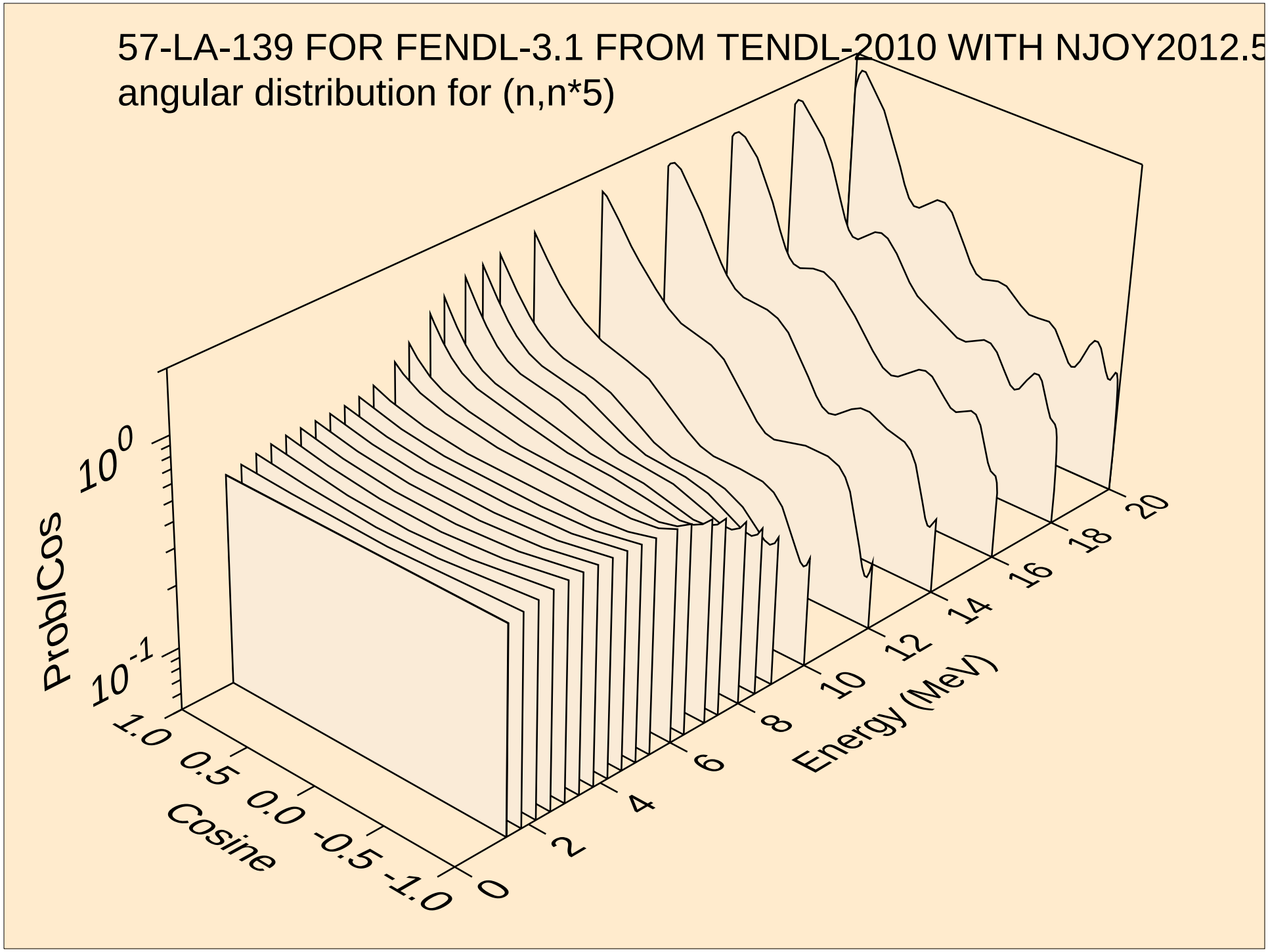

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
angular distribution for (n,n*2)
10^0
ProbICos
1.0
0.5
0.0
-0.5
-1.0
Cosine
20
40
60
80
100
120
140
160
180
200
Energy (MeV)

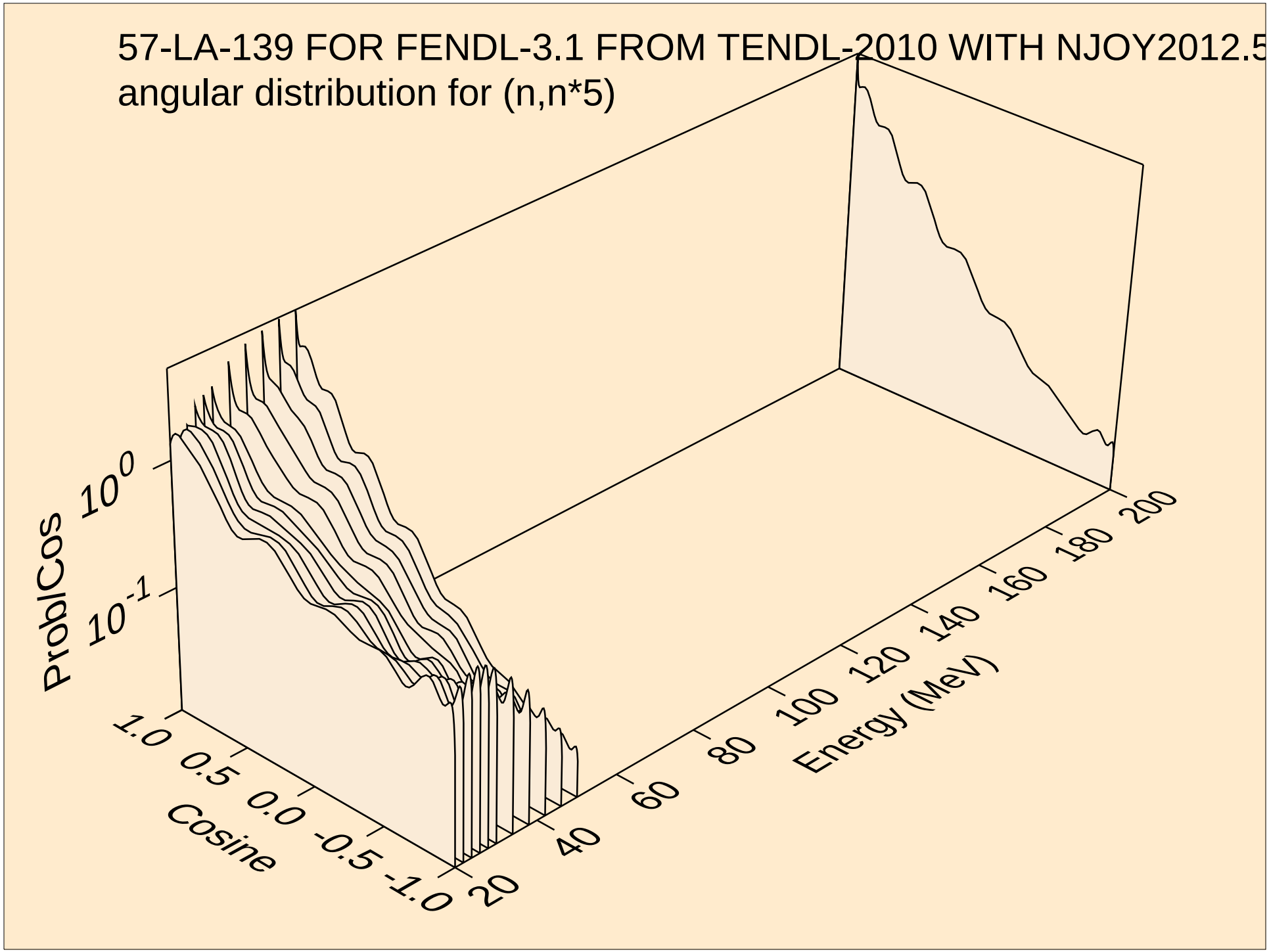

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
angular distribution for (n,n*3)
ProbICos
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

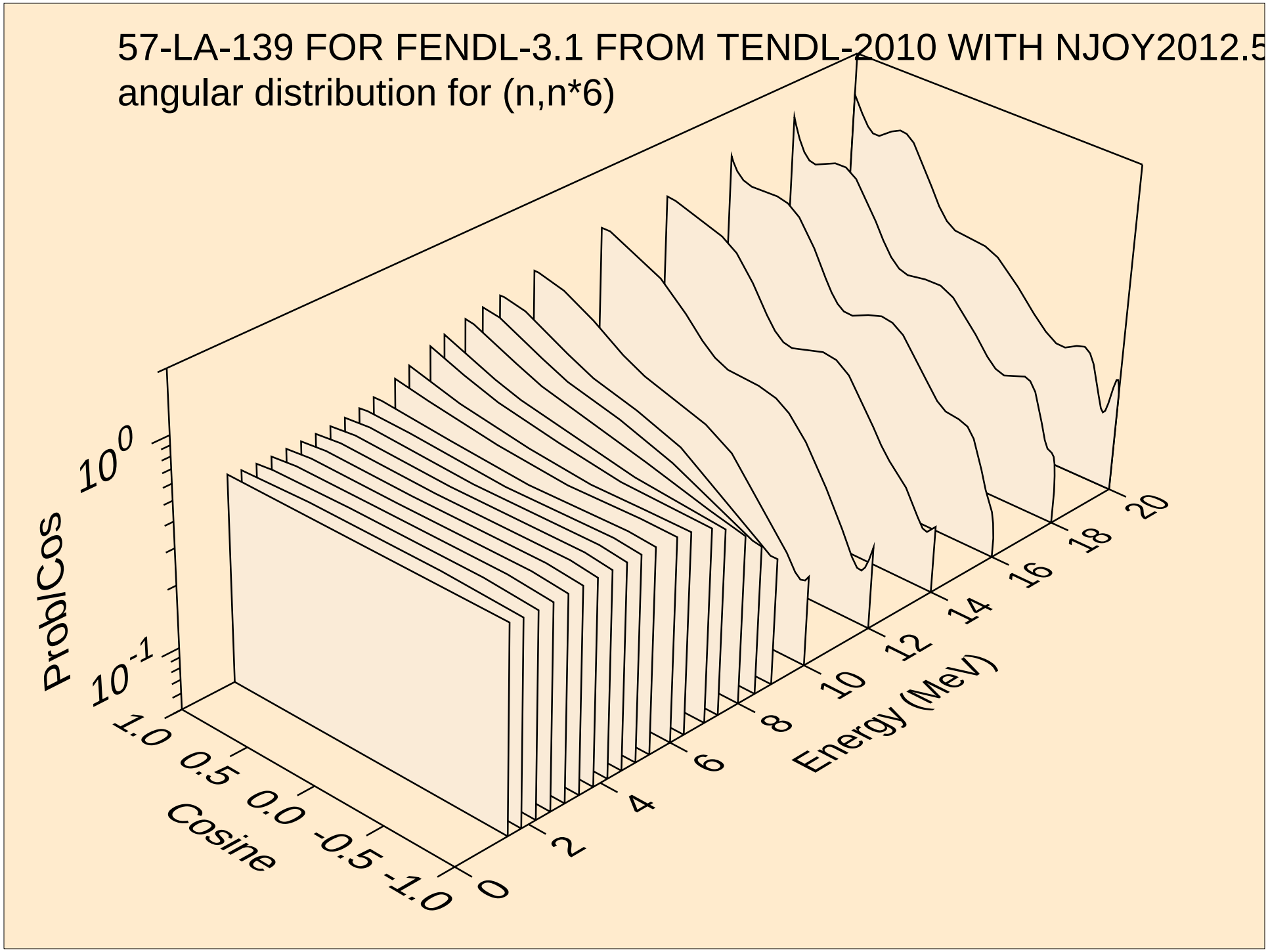

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
angular distribution for (n,n*3)
ProbICos
10^{1}
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
20
40
60
80
100
120
140
160
180
200
Energy (MeV)

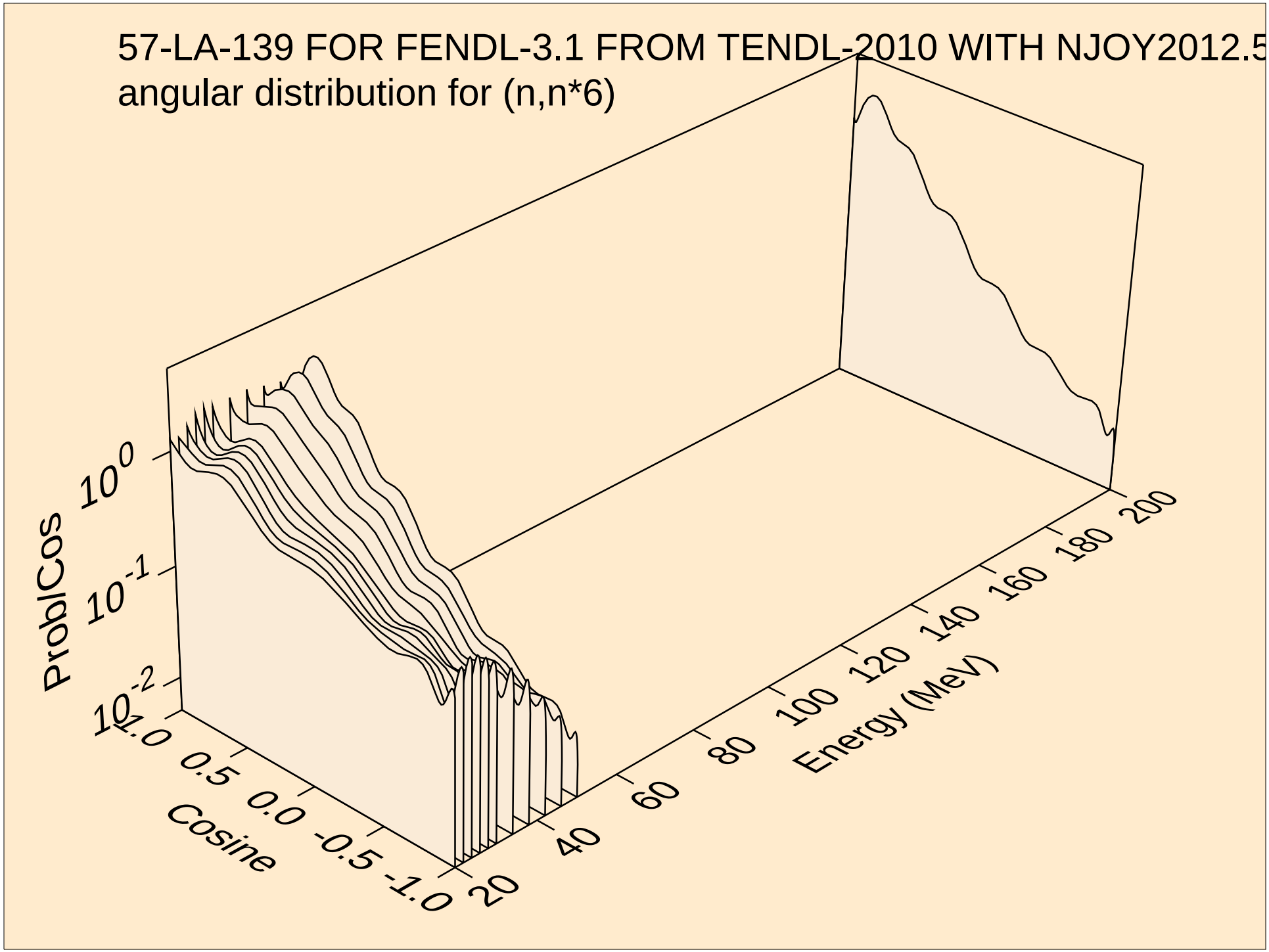

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
angular distribution for (n,n*4)
Prob\Cos
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

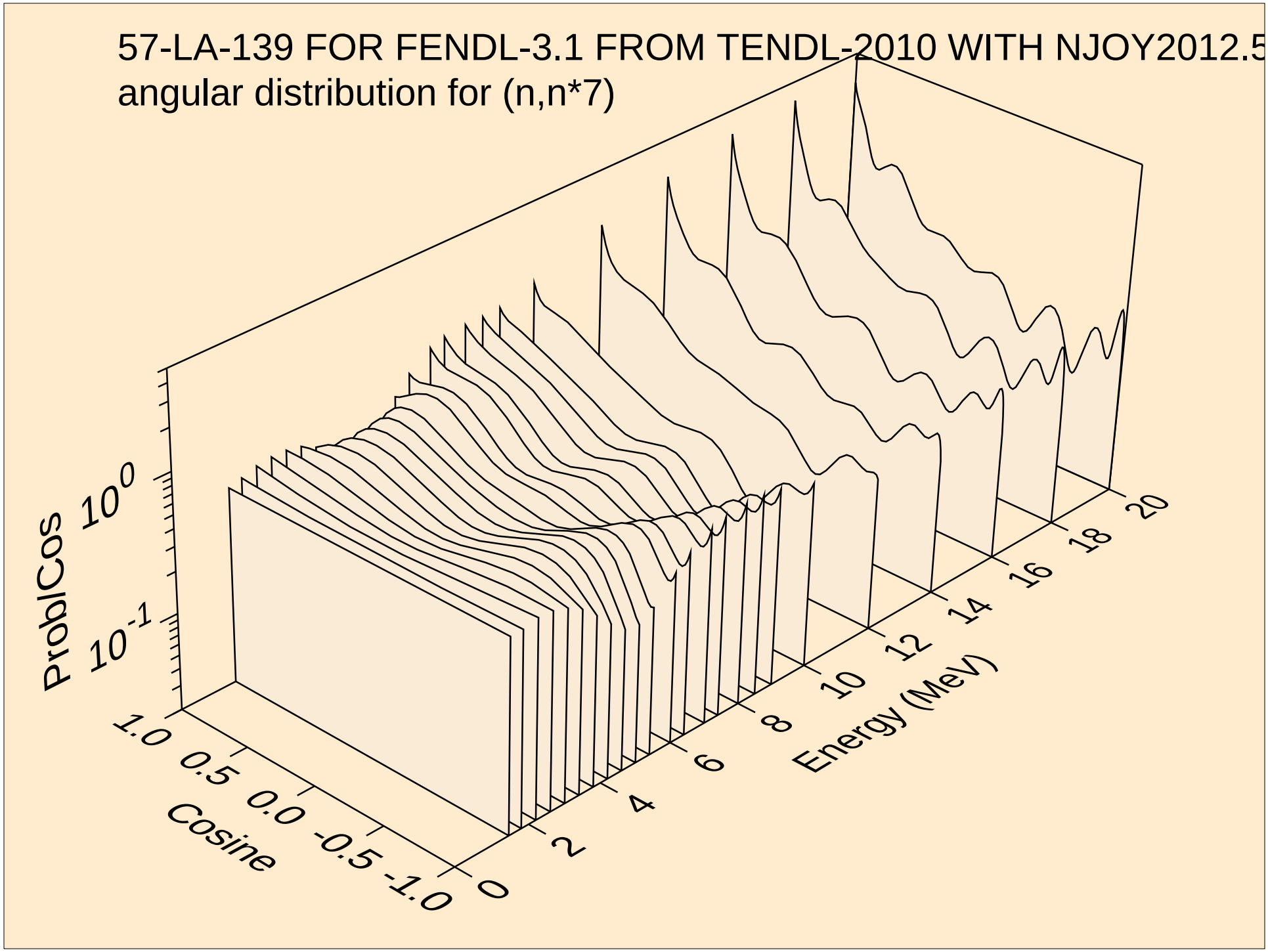

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
angular distribution for (n,n*4)
ProbICos
10^1
10^0
10^-1
1.0
0.5
0.0
-0.5
-1.0
Cosine
20
40
60
80
100
120
140
160
180
200
Energy (MeV)

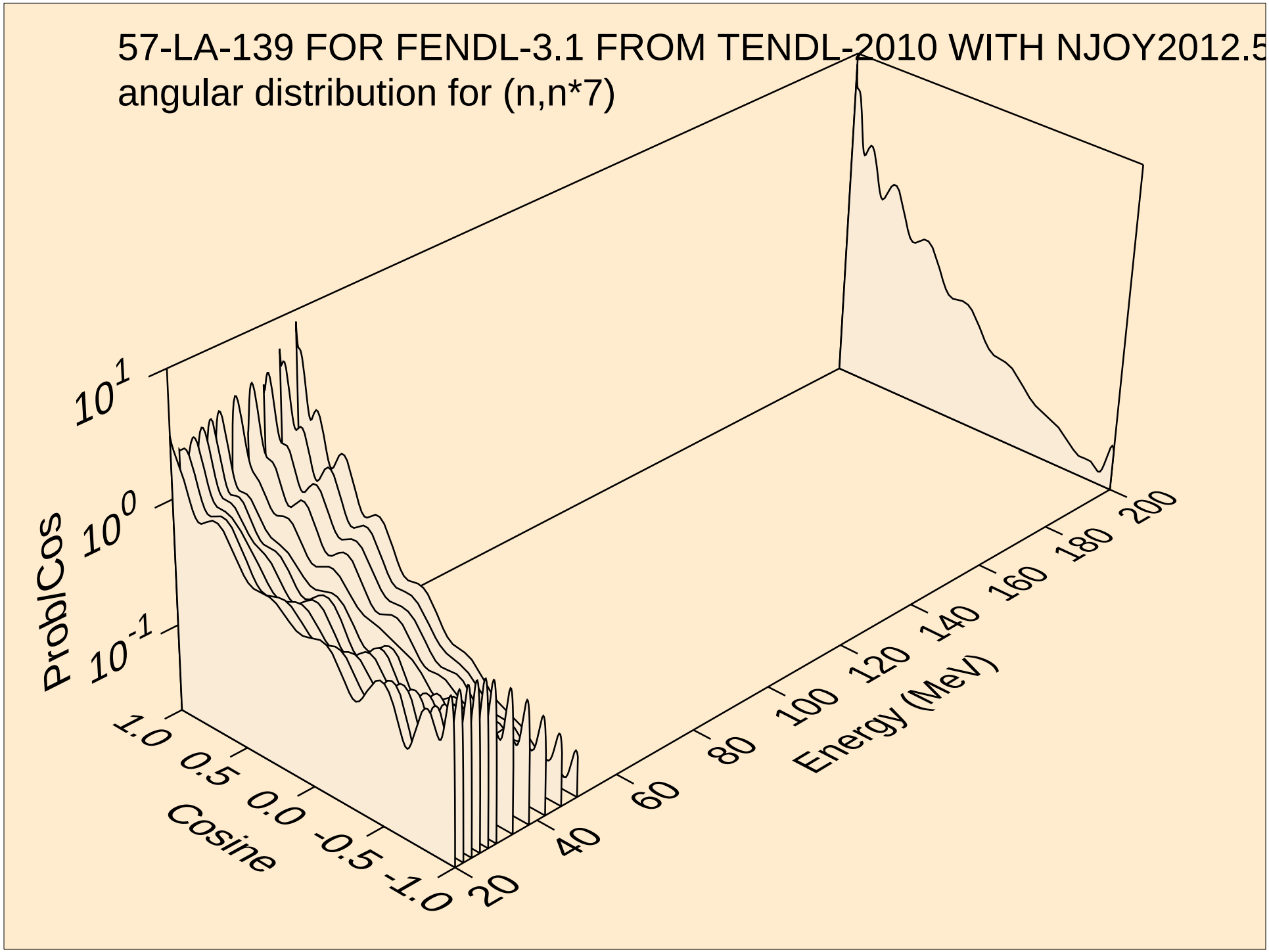

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
angular distribution for (n,n*5)
ProbICos
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

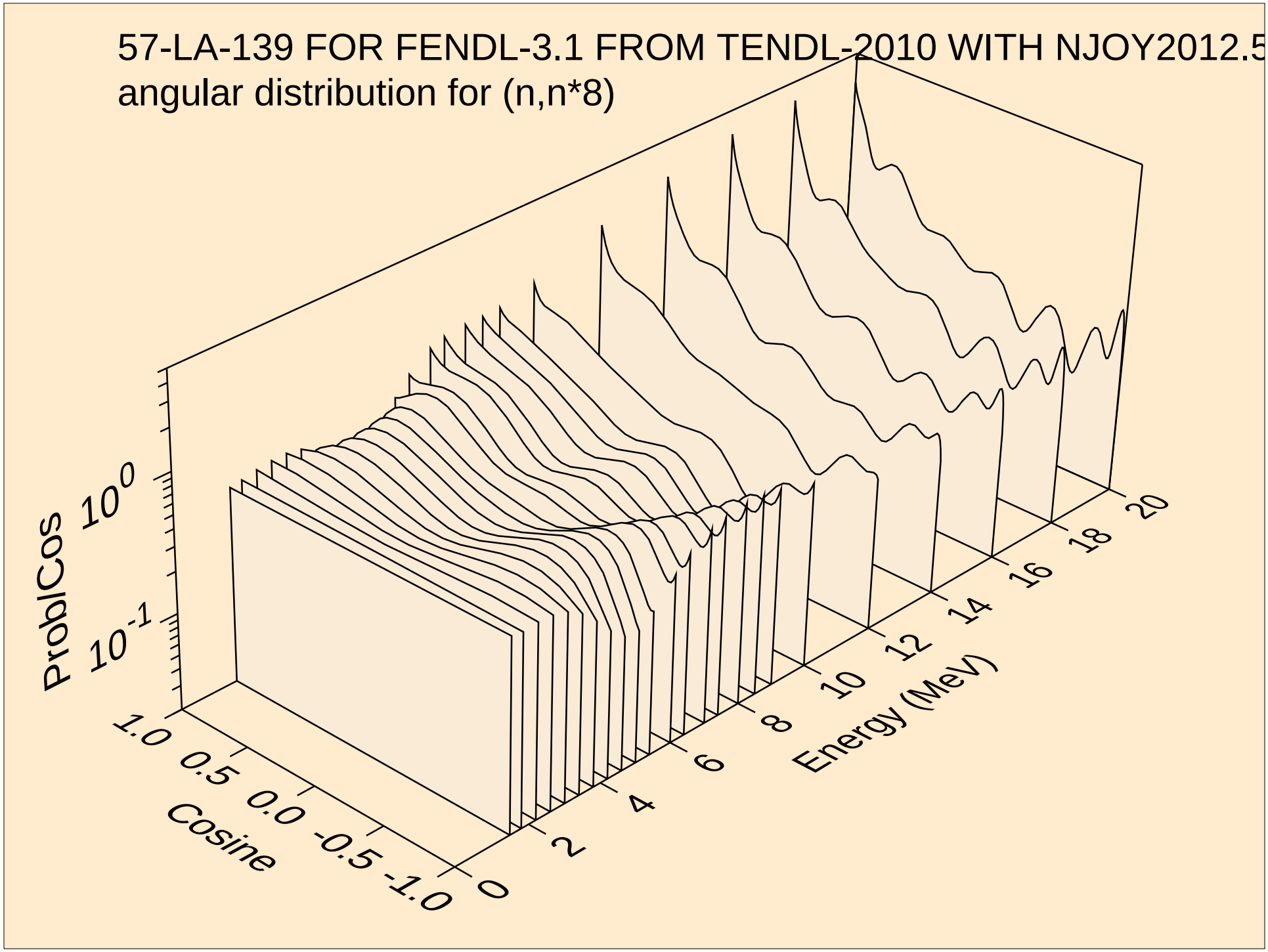

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
angular distribution for (n,n*5)
ProbICos
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
20
40
60
80
100
120
140
160
180
200
Energy (MeV)

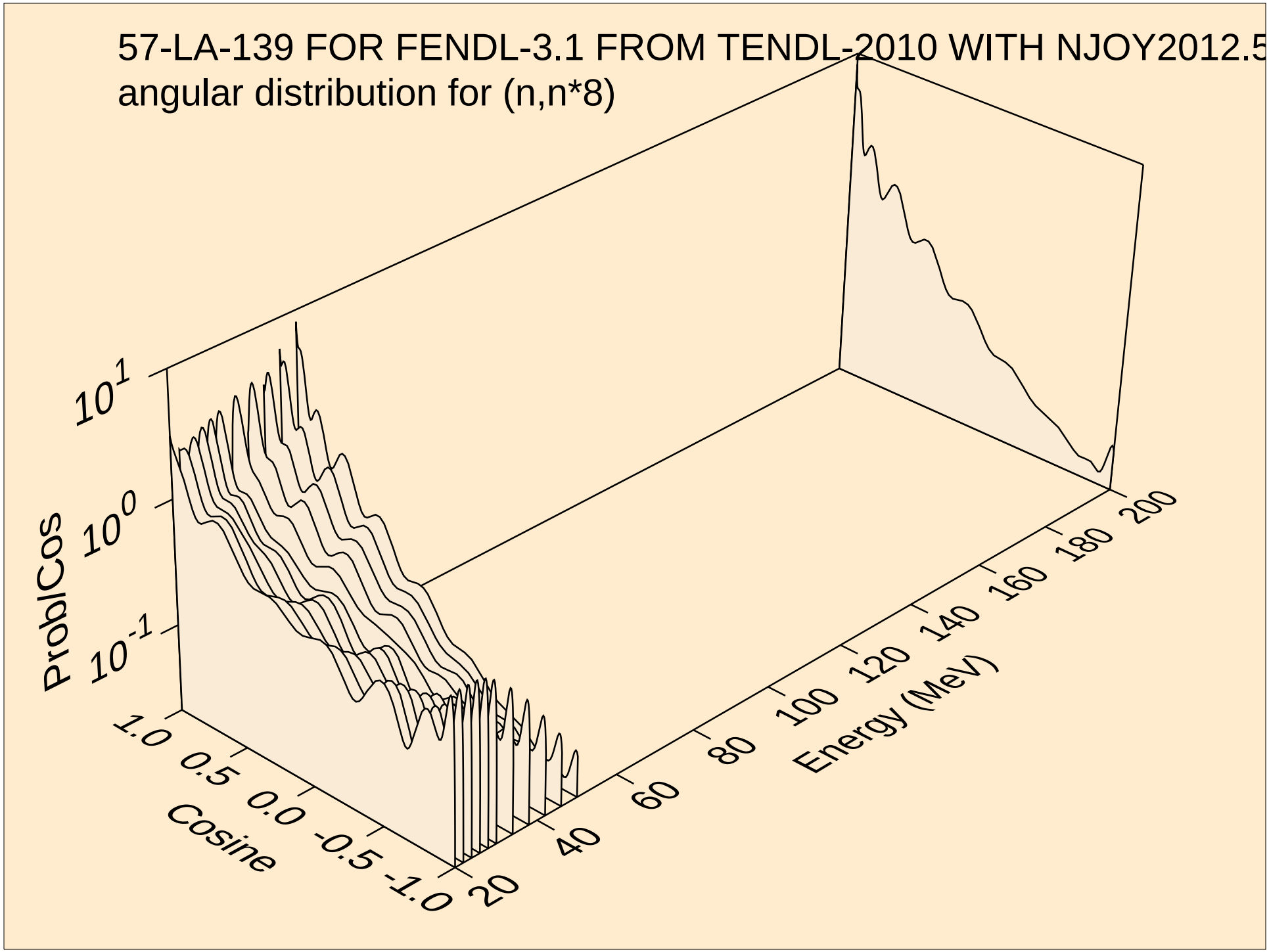

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
angular distribution for (n,n*6)
ProbICos
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

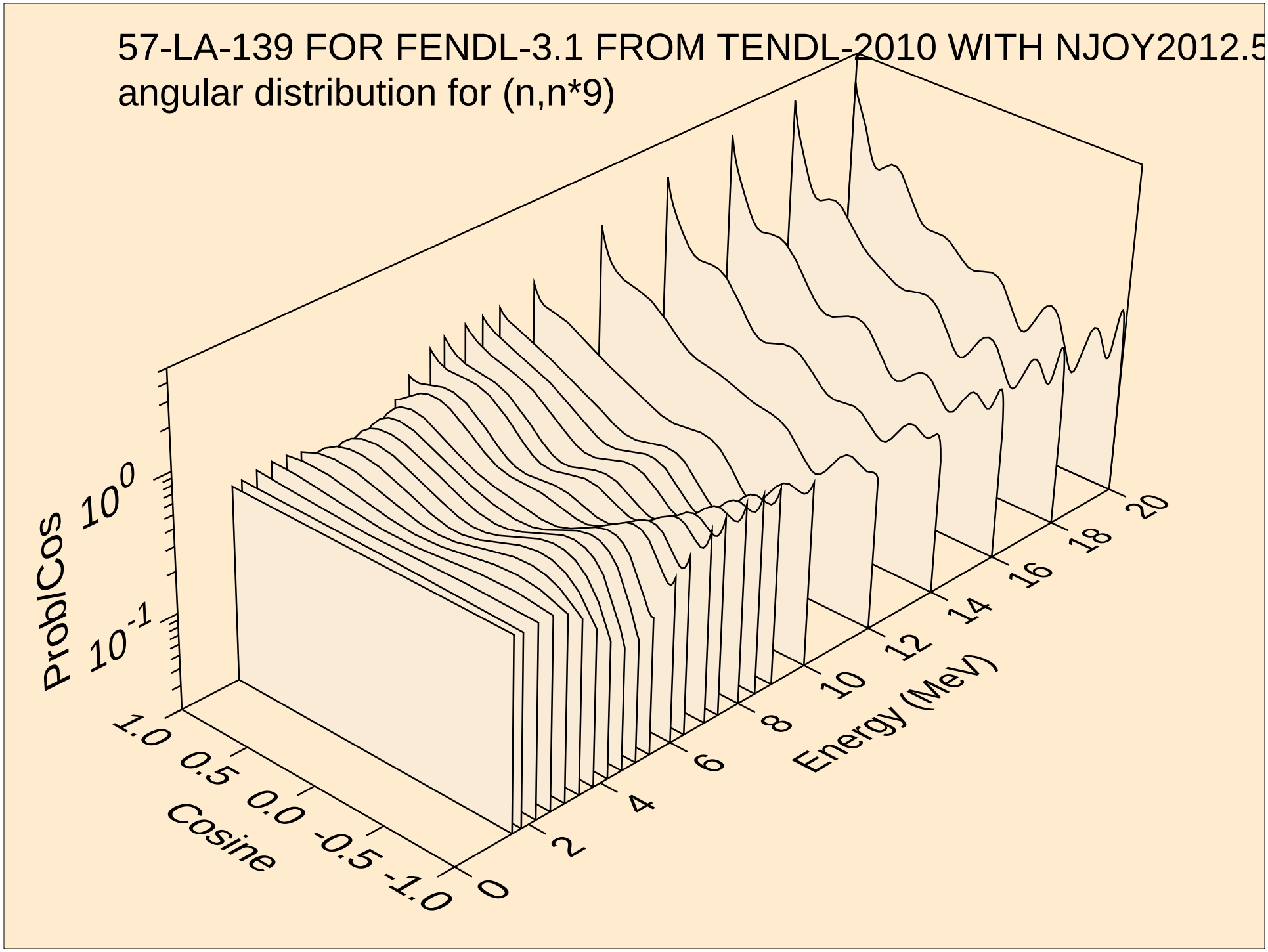

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
angular distribution for (n,n*6)
ProbCos
10^{0}
10^{-1}
10^{-2}
1.0
0.5
0.0
-0.5
-1.0
Cosine
20
40
60
80
100
120
140
160
180
200
Energy (MeV)

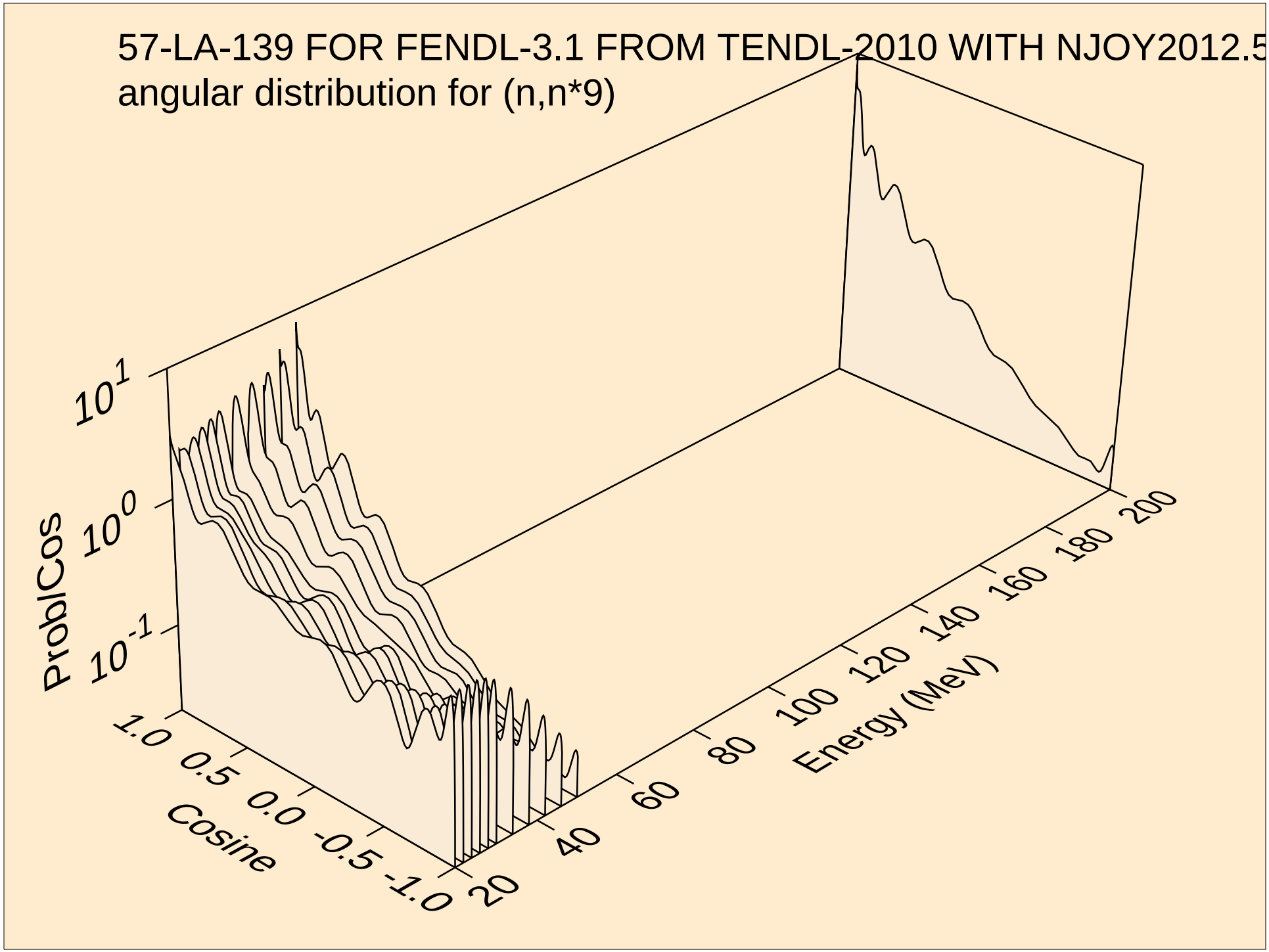

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
angular distribution for (n,n*7)
ProbICos
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

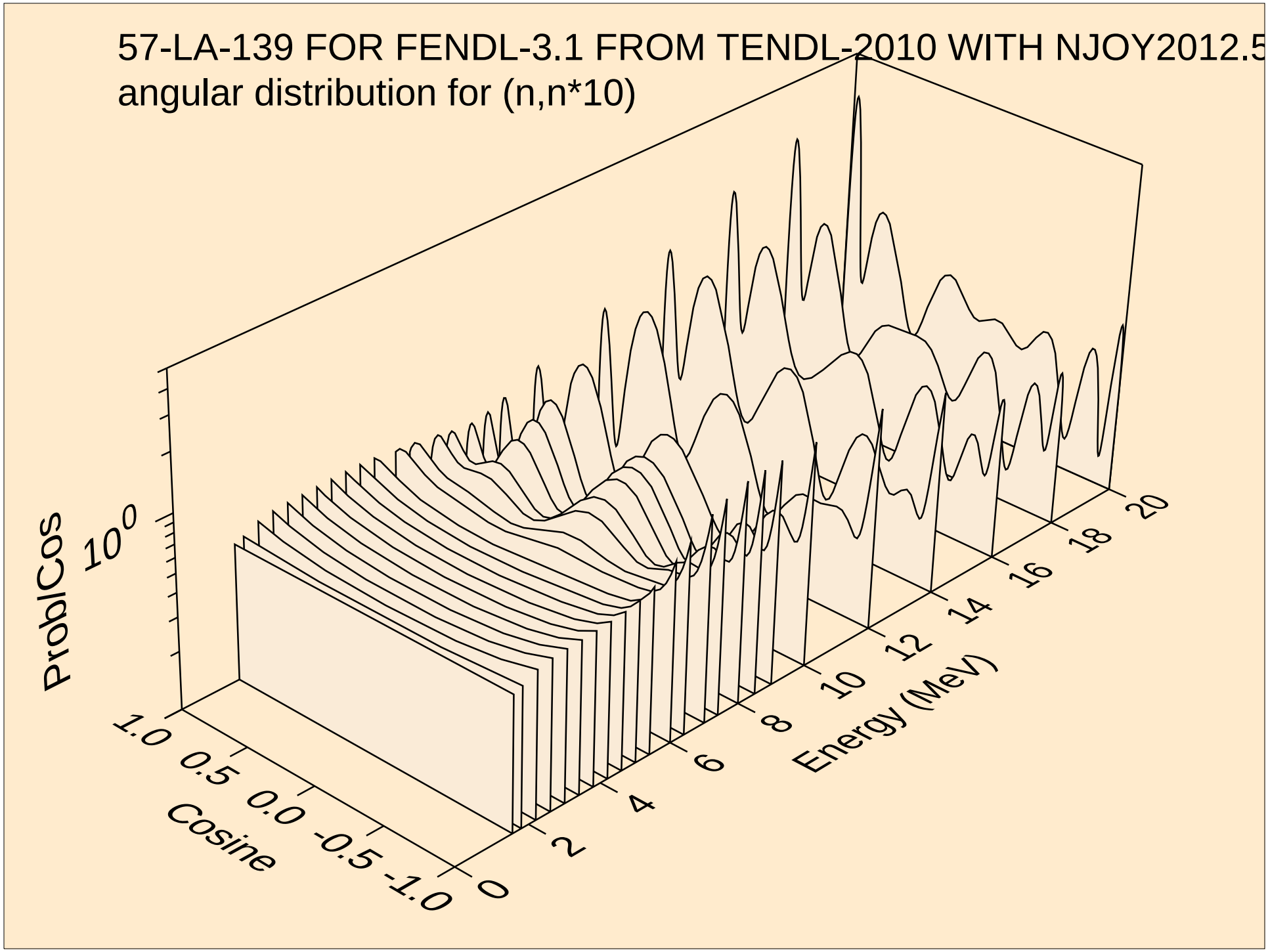

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
angular distribution for (n,n*7)
ProbICos
10^1
10^0
10^-1
1.0
0.5
0.0
-0.5
-1.0
Cosine
20
40
60
80
100
120
140
160
180
200
Energy (MeV)

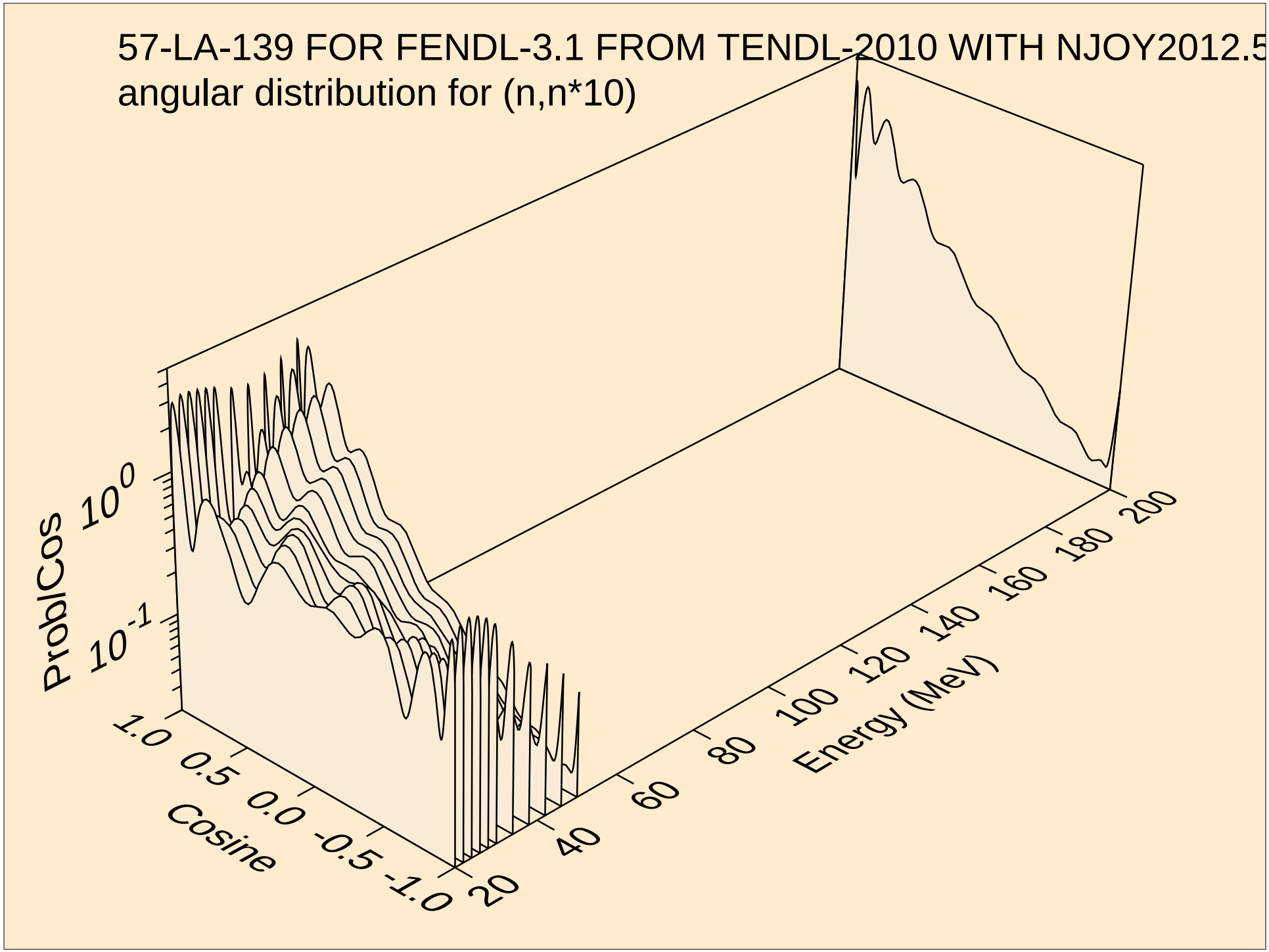

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
angular distribution for (n,n*8)
ProbICos
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

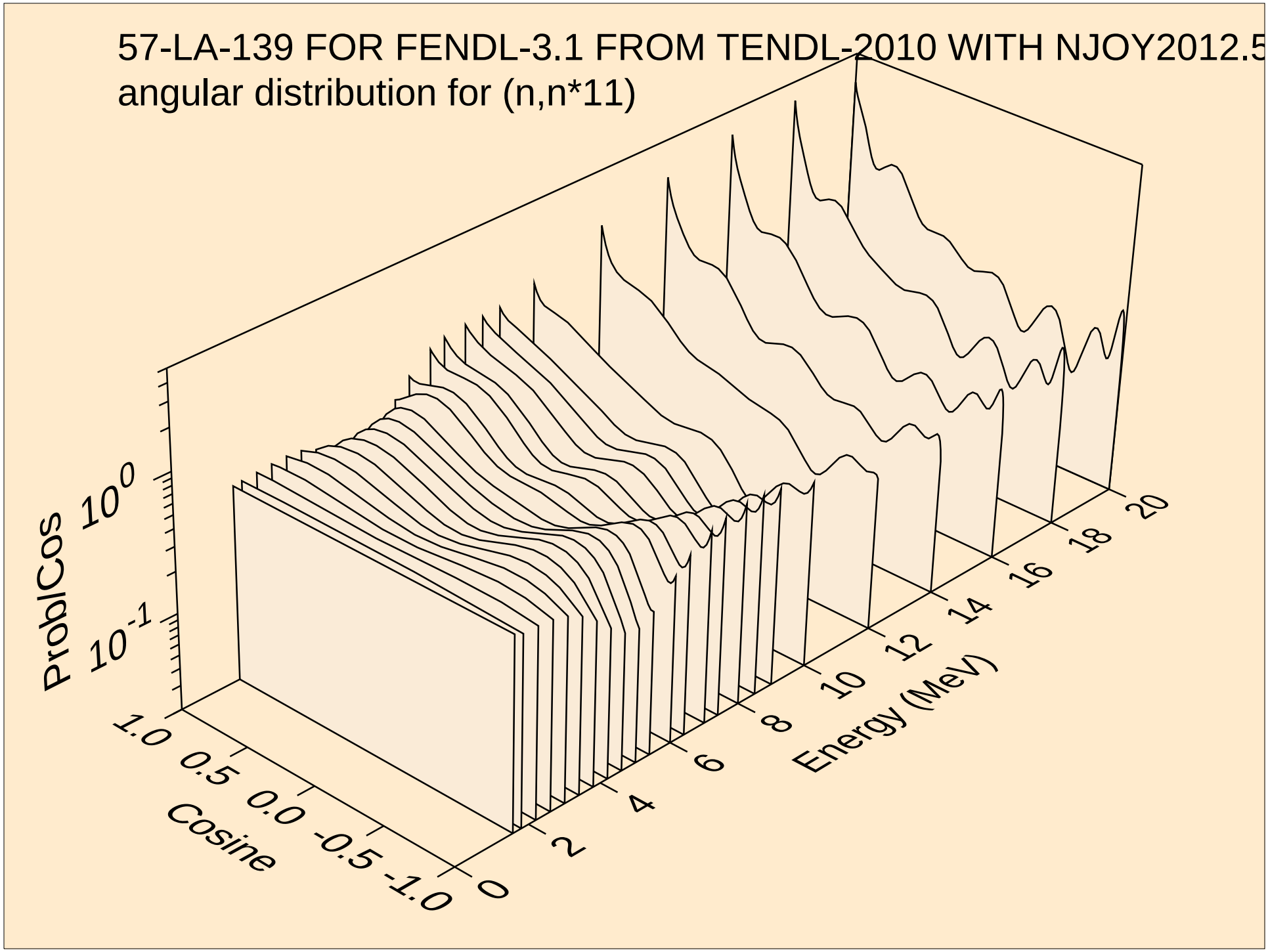

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
angular distribution for (n,n*8)
ProbICos
10^1
10^0
10^-1
1.0
0.5
0.0
-0.5
-1.0
Cosine
20
40
60
80
100
120
140
160
180
200
Energy (MeV)

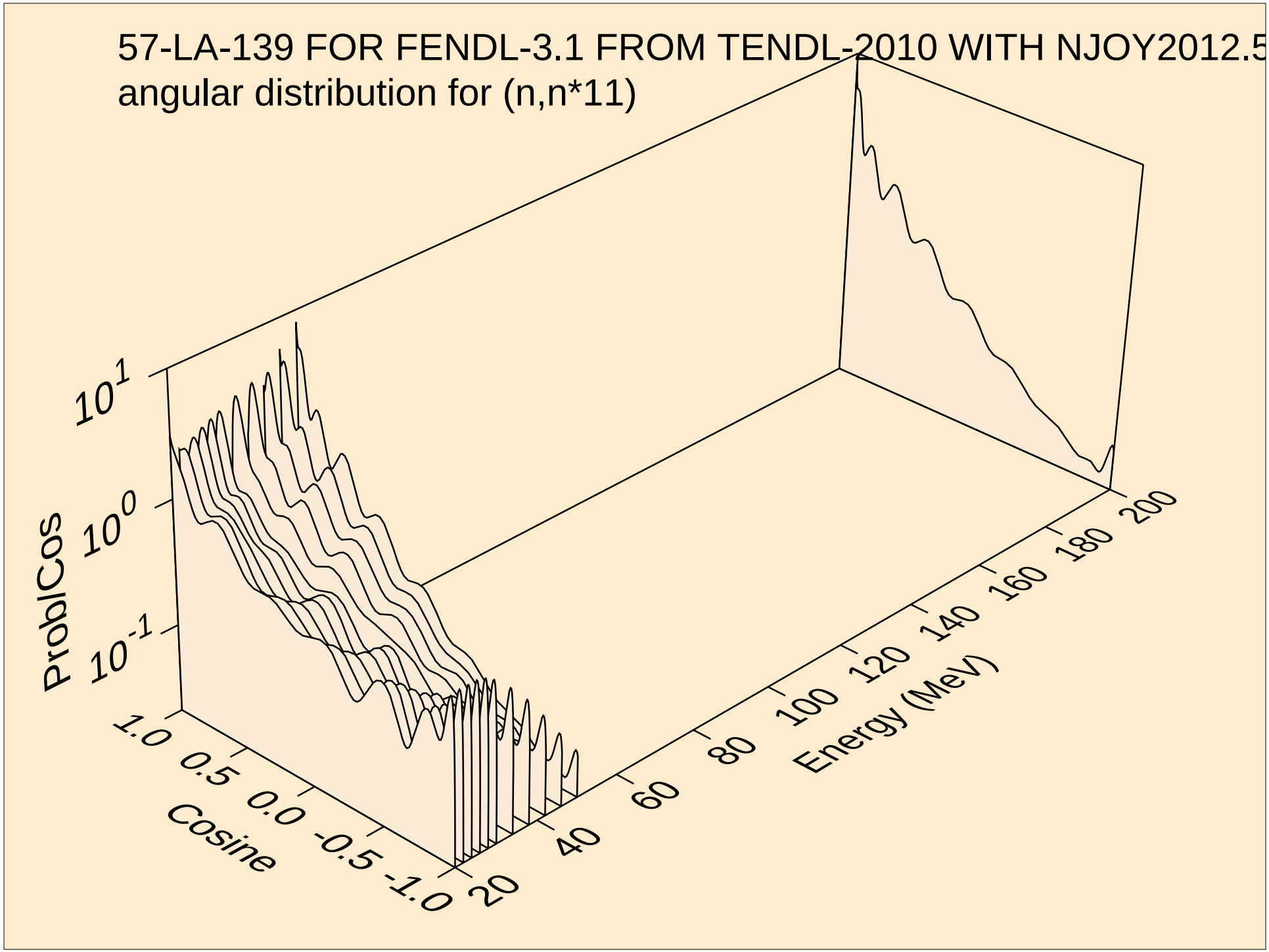

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
angular distribution for (n,n*9)
ProbICos
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

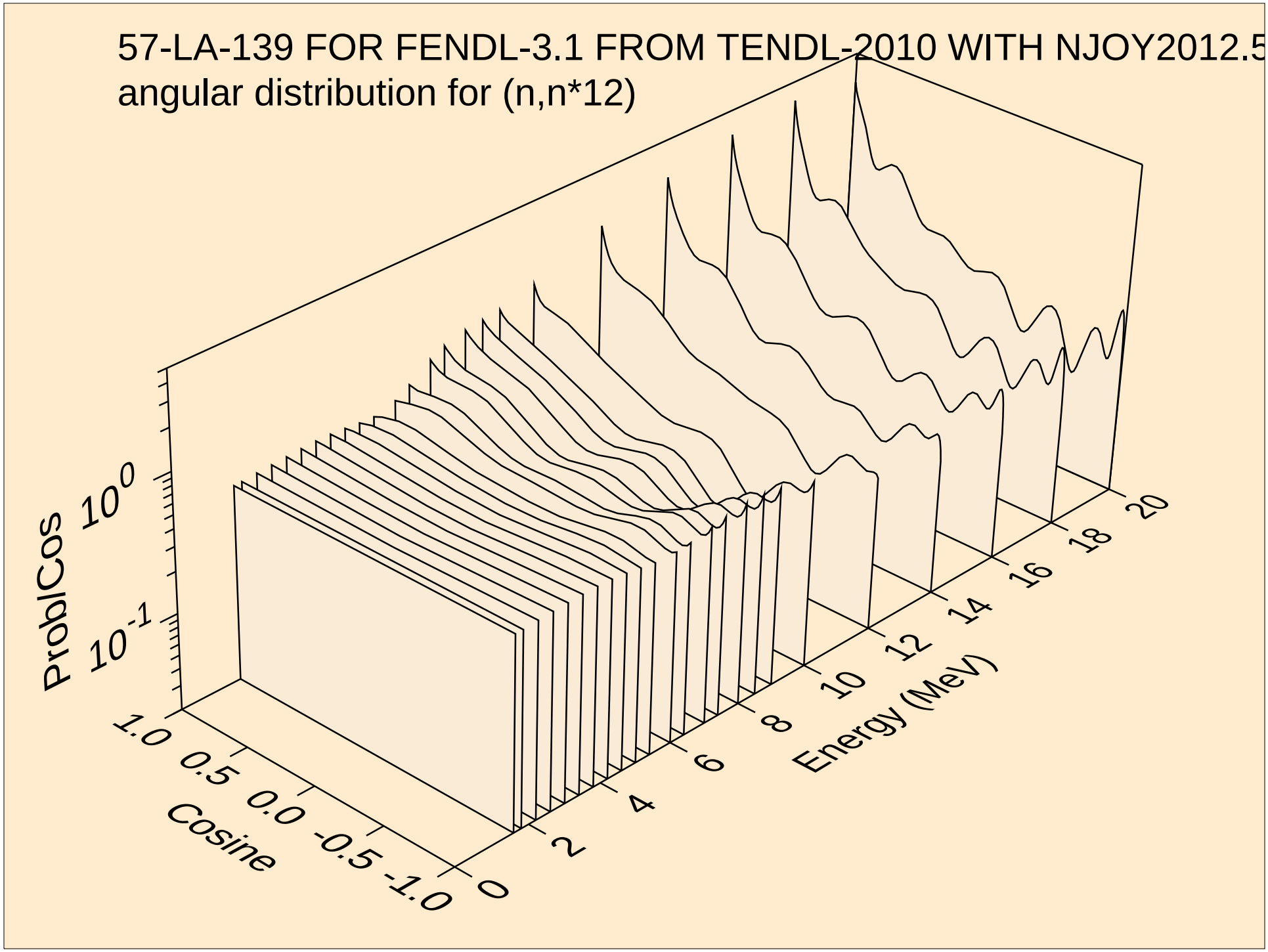

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
angular distribution for (n,n*9)
ProbICos
10^{1}
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
20
40
60
80
100
120
140
160
180
200
Energy (MeV)

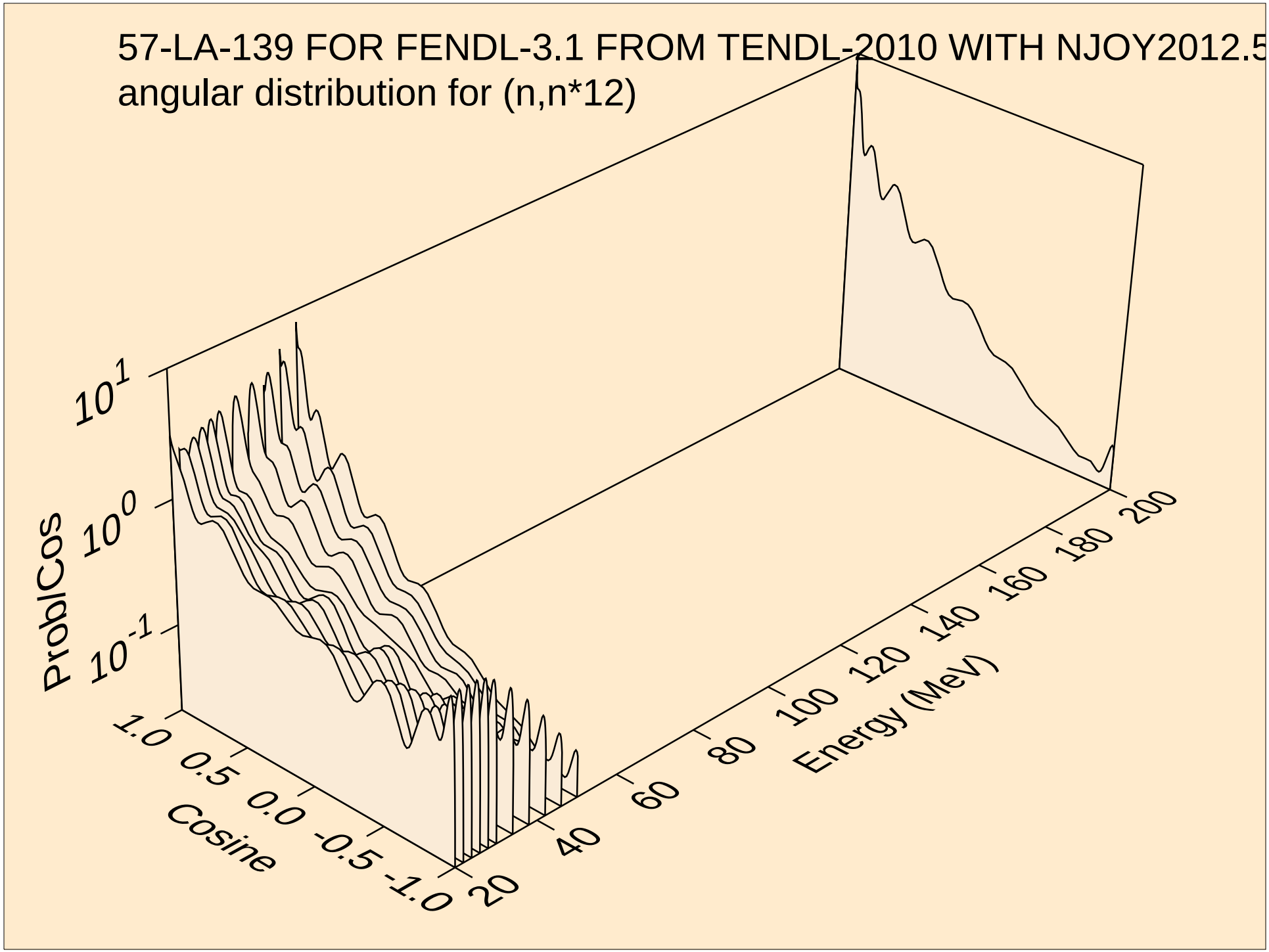

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
angular distribution for (n,n*10)
ProbICos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

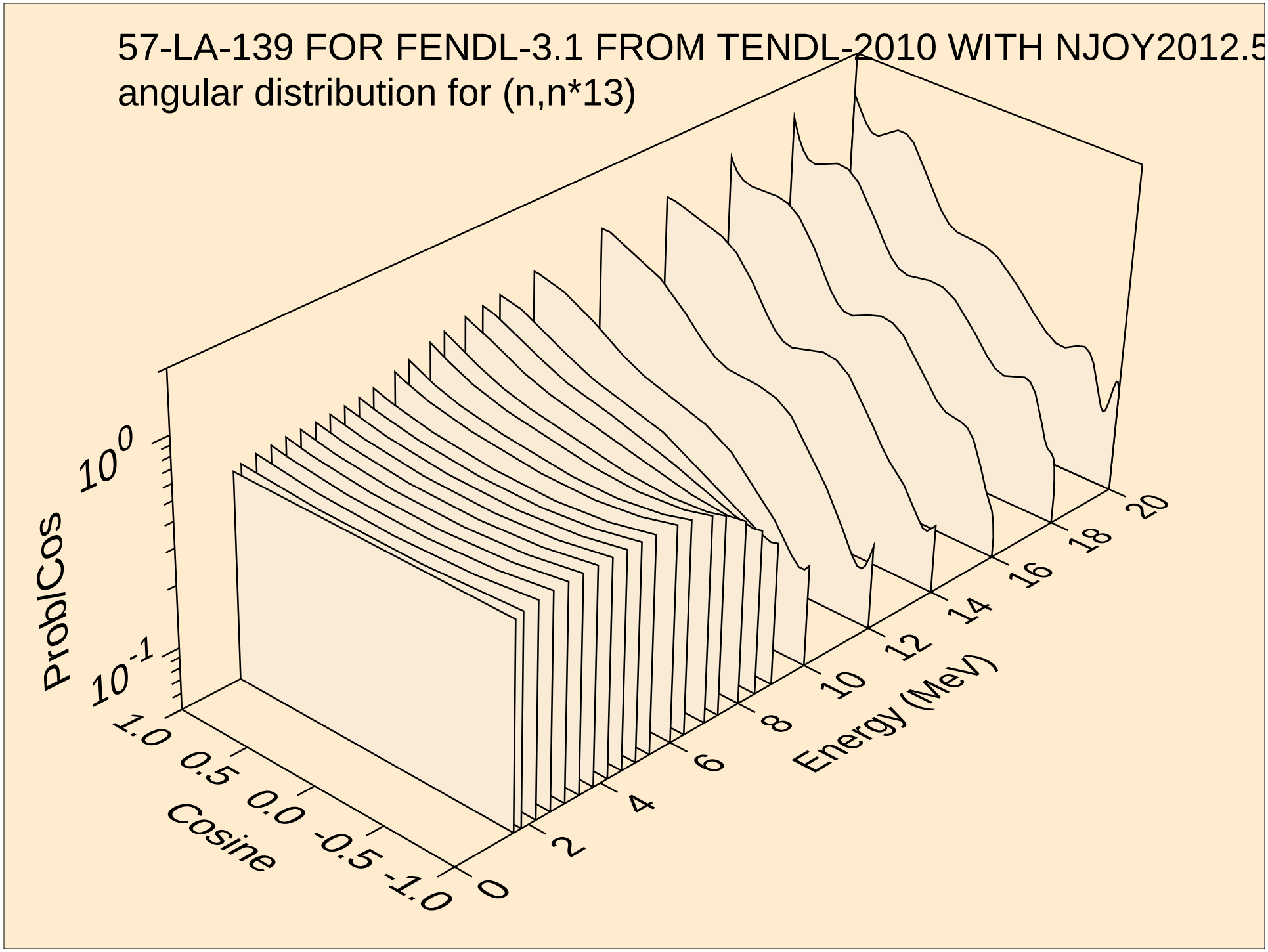

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
angular distribution for (n,n*10)
ProbICos
10^0
10^-1
1.0
0.5
0.0
-0.5
-1.0
Cosine
20
40
60
80
100
120
140
160
180
200
Energy (MeV)

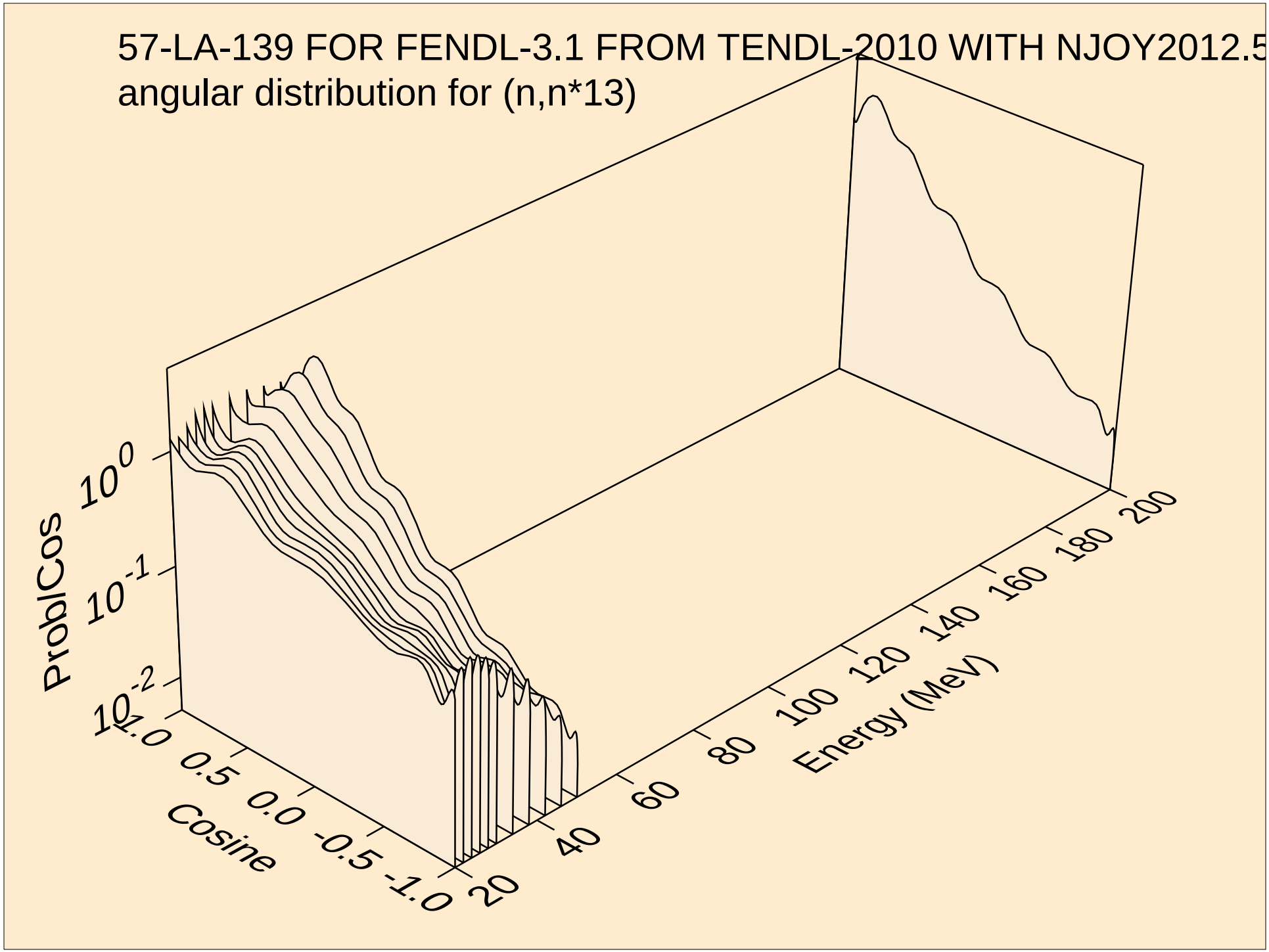

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
angular distribution for (n,n*11)
ProbICos
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

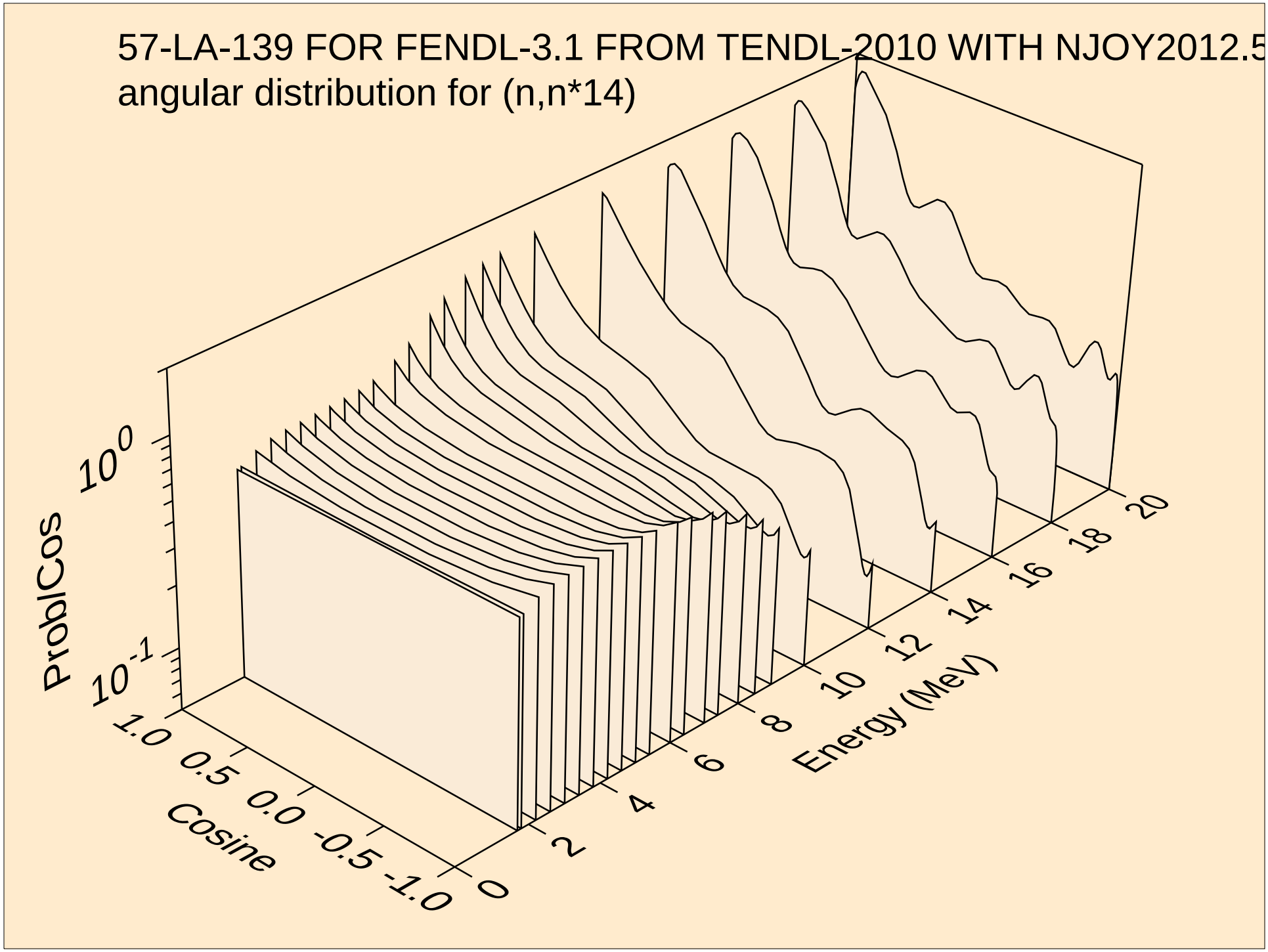

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
angular distribution for (n,n*11)
ProbICos
10^{1}
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
20
40
60
80
100
120
140
160
180
200
Energy (MeV)

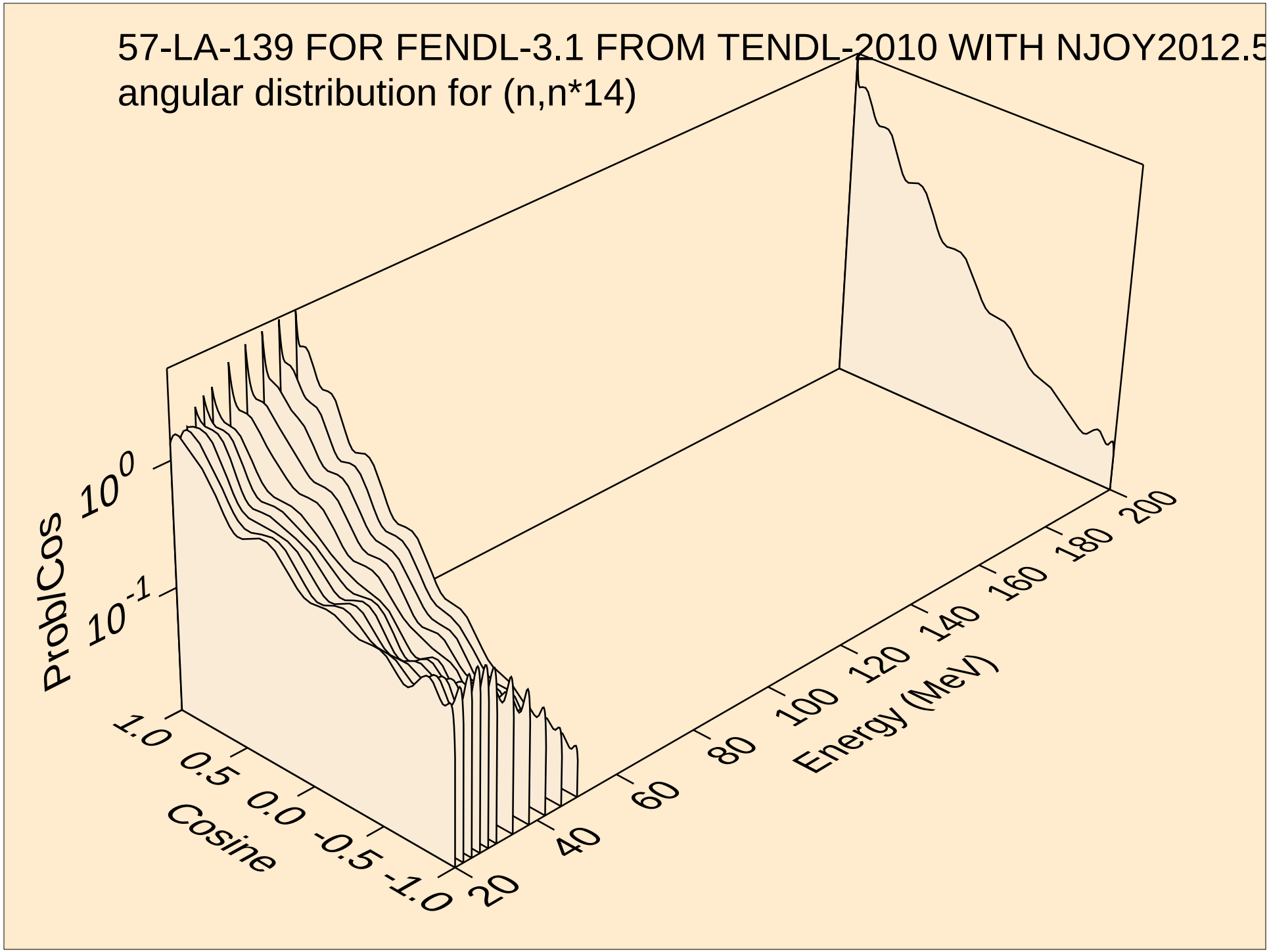

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
angular distribution for (n,n*12)
Prob\Cos
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

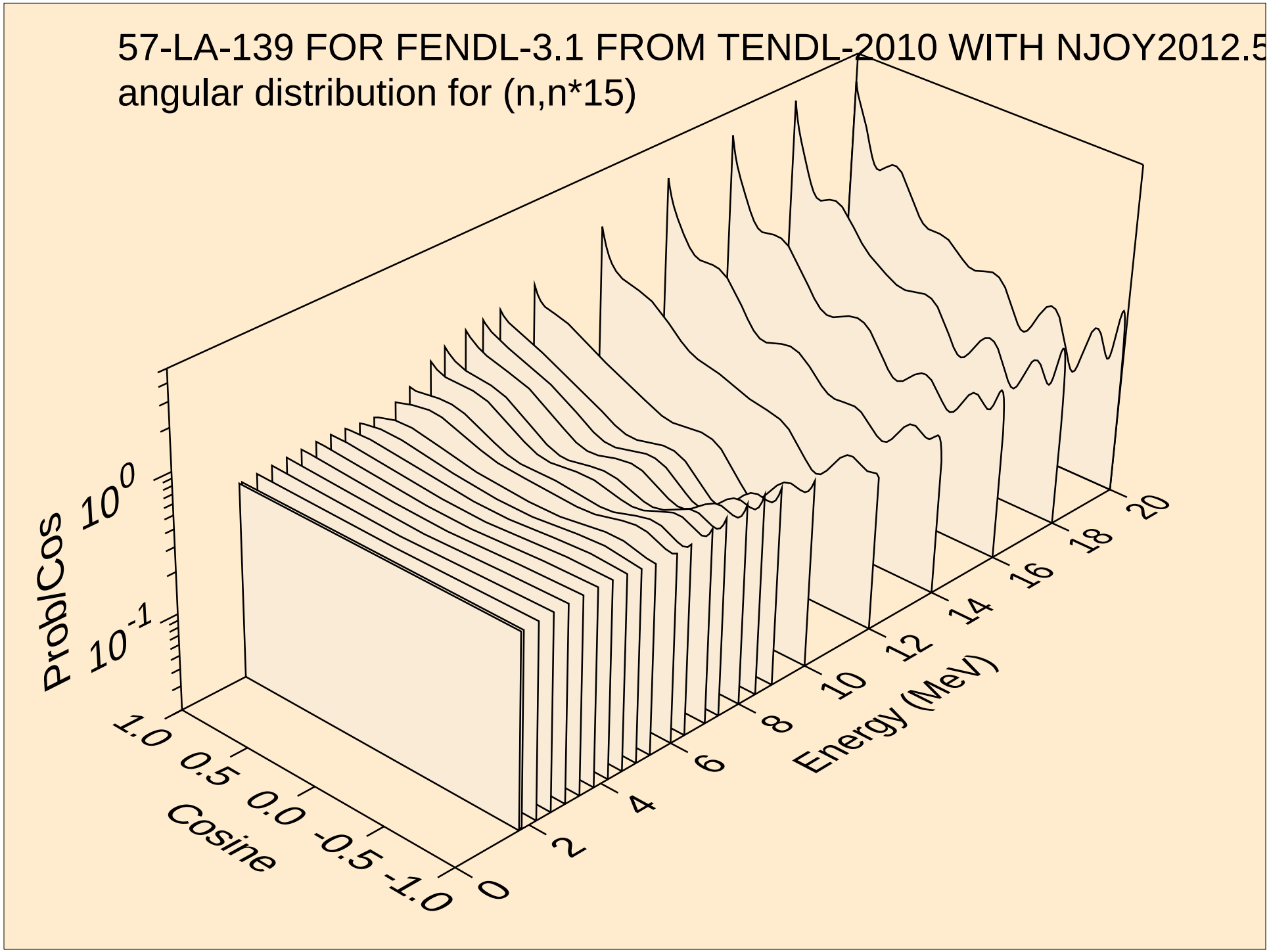

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
angular distribution for (n,n*12)
ProbICos
10^{1}
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
20
40
60
80
100
120
140
160
180
200
Energy (MeV)

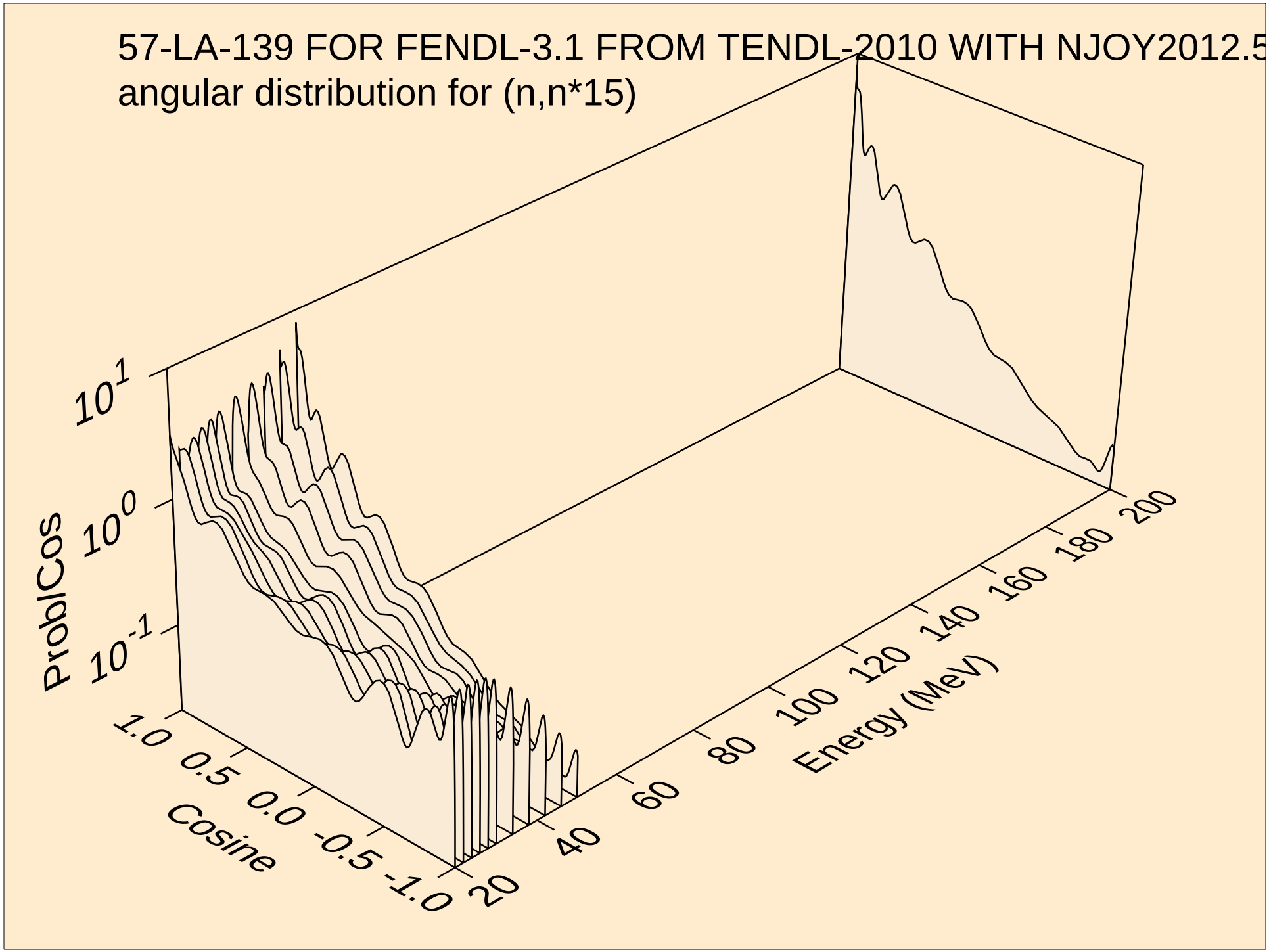

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
angular distribution for (n,n*13)
ProbICos
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

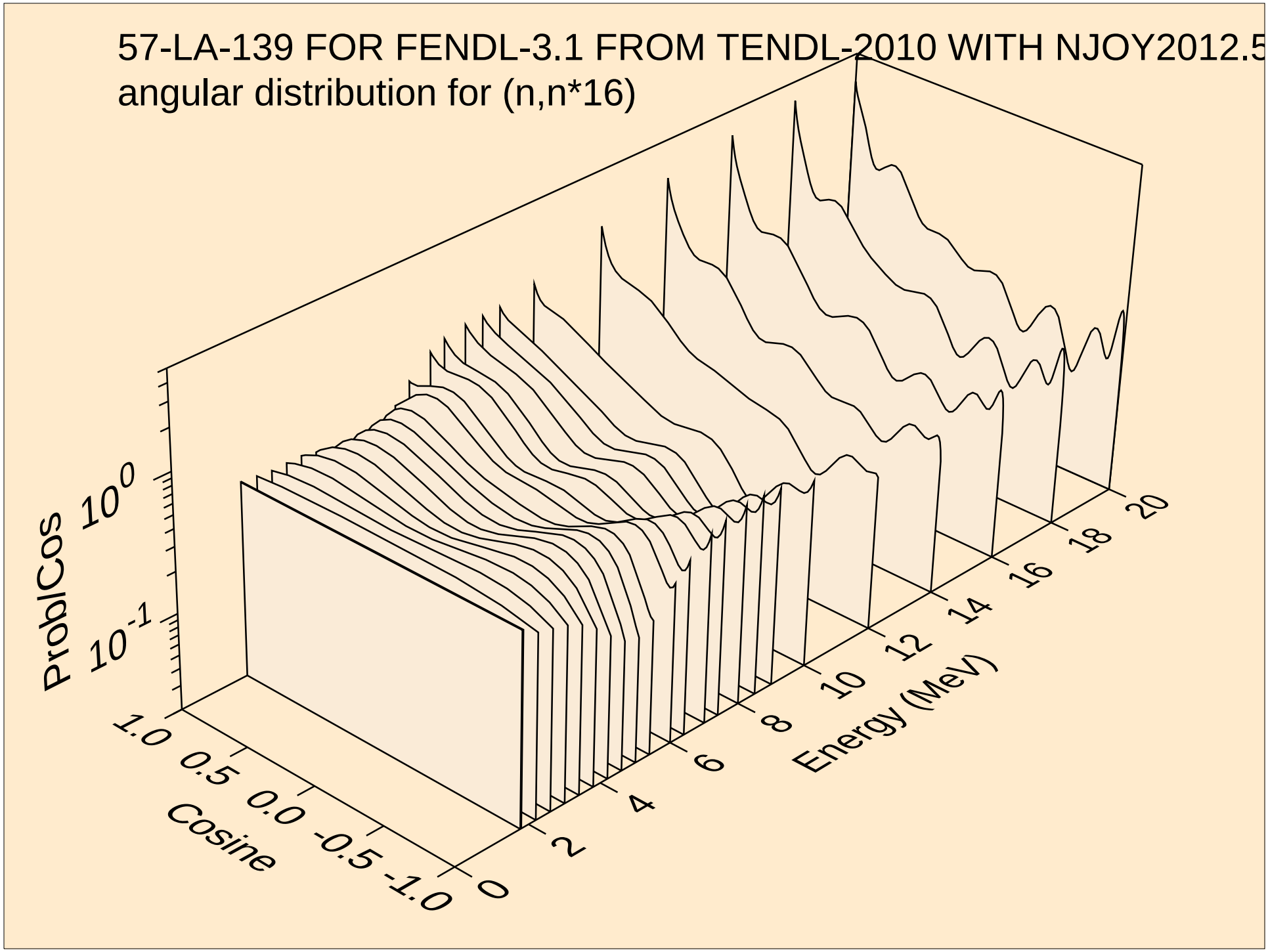

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
angular distribution for (n,n*13)
ProbCos
10^{0}
10^{-1}
10^{-2}
1.0
0.5
0.0
-0.5
-1.0
Cosine
20
40
60
80
100
120
140
160
180
200
Energy (MeV)

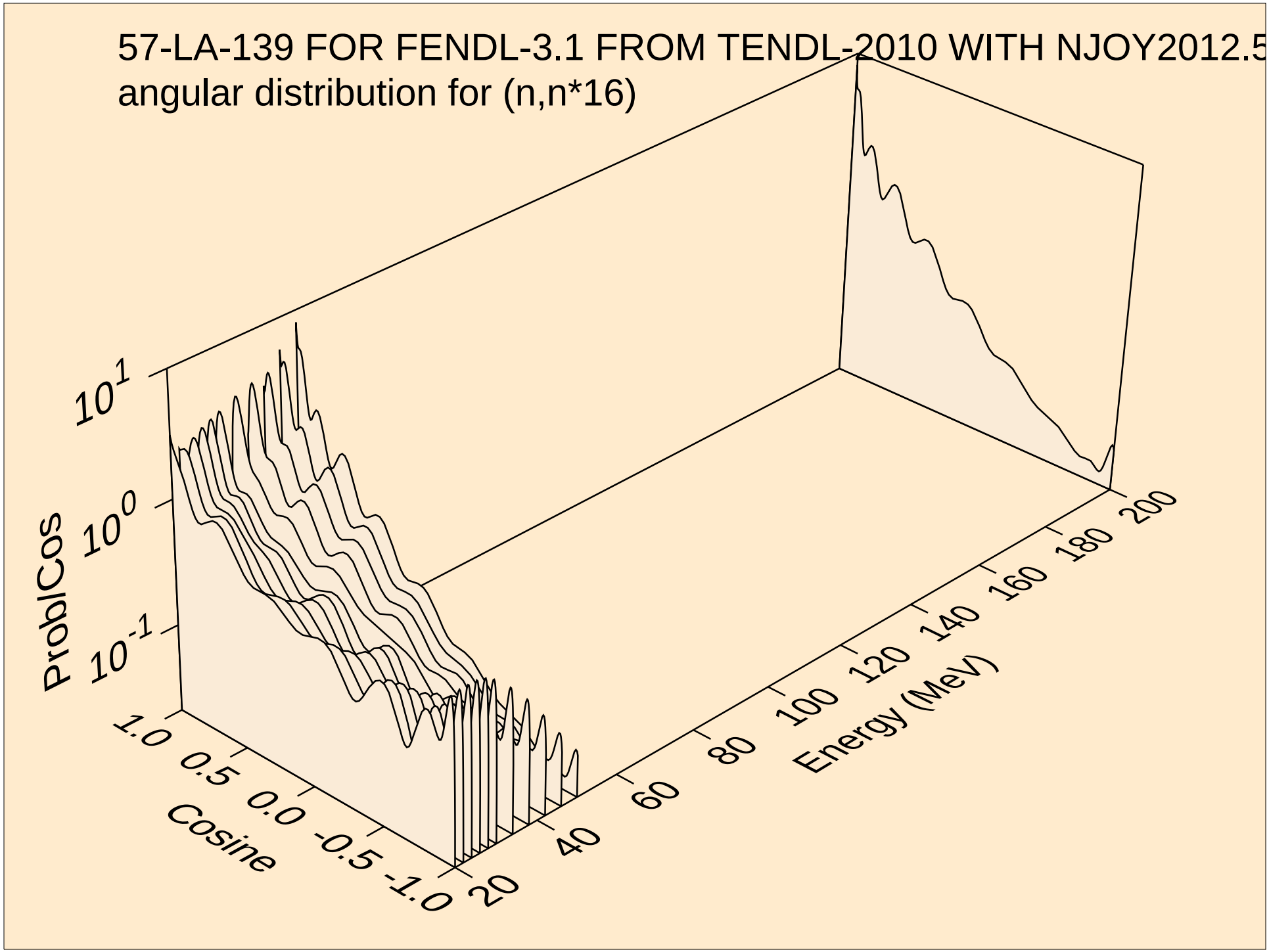

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
angular distribution for (n,n*14)
ProbICos
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

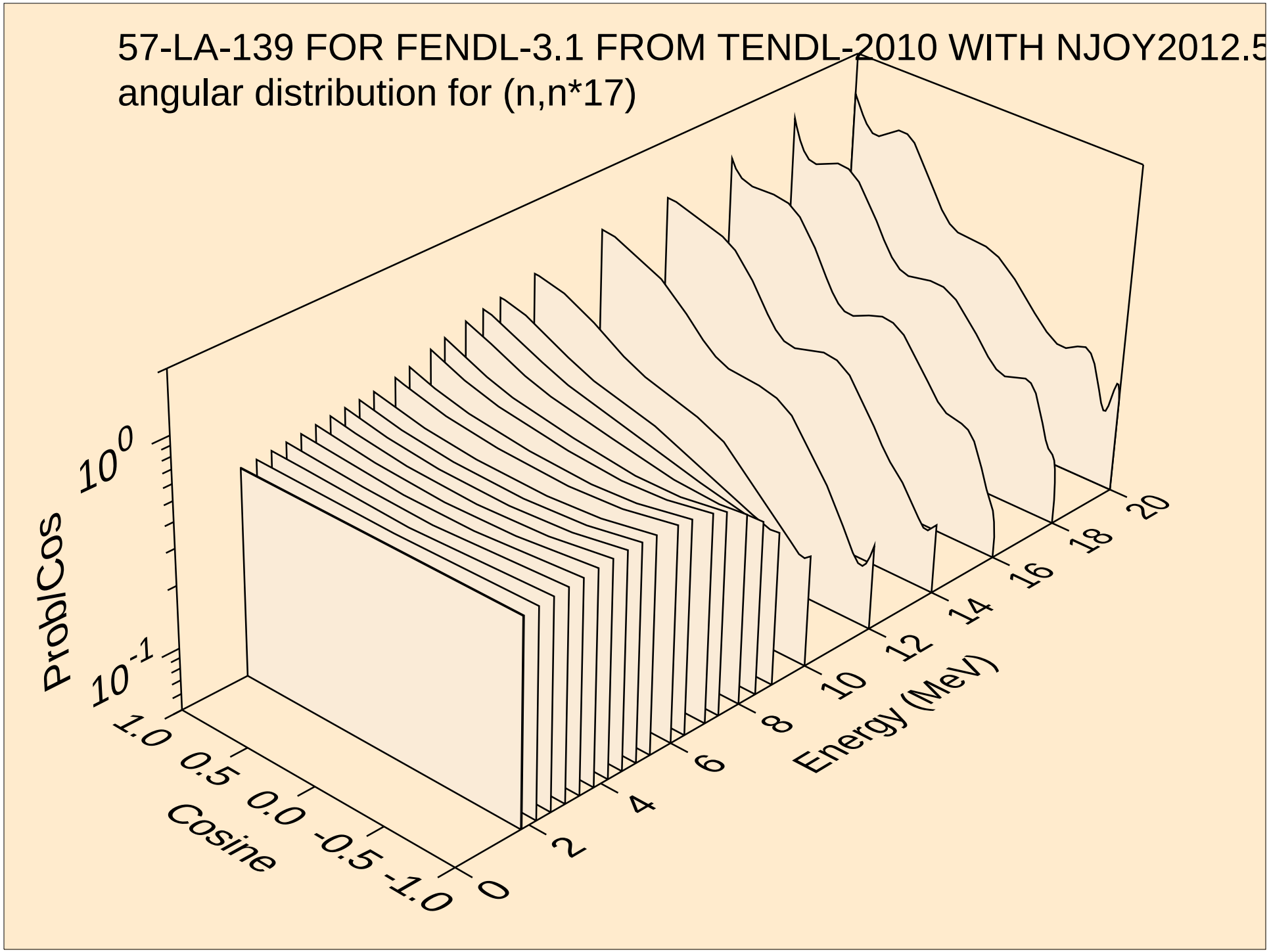

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
angular distribution for (n,n*14)
ProbICos
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
20
40
60
80
100
120
140
160
180
200
Energy (MeV)

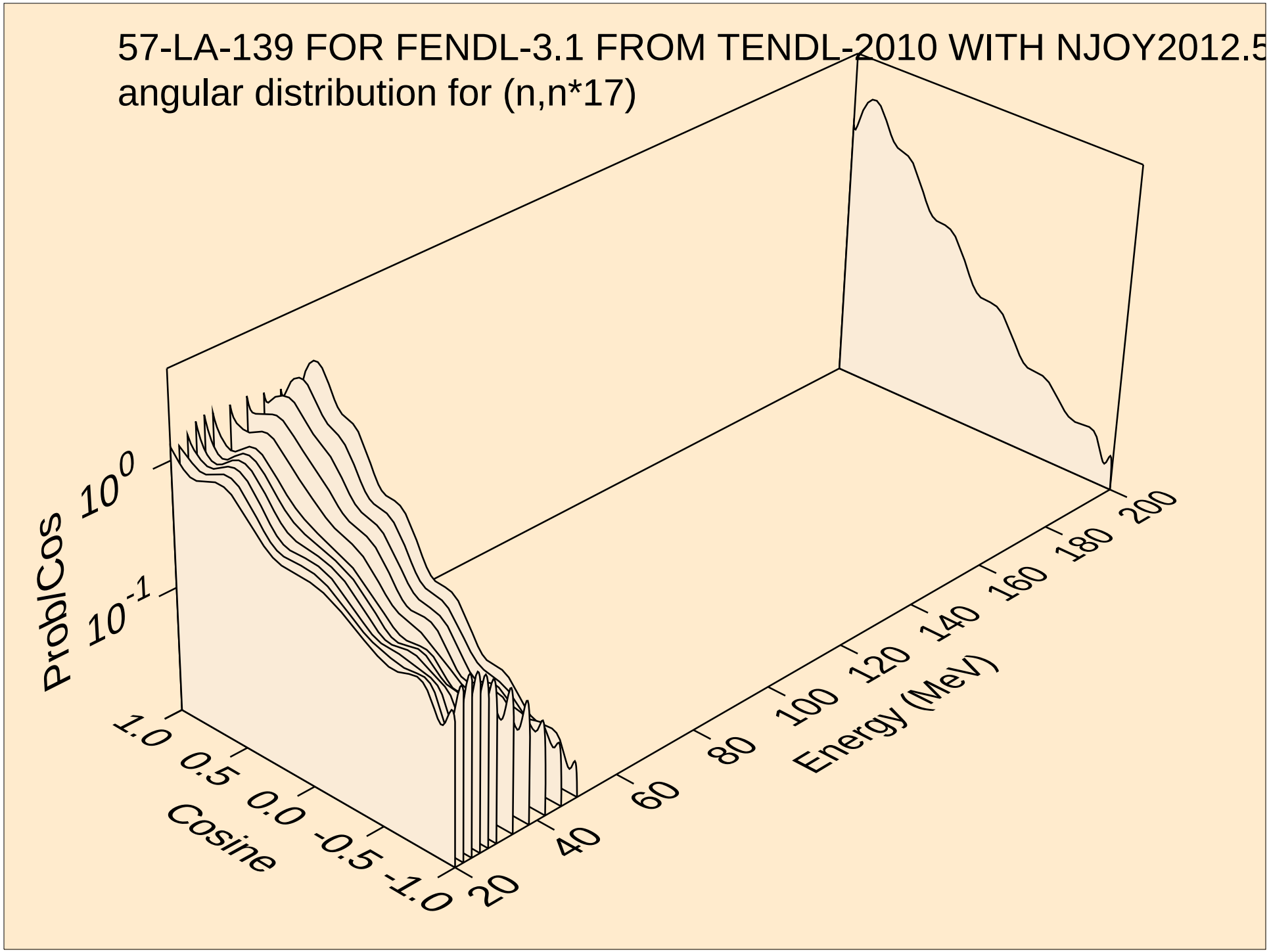

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
angular distribution for (n,n*15)
ProbICos
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

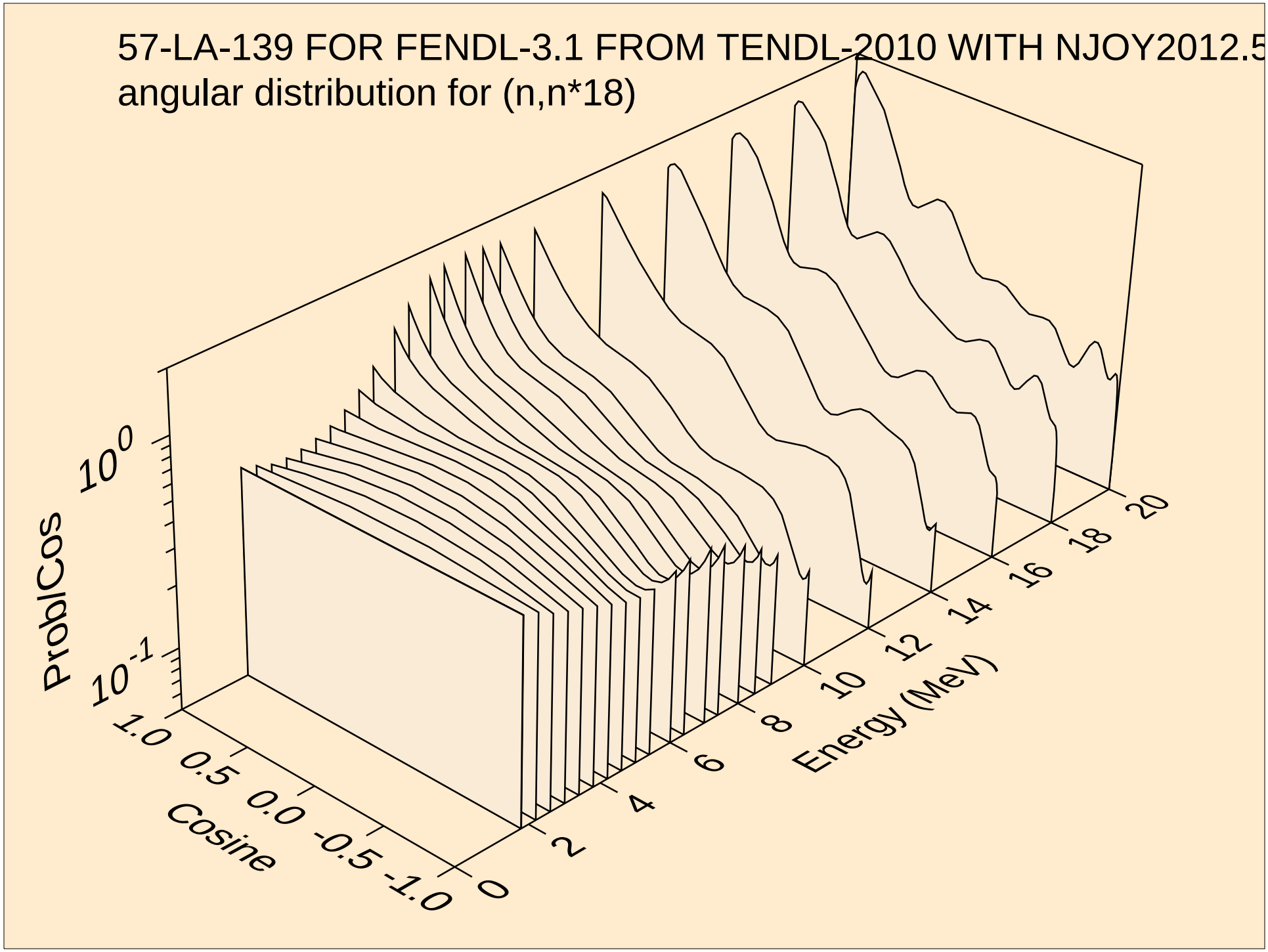

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
angular distribution for (n,n*15)
ProbICos
10^{1}
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
20
40
60
80
100
120
140
160
180
200
Energy (MeV)

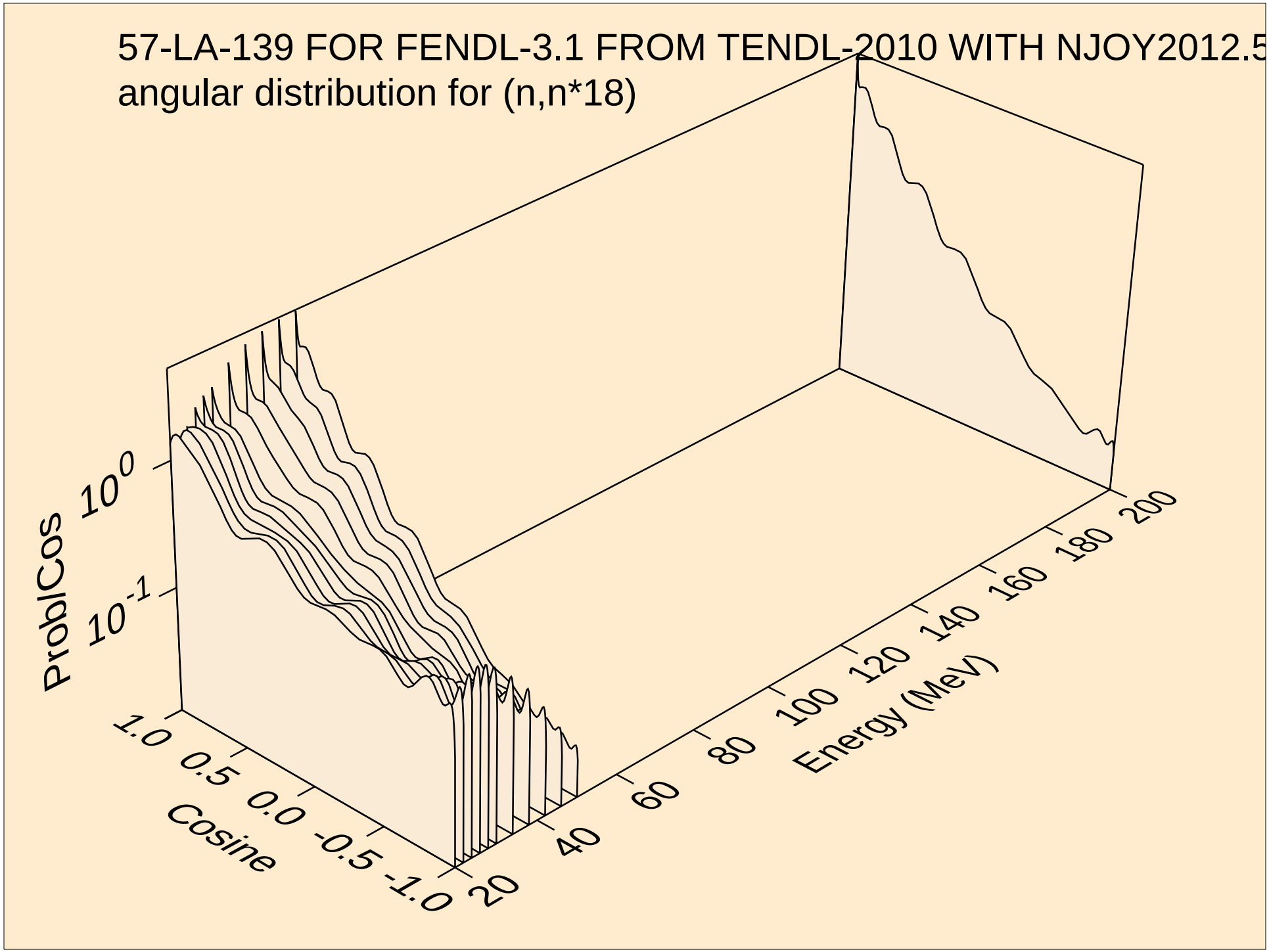

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
angular distribution for (n,n*16)
ProbICos
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

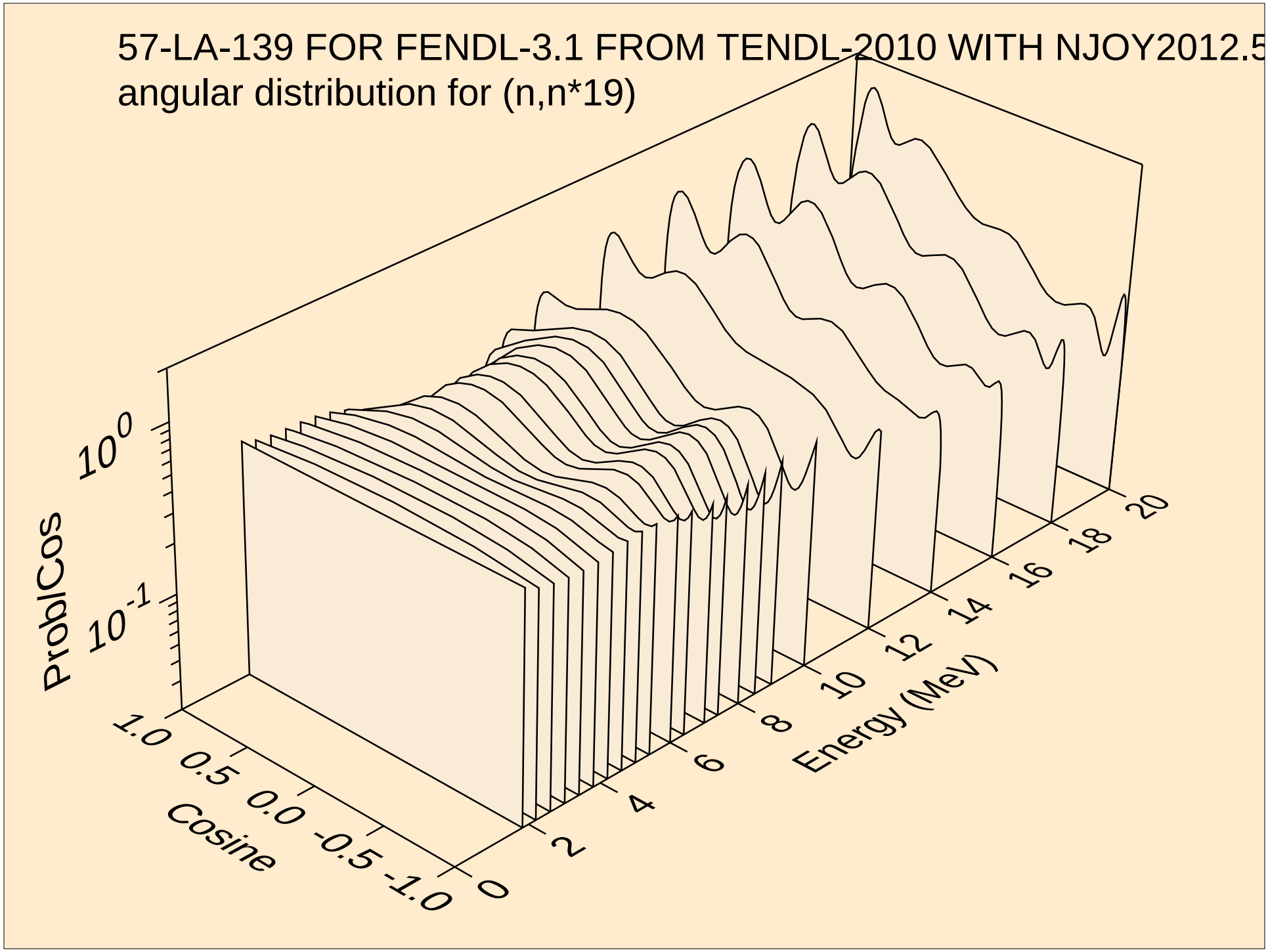

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
angular distribution for (n,n*16)
ProbICos
10^{1}
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
20
40
60
80
100
120
140
160
180
200
Energy (MeV)

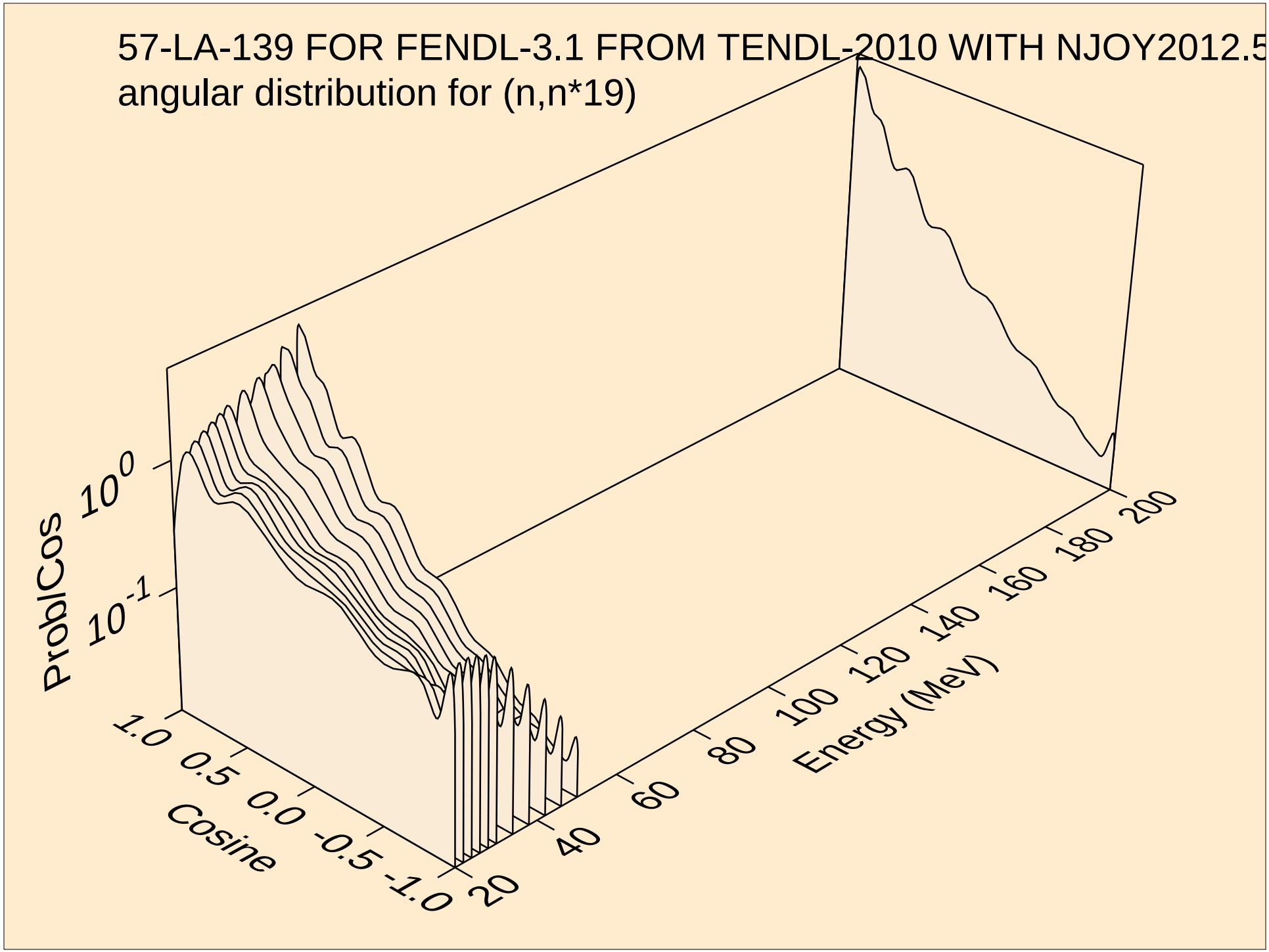

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
angular distribution for (n,n*17)
ProbICos
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

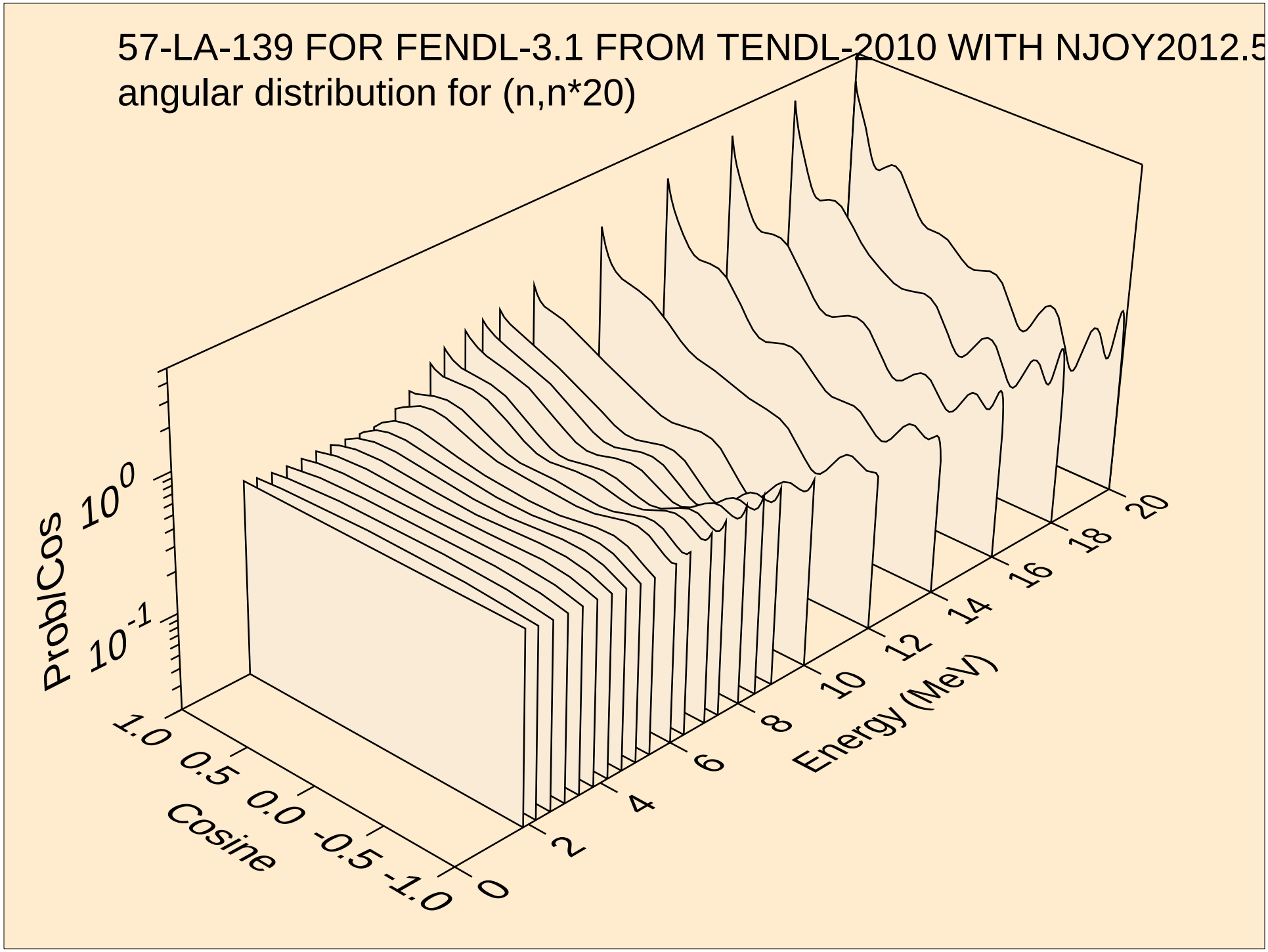

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
angular distribution for (n,n*17)
ProbCos
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
20
40
60
80
100
120
140
160
180
200
Energy (MeV)

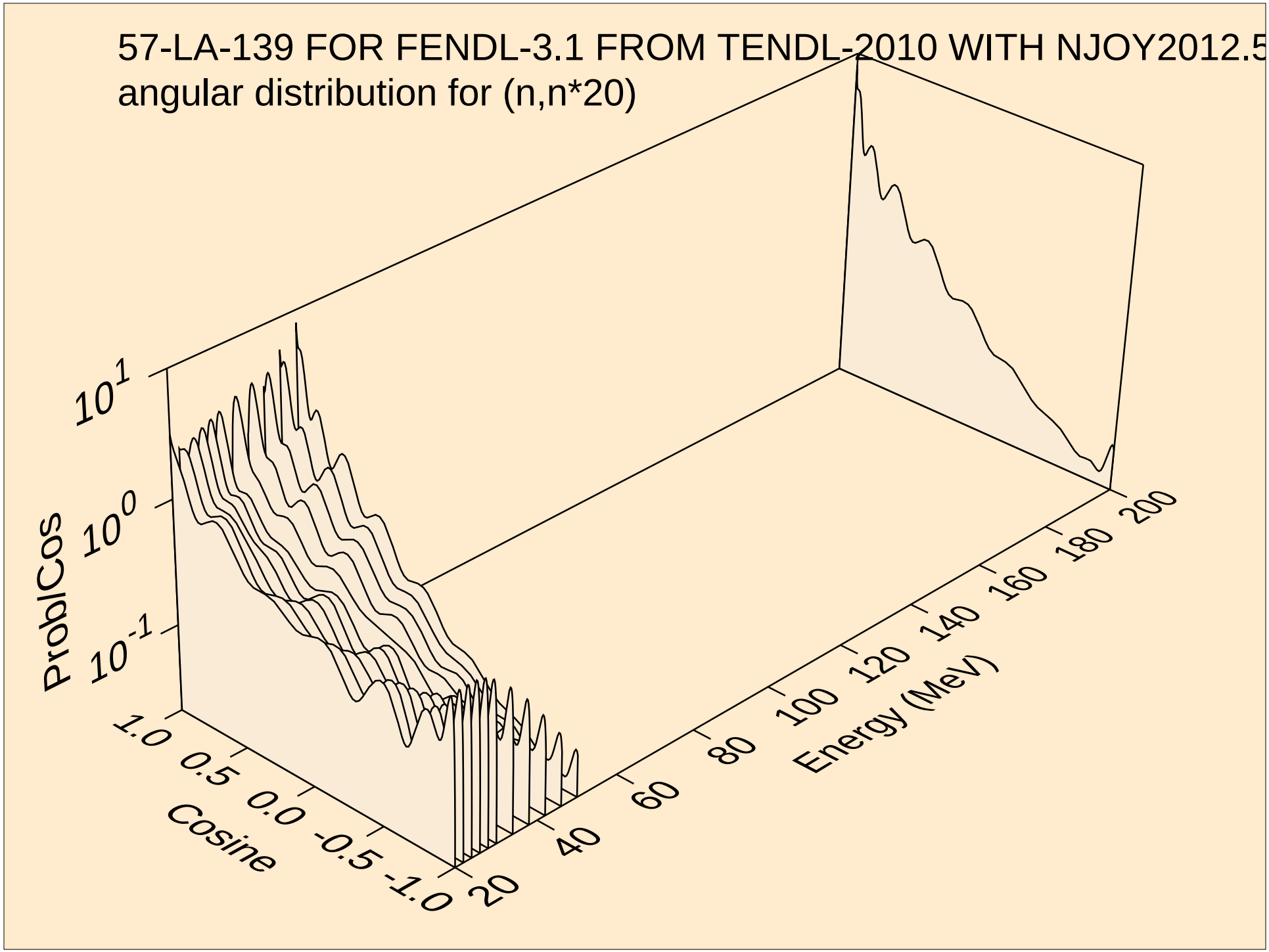

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
angular distribution for (n,n*18)
ProbICos
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

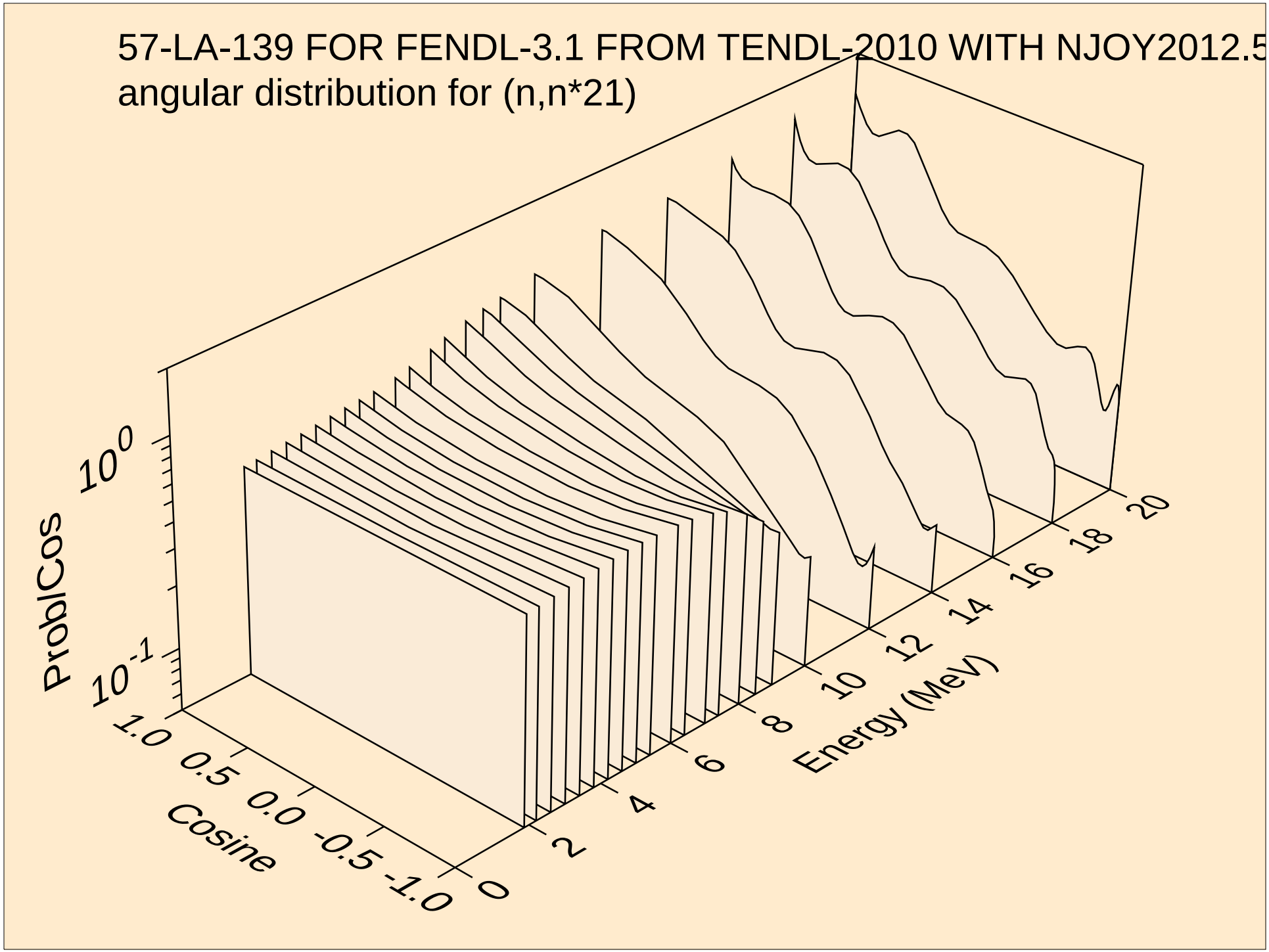

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
angular distribution for (n,n*18)
ProbICos
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
20
40
60
80
100
120
140
160
180
200
Energy (MeV)

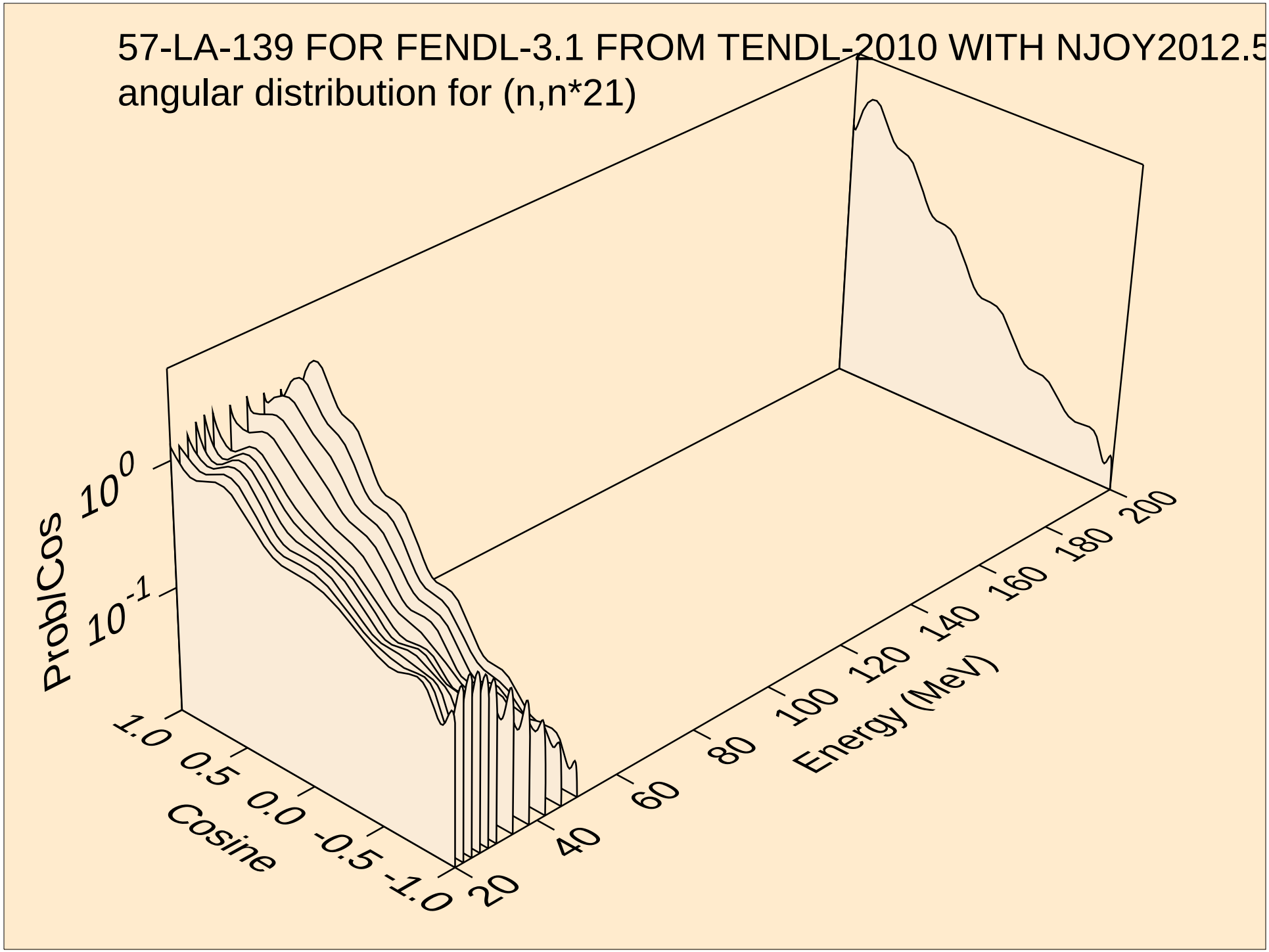

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
angular distribution for (n,n*19)
ProbICos
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

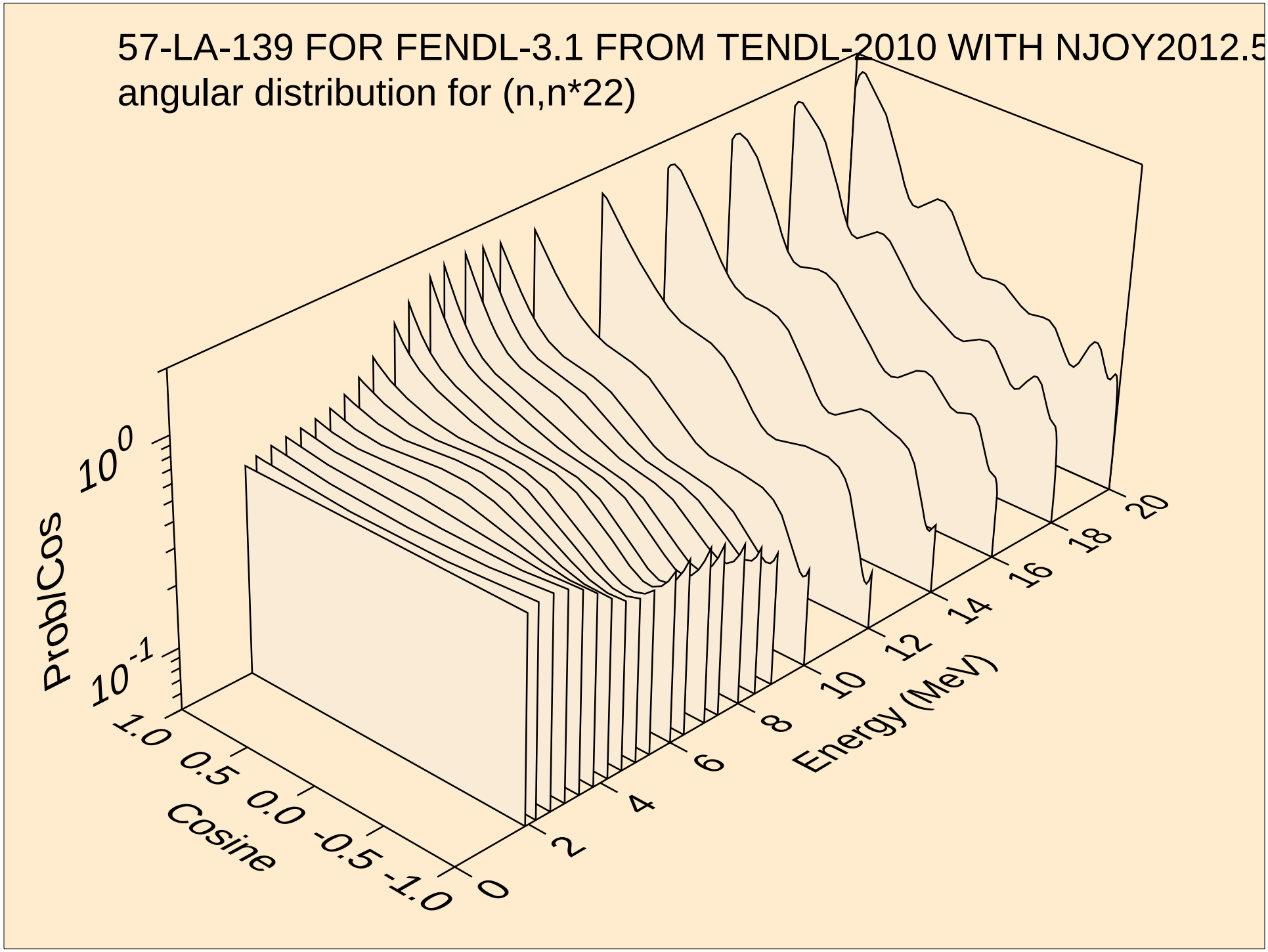

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
angular distribution for (n,n*19)
ProbICos
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
20
40
60
80
100
120
140
160
180
200
Energy (MeV)

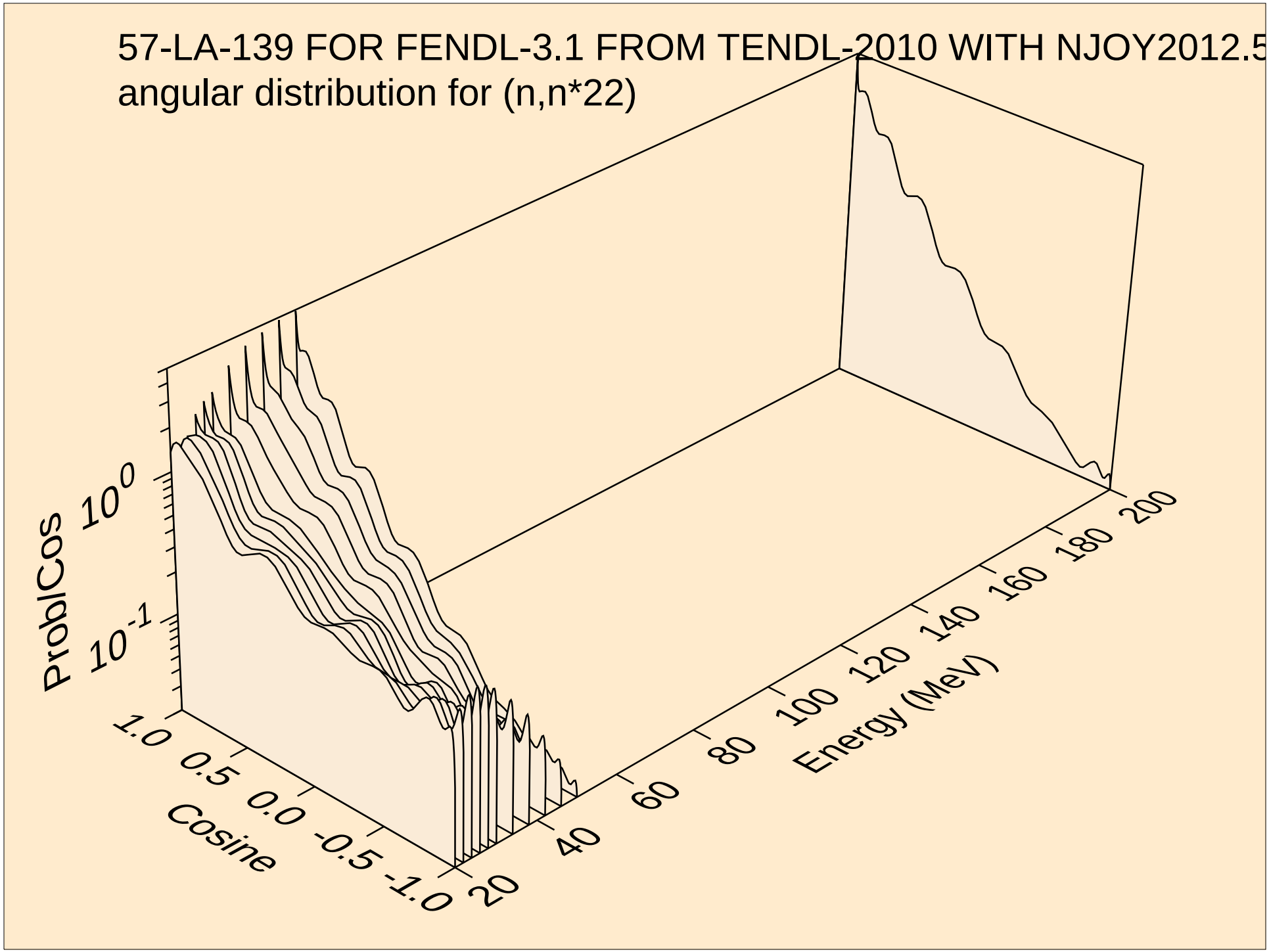

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
angular distribution for (n,n*20)
ProbICos
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

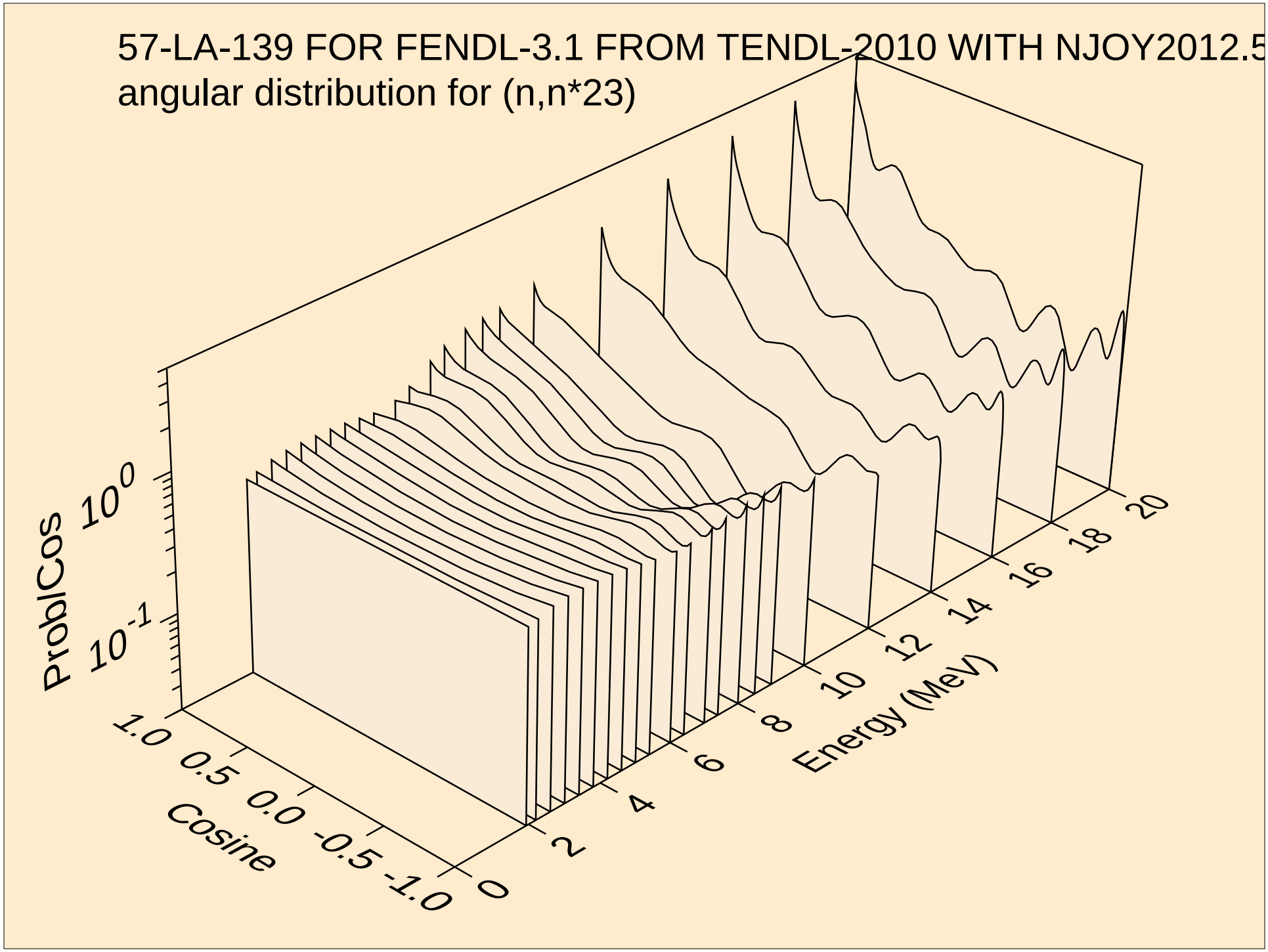

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
angular distribution for (n,n*20)
ProbICos
10^{1}
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
20
40
60
80
100
120
140
160
180
200
Energy (MeV)

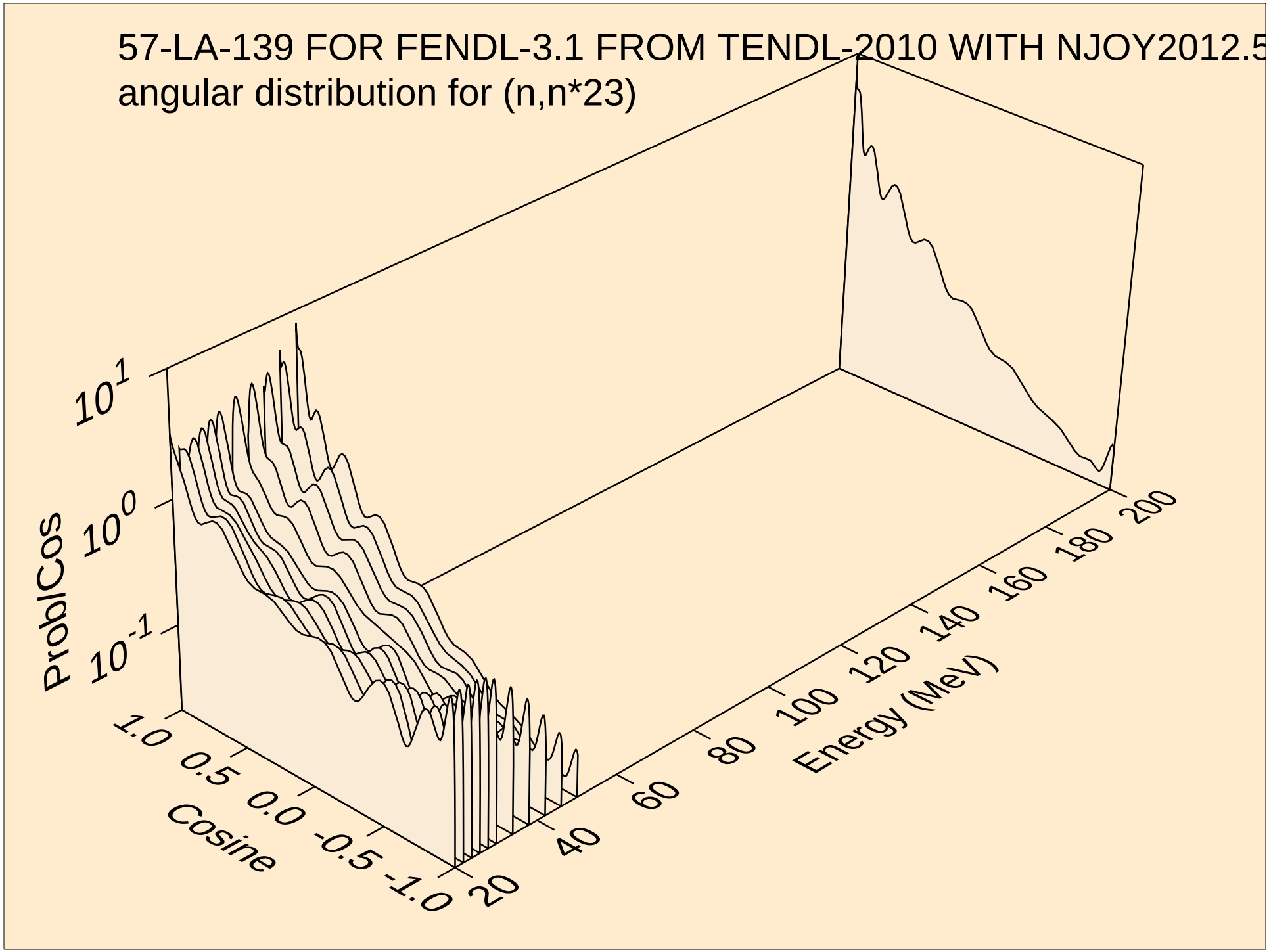

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
angular distribution for (n,n*21)
ProbICos
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

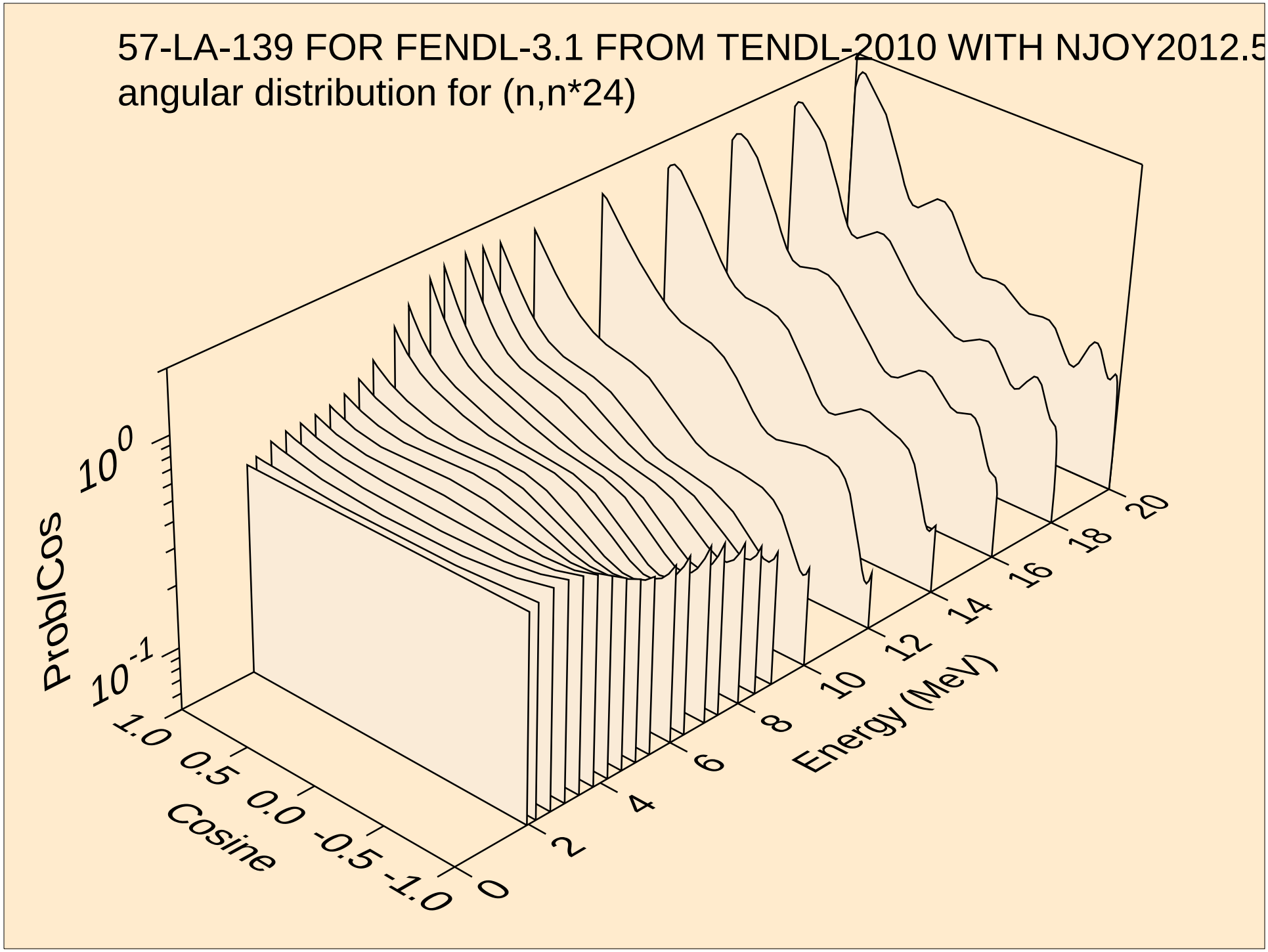

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
angular distribution for (n,n*21)
ProbCos
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
20
40
60
80
100
120
140
160
180
200
Energy (MeV)

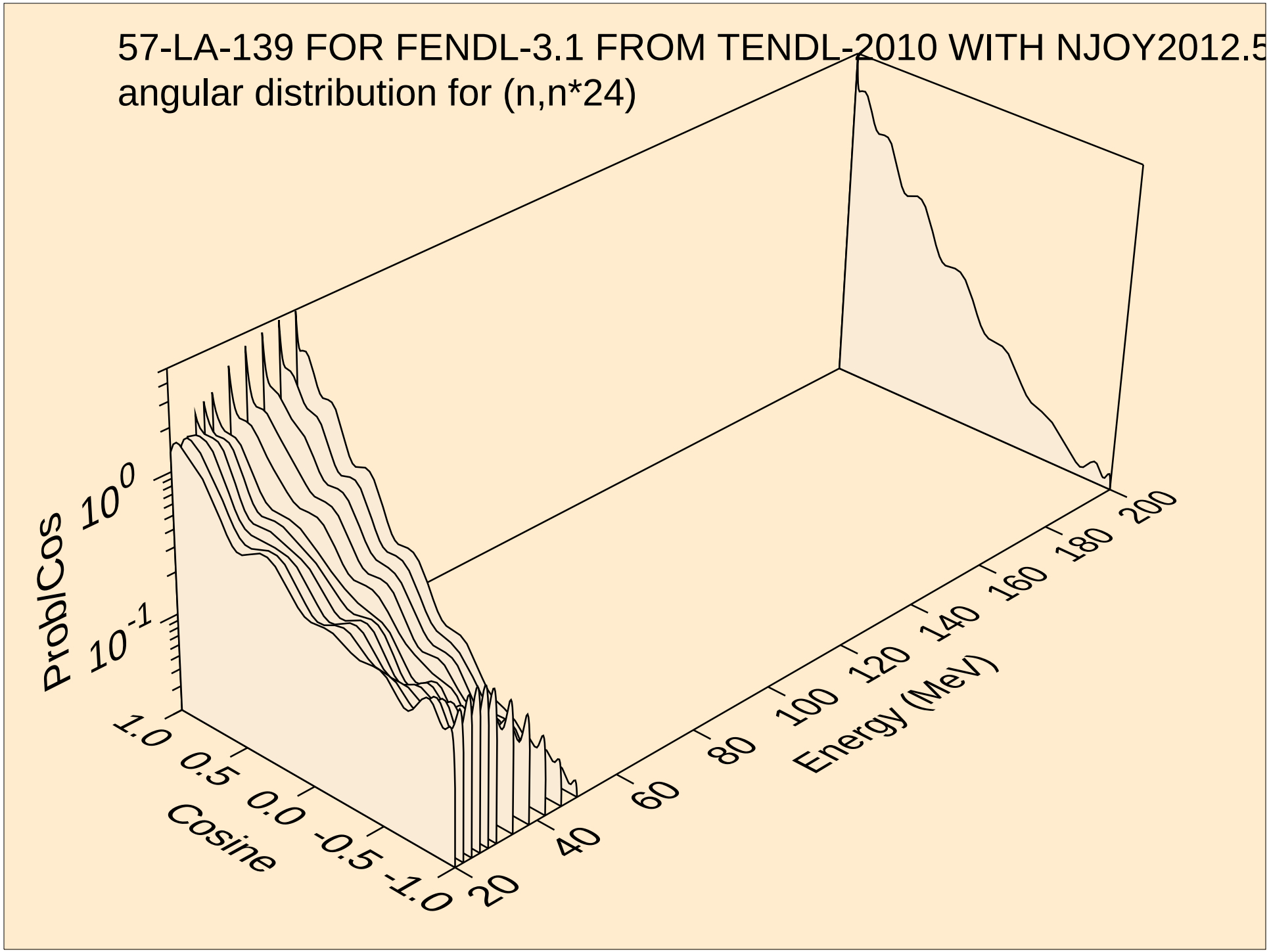

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
angular distribution for (n,n*22)
ProbICos
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

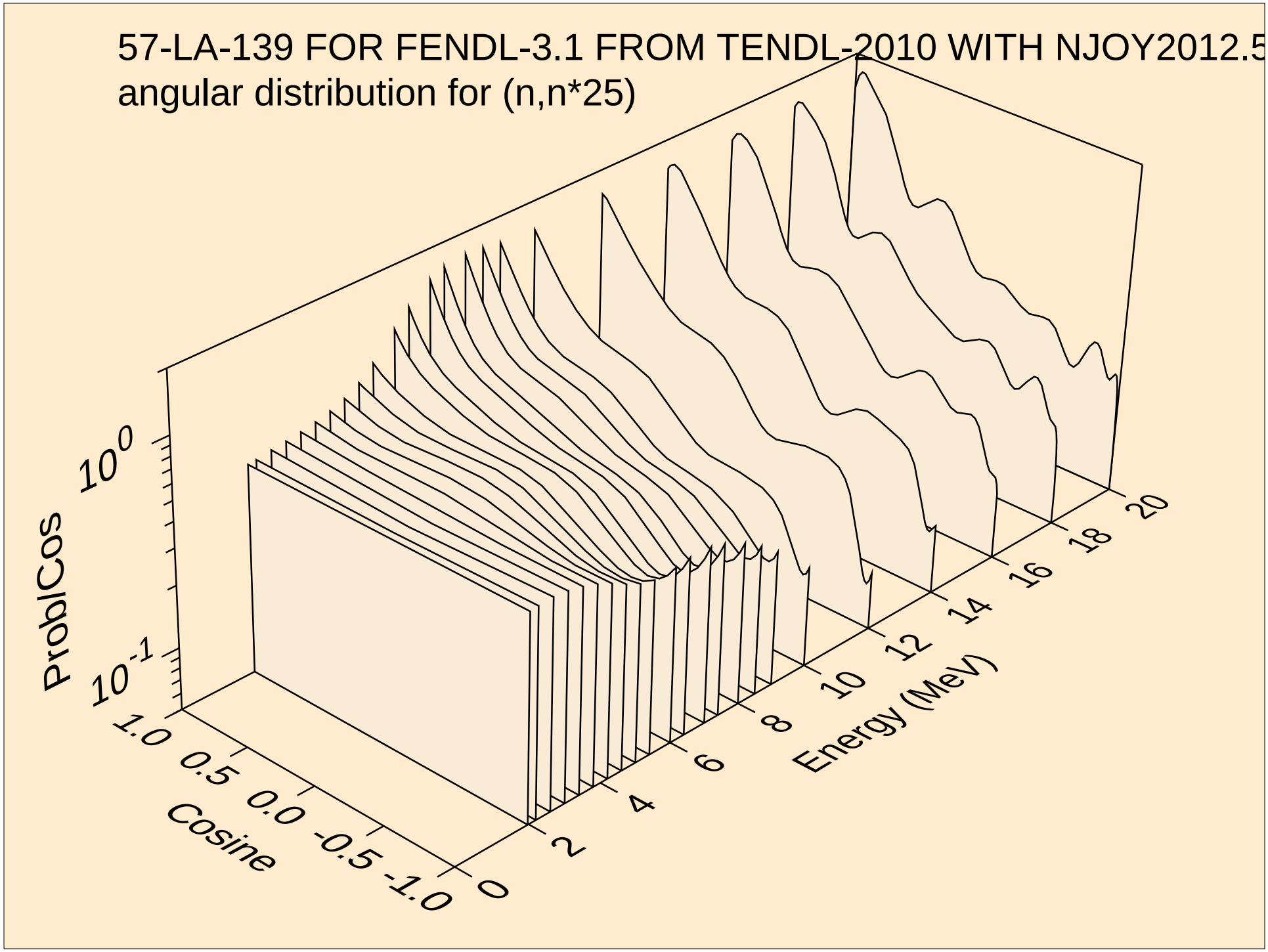

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
angular distribution for (n,n*22)
ProbICos
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
20
40
60
80
100
120
140
160
180
200
Energy (MeV)

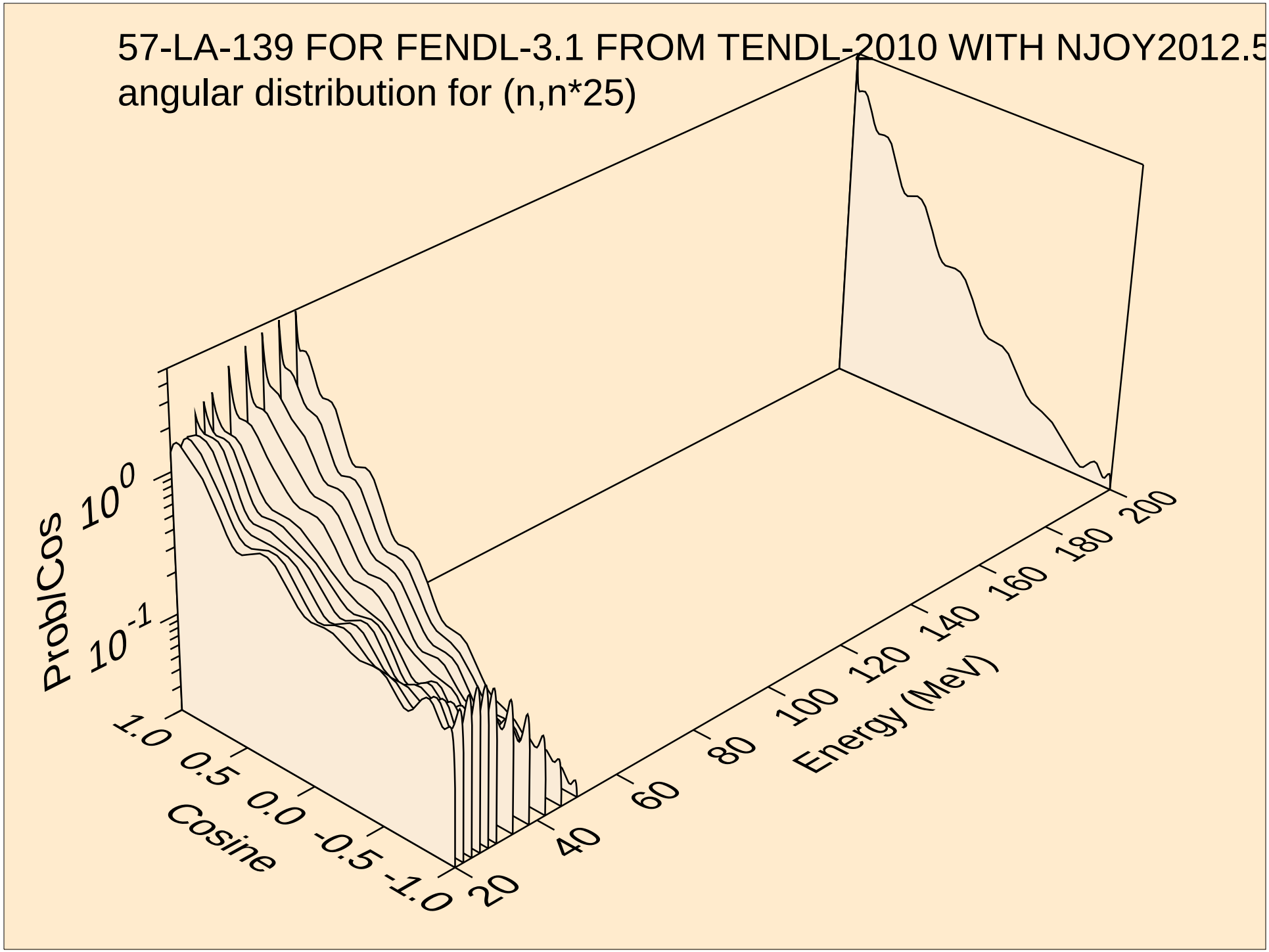

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
angular distribution for (n,n*23)
ProbICos
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

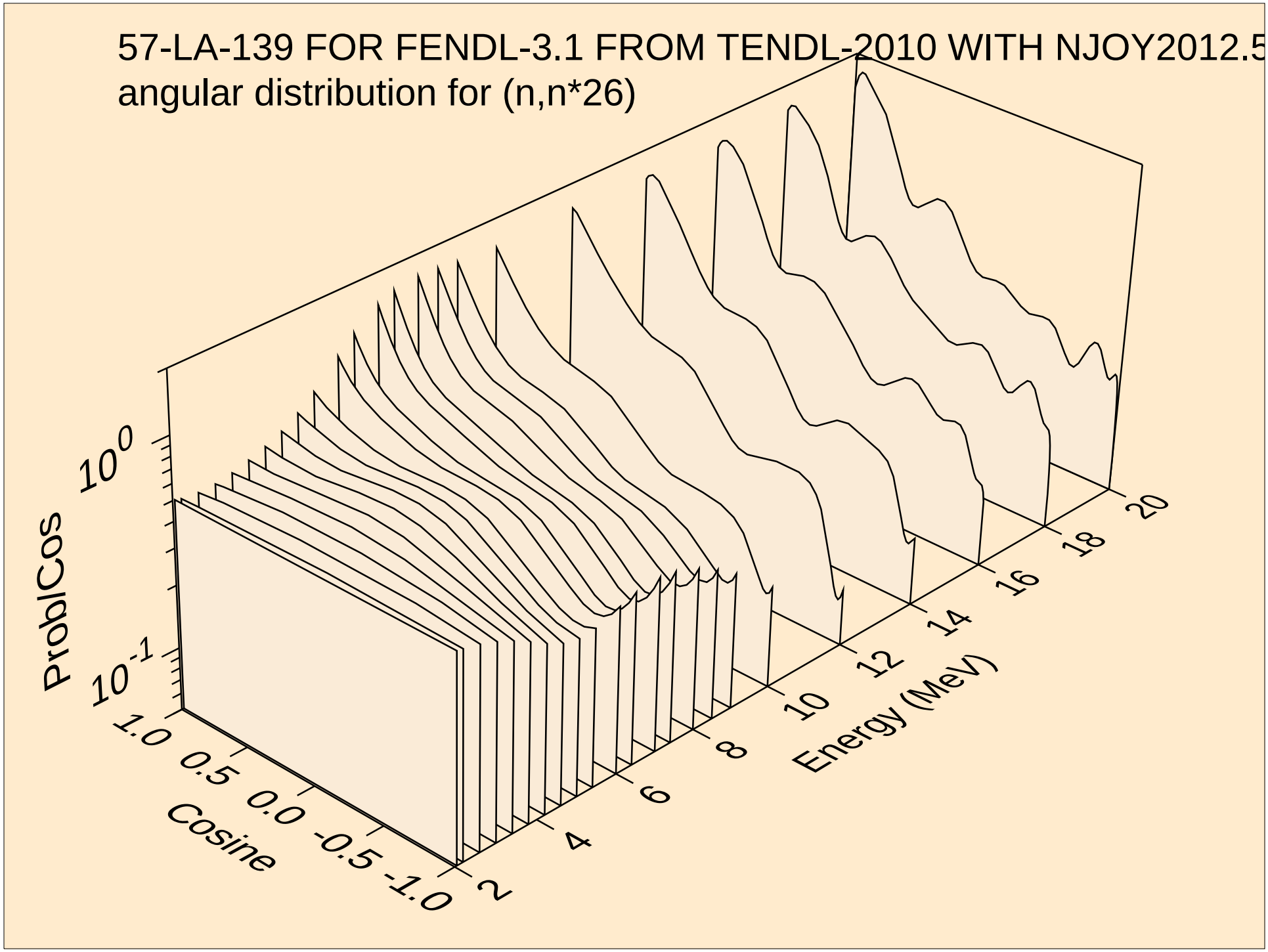

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
angular distribution for (n,n*23)
ProbICos
10^1
10^0
10^-1
1.0
0.5
0.0
-0.5
-1.0
Cosine
20
40
60
80
100
120
140
160
180
200
Energy (MeV)

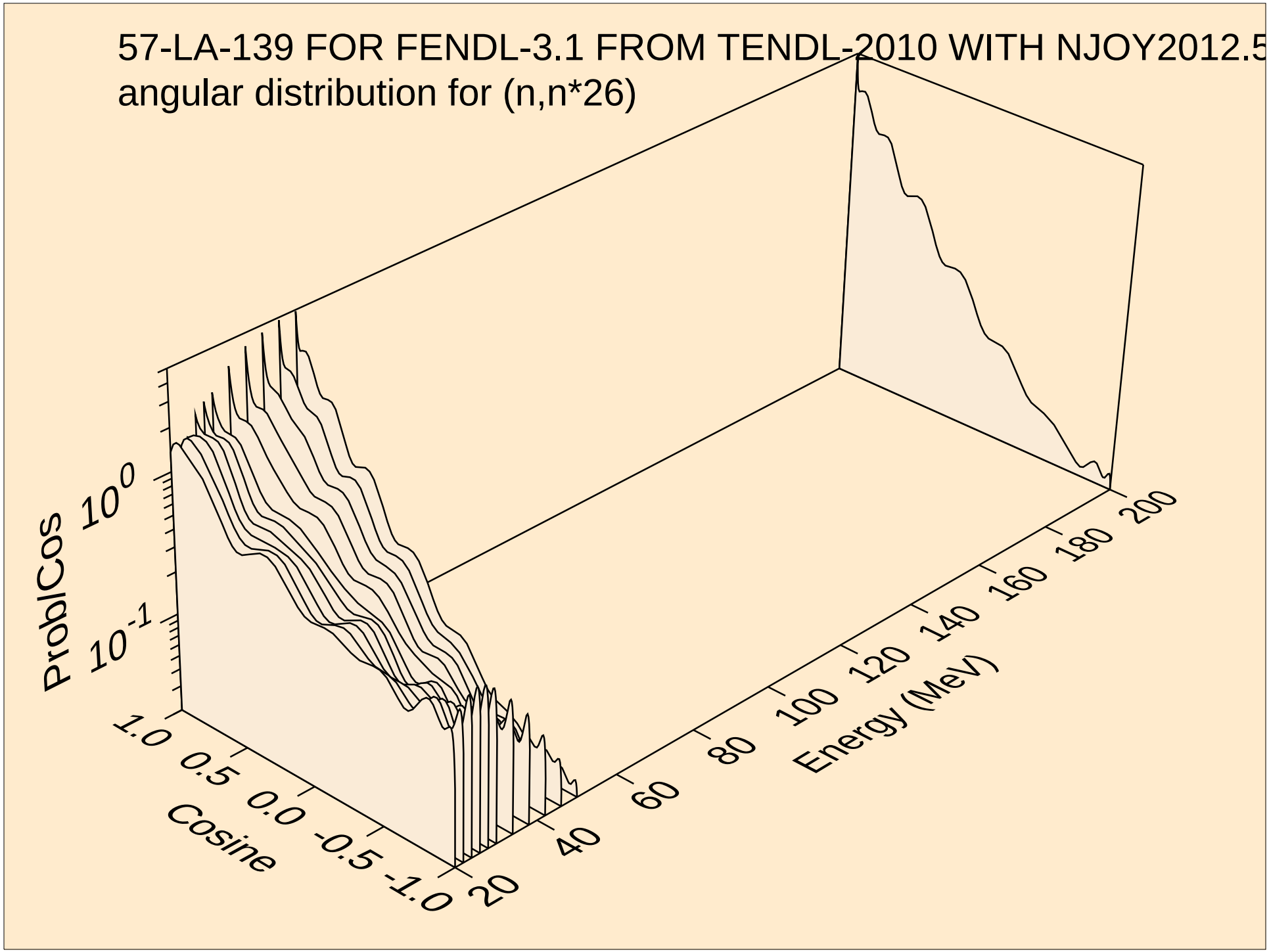

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
angular distribution for (n,n*24)
ProbICos
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

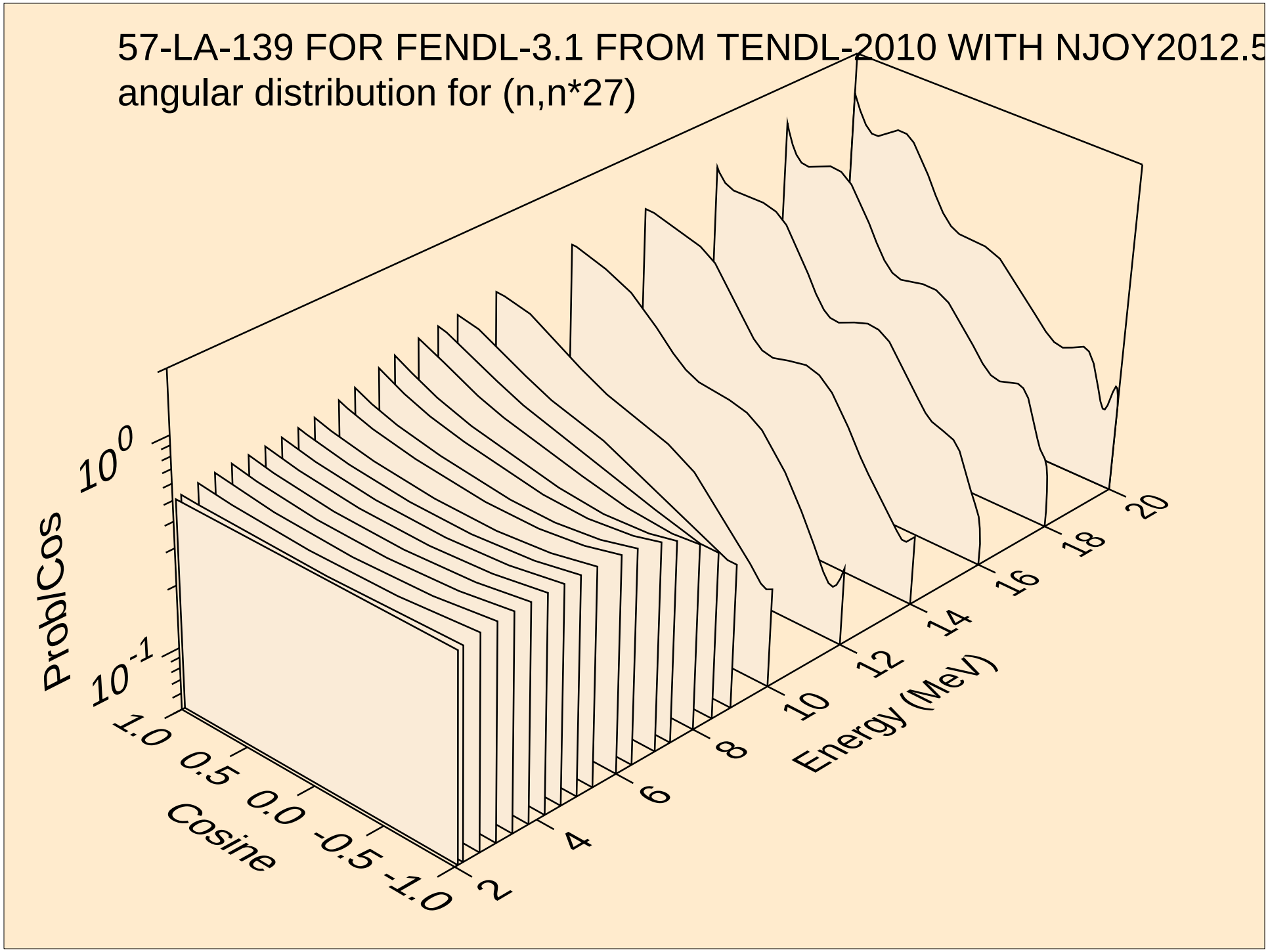

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
angular distribution for (n,n*24)
ProbICos
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
20
40
60
80
100
120
140
160
180
200
Energy (MeV)

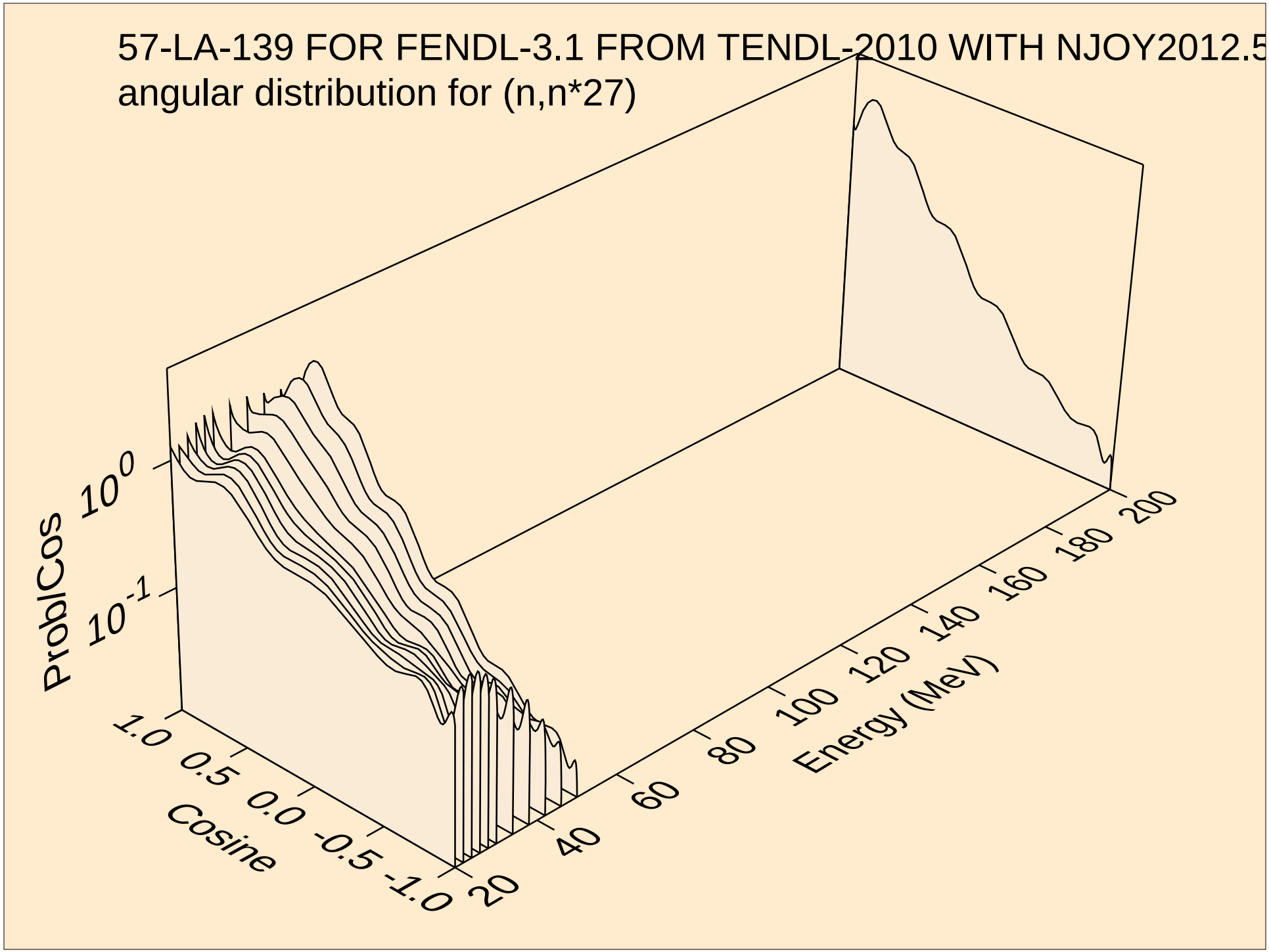

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
angular distribution for (n,n*25)
ProbICos
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

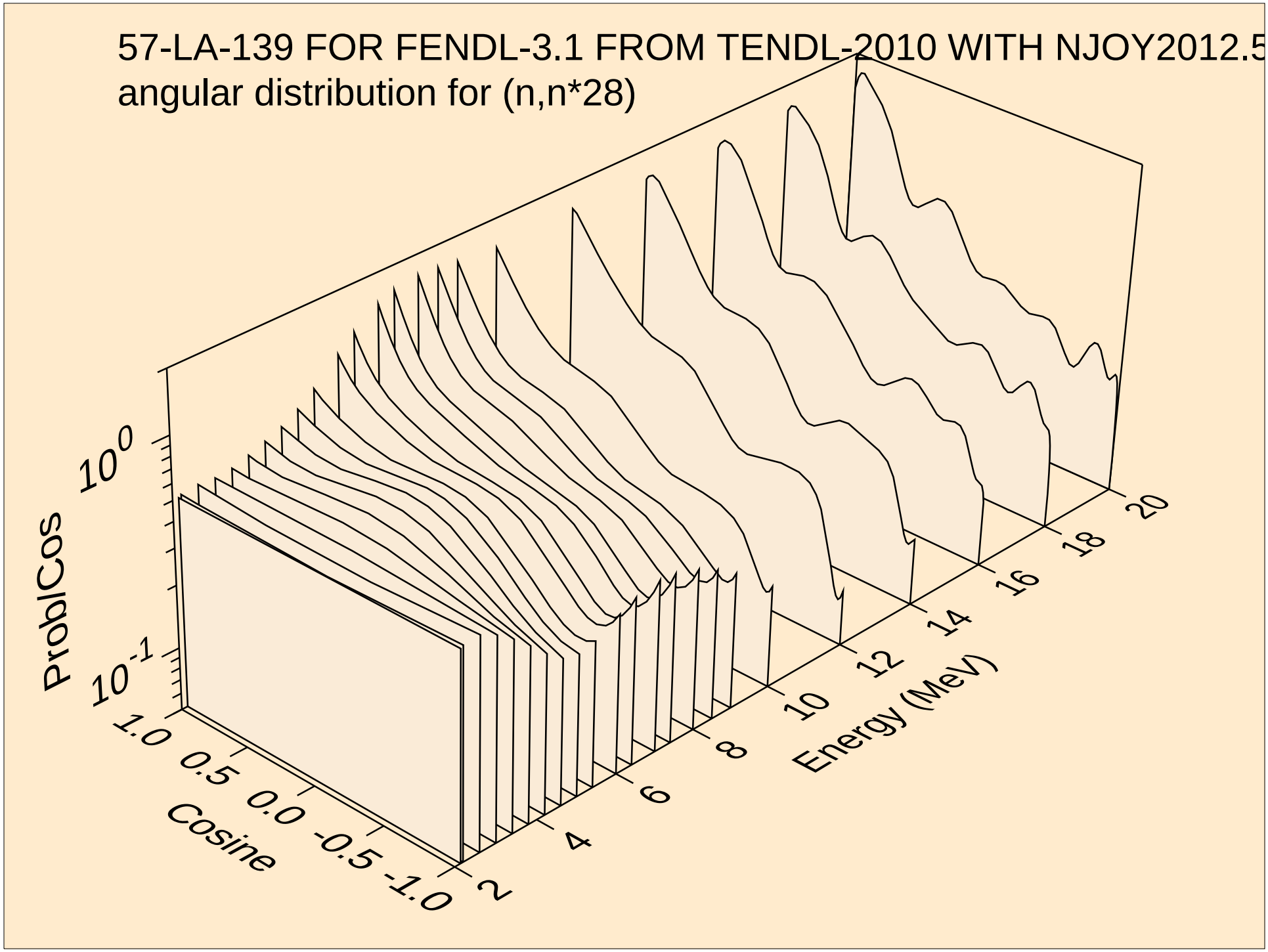

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
angular distribution for (n,n*25)
ProbICos
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
20
40
60
80
100
120
140
160
180
200
Energy (MeV)

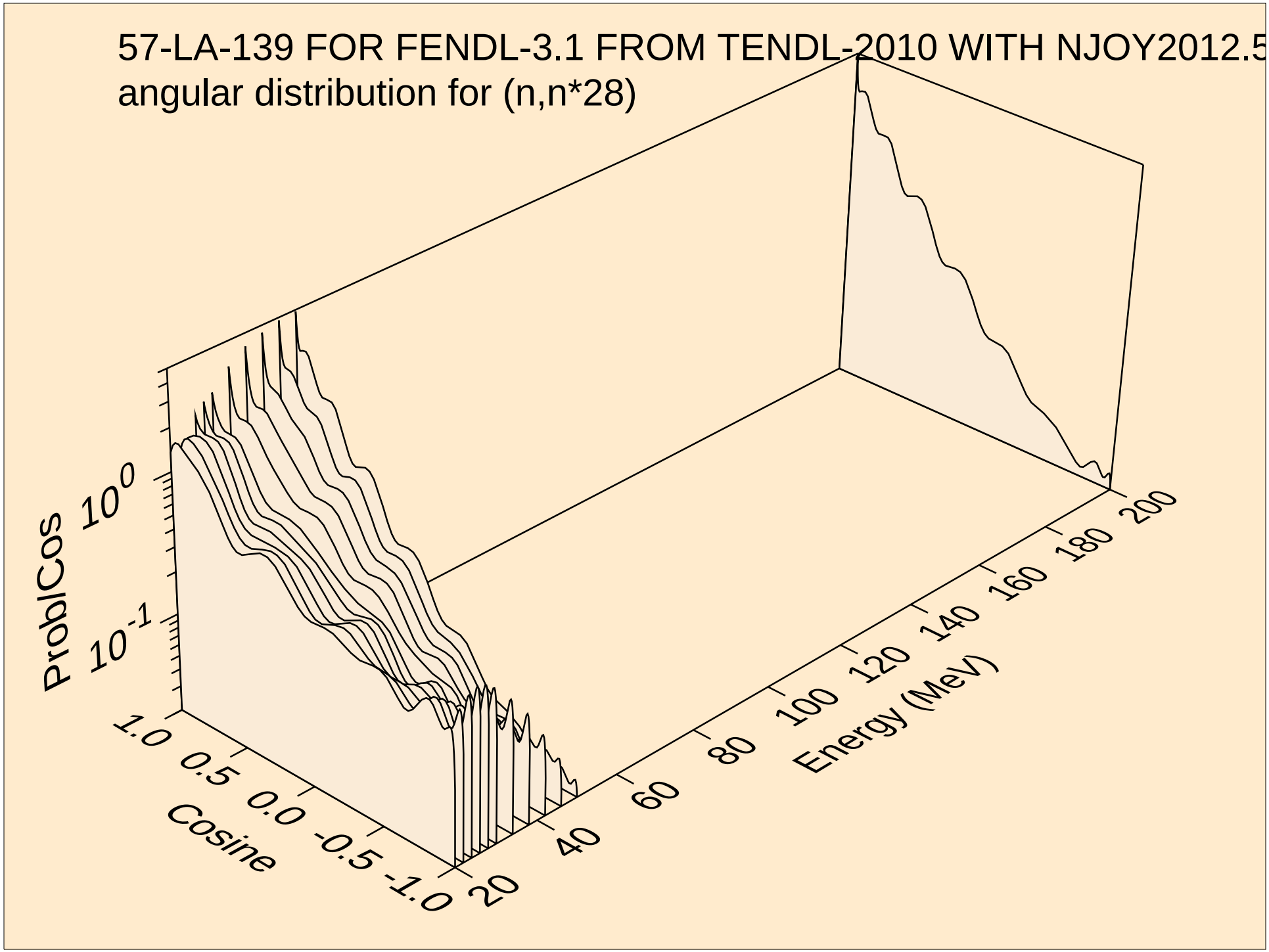

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
angular distribution for (n,n*26)
ProbICos
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

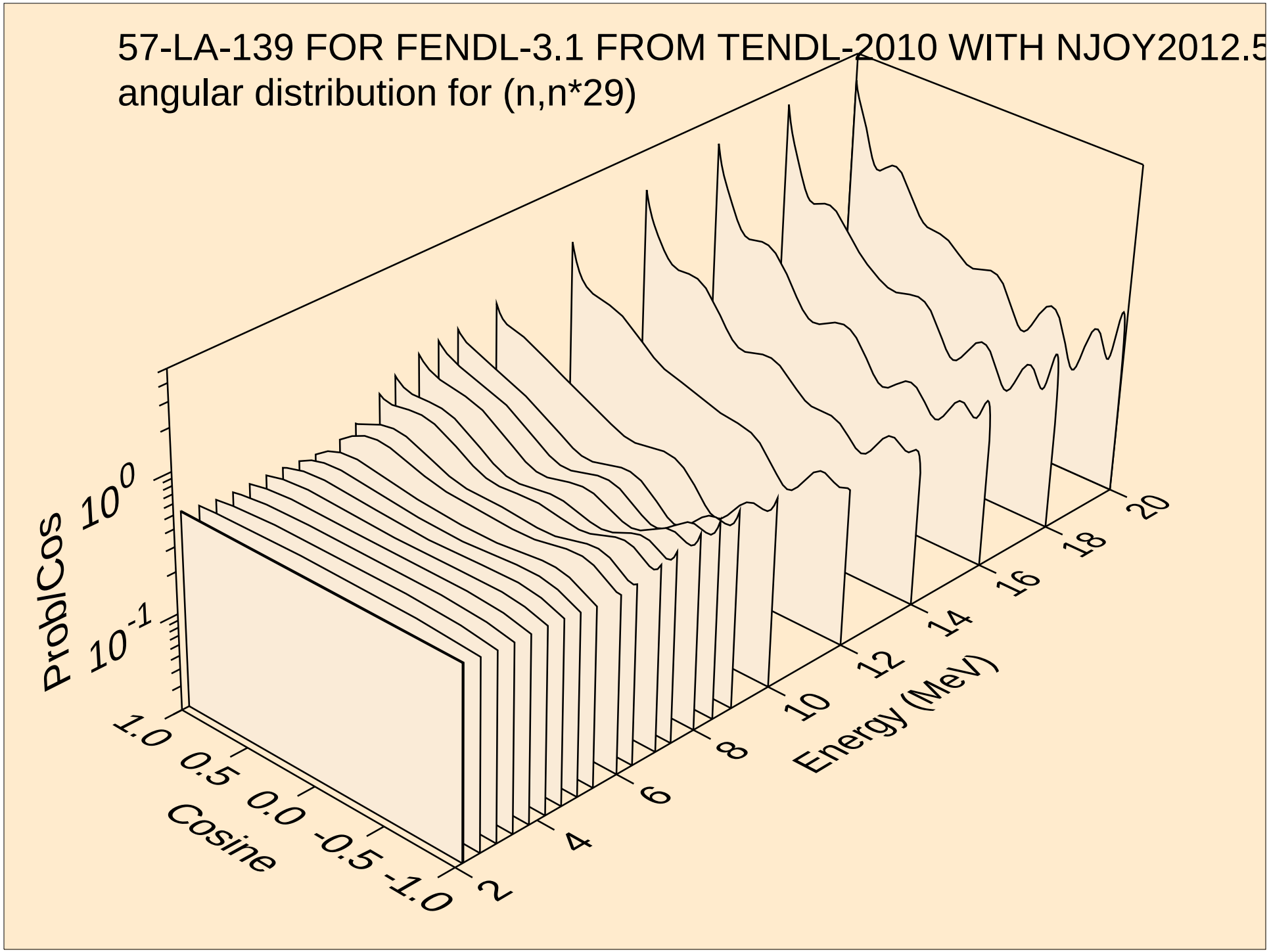

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
angular distribution for (n,n*26)
ProbICos
10^0
10^-1
1.0
0.5
0.0
-0.5
-1.0
Cosine
20
40
60
80
100
120
140
160
180
200
Energy (MeV)

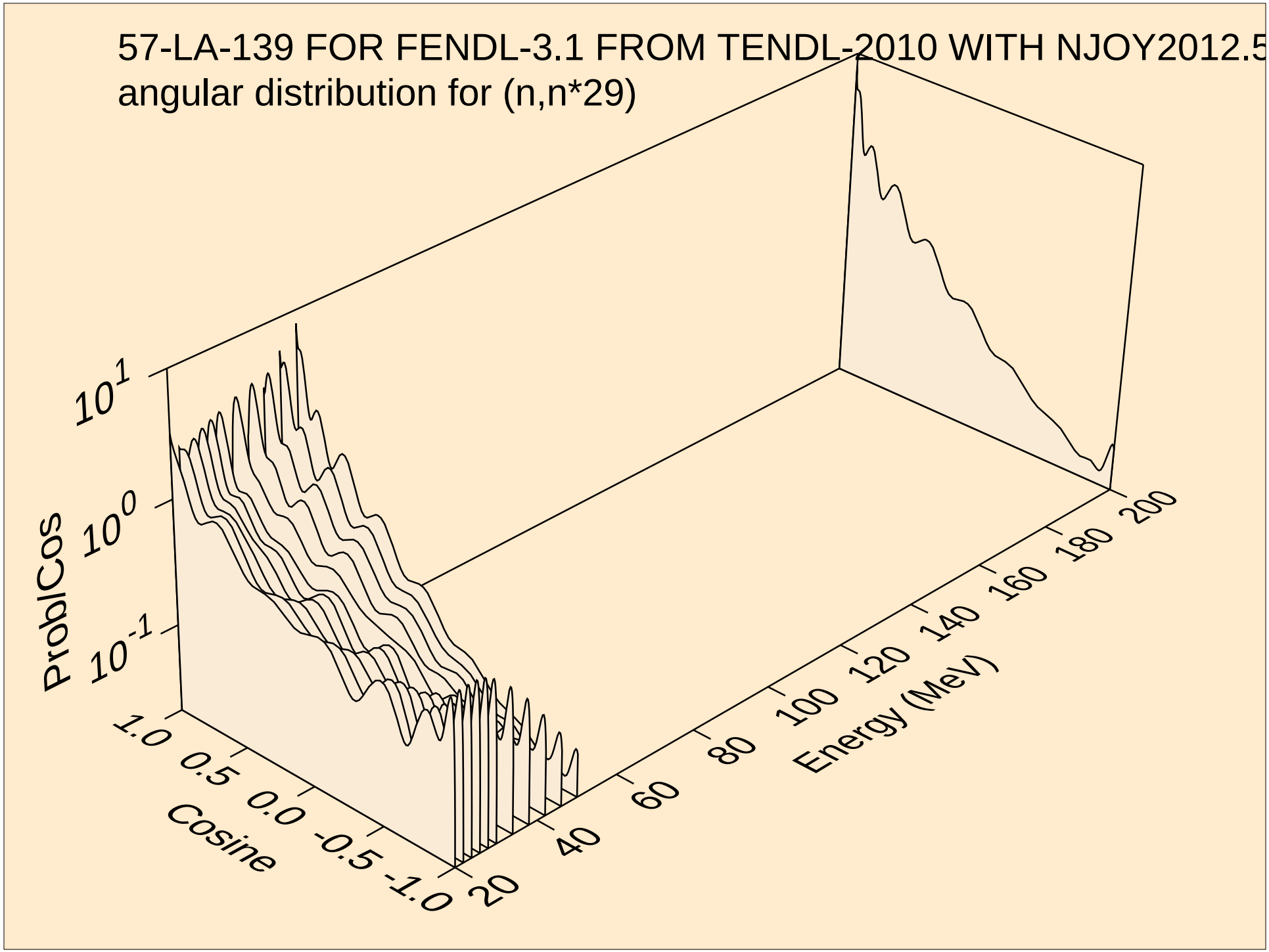

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
angular distribution for (n,n*27)
ProbICos
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

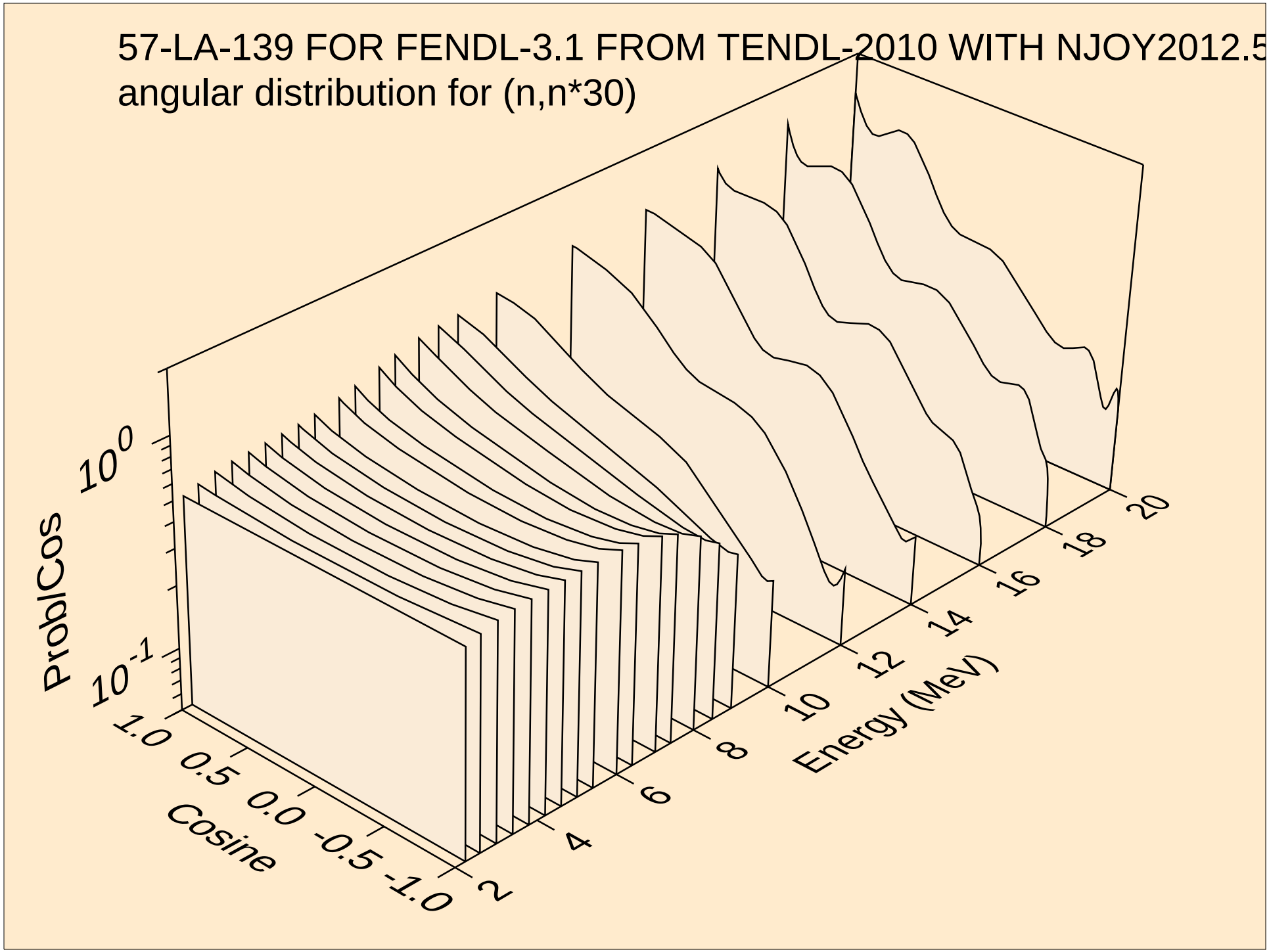

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
angular distribution for (n,n*27)
ProbCos
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
20
40
60
80
100
120
140
160
180
200
Energy (MeV)

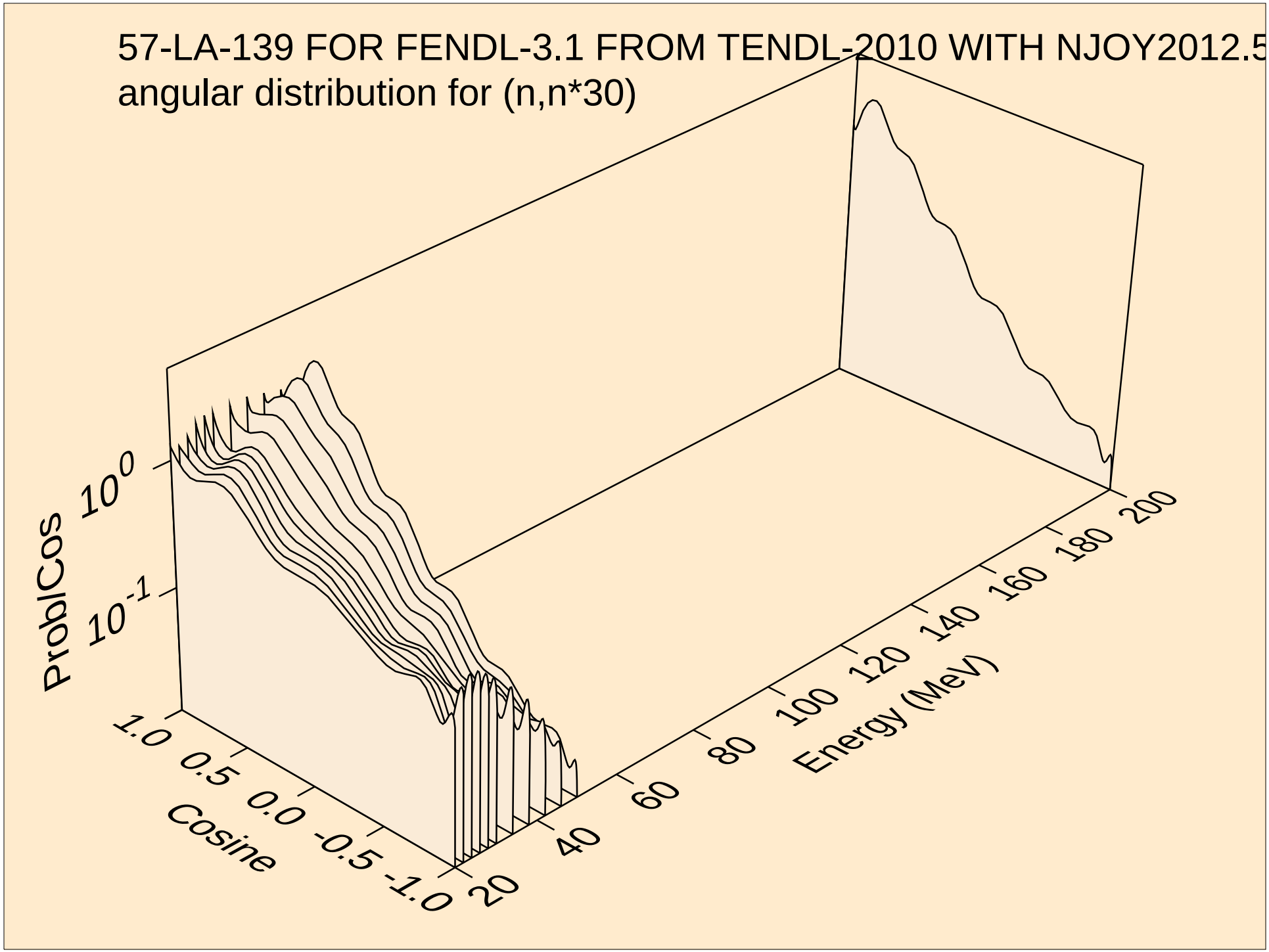

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
angular distribution for (n,n*28)
ProbICos
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

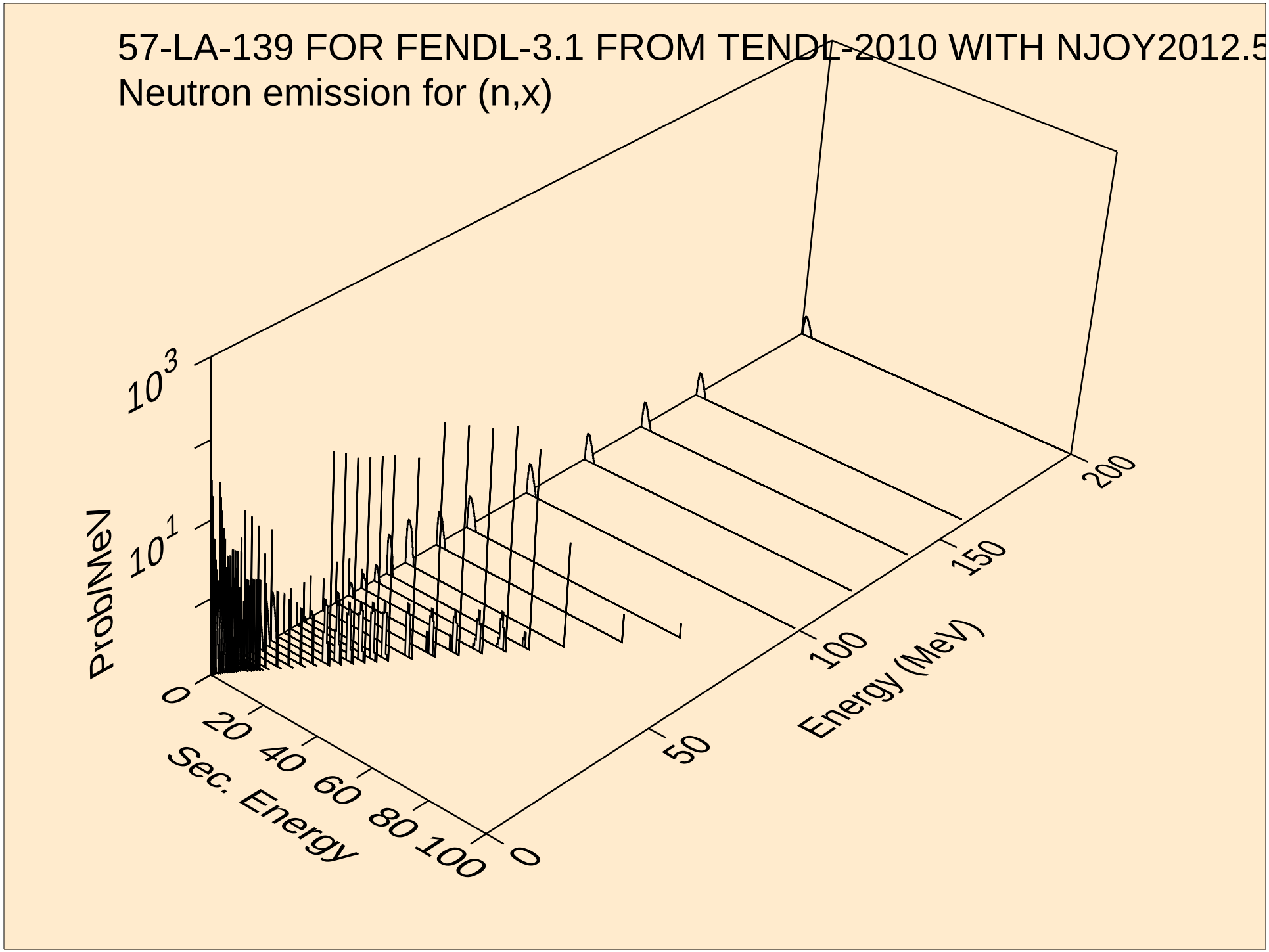

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
angular distribution for (n,n*28)
ProbICos
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
20
40
60
80
100
120
140
160
180
200
Energy (MeV)

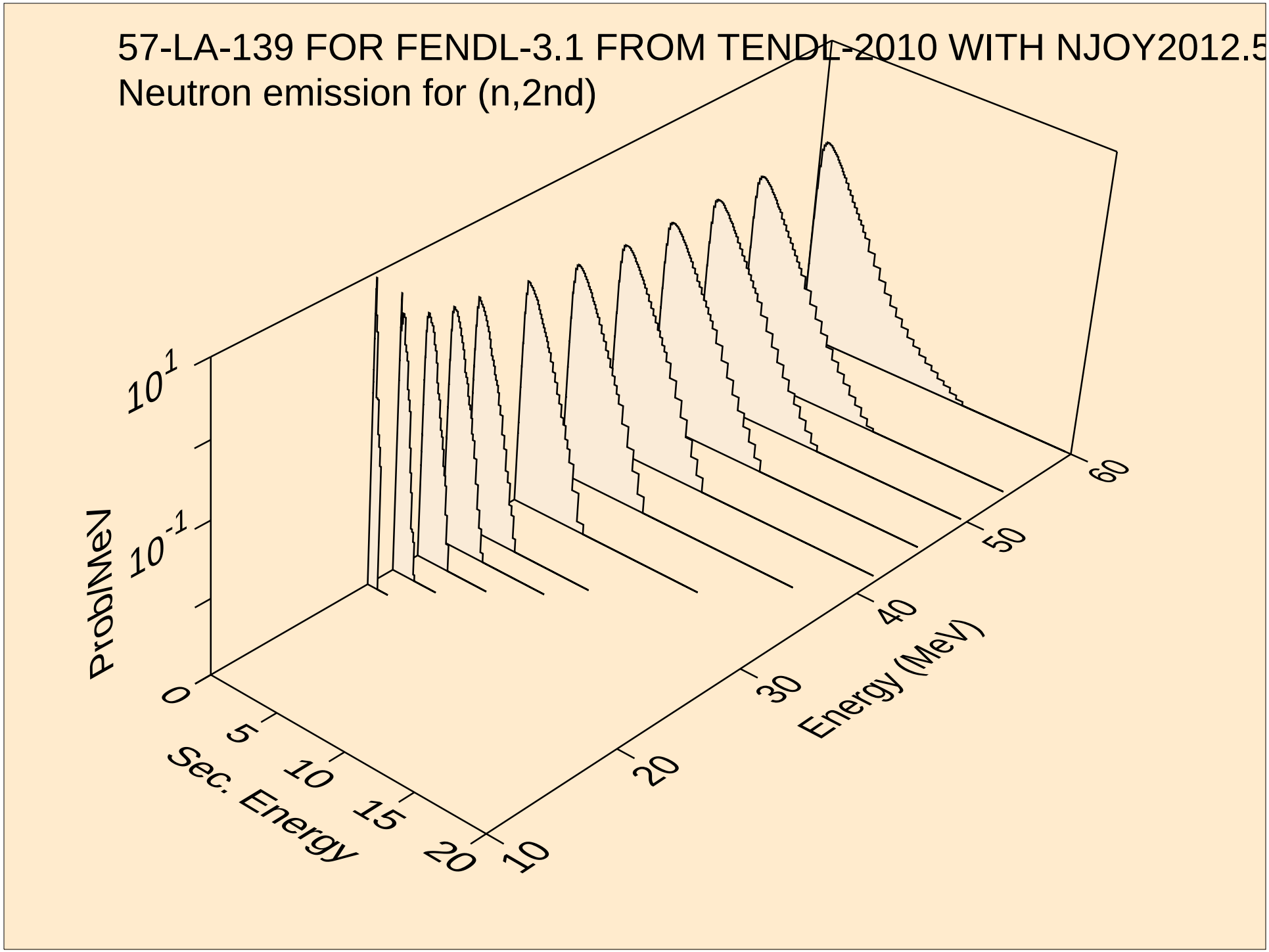

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
angular distribution for (n,n*29)
ProbICos
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

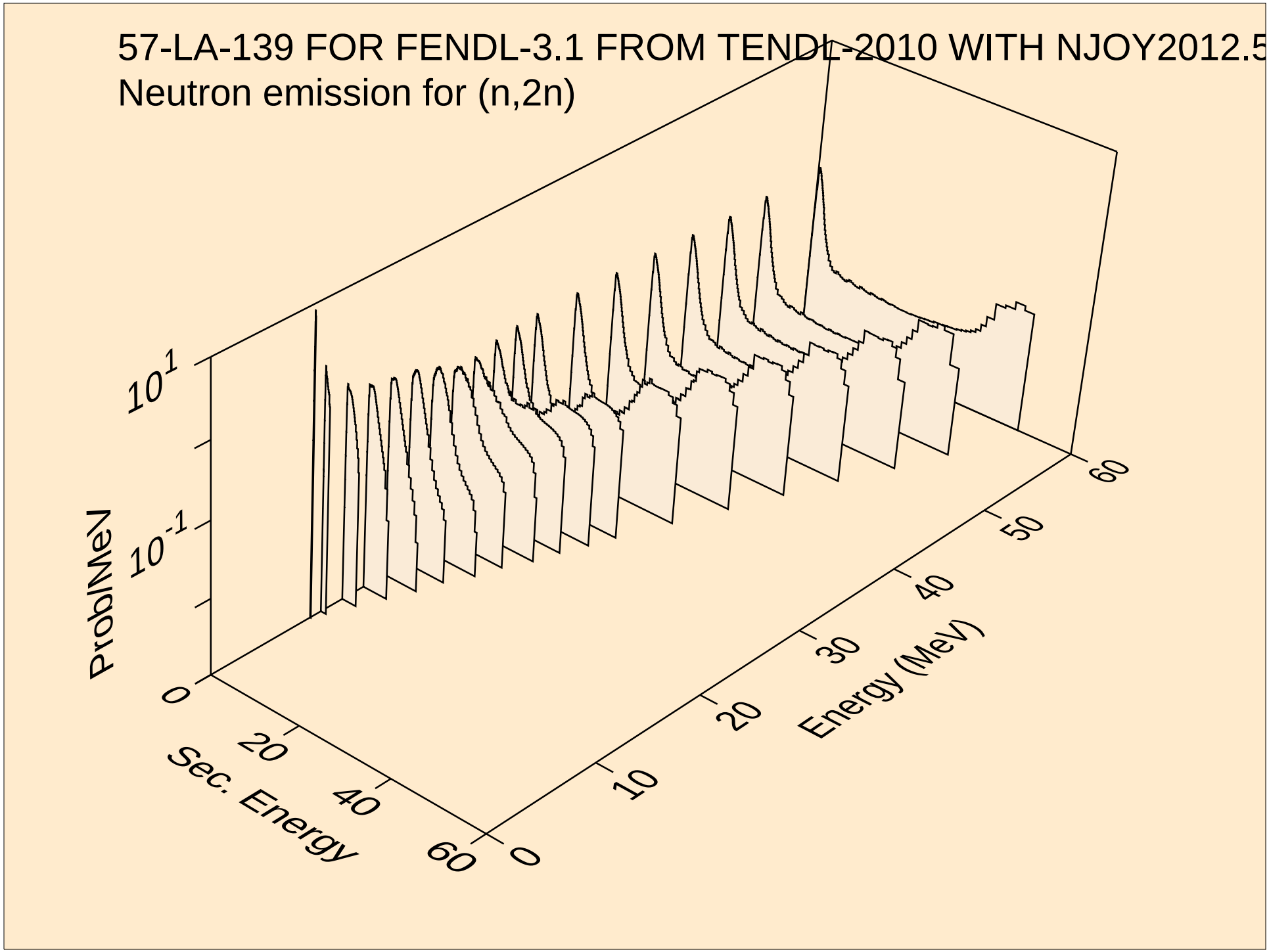

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
angular distribution for (n,n*29)
ProbICos
10^{1}
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
20
40
60
80
100
120
140
160
180
200
Energy (MeV)

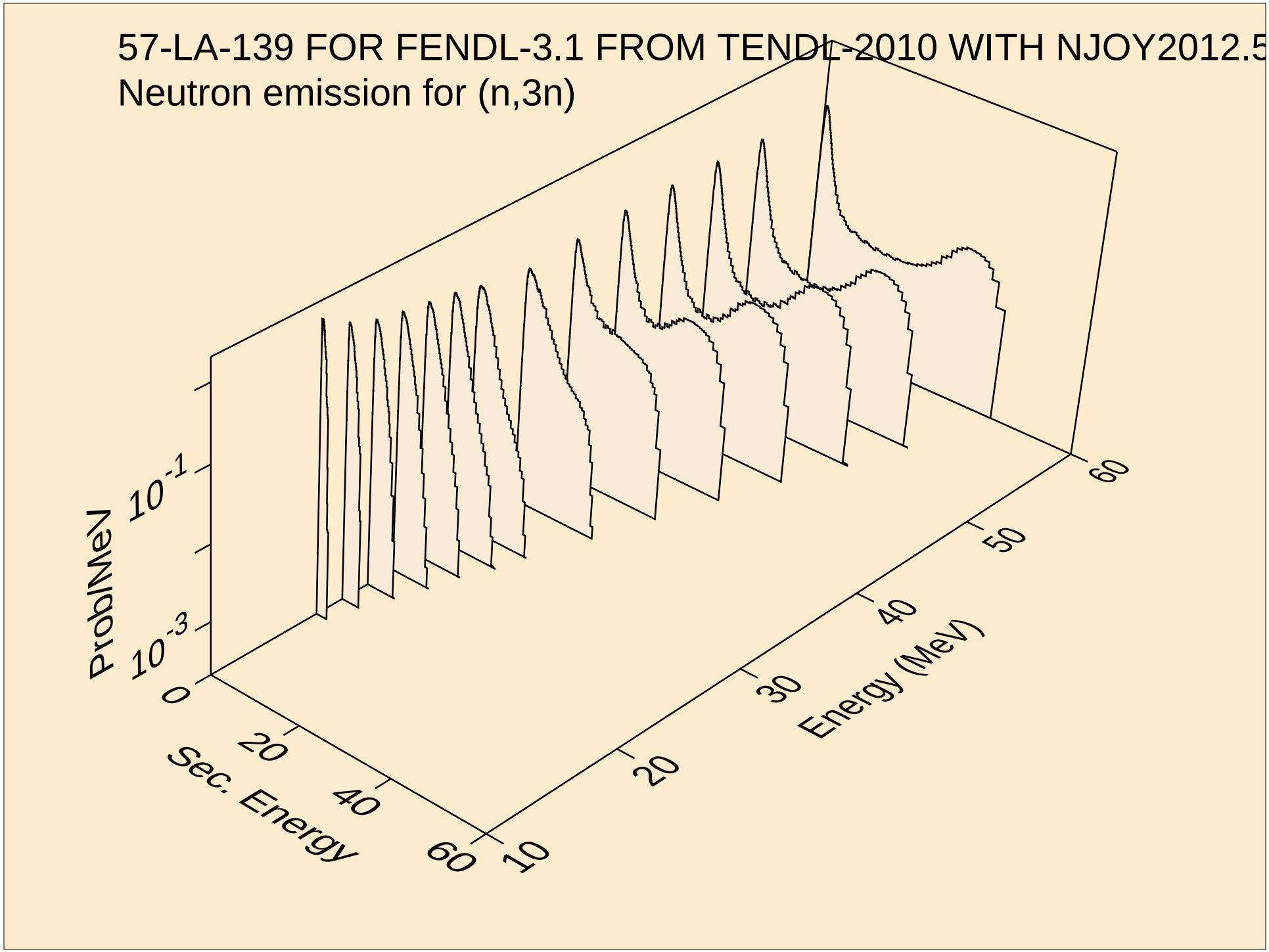

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
angular distribution for (n,n*30)
ProbCos
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

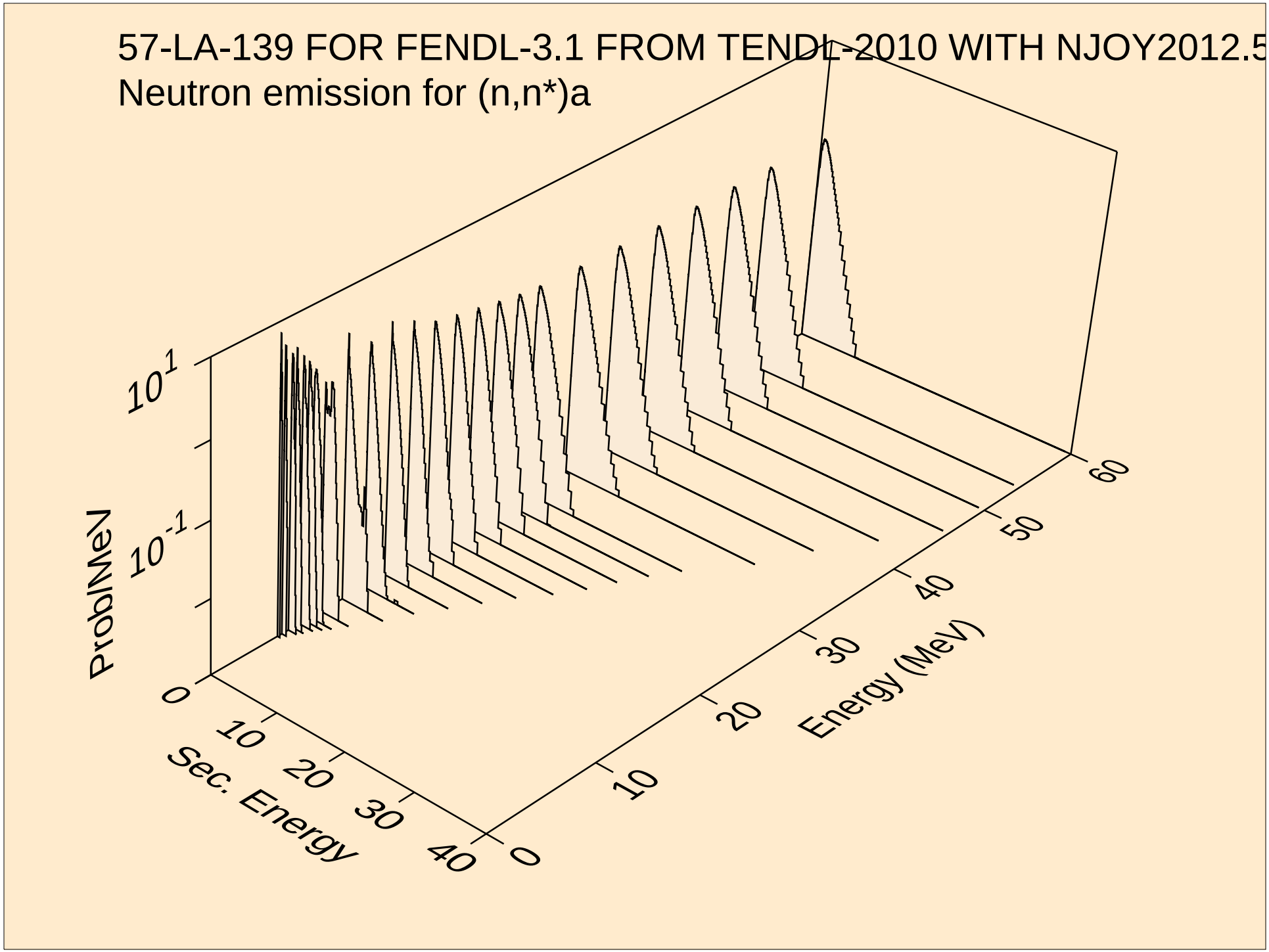

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
angular distribution for (n,n*30)
ProbICos
10^0
10^-1
1.0
0.5
0.0
-0.5
-1.0
Cosine
20
40
60
80
100
120
140
160
180
200
Energy (MeV)

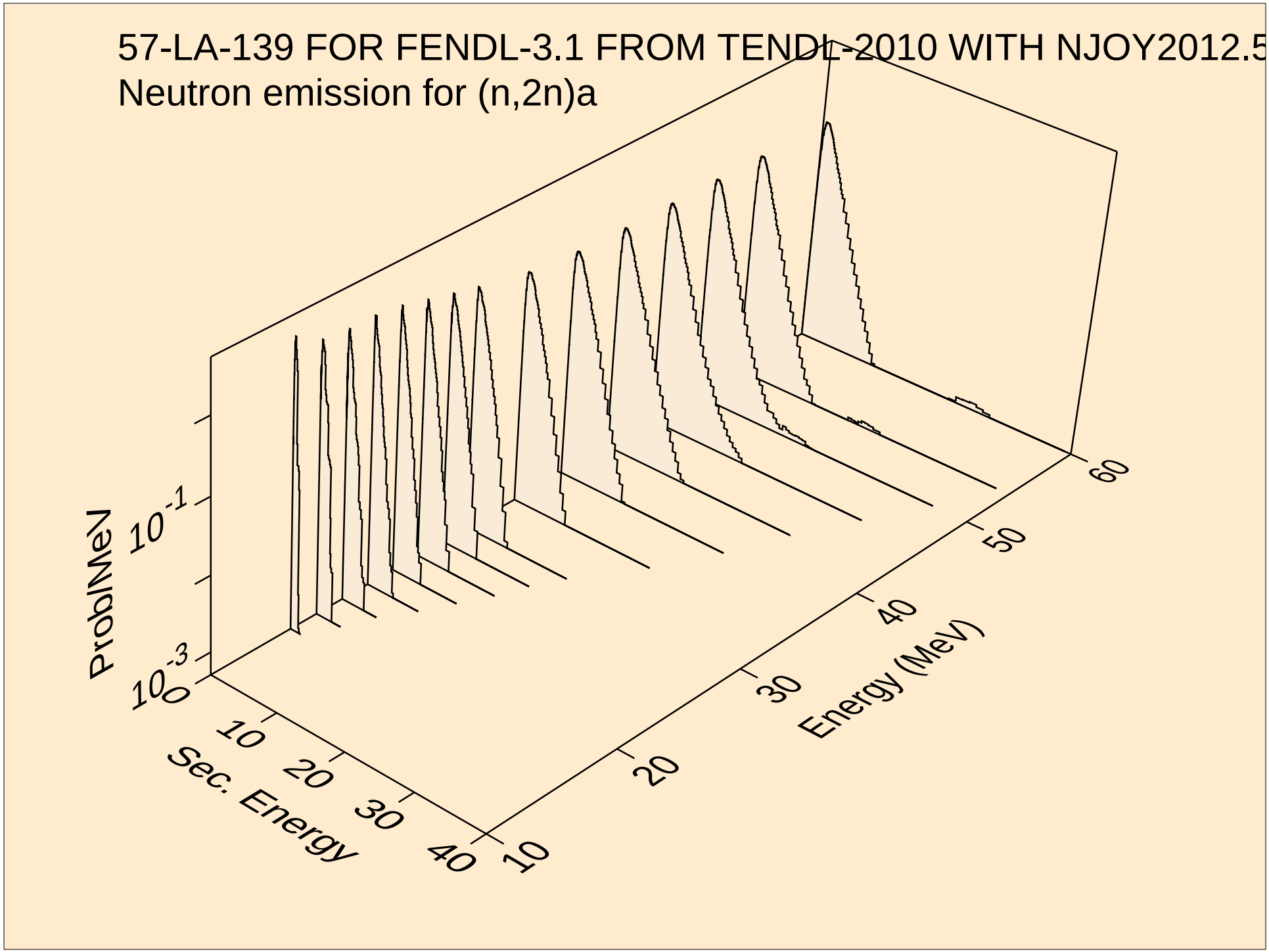

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Neutron emission for (n,x)
Prob/MeV
10^3
10^1
0
20
40
60
80
100
Sec. Energy
0
50
100
150
200
Energy (MeV)

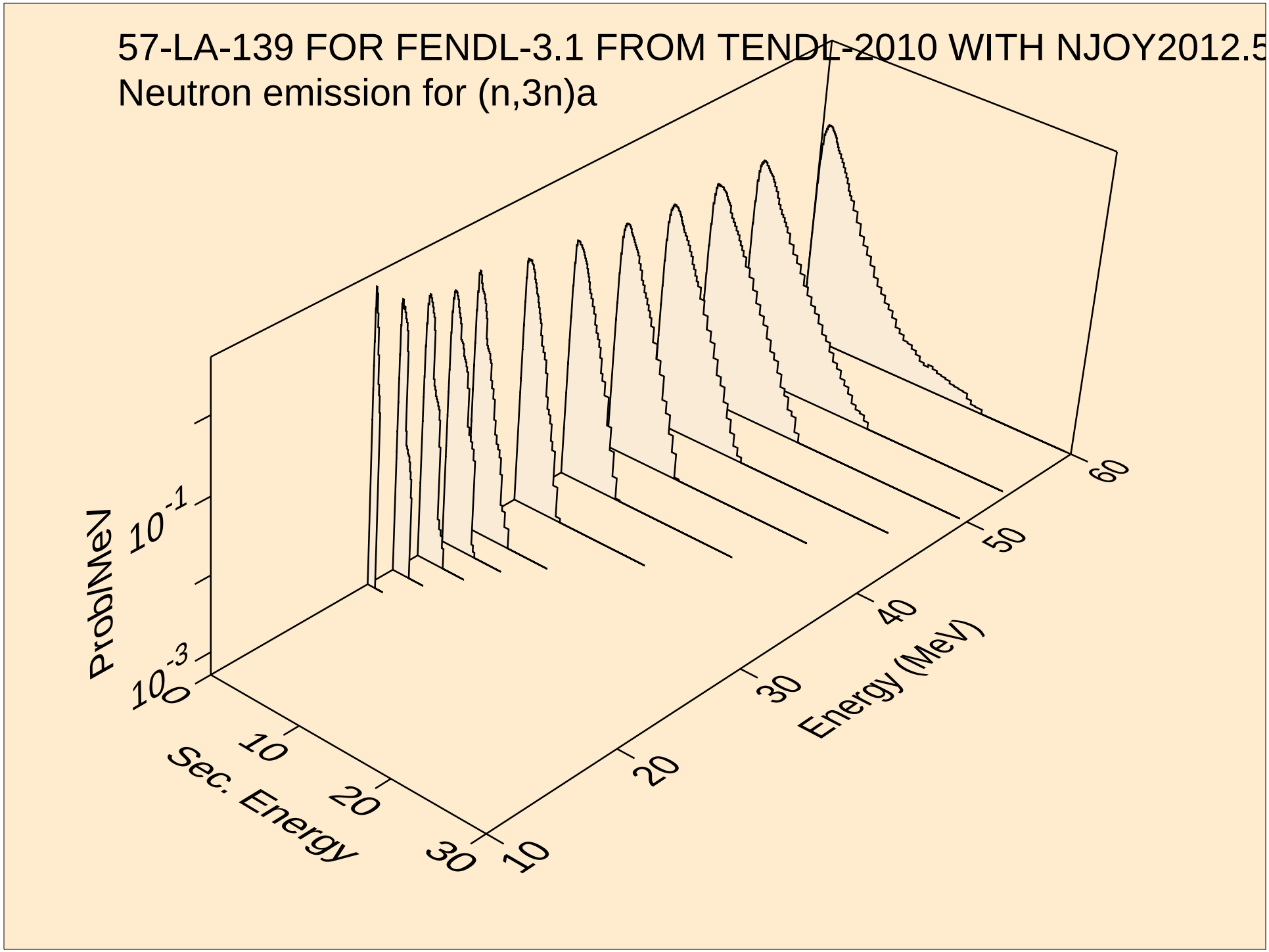

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Neutron emission for (n,2nd)
Prob/MeV
10^1
10^-1
0
5
10
15
20
Sec. Energy
10
20
30
40
50
60
Energy (MeV)

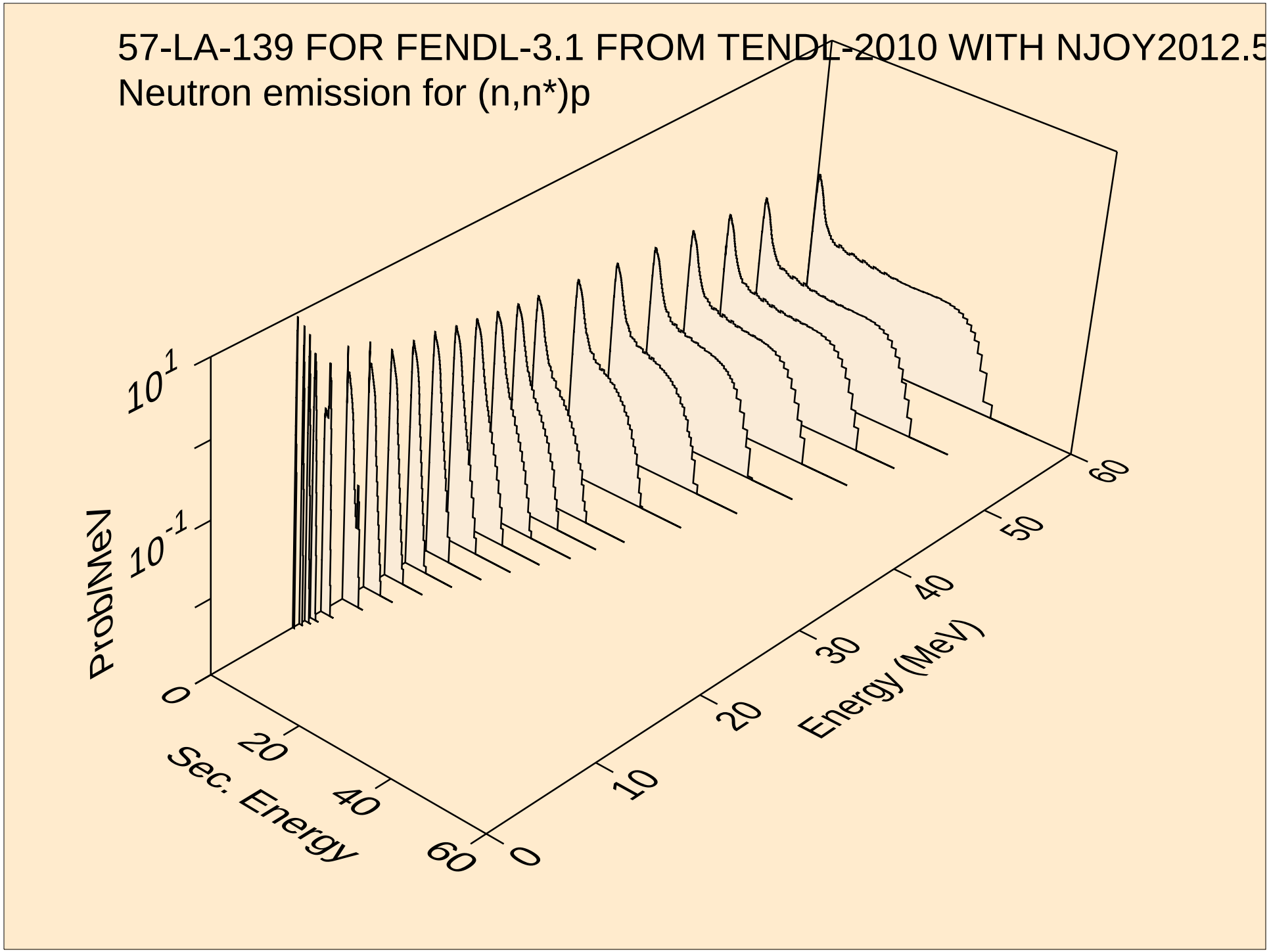

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Neutron emission for (n,2n)
Prob/MeV
10^1
10^-1
0
Sec. Energy
20
40
60
0
10
20
30
40
50
60
Energy (MeV)

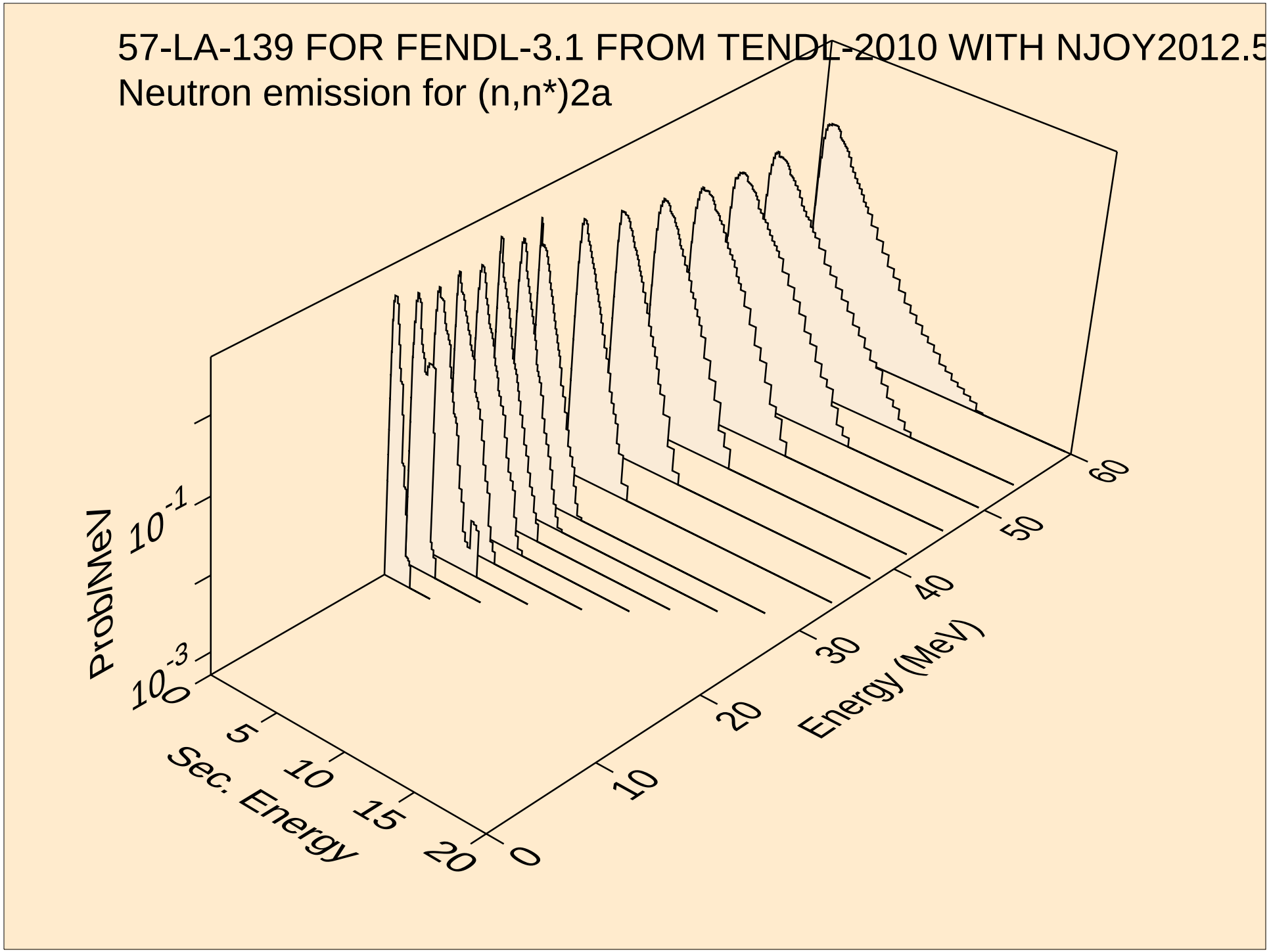

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Neutron emission for (n,3n)
Prob/MeV
10-1
10-3
0
Sec. Energy
20
40
60
10
20
30
40
50
60
Energy (MeV)

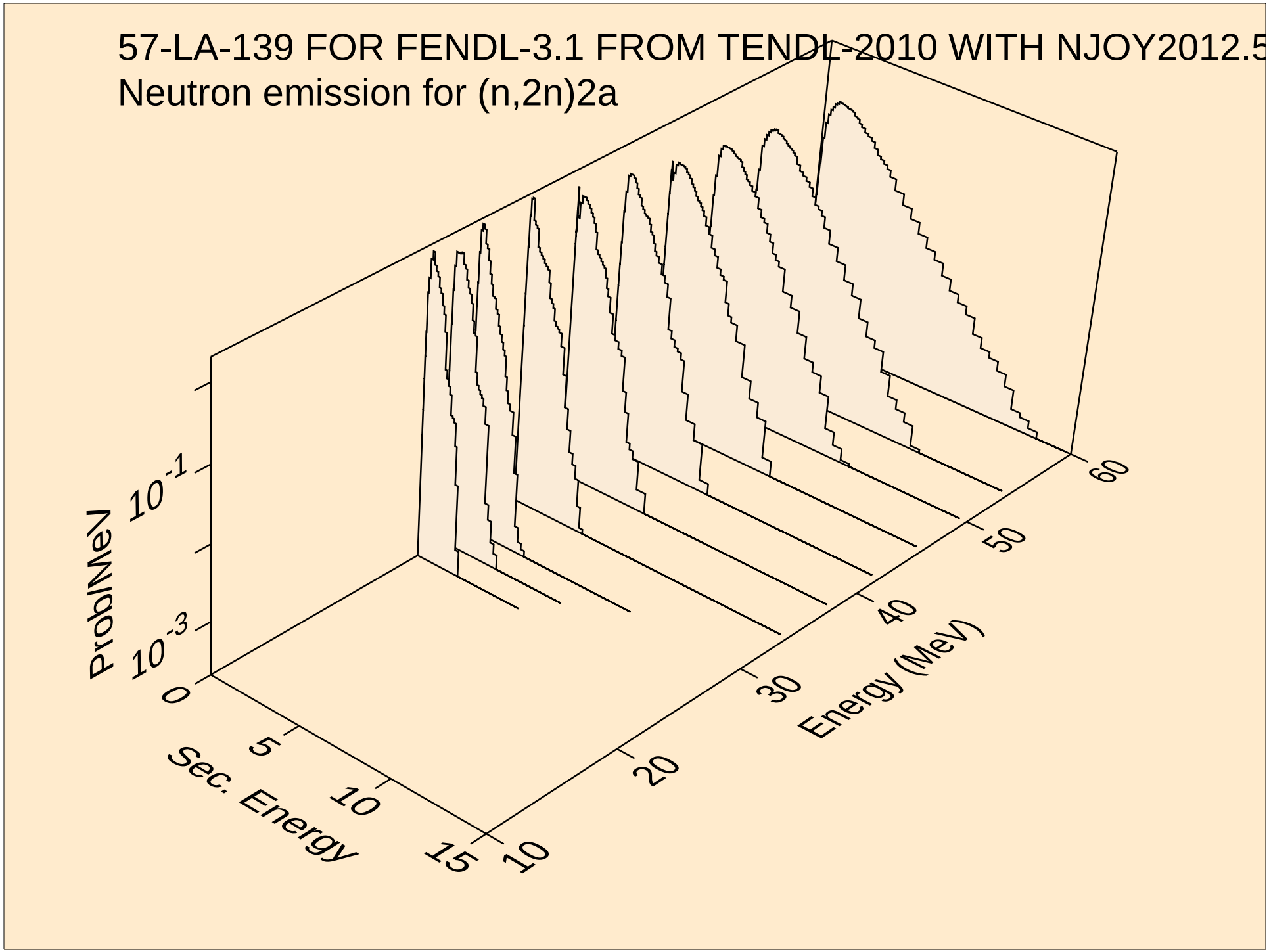

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Neutron emission for (n,n*)a
Prob/MeV
10^1
10^-1
0
Sec. Energy
10
20
30
40
0
10
20
30
40
50
60
Energy (MeV)

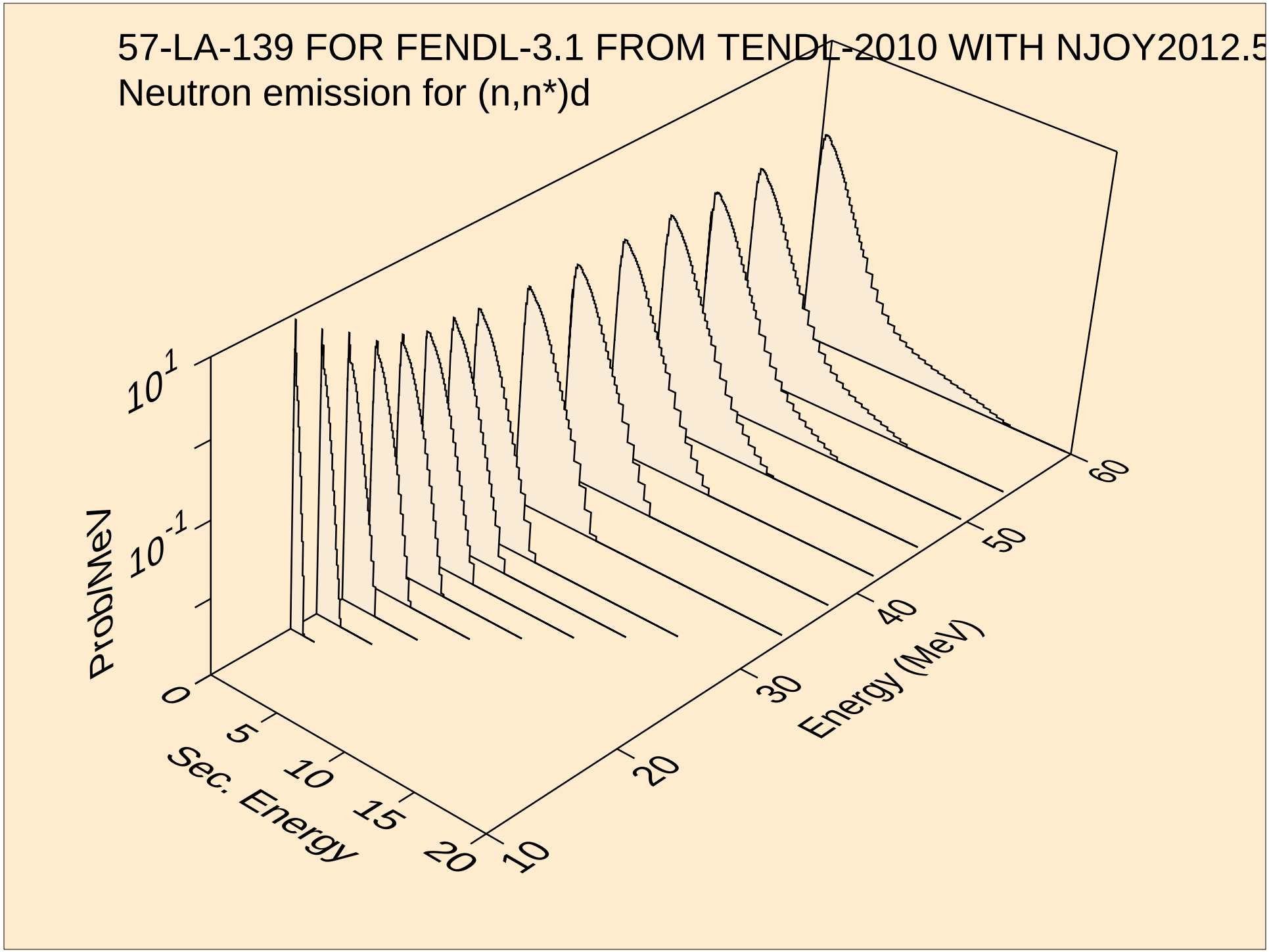

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Neutron emission for (n,2n)a
Prob/MeV
10-1
10-3
0
10
20
30
40
Sec. Energy
10
20
30
40
50
60
Energy (MeV)

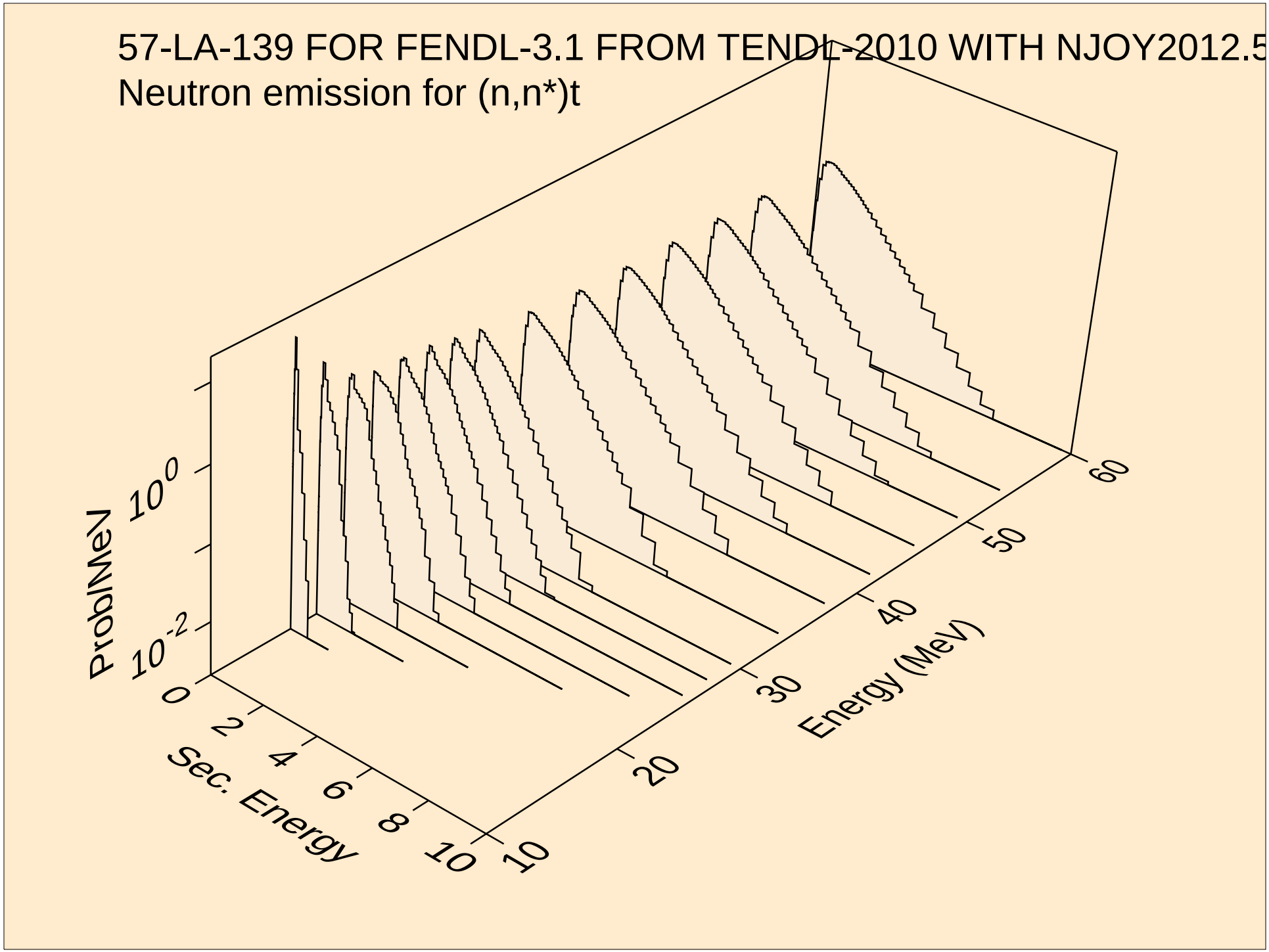

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Neutron emission for (n,3n)a
Prob/MeV
10-1
10-3
0
10
20
30
Sec. Energy
10
20
30
40
50
60
Energy (MeV)

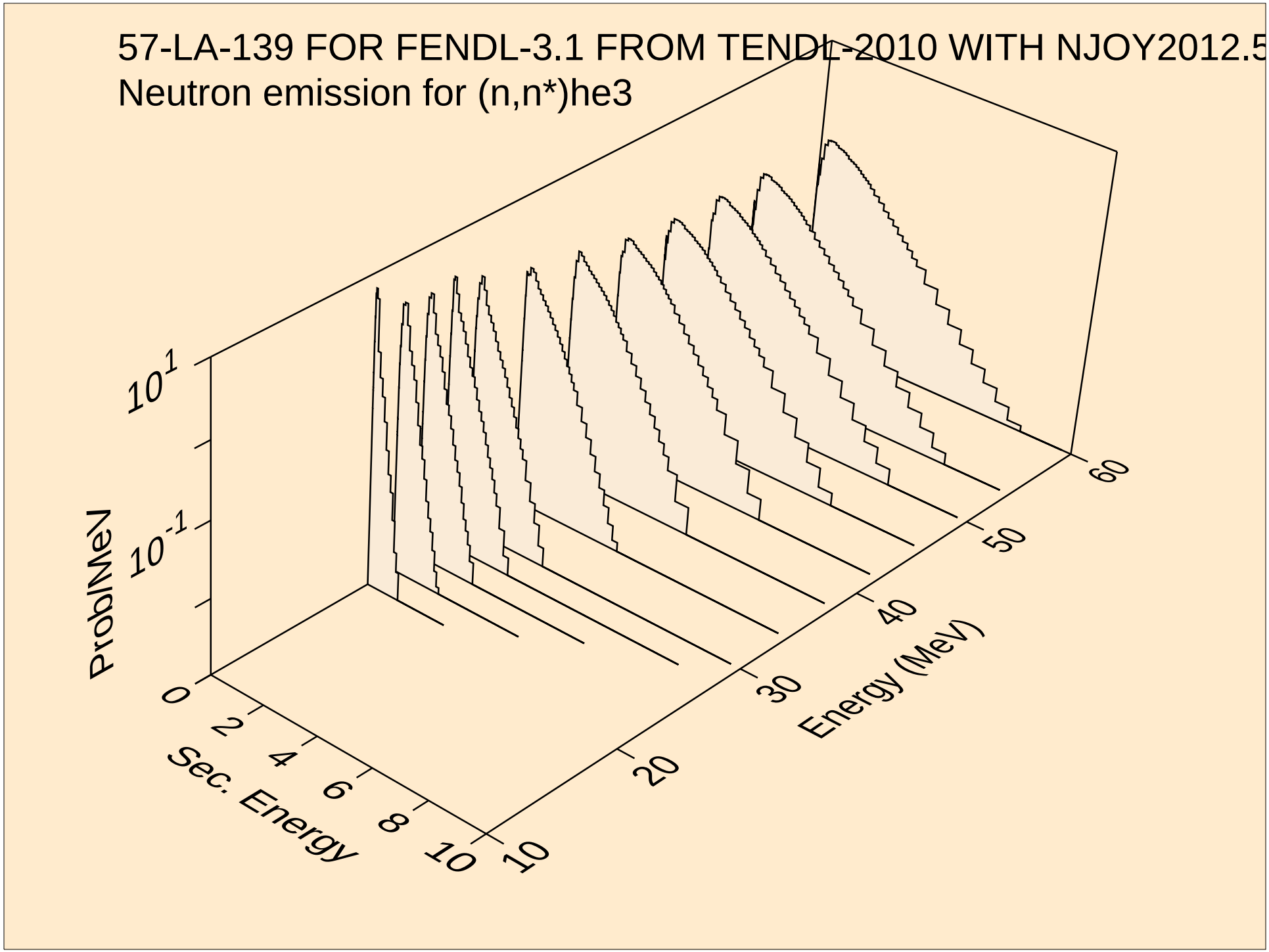

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Neutron emission for (n,n*)p
Prob/MeV
10^1
10^-1
0
Sec. Energy
20
40
60
0
10
20
30
40
50
60
Energy (MeV)

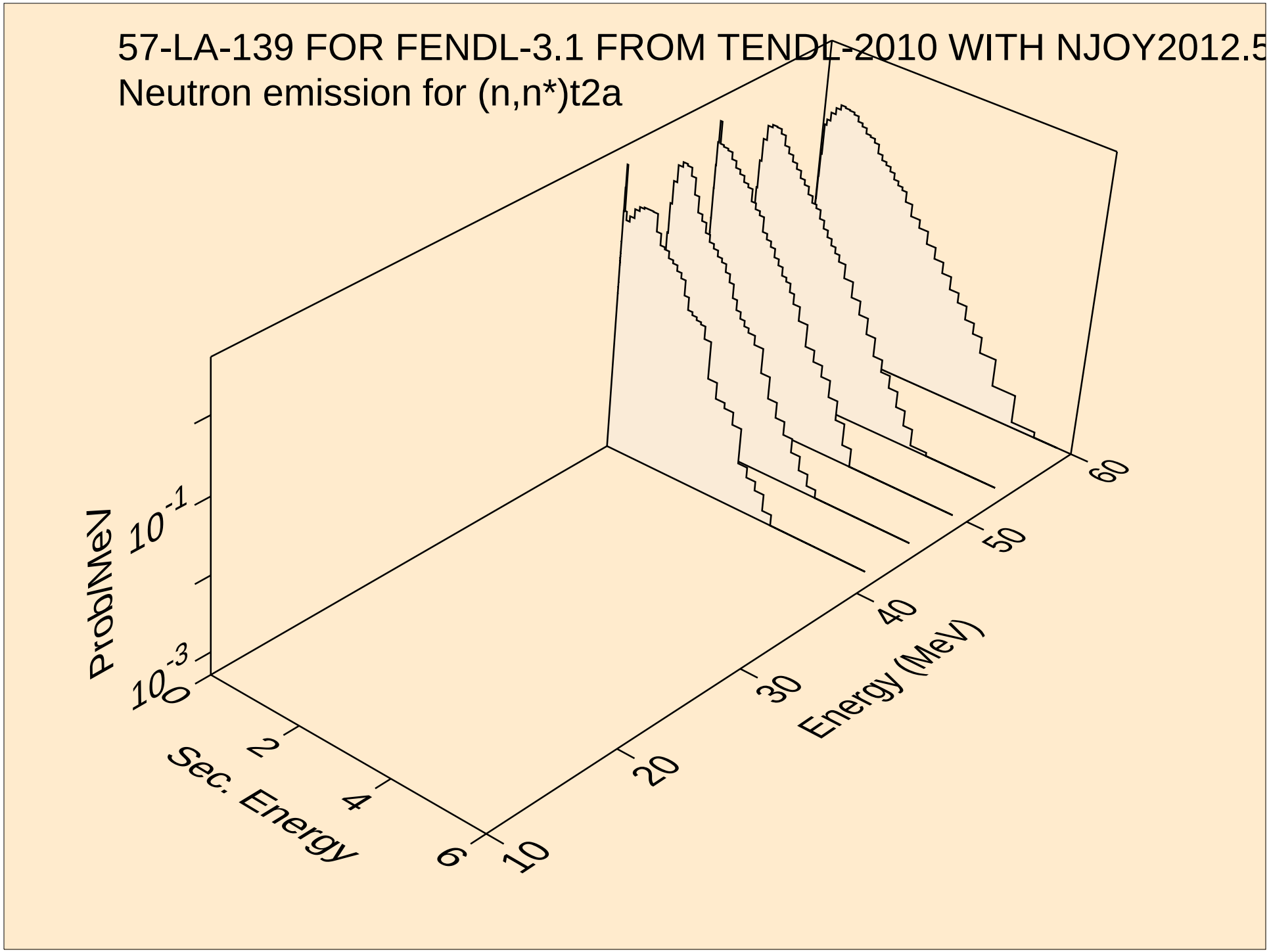

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Neutron emission for (n,n*)2a
Prob/MeV
10-1
10-3
0
5
10
15
20
Sec. Energy
0
10
20
30
40
50
60
Energy (MeV)

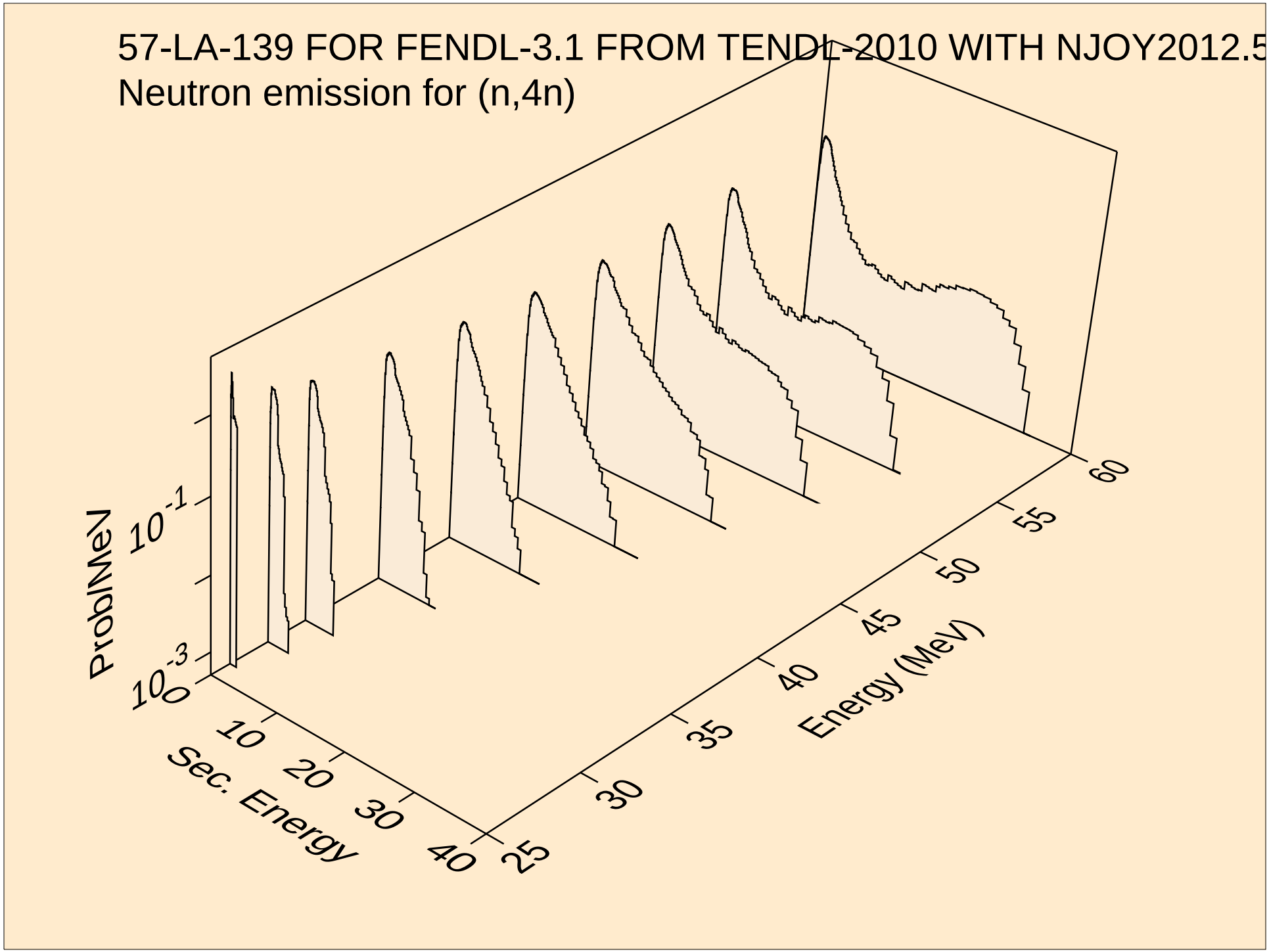

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Neutron emission for (n,2n)2a
Prob/MeV
10-1
10-3
0
5
10
15
Sec. Energy
10
20
30
40
50
60
Energy (MeV)

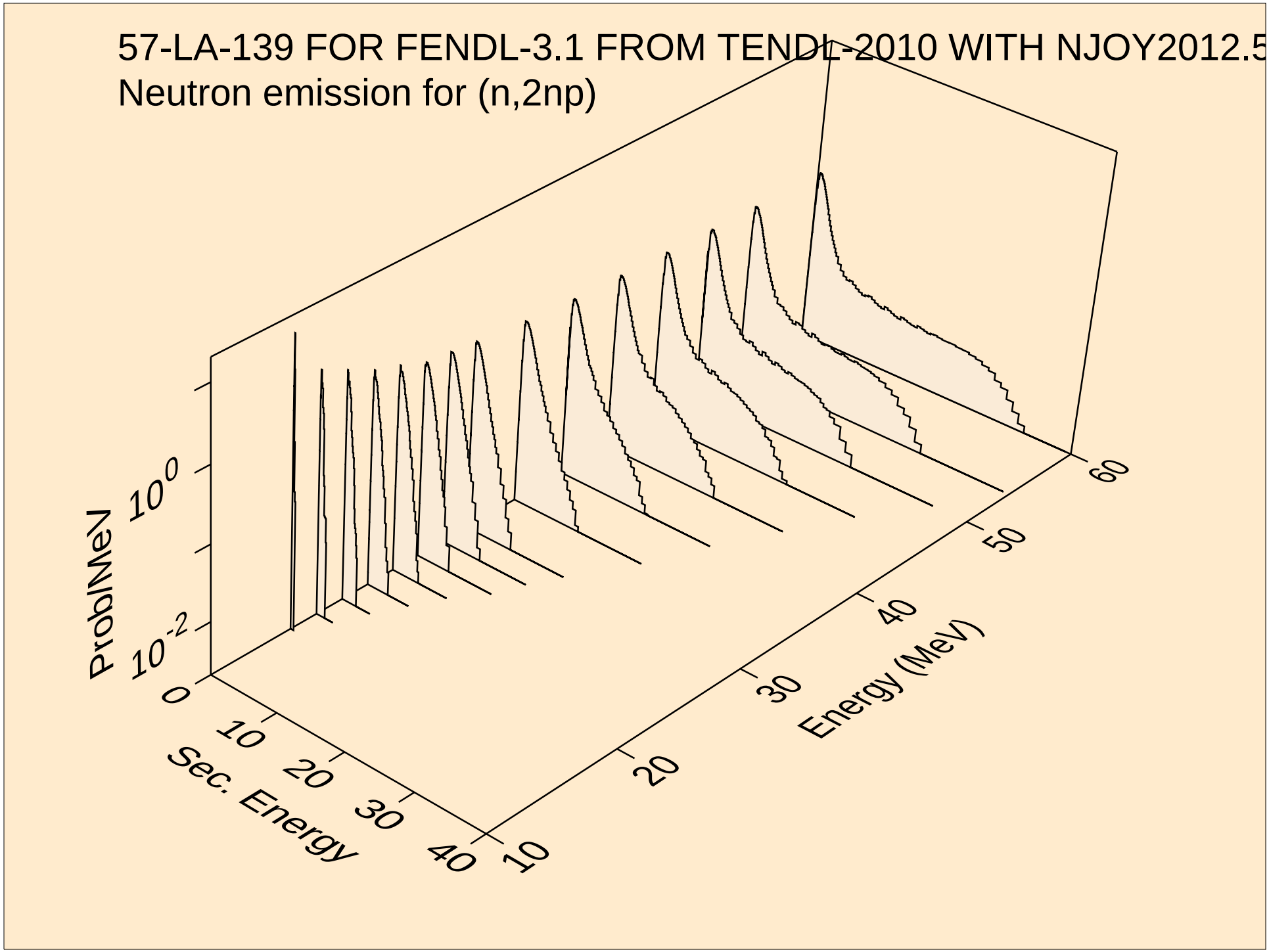

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Neutron emission for (n,n*)d
Prob/MeV
10^1
10^-1
0
5
10
15
20
Sec. Energy
10
20
30
40
50
60
Energy (MeV)

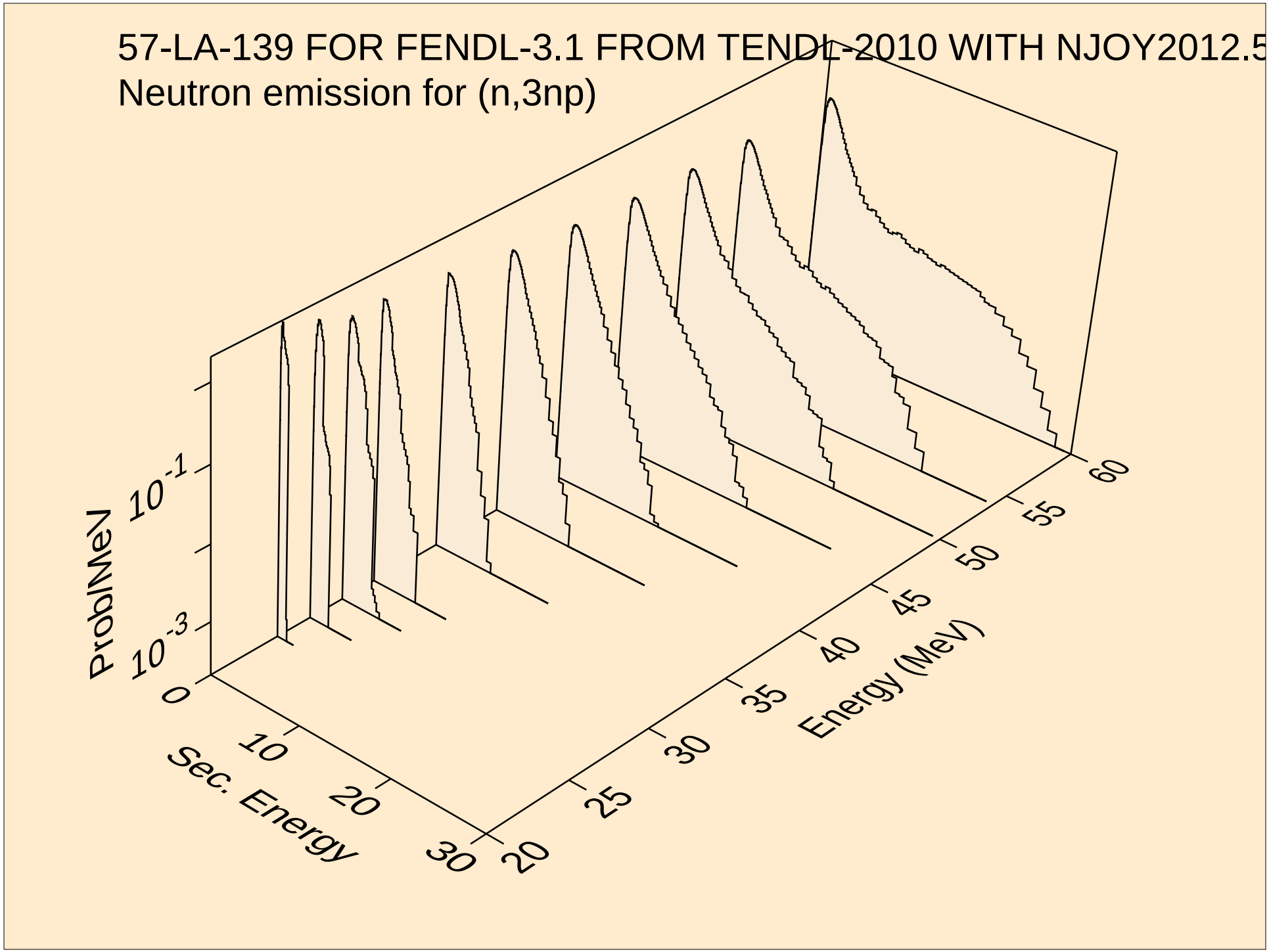

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Neutron emission for (n,n*)t
Prob/MeV
10^0
10^-2
0
2
4
6
8
10
Sec. Energy
10
20
30
40
50
60
Energy (MeV)

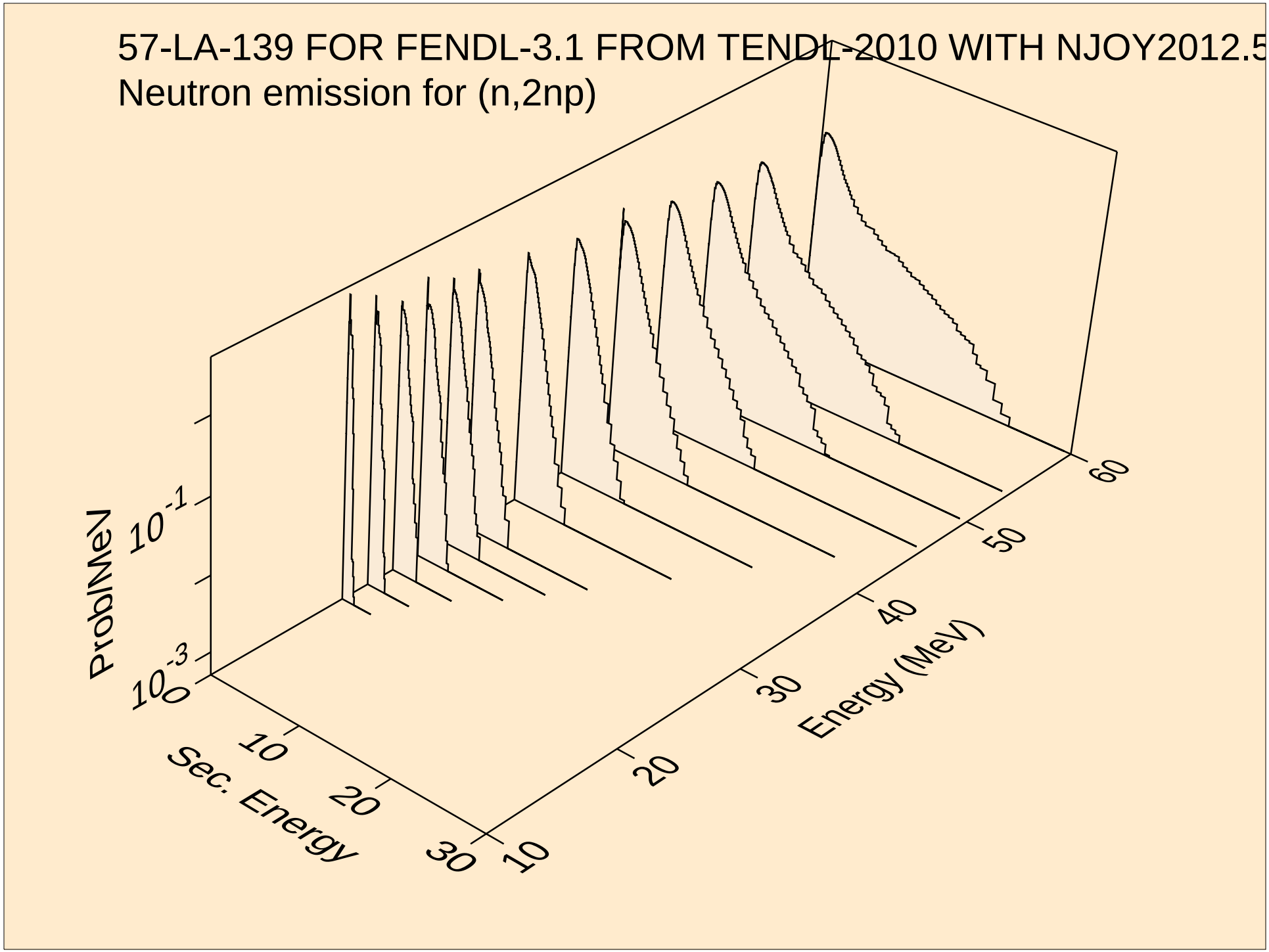

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Neutron emission for (n,n*)he3
Prob/MeV
10^1
10^-1
0
2
4
6
8
10
Sec. Energy
10
20
30
40
50
60
Energy (MeV)

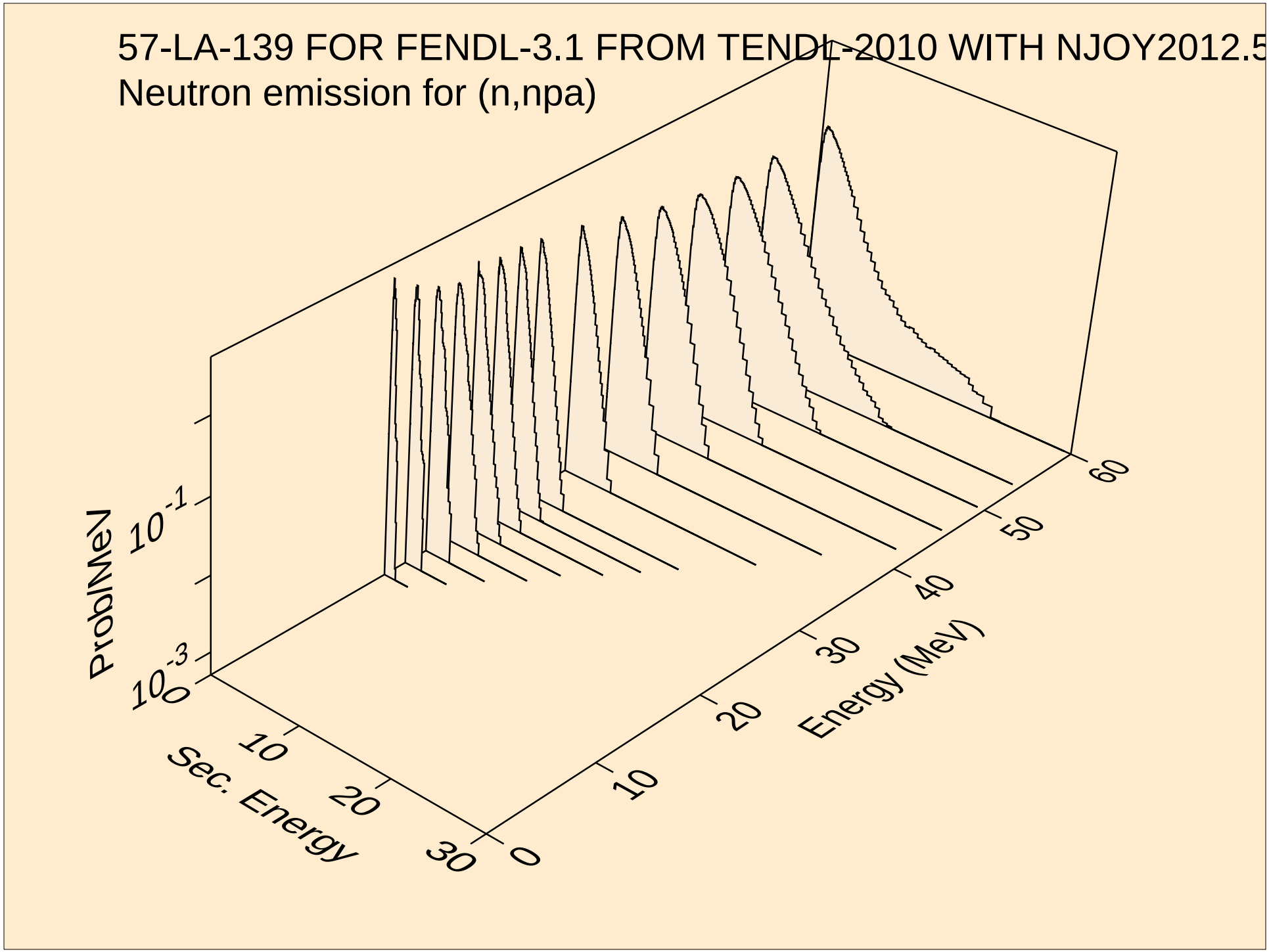

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Neutron emission for (n,n*)t2a
Prob/MeV
10-1
10-3
0
2
4
6
Sec. Energy
10
20
30
40
50
60
Energy (MeV)

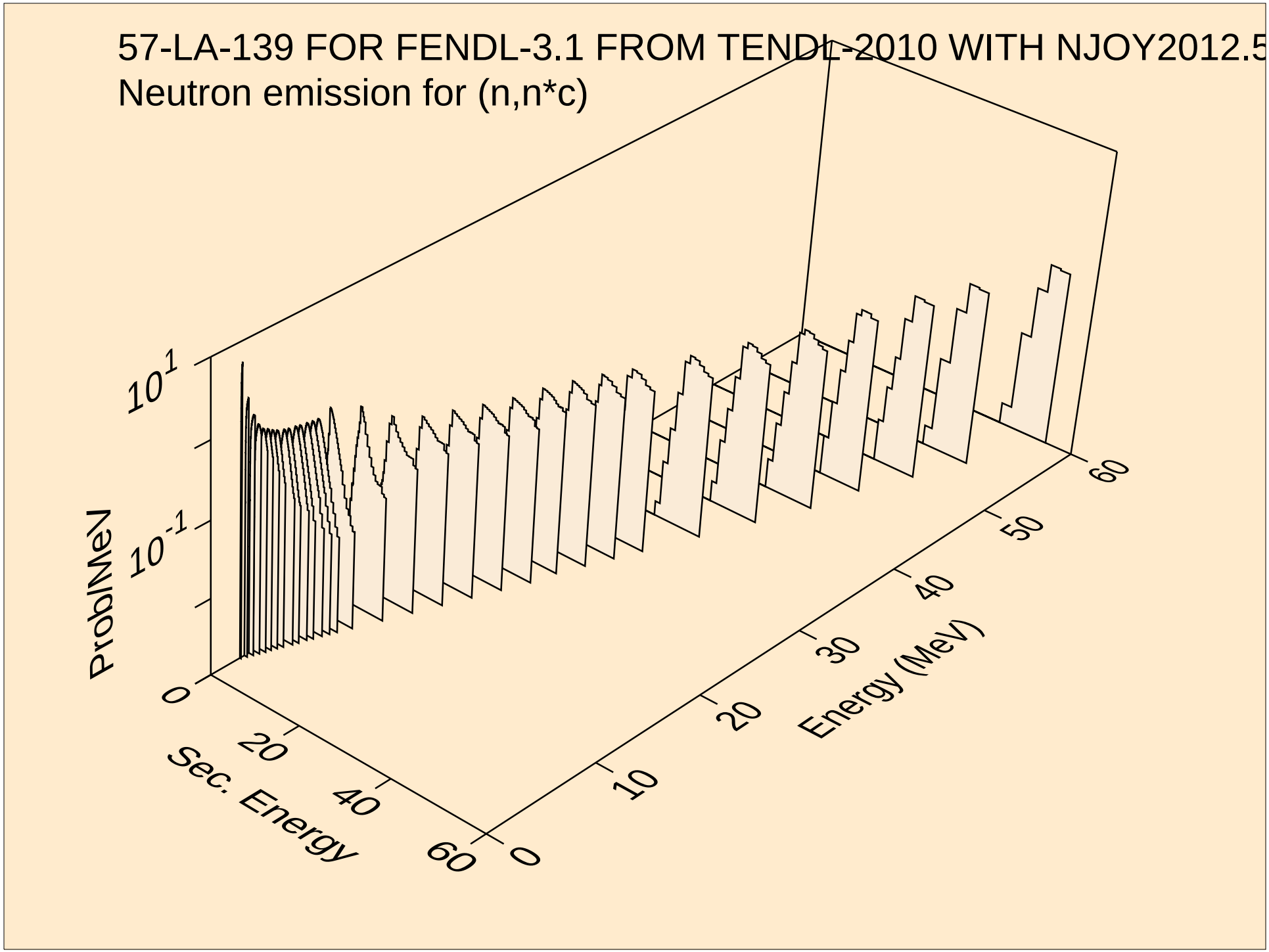

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Neutron emission for (n,4n)
Prob/MeV
10-1
10-3
0
10
20
30
40
Sec. Energy
25
30
35
40
45
50
55
60
Energy (MeV)

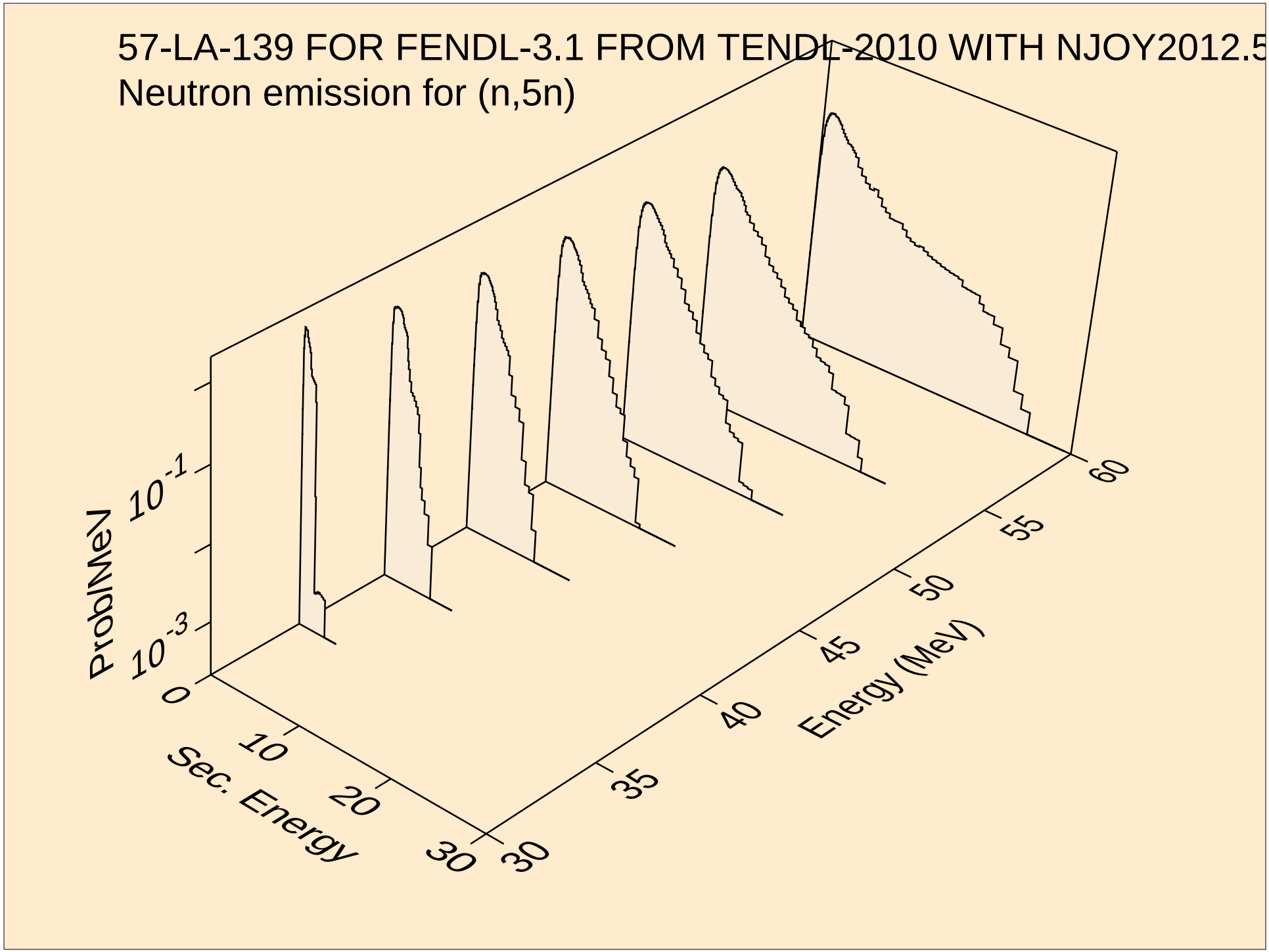

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Neutron emission for (n,2np)
Prob/MeV
10^0
10^-2
0
10
20
30
40
Sec. Energy
10
20
30
40
50
60
Energy (MeV)

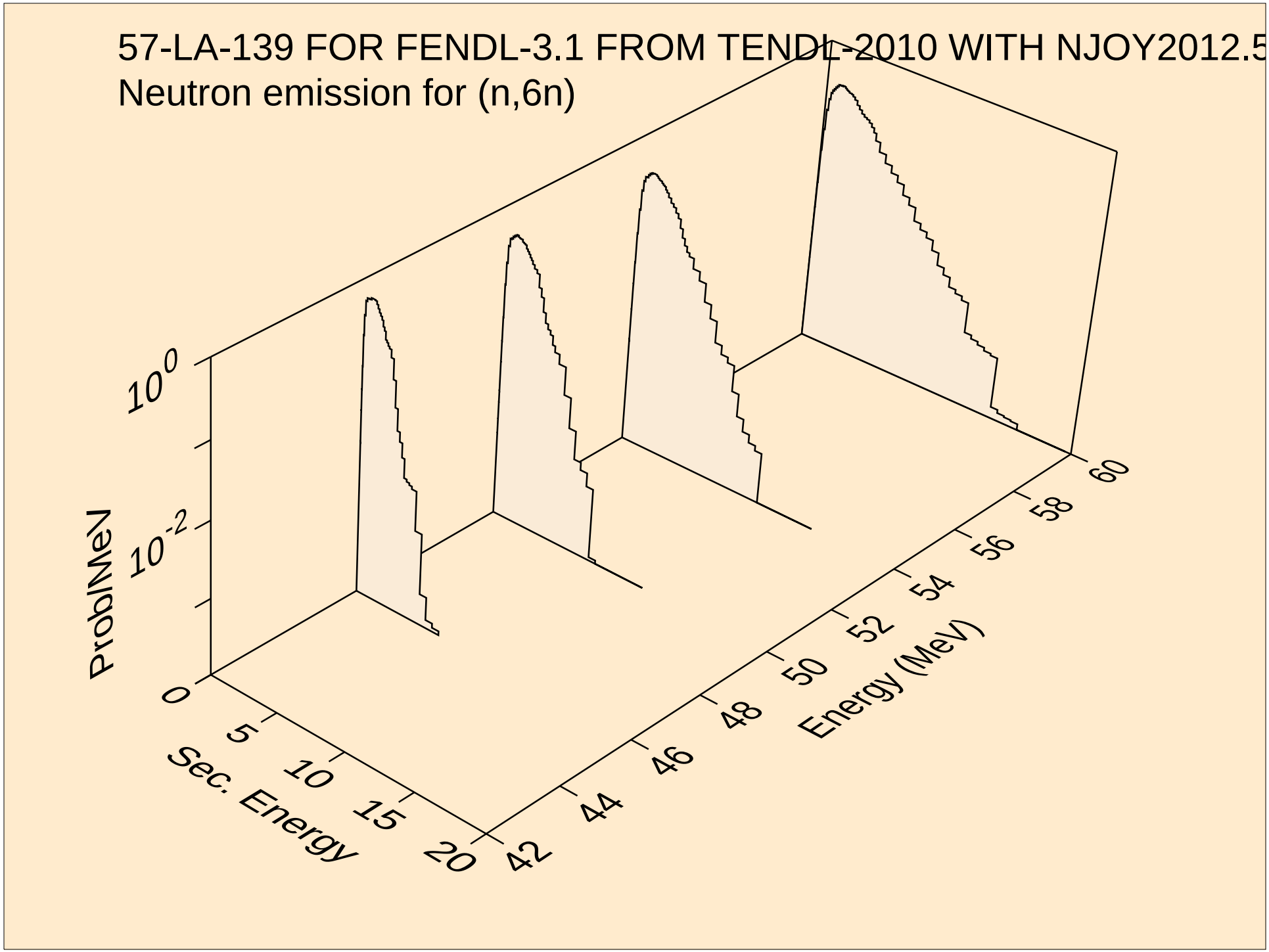

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Neutron emission for (n,3np)
Prob/MeV
10-1
10-3
0
Sec. Energy
10
20
30
Energy (MeV)
20
25
30
35
40
45
50
55
60

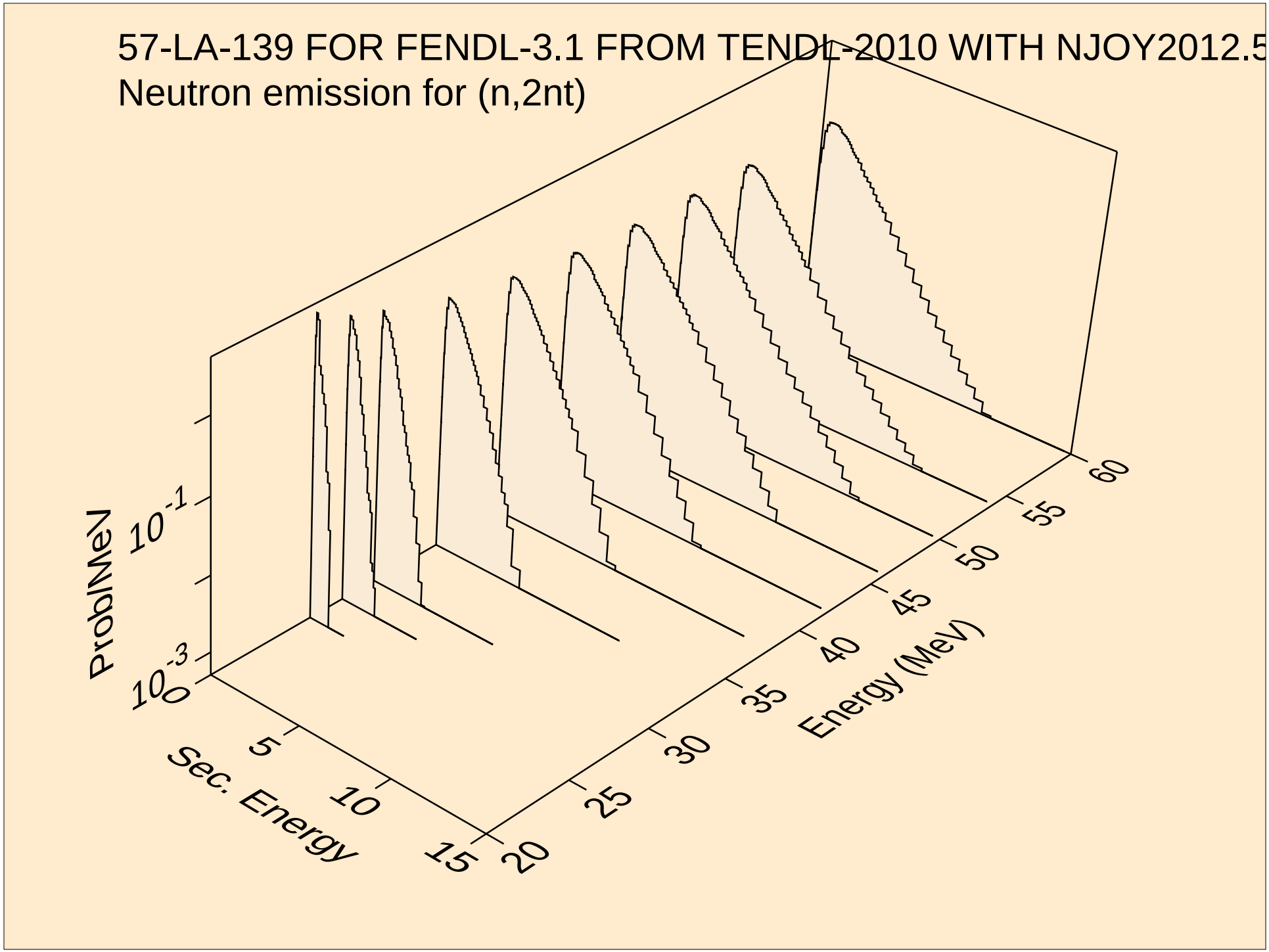

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Neutron emission for (n,2np)
Prob/MeV
10-1
10-3
0
10
20
30
Sec. Energy
10
20
30
40
50
60
Energy (MeV)

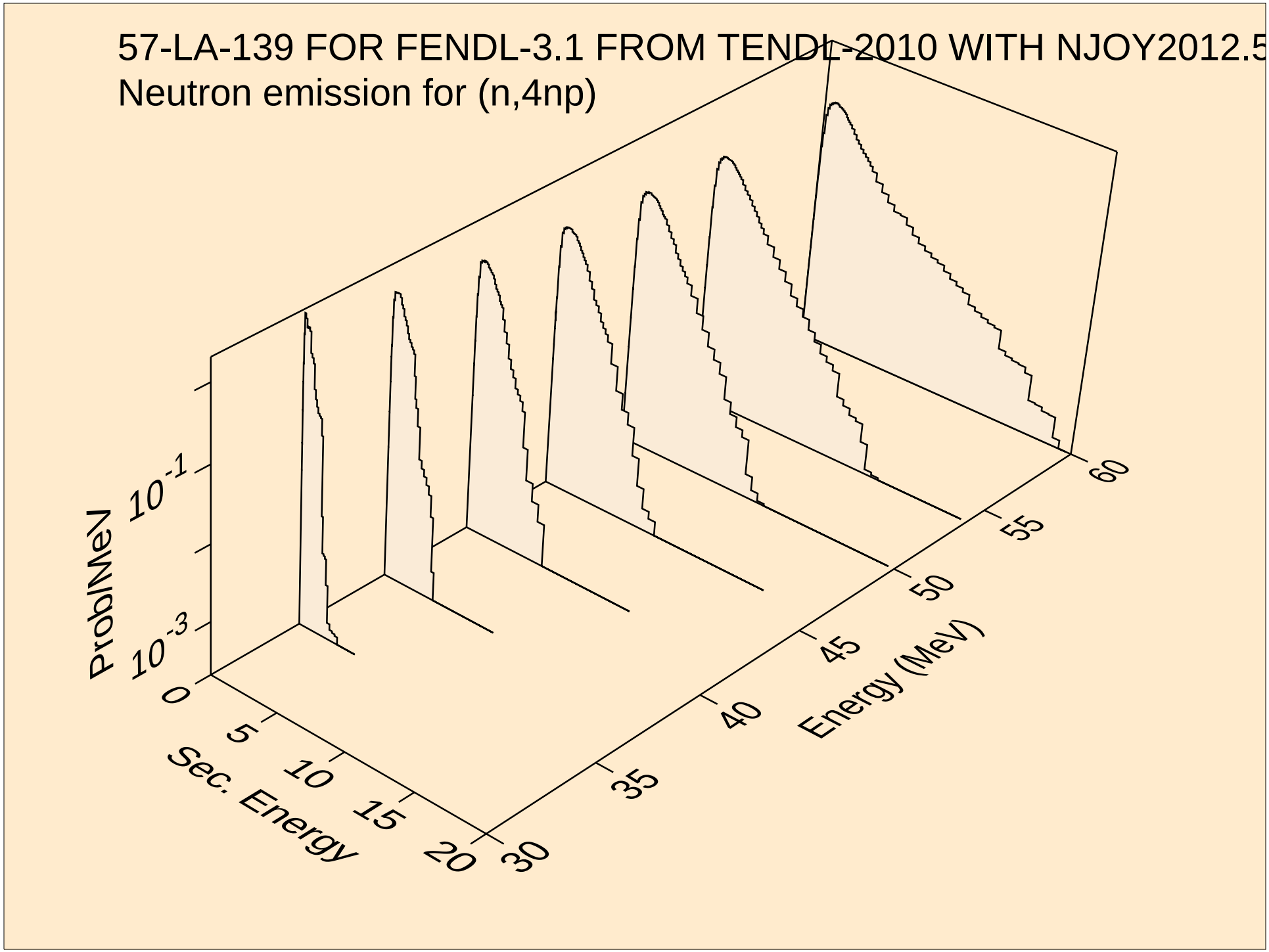

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Neutron emission for (n,npa)
Prob/MeV
10-1
10-3
0
10
20
30
Sec. Energy
0
10
20
30
40
50
60
Energy (MeV)

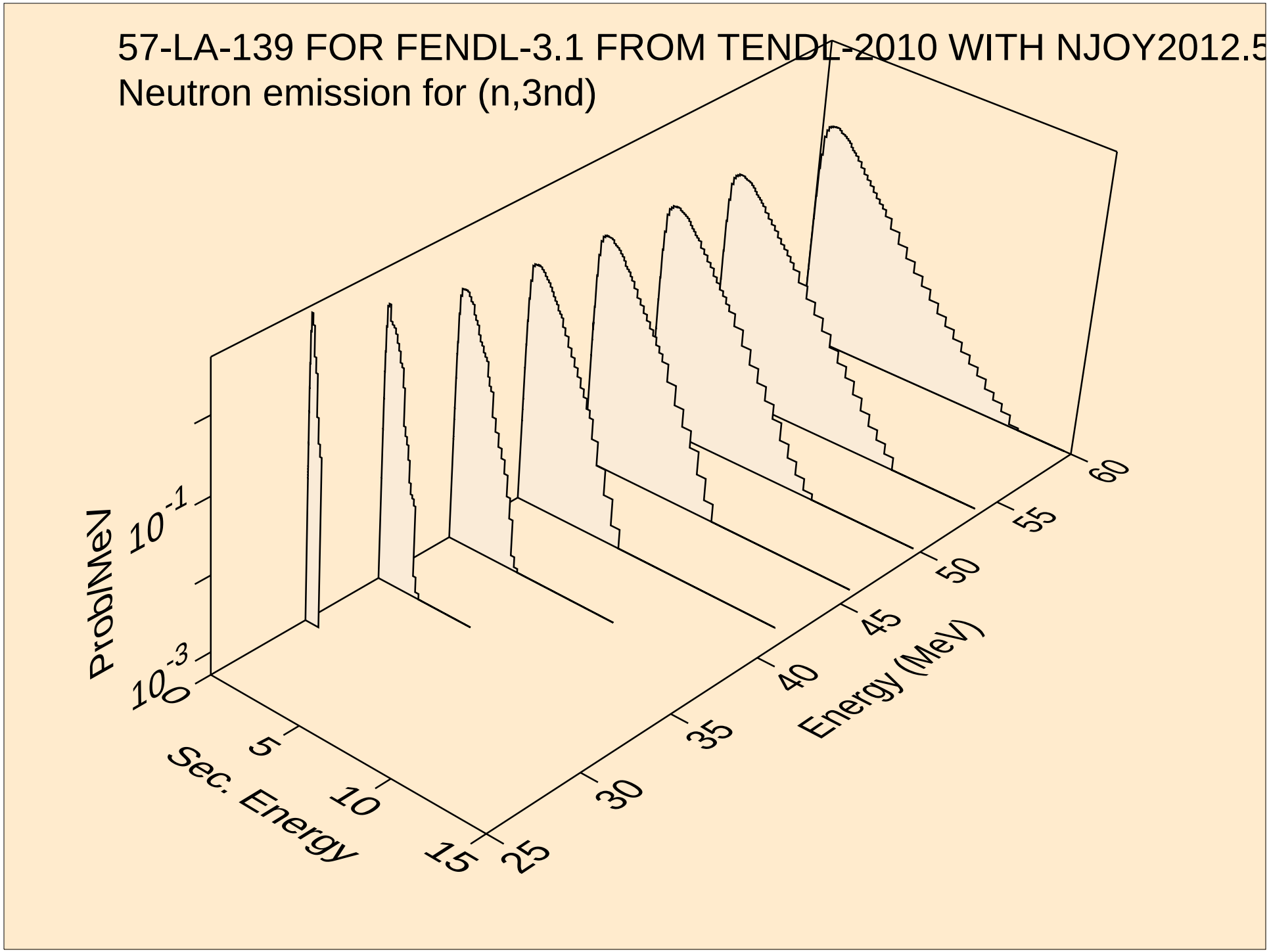

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Neutron emission for (n,n*c)
Prob/MeV
10^1
10^-1
0
20
40
60
Sec. Energy
0
10
20
30
40
50
60
Energy (MeV)

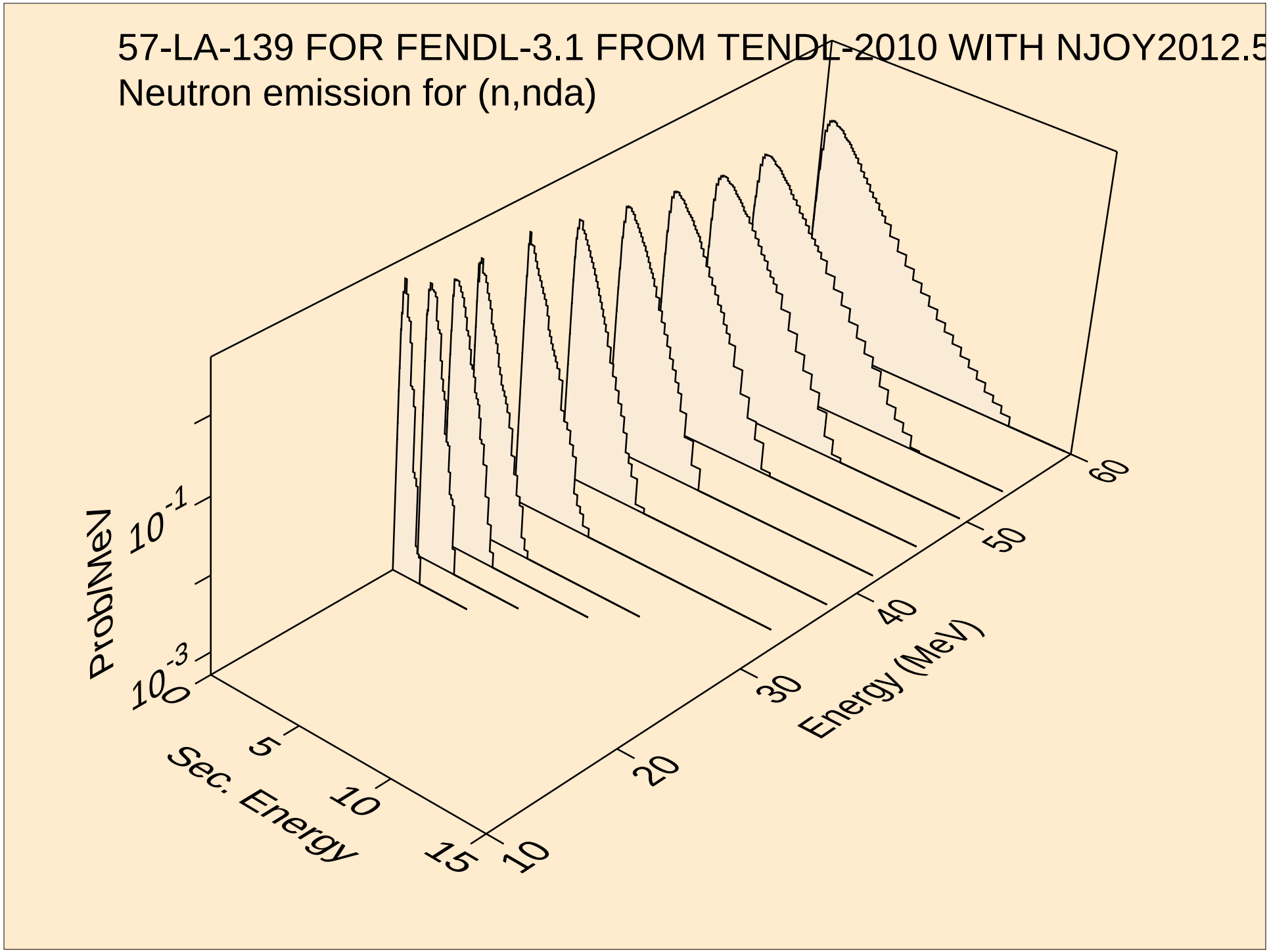

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Neutron emission for (n,5n)
Prob/MeV
10-1
10-3
0
Sec. Energy
10
20
30
30
35
40
45
50
55
60
Energy (MeV)

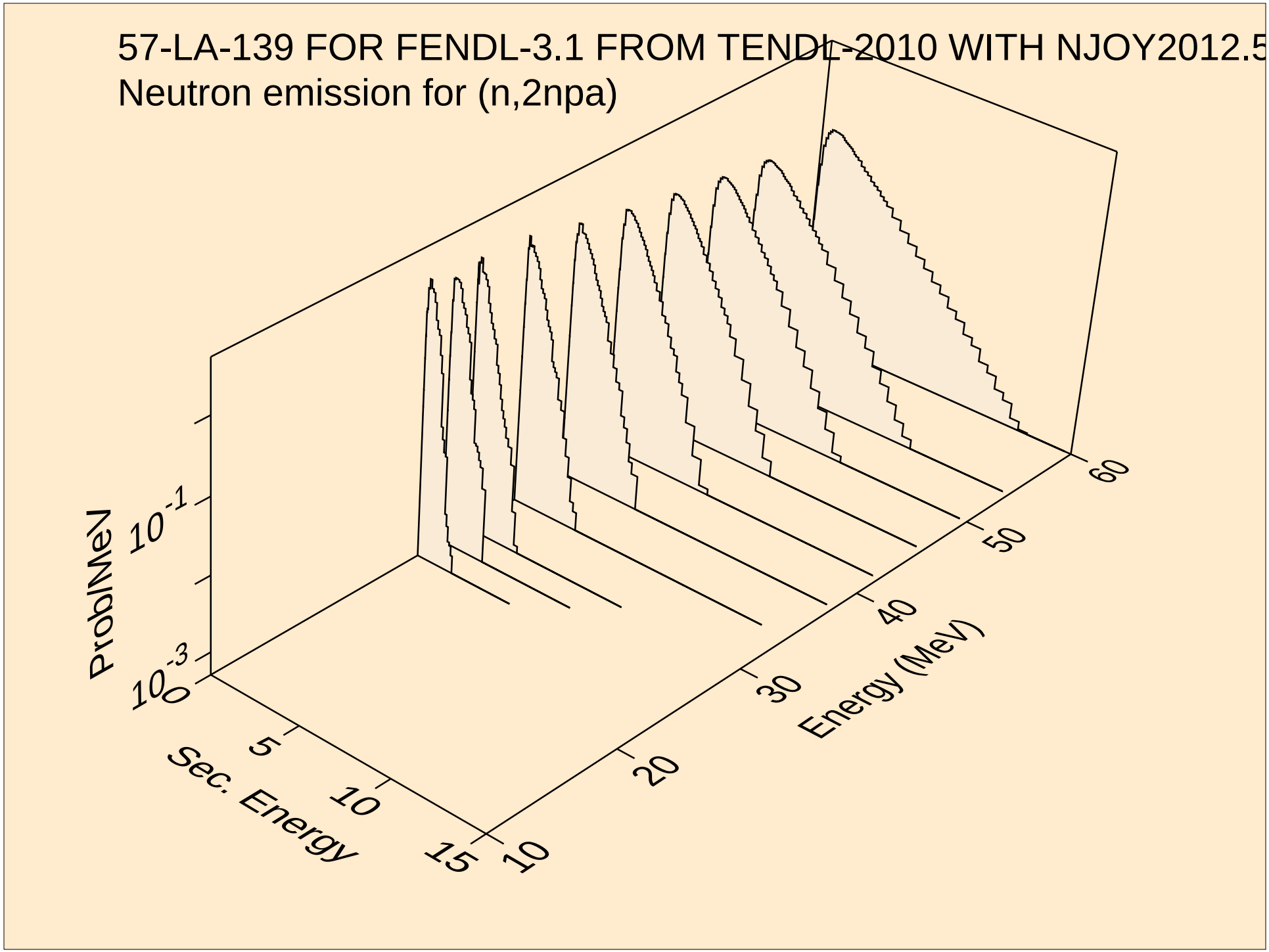

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Neutron emission for (n,6n)
Prob/MeV
10^{0}
10^{-2}
0
5
10
15
20
Sec. Energy
42
44
46
48
50
52
54
56
58
60
Energy (MeV)

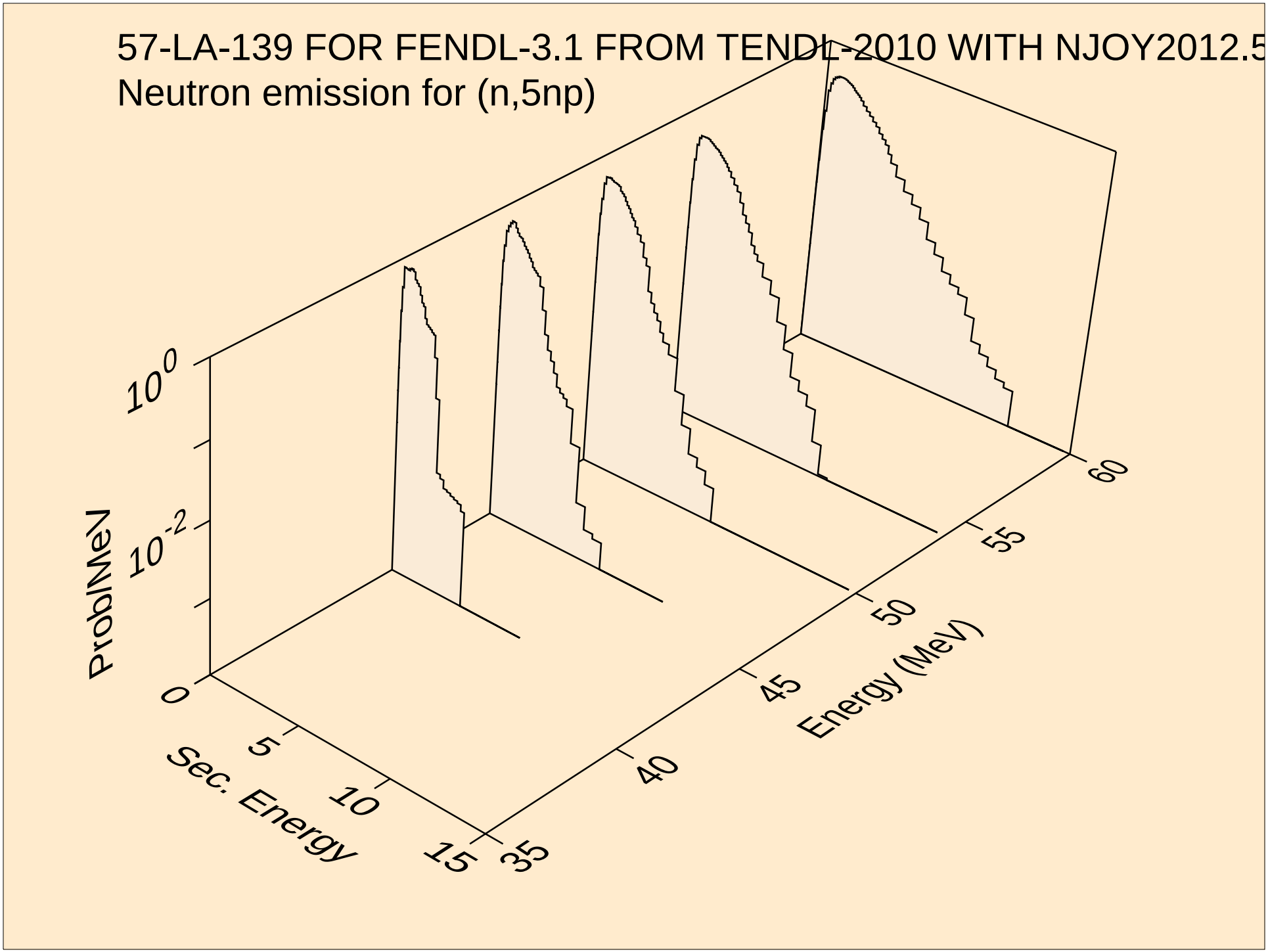

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Neutron emission for (n,2nt)
Prob/MeV
10-1
10-3
0
5
10
15
20
Sec. Energy
25
30
35
40
45
50
55
60
Energy (MeV)

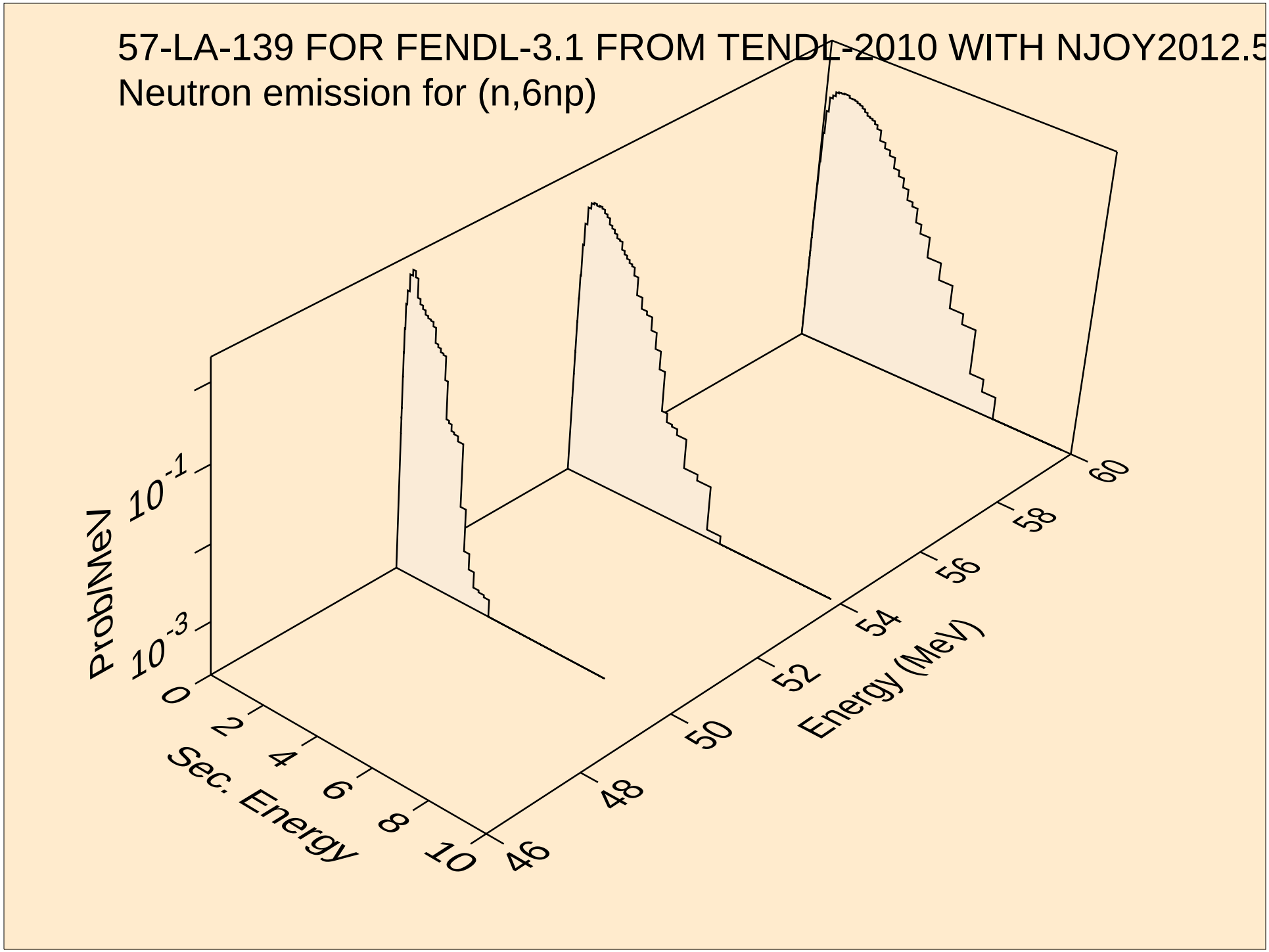

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Neutron emission for (n,4np)
Prob/MeV
10-1
10-3
0
5
10
15
20
Sec. Energy
30
35
40
45
50
55
60
Energy (MeV)

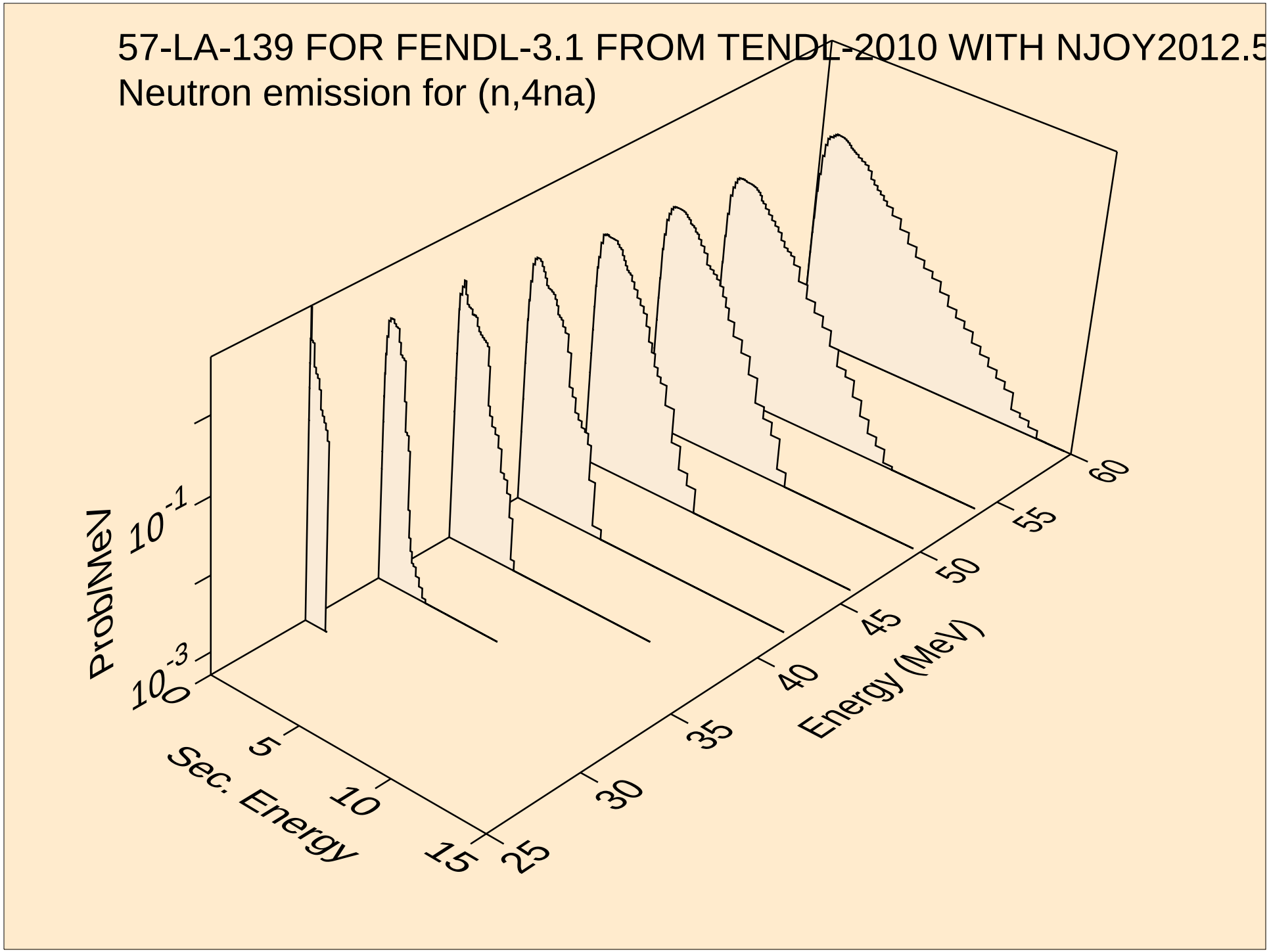

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Neutron emission for (n,3nd)
Prob/MeV
10-1
10-3
0
5
10
15
Sec. Energy
25
30
35
40
45
50
55
60
Energy (MeV)

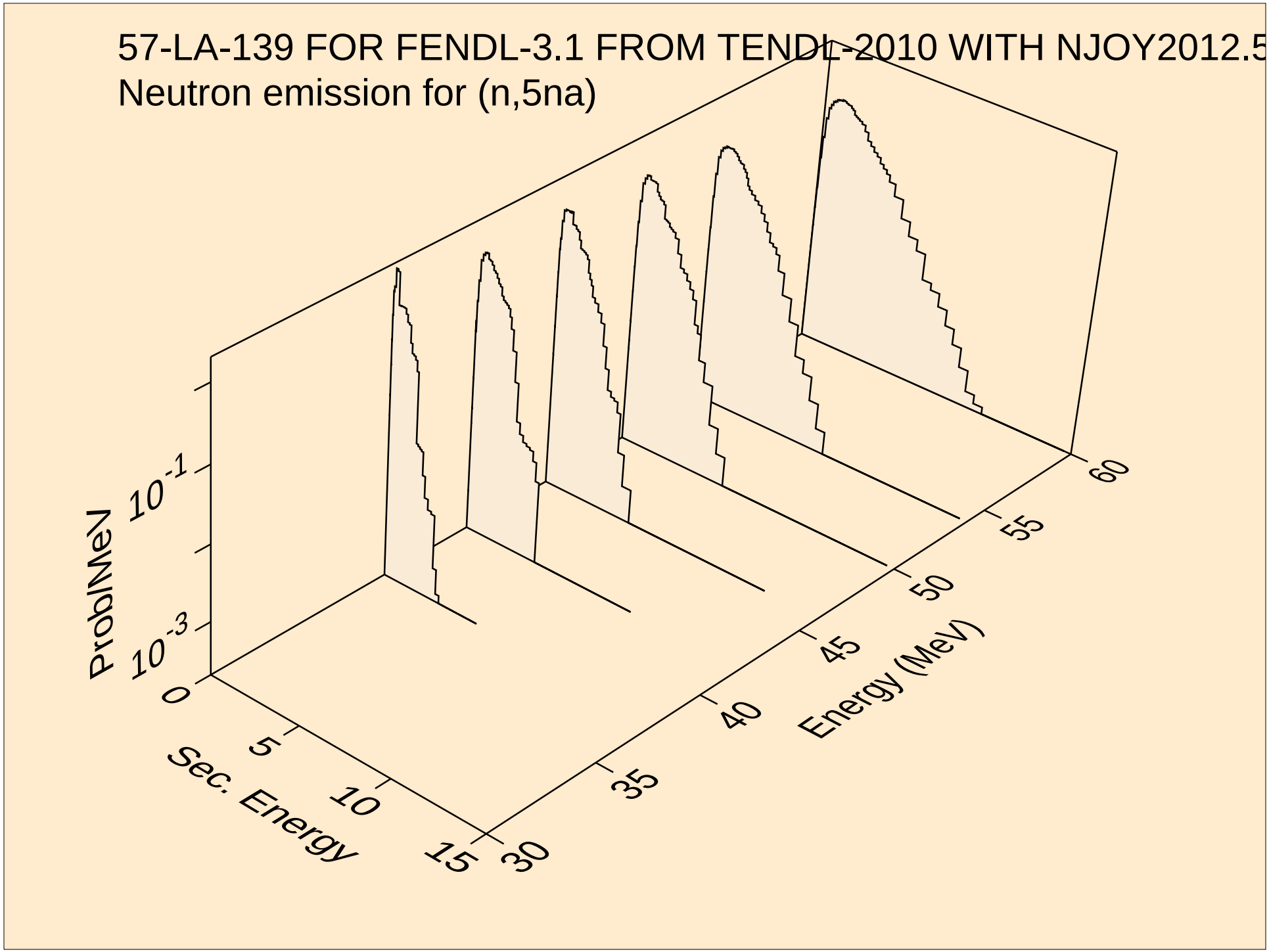

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Neutron emission for (n,nda)
Prob/MeV
10-1
10-3
0
5
10
15
Sec. Energy
10
20
30
40
50
60
Energy (MeV)

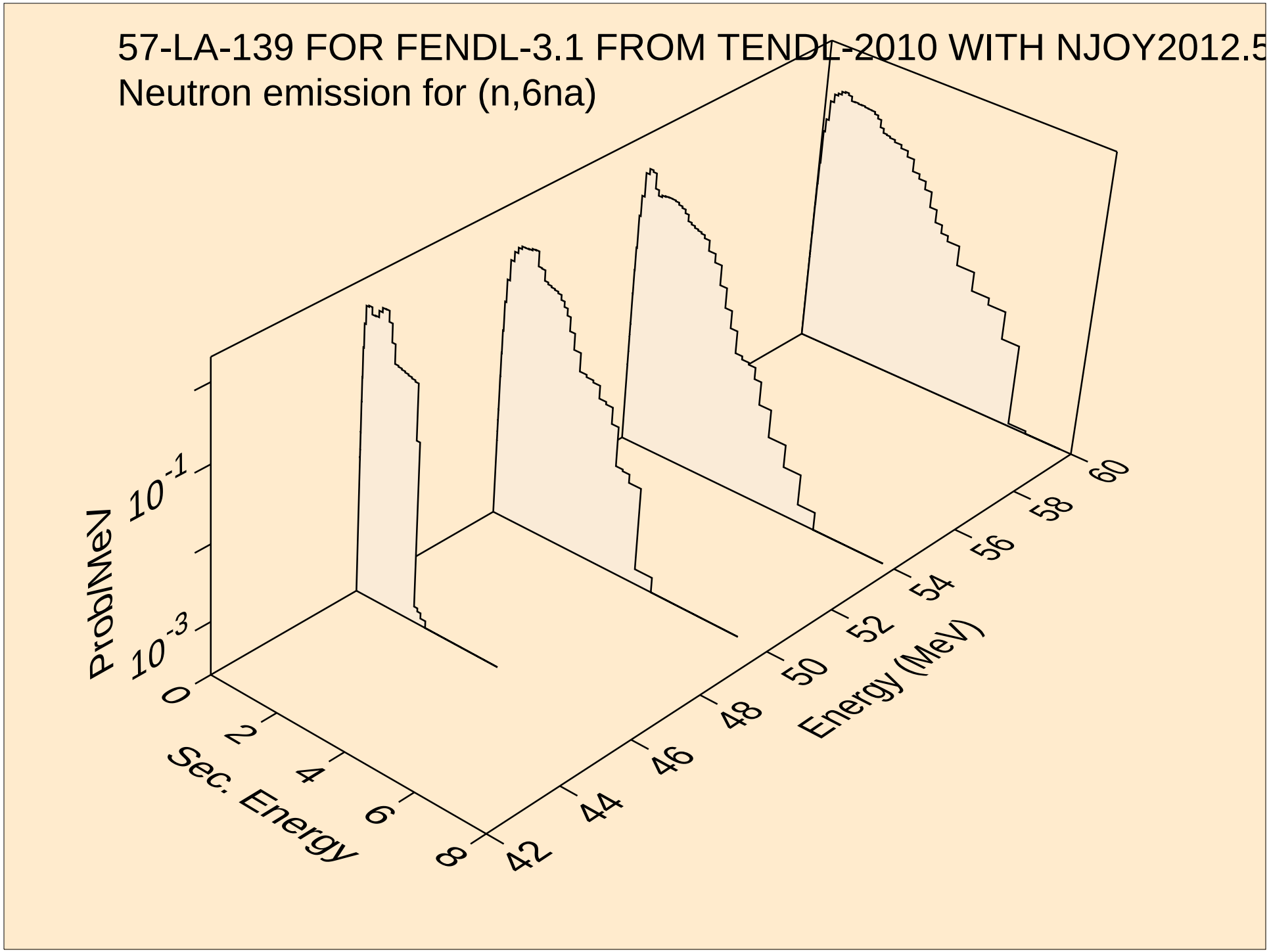

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Neutron emission for (n,2npa)
Prob/MeV
10-1
10-3
0
5
10
15
Sec. Energy
10
20
30
40
50
60
Energy (MeV)

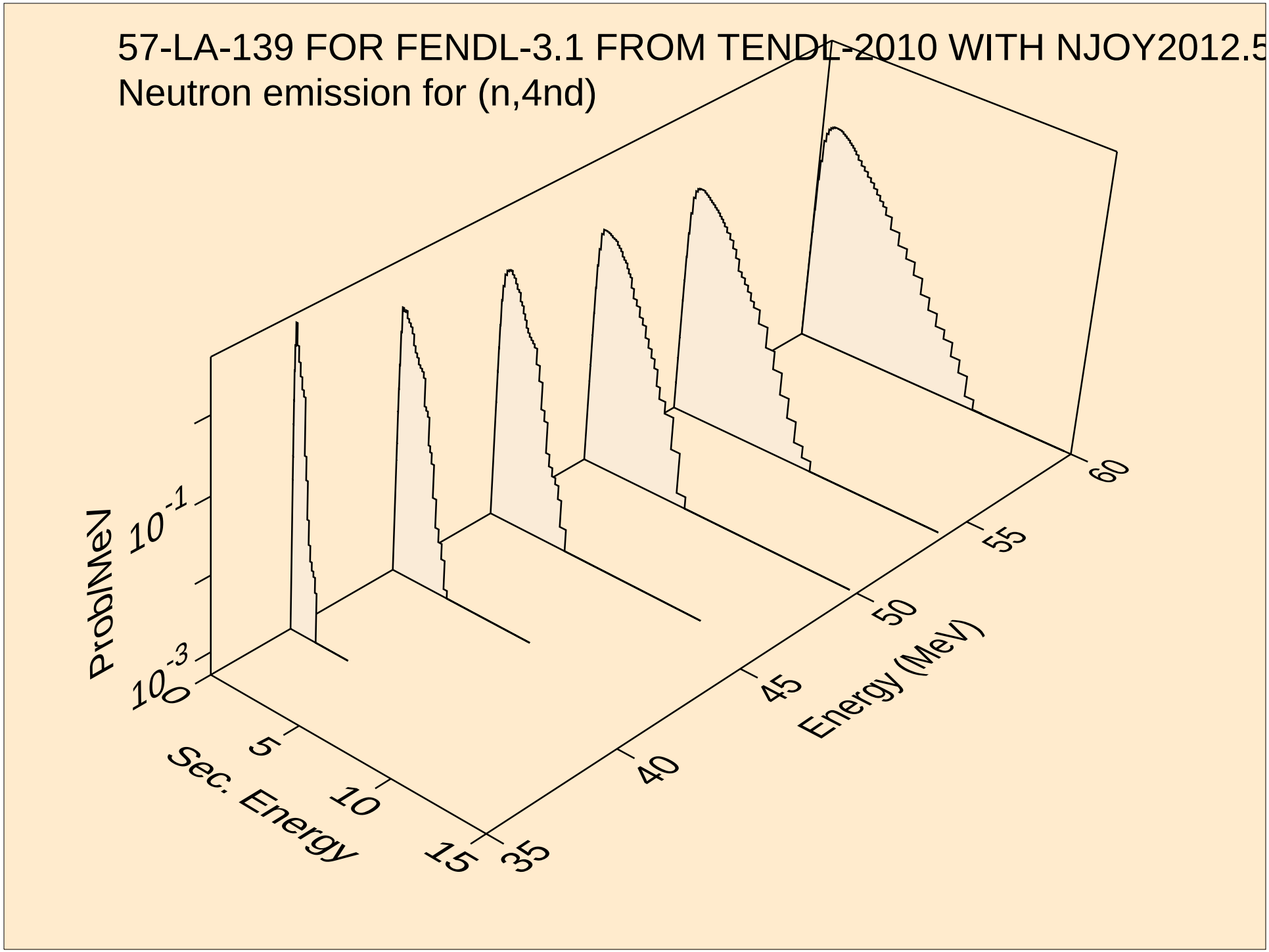

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Neutron emission for (n,5np)
Prob/MeV
10^0
10^-2
0
5
10
15
Sec. Energy
35
40
45
50
55
60
Energy (MeV)

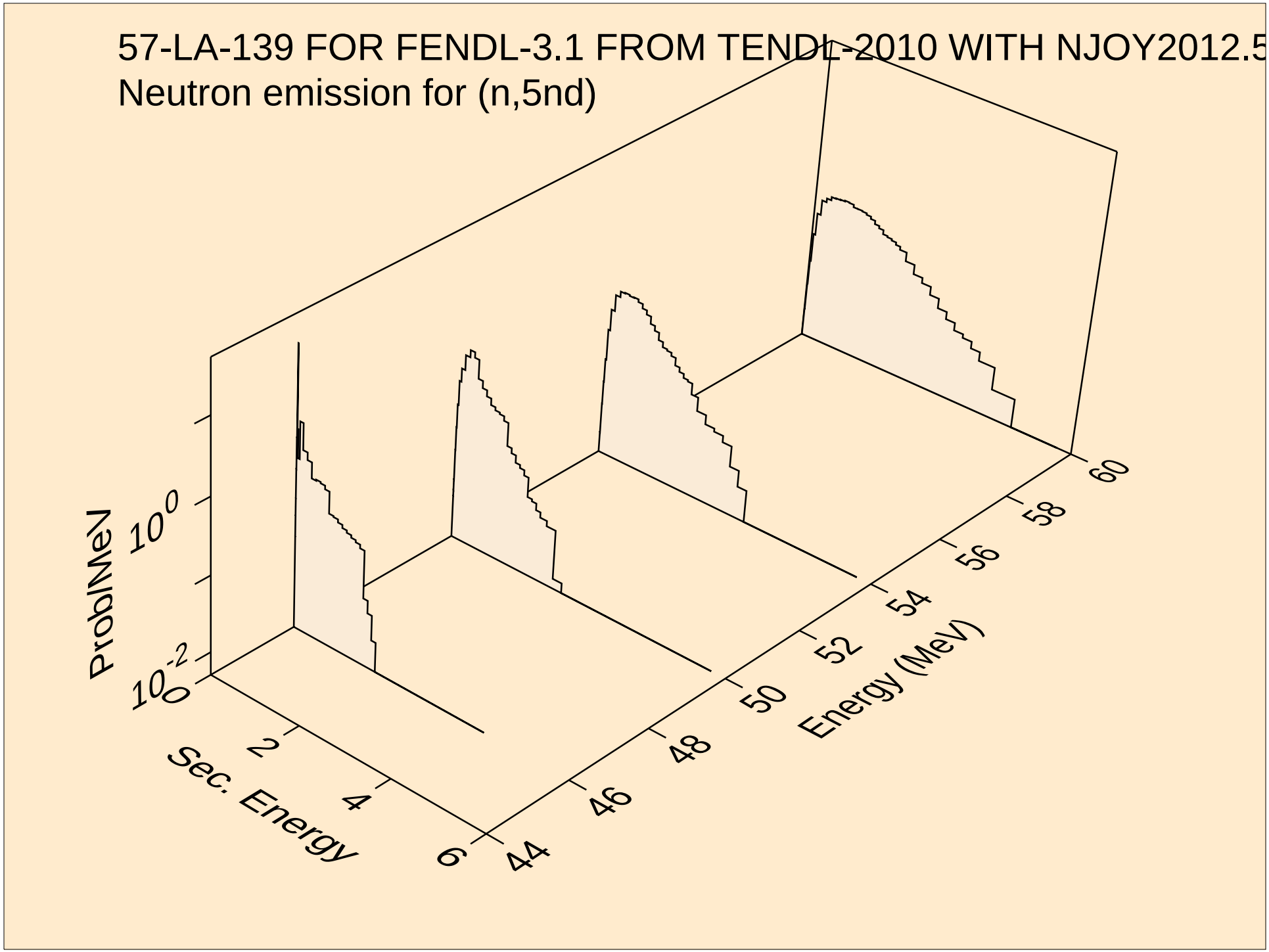

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Neutron emission for (n,6np)
Prob/MeV
10-1
10-3
0
2
4
6
8
10
Sec. Energy
46
48
50
52
54
56
58
60
Energy (MeV)

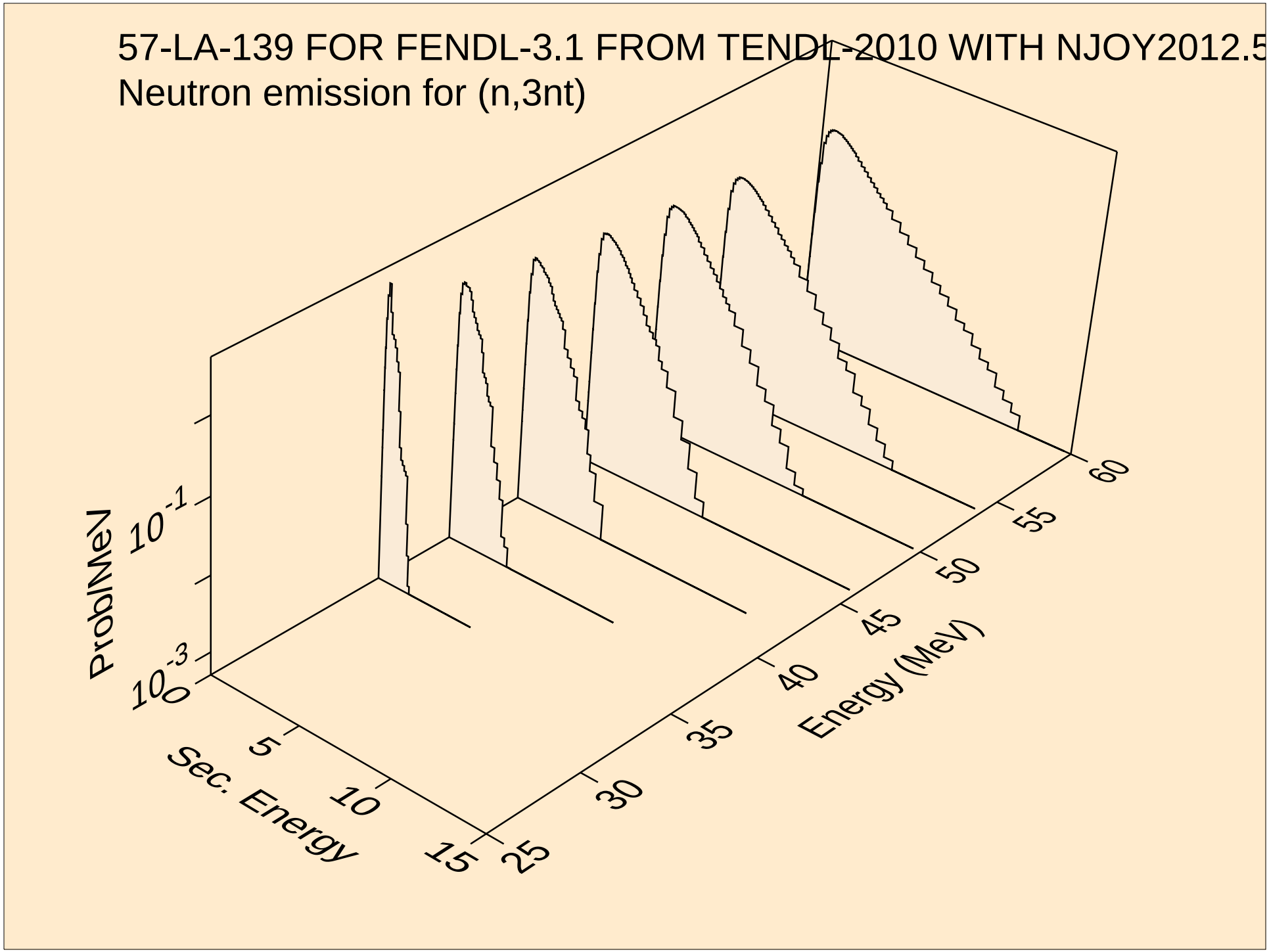

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Neutron emission for (n,4na)
Prob/MeV
10-1
10-3
0
5
10
15
Sec. Energy
25
30
35
40
45
50
55
60
Energy (MeV)

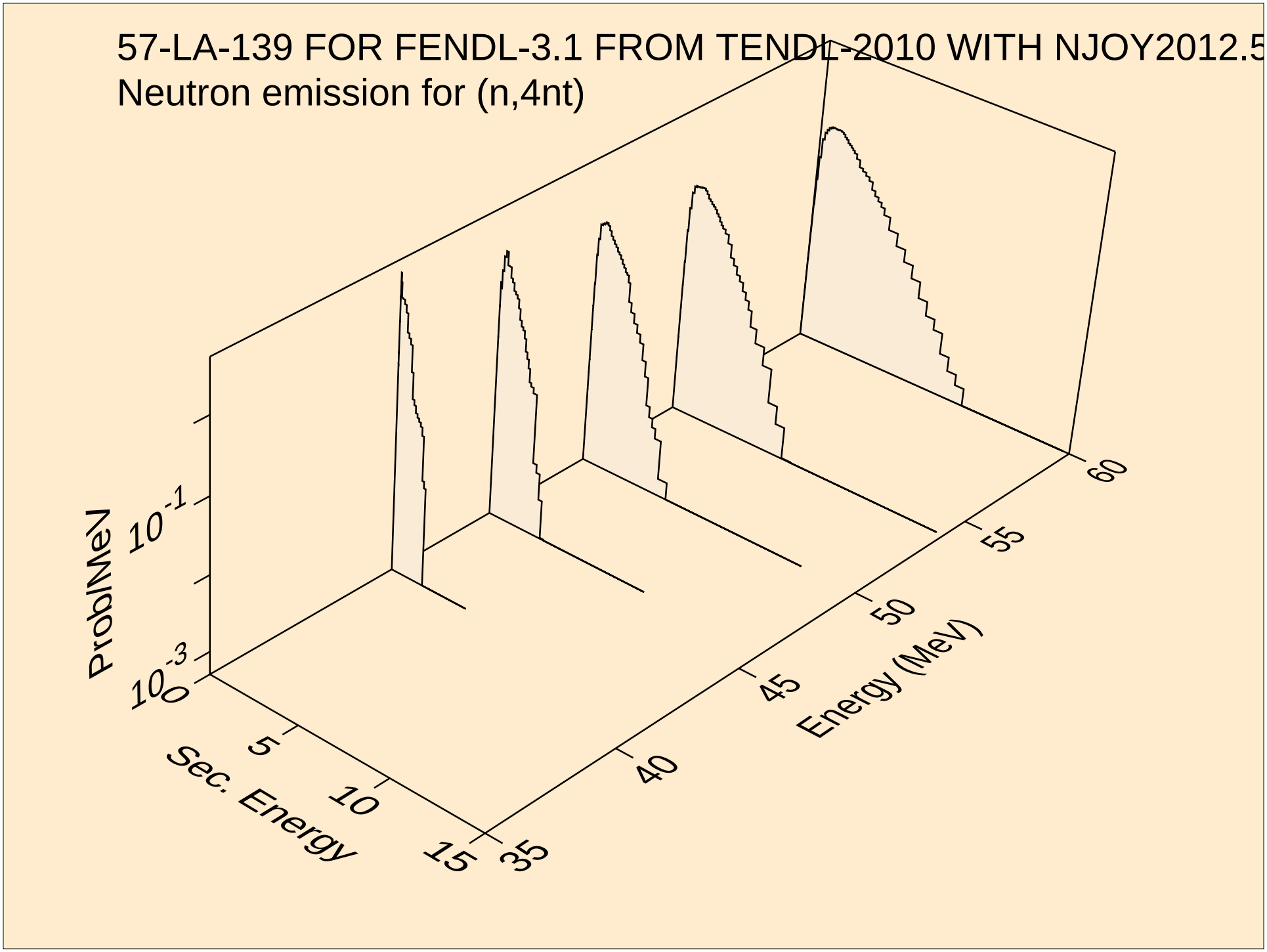

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Neutron emission for (n,5na)
Prob/MeV
10-1
10-3
0
Sec. Energy
5
10
15
30
35
40
45
50
55
60
Energy (MeV)

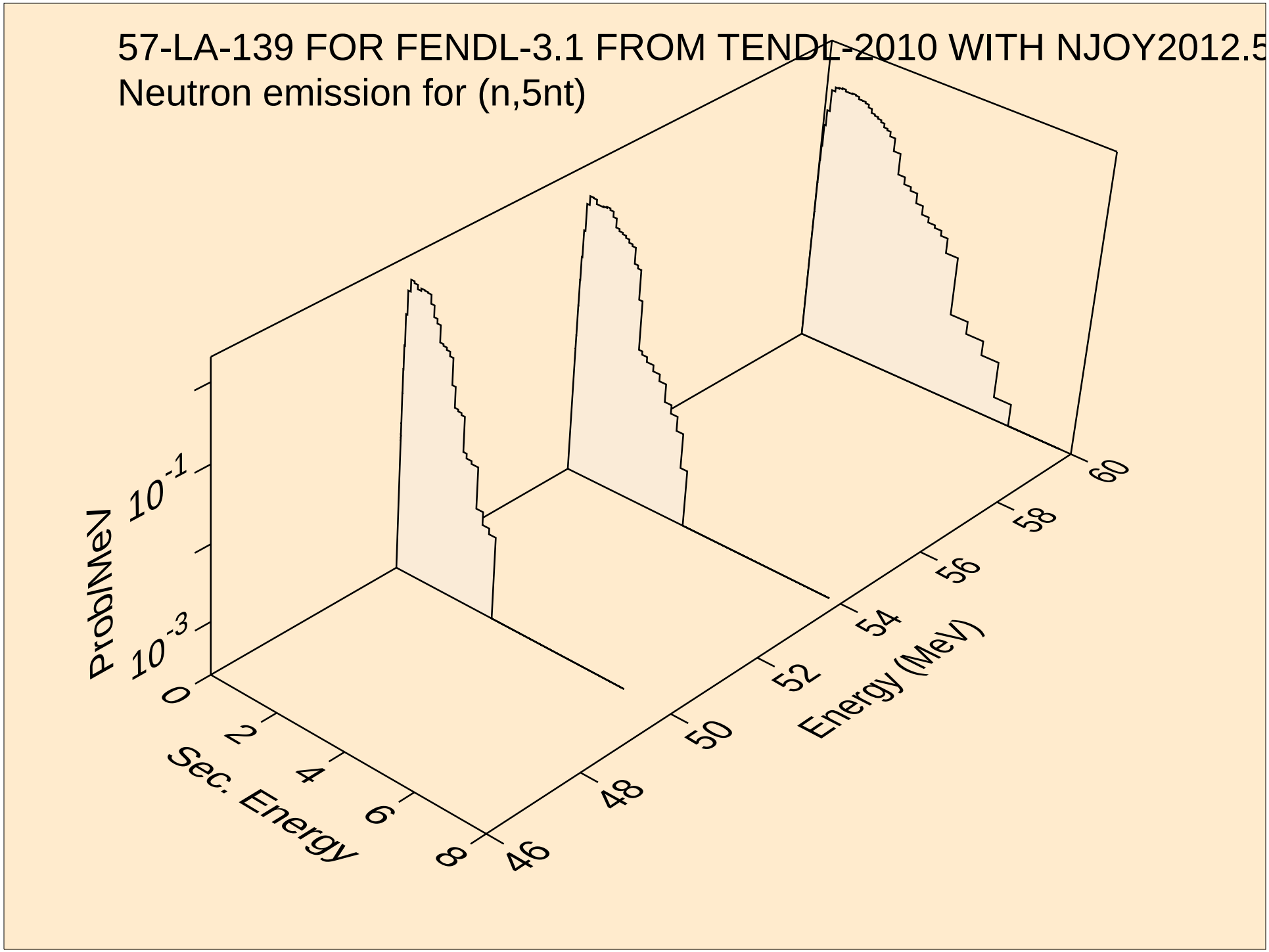

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Neutron emission for (n,6na)
Prob/MeV
10-1
10-3
0
2
4
6
8
Sec. Energy
42
44
46
48
50
52
54
56
58
60
Energy (MeV)

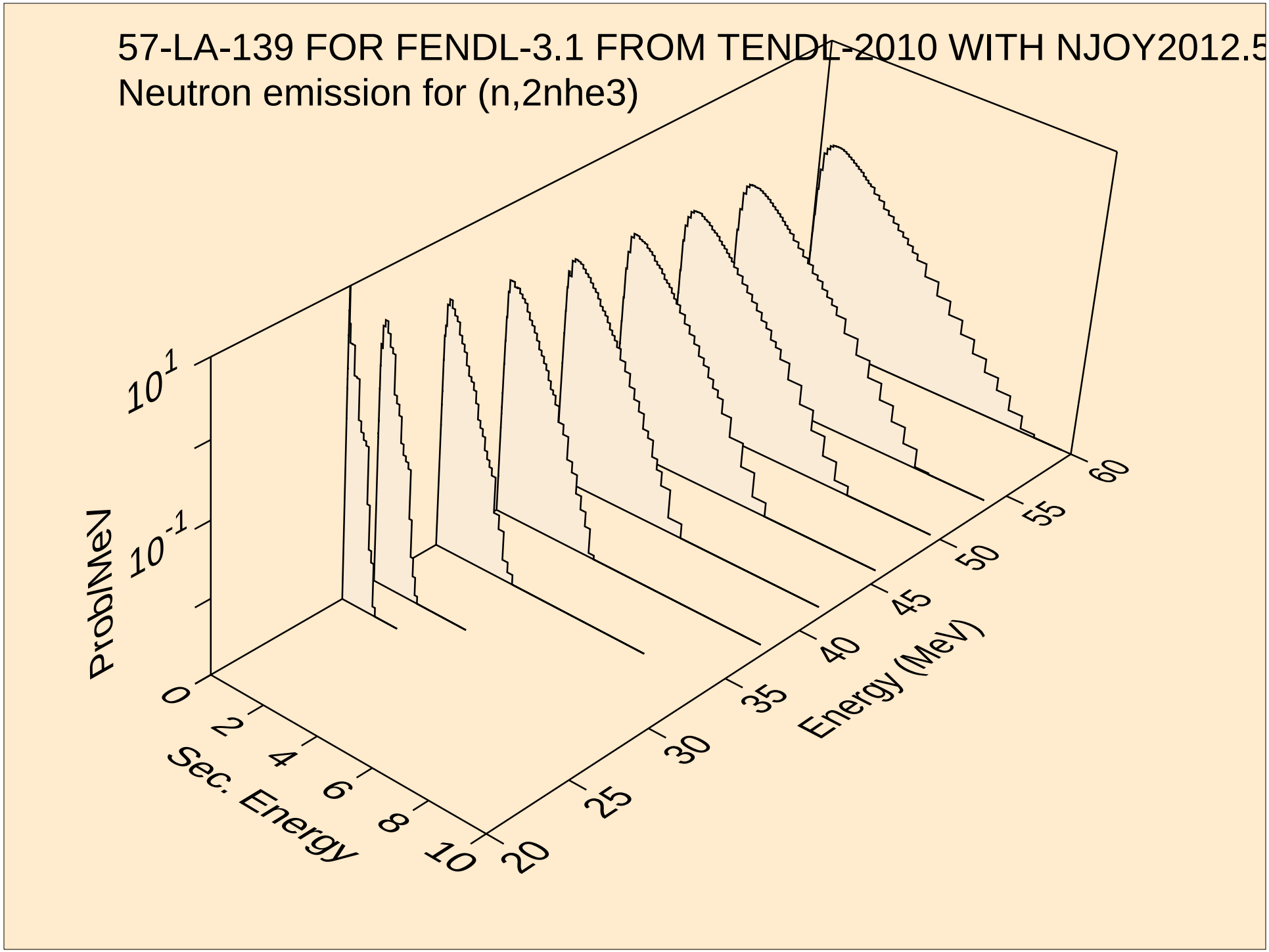

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Neutron emission for (n,4nd)
Prob/MeV
10-1
10-3
0
5
10
15
Sec. Energy
35
40
45
50
55
60
Energy (MeV)

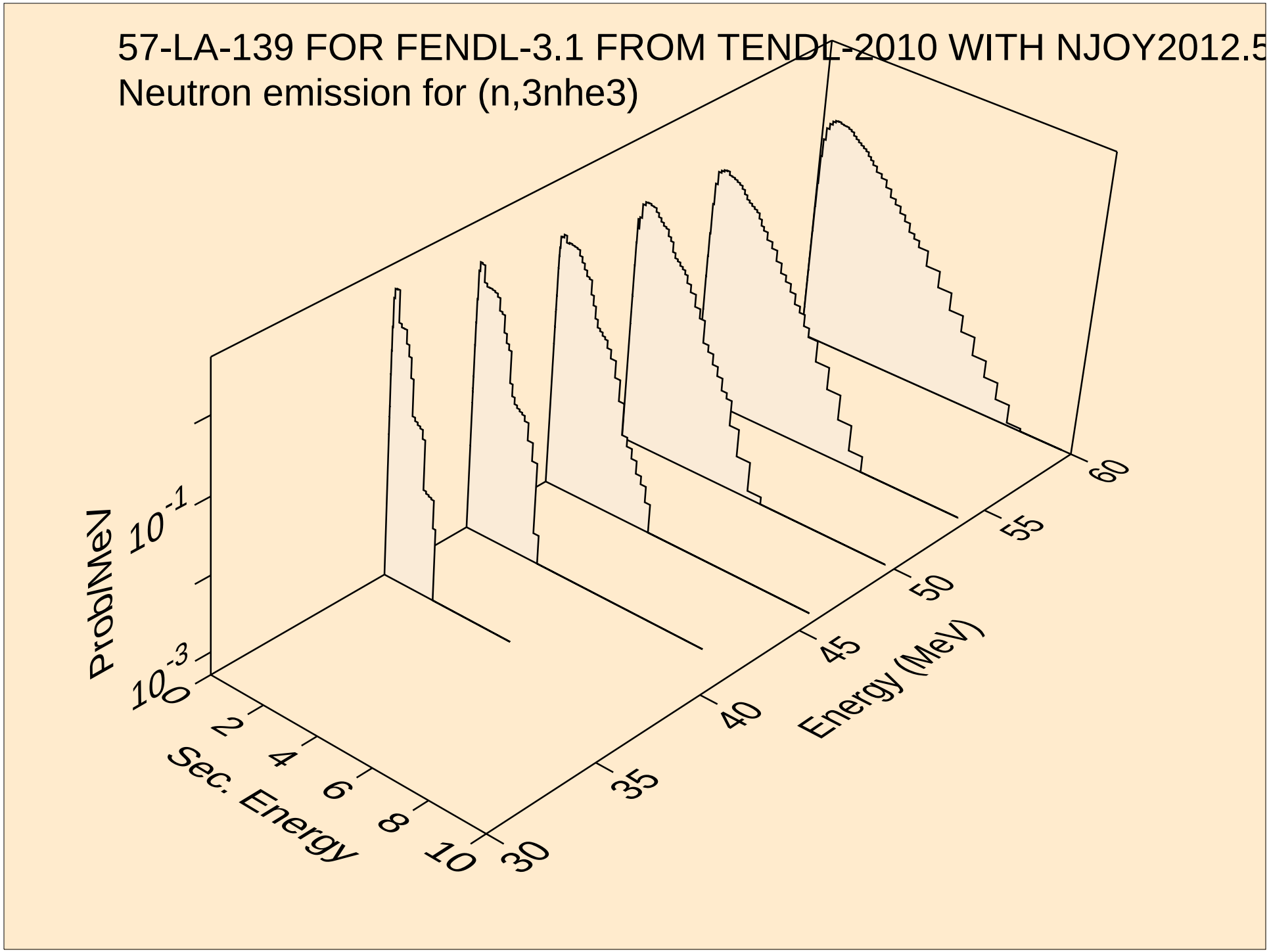

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Neutron emission for (n,5nd)
Prob/MeV
10^{0}
10^{-2}
0
2
4
6
Sec. Energy
44
46
48
50
52
54
56
58
60
Energy (MeV)

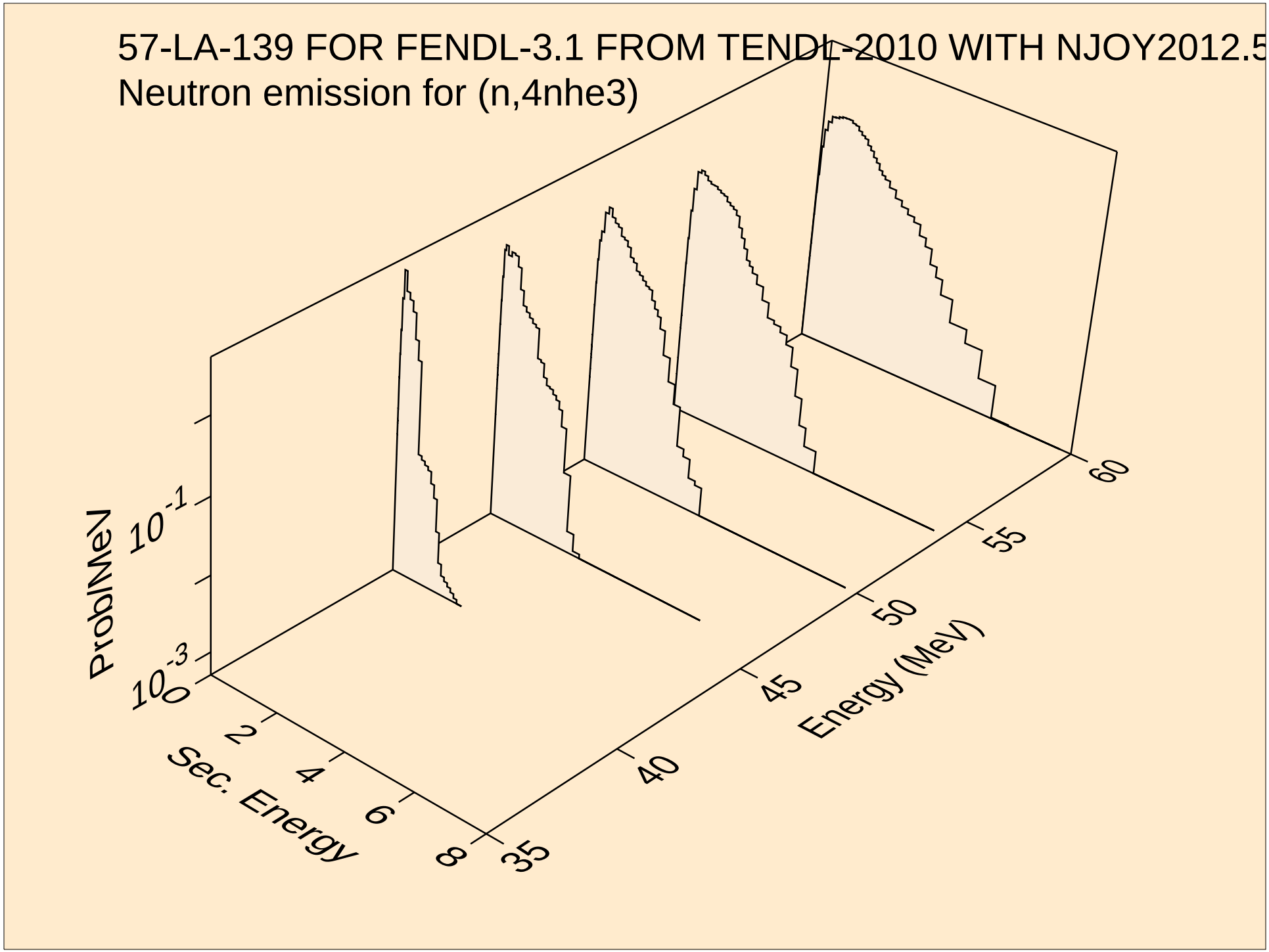

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Neutron emission for (n,3nt)
Prob/MeV
10-1
10-3
0
5
10
15
Sec. Energy
25
30
35
40
45
50
55
60
Energy (MeV)

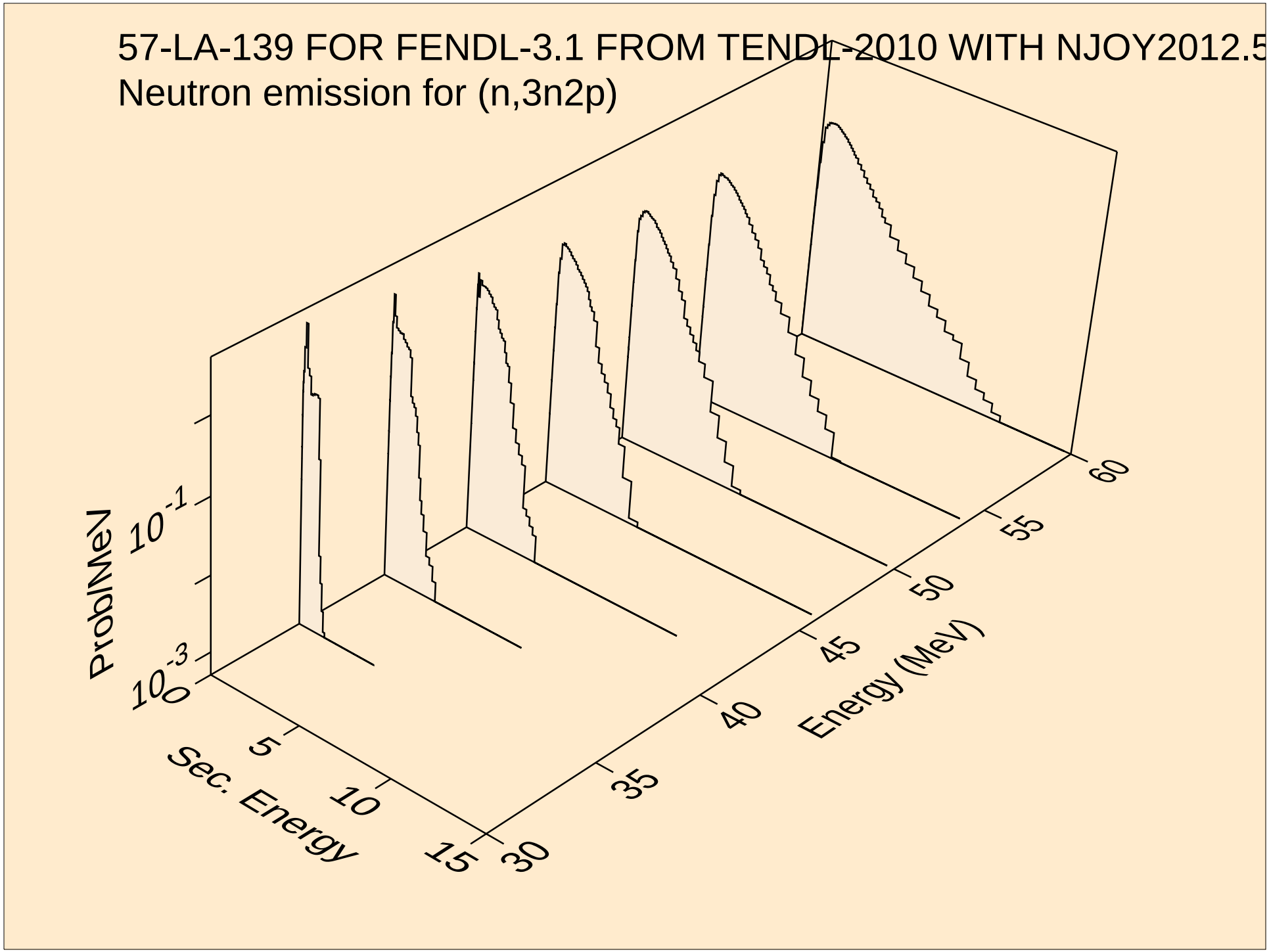

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Neutron emission for (n,4nt)
Prob/MeV
10-1
10-3
0
5
10
15
Sec. Energy
35
40
45
50
55
60
Energy (MeV)

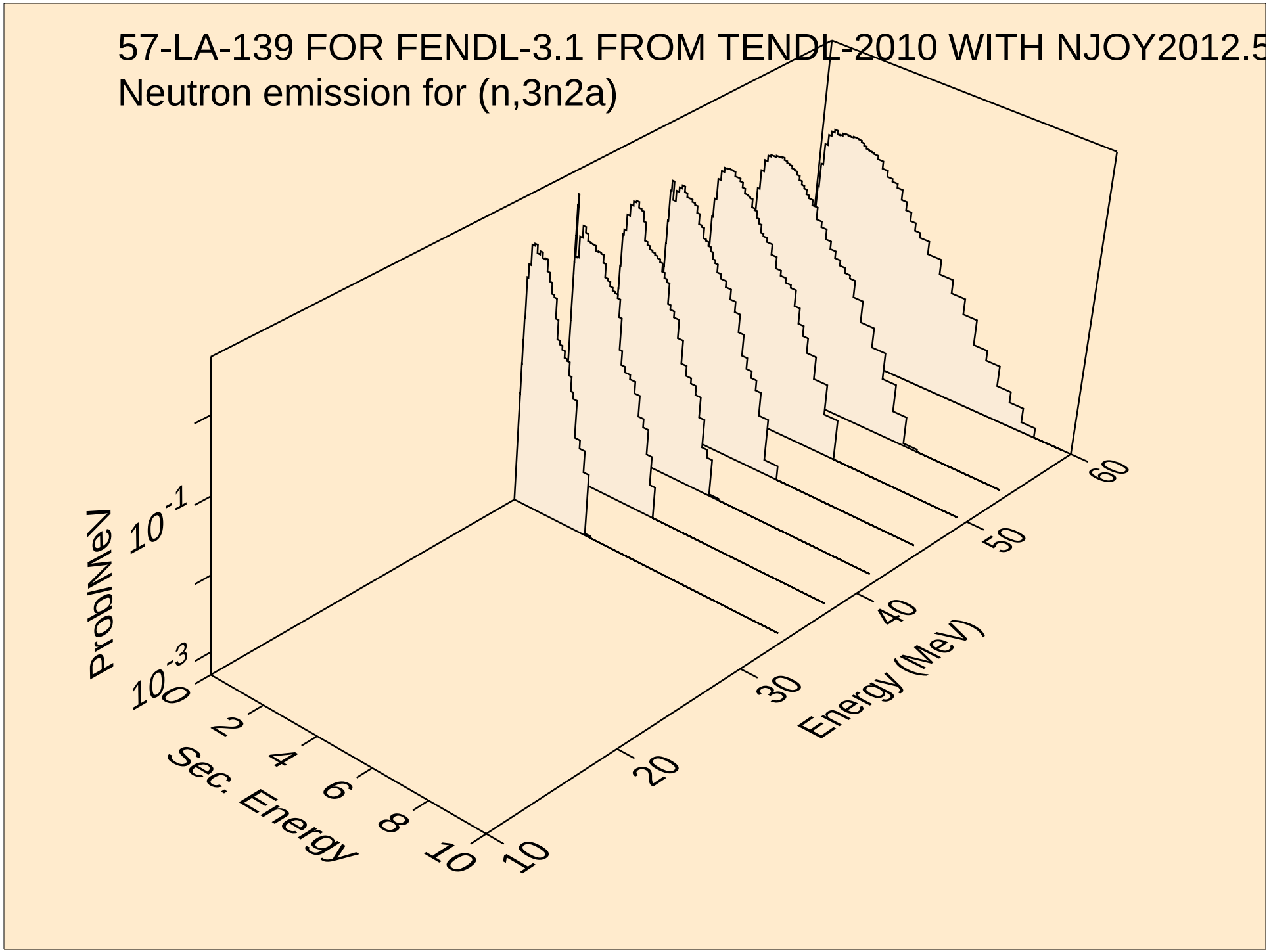

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Neutron emission for (n,5nt)
Prob/MeV
10-1
10-3
0
2
4
6
8
Sec. Energy
46
48
50
52
54
56
58
60
Energy (MeV)

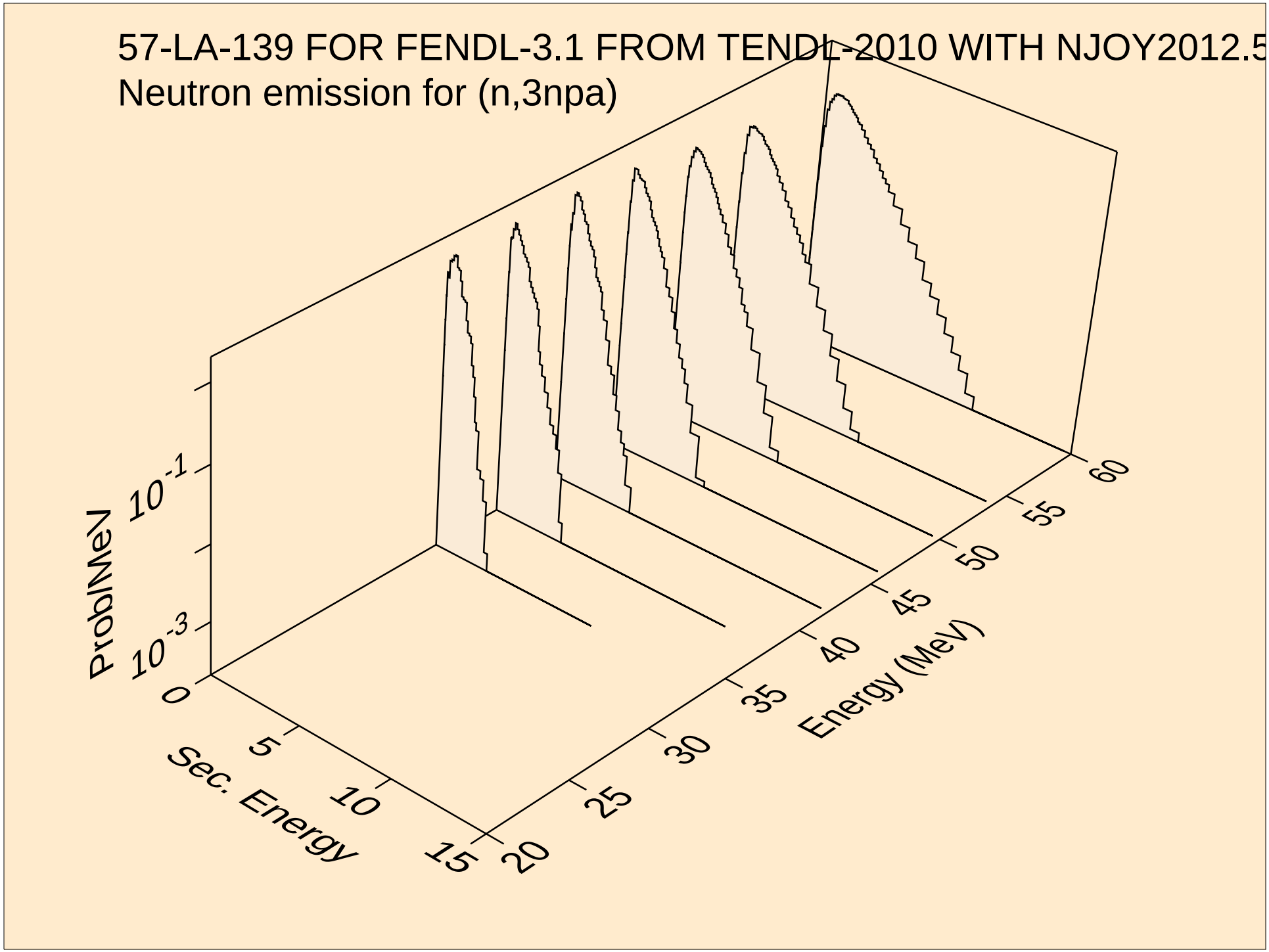

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Neutron emission for (n,2nhe3)
Prob/MeV
10^1
10^-1
0
2
4
6
8
10
Sec. Energy
20
25
30
35
40
45
50
55
60
Energy (MeV)

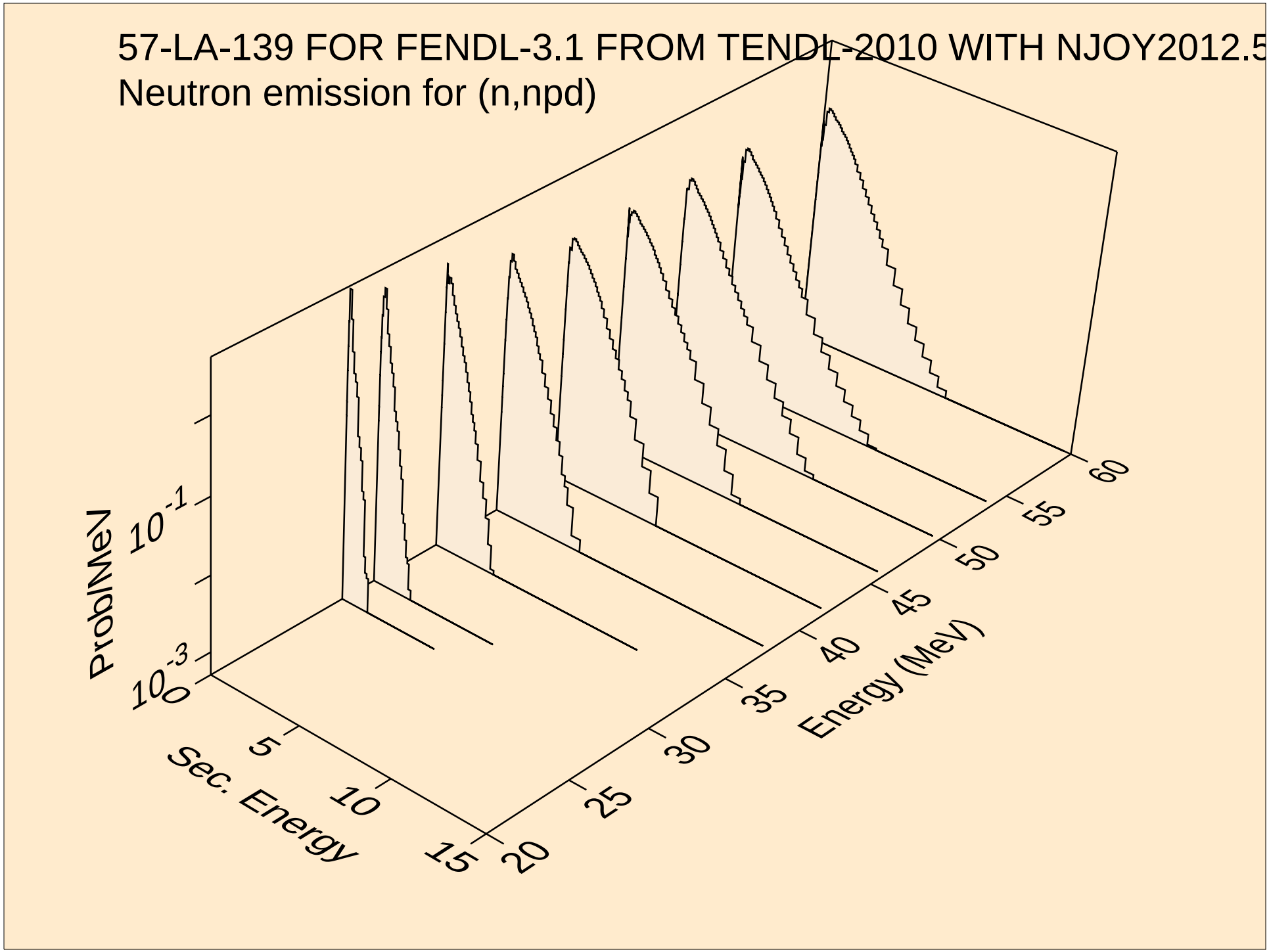

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Neutron emission for (n,3nhe3)
Prob/MeV
10-1
10-3
0
2
4
6
8
10
Sec. Energy
30
35
40
45
50
55
60
Energy (MeV)

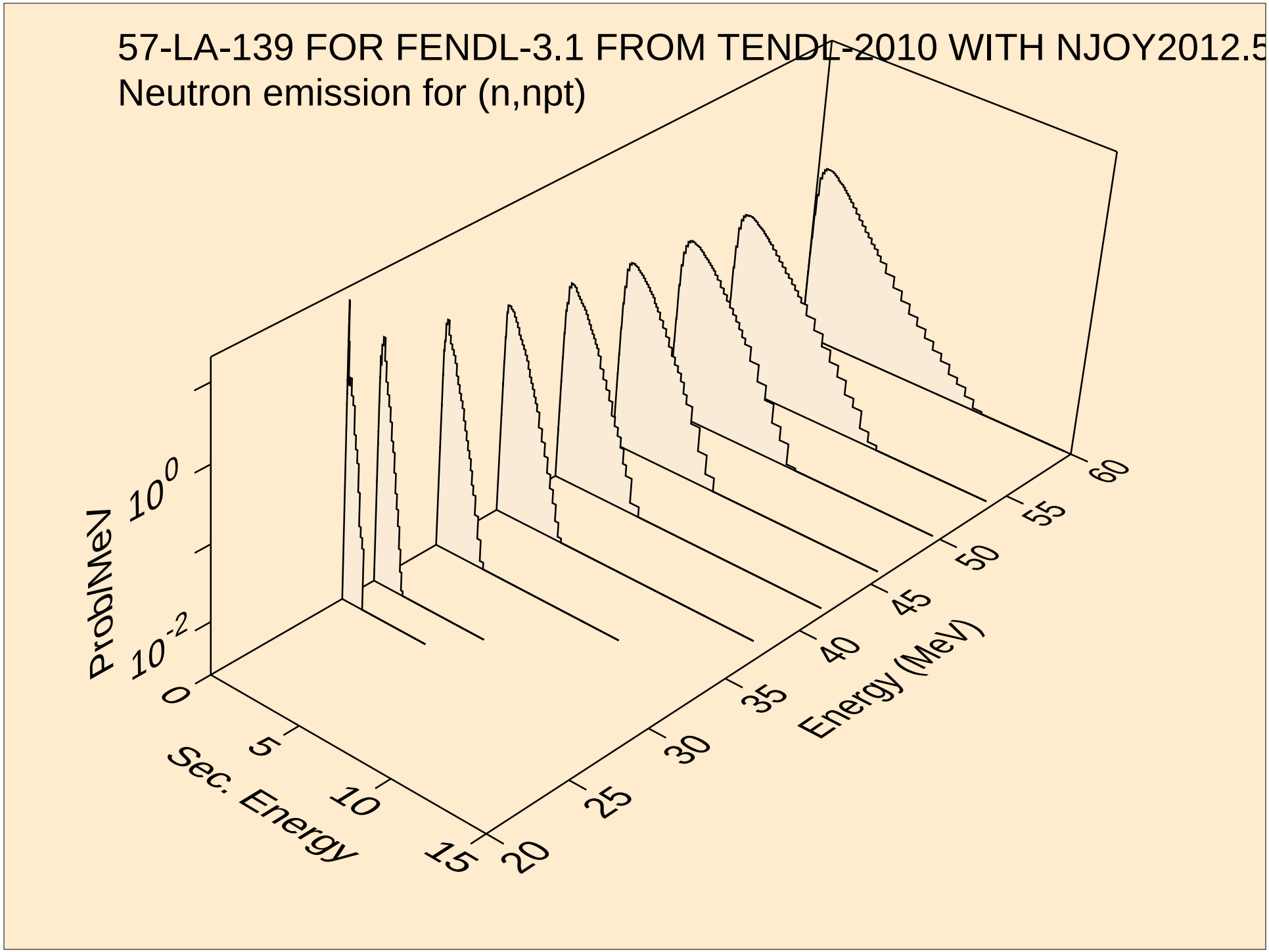

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Neutron emission for (n,4nhe3)
Prob/MeV
10-1
10-3
0
2
4
6
8
Sec. Energy
35
40
45
50
55
60
Energy (MeV)

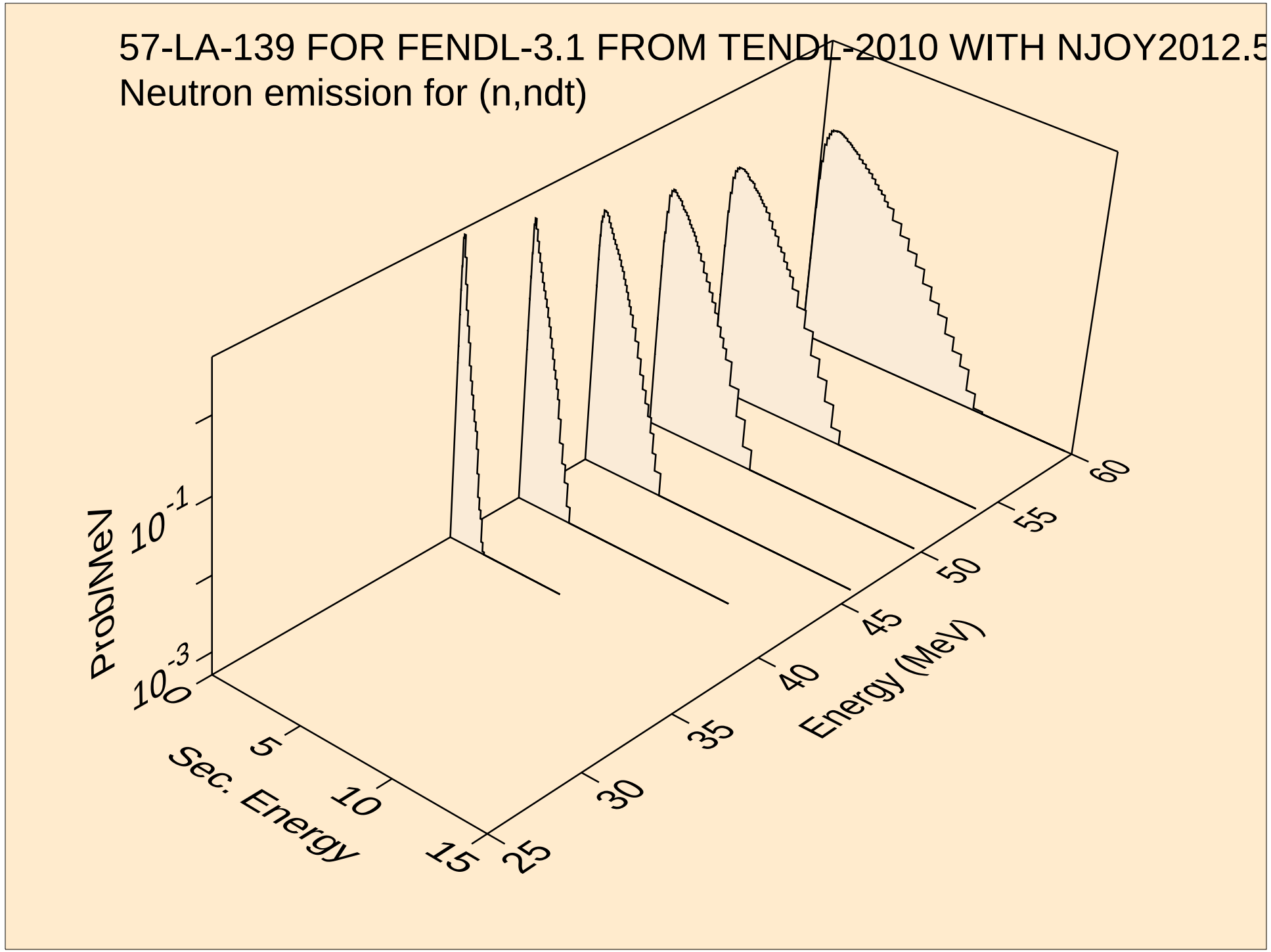

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Neutron emission for (n,3n2p)
Prob/MeV
10-1
10-3
0
5
10
15
Sec. Energy
30
35
40
45
50
55
60
Energy (MeV)

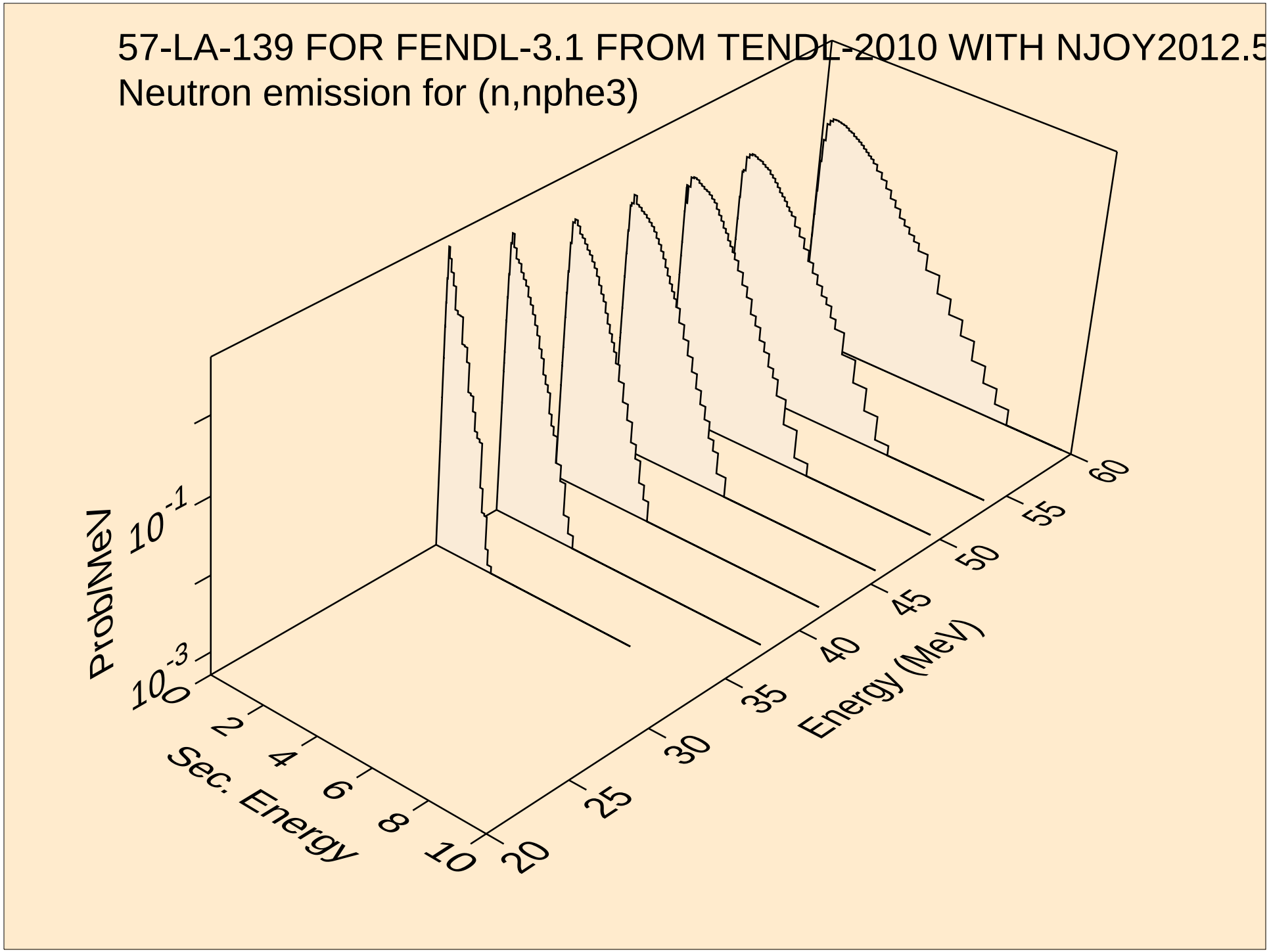

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Neutron emission for (n,3n2a)
Prob/MeV
10-1
10-3
0
2
4
6
8
10
Sec. Energy
10
20
30
40
50
60
Energy (MeV)

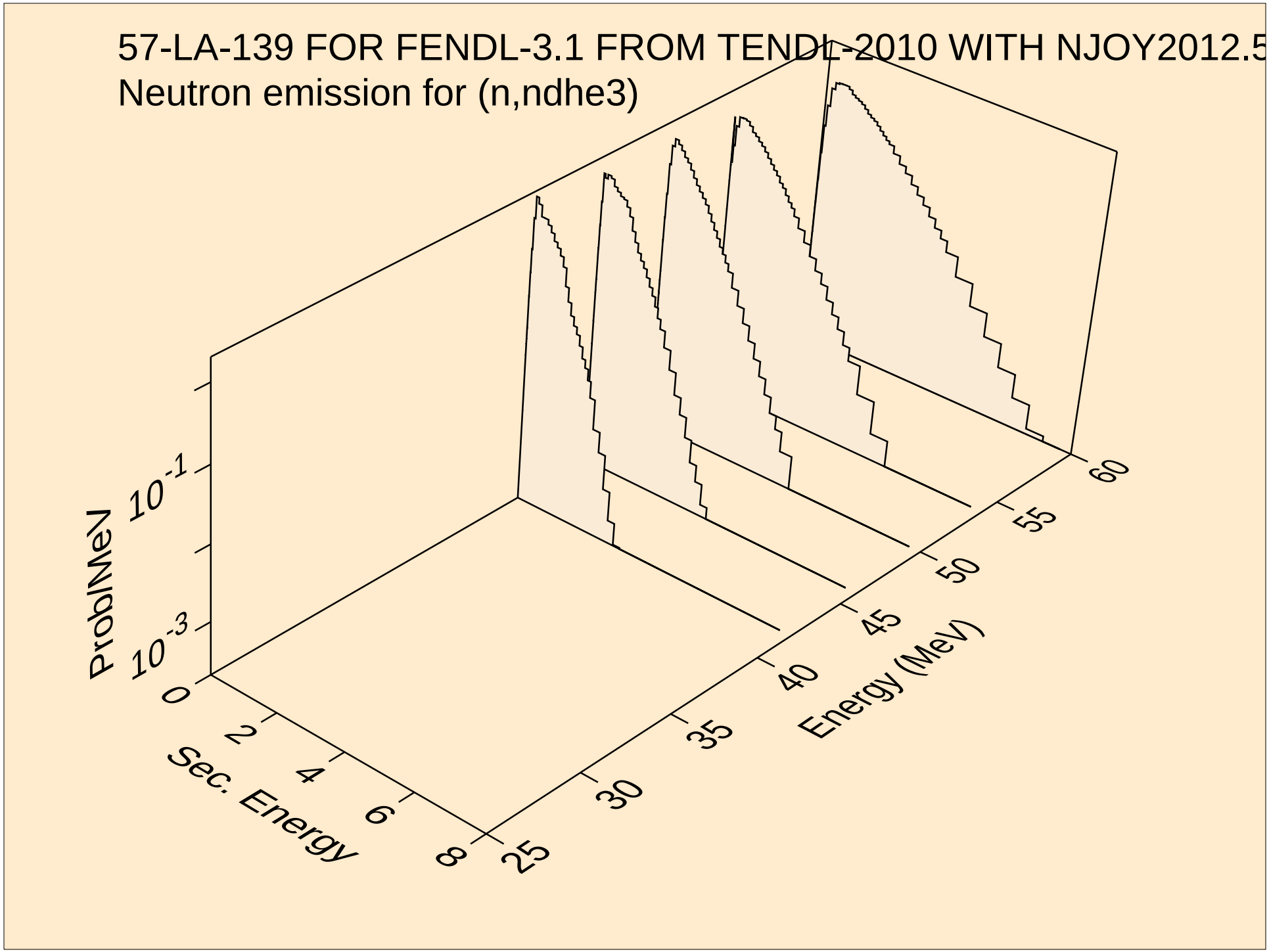

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Neutron emission for (n,3npa)
Prob/MeV
10-1
10-3
0
Sec. Energy
5
10
15
20
25
30
35
40
45
50
55
60
Energy (MeV)

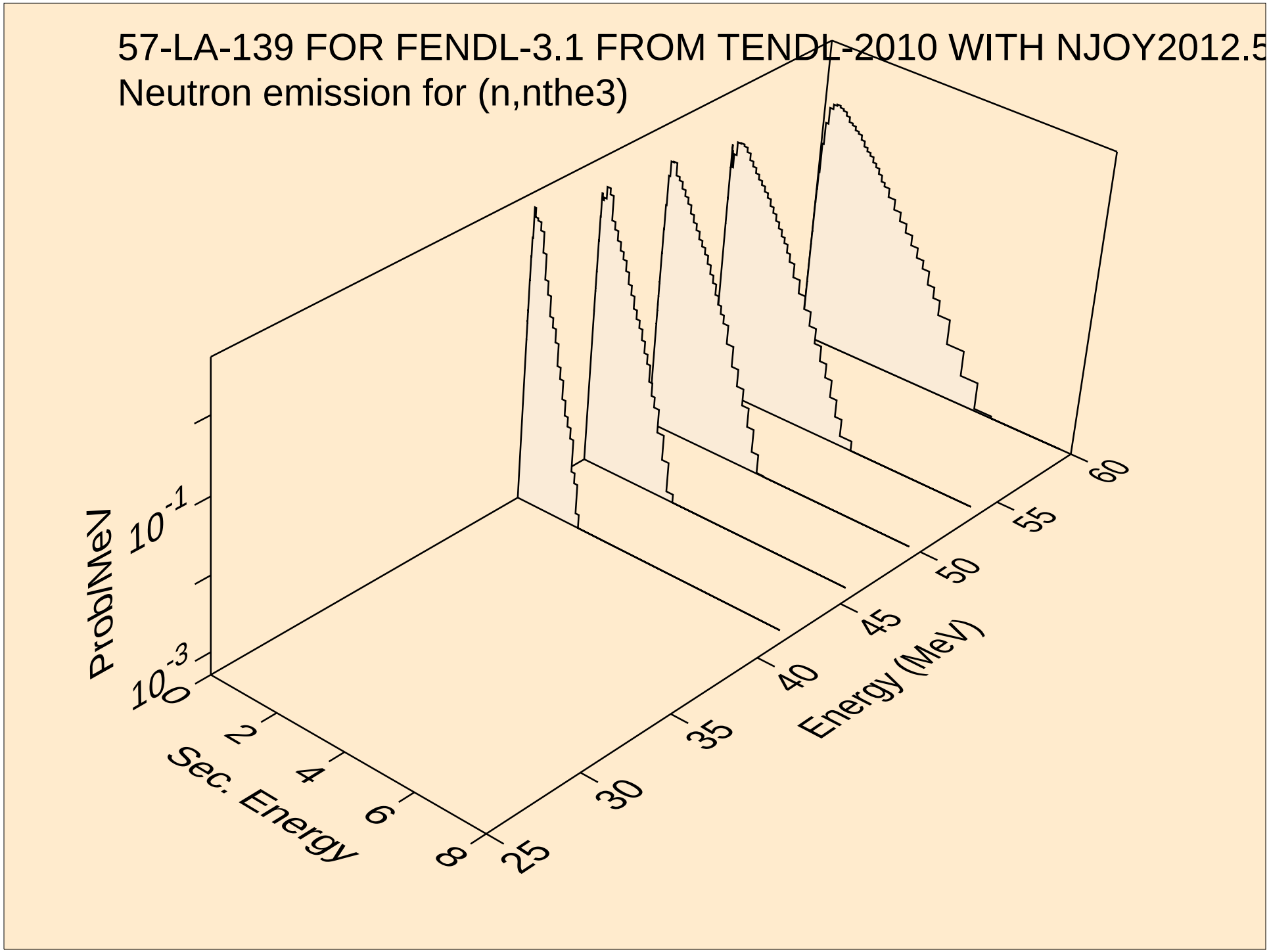

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Neutron emission for (n,npd)
Prob/MeV
10-1
10-3
0
5
10
15
20
Sec. Energy
25
30
35
40
45
50
55
60
Energy (MeV)

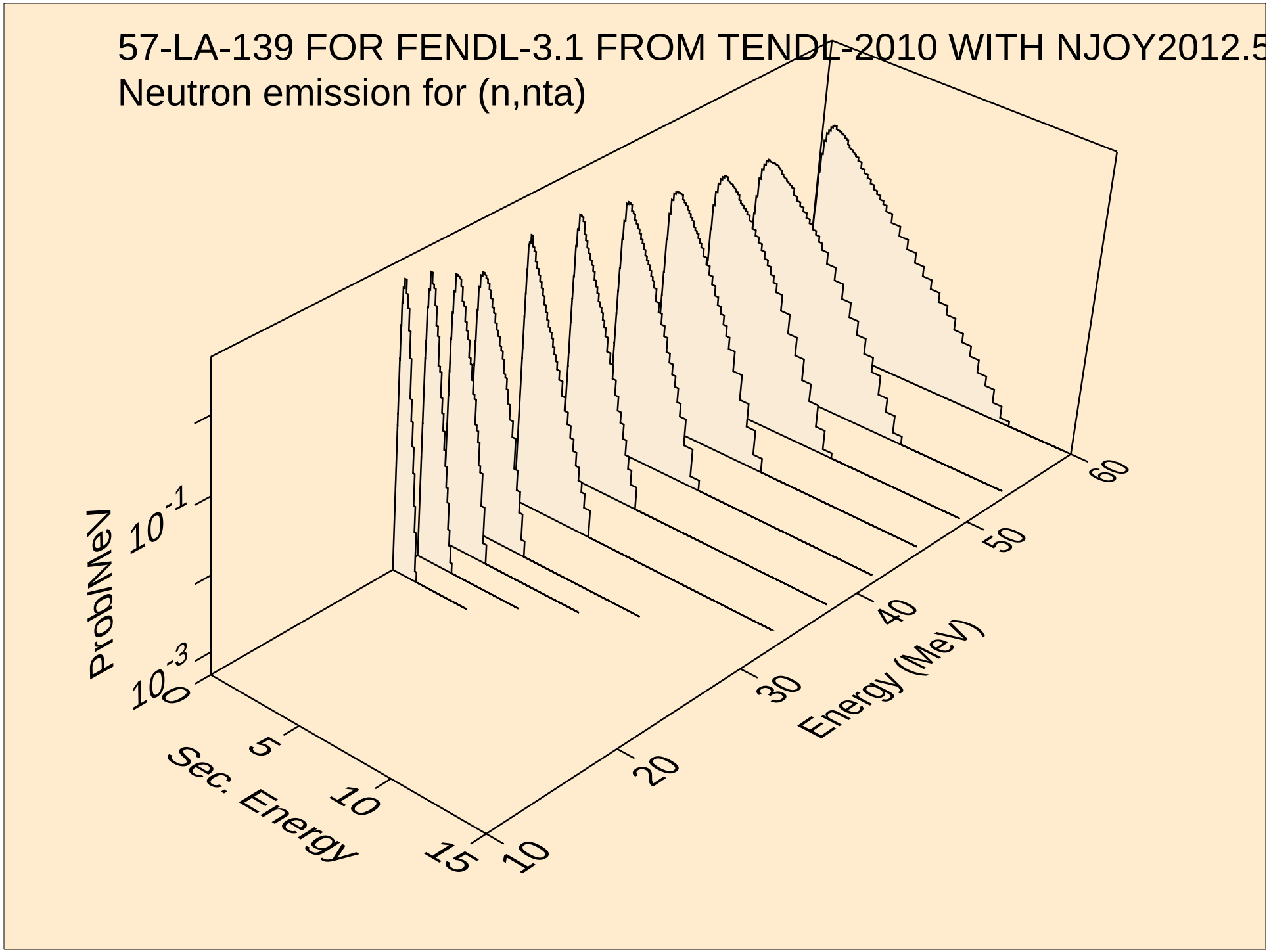

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Neutron emission for (n,npt)
Prob/MeV
10^0
10^-2
0
Sec. Energy
5
10
15
20
25
30
35
40
45
50
55
60
Energy (MeV)

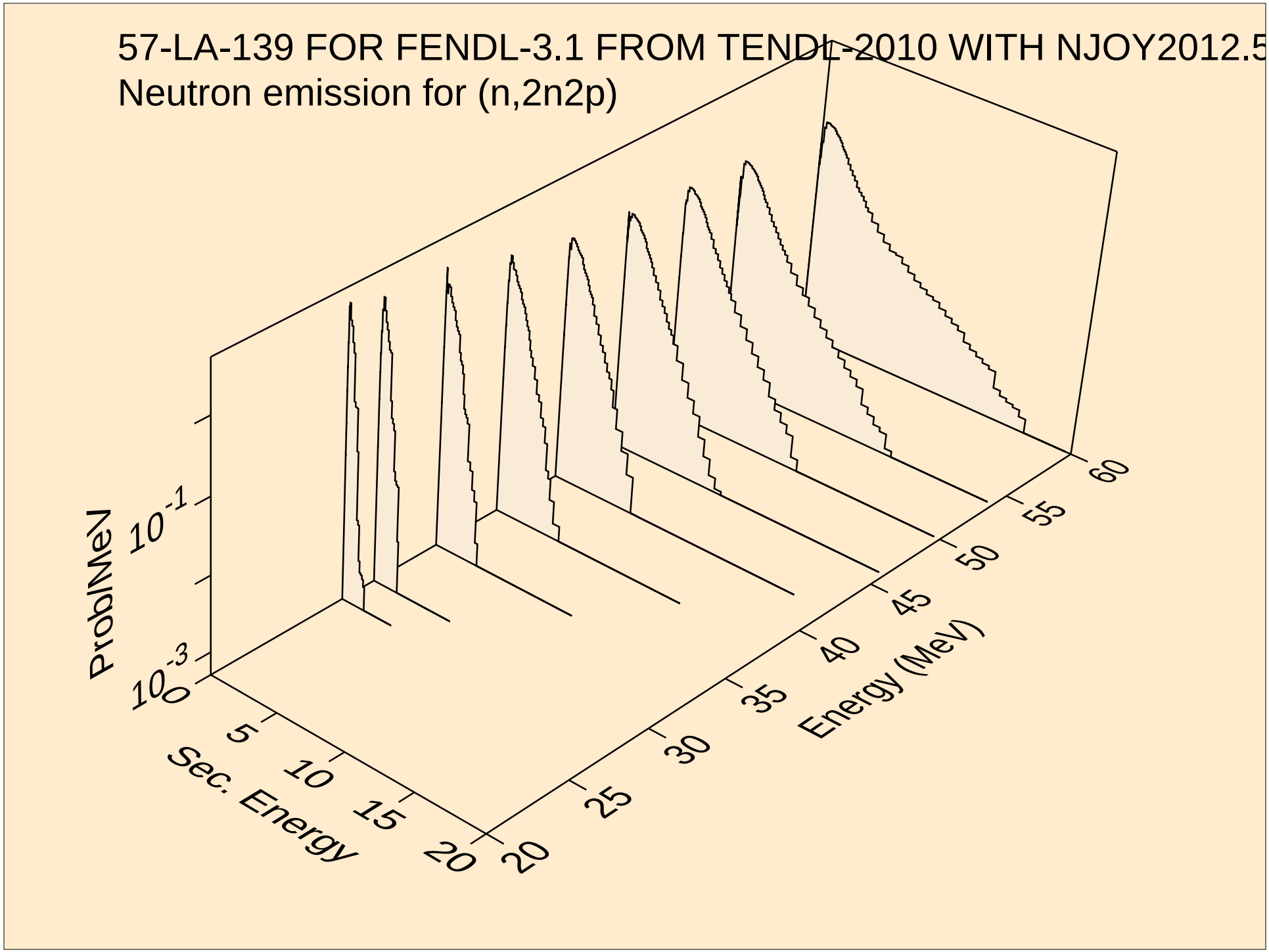

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Neutron emission for (n,ndt)
Prob/MeV
10-1
10-3
0
5
10
15
Sec. Energy
25
30
35
40
45
50
55
60
Energy (MeV)

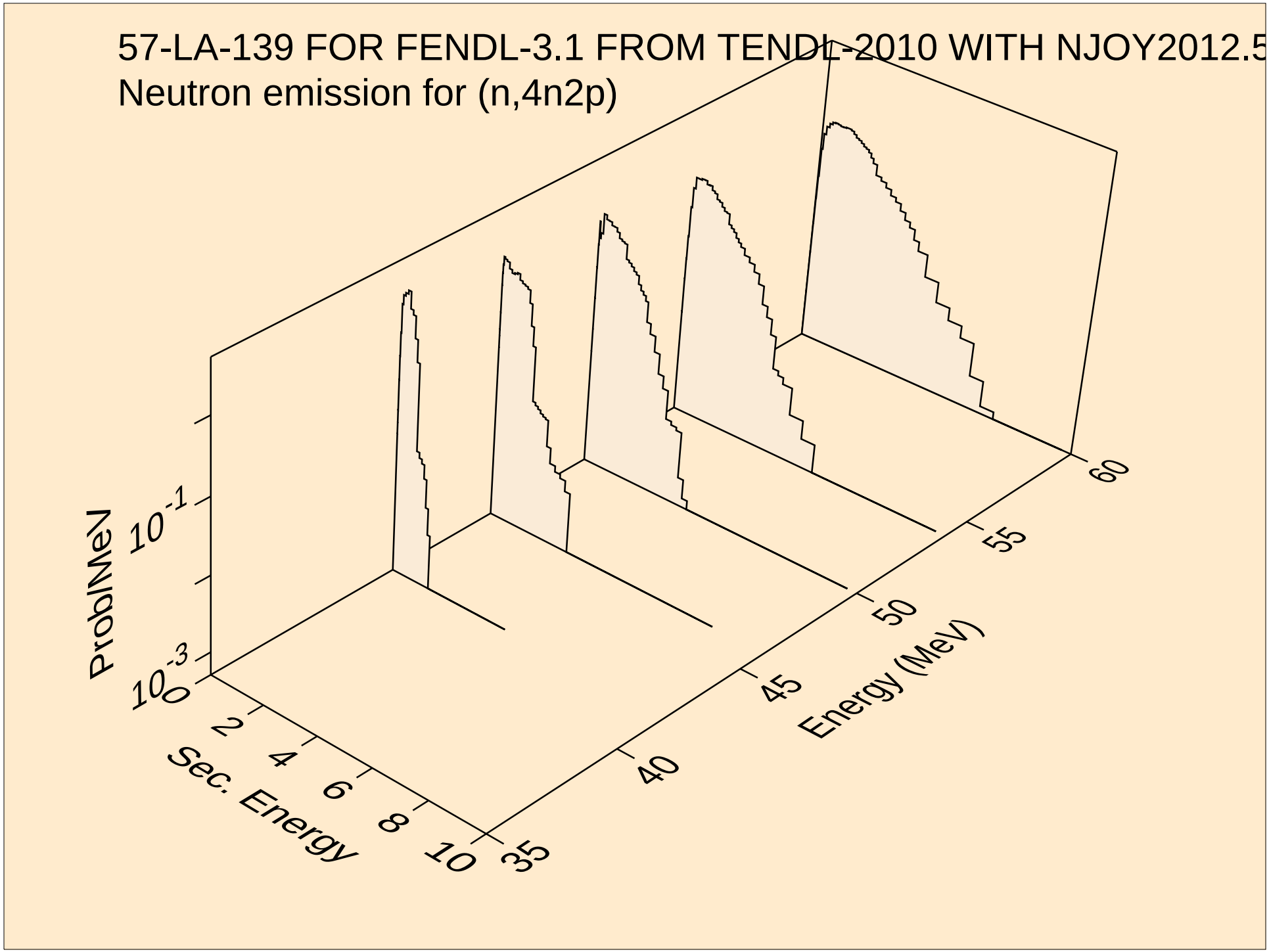

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Neutron emission for (n,nphe3)
Prob/MeV
10-1
10-3
0
2
4
6
8
10
Sec. Energy
20
25
30
35
40
45
50
55
60
Energy (MeV)

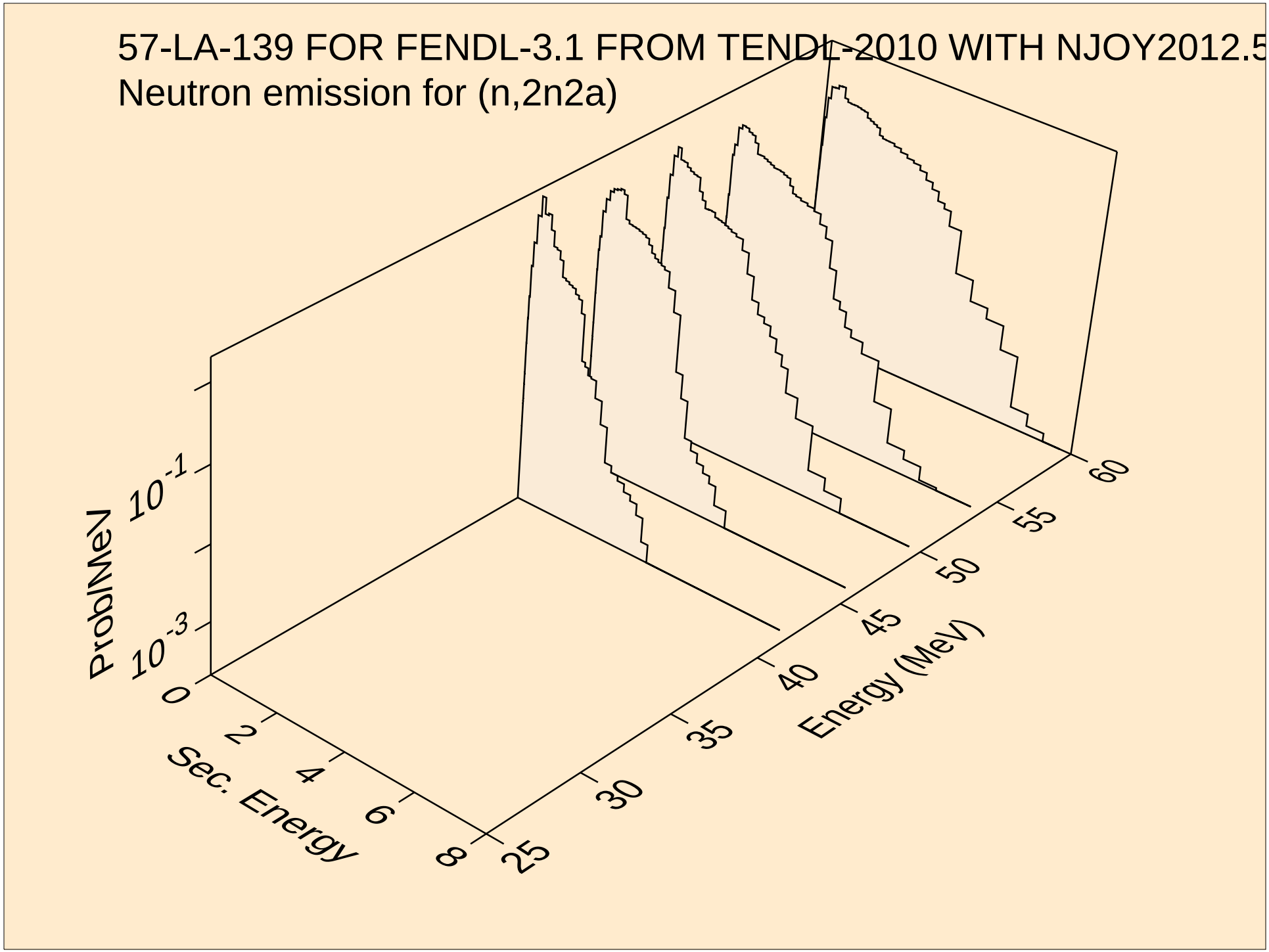

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Neutron emission for (n,ndhe3)
Prob/MeV
10-1
10-3
0
2
4
6
8
Sec. Energy
25
30
35
40
45
50
55
60
Energy (MeV)

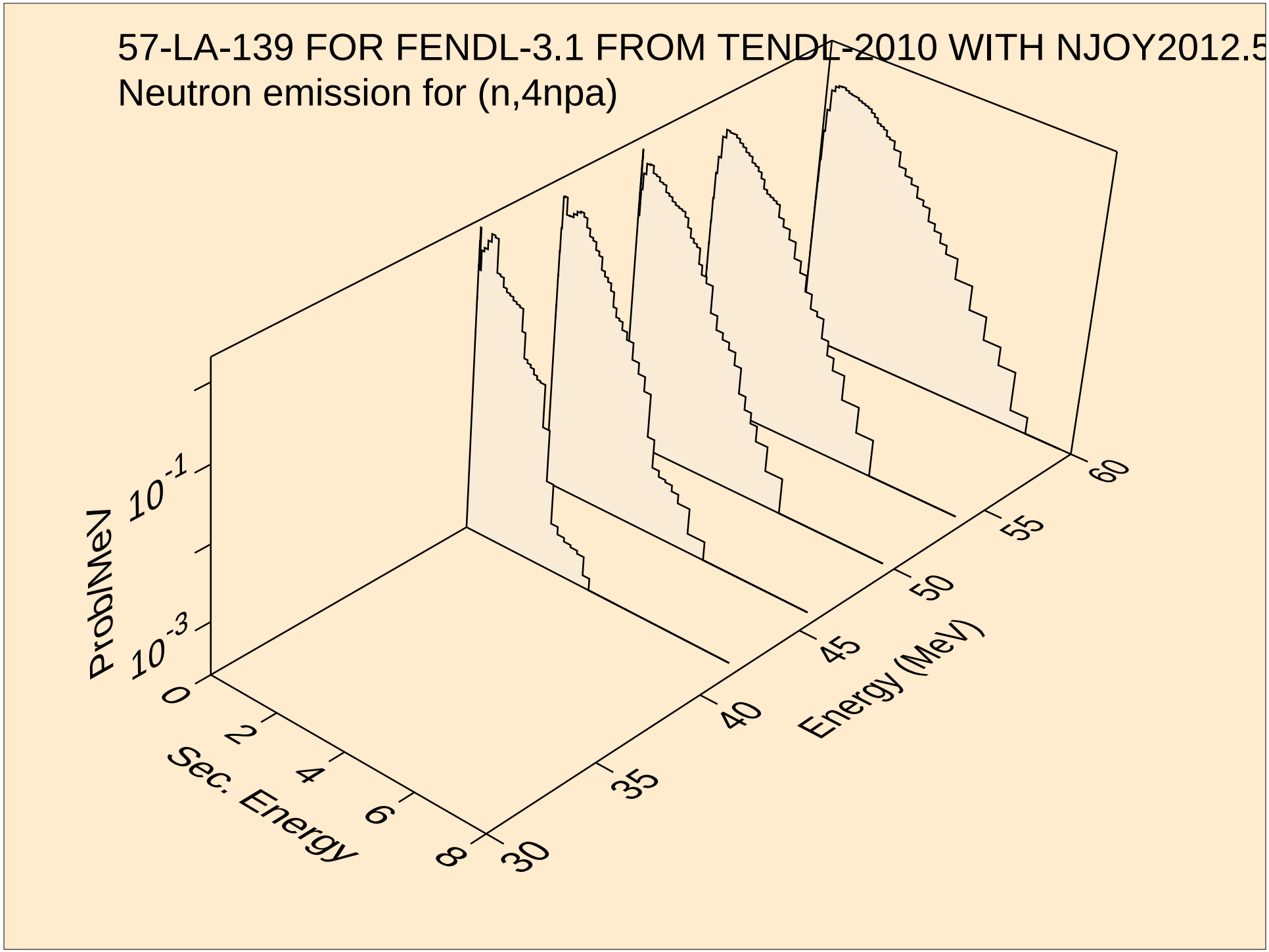

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Neutron emission for (n,nthe3)
Prob/MeV
10-1
10-3
0
2
4
6
8
Sec. Energy
25
30
35
40
45
50
55
60
Energy (MeV)

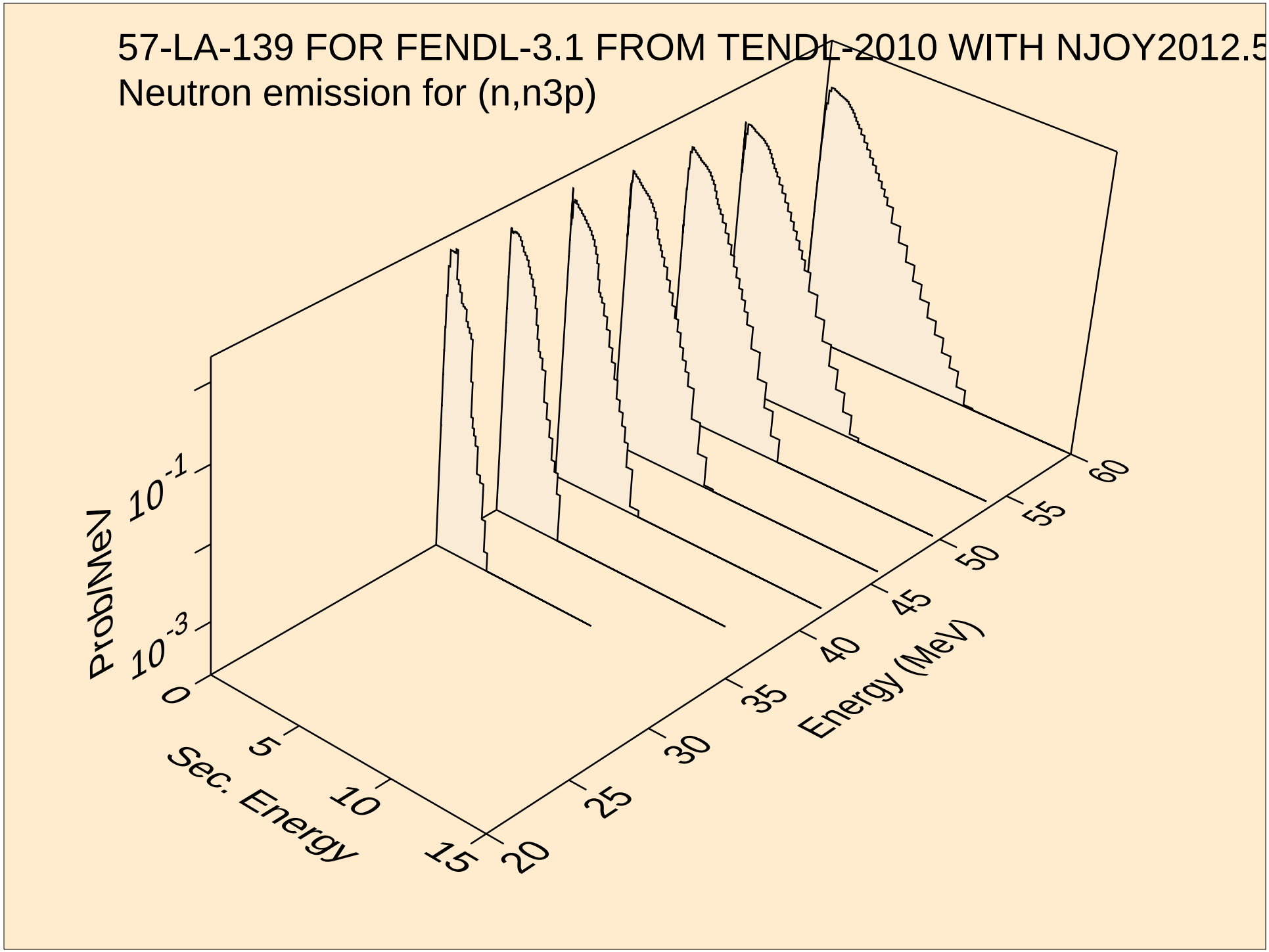

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Neutron emission for (n,nta)
Prob/MeV
10-1
10-3
0
5
10
15
Sec. Energy
10
20
30
40
50
60
Energy (MeV)

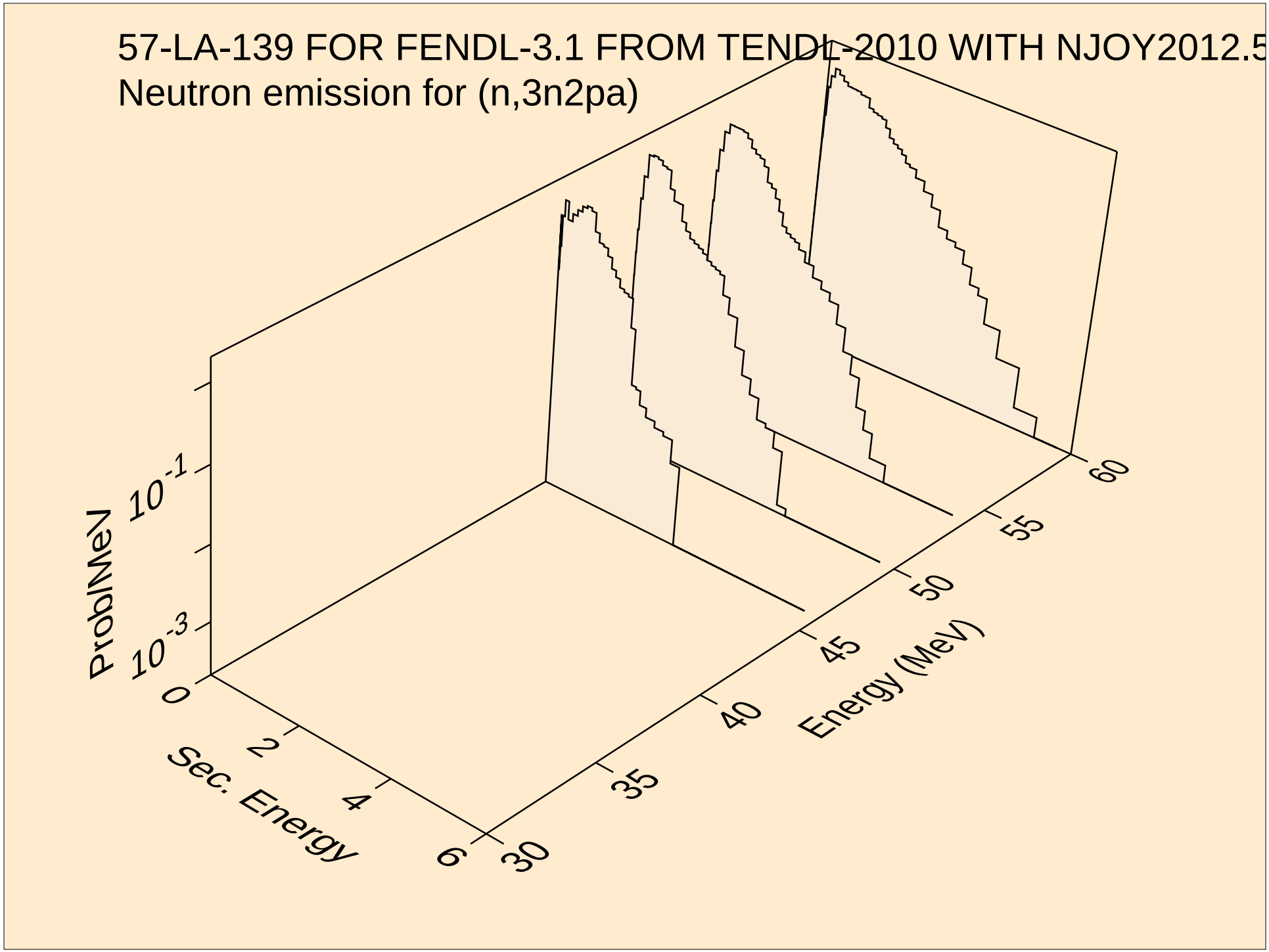

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Neutron emission for (n,2n2p)
Prob/MeV
10-1
10-3
0
5
10
15
20
Sec. Energy
20
25
30
35
40
45
50
55
60
Energy (MeV)

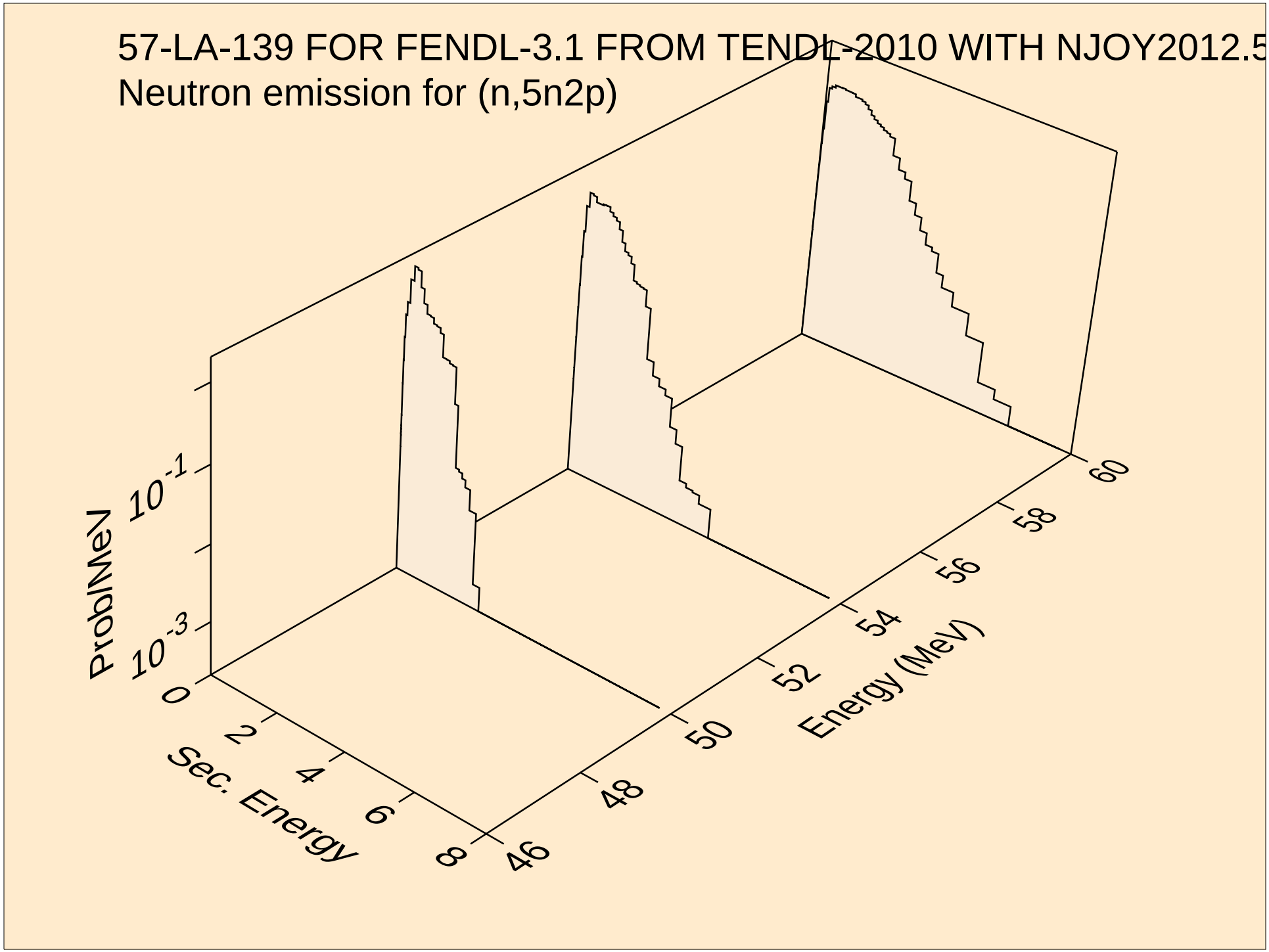

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Neutron emission for (n,4n2p)
Prob/MeV
10-1
10-3
0
2
4
6
8
10
Sec. Energy
35
40
45
50
55
60
Energy (MeV)

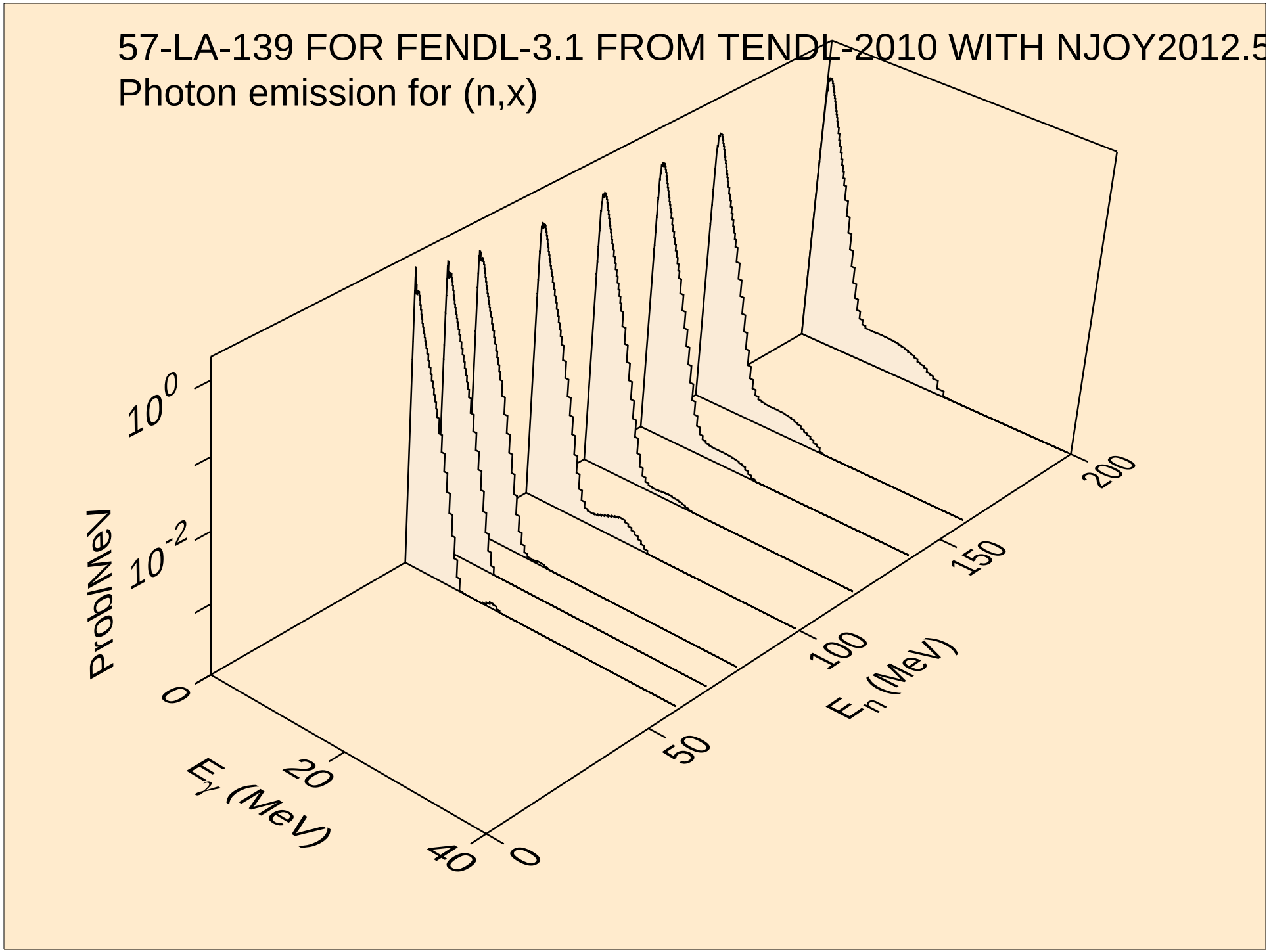

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Neutron emission for (n,2n2a)
Prob/MeV
10-1
10-3
0
Sec. Energy
2
4
6
8
25
30
35
40
45
50
55
60
Energy (MeV)

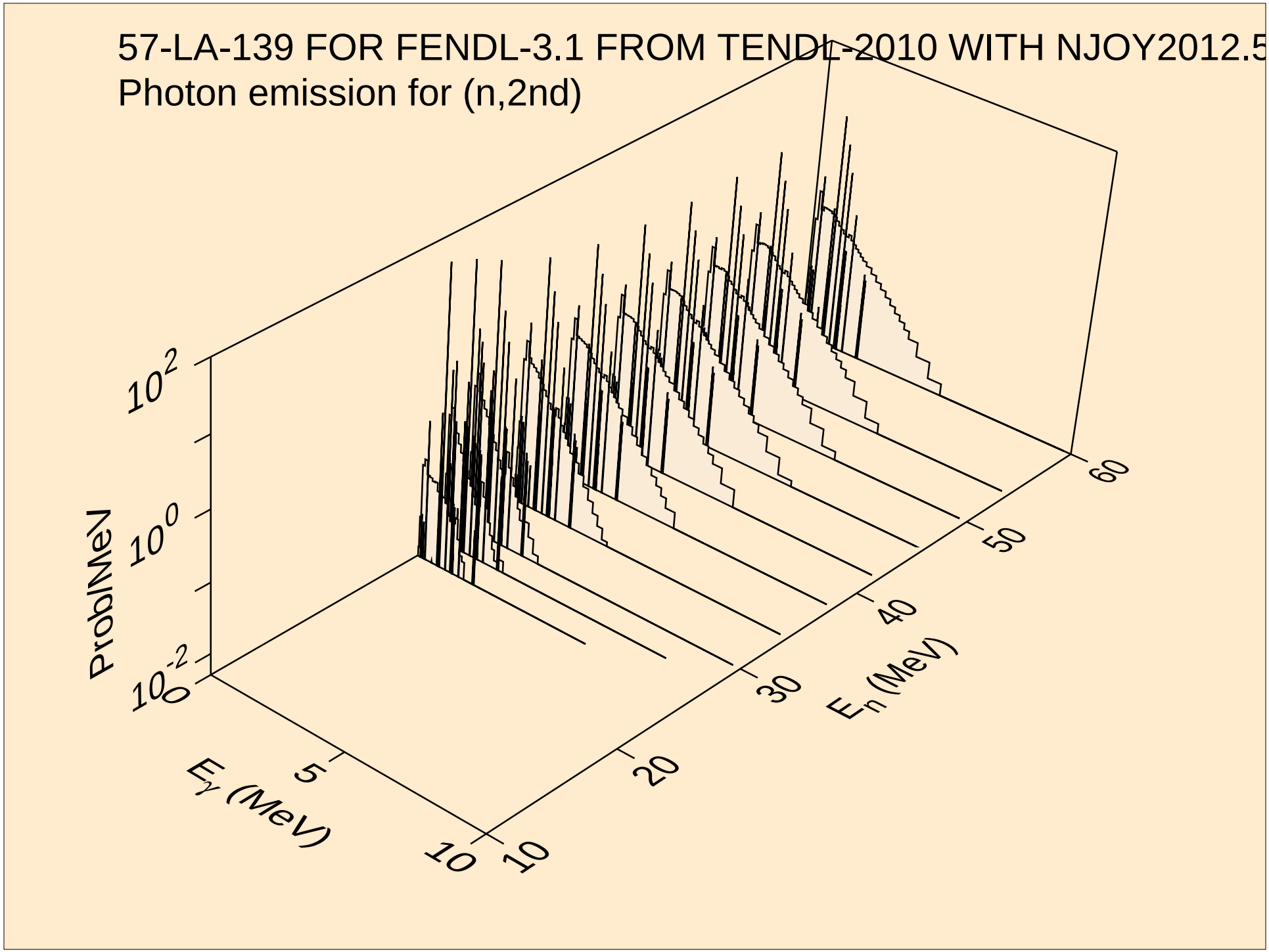

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Neutron emission for (n,4npa)
Prob/MeV
10-1
10-3
0
2
4
6
8
Sec. Energy
30
35
40
45
50
55
60
Energy (MeV)

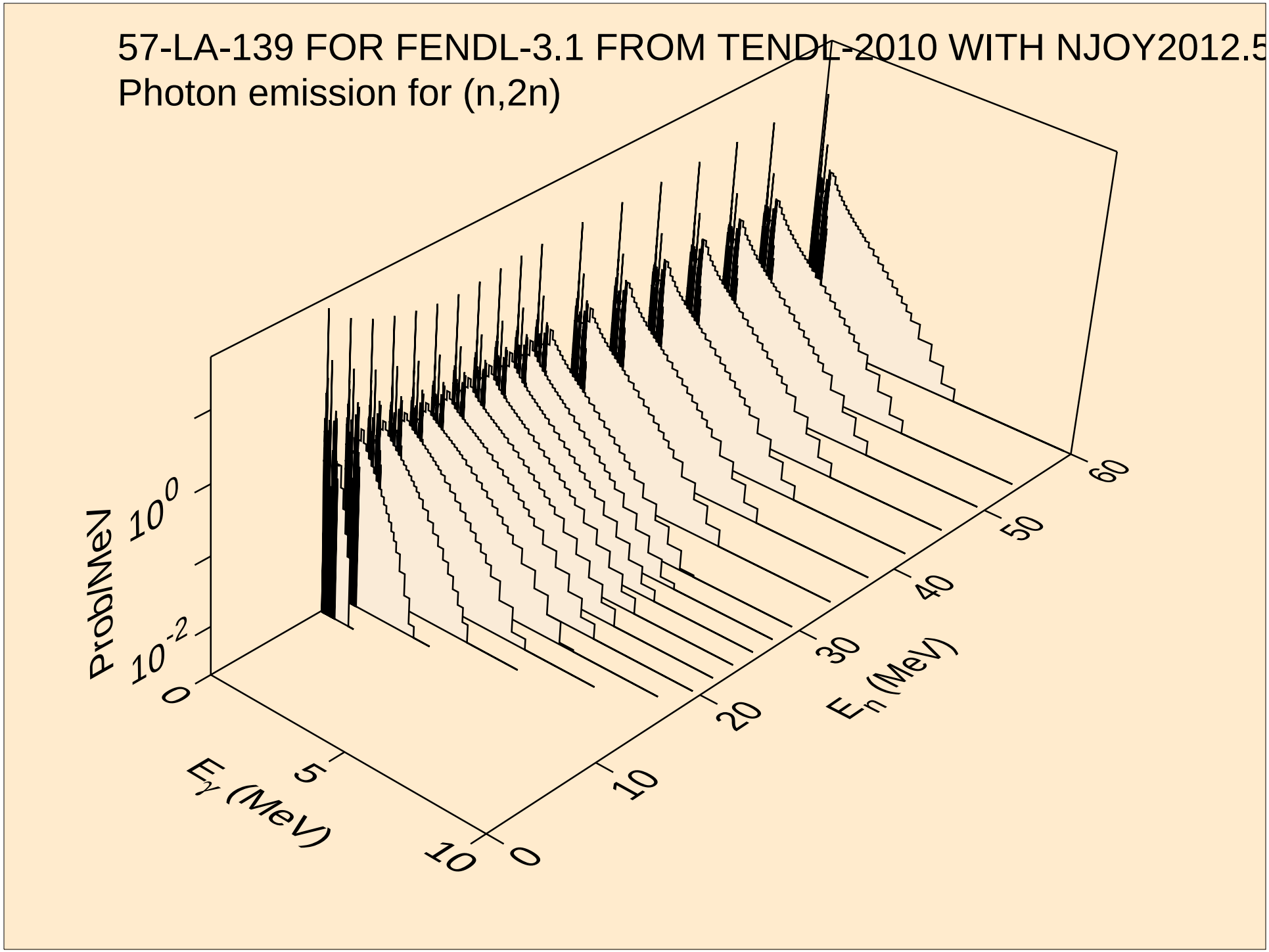

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Neutron emission for (n,n3p)
Prob/MeV
10-1
10-3
0
Sec. Energy
5
10
15
20
25
30
35
40
45
50
55
60
Energy (MeV)

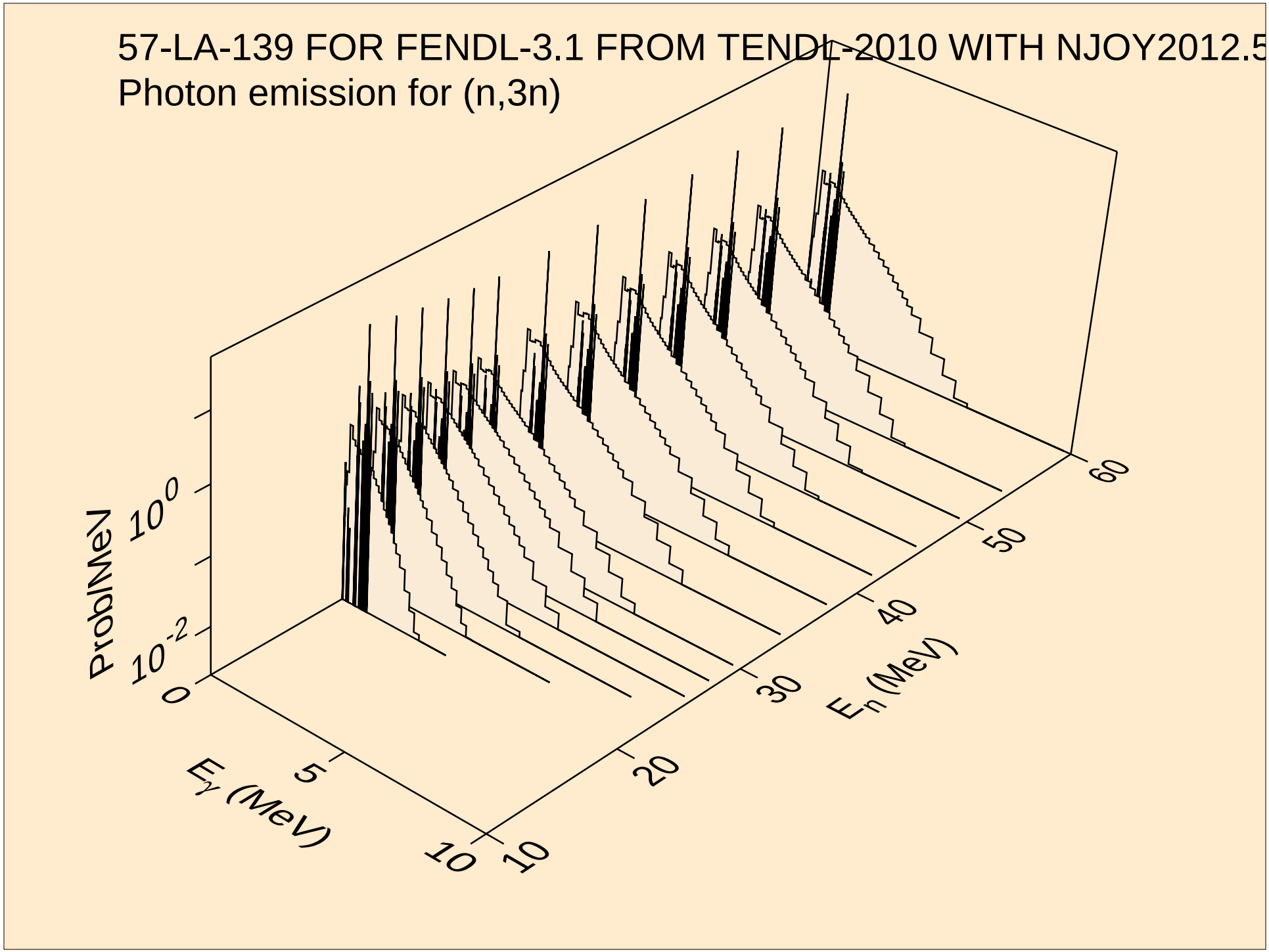

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Neutron emission for (n,3n2pa)
Prob/MeV
10-1
10-3
0
2
4
6
Sec. Energy
30
35
40
45
50
55
60
Energy (MeV)

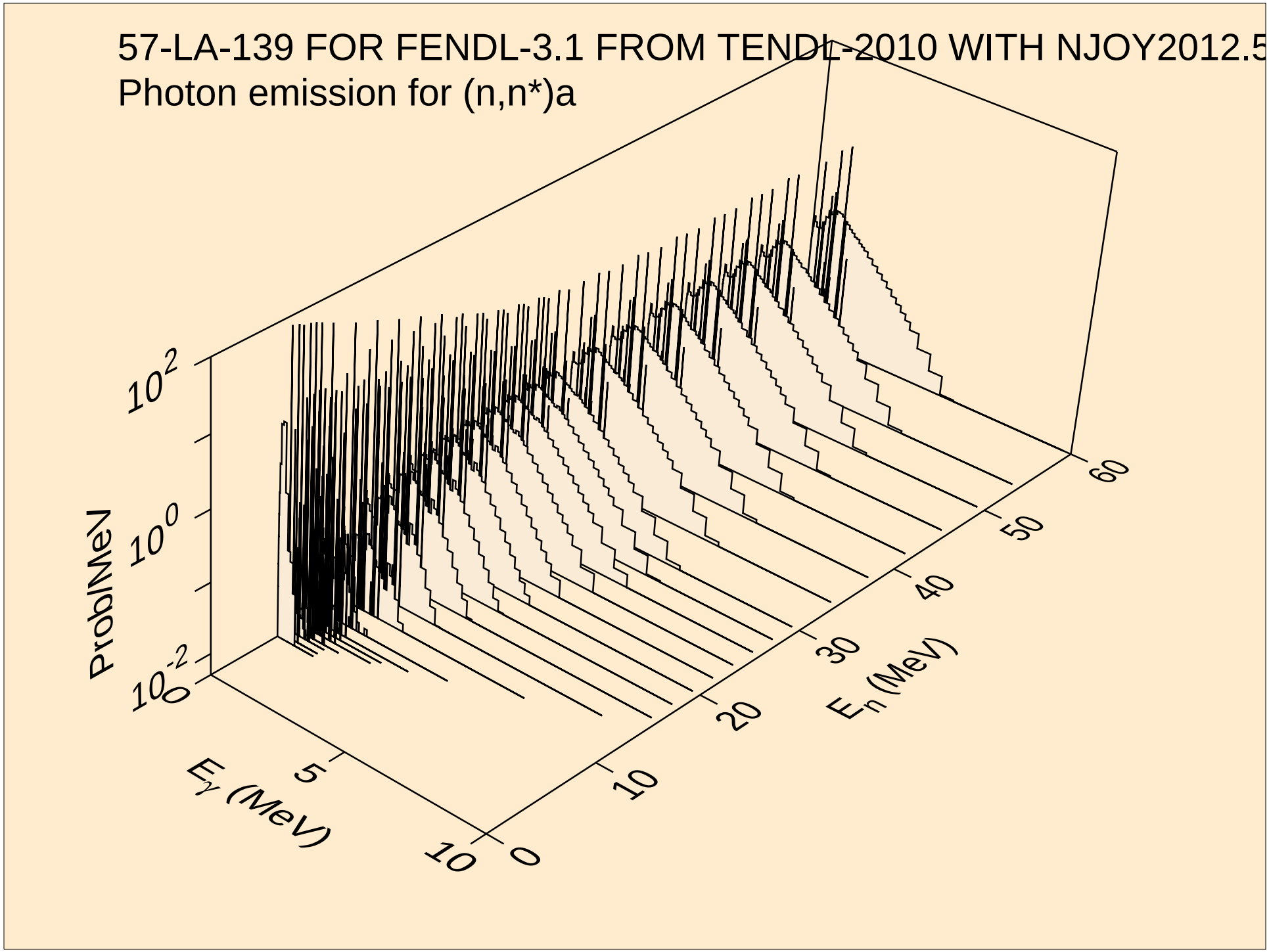

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Neutron emission for (n,5n2p)
Prob/MeV
10-1
10-3
0
2
4
6
8
Sec. Energy
46
48
50
52
54
56
58
60
Energy (MeV)

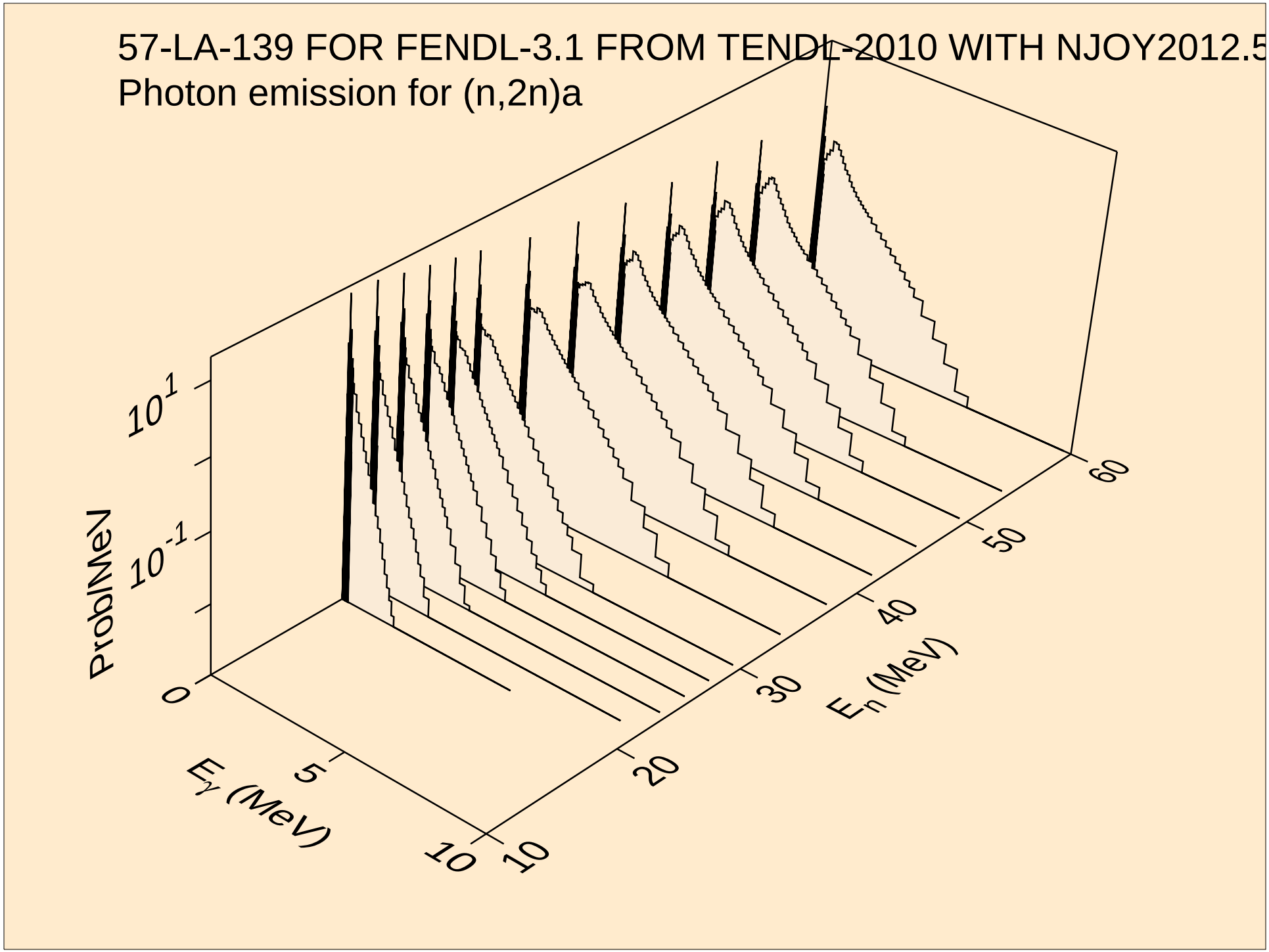

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Photon emission for (n,x)
Prob/MeV
10^{0}
10^{-2}
0
20
40
E_γ (MeV)
0
50
100
150
200
E_n (MeV)

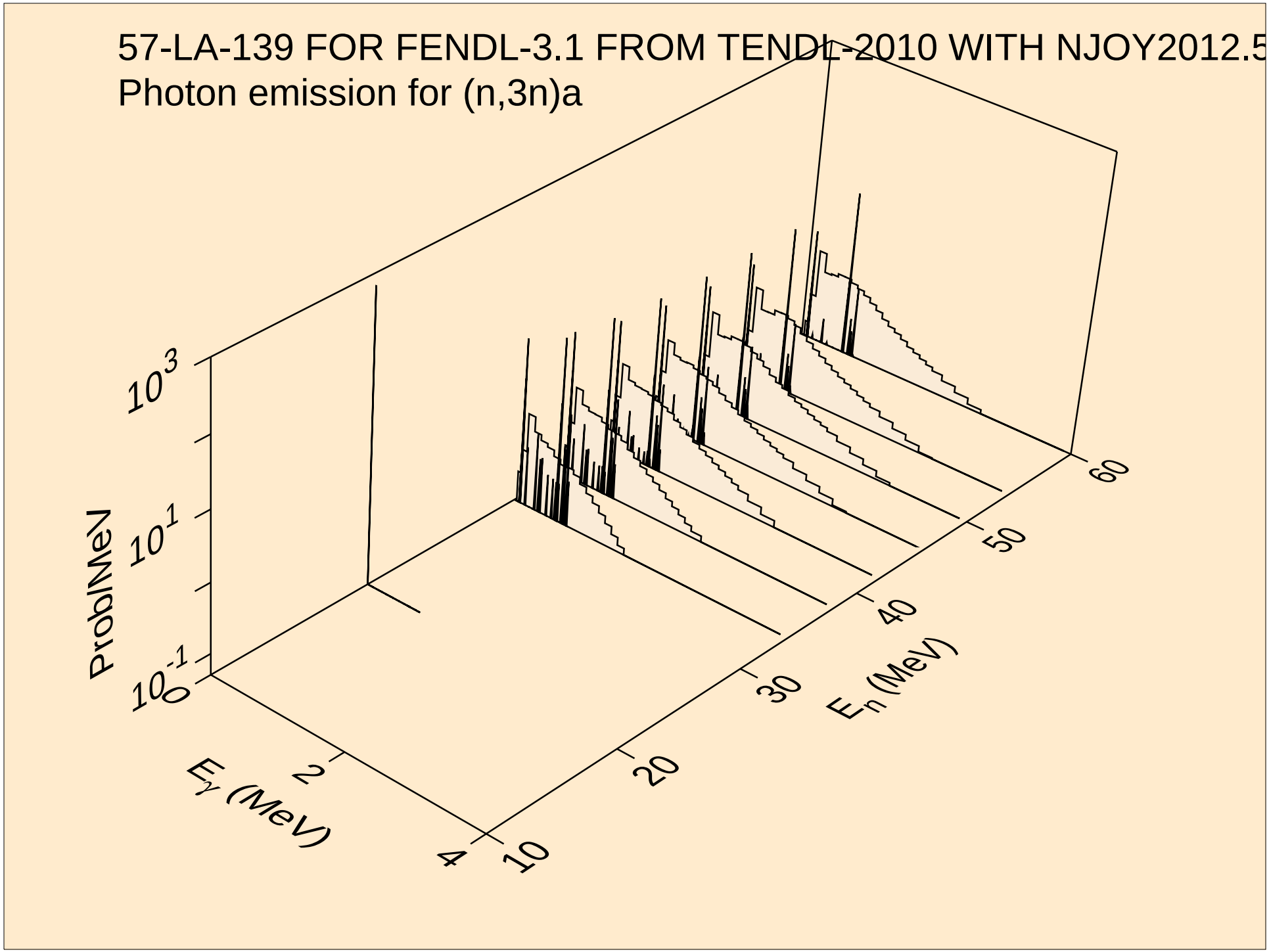

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Photon emission for (n,2nd)
Prob/MeV
10^{2}
10^{0}
10^{-2}
0
5
10
E_γ (MeV)
10
20
30
40
50
60
E_n (MeV)

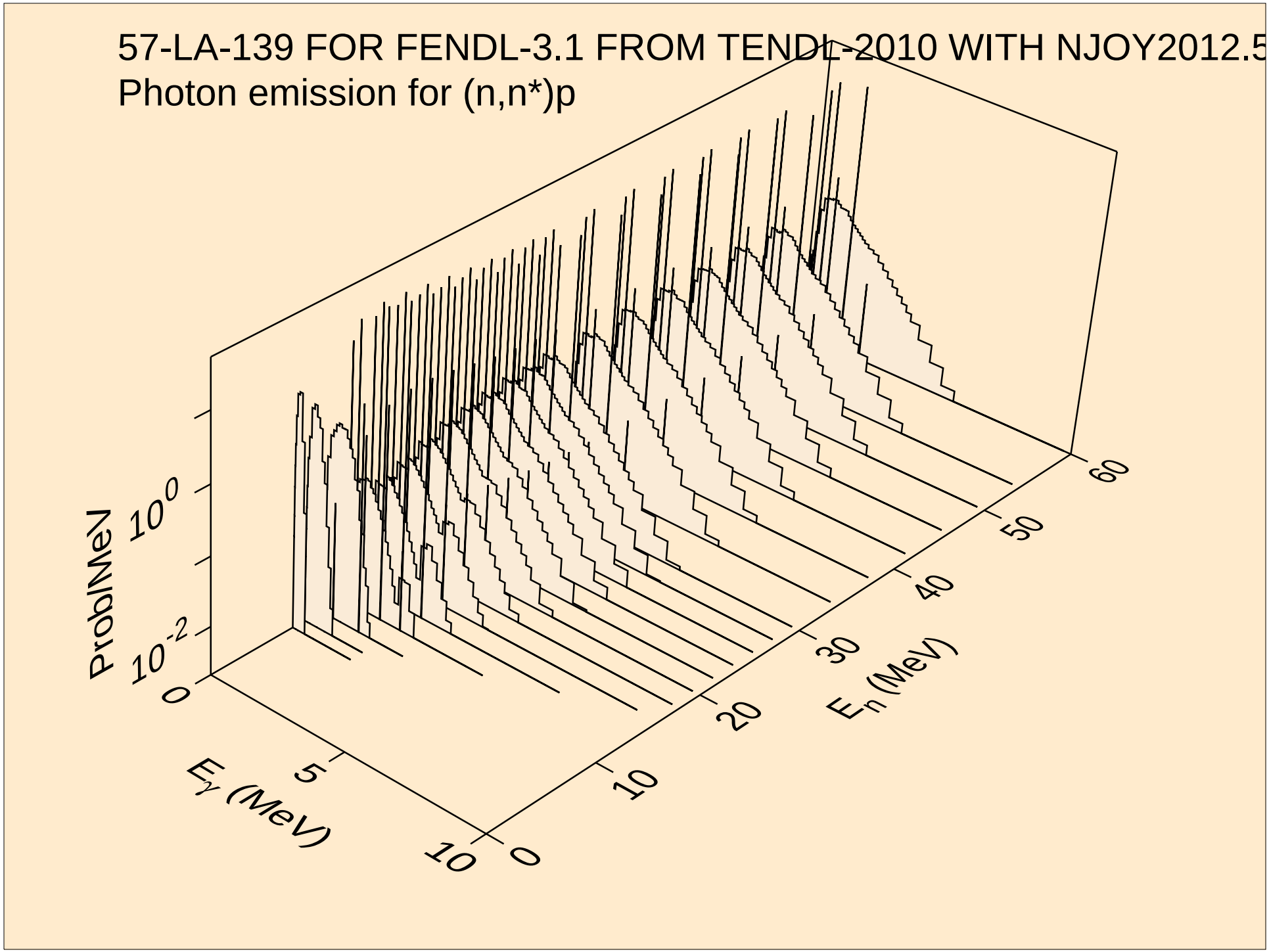

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Photon emission for (n,2n)
Prob/MeV
10^{0}
10^{-2}
0
5
10
E_γ (MeV)
0
10
20
30
40
50
60
E_n (MeV)

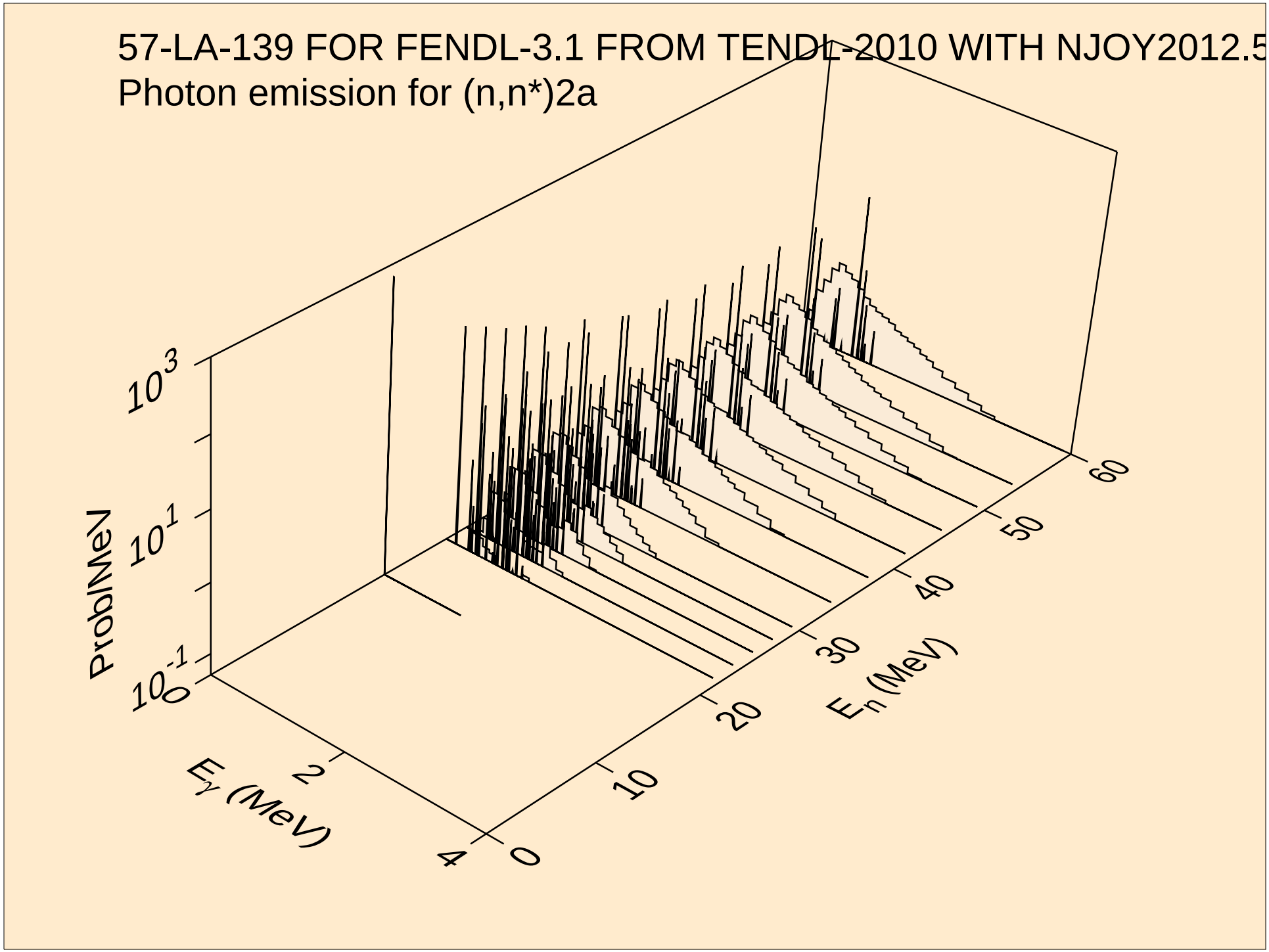

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Photon emission for (n,3n)
Prob/MeV
10^0
10^-2
0
5
10
Eγ (MeV)
10
20
30
40
50
60
En (MeV)

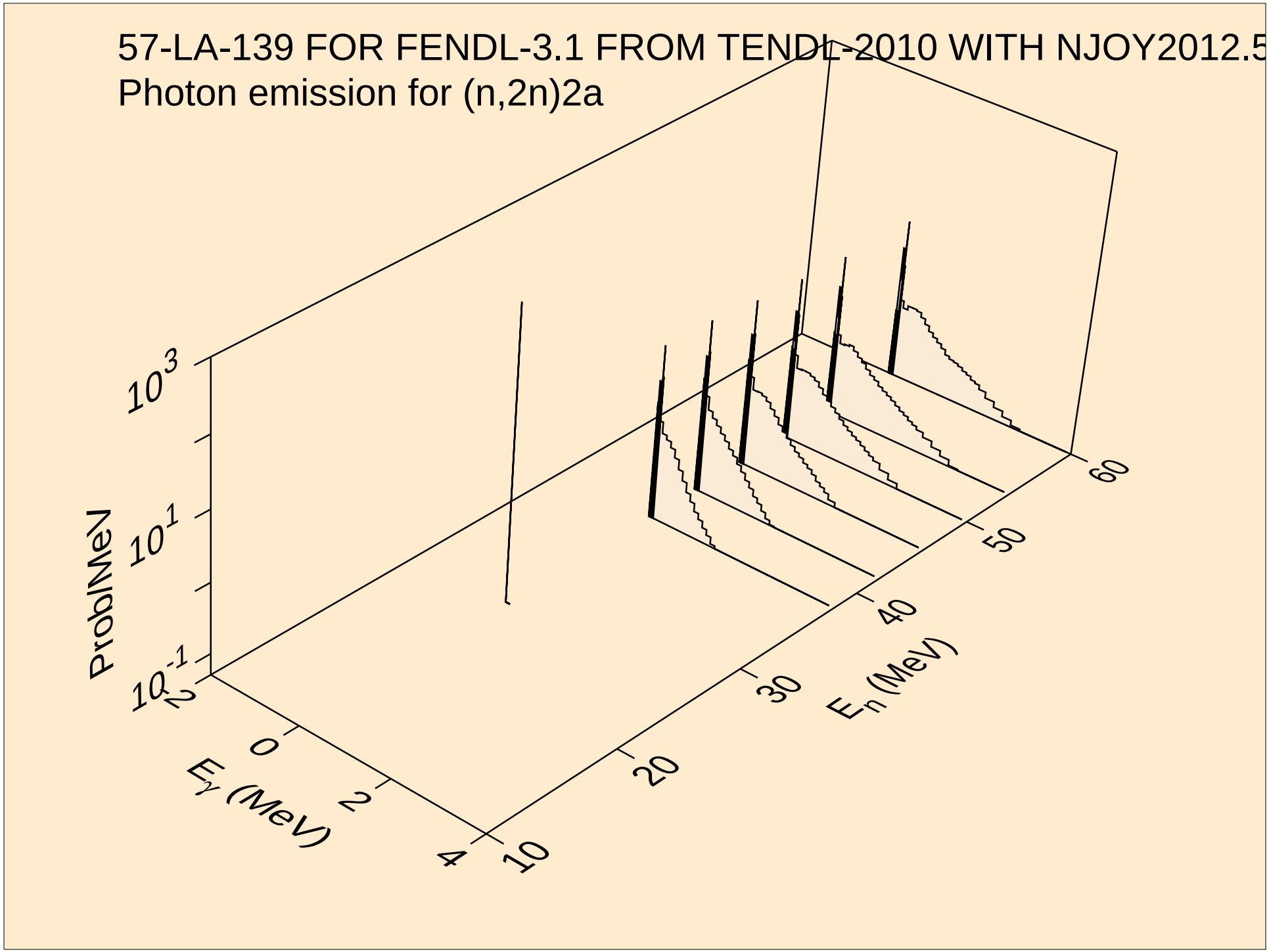

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Photon emission for (n,n*)a
Prob/MeV
10^{2}
10^{0}
10^{-2}
E_γ (MeV)
0
5
10
E_n (MeV)
0
10
20
30
40
50
60

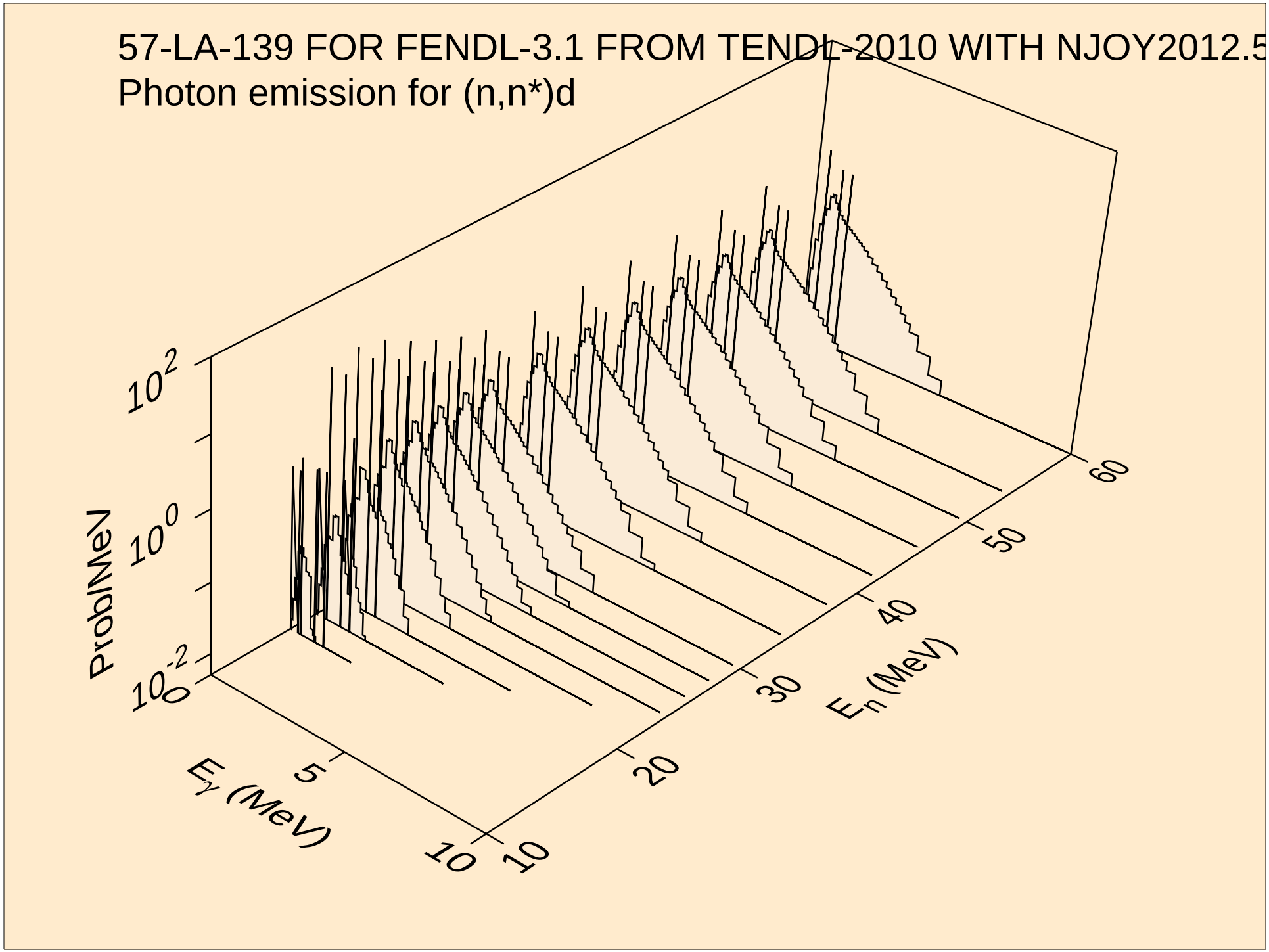

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Photon emission for (n,2n)a
Prob/MeV
10^{1}
10^{-1}
0
5
10
E_γ (MeV)
10
20
30
40
50
60
E_n (MeV)

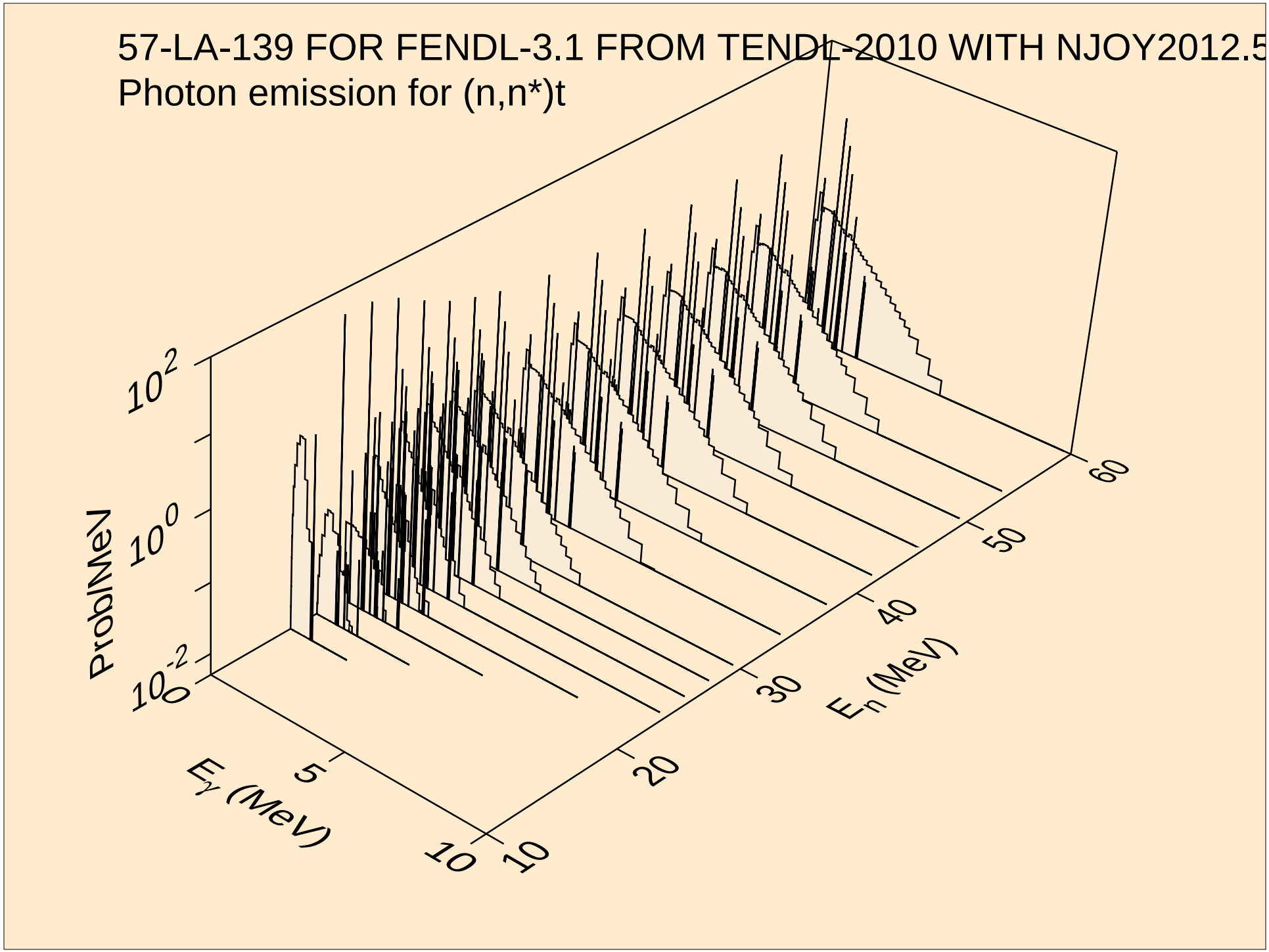

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Photon emission for (n,3n)a
Prob/MeV
10^{3}
10^{1}
10^{-1}
0
2
4
E_γ (MeV)
10
20
30
40
50
60
E_n (MeV)

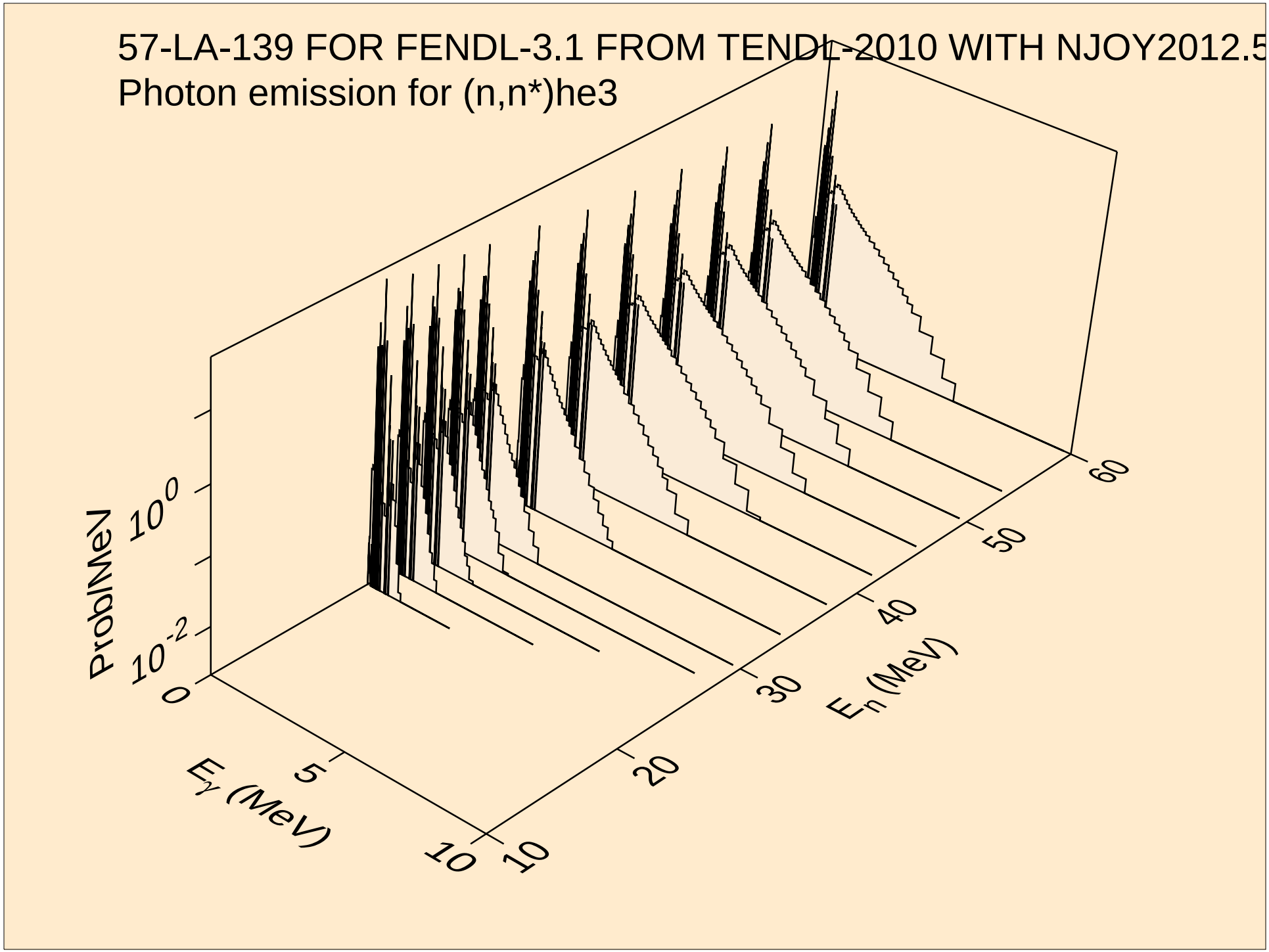

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Photon emission for (n,n*)p
Prob/MeV
10^0
10^-2
0
E_γ (MeV)
5
10
0
10
20
30
40
50
60
E_n (MeV)

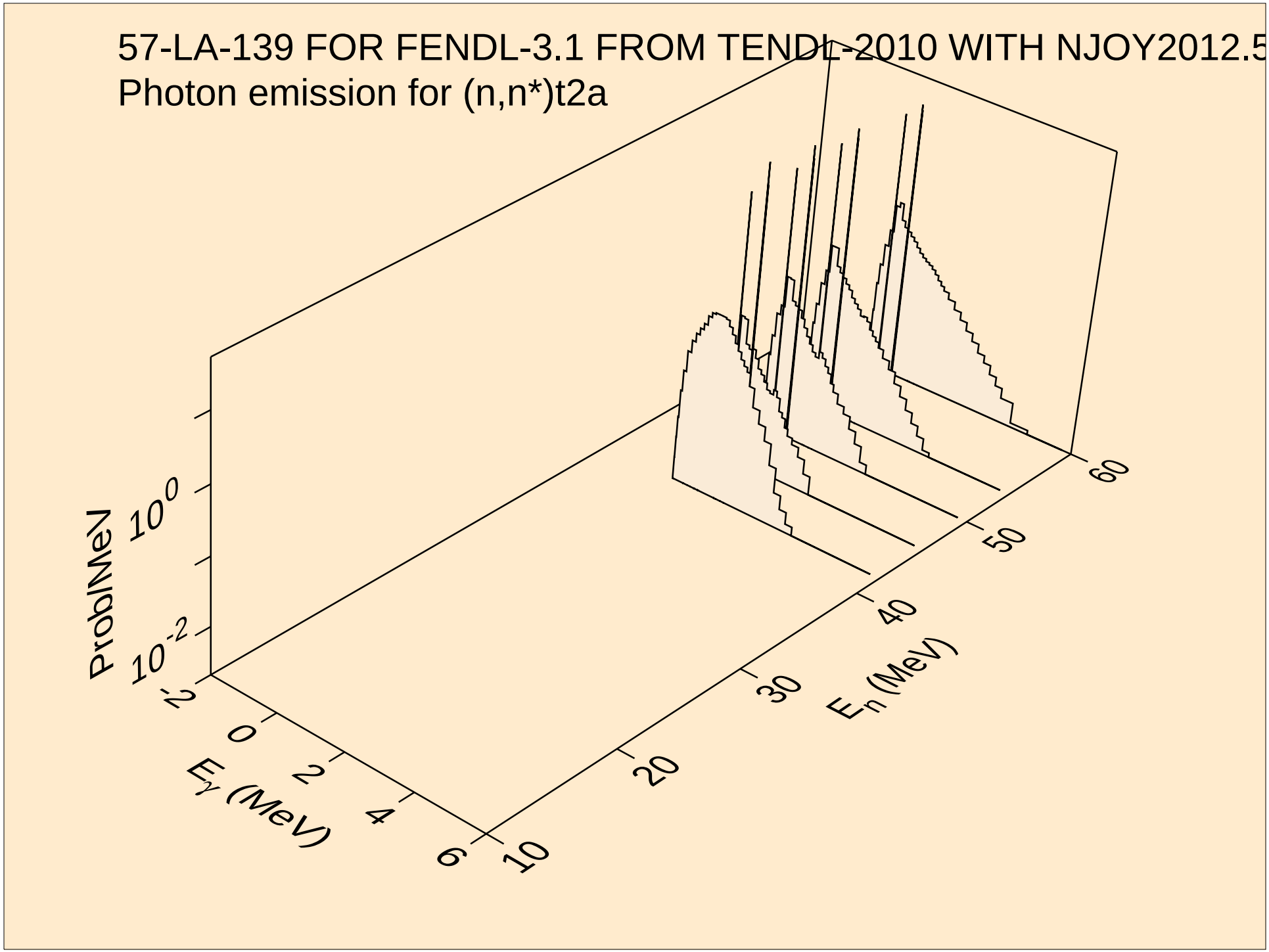

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Photon emission for (n,n*)2a
Prob/MeV
10^{3}
10^{1}
10^{-1}
0
2
4
E_γ (MeV)
0
10
20
30
40
50
60
E_n (MeV)

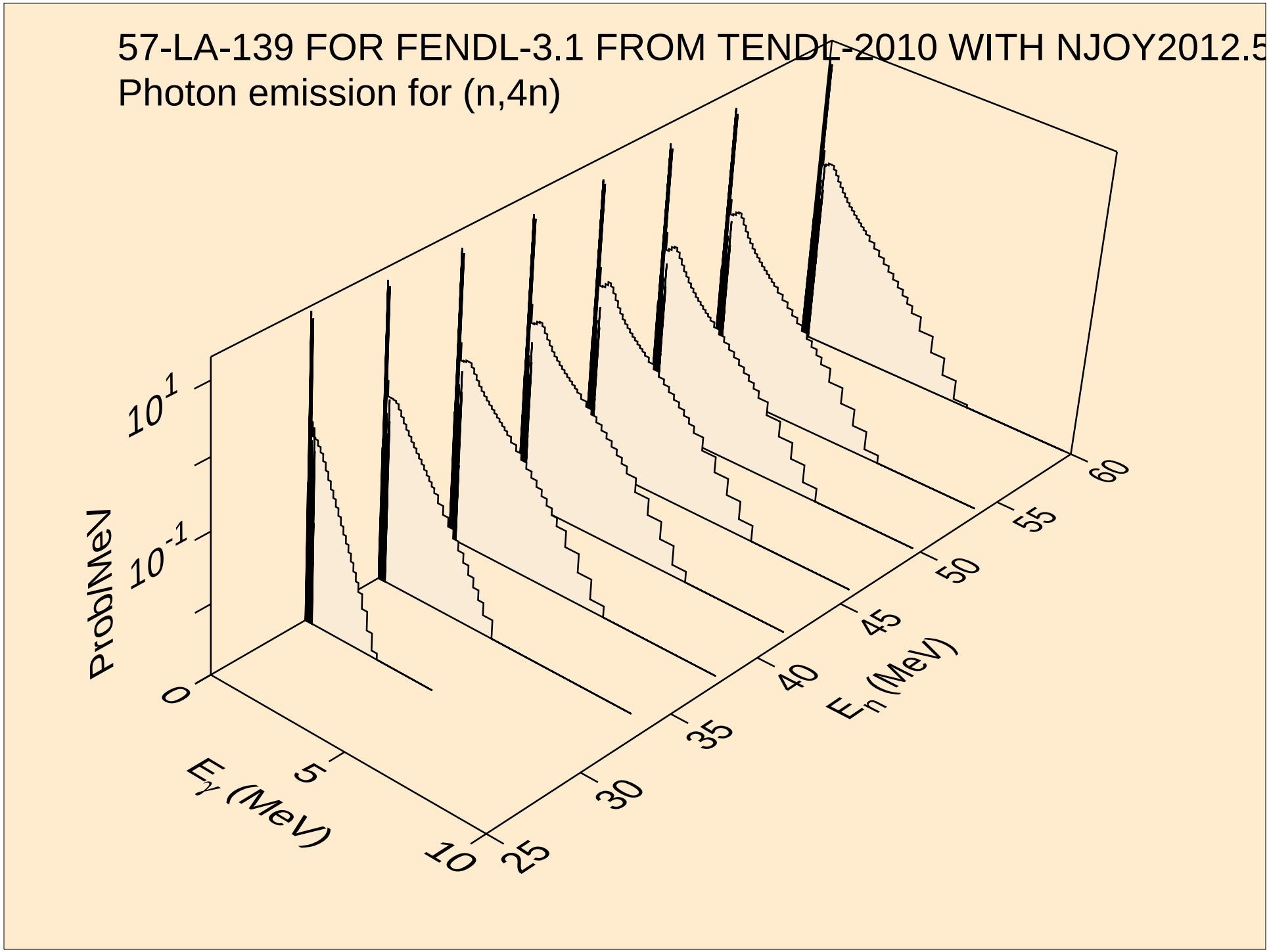

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Photon emission for (n,2n)2a
Prob/MeV
10^{3}
10^{1}
10^{-1}
E_γ (MeV)
-2
0
2
4
10
20
30
40
50
60
E_n (MeV)

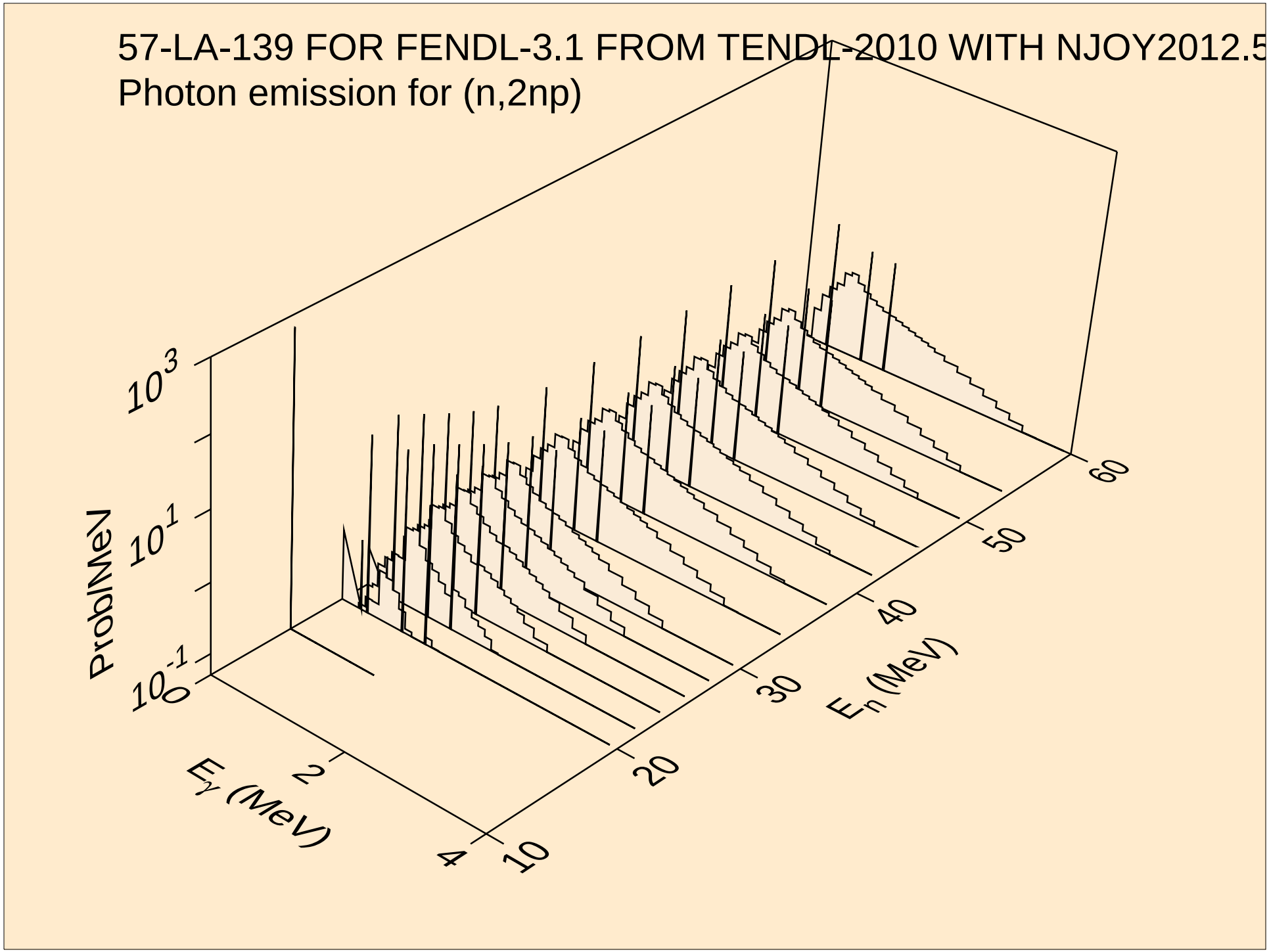

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Photon emission for (n,n*)d
Prob/MeV
10^{2}
10^{0}
10^{-2}
E_γ (MeV)
0
5
10
10
20
30
40
50
60
E_n (MeV)

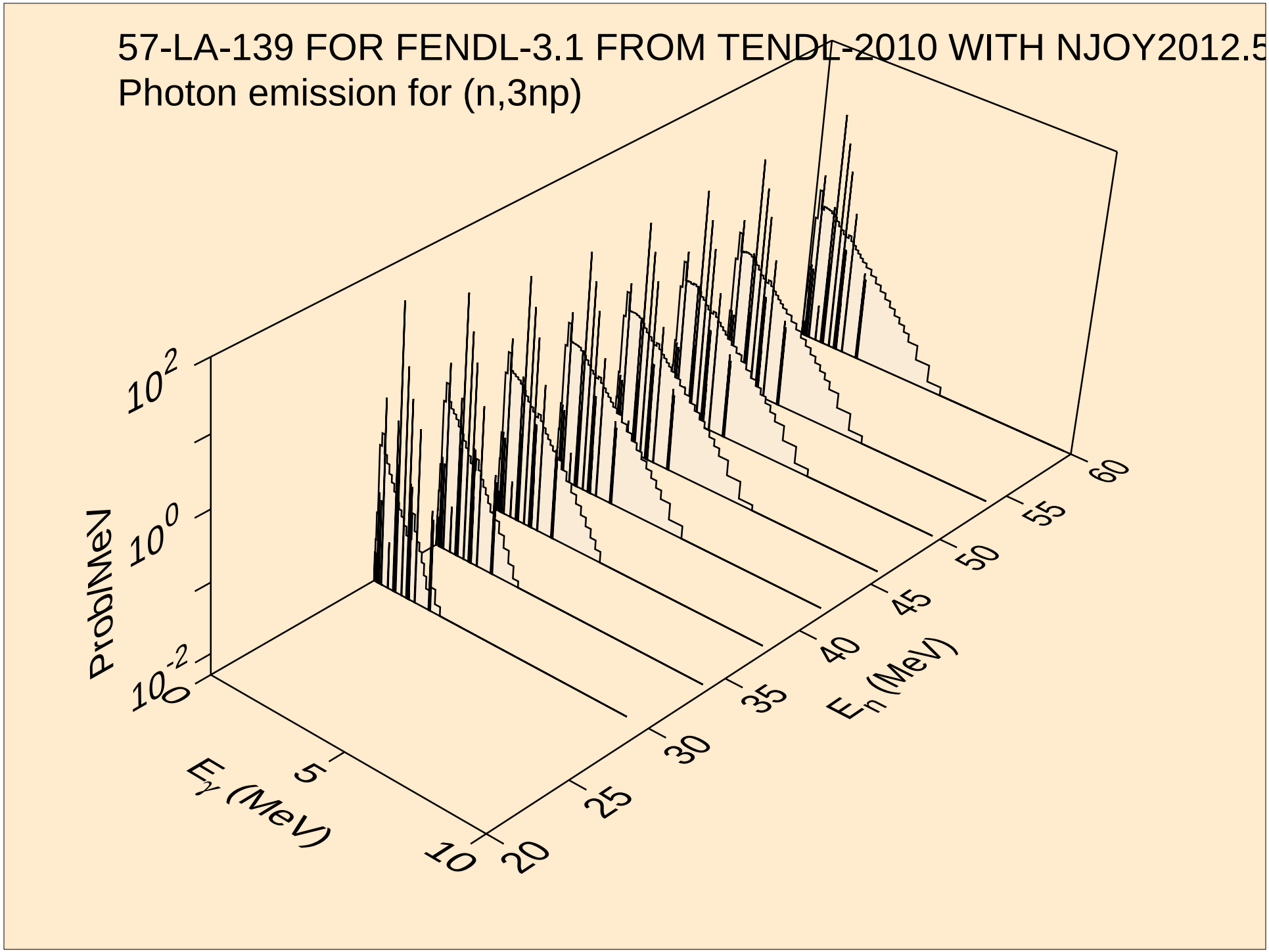

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Photon emission for (n,n*)t
Prob/MeV
10^{2}
10^{0}
10^{-2}
0
5
10
E_γ (MeV)
10
20
30
40
50
60
E_n (MeV)

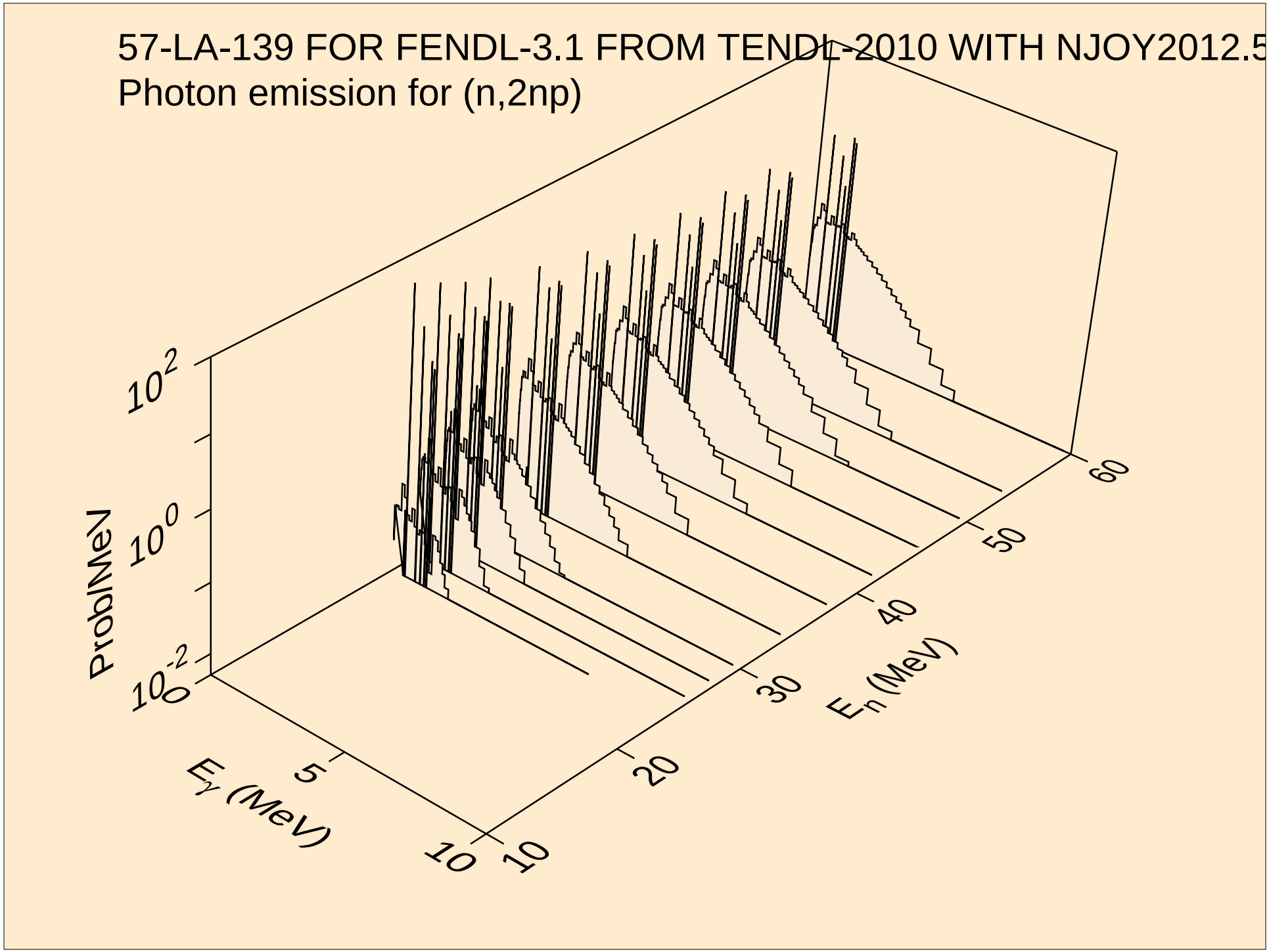

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Photon emission for (n,n*)he3
Prob/MeV
10^0
10^-2
0
5
10
E_γ (MeV)
10
20
30
40
50
60
E_n (MeV)

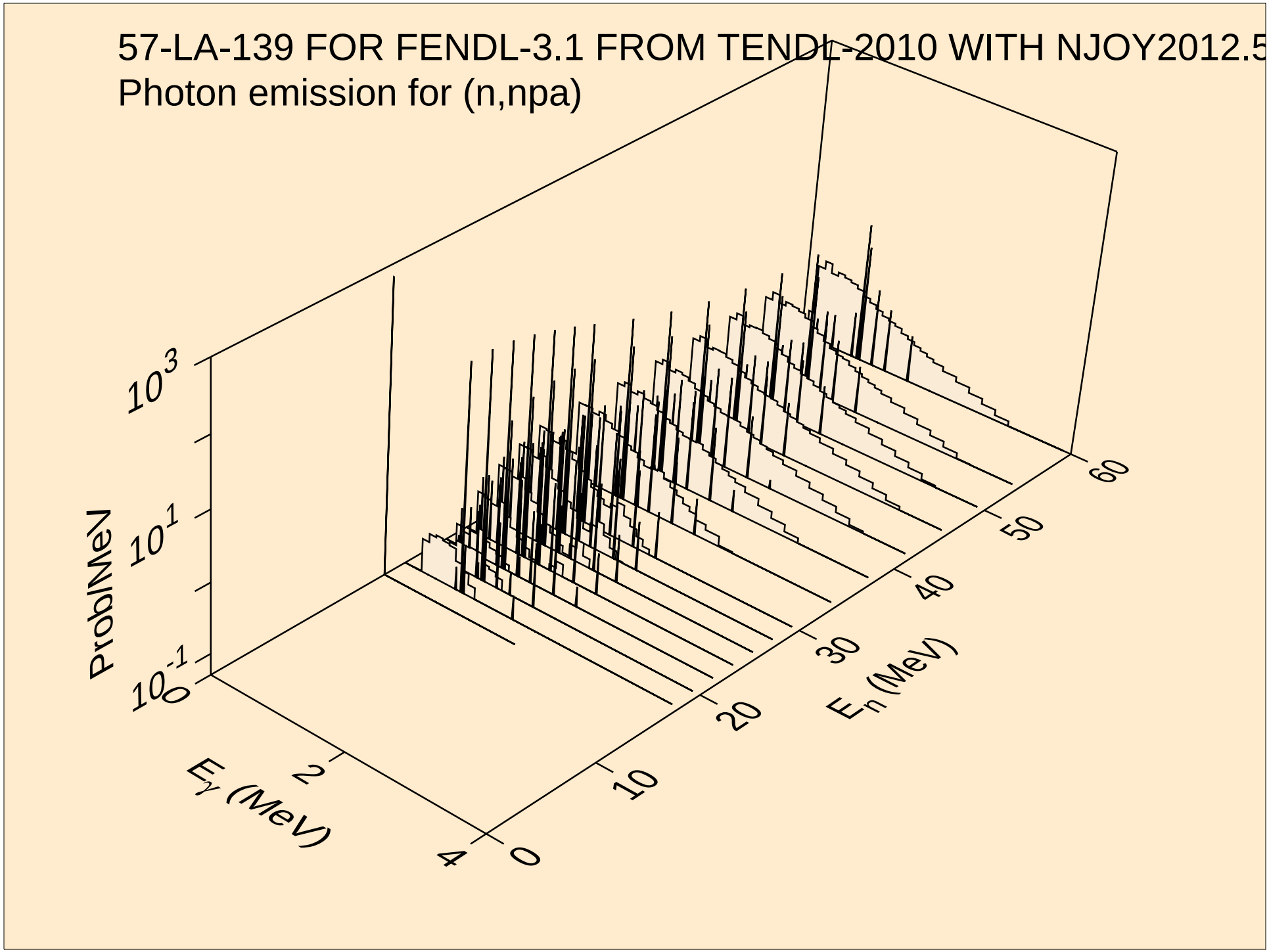

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Photon emission for (n,n*)t2a
Prob/MeV
10^{0}
10^{-2}
-2
0
2
4
6
E_γ (MeV)
10
20
30
40
50
60
E_n (MeV)

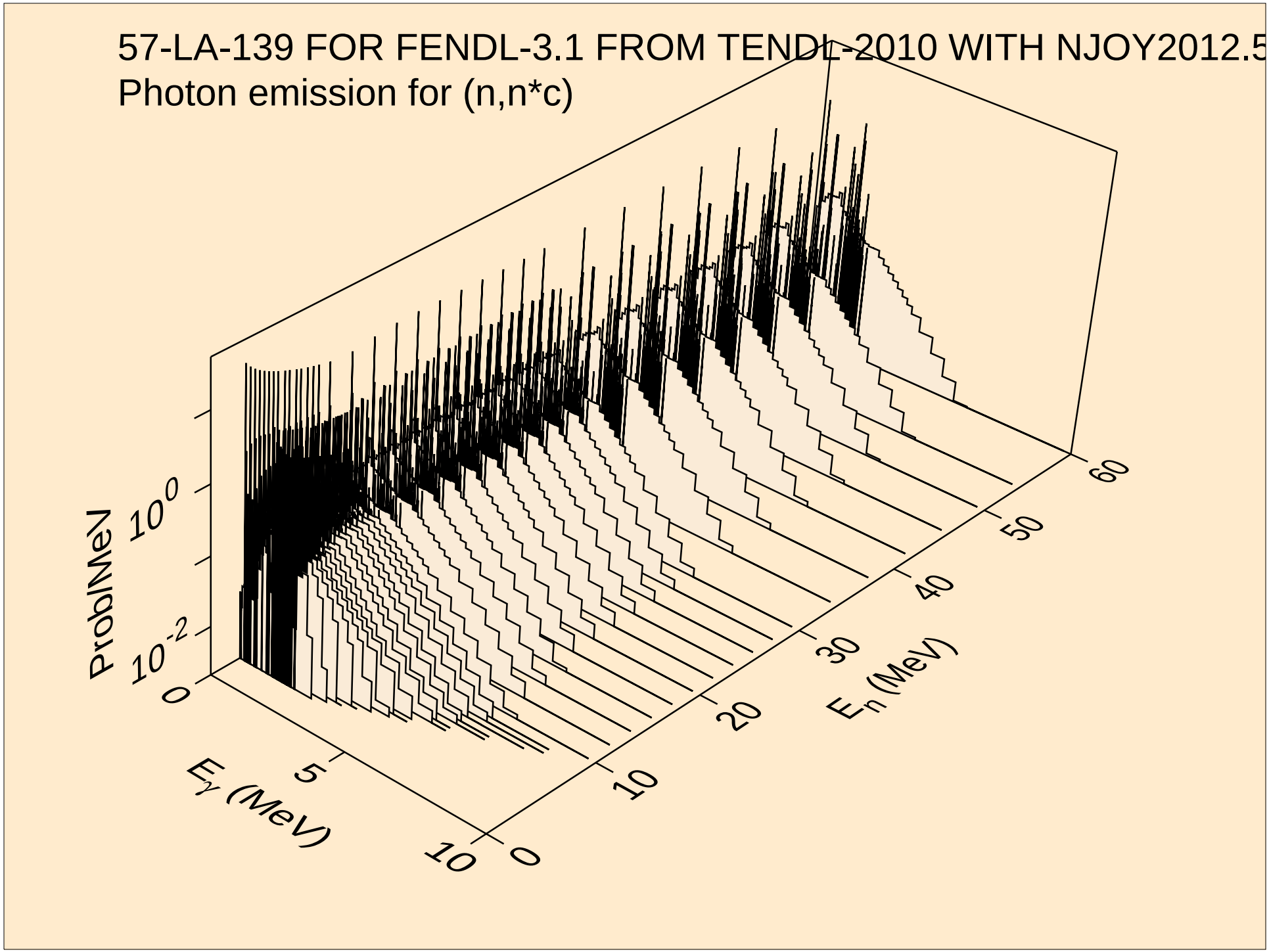

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Photon emission for (n,4n)
Prob/MeV
10^{1}
10^{-1}
0
5
10
E_γ (MeV)
25
30
35
40
45
50
55
60
E_n (MeV)

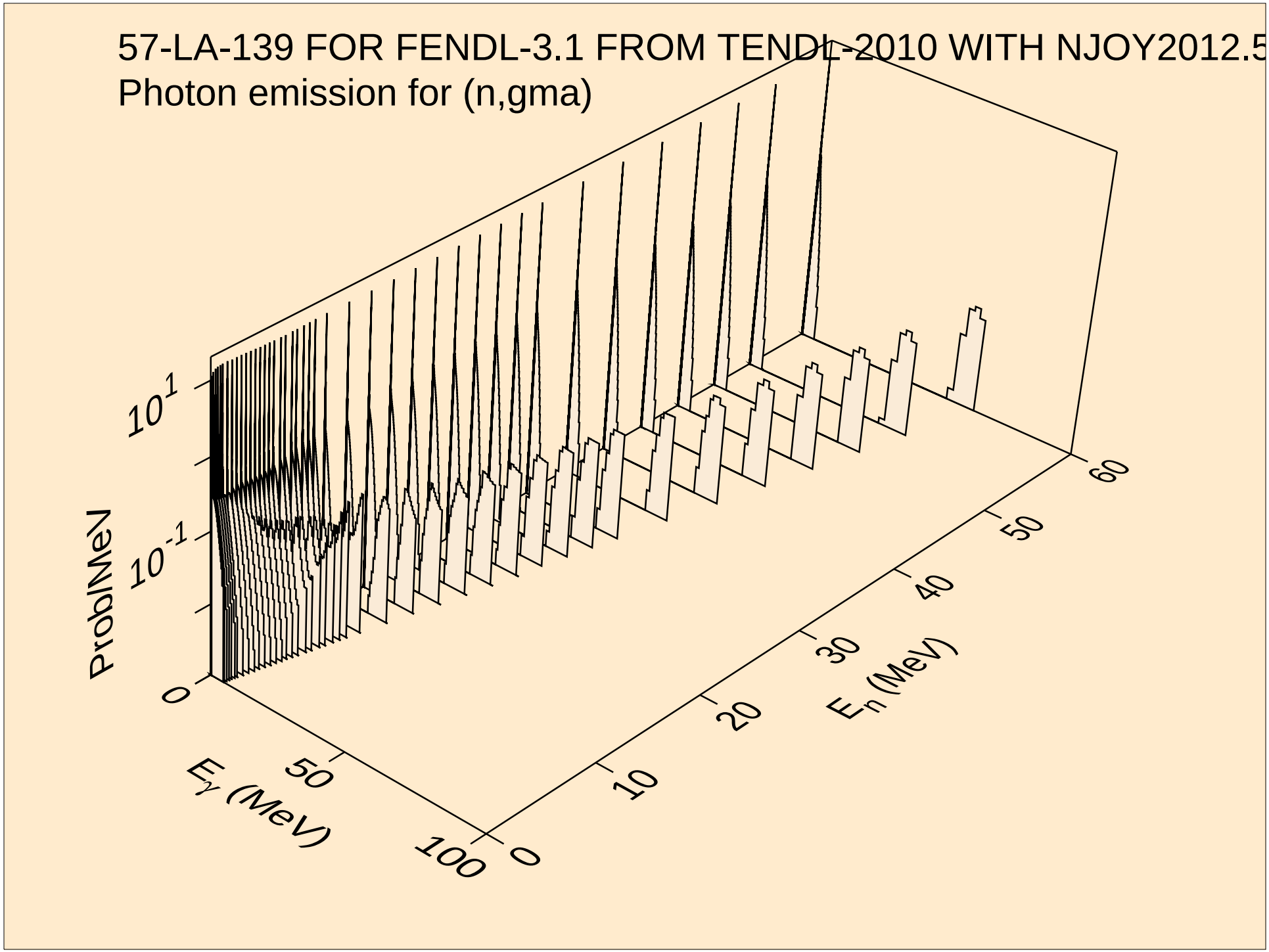

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Photon emission for (n,2np)
Prob/MeV
10^{3}
10^{1}
10^{-1}
0
2
4
E_γ (MeV)
10
20
30
40
50
60
E_n (MeV)

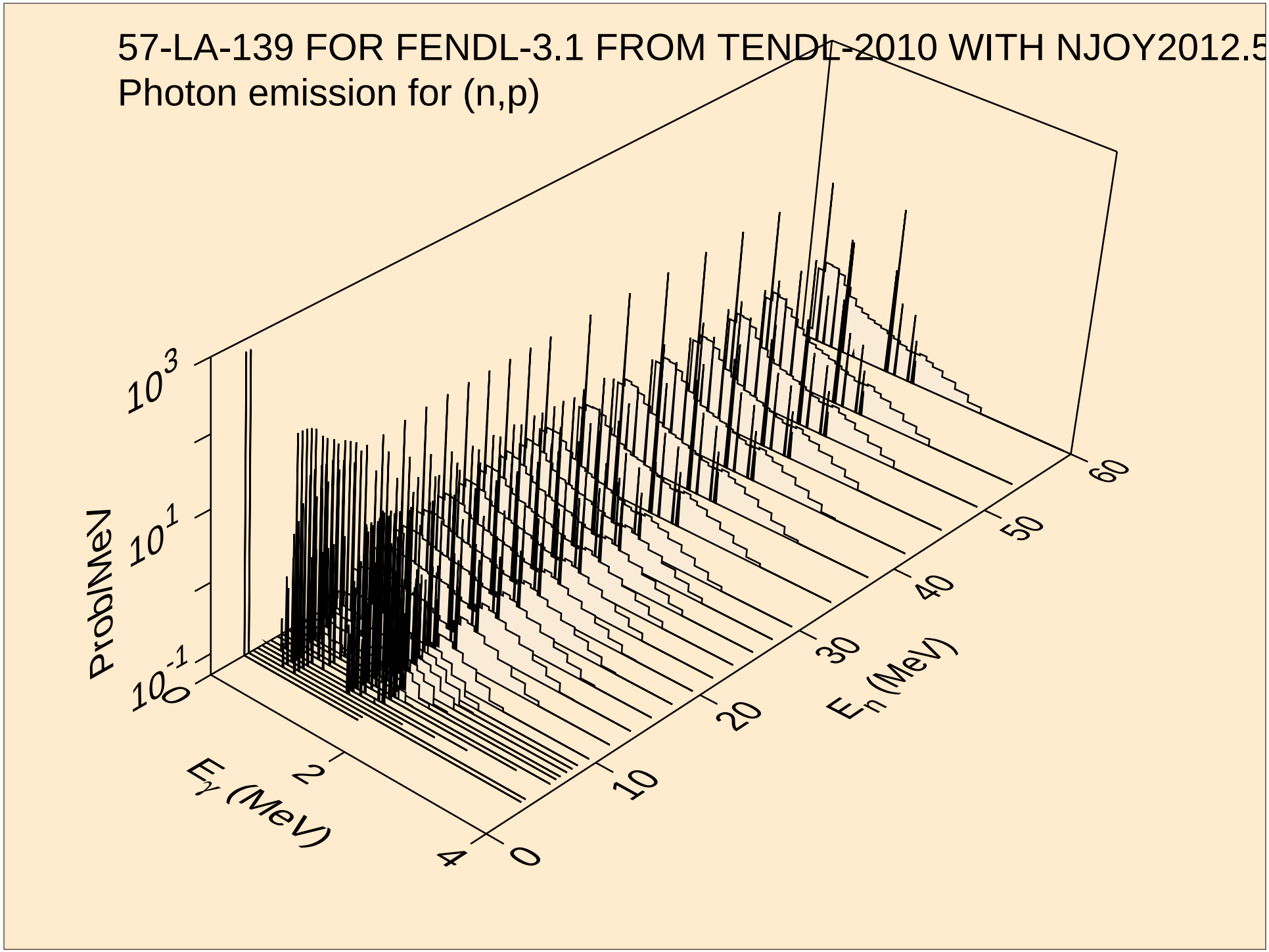

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Photon emission for (n,3np)
Prob/MeV
10^{2}
10^{0}
10^{-2}
E_γ (MeV)
0
5
10
E_n (MeV)
20
25
30
35
40
45
50
55
60

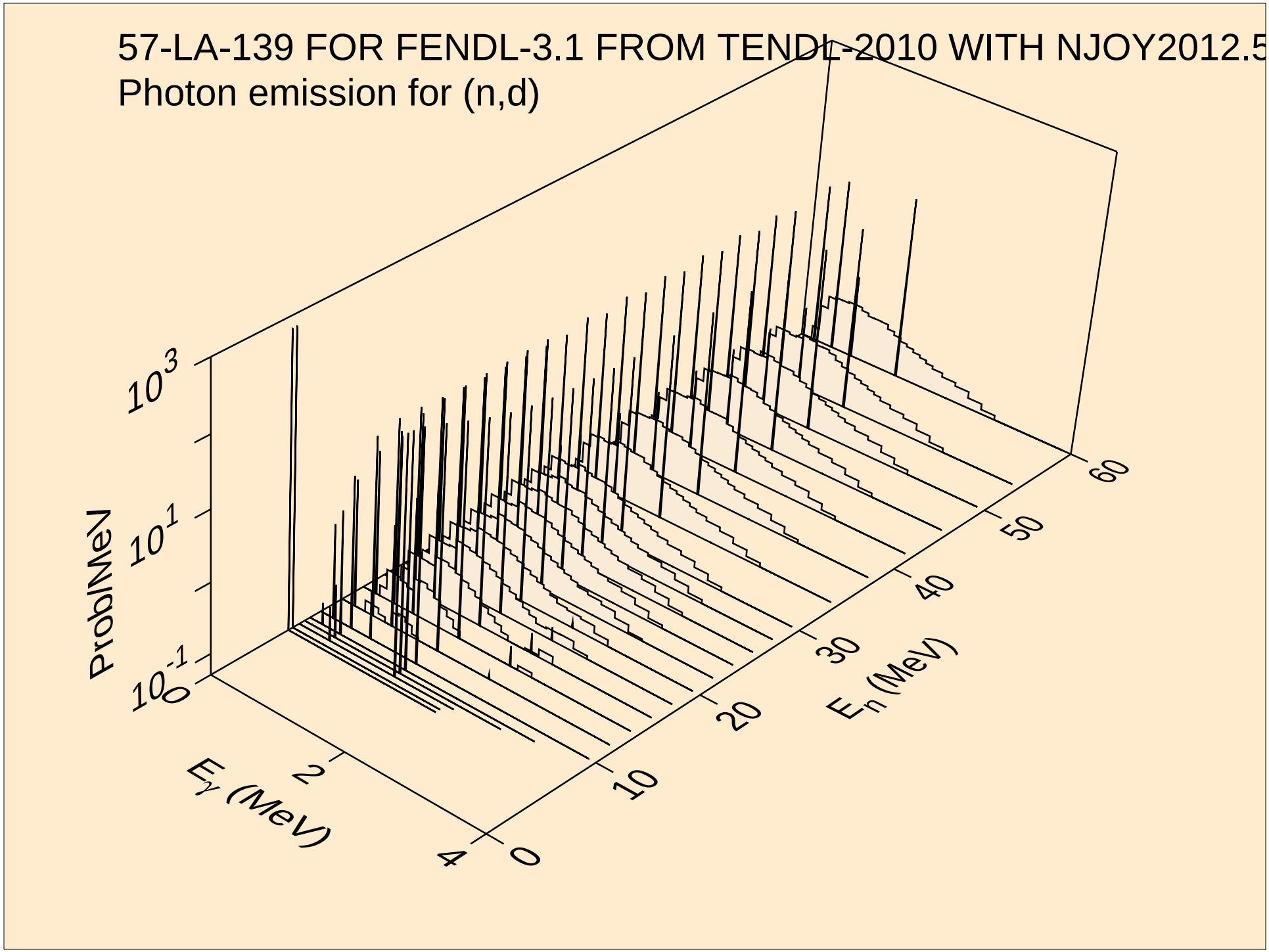

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Photon emission for (n,2np)
Prob/MeV
10^{2}
10^{0}
10^{-2}
0
E_γ (MeV)
5
10
10
20
30
40
50
60
E_n (MeV)

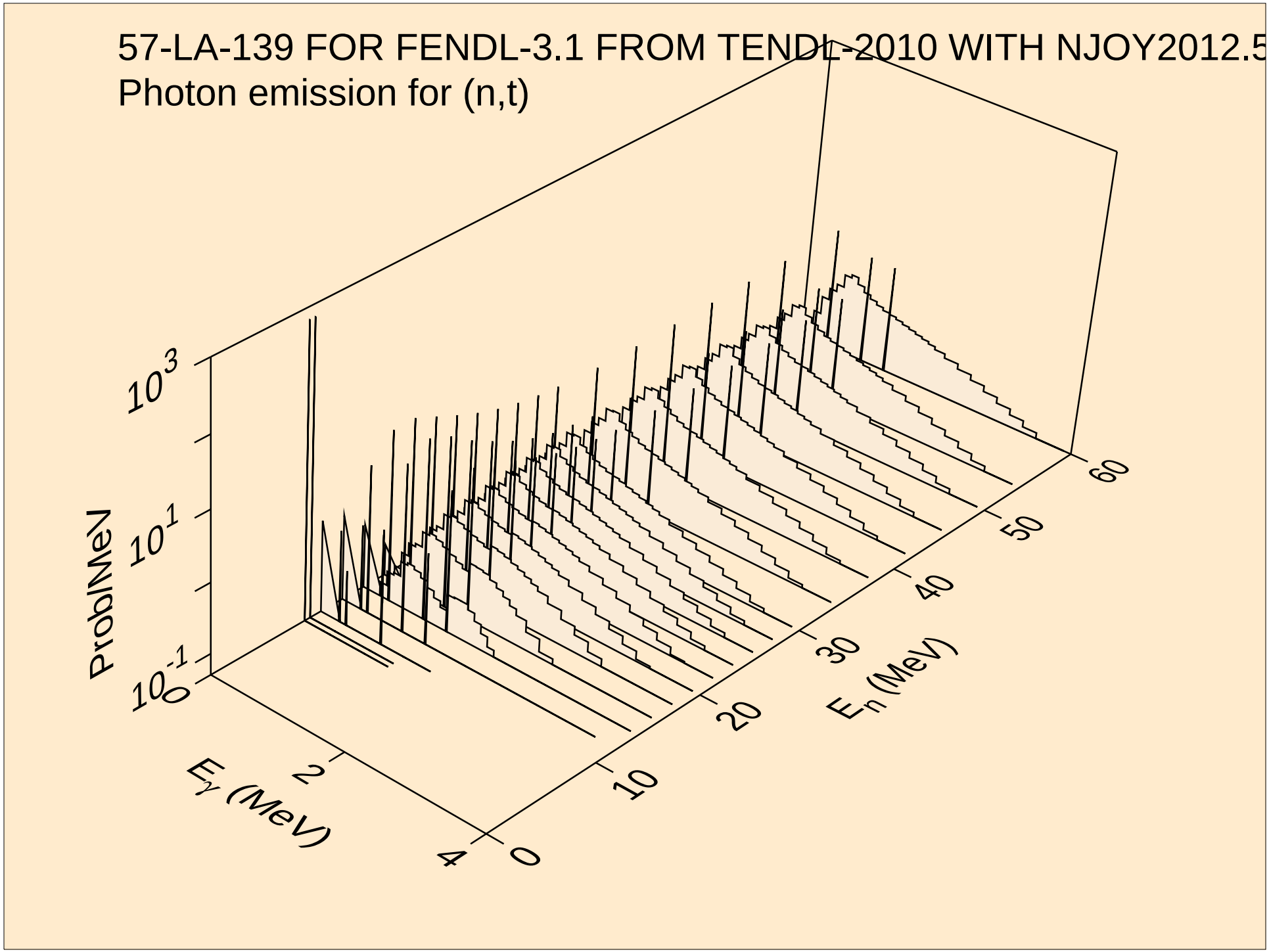

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Photon emission for (n,npa)
Prob/MeV
10^{3}
10^{1}
10^{-1}
0
2
4
E_γ (MeV)
0
10
20
30
40
50
60
E_n (MeV)

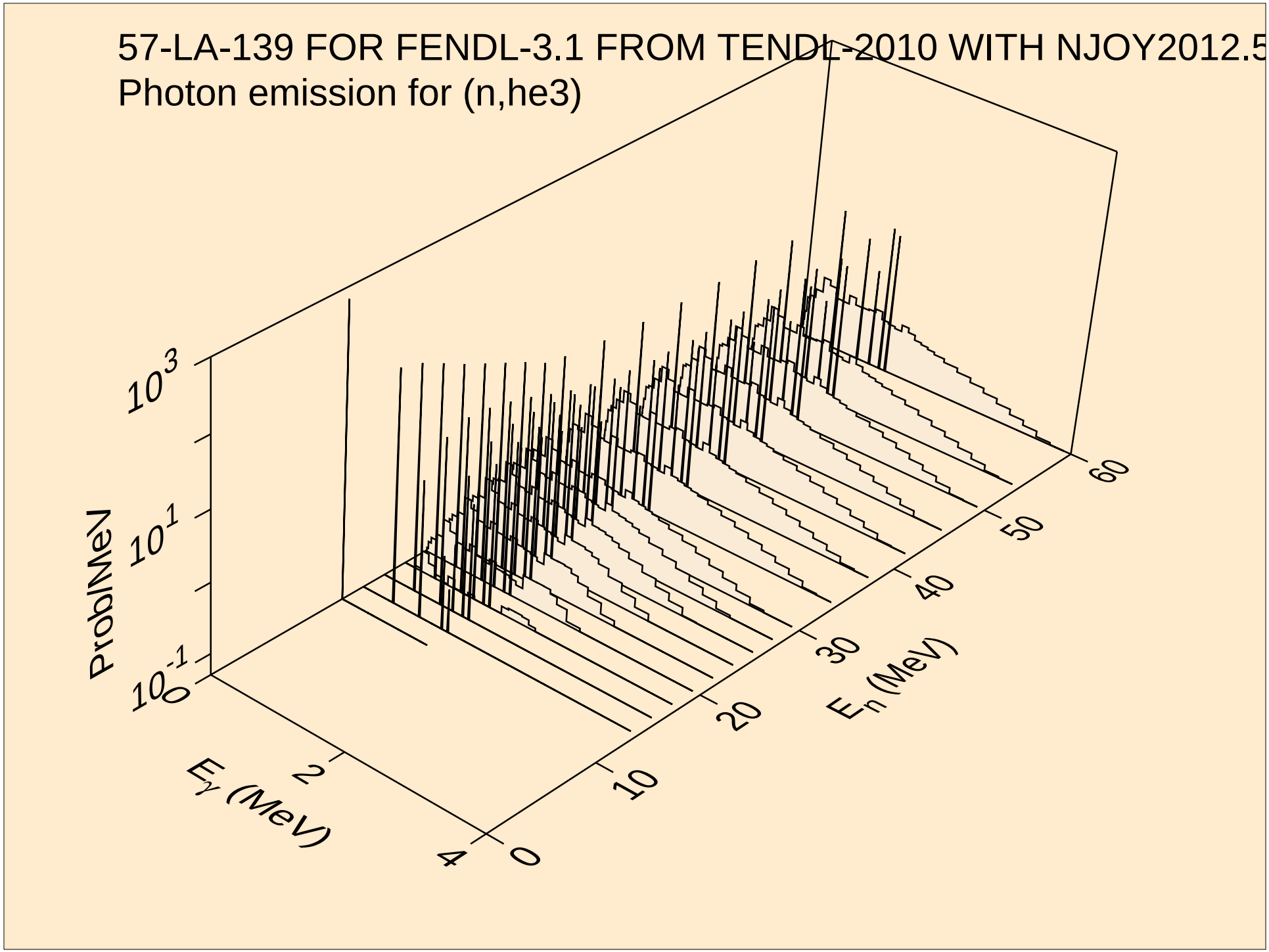

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Photon emission for (n,n*c)
Prob/MeV
10^0
10^-2
0
5
10
E_γ (MeV)
0
10
20
30
40
50
60
E_n (MeV)

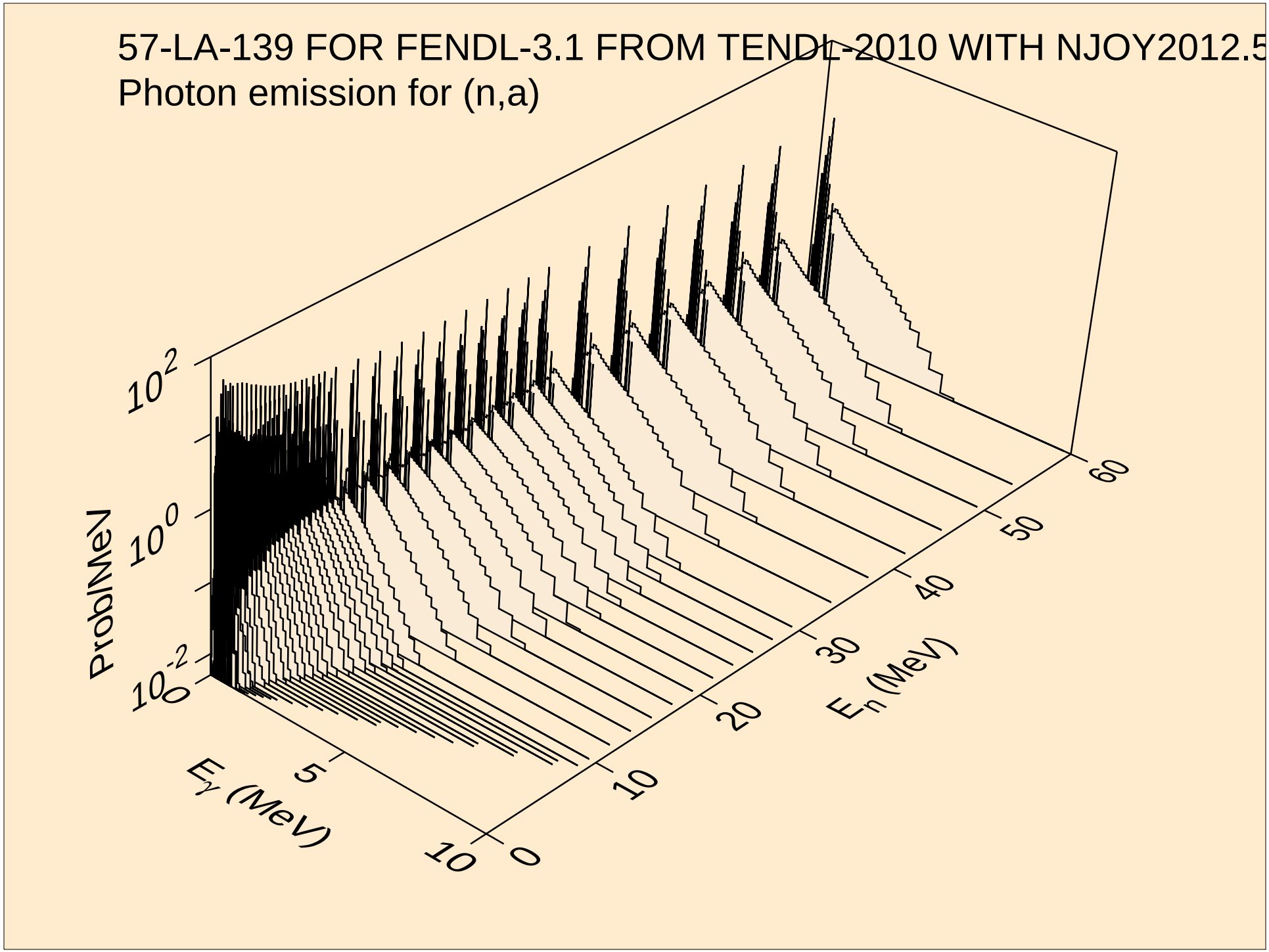

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Photon emission for (n,gma)
Prob/MeV
10^{1}
10^{-1}
0
E_γ (MeV)
50
100
0
10
20
30
40
50
60
E_n (MeV)

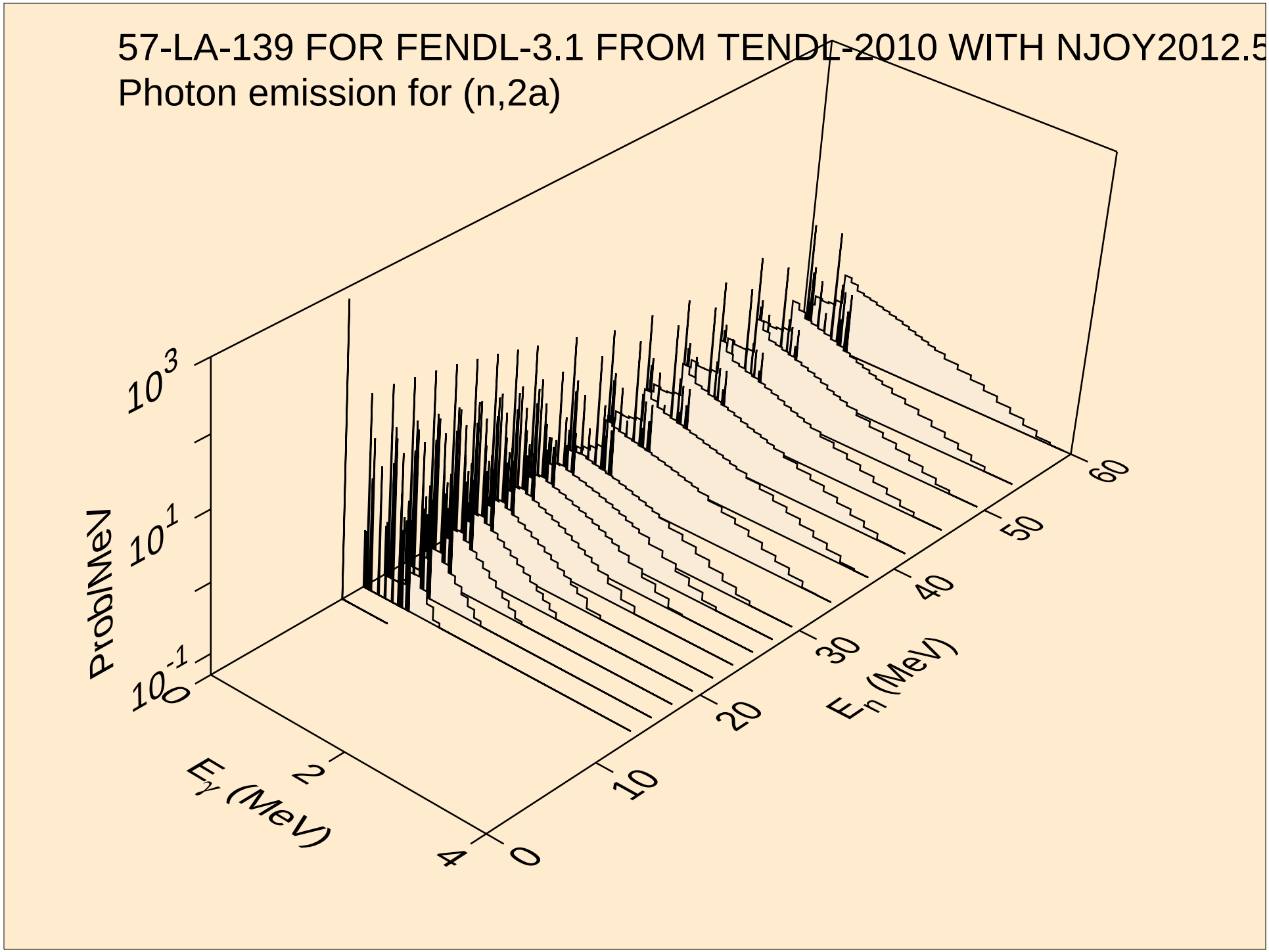

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Photon emission for (n,p)
Prob/MeV
10^{3}
10^{1}
10^{-1}
0
2
4
E_γ (MeV)
0
10
20
30
40
50
60
E_n (MeV)

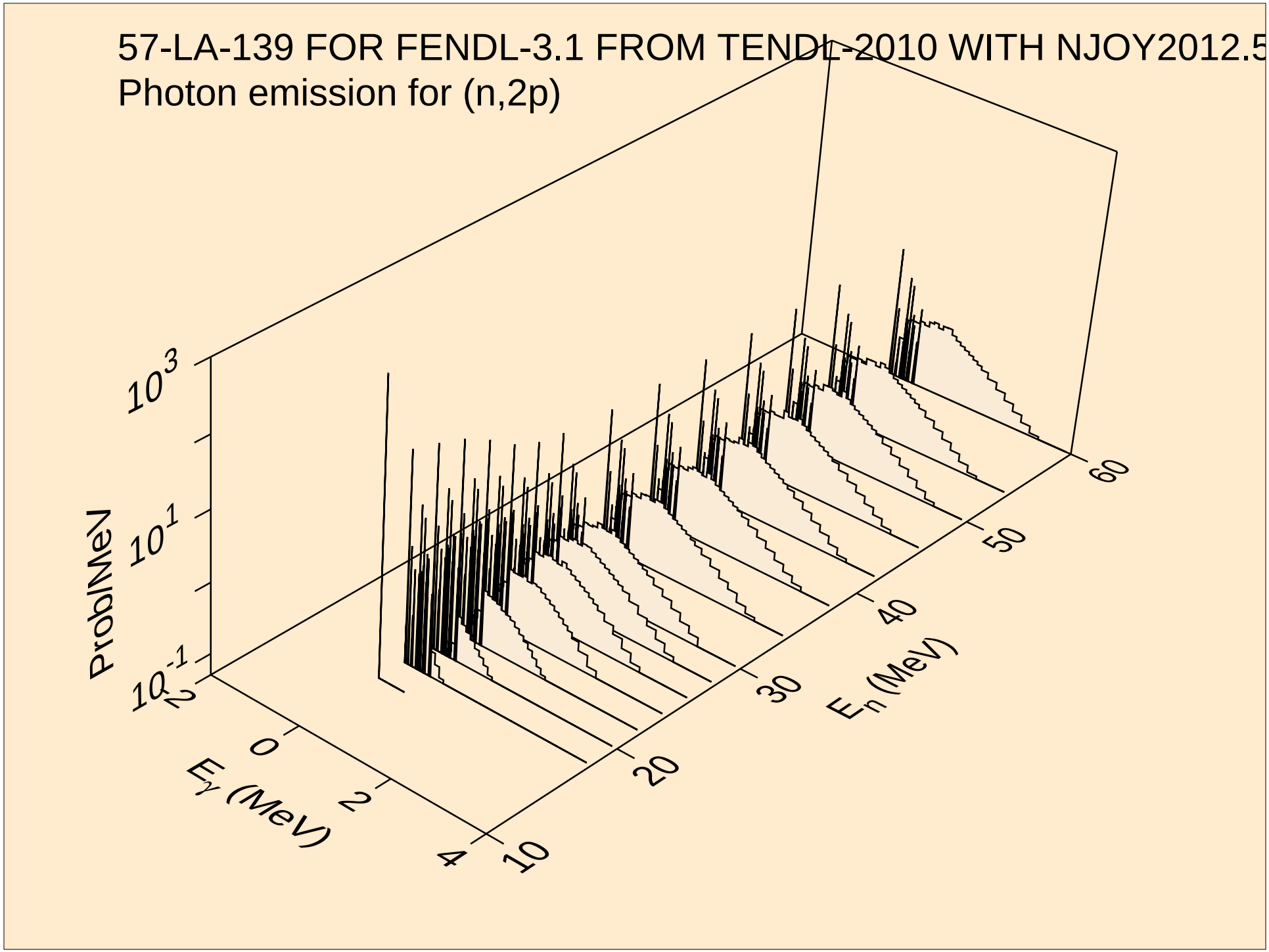

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Photon emission for (n,d)
Prob/MeV
10^{3}
10^{1}
10^{-1}
0
2
4
E_γ (MeV)
0
10
20
30
40
50
60
E_n (MeV)

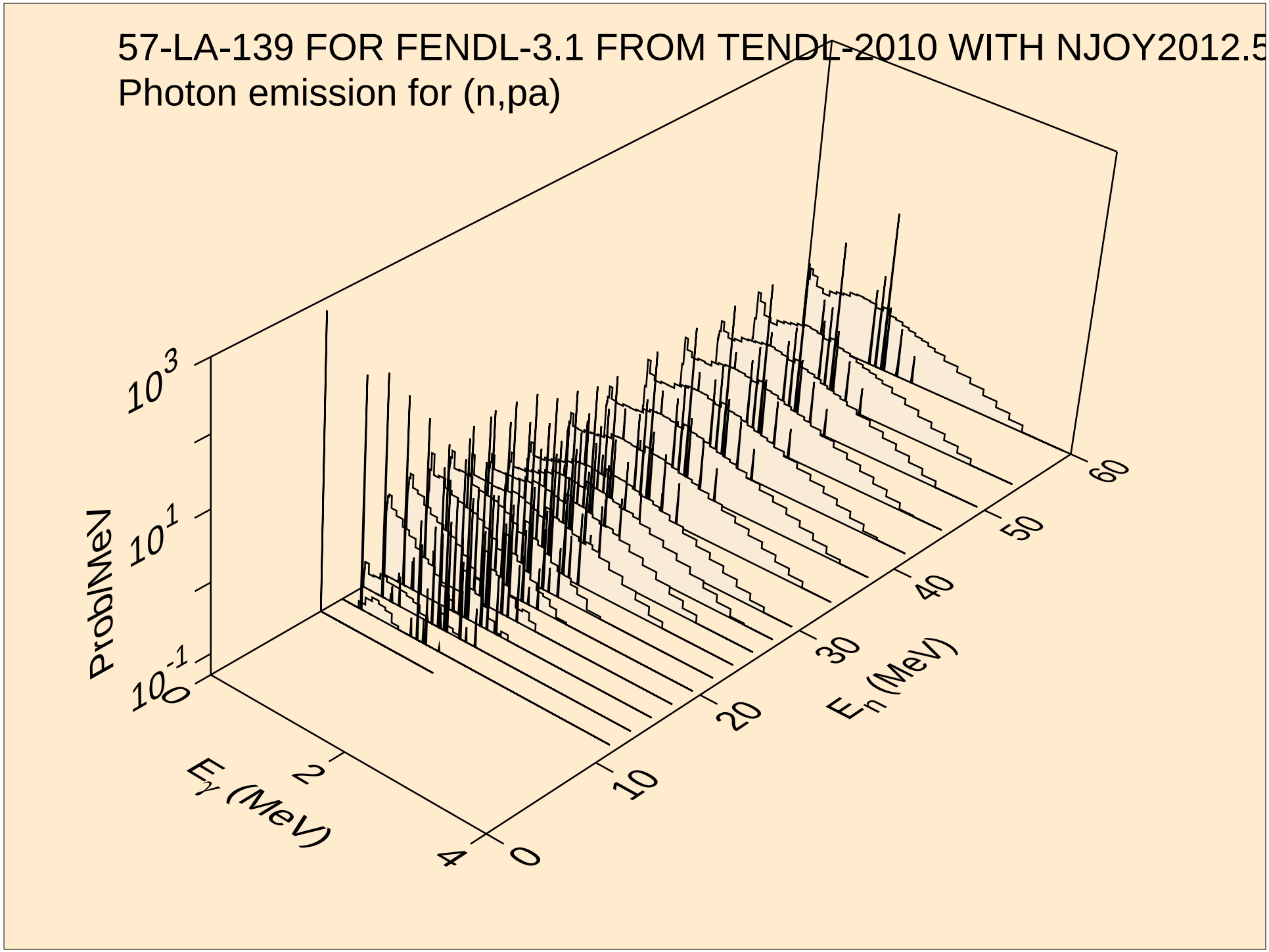

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Photon emission for (n,t)
Prob/MeV
10^{3}
10^{1}
10^{-1}
0
2
4
E_γ (MeV)
0
10
20
30
40
50
60
E_n (MeV)

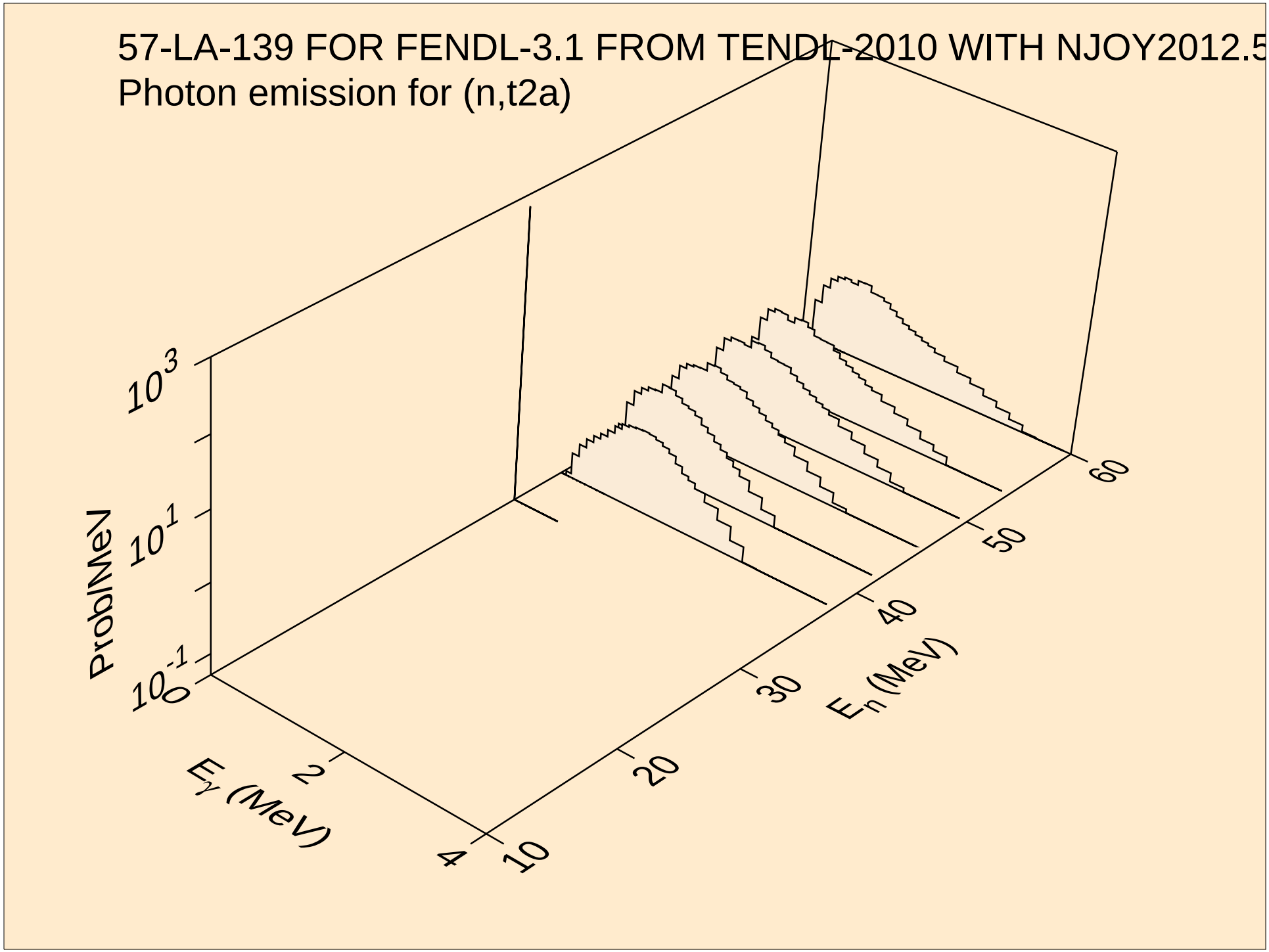

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Photon emission for (n,he3)
Prob/MeV
10^{3}
10^{1}
10^{-1}
E_γ (MeV)
0
2
4
E_n (MeV)
10
20
30
40
50
60

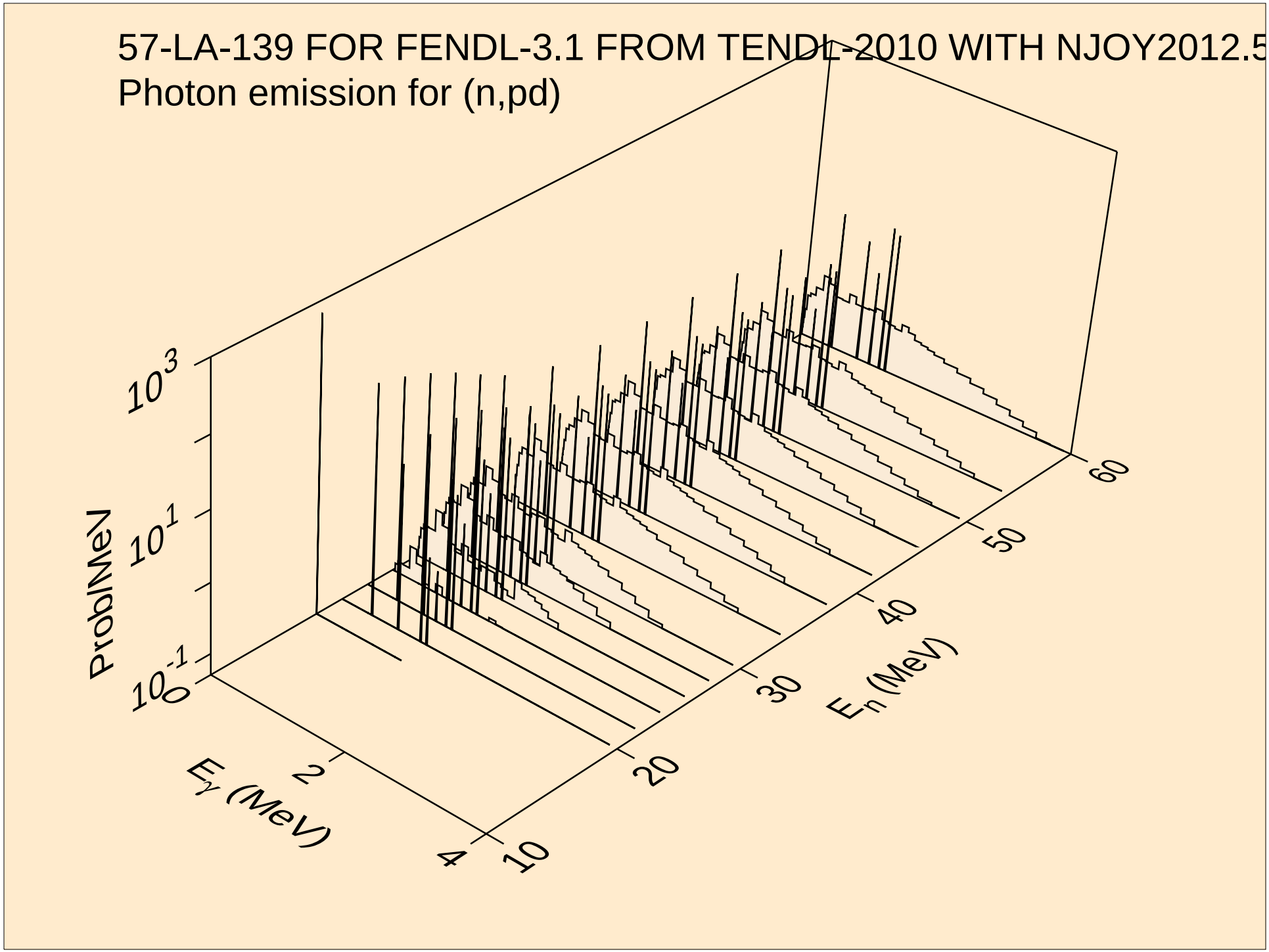

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Photon emission for (n,a)
Prob/MeV
10^{2}
10^{0}
10^{-2}
0
5
10
E_γ (MeV)
0
10
20
30
40
50
60
E_n (MeV)

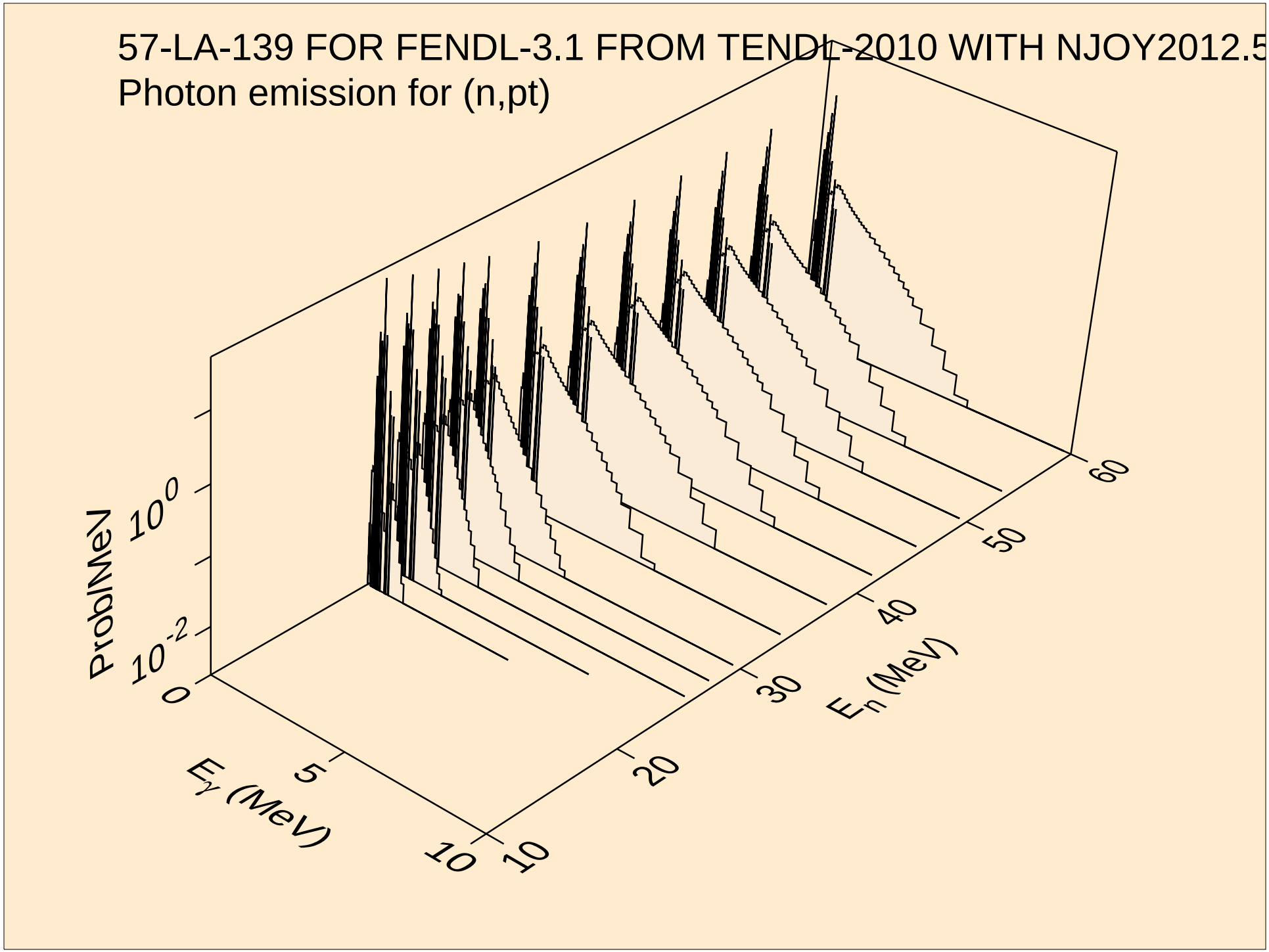

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Photon emission for (n,2a)
Prob/MeV
10^{3}
10^{1}
10^{-1}
0
2
4
E_γ (MeV)
0
10
20
30
40
50
60
E_n (MeV)

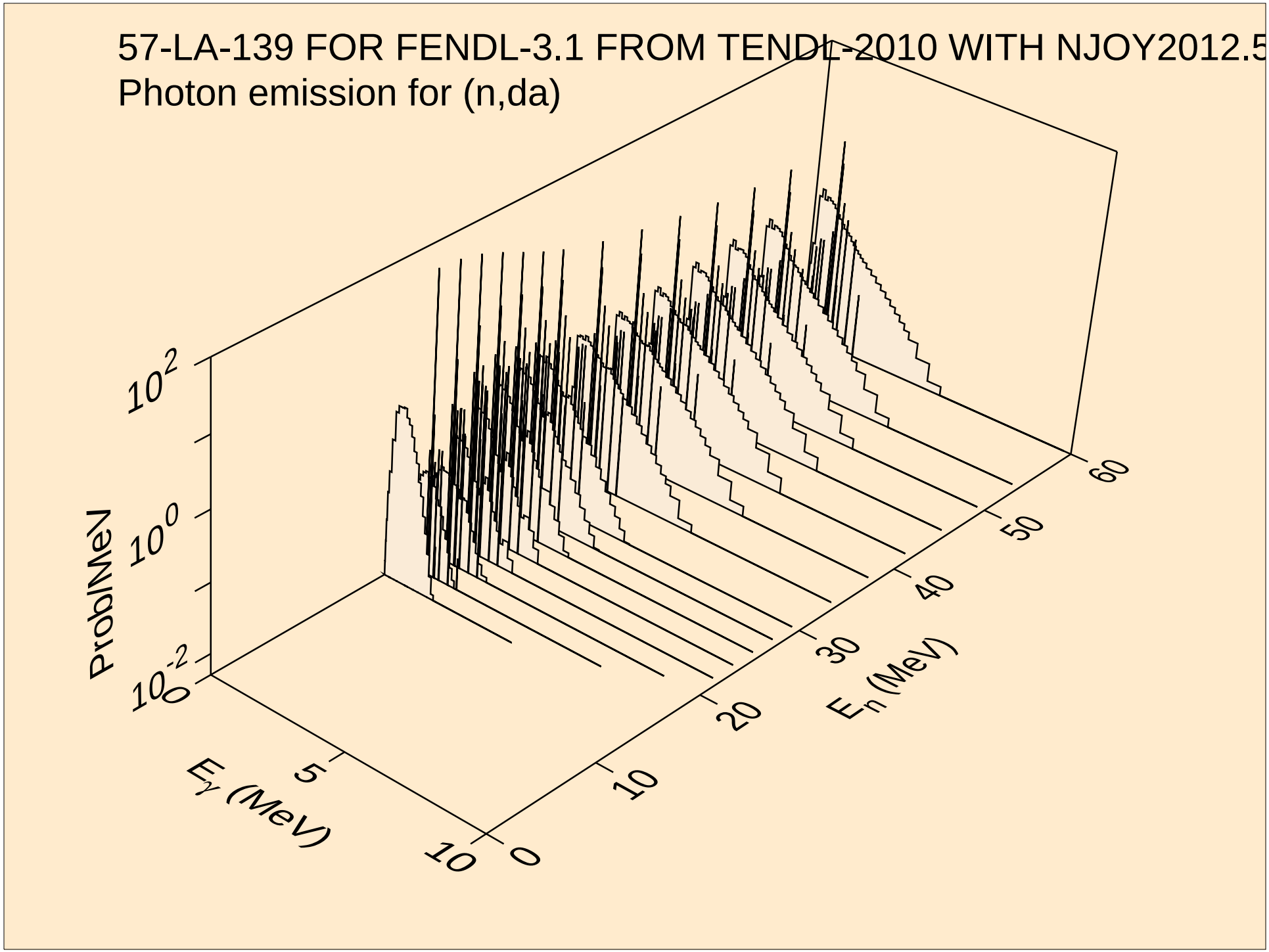

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Photon emission for (n,2p)
Prob/MeV
10^{3}
10^{1}
10^{-1}
E_γ (MeV)
0
2
4
E_n (MeV)
10
20
30
40
50
60

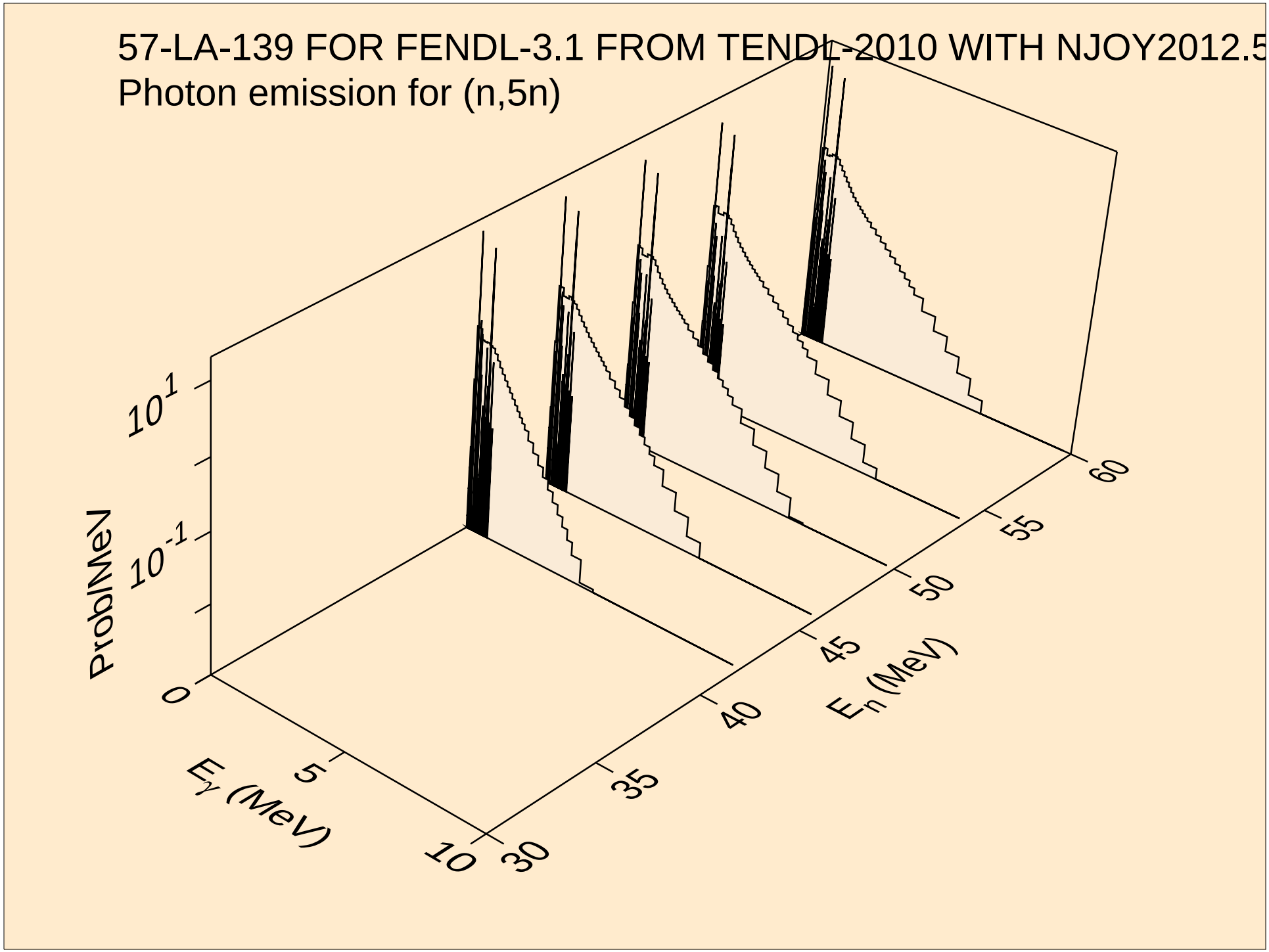

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Photon emission for (n,pa)
Prob/MeV
10^{3}
10^{1}
10^{-1}
0
2
4
E_γ (MeV)
0
10
20
30
40
50
60
E_n (MeV)

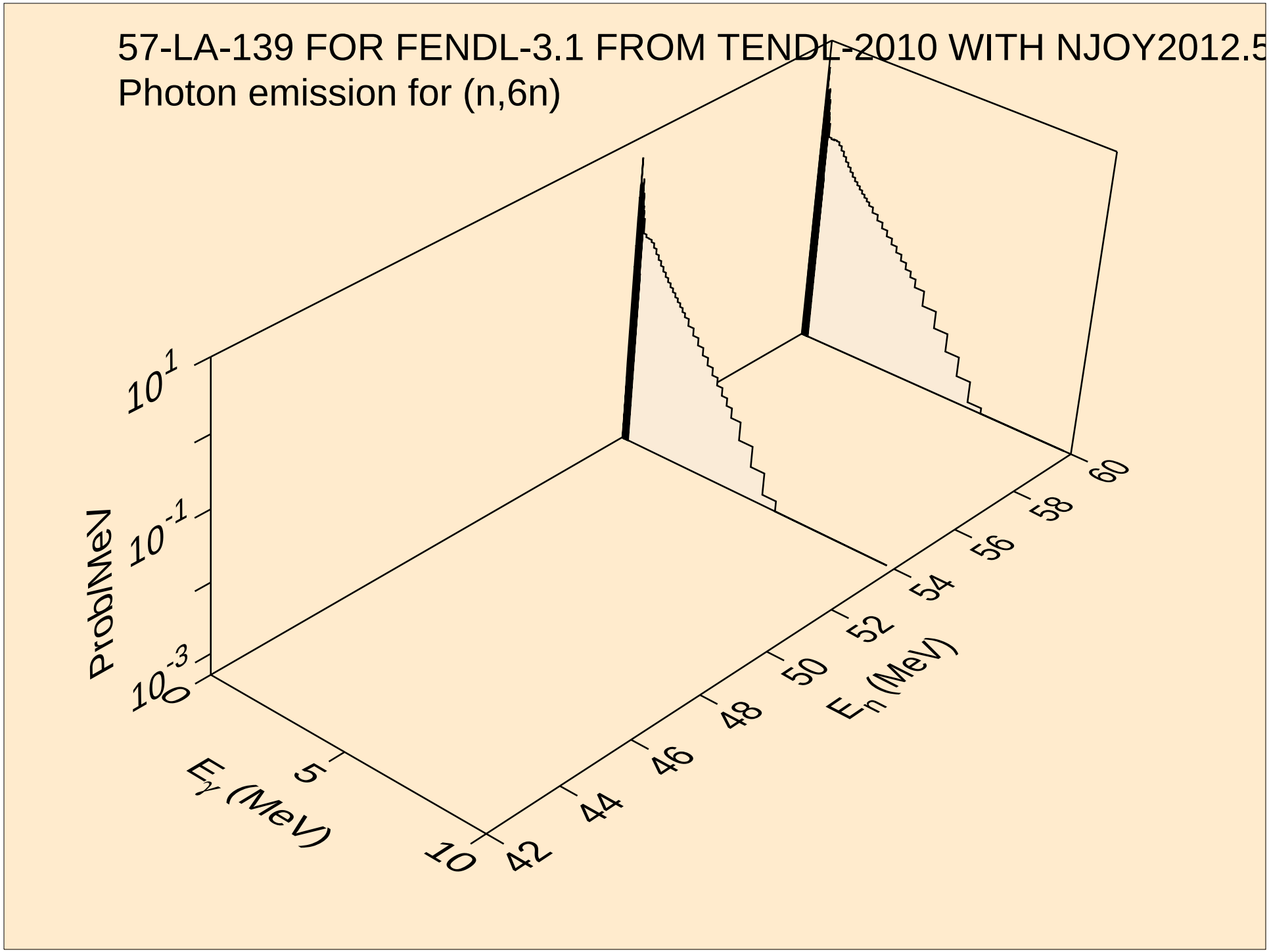

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Photon emission for (n,t2a)
Prob/MeV
10^{3}
10^{1}
10^{-1}
0
2
4
E_γ (MeV)
10
20
30
40
50
60
E_n (MeV)

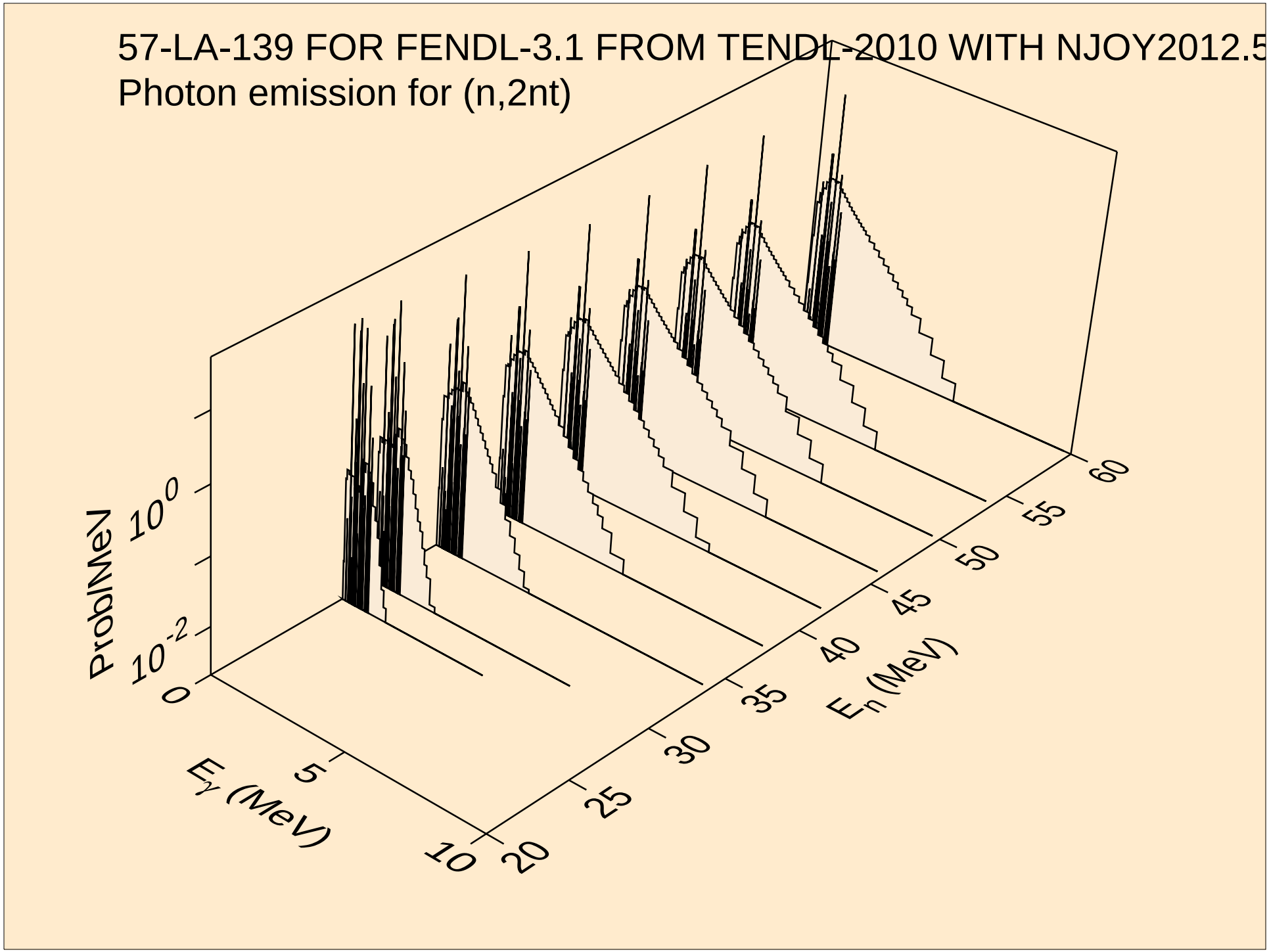

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Photon emission for (n,pd)
Prob/MeV
10^{3}
10^{1}
10^{-1}
0
E_γ (MeV)
2
4
10
20
30
40
50
60
E_n (MeV)

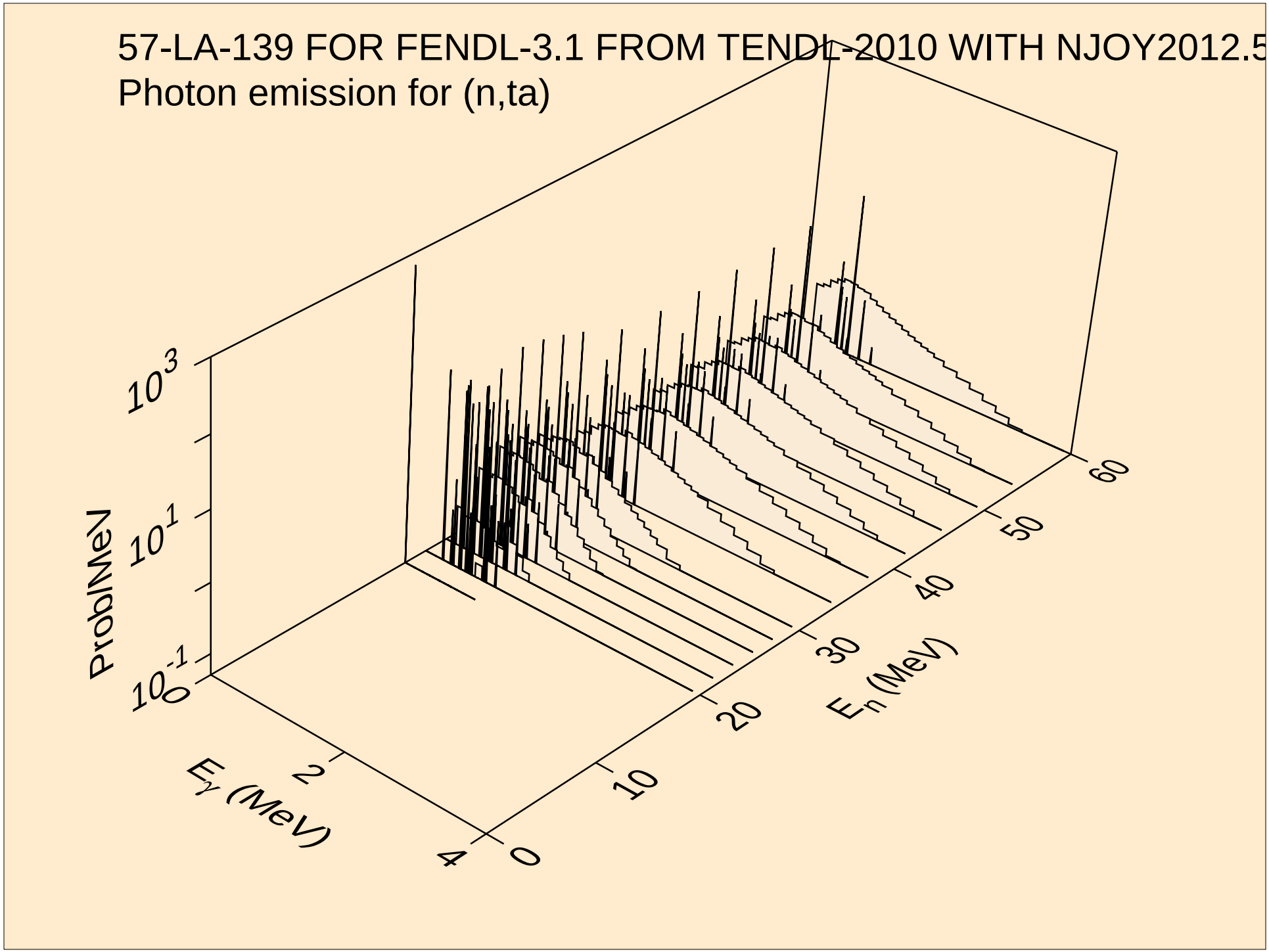

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Photon emission for (n,pt)
Prob/MeV
10^0
10^-2
0
5
10
E_γ (MeV)
10
20
30
40
50
60
E_n (MeV)

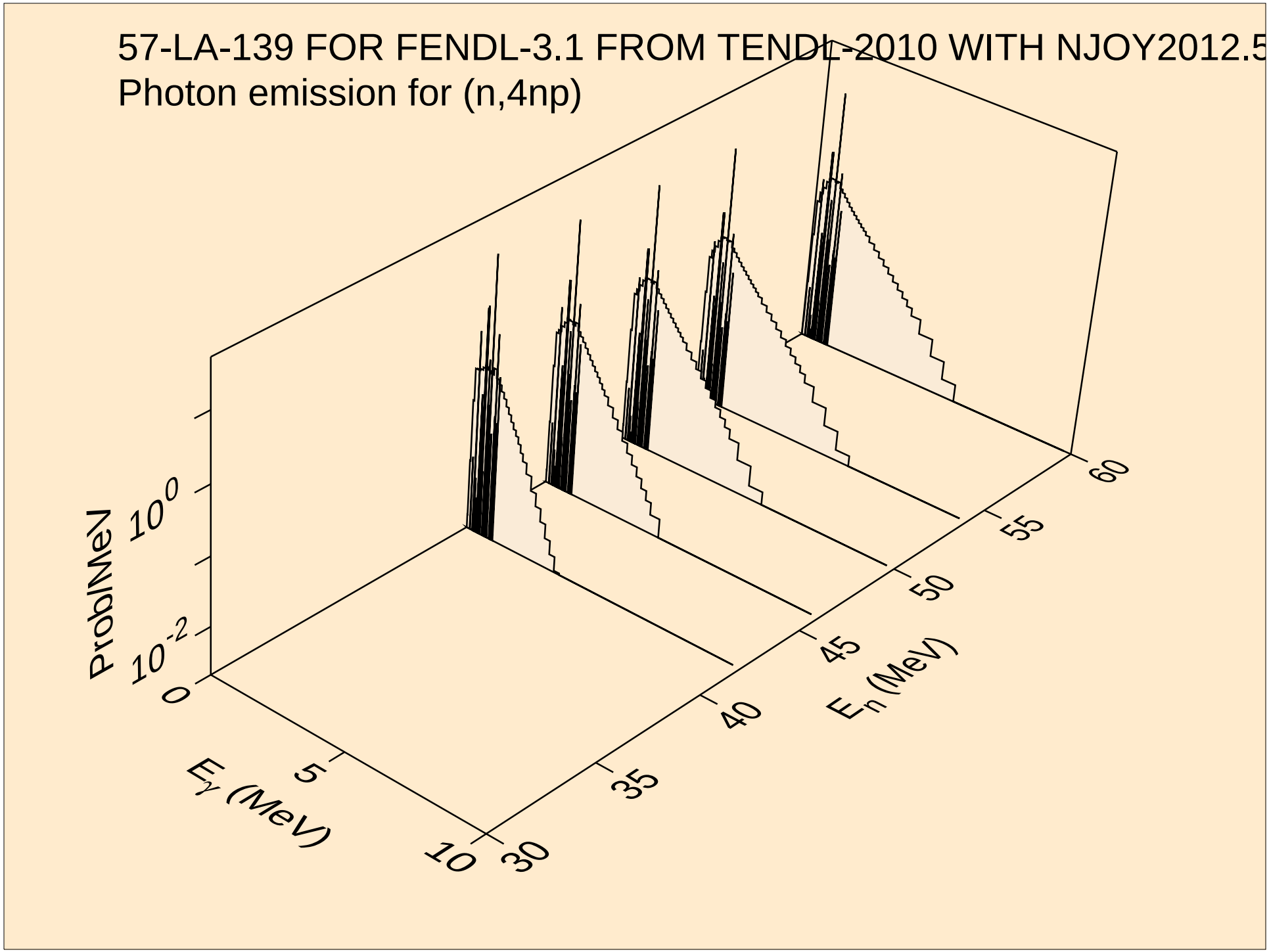

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Photon emission for (n,da)
Prob/MeV
10^{2}
10^{0}
10^{-2}
0
5
10
E_γ (MeV)
0
10
20
30
40
50
60
E_n (MeV)

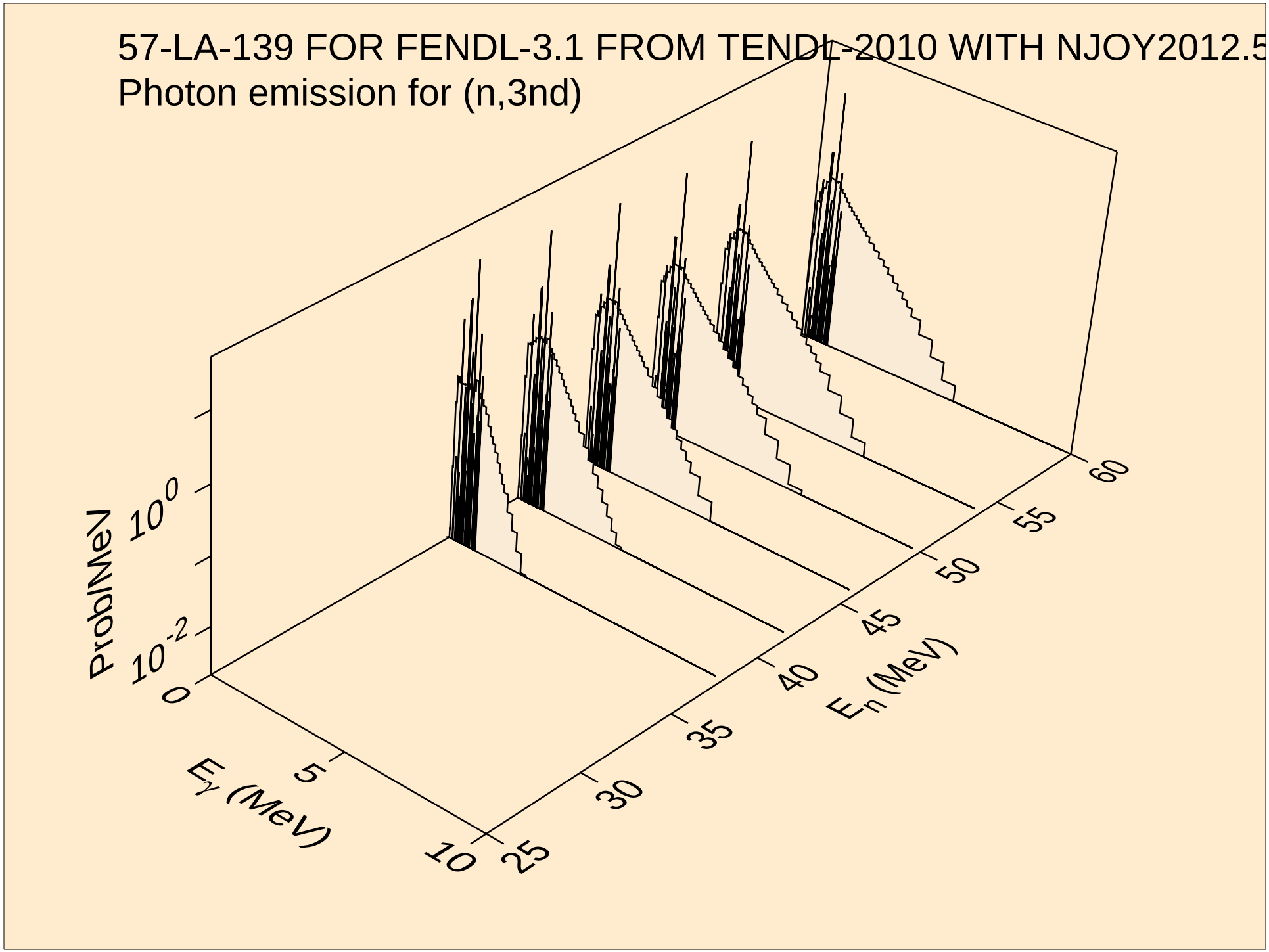

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Photon emission for (n,5n)
Prob/MeV
10^{1}
10^{-1}
0
5
10
E_γ (MeV)
30
35
40
45
50
55
60
E_n (MeV)

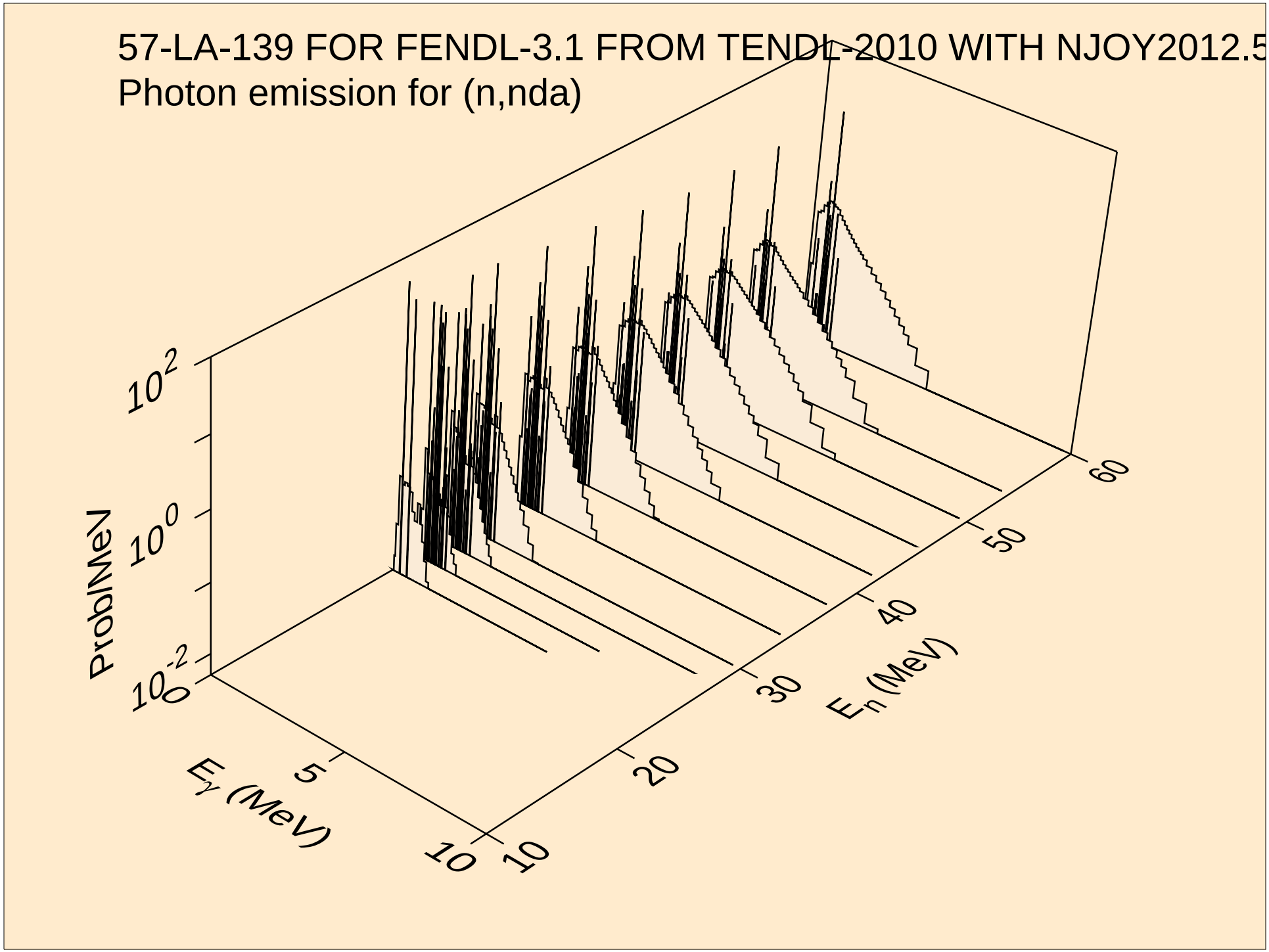

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Photon emission for (n,6n)
Prob/MeV
10^{1}
10^{-1}
10^{-3}
0
5
10
E_γ (MeV)
42
44
46
48
50
52
54
56
58
60
E_n (MeV)

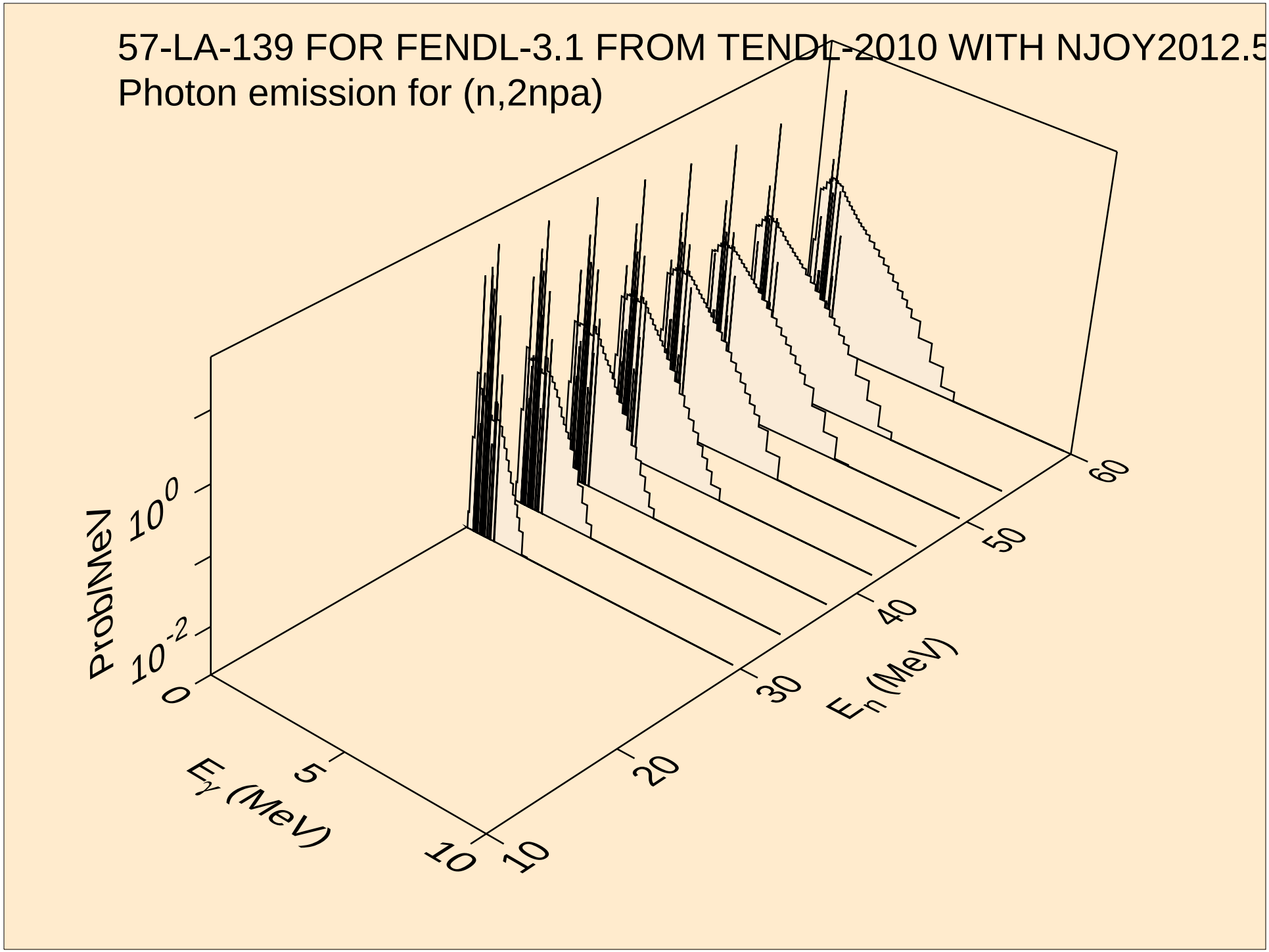

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Photon emission for (n,2nt)
Prob/MeV
10^0
10^-2
0
5
10
E_γ (MeV)
20
25
30
35
40
45
50
55
60
E_n (MeV)

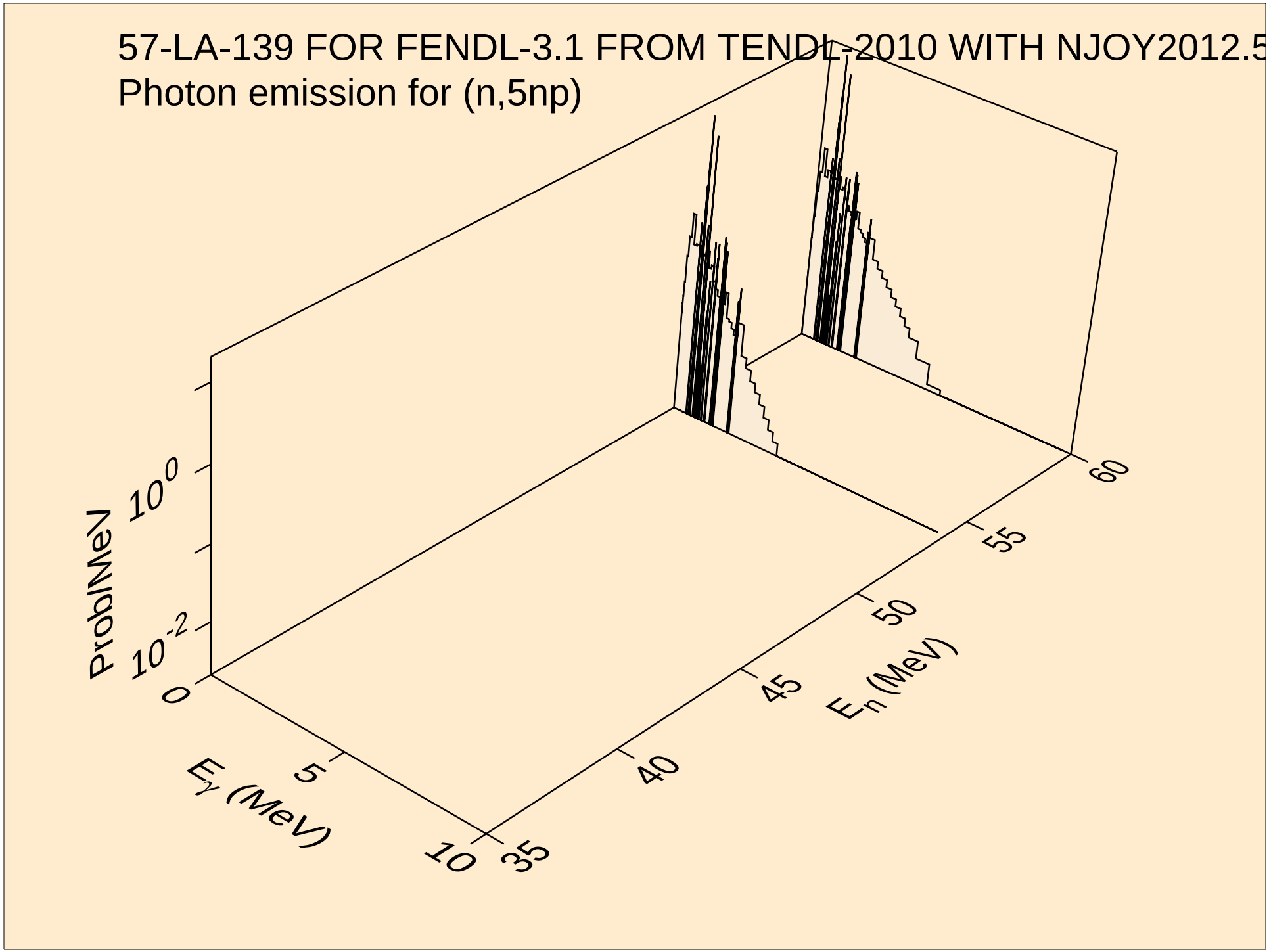

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Photon emission for (n,ta)
Prob/MeV
10^{3}
10^{1}
10^{-1}
0
2
4
E_γ (MeV)
0
10
20
30
40
50
60
E_n (MeV)

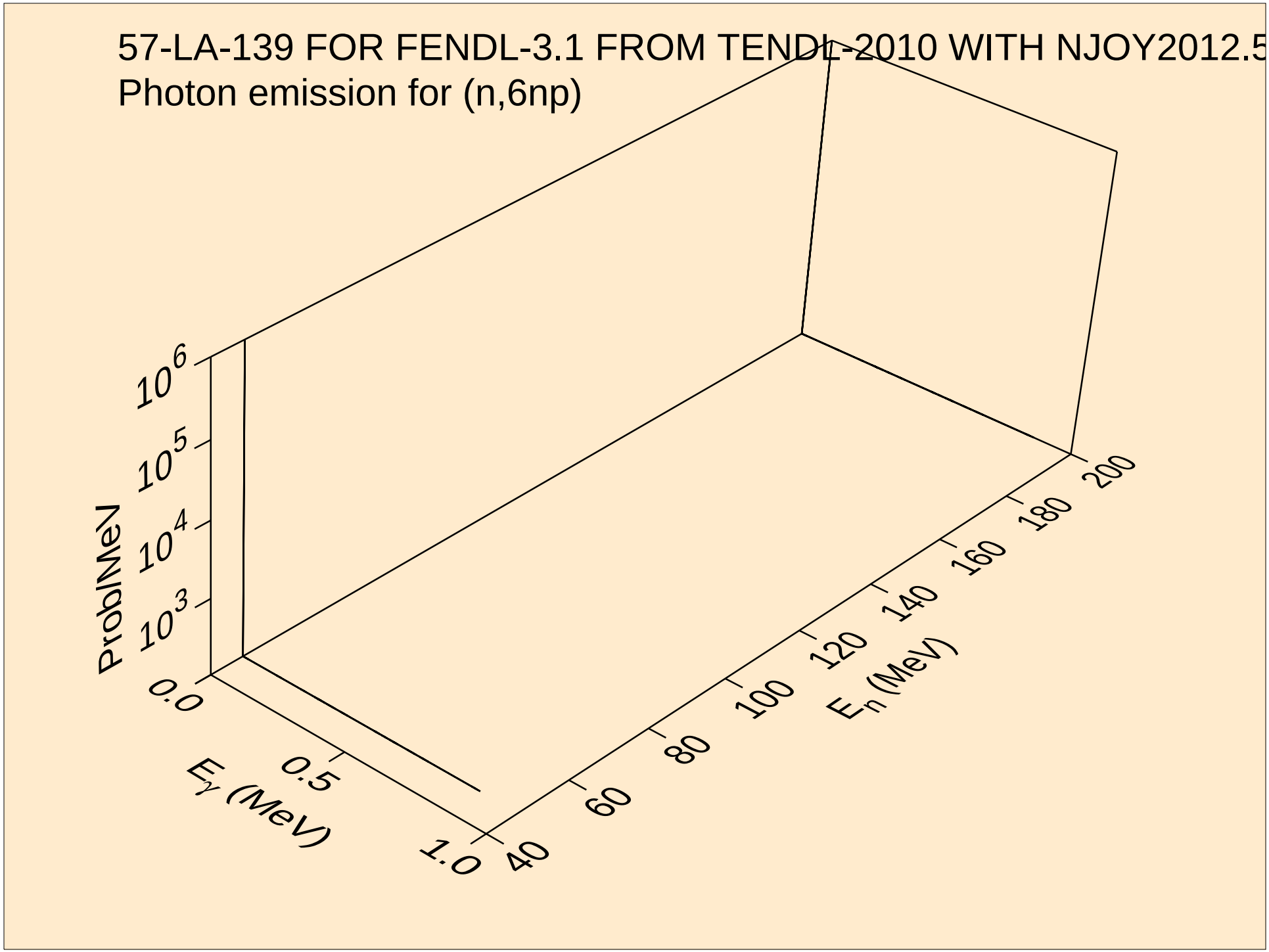

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Photon emission for (n,4np)
Prob/MeV
10^0
10^-2
0
E_γ (MeV)
5
10
30
35
40
45
E_n (MeV)
50
55
60

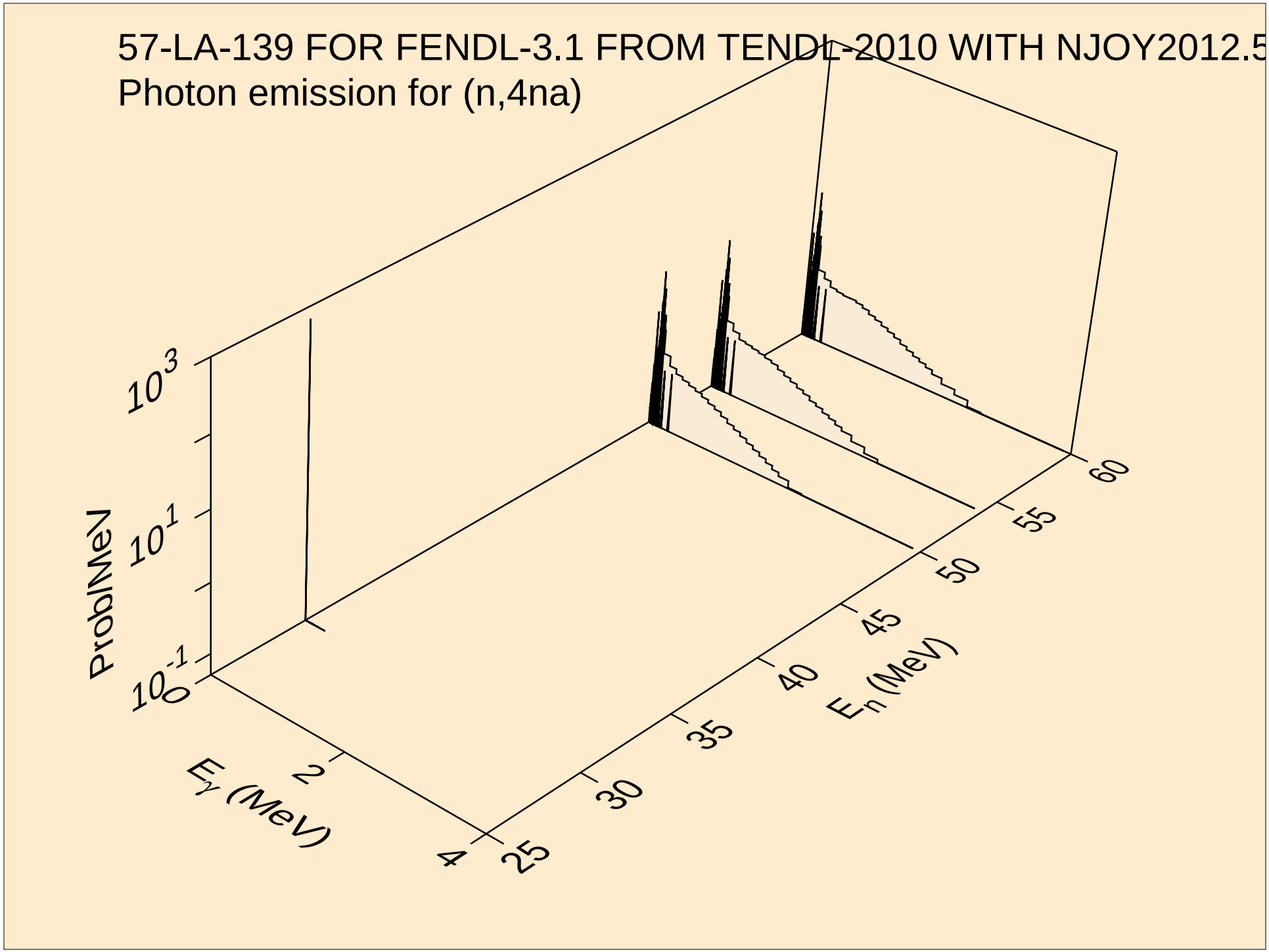

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Photon emission for (n,3nd)
Prob/MeV
10^0
10^-2
0
5
10
E_γ (MeV)
25
30
35
40
45
50
55
60
E_n (MeV)

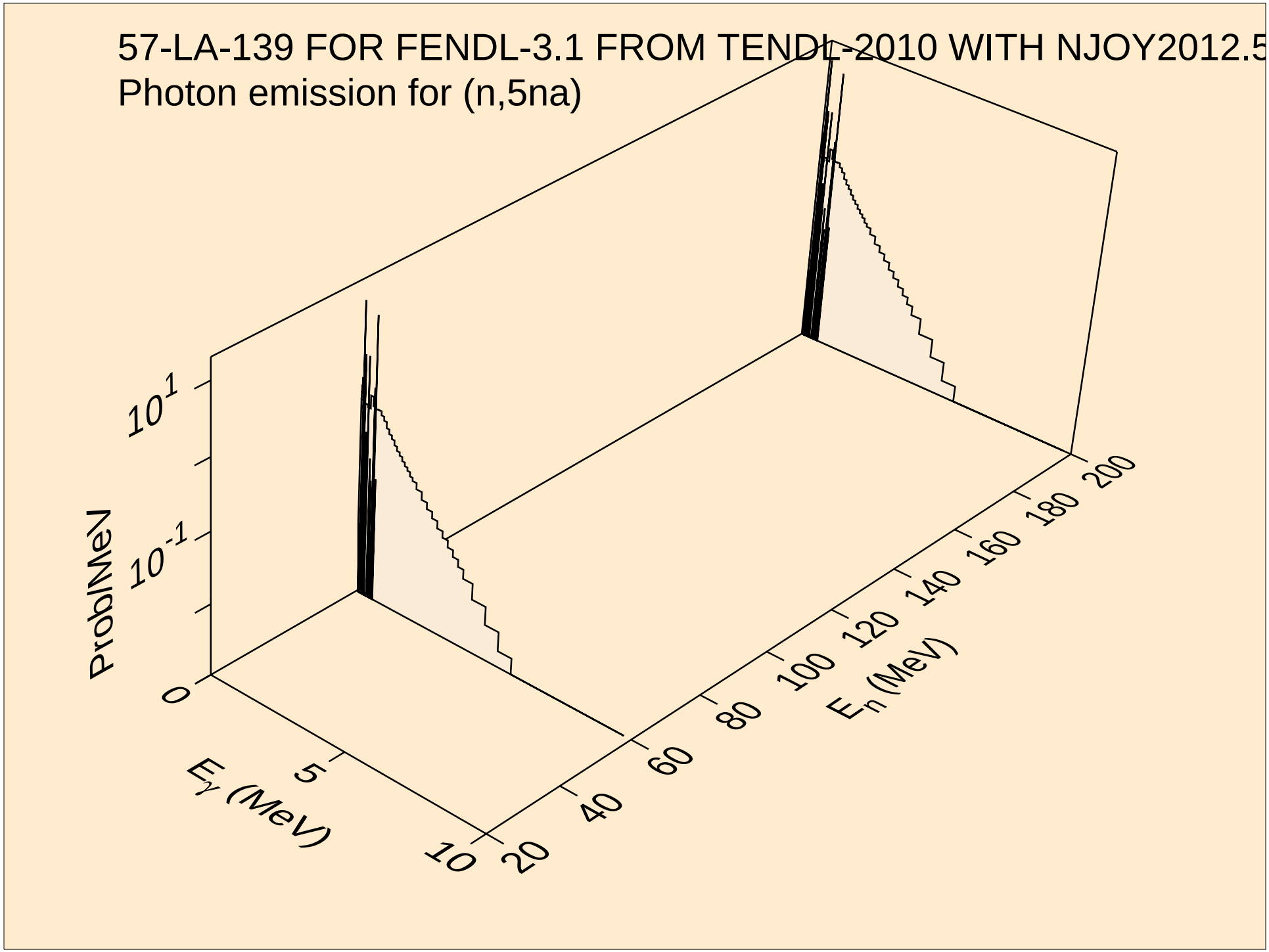

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Photon emission for (n,nda)
Prob/MeV
10^{2}
10^{0}
10^{-2}
0
E_γ (MeV)
5
10
10
20
30
40
50
60
E_n (MeV)

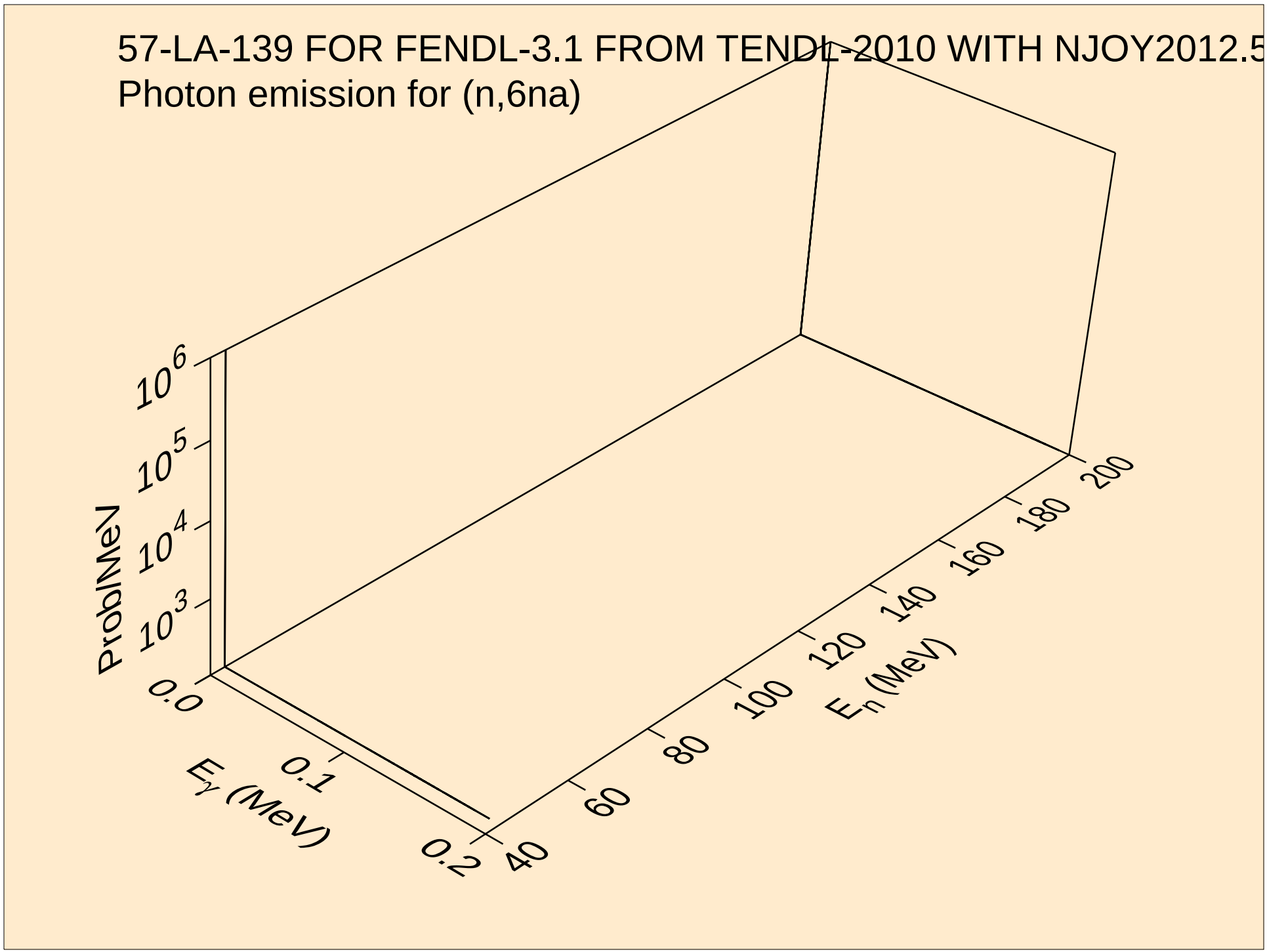

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Photon emission for (n,2npa)
Prob/MeV
10^0
10^-2
0
5
10
E_γ (MeV)
10
20
30
40
50
60
E_n (MeV)

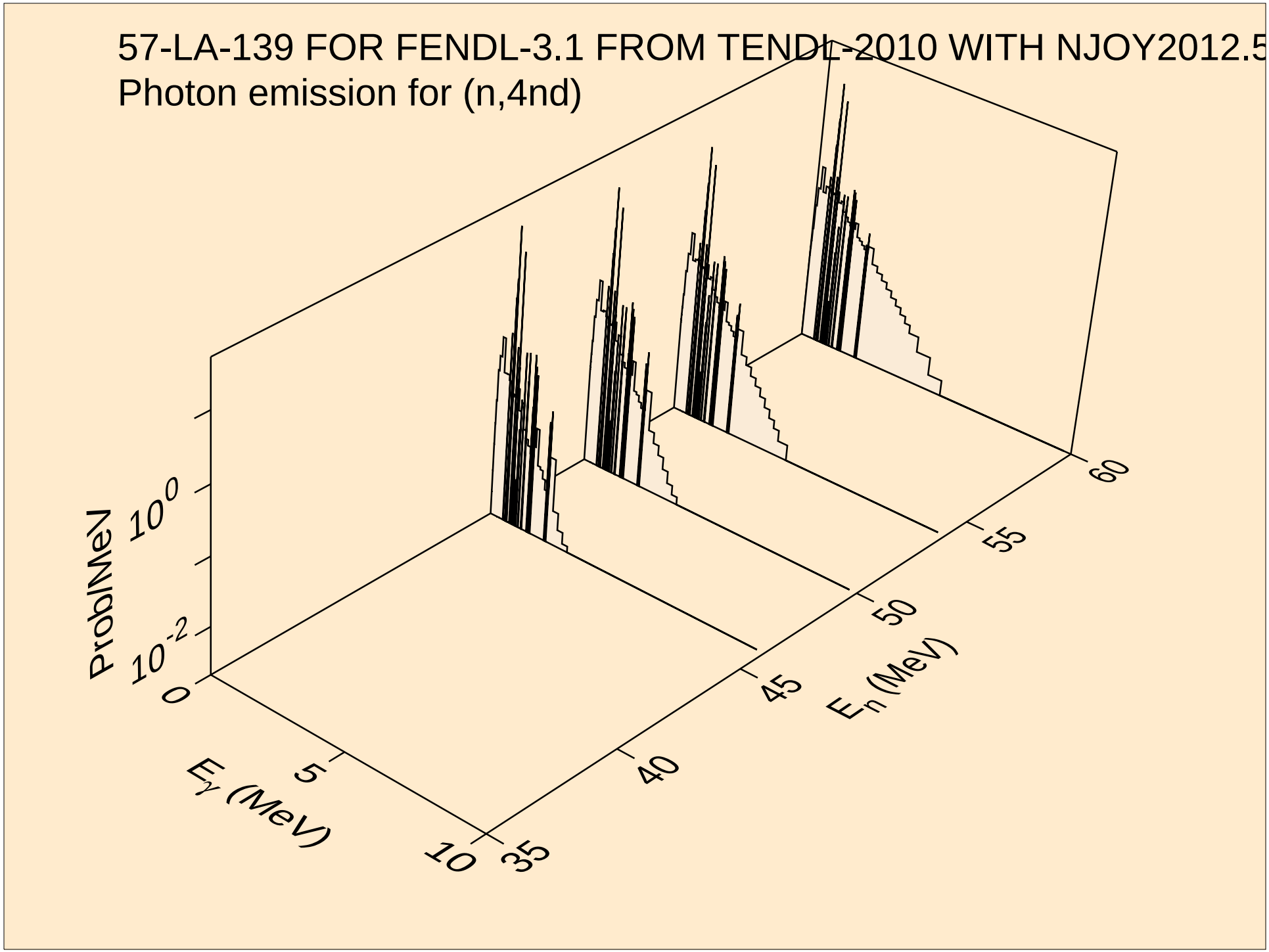

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Photon emission for (n,5np)
Prob/MeV
10^{0}
10^{-2}
0
E_γ (MeV)
5
10
35
40
45
50
55
60
E_n (MeV)

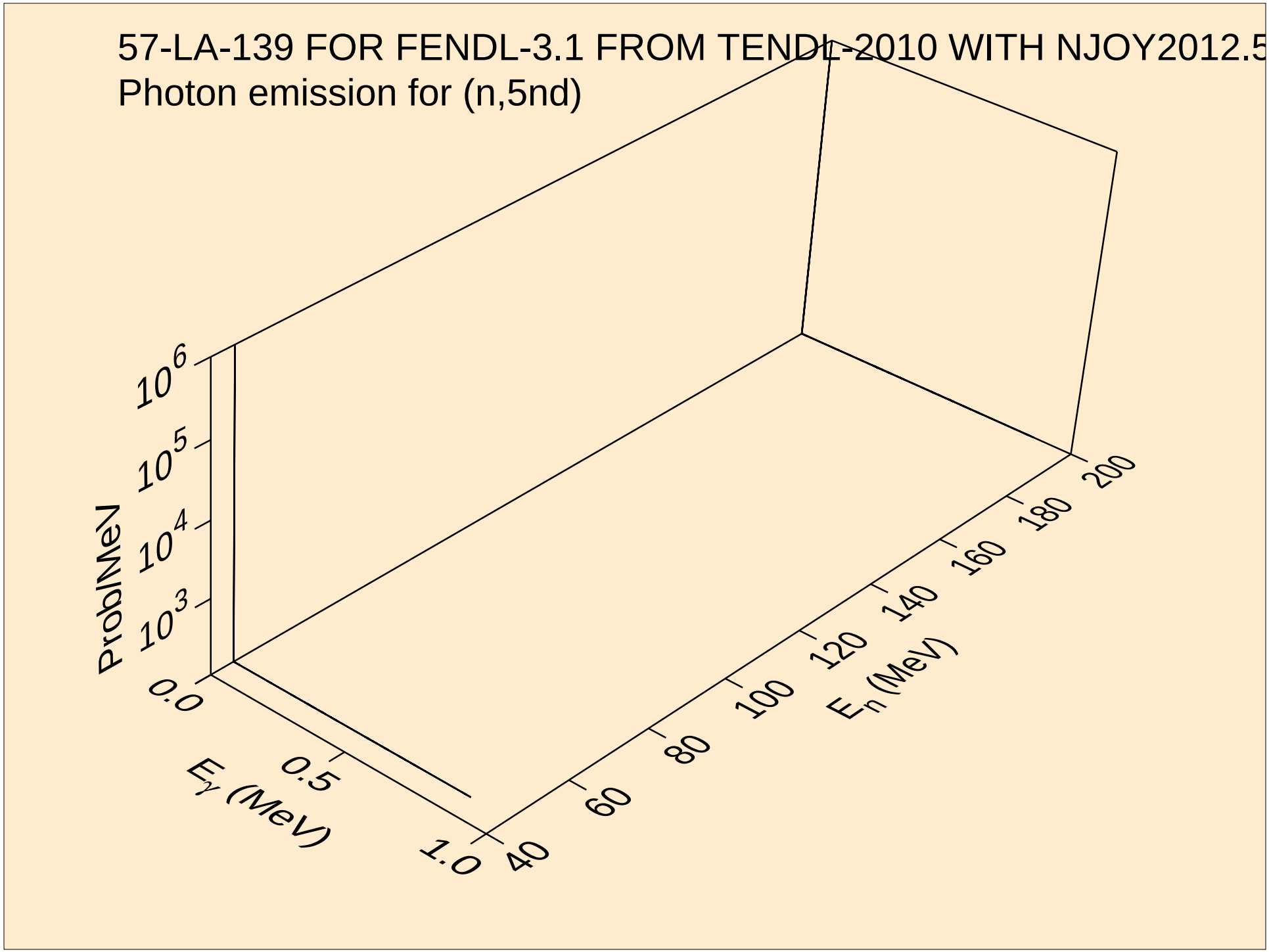

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Photon emission for (n,6np)
Prob/MeV
10^6
10^5
10^4
10^3
0.0
0.5
1.0
E_γ (MeV)
40
60
80
100
120
140
160
180
200
E_n (MeV)

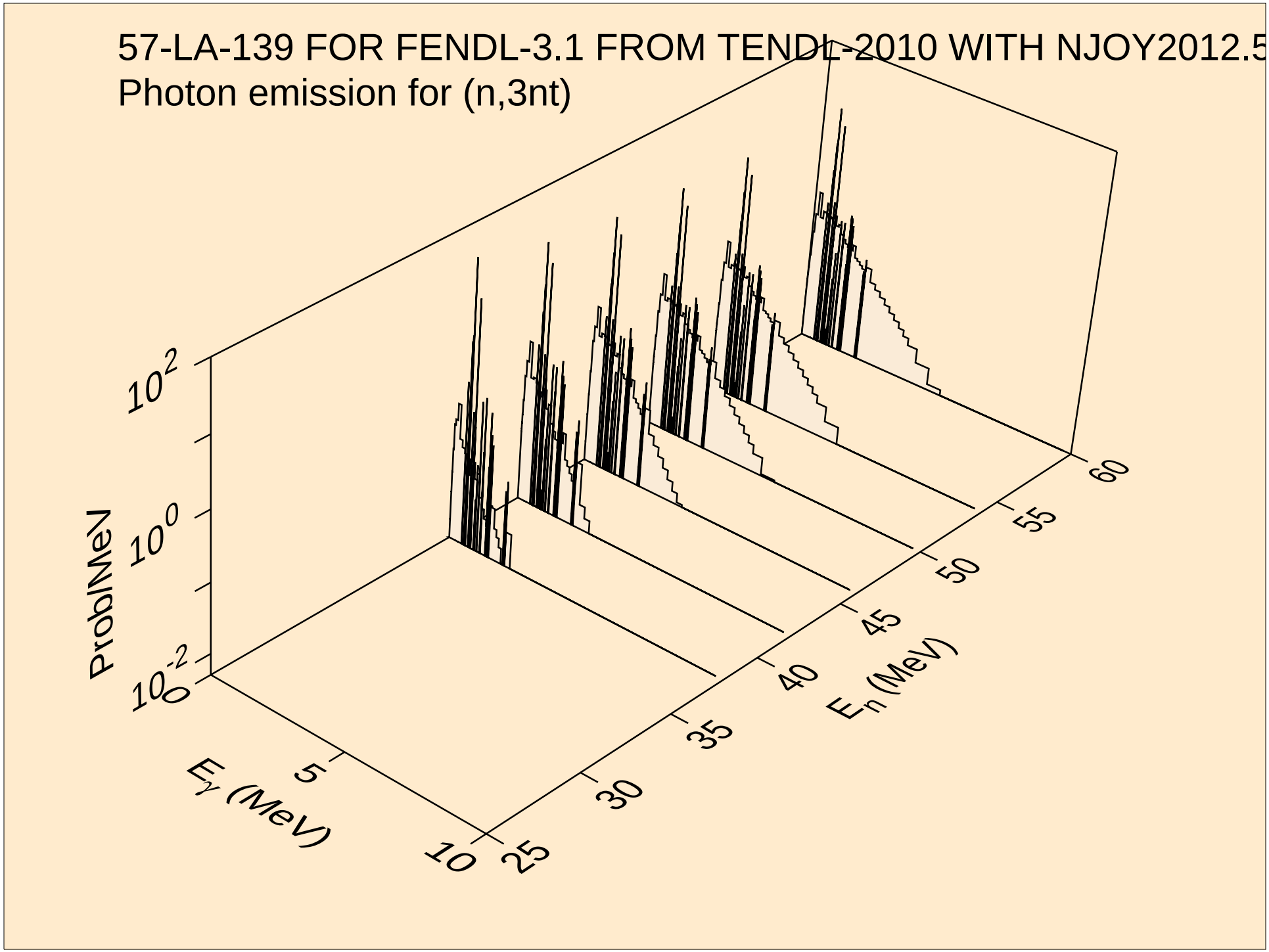

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Photon emission for (n,4na)
Prob/MeV
10^{3}
10^{1}
10^{-1}
0
2
4
E_γ (MeV)
25
30
35
40
45
50
55
60
E_n (MeV)

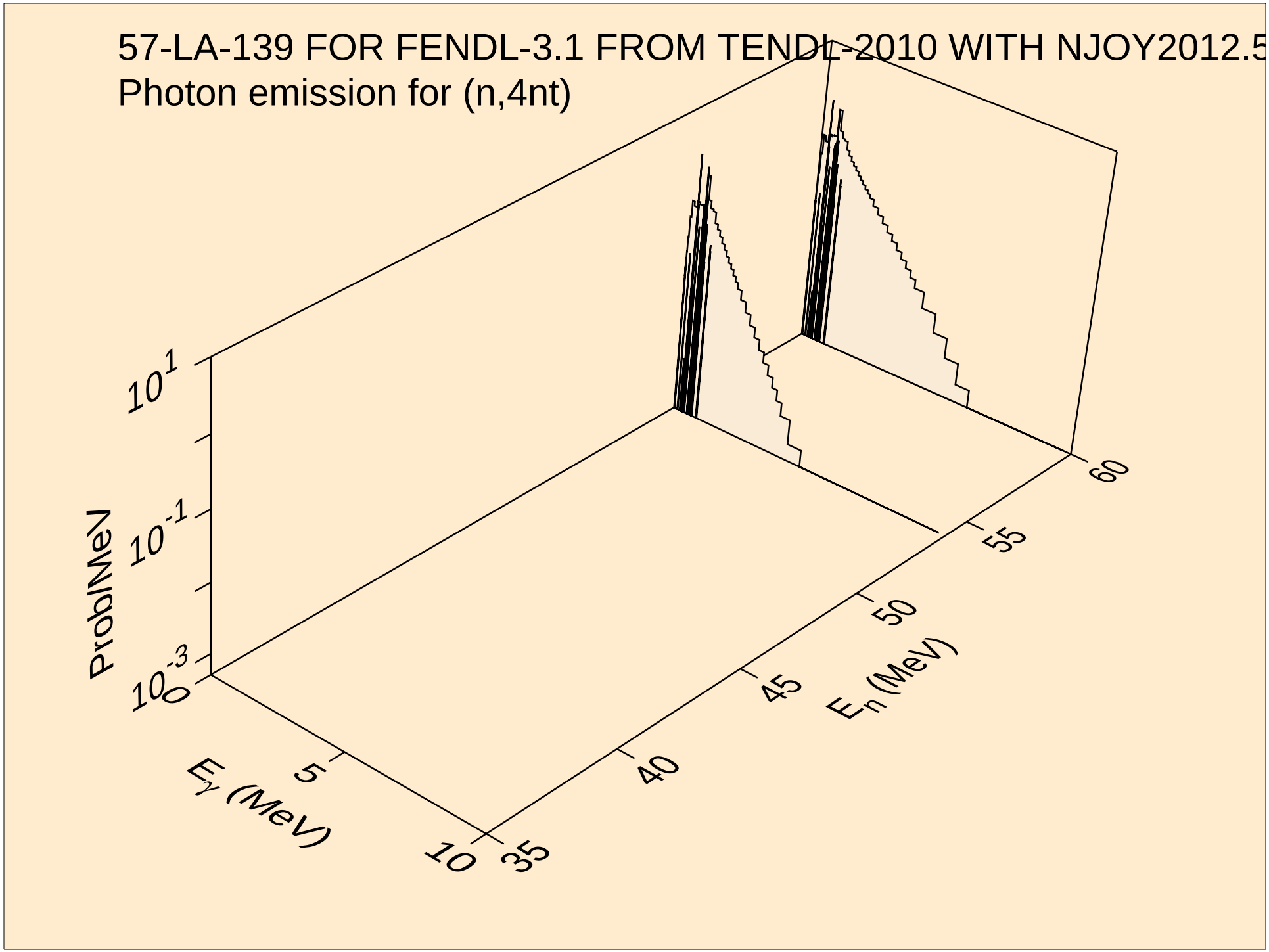

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Photon emission for (n,5na)
Prob/MeV
10^{1}
10^{-1}
0
5
10
E_γ (MeV)
20
40
60
80
100
120
140
160
180
200
E_n (MeV)

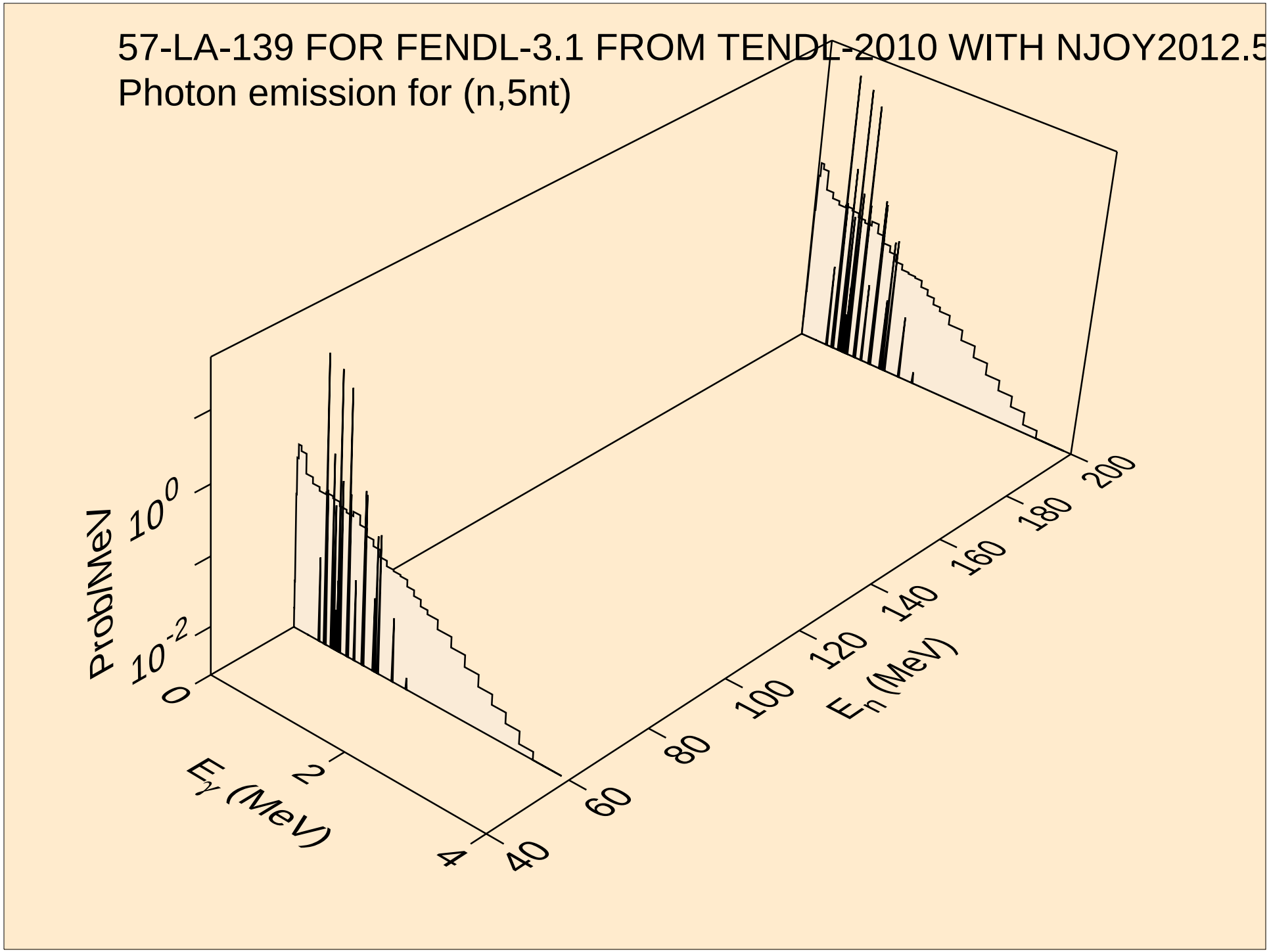

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Photon emission for (n,6na)
Prob/MeV
10^6
10^5
10^4
10^3
0.0
0.1
0.2
E_γ (MeV)
40
60
80
100
120
140
160
180
200
E_n (MeV)

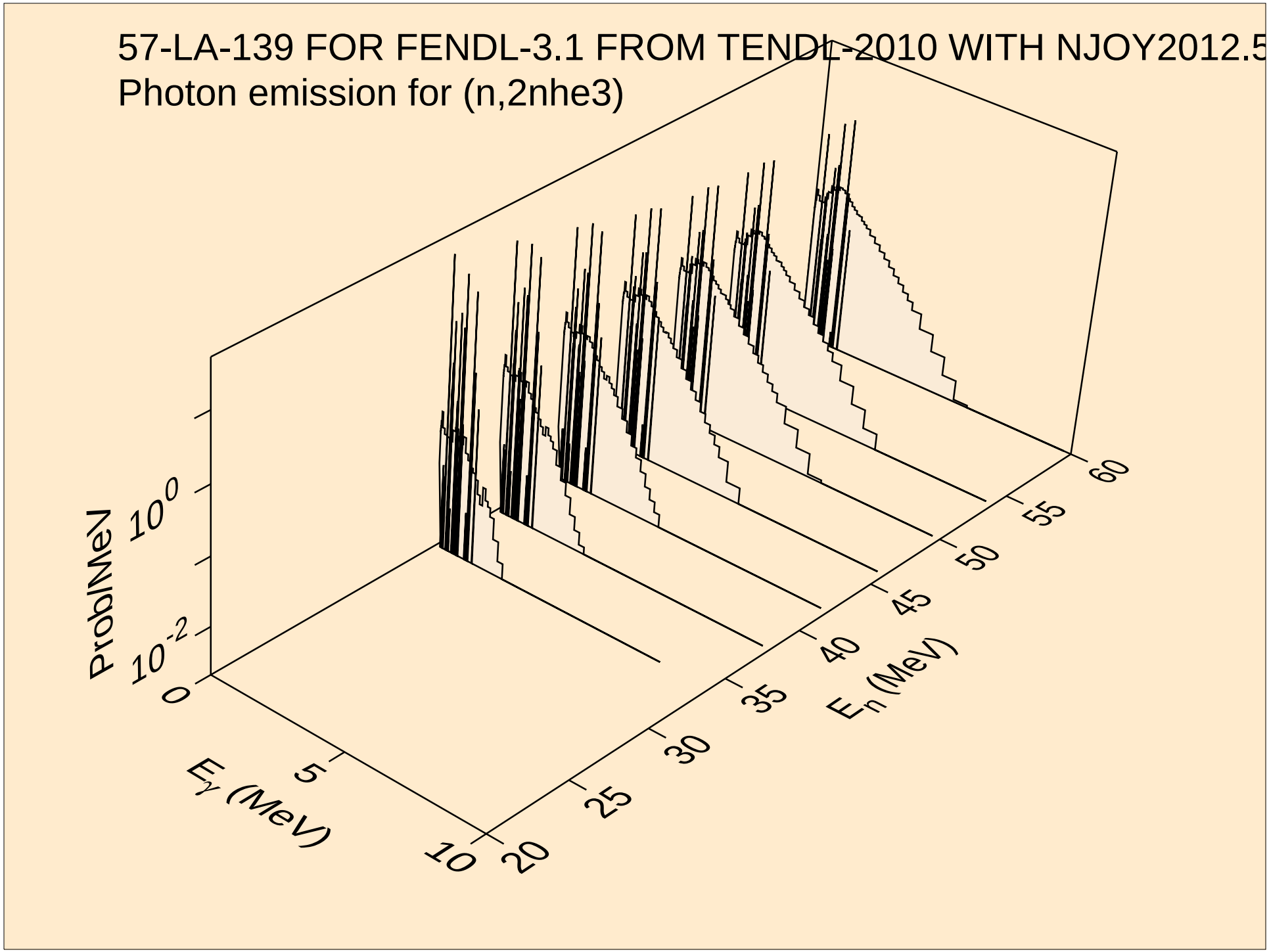

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Photon emission for (n,4nd)
Prob/MeV
10^0
10^-2
0
E_γ (MeV)
5
10
35
40
45
50
55
60
E_n (MeV)

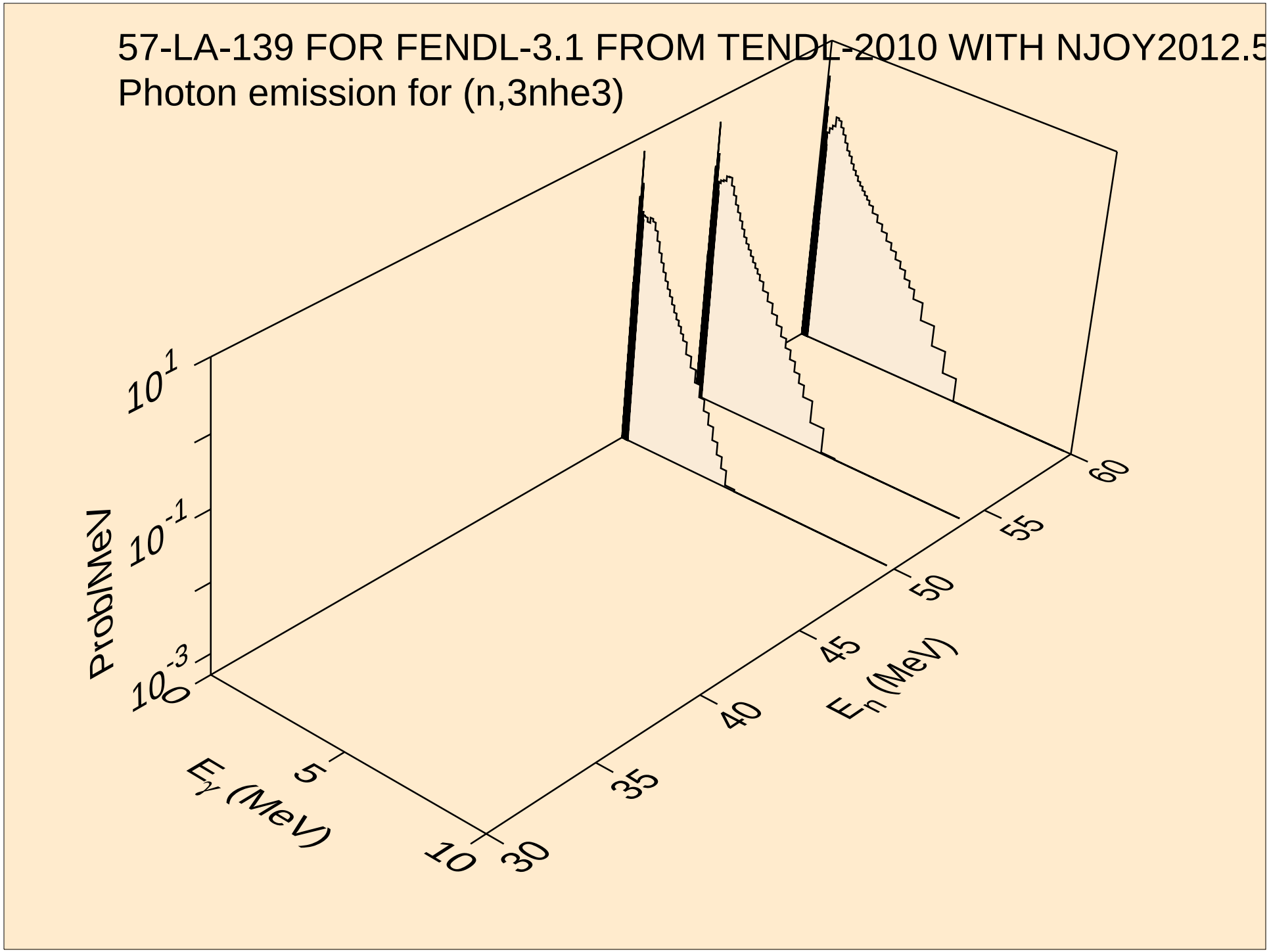

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Photon emission for (n,5nd)
Prob/MeV
10^6
10^5
10^4
10^3
0.0
0.5
1.0
E_γ (MeV)
40
60
80
100
120
140
160
180
200
E_n (MeV)

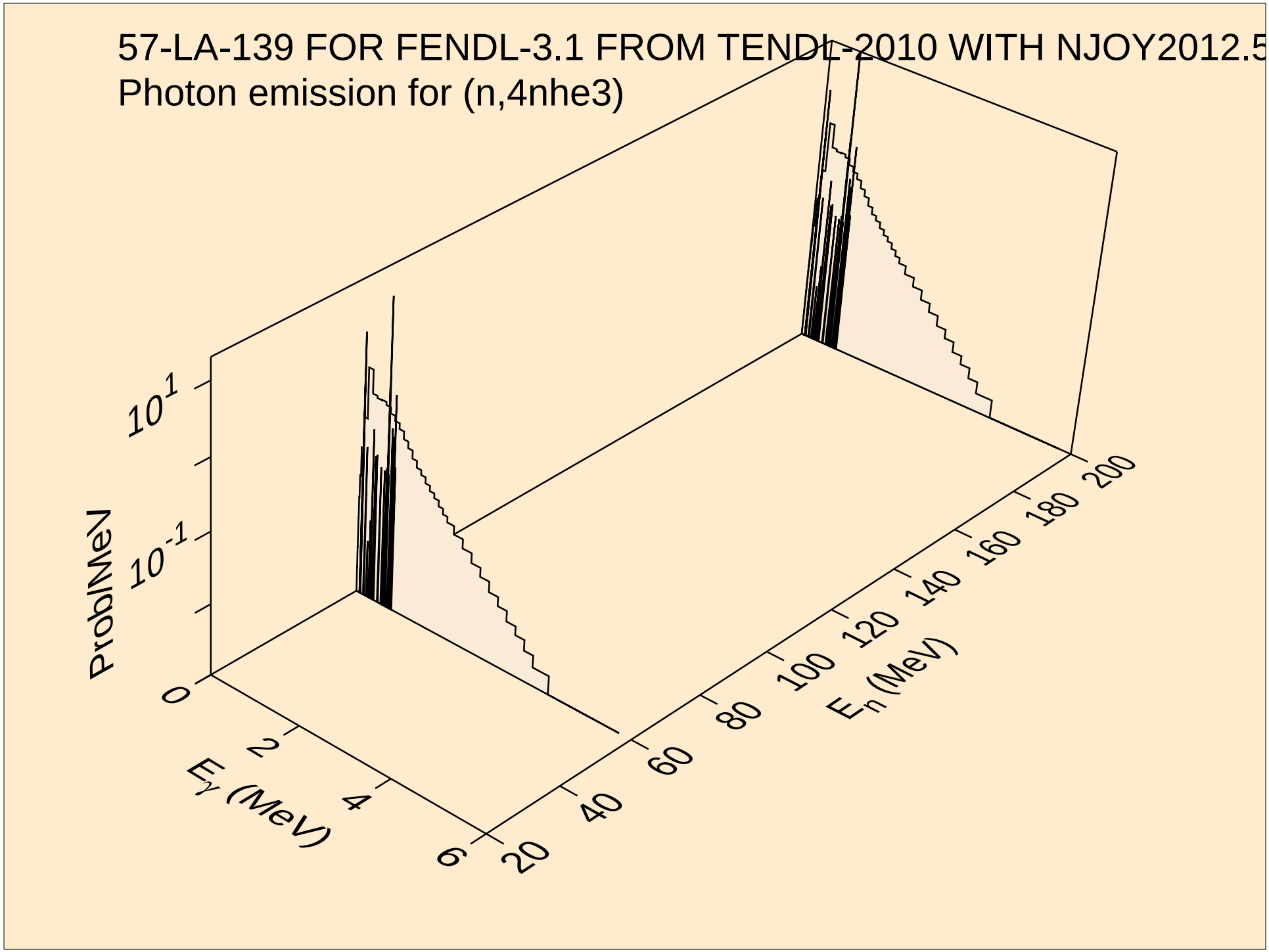

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Photon emission for (n,3nt)
Prob/MeV
10^{2}
10^{0}
10^{-2}
0
5
10
E_γ (MeV)
25
30
35
40
45
50
55
60
E_n (MeV)

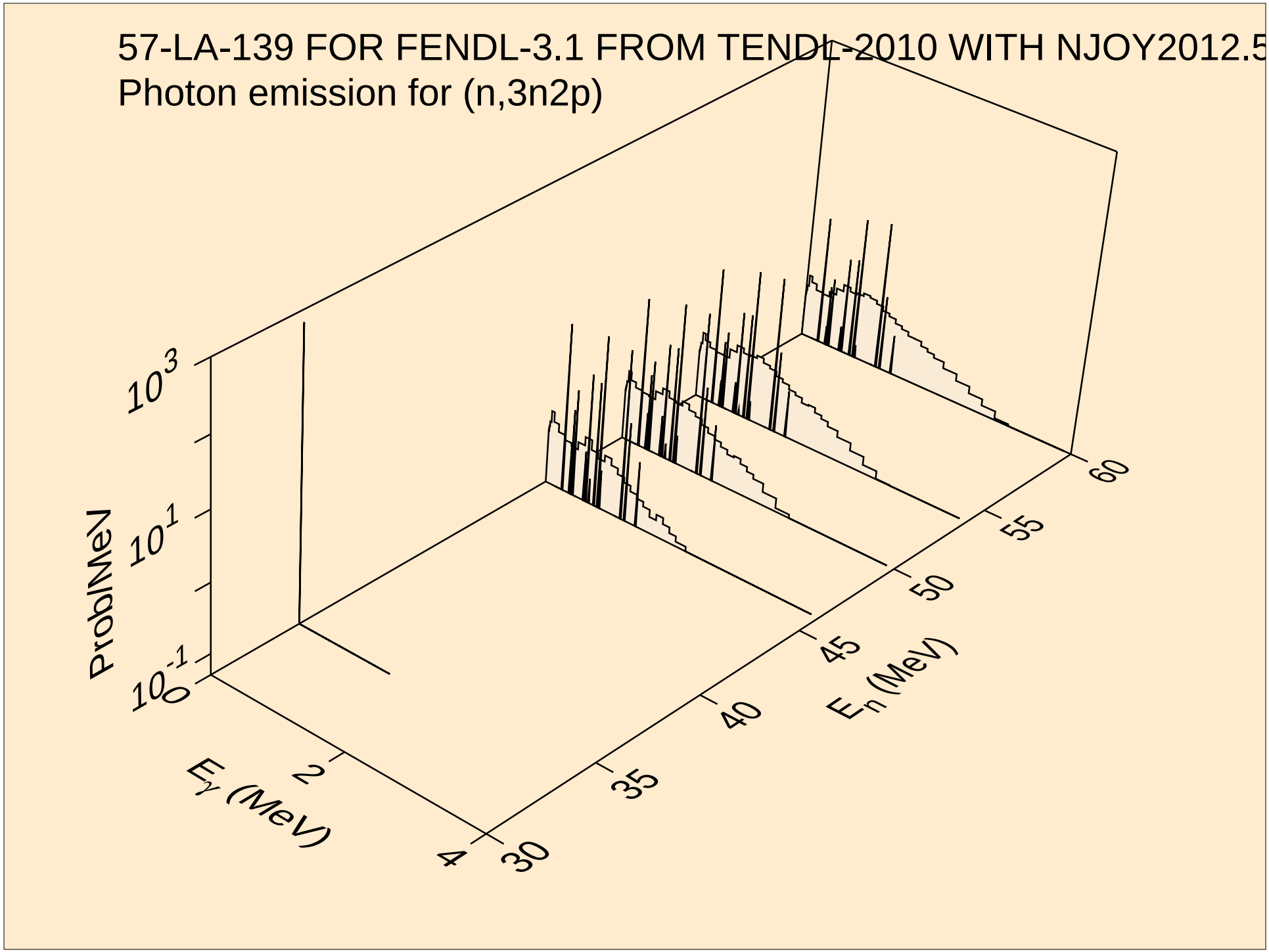

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Photon emission for (n,4nt)
Prob/MeV
10^{1}
10^{-1}
10^{-3}
0
5
10
E_γ (MeV)
35
40
45
50
55
60
E_n (MeV)

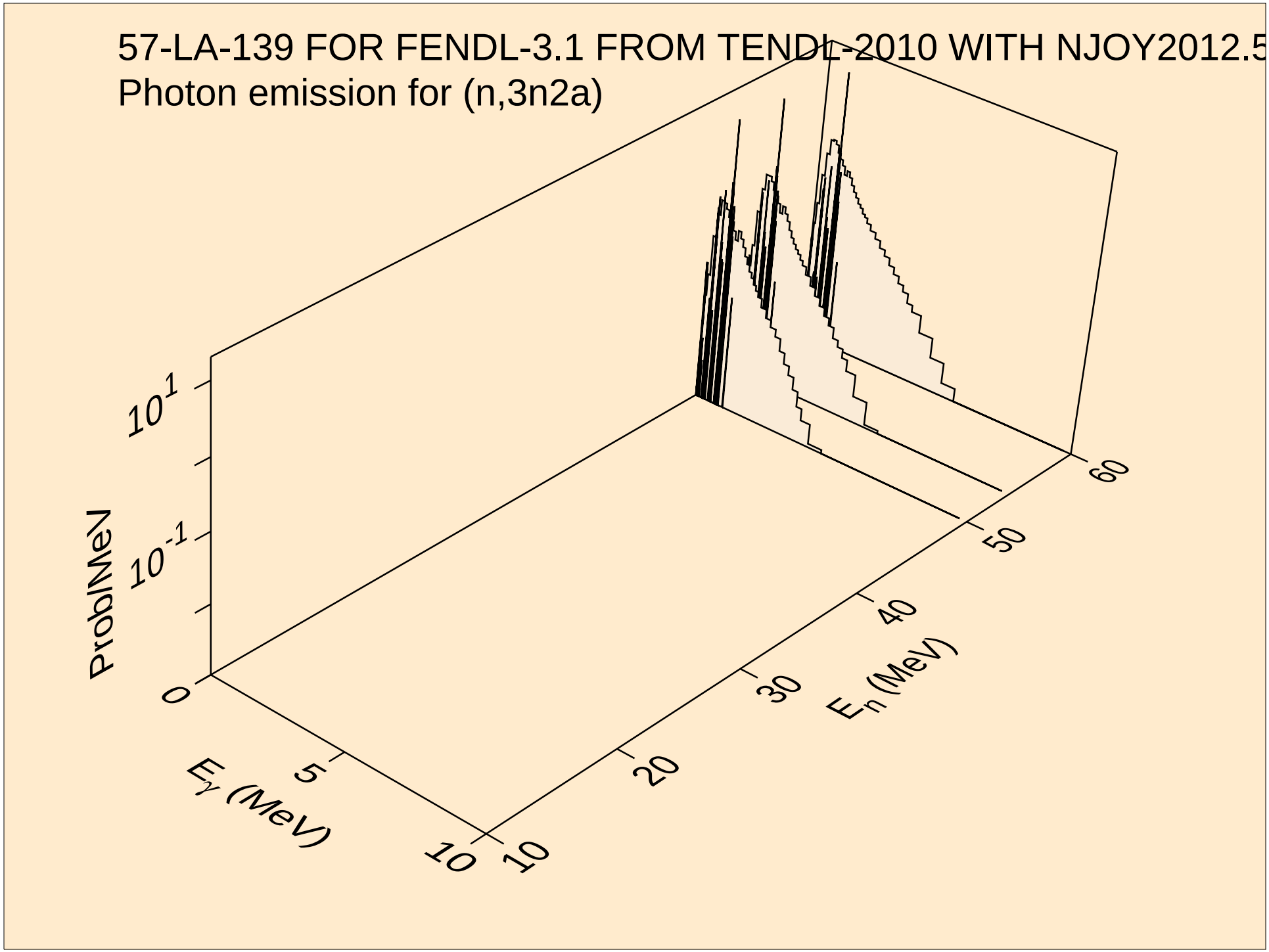

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Photon emission for (n,5nt)
Prob/MeV
10^0
10^-2
0
2
4
E_γ (MeV)
40
60
80
100
120
140
160
180
200
E_n (MeV)

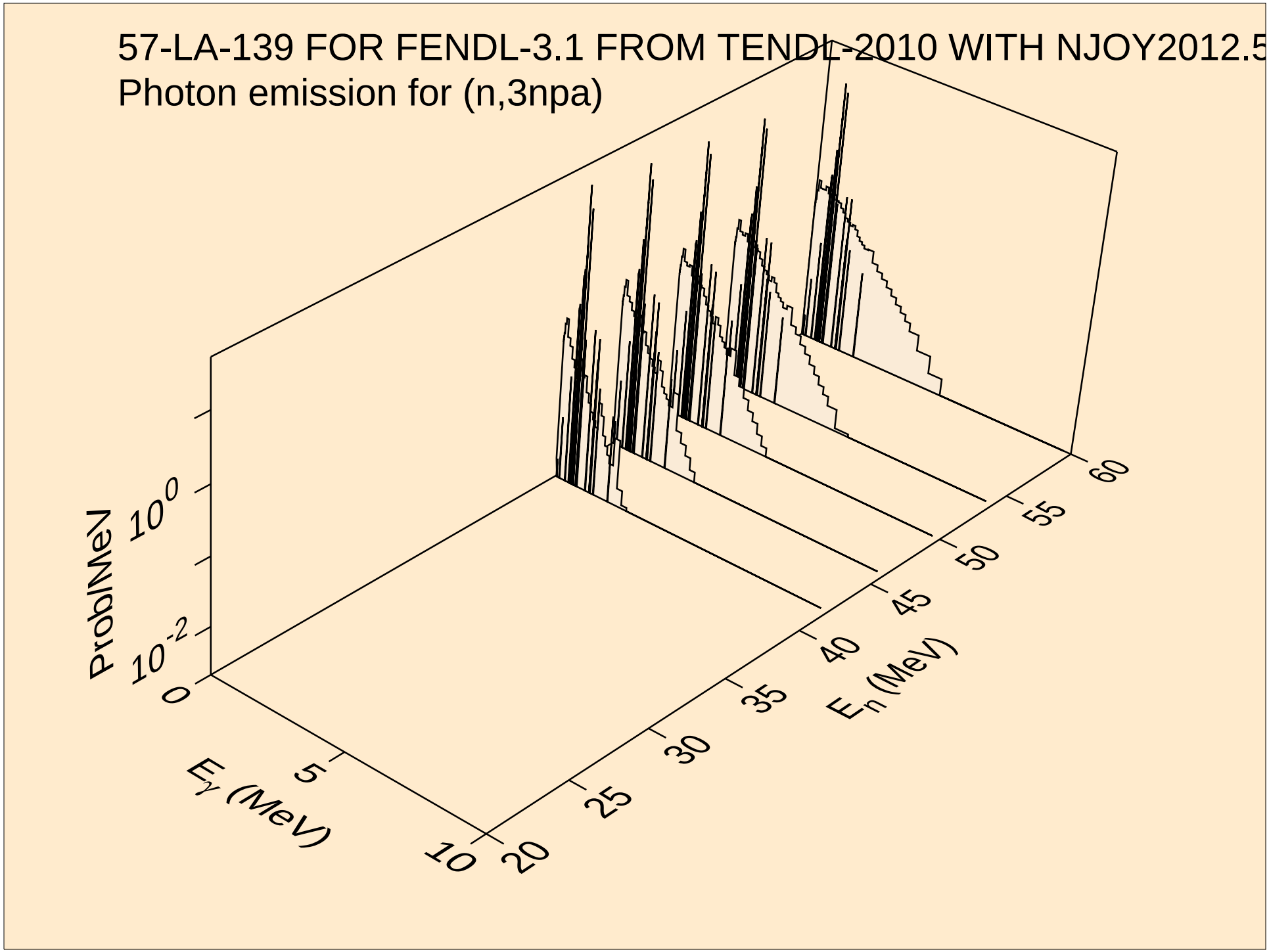

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Photon emission for (n,2nhe3)
Prob/MeV
10^0
10^-2
0
5
10
E_γ (MeV)
20
25
30
35
40
45
50
55
60
E_n (MeV)

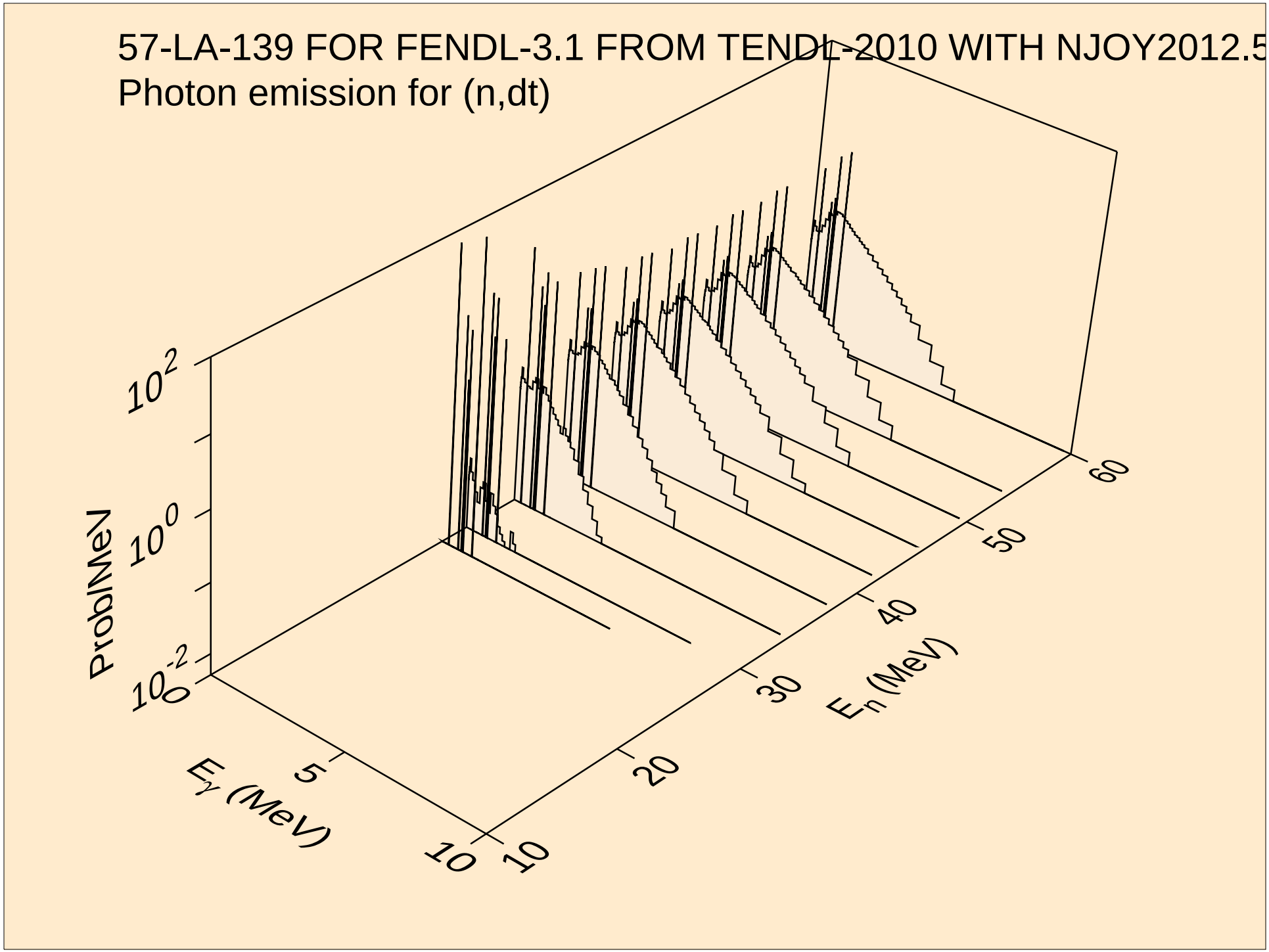

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Photon emission for (n,3nhe3)
Prob/MeV
10^{1}
10^{-1}
10^{-3}
0
5
10
E_γ (MeV)
30
35
40
45
50
55
60
E_n (MeV)

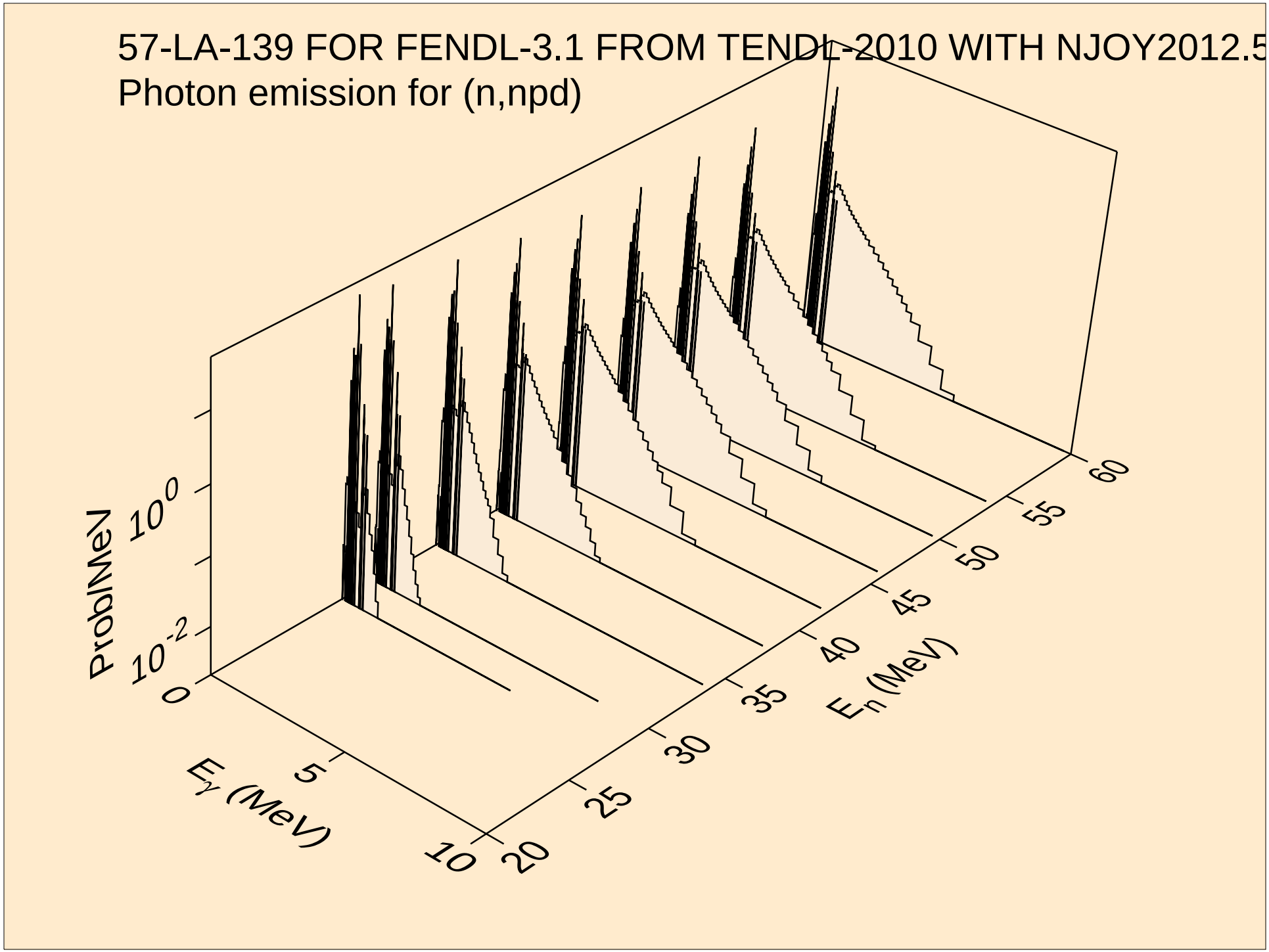

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Photon emission for (n,4nhe3)
Prob/MeV
10^1
10^-1
0
2
4
6
E_γ (MeV)
20
40
60
80
100
120
140
160
180
200
E_n (MeV)

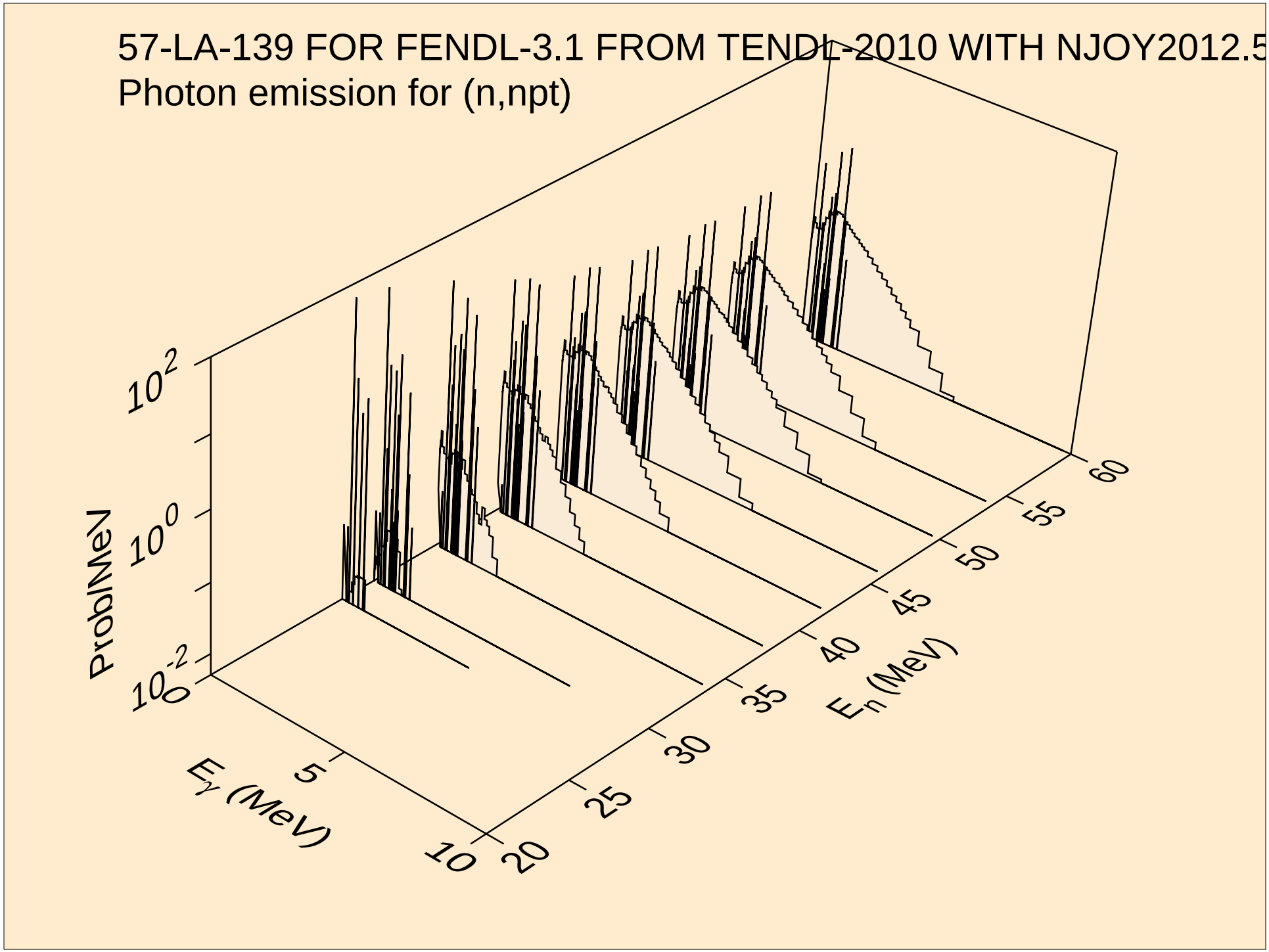

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Photon emission for (n,3n2p)
Prob/MeV
10^{3}
10^{1}
10^{-1}
0
2
4
E_γ (MeV)
30
35
40
45
50
55
60
E_n (MeV)

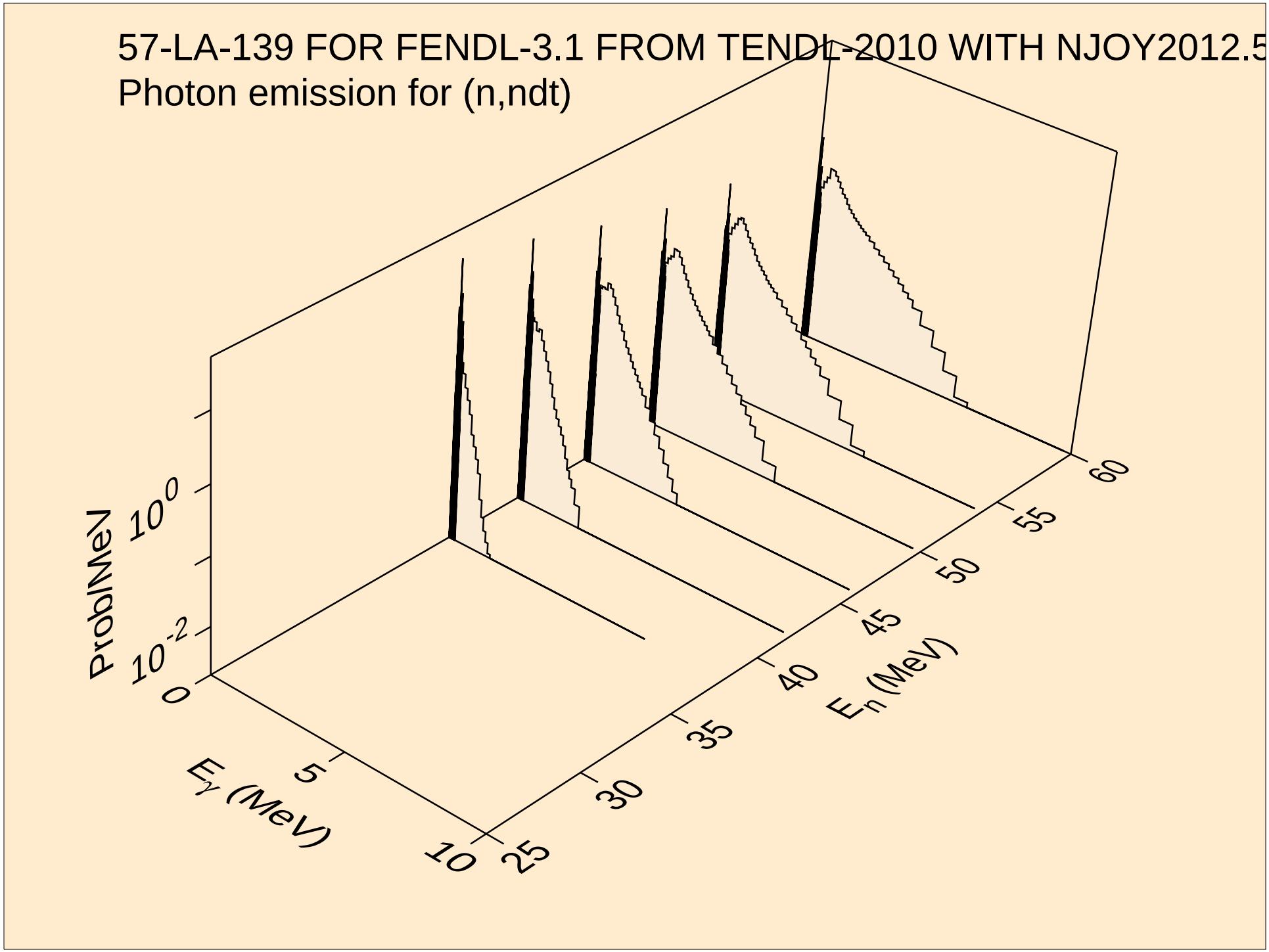

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Photon emission for (n,3n2a)
Prob/MeV
10^{1}
10^{-1}
0
5
10
E_γ (MeV)
10
20
30
40
50
60
E_n (MeV)

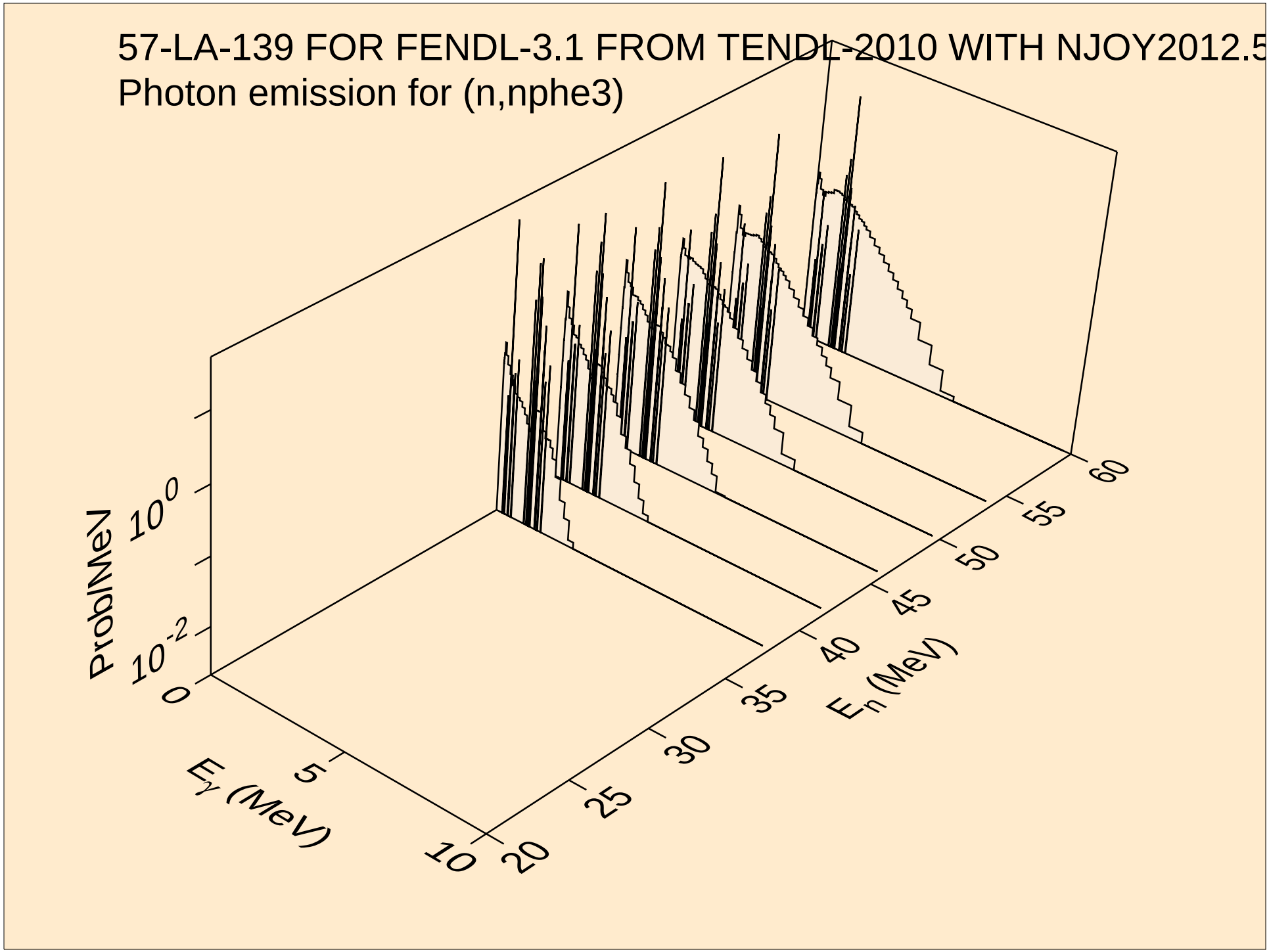

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Photon emission for (n,3npa)
Prob/MeV
10^0
10^-2
0
5
10
E_γ (MeV)
20
25
30
35
40
45
50
55
60
E_n (MeV)

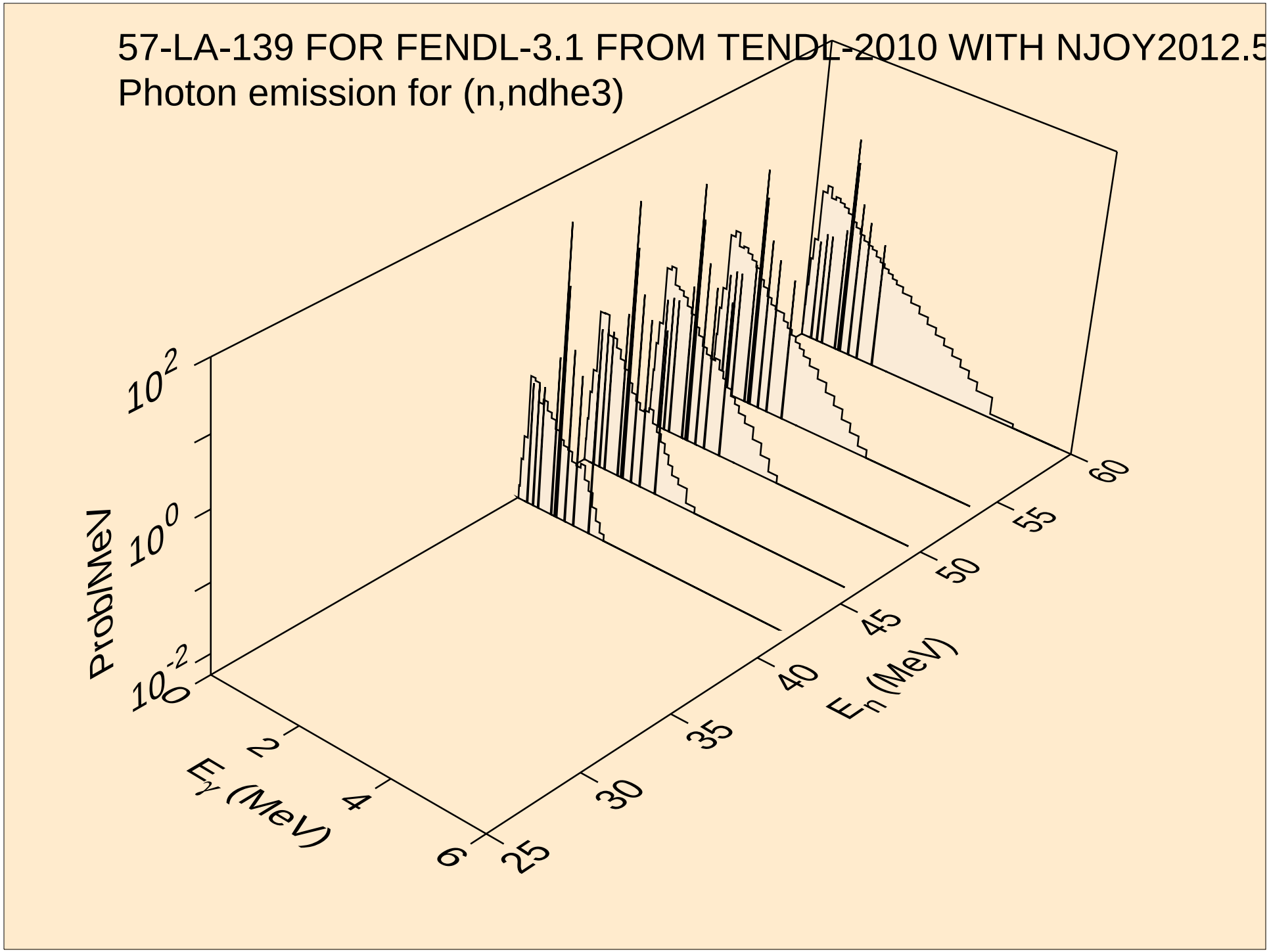

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Photon emission for (n,dt)
Prob/MeV
10^{2}
10^{0}
10^{-2}
0
E_γ (MeV)
5
10
10
20
30
40
50
60
E_n (MeV)

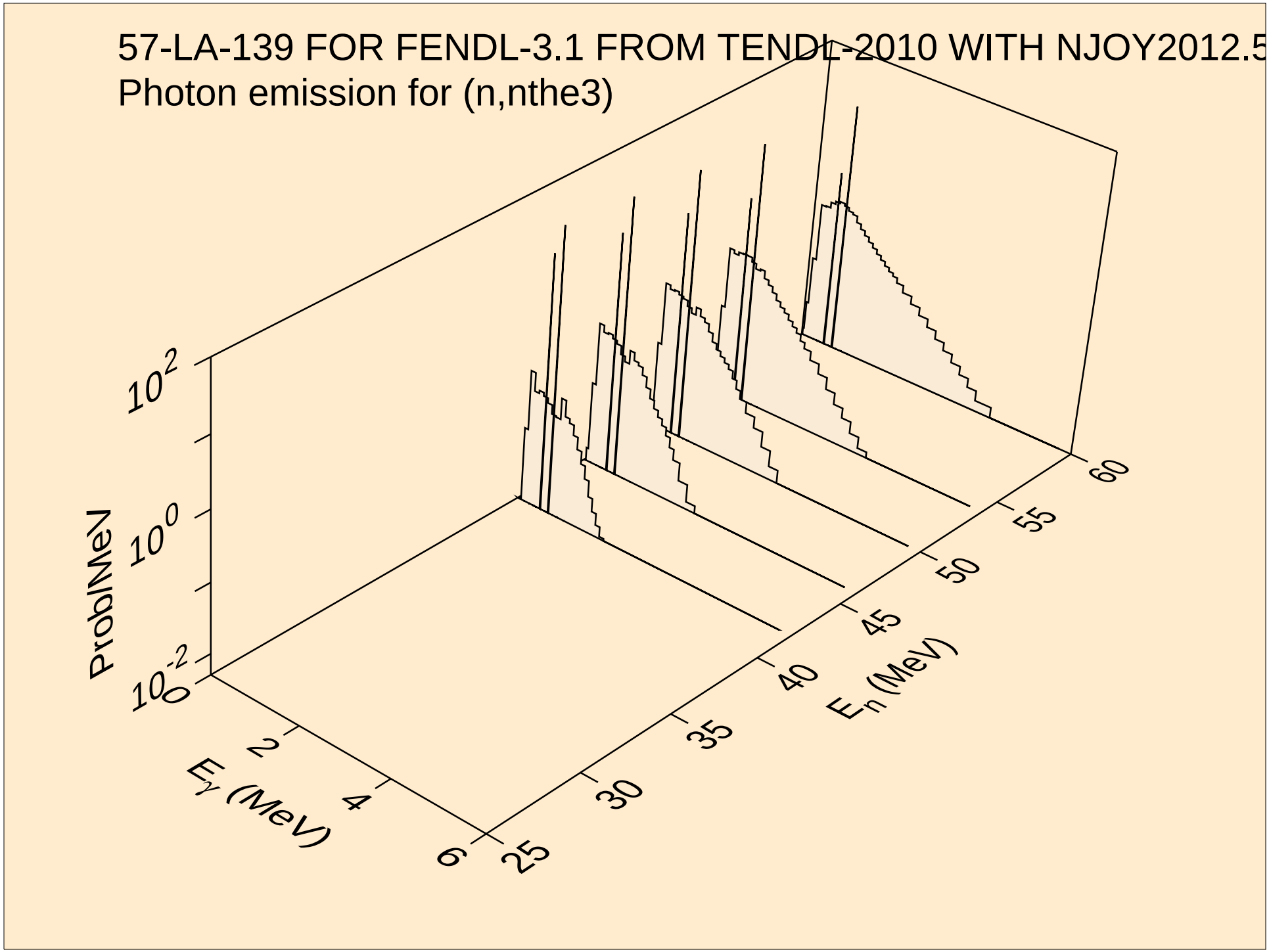

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Photon emission for (n,npd)
Prob/MeV
10^0
10^-2
0
5
10
E_γ (MeV)
20
25
30
35
40
45
50
55
60
E_n (MeV)

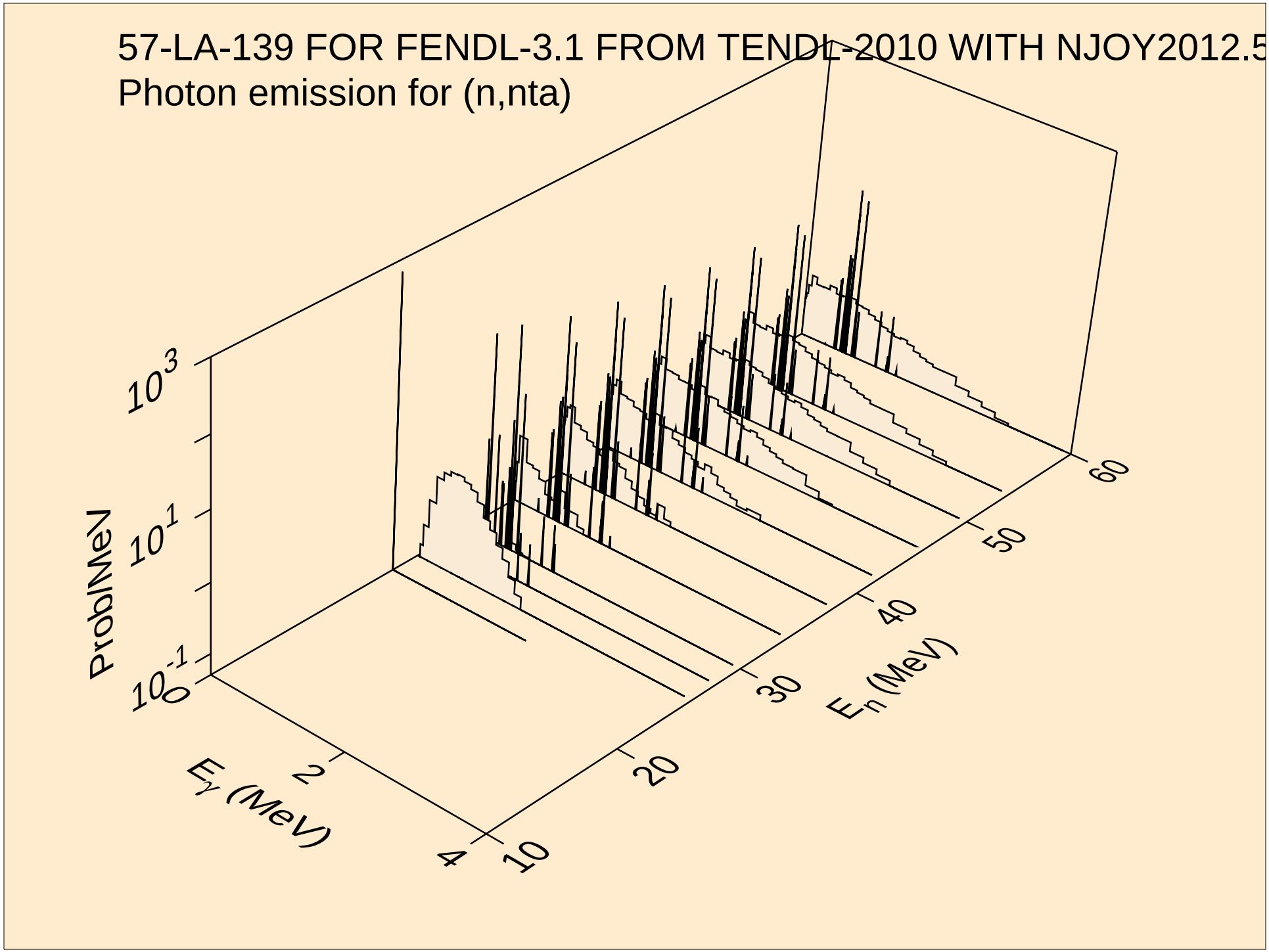

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Photon emission for (n,npt)
Prob/MeV
10^{2}
10^{0}
10^{-2}
E_γ (MeV)
0
5
10
E_n (MeV)
20
25
30
35
40
45
50
55
60

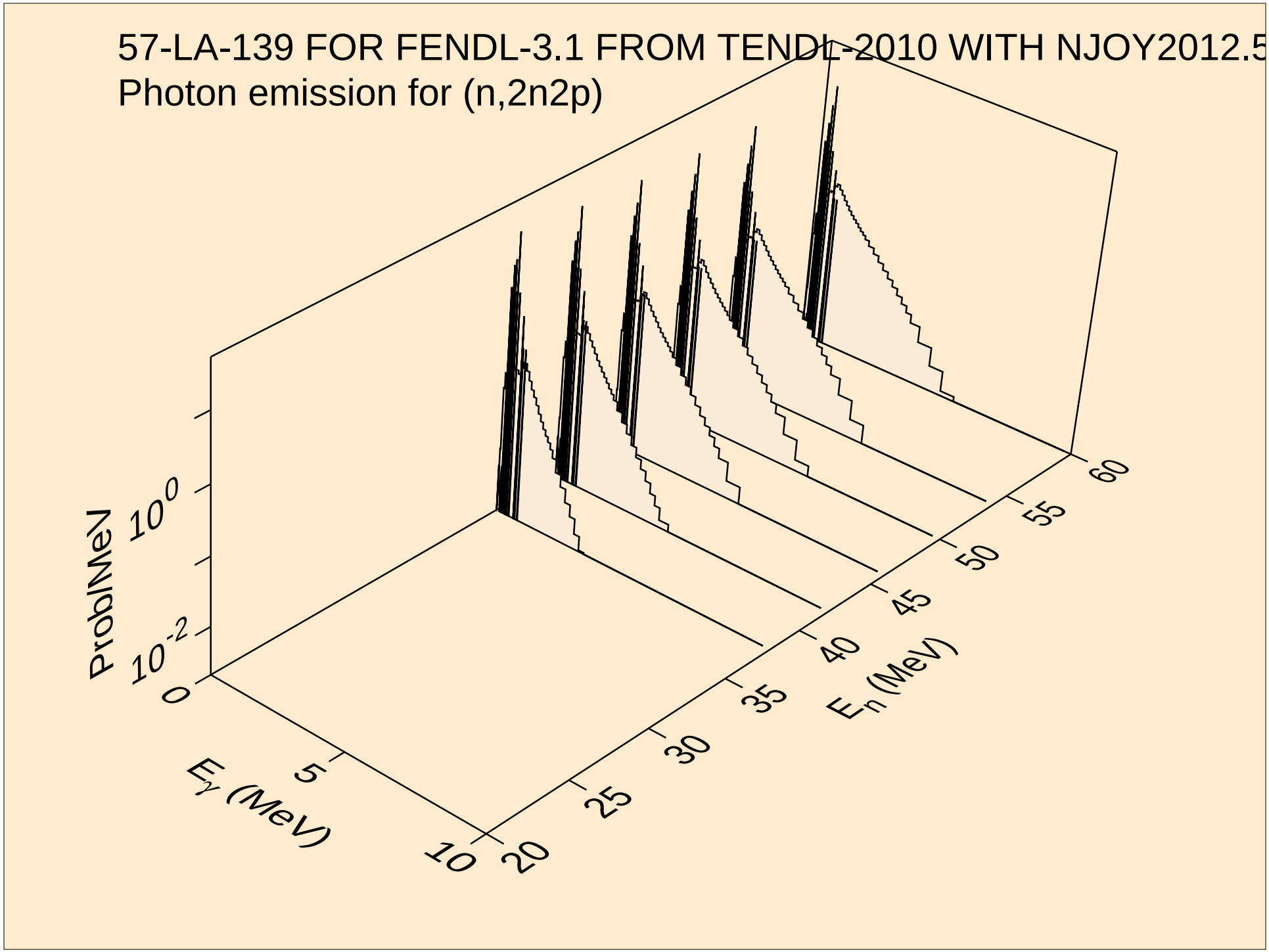

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Photon emission for (n,ndt)
Prob/MeV
10^0
10^-2
0
E_γ (MeV)
5
10
25
30
35
40
45
50
55
60
E_n (MeV)

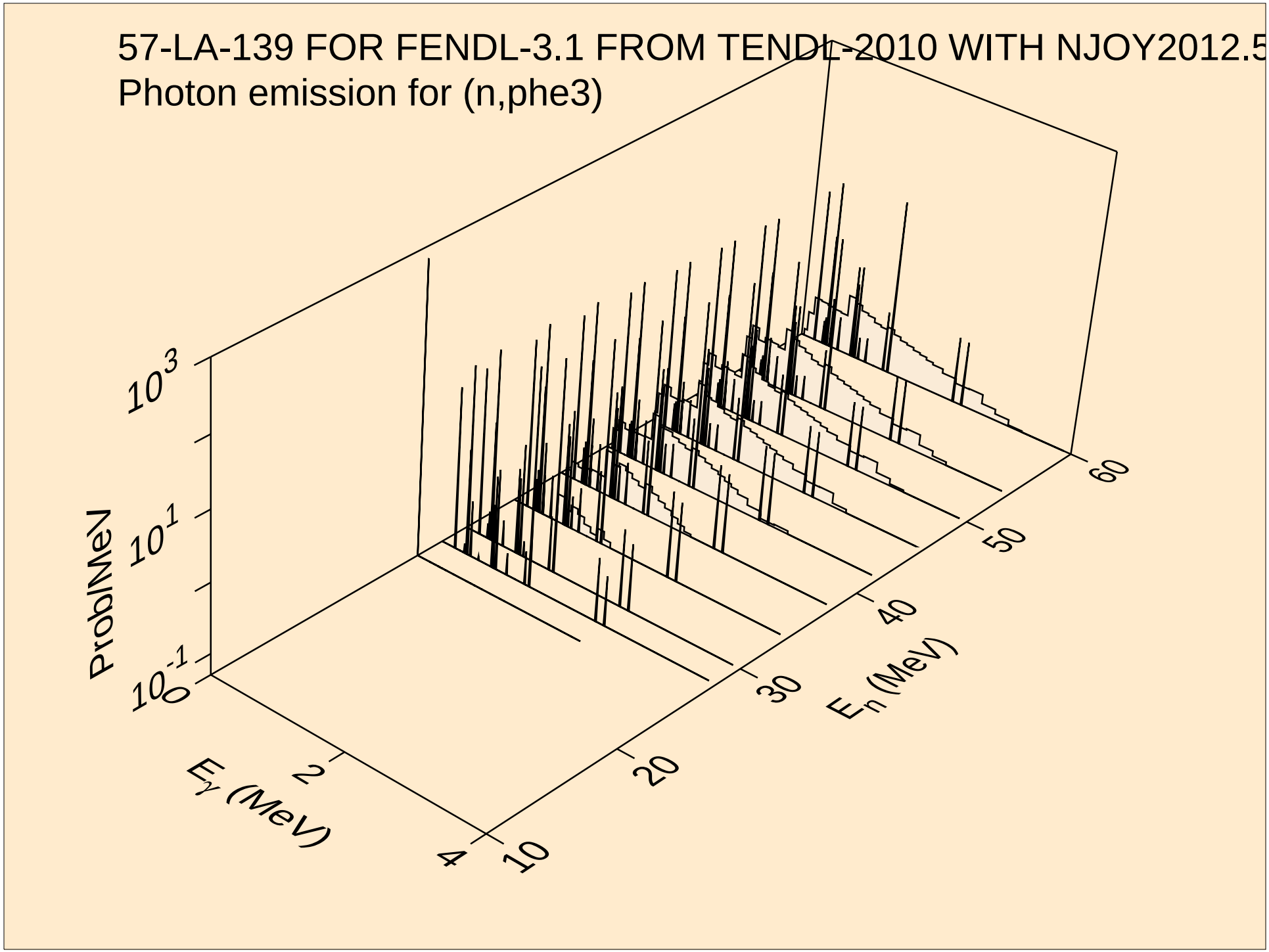

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Photon emission for (n,nphe3)
Prob/MeV
10^0
10^-2
0
5
10
E_γ (MeV)
20
25
30
35
40
45
50
55
60
E_n (MeV)

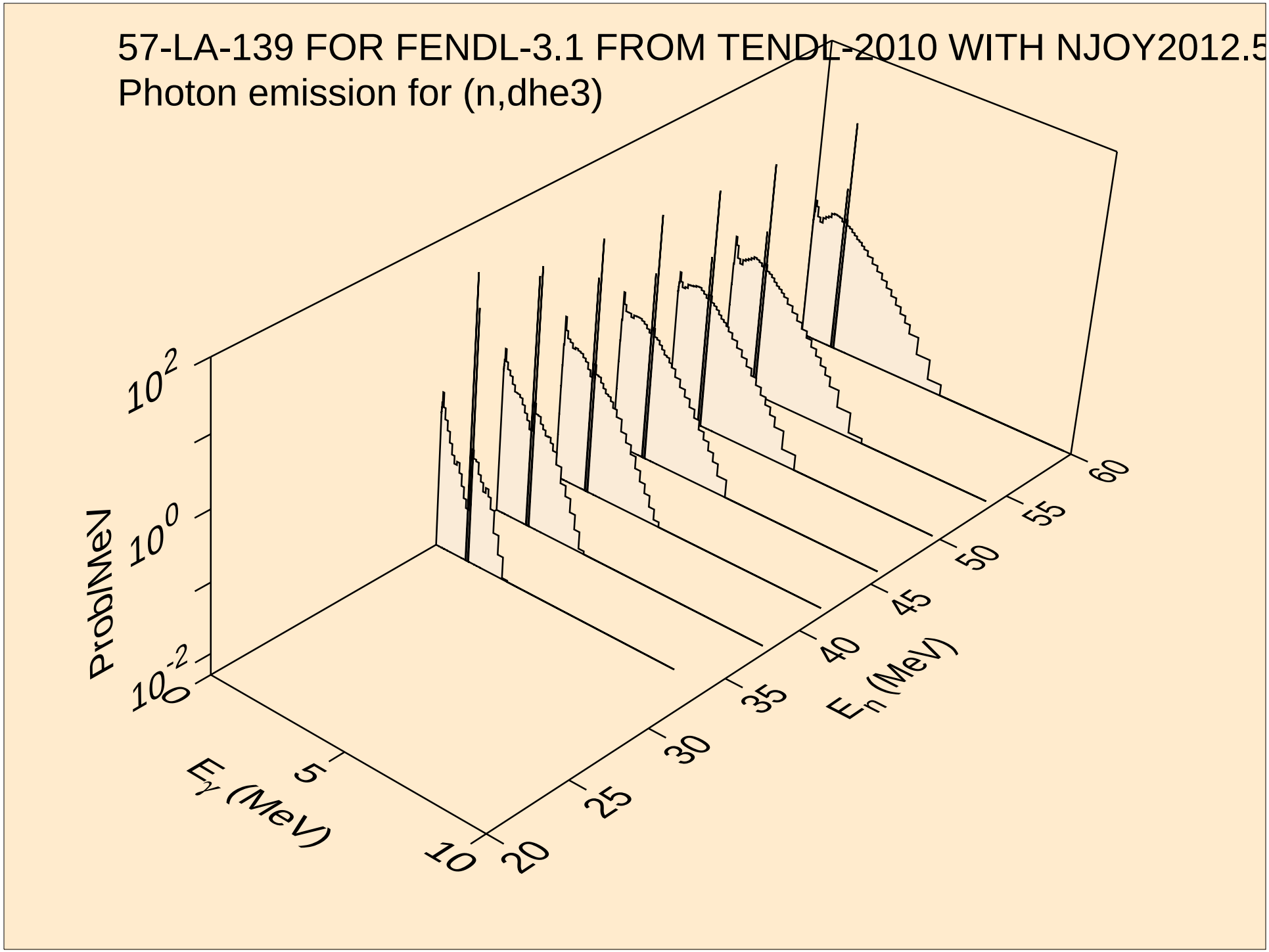

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Photon emission for (n,ndhe3)
Prob/MeV
10^{2}
10^{0}
10^{-2}
E_γ (MeV)
0
2
4
6
E_n (MeV)
25
30
35
40
45
50
55
60

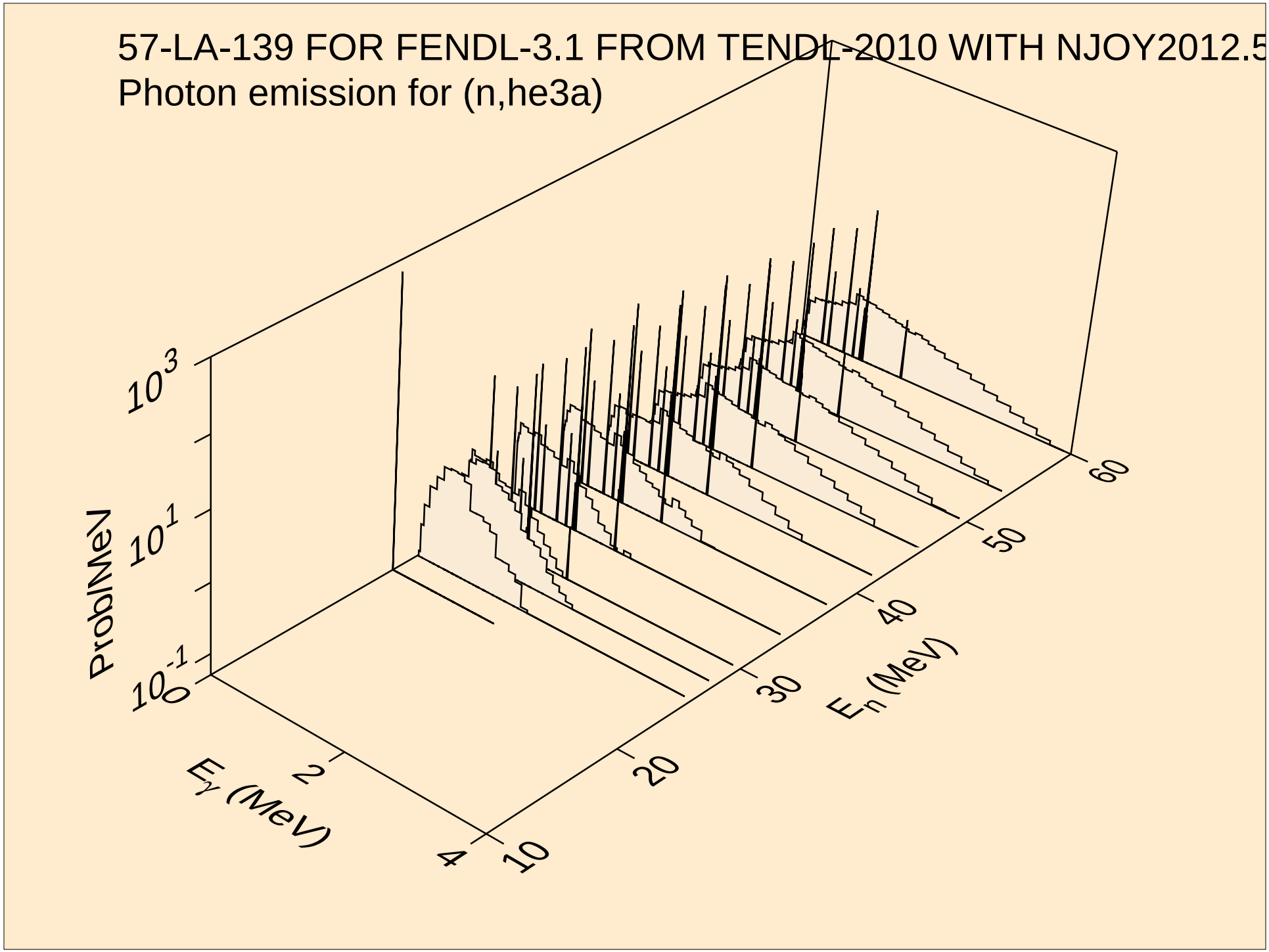

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Photon emission for (n,nthe3)
Prob/MeV
10^{2}
10^{0}
10^{-2}
0
2
4
6
E_γ (MeV)
25
30
35
40
45
50
55
60
E_n (MeV)

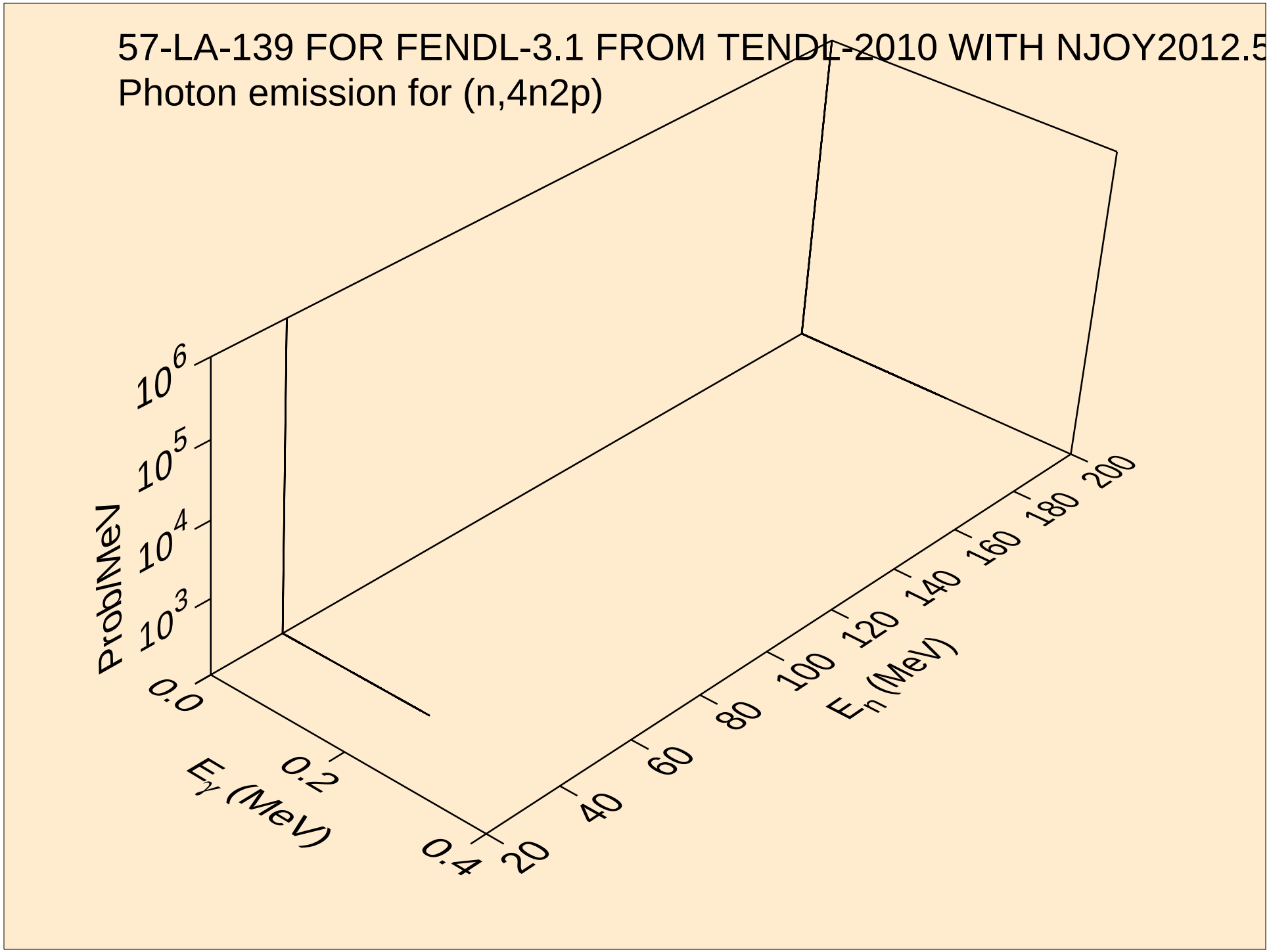

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Photon emission for (n,nta)
Prob/MeV
10^{3}
10^{1}
10^{-1}
0
E_γ (MeV)
2
4
10
20
30
40
50
60
E_n (MeV)

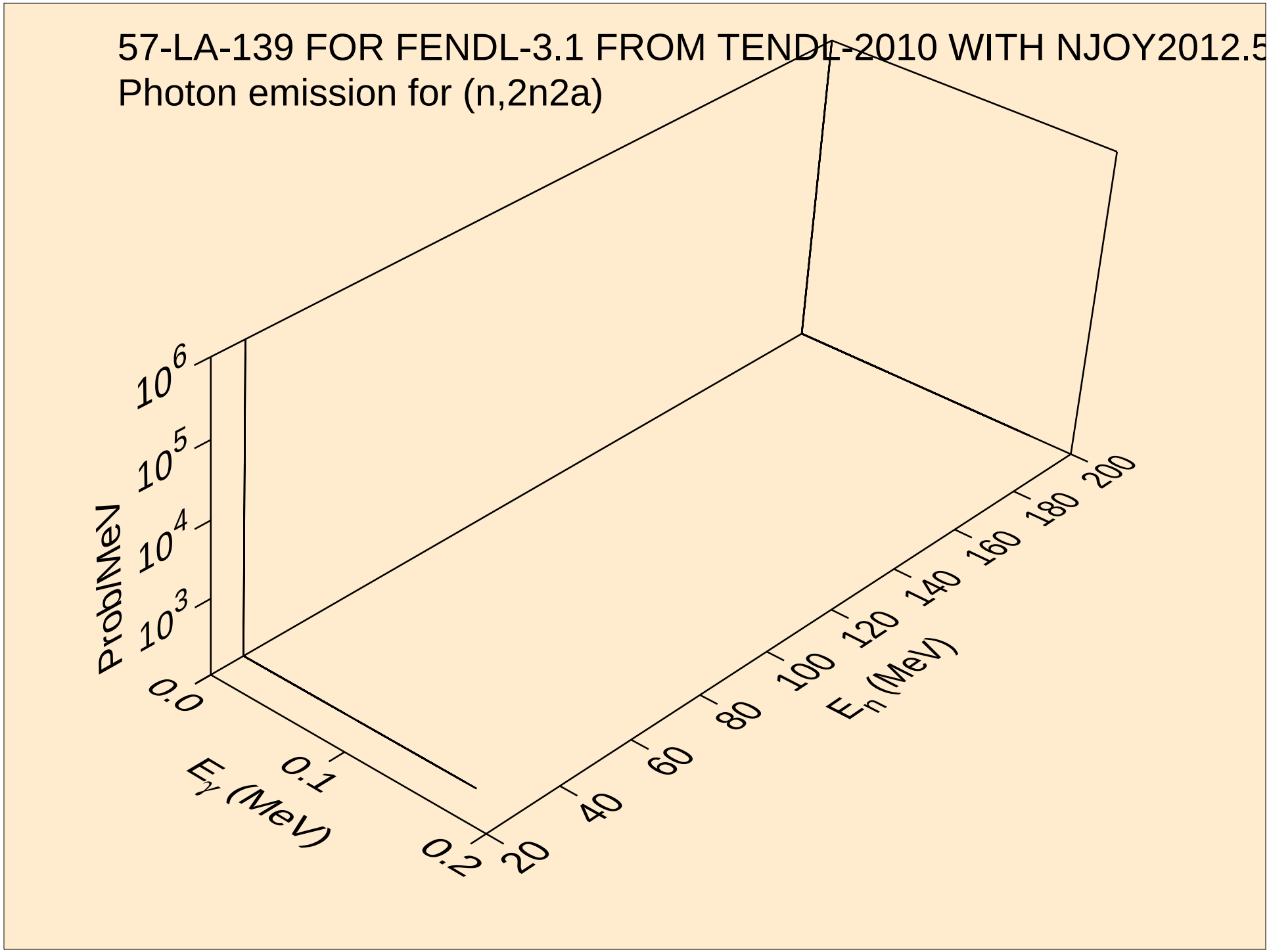

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Photon emission for (n,2n2p)
Prob/MeV
10^0
10^-2
0
E_γ (MeV)
5
10
20
25
30
35
40
45
50
55
60
E_n (MeV)

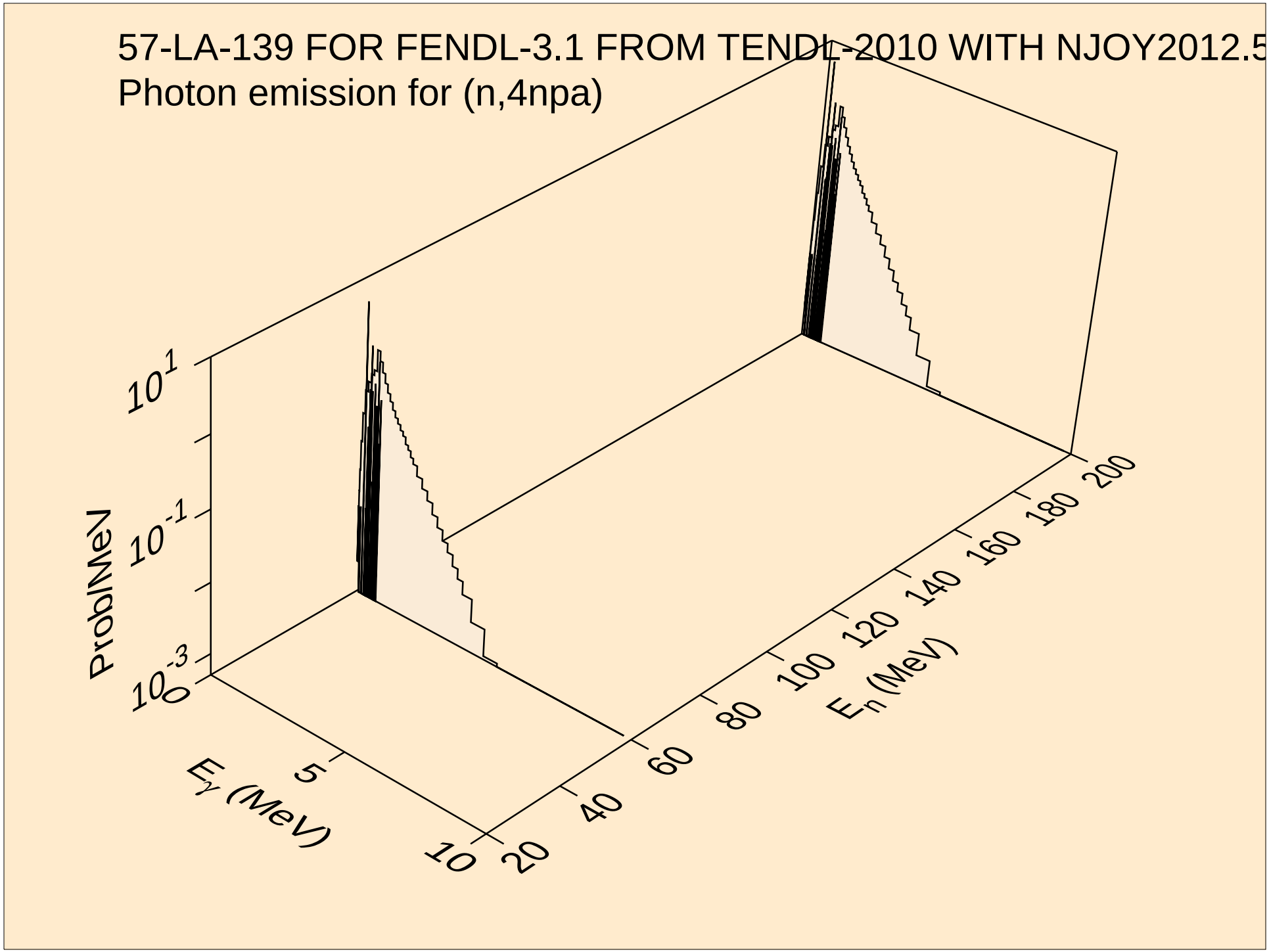

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Photon emission for (n,phe3)
Prob/MeV
10^{3}
10^{1}
10^{-1}
0
E_γ (MeV)
2
4
10
20
30
40
50
60
E_n (MeV)

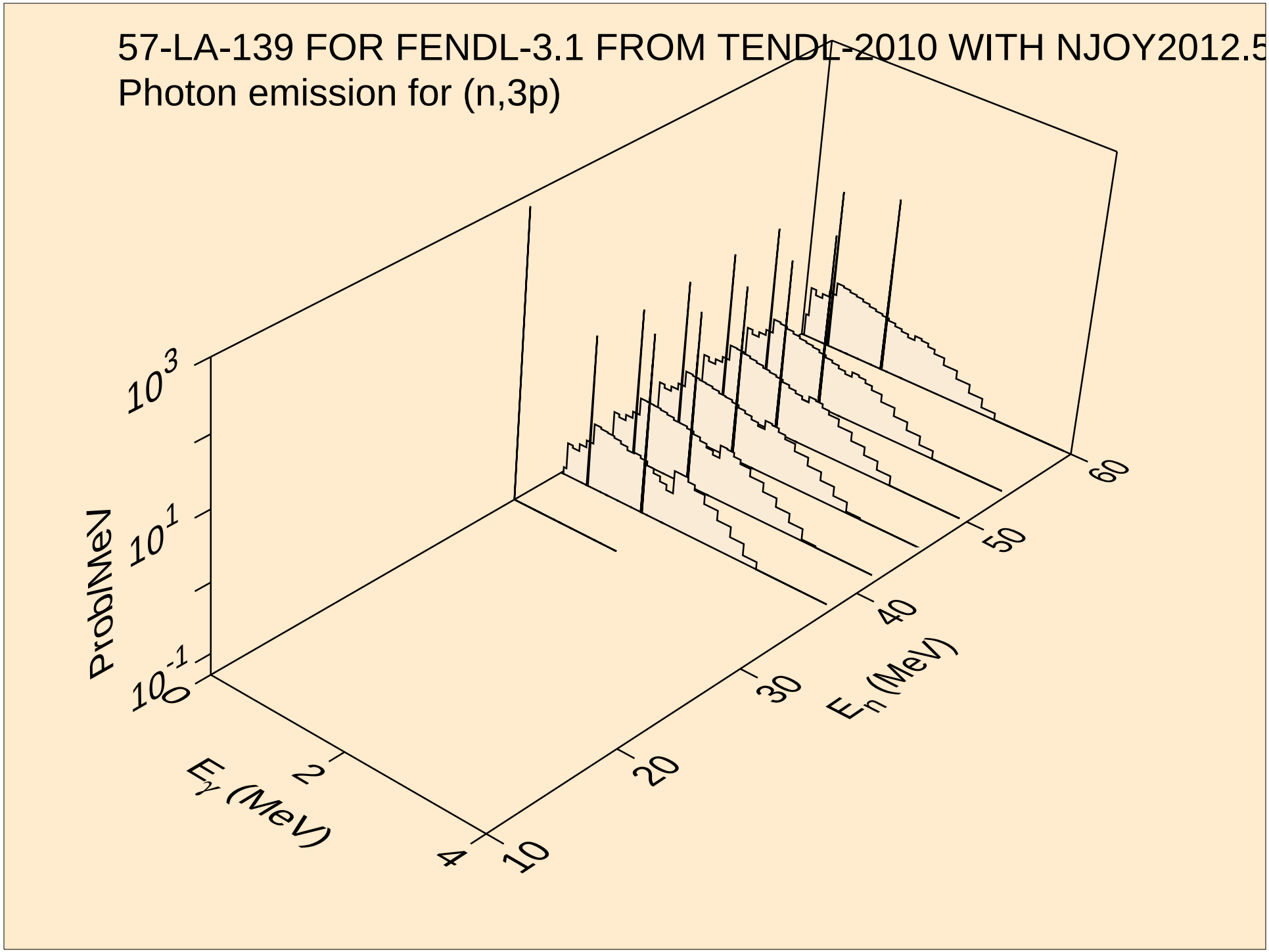

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Photon emission for (n,dhe3)
Prob/MeV
10^{2}
10^{0}
10^{-2}
E_γ (MeV)
0
5
10
20
25
30
35
40
45
50
55
60
E_n (MeV)

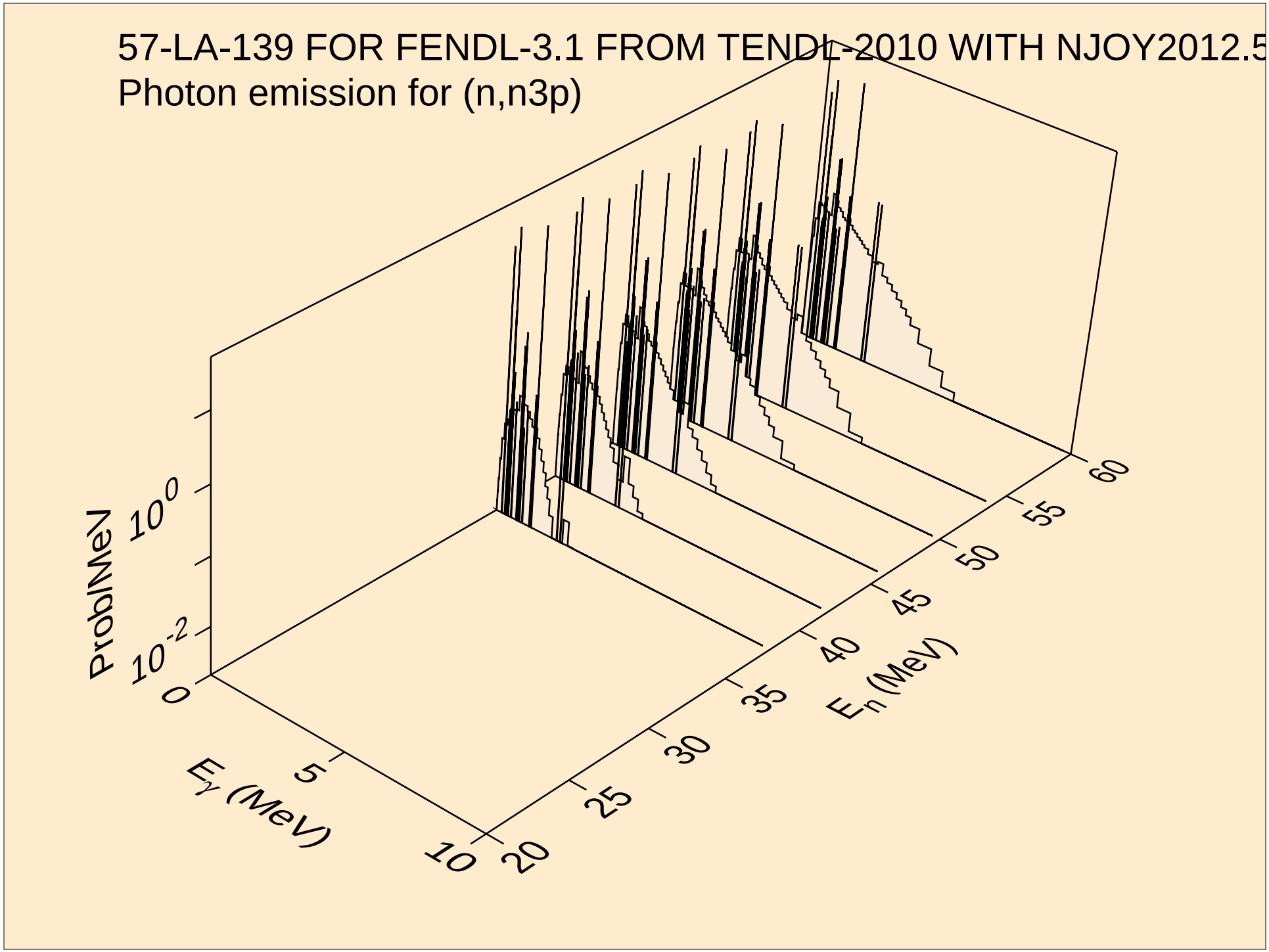

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Photon emission for (n,he3a)
Prob/MeV
10^{3}
10^{1}
10^{-1}
0
E_γ (MeV)
2
4
10
20
30
40
50
60
E_n (MeV)

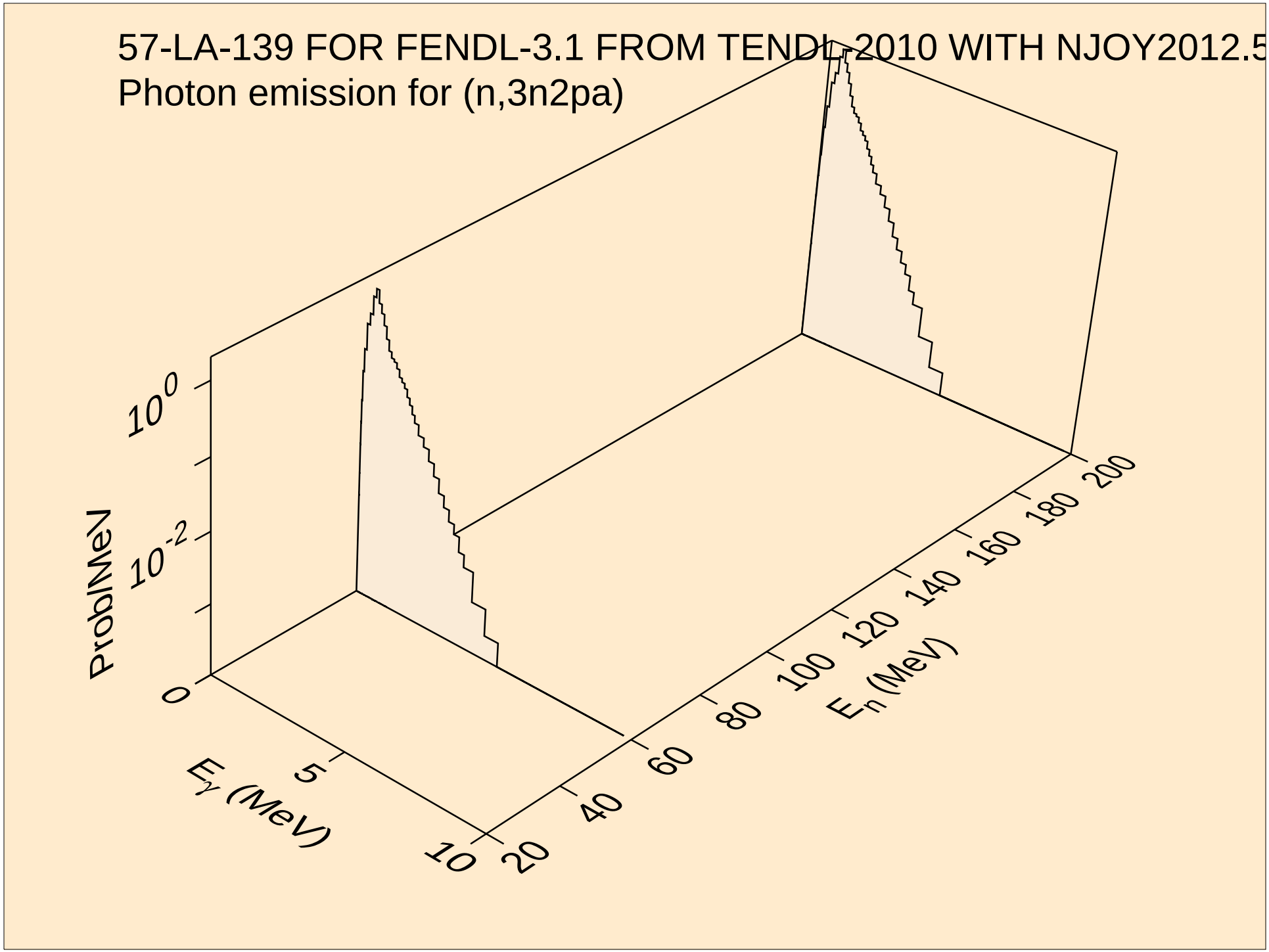

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Photon emission for (n,4n2p)
Prob/MeV
10^6
10^5
10^4
10^3
0.0
0.2
0.4
E_γ (MeV)
20
40
60
80
100
120
140
160
180
200
E_n (MeV)

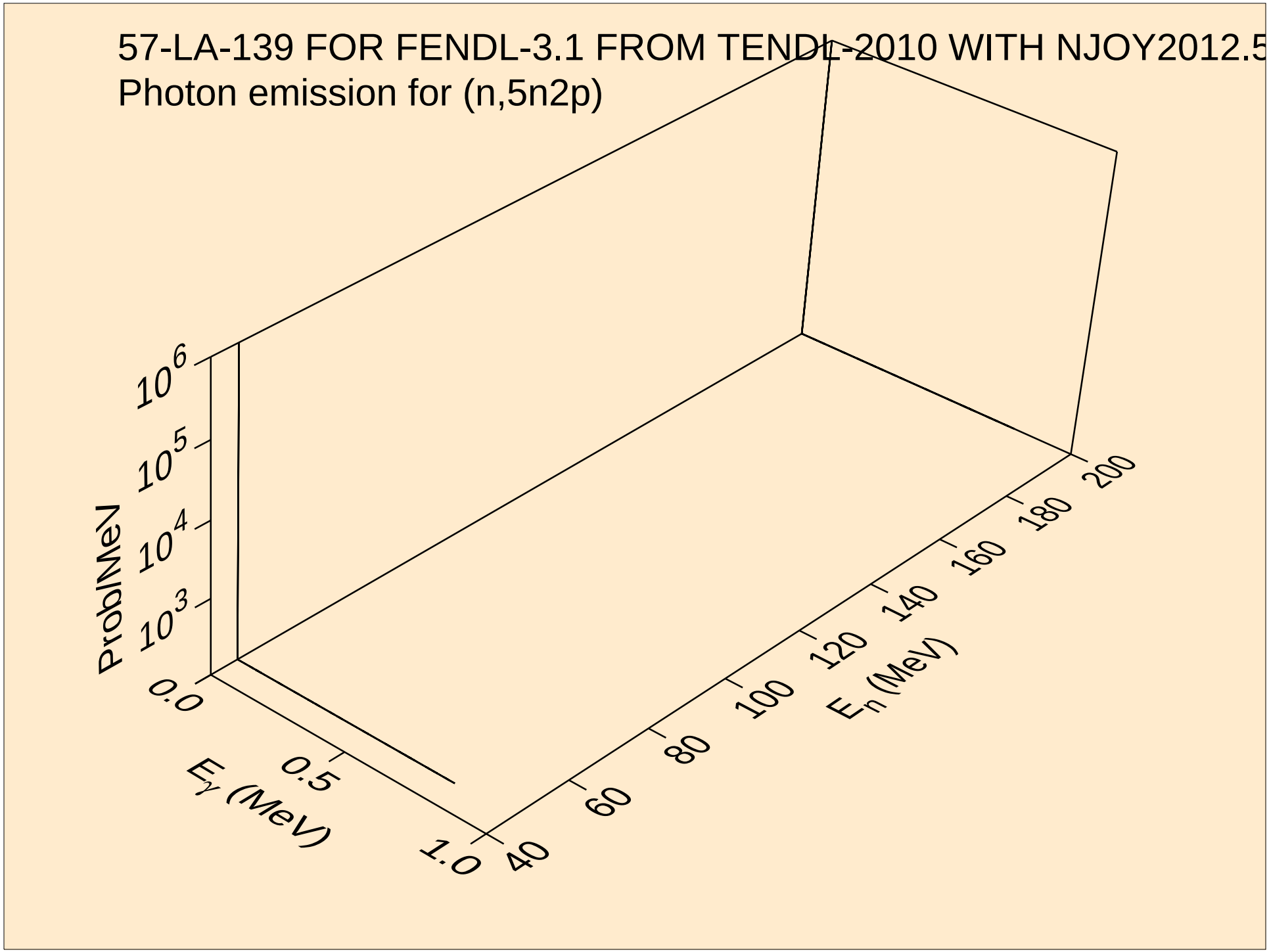

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Photon emission for (n,2n2a)
Prob/MeV
10^6
10^5
10^4
10^3
0.0
0.1
0.2
E_γ (MeV)
20
40
60
80
100
120
140
160
180
200
E_n (MeV)

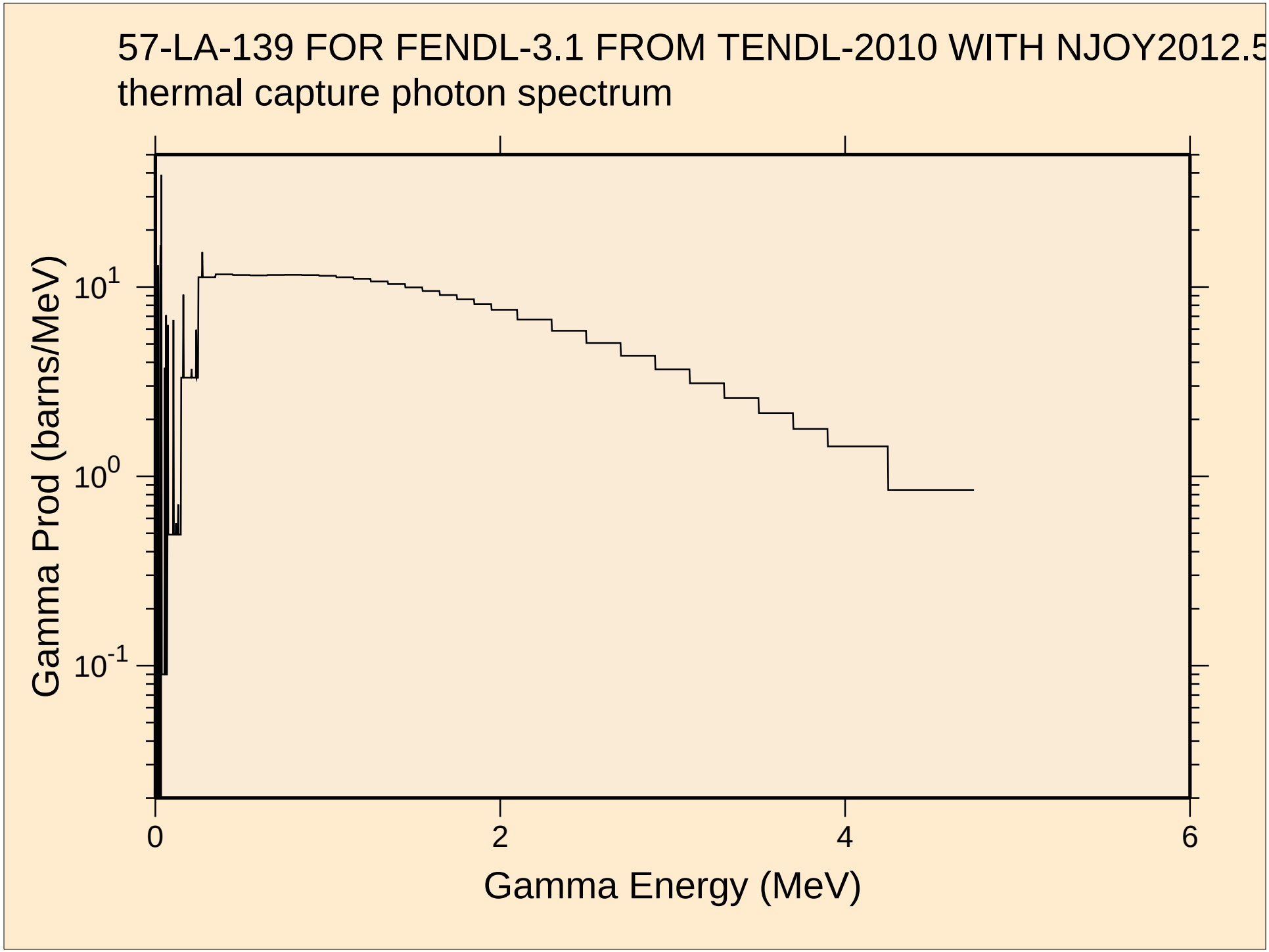

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Photon emission for (n,4npa)
Prob/MeV
10^{1}
10^{-1}
10^{-3}
0
5
10
E_γ (MeV)
20
40
60
80
100
120
140
160
180
200
E_n (MeV)

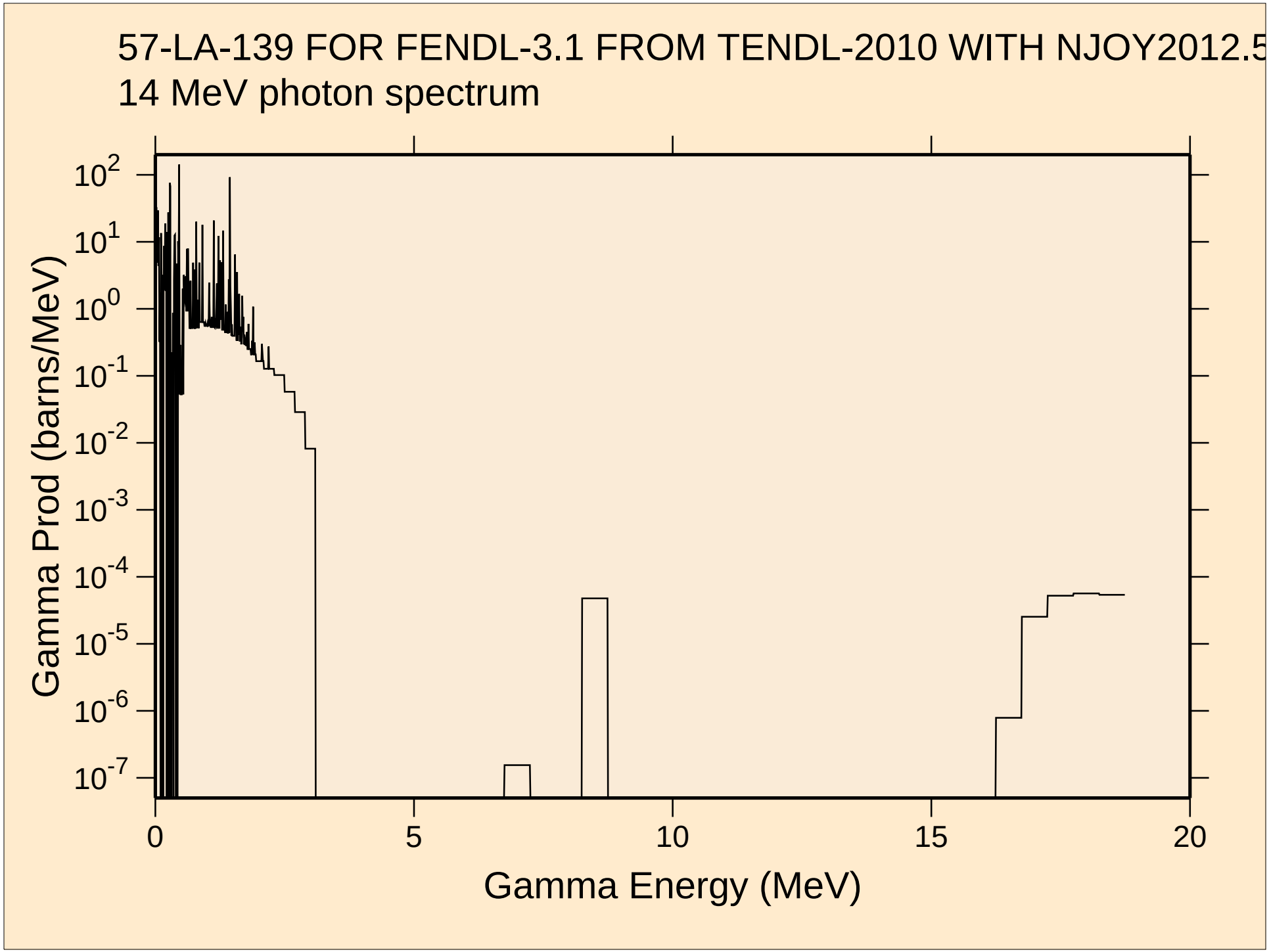

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Photon emission for (n,3p)
Prob/MeV
10^{3}
10^{1}
10^{-1}
0
2
4
E_γ (MeV)
10
20
30
40
50
60
E_n (MeV)

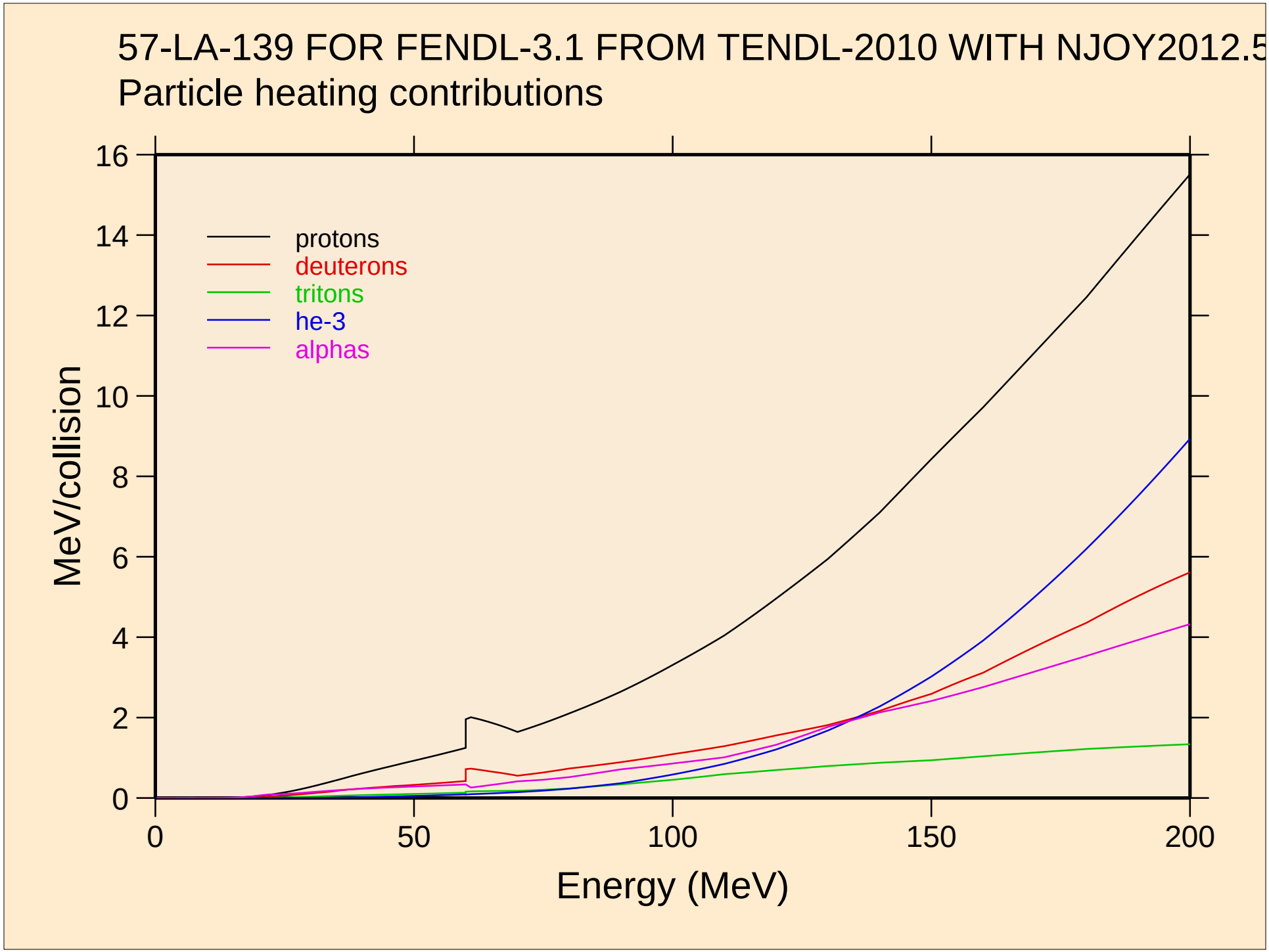

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Photon emission for (n,n3p)
Prob/MeV
10^0
10^-2
0
5
10
E_γ (MeV)
20
25
30
35
40
45
50
55
60
E_n (MeV)

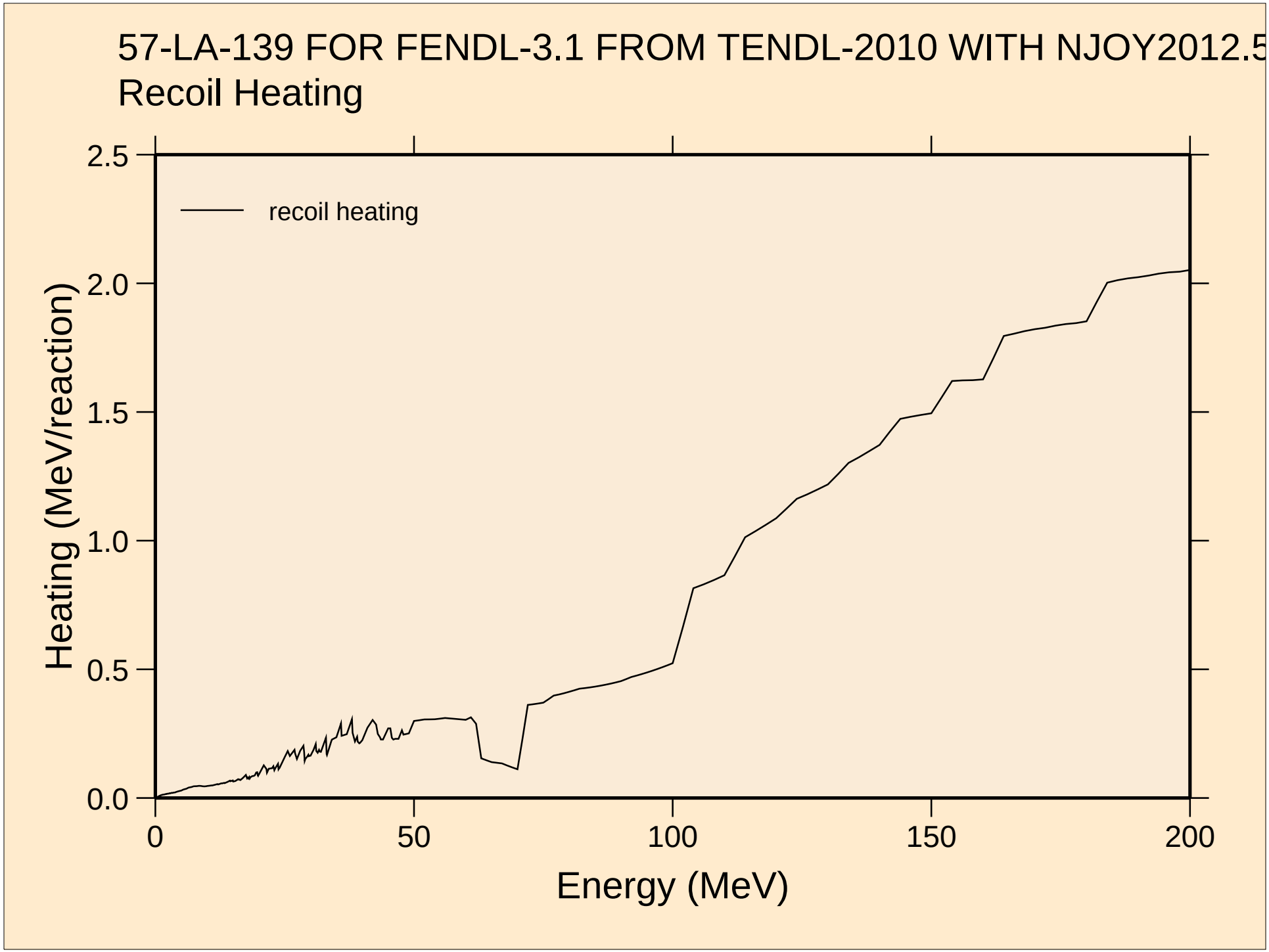

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Photon emission for (n,3n2pa)
Prob/MeV
10^{0}
10^{-2}
0
5
10
E_γ (MeV)
20
40
60
80
100
120
140
160
180
200
E_n (MeV)

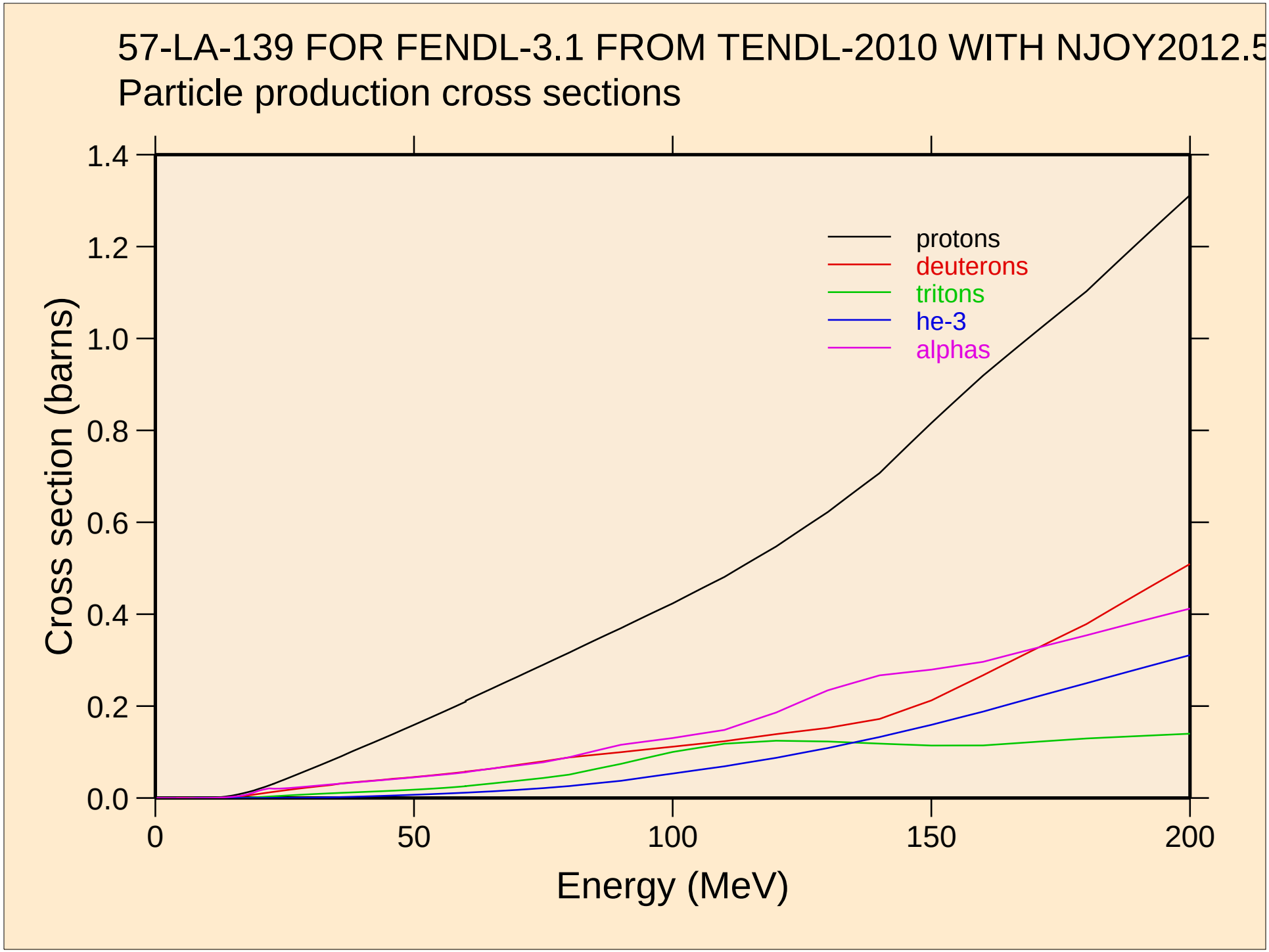

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Photon emission for (n,5n2p)
Prob/MeV
10^6
10^5
10^4
10^3
0.0
0.5
1.0
E_γ (MeV)
40
60
80
100
120
140
160
180
200
E_n (MeV)

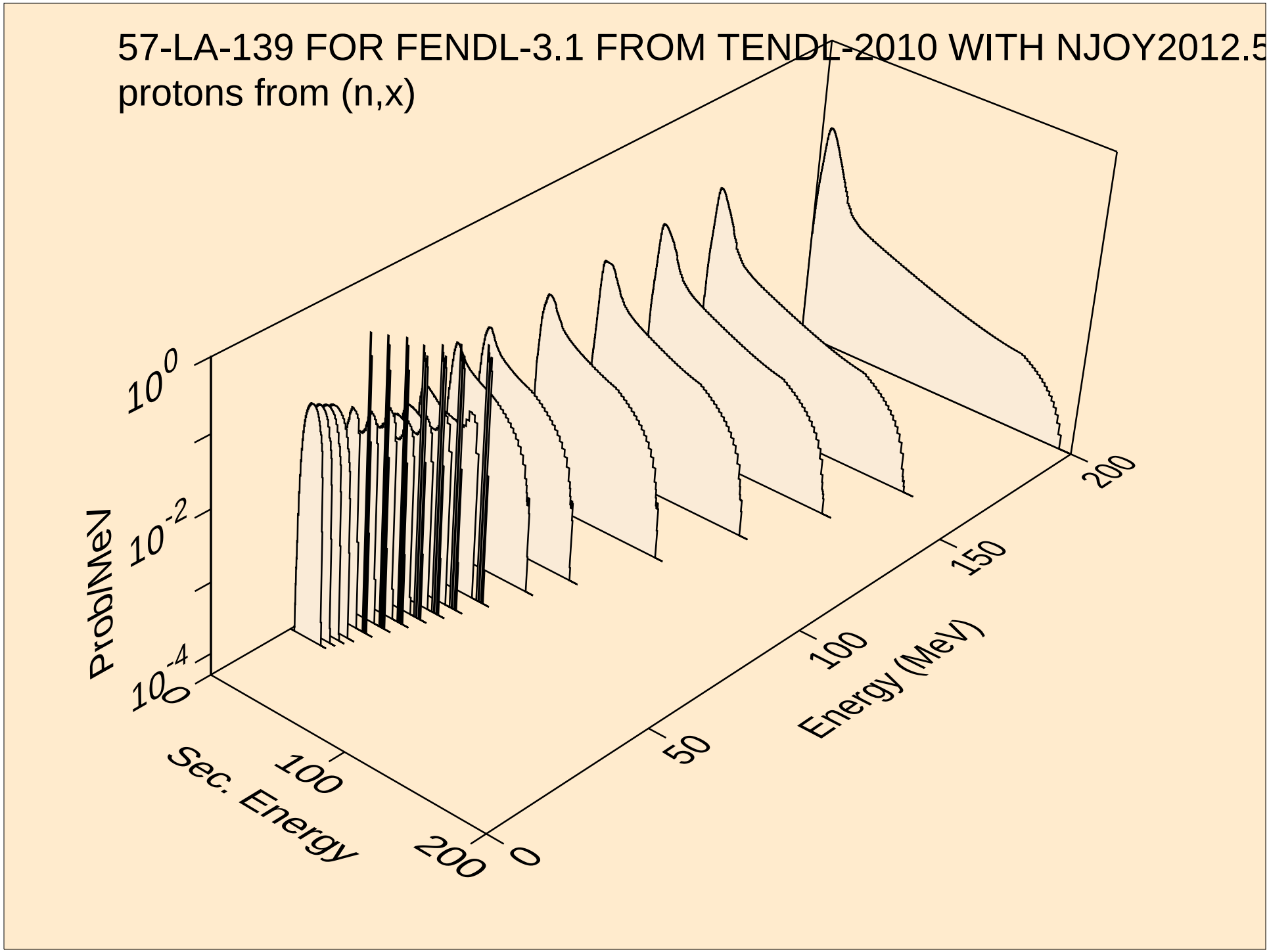

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
thermal capture photon spectrum
Gamma Prod (barns/MeV)
10^1
10^0
10^-1
0
2
4
6
Gamma Energy (MeV)

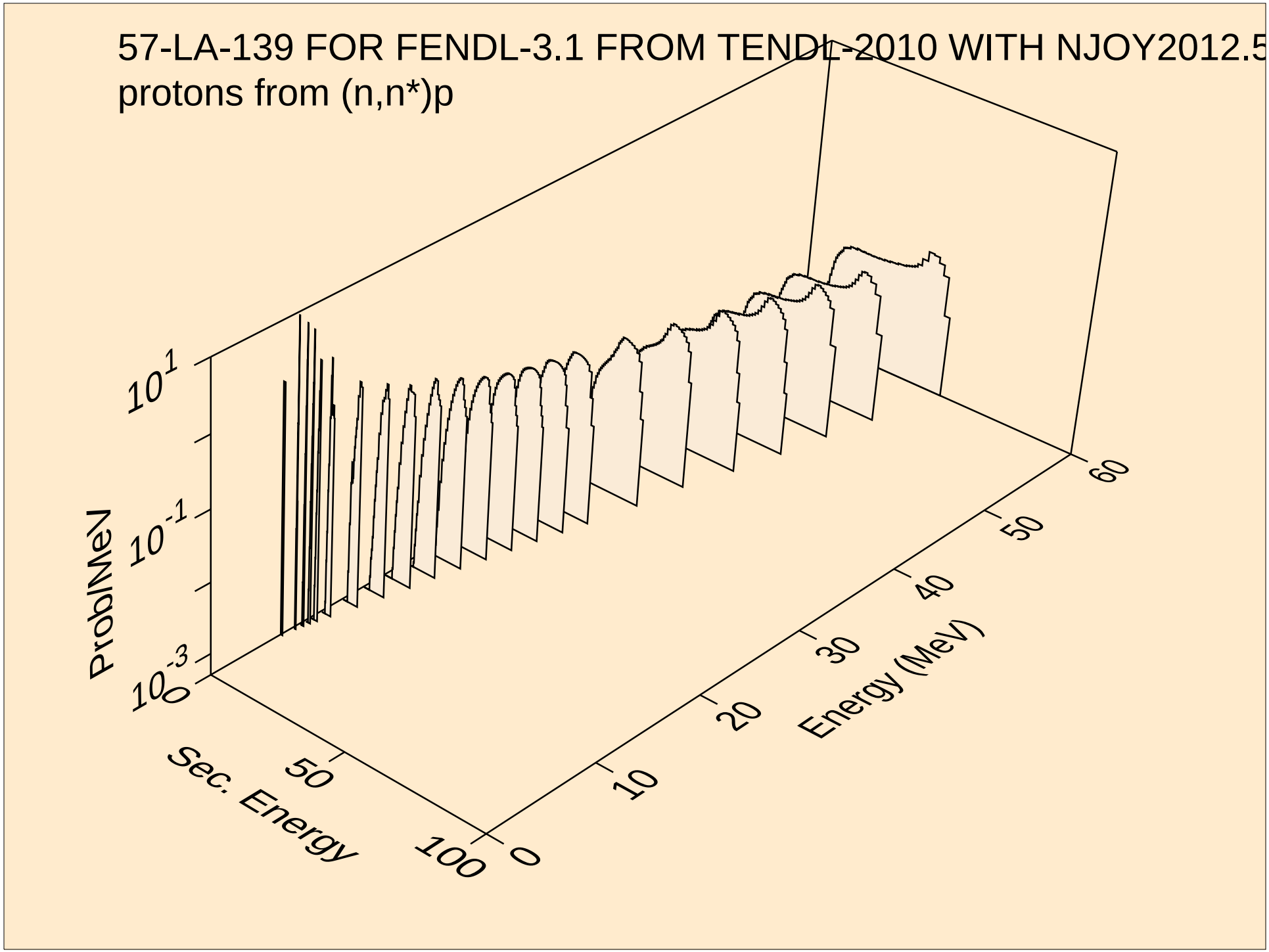

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
14 MeV photon spectrum
Gamma Prod (barns/MeV)
10^{2}
10^{1}
10^{0}
10^{-1}
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
10^{-7}
0
5
10
15
20
Gamma Energy (MeV)

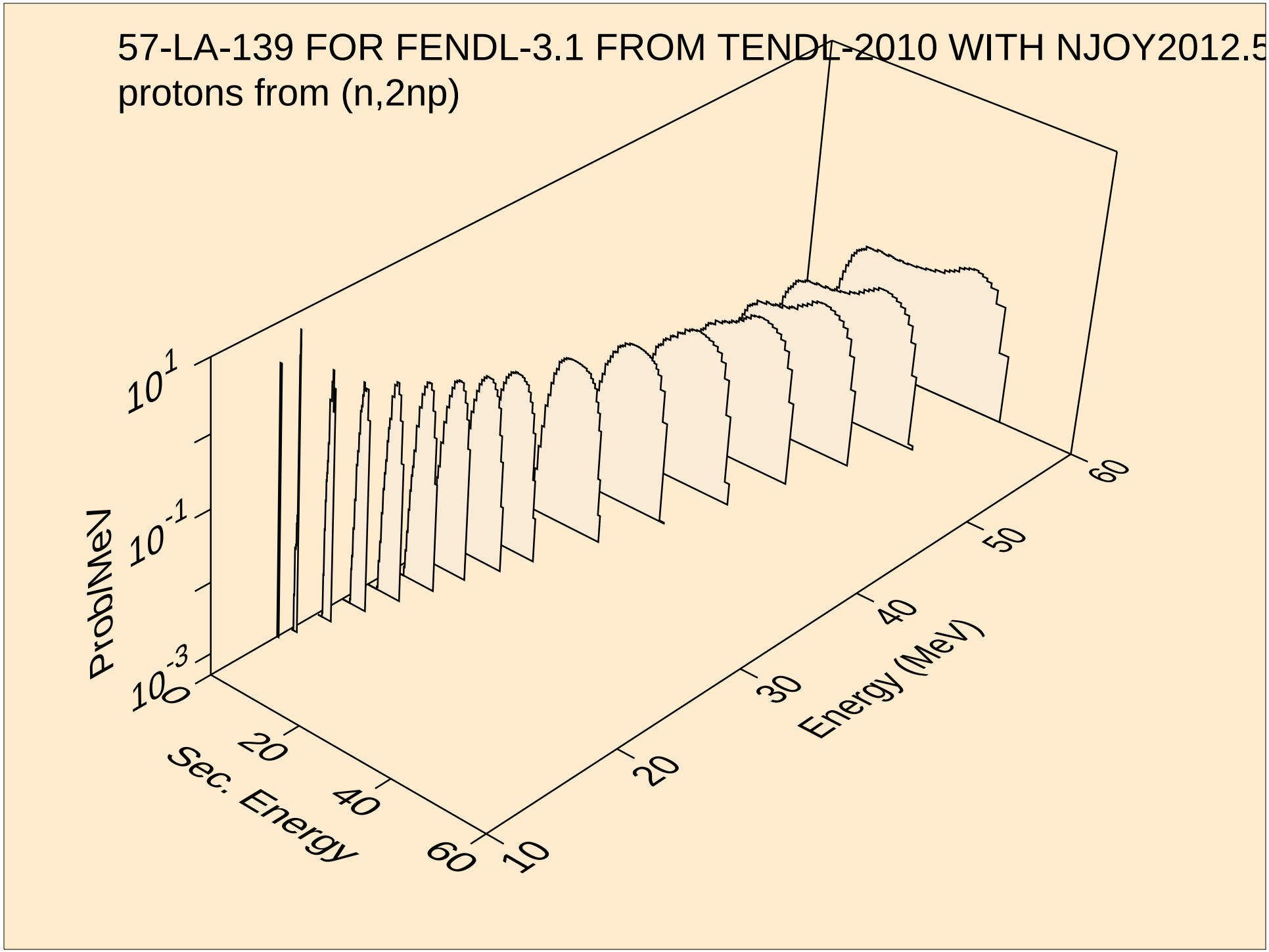

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Particle heating contributions
protons
deuterons
tritons
he-3
alphas
MeV/collision
Energy (MeV)
0
2
4
6
8
10
12
14
16
0
50
100
150
200

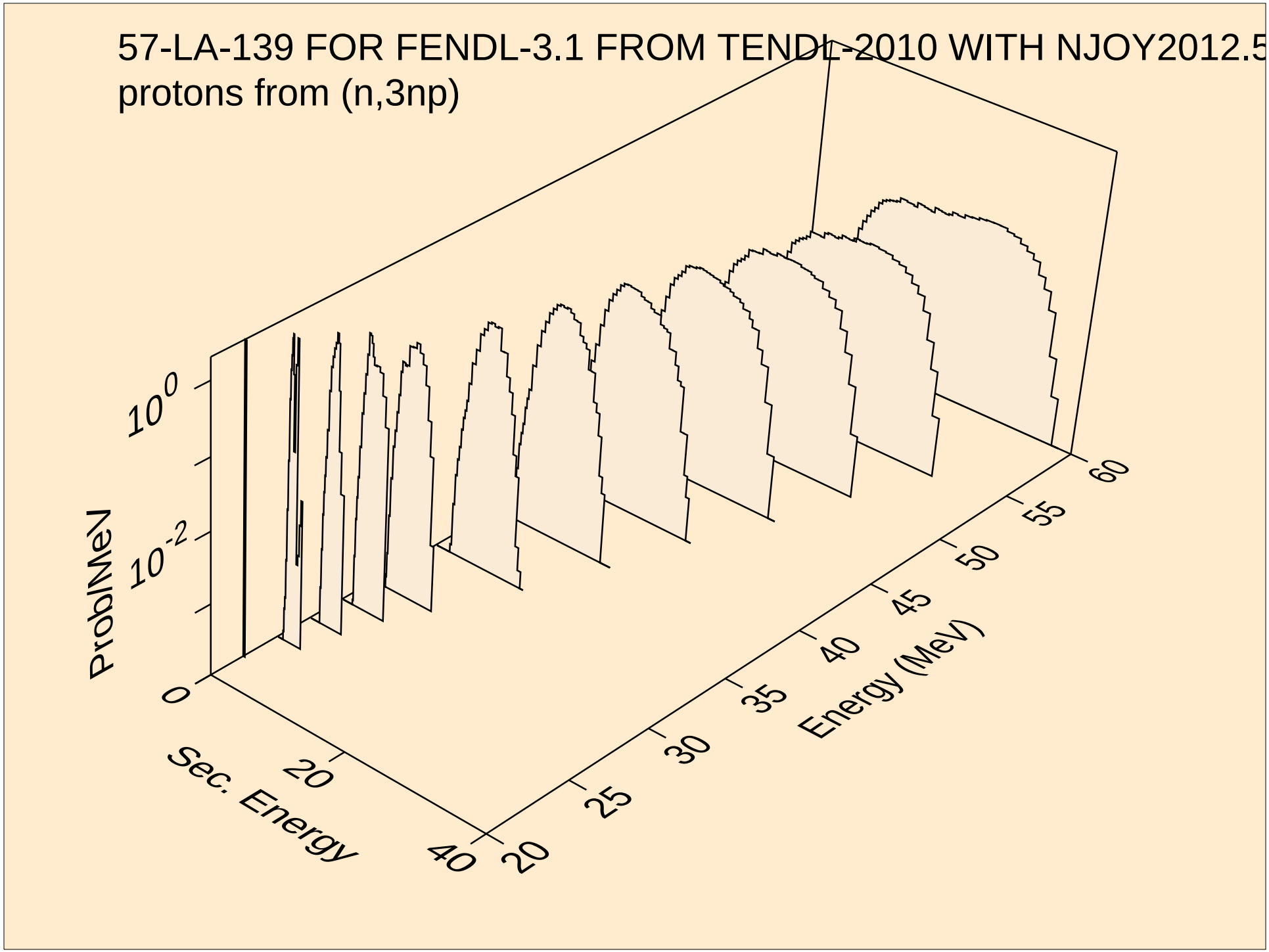

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Recoil Heating
recoil heating
Heating (MeV/reaction)
Energy (MeV)
0.0
0.5
1.0
1.5
2.0
2.5
0
50
100
150
200

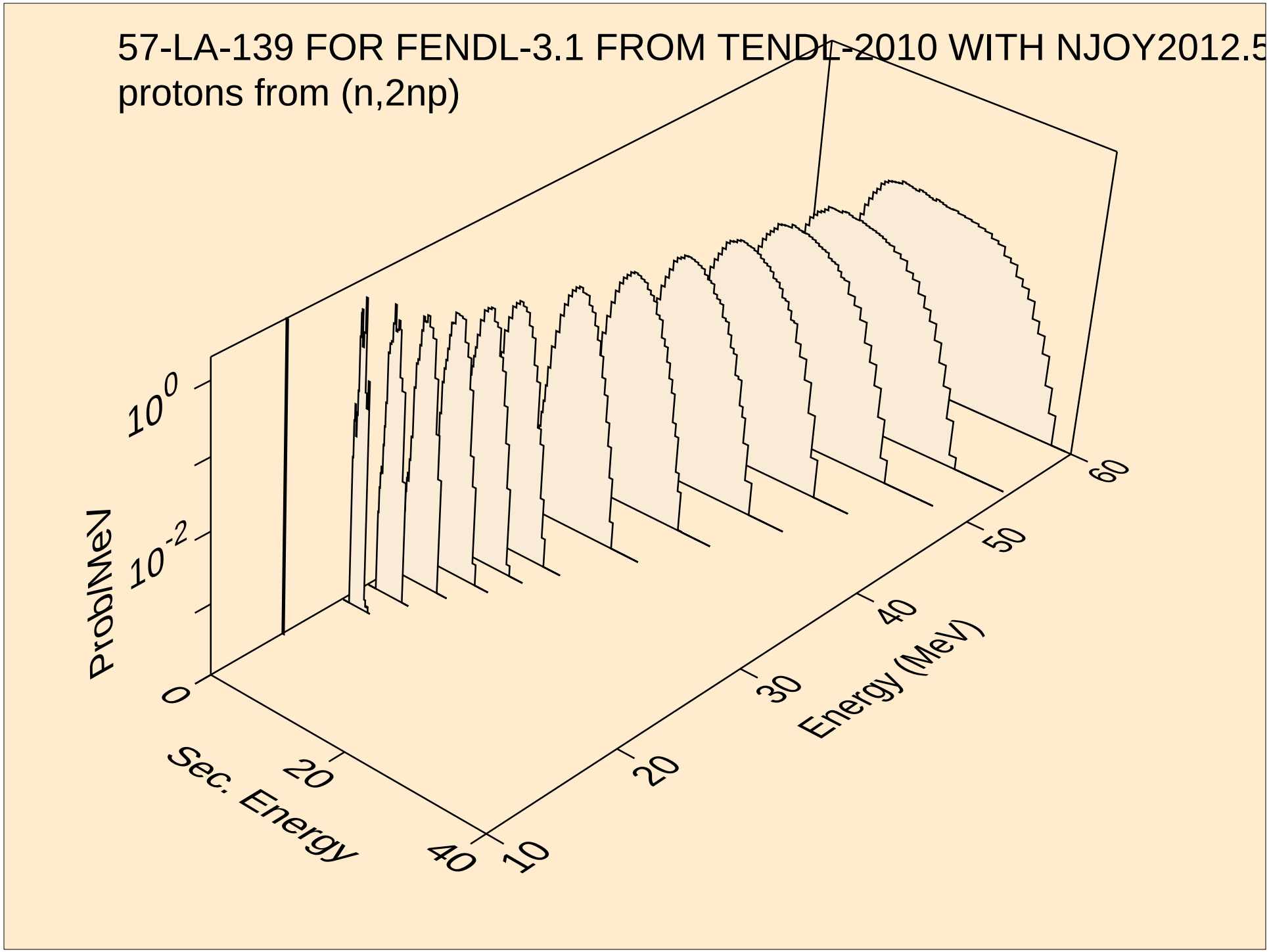

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
Particle production cross sections
Cross section (barns)
Energy (MeV)
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
0
50
100
150
200
protons
deuterons
tritons
he-3
alphas

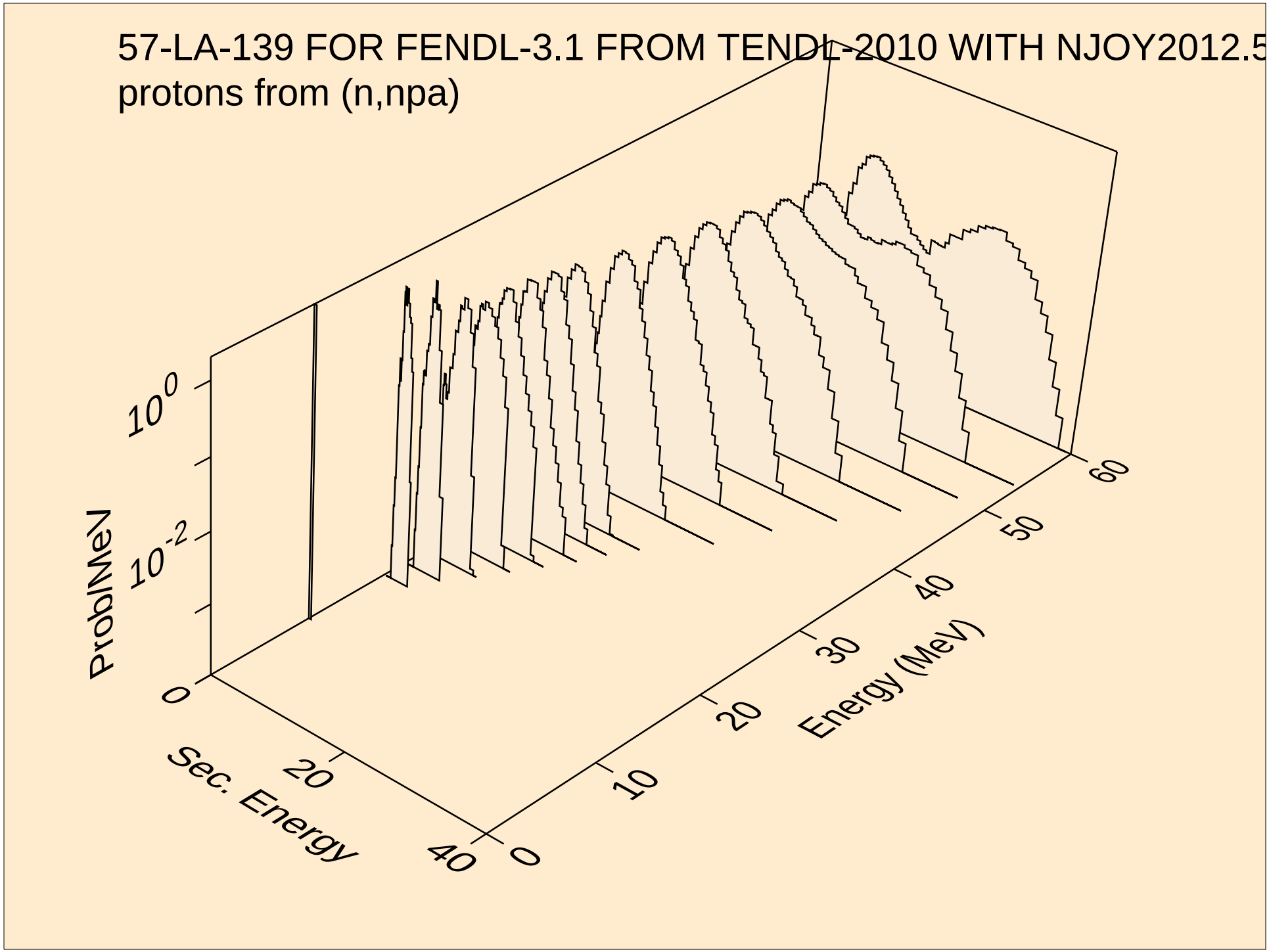

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
protons from (n,x)
Prob/MeV
10^0
10^-2
10^-4
Sec. Energy
0
100
200
Energy (MeV)
0
50
100
150
200

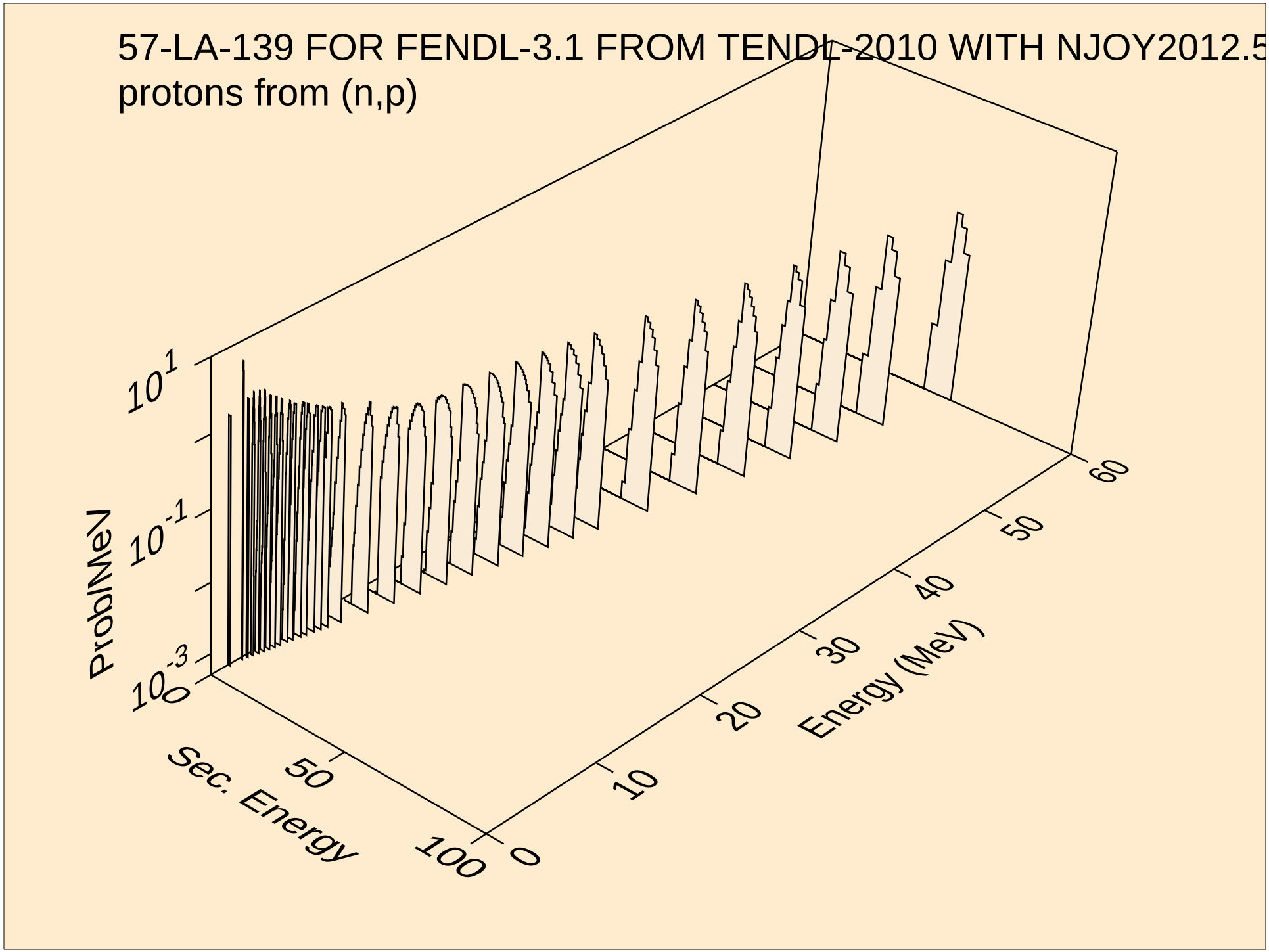

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
protons from (n,n*)p
Prob/MeV
10^1
10^-1
10^-3
0
50
100
Sec. Energy
0
10
20
30
40
50
60
Energy (MeV)

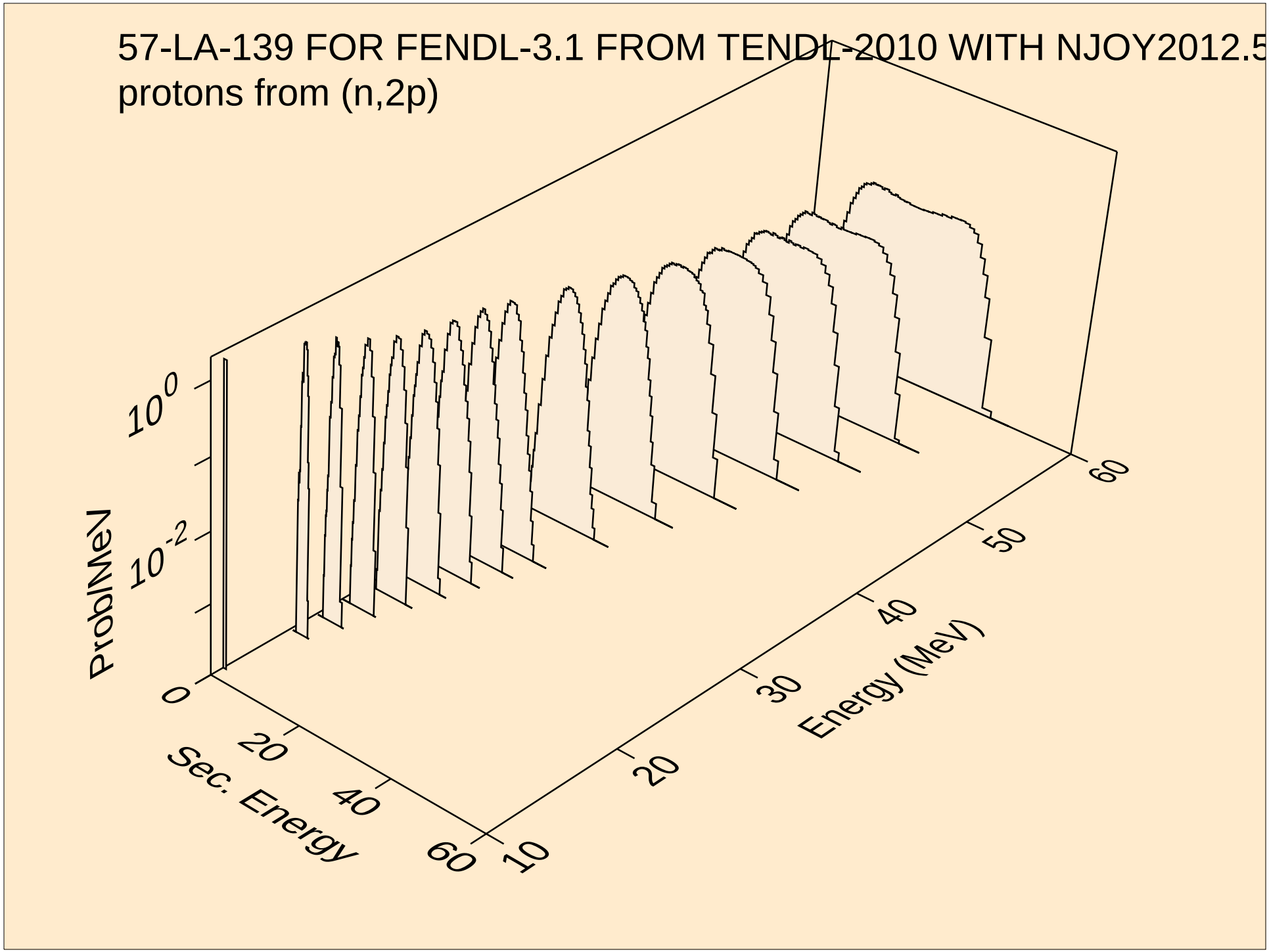

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
protons from (n,2np)
Prob/MeV
10^1
10^-1
10^-3
0
20
40
60
Sec. Energy
10
20
30
40
50
60
Energy (MeV)

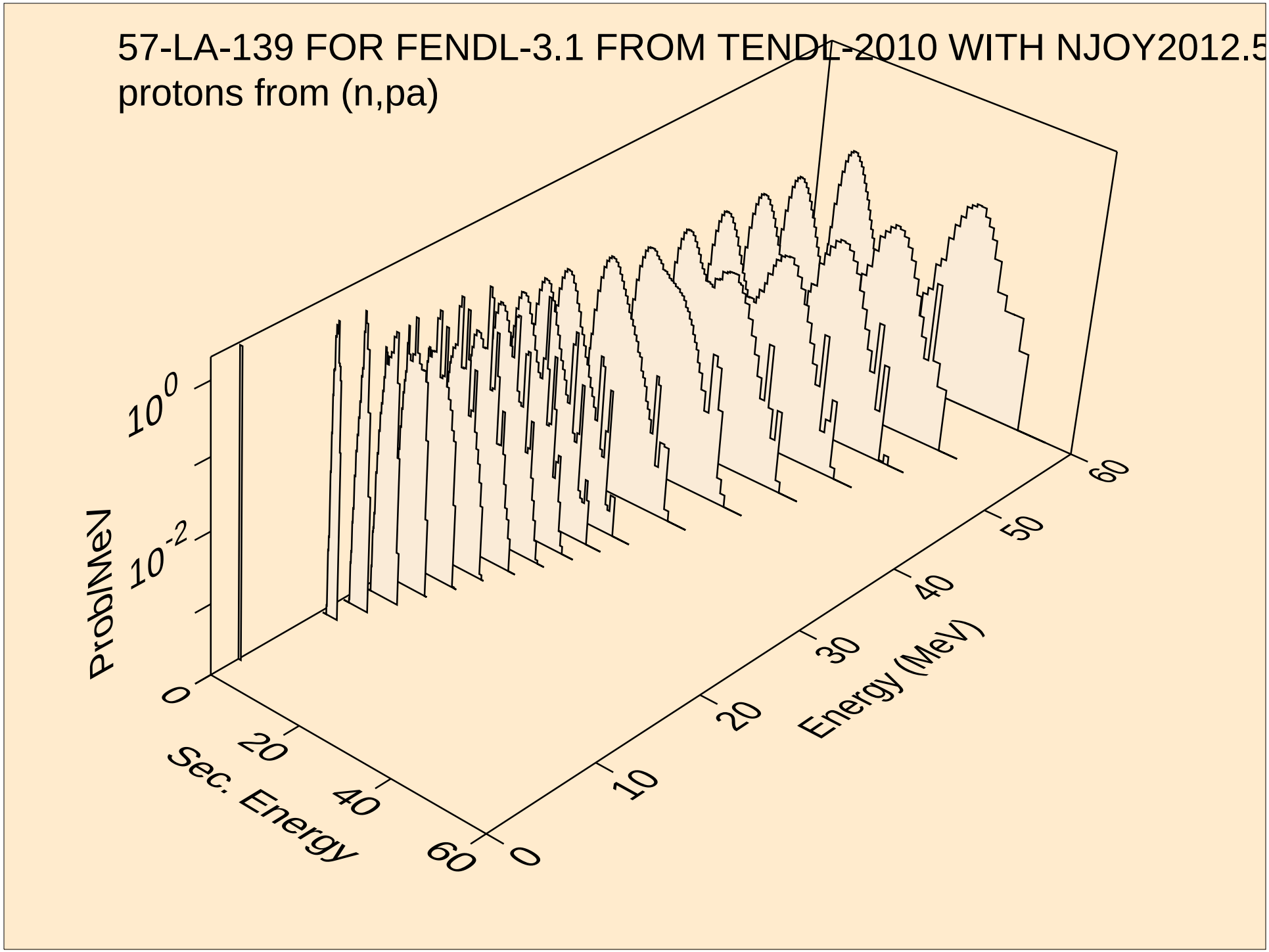

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
protons from (n,3np)
Prob/MeV
10^{0}
10^{-2}
0
Sec. Energy
20
40
Energy (MeV)
20
25
30
35
40
45
50
55
60

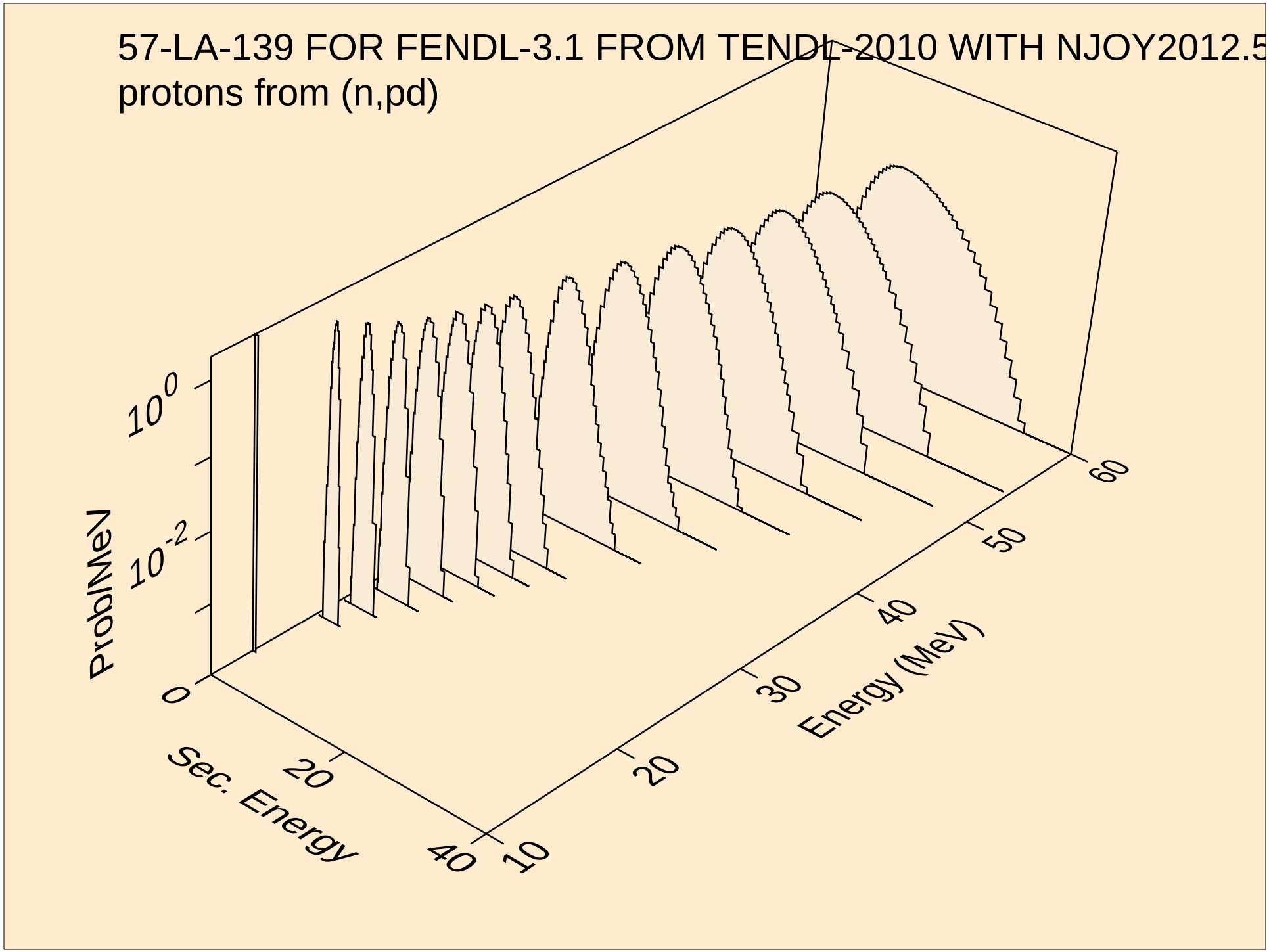

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
protons from (n,2np)
Prob/MeV
10^0
10^-2
0
Sec. Energy
20
40
10
20
30
40
50
60
Energy (MeV)

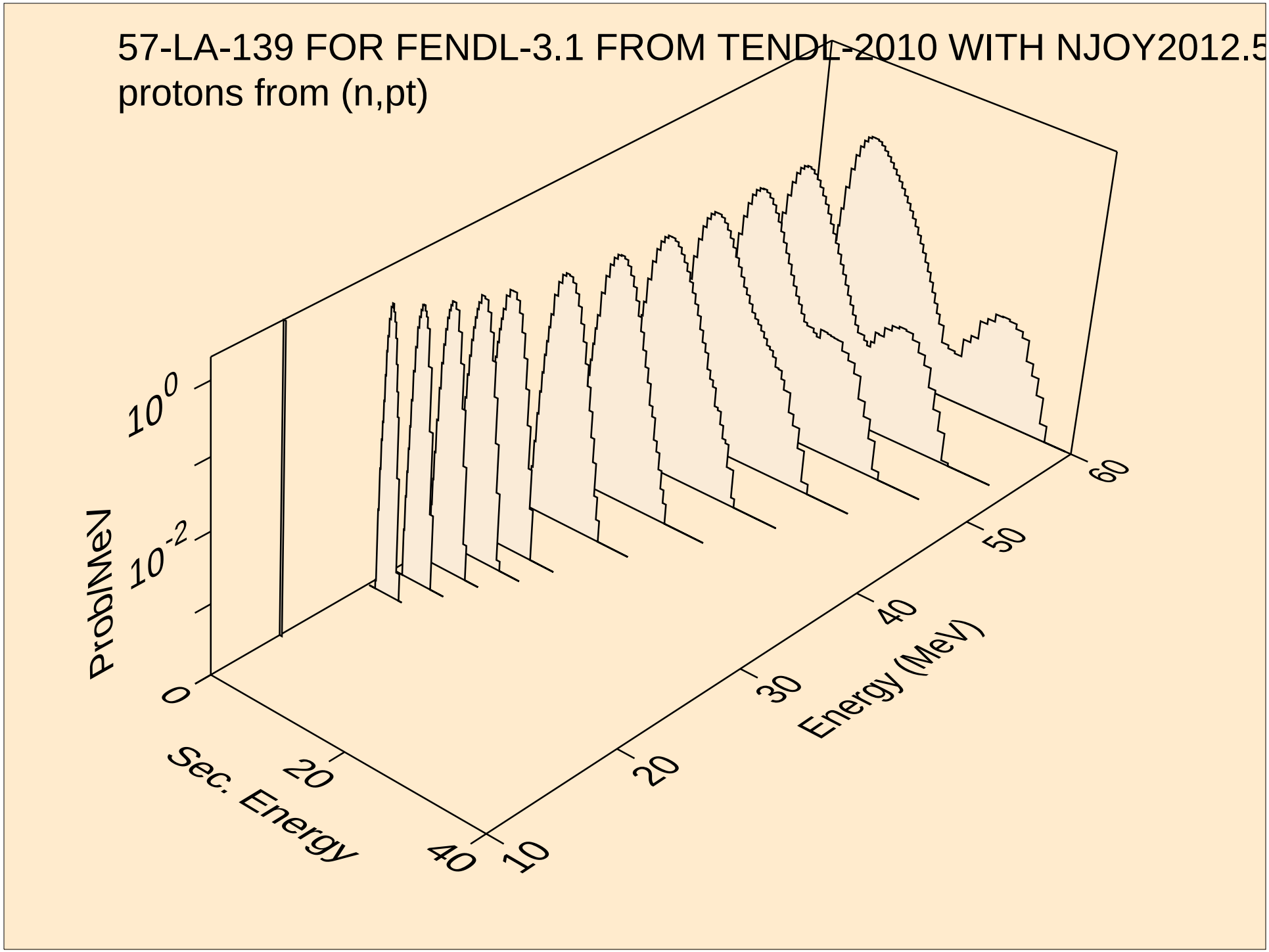

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
protons from (n,npa)
Prob/MeV
10^{0}
10^{-2}
0
20
40
Sec. Energy
0
10
20
30
40
50
60
Energy (MeV)

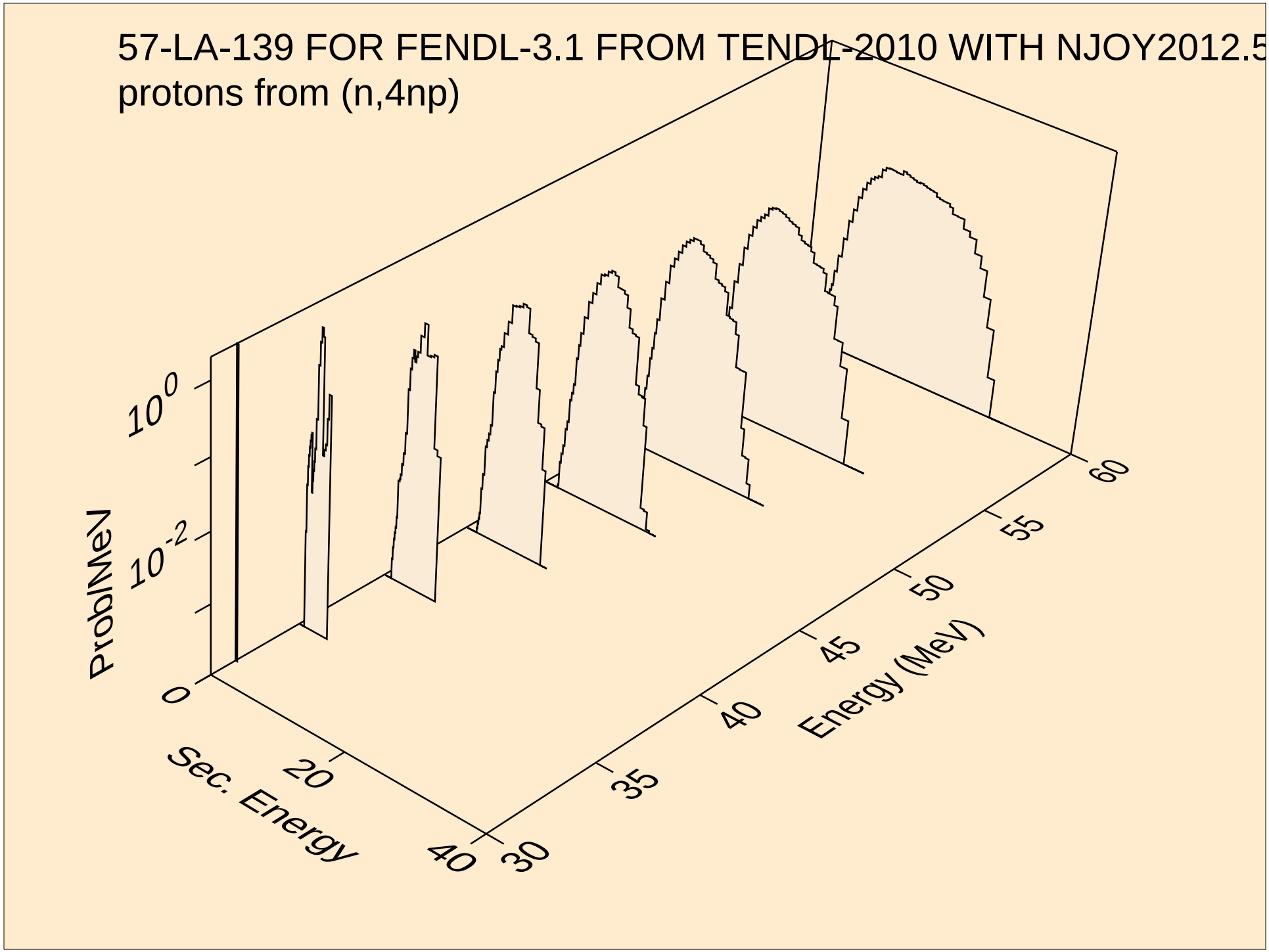

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
protons from (n,p)
Prob/MeV
10^1
10^-1
10^-3
0
50
100
Sec. Energy
0
10
20
30
40
50
60
Energy (MeV)

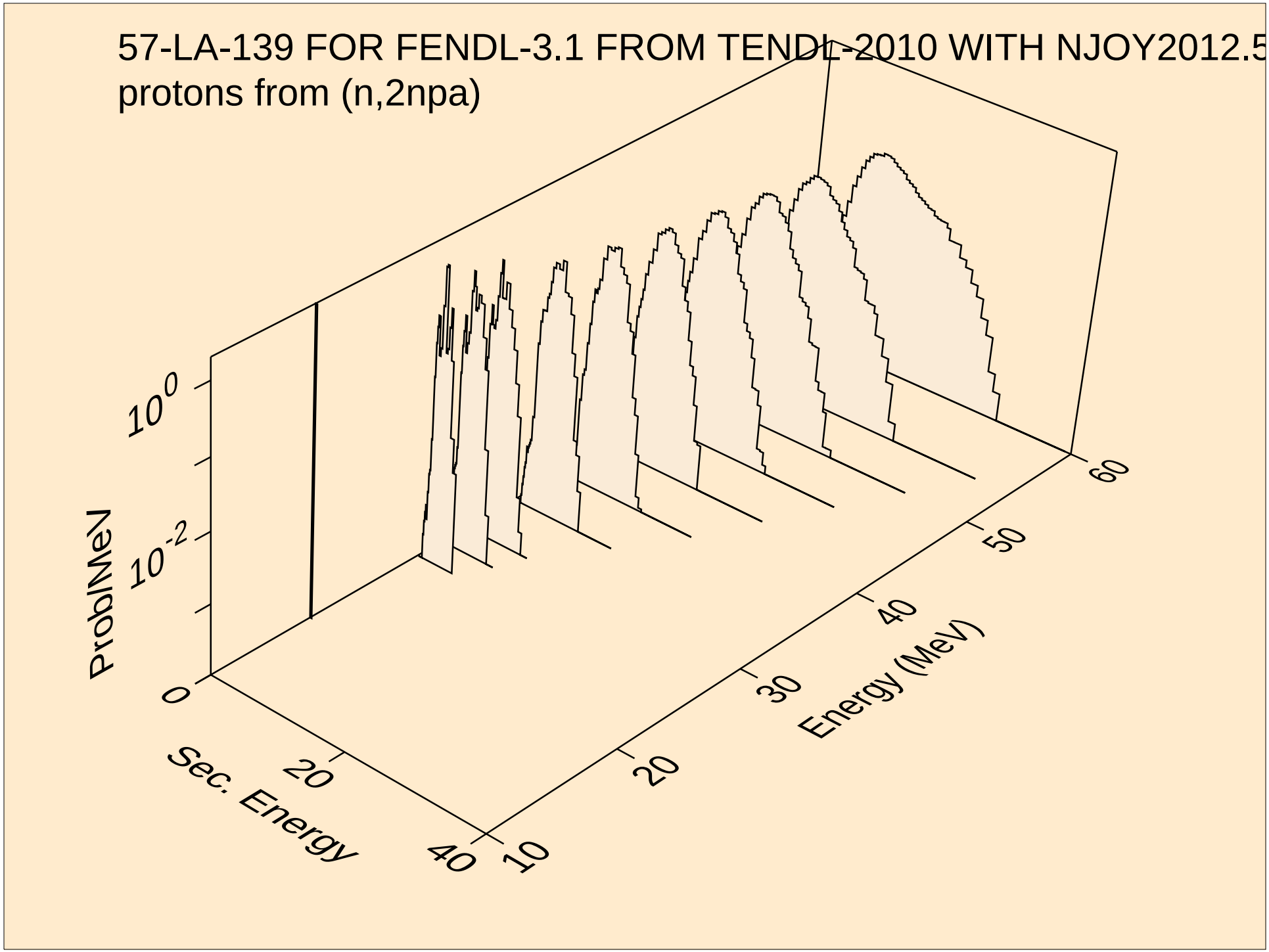

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
protons from (n,2p)
Prob/MeV
10^{0}
10^{-2}
0
20
40
60
Sec. Energy
10
20
30
40
50
60
Energy (MeV)

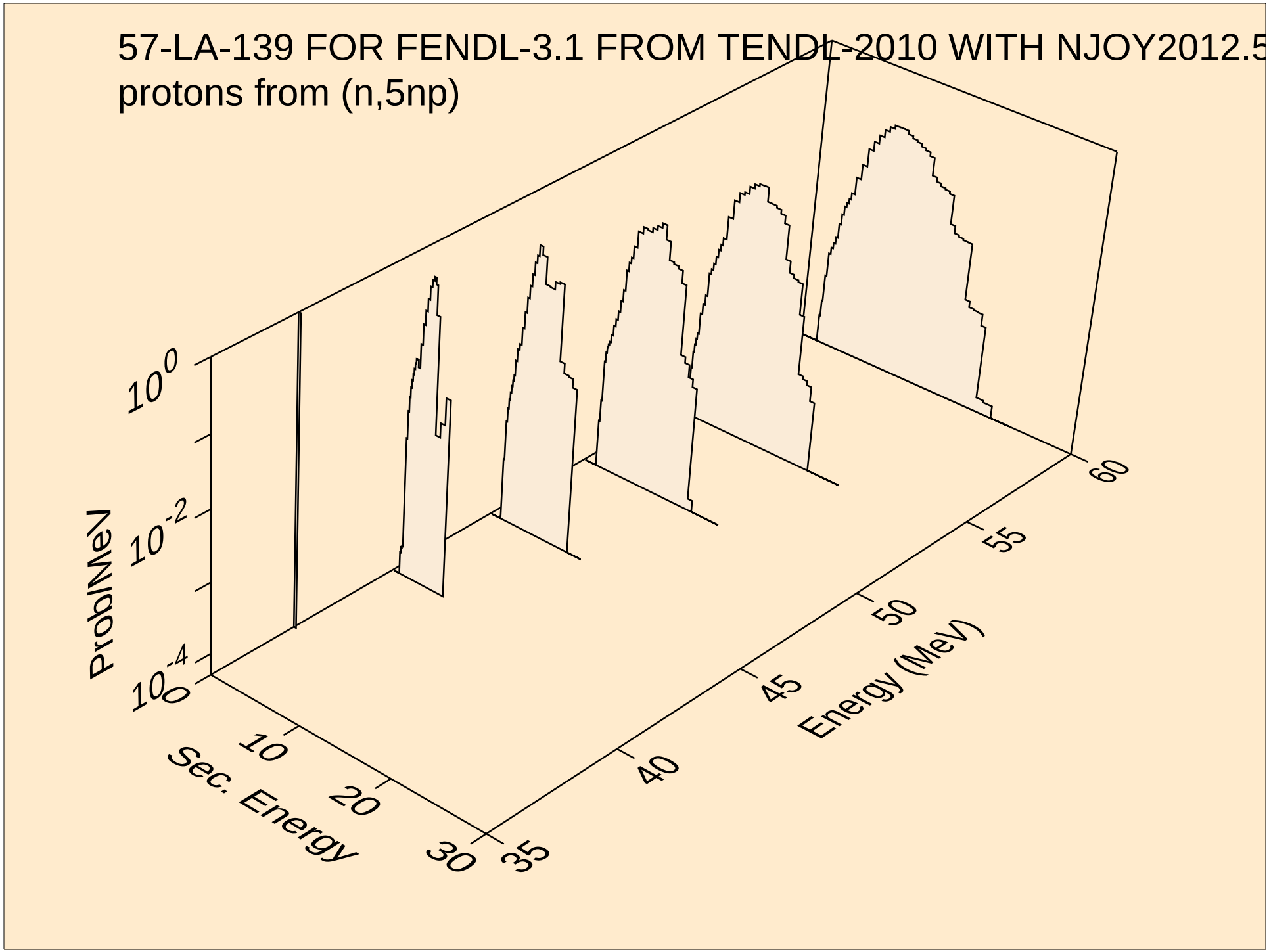

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
protons from (n,pa)
Prob/MeV
10^{0}
10^{-2}
0
20
40
60
Sec. Energy
0
10
20
30
40
50
60
Energy (MeV)

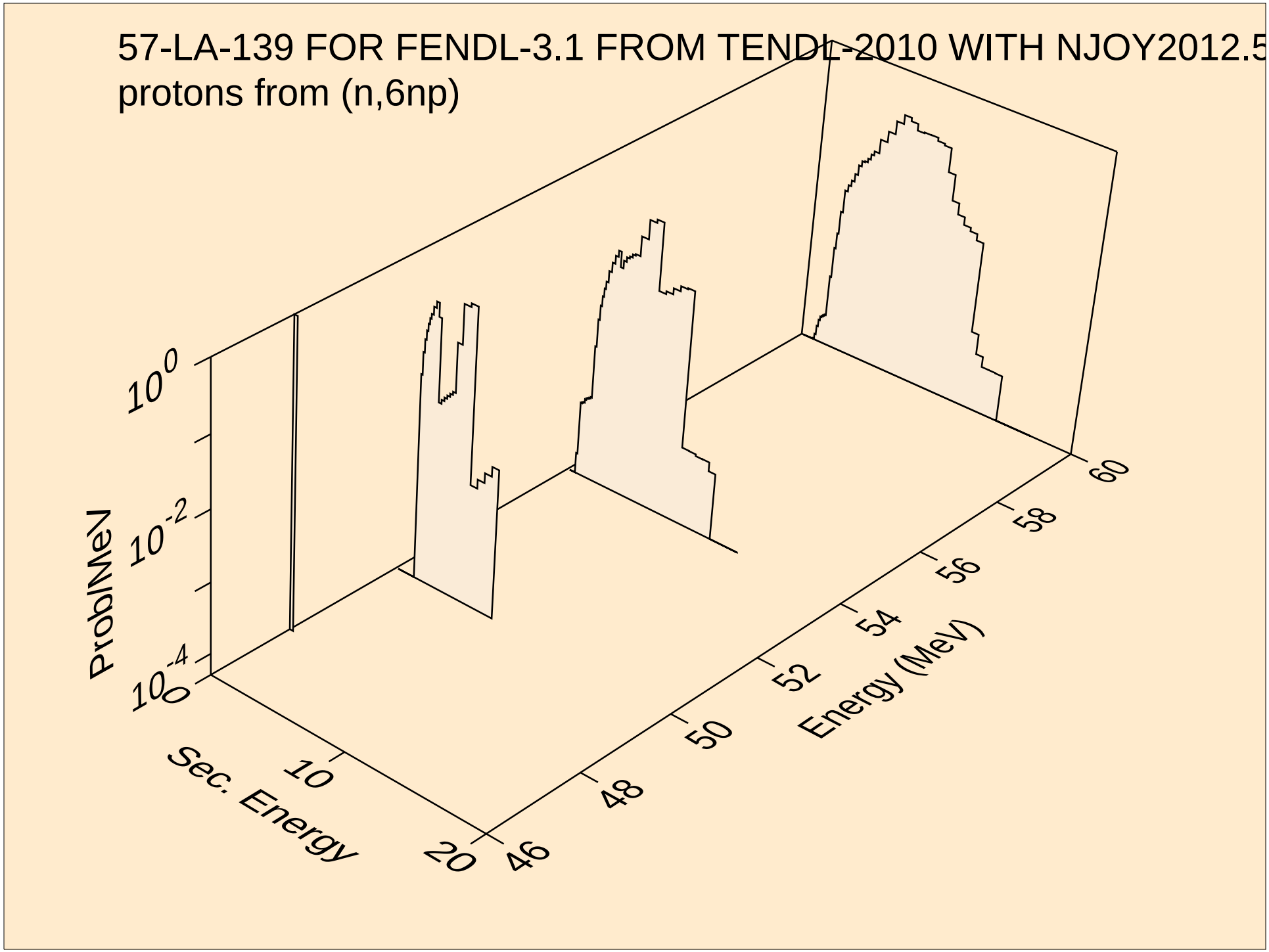

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
protons from (n,pd)
Prob/MeV
10^{0}
10^{-2}
0
Sec. Energy
20
40
10
20
30
Energy (MeV)
40
50
60

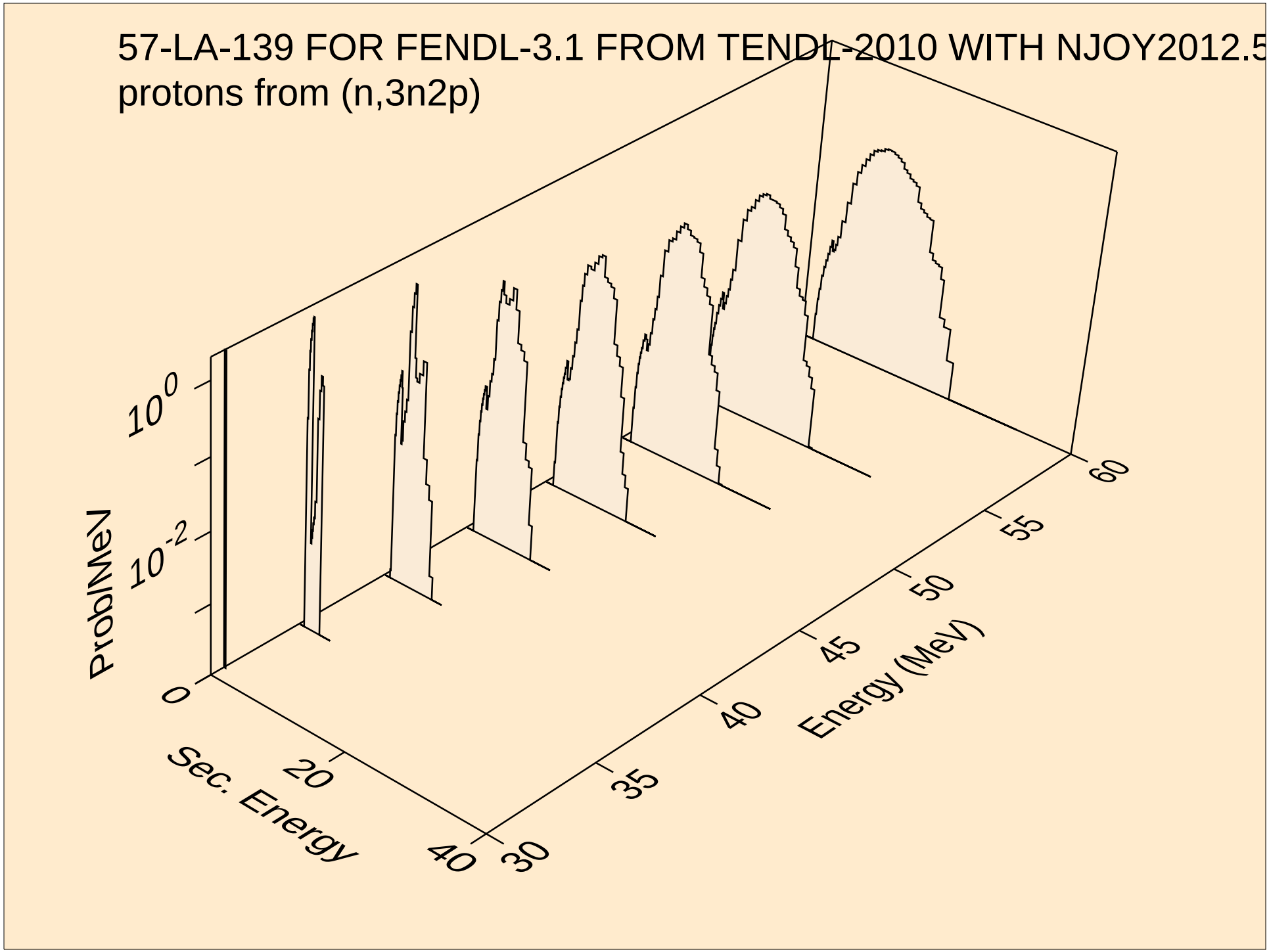

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
protons from (n,pt)
Prob/MeV
10^{0}
10^{-2}
0
Sec. Energy
20
40
10
20
30
Energy (MeV)
40
50
60

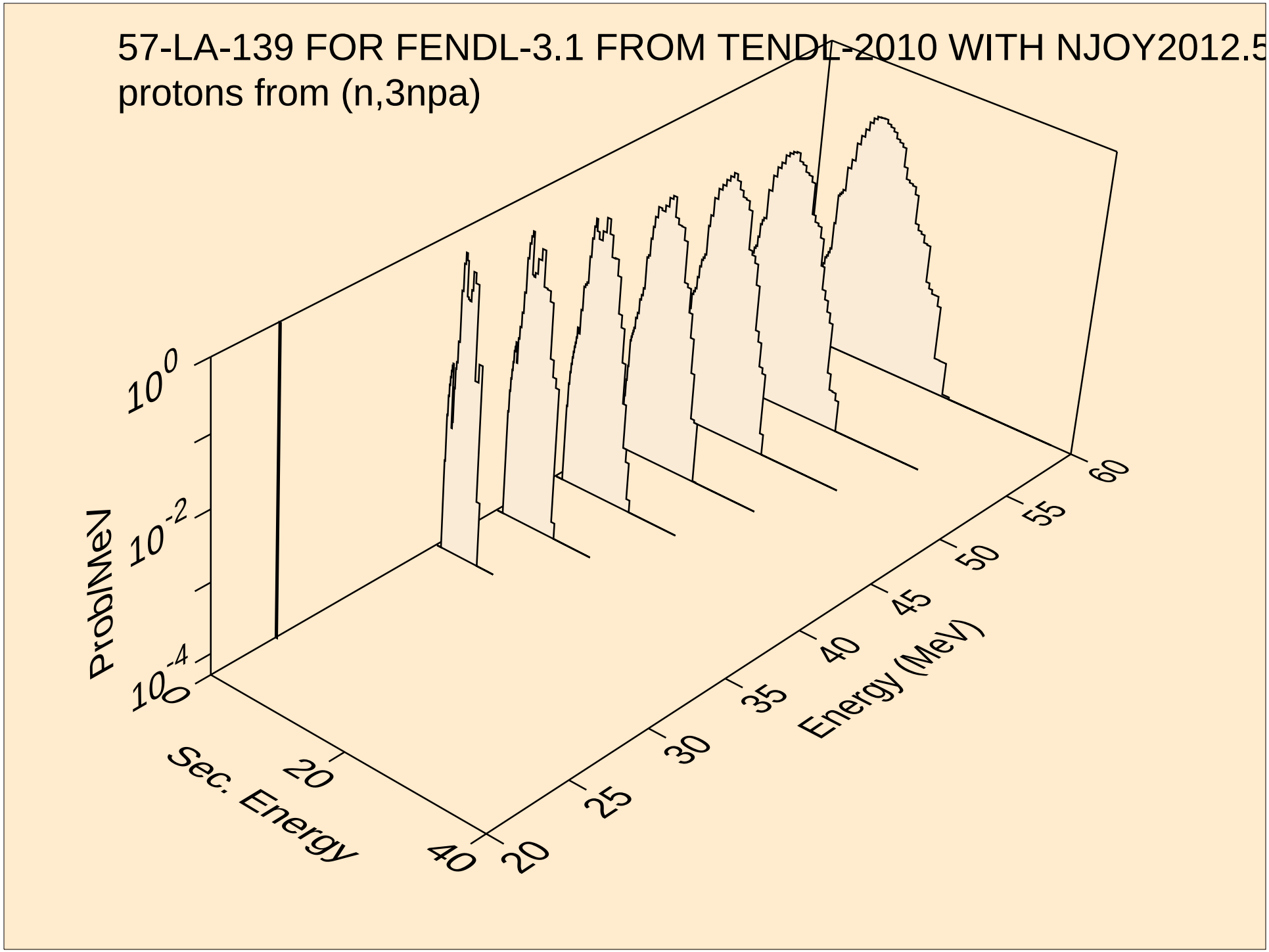

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
protons from (n,4np)
Prob/MeV
10^{0}
10^{-2}
0
Sec. Energy
20
40
30
35
40
45
50
55
60
Energy (MeV)

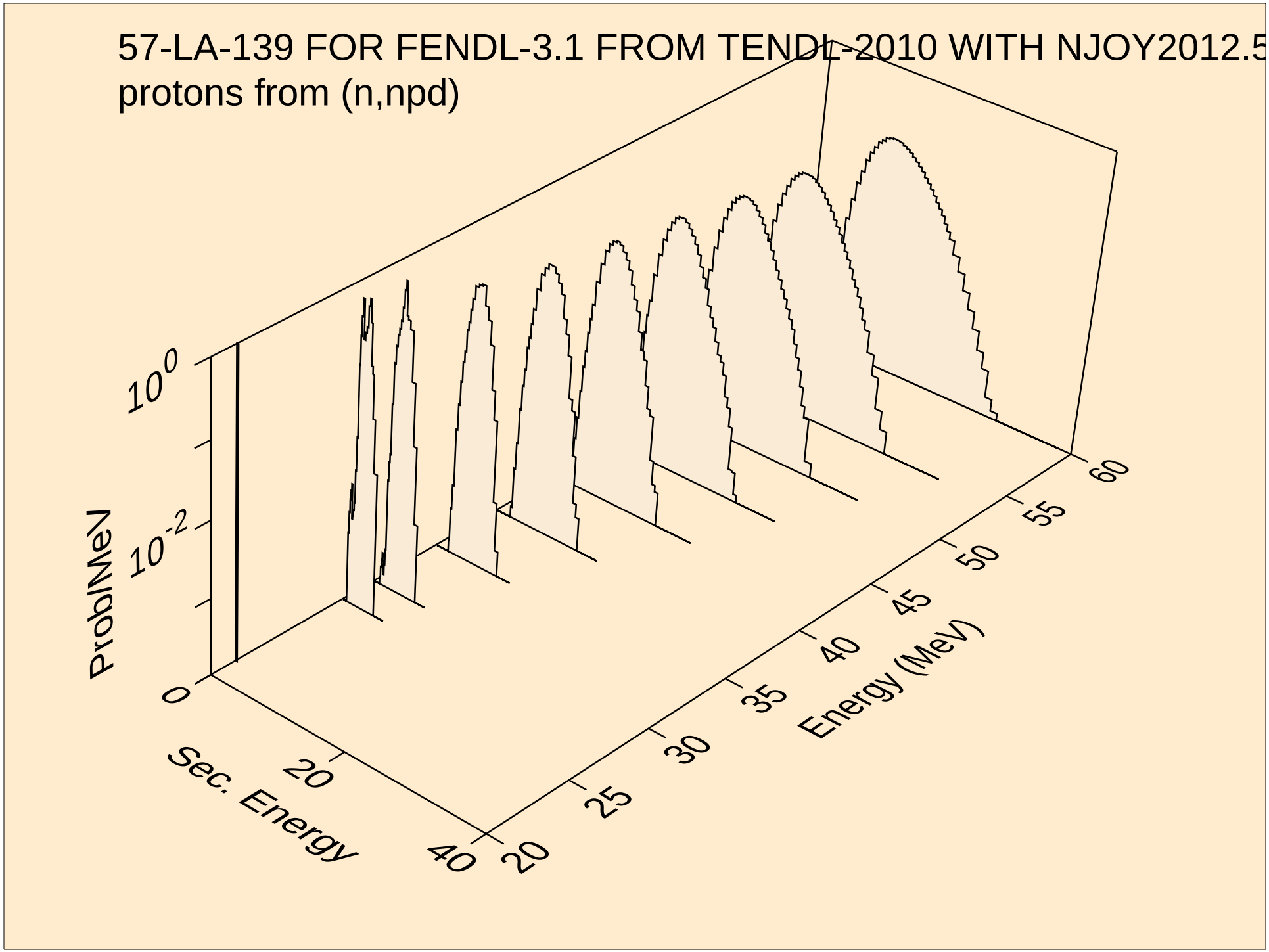

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
protons from (n,2npa)
Prob/MeV
10^{0}
10^{-2}
0
Sec. Energy
20
40
10
20
30
40
50
60
Energy (MeV)

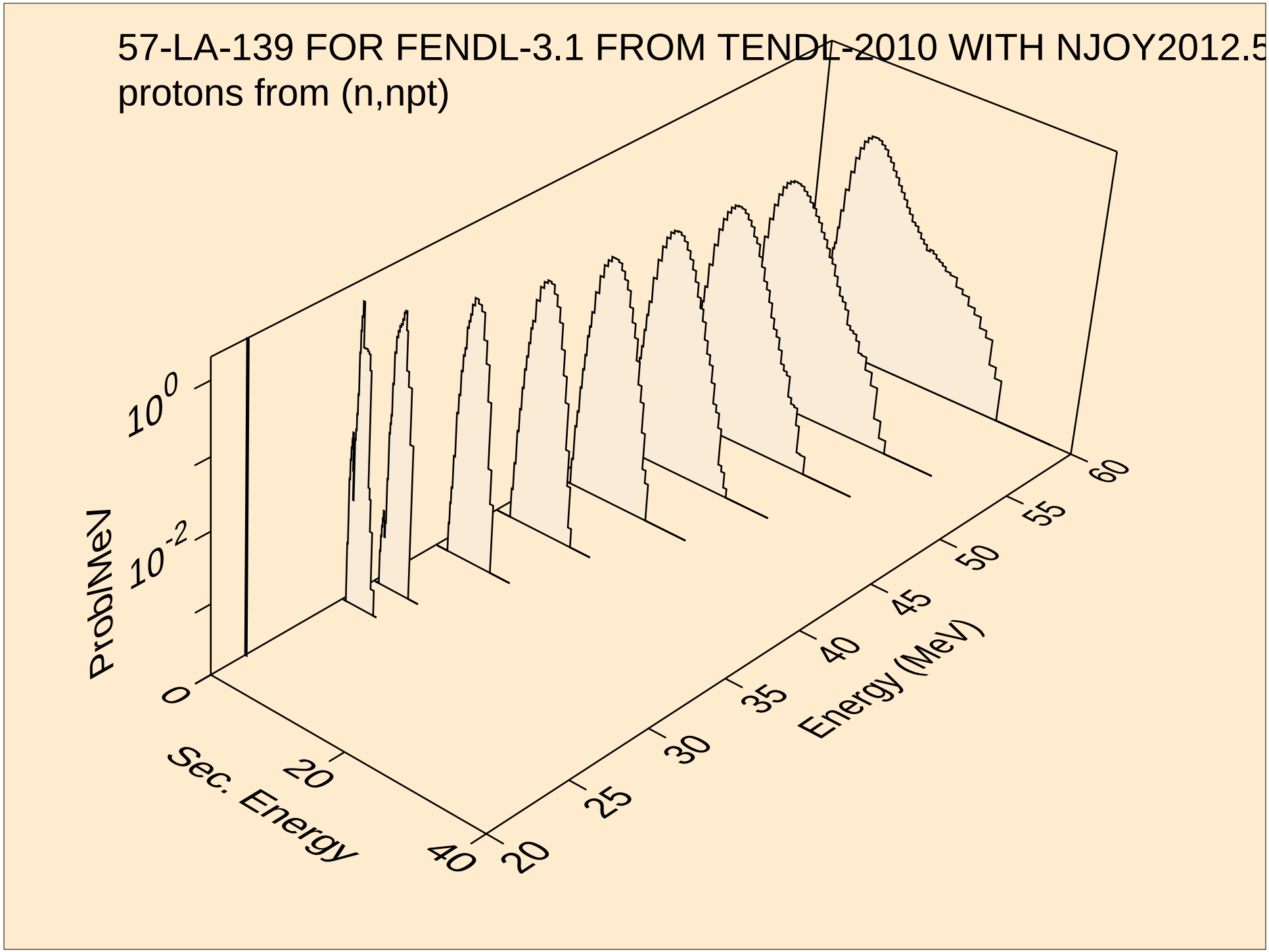

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
protons from (n,5np)
Prob/MeV
10^{0}
10^{-2}
10^{-4}
0
10
20
30
35
Sec. Energy
40
45
50
55
60
Energy (MeV)

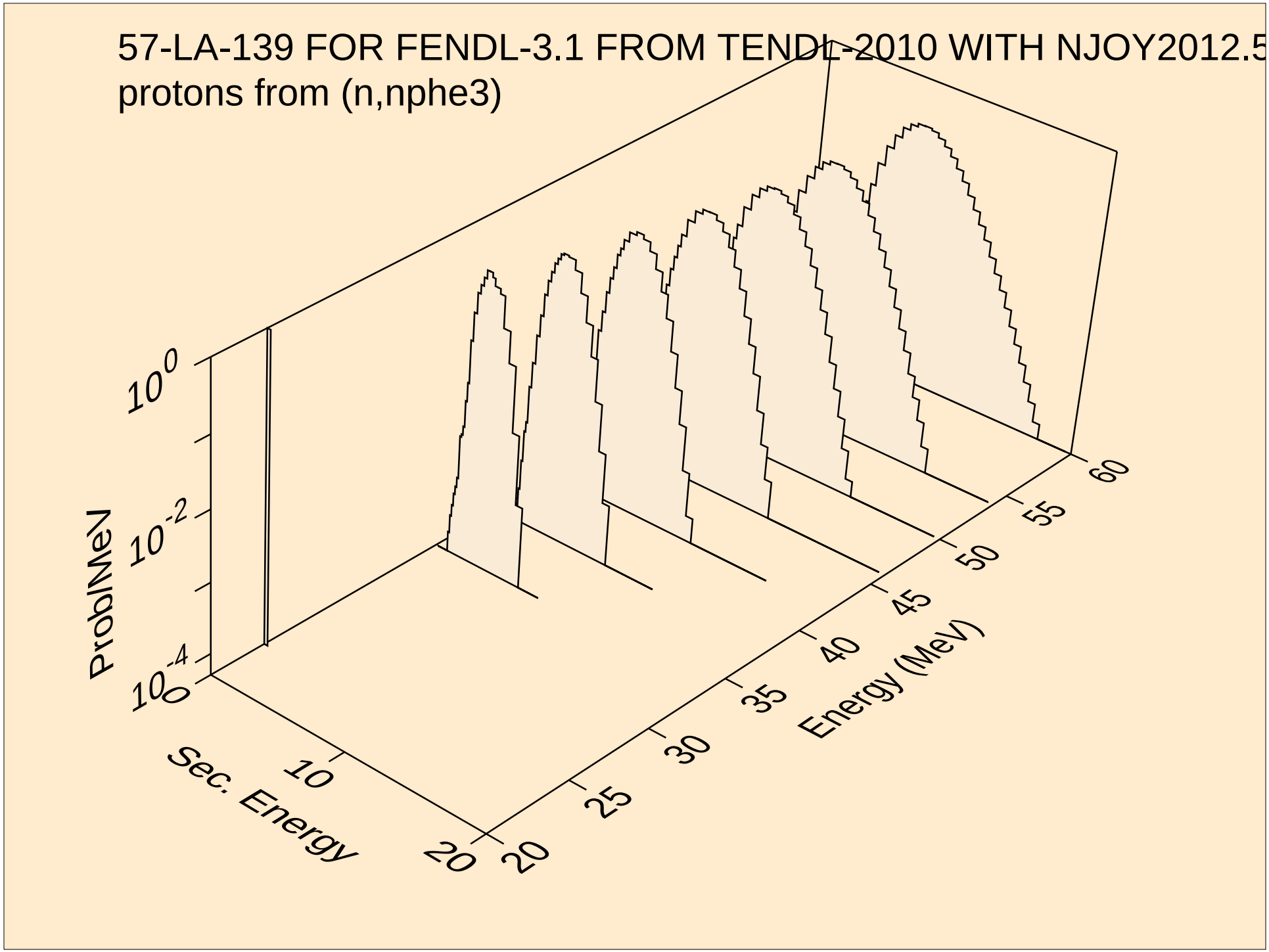

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
protons from (n,6np)
Prob/MeV
10^{0}
10^{-2}
10^{-4}
0
10
20
Sec. Energy
46
48
50
52
54
56
58
60
Energy (MeV)

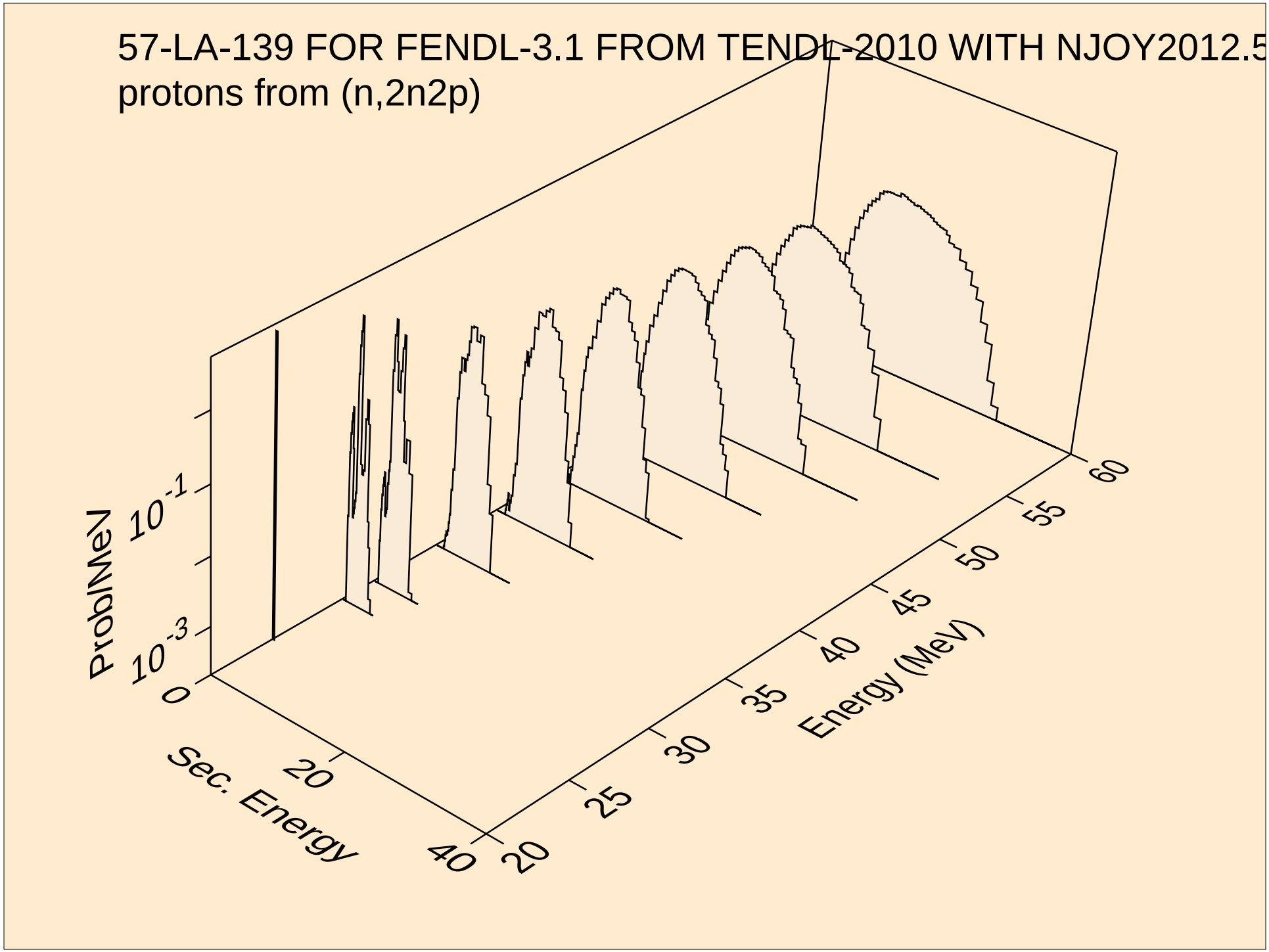

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
protons from (n,3n2p)
Prob/MeV
10^{0}
10^{-2}
0
Sec. Energy
20
40
30
35
40
45
50
55
60
Energy (MeV)

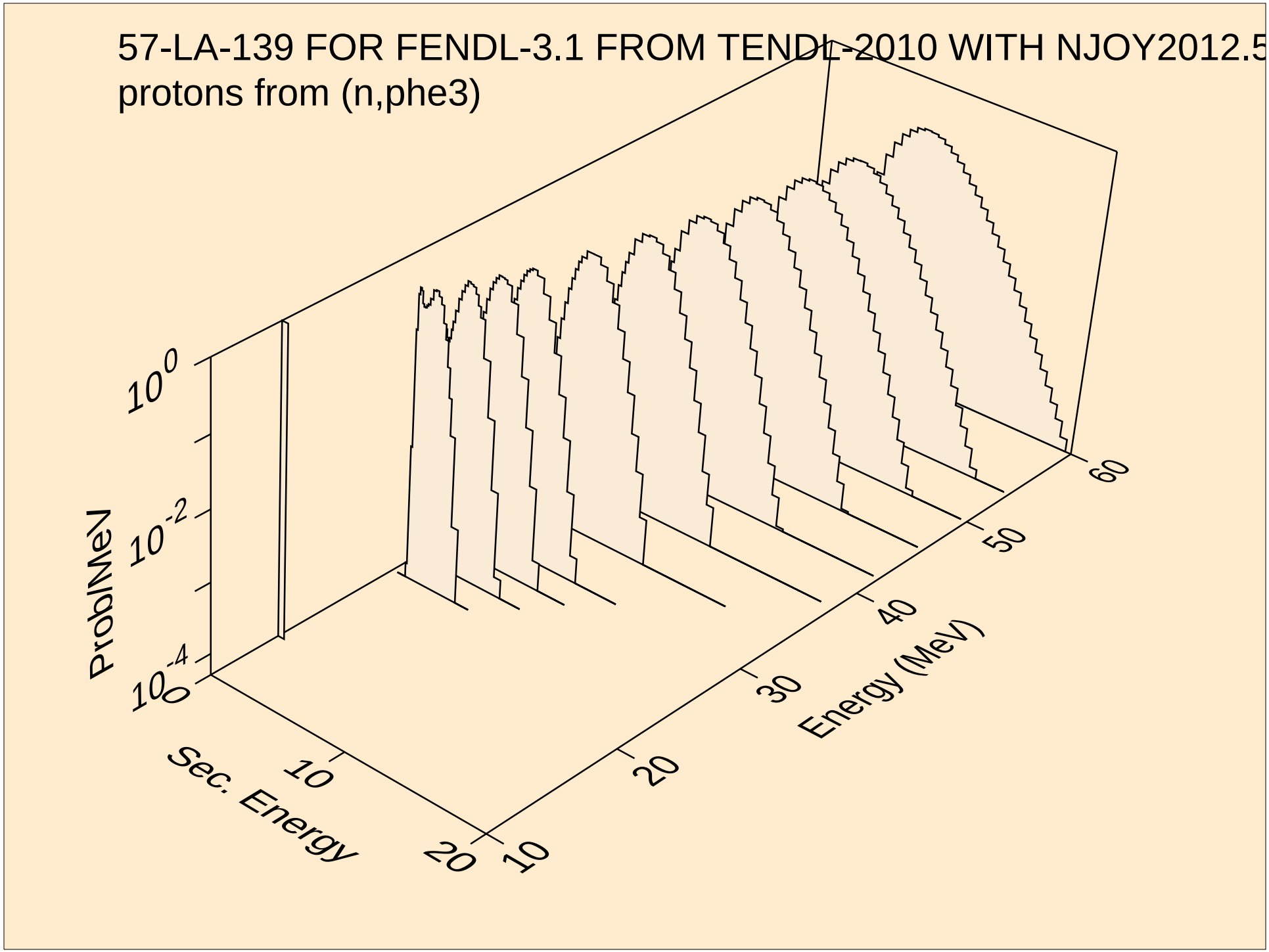

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
protons from (n,3npa)
Prob/MeV
10^{0}
10^{-2}
10^{-4}
0
Sec. Energy
20
40
20
25
30
35
40
45
50
55
60
Energy (MeV)

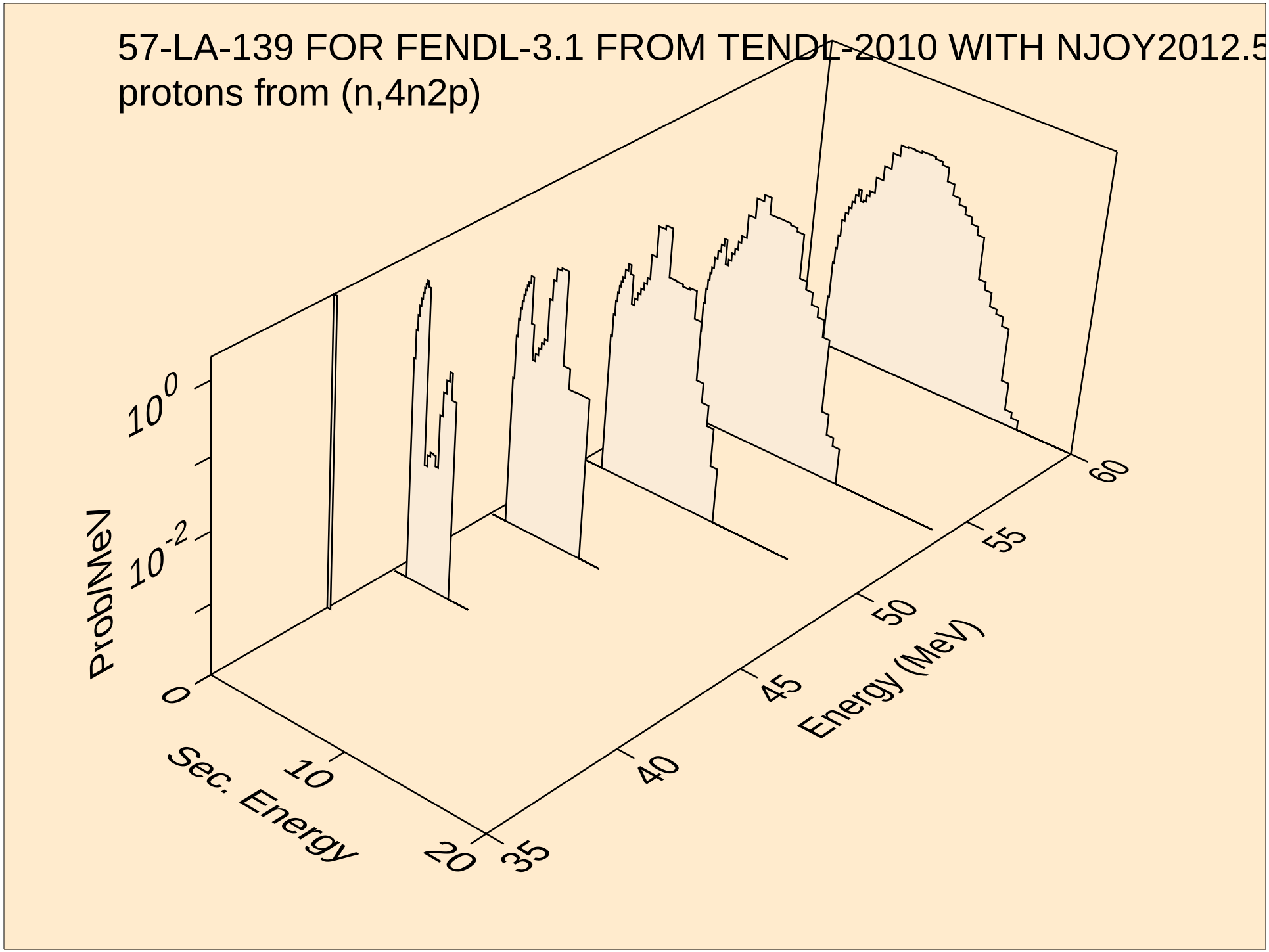

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
protons from (n,npd)
Prob/MeV
10^{0}
10^{-2}
0
Sec. Energy
20
40
20
25
30
35
40
45
50
55
60
Energy (MeV)

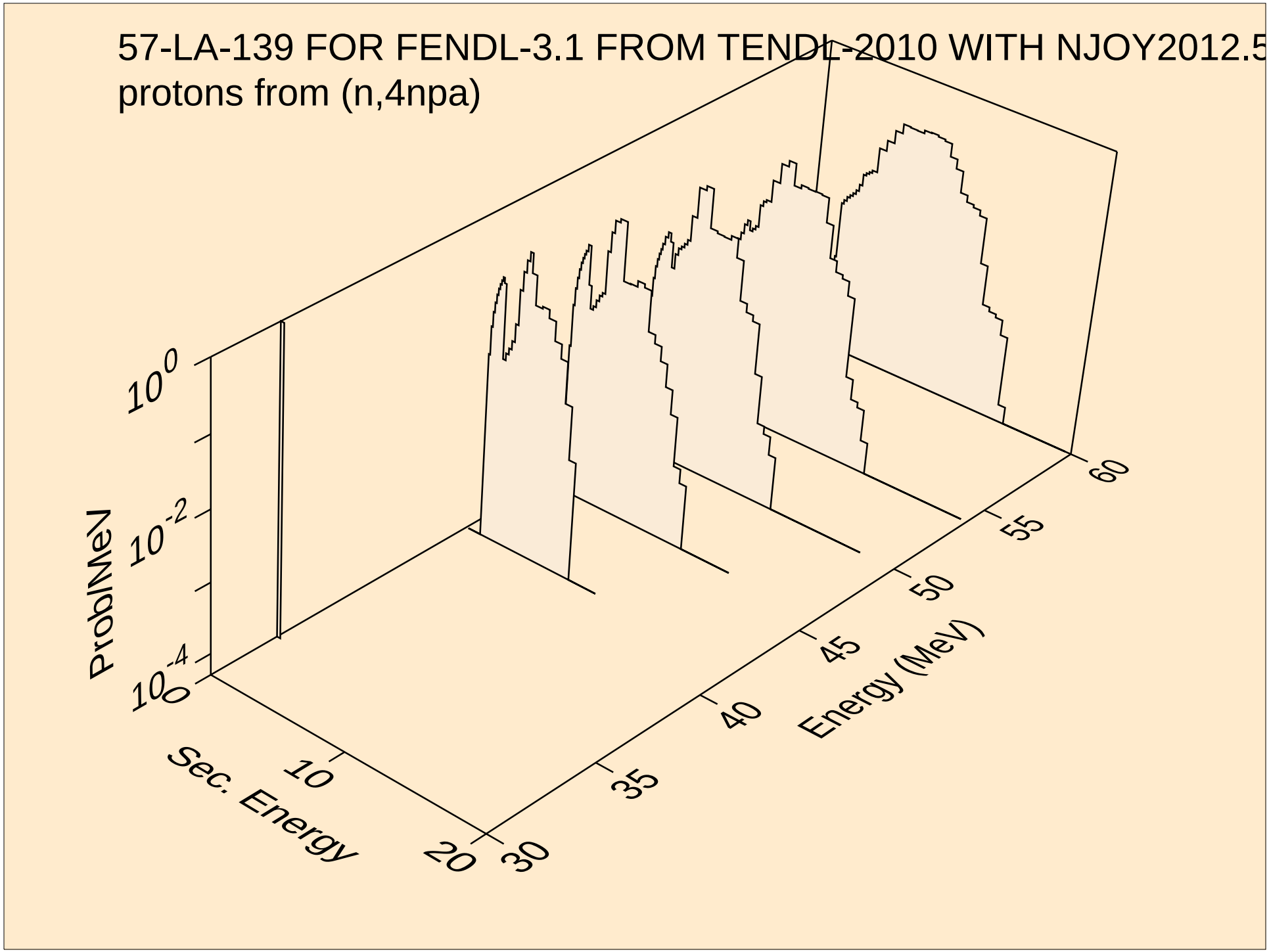

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
protons from (n,npt)
Prob/MeV
10^{0}
10^{-2}
0
Sec. Energy
20
40
Energy (MeV)
20
25
30
35
40
45
50
55
60

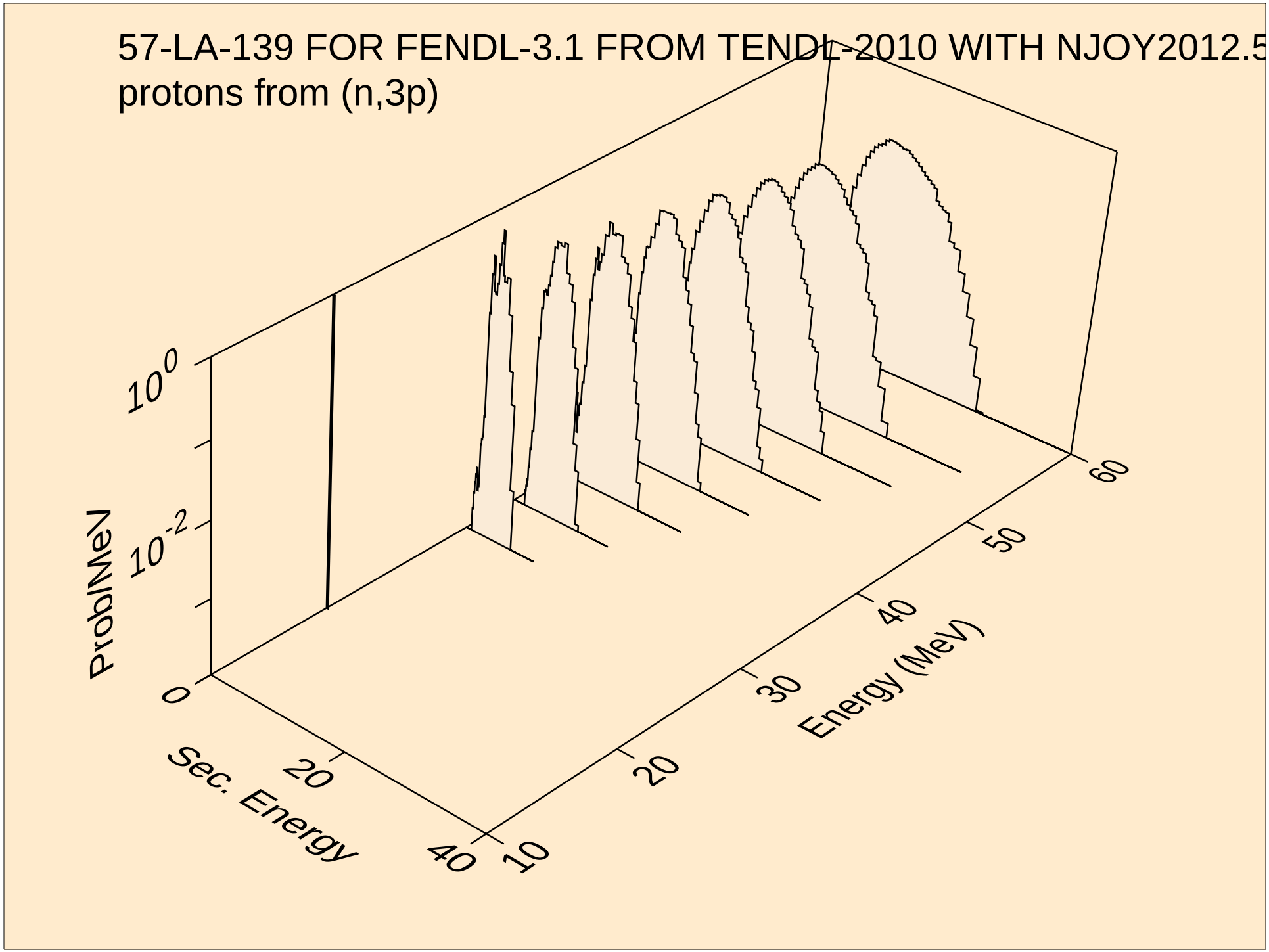

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
protons from (n,nphe3)
Prob/MeV
10^0
10^-2
10^-4
0
10
20
Sec. Energy
20
25
30
35
40
45
50
55
60
Energy (MeV)

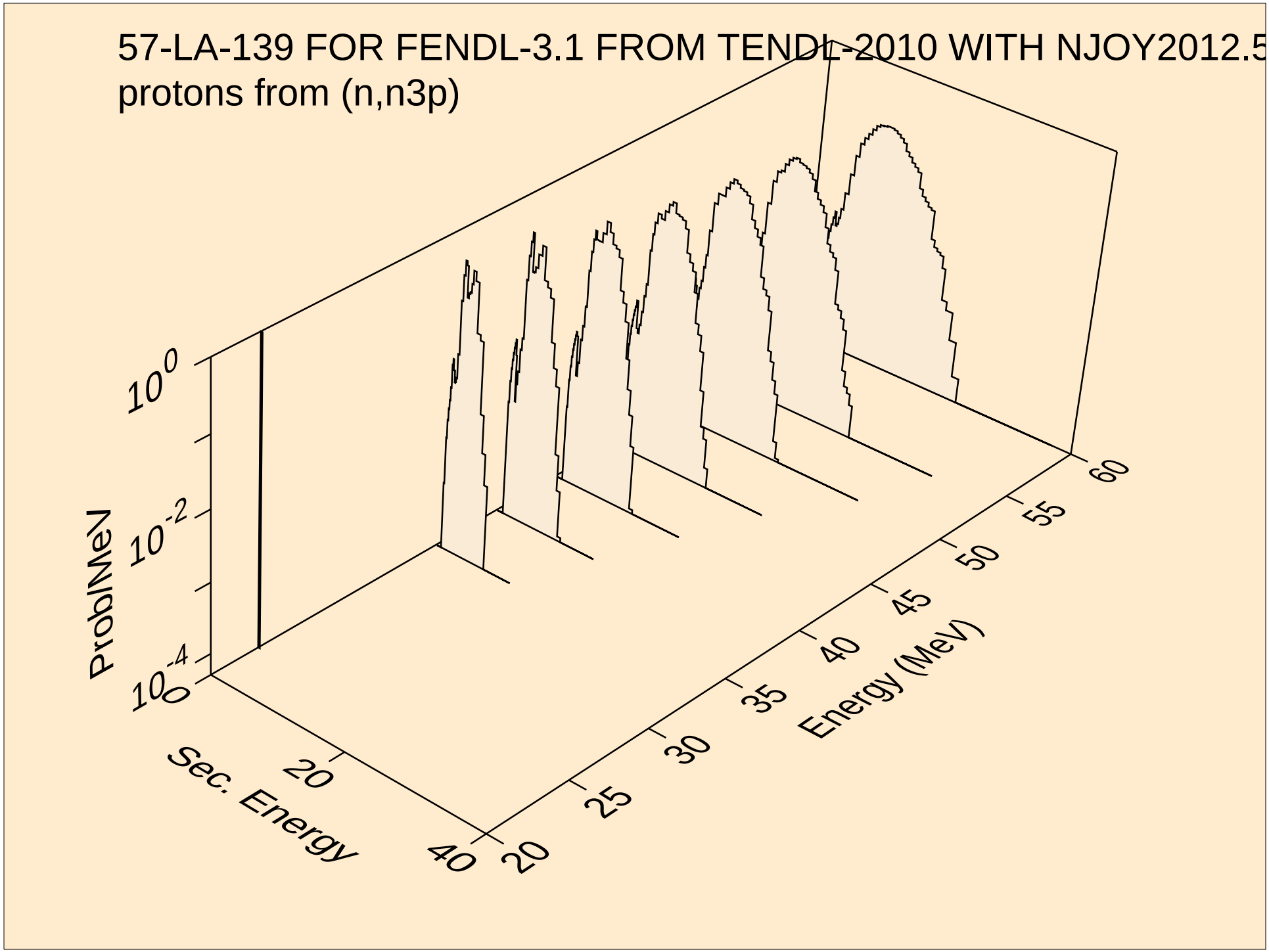

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
protons from (n,2n2p)
Prob/MeV
10-1
10-3
0
Sec. Energy
20
40
20
25
30
35
40
45
50
55
60
Energy (MeV)

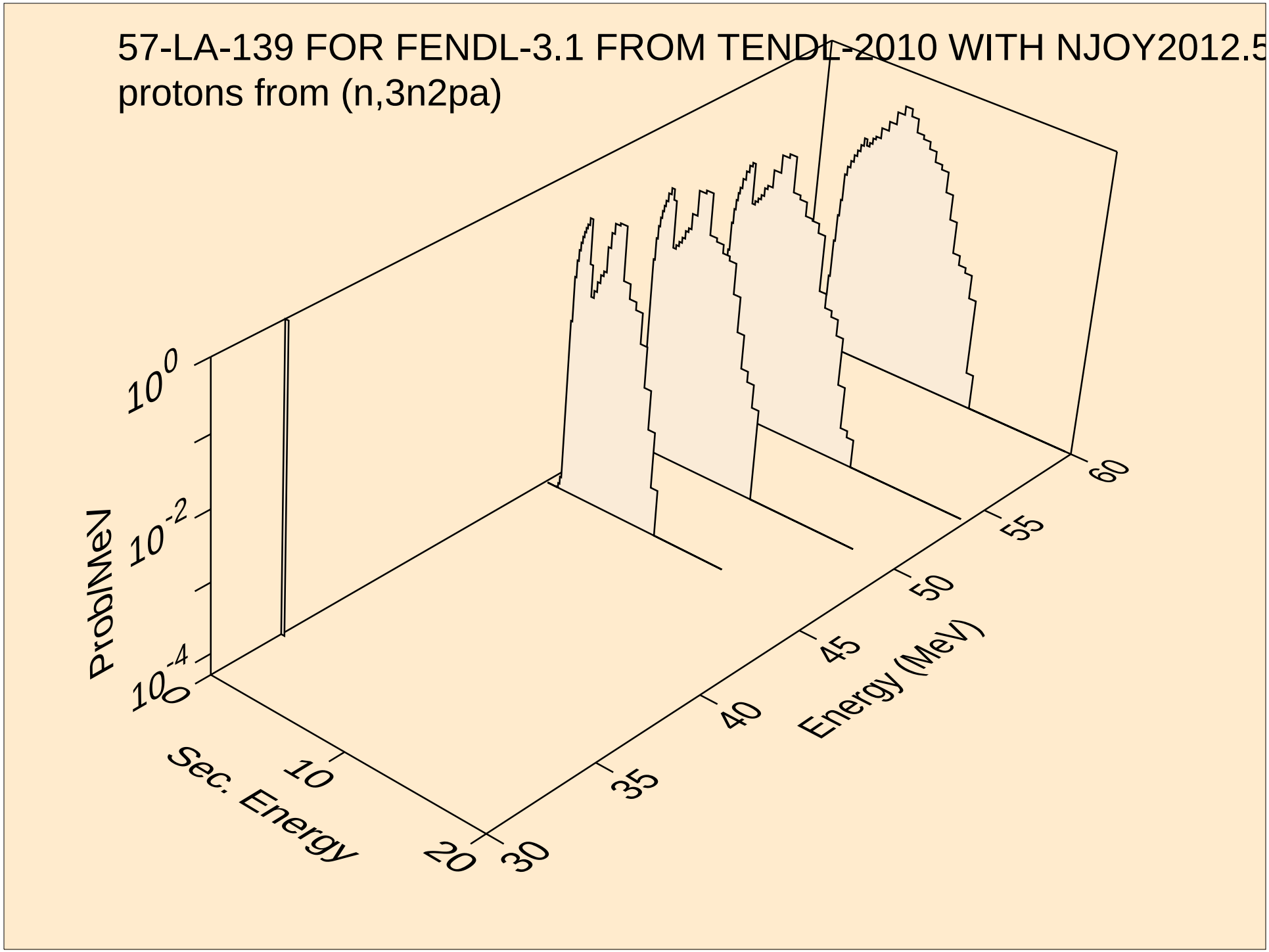

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
protons from (n,phe3)
Prob/MeV
10^{0}
10^{-2}
10^{-4}
0
Sec. Energy
10
20
10
20
30
40
50
60
Energy (MeV)

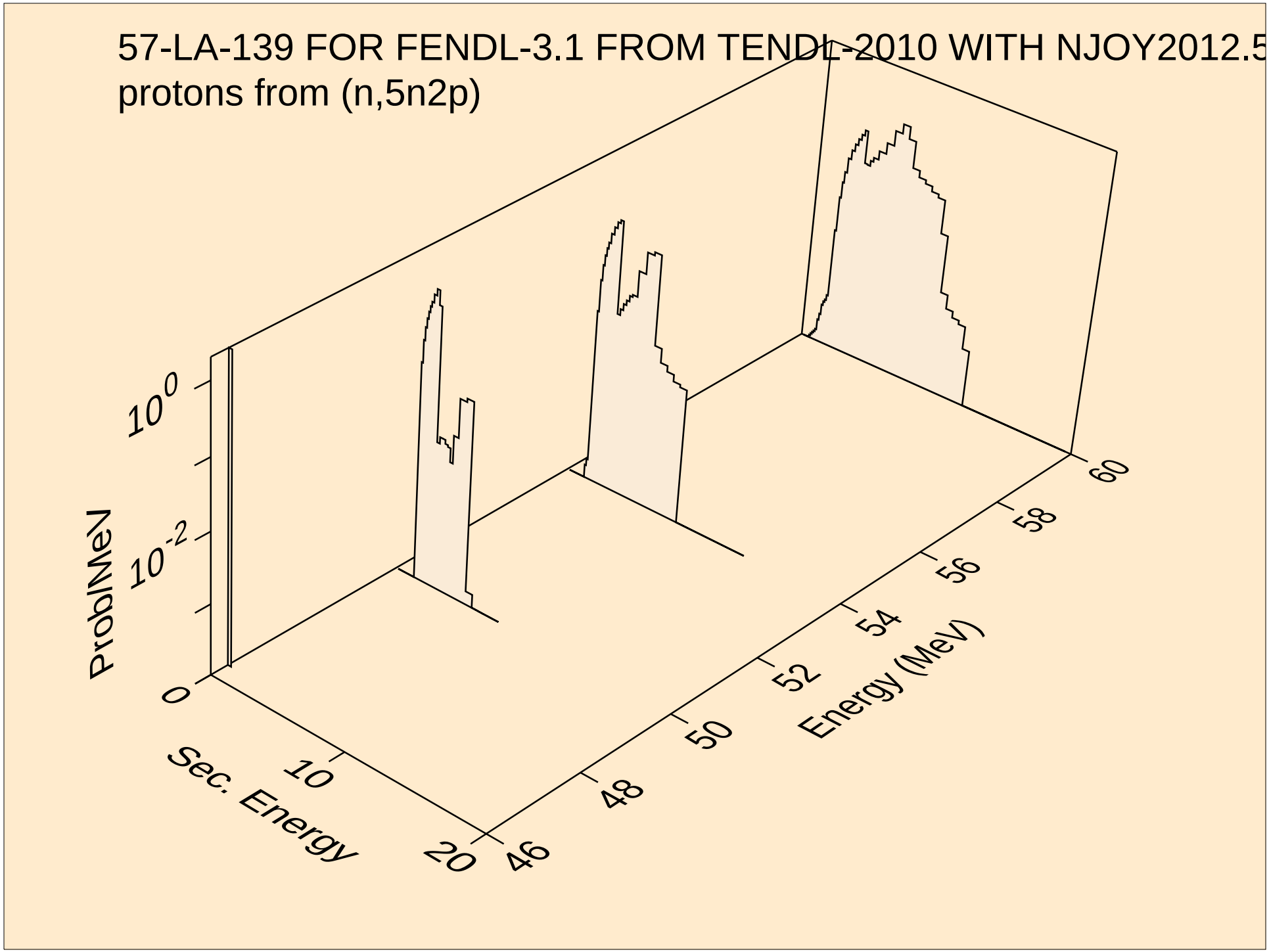

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
protons from (n,4n2p)
Prob/MeV
10^{0}
10^{-2}
0
Sec. Energy
10
20
35
40
45
Energy (MeV)
50
55
60

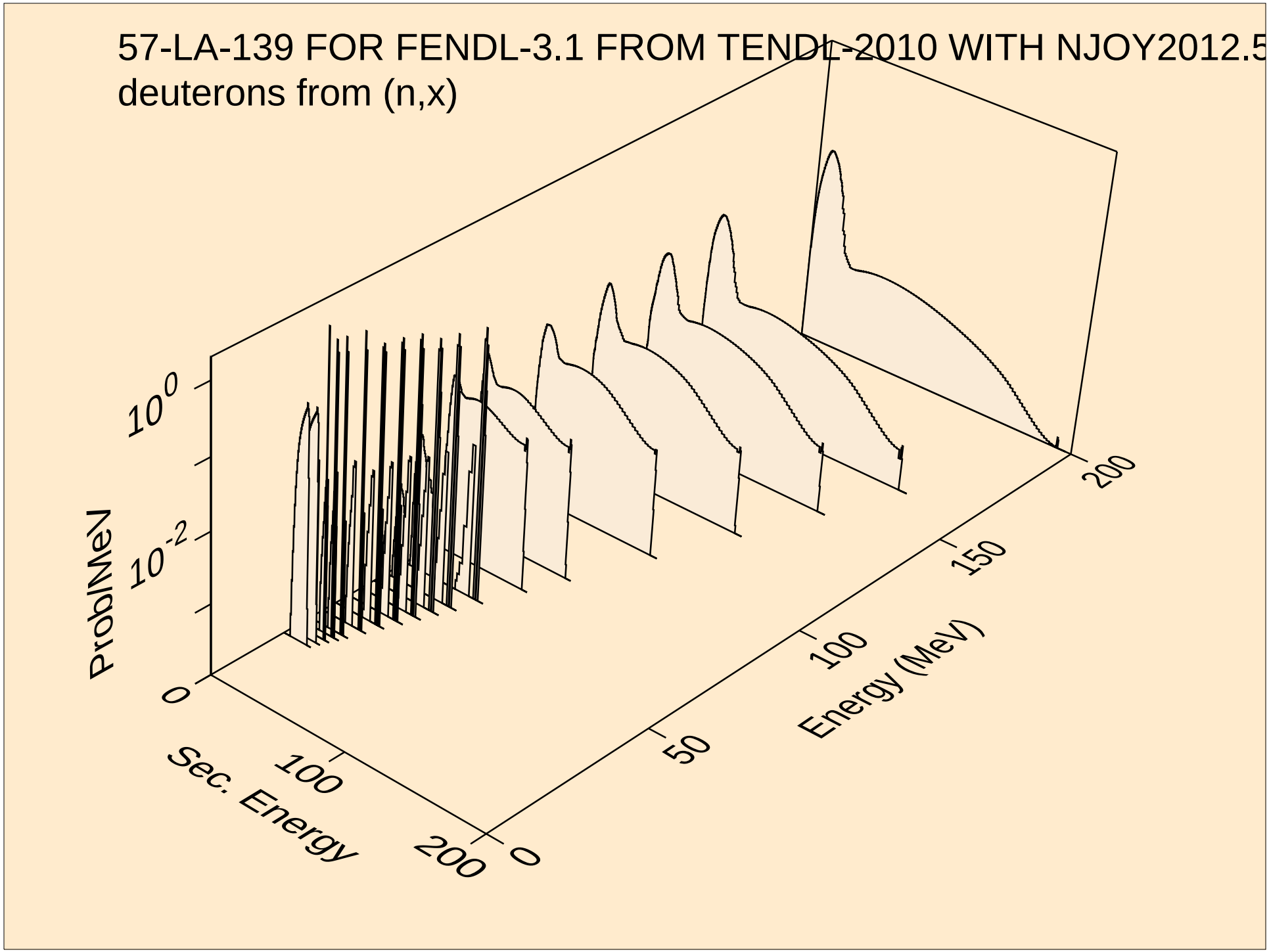

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
protons from (n,4npa)
Prob/MeV
10^0
10^-2
10^-4
Sec. Energy
0
10
20
30
35
40
45
50
55
60
Energy (MeV)

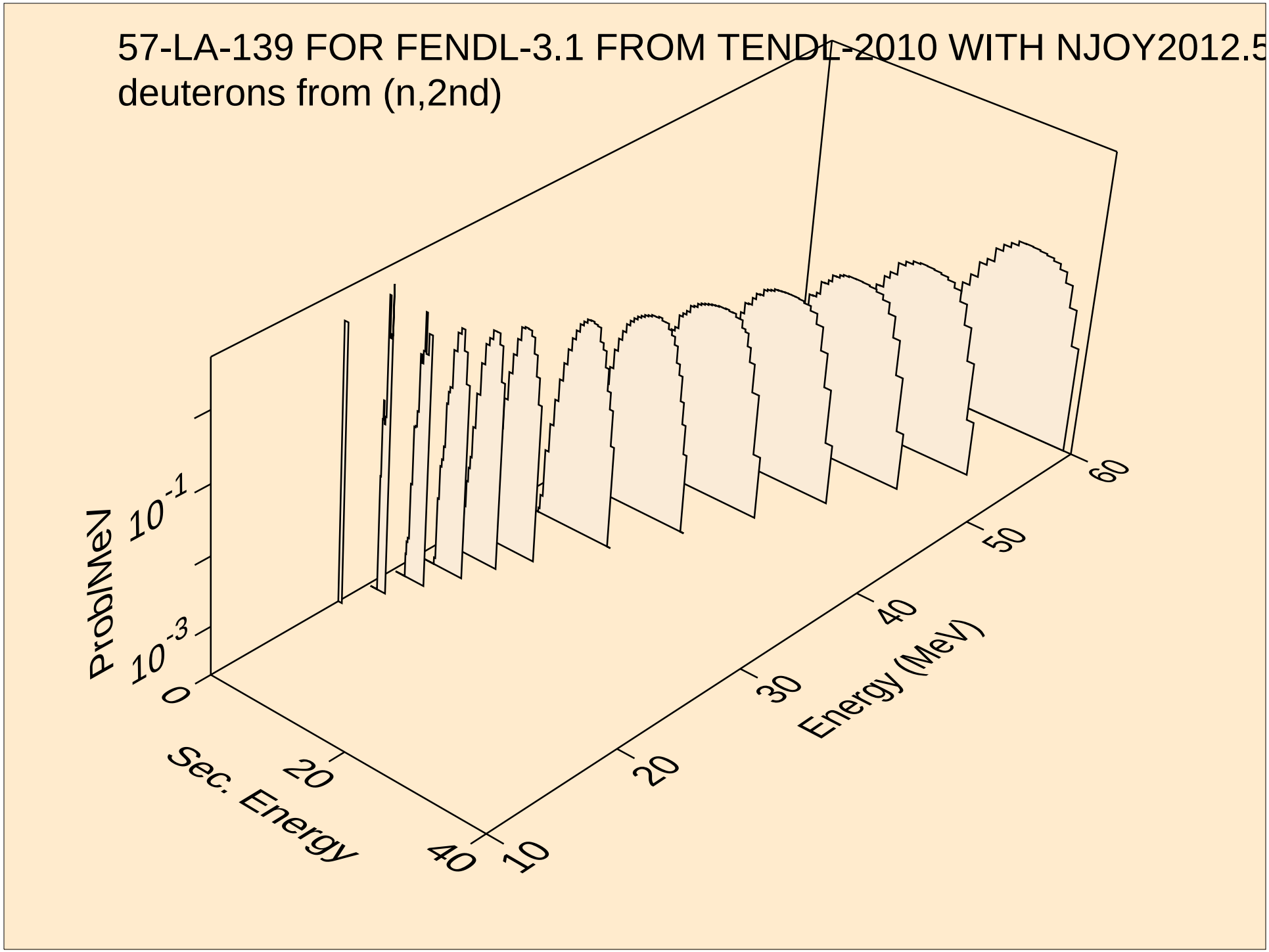

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
protons from (n,3p)
Prob/MeV
10^{0}
10^{-2}
0
Sec. Energy
20
40
10
20
30
Energy (MeV)
40
50
60

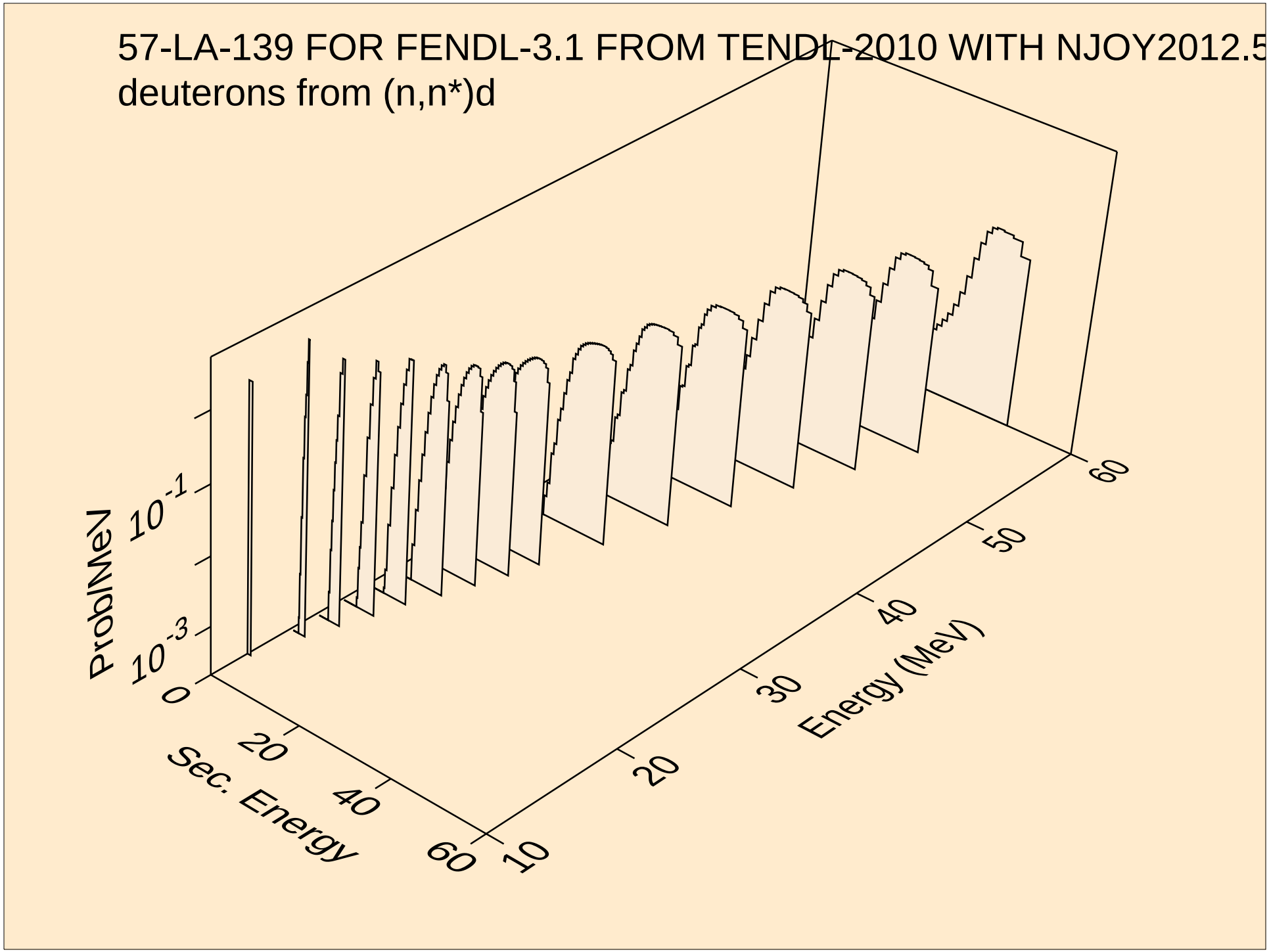

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
protons from (n,n3p)
Prob/MeV
10^0
10^-2
10^-4
0
Sec. Energy
20
40
Energy (MeV)
20
25
30
35
40
45
50
55
60

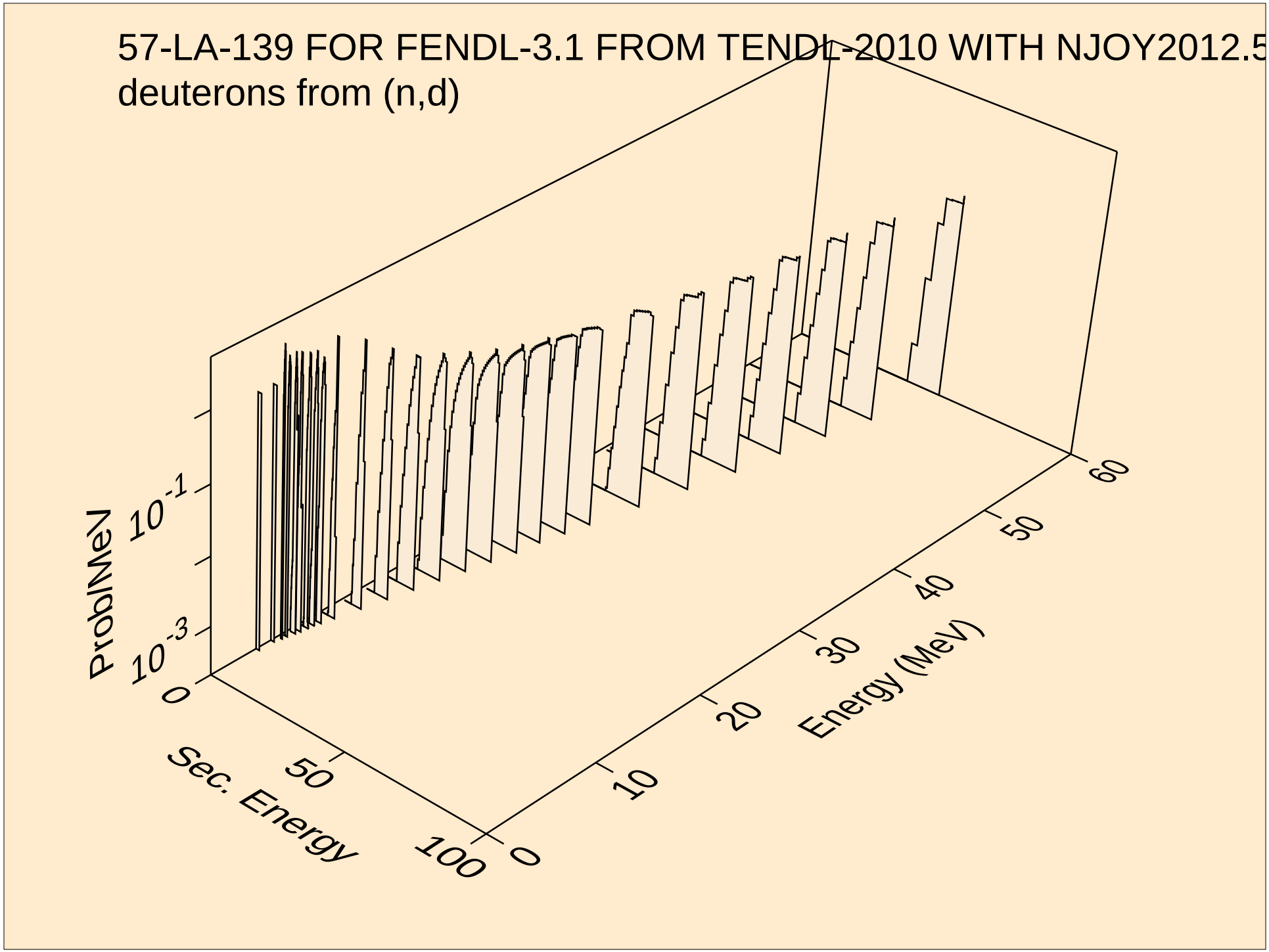

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
protons from (n,3n2pa)
Prob/MeV
10^0
10^-2
10^-4
Sec. Energy
0
10
20
30
35
40
45
50
55
60
Energy (MeV)

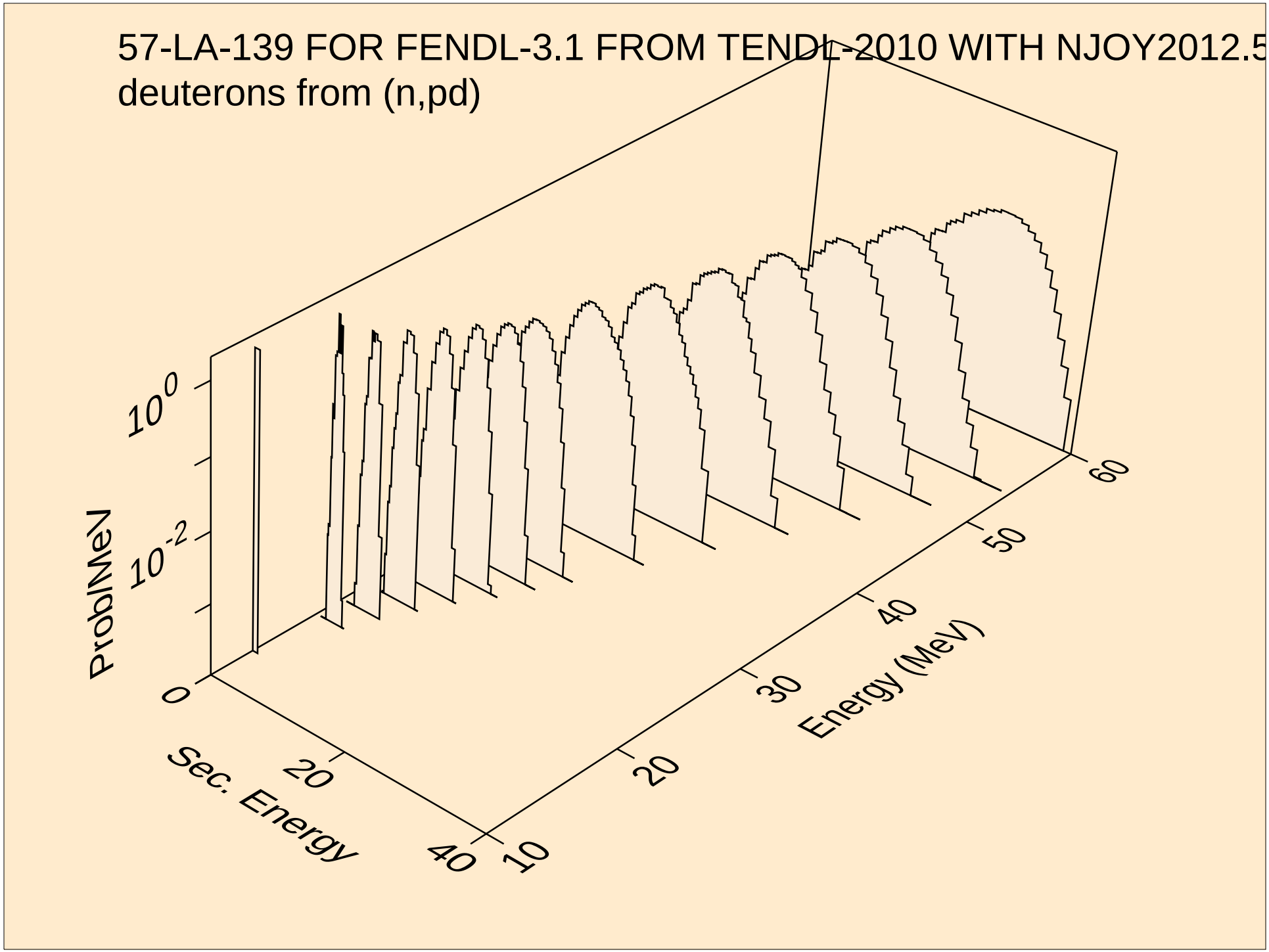

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
protons from (n,5n2p)
Prob/MeV
10^{0}
10^{-2}
0
Sec. Energy
10
20
46
48
50
52
54
56
58
60
Energy (MeV)

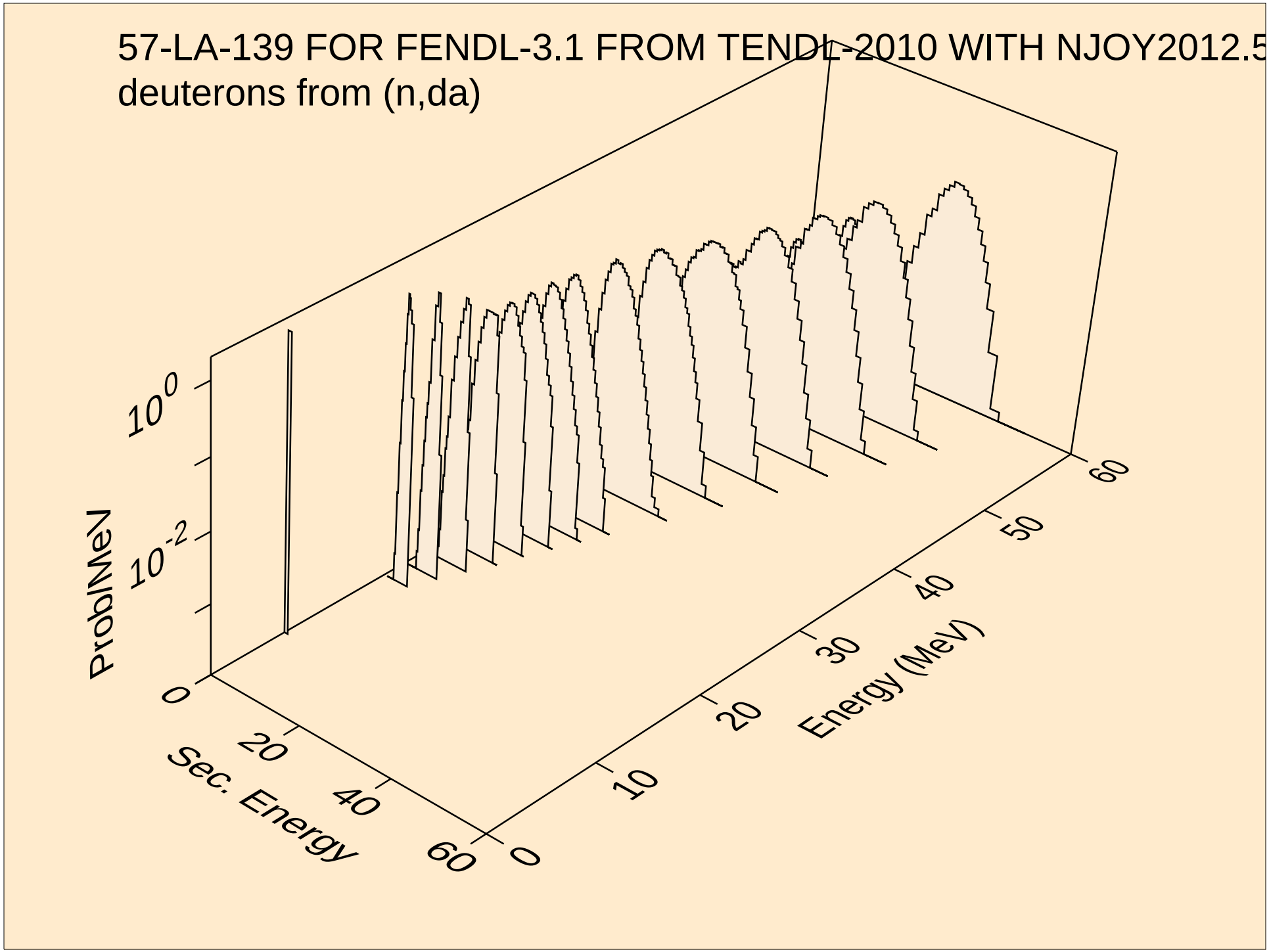

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
deuterons from (n,x)
Prob/MeV
10^0
10^-2
0
100
200
Sec. Energy
0
50
100
150
200
Energy (MeV)

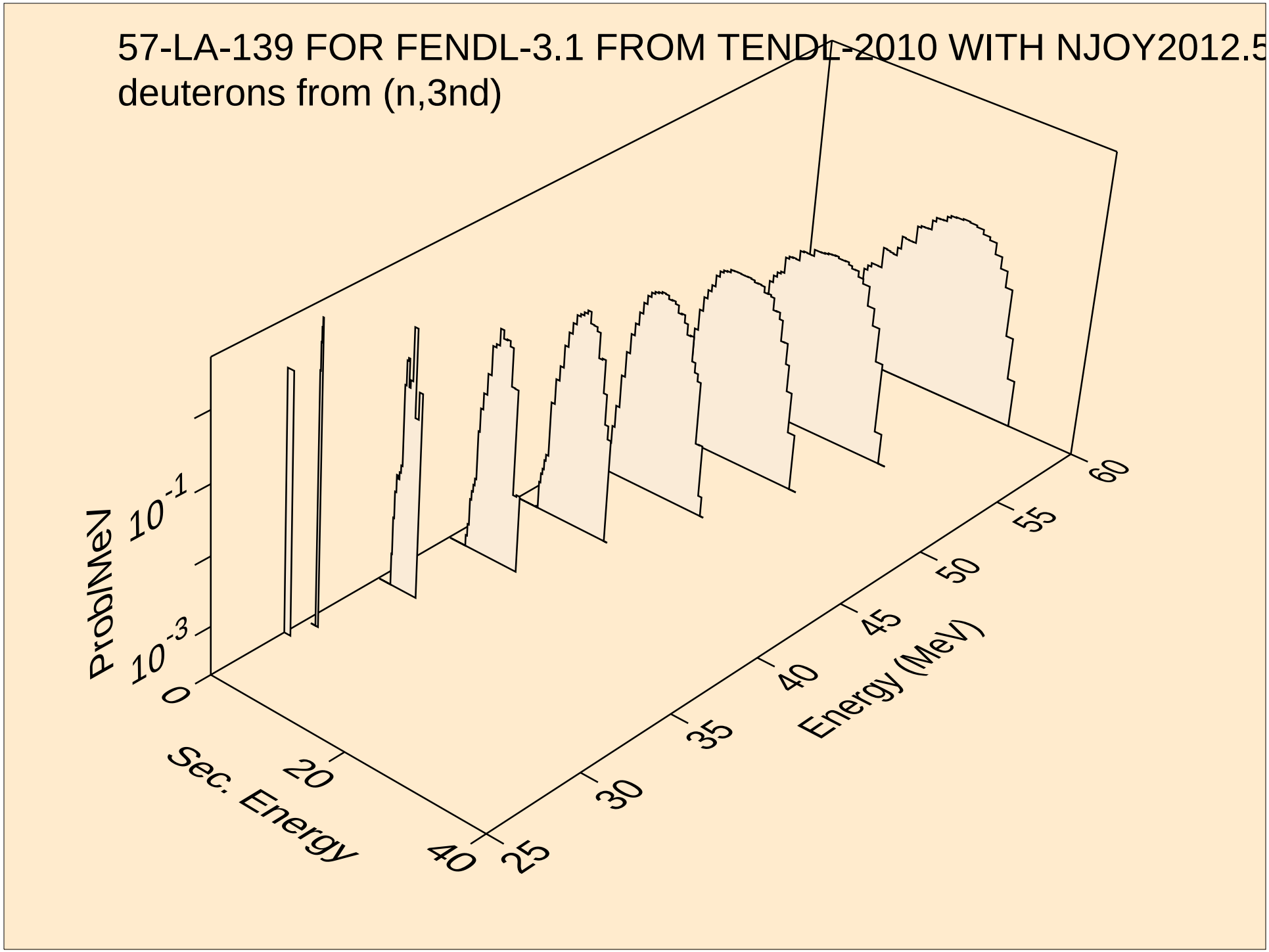

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
deuterons from (n,2nd)
Prob/MeV
10-1
10-3
0
Sec. Energy
20
40
10
20
30
40
50
60
Energy (MeV)

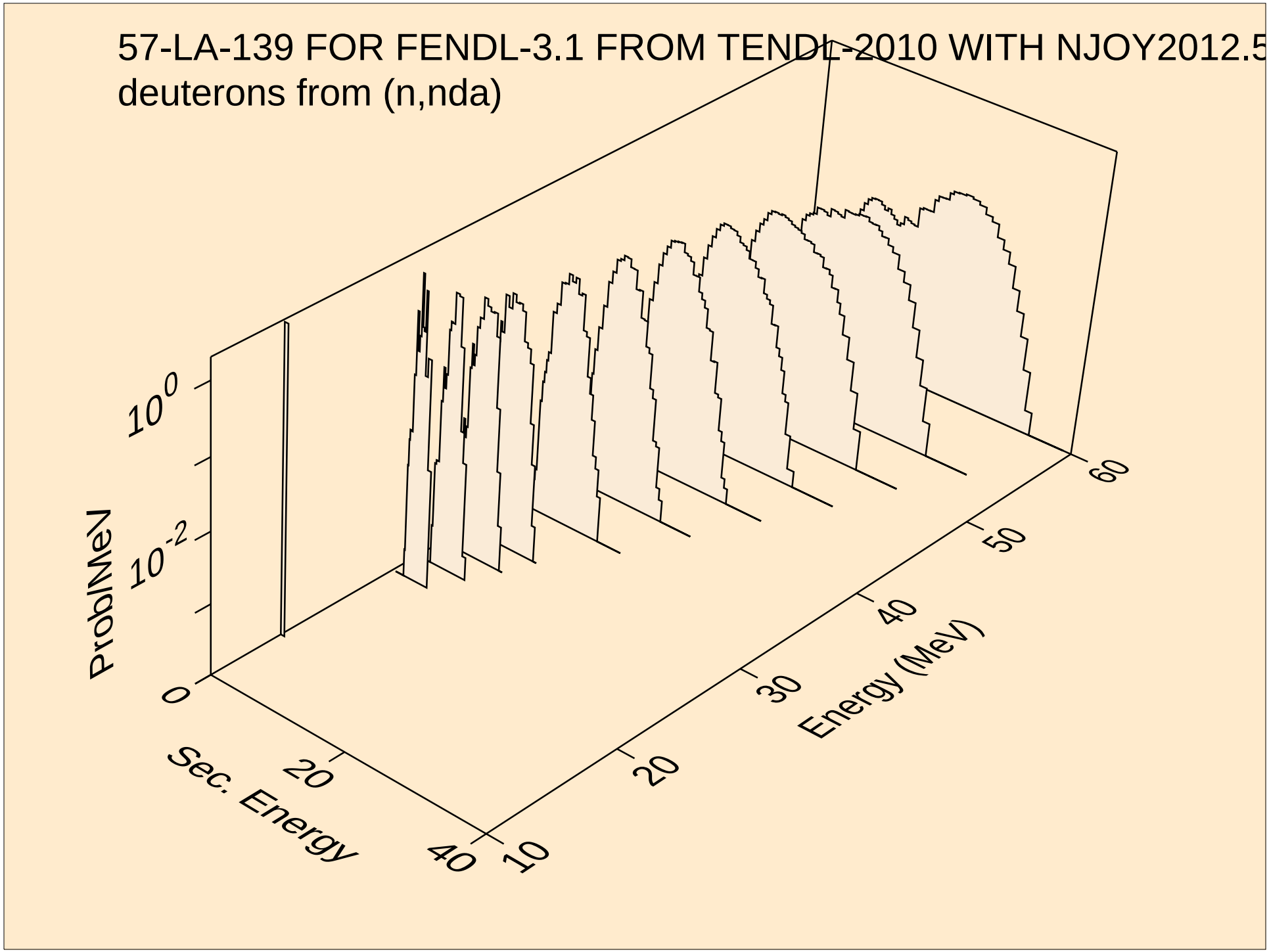

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
deuterons from (n,n*)d
Prob/MeV
10-1
10-3
0
Sec. Energy
20
40
60
10
20
30
40
50
60
Energy (MeV)

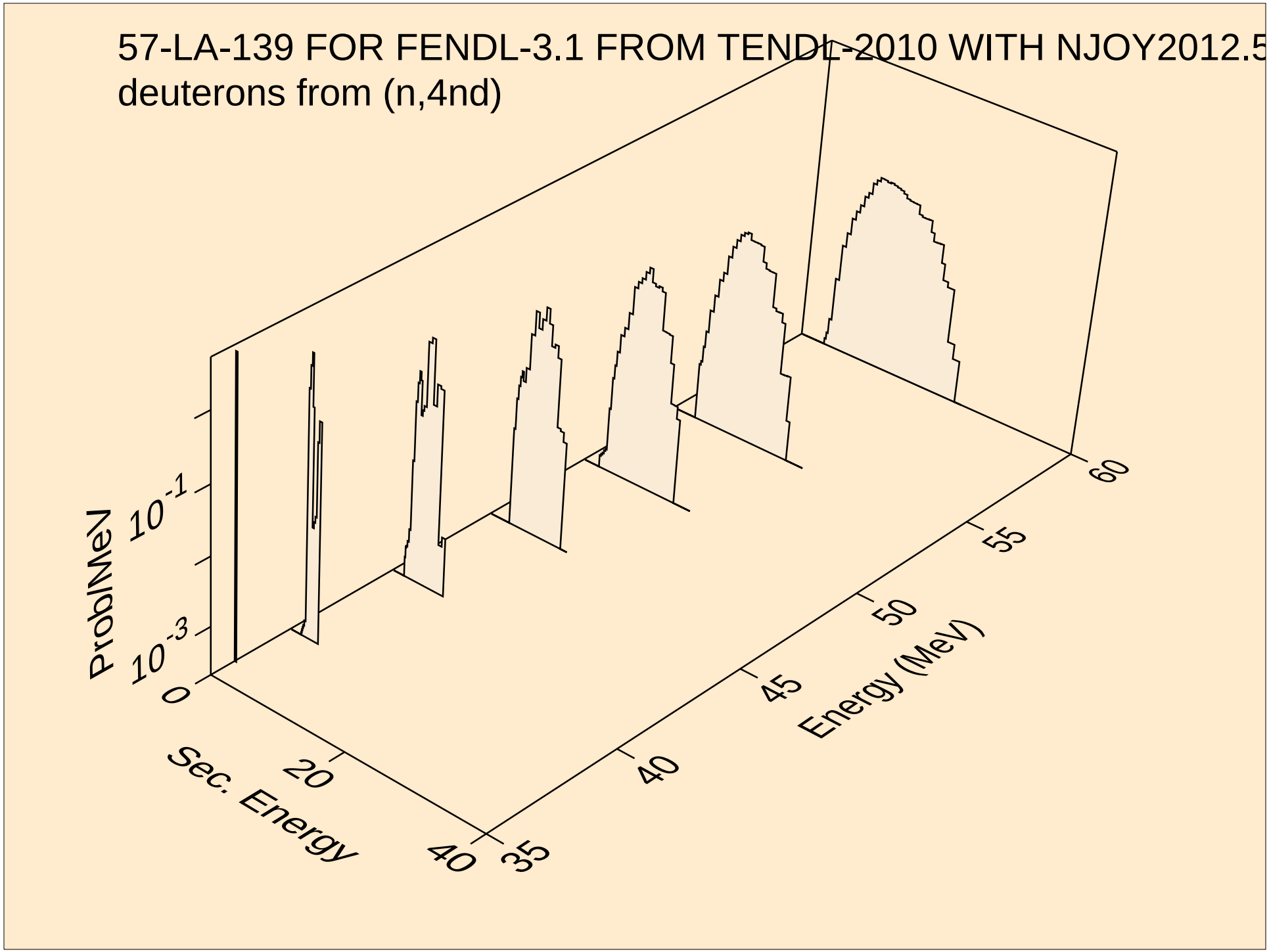

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
deuterons from (n,d)
Prob/MeV
10-1
10-3
0
Sec. Energy
50
100
0
10
20
30
40
50
60
Energy (MeV)

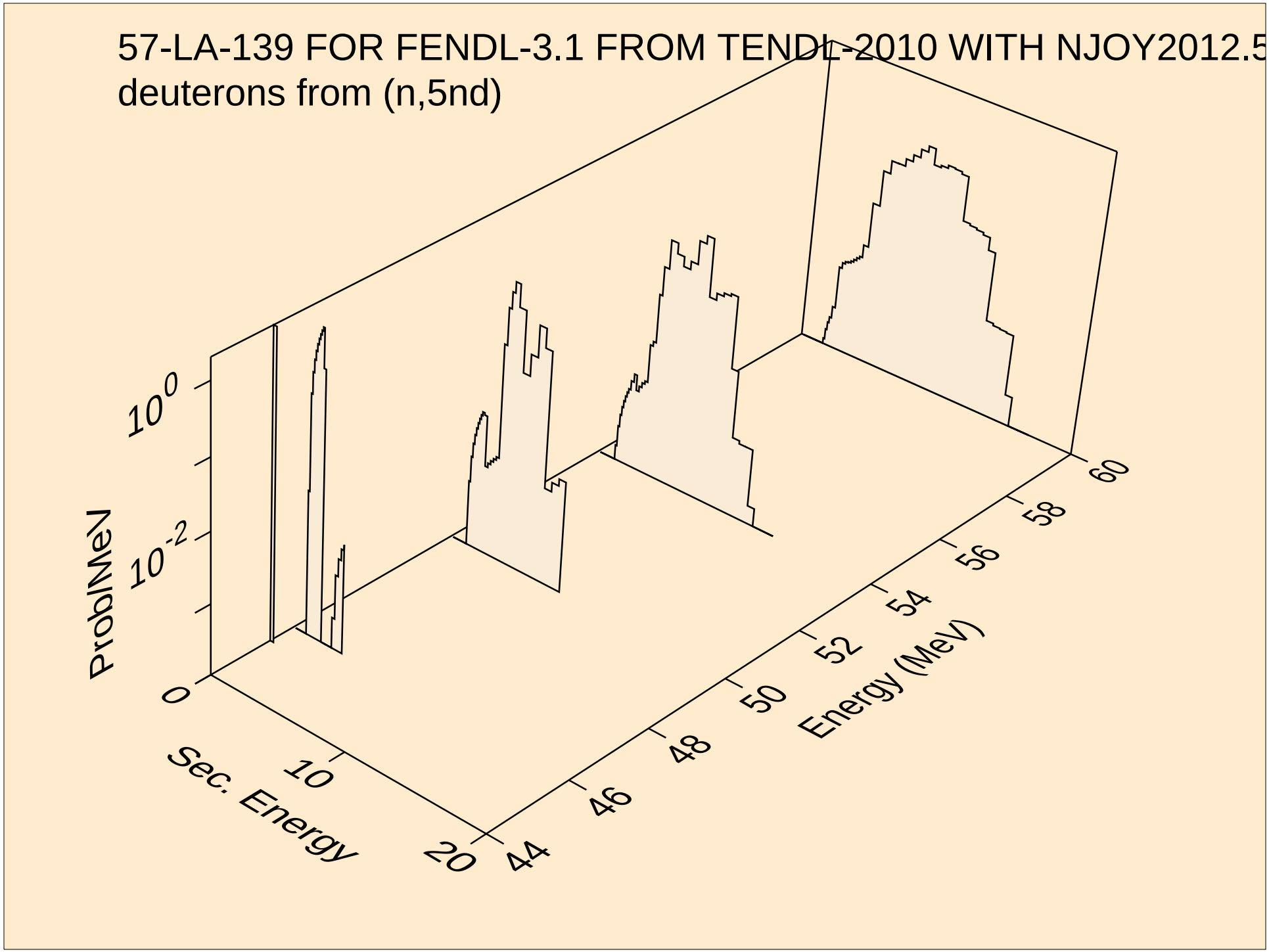

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
deuterons from (n,pd)
Prob/MeV
10^{0}
10^{-2}
0
Sec. Energy
20
40
10
20
30
Energy (MeV)
40
50
60

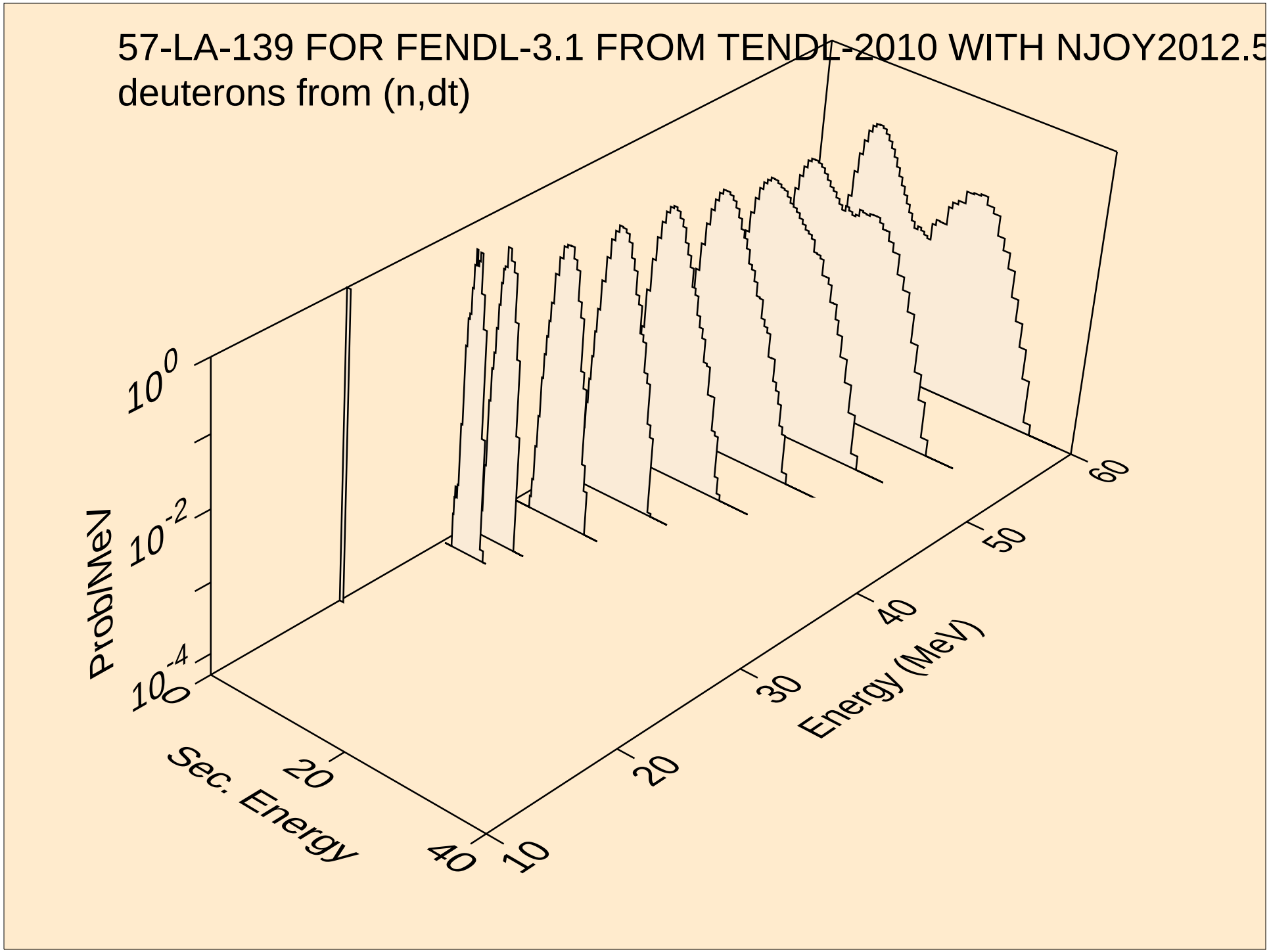

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
deuterons from (n,da)
Prob/MeV
10^0
10^-2
0
20
40
60
Sec. Energy
0
10
20
30
40
50
60
Energy (MeV)

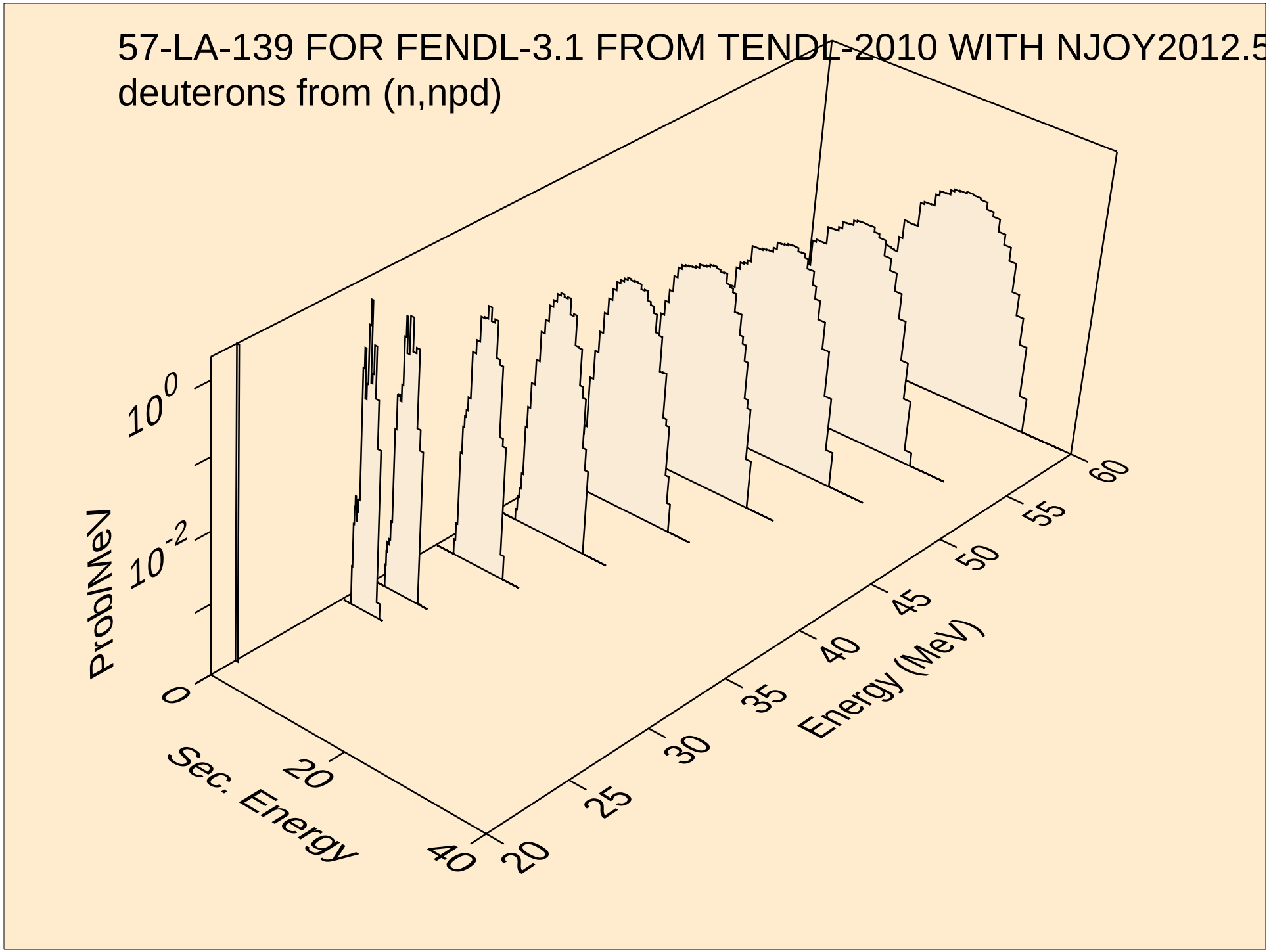

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
deuterons from (n,3nd)
Prob/MeV
10-1
10-3
0
Sec. Energy
20
40
25
30
35
40
45
50
55
60
Energy (MeV)

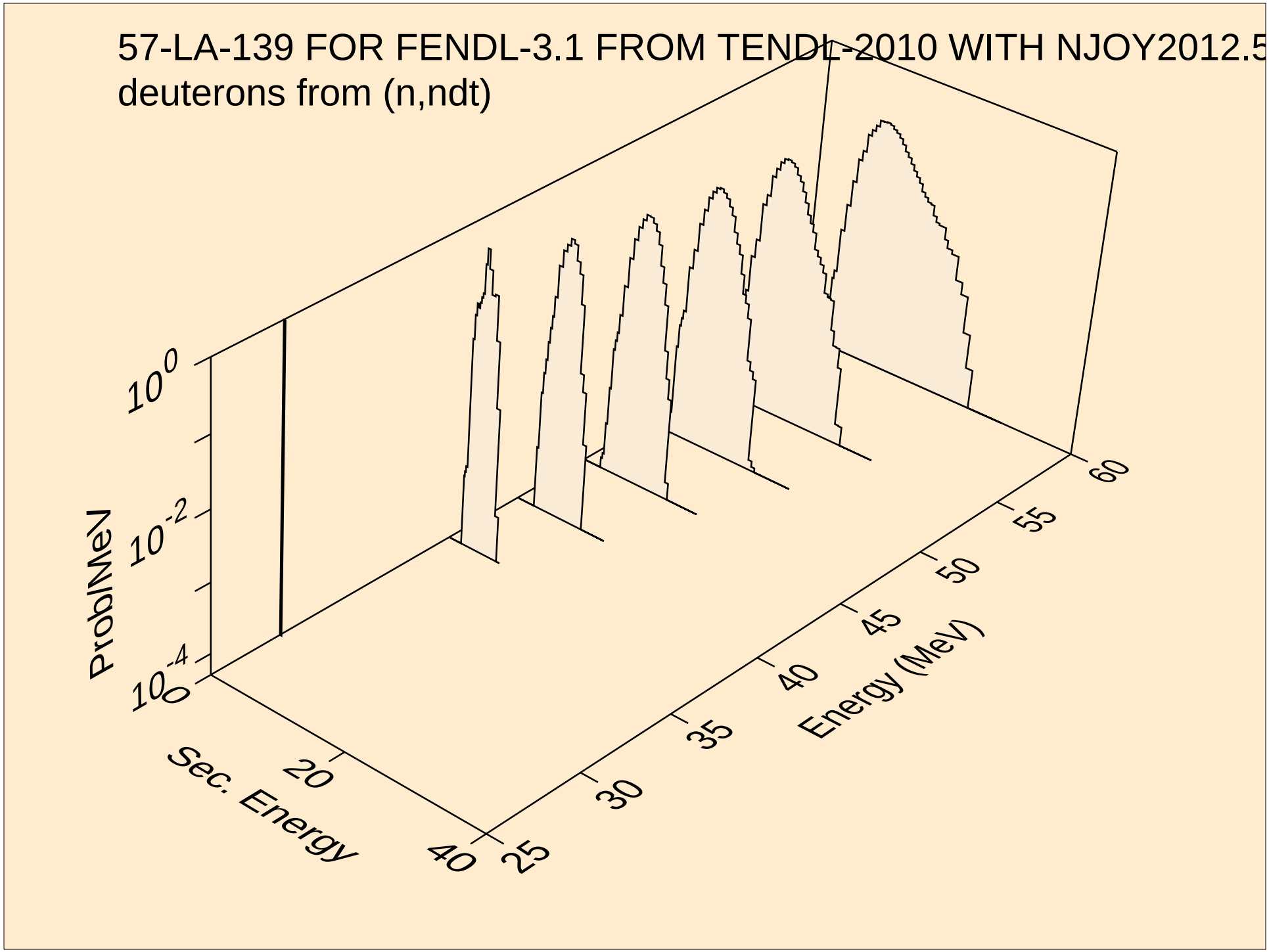

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
deuterons from (n,nda)
Prob/MeV
10^{0}
10^{-2}
0
Sec. Energy
20
40
10
20
30
Energy (MeV)
40
50
60

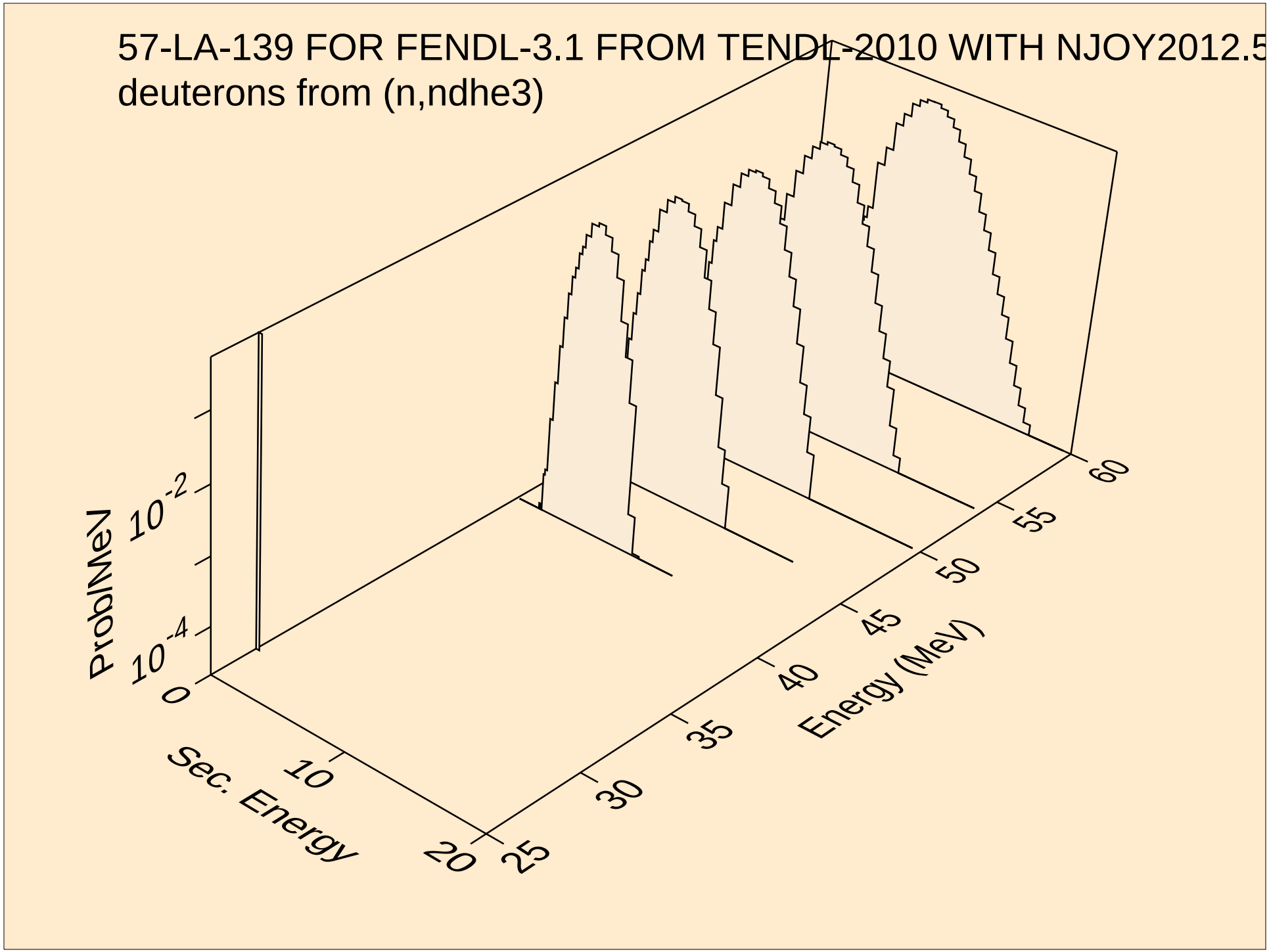

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
deuterons from (n,4nd)
Prob/MeV
10-1
10-3
0
Sec. Energy
20
40
35
40
45
50
55
60
Energy (MeV)

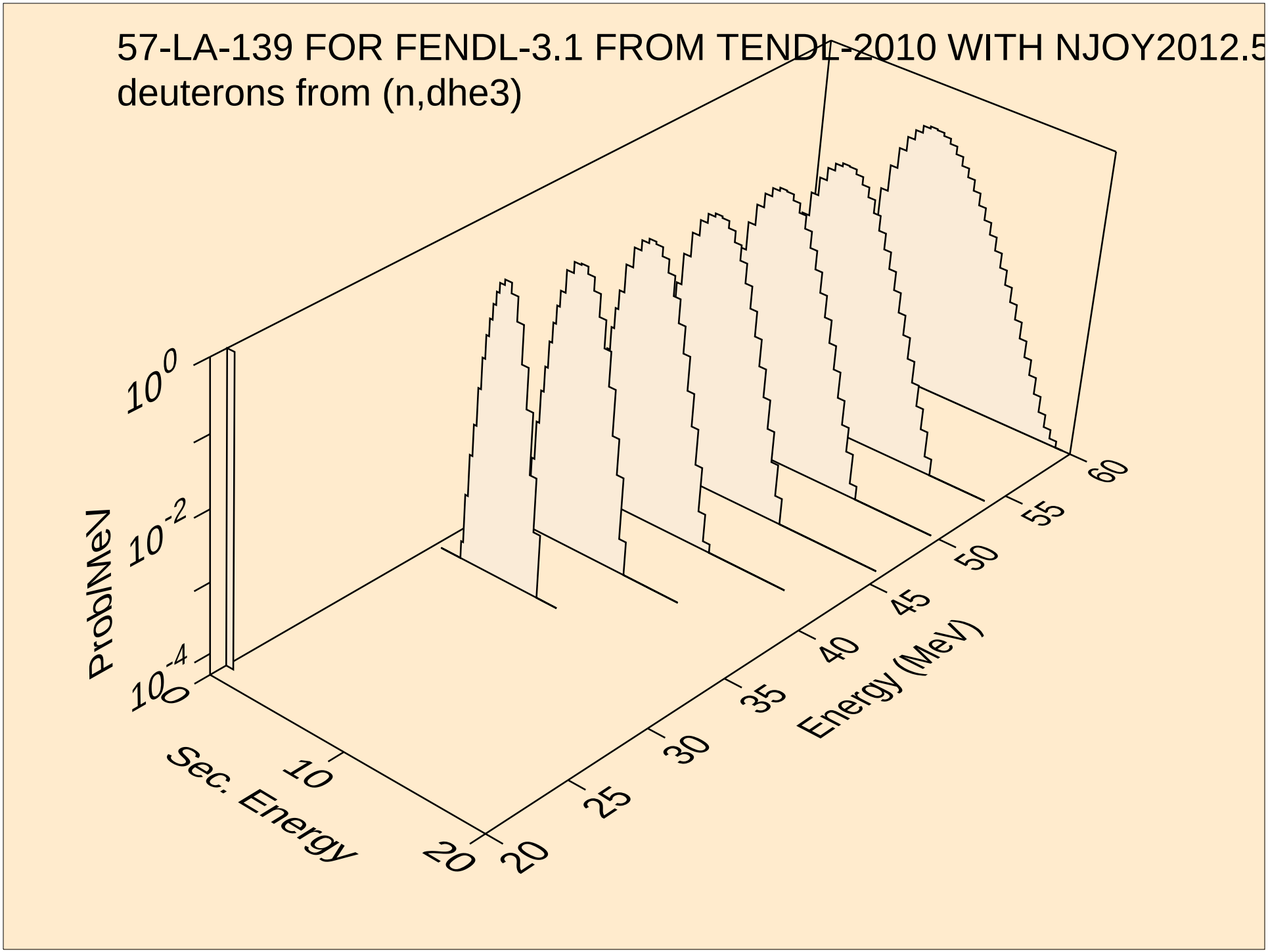

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
deuterons from (n,5nd)
Prob/MeV
10^0
10^-2
0
Sec. Energy
10
20
Energy (MeV)
44
46
48
50
52
54
56
58
60

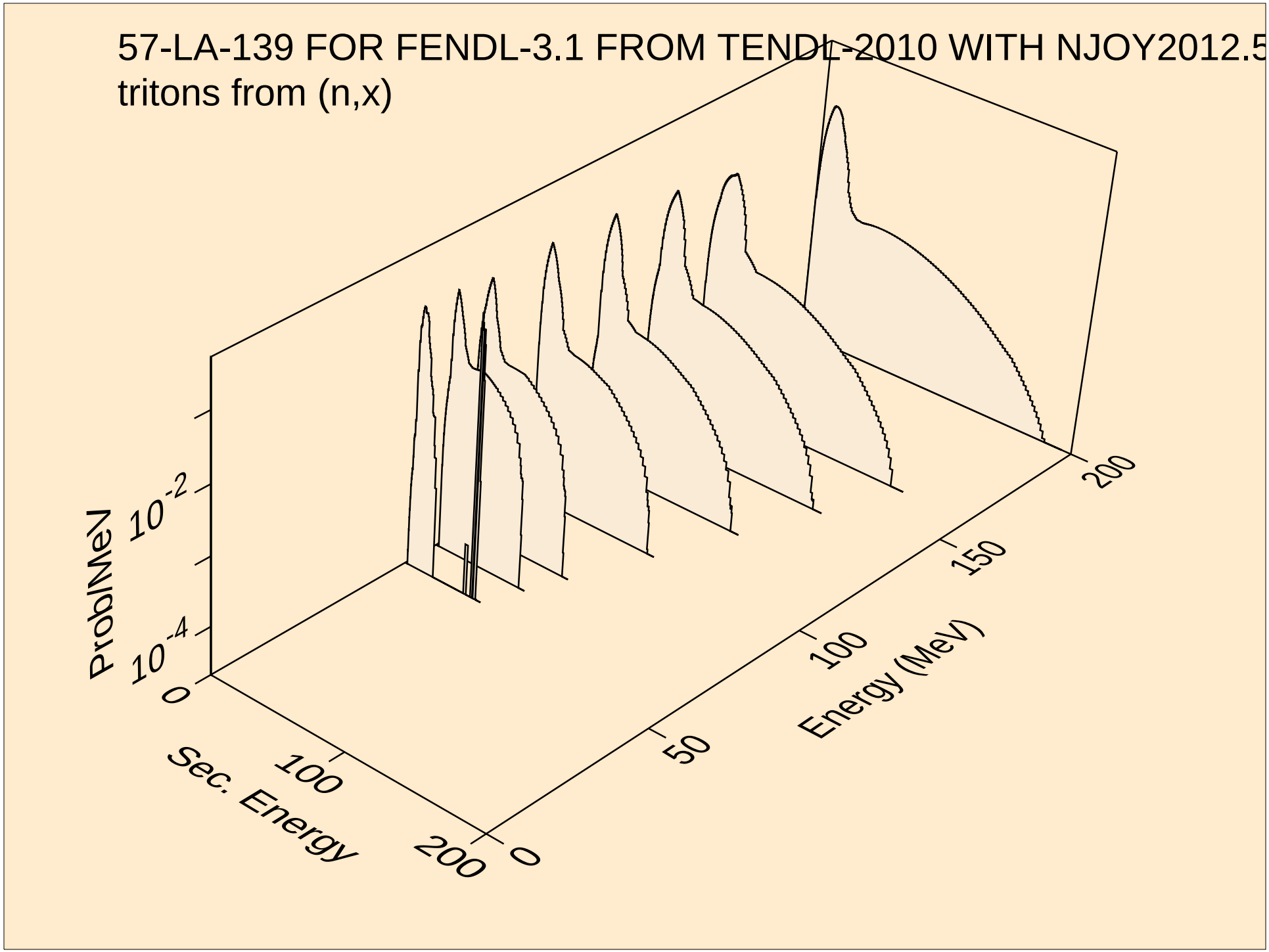

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
deuterons from (n,dt)
Prob/MeV
10^0
10^-2
10^-4
Sec. Energy
10
20
40
Energy (MeV)
20
30
40
50
60

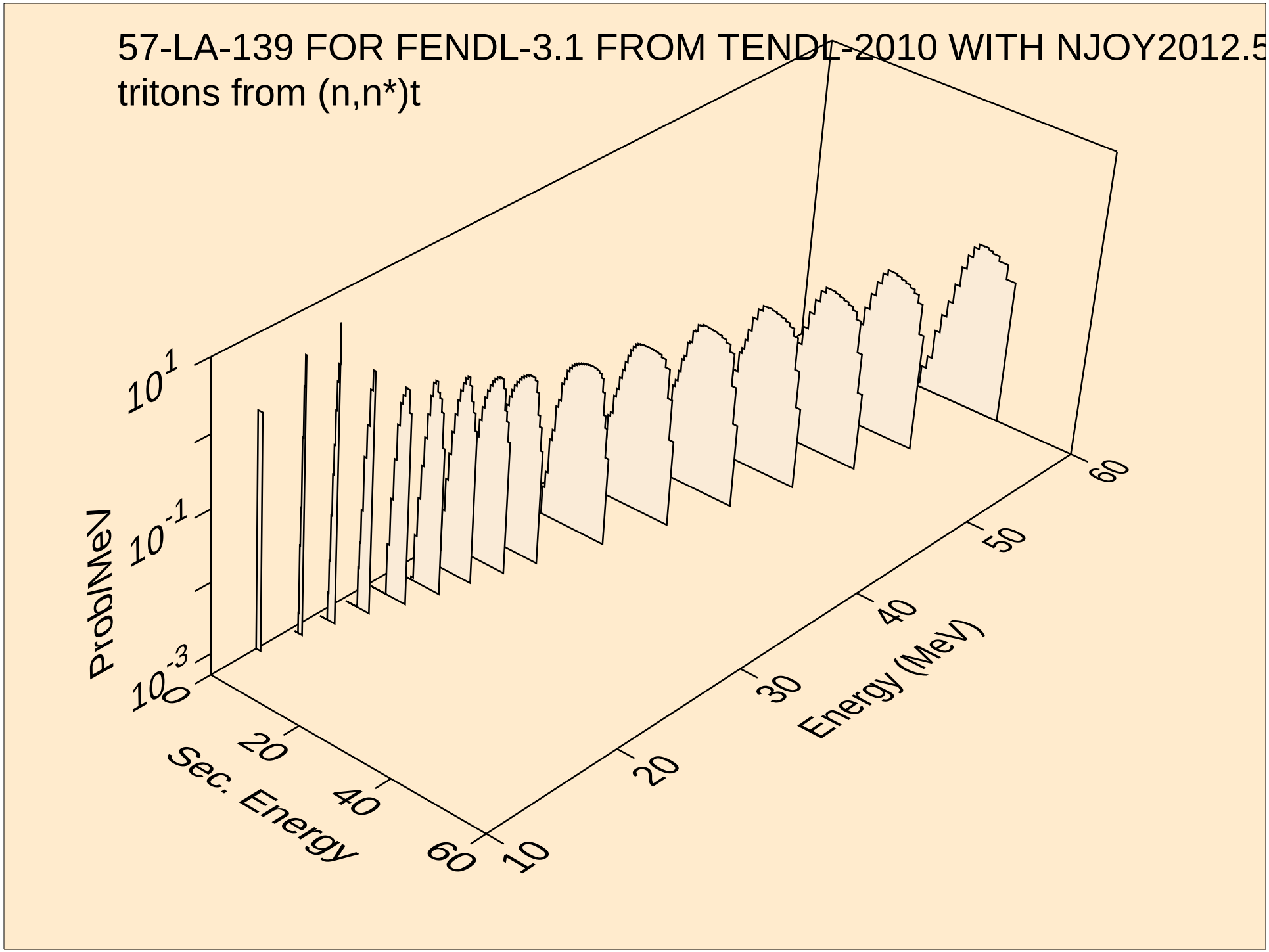

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
deuterons from (n,npd)
Prob/MeV
10^{0}
10^{-2}
0
Sec. Energy
20
40
20
25
30
35
40
45
50
55
60
Energy (MeV)

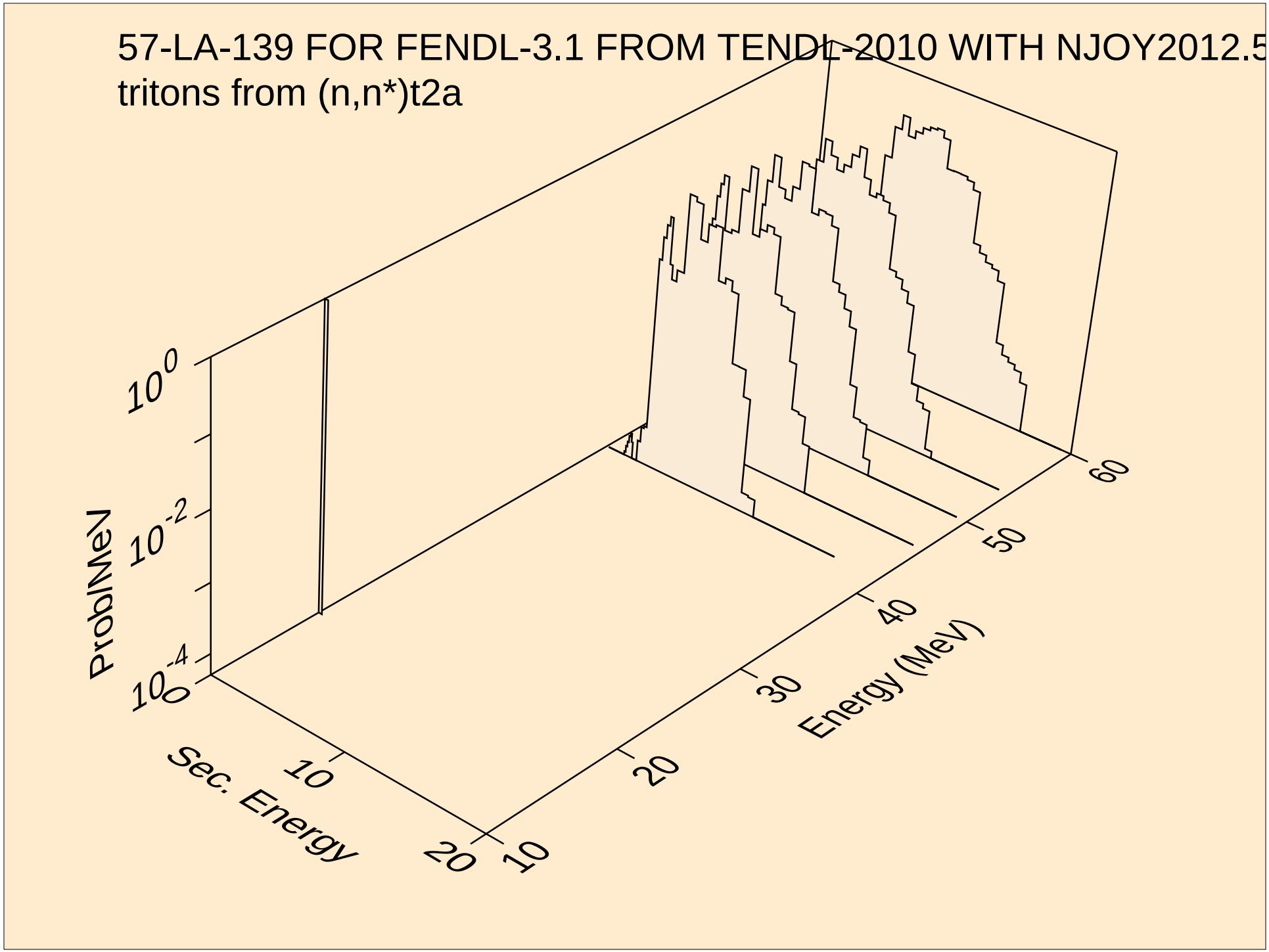

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
deuterons from (n,ndt)
Prob/MeV
10^{0}
10^{-2}
10^{-4}
0
20
40
Sec. Energy
25
30
35
40
45
50
55
60
Energy (MeV)

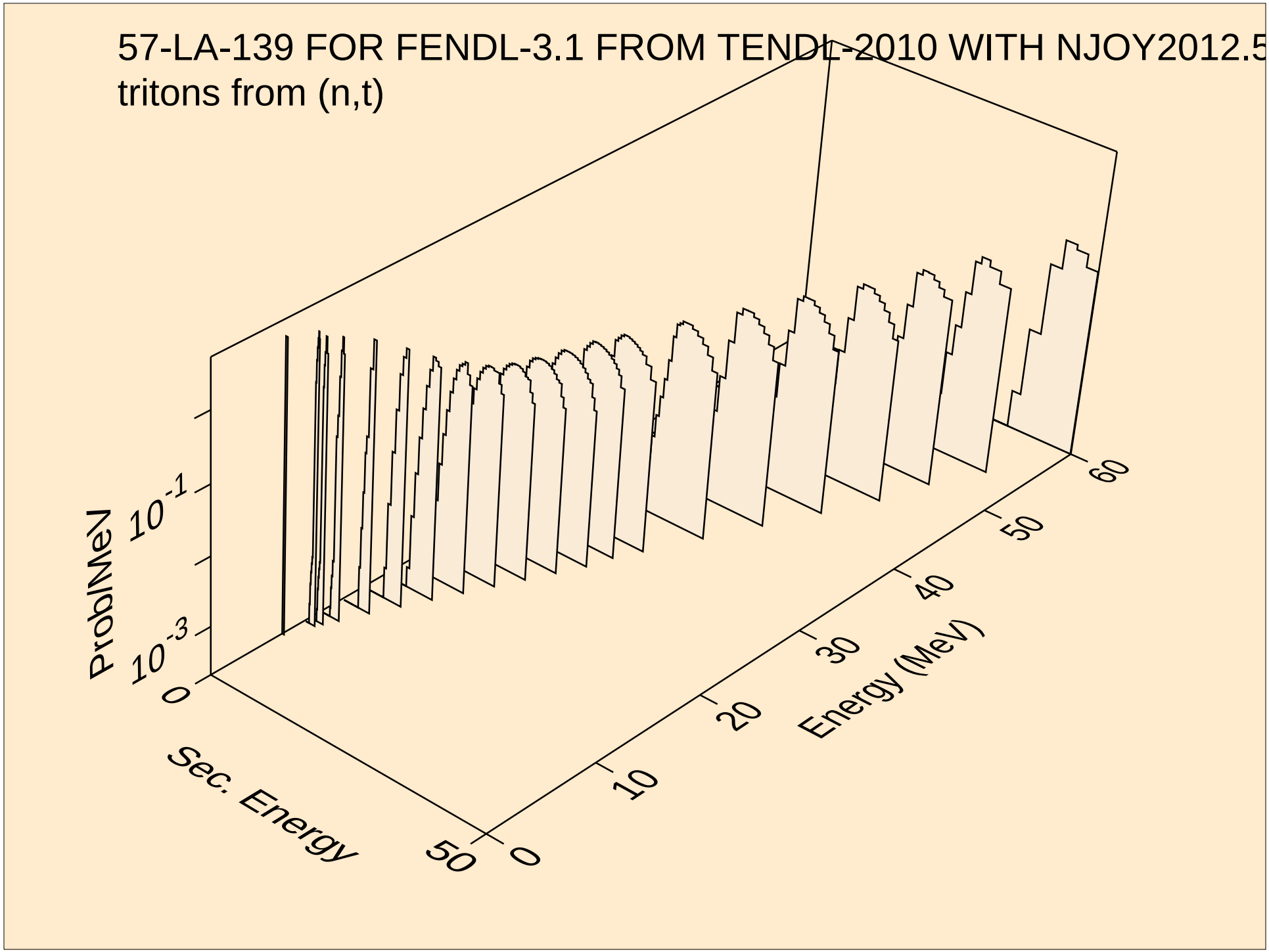

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
deuterons from (n,ndhe3)
Prob/MeV
10-2
10-4
0
Sec. Energy
10
20
25
30
35
40
45
50
55
60
Energy (MeV)

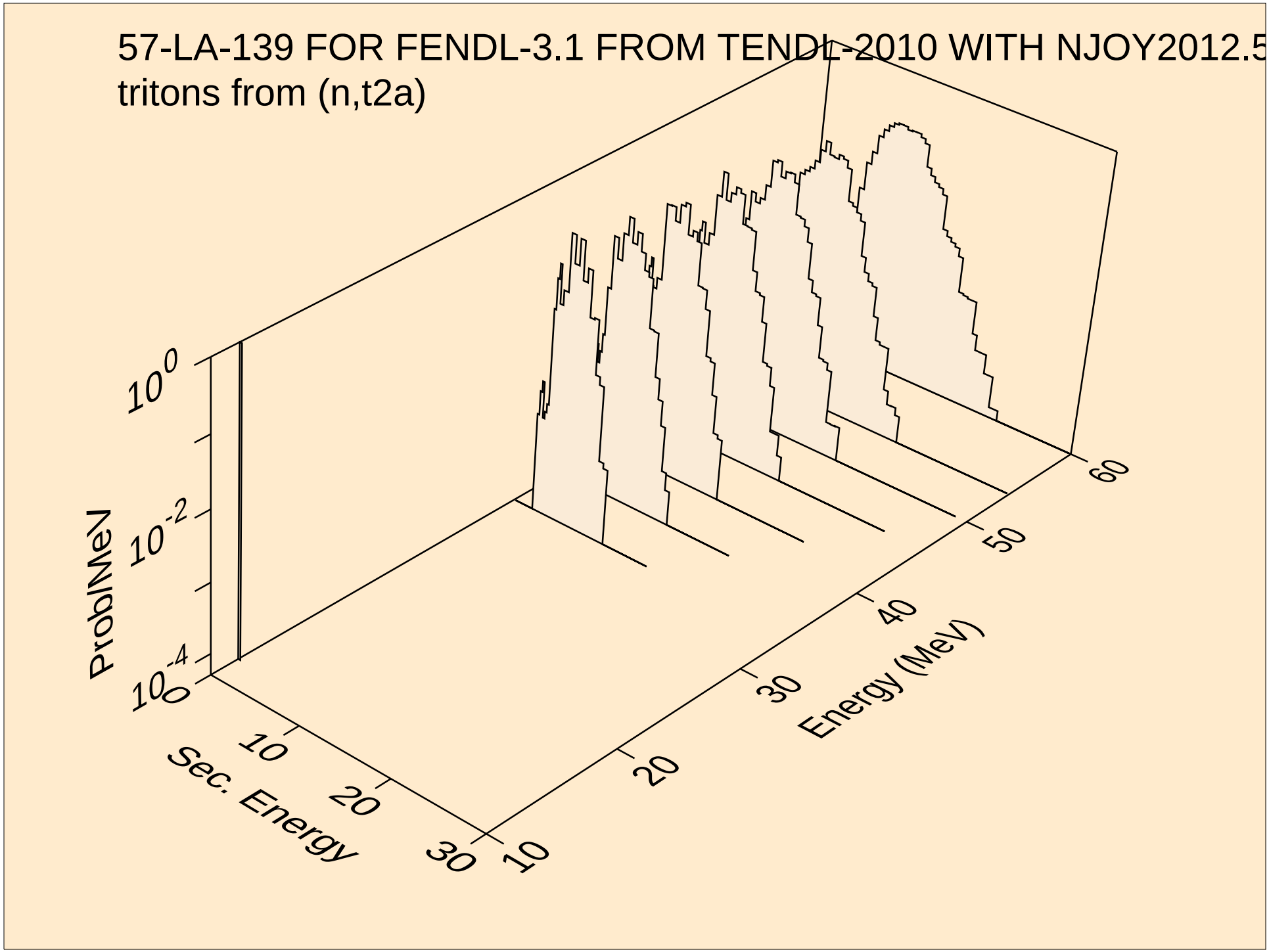

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
deuterons from (n,dhe3)
Prob/MeV
10^{0}
10^{-2}
10^{-4}
0
10
20
Sec. Energy
20
25
30
35
40
45
50
55
60
Energy (MeV)

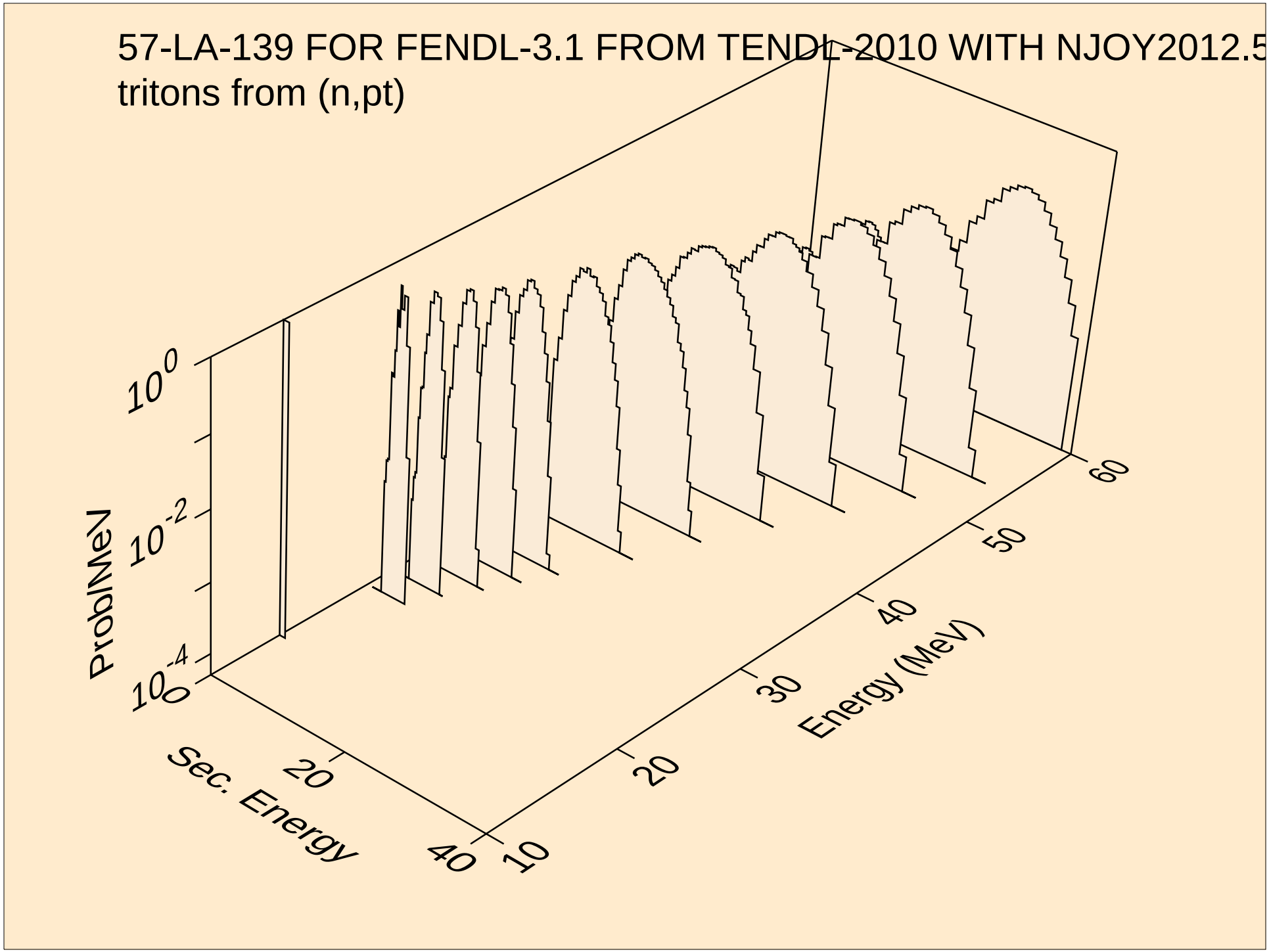

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
tritons from (n,x)
Prob/MeV
10-2
10-4
0
Sec. Energy
100
200
0
50
100
150
200
Energy (MeV)

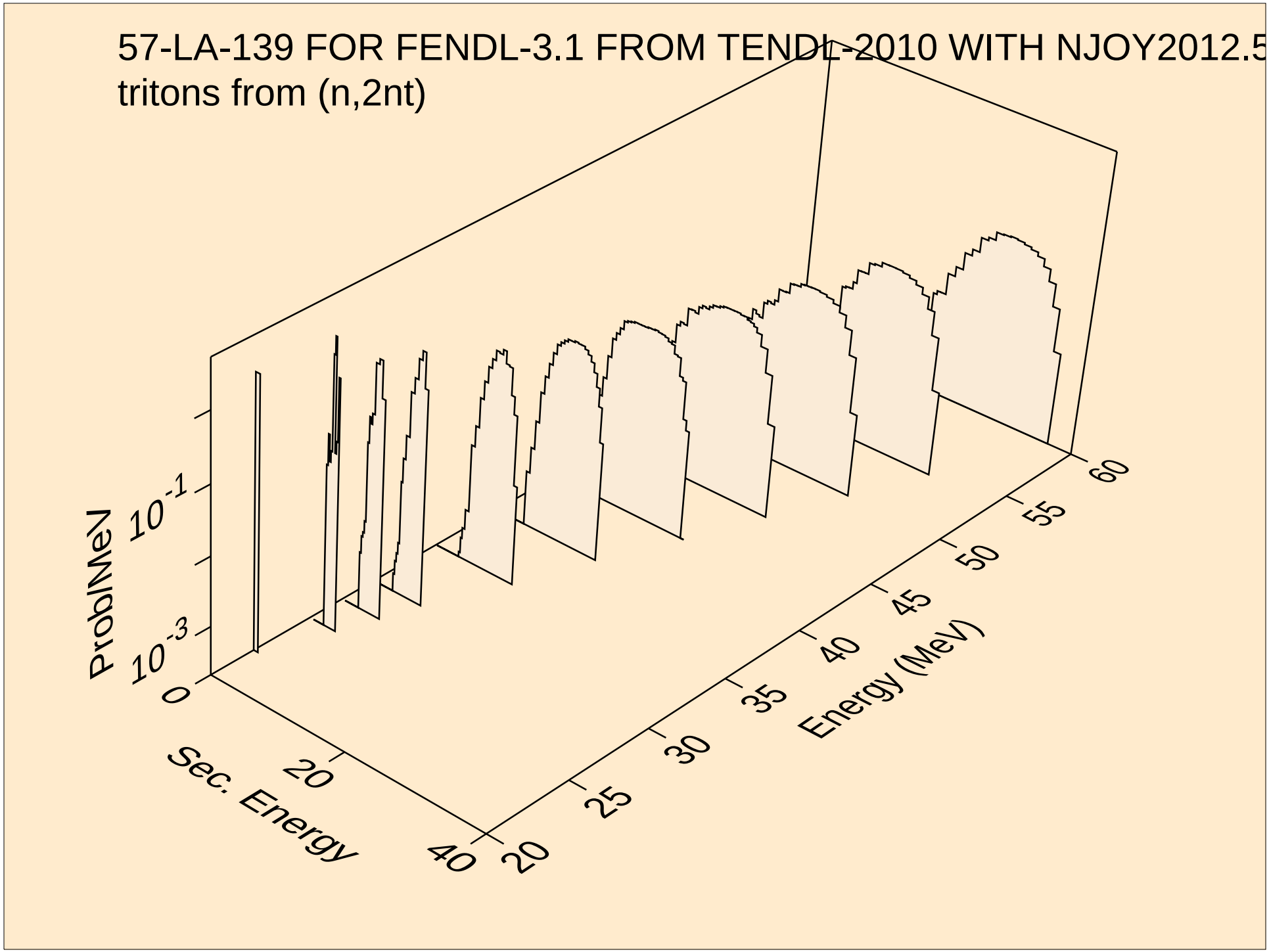

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
tritons from (n,n*)t
Prob/MeV
10^1
10^-1
10^-3
0
20
40
60
Sec. Energy
10
20
30
40
50
60
Energy (MeV)

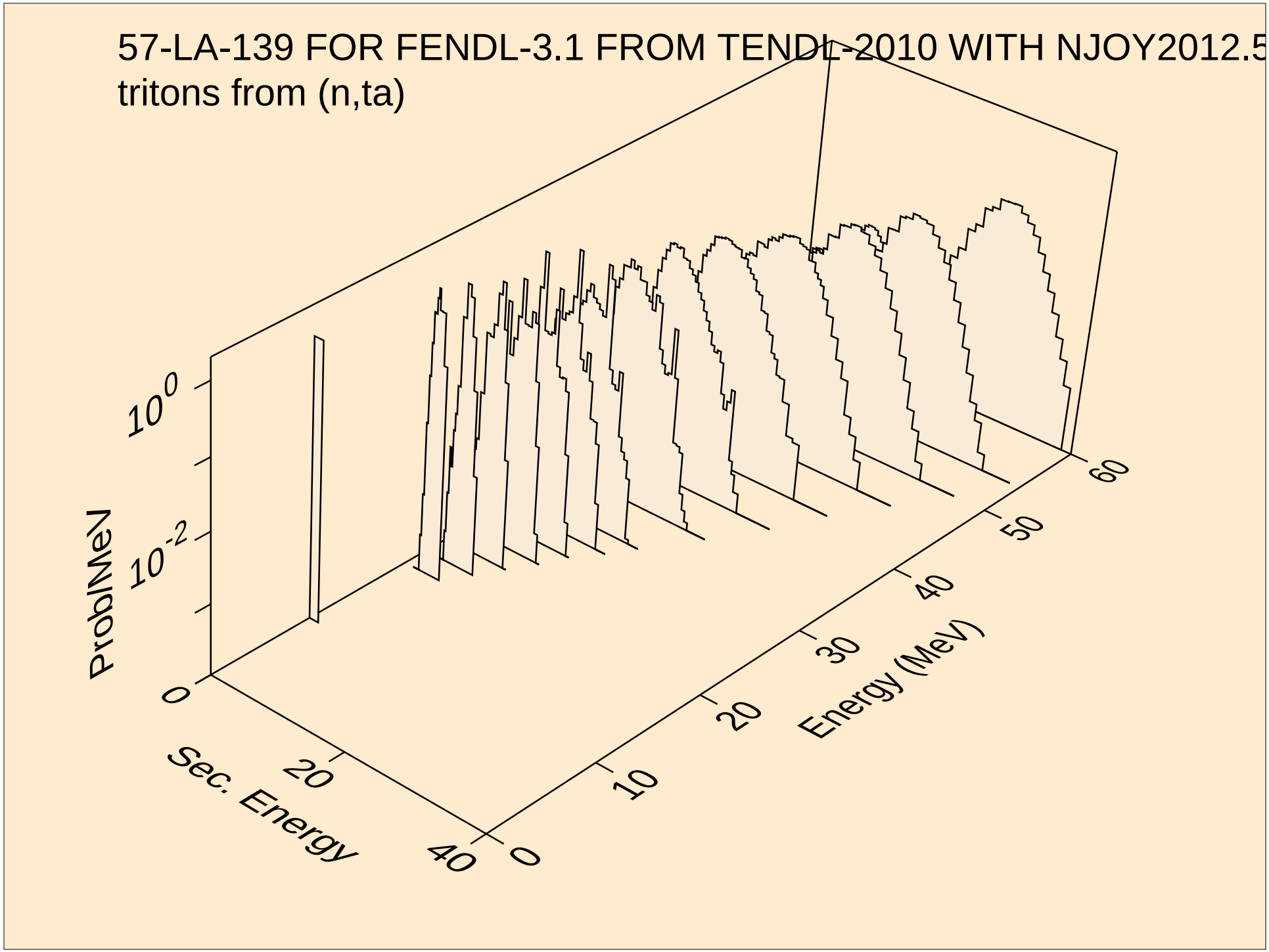

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
tritons from (n,n*)t2a
Prob/MeV
10^0
10^-2
10^-4
Sec. Energy
10
20
Energy (MeV)
10
20
30
40
50
60

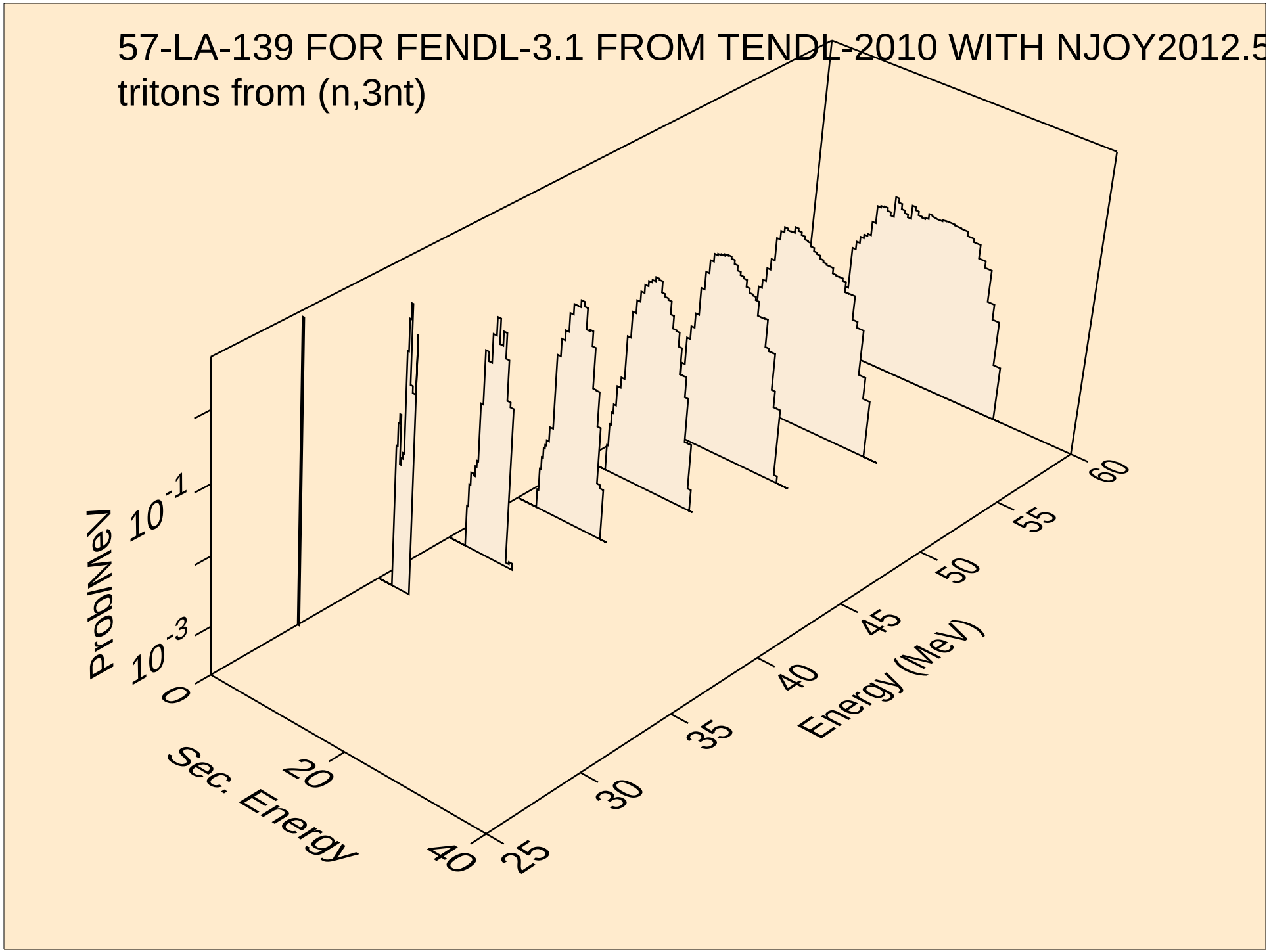

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
tritons from (n,t)
Prob/MeV
10-1
10-3
0
Sec. Energy
50
0
10
20
30
40
50
60
Energy (MeV)

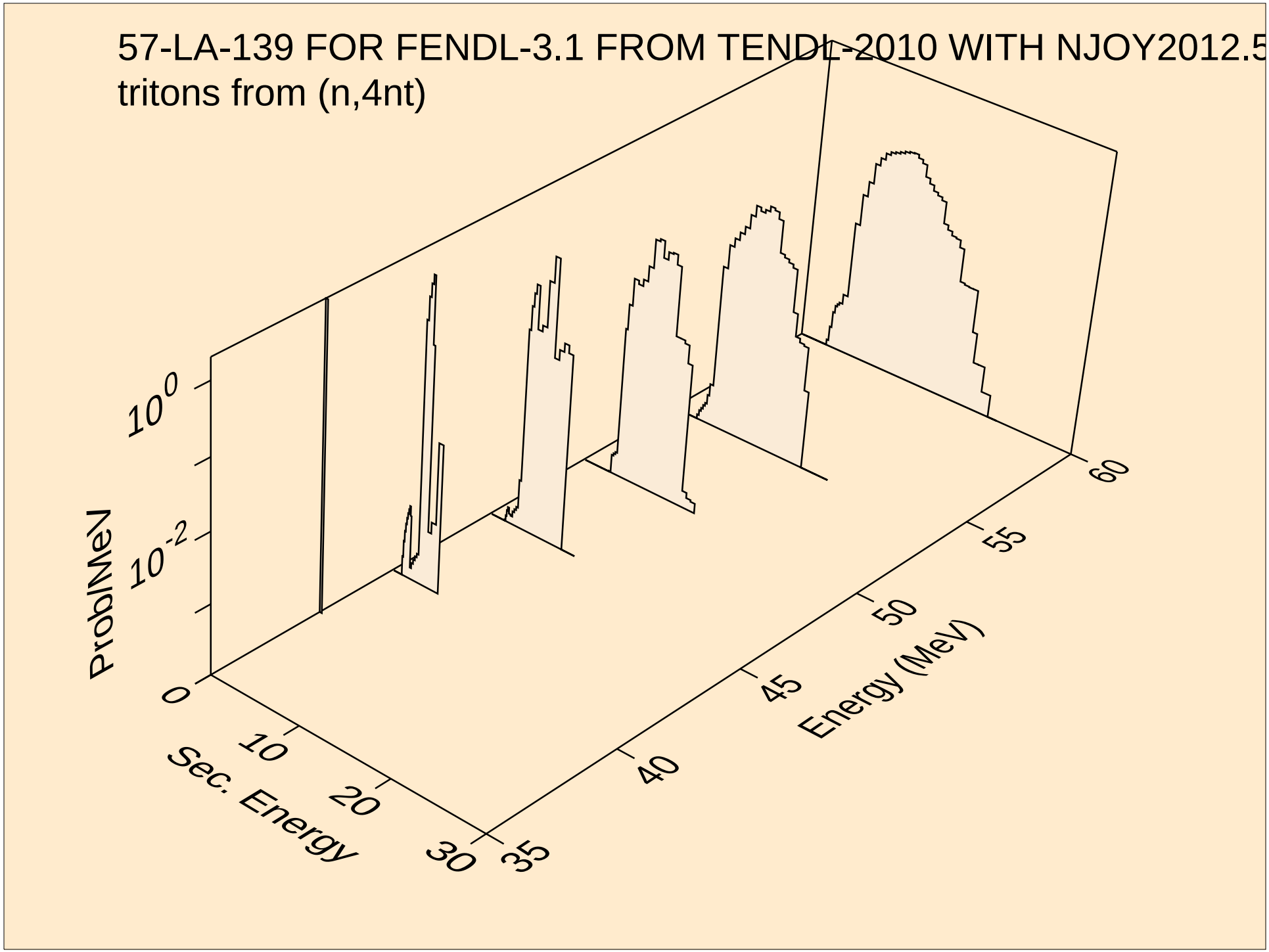

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
tritons from (n,t2a)
Prob/MeV
10^0
10^-2
10^-4
0
10
20
30
Sec. Energy
10
20
30
40
50
60
Energy (MeV)

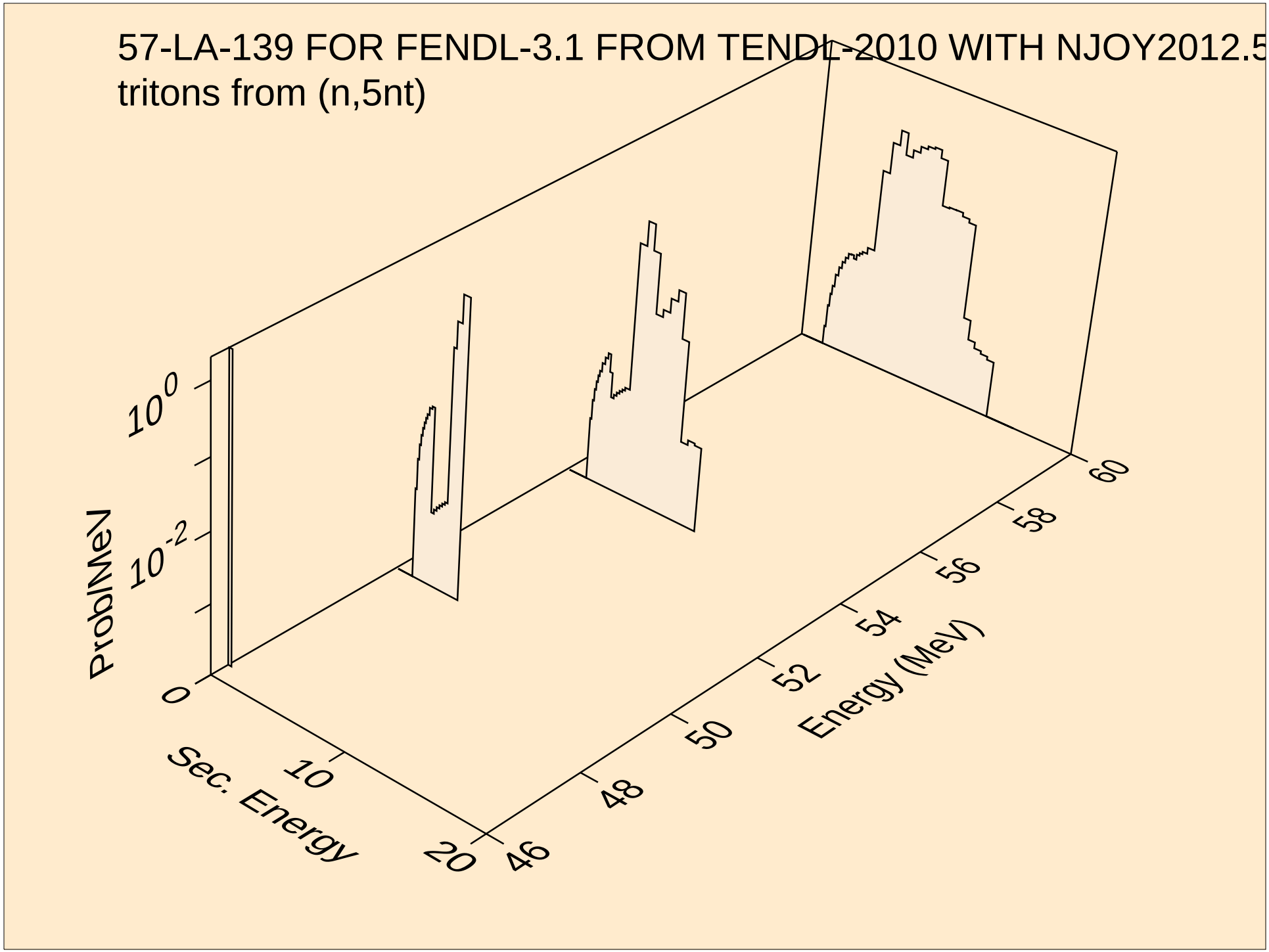

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
tritons from (n,pt)
Prob/MeV
10^0
10^-2
10^-4
0
Sec. Energy
20
40
10
20
30
40
50
60
Energy (MeV)

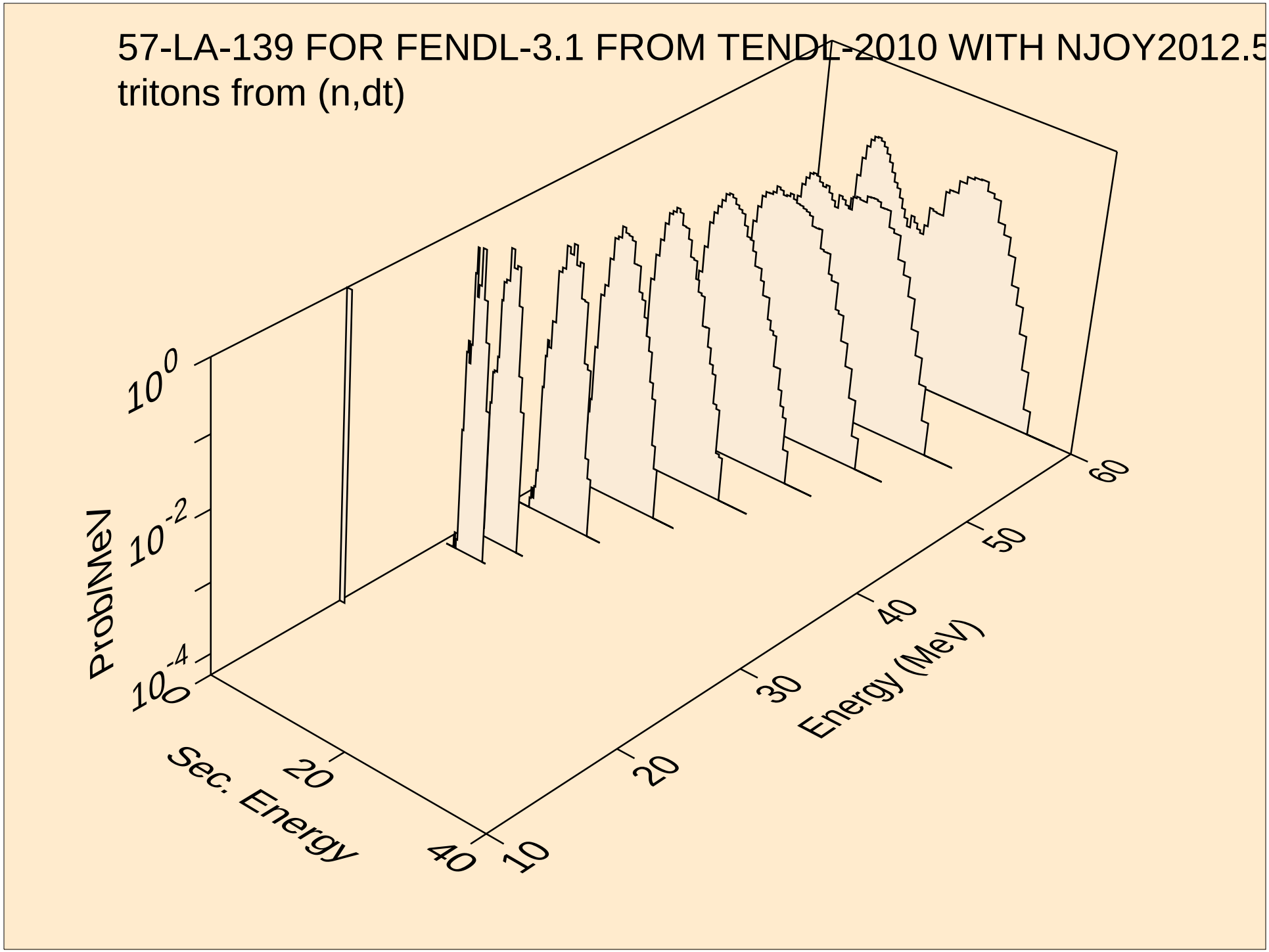

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
tritons from (n,2nt)
Prob/MeV
10-1
10-3
0
Sec. Energy
20
40
20
25
30
35
40
45
50
55
60
Energy (MeV)

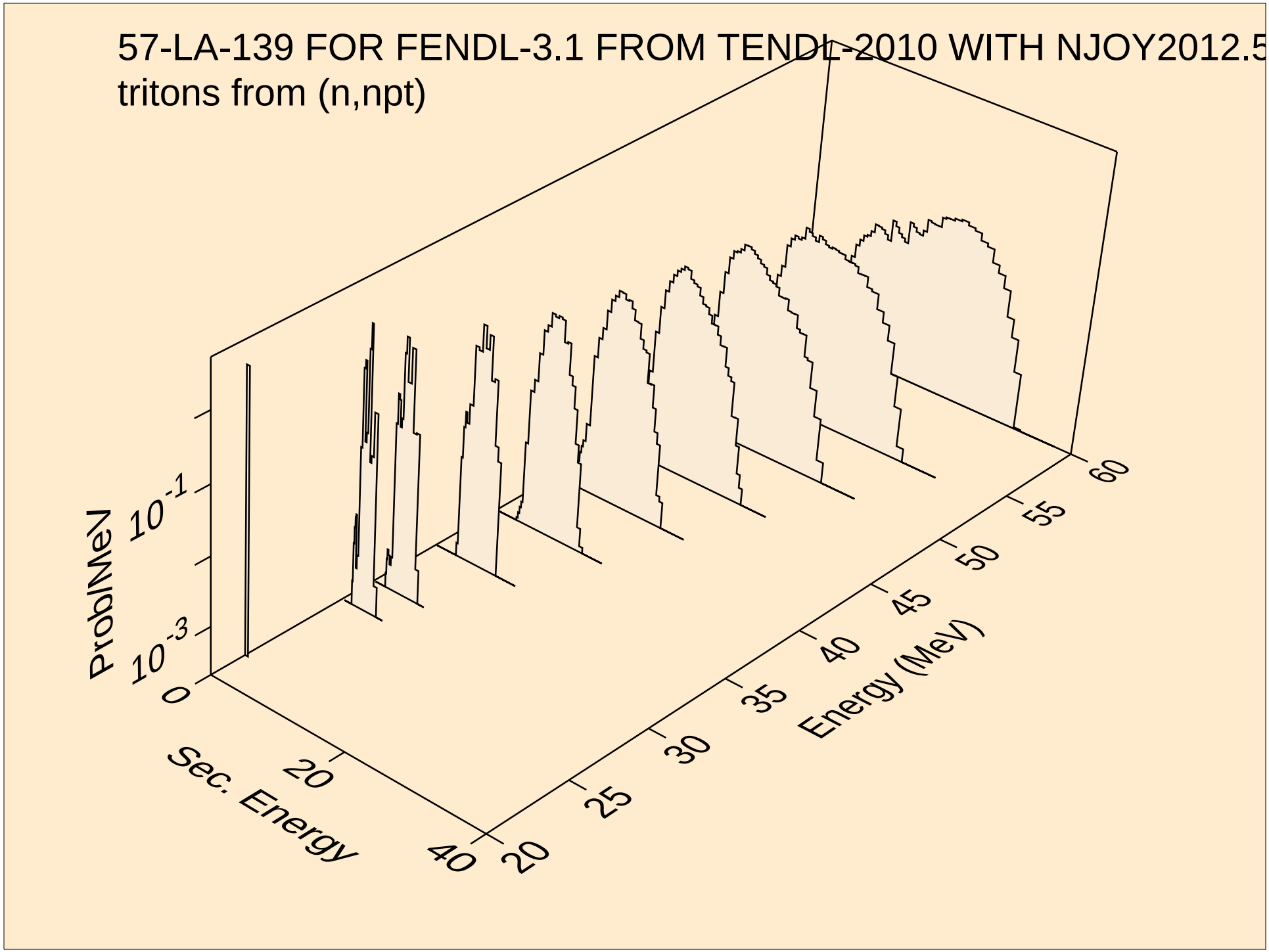

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
tritons from (n,ta)
Prob/MeV
10^{0}
10^{-2}
0
20
40
Sec. Energy
0
10
20
30
40
50
60
Energy (MeV)

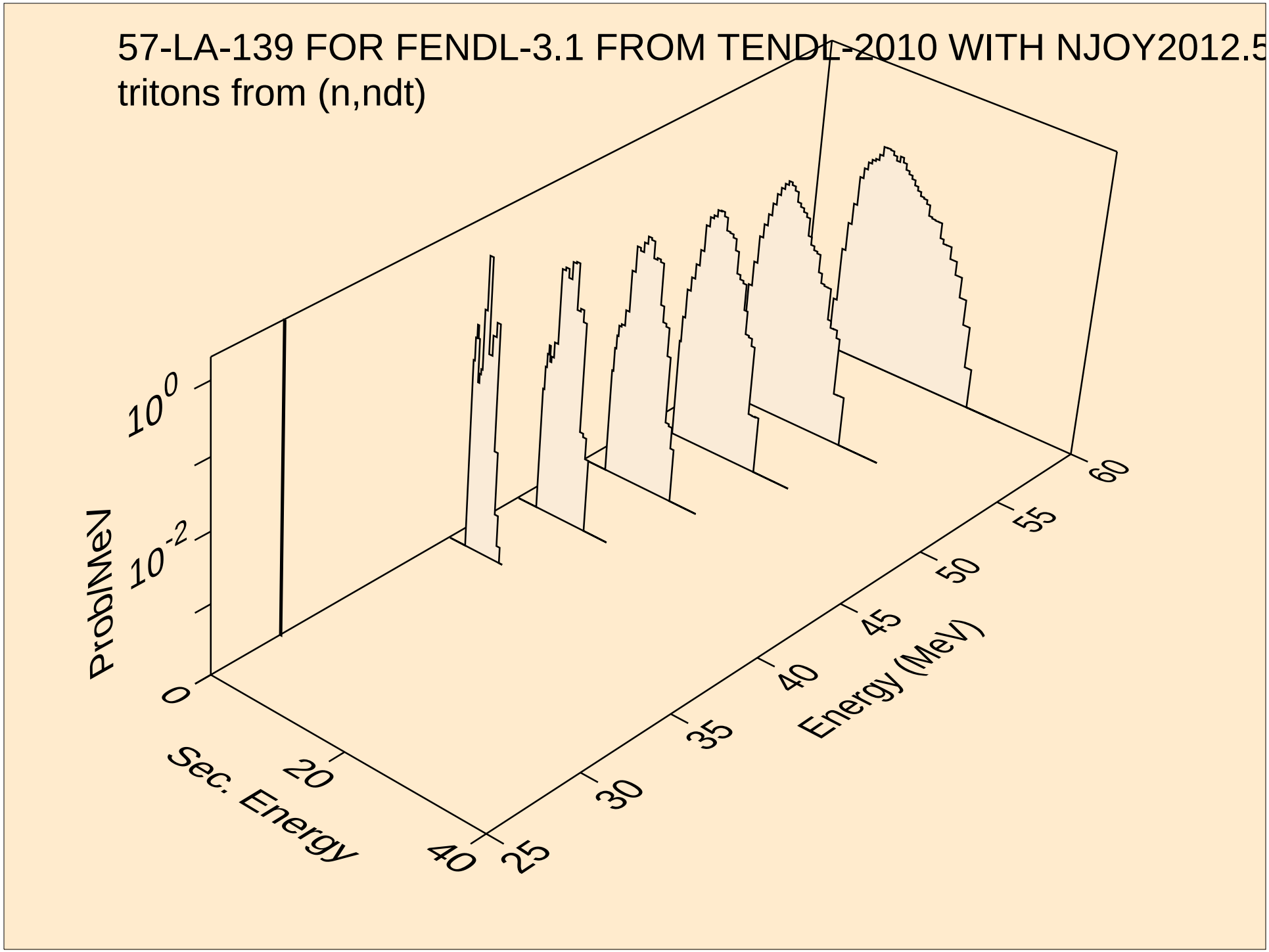

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
tritons from (n,3nt)
Prob/MeV
10-1
10-3
0
Sec. Energy
20
40
25
30
35
40
45
50
55
60
Energy (MeV)

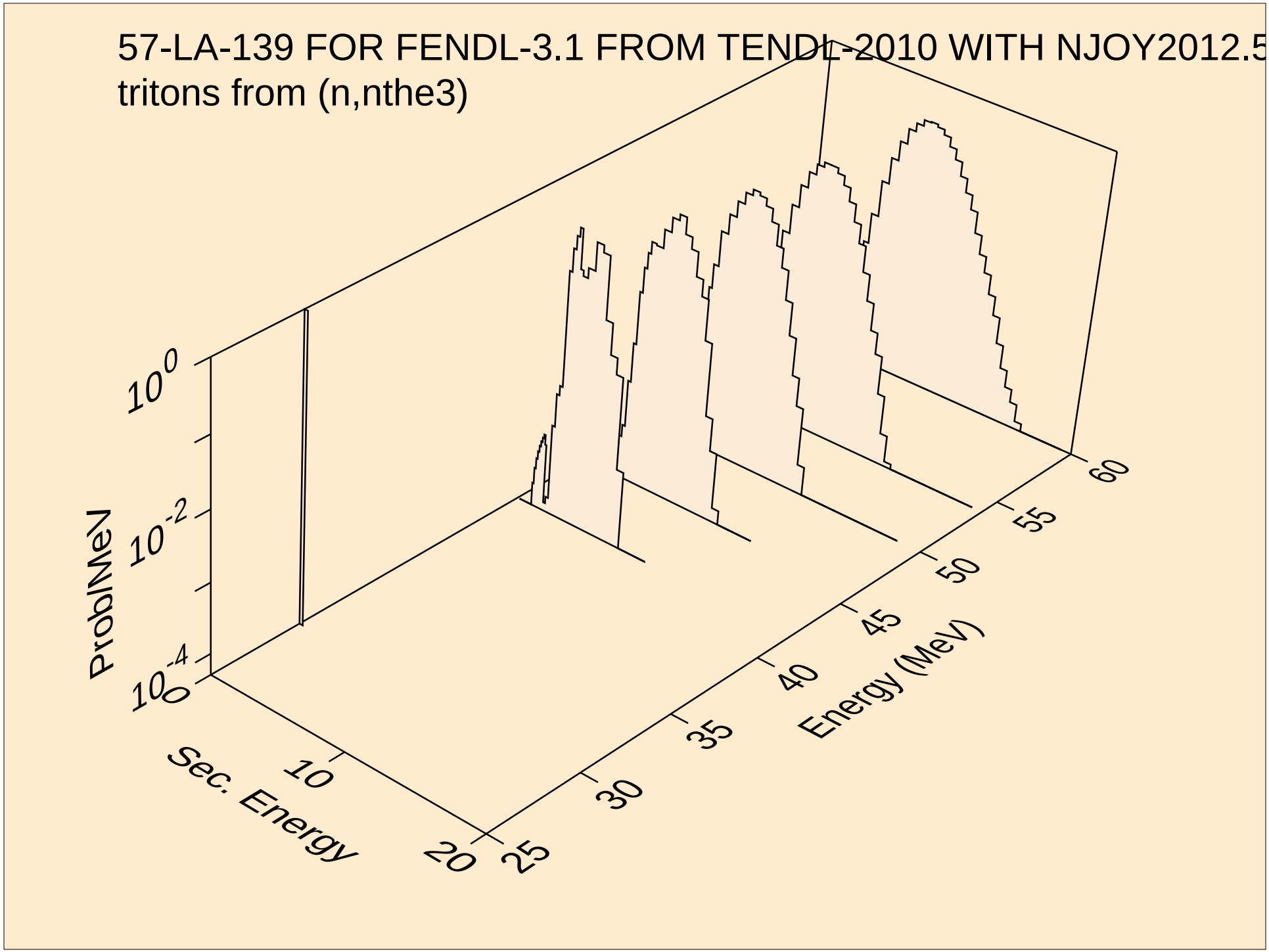

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
tritons from (n,4nt)
Prob/MeV
10^{0}
10^{-2}
0
10
20
30
35
Sec. Energy
40
45
50
55
60
Energy (MeV)

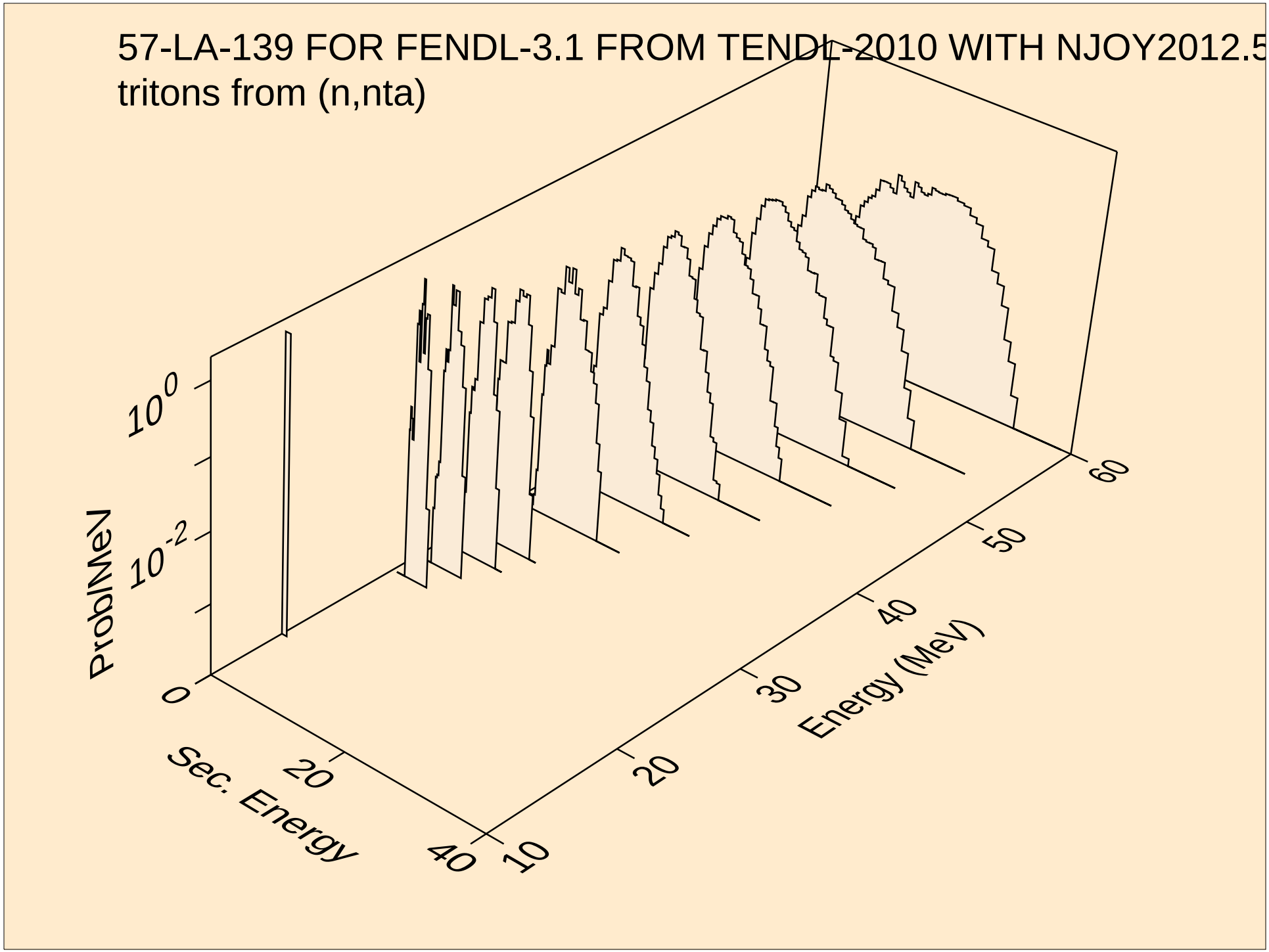

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
tritons from (n,5nt)
Prob/MeV
10^{0}
10^{-2}
0
Sec. Energy
10
20
46
48
50
52
54
56
58
60
Energy (MeV)

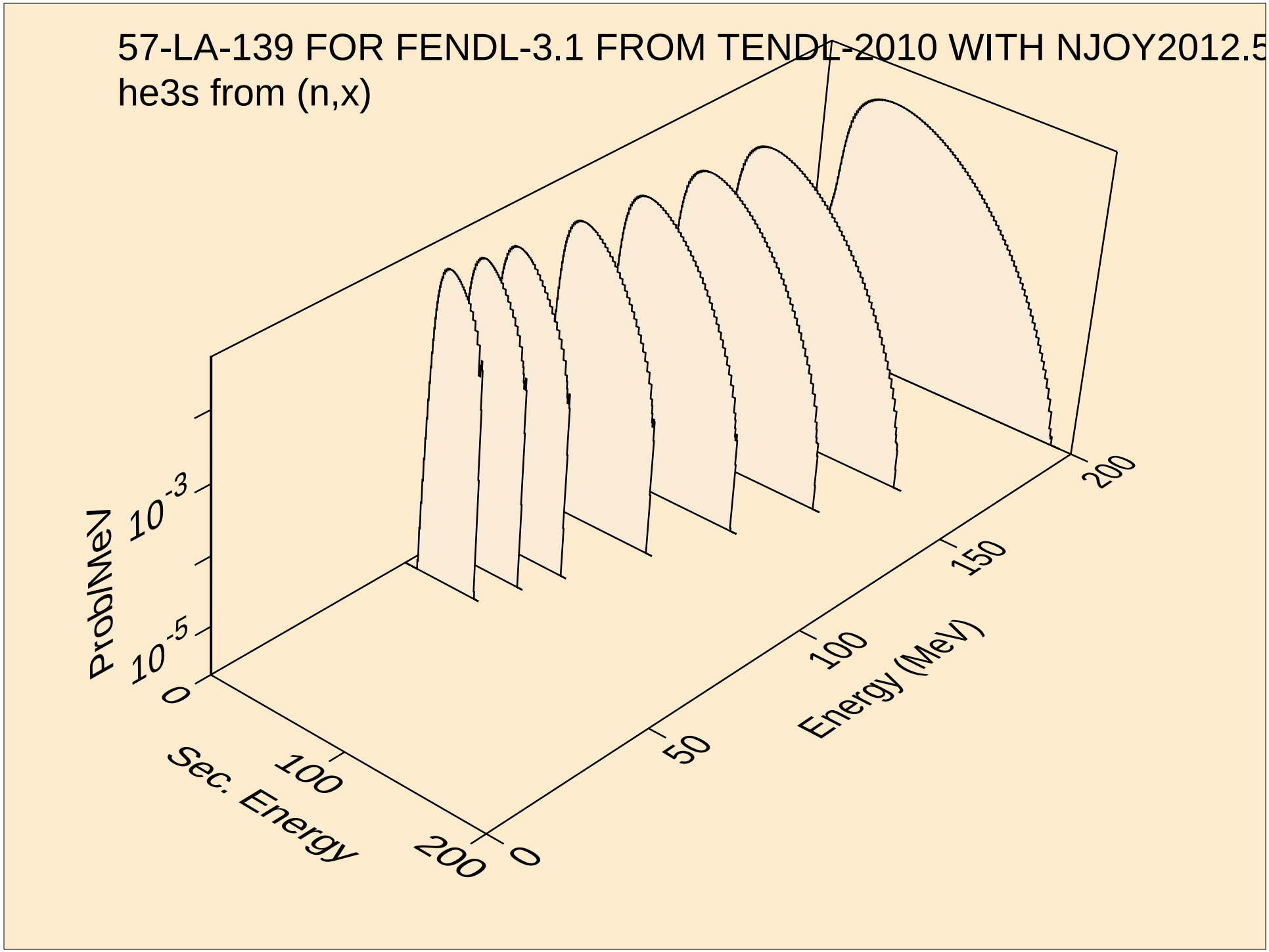

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
tritons from (n,dt)
Prob/MeV
10^0
10^-2
10^-4
0
Sec. Energy
20
40
10
20
30
Energy (MeV)
40
50
60

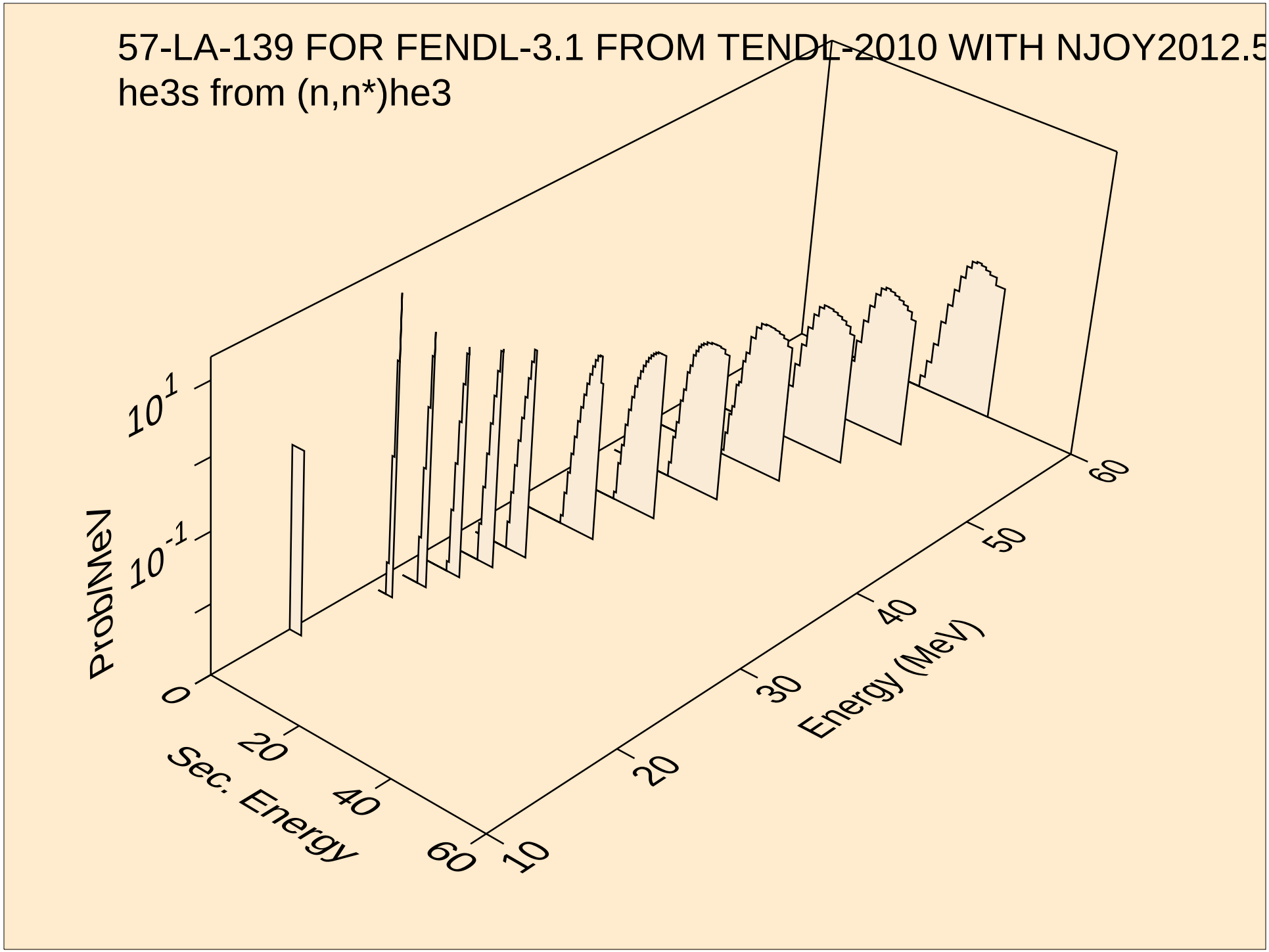

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
tritons from (n,npt)
Prob/MeV
10-1
10-3
0
Sec. Energy
20
40
20
25
30
35
40
45
50
55
60
Energy (MeV)

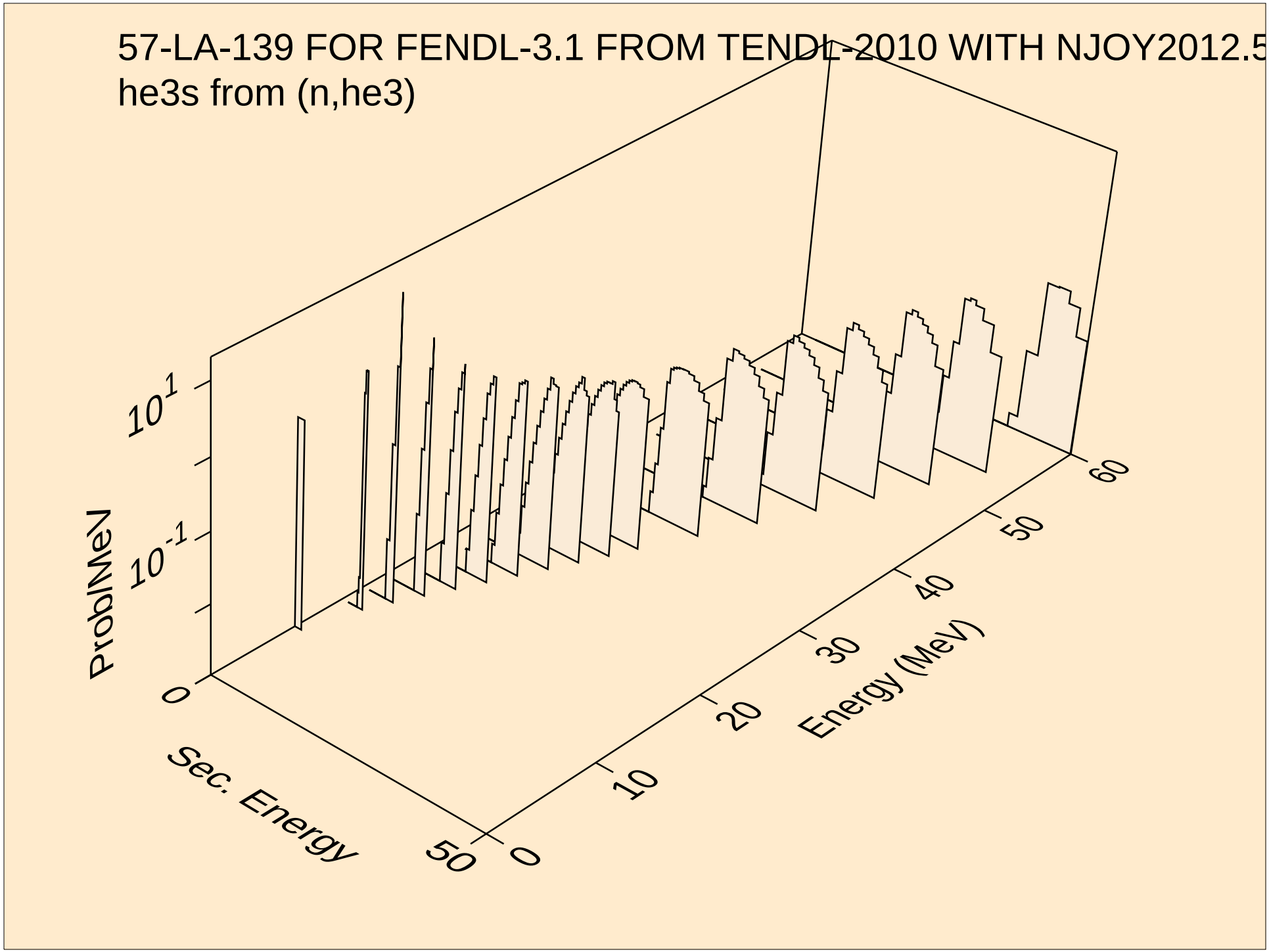

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
tritons from (n,ndt)
Prob/MeV
10^{0}
10^{-2}
0
Sec. Energy
20
40
25
30
35
40
45
50
55
60
Energy (MeV)

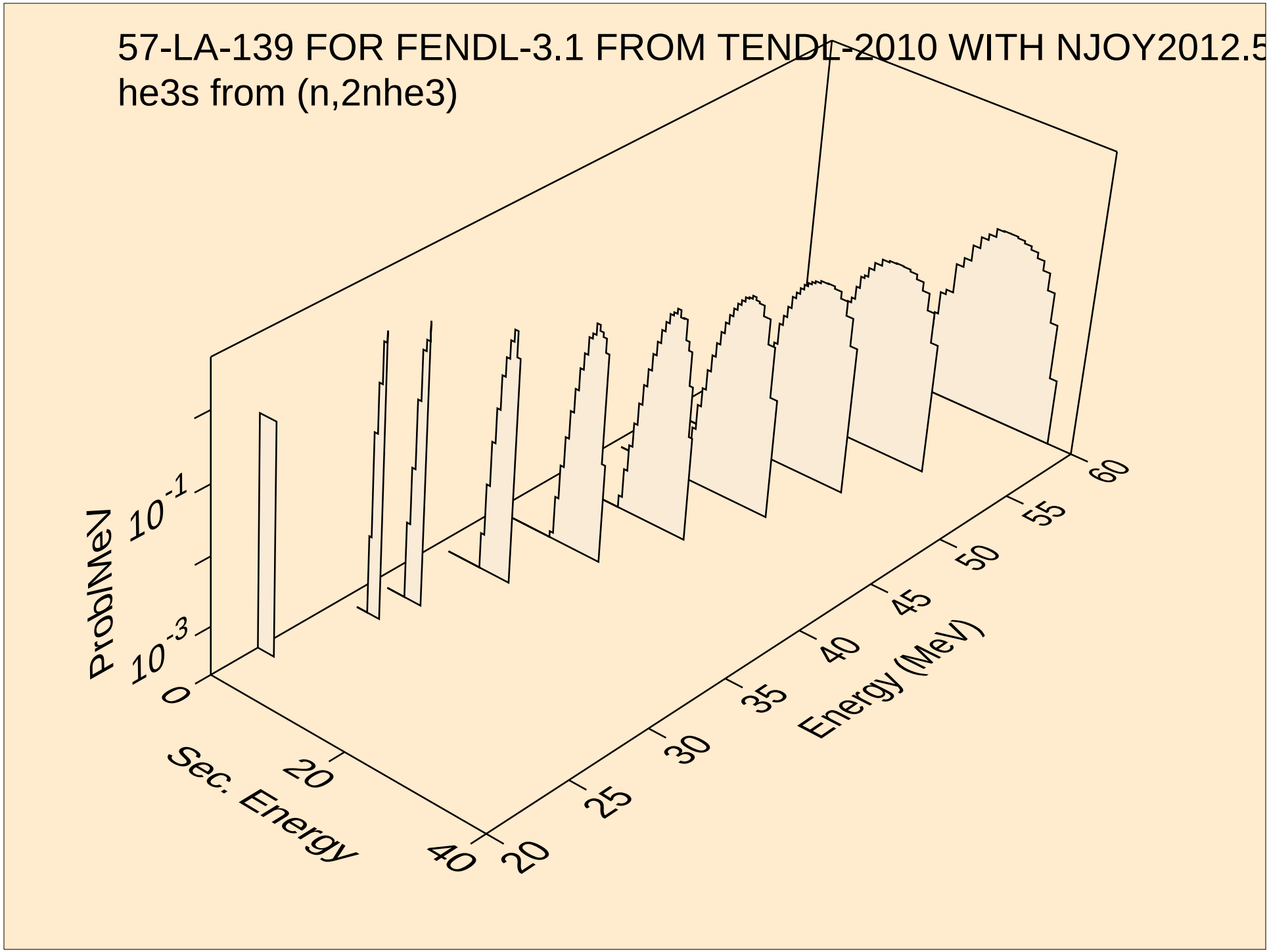

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
tritons from (n,nthe3)
Prob/MeV
10^0
10^-2
10^-4
0
10
20
Sec. Energy
25
30
35
40
45
50
55
60
Energy (MeV)

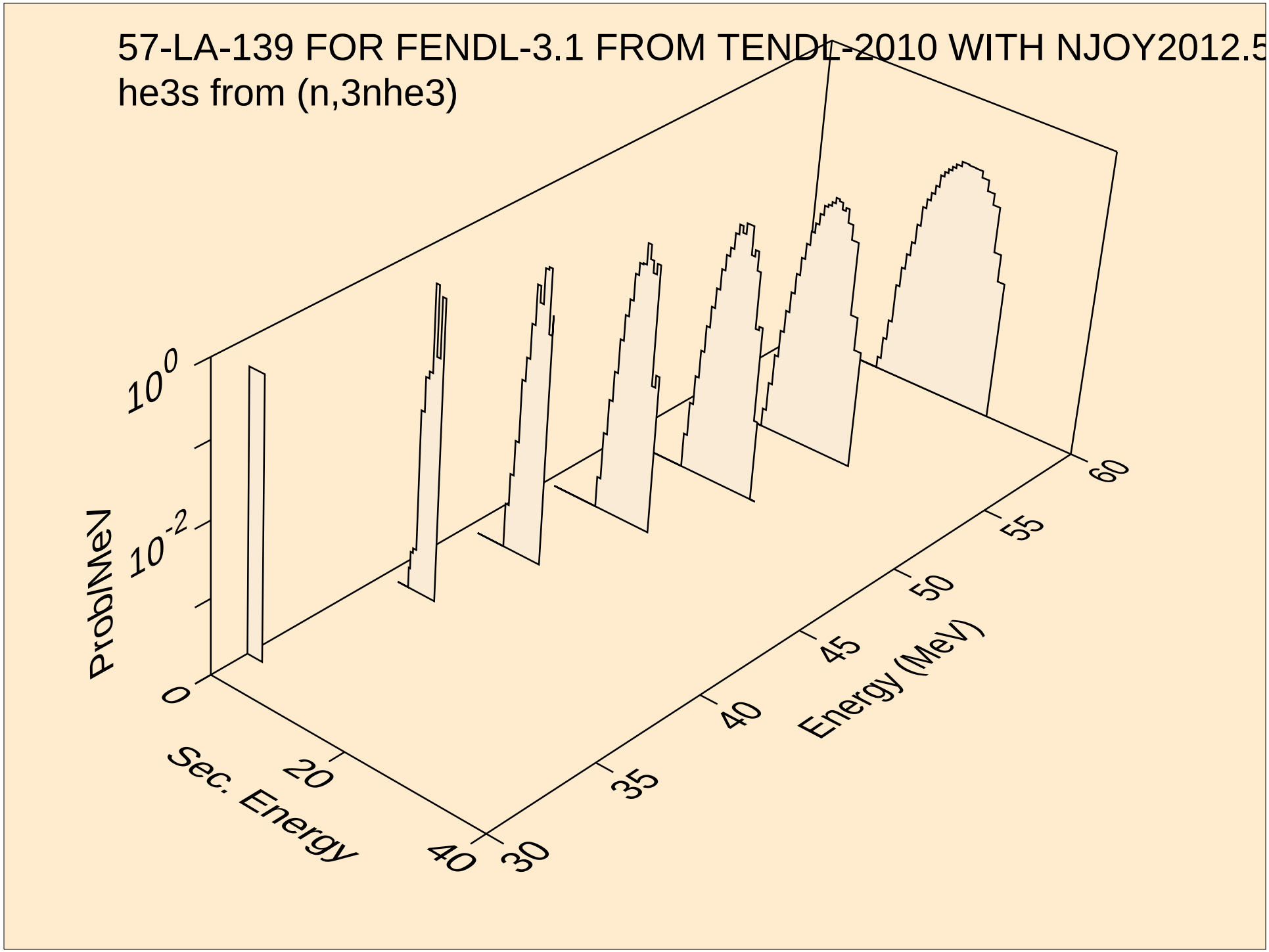

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
tritons from (n,nta)
Prob/MeV
10^{0}
10^{-2}
0
20
40
Sec. Energy
10
20
30
40
50
60
Energy (MeV)

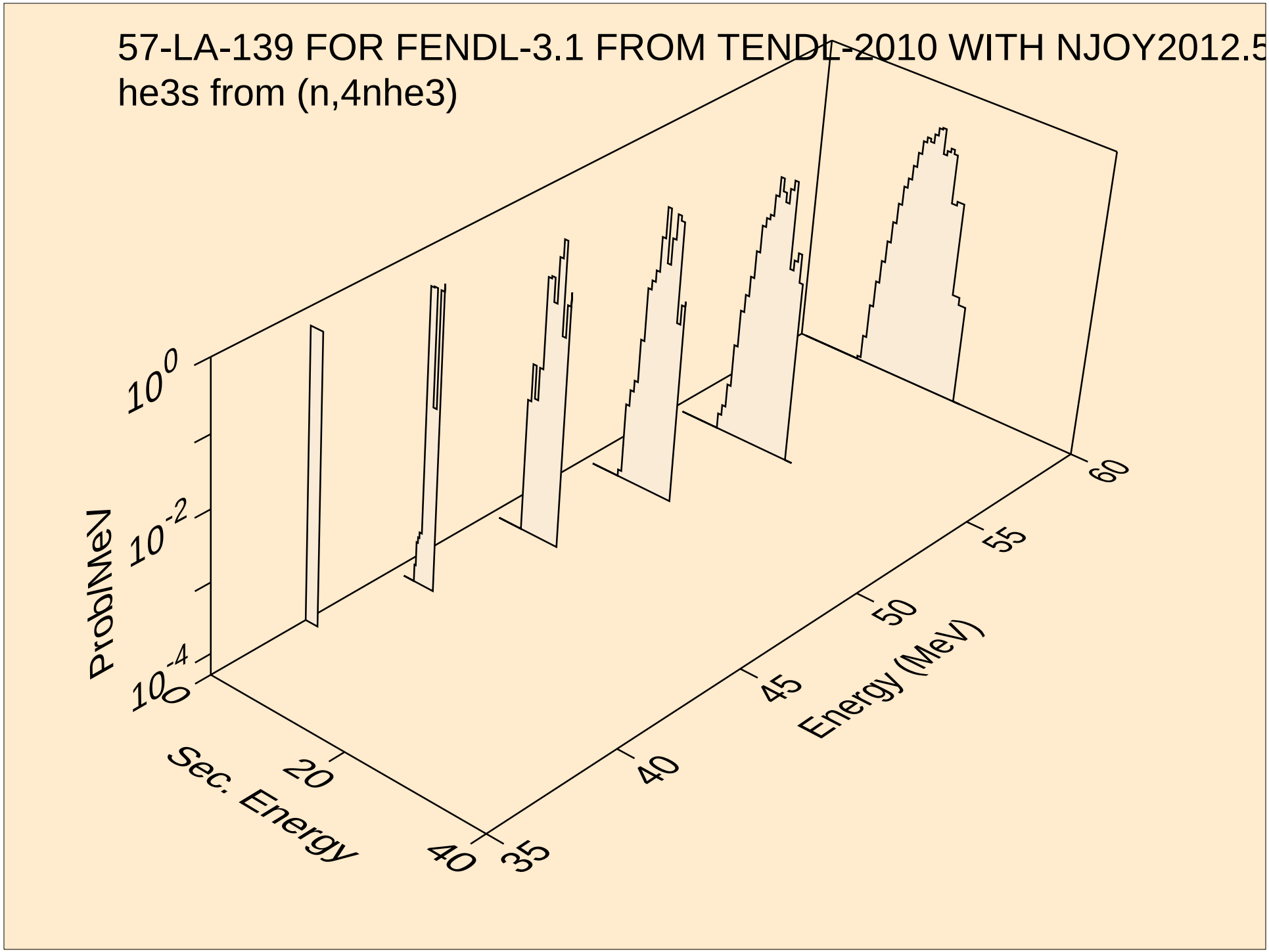

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
he3s from (n,x)
Prob/MeV
10-3
10-5
0
Sec. Energy
100
200
0
50
100
150
200
Energy (MeV)

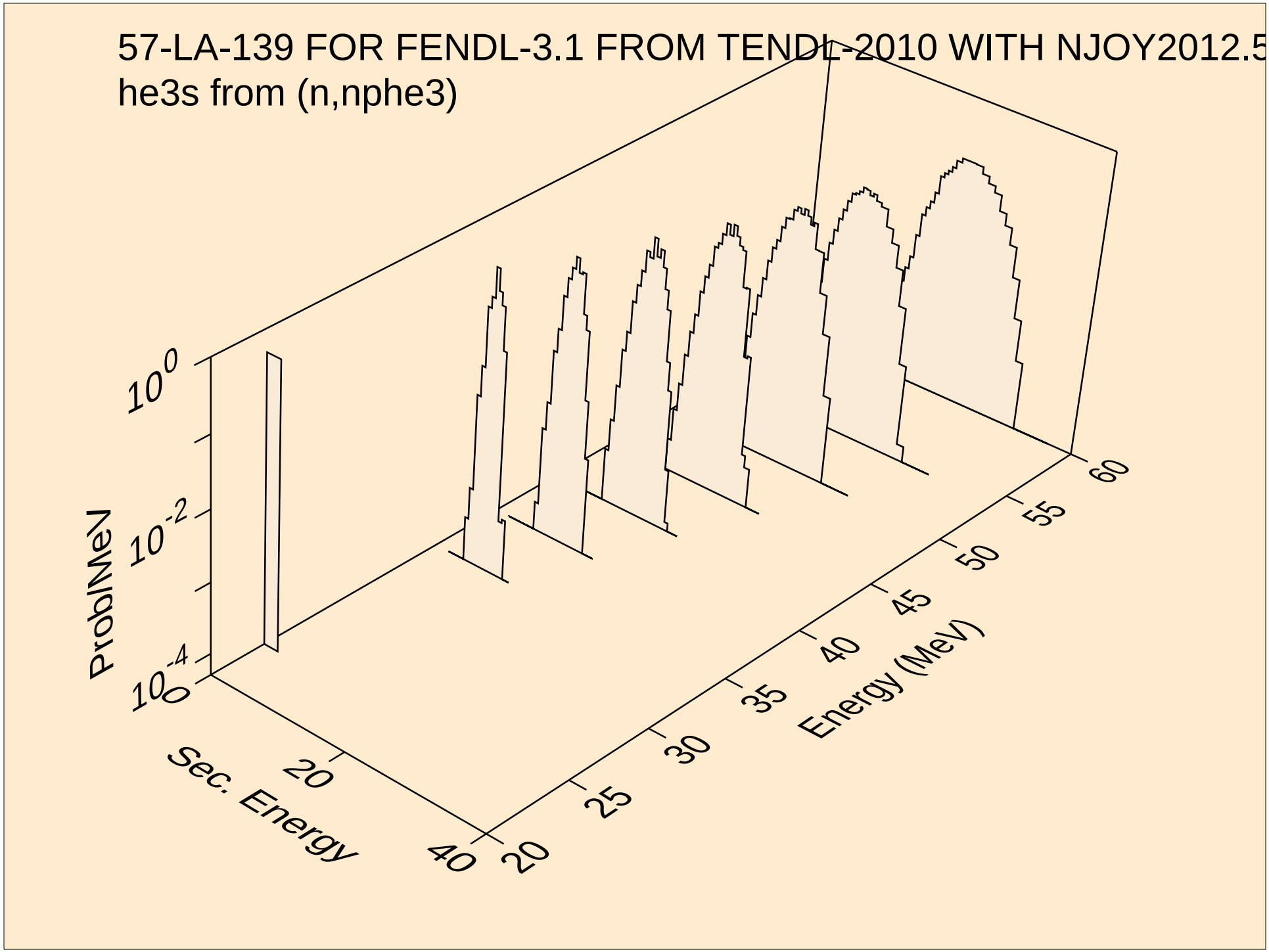

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
he3s from (n,n*)he3
Prob/MeV
10^1
10^-1
0
20
40
60
Sec. Energy
10
20
30
40
50
60
Energy (MeV)

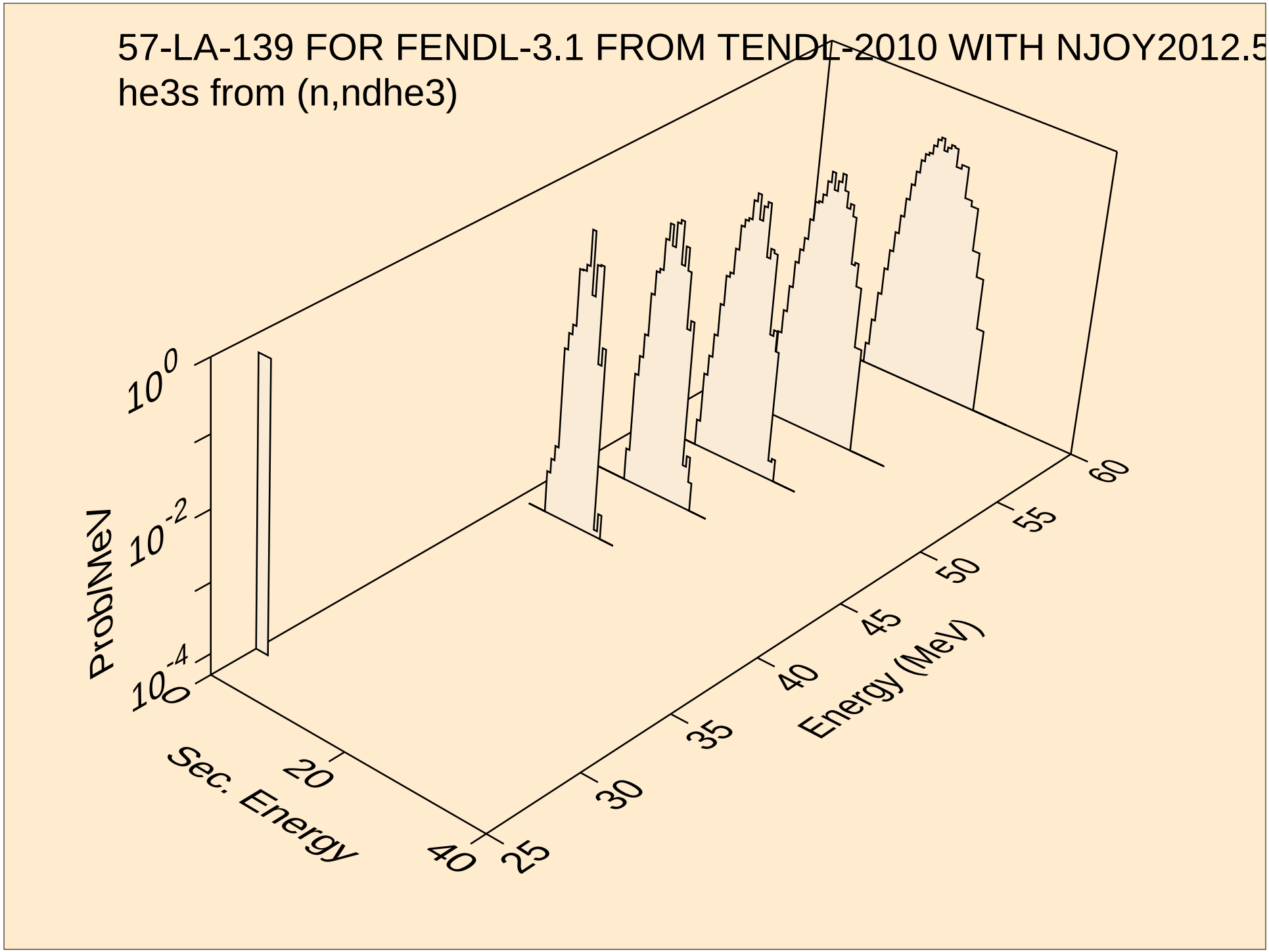

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
he3s from (n,he3)
Prob/MeV
10^1
10^-1
0
Sec. Energy
50
0
10
20
30
40
50
60
Energy (MeV)

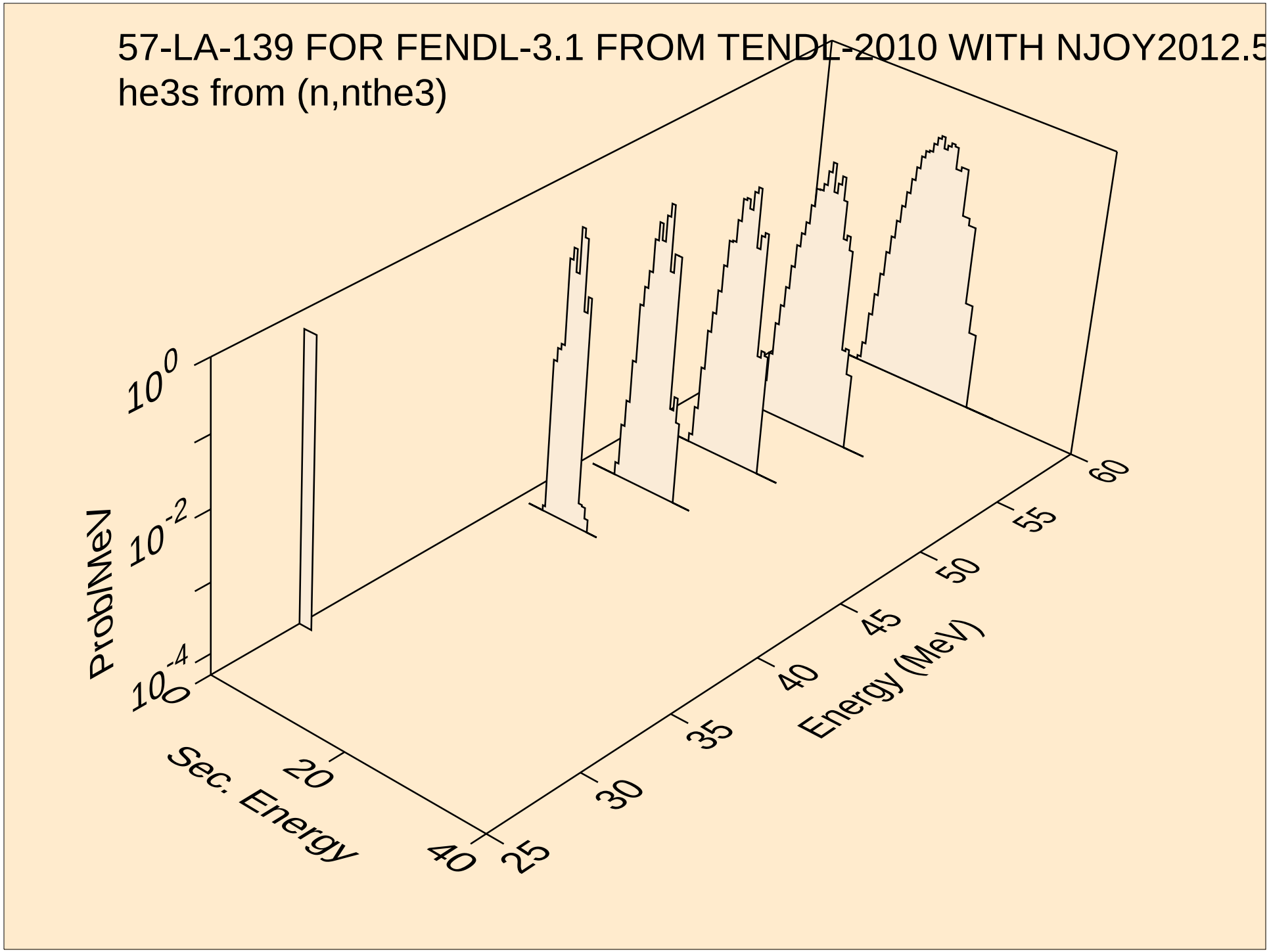

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
he3s from (n,2nhe3)
Prob/MeV
10-1
10-3
0
Sec. Energy
20
40
20
25
30
35
40
45
50
55
60
Energy (MeV)

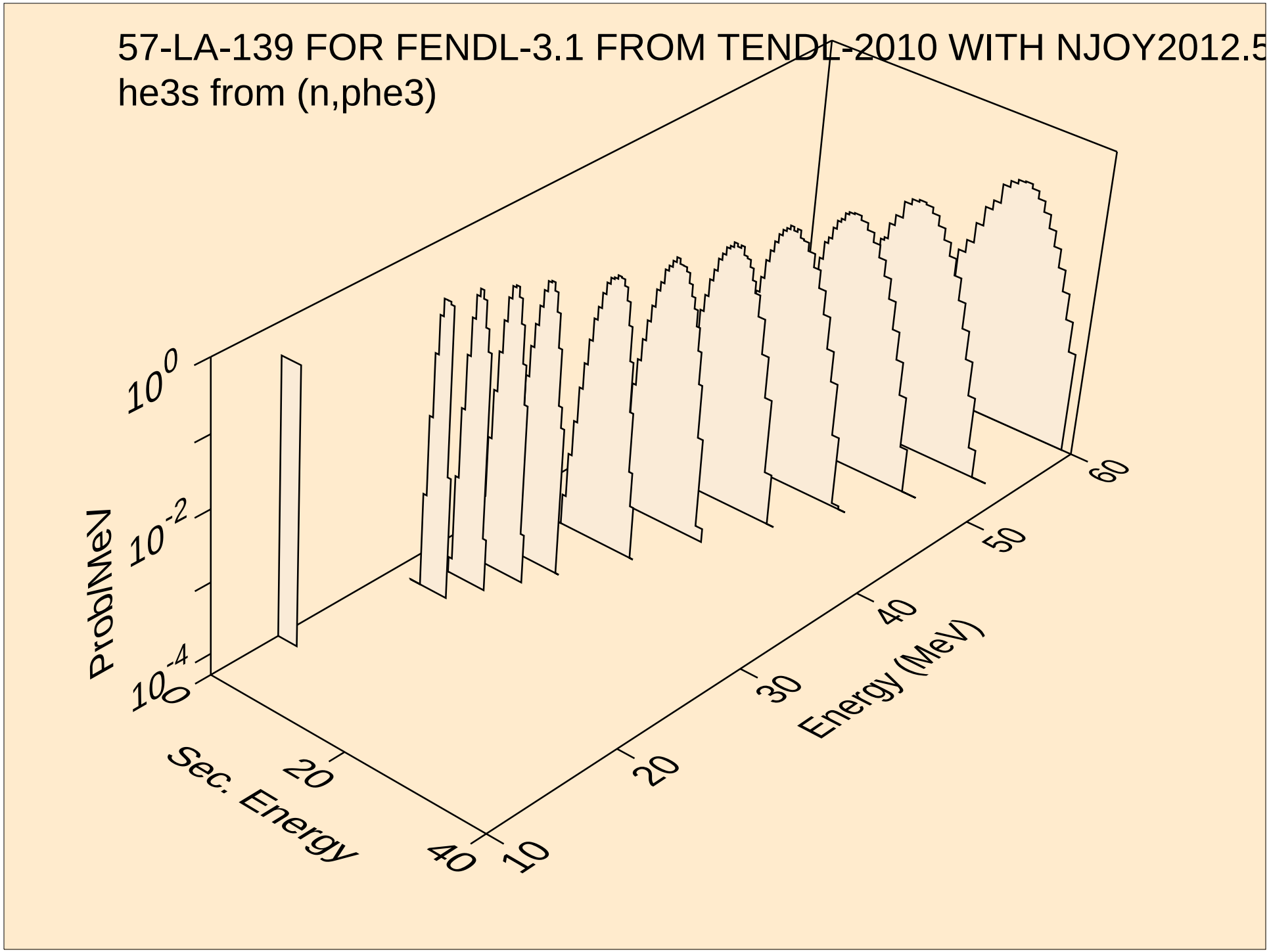

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
he3s from (n,3nhe3)
Prob/MeV
10^0
10^-2
0
Sec. Energy
20
40
30
35
40
45
50
55
60
Energy (MeV)

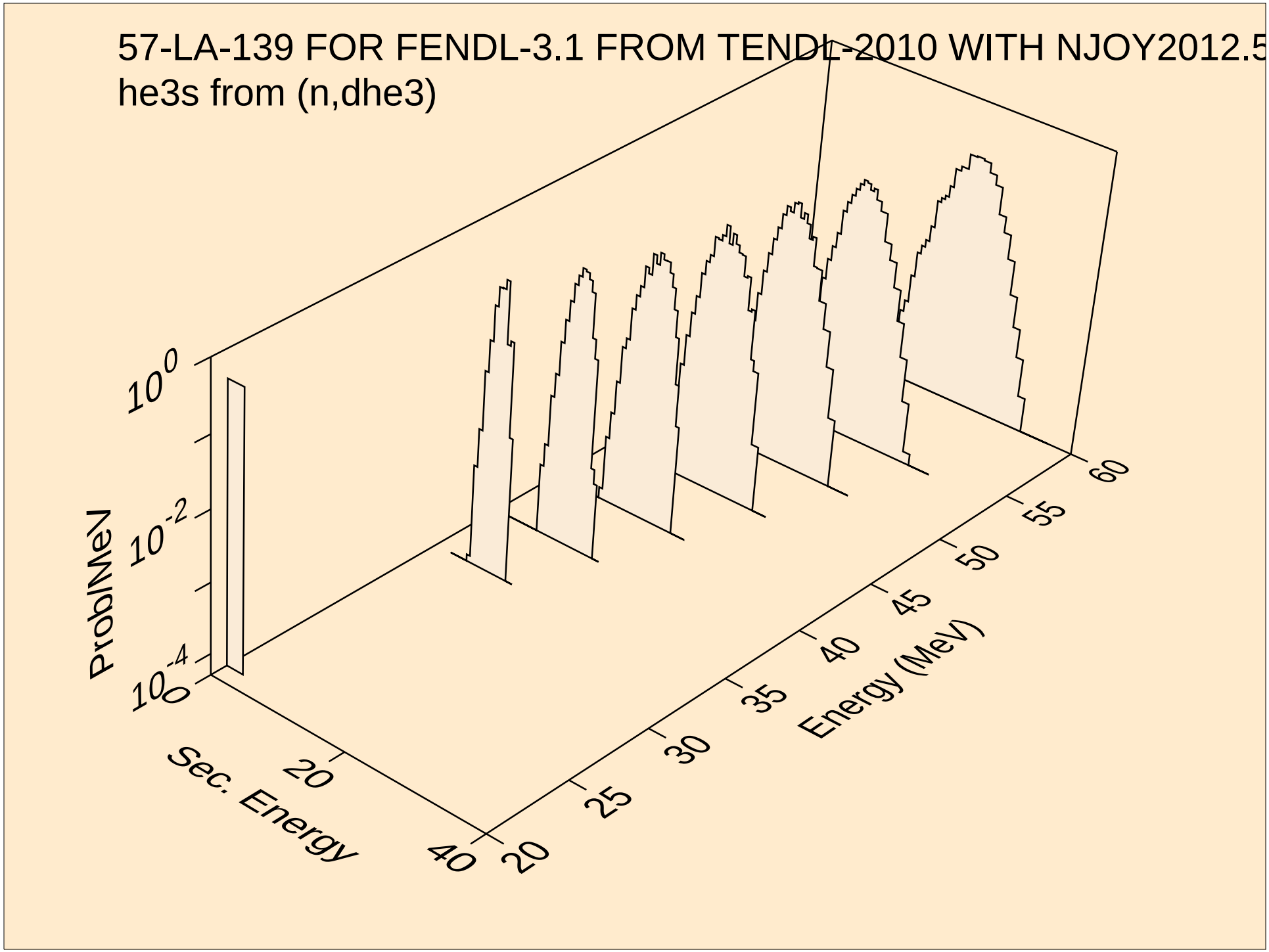

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
he3s from (n,4nhe3)
Prob/MeV
10^0
10^-2
10^-4
Sec. Energy
0
20
40
35
40
45
50
55
60
Energy (MeV)

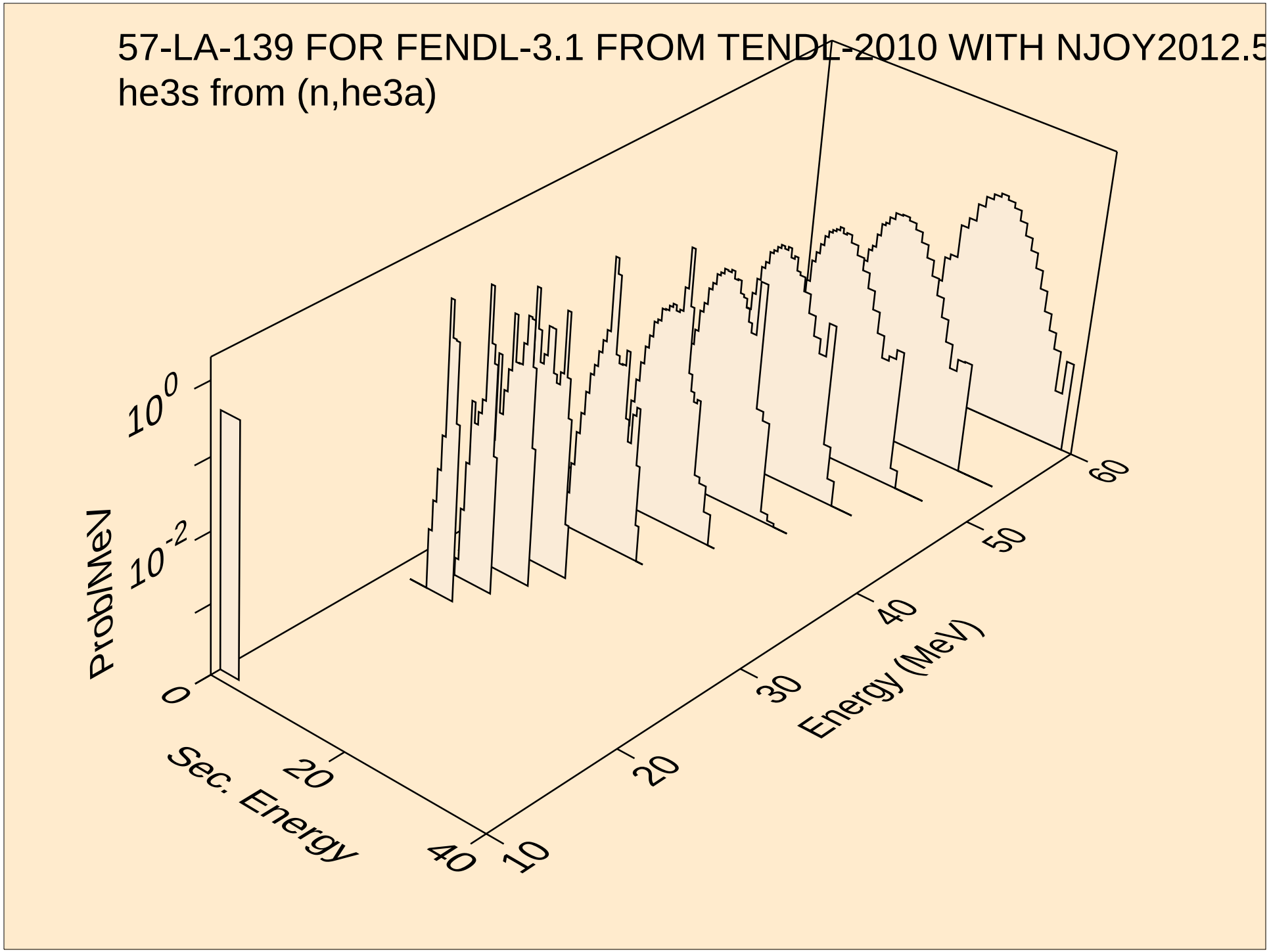

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
he3s from (n,nphe3)
Prob/MeV
10^{0}
10^{-2}
10^{-4}
0
20
40
Sec. Energy
20
25
30
35
40
45
50
55
60
Energy (MeV)

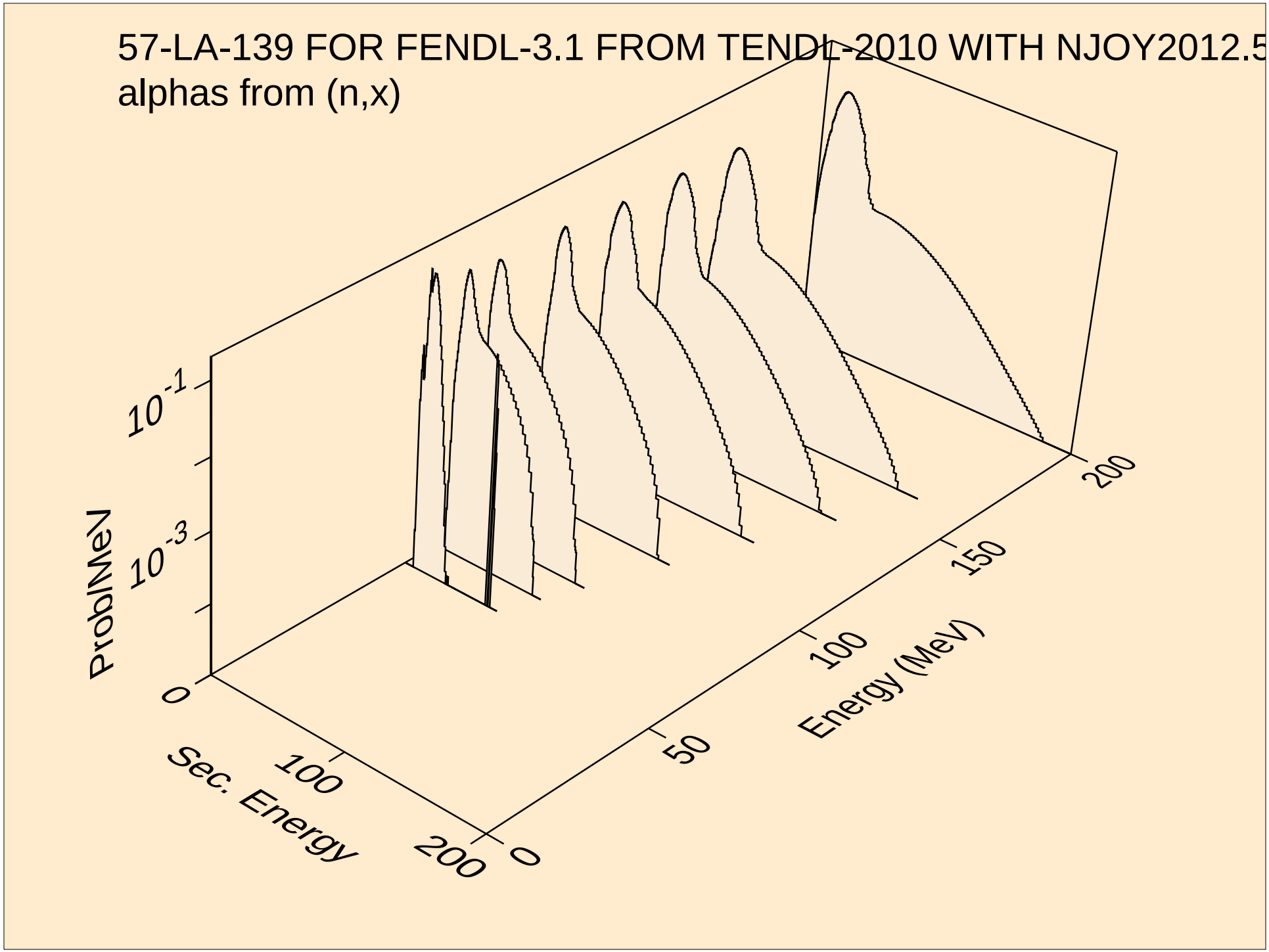

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
he3s from (n,ndhe3)
Prob/MeV
10^0
10^-2
10^-4
0
20
40
Sec. Energy
25
30
35
40
45
50
55
60
Energy (MeV)

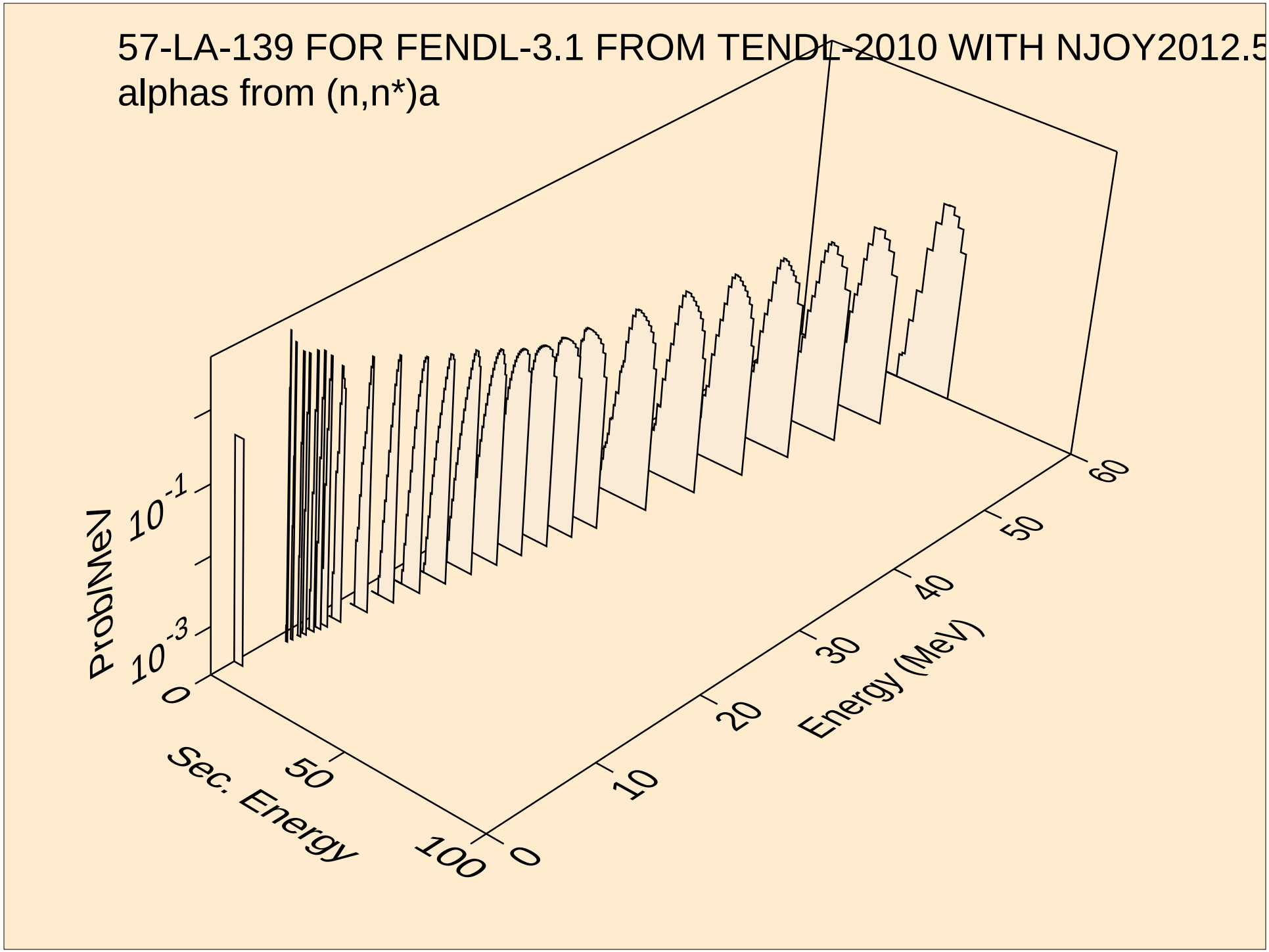

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
he3s from (n,nthe3)
Prob/MeV
10^0
10^-2
10^-4
0
20
40
Sec. Energy
25
30
35
40
45
50
55
60
Energy (MeV)

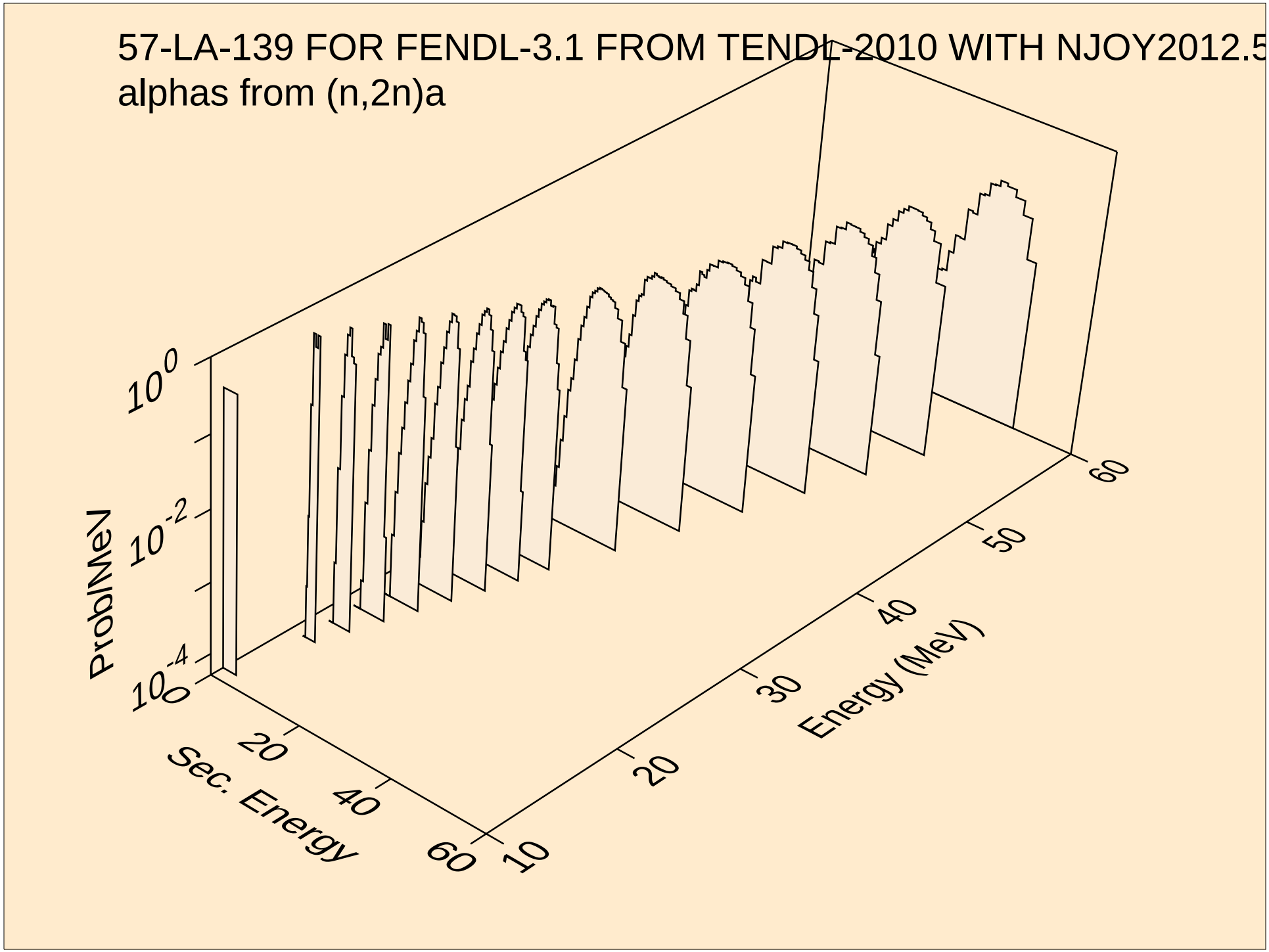

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
he3s from (n,phe3)
Prob/MeV
10^0
10^-2
10^-4
0
Sec. Energy
20
40
10
20
30
40
50
60
Energy (MeV)

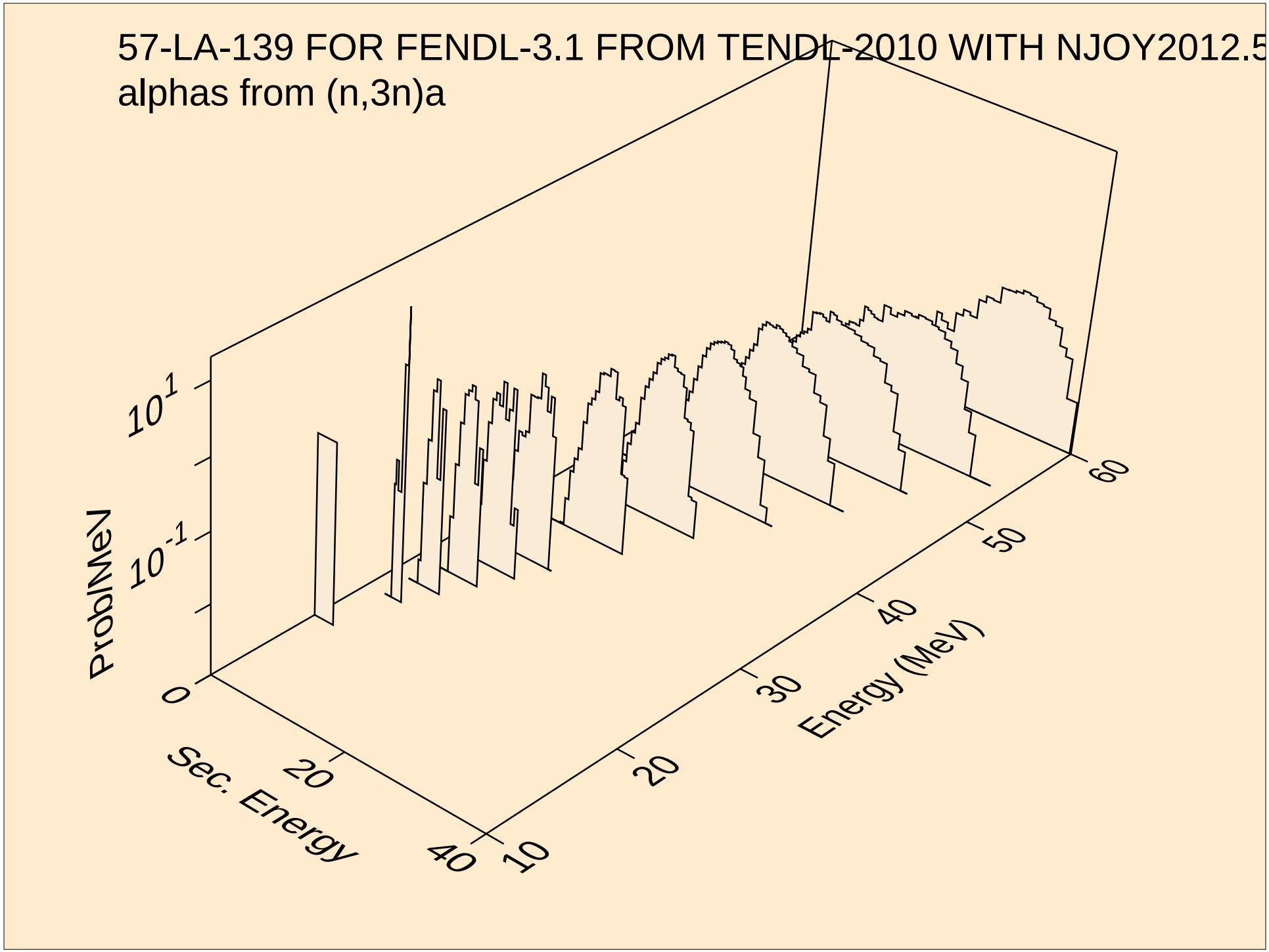

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
he3s from (n,dhe3)
Prob/MeV
10^0
10^-2
10^-4
0
20
40
Sec. Energy
20
25
30
35
40
45
50
55
60
Energy (MeV)

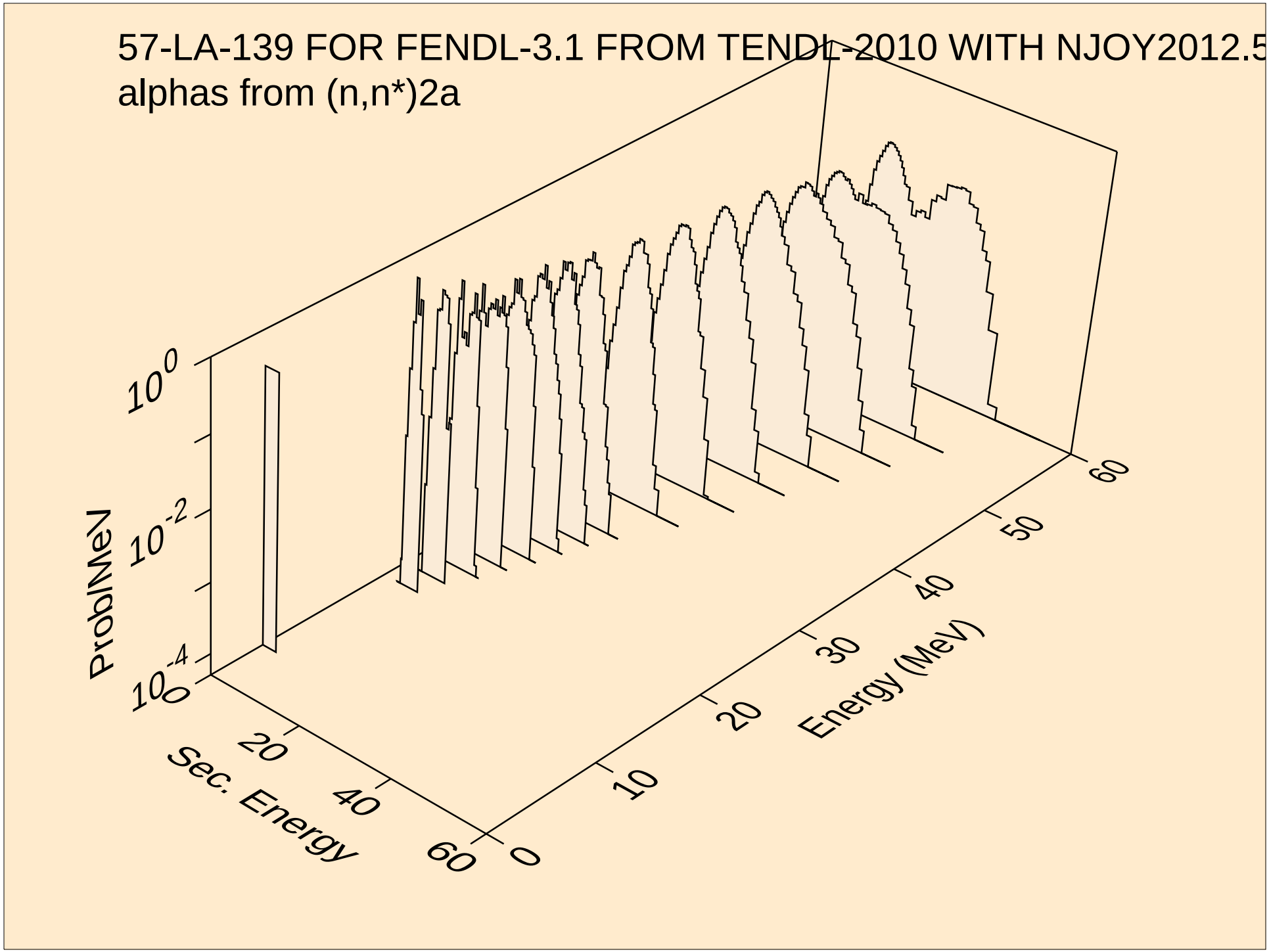

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
he3s from (n,he3a)
Prob/MeV
10^0
10^-2
0
Sec. Energy
20
40
10
20
30
40
50
60
Energy (MeV)

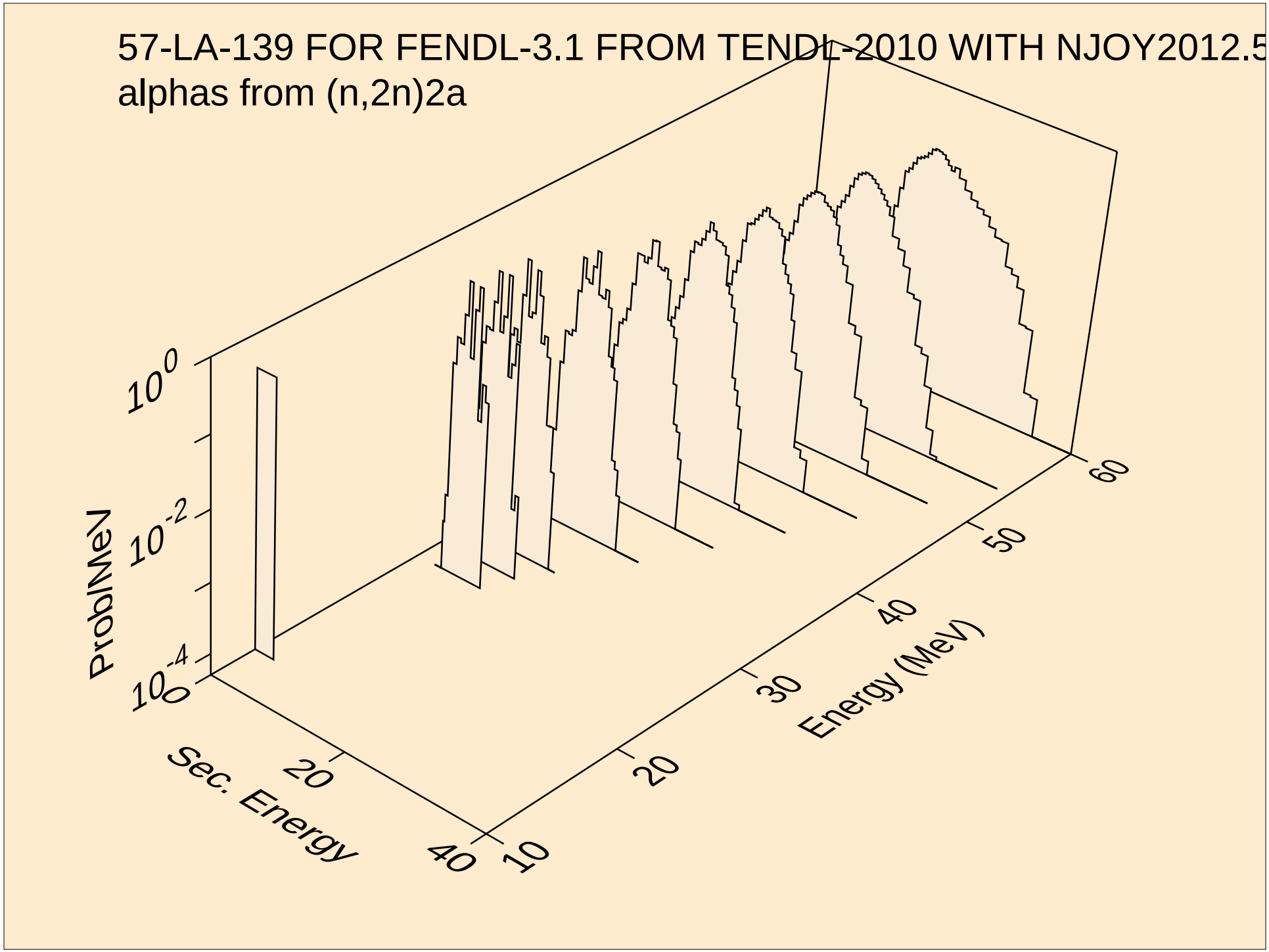

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
alphas from (n,x)
Prob/MeV
10-1
10-3
0
Sec. Energy
100
200
0
50
100
150
200
Energy (MeV)

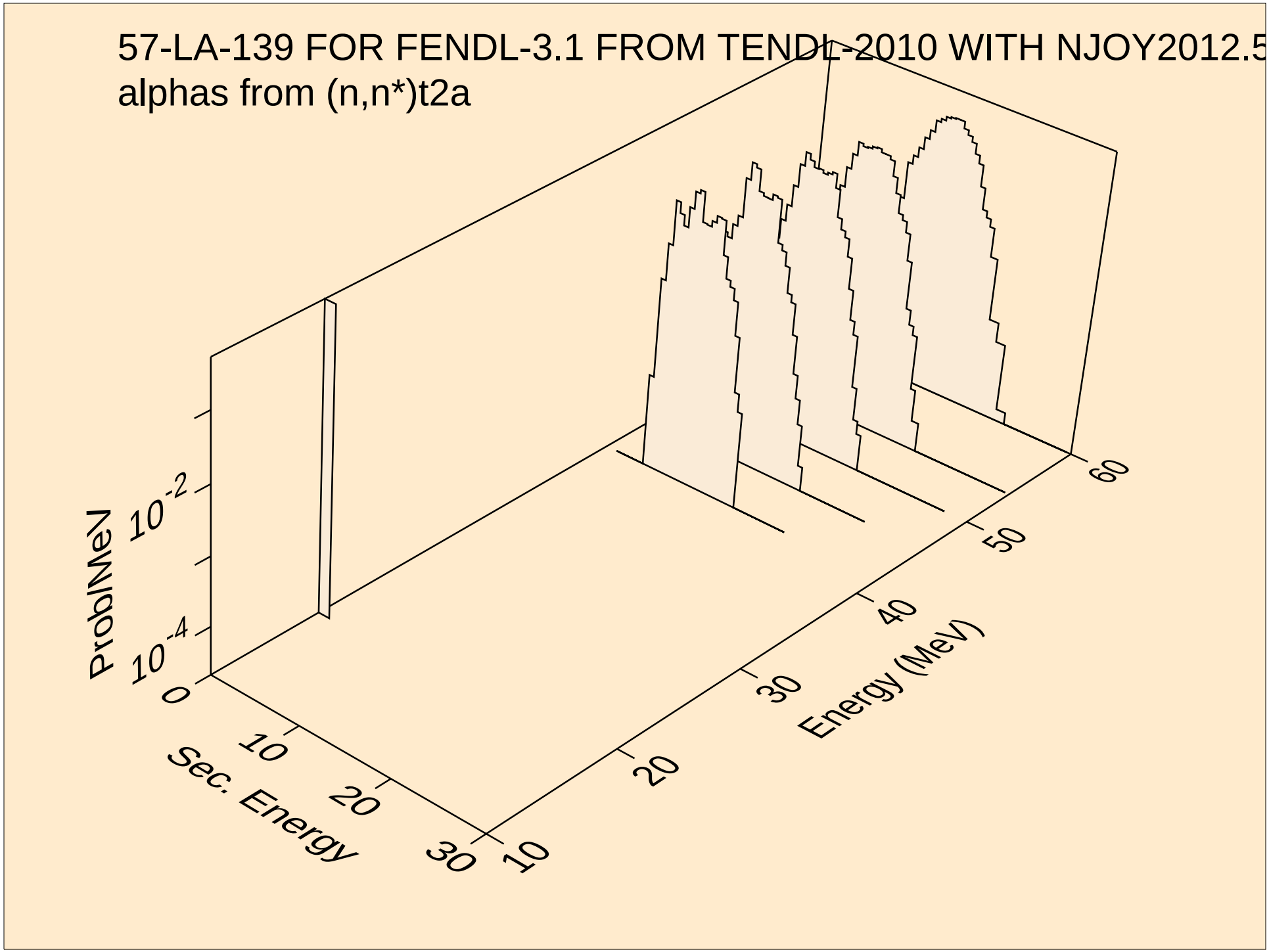

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
alphas from (n,n*)a
Prob/MeV
10-1
10-3
0
Sec. Energy
50
100
0
10
20
30
40
50
60
Energy (MeV)

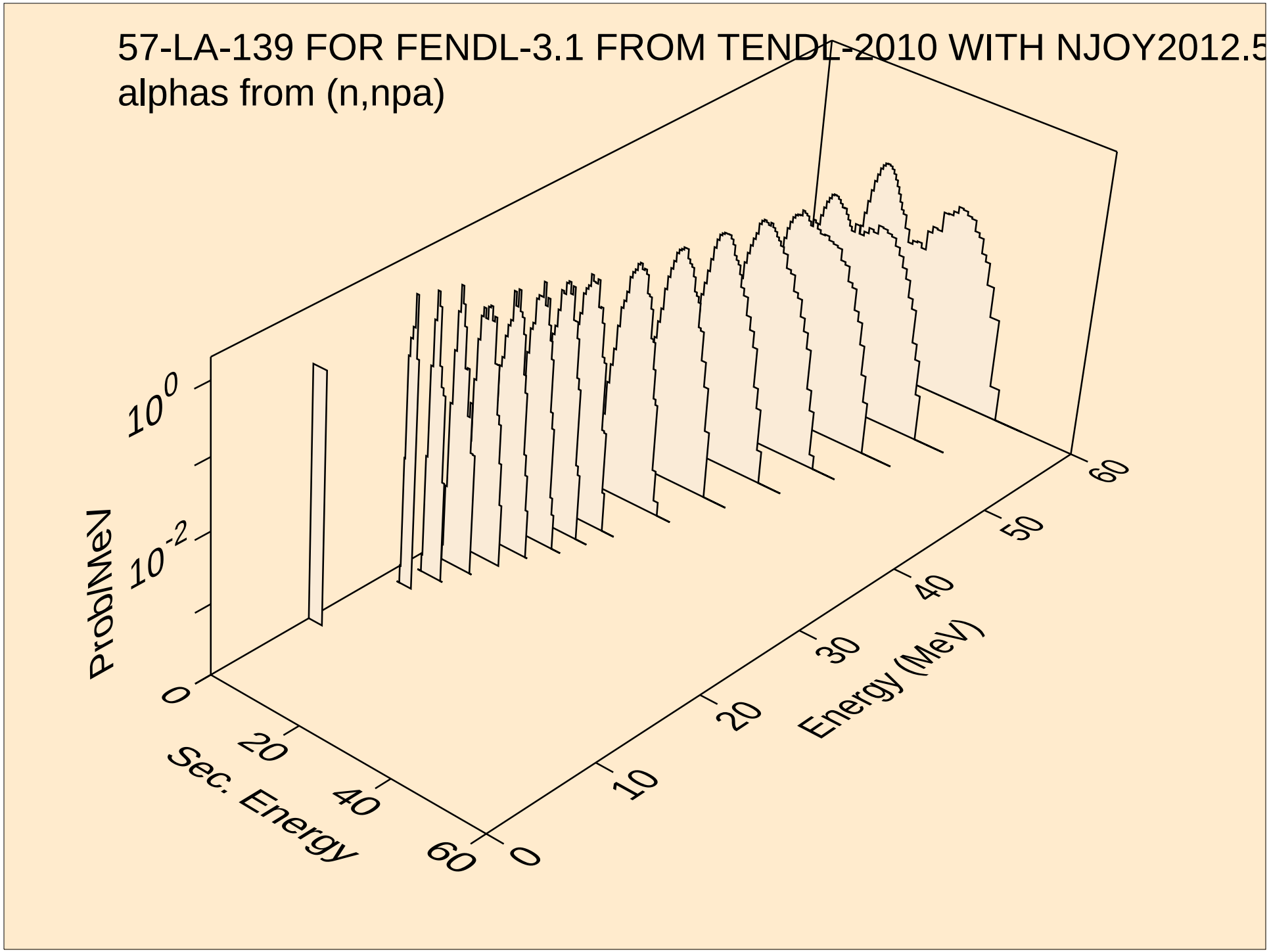

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
alphas from (n,2n)a
Prob/MeV
10^0
10^-2
10^-4
0
20
40
60
Sec. Energy
10
20
30
40
50
60
Energy (MeV)

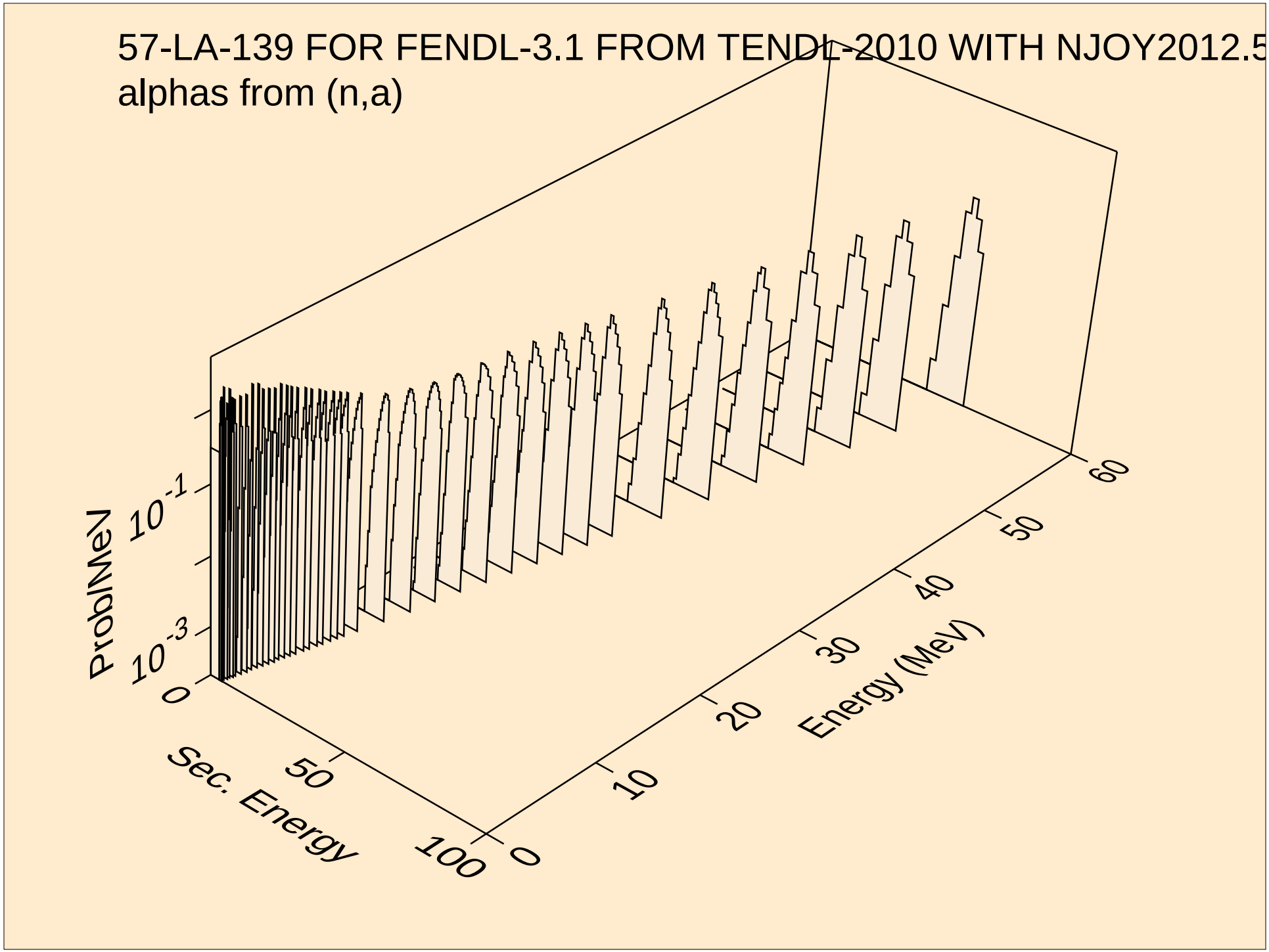

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
alphas from (n,3n)a
Prob/MeV
10^1
10^-1
0
Sec. Energy
20
40
10
20
30
40
50
60
Energy (MeV)

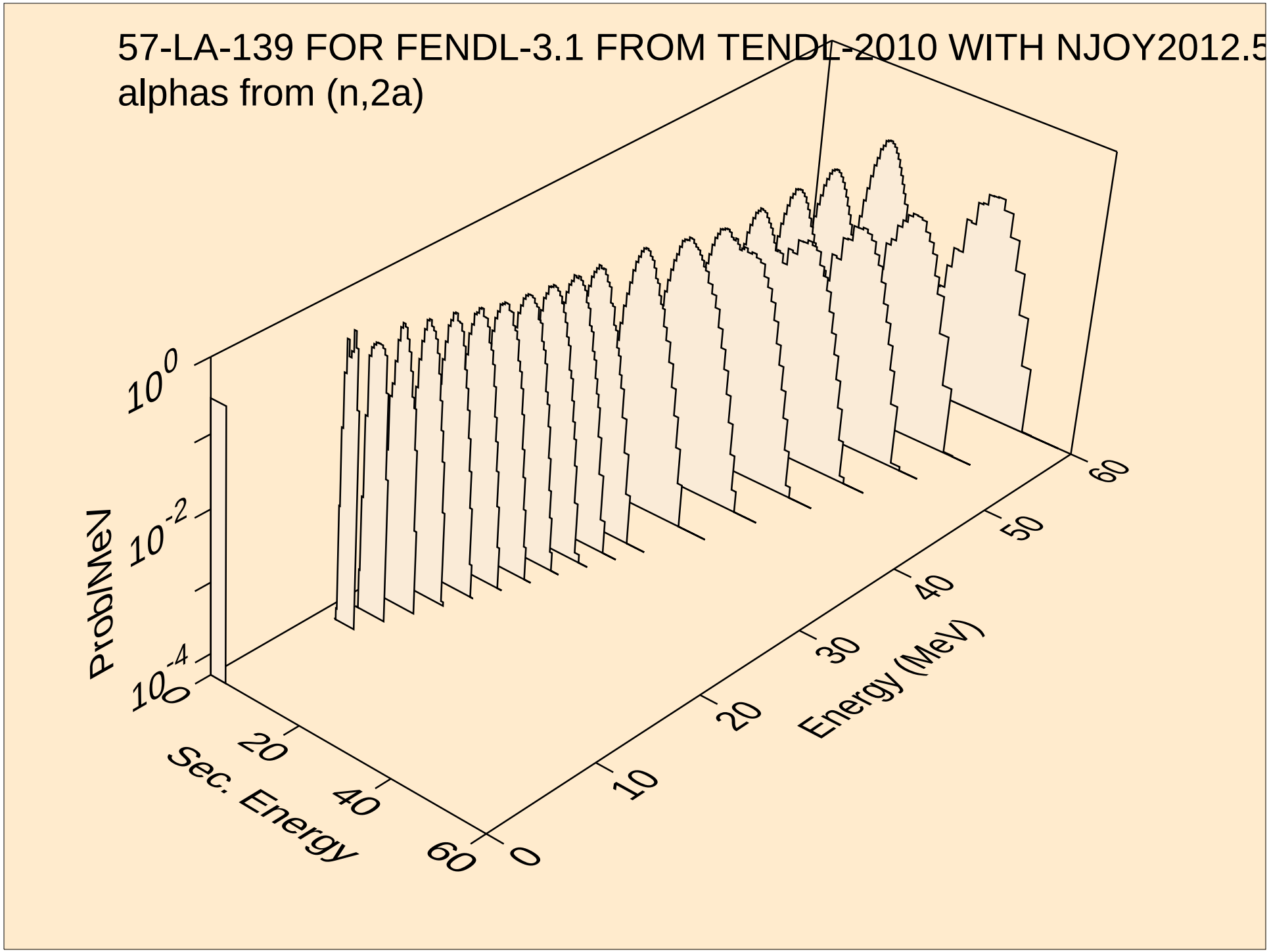

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
alphas from (n,n*)2a
Prob/MeV
10^0
10^-2
10^-4
0
20
40
60
Sec. Energy
0
10
20
30
40
50
60
Energy (MeV)

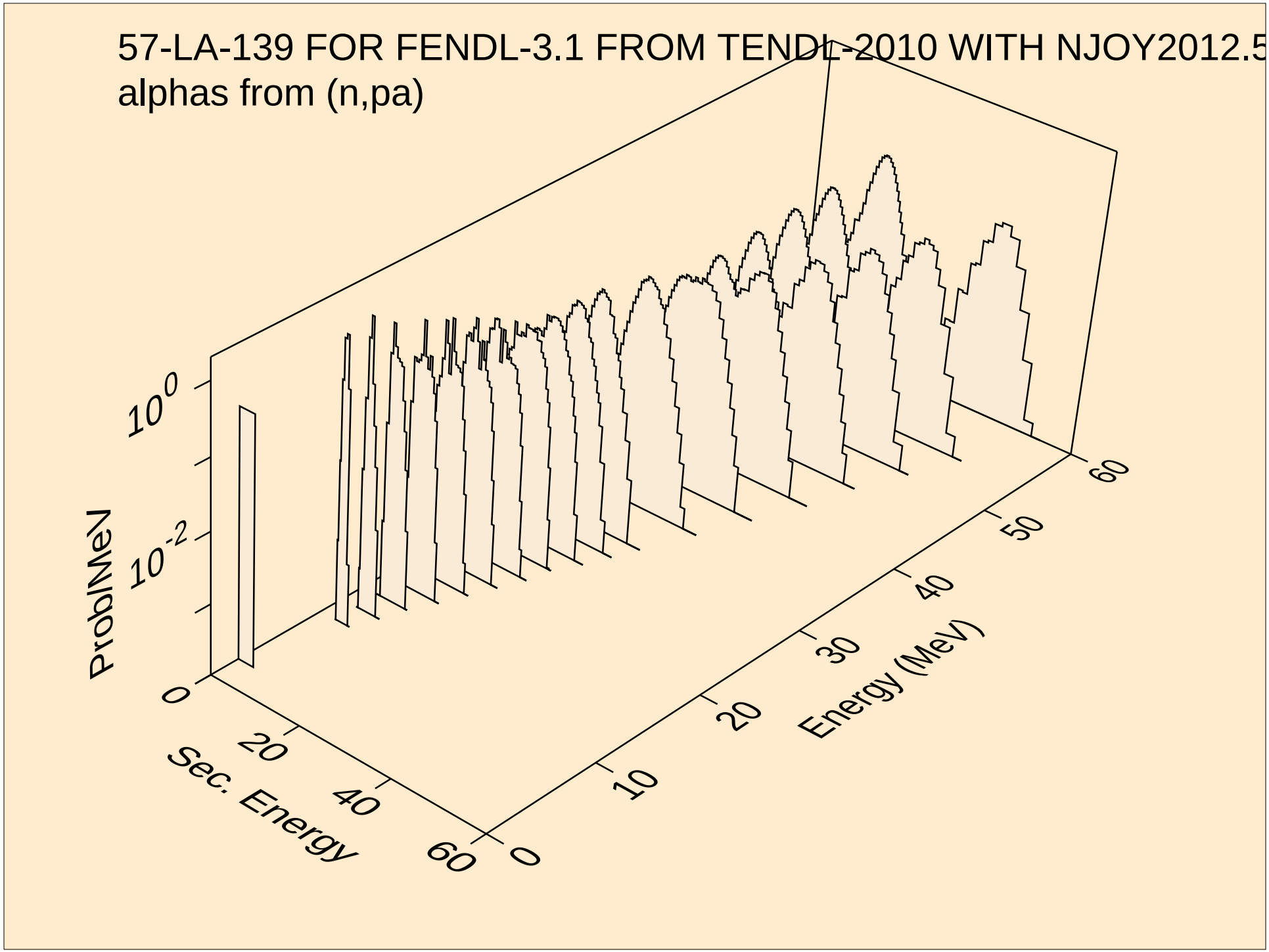

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
alphas from (n,2n)2a
Prob/MeV
10^0
10^-2
10^-4
0
20
40
Sec. Energy
10
20
30
40
50
60
Energy (MeV)

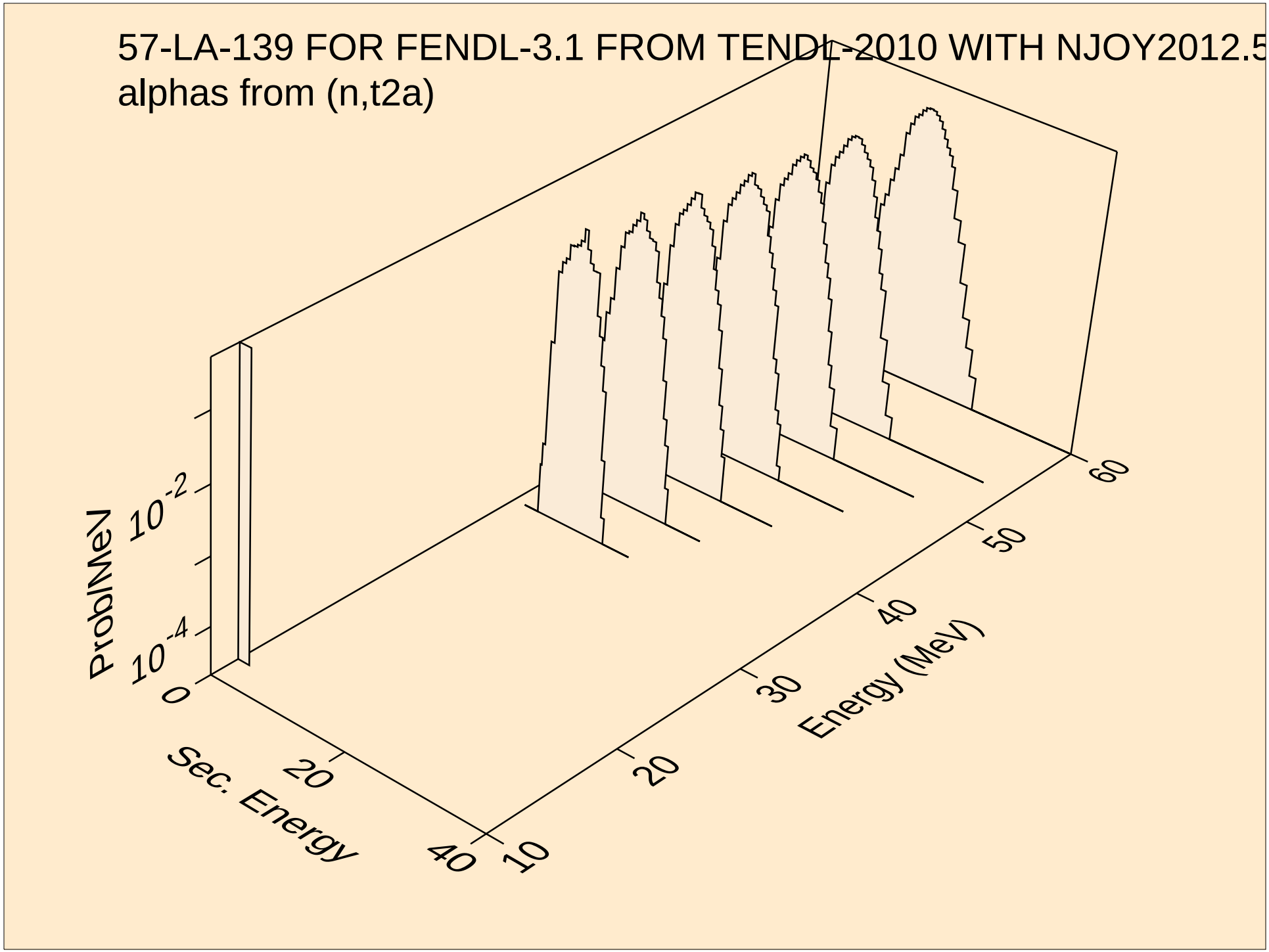

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
alphas from (n,n*)t2a
Prob/MeV
10-2
10-4
0
Sec. Energy
10
20
30
10
20
30
40
50
60
Energy (MeV)

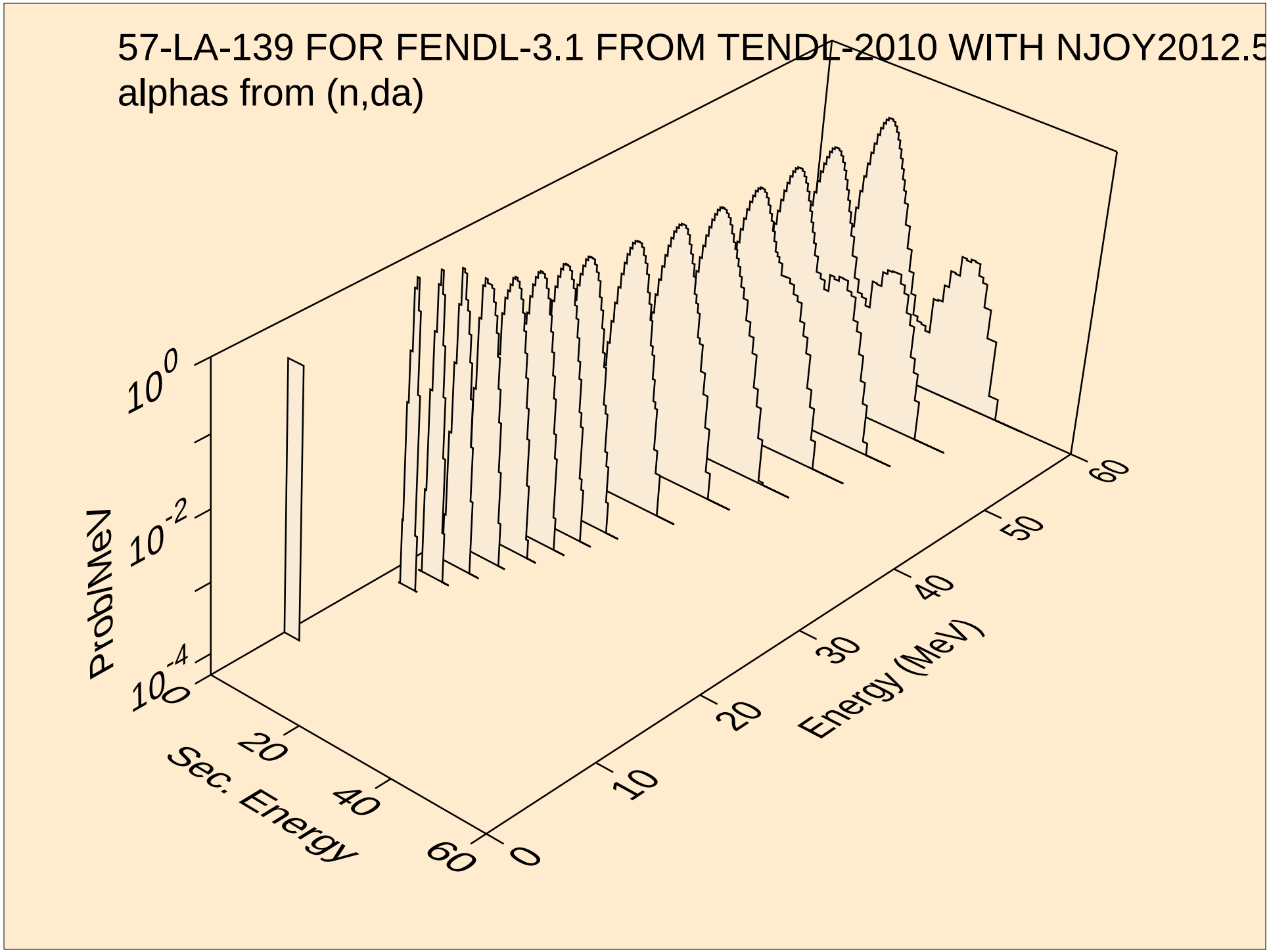

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
alphas from (n,npa)
Prob/MeV
10^0
10^-2
0
20
40
60
Sec. Energy
0
10
20
30
40
50
60
Energy (MeV)

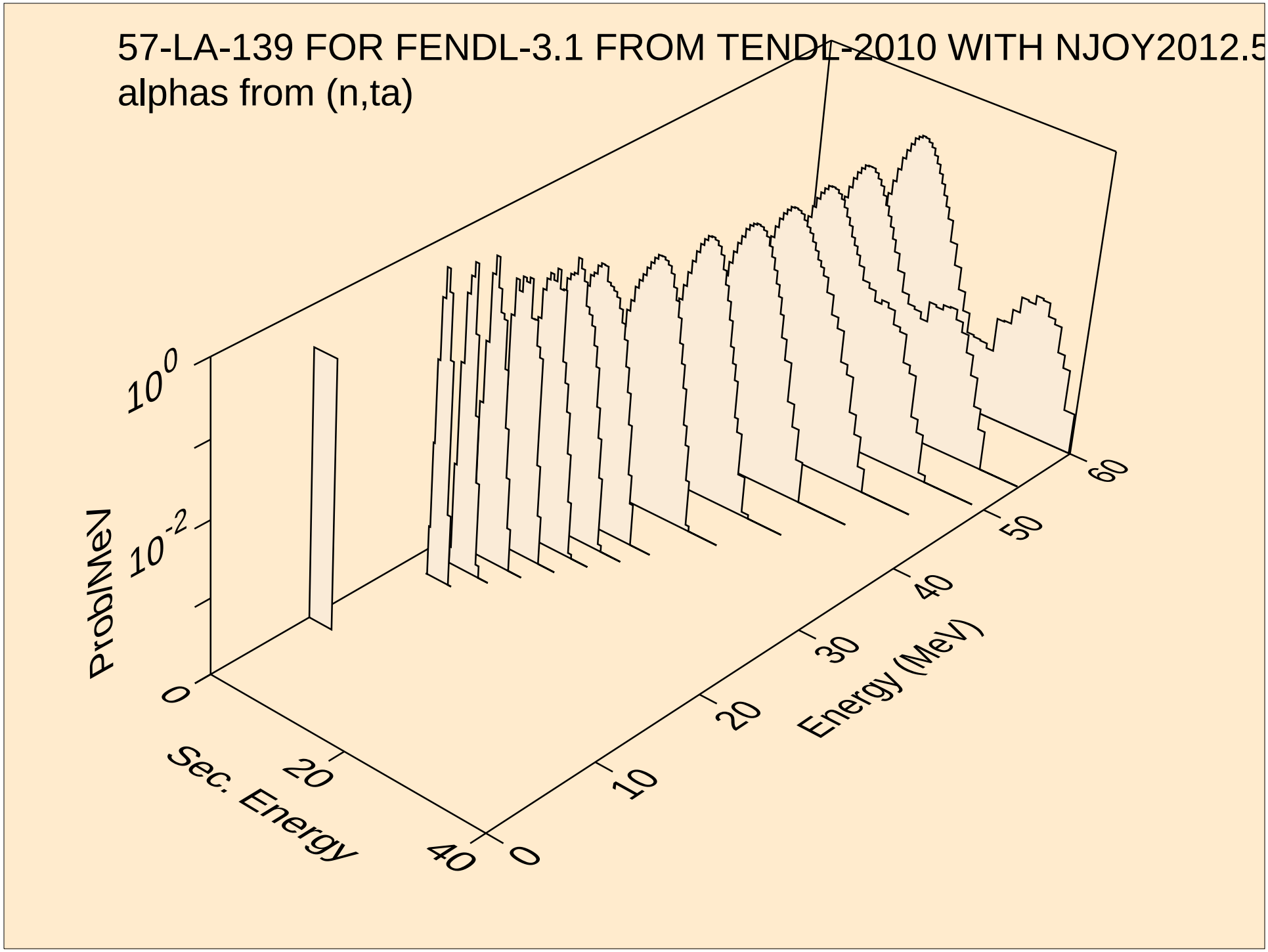

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
alphas from (n,a)
Prob/MeV
10-1
10-3
0
Sec. Energy
50
100
0
10
20
30
40
50
60
Energy (MeV)

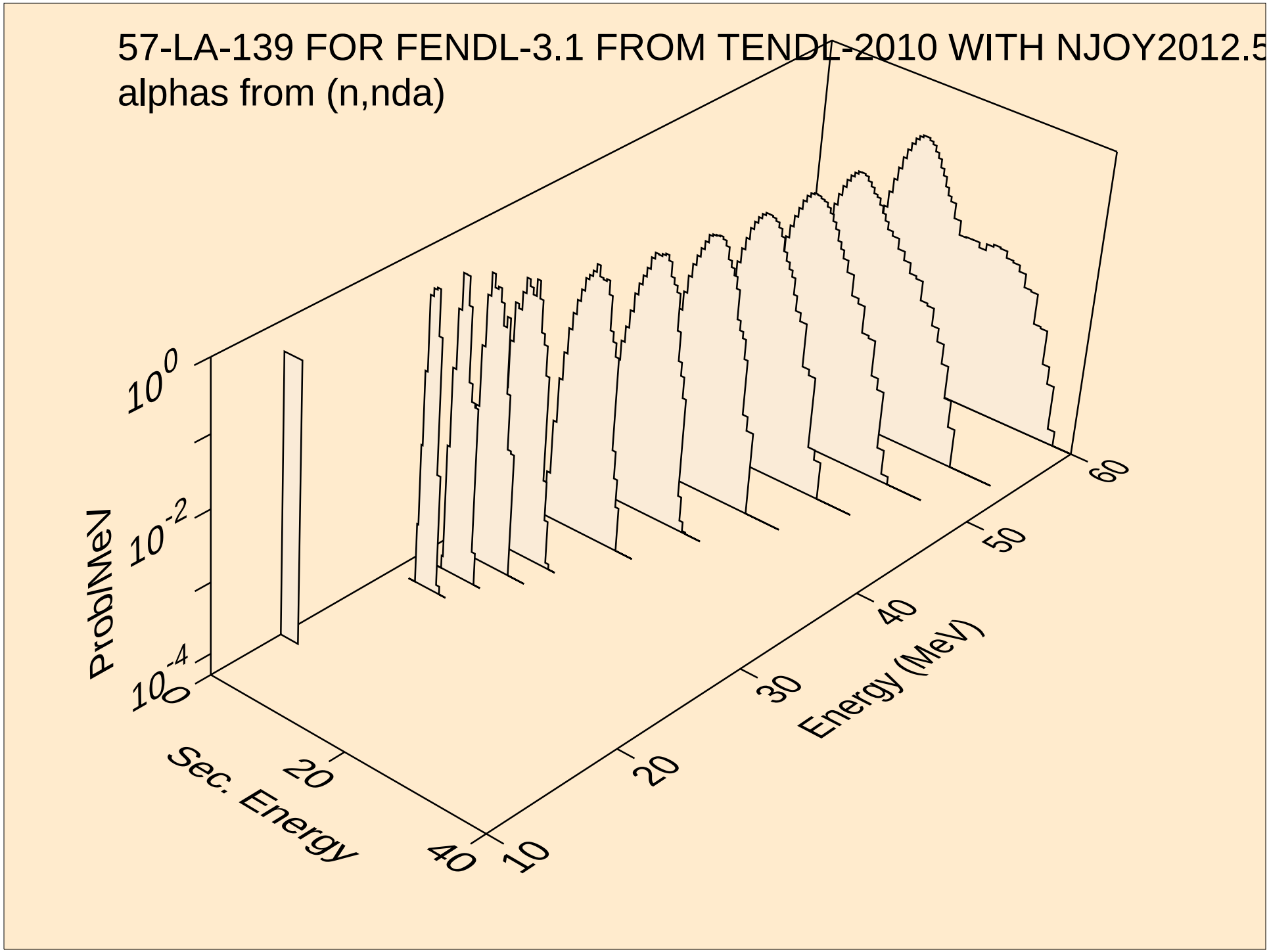

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
alphas from (n,2a)
Prob/MeV
10^0
10^-2
10^-4
0
20
40
60
Sec. Energy
0
10
20
30
40
50
60
Energy (MeV)

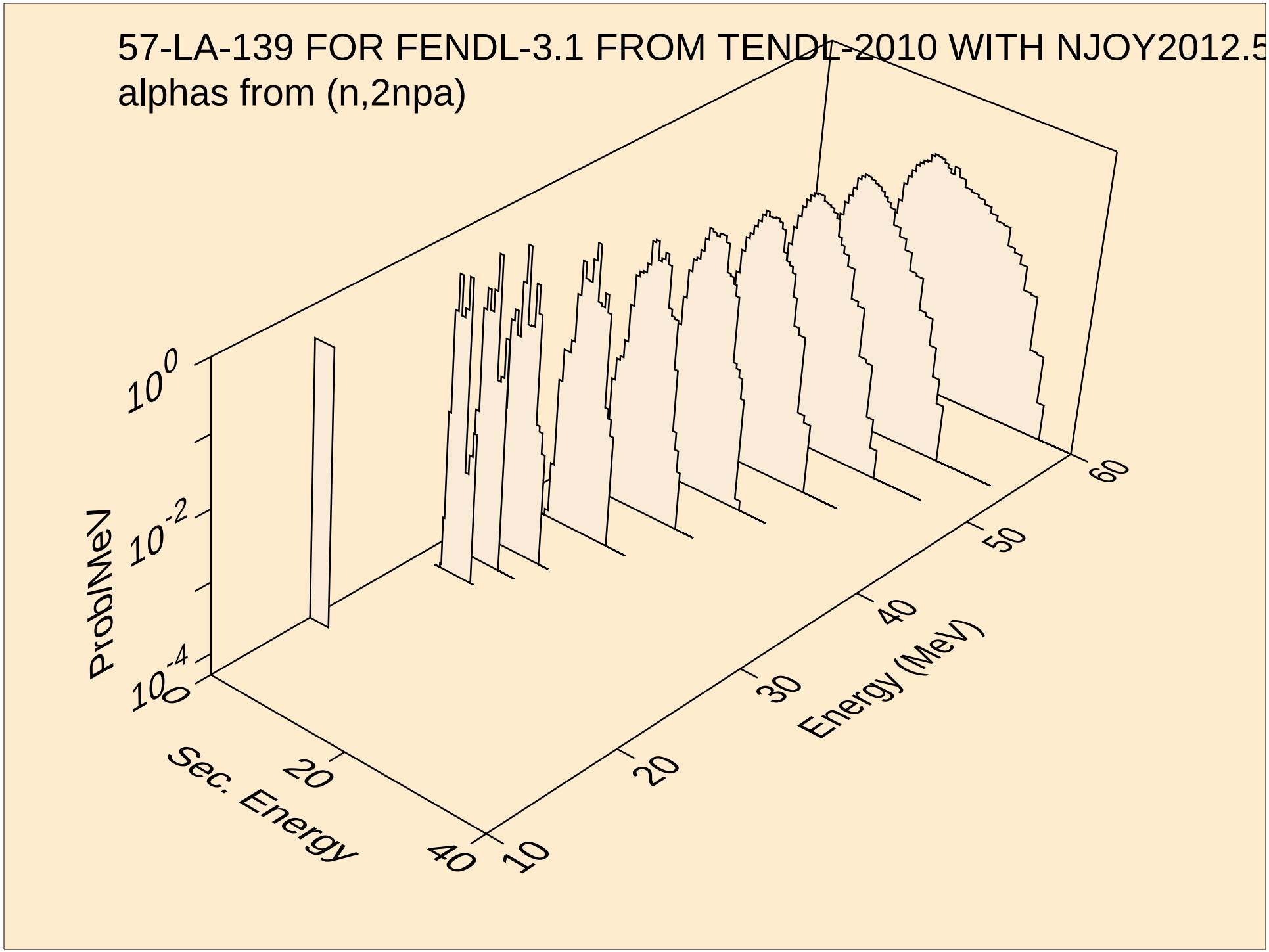

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
alphas from (n,pa)
Prob/MeV
10^0
10^-2
0
20
40
60
Sec. Energy
0
10
20
30
40
50
60
Energy (MeV)

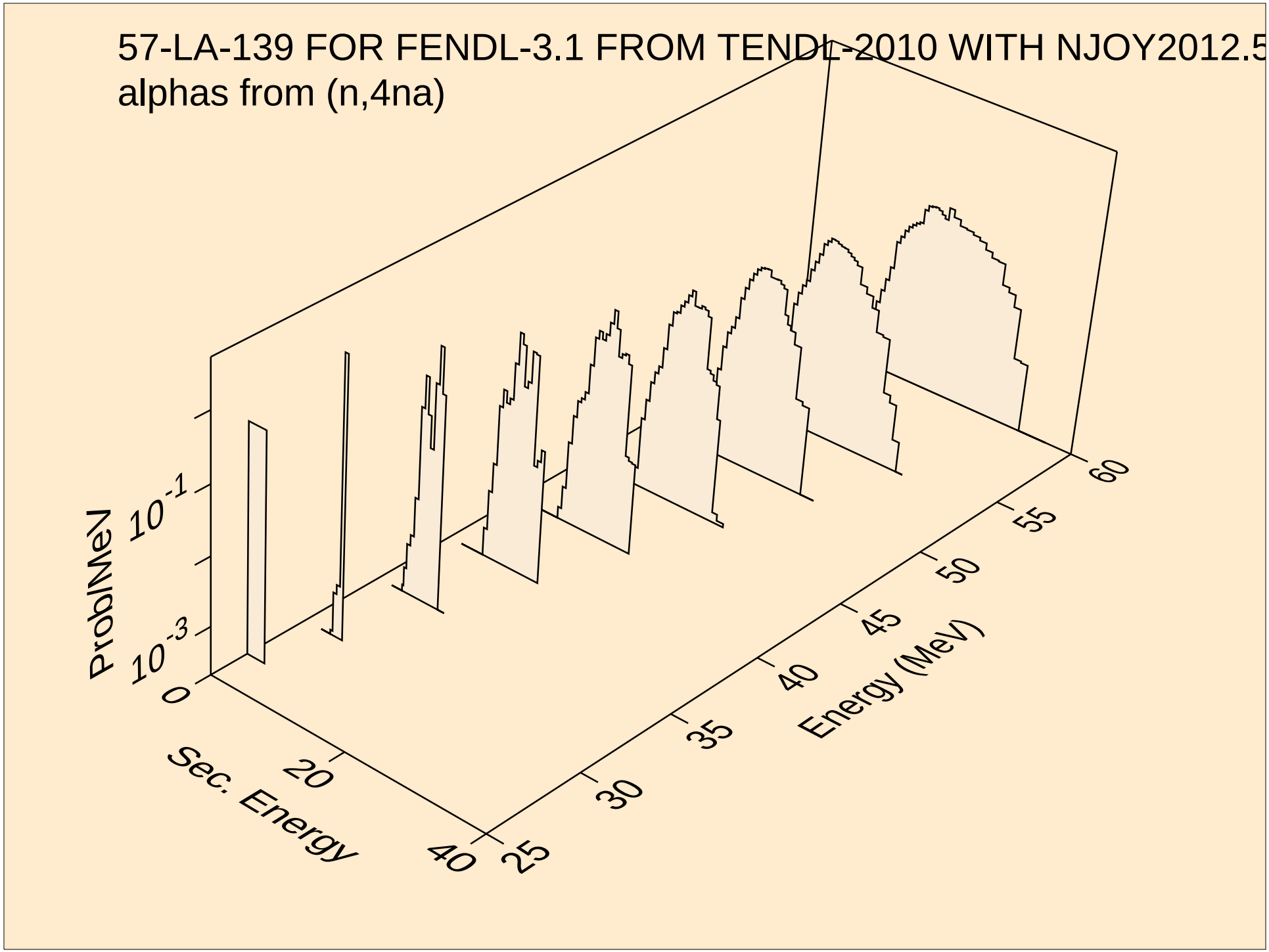

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
alphas from (n,t2a)
Prob/MeV
10-2
10-4
0
Sec. Energy
20
40
10
20
30
40
50
60
Energy (MeV)

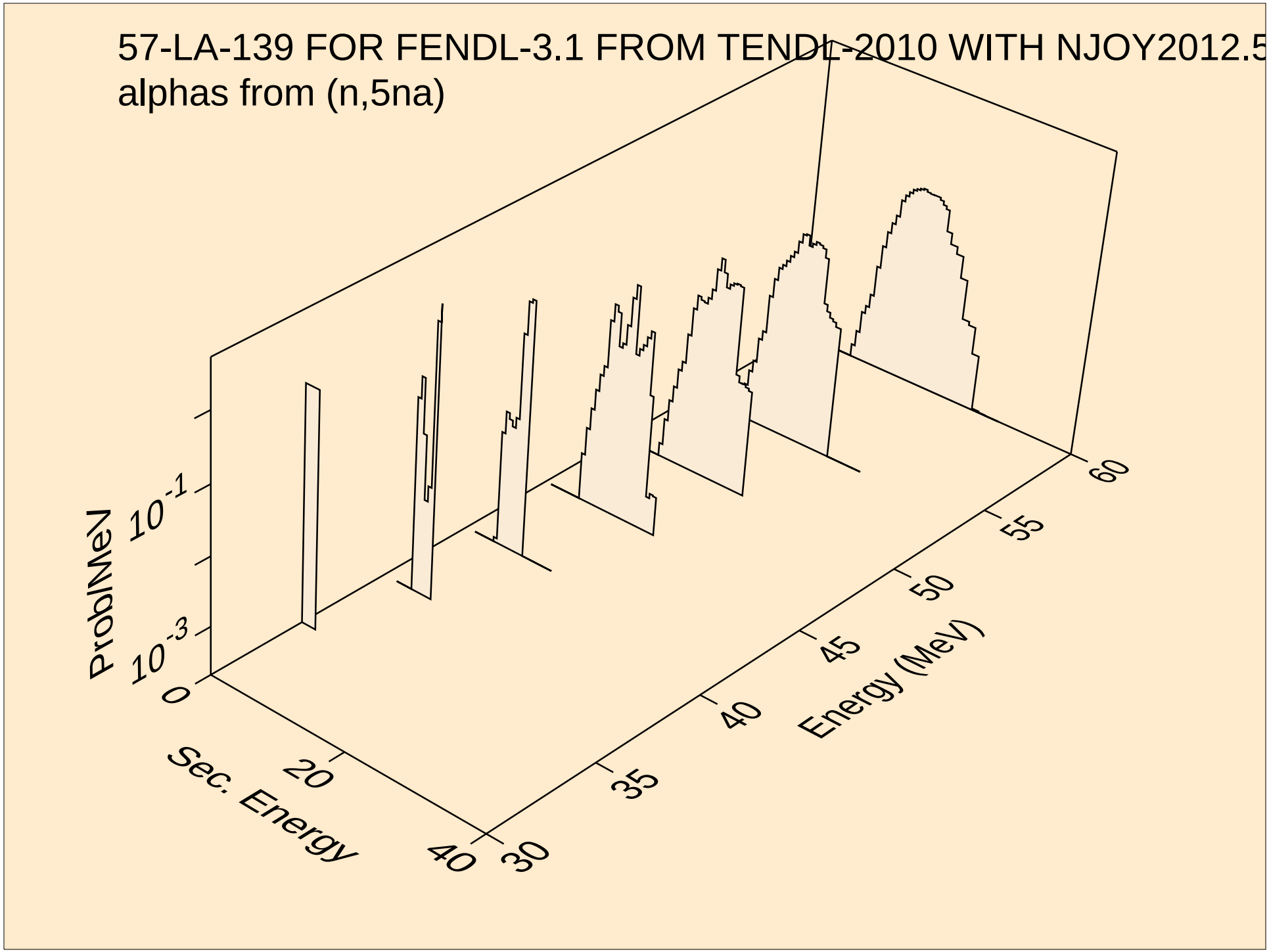

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
alphas from (n,da)
Prob/MeV
10^0
10^-2
10^-4
0
20
40
60
Sec. Energy
0
10
20
30
40
50
60
Energy (MeV)

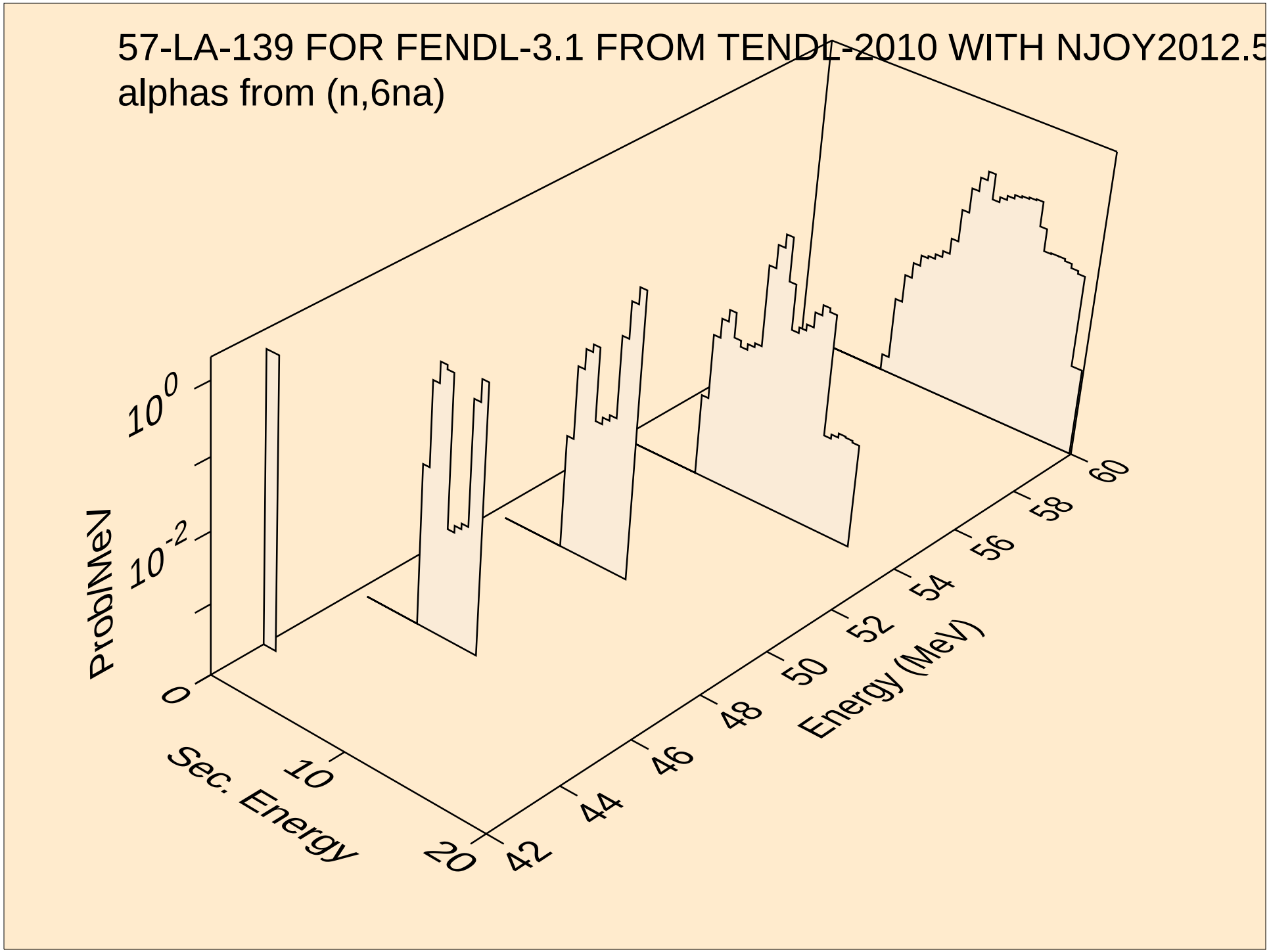

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
alphas from (n,ta)
Prob/MeV
10^0
10^-2
0
Sec. Energy
20
40
0
10
20
30
40
50
60
Energy (MeV)

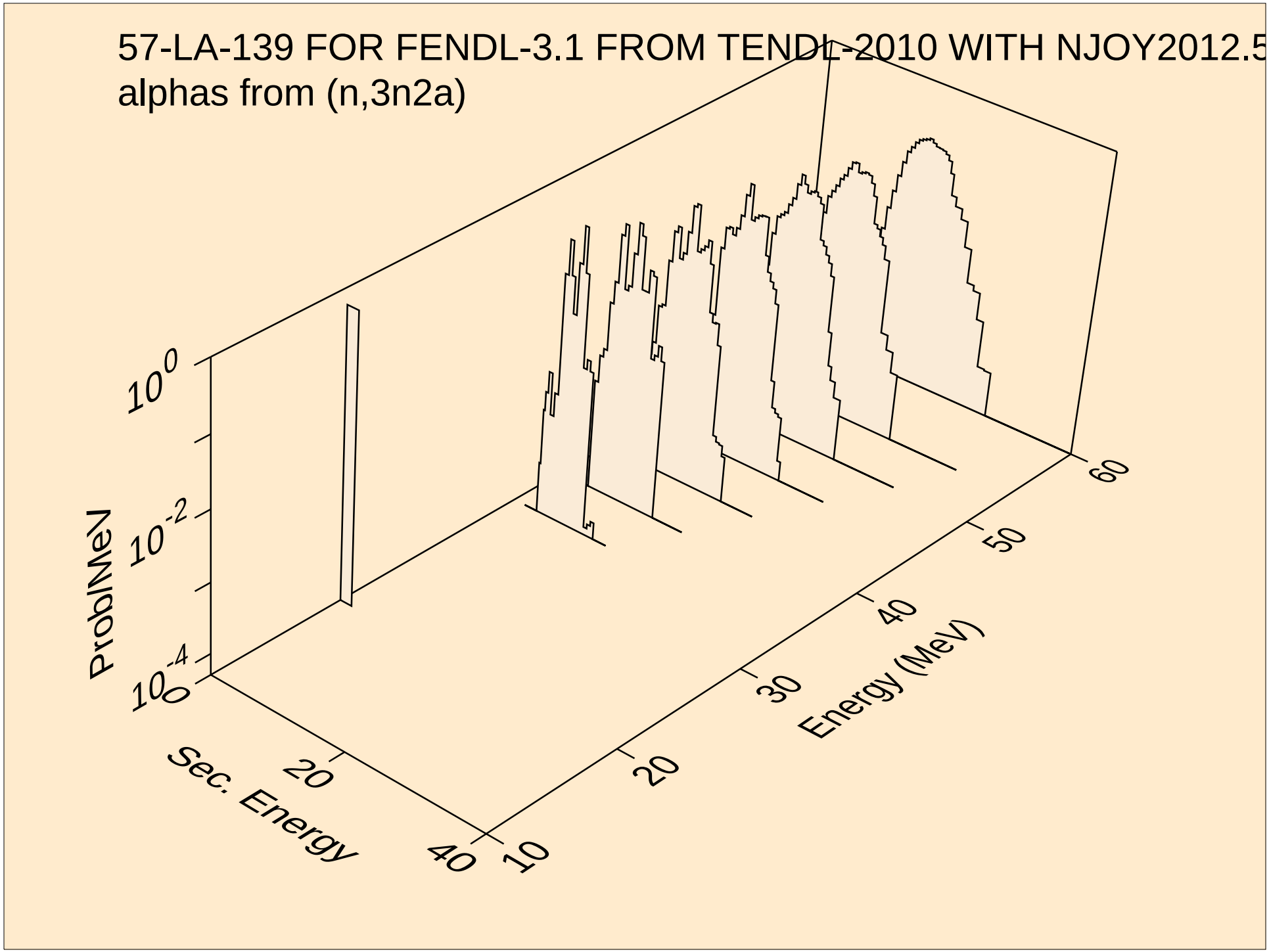

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
alphas from (n,nda)
Prob/MeV
10^0
10^-2
10^-4
0
20
40
Sec. Energy
10
20
30
40
50
60
Energy (MeV)

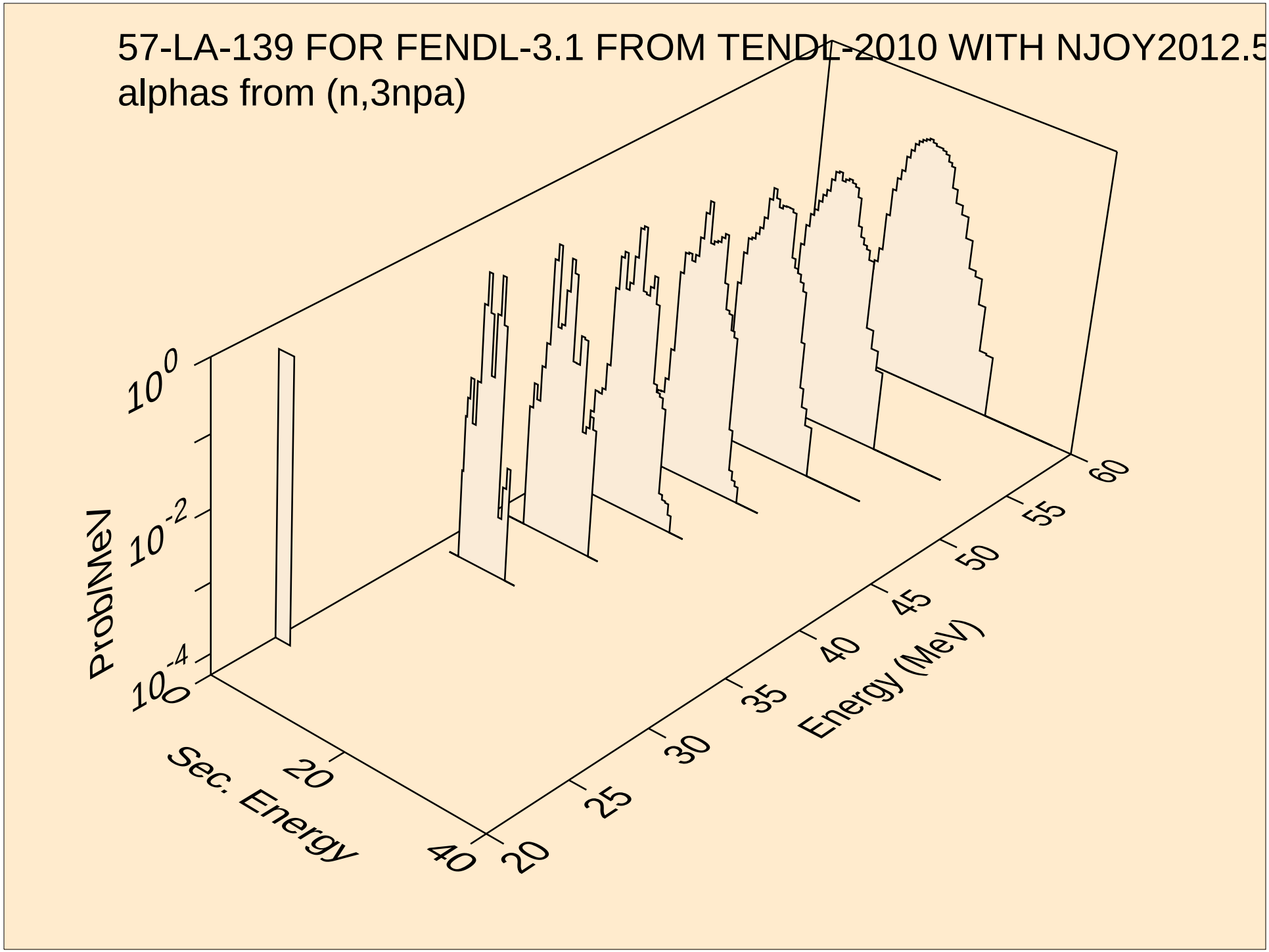

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
alphas from (n,2npa)
Prob/MeV
10^0
10^-2
10^-4
0
20
40
Sec. Energy
10
20
30
40
50
60
Energy (MeV)

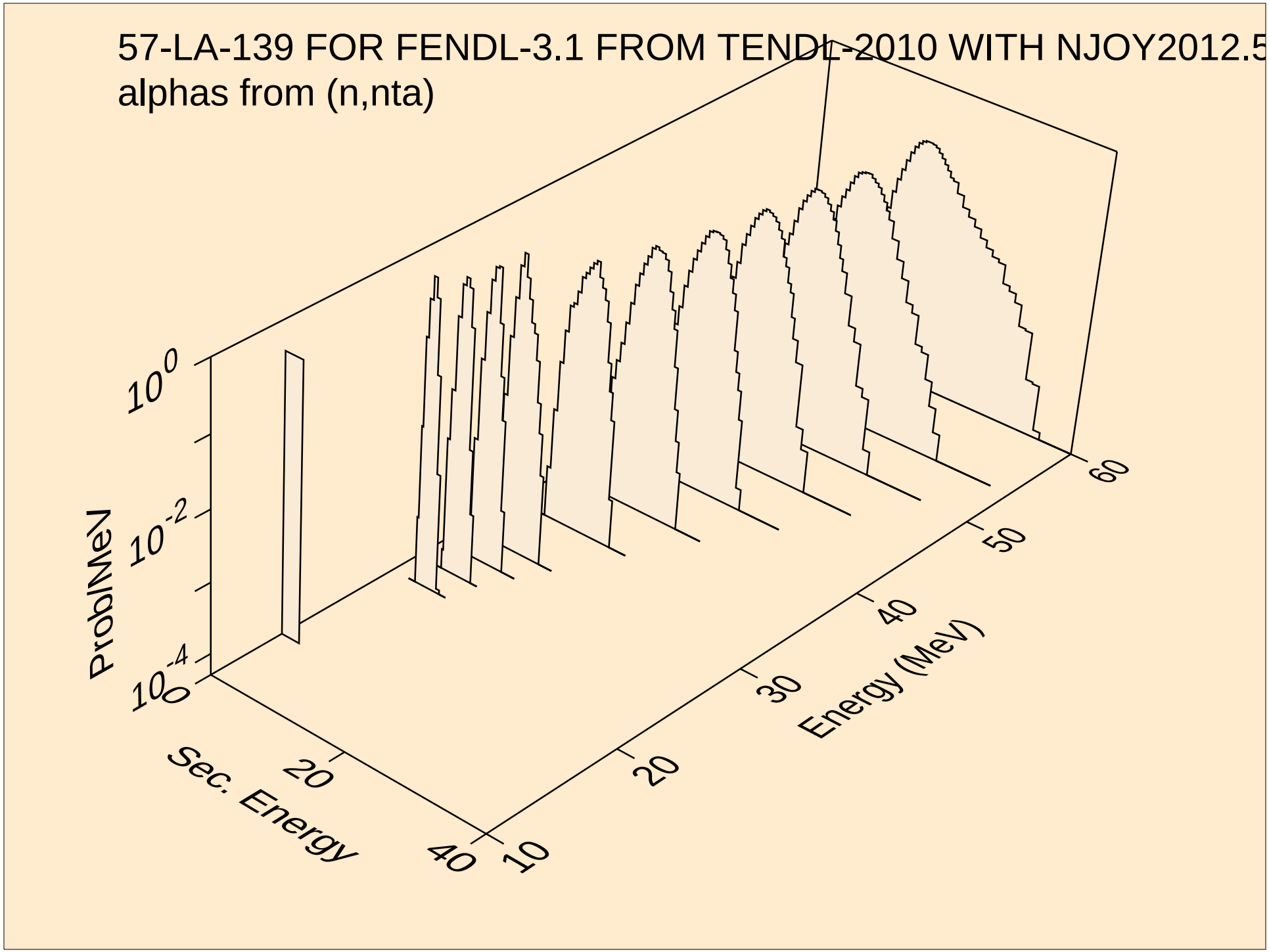

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
alphas from (n,4na)
Prob/MeV
10-1
10-3
0
Sec. Energy
20
40
25
30
35
40
45
50
55
60
Energy (MeV)

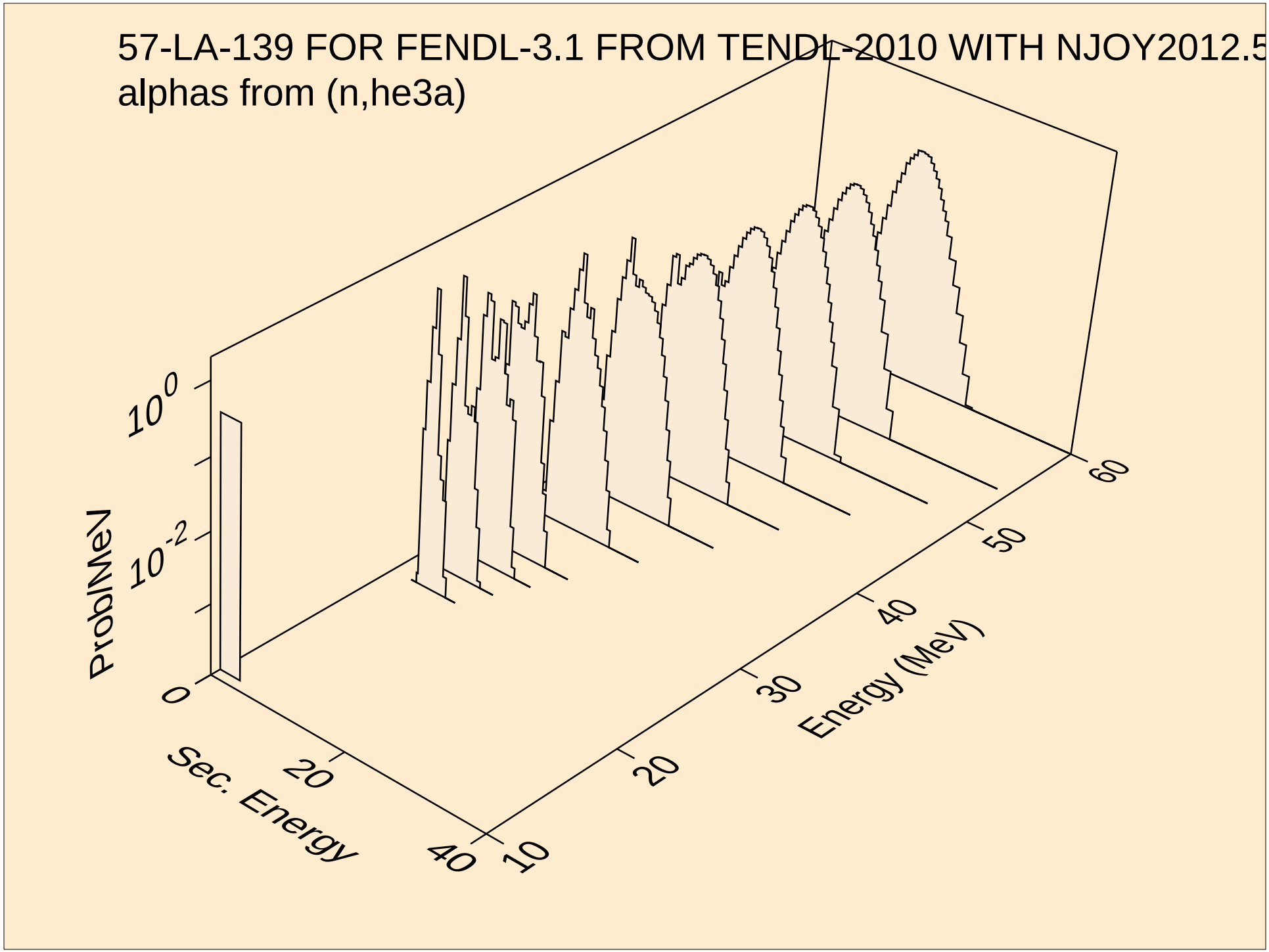

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
alphas from (n,5na)
Prob/MeV
10-1
10-3
0
Sec. Energy
20
40
30
35
40
45
50
55
60
Energy (MeV)

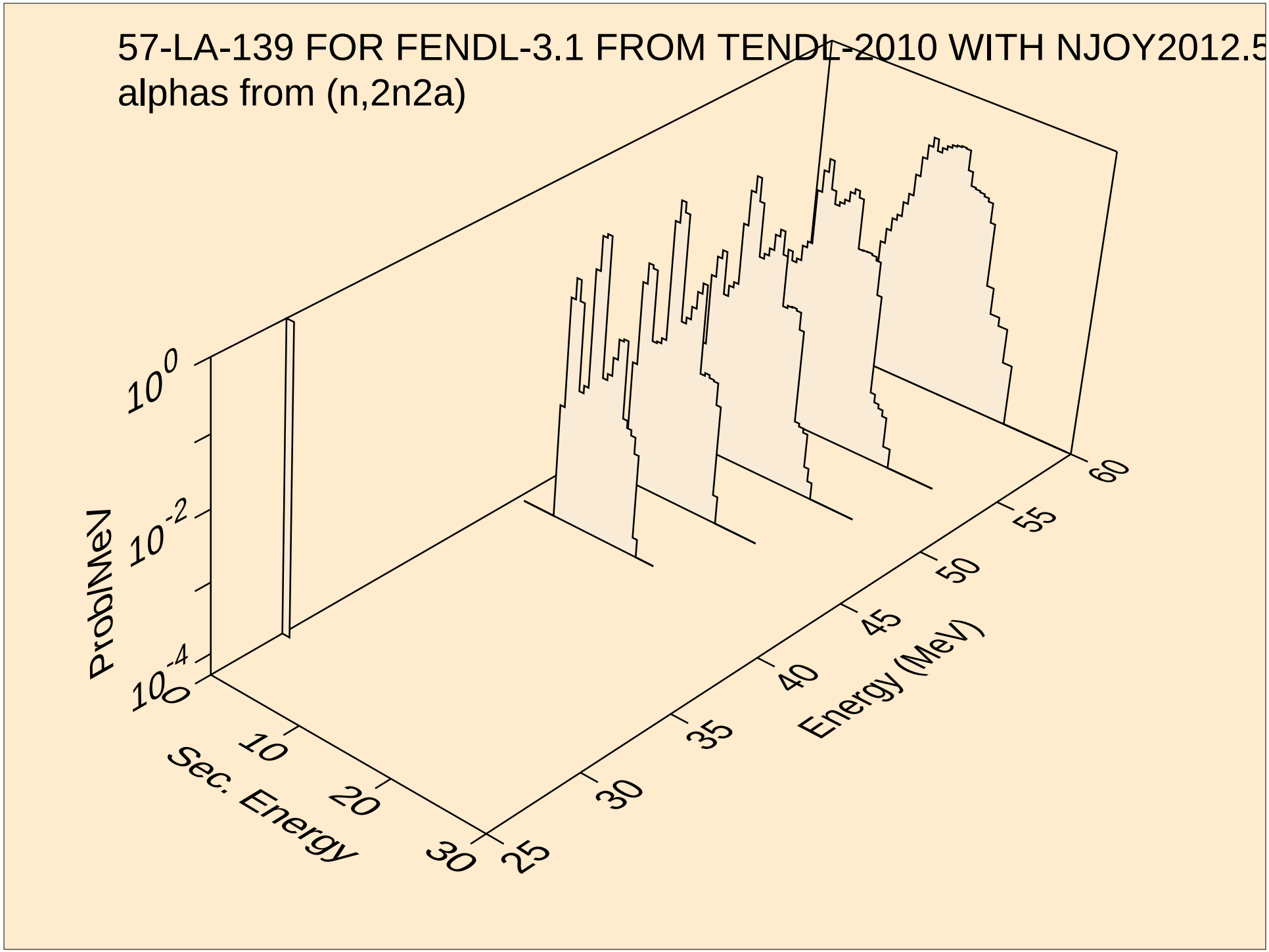

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
alphas from (n,6na)
Prob/MeV
10^{0}
10^{-2}
0
10
20
Sec. Energy
42
44
46
48
50
52
54
56
58
60
Energy (MeV)

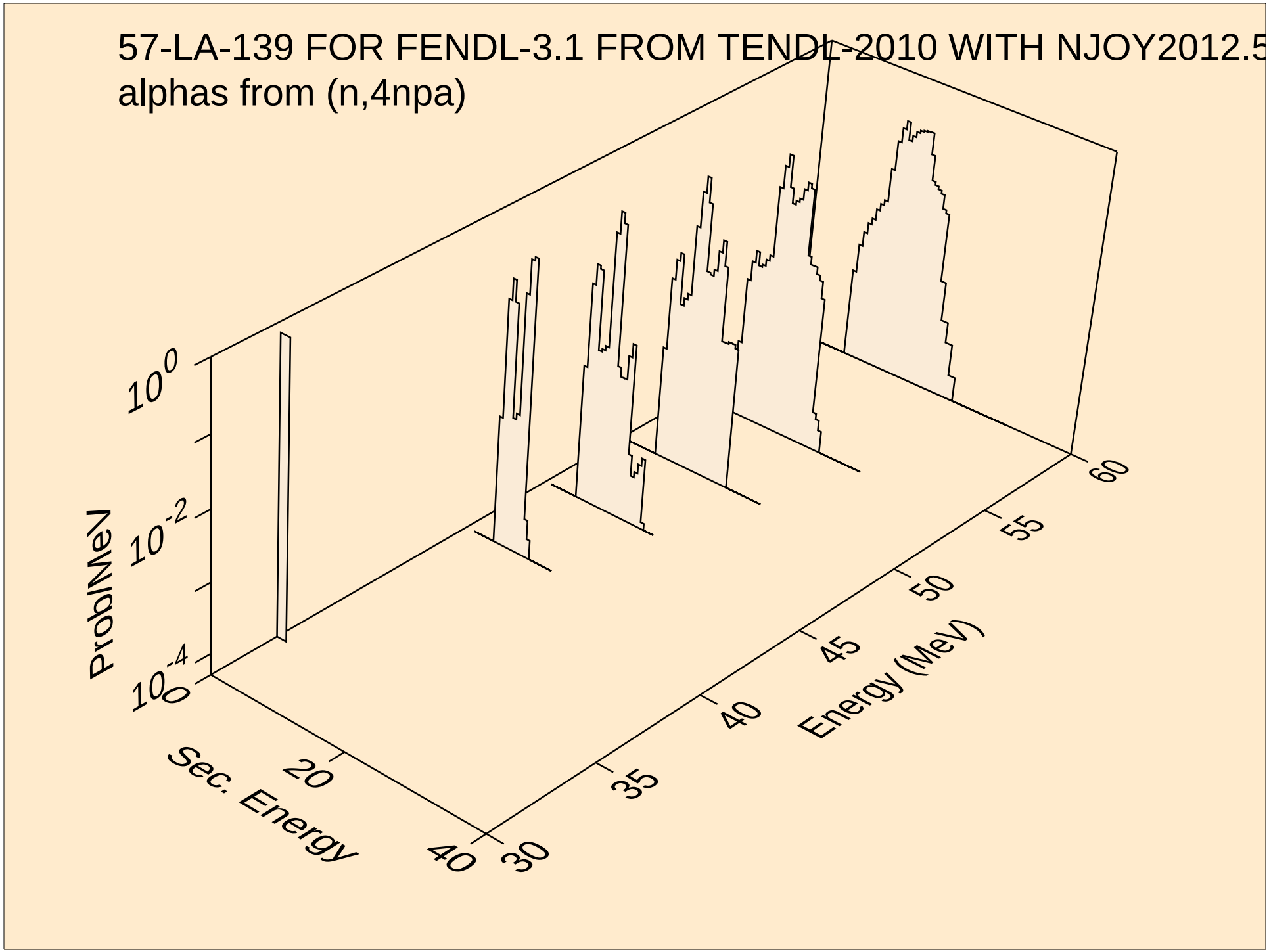

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
alphas from (n,3n2a)
Prob/MeV
10^0
10^-2
10^-4
0
20
40
Sec. Energy
10
20
30
40
50
60
Energy (MeV)

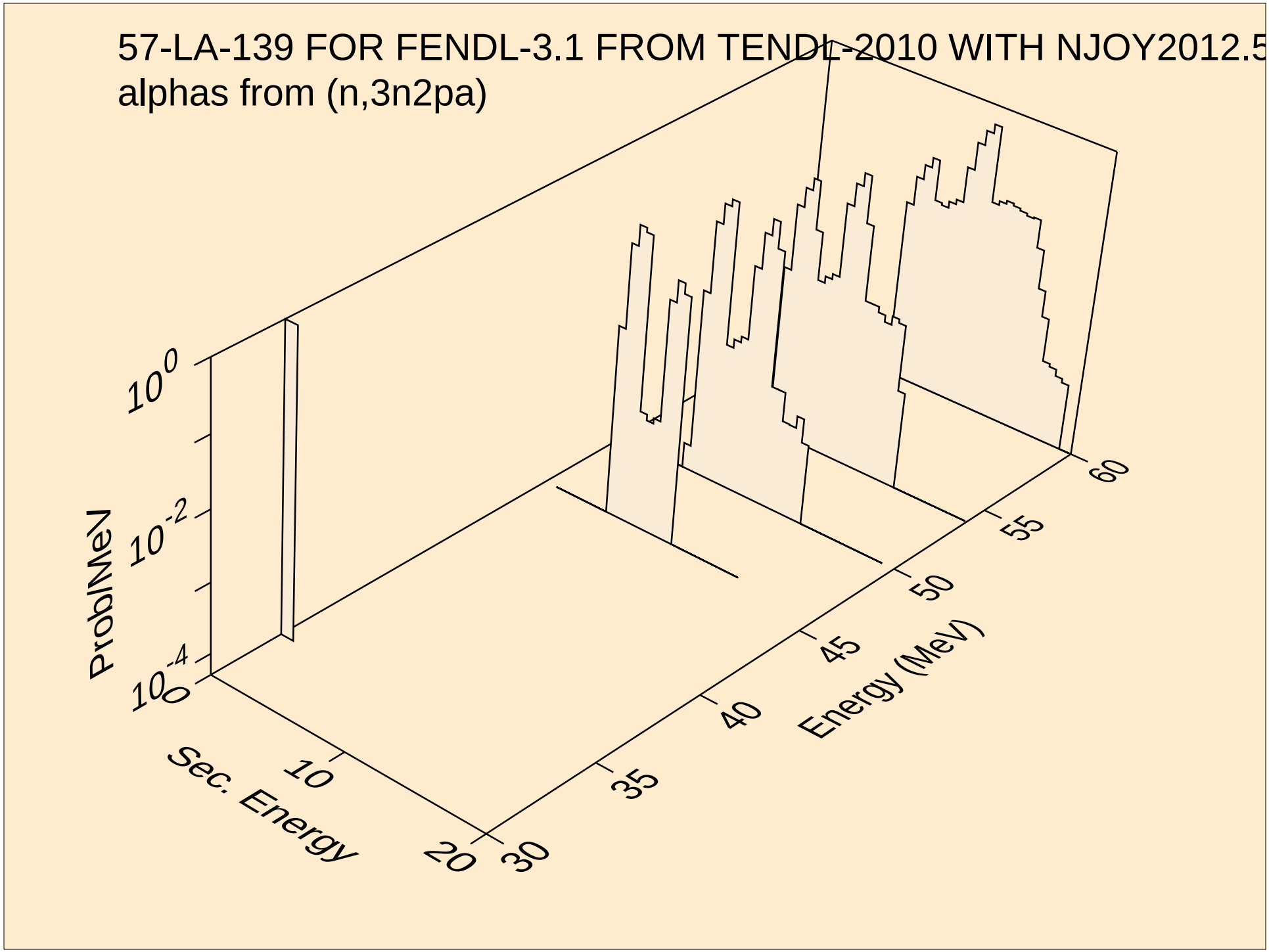

57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
alphas from (n,3npa)
Prob/MeV
10^0
10^-2
10^-4
0
Sec. Energy
20
40
20
25
30
35
40
45
50
55
60
Energy (MeV)


57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
alphas from (n,nta)
Prob/MeV
10^0
10^-2
10^-4
0
Sec. Energy
20
40
10
20
30
40
50
60
Energy (MeV)


57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
alphas from (n,he3a)
Prob/MeV
10^{0}
10^{-2}
0
Sec. Energy
20
40
10
20
30
Energy (MeV)
40
50
60


57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
alphas from (n,2n2a)
Prob/MeV
10^{0}
10^{-2}
10^{-4}
0
10
20
30
Sec. Energy
25
30
35
40
45
50
55
60
Energy (MeV)


57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
alphas from (n,4npa)
Prob/MeV
10^{0}
10^{-2}
10^{-4}
0
20
40
Sec. Energy
30
35
40
45
50
55
60
Energy (MeV)


57-LA-139 FOR FENDL-3.1 FROM TENDL-2010 WITH NJOY2012.5
alphas from (n,3n2pa)
Prob/MeV
10^0
10^-2
10^-4
Sec. Energy
0
10
20
30
35
40
45
50
55
60
Energy (MeV)