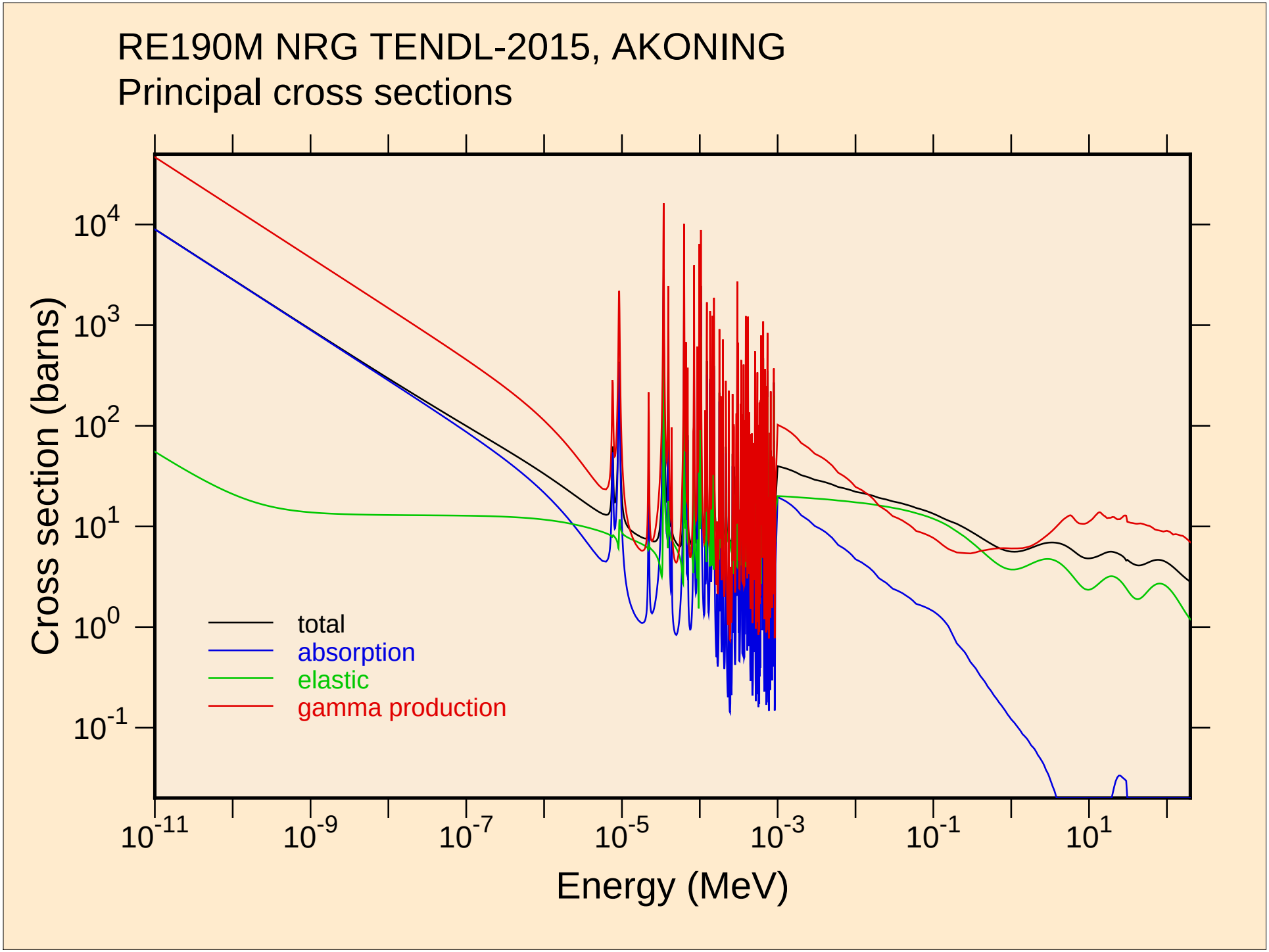
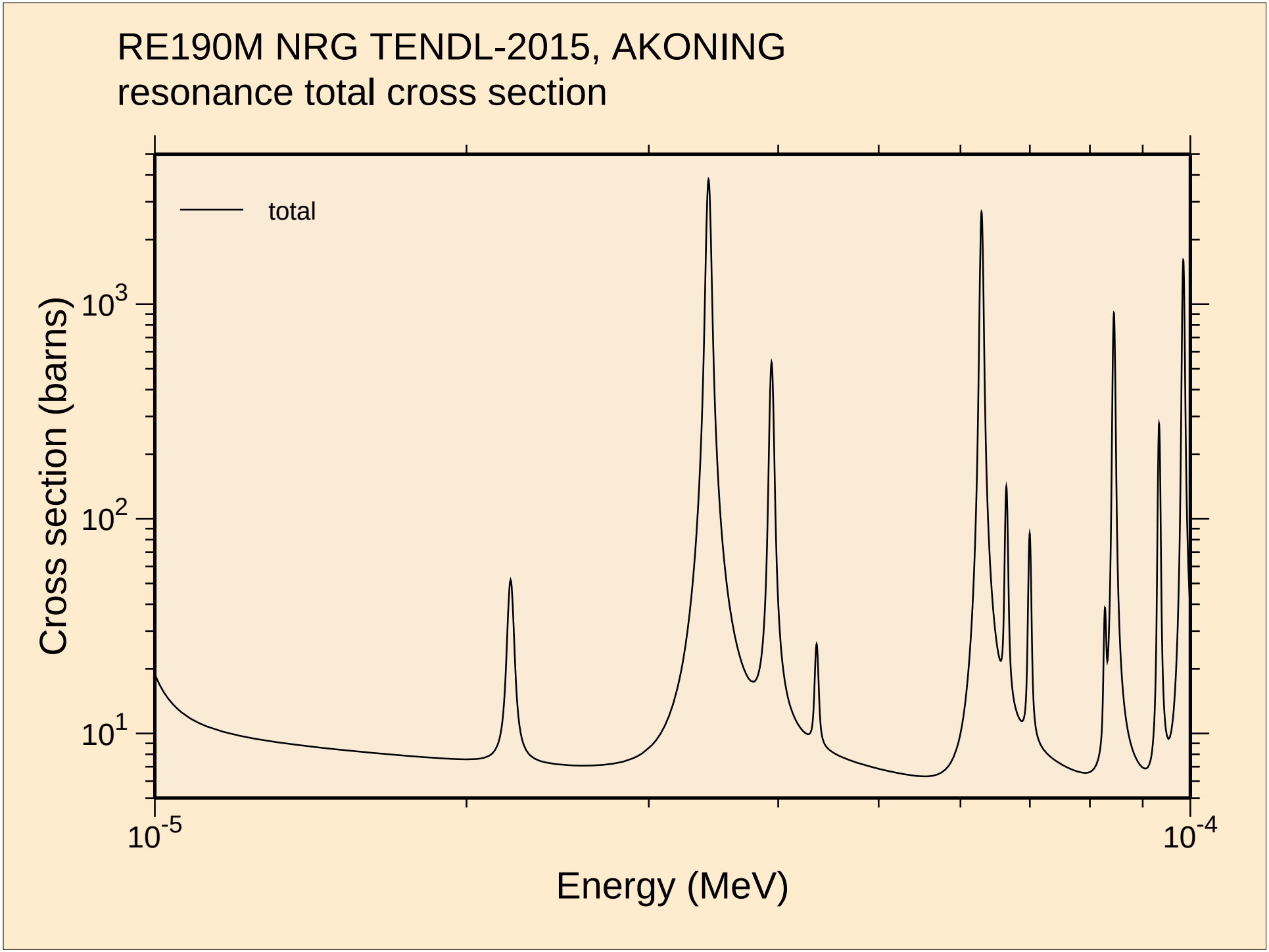
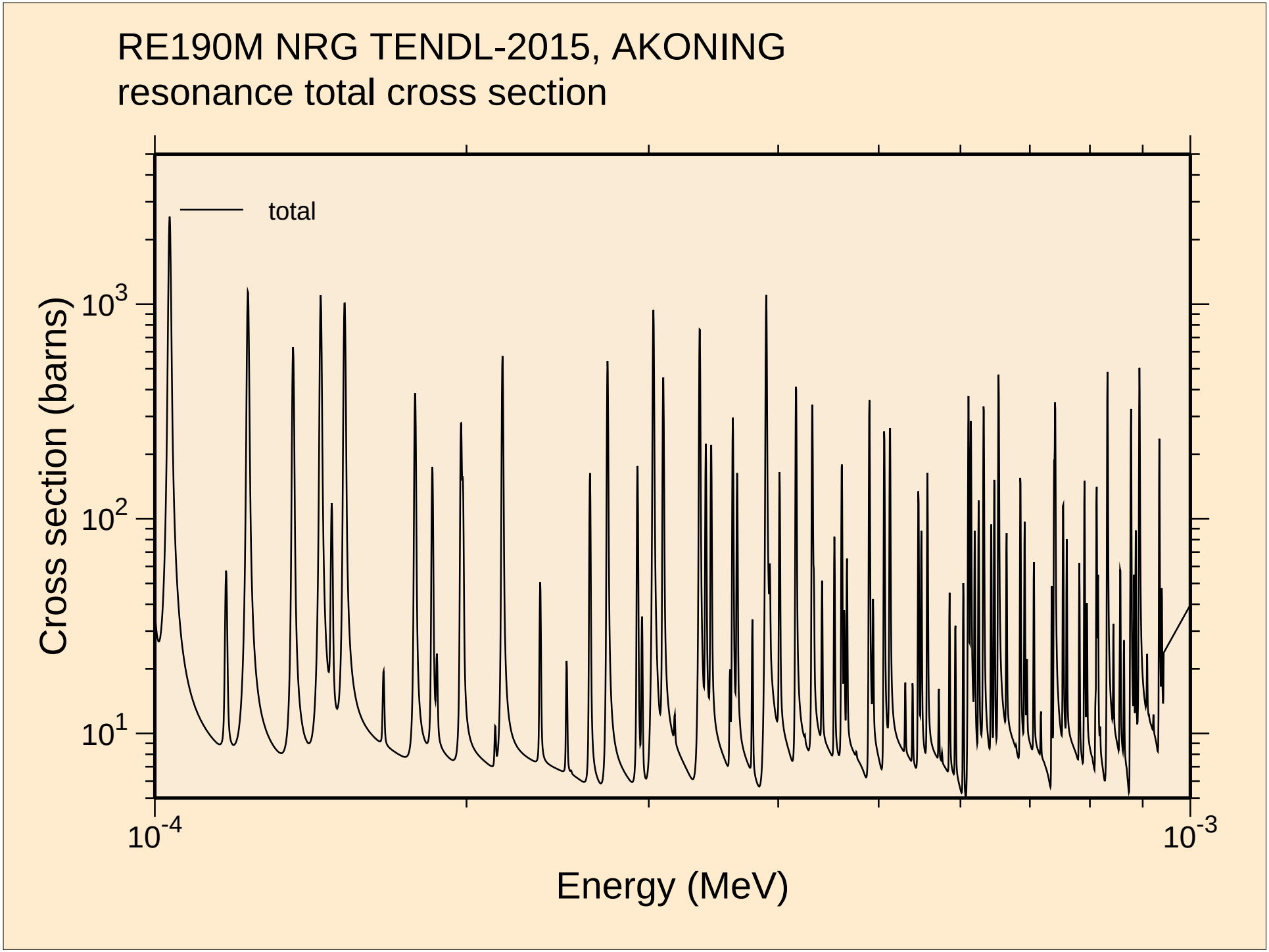
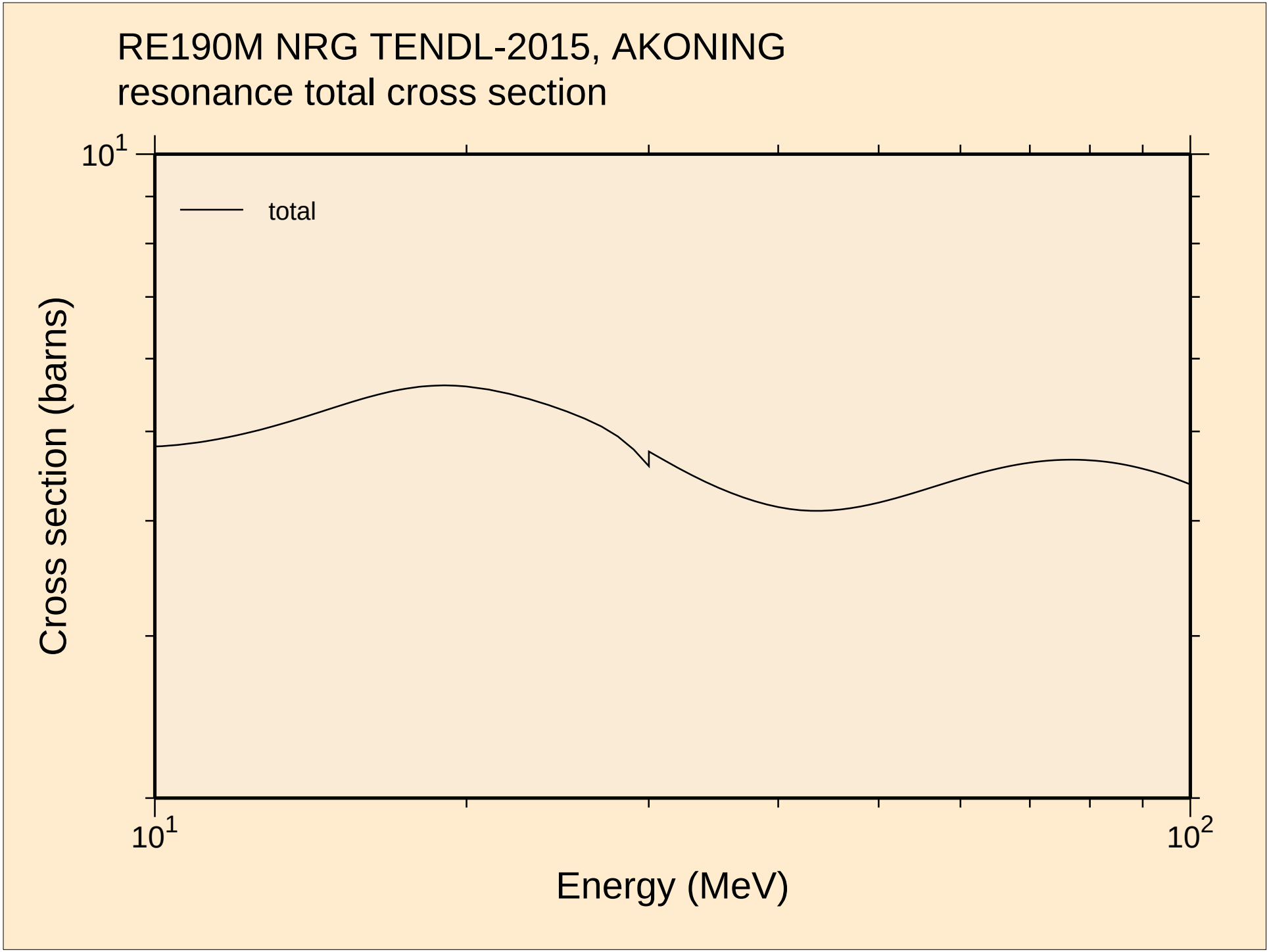
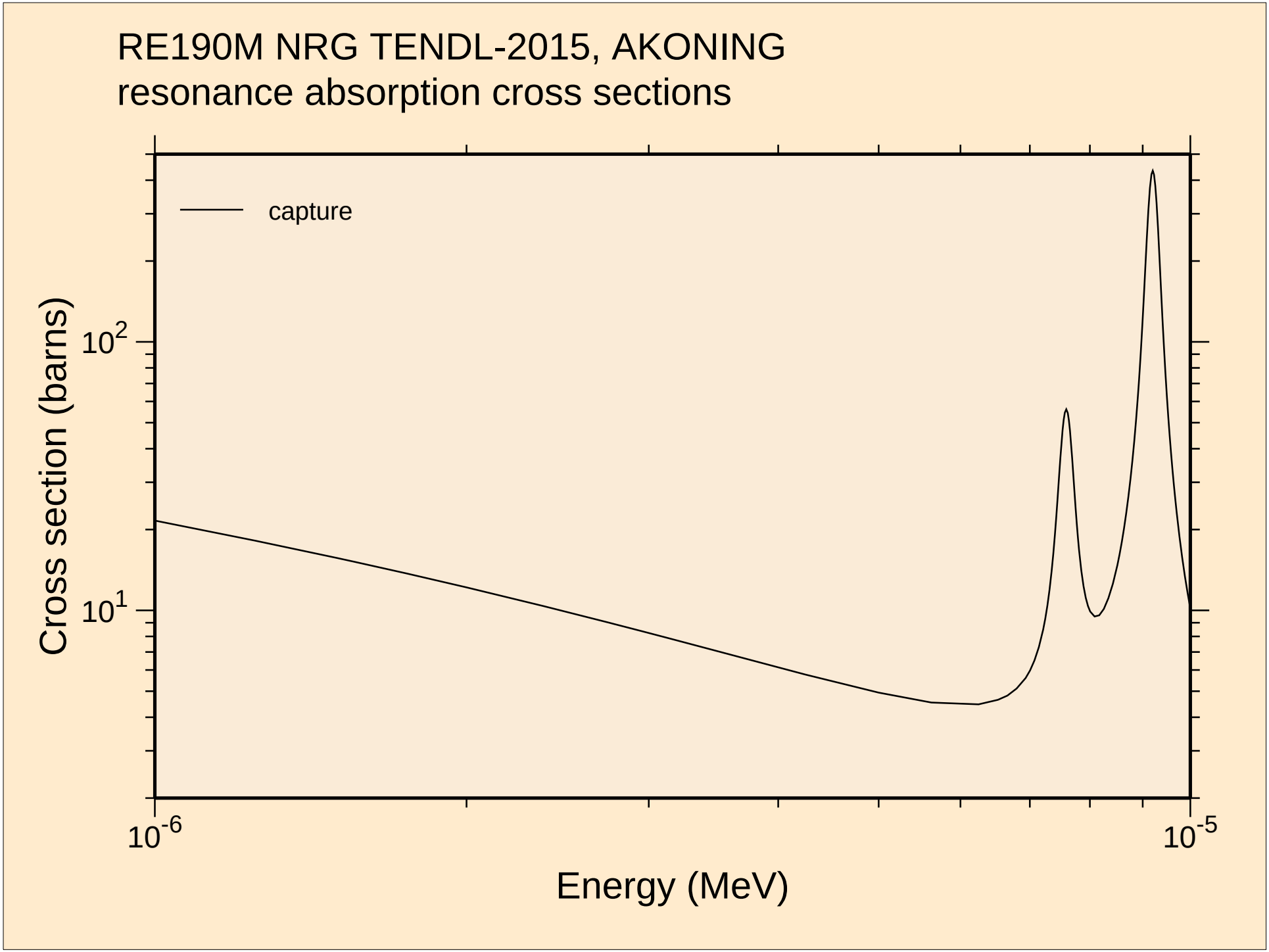
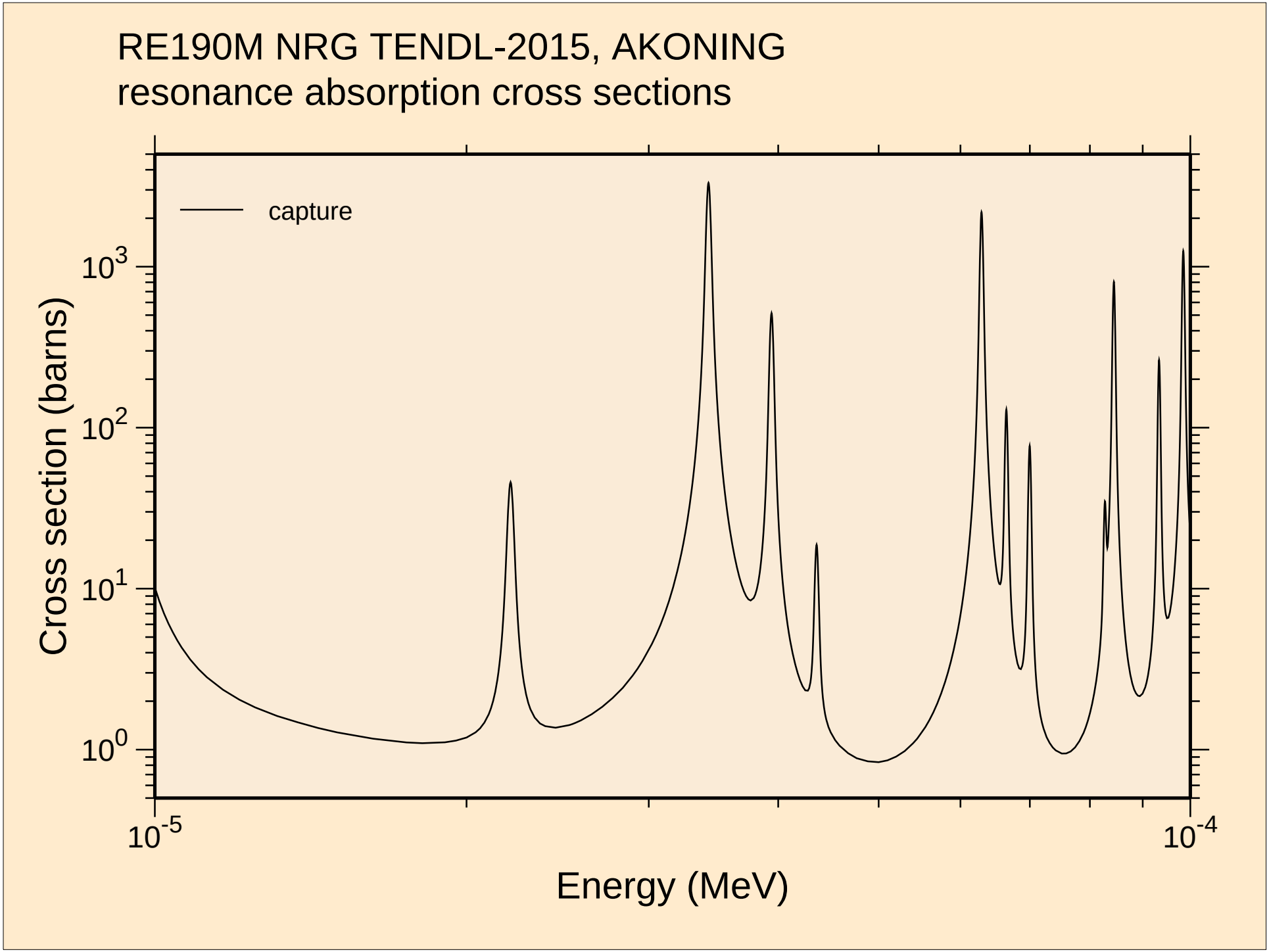

RE190M NRG TENDL-2015, AKONING
Principal cross sections
Cross section (barns)
10^{4}
10^{3}
10^{2}
10^{1}
10^{0}
10^{-1}
total
absorption
elastic
gamma production
10^{-11}
10^{-9}
10^{-7}
10^{-5}
10^{-3}
10^{-1}
10^{1}
Energy (MeV)

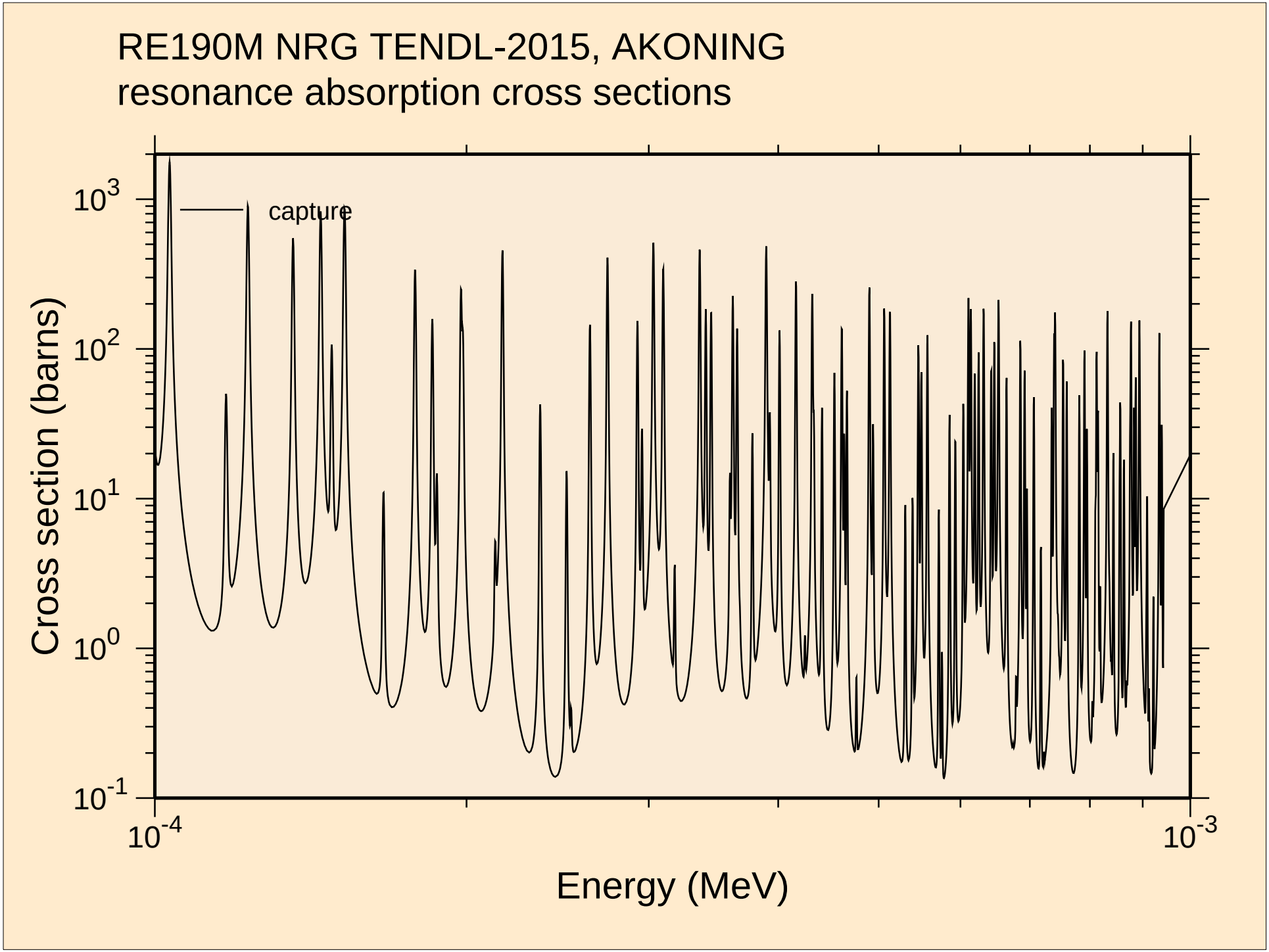

RE190M NRG TENDL-2015, AKONING
resonance total cross section
total
Cross section (barns)
10^3
10^2
10^1
10^-5
10^-4
Energy (MeV)

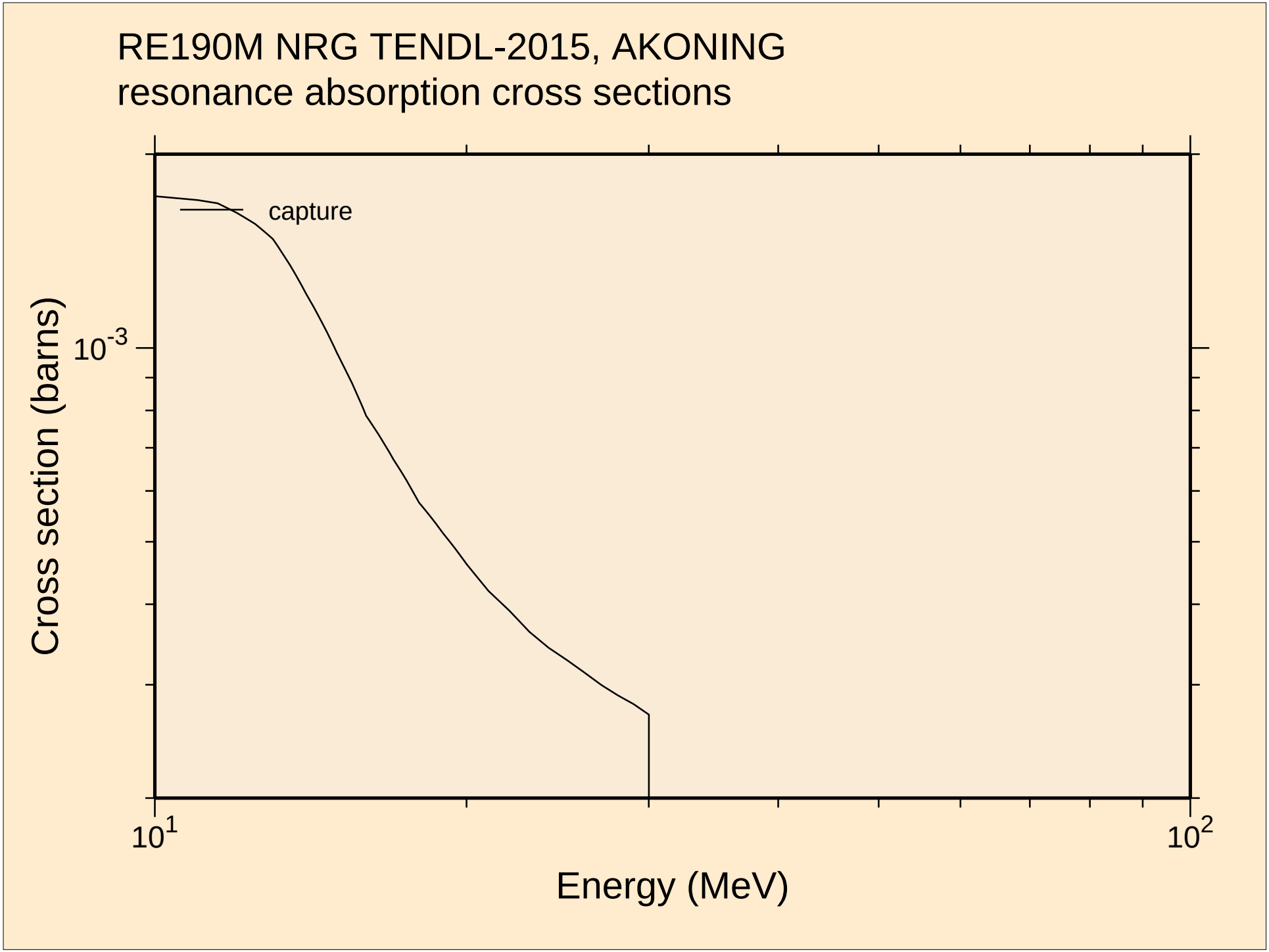

RE190M NRG TENDL-2015, AKONING
resonance total cross section
total
Cross section (barns)
10^3
10^2
10^1
10^-4
10^-3
Energy (MeV)

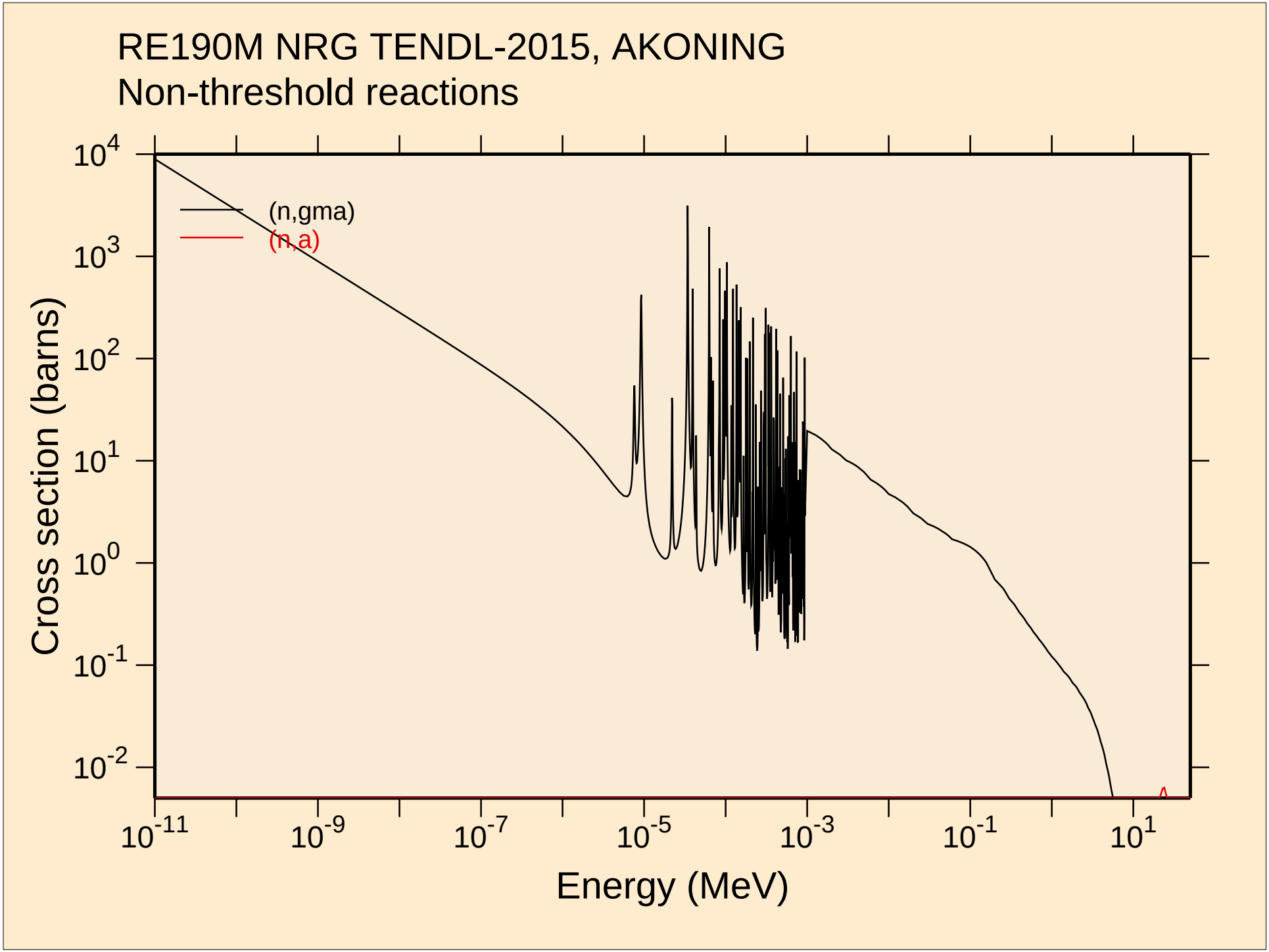

RE190M NRG TENDL-2015, AKONING
resonance total cross section
total
Cross section (barns)
10^1
10^1
10^2
Energy (MeV)

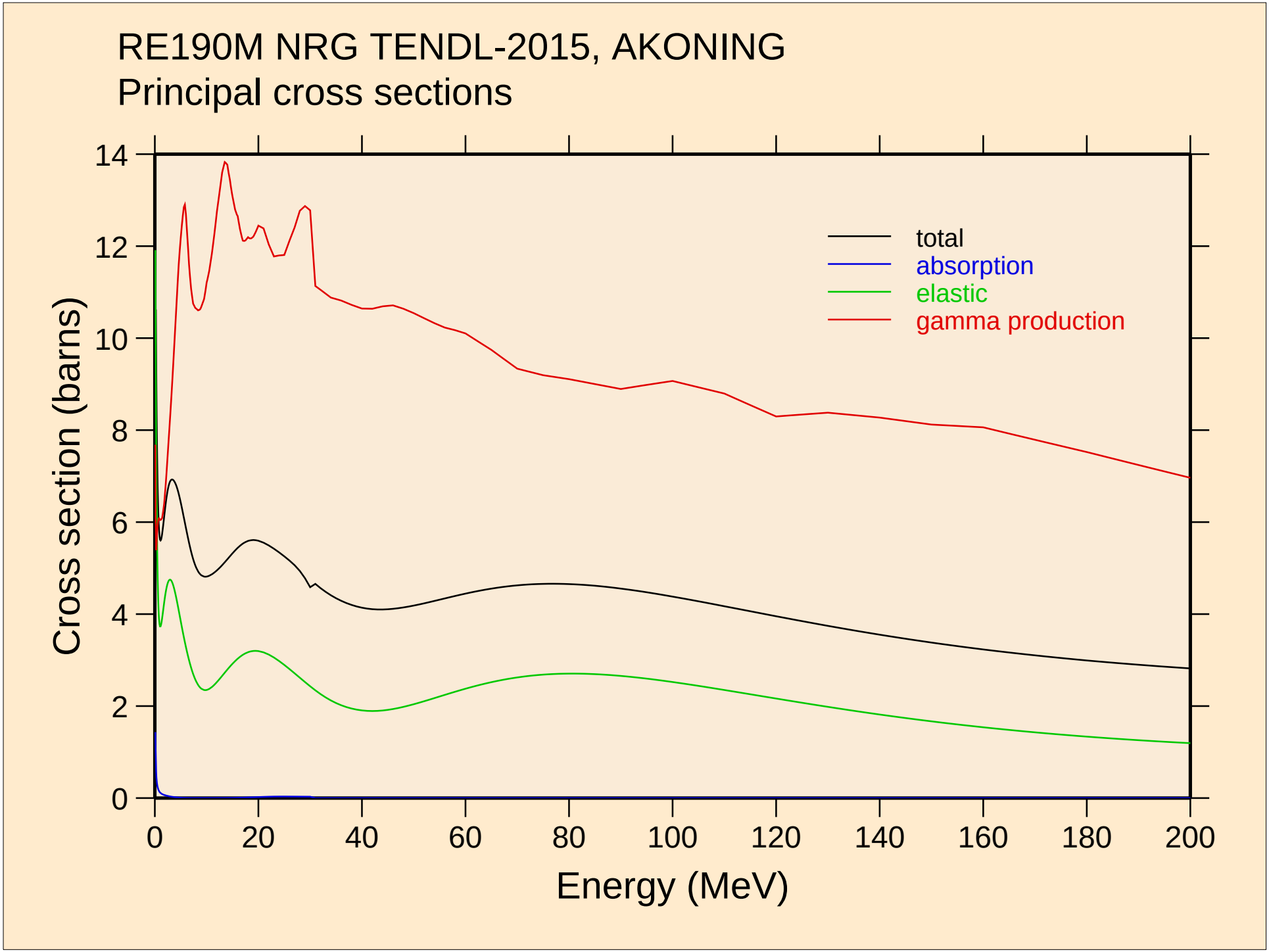

RE190M NRG TENDL-2015, AKONING
resonance absorption cross sections
capture
Cross section (barns)
10^2
10^1
10^-6
10^-5
Energy (MeV)

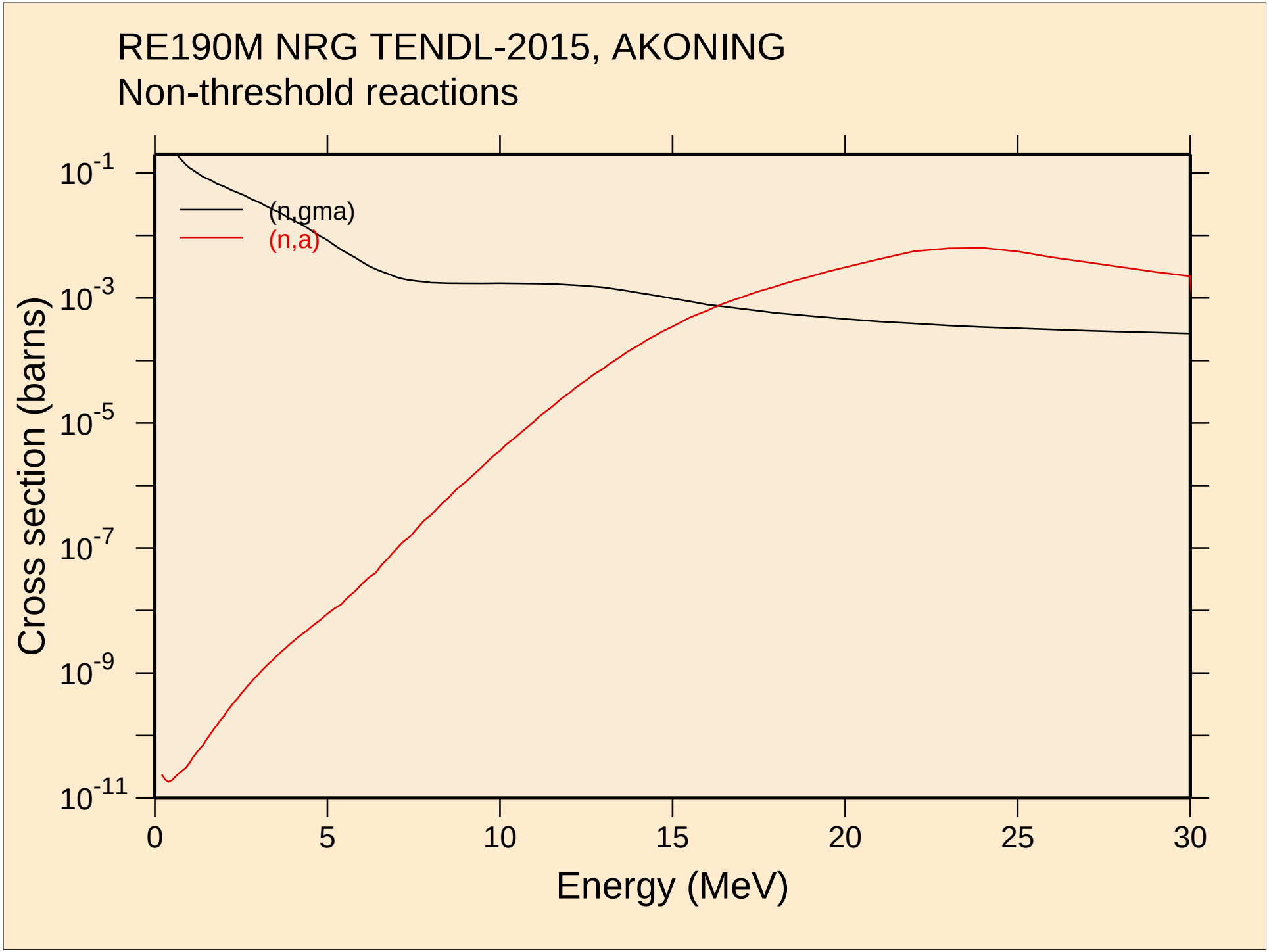

RE190M NRG TENDL-2015, AKONING
resonance absorption cross sections
capture
Cross section (barns)
10^3
10^2
10^1
10^0
10^-5
10^-4
Energy (MeV)

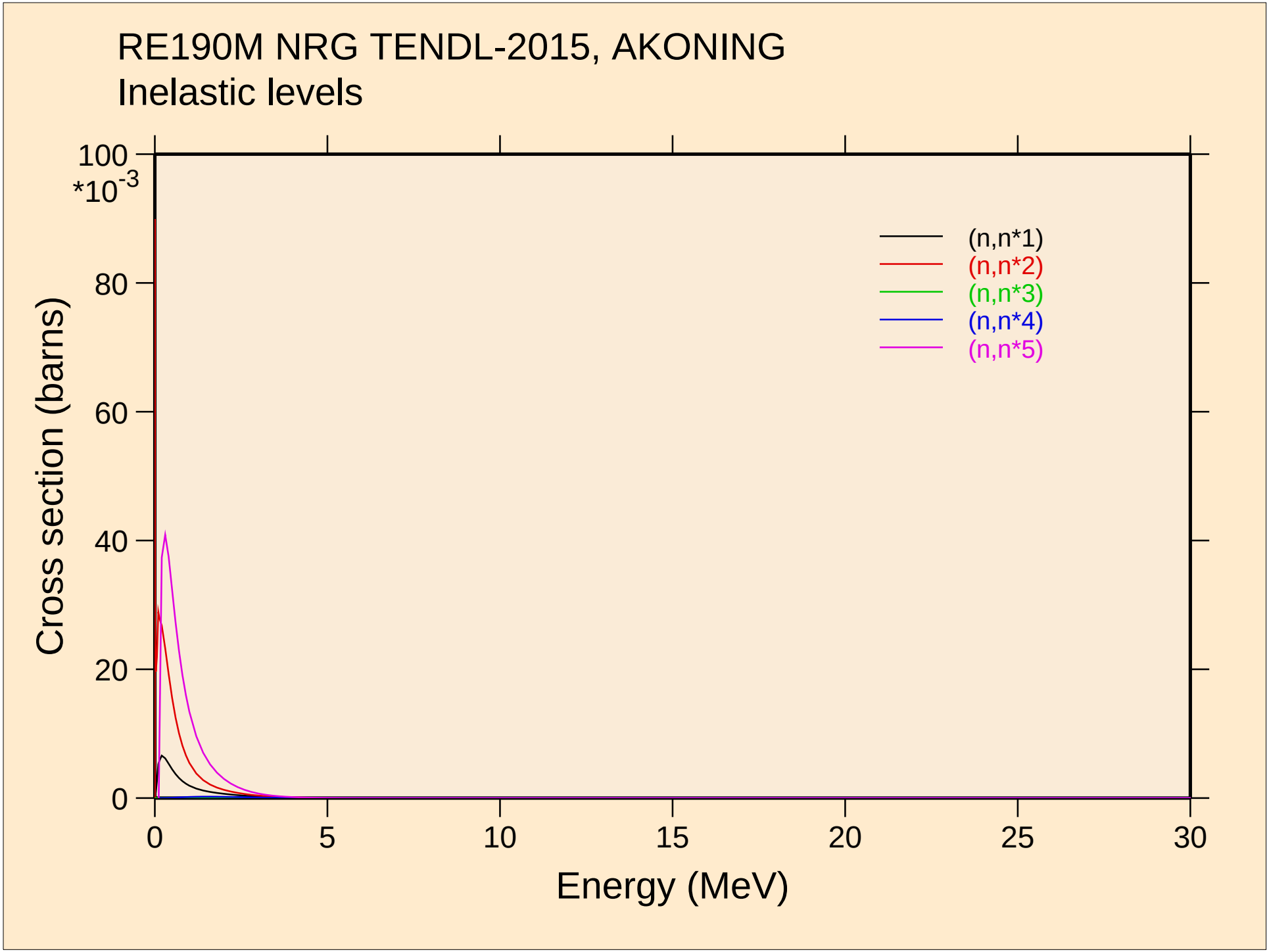

RE190M NRG TENDL-2015, AKONING
resonance absorption cross sections
capture
Cross section (barns)
10^3
10^2
10^1
10^0
10^-1
10^-4
10^-3
Energy (MeV)

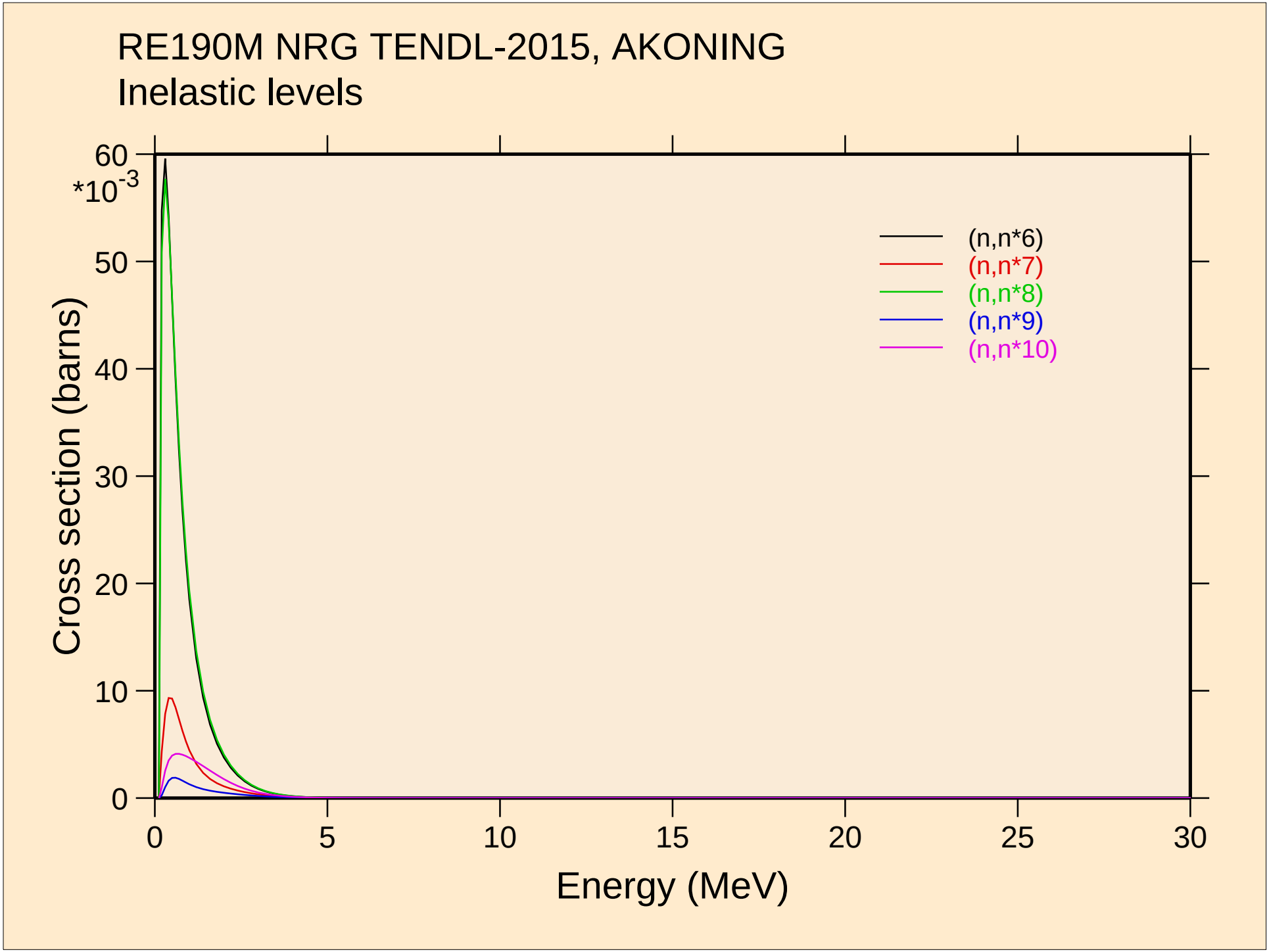

RE190M NRG TENDL-2015, AKONING
resonance absorption cross sections
capture
Cross section (barns)
10-3
101
102
Energy (MeV)

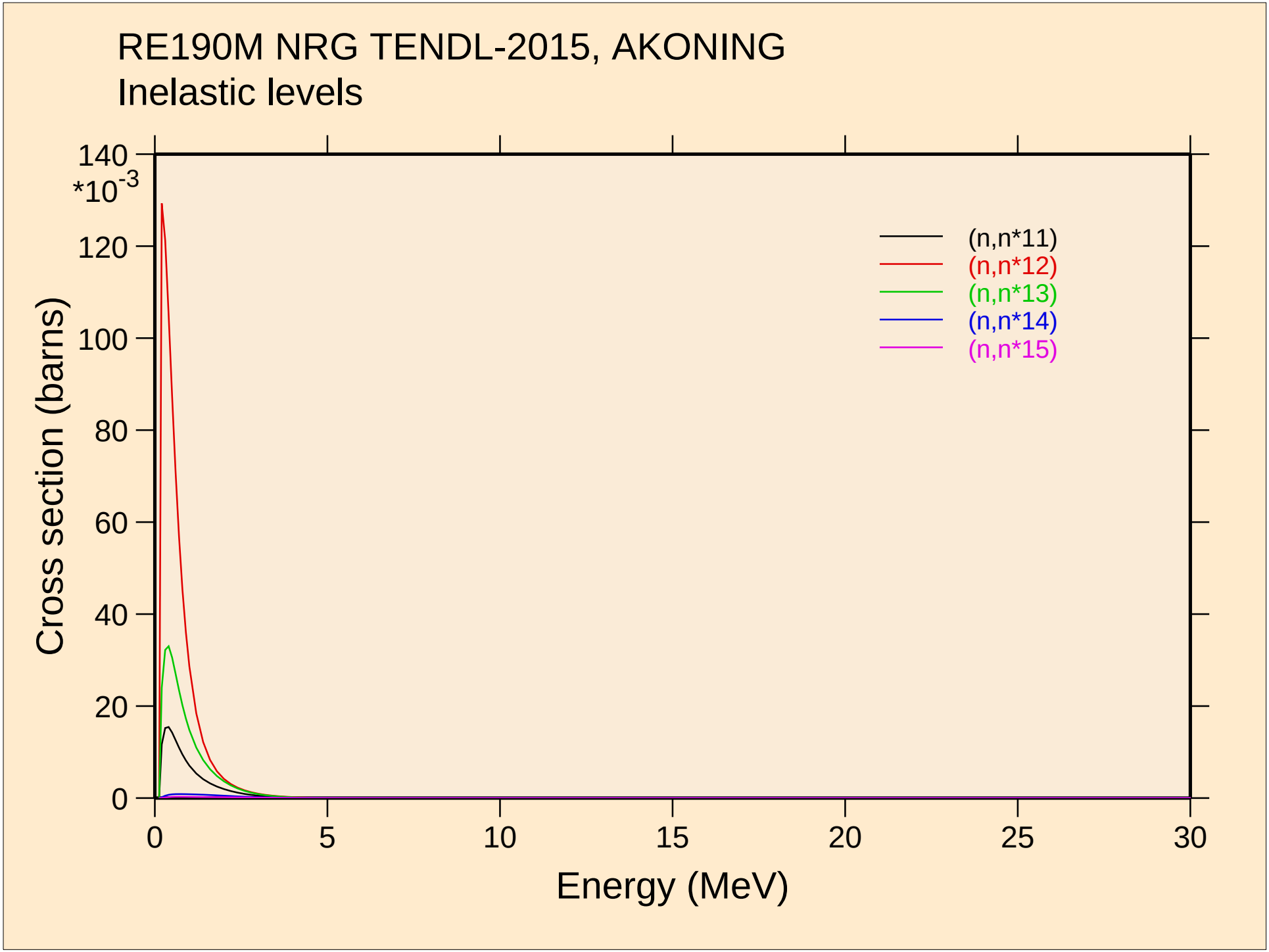

RE190M NRG TENDL-2015, AKONING
Non-threshold reactions
(n,gma)
(n,a)
Cross section (barns)
Energy (MeV)
10^4
10^3
10^2
10^1
10^0
10^-1
10^-2
10^-11
10^-9
10^-7
10^-5
10^-3
10^-1
10^1

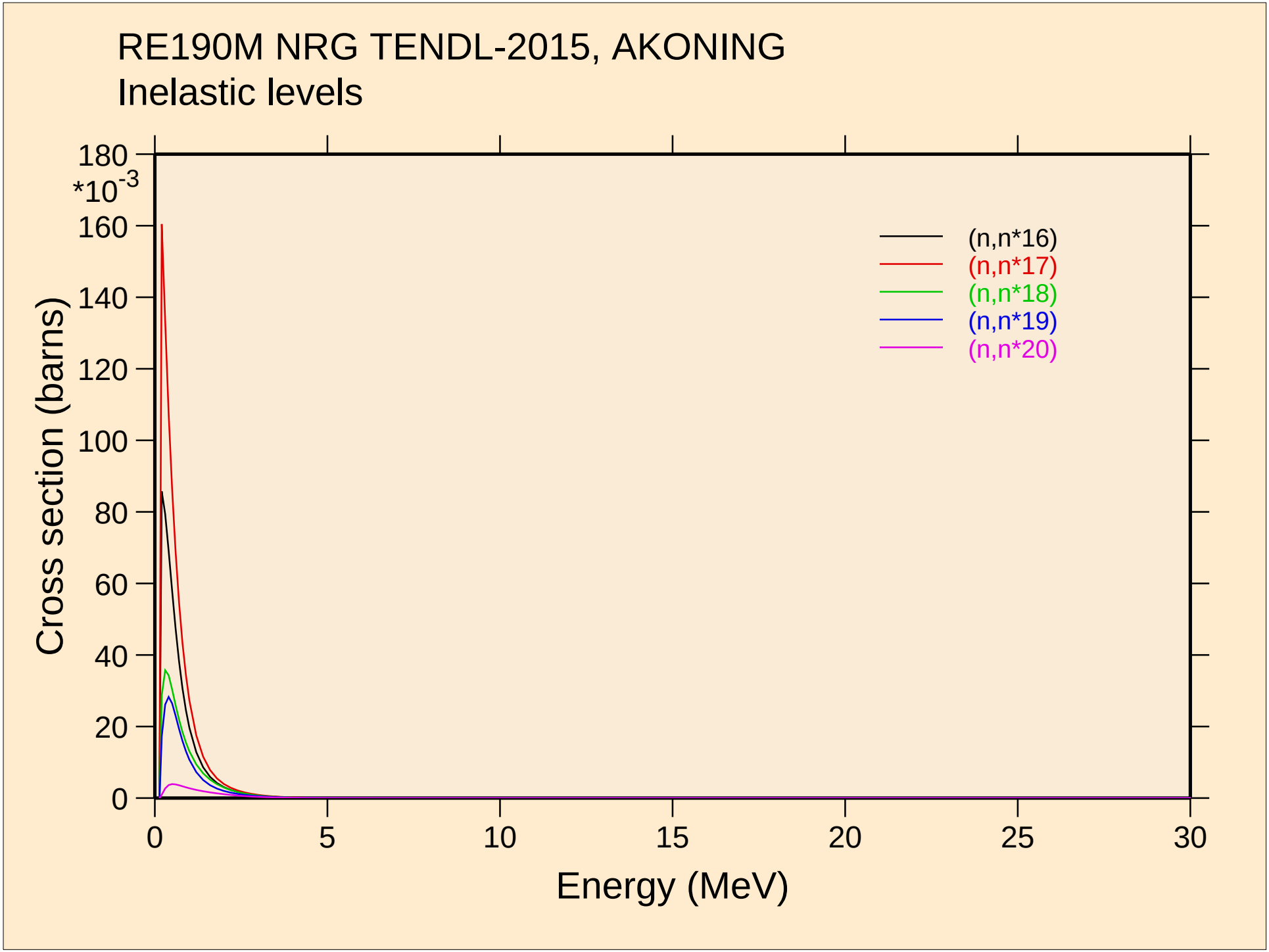

RE190M NRG TENDL-2015, AKONING
Principal cross sections
Cross section (barns)
Energy (MeV)
0
2
4
6
8
10
12
14
0
20
40
60
80
100
120
140
160
180
200
total
absorption
elastic
gamma production

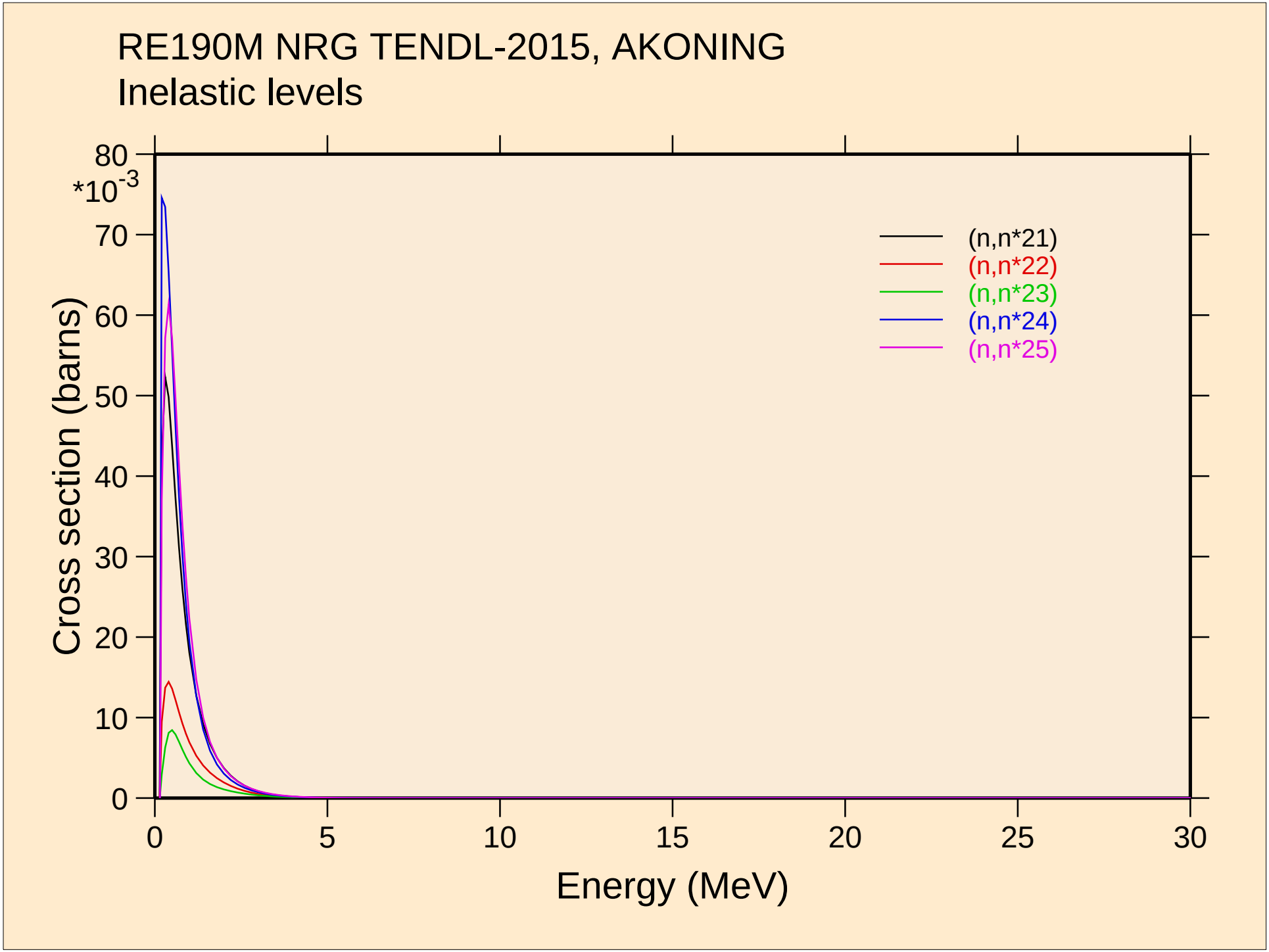

RE190M NRG TENDL-2015, AKONING
Non-threshold reactions
(n,gma)
(n,a)
Cross section (barns)
10-1
10-3
10-5
10-7
10-9
10-11
0
5
10
15
20
25
30
Energy (MeV)

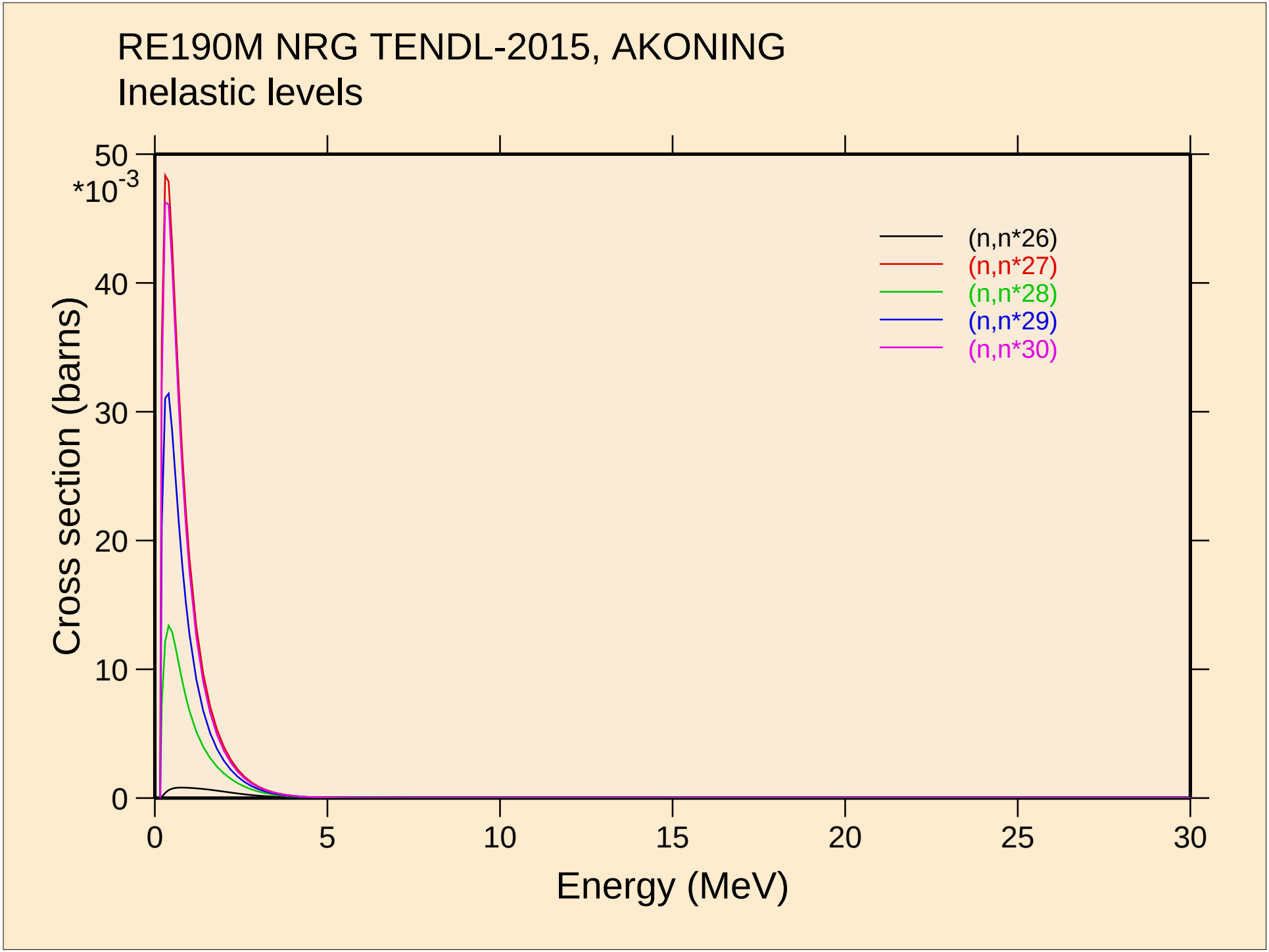

RE190M NRG TENDL-2015, AKONING
Inelastic levels
100
*10-3
80
60
40
20
0
Cross section (barns)
0
5
10
15
20
25
30
Energy (MeV)
(n,n*1)
(n,n*2)
(n,n*3)
(n,n*4)
(n,n*5)

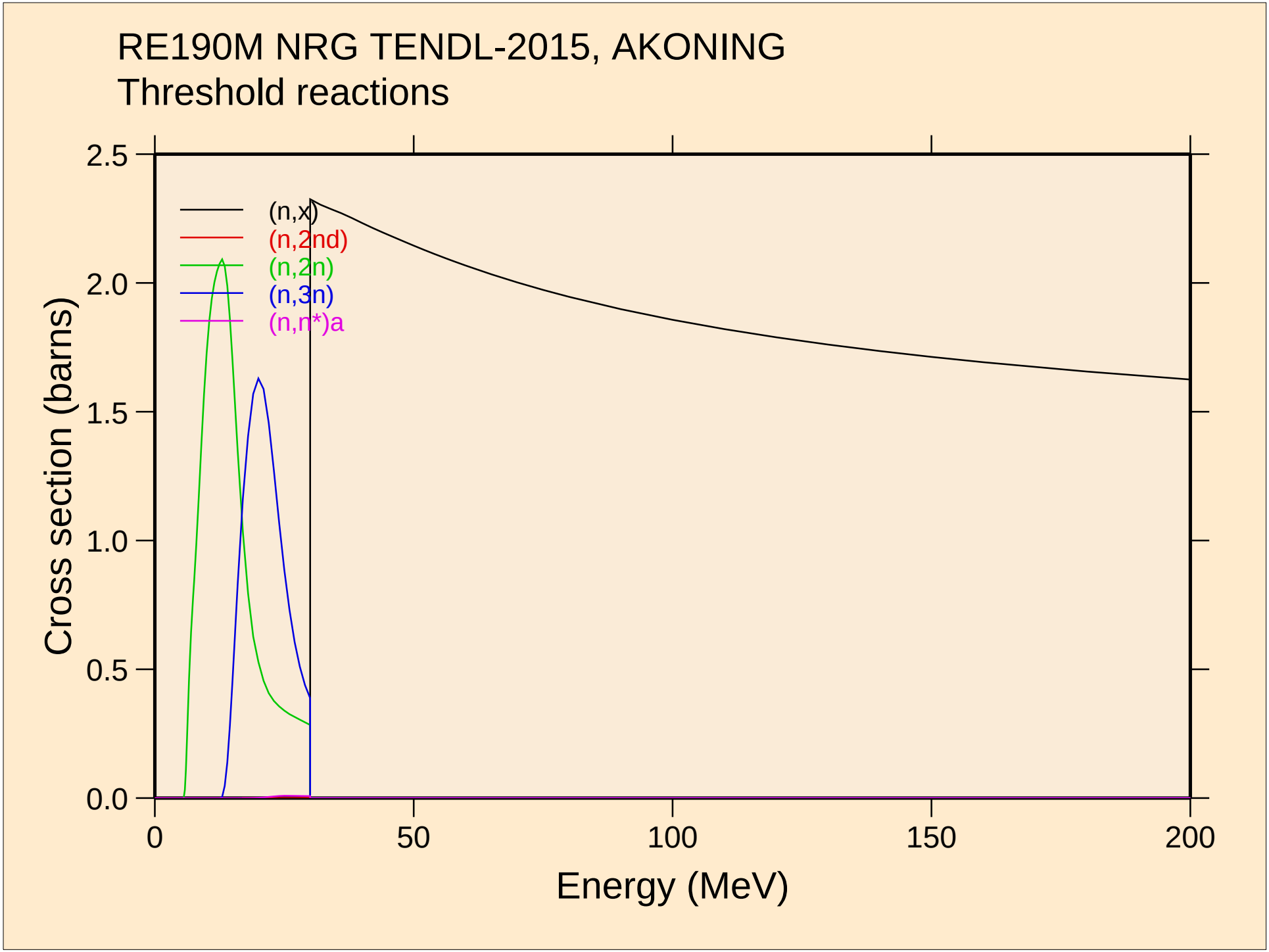

RE190M NRG TENDL-2015, AKONING
Inelastic levels
Cross section (barns)
*10-3
60
50
40
30
20
10
0
0
5
10
15
20
25
30
Energy (MeV)
(n,n*6)
(n,n*7)
(n,n*8)
(n,n*9)
(n,n*10)

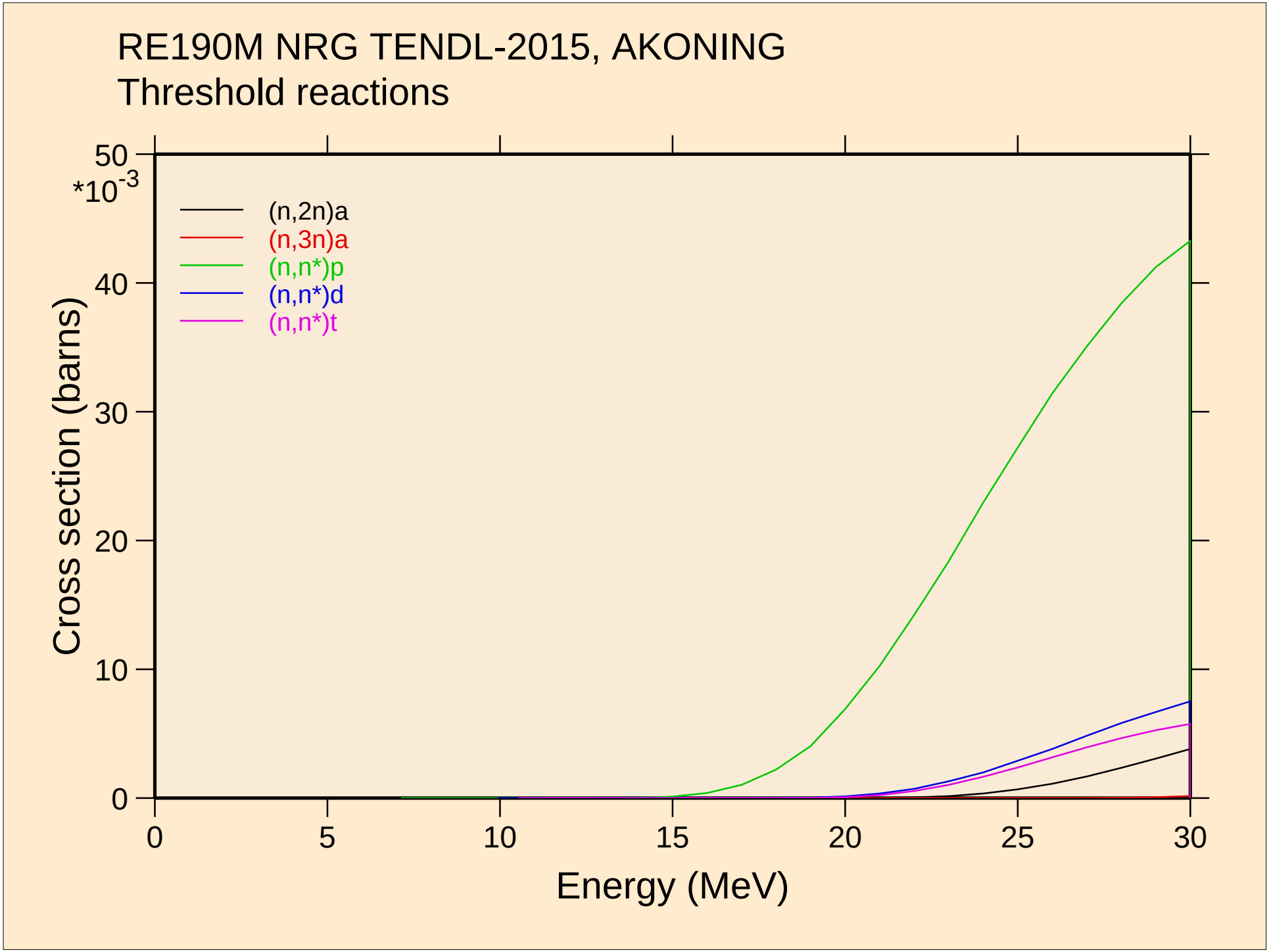

RE190M NRG TENDL-2015, AKONING
Inelastic levels
140
*10-3
120
100
80
60
40
20
0
Cross section (barns)
0
5
10
15
20
25
30
Energy (MeV)
(n,n*11)
(n,n*12)
(n,n*13)
(n,n*14)
(n,n*15)

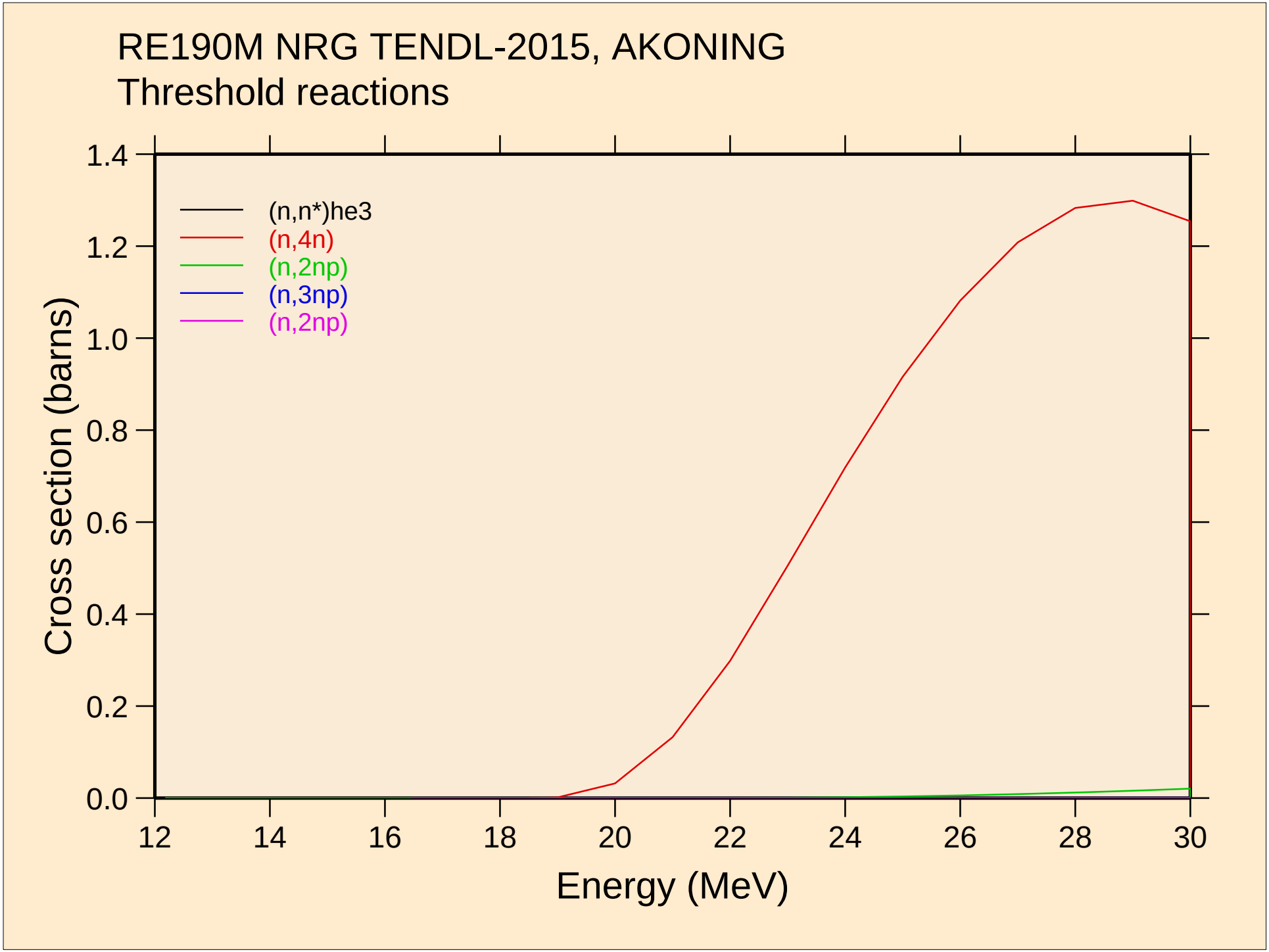

RE190M NRG TENDL-2015, AKONING
Inelastic levels
Cross section (barns)
*10-3
180
160
140
120
100
80
60
40
20
0
0
5
10
15
20
25
30
Energy (MeV)
(n,n*16)
(n,n*17)
(n,n*18)
(n,n*19)
(n,n*20)

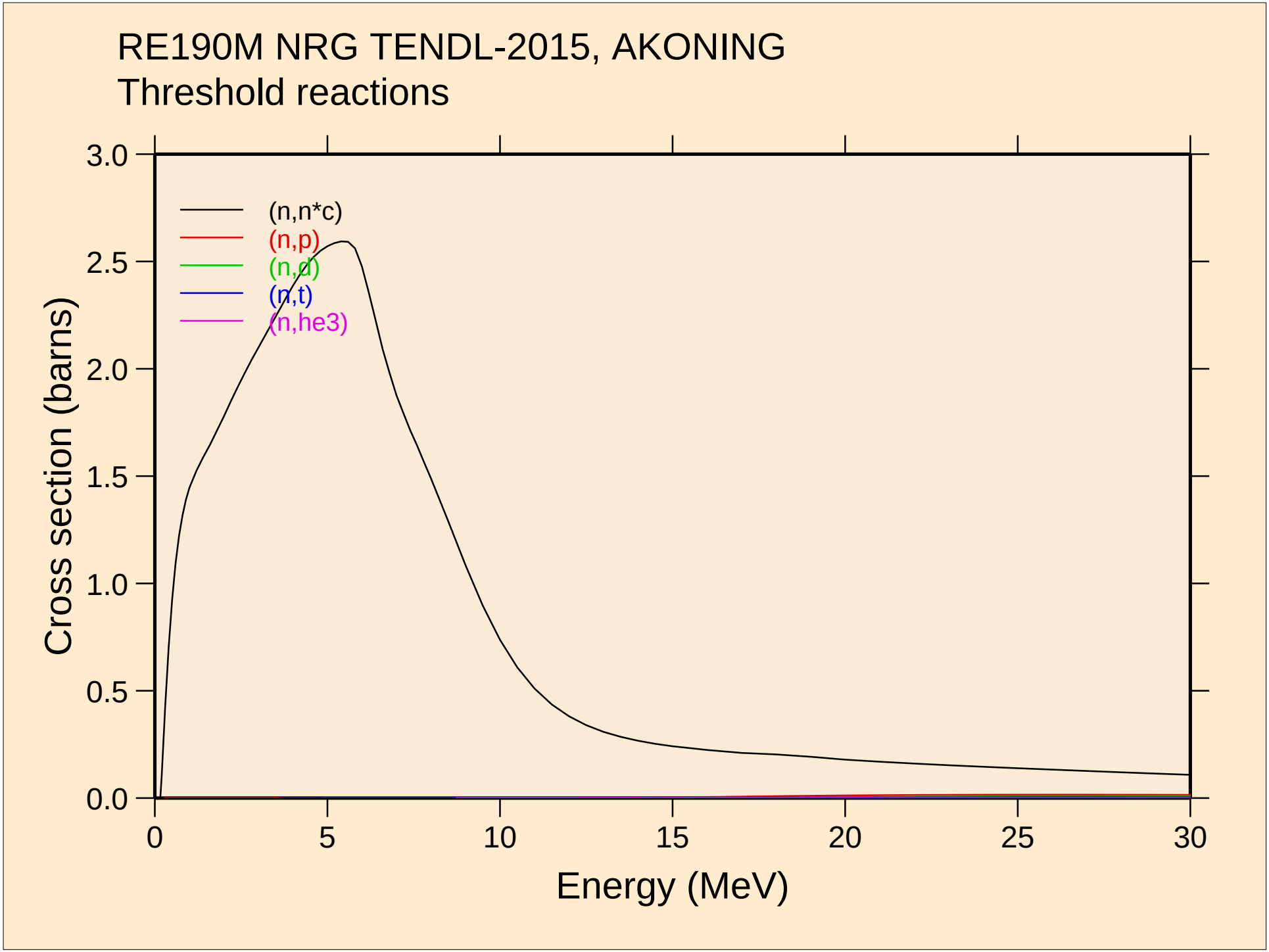

RE190M NRG TENDL-2015, AKONING
Inelastic levels
Cross section (barns)
*10-3
80
70
60
50
40
30
20
10
0
0
5
10
15
20
25
30
Energy (MeV)
(n,n*21)
(n,n*22)
(n,n*23)
(n,n*24)
(n,n*25)

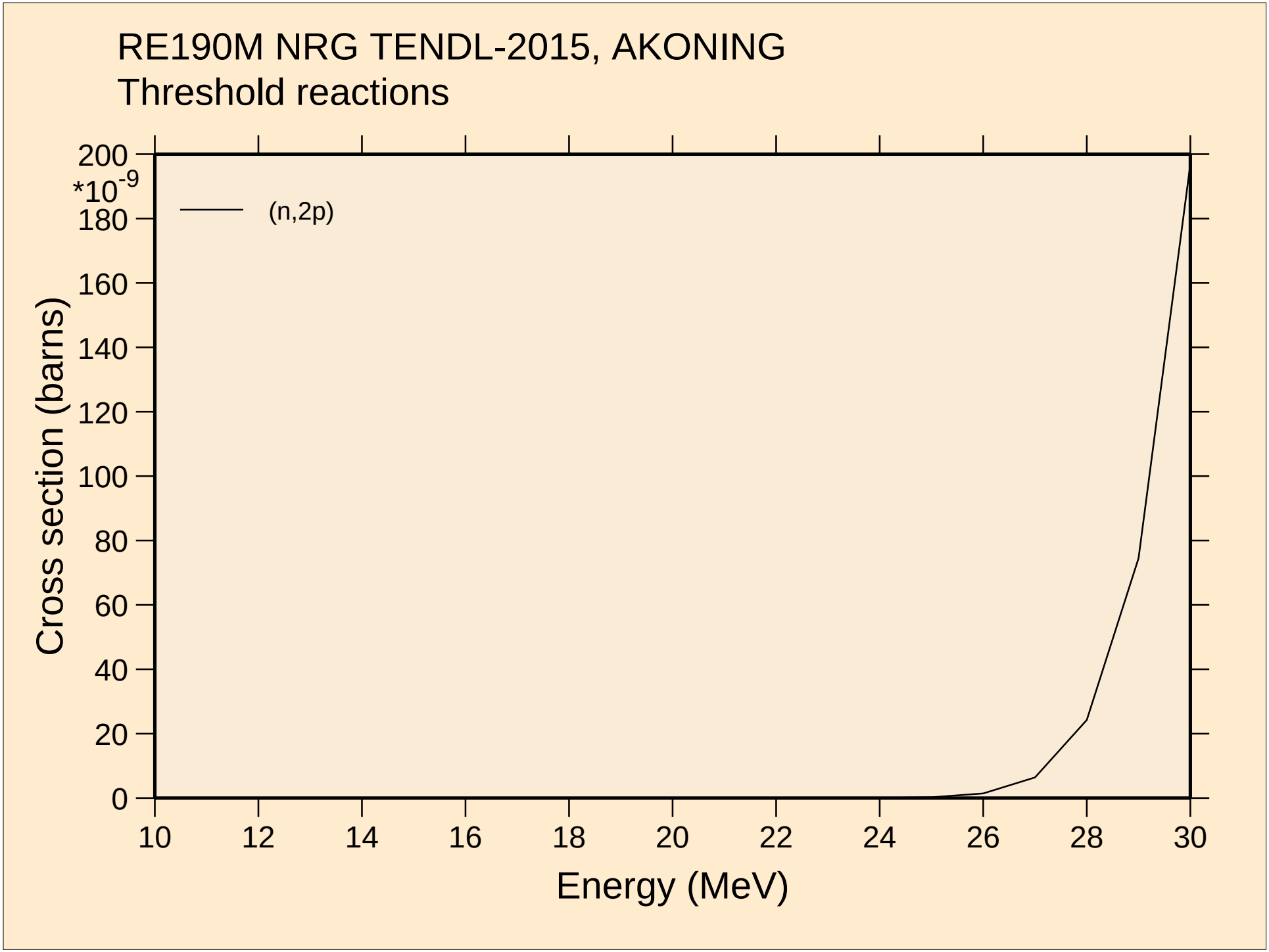

RE190M NRG TENDL-2015, AKONING
Inelastic levels
Cross section (barns)
*10-3
50
40
30
20
10
0
0
5
10
15
20
25
30
Energy (MeV)
(n,n*26)
(n,n*27)
(n,n*28)
(n,n*29)
(n,n*30)

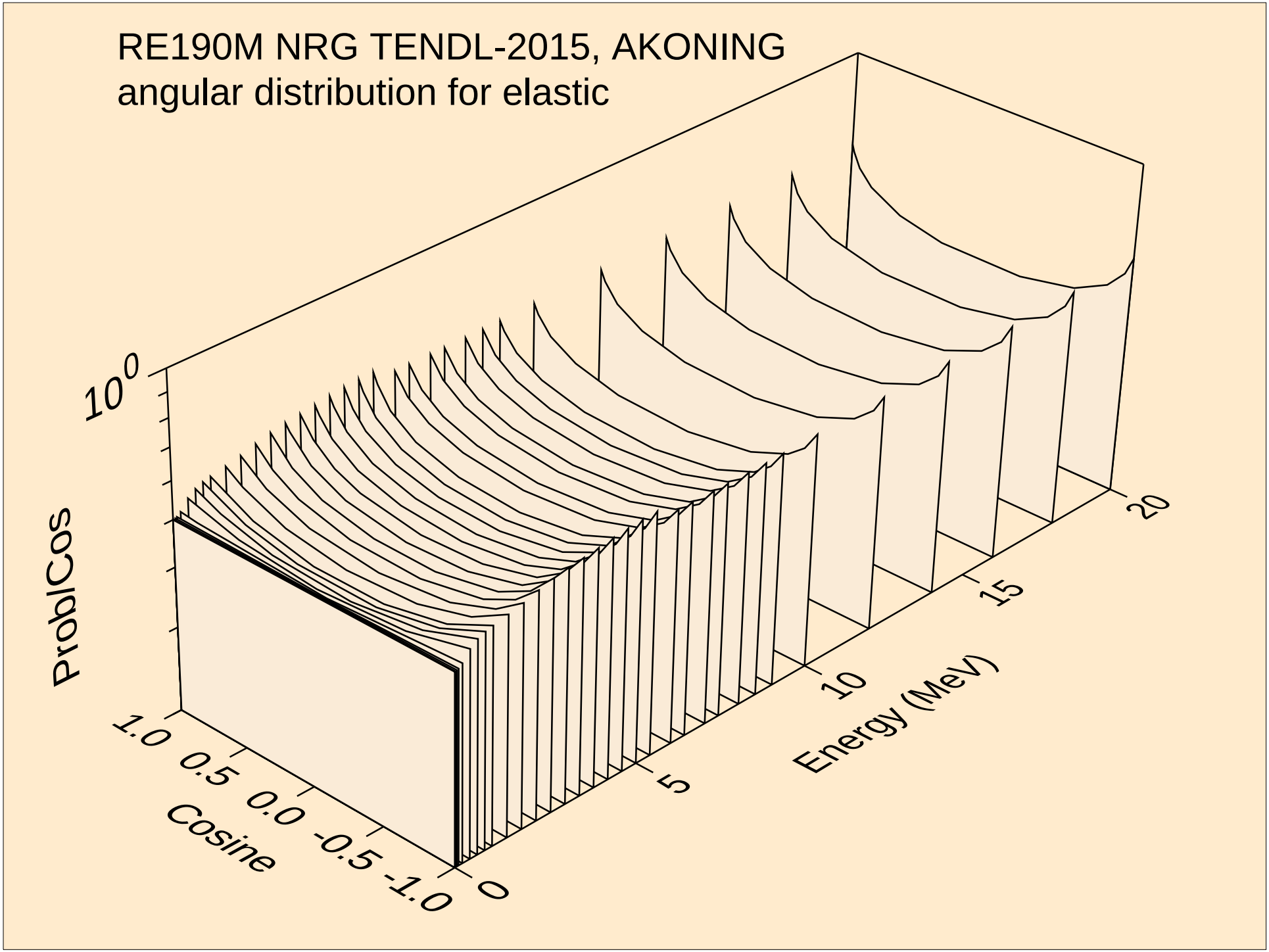

RE190M NRG TENDL-2015, AKONING
Threshold reactions
Cross section (barns)
Energy (MeV)
(n,x)
(n,2nd)
(n,2n)
(n,3n)
(n,n*)a
0.0
0.5
1.0
1.5
2.0
2.5
0
50
100
150
200

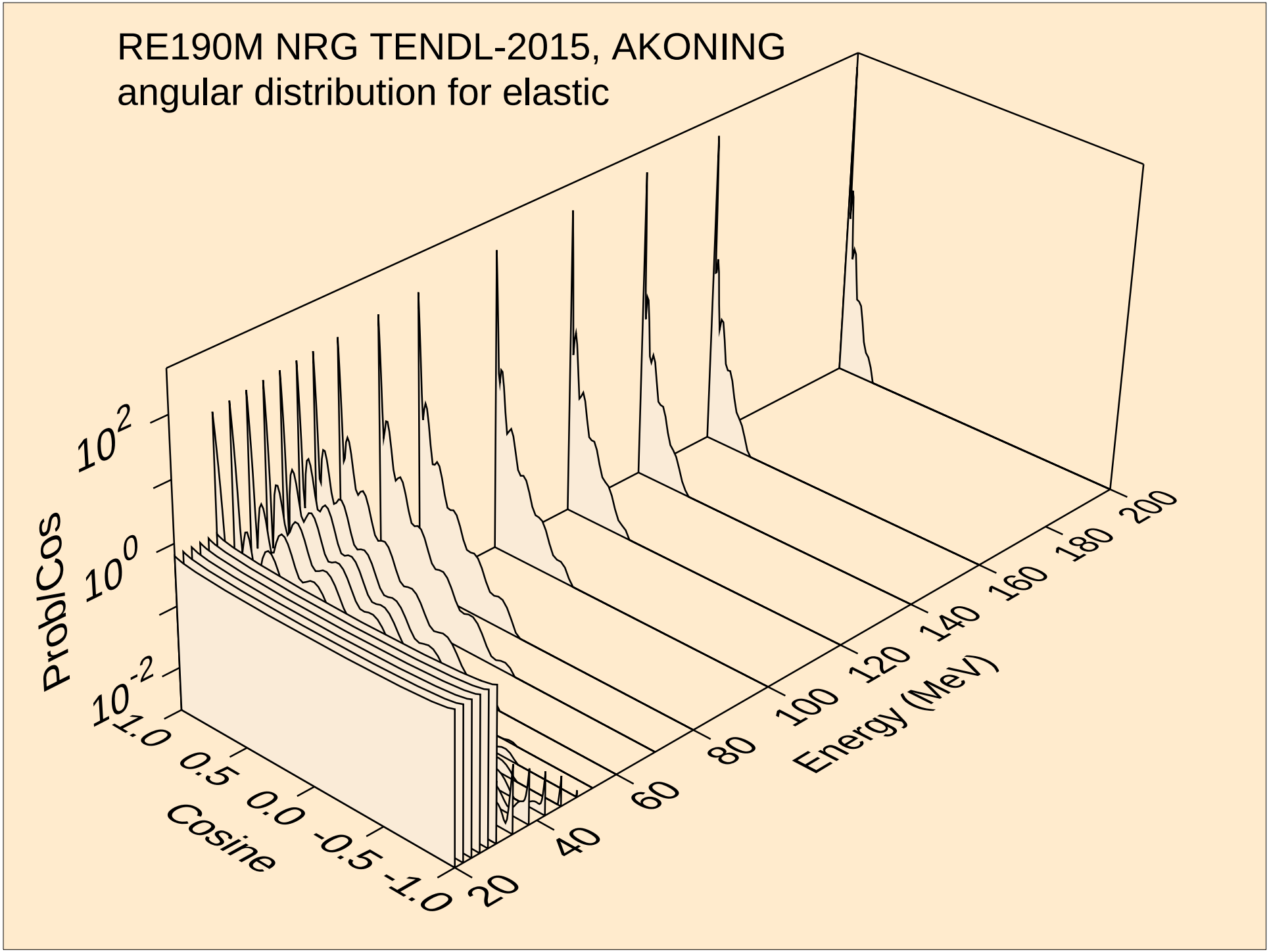

RE190M NRG TENDL-2015, AKONING
Threshold reactions
50
*10-3
40
30
20
10
0
Cross section (barns)
(n,2n)a
(n,3n)a
(n,n*)p
(n,n*)d
(n,n*)t
0
5
10
15
20
25
30
Energy (MeV)

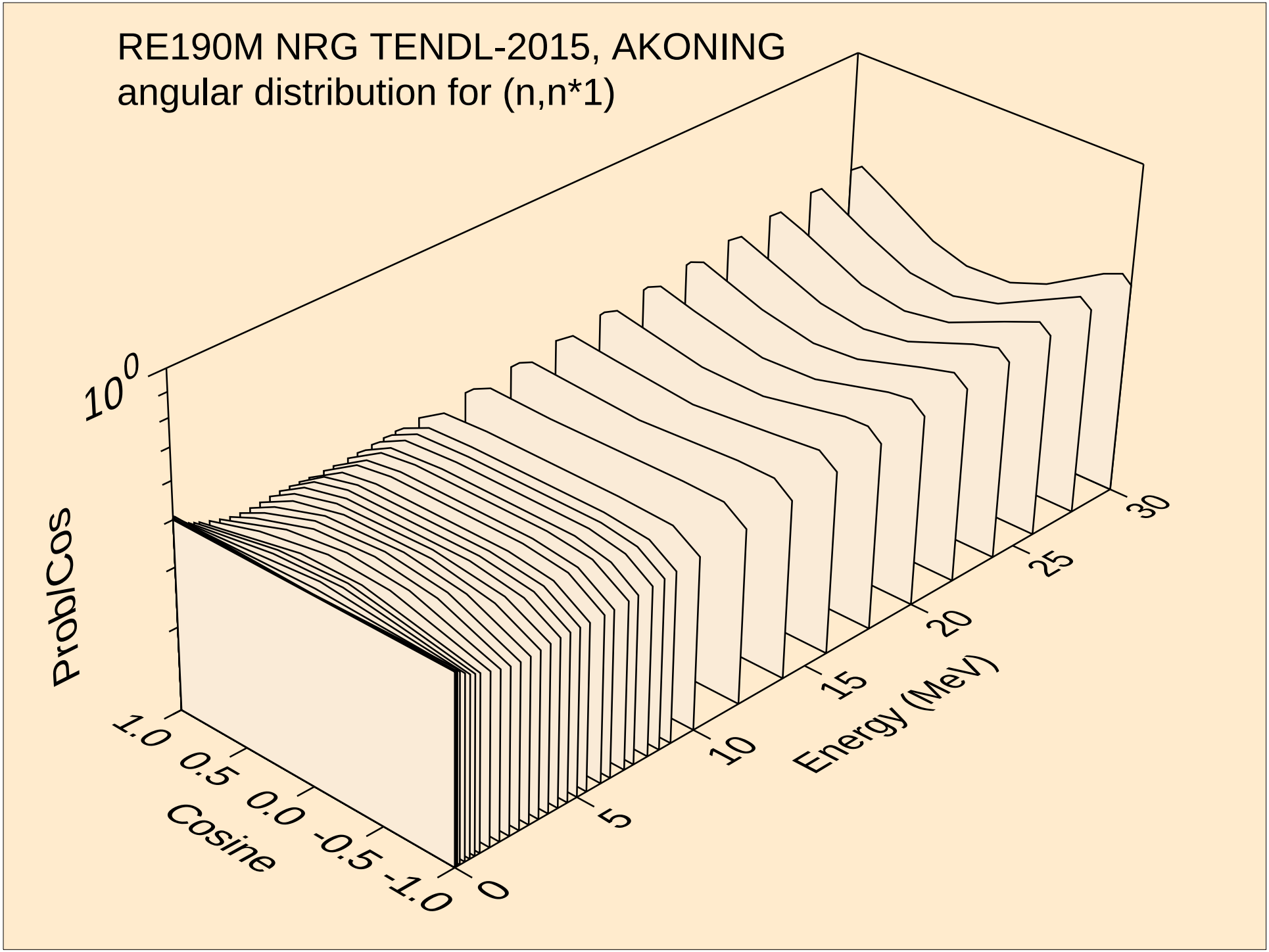

RE190M NRG TENDL-2015, AKONING
Threshold reactions
(n,n*)he3
(n,4n)
(n,2np)
(n,3np)
(n,2np)
Cross section (barns)
Energy (MeV)
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
12
14
16
18
20
22
24
26
28
30

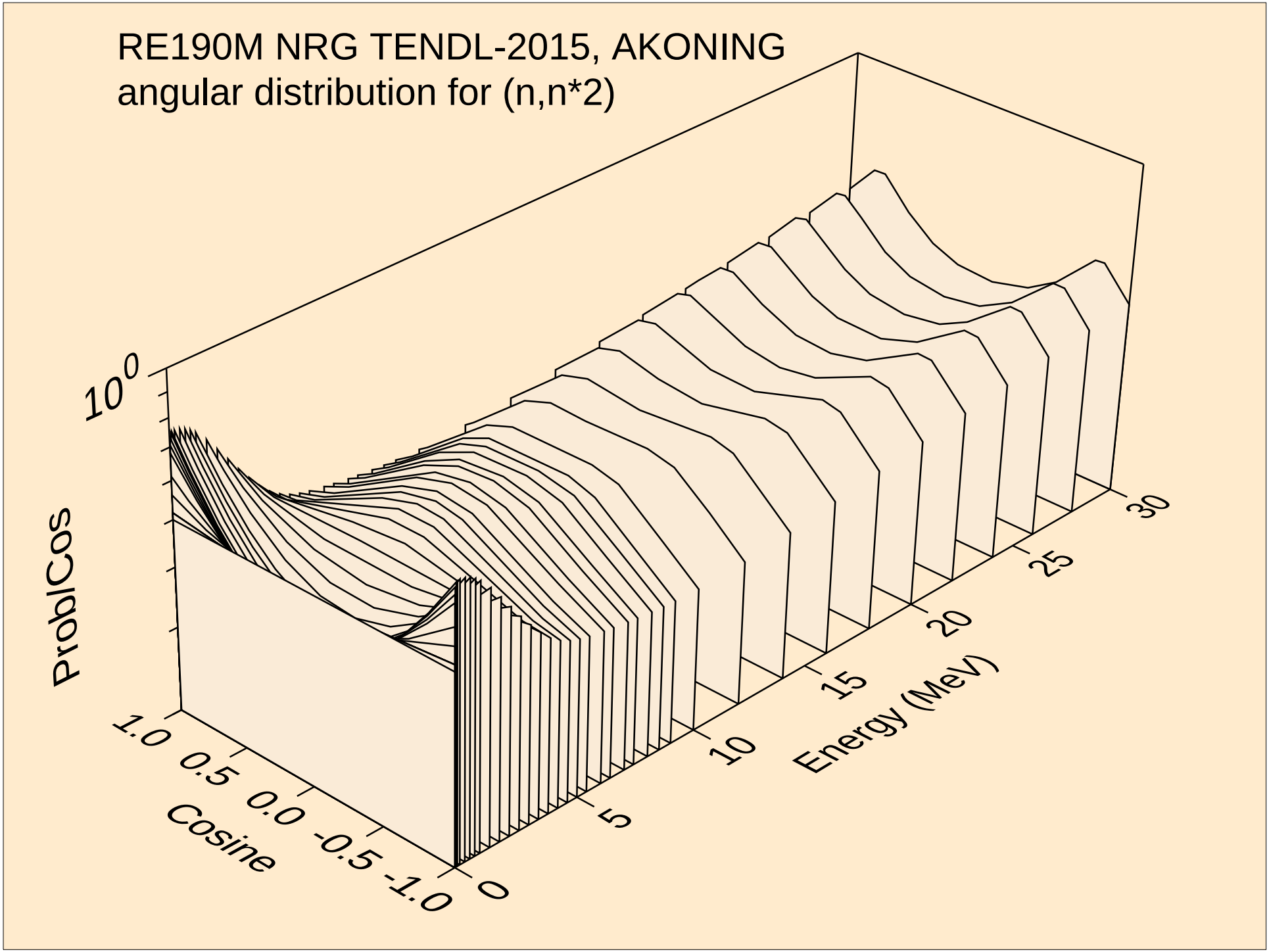

RE190M NRG TENDL-2015, AKONING
Threshold reactions
Cross section (barns)
Energy (MeV)
(n,n*c)
(n,p)
(n,d)
(n,t)
(n,he3)
0.0
0.5
1.0
1.5
2.0
2.5
3.0
0
5
10
15
20
25
30

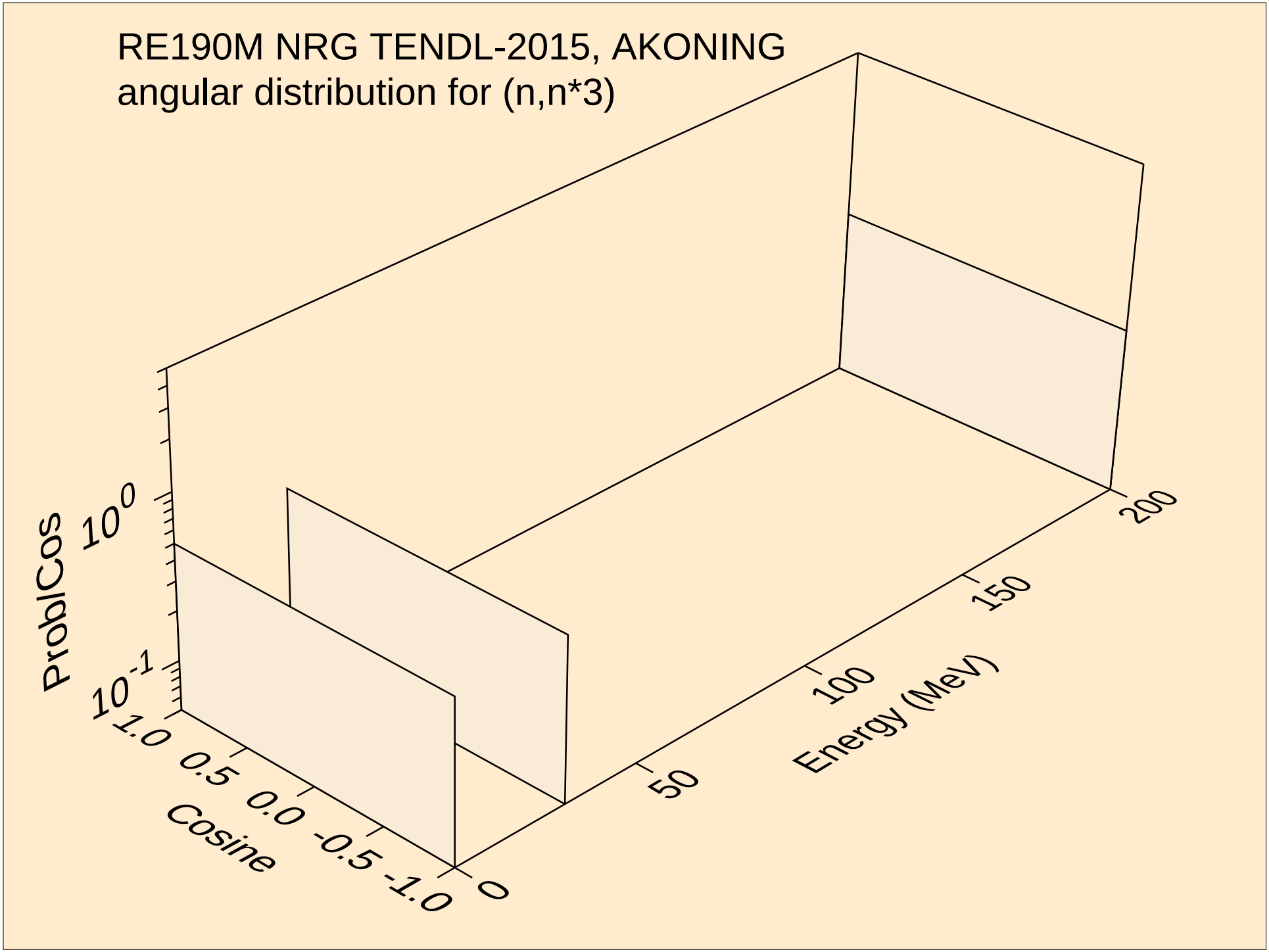

RE190M NRG TENDL-2015, AKONING
Threshold reactions
*10-9
(n,2p)
Cross section (barns)
200
180
160
140
120
100
80
60
40
20
0
10
12
14
16
18
20
22
24
26
28
30
Energy (MeV)

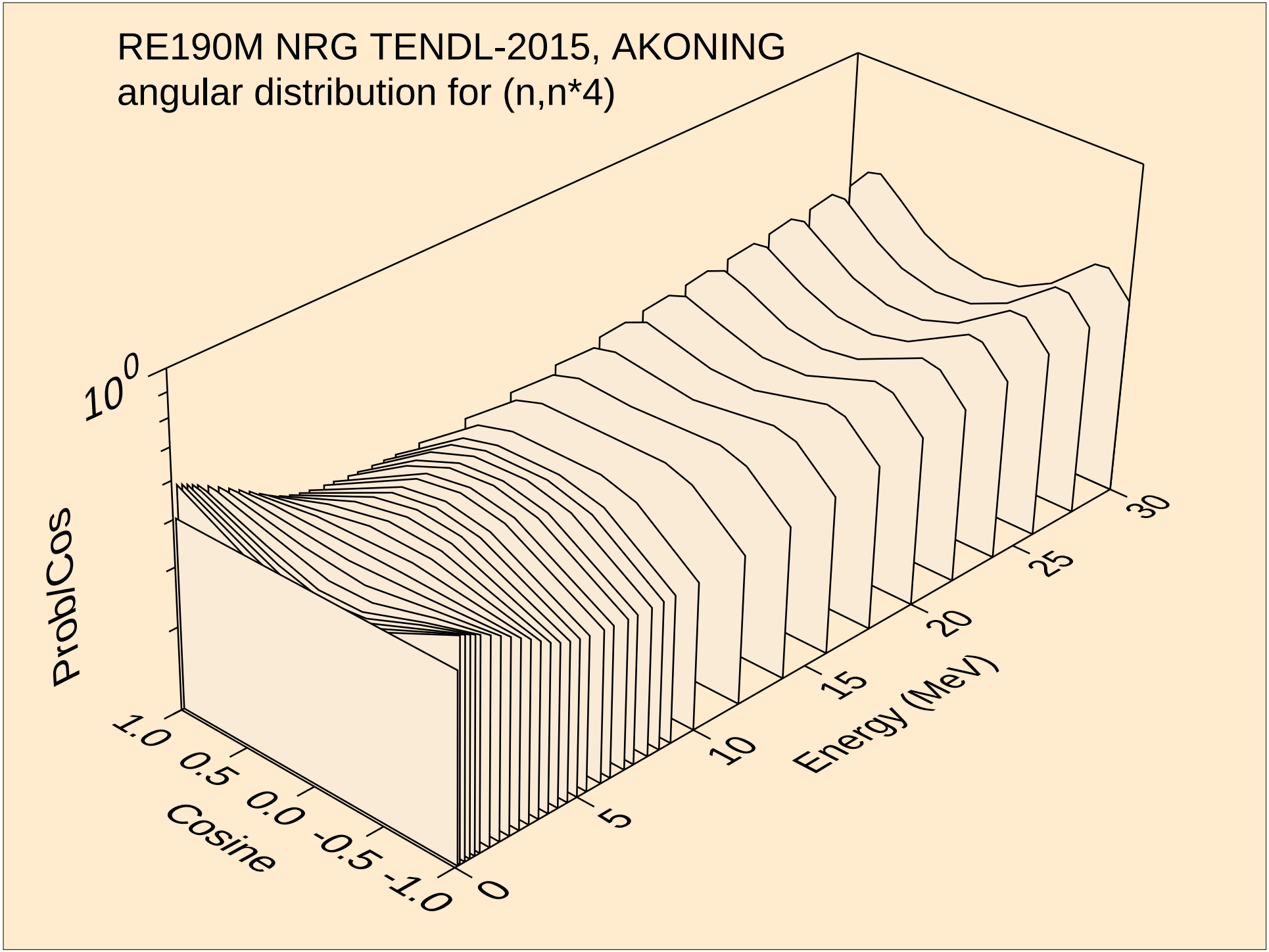

RE190M NRG TENDL-2015, AKONING
angular distribution for elastic
ProbICos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
Energy (MeV)

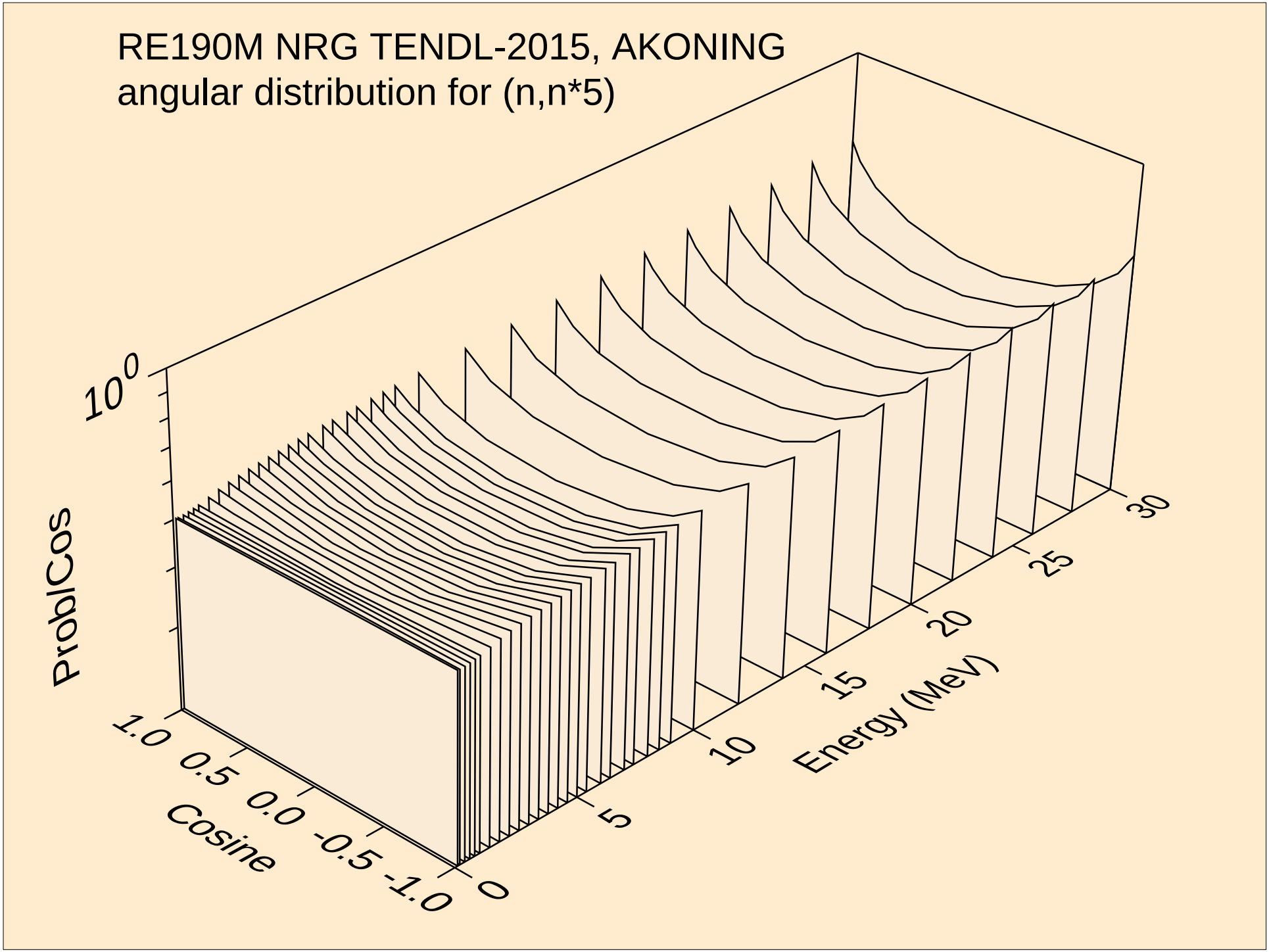

RE190M NRG TENDL-2015, AKONING
angular distribution for elastic
ProbICos
10^{2}
10^{0}
10^{-2}
Cosine
1.0
0.5
0.0
-0.5
-1.0
Energy (MeV)
20
40
60
80
100
120
140
160
180
200

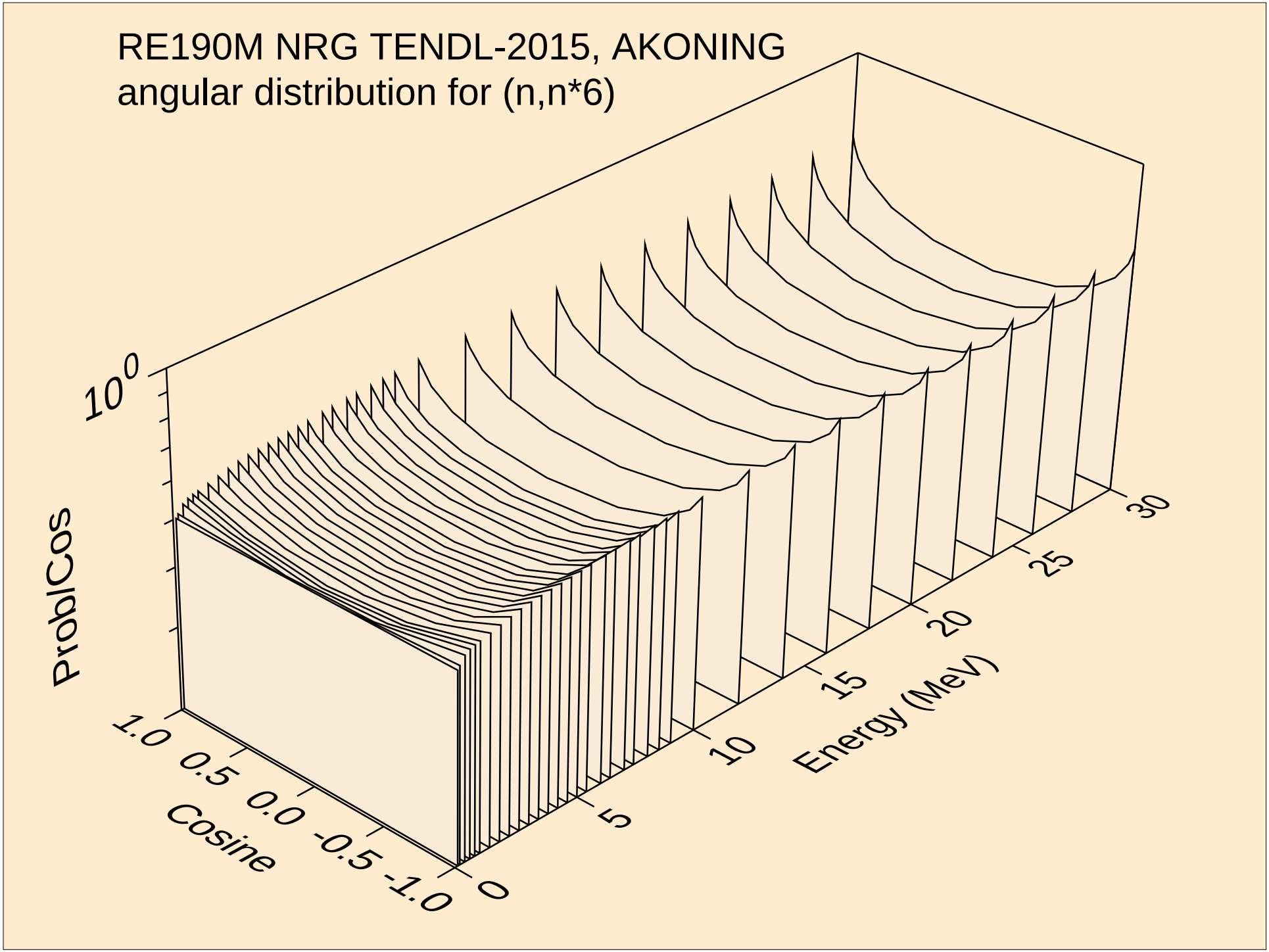

RE190M NRG TENDL-2015, AKONING
angular distribution for (n,n*1)
10^0
ProbICos
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
25
30
Energy (MeV)

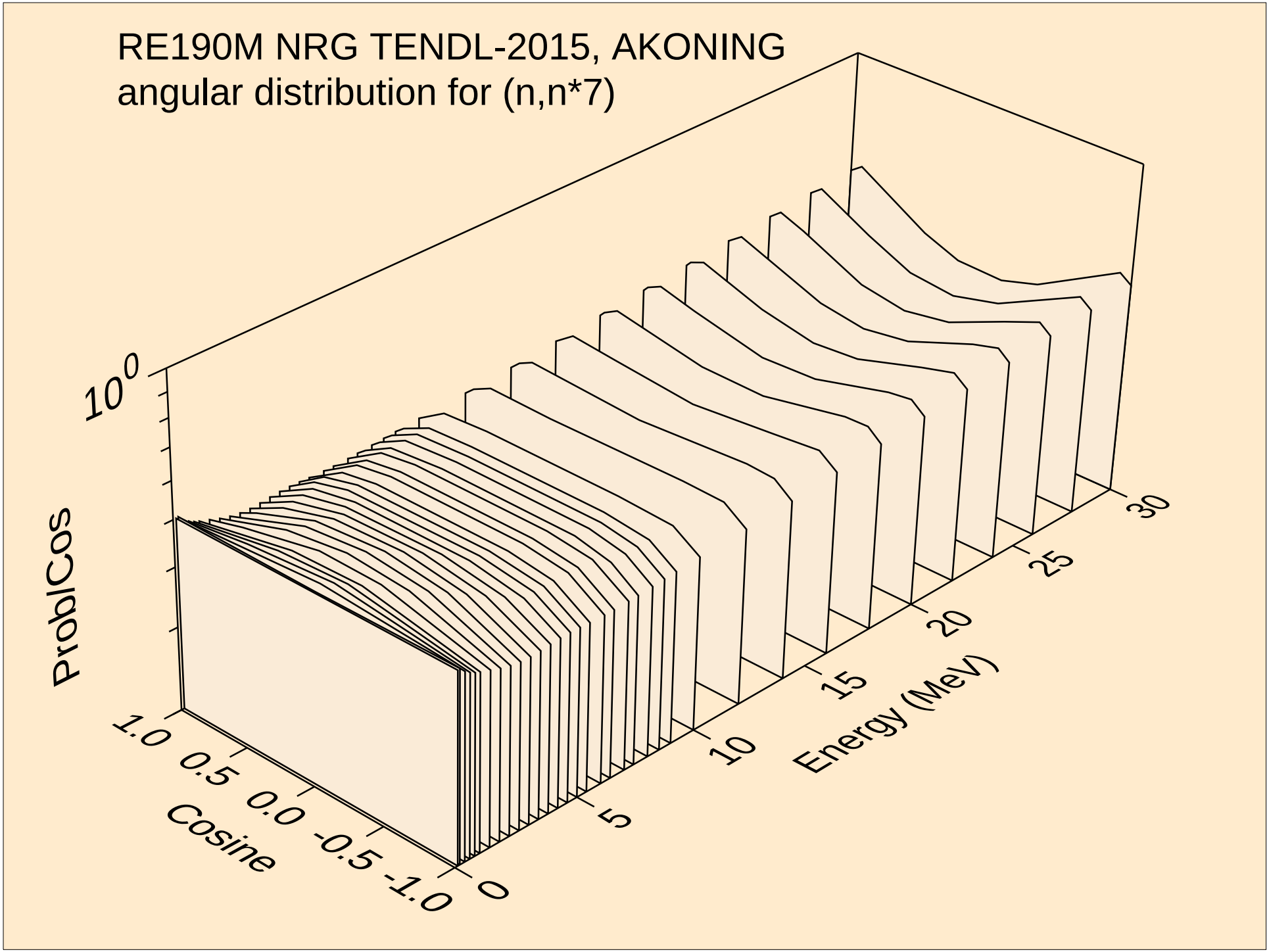

RE190M NRG TENDL-2015, AKONING
angular distribution for (n,n*2)
ProbICos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
25
30
Energy (MeV)

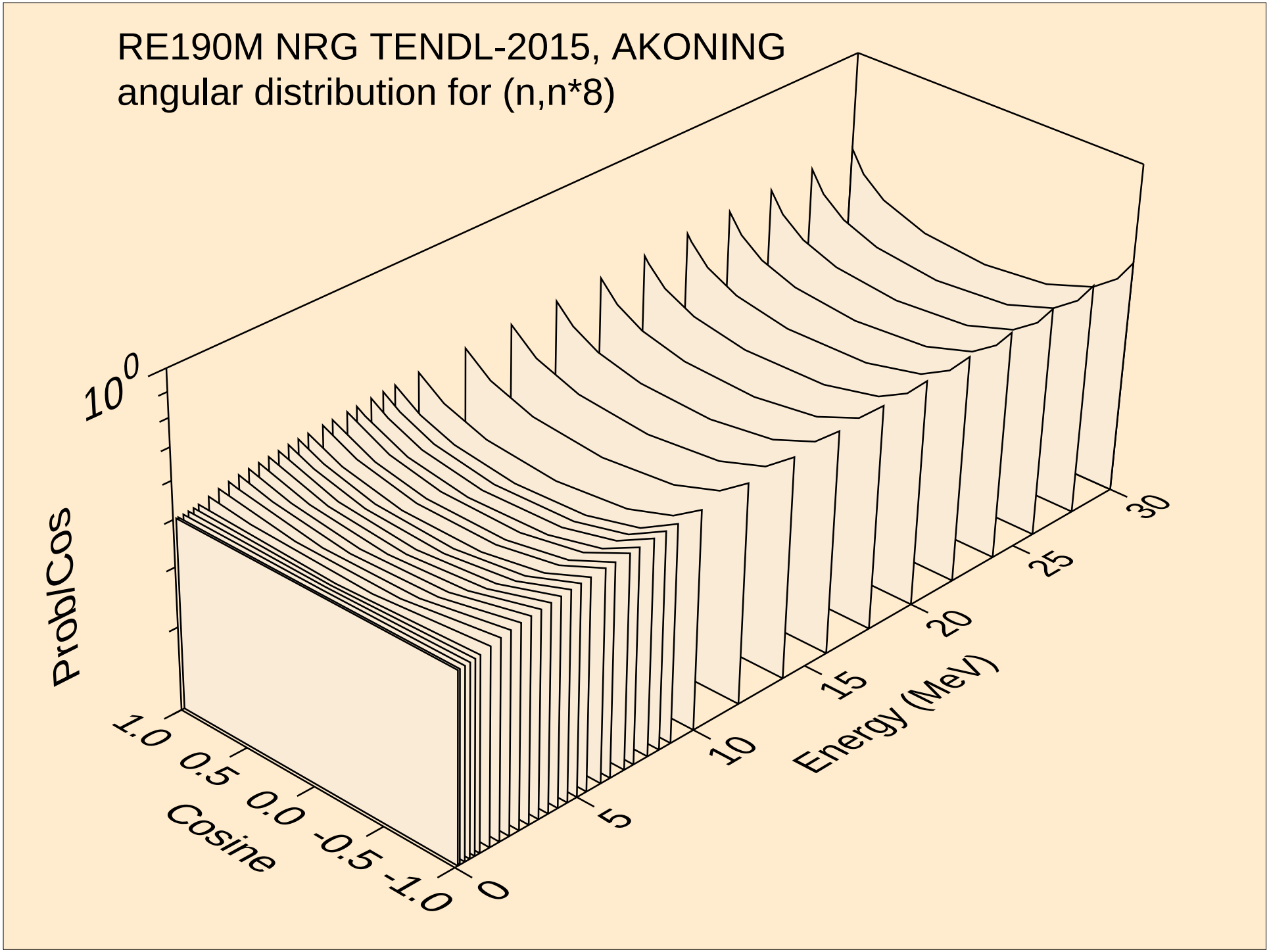

RE190M NRG TENDL-2015, AKONING
angular distribution for (n,n*3)
ProbICos
10^0
10^-1
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
50
100
150
200
Energy (MeV)

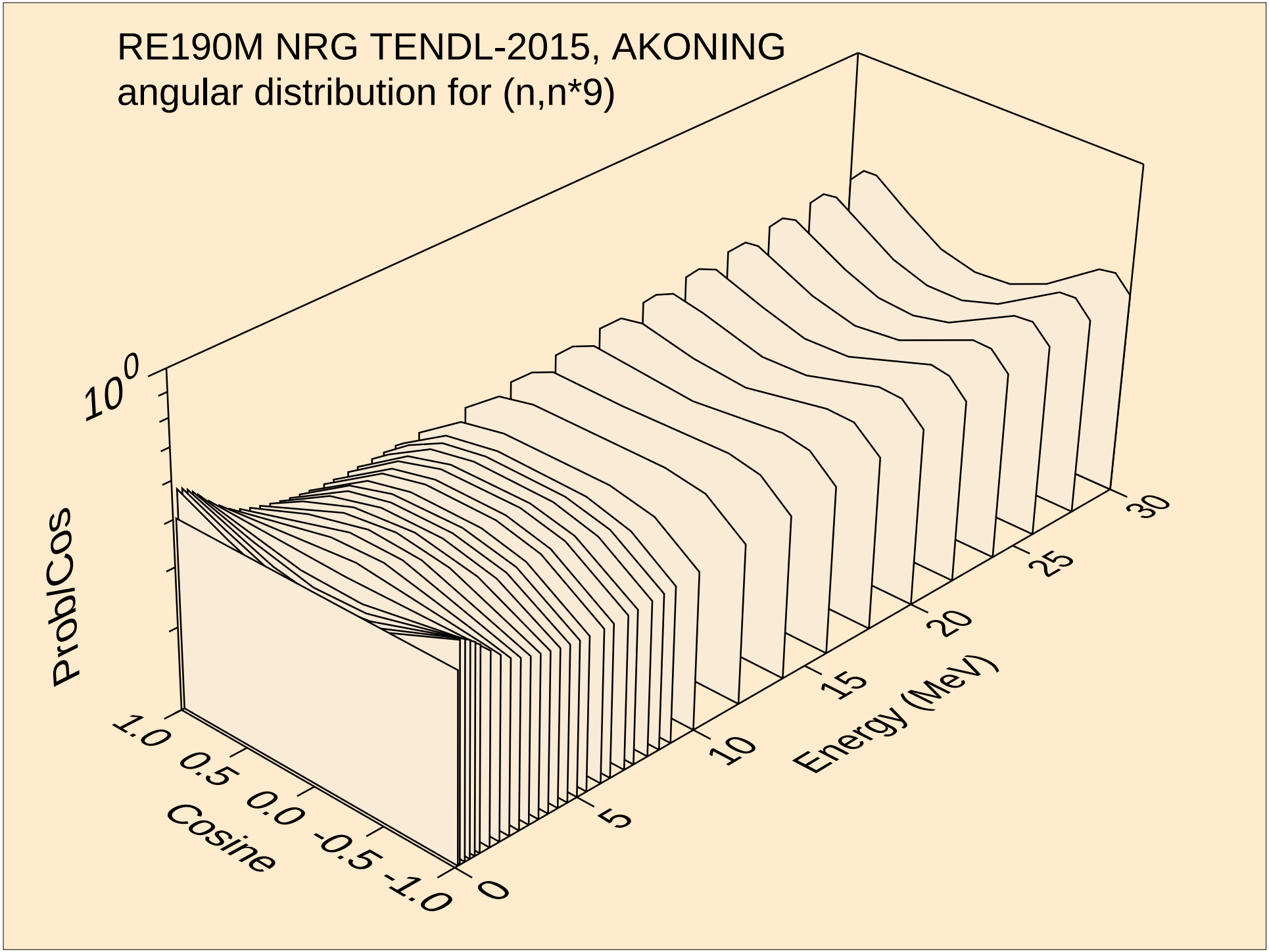

RE190M NRG TENDL-2015, AKONING
angular distribution for (n,n*4)
10^0
ProbICos
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
25
30
Energy (MeV)

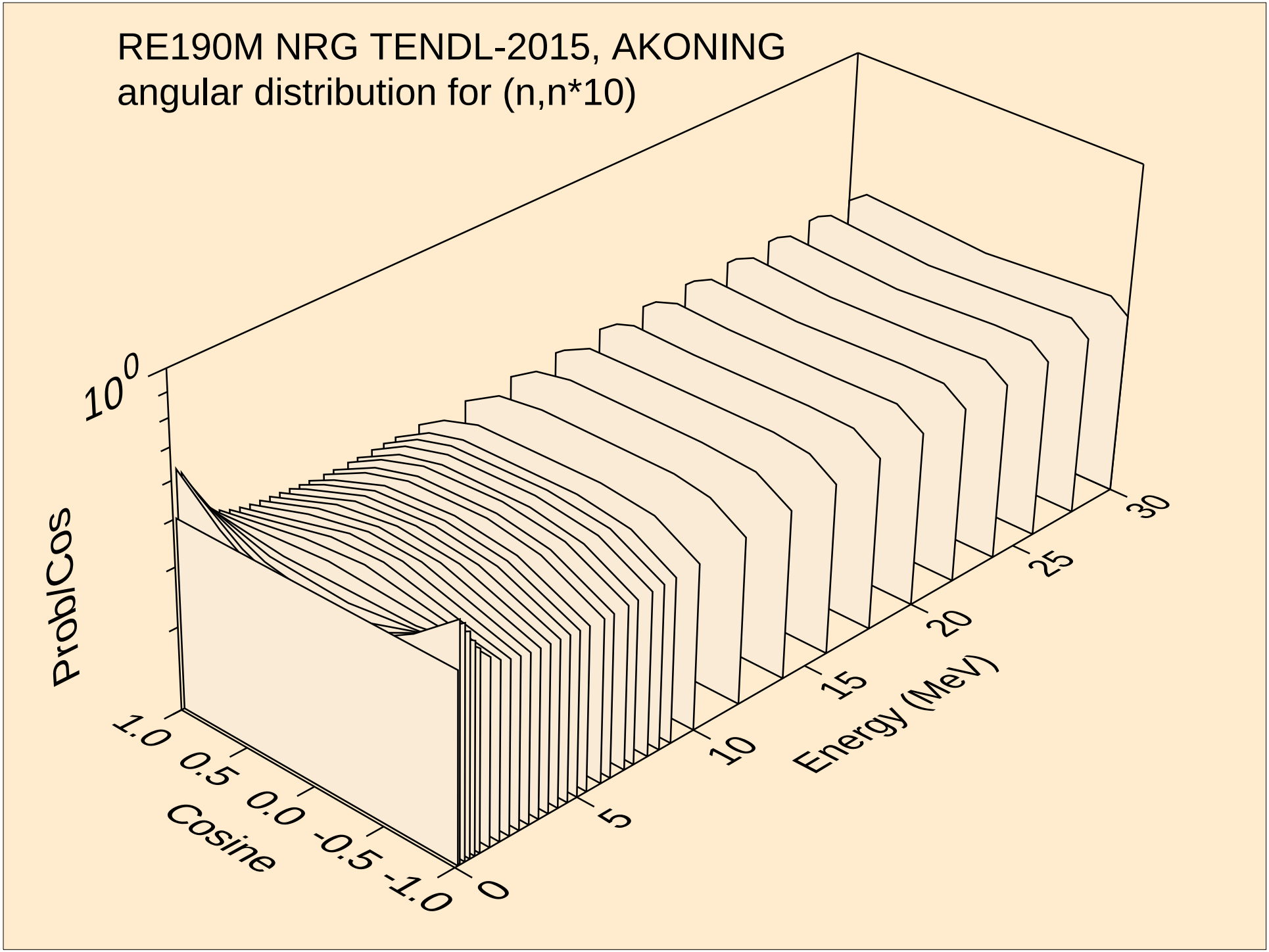

RE190M NRG TENDL-2015, AKONING
angular distribution for (n,n*5)
ProbICos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
25
30
Energy (MeV)

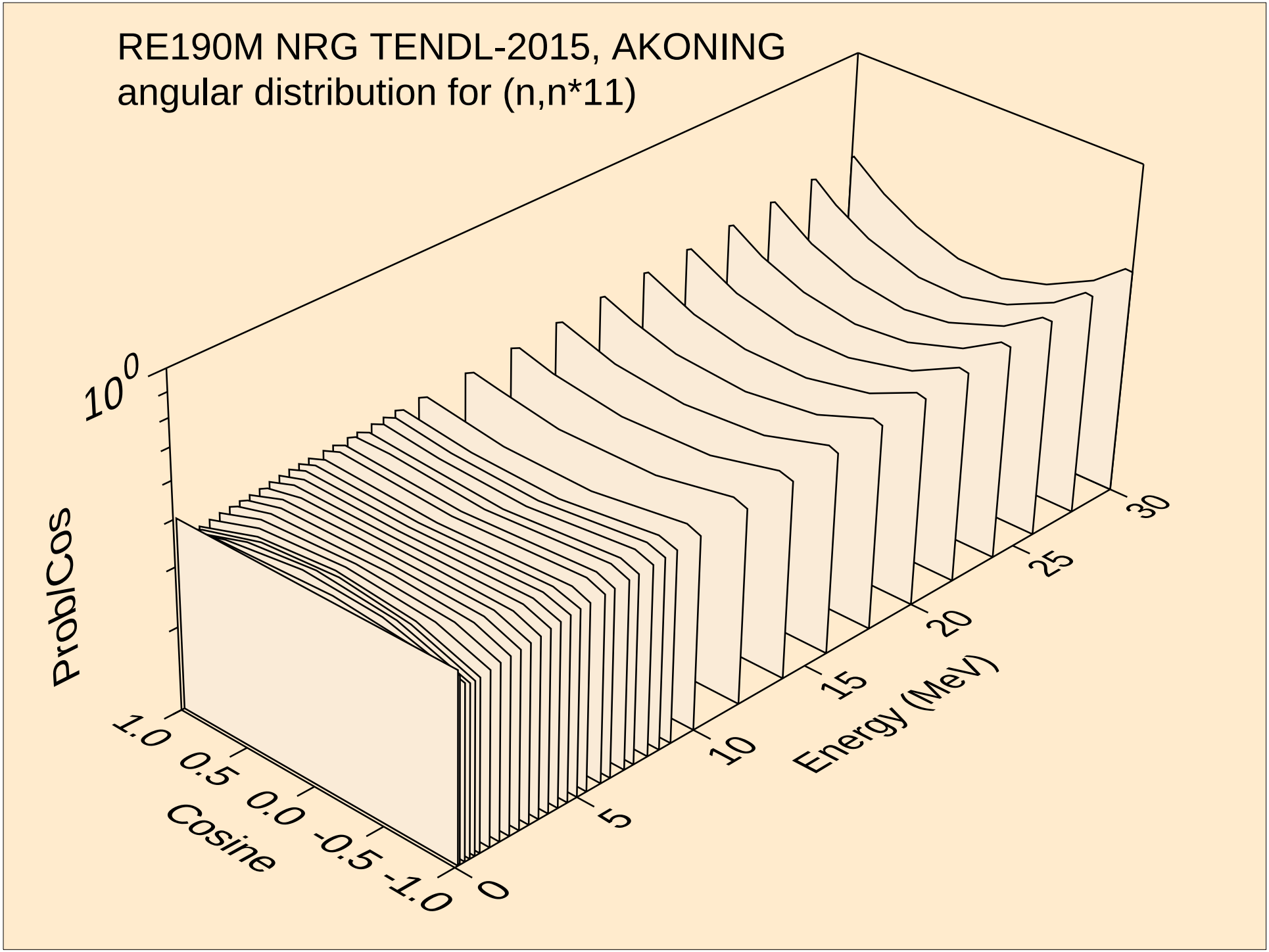

RE190M NRG TENDL-2015, AKONING
angular distribution for (n,n*6)
ProbICos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
25
30
Energy (MeV)

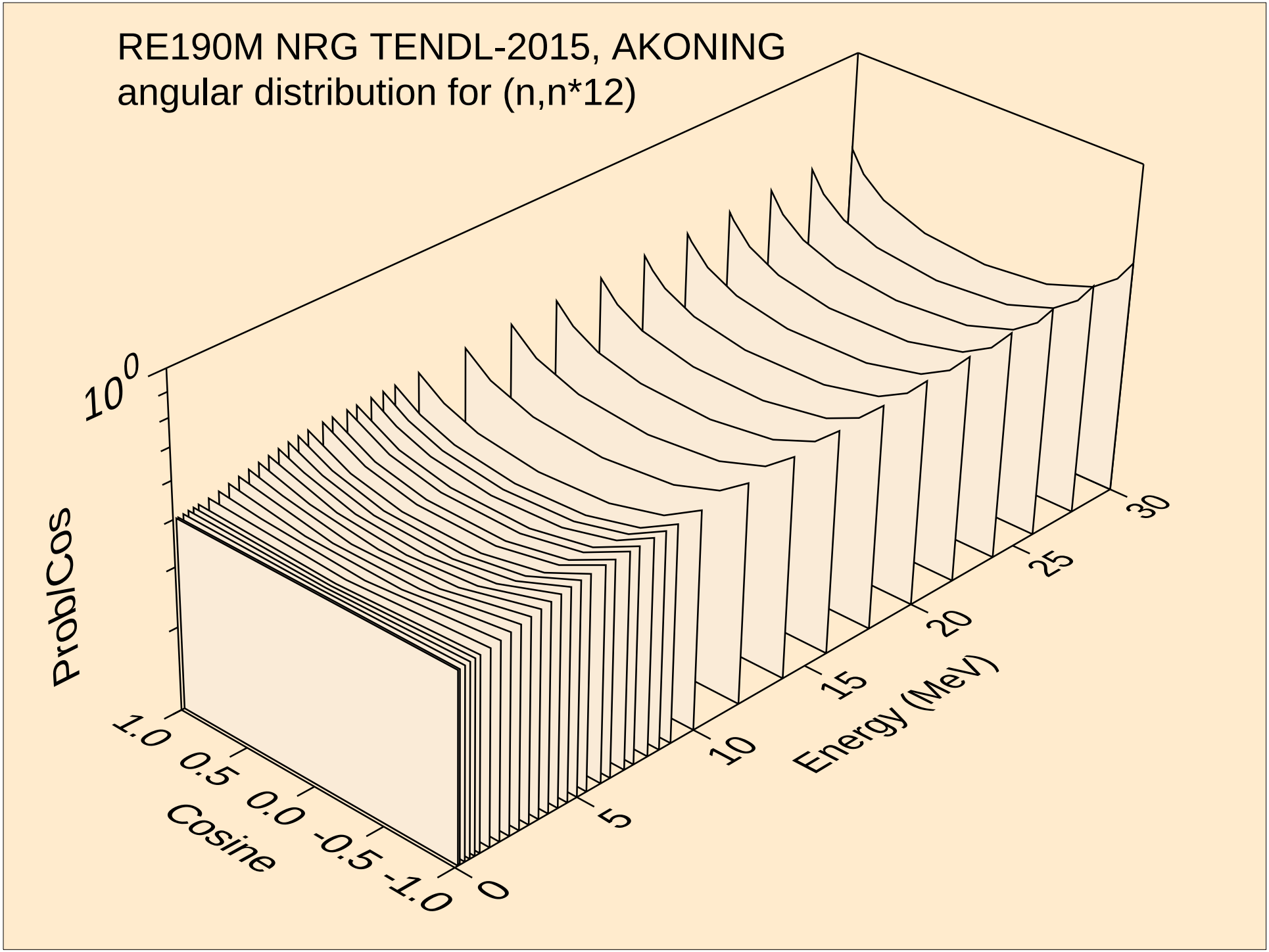

RE190M NRG TENDL-2015, AKONING
angular distribution for (n,n*7)
ProbICos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
25
30
Energy (MeV)

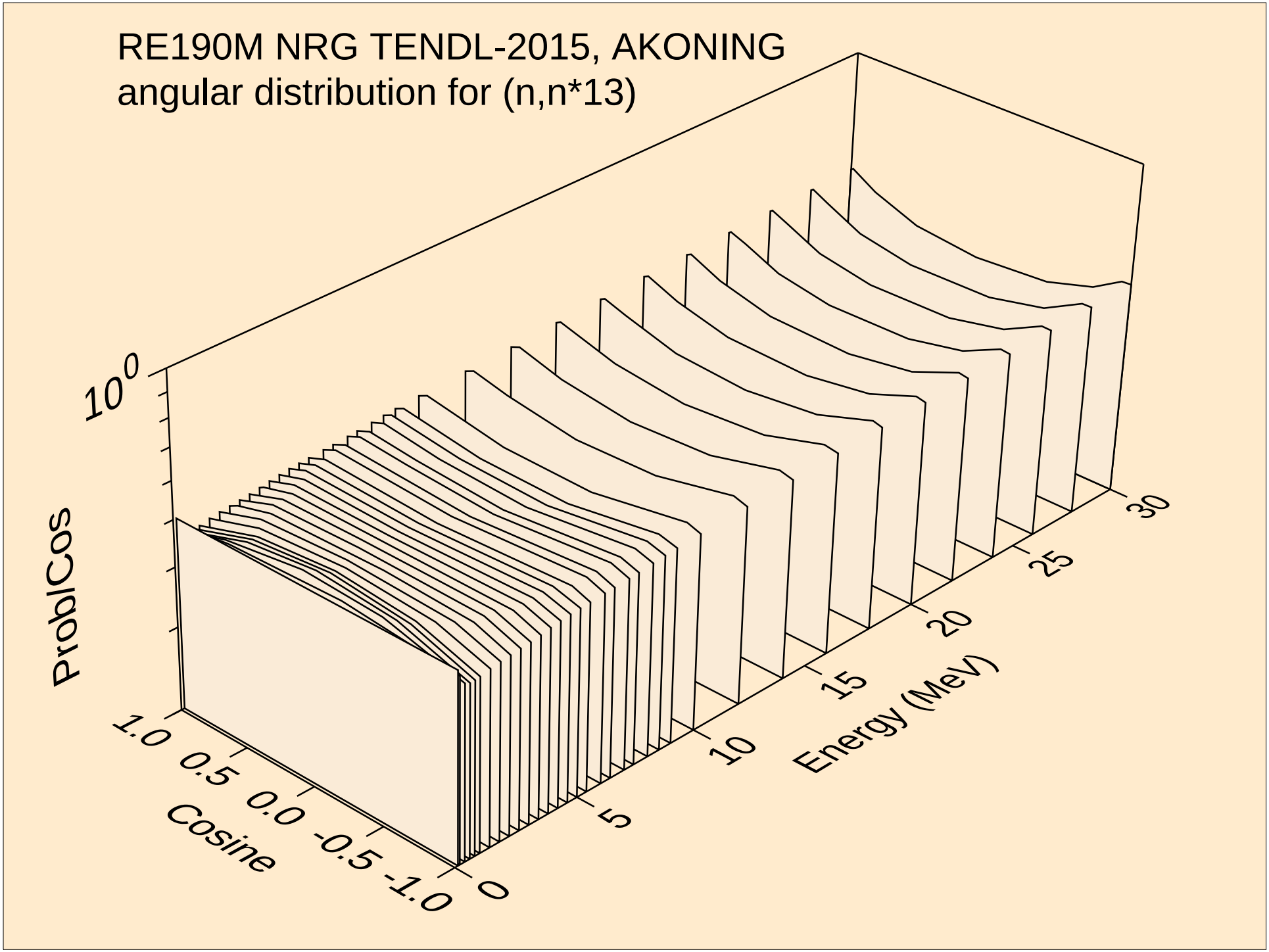

RE190M NRG TENDL-2015, AKONING
angular distribution for (n,n*8)
ProbICos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
25
30
Energy (MeV)

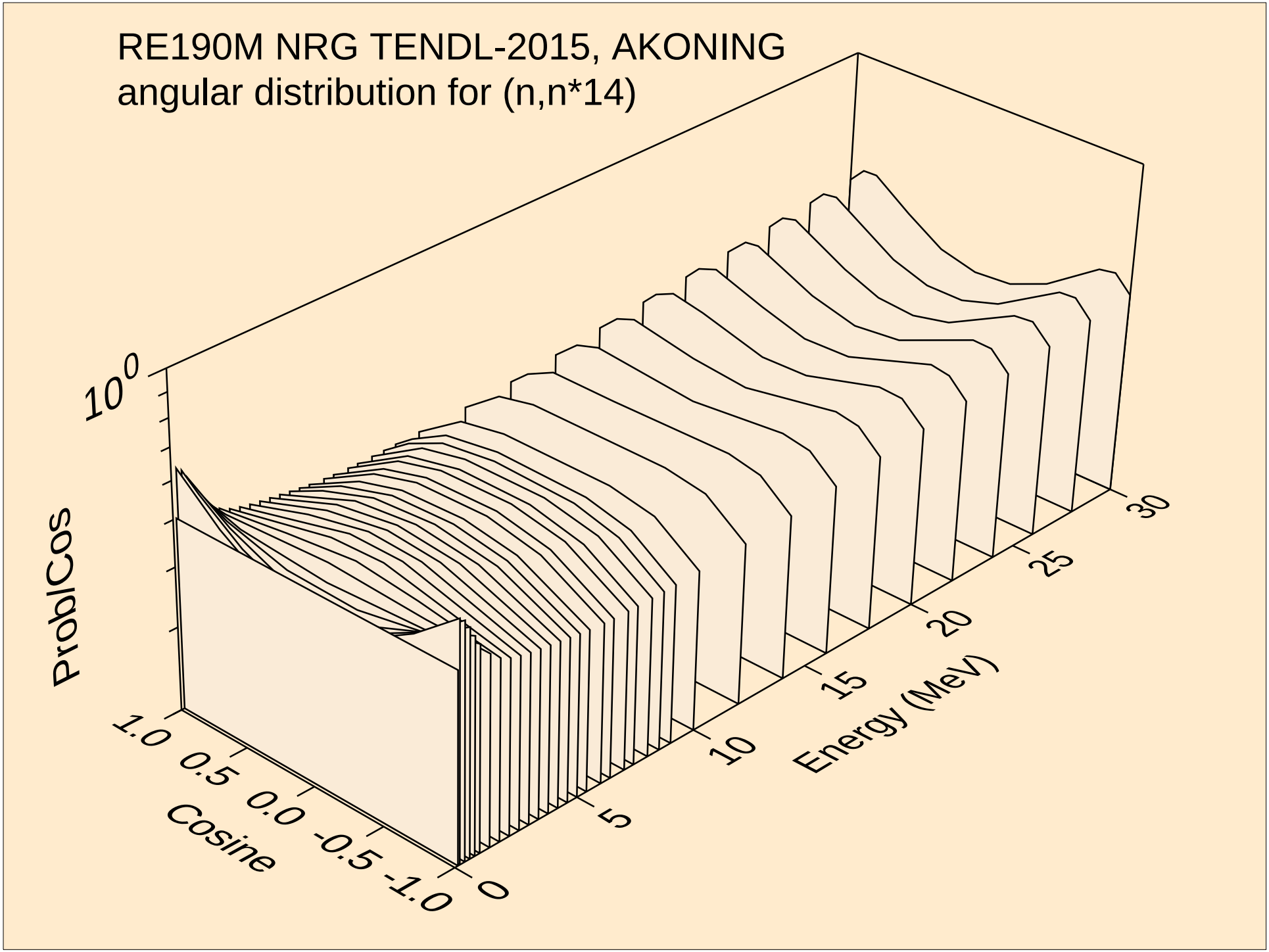

RE190M NRG TENDL-2015, AKONING
angular distribution for (n,n*9)
ProbICos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
25
30
Energy (MeV)

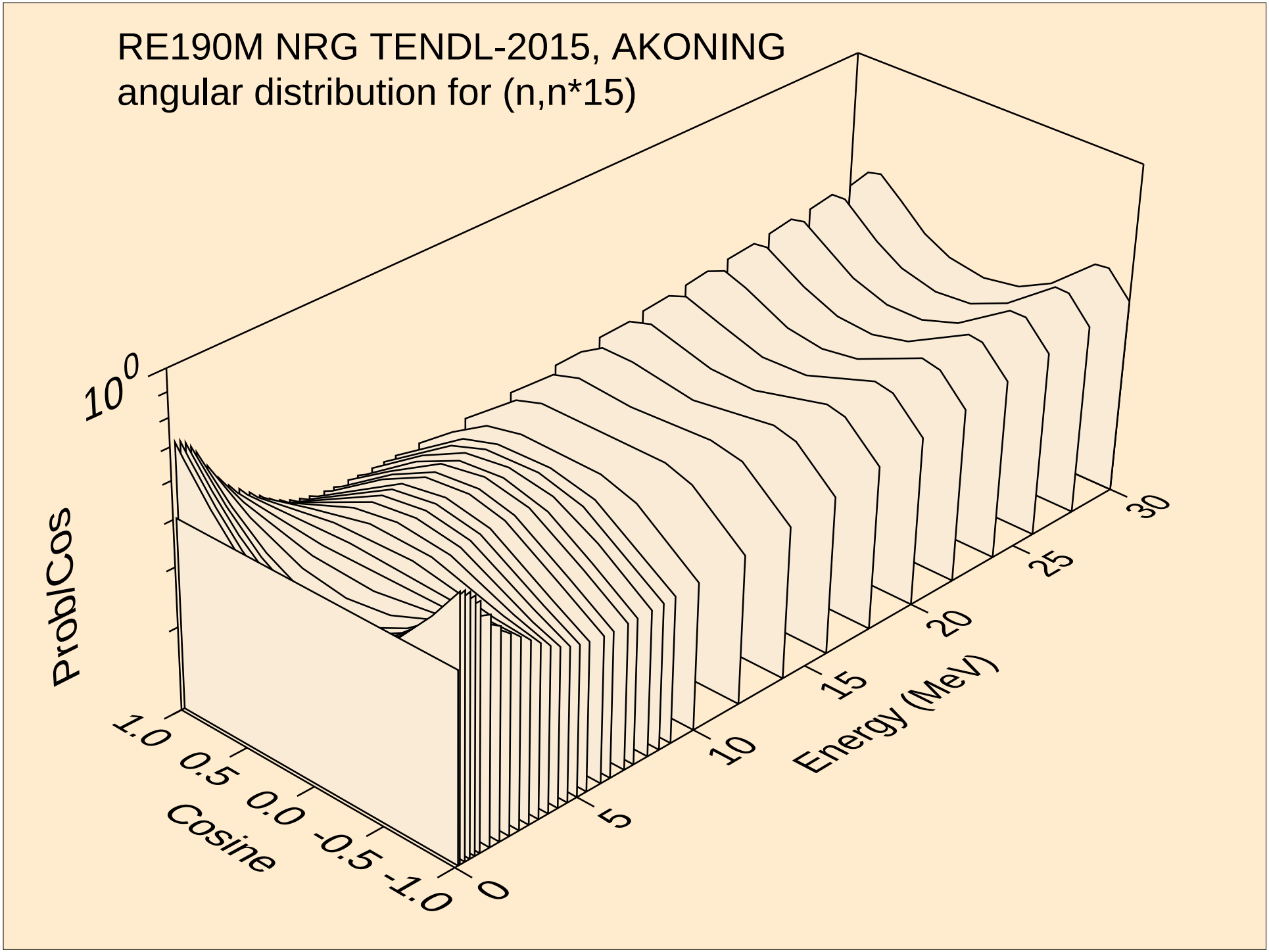

RE190M NRG TENDL-2015, AKONING
angular distribution for (n,n*10)
10^0
ProbICos
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
25
30
Energy (MeV)

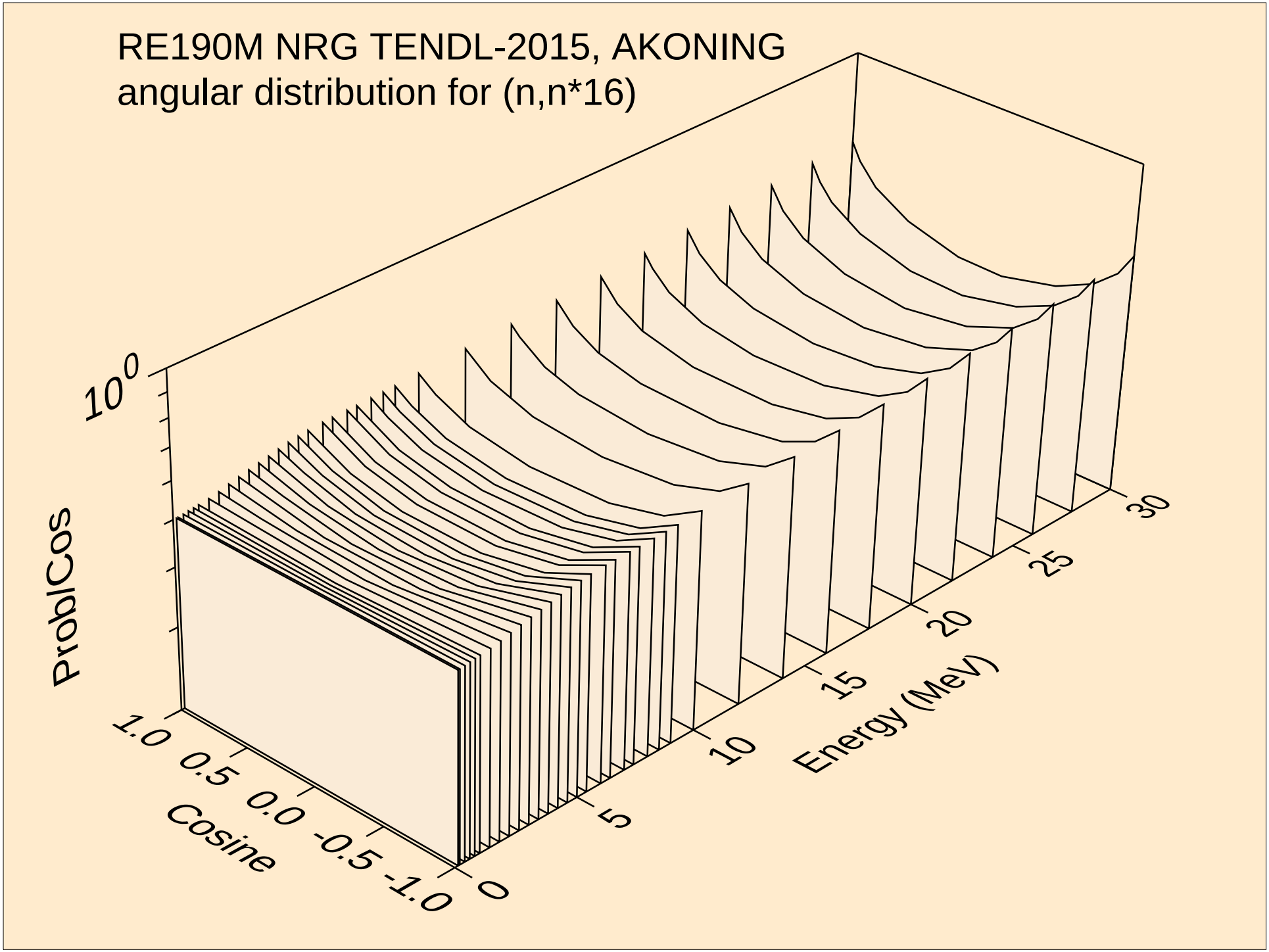

RE190M NRG TENDL-2015, AKONING
angular distribution for (n,n*11)
ProbCos
10^0
Cosine
1.0
0.5
0.0
-0.5
-1.0
Energy (MeV)
0
5
10
15
20
25
30

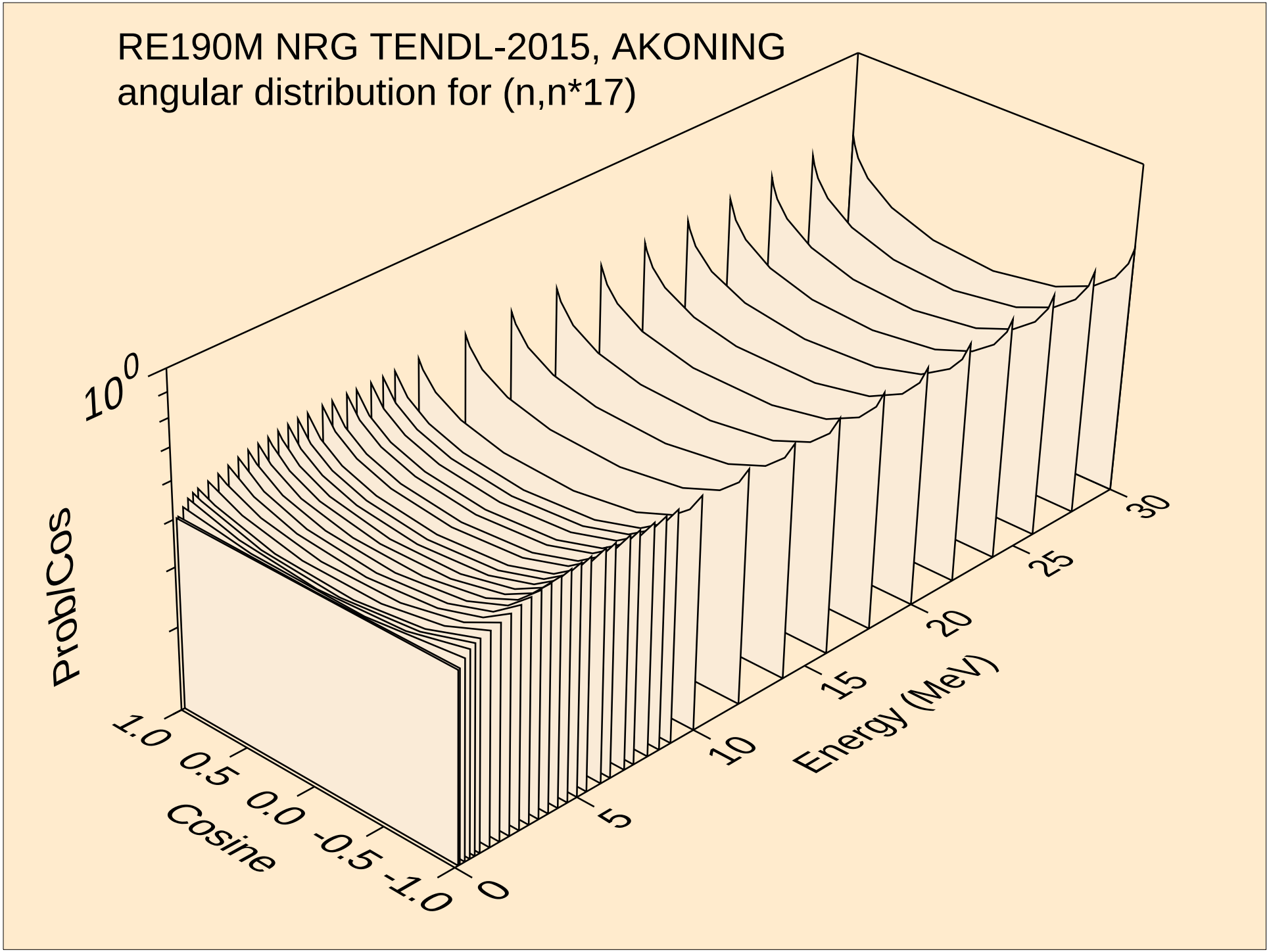

RE190M NRG TENDL-2015, AKONING
angular distribution for (n,n*12)
ProbICos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
25
30
Energy (MeV)

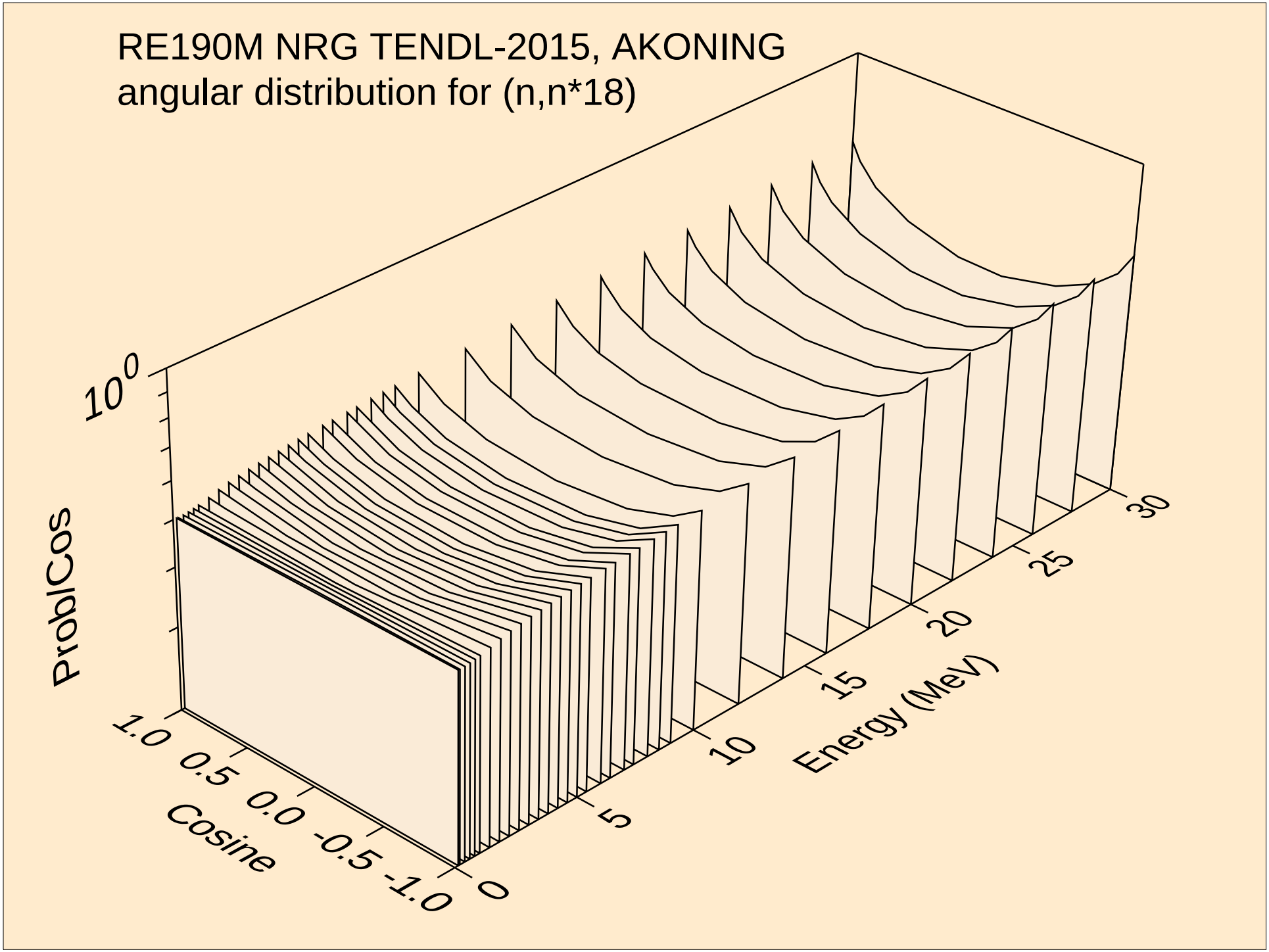

RE190M NRG TENDL-2015, AKONING
angular distribution for (n,n*13)
ProbICos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
25
30
Energy (MeV)

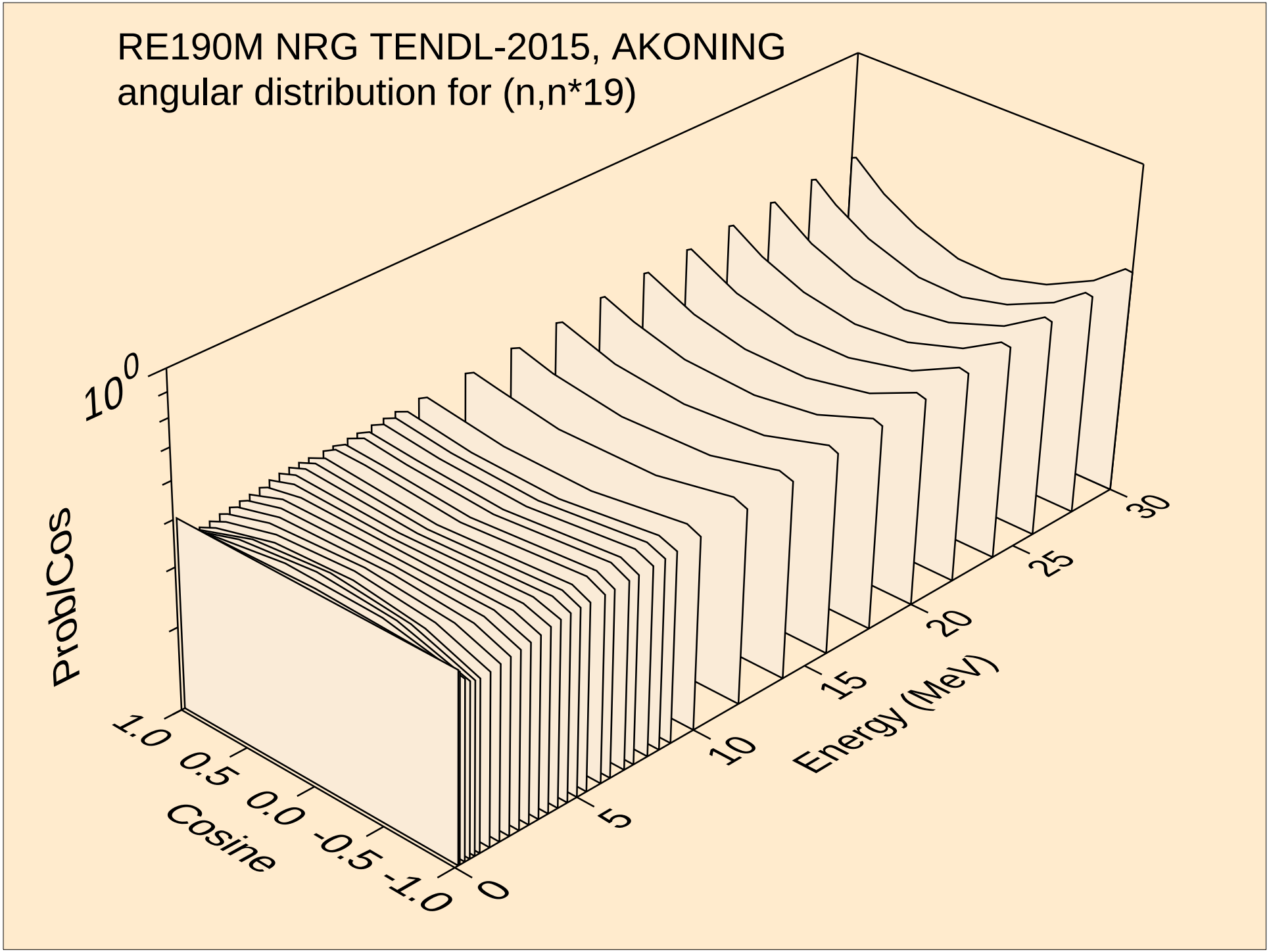

RE190M NRG TENDL-2015, AKONING
angular distribution for (n,n*14)
ProbICos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
25
30
Energy (MeV)

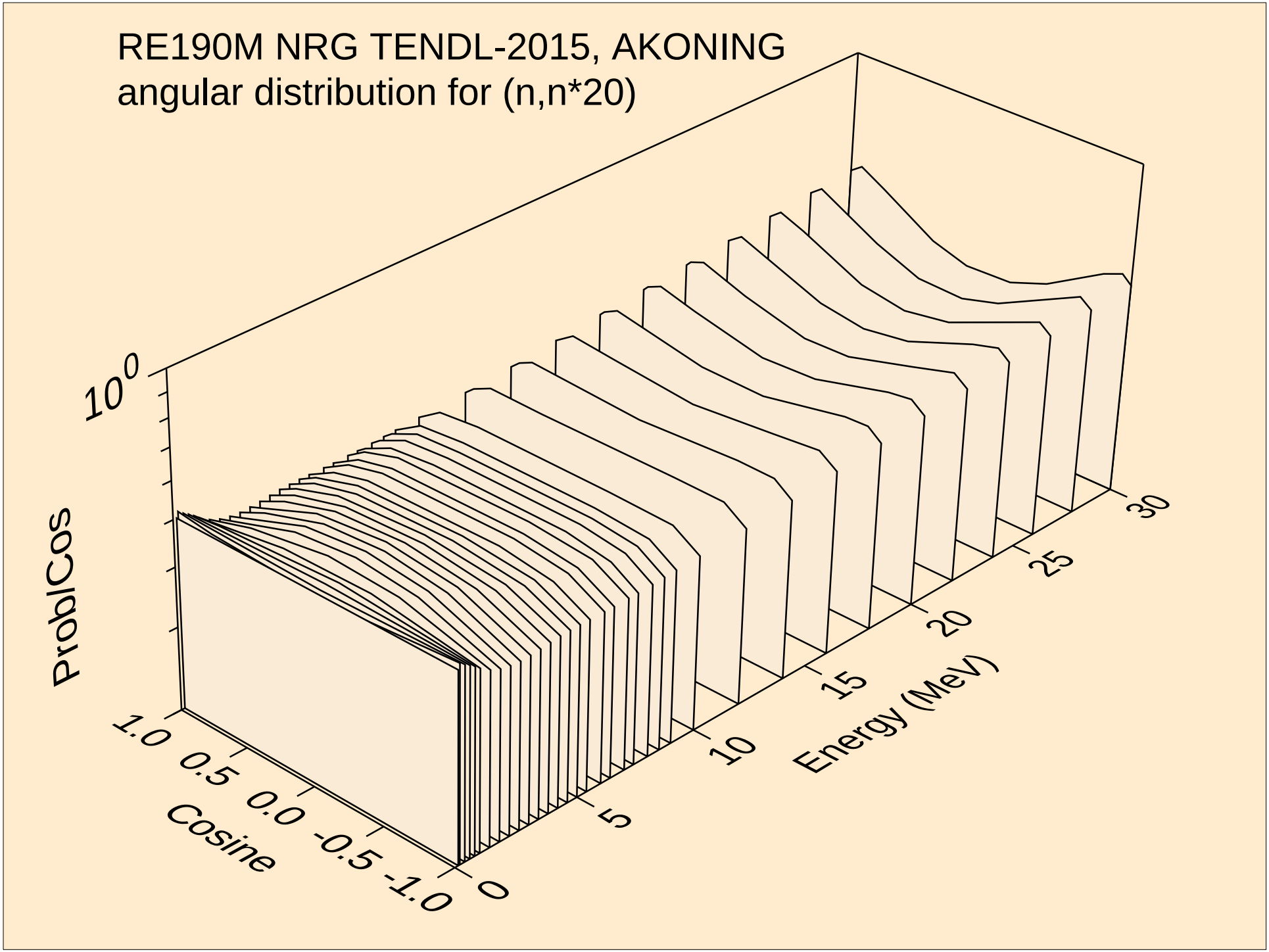

RE190M NRG TENDL-2015, AKONING
angular distribution for (n,n*15)
10^0
ProbICos
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
25
30
Energy (MeV)

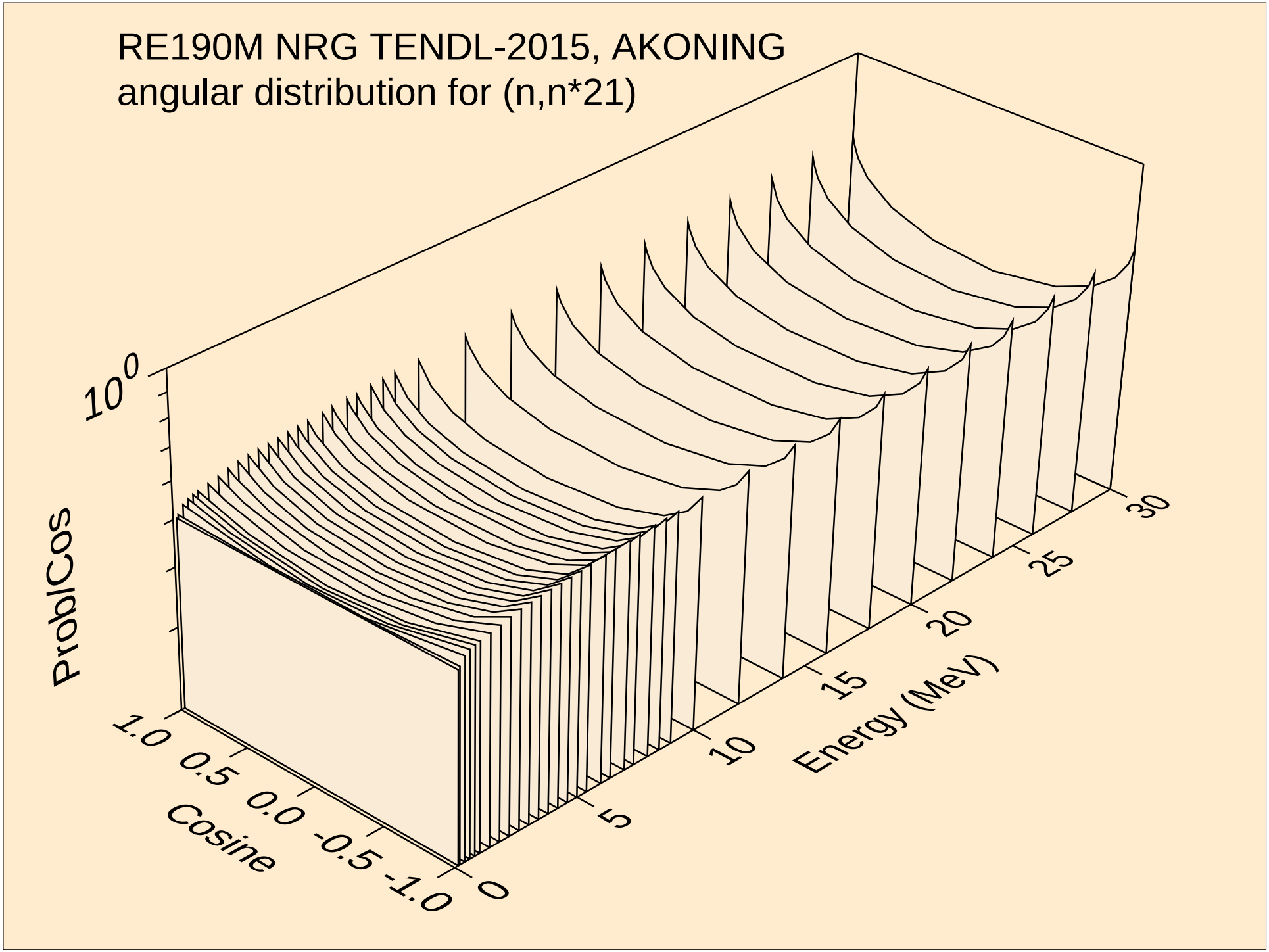

RE190M NRG TENDL-2015, AKONING
angular distribution for (n,n*16)
10^0
ProbICos
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
25
30
Energy (MeV)

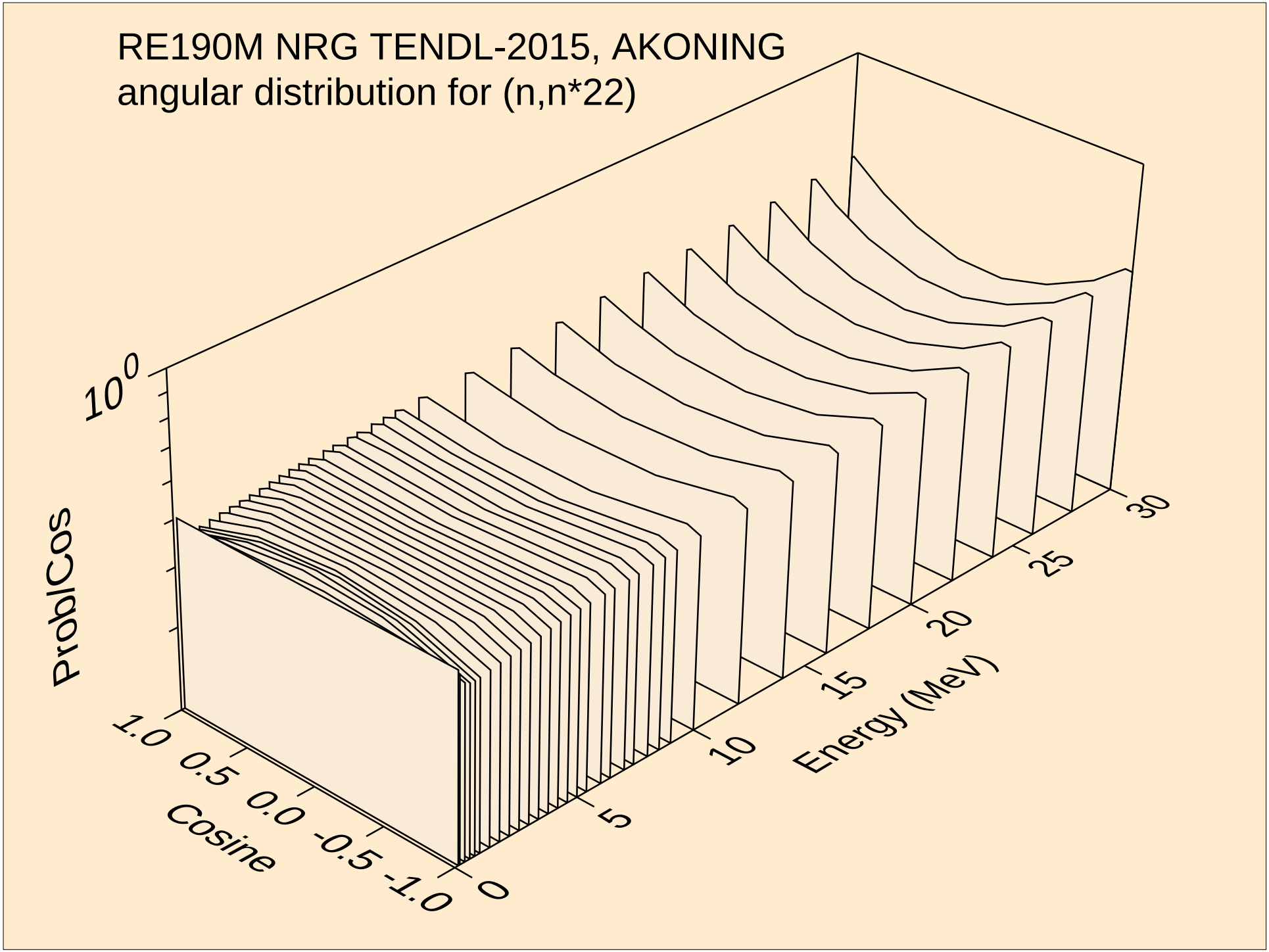

RE190M NRG TENDL-2015, AKONING
angular distribution for (n,n*17)
ProbICos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
25
30
Energy (MeV)

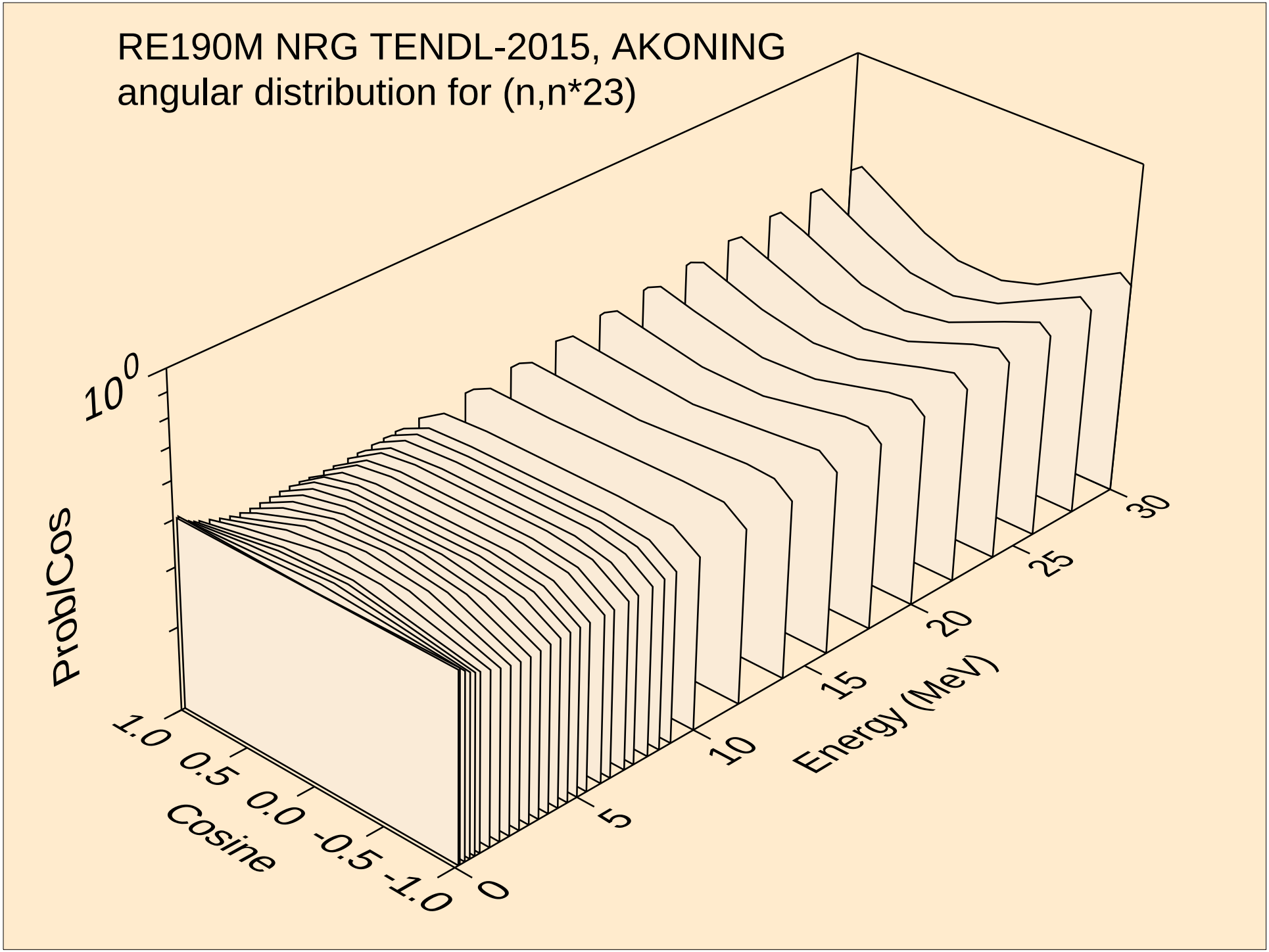

RE190M NRG TENDL-2015, AKONING
angular distribution for (n,n*18)
ProbICos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
25
30
Energy (MeV)

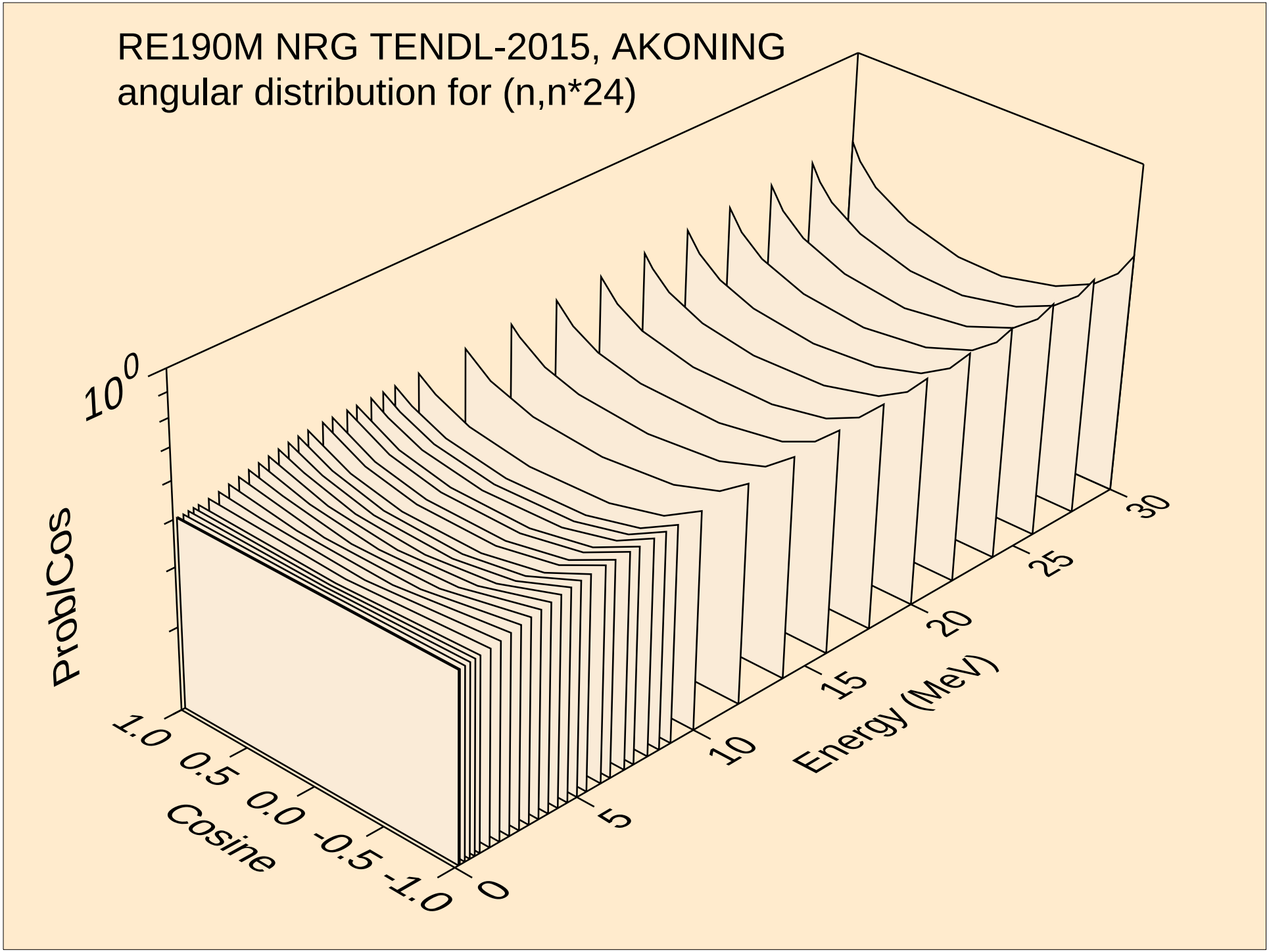

RE190M NRG TENDL-2015, AKONING
angular distribution for (n,n*19)
ProbCos
10^0
Cosine
1.0
0.5
0.0
-0.5
-1.0
Energy (MeV)
0
5
10
15
20
25
30

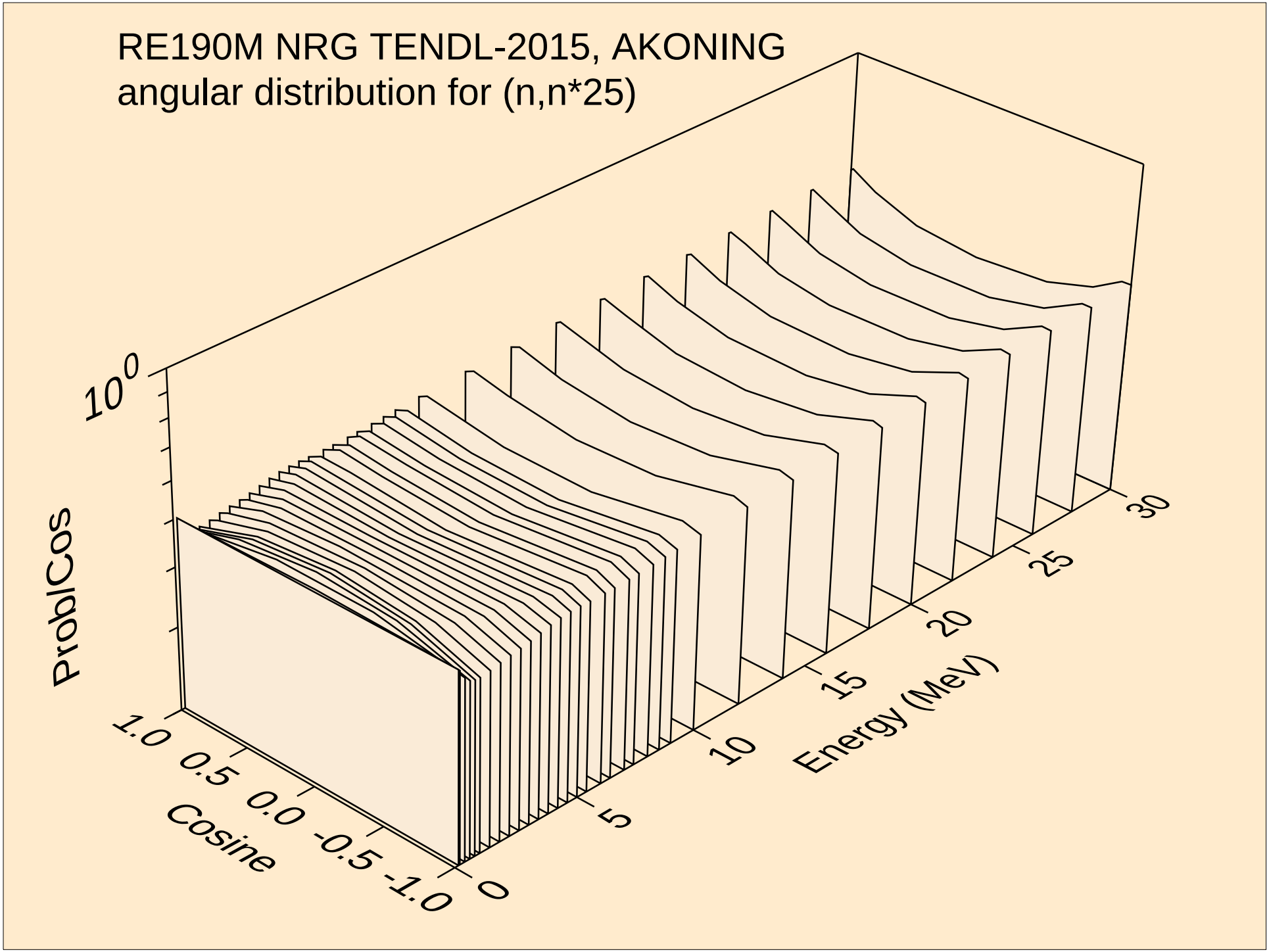

RE190M NRG TENDL-2015, AKONING
angular distribution for (n,n*20)
ProbICos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
25
30
Energy (MeV)

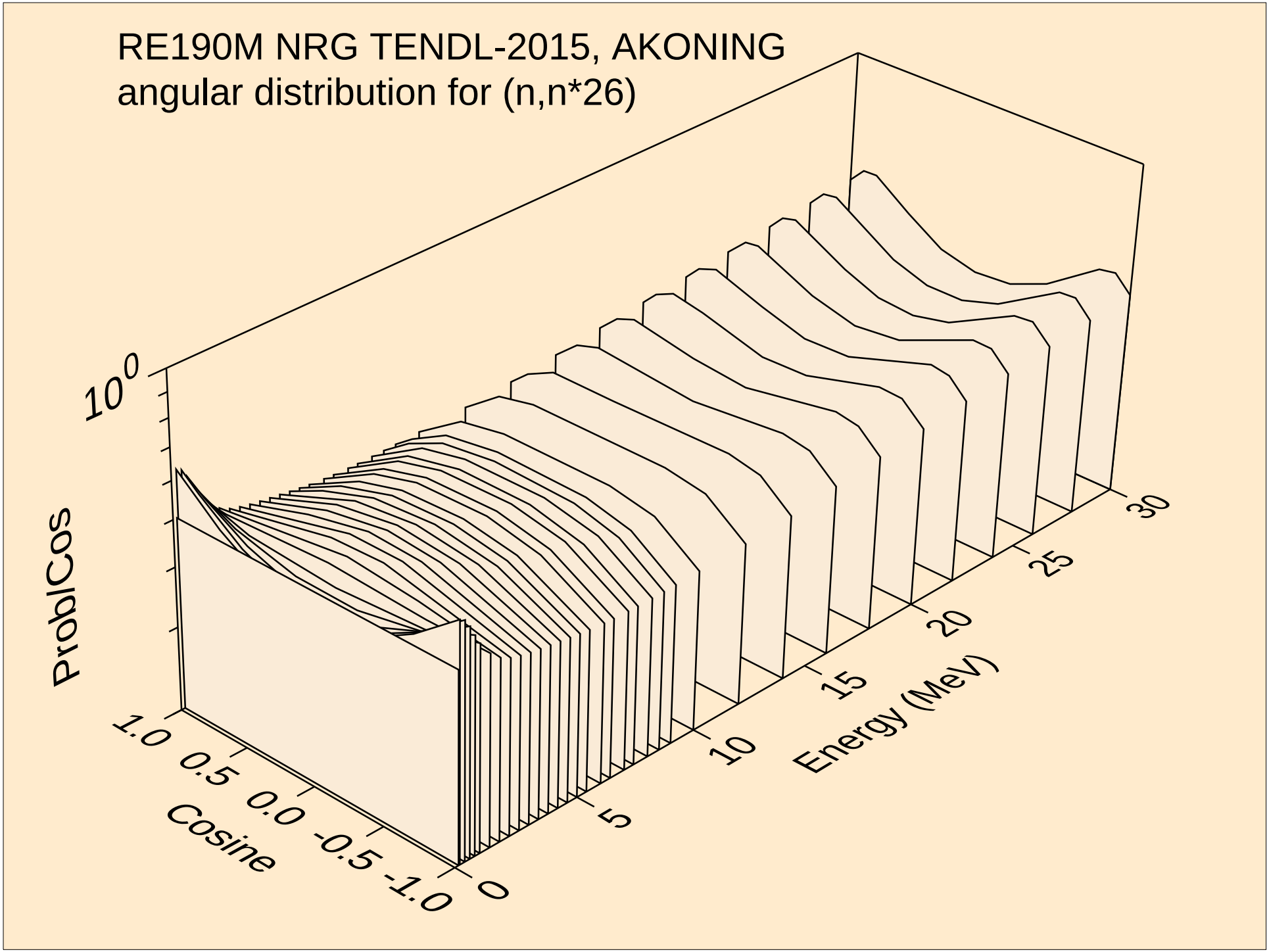

RE190M NRG TENDL-2015, AKONING
angular distribution for (n,n*21)
ProbICos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
25
30
Energy (MeV)

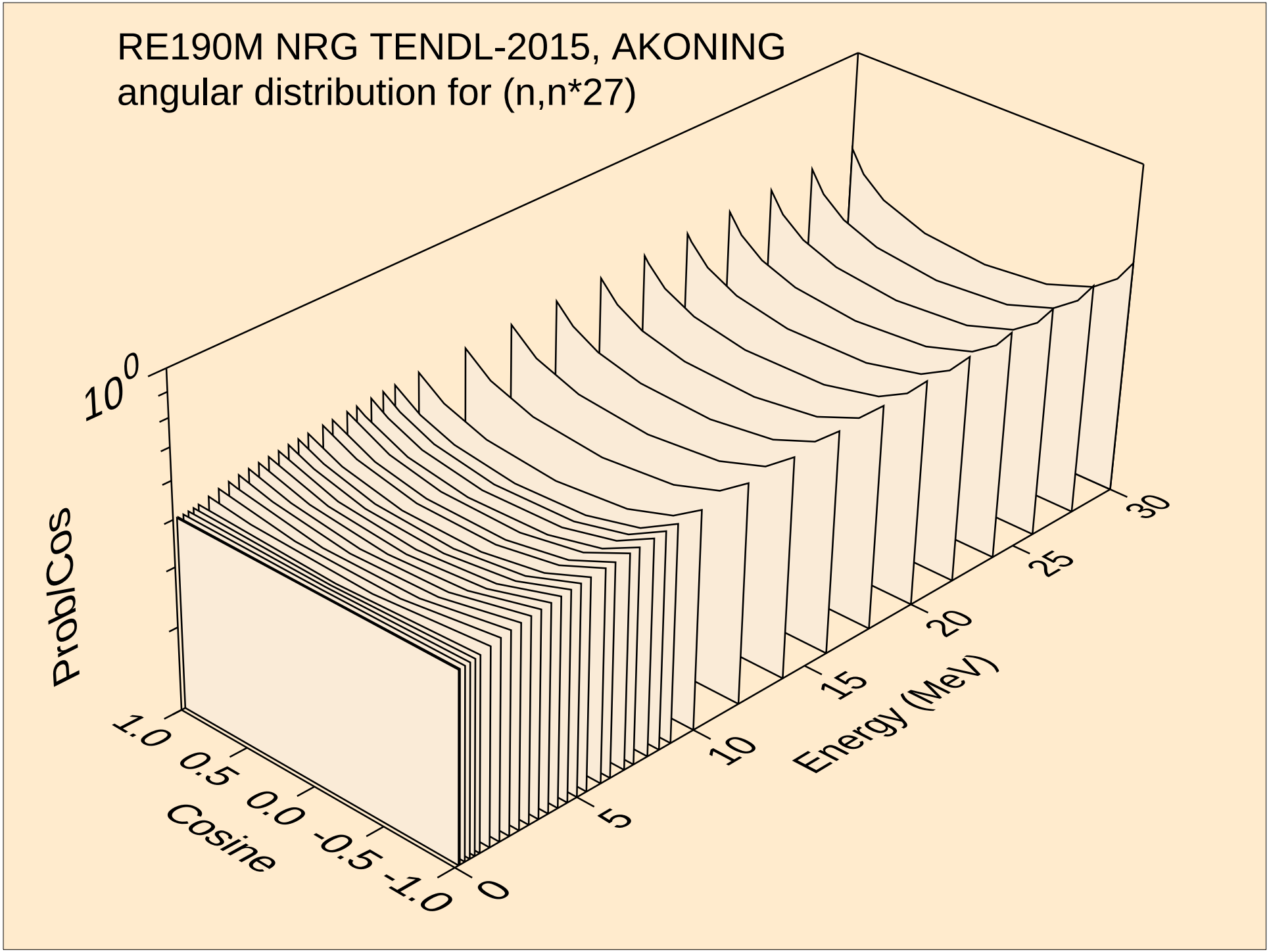

RE190M NRG TENDL-2015, AKONING
angular distribution for (n,n*22)
ProbCos
10^0
Cosine
1.0
0.5
0.0
-0.5
-1.0
Energy (MeV)
0
5
10
15
20
25
30

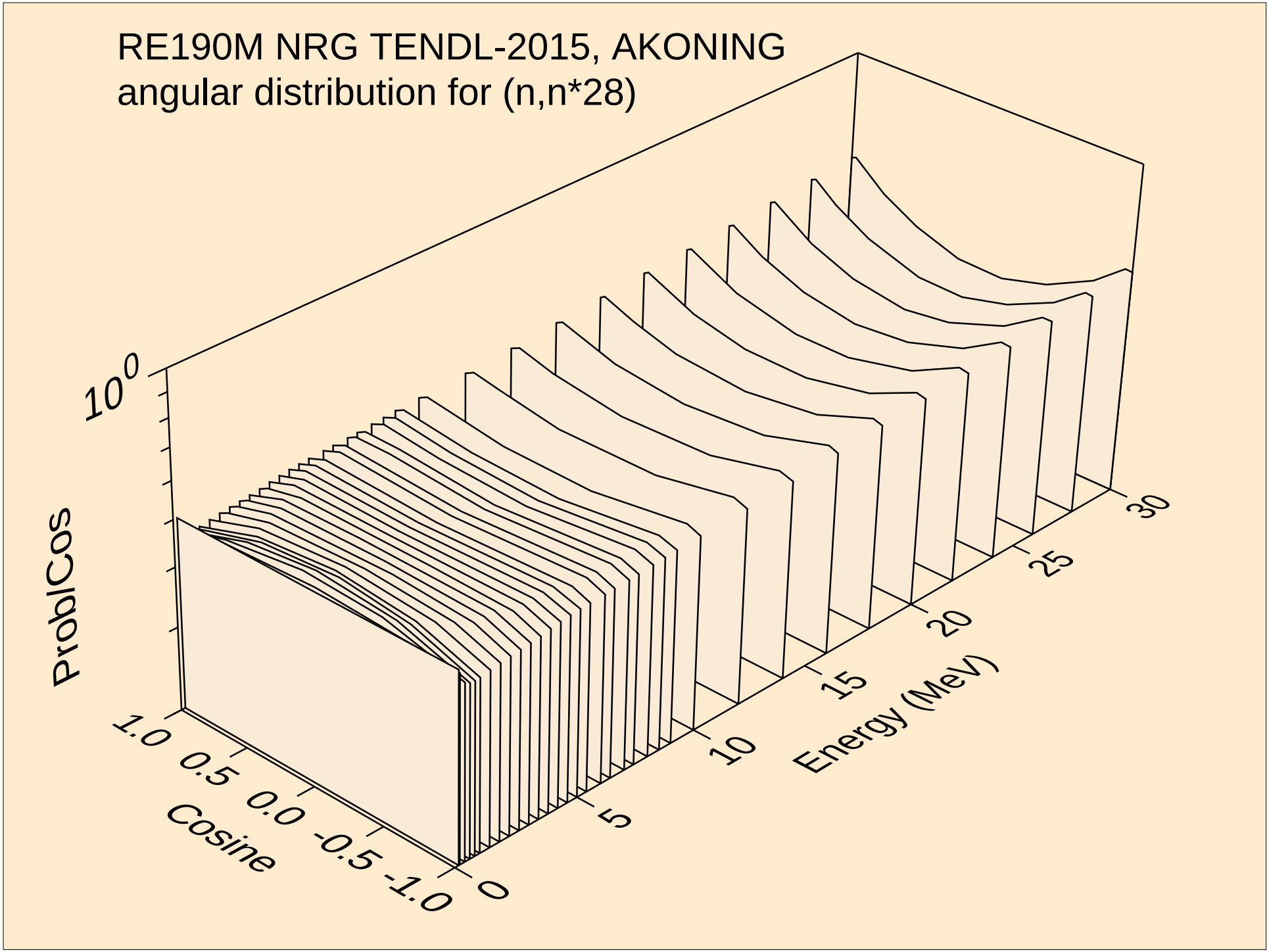

RE190M NRG TENDL-2015, AKONING
angular distribution for (n,n*23)
ProbICos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
25
30
Energy (MeV)

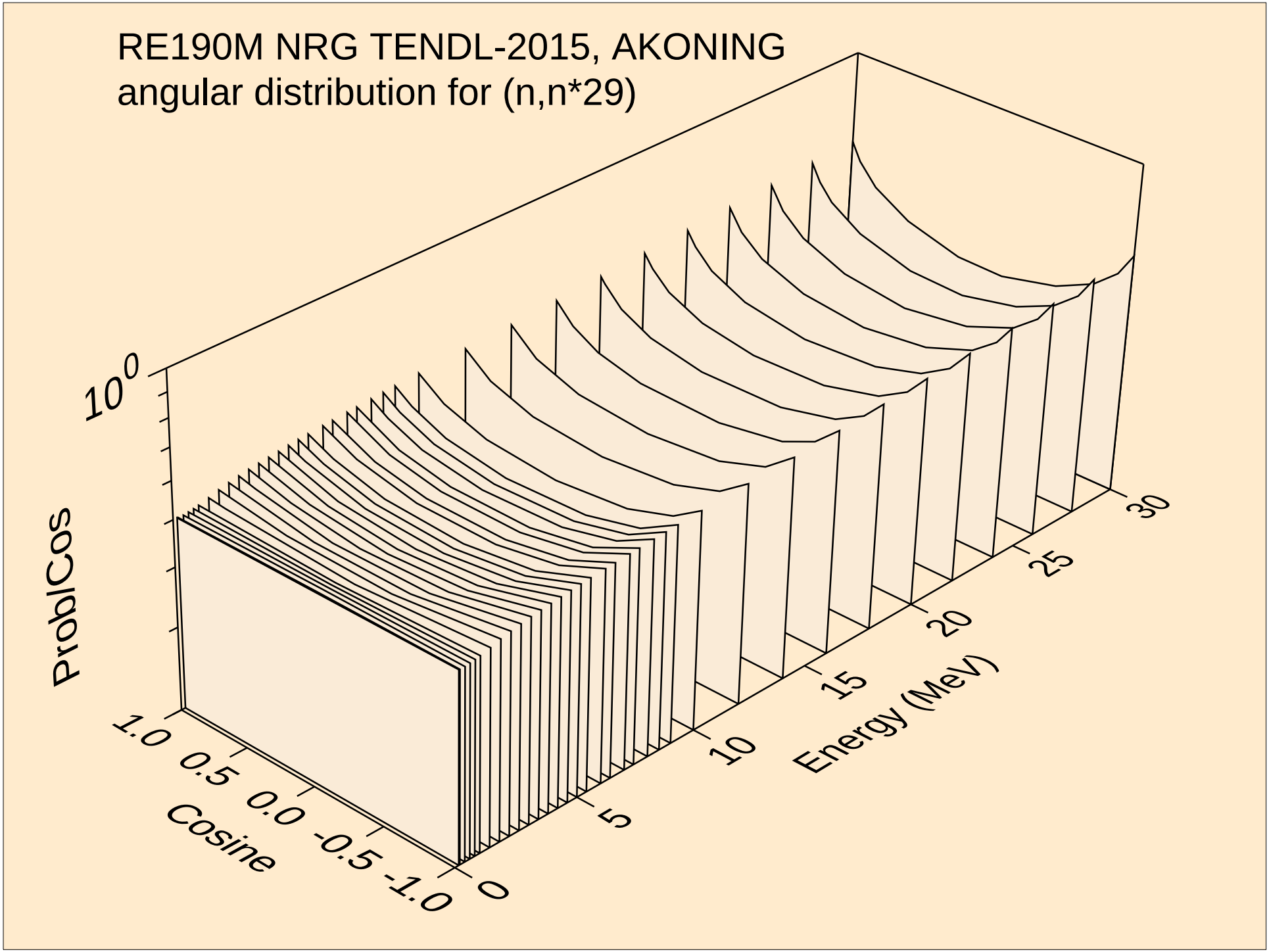

RE190M NRG TENDL-2015, AKONING
angular distribution for (n,n*24)
ProbCos
10^0
Cosine
1.0
0.5
0.0
-0.5
-1.0
Energy (MeV)
0
5
10
15
20
25
30

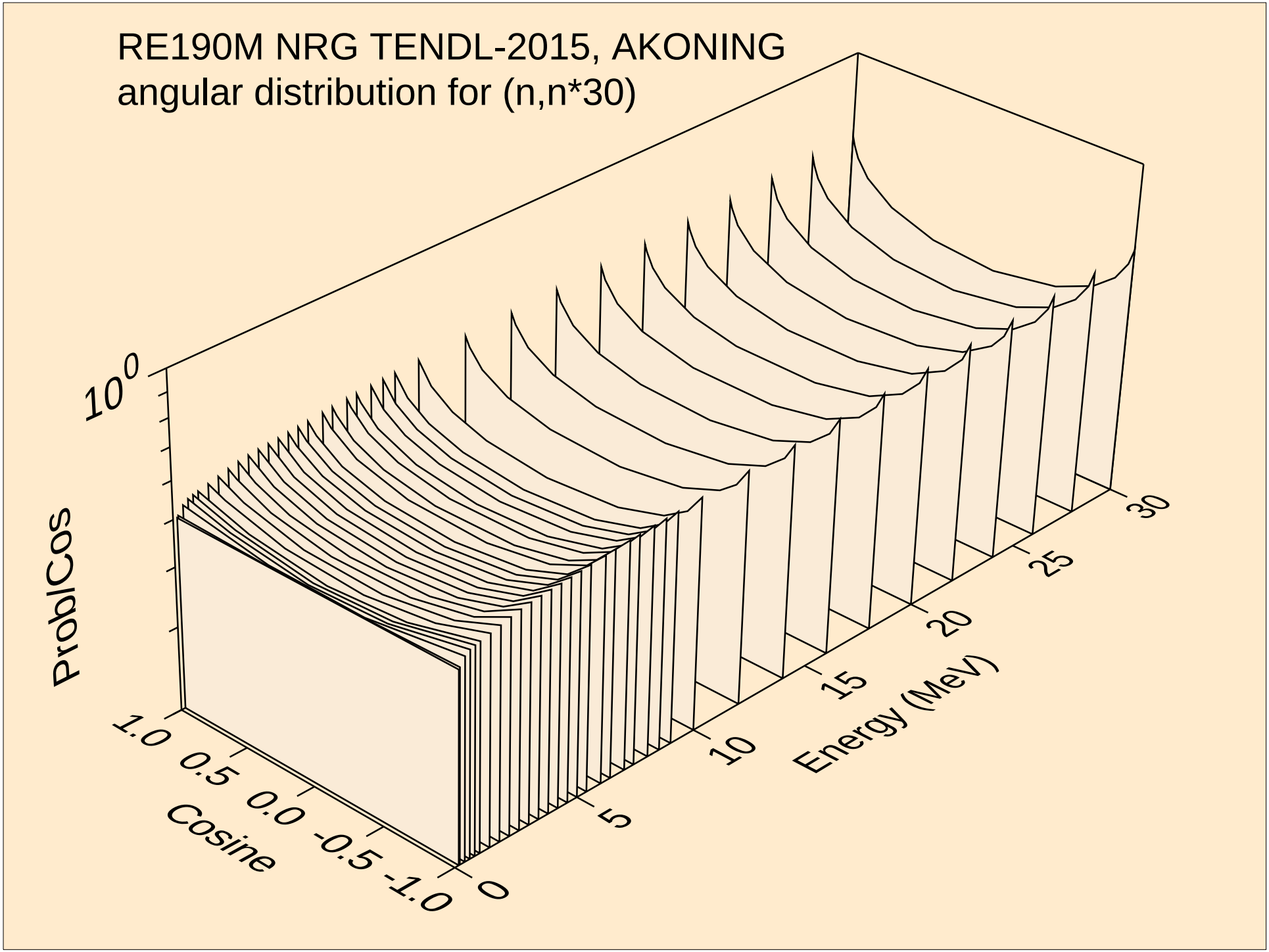

RE190M NRG TENDL-2015, AKONING
angular distribution for (n,n*25)
10^0
ProbCos
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
25
30
Energy (MeV)

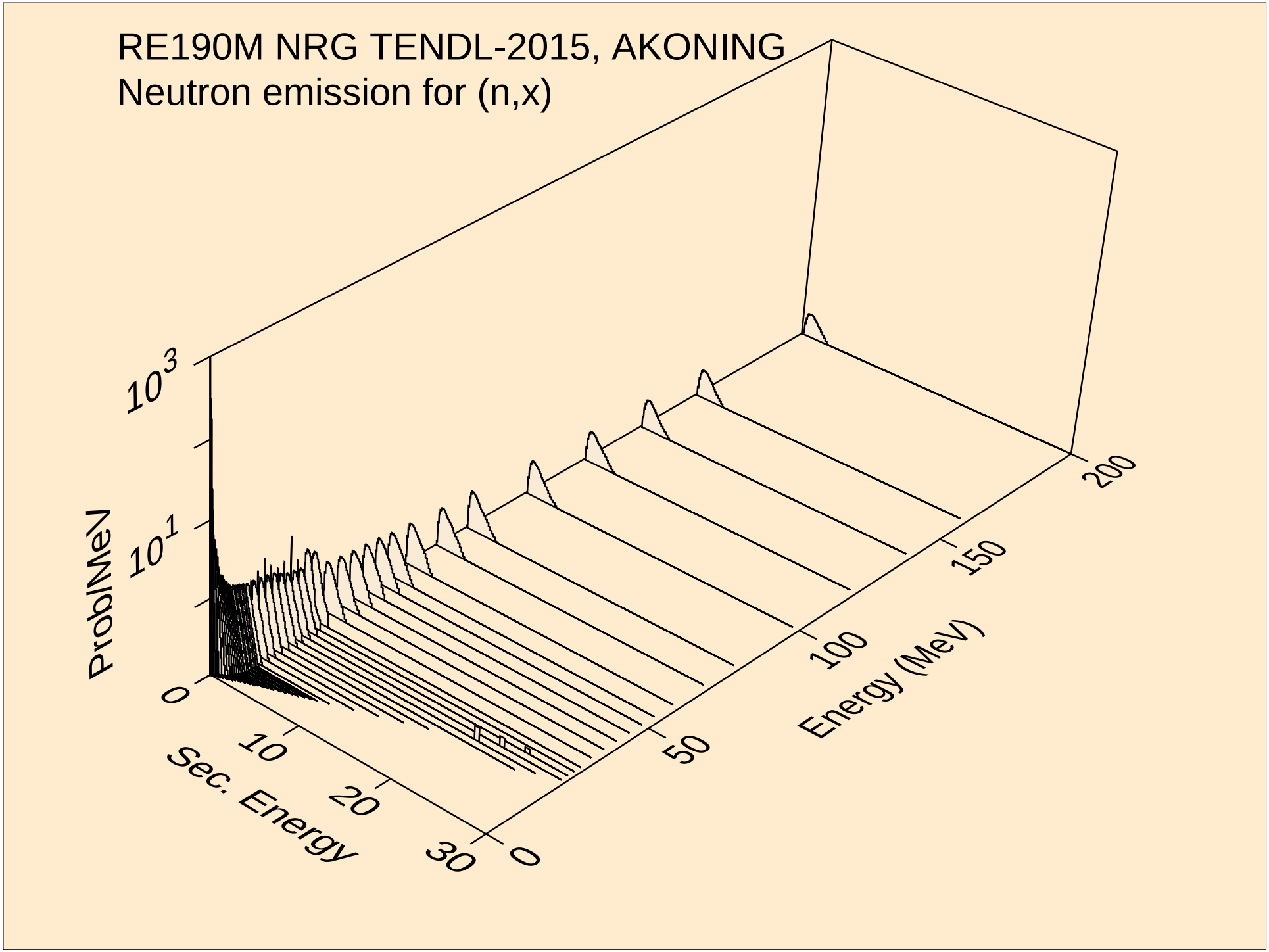

RE190M NRG TENDL-2015, AKONING
angular distribution for (n,n*26)
ProbICos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
25
30
Energy (MeV)

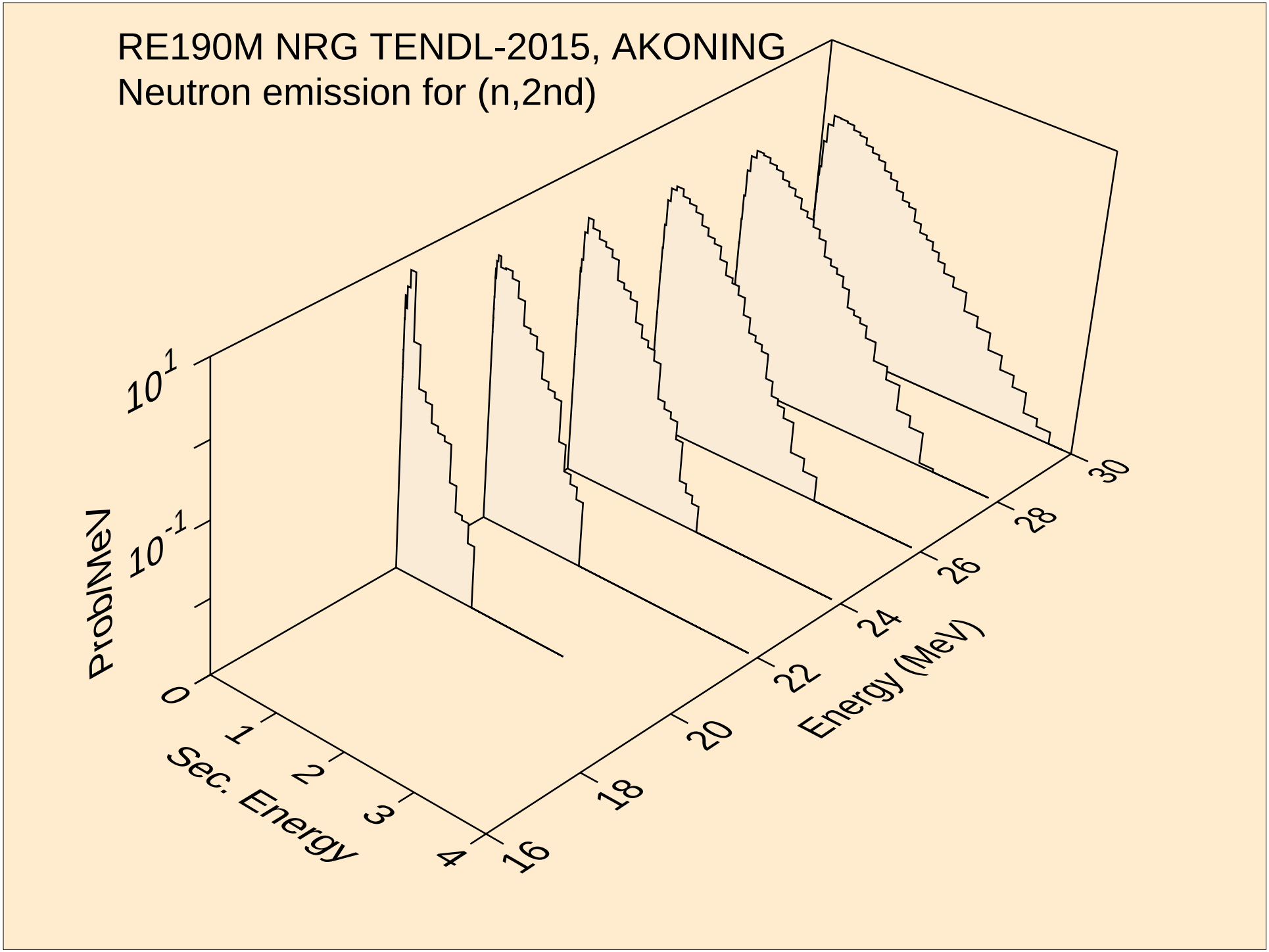

RE190M NRG TENDL-2015, AKONING
angular distribution for (n,n*27)
ProbICos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
25
30
Energy (MeV)

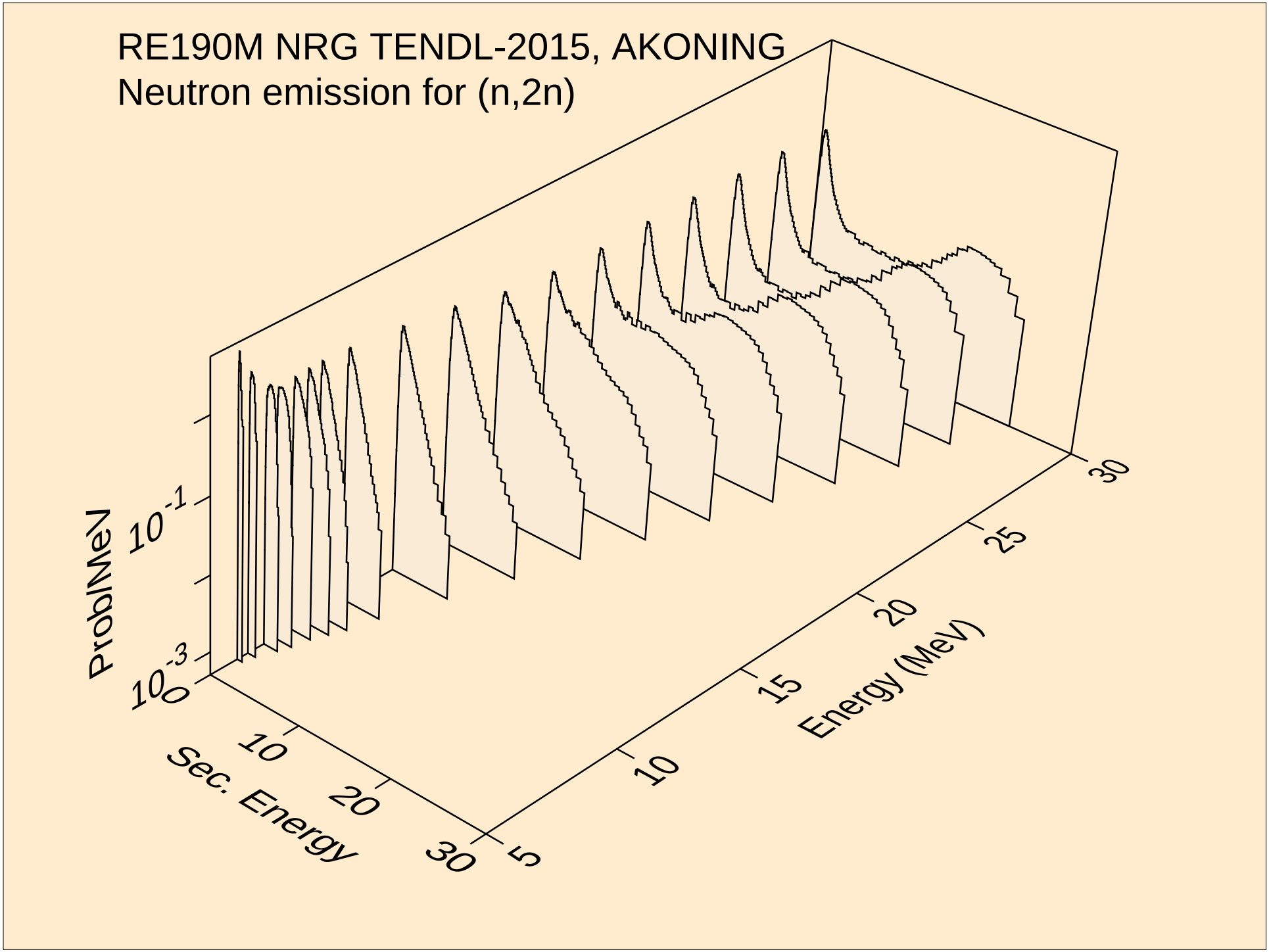

RE190M NRG TENDL-2015, AKONING
angular distribution for (n,n*28)
ProbICos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
25
30
Energy (MeV)

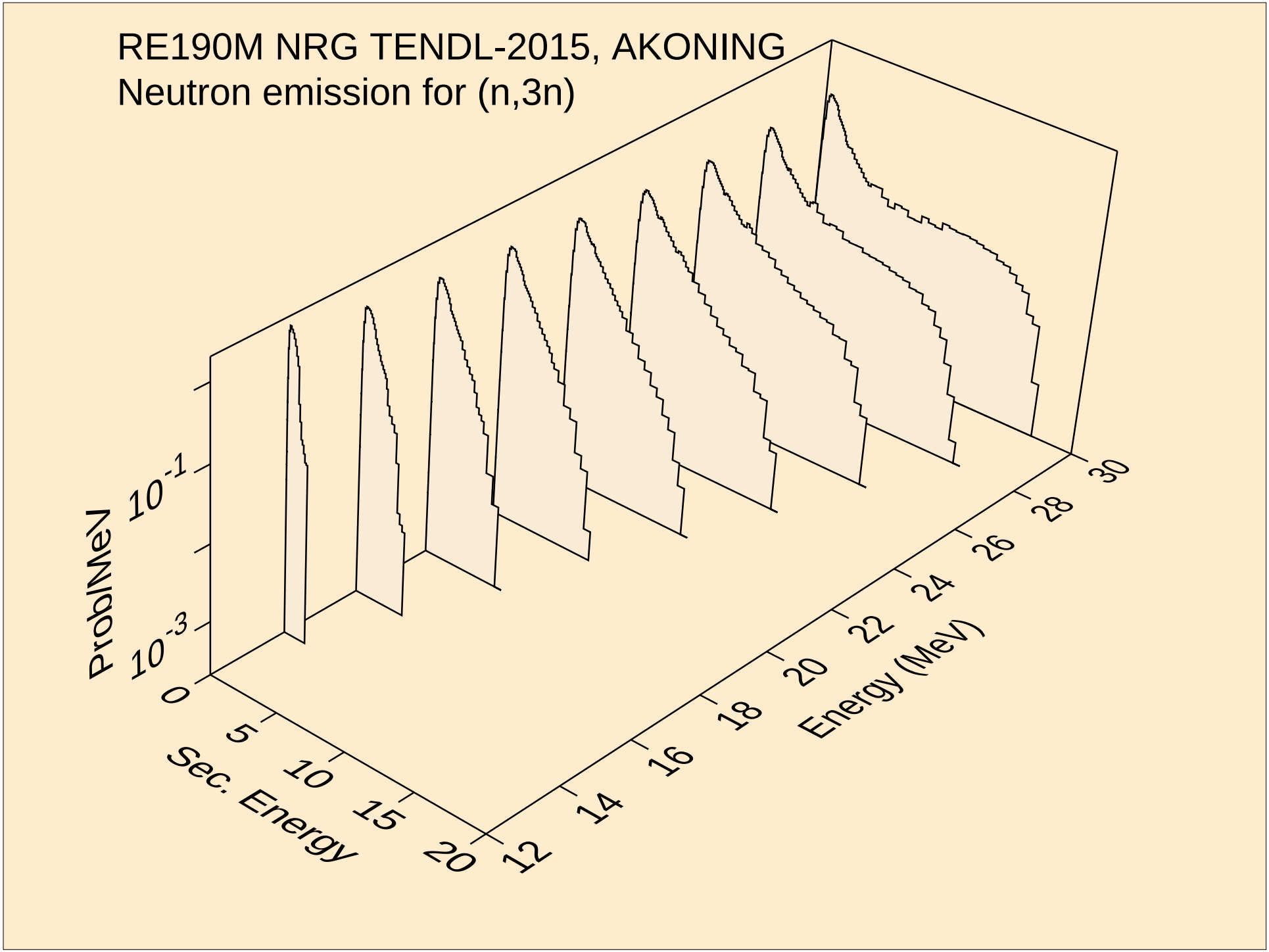

RE190M NRG TENDL-2015, AKONING
angular distribution for (n,n*29)
ProbICos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
25
30
Energy (MeV)

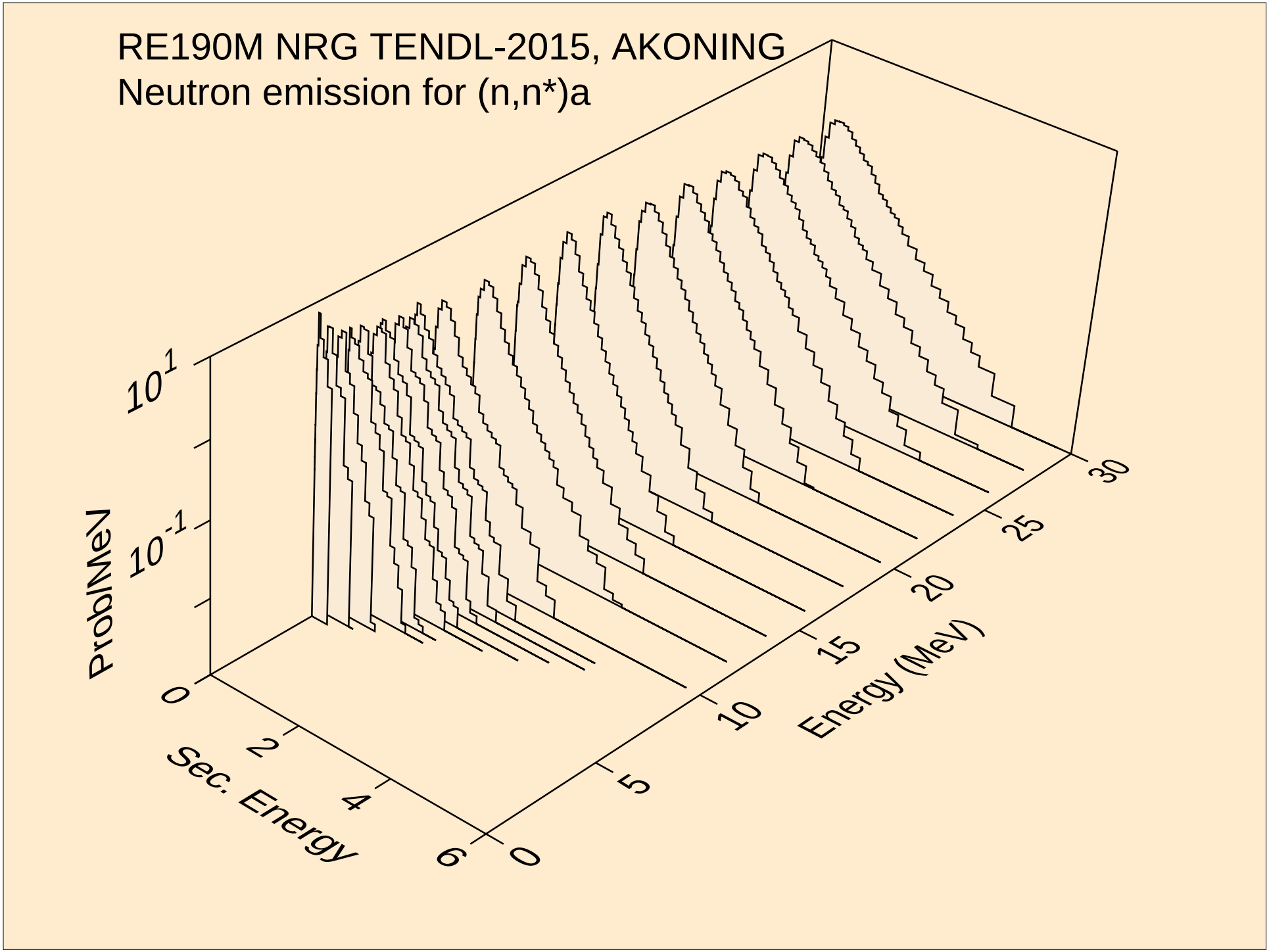

RE190M NRG TENDL-2015, AKONING
angular distribution for (n,n*30)
ProbICos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
25
30
Energy (MeV)

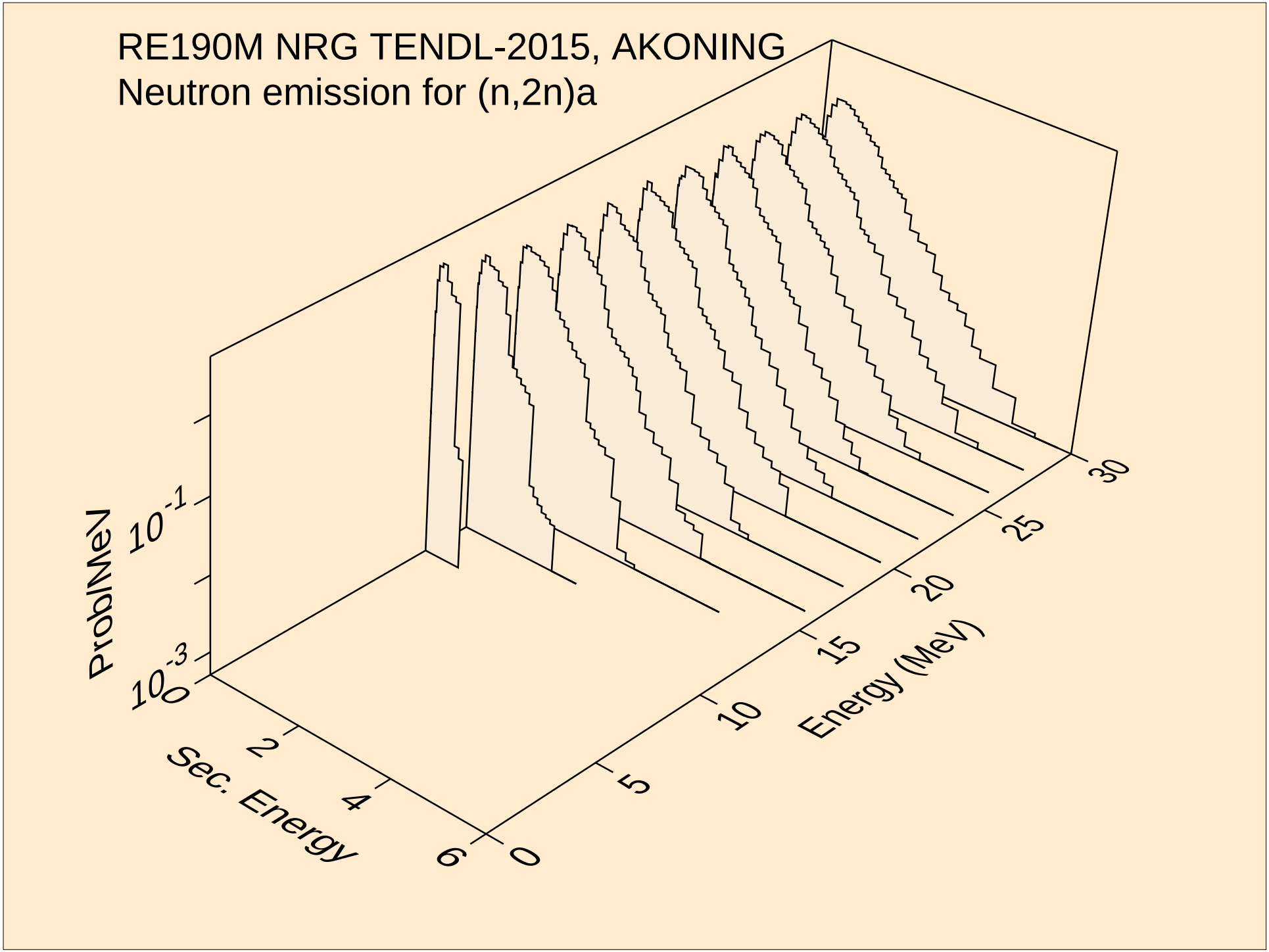

RE190M NRG TENDL-2015, AKONING
Neutron emission for (n,x)
Prob/MeV
10^3
10^1
0
10
20
30
Sec. Energy
0
50
100
150
200
Energy (MeV)

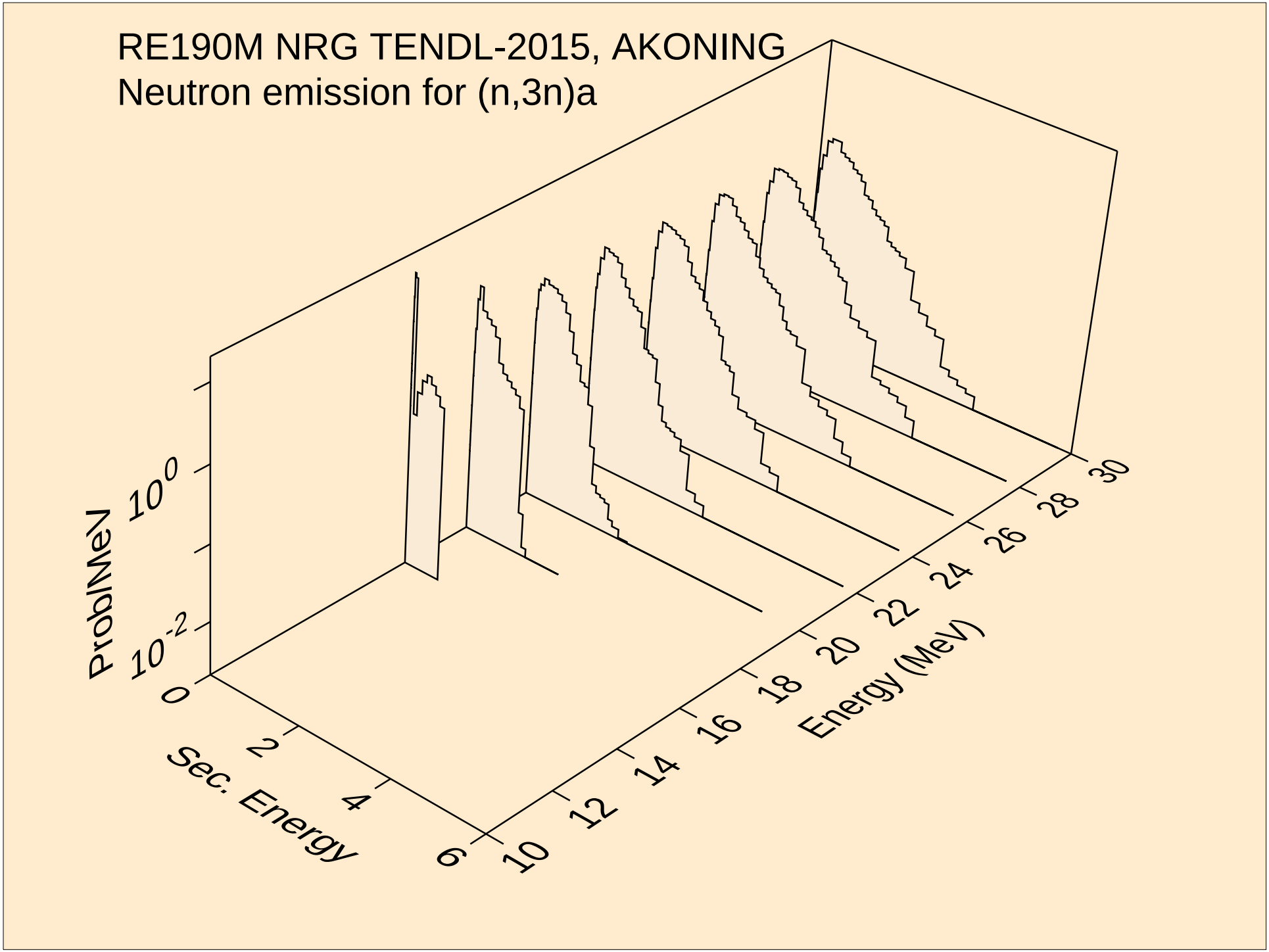

RE190M NRG TENDL-2015, AKONING
Neutron emission for (n,2nd)
Prob/MeV
10^{1}
10^{-1}
0
1
2
3
4
Sec. Energy
16
18
20
22
24
26
28
30
Energy (MeV)

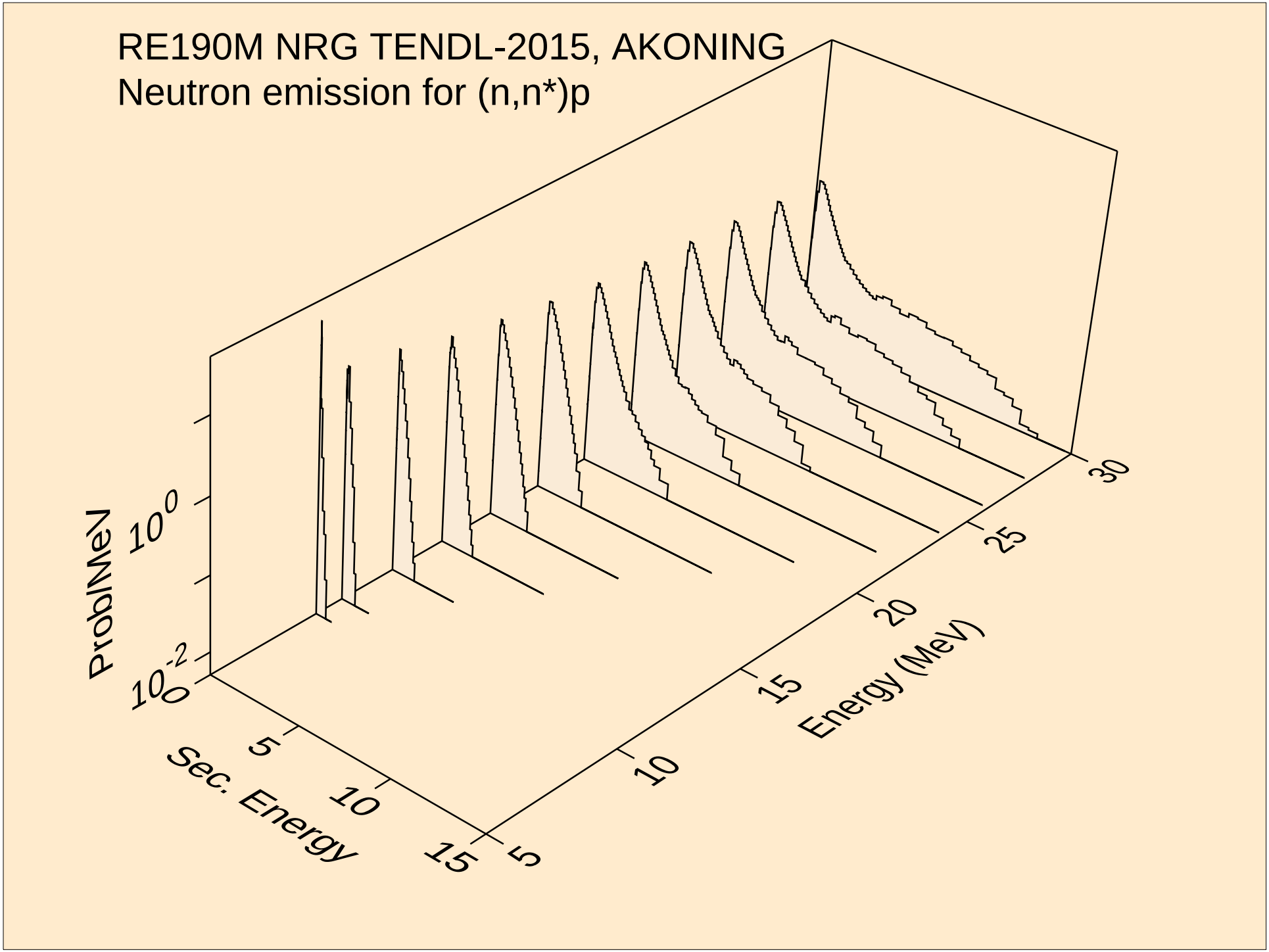

RE190M NRG TENDL-2015, AKONING
Neutron emission for (n,2n)
Prob/MeV
10-1
10-3
0
10
20
30
Sec. Energy
5
10
15
20
25
30
Energy (MeV)

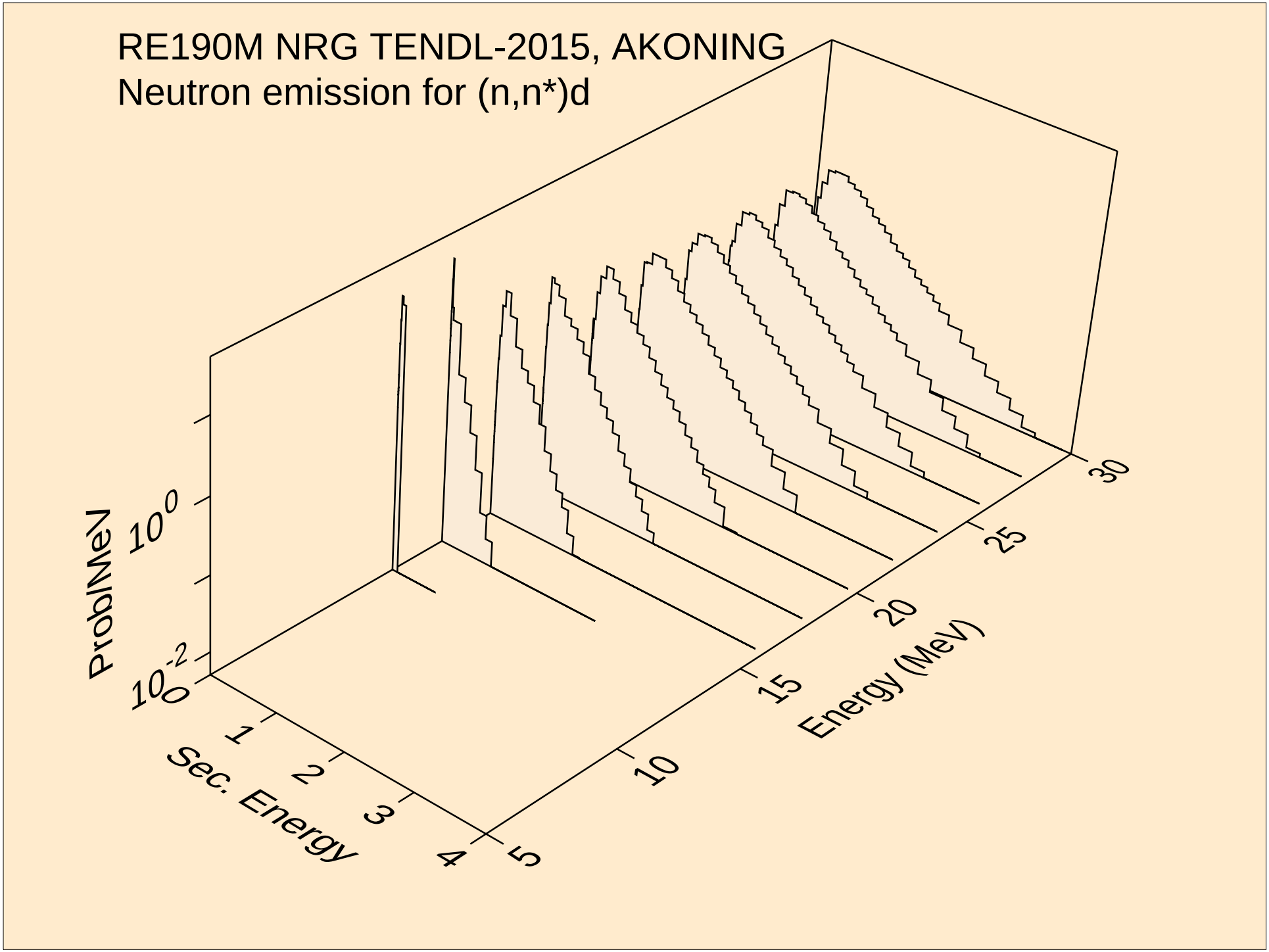

RE190M NRG TENDL-2015, AKONING
Neutron emission for (n,3n)
Prob/MeV
10-1
10-3
0
5
10
15
20
Sec. Energy
12
14
16
18
20
22
24
26
28
30
Energy (MeV)

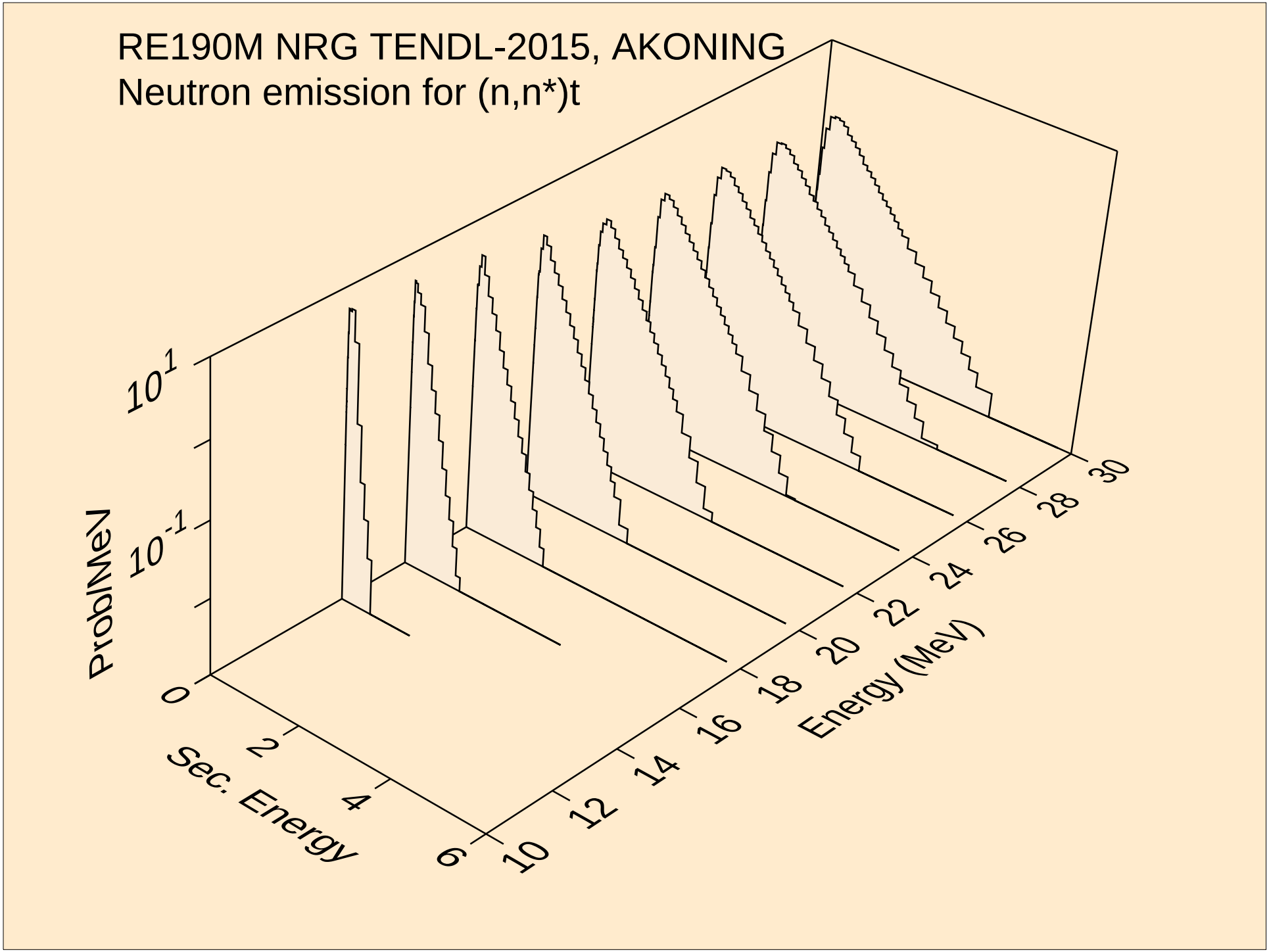

RE190M NRG TENDL-2015, AKONING
Neutron emission for (n,n*)a
Prob/MeV
10^1
10^-1
0
Sec. Energy
2
4
6
0
5
10
15
20
25
30
Energy (MeV)

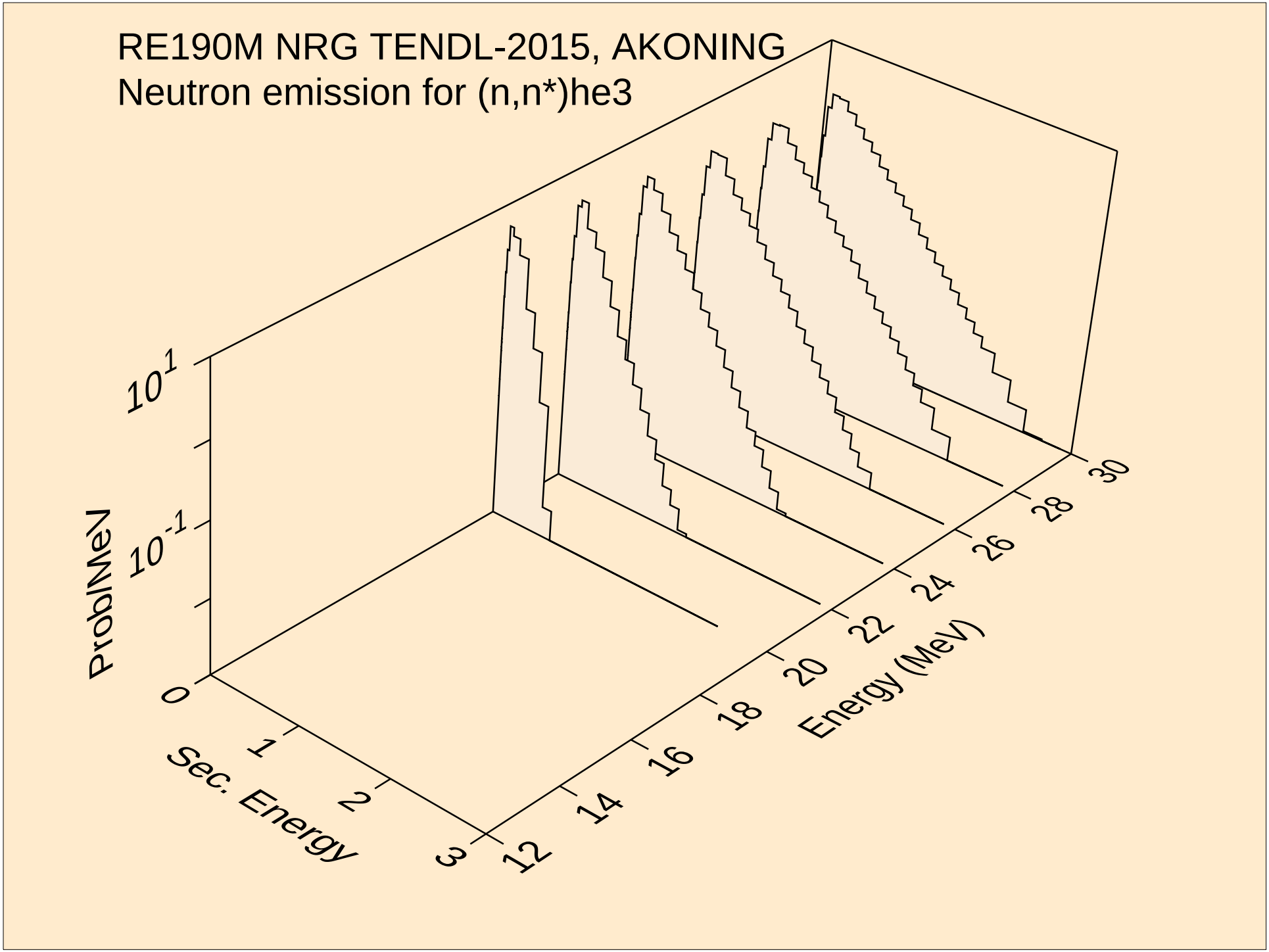

RE190M NRG TENDL-2015, AKONING
Neutron emission for (n,2n)a
Prob/MeV
10-1
10-3
0
2
4
6
Sec. Energy
0
5
10
15
20
25
30
Energy (MeV)

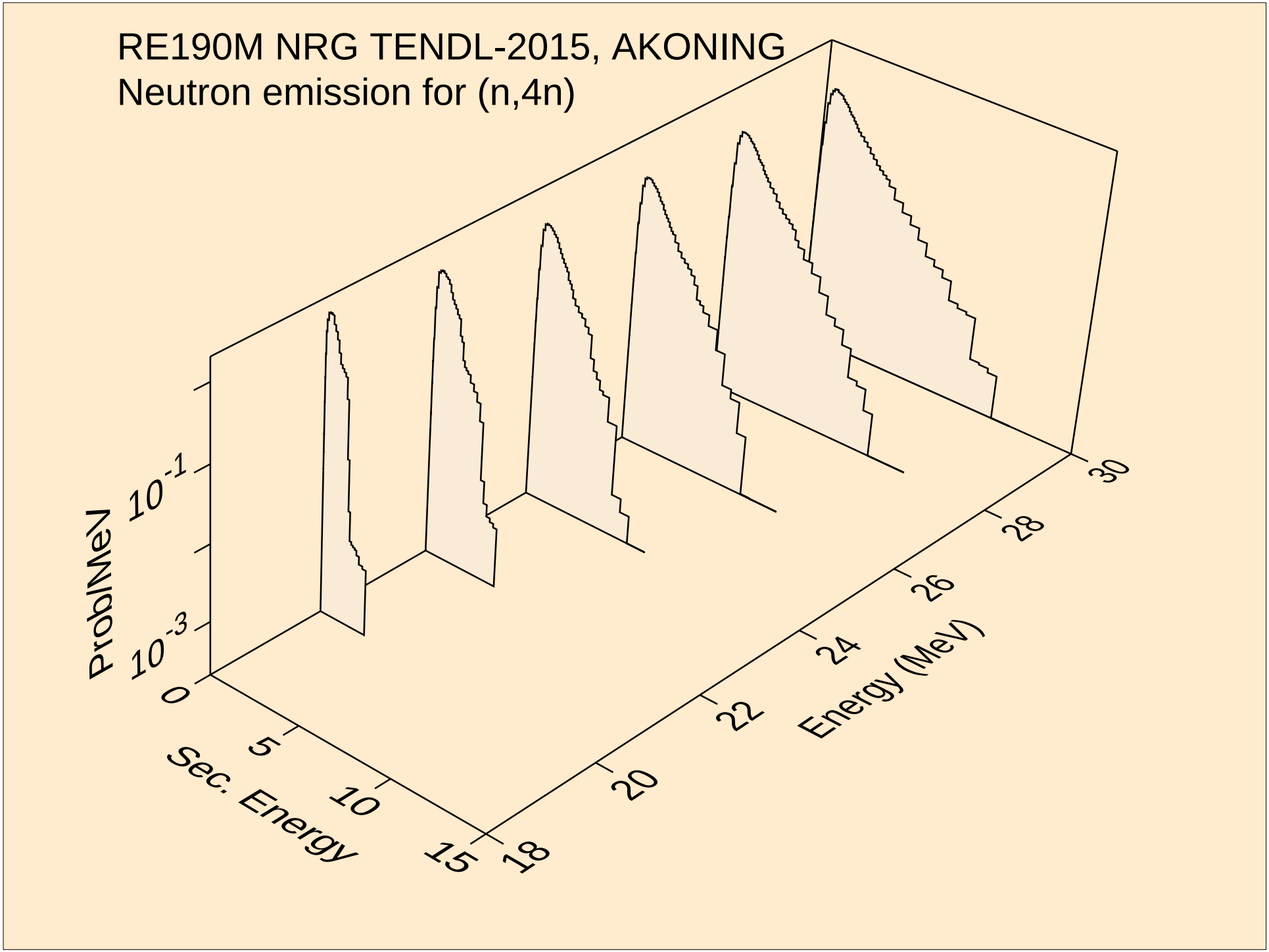

RE190M NRG TENDL-2015, AKONING
Neutron emission for (n,3n)a
Prob/MeV
10^0
10^-2
0
2
4
6
Sec. Energy
10
12
14
16
18
20
22
24
26
28
30
Energy (MeV)

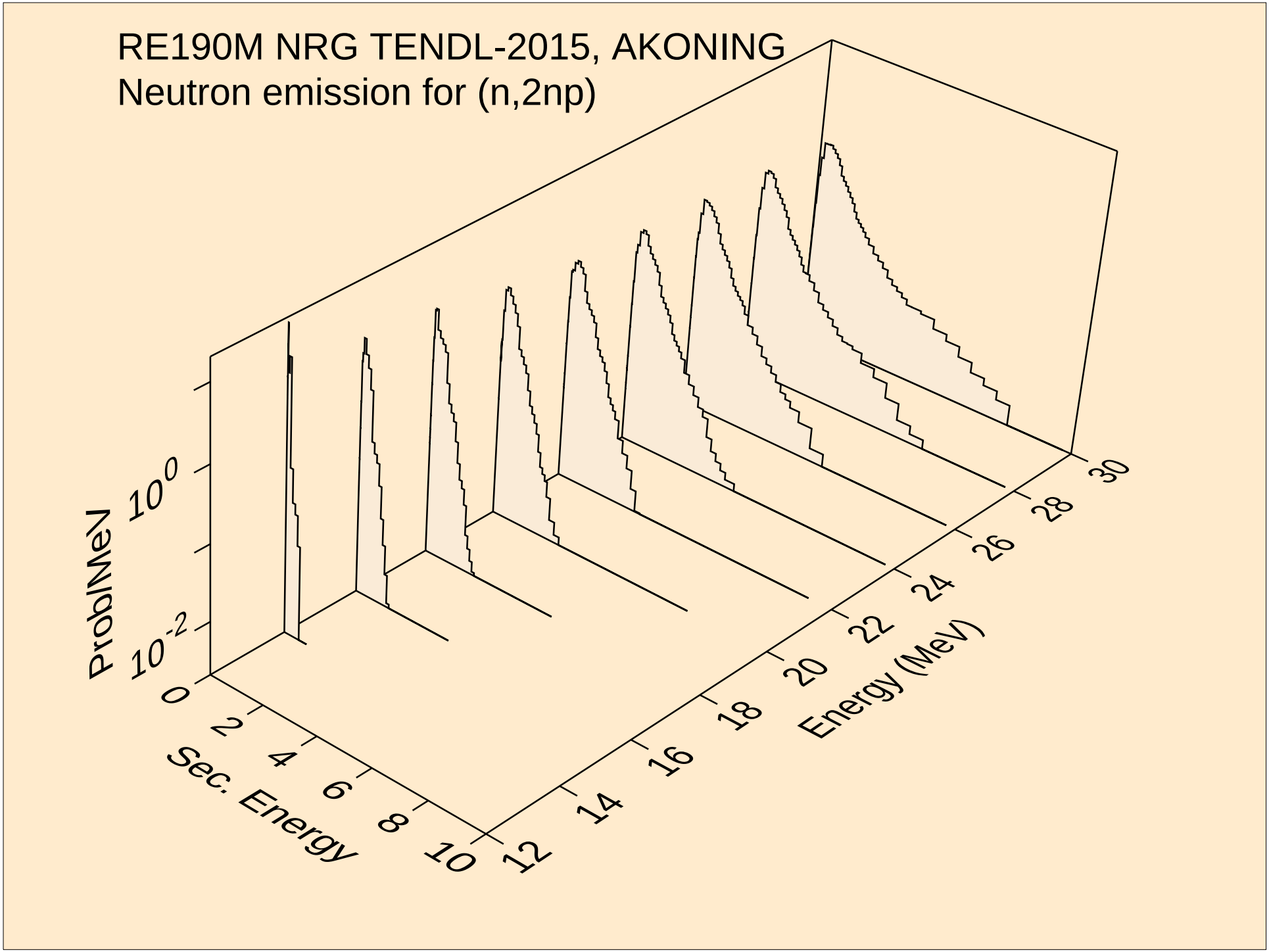

RE190M NRG TENDL-2015, AKONING
Neutron emission for (n,n*)p
Prob/MeV
10^{0}
10^{-2}
0
5
10
15
Sec. Energy
5
10
15
20
25
30
Energy (MeV)

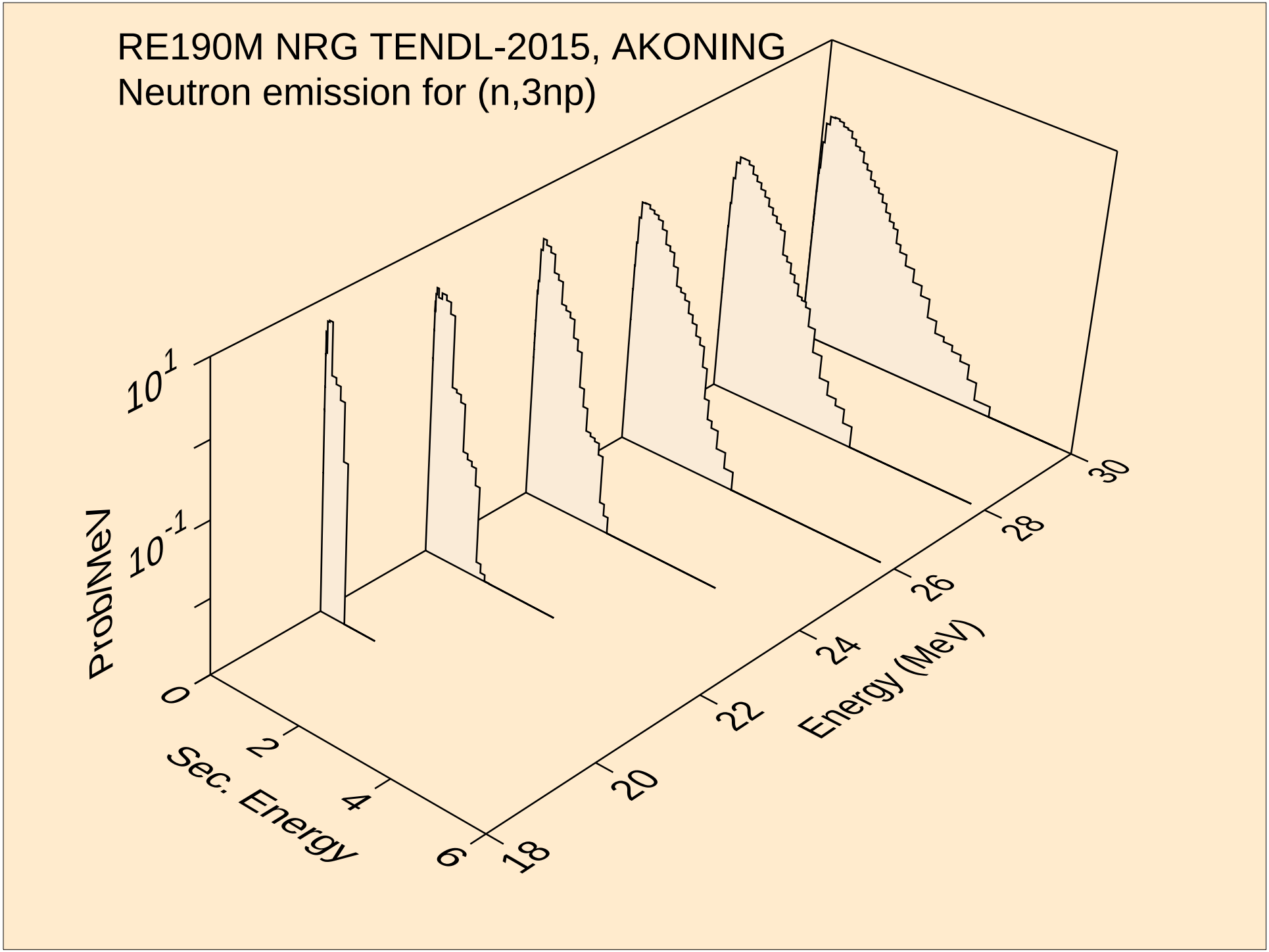

RE190M NRG TENDL-2015, AKONING
Neutron emission for (n,n*)d
Prob/MeV
10^{0}
10^{-2}
0
Sec. Energy
1
2
3
4
5
10
15
20
25
30
Energy (MeV)

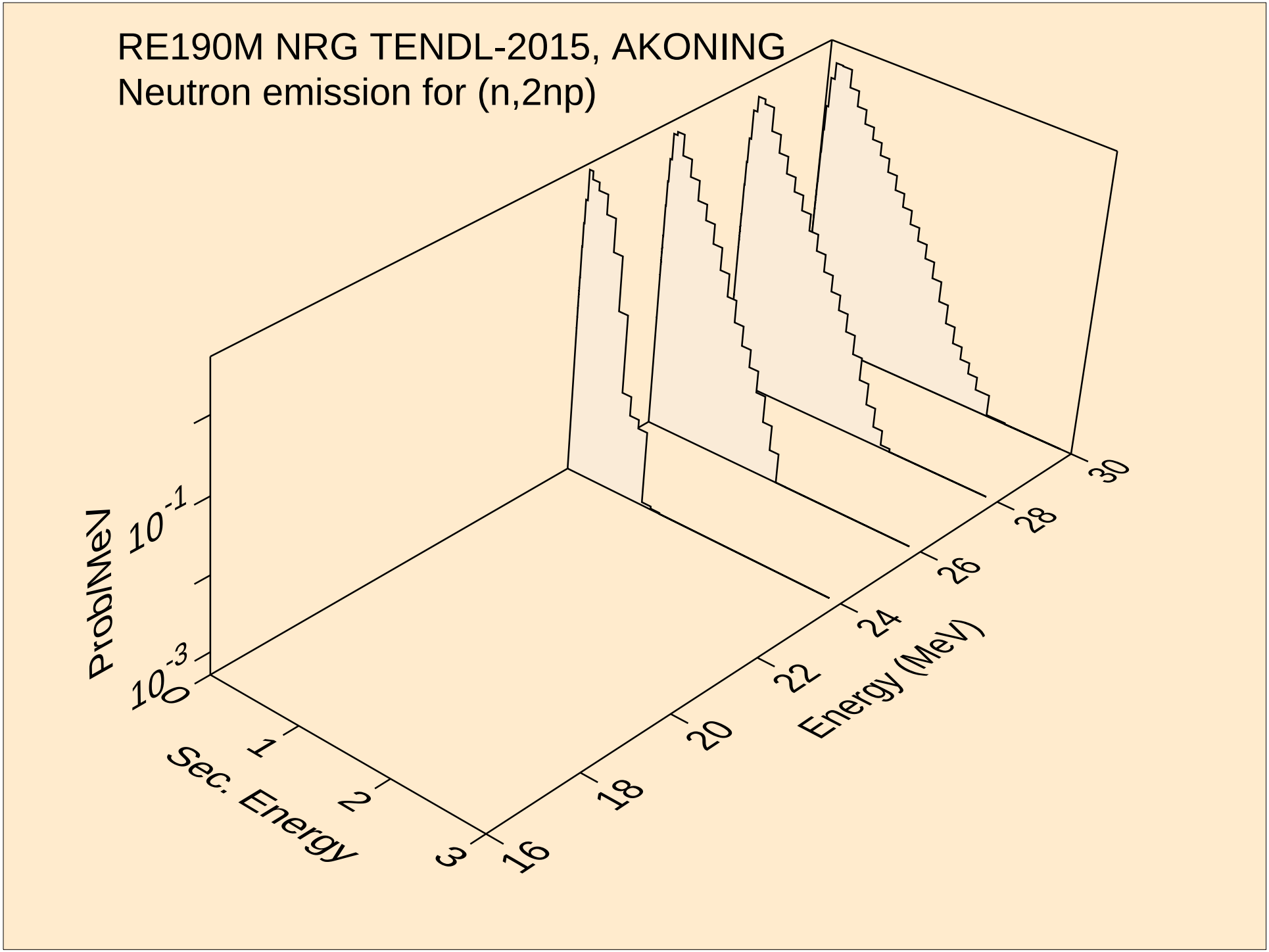

RE190M NRG TENDL-2015, AKONING
Neutron emission for (n,n*)t
Prob/MeV
10^1
10^-1
0
Sec. Energy
2
4
6
10
12
14
16
18
20
22
24
26
28
30
Energy (MeV)

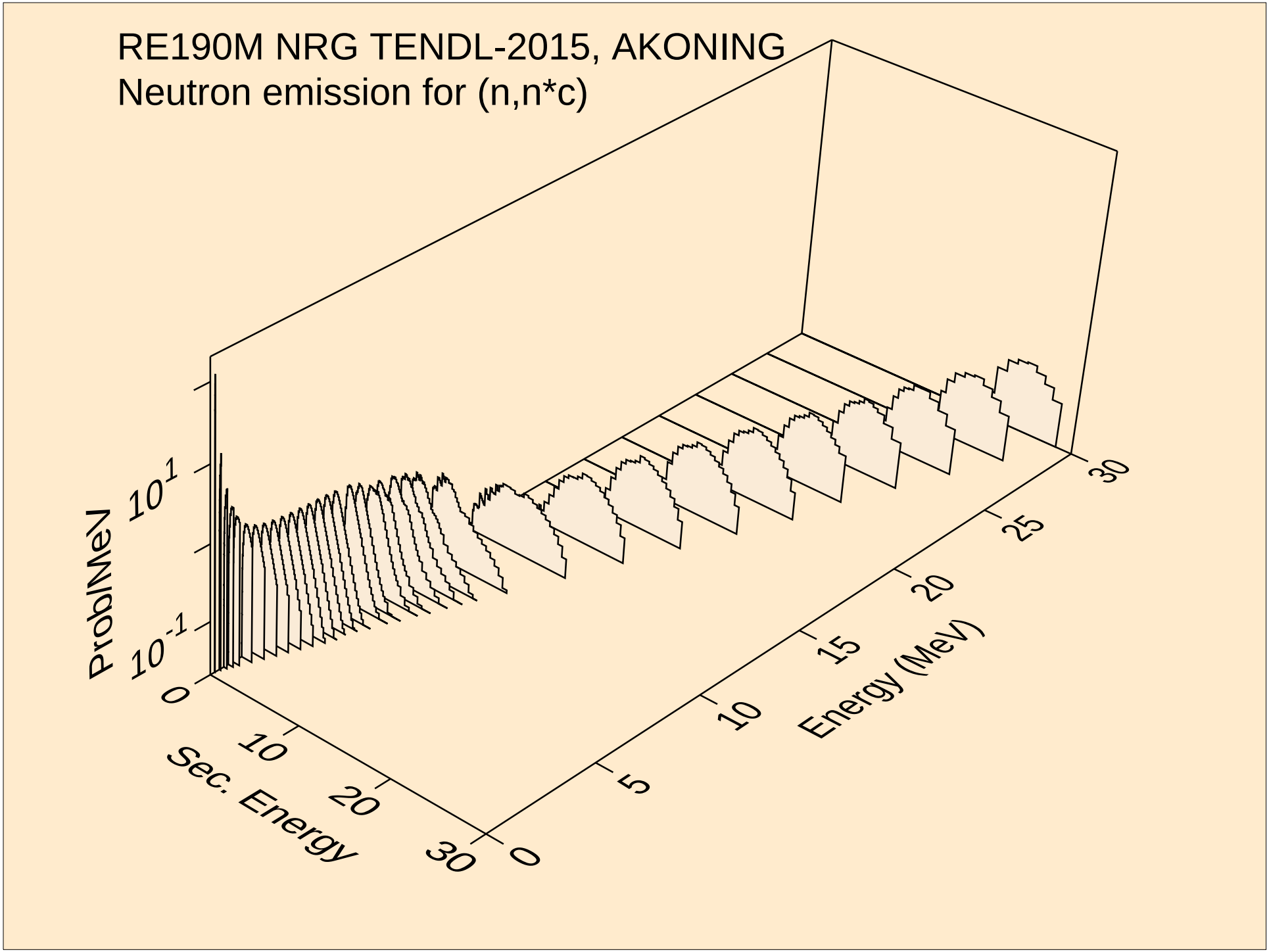

RE190M NRG TENDL-2015, AKONING
Neutron emission for (n,n*)he3
Prob/MeV
10^{1}
10^{-1}
0
Sec. Energy
1
2
3
Energy (MeV)
12
14
16
18
20
22
24
26
28
30

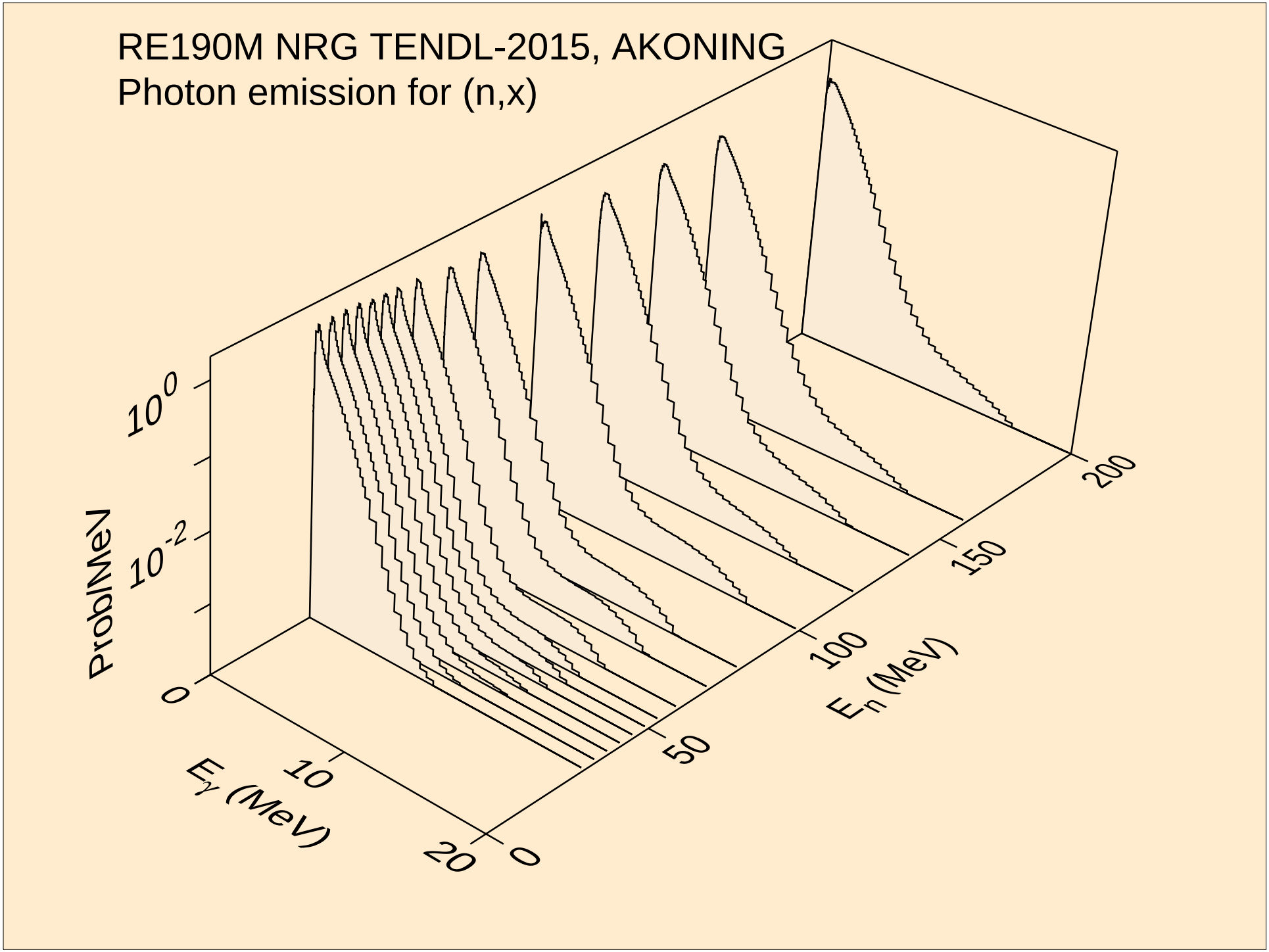

RE190M NRG TENDL-2015, AKONING
Neutron emission for (n,4n)
Prob/MeV
10-1
10-3
0
Sec. Energy
5
10
15
18
20
22
24
26
28
30
Energy (MeV)

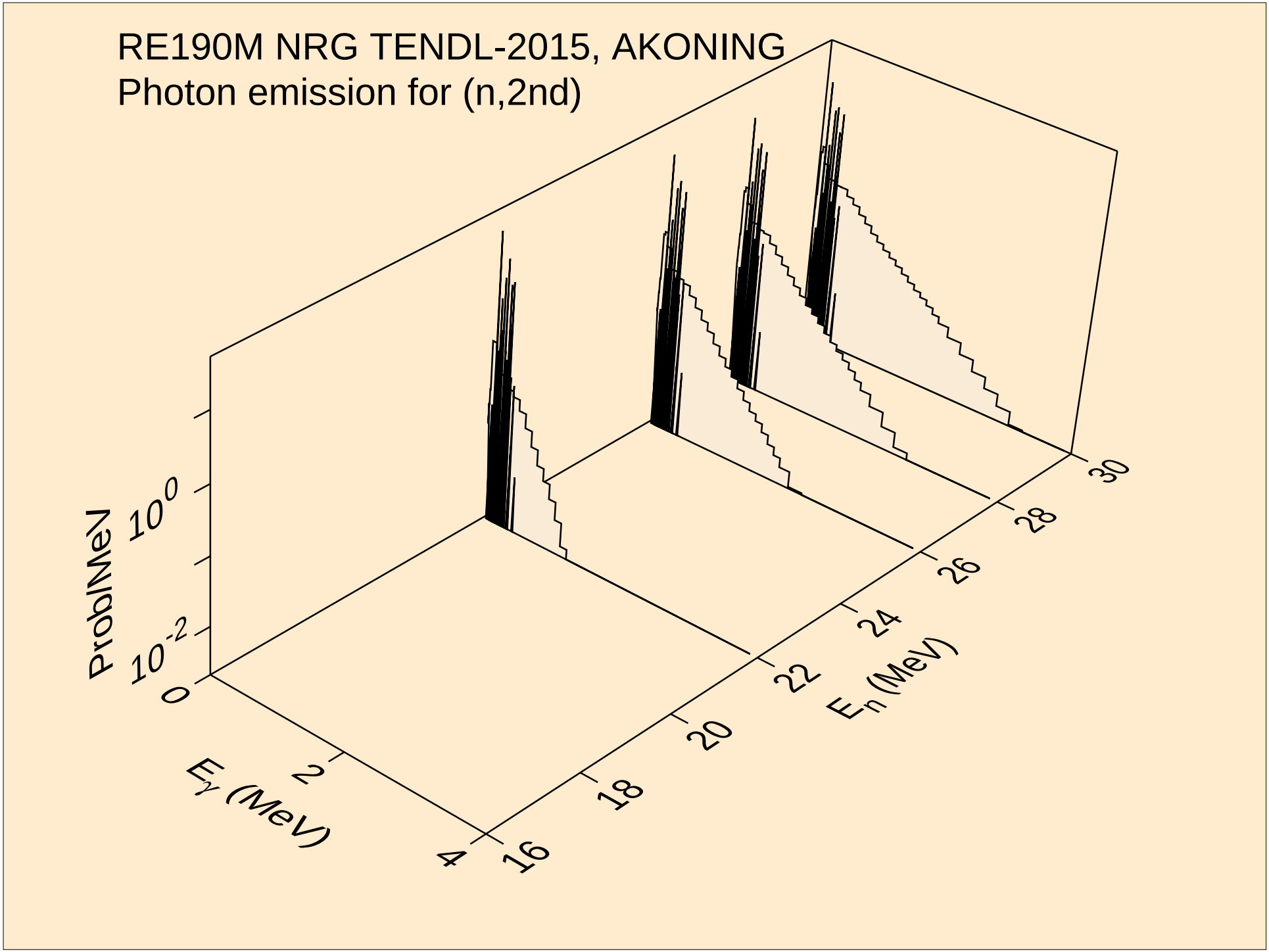

RE190M NRG TENDL-2015, AKONING
Neutron emission for (n,2np)
Prob/MeV
10^{0}
10^{-2}
0
2
4
6
8
10
12
Sec. Energy
14
16
18
20
22
24
26
28
30
Energy (MeV)

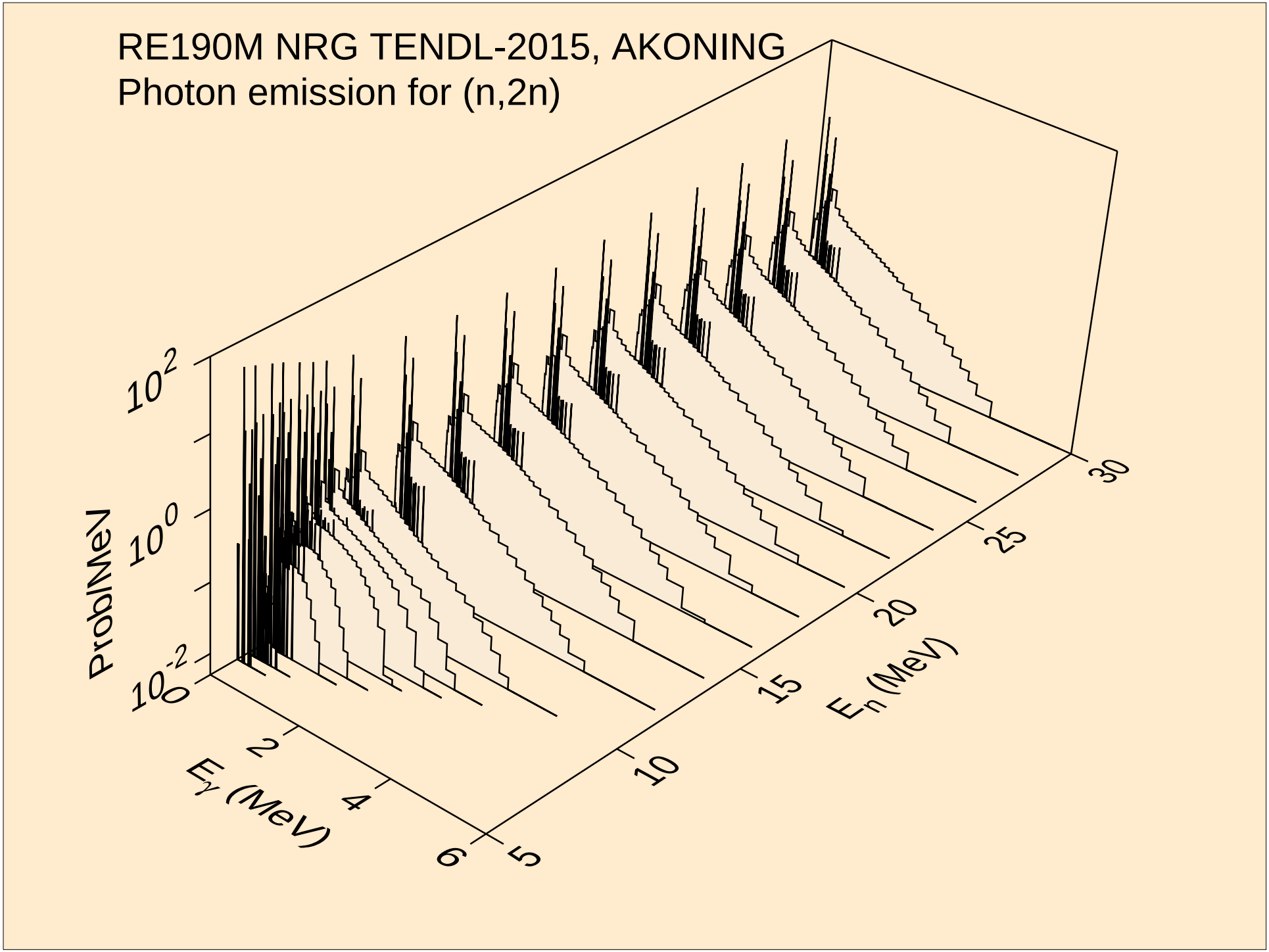

RE190M NRG TENDL-2015, AKONING
Neutron emission for (n,3np)
Prob/MeV
10^{1}
10^{-1}
0
2
4
6
Sec. Energy
18
20
22
24
26
28
30
Energy (MeV)

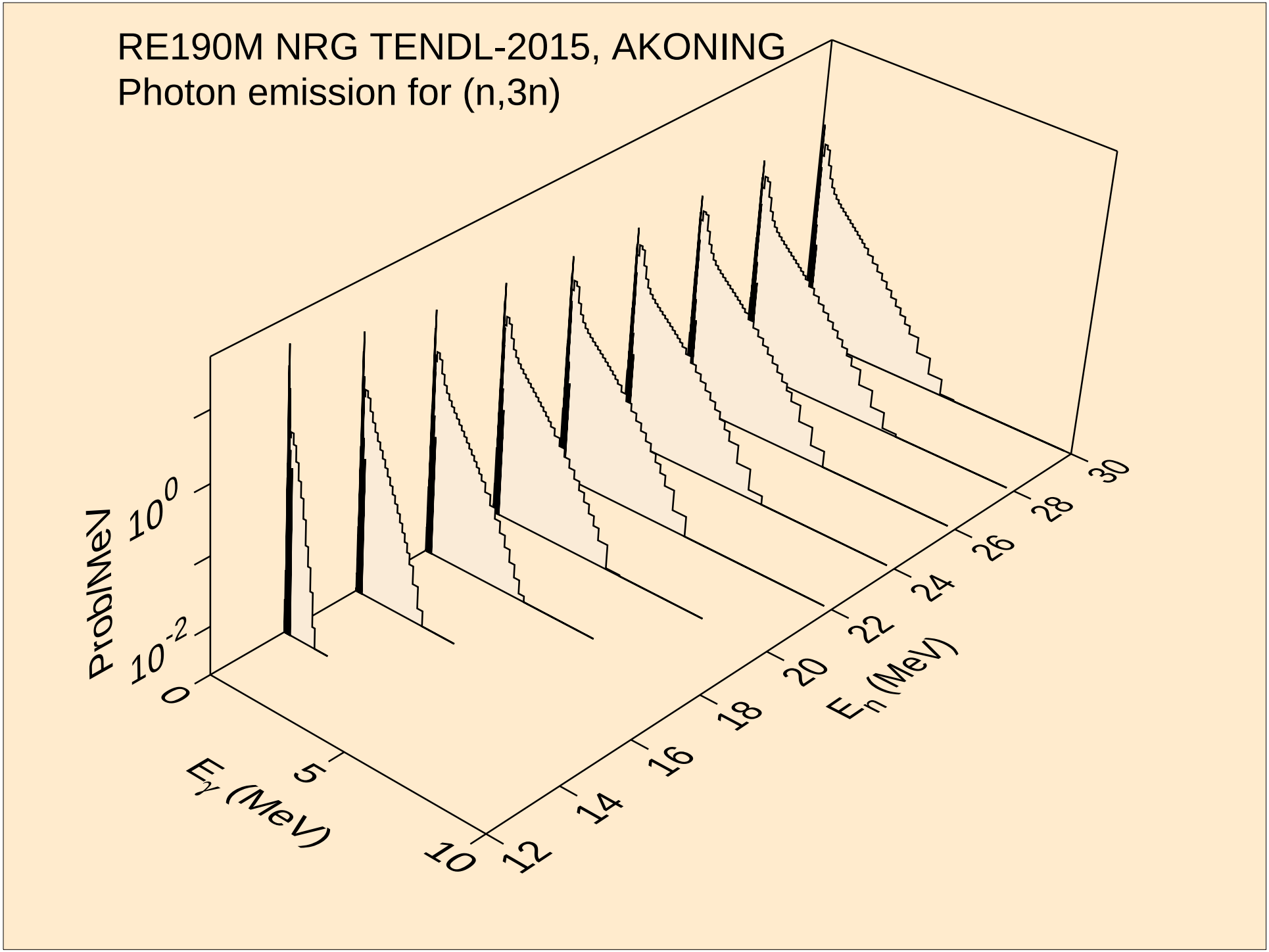

RE190M NRG TENDL-2015, AKONING
Neutron emission for (n,2np)
Prob/MeV
10-1
10-3
0
1
2
3
Sec. Energy
16
18
20
22
24
26
28
30
Energy (MeV)

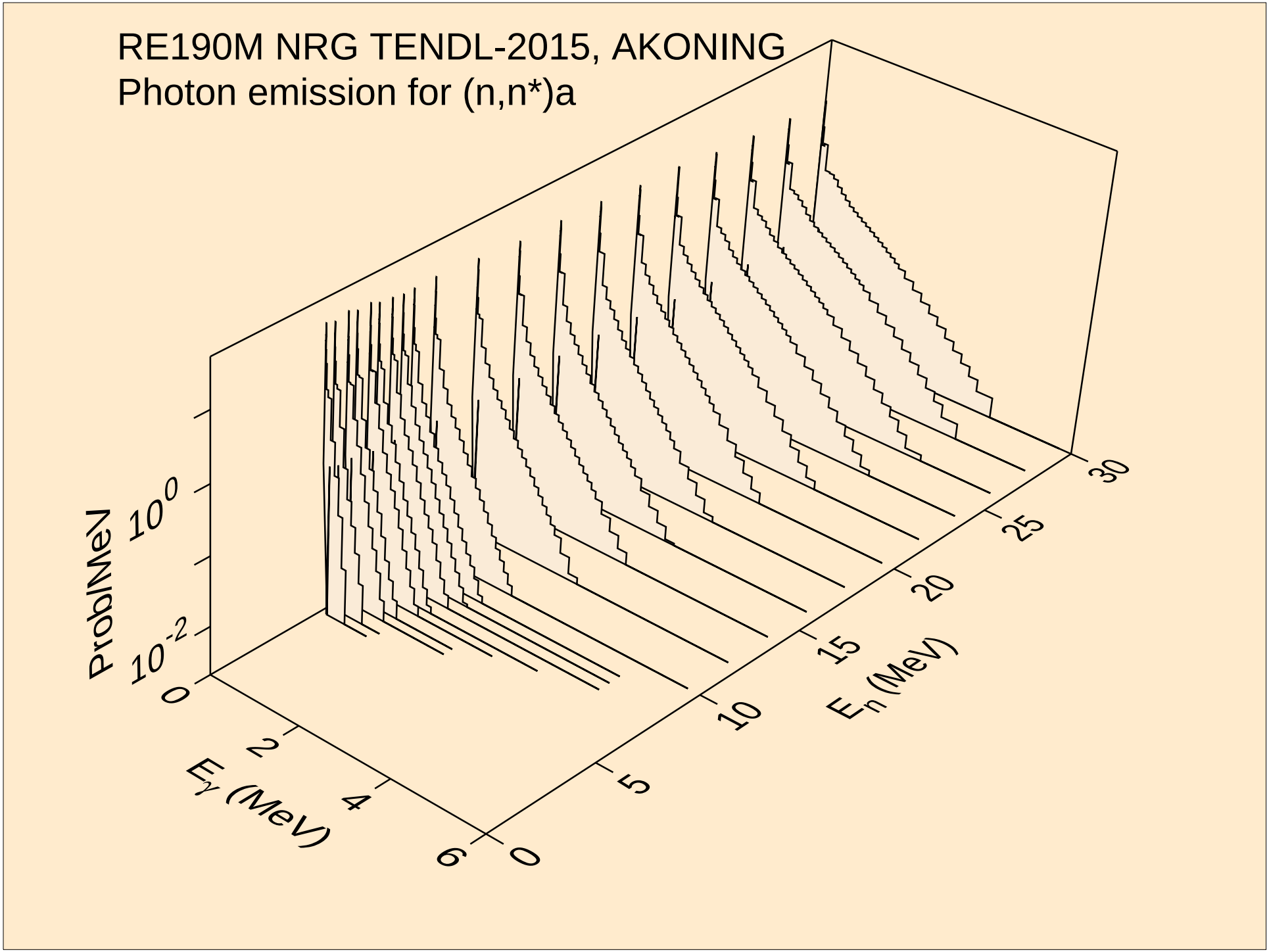

RE190M NRG TENDL-2015, AKONING
Neutron emission for (n,n*c)
Prob/MeV
10^1
10^-1
0
10
20
30
Sec. Energy
0
5
10
15
20
25
30
Energy (MeV)

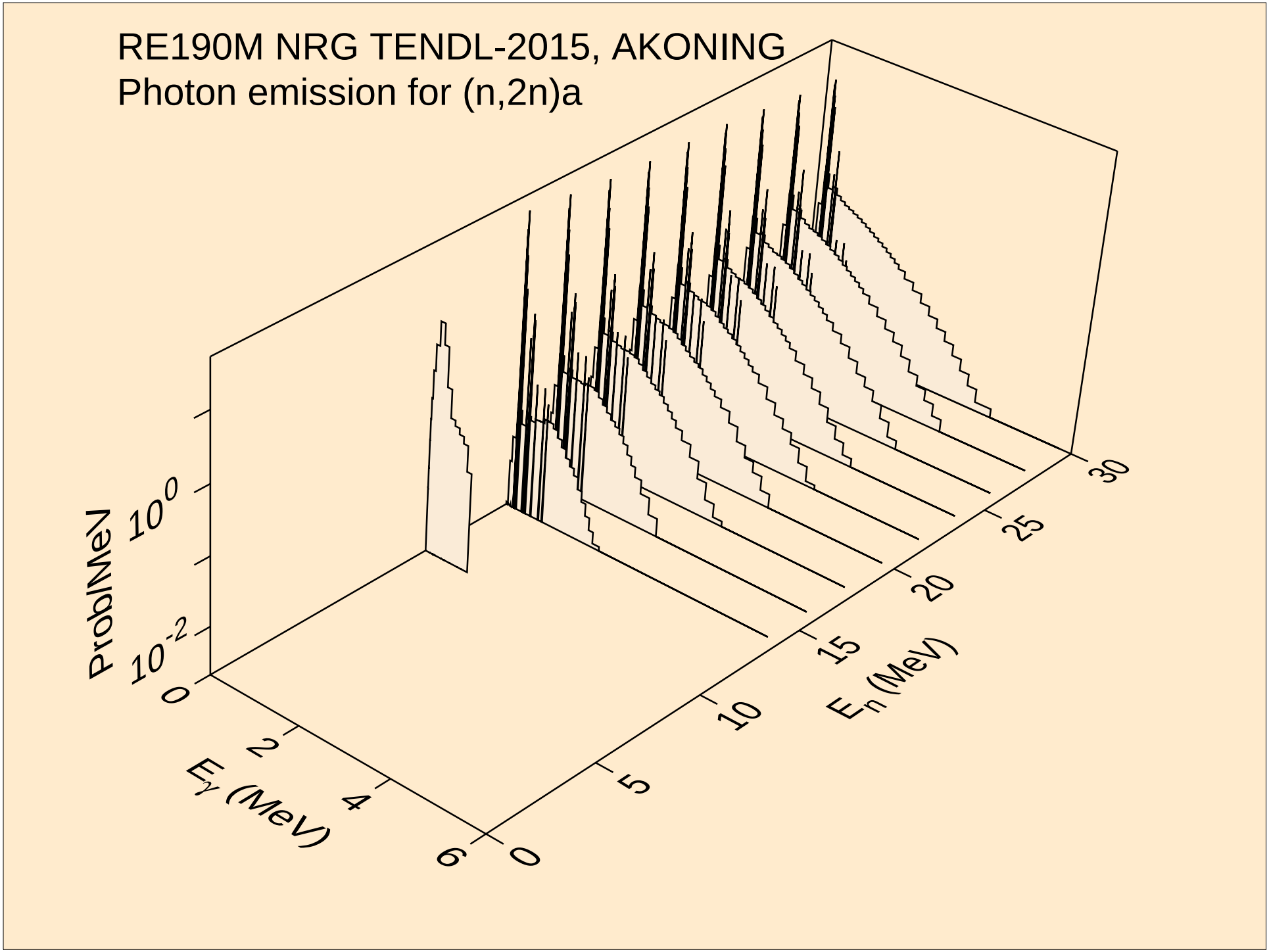

RE190M NRG TENDL-2015, AKONING
Photon emission for (n,x)
Prob/MeV
10^{0}
10^{-2}
0
10
20
E_γ (MeV)
0
50
100
150
200
E_n (MeV)

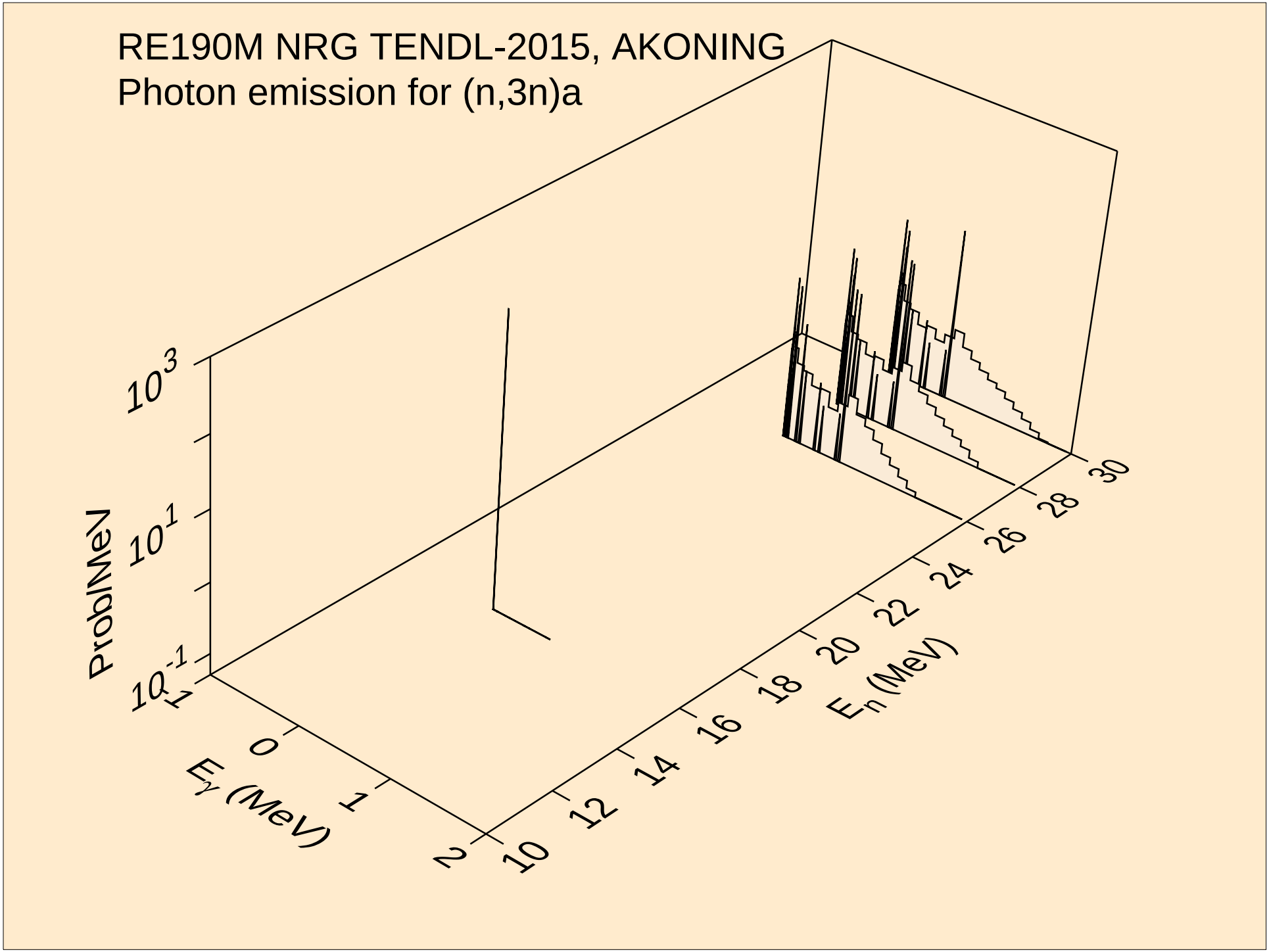

RE190M NRG TENDL-2015, AKONING
Photon emission for (n,2nd)
Prob/MeV
10^0
10^-2
0
2
4
E_γ (MeV)
16
18
20
22
24
26
28
30
E_n (MeV)

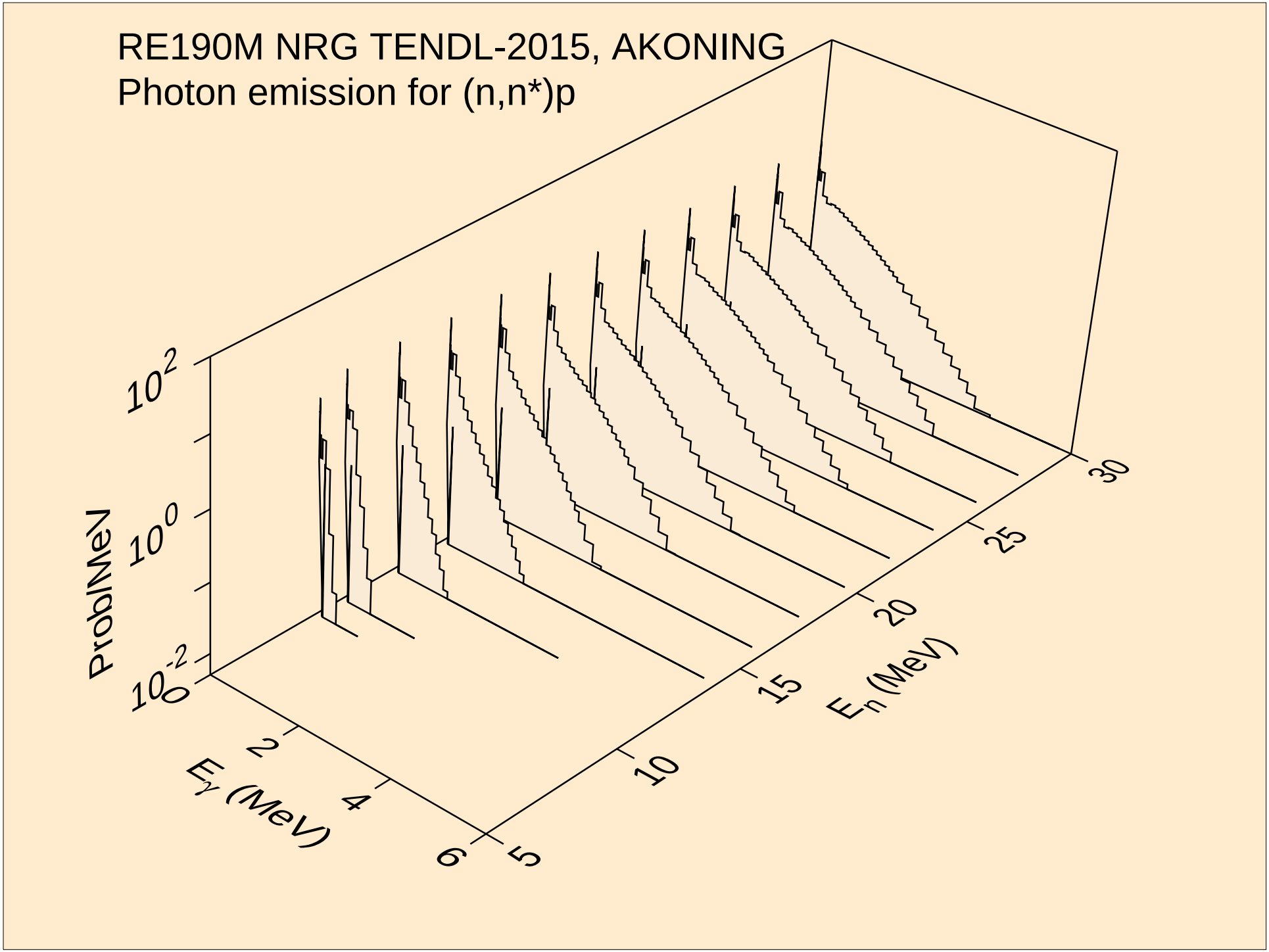

RE190M NRG TENDL-2015, AKONING
Photon emission for (n,2n)
Prob/MeV
10^{2}
10^{0}
10^{-2}
0
2
4
6
E_γ (MeV)
5
10
15
20
25
30
E_n (MeV)

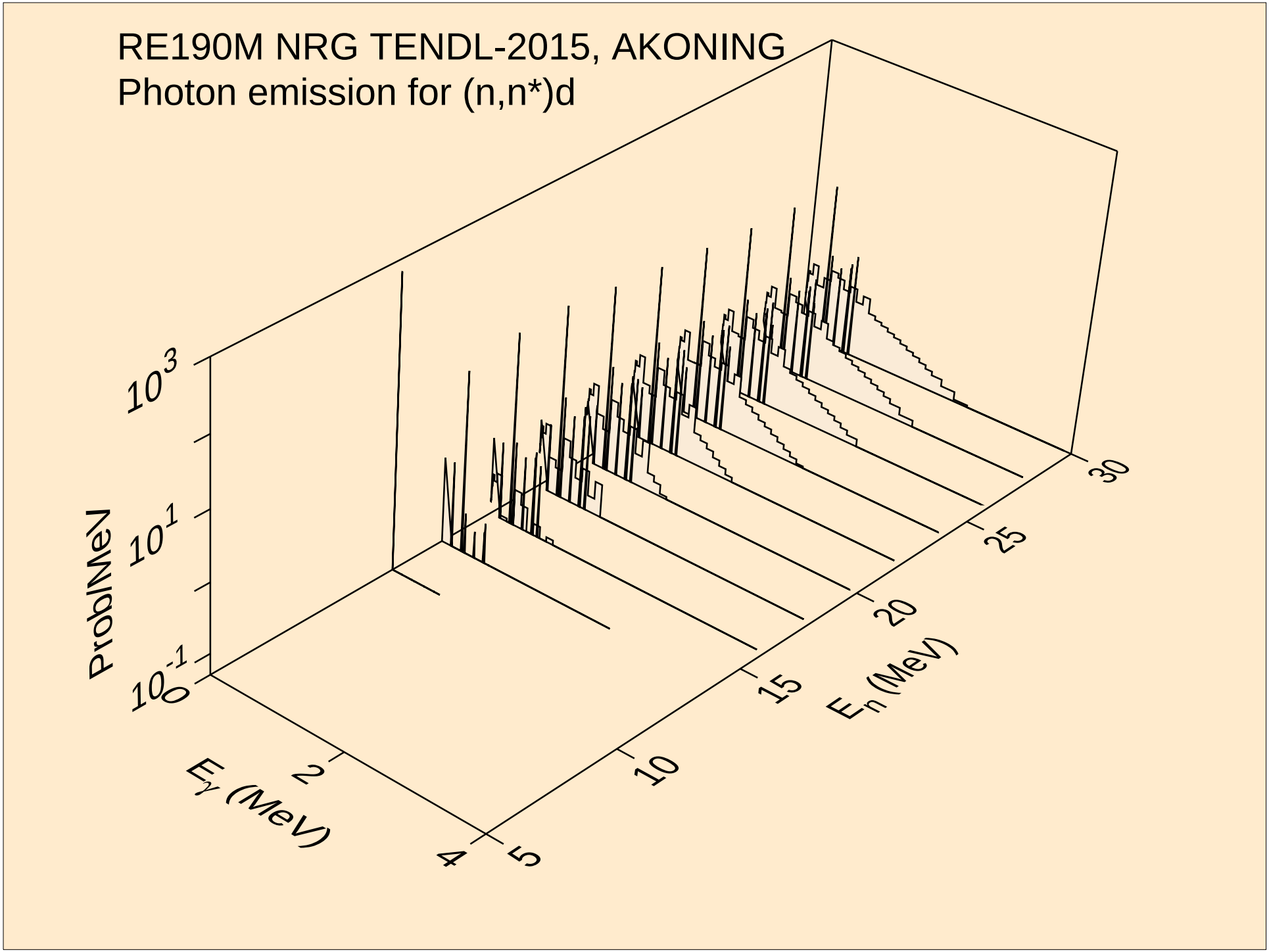

RE190M NRG TENDL-2015, AKONING
Photon emission for (n,3n)
Prob/MeV
10^0
10^-2
0
5
10
E_γ (MeV)
12
14
16
18
20
22
24
26
28
30
E_n (MeV)

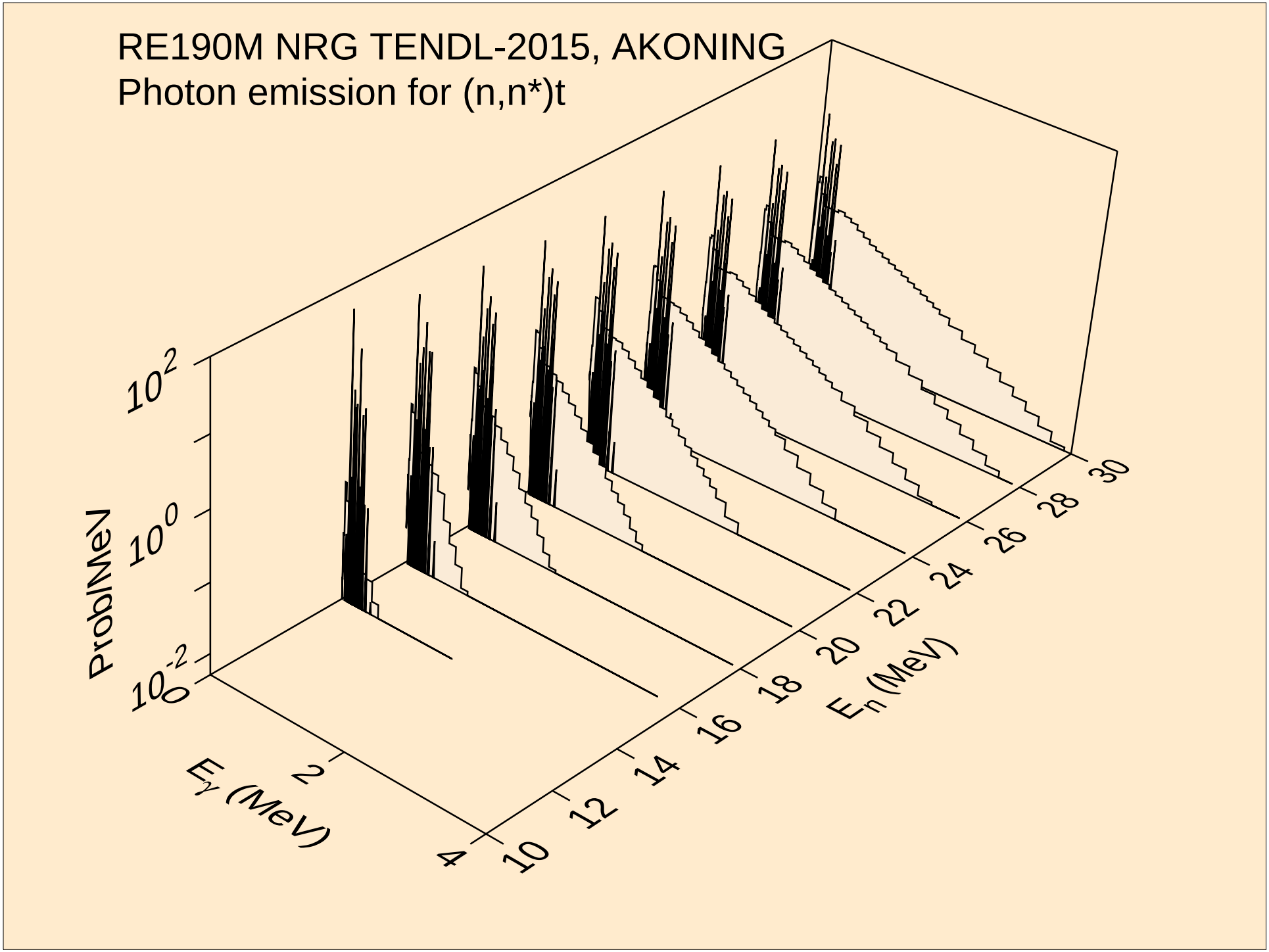

RE190M NRG TENDL-2015, AKONING
Photon emission for (n,n*)a
Prob/MeV
10^0
10^-2
0
2
4
6
E_γ (MeV)
0
5
10
15
20
25
30
E_n (MeV)

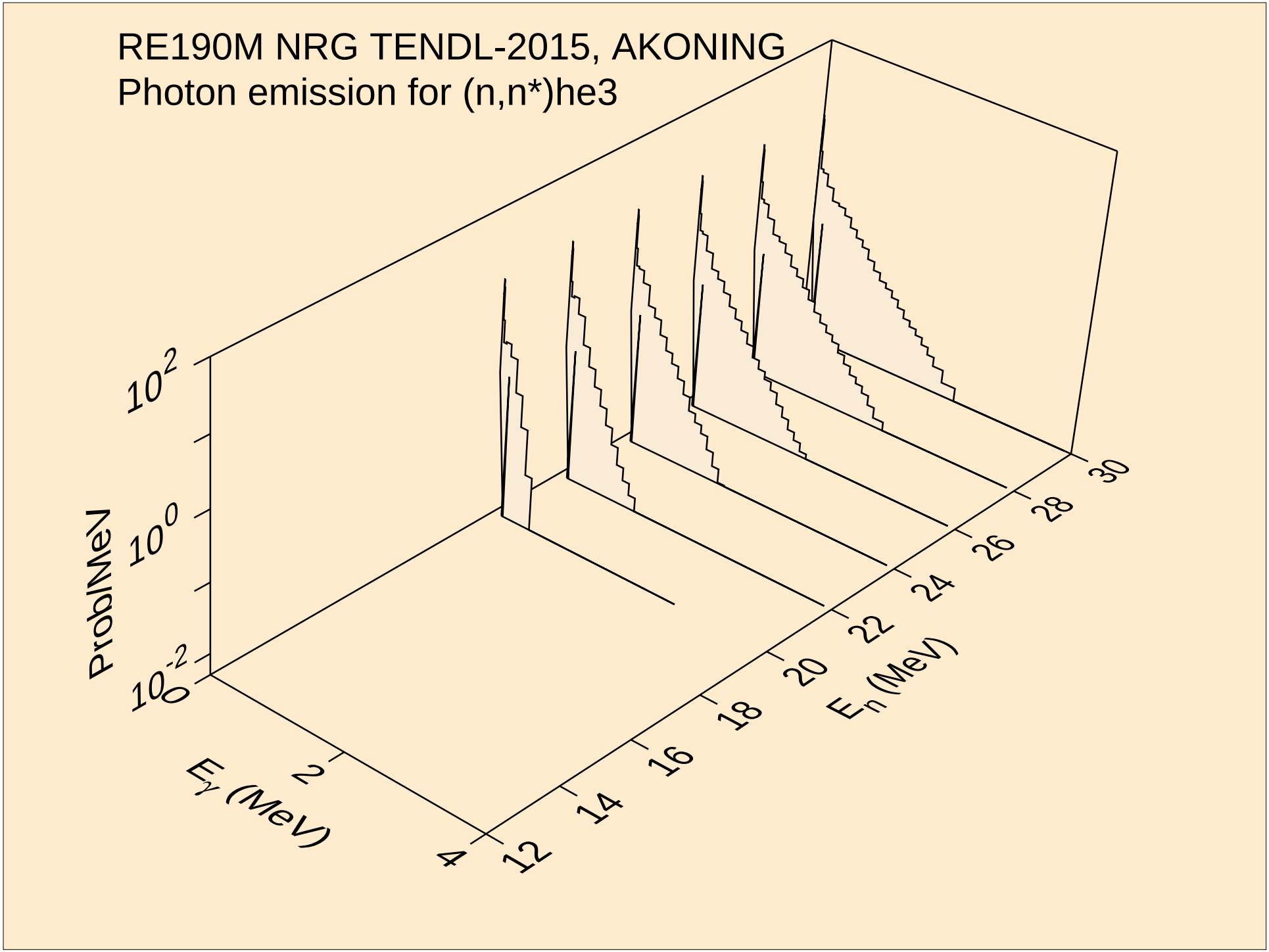

RE190M NRG TENDL-2015, AKONING
Photon emission for (n,2n)a
Prob/MeV
10^0
10^-2
0
2
4
6
E_γ (MeV)
0
5
10
15
20
25
30
E_n (MeV)

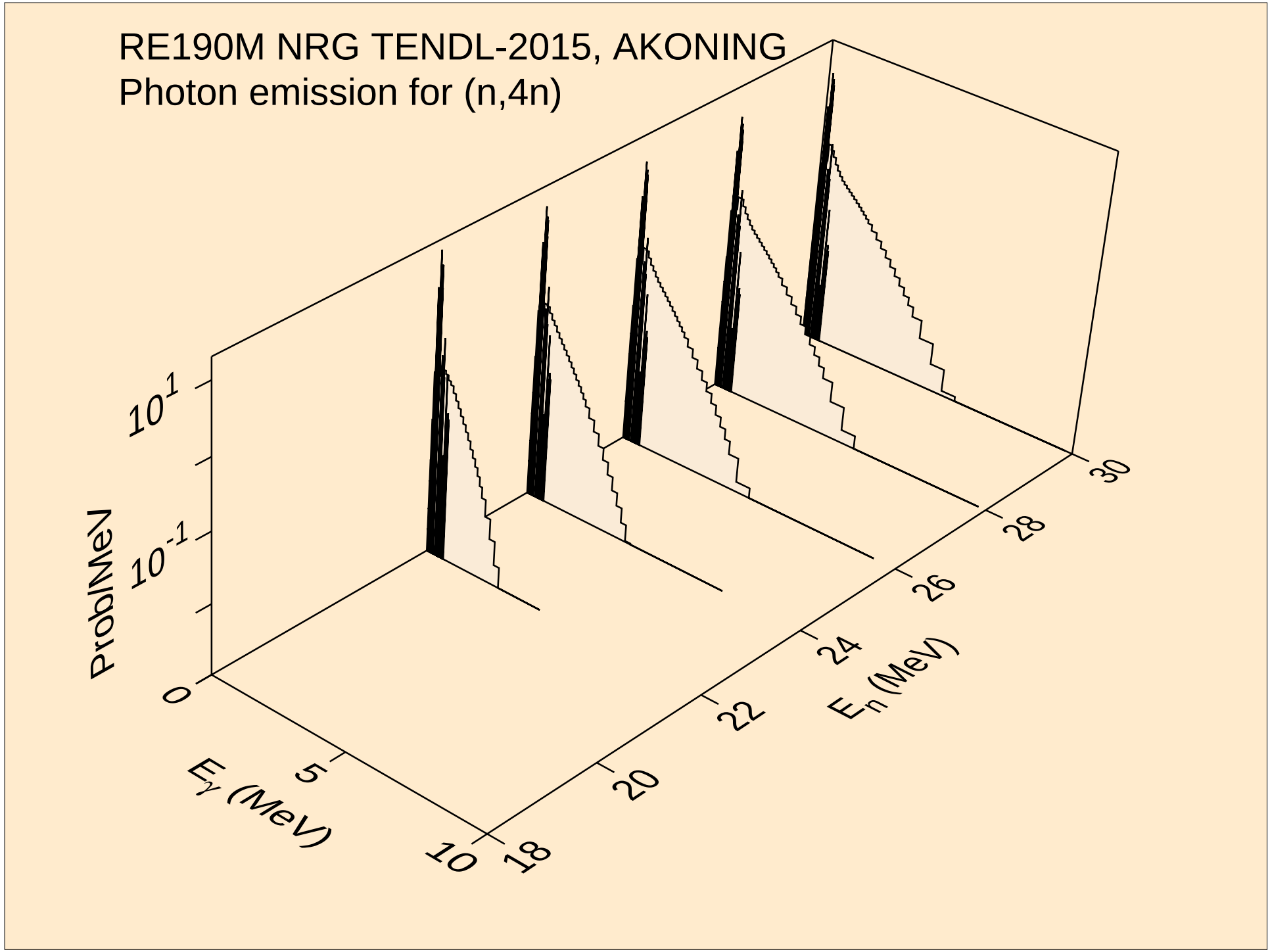

RE190M NRG TENDL-2015, AKONING
Photon emission for (n,3n)a
Prob/MeV
10^{3}
10^{1}
10^{-1}
E_γ (MeV)
-1
0
1
2
E_n (MeV)
10
12
14
16
18
20
22
24
26
28
30

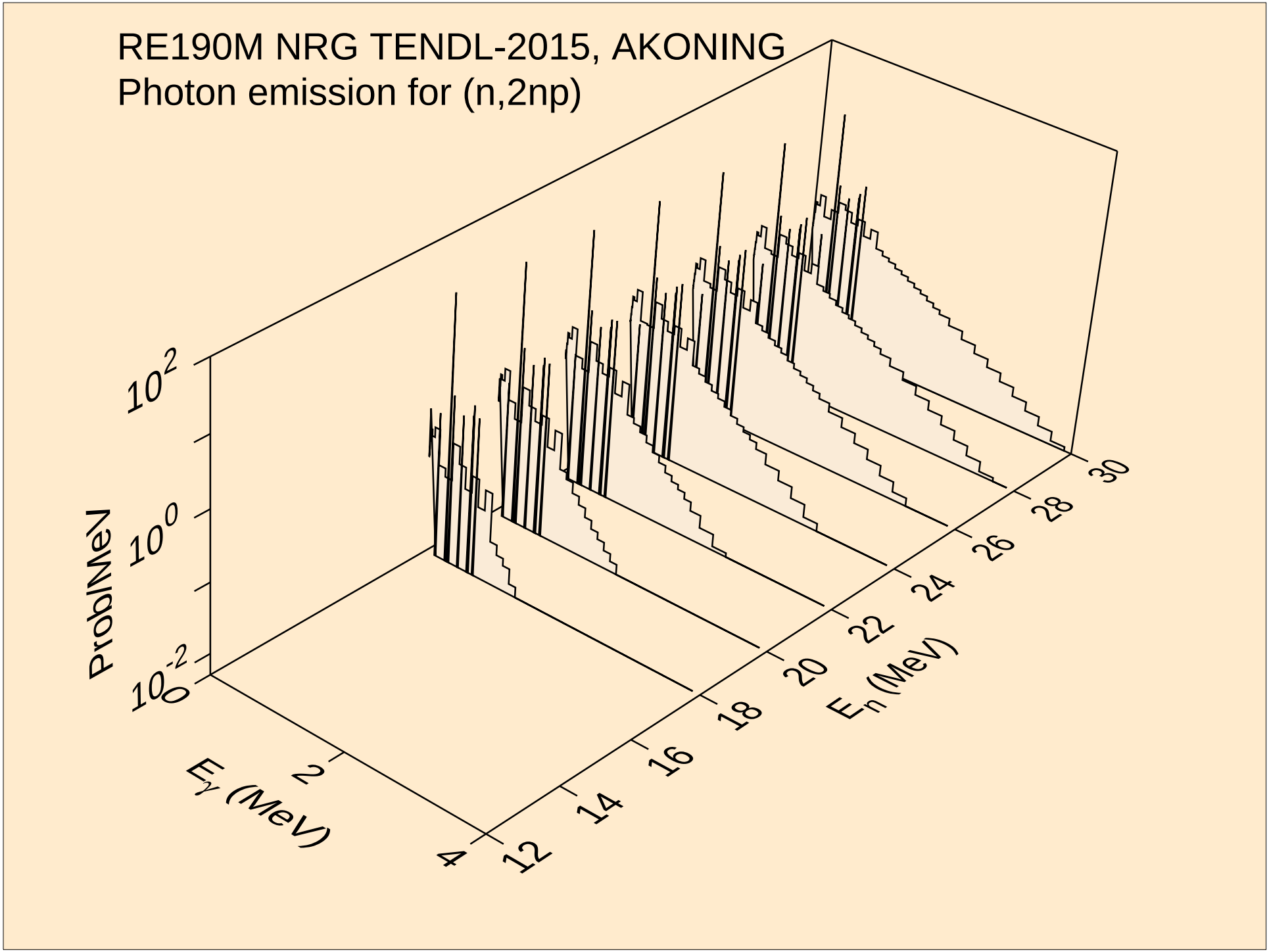

RE190M NRG TENDL-2015, AKONING
Photon emission for (n,n*)p
Prob/MeV
10^{2}
10^{0}
10^{-2}
0
2
4
6
E_γ (MeV)
5
10
15
20
25
30
E_n (MeV)

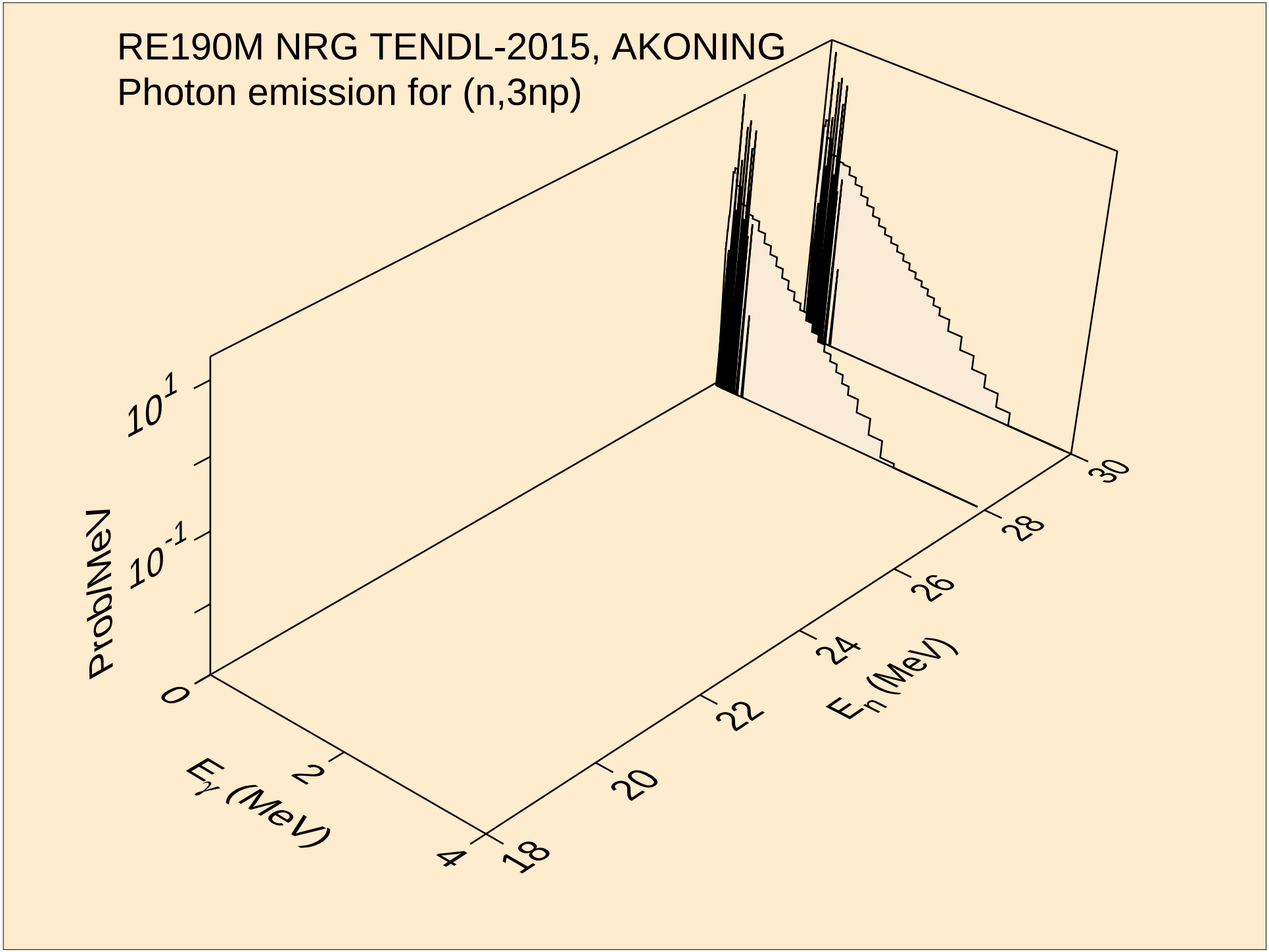

RE190M NRG TENDL-2015, AKONING
Photon emission for (n,n*)d
Prob/MeV
10^{3}
10^{1}
10^{-1}
0
2
4
E_γ (MeV)
5
10
15
20
25
30
E_n (MeV)

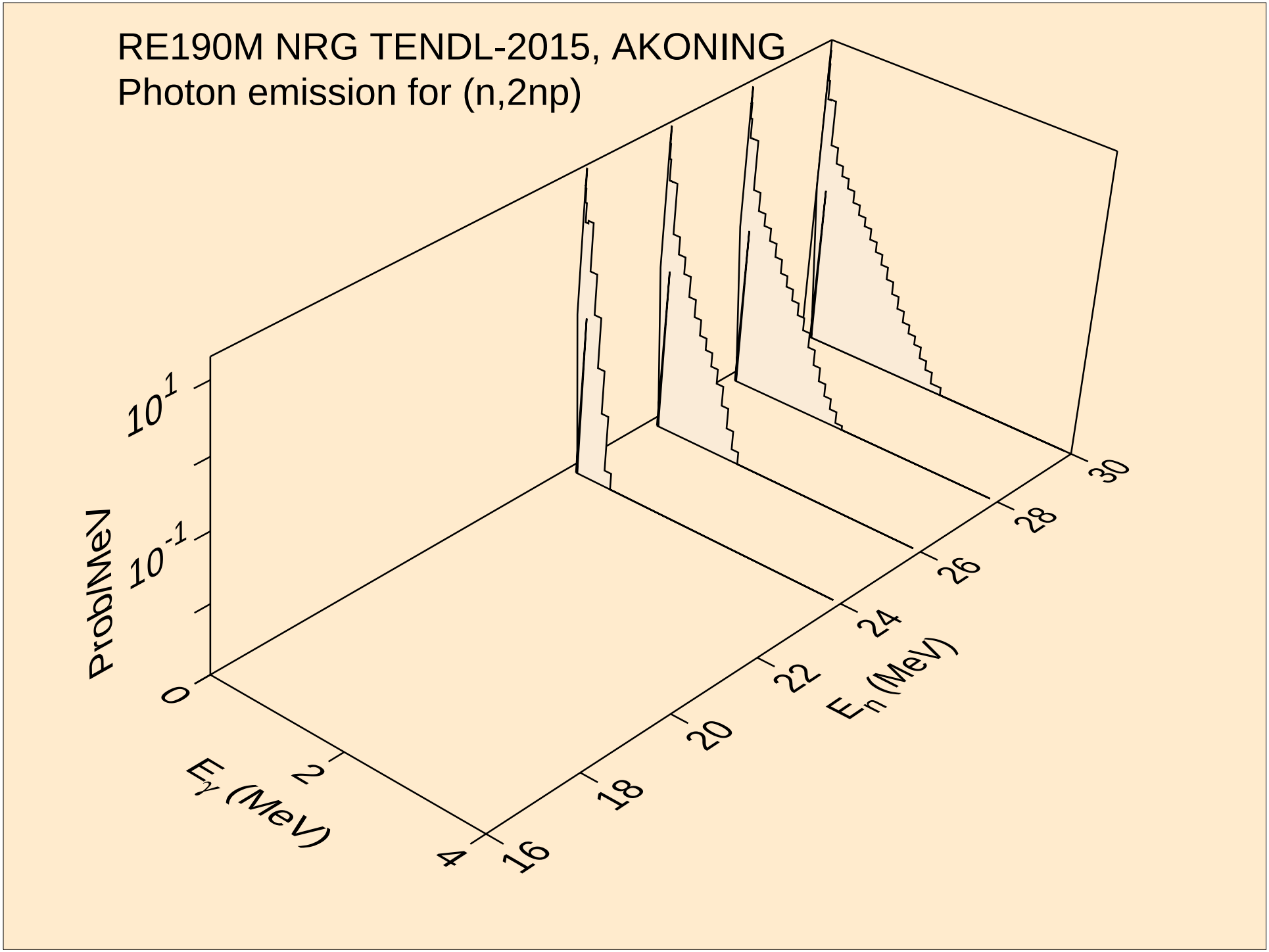

RE190M NRG TENDL-2015, AKONING
Photon emission for (n,n*)t
Prob/MeV
10^{2}
10^{0}
10^{-2}
0
2
4
E_γ (MeV)
10
12
14
16
18
20
22
24
26
28
30
E_n (MeV)

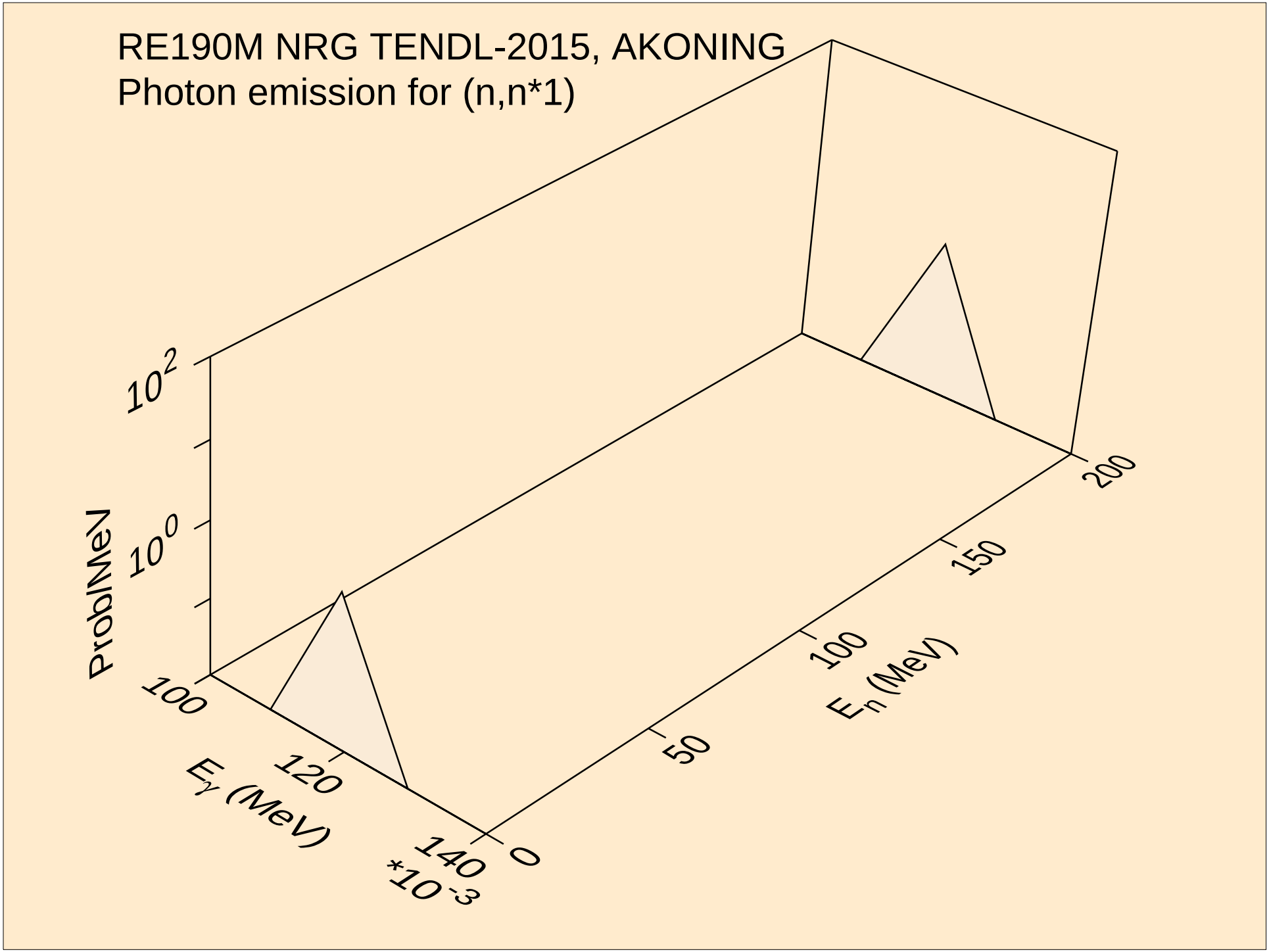

RE190M NRG TENDL-2015, AKONING
Photon emission for (n,n*)he3
Prob/MeV
10^{2}
10^{0}
10^{-2}
0
2
4
E_γ (MeV)
12
14
16
18
20
22
24
26
28
30
E_n (MeV)

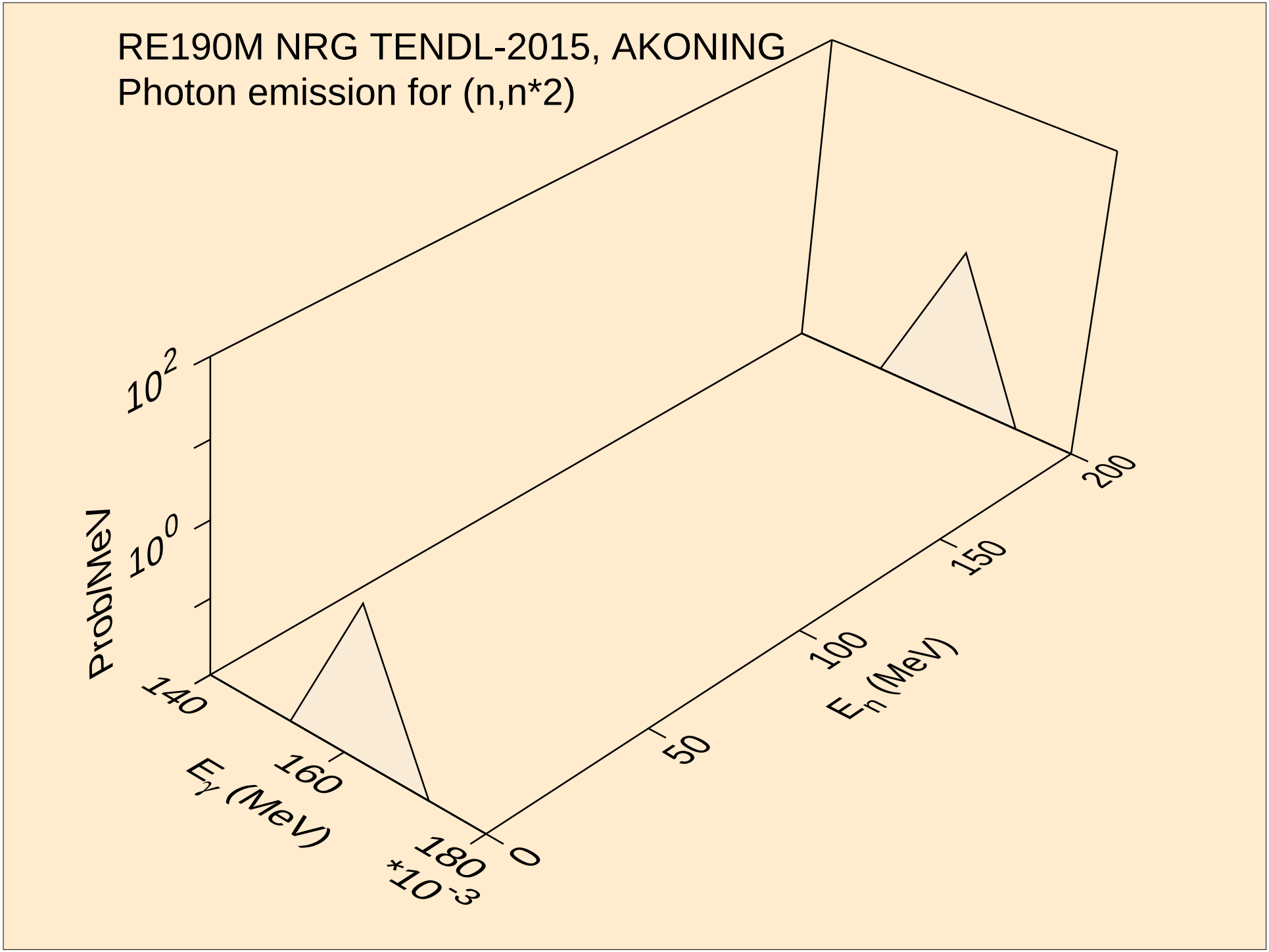

RE190M NRG TENDL-2015, AKONING
Photon emission for (n,4n)
Prob/MeV
10^{1}
10^{-1}
0
5
10
E_γ (MeV)
18
20
22
24
26
28
30
E_n (MeV)

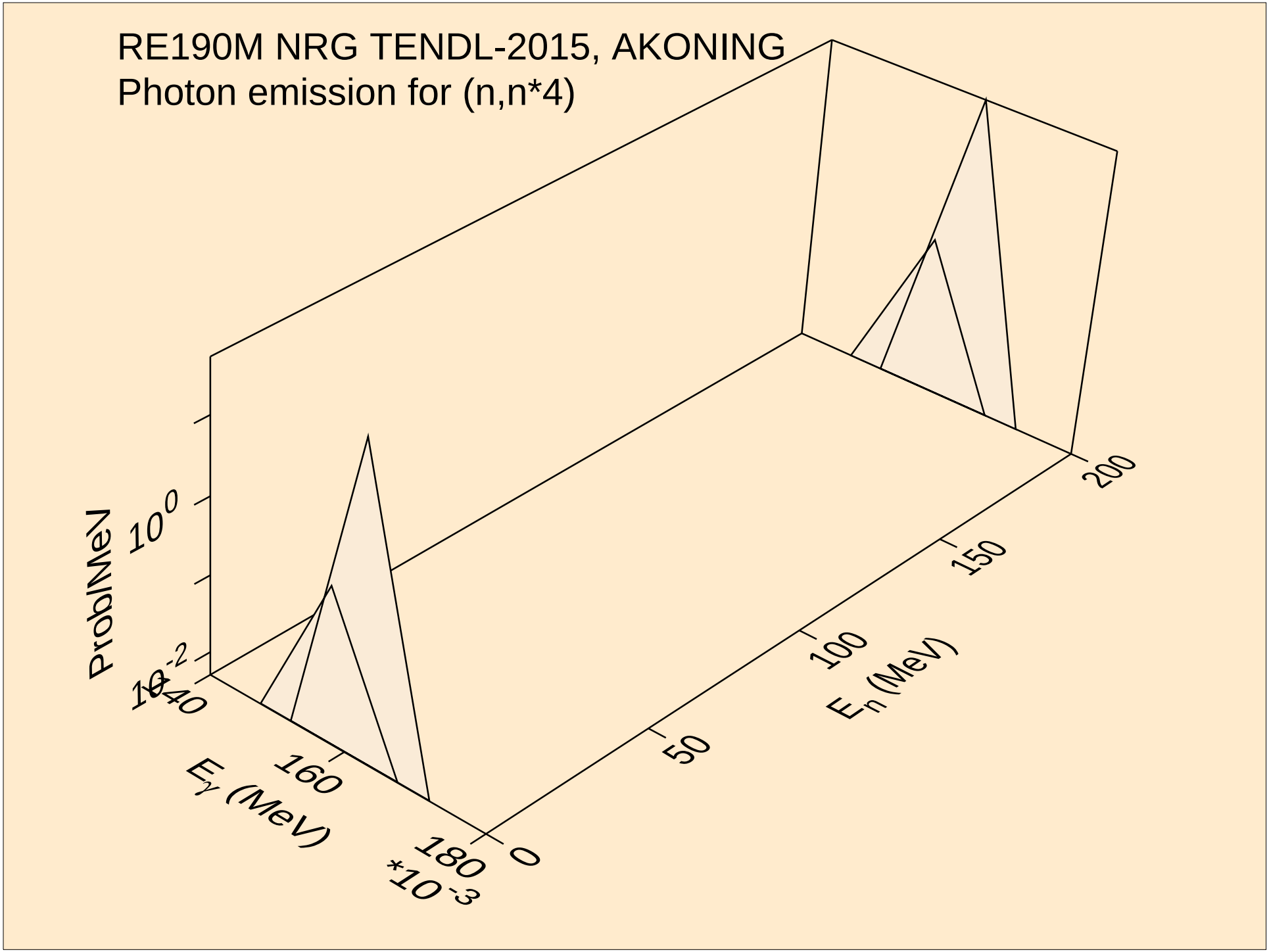

RE190M NRG TENDL-2015, AKONING
Photon emission for (n,2np)
Prob/MeV
10^{2}
10^{0}
10^{-2}
0
2
4
E_γ (MeV)
12
14
16
18
20
22
24
26
28
30
E_n (MeV)

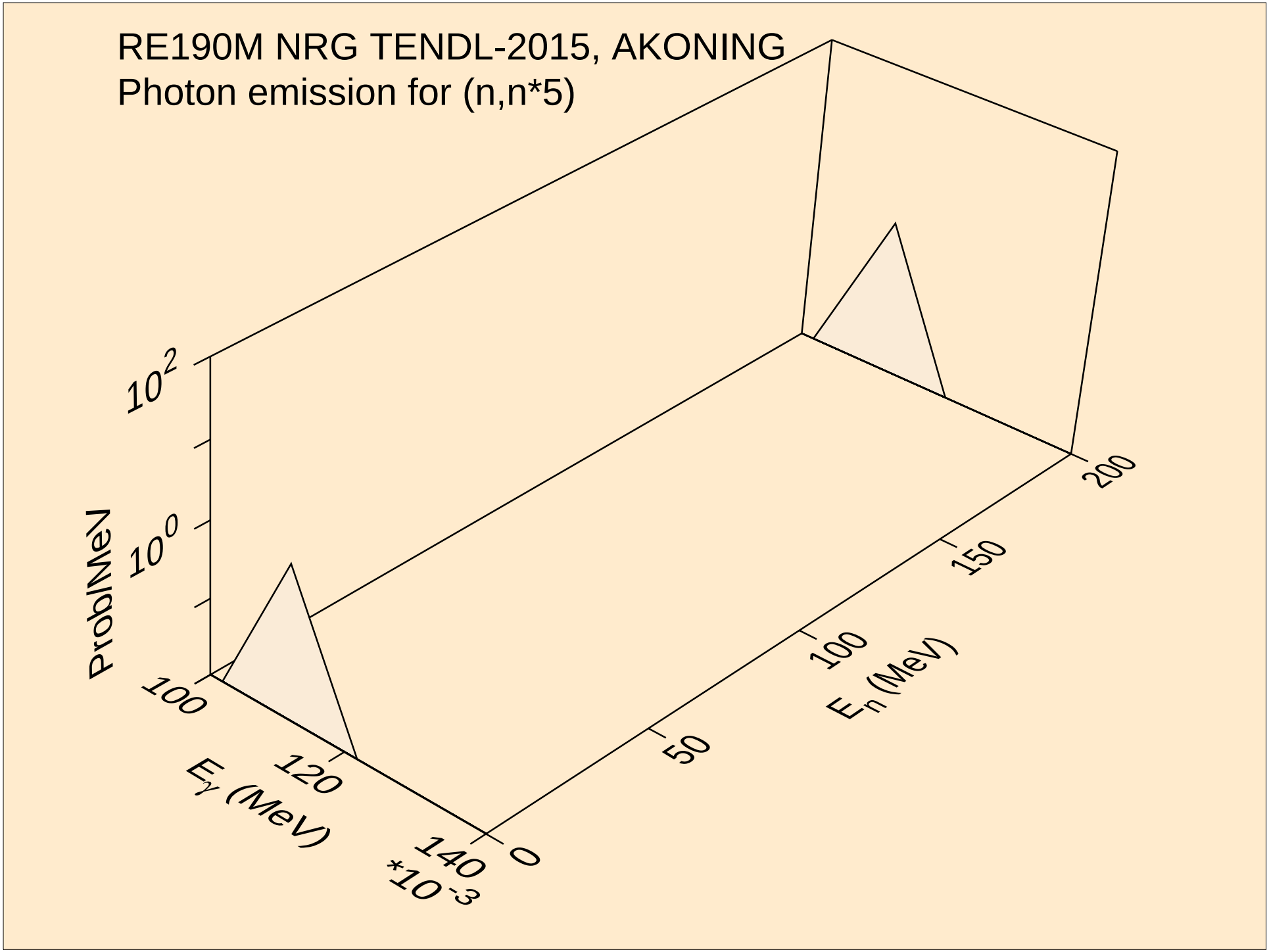

RE190M NRG TENDL-2015, AKONING
Photon emission for (n,3np)
Prob/MeV
10^{1}
10^{-1}
0
2
4
E_γ (MeV)
18
20
22
24
26
28
30
E_n (MeV)

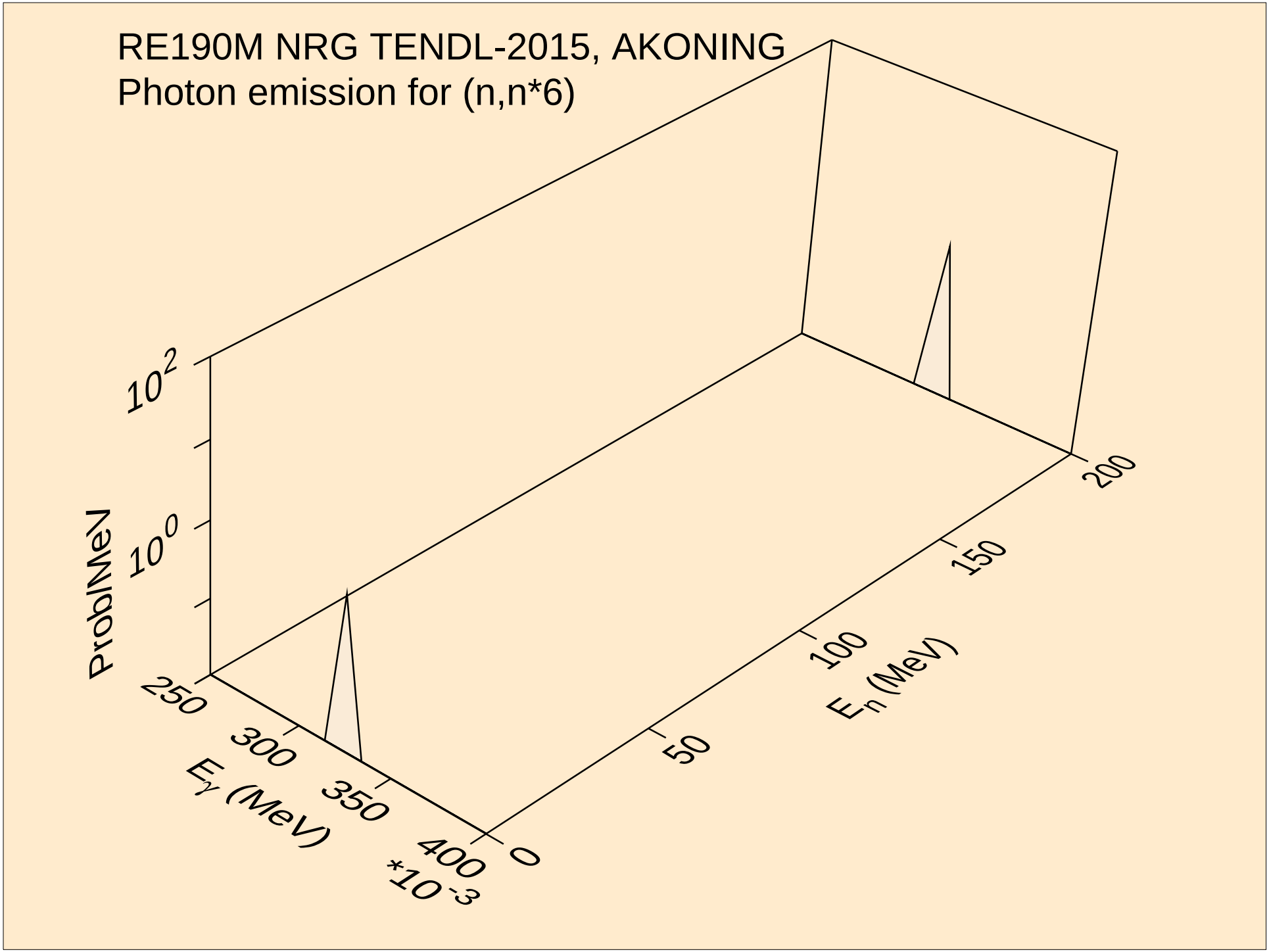

RE190M NRG TENDL-2015, AKONING
Photon emission for (n,2np)
Prob/MeV
10^{1}
10^{-1}
0
2
4
E_γ (MeV)
16
18
20
22
24
26
28
30
E_n (MeV)

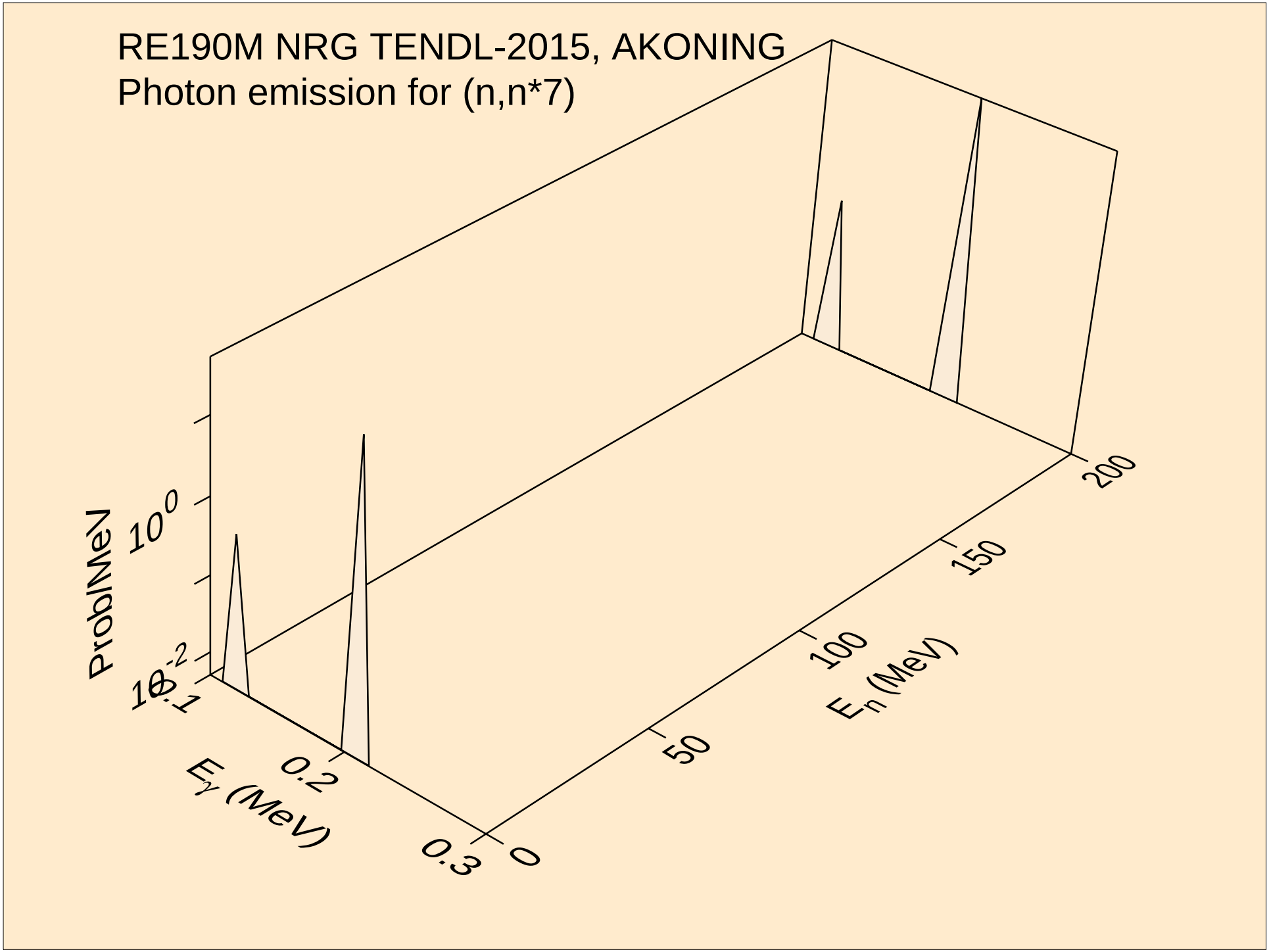

RE190M NRG TENDL-2015, AKONING
Photon emission for (n,n*1)
Prob/MeV
10^2
10^0
100
120
140
E_γ (MeV)
*10 -3
0
50
100
150
200
E_n (MeV)

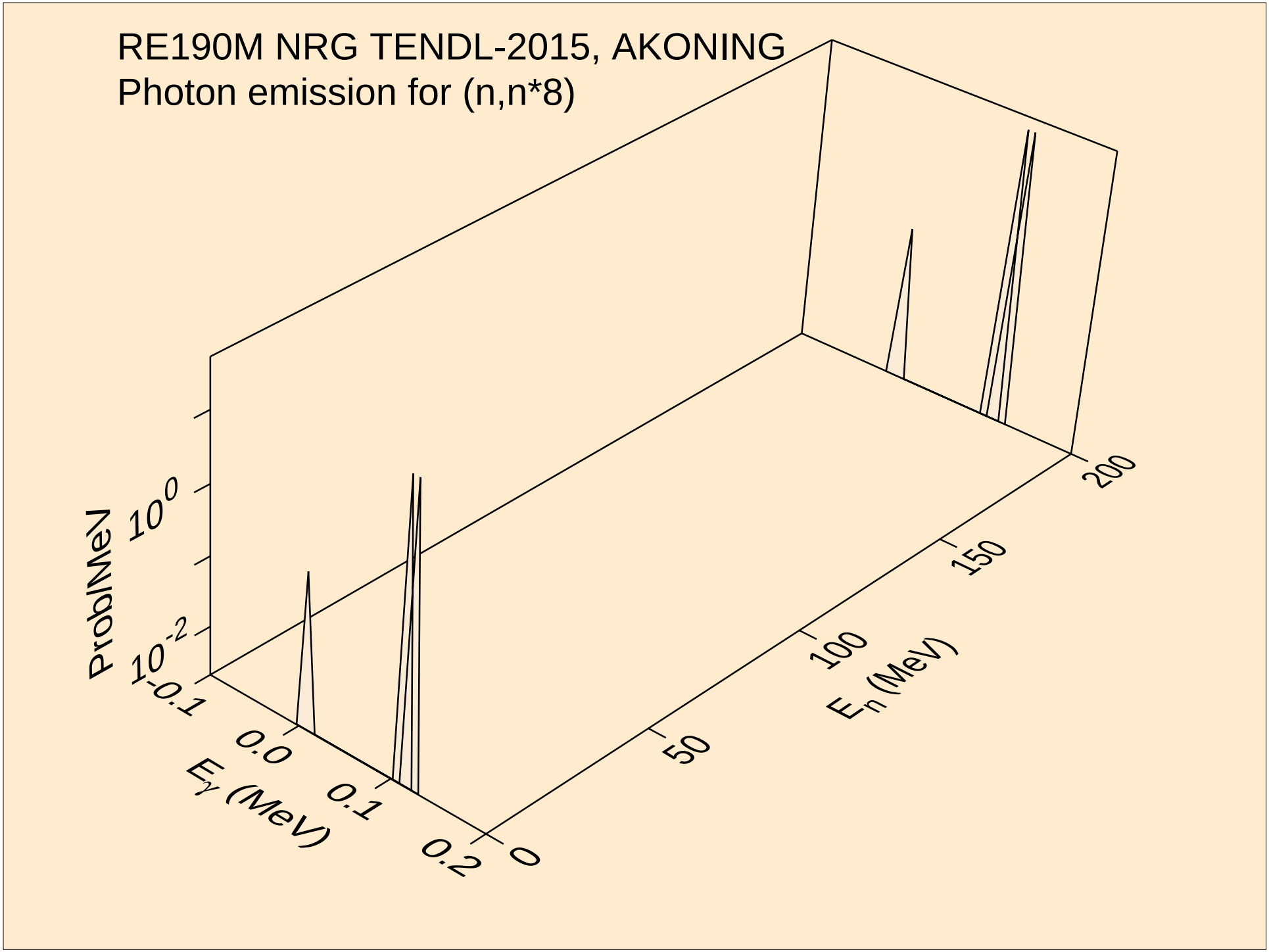

RE190M NRG TENDL-2015, AKONING
Photon emission for (n,n*2)
Prob/MeV
10^2
10^0
140
160
180
E_γ (MeV)
*10 -3
0
50
100
150
200
E_n (MeV)

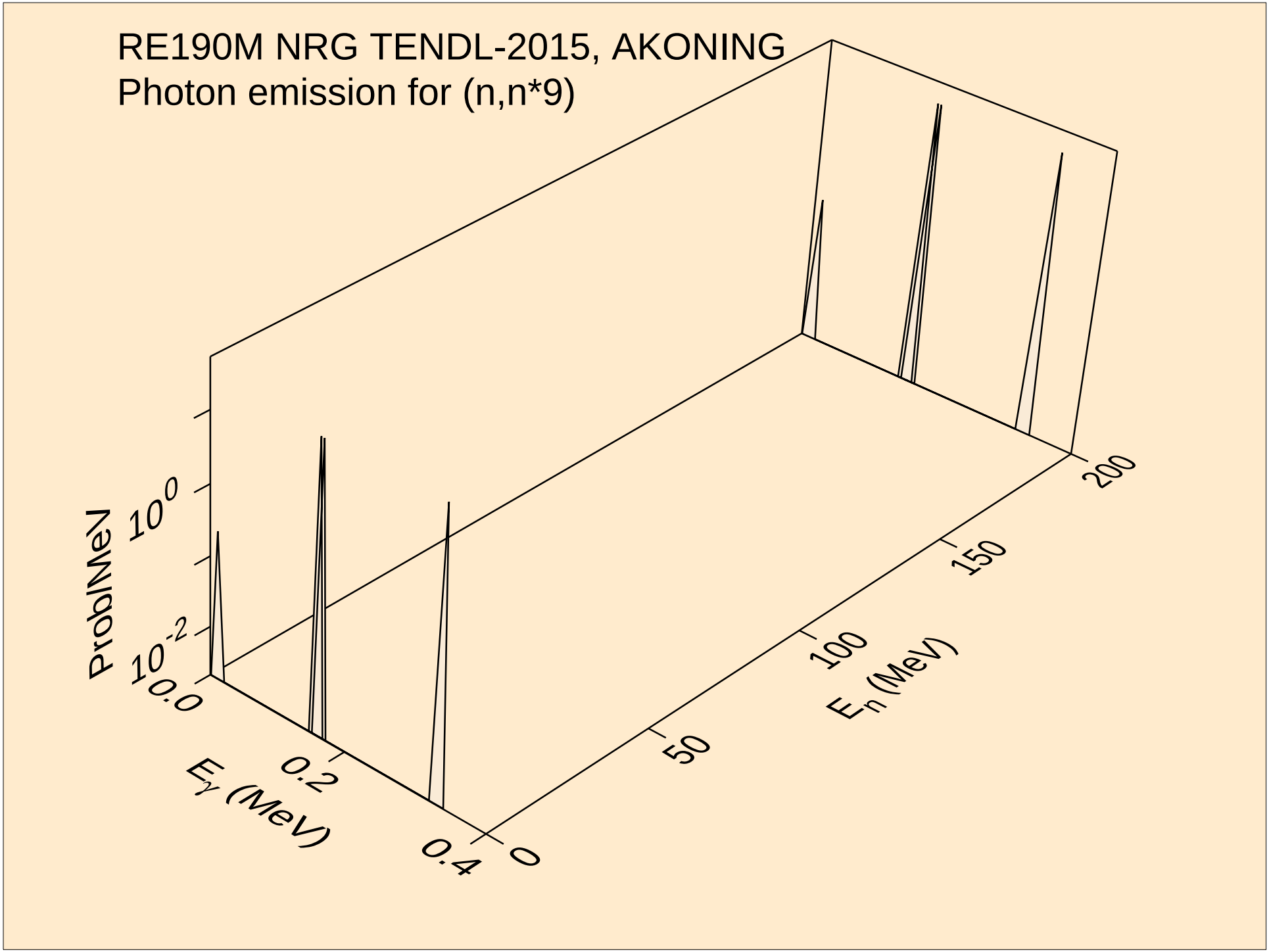

RE190M NRG TENDL-2015, AKONING
Photon emission for (n,n*4)
Prob/MeV
10^0
10^-2
40
160
180
*10^-3
E_γ (MeV)
0
50
100
150
200
E_n (MeV)

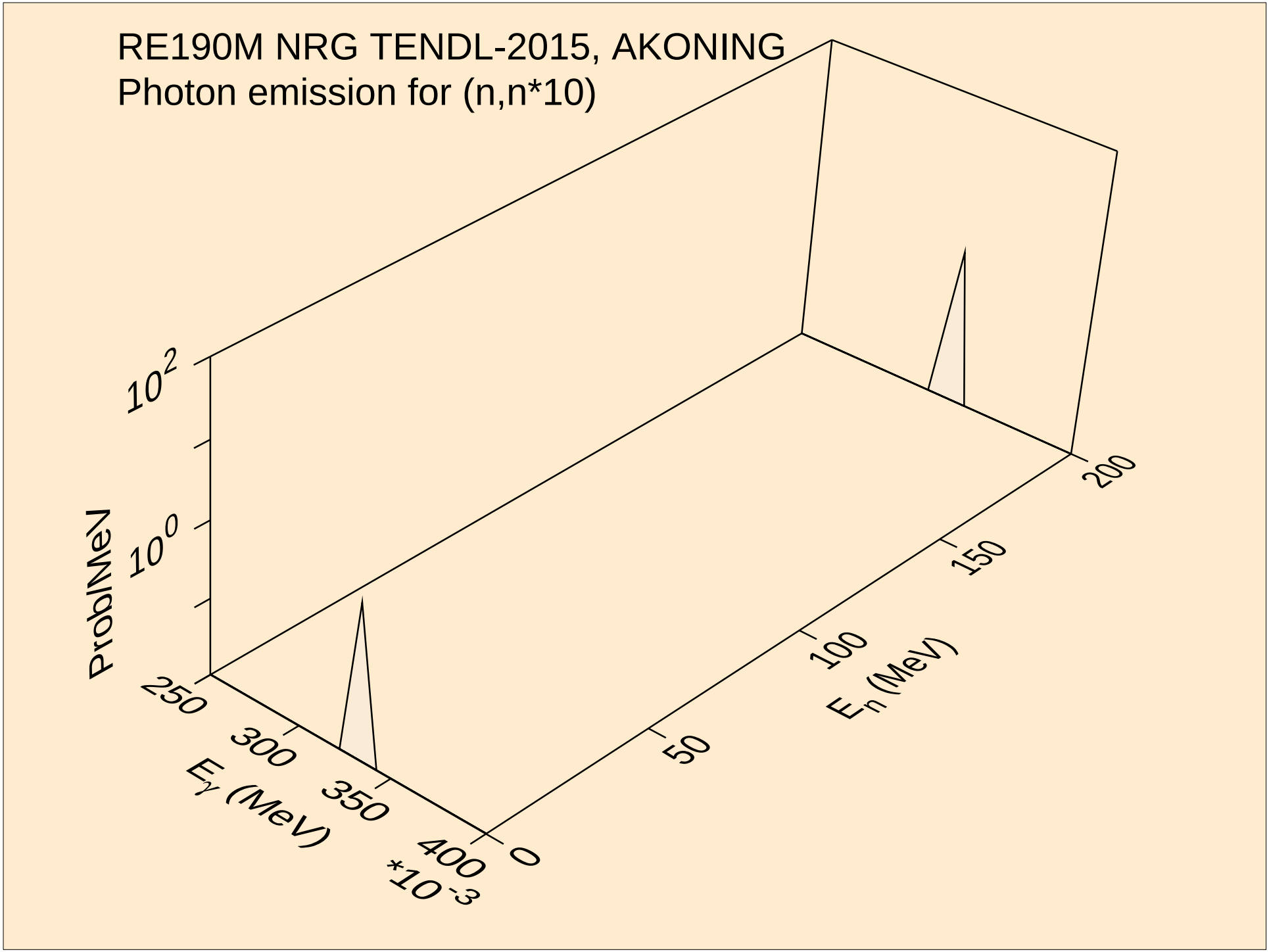

RE190M NRG TENDL-2015, AKONING
Photon emission for (n,n*5)
Prob/MeV
10^2
10^0
100
120
140
E_γ (MeV)
*10 -3
0
50
100
150
200
E_n (MeV)

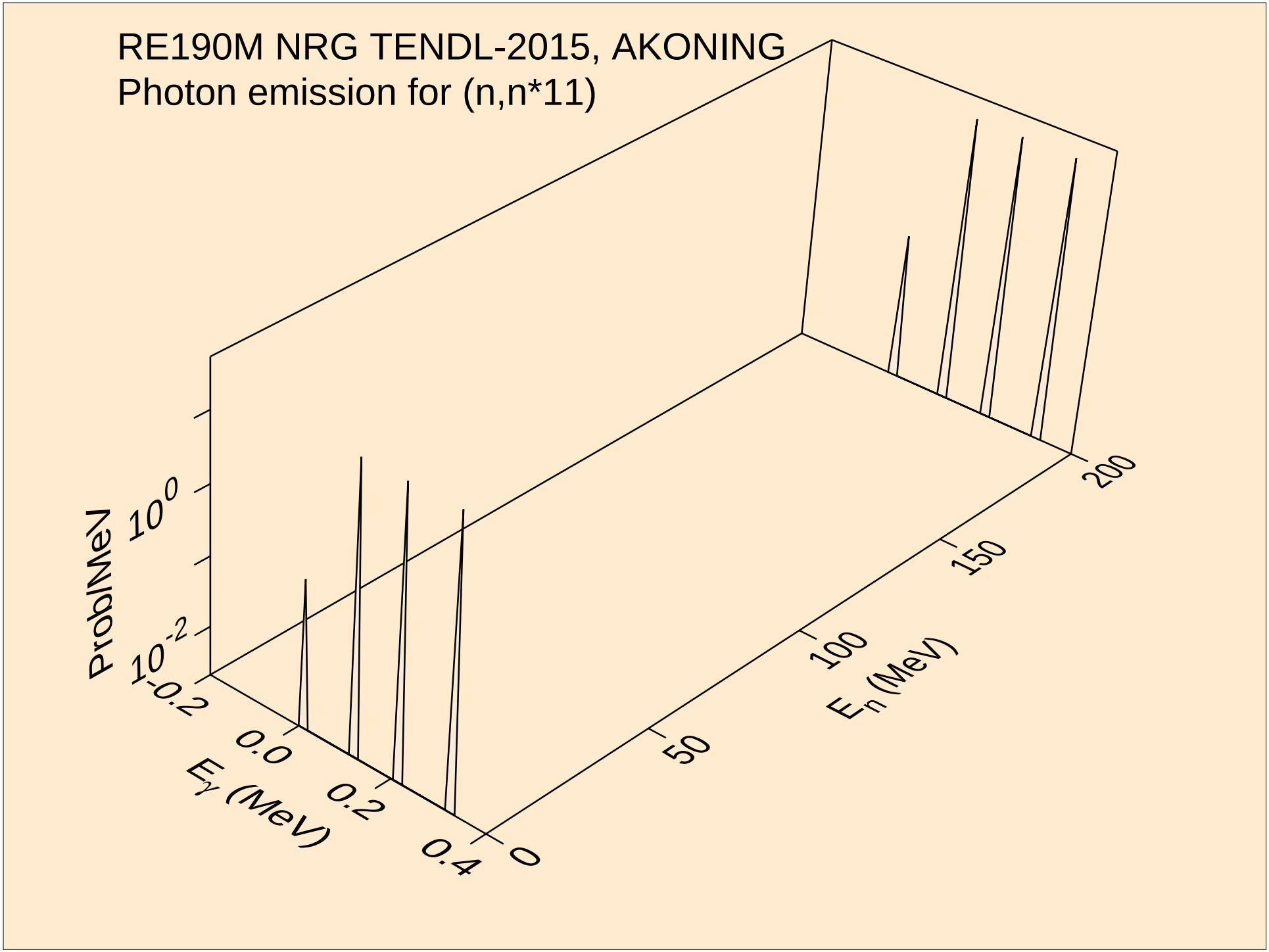

RE190M NRG TENDL-2015, AKONING
Photon emission for (n,n*6)
Prob/MeV
10^2
10^0
250
300
350
400
E_γ (MeV)
*10 -3
0
50
100
150
200
E_n (MeV)

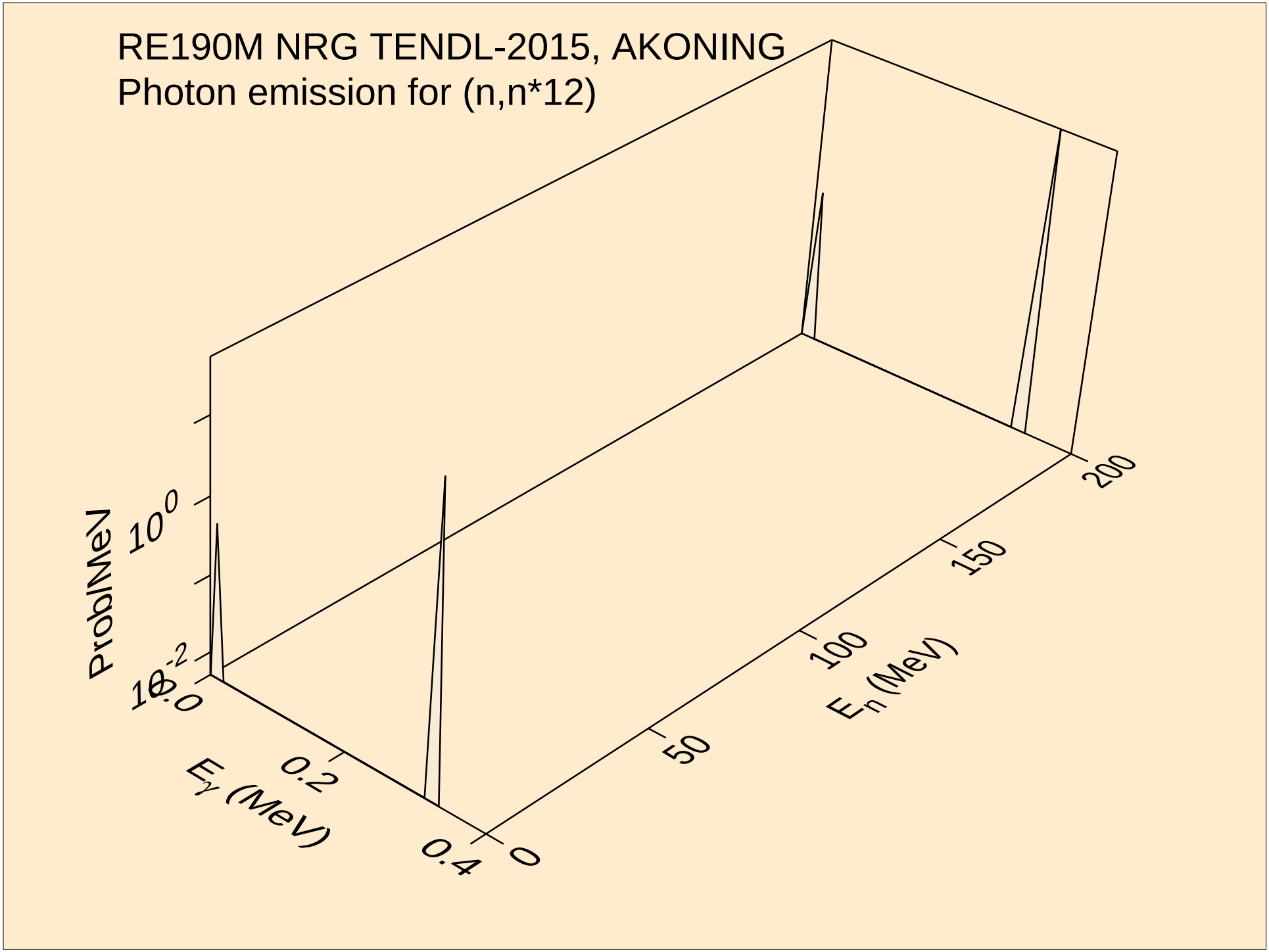

RE190M NRG TENDL-2015, AKONING
Photon emission for (n,n*7)
Prob/MeV
10^0
10^-2
0.1
0.2
0.3
Eγ (MeV)
0
50
100
150
200
En (MeV)

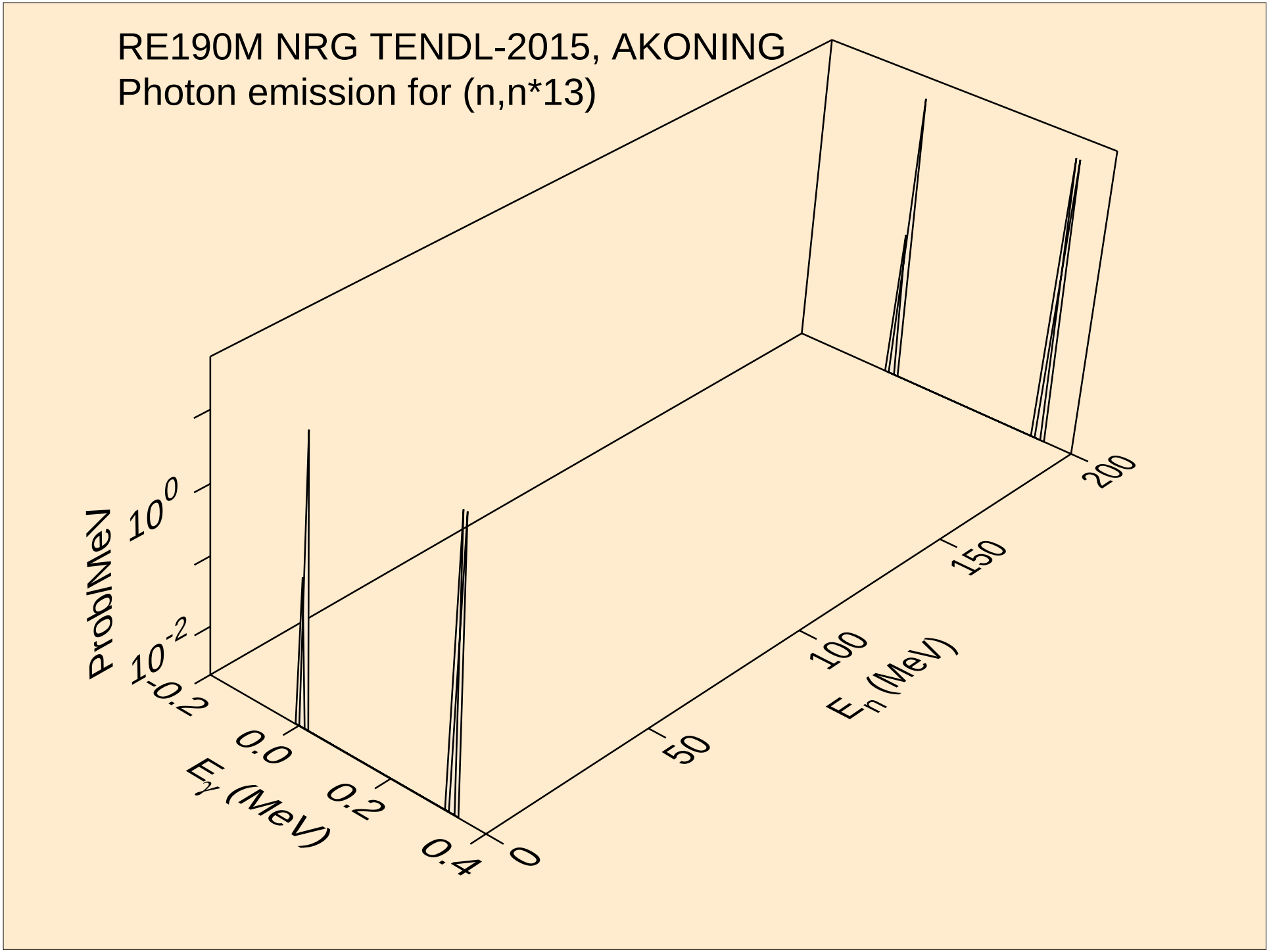

RE190M NRG TENDL-2015, AKONING
Photon emission for (n,n*8)
Prob/MeV
10^0
10^-2
-0.1
0.0
0.1
0.2
Eγ (MeV)
0
50
100
150
200
En (MeV)

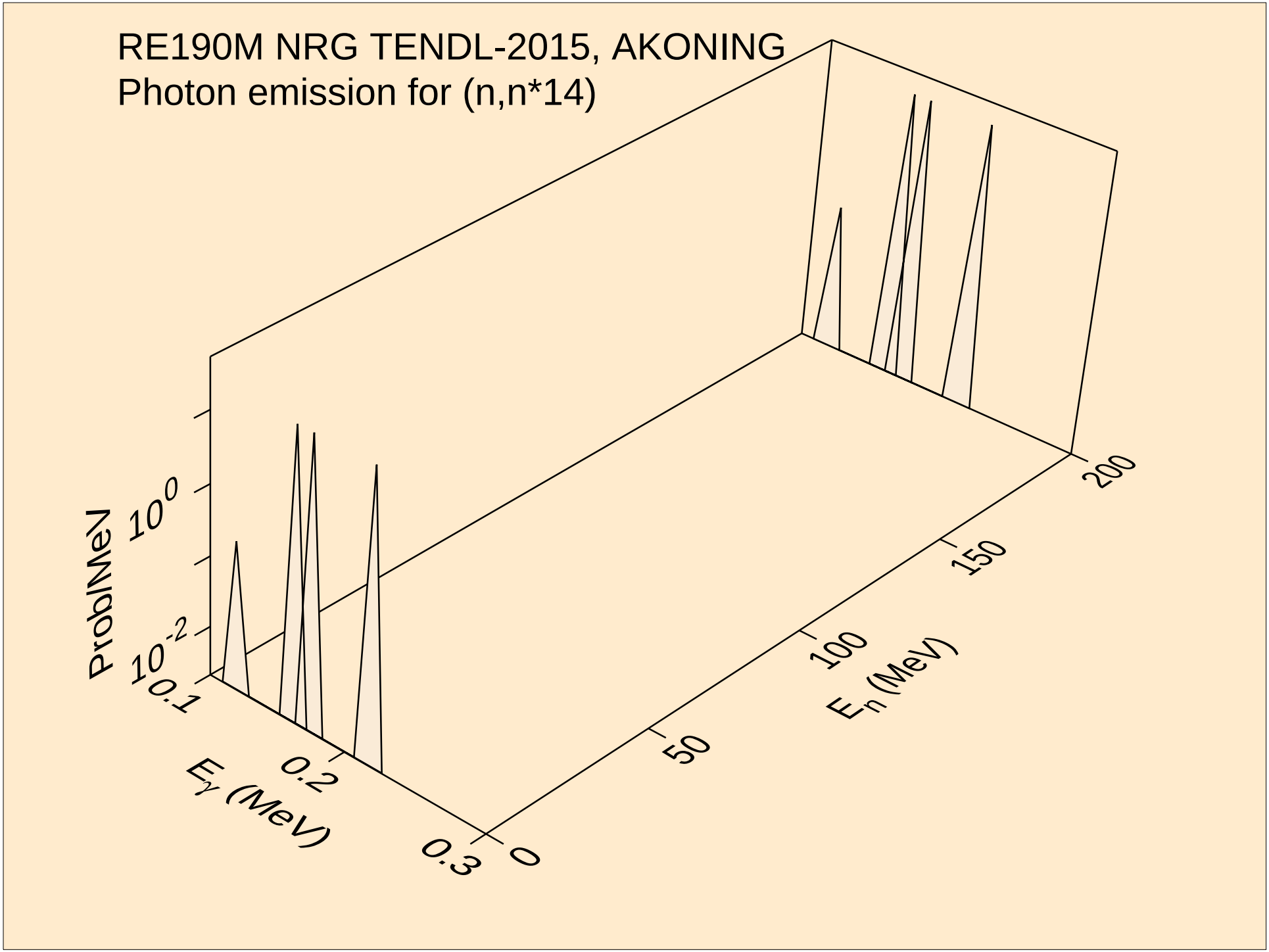

RE190M NRG TENDL-2015, AKONING
Photon emission for (n,n*9)
Prob/MeV
10^0
10^-2
0.0
0.2
0.4
E_γ (MeV)
0
50
100
150
200
E_n (MeV)

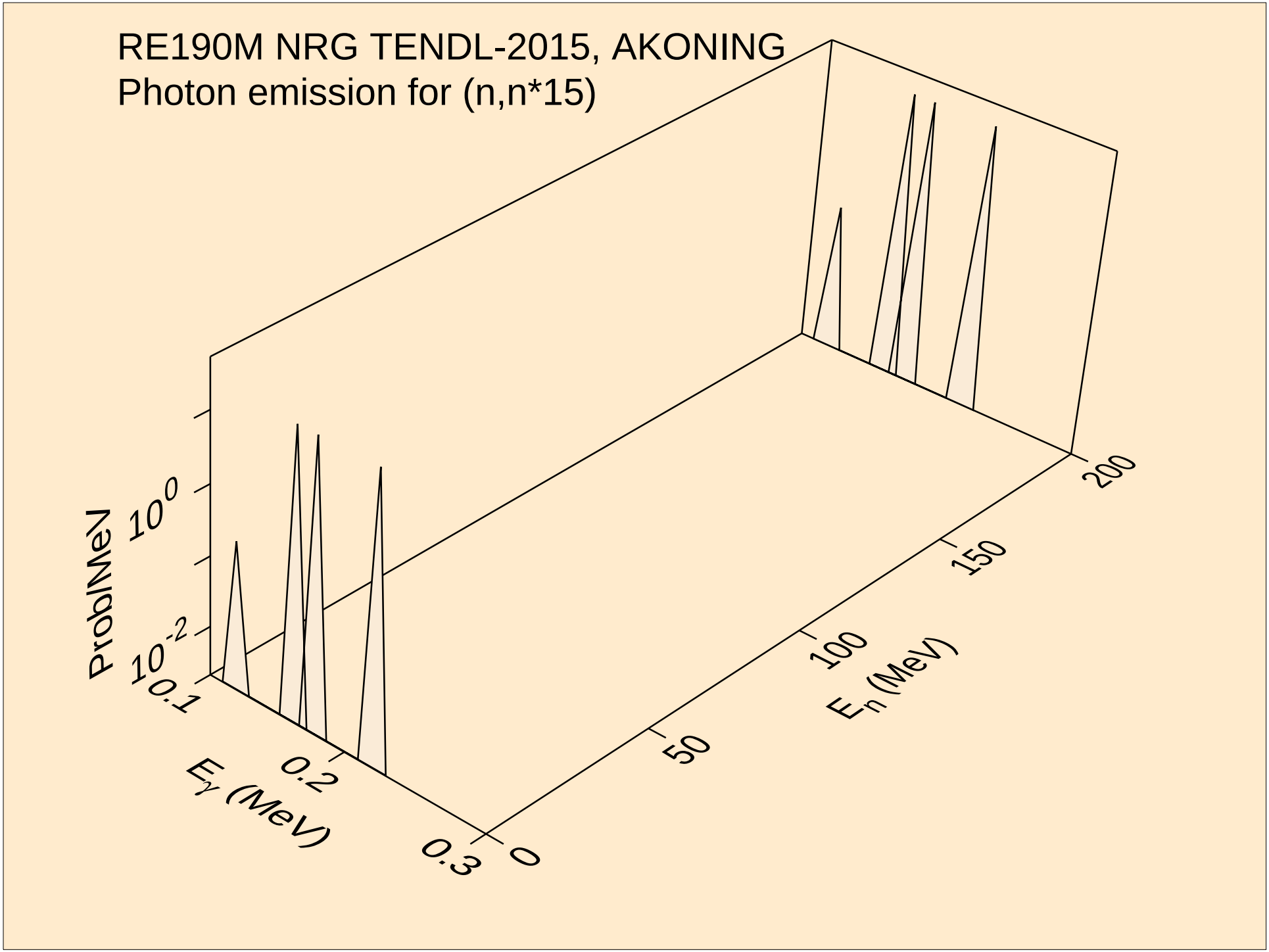

RE190M NRG TENDL-2015, AKONING
Photon emission for (n,n*10)
Prob/MeV
10^2
10^0
250
300
350
400
E_γ (MeV)
*10 -3
0
50
100
150
200
E_n (MeV)

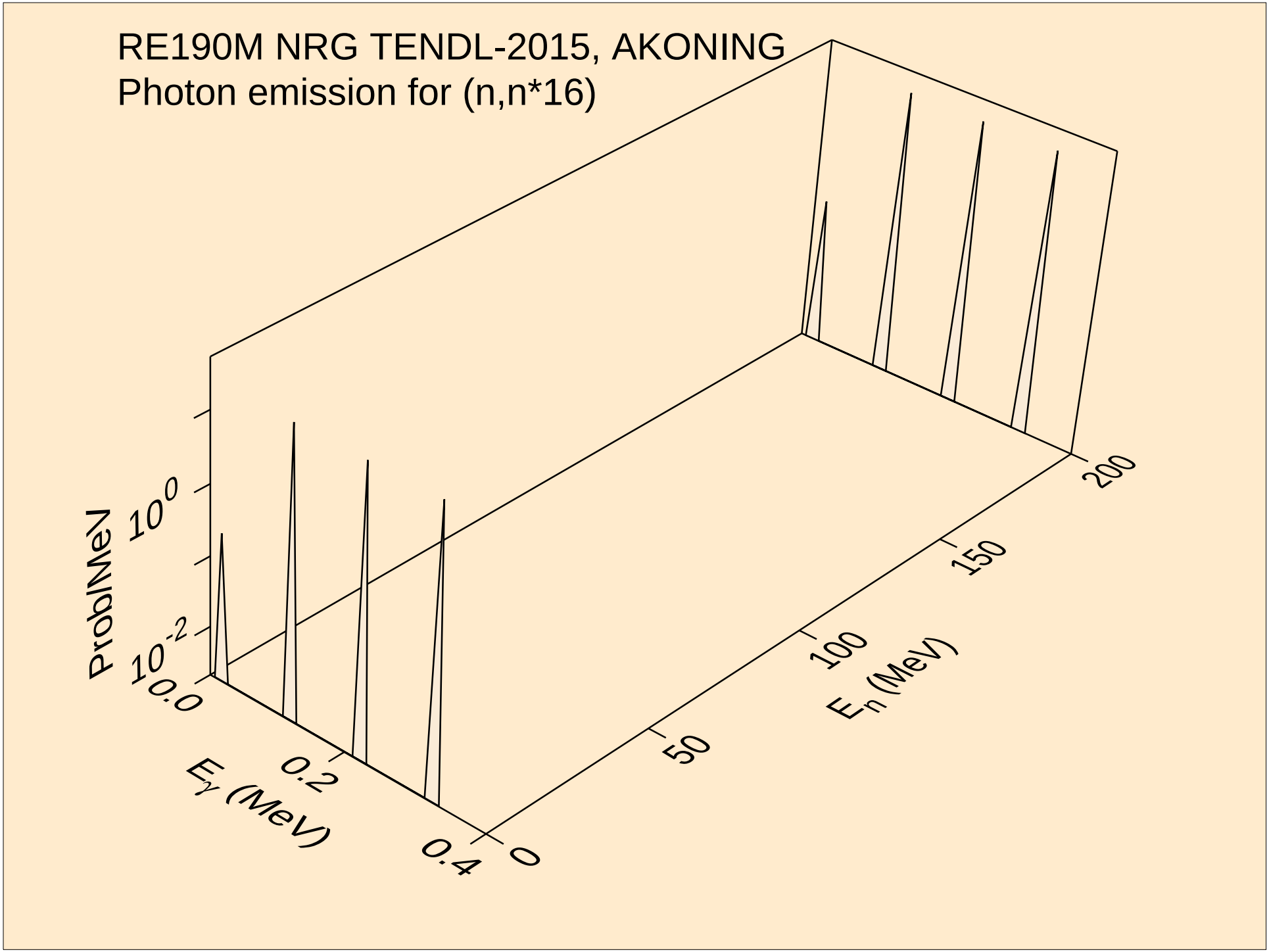

RE190M NRG TENDL-2015, AKONING
Photon emission for (n,n*11)
Prob/MeV
10^0
10^-2
-0.2
0.0
0.2
0.4
E_γ (MeV)
0
50
100
150
200
E_n (MeV)

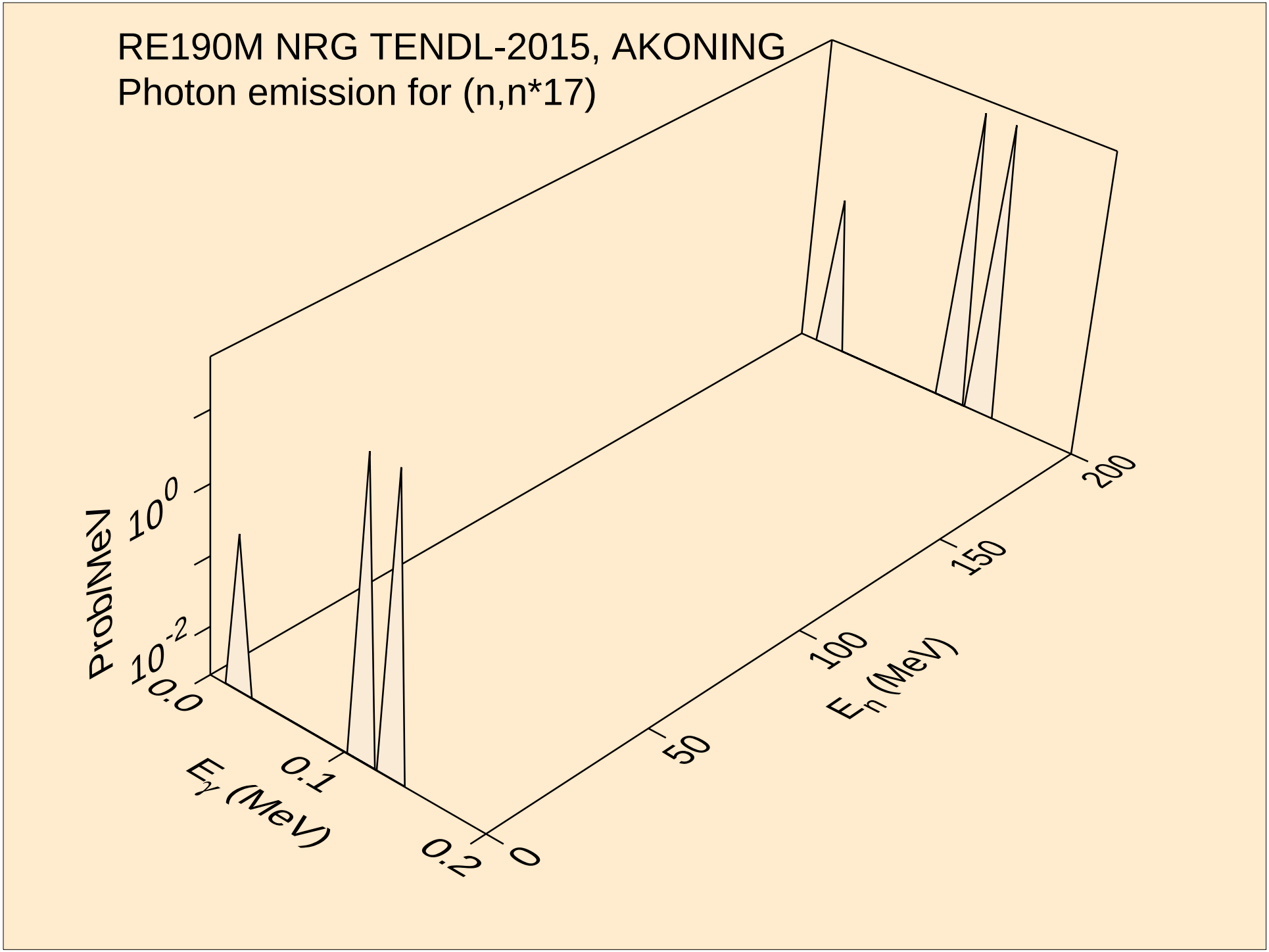

RE190M NRG TENDL-2015, AKONING
Photon emission for (n,n*12)
Prob/MeV
10^{0}
10^{-2}
0.0
0.2
0.4
E_γ (MeV)
0
50
100
150
200
E_n (MeV)

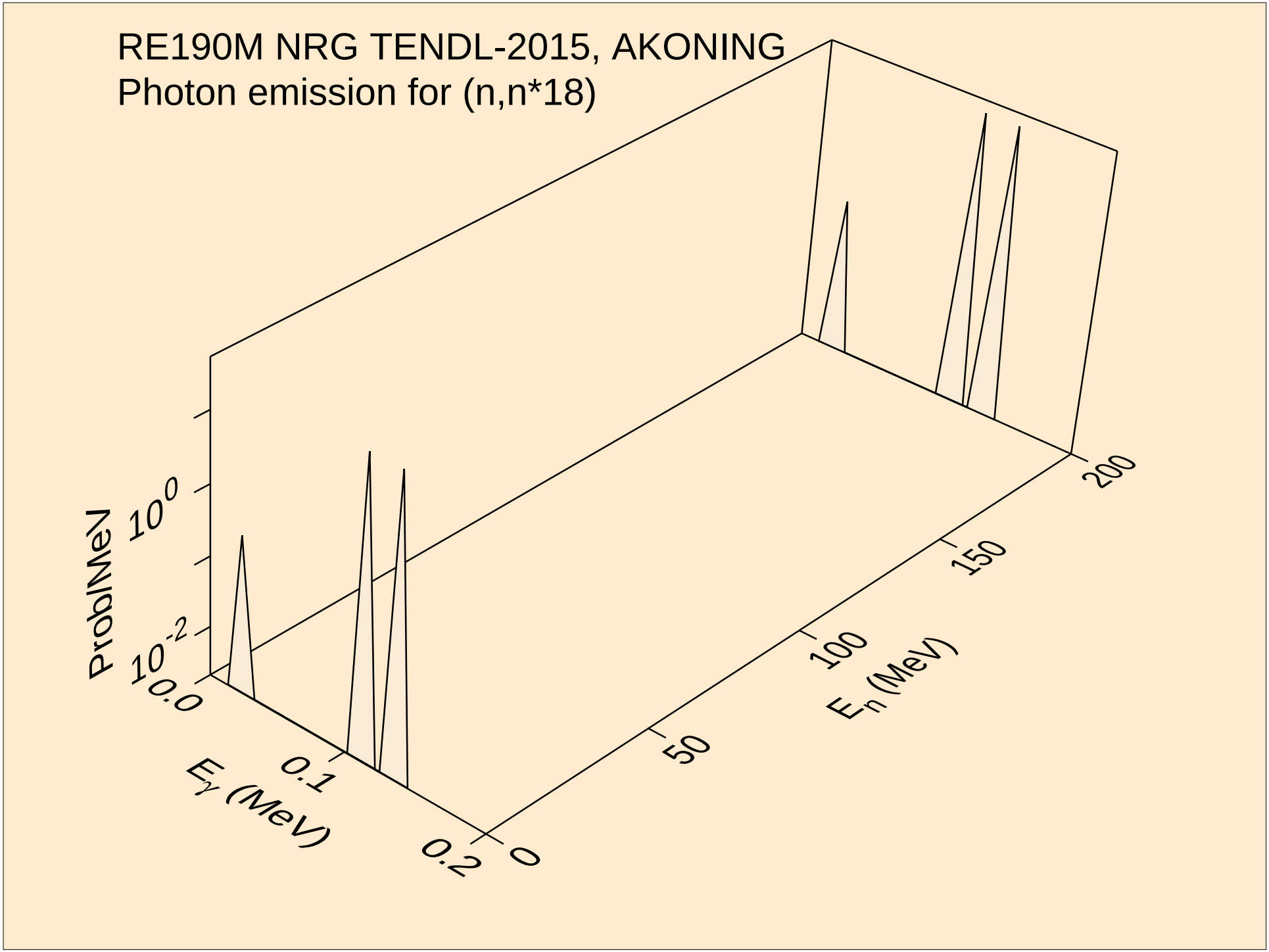

RE190M NRG TENDL-2015, AKONING
Photon emission for (n,n*13)
Prob/MeV
10^{0}
10^{-2}
-0.2
0.0
0.2
0.4
E_γ (MeV)
0
50
100
150
200
E_n (MeV)

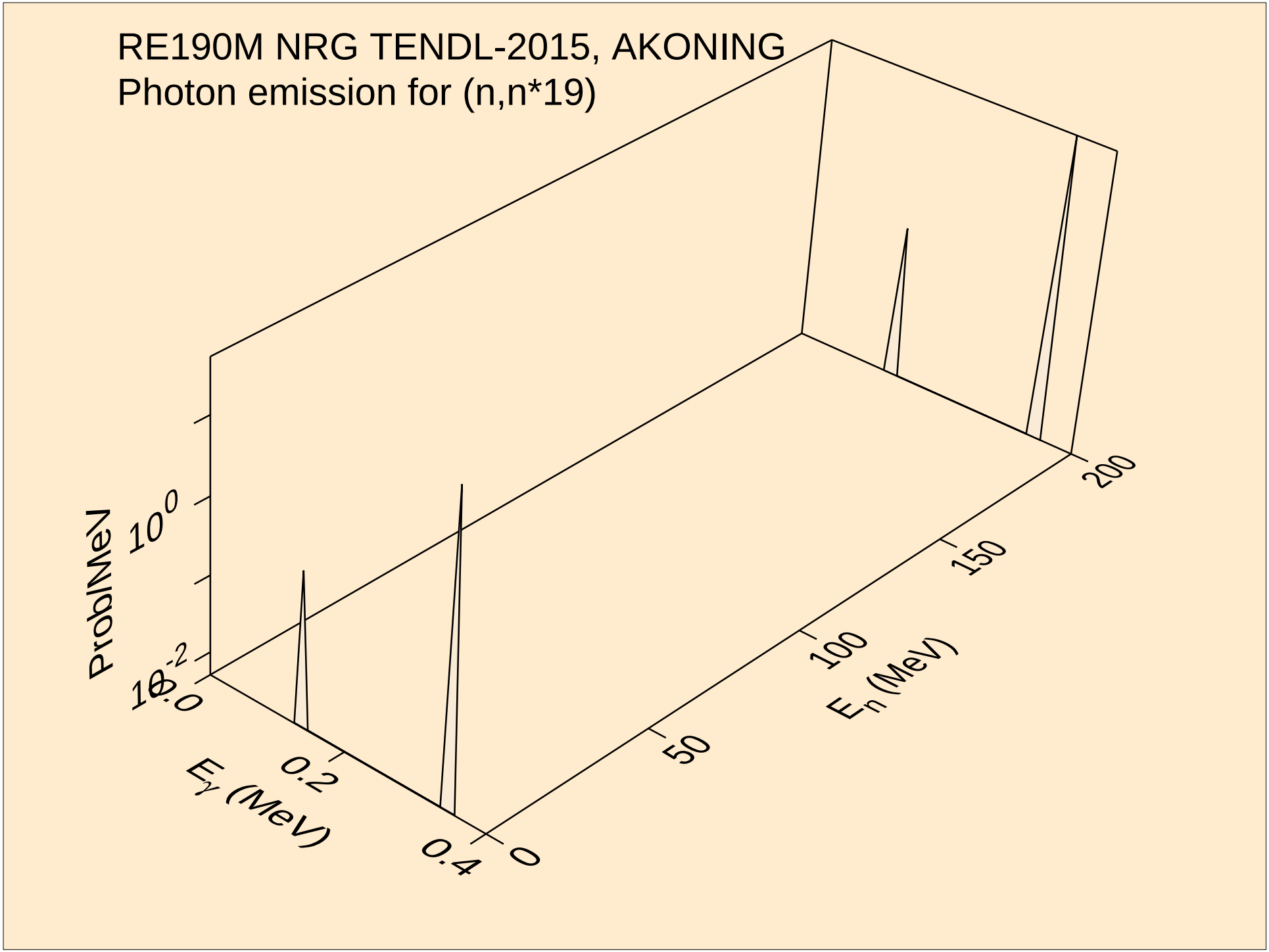

RE190M NRG TENDL-2015, AKONING
Photon emission for (n,n*14)
Prob/MeV
10^{0}
10^{-2}
0.1
0.2
0.3
E_γ (MeV)
0
50
100
150
200
E_n (MeV)

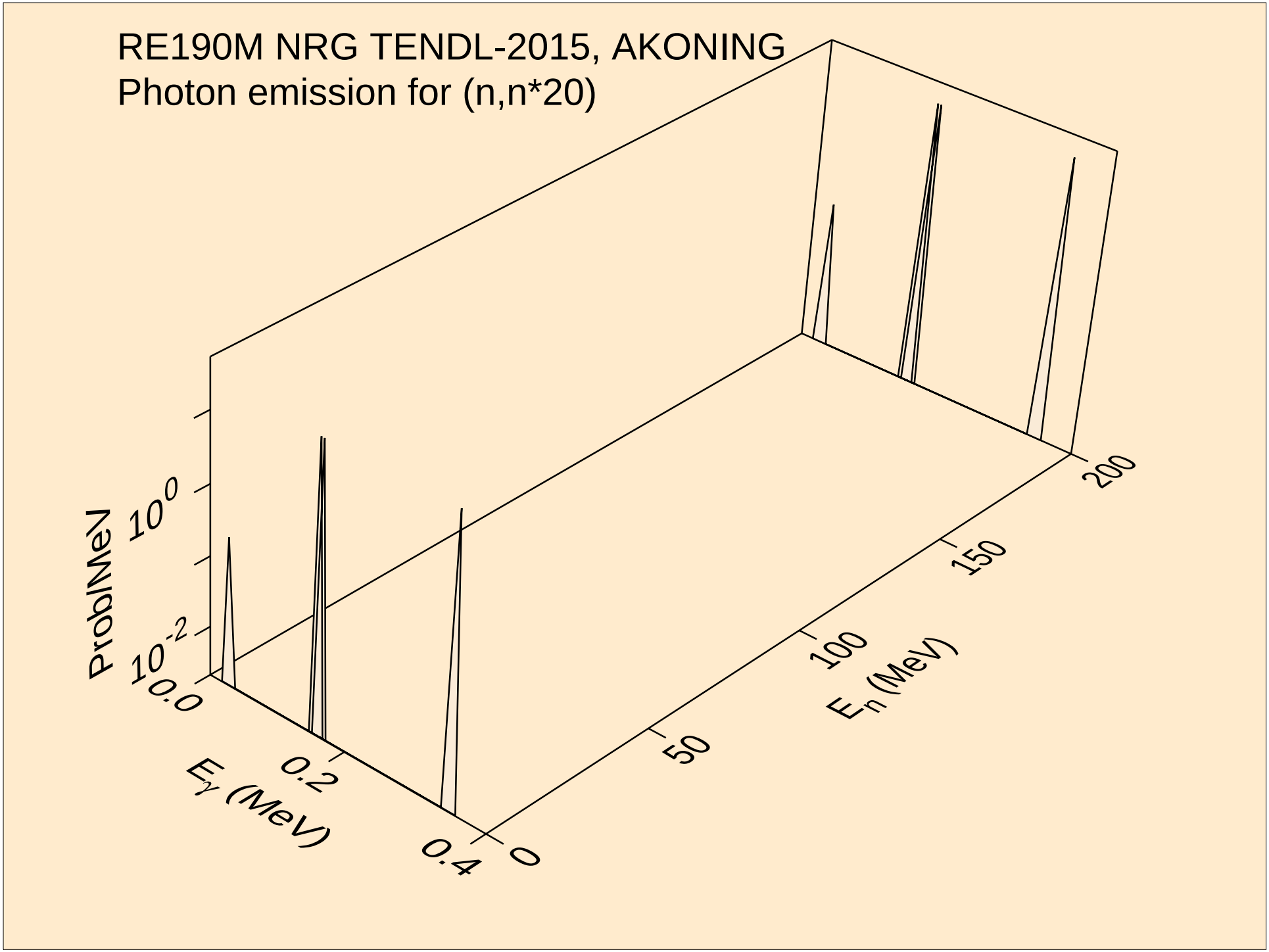

RE190M NRG TENDL-2015, AKONING
Photon emission for (n,n*15)
Prob/MeV
10^0
10^-2
0.1
0.2
0.3
Eγ (MeV)
0
50
100
150
200
En (MeV)

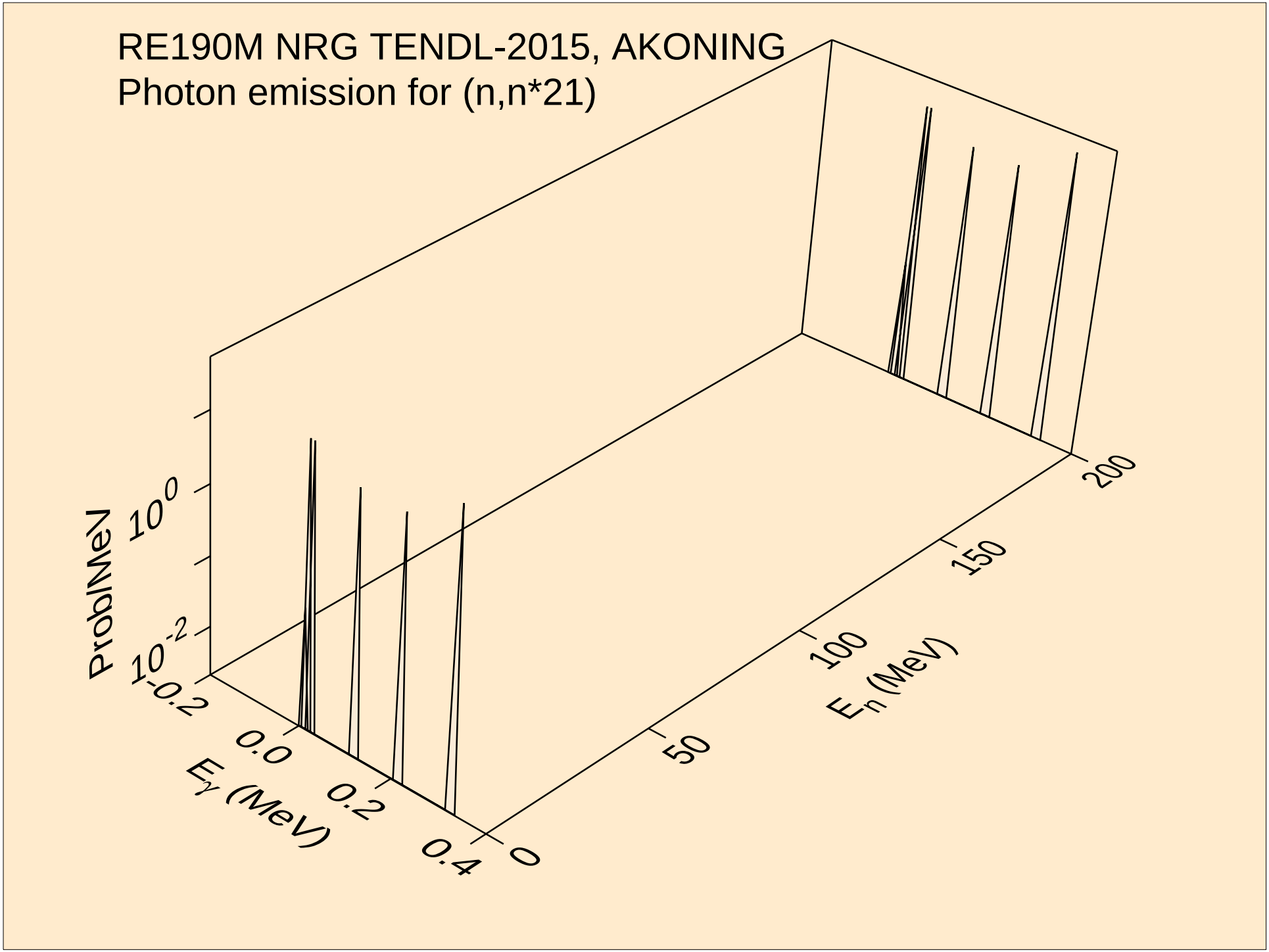

RE190M NRG TENDL-2015, AKONING
Photon emission for (n,n*16)
Prob/MeV
10^0
10^-2
0.0
0.2
0.4
E_γ (MeV)
0
50
100
150
200
E_n (MeV)

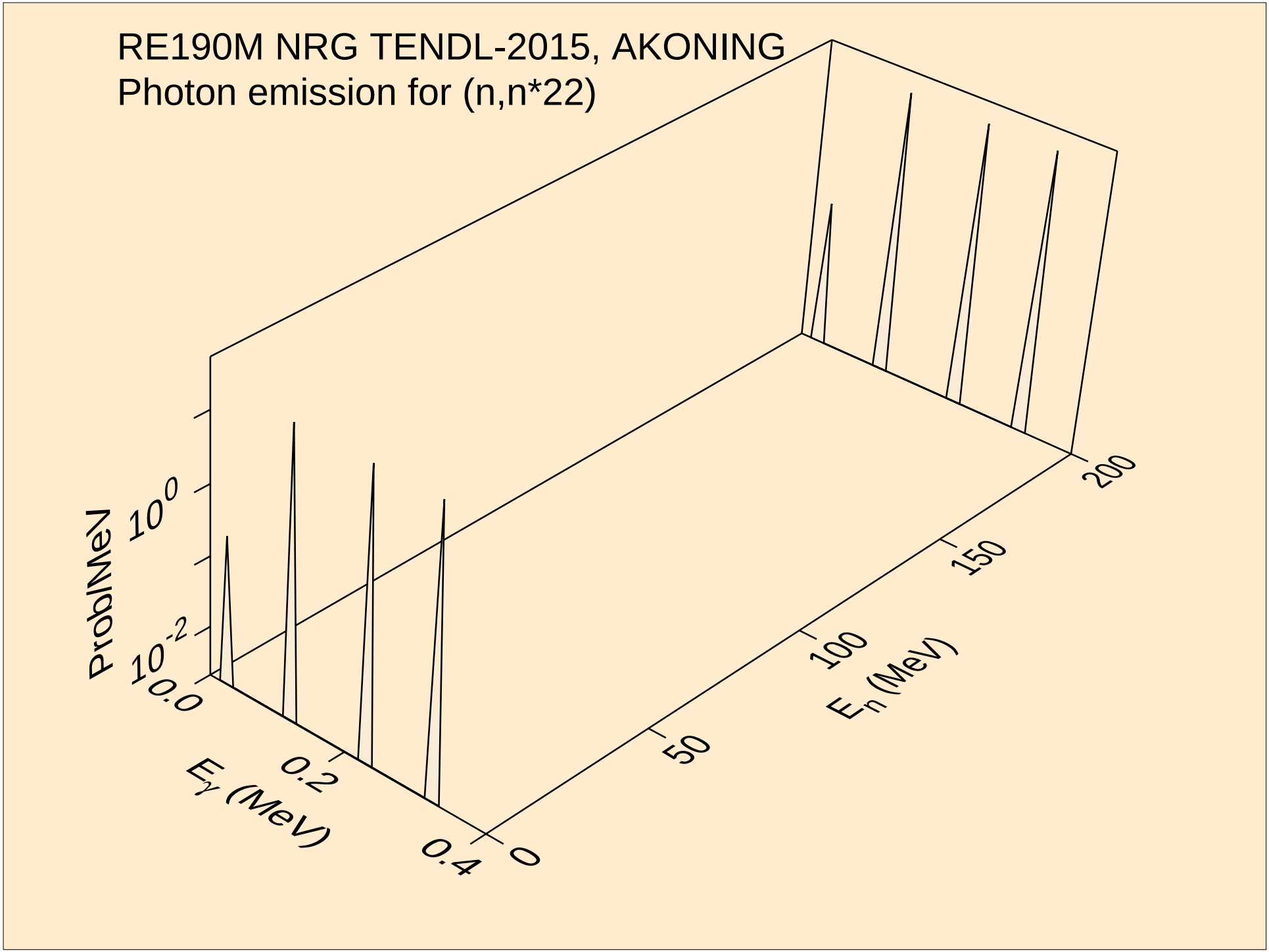

RE190M NRG TENDL-2015, AKONING
Photon emission for (n,n*17)
Prob/MeV
10^{0}
10^{-2}
0.0
0.1
0.2
E_γ (MeV)
0
50
100
150
200
E_n (MeV)

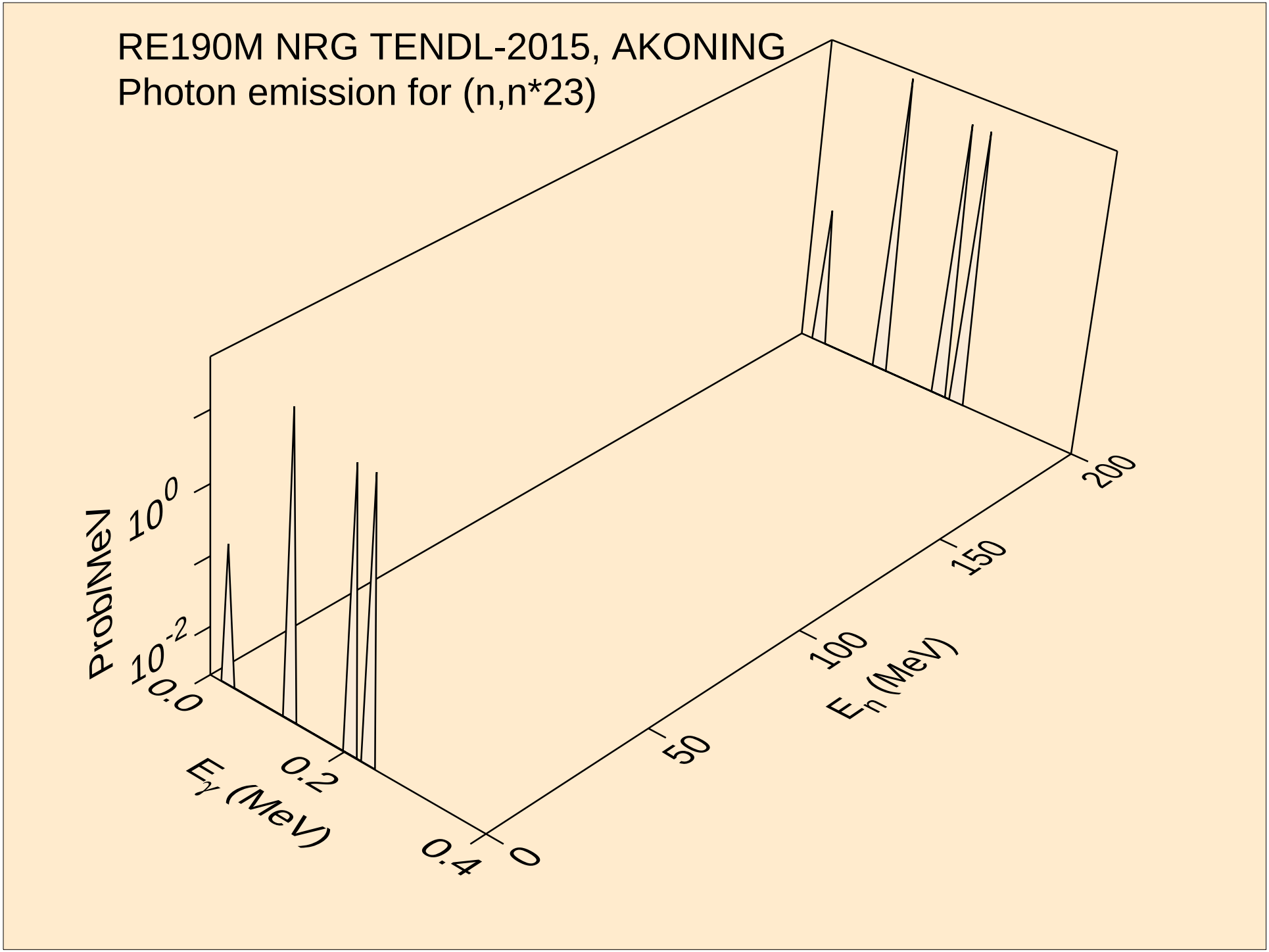

RE190M NRG TENDL-2015, AKONING
Photon emission for (n,n*18)
Prob/MeV
10^0
10^-2
0.0
0.1
0.2
E_γ (MeV)
0
50
100
150
200
E_n (MeV)

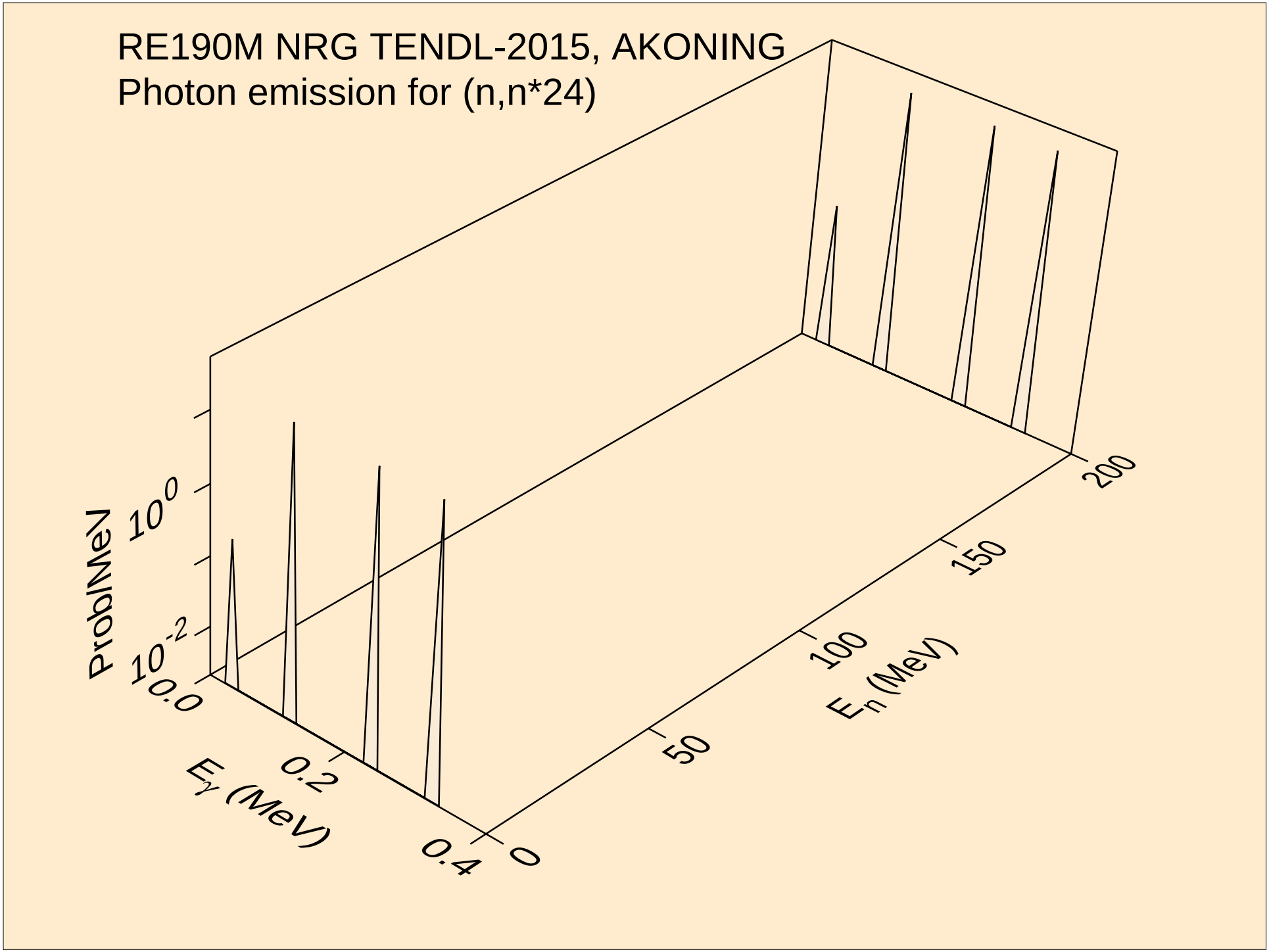

RE190M NRG TENDL-2015, AKONING
Photon emission for (n,n*19)
Prob/MeV
10^0
10^-2
0.0
0.2
0.4
E_γ (MeV)
0
50
100
150
200
E_n (MeV)

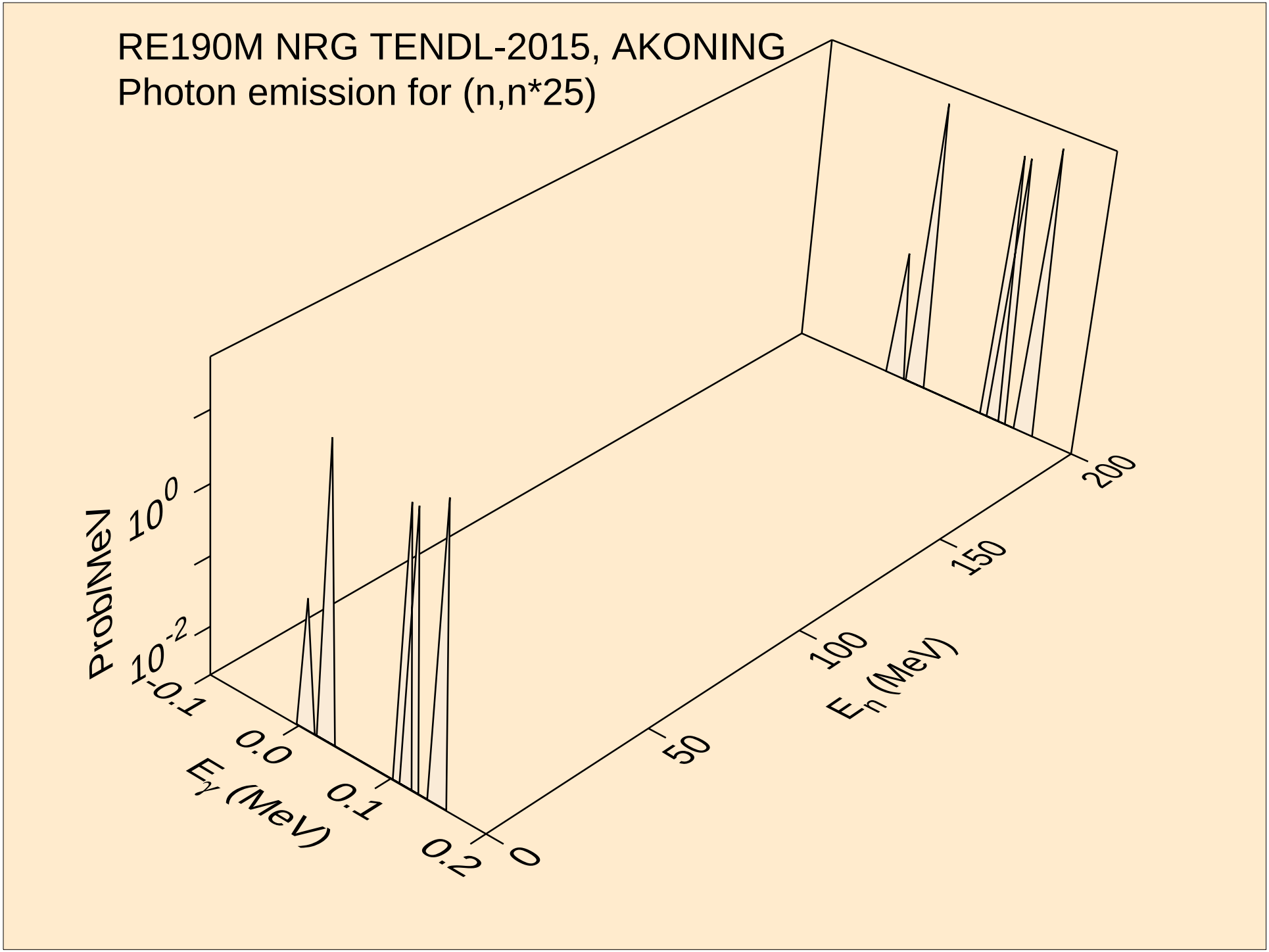

RE190M NRG TENDL-2015, AKONING
Photon emission for (n,n*20)
Prob/MeV
10^0
10^-2
0.0
0.2
0.4
E_γ (MeV)
0
50
100
150
200
E_n (MeV)

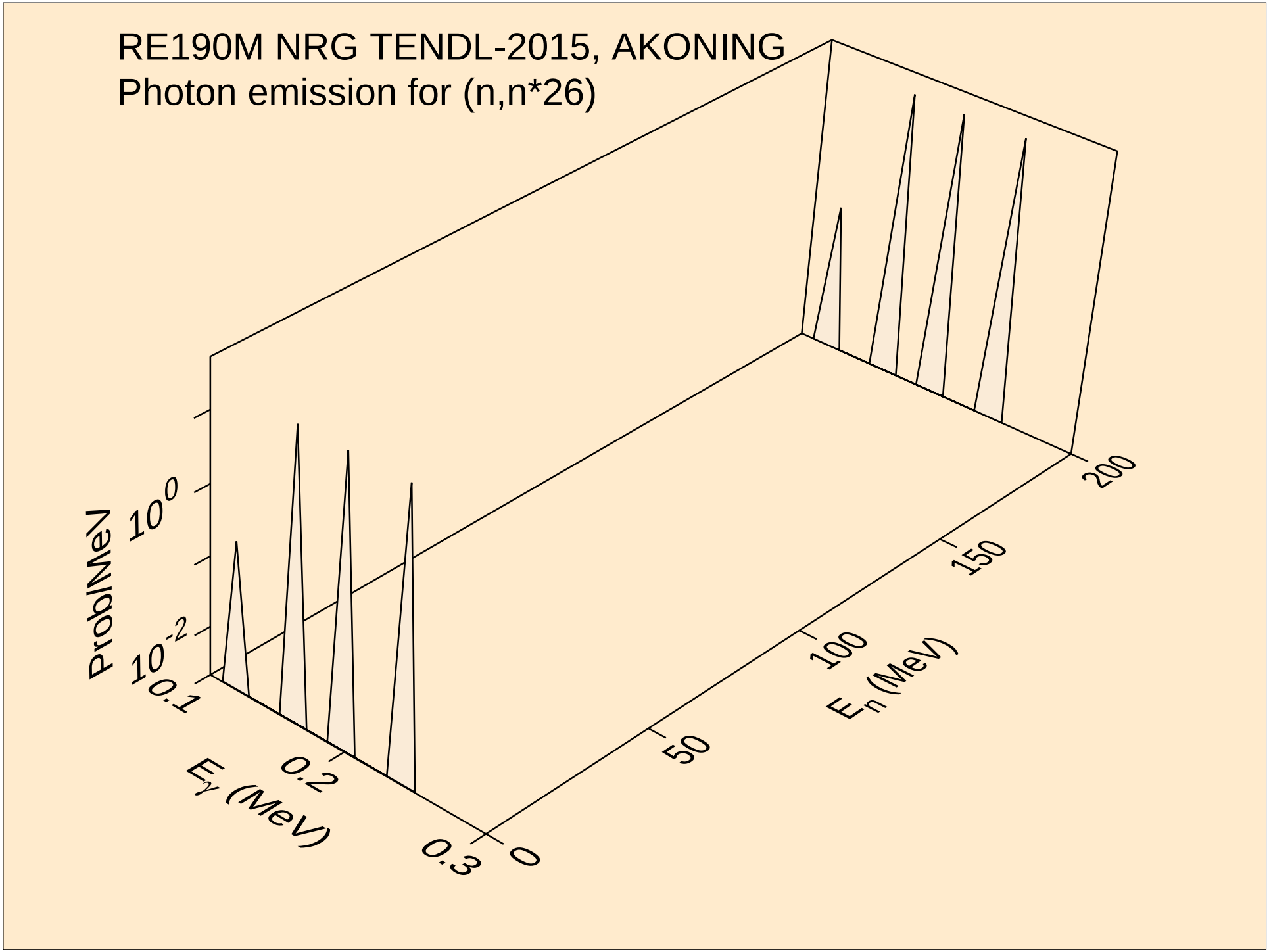

RE190M NRG TENDL-2015, AKONING
Photon emission for (n,n*21)
Prob/MeV
10^0
10^-2
-0.2
0.0
0.2
0.4
E_γ (MeV)
0
50
100
150
200
E_n (MeV)

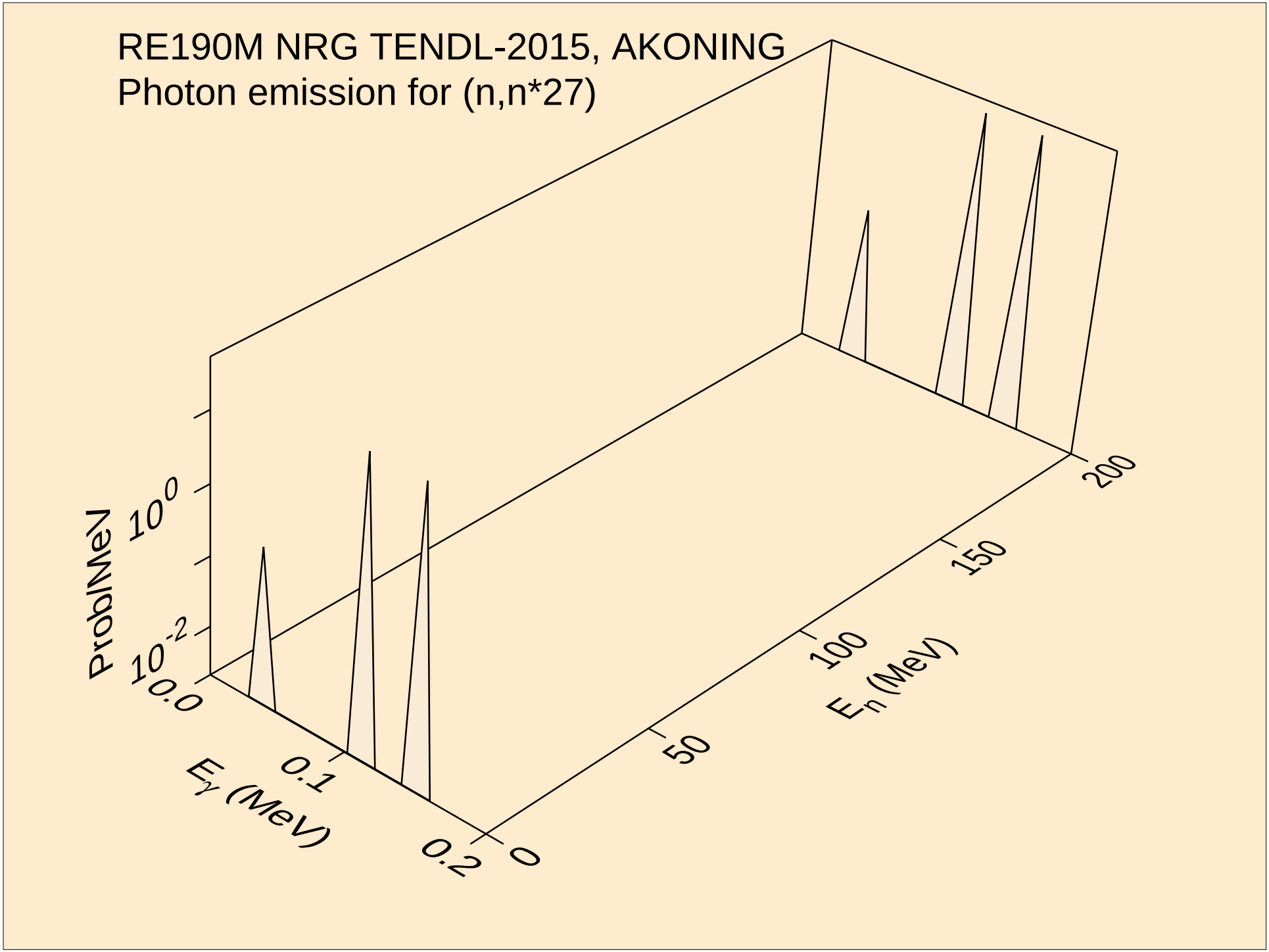

RE190M NRG TENDL-2015, AKONING
Photon emission for (n,n*22)
Prob/MeV
10^0
10^-2
0.0
0.2
0.4
E_γ (MeV)
0
50
100
150
200
E_n (MeV)

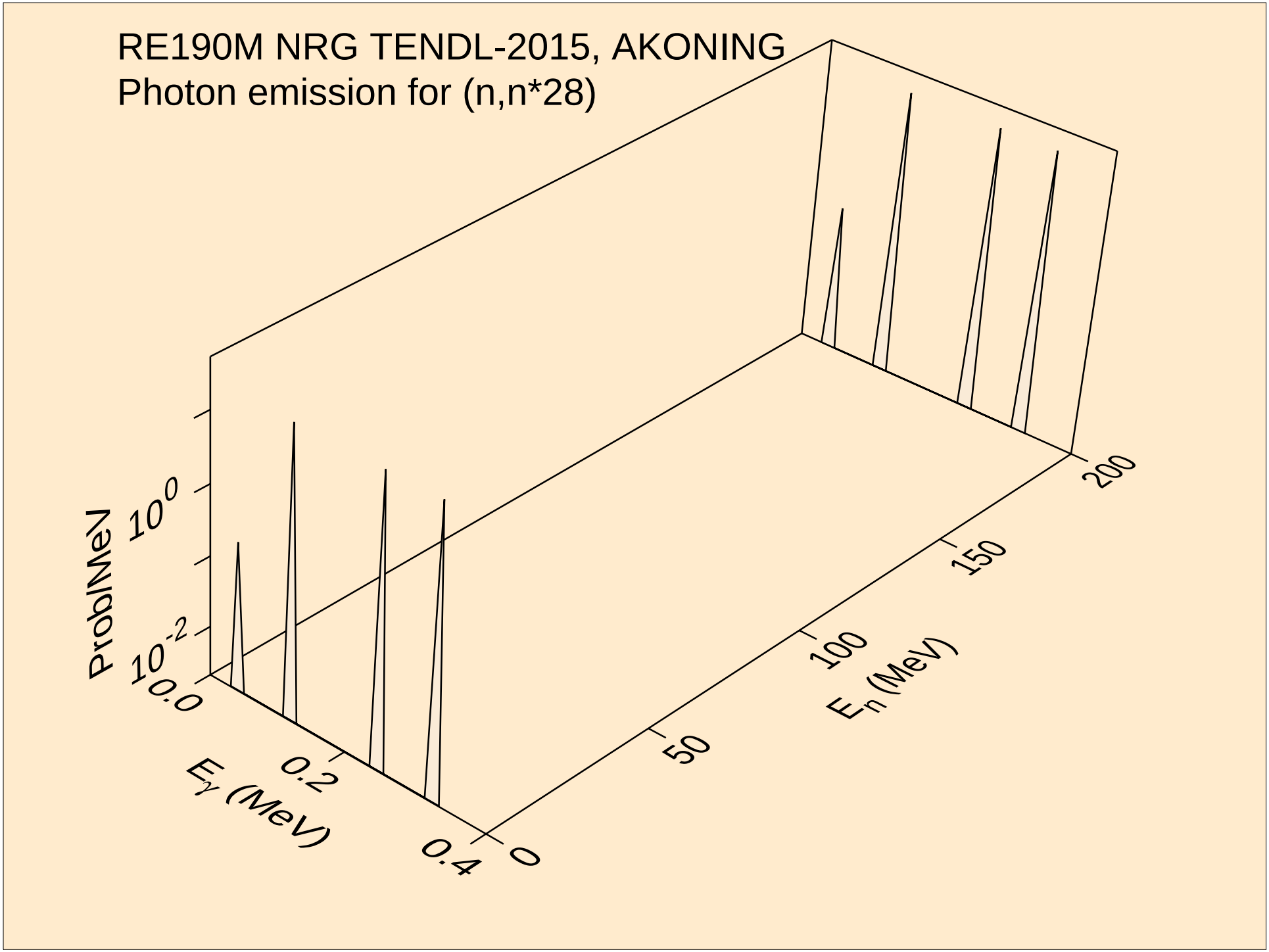

RE190M NRG TENDL-2015, AKONING
Photon emission for (n,n*23)
Prob/MeV
10^0
10^-2
0.0
0.2
0.4
E_γ (MeV)
0
50
100
150
200
E_n (MeV)

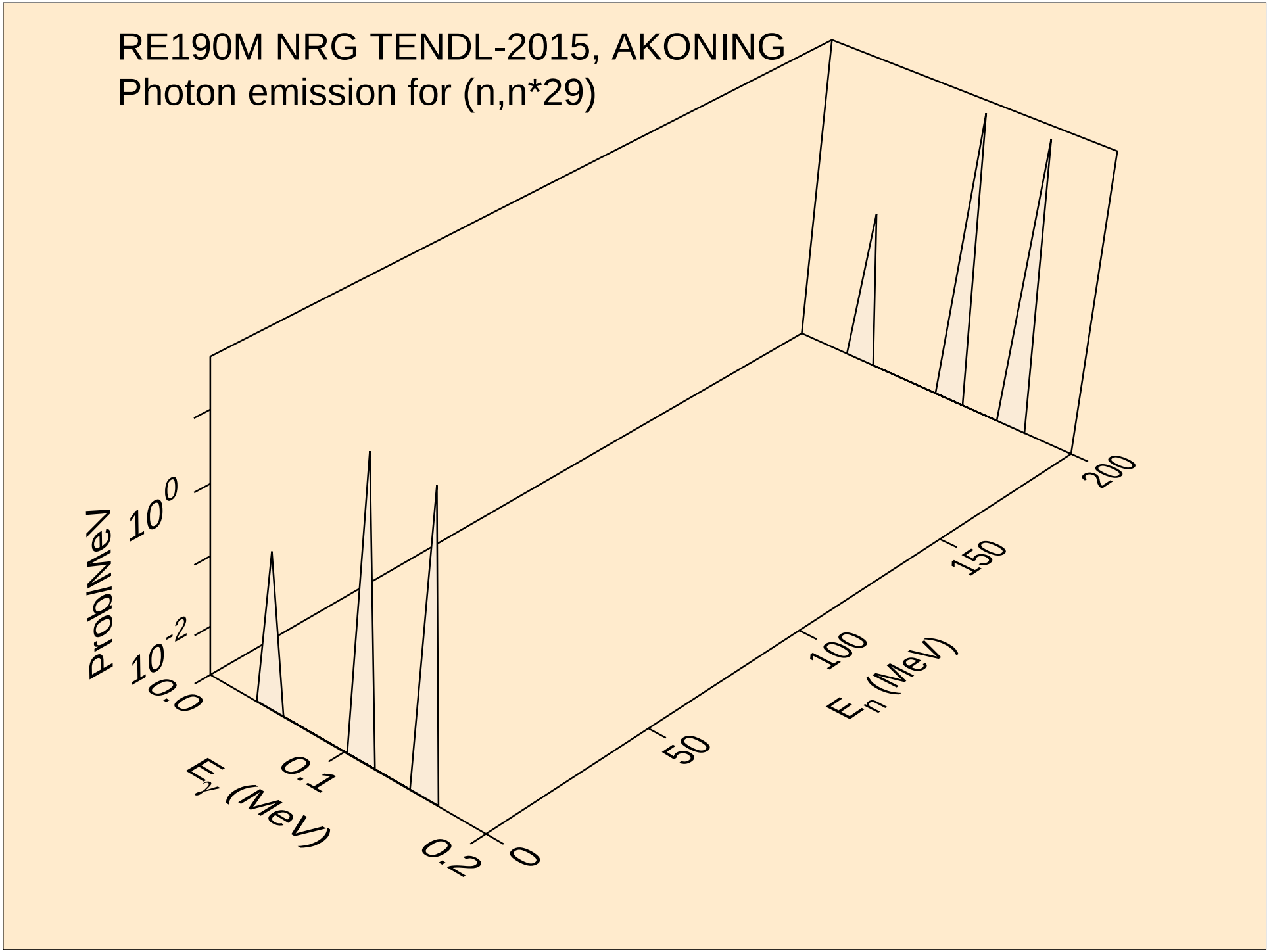

RE190M NRG TENDL-2015, AKONING
Photon emission for (n,n*24)
Prob/MeV
10^0
10^-2
0.0
0.2
0.4
E_γ (MeV)
0
50
100
150
200
E_n (MeV)

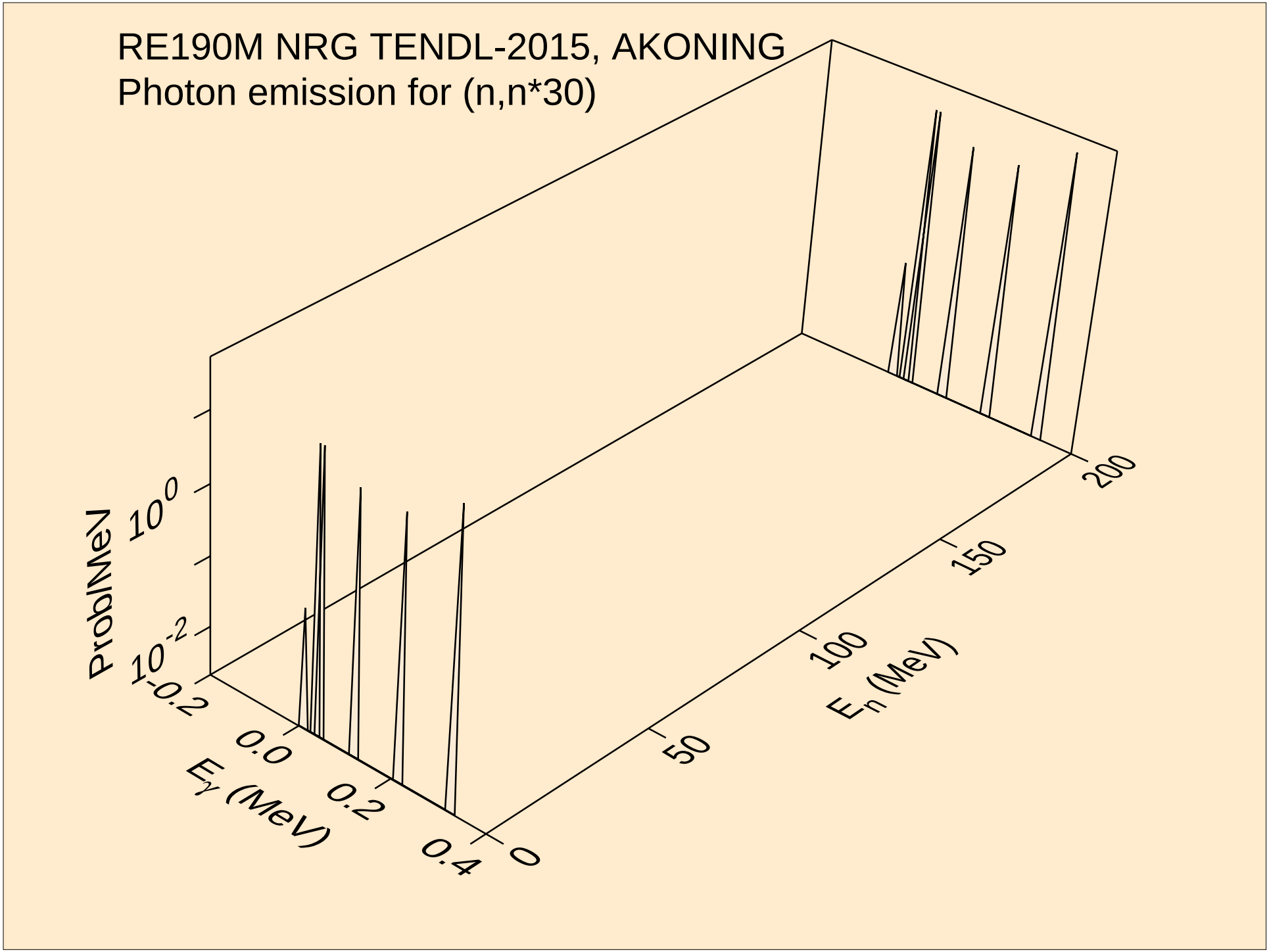

RE190M NRG TENDL-2015, AKONING
Photon emission for (n,n*25)
Prob/MeV
10^0
10^-2
-0.1
0.0
0.1
0.2
Eγ (MeV)
0
50
100
150
200
En (MeV)

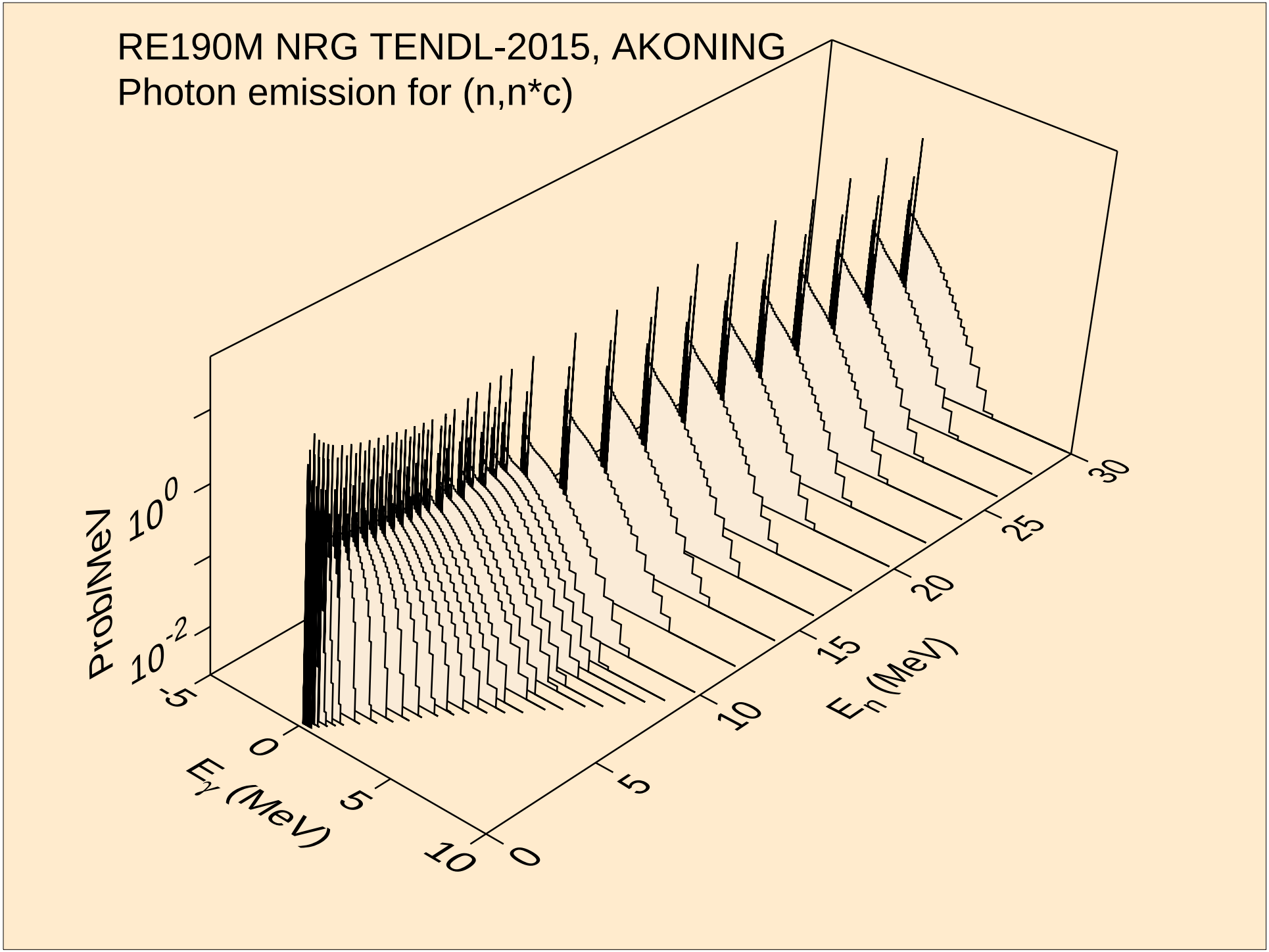

RE190M NRG TENDL-2015, AKONING
Photon emission for (n,n*26)
Prob/MeV
10^0
10^-2
0.1
0.2
0.3
E_γ (MeV)
0
50
100
150
200
E_n (MeV)

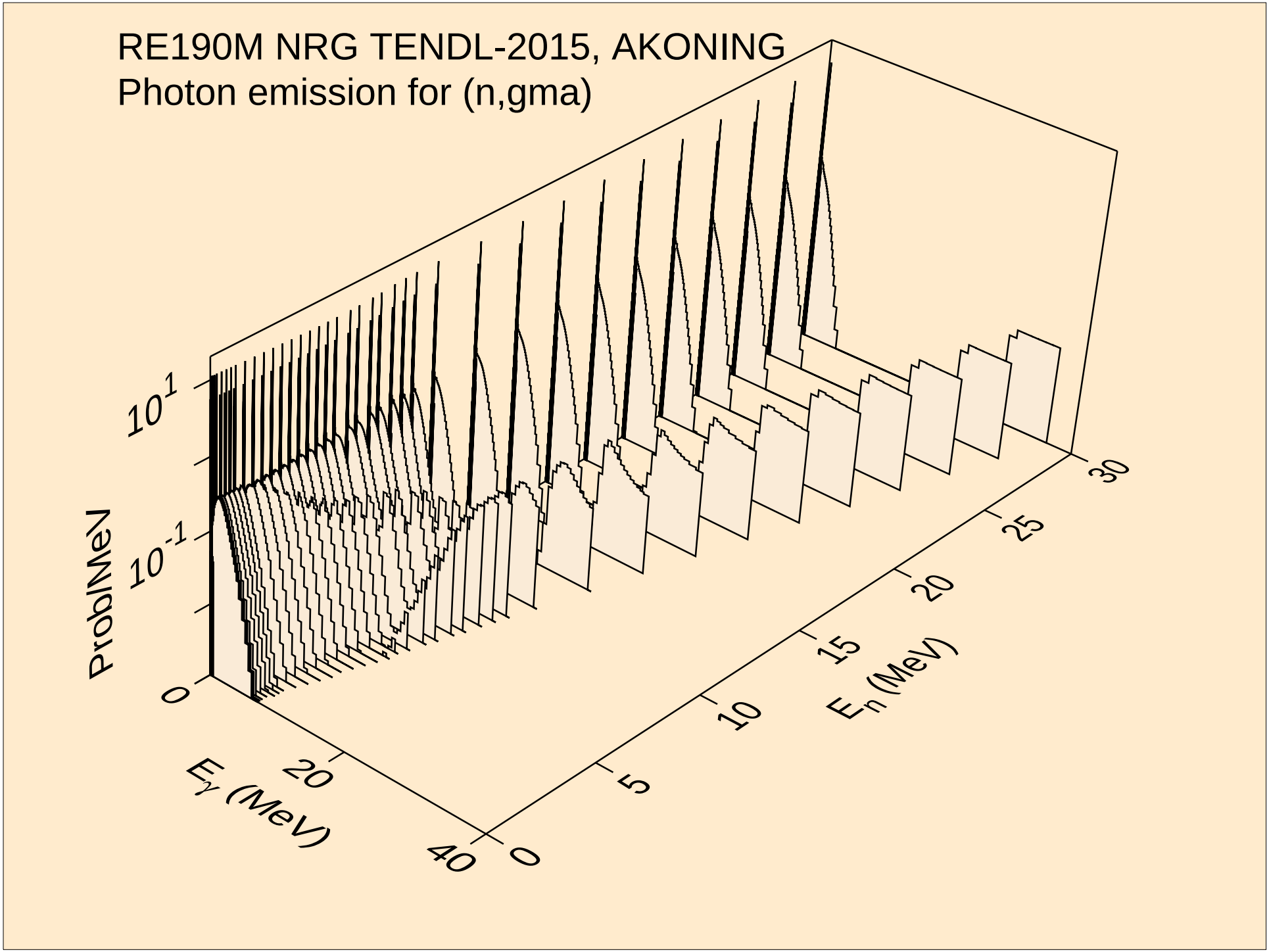

RE190M NRG TENDL-2015, AKONING
Photon emission for (n,n*27)
Prob/MeV
10^0
10^-2
0.0
0.1
0.2
E_γ (MeV)
0
50
100
150
200
E_n (MeV)

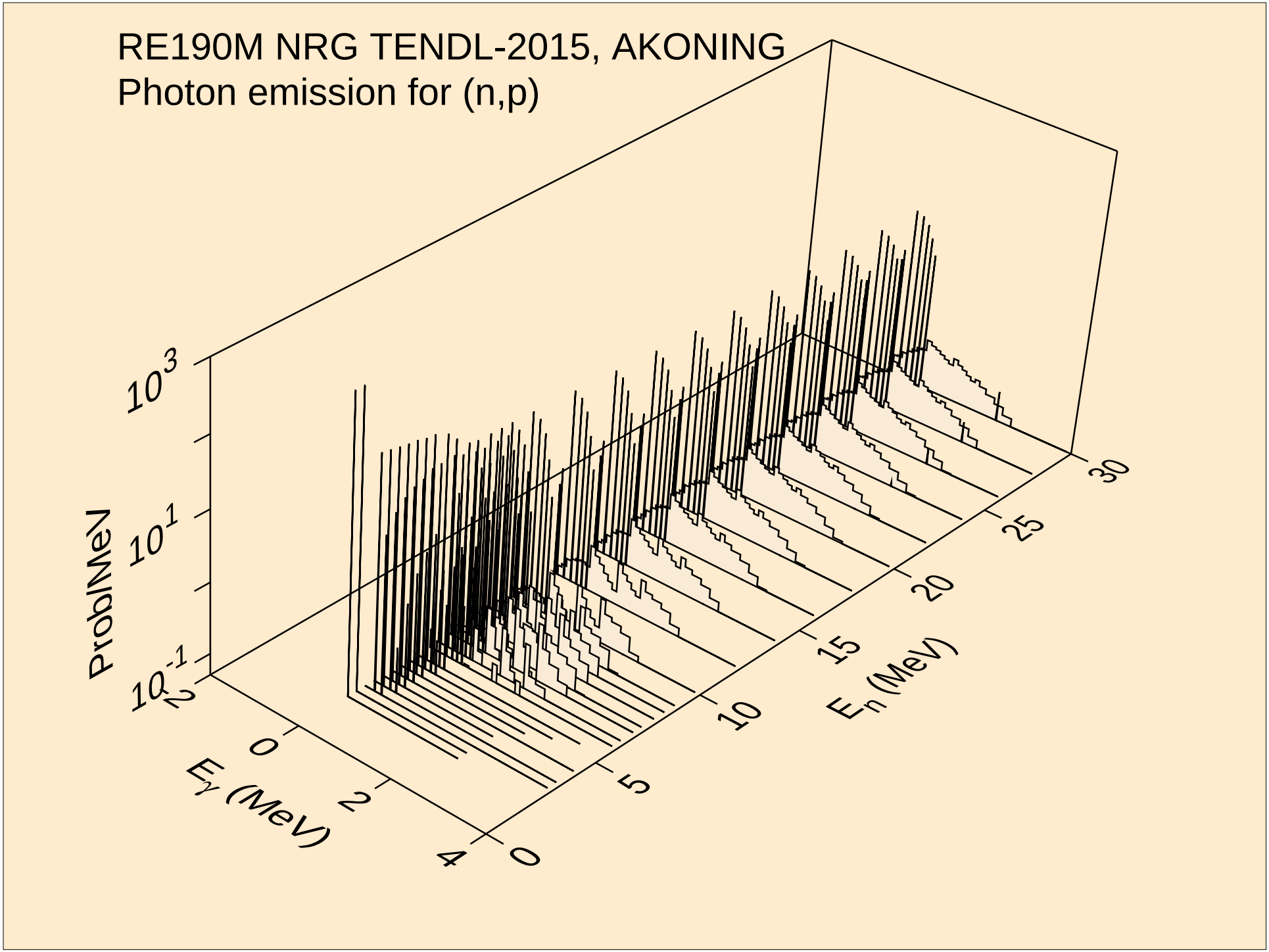

RE190M NRG TENDL-2015, AKONING
Photon emission for (n,n*28)
Prob/MeV
10^0
10^-2
0.0
0.2
0.4
E_γ (MeV)
0
50
100
150
200
E_n (MeV)

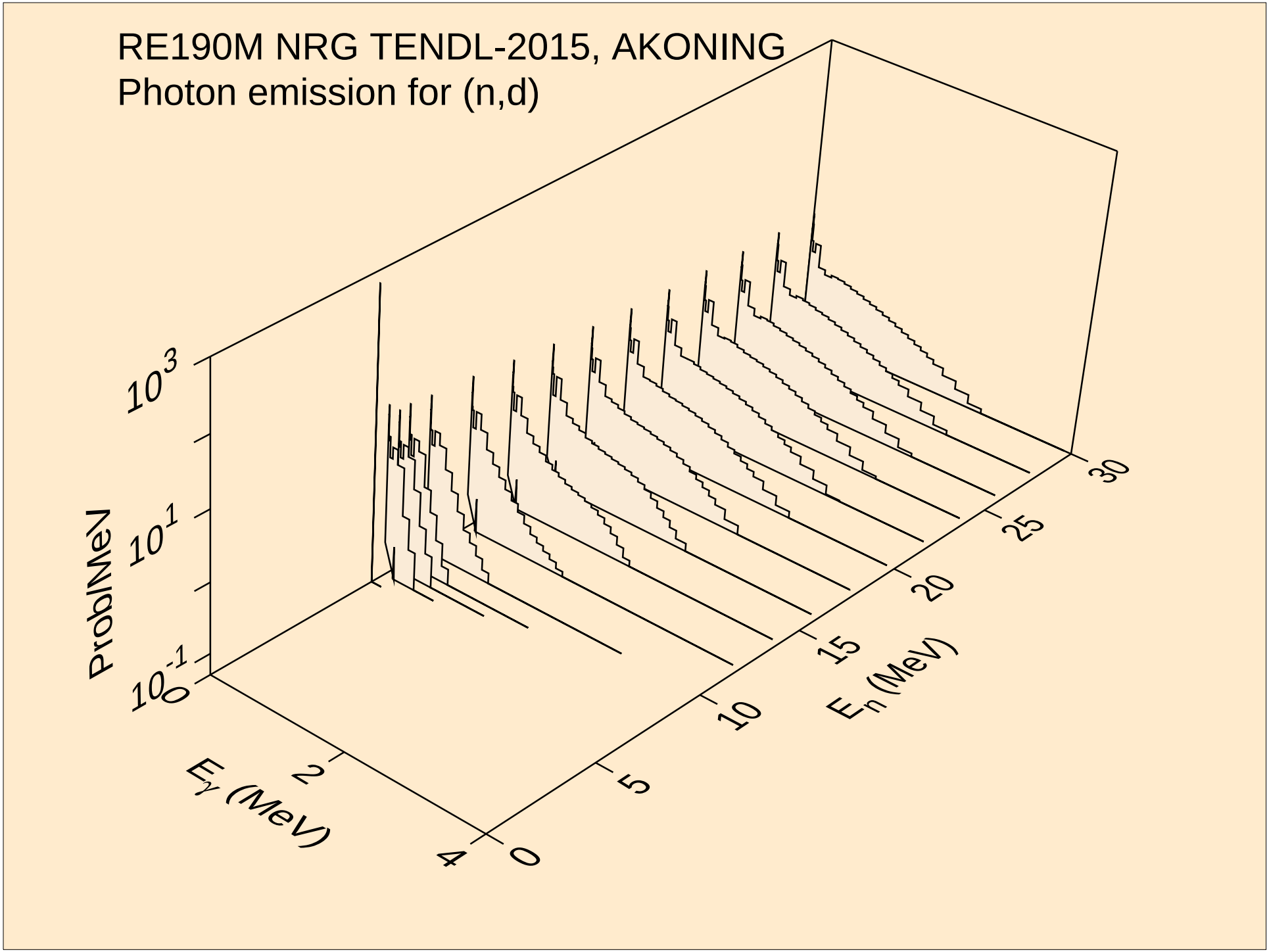

RE190M NRG TENDL-2015, AKONING
Photon emission for (n,n*29)
Prob/MeV
10^0
10^-2
0.0
0.1
0.2
E_γ (MeV)
0
50
100
150
200
E_n (MeV)

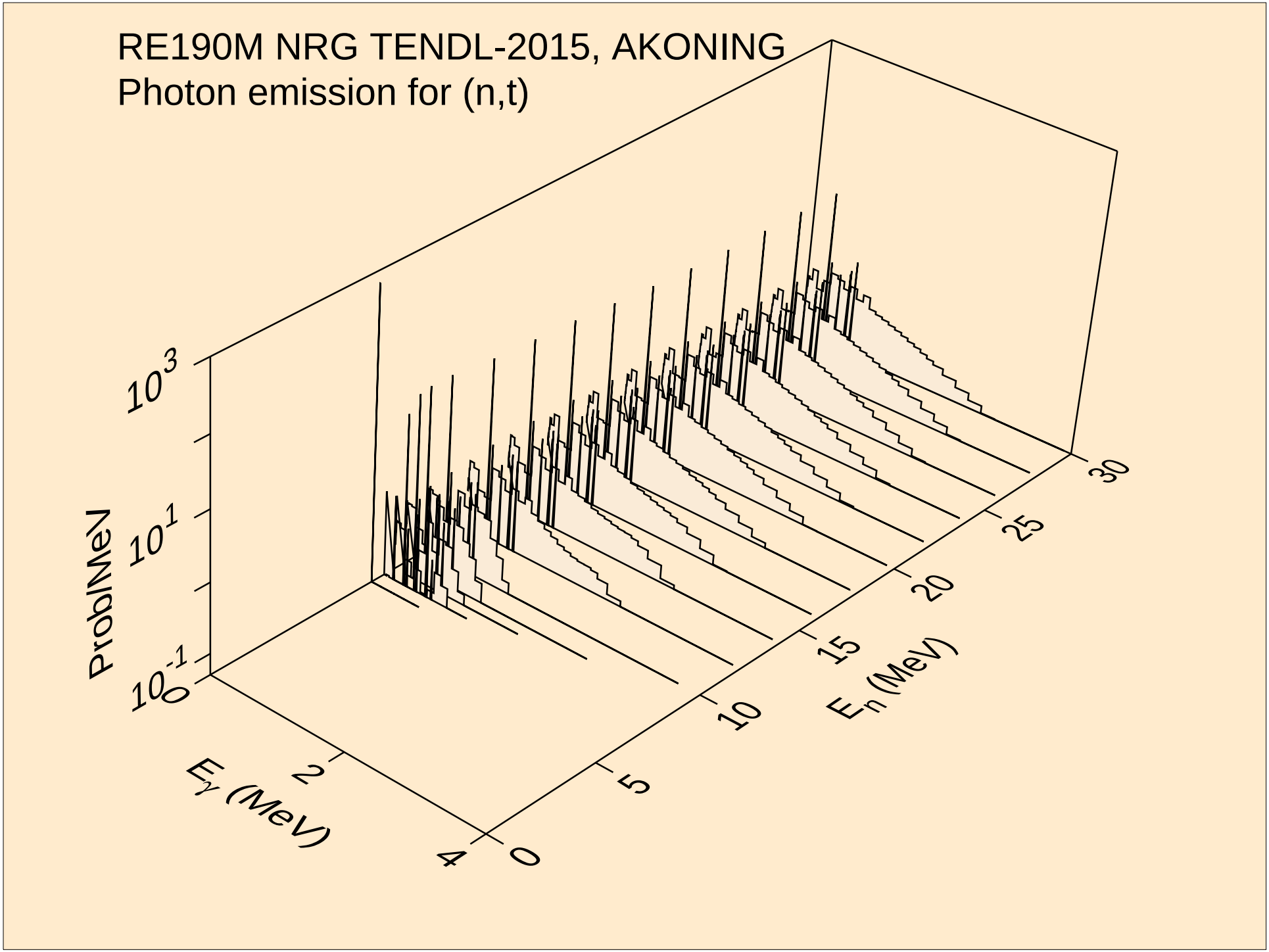

RE190M NRG TENDL-2015, AKONING
Photon emission for (n,n*30)
Prob/MeV
10^0
10^-2
-0.2
0.0
0.2
0.4
E_γ (MeV)
0
50
100
150
200
E_n (MeV)

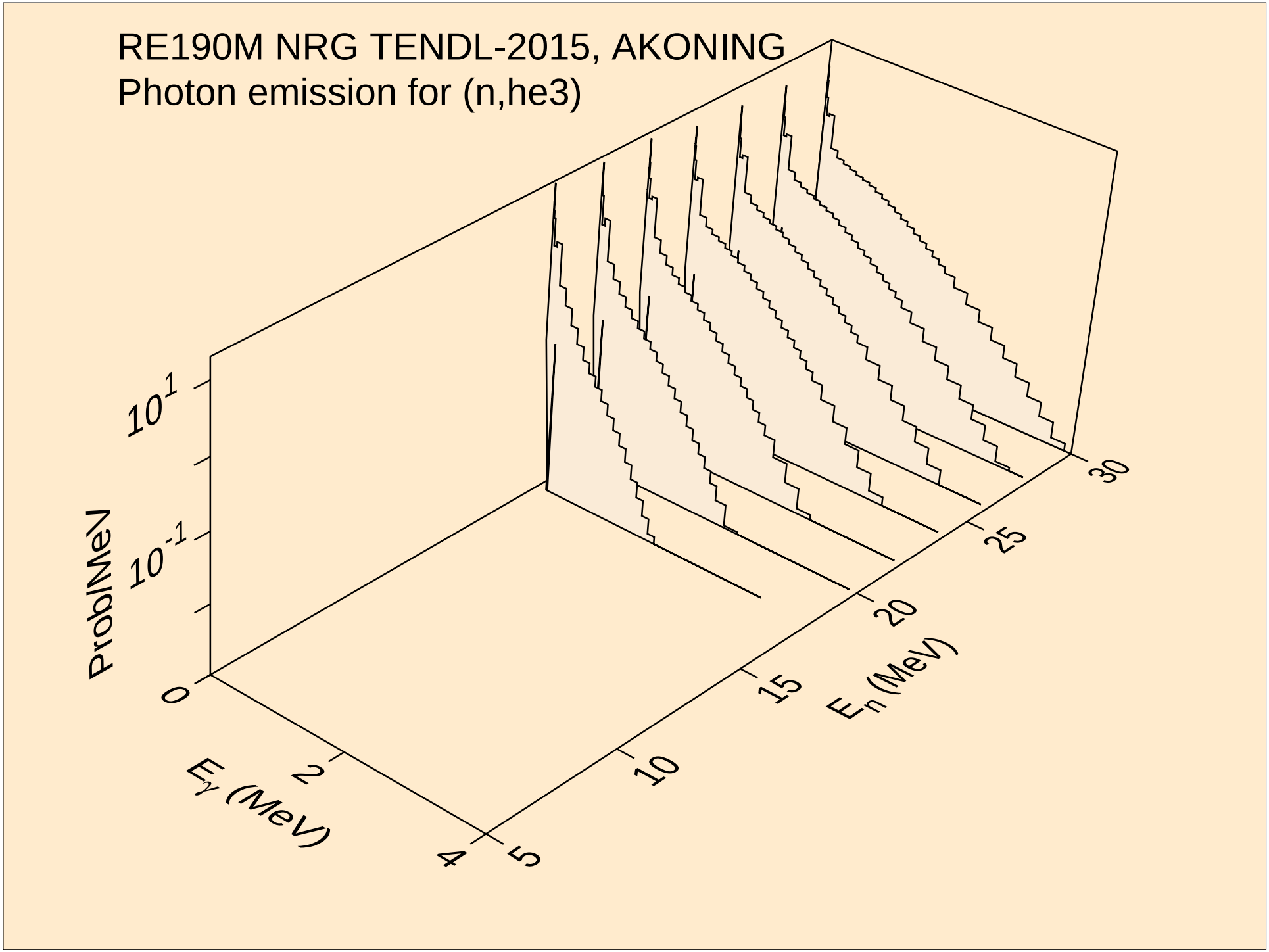

RE190M NRG TENDL-2015, AKONING
Photon emission for (n,n*c)
Prob/MeV
10^{0}
10^{-2}
E_γ (MeV)
-5
0
5
10
E_n (MeV)
0
5
10
15
20
25
30

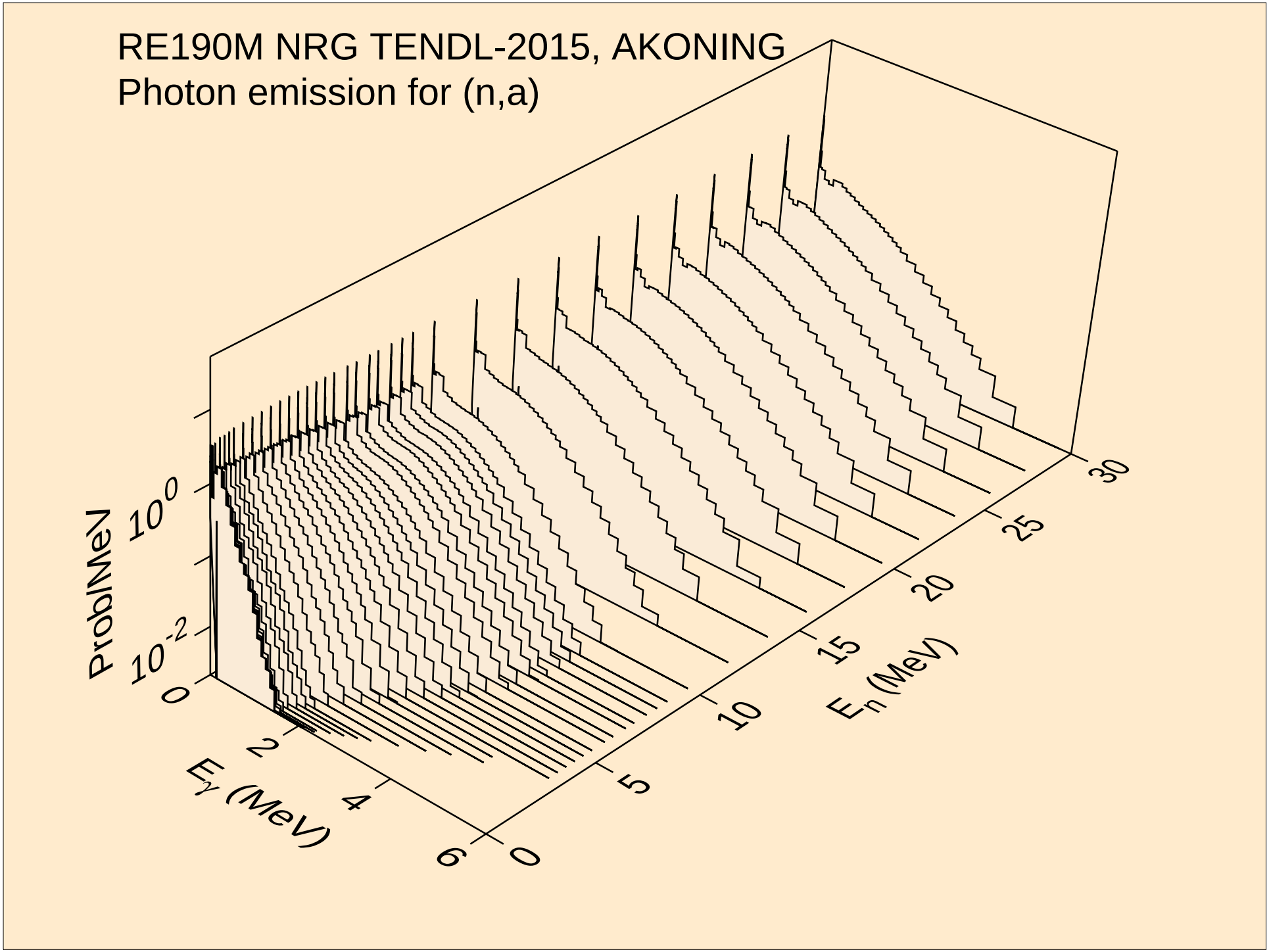

RE190M NRG TENDL-2015, AKONING
Photon emission for (n,gma)
Prob/MeV
10^{1}
10^{-1}
0
E_γ (MeV)
20
40
0
5
10
15
20
25
30
E_n (MeV)

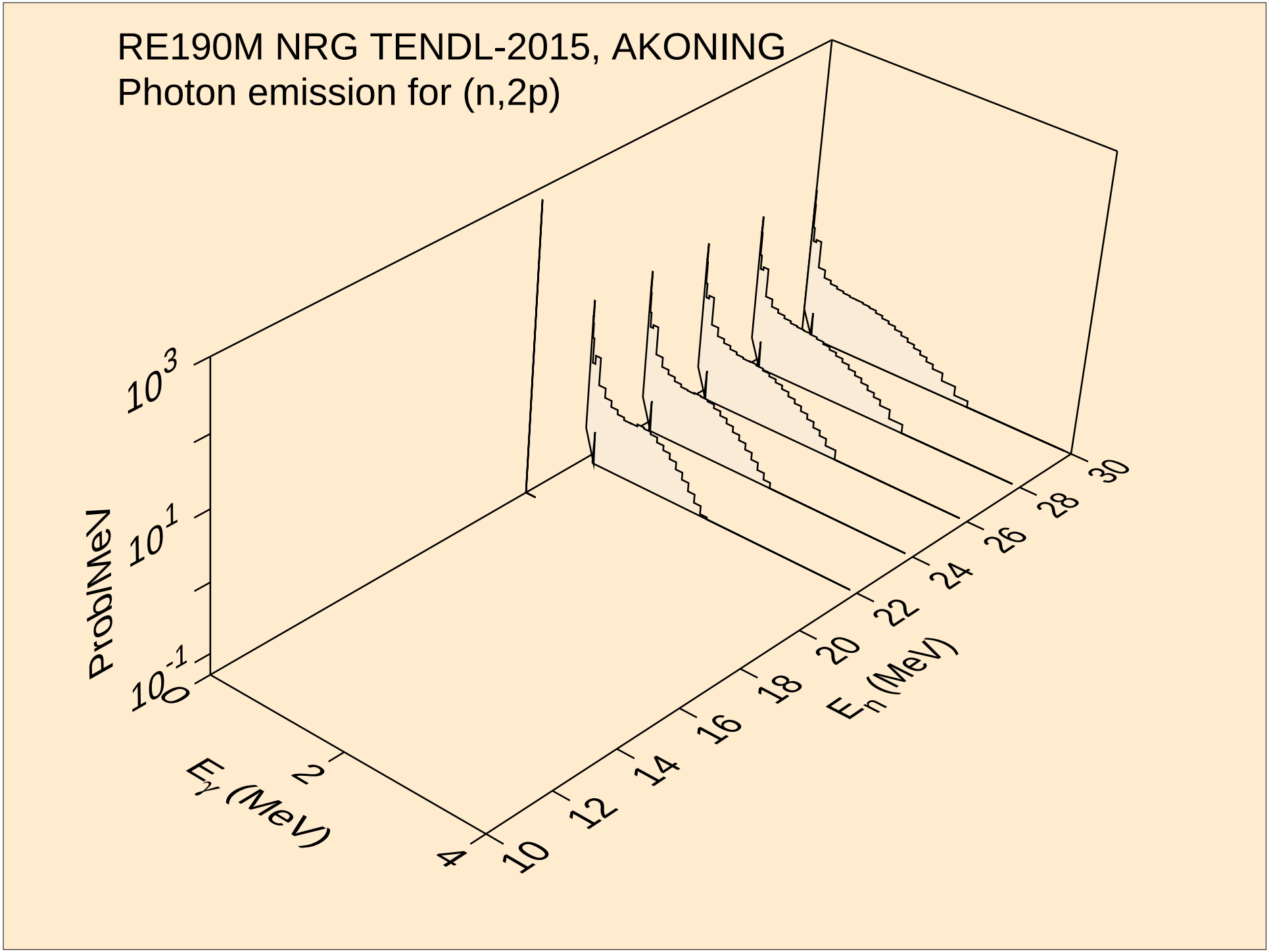

RE190M NRG TENDL-2015, AKONING
Photon emission for (n,p)
Prob/MeV
10^{3}
10^{1}
10^{-1}
E_γ (MeV)
0
2
4
E_n (MeV)
0
5
10
15
20
25
30

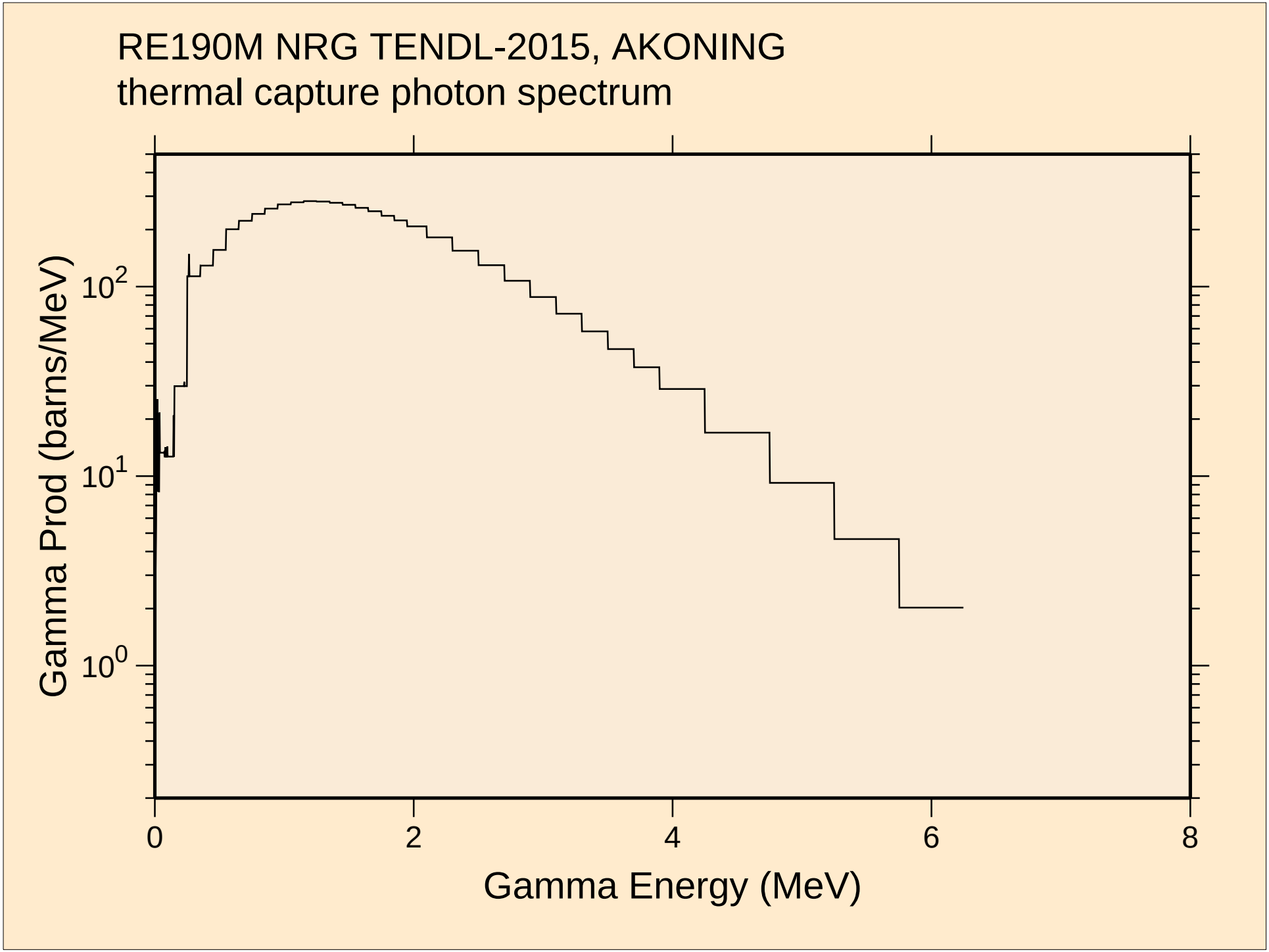

RE190M NRG TENDL-2015, AKONING
Photon emission for (n,d)
Prob/MeV
10^{3}
10^{1}
10^{-1}
E_γ (MeV)
0
2
4
E_n (MeV)
0
5
10
15
20
25
30

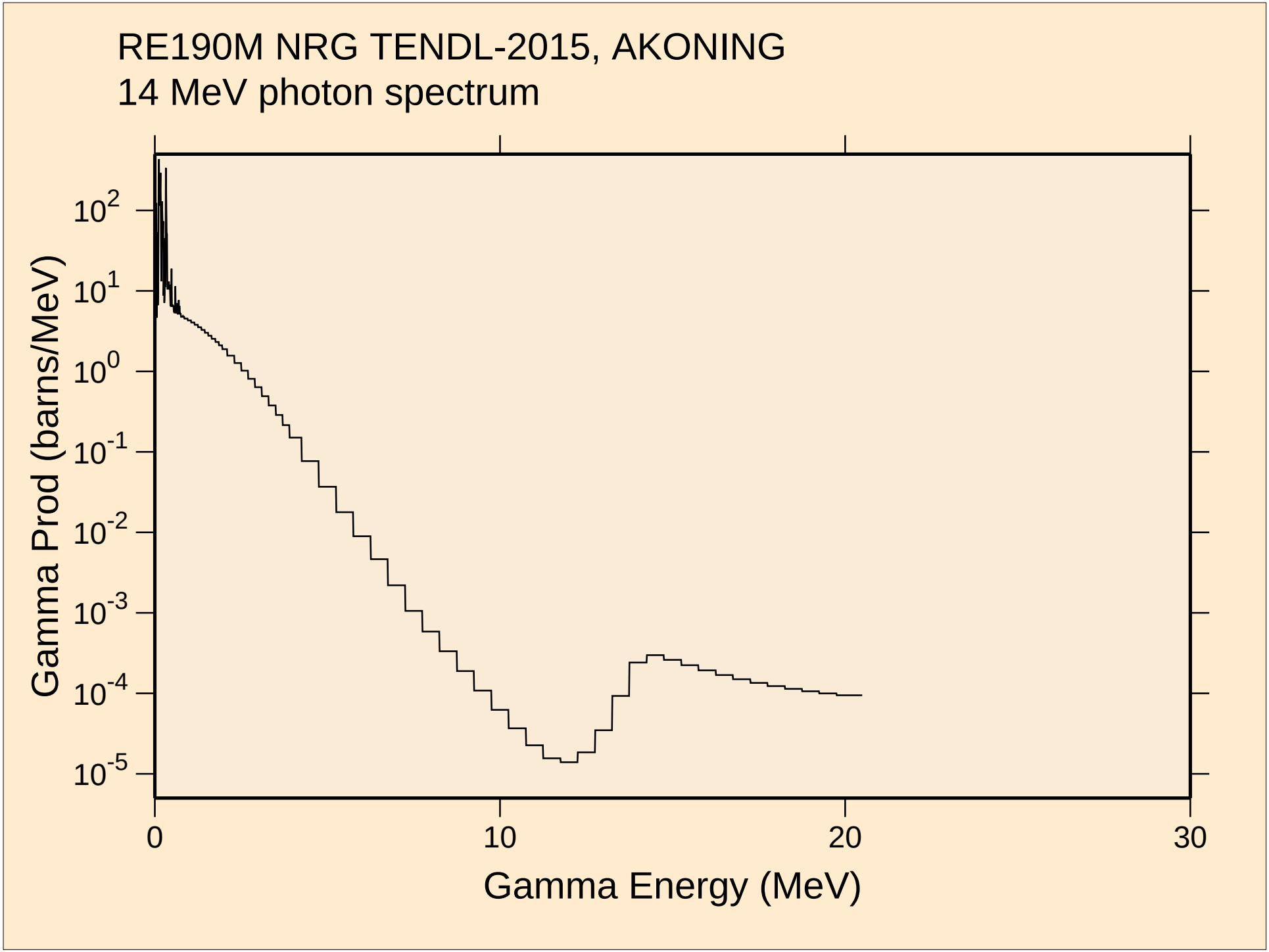

RE190M NRG TENDL-2015, AKONING
Photon emission for (n,t)
Prob/MeV
10^{3}
10^{1}
10^{-1}
E_γ (MeV)
0
2
4
E_n (MeV)
0
5
10
15
20
25
30

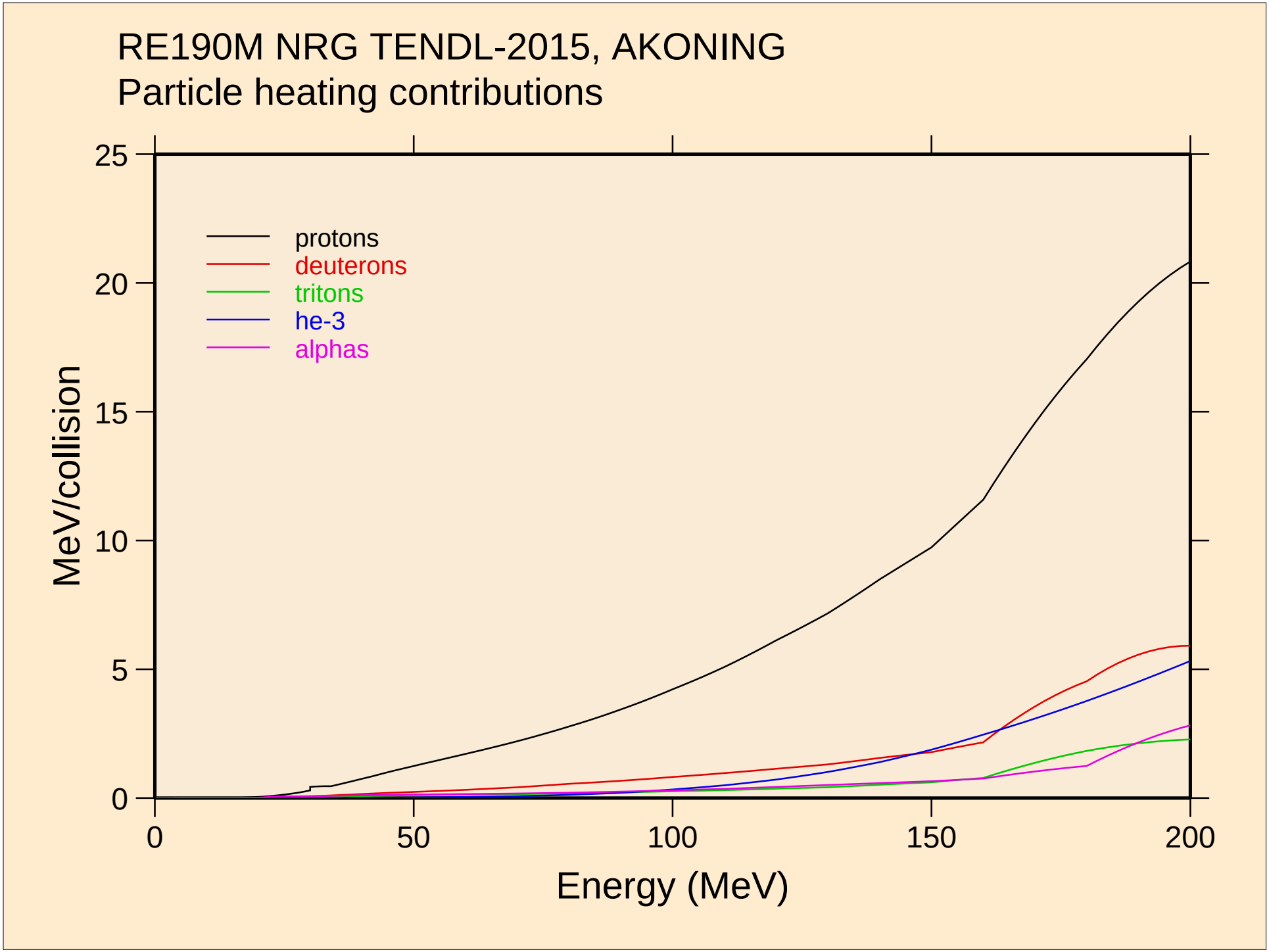

RE190M NRG TENDL-2015, AKONING
Photon emission for (n,he3)
Prob/MeV
10^{1}
10^{-1}
0
2
4
E_γ (MeV)
5
10
15
20
25
30
E_n (MeV)

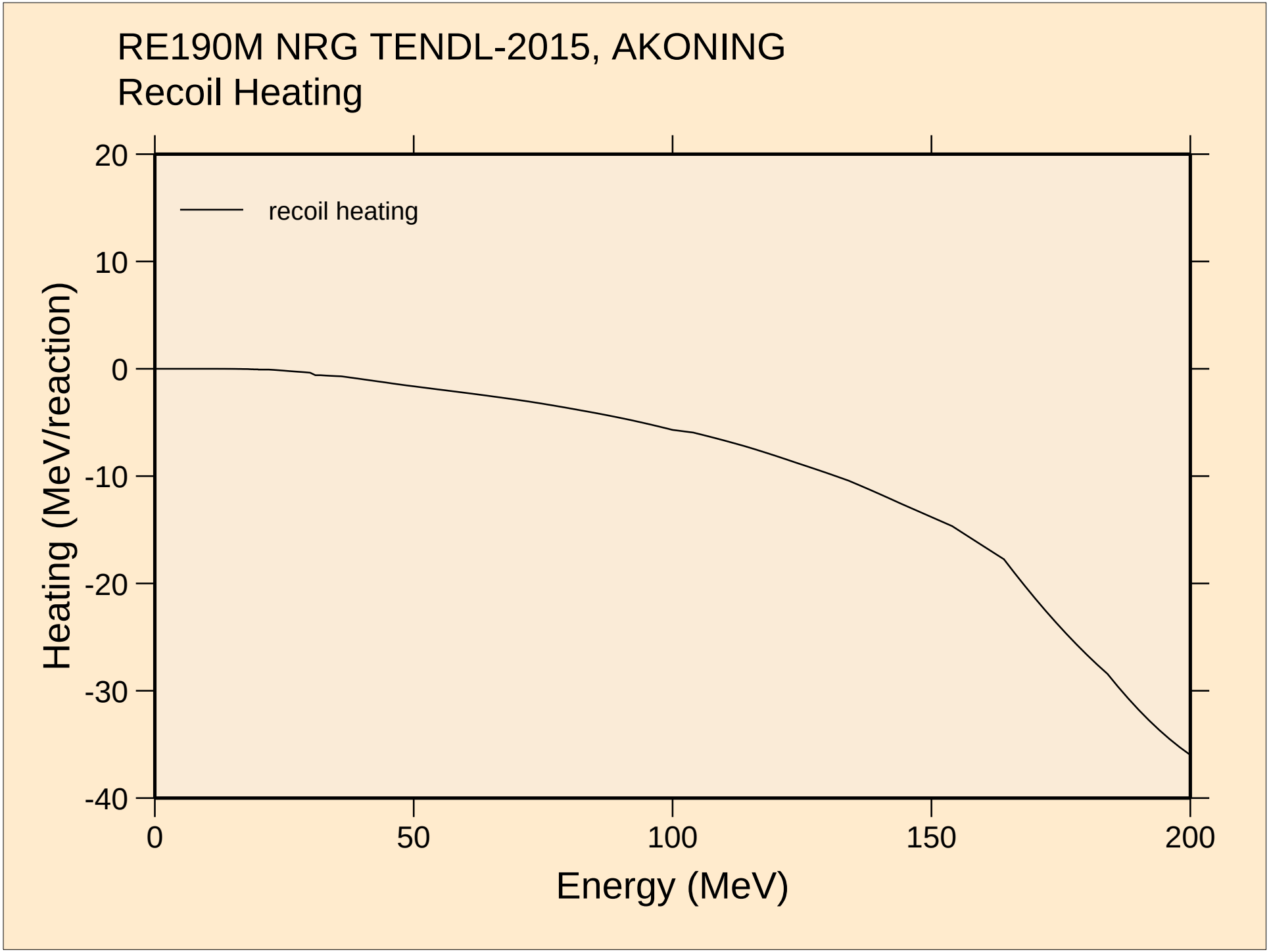

RE190M NRG TENDL-2015, AKONING
Photon emission for (n,a)
Prob/MeV
10^0
10^-2
0
2
4
6
E_γ (MeV)
0
5
10
15
20
25
30
E_n (MeV)

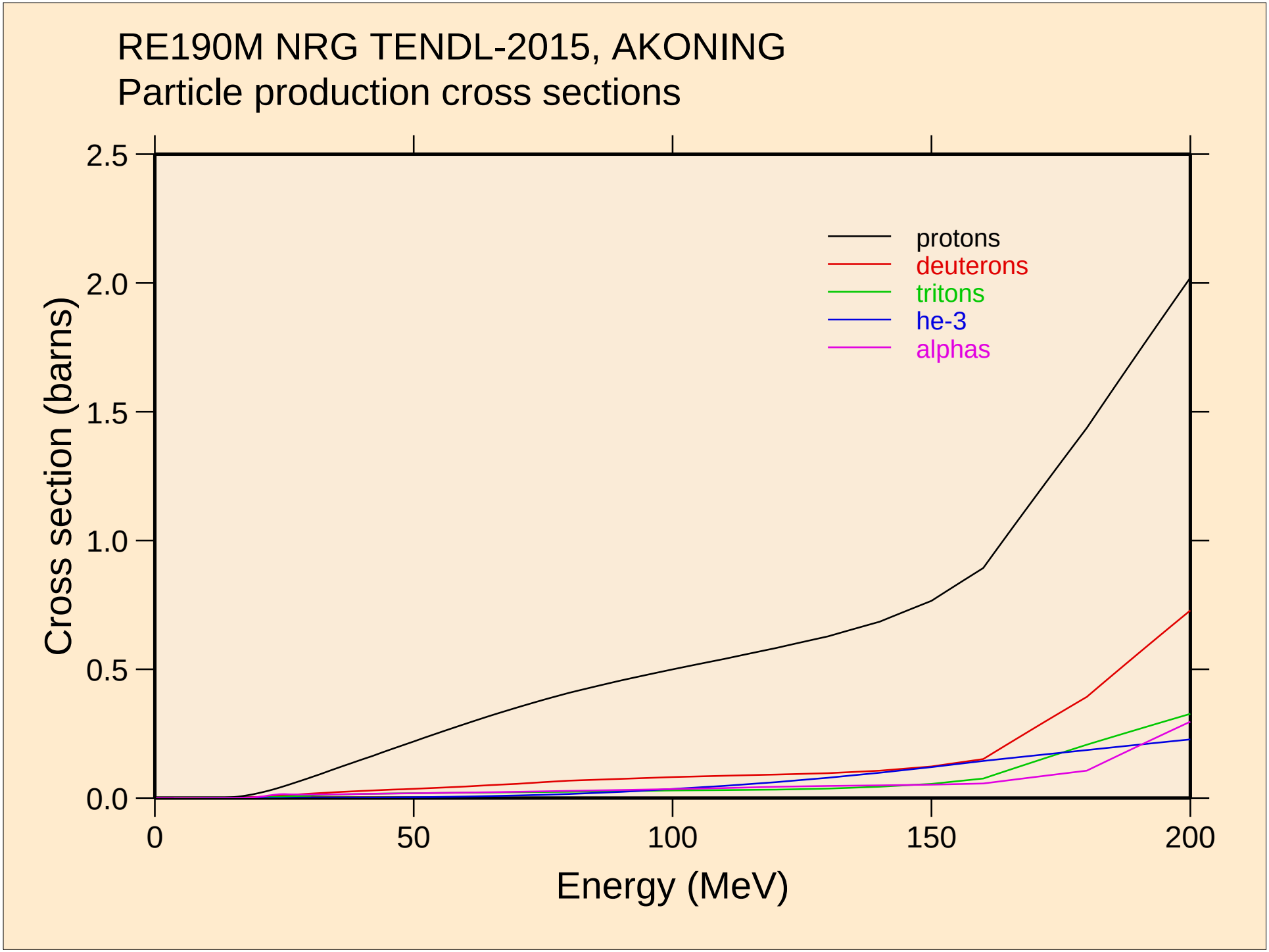

RE190M NRG TENDL-2015, AKONING
Photon emission for (n,2p)
Prob/MeV
10^{3}
10^{1}
10^{-1}
E_γ (MeV)
0
2
4
E_n (MeV)
10
12
14
16
18
20
22
24
26
28
30

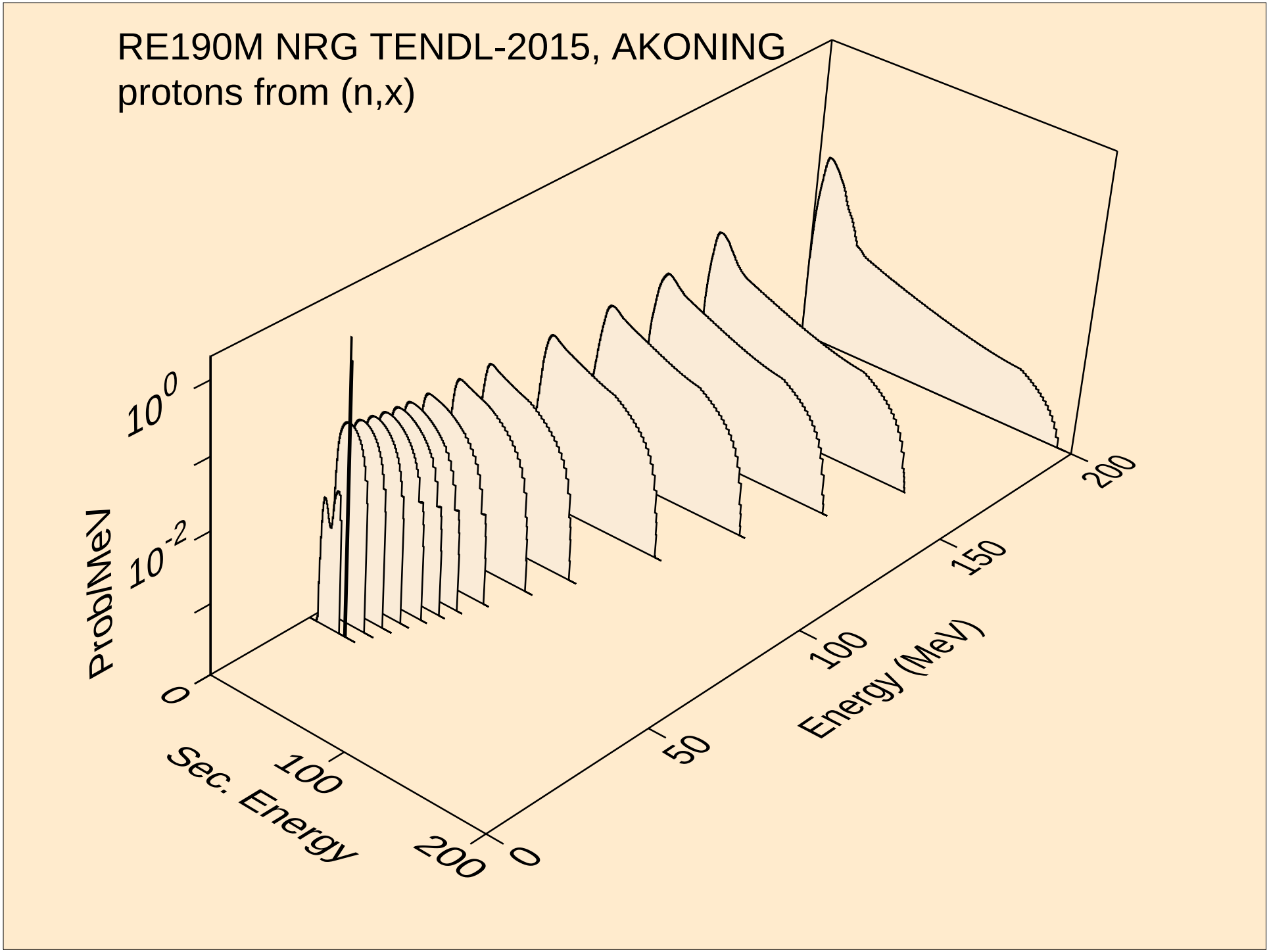

RE190M NRG TENDL-2015, AKONING
thermal capture photon spectrum
Gamma Prod (barns/MeV)
10^2
10^1
10^0
0
2
4
6
8
Gamma Energy (MeV)

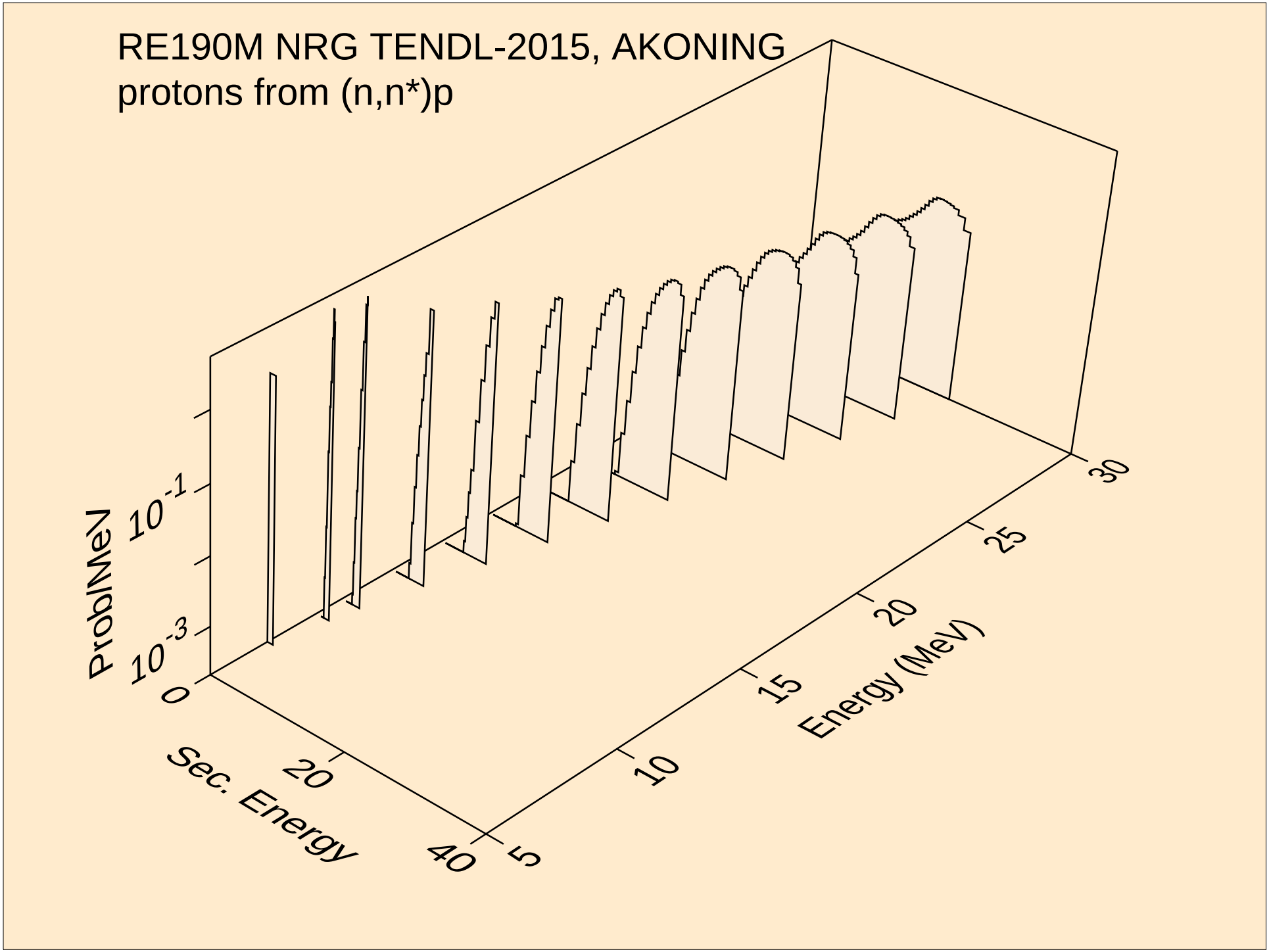

RE190M NRG TENDL-2015, AKONING
14 MeV photon spectrum
Gamma Prod (barns/MeV)
10^2
10^1
10^0
10^-1
10^-2
10^-3
10^-4
10^-5
0
10
20
30
Gamma Energy (MeV)

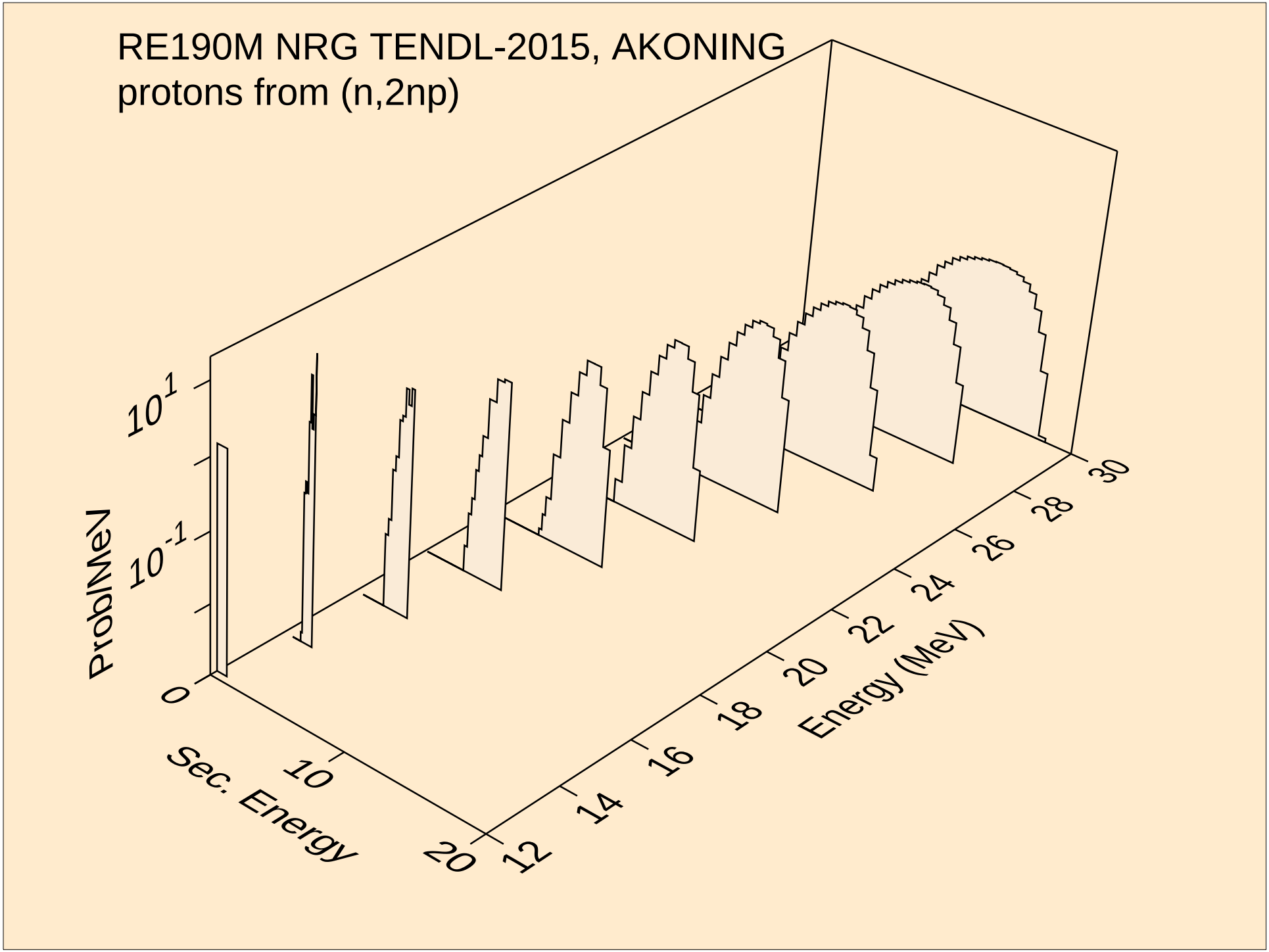

RE190M NRG TENDL-2015, AKONING
Particle heating contributions
protons
deuterons
tritons
he-3
alphas
MeV/collision
Energy (MeV)
0
5
10
15
20
25
0
50
100
150
200

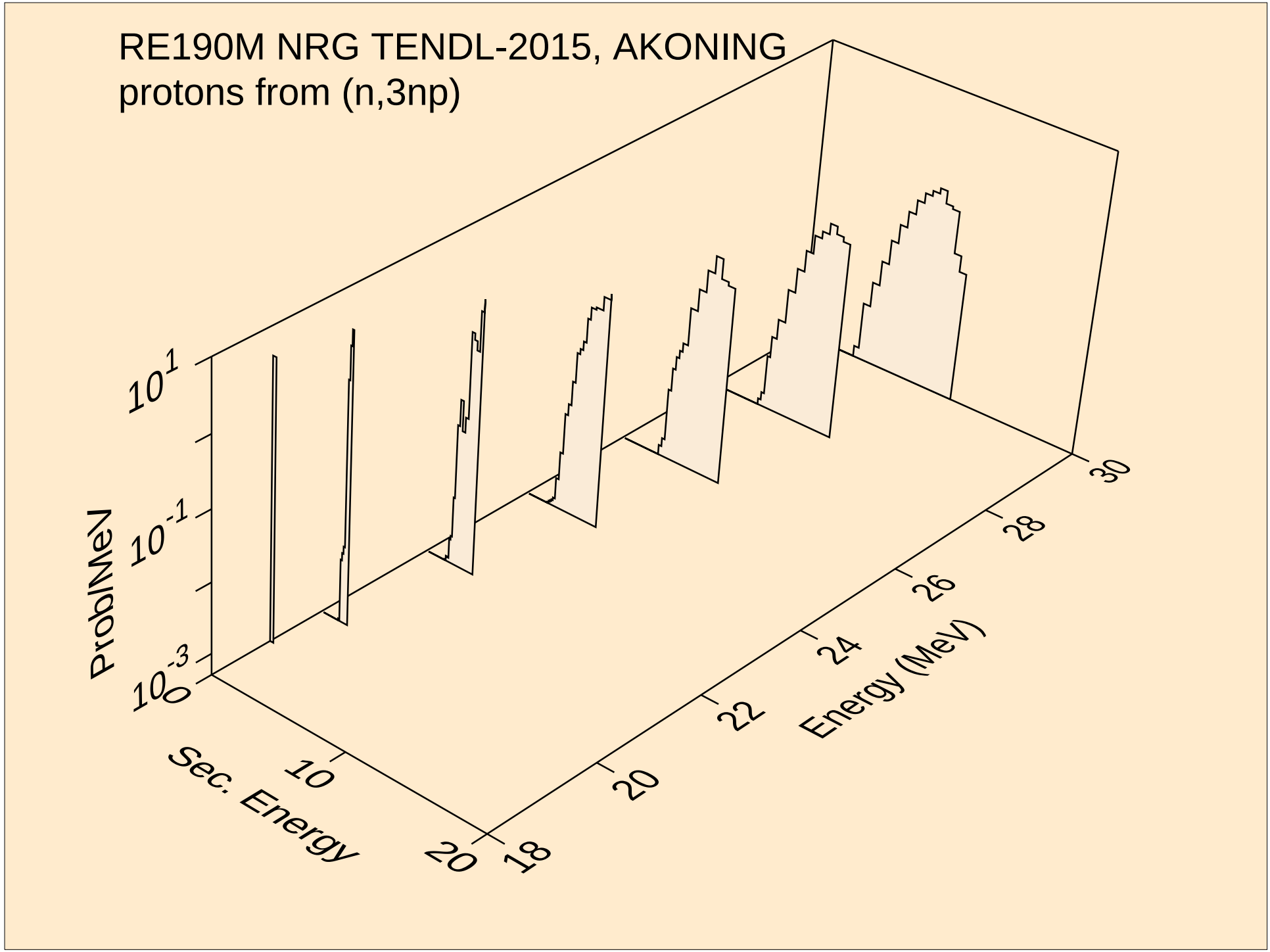

RE190M NRG TENDL-2015, AKONING
Recoil Heating
recoil heating
Heating (MeV/reaction)
20
10
0
-10
-20
-30
-40
0
50
100
150
200
Energy (MeV)

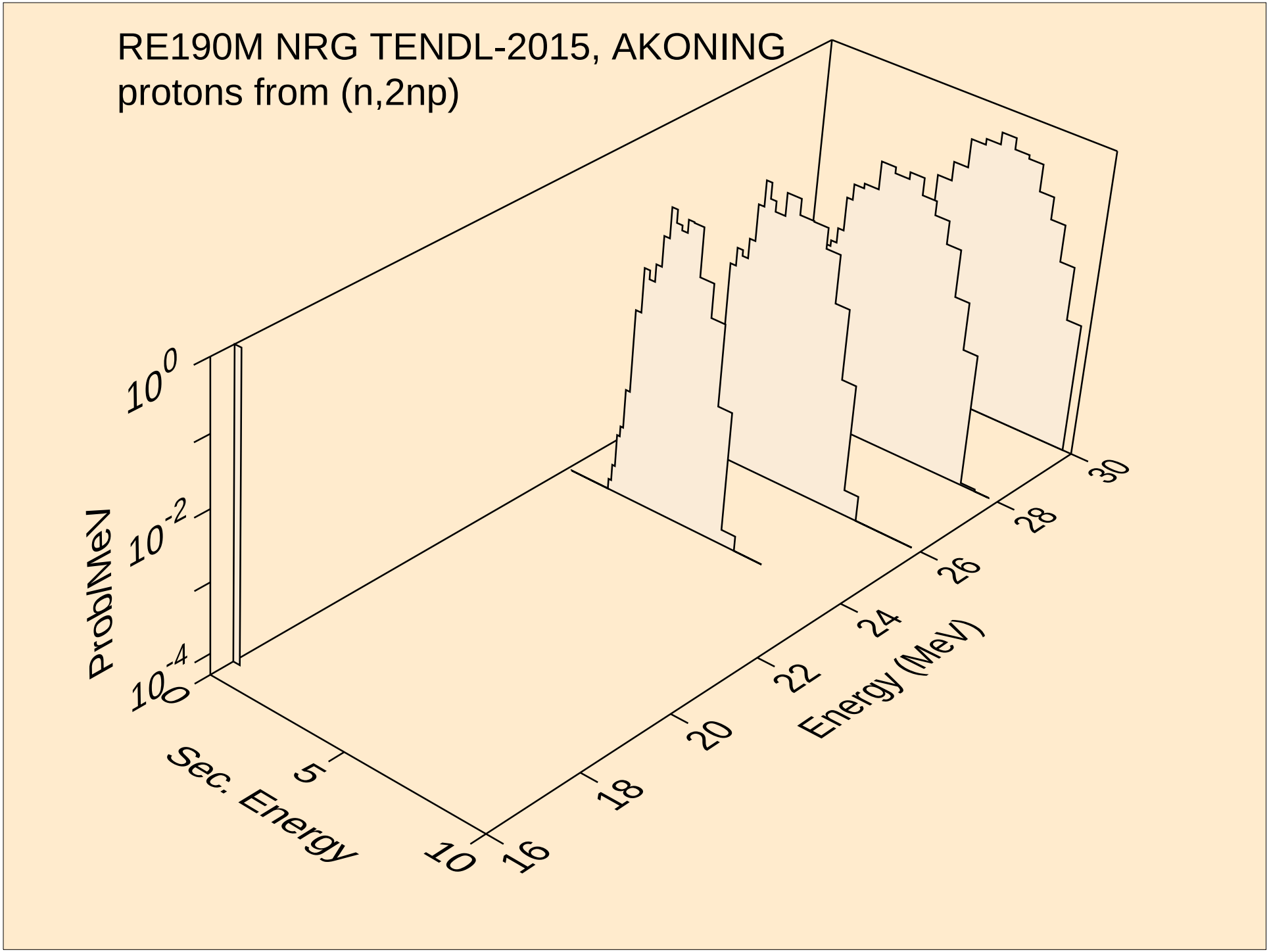

RE190M NRG TENDL-2015, AKONING
Particle production cross sections
Cross section (barns)
2.5
2.0
1.5
1.0
0.5
0.0
0
50
100
150
200
Energy (MeV)
protons
deuterons
tritons
he-3
alphas

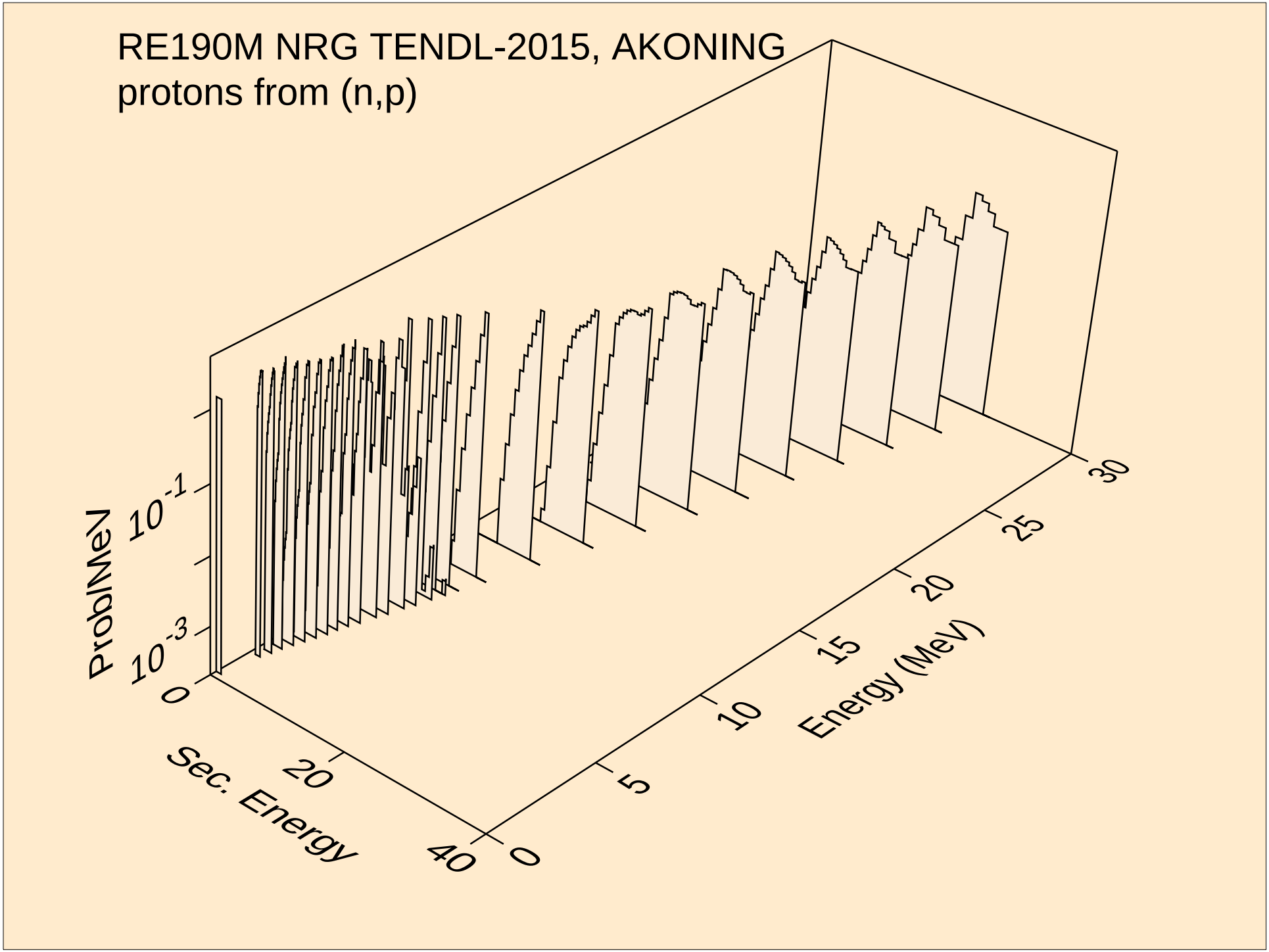

RE190M NRG TENDL-2015, AKONING
protons from (n,x)
Prob/MeV
10^{0}
10^{-2}
0
Sec. Energy
100
200
0
50
100
150
200
Energy (MeV)

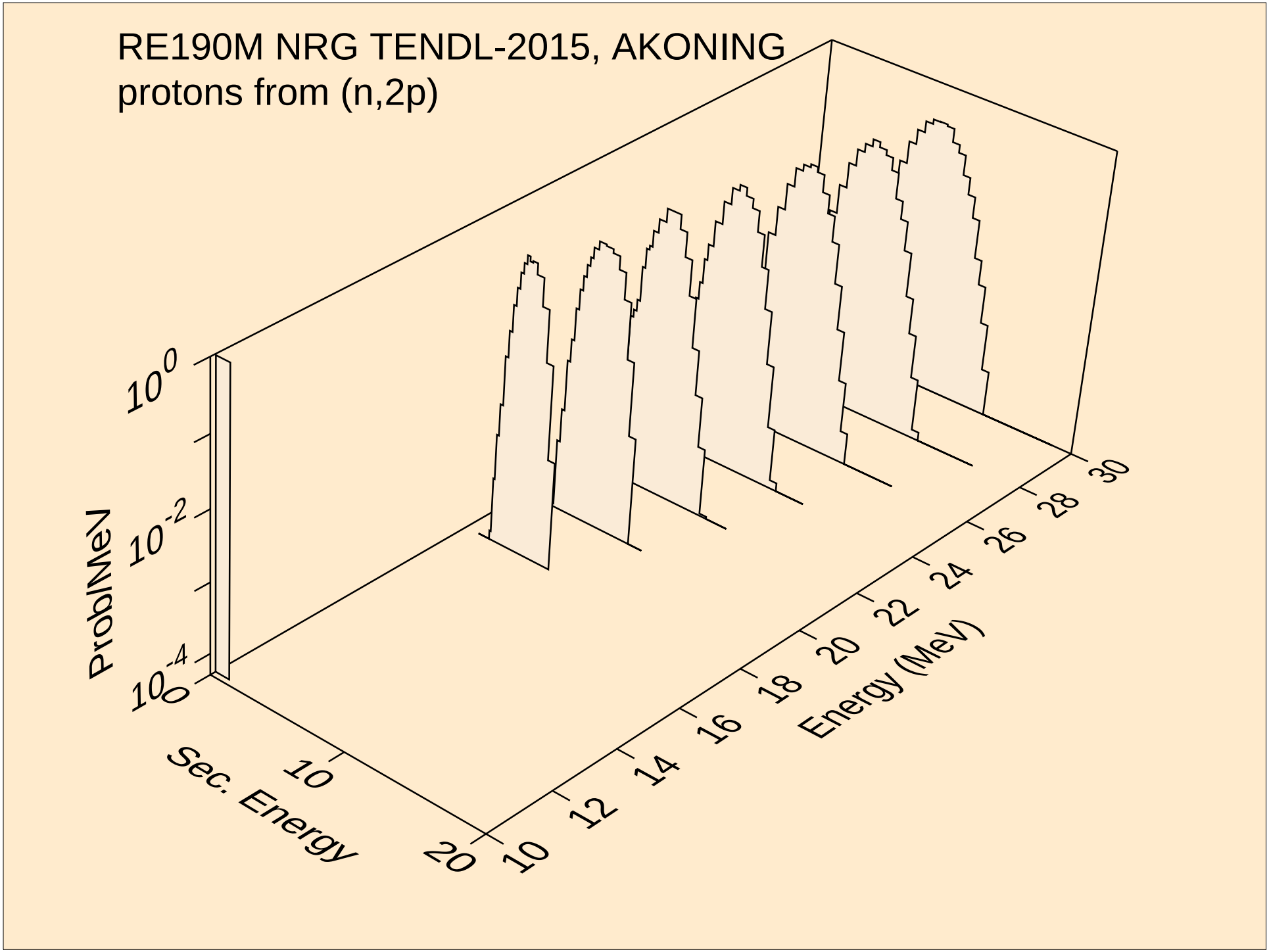

RE190M NRG TENDL-2015, AKONING
protons from (n,n*)p
Prob/MeV
10-1
10-3
0
Sec. Energy
20
40
5
10
15
20
25
30
Energy (MeV)

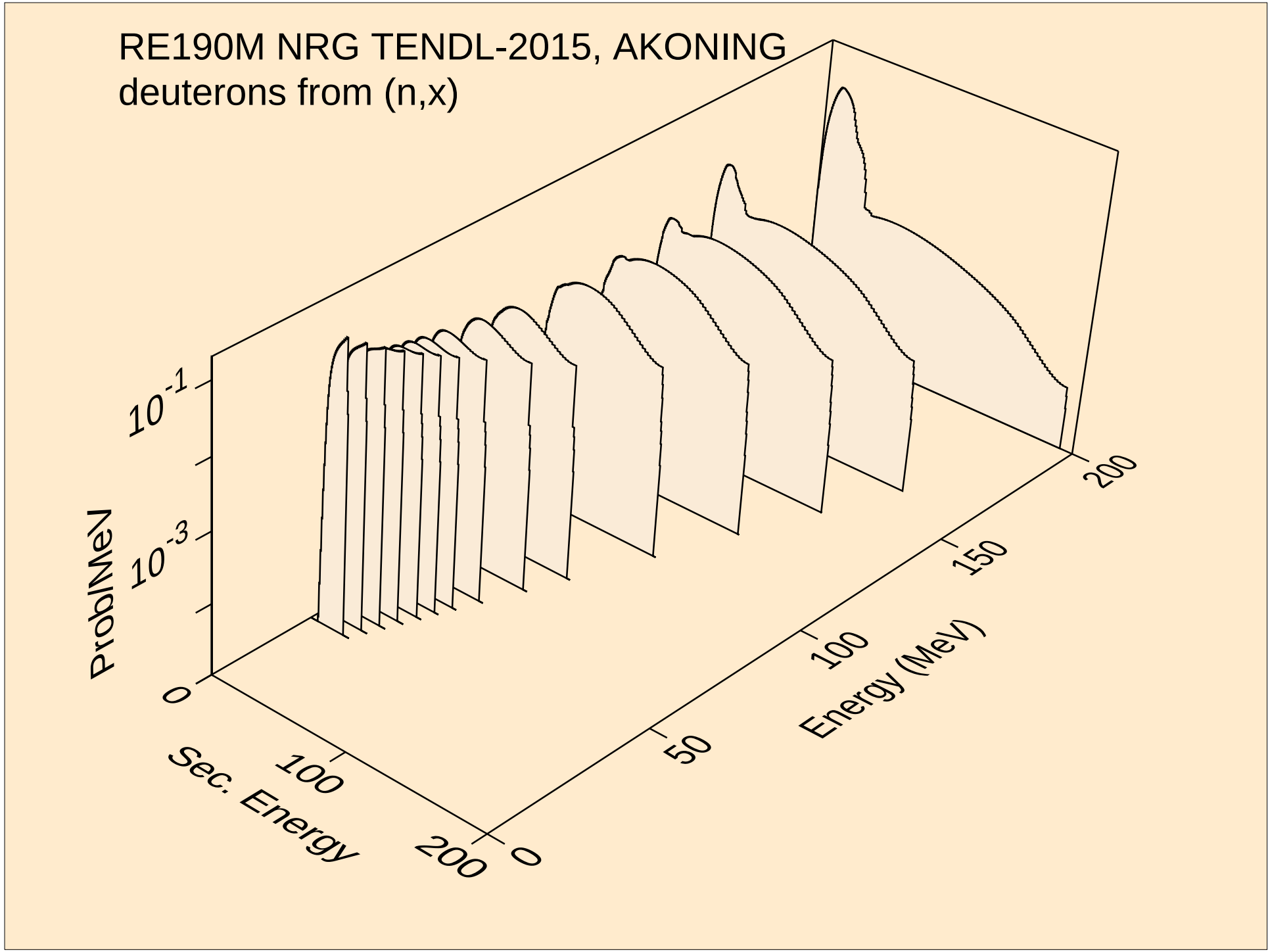

RE190M NRG TENDL-2015, AKONING
protons from (n,2np)
Prob/MeV
10^{1}
10^{-1}
0
Sec. Energy
10
20
12
14
16
18
20
22
24
26
28
30
Energy (MeV)

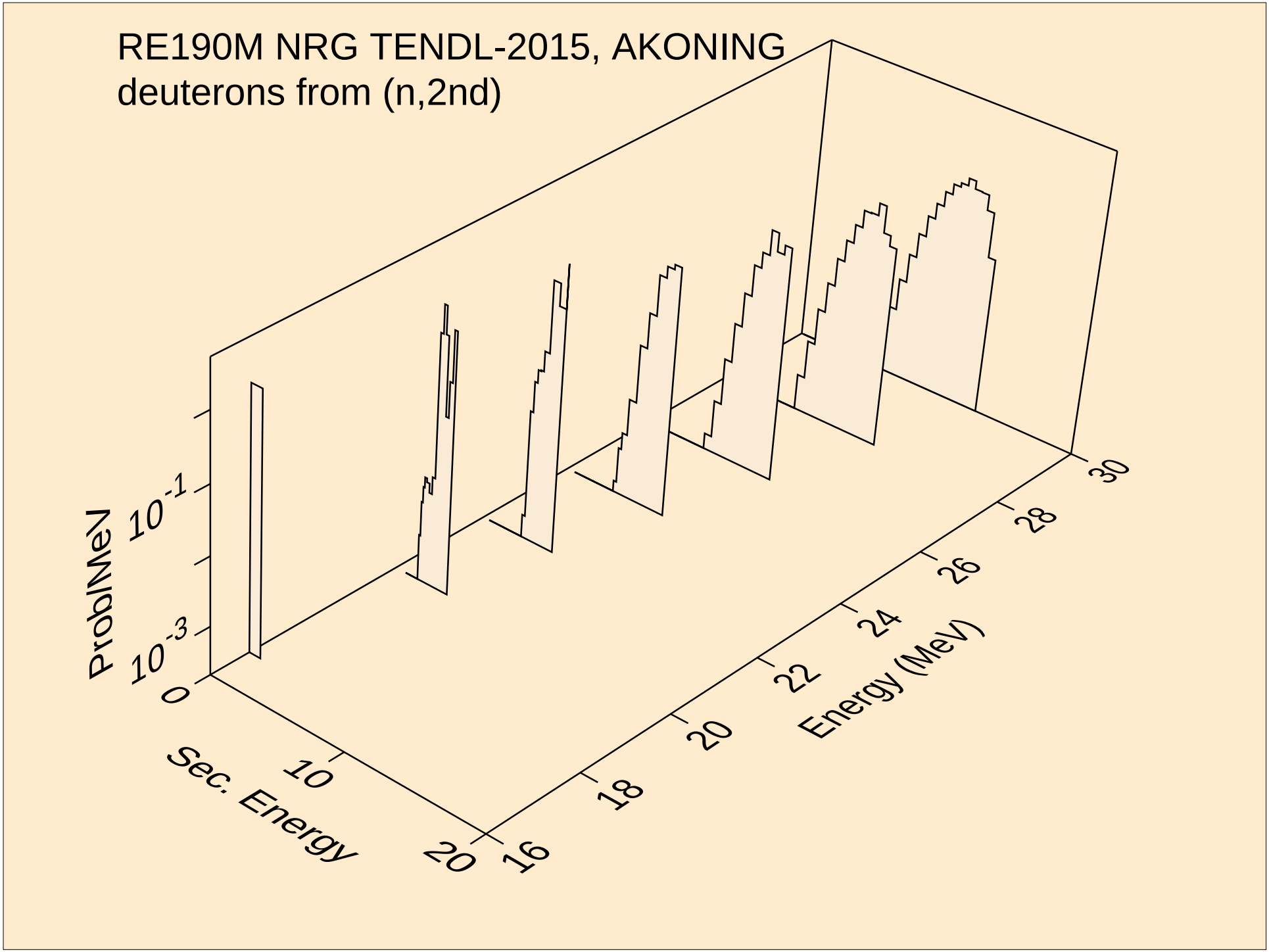

RE190M NRG TENDL-2015, AKONING
protons from (n,3np)
Prob/MeV
10^1
10^-1
10^-3
0
Sec. Energy
10
20
18
20
22
24
26
28
30
Energy (MeV)

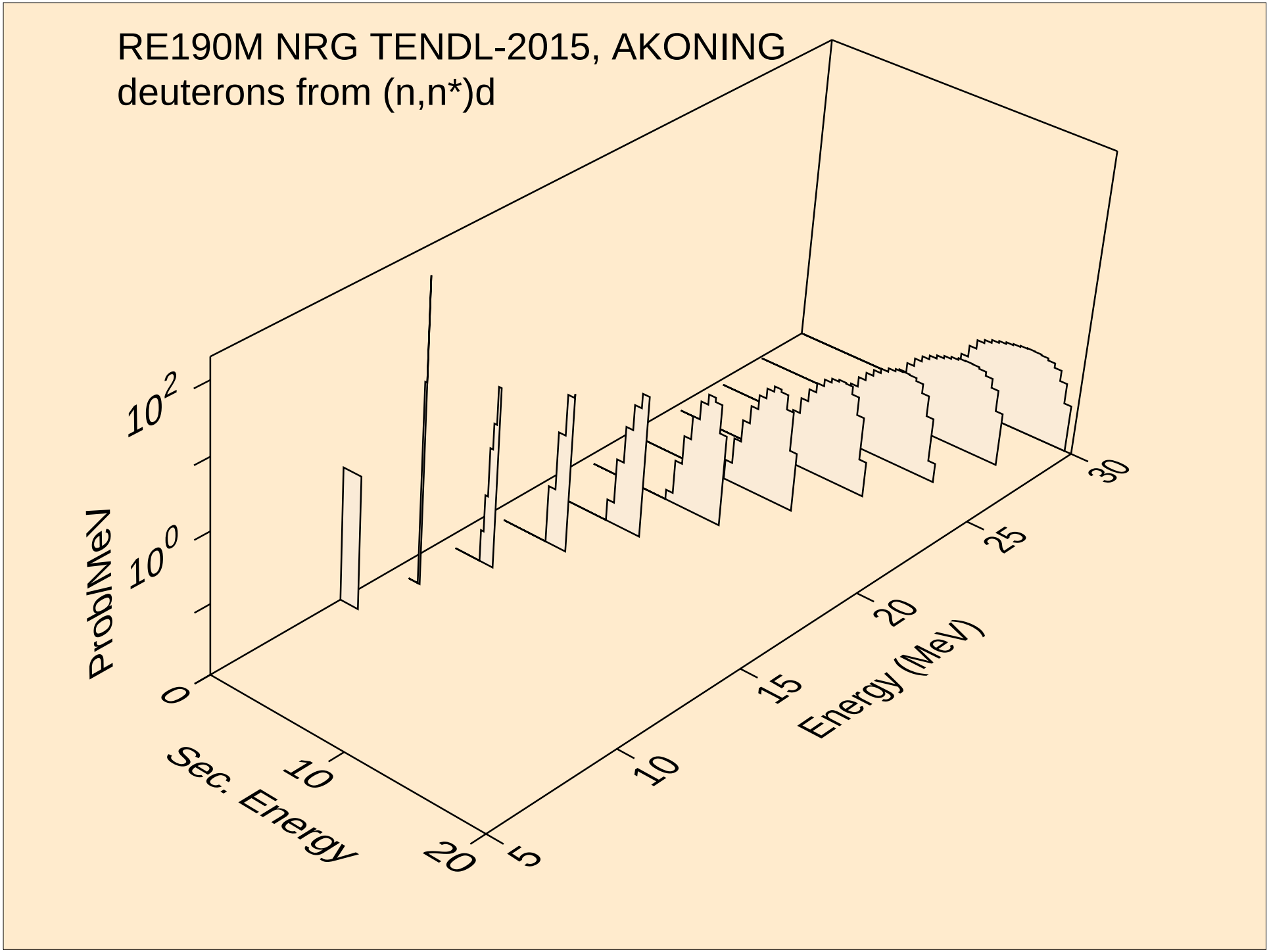

RE190M NRG TENDL-2015, AKONING
protons from (n,2np)
Prob/MeV
10^0
10^-2
10^-4
0
Sec. Energy
5
10
16
18
20
22
24
26
28
30
Energy (MeV)

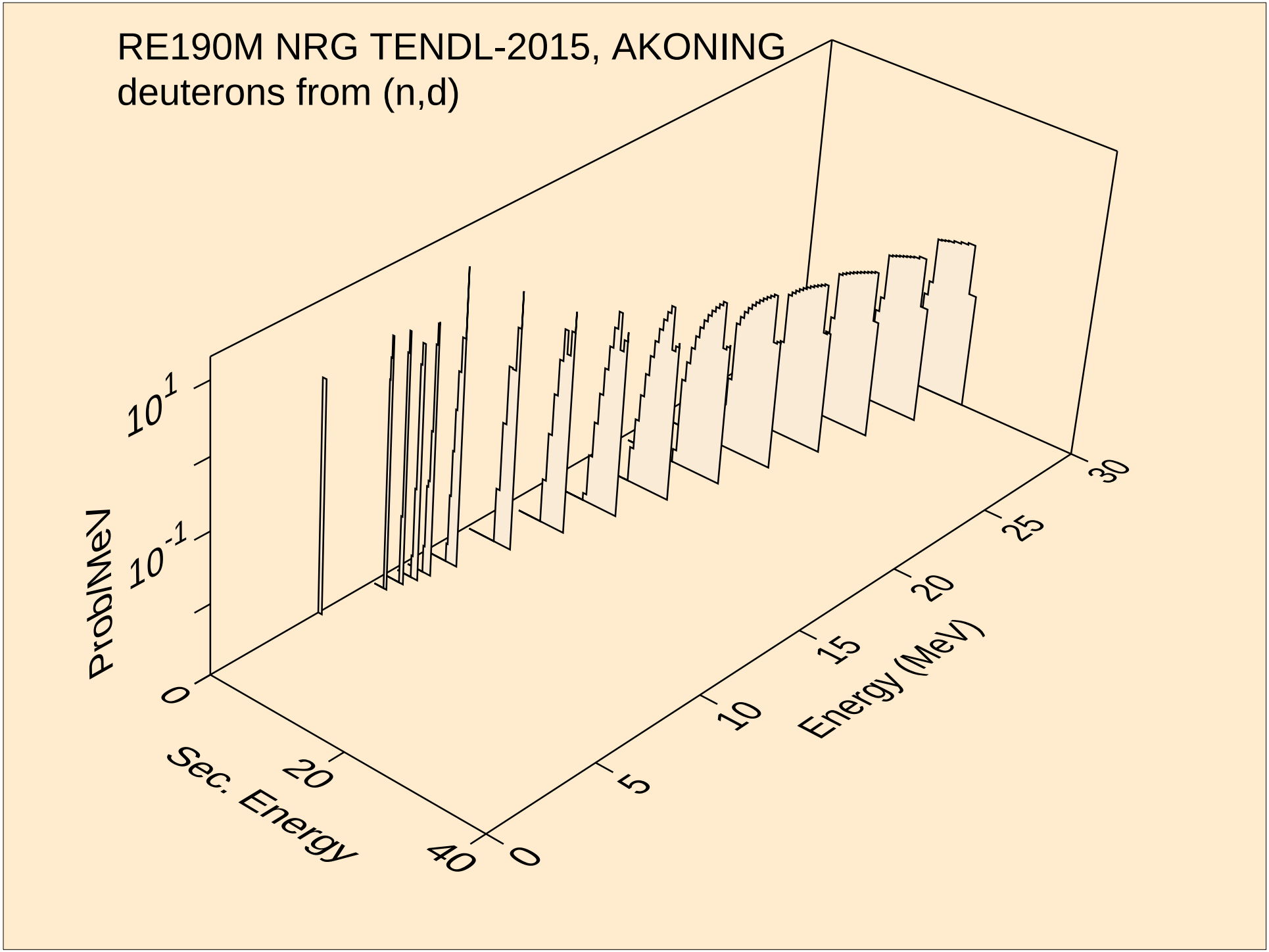

RE190M NRG TENDL-2015, AKONING
protons from (n,p)
Prob/MeV
10-1
10-3
0
Sec. Energy
20
40
0
5
10
15
20
25
30
Energy (MeV)

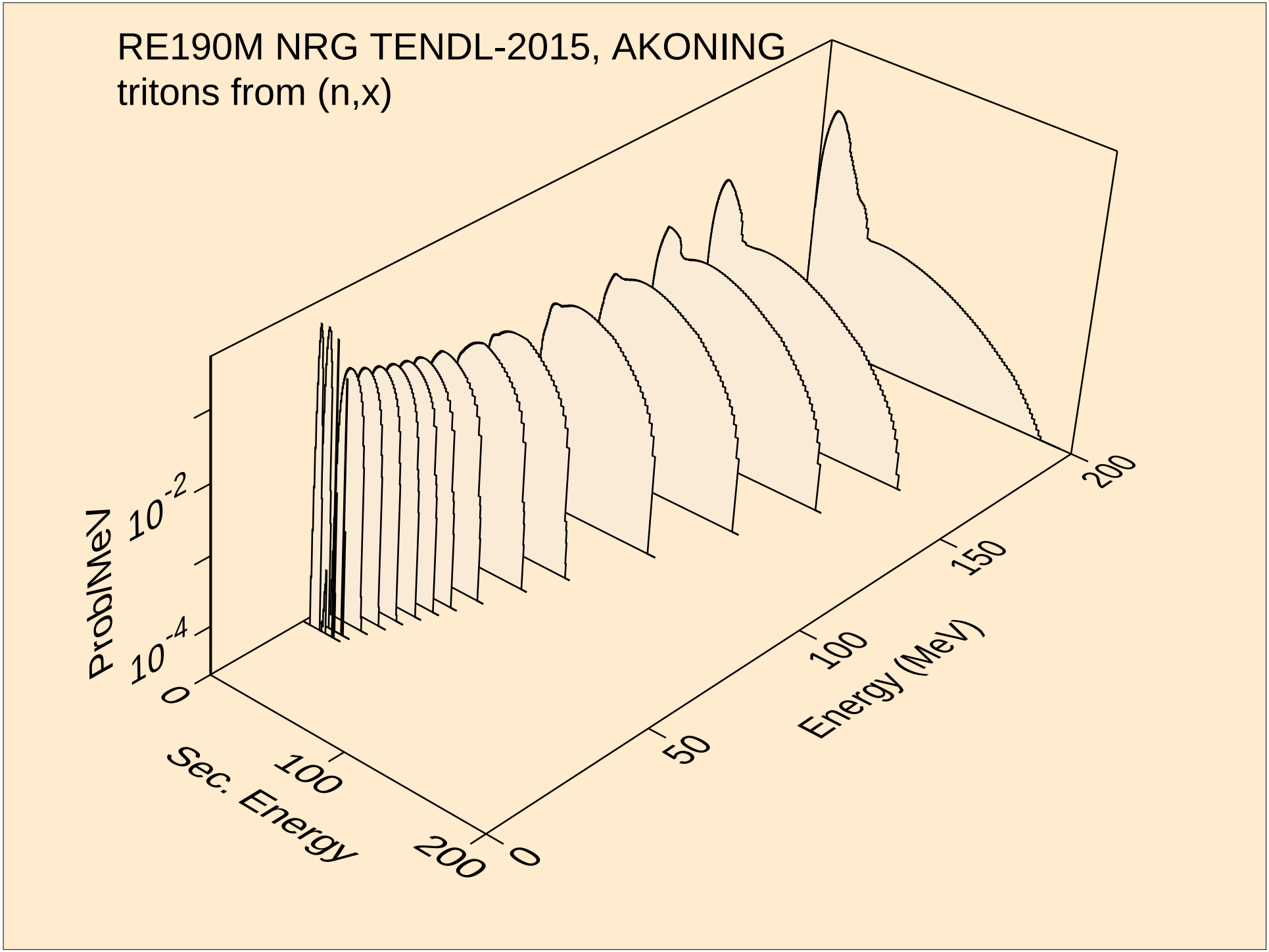

RE190M NRG TENDL-2015, AKONING
protons from (n,2p)
Prob/MeV
10^{0}
10^{-2}
10^{-4}
0
Sec. Energy
10
20
Energy (MeV)
10
12
14
16
18
20
22
24
26
28
30

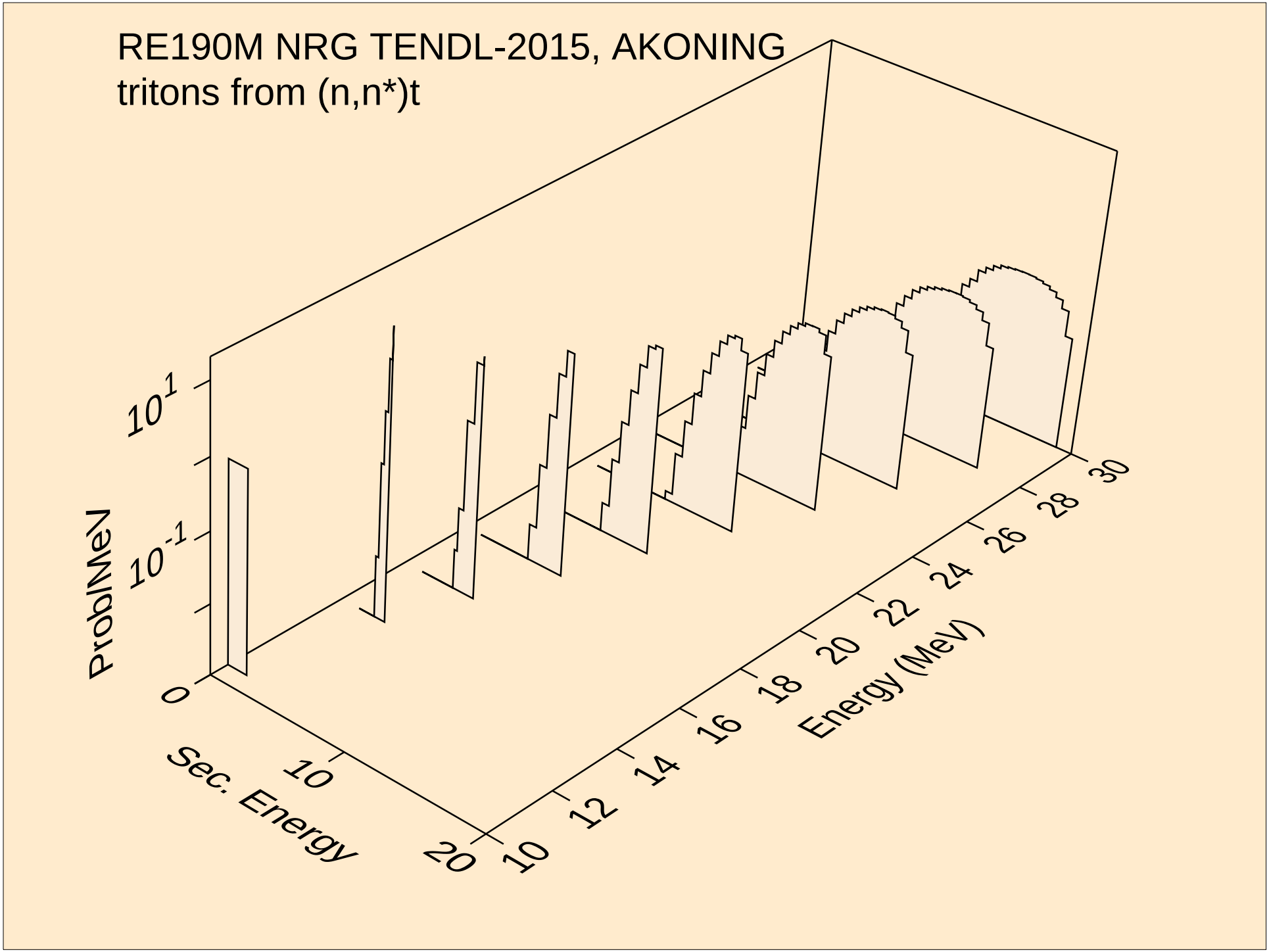

RE190M NRG TENDL-2015, AKONING
deuterons from (n,x)
Prob/MeV
10-1
10-3
0
Sec. Energy
100
200
0
50
100
150
200
Energy (MeV)

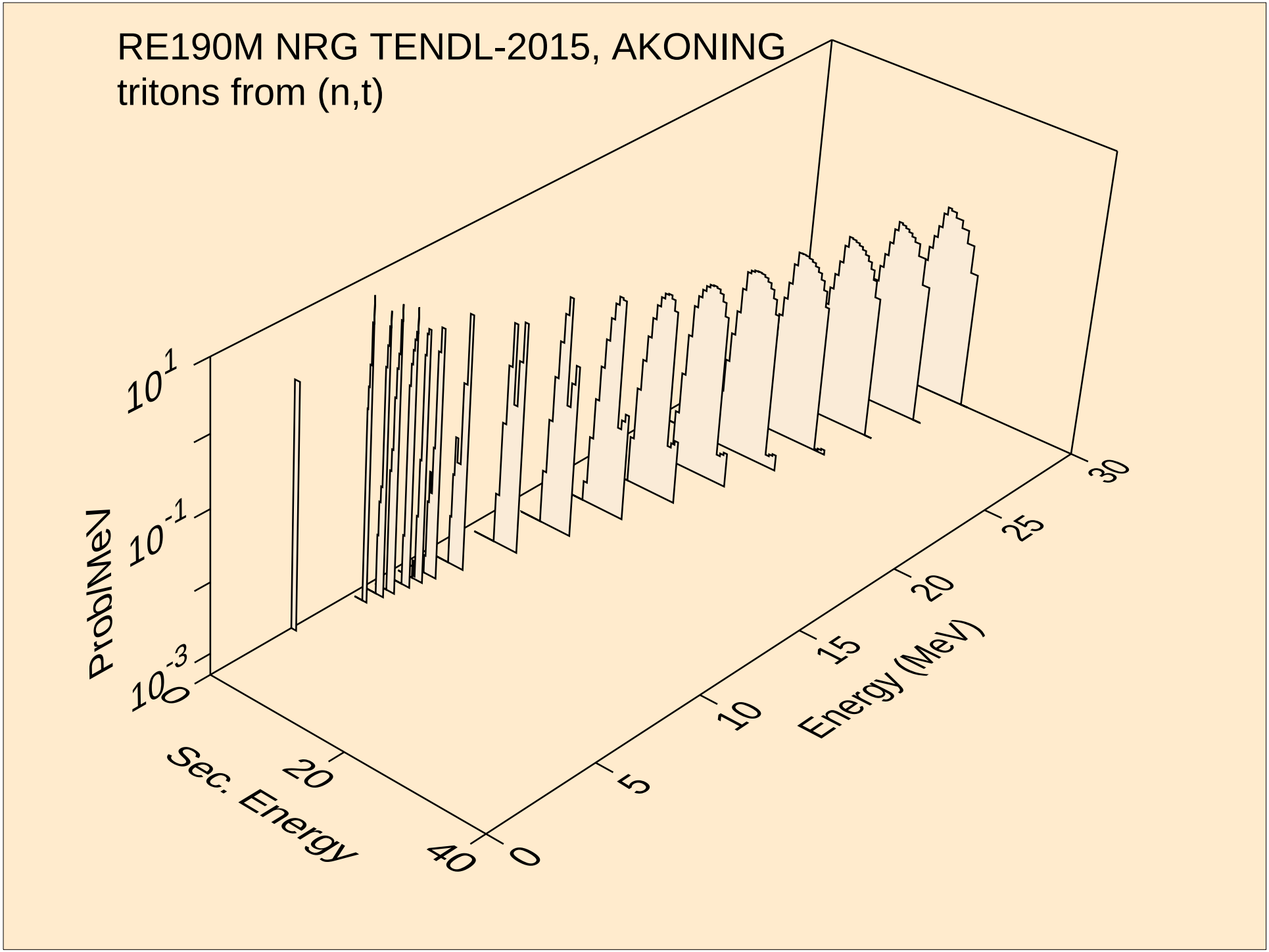

RE190M NRG TENDL-2015, AKONING
deuterons from (n,2nd)
Prob/MeV
10-1
10-3
0
Sec. Energy
10
20
16
18
20
22
24
26
28
30
Energy (MeV)

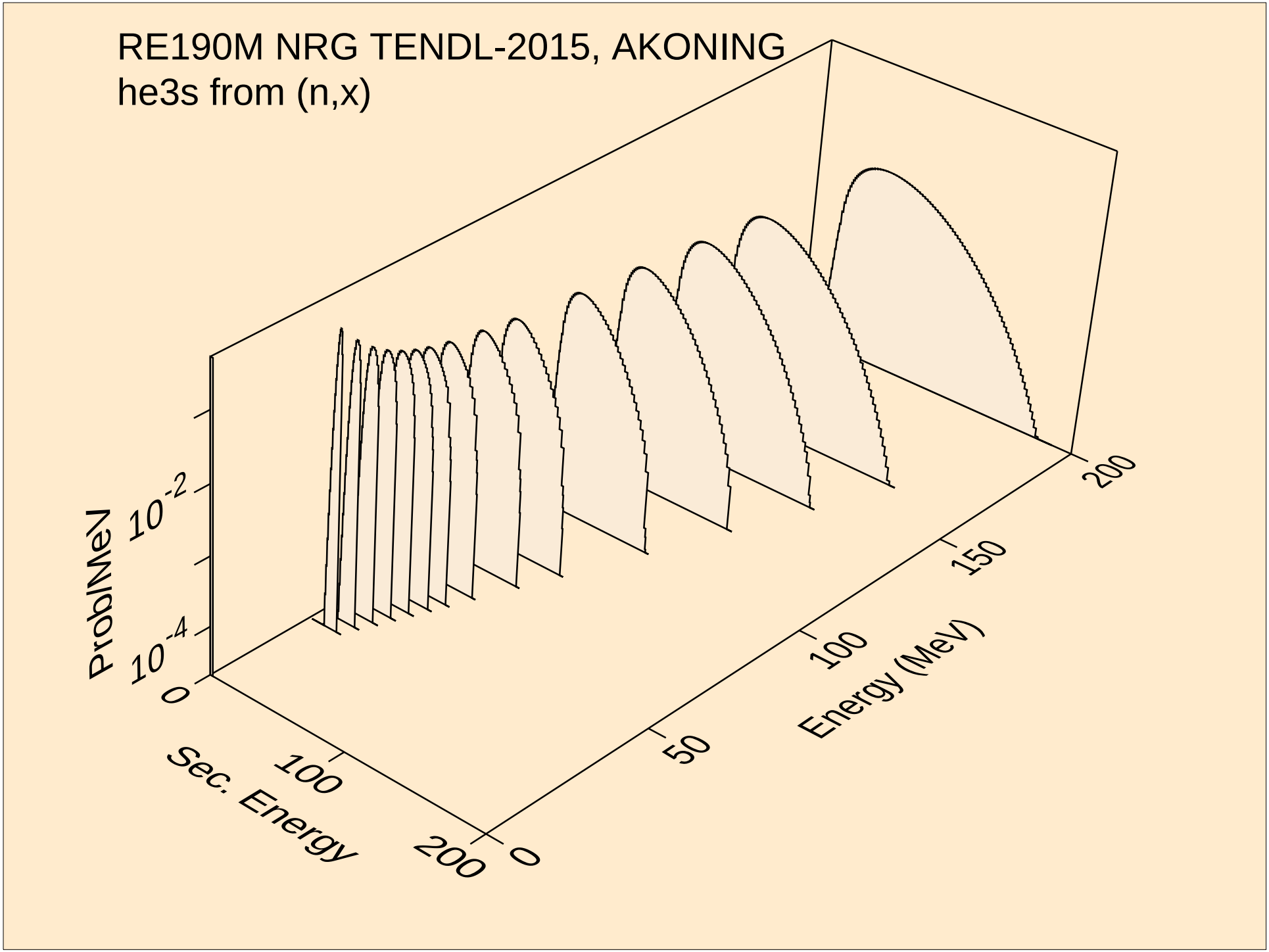

RE190M NRG TENDL-2015, AKONING
deuterons from (n,n*)d
Prob/MeV
10^2
10^0
0
Sec. Energy
10
20
5
10
15
20
25
30
Energy (MeV)

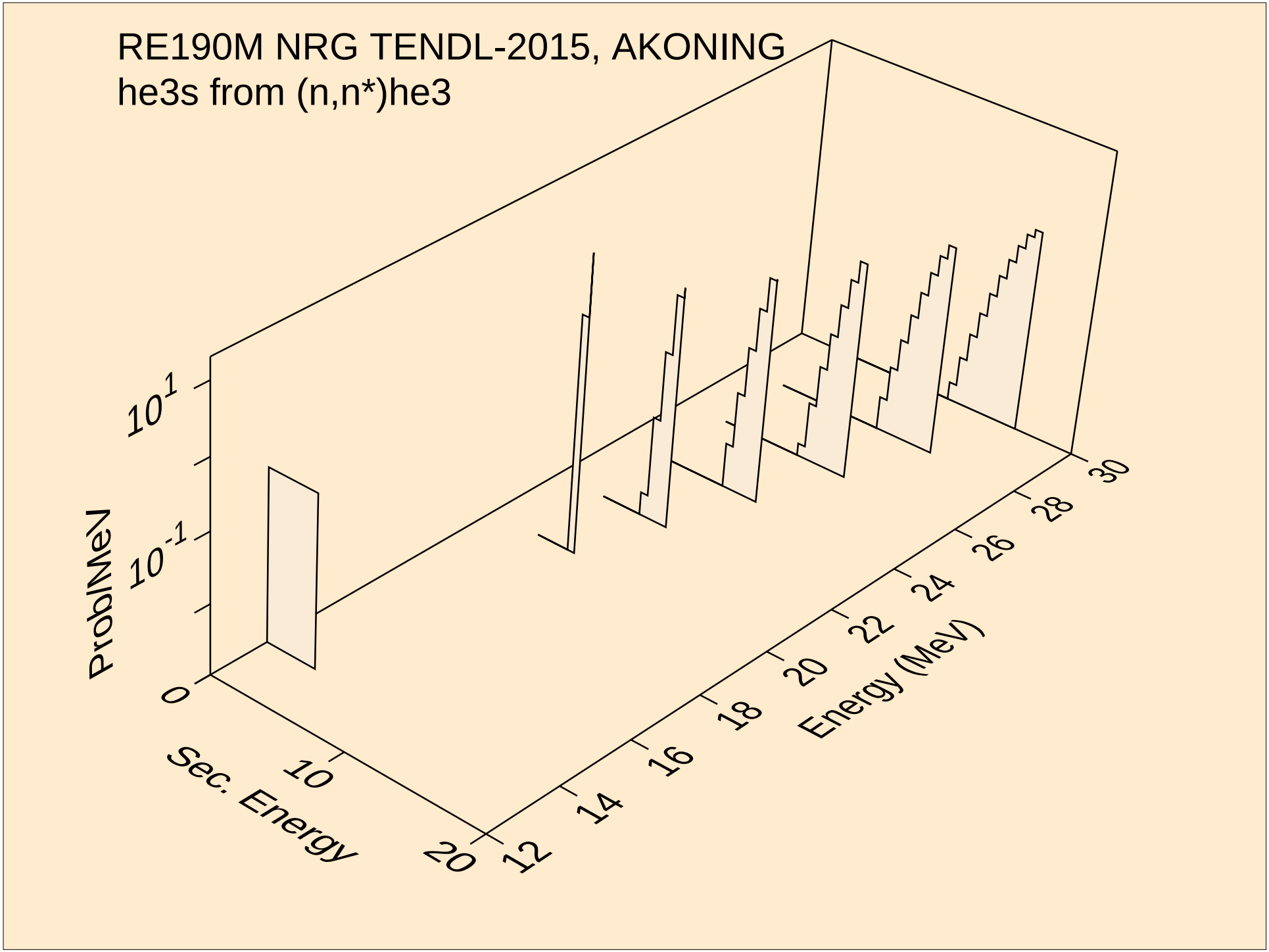

RE190M NRG TENDL-2015, AKONING
deuterons from (n,d)
Prob/MeV
10^{1}
10^{-1}
0
Sec. Energy
20
40
0
5
10
15
Energy (MeV)
20
25
30

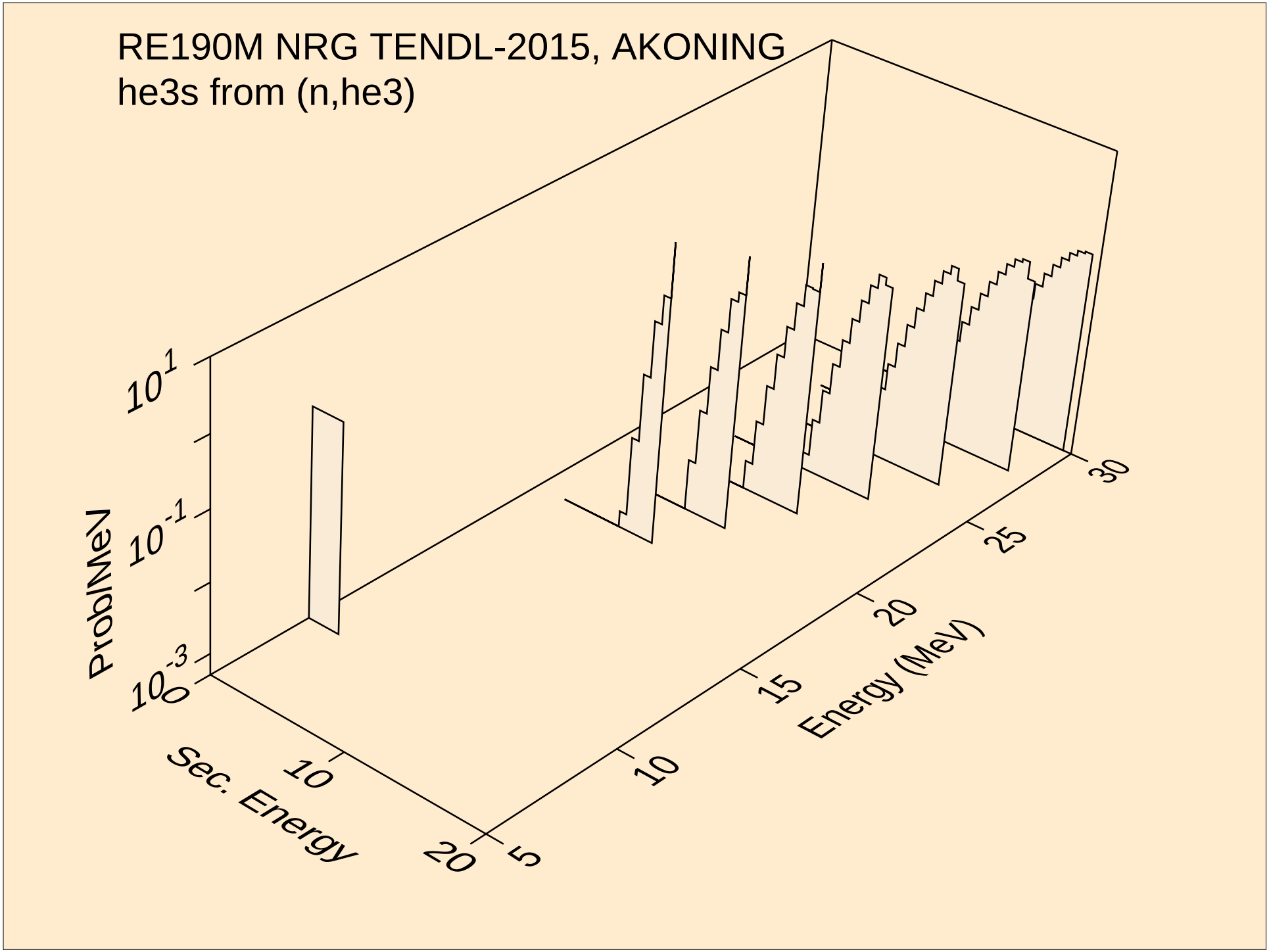

RE190M NRG TENDL-2015, AKONING
tritons from (n,x)
Prob/MeV
10-2
10-4
0
Sec. Energy
100
200
0
50
100
150
200
Energy (MeV)

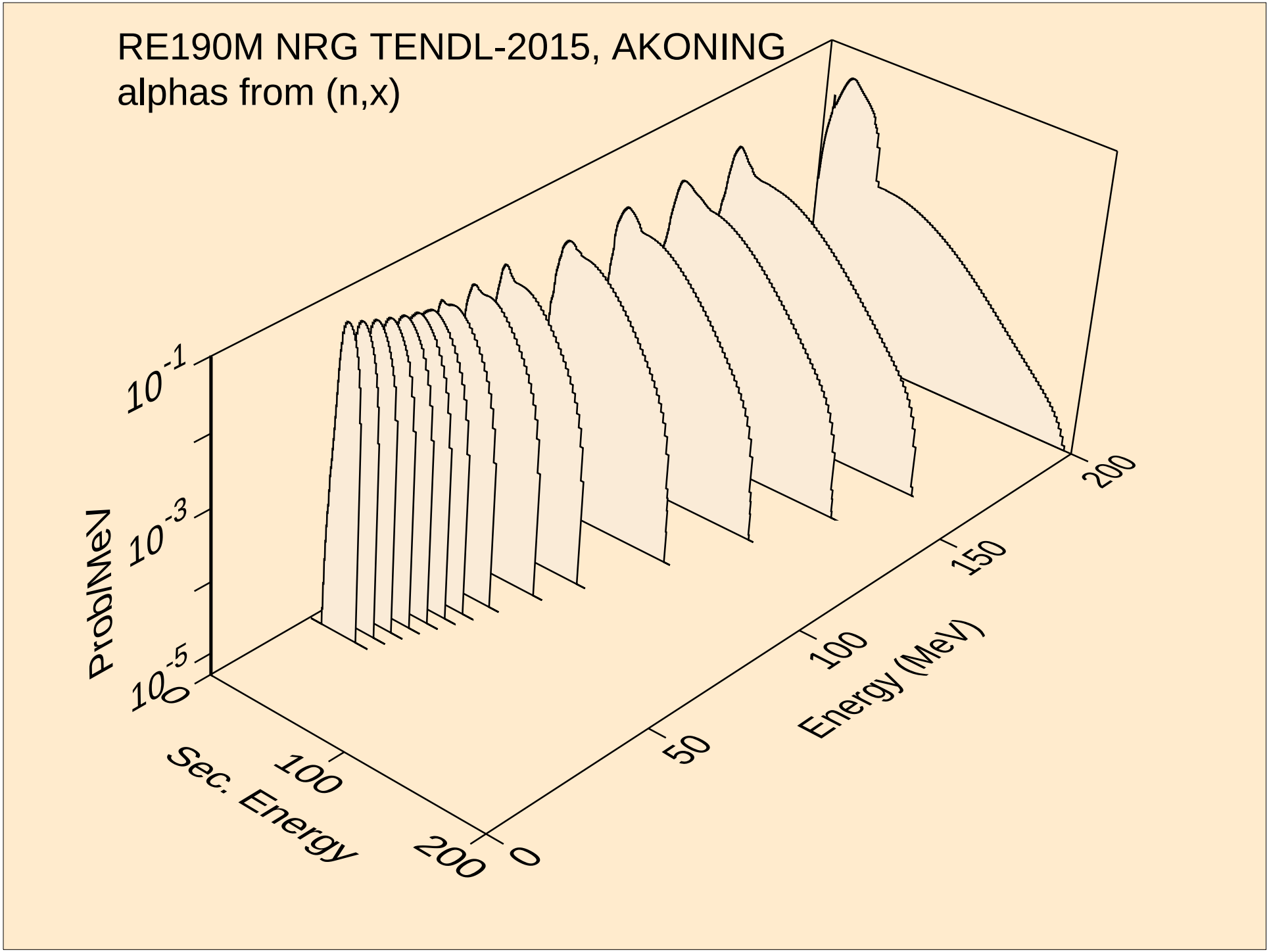

RE190M NRG TENDL-2015, AKONING
tritons from (n,n*)t
Prob/MeV
10^1
10^-1
0
Sec. Energy
10
20
10
12
14
16
18
20
22
24
26
28
30
Energy (MeV)

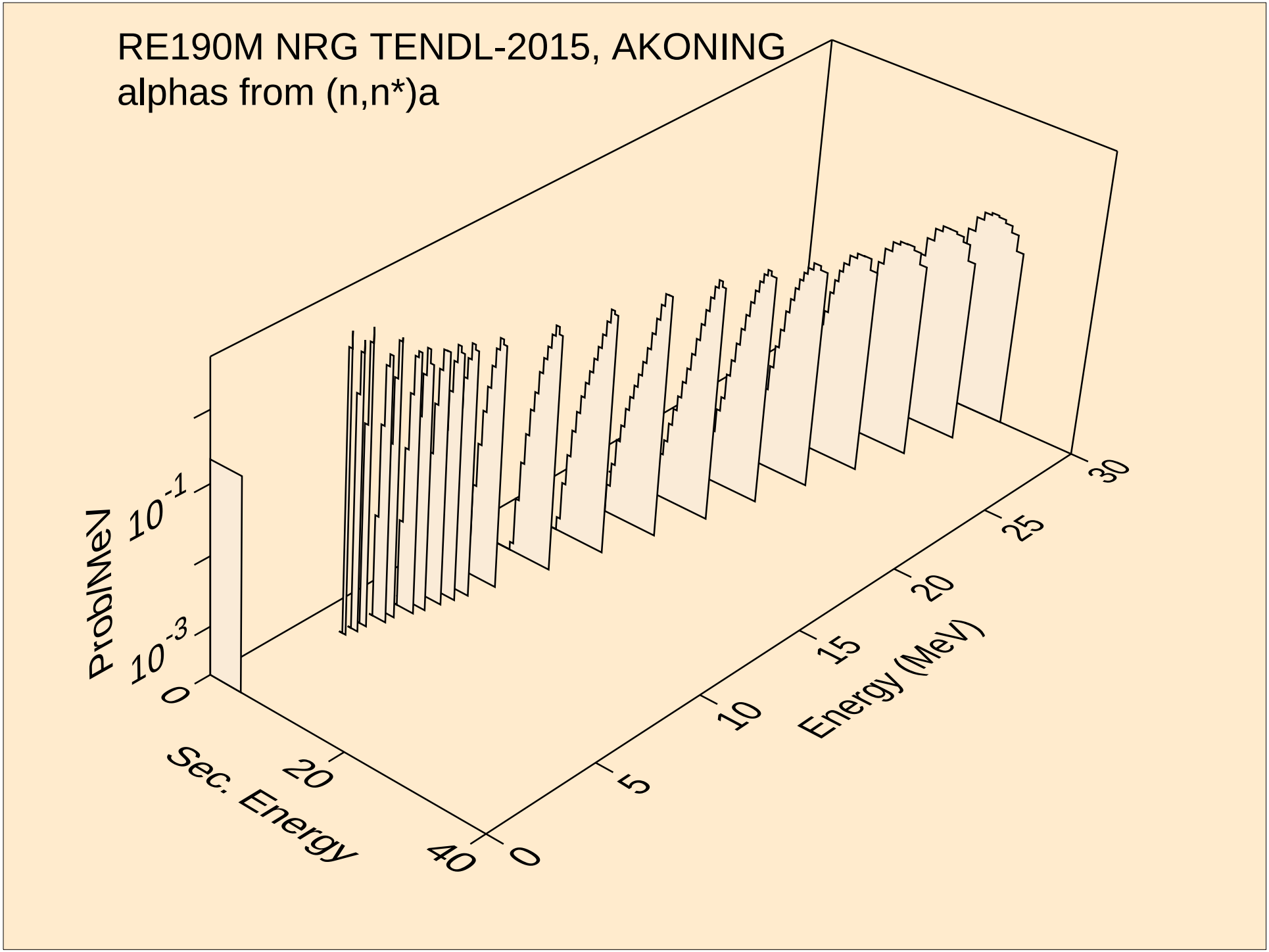

RE190M NRG TENDL-2015, AKONING
tritons from (n,t)
Prob/MeV
10^{1}
10^{-1}
10^{-3}
0
20
40
Sec. Energy
0
5
10
15
20
25
30
Energy (MeV)

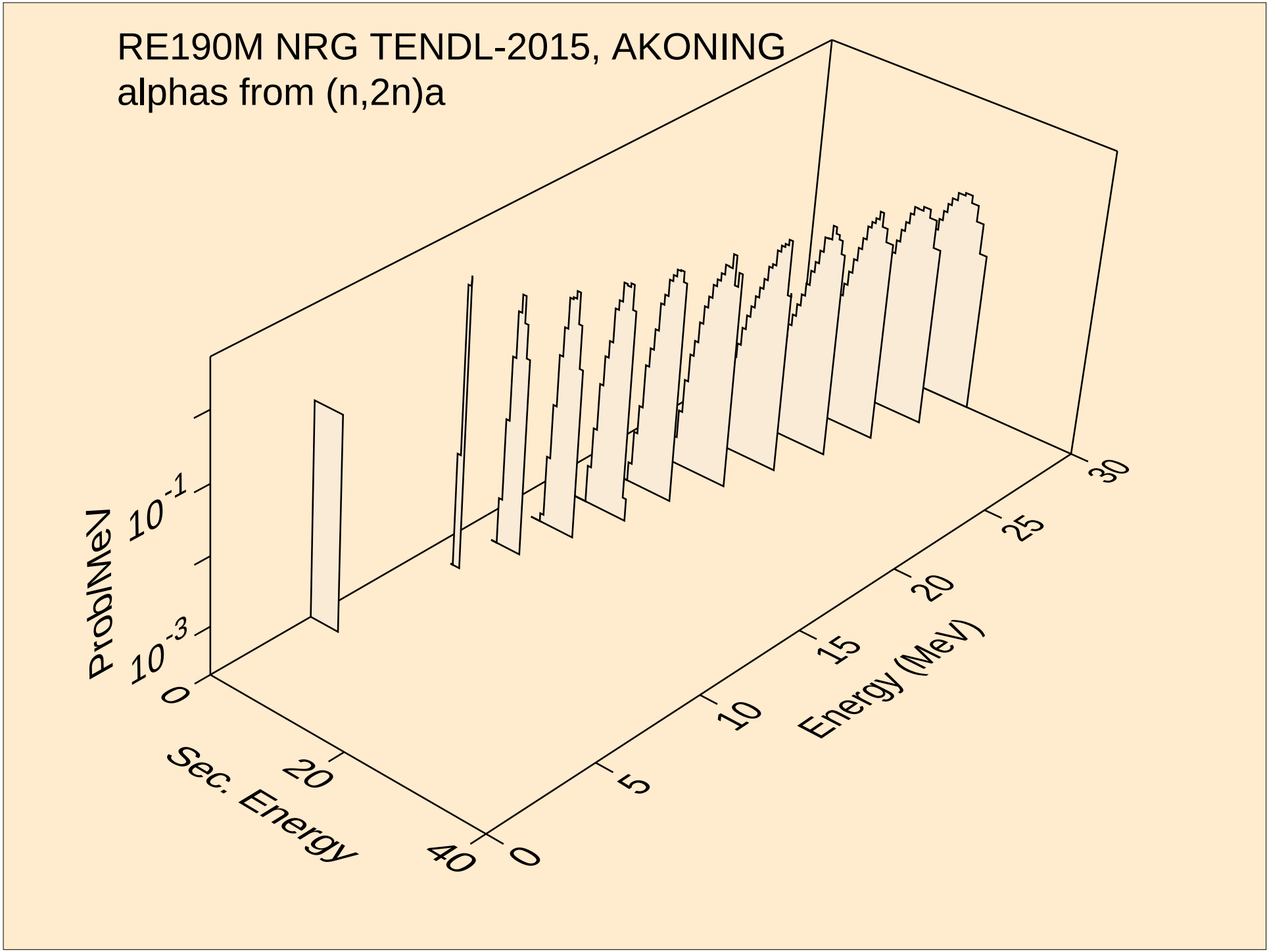

RE190M NRG TENDL-2015, AKONING
he3s from (n,x)
Prob/MeV
10-2
10-4
0
Sec. Energy
100
200
0
50
100
150
200
Energy (MeV)

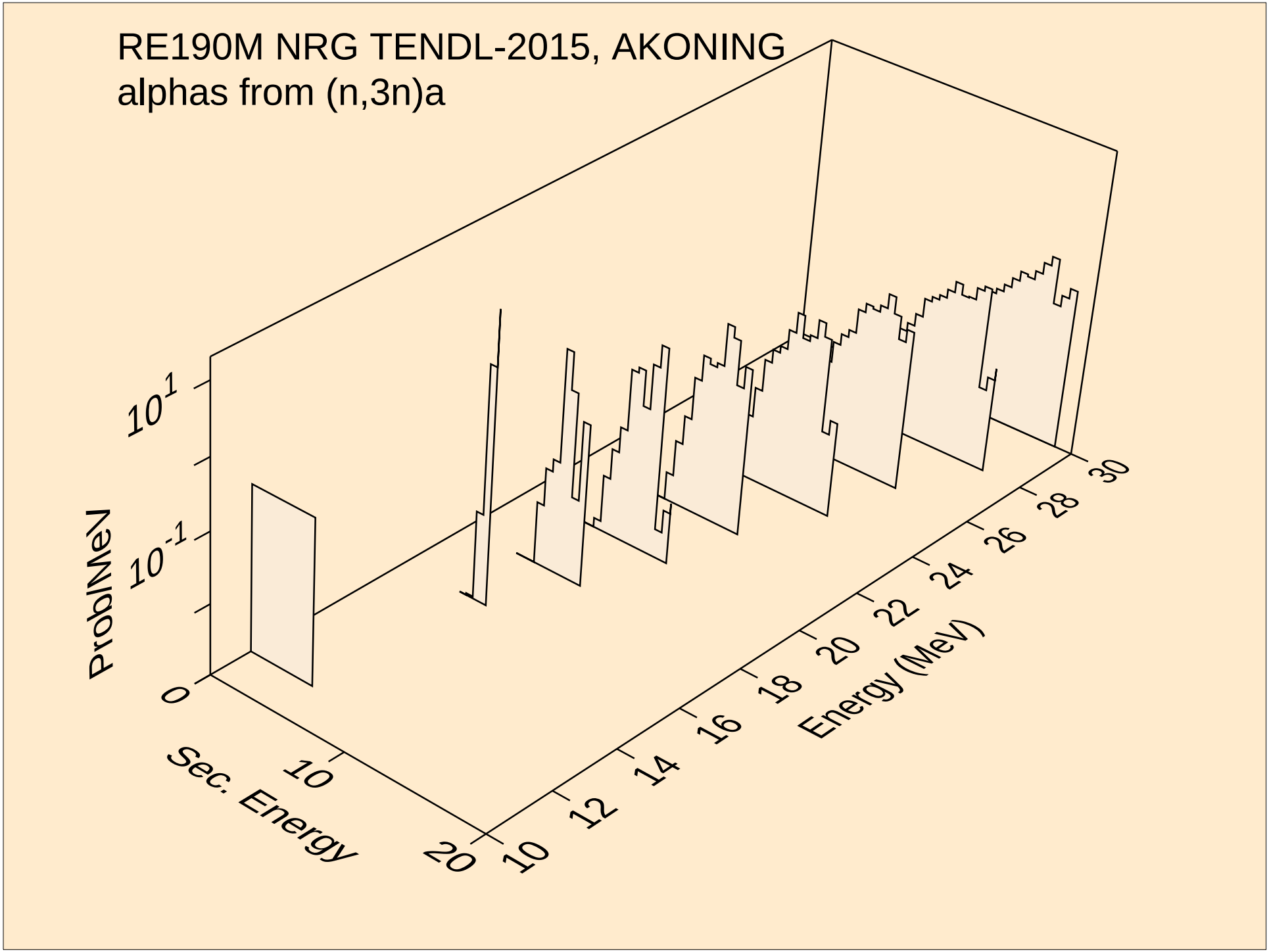

RE190M NRG TENDL-2015, AKONING
he3s from (n,n*)he3
Prob/MeV
10^1
10^-1
0
Sec. Energy
10
20
12
14
16
18
20
22
24
26
28
30
Energy (MeV)

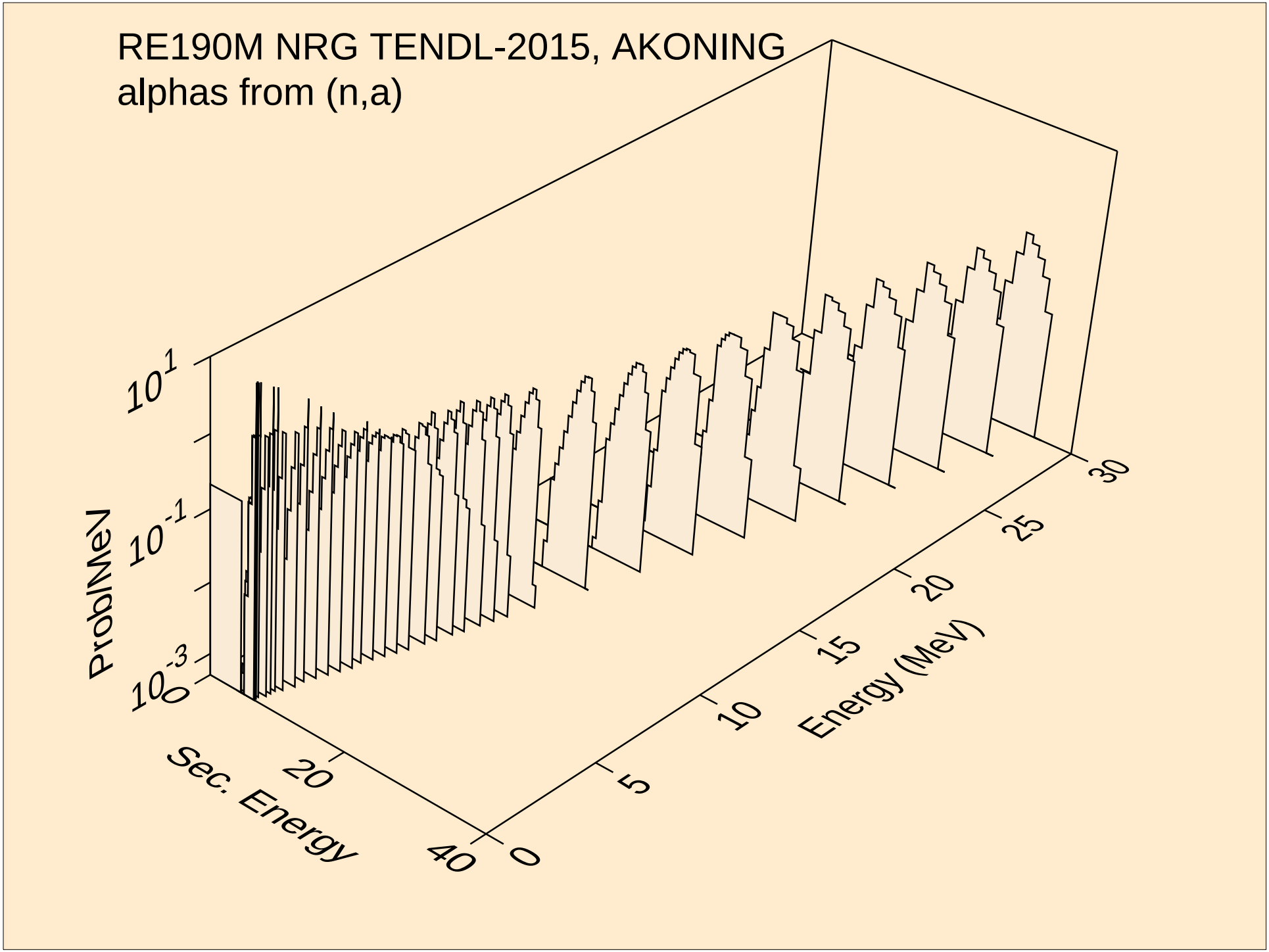

RE190M NRG TENDL-2015, AKONING
he3s from (n,he3)
Prob/MeV
10^{1}
10^{-1}
10^{-3}
0
Sec. Energy
10
20
5
10
15
20
25
30
Energy (MeV)


RE190M NRG TENDL-2015, AKONING
alphas from (n,x)
Prob/MeV
10-1
10-3
10-5
0
100
200
Sec. Energy
0
50
100
150
200
Energy (MeV)


RE190M 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)


RE190M NRG TENDL-2015, AKONING
alphas from (n,2n)a
Prob/MeV
10-1
10-3
0
Sec. Energy
20
40
0
5
10
15
20
25
30
Energy (MeV)


RE190M NRG TENDL-2015, AKONING
alphas from (n,3n)a
Prob/MeV
10^{1}
10^{-1}
0
Sec. Energy
10
20
Energy (MeV)
10
12
14
16
18
20
22
24
26
28
30


RE190M NRG TENDL-2015, AKONING
alphas from (n,a)
Prob/MeV
10^1
10^-1
10^-3
0
20
40
Sec. Energy
0
5
10
15
20
25
30
Energy (MeV)