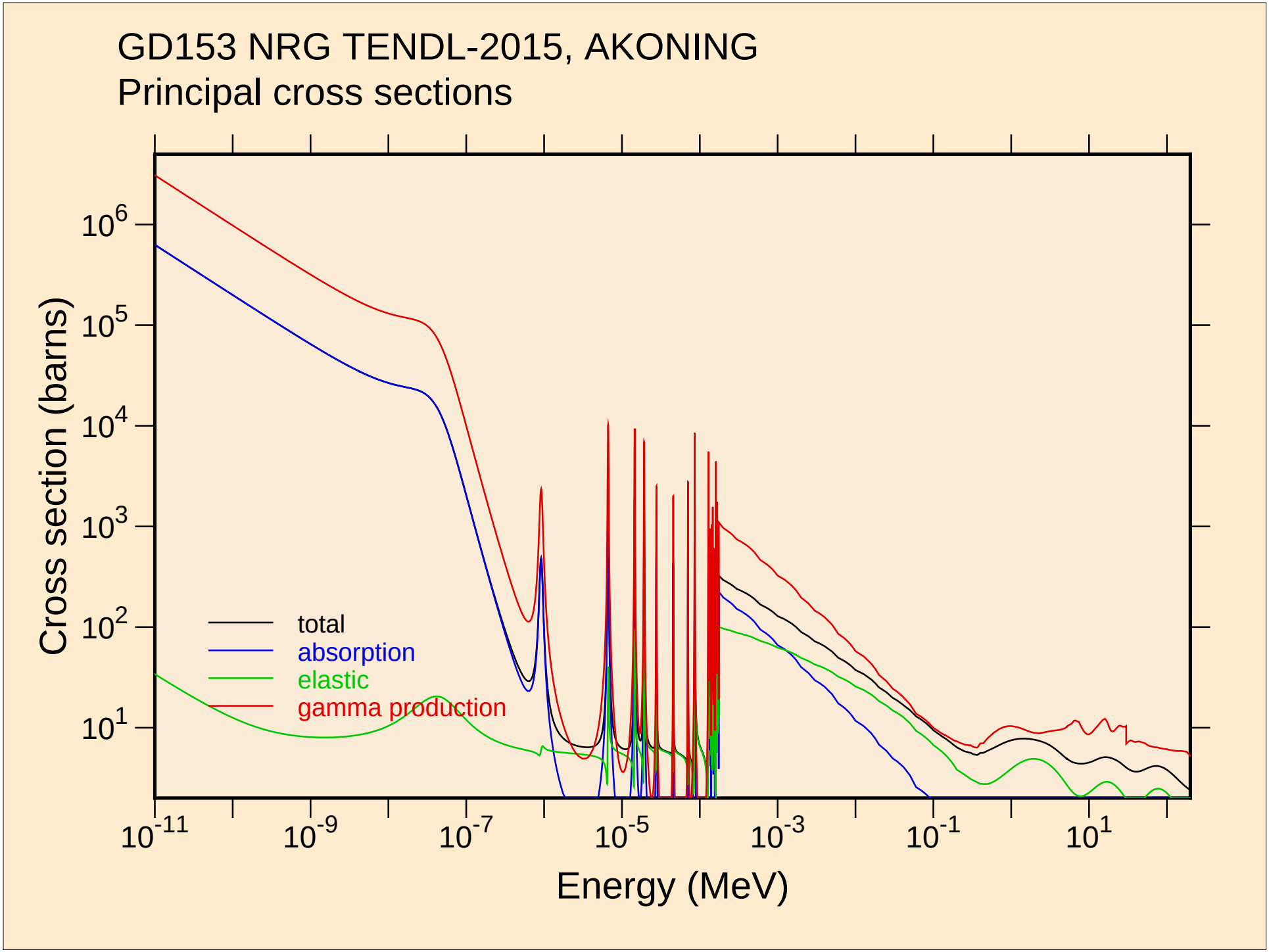
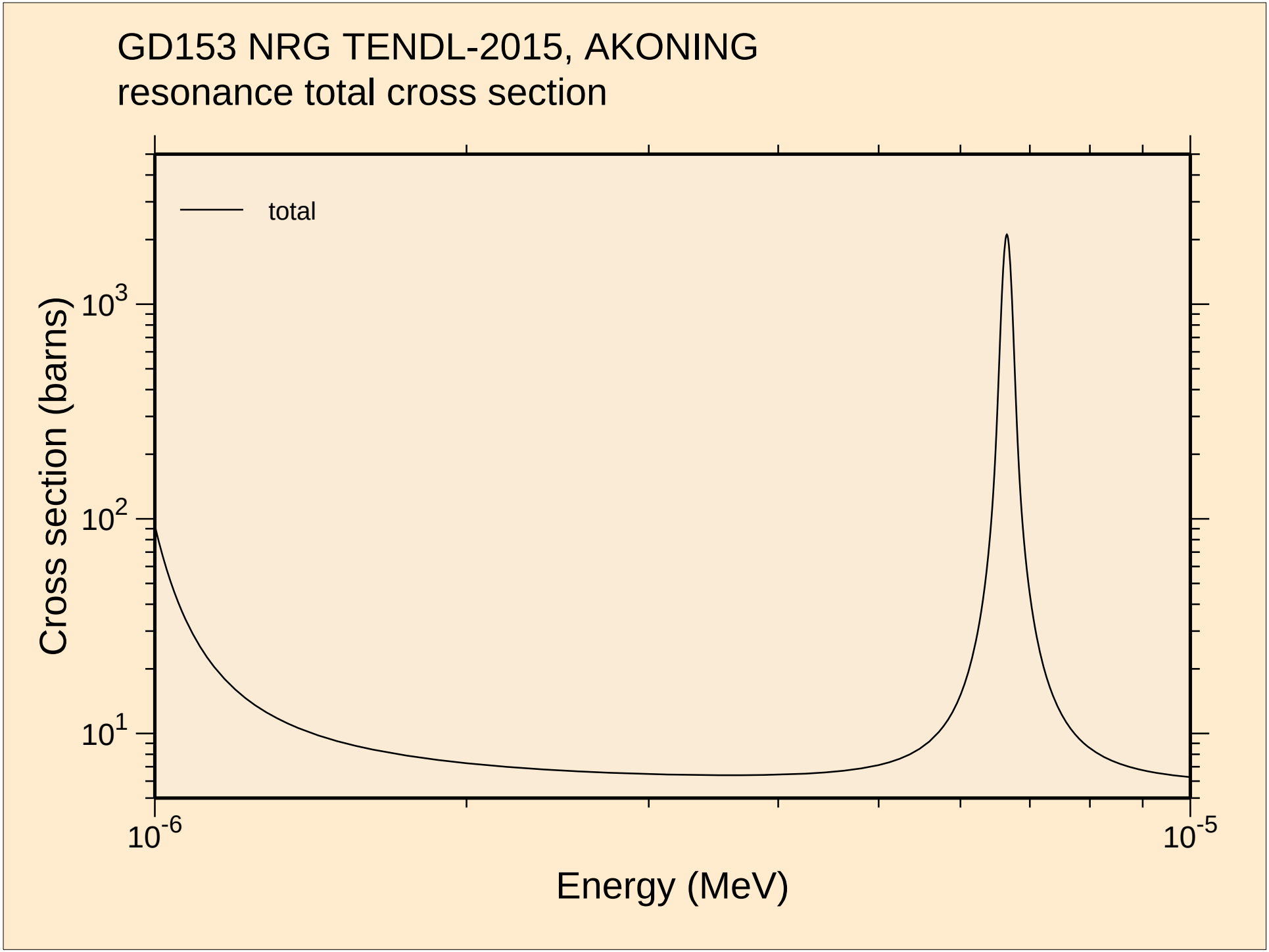
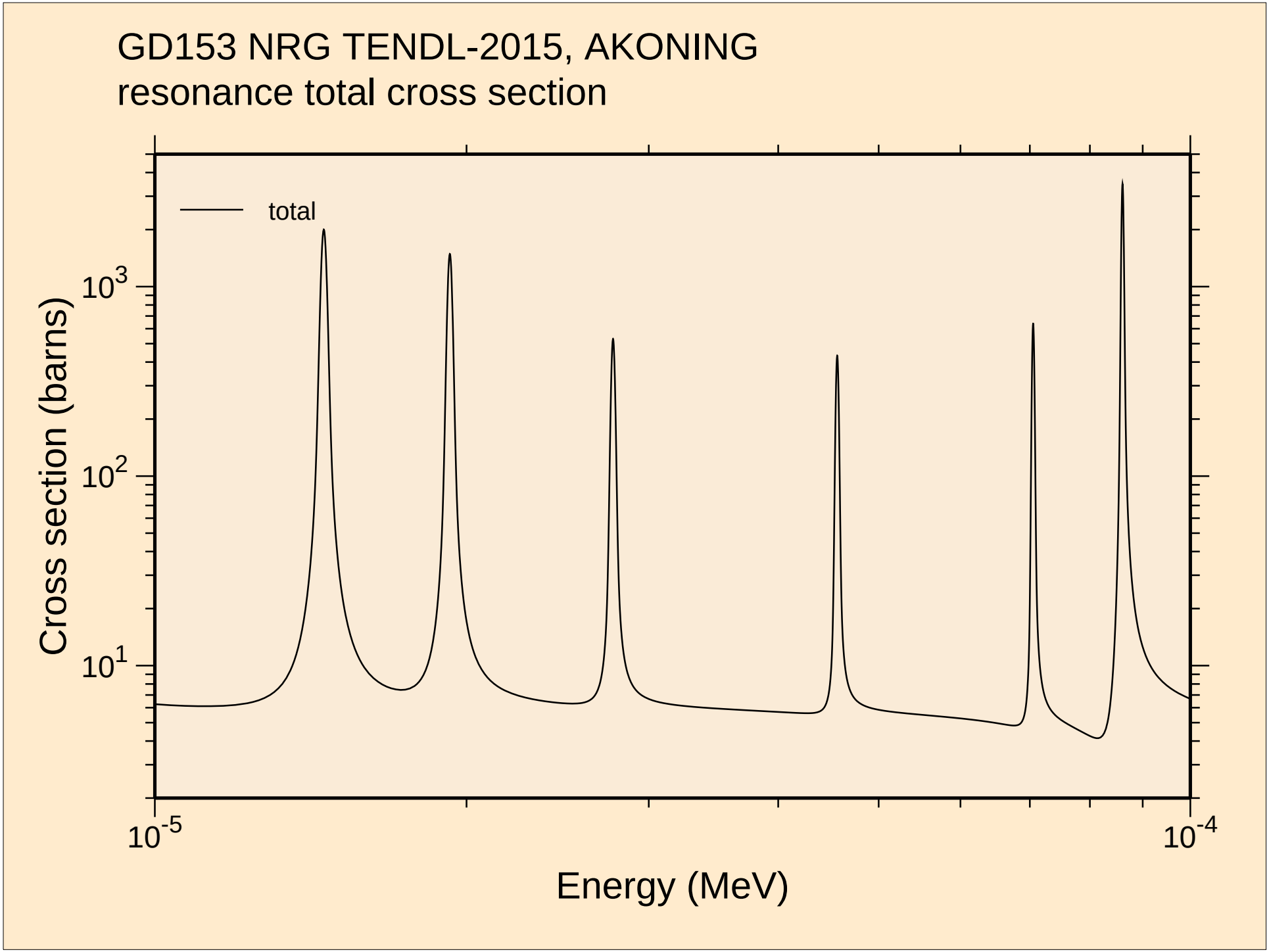
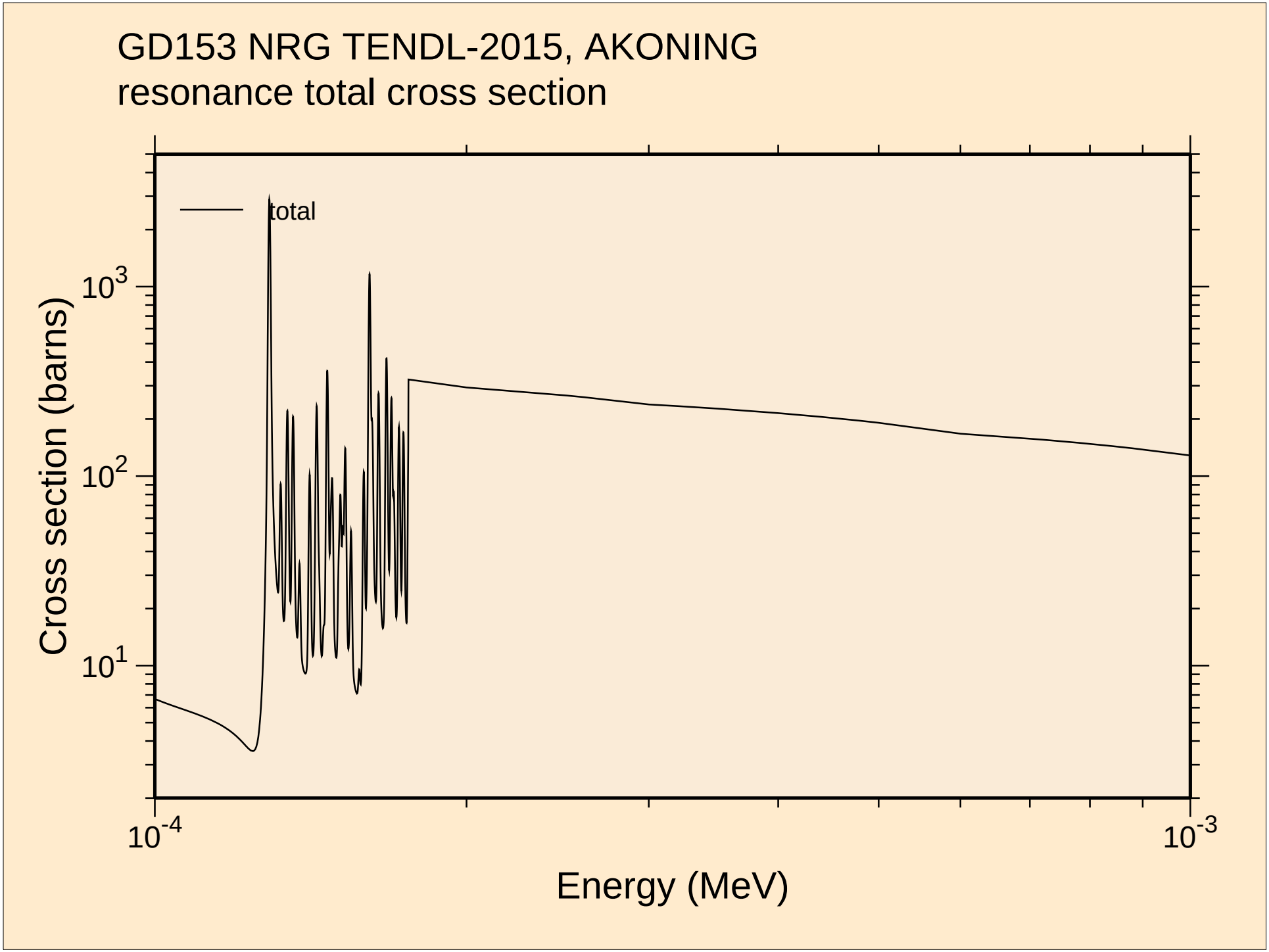
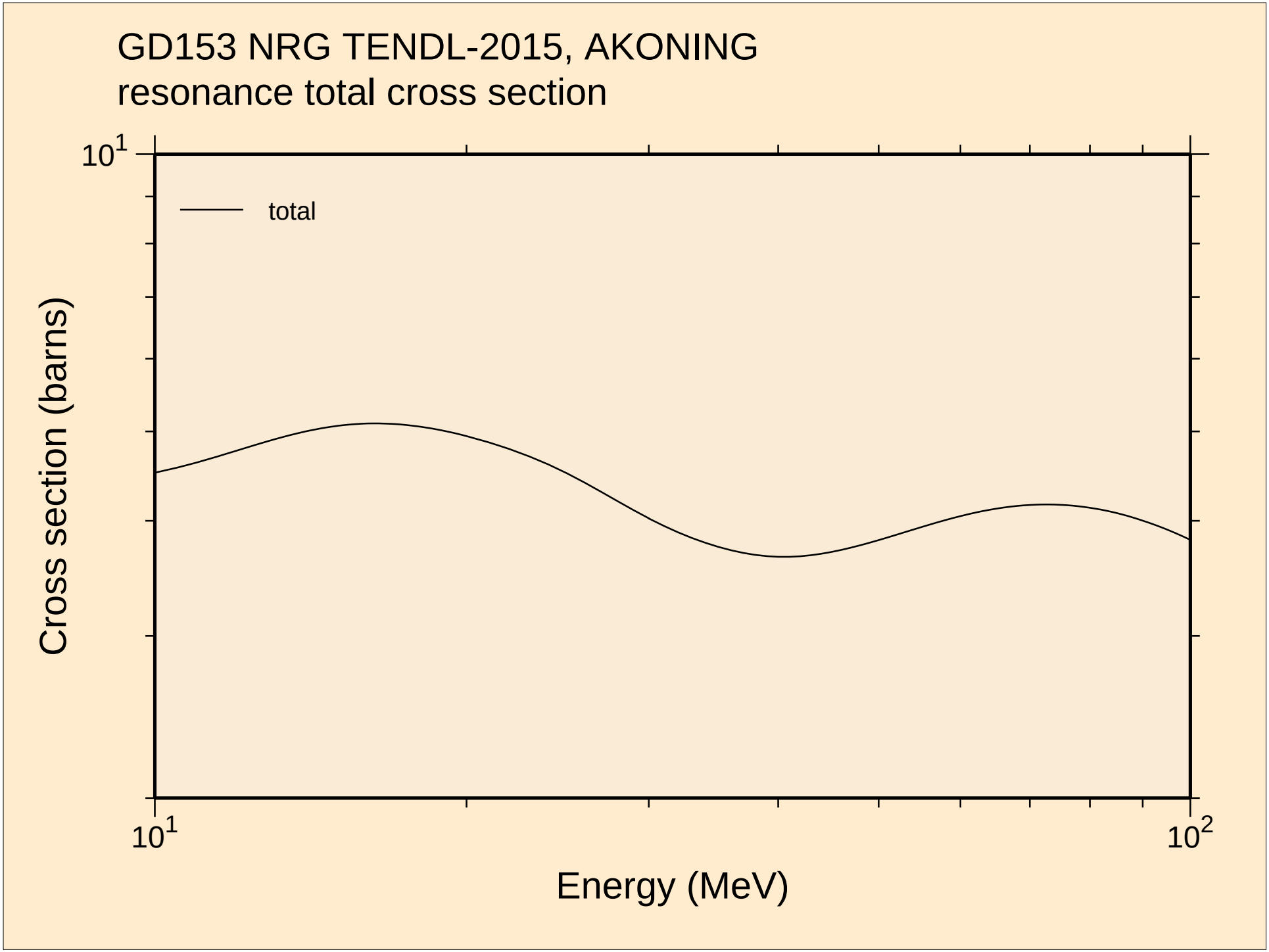
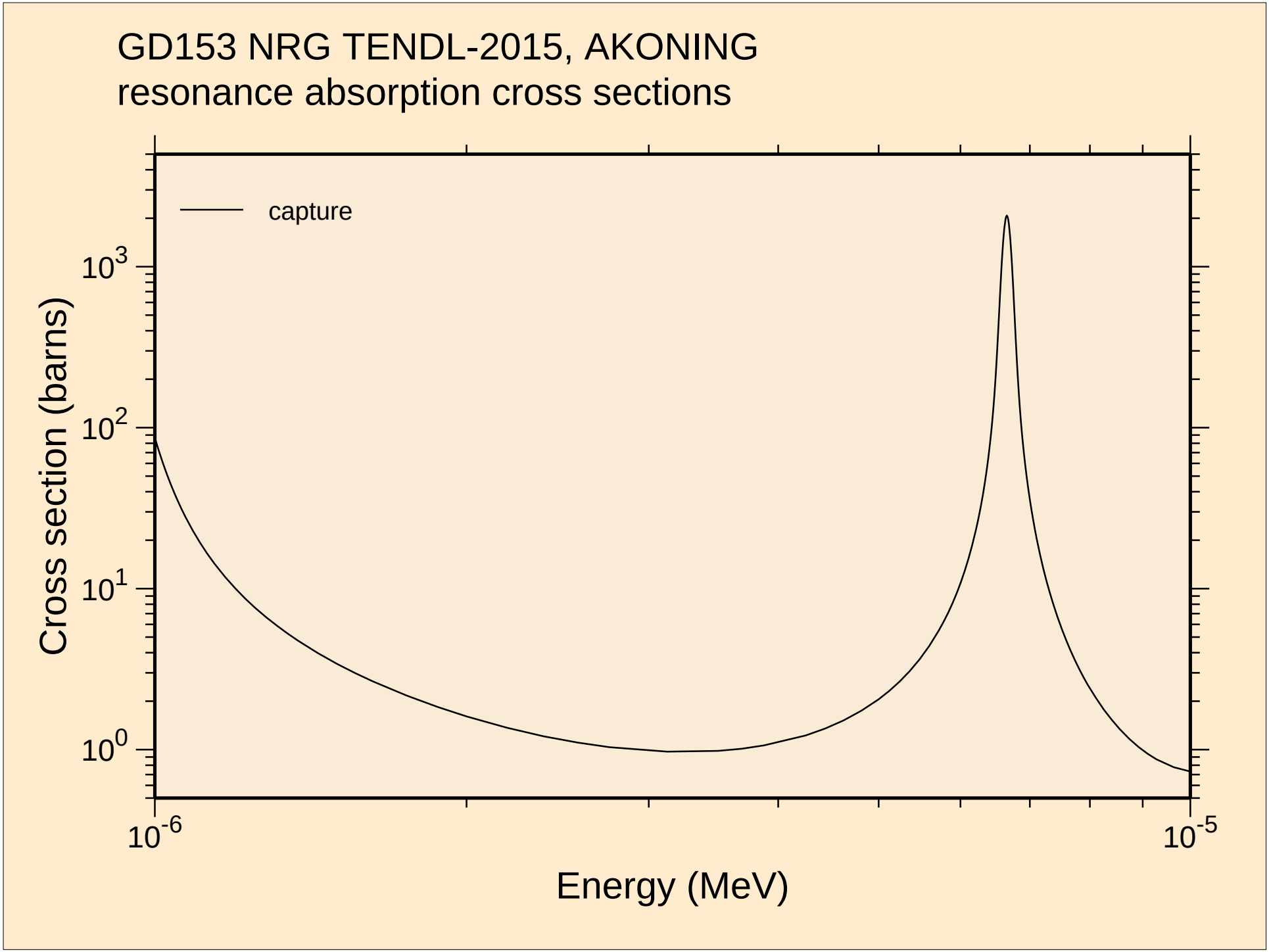

GD153 NRG TENDL-2015, AKONING
Principal cross sections
Cross section (barns)
10^6
10^5
10^4
10^3
10^2
10^1
total
absorption
elastic
gamma production
10^{-11}
10^{-9}
10^{-7}
10^{-5}
10^{-3}
10^{-1}
10^1
Energy (MeV)

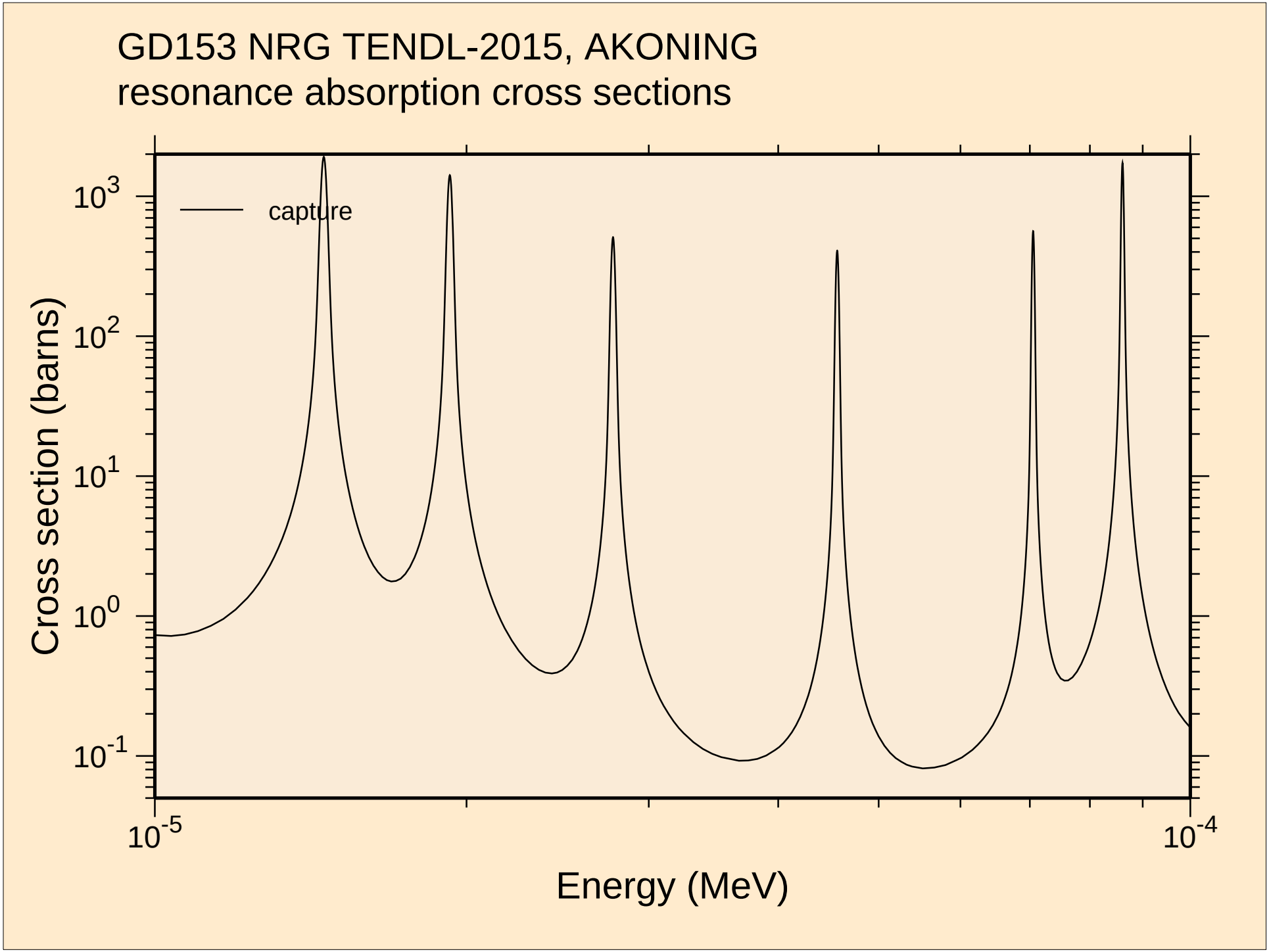

GD153 NRG TENDL-2015, AKONING
resonance total cross section
total
Cross section (barns)
10^3
10^2
10^1
10^-6
10^-5
Energy (MeV)

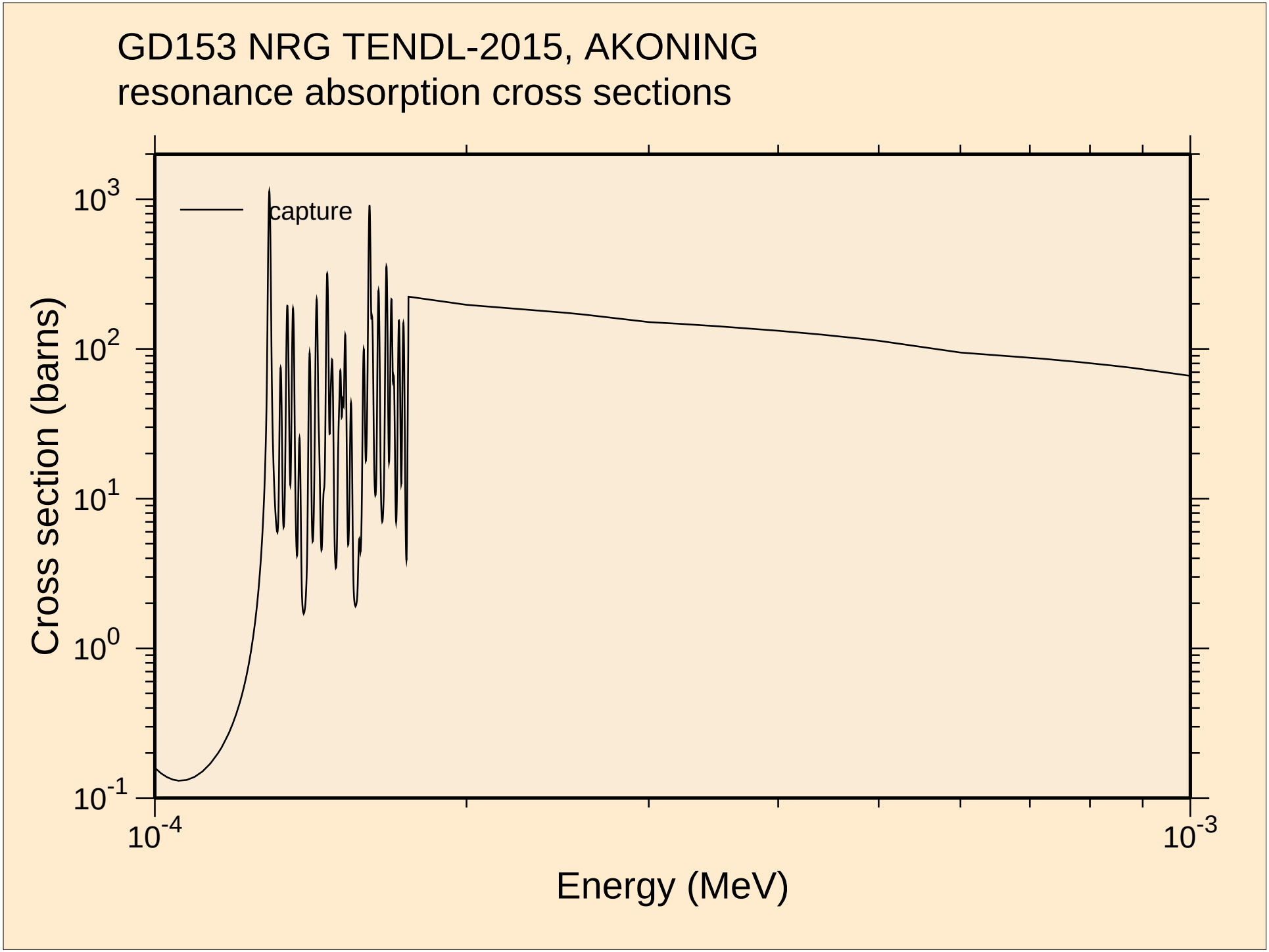

GD153 NRG TENDL-2015, AKONING
resonance total cross section
total
Cross section (barns)
10^3
10^2
10^1
10^-5
10^-4
Energy (MeV)

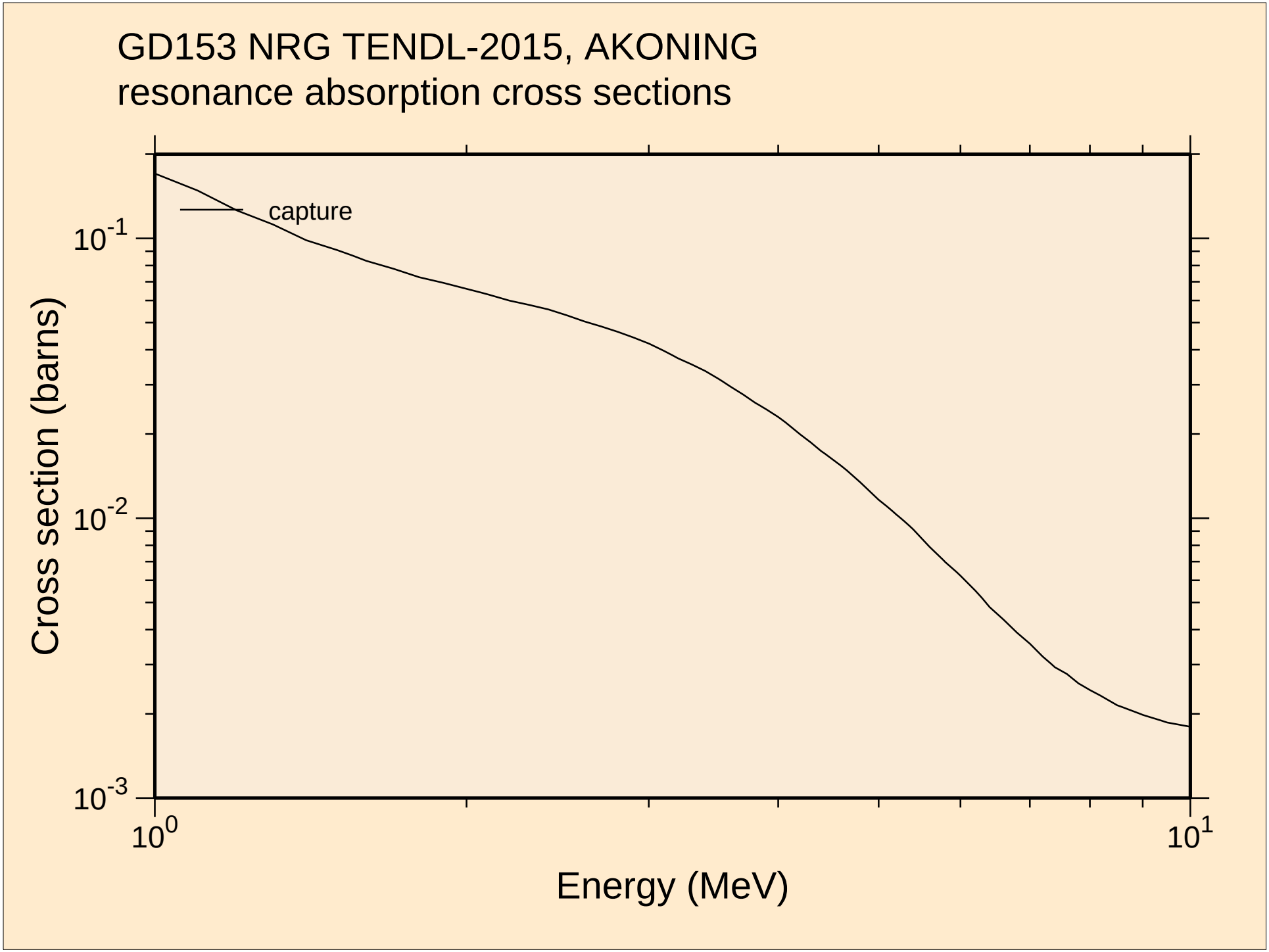

GD153 NRG TENDL-2015, AKONING
resonance total cross section
total
Cross section (barns)
10^3
10^2
10^1
10^-4
10^-3
Energy (MeV)

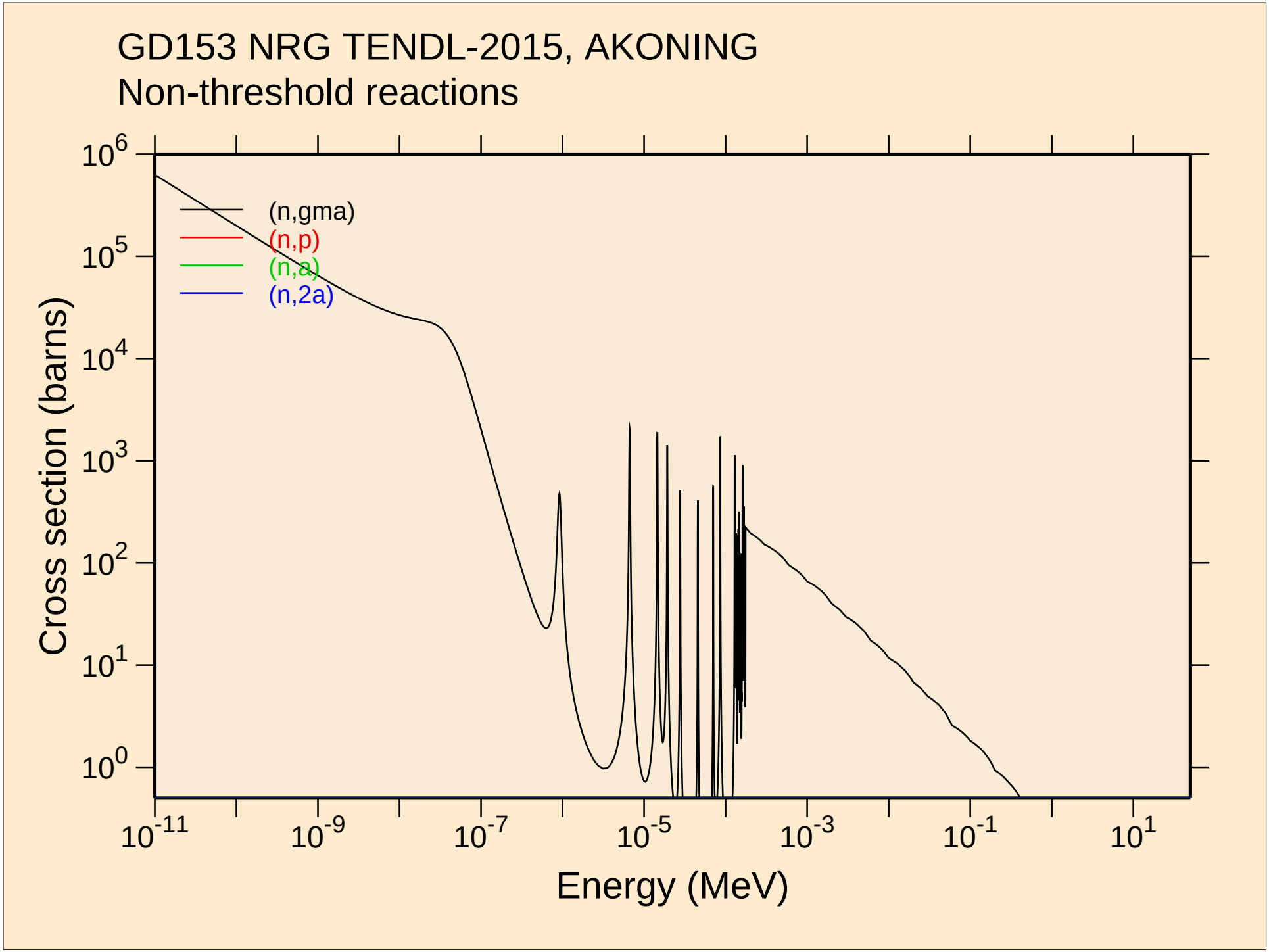

GD153 NRG TENDL-2015, AKONING
resonance total cross section
10^1
total
Cross section (barns)
10^1
10^2
Energy (MeV)

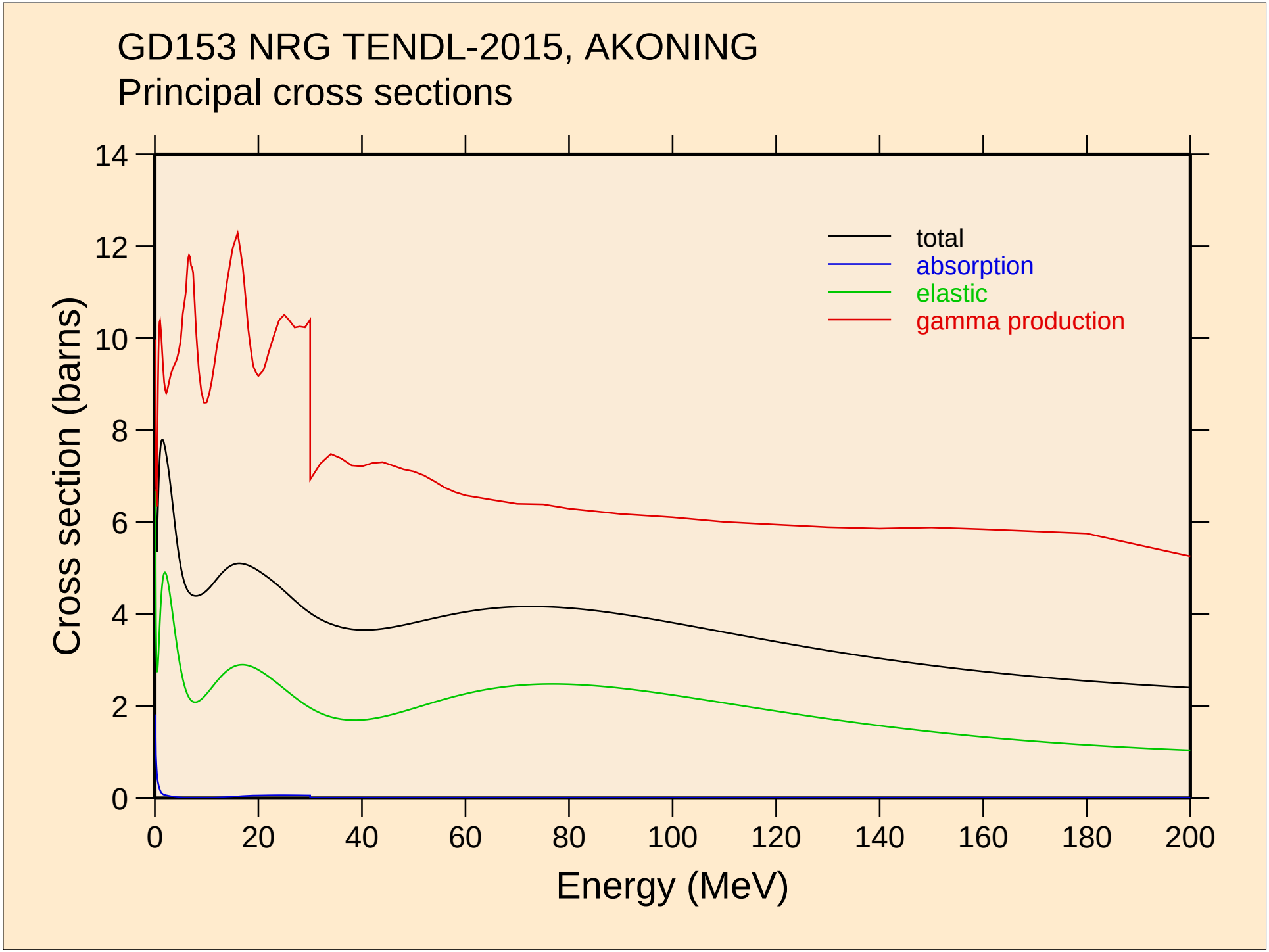

GD153 NRG TENDL-2015, AKONING
resonance absorption cross sections
capture
Cross section (barns)
10^3
10^2
10^1
10^0
10^{-6}
10^{-5}
Energy (MeV)

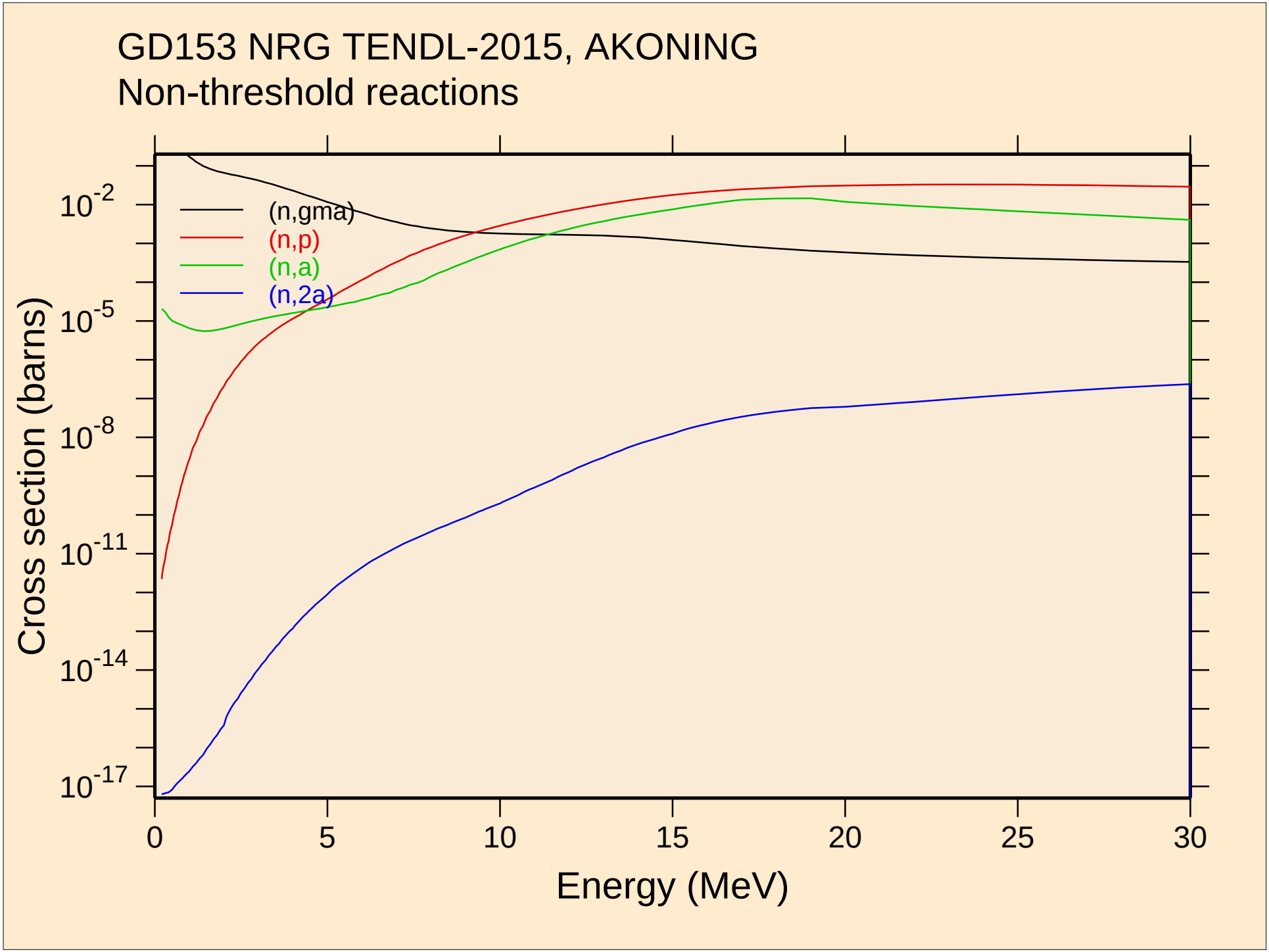

GD153 NRG TENDL-2015, AKONING
resonance absorption cross sections
capture
Cross section (barns)
10^3
10^2
10^1
10^0
10^-1
10^-5
10^-4
Energy (MeV)

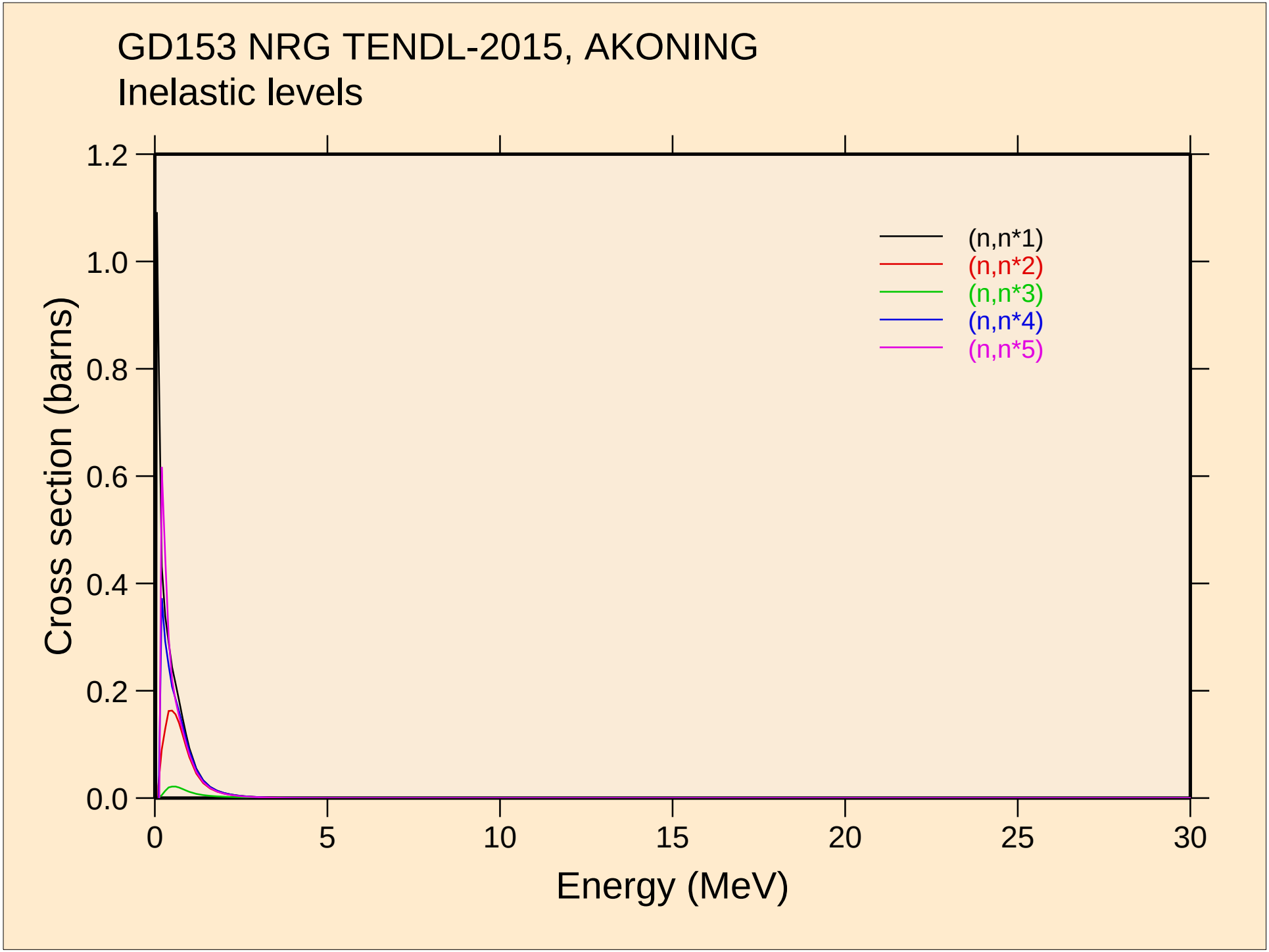

GD153 NRG TENDL-2015, AKONING
resonance absorption cross sections
capture
Cross section (barns)
10^3
10^2
10^1
10^0
10^-1
10^-4
10^-3
Energy (MeV)

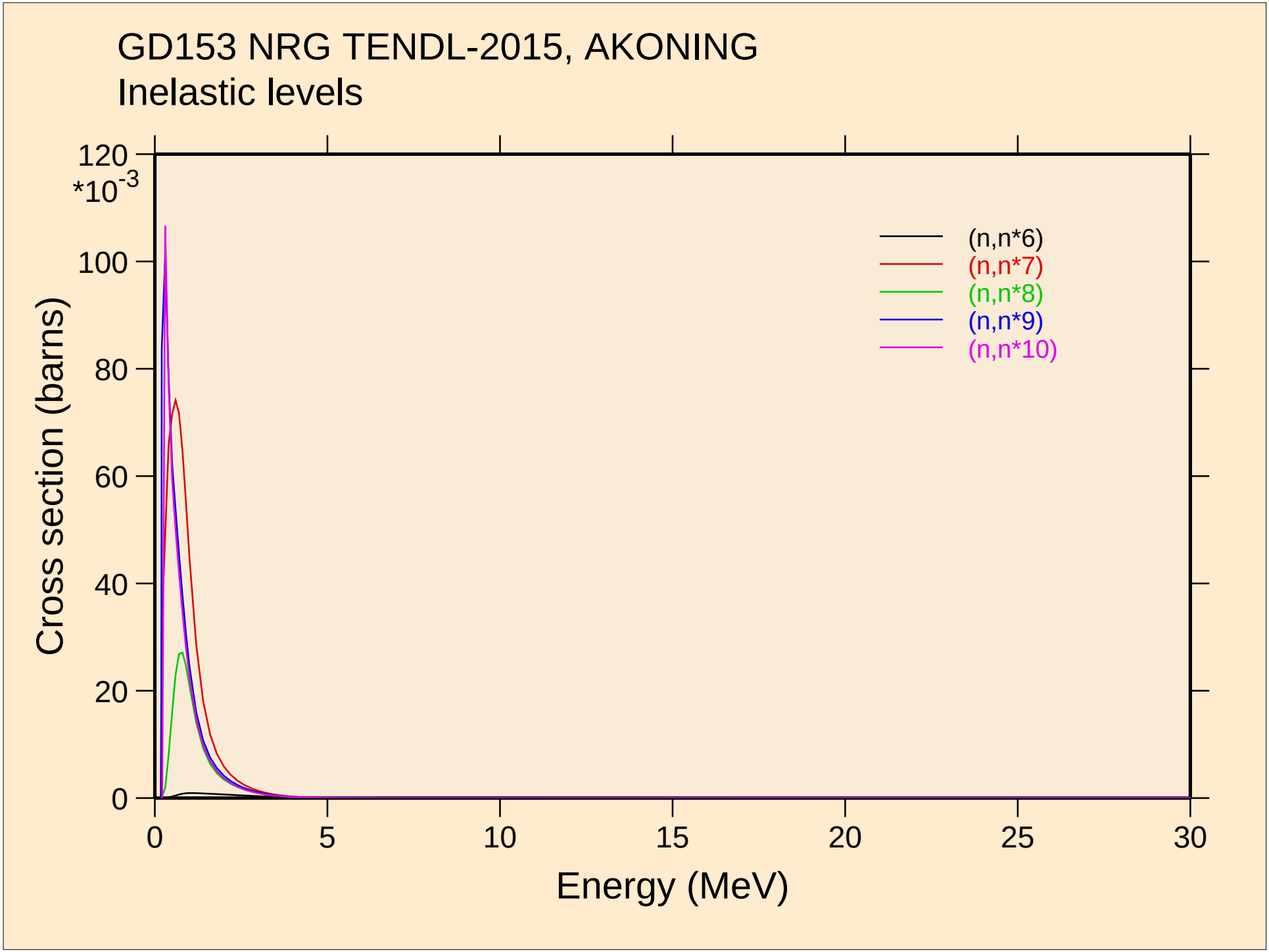

GD153 NRG TENDL-2015, AKONING
resonance absorption cross sections
capture
Cross section (barns)
10-1
10-2
10-3
100
101
Energy (MeV)

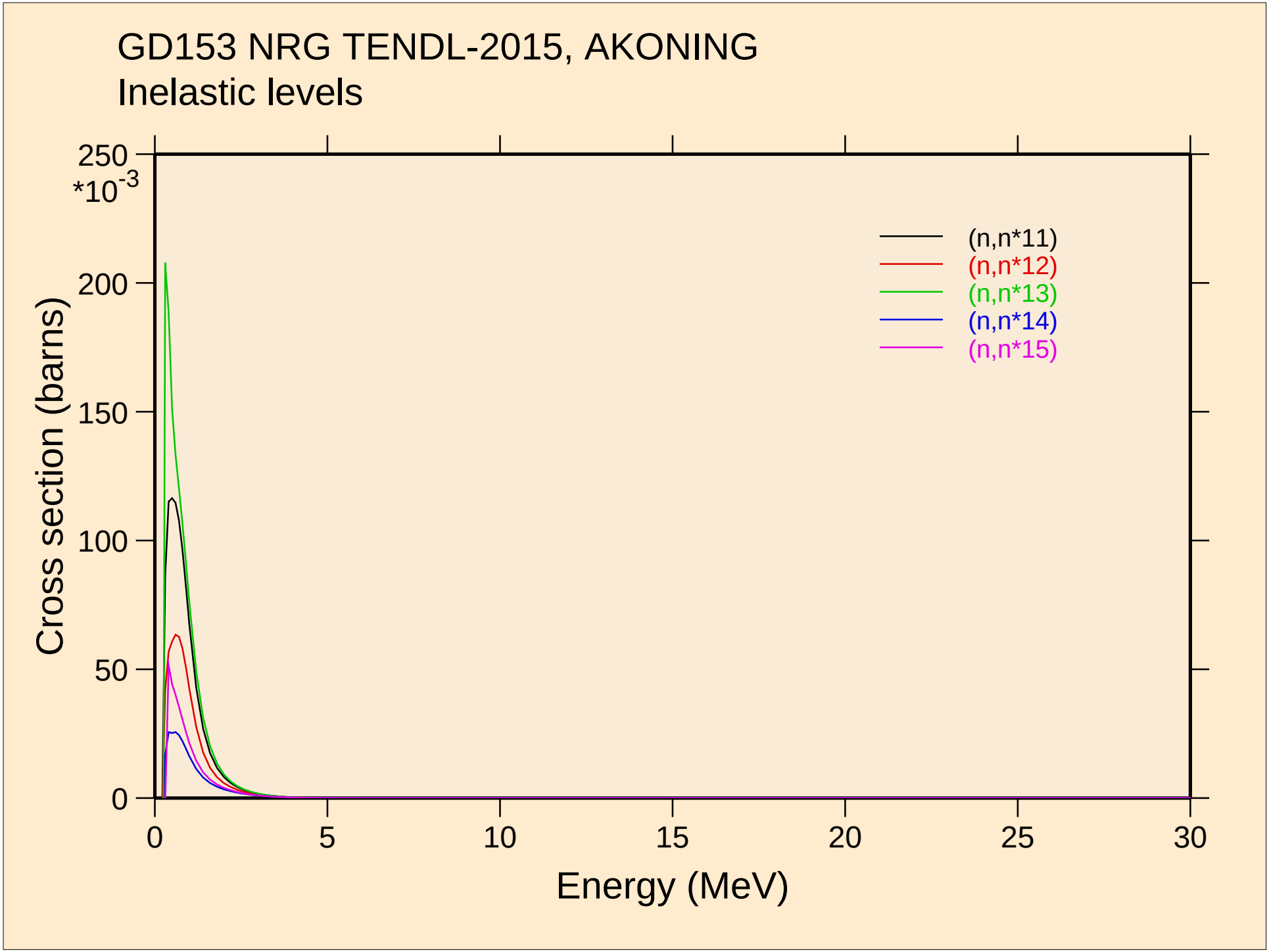

GD153 NRG TENDL-2015, AKONING
Non-threshold reactions
(n,gma)
(n,p)
(n,a)
(n,2a)
Cross section (barns)
Energy (MeV)
10^6
10^5
10^4
10^3
10^2
10^1
10^0
10^-11
10^-9
10^-7
10^-5
10^-3
10^-1
10^1

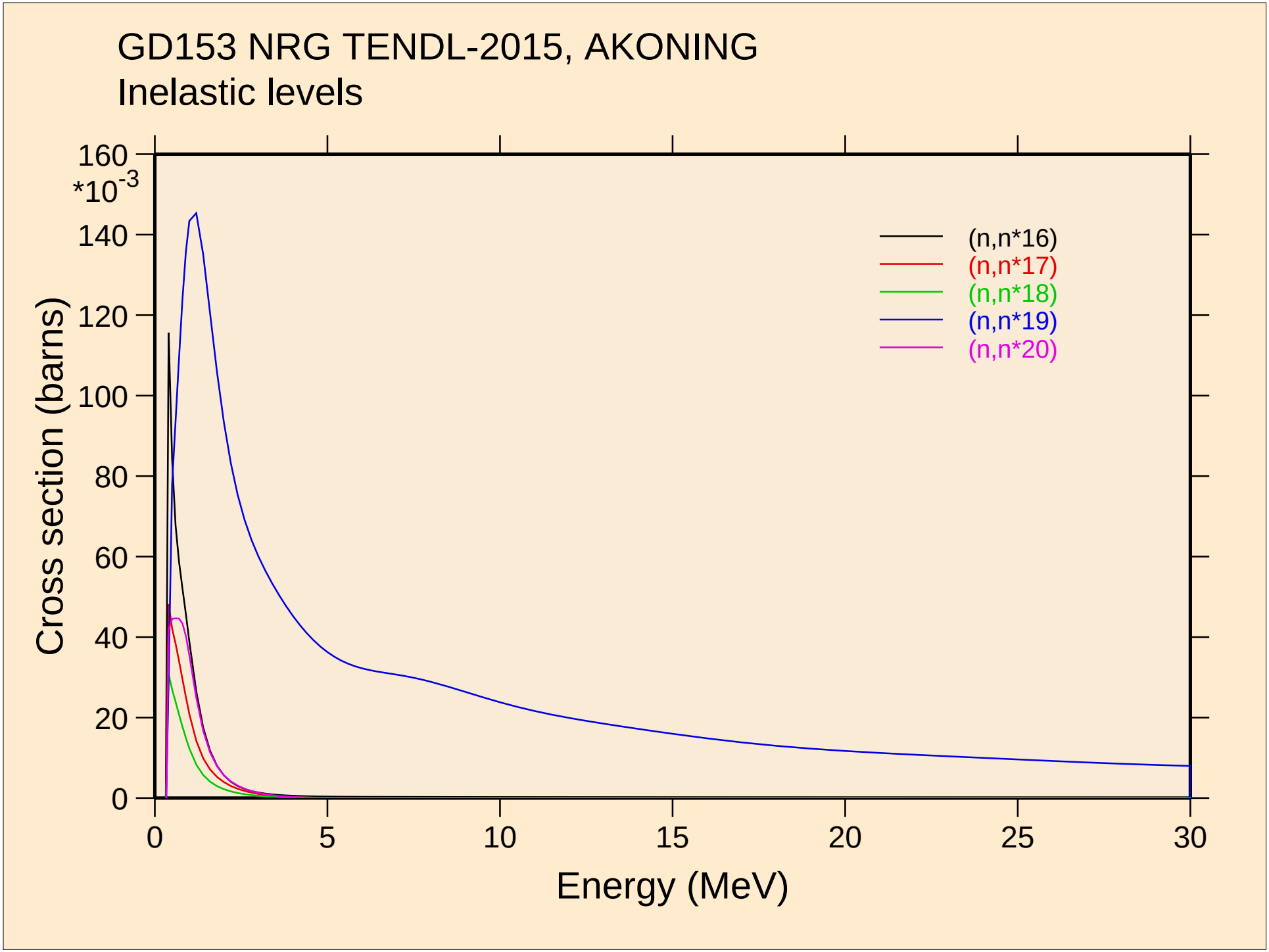

GD153 NRG TENDL-2015, AKONING
Principal cross sections
Cross section (barns)
Energy (MeV)
0
2
4
6
8
10
12
14
0
20
40
60
80
100
120
140
160
180
200
total
absorption
elastic
gamma production

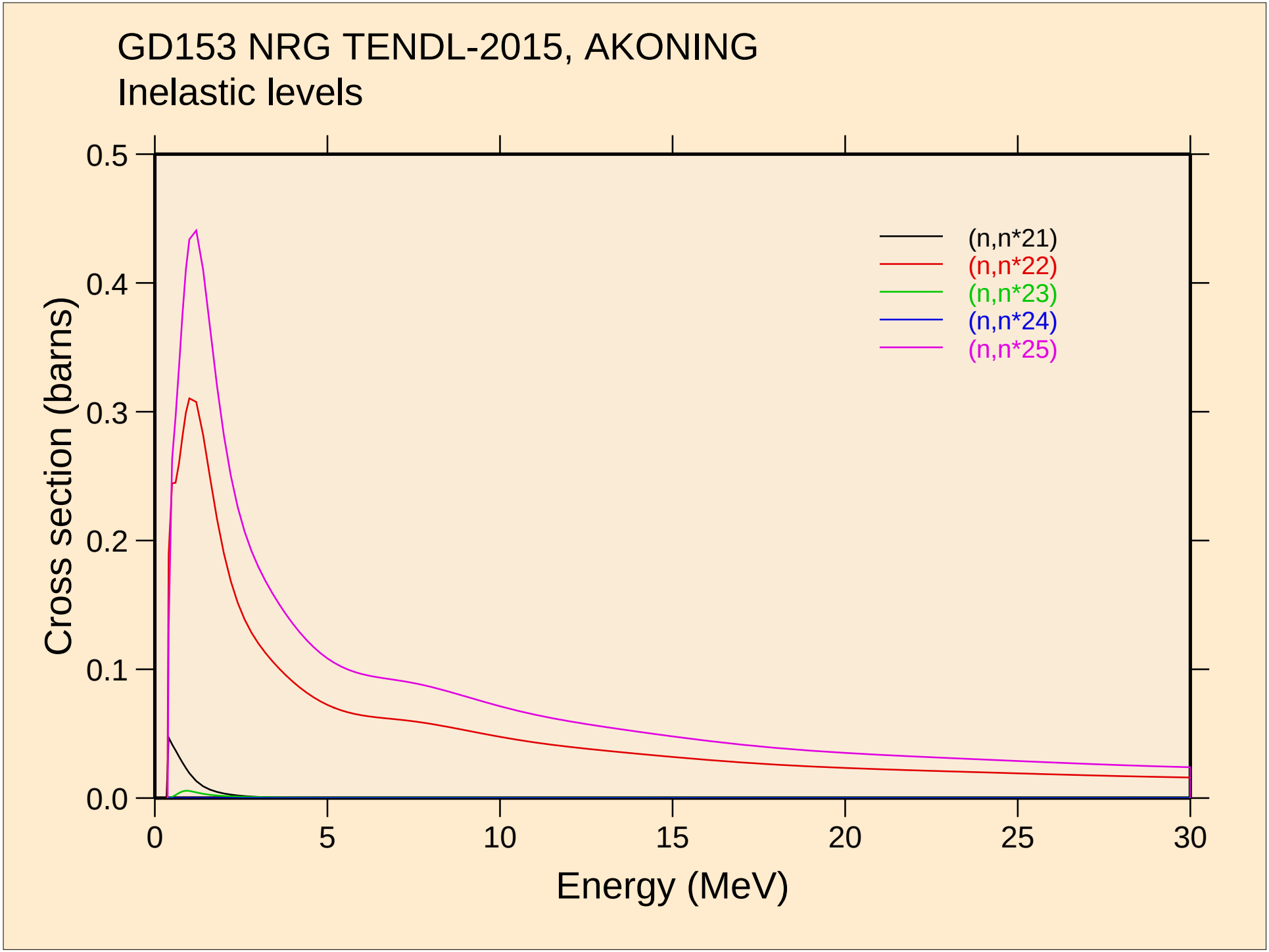

GD153 NRG TENDL-2015, AKONING
Non-threshold reactions
(n,gma)
(n,p)
(n,a)
(n,2a)
Cross section (barns)
10-2
10-5
10-8
10-11
10-14
10-17
0
5
10
15
20
25
30
Energy (MeV)

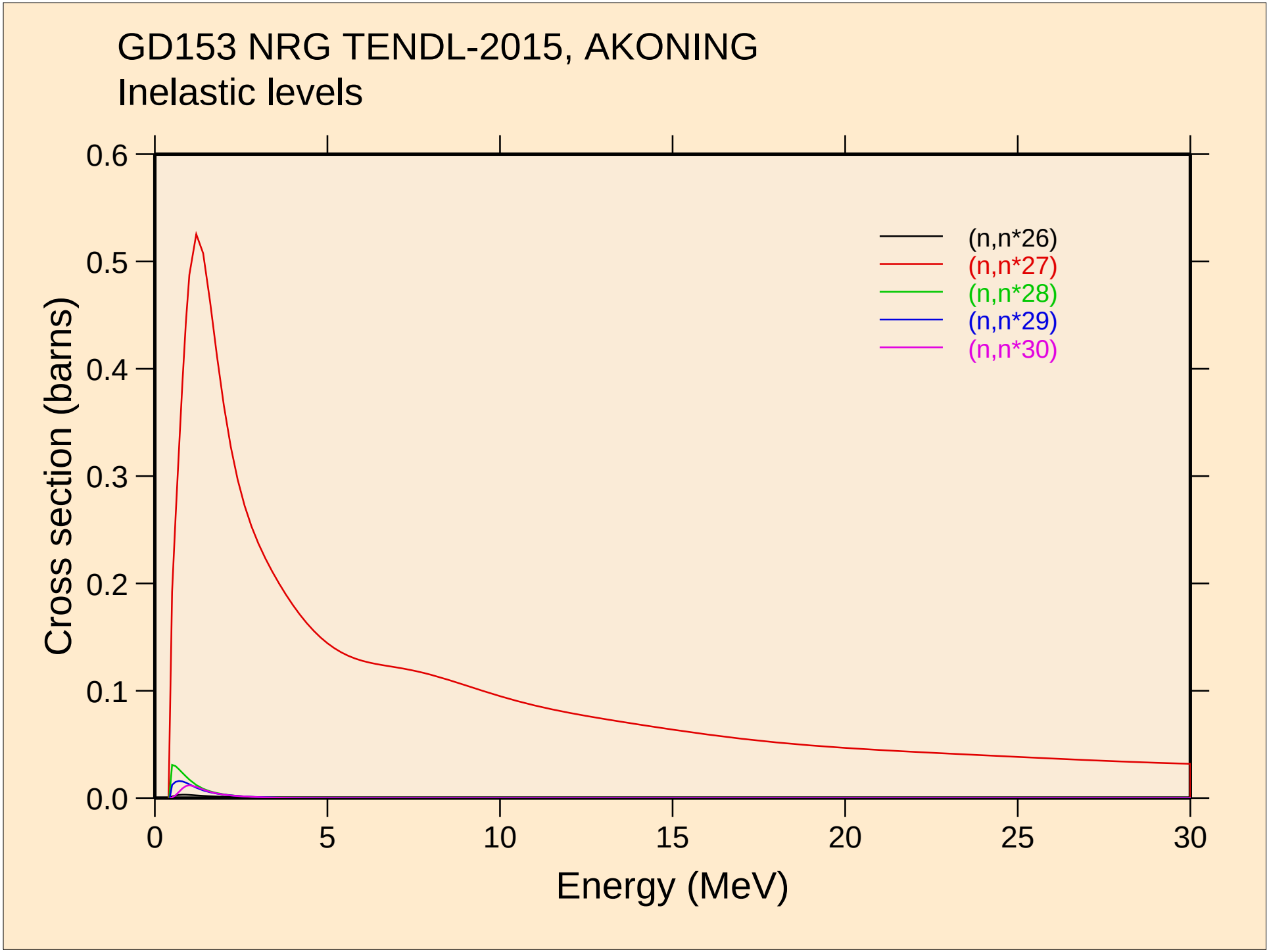

GD153 NRG TENDL-2015, AKONING
Inelastic levels
Cross section (barns)
Energy (MeV)
1.2
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
25
30
(n,n*1)
(n,n*2)
(n,n*3)
(n,n*4)
(n,n*5)

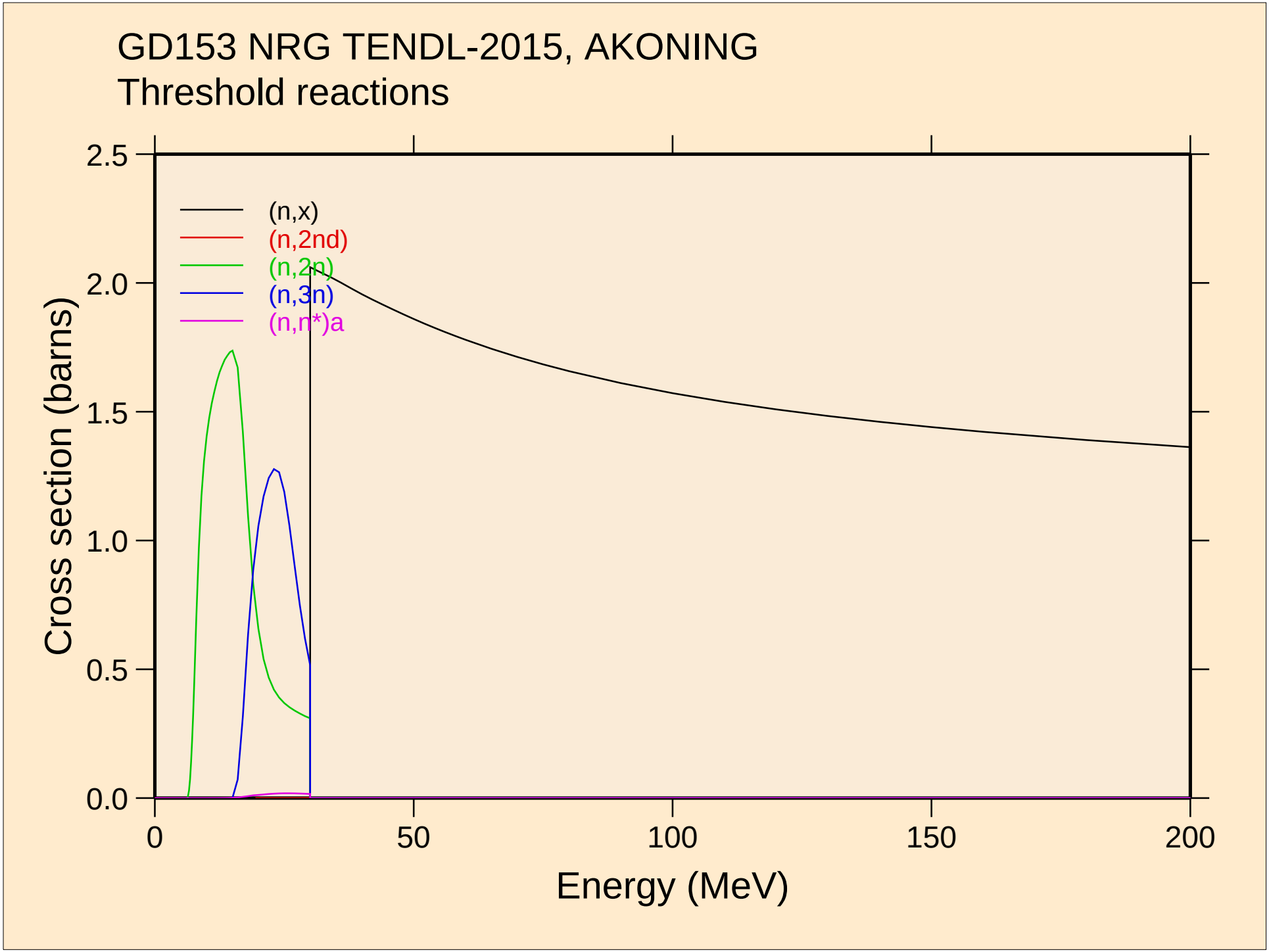

GD153 NRG TENDL-2015, AKONING
Inelastic levels
120
*10-3
100
80
60
40
20
0
Cross section (barns)
0
5
10
15
20
25
30
Energy (MeV)
(n,n*6)
(n,n*7)
(n,n*8)
(n,n*9)
(n,n*10)

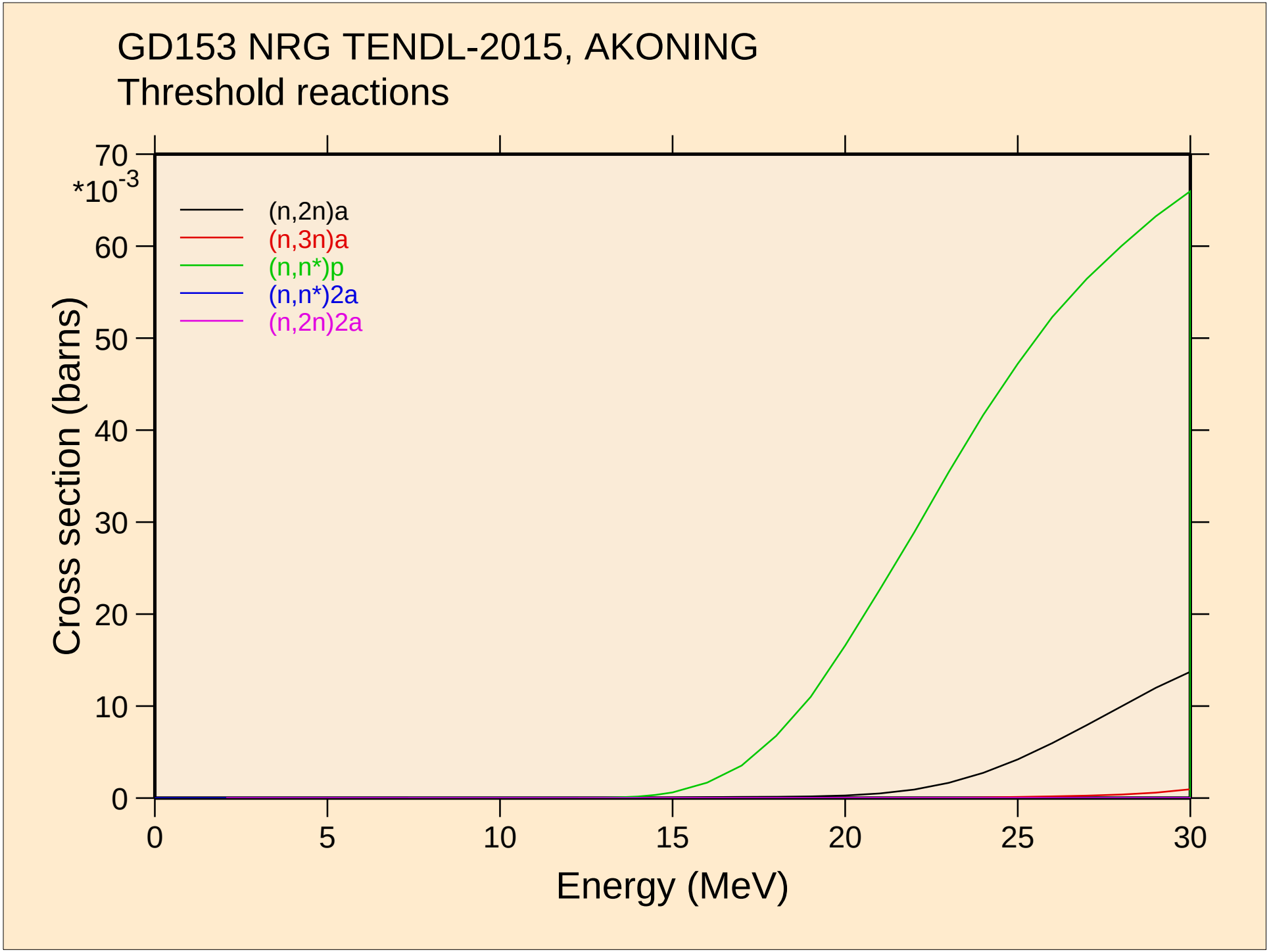

GD153 NRG TENDL-2015, AKONING
Inelastic levels
250
*10-3
200
150
100
50
0
Cross section (barns)
0
5
10
15
20
25
30
Energy (MeV)
(n,n*11)
(n,n*12)
(n,n*13)
(n,n*14)
(n,n*15)

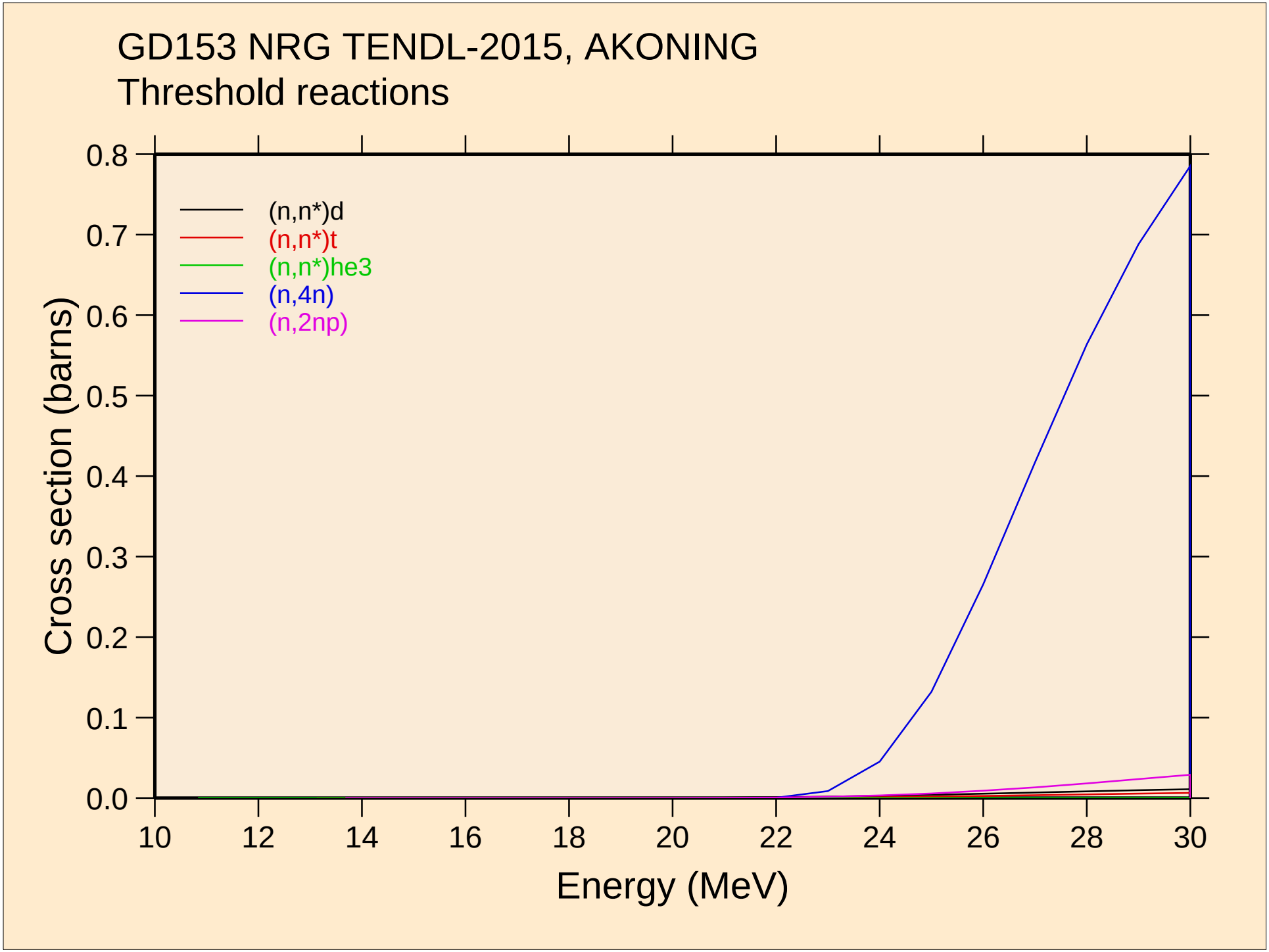

GD153 NRG TENDL-2015, AKONING
Inelastic levels
Cross section (barns)
*10-3
160
140
120
100
80
60
40
20
0
0
5
10
15
20
25
30
Energy (MeV)
(n,n*16)
(n,n*17)
(n,n*18)
(n,n*19)
(n,n*20)

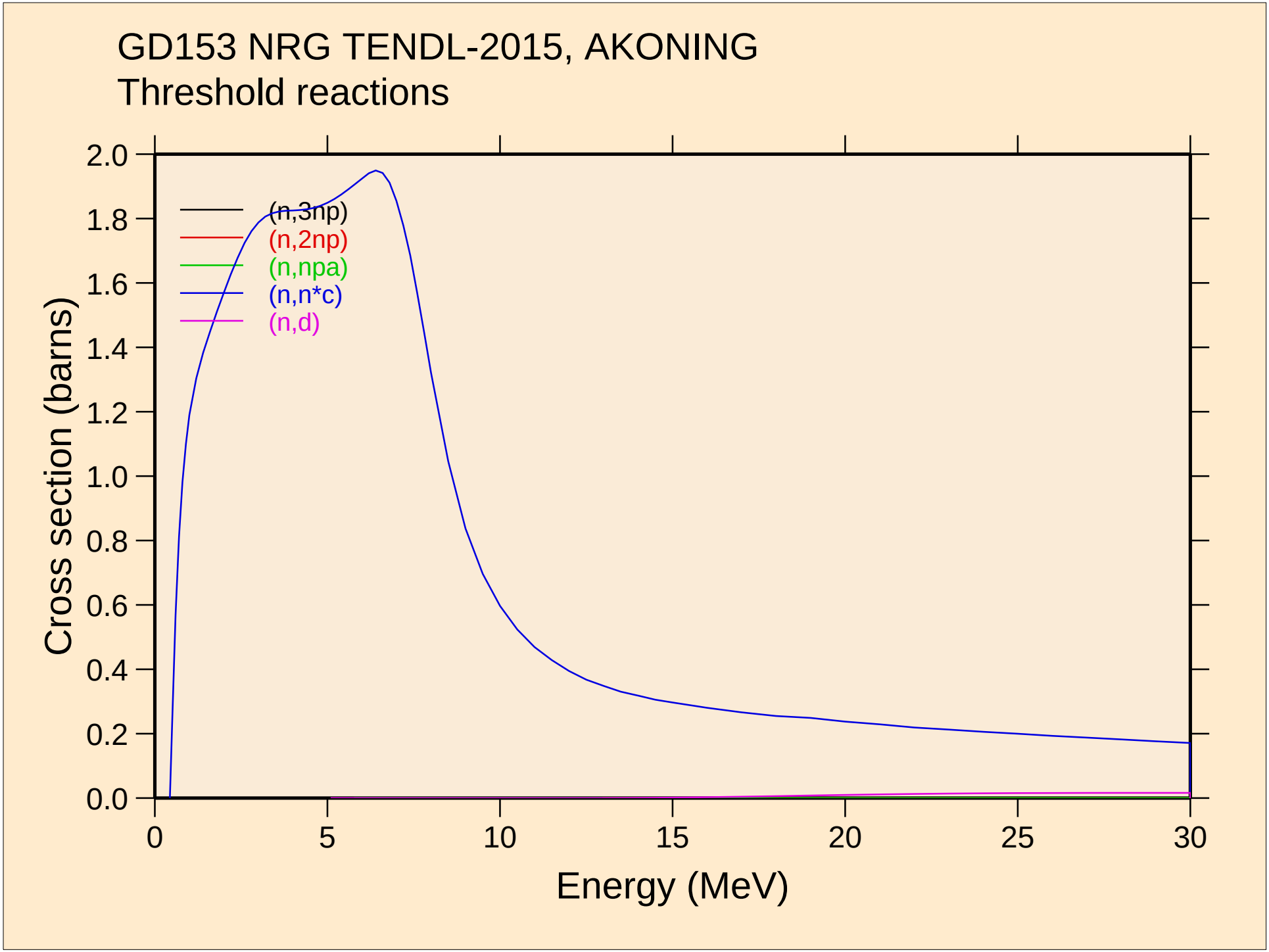

GD153 NRG TENDL-2015, AKONING
Inelastic levels
Cross section (barns)
0.0
0.1
0.2
0.3
0.4
0.5
0
5
10
15
20
25
30
Energy (MeV)
(n,n*21)
(n,n*22)
(n,n*23)
(n,n*24)
(n,n*25)

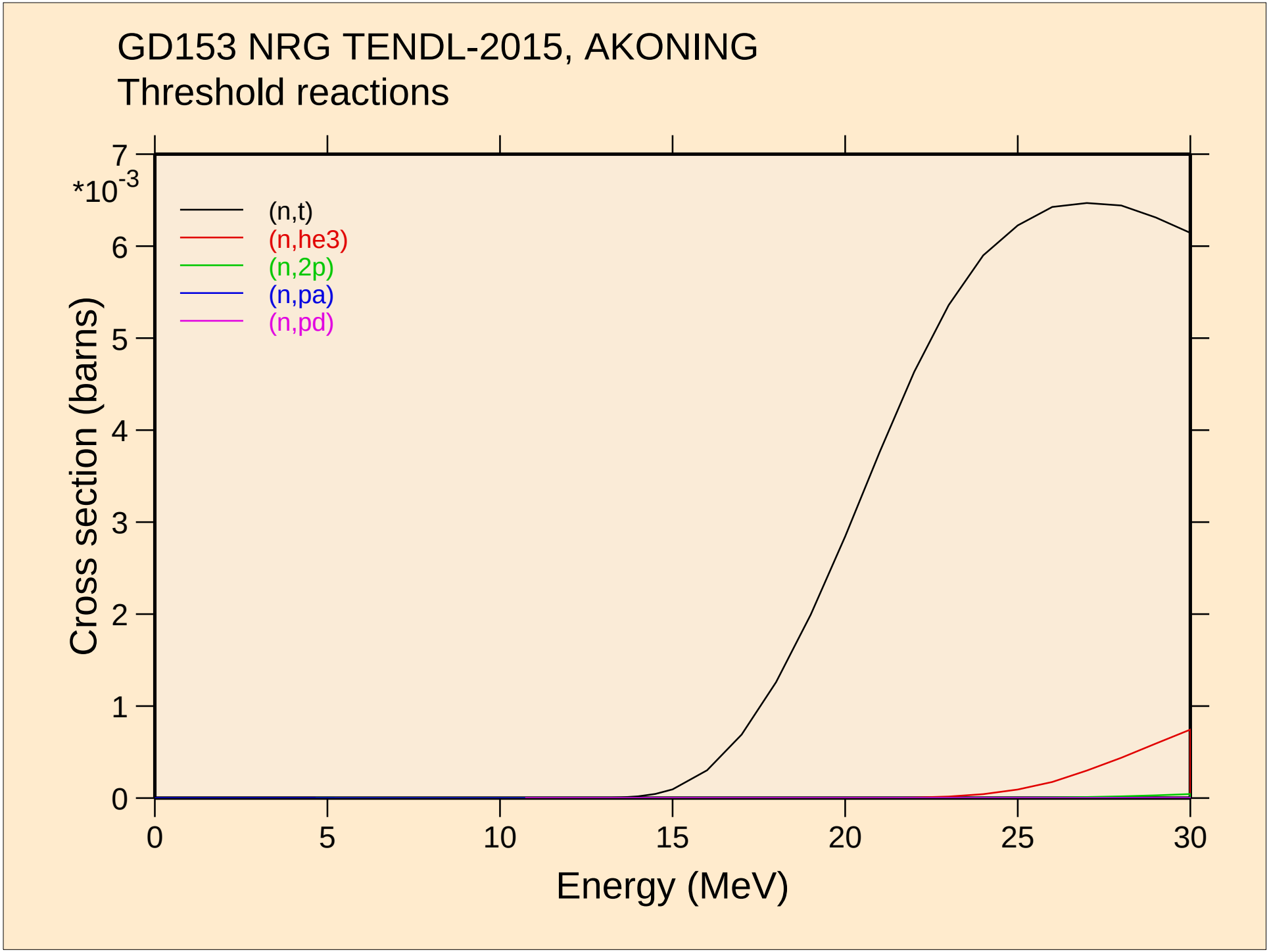

GD153 NRG TENDL-2015, AKONING
Inelastic levels
Cross section (barns)
Energy (MeV)
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0
5
10
15
20
25
30
(n,n*26)
(n,n*27)
(n,n*28)
(n,n*29)
(n,n*30)

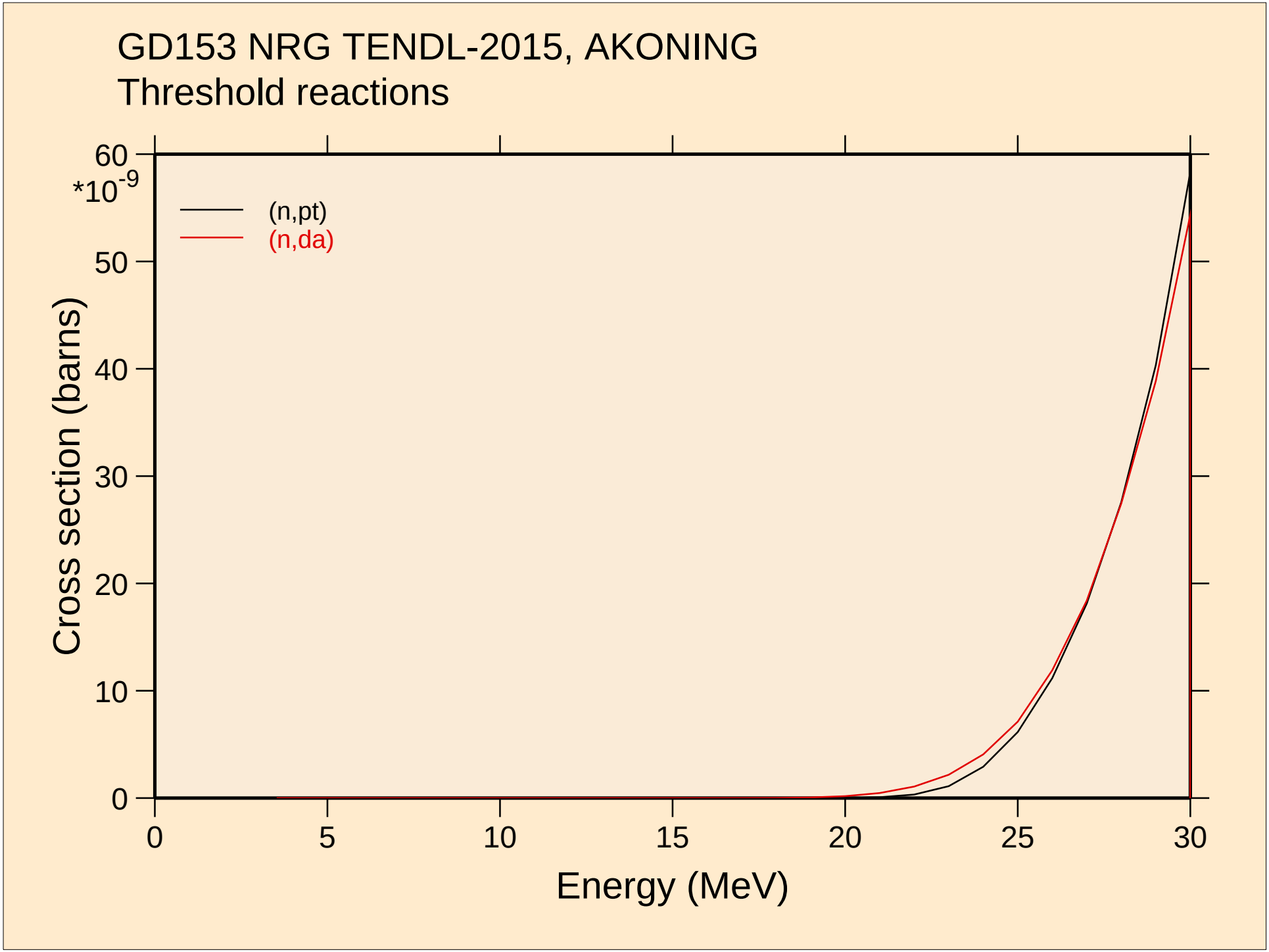

GD153 NRG TENDL-2015, AKONING
Threshold reactions
(n,x)
(n,2nd)
(n,2n)
(n,3n)
(n,n*)a
Cross section (barns)
2.5
2.0
1.5
1.0
0.5
0.0
0
50
100
150
200
Energy (MeV)

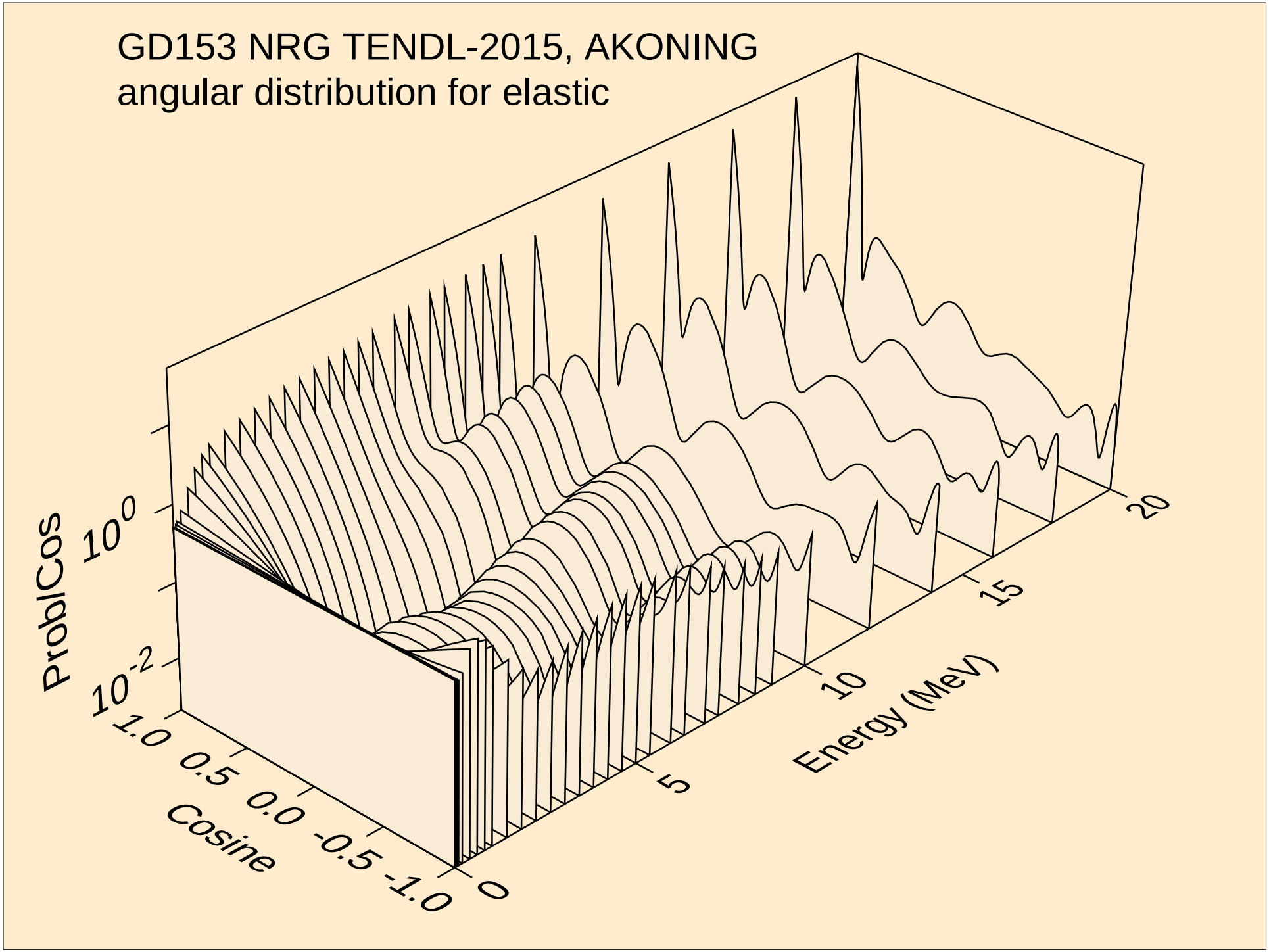

GD153 NRG TENDL-2015, AKONING
Threshold reactions
*10-3
Cross section (barns)
Energy (MeV)
(n,2n)a
(n,3n)a
(n,n*)p
(n,n*)2a
(n,2n)2a
0
10
20
30
40
50
60
70
0
5
10
15
20
25
30

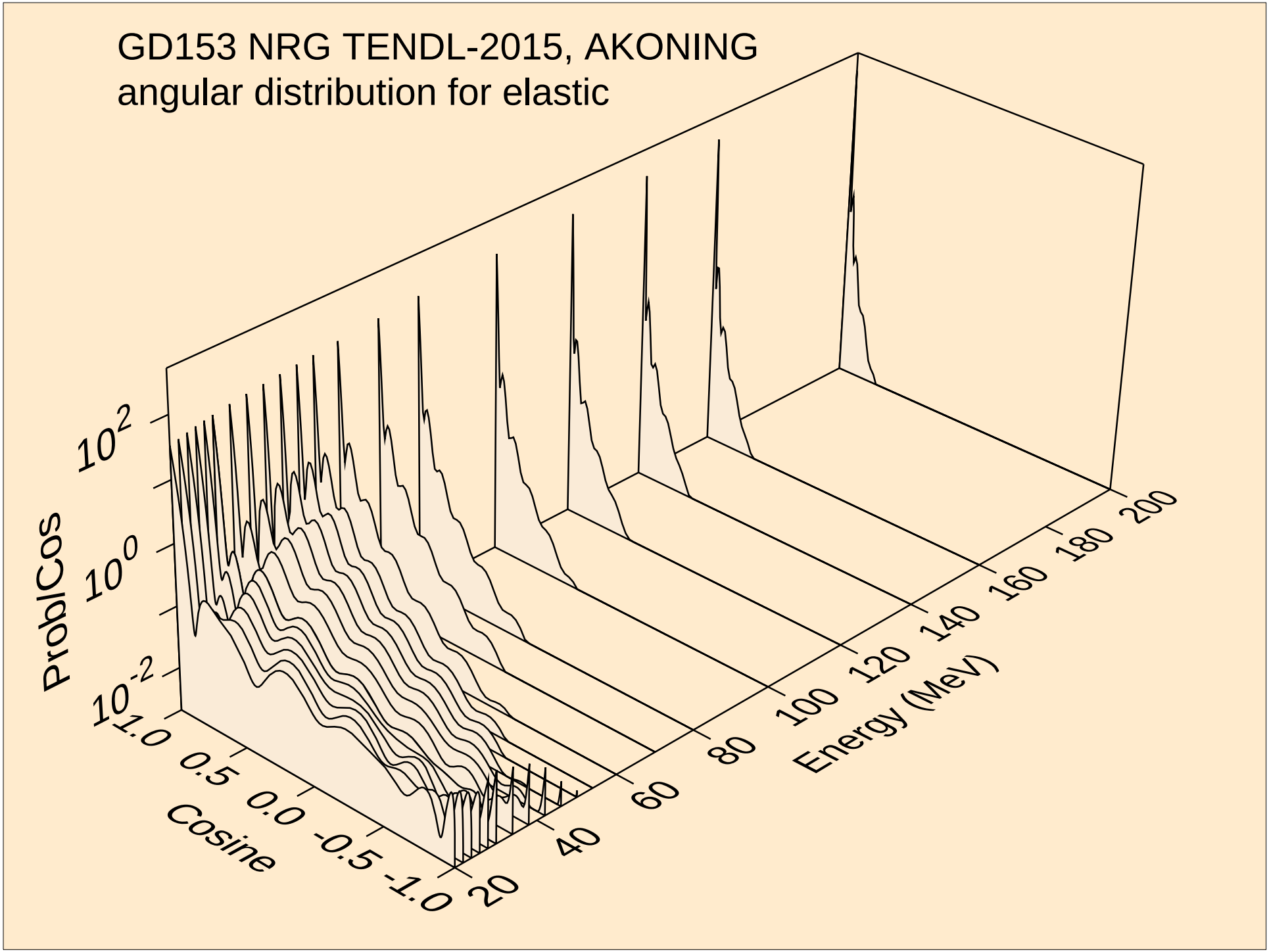

GD153 NRG TENDL-2015, AKONING
Threshold reactions
(n,n*)d
(n,n*)t
(n,n*)he3
(n,4n)
(n,2np)
Cross section (barns)
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
10
12
14
16
18
20
22
24
26
28
30
Energy (MeV)

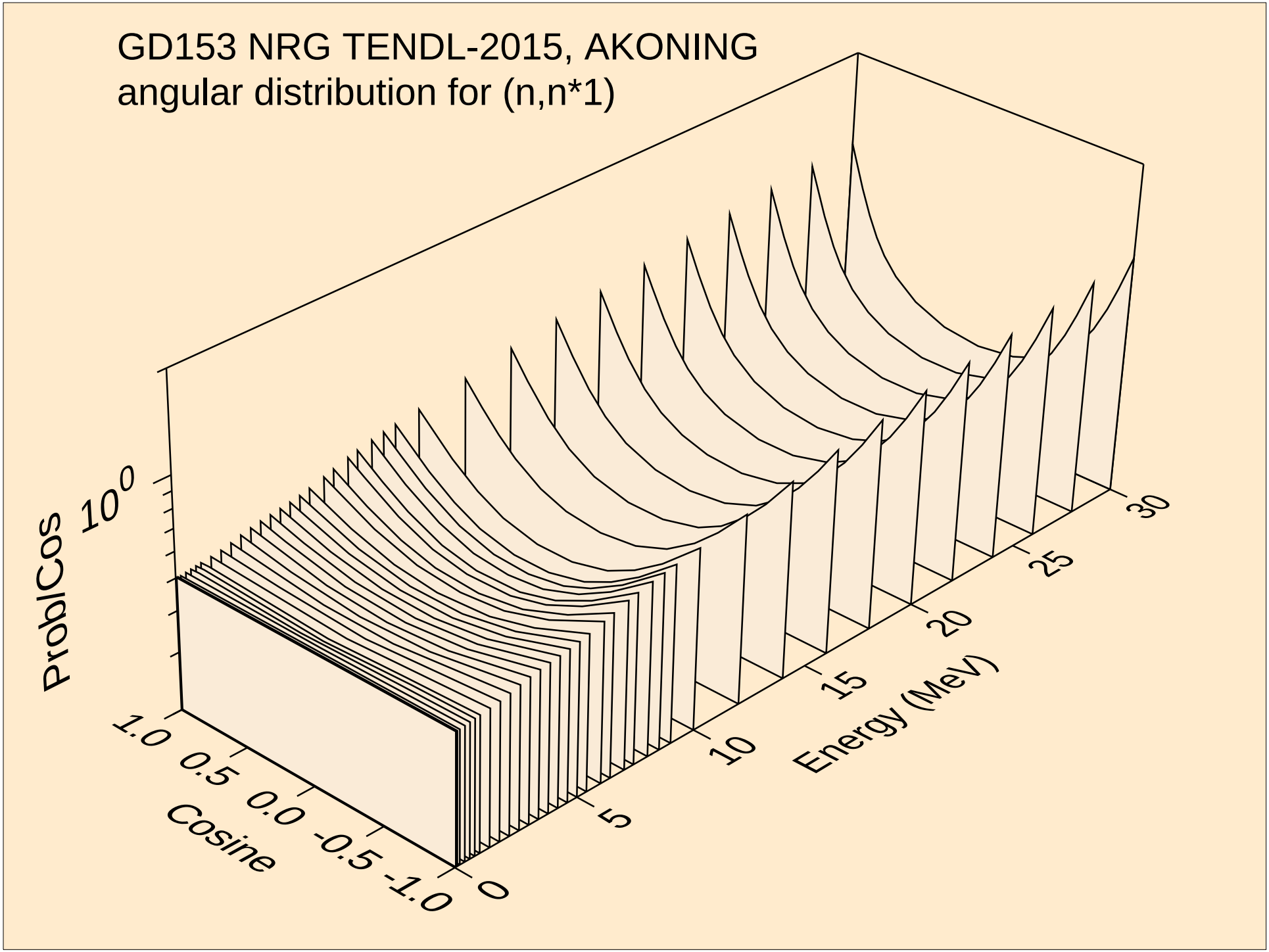

GD153 NRG TENDL-2015, AKONING
Threshold reactions
Cross section (barns)
Energy (MeV)
(n,3np)
(n,2np)
(n,npa)
(n,n*c)
(n,d)
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
1.6
1.8
2.0
0
5
10
15
20
25
30

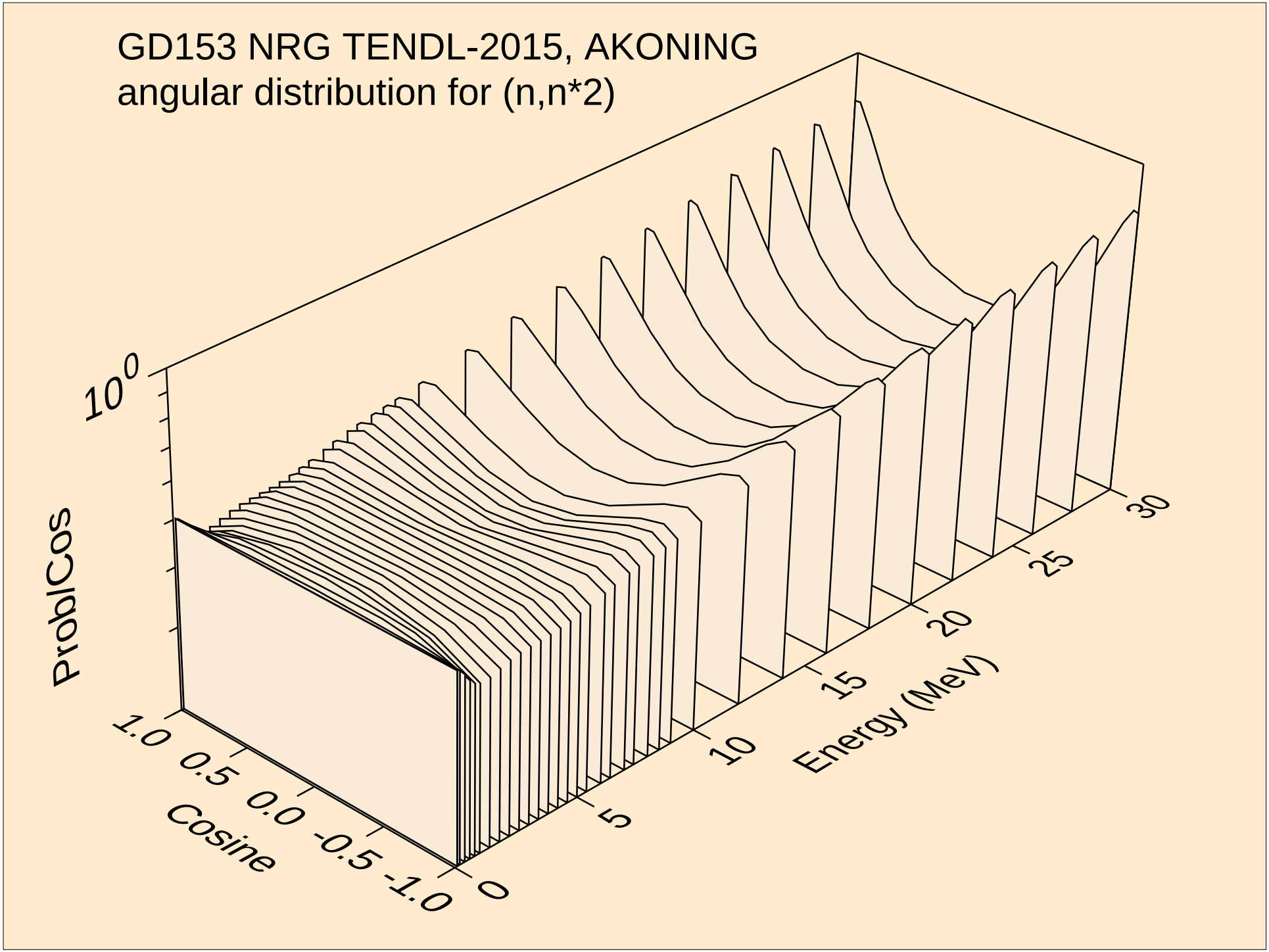

GD153 NRG TENDL-2015, AKONING
Threshold reactions
*10-3
Cross section (barns)
Energy (MeV)
(n,t)
(n,he3)
(n,2p)
(n,pa)
(n,pd)
0
1
2
3
4
5
6
7
0
5
10
15
20
25
30

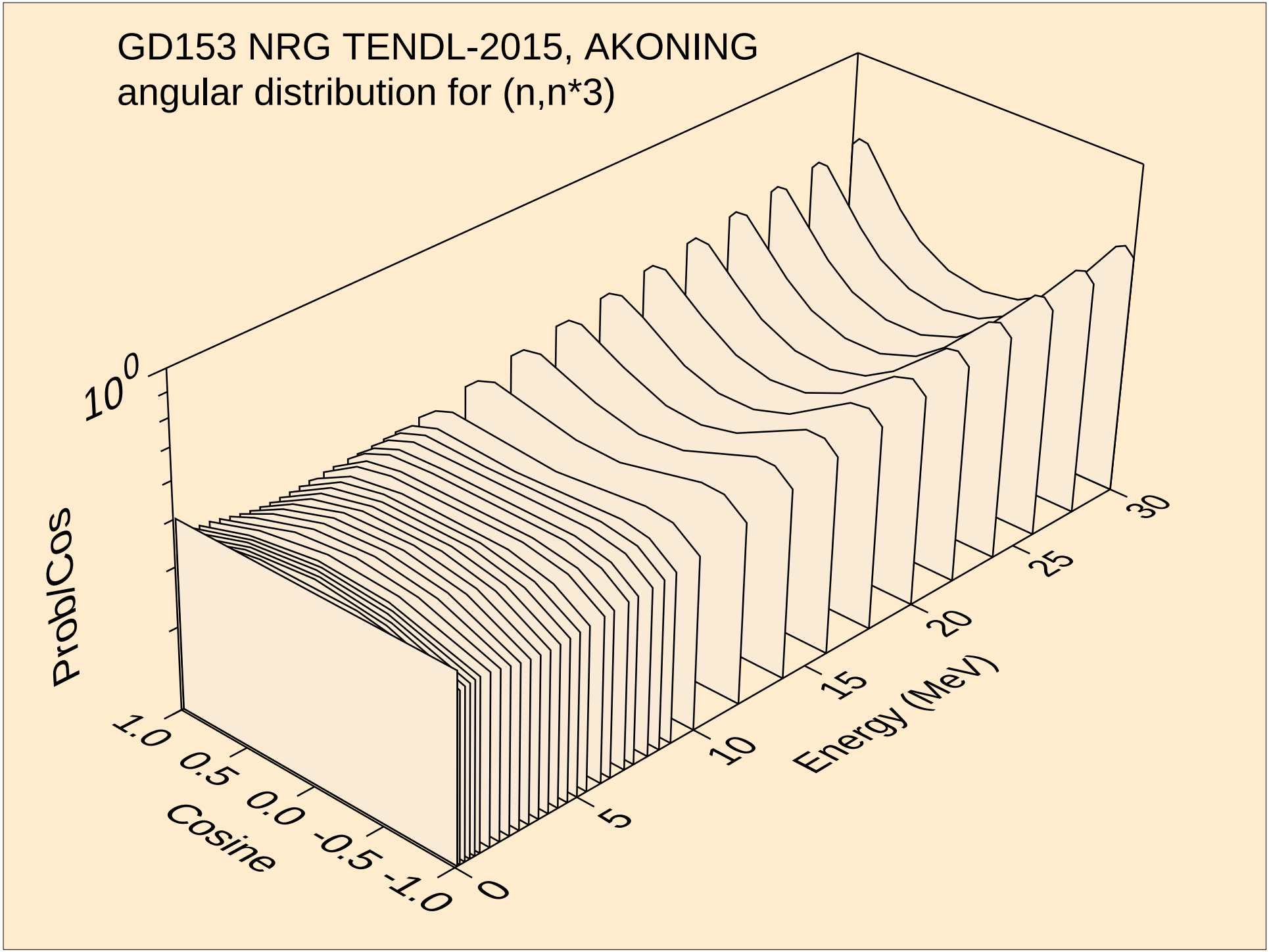

GD153 NRG TENDL-2015, AKONING
Threshold reactions
*10-9
(n,pt)
(n,da)
Cross section (barns)
Energy (MeV)
0
10
20
30
40
50
60
0
5
10
15
20
25
30

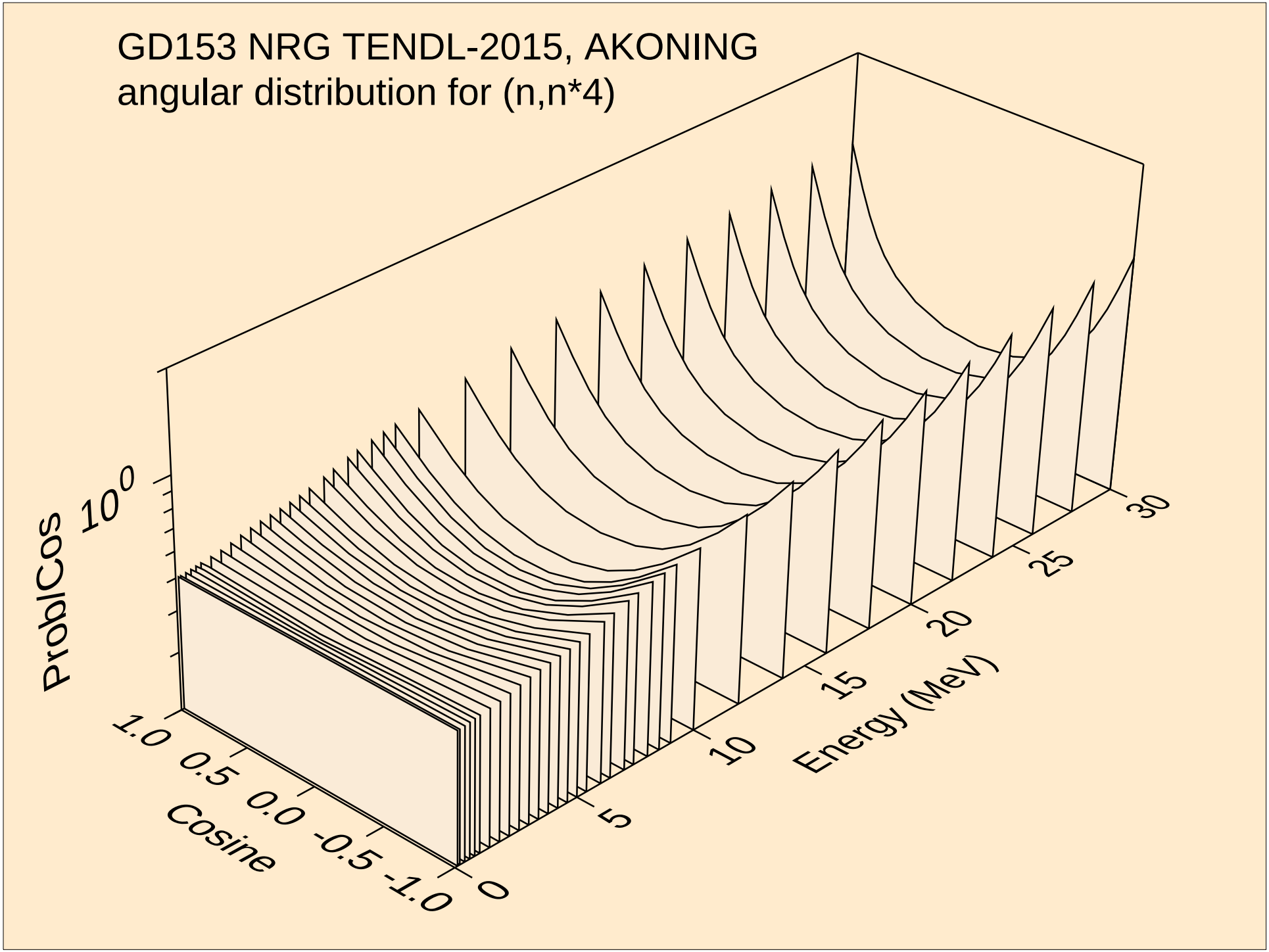

GD153 NRG TENDL-2015, AKONING
angular distribution for elastic
ProbCos
10^0
10^{-2}
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
Energy (MeV)

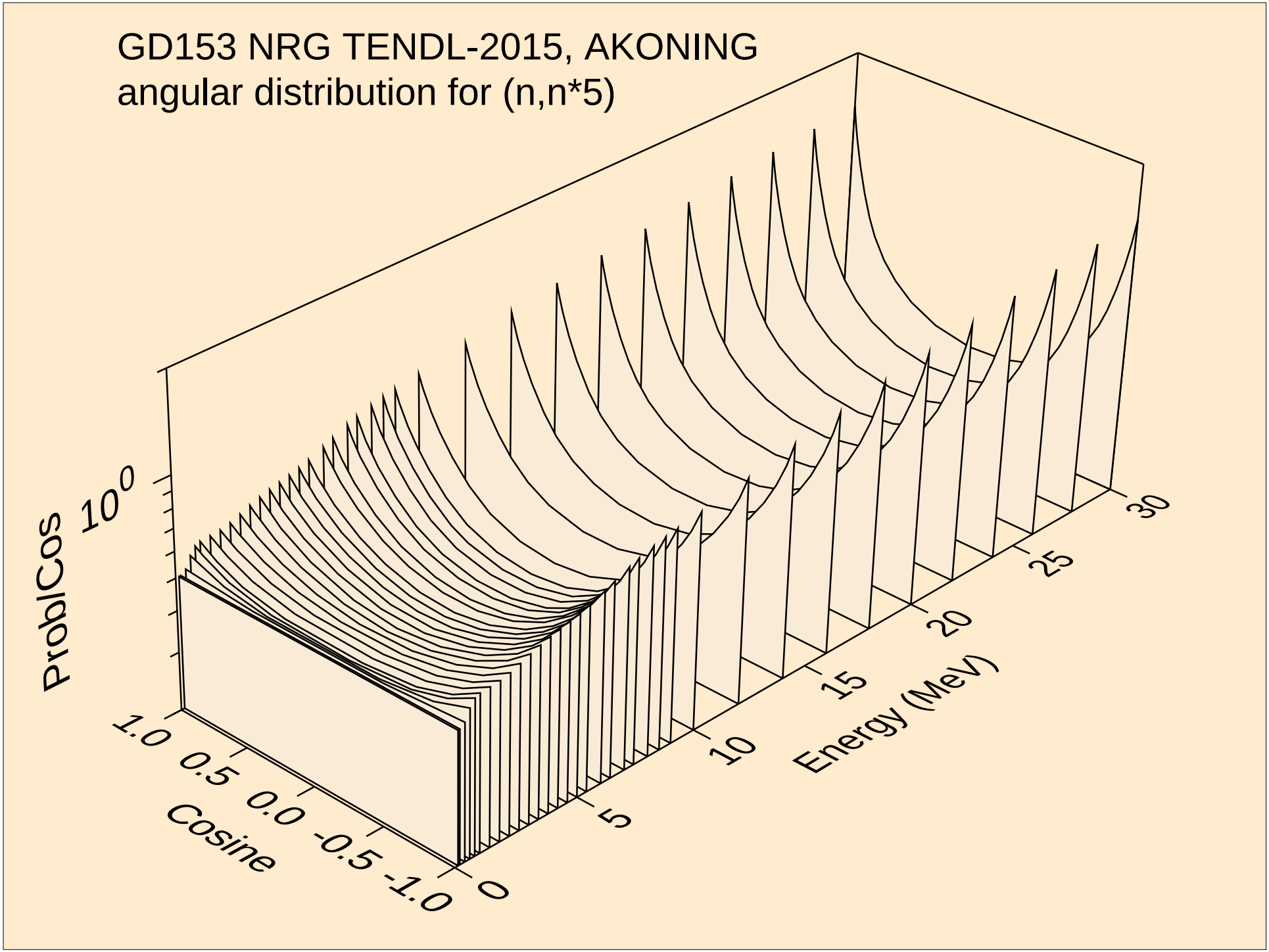

GD153 NRG TENDL-2015, AKONING
angular distribution for elastic
ProbICos
10^{2}
10^{0}
10^{-2}
Cosine
1.0
0.5
0.0
-0.5
-1.0
Energy (MeV)
20
40
60
80
100
120
140
160
180
200

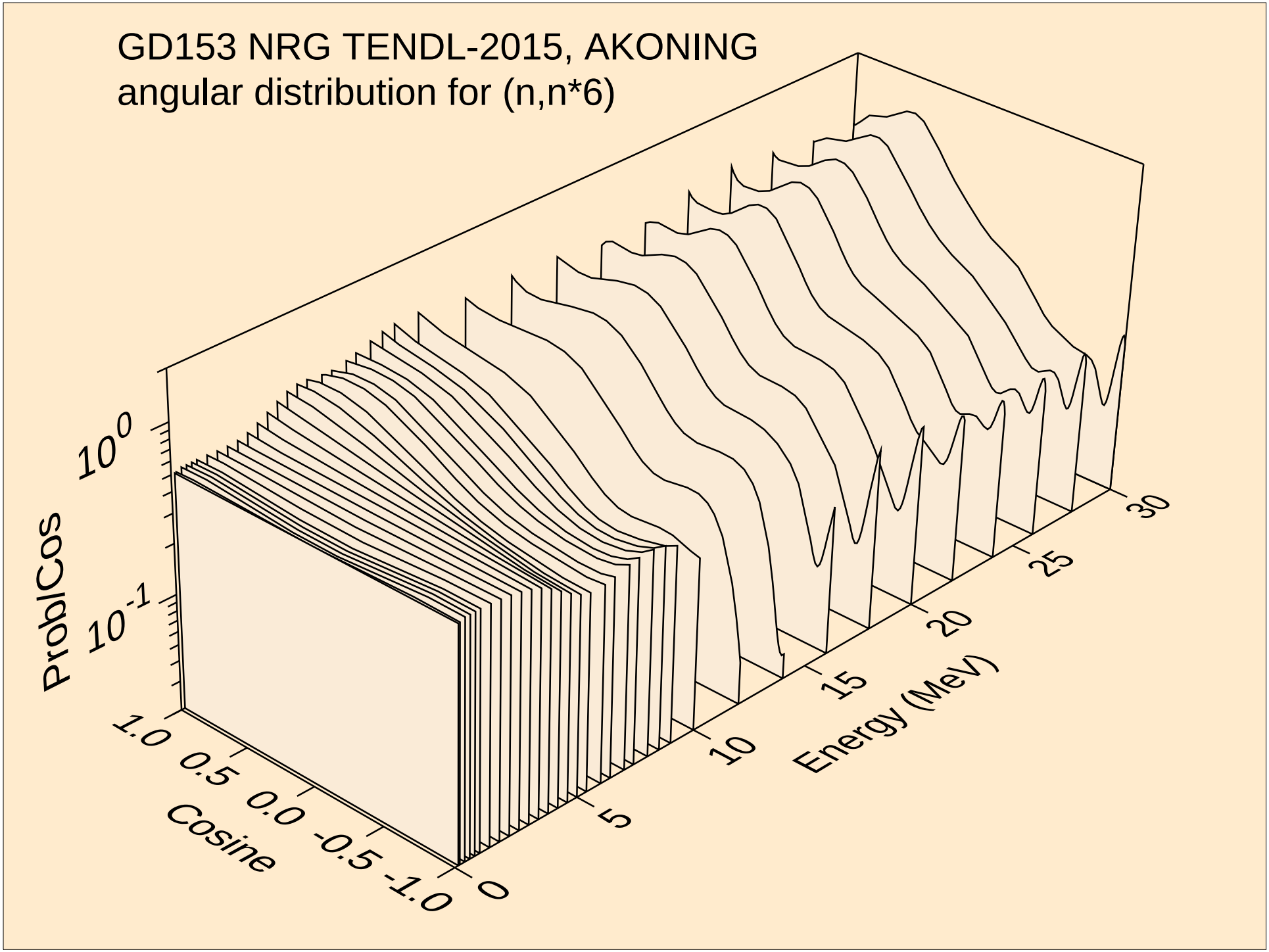

GD153 NRG TENDL-2015, AKONING
angular distribution for (n,n*1)
ProbICos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
25
30
Energy (MeV)

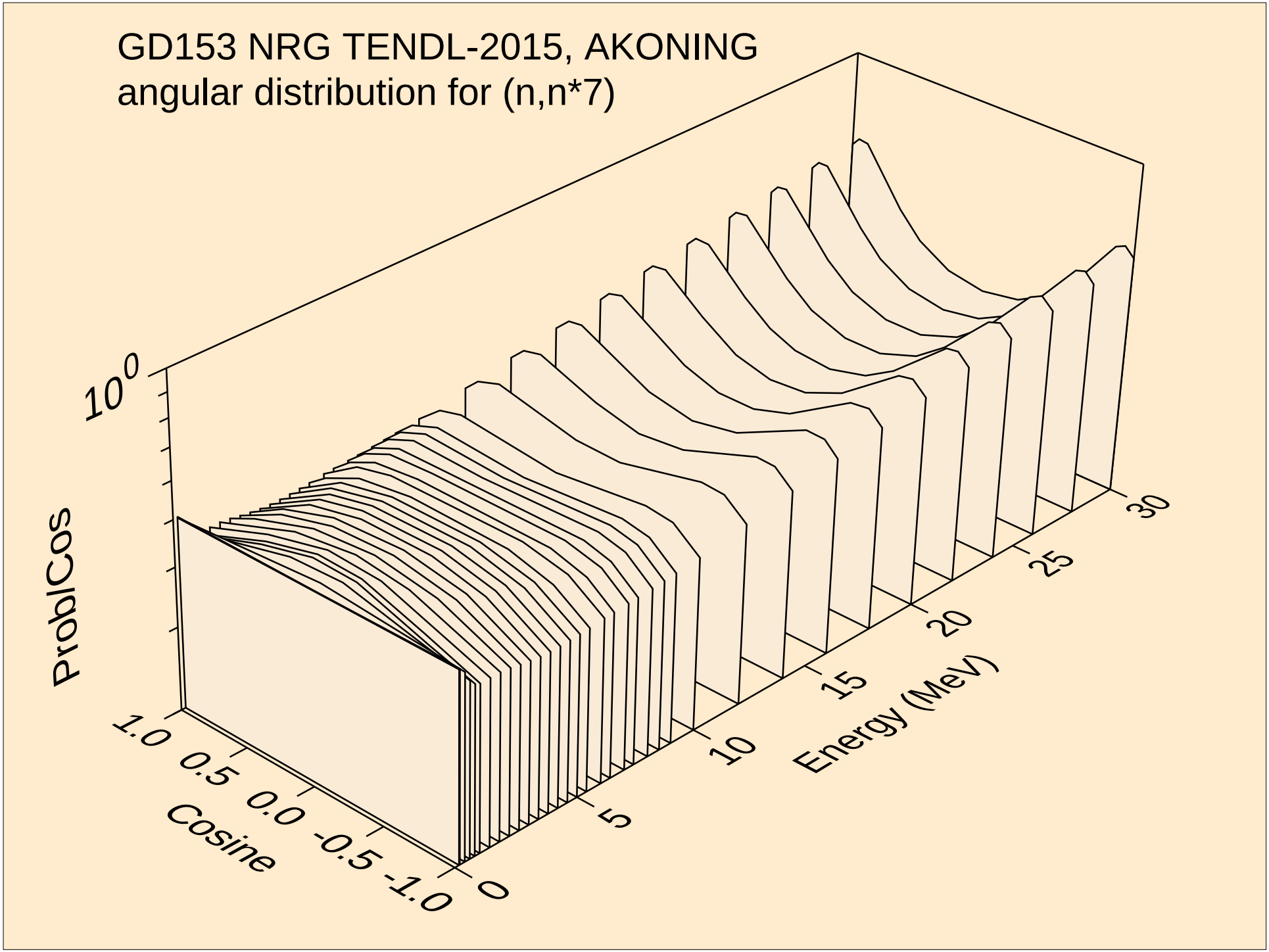

GD153 NRG TENDL-2015, AKONING
angular distribution for (n,n*2)
10^0
ProbICos
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
25
30
Energy (MeV)

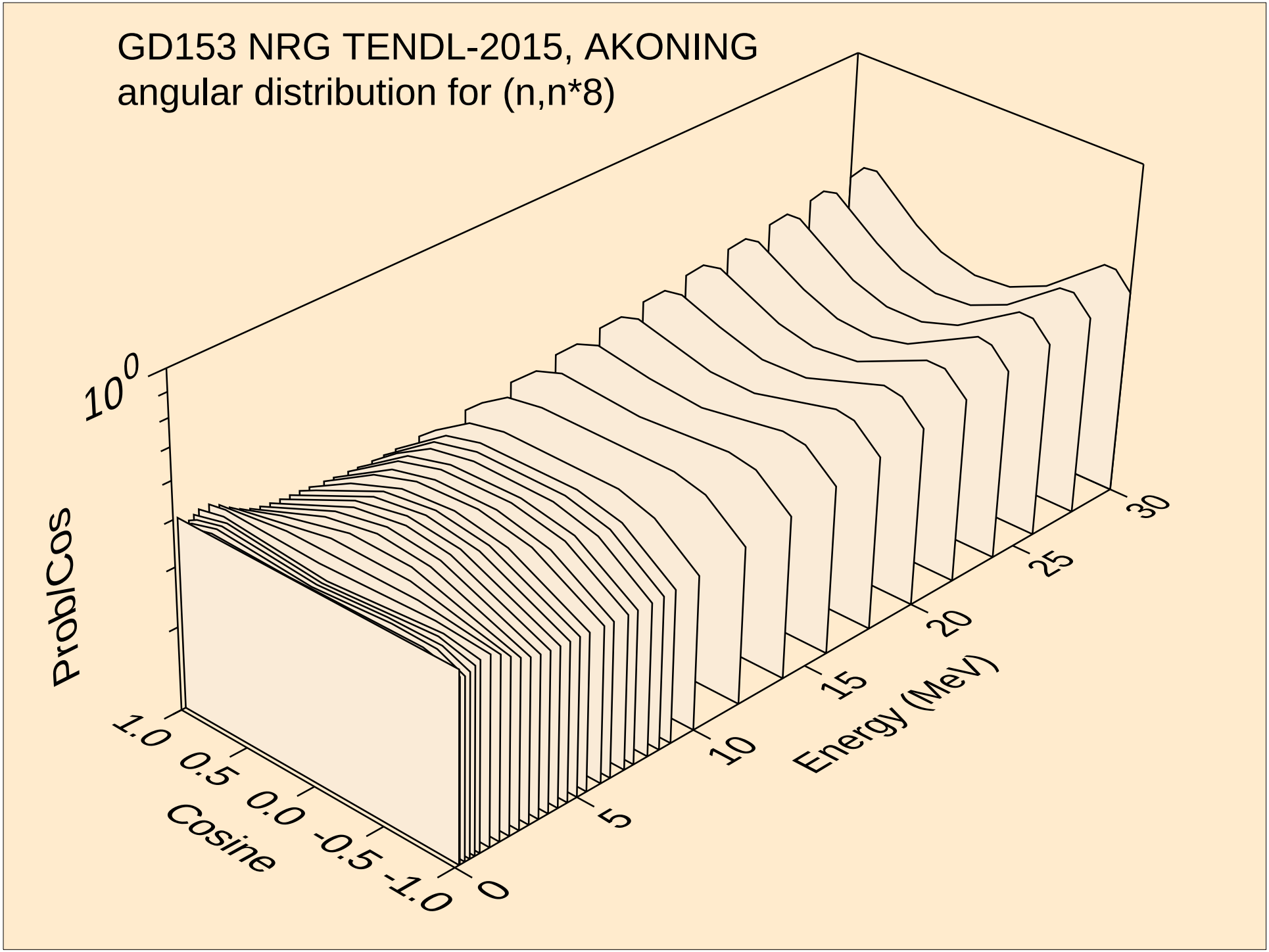

GD153 NRG TENDL-2015, AKONING
angular distribution for (n,n*3)
10^0
ProbCos
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
25
30
Energy (MeV)

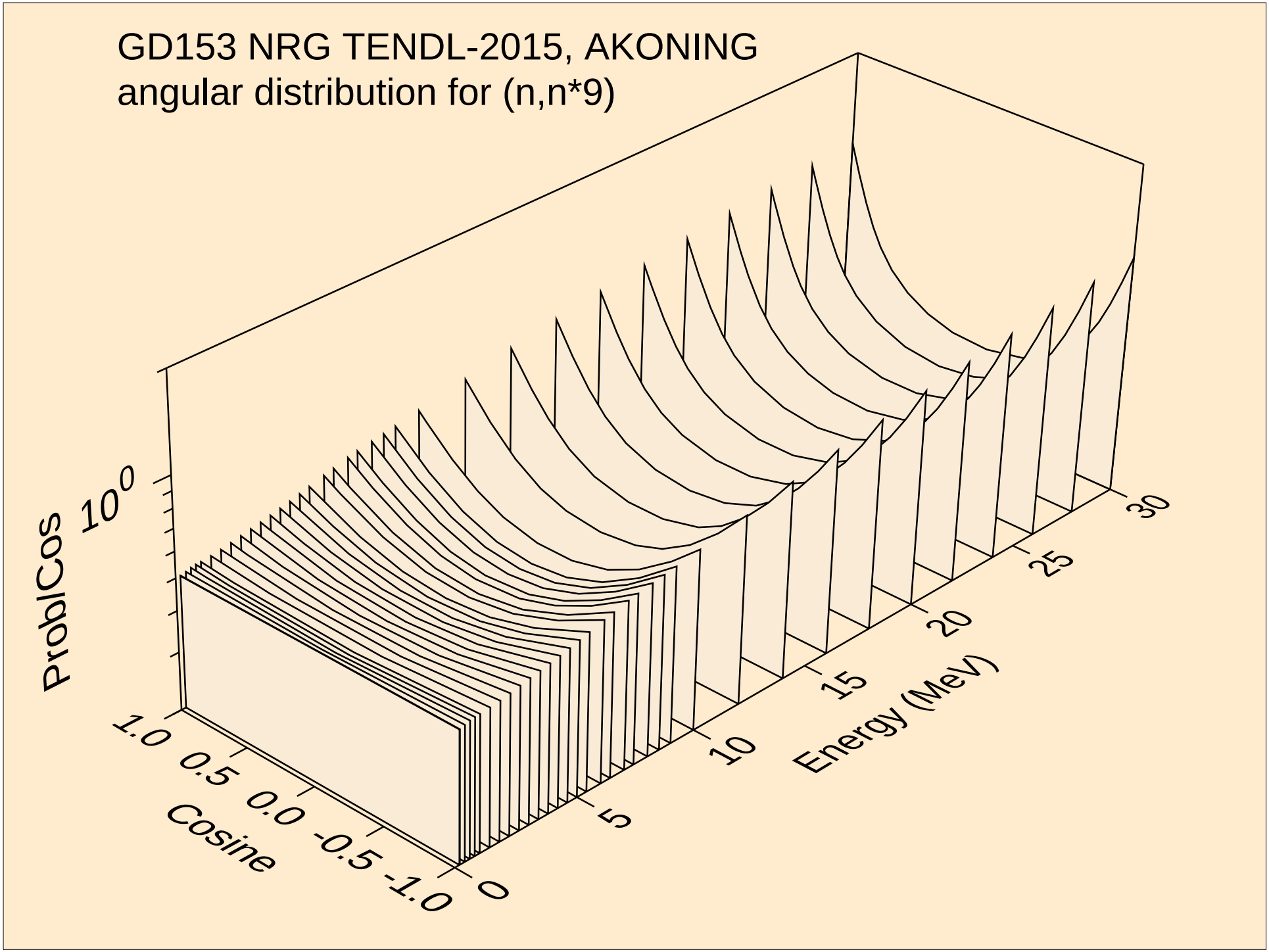

GD153 NRG TENDL-2015, AKONING
angular distribution for (n,n*4)
ProbICos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
25
30
Energy (MeV)

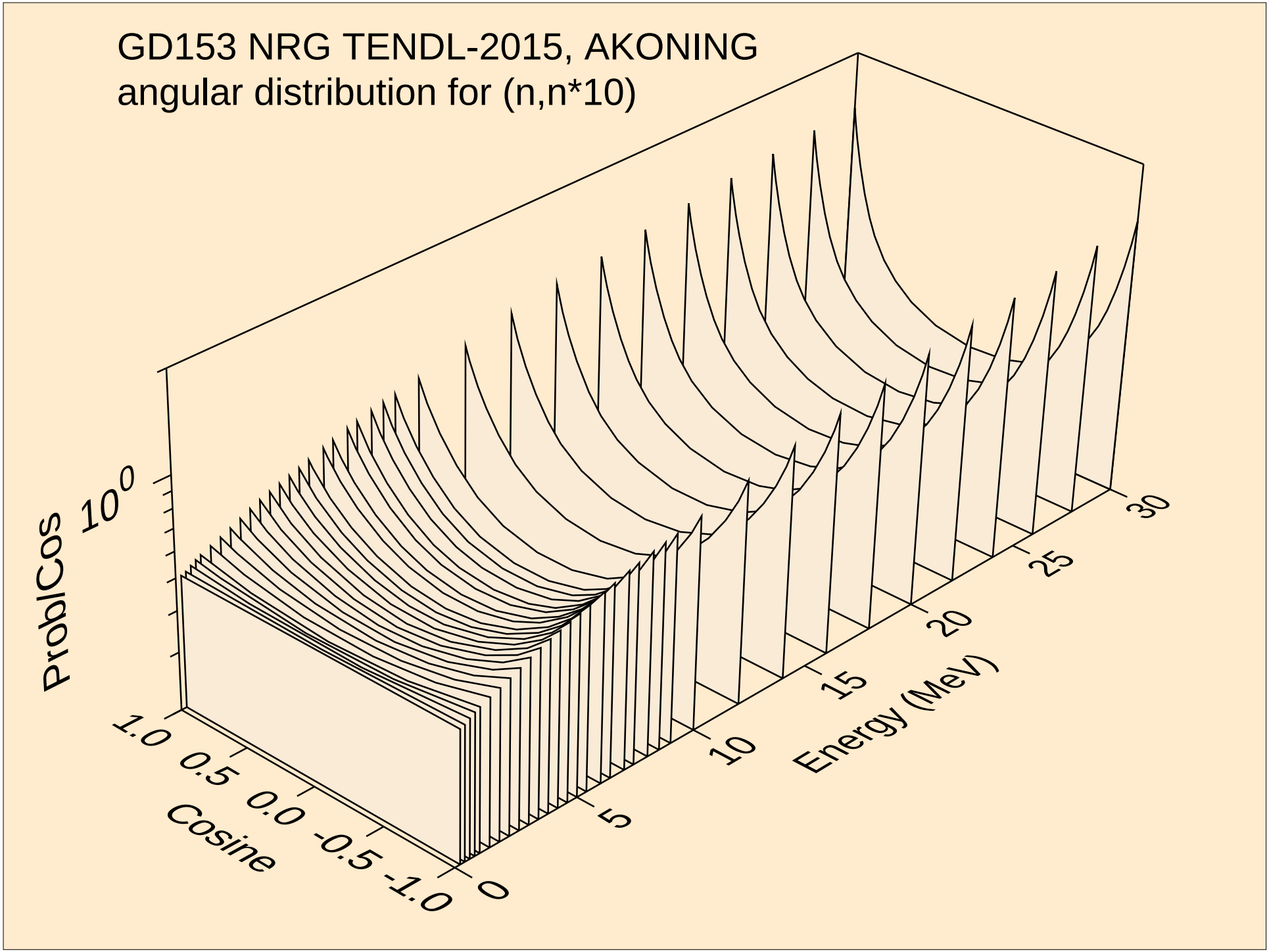

GD153 NRG TENDL-2015, AKONING
angular distribution for (n,n*5)
ProbICos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
25
30
Energy (MeV)

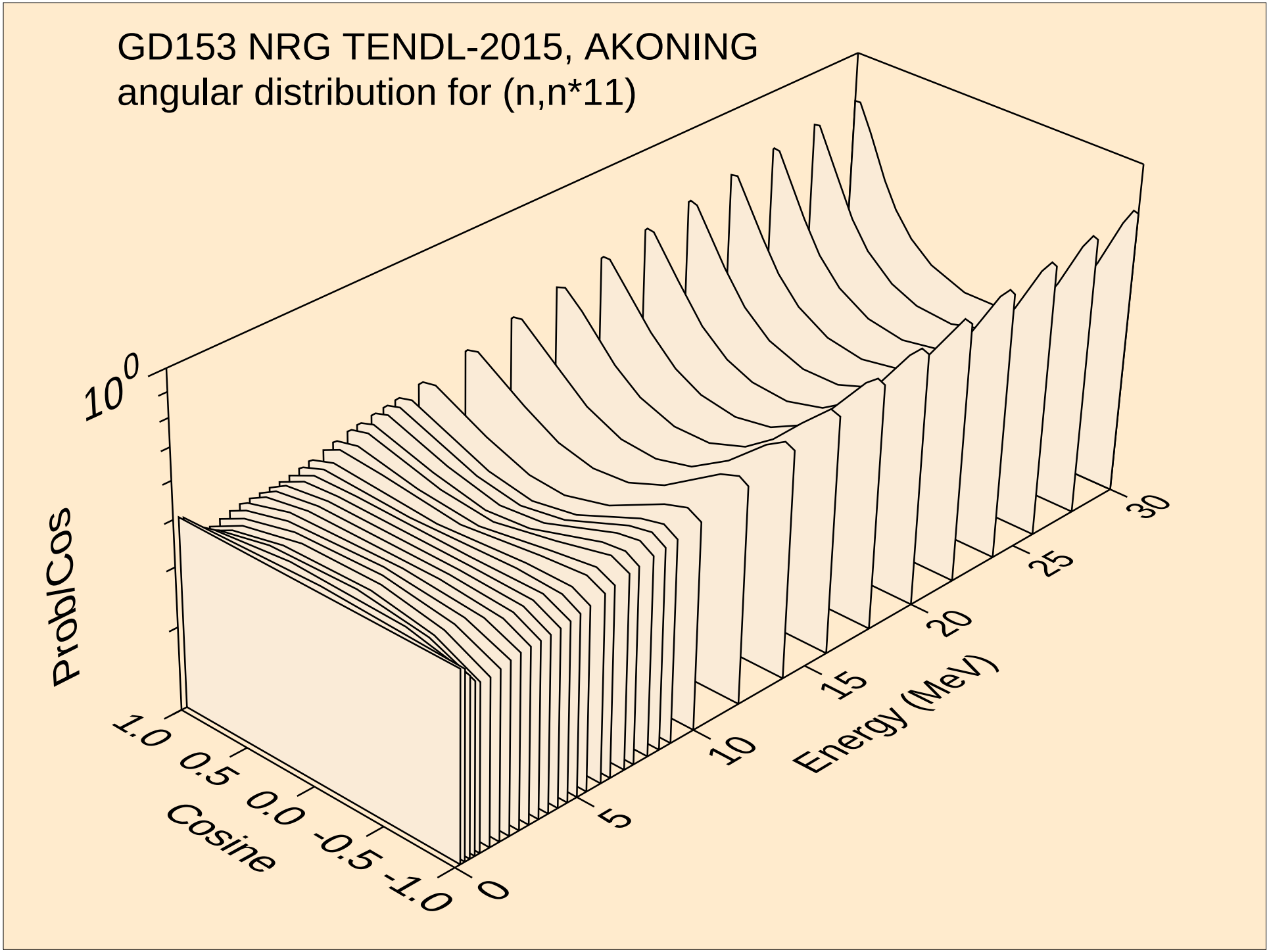

GD153 NRG TENDL-2015, AKONING
angular distribution for (n,n*6)
ProbCos
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
25
30
Energy (MeV)

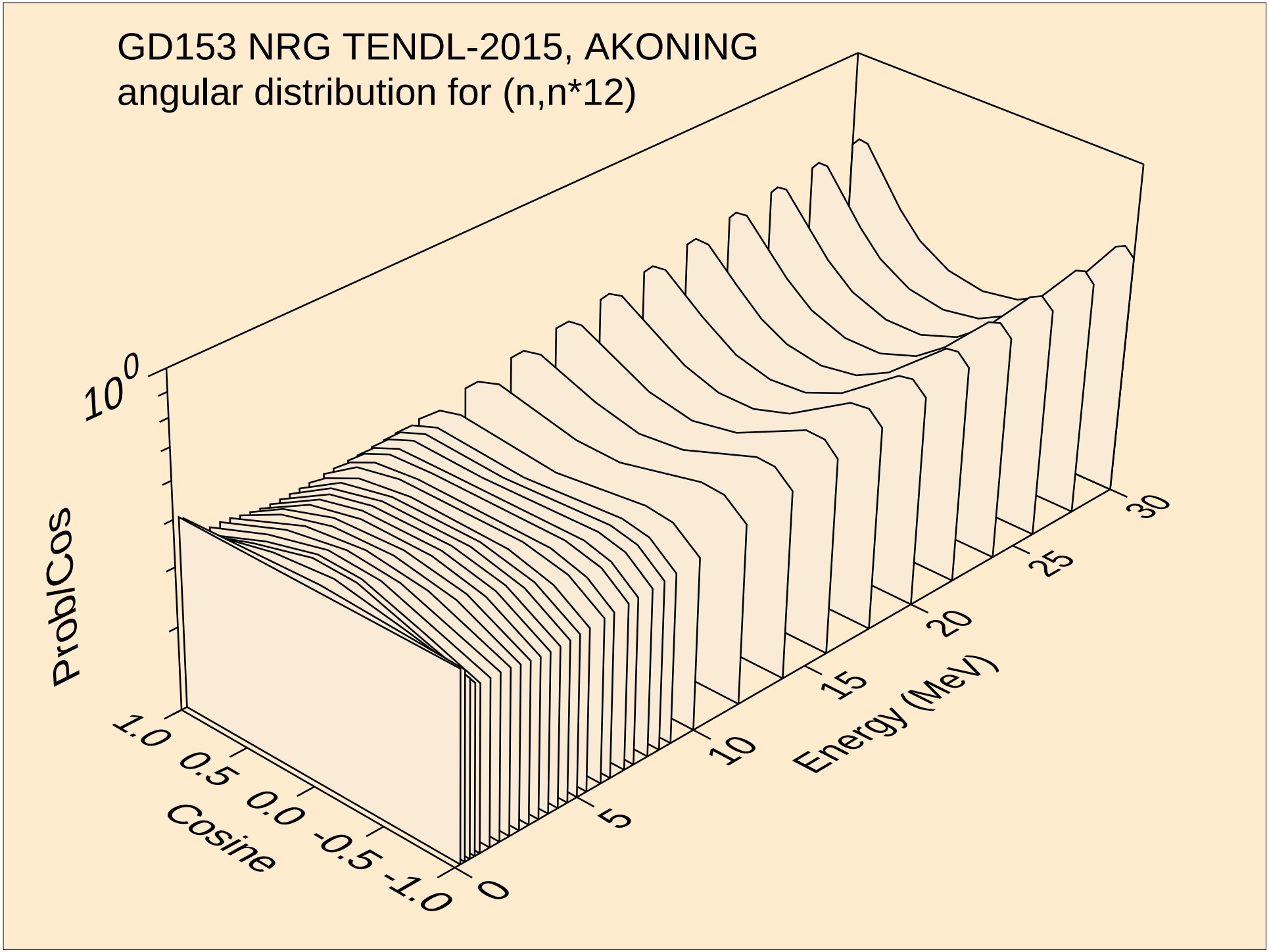

GD153 NRG TENDL-2015, AKONING
angular distribution for (n,n*7)
ProbICos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
25
30
Energy (MeV)

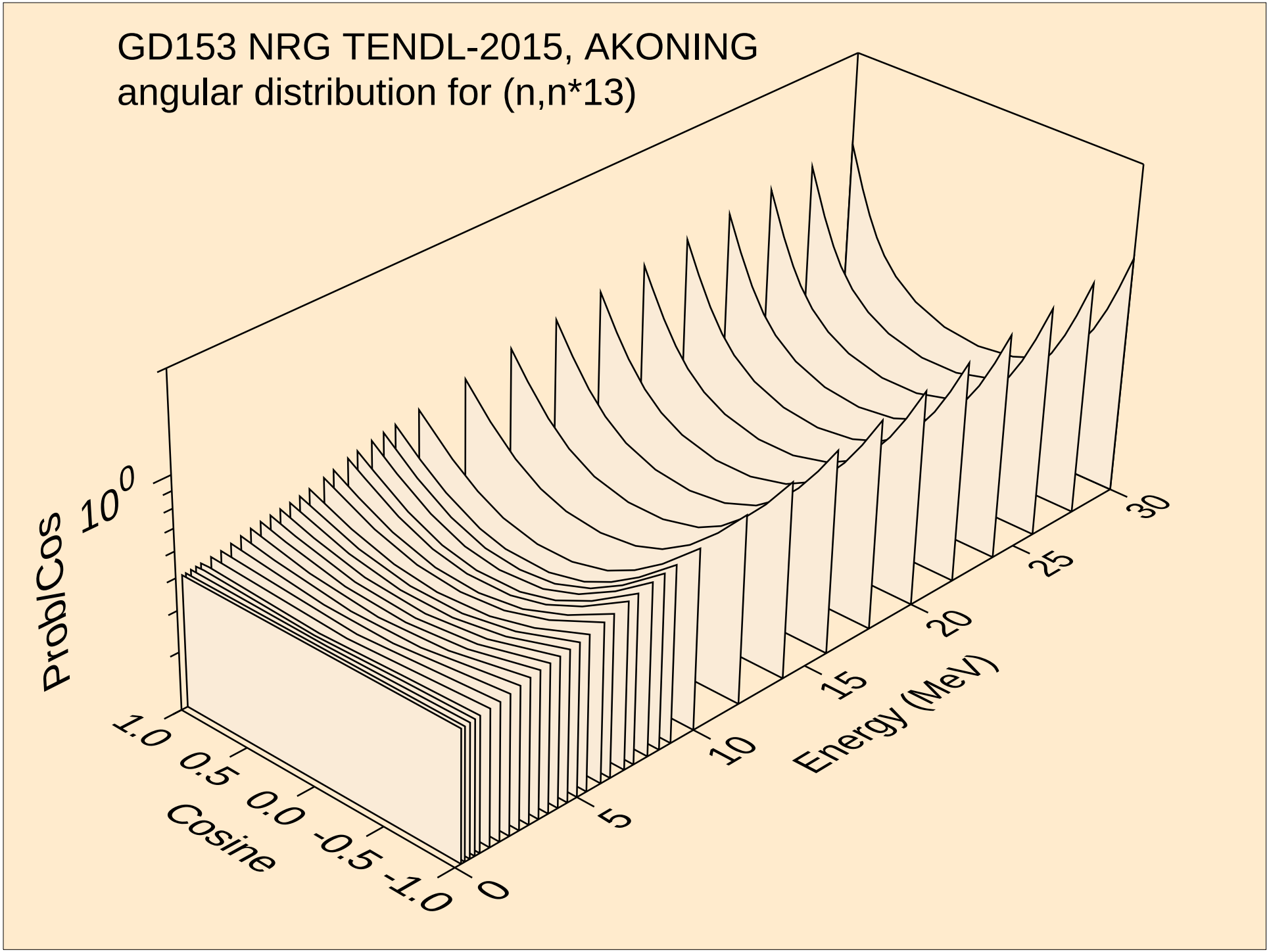

GD153 NRG TENDL-2015, AKONING
angular distribution for (n,n*8)
ProbICos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
25
30
Energy (MeV)

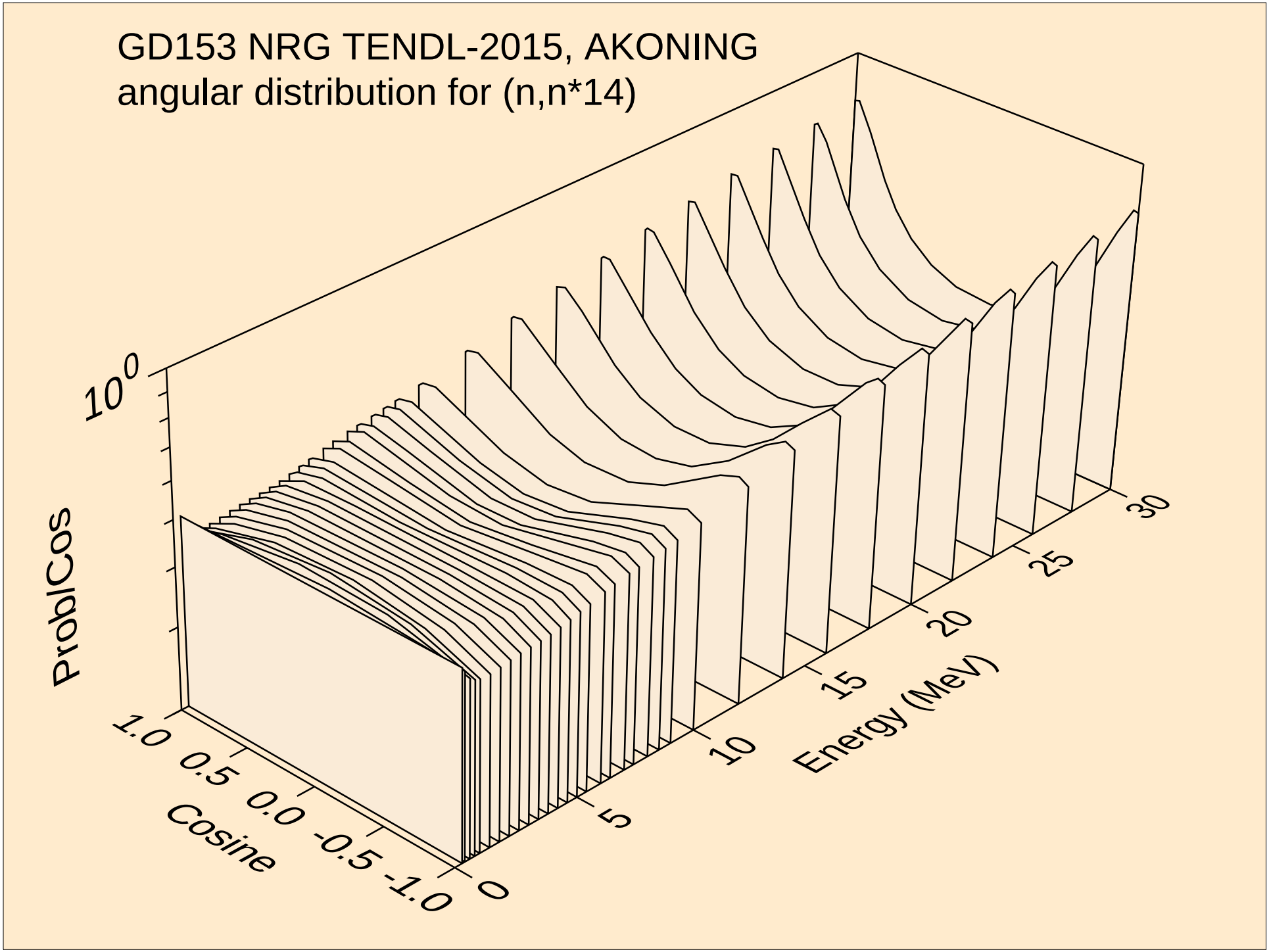

GD153 NRG TENDL-2015, AKONING
angular distribution for (n,n*9)
ProbICos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
25
30
Energy (MeV)

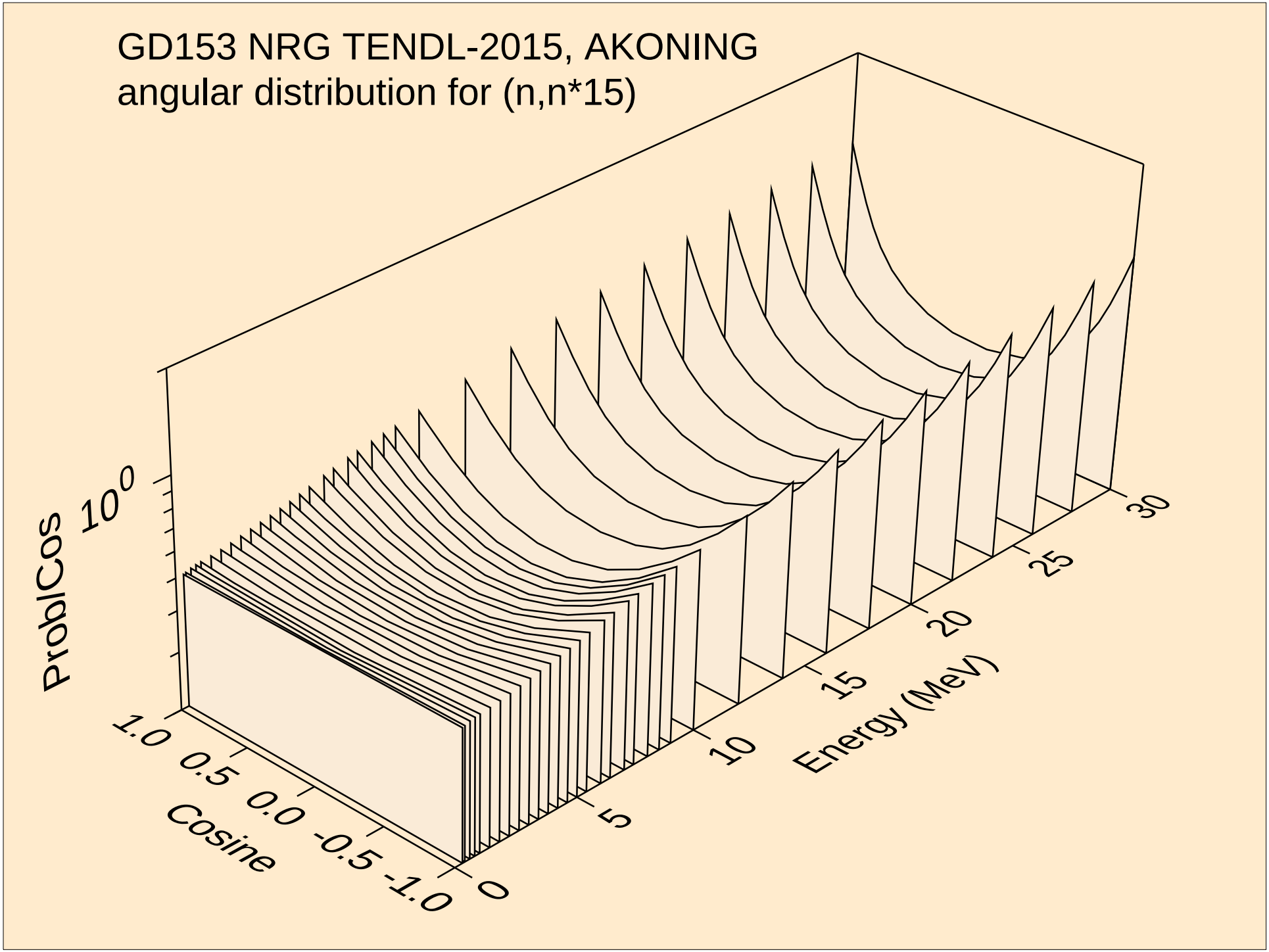

GD153 NRG TENDL-2015, AKONING
angular distribution for (n,n*10)
ProbICos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
25
30
Energy (MeV)

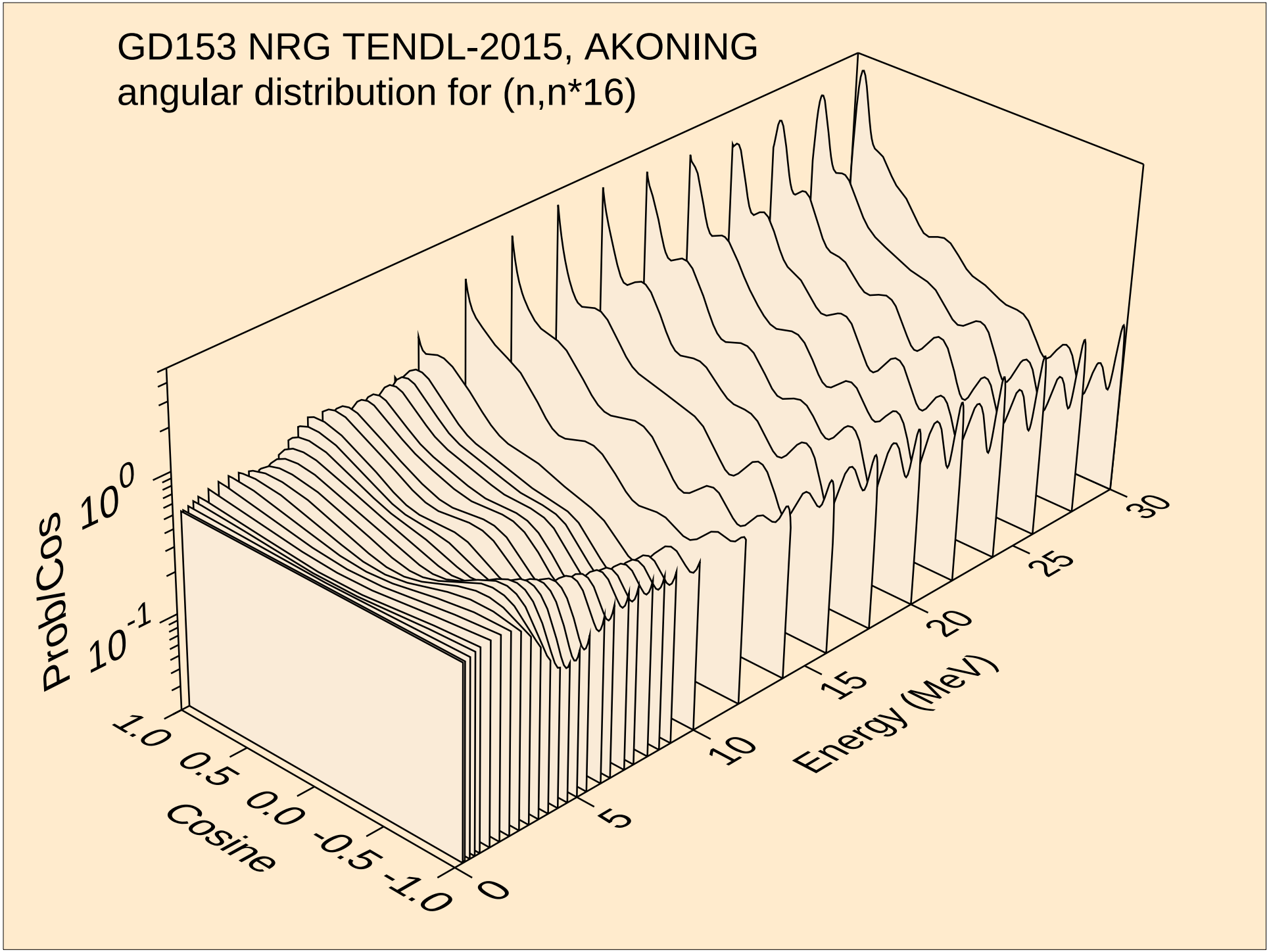

GD153 NRG TENDL-2015, AKONING
angular distribution for (n,n*11)
10^0
ProbICos
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
25
30
Energy (MeV)

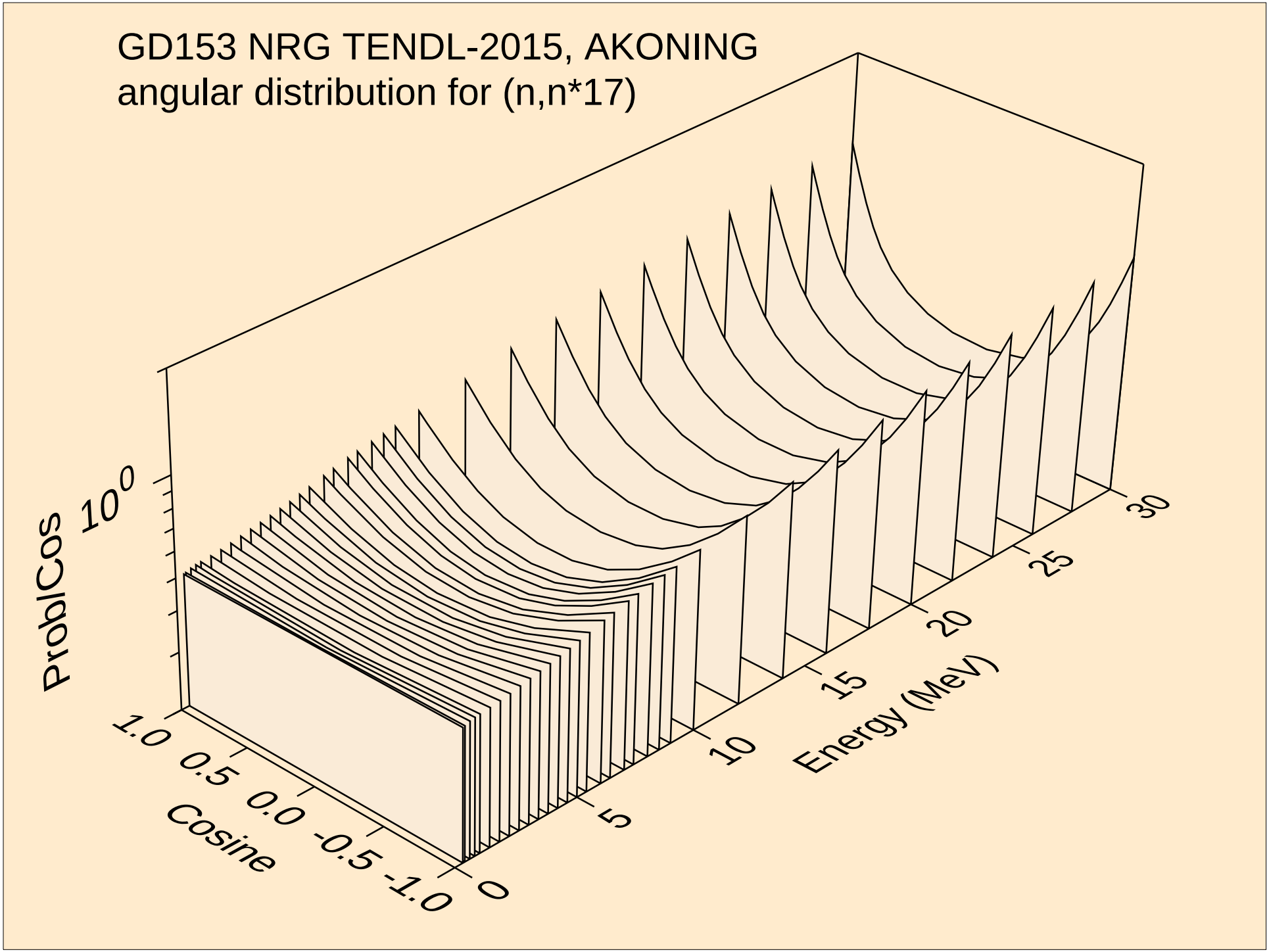

GD153 NRG TENDL-2015, AKONING
angular distribution for (n,n*12)
10^0
ProbICos
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
25
30
Energy (MeV)

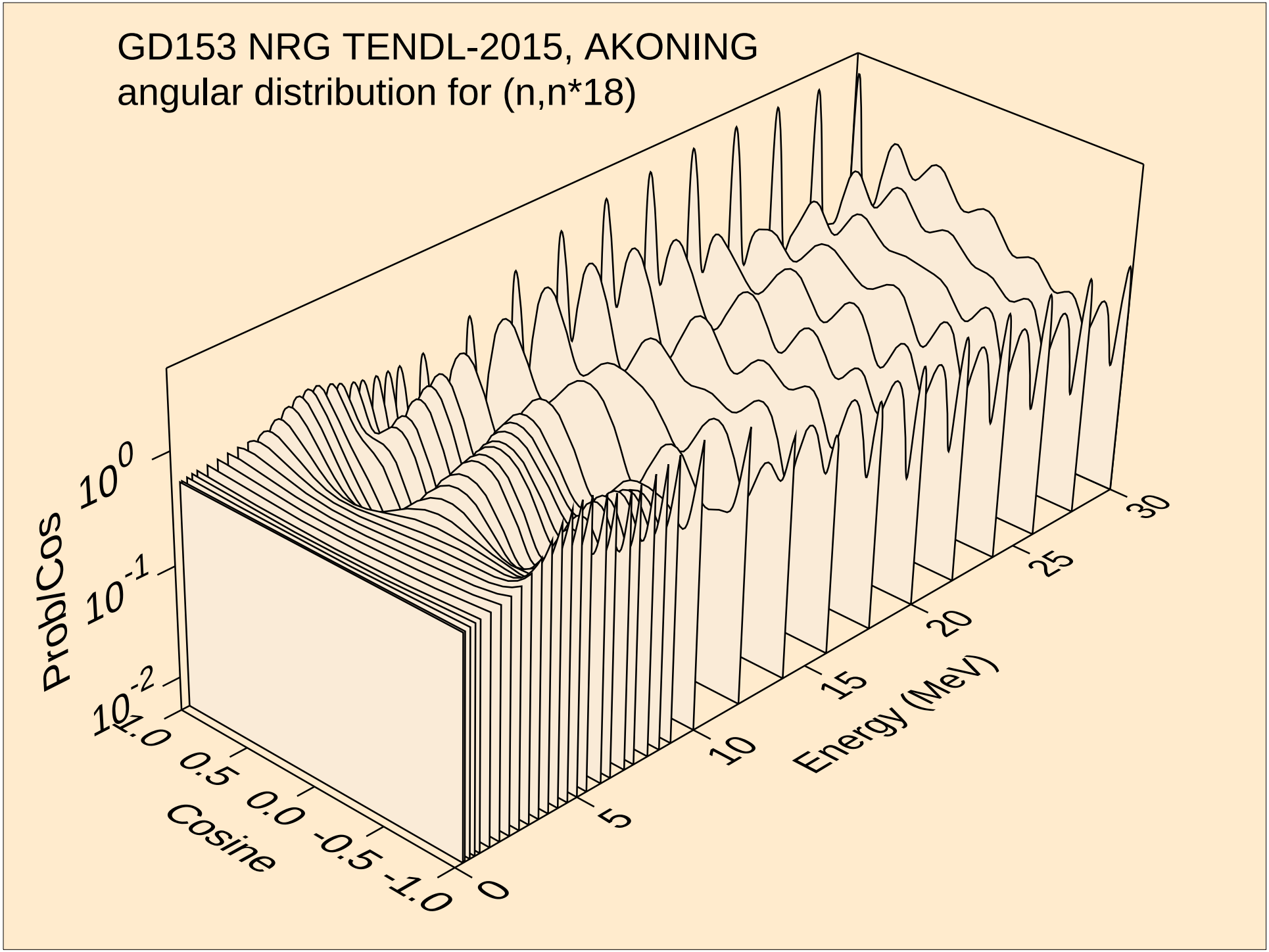

GD153 NRG TENDL-2015, AKONING
angular distribution for (n,n*13)
ProbICos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
25
30
Energy (MeV)

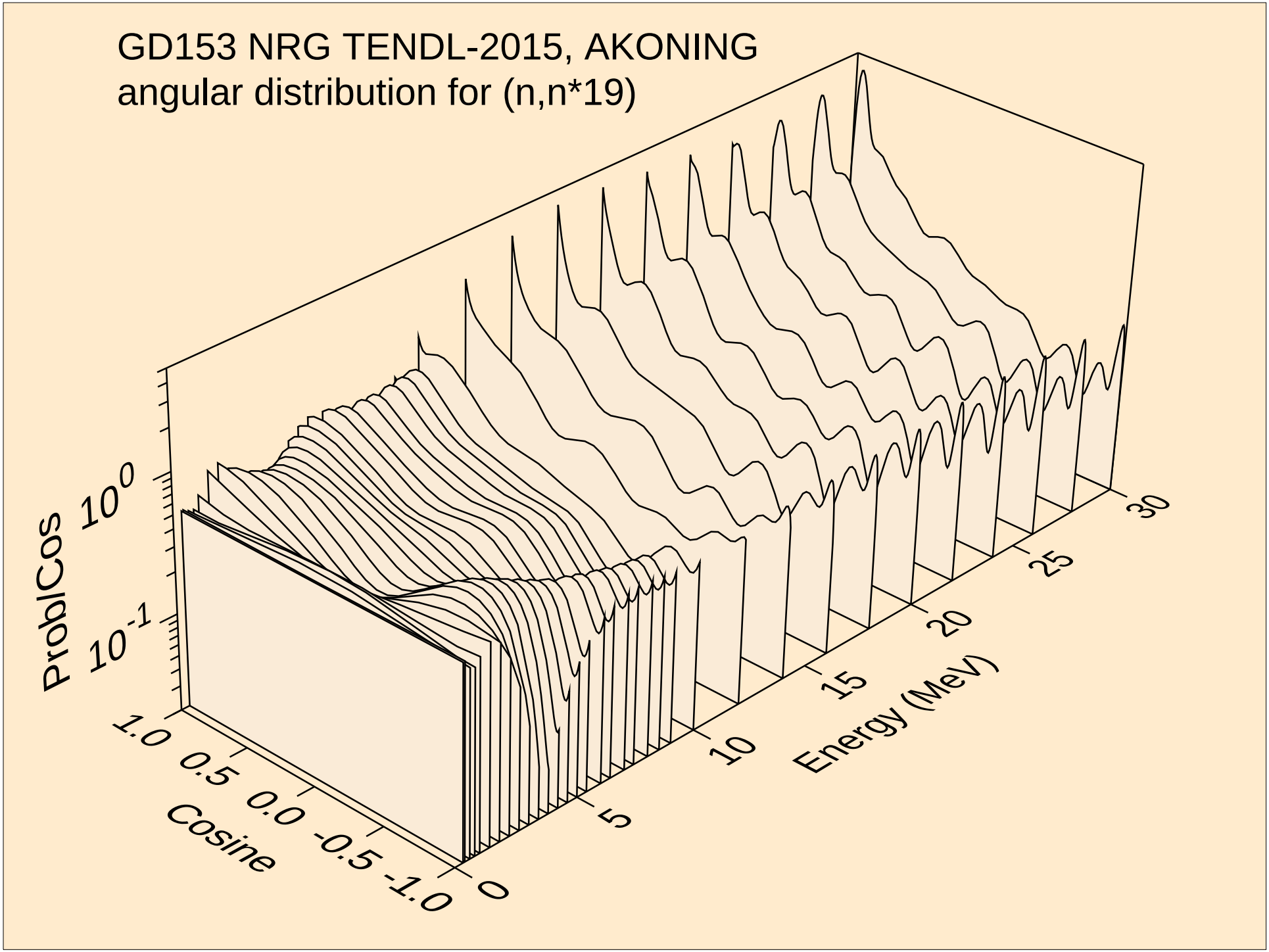

GD153 NRG TENDL-2015, AKONING
angular distribution for (n,n*14)
10^0
ProbICos
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
25
30
Energy (MeV)

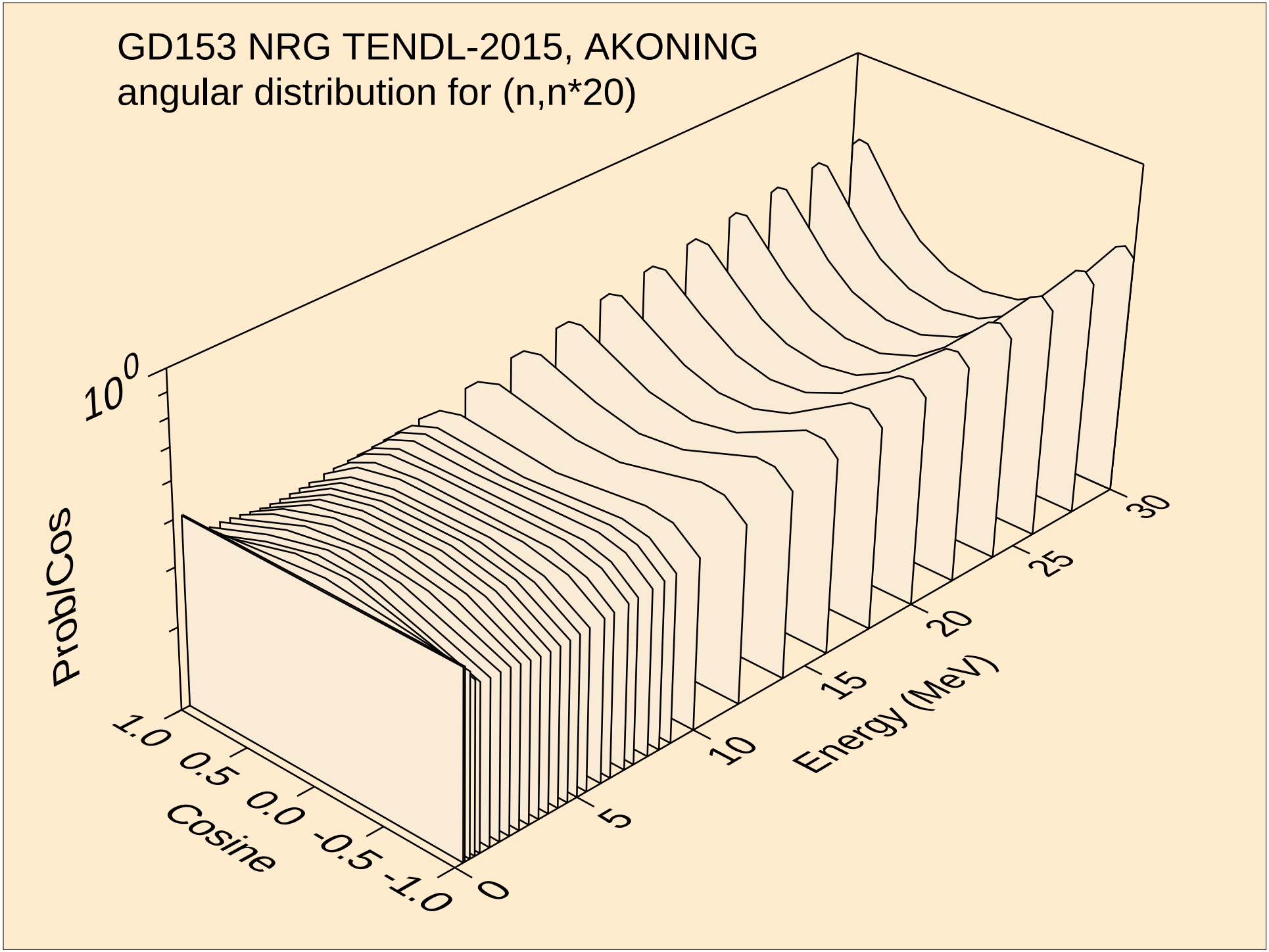

GD153 NRG TENDL-2015, AKONING
angular distribution for (n,n*15)
ProbICos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
25
30
Energy (MeV)

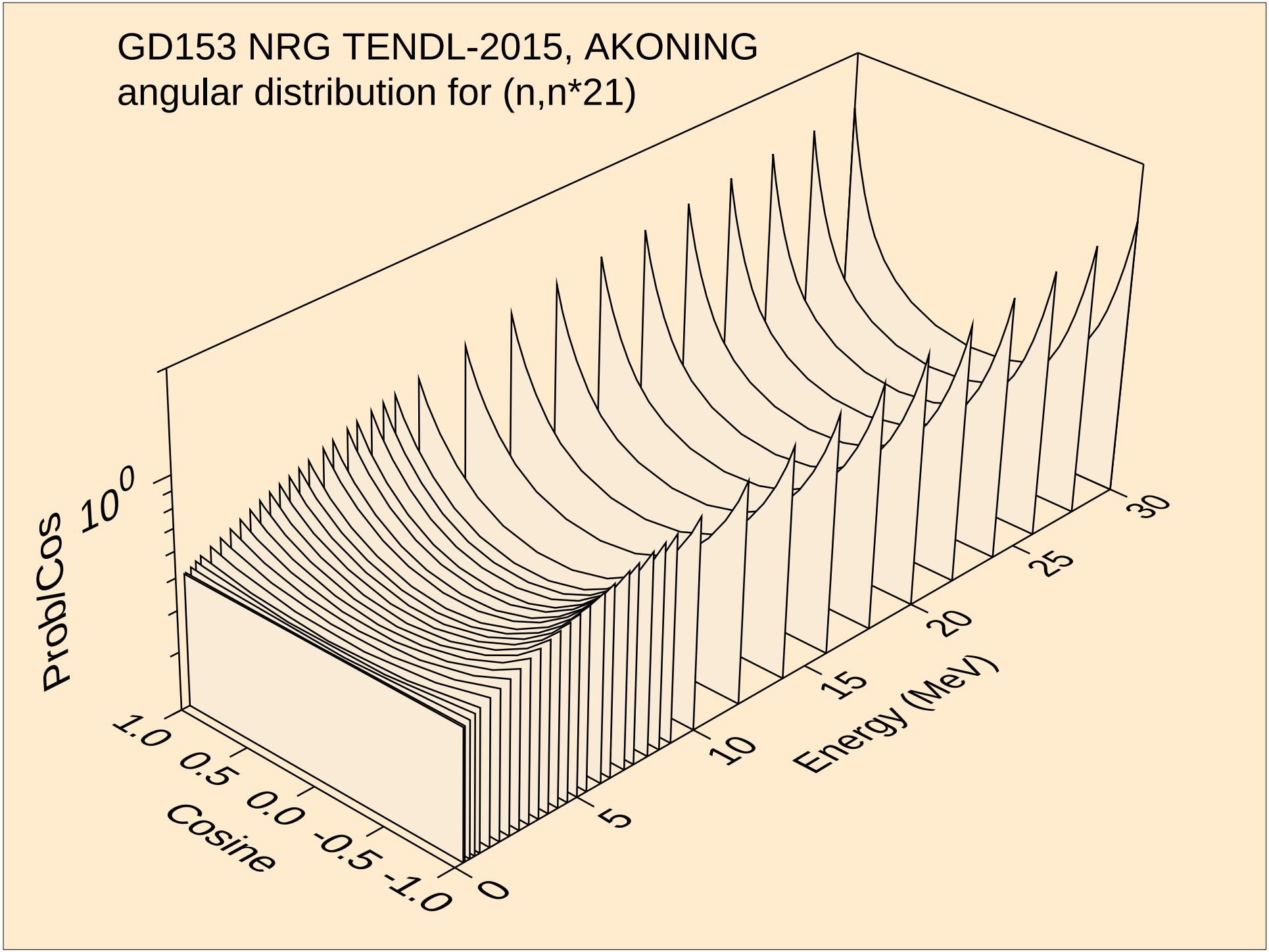

GD153 NRG TENDL-2015, AKONING
angular distribution for (n,n*16)
Prob\Cos
10^0
10^-1
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
25
30
Energy (MeV)

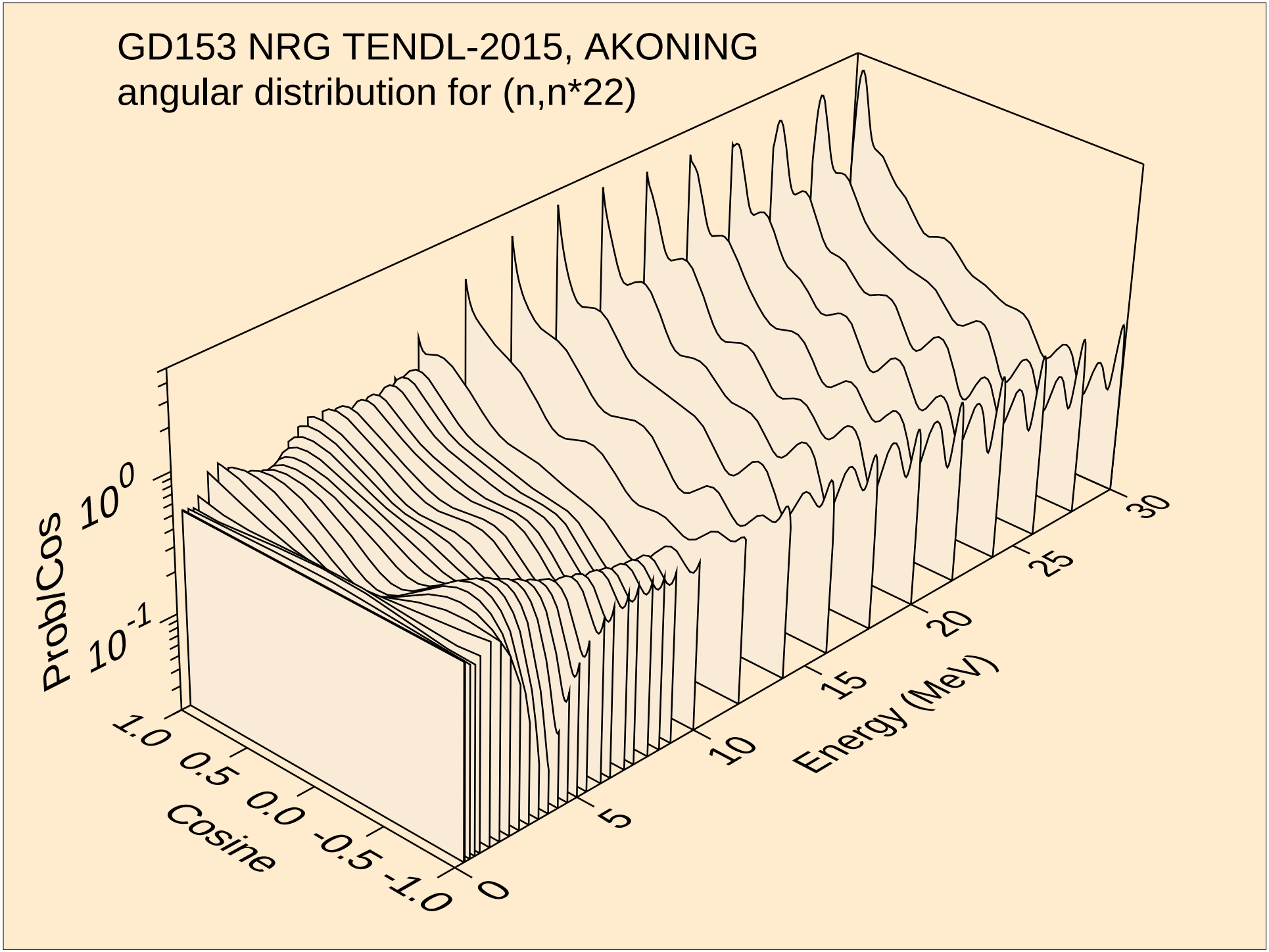

GD153 NRG TENDL-2015, AKONING
angular distribution for (n,n*17)
ProbICos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
25
30
Energy (MeV)

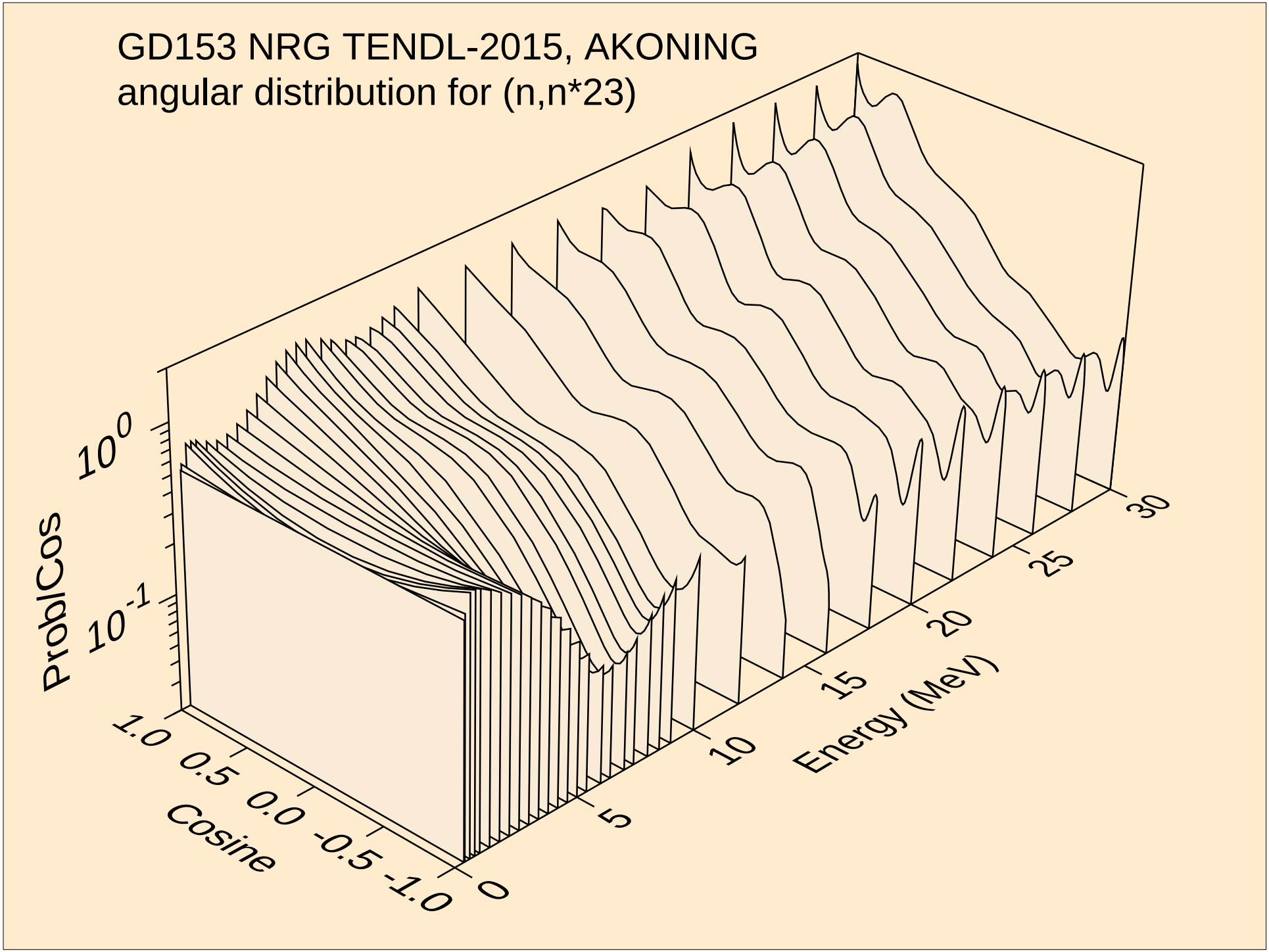

GD153 NRG TENDL-2015, AKONING
angular distribution for (n,n*18)
Prob\Cos
10^0
10^-1
10^-2
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
25
30
Energy (MeV)

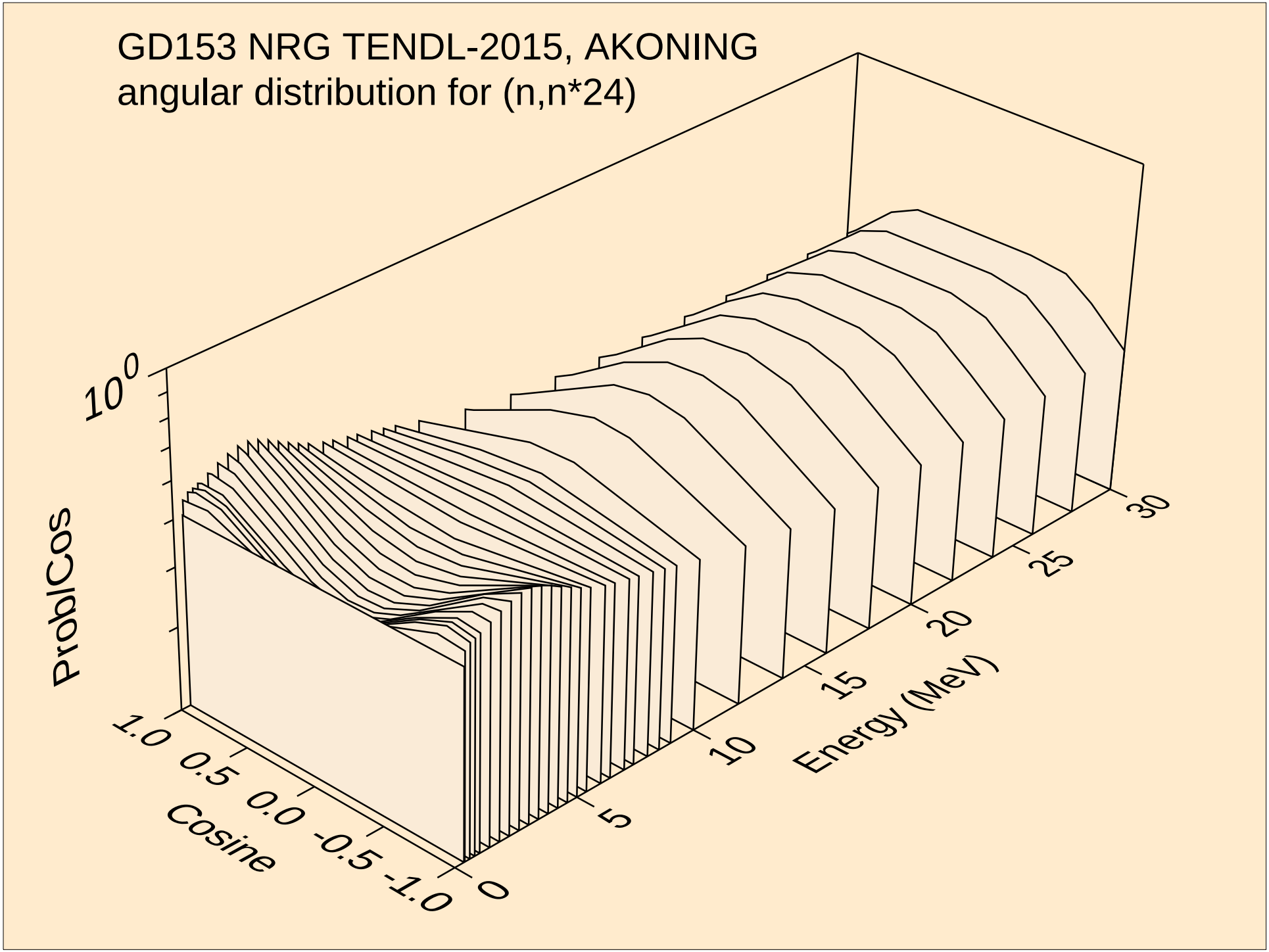

GD153 NRG TENDL-2015, AKONING
angular distribution for (n,n*19)
Prob\Cos
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
25
30
Energy (MeV)

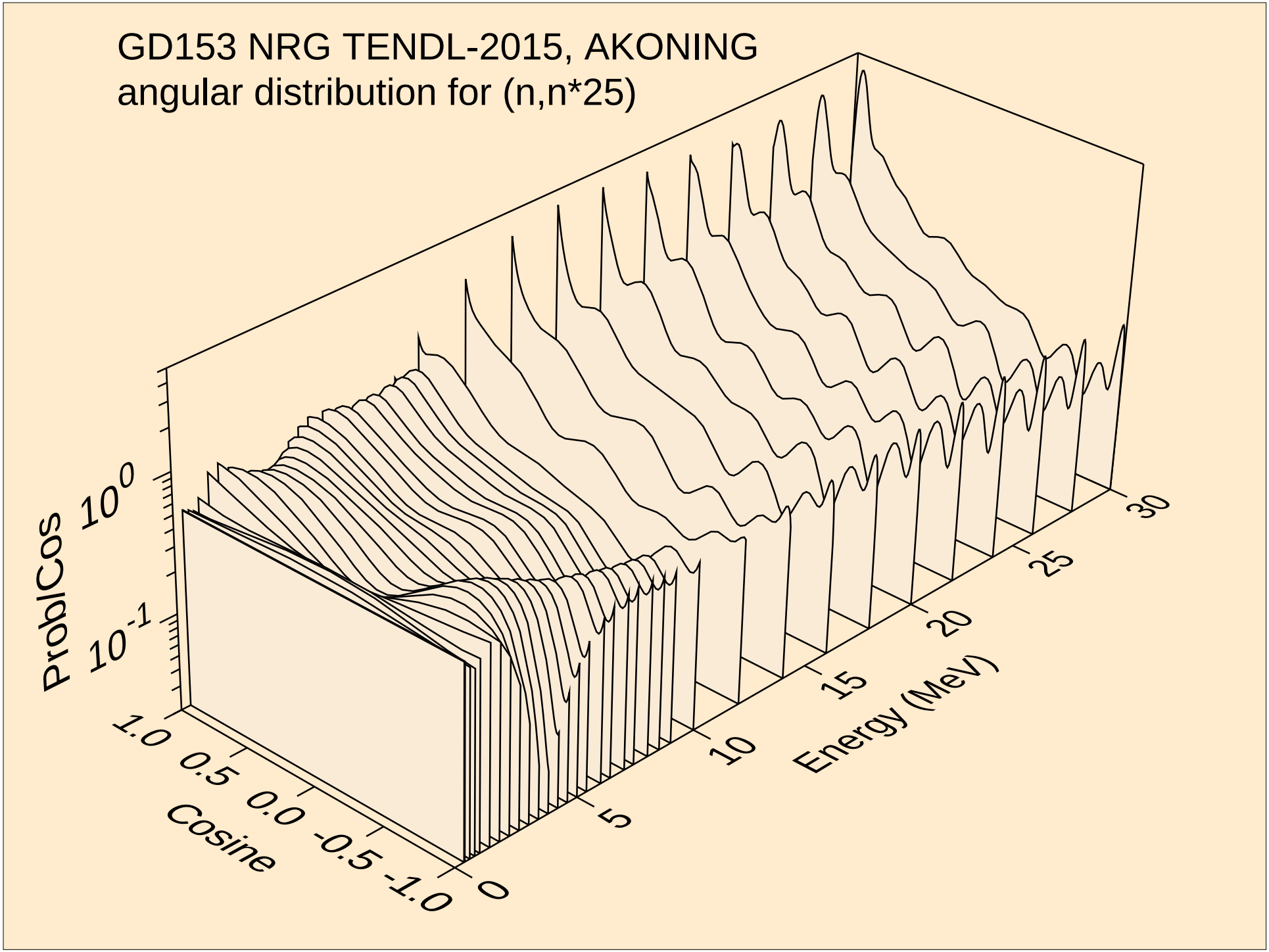

GD153 NRG TENDL-2015, AKONING
angular distribution for (n,n*20)
10^0
ProbICos
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
25
30
Energy (MeV)

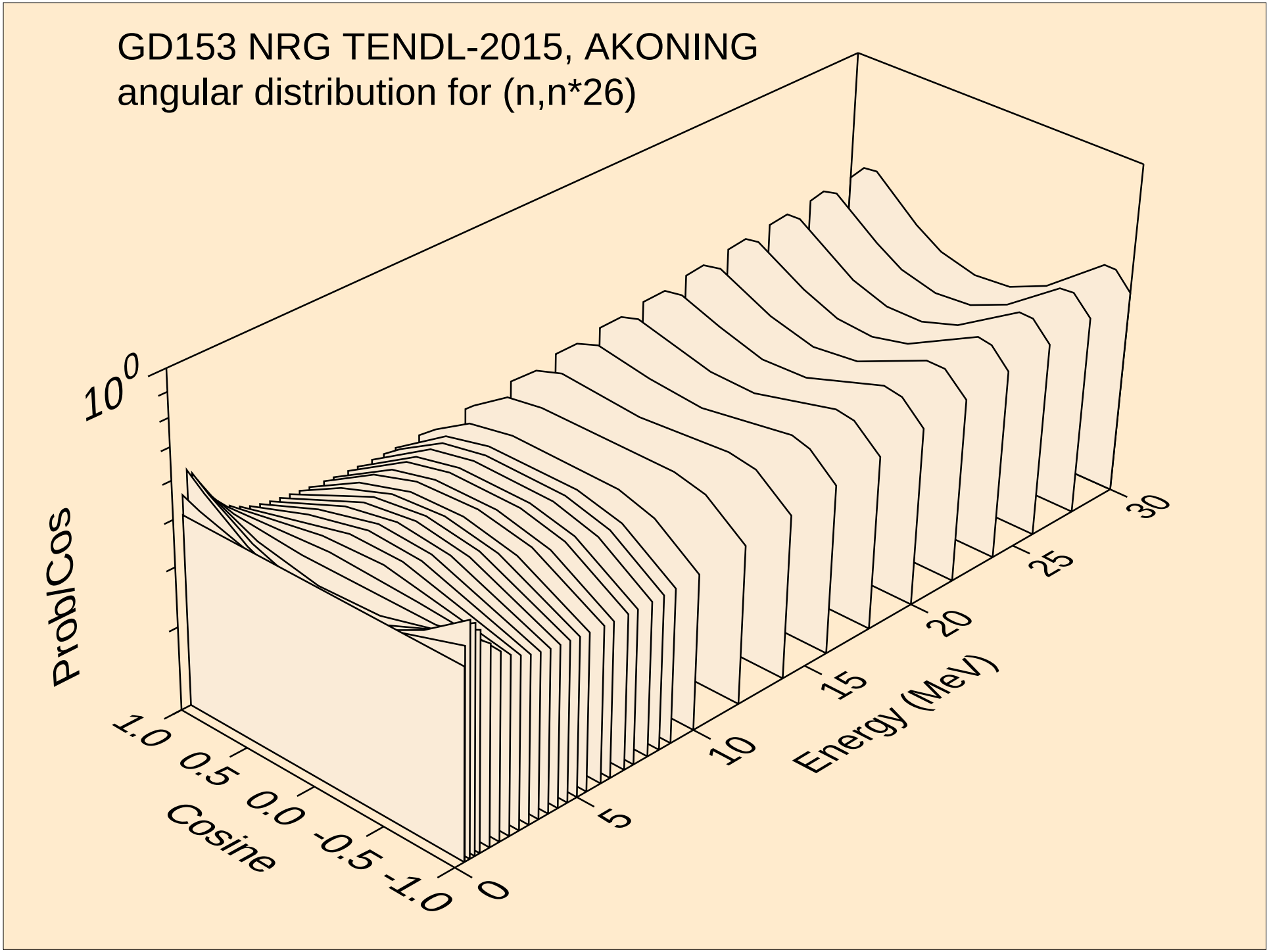

GD153 NRG TENDL-2015, AKONING
angular distribution for (n,n*21)
ProbICos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
25
30
Energy (MeV)

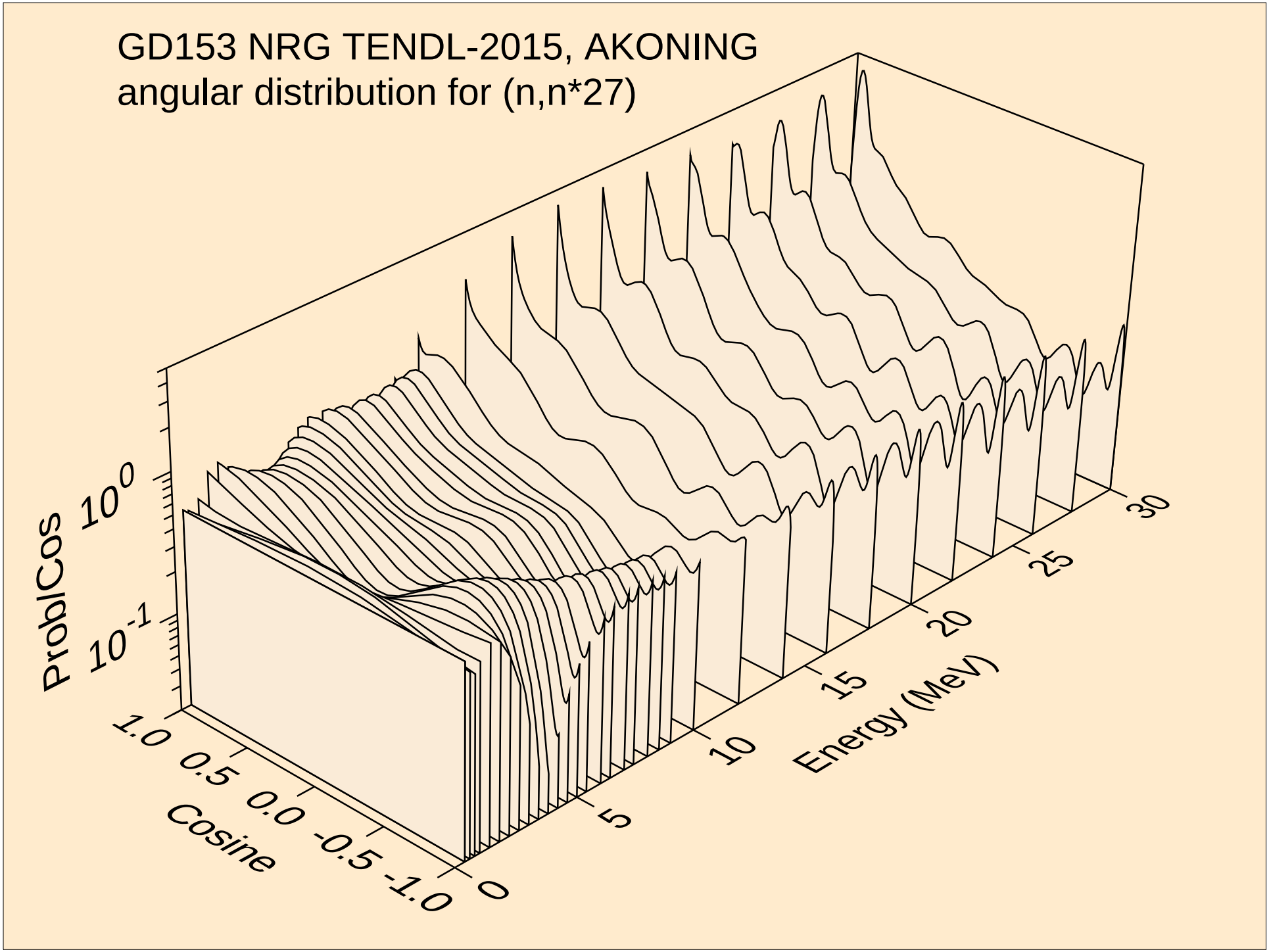

GD153 NRG TENDL-2015, AKONING
angular distribution for (n,n*22)
Prob\Cos
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
25
30
Energy (MeV)

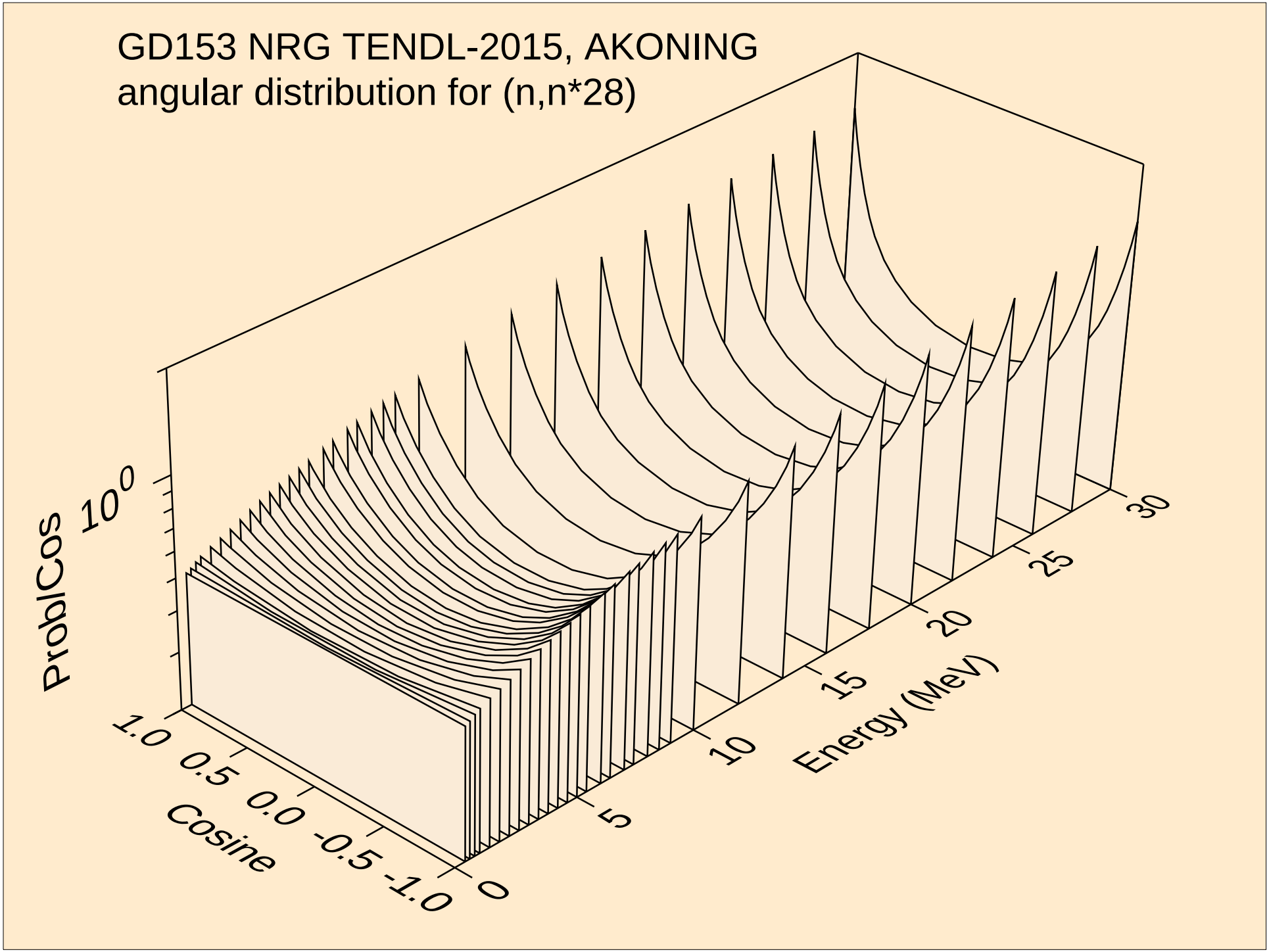

GD153 NRG TENDL-2015, AKONING
angular distribution for (n,n*23)
ProbCos
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
25
30
Energy (MeV)

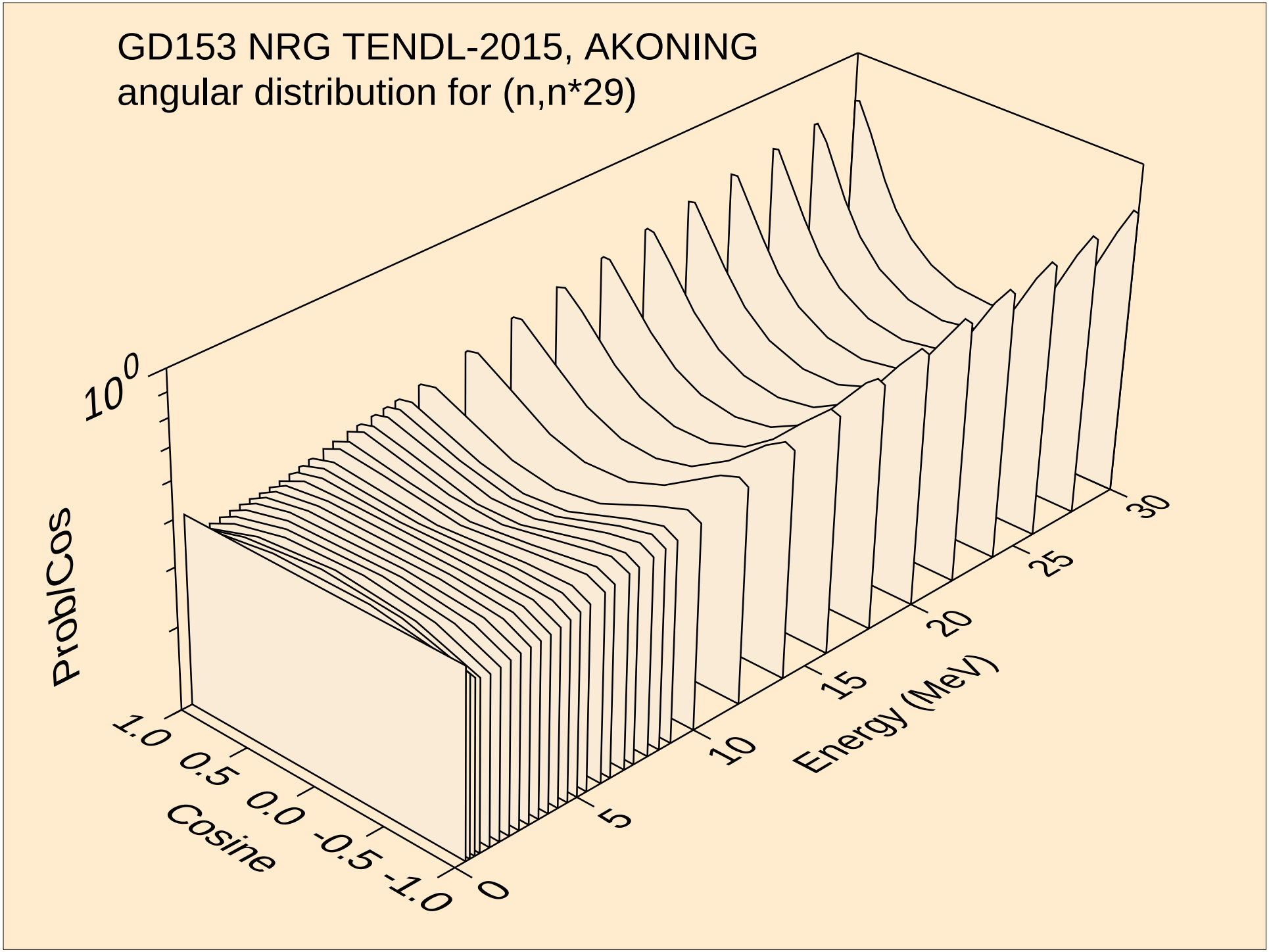

GD153 NRG TENDL-2015, AKONING
angular distribution for (n,n*24)
10^0
ProbICos
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
25
30
Energy (MeV)

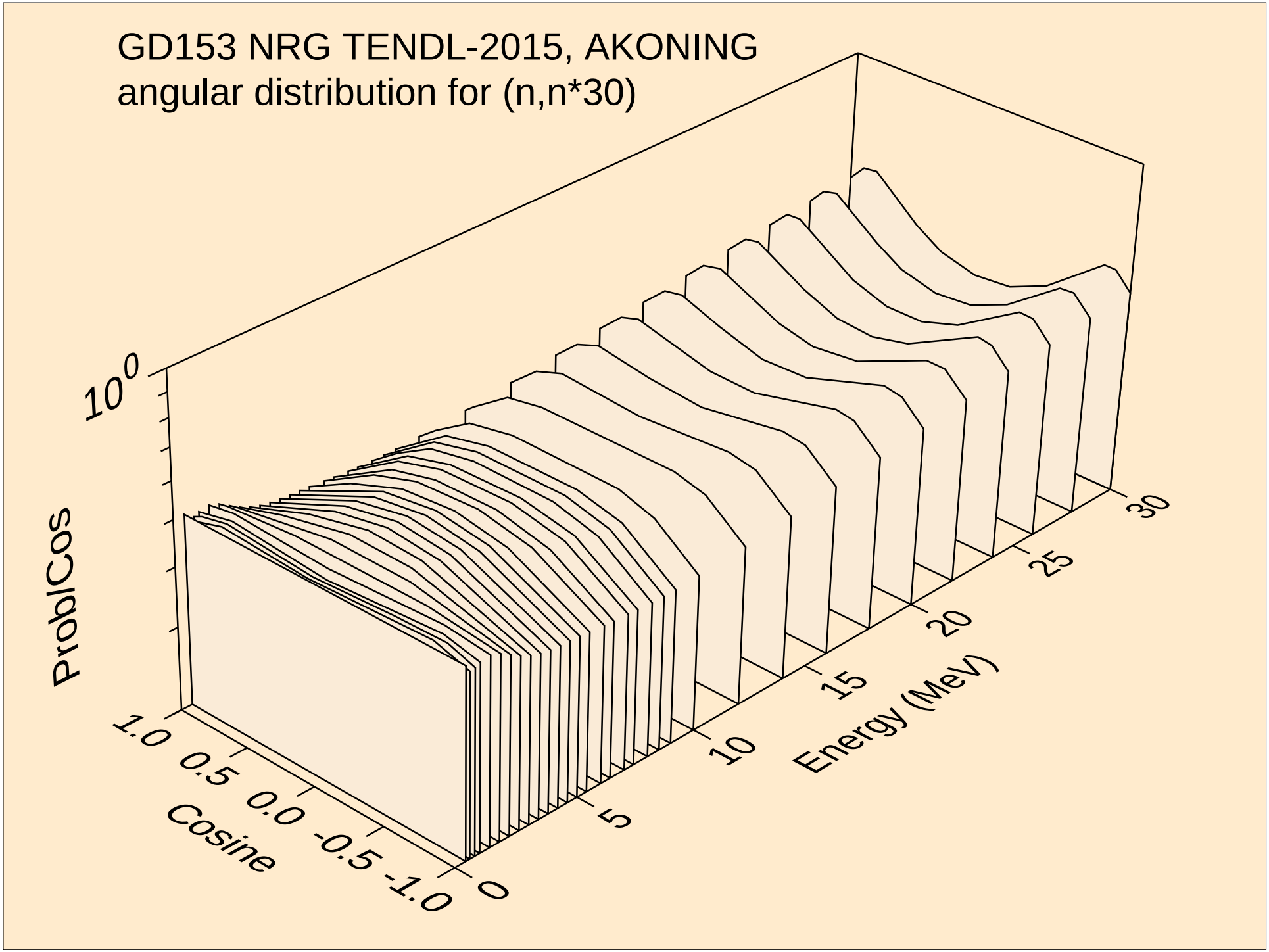

GD153 NRG TENDL-2015, AKONING
angular distribution for (n,n*25)
Prob\Cos
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
25
30
Energy (MeV)

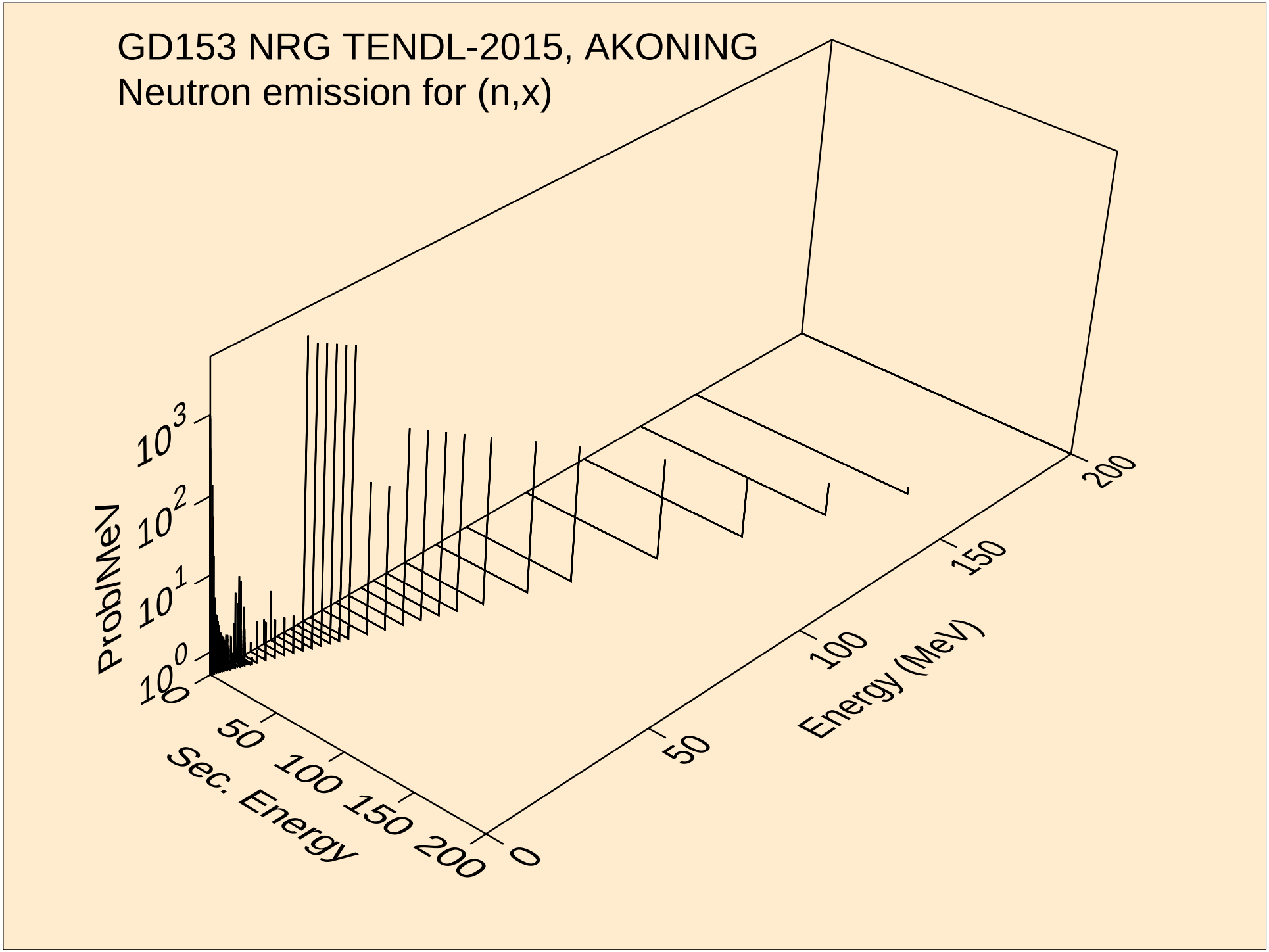

GD153 NRG TENDL-2015, AKONING
angular distribution for (n,n*26)
10^0
ProbICos
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
25
30
Energy (MeV)

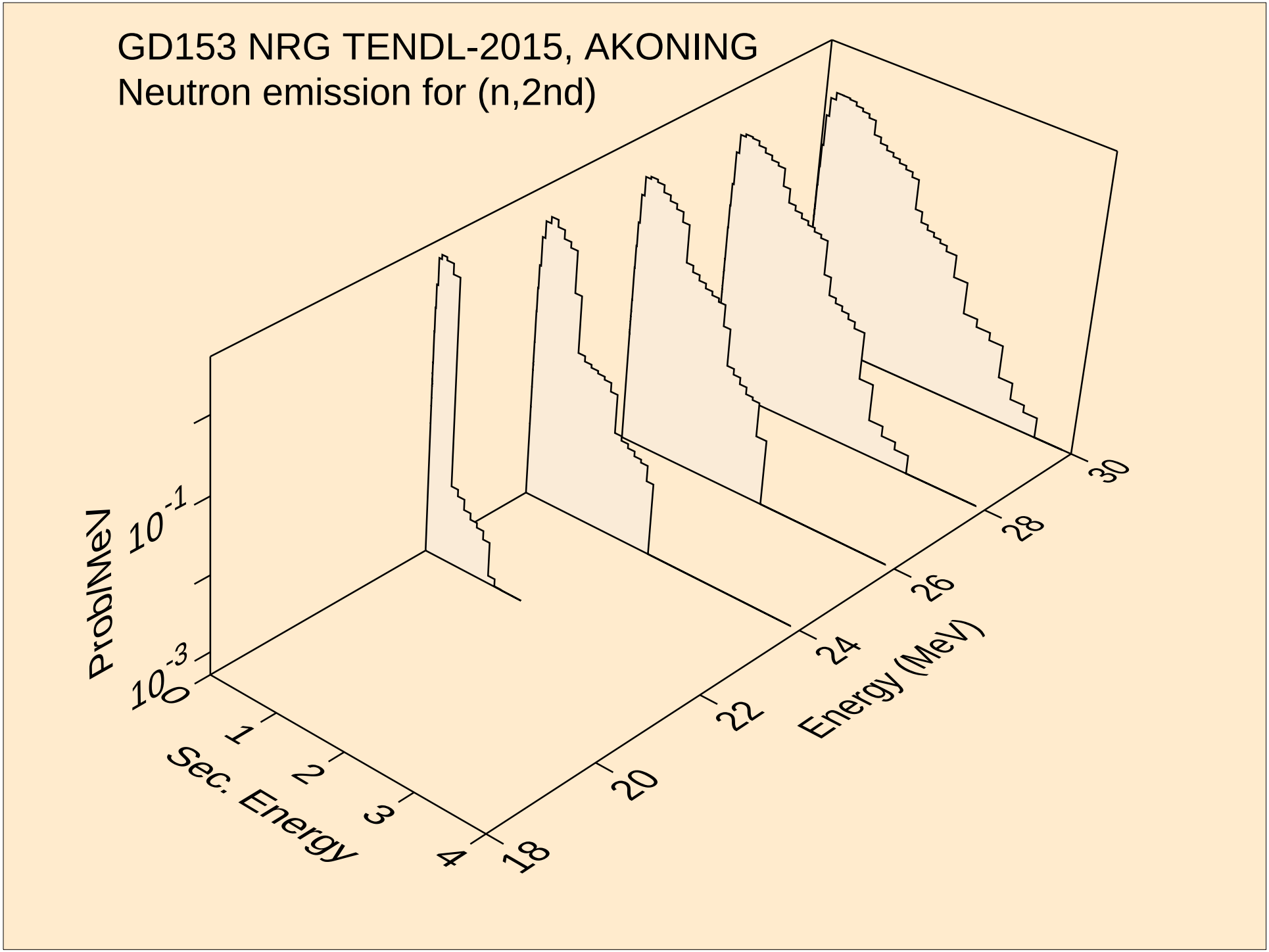

GD153 NRG TENDL-2015, AKONING
angular distribution for (n,n*27)
Prob\Cos
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
25
30
Energy (MeV)

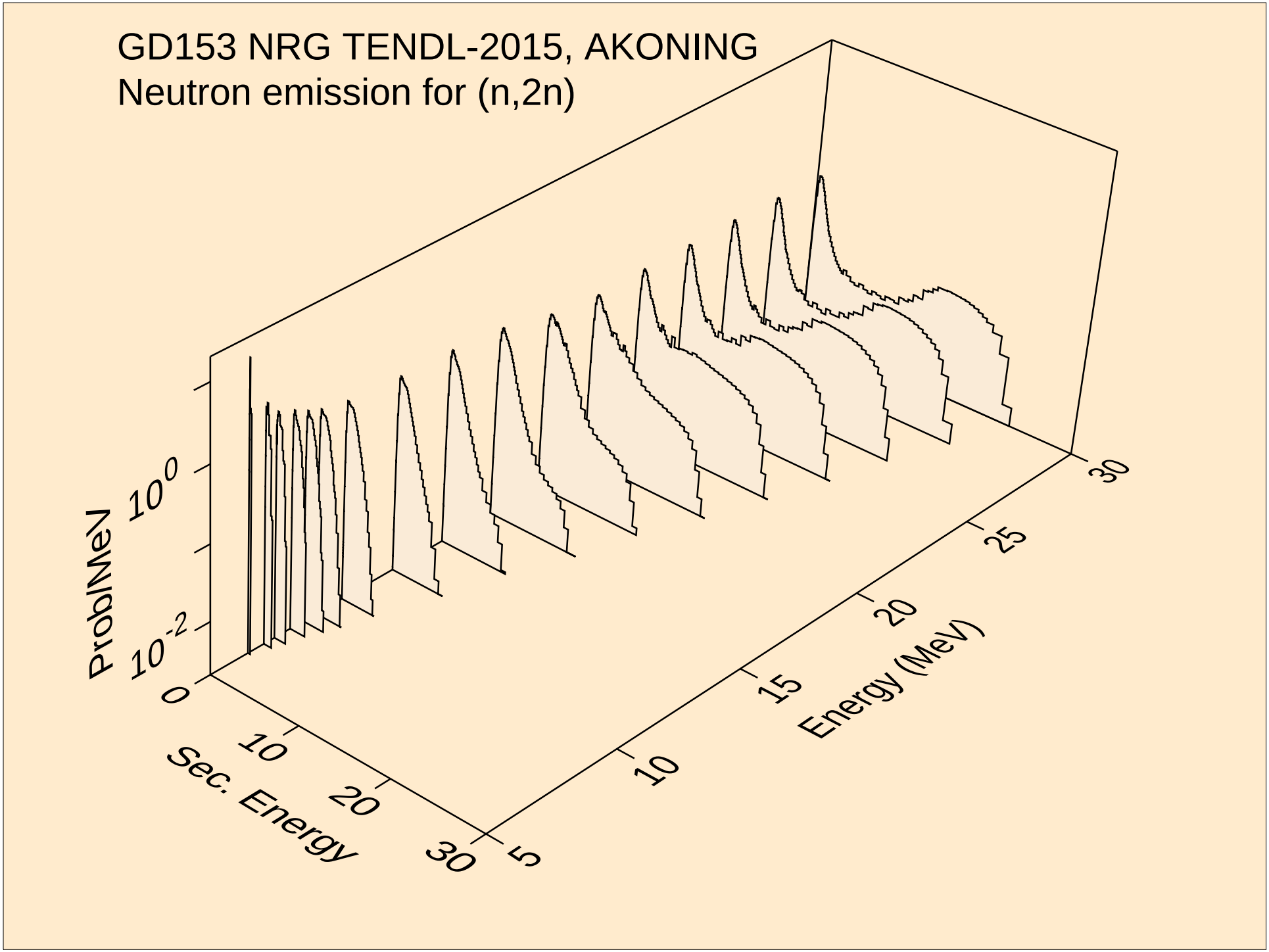

GD153 NRG TENDL-2015, AKONING
angular distribution for (n,n*28)
ProbCos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
25
30
Energy (MeV)

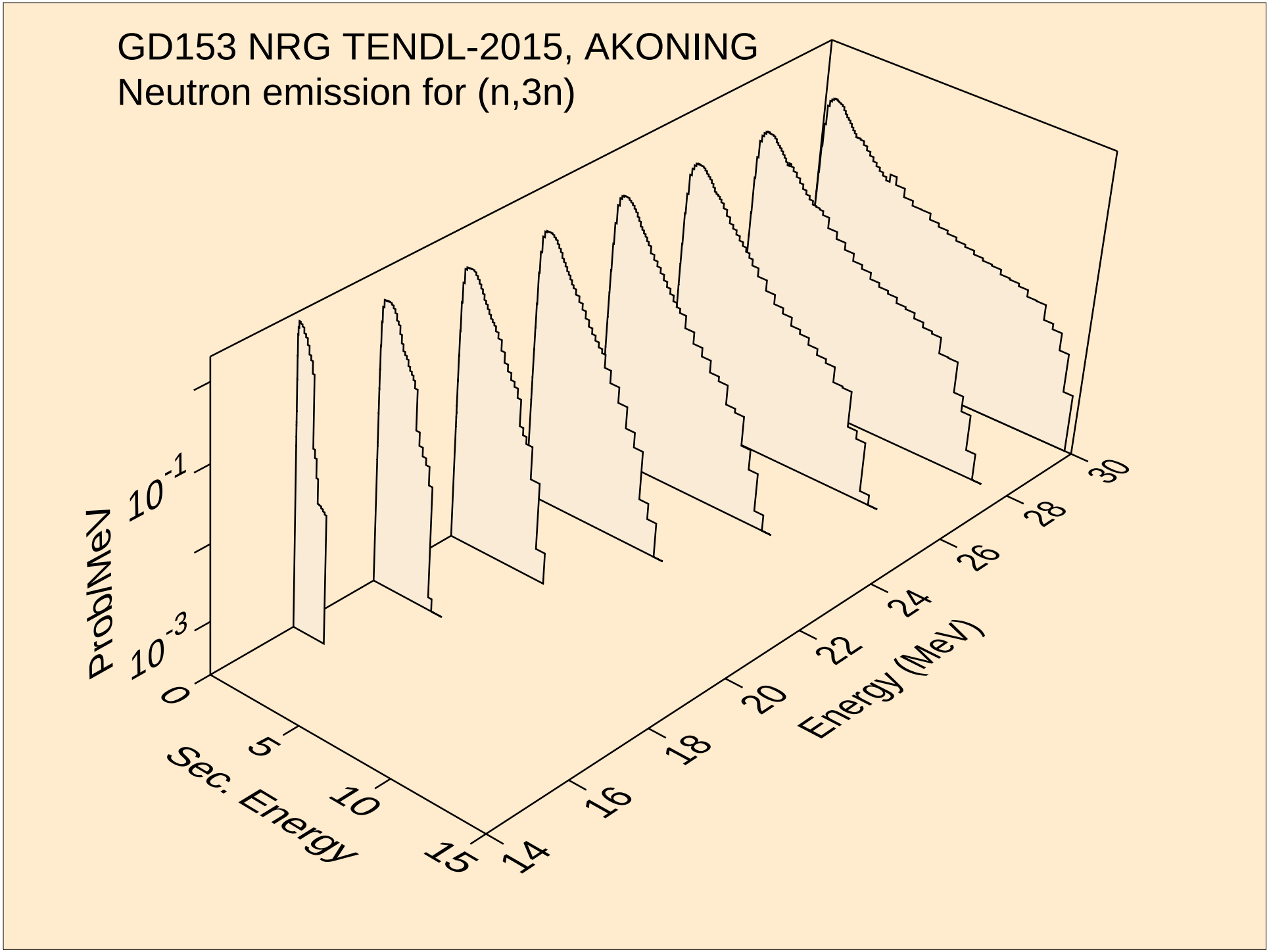

GD153 NRG TENDL-2015, AKONING
angular distribution for (n,n*29)
ProbICos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
25
30
Energy (MeV)

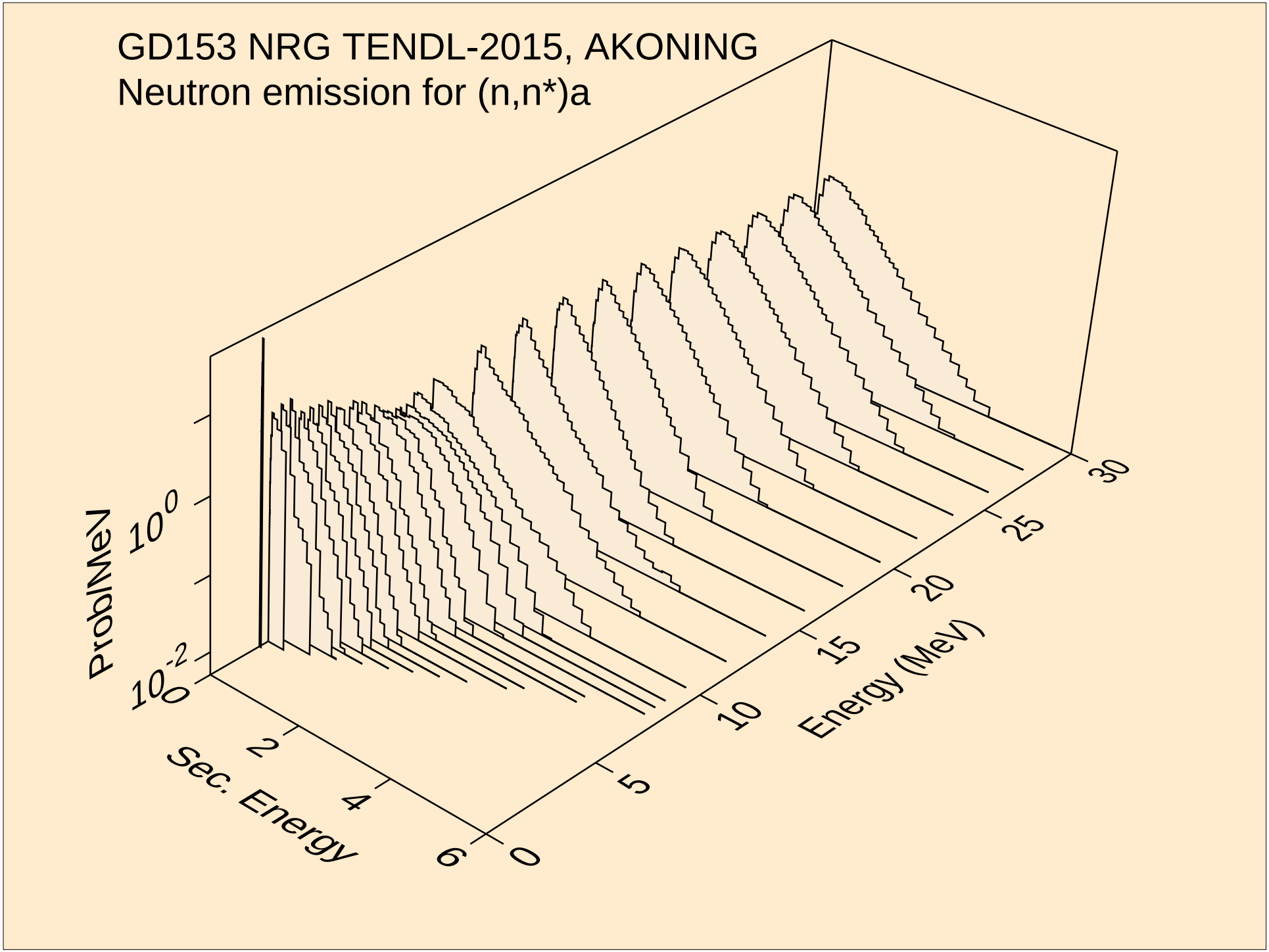

GD153 NRG TENDL-2015, AKONING
angular distribution for (n,n*30)
10^0
ProbICos
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
25
30
Energy (MeV)

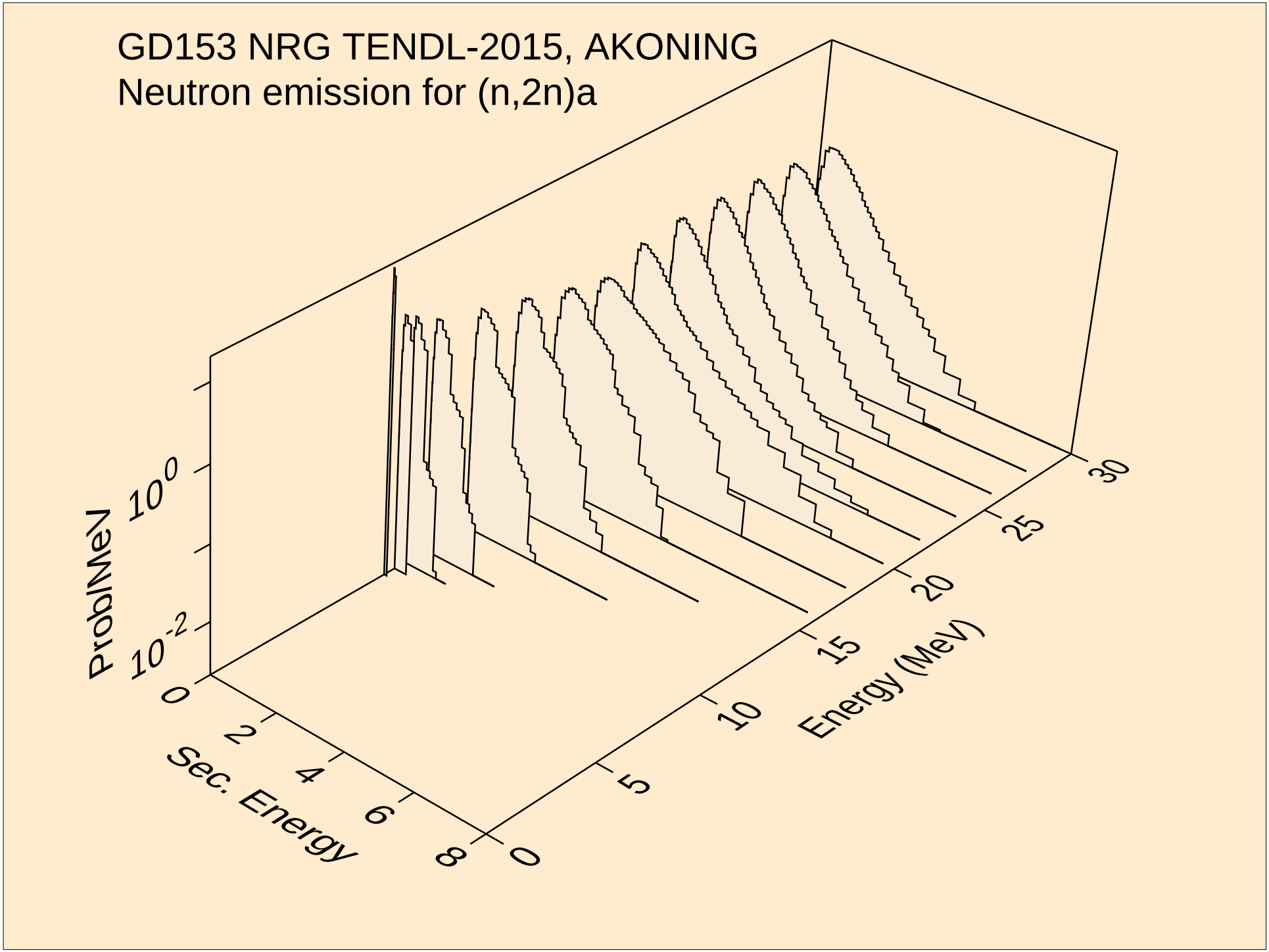

GD153 NRG TENDL-2015, AKONING
Neutron emission for (n,x)
Prob/MeV
10^3
10^2
10^1
10^0
Sec. Energy
50
100
150
200
0
50
100
150
200
Energy (MeV)

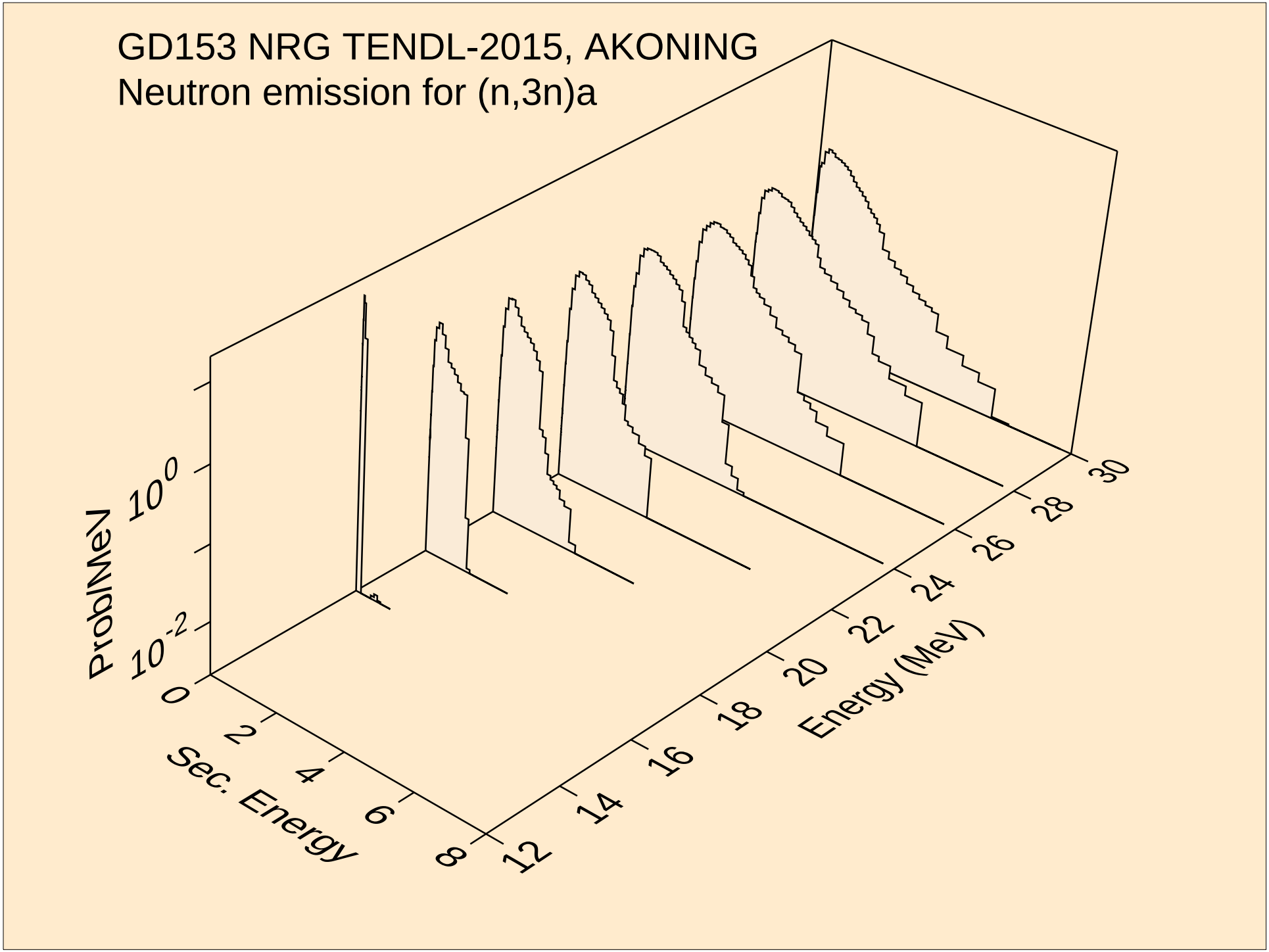

GD153 NRG TENDL-2015, AKONING
Neutron emission for (n,2nd)
Prob/MeV
10-1
10-3
0
1
2
3
4
Sec. Energy
18
20
22
24
26
28
30
Energy (MeV)

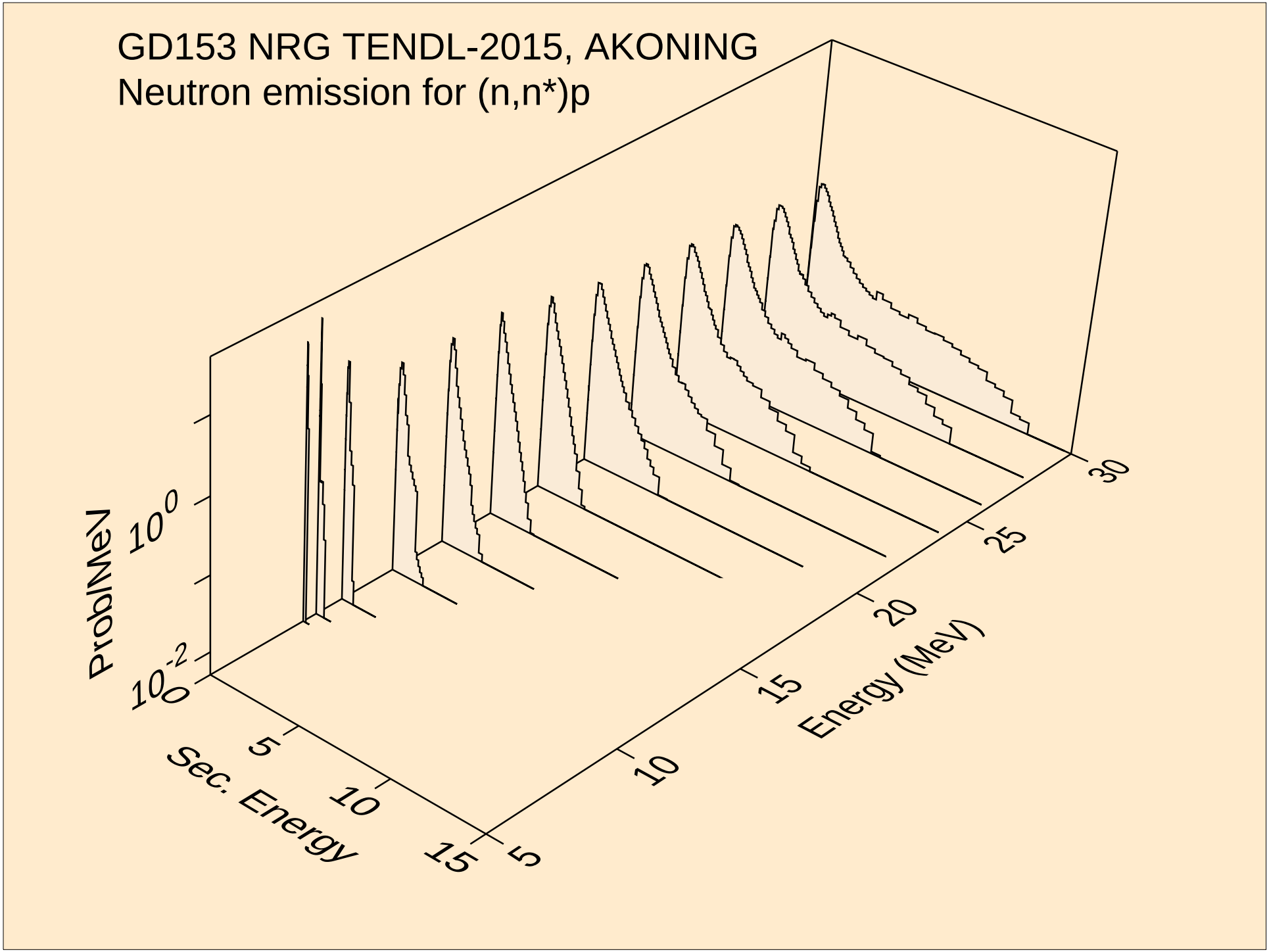

GD153 NRG TENDL-2015, AKONING
Neutron emission for (n,2n)
Prob/MeV
10^0
10^-2
0
10
20
30
Sec. Energy
5
10
15
20
25
30
Energy (MeV)

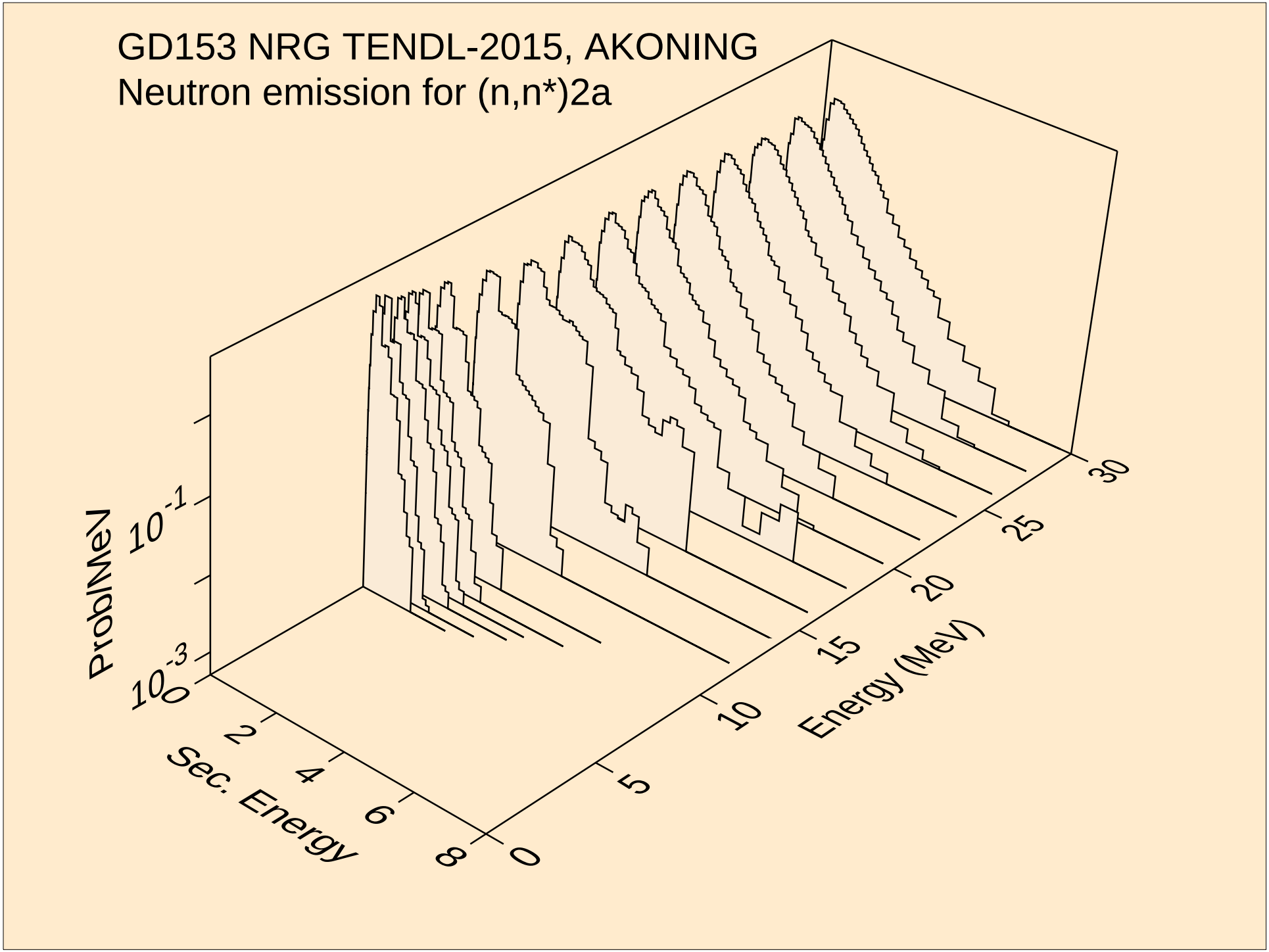

GD153 NRG TENDL-2015, AKONING
Neutron emission for (n,3n)
Prob/MeV
10-1
10-3
0
Sec. Energy
5
10
15
14
16
18
20
22
24
26
28
30
Energy (MeV)

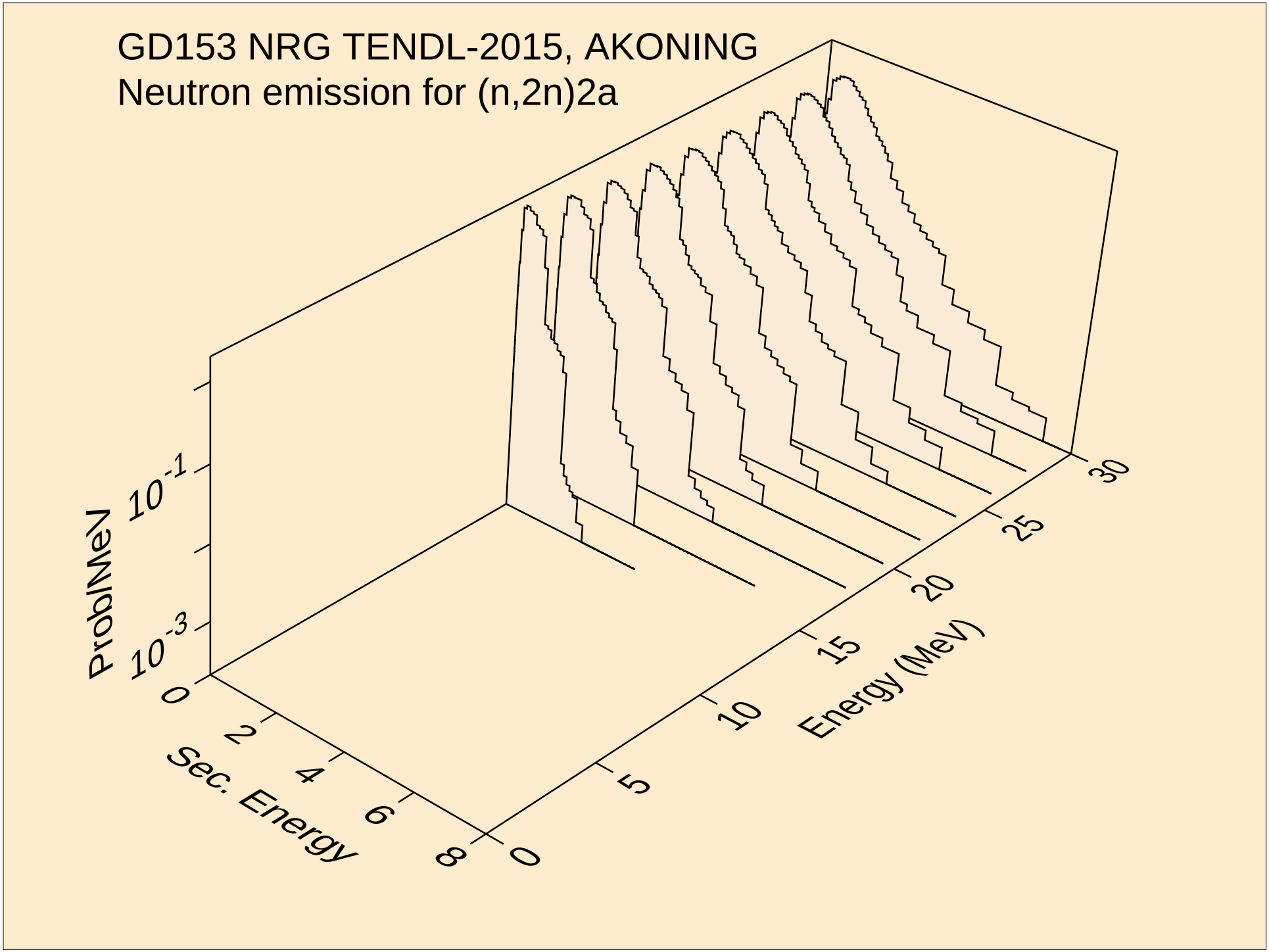

GD153 NRG TENDL-2015, AKONING
Neutron emission for (n,n*)a
Prob/MeV
10^{0}
10^{-2}
0
2
4
6
Sec. Energy
0
5
10
15
20
25
30
Energy (MeV)

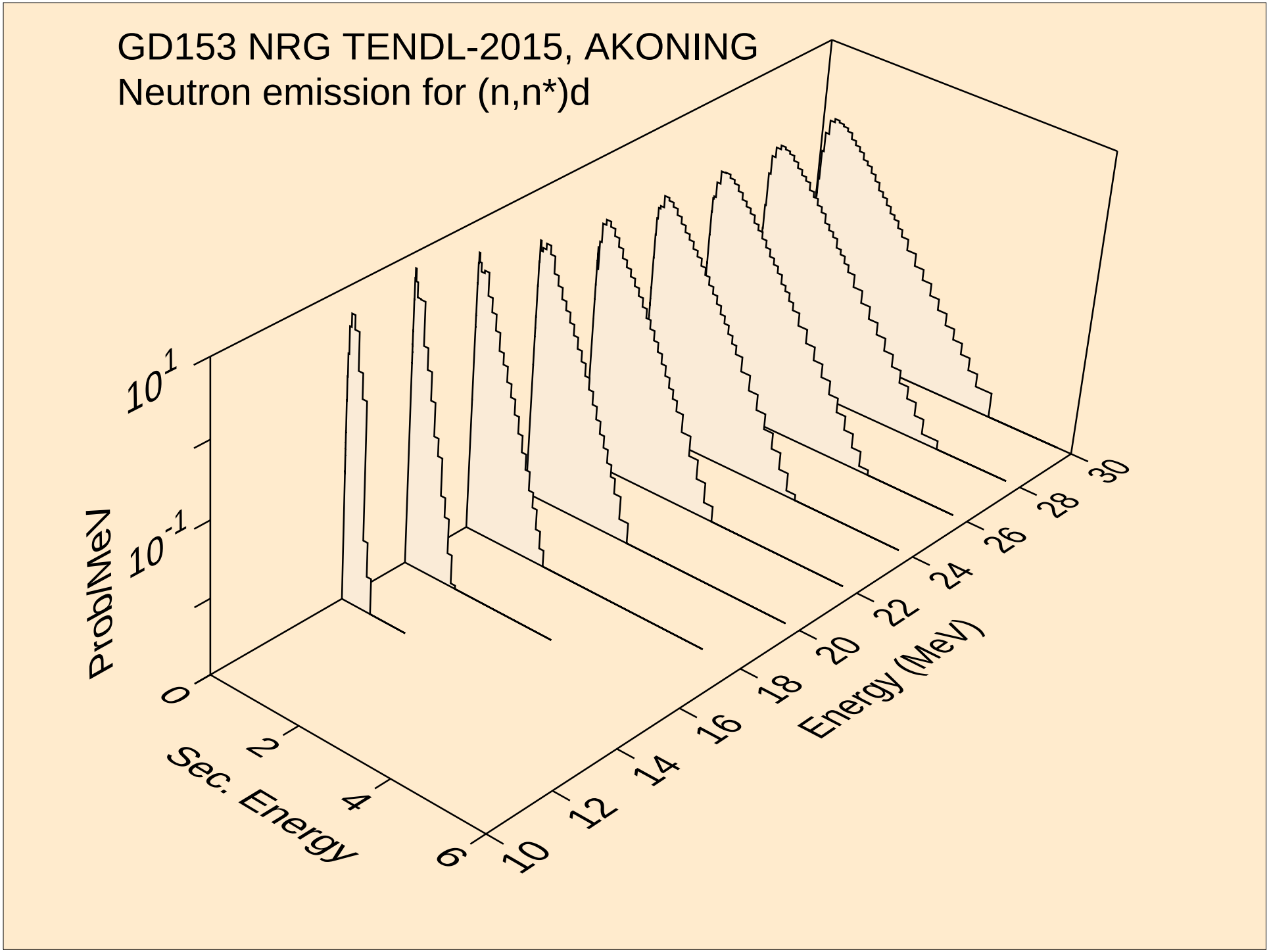

GD153 NRG TENDL-2015, AKONING
Neutron emission for (n,2n)a
Prob/MeV
10^0
10^-2
0
2
4
6
8
Sec. Energy
0
5
10
15
20
25
30
Energy (MeV)

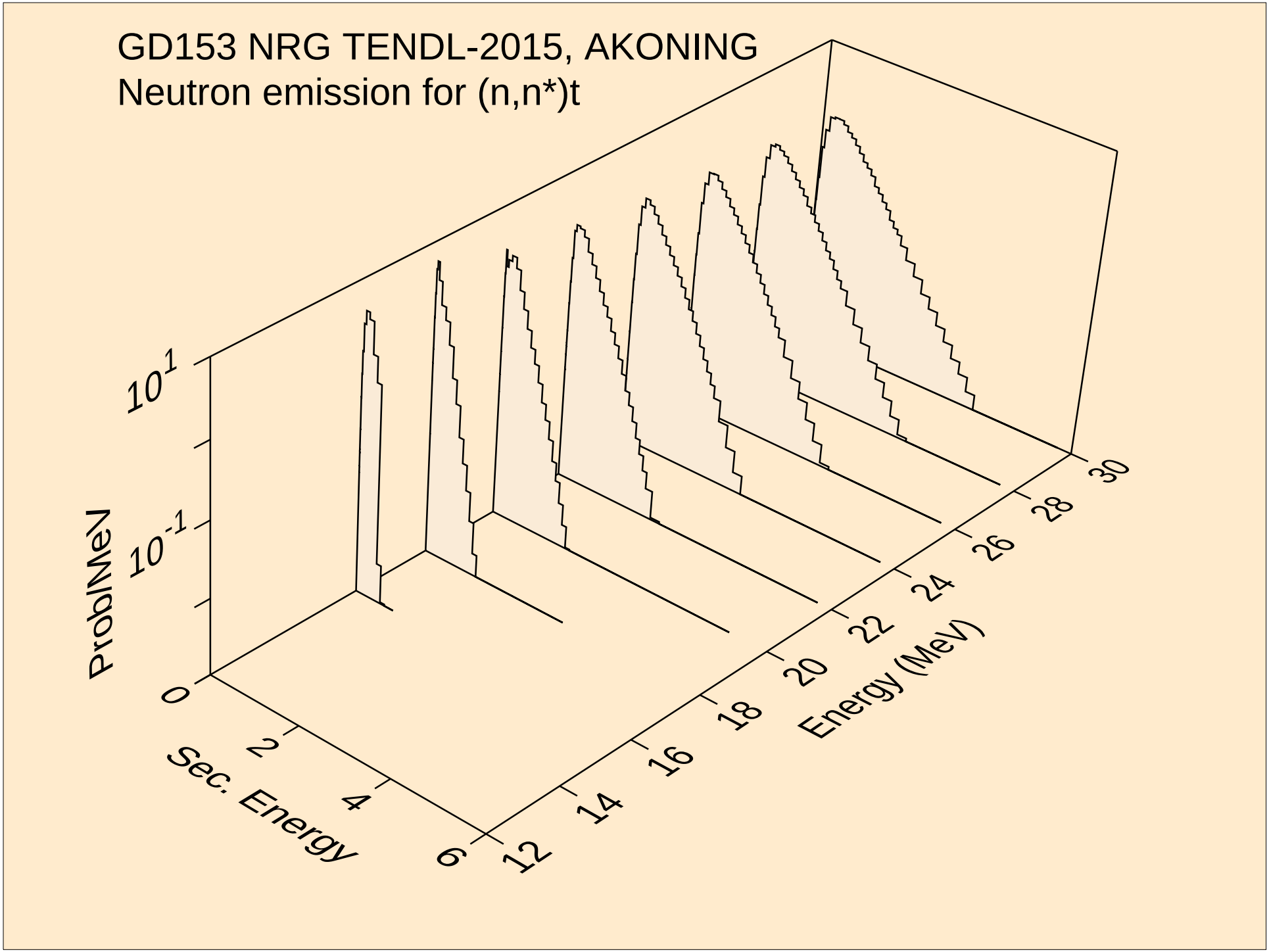

GD153 NRG TENDL-2015, AKONING
Neutron emission for (n,3n)a
Prob/MeV
10^0
10^-2
0
2
4
6
8
Sec. Energy
12
14
16
18
20
22
24
26
28
30
Energy (MeV)

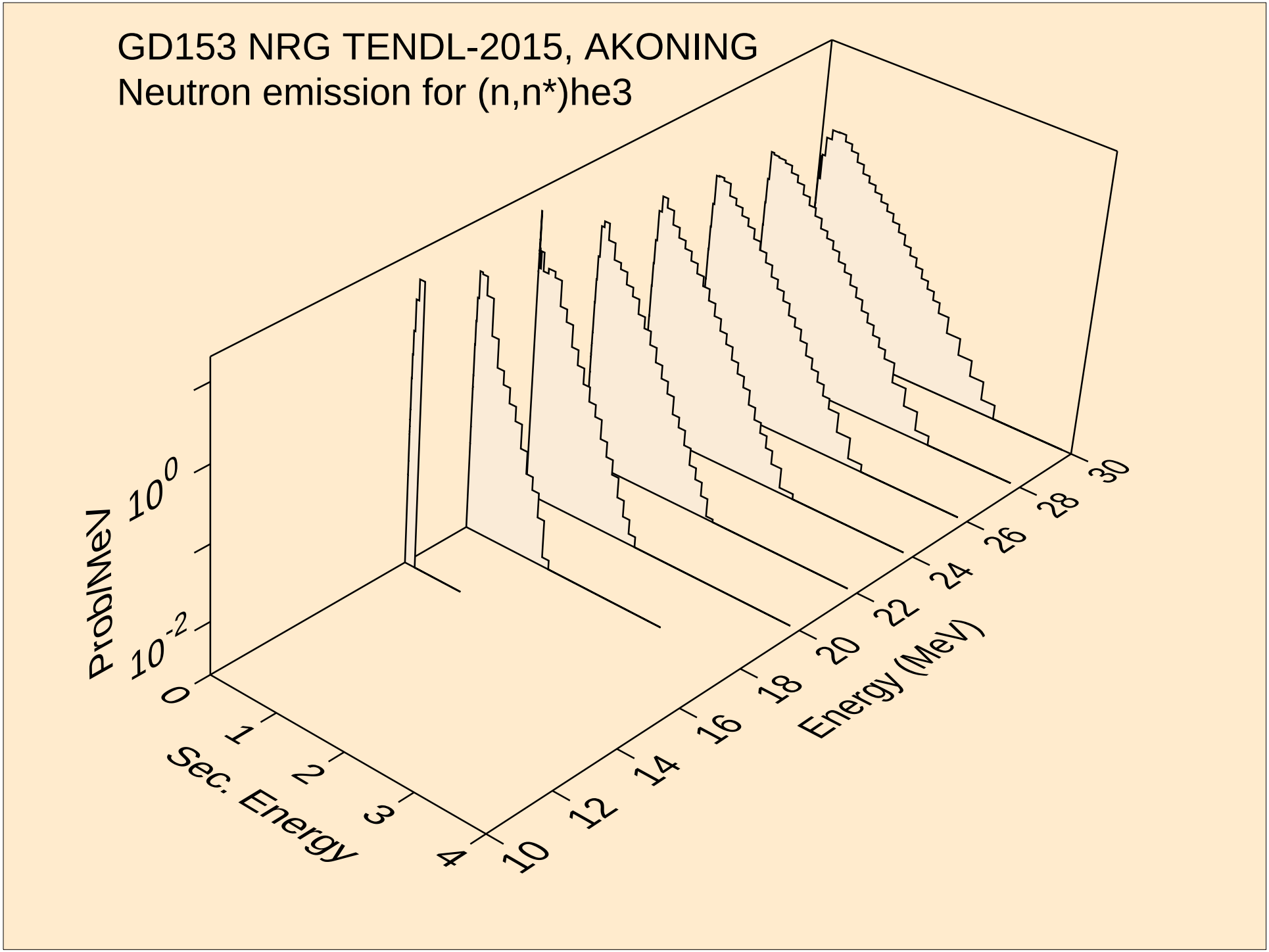

GD153 NRG TENDL-2015, AKONING
Neutron emission for (n,n*)p
Prob/MeV
10^{0}
10^{-2}
0
5
10
15
Sec. Energy
5
10
15
20
25
30
Energy (MeV)

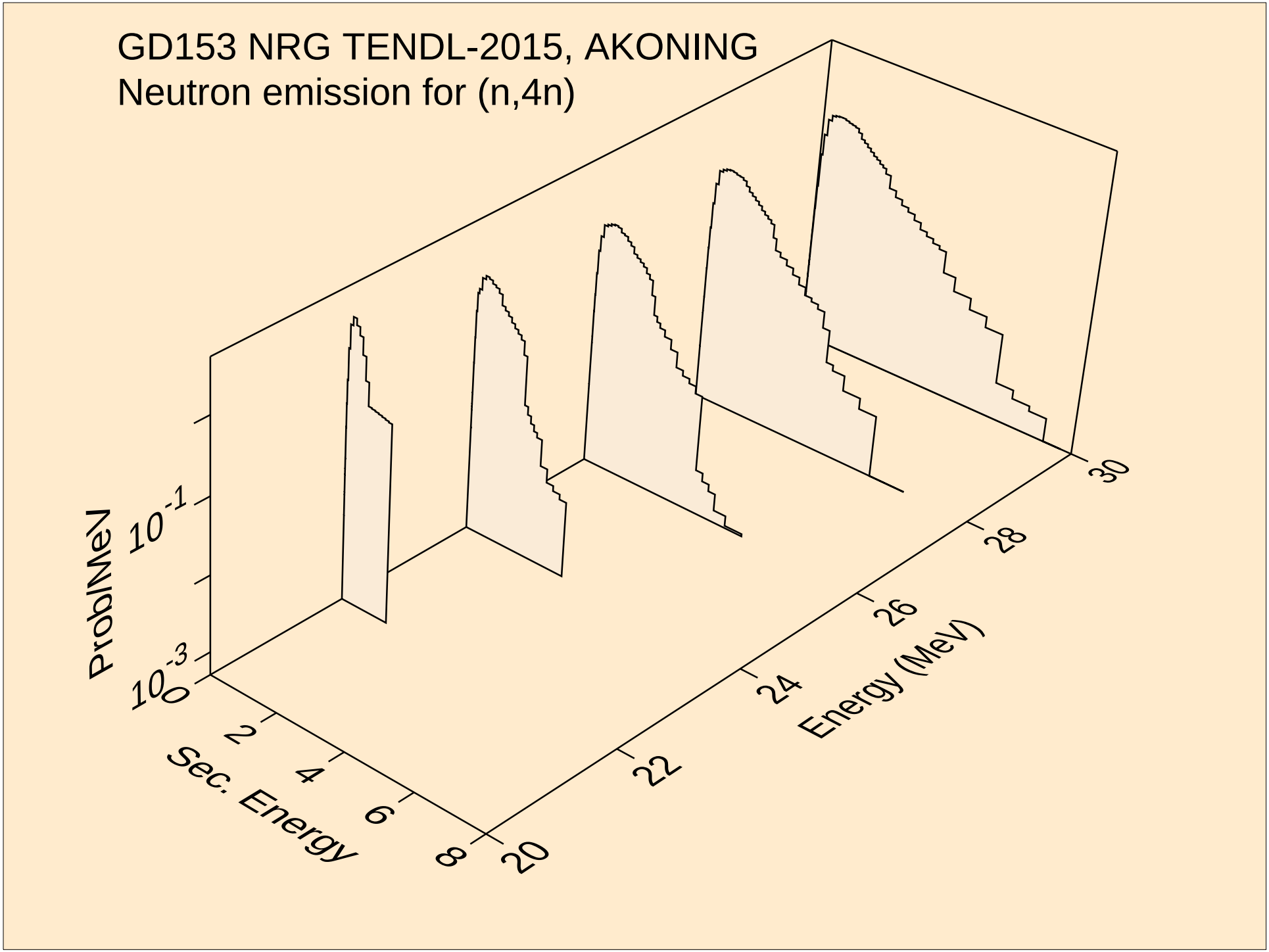

GD153 NRG TENDL-2015, AKONING
Neutron emission for (n,n*)2a
Prob/MeV
10-1
10-3
0
2
4
6
8
Sec. Energy
0
5
10
15
20
25
30
Energy (MeV)

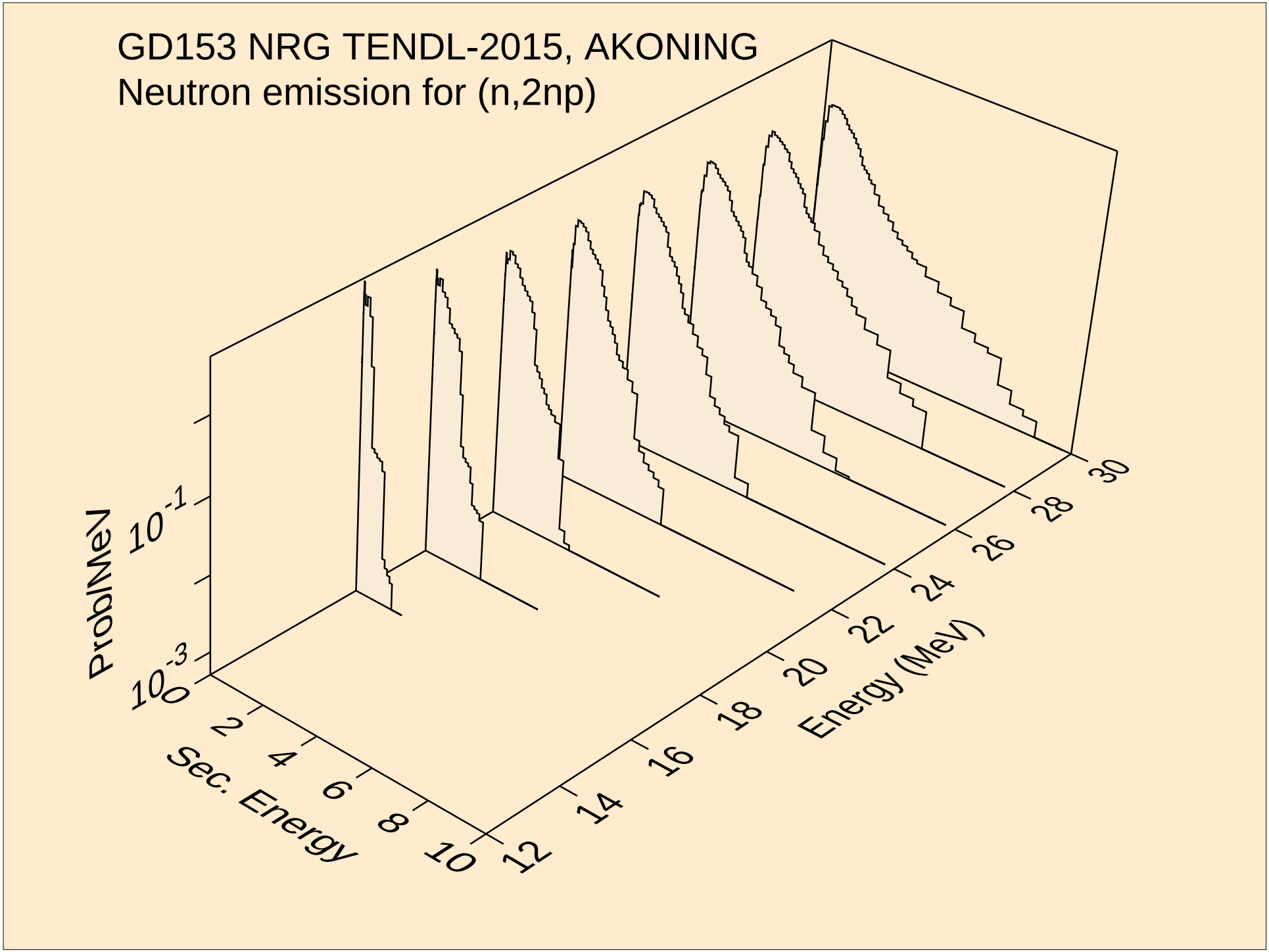

GD153 NRG TENDL-2015, AKONING
Neutron emission for (n,2n)2a
Prob/MeV
10-1
10-3
0
2
4
6
8
Sec. Energy
0
5
10
15
20
25
30
Energy (MeV)

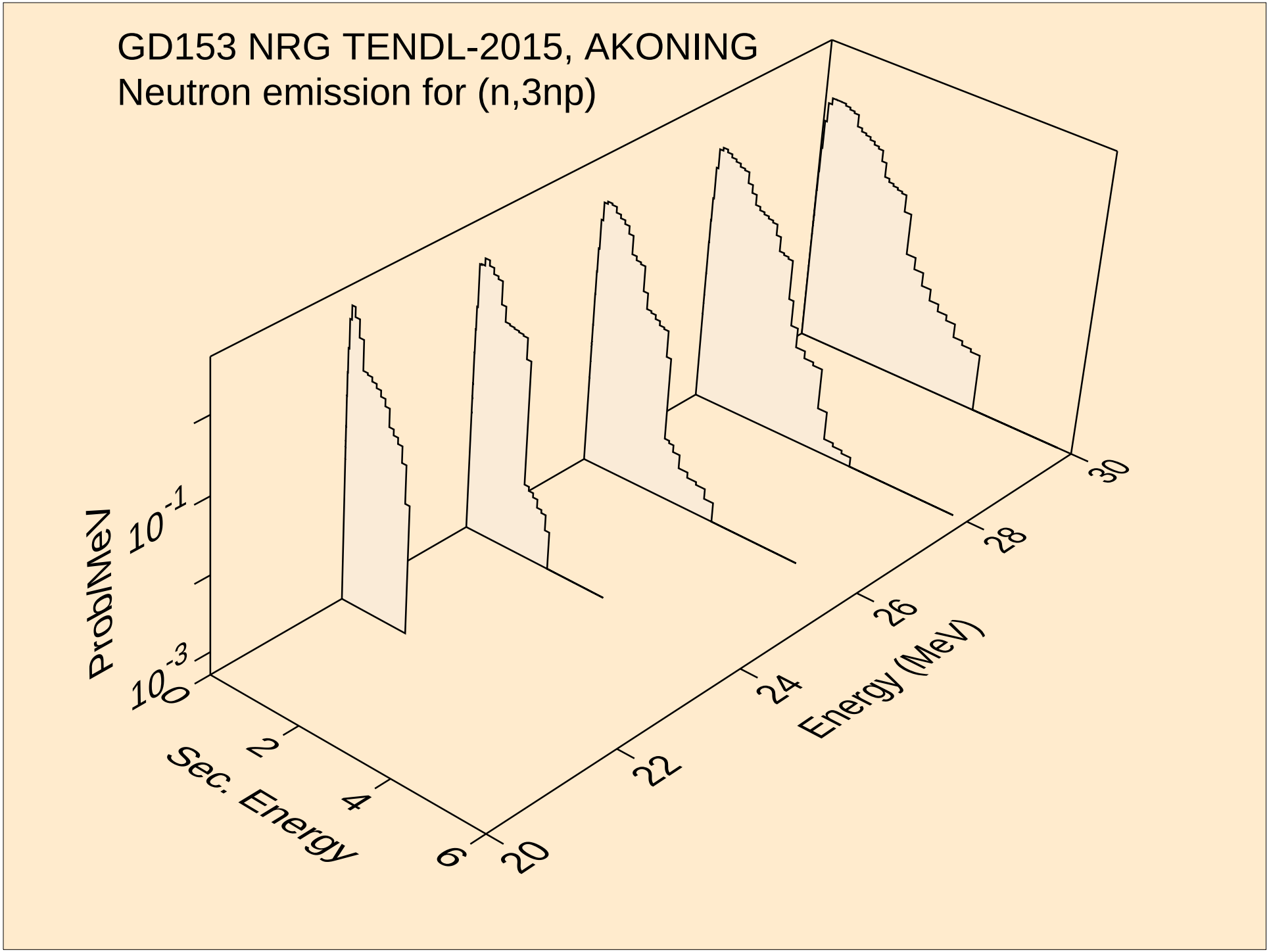

GD153 NRG TENDL-2015, AKONING
Neutron emission for (n,n*)d
Prob/MeV
10^{1}
10^{-1}
0
2
4
6
Sec. Energy
10
12
14
16
18
20
22
24
26
28
30
Energy (MeV)

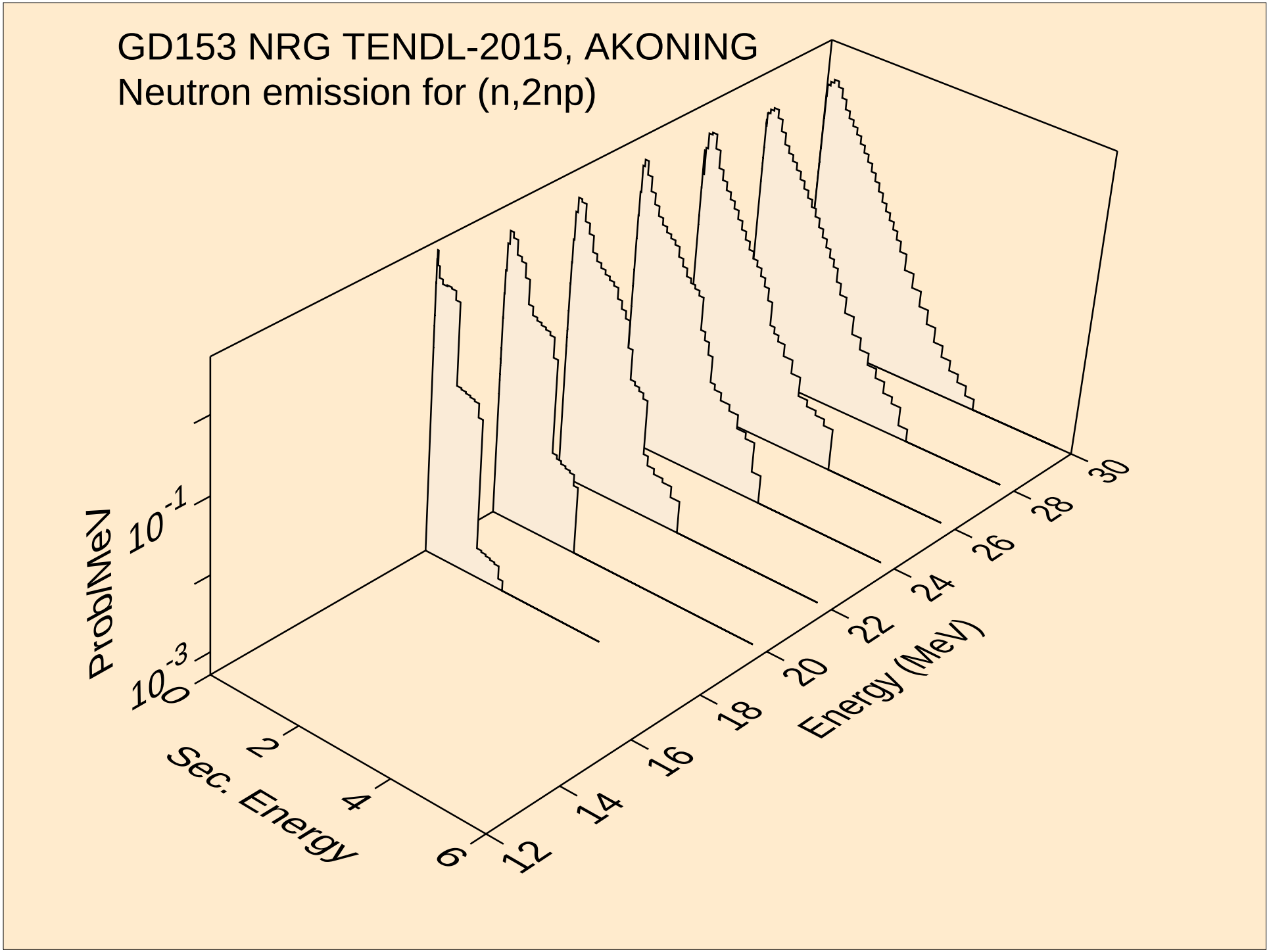

GD153 NRG TENDL-2015, AKONING
Neutron emission for (n,n*)t
Prob/MeV
10^1
10^-1
0
Sec. Energy
2
4
6
12
14
16
18
20
22
24
26
28
30
Energy (MeV)

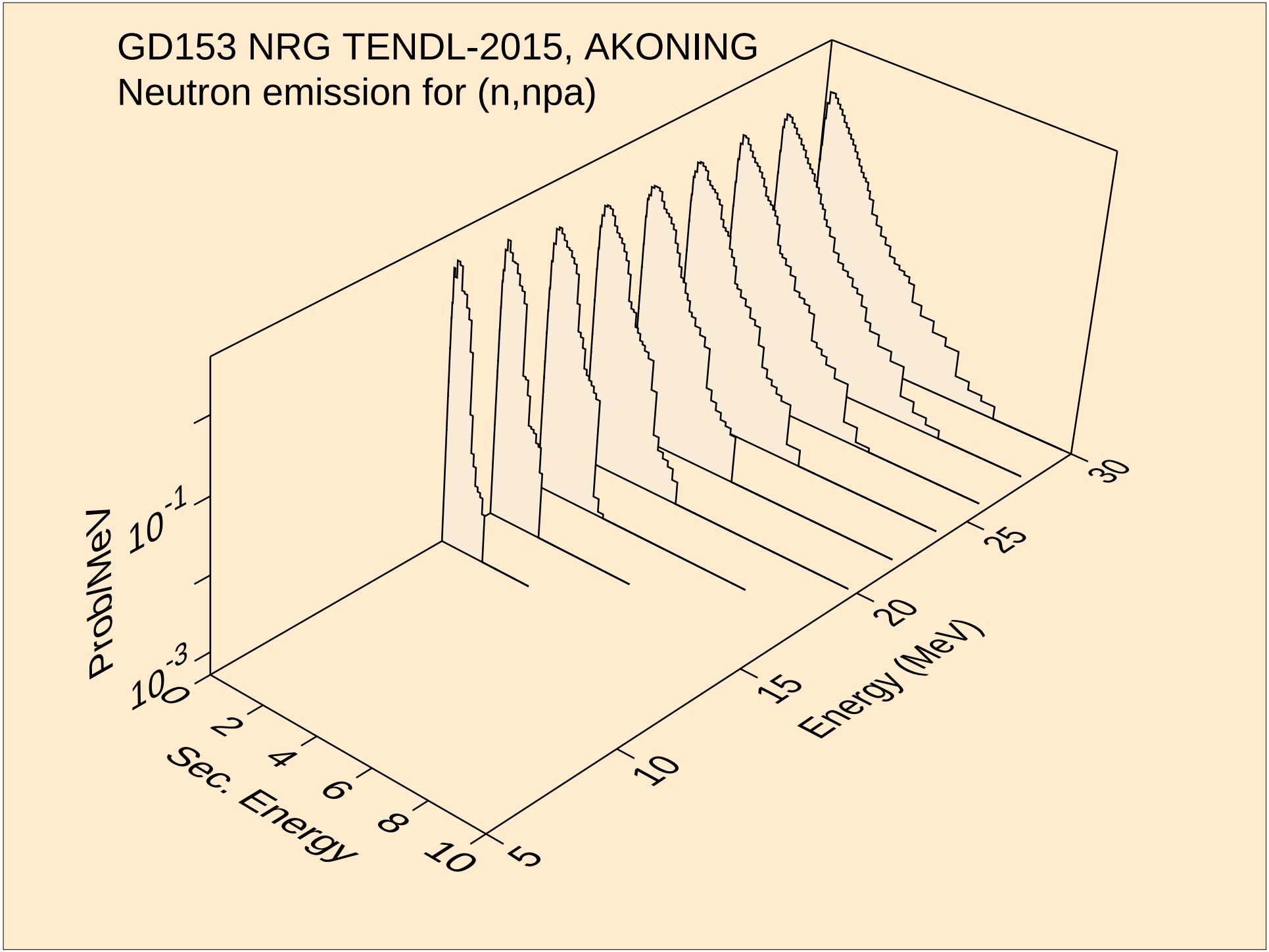

GD153 NRG TENDL-2015, AKONING
Neutron emission for (n,n*)he3
Prob/MeV
10^0
10^-2
0
1
2
3
4
Sec. Energy
10
12
14
16
18
20
22
24
26
28
30
Energy (MeV)

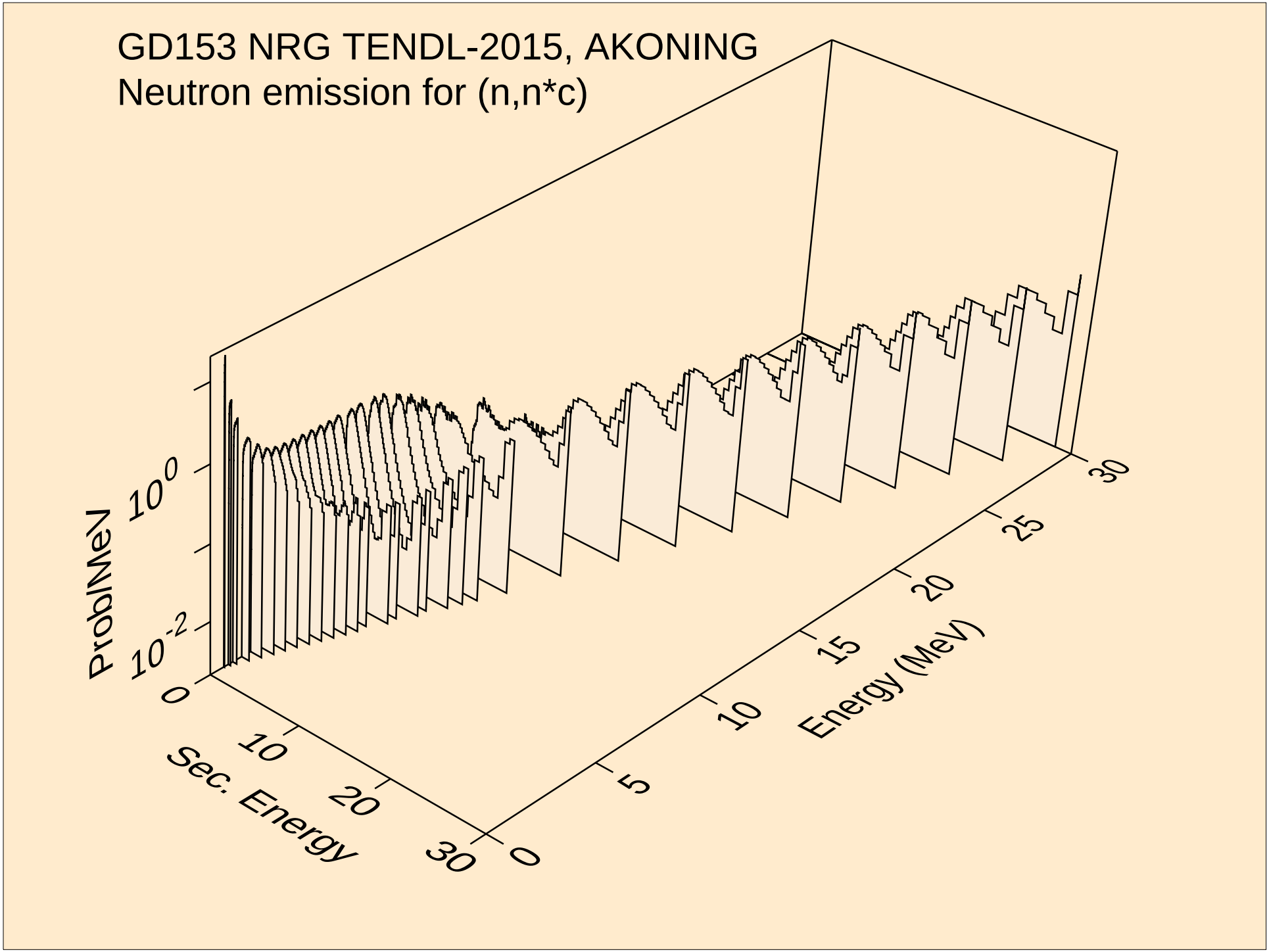

GD153 NRG TENDL-2015, AKONING
Neutron emission for (n,4n)
Prob/MeV
10-1
10-3
0
2
4
6
8
Sec. Energy
20
22
24
26
28
30
Energy (MeV)

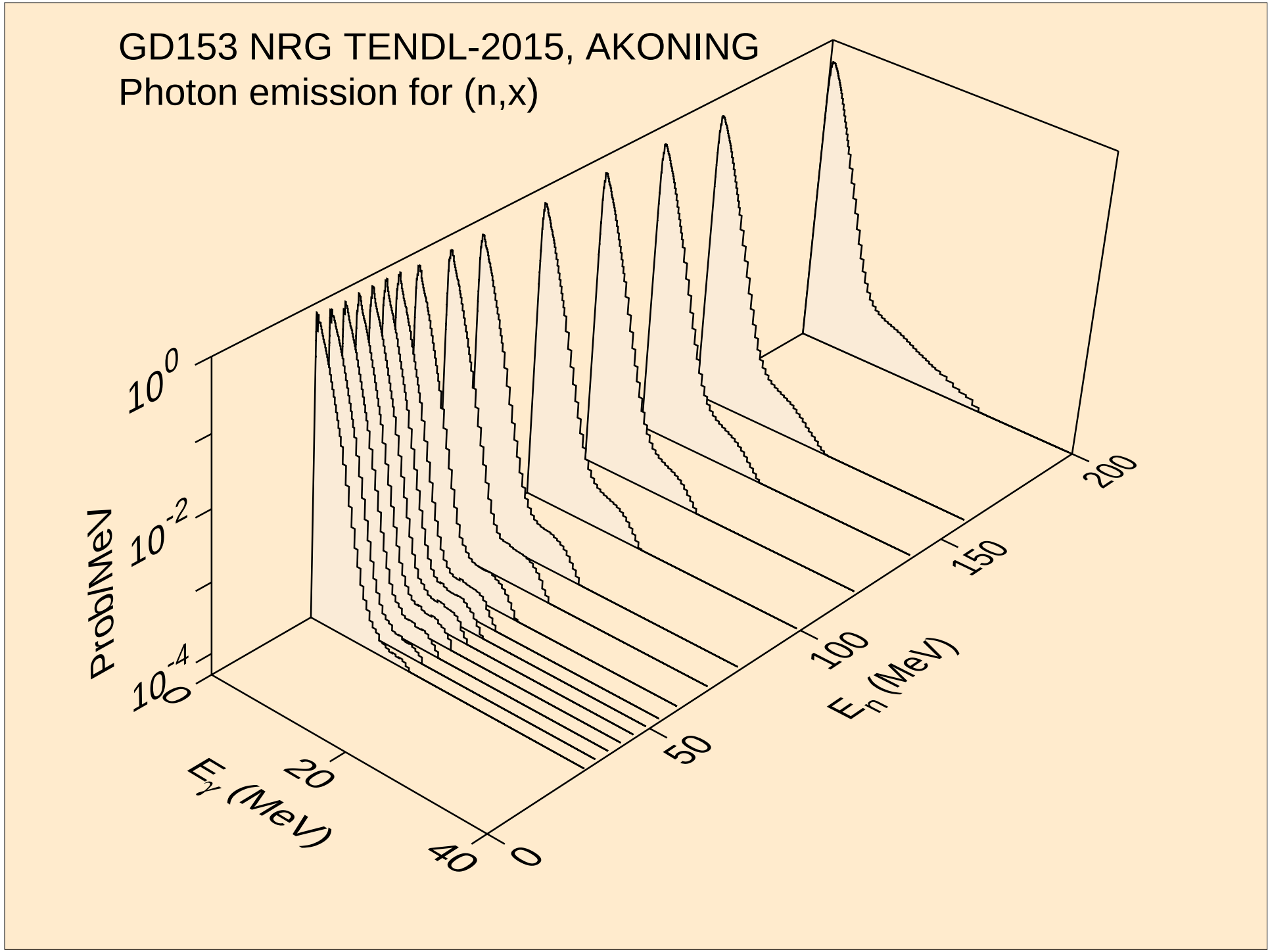

GD153 NRG TENDL-2015, AKONING
Neutron emission for (n,2np)
Prob/MeV
10-1
10-3
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
Sec. Energy
Energy (MeV)

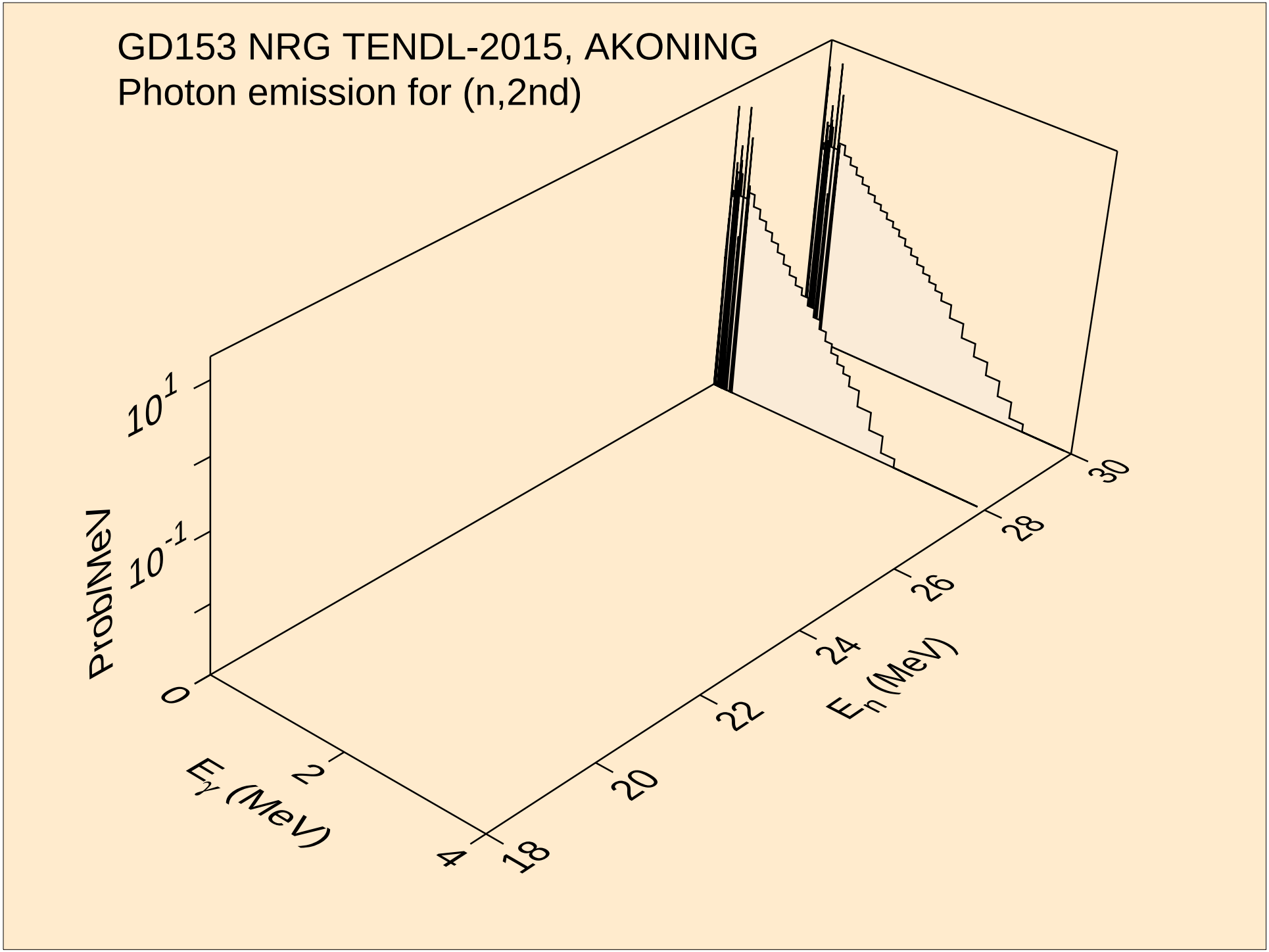

GD153 NRG TENDL-2015, AKONING
Neutron emission for (n,3np)
Prob/MeV
10-1
10-3
0
2
4
6
Sec. Energy
20
22
24
26
28
30
Energy (MeV)

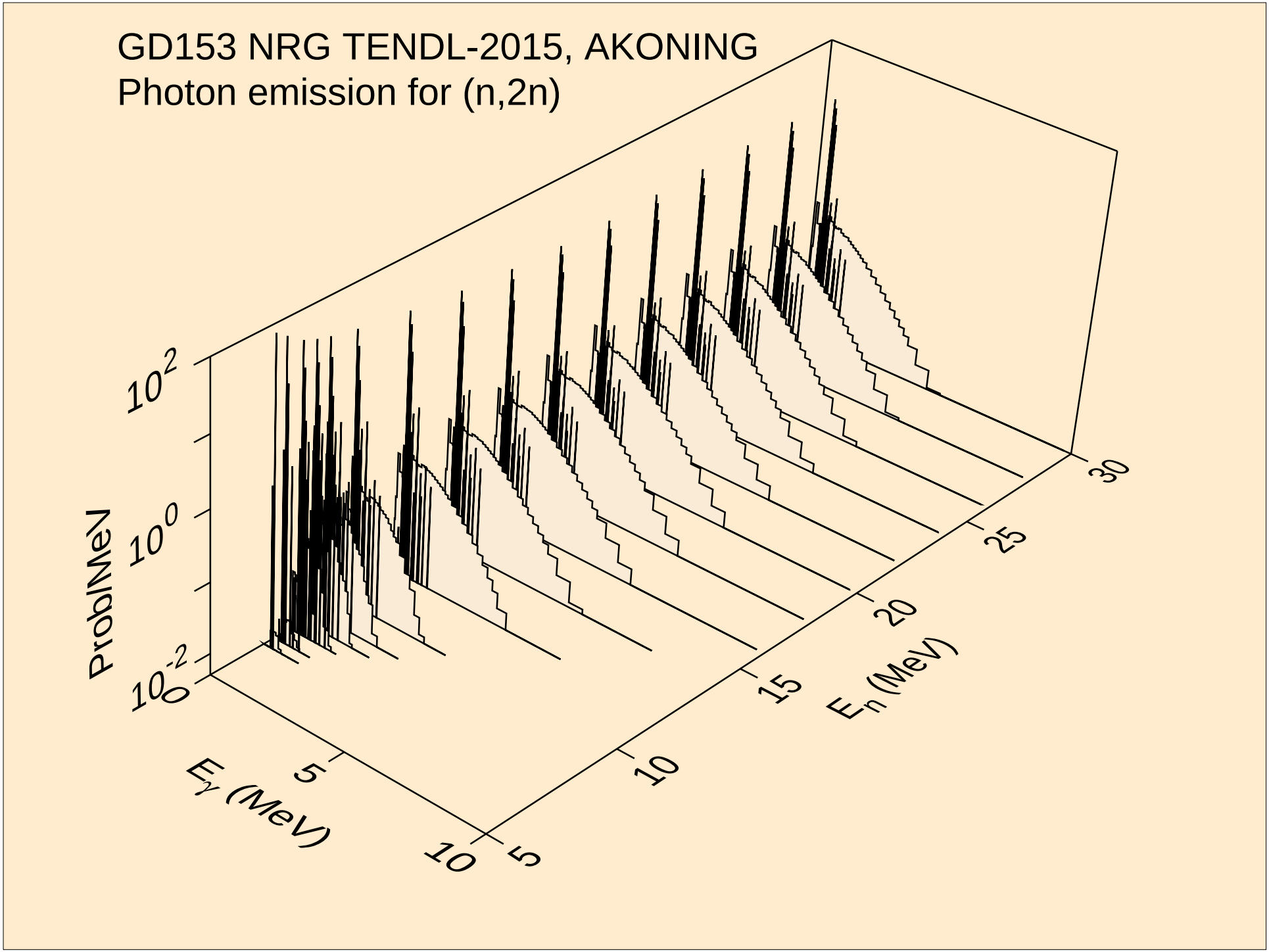

GD153 NRG TENDL-2015, AKONING
Neutron emission for (n,2np)
Prob/MeV
10-1
10-3
0
2
4
6
Sec. Energy
12
14
16
18
20
22
24
26
28
30
Energy (MeV)

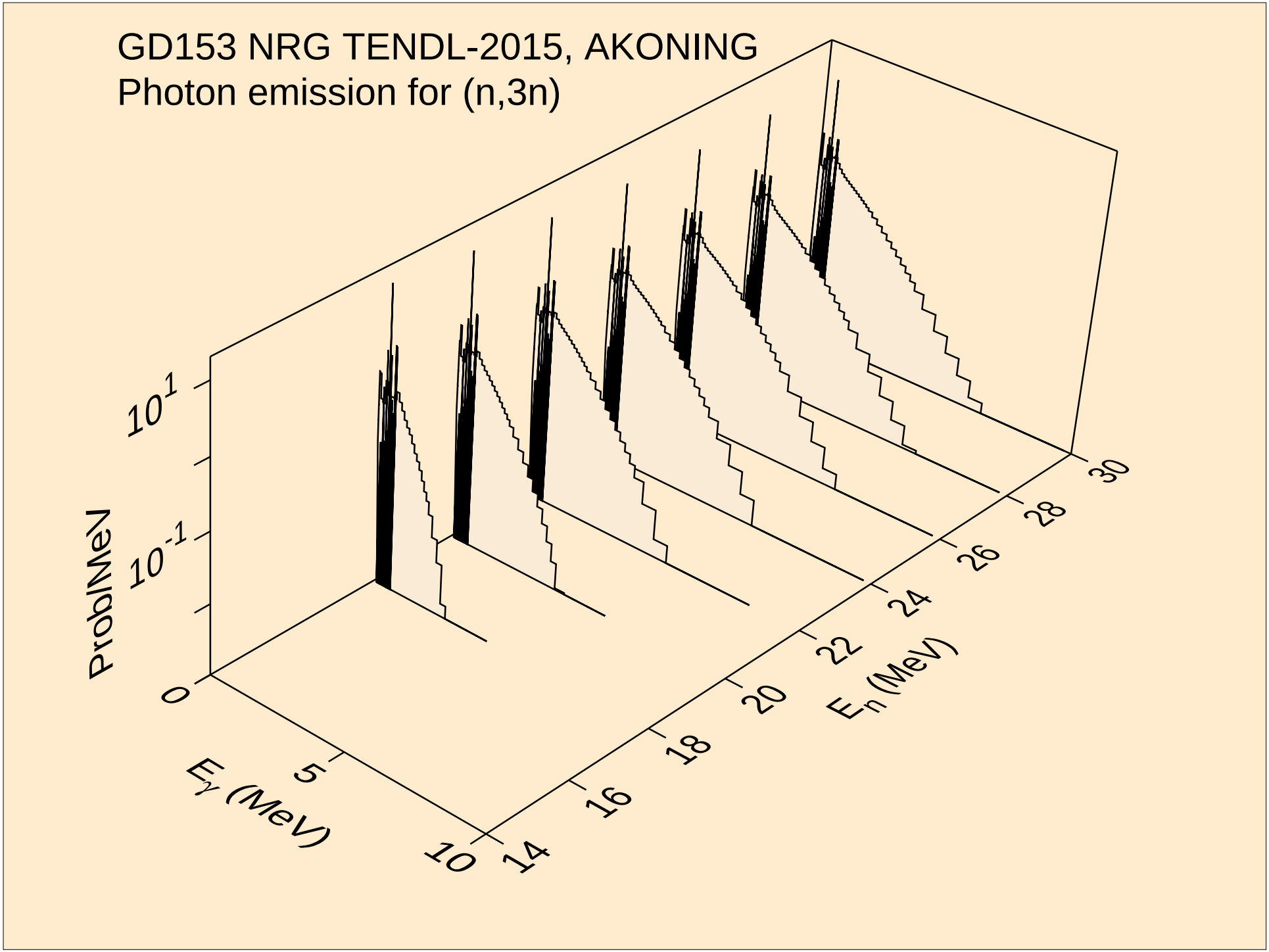

GD153 NRG TENDL-2015, AKONING
Neutron emission for (n,npa)
Prob/MeV
10-1
10-3
0
2
4
6
8
10
Sec. Energy
5
10
15
20
25
30
Energy (MeV)

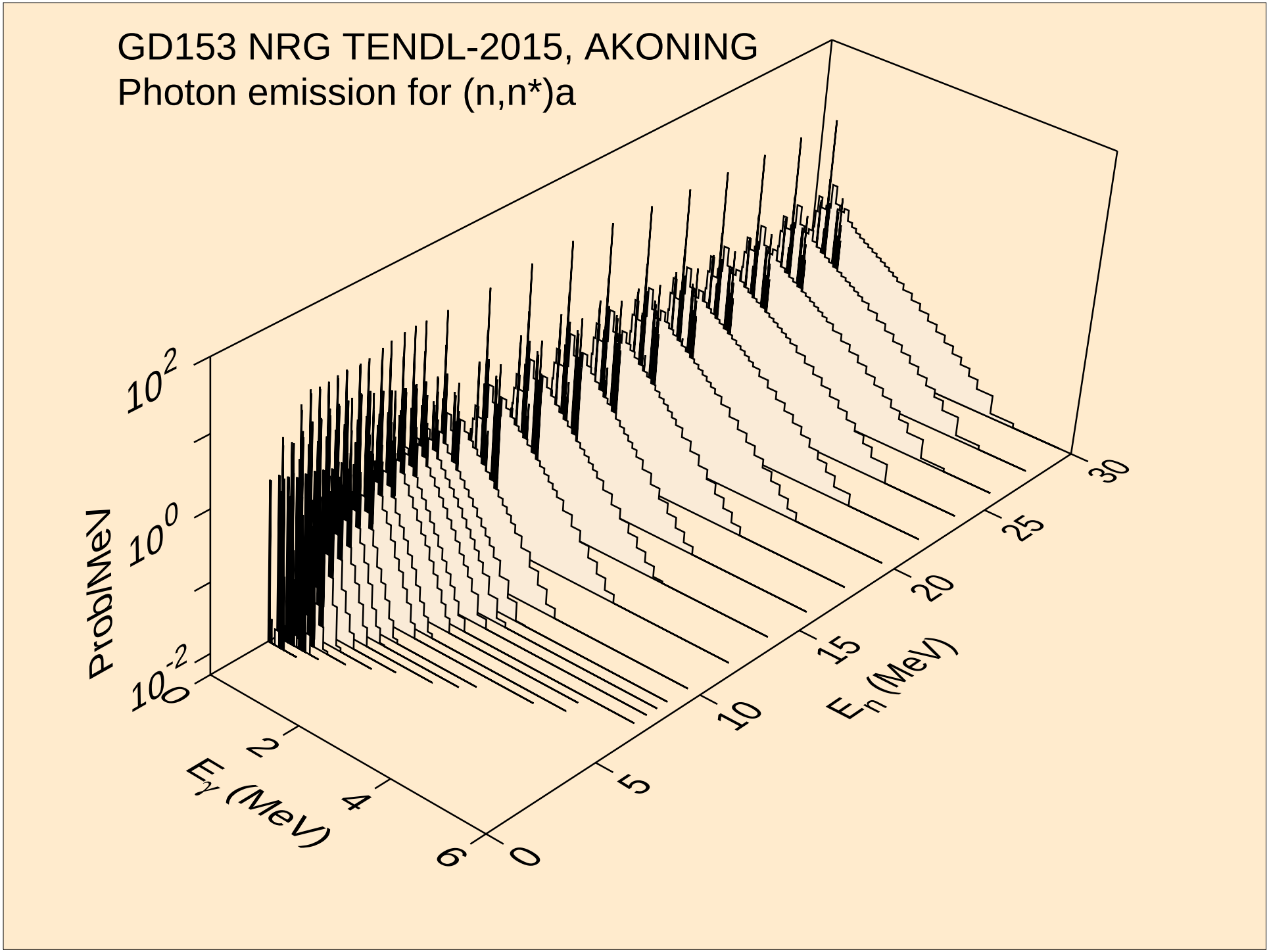

GD153 NRG TENDL-2015, AKONING
Neutron emission for (n,n*c)
Prob/MeV
10^0
10^-2
0
10
20
30
Sec. Energy
0
5
10
15
20
25
30
Energy (MeV)

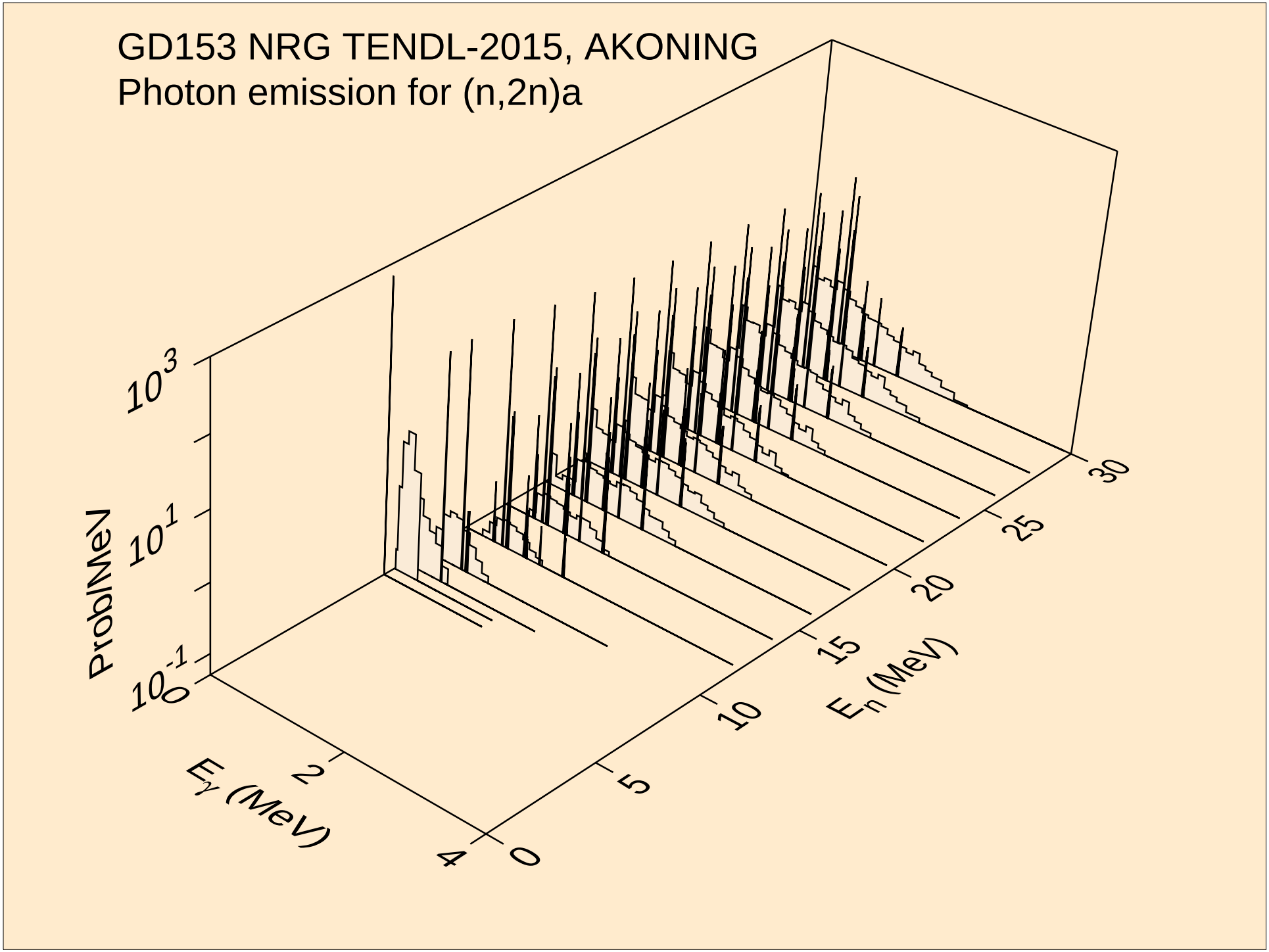

GD153 NRG TENDL-2015, AKONING
Photon emission for (n,x)
Prob/MeV
10^{0}
10^{-2}
10^{-4}
E_γ (MeV)
0
20
40
E_n (MeV)
0
50
100
150
200

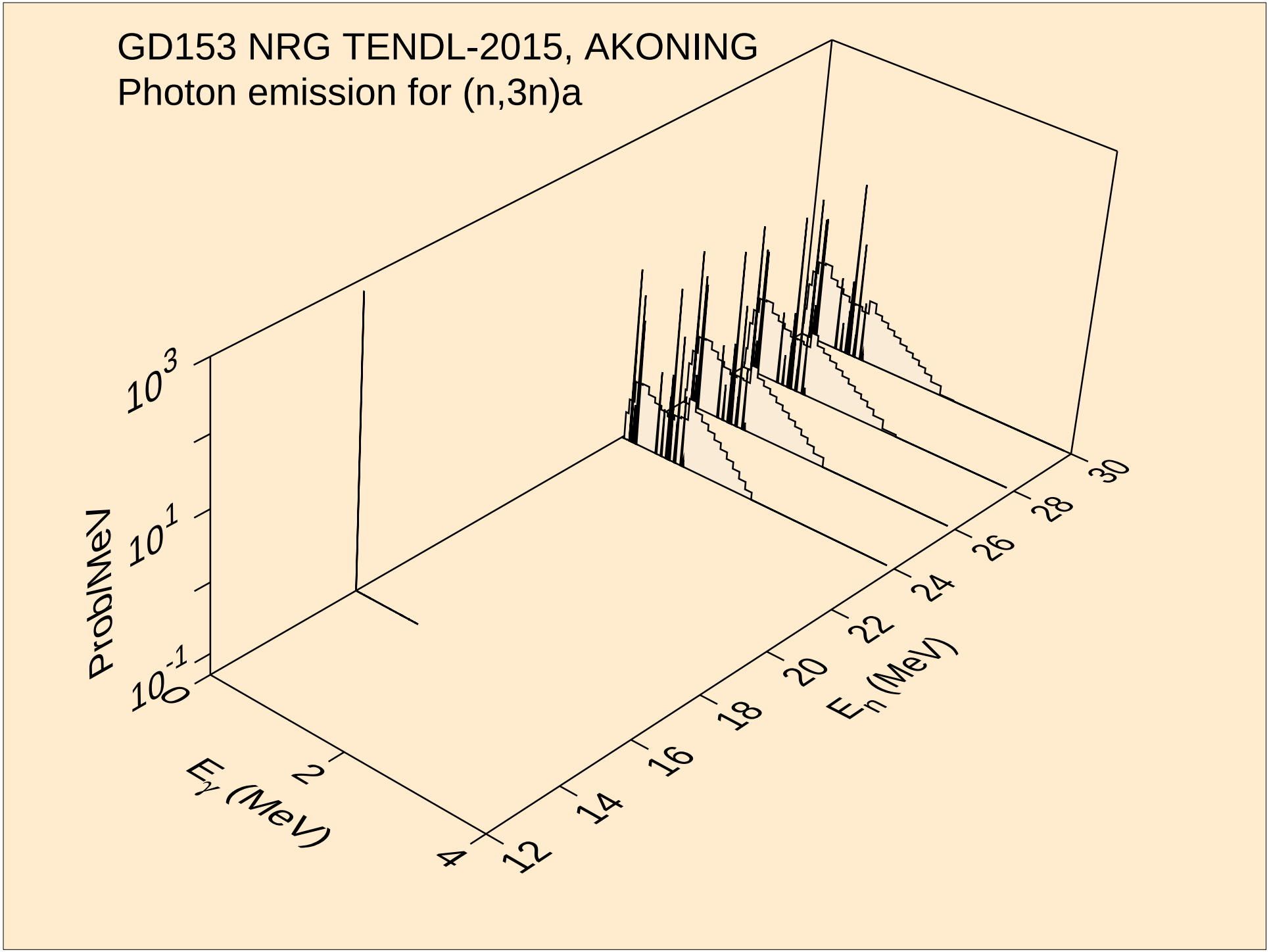

GD153 NRG TENDL-2015, AKONING
Photon emission for (n,2nd)
Prob/MeV
10^{1}
10^{-1}
0
E_γ (MeV)
2
4
18
20
22
24
26
28
30
E_n (MeV)

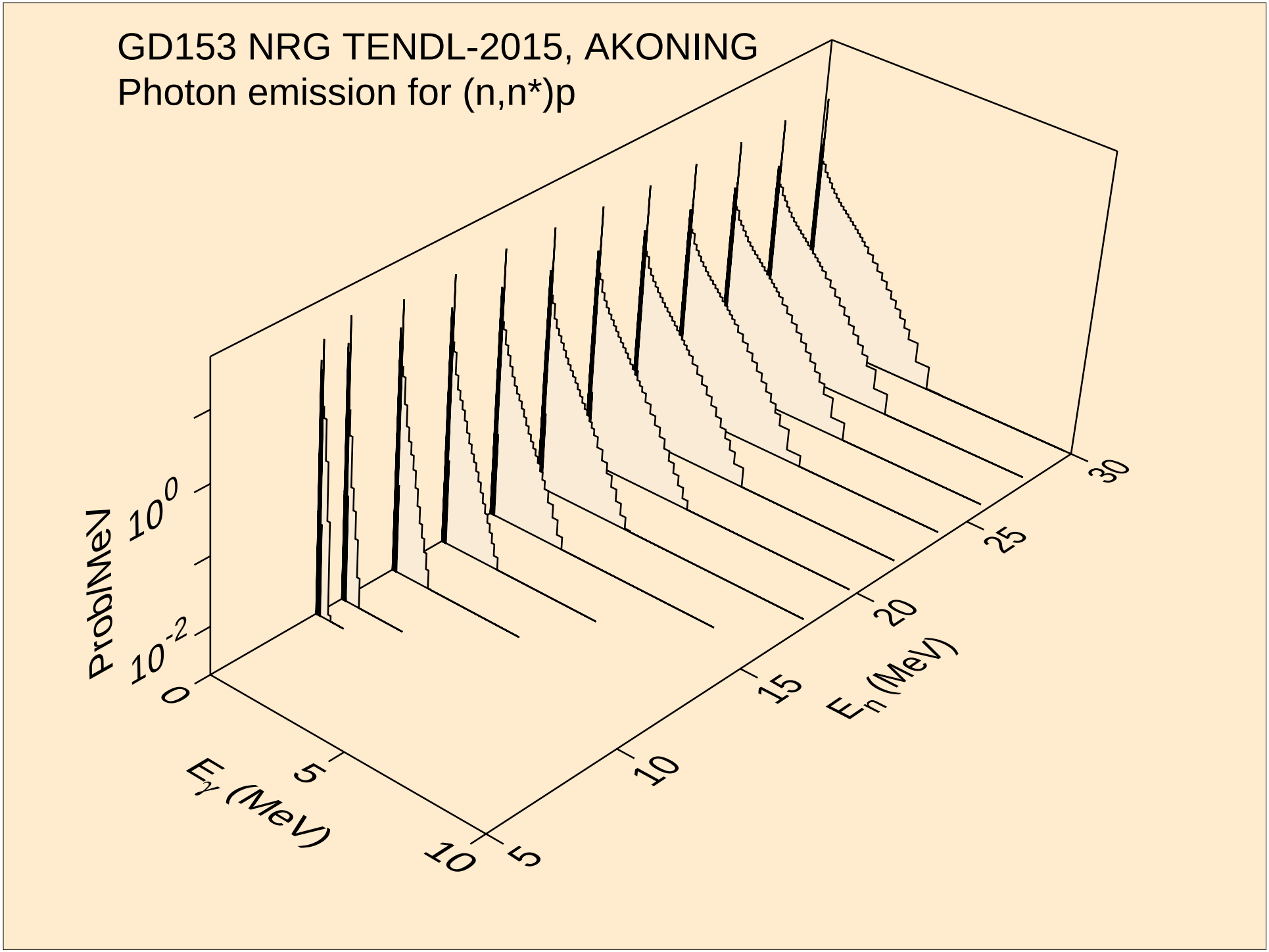

GD153 NRG TENDL-2015, AKONING
Photon emission for (n,2n)
Prob/MeV
10^{2}
10^{0}
10^{-2}
0
5
10
E_γ (MeV)
5
10
15
20
25
30
E_n (MeV)

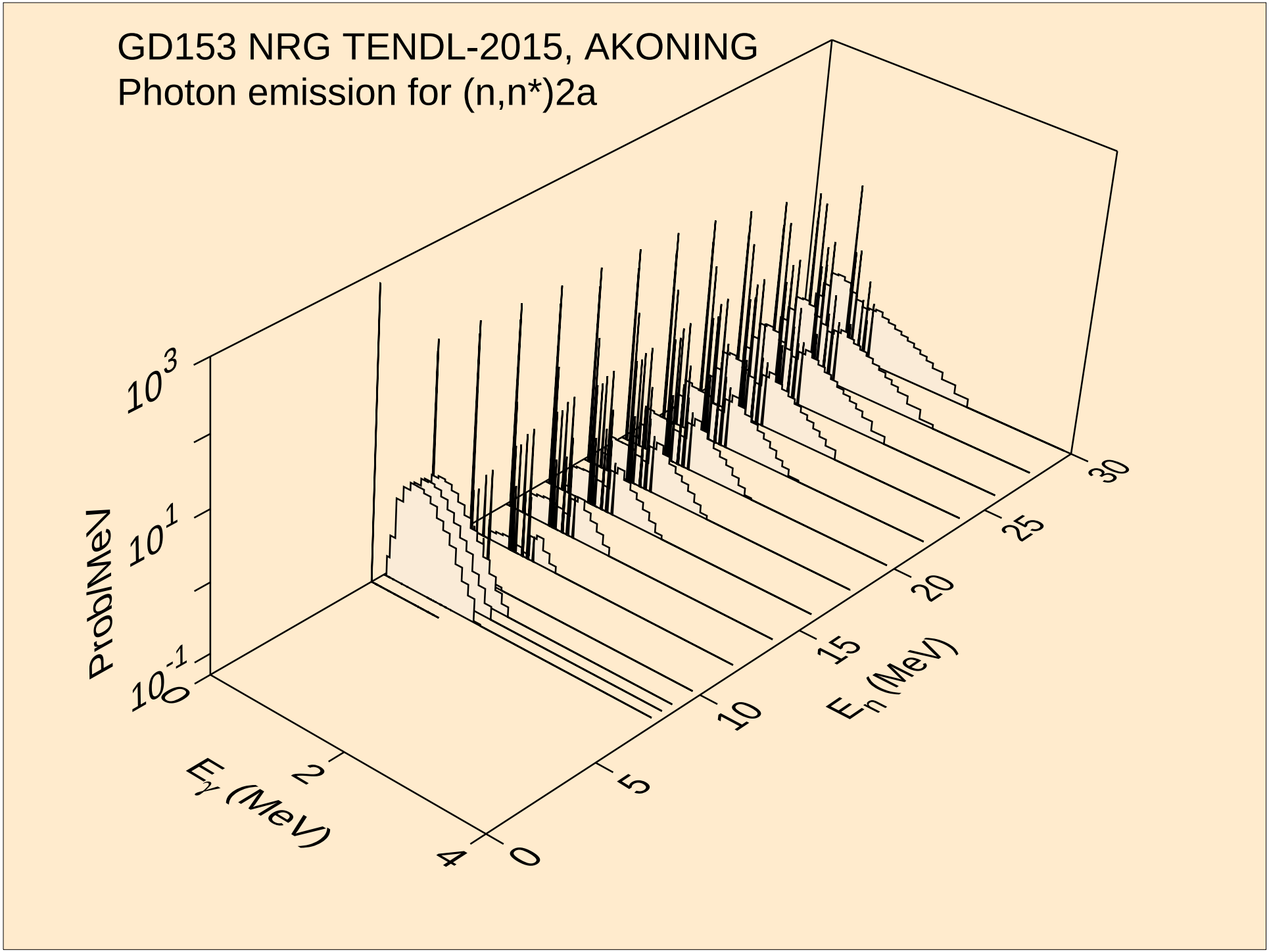

GD153 NRG TENDL-2015, AKONING
Photon emission for (n,3n)
Prob/MeV
10^{1}
10^{-1}
0
5
10
E_γ (MeV)
14
16
18
20
22
24
26
28
30
E_n (MeV)

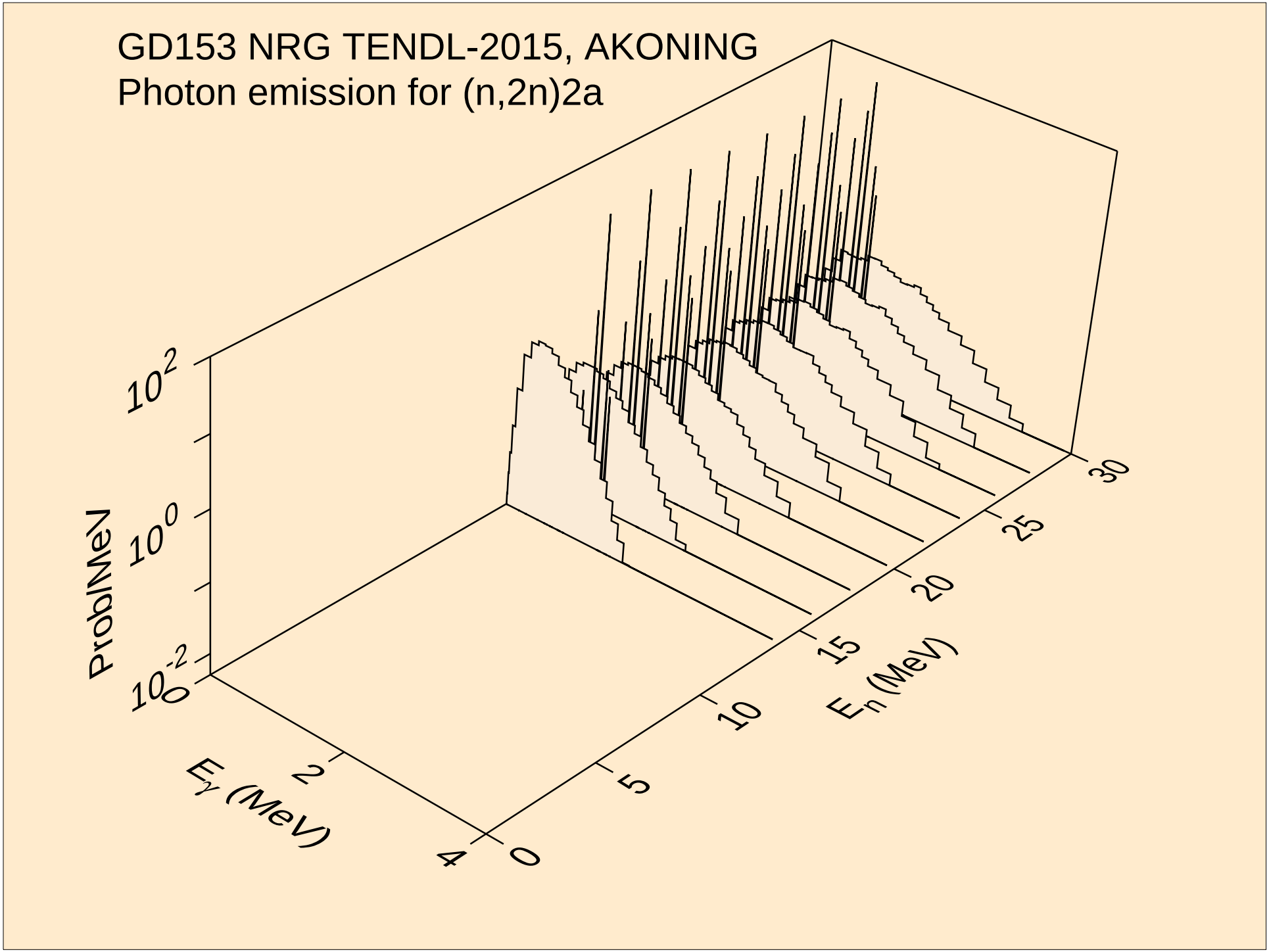

GD153 NRG TENDL-2015, AKONING
Photon emission for (n,n*)a
Prob/MeV
10^{2}
10^{0}
10^{-2}
E_γ (MeV)
0
2
4
6
E_n (MeV)
0
5
10
15
20
25
30

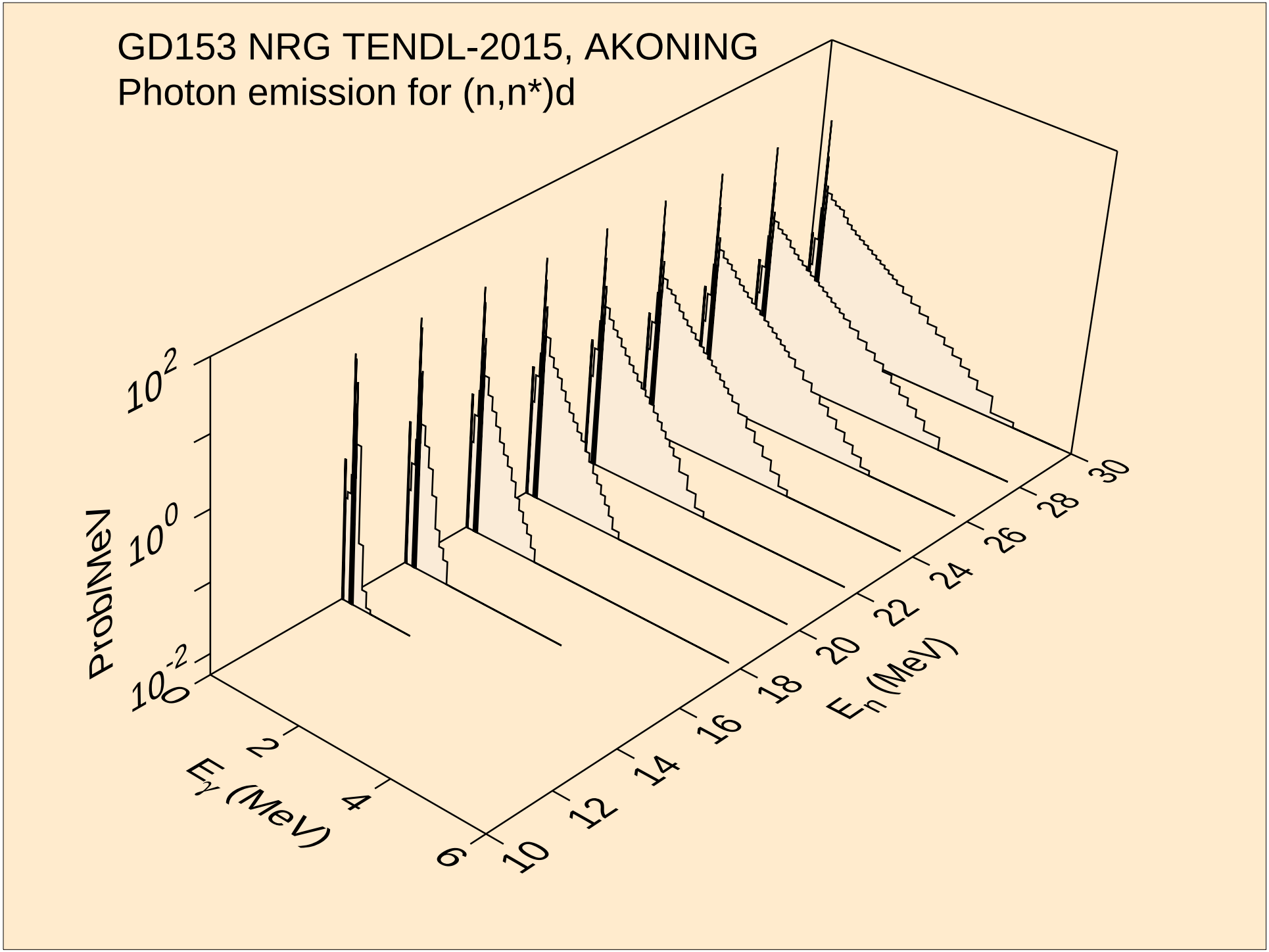

GD153 NRG TENDL-2015, AKONING
Photon emission for (n,2n)a
Prob/MeV
10^{3}
10^{1}
10^{-1}
0
2
4
E_γ (MeV)
0
5
10
15
20
25
30
E_n (MeV)

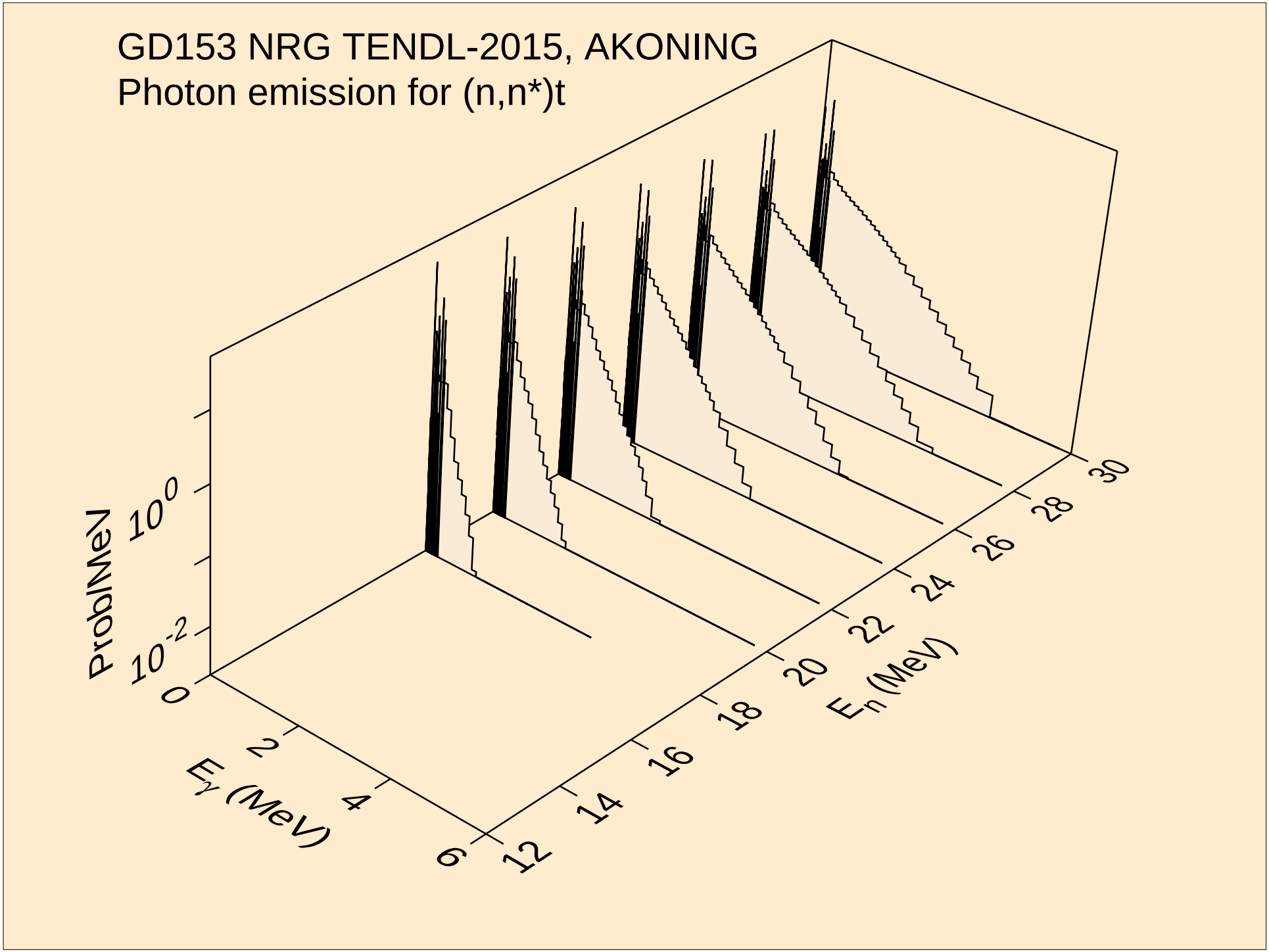

GD153 NRG TENDL-2015, AKONING
Photon emission for (n,3n)a
Prob/MeV
10^{3}
10^{1}
10^{-1}
0
2
4
E_γ (MeV)
12
14
16
18
20
22
24
26
28
30
E_n (MeV)

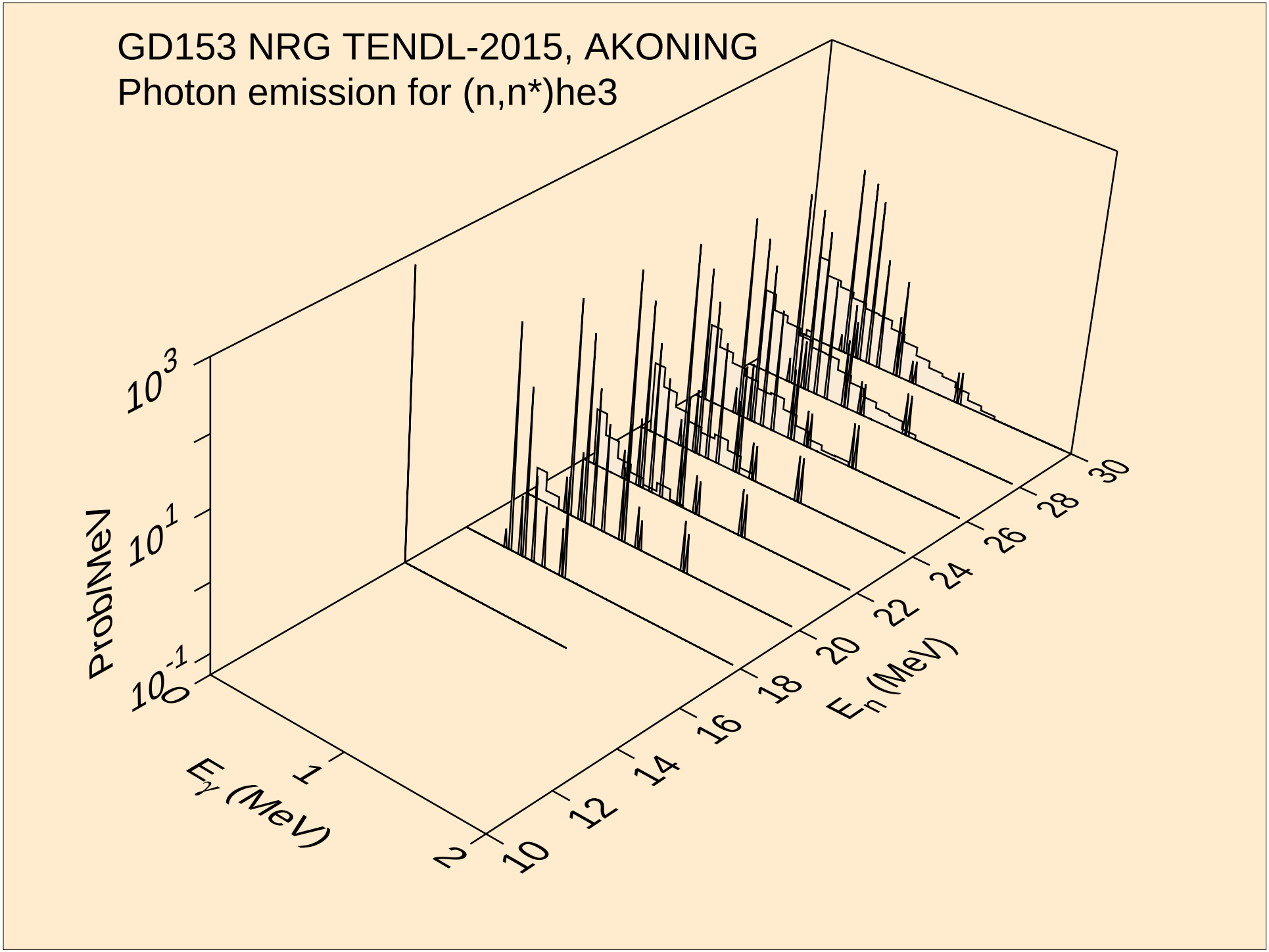

GD153 NRG TENDL-2015, AKONING
Photon emission for (n,n*)p
Prob/MeV
10^0
10^-2
0
5
10
E_γ (MeV)
5
10
15
20
25
30
E_n (MeV)

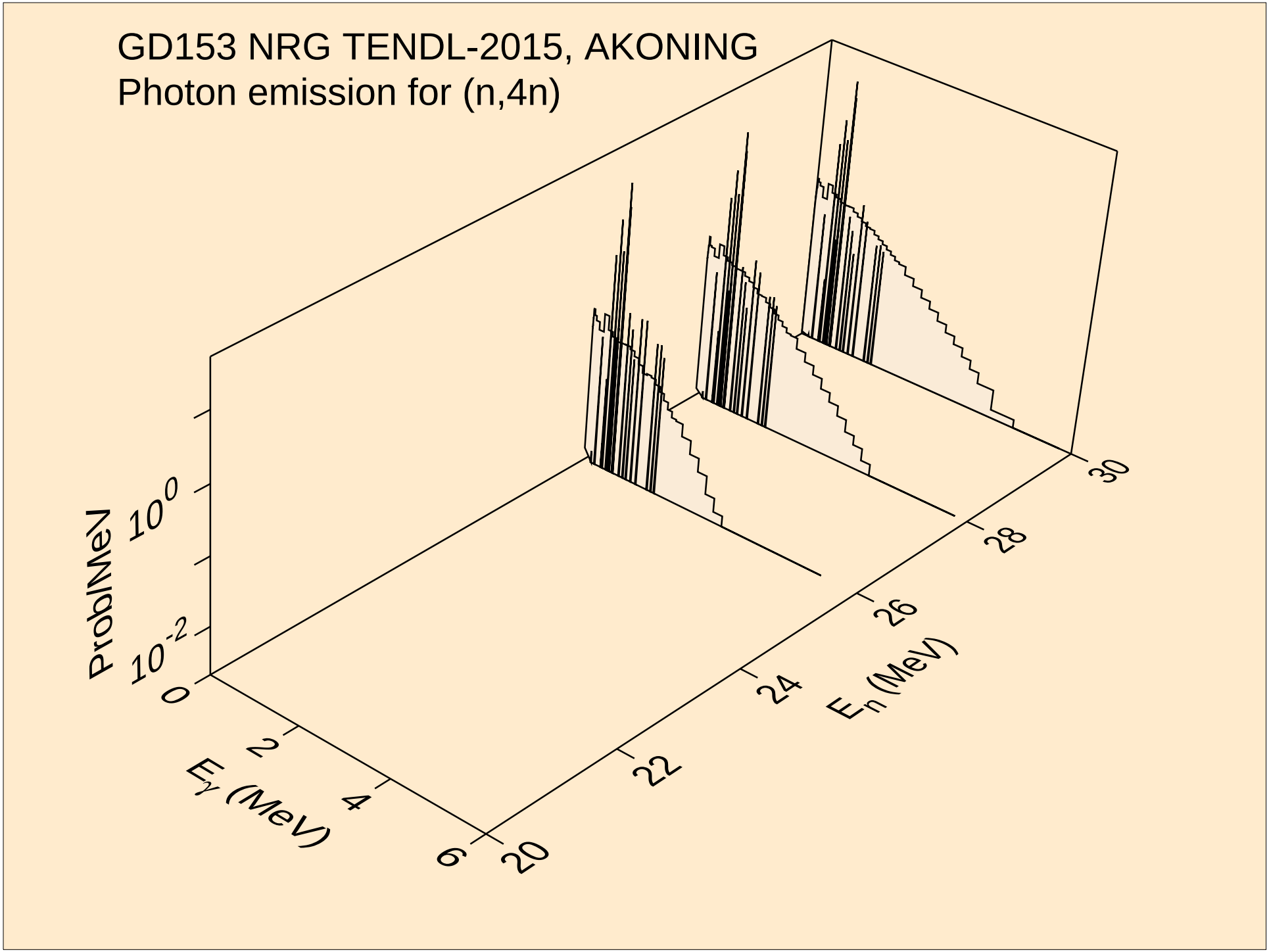

GD153 NRG TENDL-2015, AKONING
Photon emission for (n,n*)2a
Prob/MeV
10^{3}
10^{1}
10^{-1}
E_γ (MeV)
0
2
4
E_n (MeV)
0
5
10
15
20
25
30

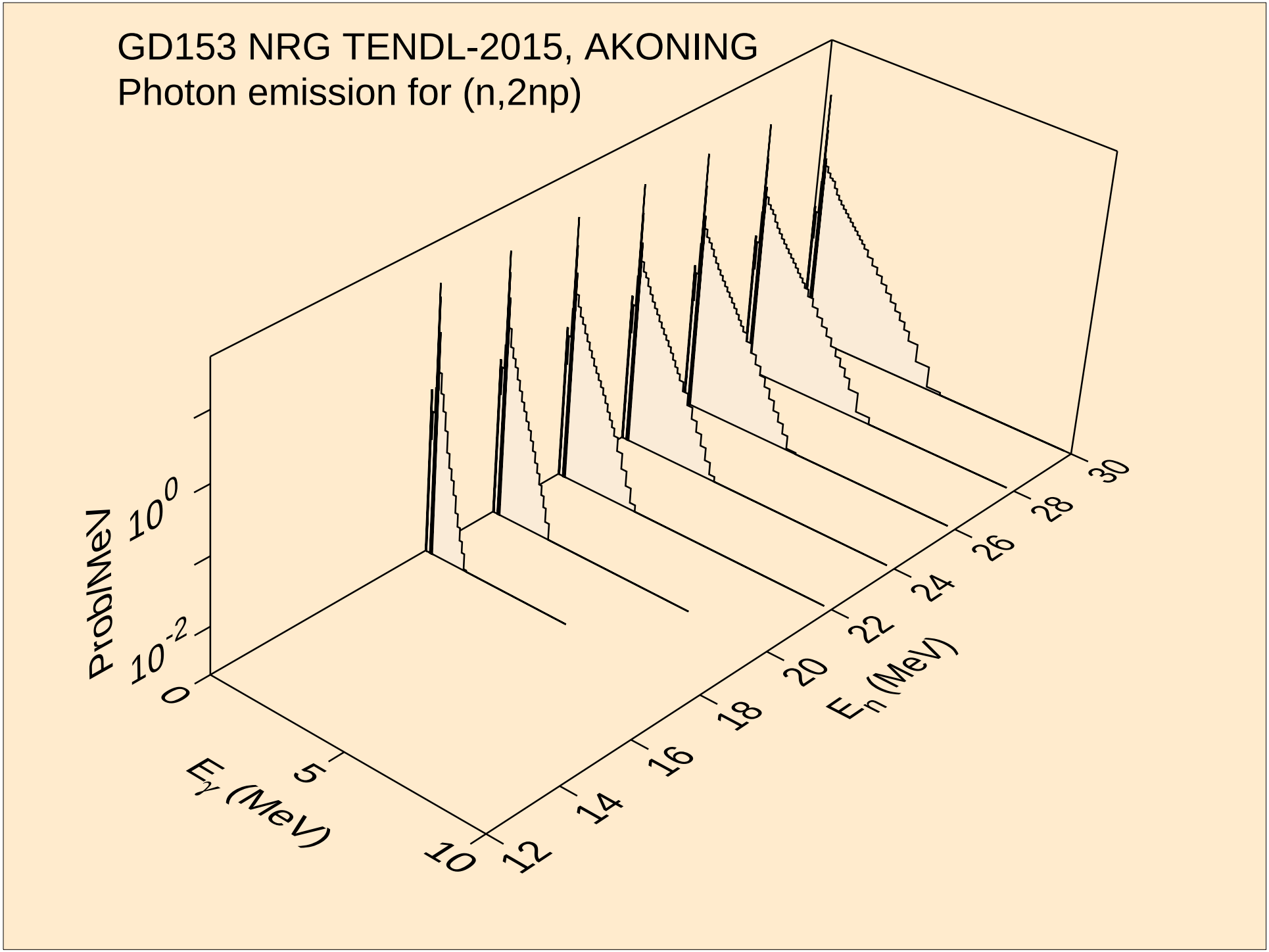

GD153 NRG TENDL-2015, AKONING
Photon emission for (n,2n)2a
Prob/MeV
10^{2}
10^{0}
10^{-2}
E_γ (MeV)
0
2
4
E_n (MeV)
5
10
15
20
25
30

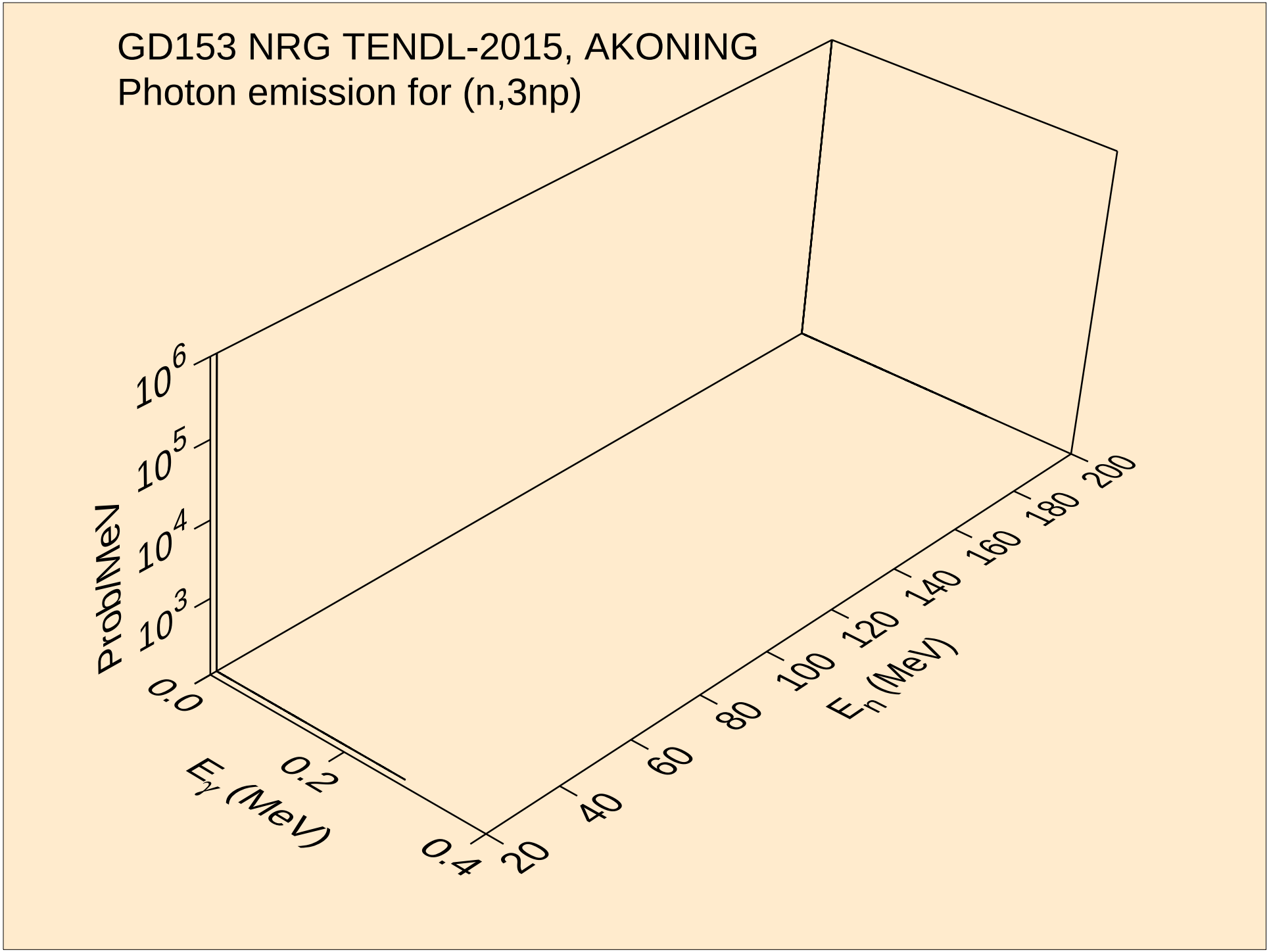

GD153 NRG TENDL-2015, AKONING
Photon emission for (n,n*)d
Prob/MeV
10^{2}
10^{0}
10^{-2}
E_γ (MeV)
0
2
4
6
E_n (MeV)
10
12
14
16
18
20
22
24
26
28
30

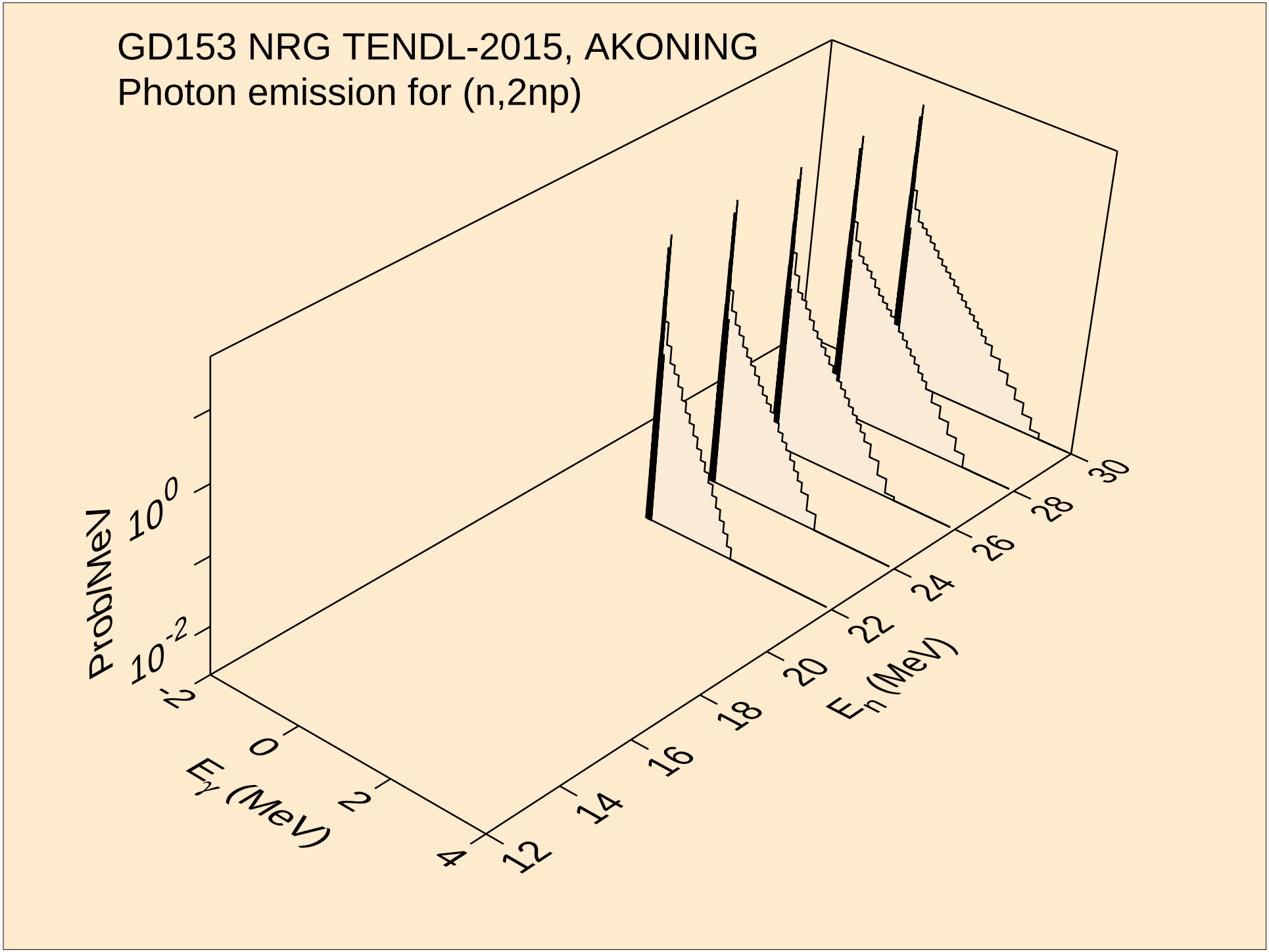

GD153 NRG TENDL-2015, AKONING
Photon emission for (n,n*)t
Prob/MeV
10^0
10^-2
0
2
4
6
E_γ (MeV)
12
14
16
18
20
22
24
26
28
30
E_n (MeV)

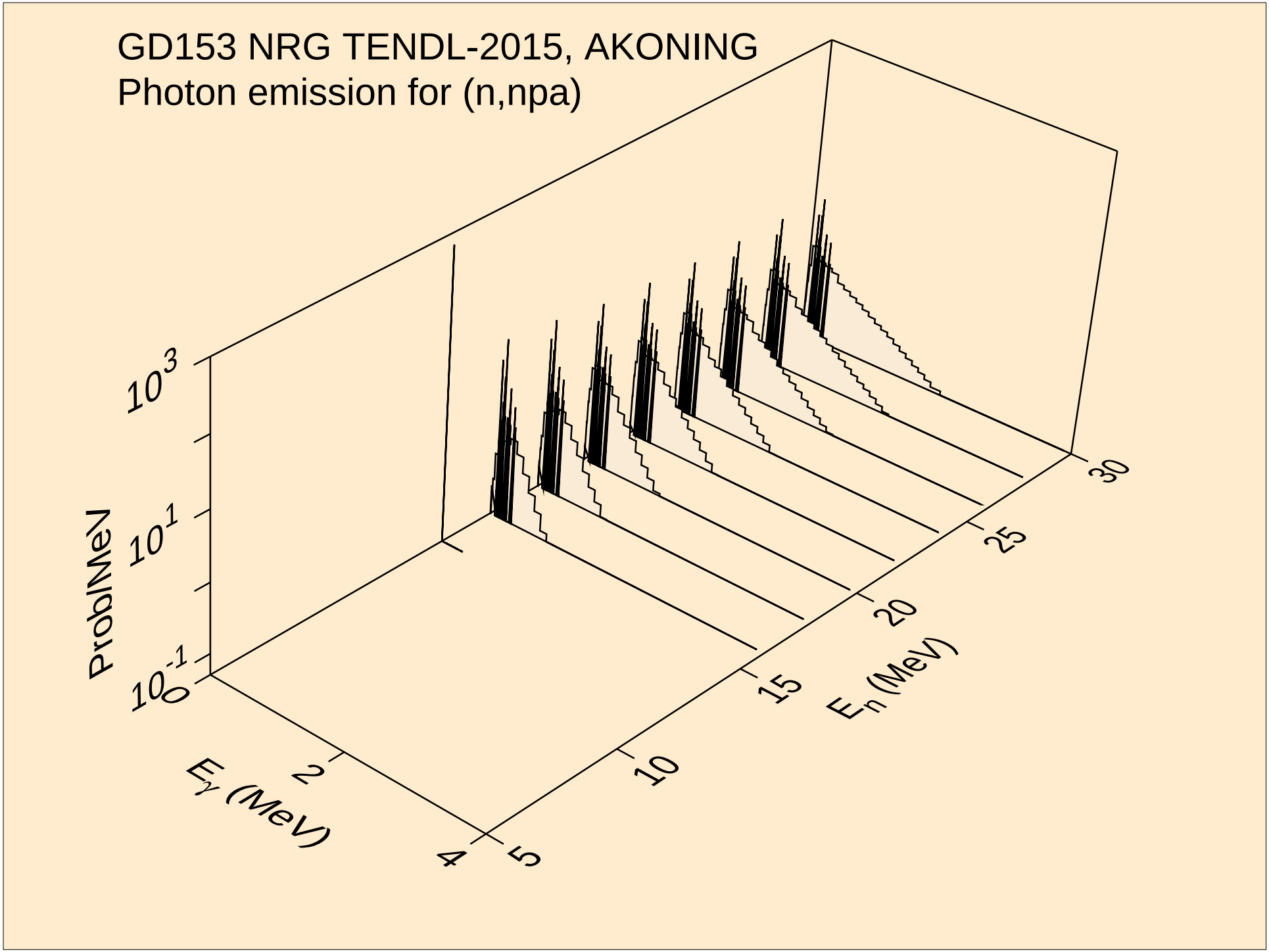

GD153 NRG TENDL-2015, AKONING
Photon emission for (n,n*)he3
Prob/MeV
10^{3}
10^{1}
10^{-1}
E_γ (MeV)
0
1
2
E_n (MeV)
10
12
14
16
18
20
22
24
26
28
30

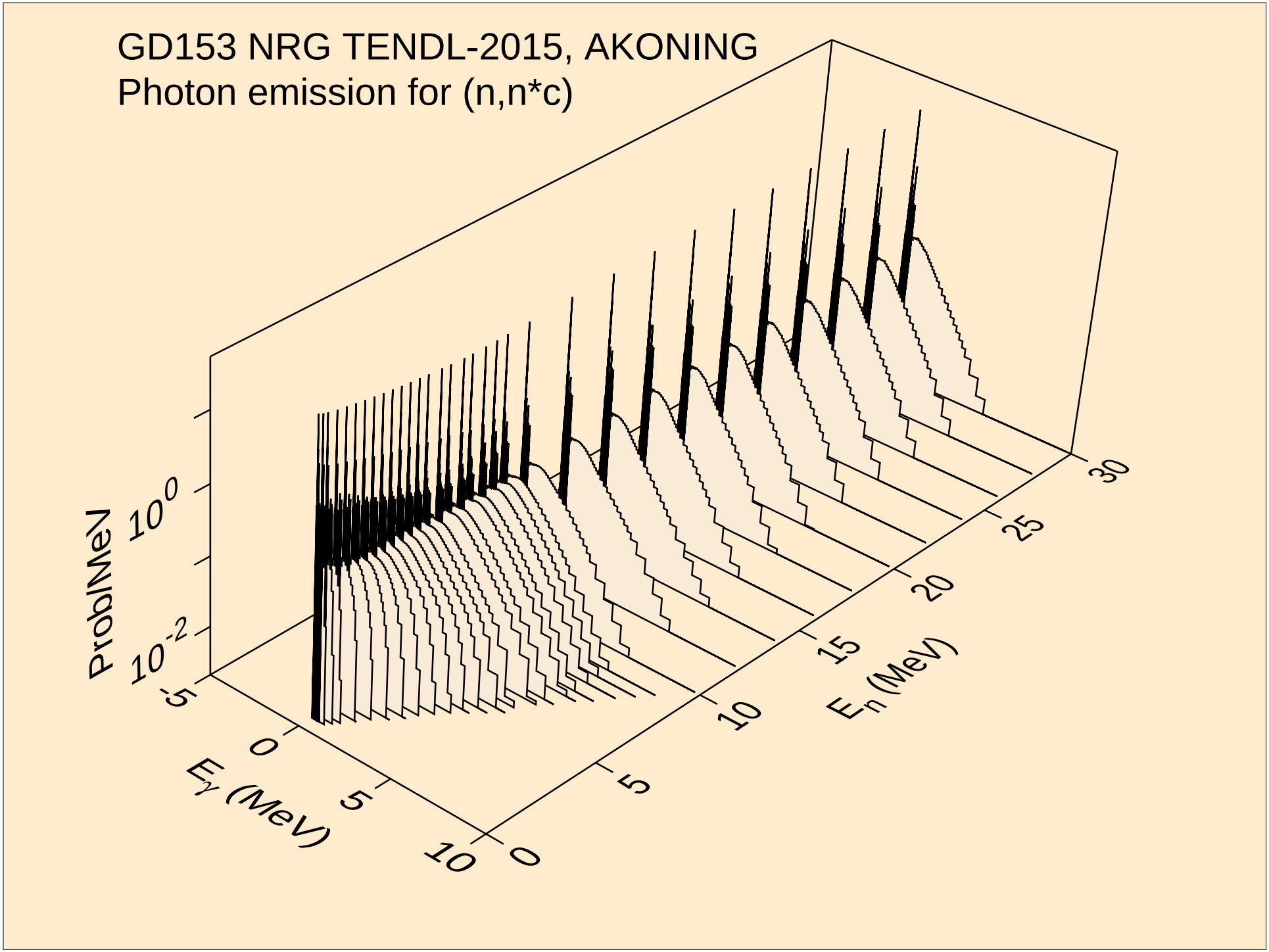

GD153 NRG TENDL-2015, AKONING
Photon emission for (n,4n)
Prob/MeV
10^{0}
10^{-2}
0
2
4
6
E_γ (MeV)
20
22
24
26
28
30
E_n (MeV)

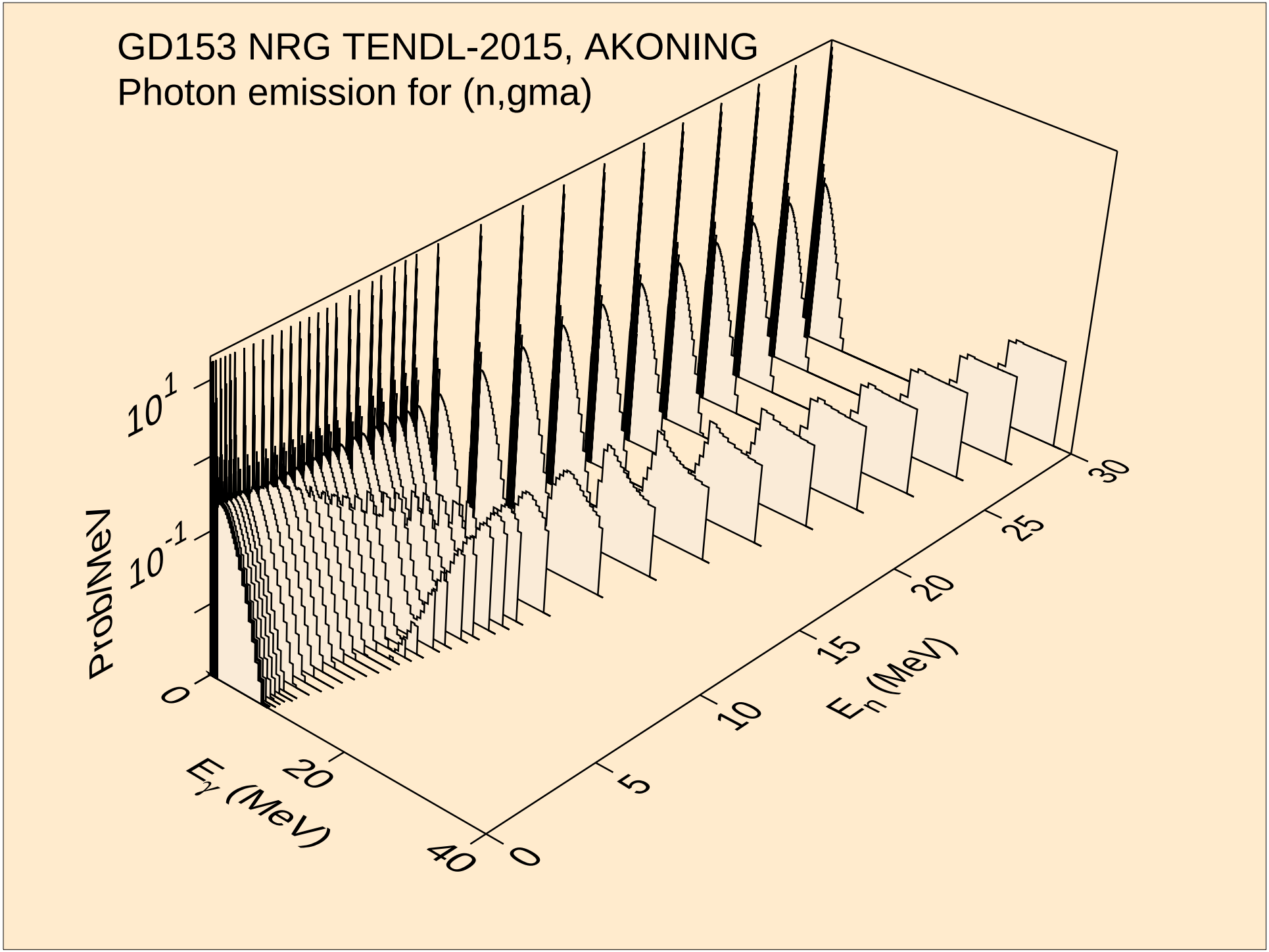

GD153 NRG TENDL-2015, AKONING
Photon emission for (n,2np)
Prob/MeV
10^{0}
10^{-2}
0
E_γ (MeV)
5
10
12
14
16
18
20
22
24
26
28
30
E_n (MeV)

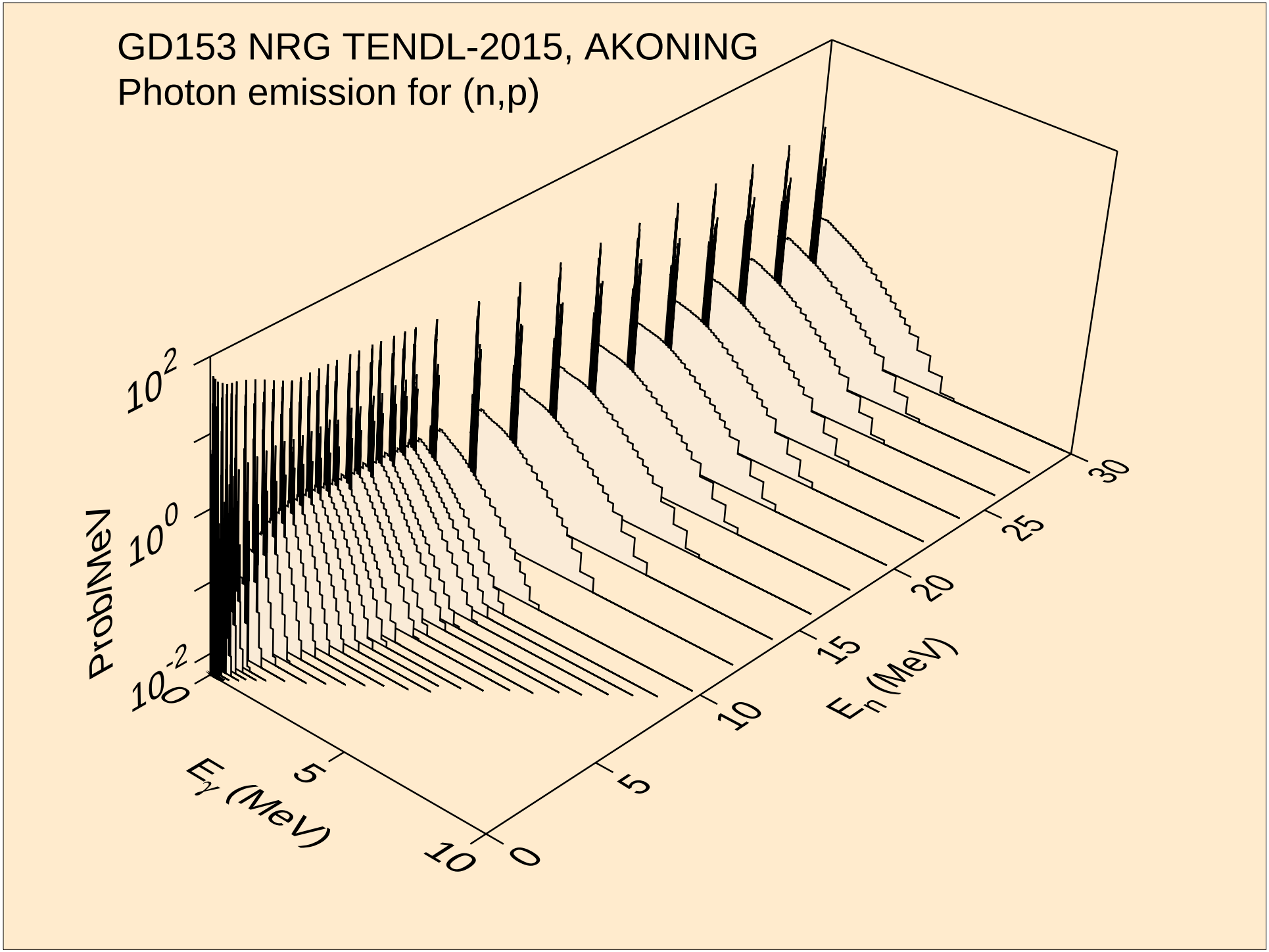

GD153 NRG TENDL-2015, AKONING
Photon emission for (n,3np)
Prob/MeV
10^6
10^5
10^4
10^3
0.0
0.2
0.4
E_γ (MeV)
20
40
60
80
100
120
140
160
180
200
E_n (MeV)

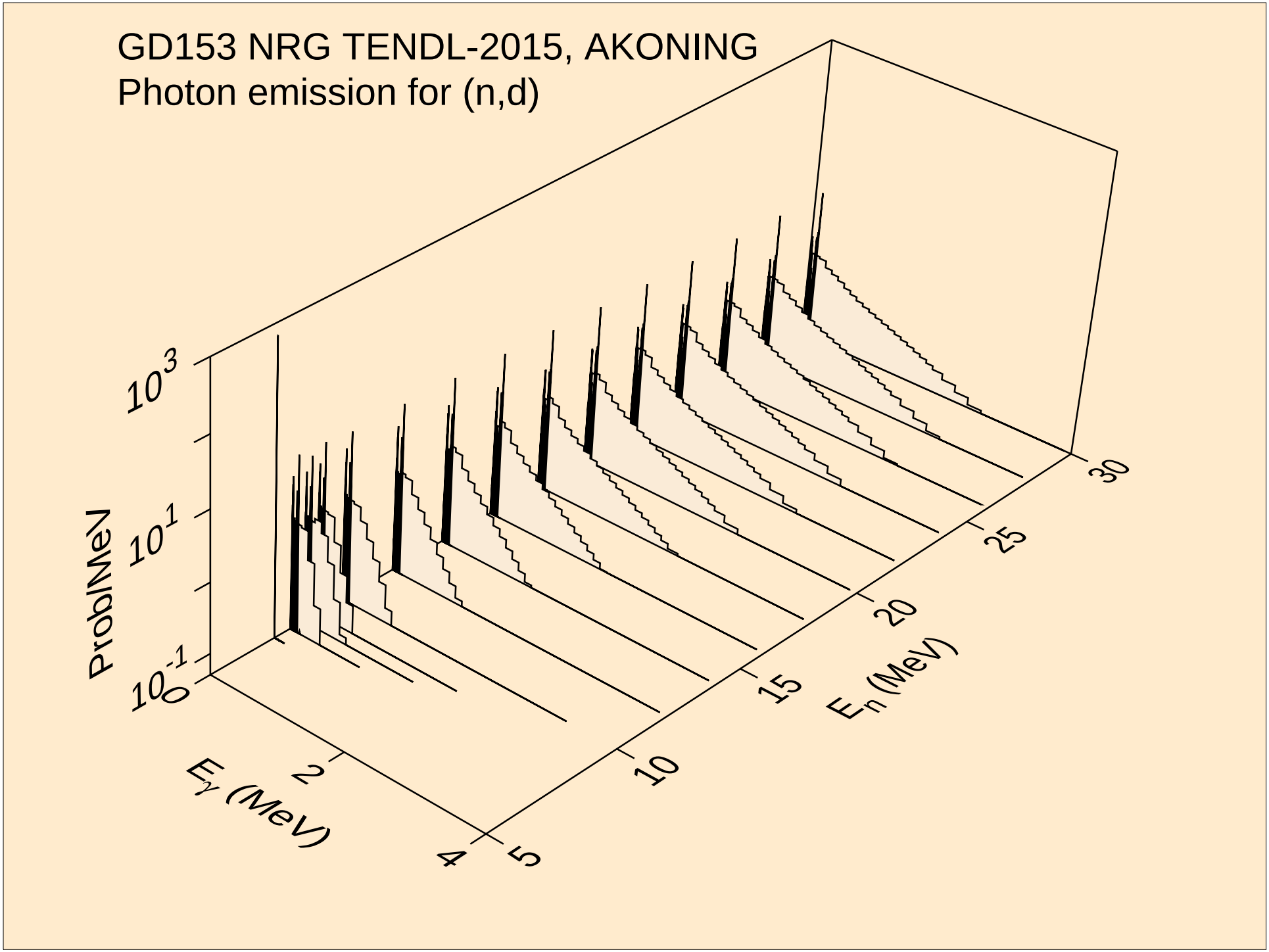

GD153 NRG TENDL-2015, AKONING
Photon emission for (n,2np)
Prob/MeV
10^{0}
10^{-2}
-2
0
2
4
E_γ (MeV)
12
14
16
18
20
22
24
26
28
30
E_n (MeV)

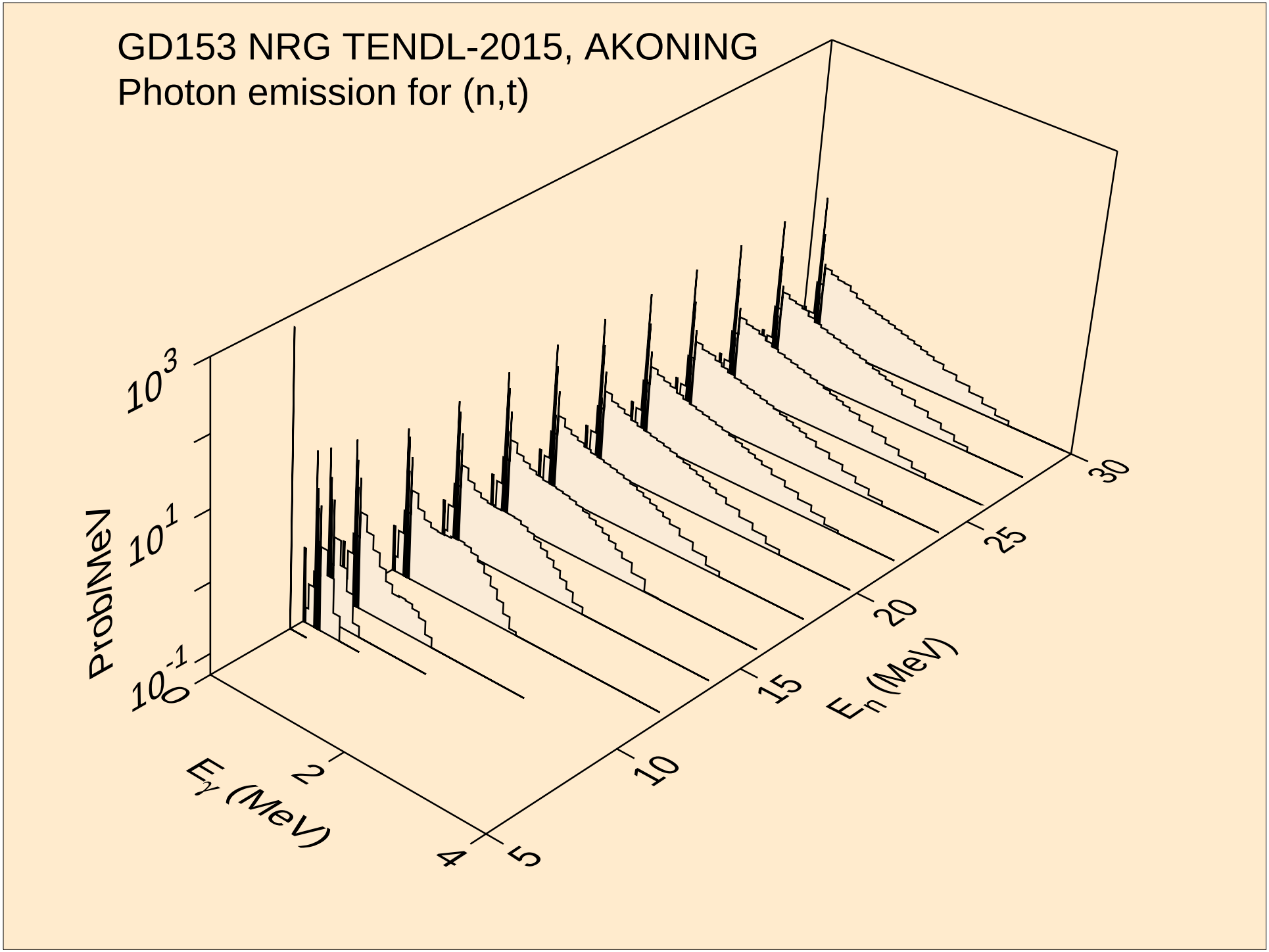

GD153 NRG TENDL-2015, AKONING
Photon emission for (n,npa)
Prob/MeV
10^{3}
10^{1}
10^{-1}
E_γ (MeV)
0
2
4
5
10
15
20
25
30
E_n (MeV)

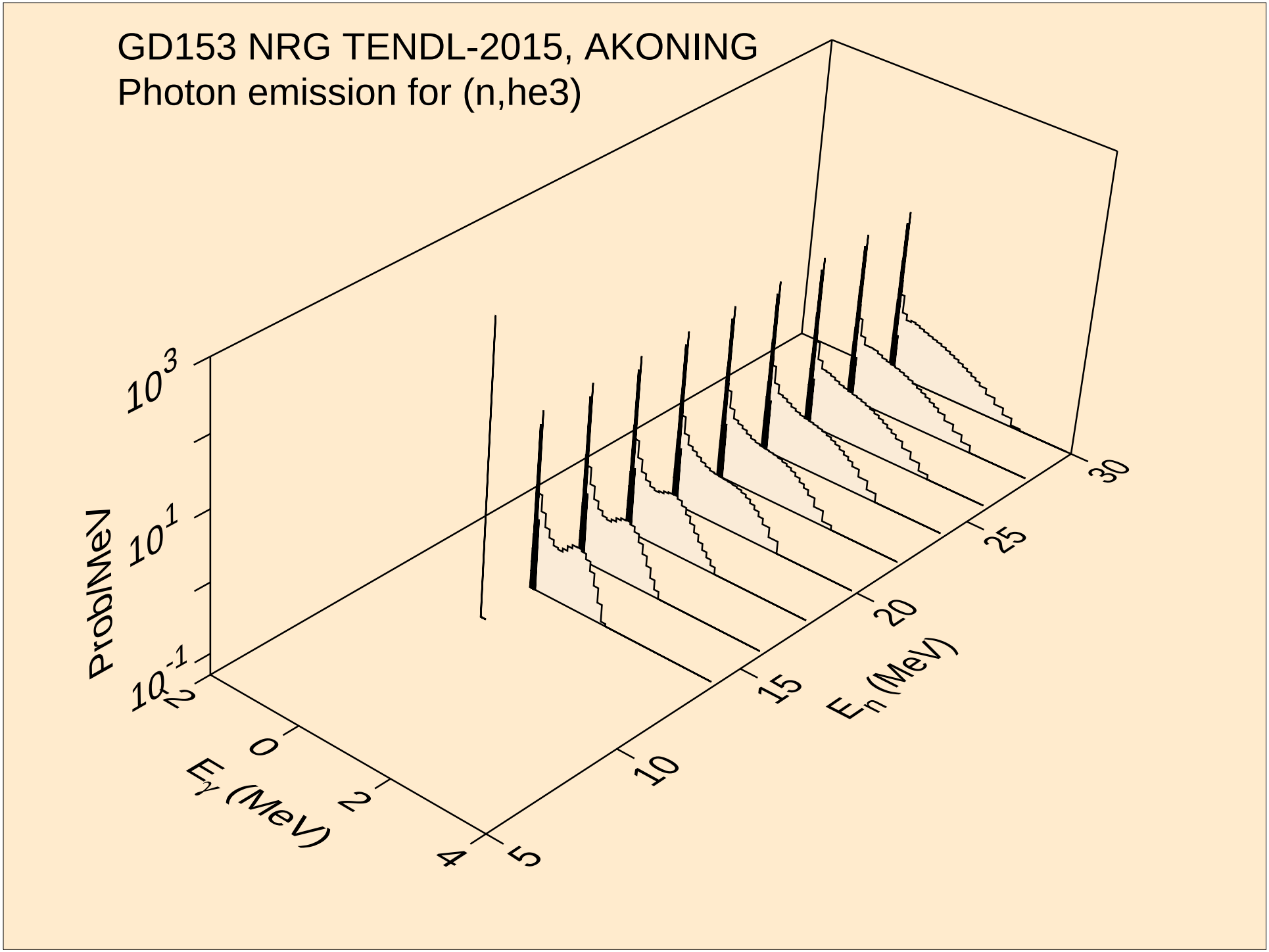

GD153 NRG TENDL-2015, AKONING
Photon emission for (n,n*c)
Prob/MeV
10^{0}
10^{-2}
-5
0
5
10
E_γ (MeV)
0
5
10
15
20
25
30
E_n (MeV)

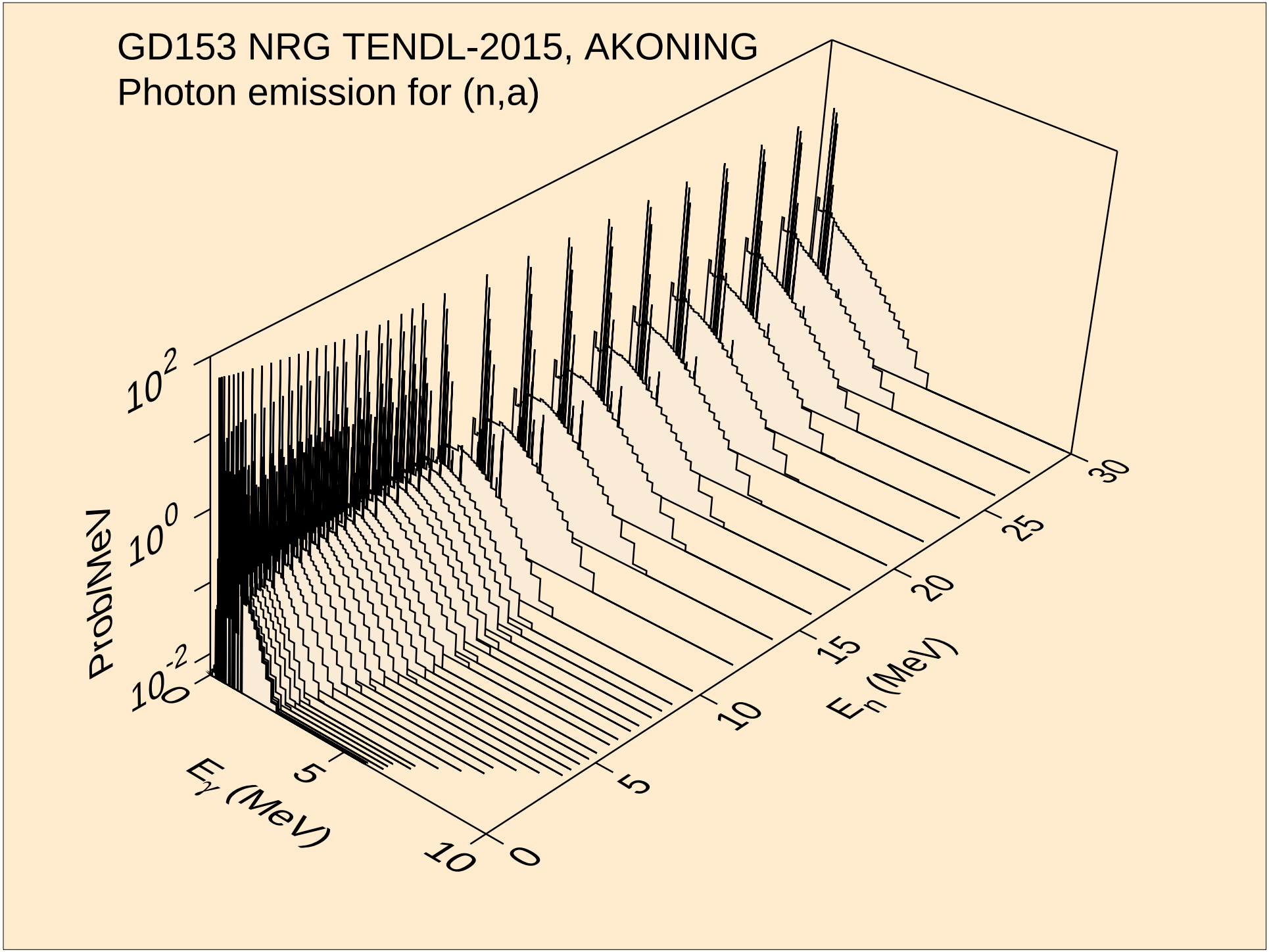

GD153 NRG TENDL-2015, AKONING
Photon emission for (n,gma)
Prob/MeV
10^{1}
10^{-1}
0
E_γ (MeV)
20
40
0
5
10
15
20
25
30
E_n (MeV)

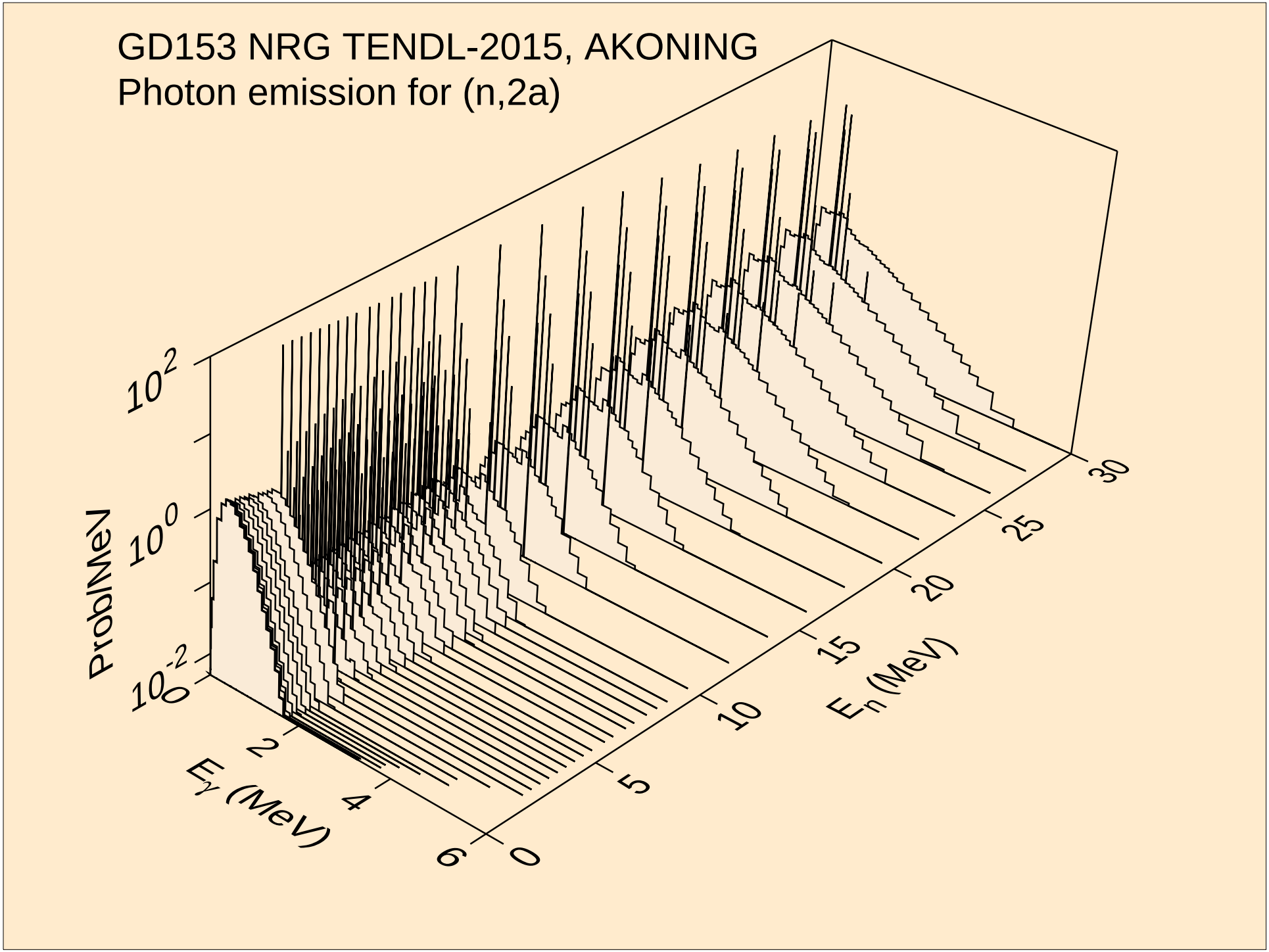

GD153 NRG TENDL-2015, AKONING
Photon emission for (n,p)
Prob/MeV
10^{2}
10^{0}
10^{-2}
E_γ (MeV)
0
5
10
E_n (MeV)
0
5
10
15
20
25
30

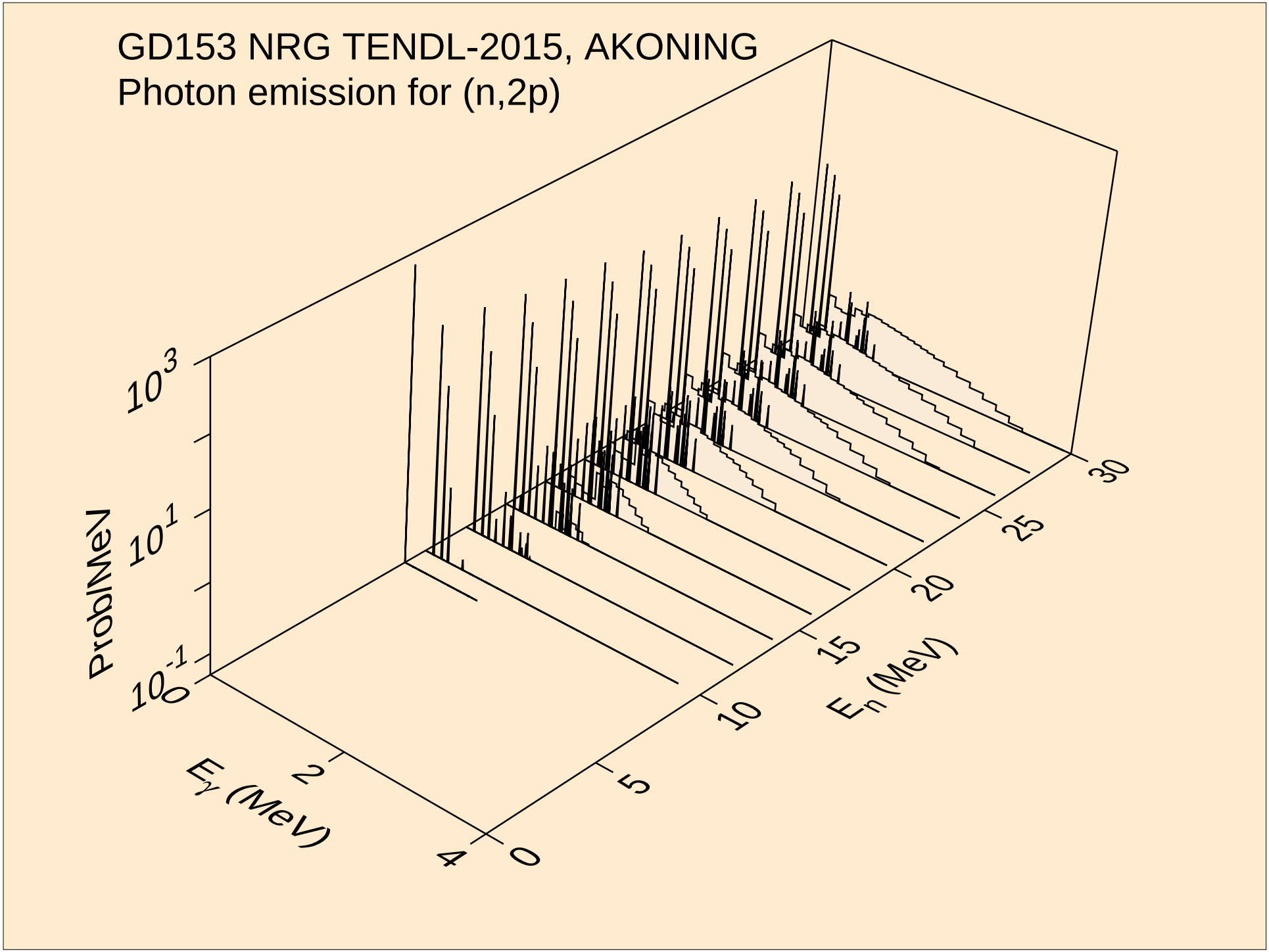

GD153 NRG TENDL-2015, AKONING
Photon emission for (n,d)
Prob/MeV
10^{3}
10^{1}
10^{-1}
0
2
4
E_γ (MeV)
5
10
15
20
25
30
E_n (MeV)

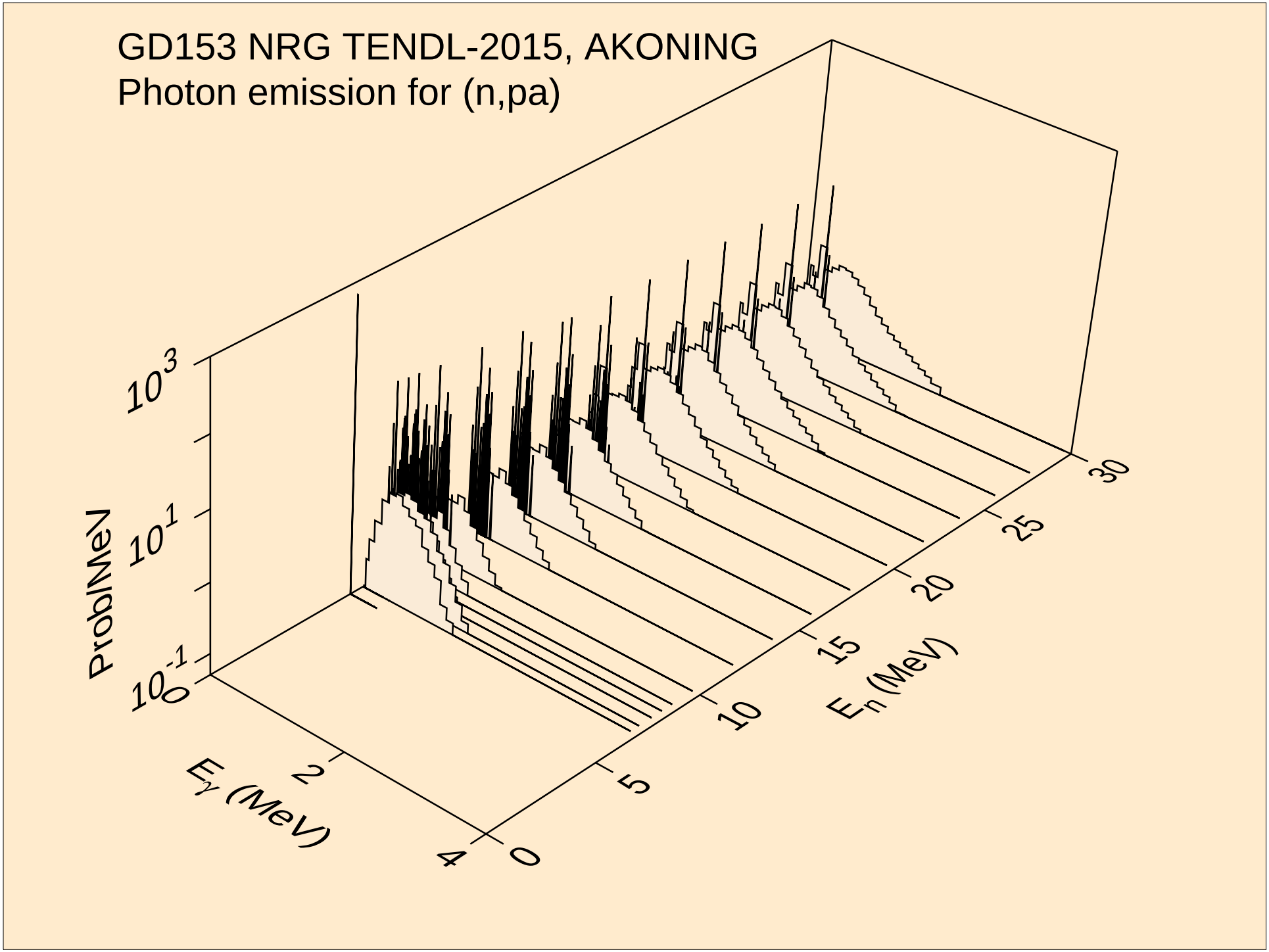

GD153 NRG TENDL-2015, AKONING
Photon emission for (n,t)
Prob/MeV
10^{3}
10^{1}
10^{-1}
0
2
4
E_γ (MeV)
5
10
15
20
25
30
E_n (MeV)

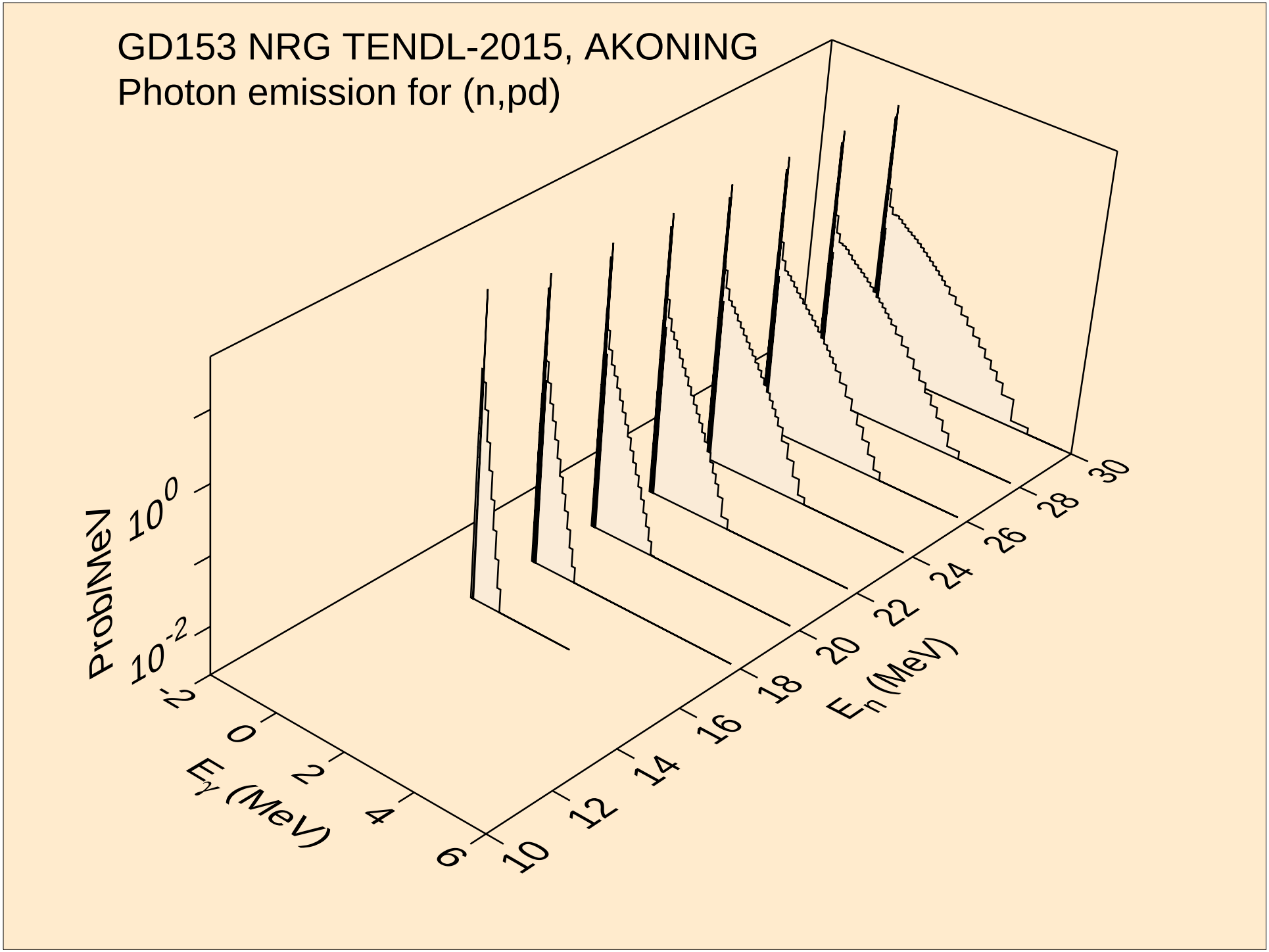

GD153 NRG TENDL-2015, AKONING
Photon emission for (n,he3)
Prob/MeV
10^{3}
10^{1}
10^{-1}
-2
0
2
4
E_γ (MeV)
5
10
15
20
25
30
E_n (MeV)

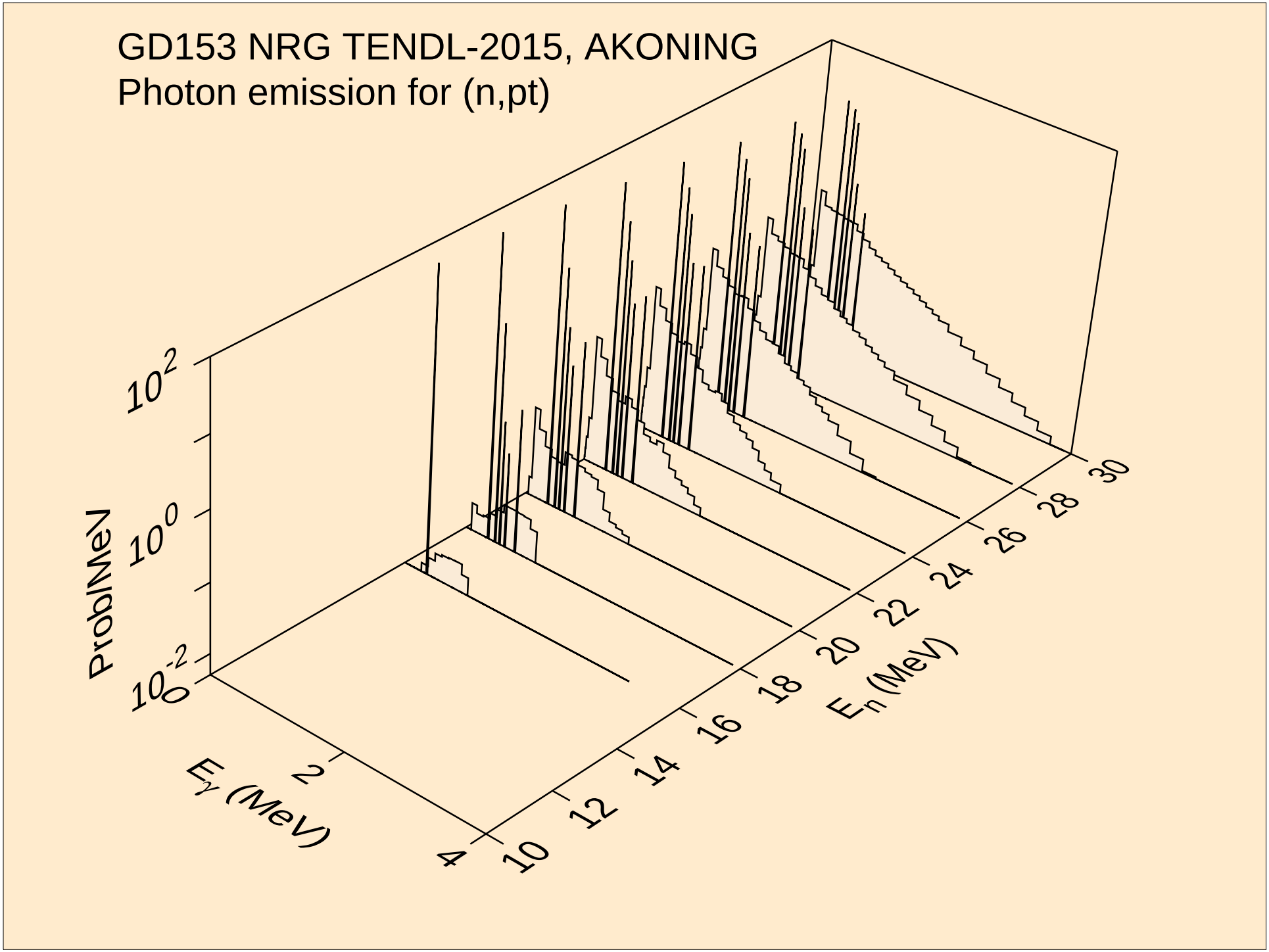

GD153 NRG TENDL-2015, AKONING
Photon emission for (n,a)
Prob/MeV
10^{2}
10^{0}
10^{-2}
0
5
10
E_γ (MeV)
0
5
10
15
20
25
30
E_n (MeV)

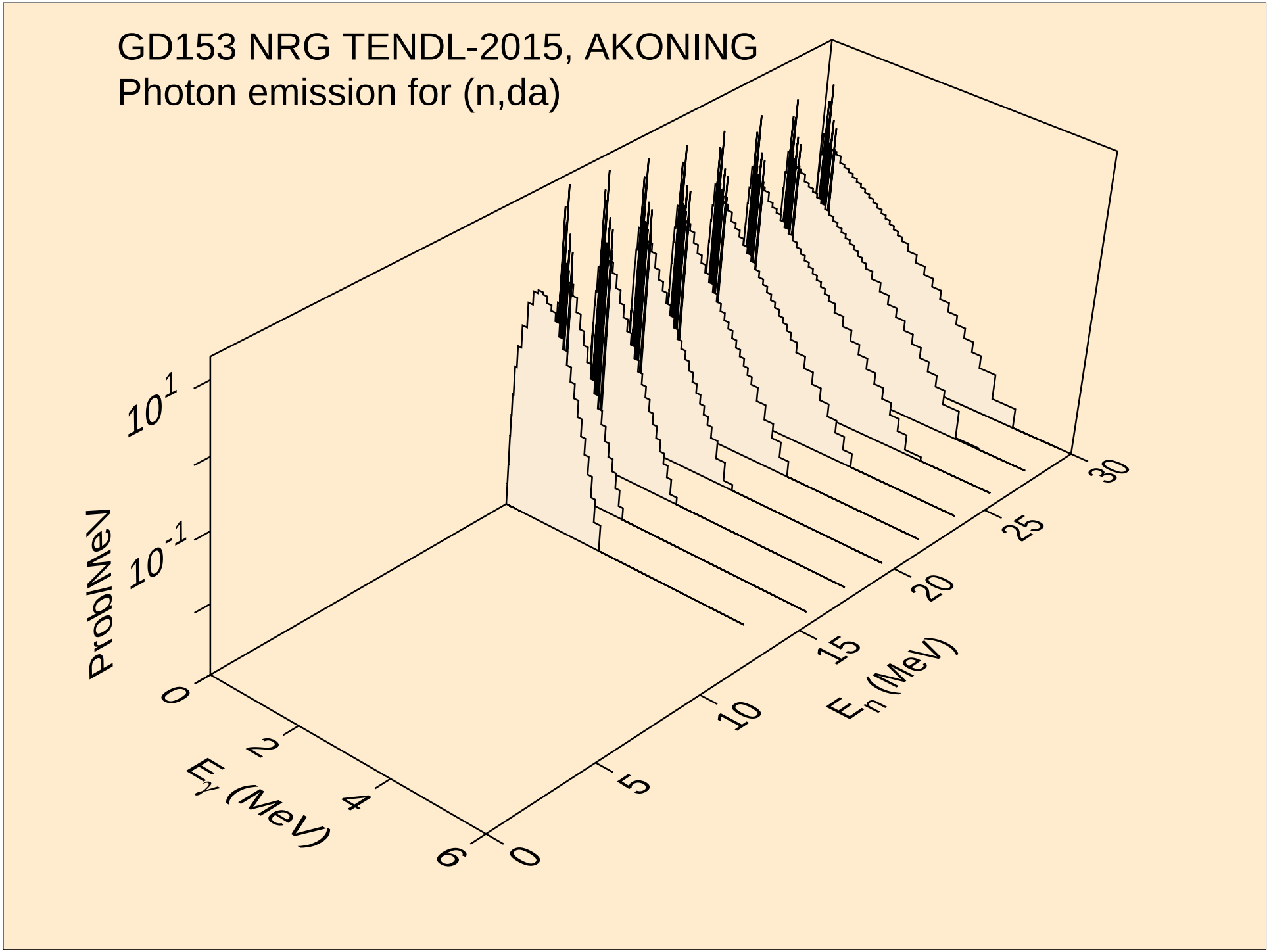

GD153 NRG TENDL-2015, AKONING
Photon emission for (n,2a)
Prob/MeV
10^{2}
10^{0}
10^{-2}
0
2
4
6
E_γ (MeV)
0
5
10
15
20
25
30
E_n (MeV)

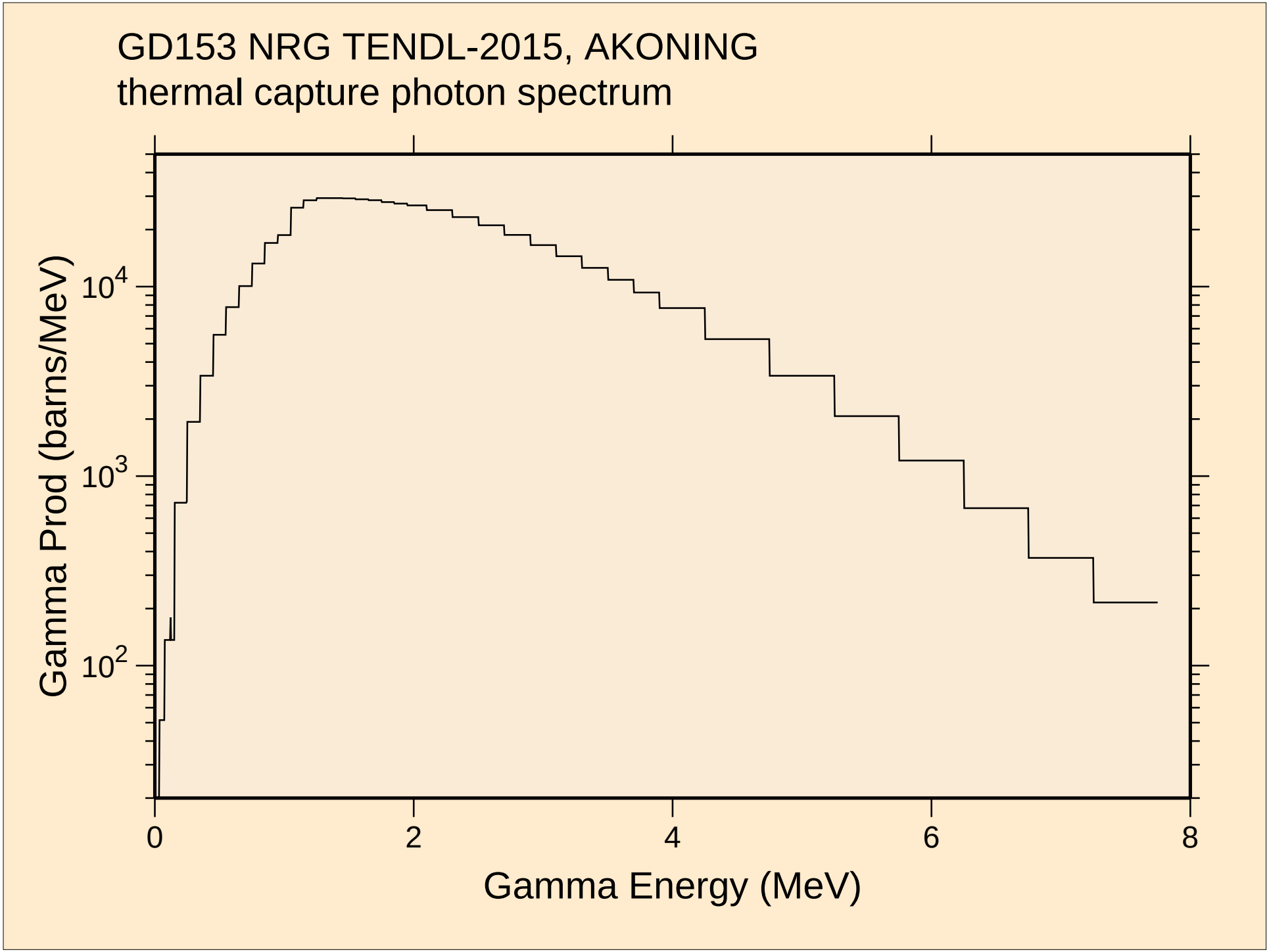

GD153 NRG TENDL-2015, AKONING
Photon emission for (n,2p)
Prob/MeV
10^{3}
10^{1}
10^{-1}
E_γ (MeV)
0
2
4
E_n (MeV)
0
5
10
15
20
25
30

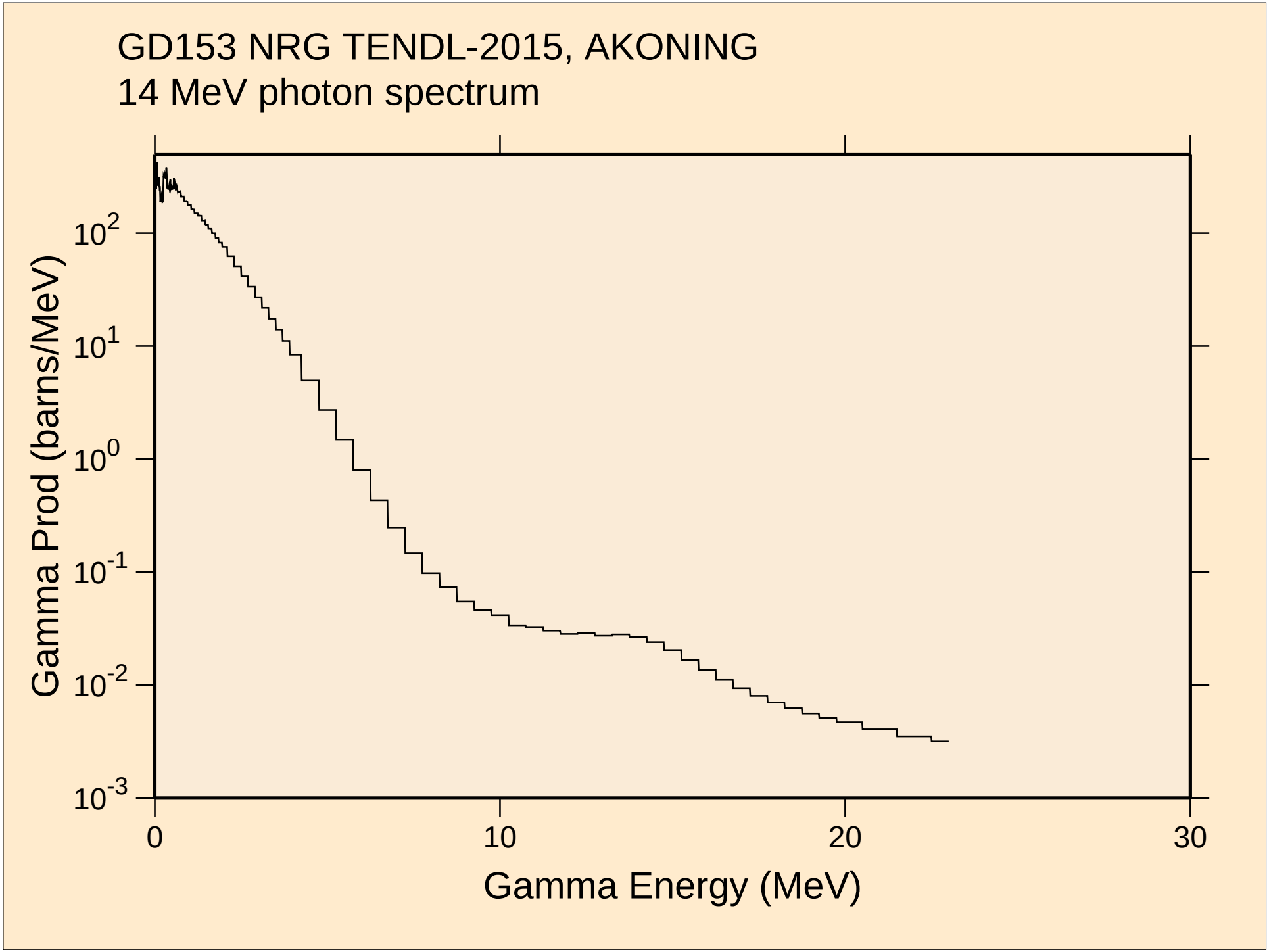

GD153 NRG TENDL-2015, AKONING
Photon emission for (n,pa)
Prob/MeV
10^{3}
10^{1}
10^{-1}
E_γ (MeV)
0
2
4
E_n (MeV)
0
5
10
15
20
25
30

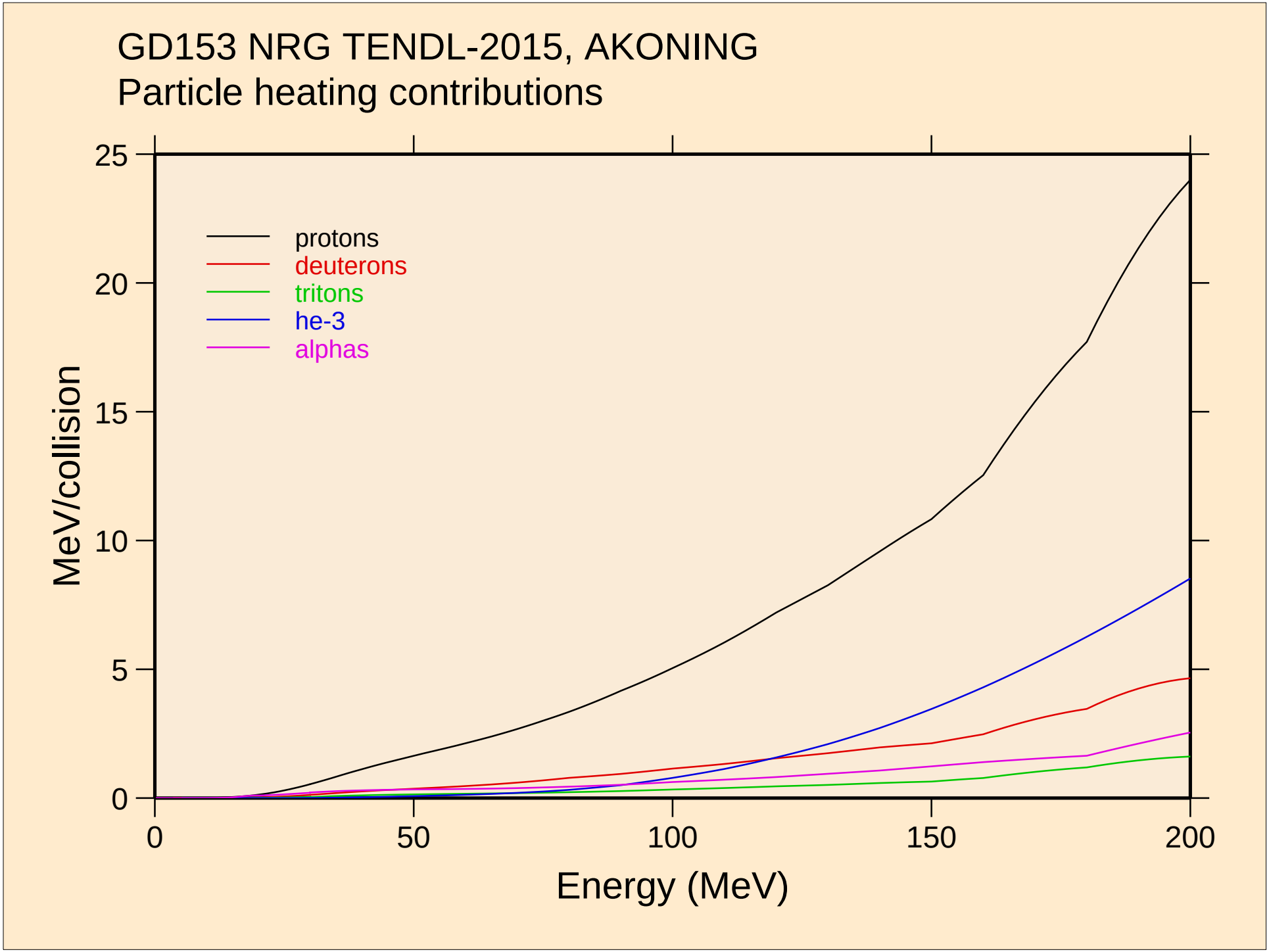

GD153 NRG TENDL-2015, AKONING
Photon emission for (n,pd)
Prob/MeV
10^{0}
10^{-2}
-2
0
2
4
6
E_γ (MeV)
10
12
14
16
18
20
22
24
26
28
30
E_n (MeV)

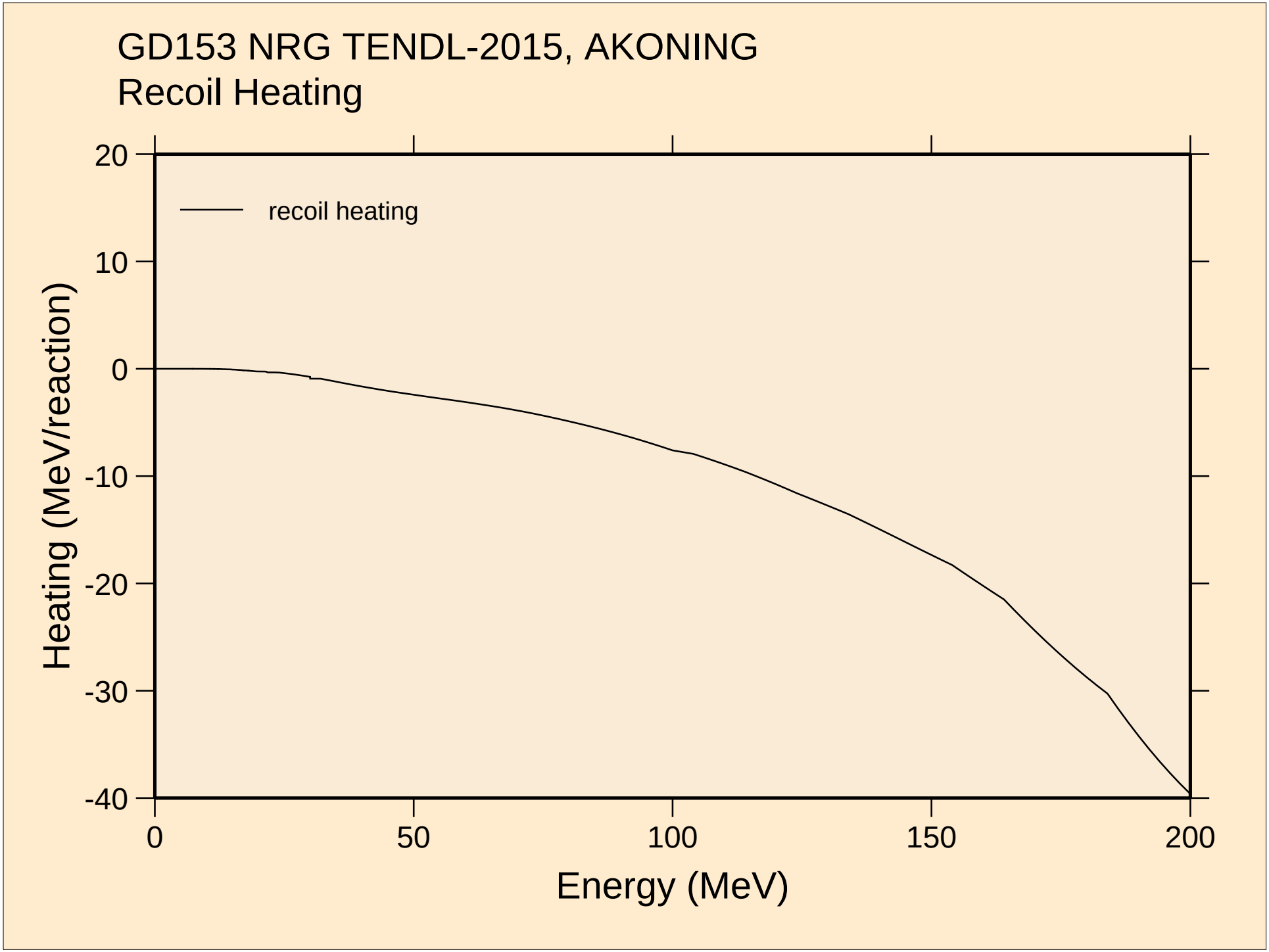

GD153 NRG TENDL-2015, AKONING
Photon emission for (n,pt)
Prob/MeV
10^{2}
10^{0}
10^{-2}
0
2
4
E_γ (MeV)
10
12
14
16
18
20
22
24
26
28
30
E_n (MeV)

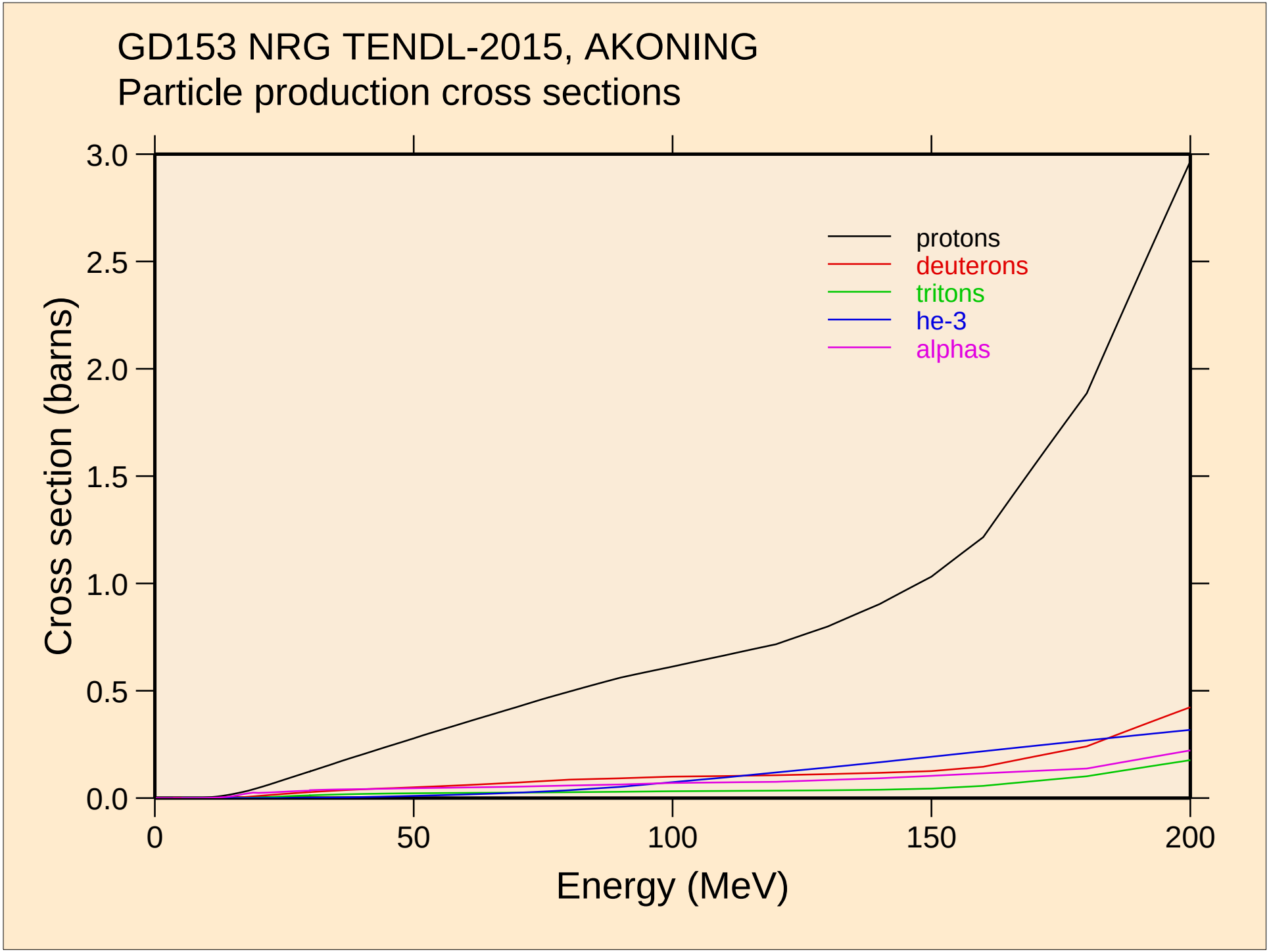

GD153 NRG TENDL-2015, AKONING
Photon emission for (n,da)
Prob/MeV
10^{1}
10^{-1}
0
2
4
6
E_γ (MeV)
0
5
10
15
20
25
30
E_n (MeV)

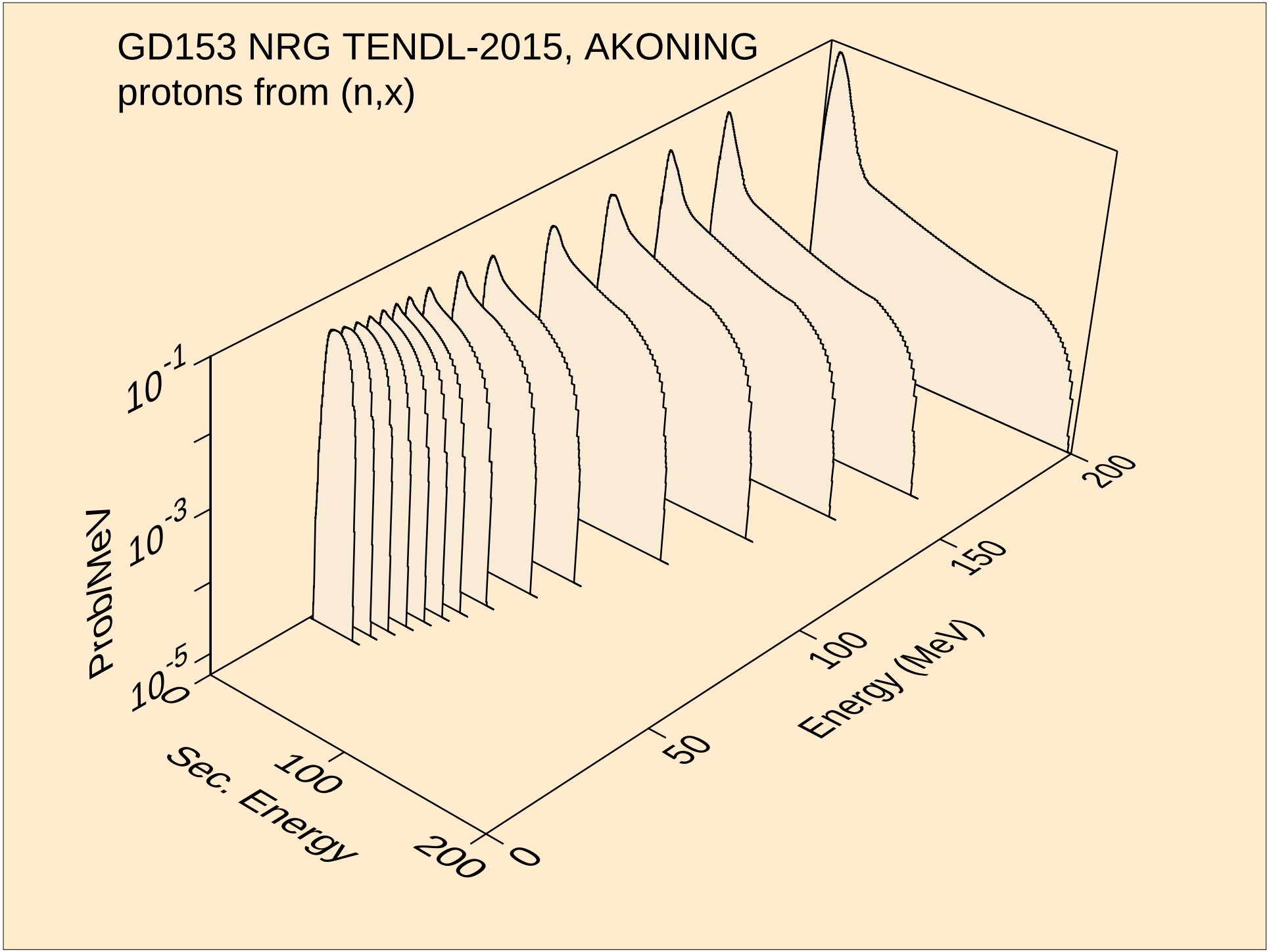

GD153 NRG TENDL-2015, AKONING
thermal capture photon spectrum
Gamma Prod (barns/MeV)
10^4
10^3
10^2
0
2
4
6
8
Gamma Energy (MeV)

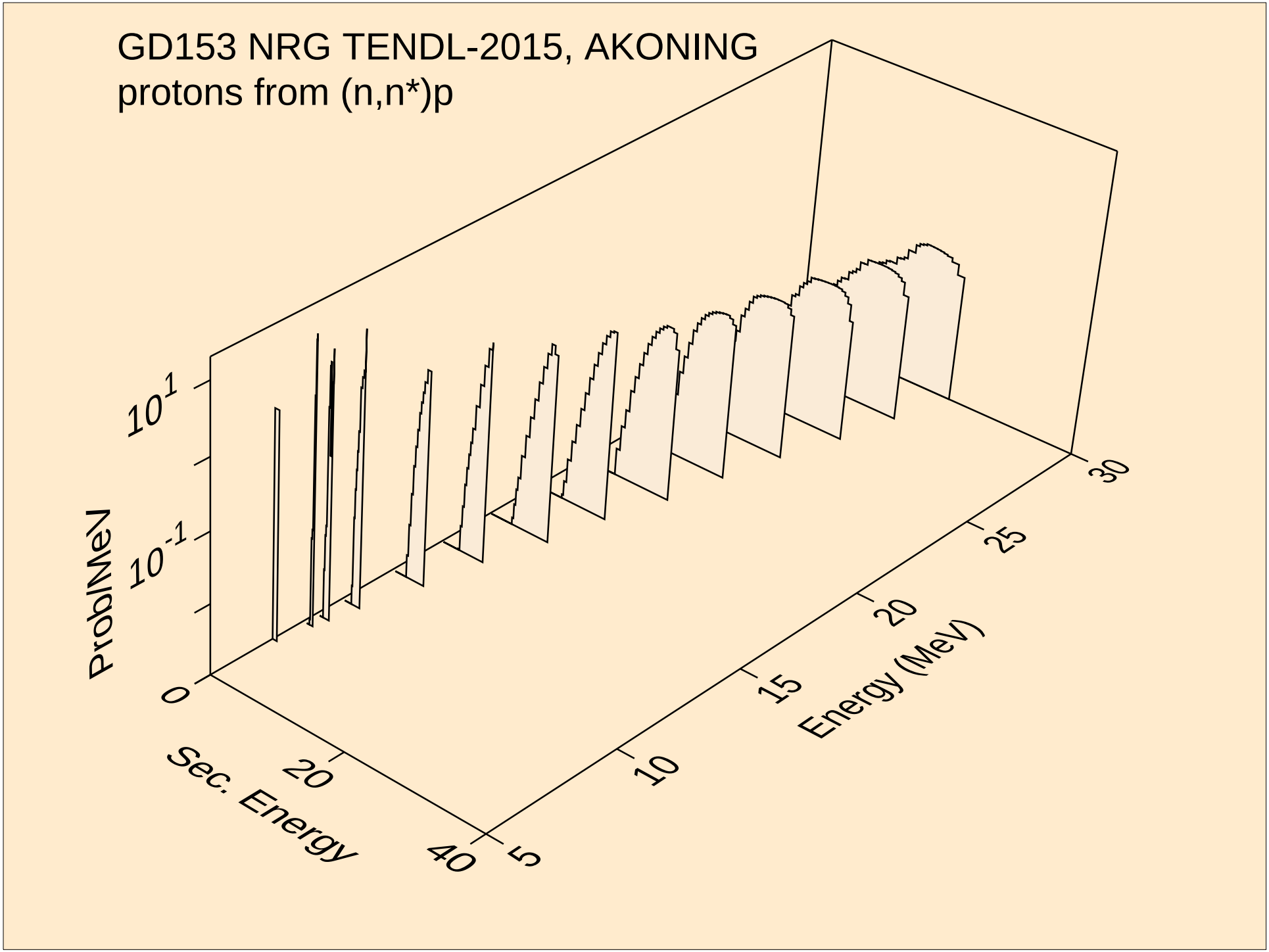

GD153 NRG TENDL-2015, AKONING
14 MeV photon spectrum
Gamma Prod (barns/MeV)
10^2
10^1
10^0
10^-1
10^-2
10^-3
0
10
20
30
Gamma Energy (MeV)

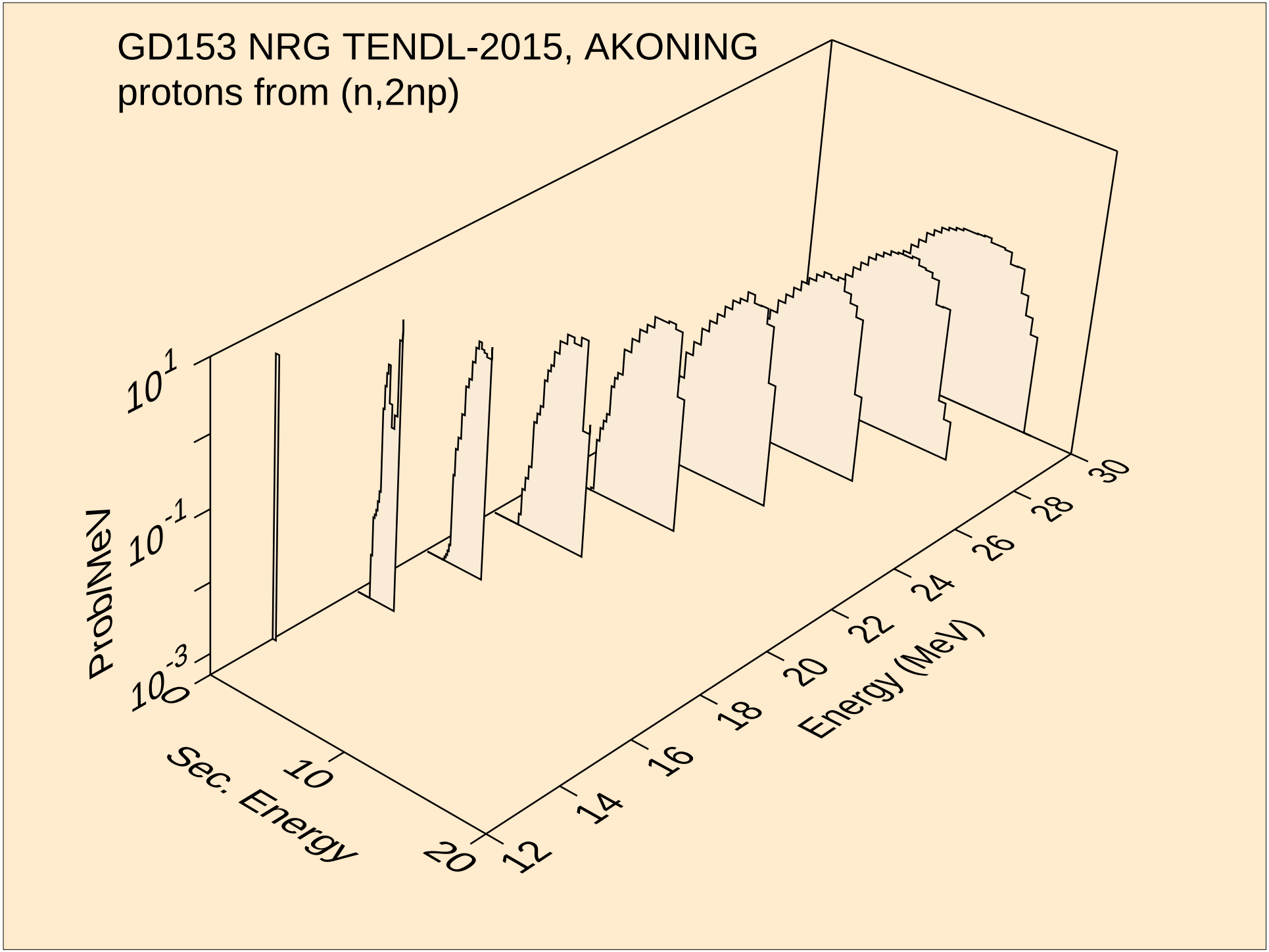

GD153 NRG TENDL-2015, AKONING
Particle heating contributions
protons
deuterons
tritons
he-3
alphas
MeV/collision
Energy (MeV)
0
5
10
15
20
25
0
50
100
150
200

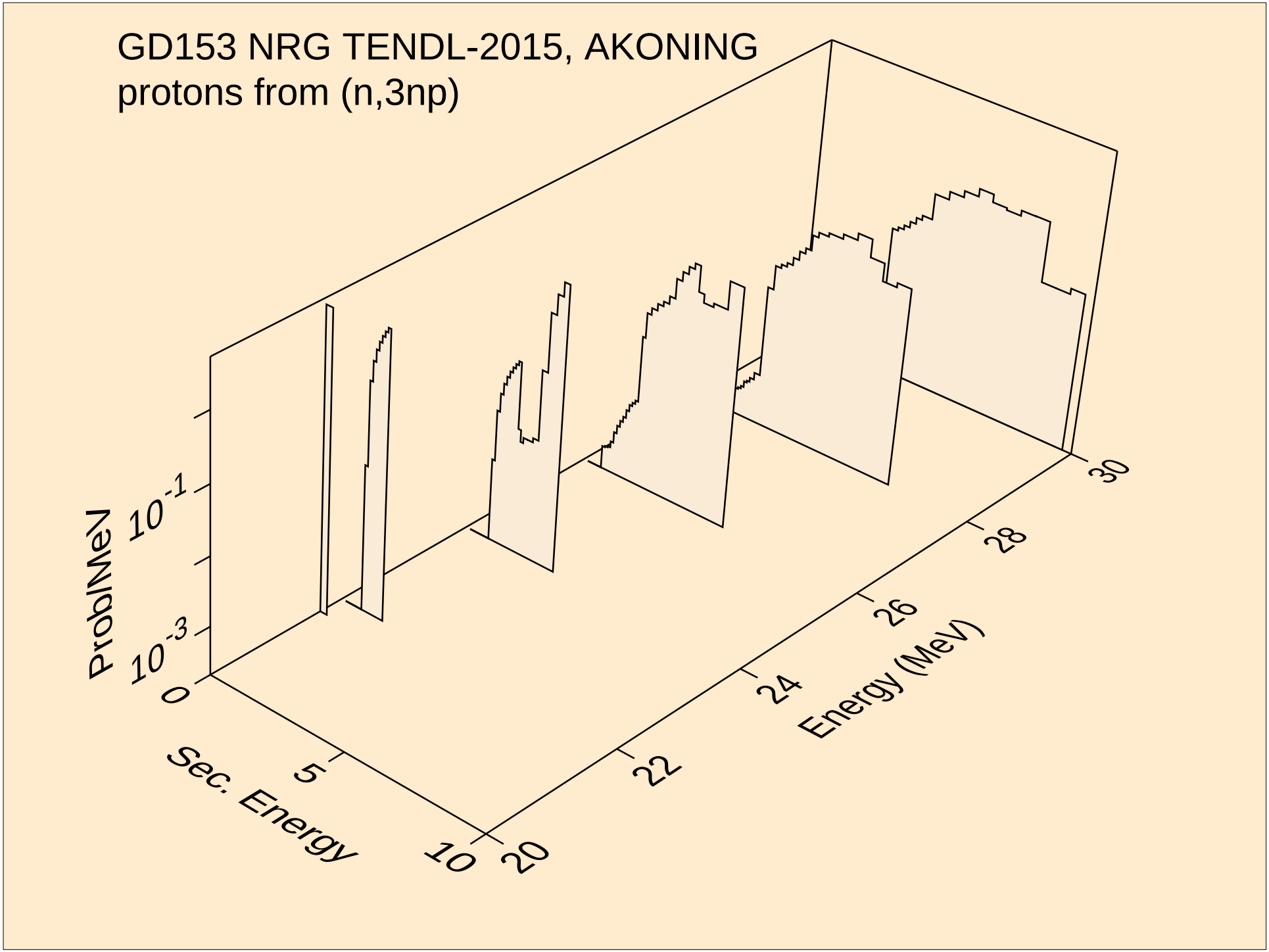

GD153 NRG TENDL-2015, AKONING
Recoil Heating
recoil heating
Heating (MeV/reaction)
20
10
0
-10
-20
-30
-40
0
50
100
150
200
Energy (MeV)

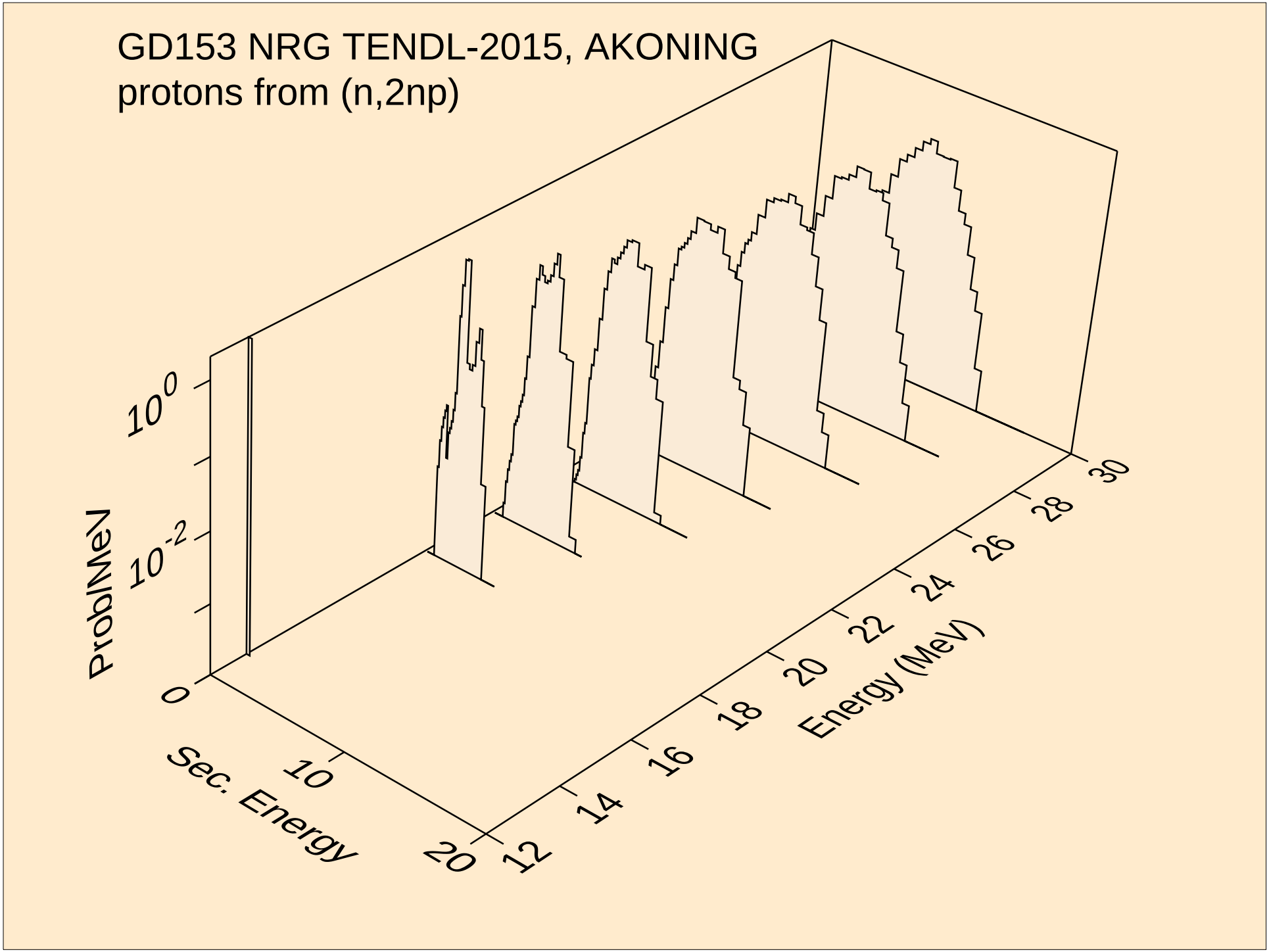

GD153 NRG TENDL-2015, AKONING
Particle production cross sections
Cross section (barns)
3.0
2.5
2.0
1.5
1.0
0.5
0.0
0
50
100
150
200
Energy (MeV)
protons
deuterons
tritons
he-3
alphas

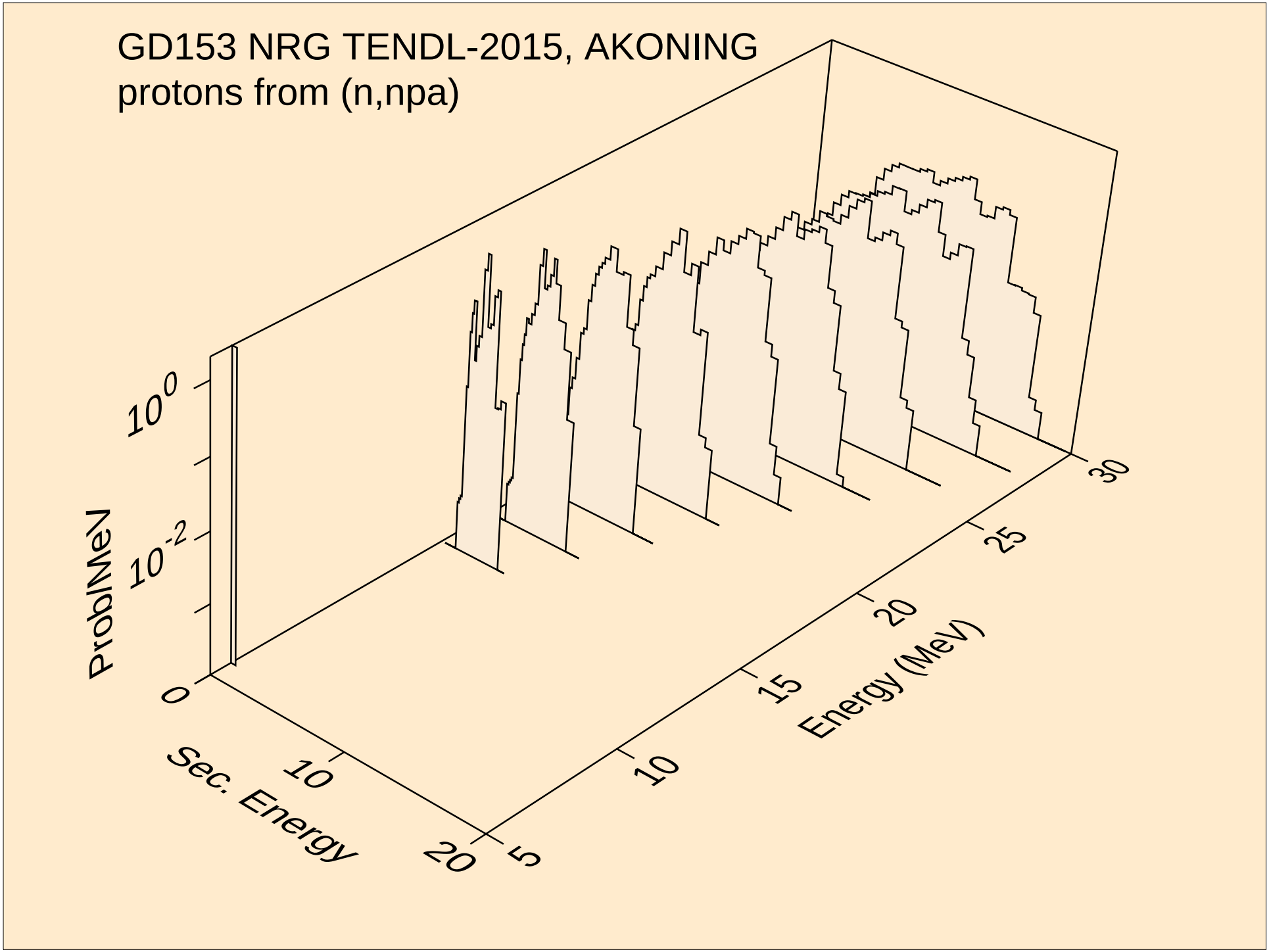

GD153 NRG TENDL-2015, AKONING
protons from (n,x)
Prob/MeV
10-1
10-3
10-5
0
100
200
Sec. Energy
0
50
100
150
200
Energy (MeV)

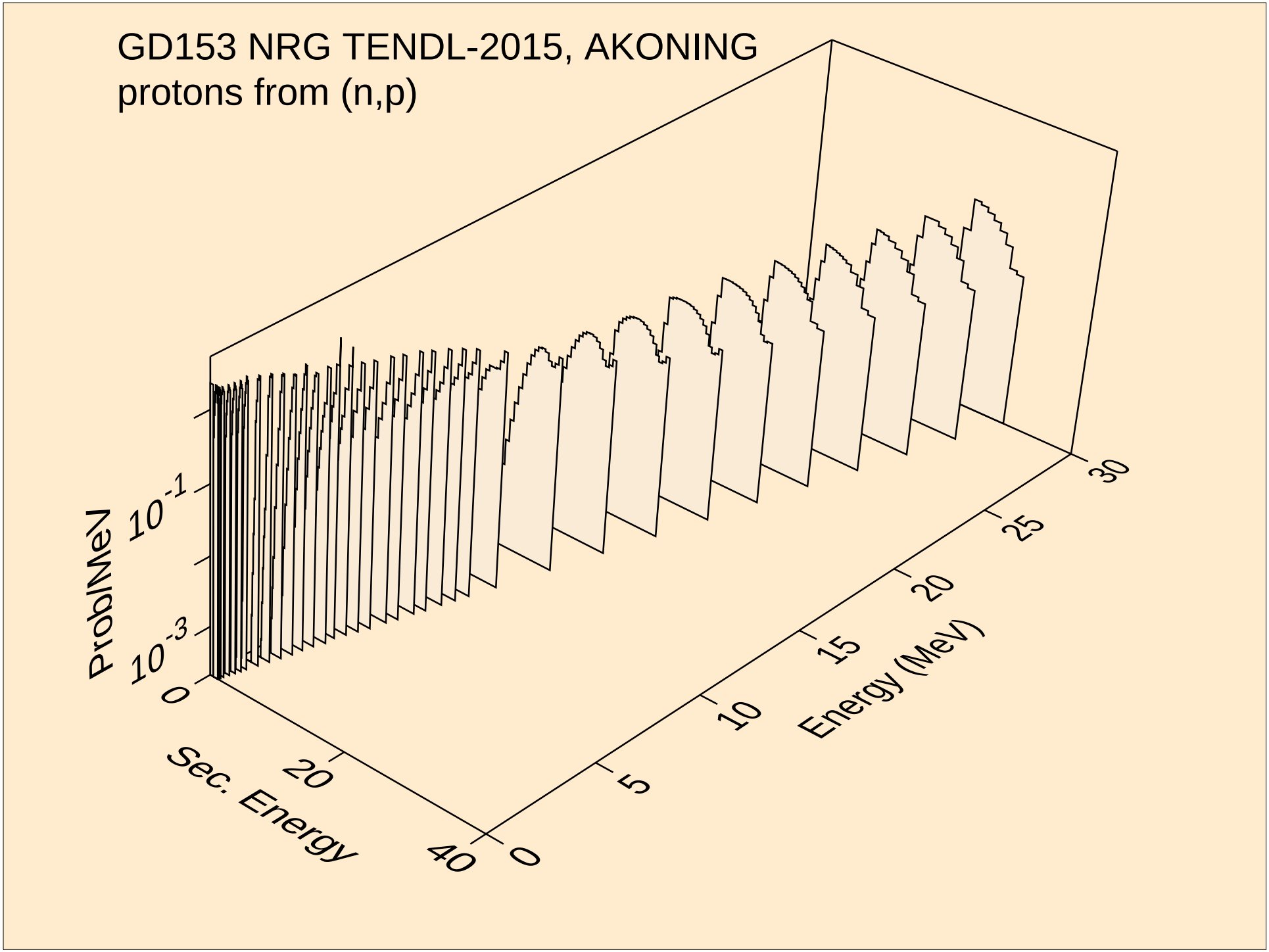

GD153 NRG TENDL-2015, AKONING
protons from (n,n*)p
Prob/MeV
10^1
10^-1
0
Sec. Energy
20
40
5
10
15
20
25
30
Energy (MeV)

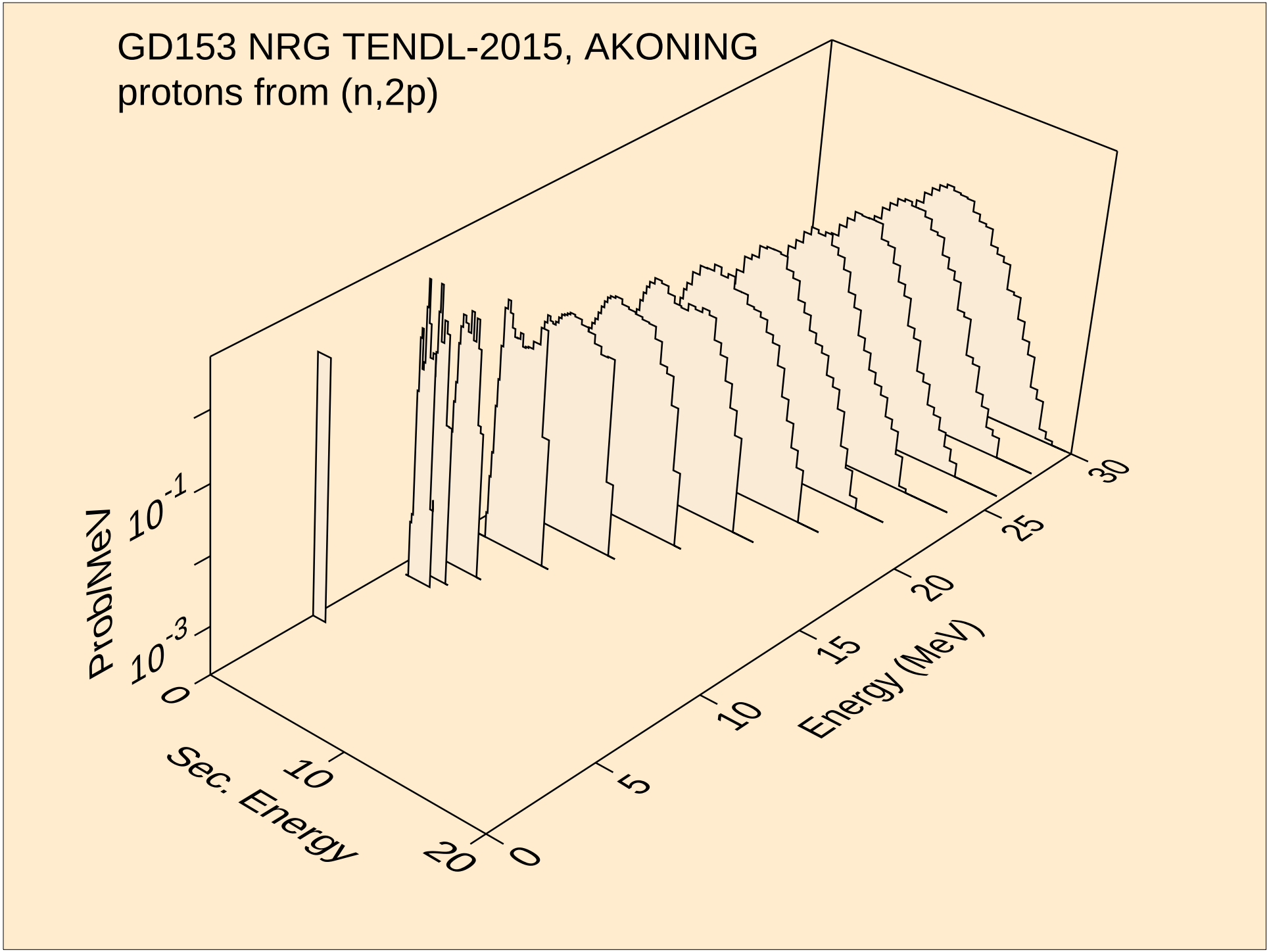

GD153 NRG TENDL-2015, AKONING
protons from (n,2np)
Prob/MeV
10^{-1}
10^{-2}
10^{-3}
0
10
20
Sec. Energy
12
14
16
18
20
22
24
26
28
30
Energy (MeV)

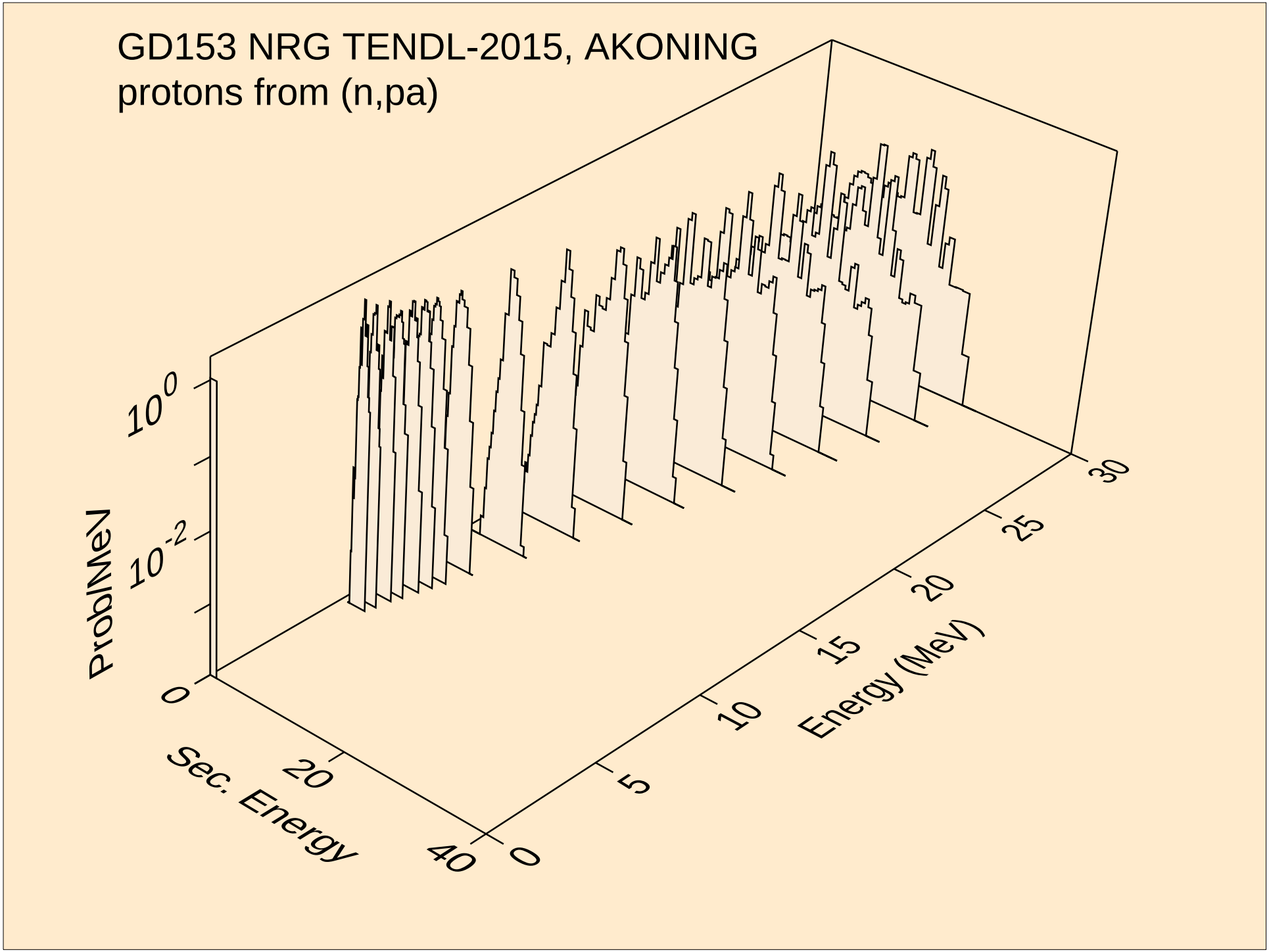

GD153 NRG TENDL-2015, AKONING
protons from (n,3np)
Prob/MeV
10-1
10-3
0
Sec. Energy
5
10
20
22
24
26
28
30
Energy (MeV)

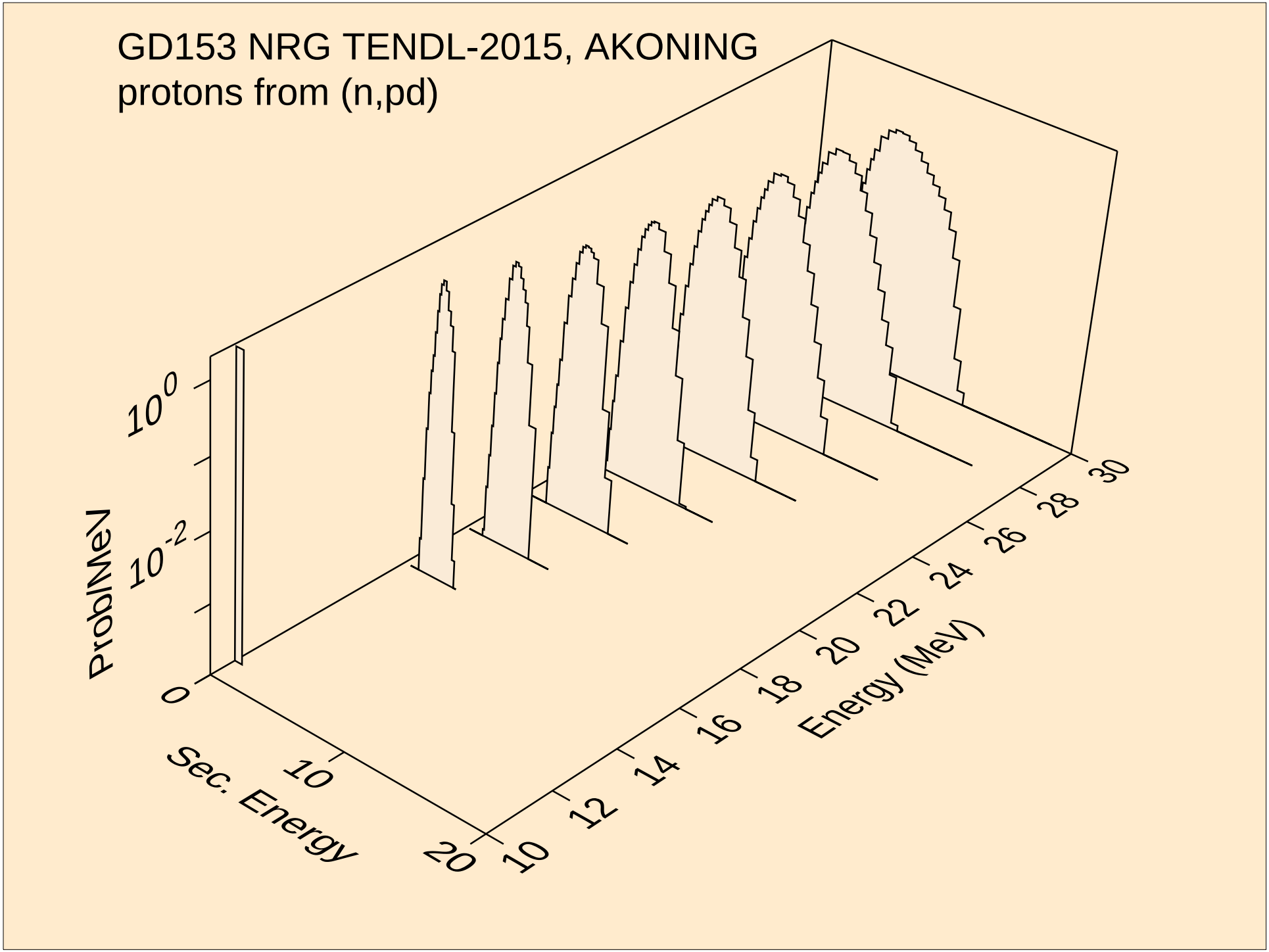

GD153 NRG TENDL-2015, AKONING
protons from (n,2np)
Prob/MeV
10^{0}
10^{-2}
0
Sec. Energy
10
20
12
14
16
18
20
22
24
26
28
30
Energy (MeV)

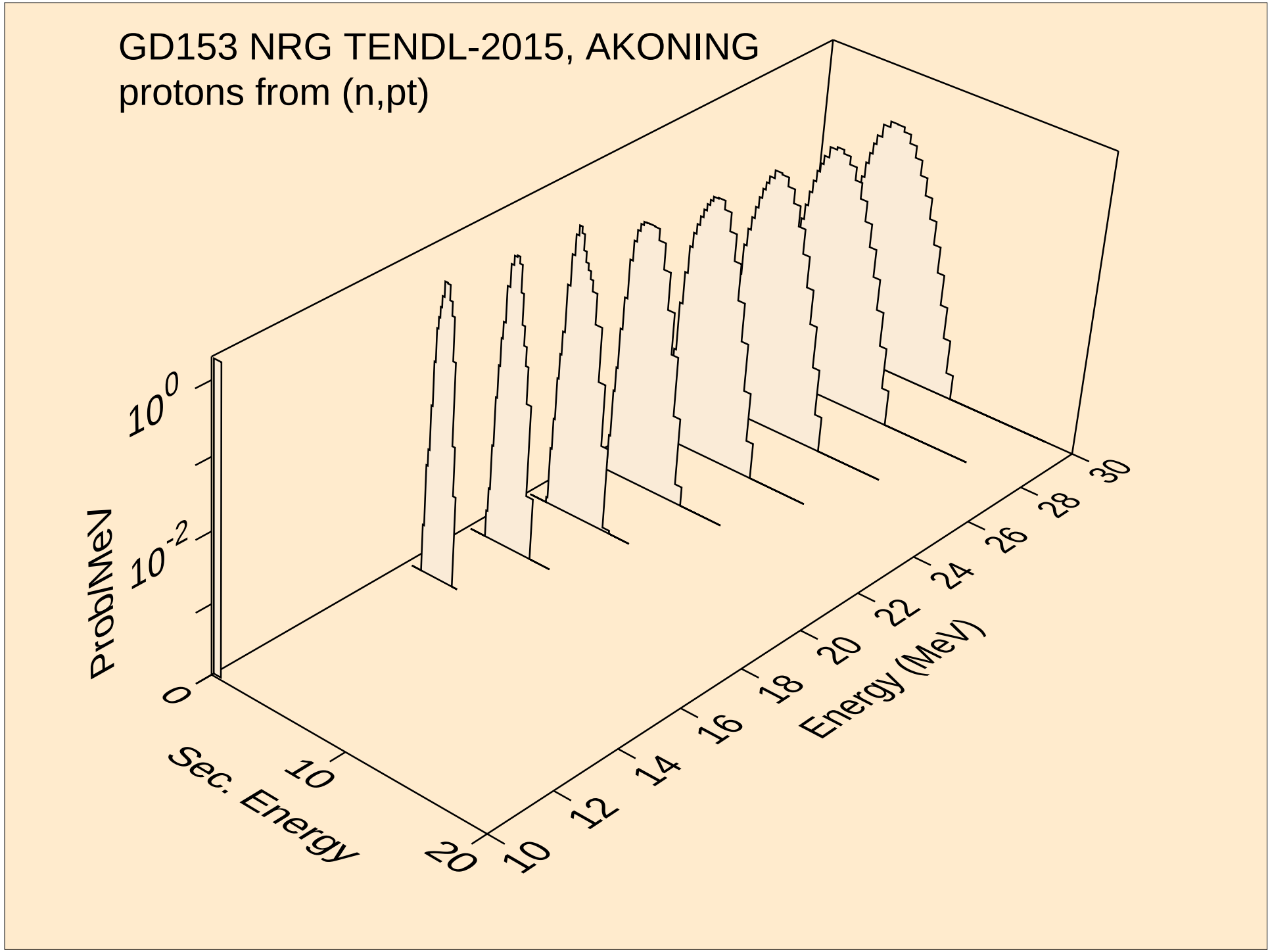

GD153 NRG TENDL-2015, AKONING
protons from (n,npa)
Prob/MeV
10^{0}
10^{-2}
0
Sec. Energy
10
20
5
10
15
20
25
30
Energy (MeV)

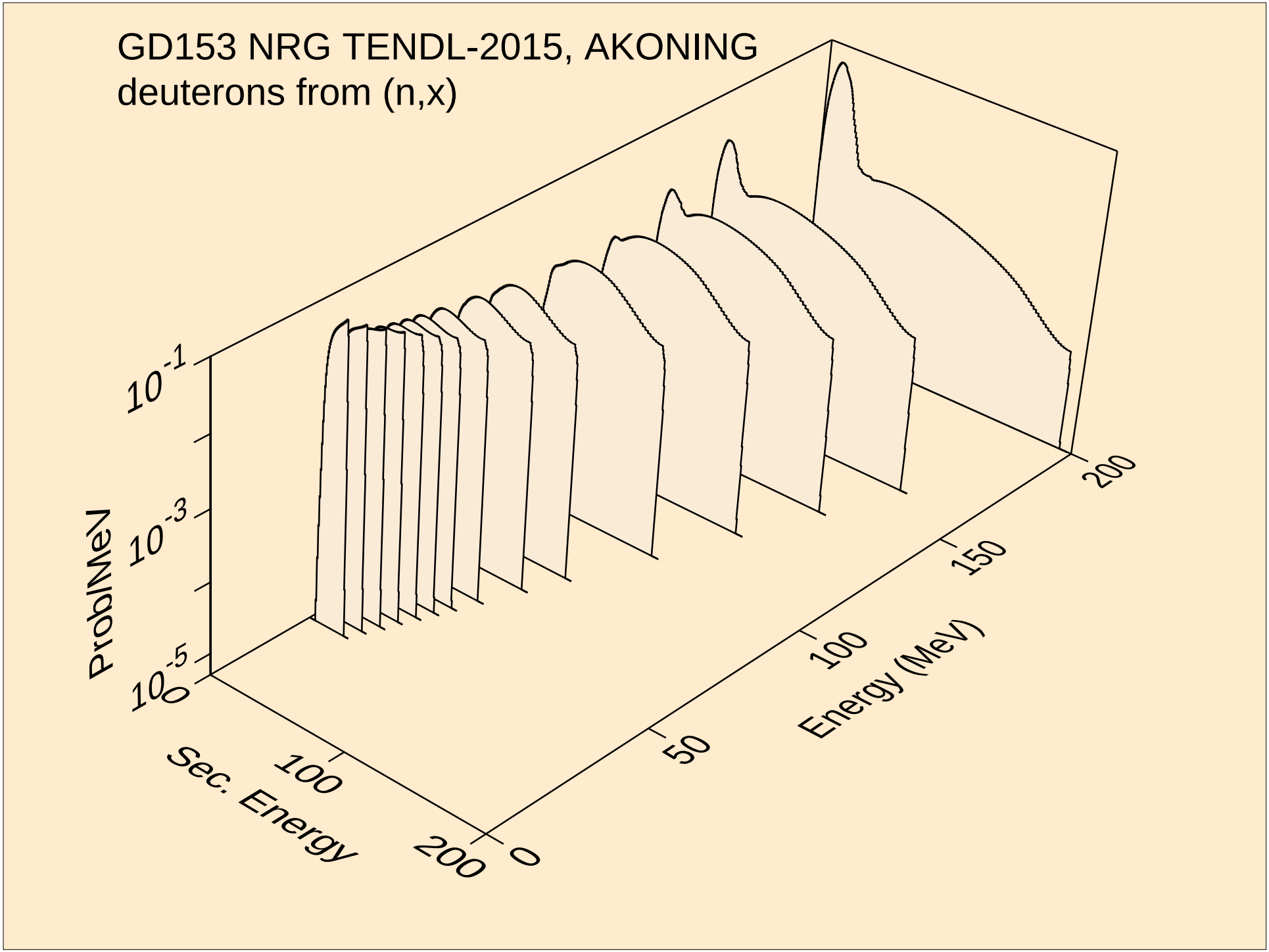

GD153 NRG TENDL-2015, AKONING
protons from (n,p)
Prob/MeV
10-1
10-3
0
Sec. Energy
20
40
0
5
10
15
20
25
30
Energy (MeV)

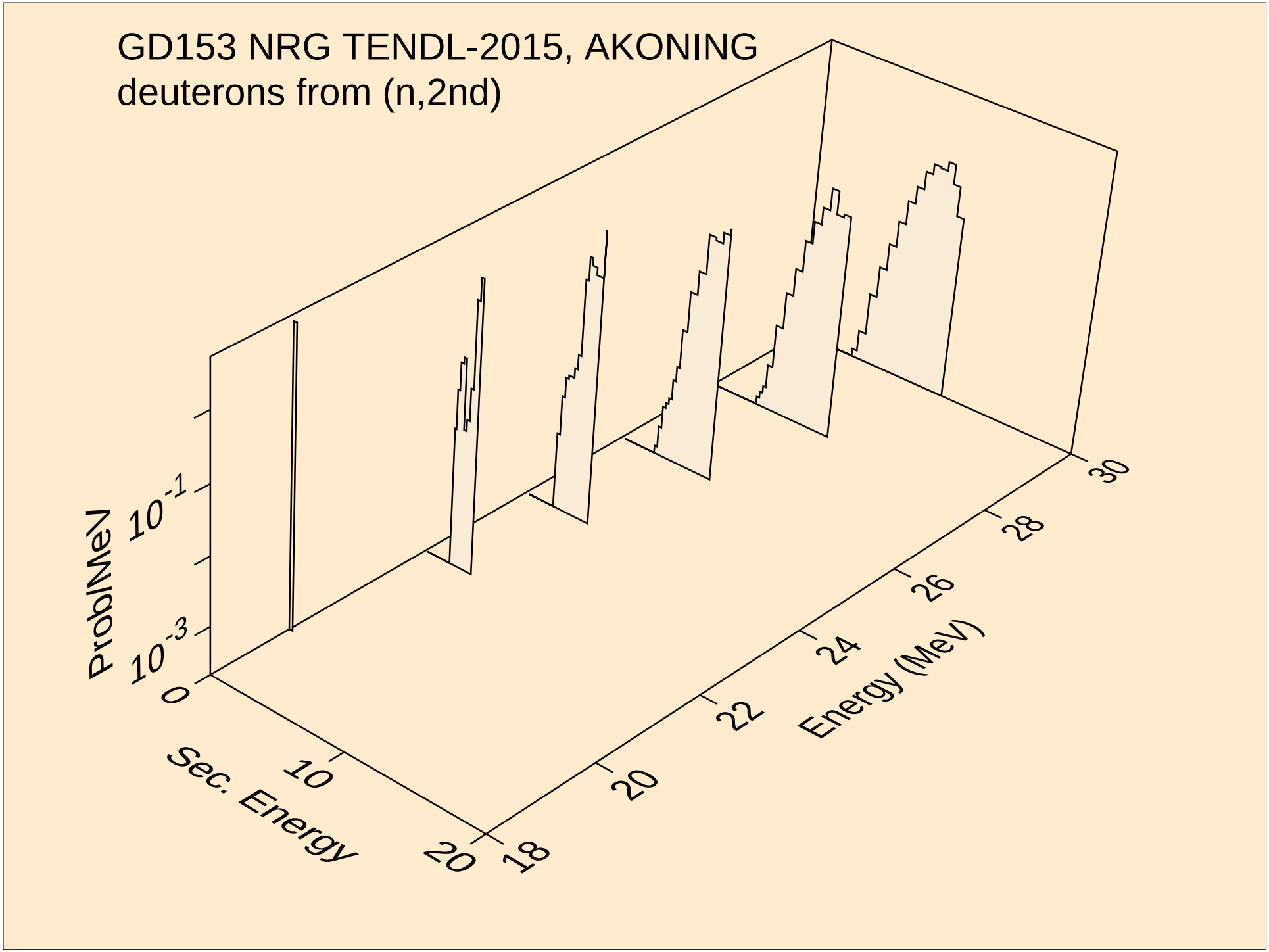

GD153 NRG TENDL-2015, AKONING
protons from (n,2p)
Prob/MeV
10-1
10-3
0
Sec. Energy
10
20
0
5
10
15
20
25
30
Energy (MeV)

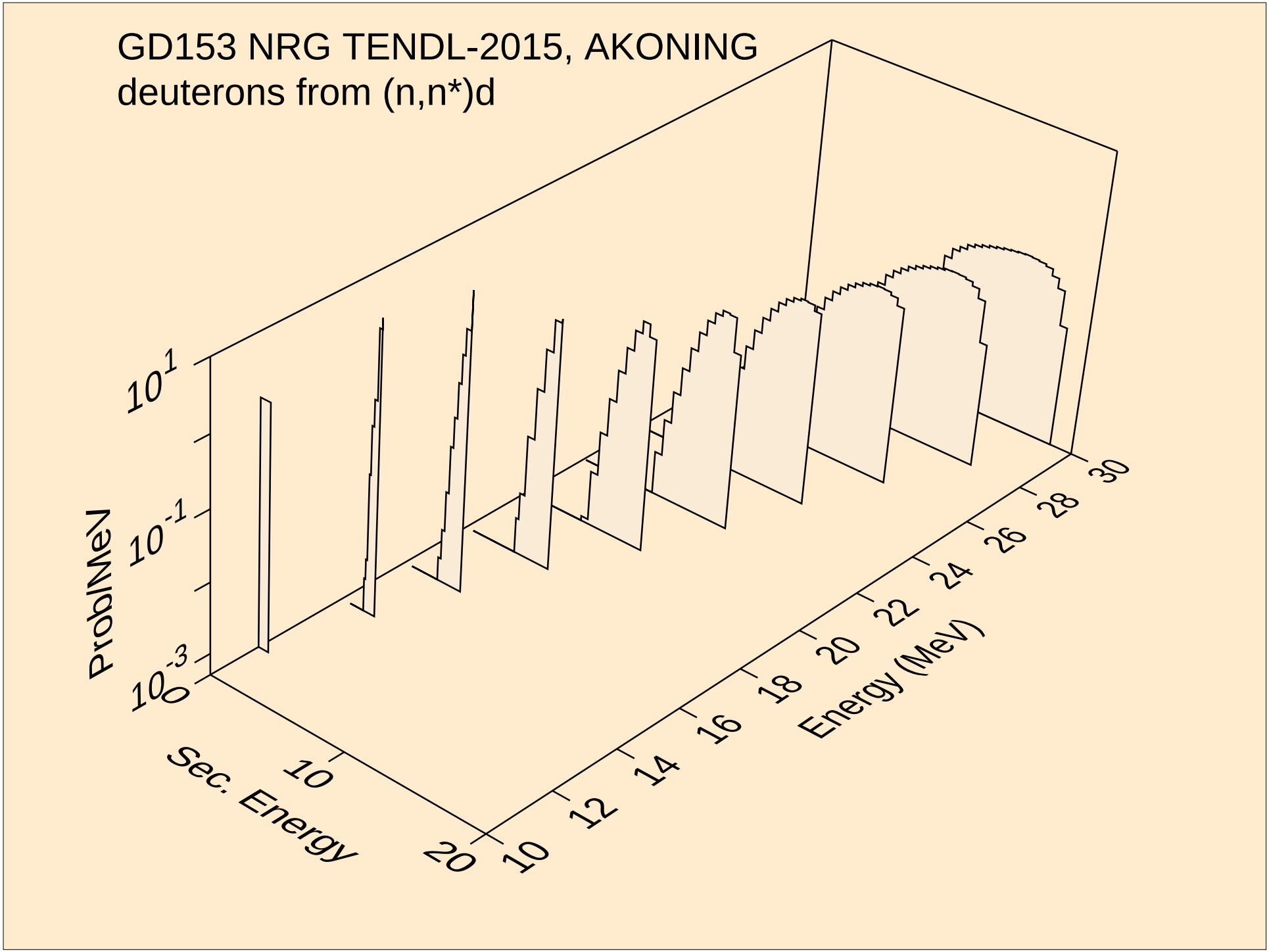

GD153 NRG TENDL-2015, AKONING
protons from (n,pa)
Prob/MeV
10^0
10^-2
0
Sec. Energy
20
40
0
5
10
15
20
25
30
Energy (MeV)

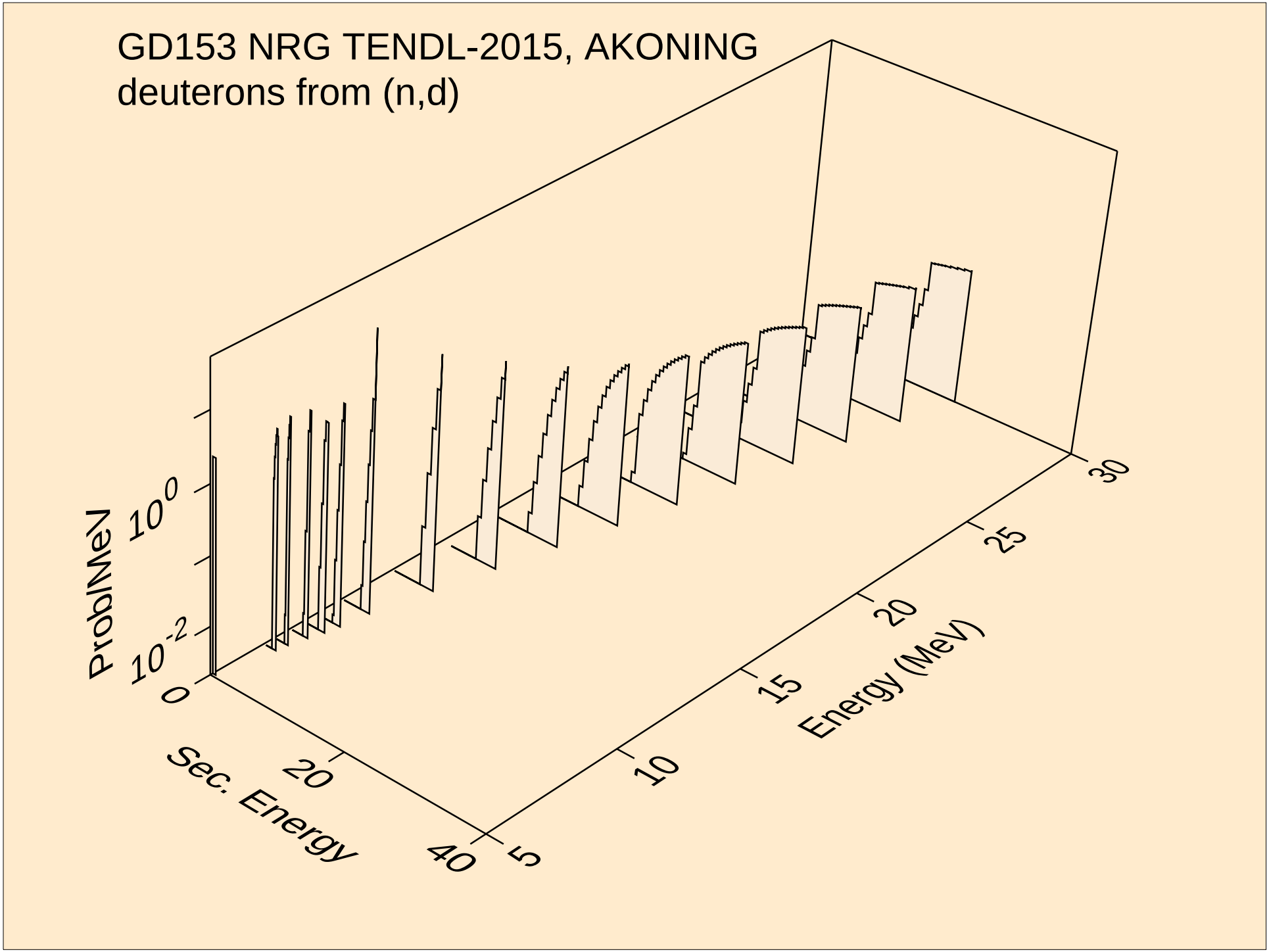

GD153 NRG TENDL-2015, AKONING
protons from (n,pd)
Prob/MeV
10^{0}
10^{-2}
0
Sec. Energy
10
20
10
12
14
16
18
20
22
24
26
28
30
Energy (MeV)

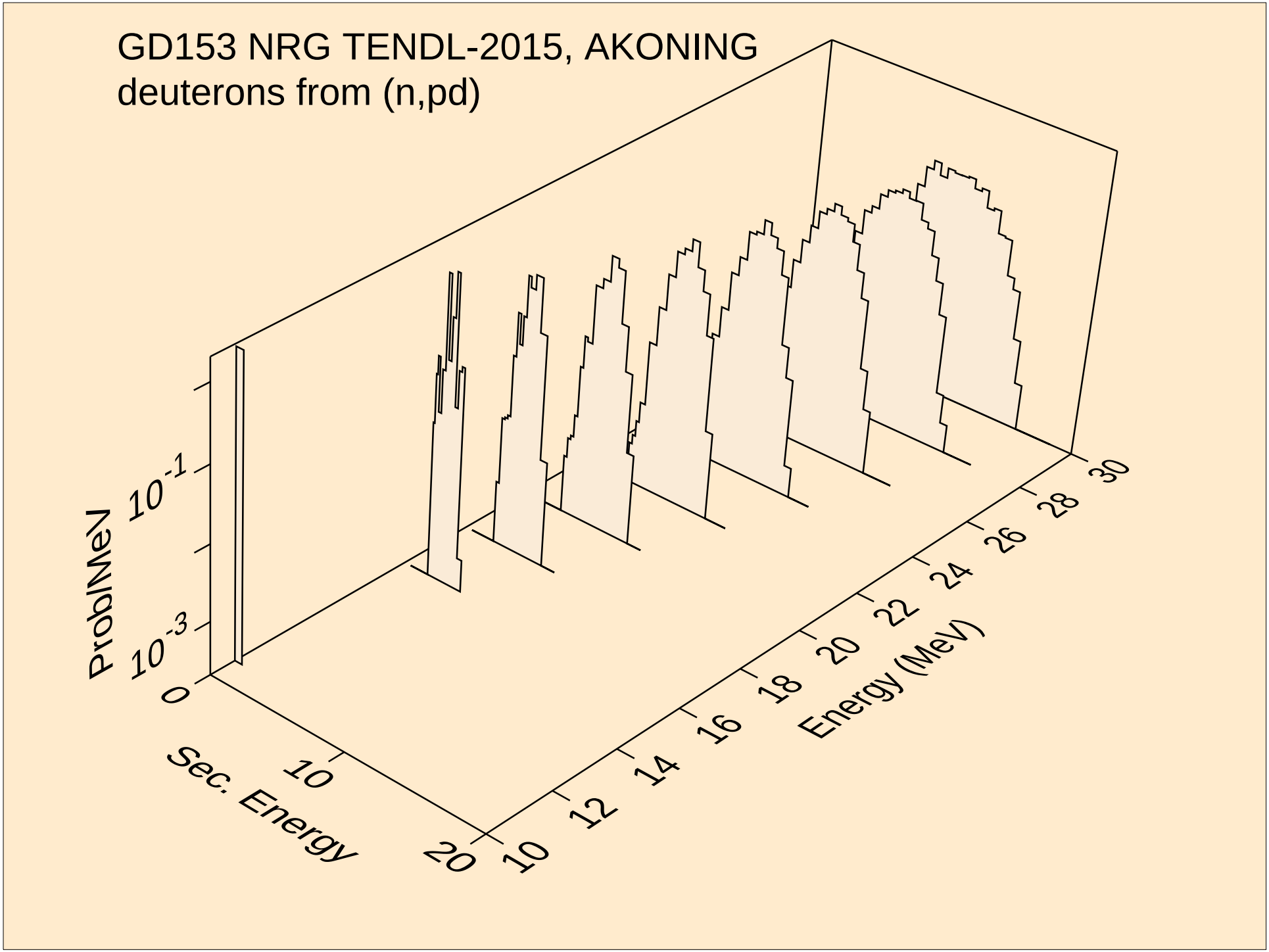

GD153 NRG TENDL-2015, AKONING
protons from (n,pt)
Prob/MeV
10^0
10^-2
0
Sec. Energy
10
20
10
12
14
16
18
20
22
24
26
28
30
Energy (MeV)

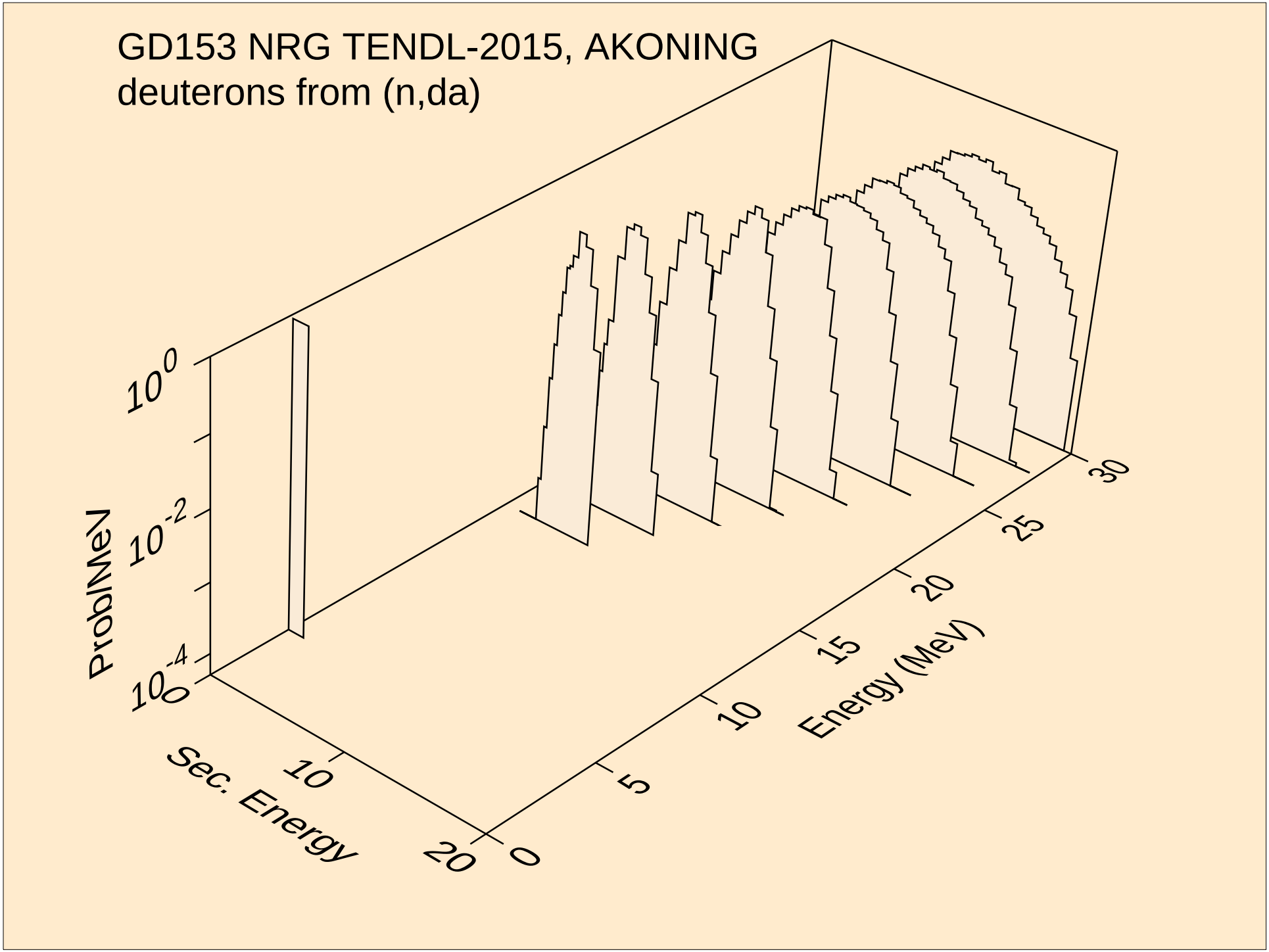

GD153 NRG TENDL-2015, AKONING
deuterons from (n,x)
Prob/MeV
10-1
10-3
10-5
0
100
200
Sec. Energy
0
50
100
150
200
Energy (MeV)

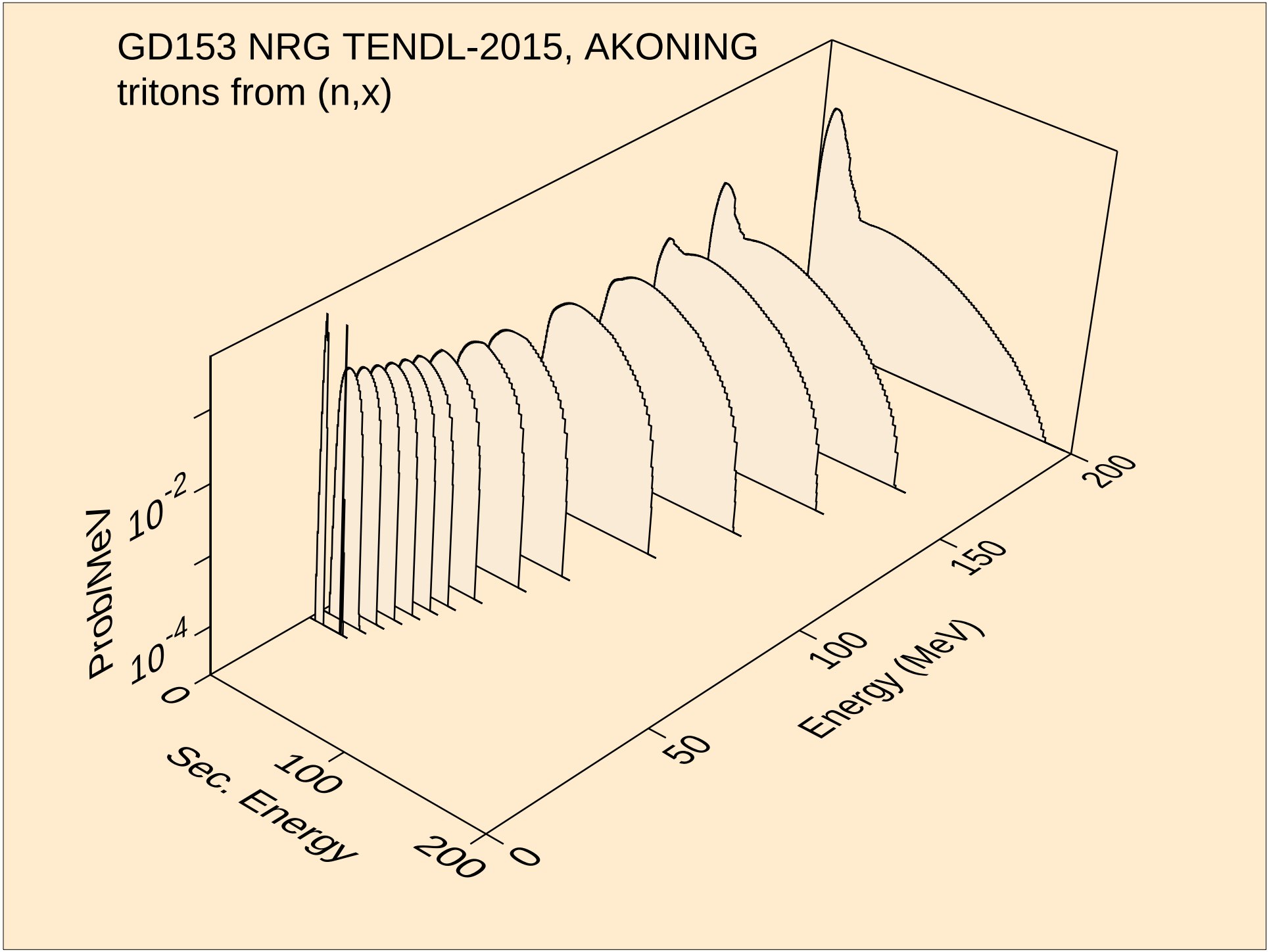

GD153 NRG TENDL-2015, AKONING
deuterons from (n,2nd)
Prob/MeV
10^-1
10^-3
0
Sec. Energy
10
20
18
20
22
24
26
28
30
Energy (MeV)

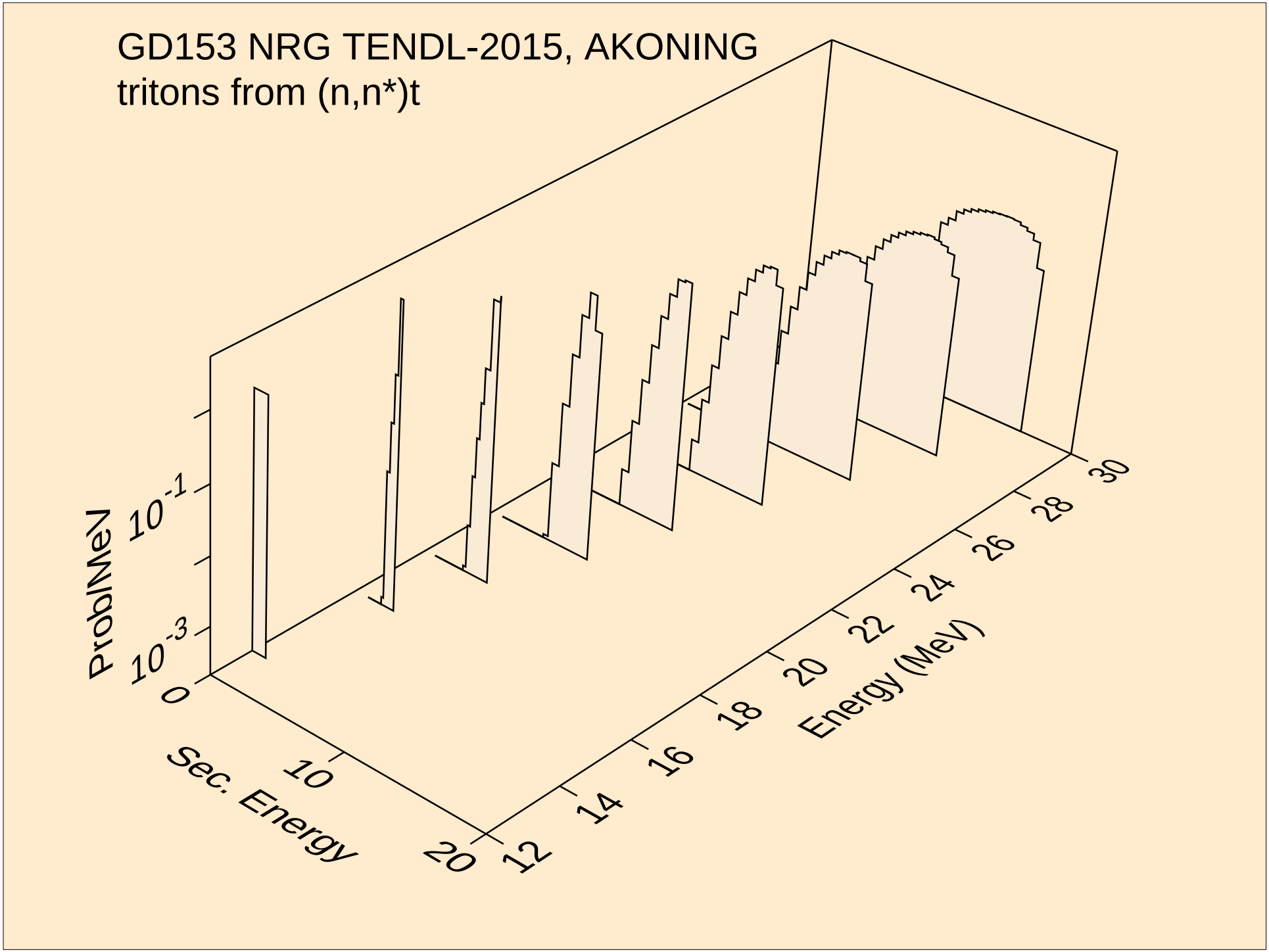

GD153 NRG TENDL-2015, AKONING
deuterons from (n,n*)d
Prob/MeV
10^{1}
10^{-1}
10^{-3}
0
10
20
Sec. Energy
10
12
14
16
18
20
22
24
26
28
30
Energy (MeV)

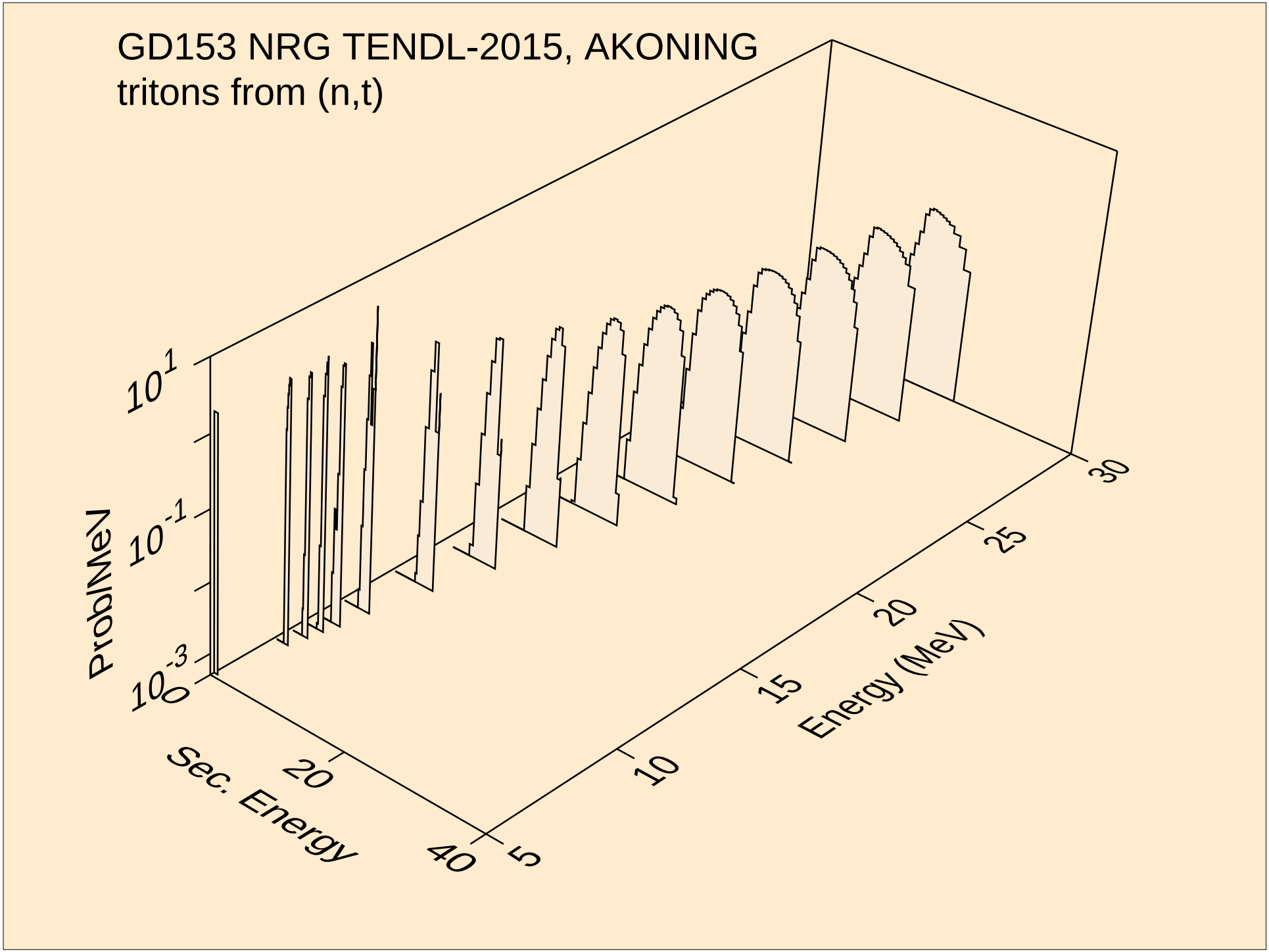

GD153 NRG TENDL-2015, AKONING
deuterons from (n,d)
Prob/MeV
10^0
10^-2
0
Sec. Energy
20
40
5
10
15
Energy (MeV)
20
25
30

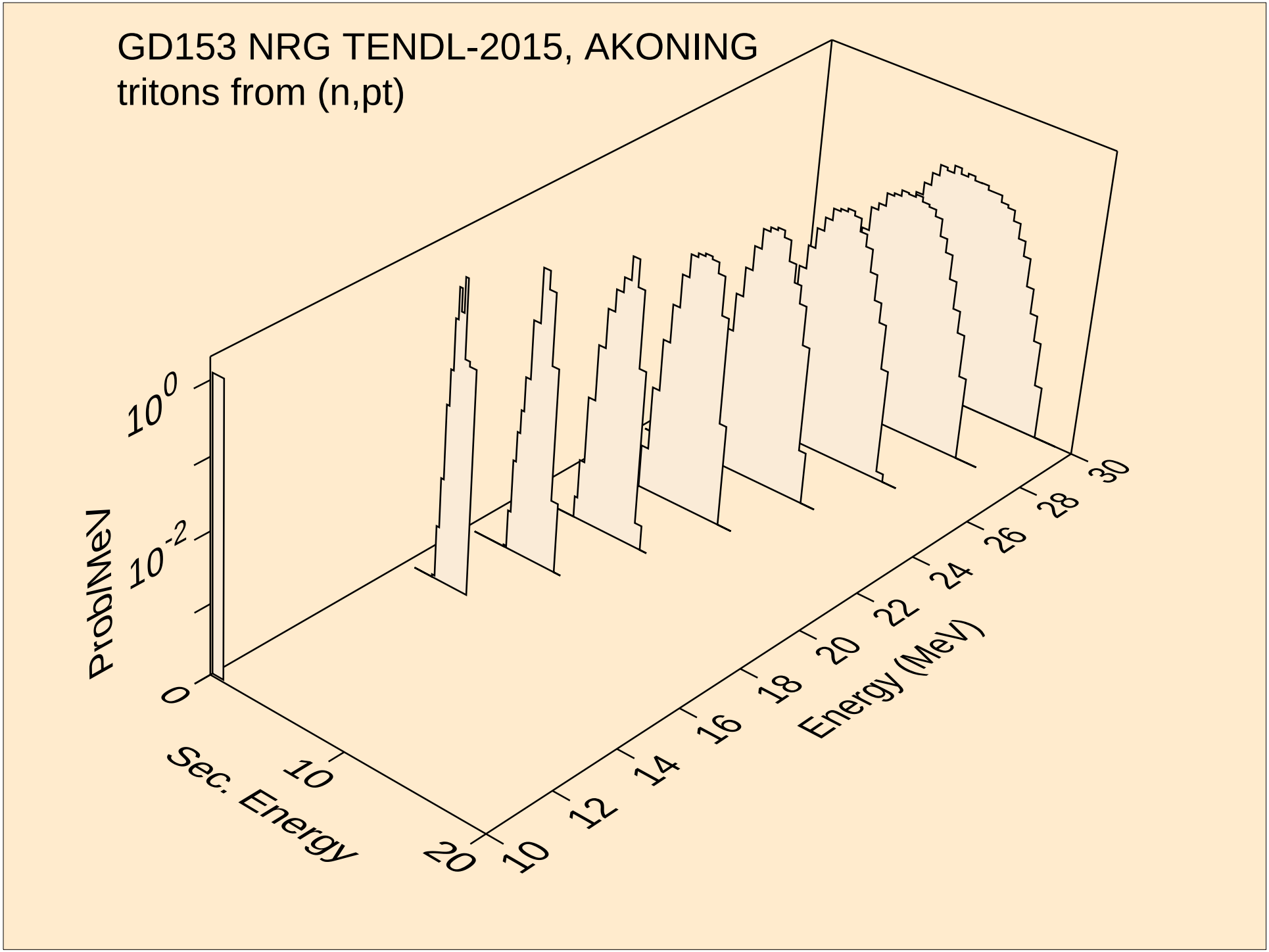

GD153 NRG TENDL-2015, AKONING
deuterons from (n,pd)
Prob/MeV
10-1
10-3
0
Sec. Energy
10
20
10
12
14
16
18
20
22
24
26
28
30
Energy (MeV)

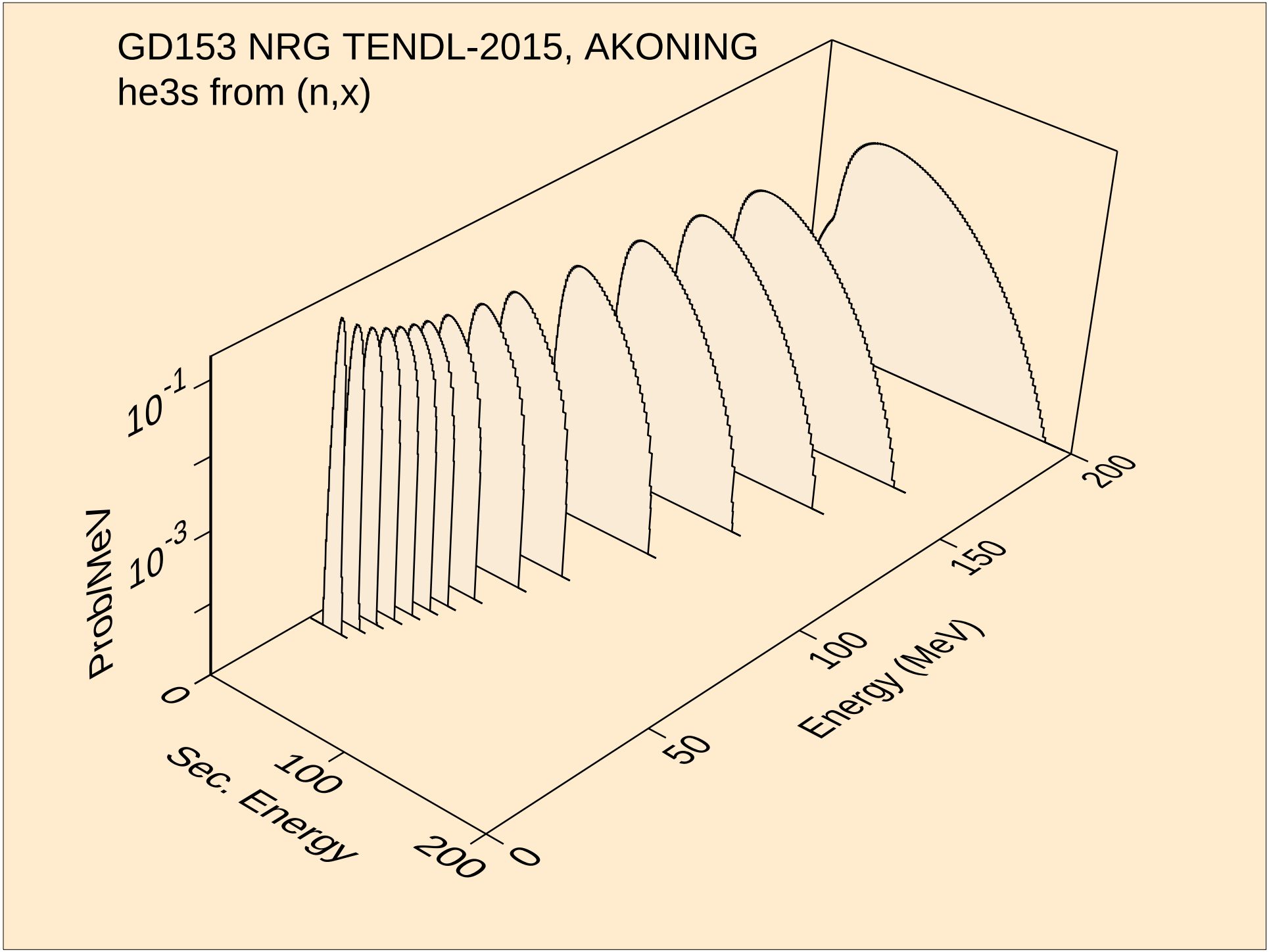

GD153 NRG TENDL-2015, AKONING
deuterons from (n,da)
Prob/MeV
10^0
10^-2
10^-4
0
10
20
Sec. Energy
0
5
10
15
20
25
30
Energy (MeV)

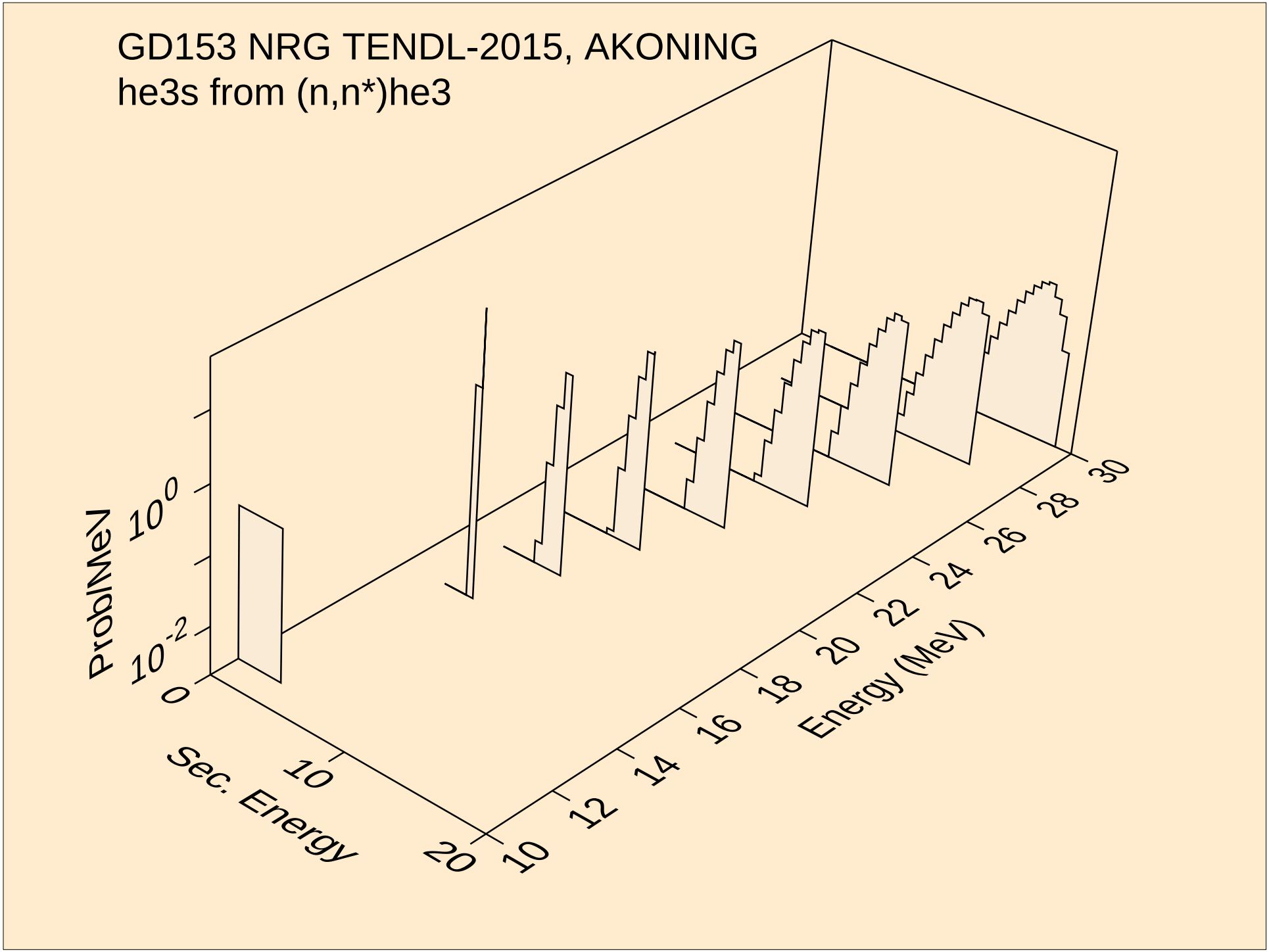

GD153 NRG TENDL-2015, AKONING
tritons from (n,x)
Prob/MeV
10-2
10-4
0
Sec. Energy
100
200
0
50
100
150
200
Energy (MeV)

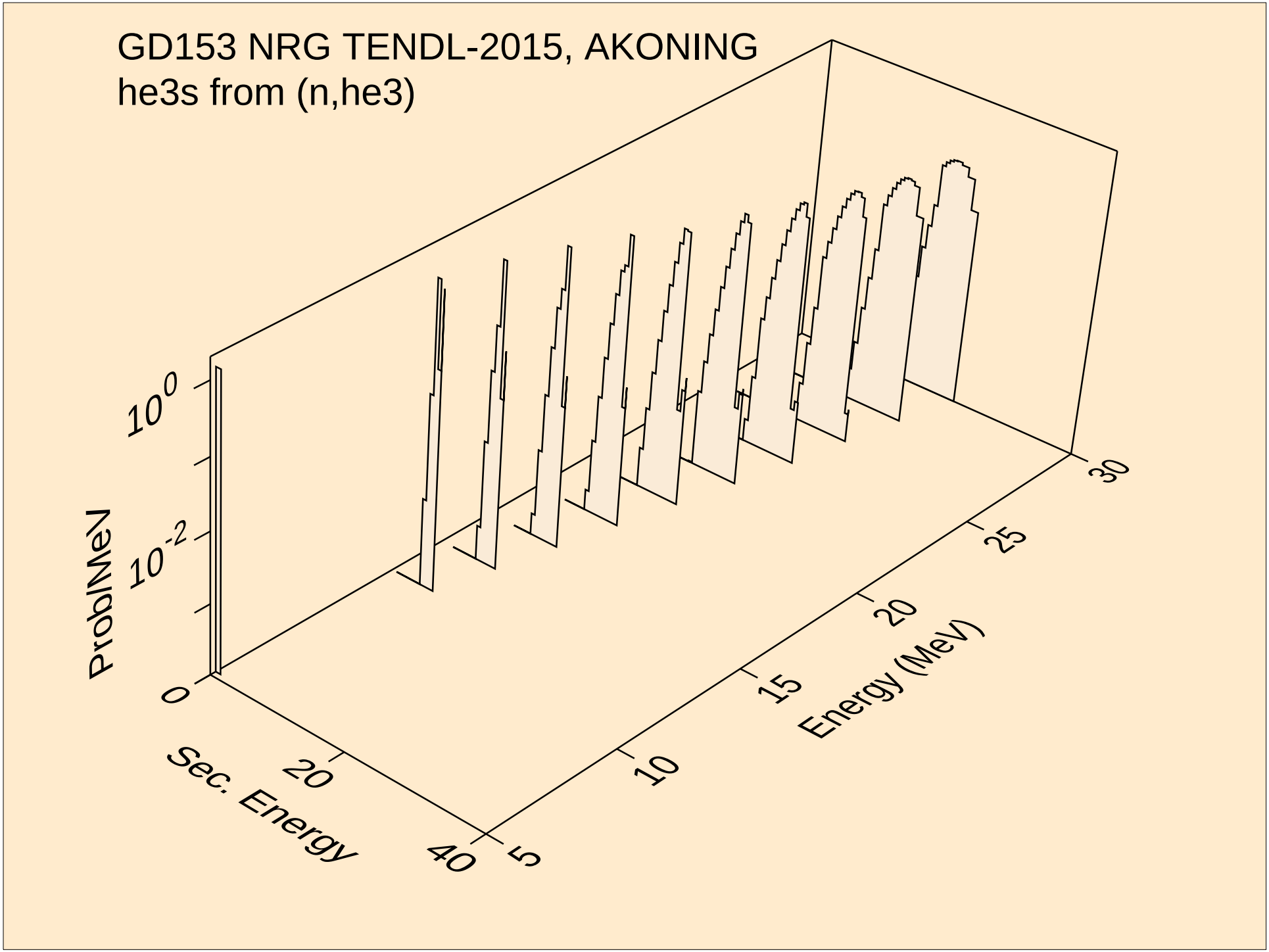

GD153 NRG TENDL-2015, AKONING
tritons from (n,n*)t
Prob/MeV
10-1
10-3
0
Sec. Energy
10
20
12
14
16
18
20
22
24
26
28
30
Energy (MeV)

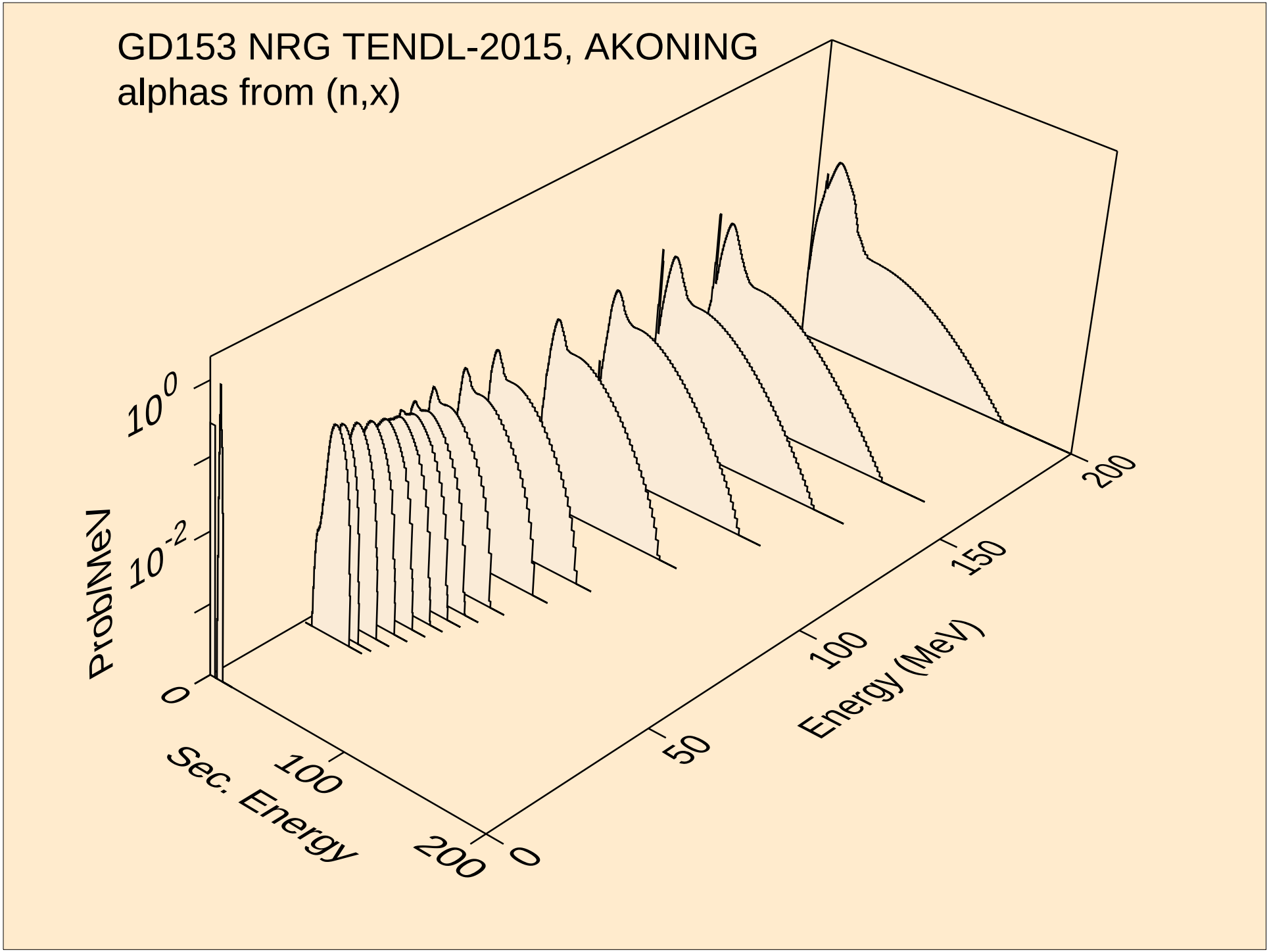

GD153 NRG TENDL-2015, AKONING
tritons from (n,t)
Prob/MeV
10^{1}
10^{-1}
10^{-3}
0
Sec. Energy
20
40
5
10
15
20
25
30
Energy (MeV)

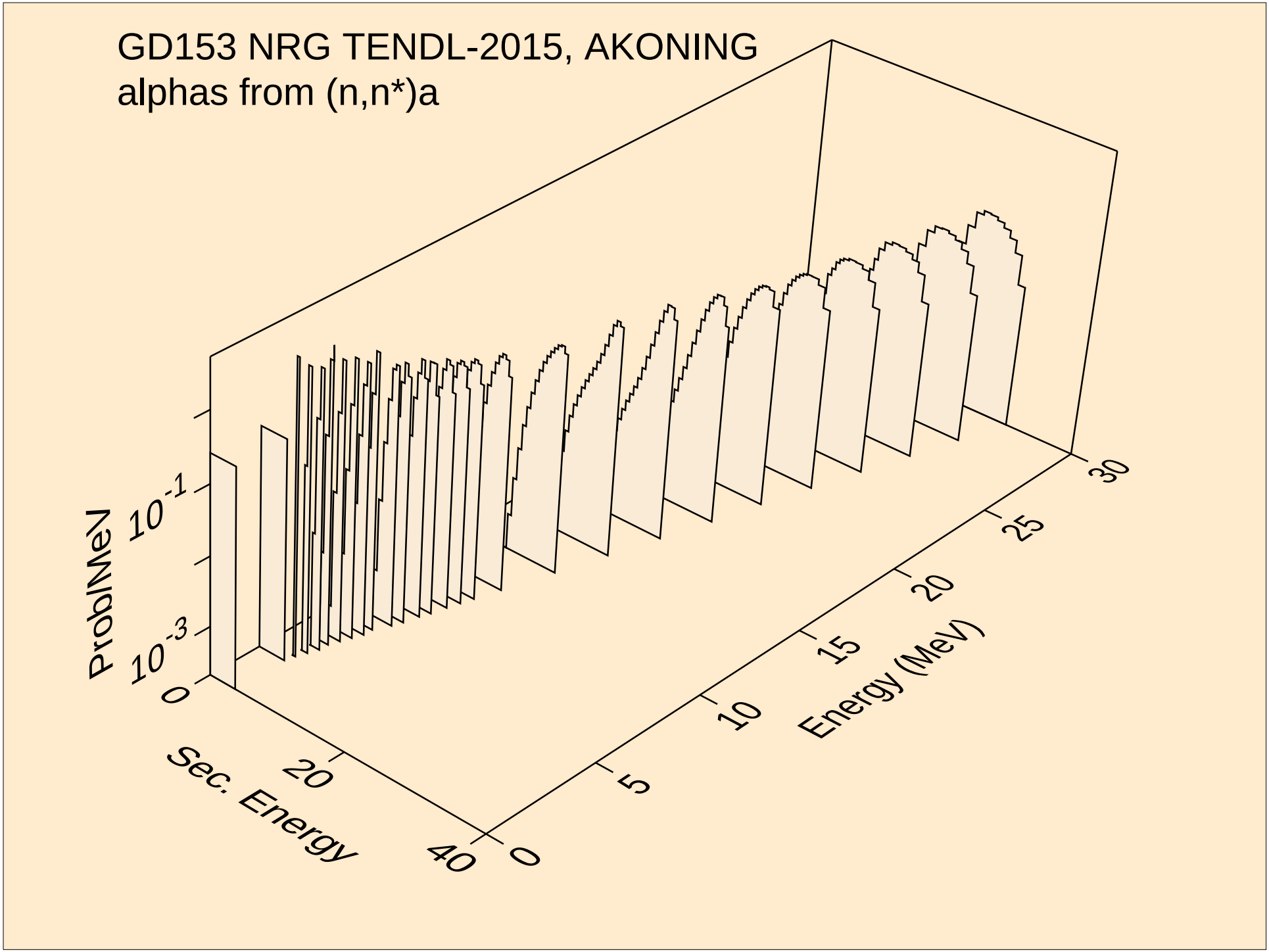

GD153 NRG TENDL-2015, AKONING
tritons from (n,pt)
Prob/MeV
10^{0}
10^{-2}
0
Sec. Energy
10
20
Energy (MeV)
10
12
14
16
18
20
22
24
26
28
30

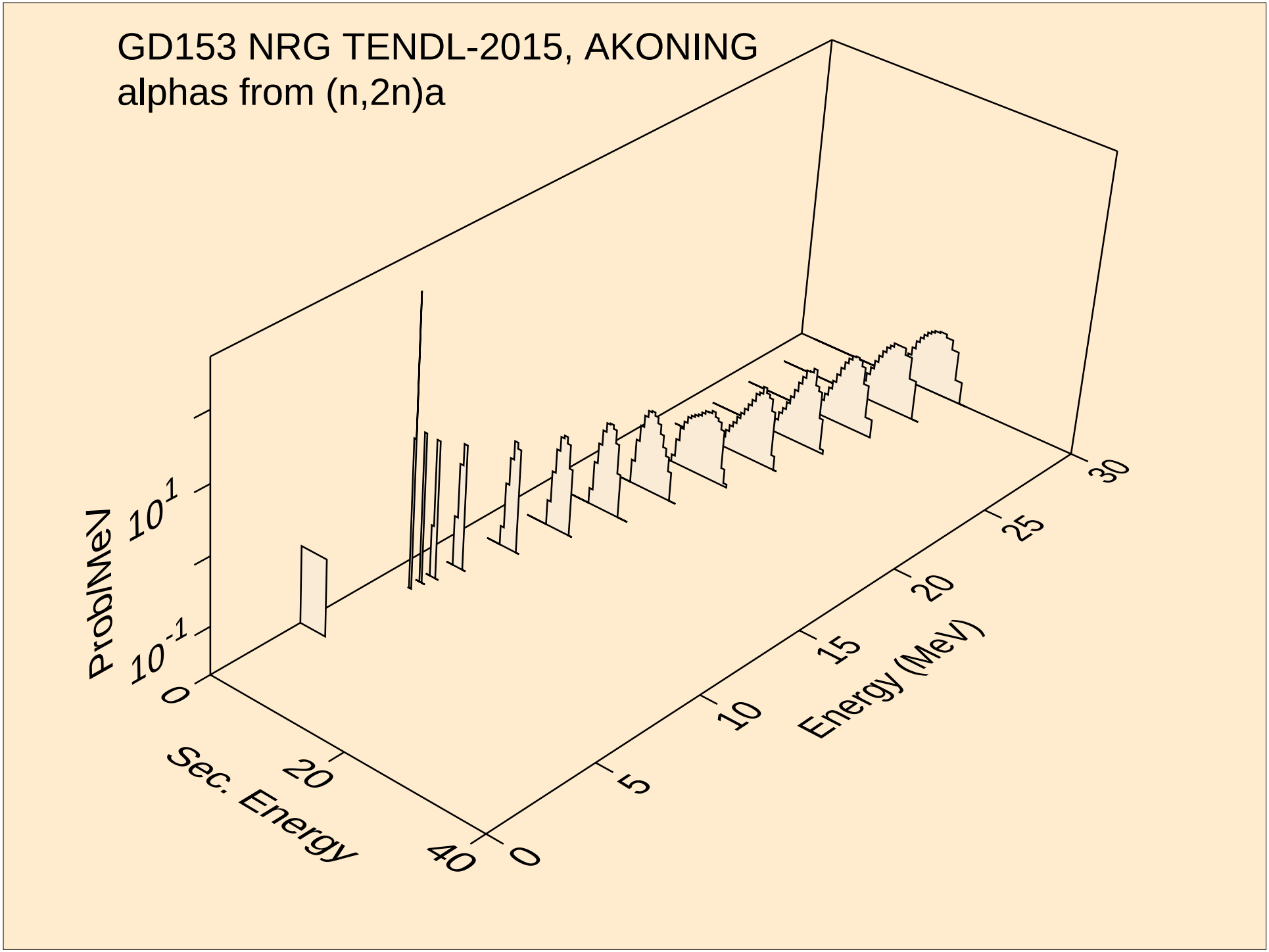

GD153 NRG TENDL-2015, AKONING
he3s from (n,x)
Prob/MeV
10-1
10-3
0
Sec. Energy
100
200
0
50
100
150
200
Energy (MeV)

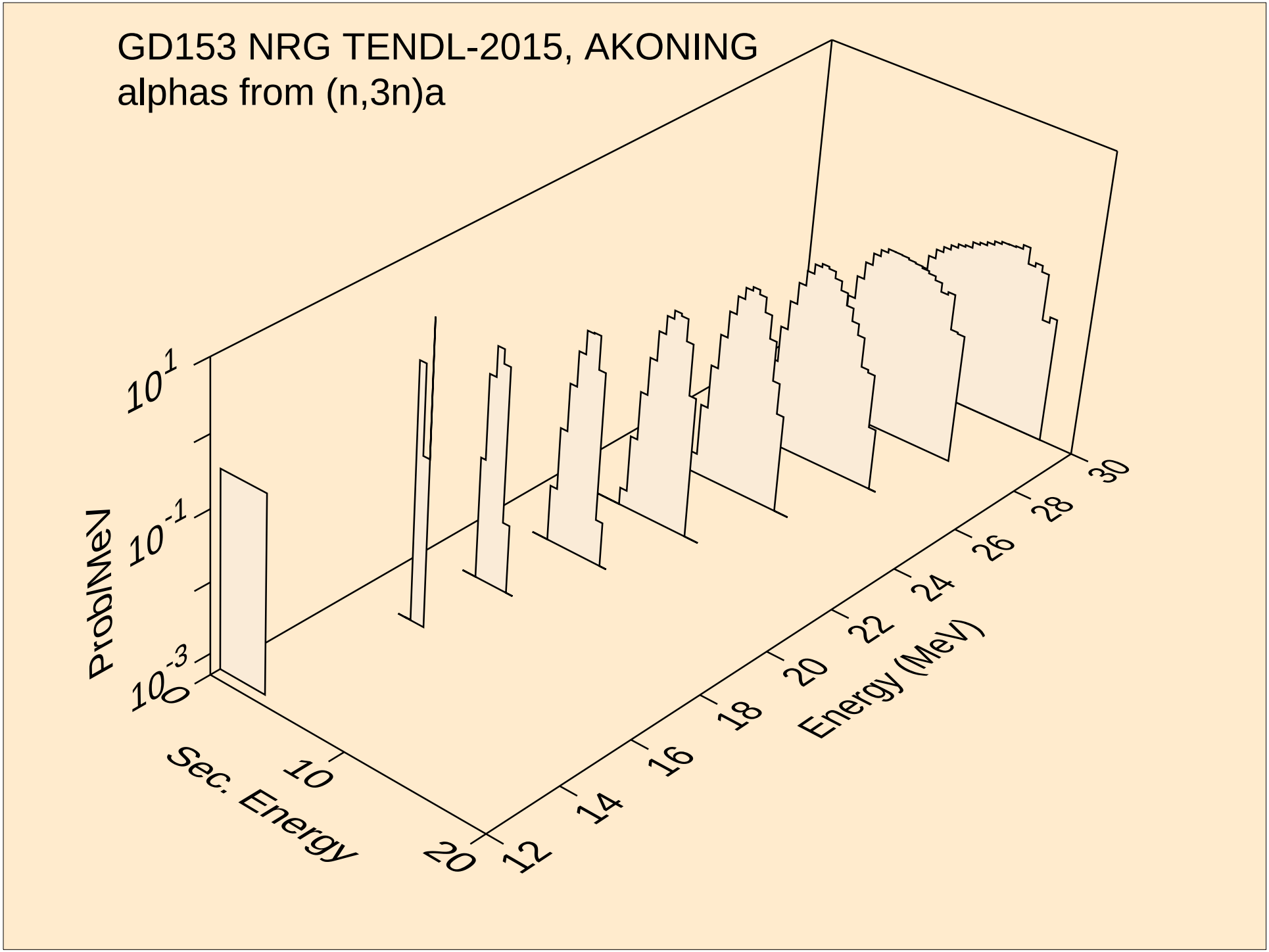

GD153 NRG TENDL-2015, AKONING
he3s from (n,n*)he3
Prob/MeV
10^0
10^-2
0
Sec. Energy
10
20
10
12
14
16
18
20
22
24
26
28
30
Energy (MeV)

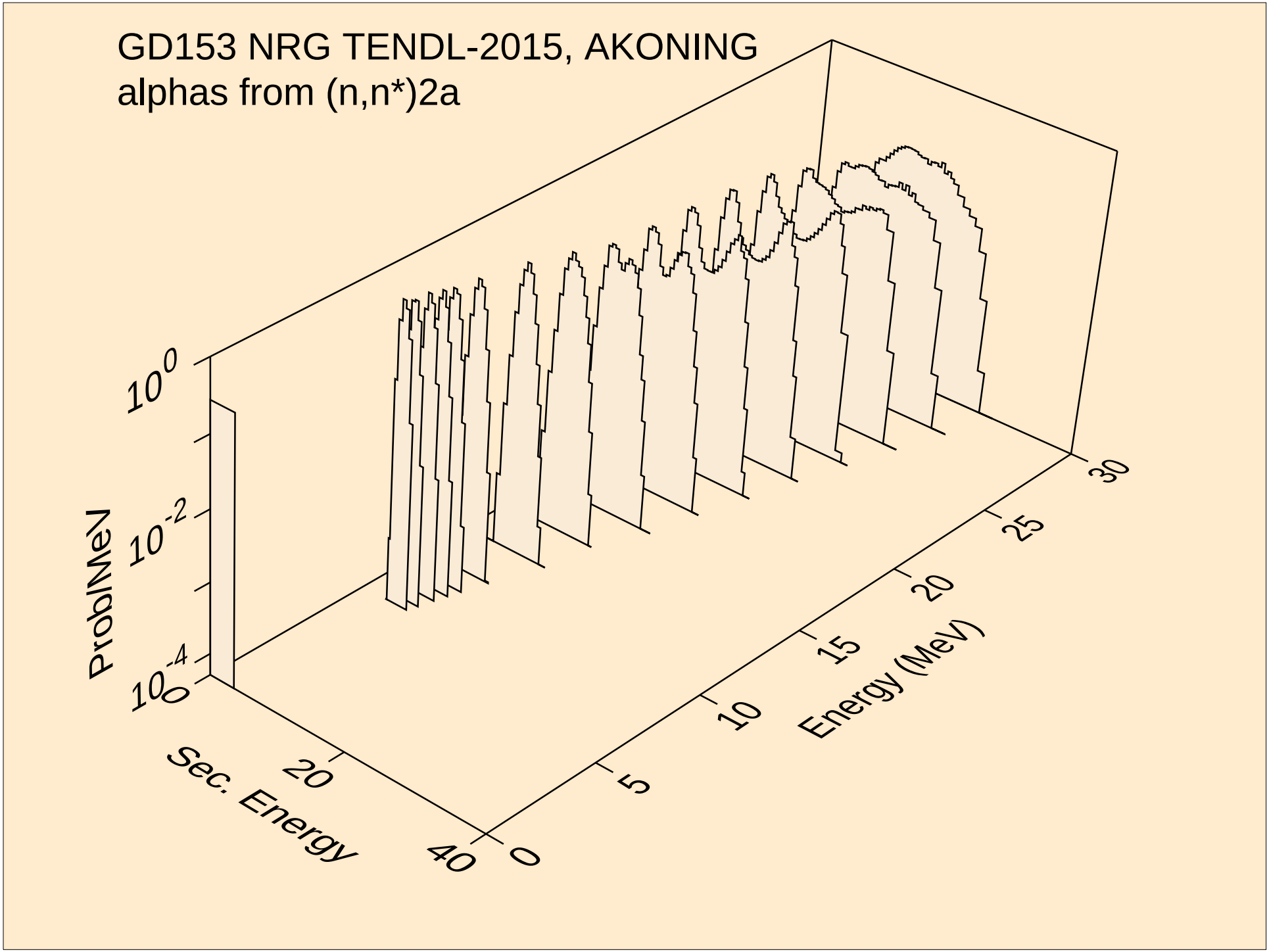

GD153 NRG TENDL-2015, AKONING
he3s from (n,he3)
Prob/MeV
10^0
10^-2
0
Sec. Energy
20
40
5
10
15
20
25
30
Energy (MeV)

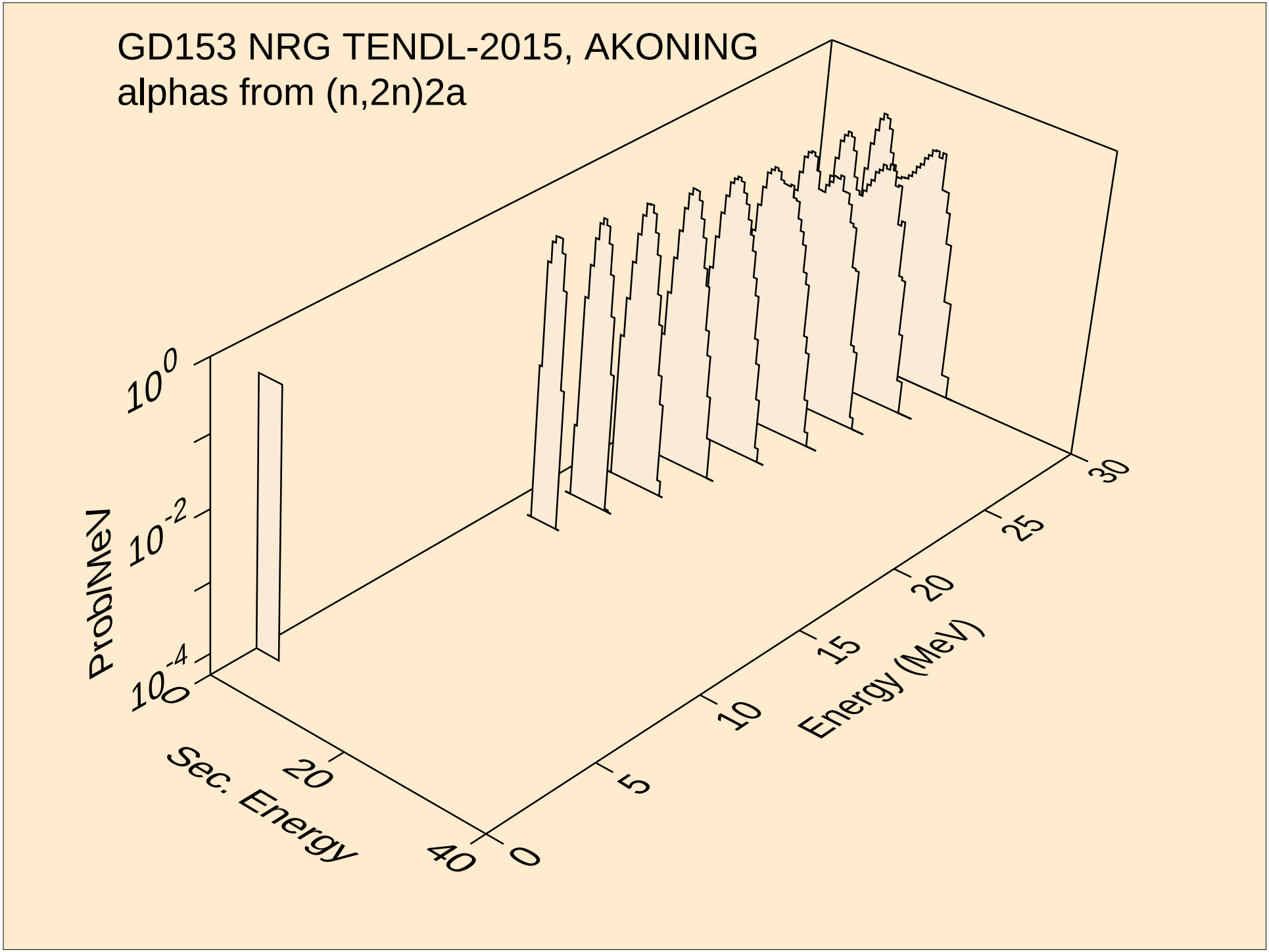

GD153 NRG TENDL-2015, AKONING
alphas from (n,x)
Prob/MeV
10^{0}
10^{-2}
0
Sec. Energy
100
200
0
50
100
150
200
Energy (MeV)

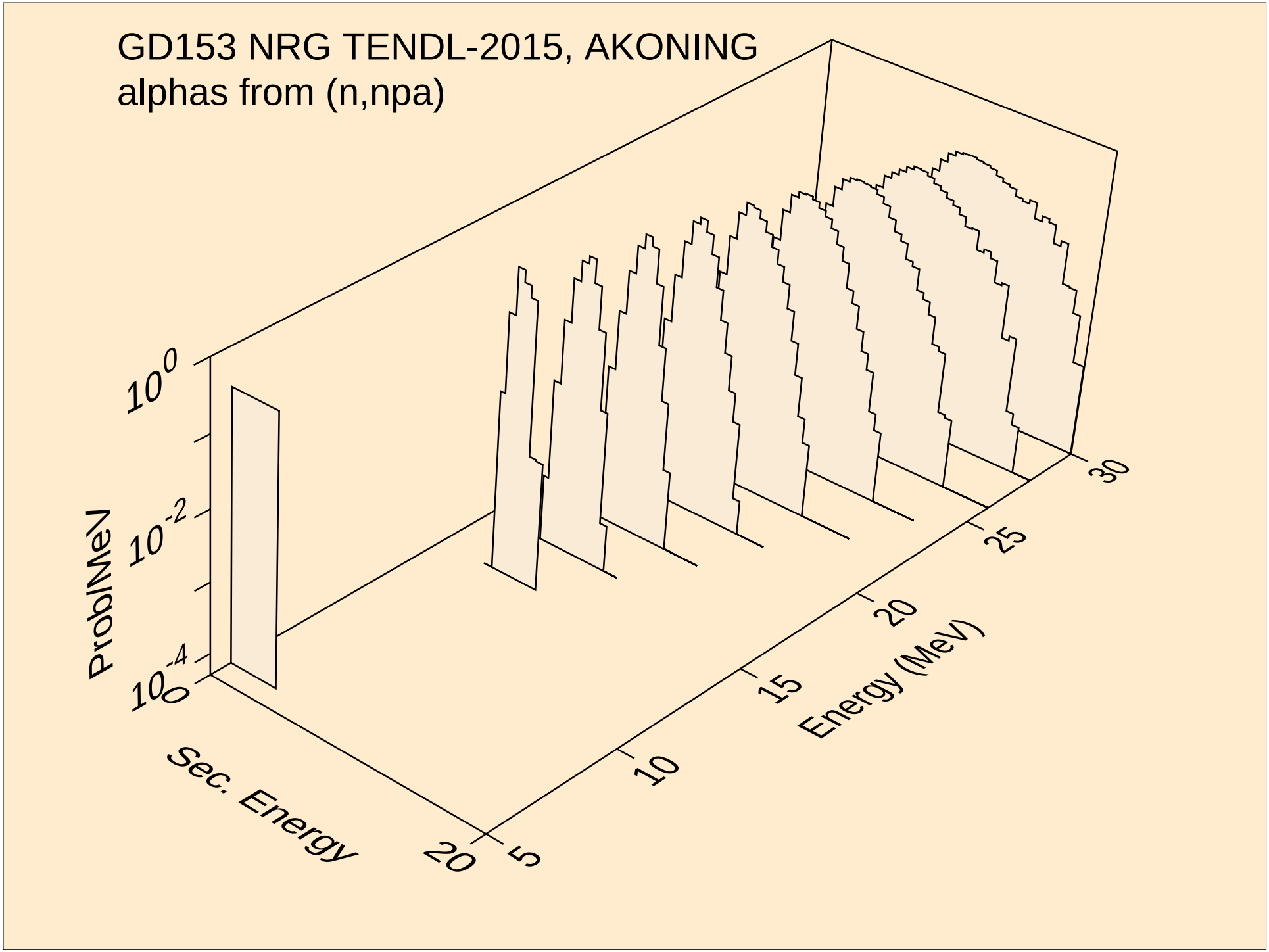

GD153 NRG TENDL-2015, AKONING
alphas from (n,n*)a
Prob/MeV
10-1
10-3
0
Sec. Energy
20
40
0
5
10
15
20
25
30
Energy (MeV)

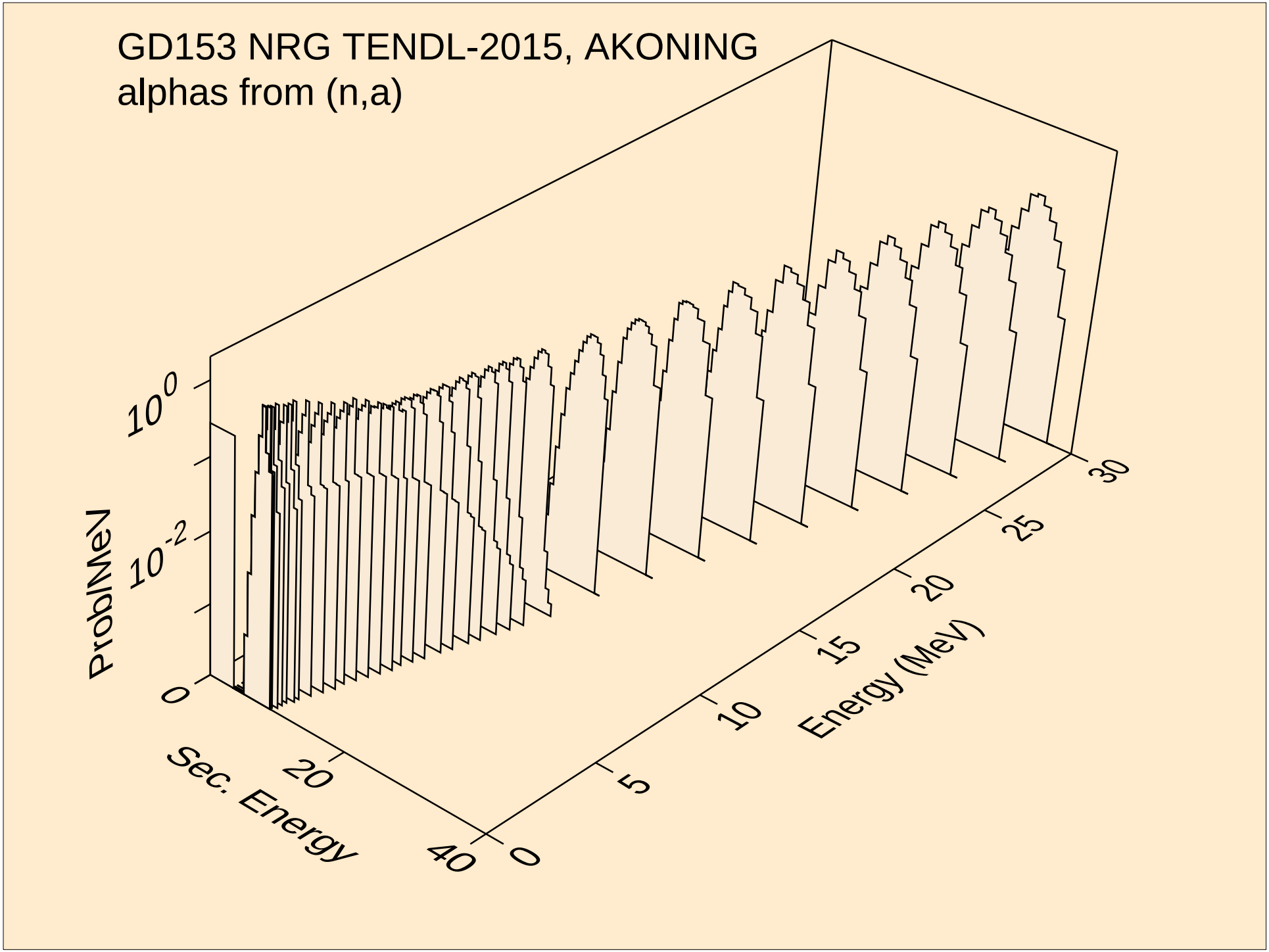

GD153 NRG TENDL-2015, AKONING
alphas from (n,2n)a
Prob/MeV
10^1
10^-1
0
Sec. Energy
20
40
0
5
10
15
20
25
30
Energy (MeV)

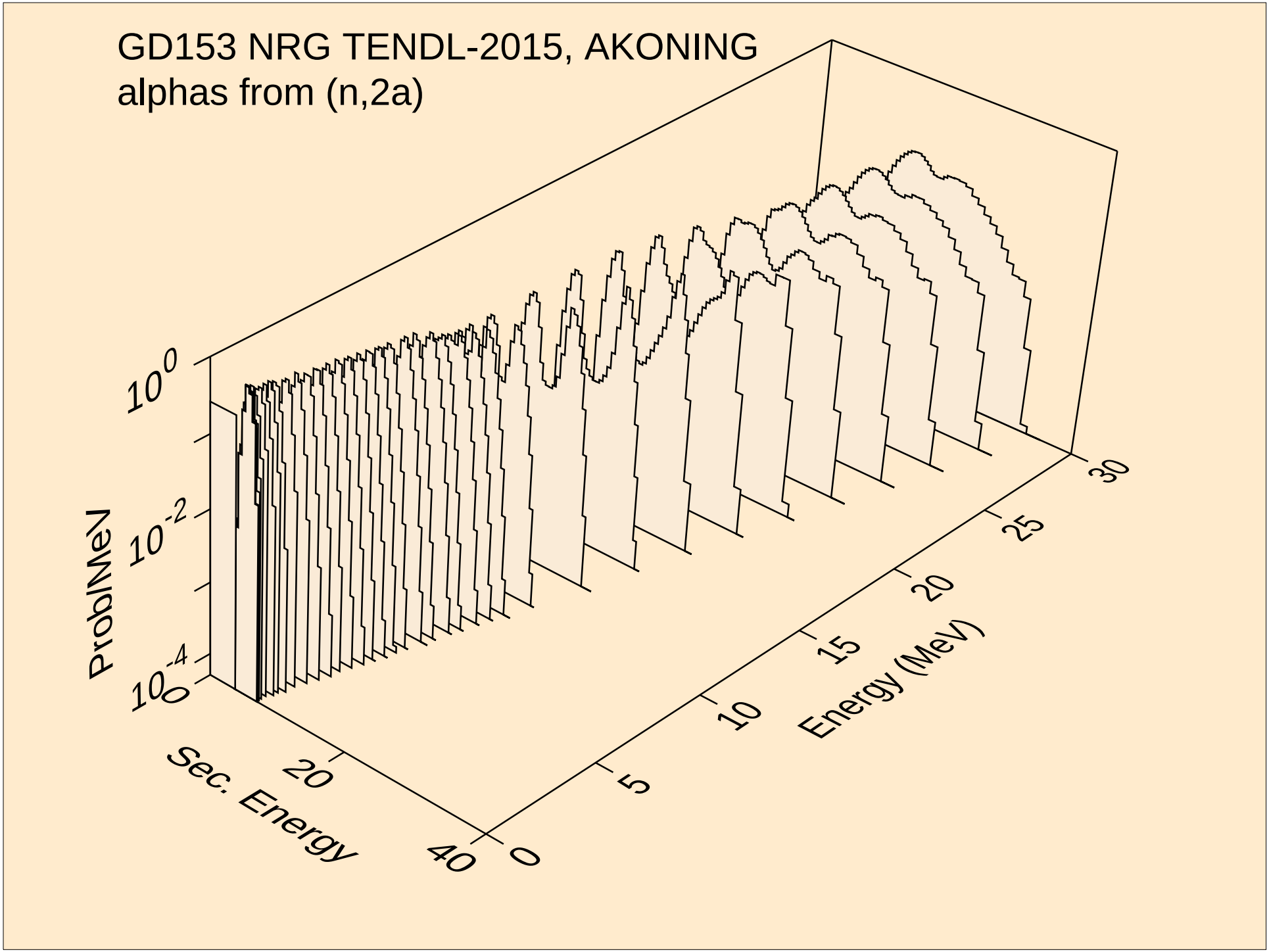

GD153 NRG TENDL-2015, AKONING
alphas from (n,3n)a
Prob/MeV
10^{1}
10^{-1}
10^{-3}
0
Sec. Energy
10
20
12
14
16
18
20
22
24
26
28
30
Energy (MeV)

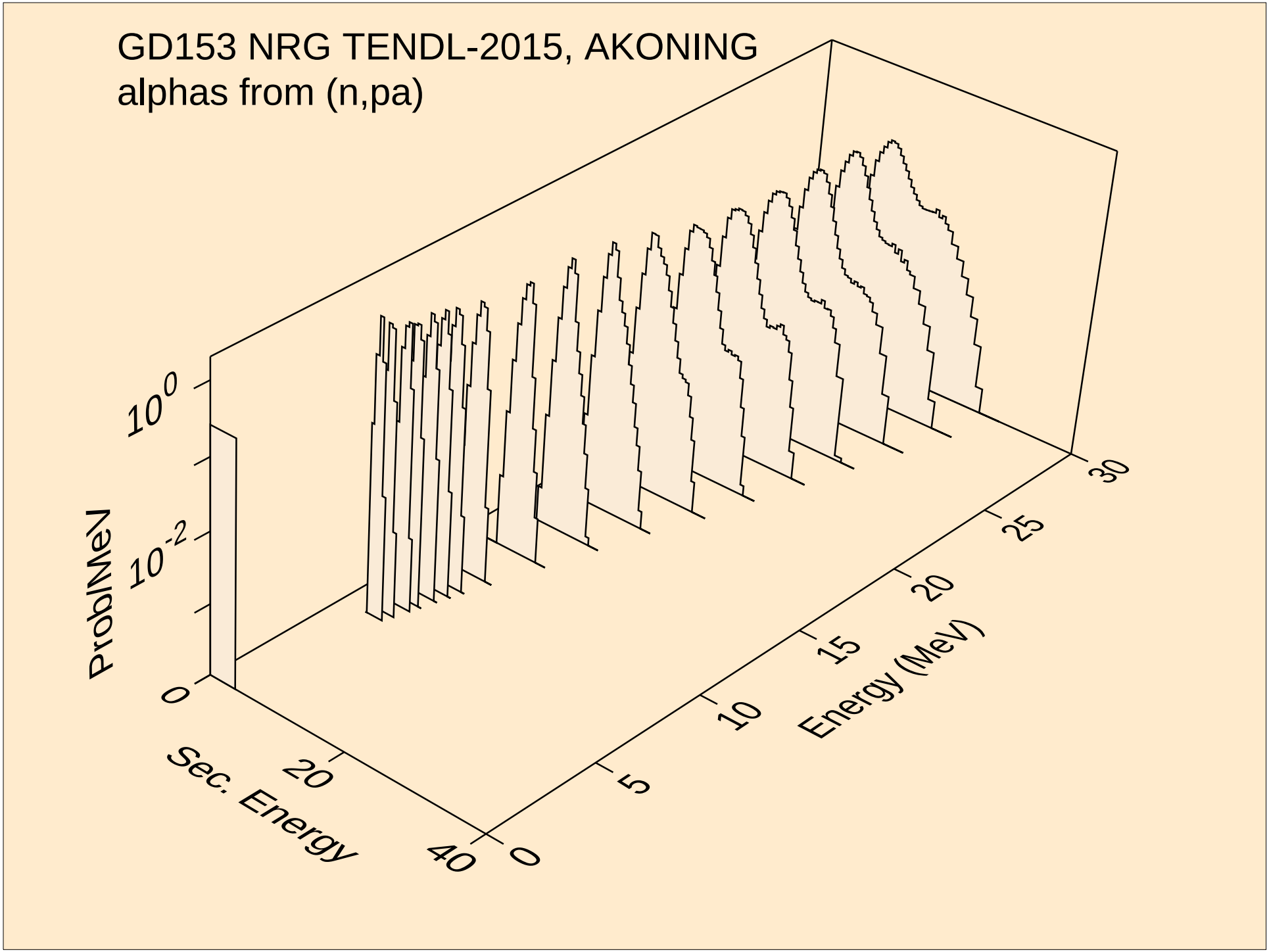

GD153 NRG TENDL-2015, AKONING
alphas from (n,n*)2a
Prob/MeV
10^0
10^-2
10^-4
Sec. Energy
0
20
40
Energy (MeV)
0
5
10
15
20
25
30

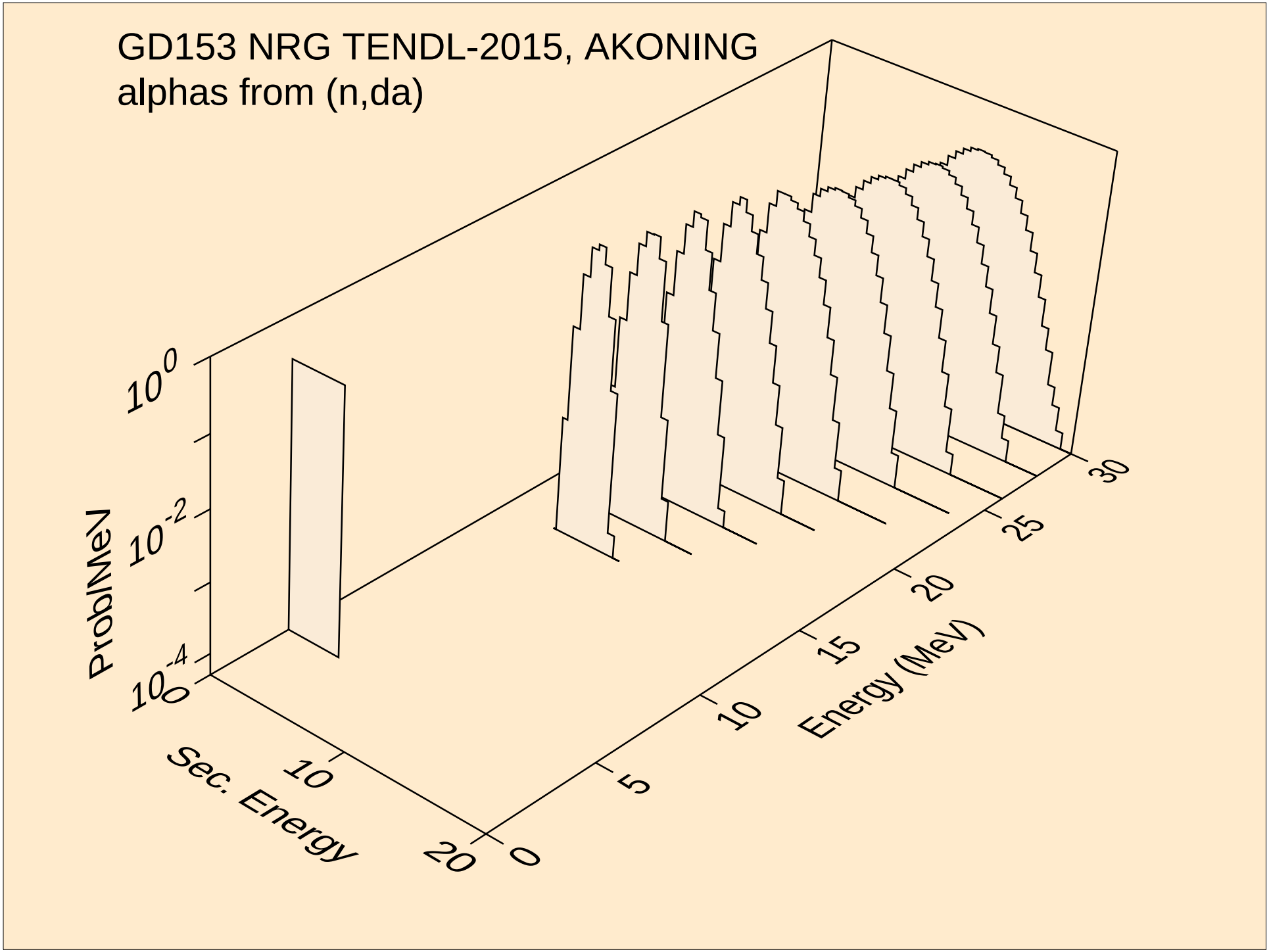

GD153 NRG TENDL-2015, AKONING
alphas from (n,2n)2a
Prob/MeV
10^0
10^-2
10^-4
0
20
40
Sec. Energy
0
5
10
15
20
25
30
Energy (MeV)


GD153 NRG TENDL-2015, AKONING
alphas from (n,npa)
Prob/MeV
10^0
10^-2
10^-4
0
Sec. Energy
20
5
10
15
20
25
30
Energy (MeV)


GD153 NRG TENDL-2015, AKONING
alphas from (n,a)
Prob/MeV
10^0
10^-2
0
Sec. Energy
20
40
0
5
10
15
20
25
30
Energy (MeV)


GD153 NRG TENDL-2015, AKONING
alphas from (n,2a)
Prob/MeV
10^{0}
10^{-2}
10^{-4}
0
20
40
Sec. Energy
0
5
10
15
20
25
30
Energy (MeV)


GD153 NRG TENDL-2015, AKONING
alphas from (n,pa)
Prob/MeV
10^0
10^-2
0
Sec. Energy
20
40
0
5
10
15
20
25
30
Energy (MeV)


GD153 NRG TENDL-2015, AKONING
alphas from (n,da)
Prob/MeV
10^{0}
10^{-2}
10^{-4}
0
10
20
Sec. Energy
0
5
10
15
20
25
30
Energy (MeV)