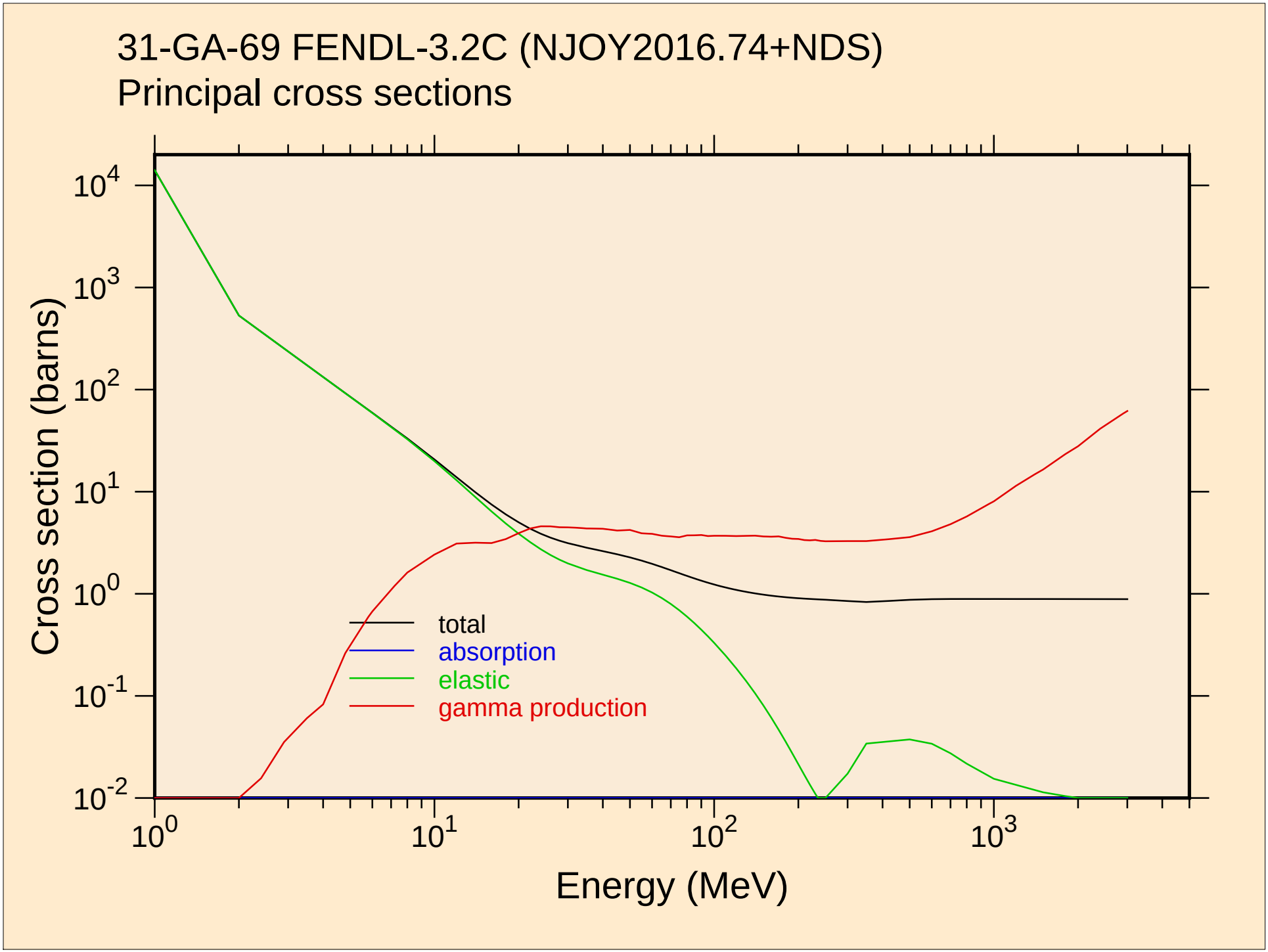
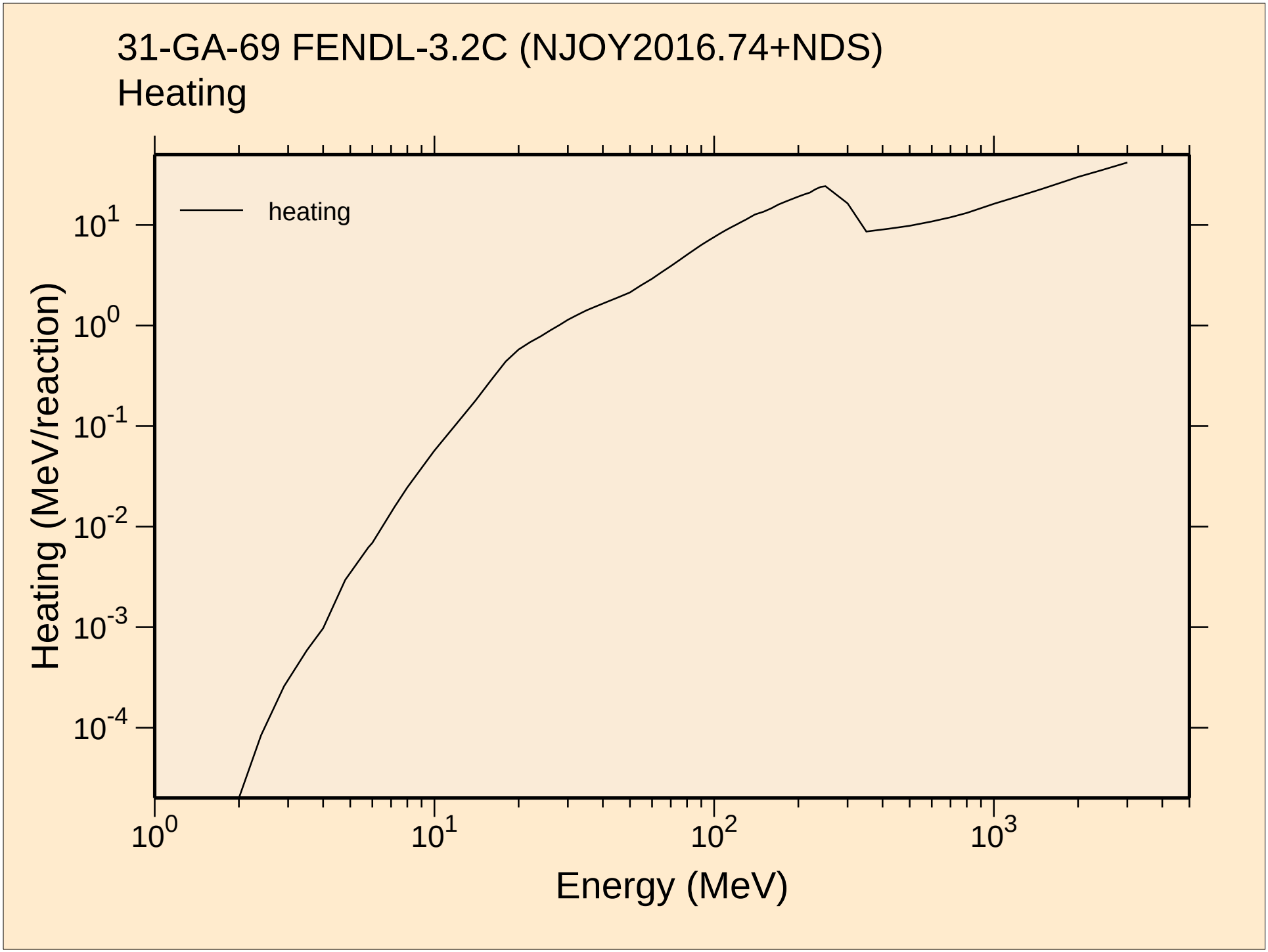
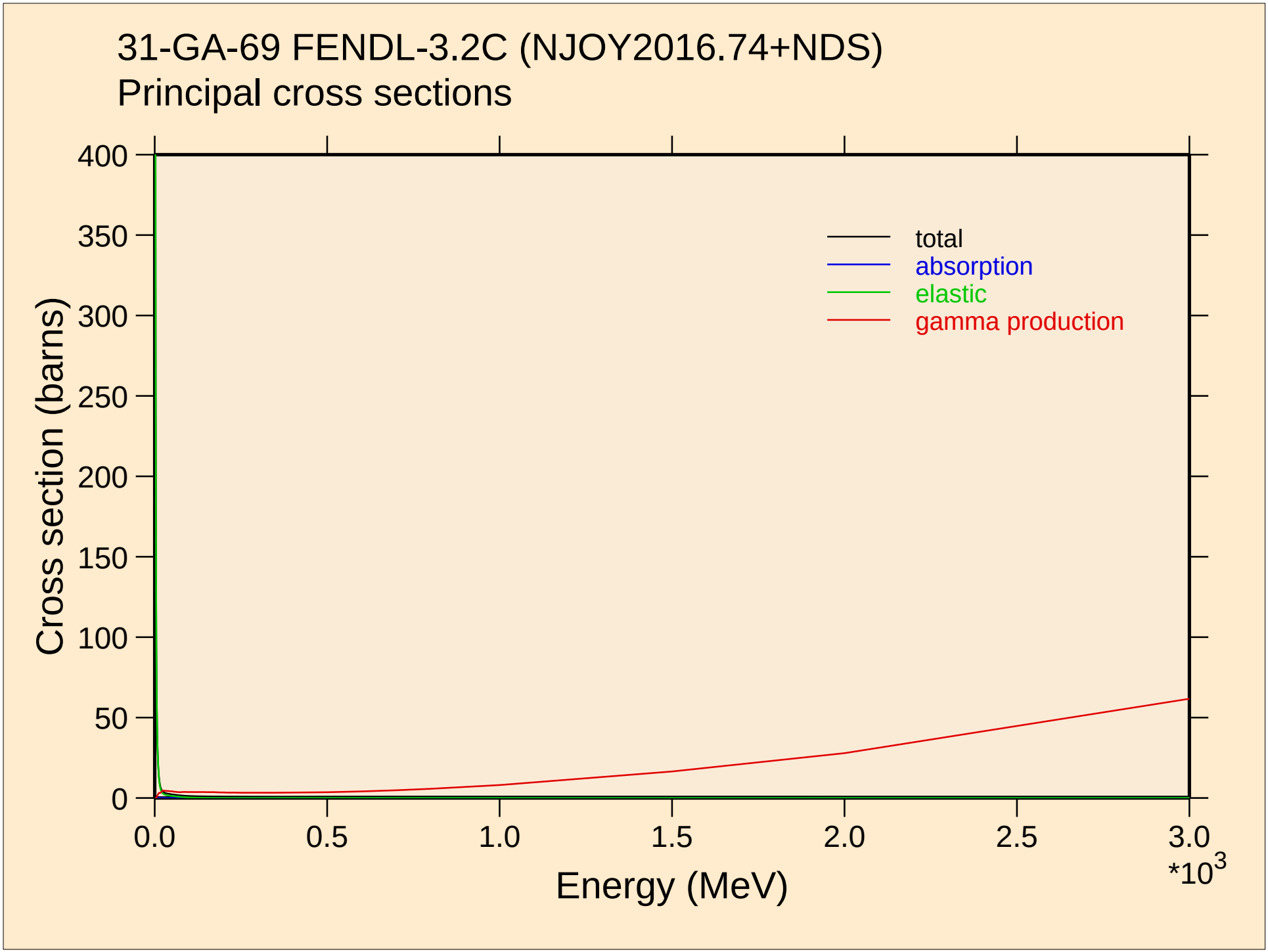
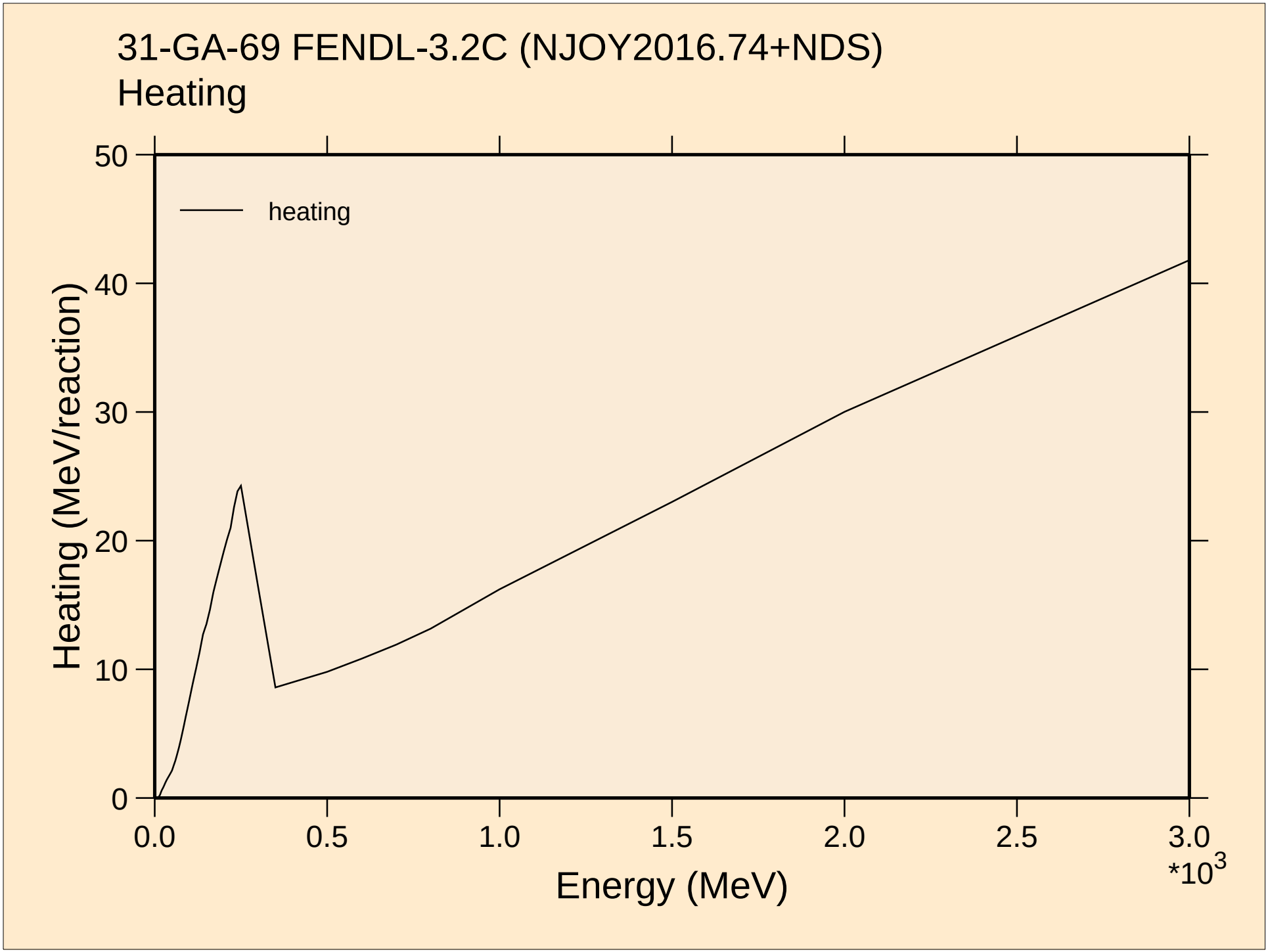
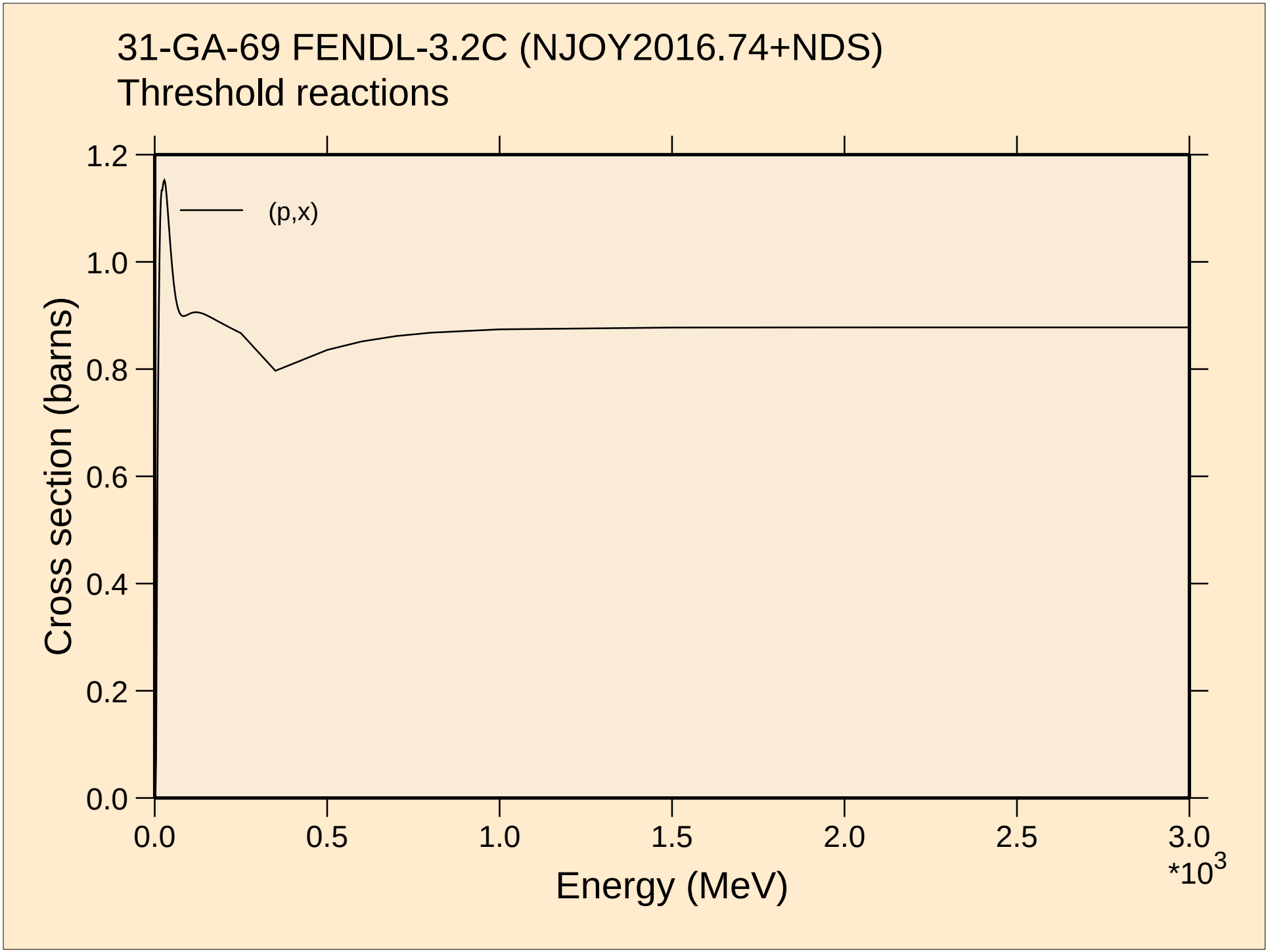
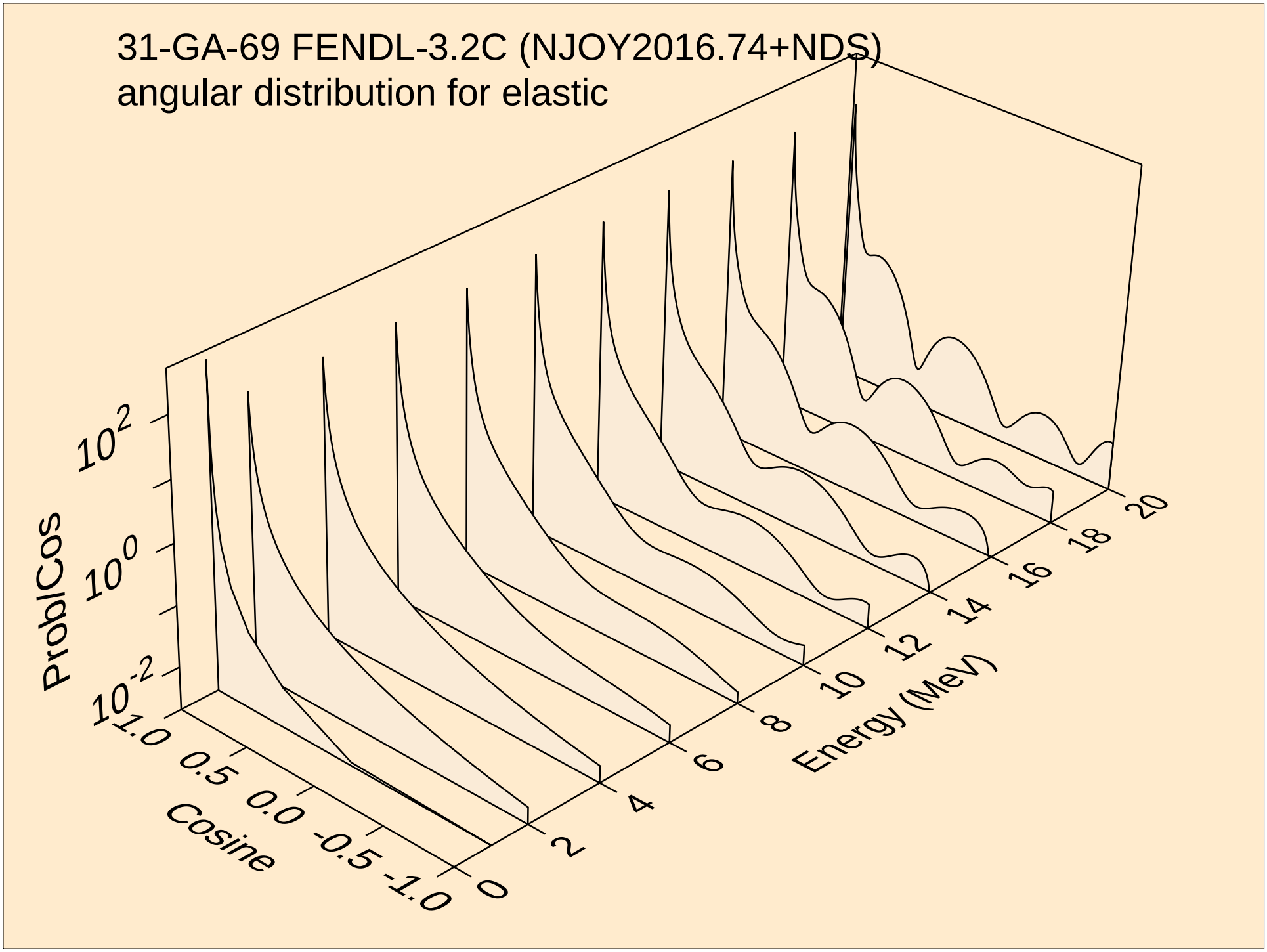

31-GA-69 FENDL-3.2C (NJOY2016.74+NDS)
Principal cross sections
Cross section (barns)
Energy (MeV)
total
absorption
elastic
gamma production

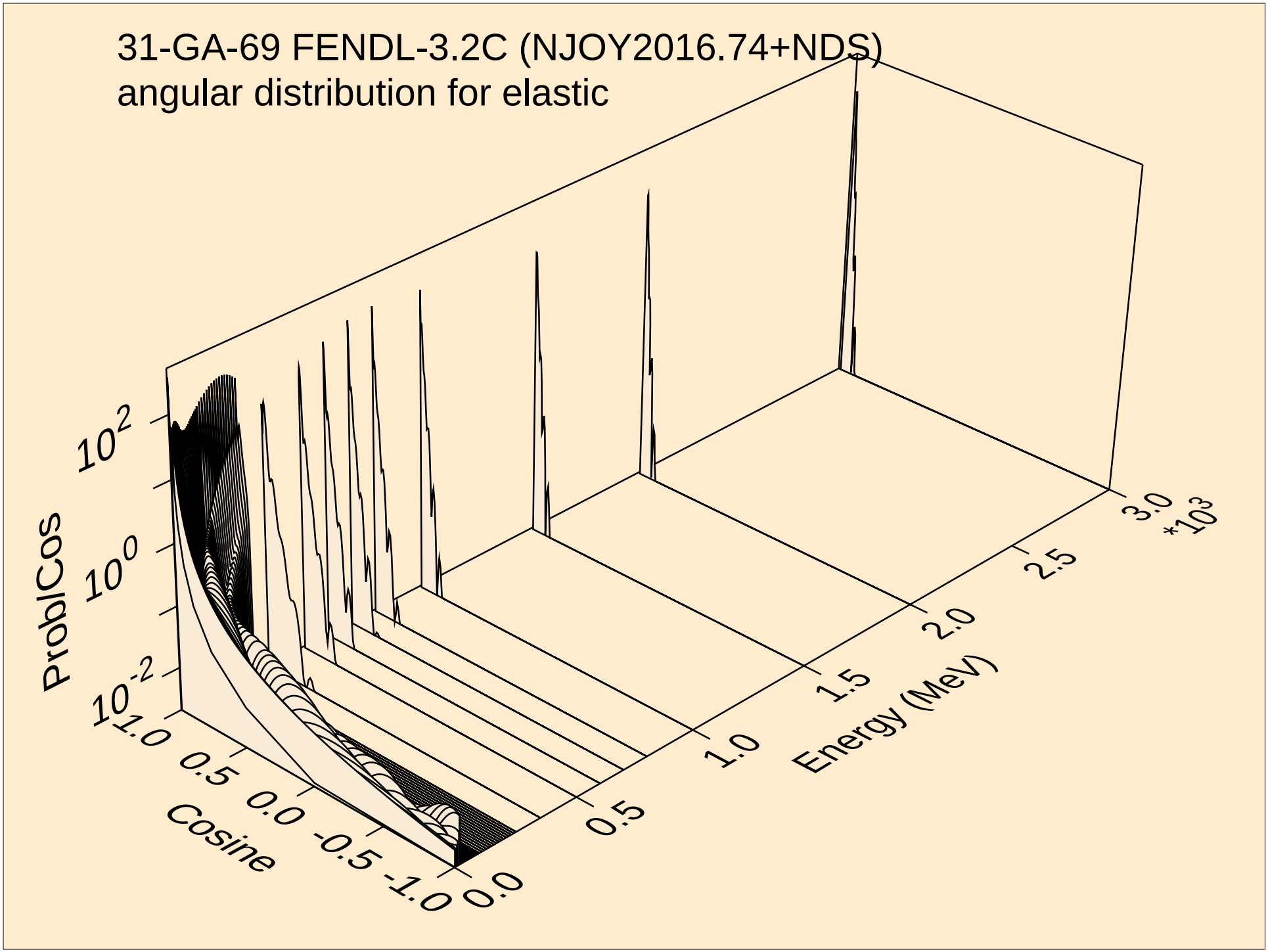

31-GA-69 FENDL-3.2C (NJOY2016.74+NDS)
Heating
heating
Heating (MeV/reaction)
Energy (MeV)
10^1
10^0
10^-1
10^-2
10^-3
10^-4
10^0
10^1
10^2
10^3

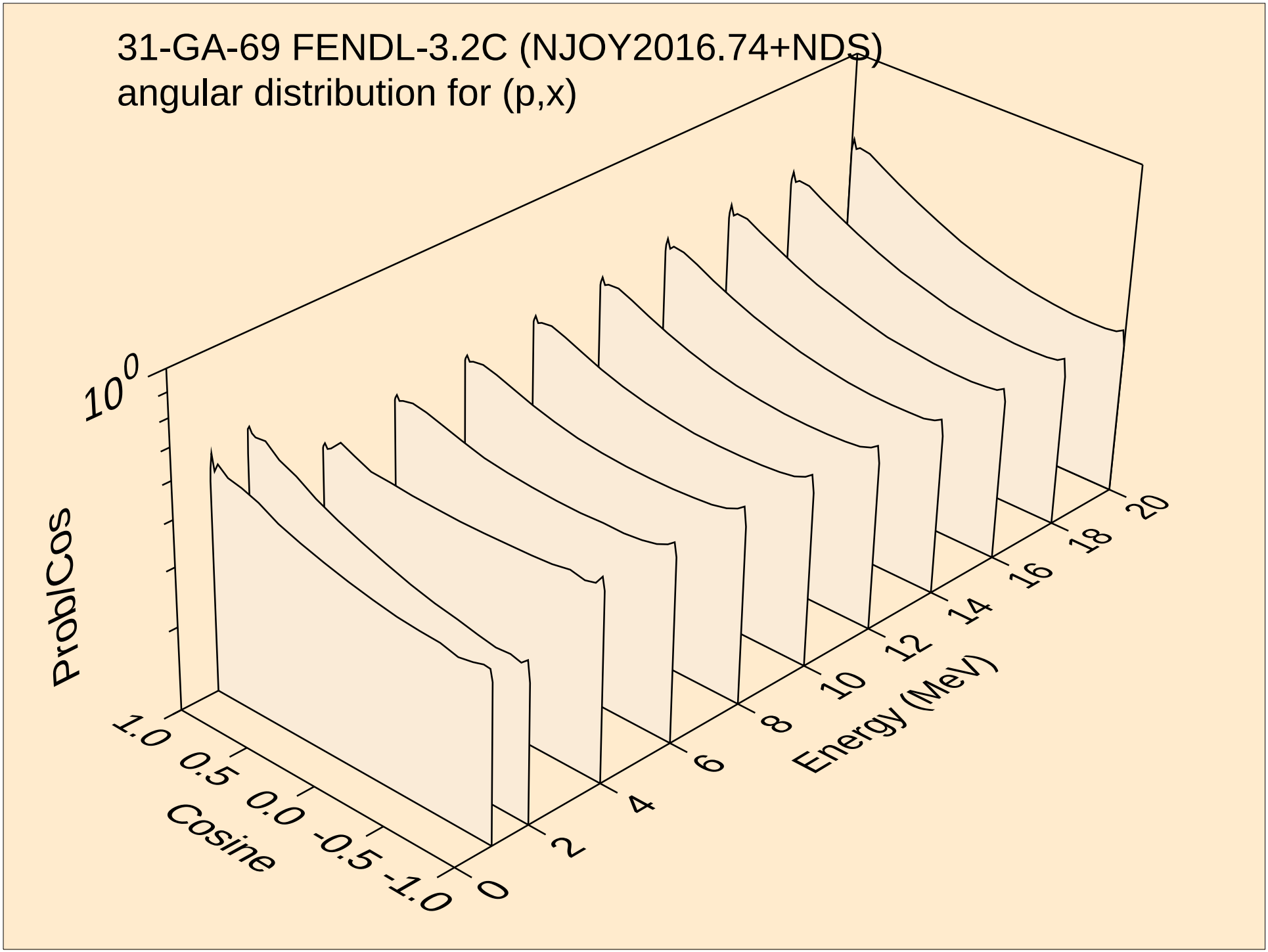

31-GA-69 FENDL-3.2C (NJOY2016.74+NDS)
Principal cross sections
Cross section (barns)
400
350
300
250
200
150
100
50
0
0.0
0.5
1.0
1.5
2.0
2.5
3.0
*10^3
Energy (MeV)
total
absorption
elastic
gamma production

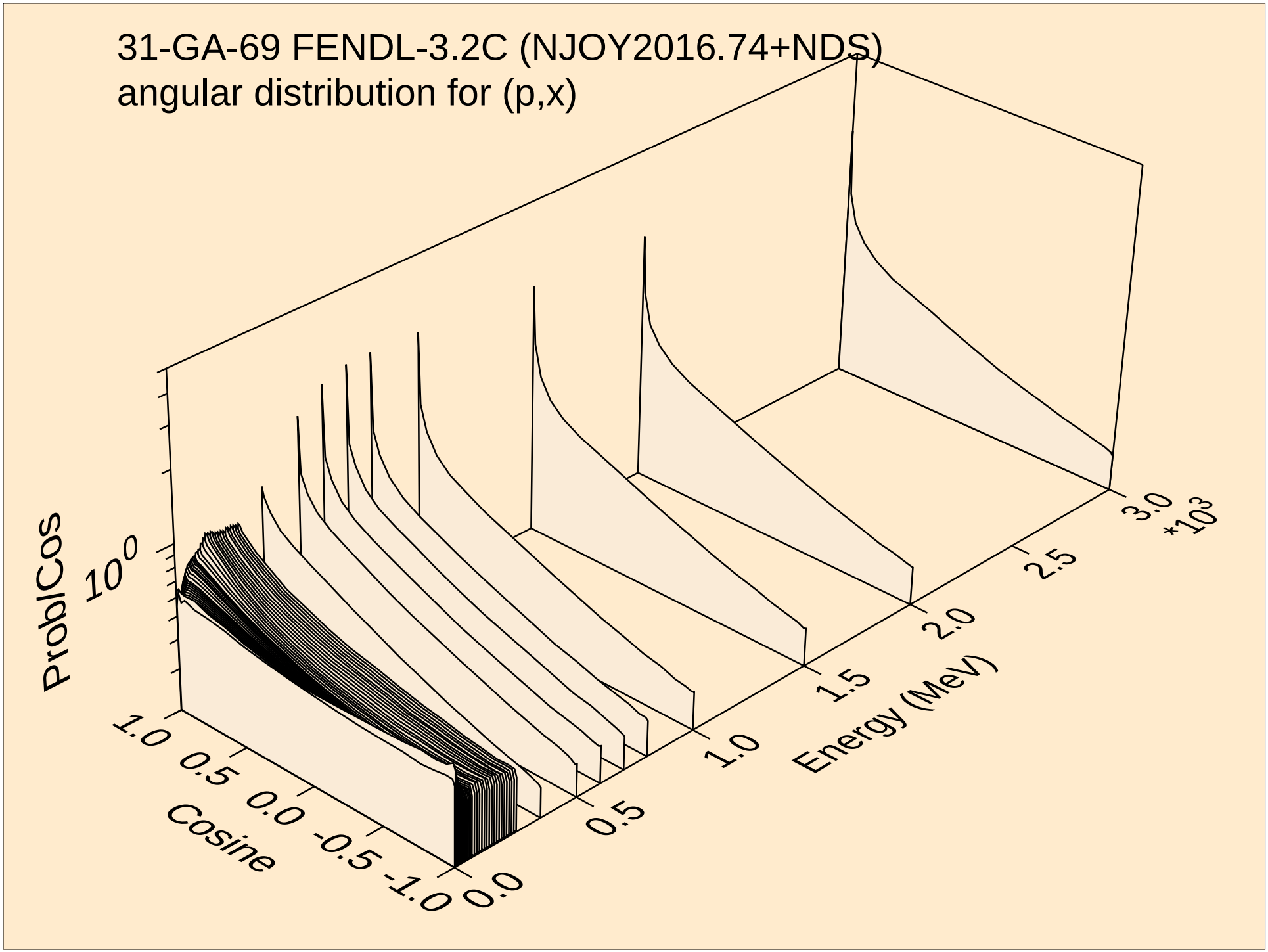

31-GA-69 FENDL-3.2C (NJOY2016.74+NDS)
Heating
heating
Heating (MeV/reaction)
Energy (MeV)
*10^3
0
10
20
30
40
50
0.0
0.5
1.0
1.5
2.0
2.5
3.0

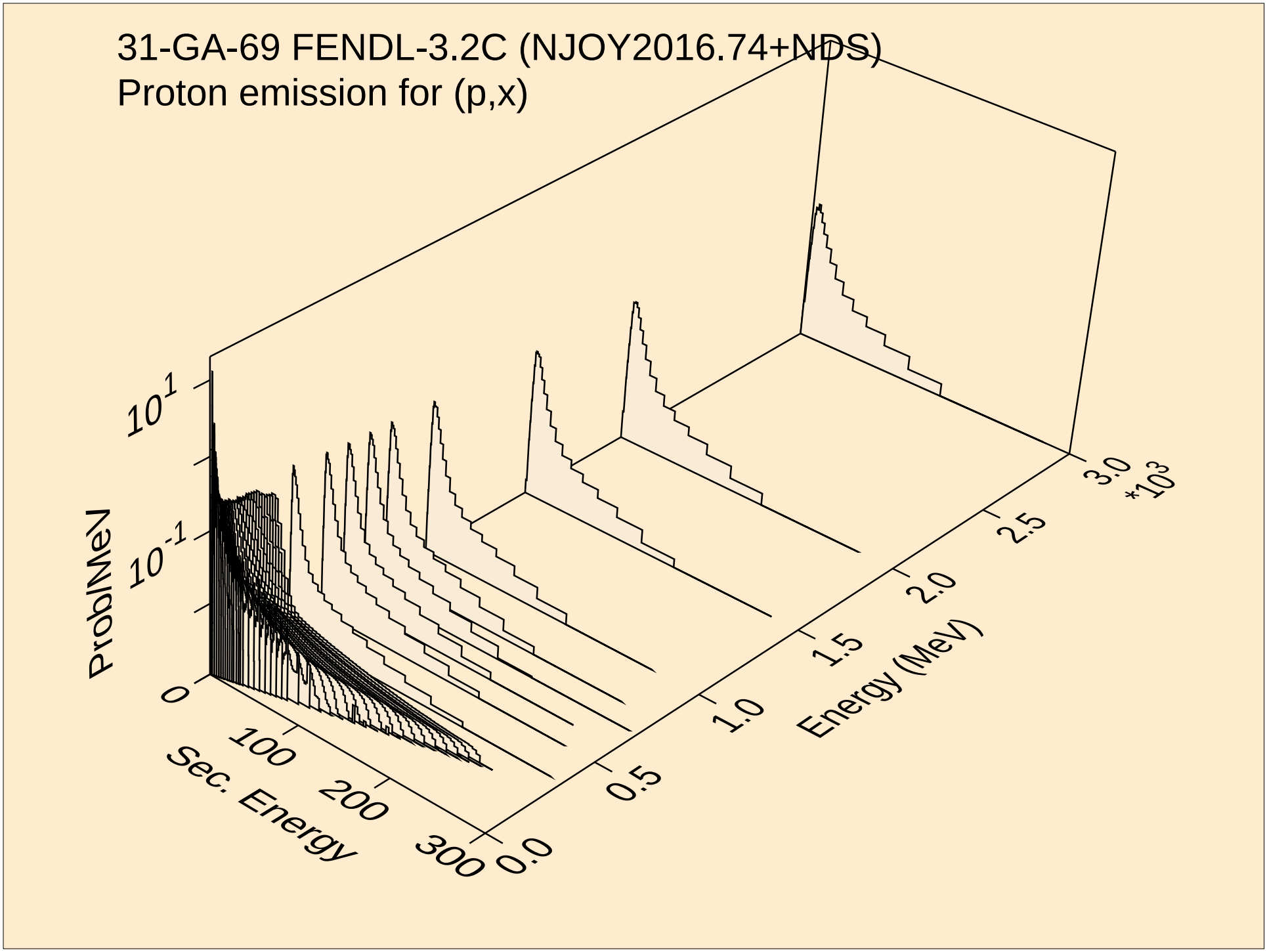

31-GA-69 FENDL-3.2C (NJOY2016.74+NDS)
Threshold reactions
(p,x)
Cross section (barns)
1.2
1.0
0.8
0.6
0.4
0.2
0.0
0.0
0.5
1.0
1.5
2.0
2.5
3.0
*10^3
Energy (MeV)

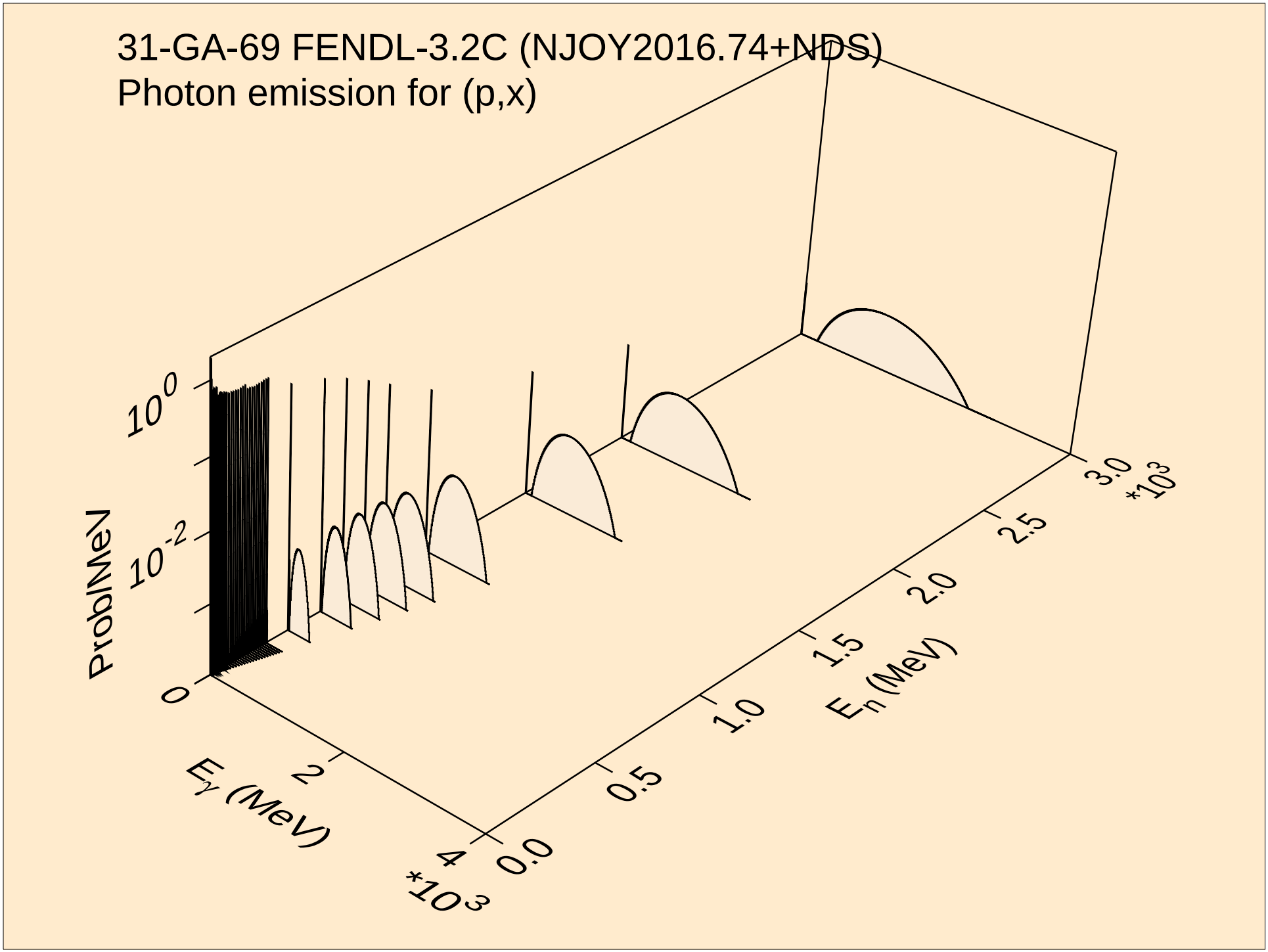

31-GA-69 FENDL-3.2C (NJOY2016.74+NDS)
angular distribution for elastic
ProbCos
10^{2}
10^{0}
10^{-2}
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

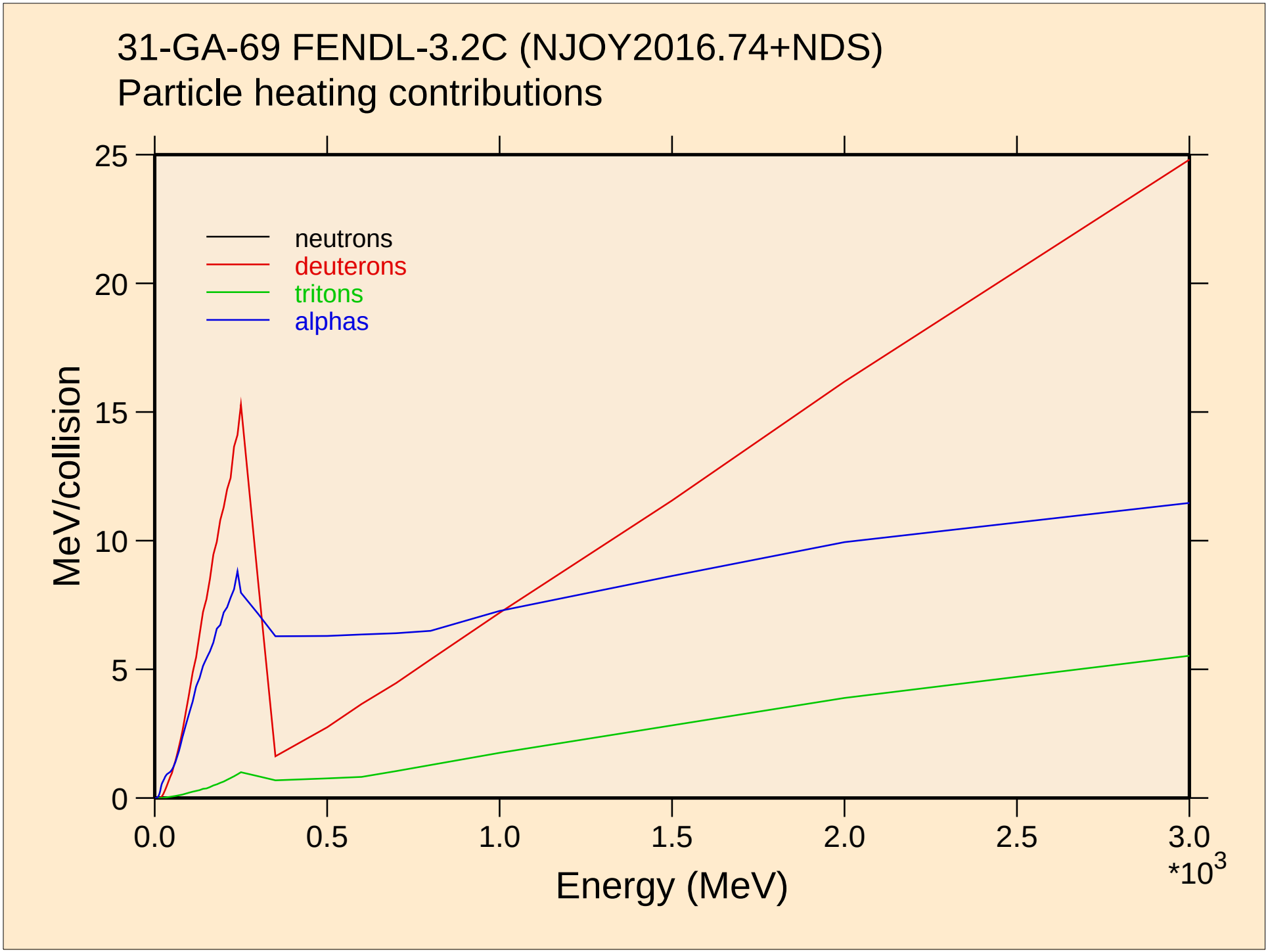

31-GA-69 FENDL-3.2C (NJOY2016.74+NDS)
angular distribution for elastic
ProbICos
10^2
10^0
10^-2
Cosine
1.0
0.5
0.0
-0.5
-1.0
0.0
0.5
1.0
1.5
2.0
2.5
3.0
*10^3
Energy (MeV)

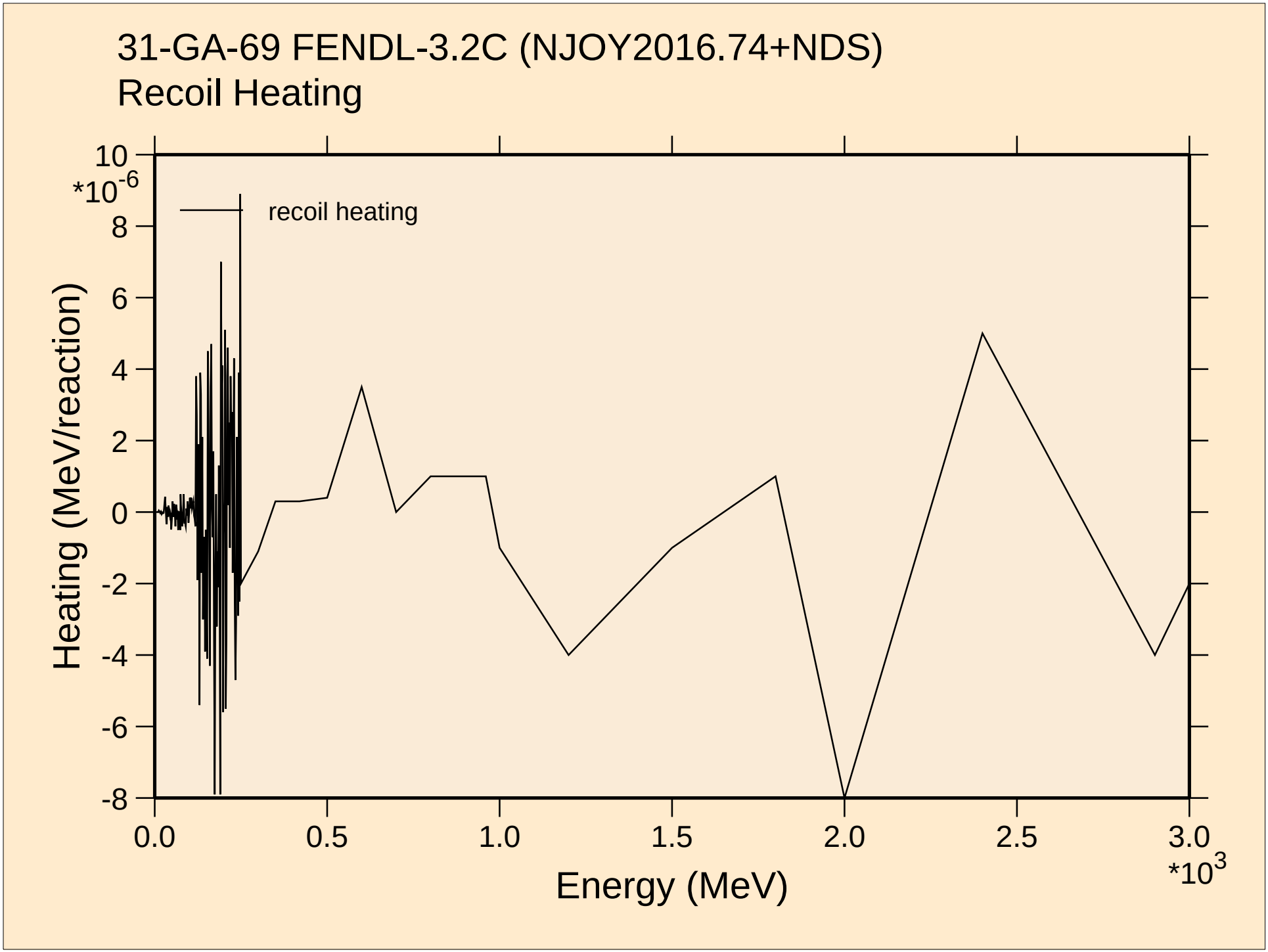

31-GA-69 FENDL-3.2C (NJOY2016.74+NDS)
angular distribution for (p,x)
10^0
Prob\Cos
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

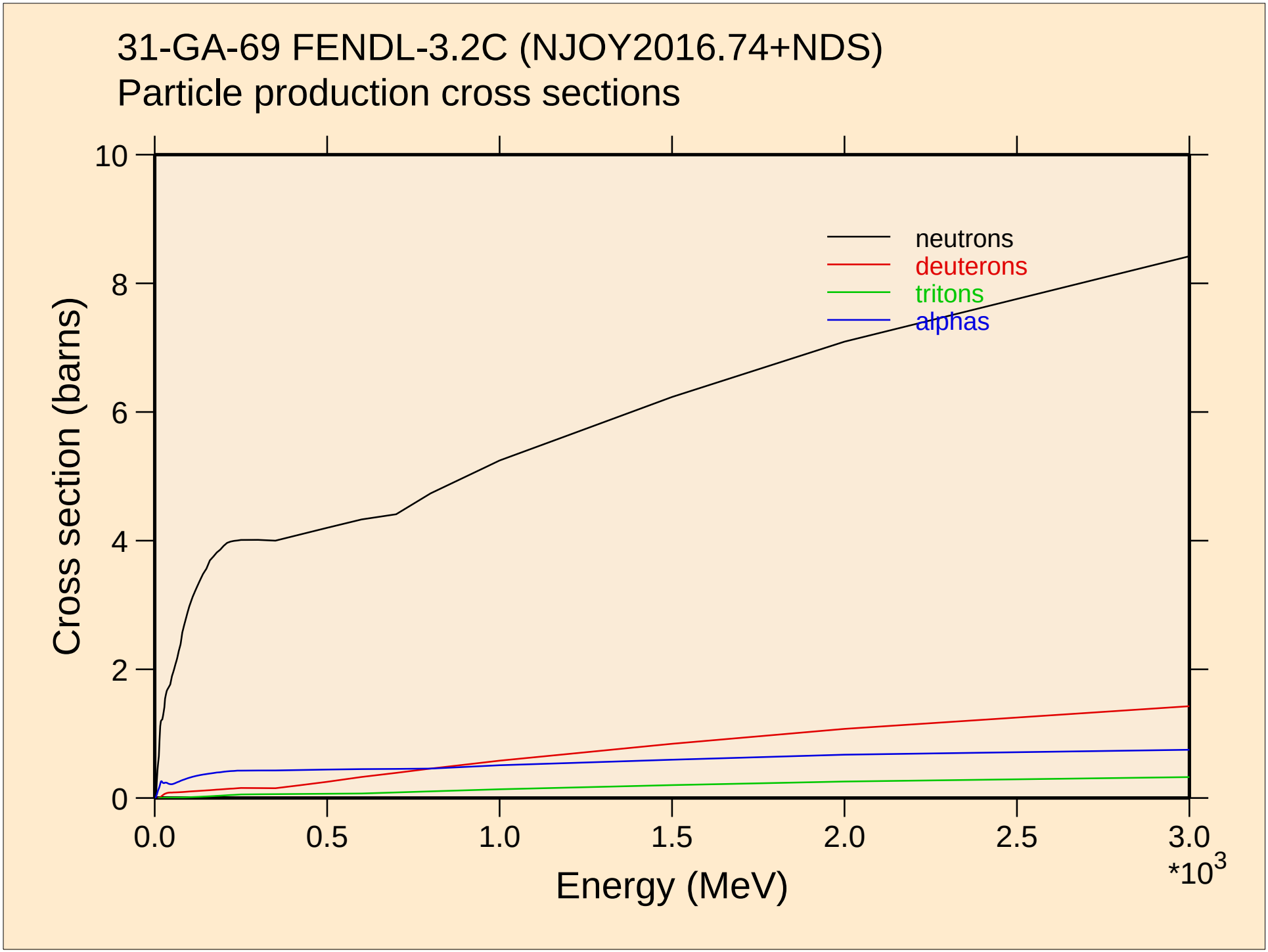

31-GA-69 FENDL-3.2C (NJOY2016.74+NDS)
angular distribution for (p,x)
ProbICos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
0.0
0.5
1.0
1.5
2.0
2.5
3.0
*10^3
Energy (MeV)

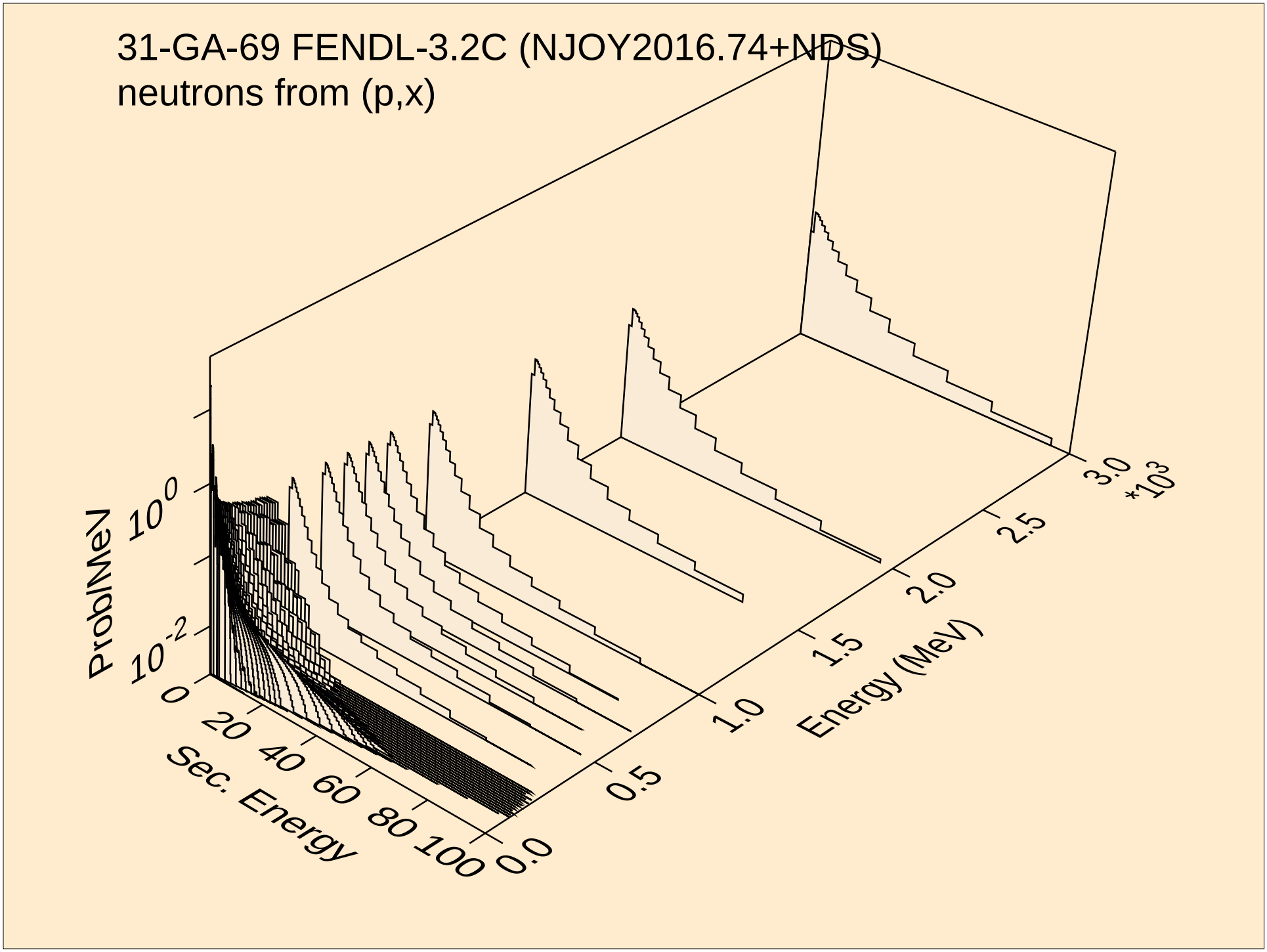

31-GA-69 FENDL-3.2C (NJOY2016.74+NDS)
Proton emission for (p,x)
Prob/MeV
10^{1}
10^{-1}
0
100
200
300
Sec. Energy
0.0
0.5
1.0
1.5
2.0
2.5
3.0
*10³
Energy (MeV)

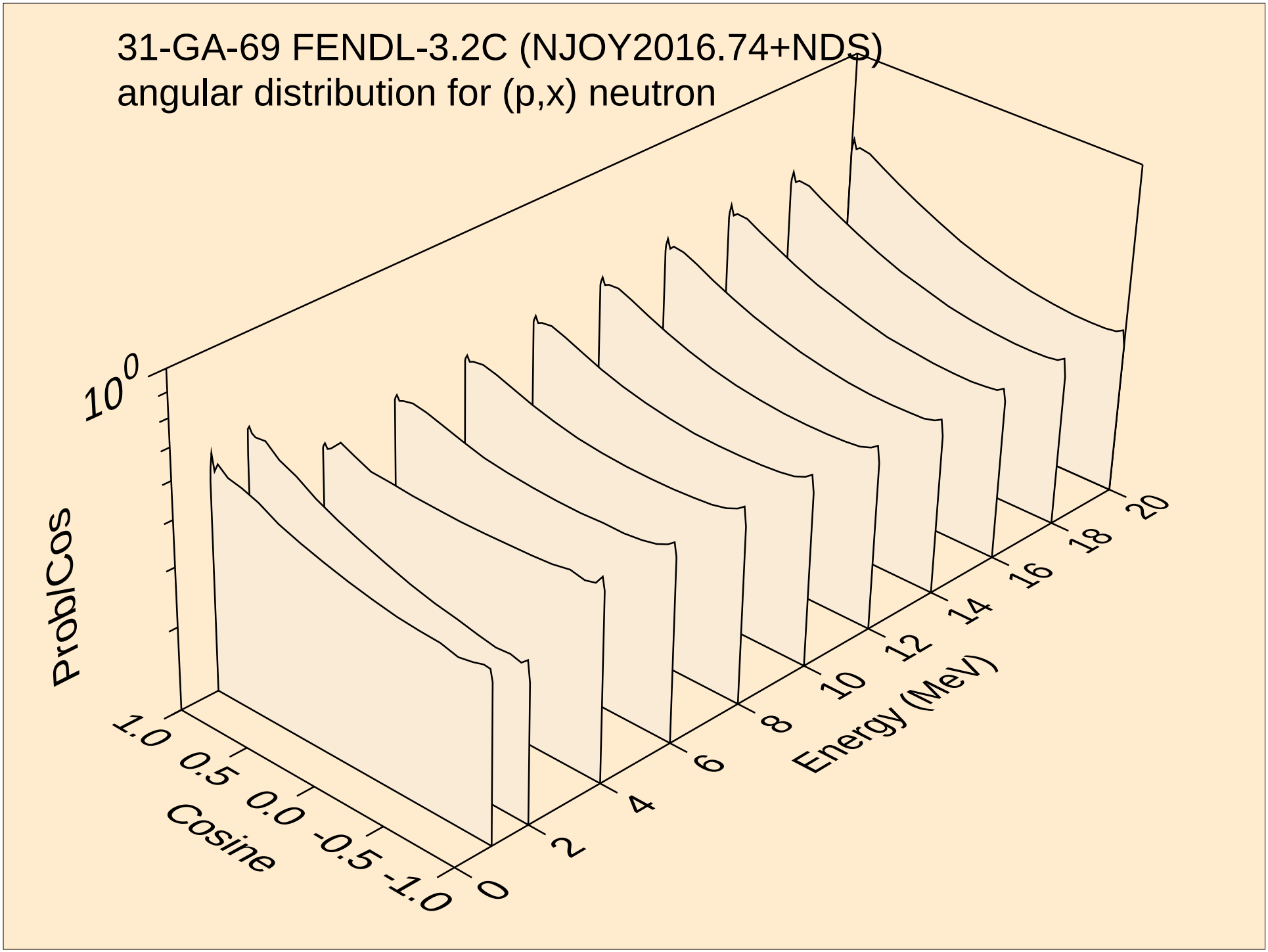

31-GA-69 FENDL-3.2C (NJOY2016.74+NDS)
Photon emission for (p,x)
Prob/MeV
10^{0}
10^{-2}
0
E_γ (MeV)
2
4
*10^{3}
0.0
0.5
1.0
1.5
2.0
2.5
3.0
*10^{3}
E_n (MeV)

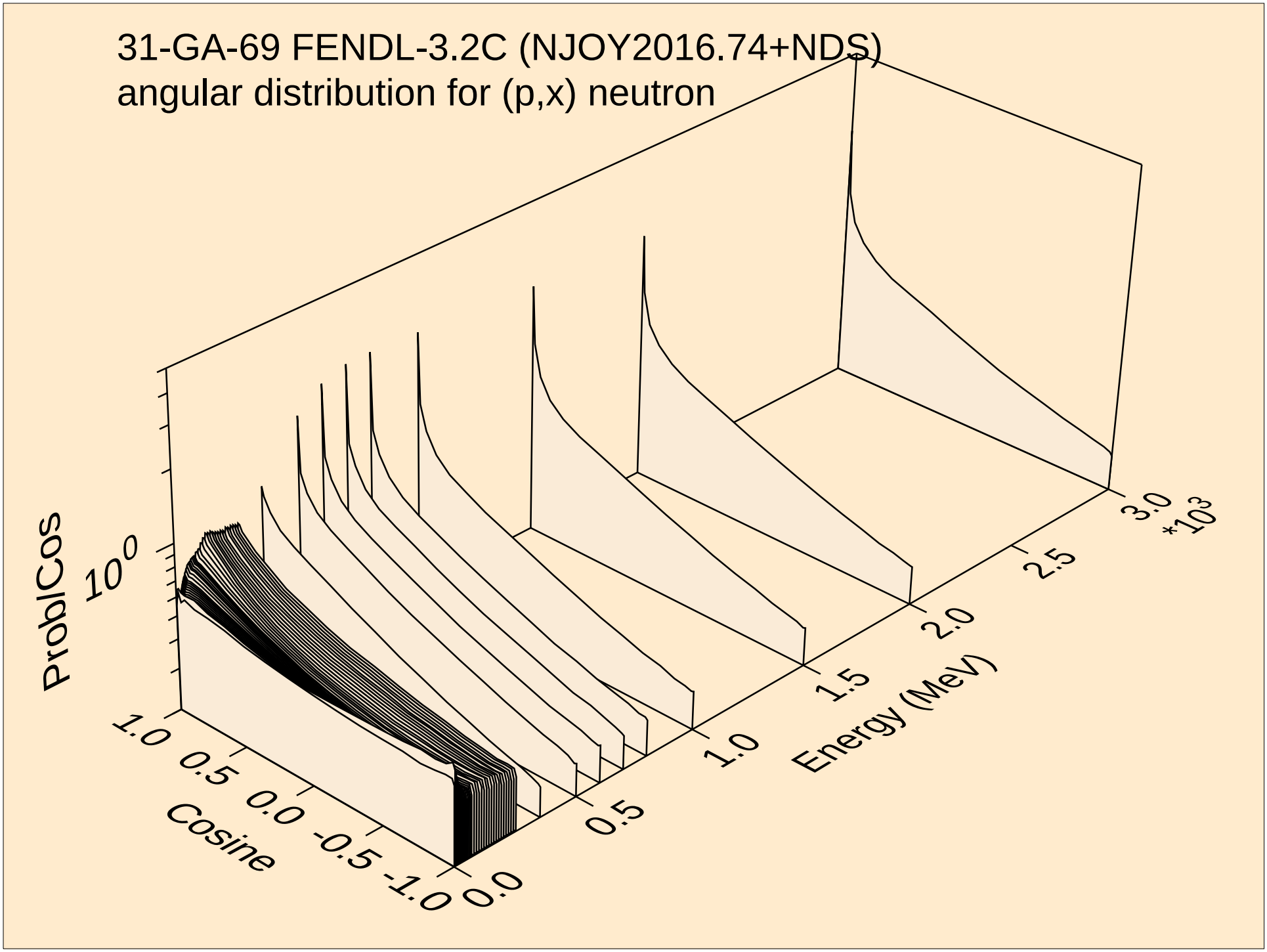

31-GA-69 FENDL-3.2C (NJOY2016.74+NDS)
Particle heating contributions
neutrons
deuterons
tritons
alphas
MeV/collision
Energy (MeV)
*10^3
0
5
10
15
20
25
0.0
0.5
1.0
1.5
2.0
2.5
3.0

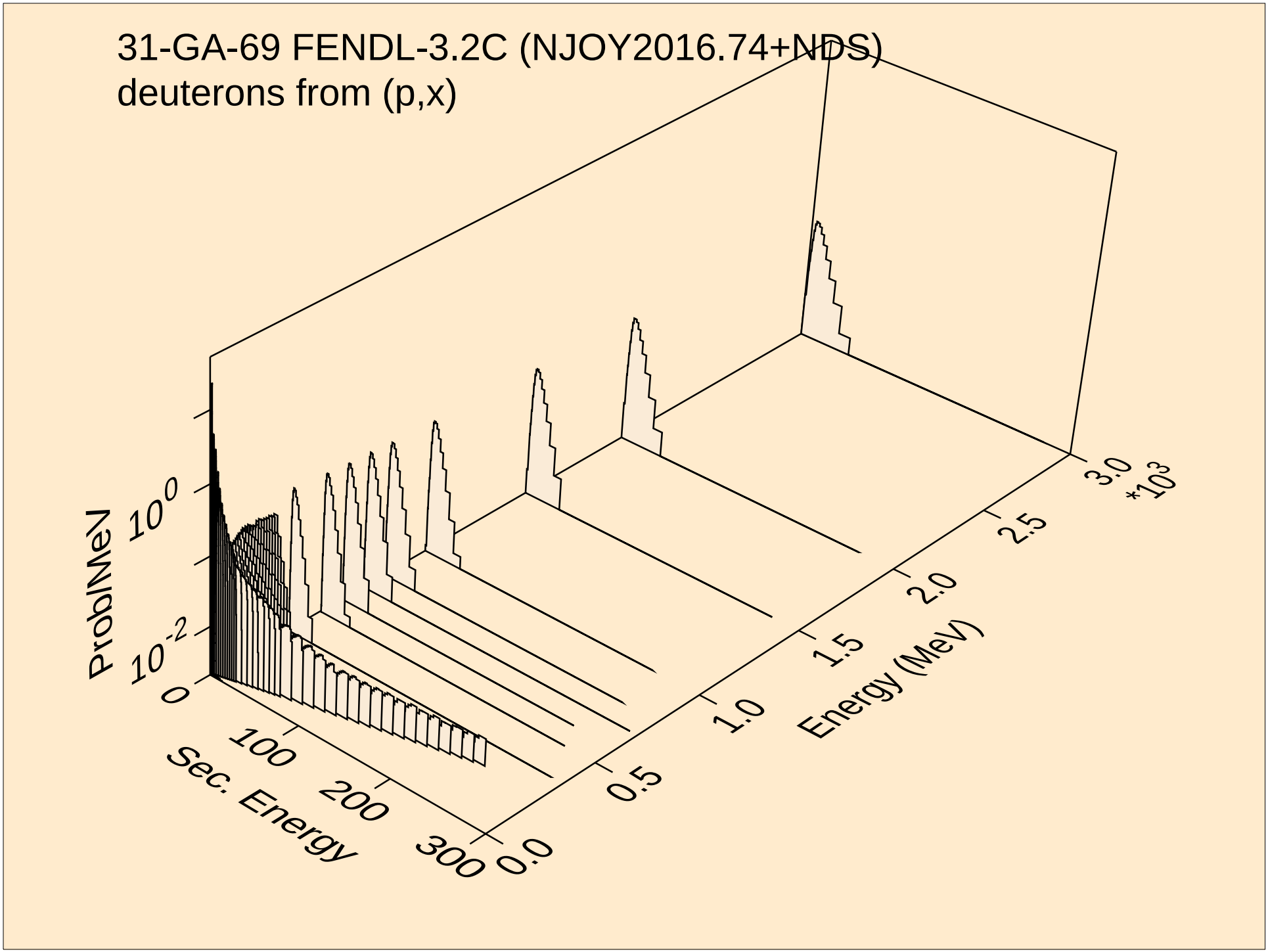

31-GA-69 FENDL-3.2C (NJOY2016.74+NDS)
Recoil Heating
recoil heating
Heating (MeV/reaction)
*10-6
10
8
6
4
2
0
-2
-4
-6
-8
0.0
0.5
1.0
1.5
2.0
2.5
3.0
*10^3
Energy (MeV)

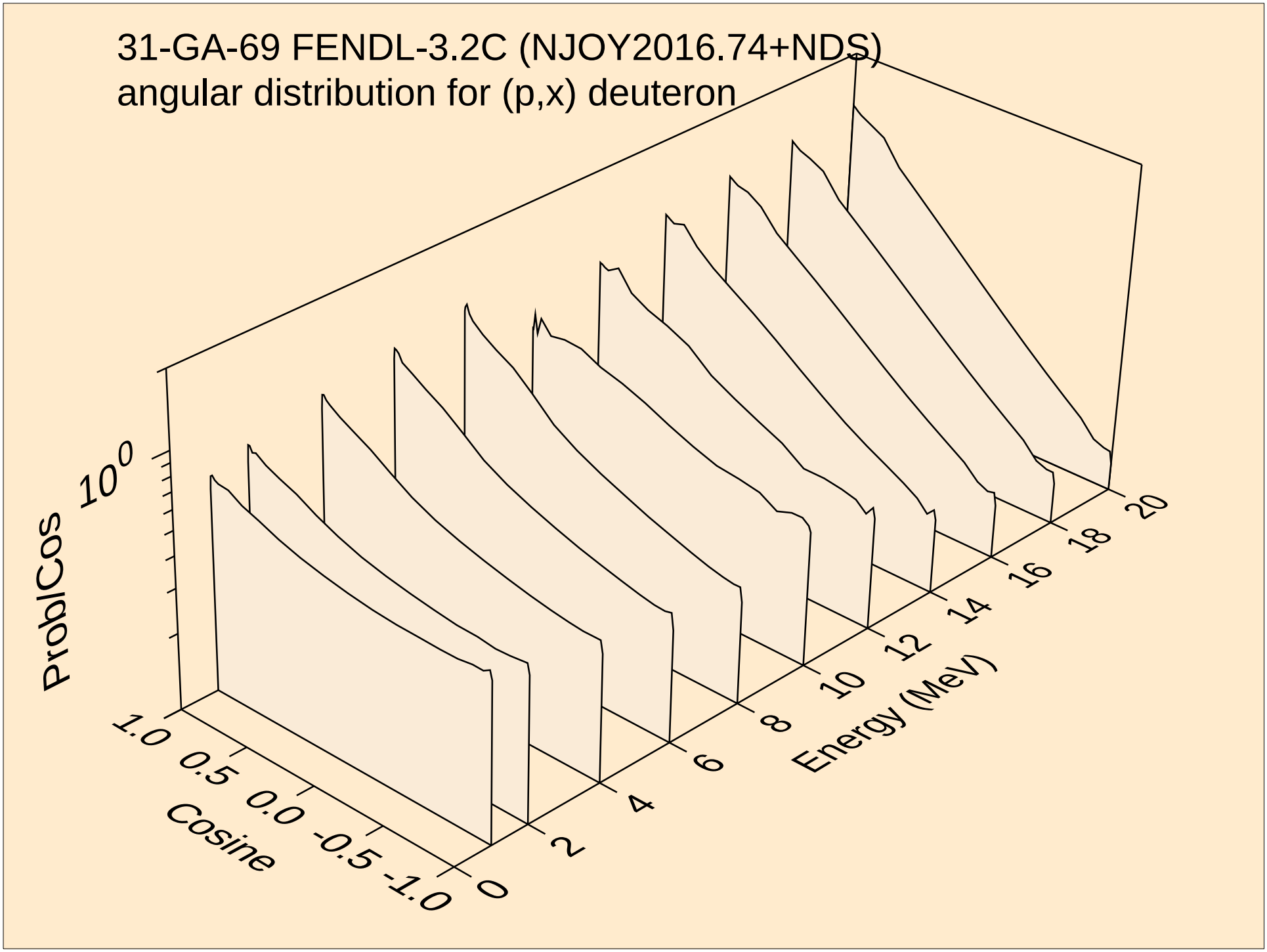

31-GA-69 FENDL-3.2C (NJOY2016.74+NDS)
Particle production cross sections
Cross section (barns)
Energy (MeV)
*10^3
neutrons
deuterons
tritons
alphas
0
2
4
6
8
10
0.0
0.5
1.0
1.5
2.0
2.5
3.0

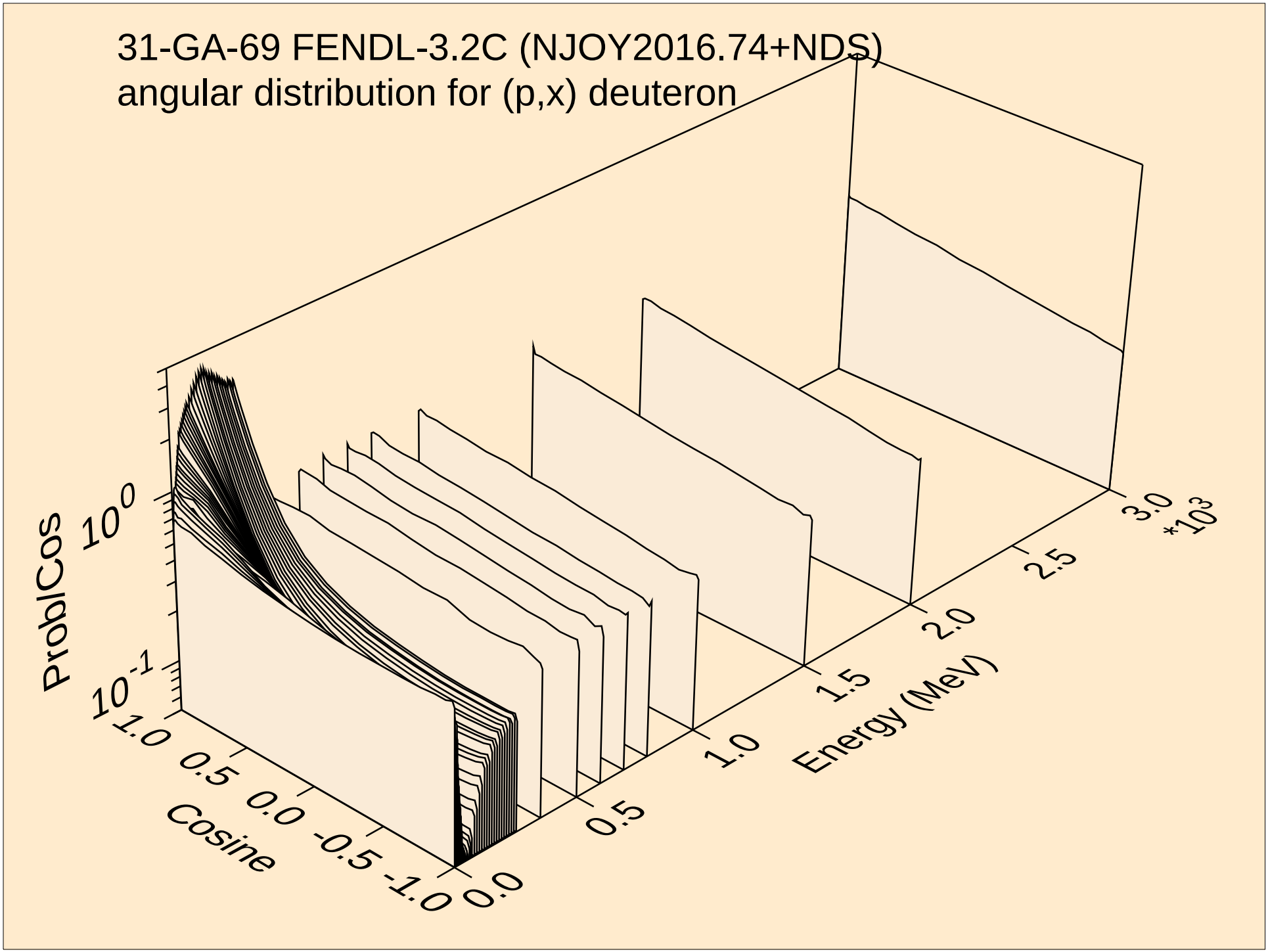

31-GA-69 FENDL-3.2C (NJOY2016.74+NDS)
neutrons from (p,x)
Prob/MeV
10^{0}
10^{-2}
0
20
40
60
80
100
Sec. Energy
0.0
0.5
1.0
1.5
2.0
2.5
3.0
*10^{3}
Energy (MeV)

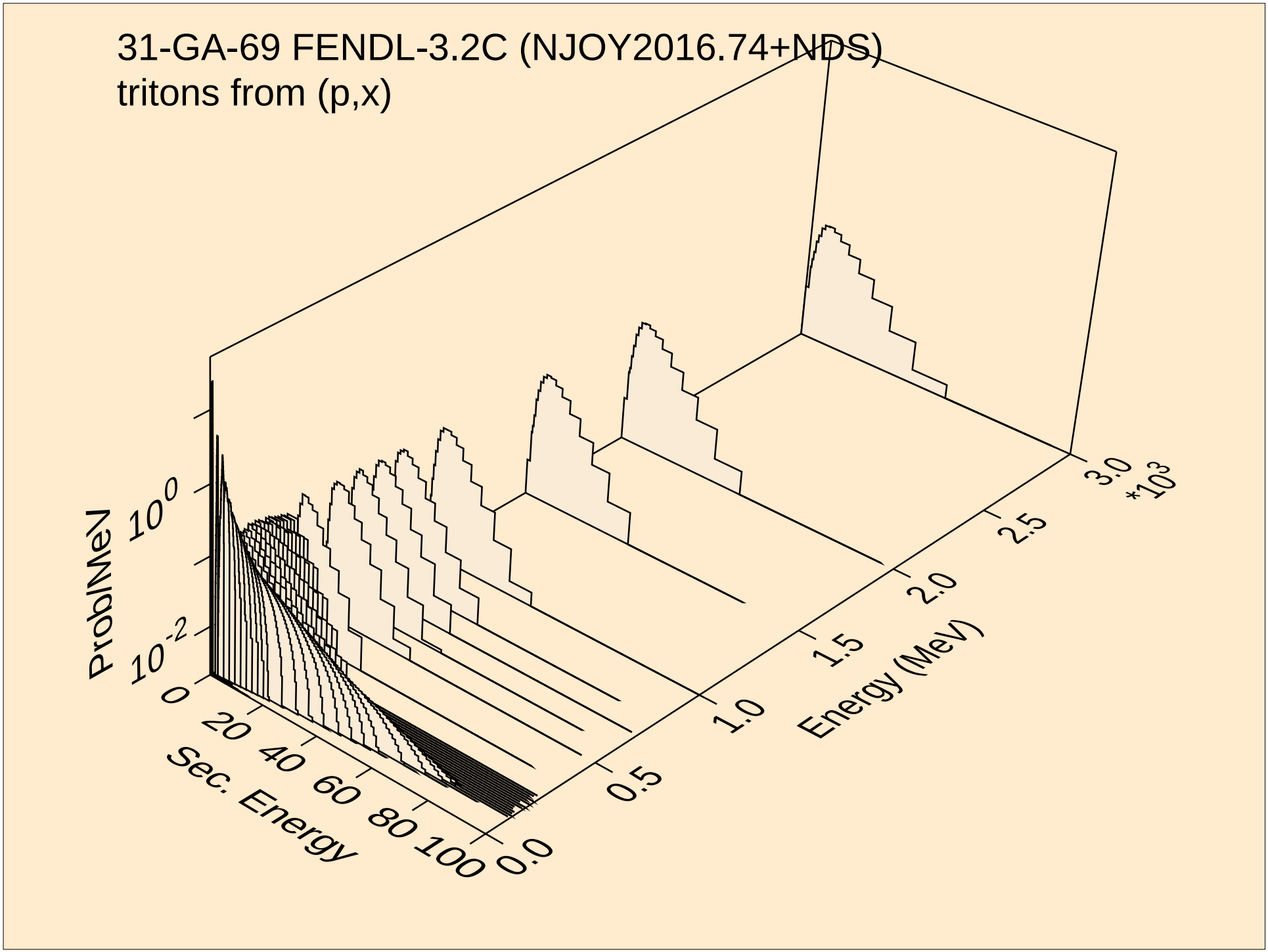

31-GA-69 FENDL-3.2C (NJOY2016.74+NDS)
angular distribution for (p,x) neutron
10^0
Prob\Cos
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

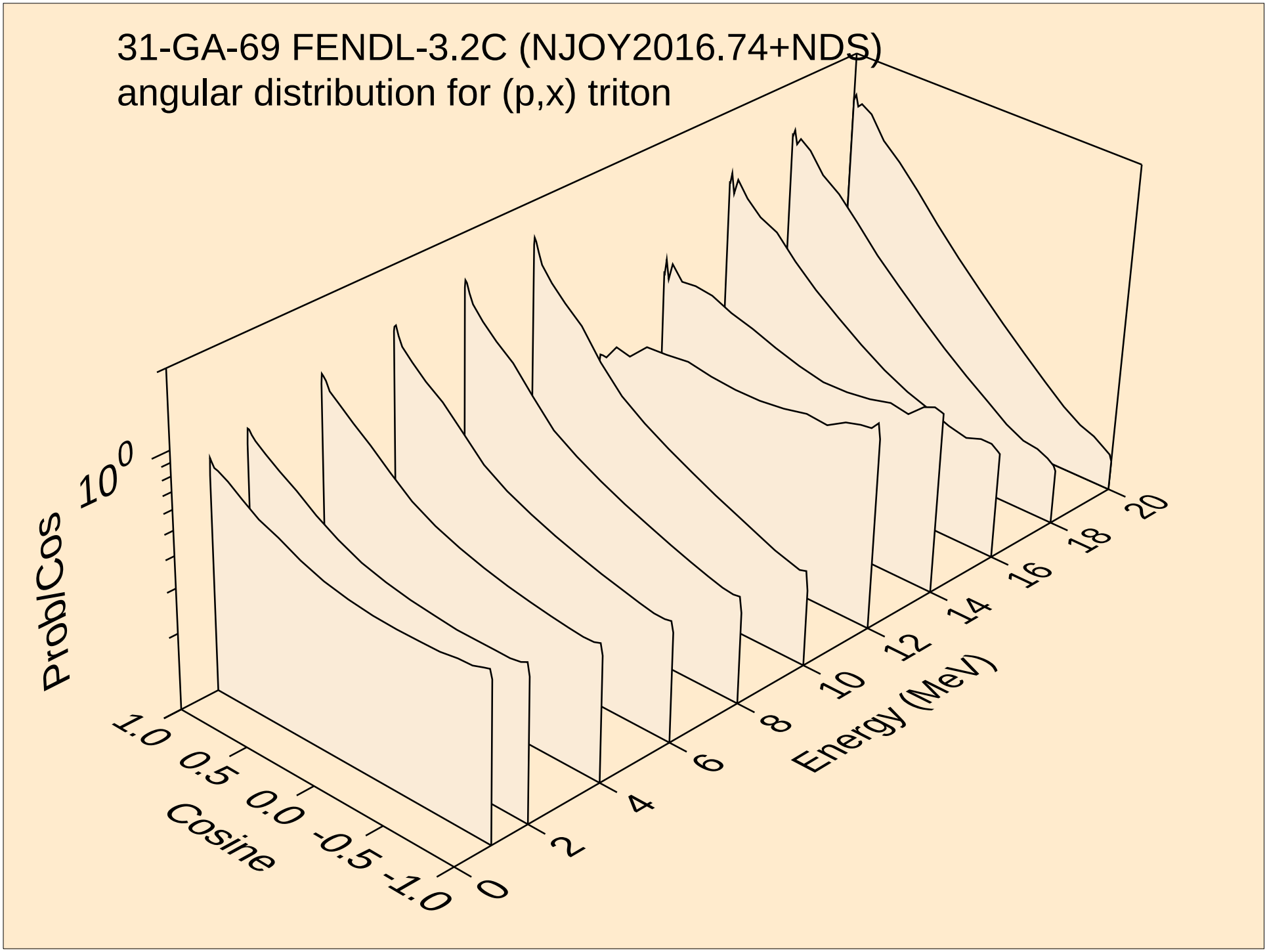

31-GA-69 FENDL-3.2C (NJOY2016.74+NDS)
angular distribution for (p,x) neutron
ProbICos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
0.0
0.5
1.0
1.5
2.0
2.5
3.0
*10^3
Energy (MeV)

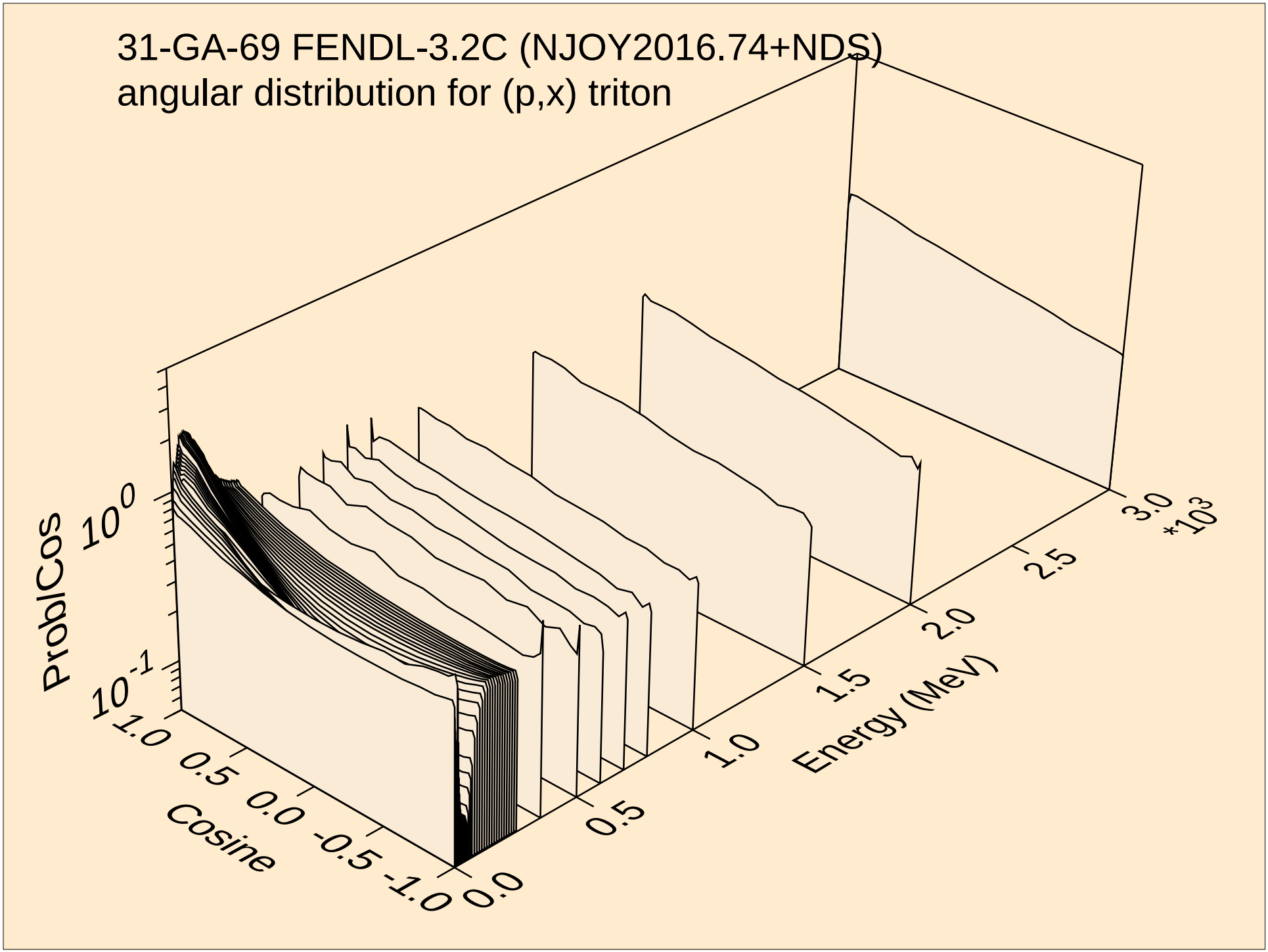

31-GA-69 FENDL-3.2C (NJOY2016.74+NDS)
deuterons from (p,x)
Prob/MeV
10^0
10^-2
0
100
200
300
Sec. Energy
0.0
0.5
1.0
1.5
2.0
2.5
3.0
*10^3
Energy (MeV)

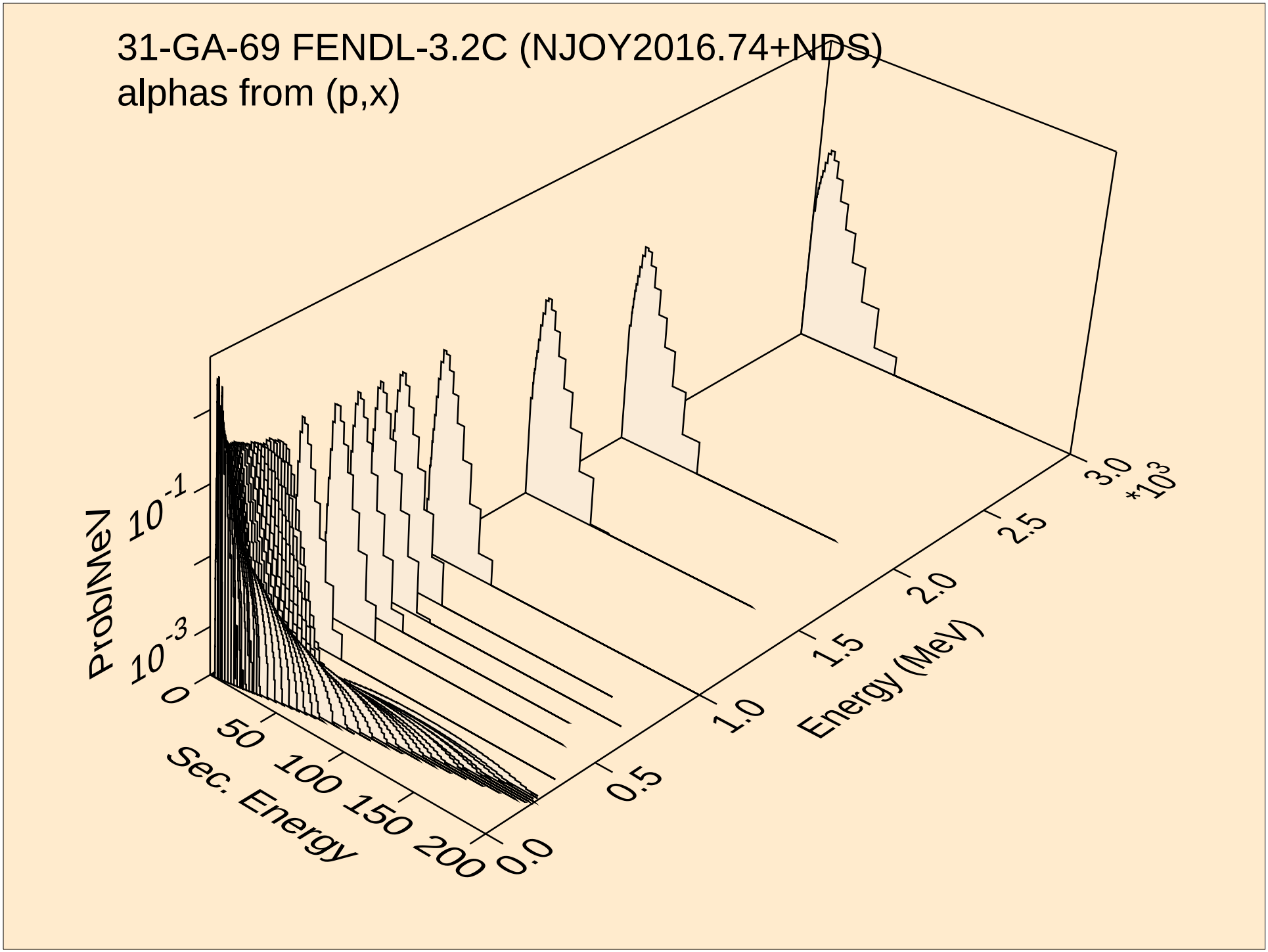

31-GA-69 FENDL-3.2C (NJOY2016.74+NDS)
angular distribution for (p,x) deuteron
ProbICos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

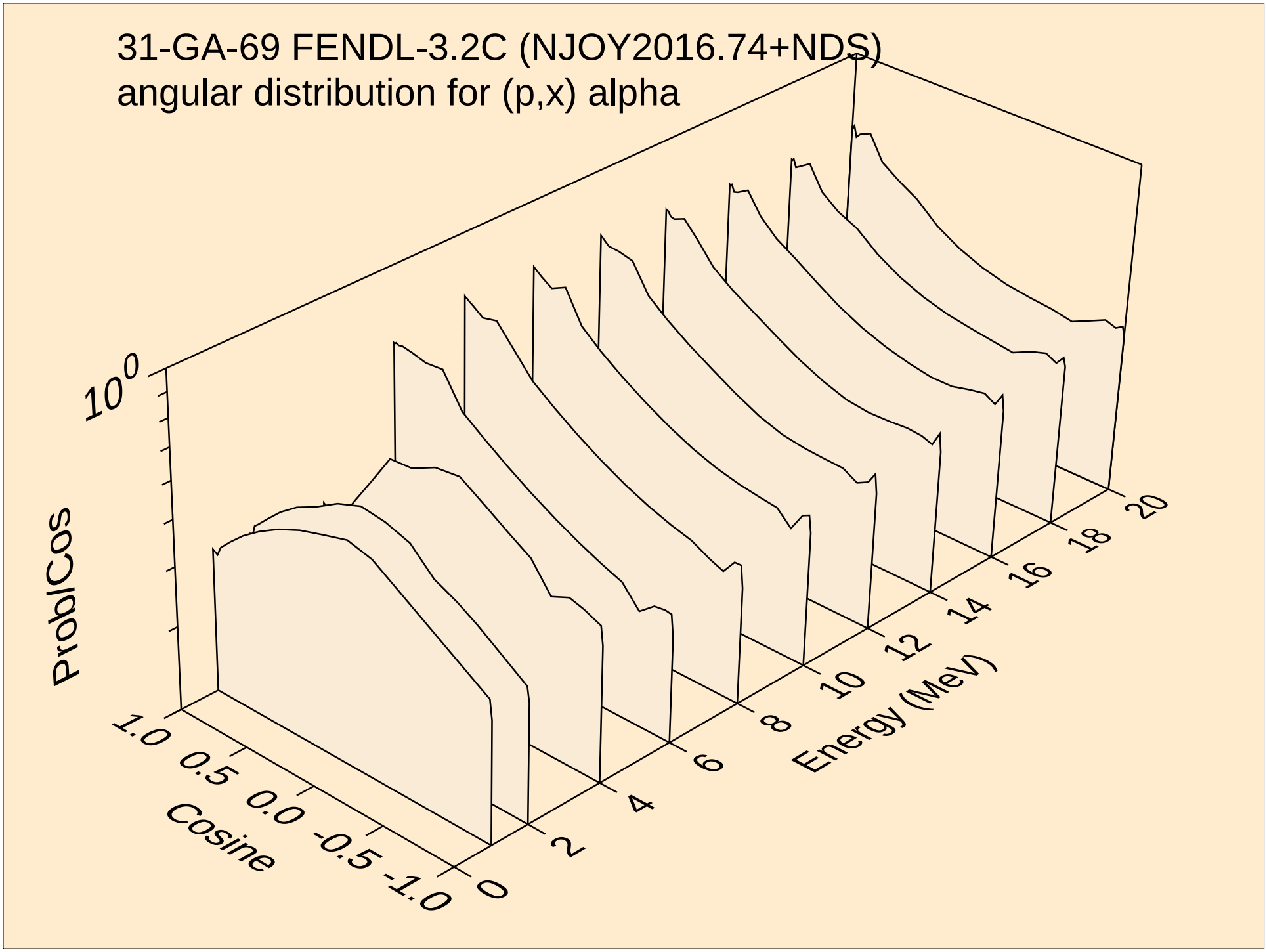

31-GA-69 FENDL-3.2C (NJOY2016.74+NDS)
angular distribution for (p,x) deuteron
ProbICos
10^0
10^-1
1.0
0.5
0.0
-0.5
-1.0
Cosine
0.0
0.5
1.0
1.5
2.0
2.5
3.0
*10^3
Energy (MeV)

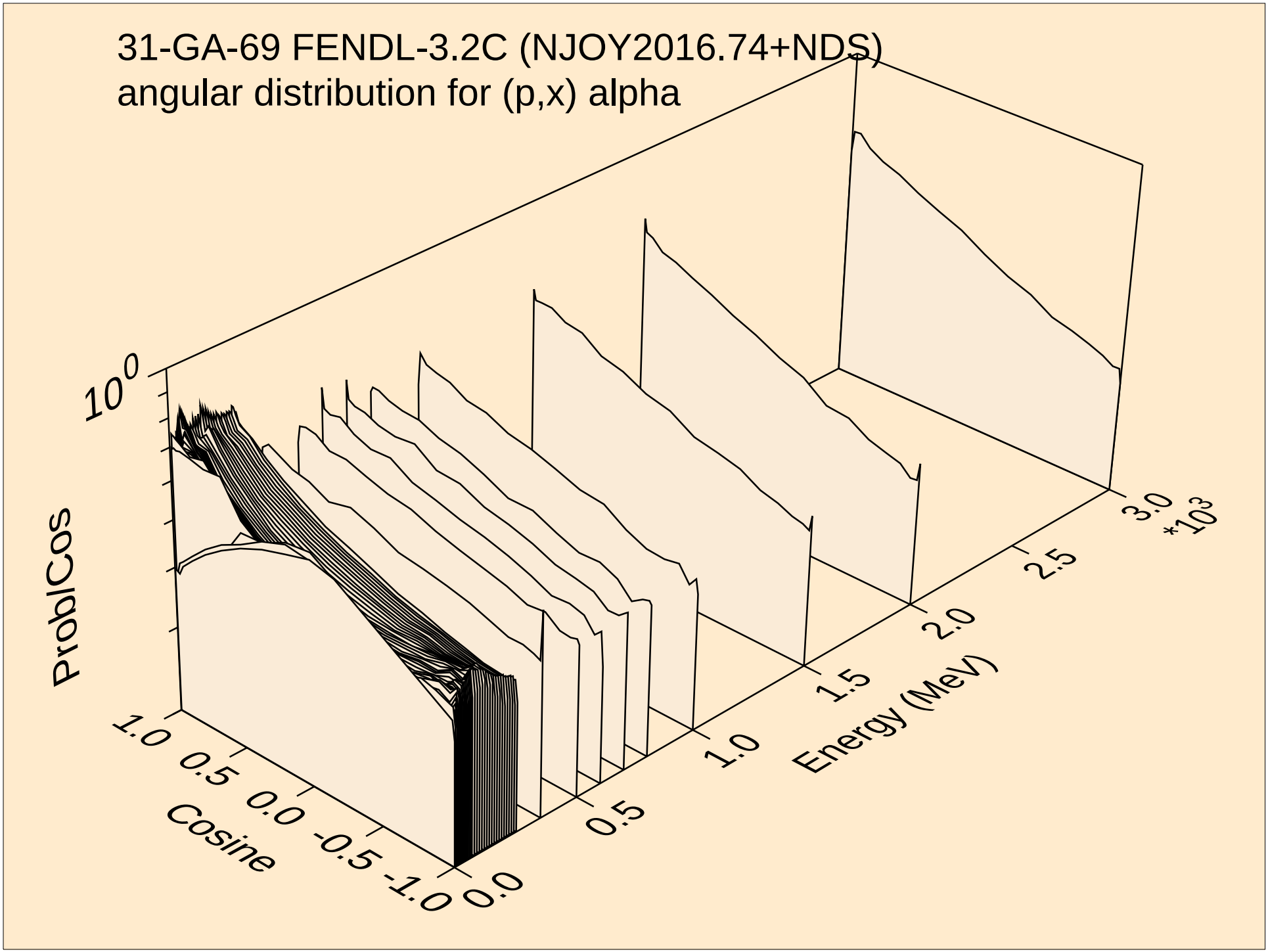

31-GA-69 FENDL-3.2C (NJOY2016.74+NDS)
tritons from (p,x)
Prob/MeV
10^{0}
10^{-2}
0
20
40
60
80
100
Sec. Energy
0.0
0.5
1.0
1.5
2.0
2.5
3.0
*10³
Energy (MeV)


31-GA-69 FENDL-3.2C (NJOY2016.74+NDS)
angular distribution for (p,x) triton
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)


31-GA-69 FENDL-3.2C (NJOY2016.74+NDS)
angular distribution for (p,x) triton
ProbICos
10^0
10^-1
1.0
0.5
0.0
-0.5
-1.0
Cosine
0.0
0.5
1.0
1.5
2.0
2.5
3.0
*10^3
Energy (MeV)


31-GA-69 FENDL-3.2C (NJOY2016.74+NDS)
alphas from (p,x)
Prob/MeV
10-1
10-3
0
50
100
150
200
Sec. Energy
0.0
0.5
1.0
1.5
2.0
2.5
3.0
*10³
Energy (MeV)


31-GA-69 FENDL-3.2C (NJOY2016.74+NDS)
angular distribution for (p,x) alpha
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)


31-GA-69 FENDL-3.2C (NJOY2016.74+NDS)
angular distribution for (p,x) alpha
ProbICos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
0.0
0.5
1.0
1.5
2.0
2.5
3.0
Energy (MeV)
*10^3