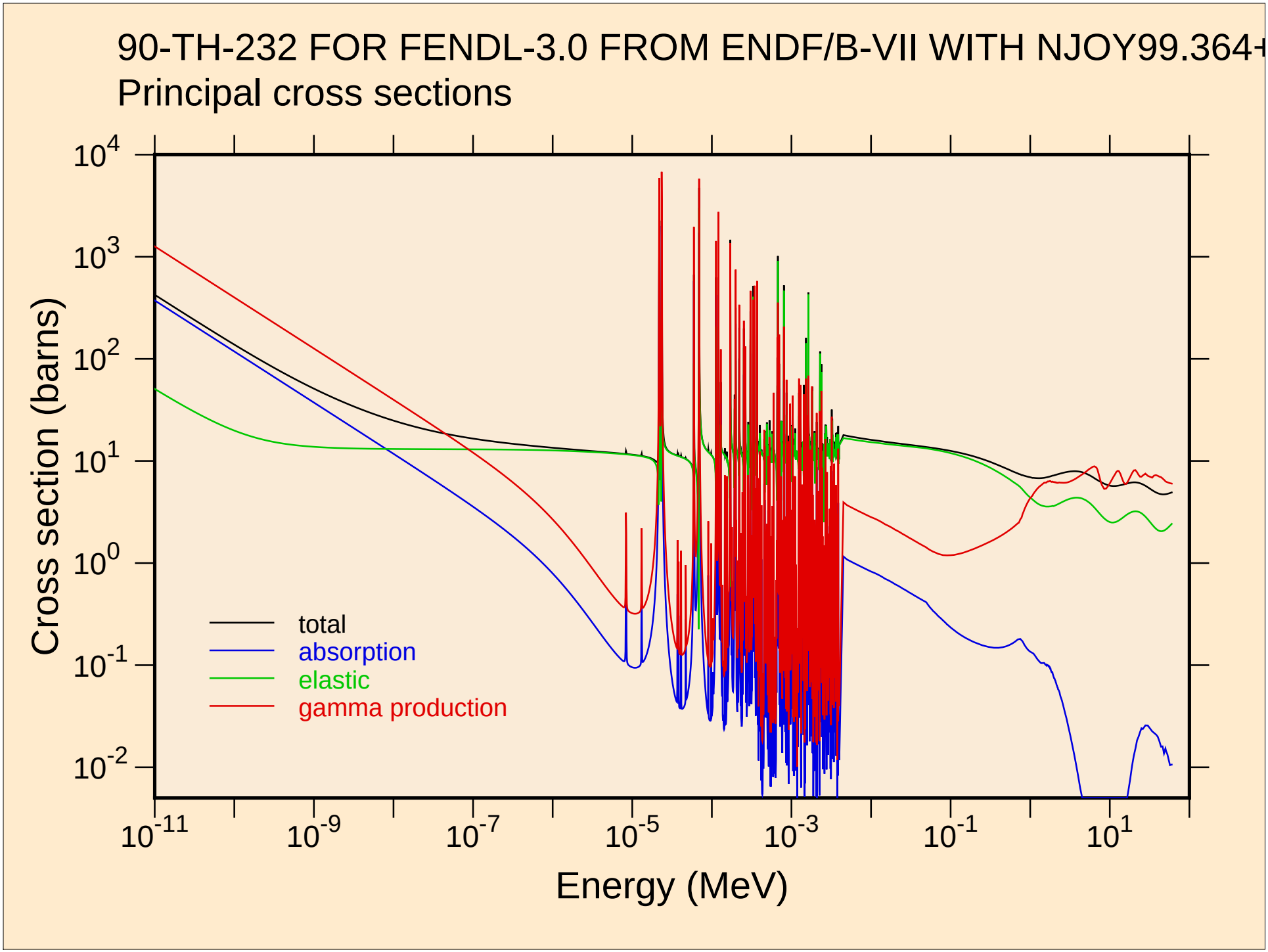
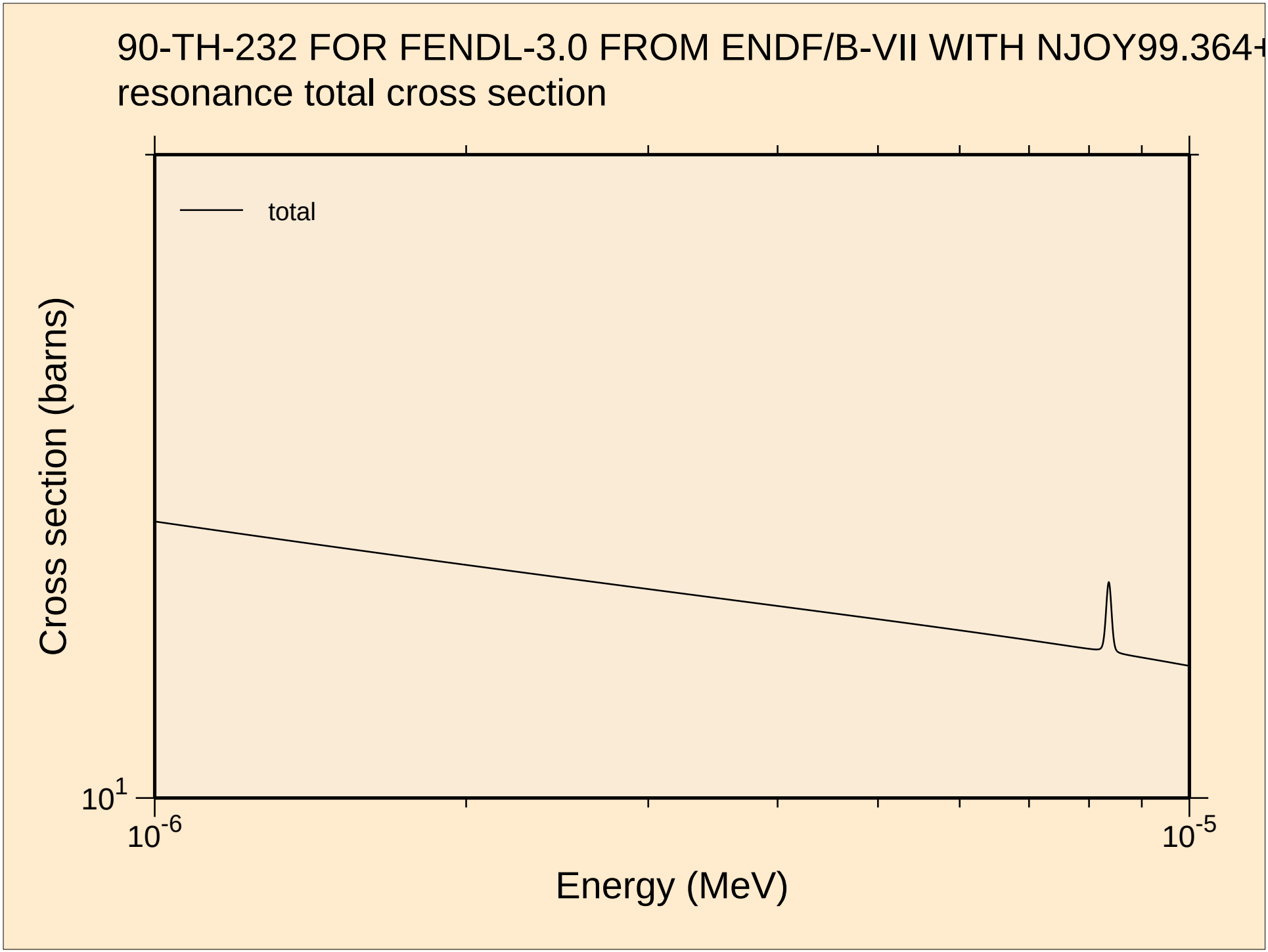
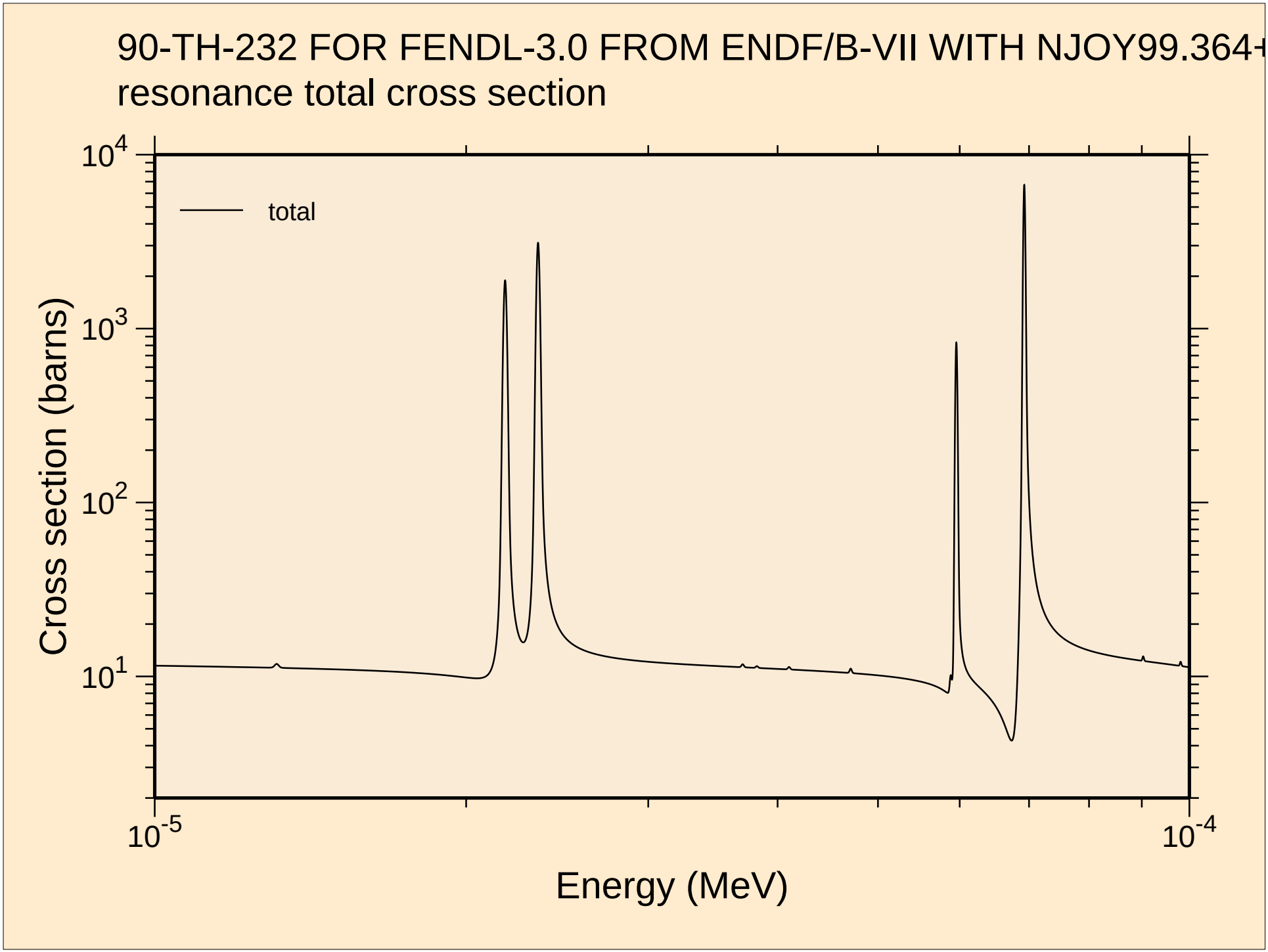
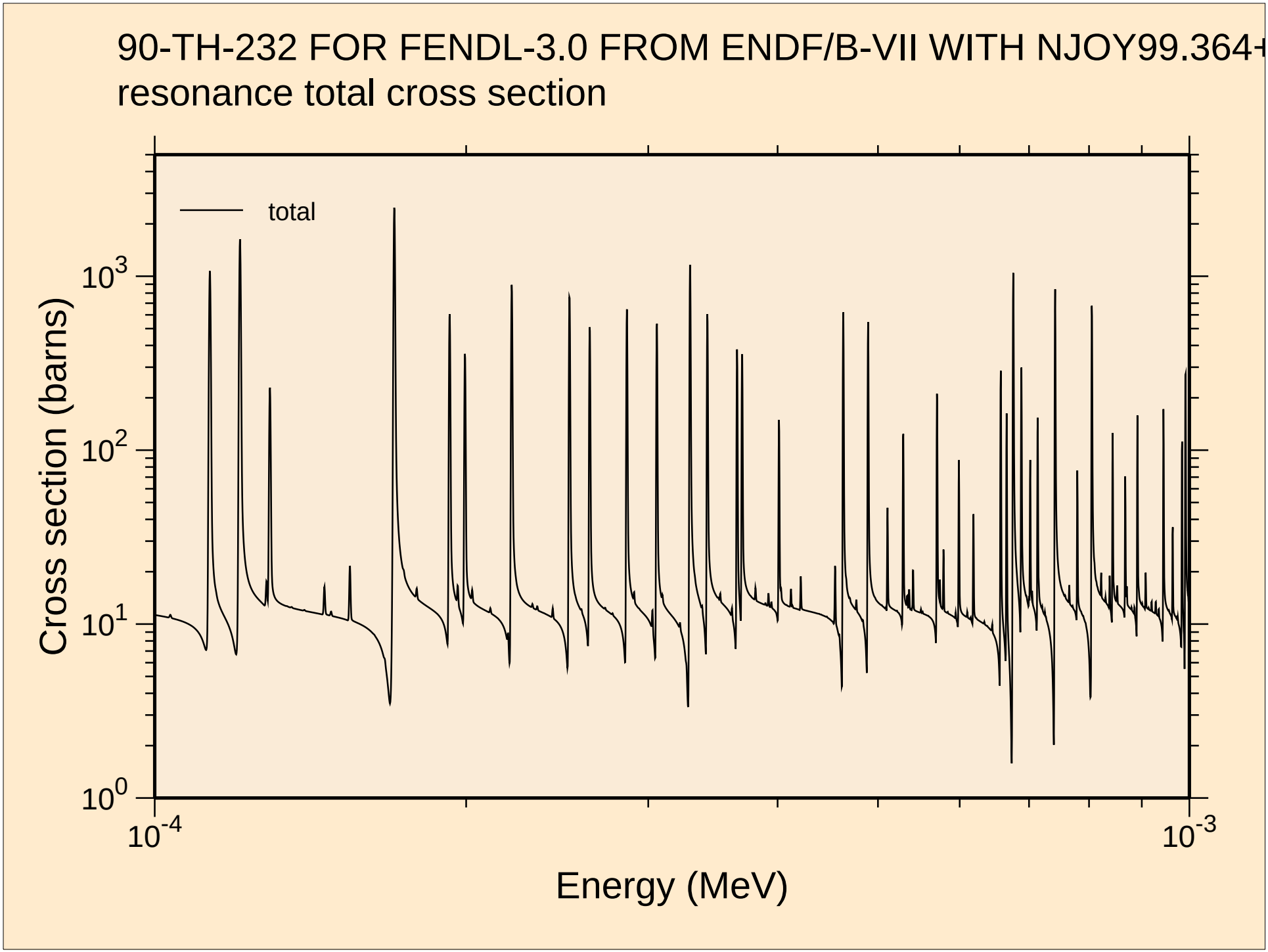
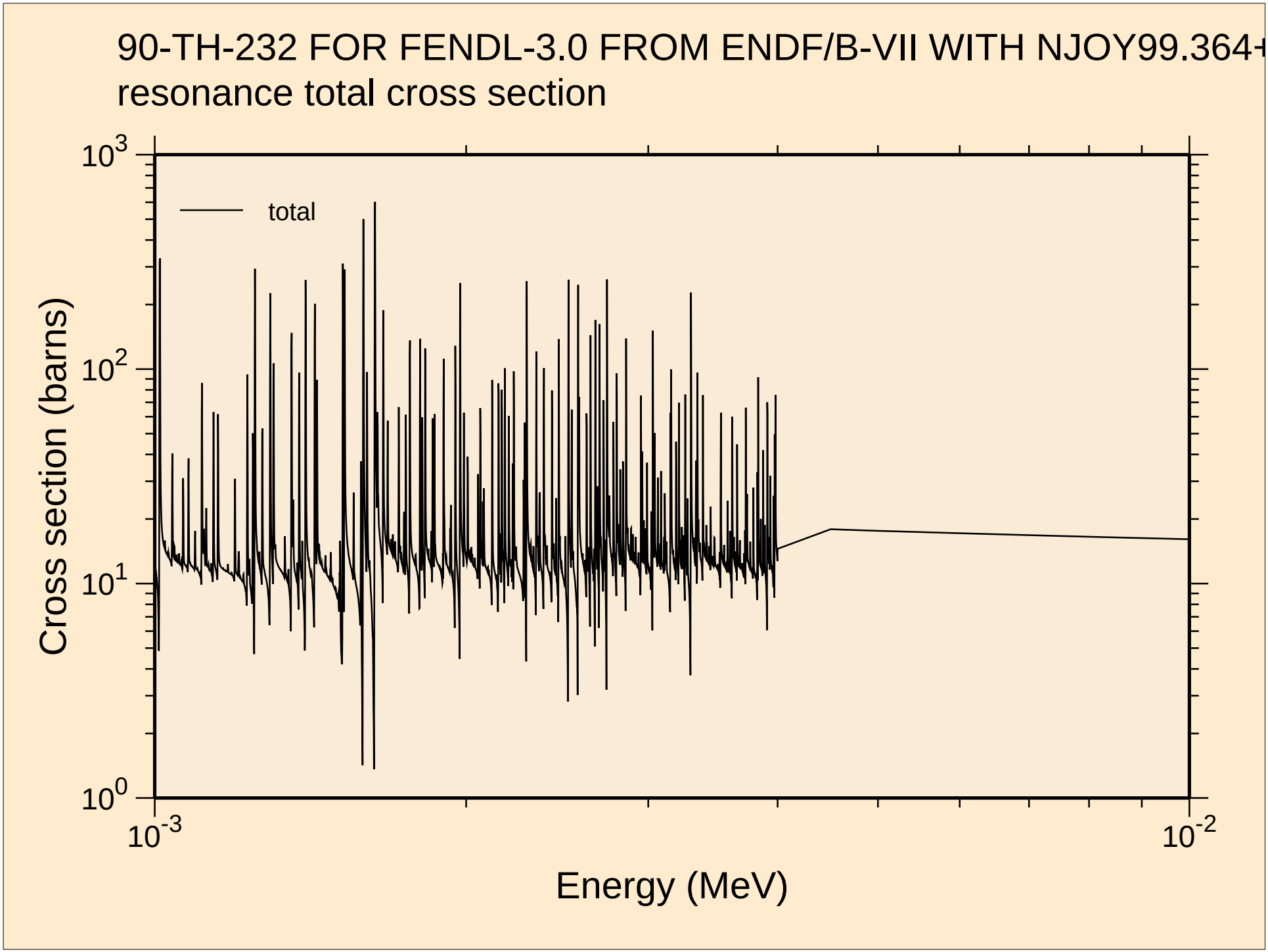
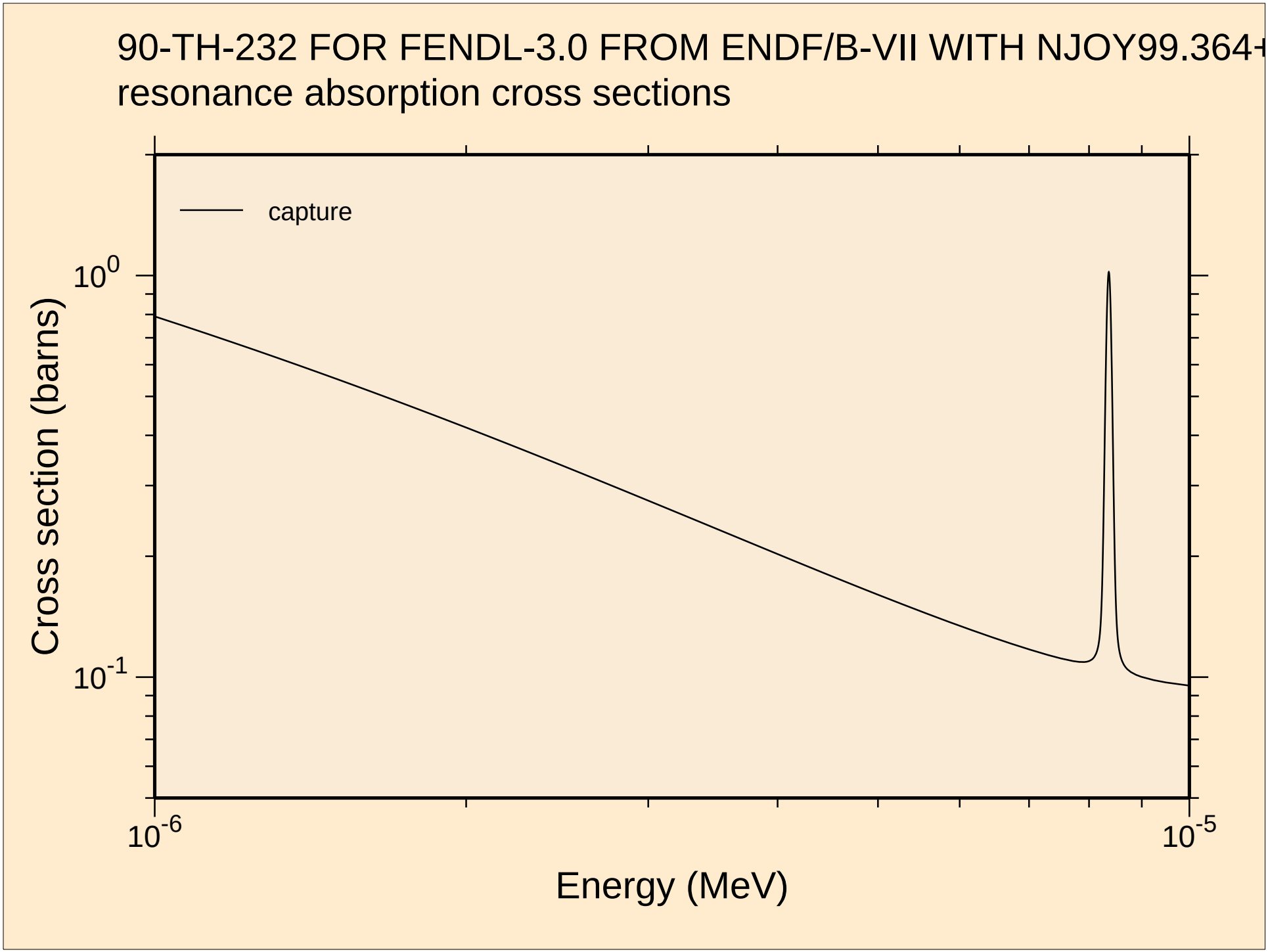

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
Principal cross sections
Cross section (barns)
Energy (MeV)
total
absorption
elastic
gamma production

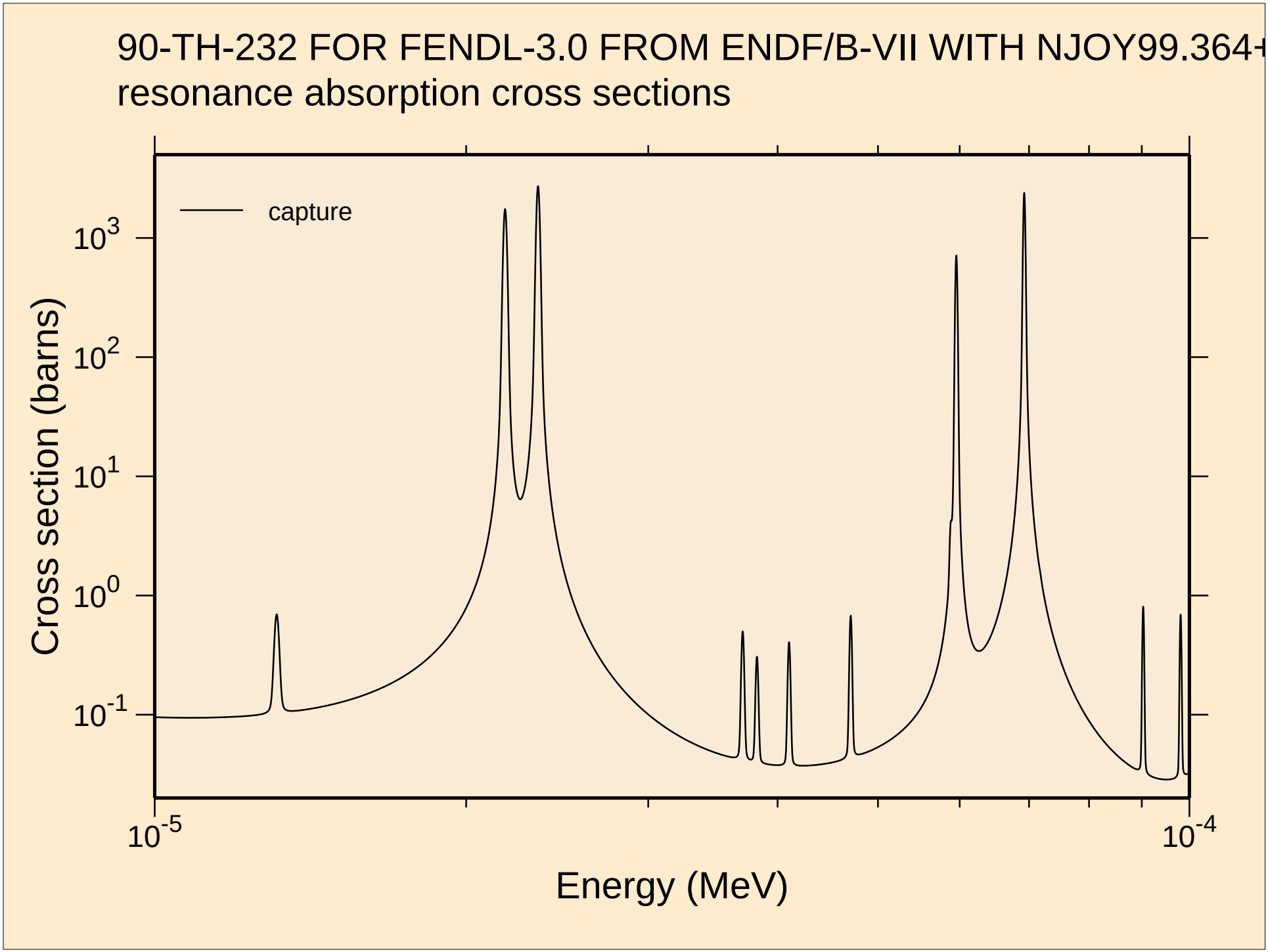

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
resonance total cross section
total
Cross section (barns)
10^1
10^-6
10^-5
Energy (MeV)

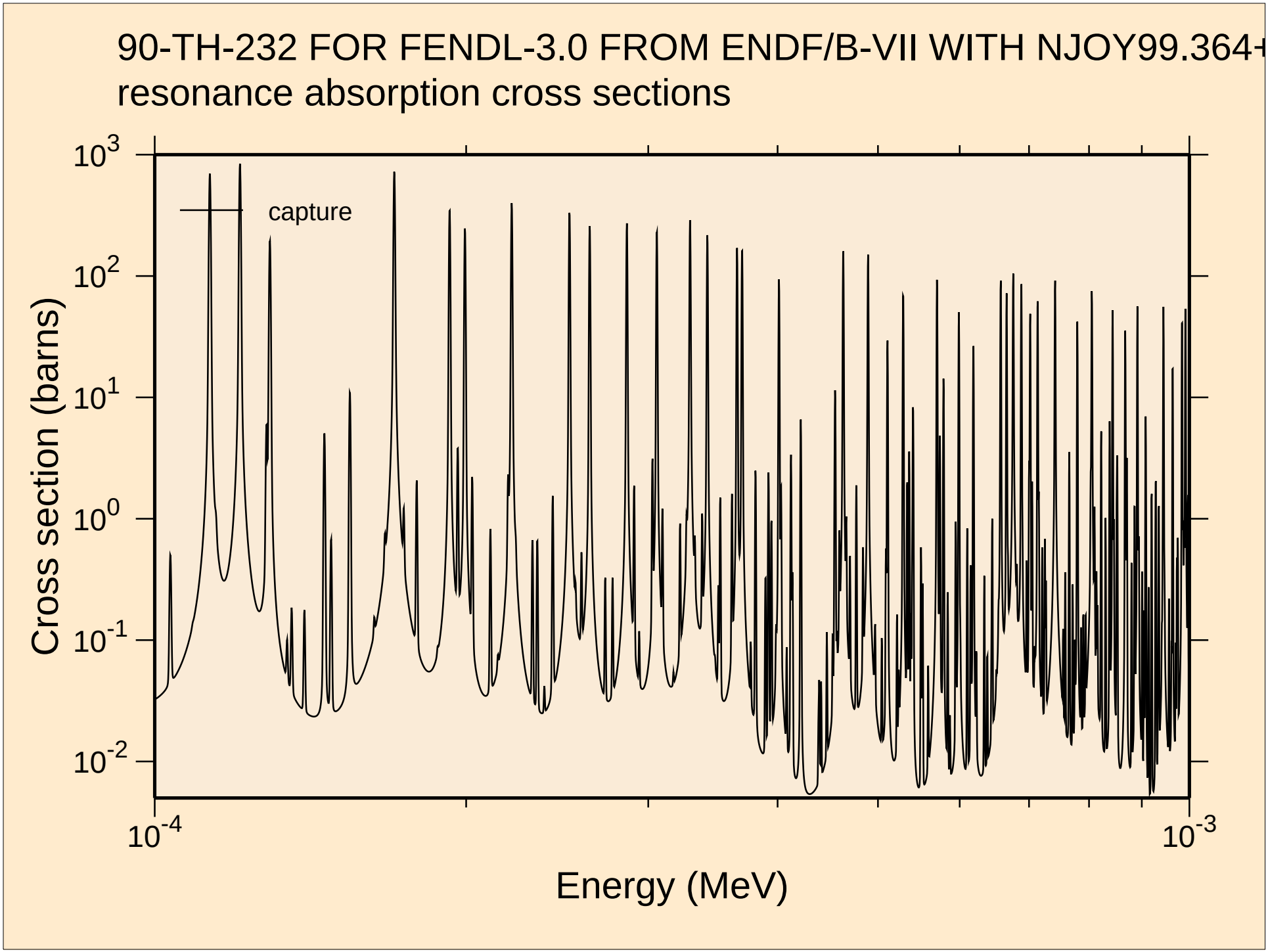

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
resonance total cross section
total
Cross section (barns)
10^4
10^3
10^2
10^1
10^{-5}
10^{-4}
Energy (MeV)

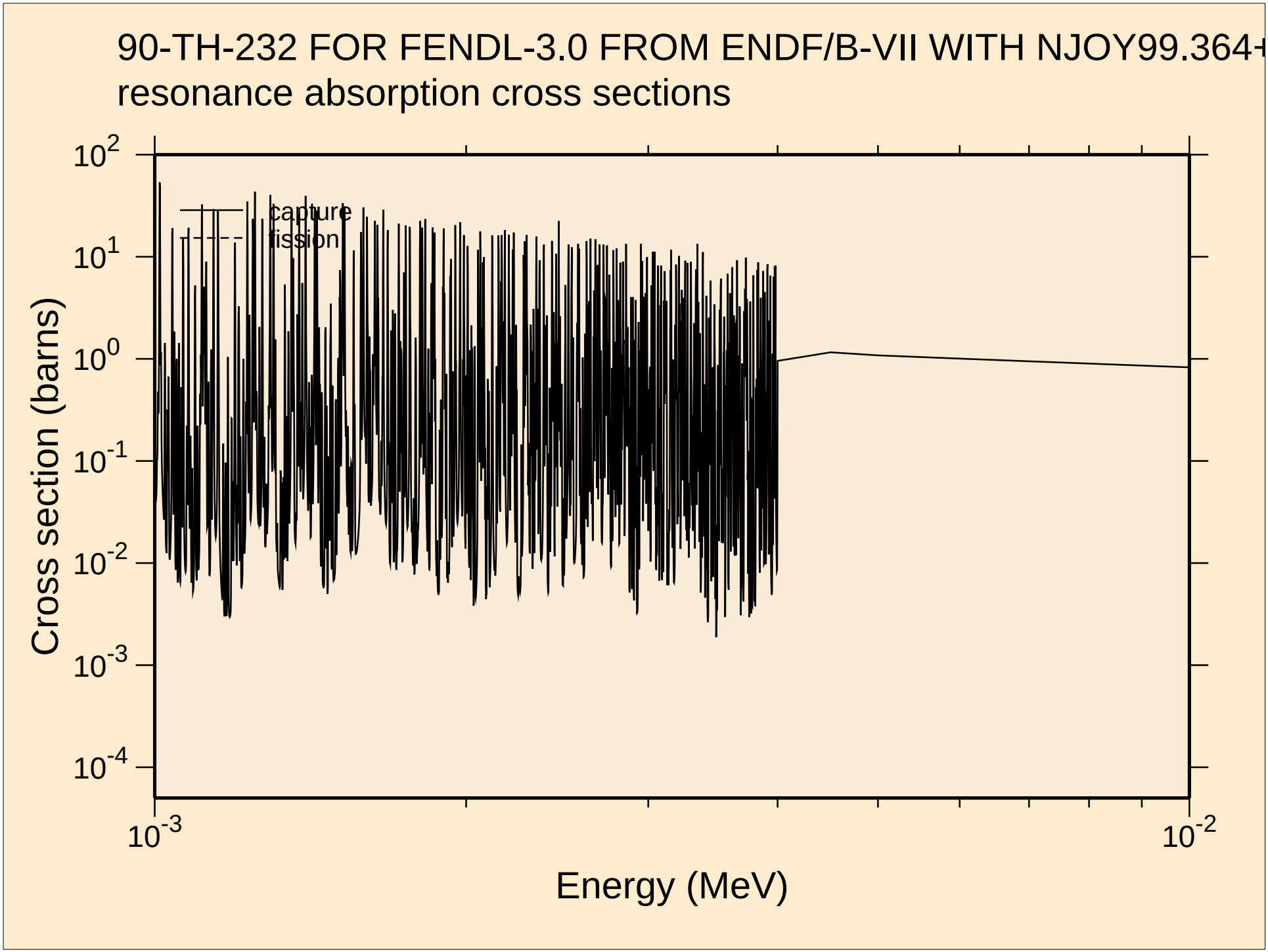

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
resonance total cross section
total
Cross section (barns)
10^3
10^2
10^1
10^0
10^{-4}
10^{-3}
Energy (MeV)

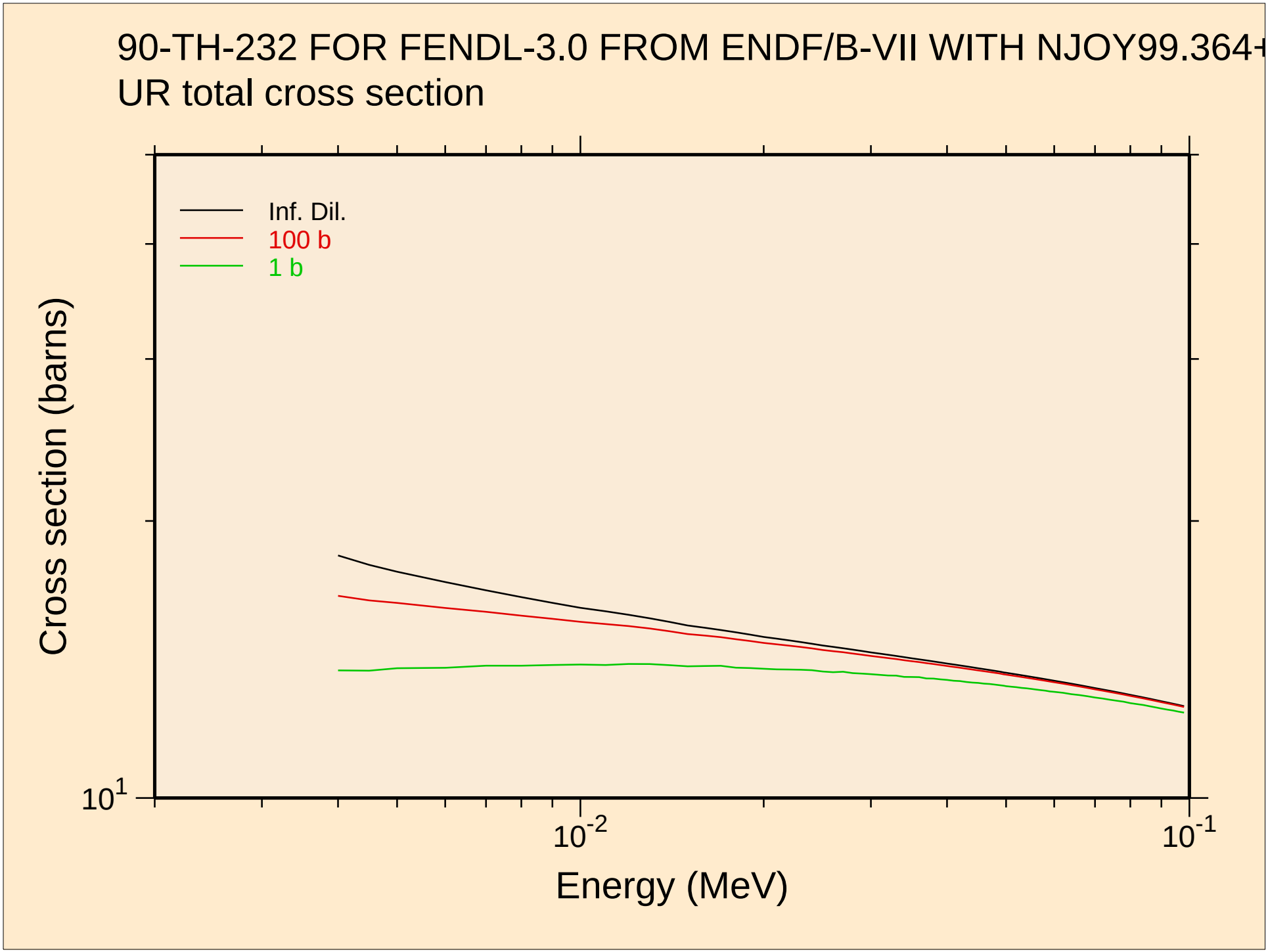

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
resonance total cross section
total
Cross section (barns)
10^3
10^2
10^1
10^0
10^{-3}
10^{-2}
Energy (MeV)


90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
resonance absorption cross sections
capture
Cross section (barns)
10^0
10^-1
10^-6
10^-5
Energy (MeV)

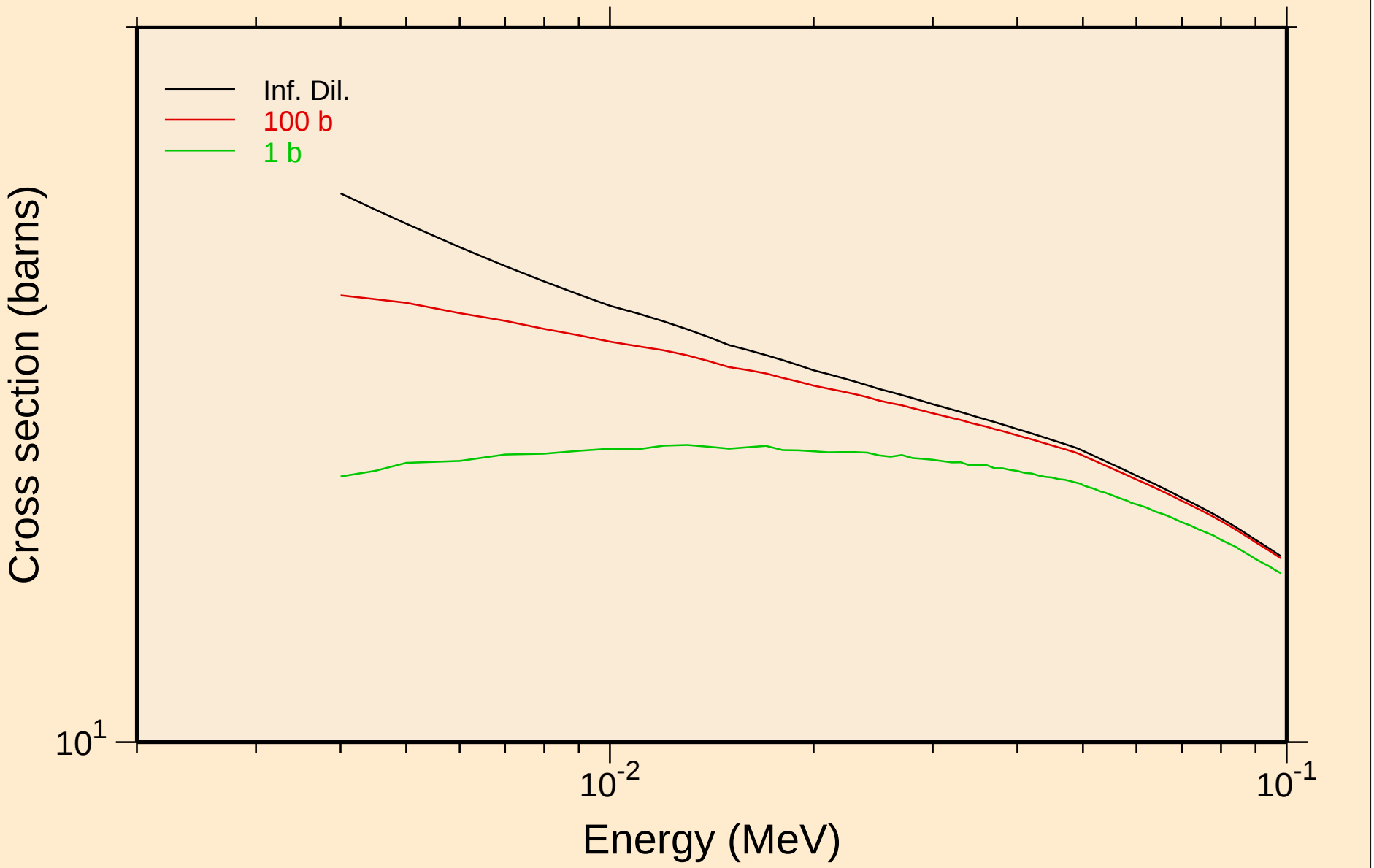

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
resonance absorption cross sections
capture
Cross section (barns)
10^3
10^2
10^1
10^0
10^-1
10^-5
10^-4
Energy (MeV)

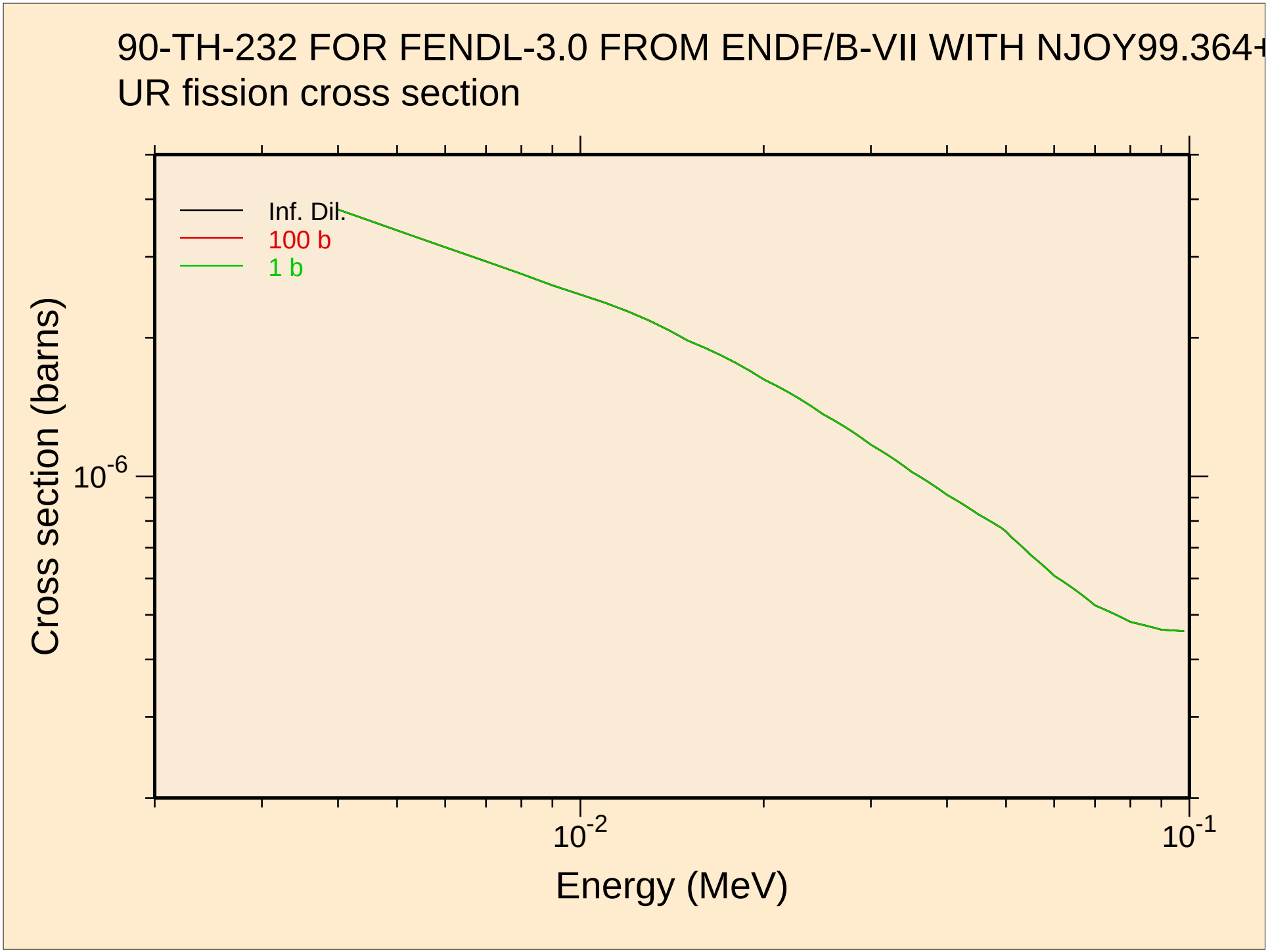

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
resonance absorption cross sections
capture
Cross section (barns)
10^3
10^2
10^1
10^0
10^-1
10^-2
10^-4
10^-3
Energy (MeV)

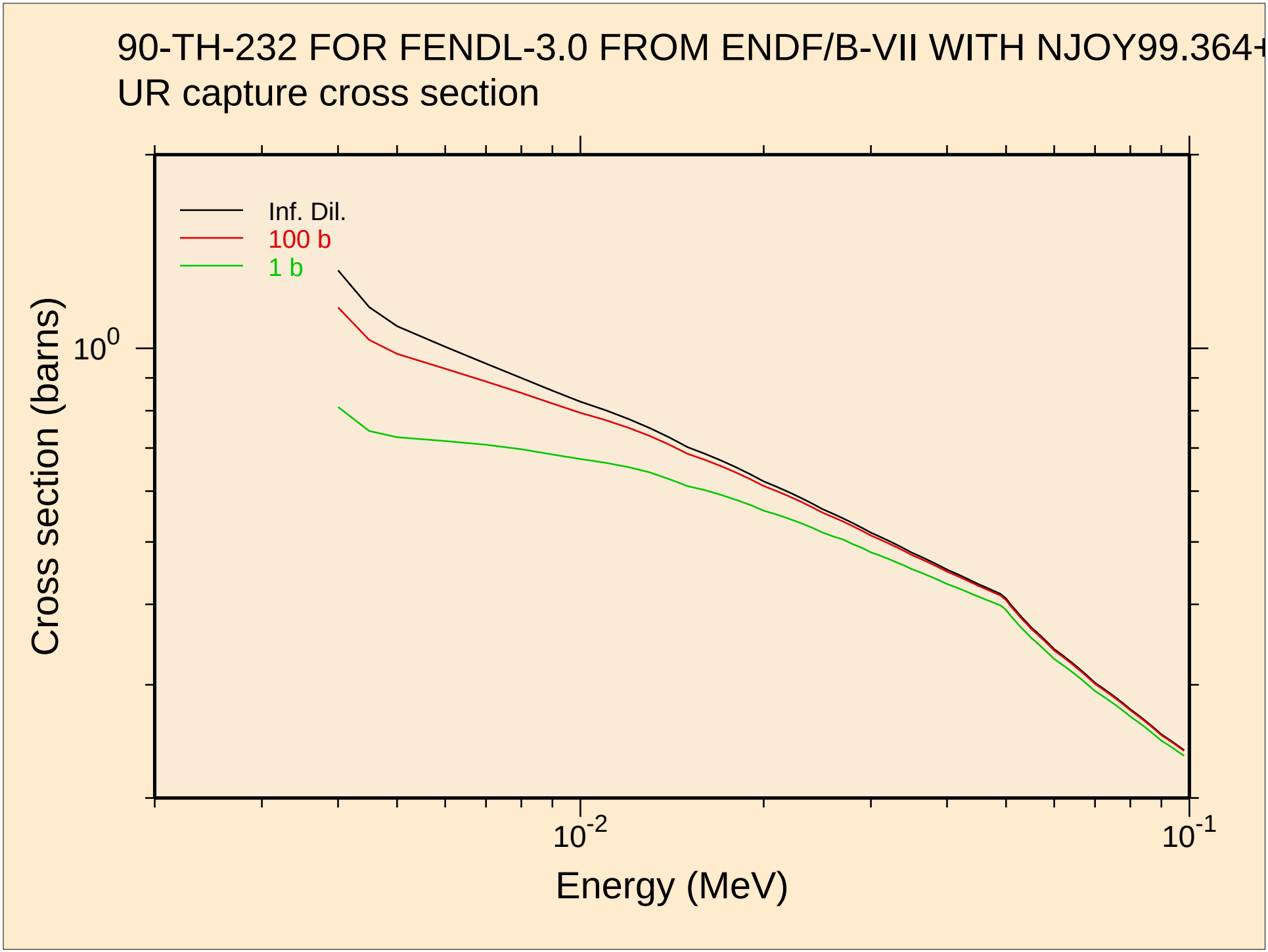

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
resonance absorption cross sections
capture
fission
Cross section (barns)
10^{2}
10^{1}
10^{0}
10^{-1}
10^{-2}
10^{-3}
10^{-4}
10^{-3}
10^{-2}
Energy (MeV)

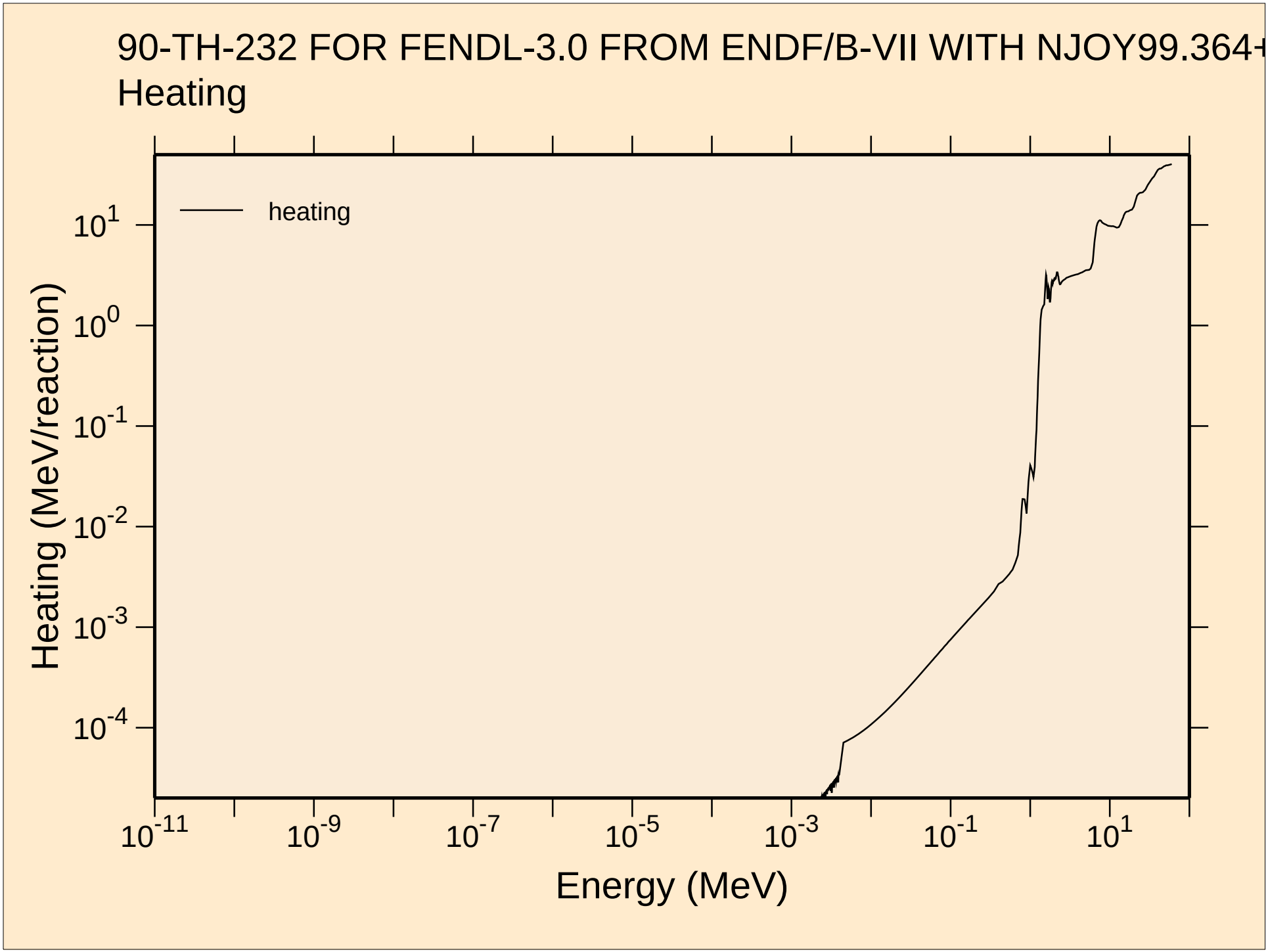

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
UR total cross section
Inf. Dil.
100 b
1 b
Cross section (barns)
10^1
10^-2
10^-1
Energy (MeV)

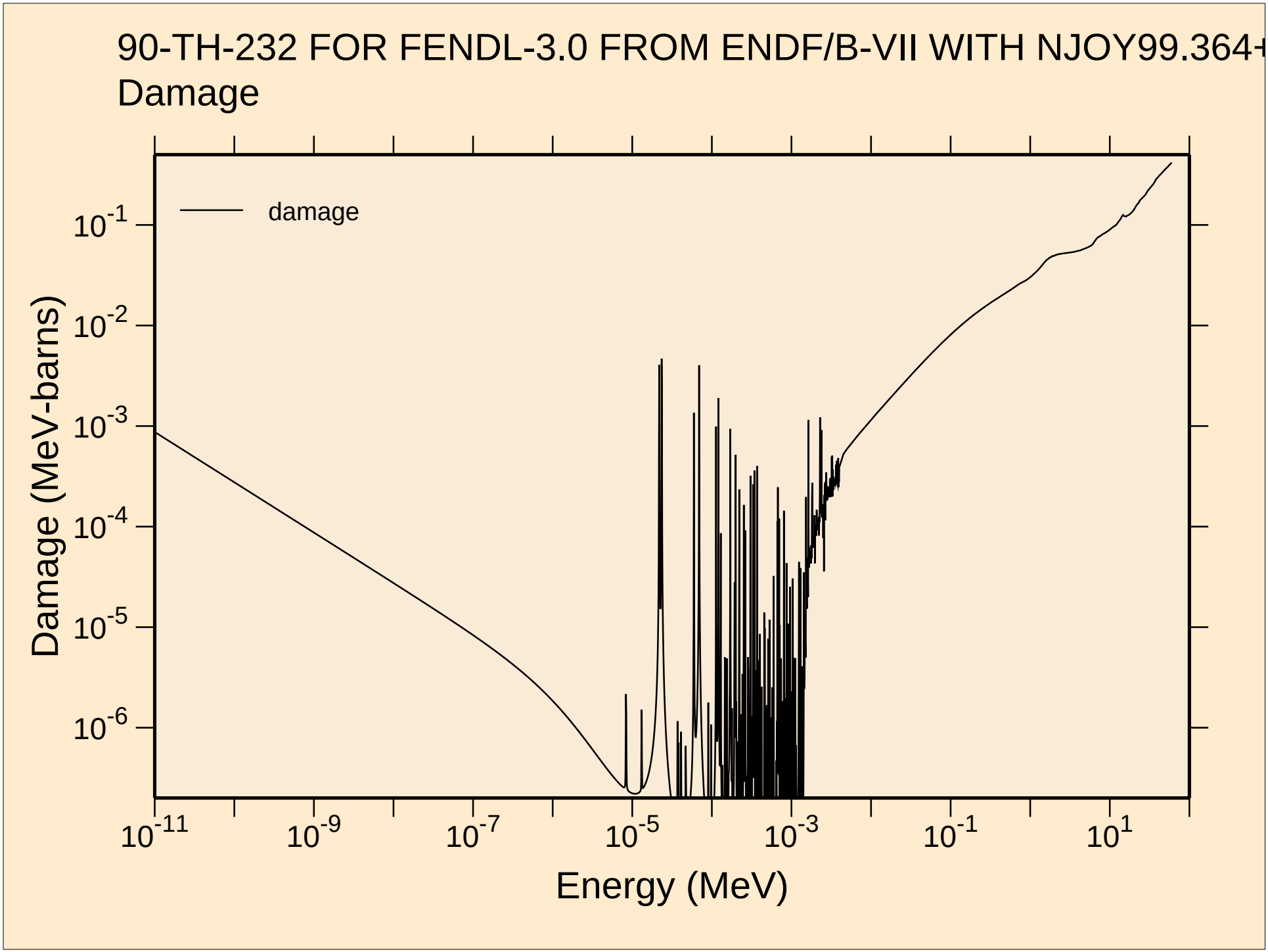
90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
UR elastic cross section

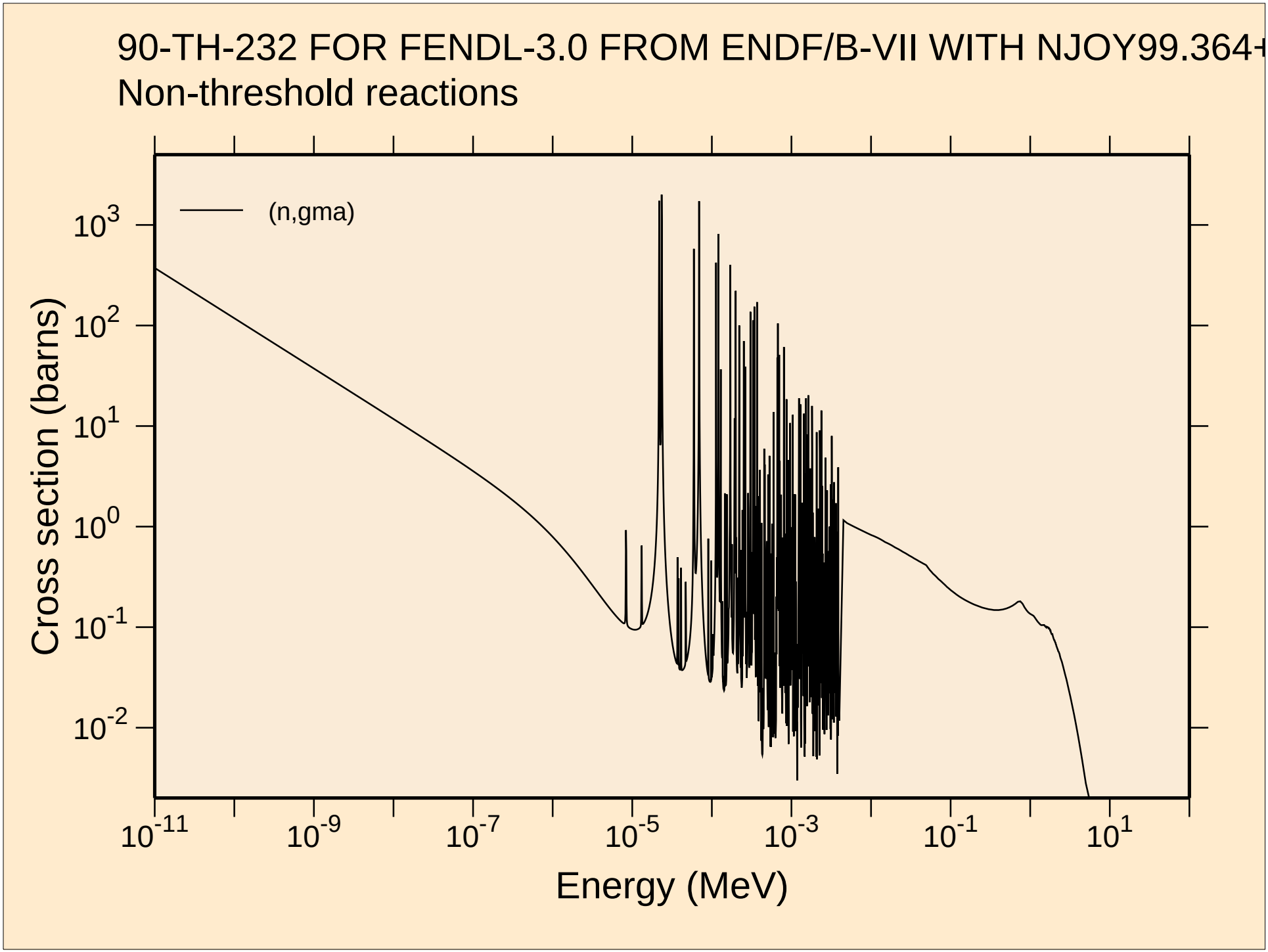


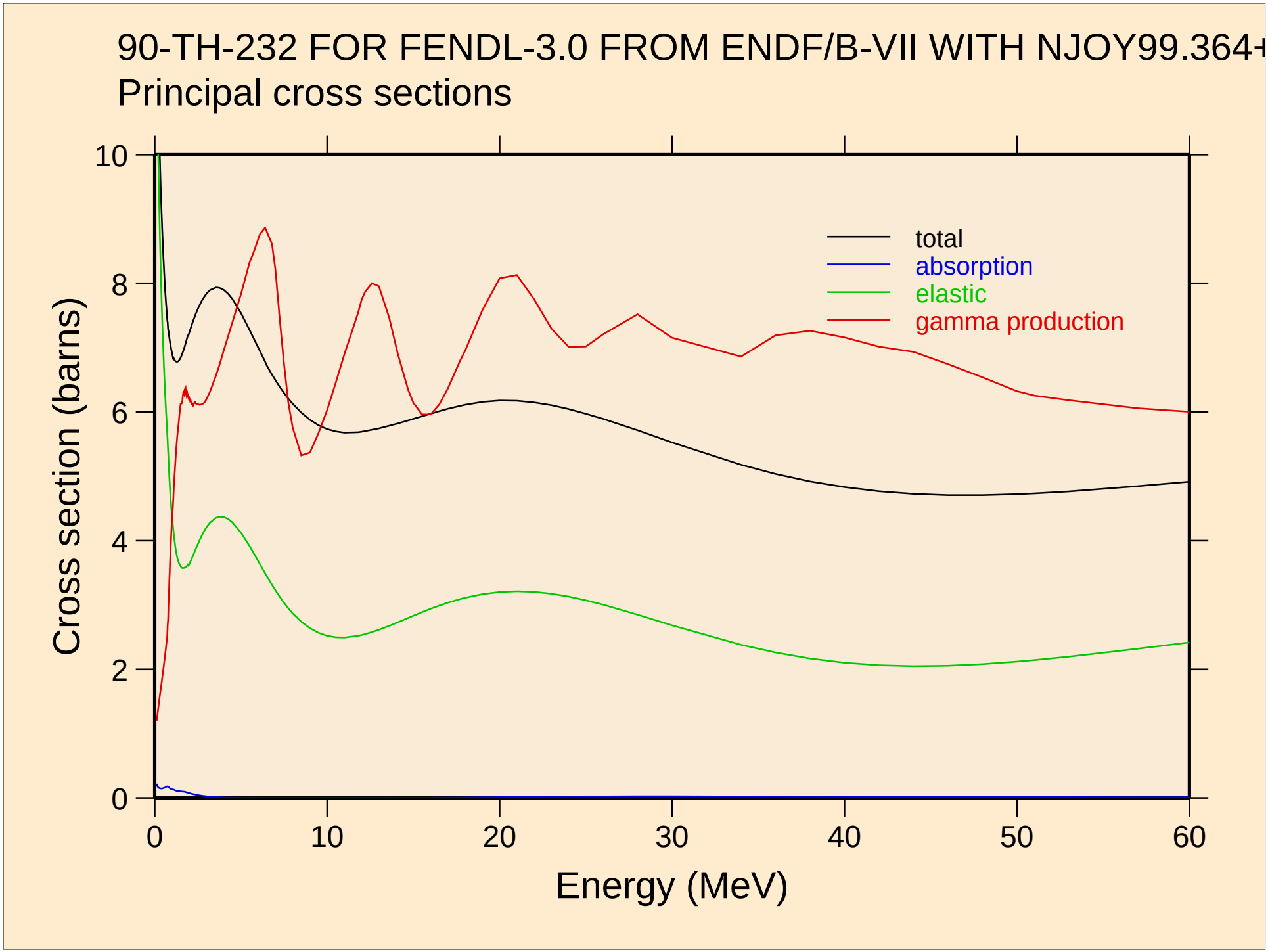

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
UR fission cross section
Inf. Dil.
100 b
1 b
Cross section (barns)
10-6
10-2
10-1
Energy (MeV)

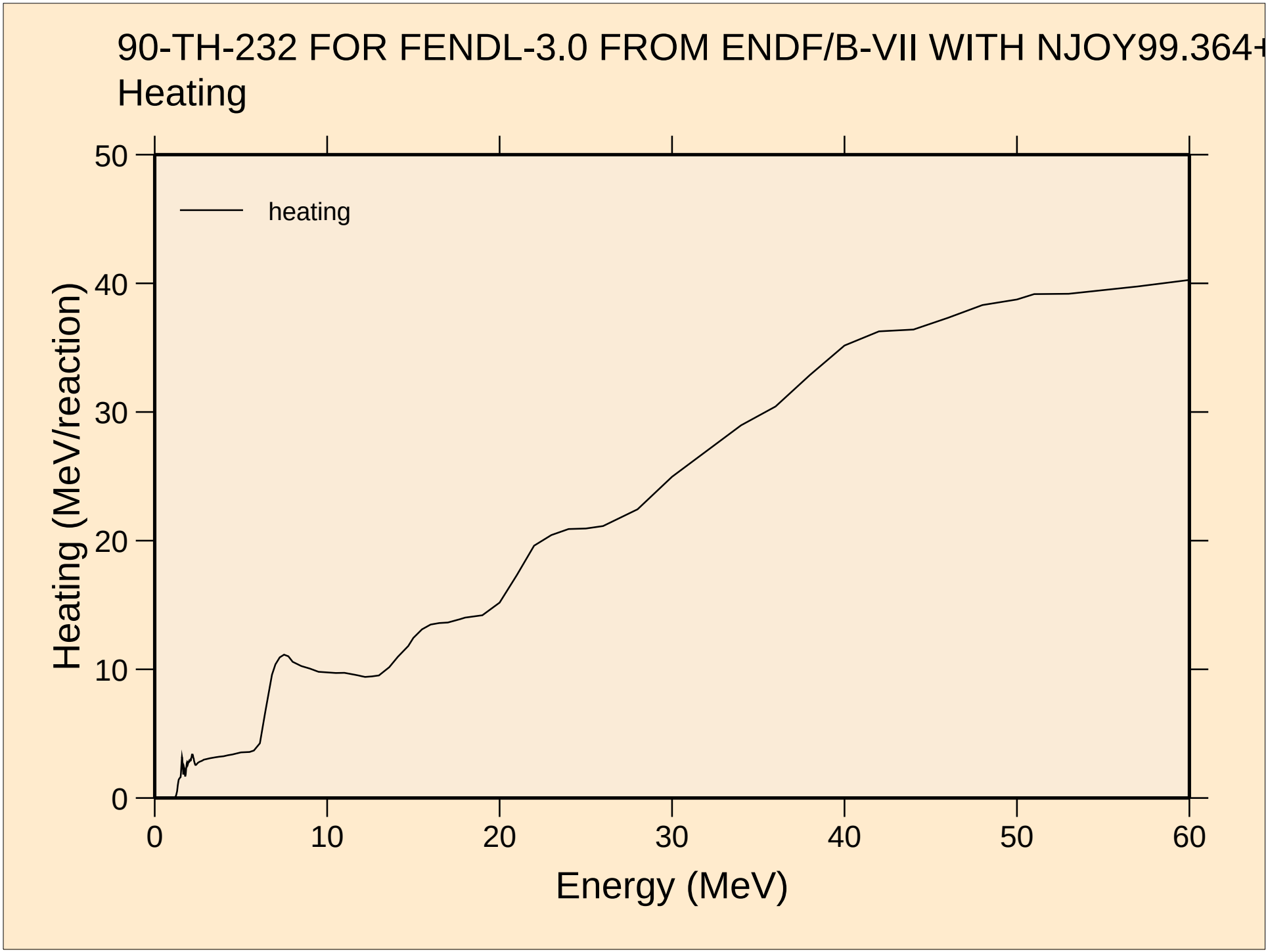

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
UR capture cross section
Inf. Dil.
100 b
1 b
Cross section (barns)
10^0
10^-2
10^-1
Energy (MeV)

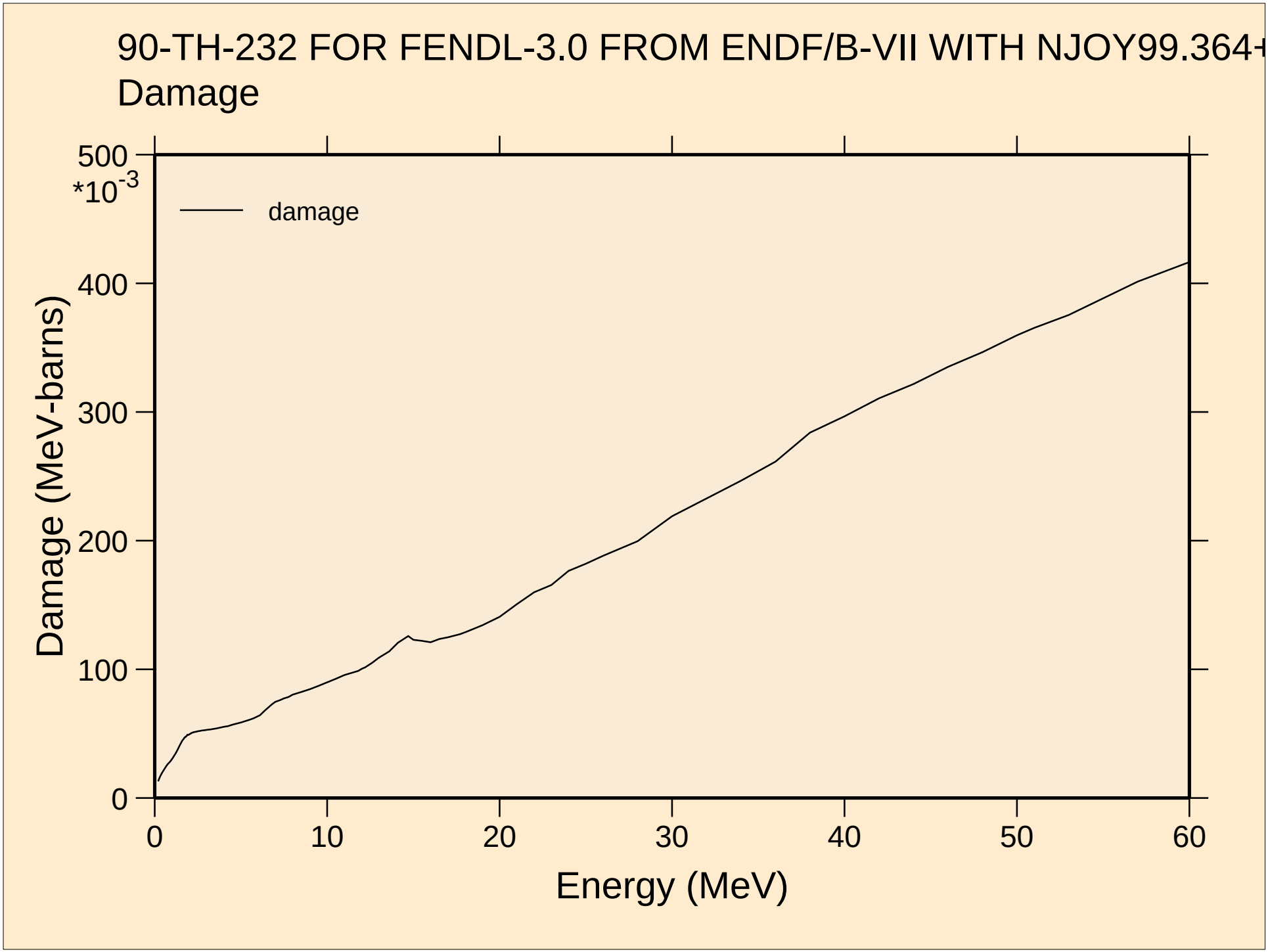

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
Heating
heating
Heating (MeV/reaction)
10^1
10^0
10^-1
10^-2
10^-3
10^-4
10^-11
10^-9
10^-7
10^-5
10^-3
10^-1
10^1
Energy (MeV)

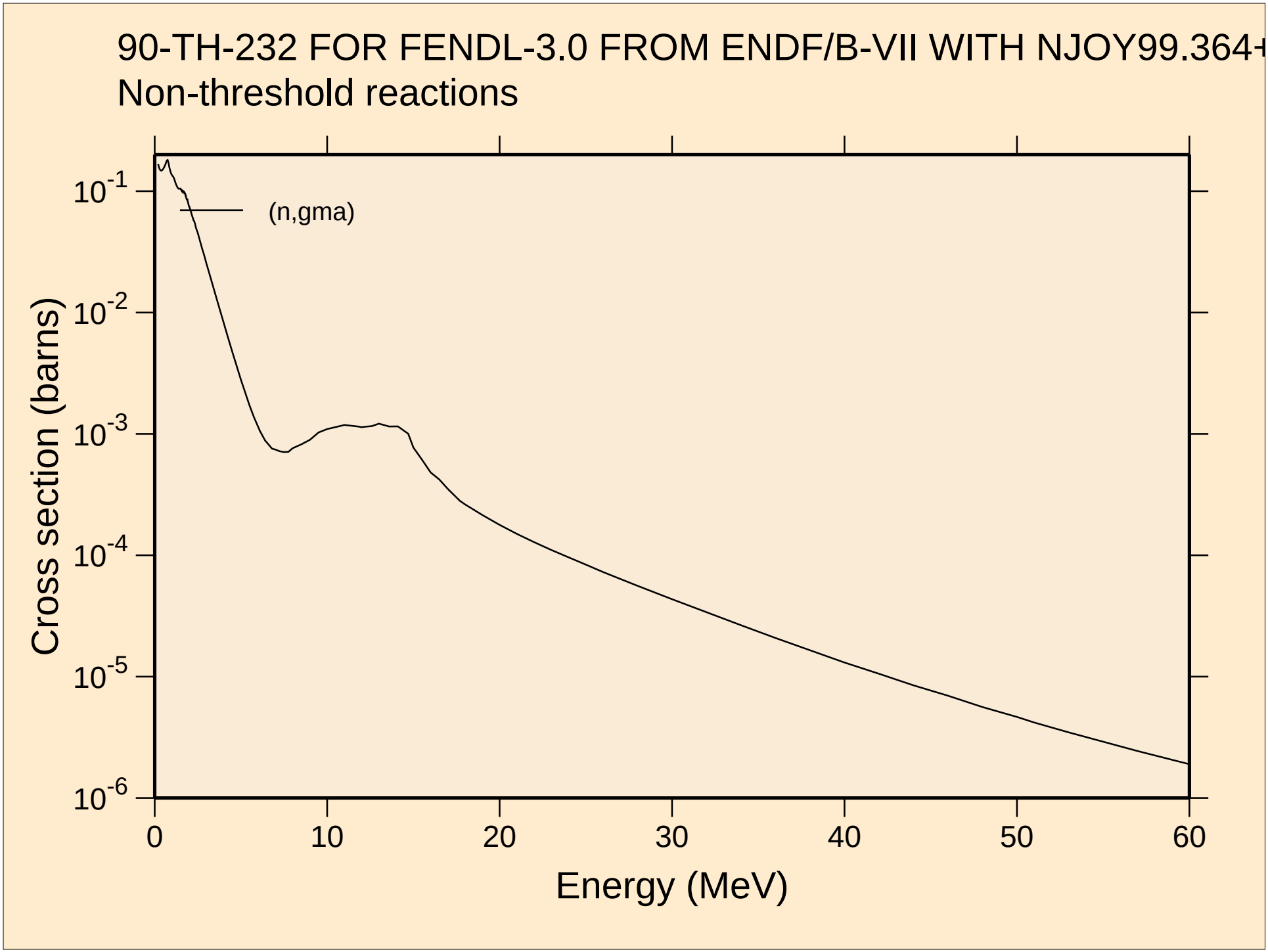

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
Damage
damage
Damage (MeV-barns)
10-1
10-2
10-3
10-4
10-5
10-6
10-11
10-9
10-7
10-5
10-3
10-1
101
Energy (MeV)

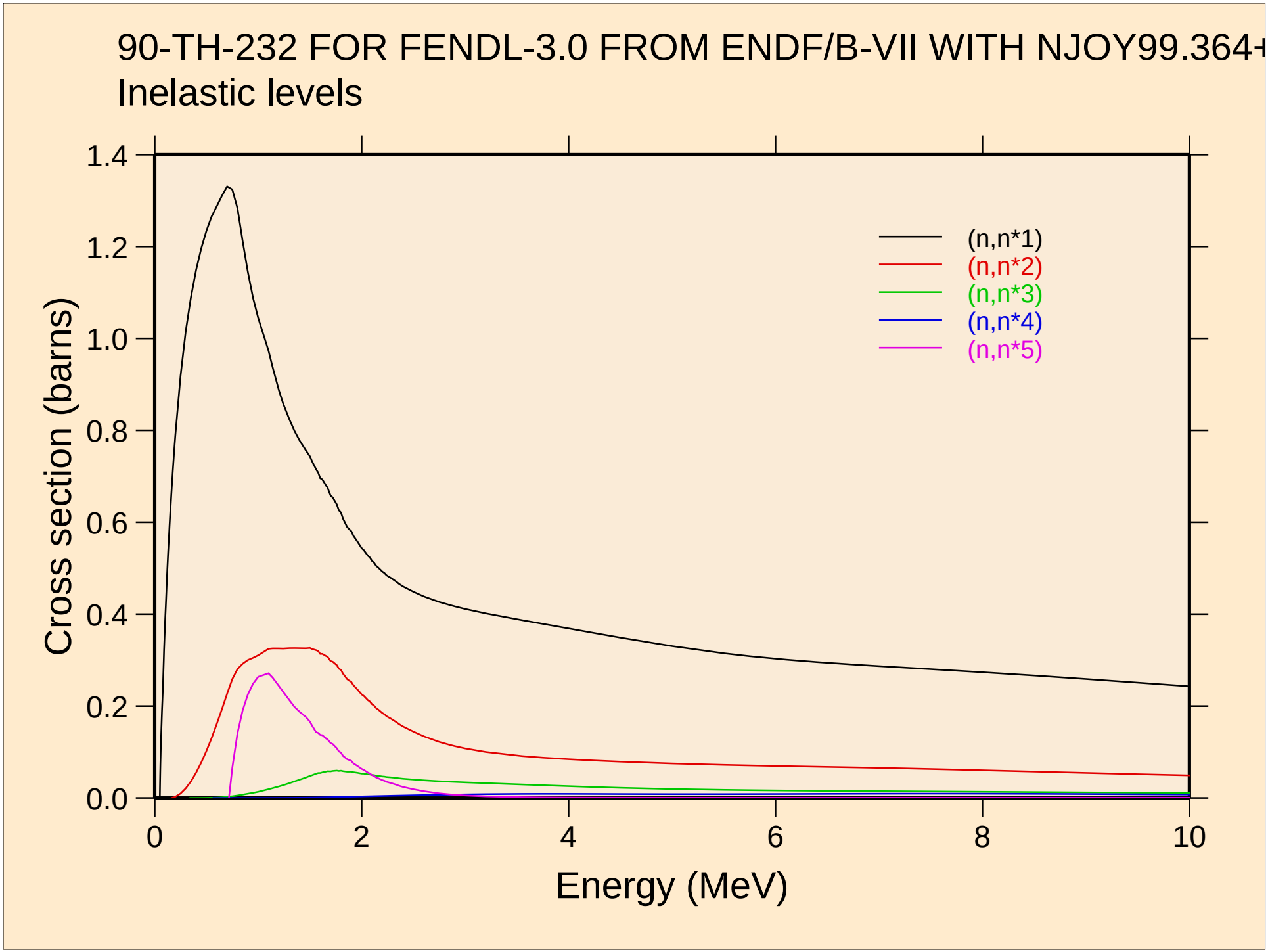

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
Non-threshold reactions
(n,gma)
Cross section (barns)
10^3
10^2
10^1
10^0
10^-1
10^-2
10^-11
10^-9
10^-7
10^-5
10^-3
10^-1
10^1
Energy (MeV)

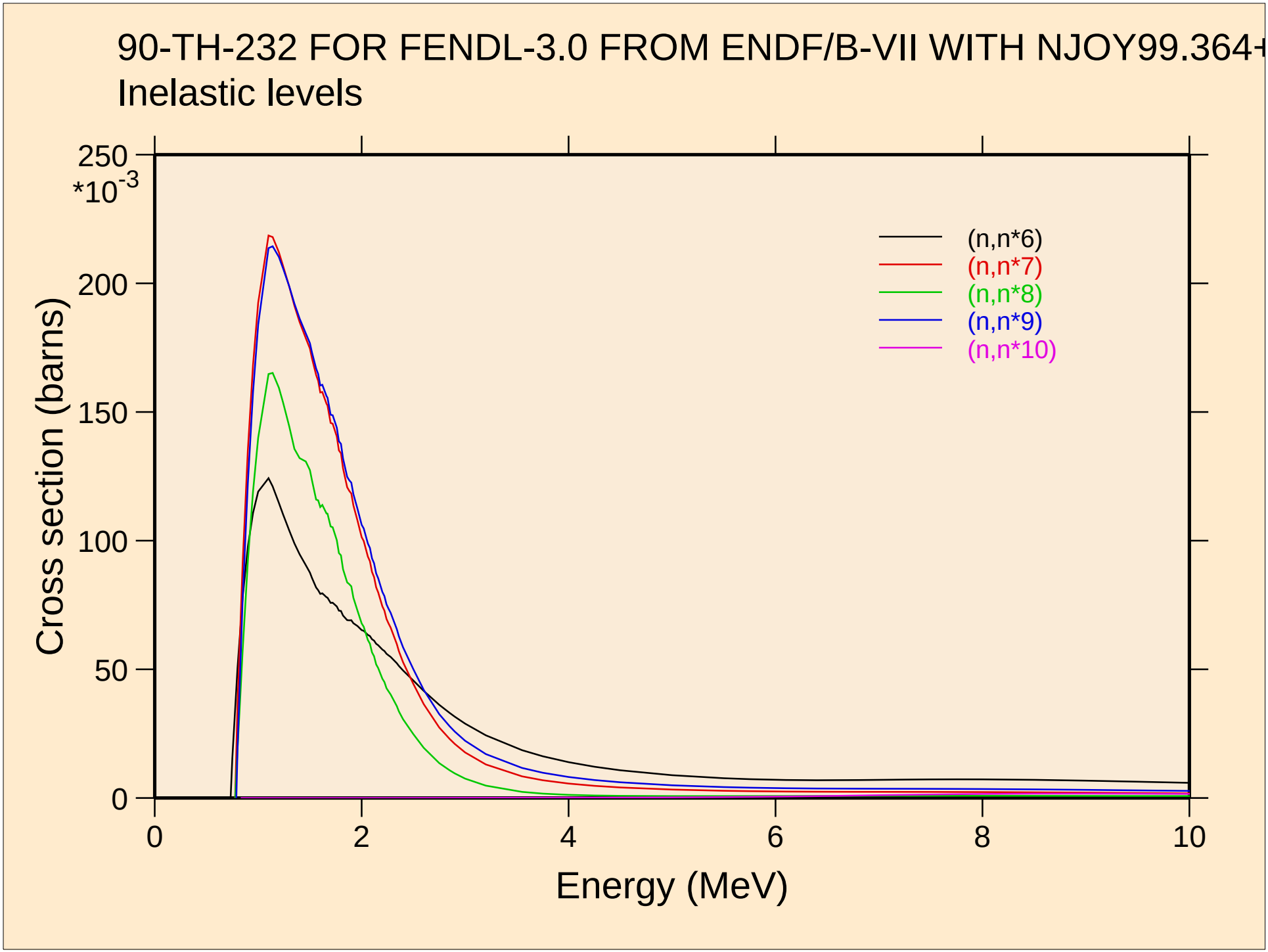

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
Principal cross sections
Cross section (barns)
Energy (MeV)
0
2
4
6
8
10
0
10
20
30
40
50
60
total
absorption
elastic
gamma production

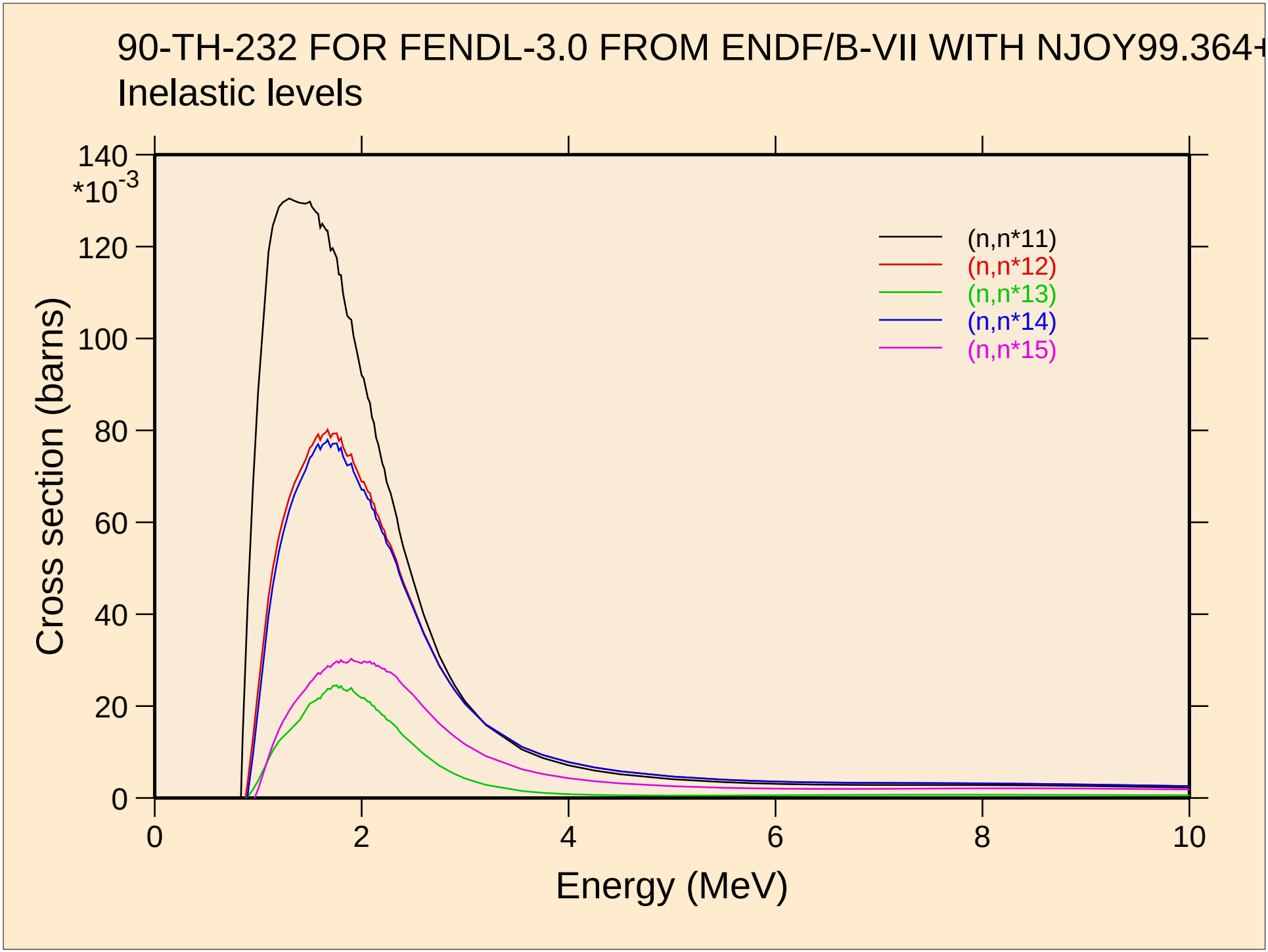

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
Heating
heating
Heating (MeV/reaction)
Energy (MeV)
0
10
20
30
40
50
60

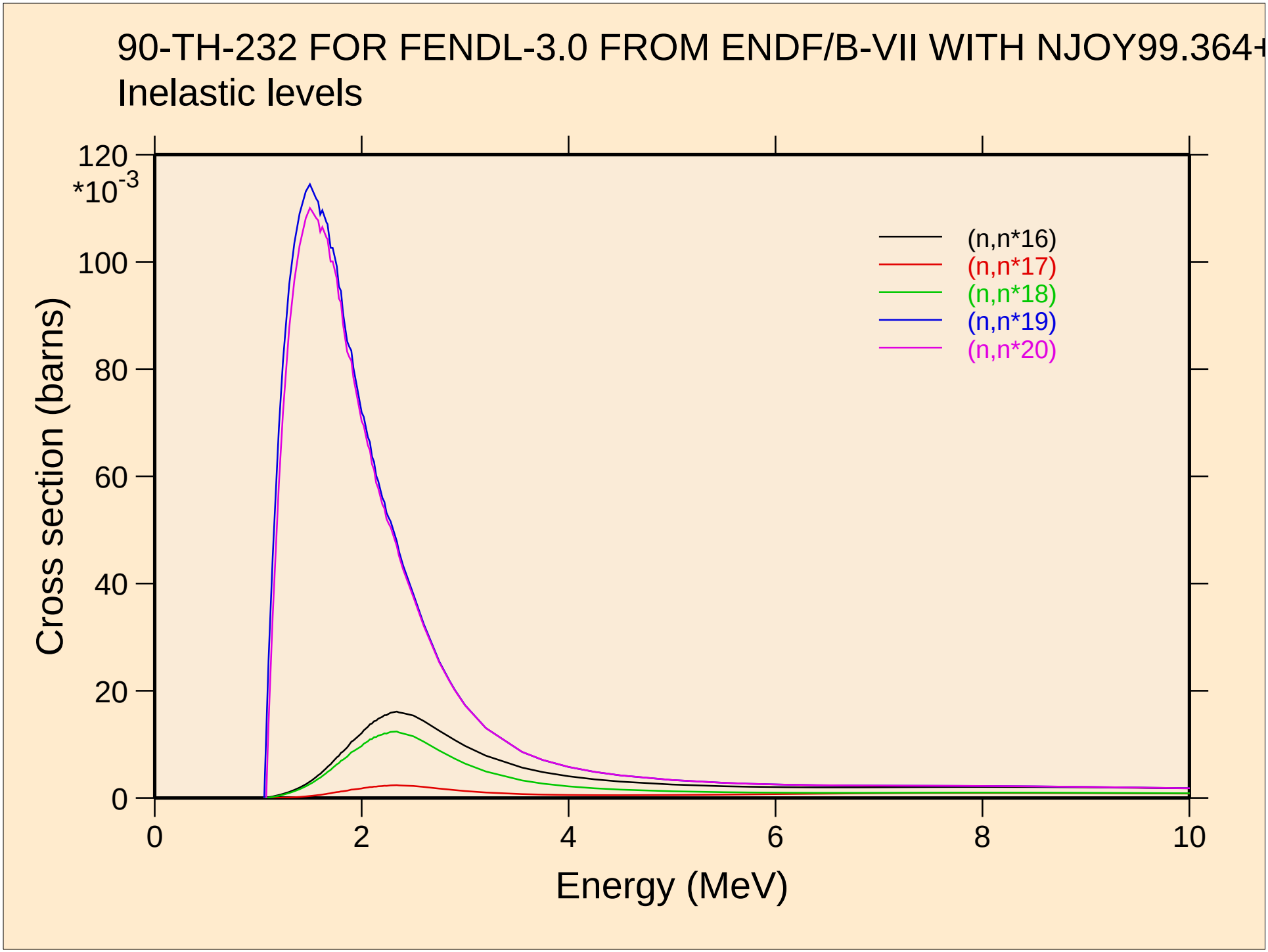

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
Damage
500
*10-3
400
300
200
100
0
damage
Damage (MeV-barns)
0
10
20
30
40
50
60
Energy (MeV)

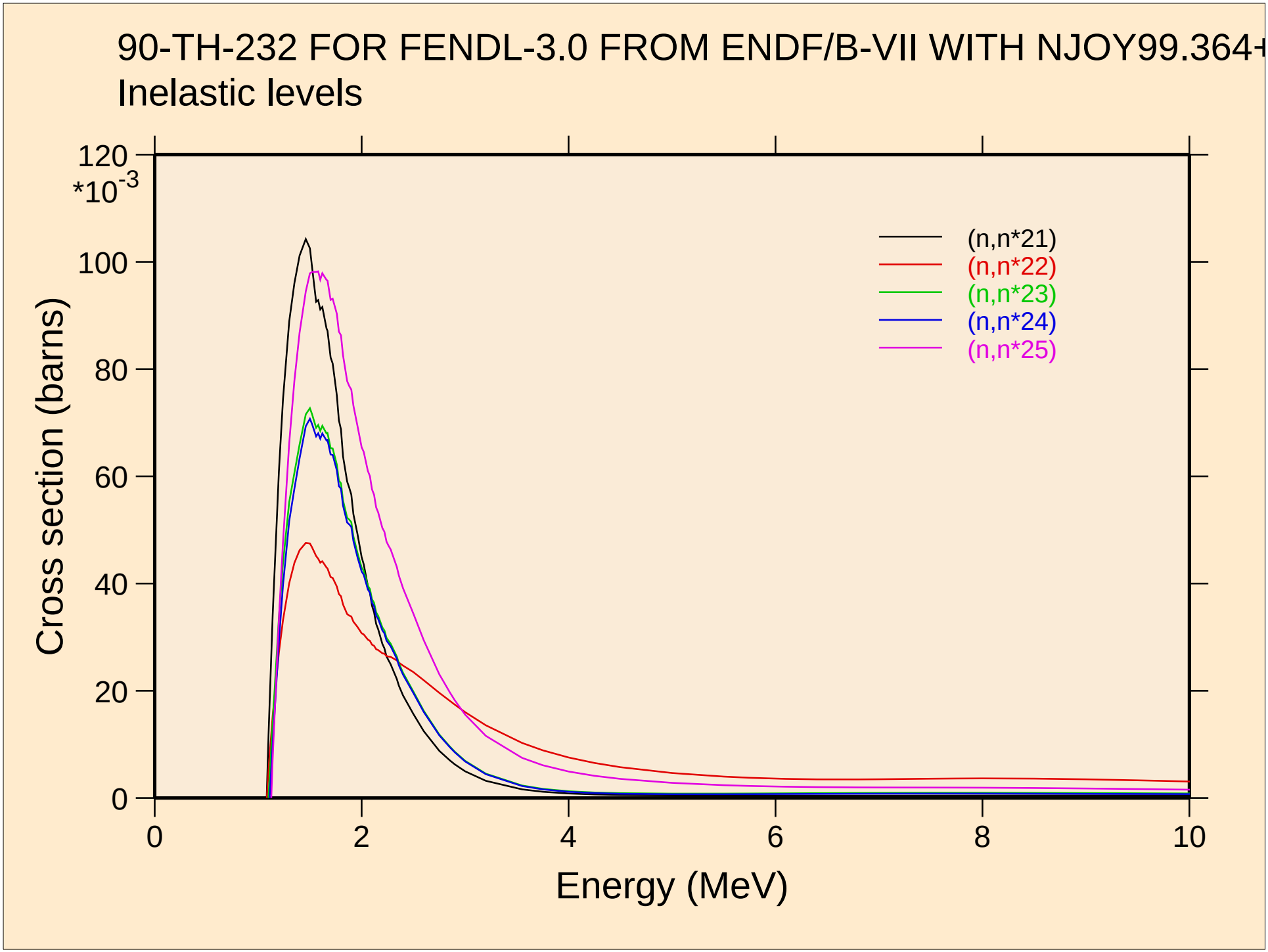

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
Non-threshold reactions
(n,gma)
Cross section (barns)
10-1
10-2
10-3
10-4
10-5
10-6
0
10
20
30
40
50
60
Energy (MeV)

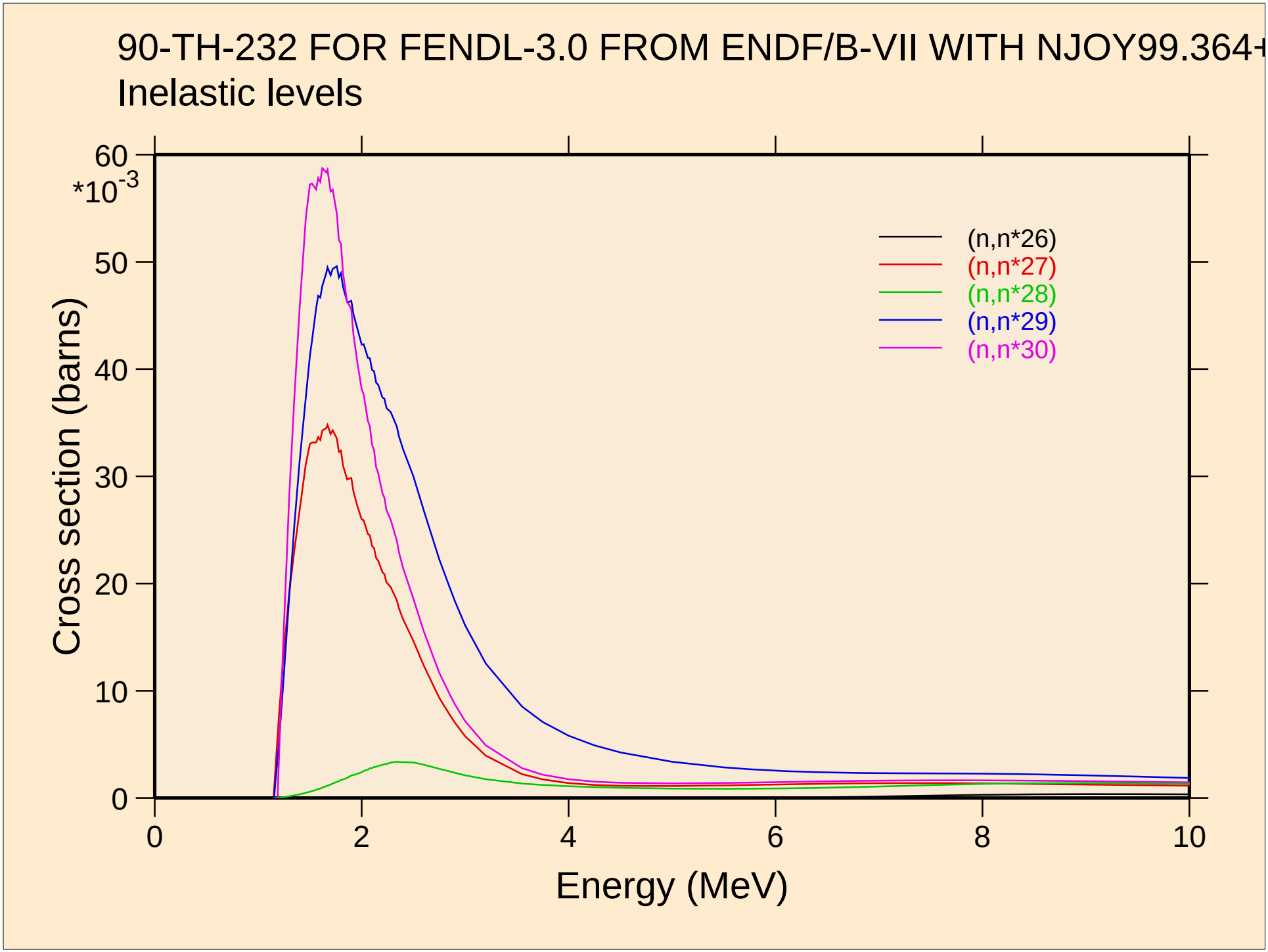

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
Inelastic levels
Cross section (barns)
Energy (MeV)
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
0
2
4
6
8
10
(n,n*1)
(n,n*2)
(n,n*3)
(n,n*4)
(n,n*5)

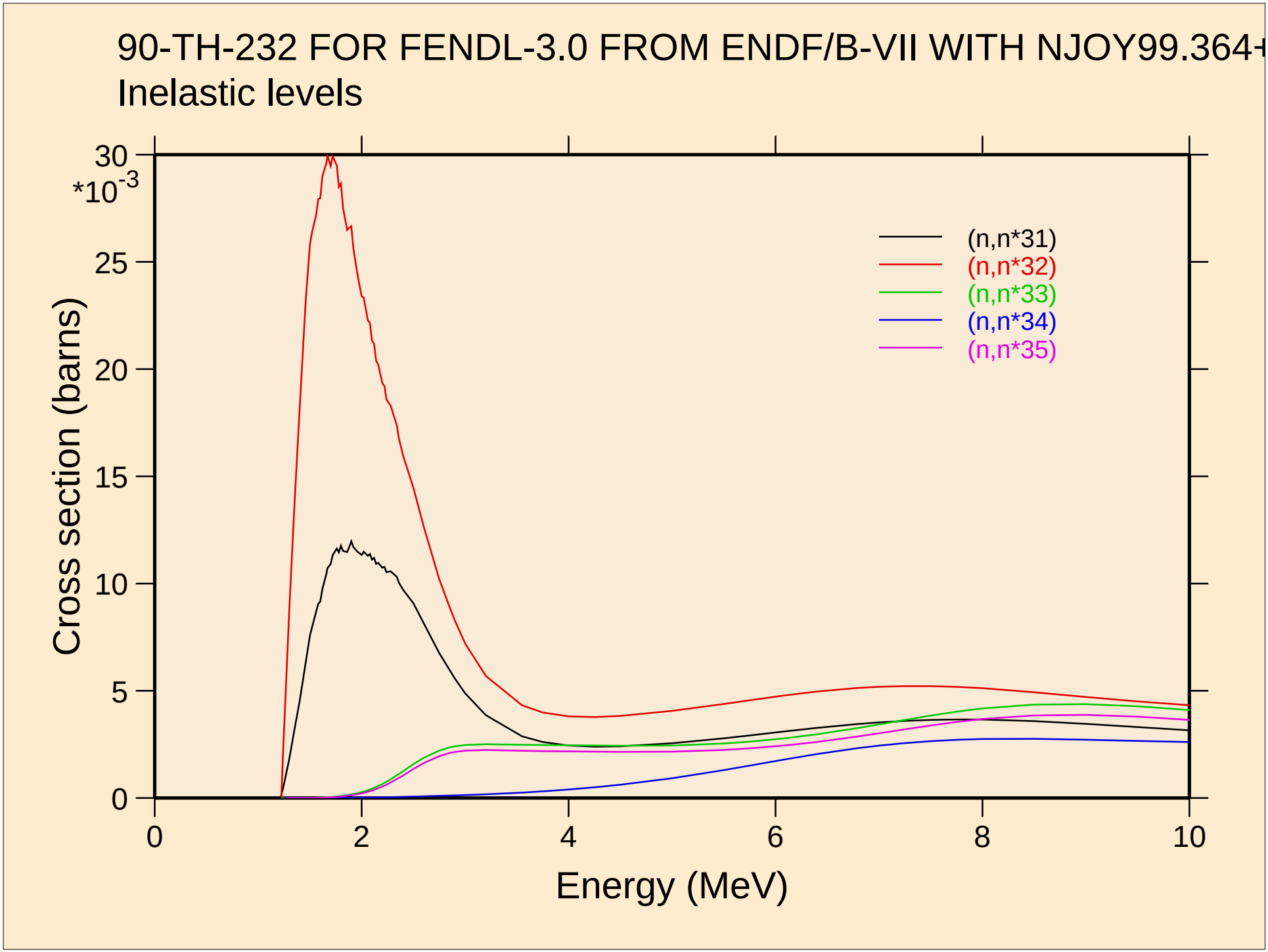

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
Inelastic levels
250
*10-3
200
150
100
50
0
Cross section (barns)
0
2
4
6
8
10
Energy (MeV)
(n,n*6)
(n,n*7)
(n,n*8)
(n,n*9)
(n,n*10)

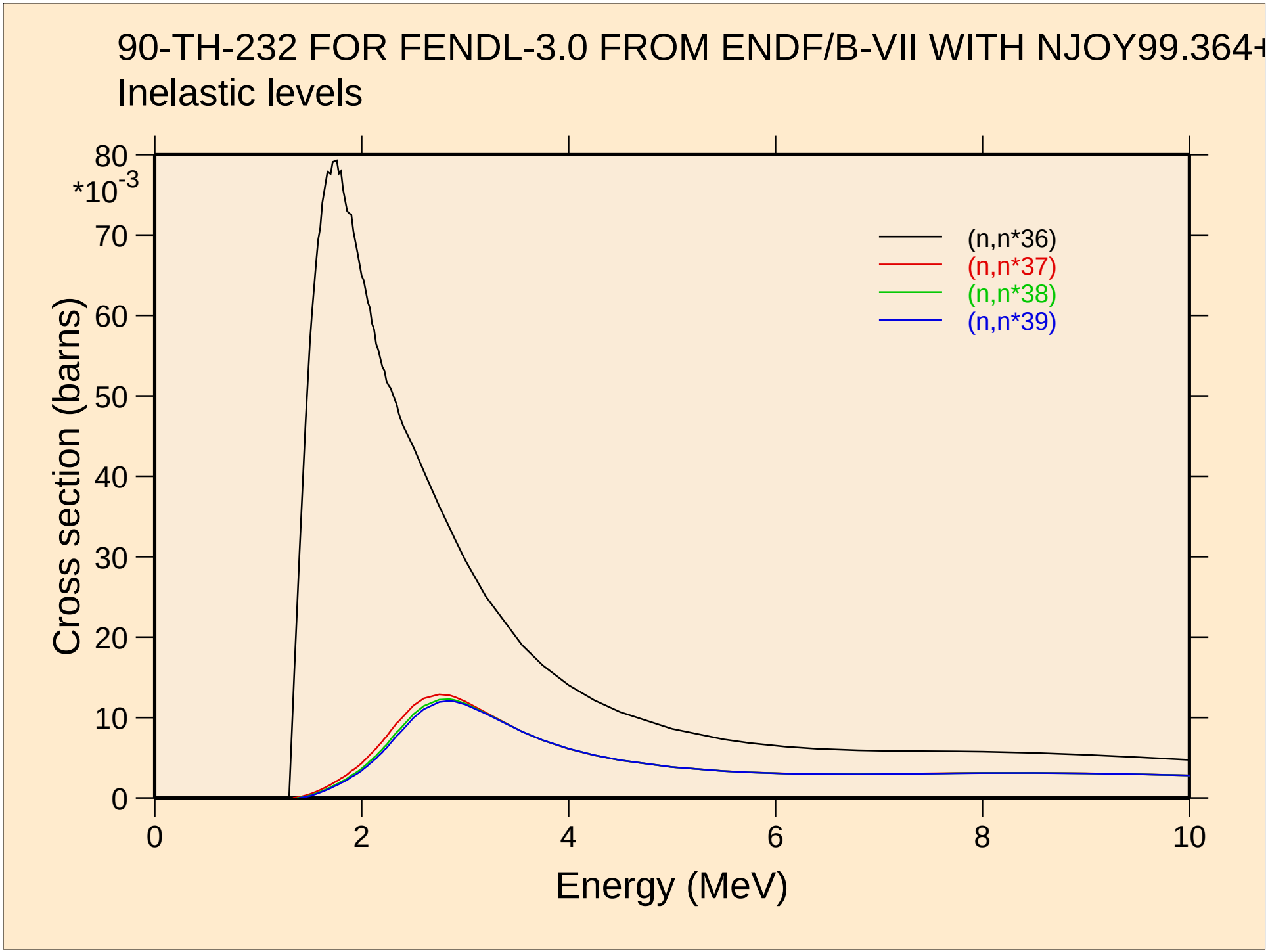

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
Inelastic levels
Cross section (barns)
*10-3
140
120
100
80
60
40
20
0
0
2
4
6
8
10
Energy (MeV)
(n,n*11)
(n,n*12)
(n,n*13)
(n,n*14)
(n,n*15)

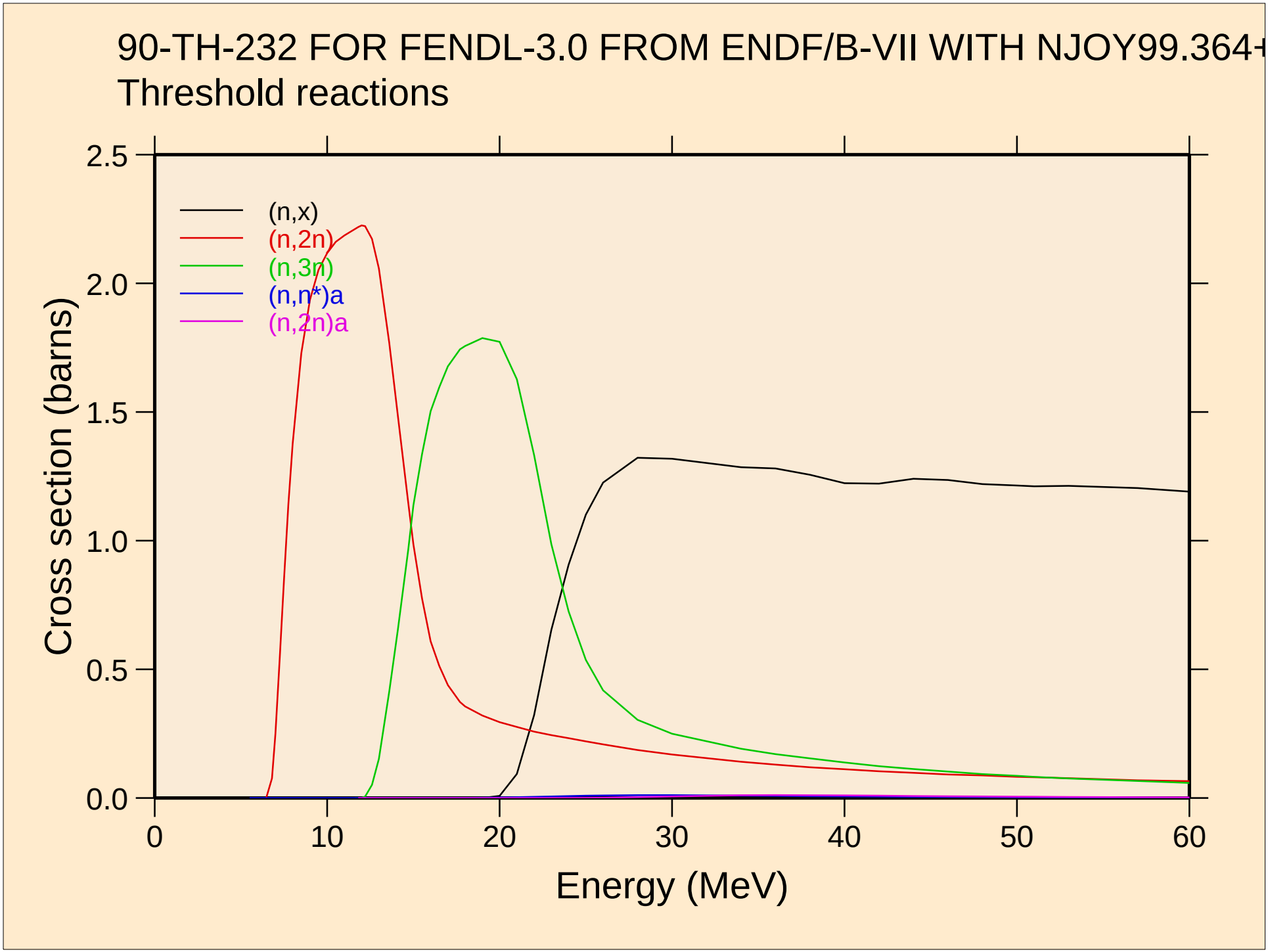

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
Inelastic levels
120
*10-3
100
80
60
40
20
0
Cross section (barns)
0
2
4
6
8
10
Energy (MeV)
(n,n*16)
(n,n*17)
(n,n*18)
(n,n*19)
(n,n*20)

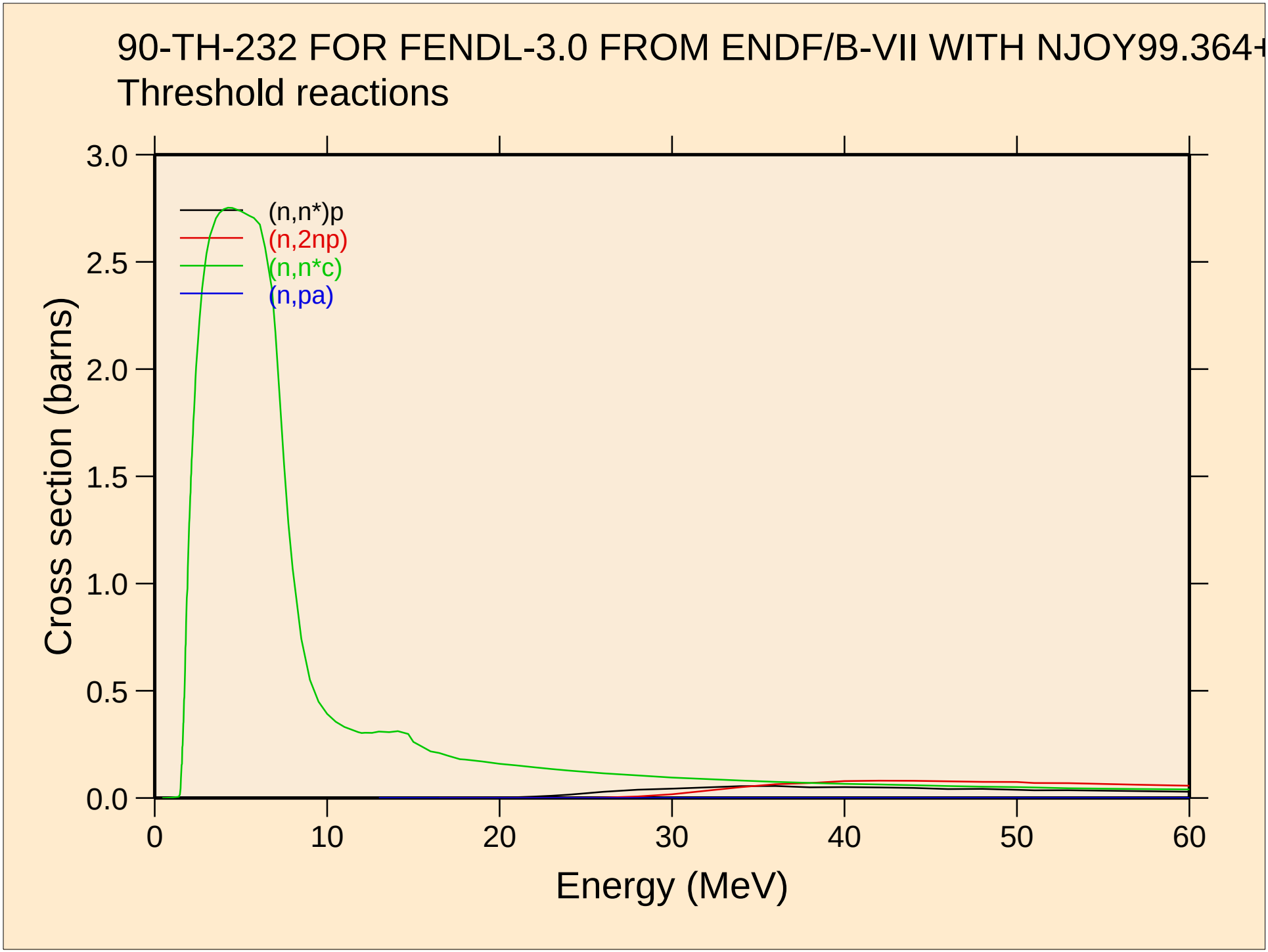

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
Inelastic levels
120
*10-3
100
80
60
40
20
0
Cross section (barns)
0
2
4
6
8
10
Energy (MeV)
(n,n*21)
(n,n*22)
(n,n*23)
(n,n*24)
(n,n*25)

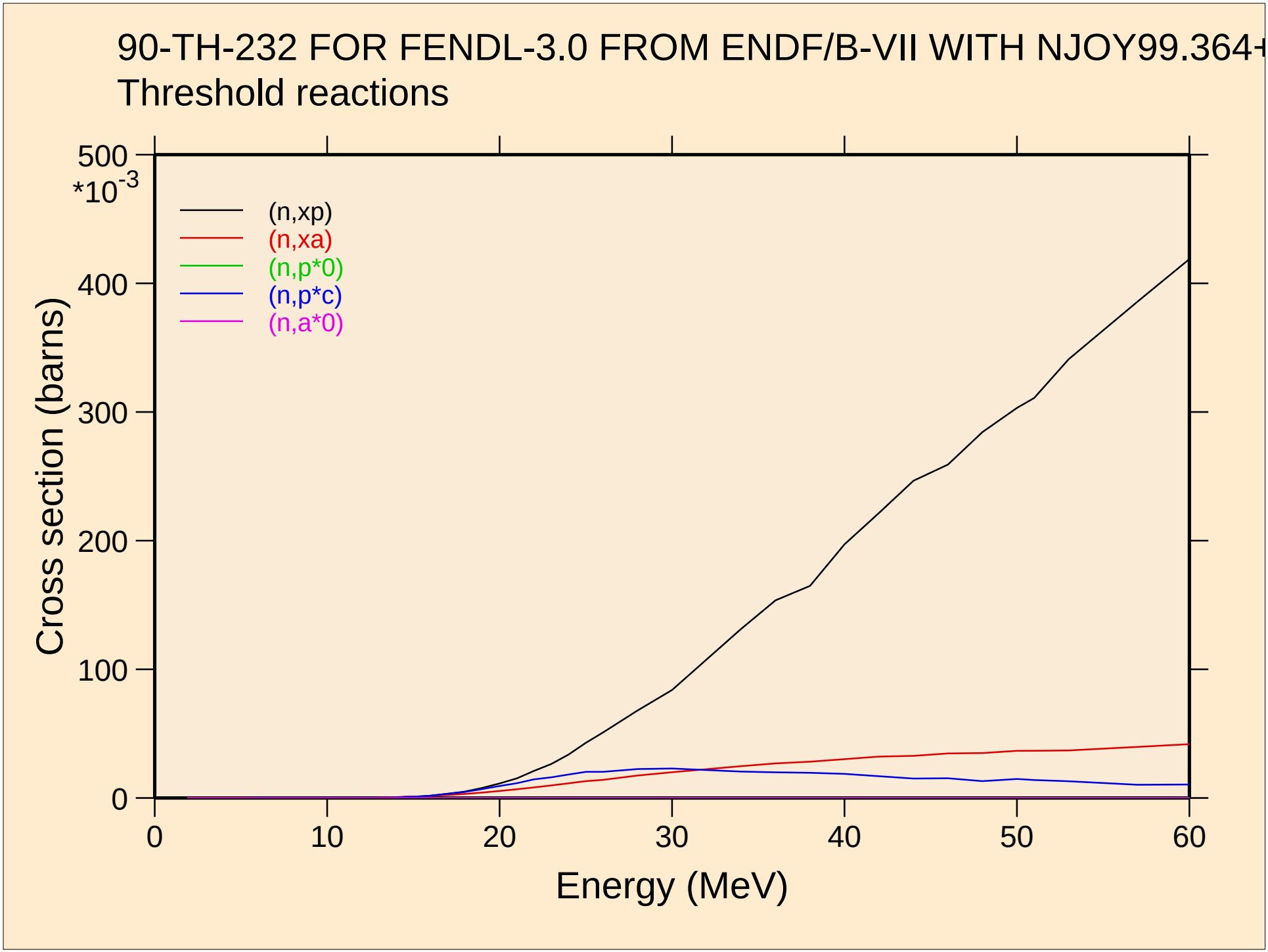

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
Inelastic levels
Cross section (barns)
*10-3
60
50
40
30
20
10
0
0
2
4
6
8
10
Energy (MeV)
(n,n*26)
(n,n*27)
(n,n*28)
(n,n*29)
(n,n*30)

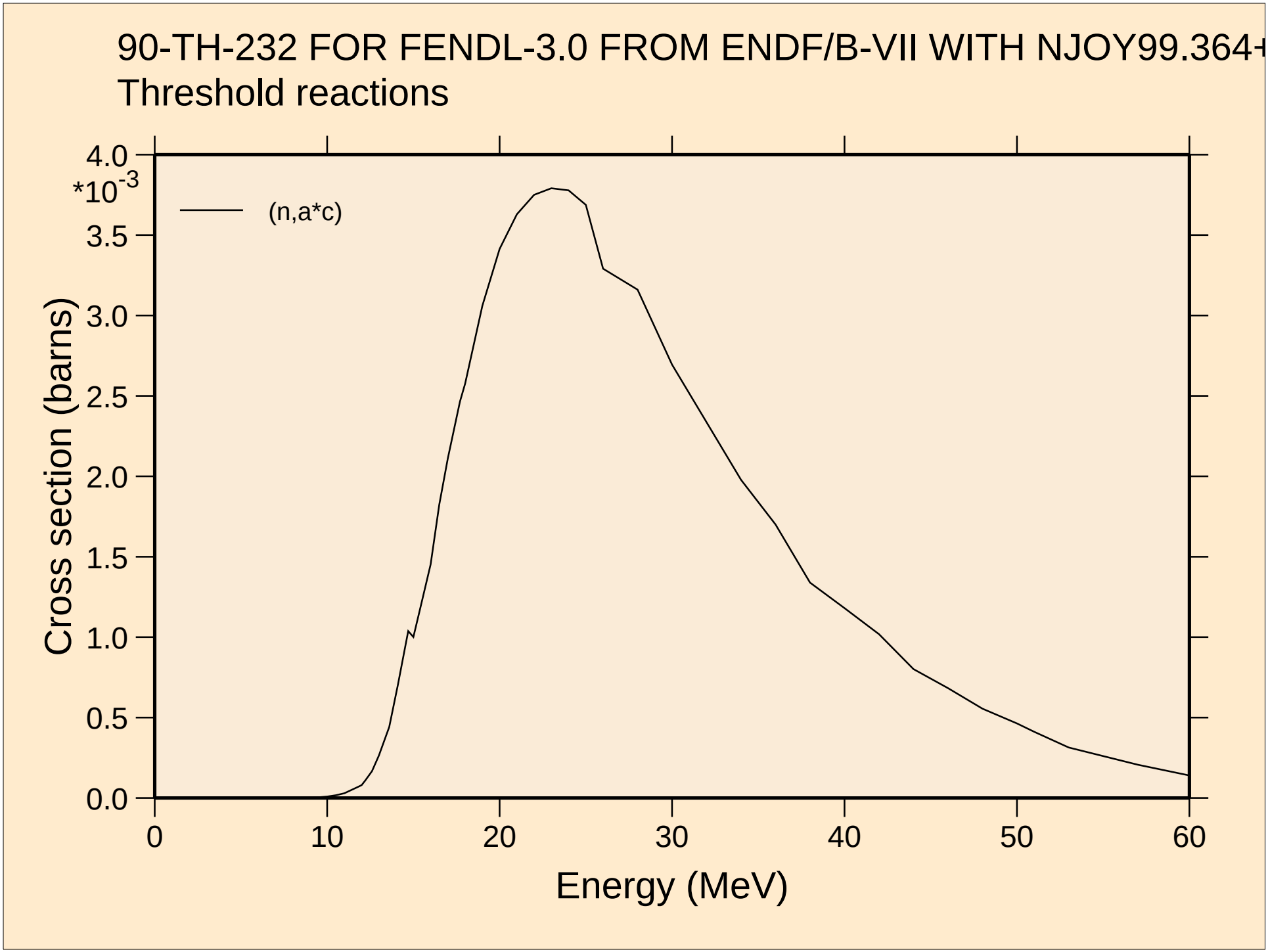

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
Inelastic levels
Cross section (barns)
*10-3
30
25
20
15
10
5
0
0
2
4
6
8
10
Energy (MeV)
(n,n*31)
(n,n*32)
(n,n*33)
(n,n*34)
(n,n*35)

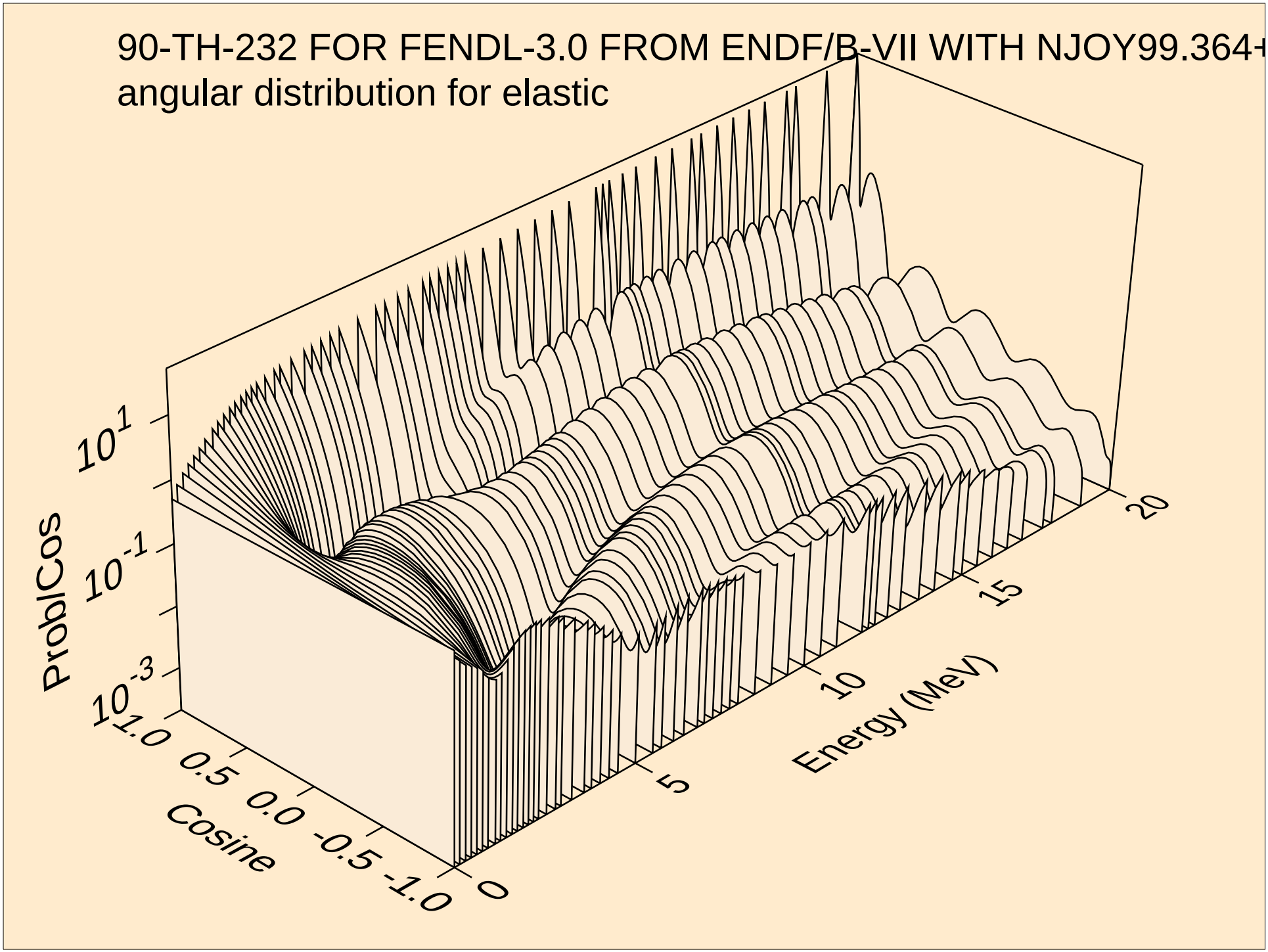

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
Inelastic levels
Cross section (barns)
*10-3
80
70
60
50
40
30
20
10
0
0
2
4
6
8
10
Energy (MeV)
(n,n*36)
(n,n*37)
(n,n*38)
(n,n*39)

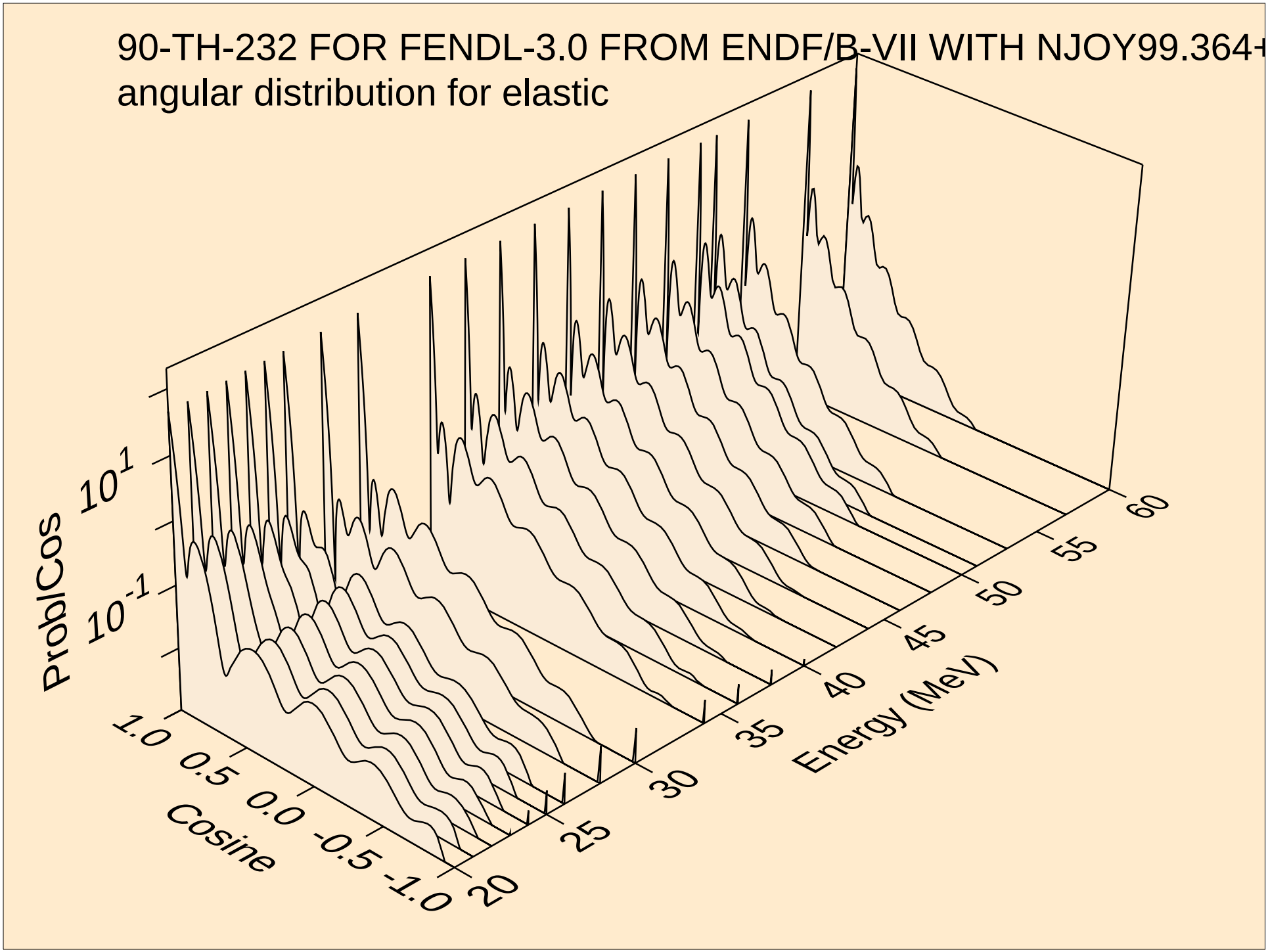

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
Threshold reactions
(n,x)
(n,2n)
(n,3n)
(n,n*)a
(n,2n)a
Cross section (barns)
Energy (MeV)
0.0
0.5
1.0
1.5
2.0
2.5
0
10
20
30
40
50
60

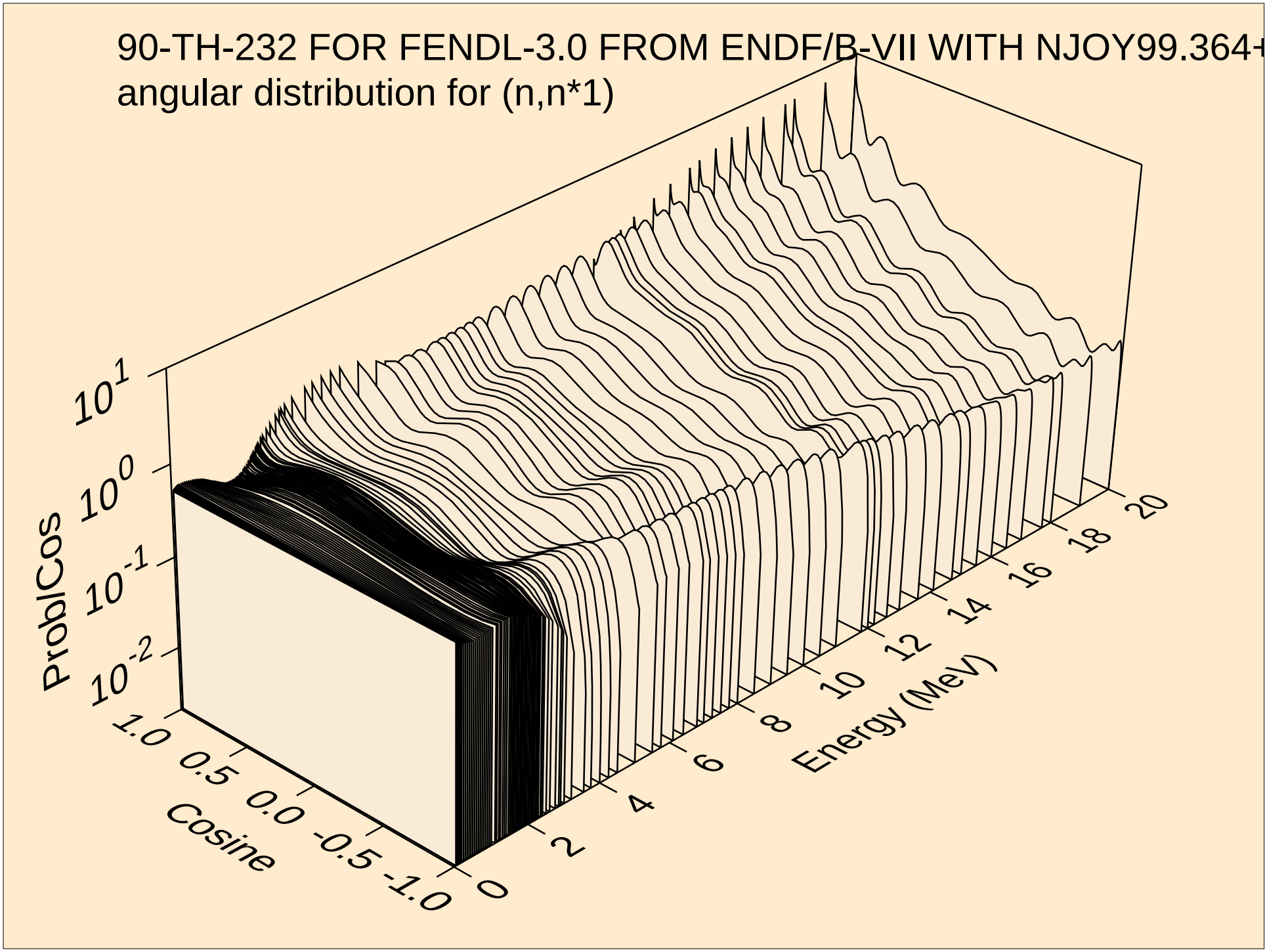

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
Threshold reactions
(n,n*)p
(n,2np)
(n,n*c)
(n,pa)
Cross section (barns)
Energy (MeV)
0.0
0.5
1.0
1.5
2.0
2.5
3.0
0
10
20
30
40
50
60

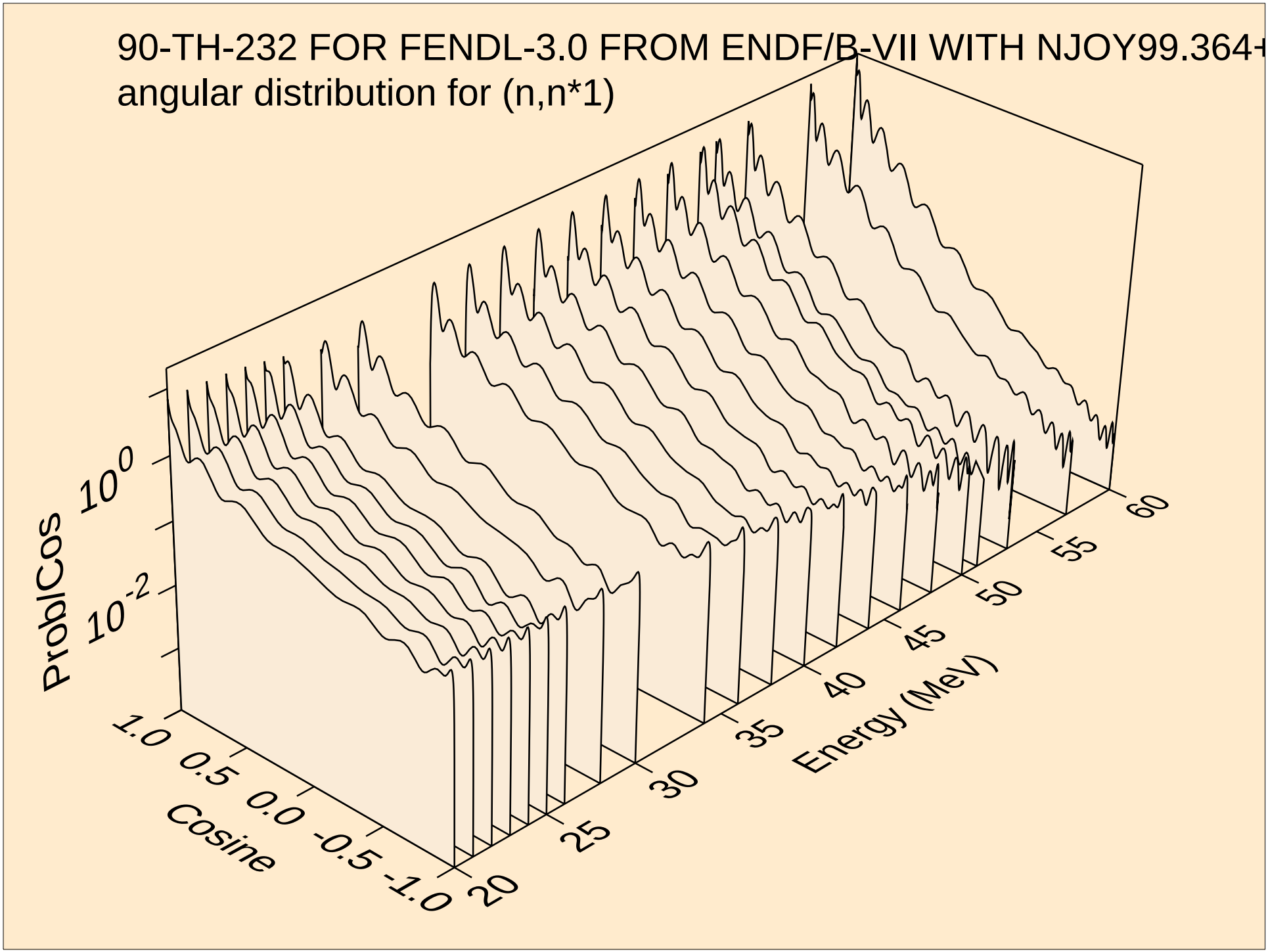

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
Threshold reactions
500
*10-3
400
300
200
100
0
Cross section (barns)
(n,xp)
(n,xa)
(n,p*0)
(n,p*c)
(n,a*0)
0
10
20
30
40
50
60
Energy (MeV)

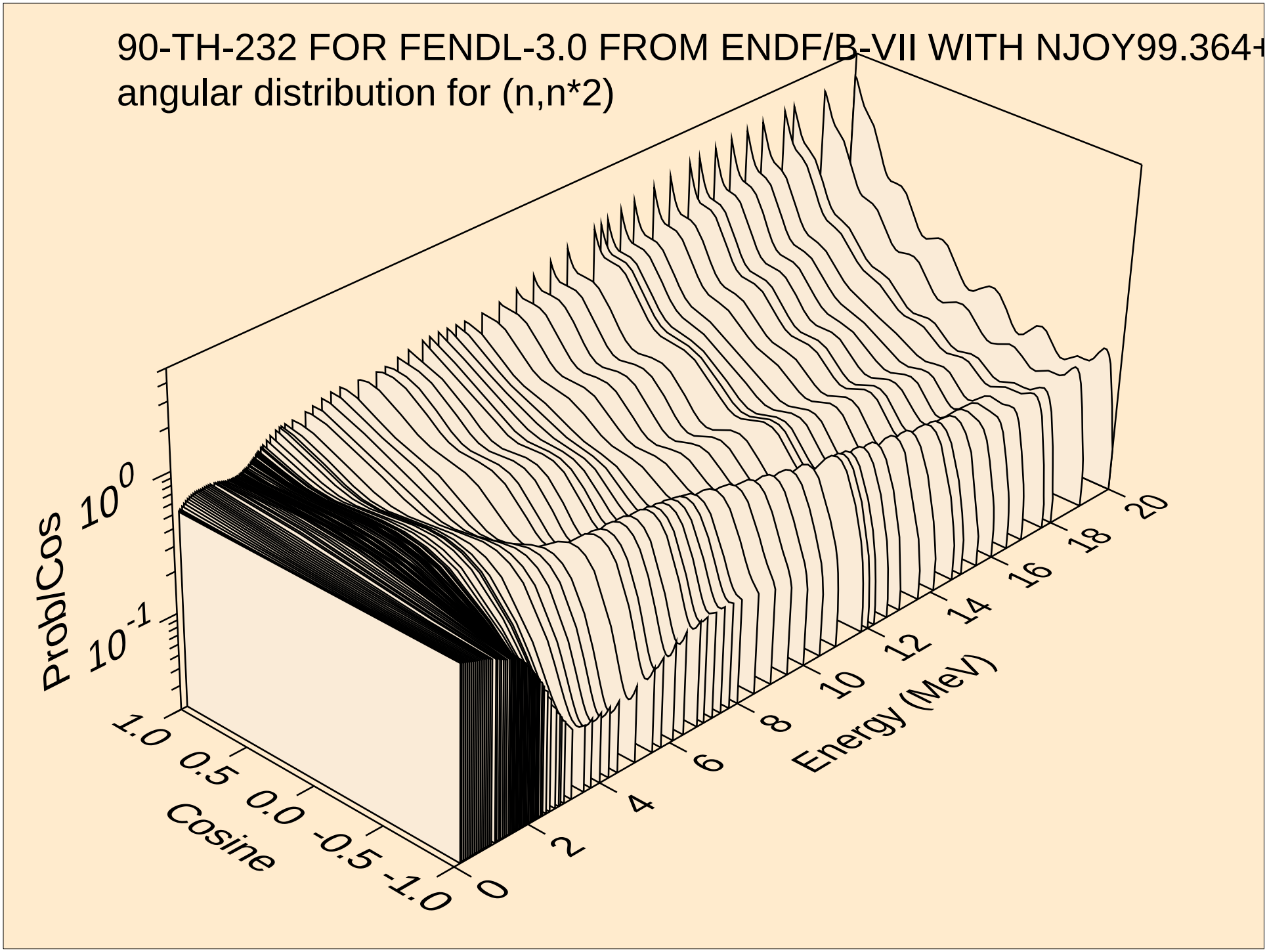

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
Threshold reactions
(n,a*c)
*10-3
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Cross section (barns)
0
10
20
30
40
50
60
Energy (MeV)

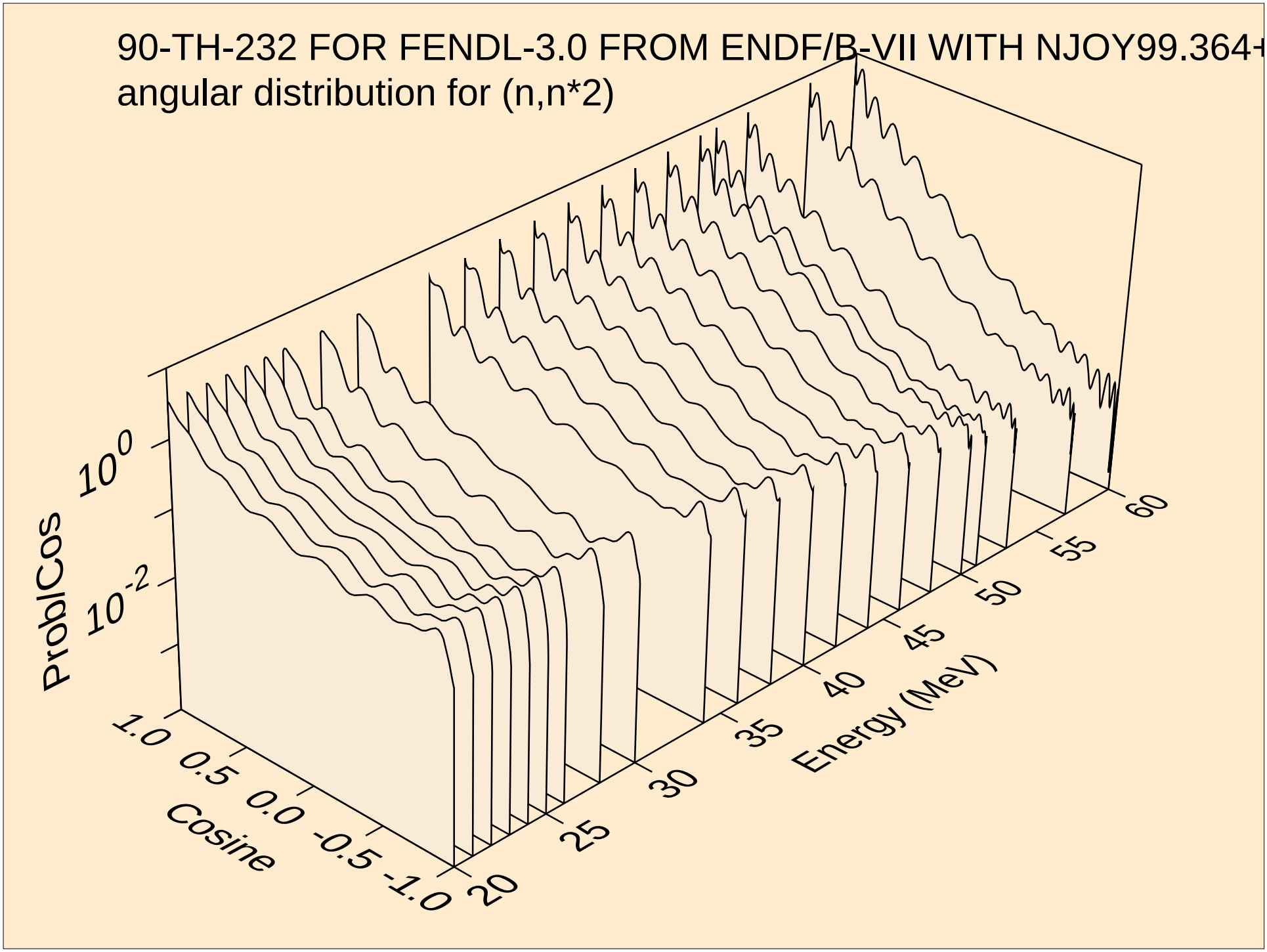

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
angular distribution for elastic
ProbICos
10^1
10^-1
10^-3
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
Energy (MeV)

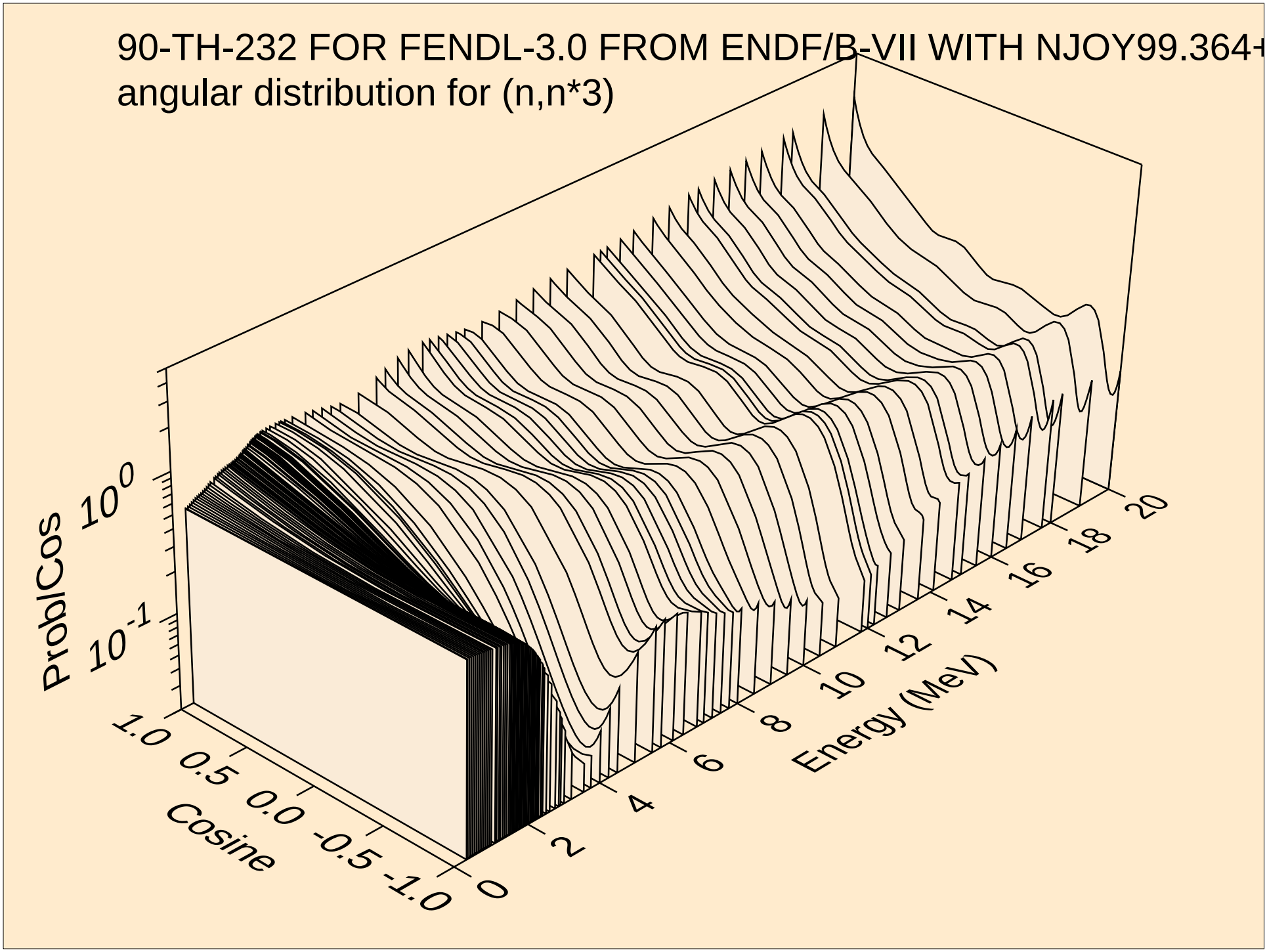

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
angular distribution for elastic
ProbICos
10^1
10^-1
1.0
0.5
0.0
-0.5
-1.0
Cosine
20
25
30
35
40
45
50
55
60
Energy (MeV)

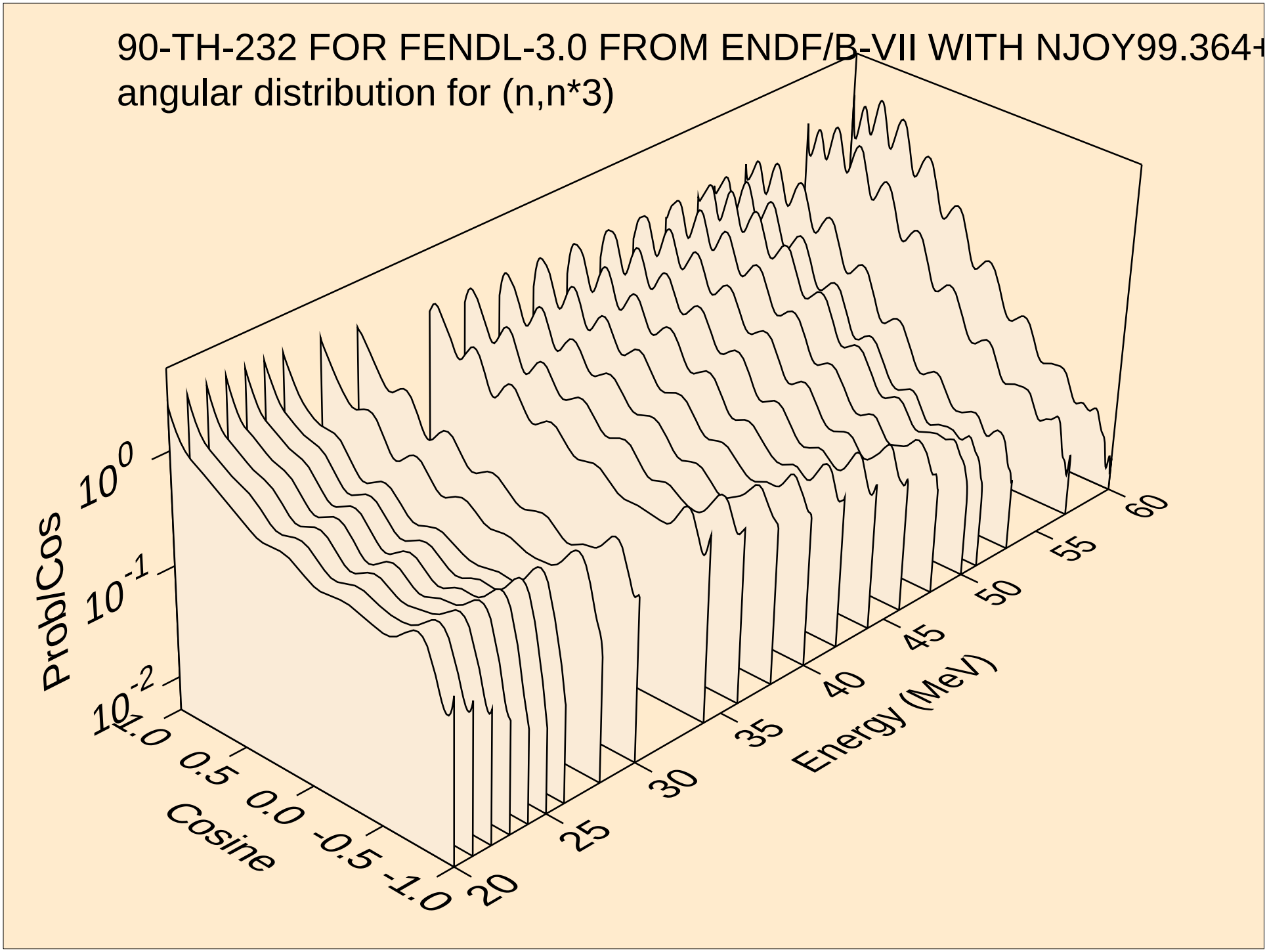

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
angular distribution for (n,n*1)
Prob\Cos
10^1
10^0
10^-1
10^-2
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

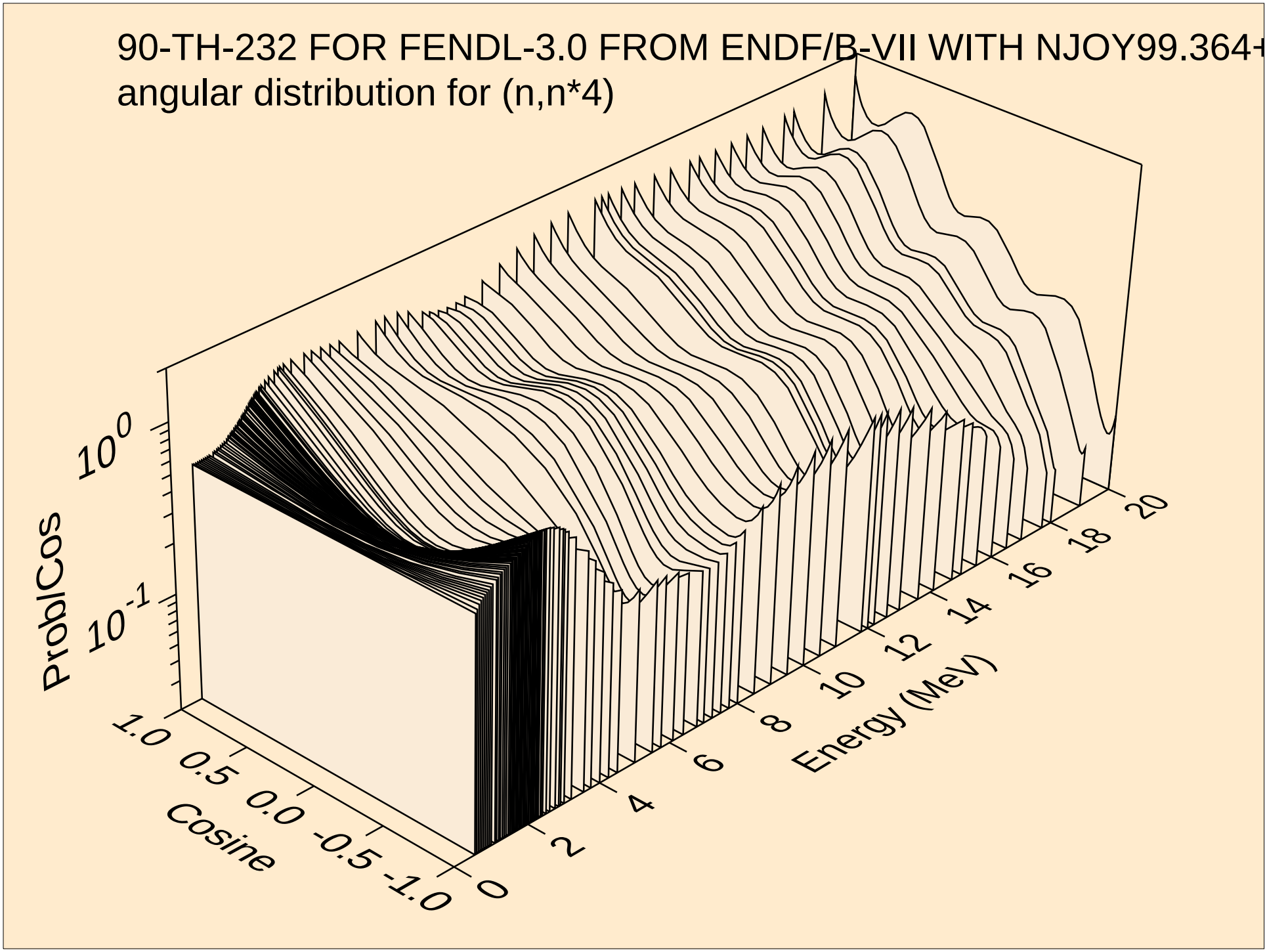

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
angular distribution for (n,n*1)
ProbICos
10^0
10^-2
1.0
0.5
0.0
-0.5
-1.0
Cosine
20
25
30
35
40
45
50
55
60
Energy (MeV)

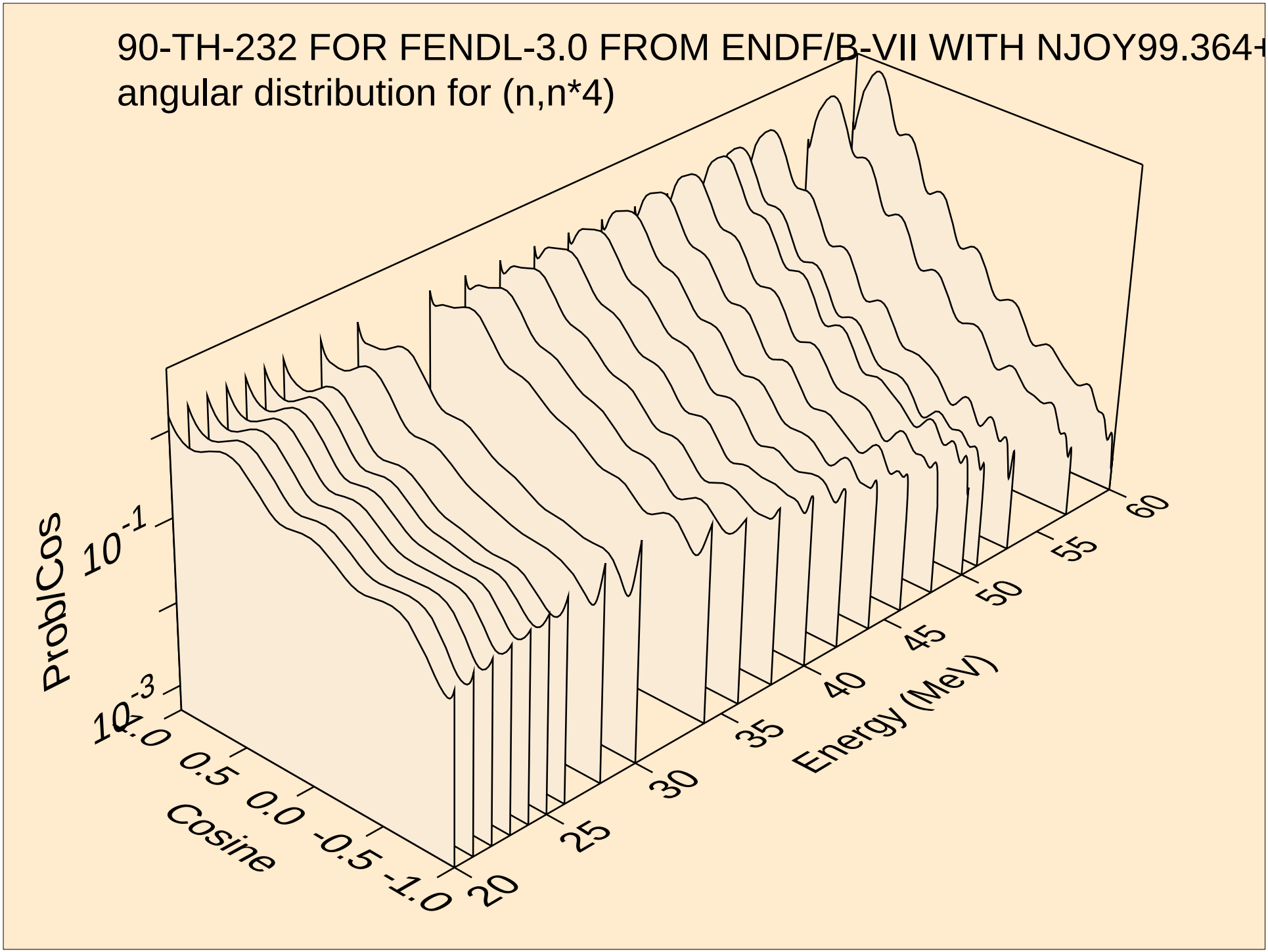

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
angular distribution for (n,n*2)
ProblCos
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

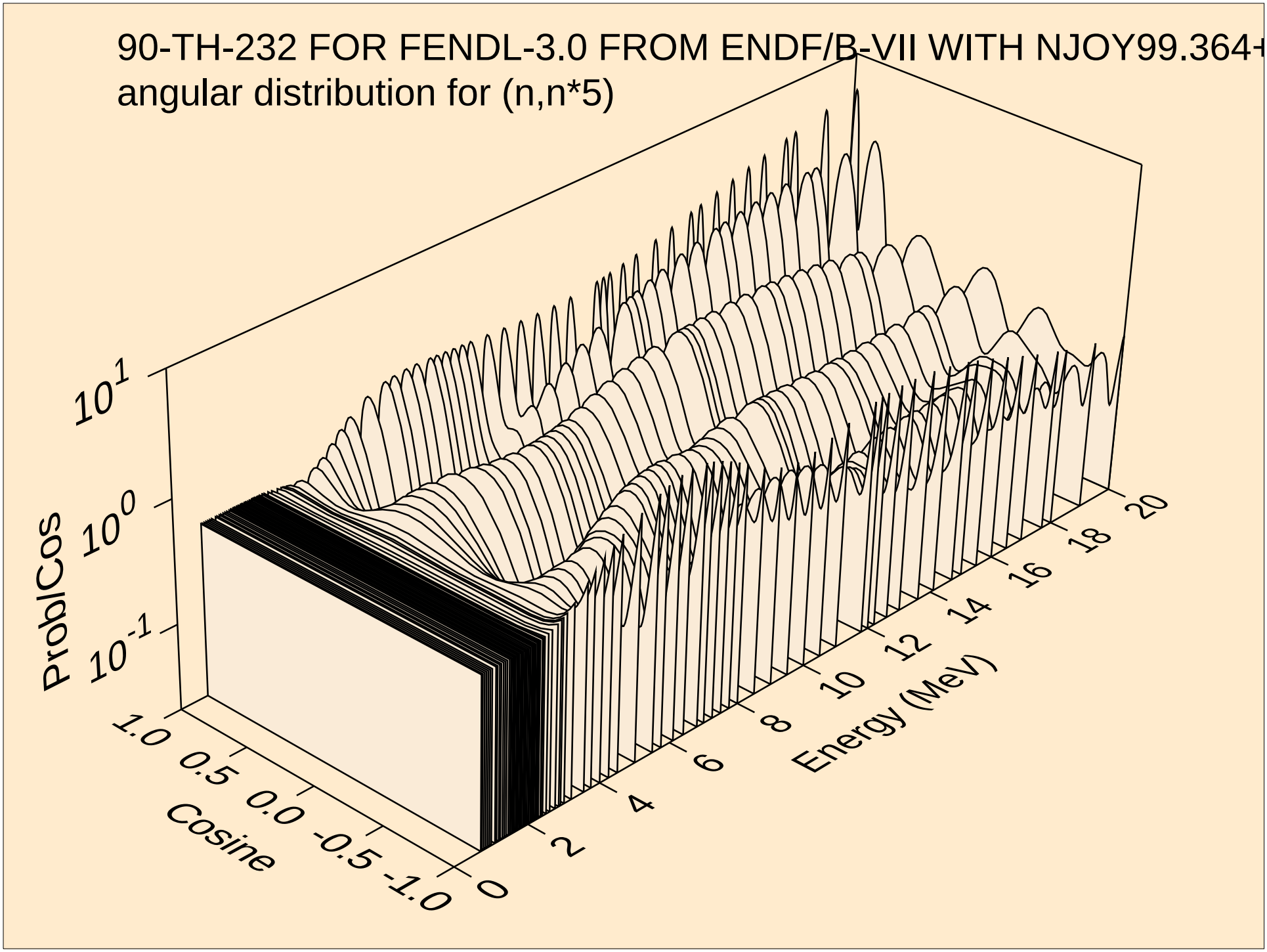

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
angular distribution for (n,n*2)
ProbICos
10^0
10^-2
1.0
0.5
0.0
-0.5
-1.0
Cosine
20
25
30
35
40
45
50
55
60
Energy (MeV)

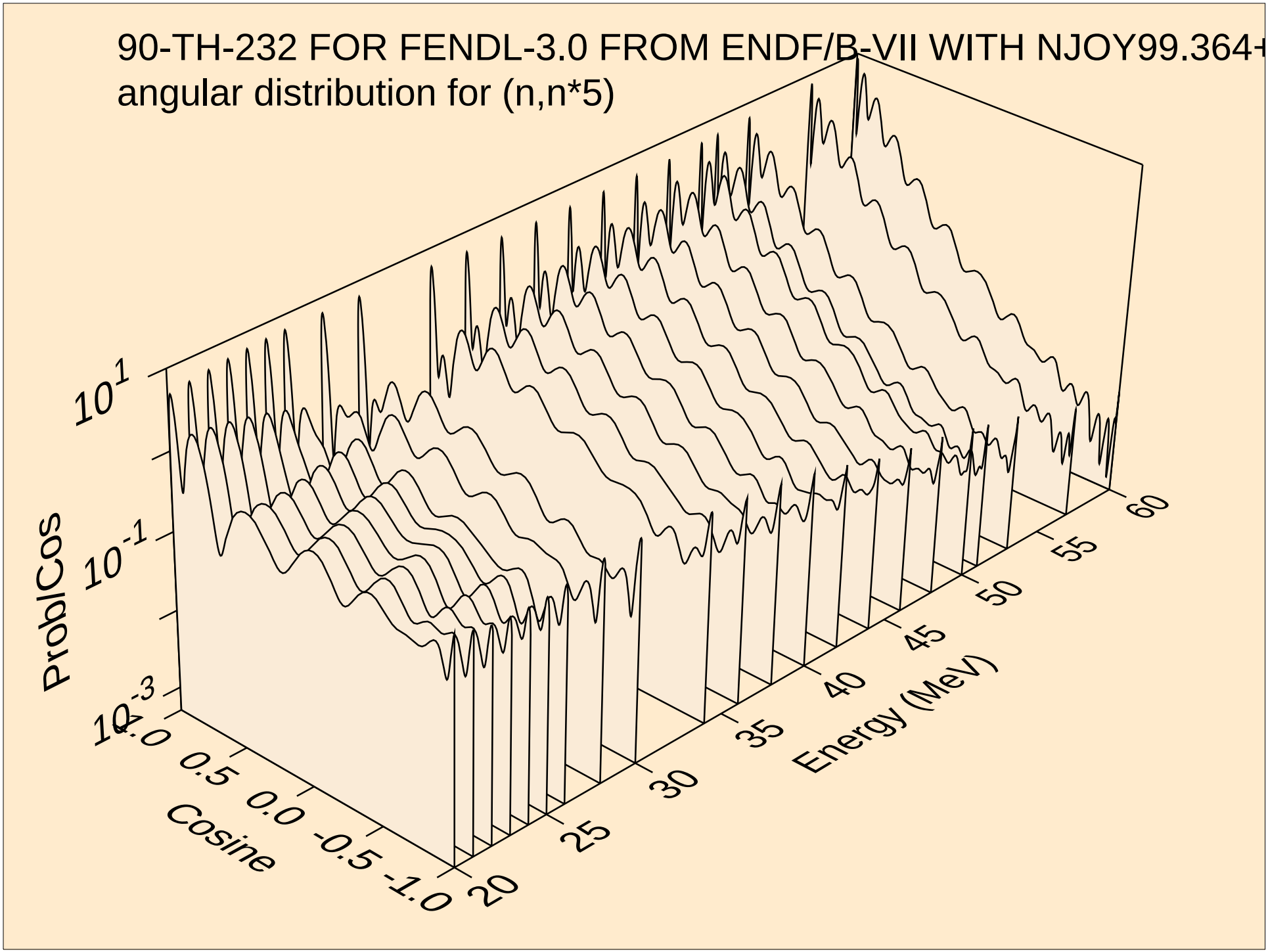

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
angular distribution for (n,n*3)
ProbICos
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

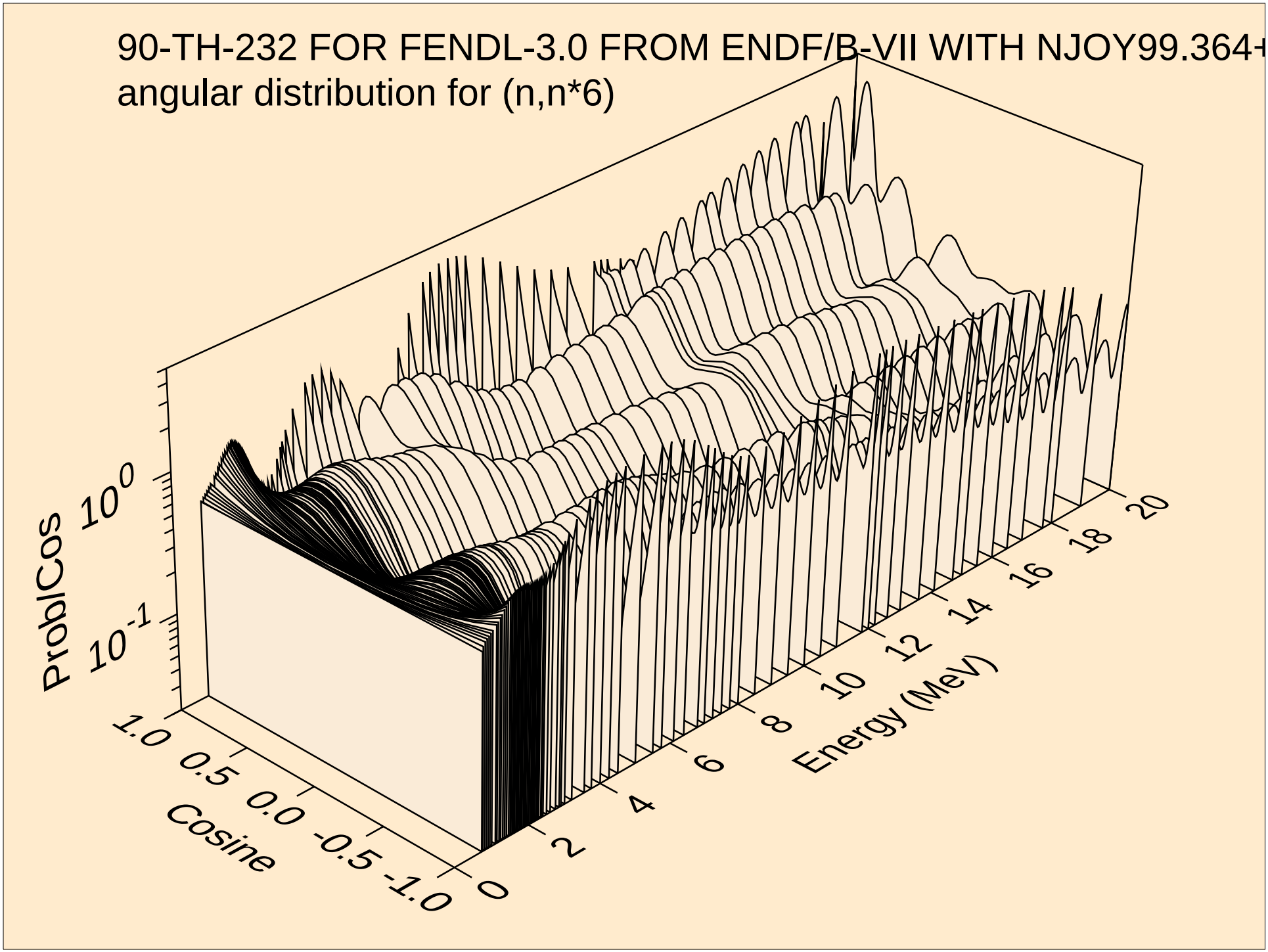

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
angular distribution for (n,n*3)
Prob\Cos
10^0
10^-1
10^-2
1.0
0.5
0.0
-0.5
-1.0
Cosine
20
25
30
35
40
45
50
55
60
Energy (MeV)

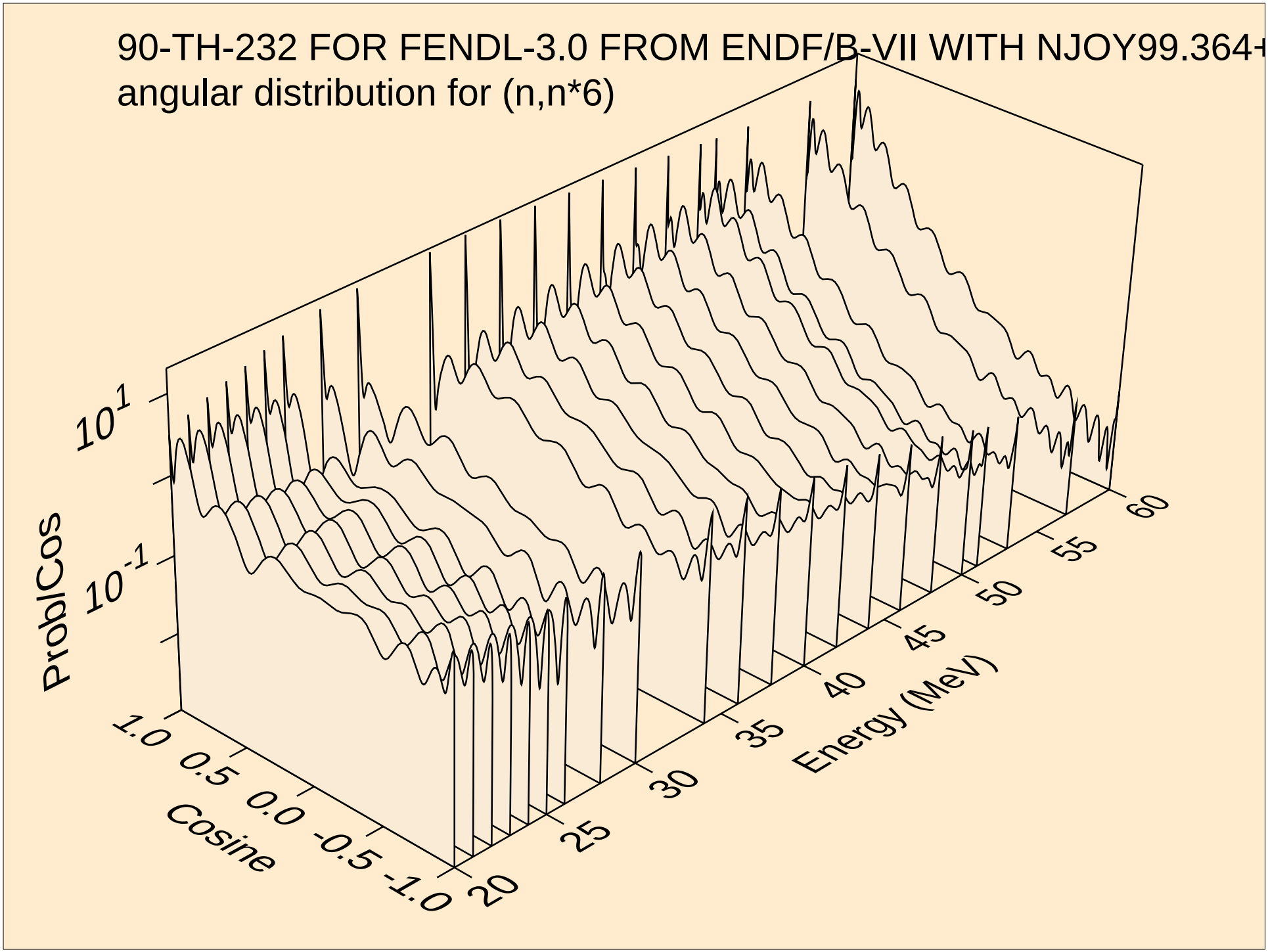

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
angular distribution for (n,n*4)
ProbICos
10^0
10^-1
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

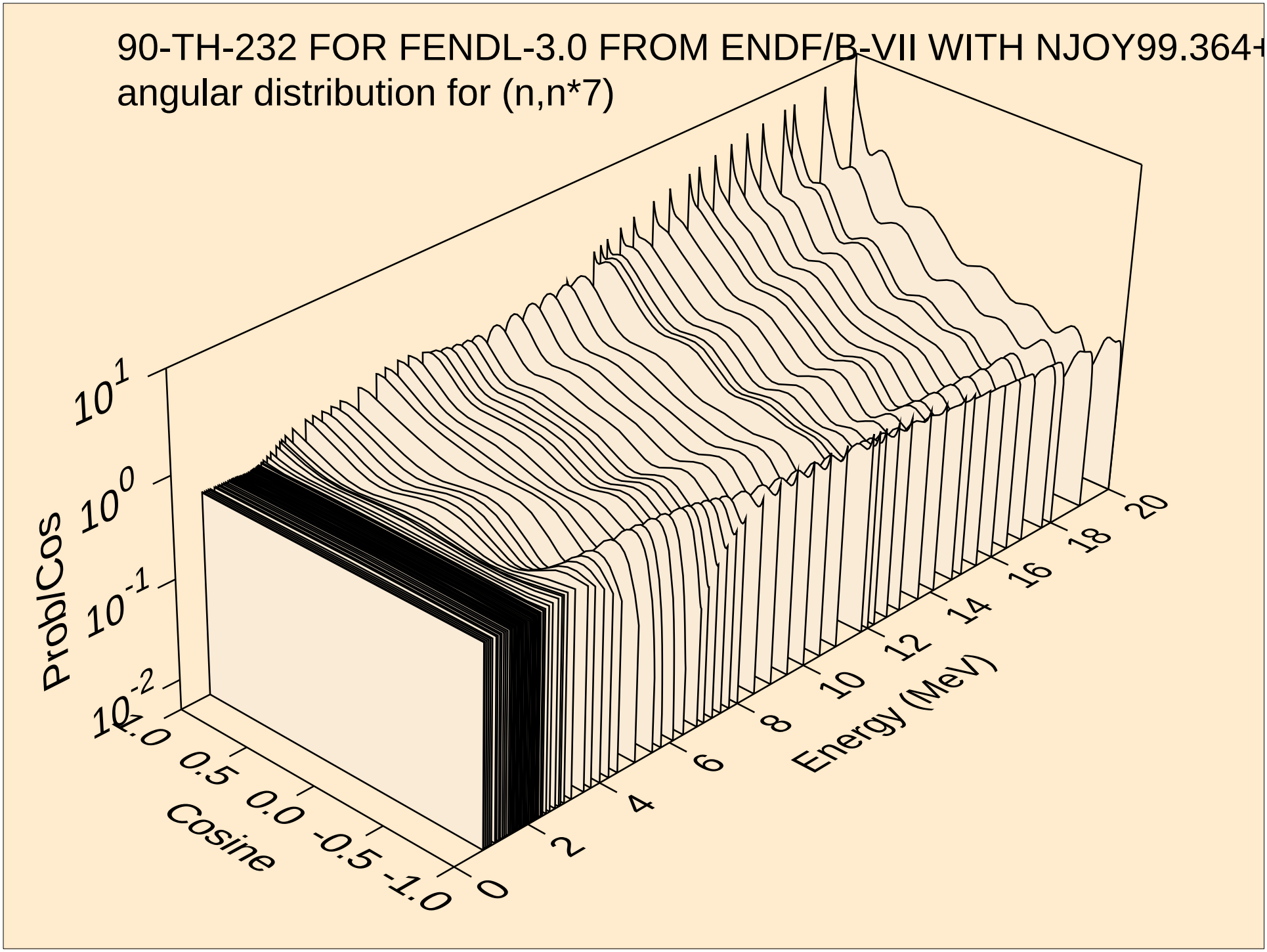

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
angular distribution for (n,n*4)
ProbICos
10-1
10-3
1.0
0.5
0.0
-0.5
-1.0
Cosine
20
25
30
35
40
45
50
55
60
Energy (MeV)

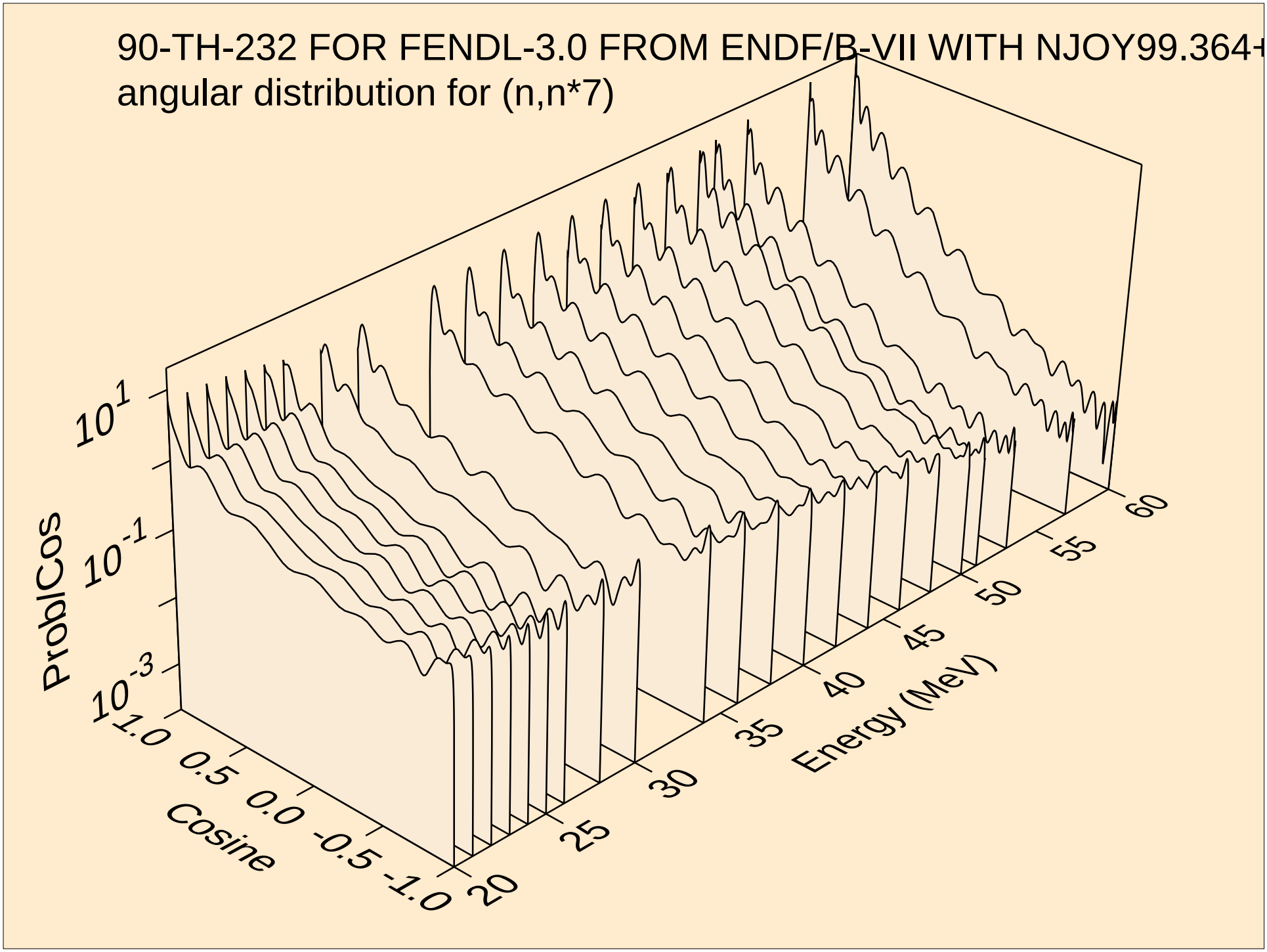

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
angular distribution for (n,n*5)
ProbICos
10^1
10^0
10^-1
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

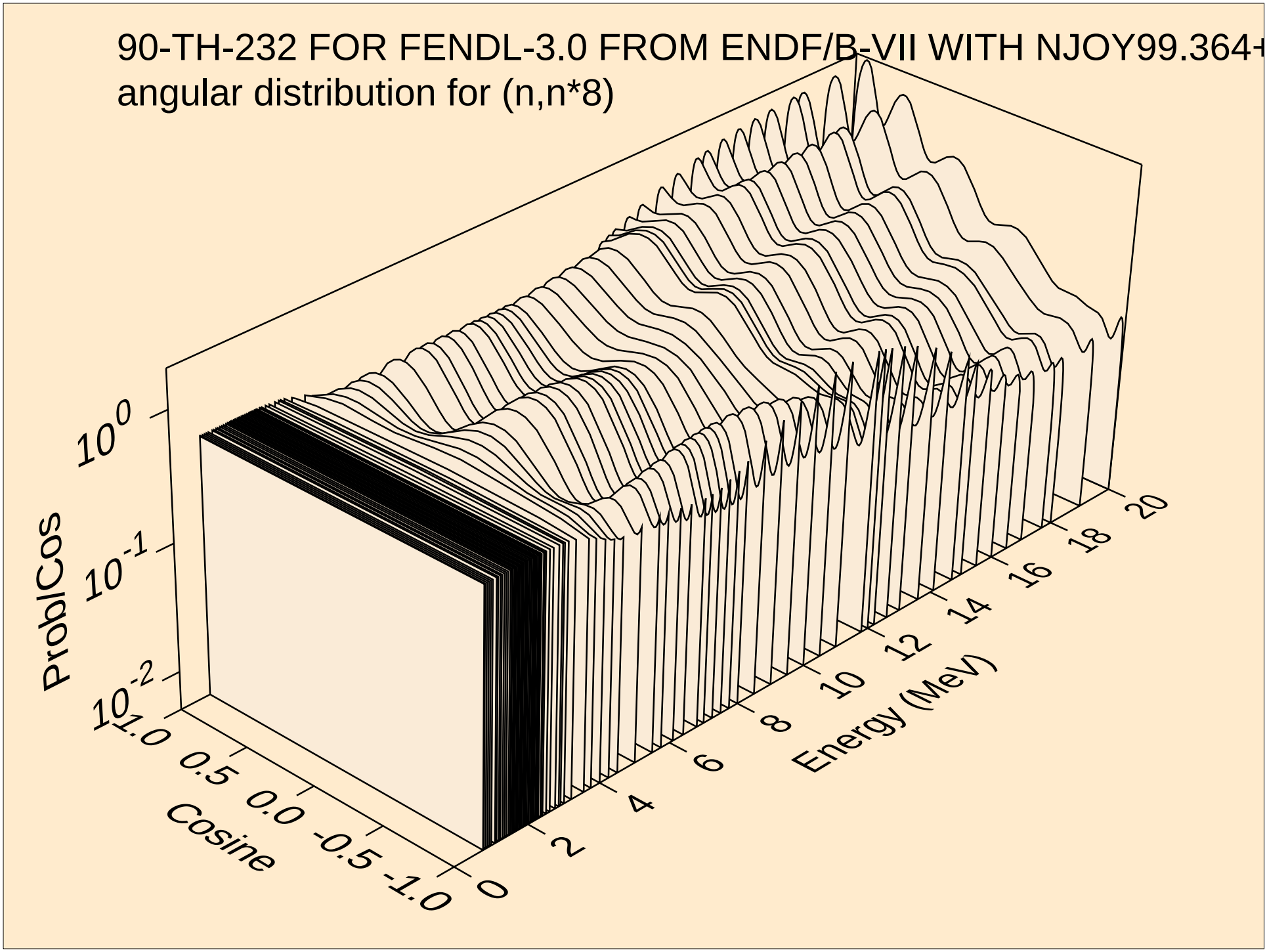

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
angular distribution for (n,n*5)
ProblCos
10^{1}
10^{-1}
10^{-3}
1.0
0.5
0.0
-0.5
-1.0
Cosine
20
25
30
35
40
45
50
55
60
Energy (MeV)

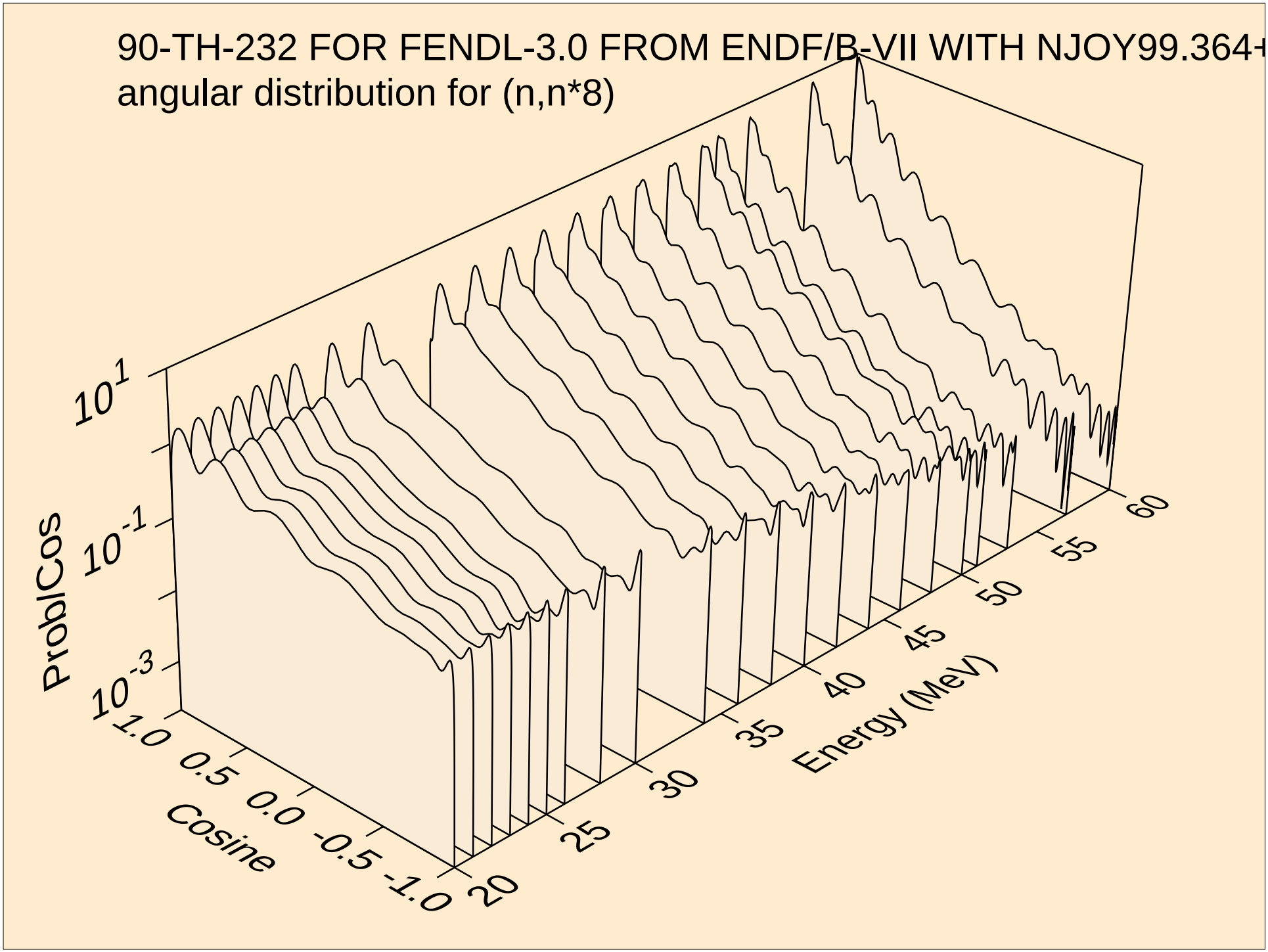

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
angular distribution for (n,n*6)
Prob\Cos
10^0
10^-1
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

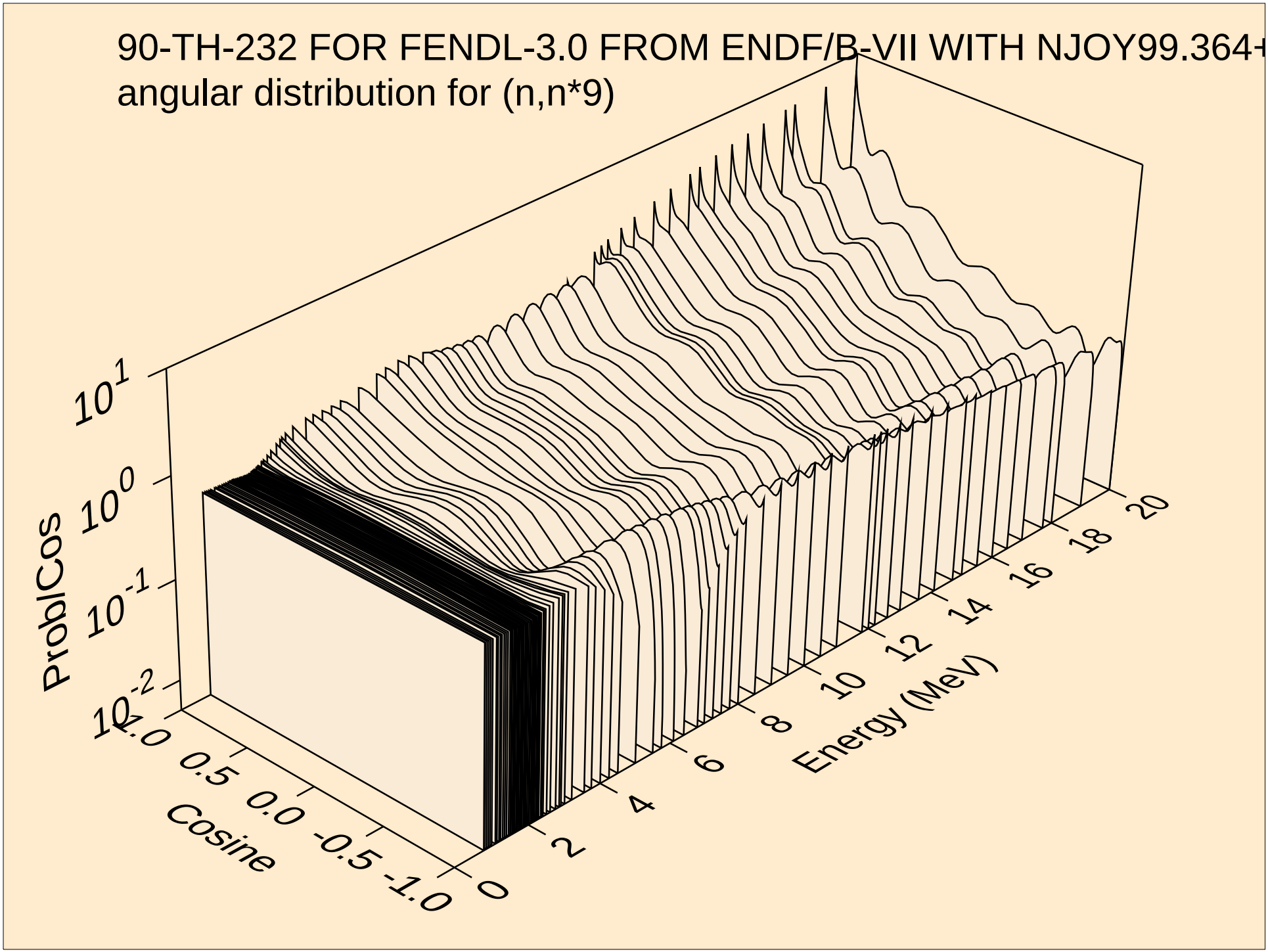

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
angular distribution for (n,n*6)
ProbICos
10^{1}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
20
25
30
35
40
45
50
55
60
Energy (MeV)

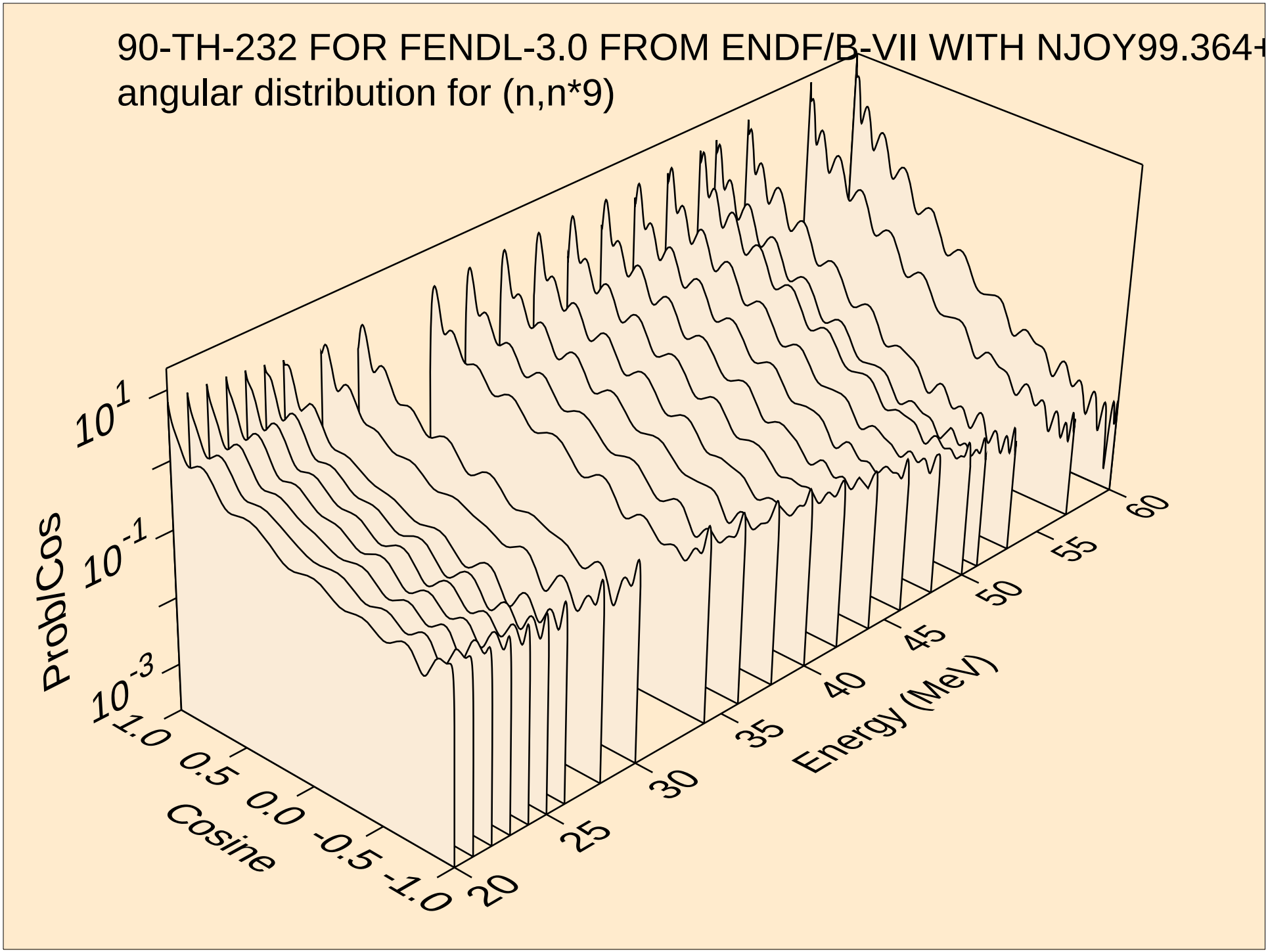

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
angular distribution for (n,n*7)
Prob\Cos
10^1
10^0
10^-1
10^-2
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

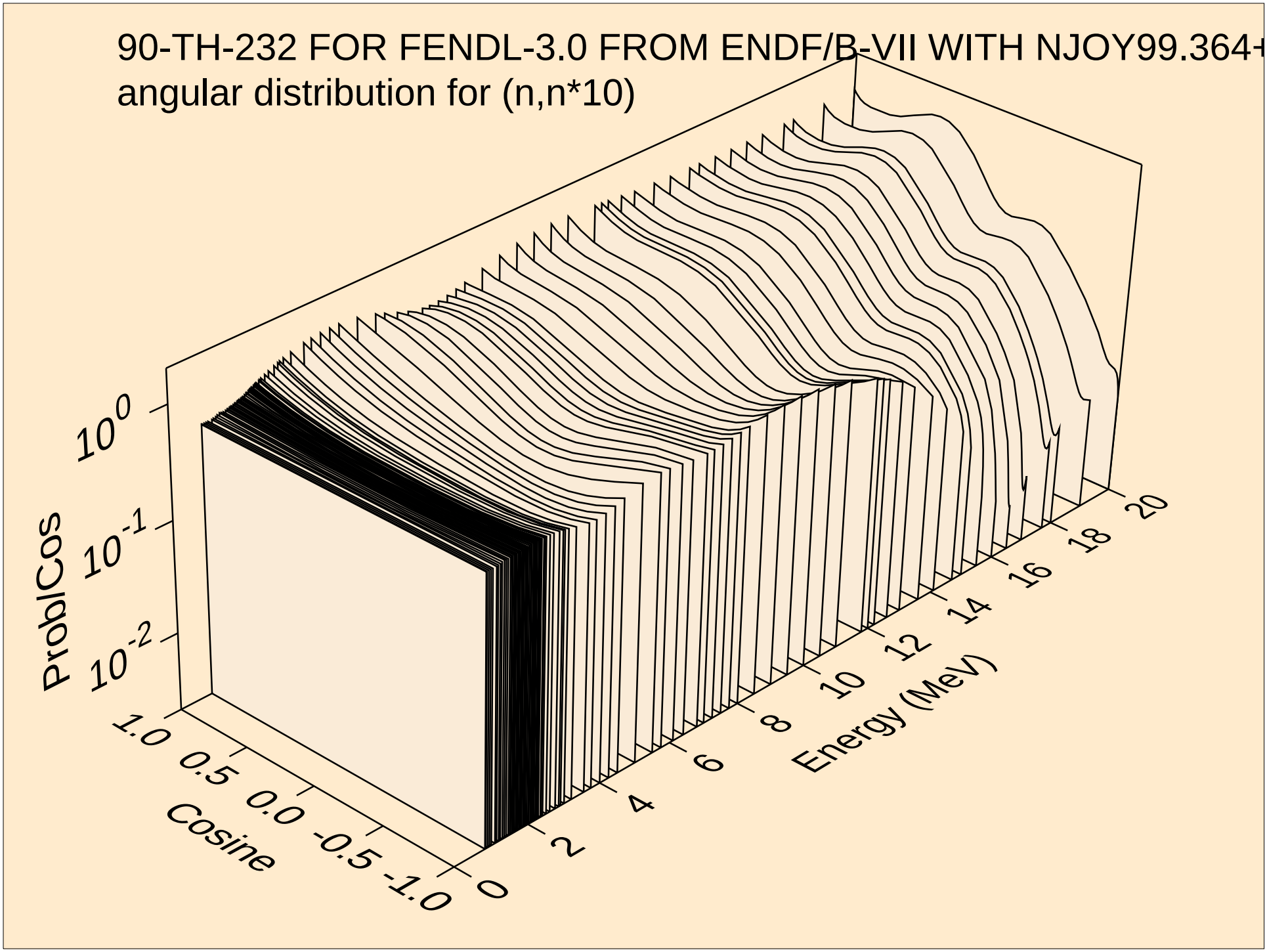

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
angular distribution for (n,n*7)
ProbICos
10^1
10^-1
10^-3
1.0
0.5
0.0
-0.5
-1.0
Cosine
20
25
30
35
40
45
50
55
60
Energy (MeV)

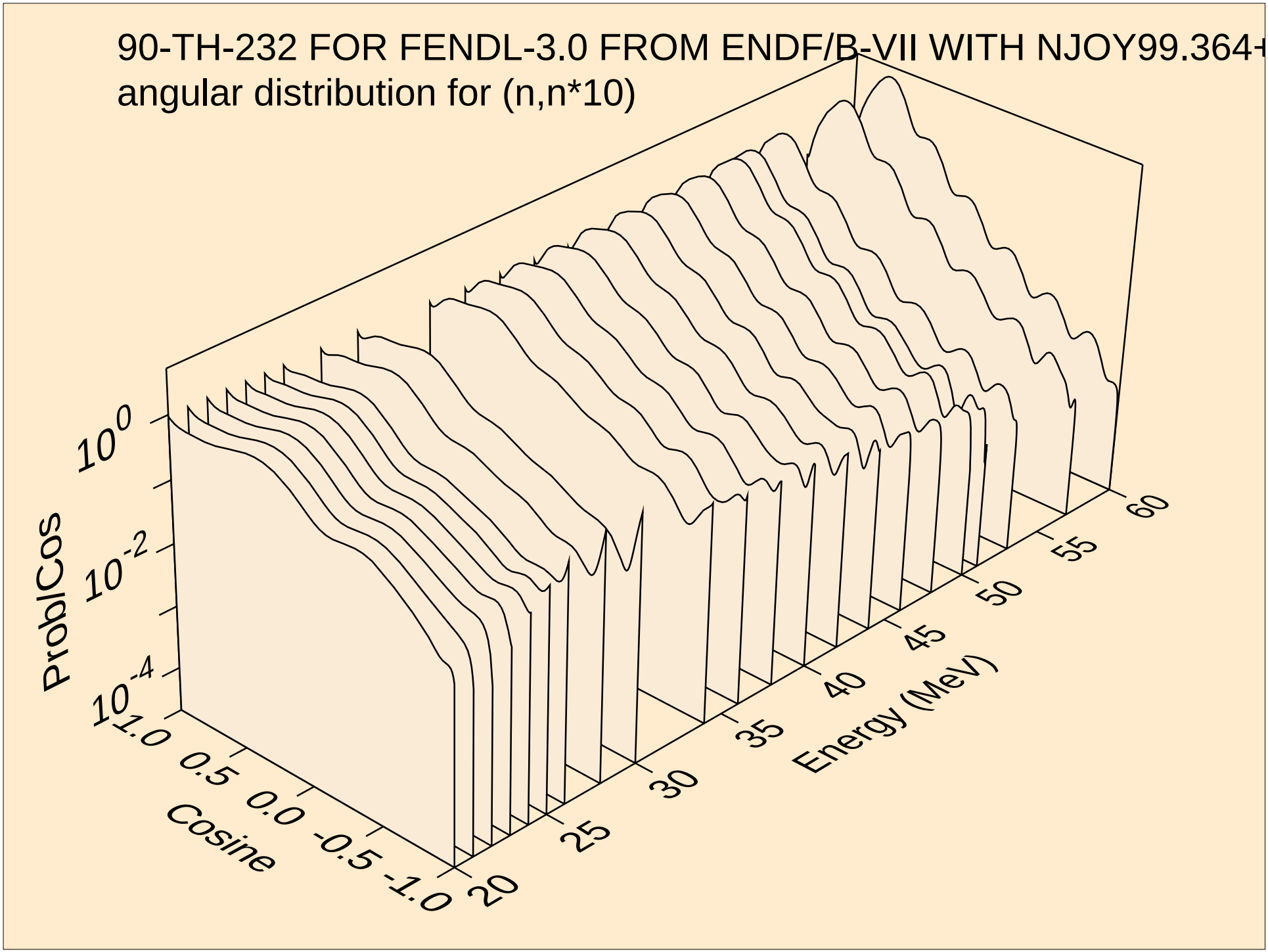

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
angular distribution for (n,n*8)
ProblCos
10^{0}
10^{-1}
10^{-2}
Cosine
1.0
0.5
0.0
-0.5
-1.0
Energy (MeV)
0
2
4
6
8
10
12
14
16
18
20

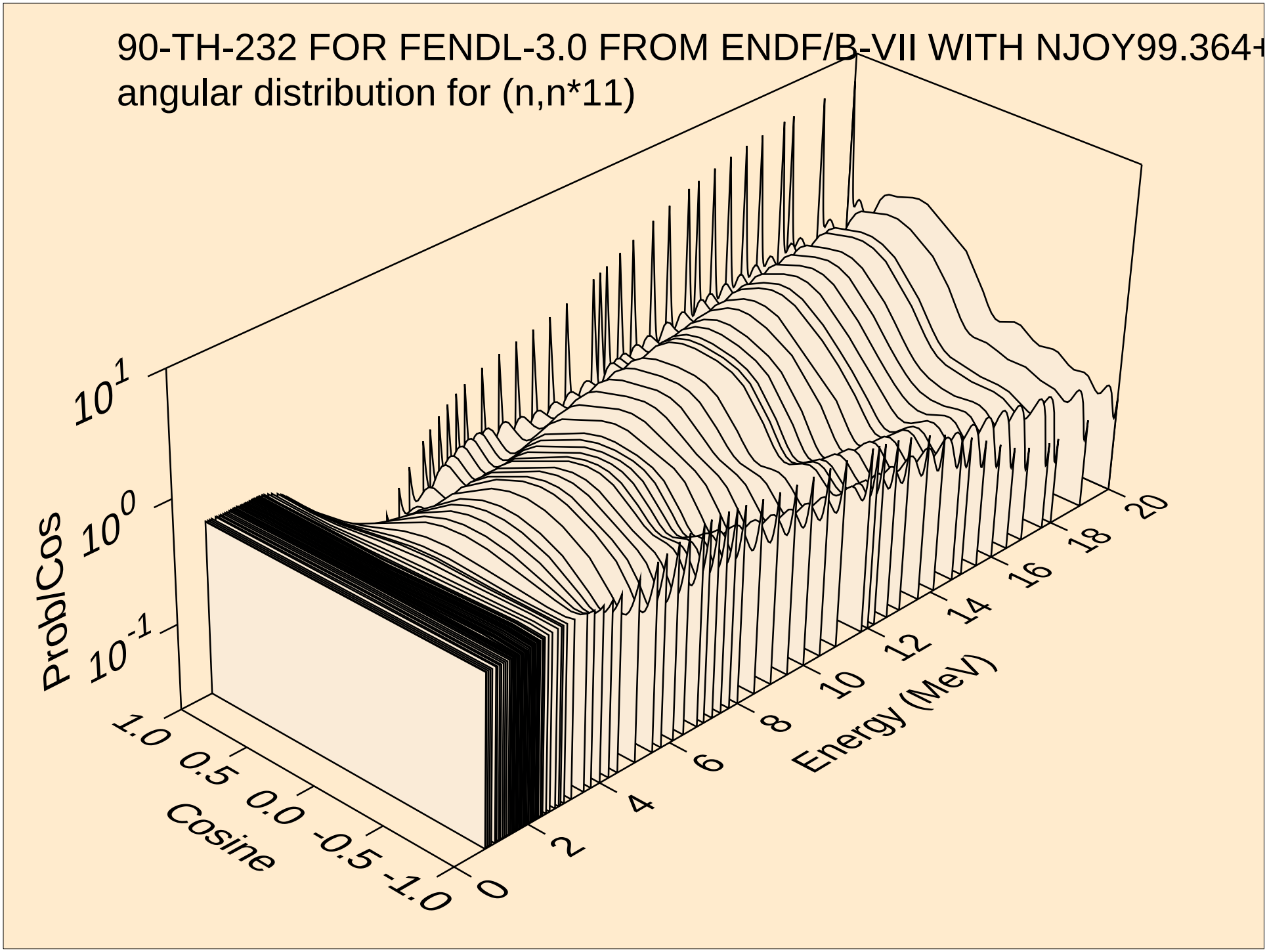

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
angular distribution for (n,n*8)
ProbICos
10^1
10^-1
10^-3
1.0
0.5
0.0
-0.5
-1.0
Cosine
20
25
30
35
40
45
50
55
60
Energy (MeV)

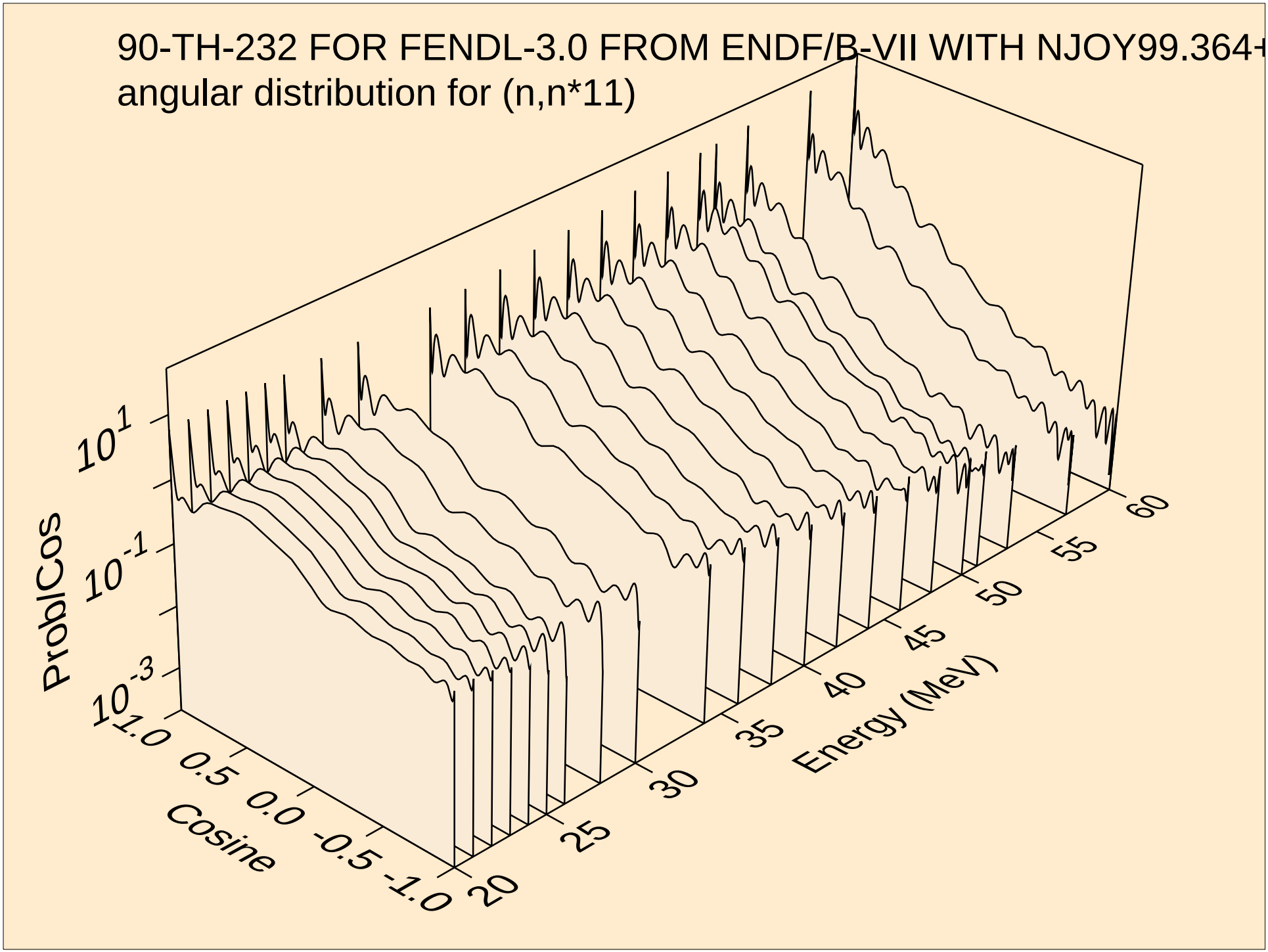

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
angular distribution for (n,n*9)
Prob\Cos
10^1
10^0
10^-1
10^-2
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

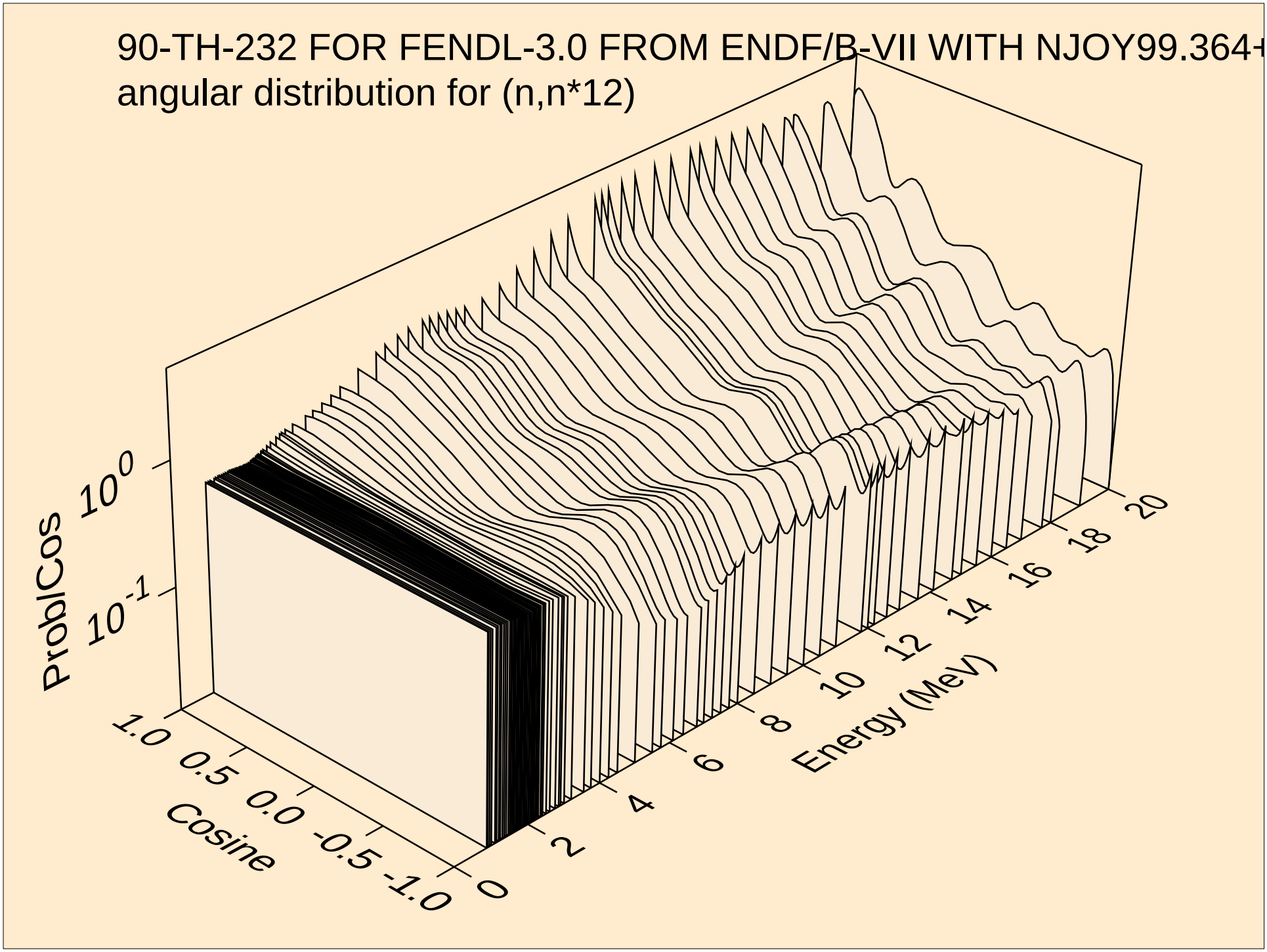

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
angular distribution for (n,n*9)
ProbICos
10^1
10^-1
10^-3
1.0
0.5
0.0
-0.5
-1.0
Cosine
20
25
30
35
40
45
50
55
60
Energy (MeV)

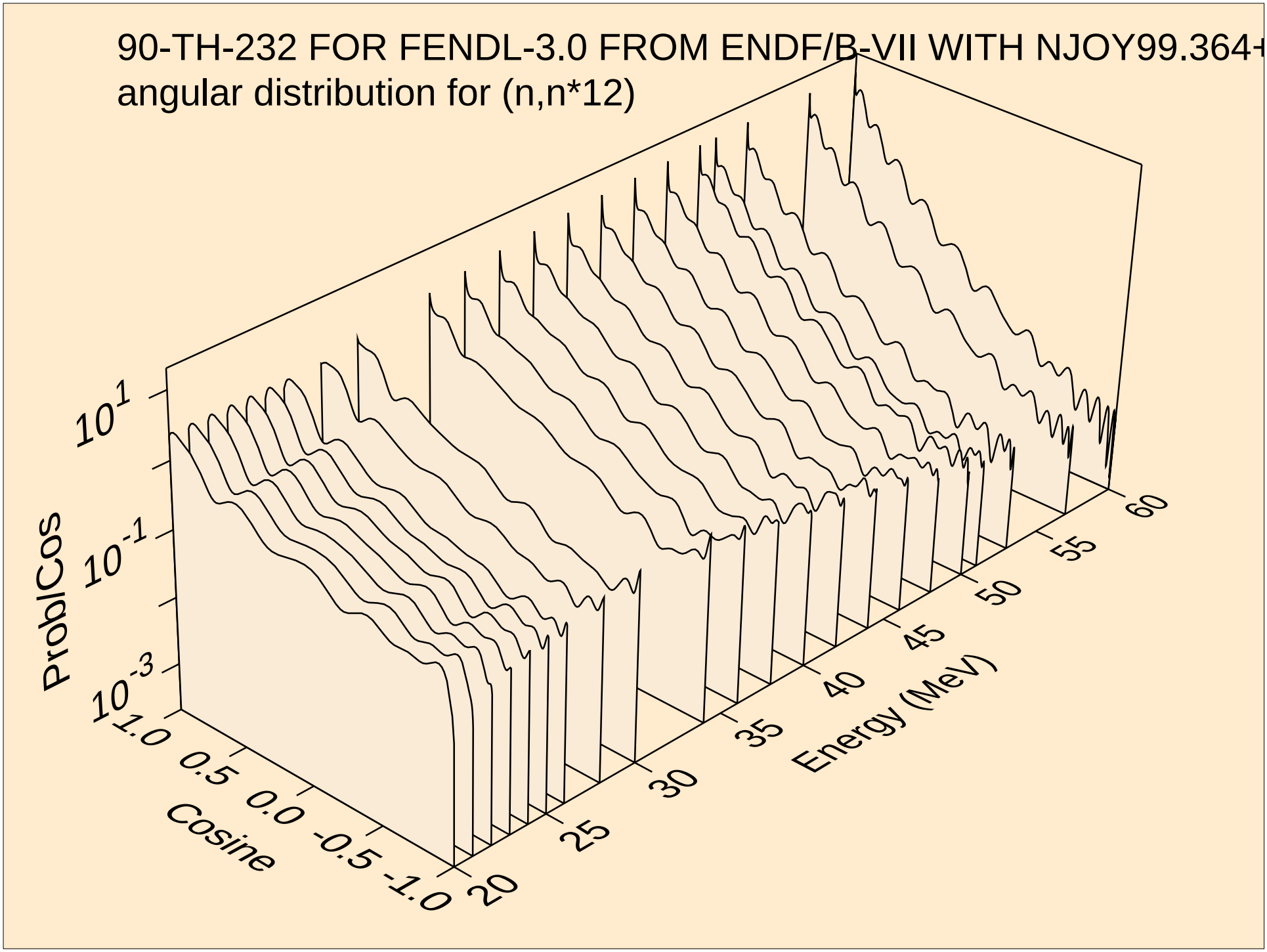

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
angular distribution for (n,n*10)
ProbICos
10^0
10^-1
10^-2
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

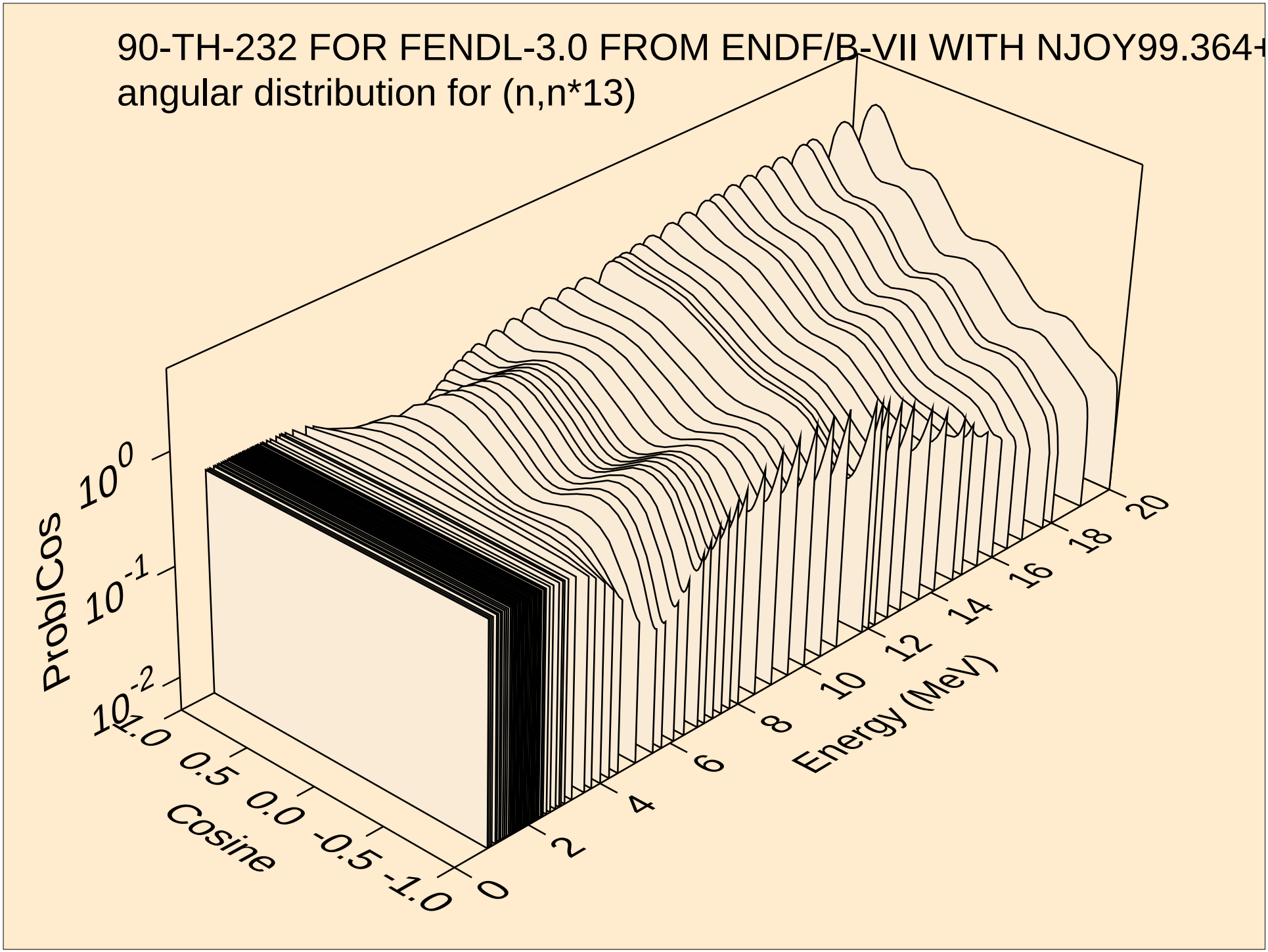

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
angular distribution for (n,n*10)
ProbICos
10^0
10^-2
10^-4
1.0
0.5
0.0
-0.5
-1.0
Cosine
20
25
30
35
40
45
50
55
60
Energy (MeV)

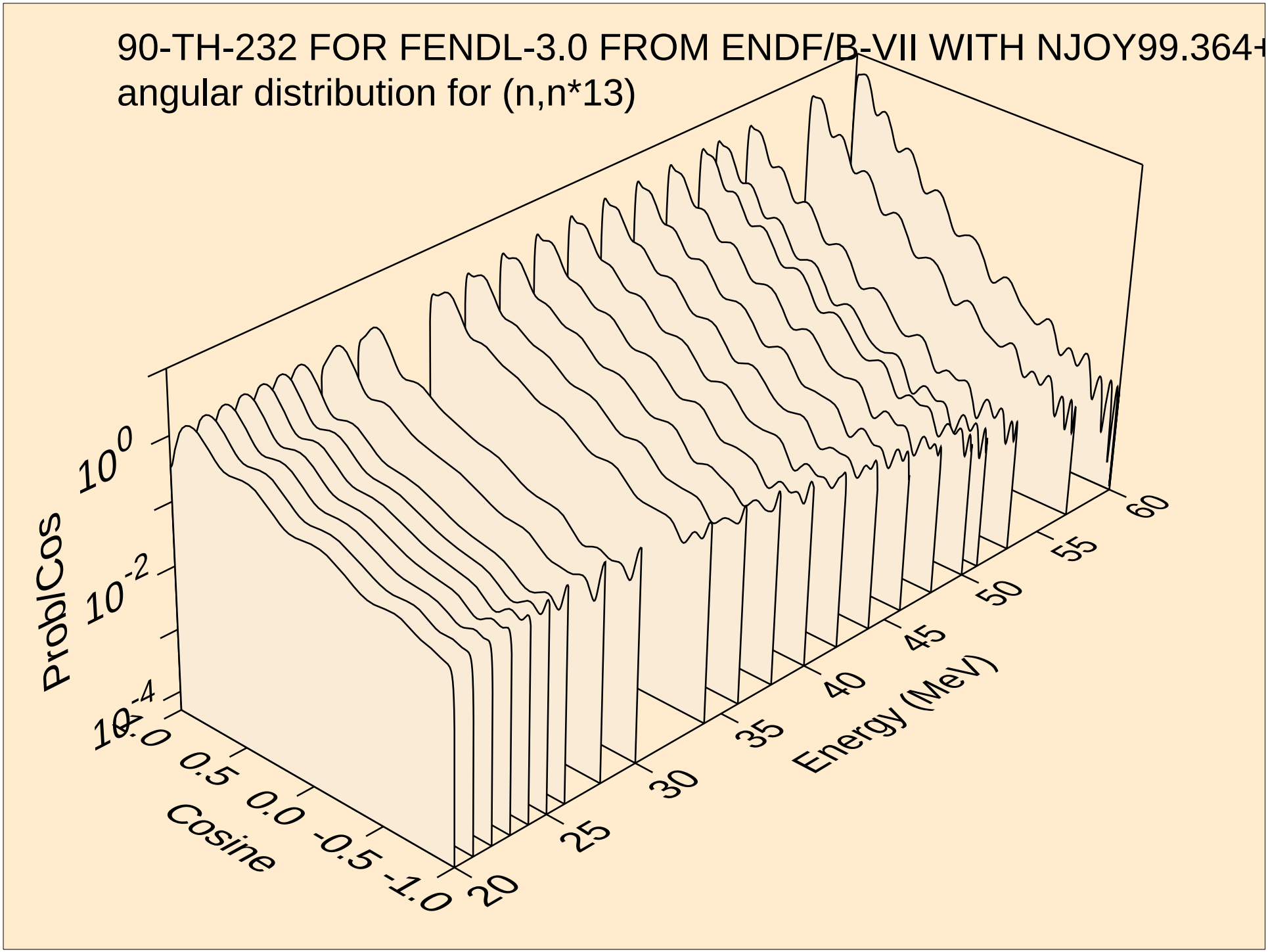

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
angular distribution for (n,n*11)
ProbICos
10^1
10^0
10^-1
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

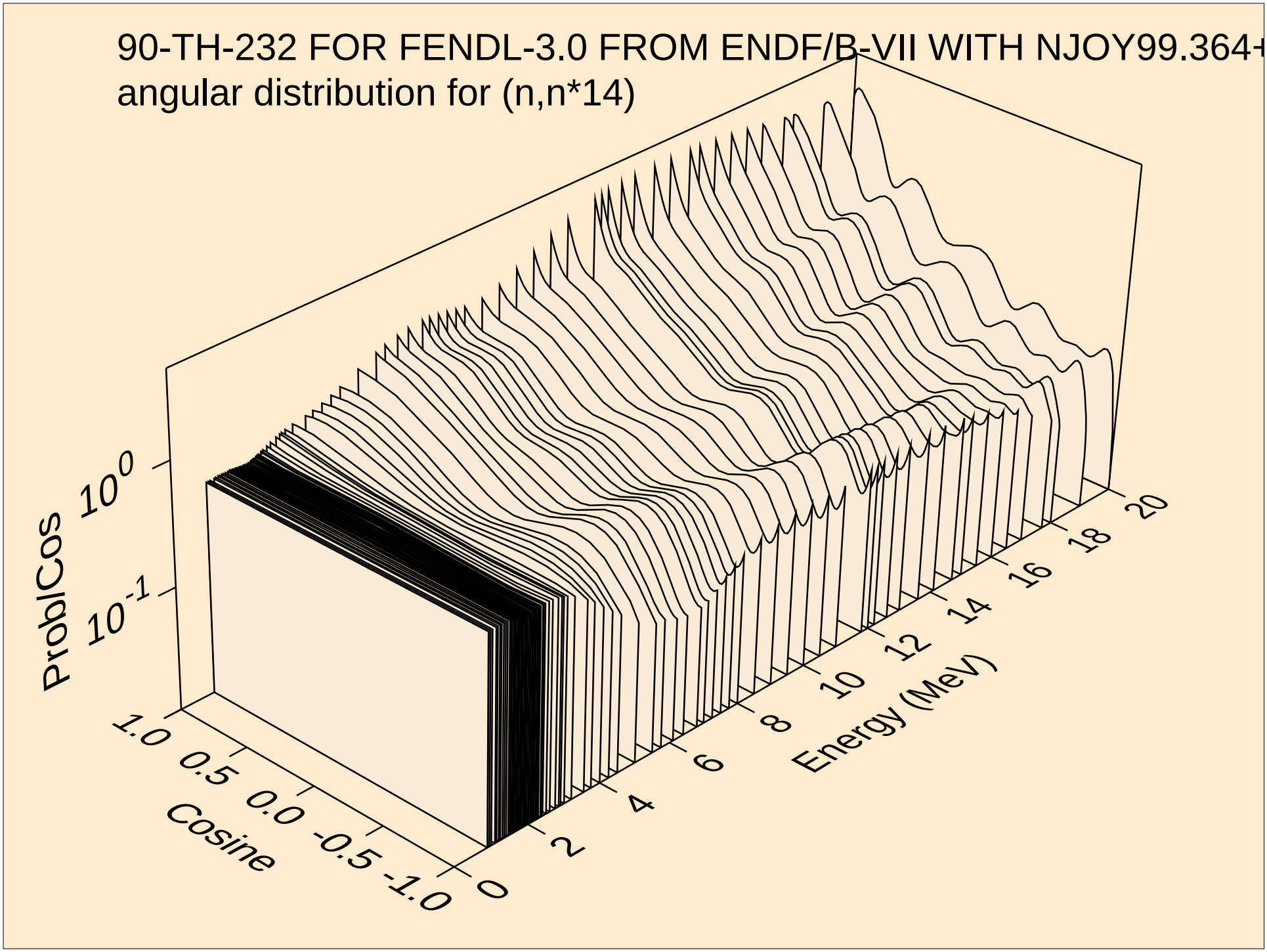

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
angular distribution for (n,n*11)
ProbICos
10^1
10^-1
10^-3
1.0
0.5
0.0
-0.5
-1.0
Cosine
20
25
30
35
40
45
50
55
60
Energy (MeV)

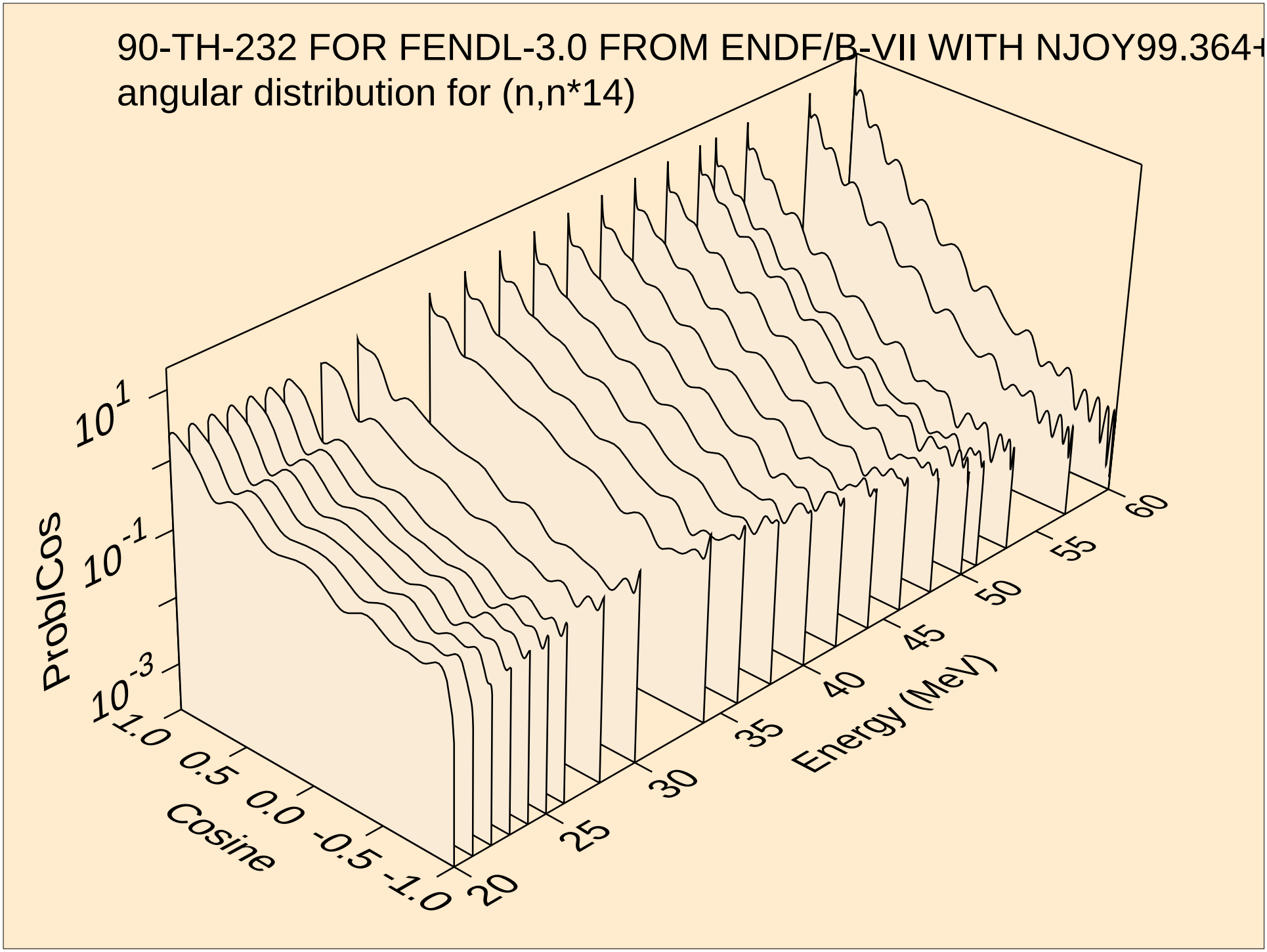

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
angular distribution for (n,n*12)
ProbICos
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

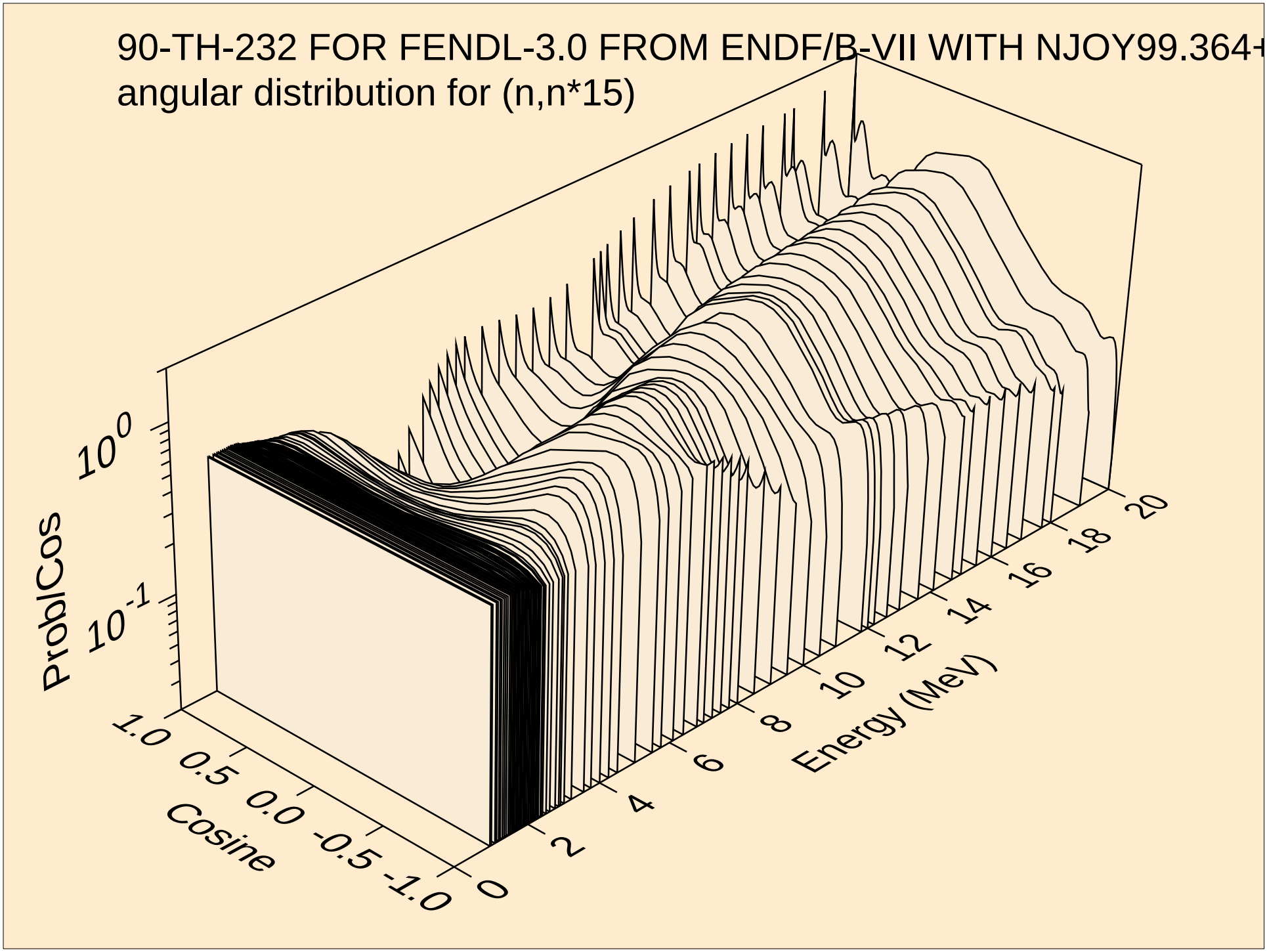

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
angular distribution for (n,n*12)
ProblCos
10^{1}
10^{-1}
10^{-3}
Cosine
1.0
0.5
0.0
-0.5
-1.0
Energy (MeV)
20
25
30
35
40
45
50
55
60

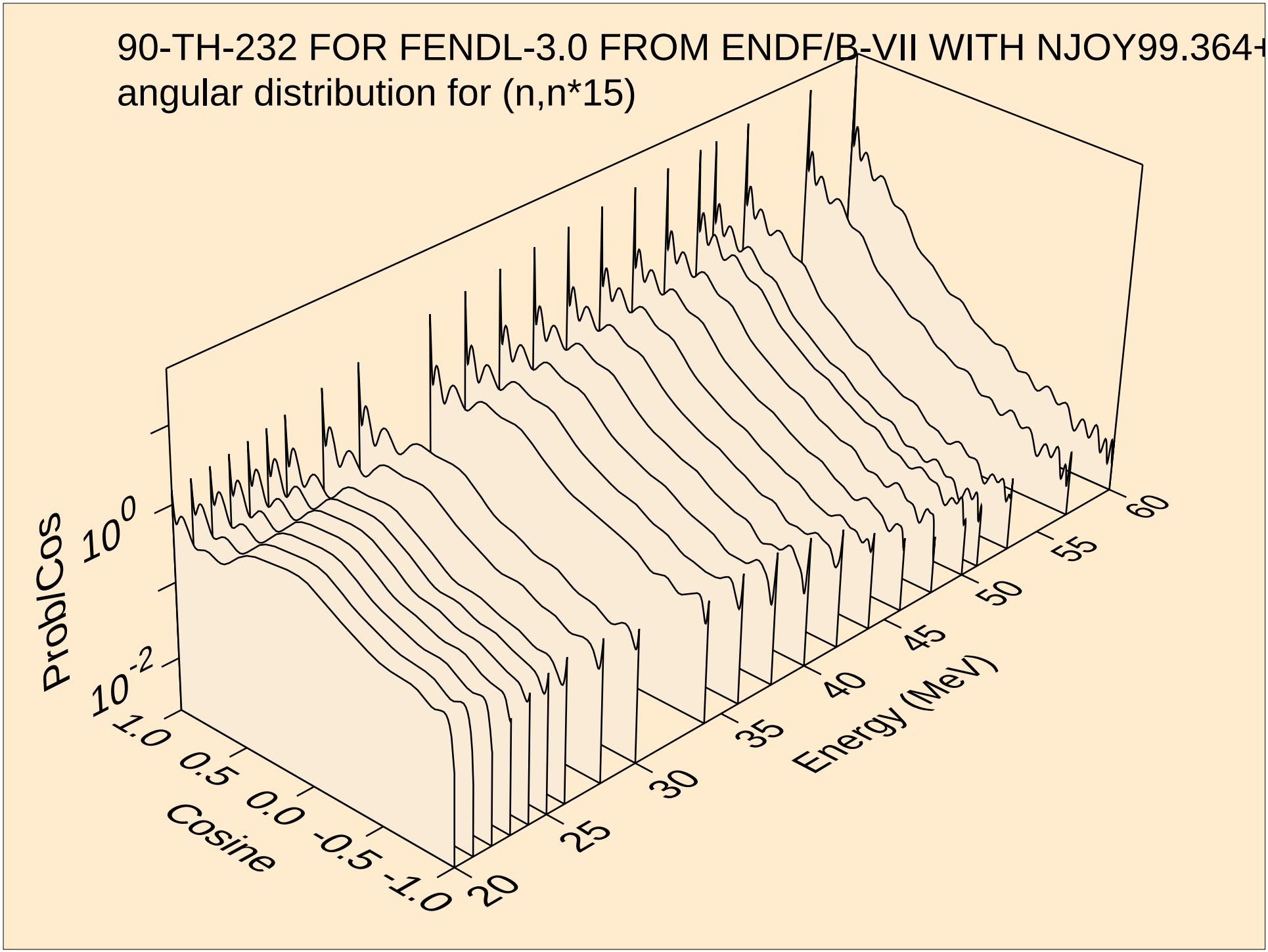

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
angular distribution for (n,n*13)
Prob\Cos
10^0
10^-1
10^-2
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

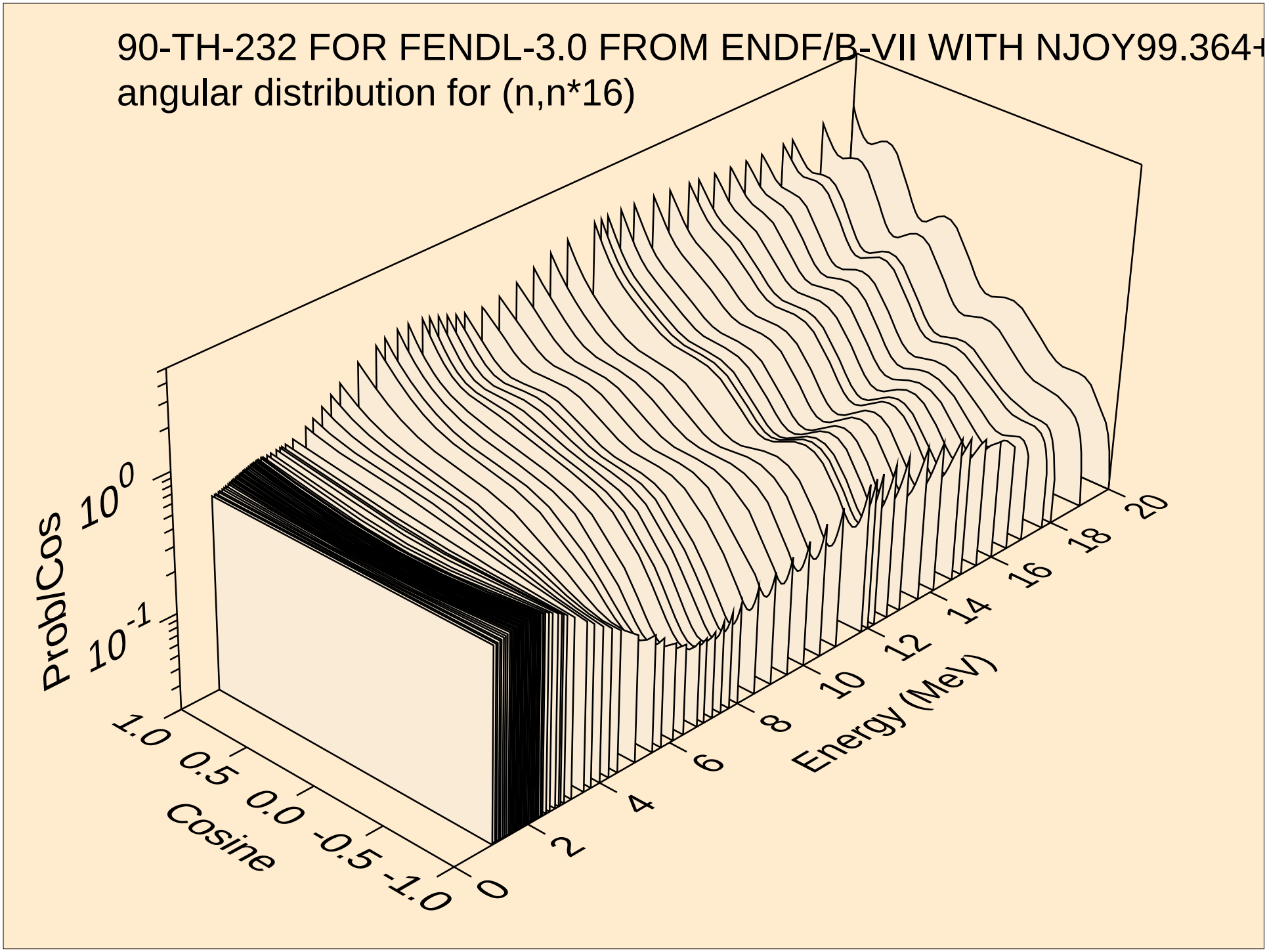

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
angular distribution for (n,n*13)
Prob\Cos
10^0
10^-2
10^-4
1.0
0.5
0.0
-0.5
-1.0
Cosine
20
25
30
35
40
45
50
55
60
Energy (MeV)

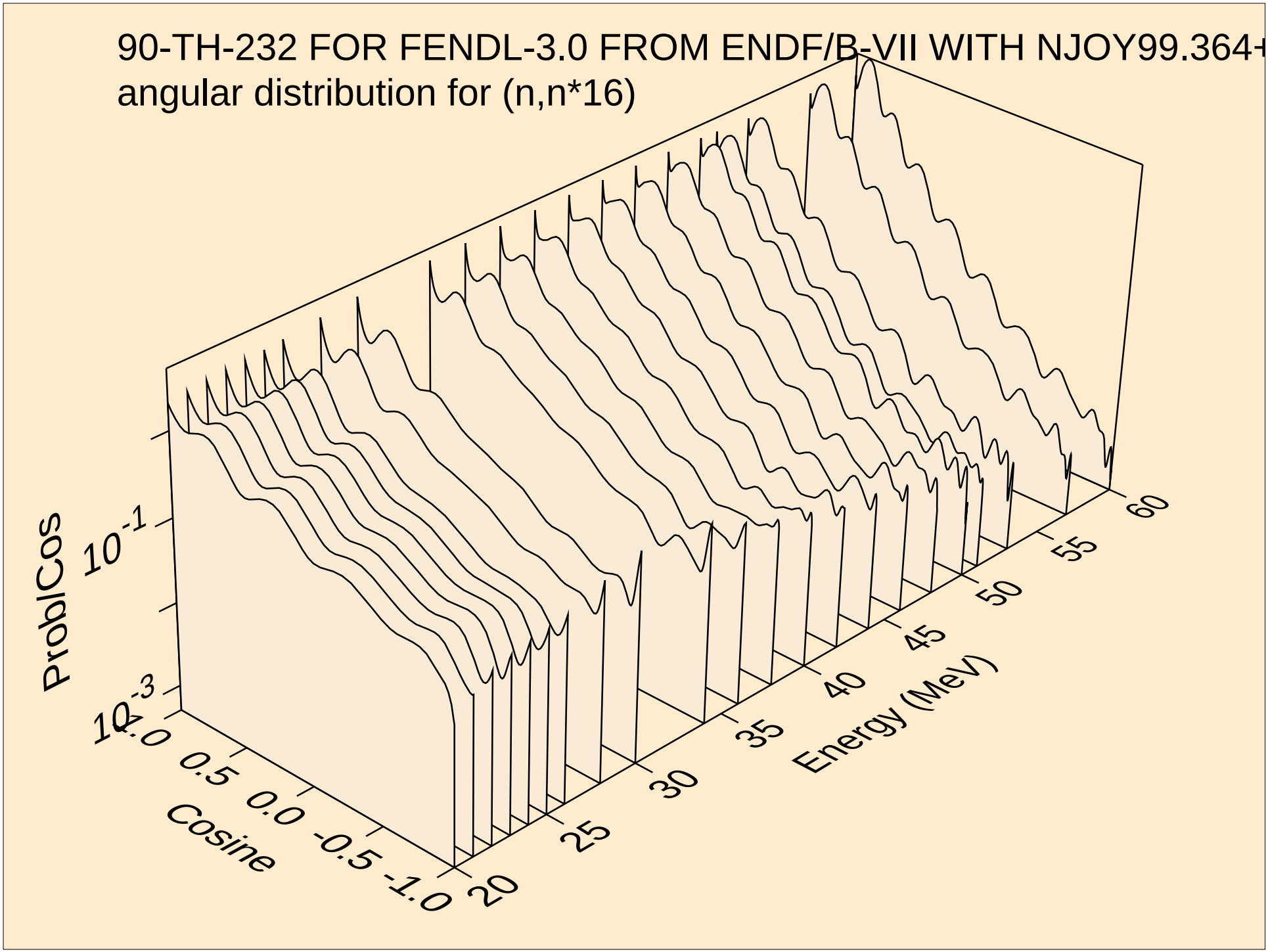

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
angular distribution for (n,n*14)
ProbICos
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

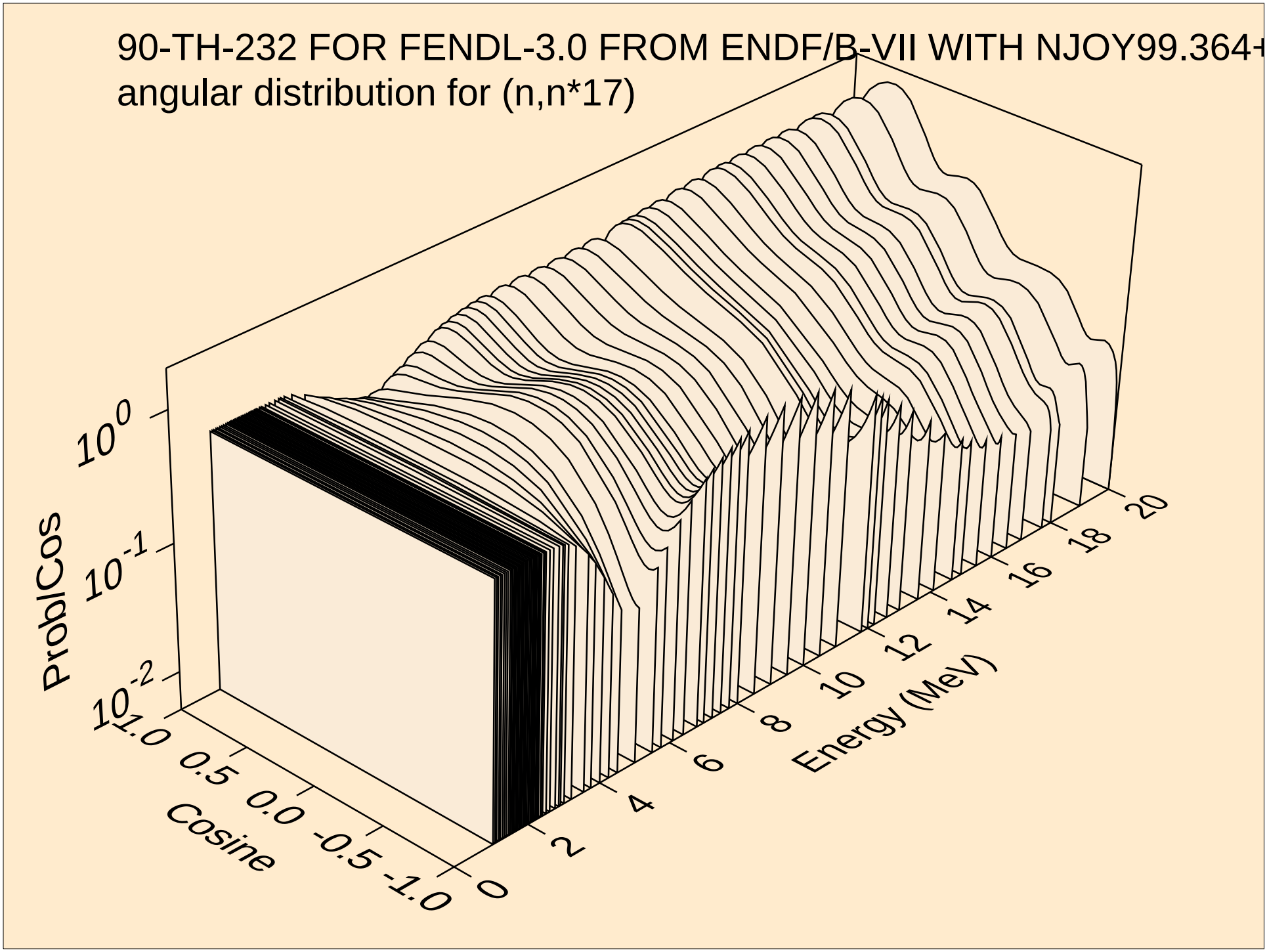

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
angular distribution for (n,n*14)
ProbICos
10^1
10^-1
10^-3
1.0
0.5
0.0
-0.5
-1.0
Cosine
20
25
30
35
40
45
50
55
60
Energy (MeV)

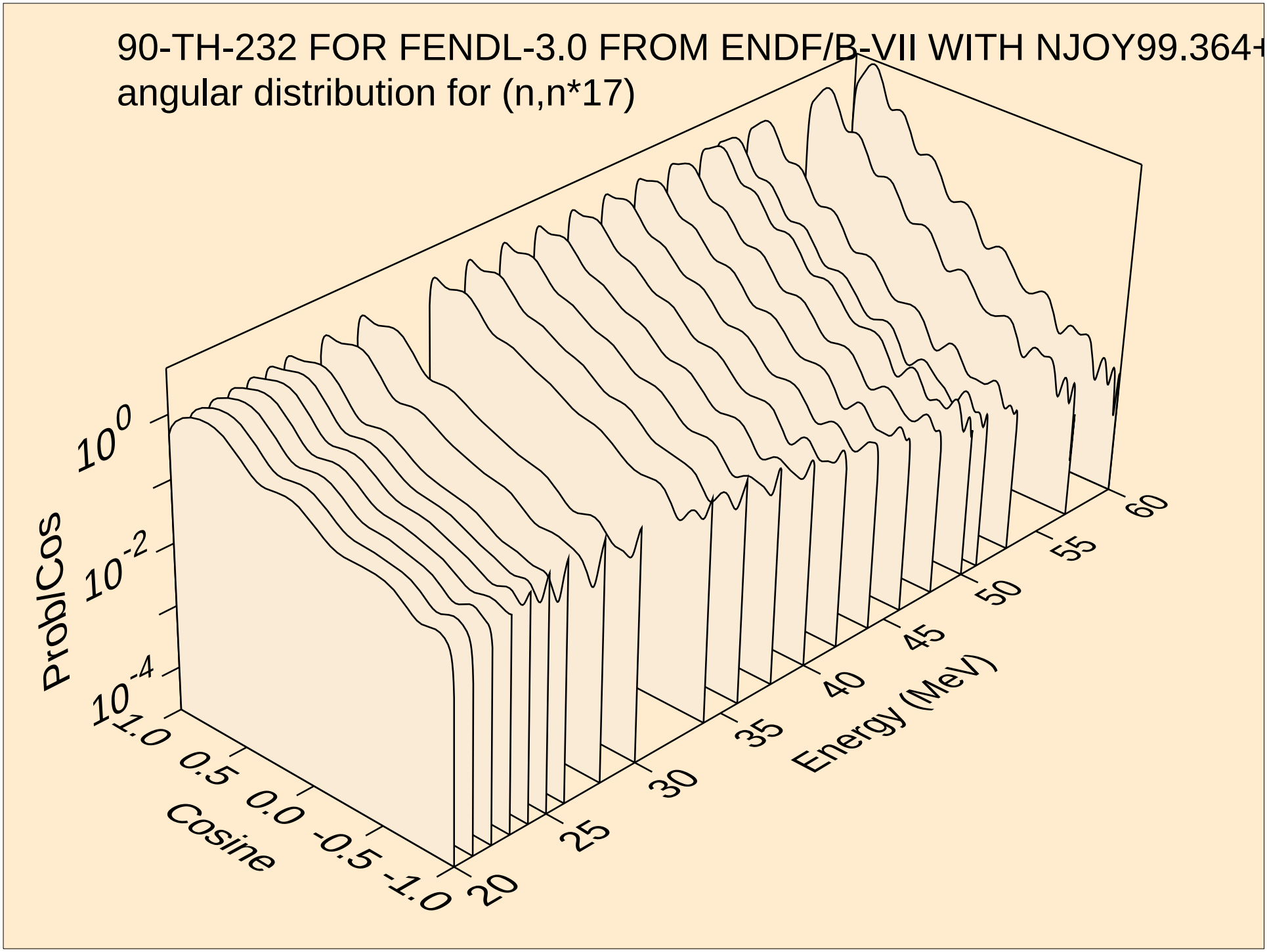

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
angular distribution for (n,n*15)
ProbICos
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

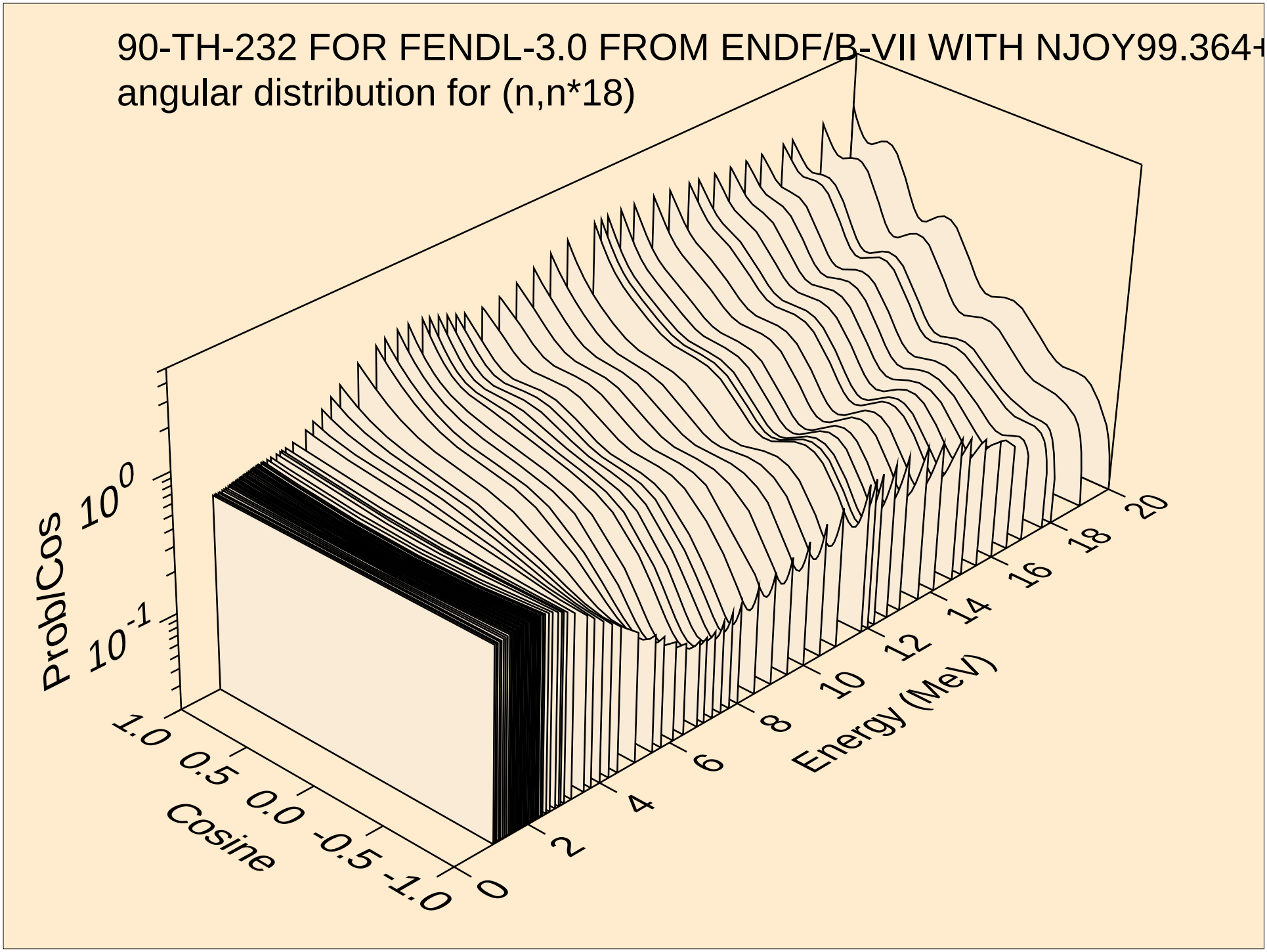

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
angular distribution for (n,n*15)
ProbICos
10^{0}
10^{-2}
1.0
0.5
0.0
-0.5
-1.0
Cosine
20
25
30
35
40
45
50
55
60
Energy (MeV)

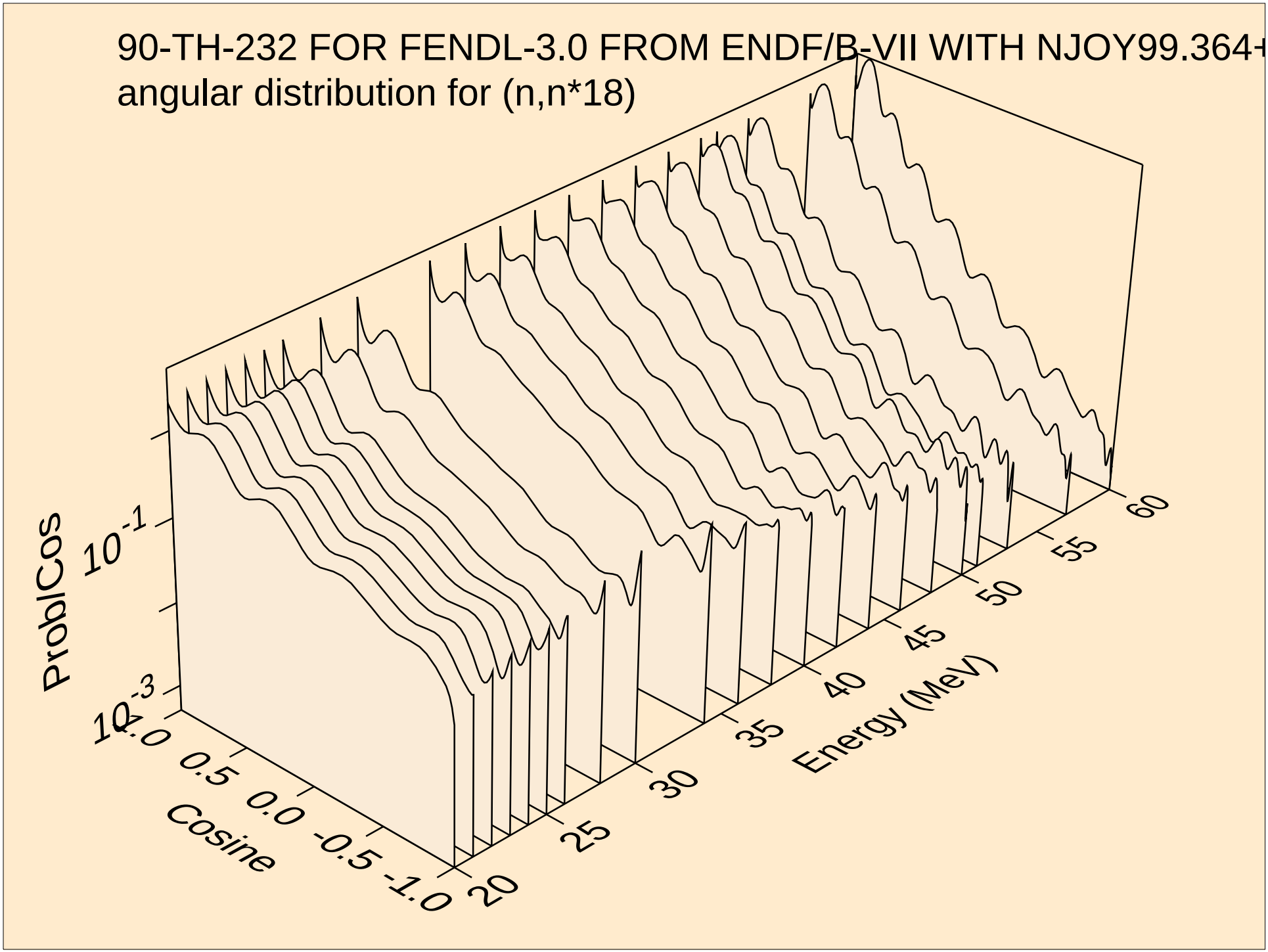

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
angular distribution for (n,n*16)
ProbICos
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

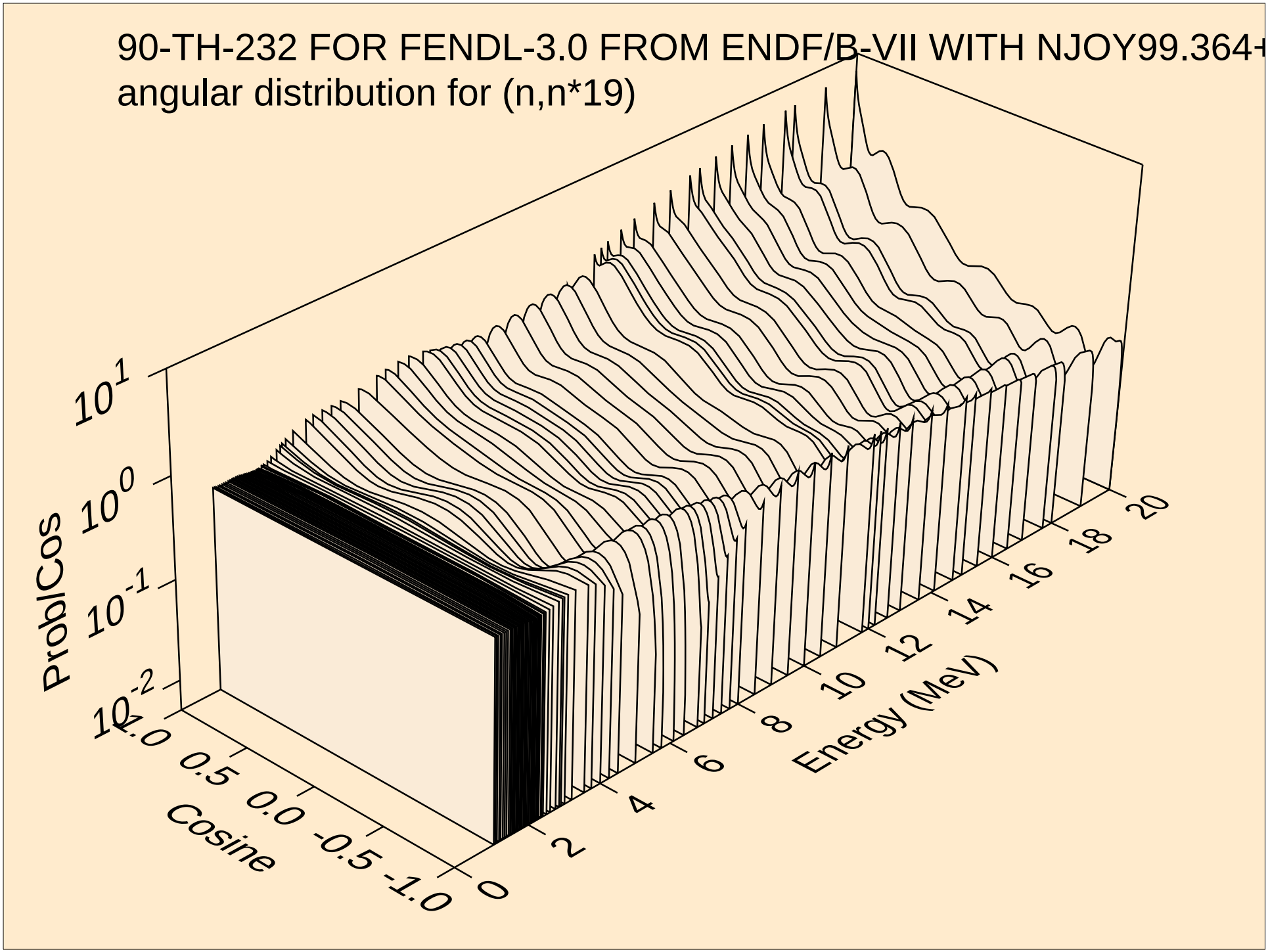

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
angular distribution for (n,n*16)
ProblCos
10-1
10-3
1.0
0.5
0.0
-0.5
-1.0
Cosine
20
25
30
35
40
45
50
55
60
Energy (MeV)

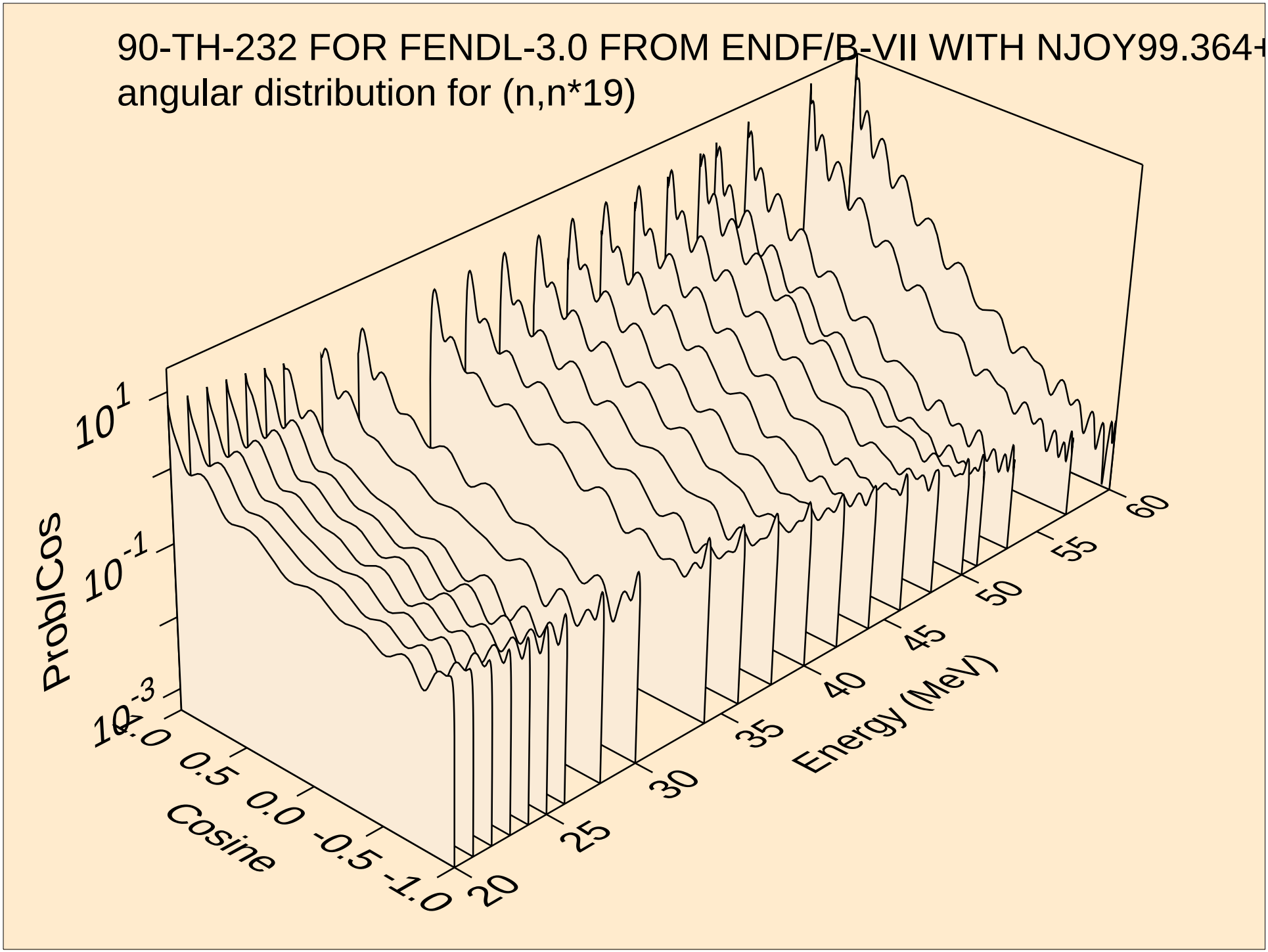

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
angular distribution for (n,n*17)
ProbICos
10^{0}
10^{-1}
10^{-2}
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

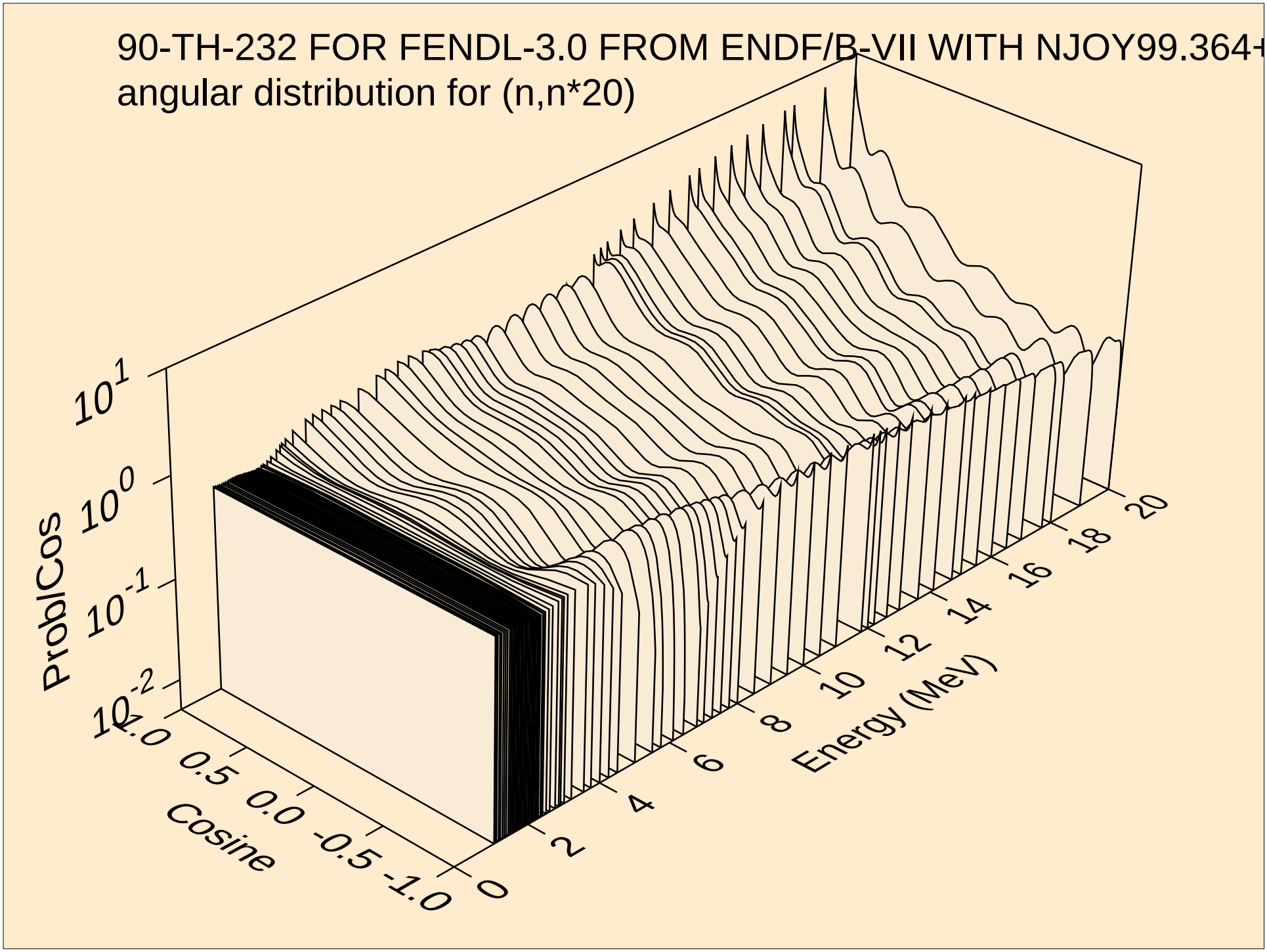

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
angular distribution for (n,n*17)
ProblCos
10^{0}
10^{-2}
10^{-4}
1.0
0.5
0.0
-0.5
-1.0
Cosine
20
25
30
35
40
45
50
55
60
Energy (MeV)

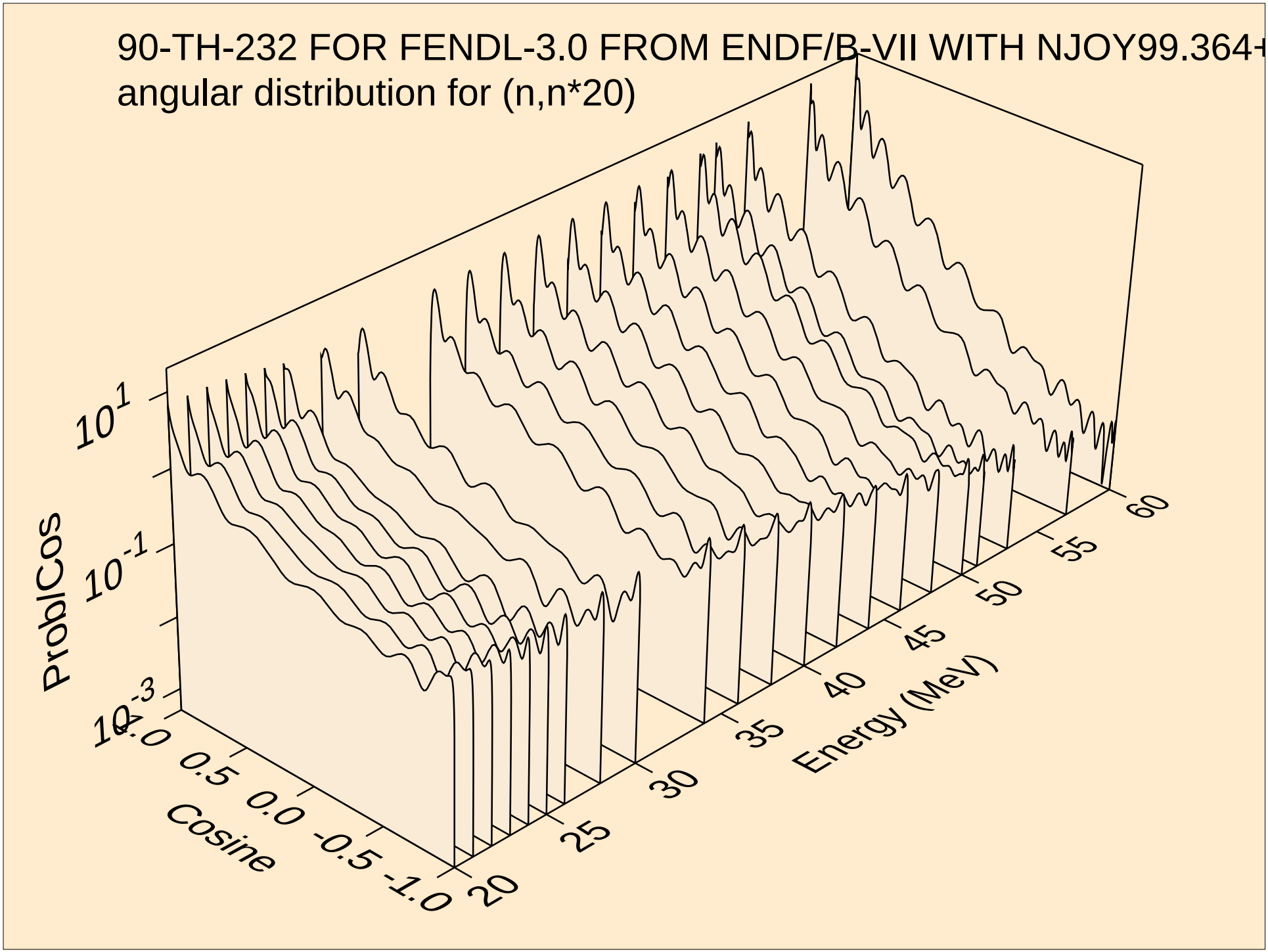

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
angular distribution for (n,n*18)
ProbICos
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

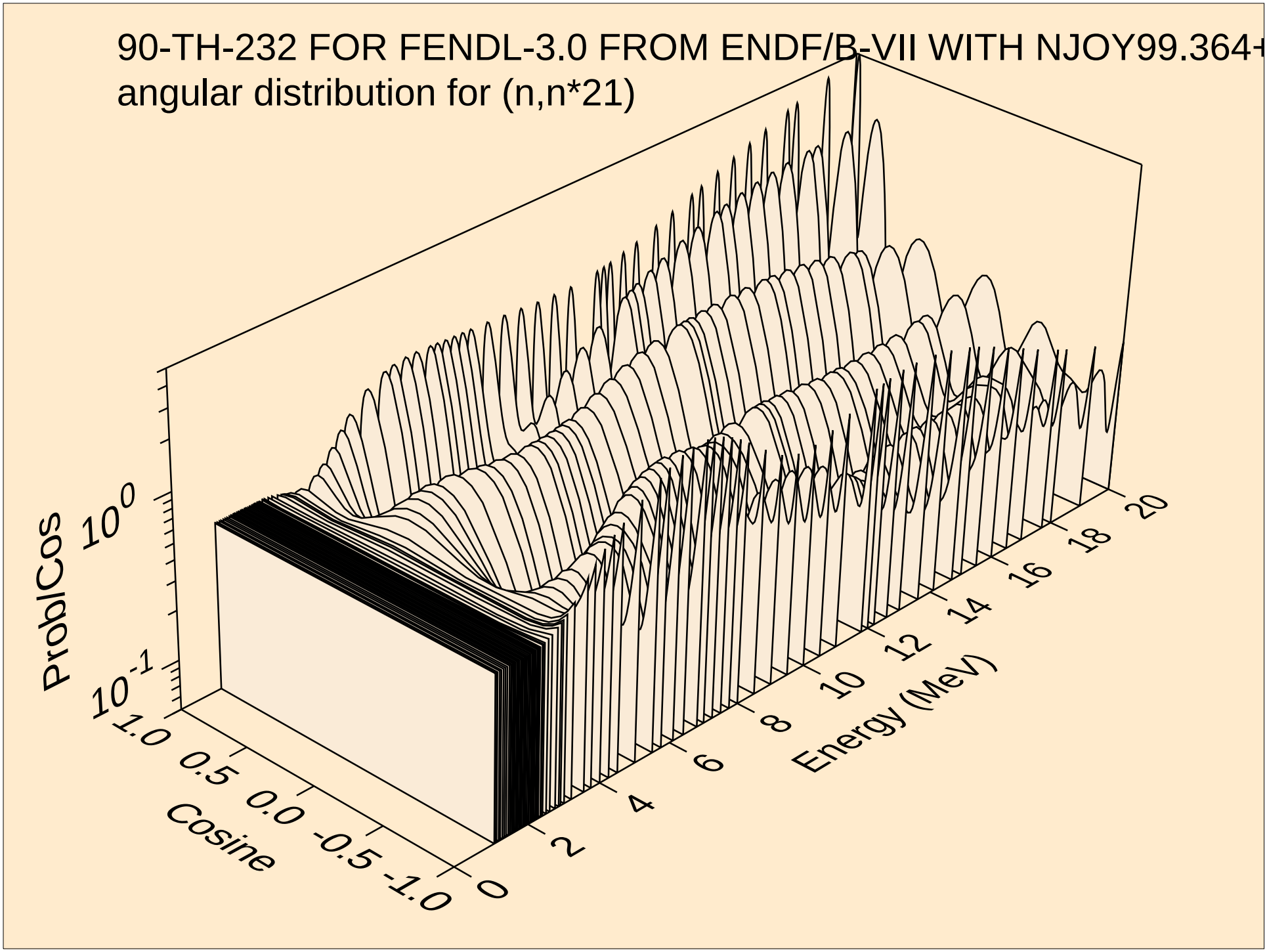

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
angular distribution for (n,n*18)
ProblCos
10-1
10-3
1.0
0.5
0.0
-0.5
-1.0
Cosine
20
25
30
35
40
45
50
55
60
Energy (MeV)

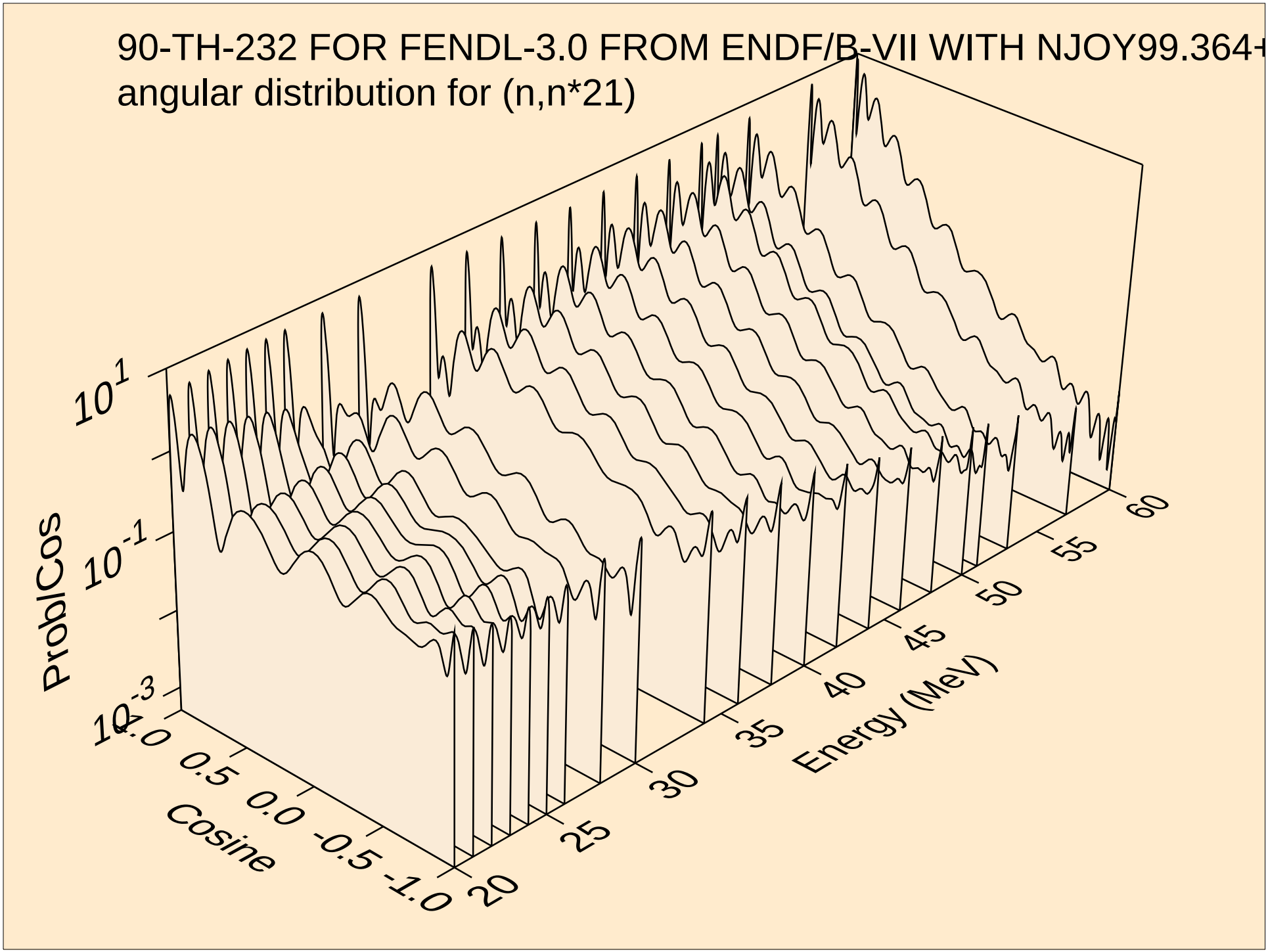

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
angular distribution for (n,n*19)
Prob\Cos
10^{1}
10^{0}
10^{-1}
10^{-2}
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

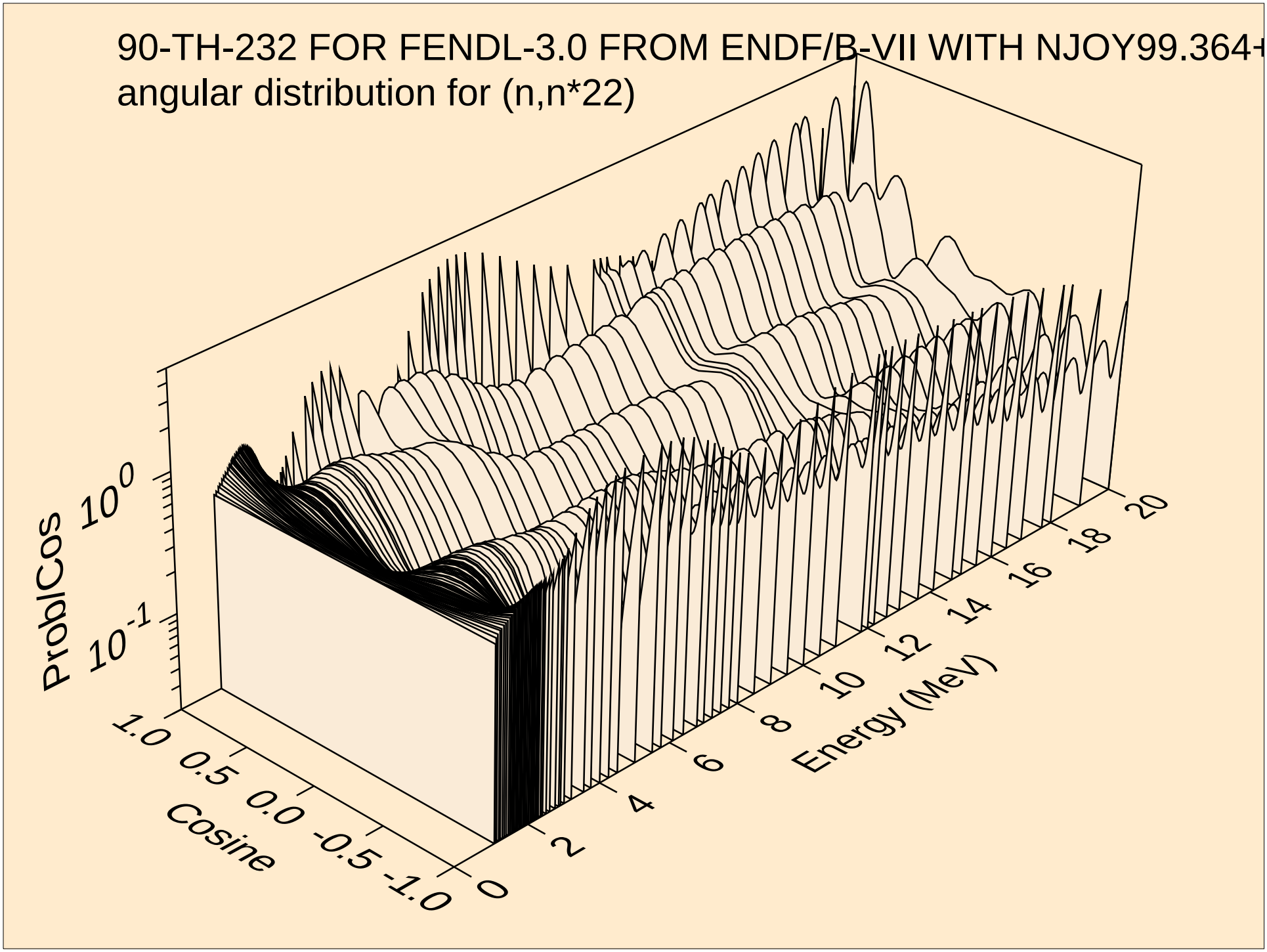

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
angular distribution for (n,n*19)
ProbICos
10^1
10^-1
10^-3
1.0
0.5
0.0
-0.5
-1.0
Cosine
20
25
30
35
40
45
50
55
60
Energy (MeV)

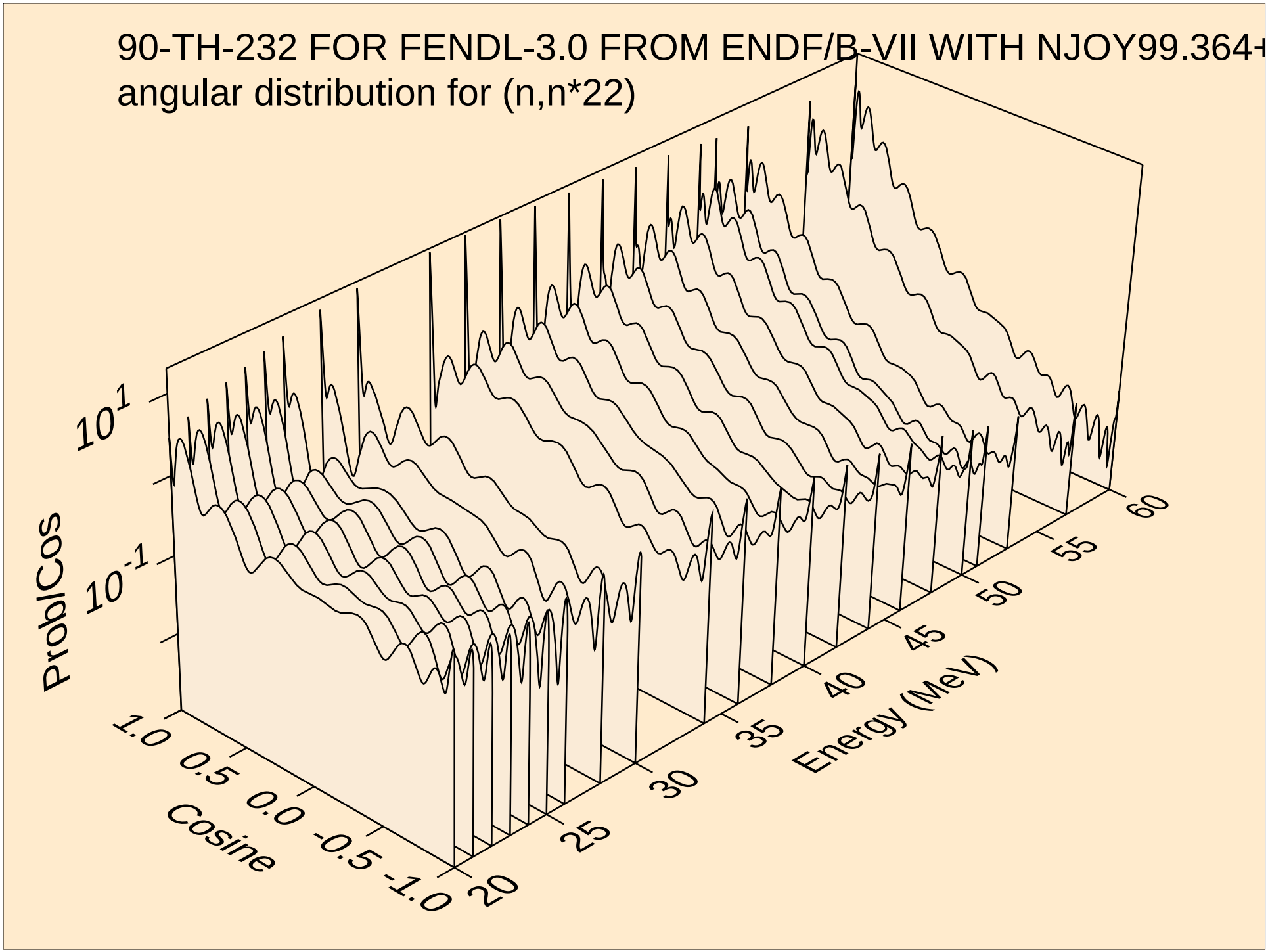

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
angular distribution for (n,n*20)
Prob\Cos
10^1
10^0
10^-1
10^-2
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

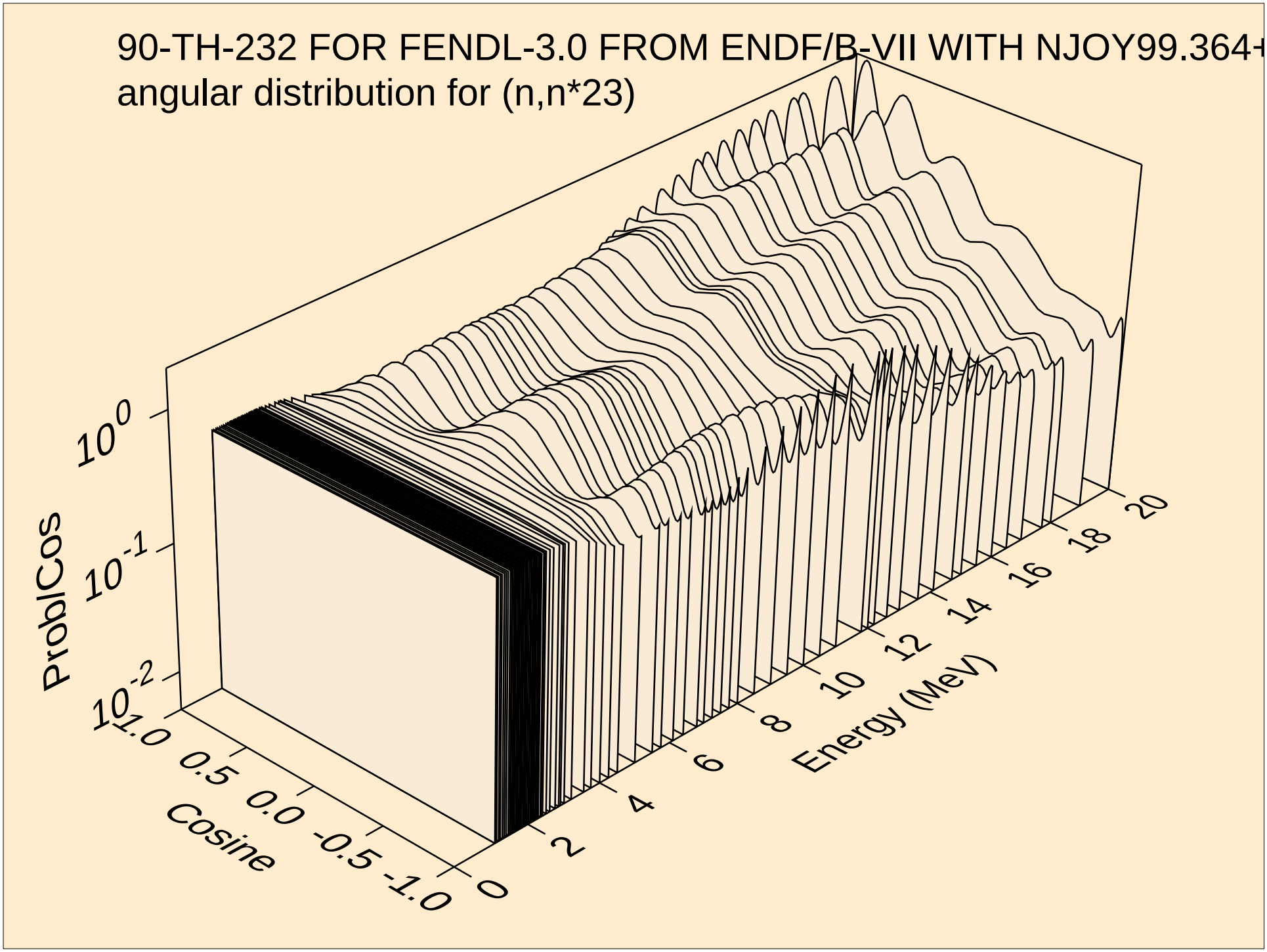

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
angular distribution for (n,n*20)
ProbICos
10^1
10^-1
10^-3
1.0
0.5
0.0
-0.5
-1.0
Cosine
20
25
30
35
40
45
50
55
60
Energy (MeV)

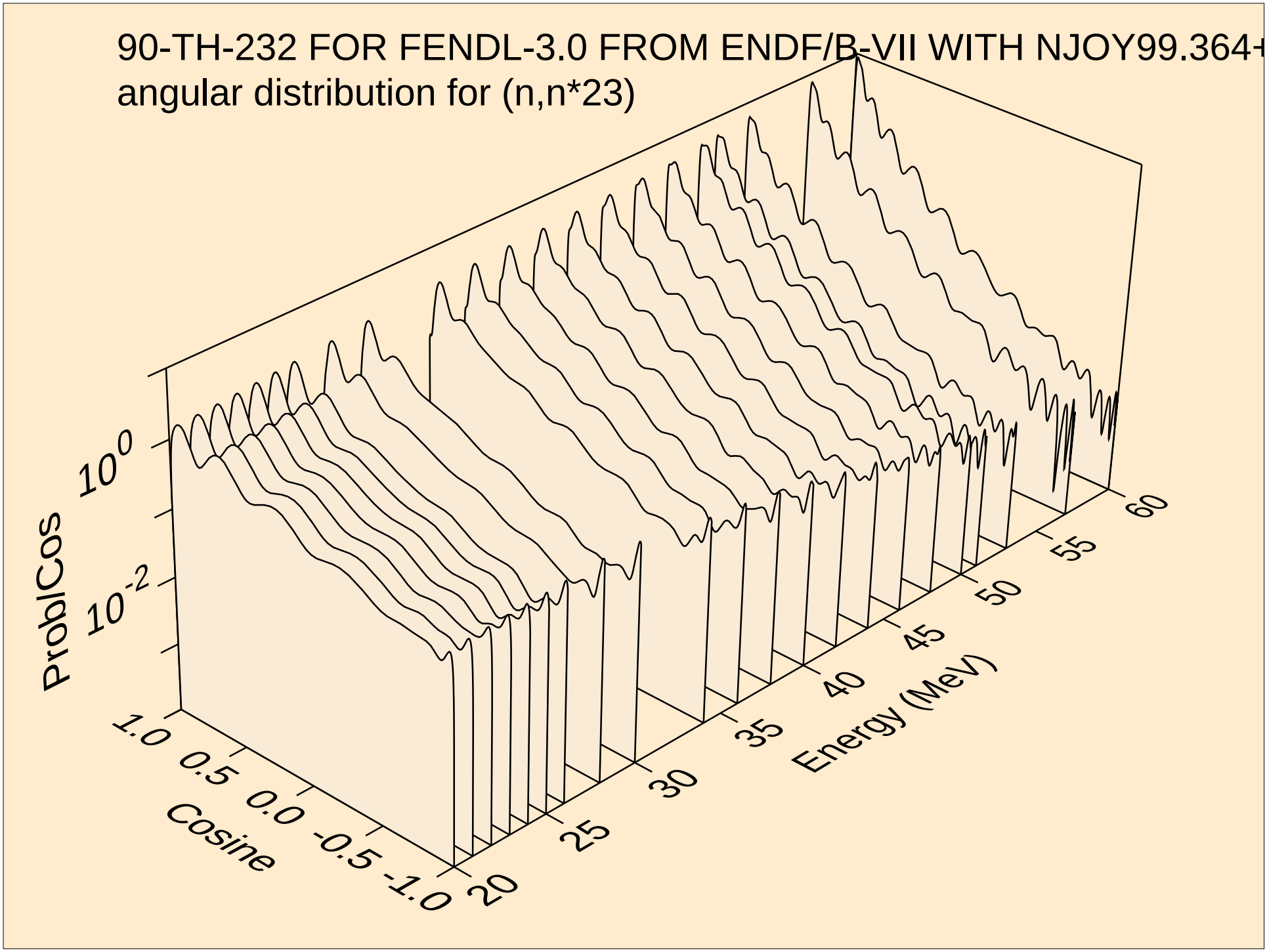

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
angular distribution for (n,n*21)
ProbICos
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

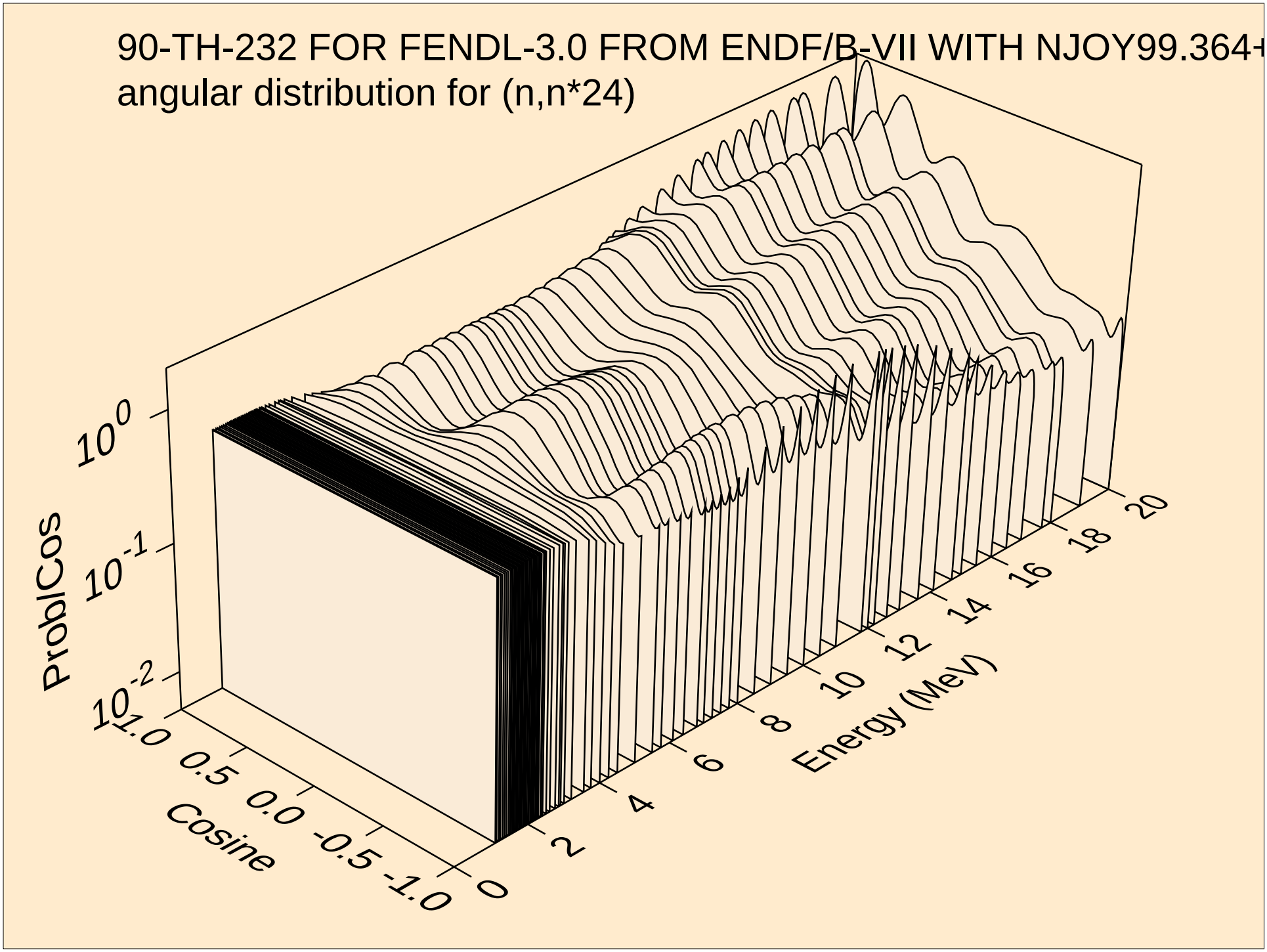

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
angular distribution for (n,n*21)
ProblCos
10^{1}
10^{-1}
10^{-3}
1.0
0.5
0.0
-0.5
-1.0
Cosine
20
25
30
35
40
45
50
55
60
Energy (MeV)

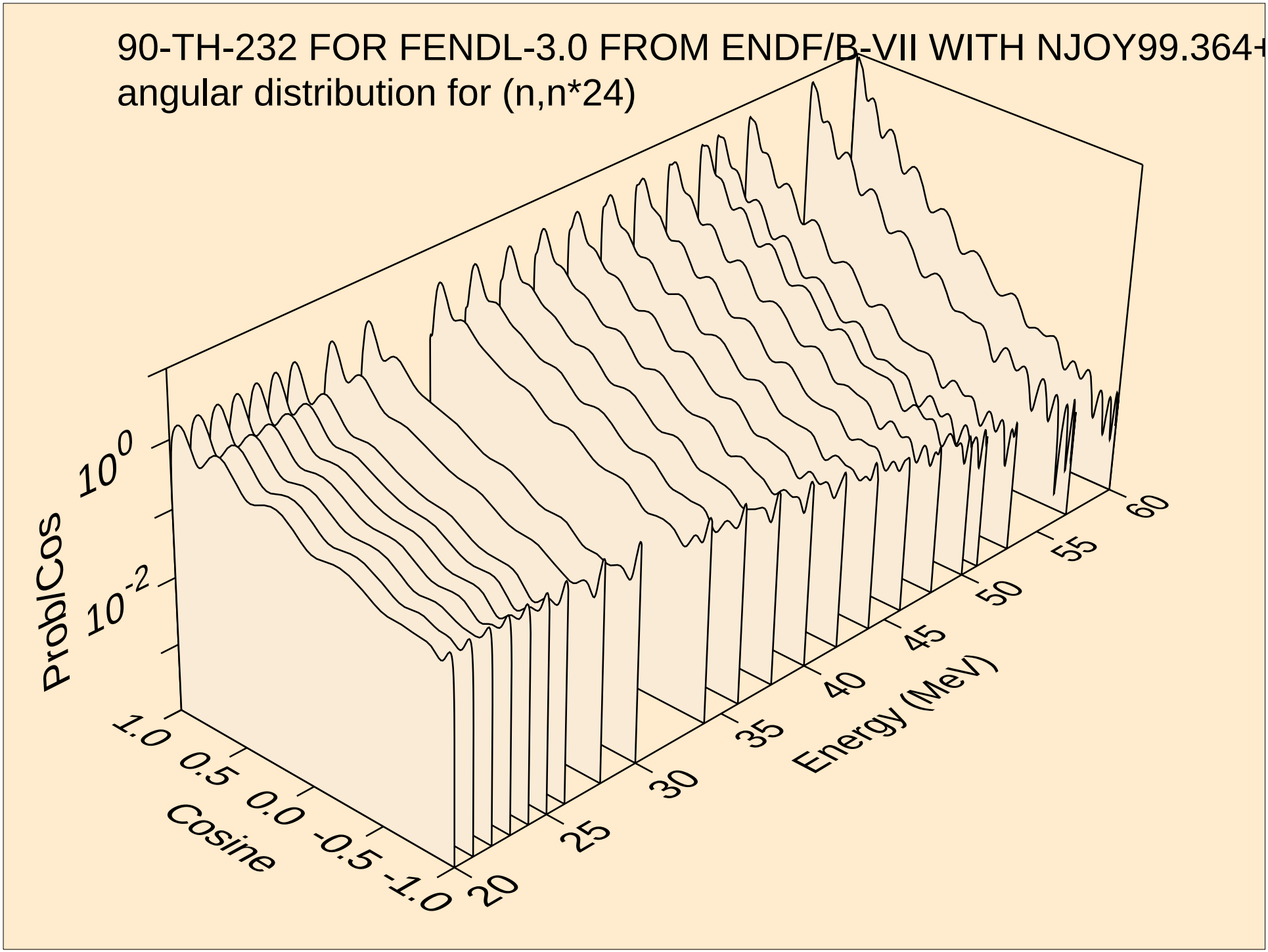

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
angular distribution for (n,n*22)
Prob\Cos
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

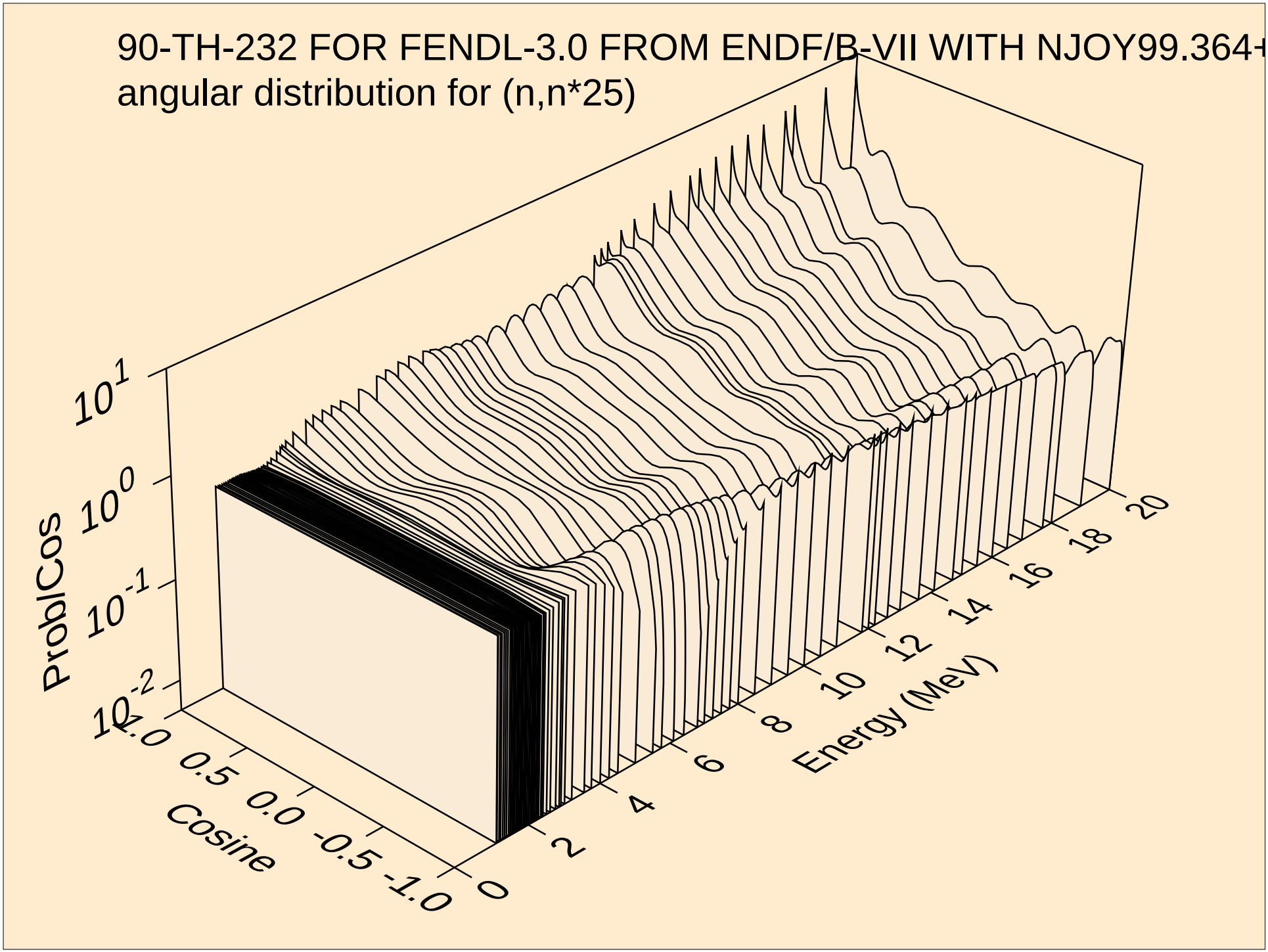

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
angular distribution for (n,n*22)
ProbICos
10^1
10^-1
1.0
0.5
0.0
-0.5
-1.0
Cosine
20
25
30
35
40
45
50
55
60
Energy (MeV)

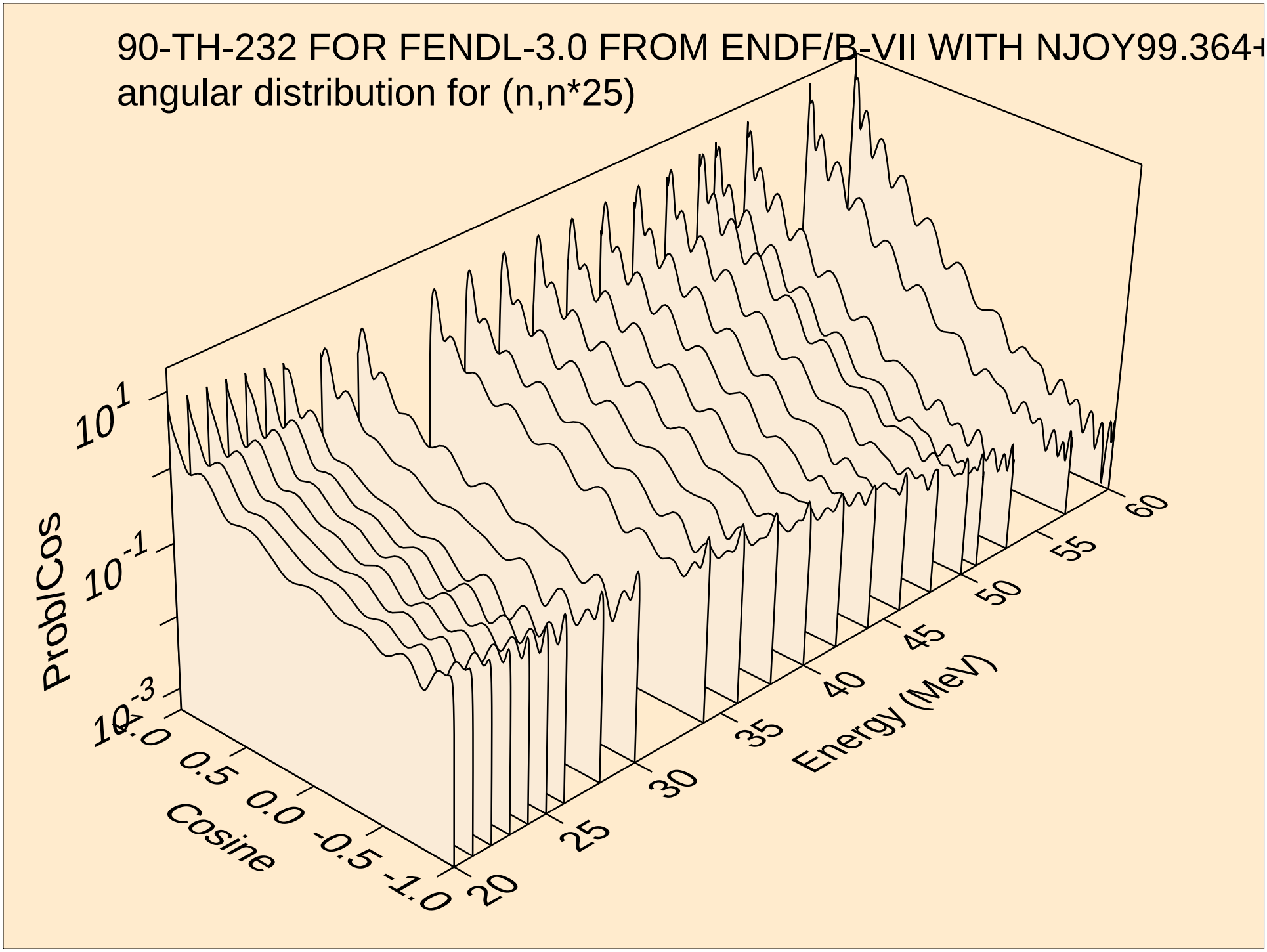

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
angular distribution for (n,n*23)
ProbICos
10^0
10^-1
10^-2
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

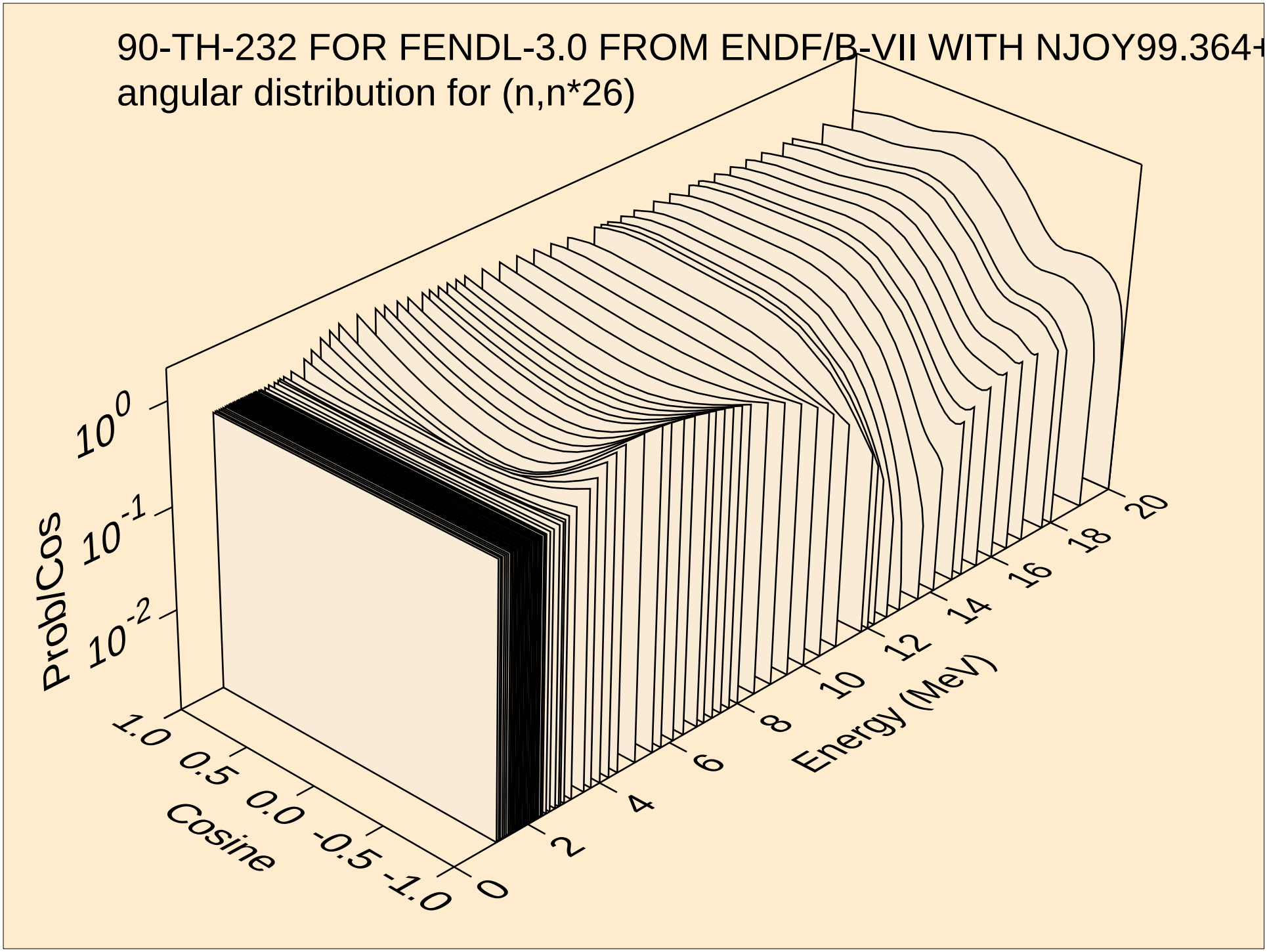

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
angular distribution for (n,n*23)
Prob\Cos
10^{0}
10^{-2}
1.0
0.5
0.0
-0.5
-1.0
Cosine
20
25
30
35
40
45
50
55
60
Energy (MeV)

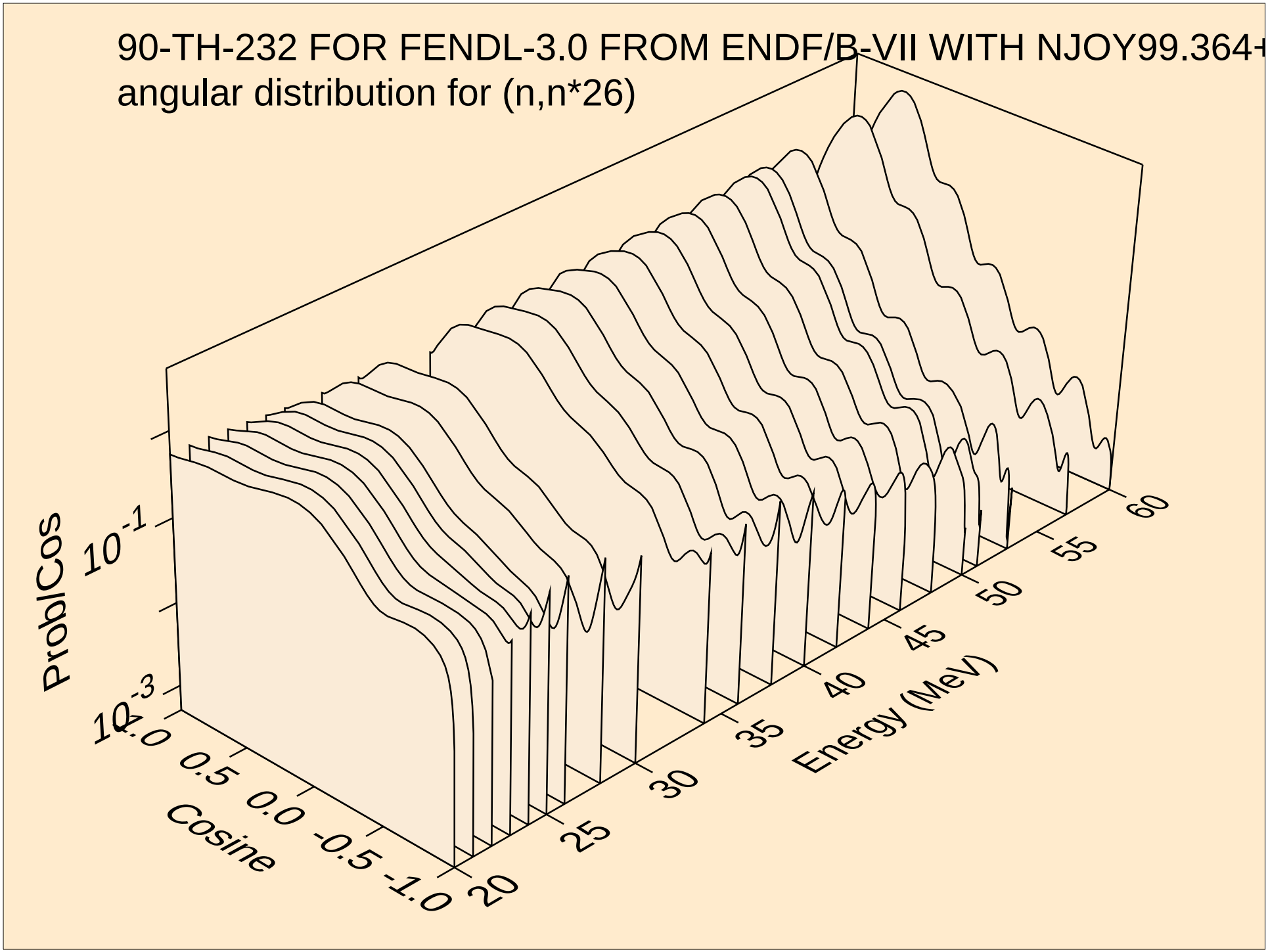

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
angular distribution for (n,n*24)
ProblCos
10^{0}
10^{-1}
10^{-2}
Cosine
1.0
0.5
0.0
-0.5
-1.0
Energy (MeV)
0
2
4
6
8
10
12
14
16
18
20

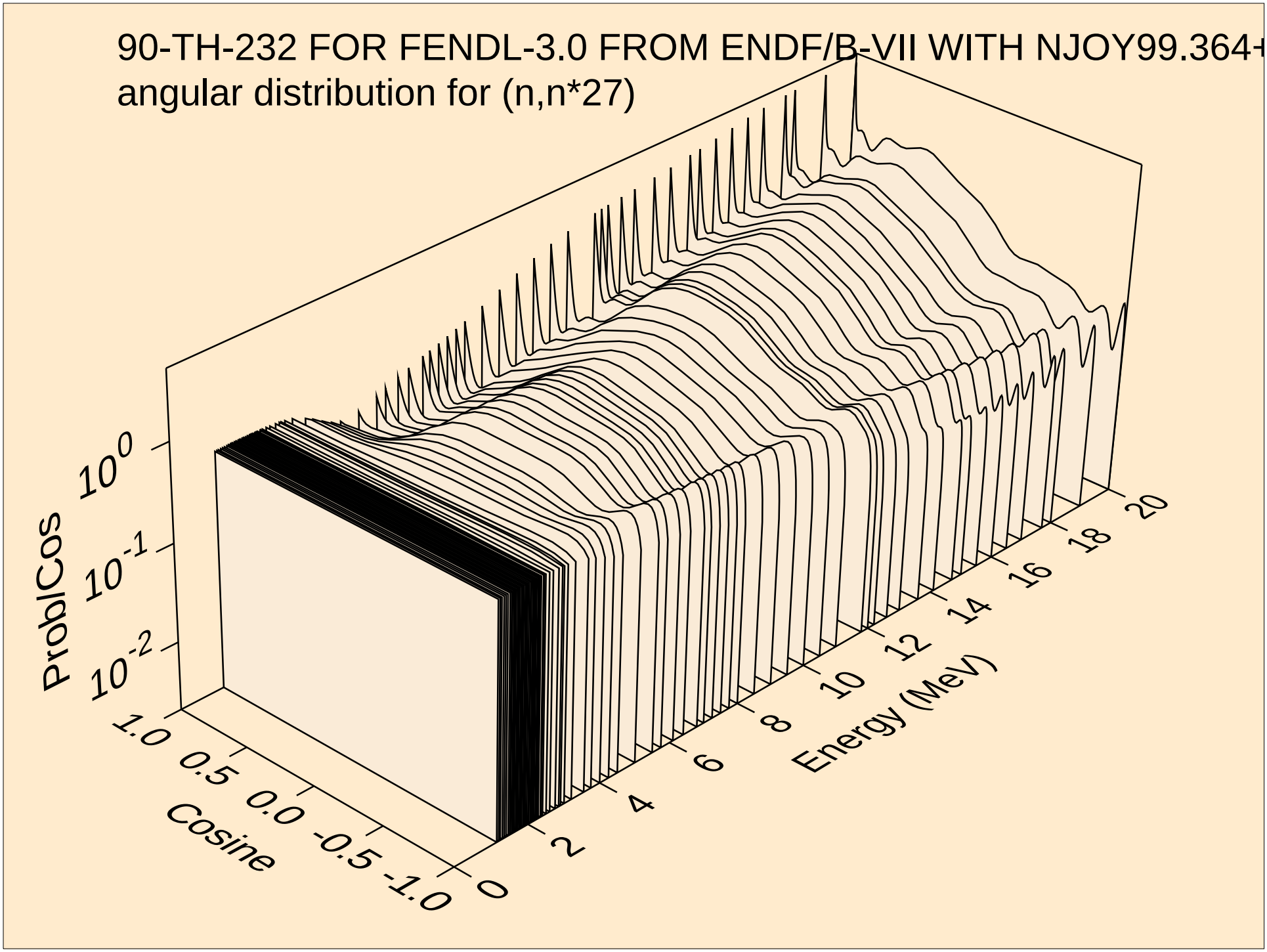

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
angular distribution for (n,n*24)
Prob\Cos
10^0
10^-2
1.0
0.5
0.0
-0.5
-1.0
Cosine
20
25
30
35
40
45
50
55
60
Energy (MeV)

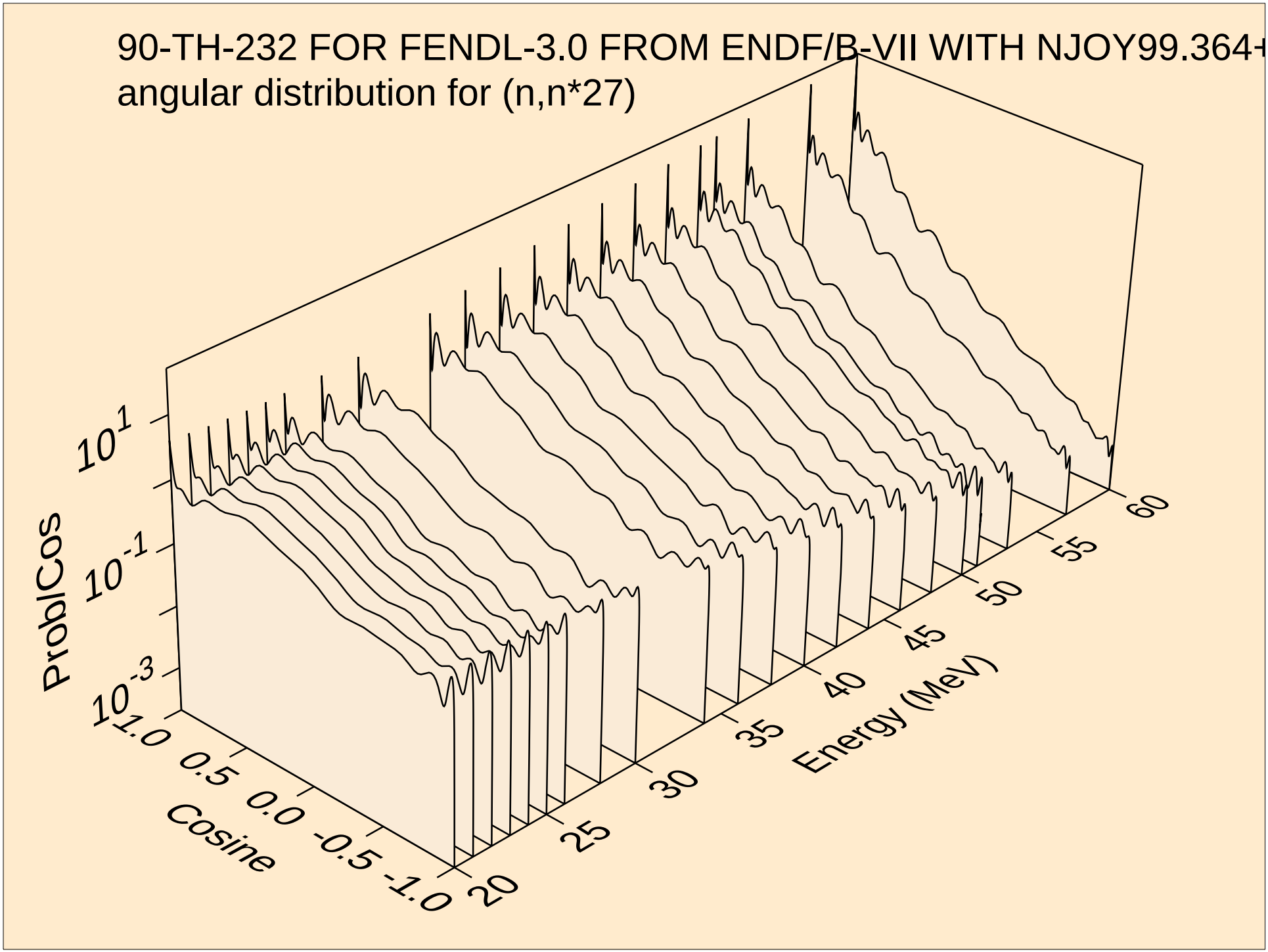

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
angular distribution for (n,n*25)
ProbCos
10^{1}
10^{0}
10^{-1}
10^{-2}
Cosine
1.0
0.5
0.0
-0.5
-1.0
Energy (MeV)
0
2
4
6
8
10
12
14
16
18
20

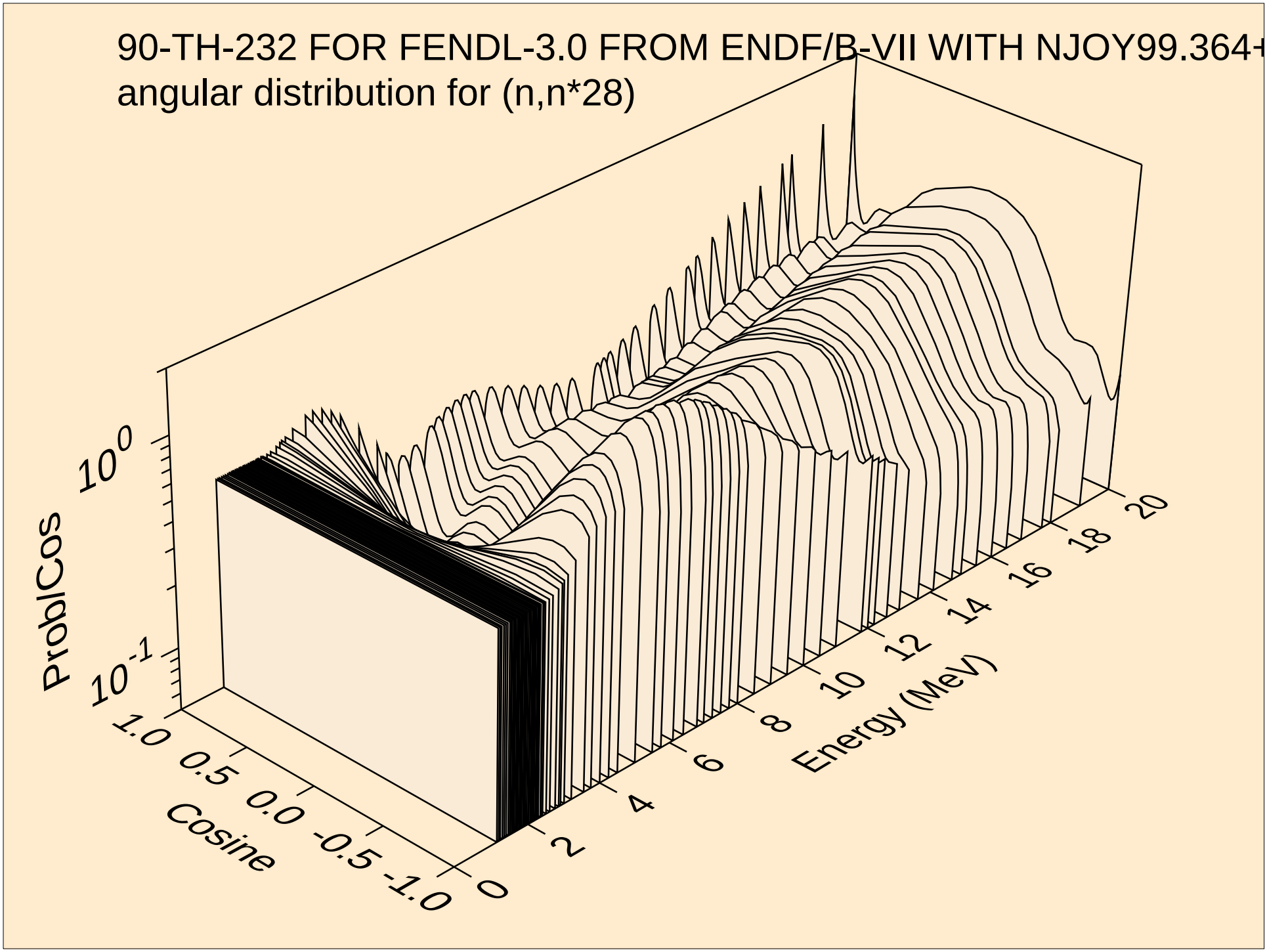

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
angular distribution for (n,n*25)
ProblCos
10^{1}
10^{-1}
10^{-3}
1.0
0.5
0.0
-0.5
-1.0
Cosine
20
25
30
35
40
45
50
55
60
Energy (MeV)

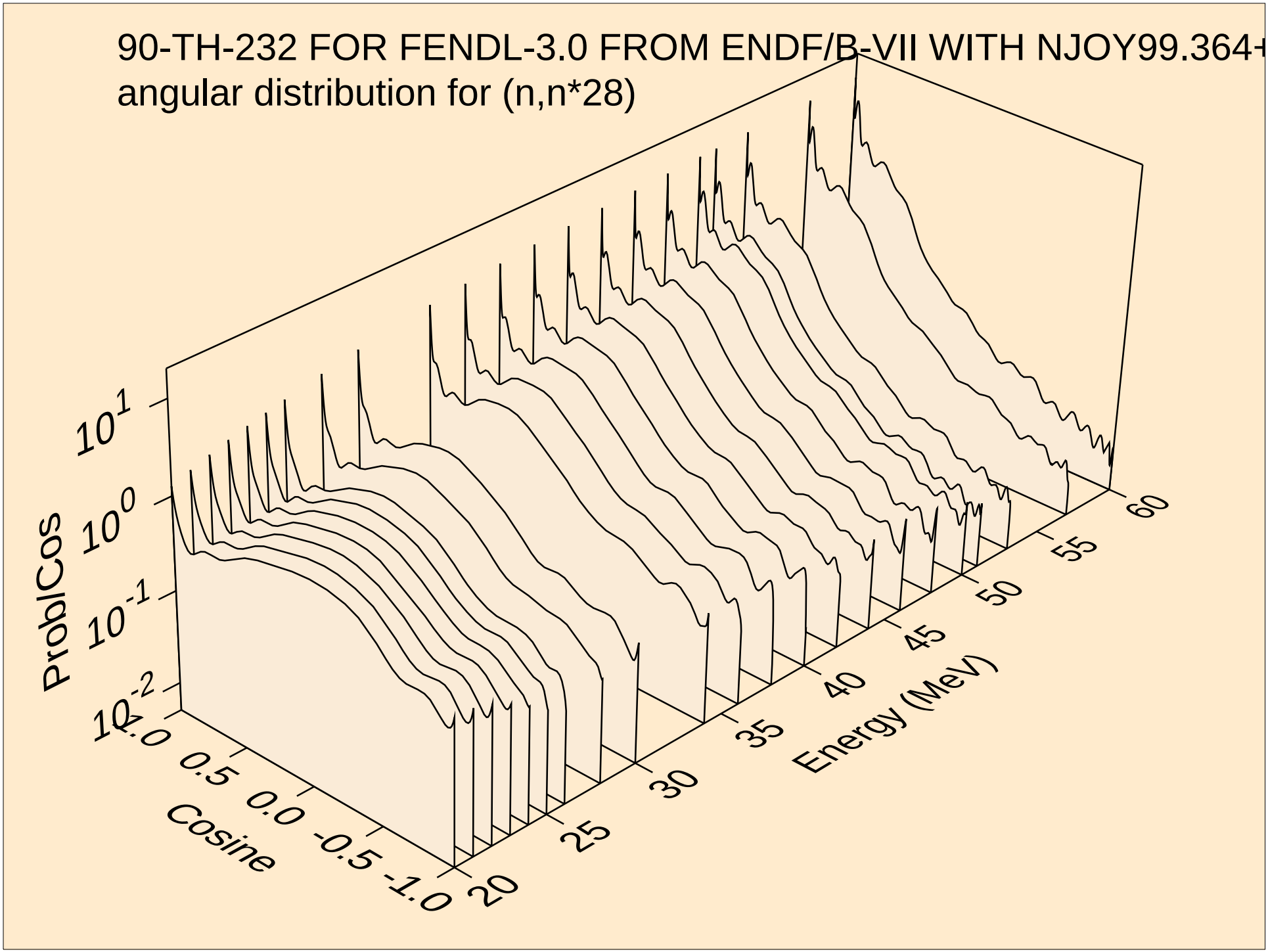

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
angular distribution for (n,n*26)
ProbICos
10^{0}
10^{-1}
10^{-2}
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

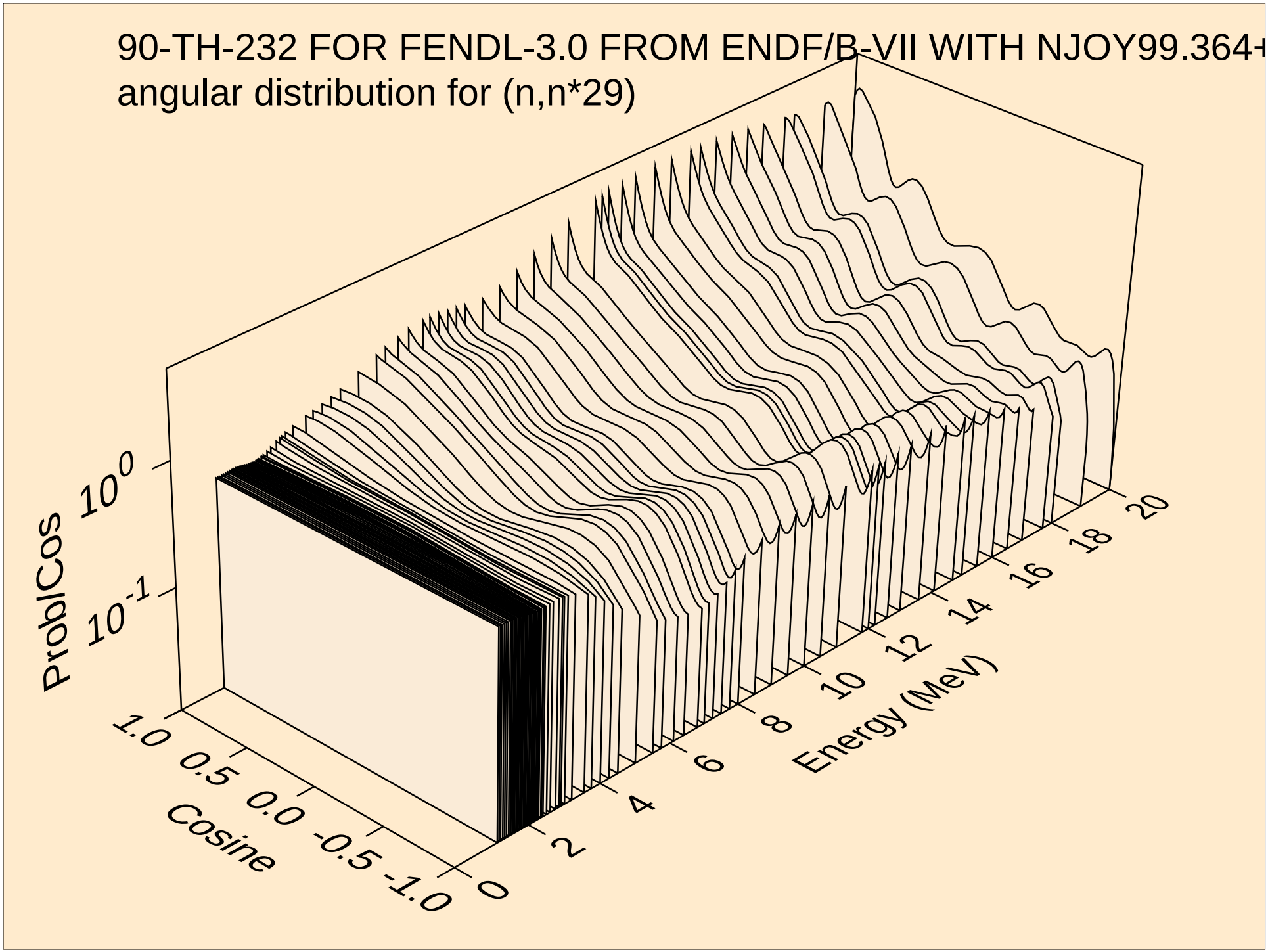

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
angular distribution for (n,n*26)
ProbICos
10-1
10-3
1.0
0.5
0.0
-0.5
-1.0
Cosine
20
25
30
35
40
45
50
55
60
Energy (MeV)

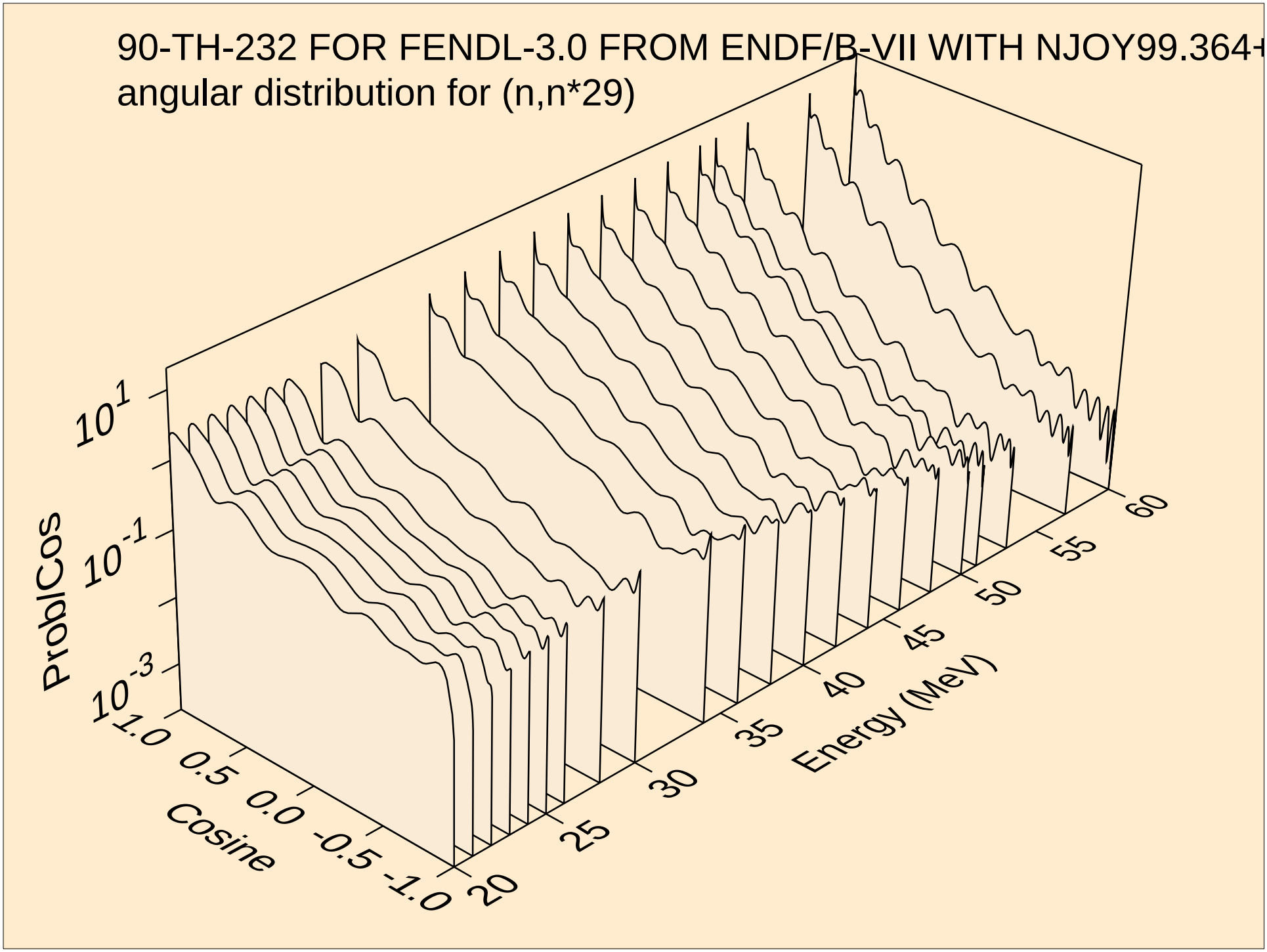

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
angular distribution for (n,n*27)
ProbICos
10^0
10^-1
10^-2
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

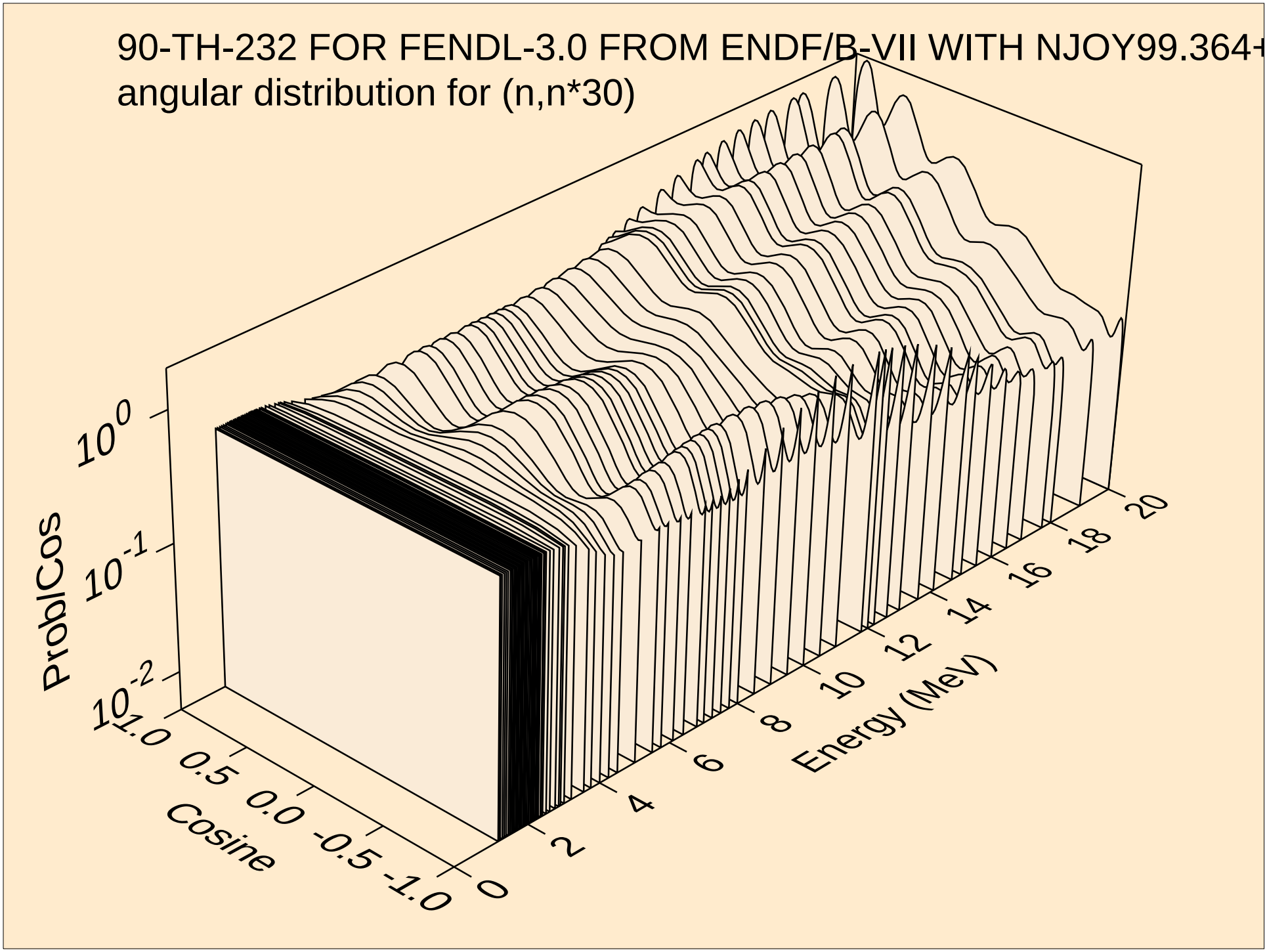

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
angular distribution for (n,n*27)
Prob\Cos
10^1
10^-1
10^-3
1.0
0.5
0.0
-0.5
-1.0
Cosine
20
25
30
35
40
45
50
55
60
Energy (MeV)

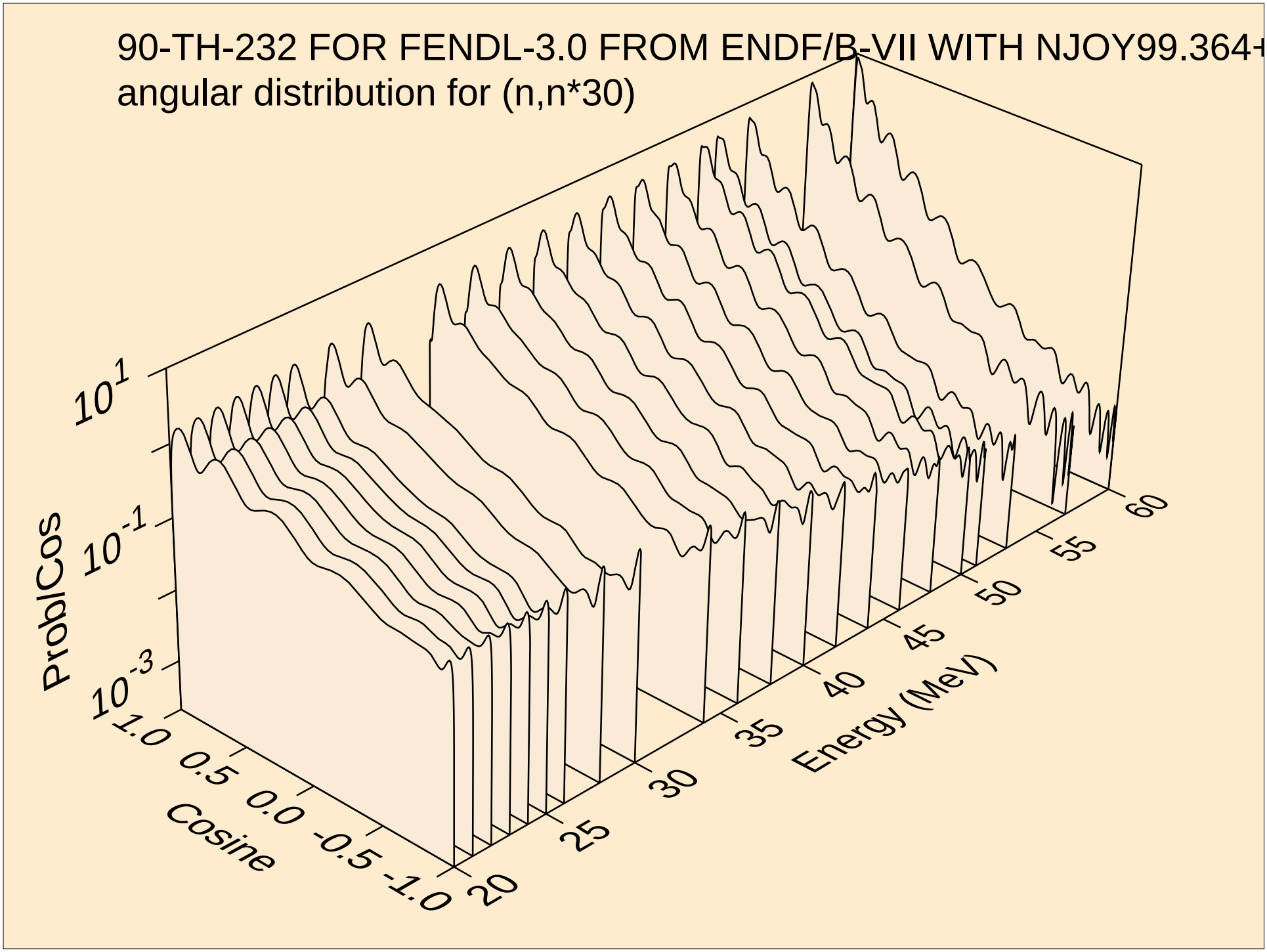

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
angular distribution for (n,n*28)
ProbICos
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

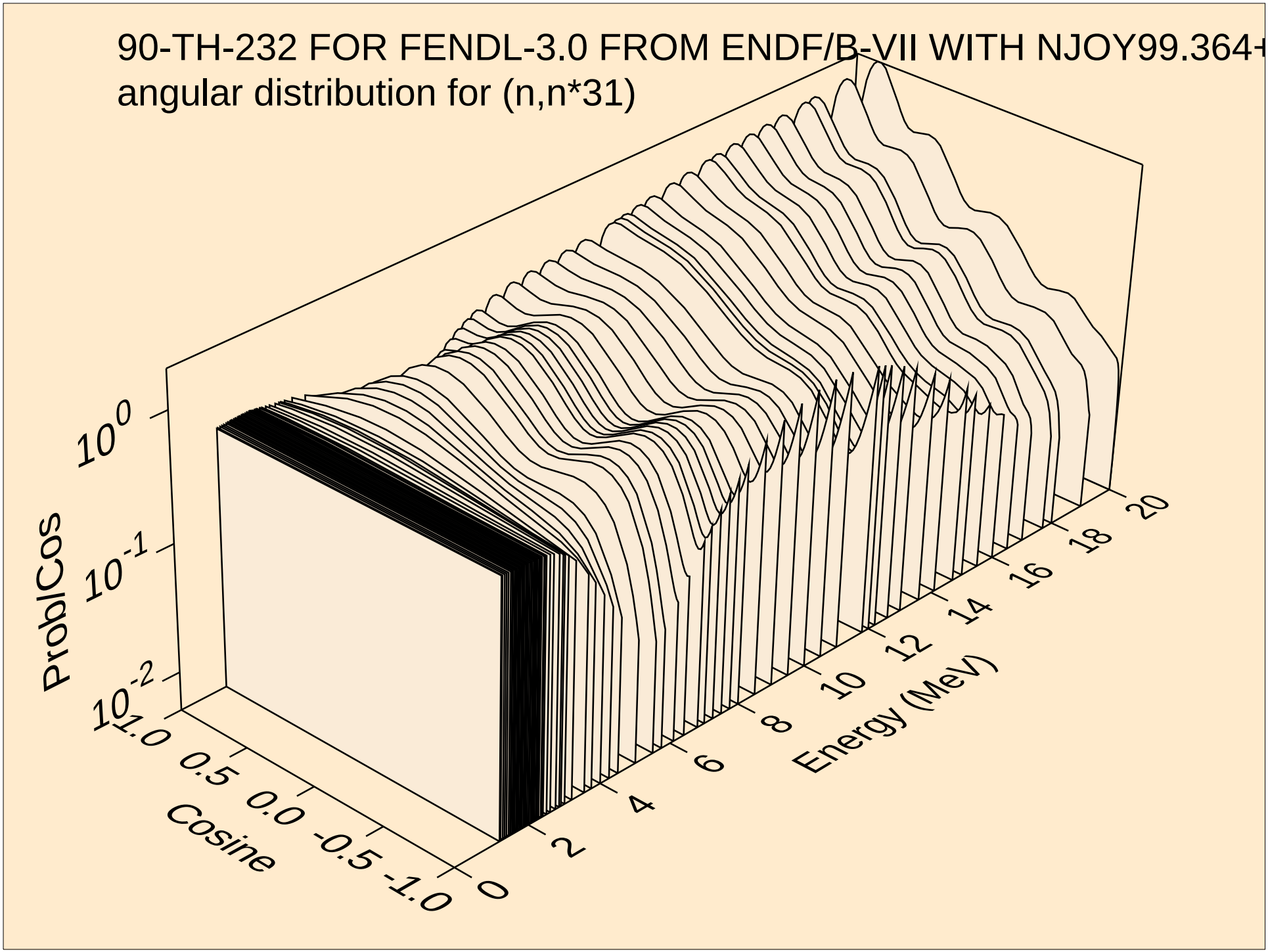

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
angular distribution for (n,n*28)
Prob\Cos
10^{1}
10^{0}
10^{-1}
10^{-2}
1.0
0.5
0.0
-0.5
-1.0
Cosine
20
25
30
35
40
45
50
55
60
Energy (MeV)

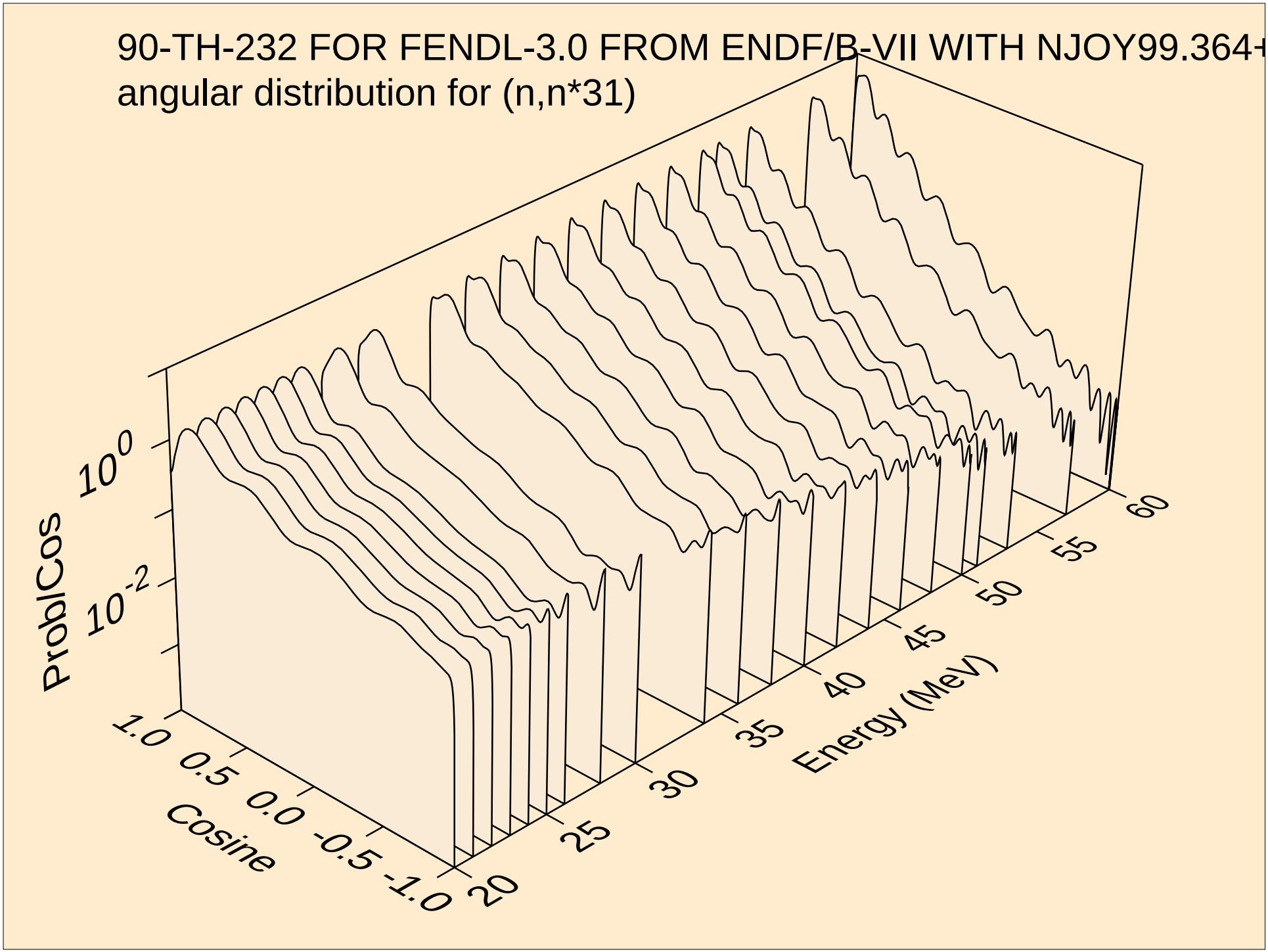

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
angular distribution for (n,n*29)
ProbICos
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

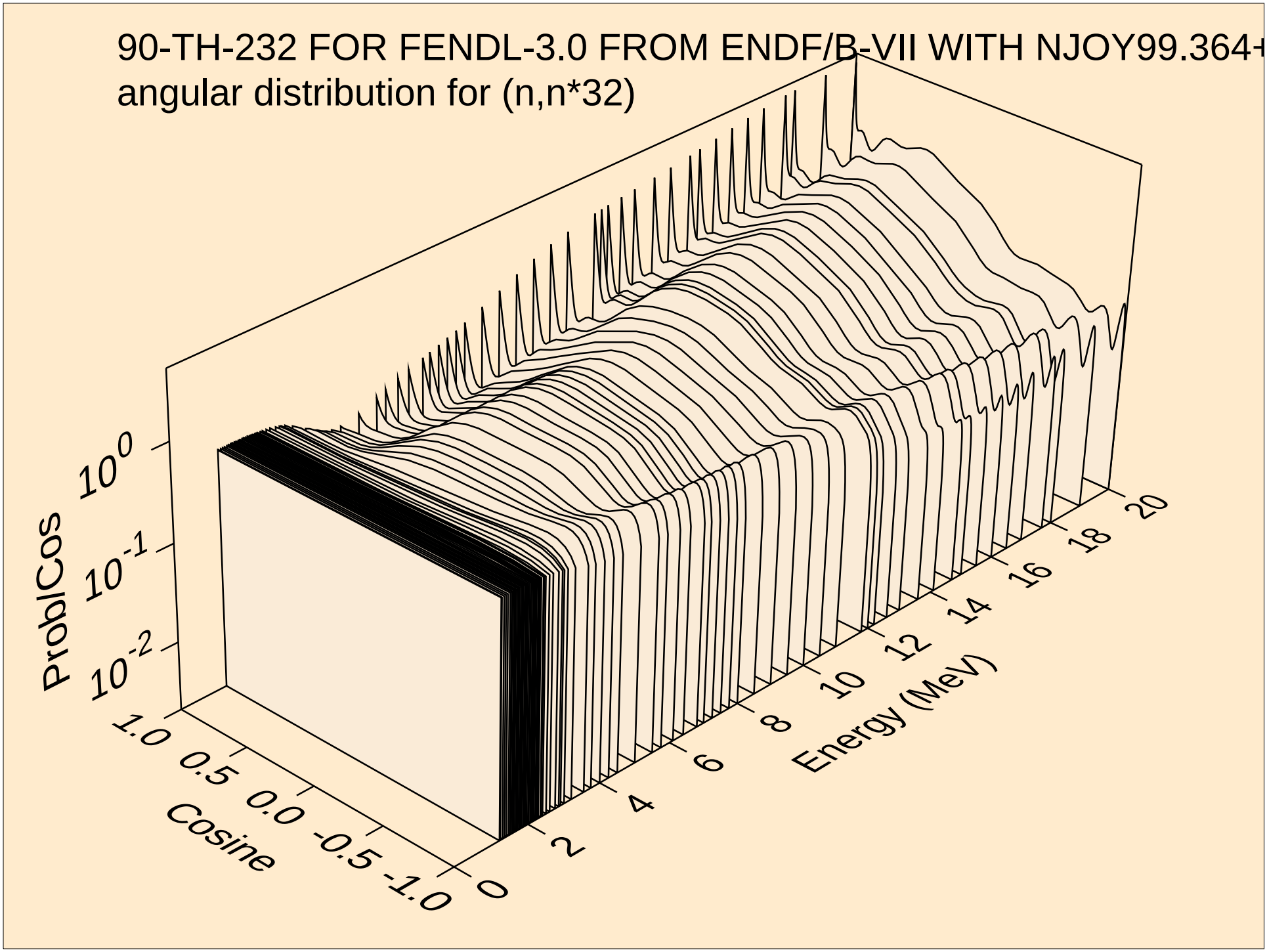

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
angular distribution for (n,n*29)
ProbICos
10^1
10^-1
10^-3
1.0
0.5
0.0
-0.5
-1.0
Cosine
20
25
30
35
40
45
50
55
60
Energy (MeV)

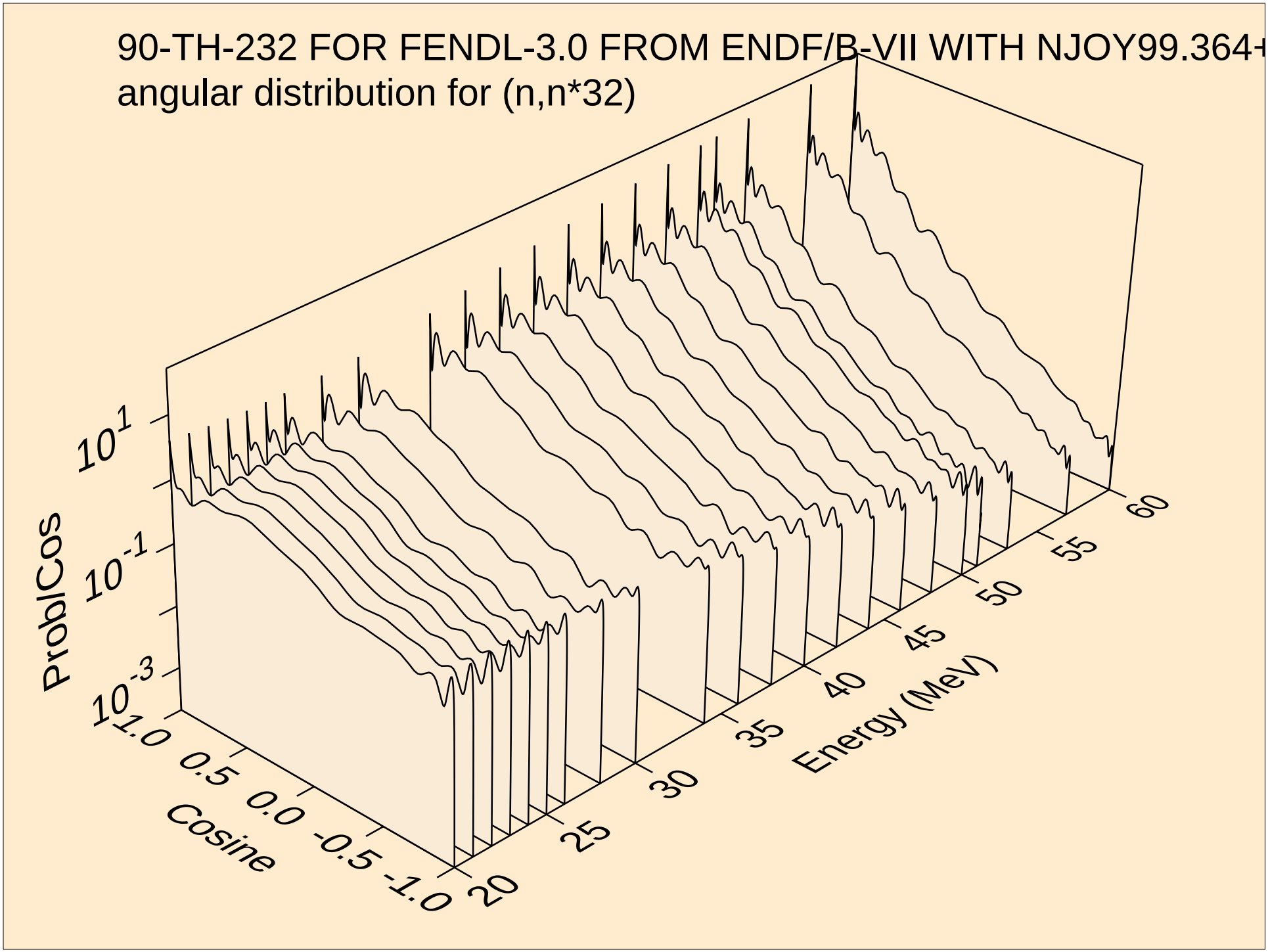

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
angular distribution for (n,n*30)
ProbICos
10^{0}
10^{-1}
10^{-2}
Cosine
1.0
0.5
0.0
-0.5
-1.0
Energy (MeV)
0
2
4
6
8
10
12
14
16
18
20

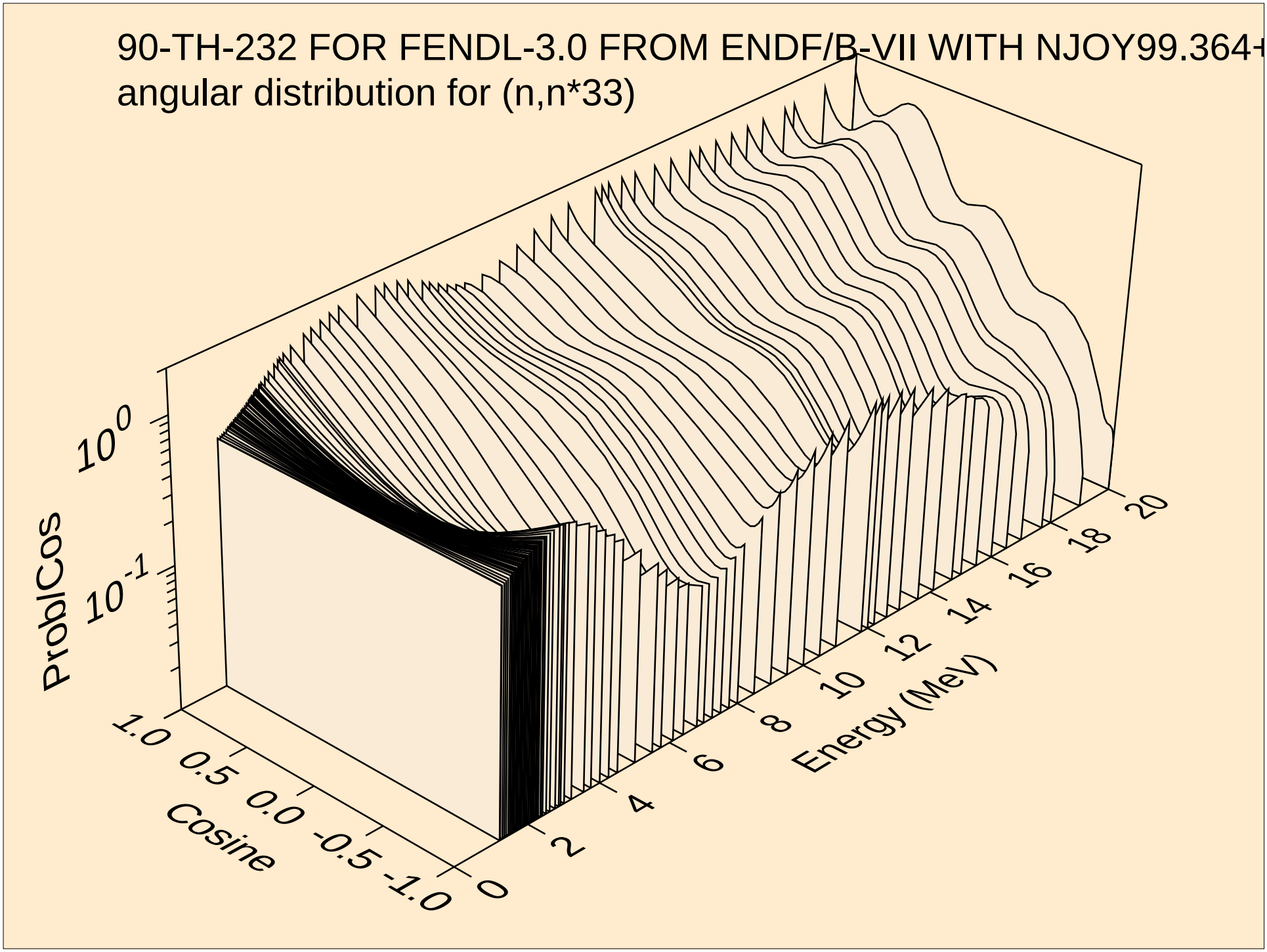

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
angular distribution for (n,n*30)
ProbICos
10^1
10^-1
10^-3
1.0
0.5
0.0
-0.5
-1.0
Cosine
20
25
30
35
40
45
50
55
60
Energy (MeV)

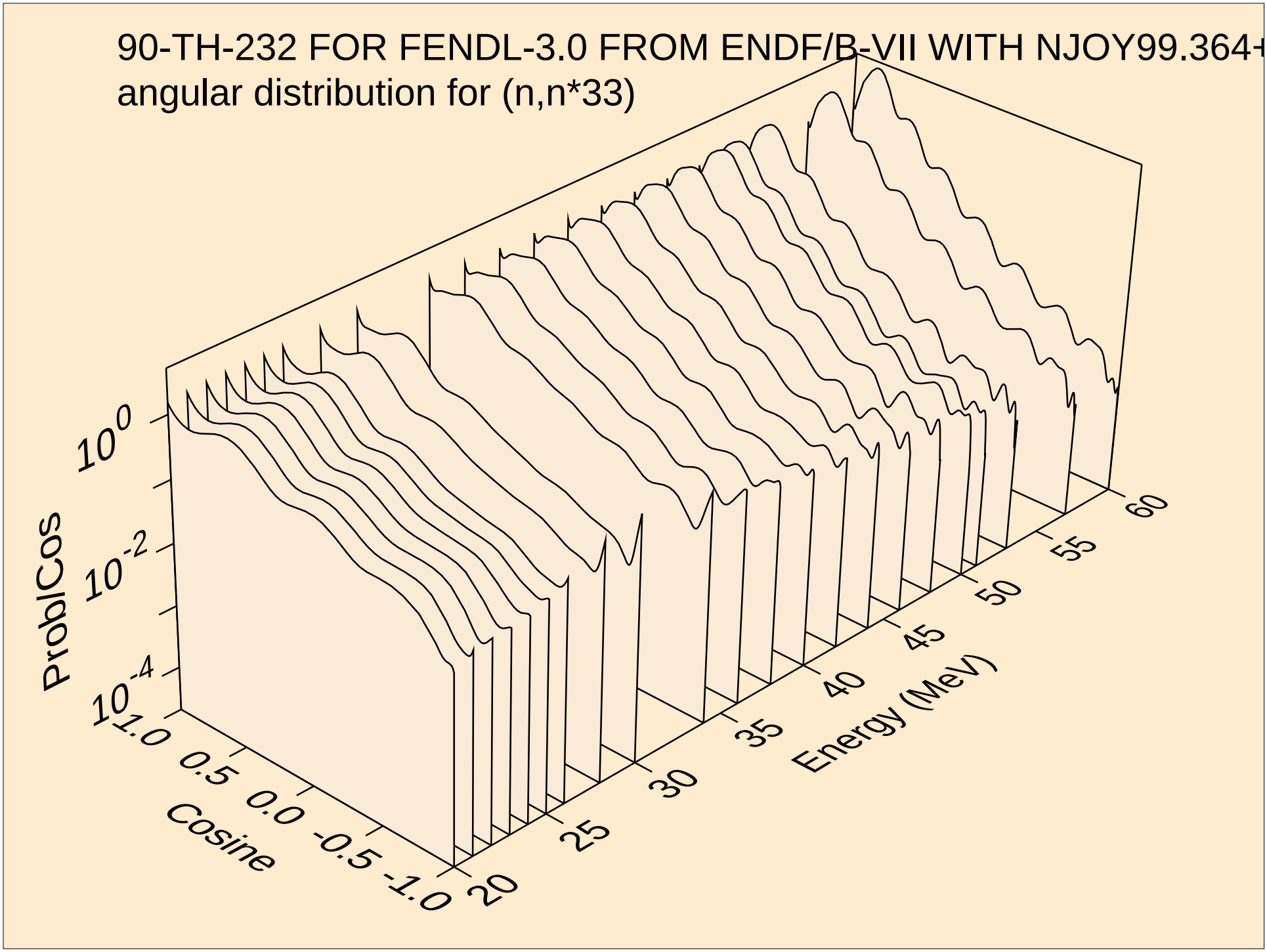

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
angular distribution for (n,n*31)
ProbICos
10^{0}
10^{-1}
10^{-2}
Cosine
1.0
0.5
0.0
-0.5
-1.0
Energy (MeV)
0
2
4
6
8
10
12
14
16
18
20

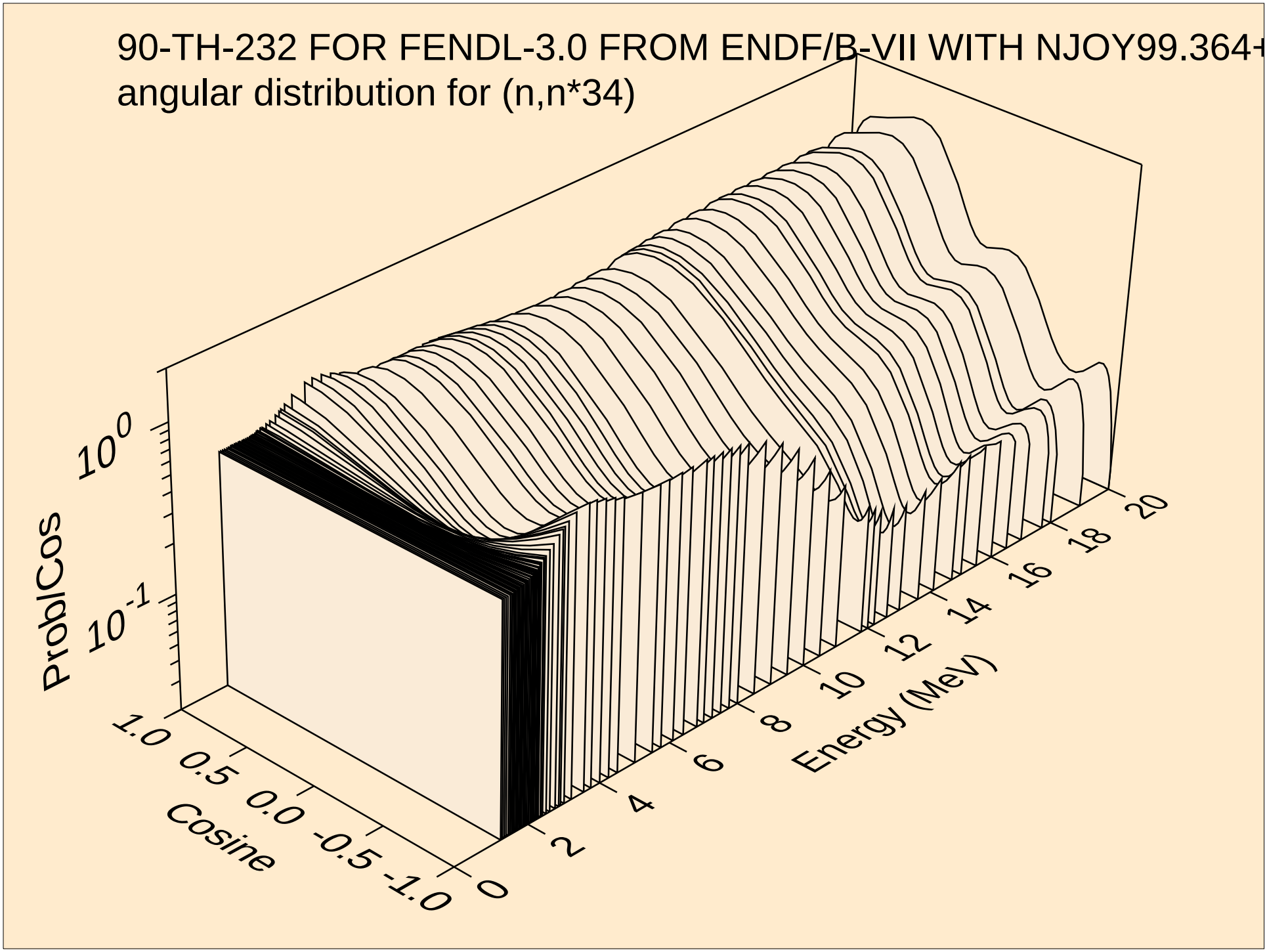

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
angular distribution for (n,n*31)
Prob\Cos
10^0
10^-2
1.0
0.5
0.0
-0.5
-1.0
Cosine
20
25
30
35
40
45
50
55
60
Energy (MeV)

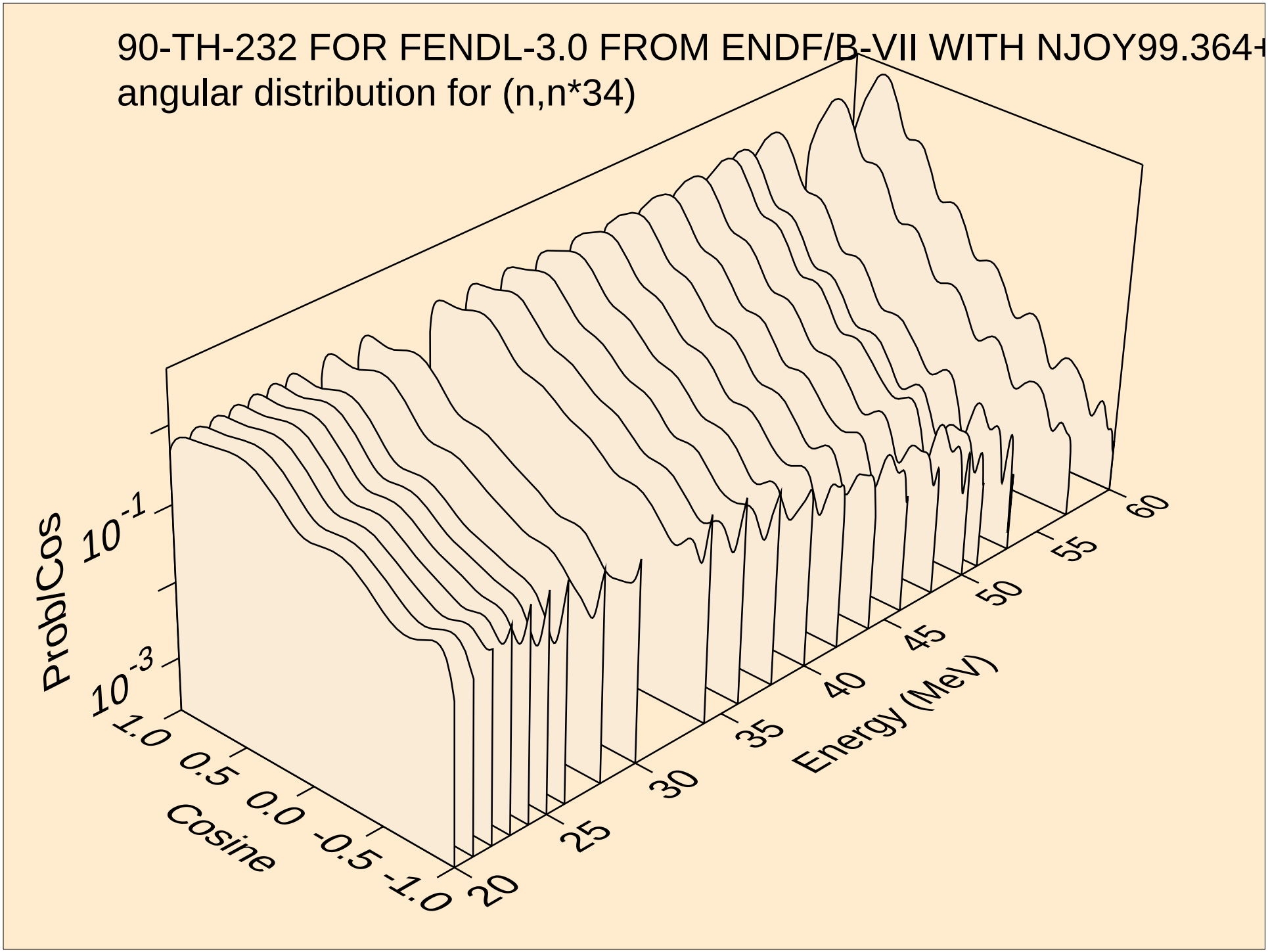

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
angular distribution for (n,n*32)
ProbICos
10^0
10^-1
10^-2
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

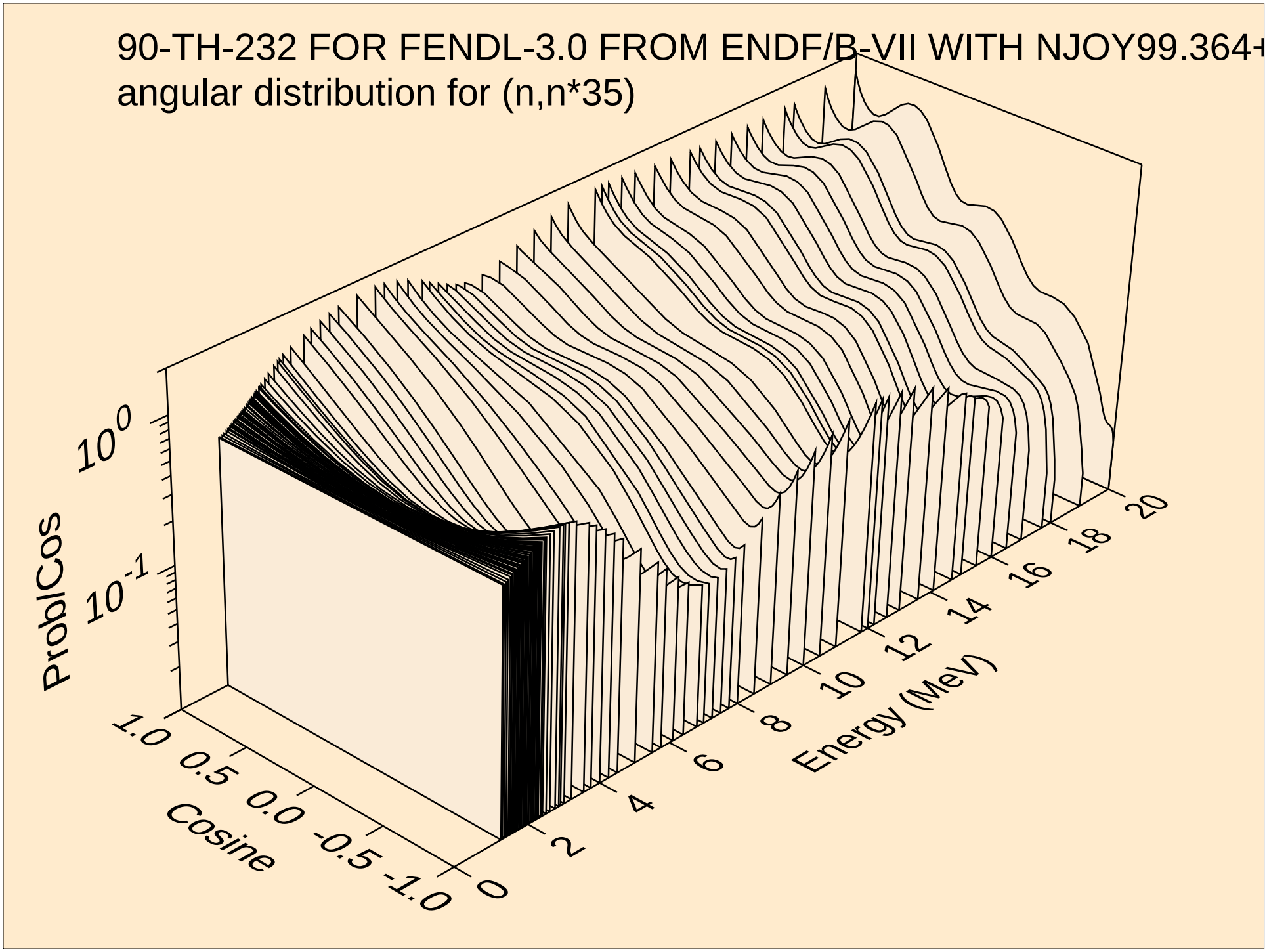

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
angular distribution for (n,n*32)
ProbICos
10^1
10^-1
10^-3
1.0
0.5
0.0
-0.5
-1.0
Cosine
20
25
30
35
40
45
50
55
60
Energy (MeV)

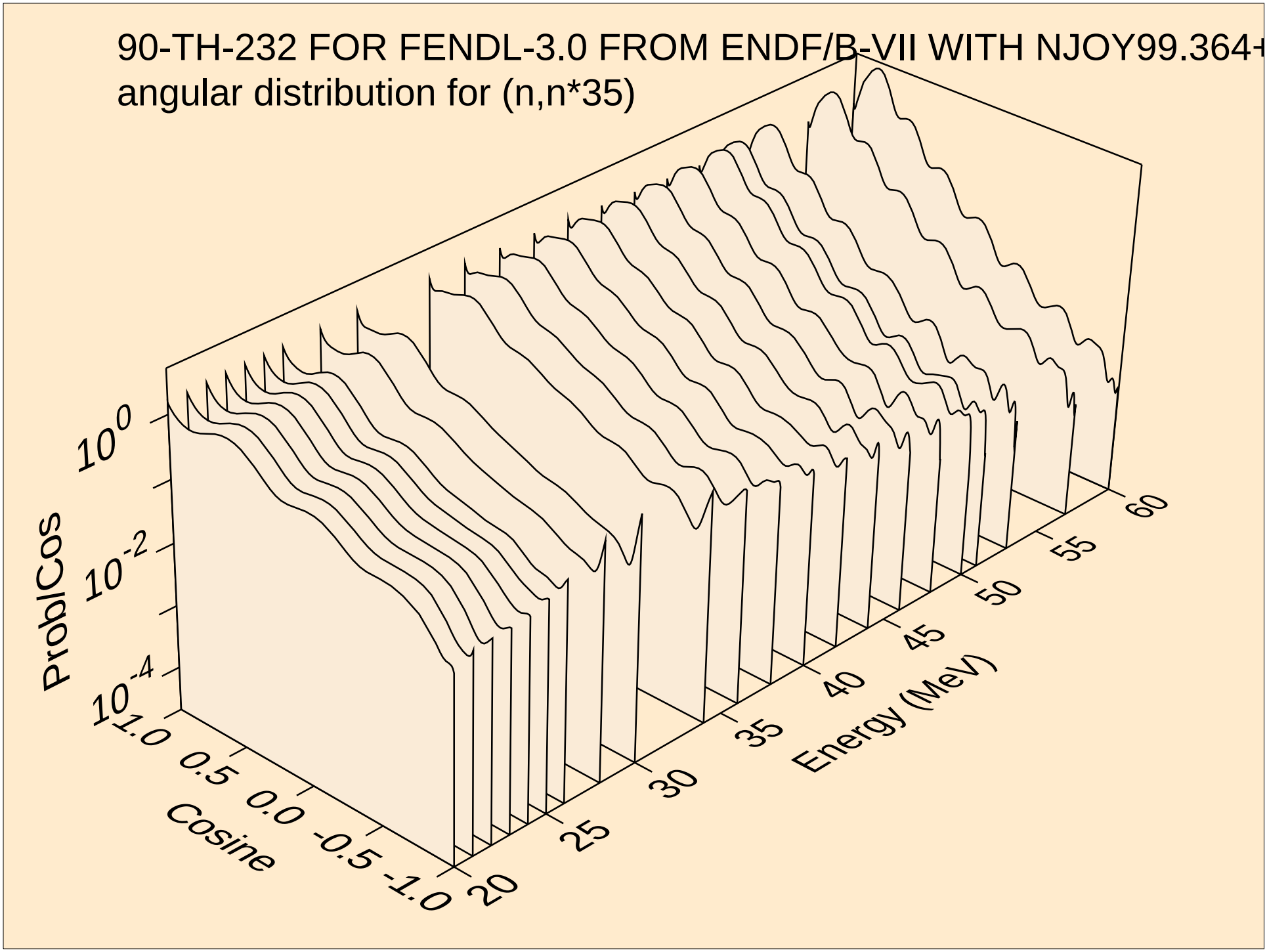

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
angular distribution for (n,n*33)
ProbICos
10^0
10^-1
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

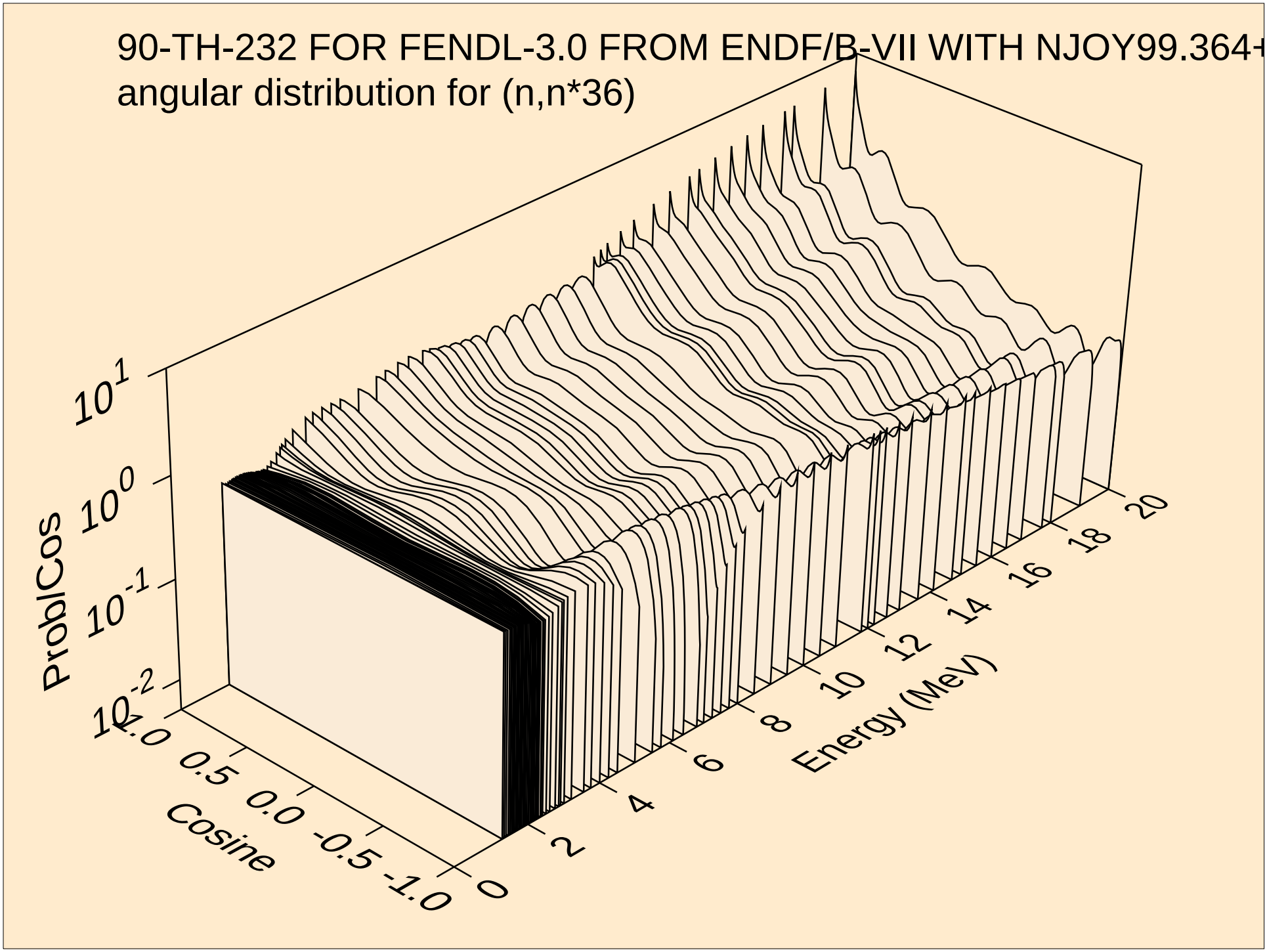

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
angular distribution for (n,n*33)
ProbICos
10^0
10^-2
10^-4
1.0
0.5
0.0
-0.5
-1.0
Cosine
20
25
30
35
40
45
50
55
60
Energy (MeV)

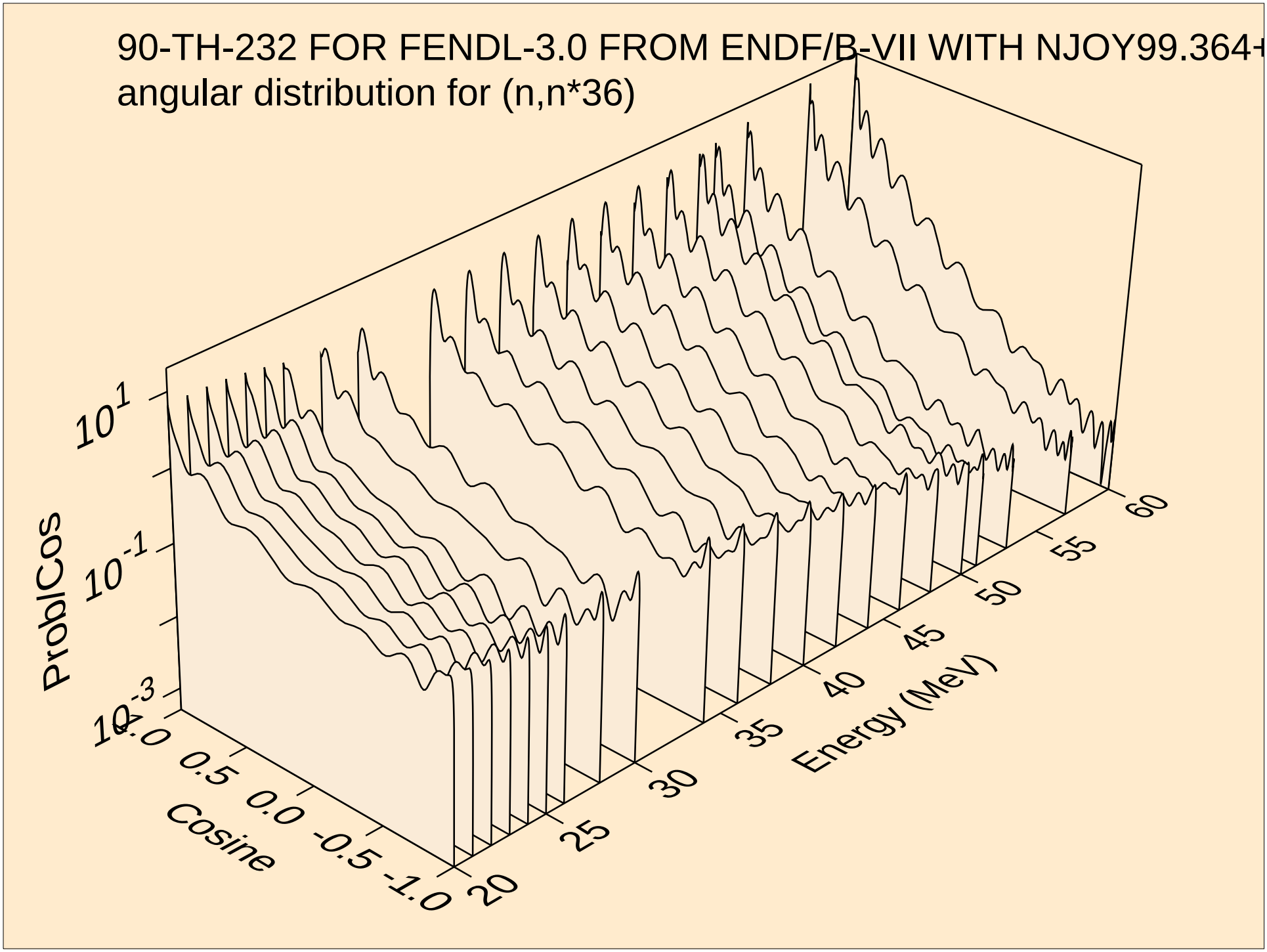

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
angular distribution for (n,n*34)
ProbICos
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

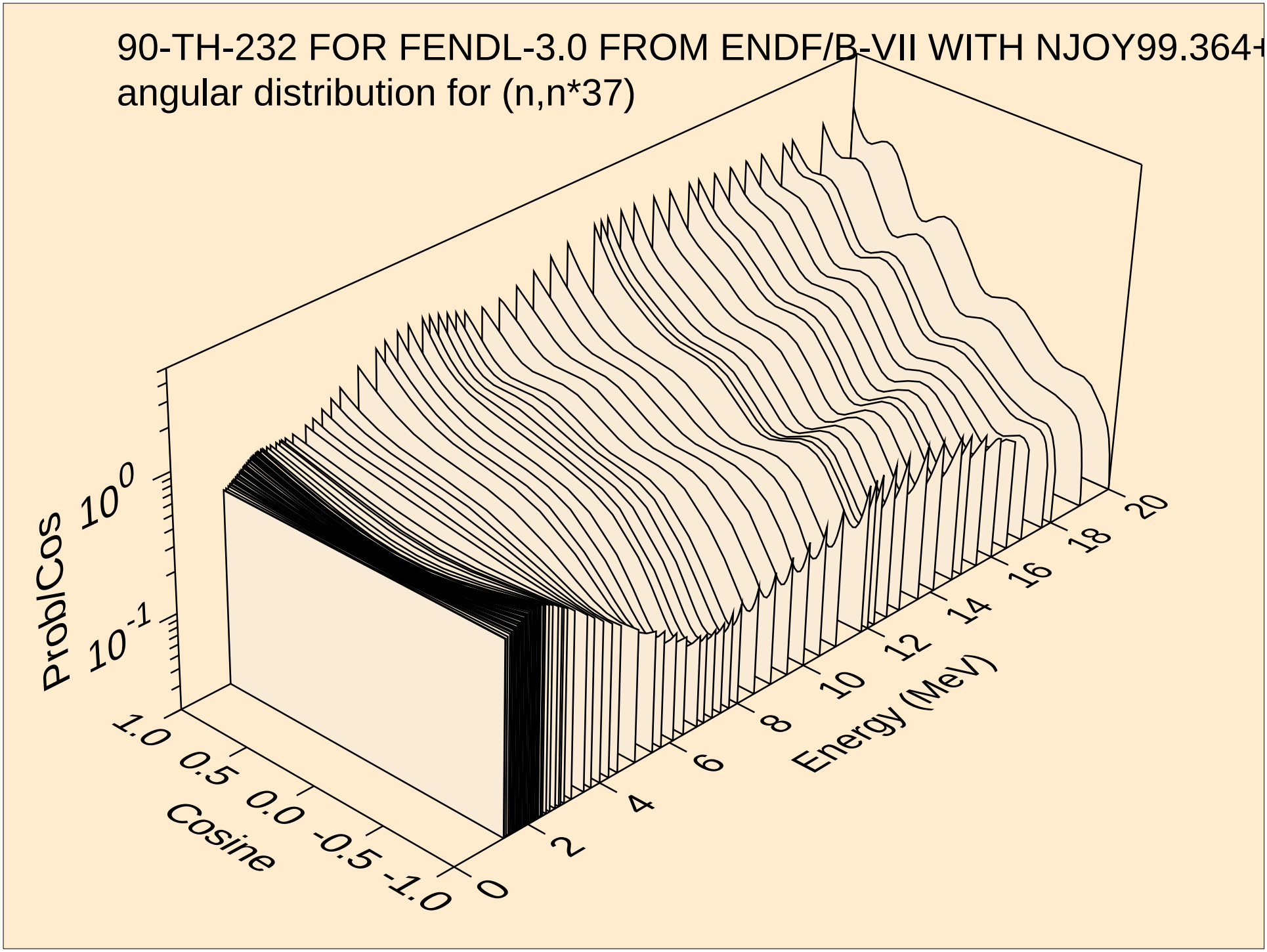

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
angular distribution for (n,n*34)
ProbICos
10-1
10-3
1.0
0.5
0.0
-0.5
-1.0
Cosine
20
25
30
35
40
45
50
55
60
Energy (MeV)

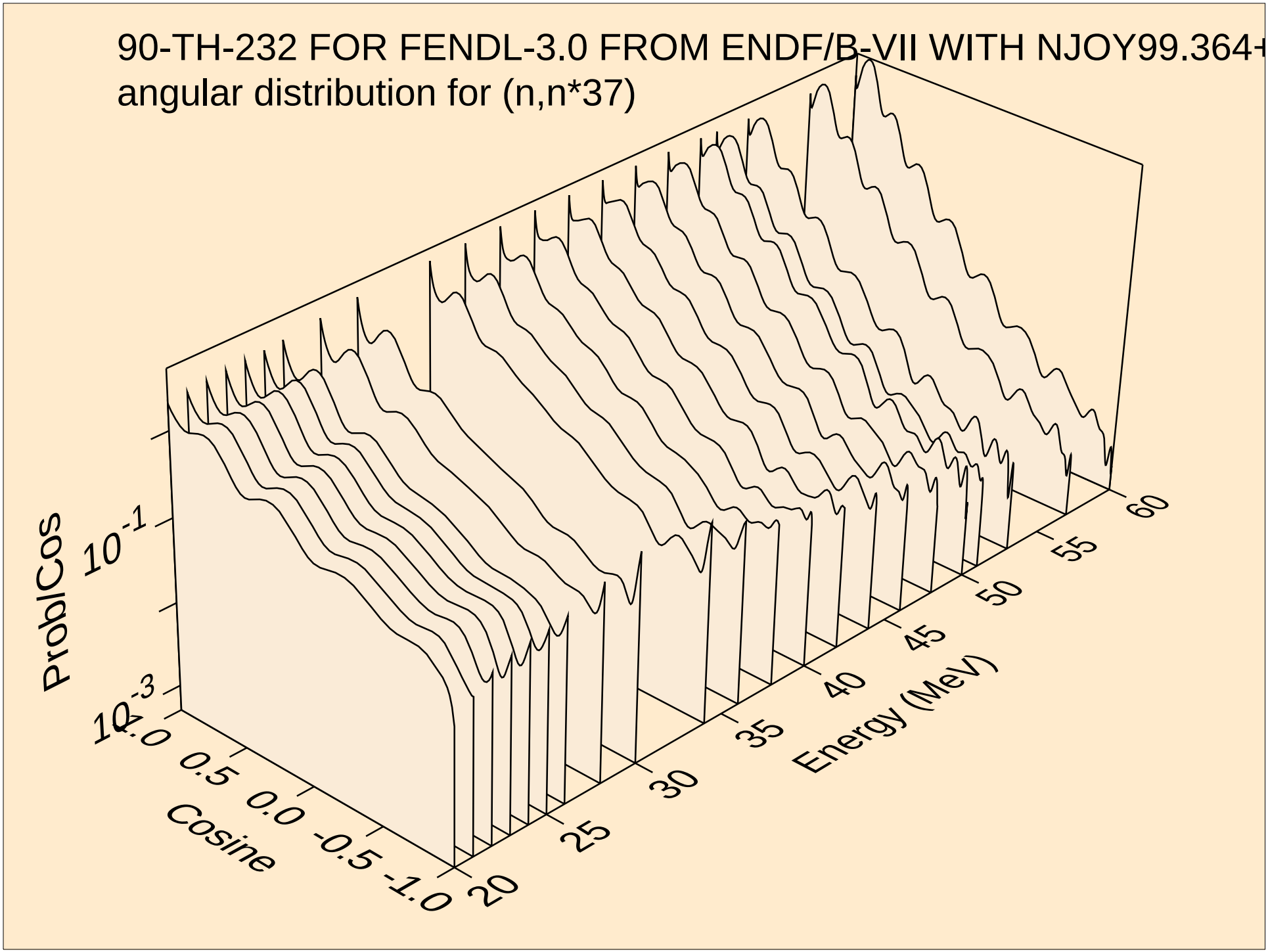

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
angular distribution for (n,n*35)
Prob|Cos
10^0
10^-1
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

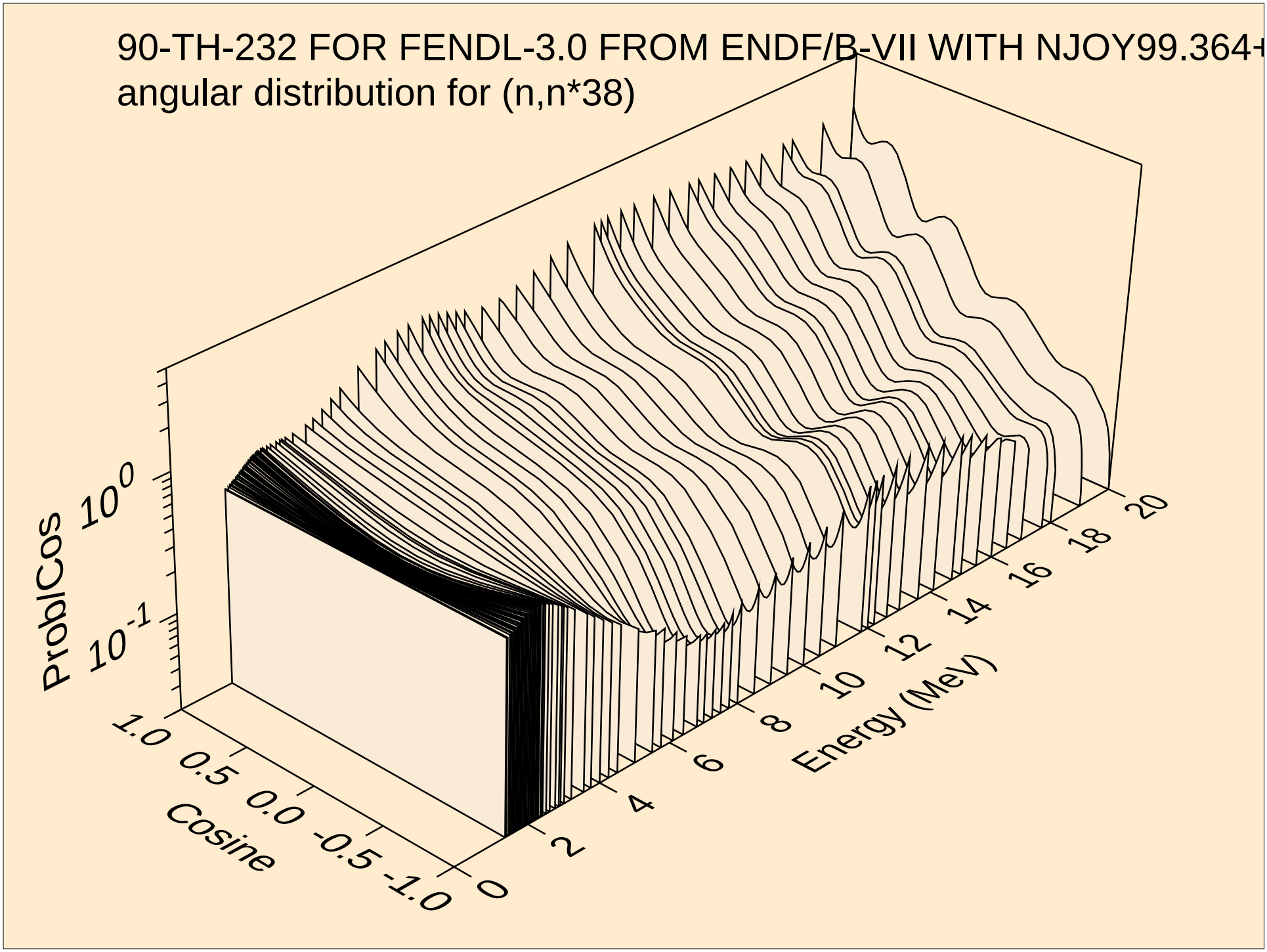

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
angular distribution for (n,n*35)
ProblCos
10^0
10^-2
10^-4
1.0
0.5
0.0
-0.5
-1.0
Cosine
20
25
30
35
40
45
50
55
60
Energy (MeV)

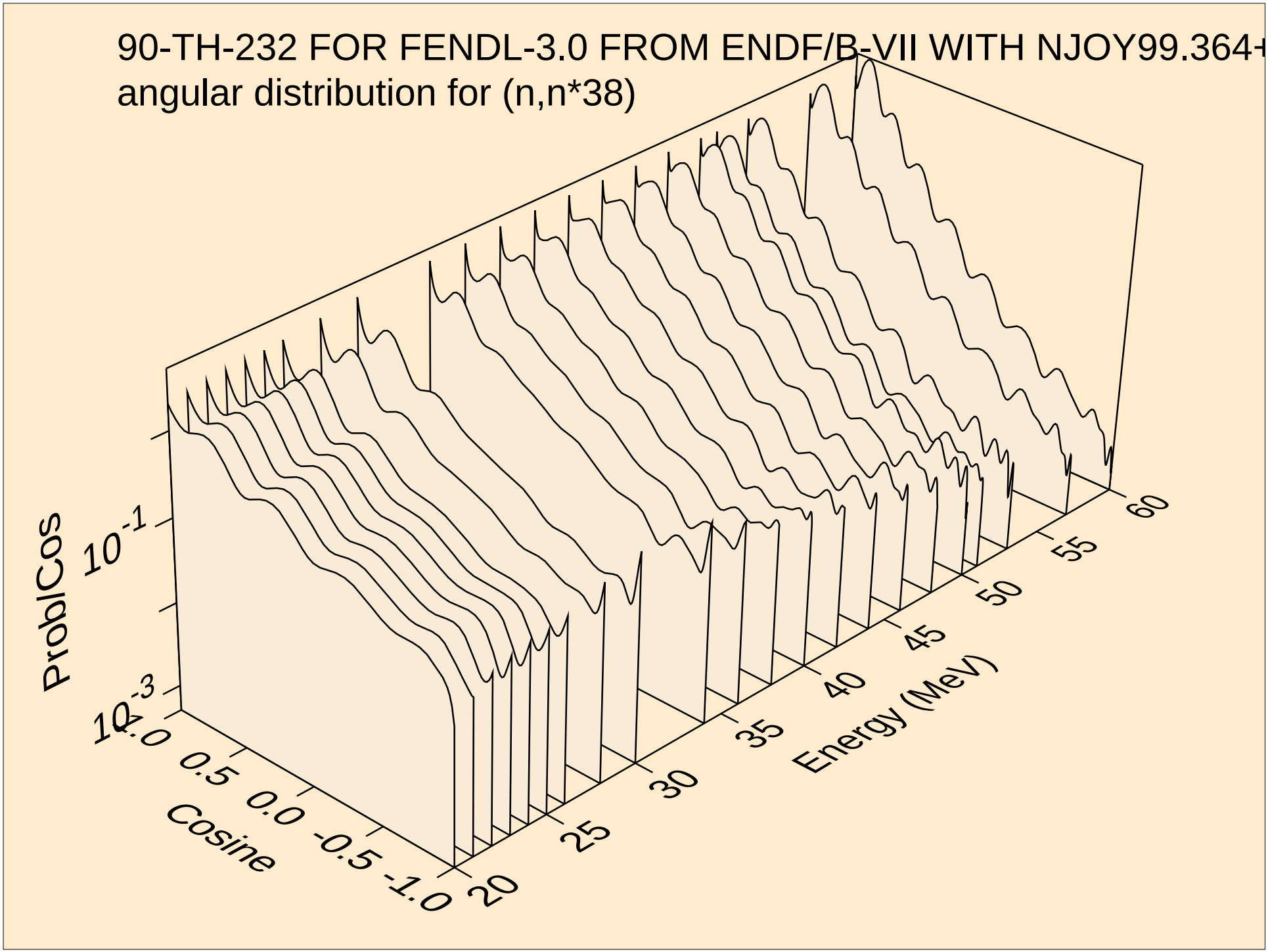

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
angular distribution for (n,n*36)
Prob\Cos
10^1
10^0
10^-1
10^-2
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

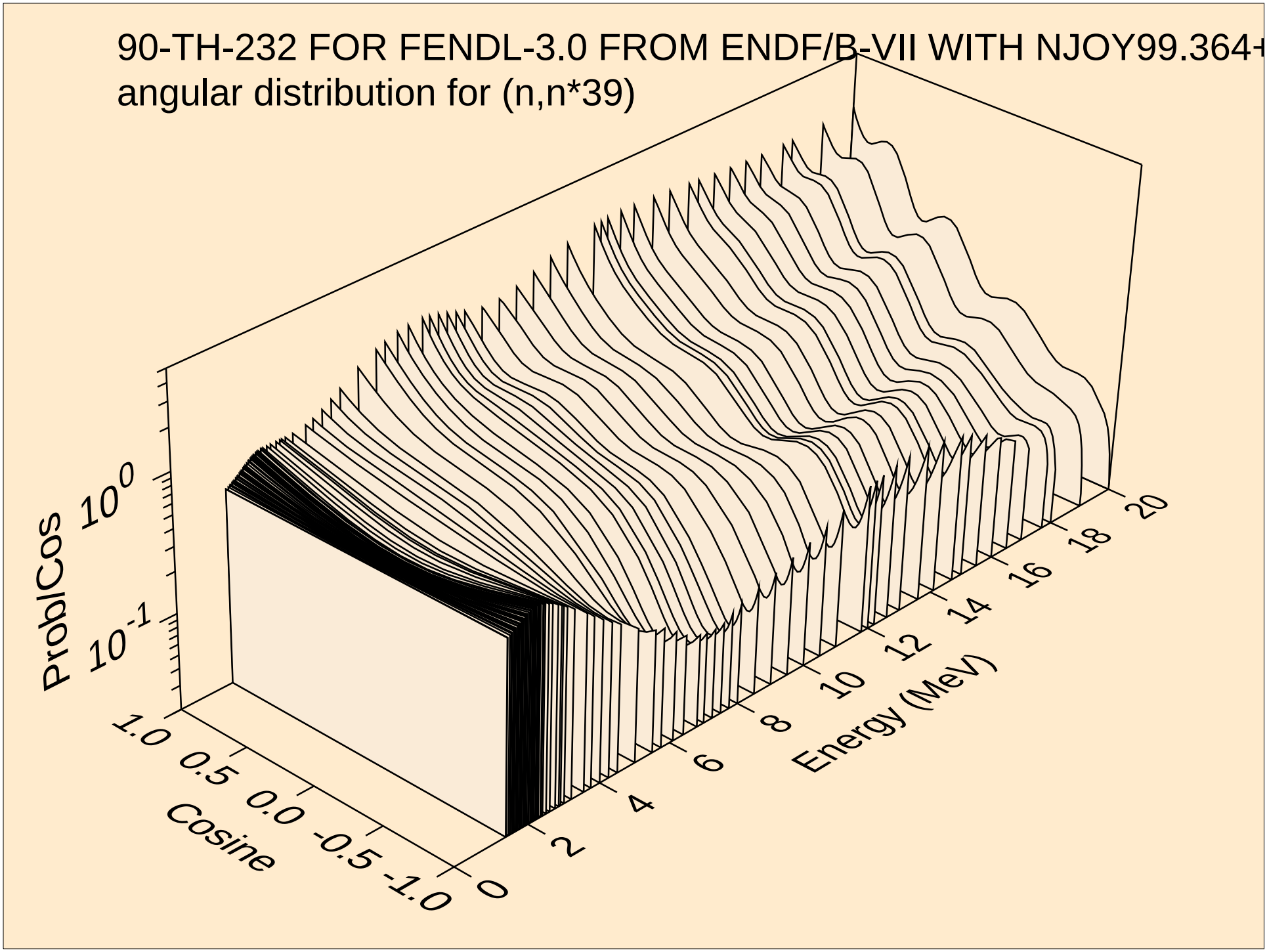

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
angular distribution for (n,n*36)
ProblCos
10^{1}
10^{-1}
10^{-3}
1.0
0.5
0.0
-0.5
-1.0
Cosine
20
25
30
35
40
45
50
55
60
Energy (MeV)

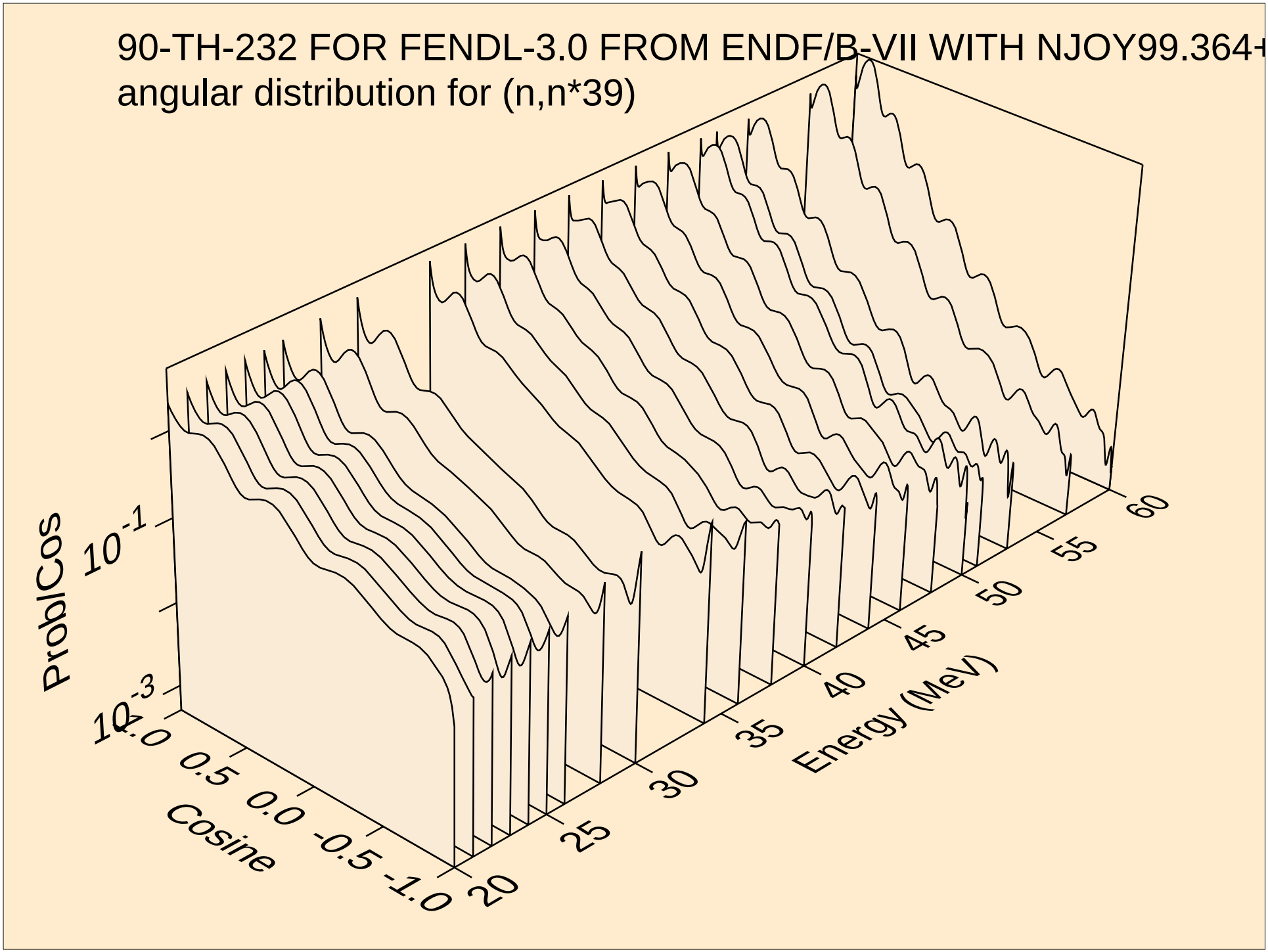

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
angular distribution for (n,n*37)
ProbICos
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

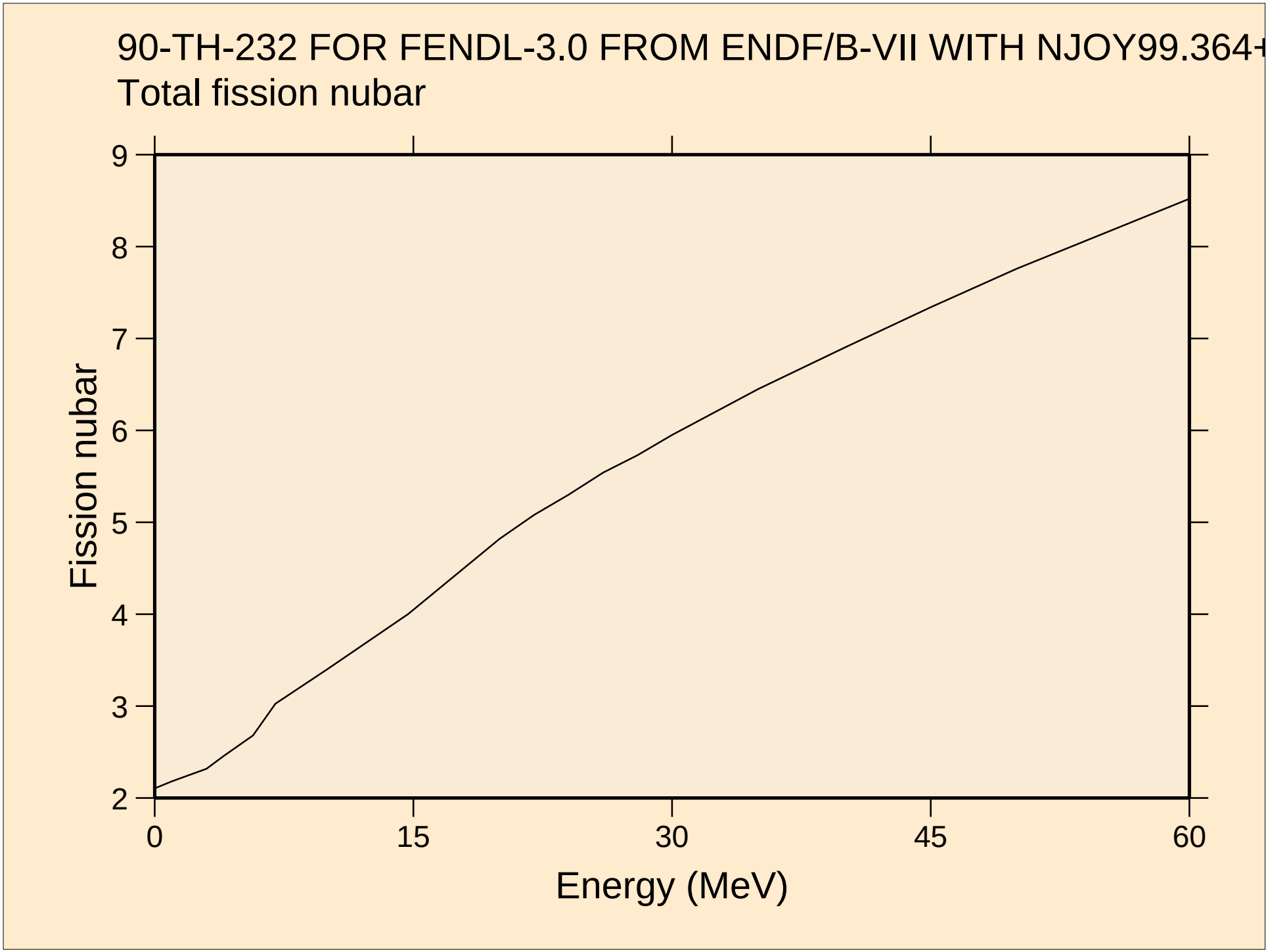

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
angular distribution for (n,n*37)
ProbICos
10-1
10-3
1.0
0.5
0.0
-0.5
-1.0
Cosine
20
25
30
35
40
45
50
55
60
Energy (MeV)

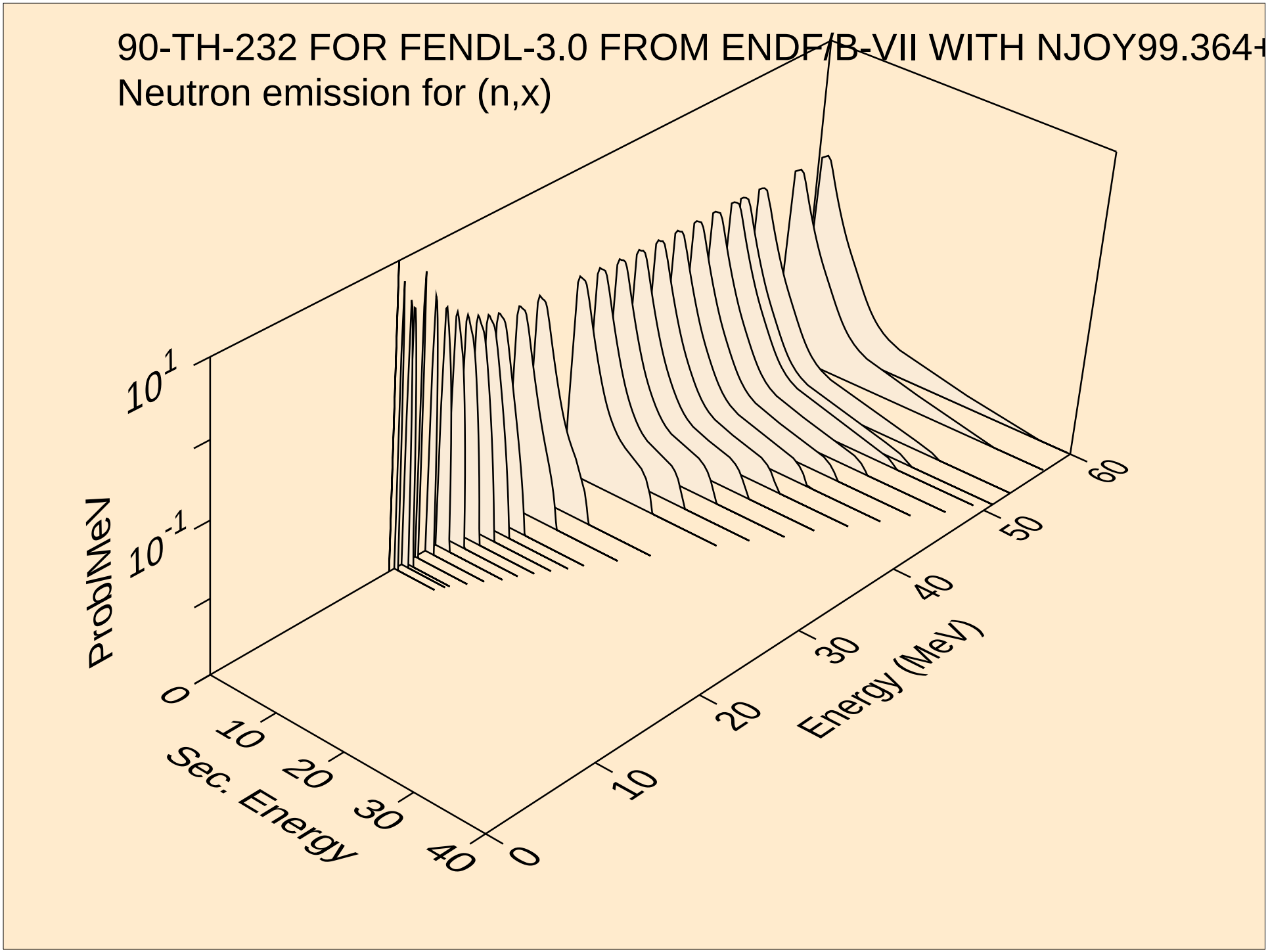

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
angular distribution for (n,n*38)
Prob\Cos
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

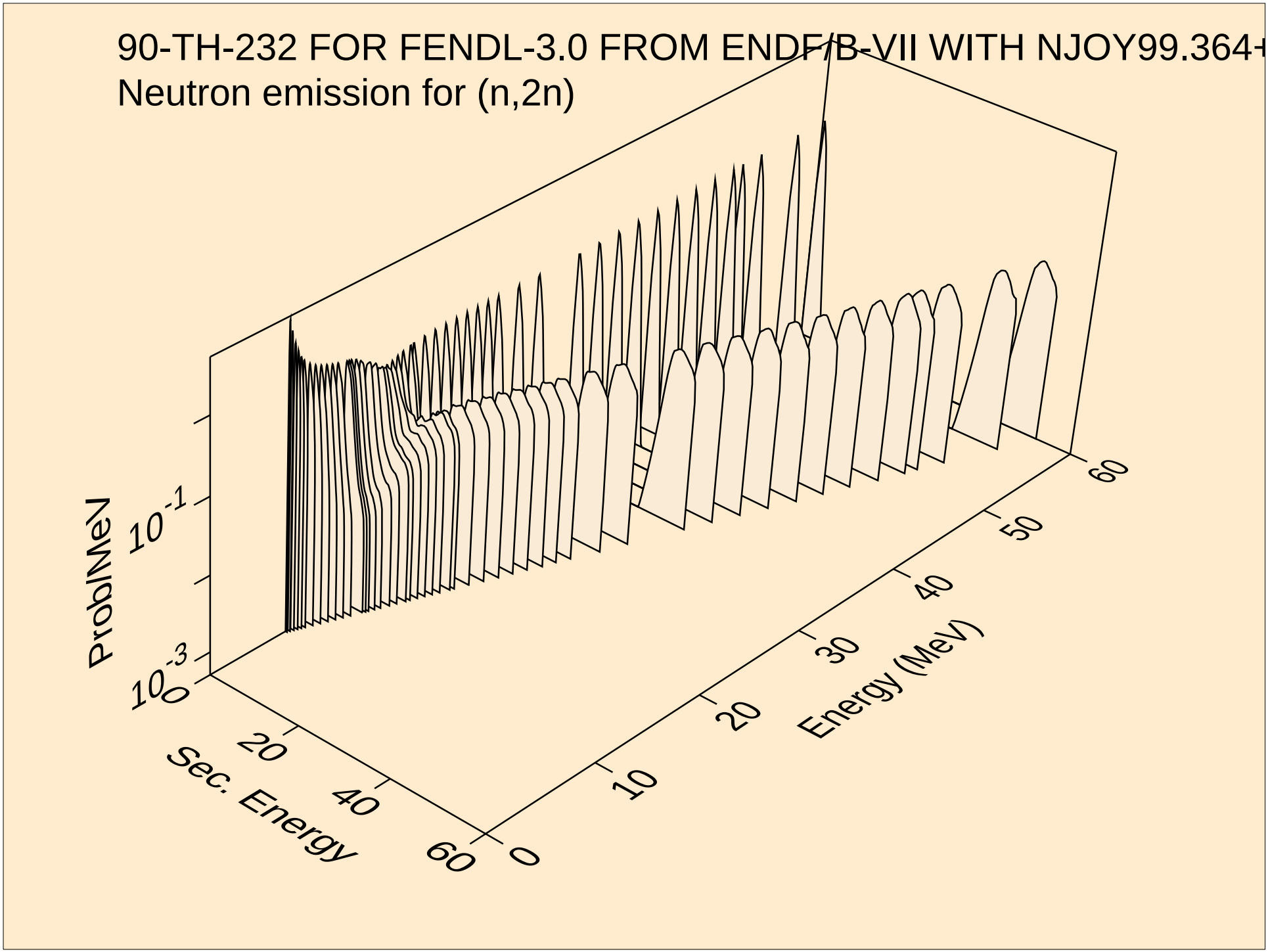

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
angular distribution for (n,n*38)
ProblCos
10-1
10-3
1.0
0.5
0.0
-0.5
-1.0
Cosine
20
25
30
35
40
45
50
55
60
Energy (MeV)

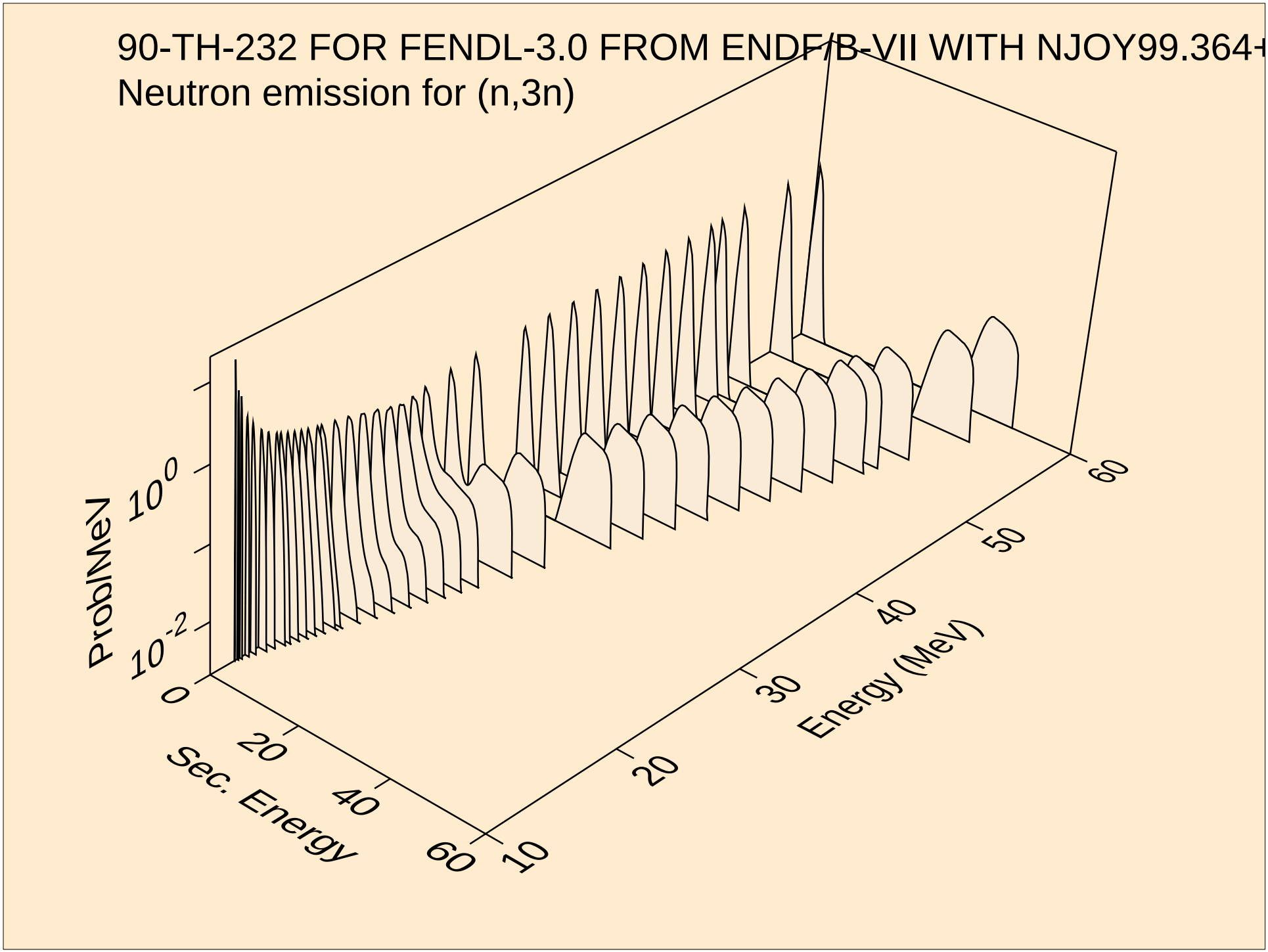

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
angular distribution for (n,n*39)
ProbICos
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

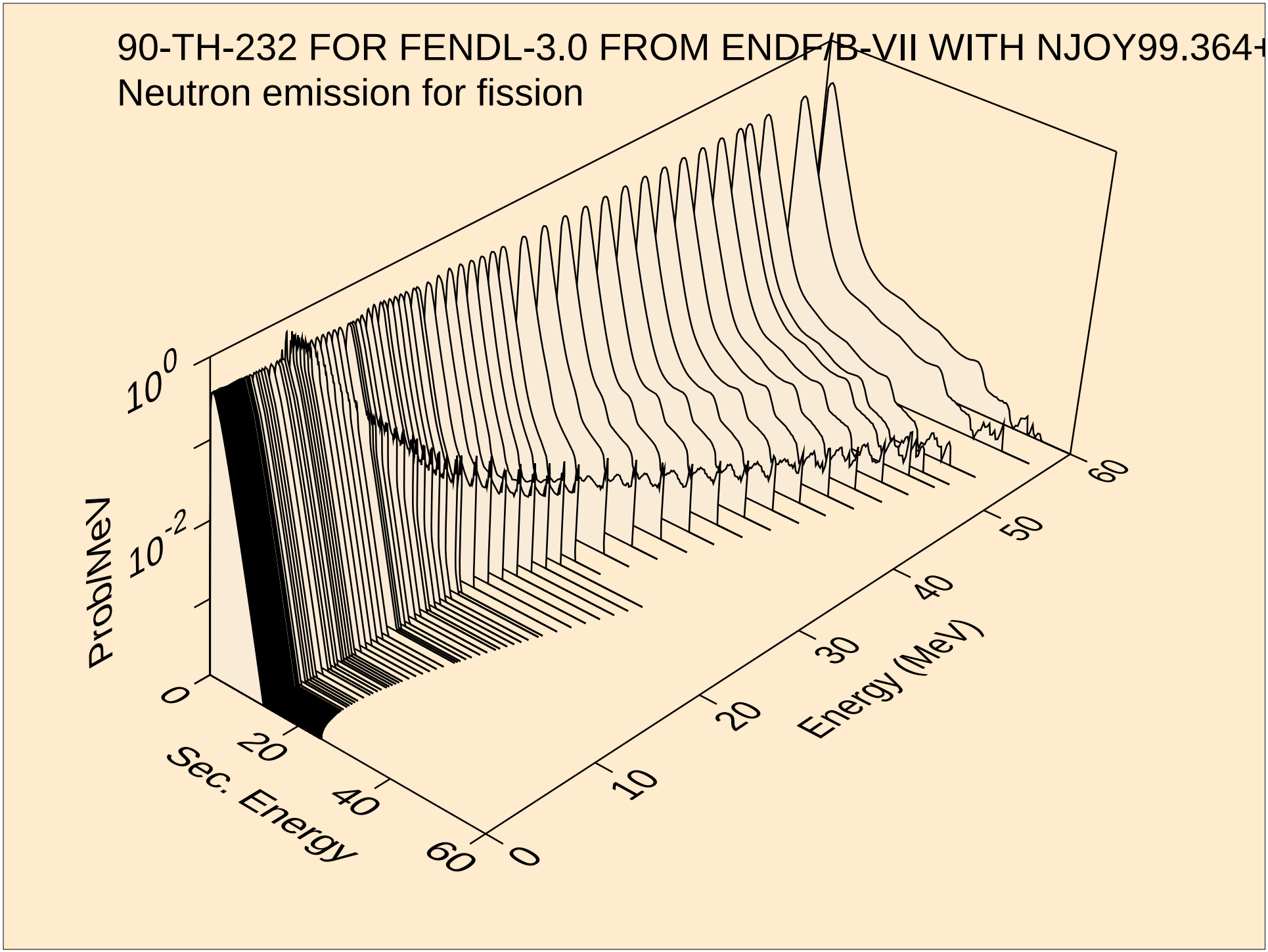

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
angular distribution for (n,n*39)
ProblCos
10-1
10-3
1.0
0.5
0.0
-0.5
-1.0
Cosine
20
25
30
35
40
45
50
55
60
Energy (MeV)

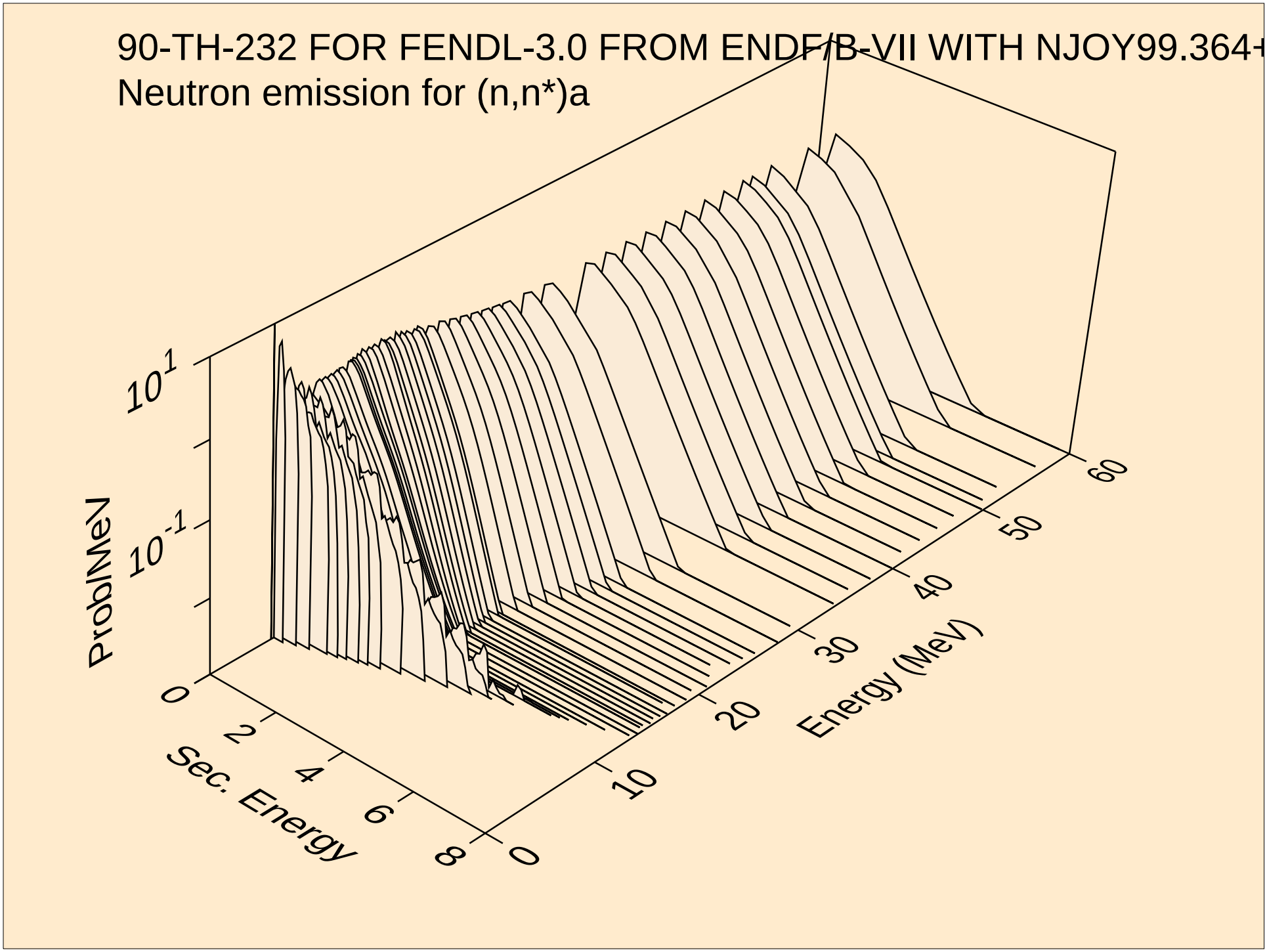

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
Total fission nubar
Fission nubar
9
8
7
6
5
4
3
2
0
15
30
45
60
Energy (MeV)

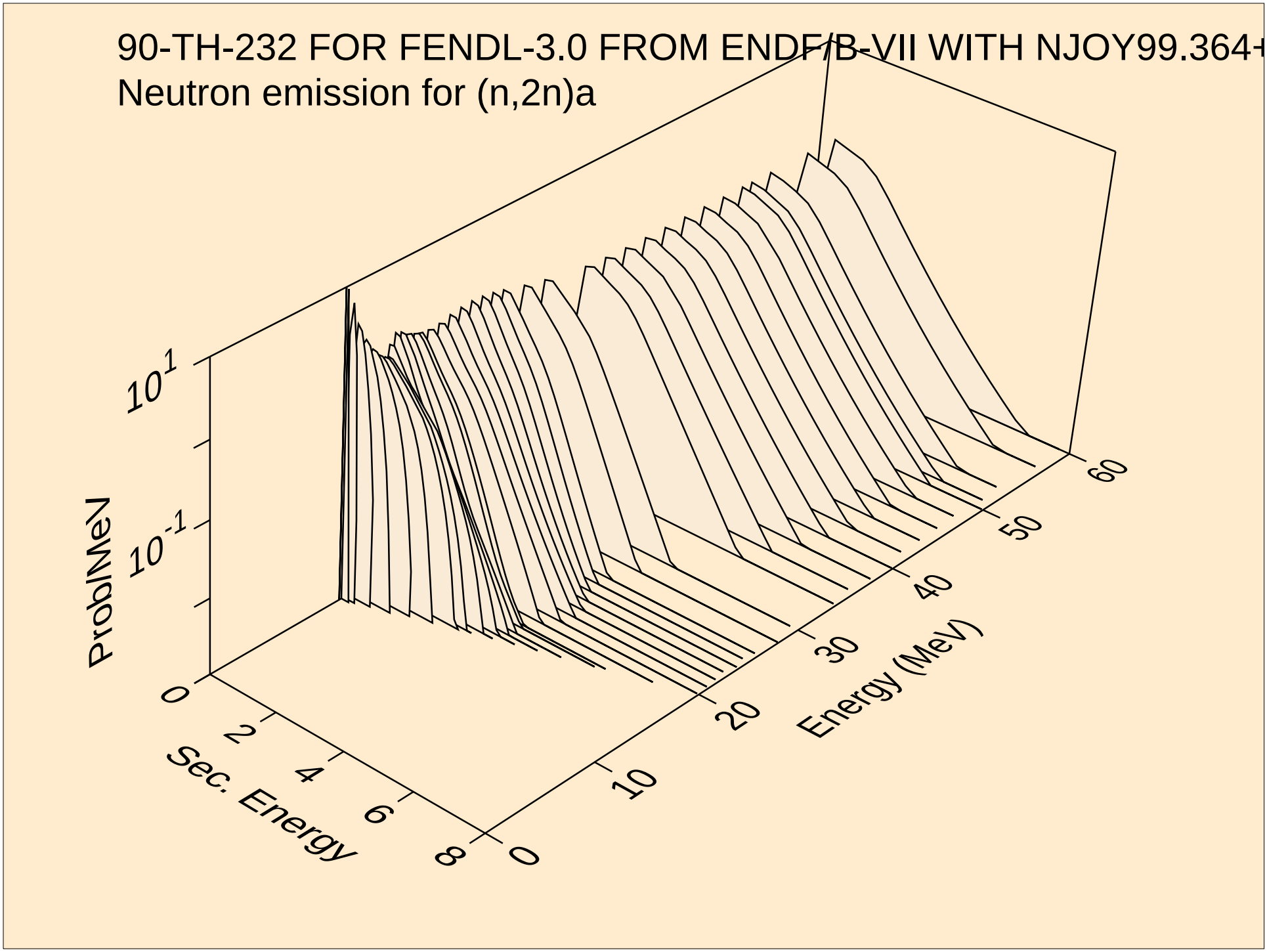

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
Neutron emission for (n,x)
Prob/MeV
10^1
10^-1
0
10
20
30
40
Sec. Energy
0
10
20
30
40
50
60
Energy (MeV)

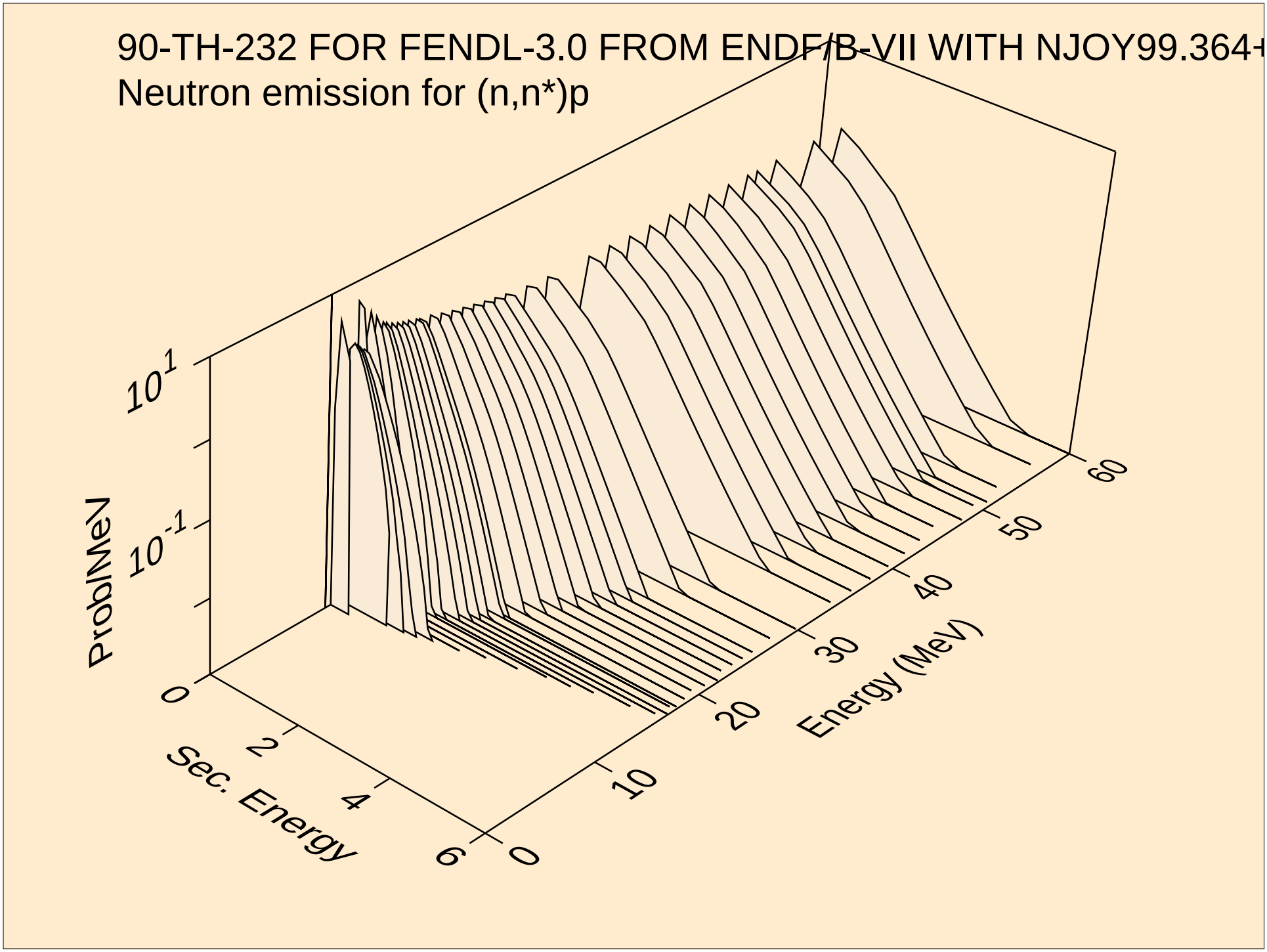

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
Neutron emission for (n,2n)
Prob/MeV
10-1
10-3
0
20
40
60
Sec. Energy
0
10
20
30
40
50
60
Energy (MeV)

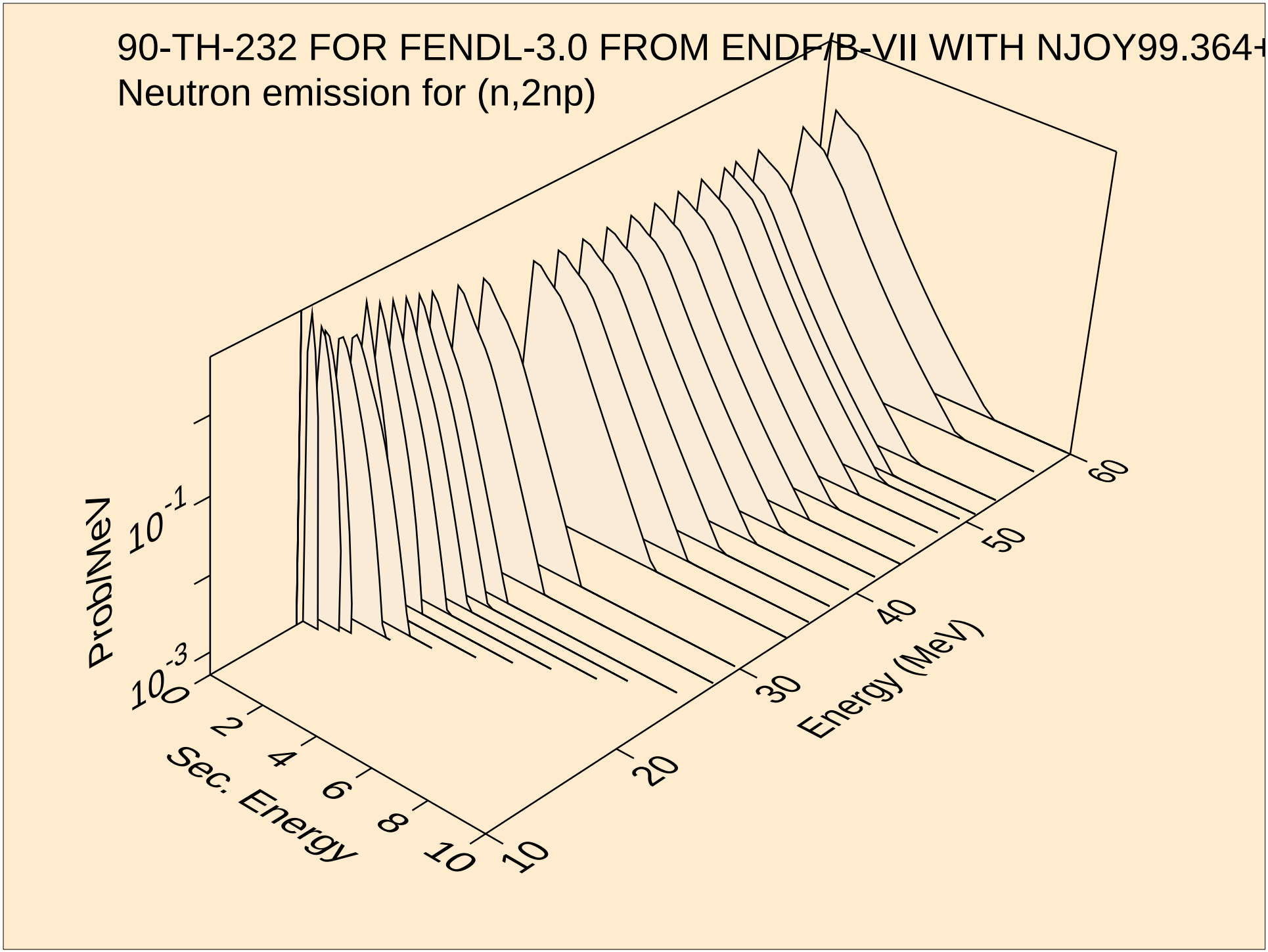

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
Neutron emission for (n,3n)
Prob/MeV
10^0
10^-2
0
20
40
60
Sec. Energy
10
20
30
40
50
60
Energy (MeV)

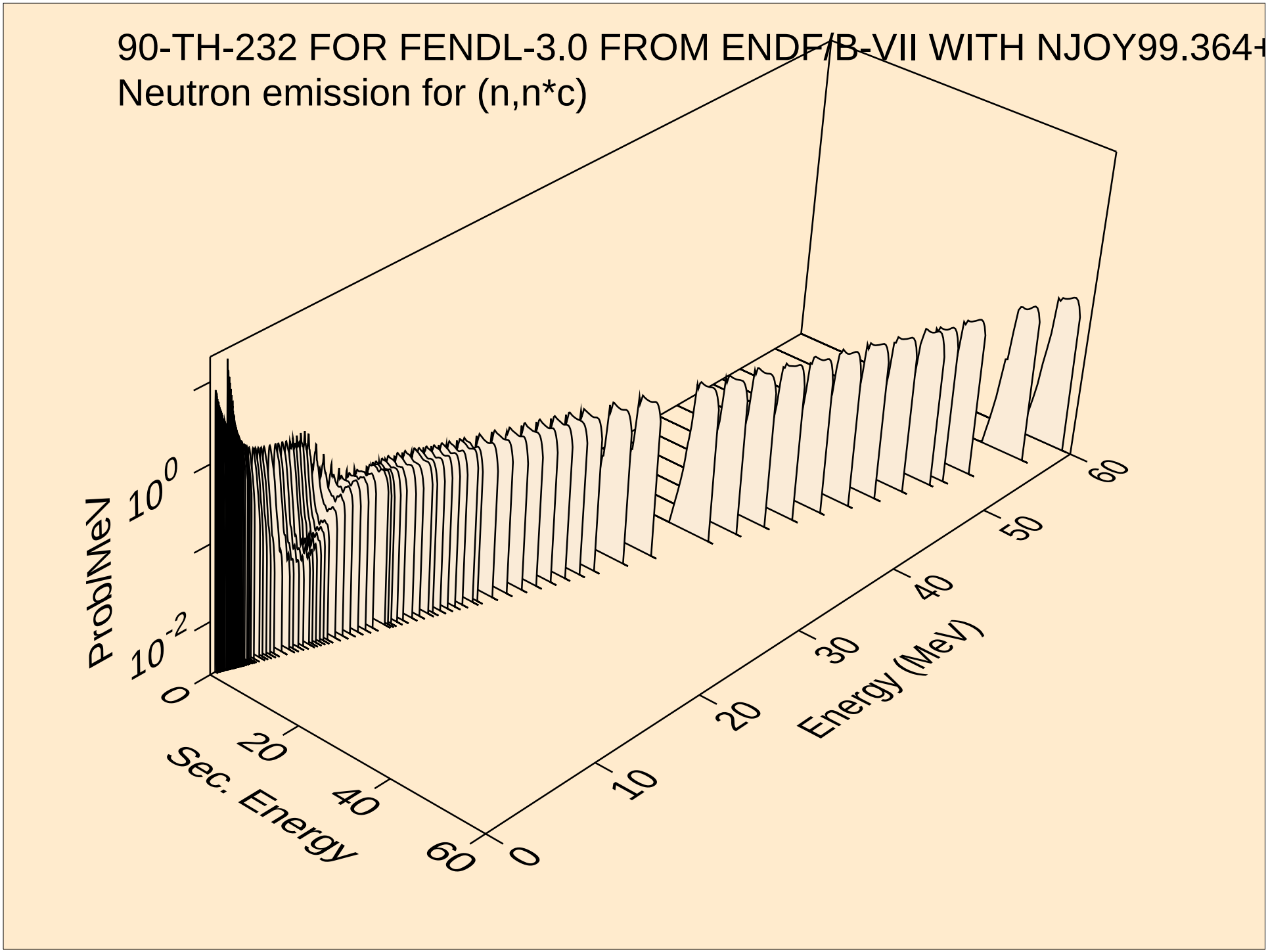

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
Neutron emission for fission
Prob/MeV
10^0
10^-2
0
20
40
60
Sec. Energy
0
10
20
30
40
50
60
Energy (MeV)

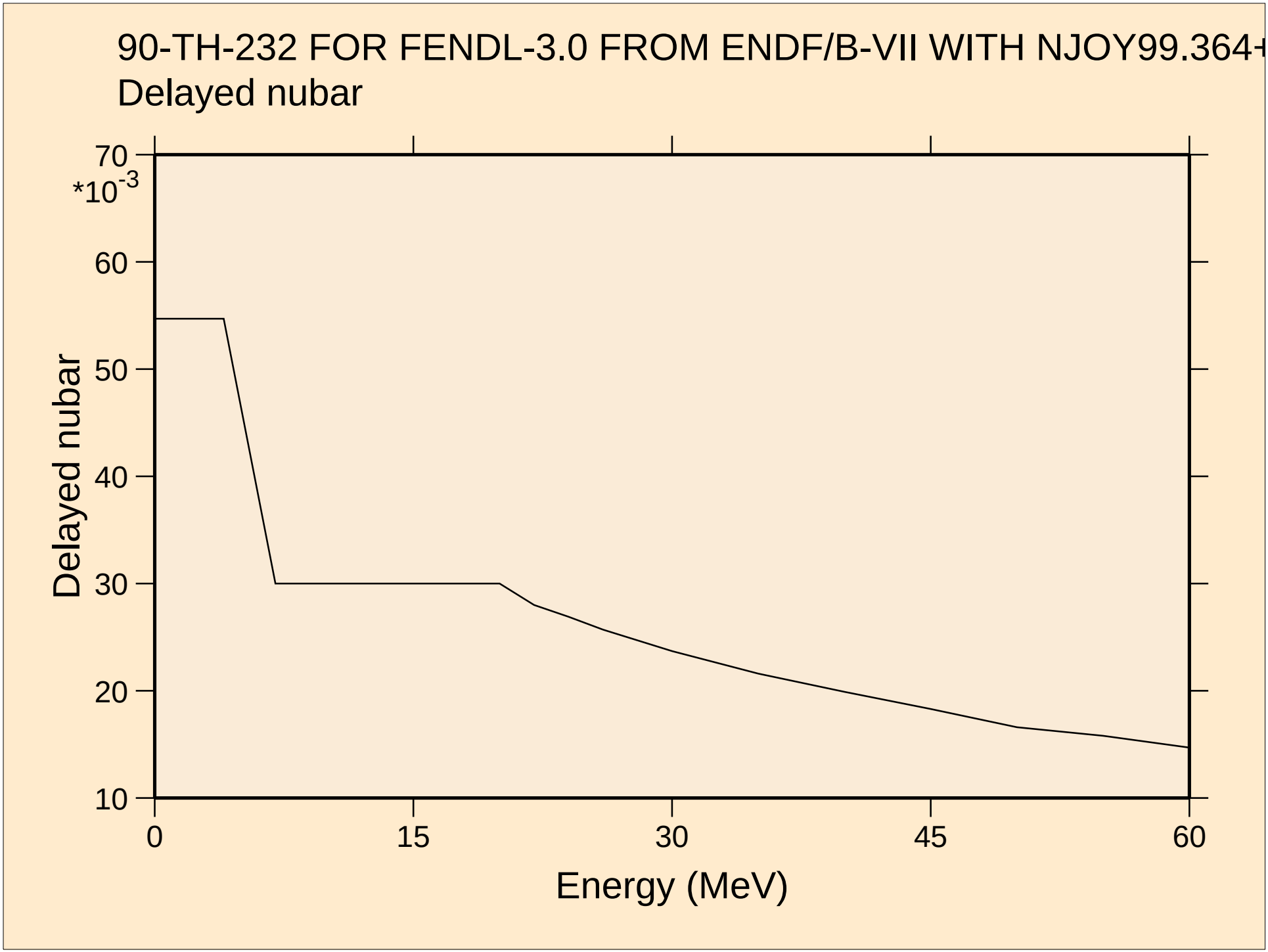

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
Neutron emission for (n,n*)a
Prob/MeV
10^1
10^-1
0
2
4
6
8
Sec. Energy
0
10
20
30
40
50
60
Energy (MeV)

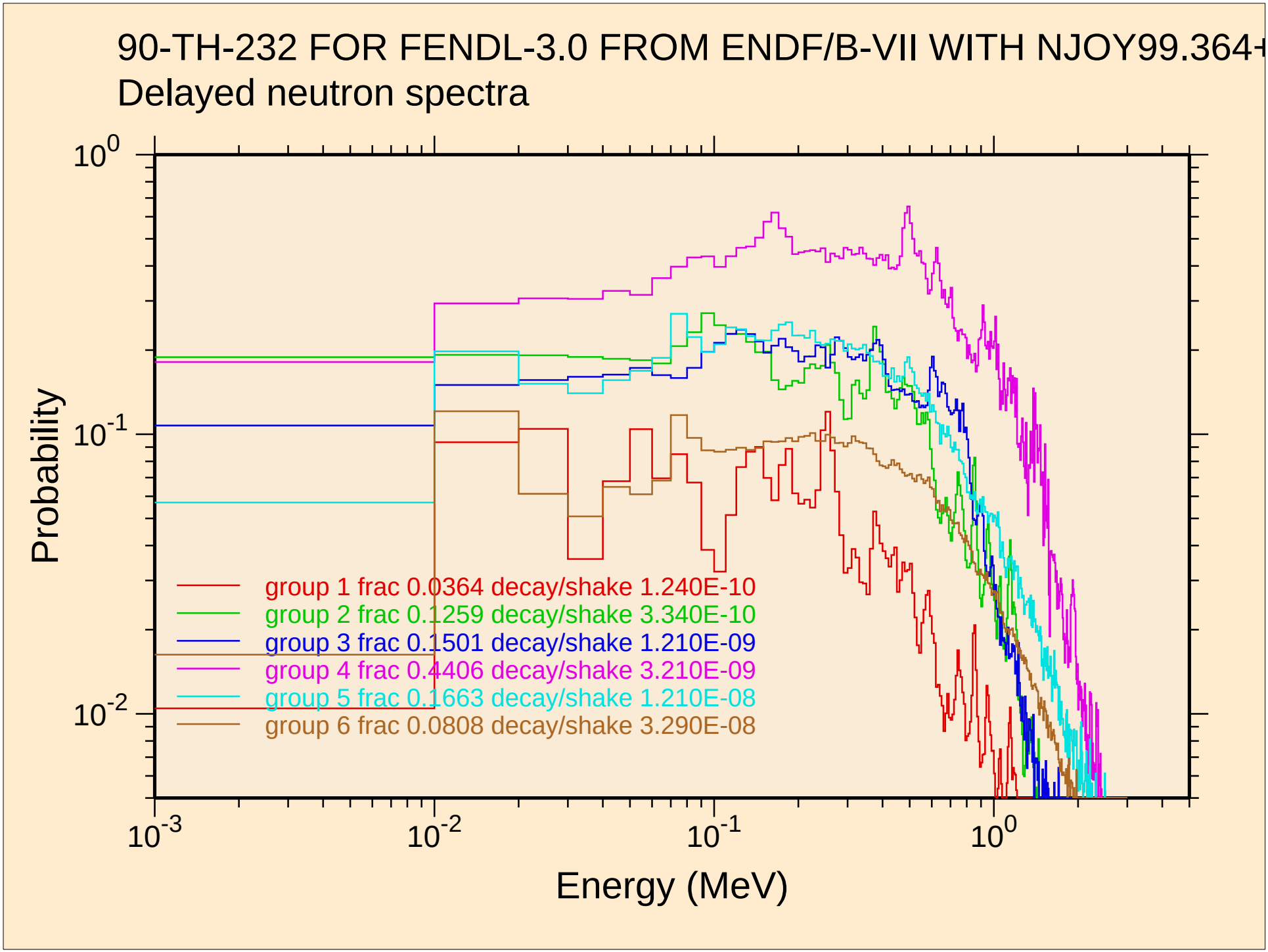

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
Neutron emission for (n,2n)a
Prob/MeV
10^1
10^-1
0
2
4
6
8
Sec. Energy
0
10
20
30
40
50
60
Energy (MeV)

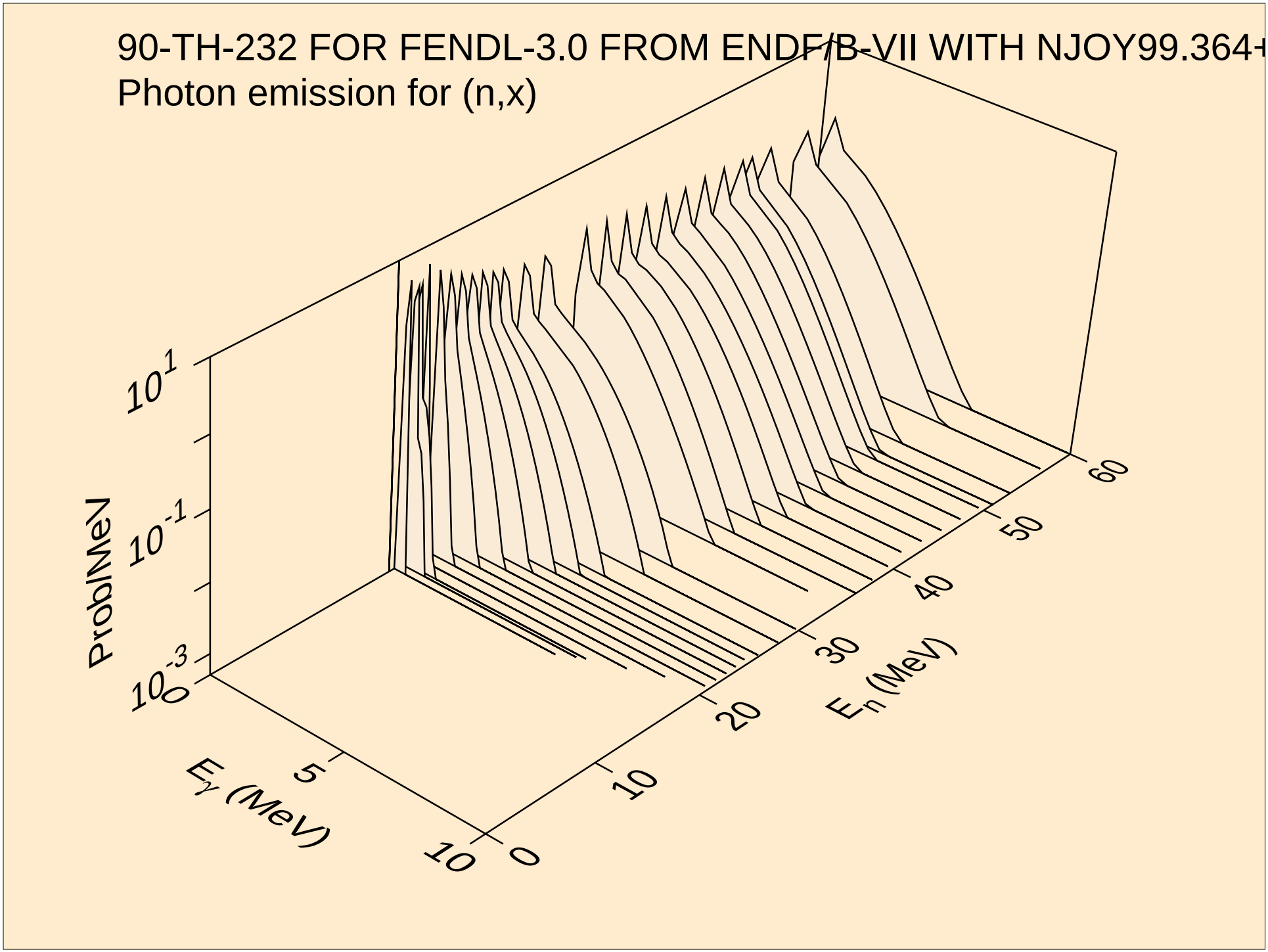

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
Neutron emission for (n,n*)p
Prob/MeV
10^1
10^-1
0
Sec. Energy
2
4
6
0
10
20
30
40
50
60
Energy (MeV)

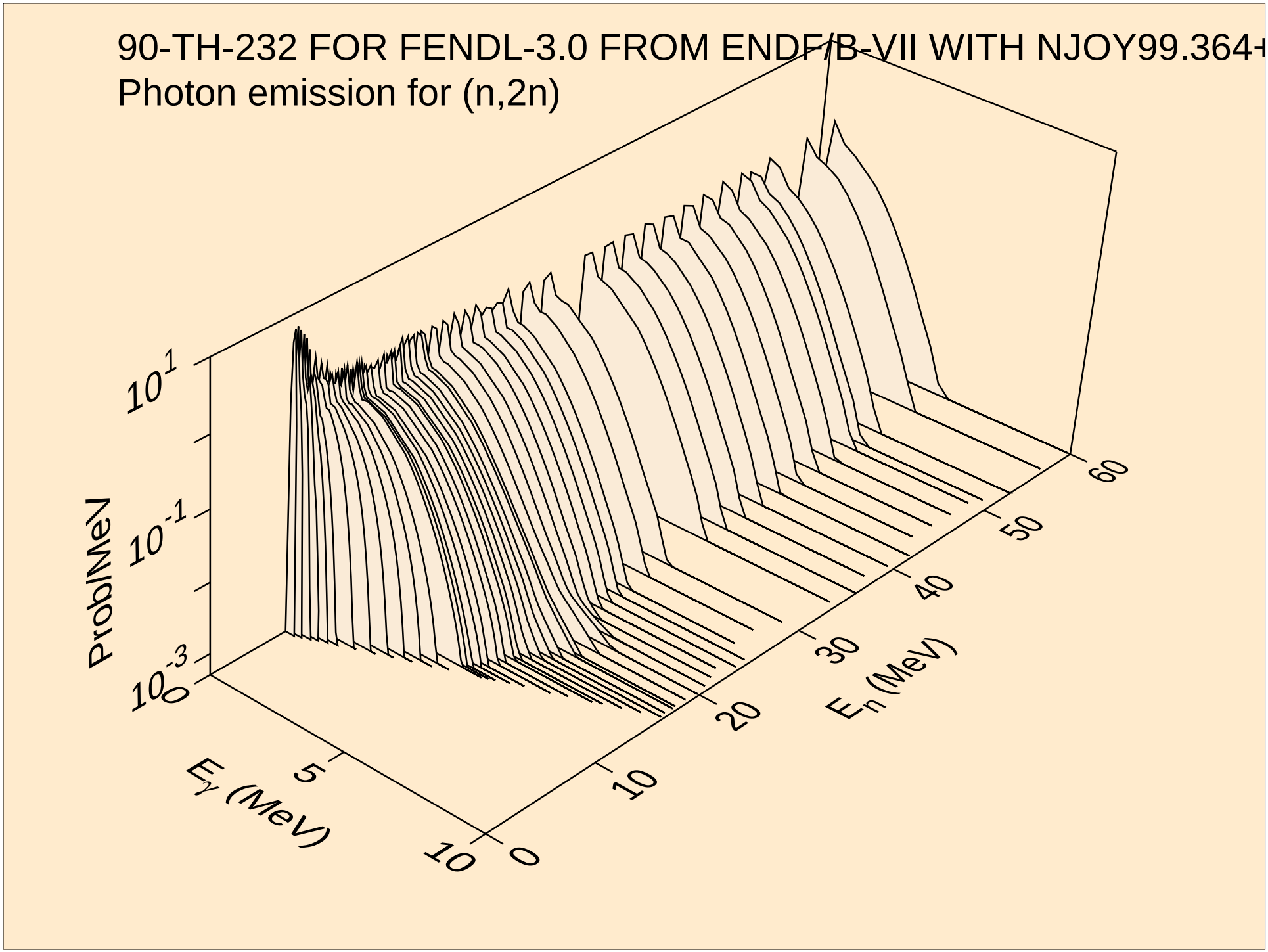

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
Neutron emission for (n,2np)
Prob/MeV
10-1
10-3
0
2
4
6
8
10
Sec. Energy
10
20
30
40
50
60
Energy (MeV)

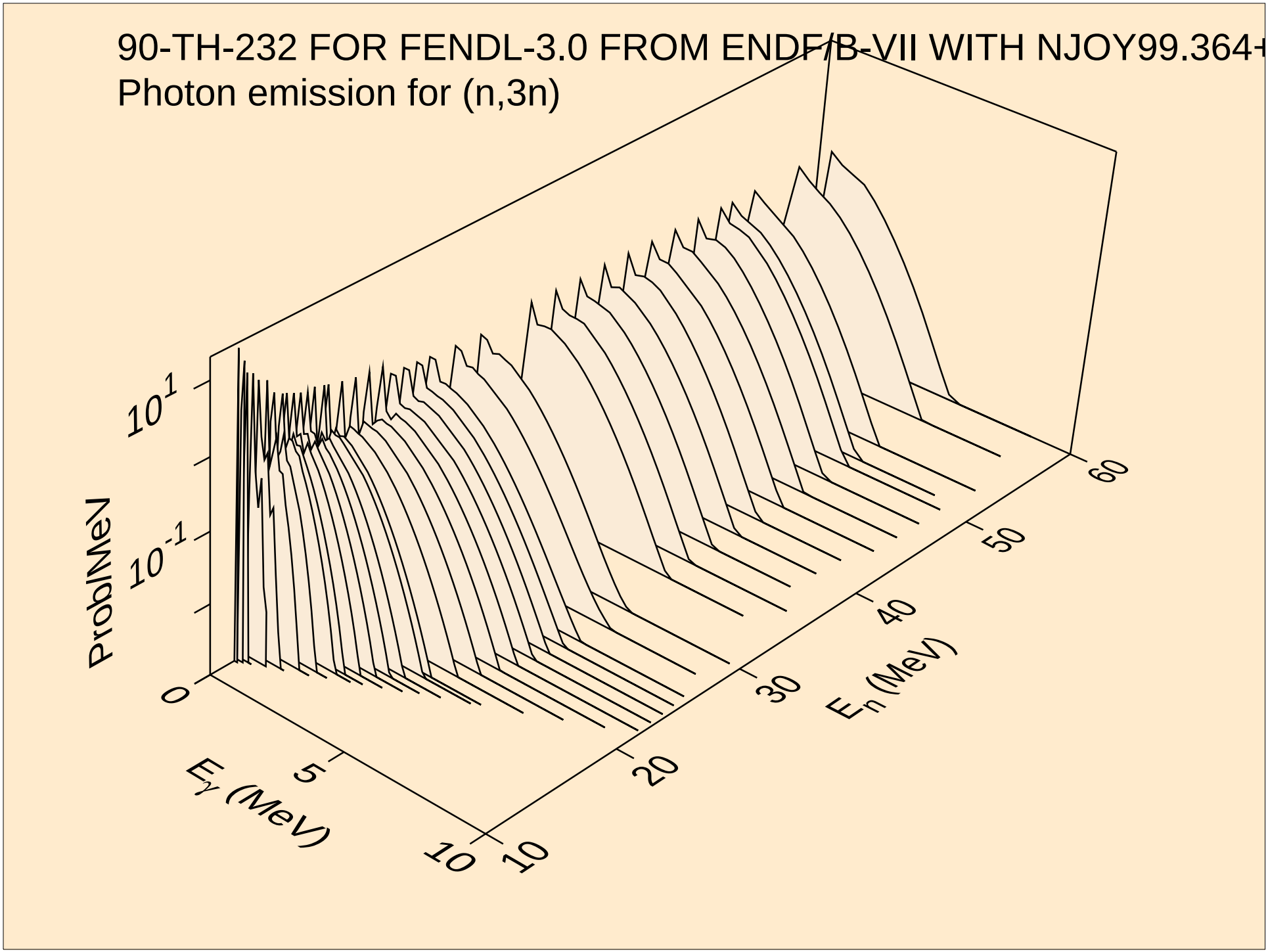

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
Neutron emission for (n,n*c)
Prob/MeV
10^0
10^-2
0
20
40
60
Sec. Energy
0
10
20
30
40
50
60
Energy (MeV)

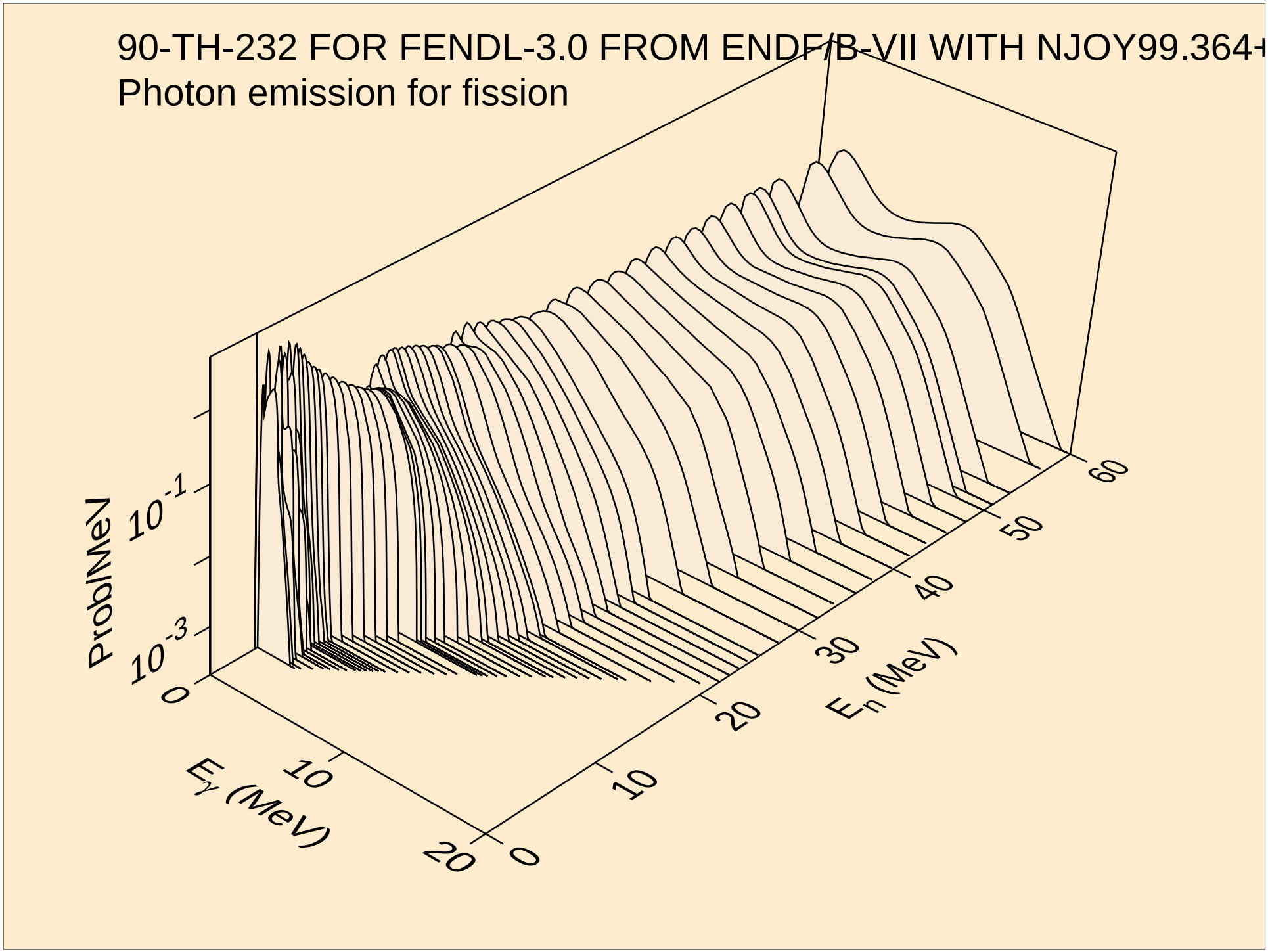

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
Delayed nubar
70
*10-3
60
50
40
30
20
10
Delayed nubar
0
15
30
45
60
Energy (MeV)

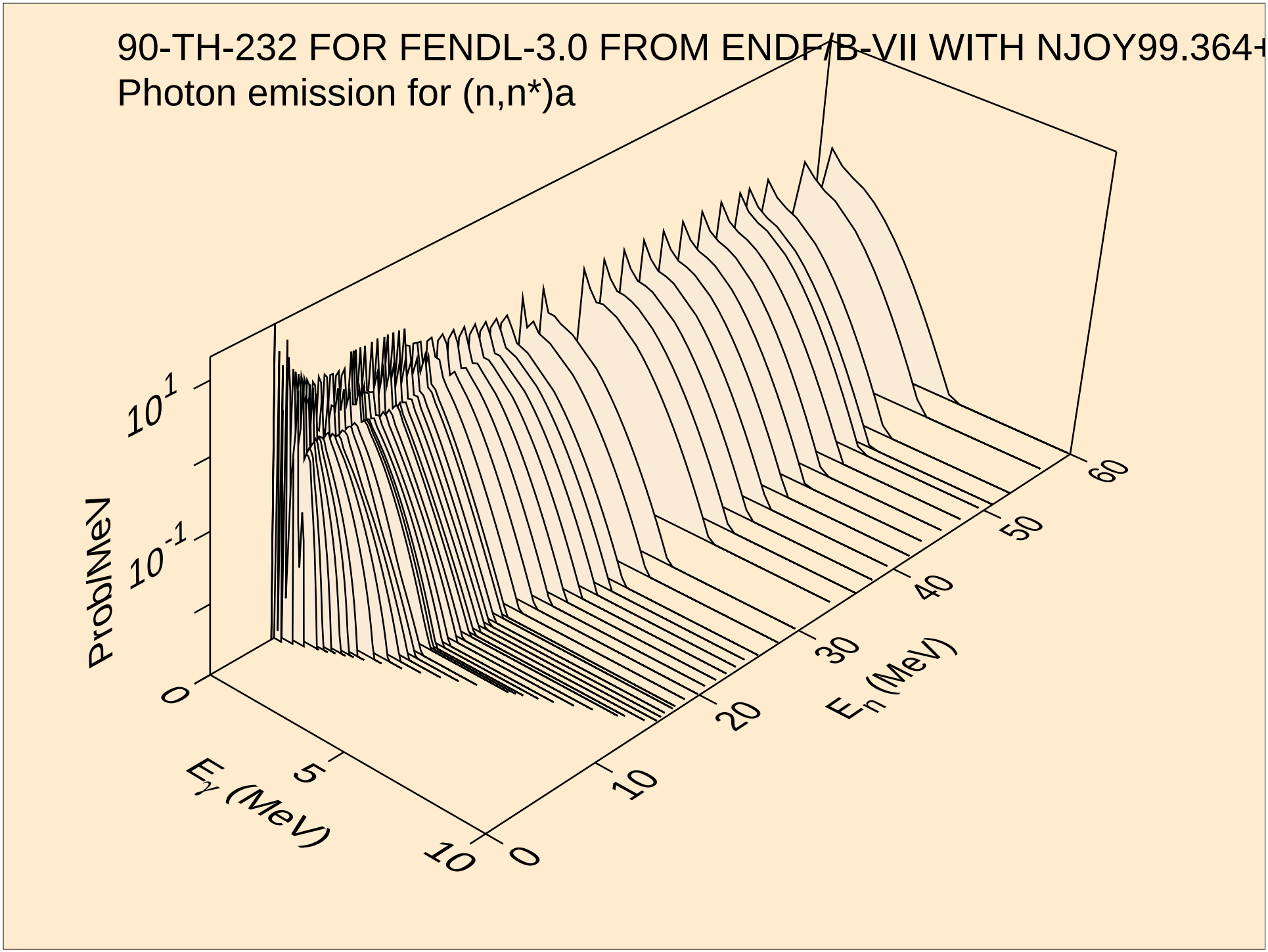

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
Delayed neutron spectra
Probability
Energy (MeV)
10^0
10^-1
10^-2
10^-3
10^-2
10^-1
10^0
group 1 frac 0.0364 decay/shake 1.240E-10
group 2 frac 0.1259 decay/shake 3.340E-10
group 3 frac 0.1501 decay/shake 1.210E-09
group 4 frac 0.4406 decay/shake 3.210E-09
group 5 frac 0.1663 decay/shake 1.210E-08
group 6 frac 0.0808 decay/shake 3.290E-08

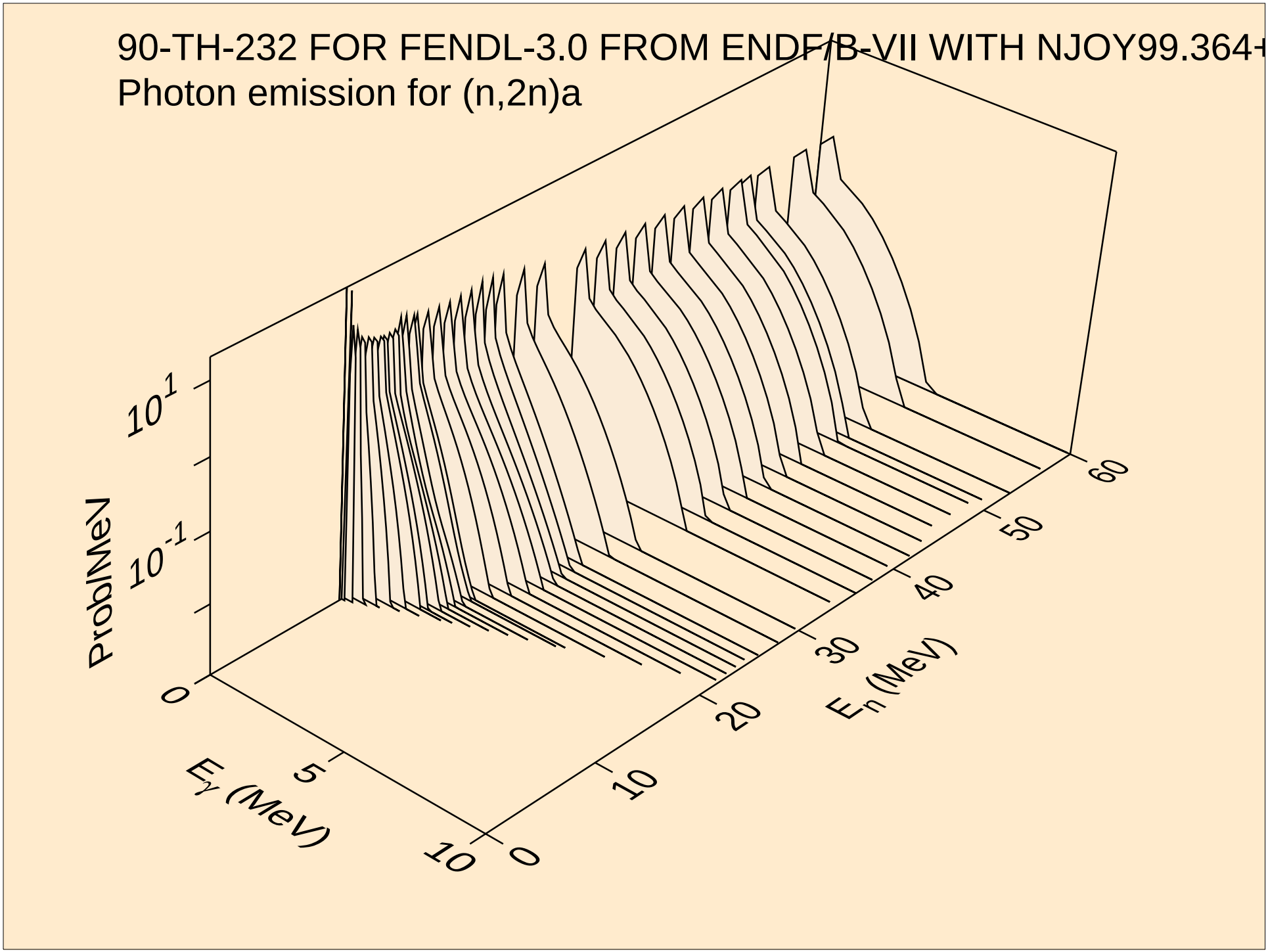

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
Photon emission for (n,x)
Prob/MeV
10^{1}
10^{-1}
10^{-3}
E_γ (MeV)
0
5
10
E_n (MeV)
0
10
20
30
40
50
60

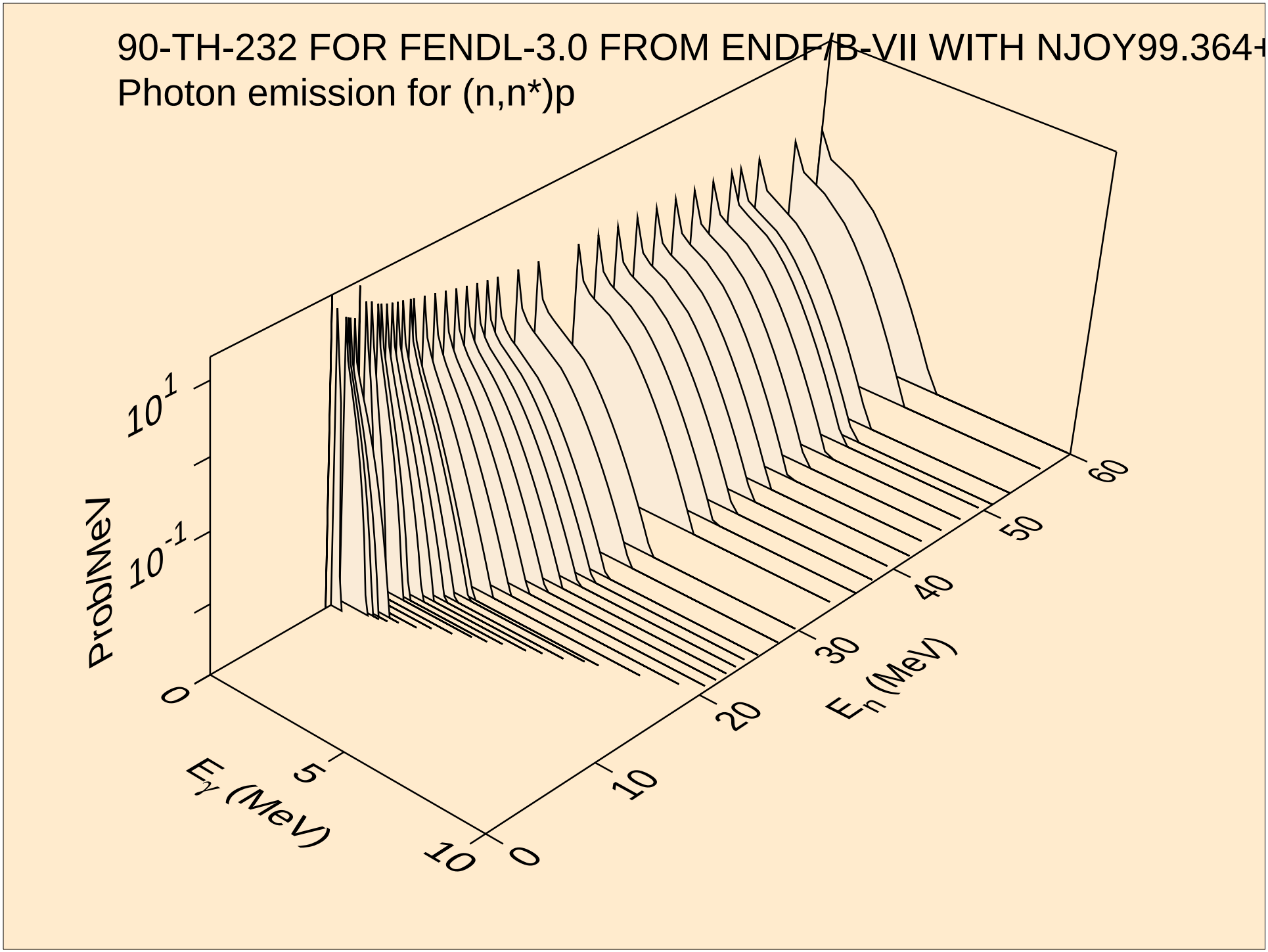

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
Photon emission for (n,2n)
Prob/MeV
10^{1}
10^{-1}
10^{-3}
0
5
10
E_γ (MeV)
0
10
20
30
40
50
60
E_n (MeV)

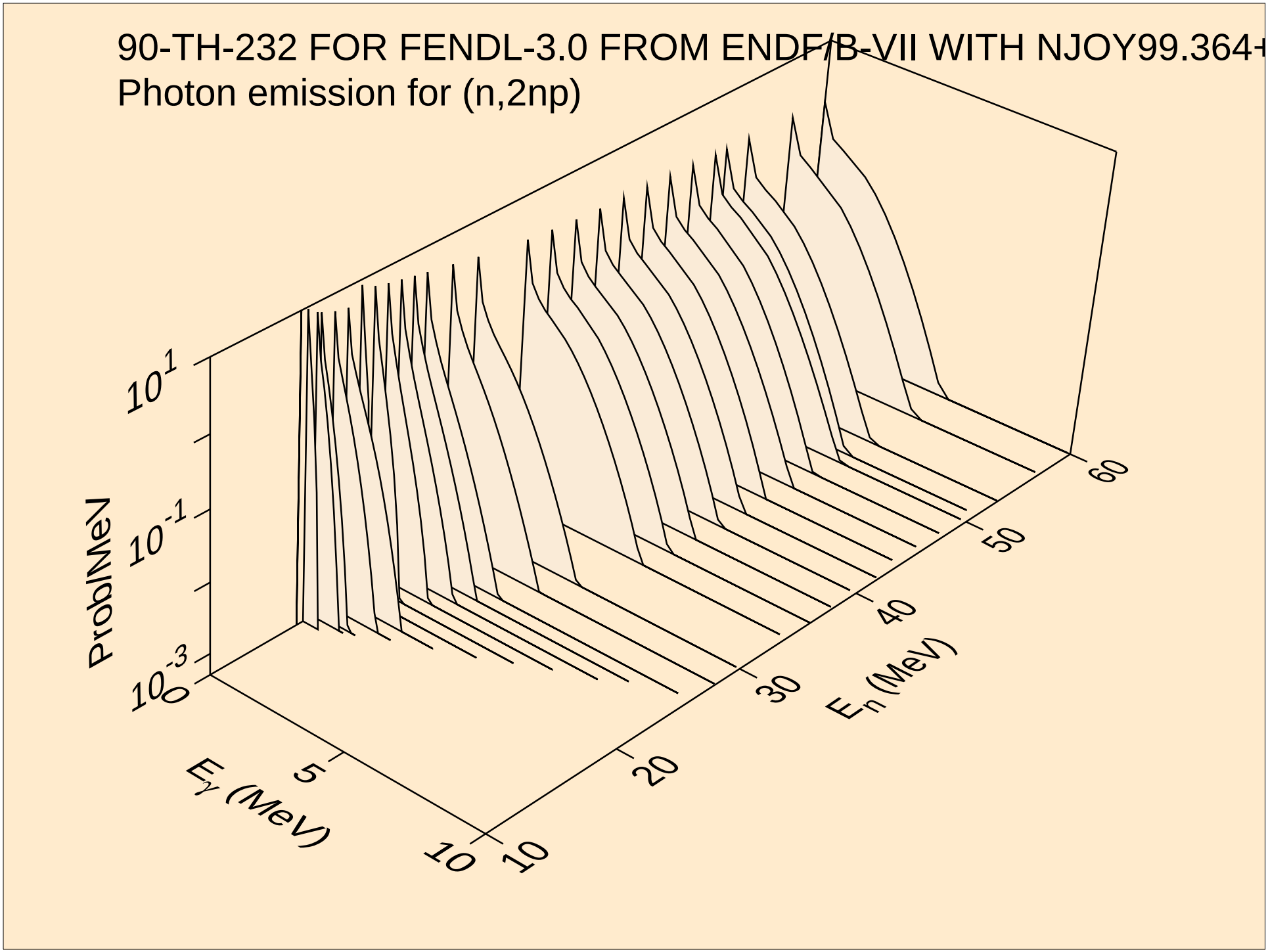

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
Photon emission for (n,3n)
Prob/MeV
10^1
10^-1
0
5
10
Eγ (MeV)
10
20
30
40
50
60
En (MeV)

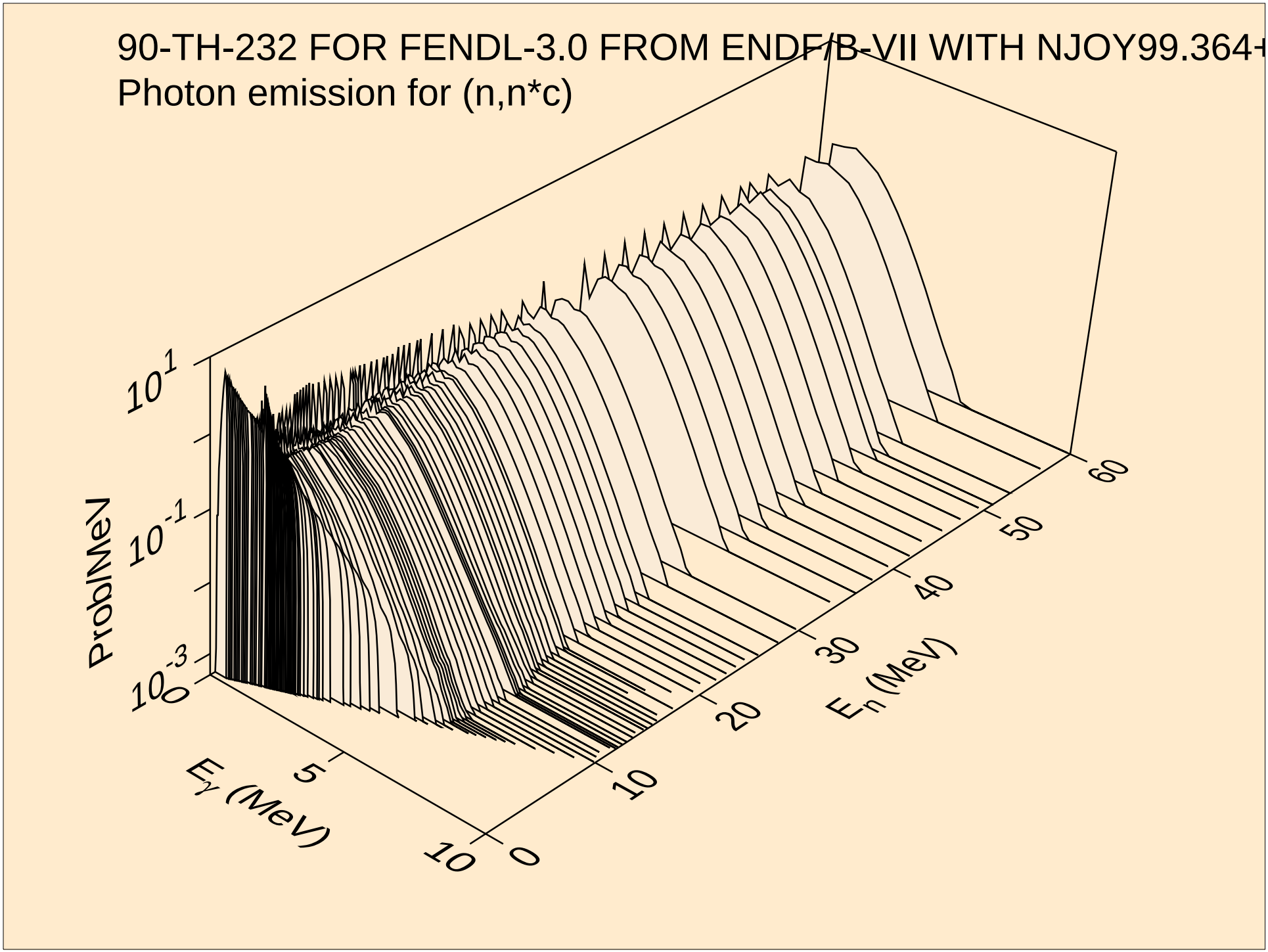

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
Photon emission for fission
Prob/MeV
10-1
10-3
0
Eγ (MeV)
10
20
0
10
20
30
40
50
60
En (MeV)

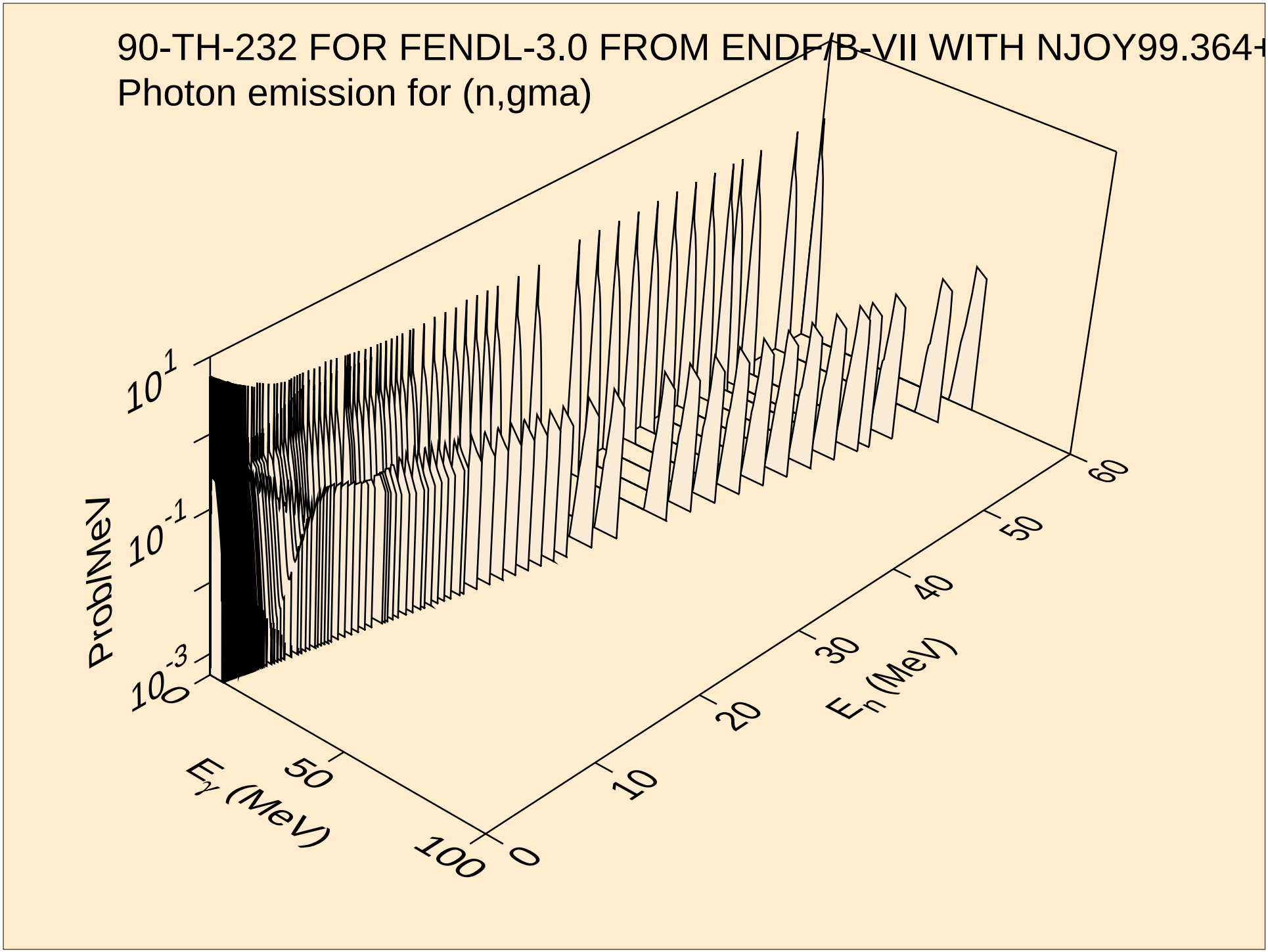

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
Photon emission for (n,n*)a
Prob/MeV
10^{1}
10^{-1}
0
E_γ (MeV)
5
10
0
10
20
30
40
50
60
E_n (MeV)

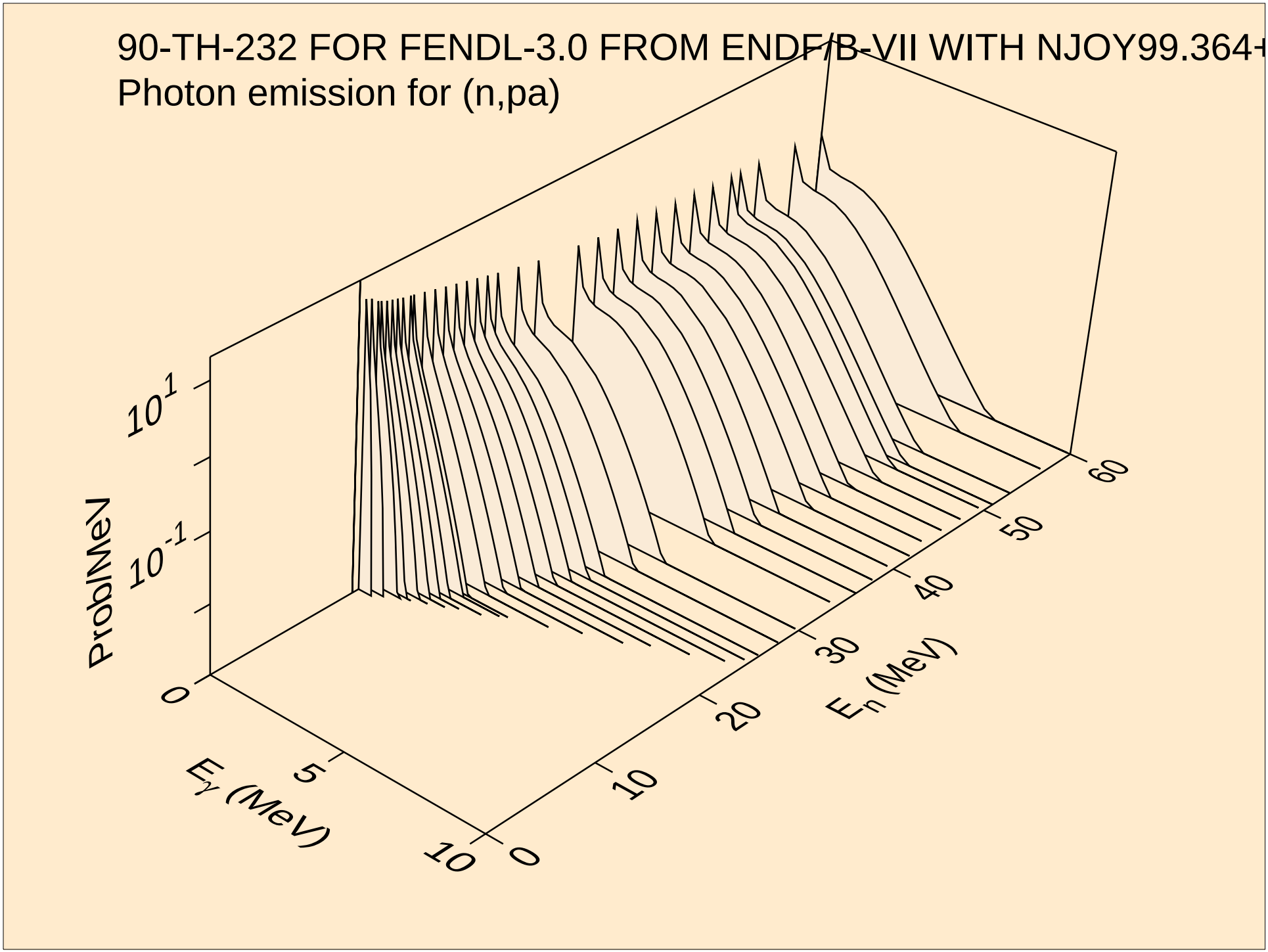

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
Photon emission for (n,2n)a
Prob/MeV
10^1
10^-1
0
5
10
E_γ (MeV)
0
10
20
30
40
50
60
E_n (MeV)

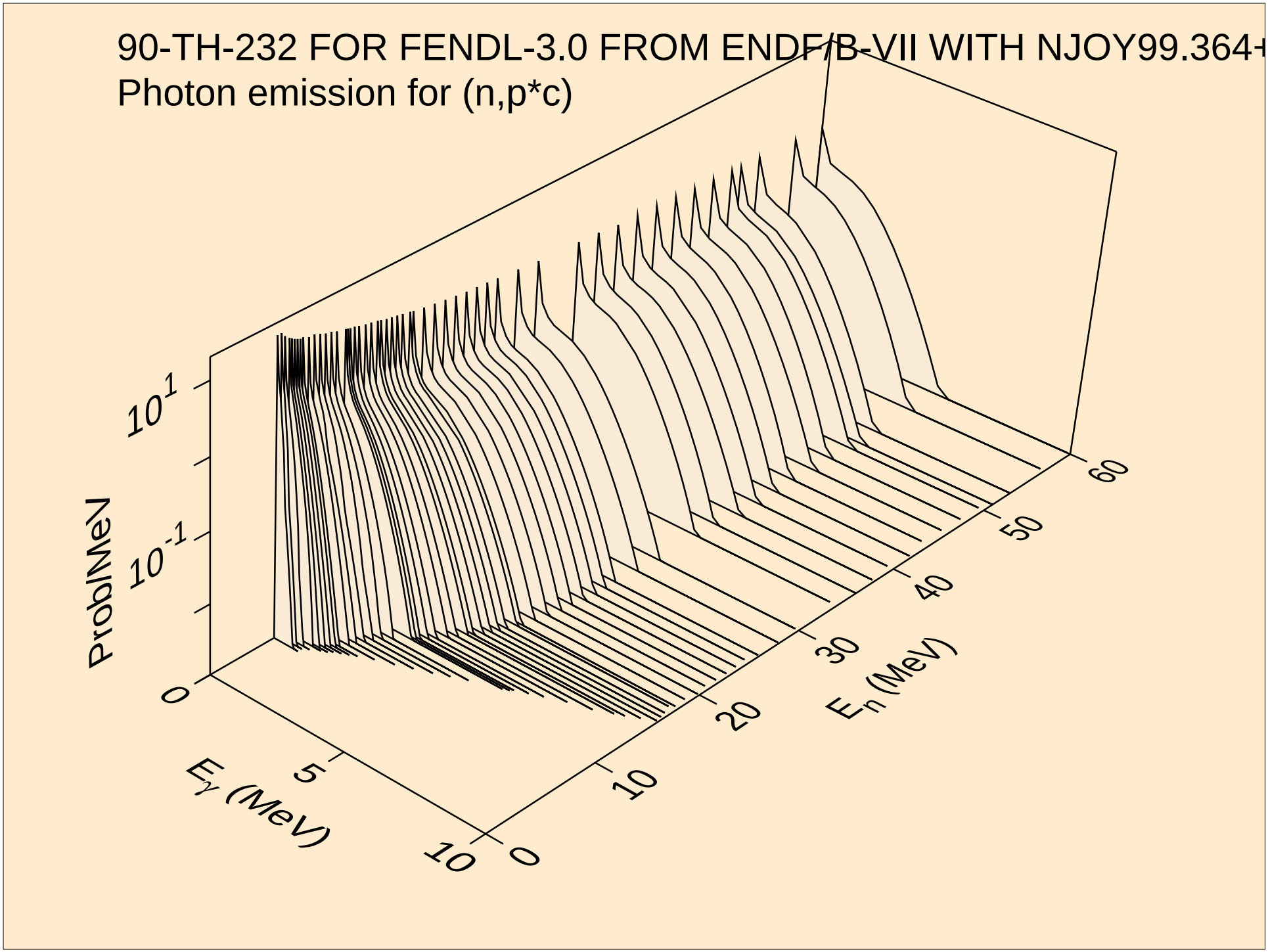

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
Photon emission for (n,n*)p
Prob/MeV
10^{1}
10^{-1}
0
E_γ (MeV)
5
10
0
10
20
30
40
50
60
E_n (MeV)

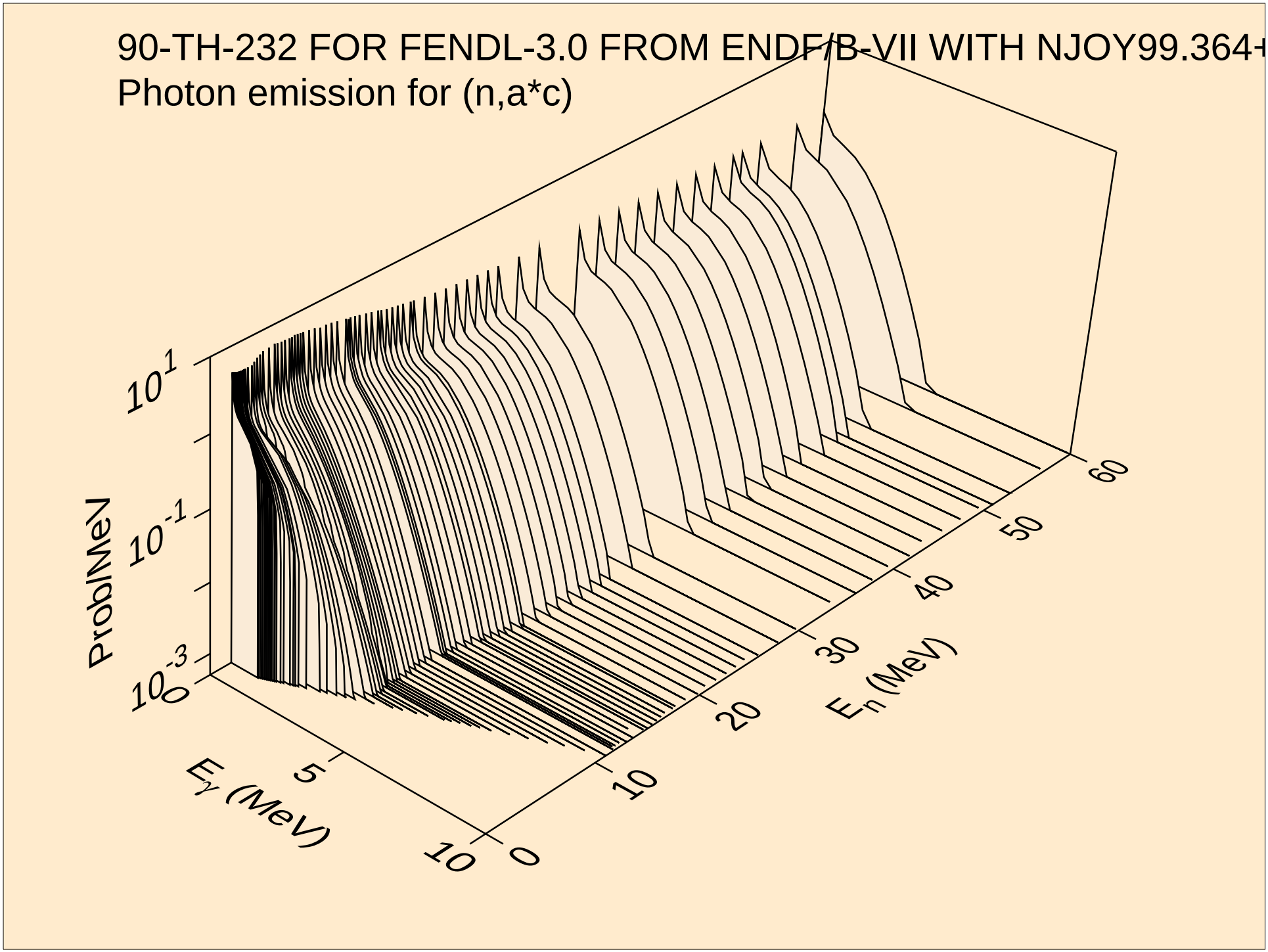

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
Photon emission for (n,2np)
Prob/MeV
10^{1}
10^{-1}
10^{-3}
0
5
10
E_γ (MeV)
10
20
30
40
50
60
E_n (MeV)

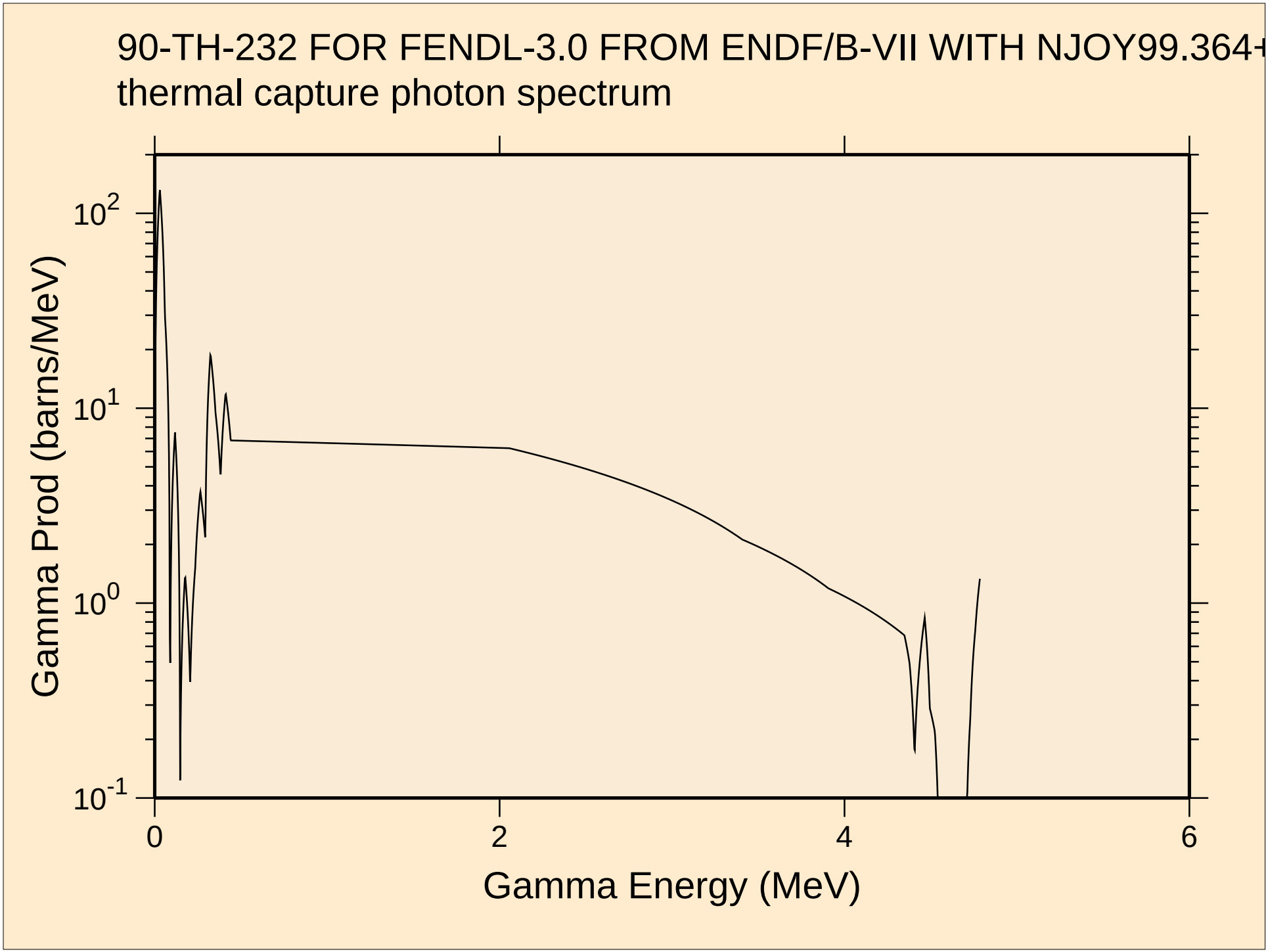

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
Photon emission for (n,n*c)
Prob/MeV
10^{1}
10^{-1}
10^{-3}
0
5
10
E_γ (MeV)
0
10
20
30
40
50
60
E_n (MeV)

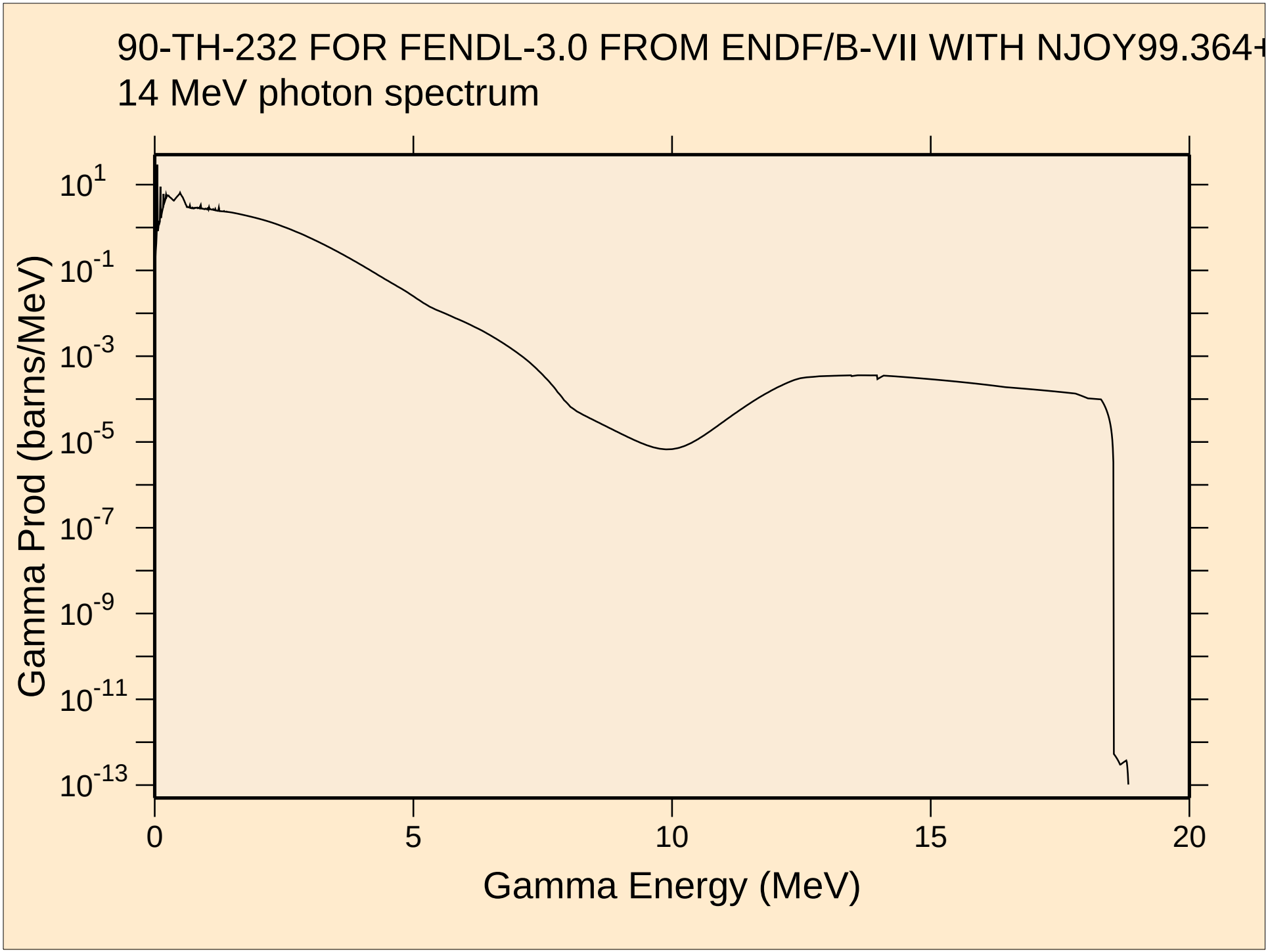

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
Photon emission for (n,gma)
Prob/MeV
10^{1}
10^{-1}
10^{-3}
0
50
100
E_γ (MeV)
0
10
20
30
40
50
60
E_n (MeV)

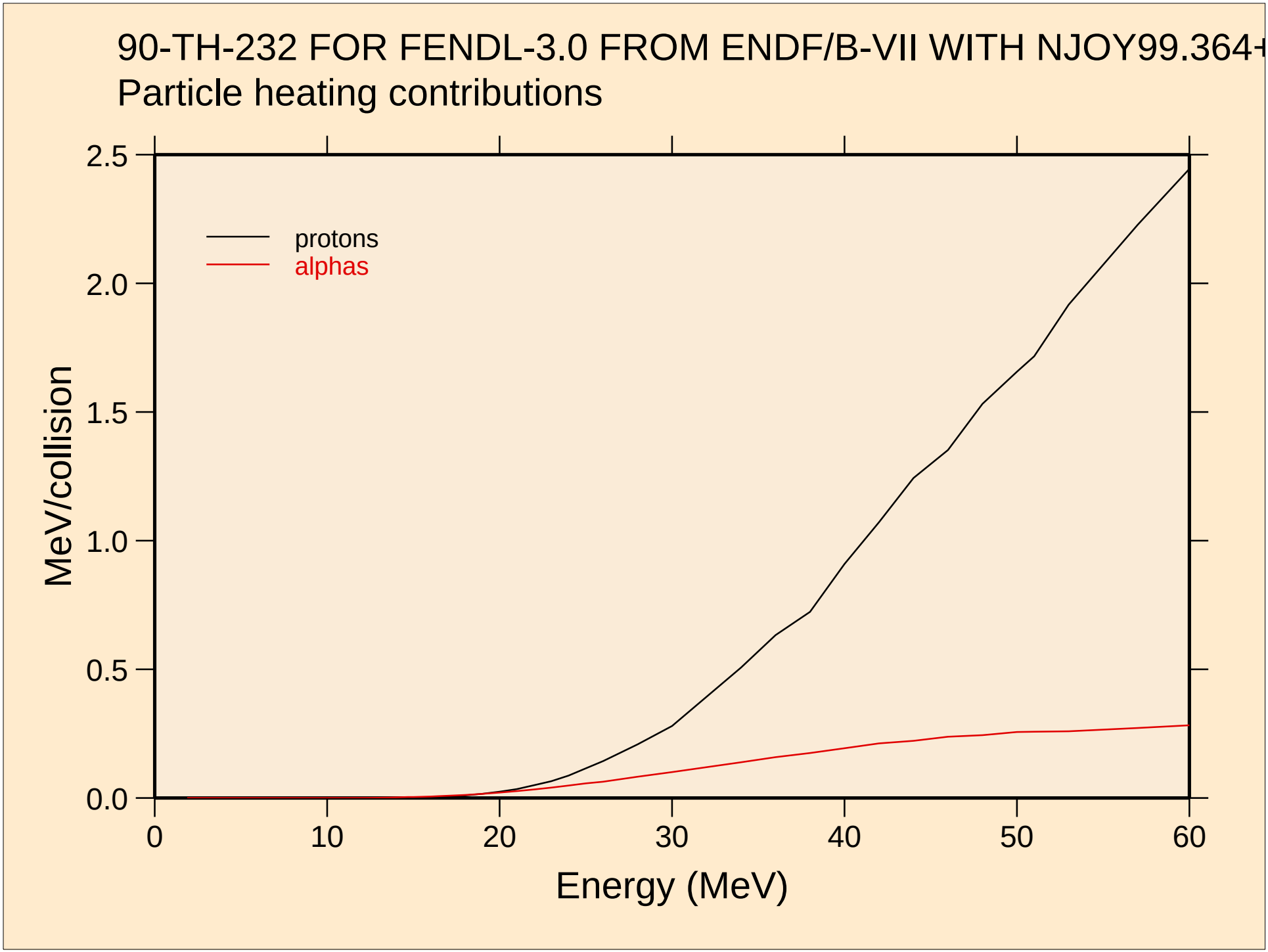

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
Photon emission for (n,pa)
Prob/MeV
10^{1}
10^{-1}
0
5
10
E_γ (MeV)
0
10
20
30
40
50
60
E_n (MeV)

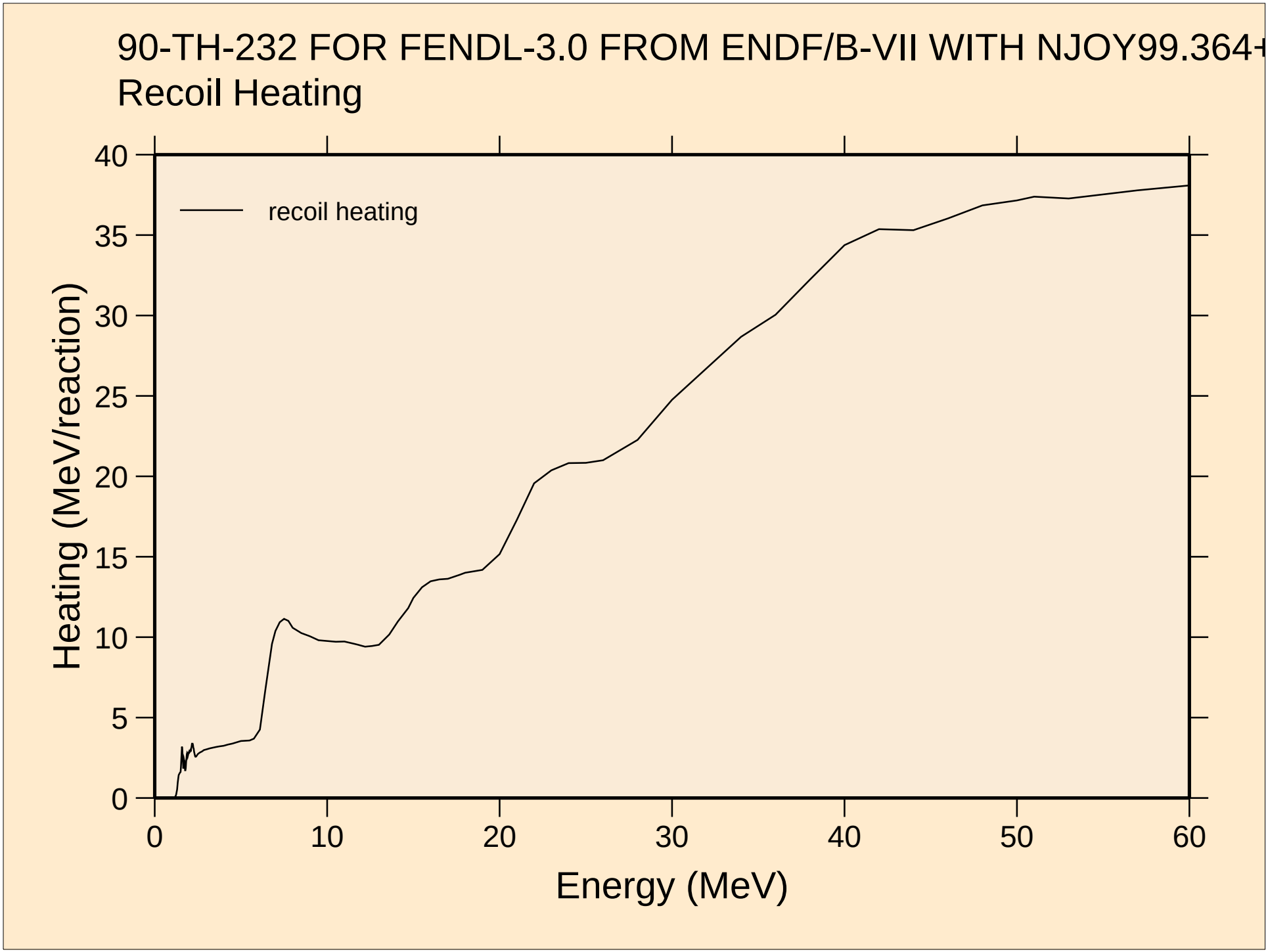

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
Photon emission for (n,p*c)
Prob/MeV
10^{1}
10^{-1}
0
5
10
E_γ (MeV)
0
10
20
30
40
50
60
E_n (MeV)

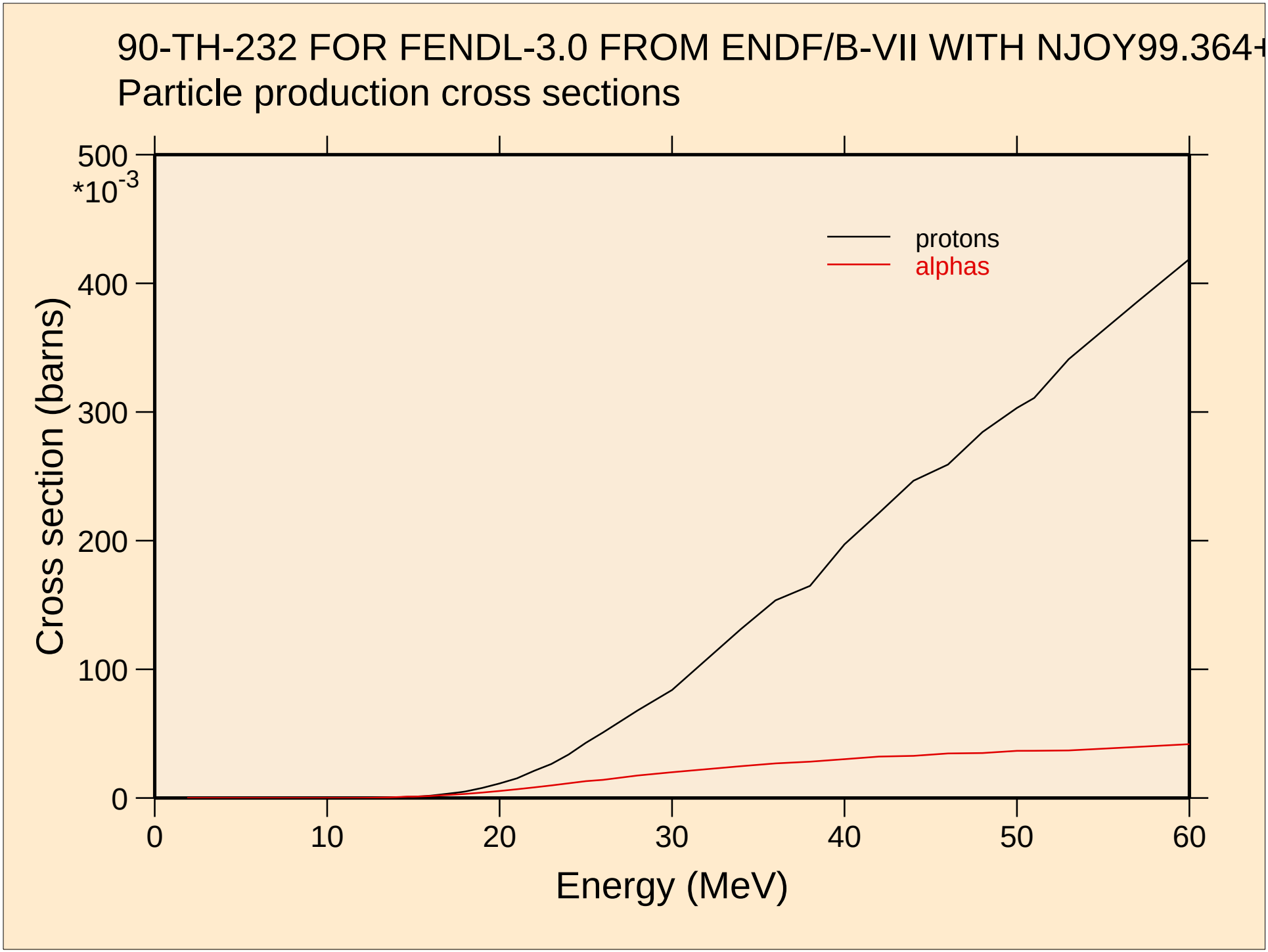

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
Photon emission for (n,a*c)
Prob/MeV
10^{1}
10^{-1}
10^{-3}
E_γ (MeV)
0
5
10
E_n (MeV)
0
10
20
30
40
50
60

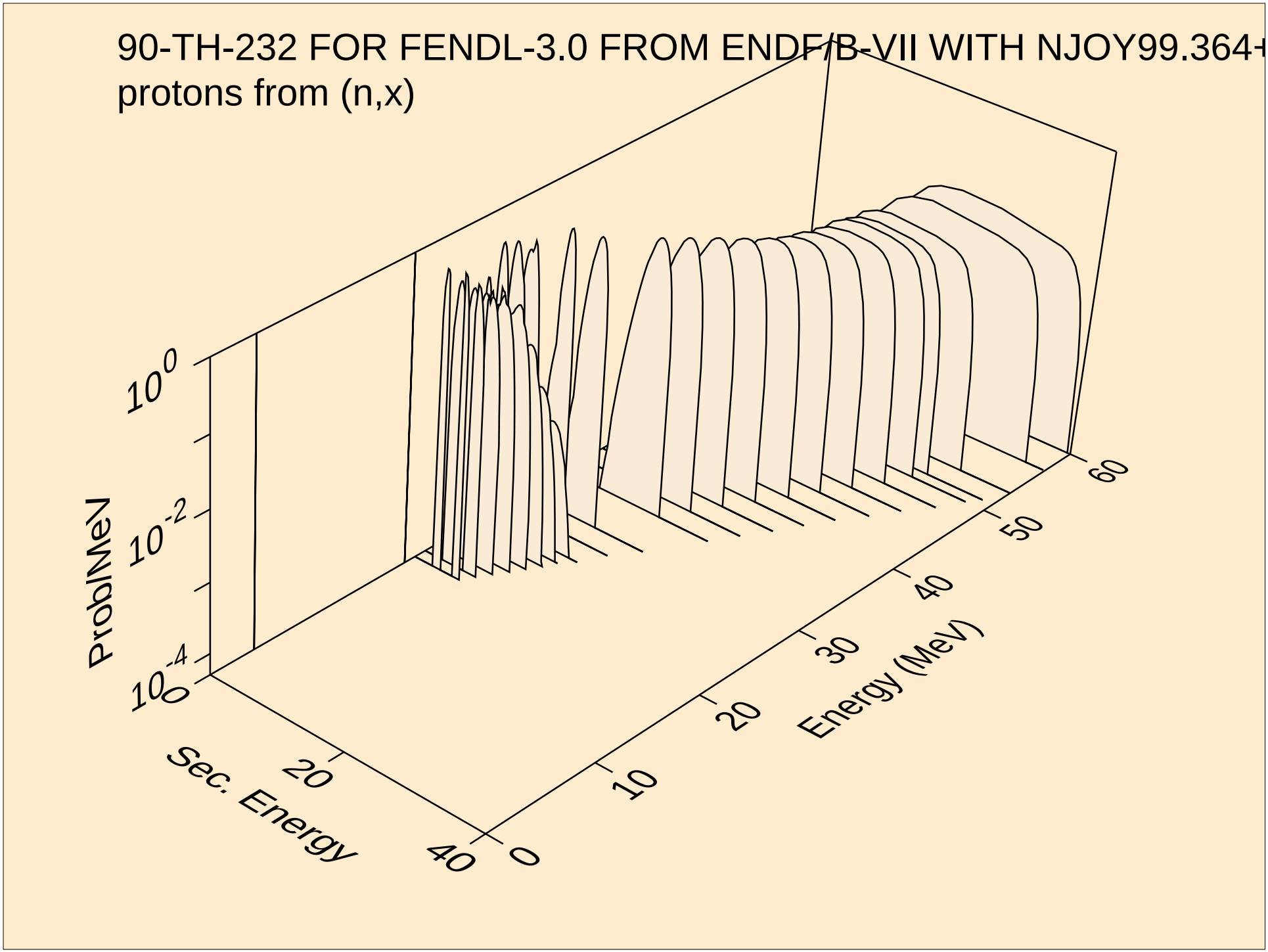

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
thermal capture photon spectrum
Gamma Prod (barns/MeV)
10^2
10^1
10^0
10^-1
0
2
4
6
Gamma Energy (MeV)

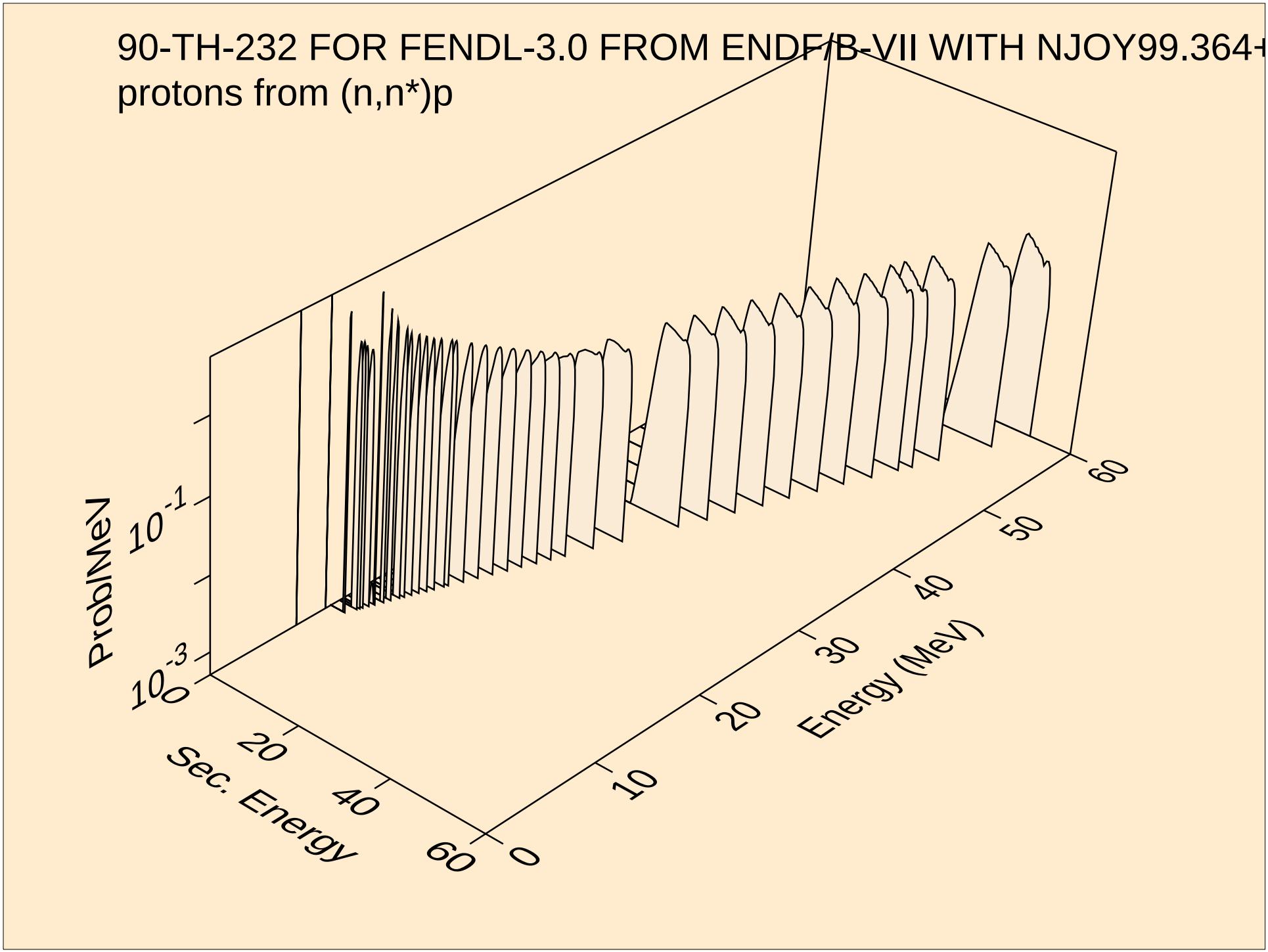

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
14 MeV photon spectrum
Gamma Prod (barns/MeV)
10^1
10^-1
10^-3
10^-5
10^-7
10^-9
10^-11
10^-13
0
5
10
15
20
Gamma Energy (MeV)

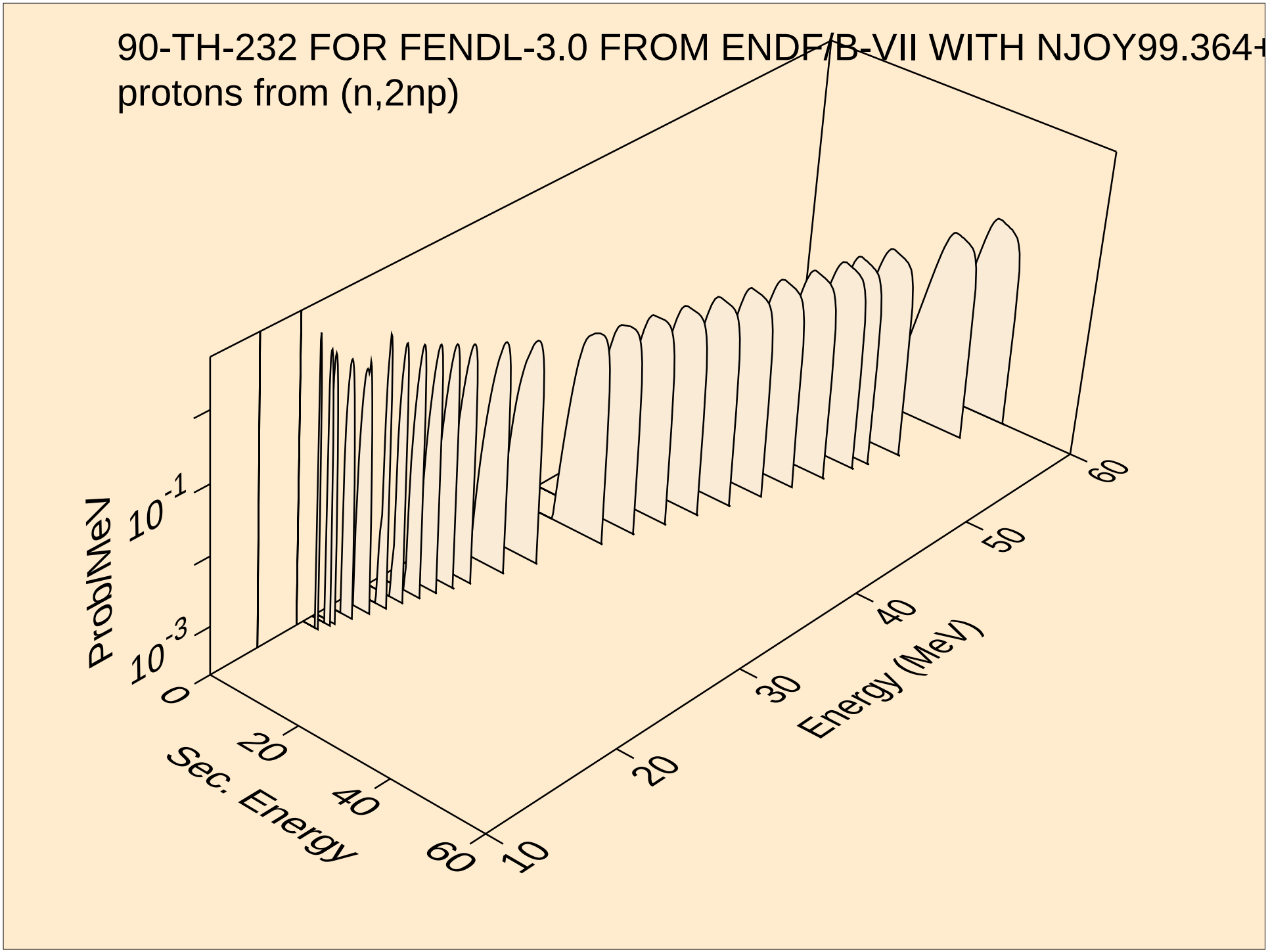

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
Particle heating contributions
protons
alphas
MeV/collision
Energy (MeV)
0.0
0.5
1.0
1.5
2.0
2.5
0
10
20
30
40
50
60

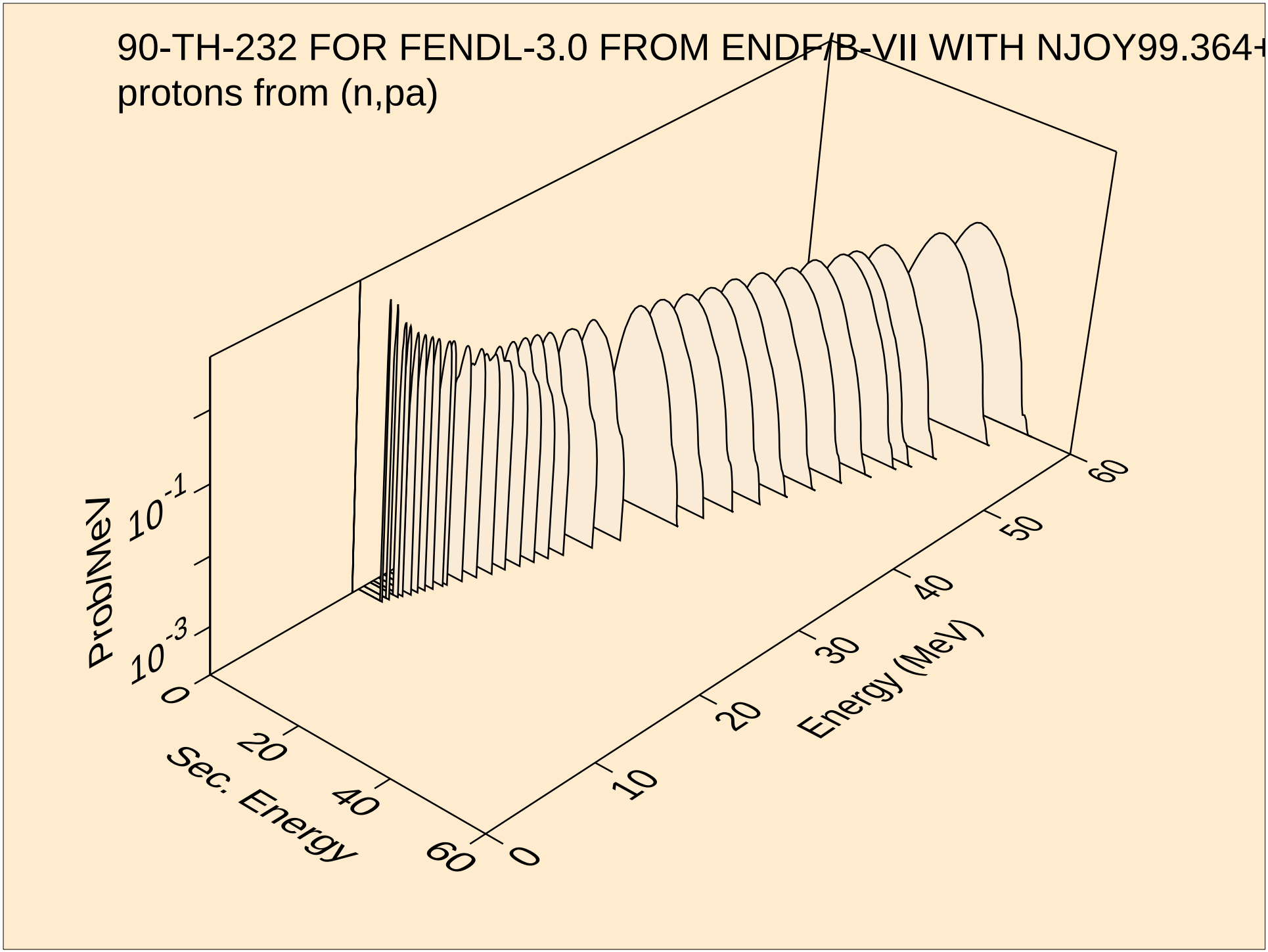

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
Recoil Heating
recoil heating
Heating (MeV/reaction)
Energy (MeV)
0
5
10
15
20
25
30
35
40
0
10
20
30
40
50
60

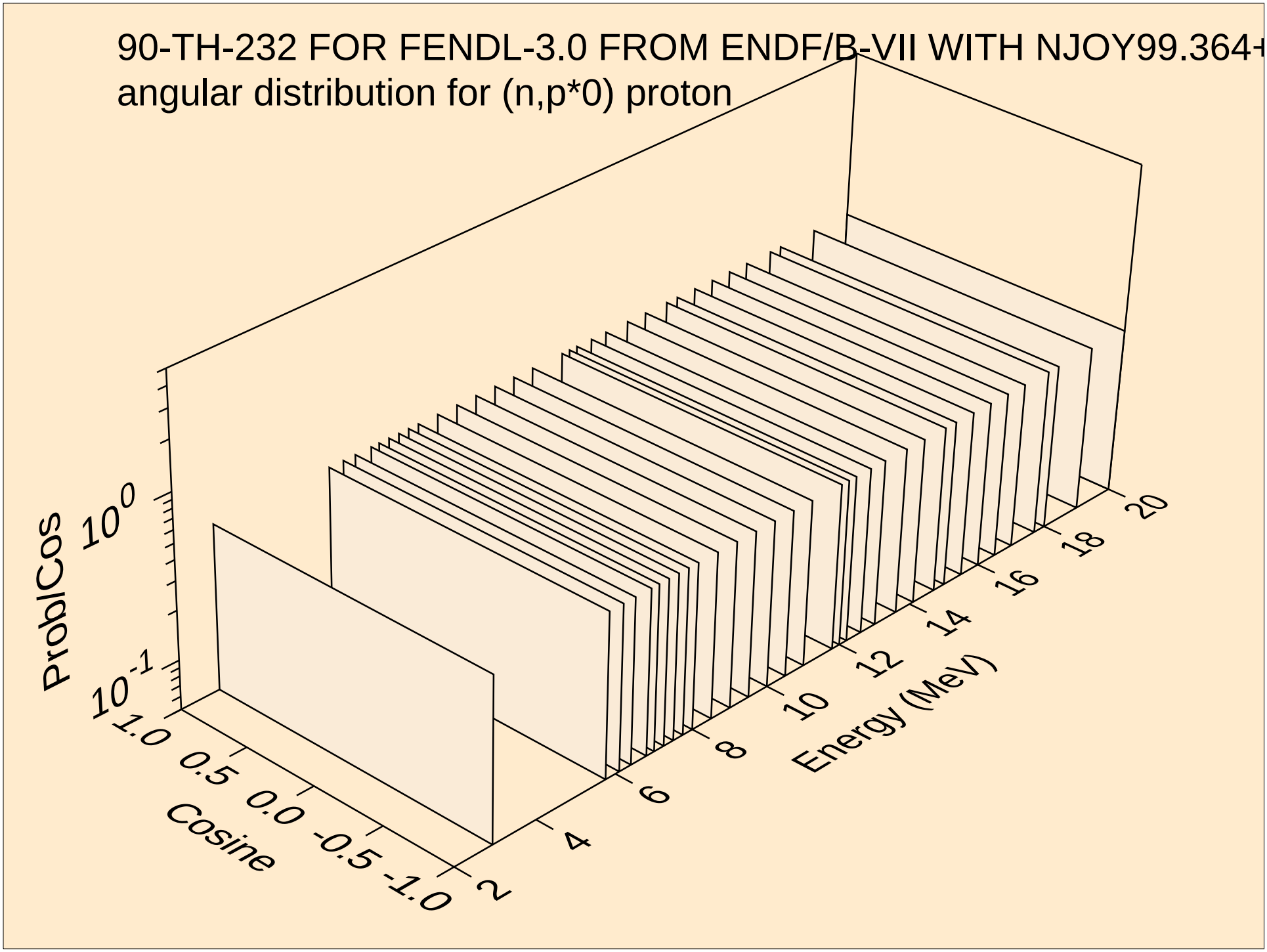

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
Particle production cross sections
500
*10-3
400
300
200
100
0
Cross section (barns)
protons
alphas
0
10
20
30
40
50
60
Energy (MeV)

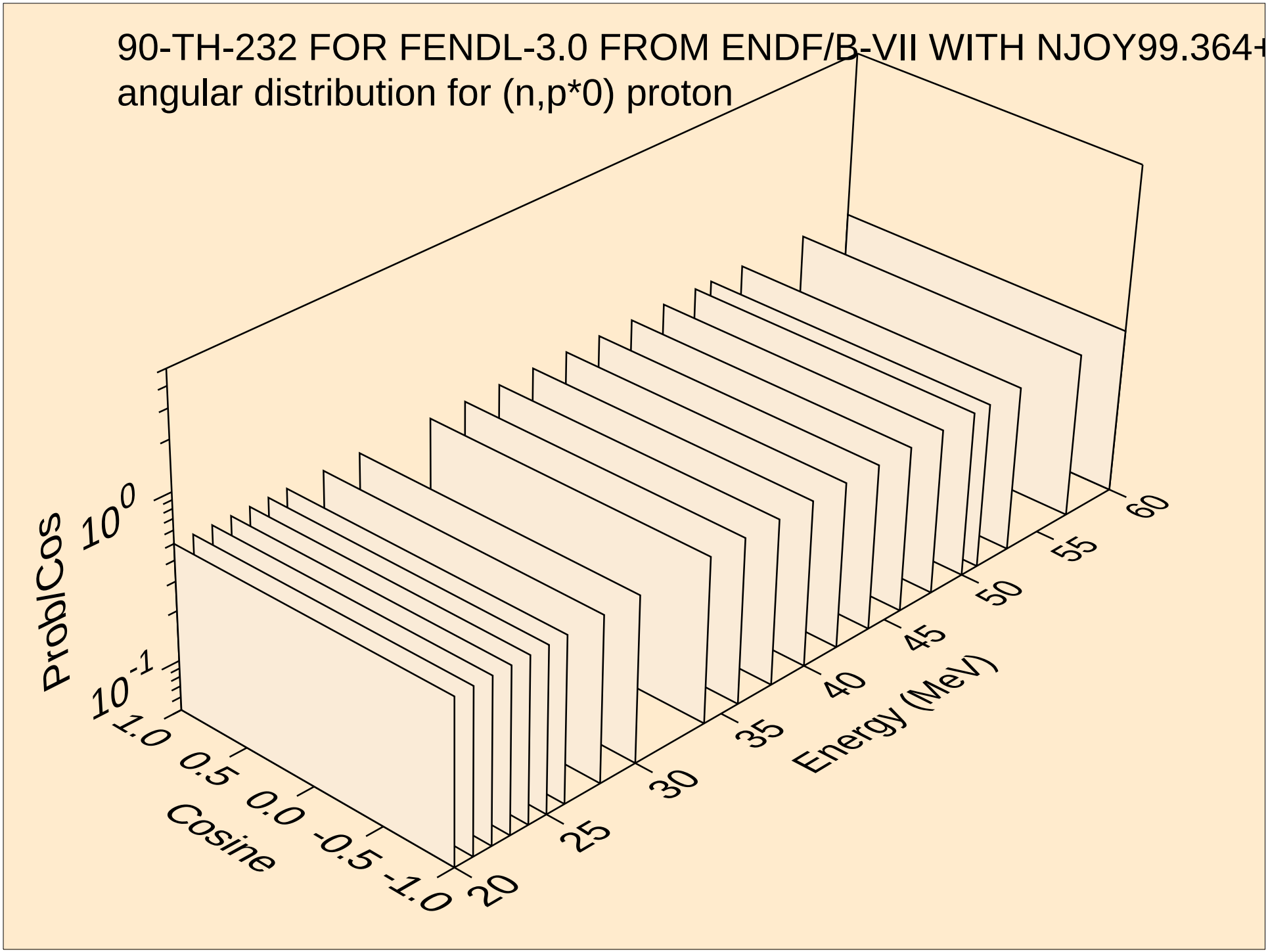

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
protons from (n,x)
Prob/MeV
10^0
10^-2
10^-4
0
20
40
Sec. Energy
0
10
20
30
40
50
60
Energy (MeV)

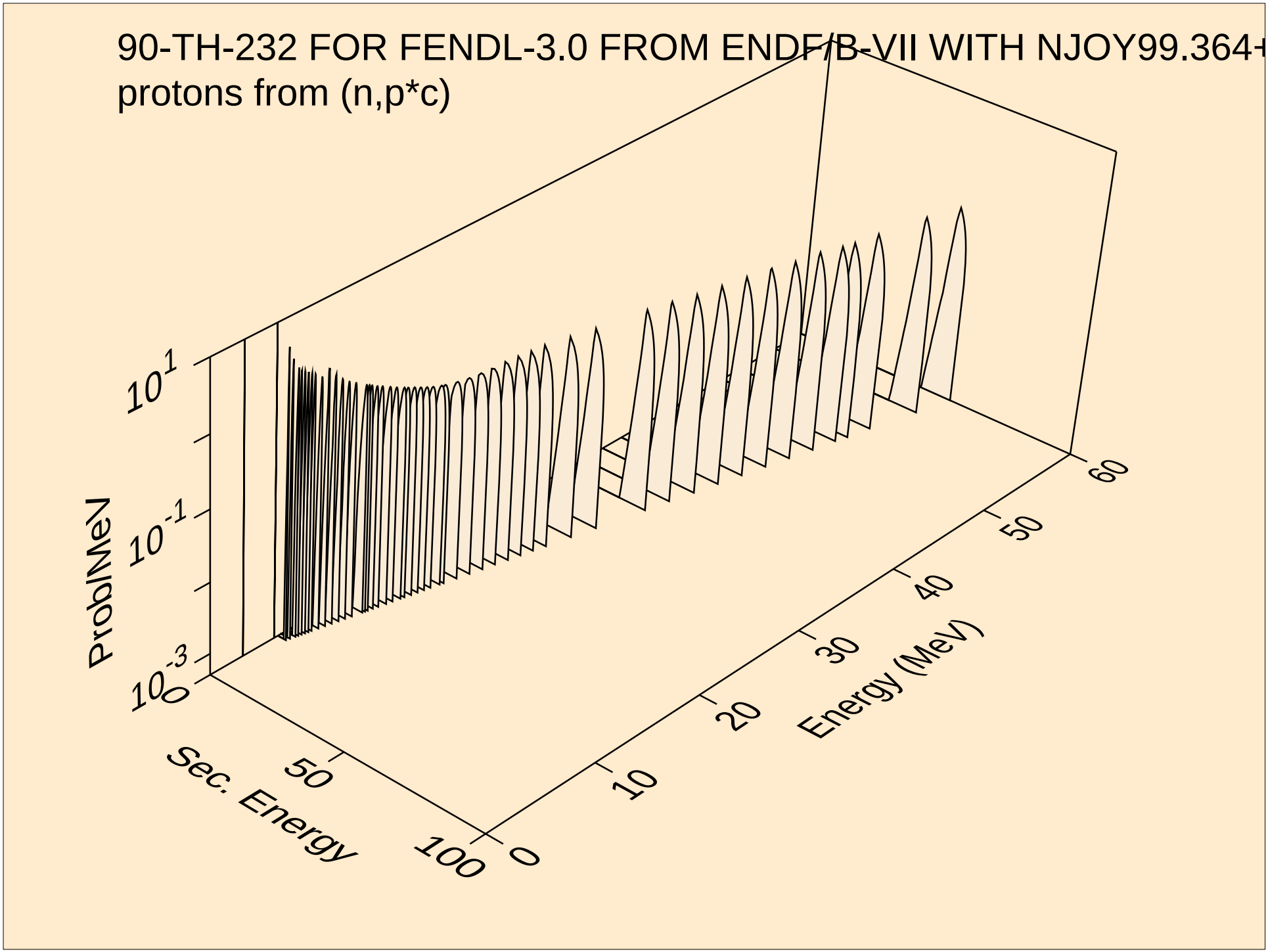

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
protons from (n,n*)p
Prob/MeV
10-1
10-3
0
20
40
60
Sec. Energy
0
10
20
30
40
50
60
Energy (MeV)

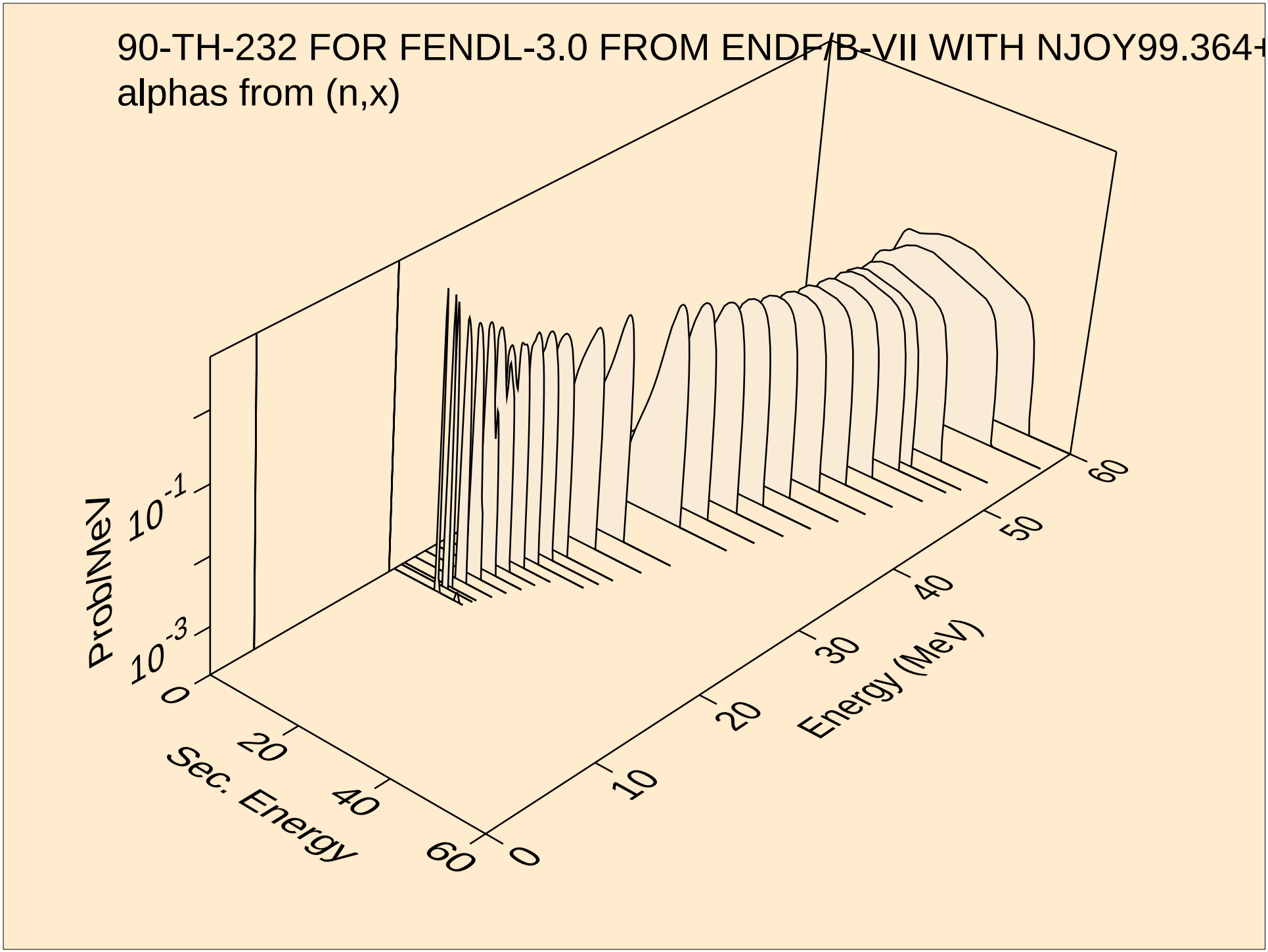

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
protons from (n,2np)
Prob/MeV
10-1
10-3
0
20
40
60
Sec. Energy
10
20
30
40
50
60
Energy (MeV)

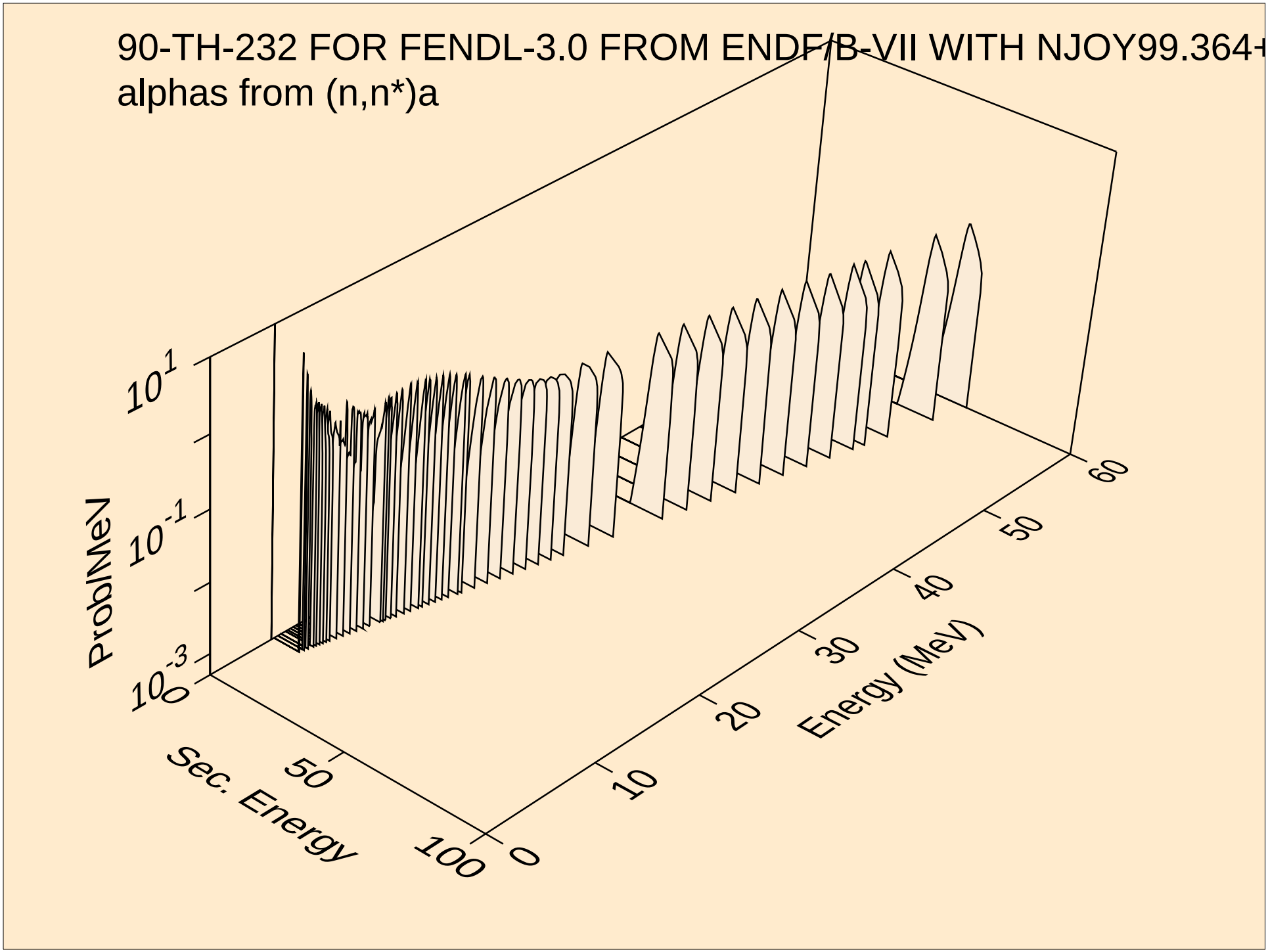

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
protons from (n,pa)
Prob/MeV
10-1
10-3
0
20
40
60
Sec. Energy
0
10
20
30
40
50
60
Energy (MeV)

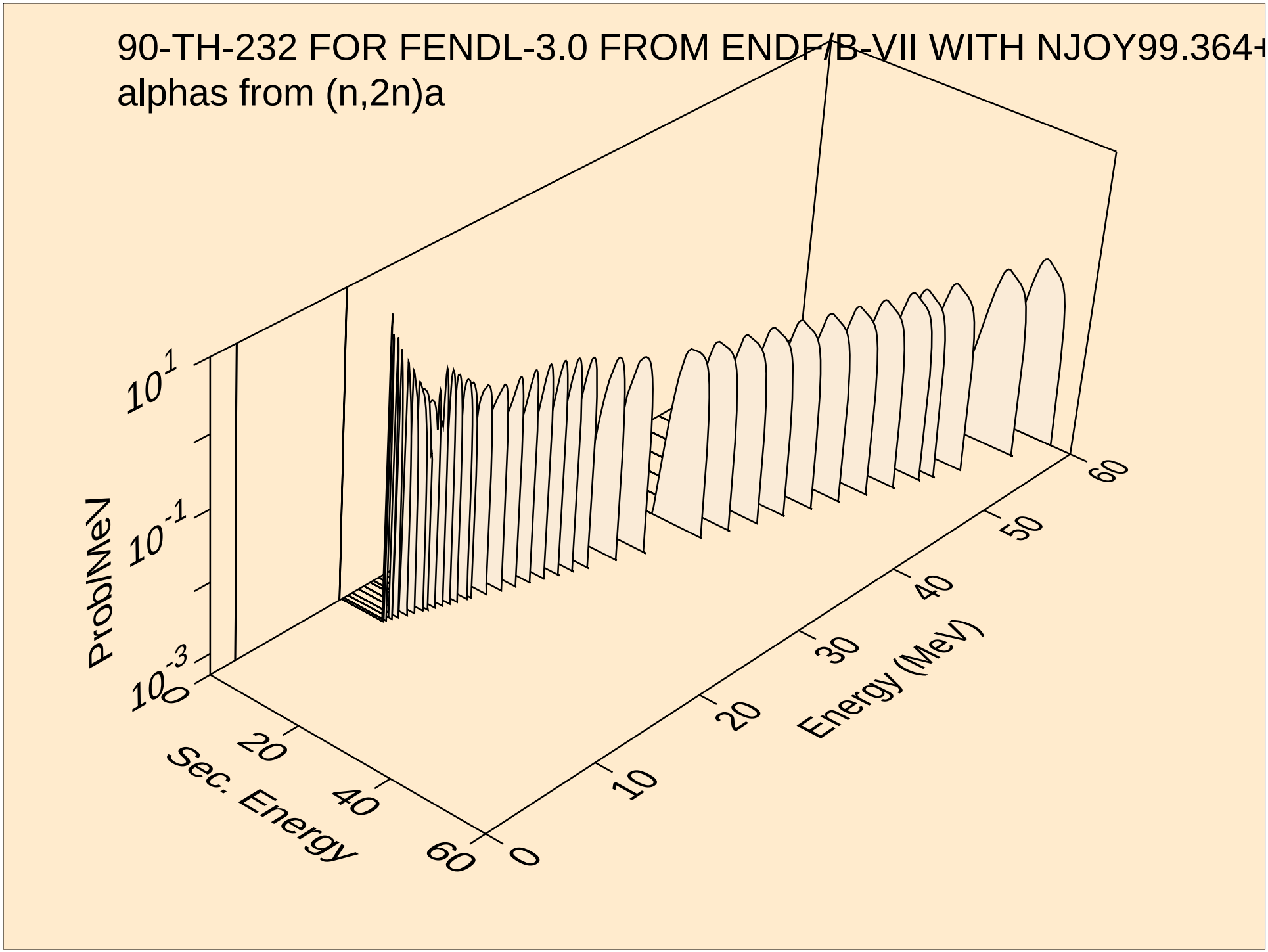

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
angular distribution for (n,p*0) proton
Prob\Cos
10^0
10^-1
1.0
0.5
0.0
-0.5
-1.0
Cosine
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

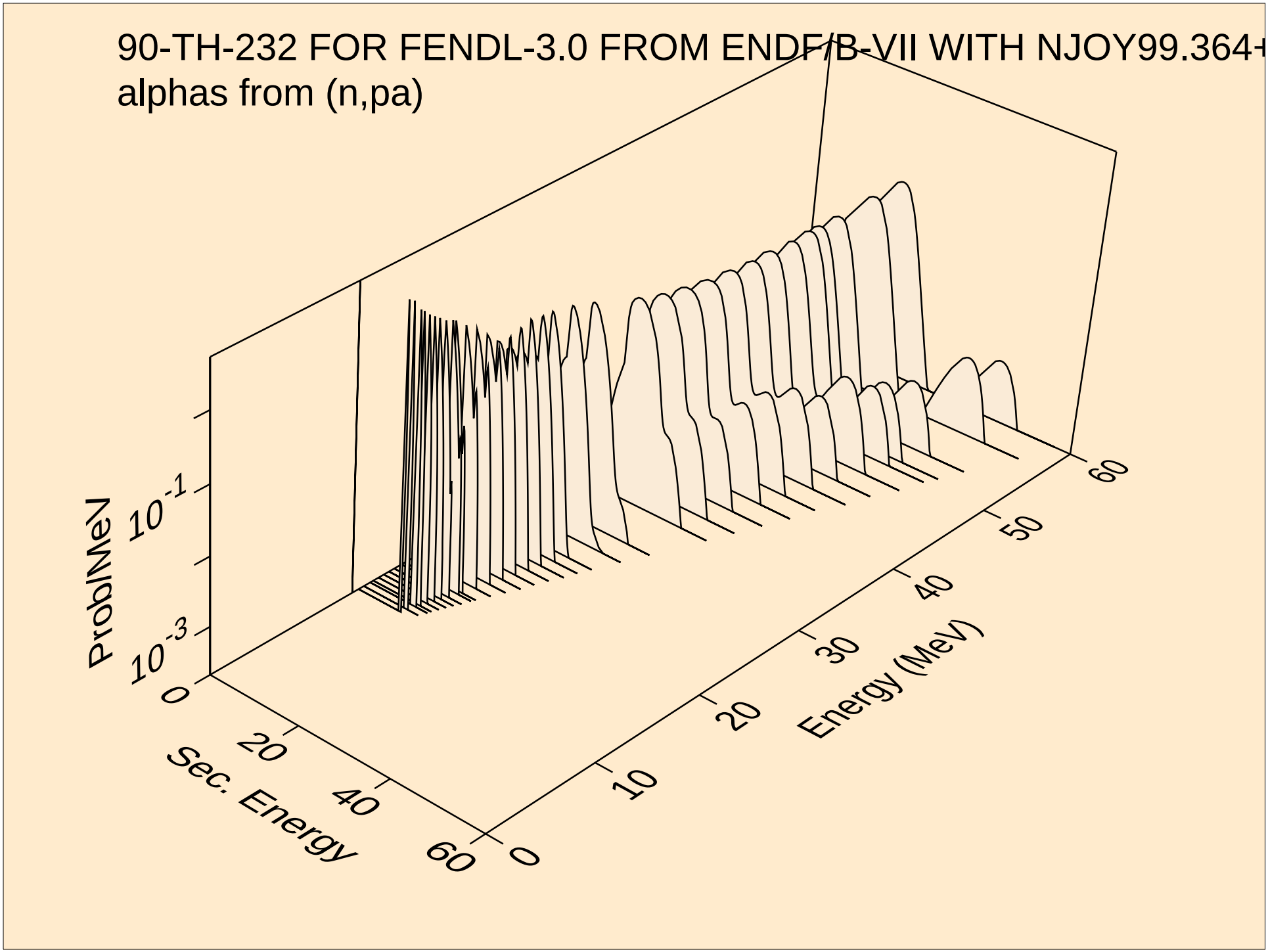

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
angular distribution for (n,p*0) proton
ProbICos
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
20
25
30
35
40
45
50
55
60
Energy (MeV)

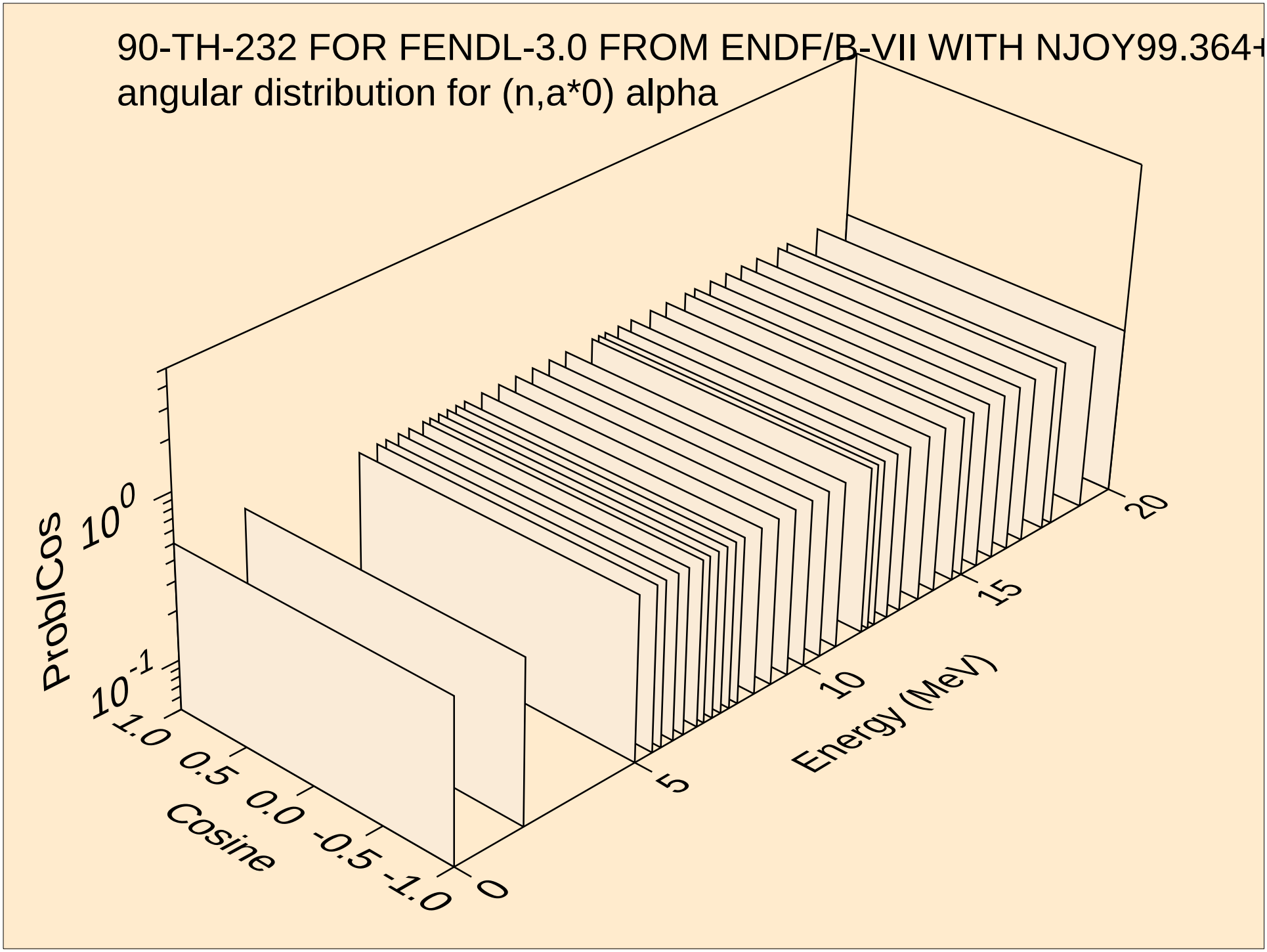

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
protons from (n,p*c)
Prob/MeV
10^1
10^-1
10^-3
0
50
100
Sec. Energy
0
10
20
30
40
50
60
Energy (MeV)

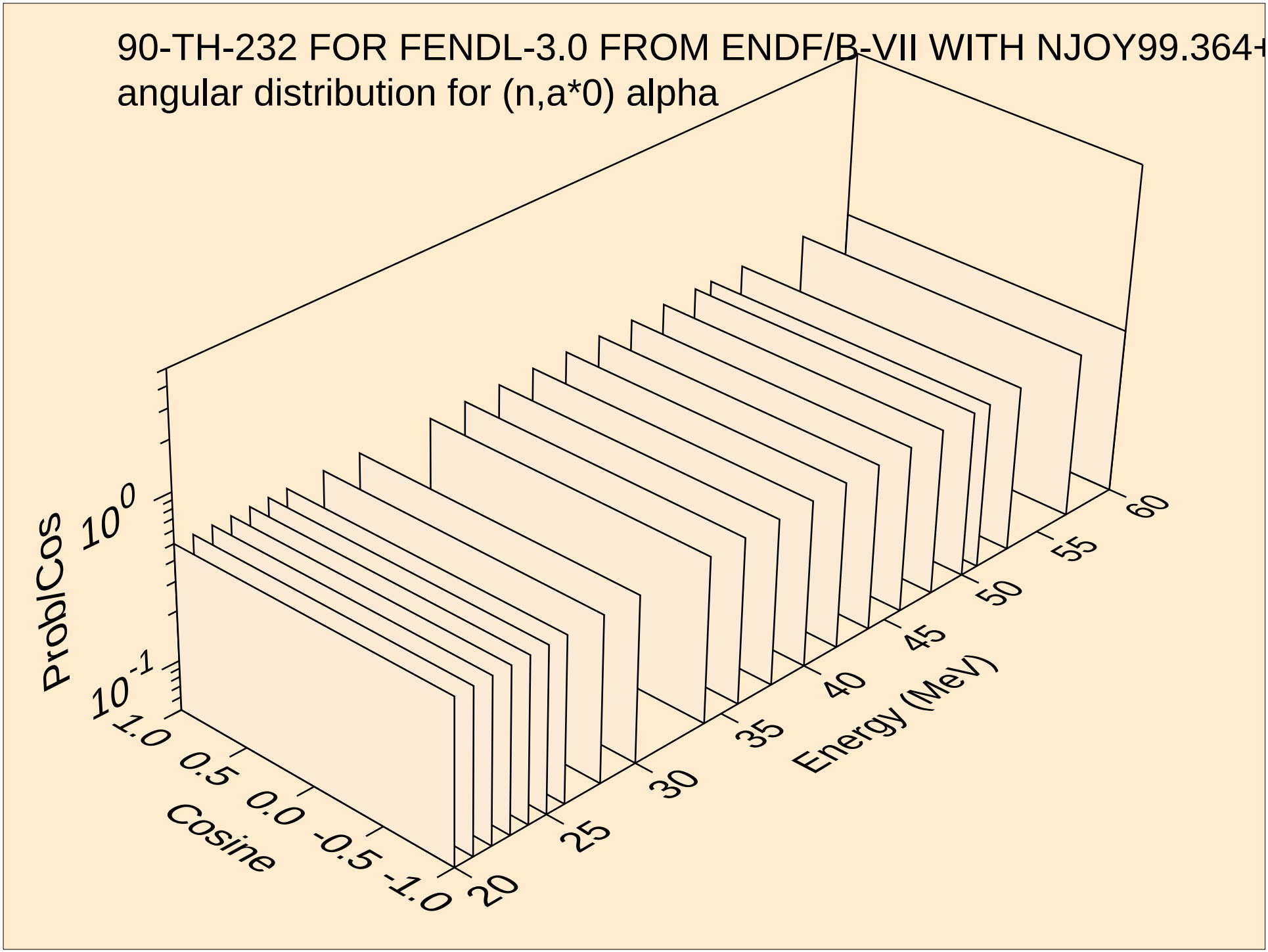

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
alphas from (n,x)
Prob/MeV
10-1
10-3
0
20
40
60
Sec. Energy
0
10
20
30
40
50
60
Energy (MeV)

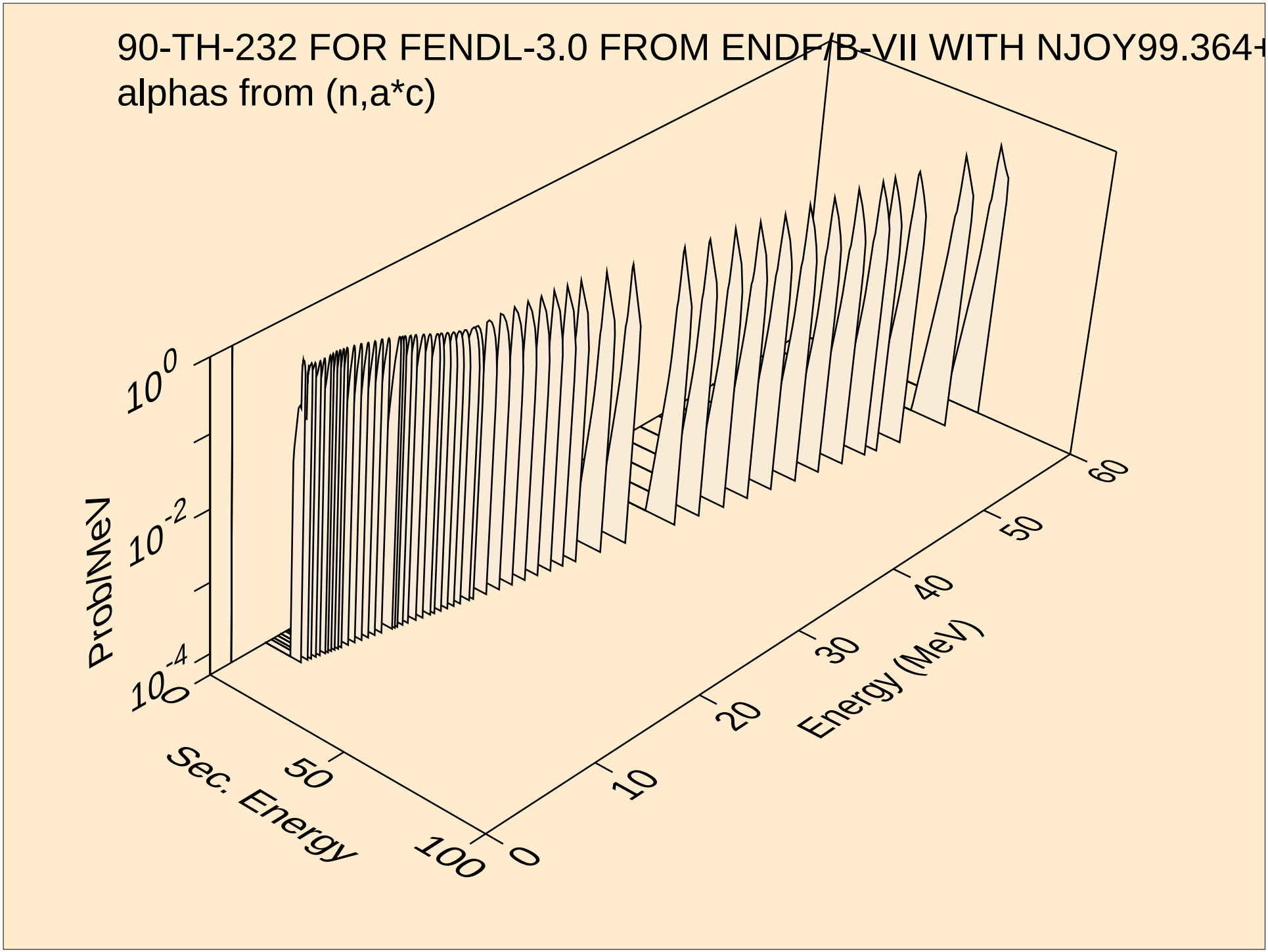

90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
alphas from (n,n*)a
Prob/MeV
10^1
10^-1
10^-3
0
50
100
Sec. Energy
0
10
20
30
40
50
60
Energy (MeV)


90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
alphas from (n,2n)a
Prob/MeV
10^1
10^-1
10^-3
0
20
40
60
Sec. Energy
0
10
20
30
40
50
60
Energy (MeV)


90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
alphas from (n,pa)
Prob/MeV
10-1
10-3
0
20
40
60
Sec. Energy
0
10
20
30
40
50
60
Energy (MeV)


90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
angular distribution for (n,a*0) alpha
ProbICos
10^0
10^-1
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
Energy (MeV)


90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
angular distribution for (n,a*0) alpha
ProbICos
10^0
10^-1
1.0
0.5
0.0
-0.5
-1.0
Cosine
20
25
30
35
40
45
50
55
60
Energy (MeV)


90-TH-232 FOR FENDL-3.0 FROM ENDF/B-VII WITH NJOY99.364+
alphas from (n,a*c)
Prob/MeV
10^0
10^-2
10^-4
0
50
100
Sec. Energy
0
10
20
30
40
50
60
Energy (MeV)