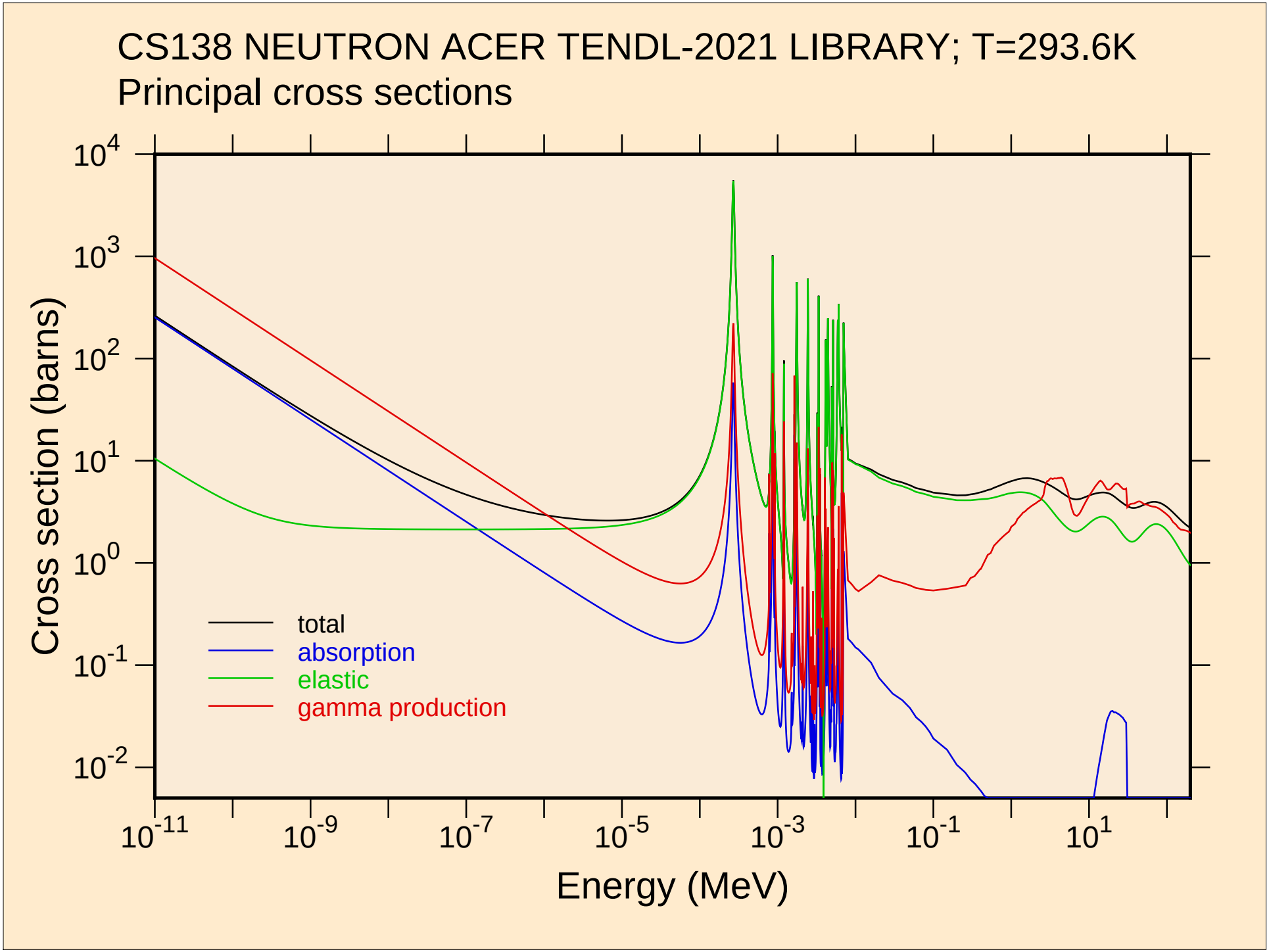
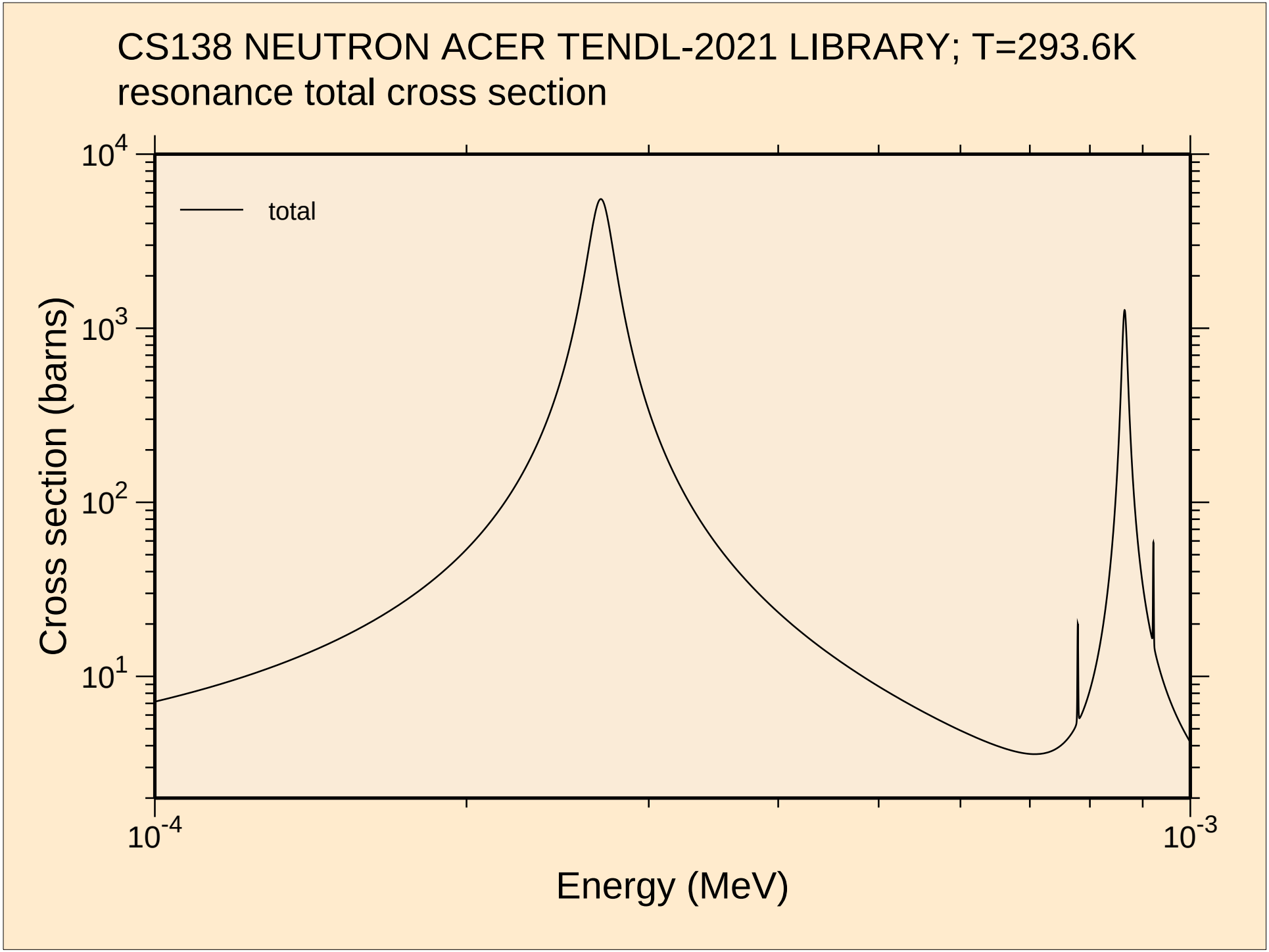
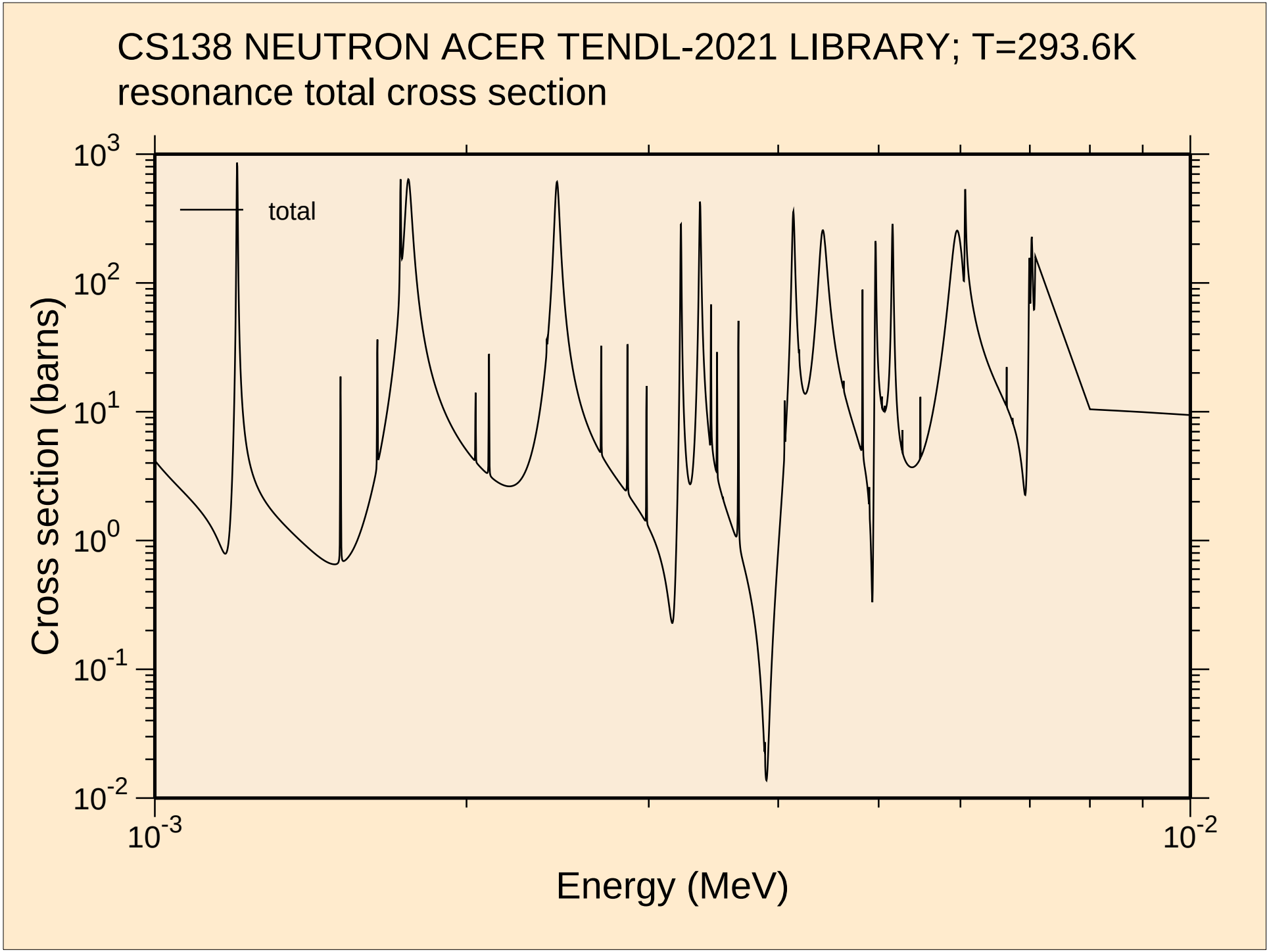
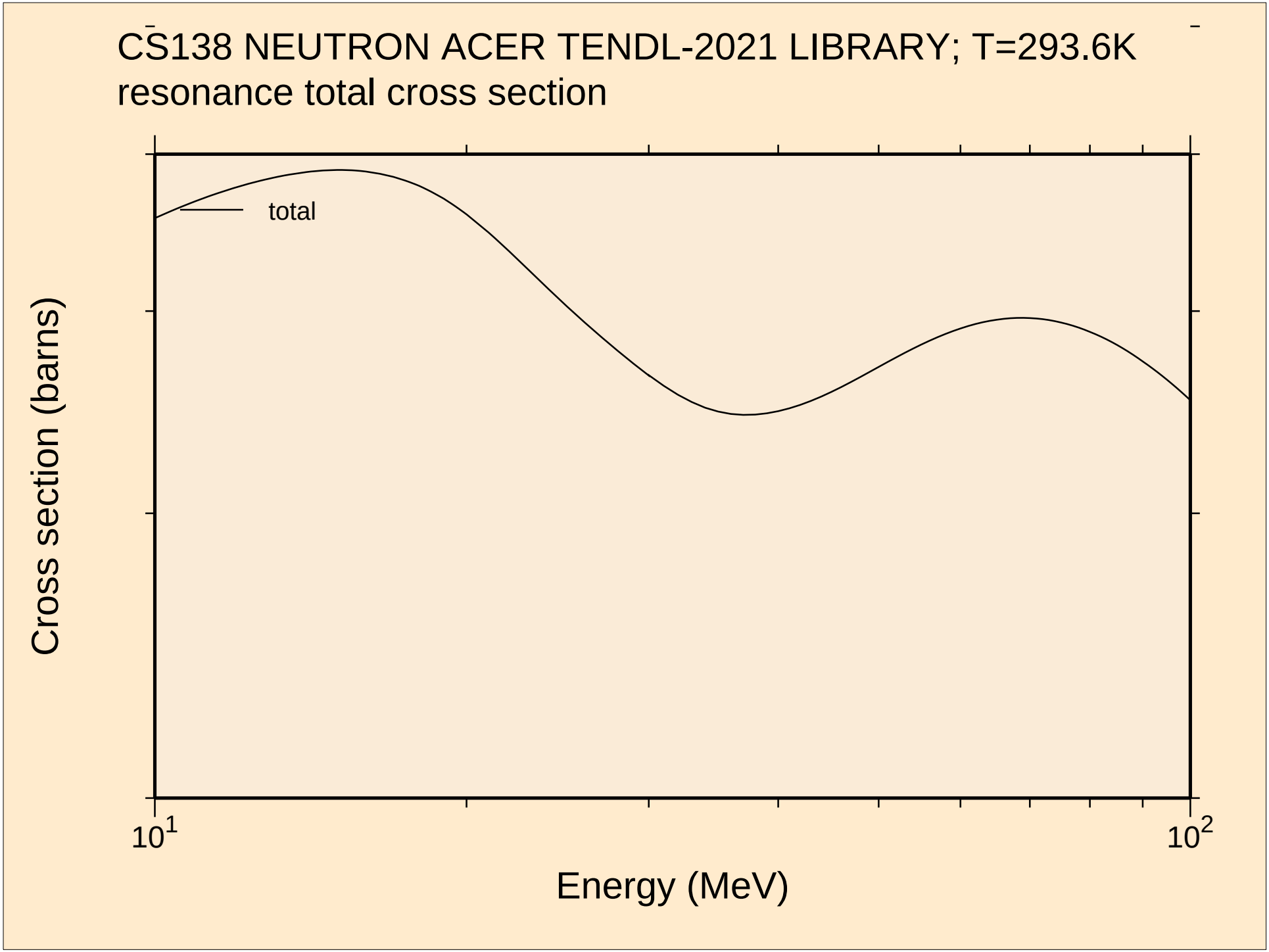
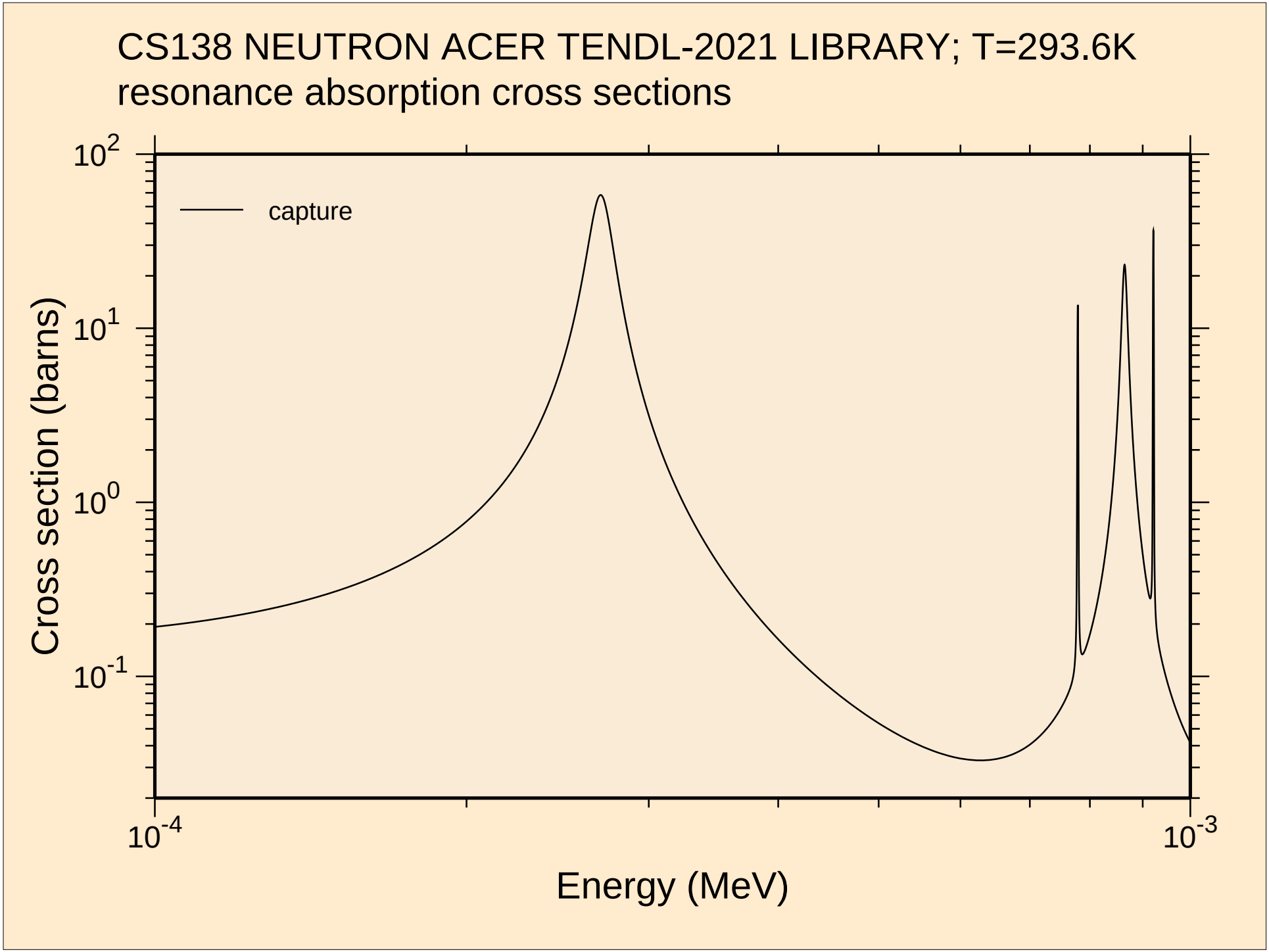
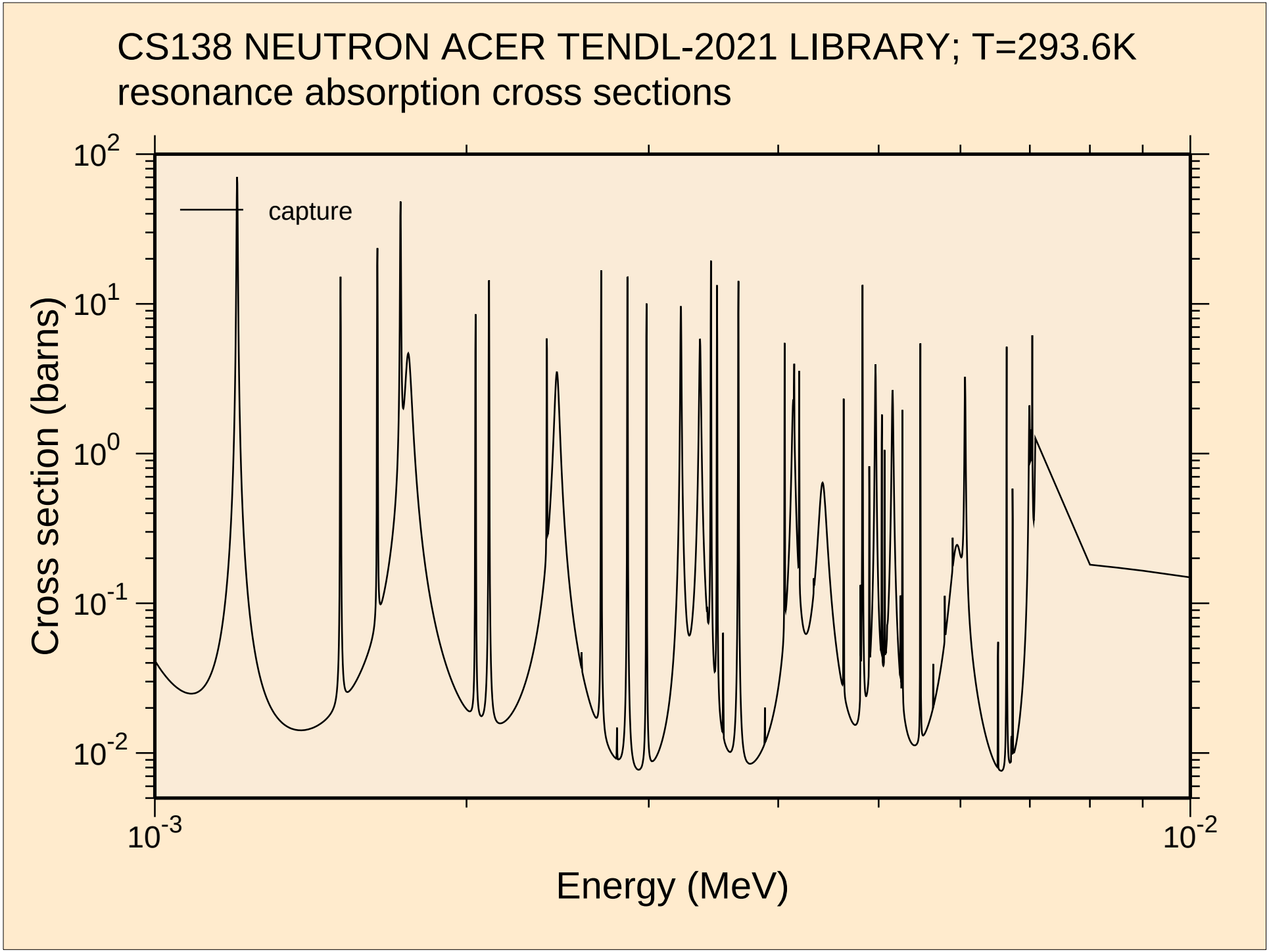

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
Principal cross sections
Cross section (barns)
Energy (MeV)
total
absorption
elastic
gamma production

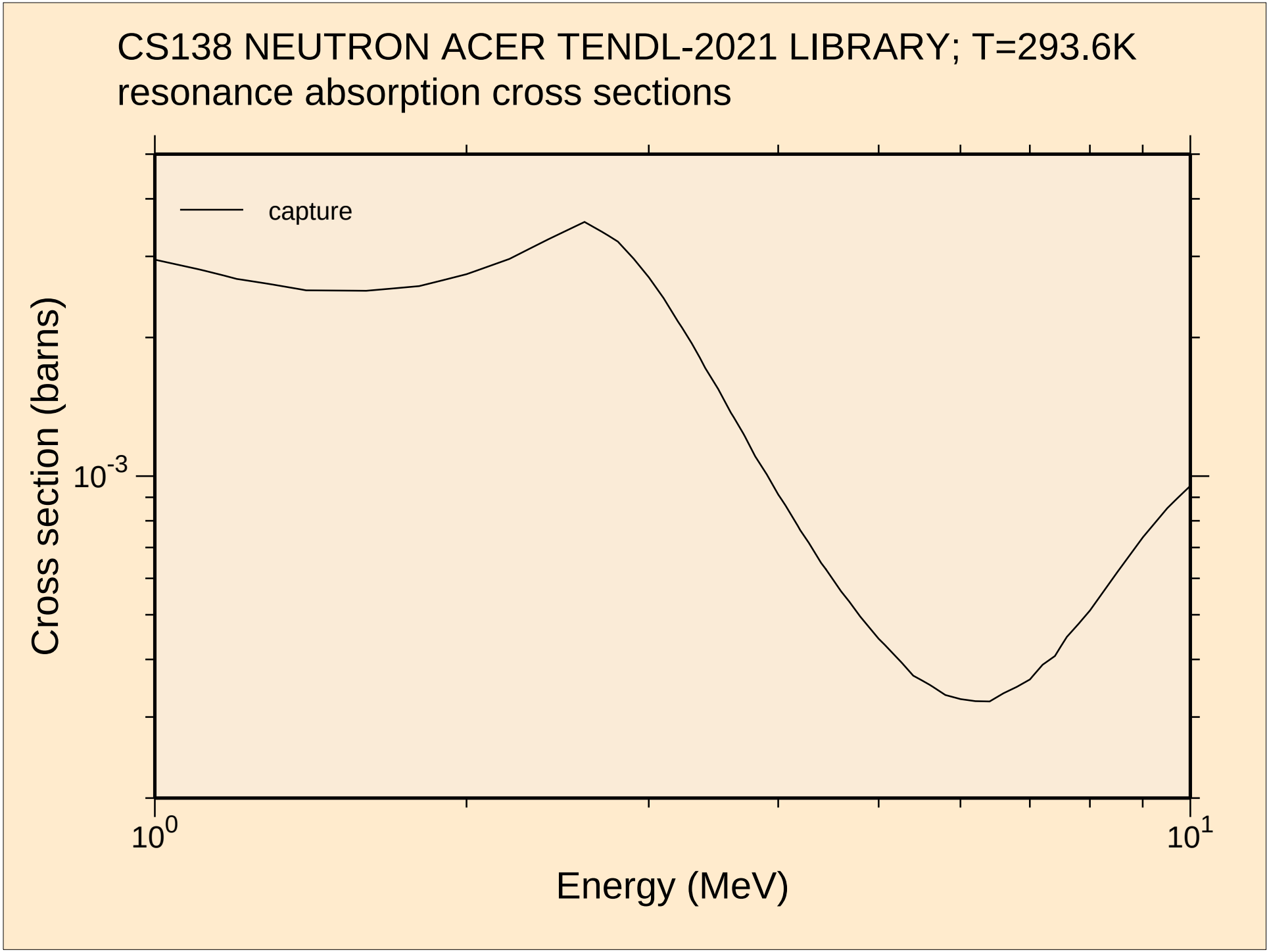

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
resonance total cross section
total
Cross section (barns)
10^4
10^3
10^2
10^1
10^{-4}
10^{-3}
Energy (MeV)

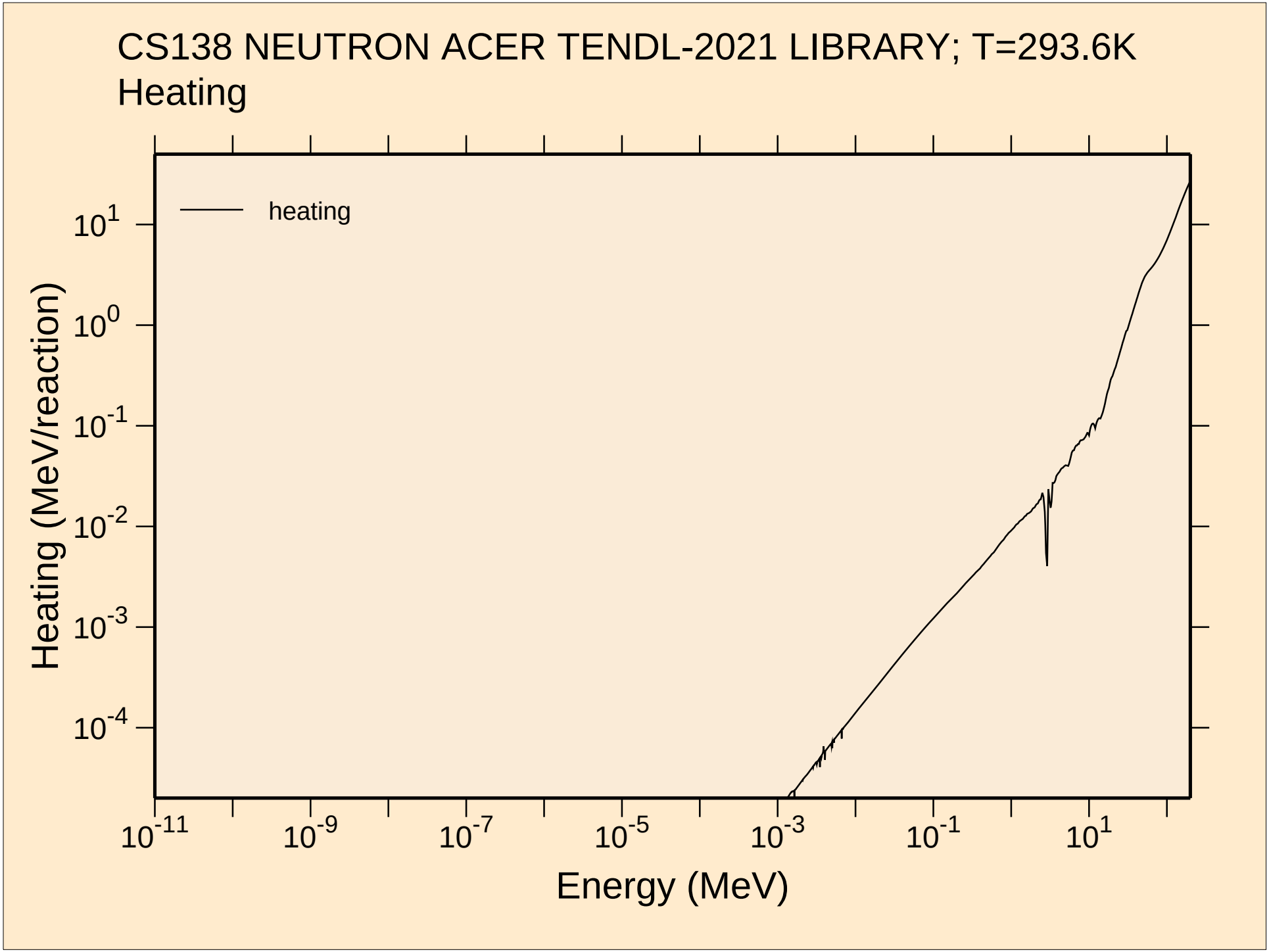

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
resonance total cross section
total
Cross section (barns)
10^{3}
10^{2}
10^{1}
10^{0}
10^{-1}
10^{-2}
10^{-3}
10^{-2}
Energy (MeV)

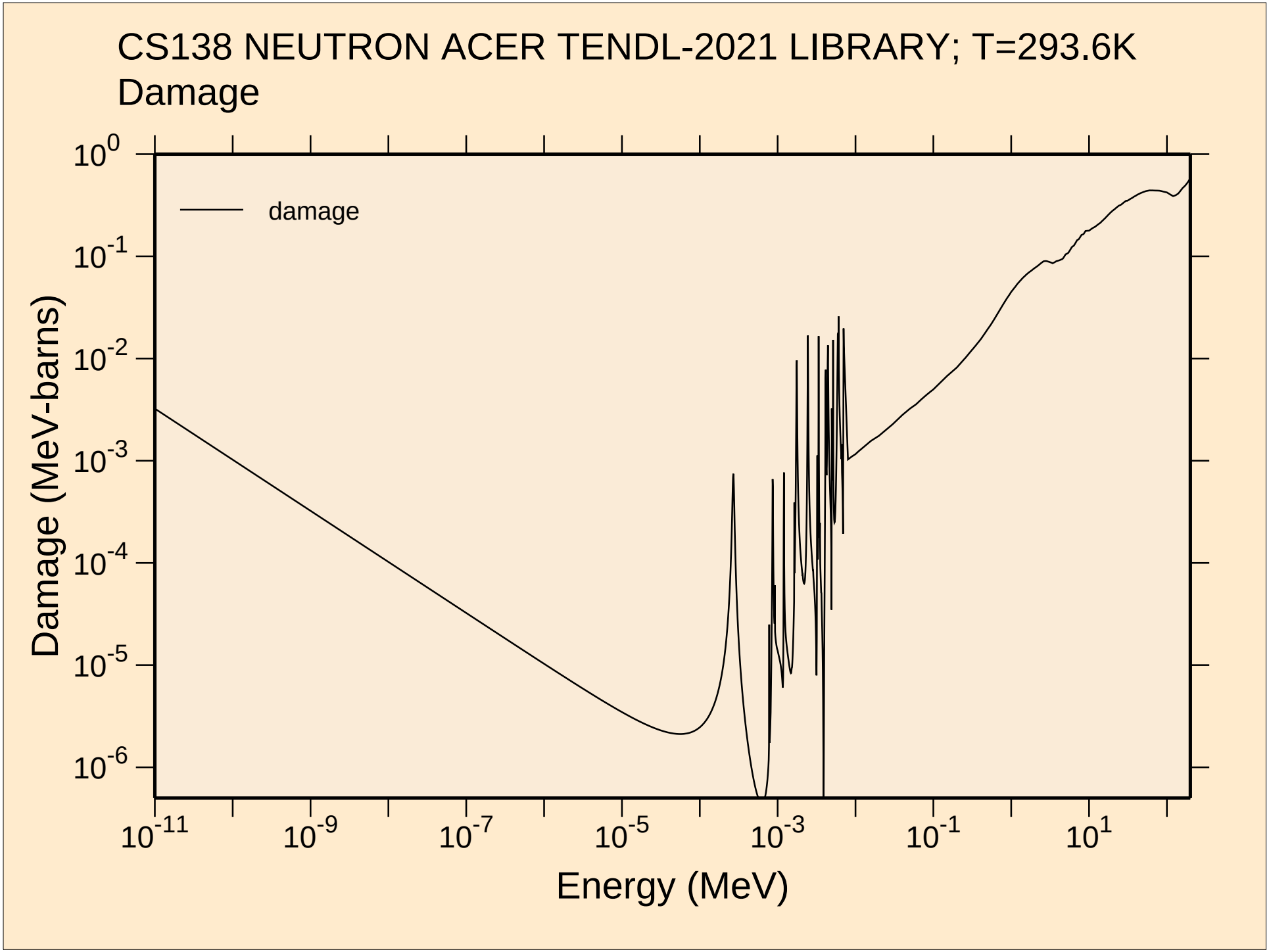

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
resonance total cross section
total
Cross section (barns)
10^1
10^2
Energy (MeV)

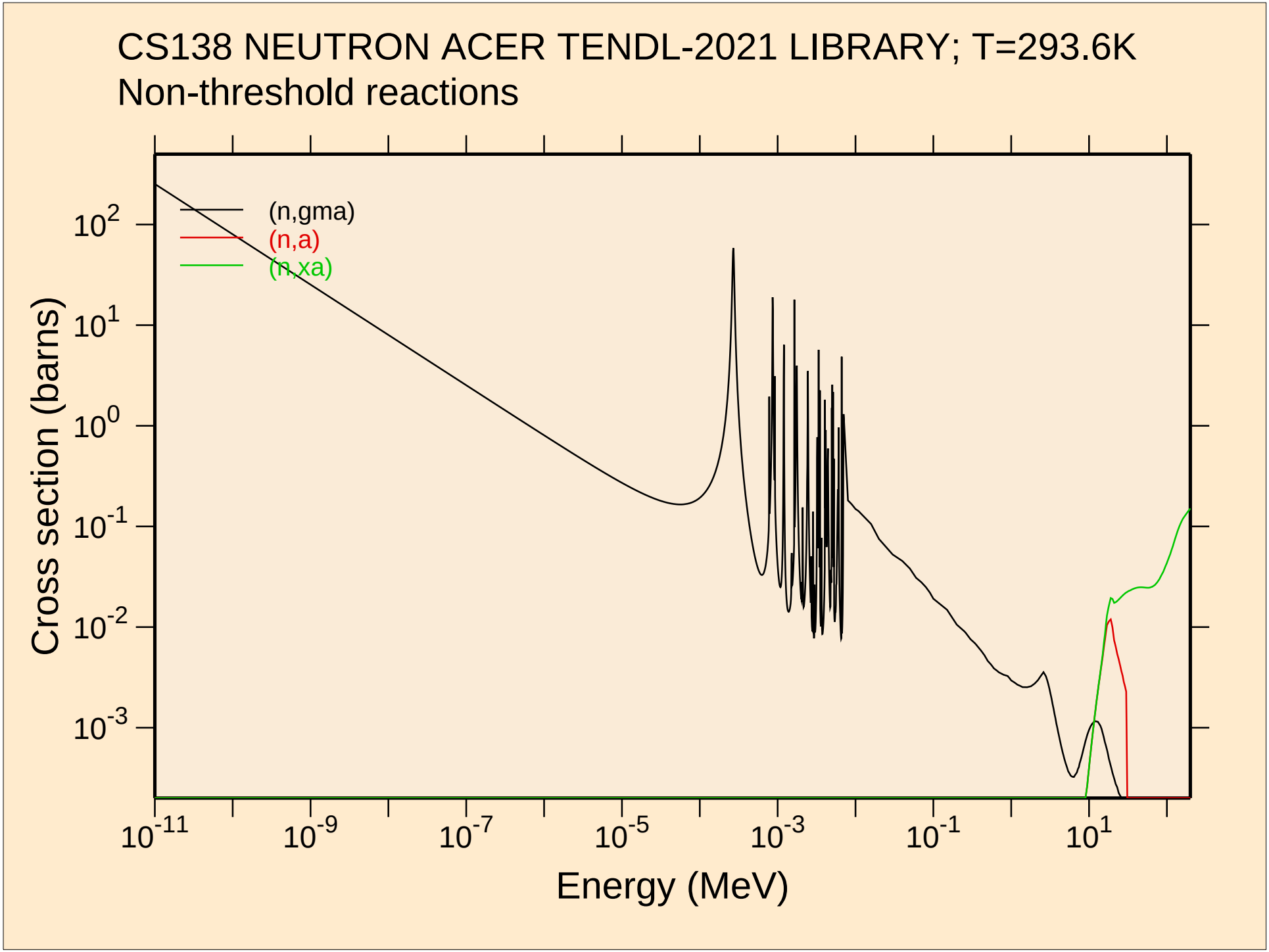

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
resonance absorption cross sections
capture
Cross section (barns)
10^2
10^1
10^0
10^-1
10^-4
10^-3
Energy (MeV)

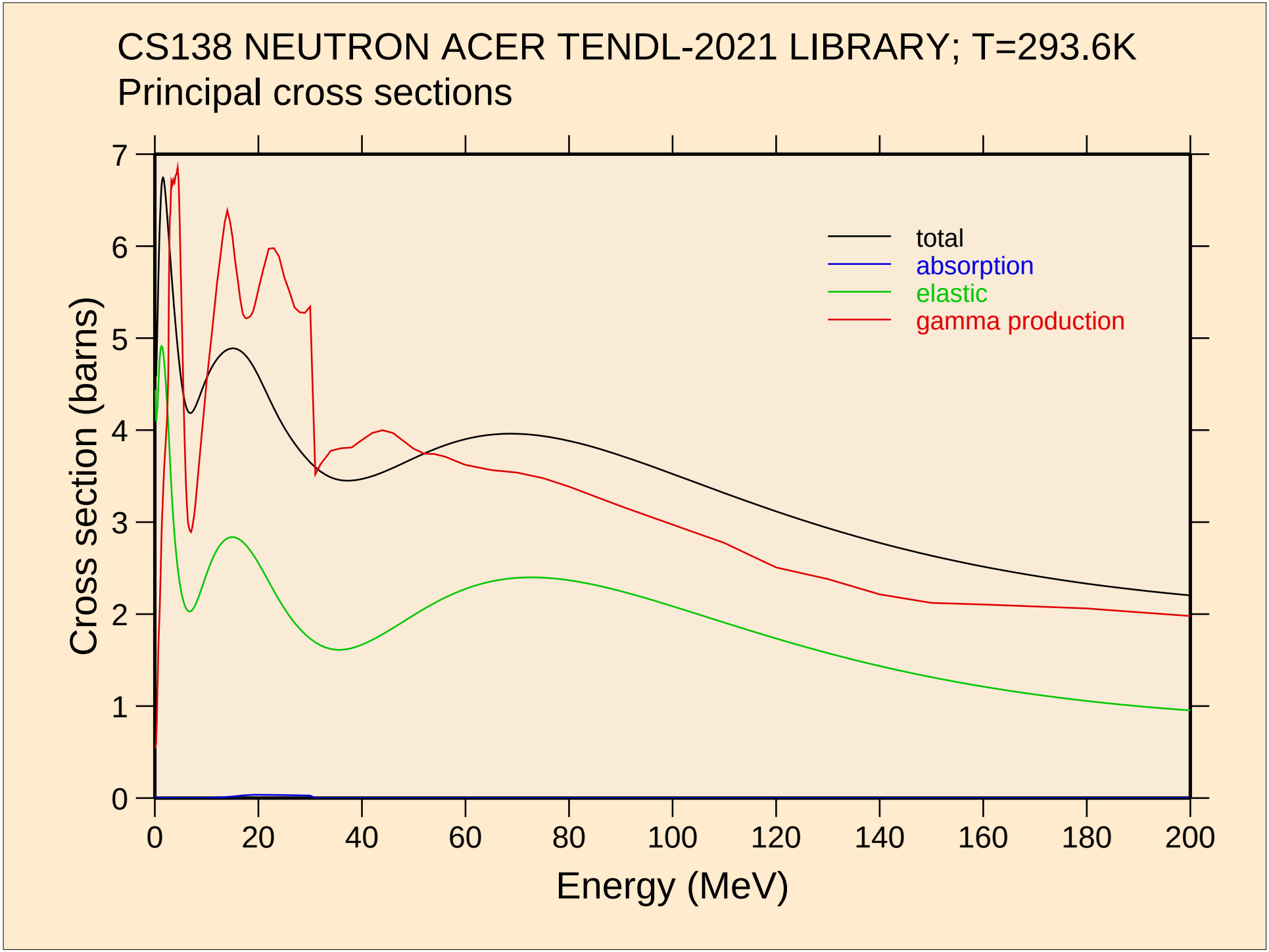

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
resonance absorption cross sections
capture
Cross section (barns)
10^{2}
10^{1}
10^{0}
10^{-1}
10^{-2}
10^{-3}
10^{-2}
Energy (MeV)

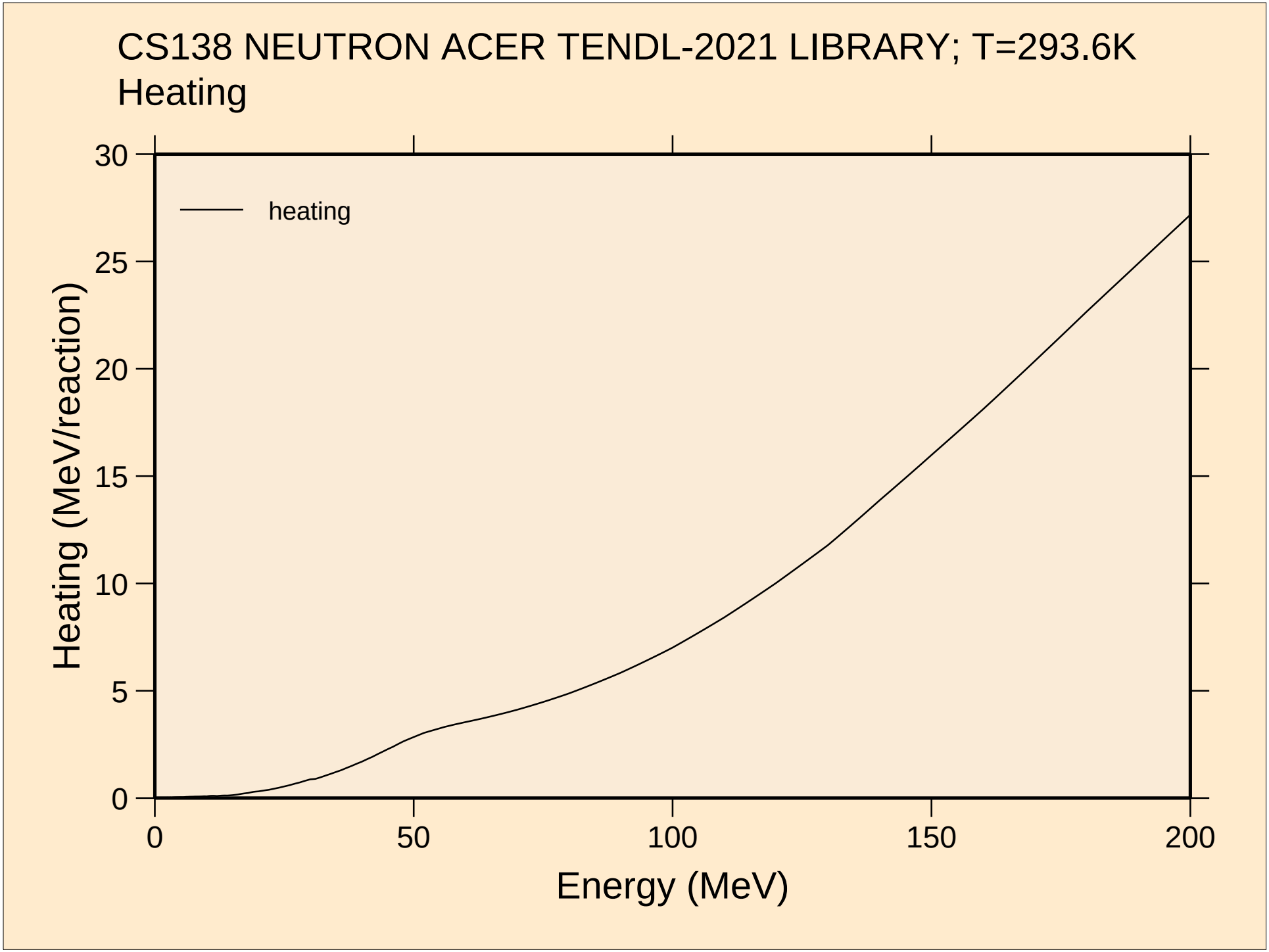

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
resonance absorption cross sections
capture
Cross section (barns)
10-3
100
101
Energy (MeV)

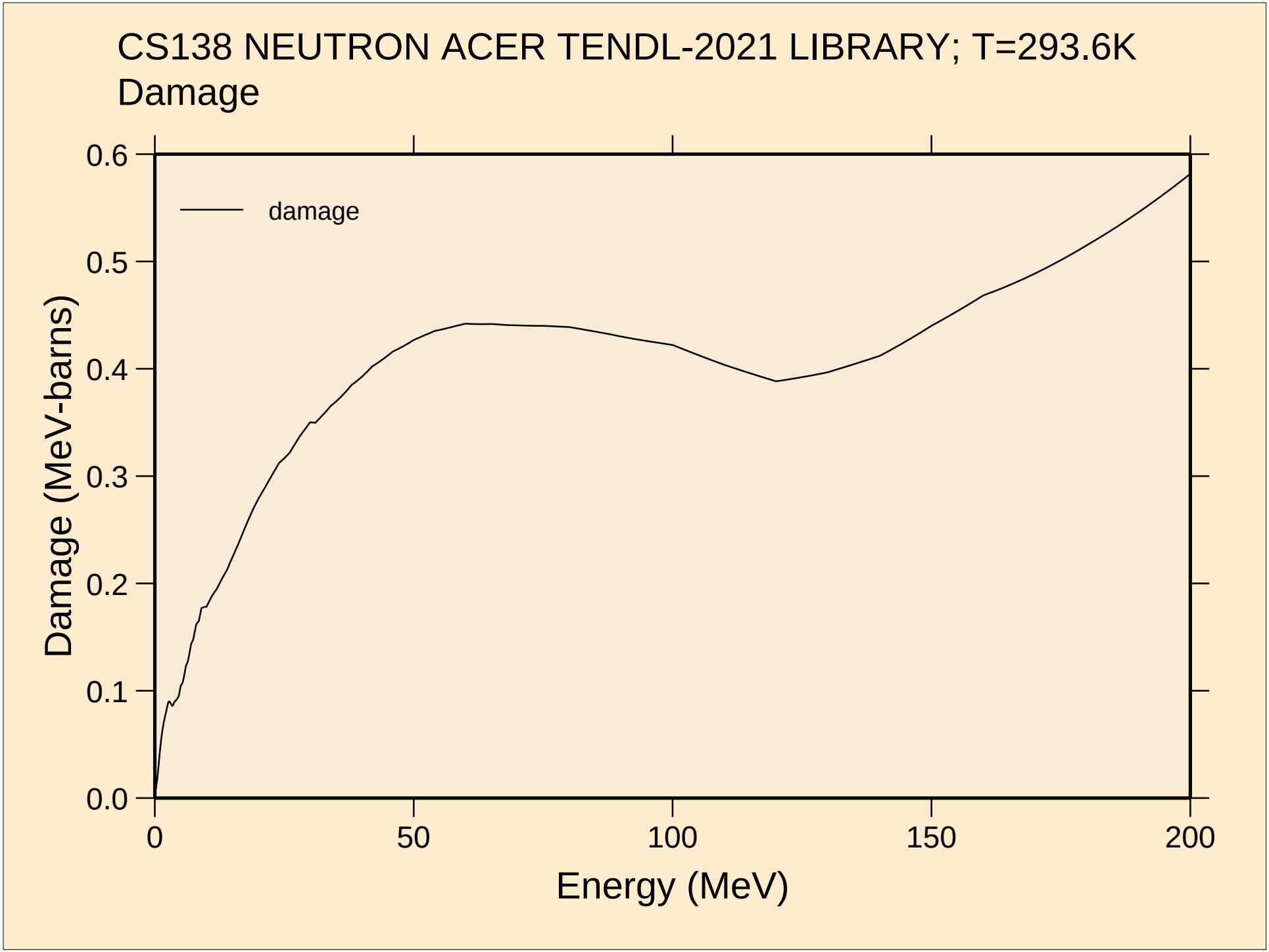

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
Heating
heating
Heating (MeV/reaction)
10^{1}
10^{0}
10^{-1}
10^{-2}
10^{-3}
10^{-4}
10^{-11}
10^{-9}
10^{-7}
10^{-5}
10^{-3}
10^{-1}
10^{1}
Energy (MeV)

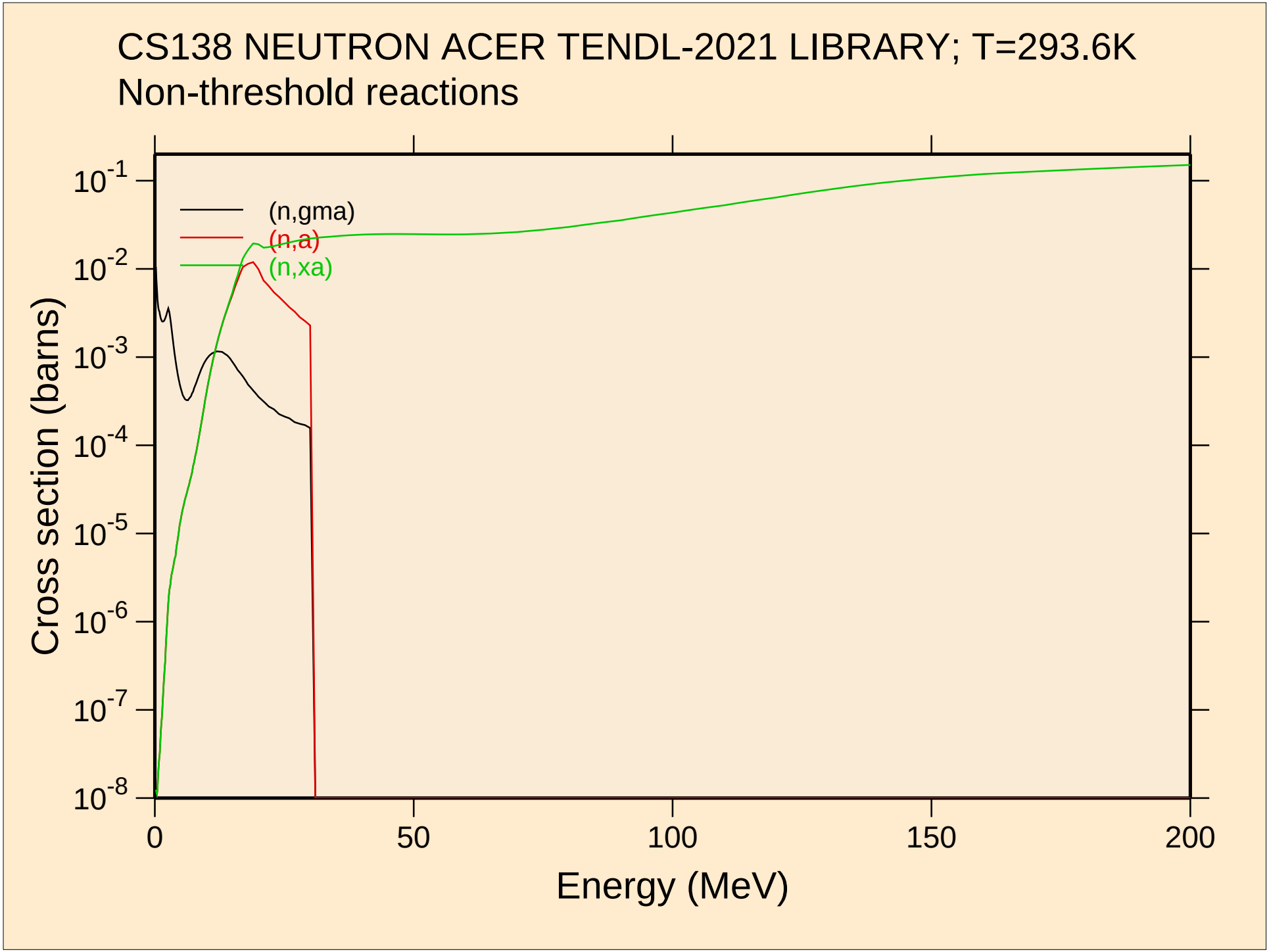

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
Damage
damage
Damage (MeV-barns)
Energy (MeV)
10^0
10^-1
10^-2
10^-3
10^-4
10^-5
10^-6
10^-11
10^-9
10^-7
10^-5
10^-3
10^-1
10^1

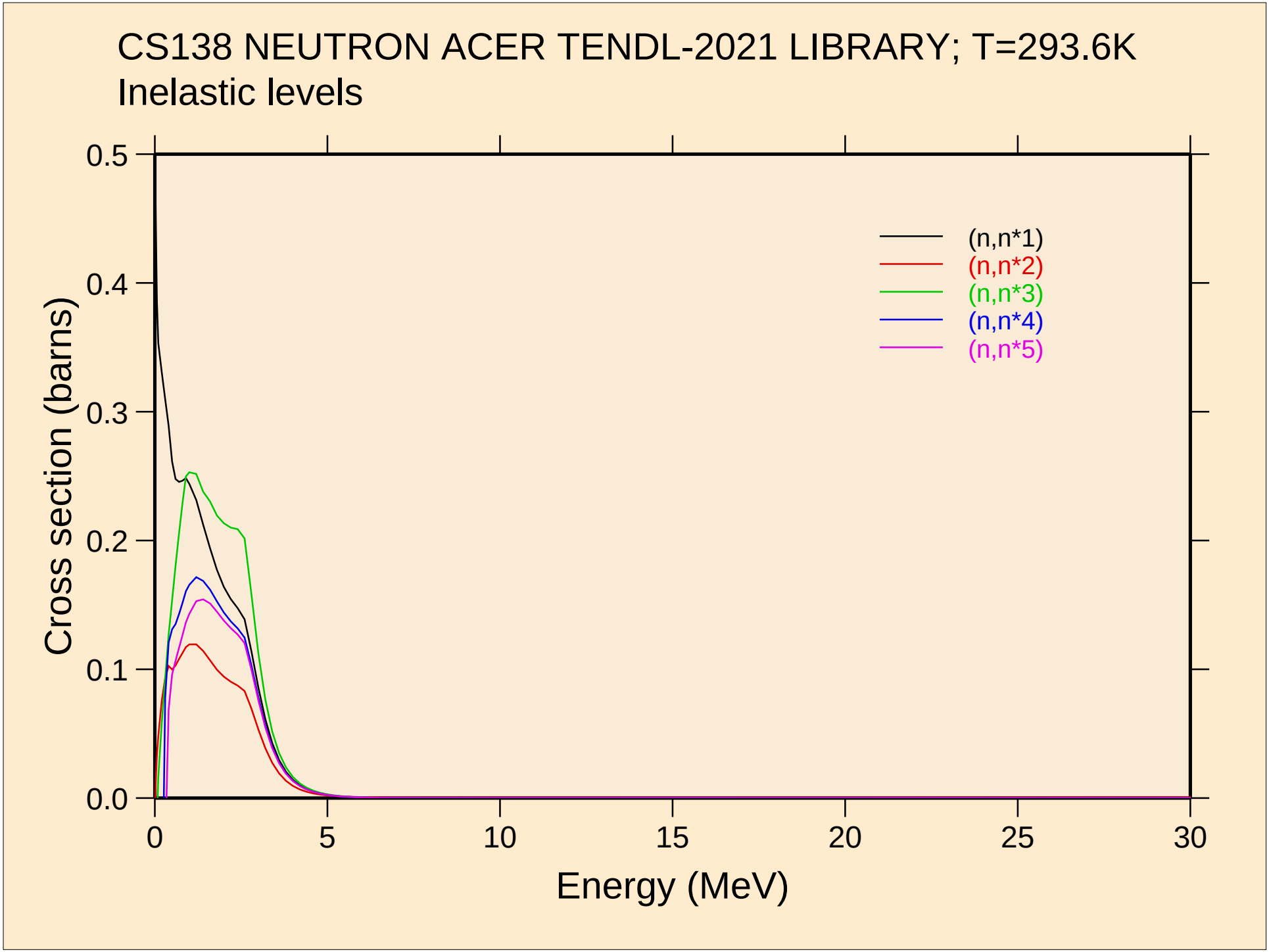

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
Non-threshold reactions
(n,gma)
(n,a)
(n,xa)
Cross section (barns)
10^2
10^1
10^0
10^-1
10^-2
10^-3
10^-11
10^-9
10^-7
10^-5
10^-3
10^-1
10^1
Energy (MeV)

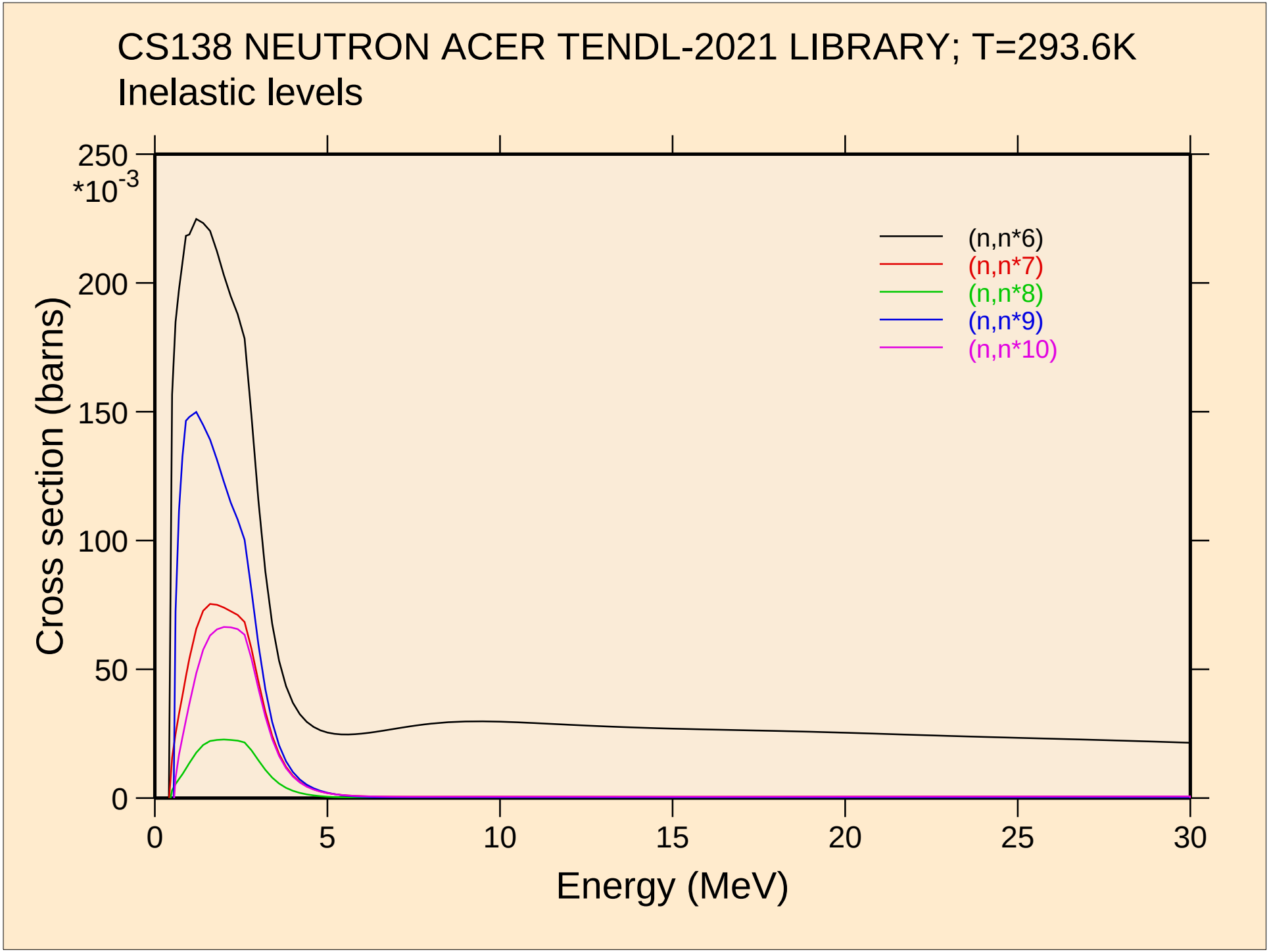

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
Principal cross sections
Cross section (barns)
Energy (MeV)
0
1
2
3
4
5
6
7
0
20
40
60
80
100
120
140
160
180
200
total
absorption
elastic
gamma production

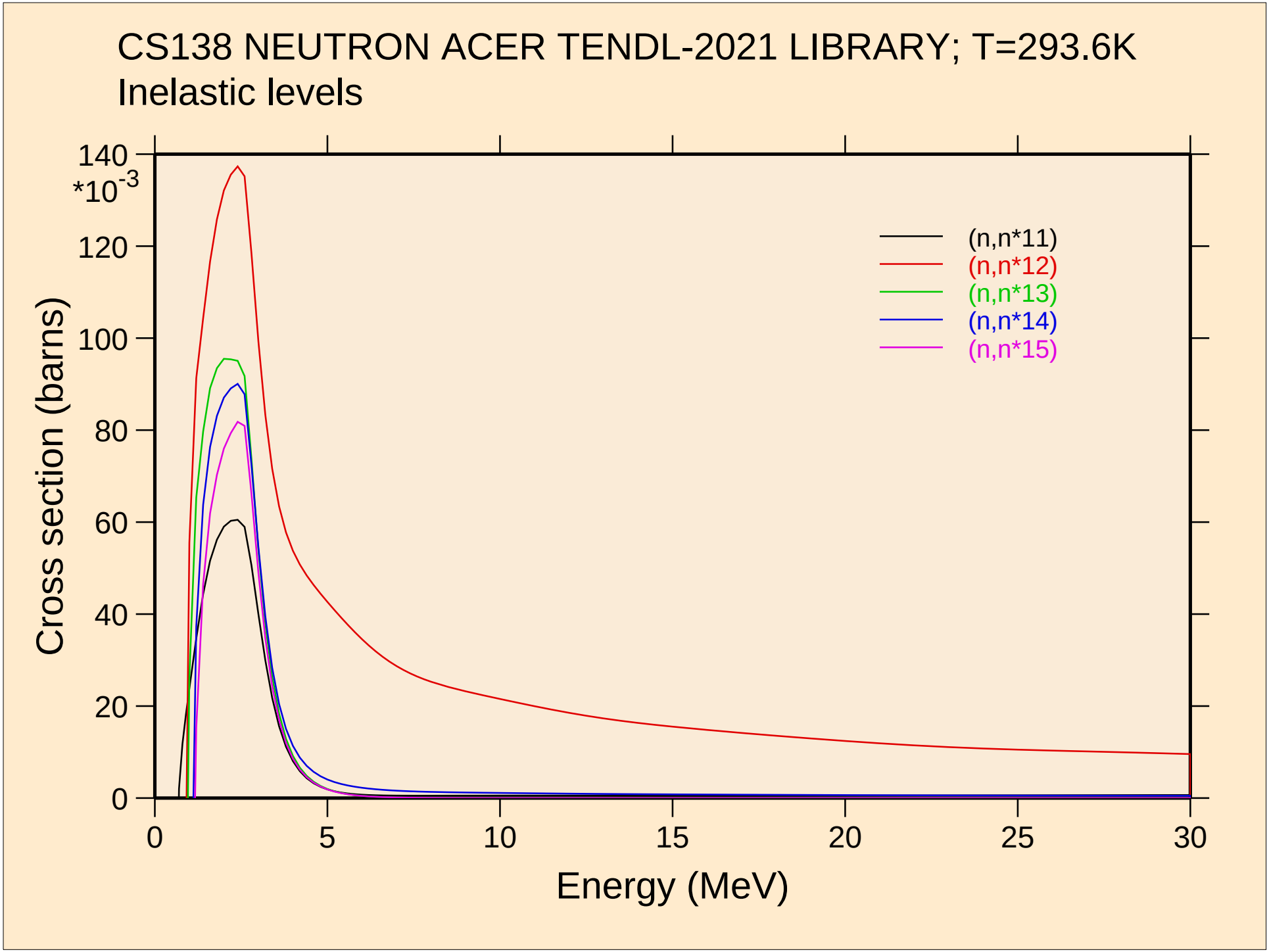

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
Heating
heating
Heating (MeV/reaction)
Energy (MeV)
0
5
10
15
20
25
30
0
50
100
150
200

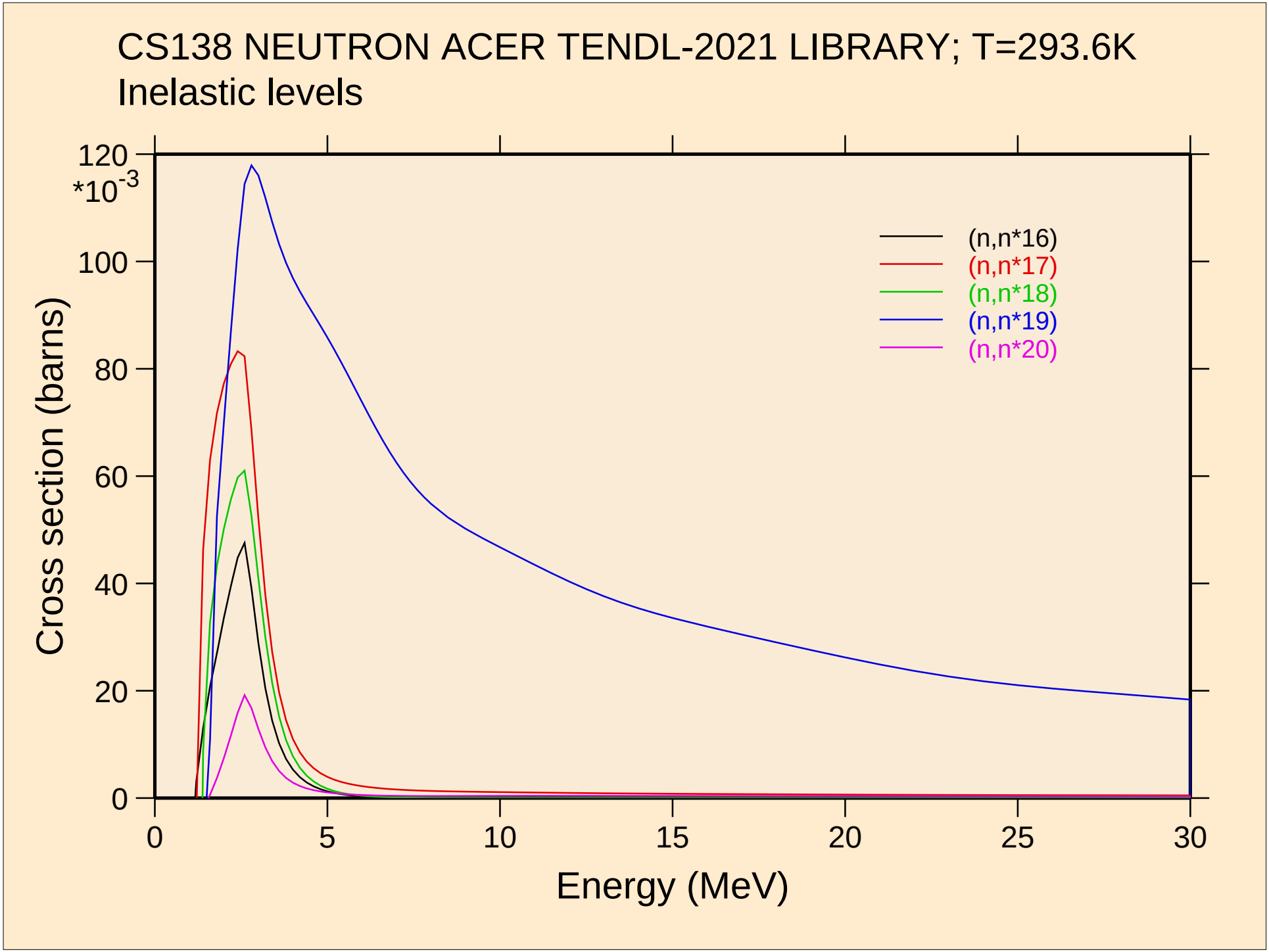

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
Damage
damage
Damage (MeV-barns)
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0
50
100
150
200
Energy (MeV)

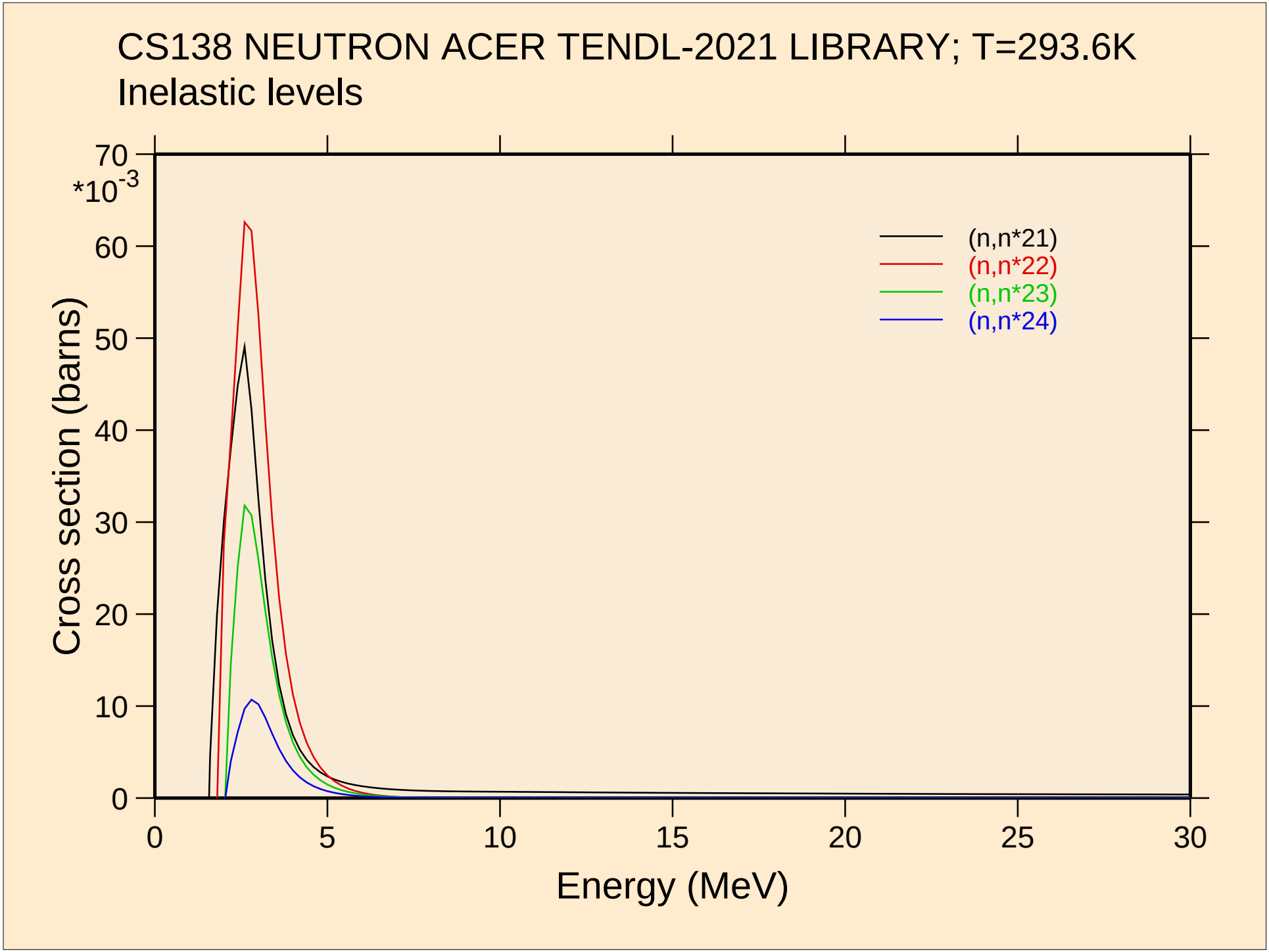

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
Non-threshold reactions
(n,gma)
(n,a)
(n,xa)
Cross section (barns)
10-1
10-2
10-3
10-4
10-5
10-6
10-7
10-8
0
50
100
150
200
Energy (MeV)

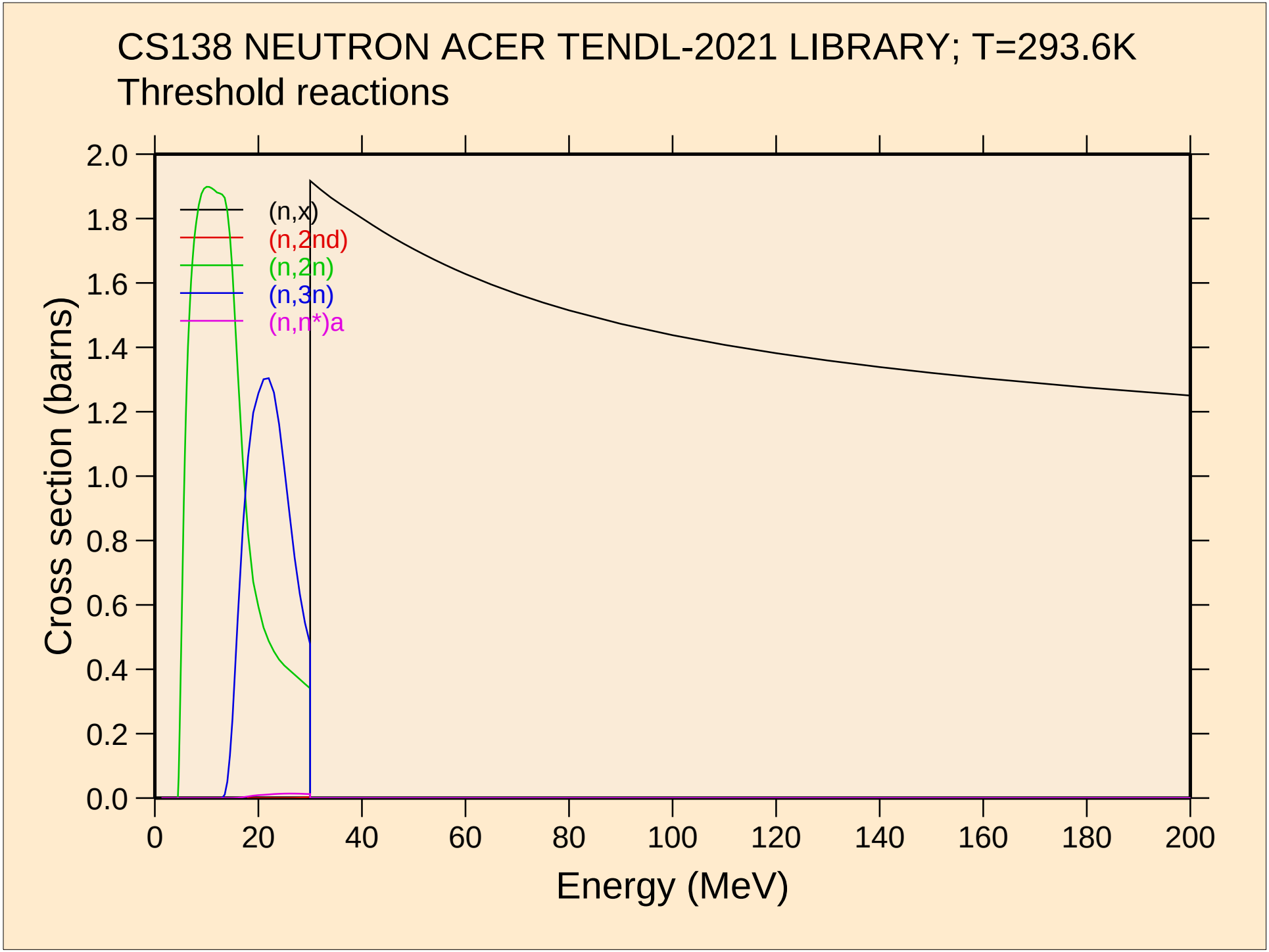

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
Inelastic levels
Cross section (barns)
0.0
0.1
0.2
0.3
0.4
0.5
0
5
10
15
20
25
30
Energy (MeV)
(n,n*1)
(n,n*2)
(n,n*3)
(n,n*4)
(n,n*5)

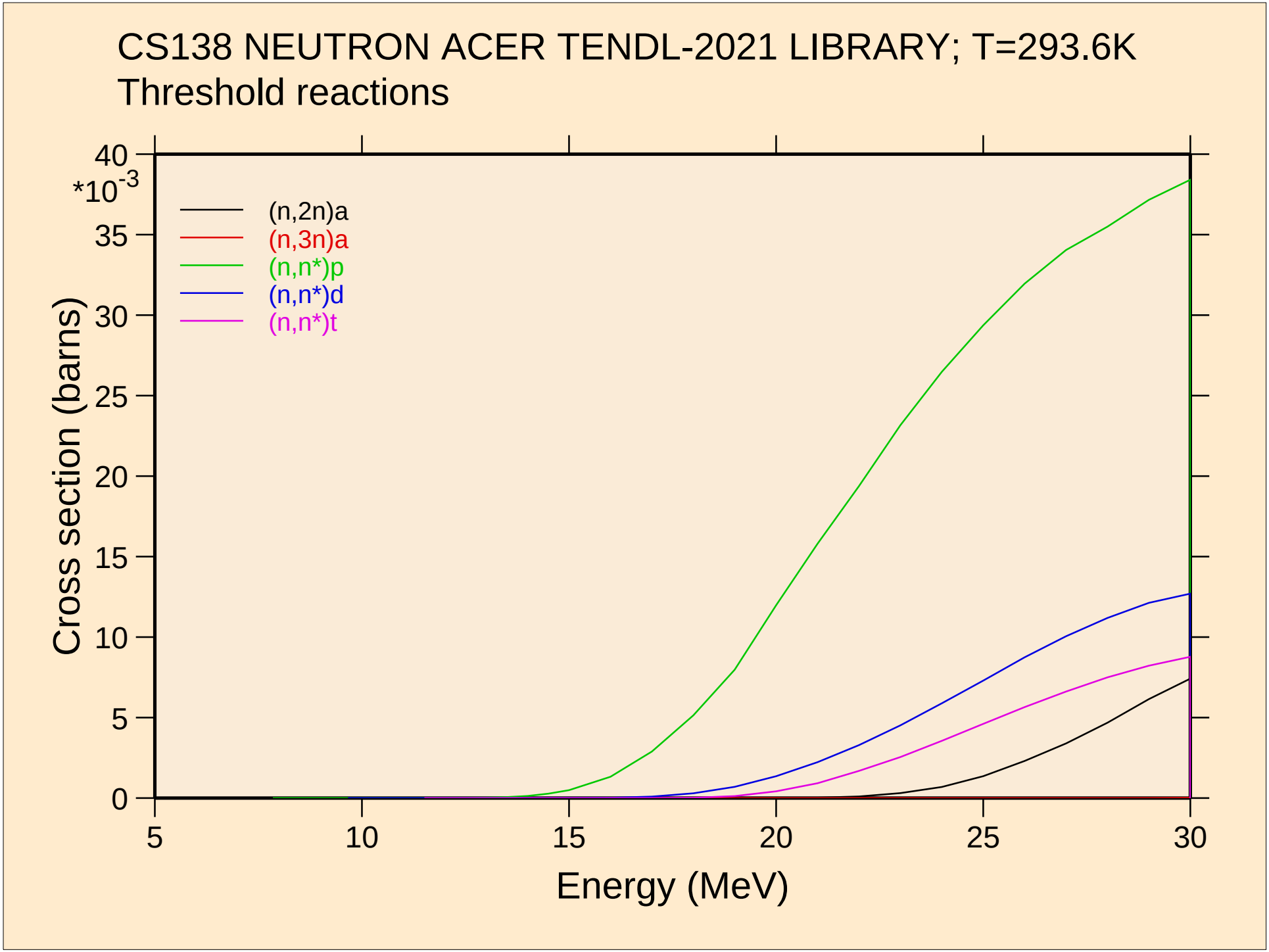

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
Inelastic levels
250
*10-3
200
150
100
50
0
Cross section (barns)
0
5
10
15
20
25
30
Energy (MeV)
(n,n*6)
(n,n*7)
(n,n*8)
(n,n*9)
(n,n*10)

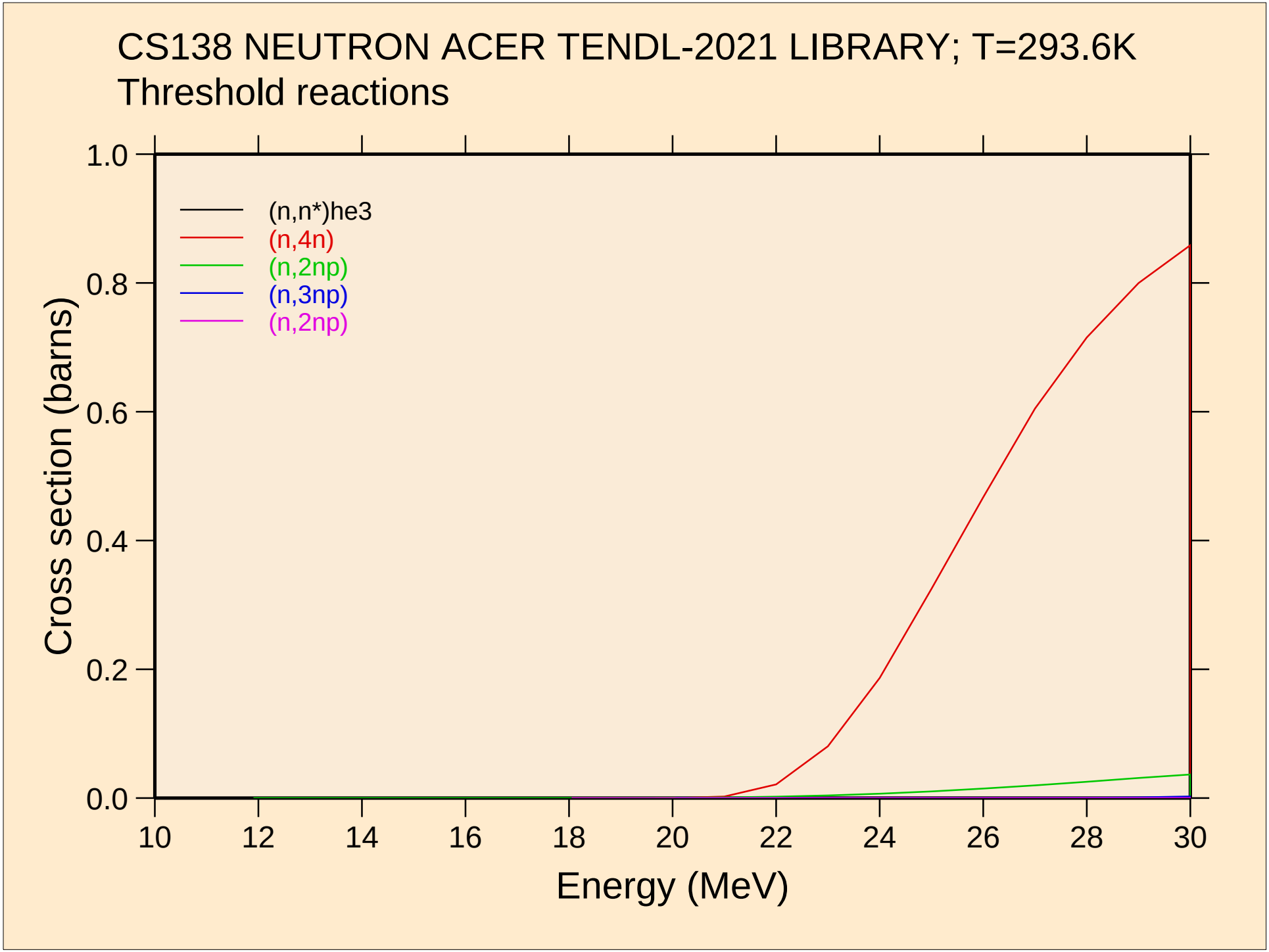

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
Inelastic levels
Cross section (barns)
*10-3
140
120
100
80
60
40
20
0
0
5
10
15
20
25
30
Energy (MeV)
(n,n*11)
(n,n*12)
(n,n*13)
(n,n*14)
(n,n*15)

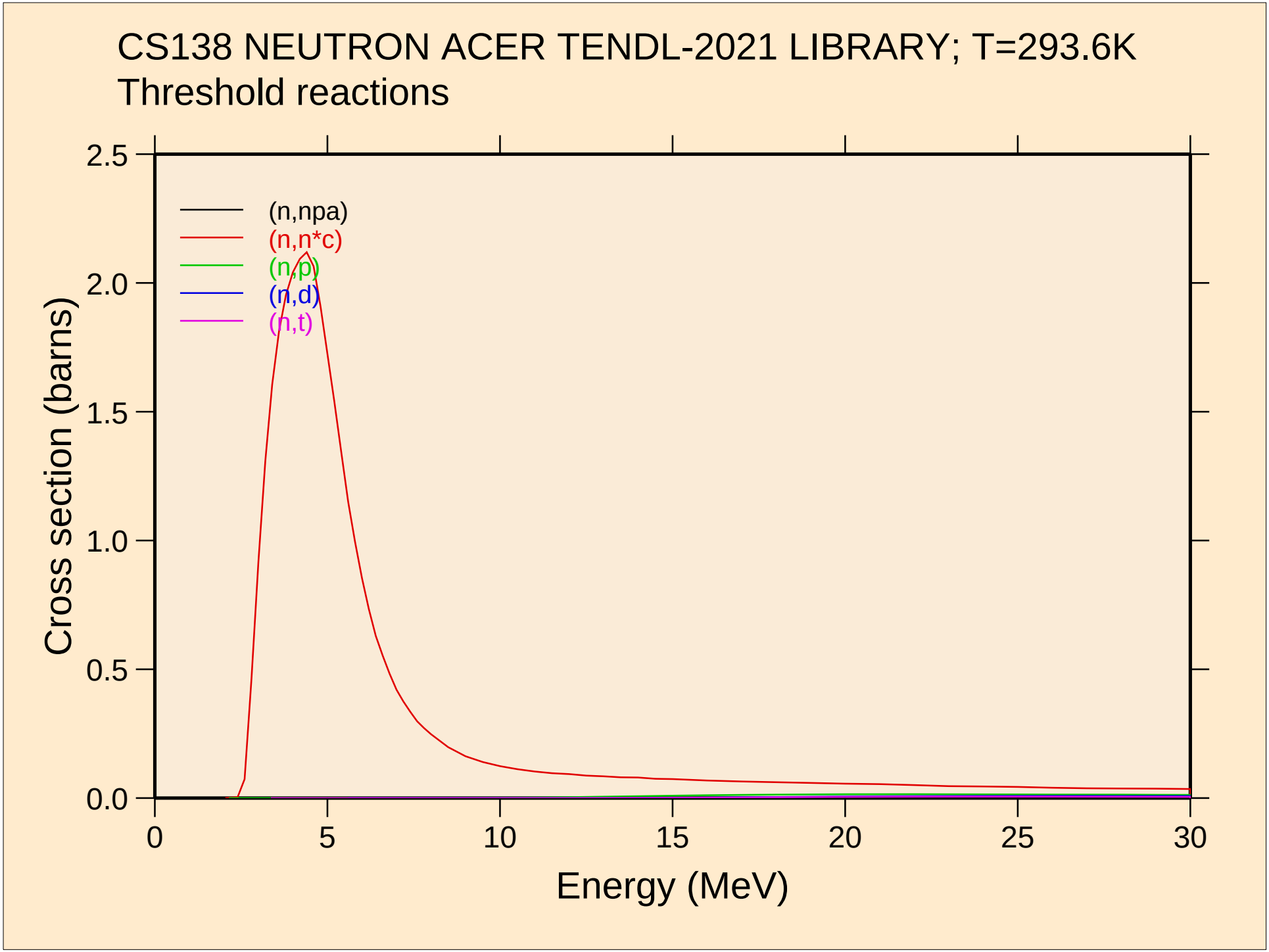

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
Inelastic levels
120
*10-3
100
80
60
40
20
0
Cross section (barns)
0
5
10
15
20
25
30
Energy (MeV)
(n,n*16)
(n,n*17)
(n,n*18)
(n,n*19)
(n,n*20)

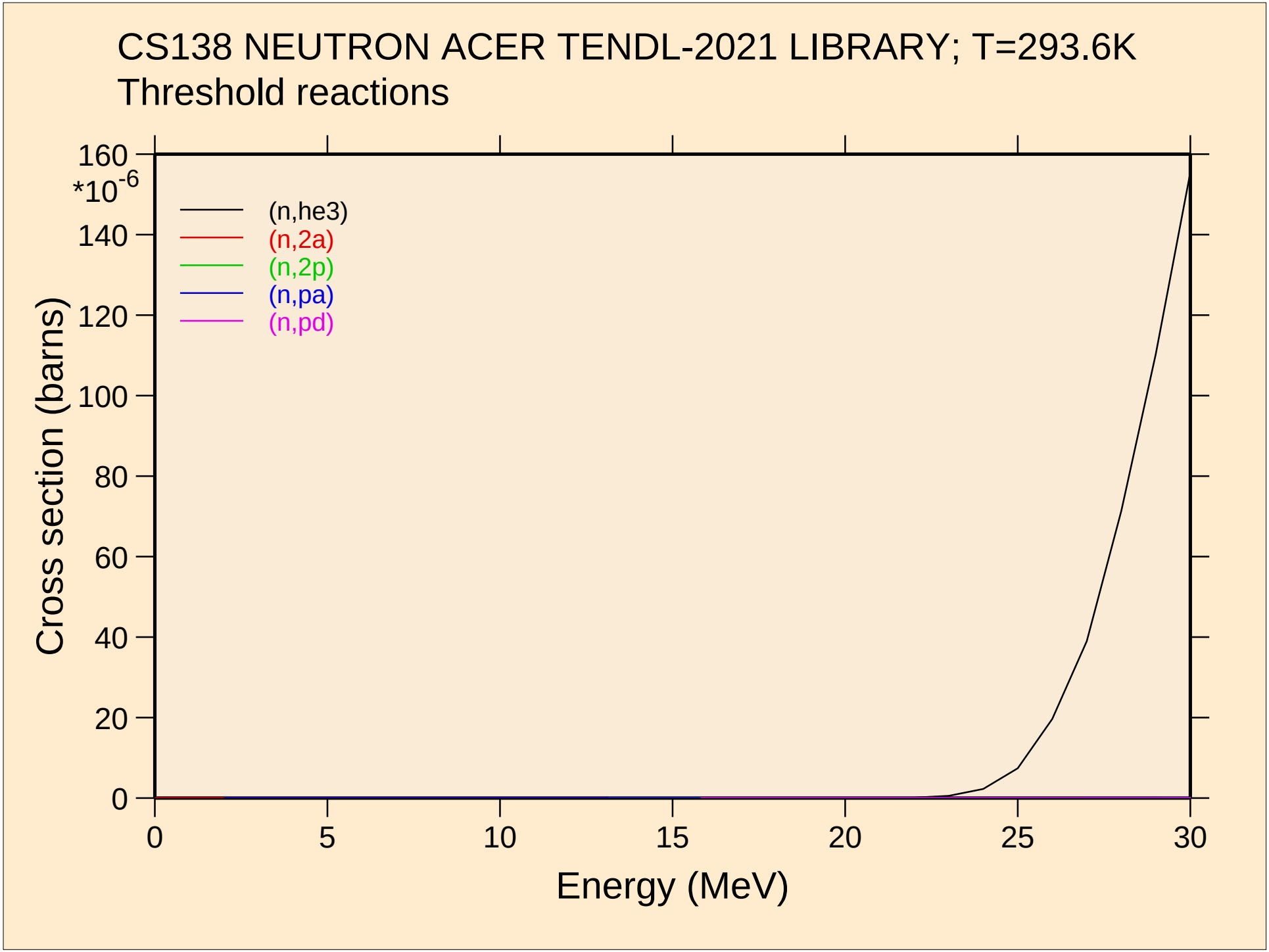

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
Inelastic levels
Cross section (barns)
*10-3
70
60
50
40
30
20
10
0
0
5
10
15
20
25
30
Energy (MeV)
(n,n*21)
(n,n*22)
(n,n*23)
(n,n*24)

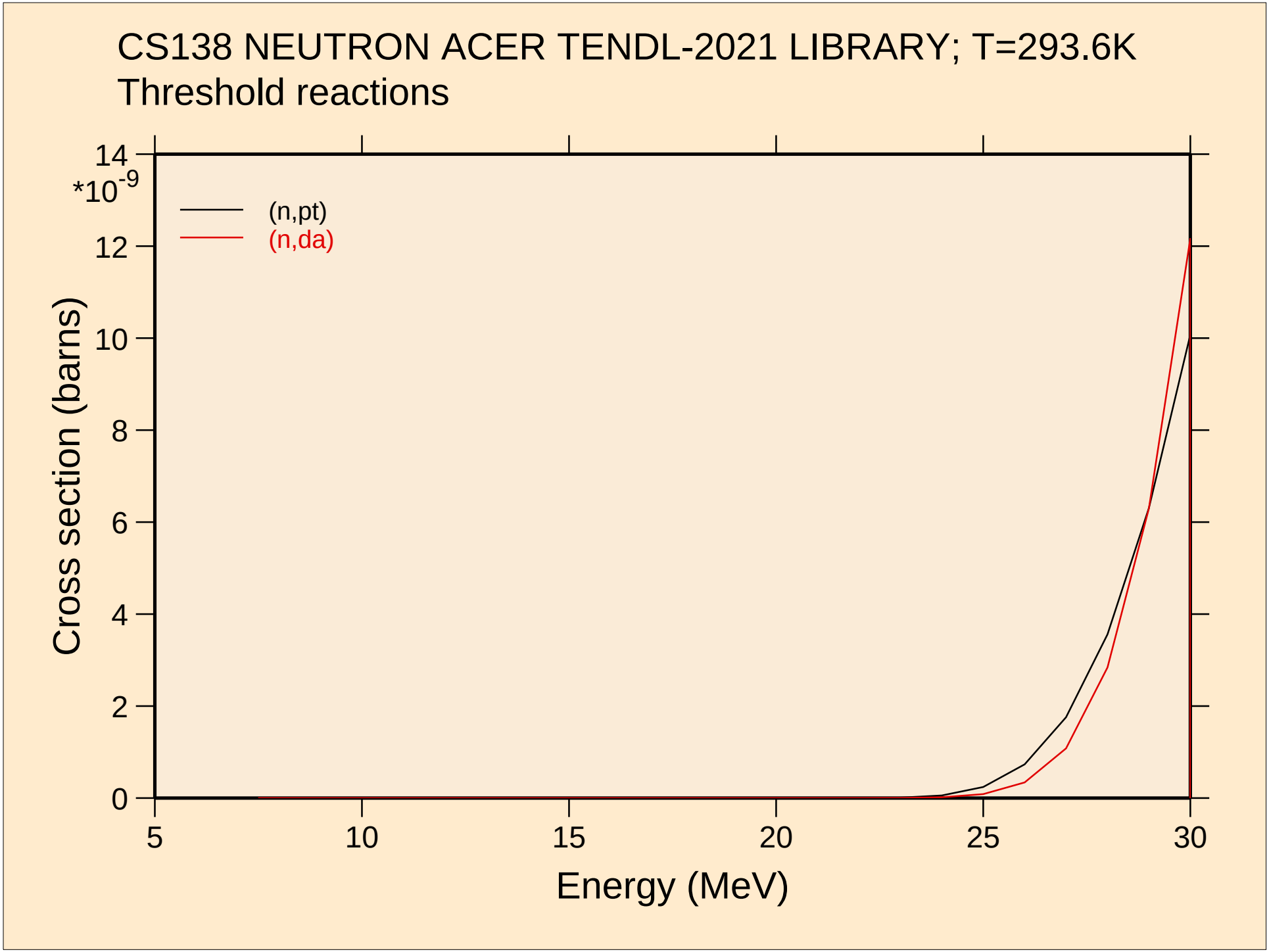

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
Threshold reactions
(n,x)
(n,2nd)
(n,2n)
(n,3n)
(n,n*)a
Cross section (barns)
Energy (MeV)
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
1.6
1.8
2.0
0
20
40
60
80
100
120
140
160
180
200

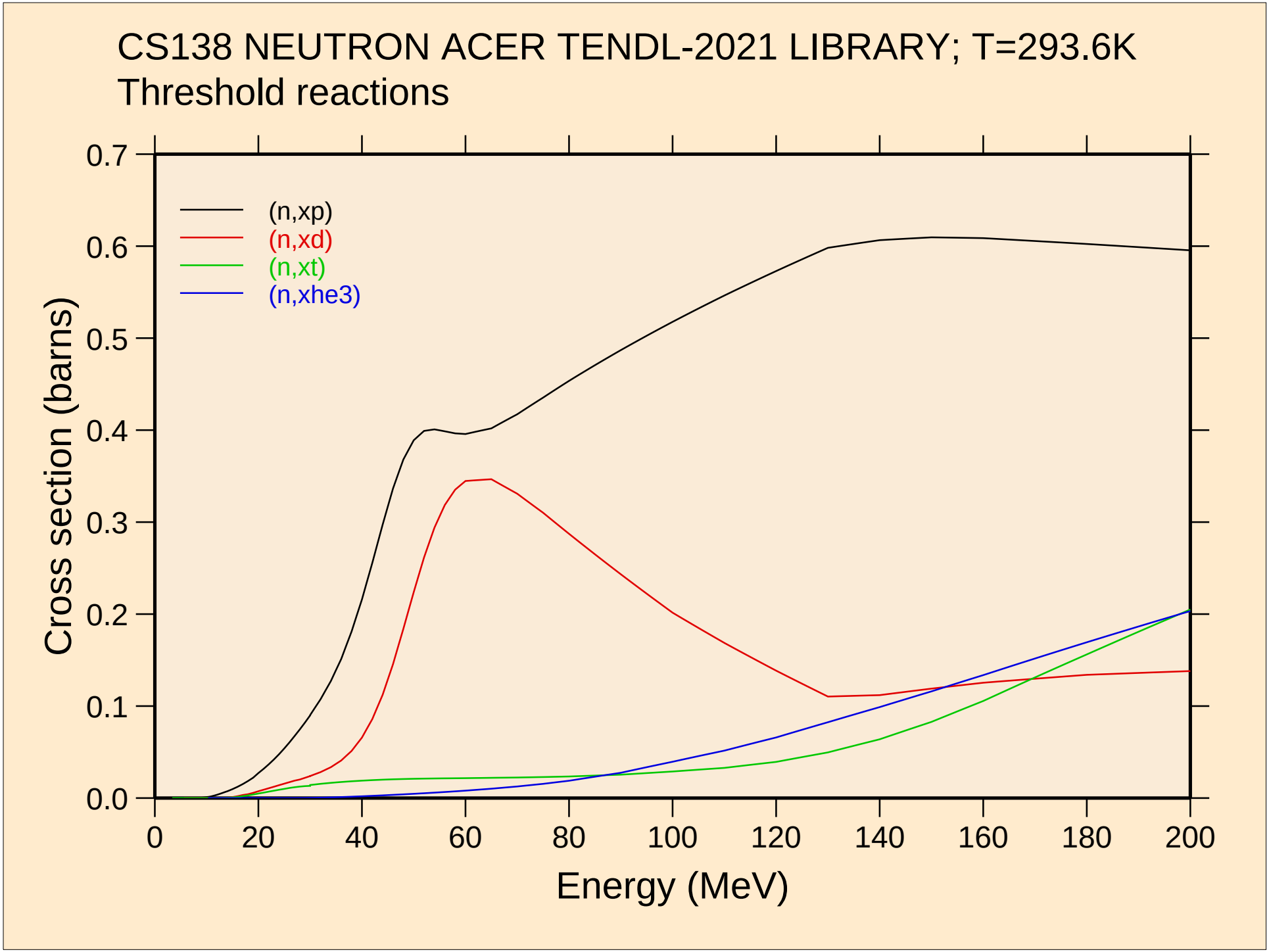

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
Threshold reactions
*10-3
40
35
30
25
20
15
10
5
0
Cross section (barns)
(n,2n)a
(n,3n)a
(n,n*)p
(n,n*)d
(n,n*)t
5
10
15
20
25
30
Energy (MeV)

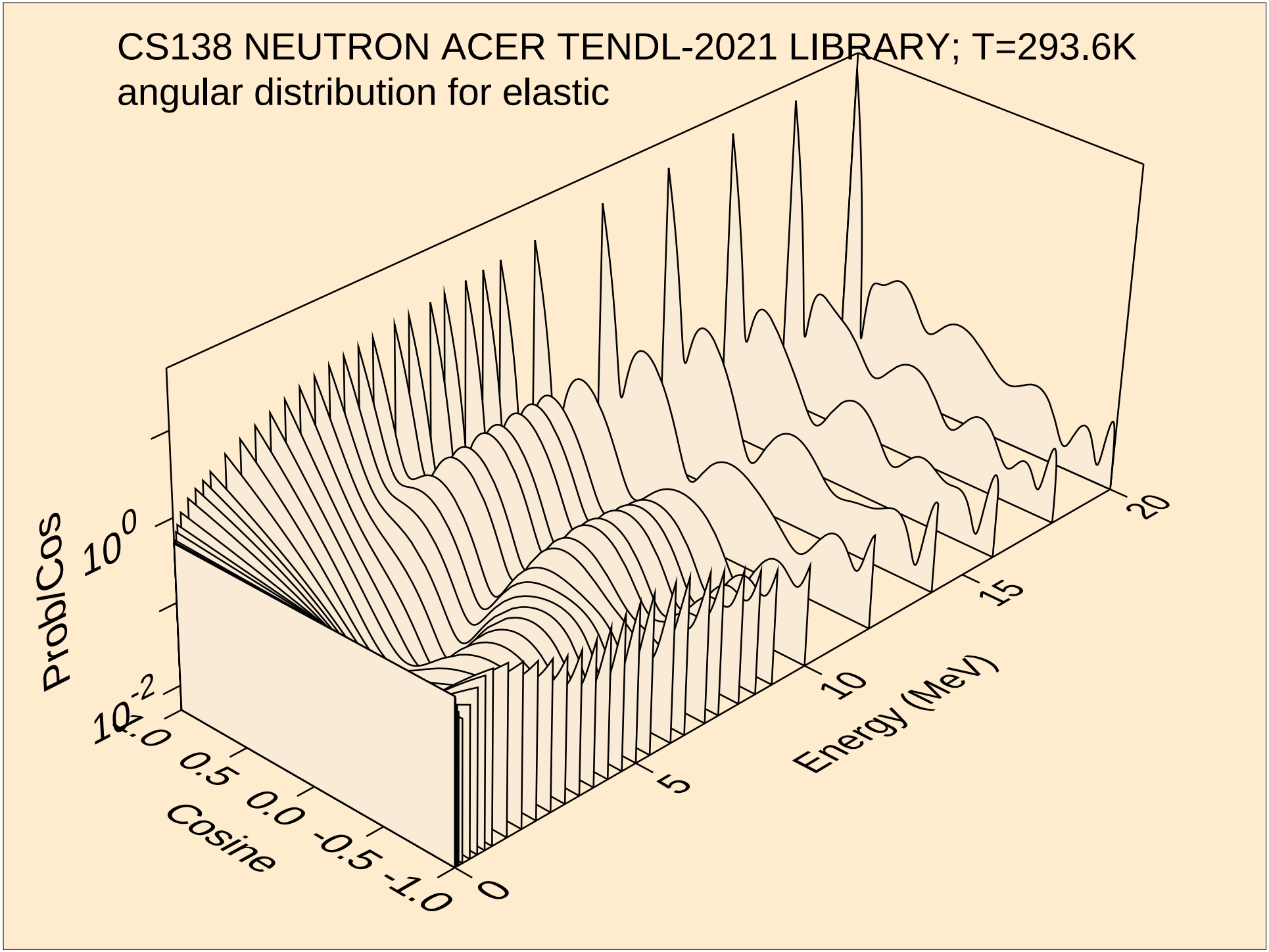

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
Threshold reactions
(n,n*)he3
(n,4n)
(n,2np)
(n,3np)
(n,2np)
Cross section (barns)
1.0
0.8
0.6
0.4
0.2
0.0
10
12
14
16
18
20
22
24
26
28
30
Energy (MeV)

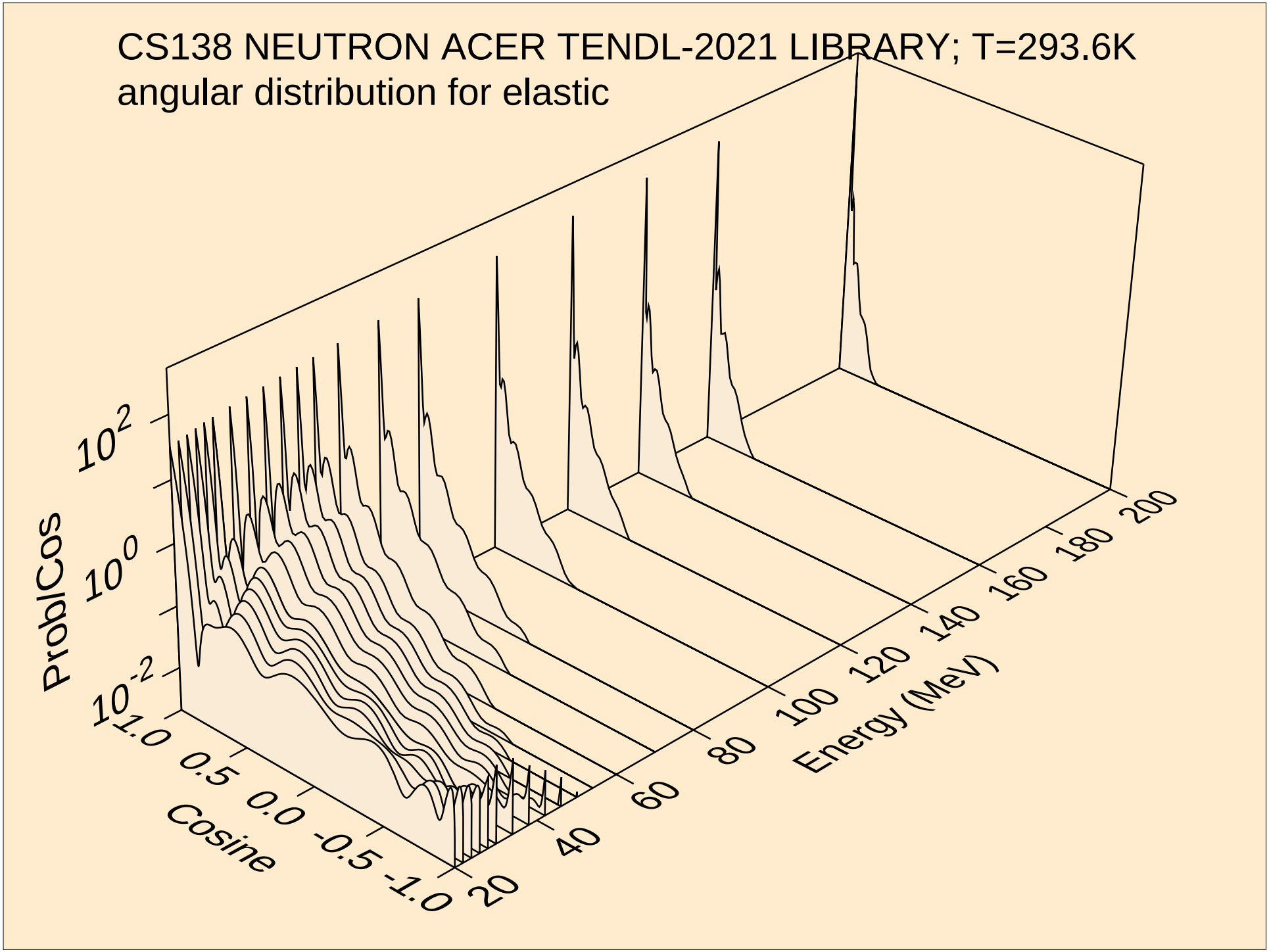

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
Threshold reactions
(n,npa)
(n,n*c)
(n,p)
(n,d)
(n,t)
Cross section (barns)
Energy (MeV)
0.0
0.5
1.0
1.5
2.0
2.5
0
5
10
15
20
25
30

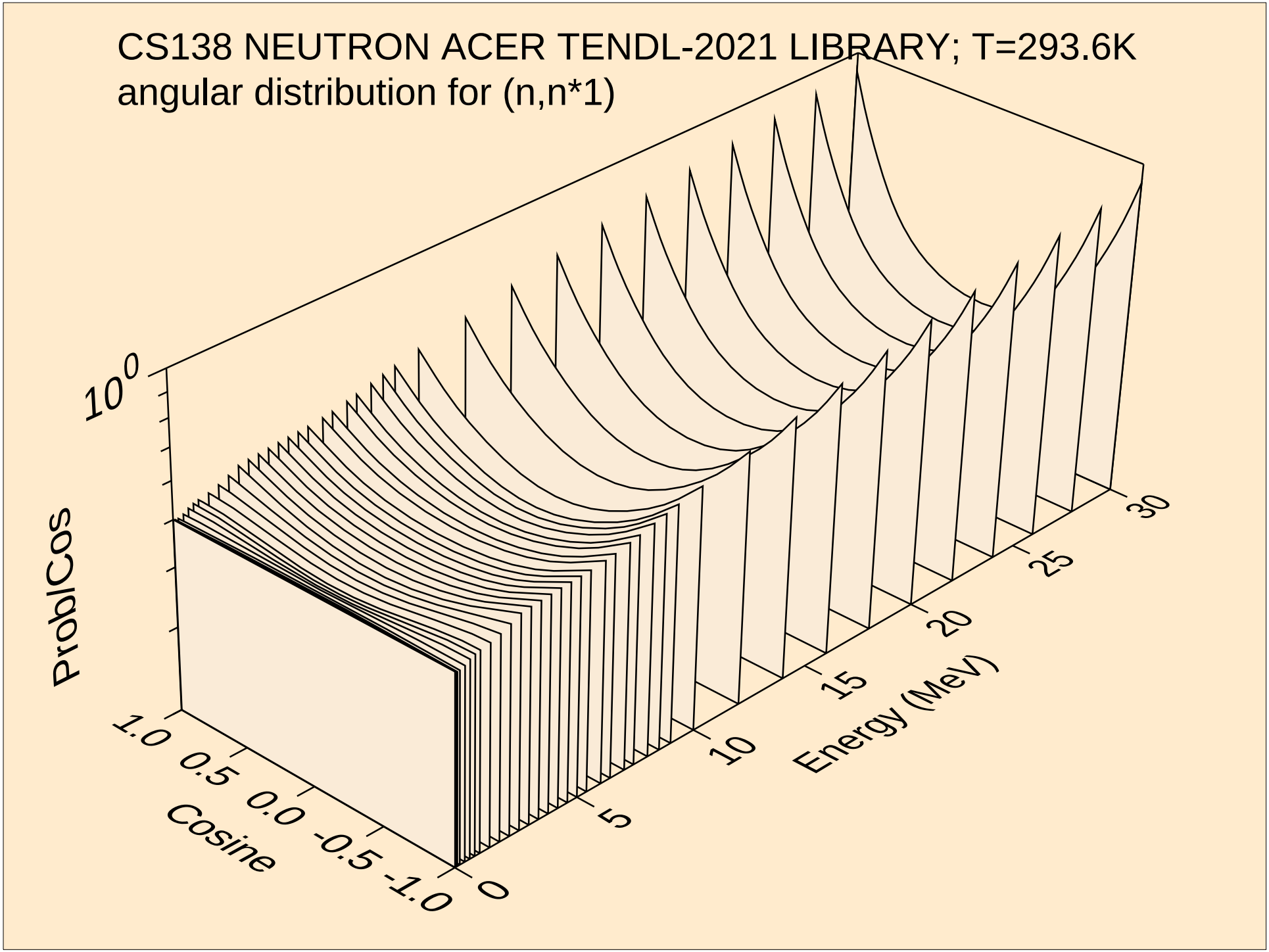

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
Threshold reactions
*10-6
160
140
120
100
80
60
40
20
0
(n,he3)
(n,2a)
(n,2p)
(n,pa)
(n,pd)
Cross section (barns)
0
5
10
15
20
25
30
Energy (MeV)

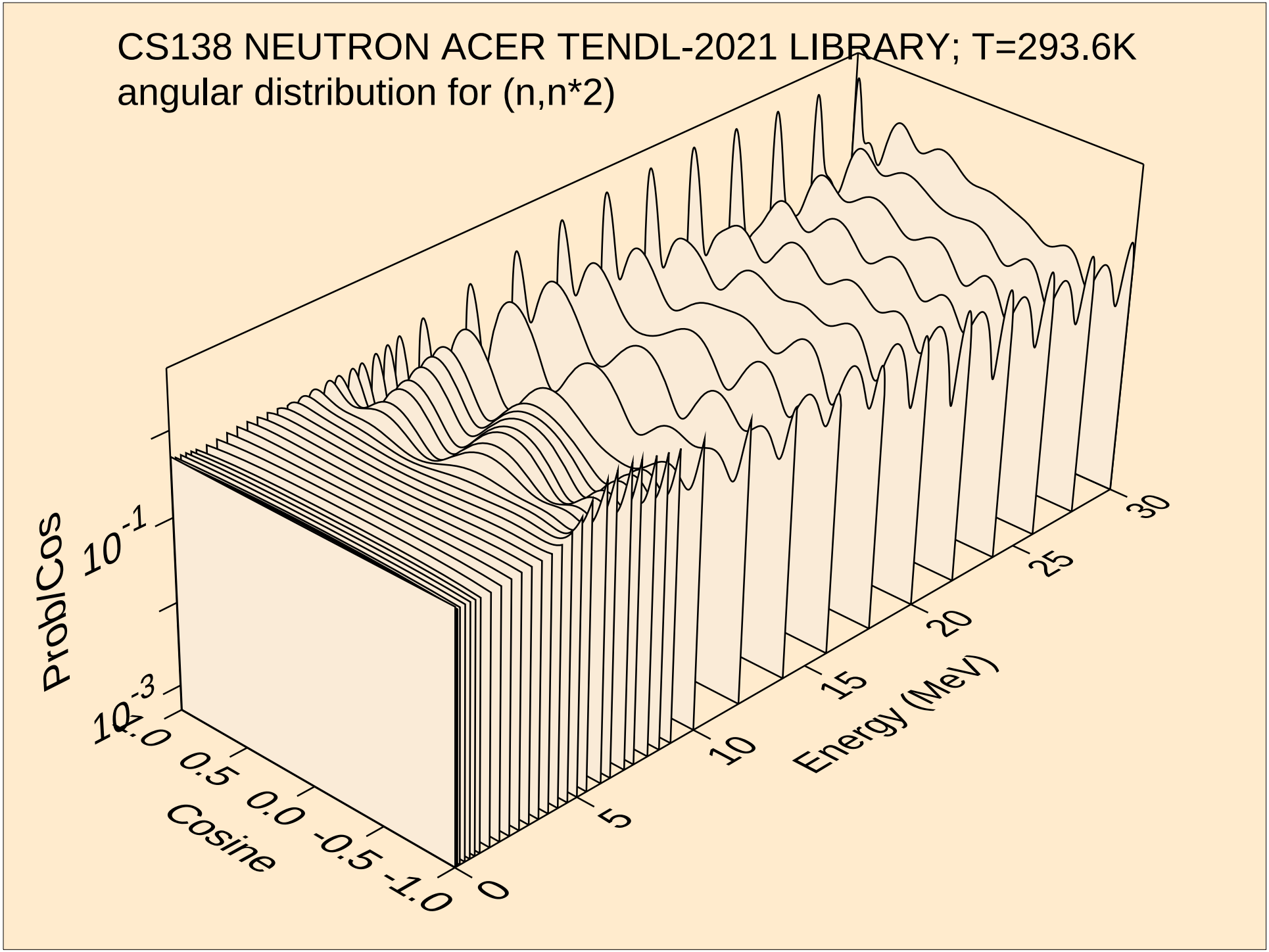

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
Threshold reactions
*10-9
(n,pt)
(n,da)
Cross section (barns)
Energy (MeV)
0
2
4
6
8
10
12
14
5
10
15
20
25
30

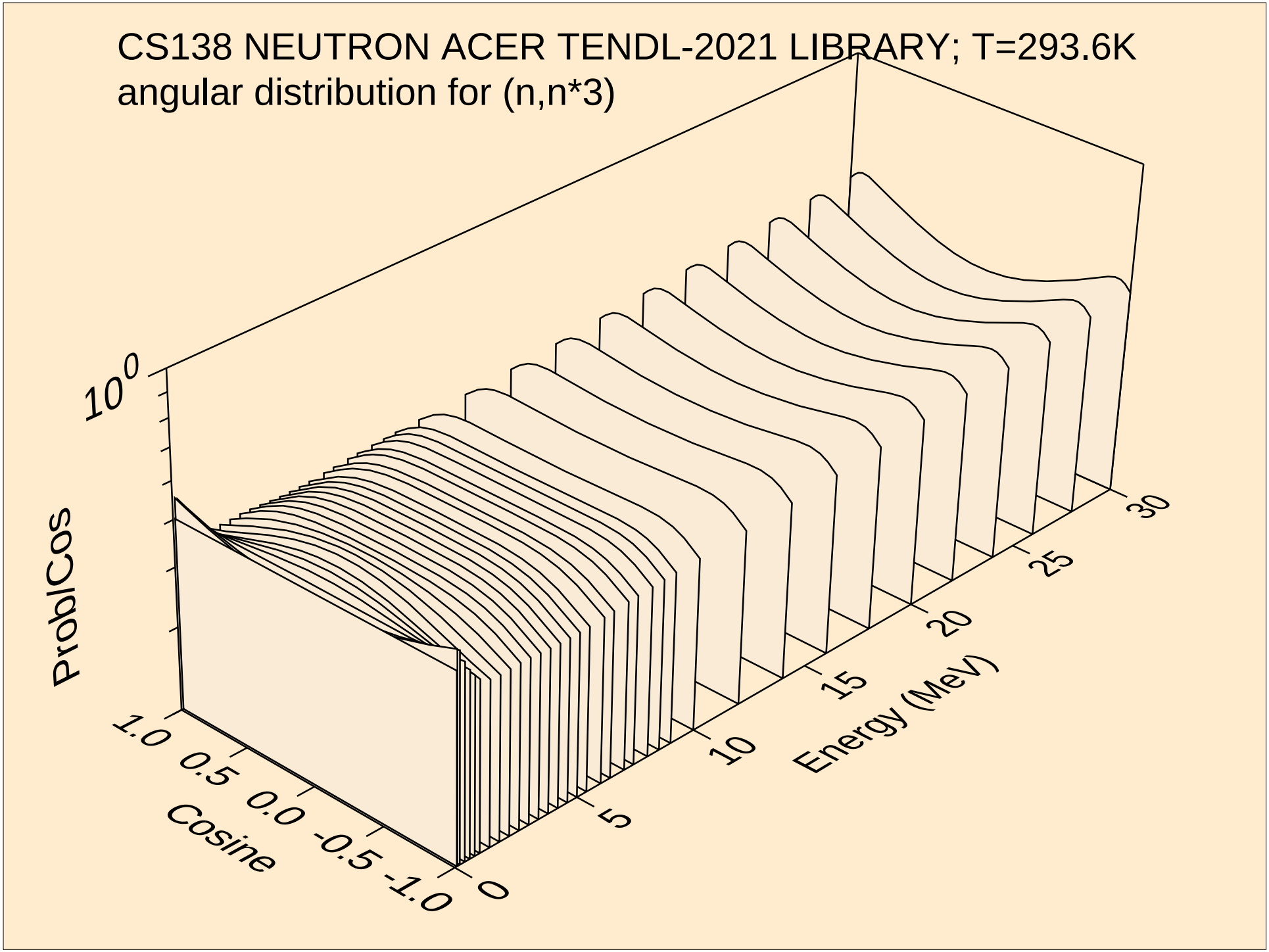

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
Threshold reactions
(n,xp)
(n,xd)
(n,xt)
(n,xhe3)
Cross section (barns)
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0
20
40
60
80
100
120
140
160
180
200
Energy (MeV)

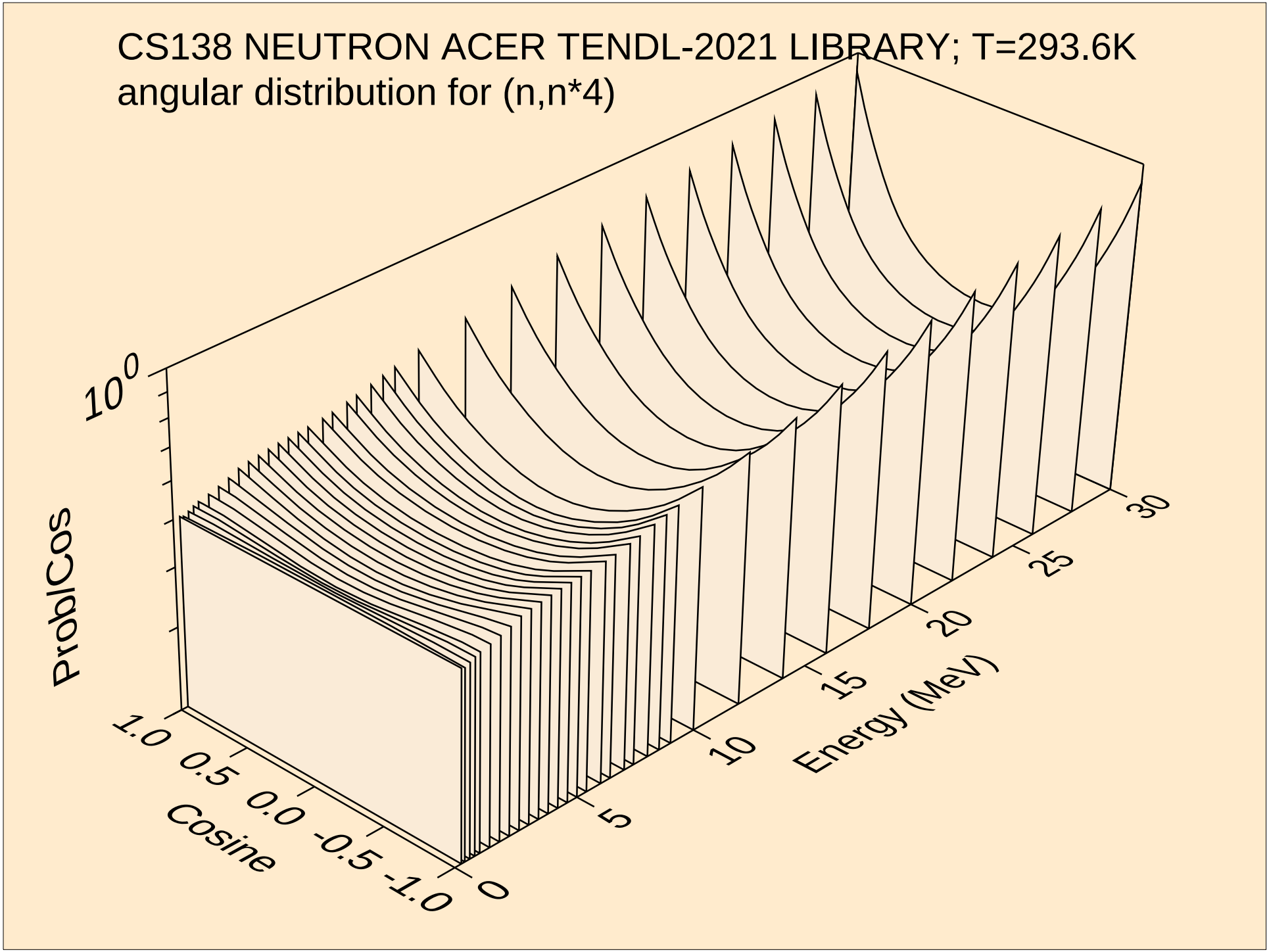

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
angular distribution for elastic
ProbICos
10^0
10^-2
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
Energy (MeV)

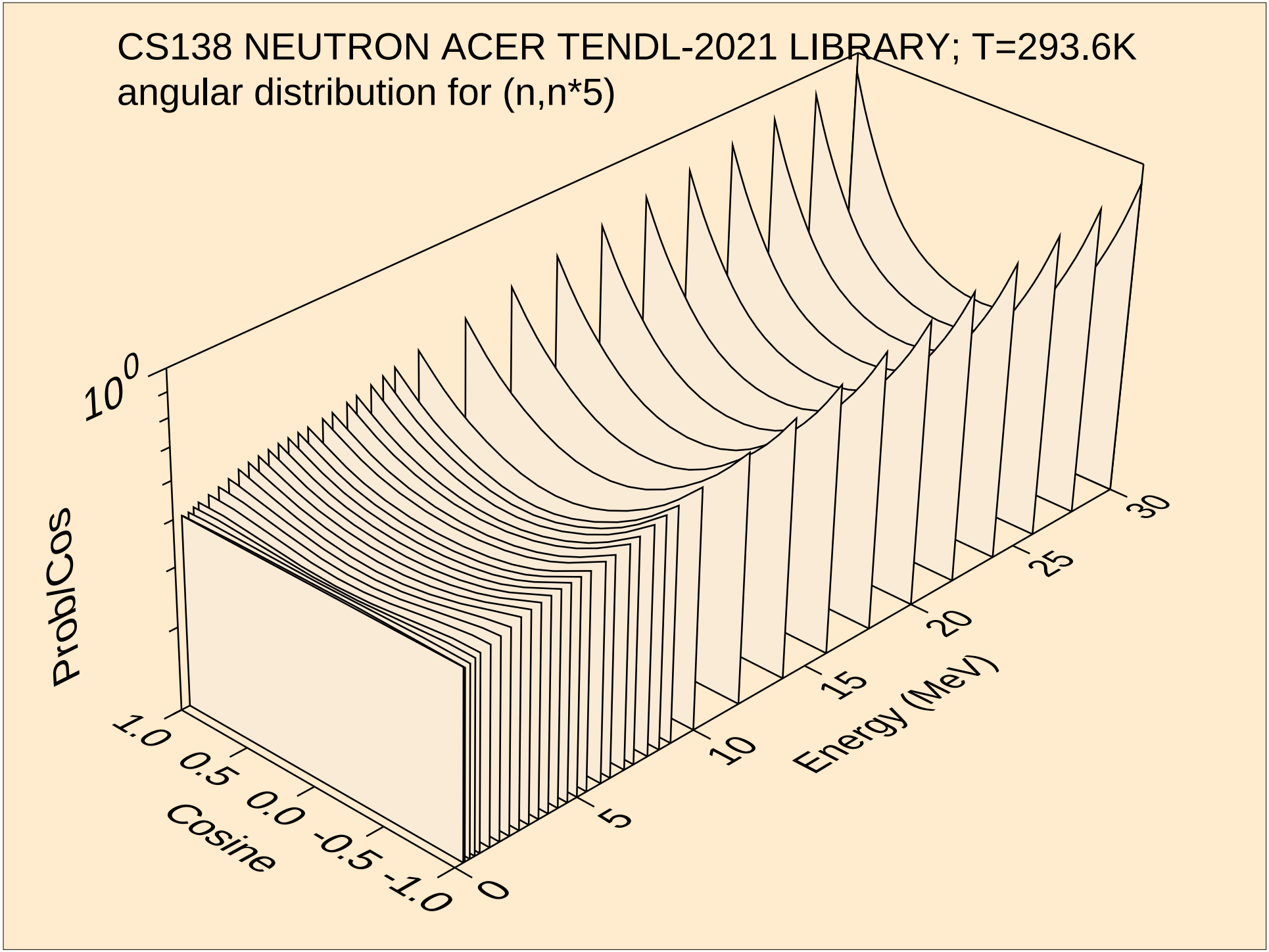

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
angular distribution for elastic
ProbICos
10^{2}
10^{0}
10^{-2}
1.0
0.5
0.0
-0.5
-1.0
Cosine
20
40
60
80
100
120
140
160
180
200
Energy (MeV)

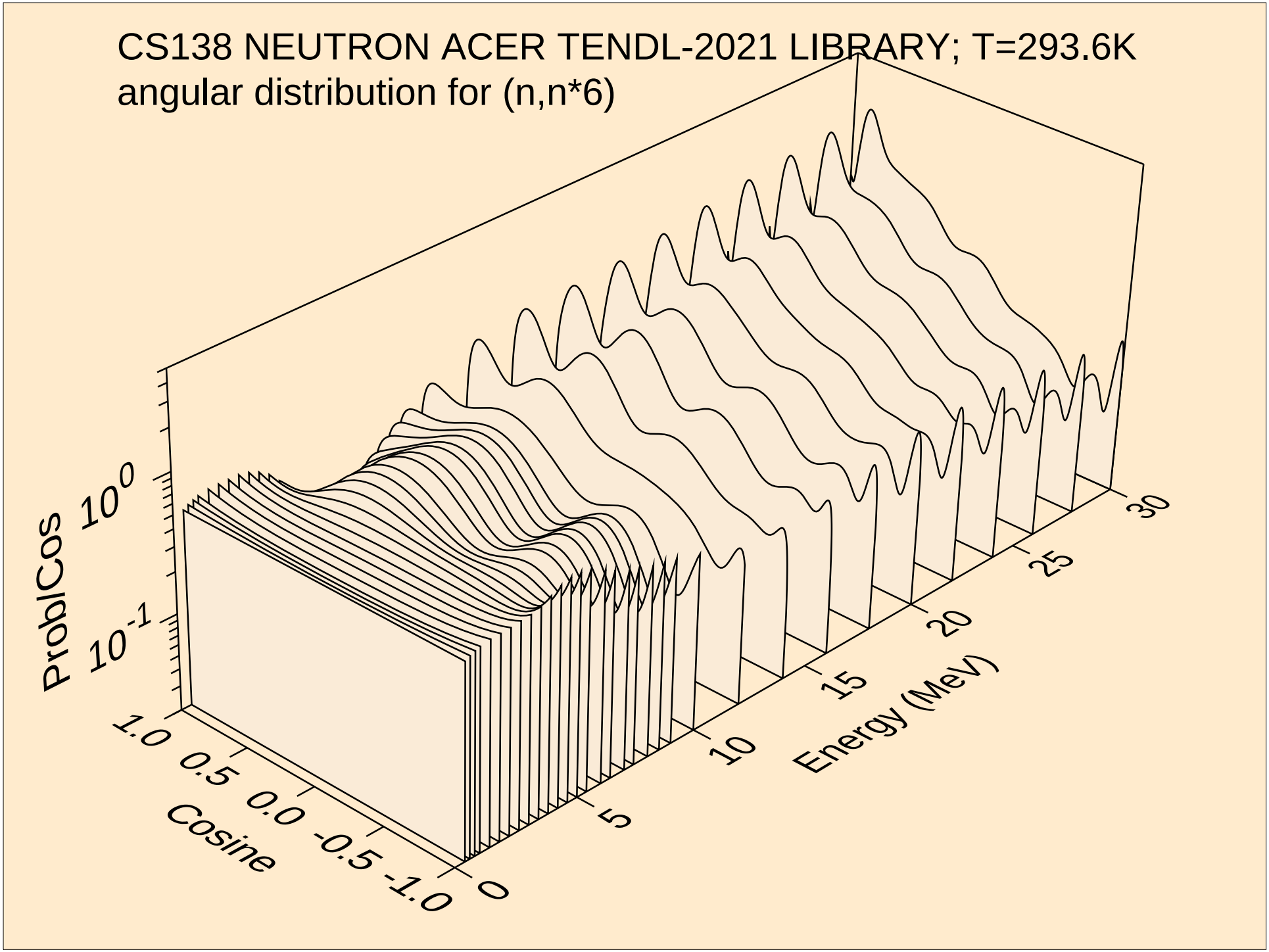

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
angular distribution for (n,n*1)
10^0
Prob\Cos
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
25
30
Energy (MeV)

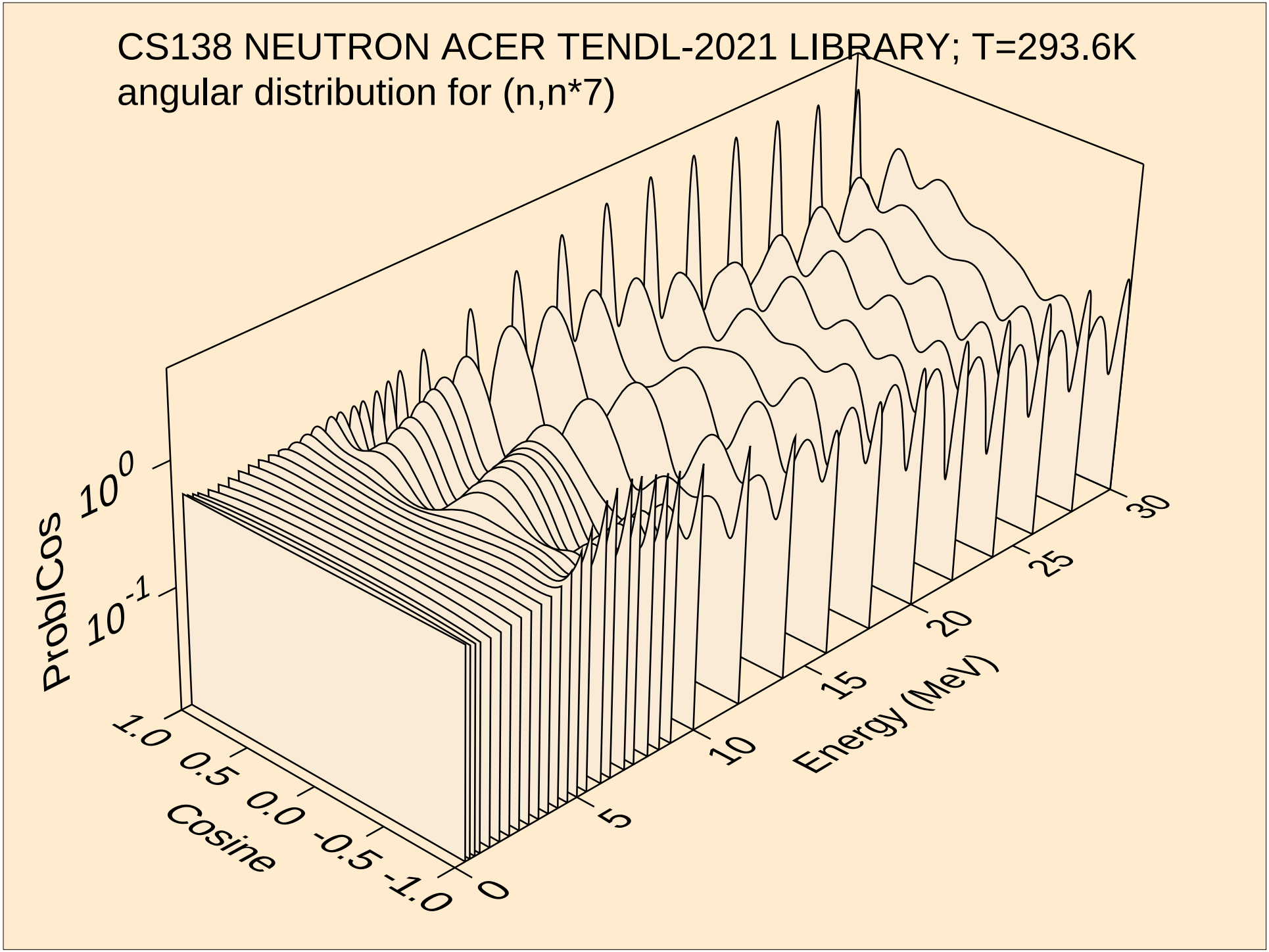

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
angular distribution for (n,n*2)
ProbCos
10-1
10-3
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
25
30
Energy (MeV)

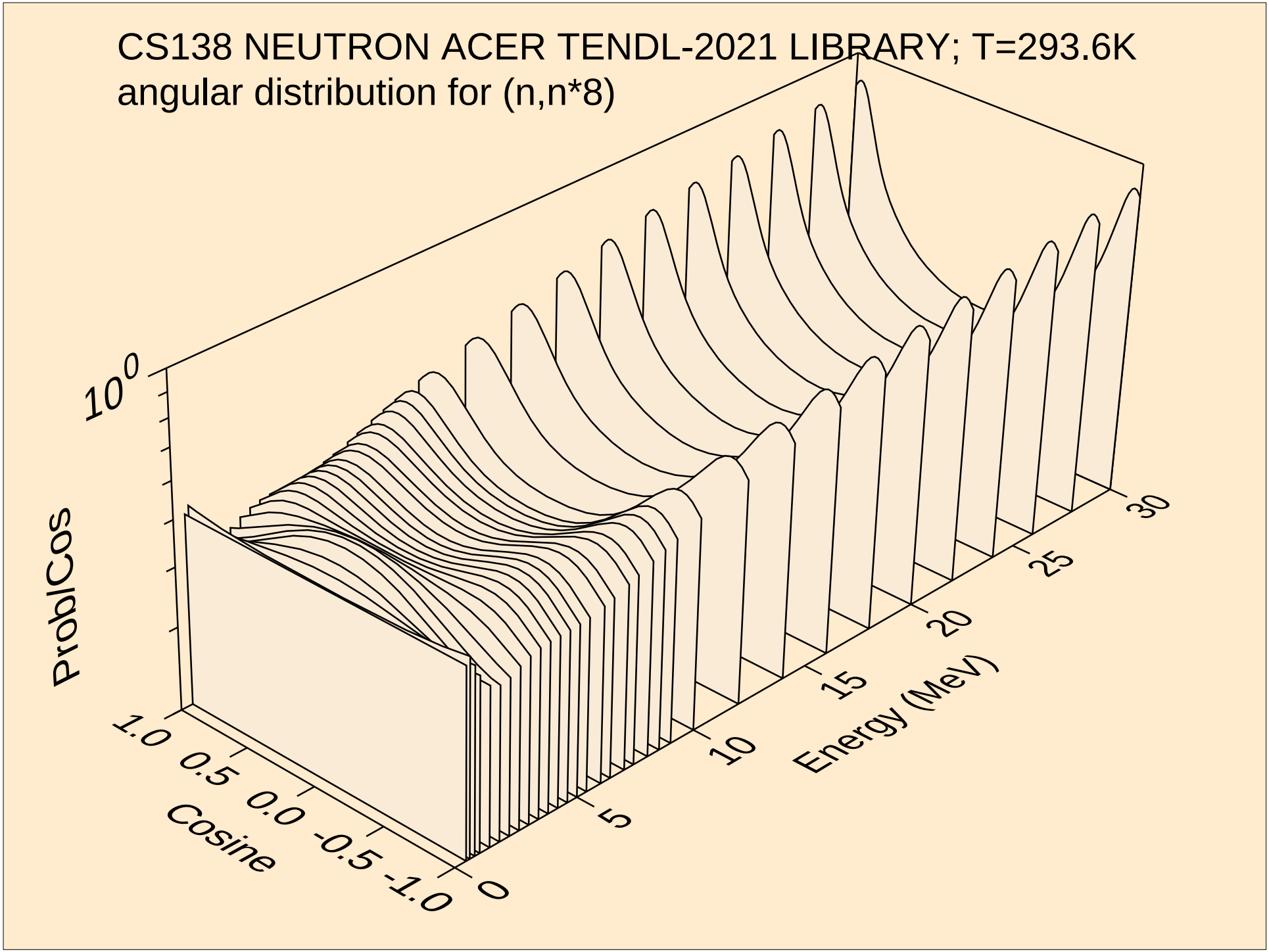

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
angular distribution for (n,n*3)
10^0
ProbICos
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
25
30
Energy (MeV)

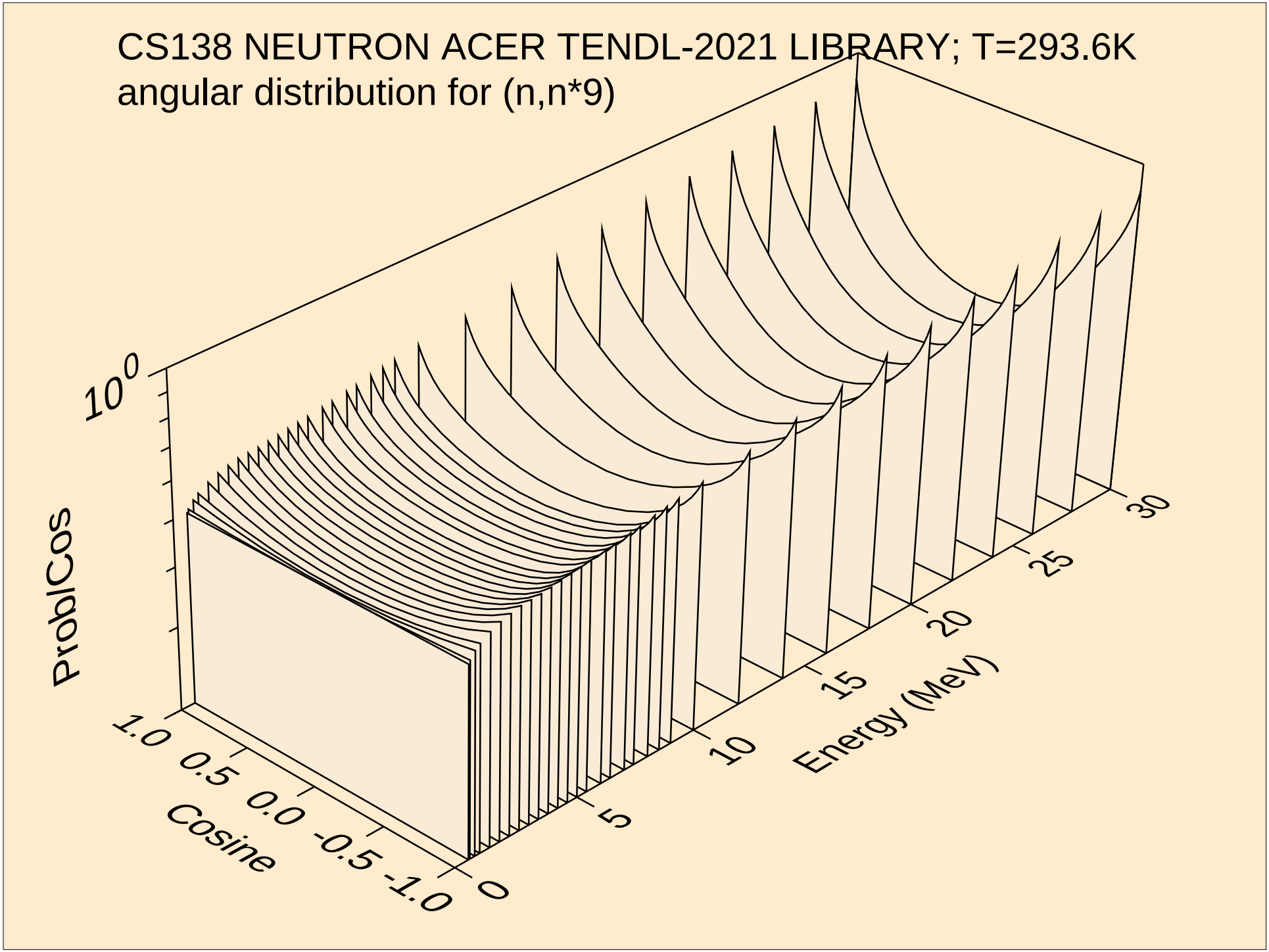

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
angular distribution for (n,n*4)
ProbICos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
25
30
Energy (MeV)

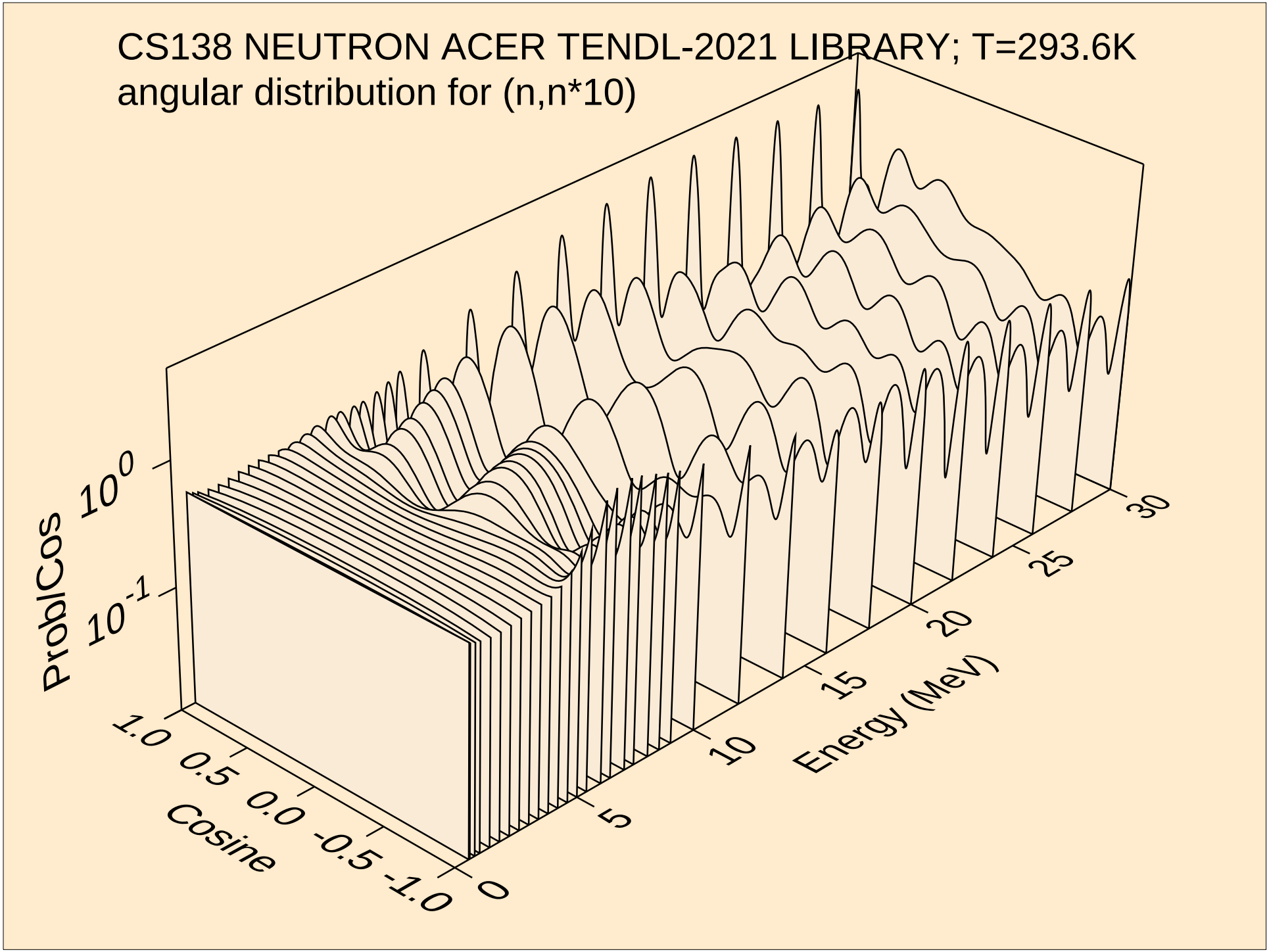

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
angular distribution for (n,n*5)
ProbICos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
25
30
Energy (MeV)

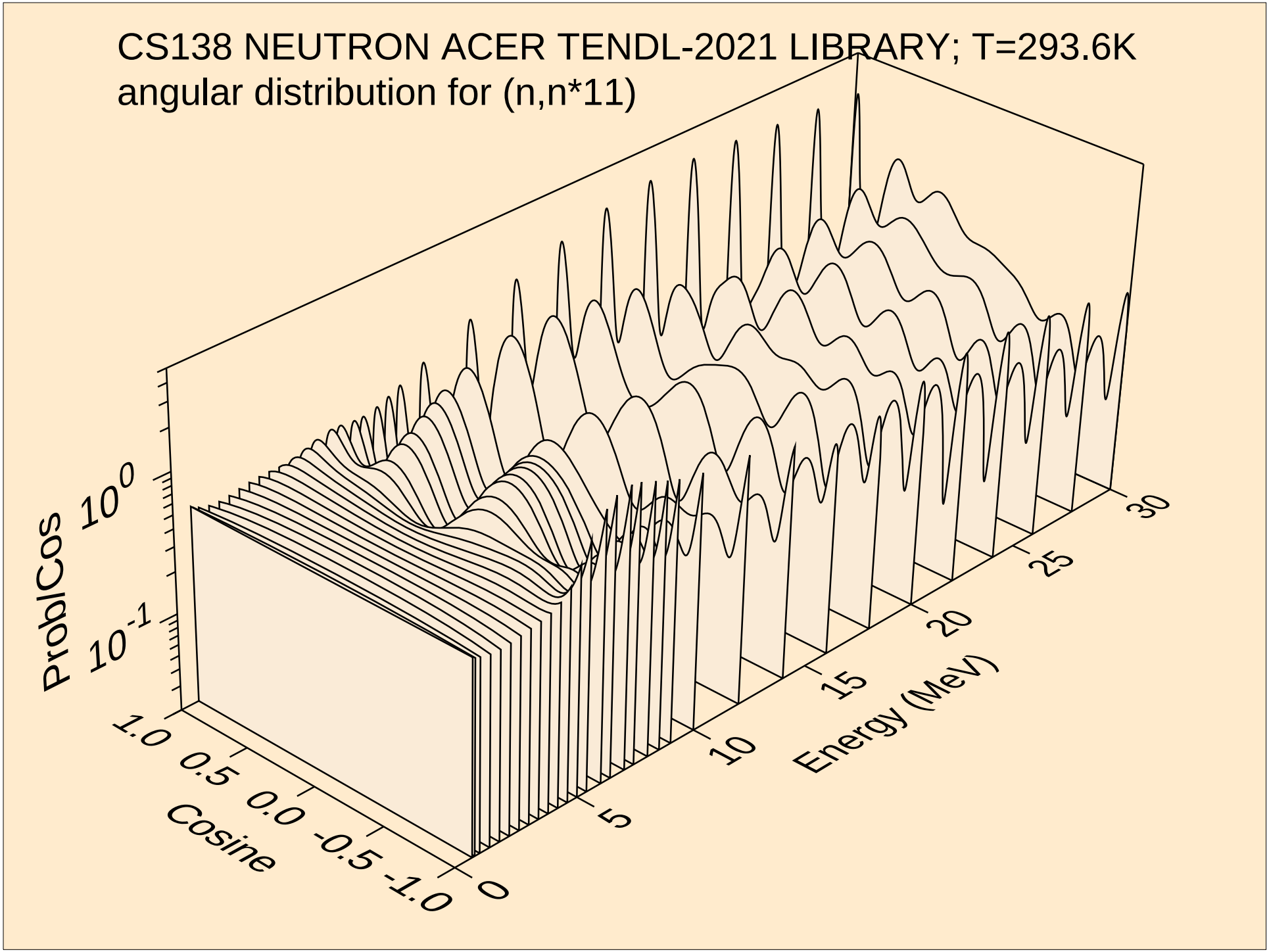

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
angular distribution for (n,n*6)
ProbICos
10^0
10^-1
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
25
30
Energy (MeV)

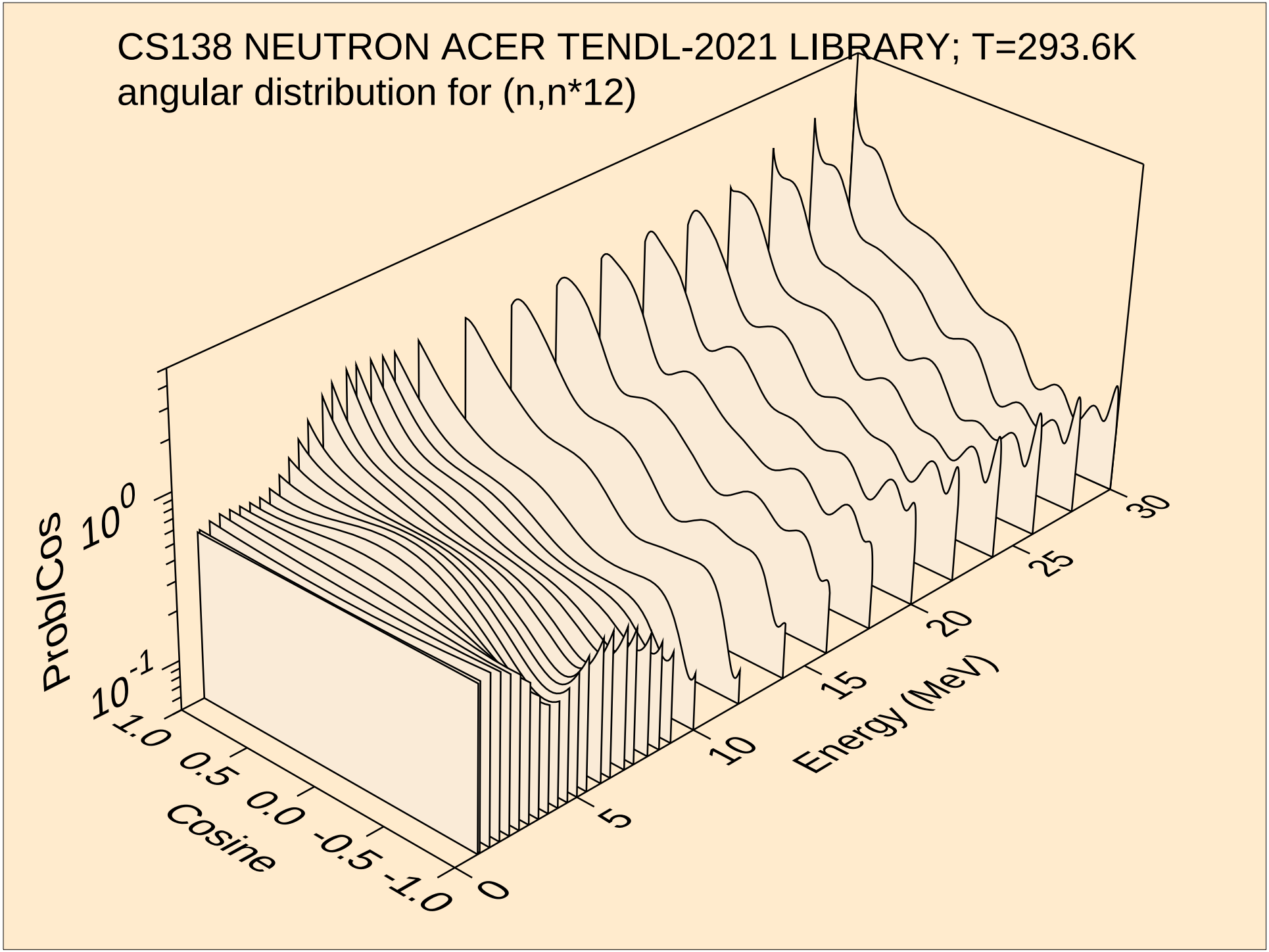

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
angular distribution for (n,n*7)
Prob\Cos
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
25
30
Energy (MeV)

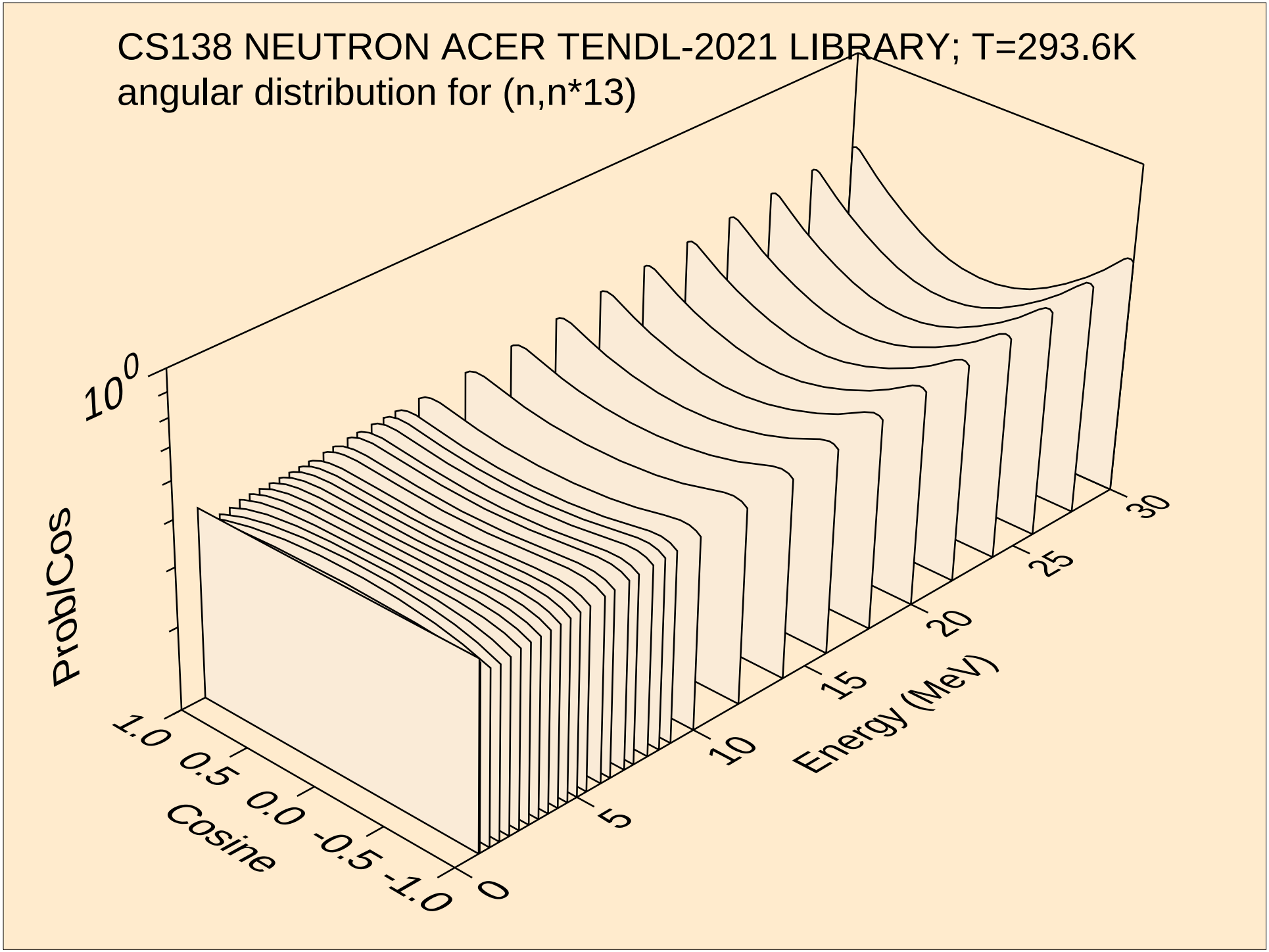

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
angular distribution for (n,n*8)
10^0
ProbICos
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
25
30
Energy (MeV)

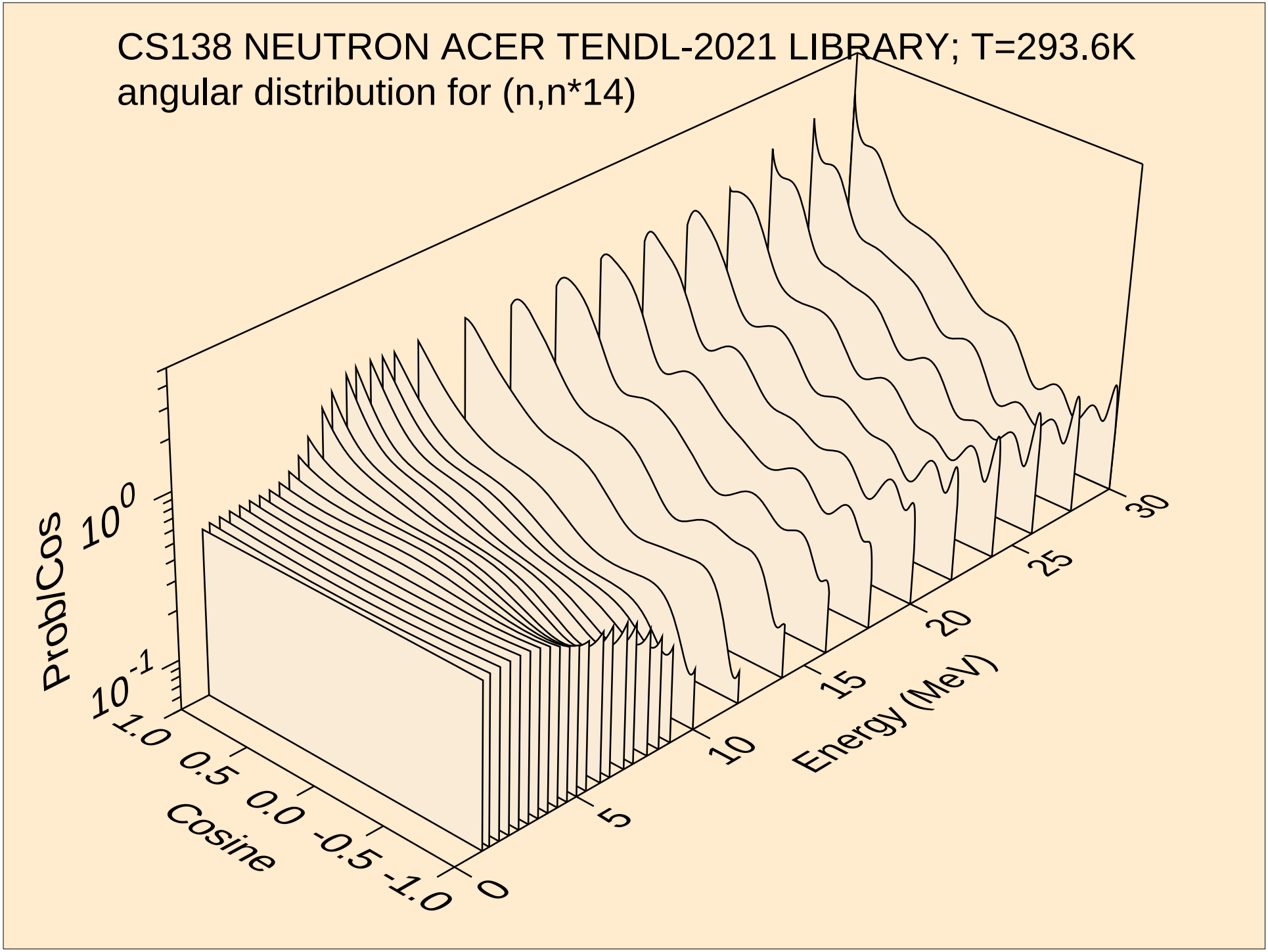

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
angular distribution for (n,n*9)
10^0
ProbICos
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
25
30
Energy (MeV)

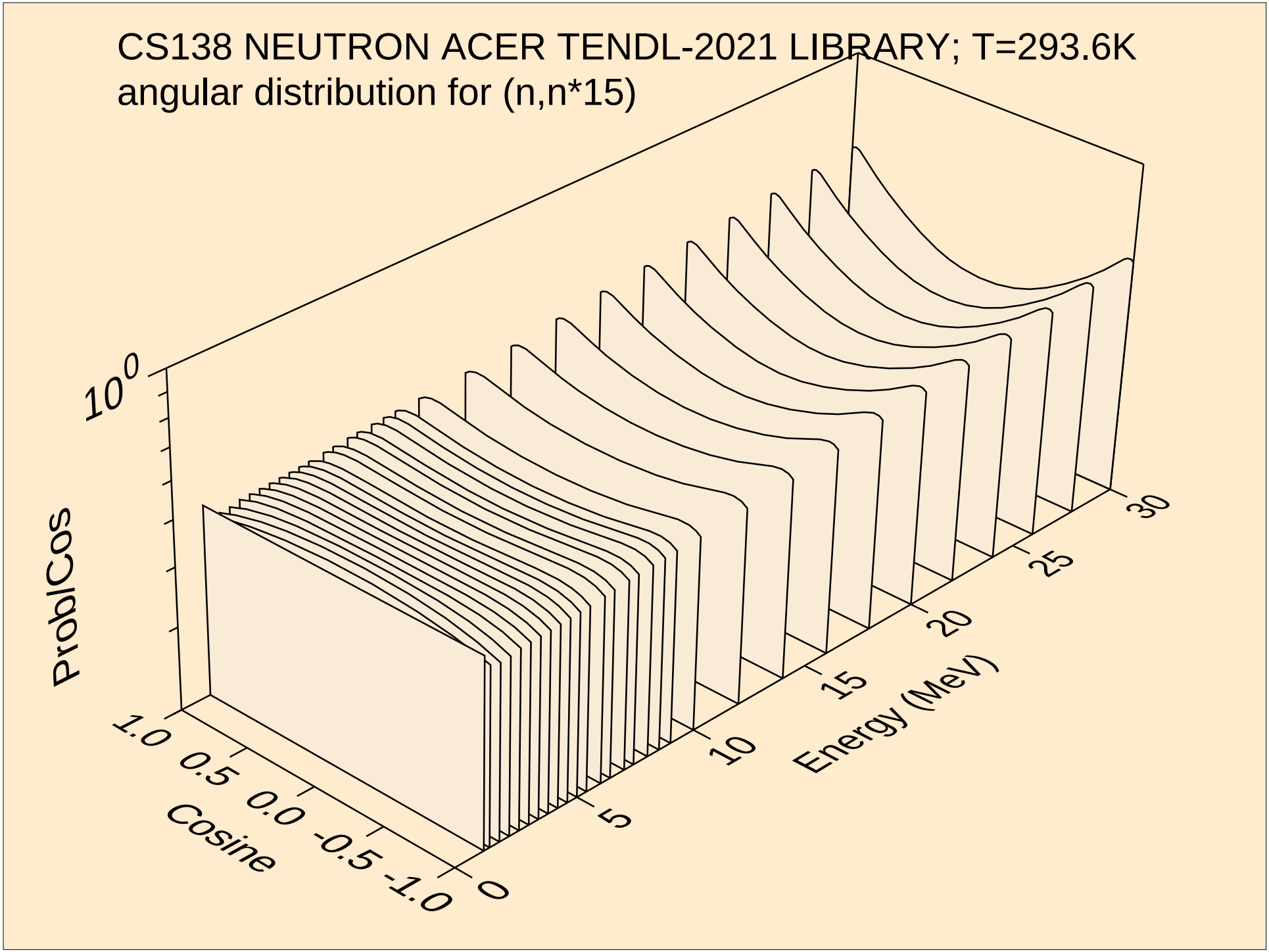

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
angular distribution for (n,n*10)
Prob\Cos
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
25
30
Energy (MeV)

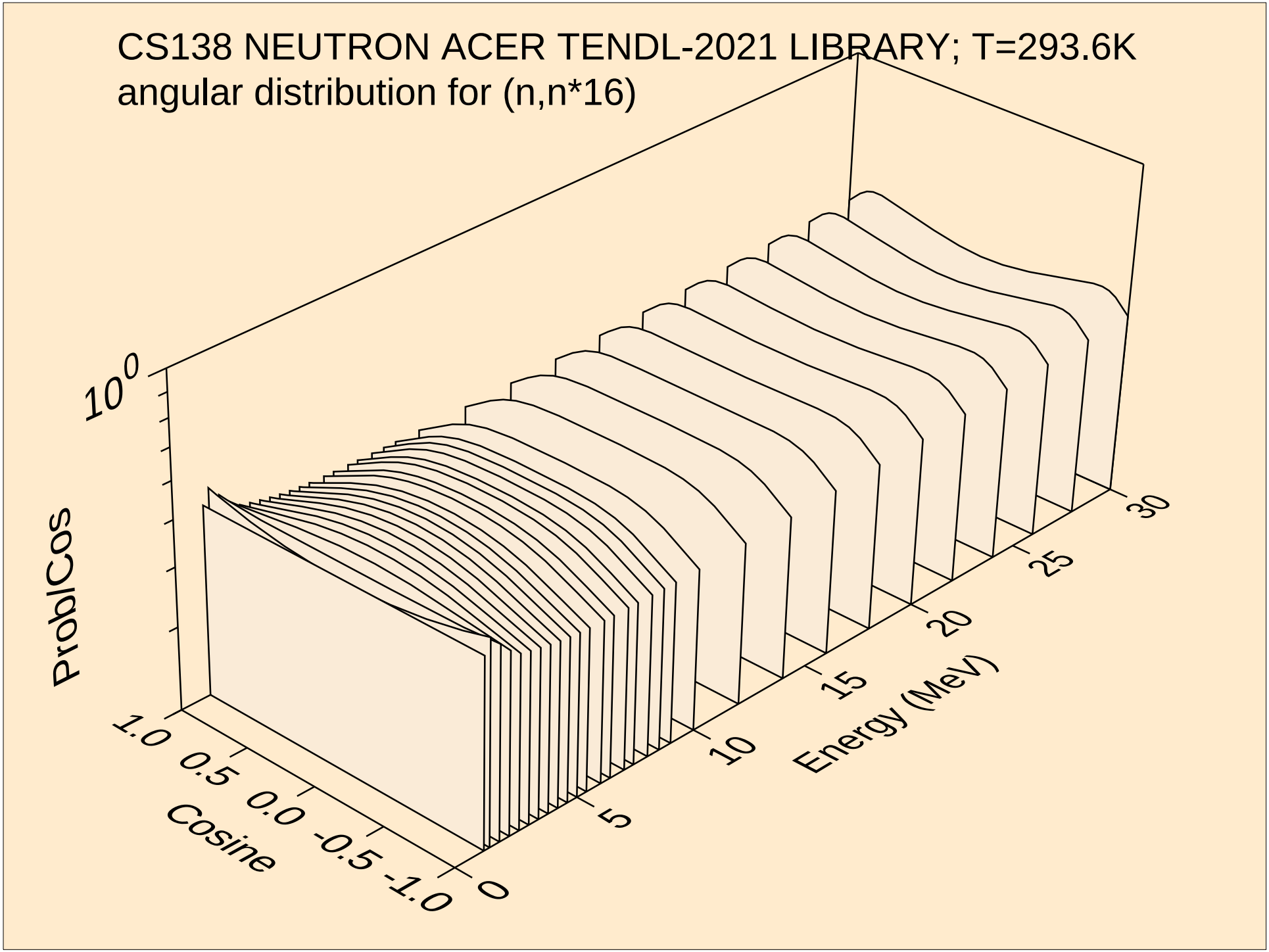

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
angular distribution for (n,n*11)
Prob\Cos
10^0
10^-1
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
25
30
Energy (MeV)

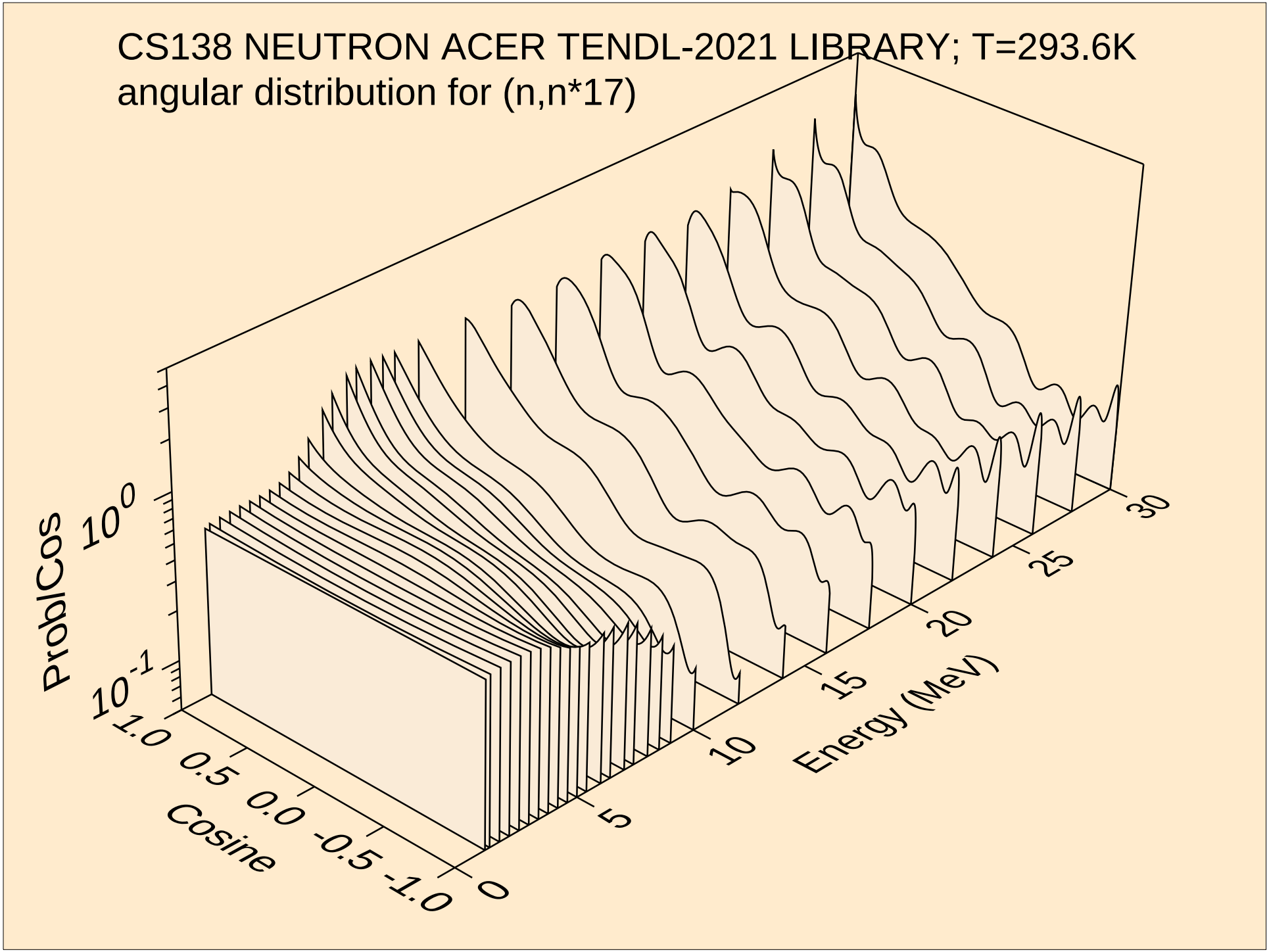

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
angular distribution for (n,n*12)
ProbCos
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
25
30
Energy (MeV)

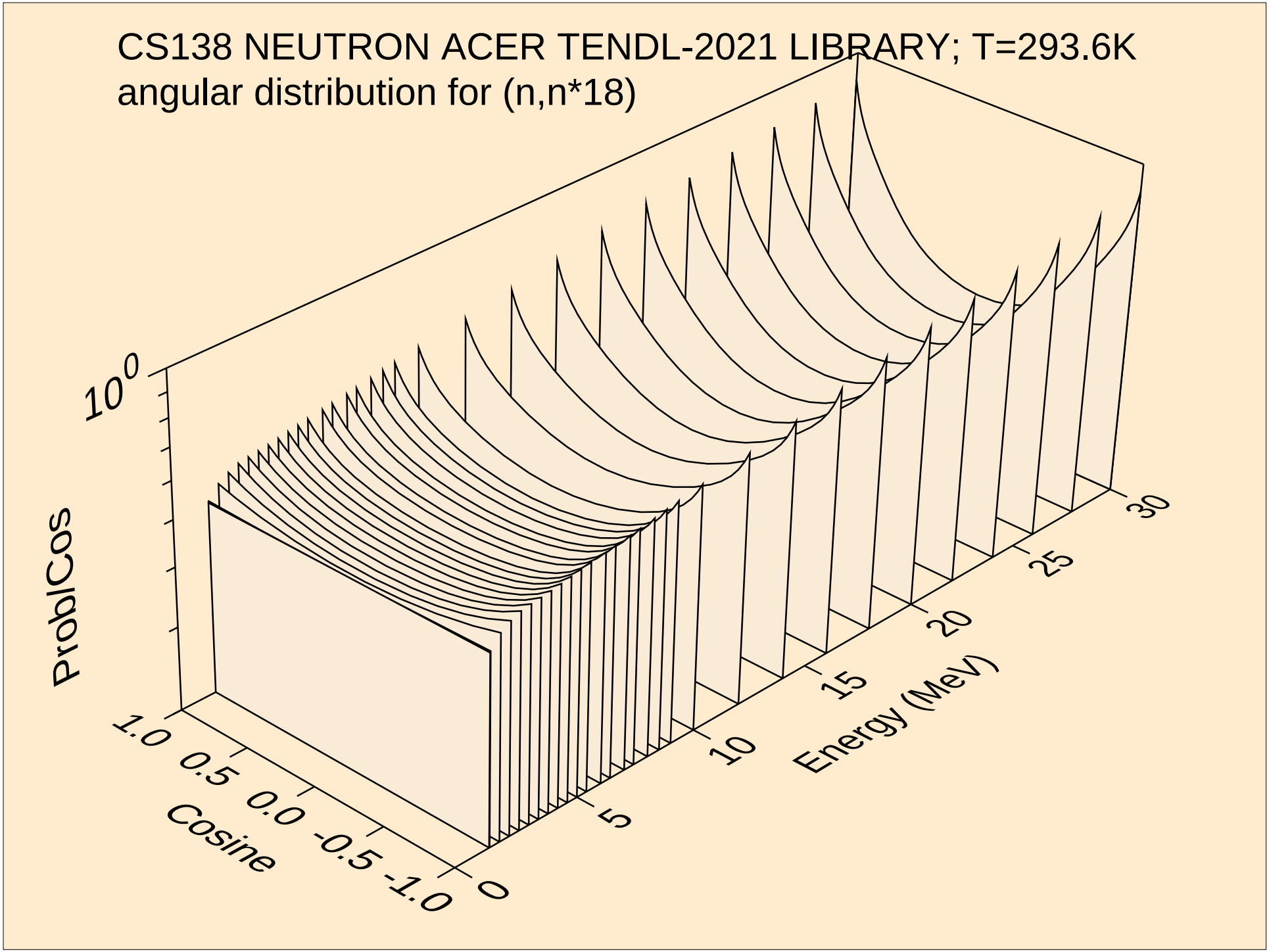

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
angular distribution for (n,n*13)
10^0
ProbICos
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
25
30
Energy (MeV)

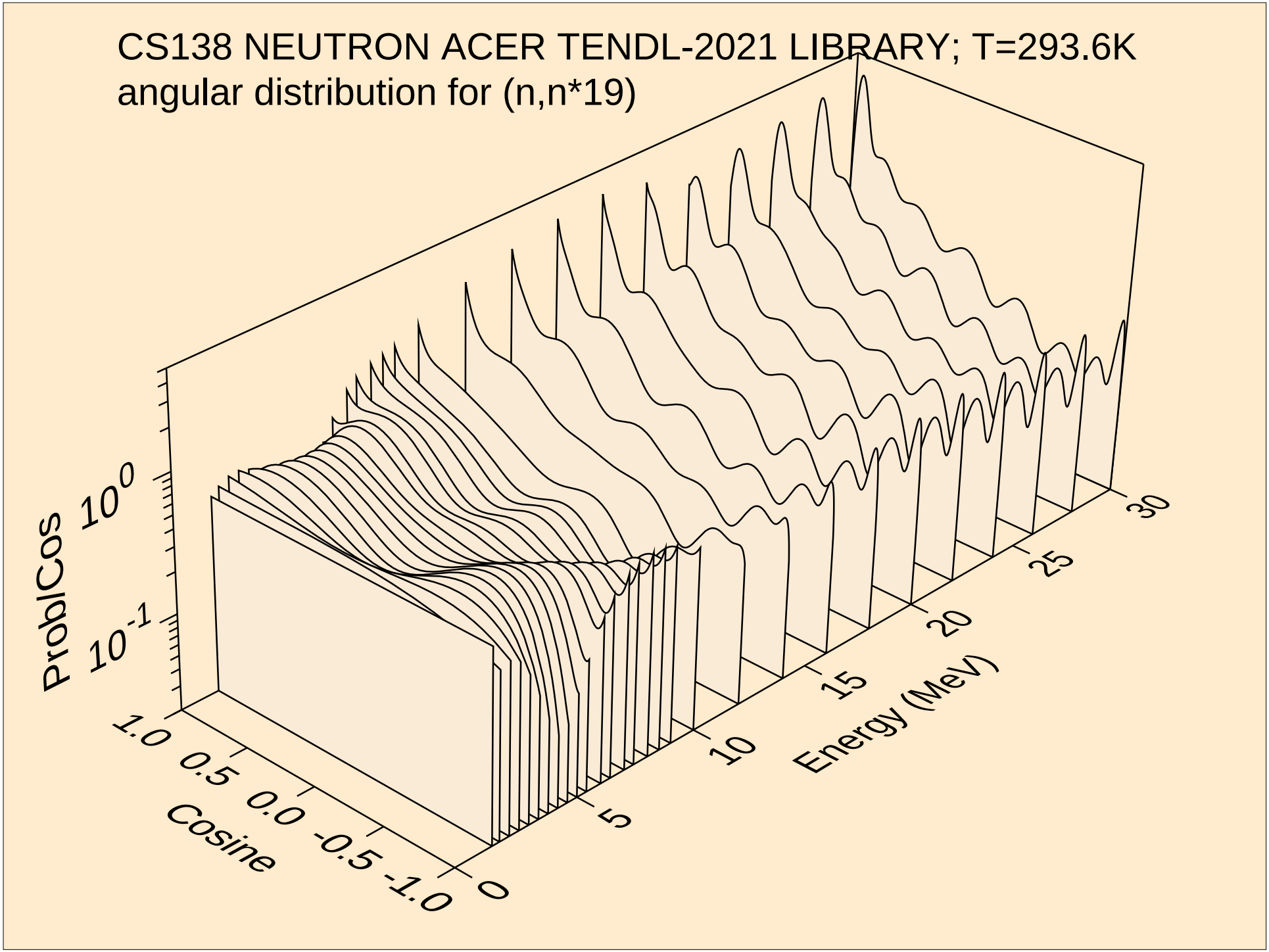

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
angular distribution for (n,n*14)
ProbCos
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
25
30
Energy (MeV)

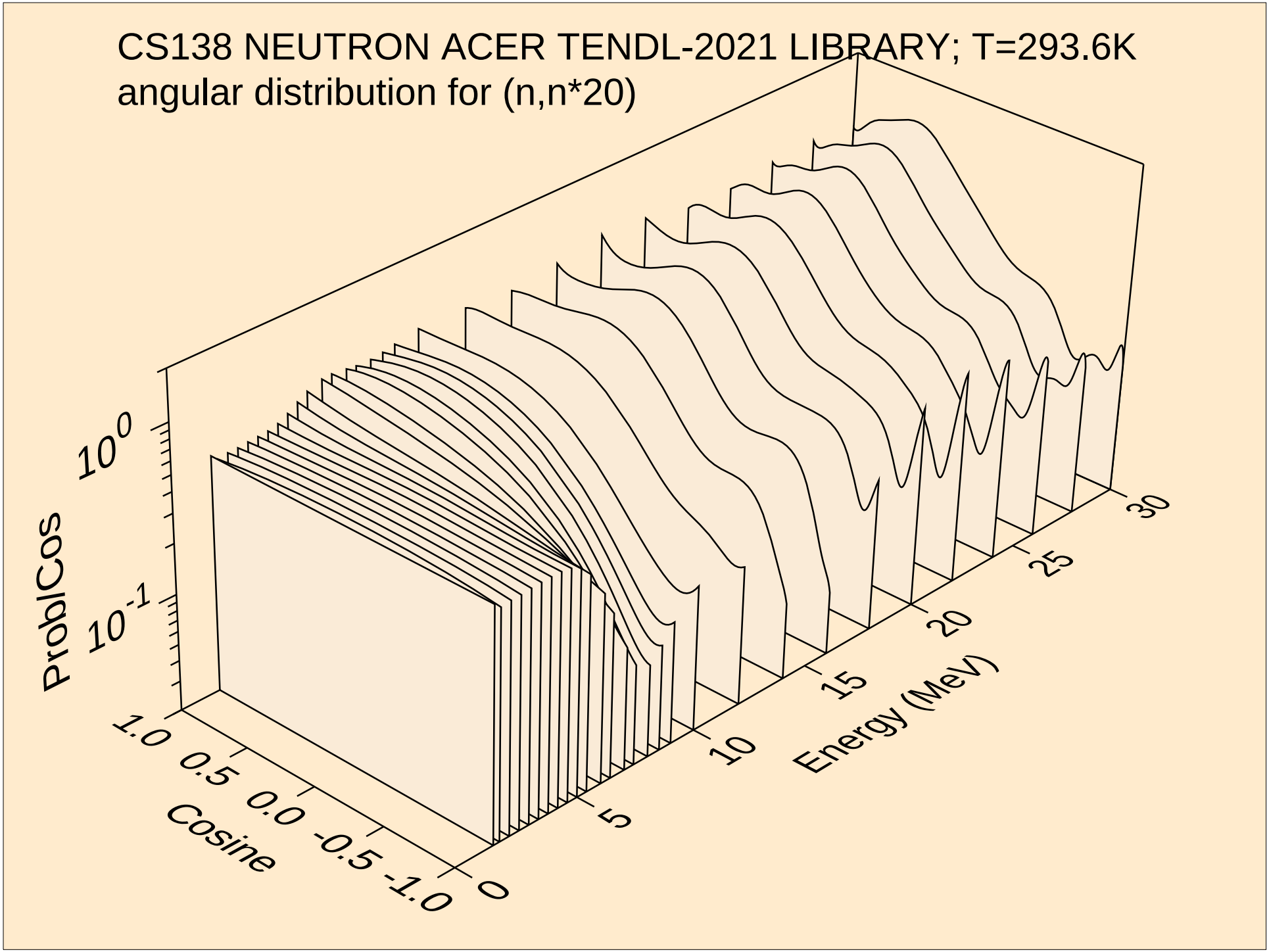

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
angular distribution for (n,n*15)
10^0
ProbICos
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
25
30
Energy (MeV)

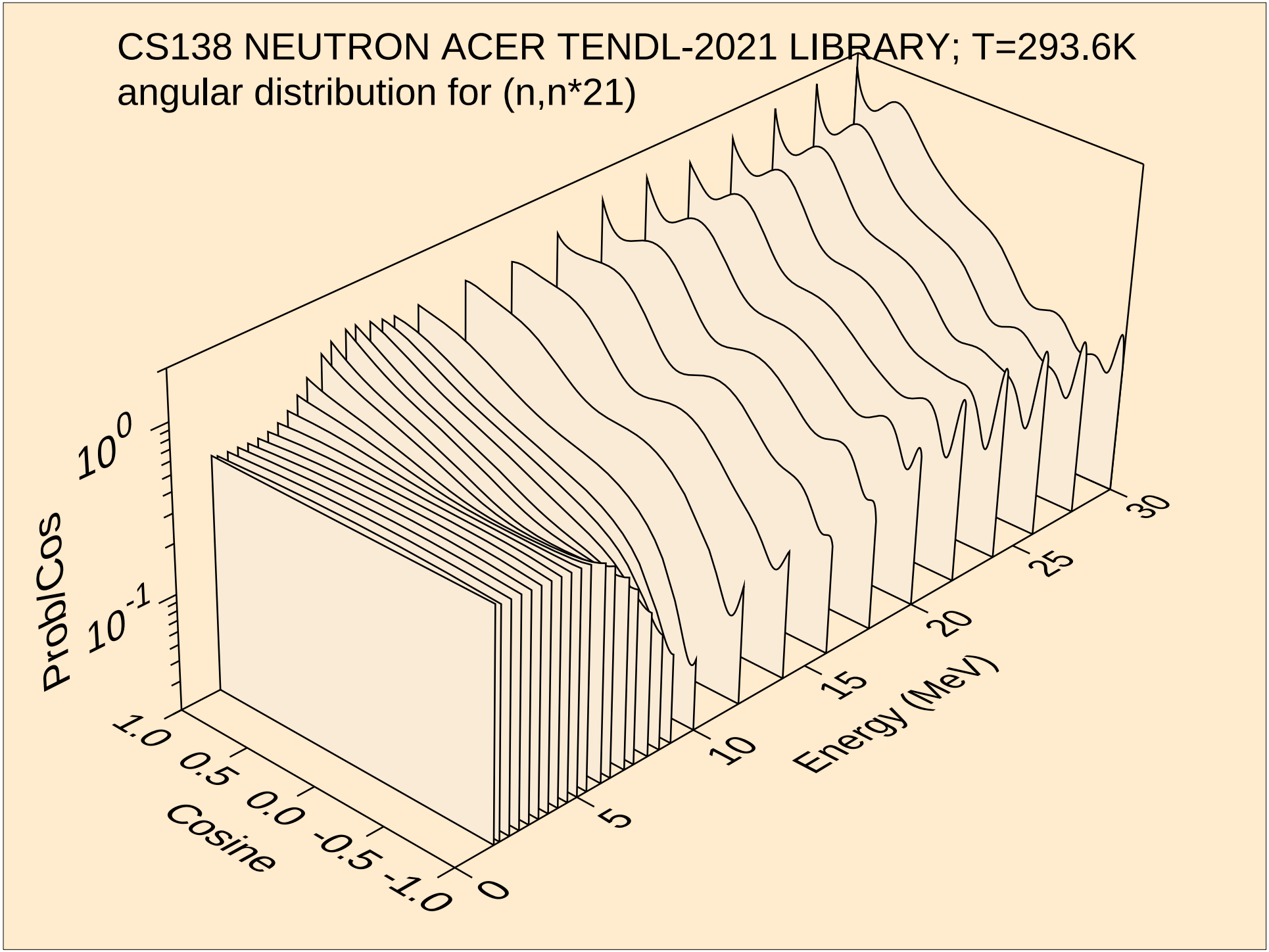

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
angular distribution for (n,n*16)
10^0
ProbCos
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
25
30
Energy (MeV)

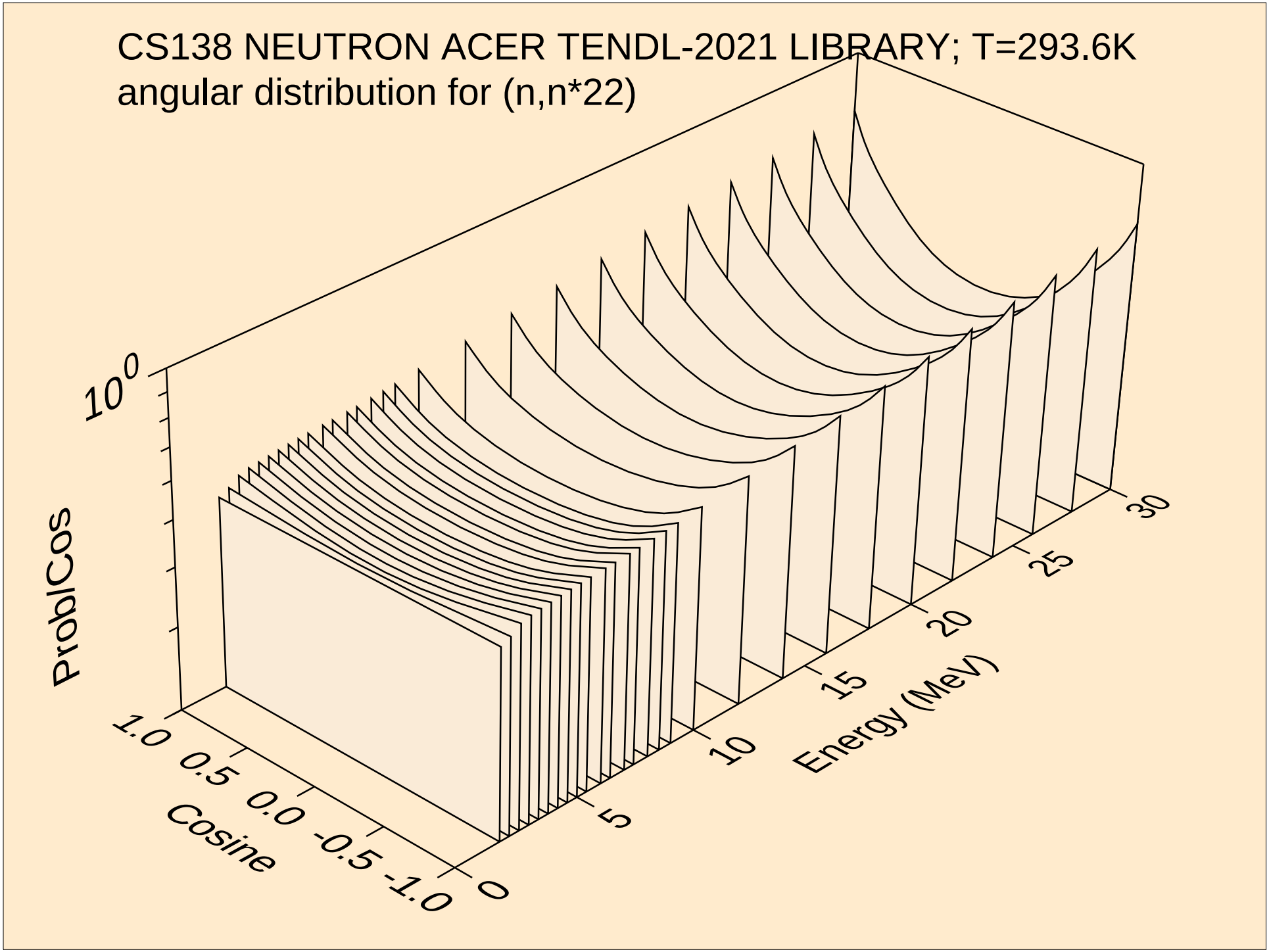

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
angular distribution for (n,n*17)
ProbICos
10^0
10^-1
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
25
30
Energy (MeV)

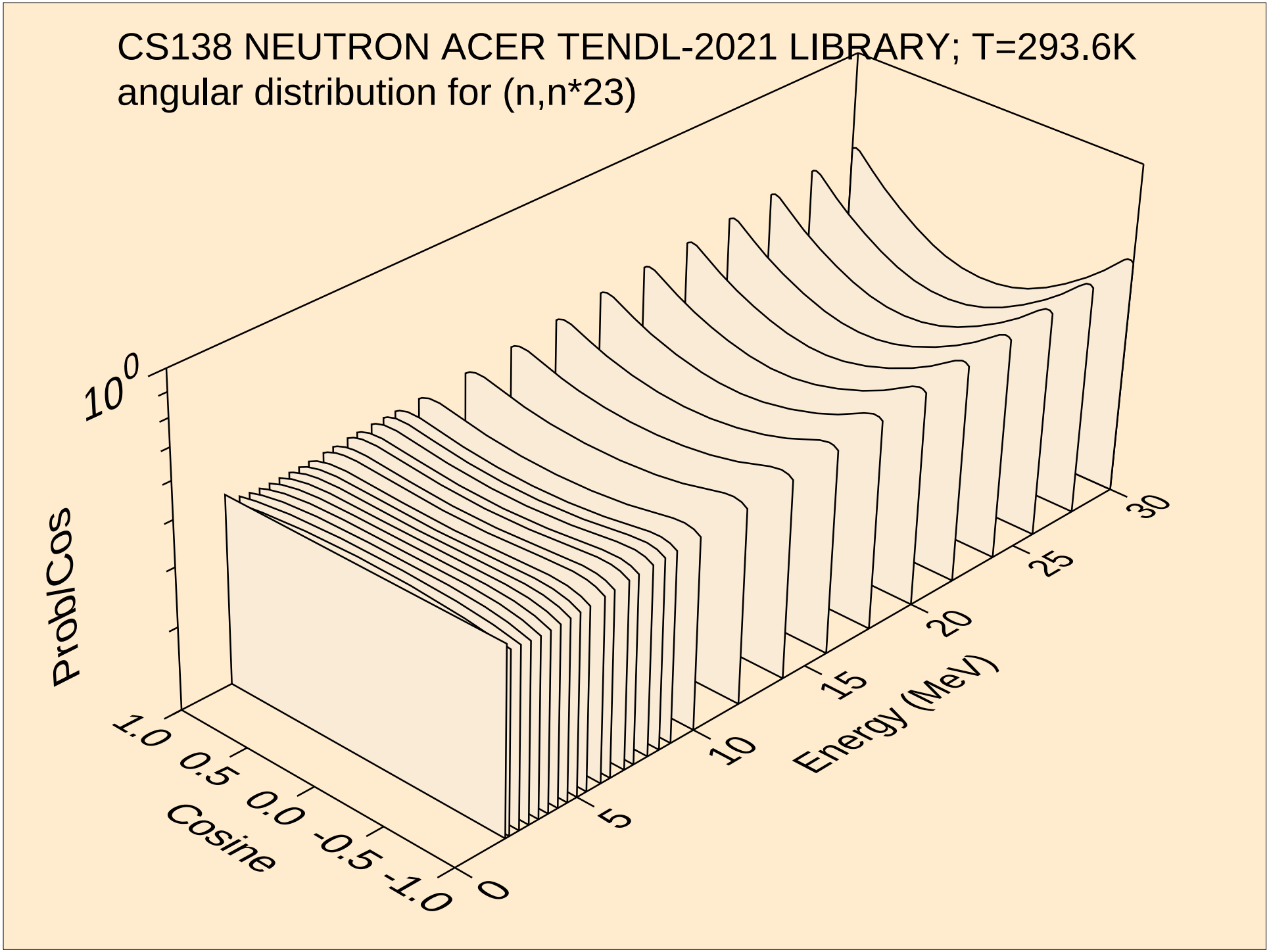

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
angular distribution for (n,n*18)
10^0
ProbICos
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
25
30
Energy (MeV)

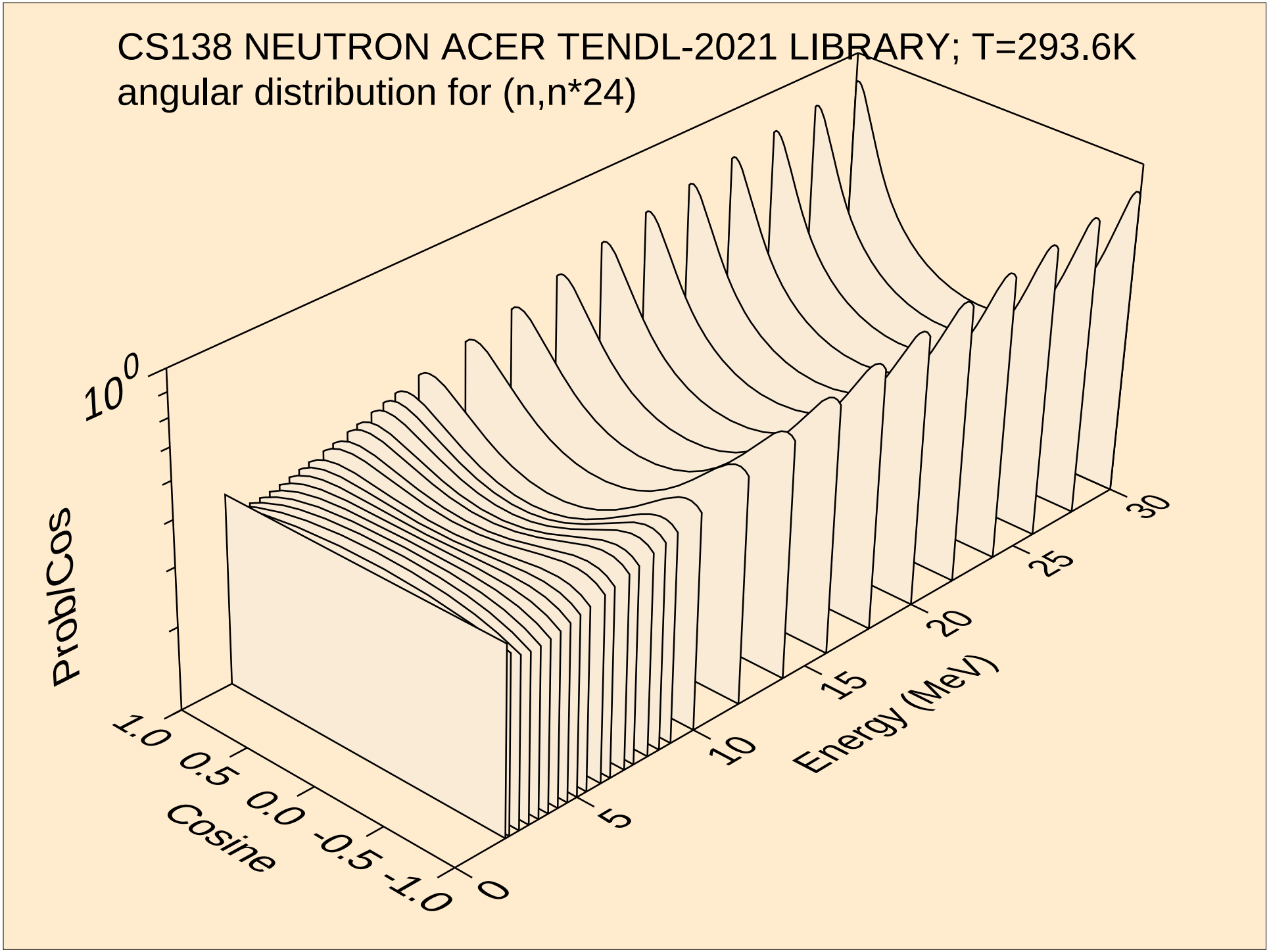

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
angular distribution for (n,n*19)
Prob\Cos
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
25
30
Energy (MeV)

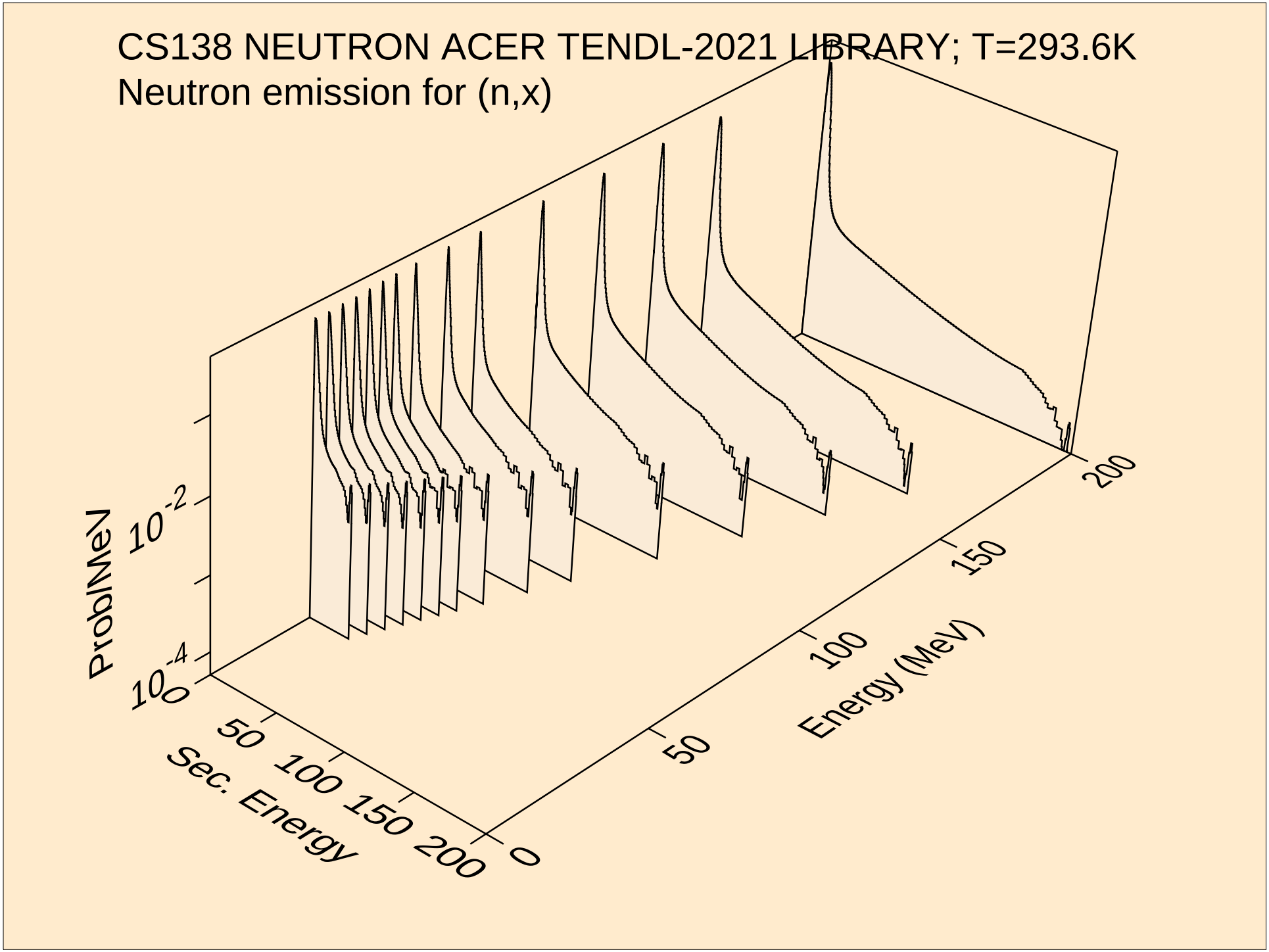

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
angular distribution for (n,n*20)
ProbCos
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
25
30
Energy (MeV)

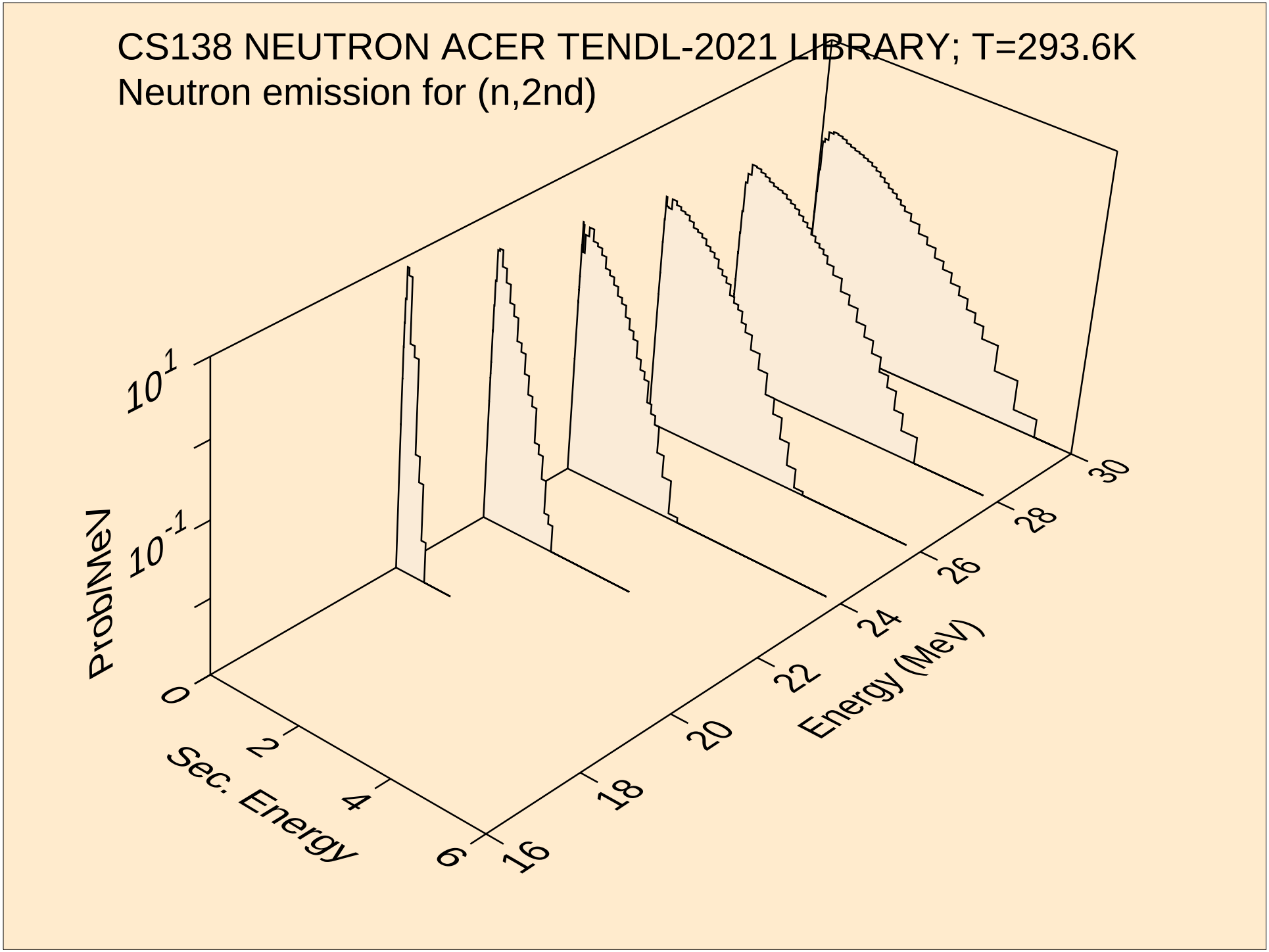

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
angular distribution for (n,n*21)
ProbCos
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
25
30
Energy (MeV)

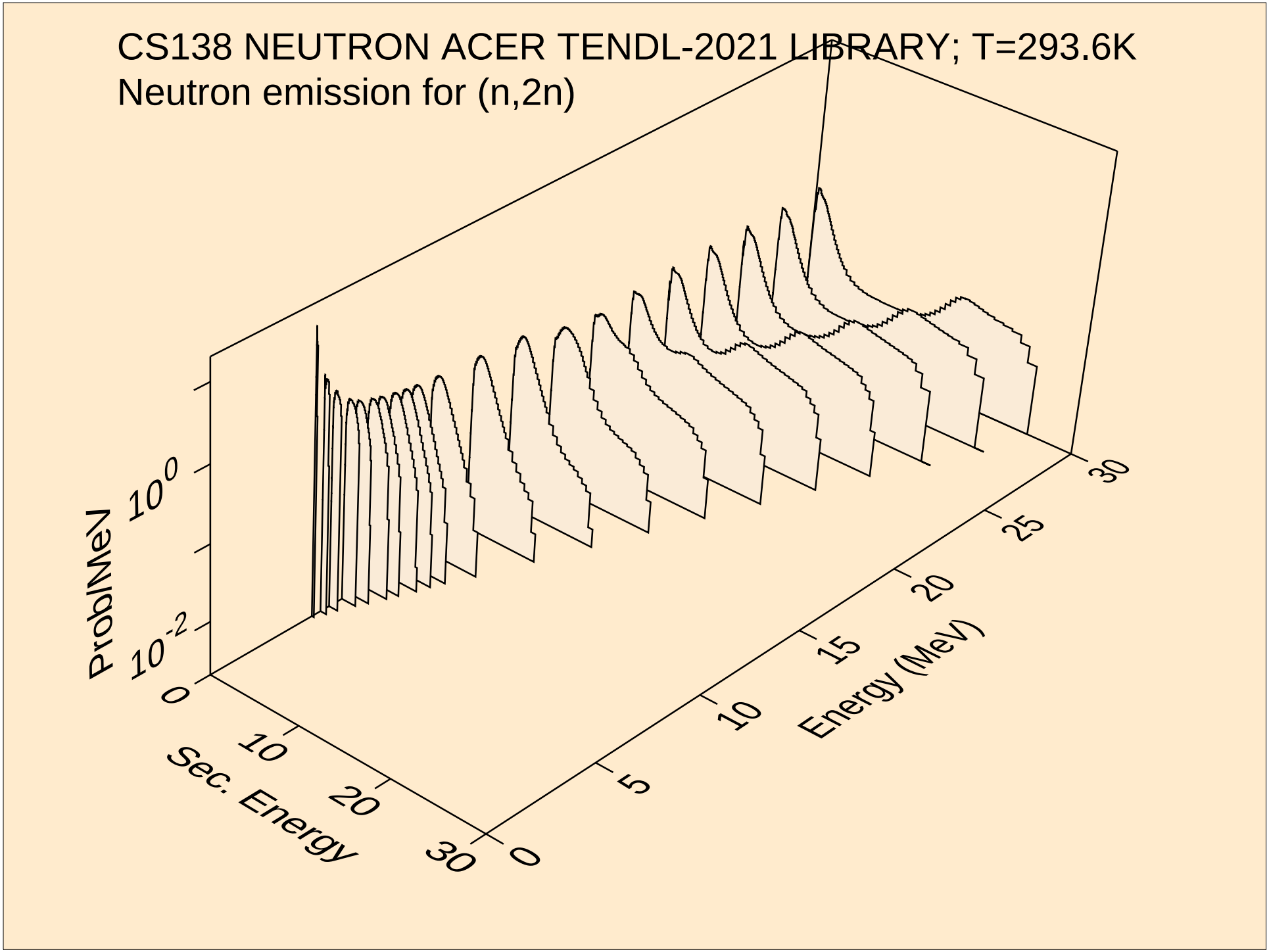

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
angular distribution for (n,n*22)
10^0
ProbICos
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
25
30
Energy (MeV)

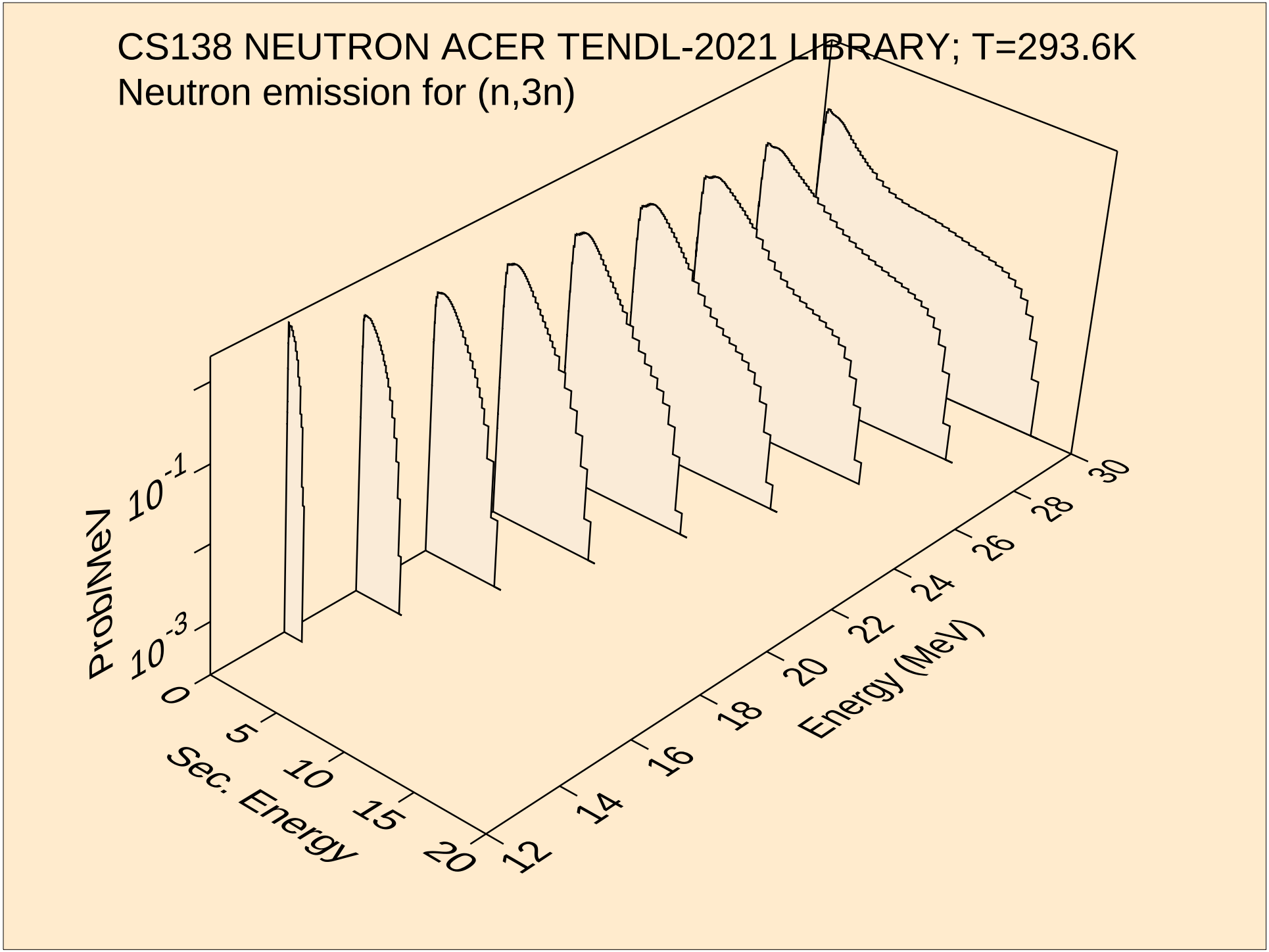

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
angular distribution for (n,n*23)
ProbICos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
25
30
Energy (MeV)

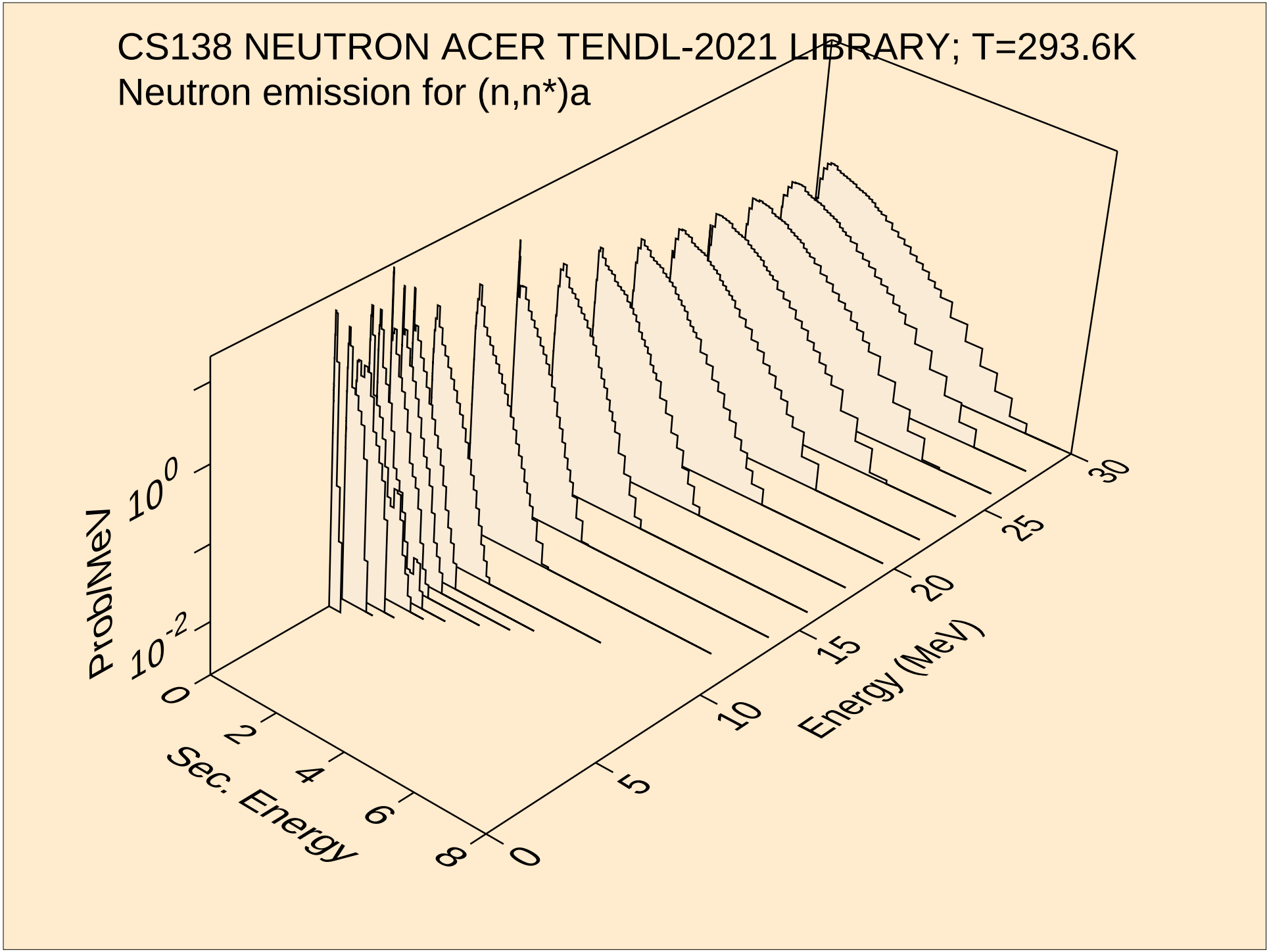

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
angular distribution for (n,n*24)
10^0
Prob\Cos
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
25
30
Energy (MeV)

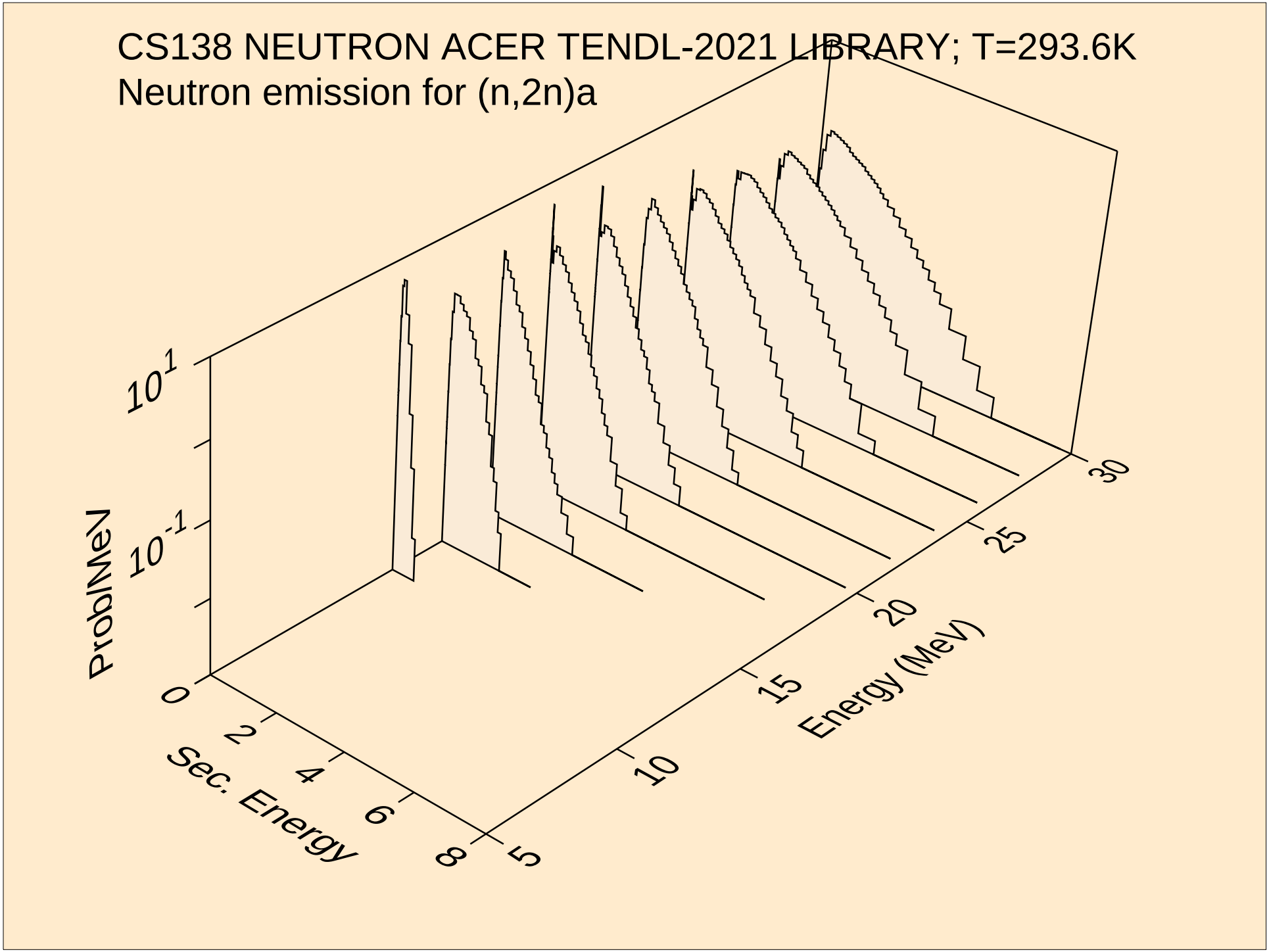

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
Neutron emission for (n,x)
Prob/MeV
10-2
10-4
0
50
100
150
200
Sec. Energy
0
50
100
150
200
Energy (MeV)

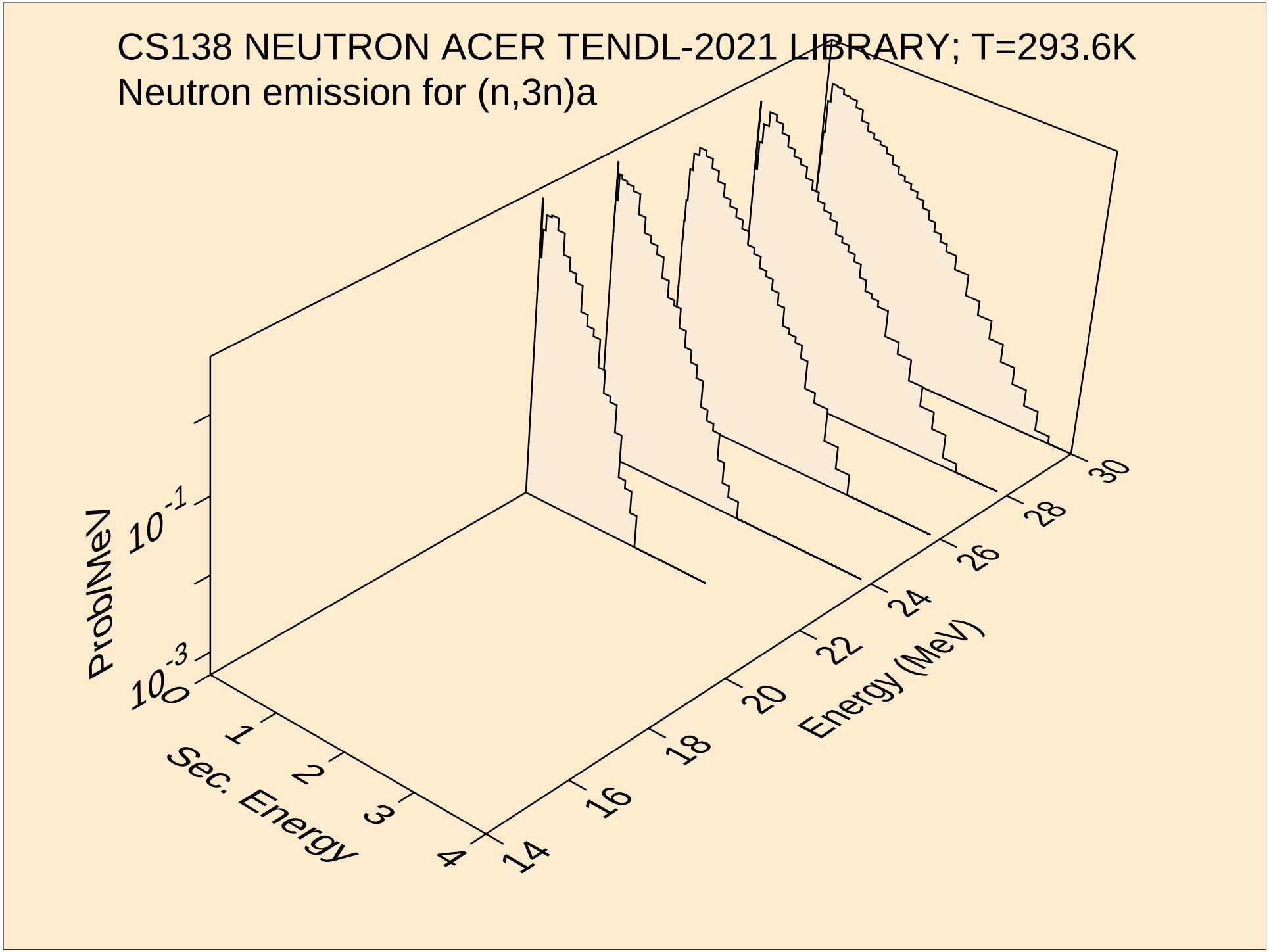

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
Neutron emission for (n,2nd)
Prob/MeV
10^1
10^-1
0
Sec. Energy
2
4
6
16
18
20
22
24
26
28
30
Energy (MeV)

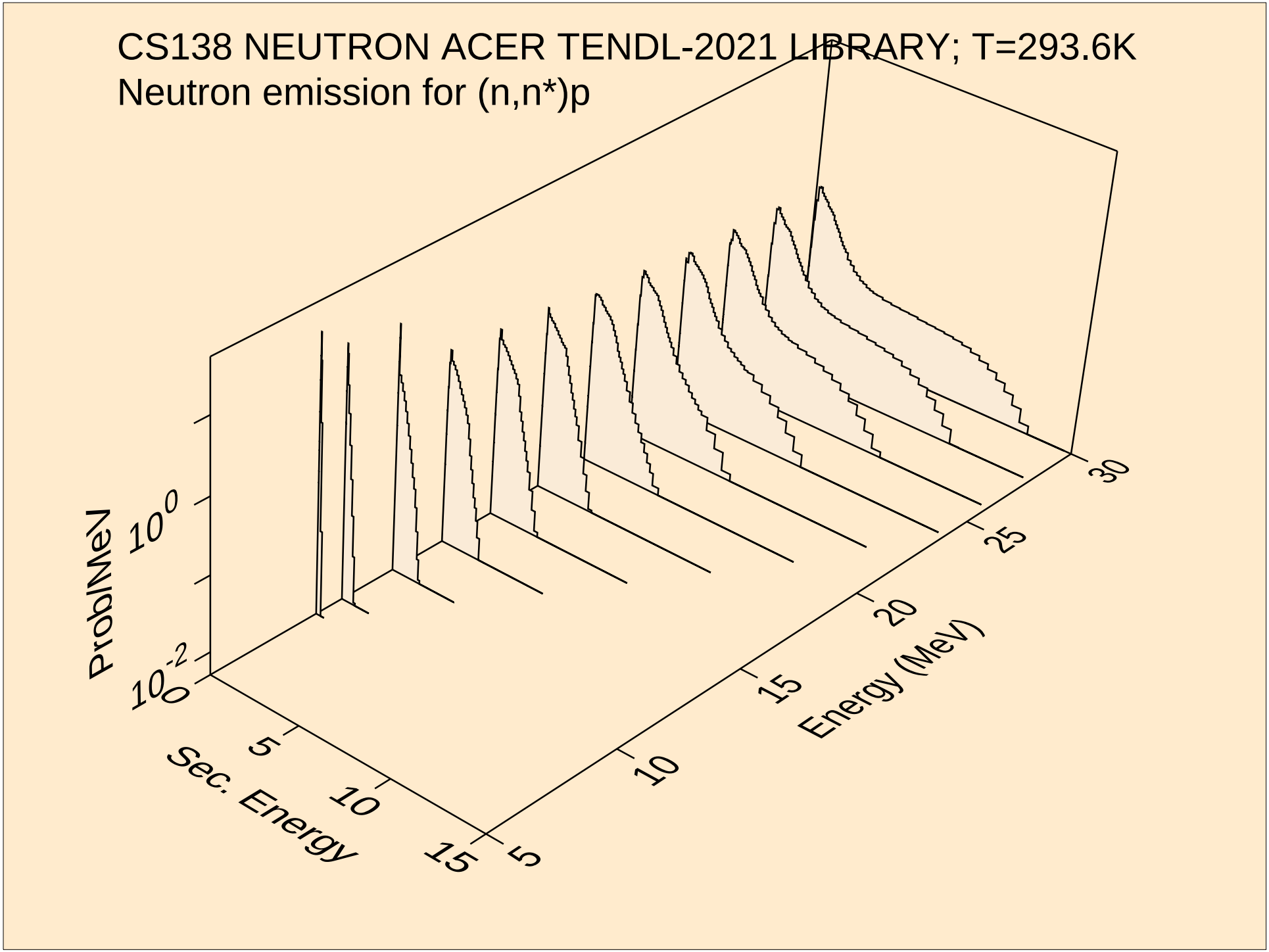

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
Neutron emission for (n,2n)
Prob/MeV
10^0
10^-2
0
10
20
30
Sec. Energy
0
5
10
15
20
25
30
Energy (MeV)

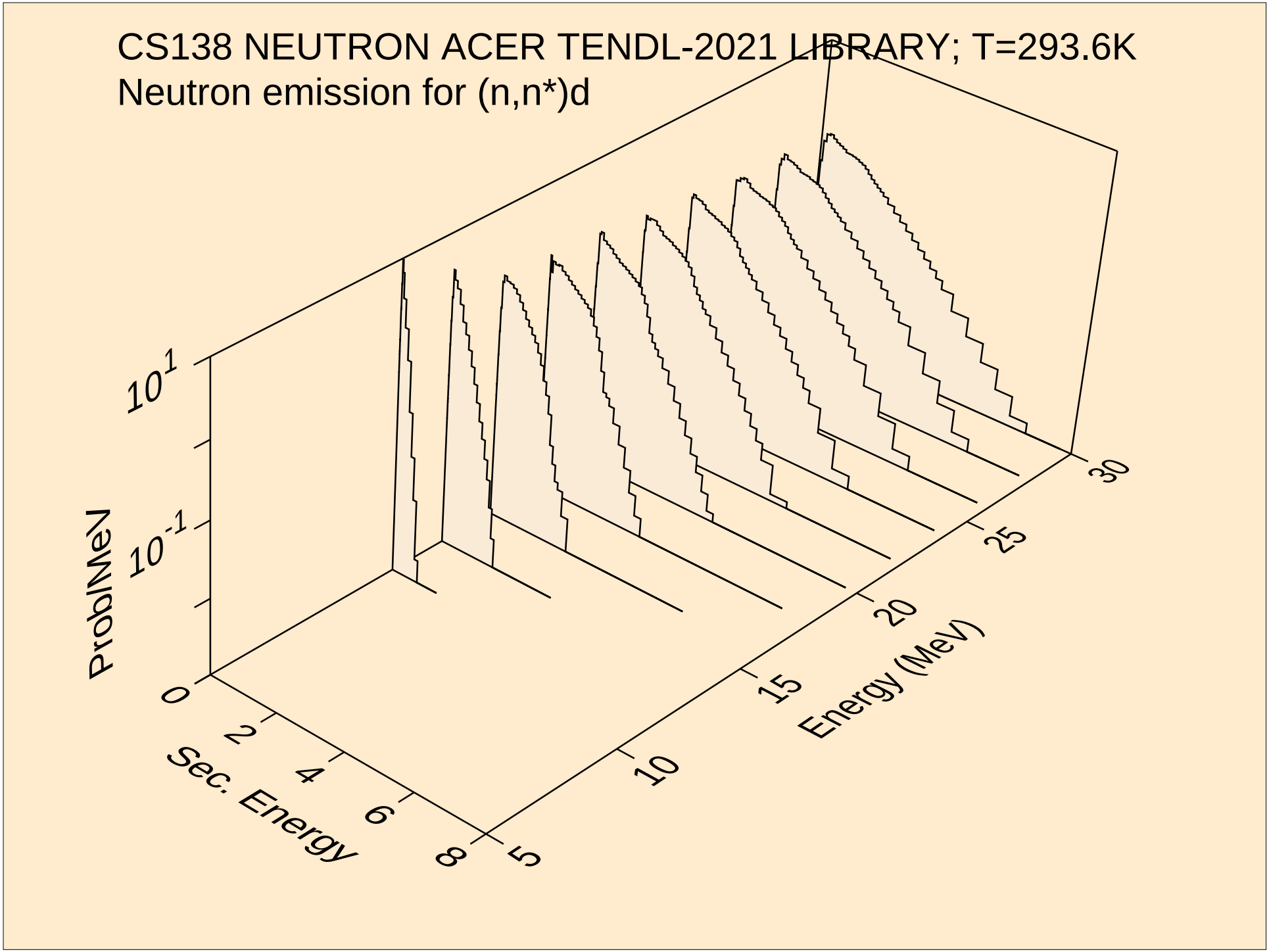

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
Neutron emission for (n,3n)
Prob/MeV
10-1
10-3
0
5
10
15
20
Sec. Energy
12
14
16
18
20
22
24
26
28
30
Energy (MeV)

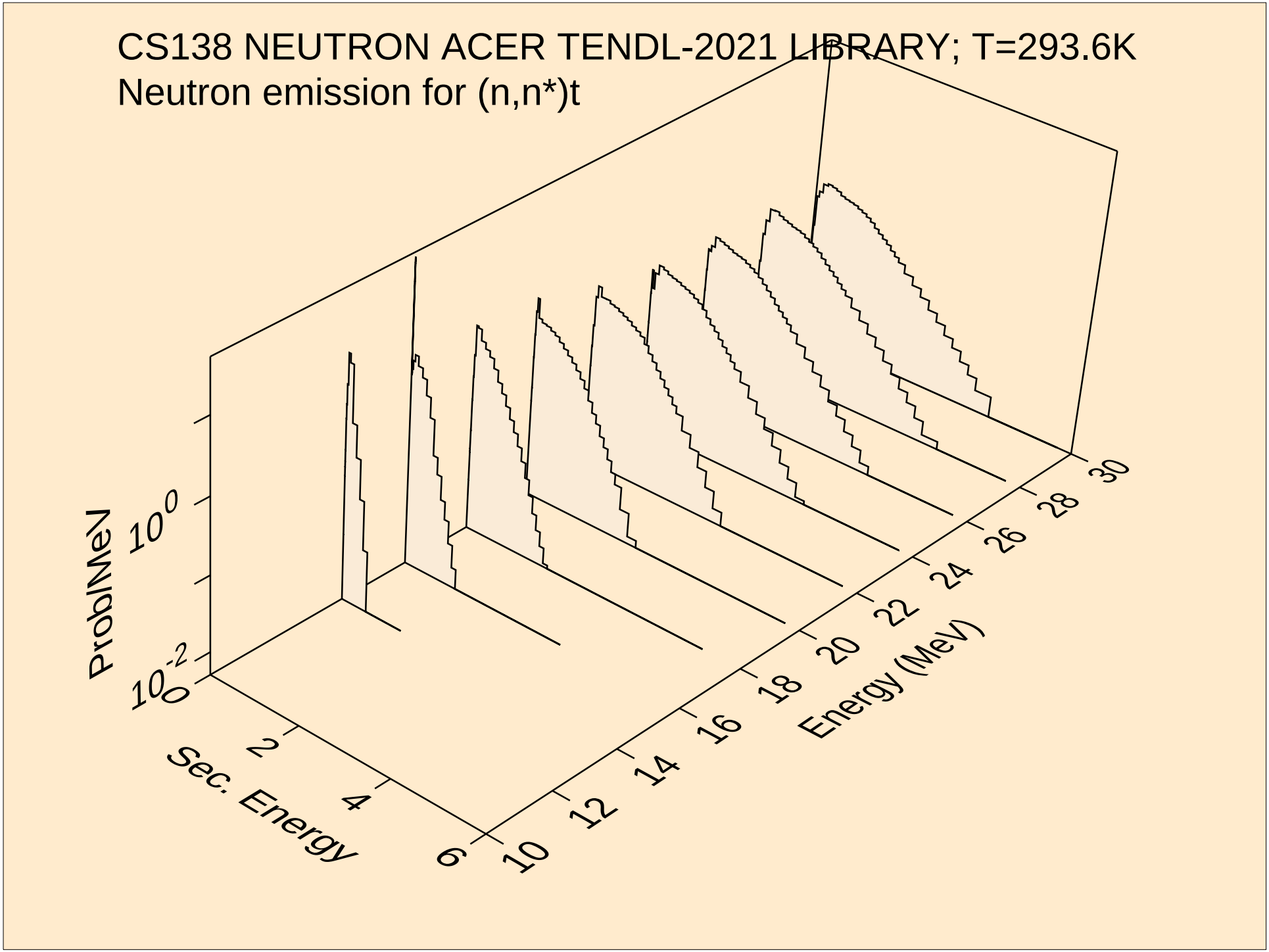

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
Neutron emission for (n,n*)a
Prob/MeV
10^0
10^-2
0
2
4
6
8
Sec. Energy
0
5
10
15
20
25
30
Energy (MeV)

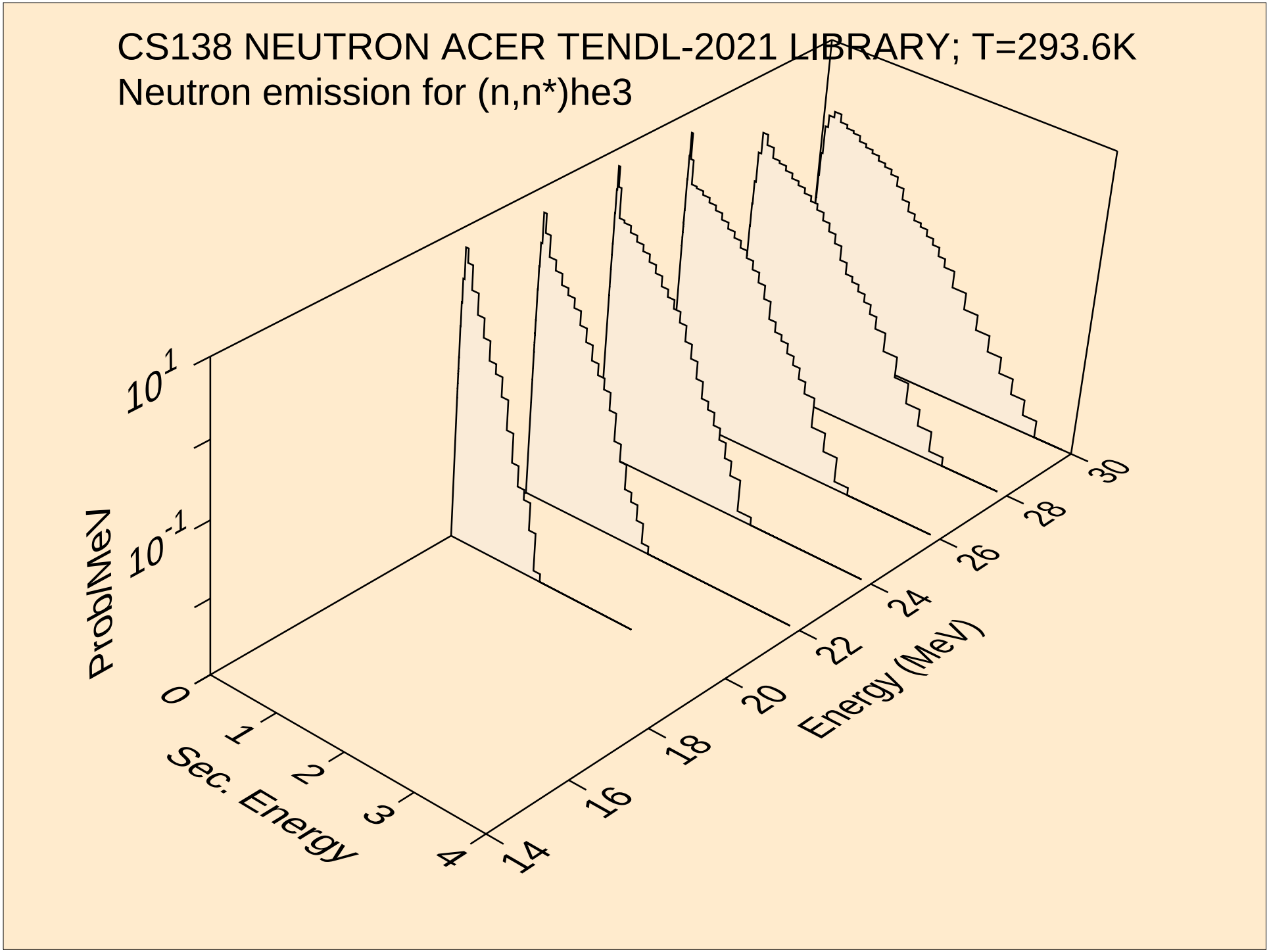

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
Neutron emission for (n,2n)a
Prob/MeV
10^1
10^-1
0
2
4
6
8
Sec. Energy
5
10
15
20
25
30
Energy (MeV)

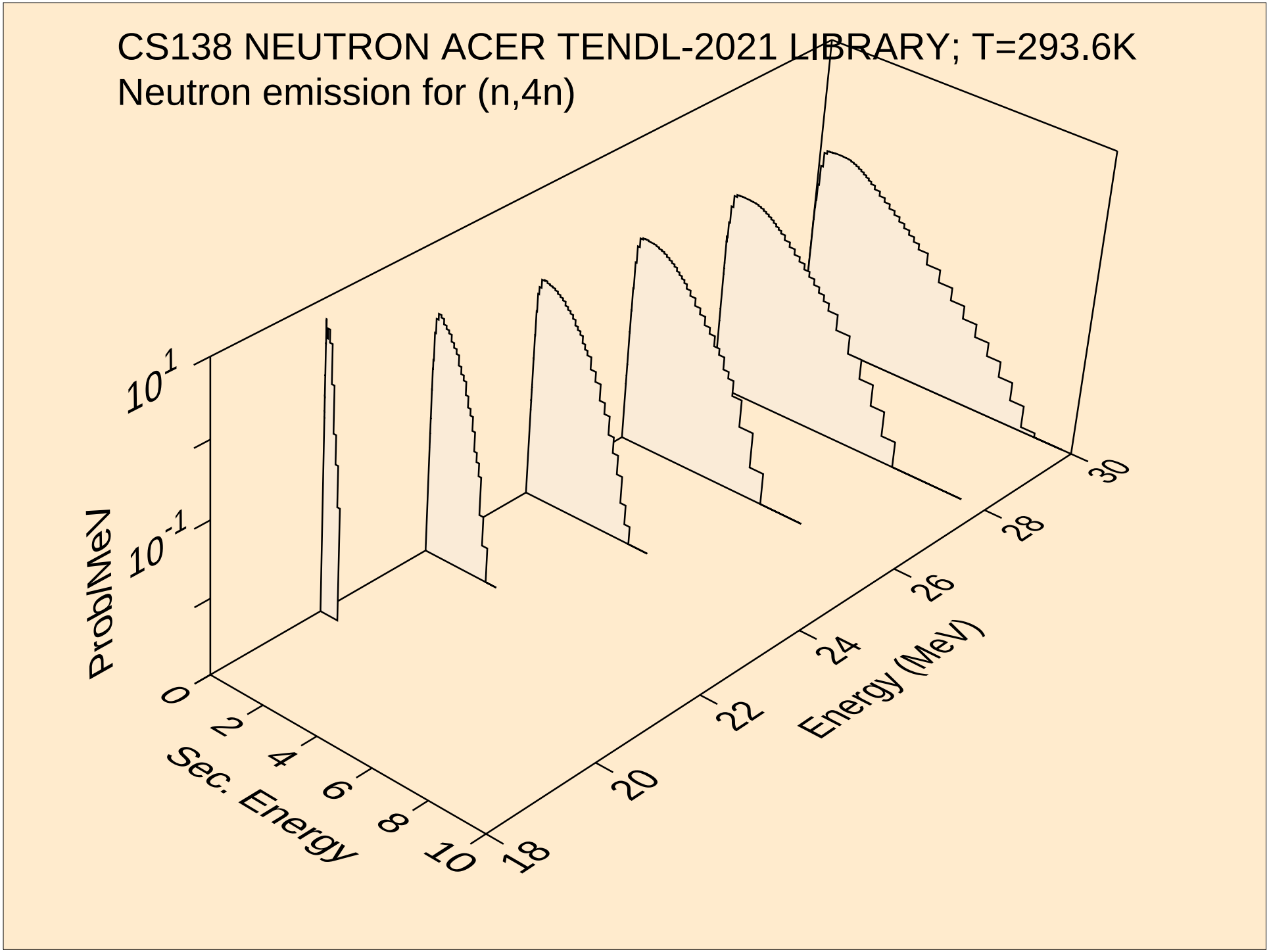

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
Neutron emission for (n,3n)a
Prob/MeV
10-1
10-3
0
1
2
3
4
Sec. Energy
14
16
18
20
22
24
26
28
30
Energy (MeV)

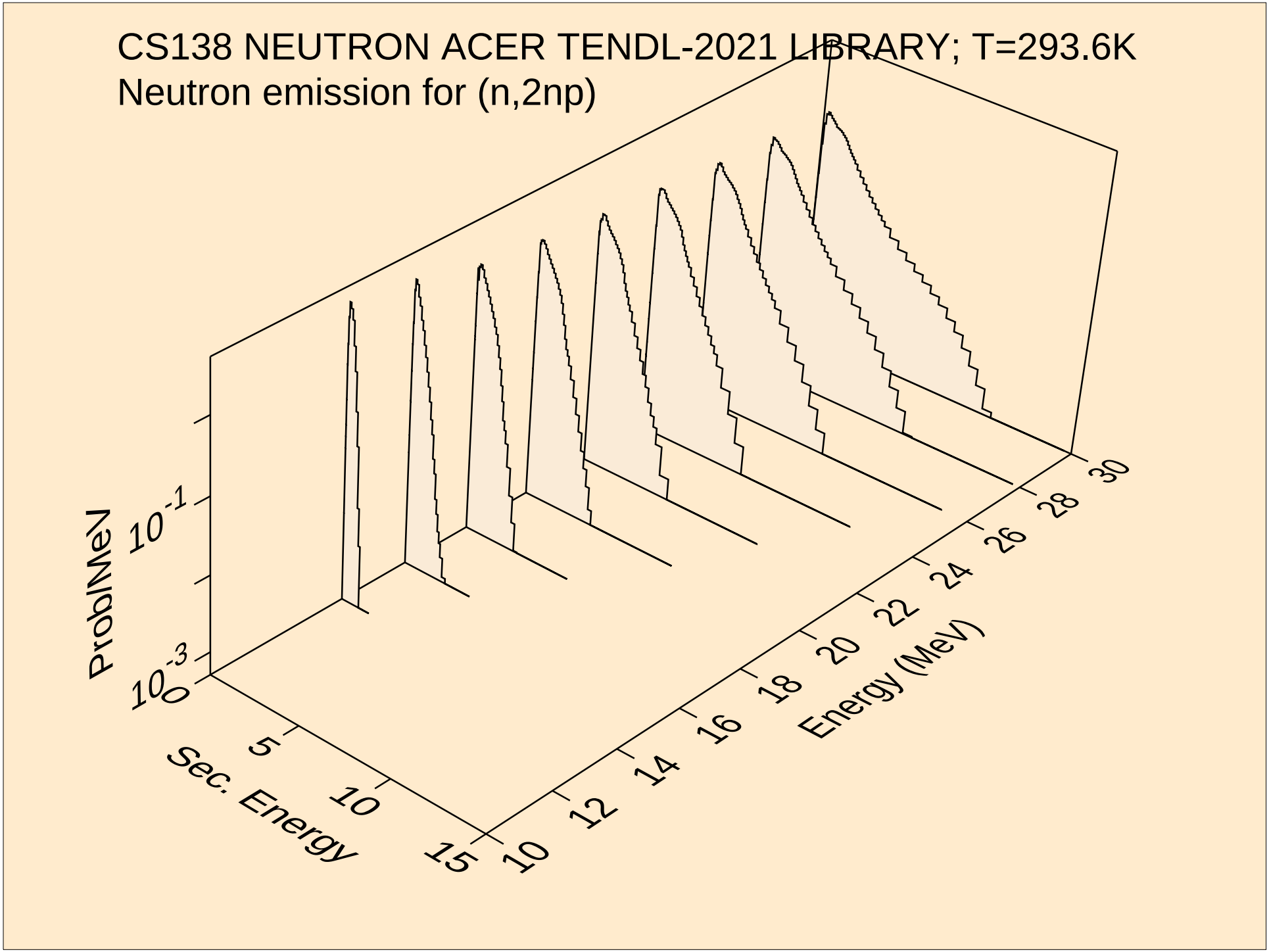

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
Neutron emission for (n,n*)p
Prob/MeV
10^{0}
10^{-2}
0
5
10
15
Sec. Energy
5
10
15
20
25
30
Energy (MeV)

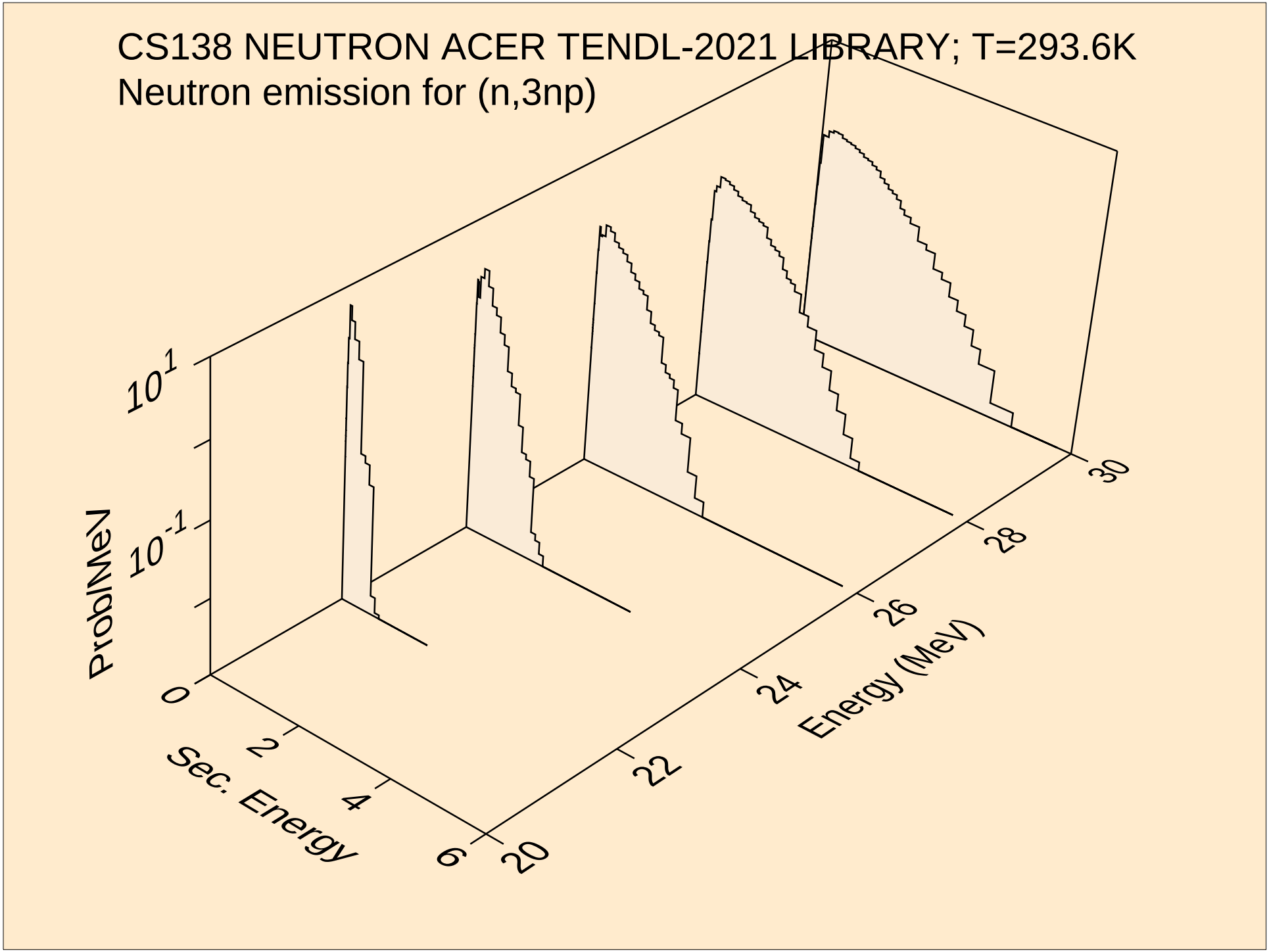

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
Neutron emission for (n,n*)d
Prob/MeV
10^1
10^-1
0
2
4
6
8
Sec. Energy
5
10
15
20
25
30
Energy (MeV)

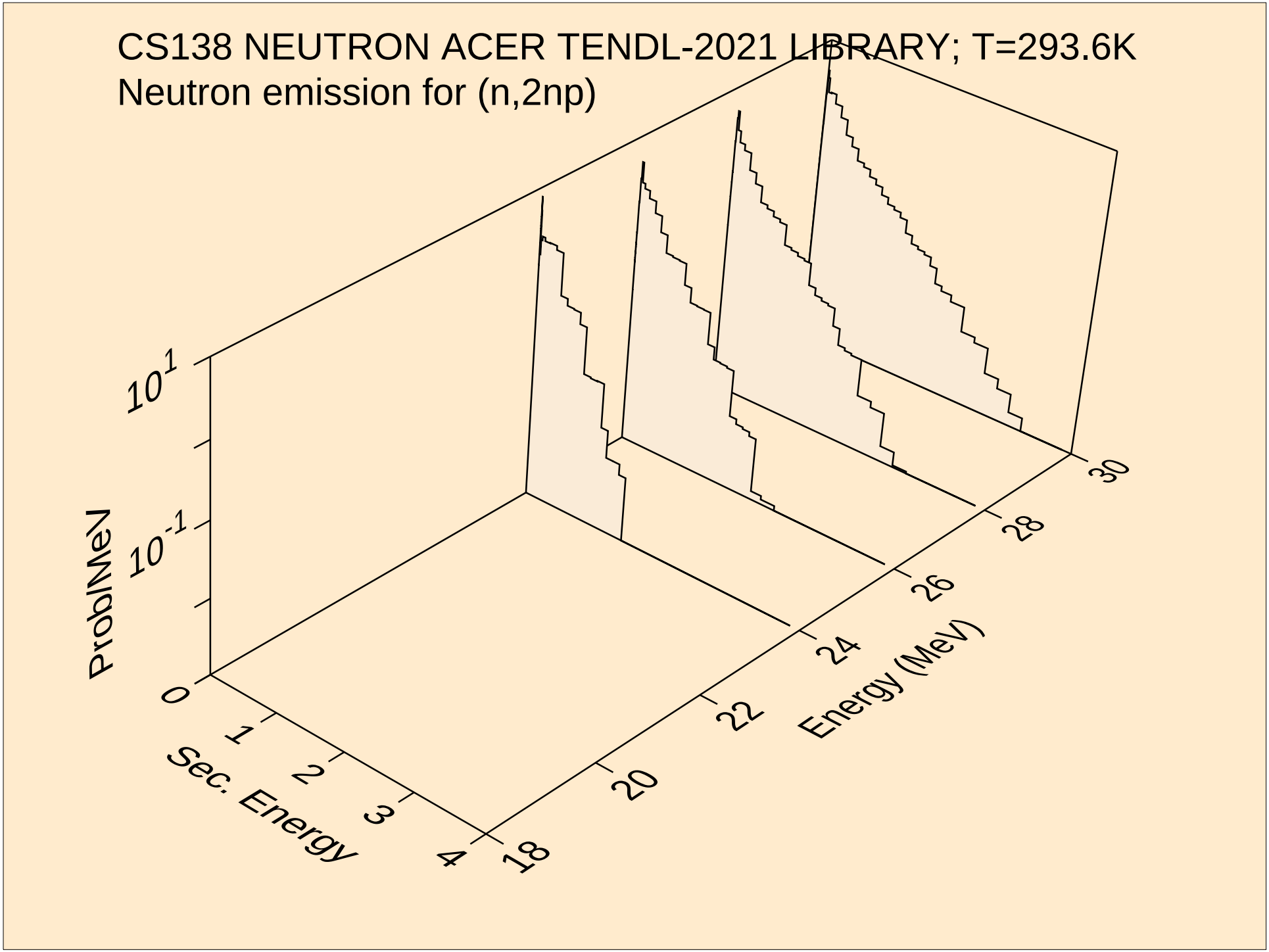

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
Neutron emission for (n,n*)t
Prob/MeV
10^{0}
10^{-2}
0
2
4
6
Sec. Energy
10
12
14
16
18
20
22
24
26
28
30
Energy (MeV)

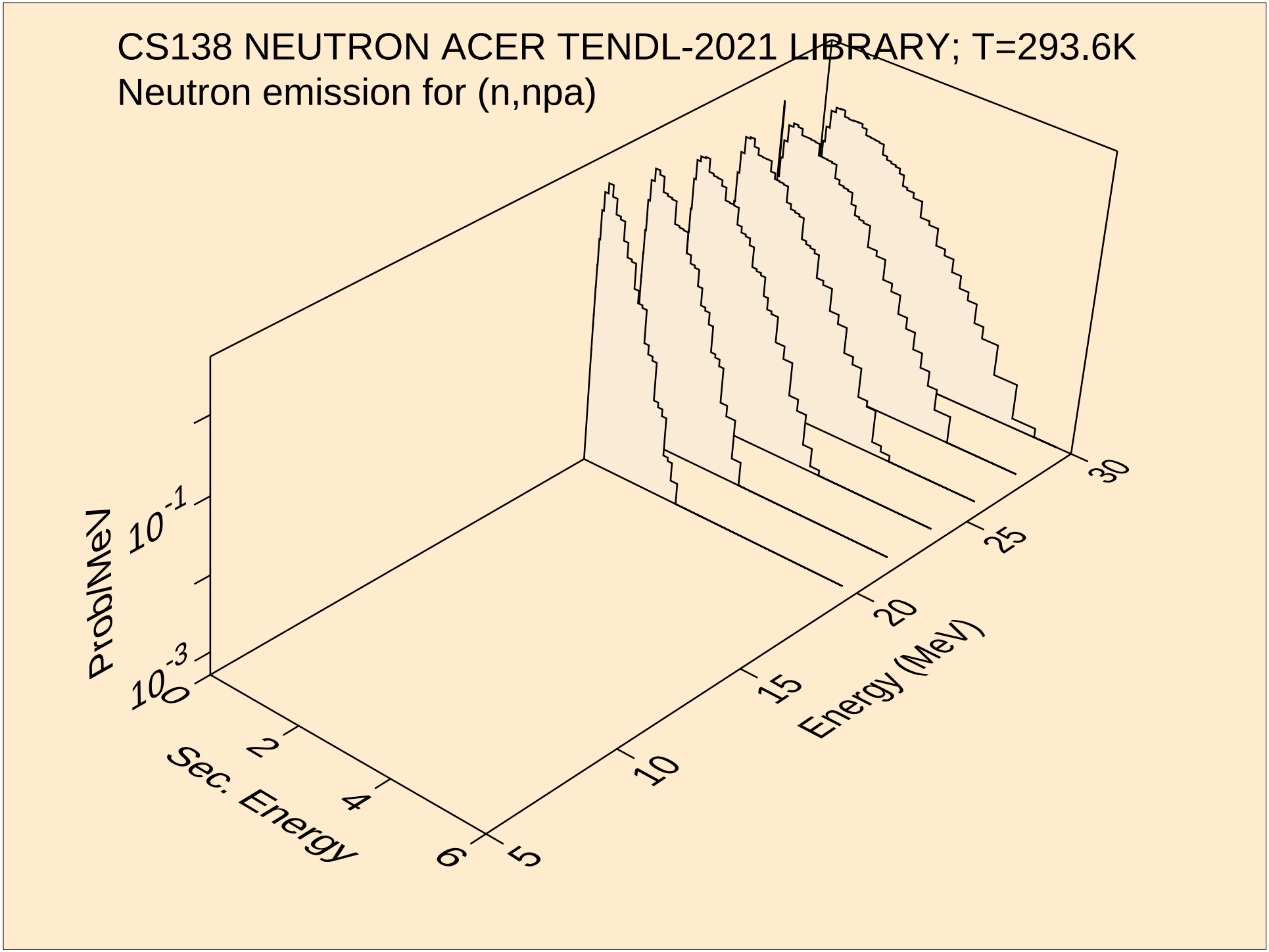

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
Neutron emission for (n,n*)he3
Prob/MeV
10^1
10^-1
0
Sec. Energy
1
2
3
4
14
16
18
20
22
24
26
28
30
Energy (MeV)

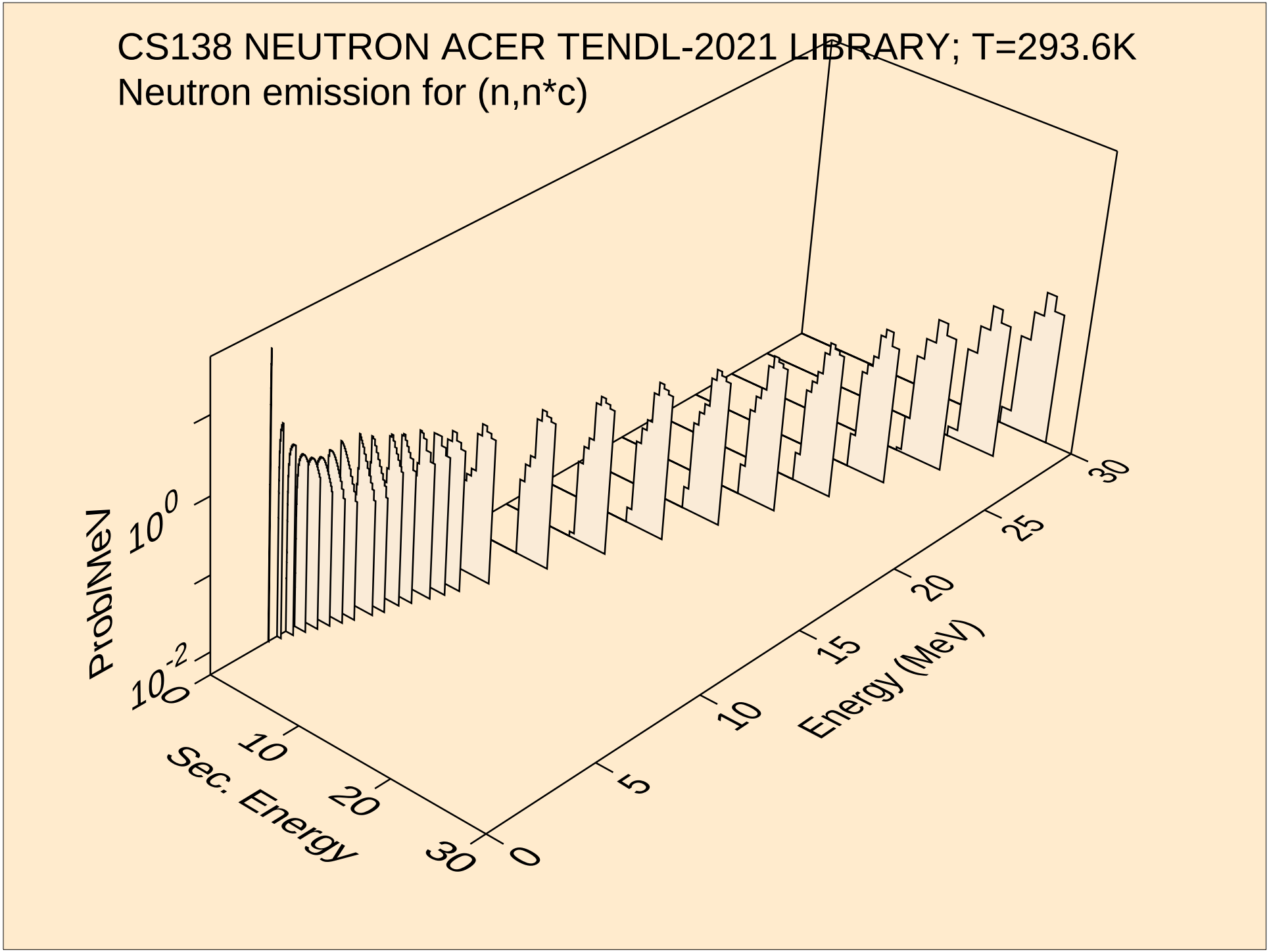

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
Neutron emission for (n,4n)
Prob/MeV
10^1
10^-1
0
Sec. Energy
2
4
6
8
10
18
20
22
24
26
28
30
Energy (MeV)

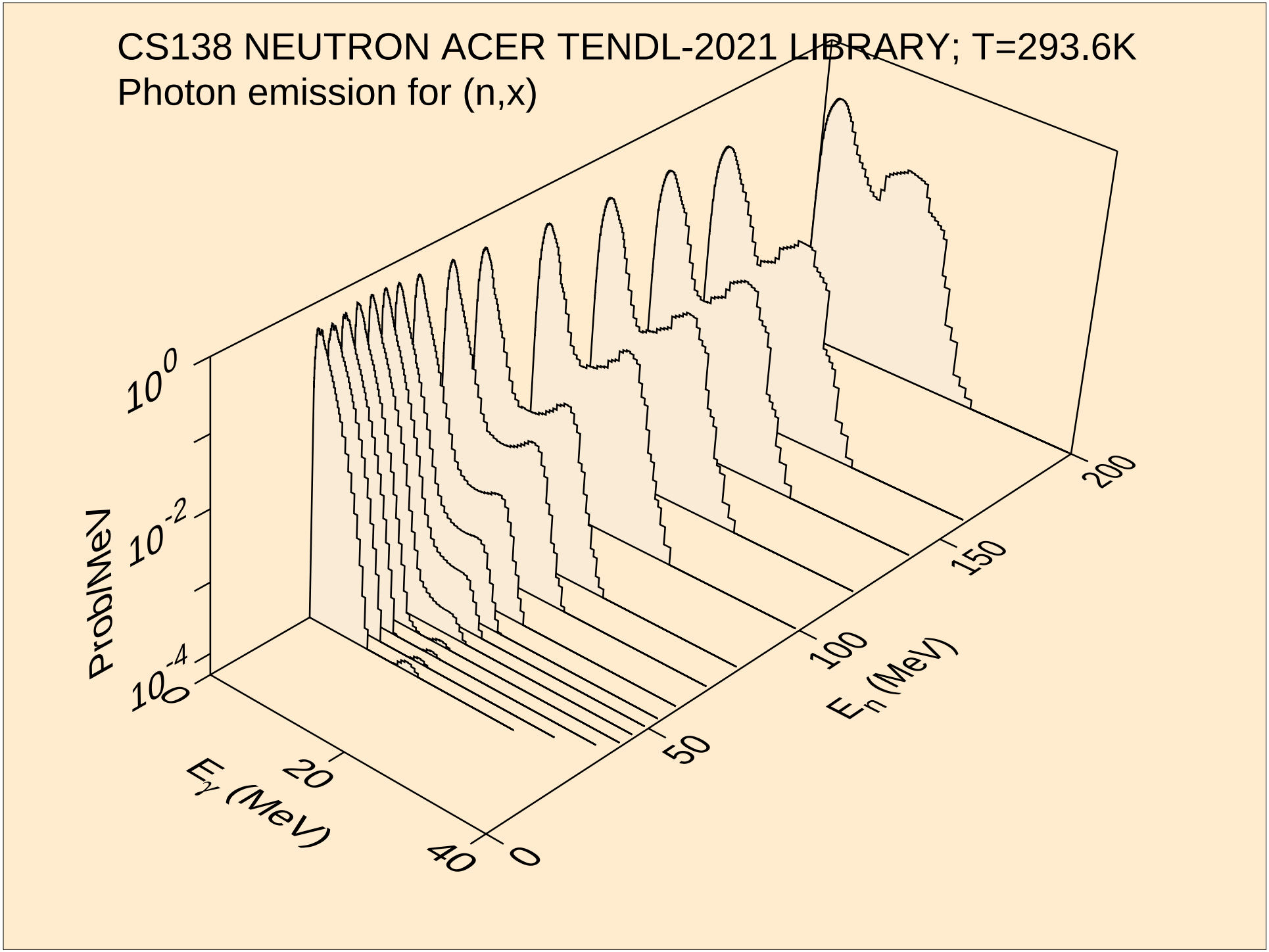

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
Neutron emission for (n,2np)
Prob/MeV
10-1
10-3
0
5
10
15
Sec. Energy
10
12
14
16
18
20
22
24
26
28
30
Energy (MeV)

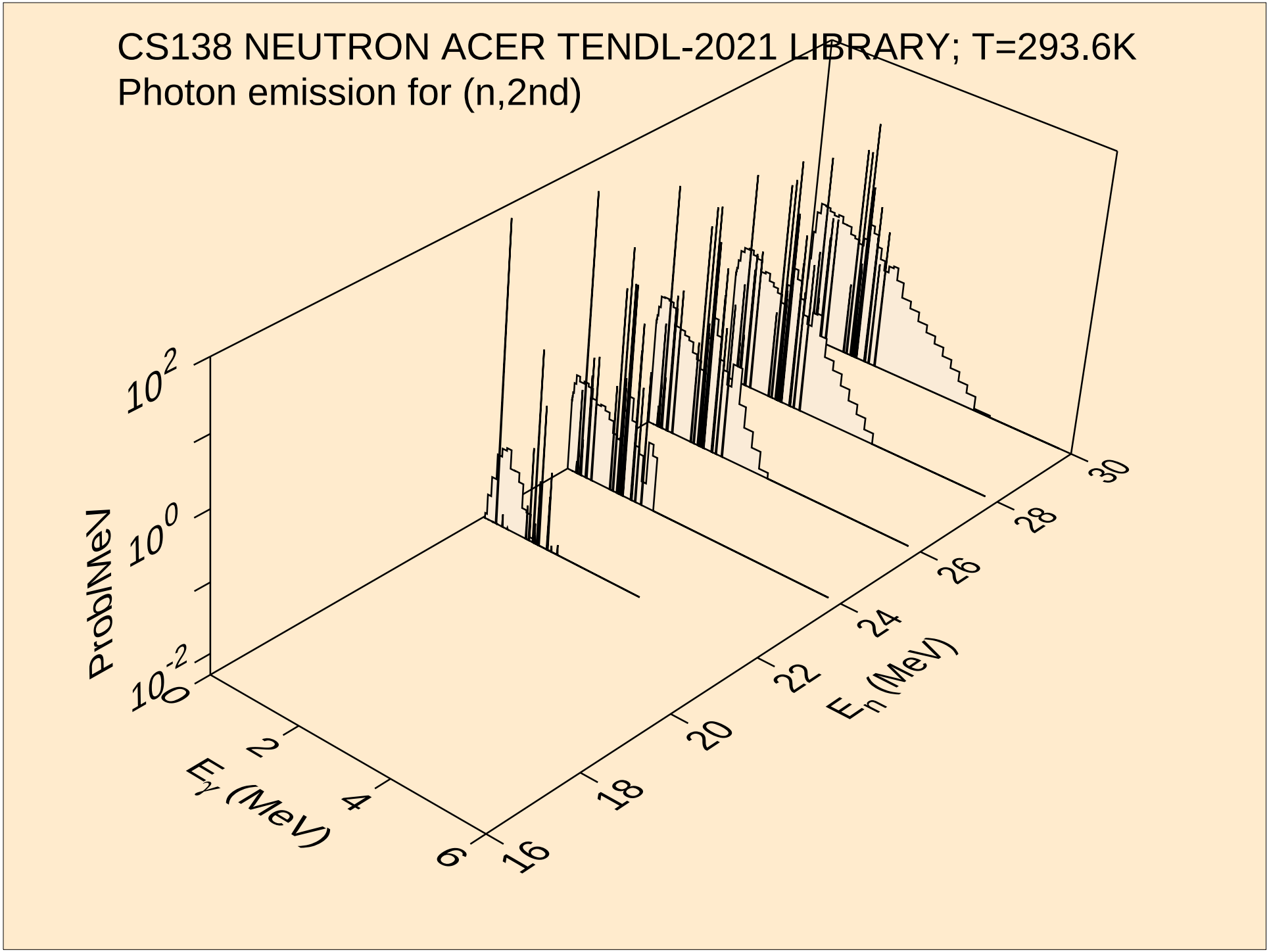

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
Neutron emission for (n,3np)
Prob/MeV
10^1
10^-1
0
2
4
6
Sec. Energy
20
22
24
26
28
30
Energy (MeV)

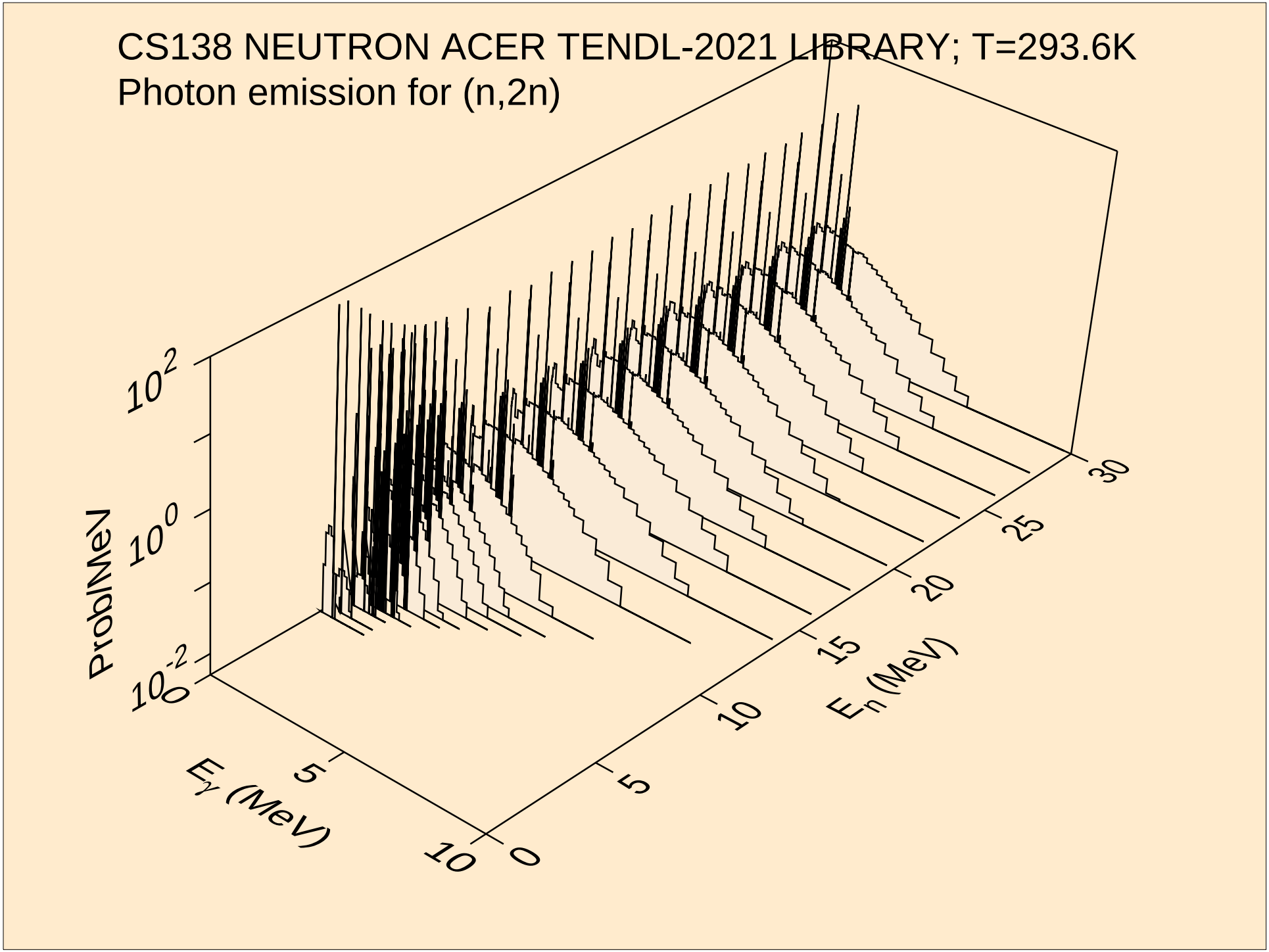

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
Neutron emission for (n,2np)
Prob/MeV
10^1
10^-1
0
Sec. Energy
1
2
3
4
Energy (MeV)
18
20
22
24
26
28
30

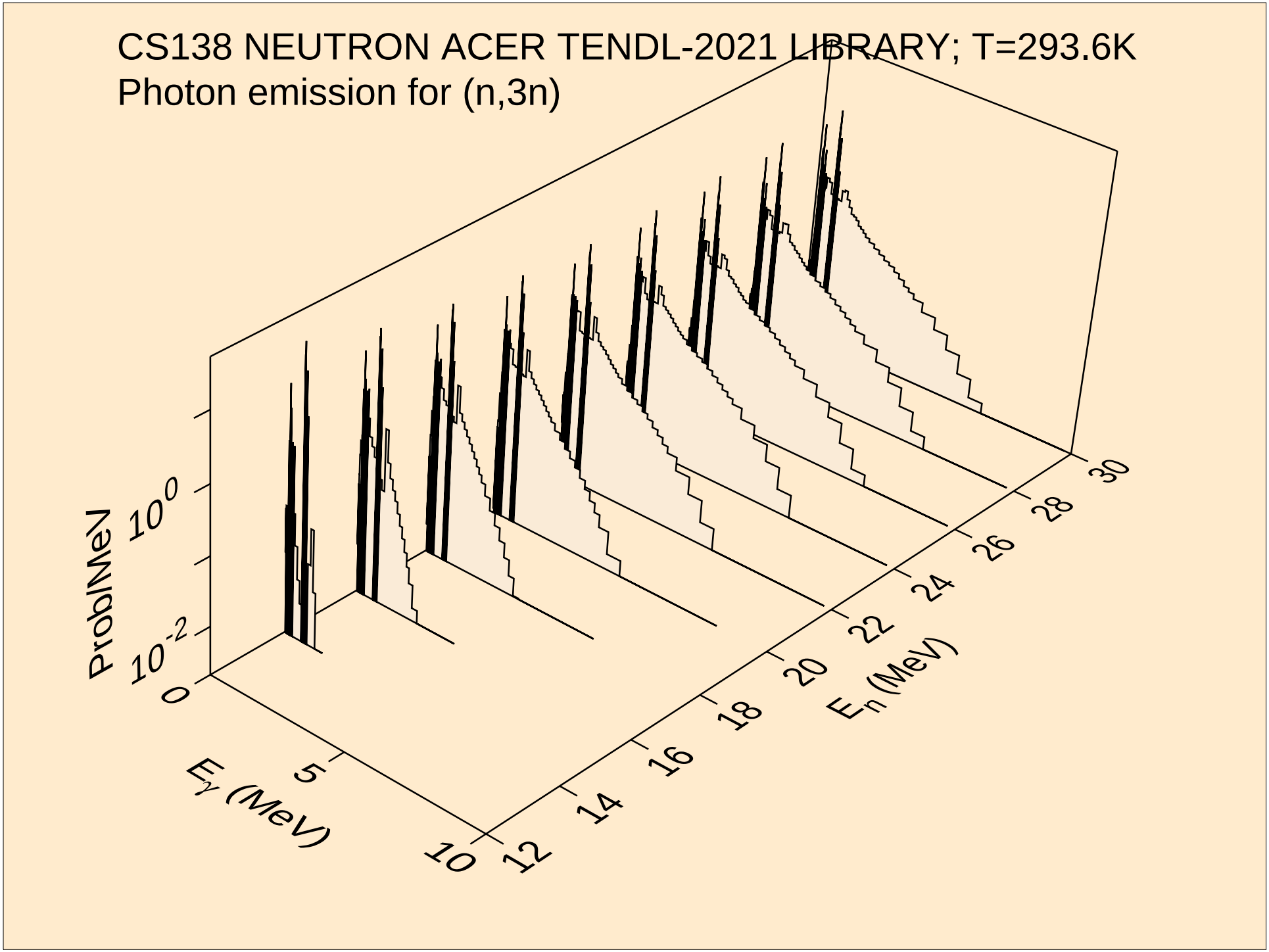

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
Neutron emission for (n,npa)
Prob/MeV
10-1
10-3
0
2
4
6
Sec. Energy
5
10
15
20
25
30
Energy (MeV)

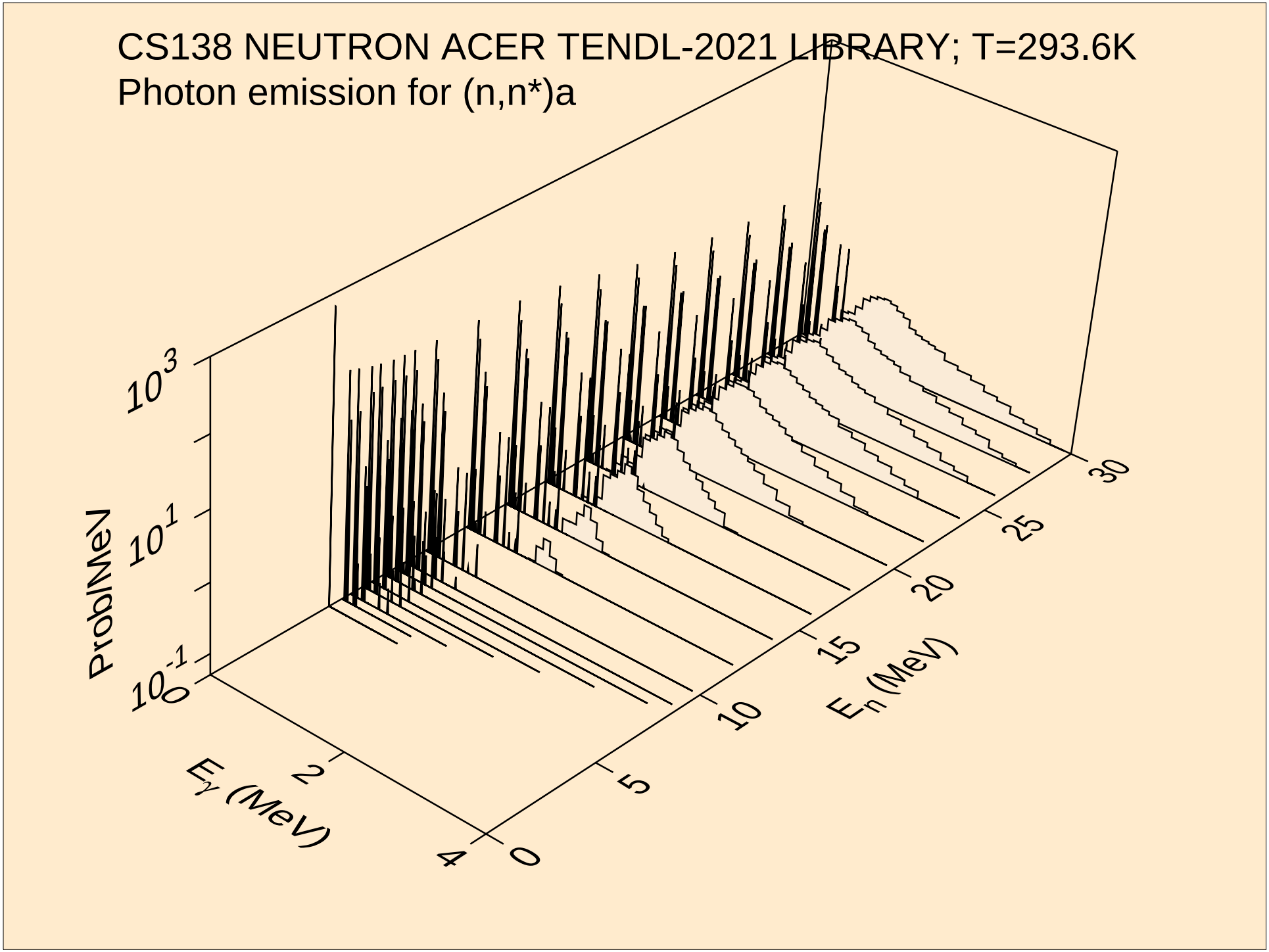

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
Neutron emission for (n,n*c)
Prob/MeV
10^0
10^-2
0
10
20
30
Sec. Energy
0
5
10
15
20
25
30
Energy (MeV)

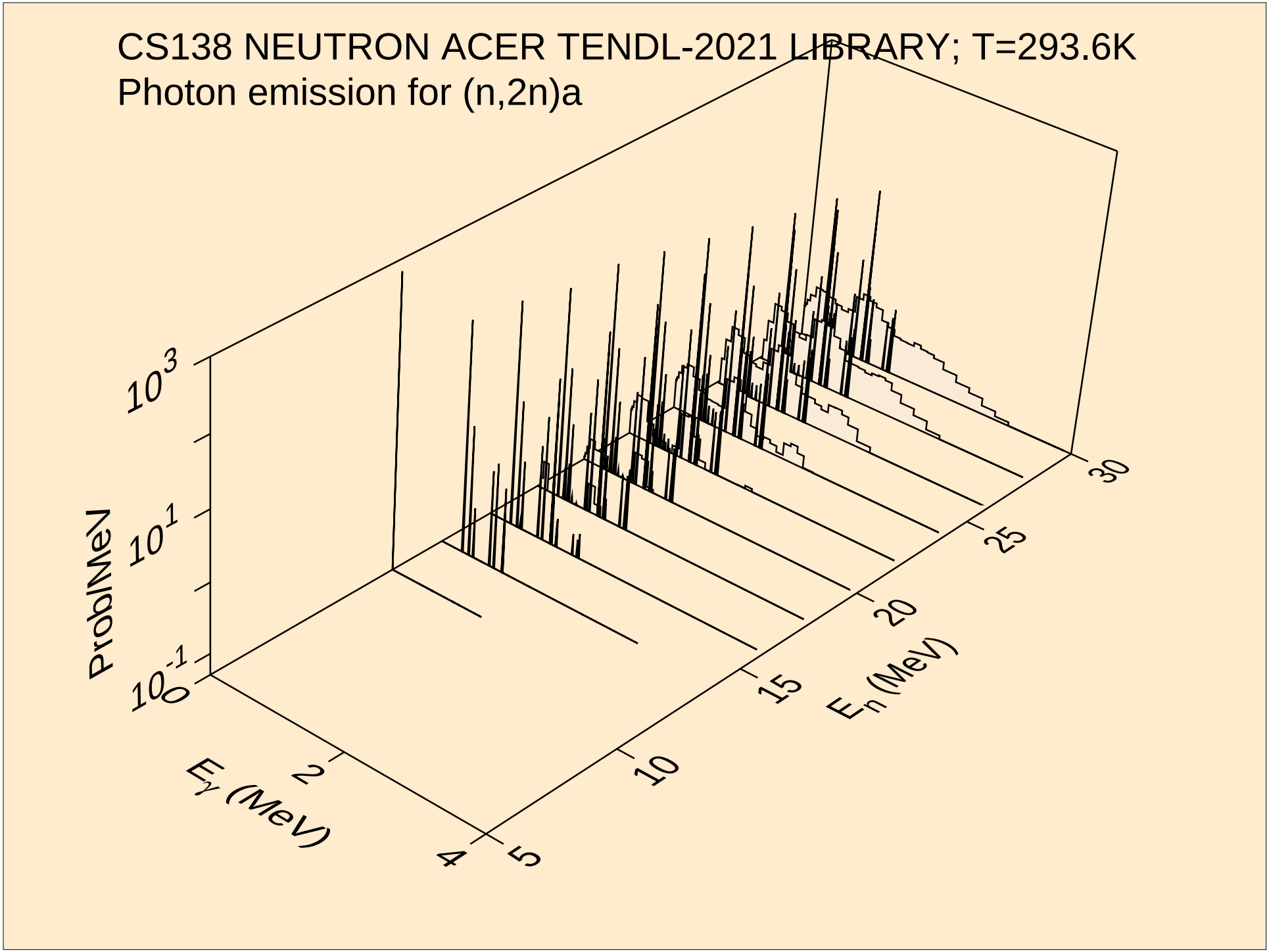

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
Photon emission for (n,x)
Prob/MeV
10^{0}
10^{-2}
10^{-4}
0
20
40
E_γ (MeV)
0
50
100
150
200
E_n (MeV)

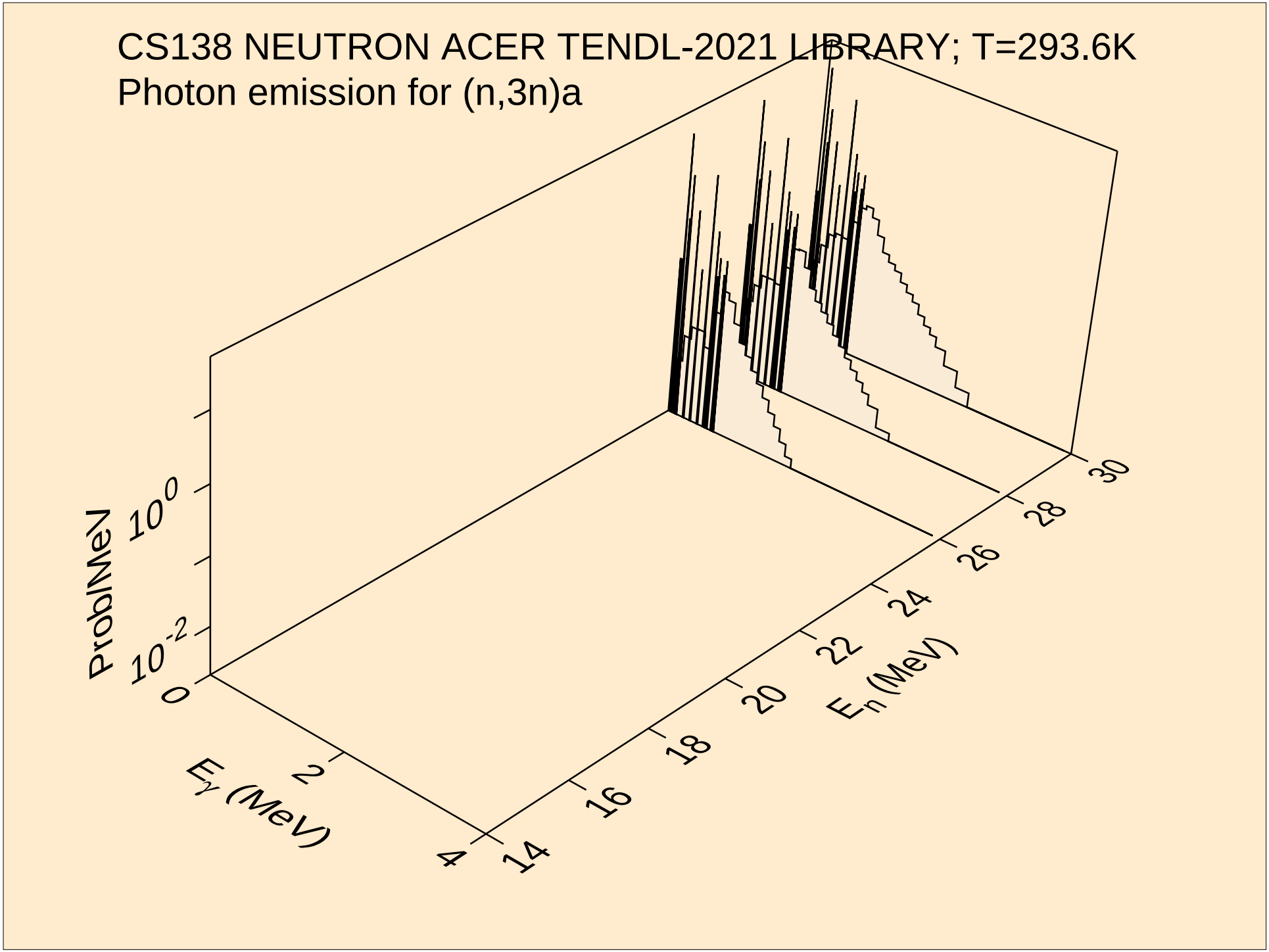

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
Photon emission for (n,2nd)
Prob/MeV
10^{2}
10^{0}
10^{-2}
E_γ (MeV)
0
2
4
6
E_n (MeV)
16
18
20
22
24
26
28
30

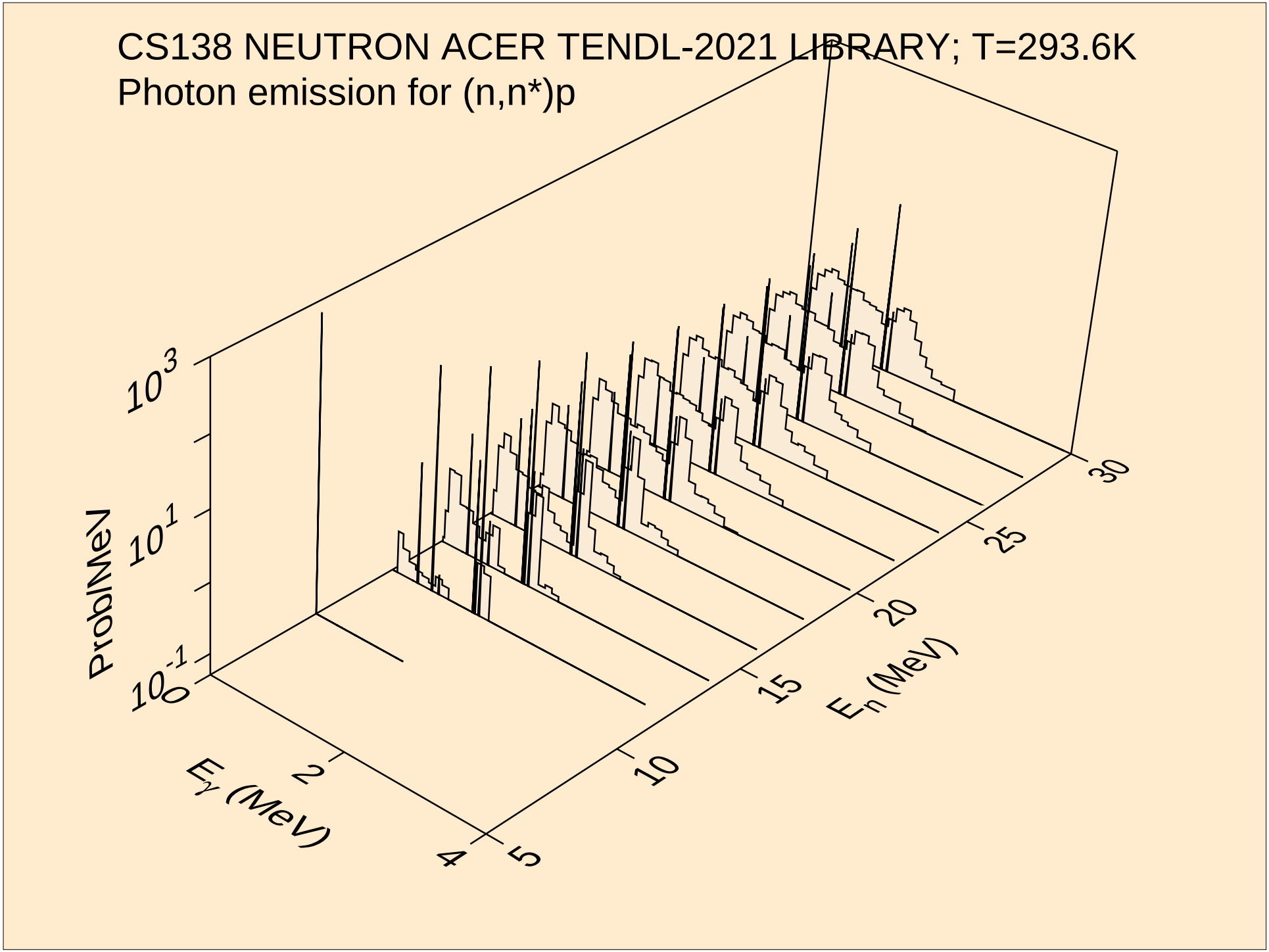

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
Photon emission for (n,2n)
Prob/MeV
10^{2}
10^{0}
10^{-2}
0
5
10
E_γ (MeV)
0
5
10
15
20
25
30
E_n (MeV)

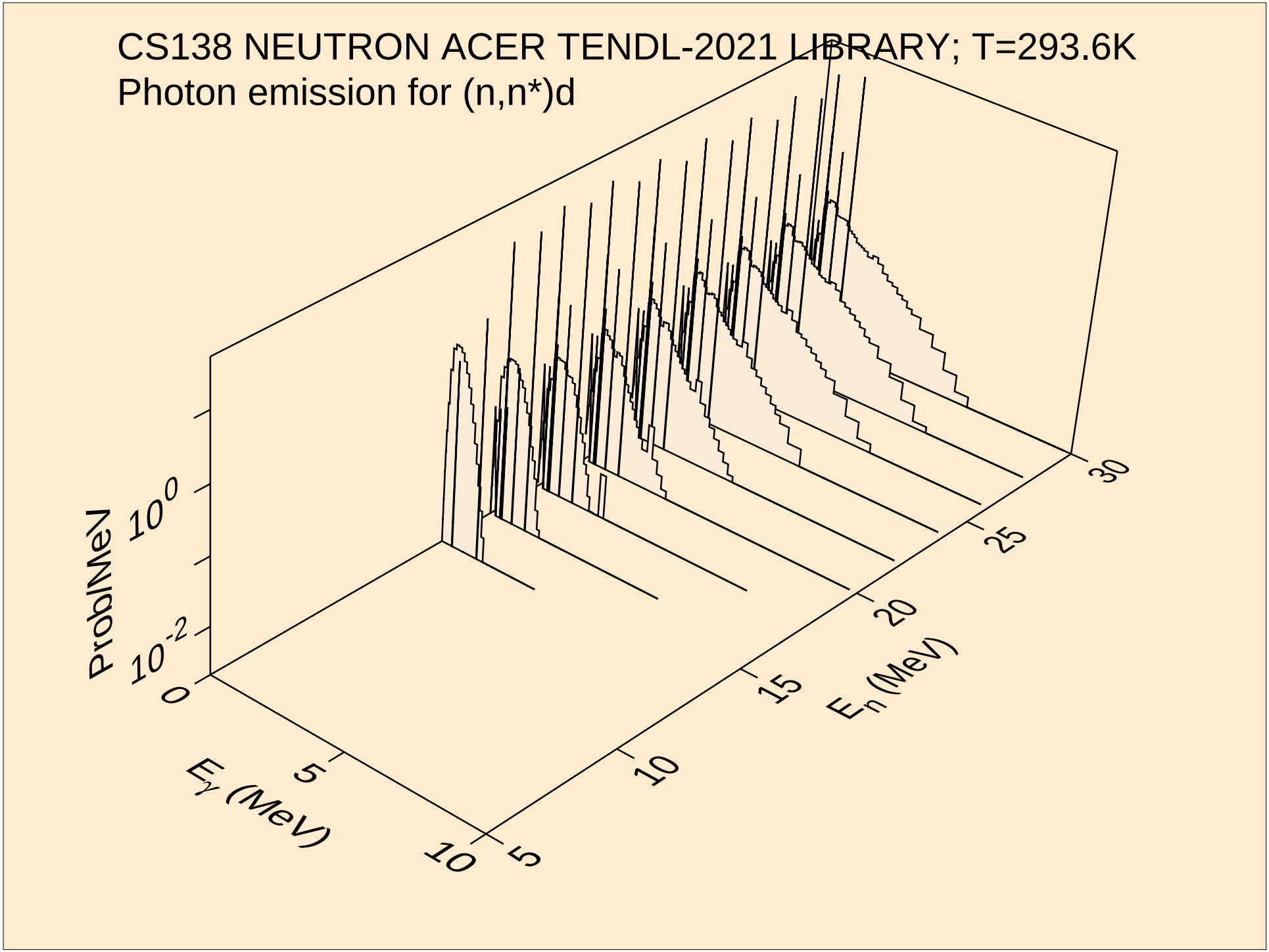

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
Photon emission for (n,3n)
Prob/MeV
10^0
10^-2
0
5
10
E_γ (MeV)
12
14
16
18
20
22
24
26
28
30
E_n (MeV)

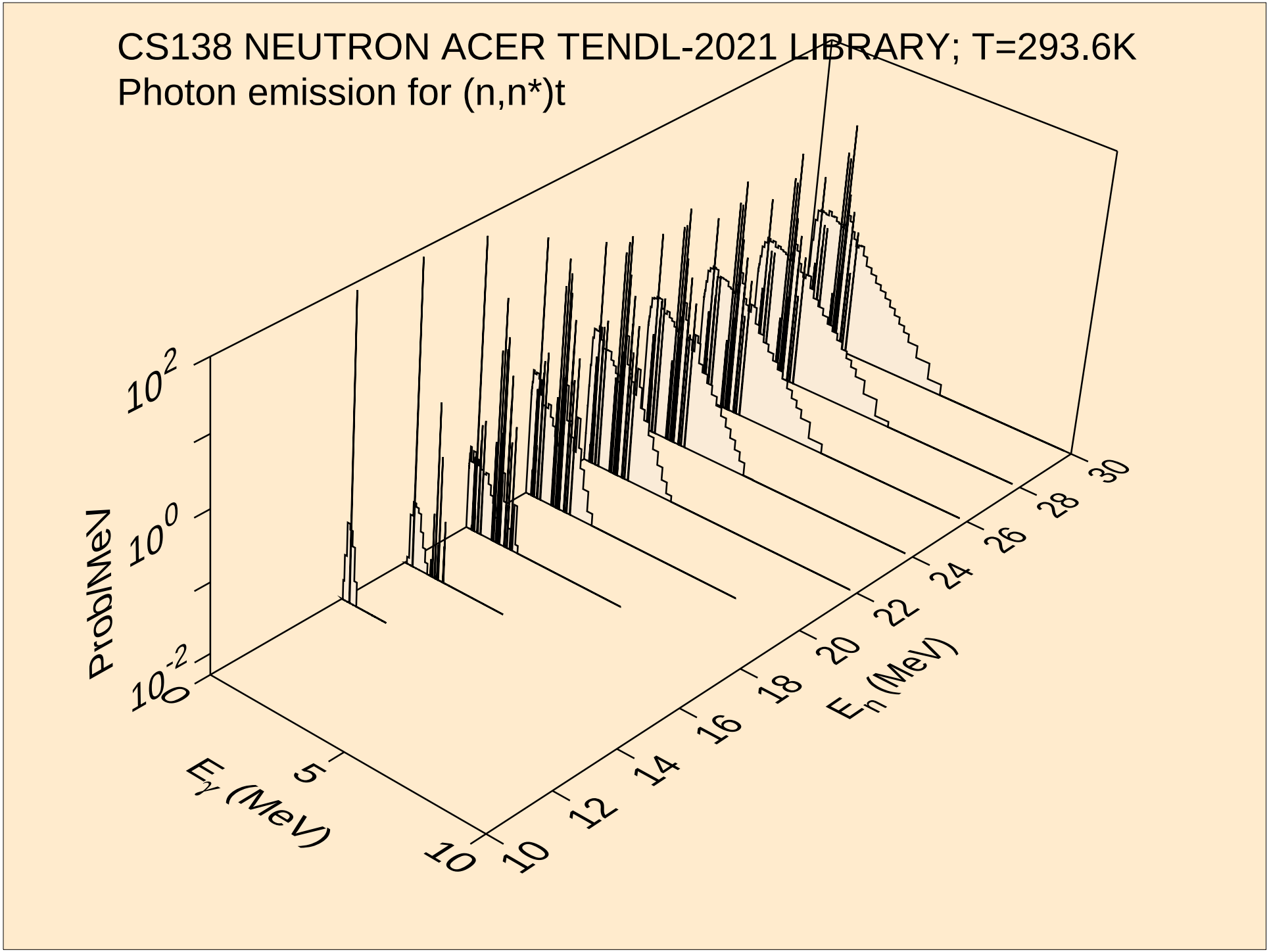

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
Photon emission for (n,n*)a
Prob/MeV
10^3
10^1
10^-1
E_γ (MeV)
0
2
4
E_n (MeV)
0
5
10
15
20
25
30

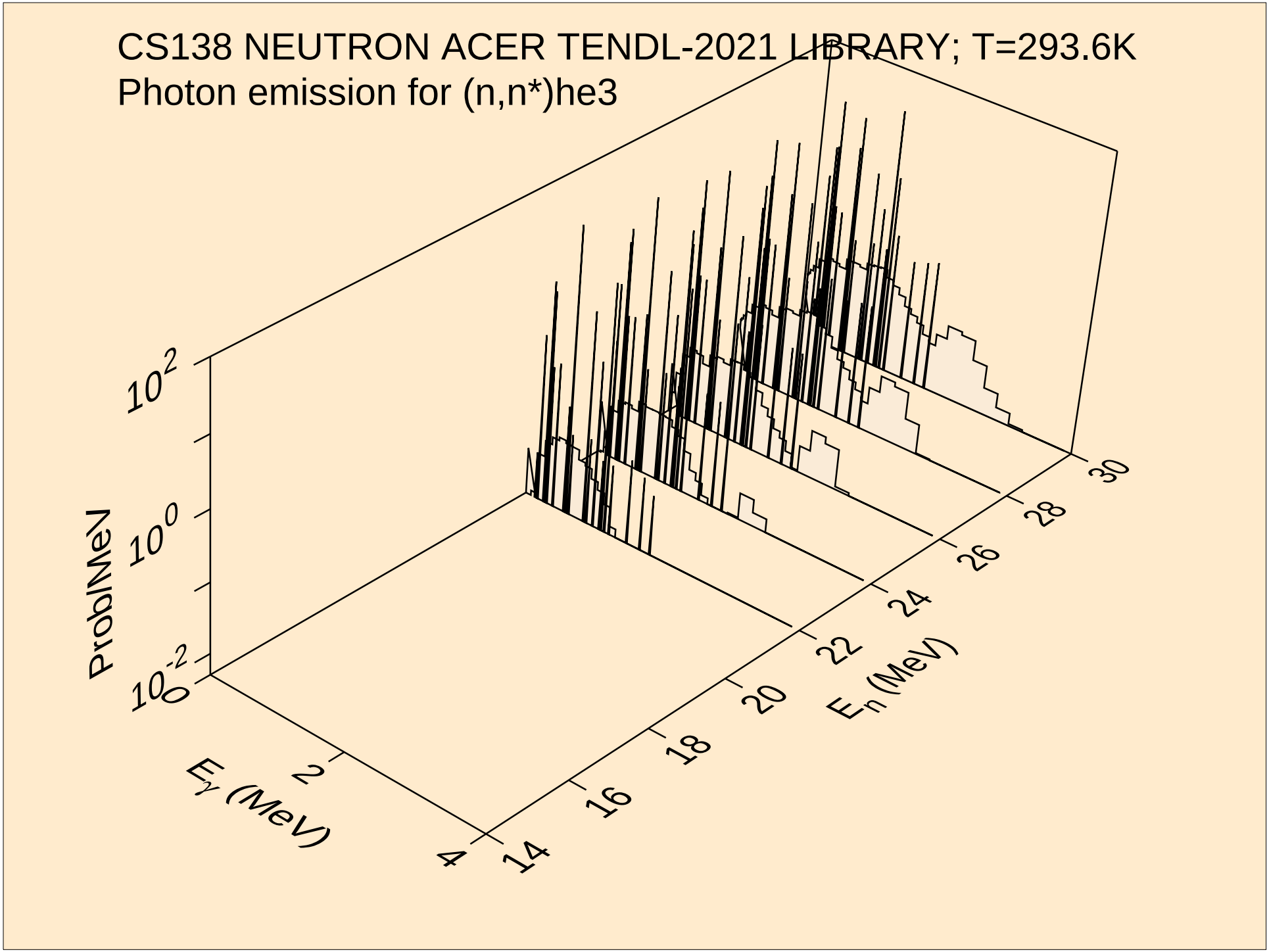

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
Photon emission for (n,2n)a
Prob/MeV
10^{3}
10^{1}
10^{-1}
0
2
4
E_γ (MeV)
5
10
15
20
25
30
E_n (MeV)

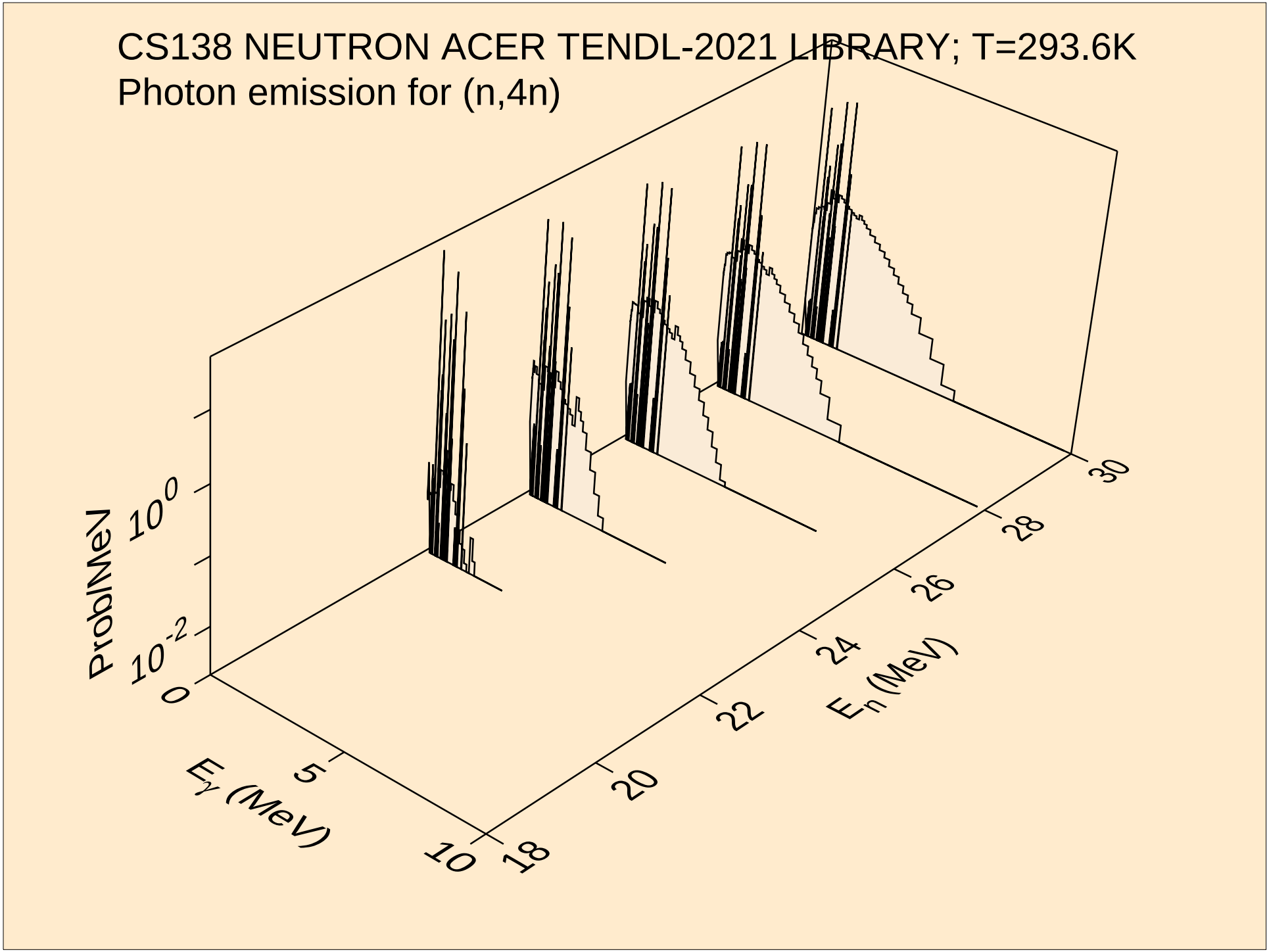

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
Photon emission for (n,3n)a
Prob/MeV
10^0
10^-2
0
2
4
E_γ (MeV)
14
16
18
20
22
24
26
28
30
E_n (MeV)

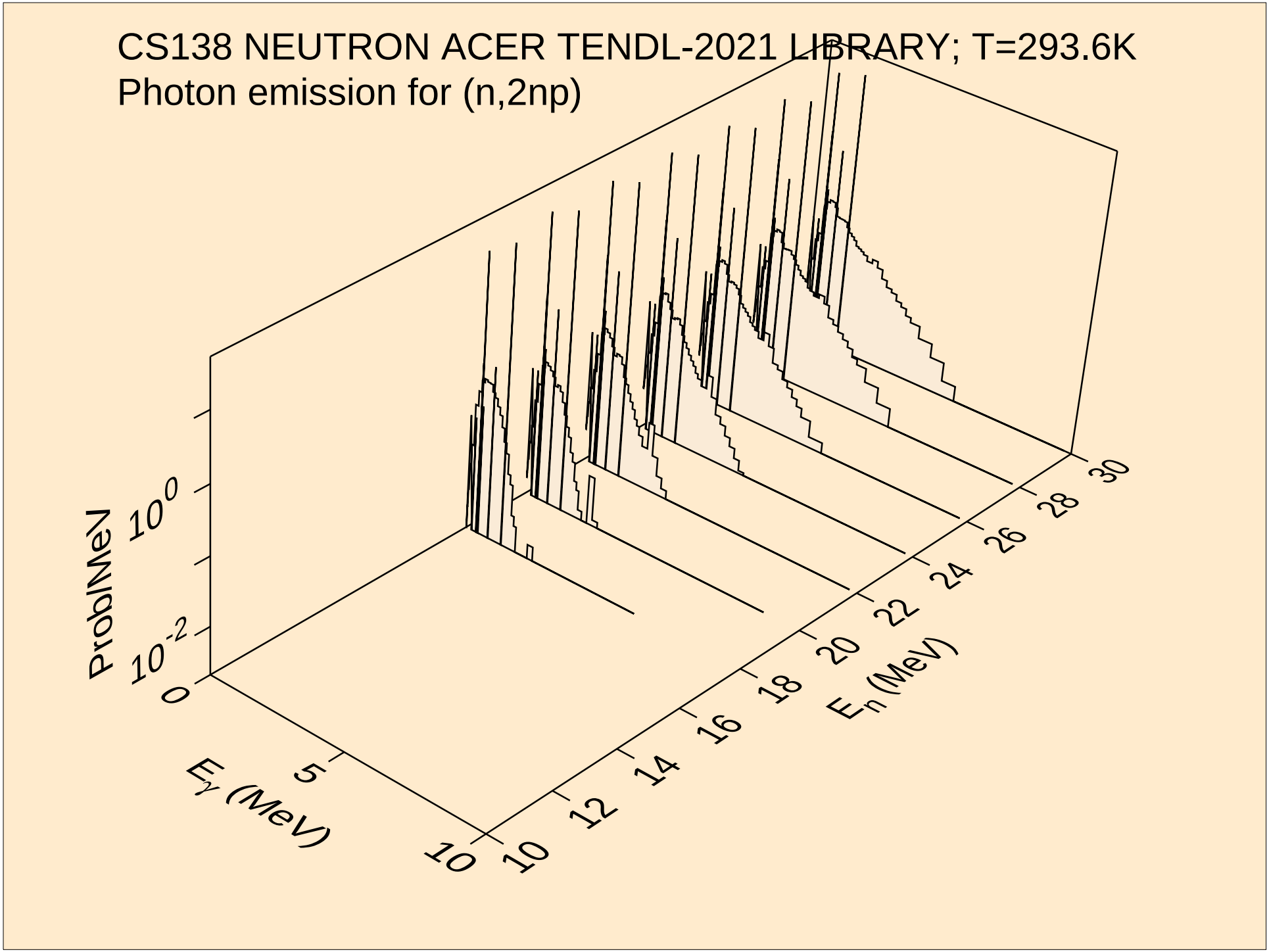

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
Photon emission for (n,n*)p
Prob/MeV
10^{3}
10^{1}
10^{-1}
0
2
4
5
10
15
20
25
30
E_γ (MeV)
E_n (MeV)

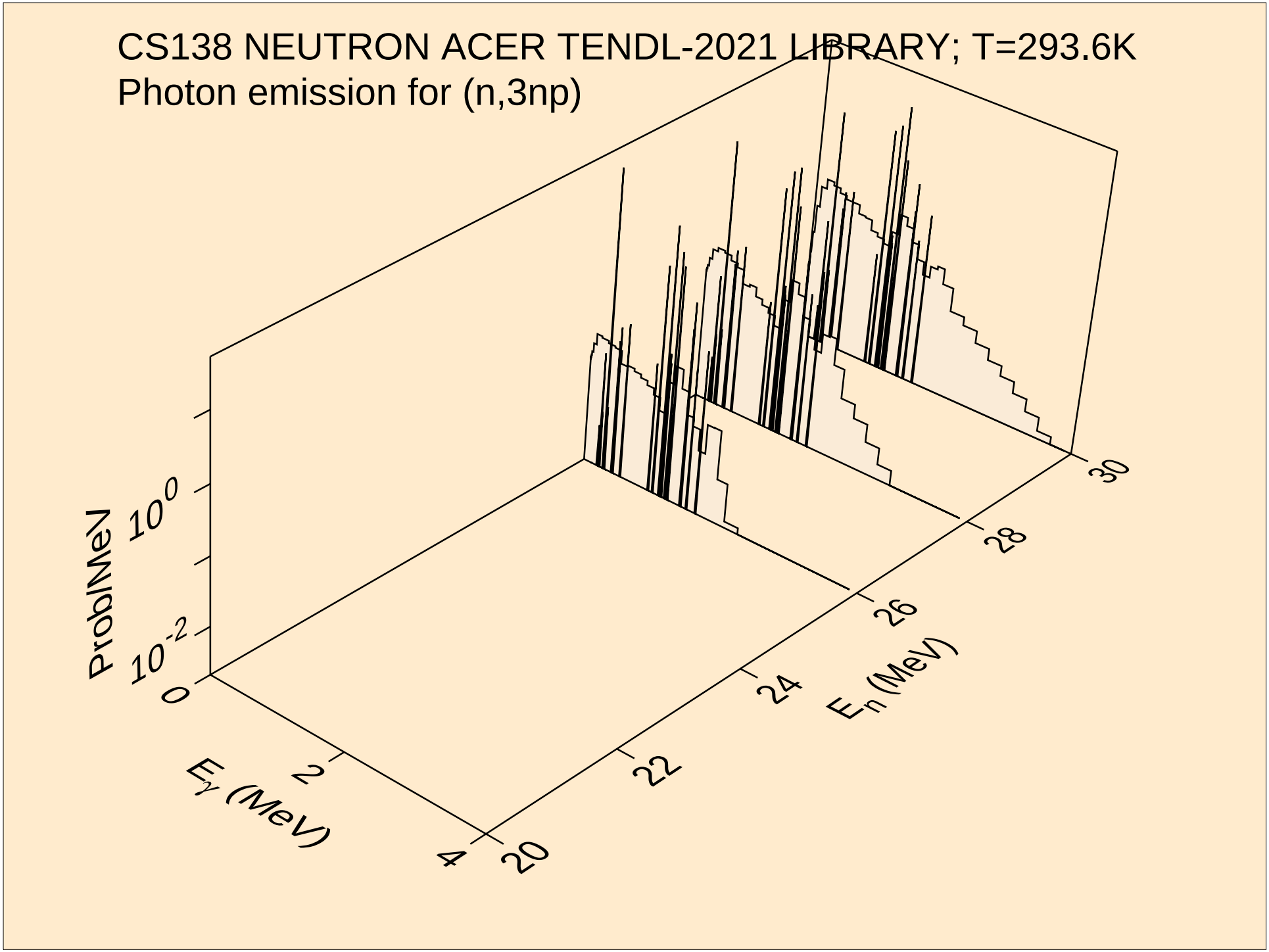

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
Photon emission for (n,n*)d
Prob/MeV
10^0
10^-2
0
5
10
E_γ (MeV)
5
10
15
20
25
30
E_n (MeV)

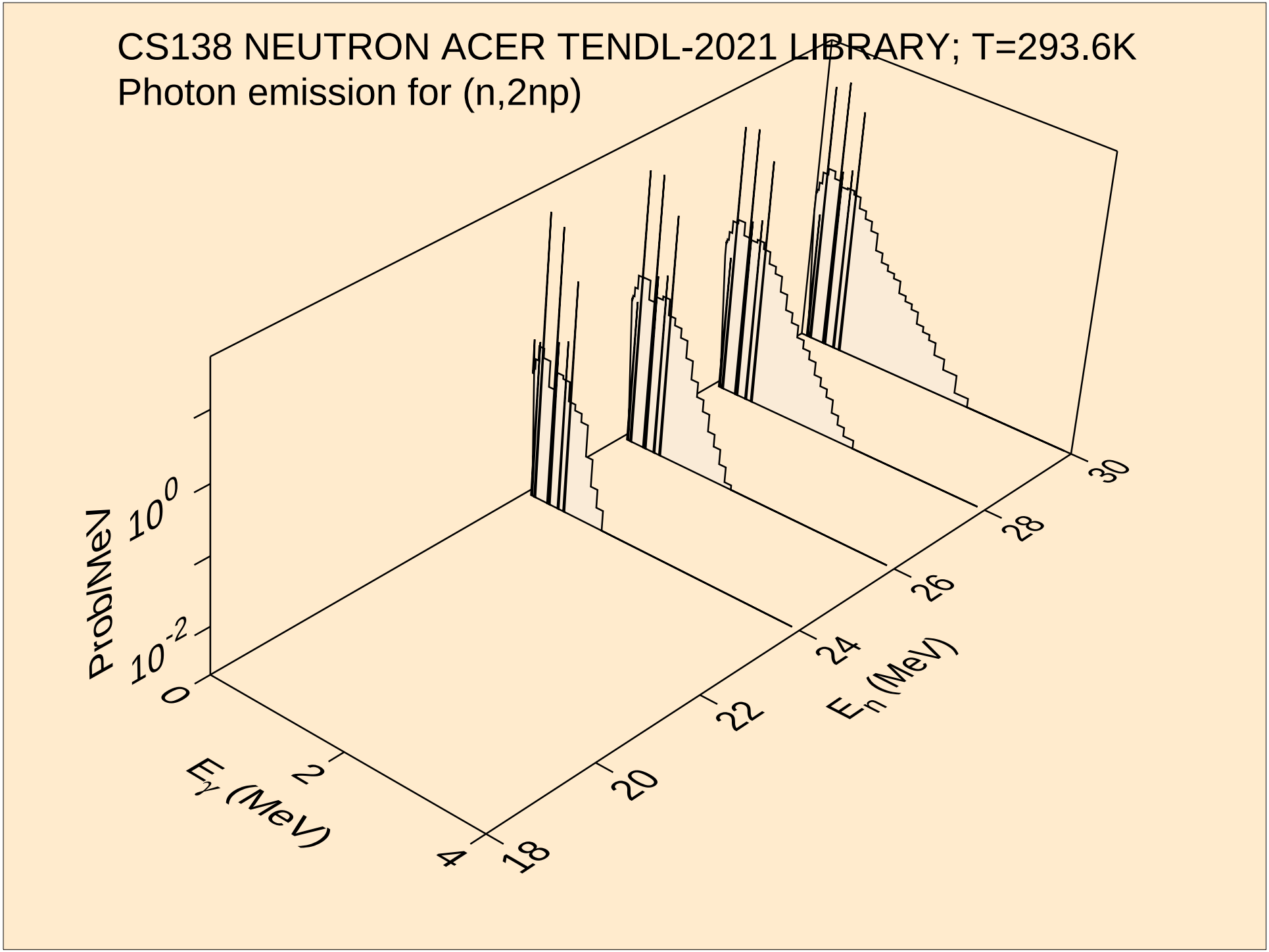

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
Photon emission for (n,n*)t
Prob/MeV
10^{2}
10^{0}
10^{-2}
0
5
10
E_γ (MeV)
10
12
14
16
18
20
22
24
26
28
30
E_n (MeV)

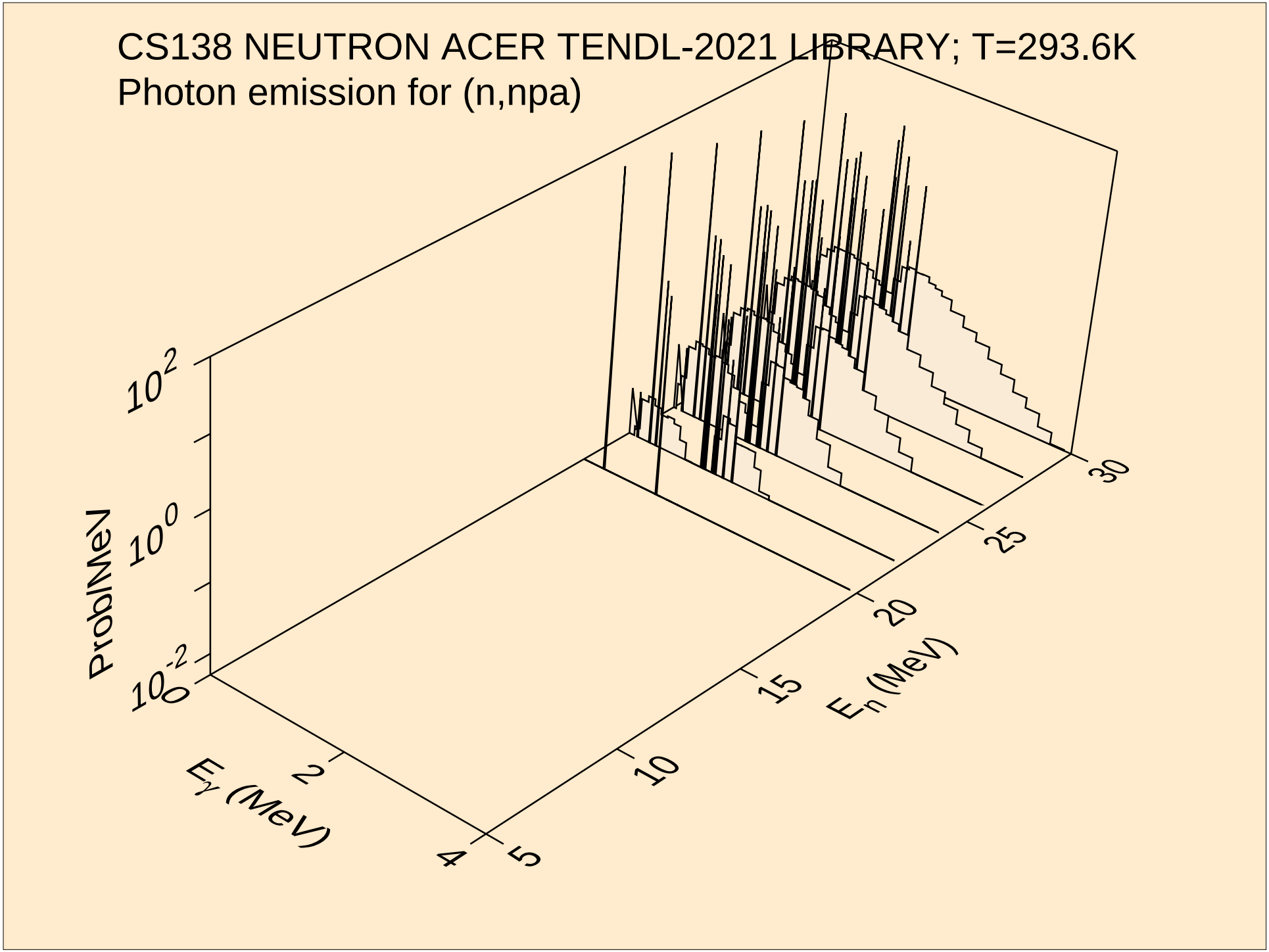

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
Photon emission for (n,n*)he3
Prob/MeV
10^{2}
10^{0}
10^{-2}
E_γ (MeV)
2
4
14
16
18
20
22
24
26
28
30
E_n (MeV)

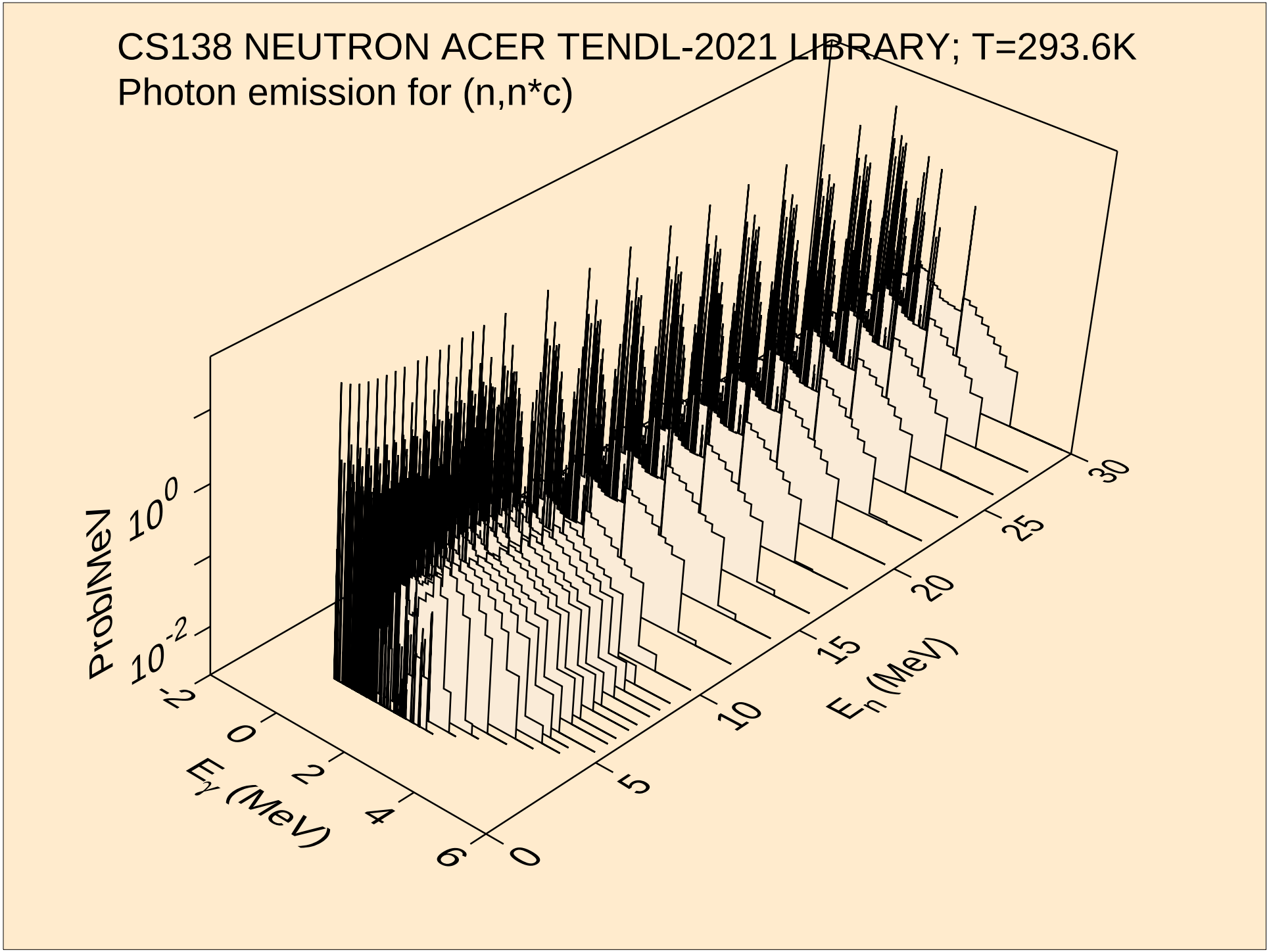

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
Photon emission for (n,4n)
Prob/MeV
10^0
10^-2
0
5
10
E_γ (MeV)
18
20
22
24
26
28
30
E_n (MeV)

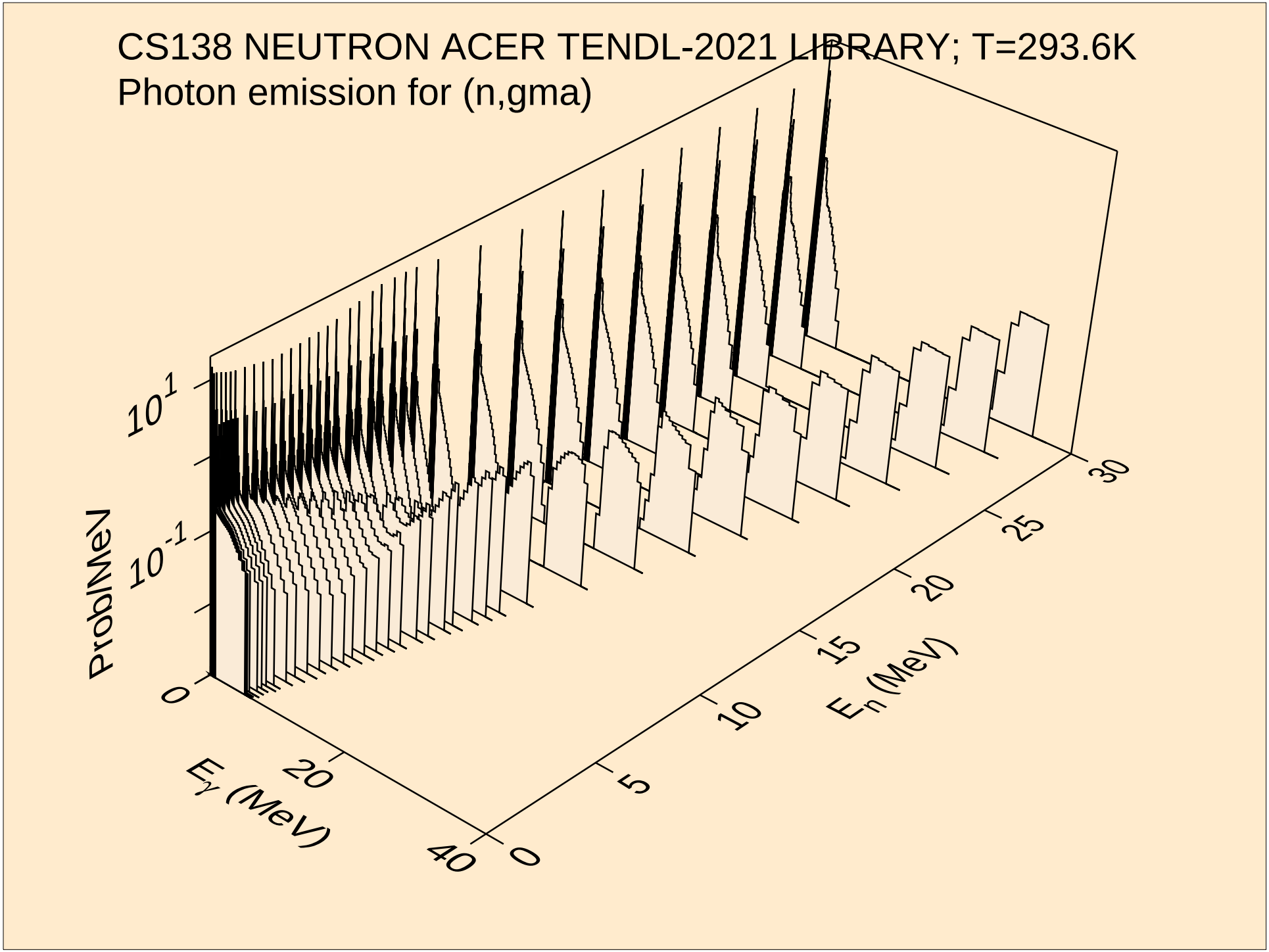

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
Photon emission for (n,2np)
Prob/MeV
10^0
10^-2
0
5
10
E_γ (MeV)
10
12
14
16
18
20
22
24
26
28
30
E_n (MeV)

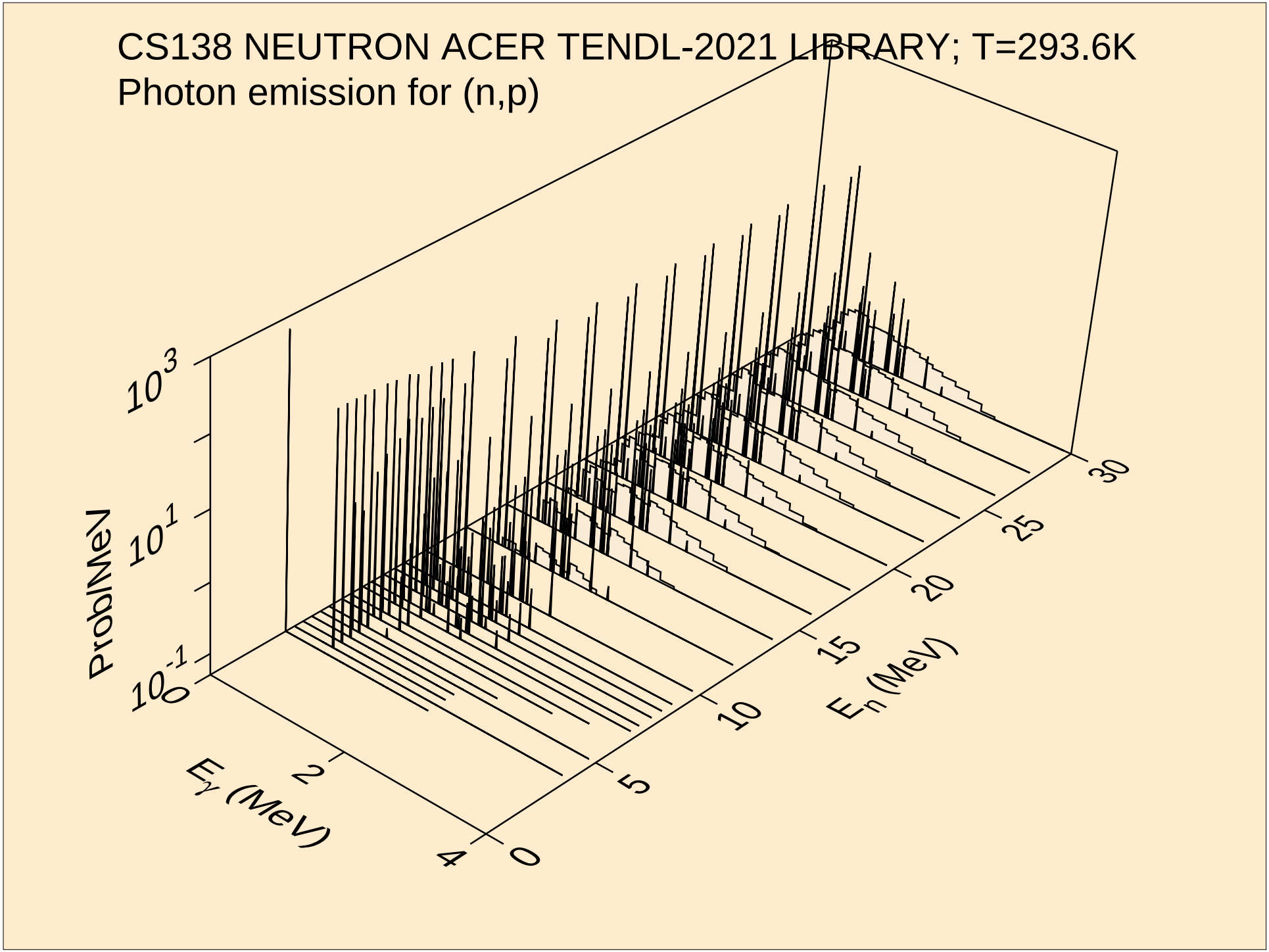

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
Photon emission for (n,3np)
Prob/MeV
10^0
10^-2
0
2
4
E_γ (MeV)
20
22
24
26
28
30
E_n (MeV)

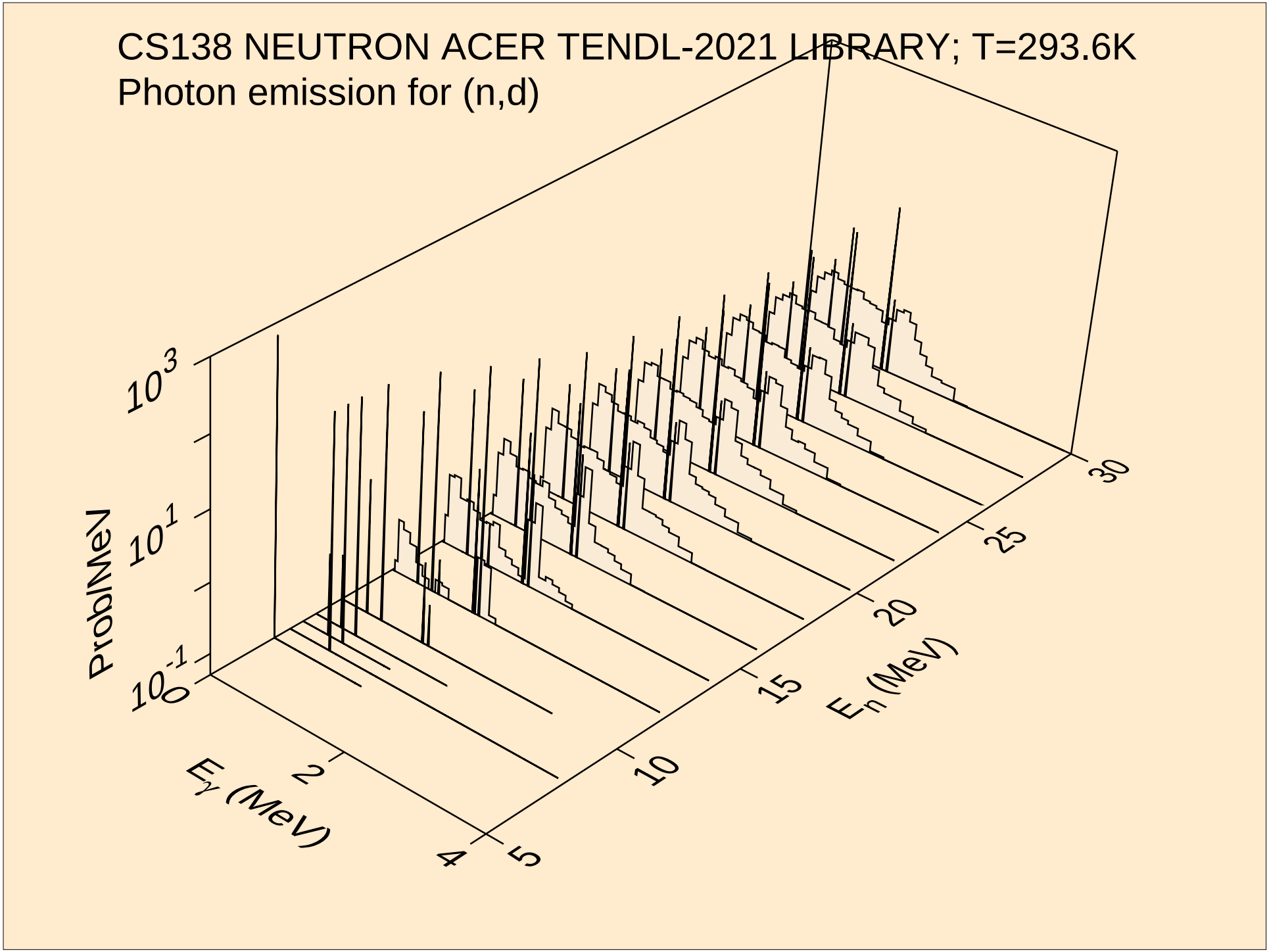

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
Photon emission for (n,2np)
Prob/MeV
10^0
10^-2
0
2
4
E_γ (MeV)
18
20
22
24
26
28
30
E_n (MeV)

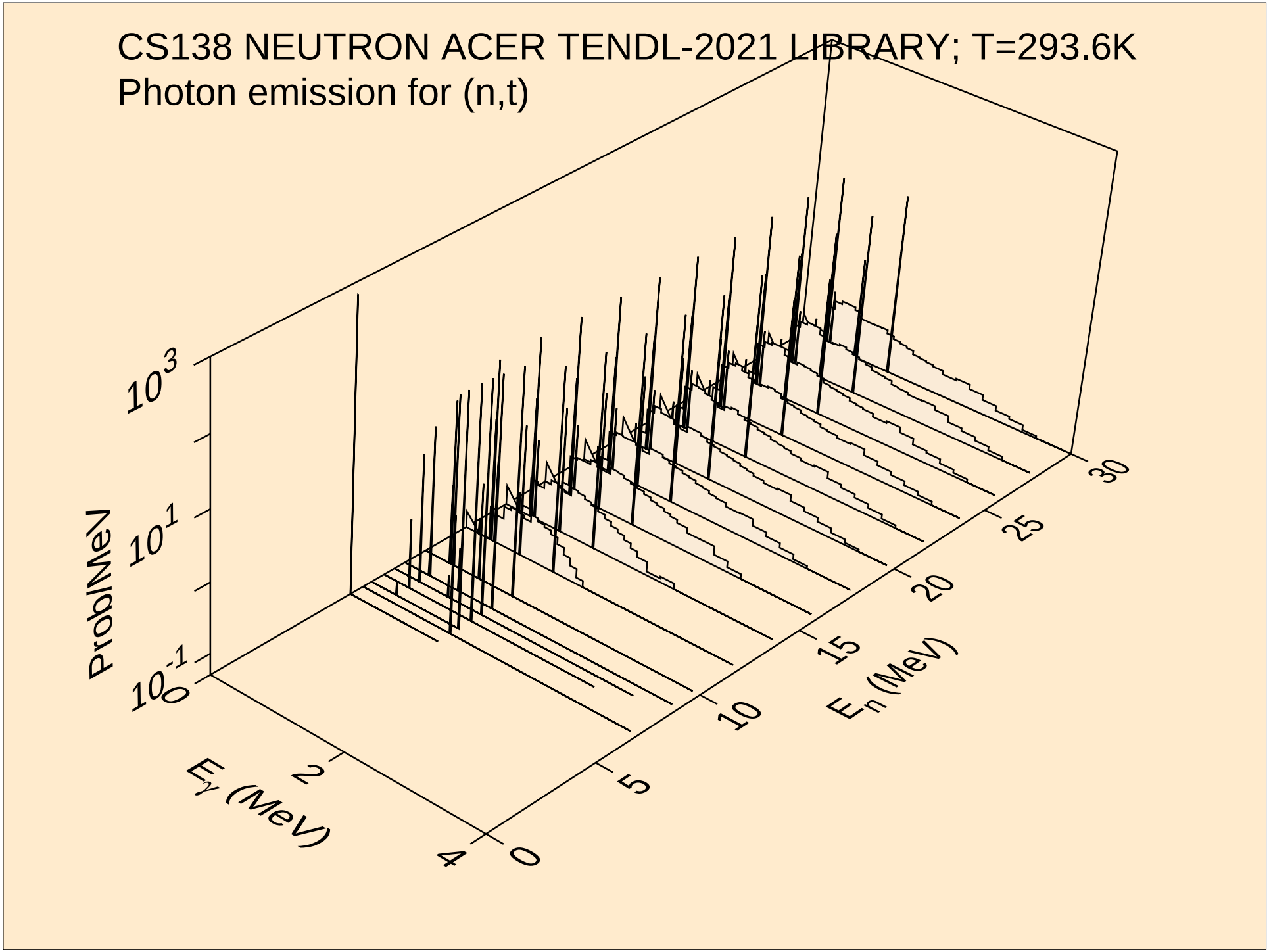

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
Photon emission for (n,npa)
Prob/MeV
10^{2}
10^{0}
10^{-2}
0
2
4
E_γ (MeV)
5
10
15
20
25
30
E_n (MeV)

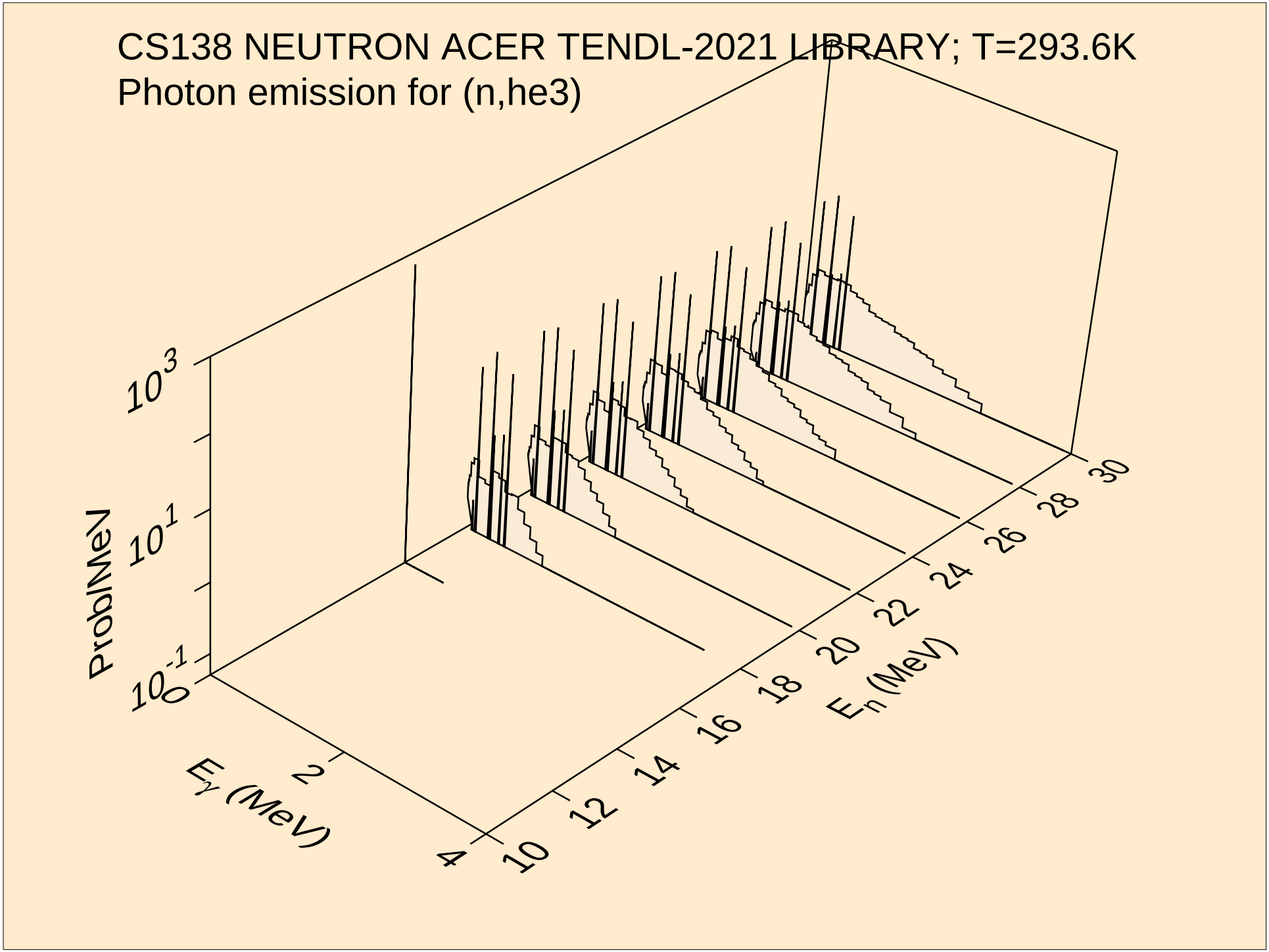

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
Photon emission for (n,n*c)
Prob/MeV
10^{0}
10^{-2}
E_γ (MeV)
0
2
4
6
E_n (MeV)
0
5
10
15
20
25
30

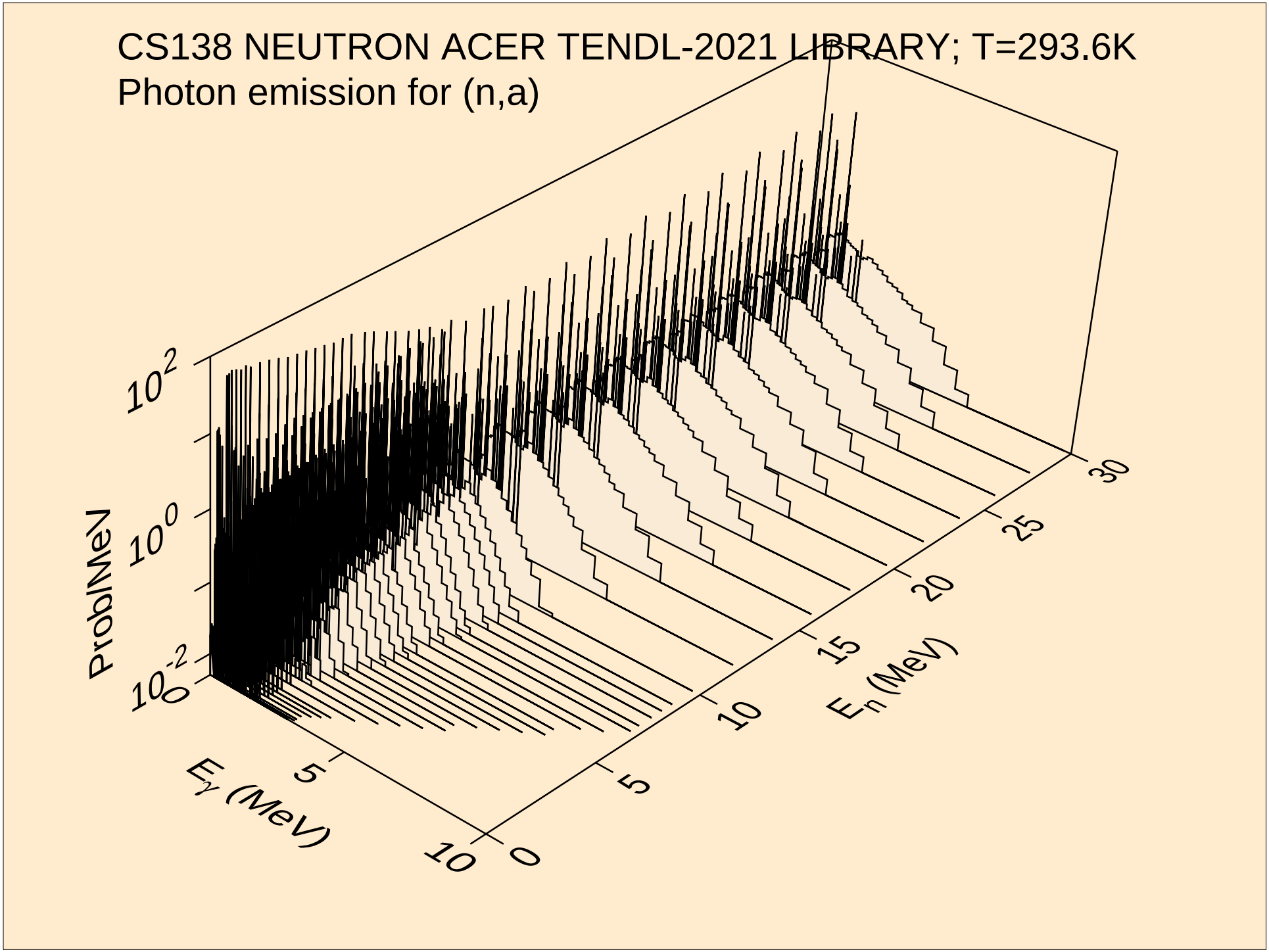

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
Photon emission for (n,gma)
Prob/MeV
10^1
10^-1
0
E_γ (MeV)
20
40
0
5
10
15
20
25
30
E_n (MeV)

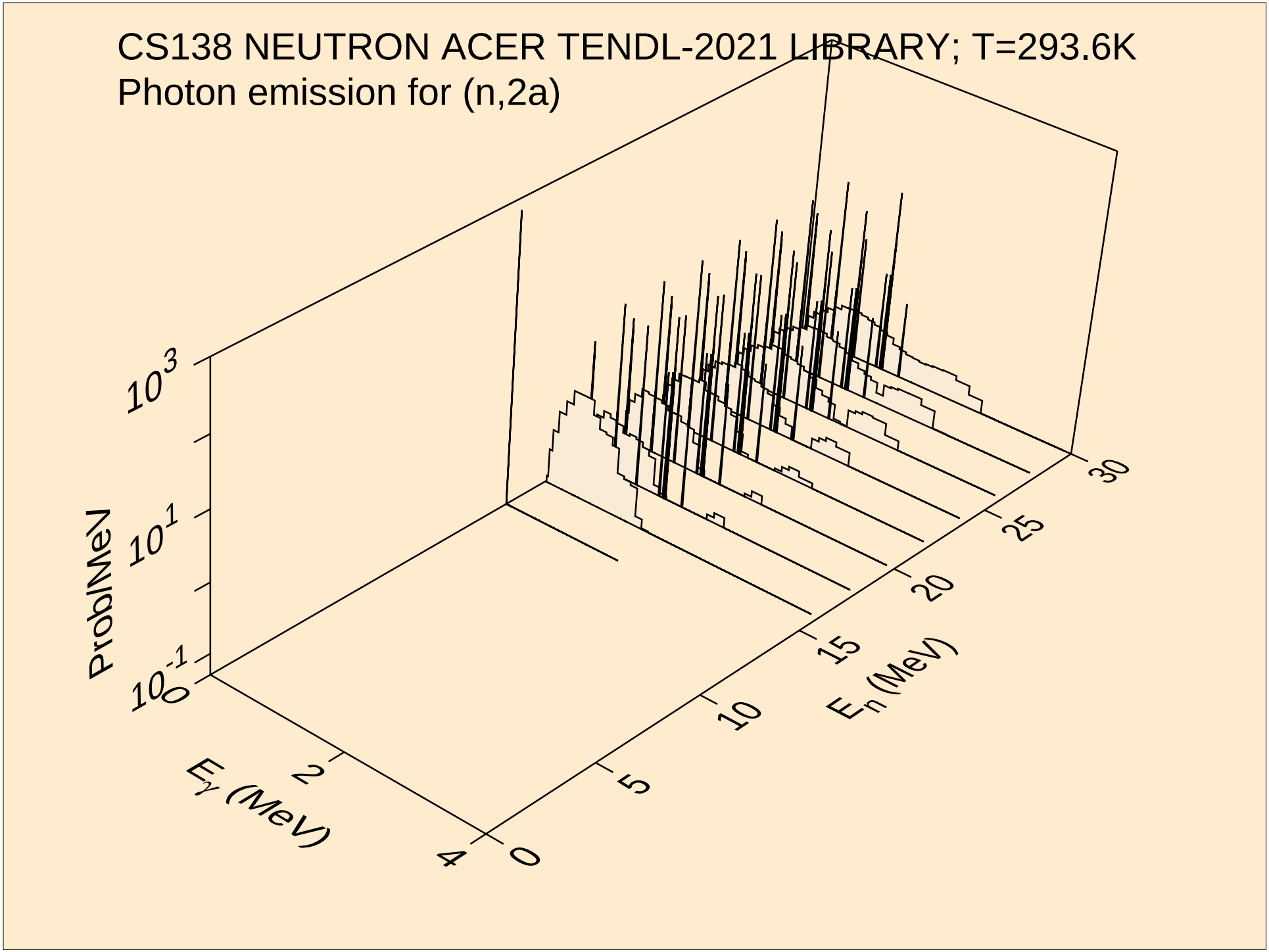

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
Photon emission for (n,p)
Prob/MeV
10^{3}
10^{1}
10^{-1}
0
2
4
E_γ (MeV)
0
5
10
15
20
25
30
E_n (MeV)

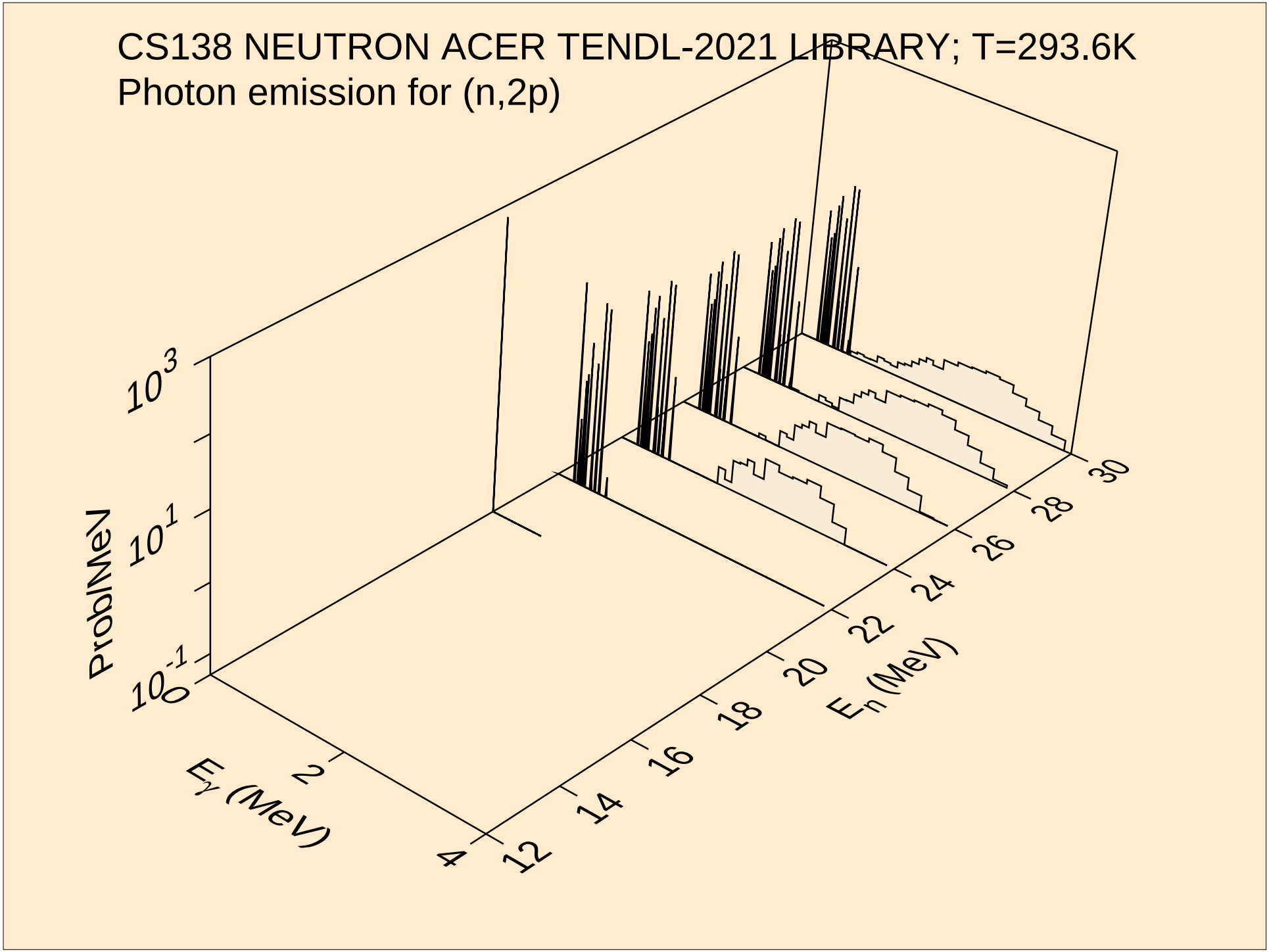

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
Photon emission for (n,d)
Prob/MeV
10^{3}
10^{1}
10^{-1}
0
E_γ (MeV)
2
4
5
10
15
20
25
30
E_n (MeV)

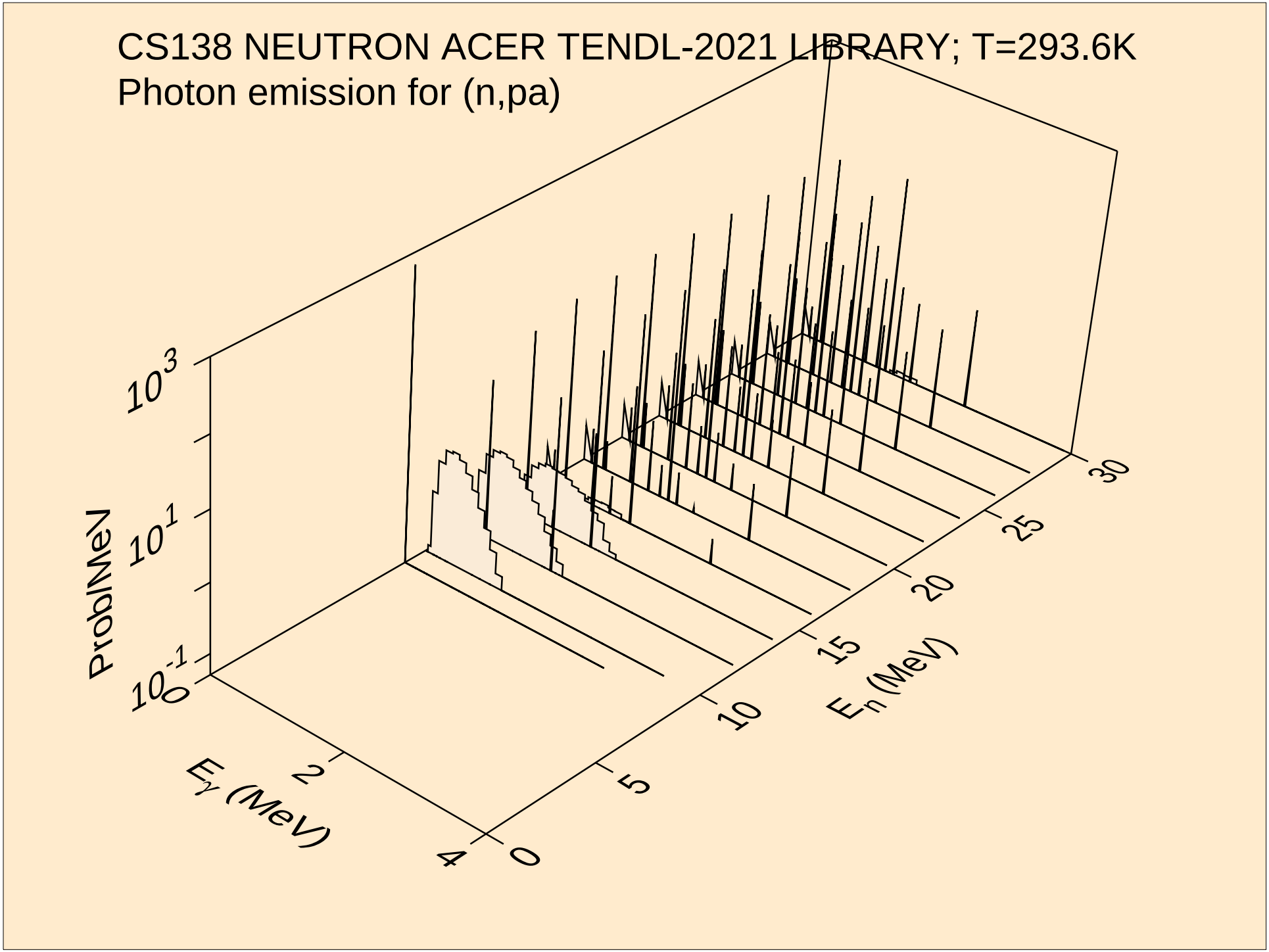

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
Photon emission for (n,t)
Prob/MeV
10^{3}
10^{1}
10^{-1}
0
2
4
E_γ (MeV)
0
5
10
15
20
25
30
E_n (MeV)

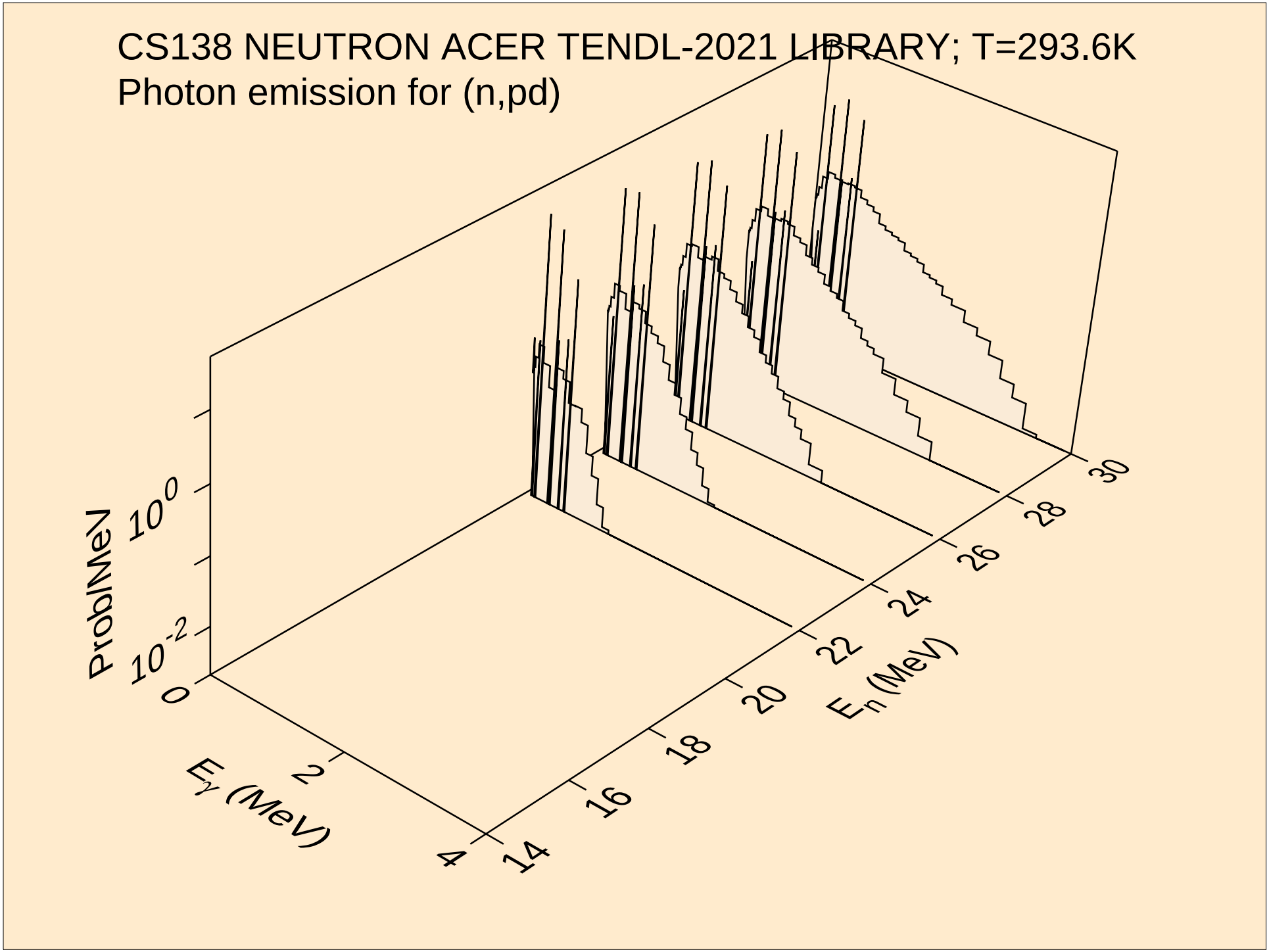

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
Photon emission for (n,he3)
Prob/MeV
10^{3}
10^{1}
10^{-1}
0
2
4
E_γ (MeV)
10
12
14
16
18
20
22
24
26
28
30
E_n (MeV)

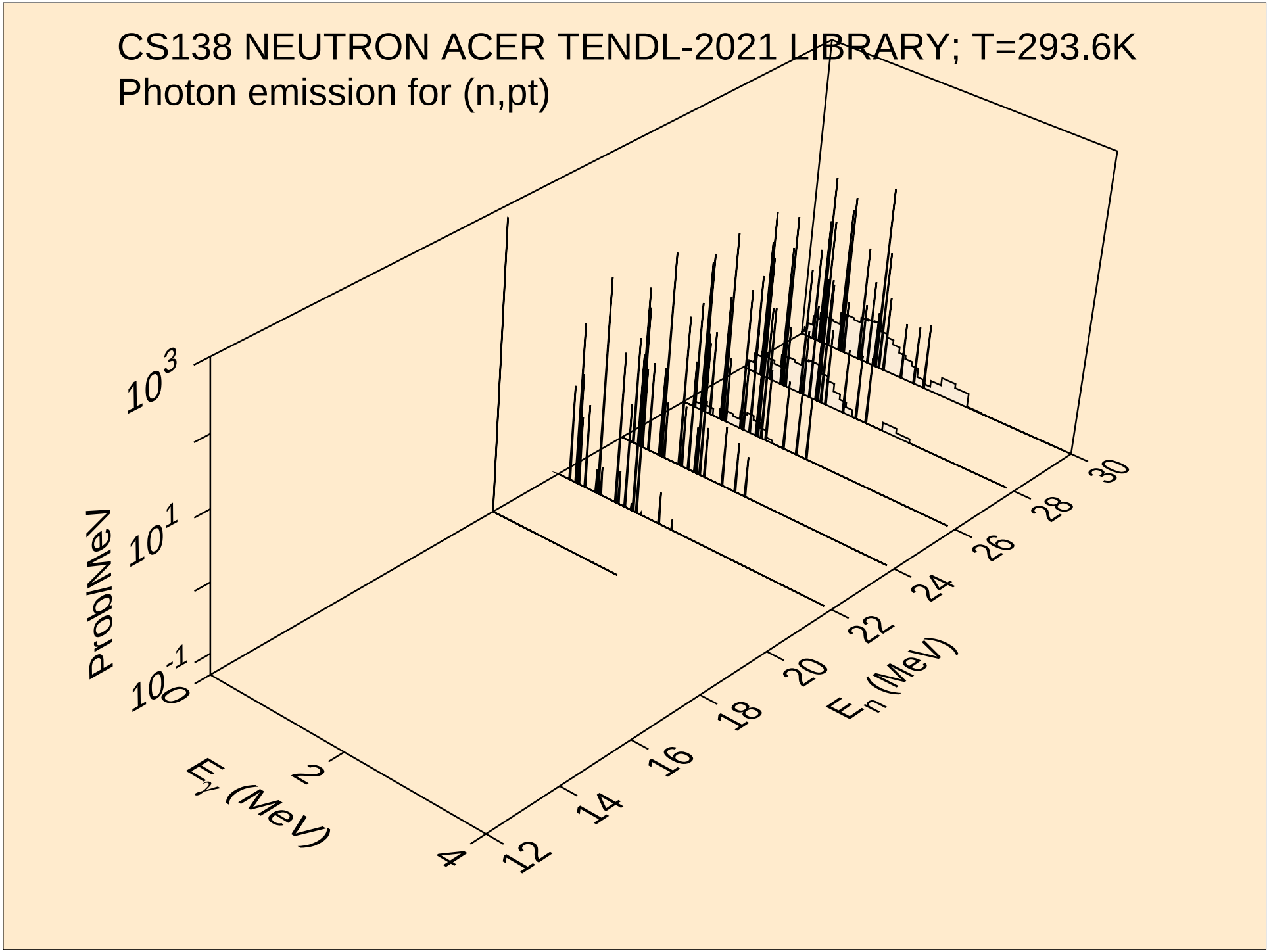

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
Photon emission for (n,a)
Prob/MeV
10^{2}
10^{0}
10^{-2}
0
5
10
E_γ (MeV)
0
5
10
15
20
25
30
E_n (MeV)

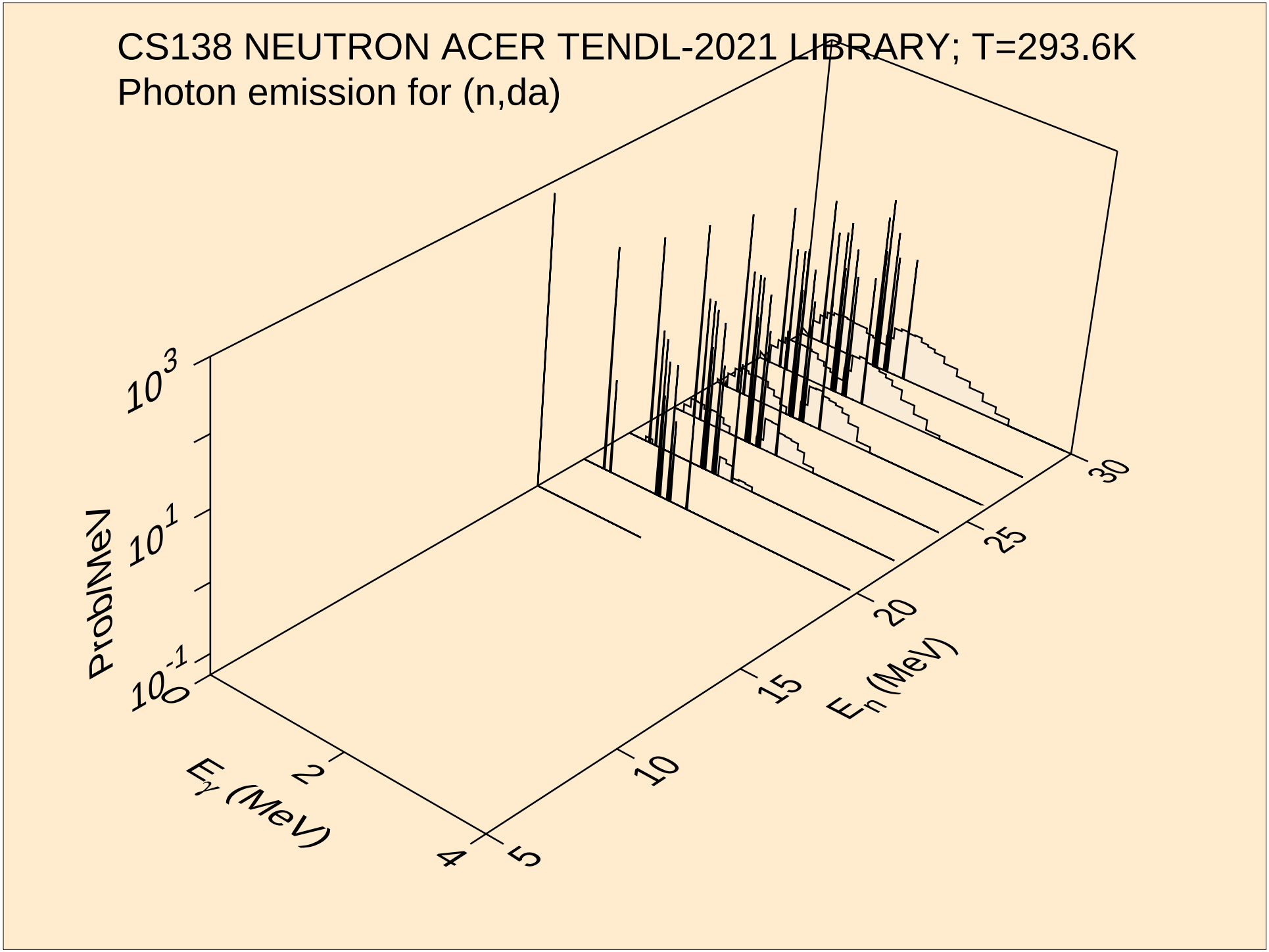

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
Photon emission for (n,2a)
Prob/MeV
10^{3}
10^{1}
10^{-1}
0
2
4
E_γ (MeV)
0
5
10
15
20
25
30
E_n (MeV)

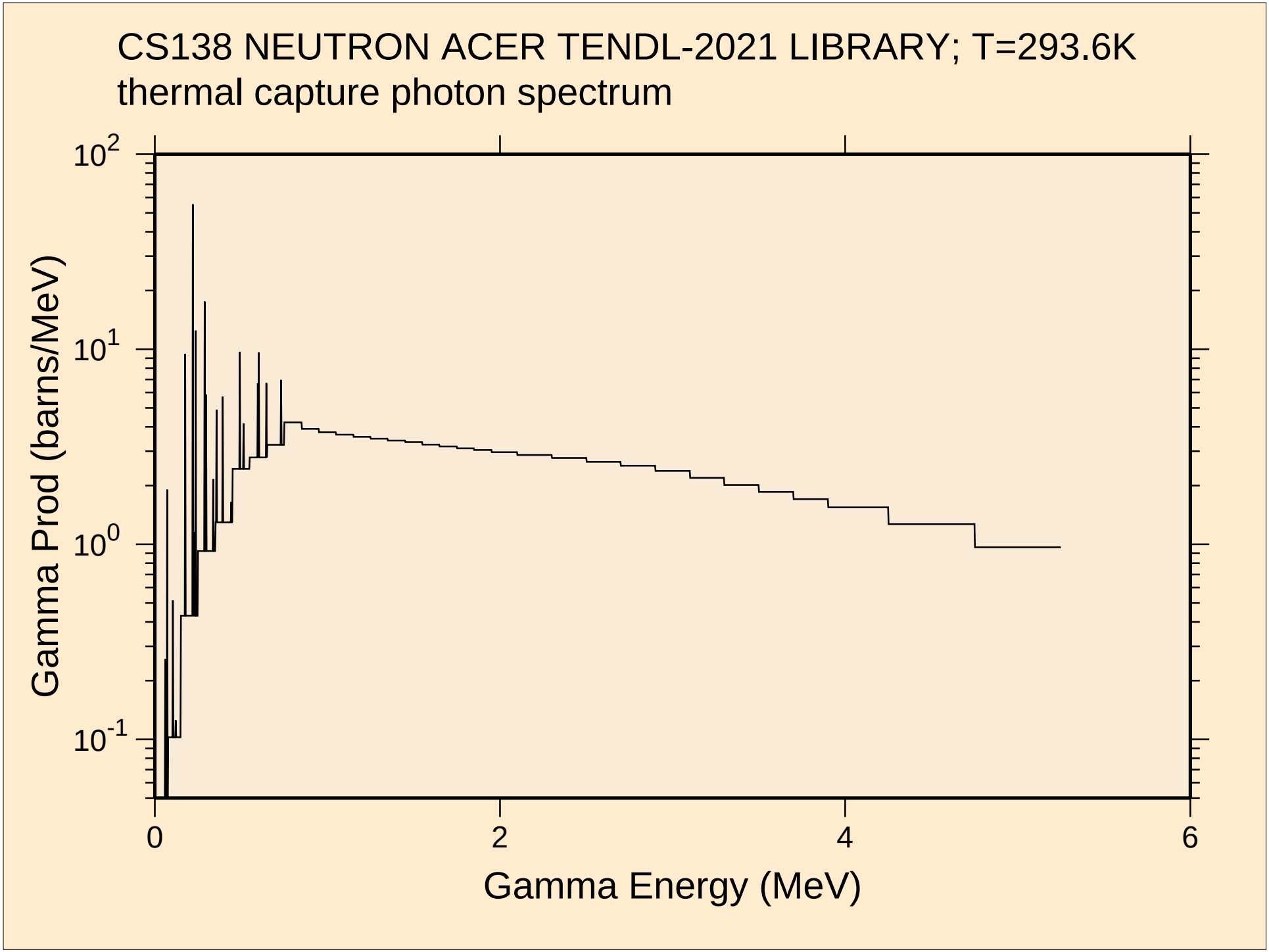

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
Photon emission for (n,2p)
Prob/MeV
10^{3}
10^{1}
10^{-1}
0
2
4
E_γ (MeV)
12
14
16
18
20
22
24
26
28
30
E_n (MeV)

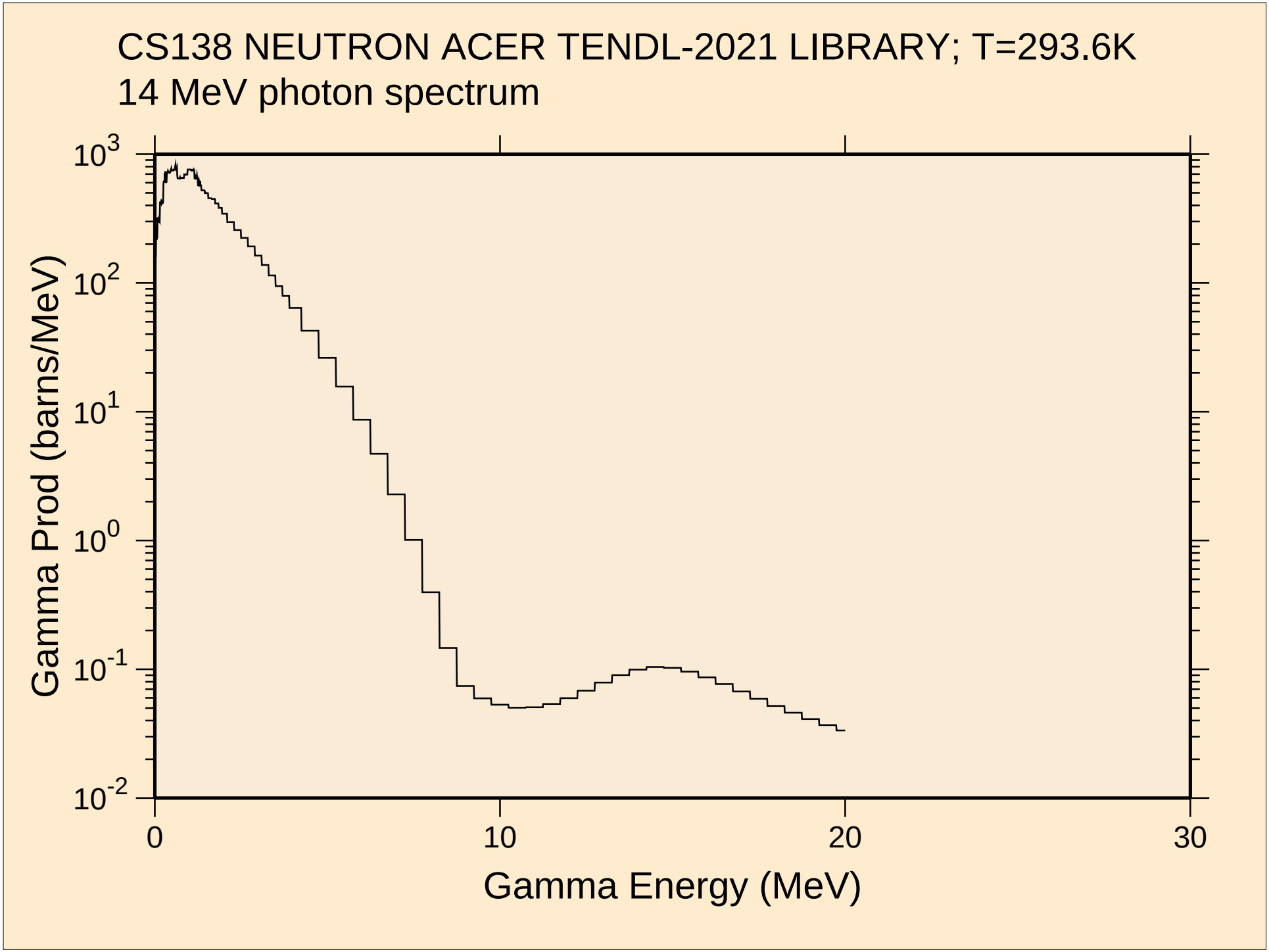

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
Photon emission for (n,pa)
Prob/MeV
10^{3}
10^{1}
10^{-1}
E_γ (MeV)
0
2
4
E_n (MeV)
0
5
10
15
20
25
30

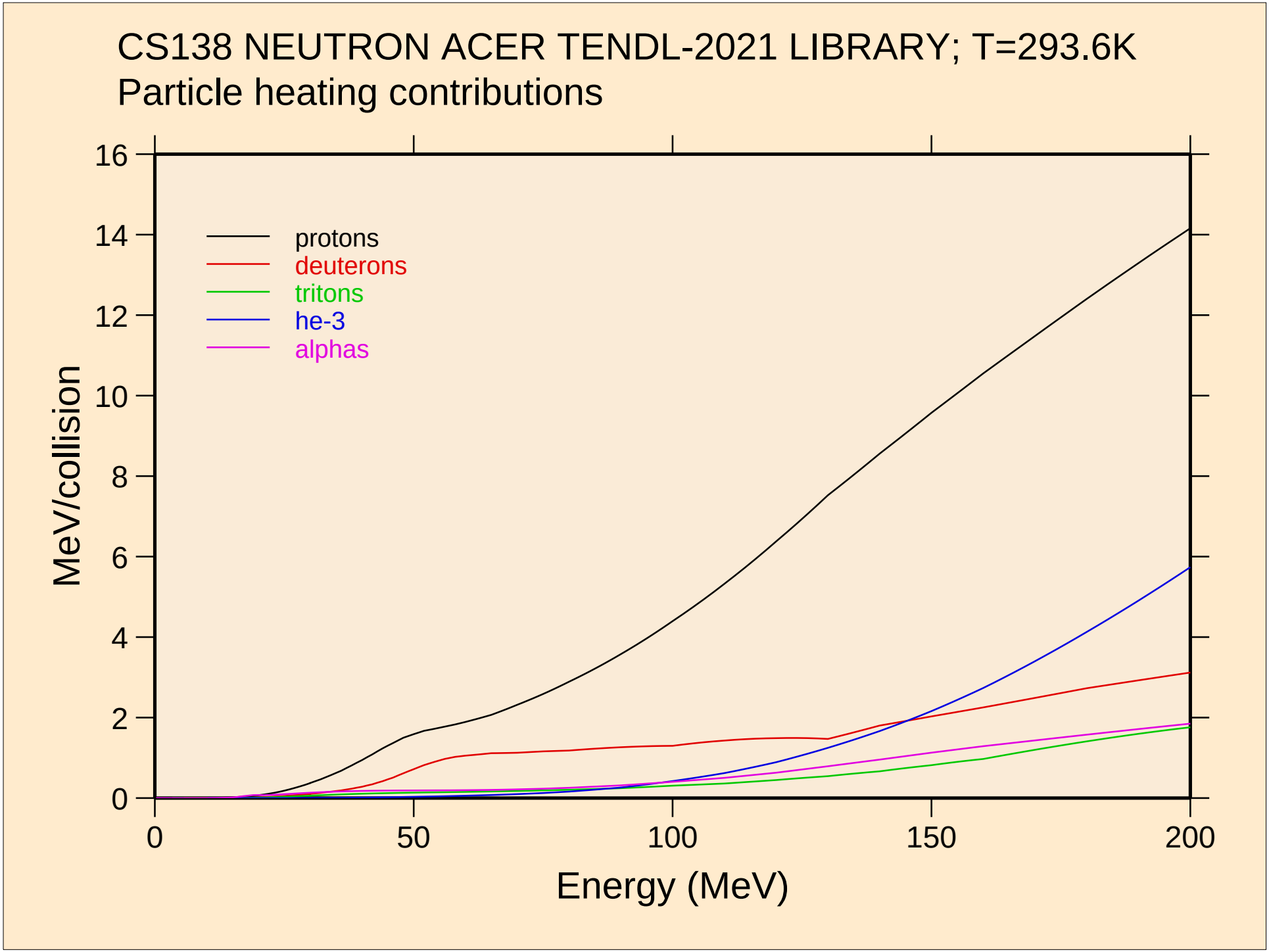

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
Photon emission for (n,pd)
Prob/MeV
10^0
10^-2
0
2
4
E_γ (MeV)
14
16
18
20
22
24
26
28
30
E_n (MeV)

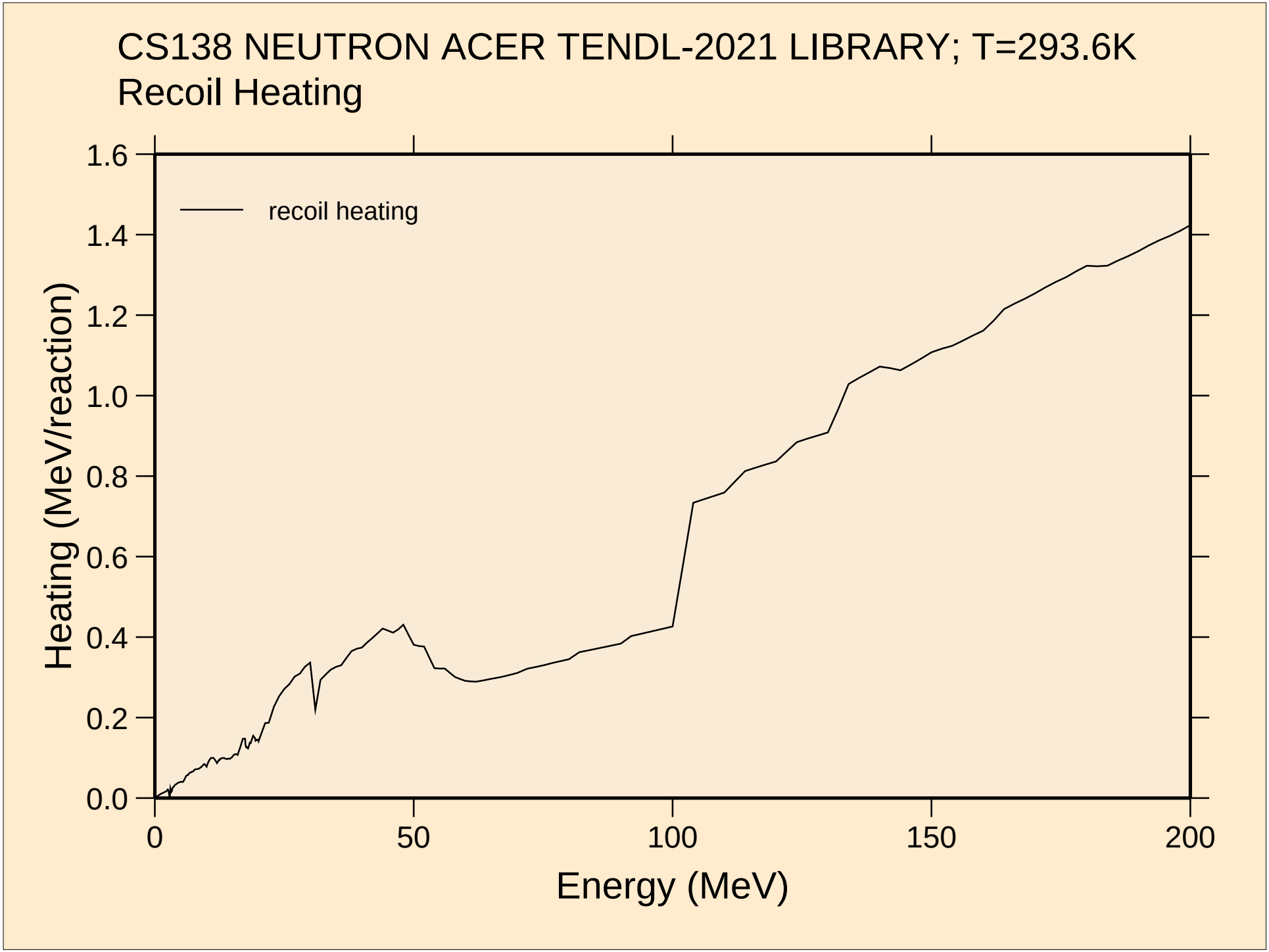

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
Photon emission for (n,pt)
Prob/MeV
10^{3}
10^{1}
10^{-1}
0
2
4
E_γ (MeV)
12
14
16
18
20
22
24
26
28
30
E_n (MeV)

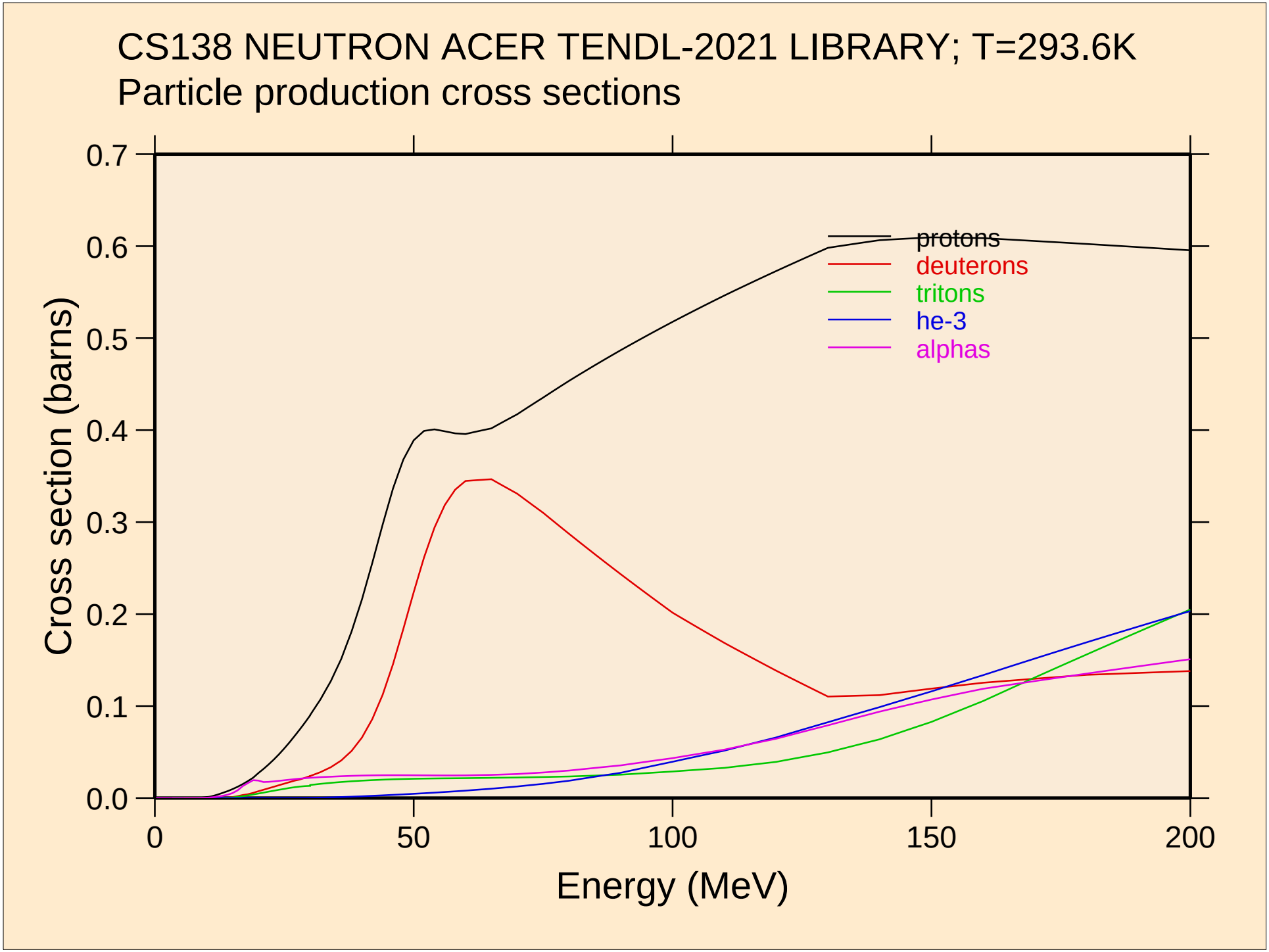

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
Photon emission for (n,da)
Prob/MeV
10^{3}
10^{1}
10^{-1}
0
2
4
E_γ (MeV)
5
10
15
20
25
30
E_n (MeV)

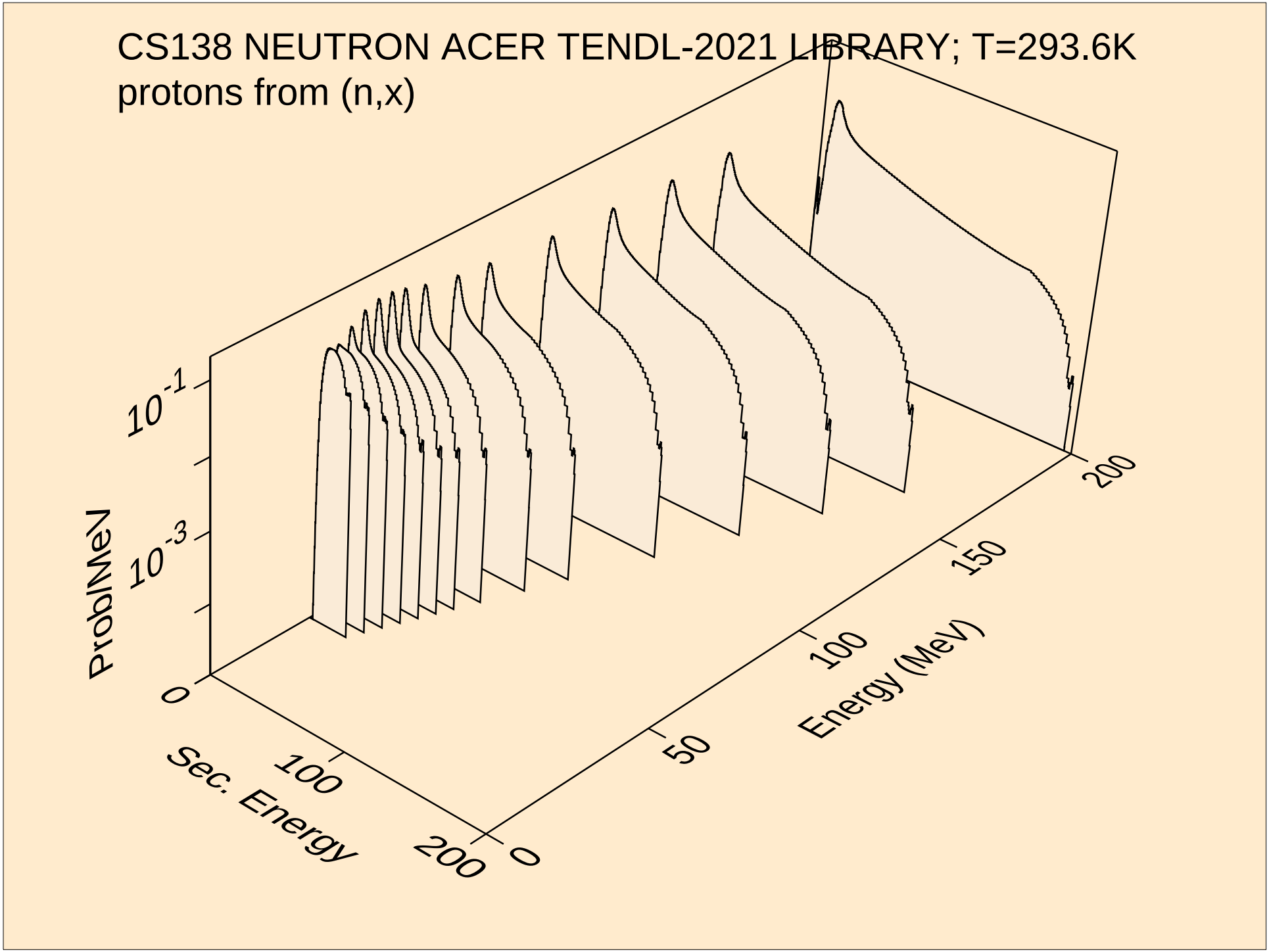

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
thermal capture photon spectrum
Gamma Prod (barns/MeV)
10^2
10^1
10^0
10^-1
0
2
4
6
Gamma Energy (MeV)

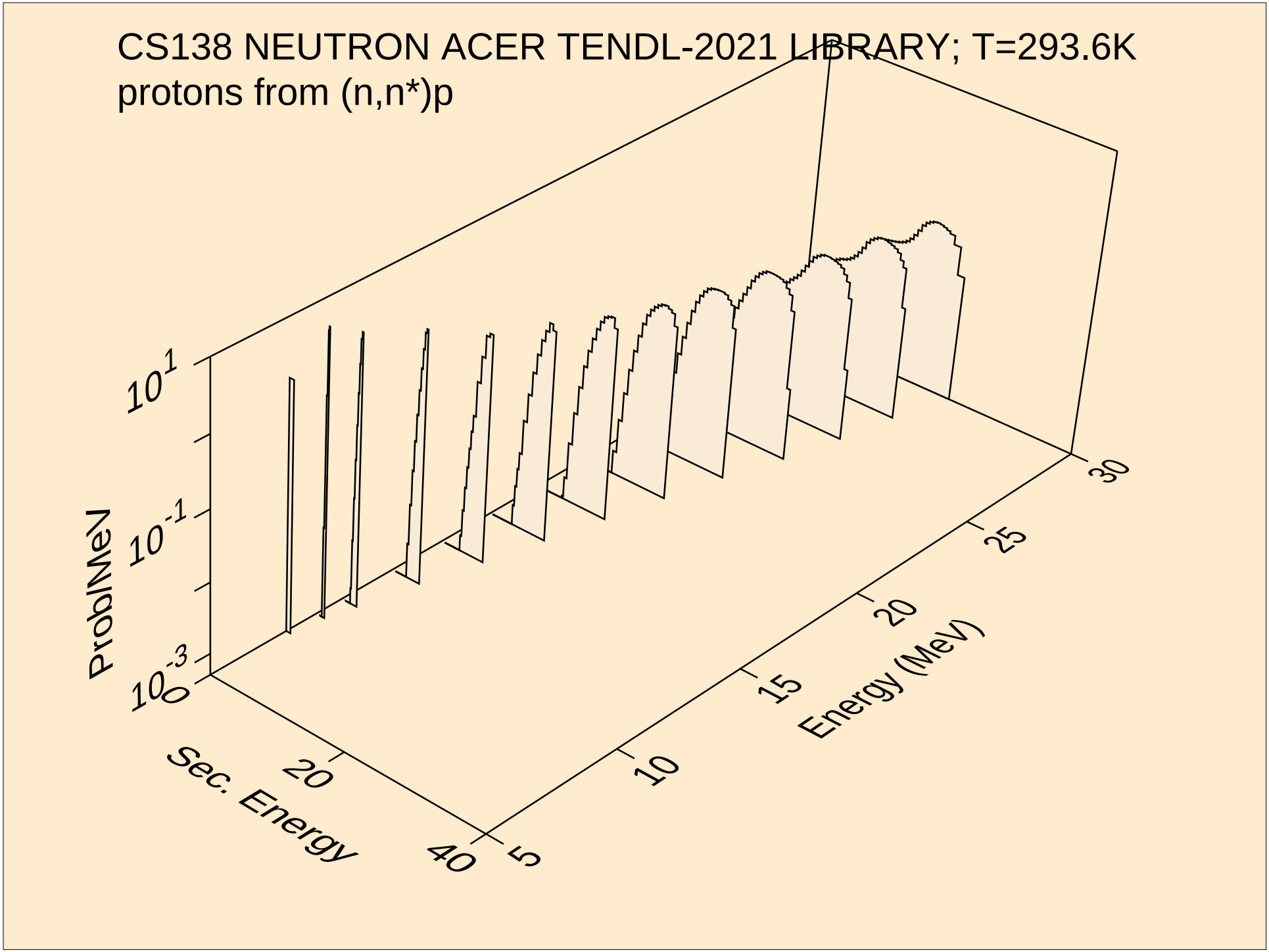

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
14 MeV photon spectrum
Gamma Prod (barns/MeV)
10^3
10^2
10^1
10^0
10^-1
10^-2
0
10
20
30
Gamma Energy (MeV)

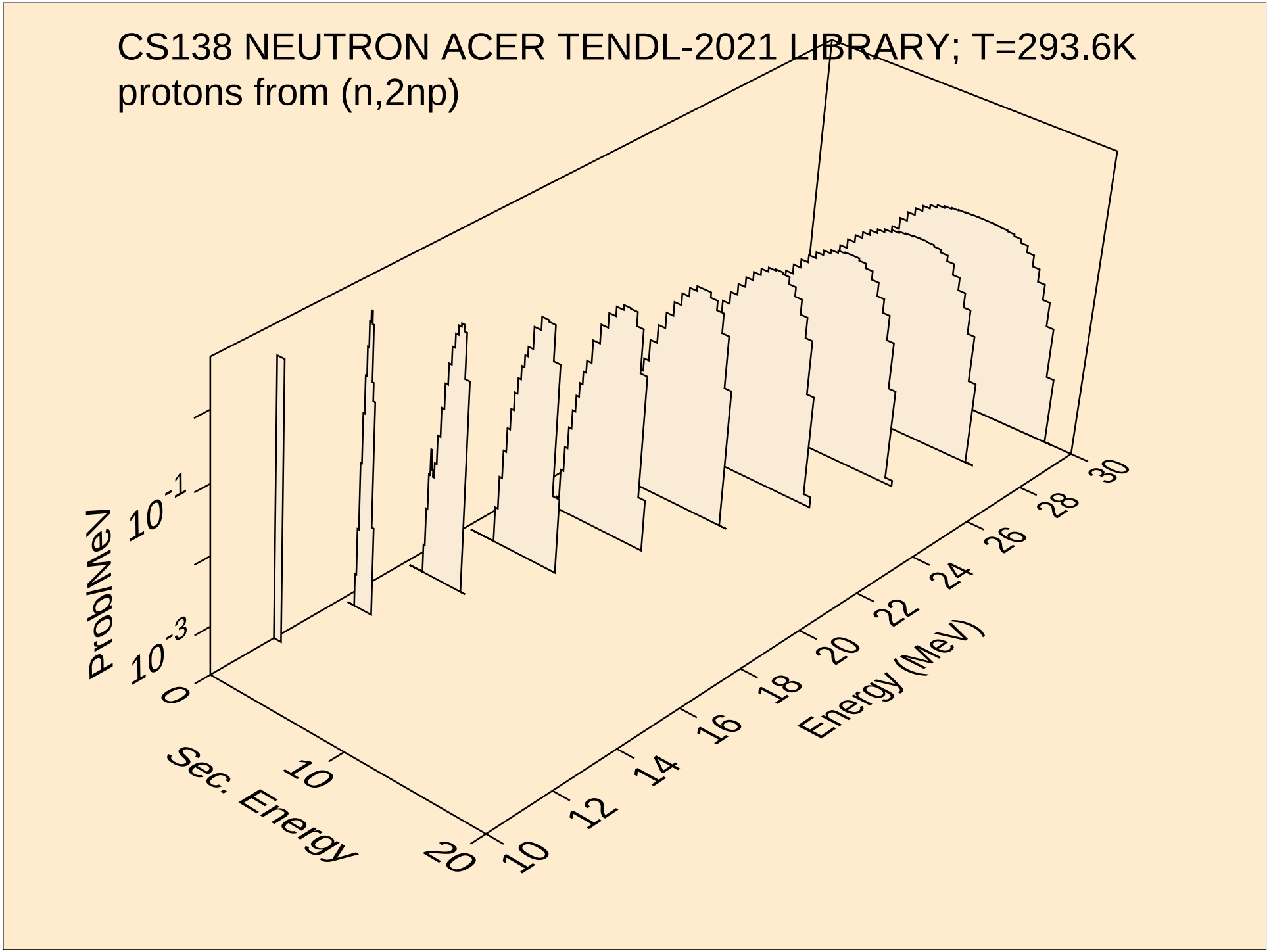

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
Particle heating contributions
protons
deuterons
tritons
he-3
alphas
MeV/collision
Energy (MeV)
0
2
4
6
8
10
12
14
16
0
50
100
150
200

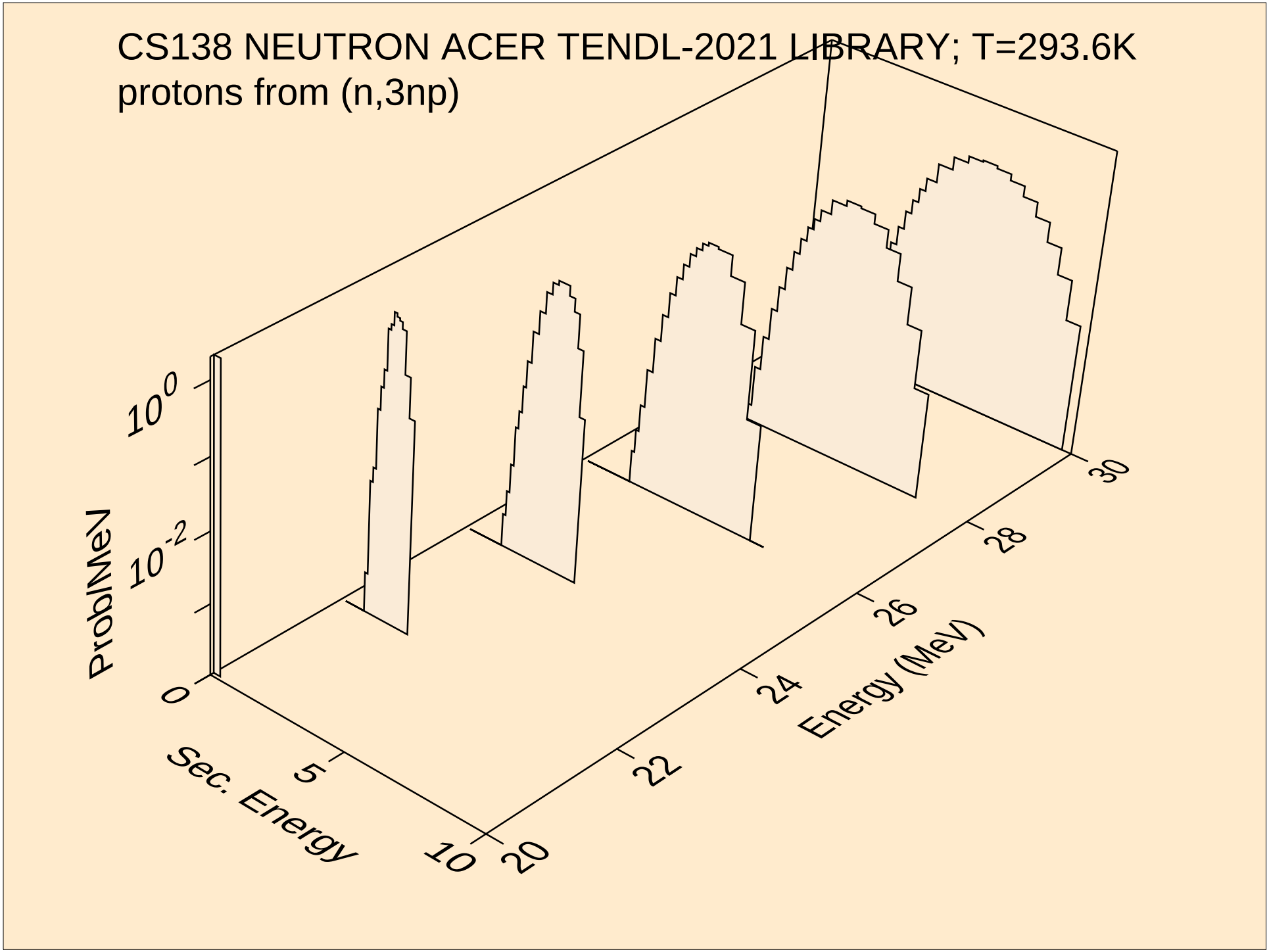

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
Recoil Heating
recoil heating
Heating (MeV/reaction)
Energy (MeV)
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
1.6
0
50
100
150
200

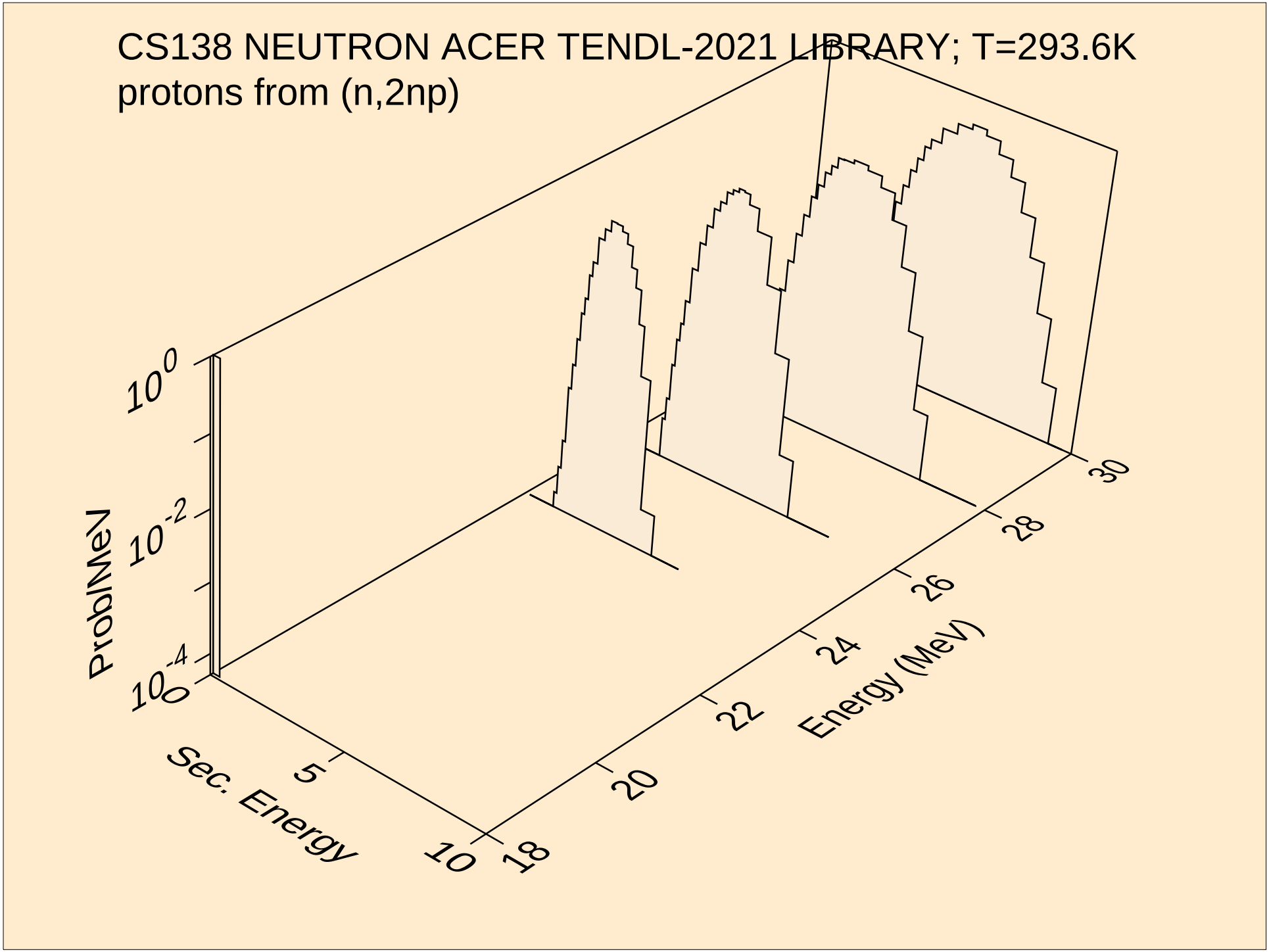

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
Particle production cross sections
Cross section (barns)
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0
50
100
150
200
Energy (MeV)
protons
deuterons
tritons
he-3
alphas

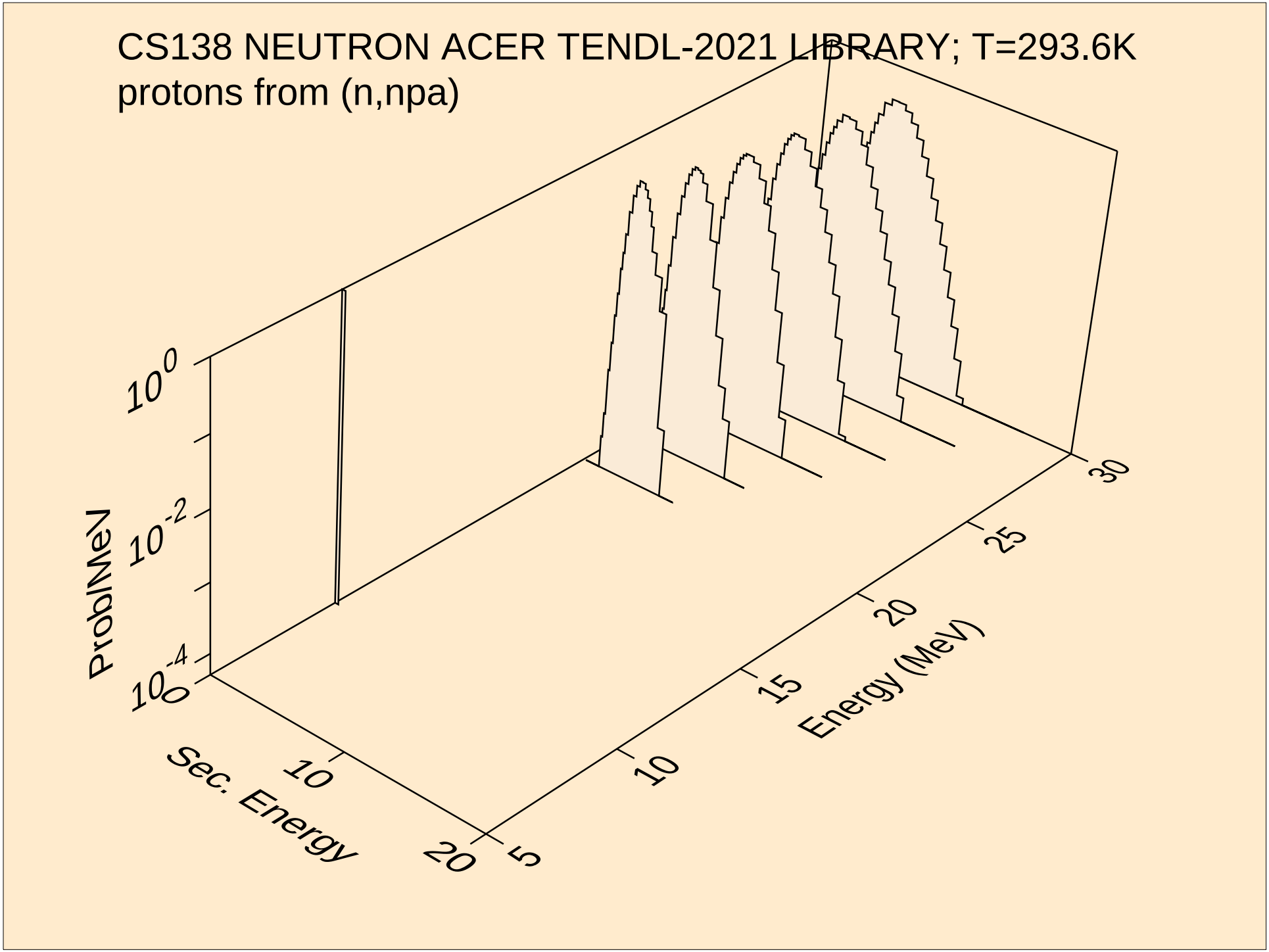

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
protons from (n,x)
Prob/MeV
10-1
10-3
0
Sec. Energy
100
200
0
50
100
150
200
Energy (MeV)

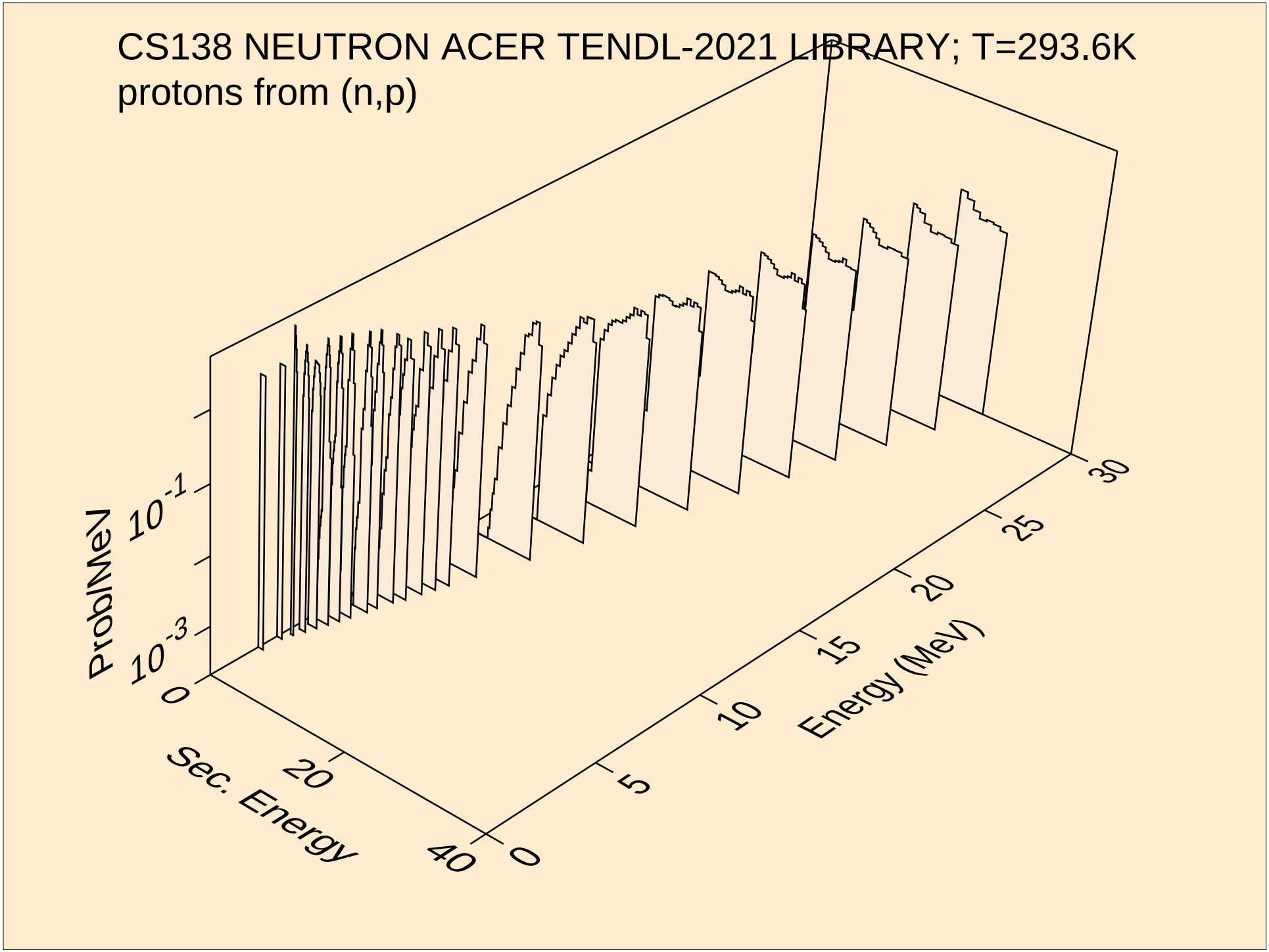

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
protons from (n,n*)p
Prob/MeV
10^1
10^-1
10^-3
0
20
40
Sec. Energy
5
10
15
20
25
30
Energy (MeV)

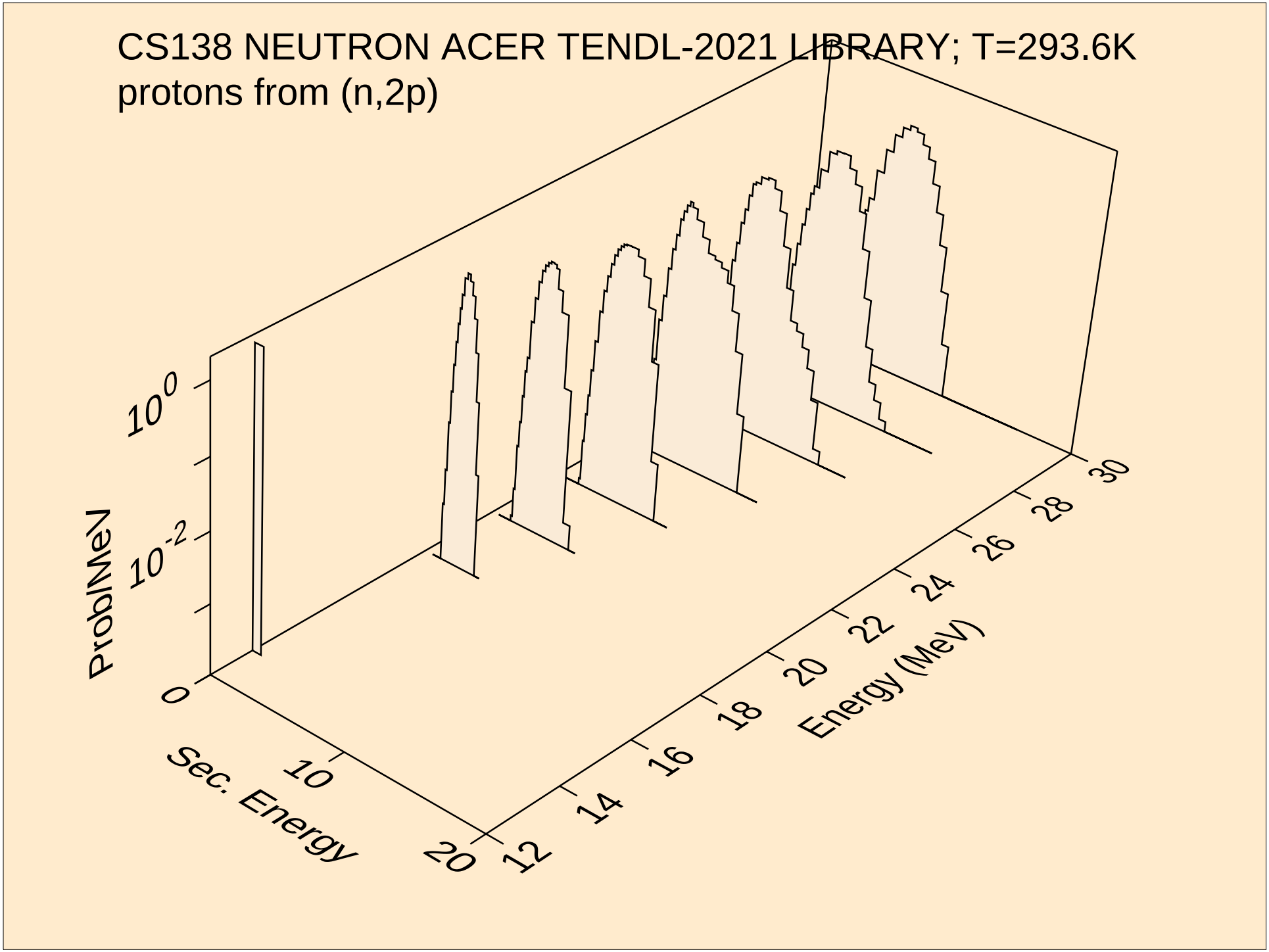

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
protons from (n,2np)
Prob/MeV
10-1
10-3
0
Sec. Energy
10
20
10
12
14
16
18
20
22
24
26
28
30
Energy (MeV)

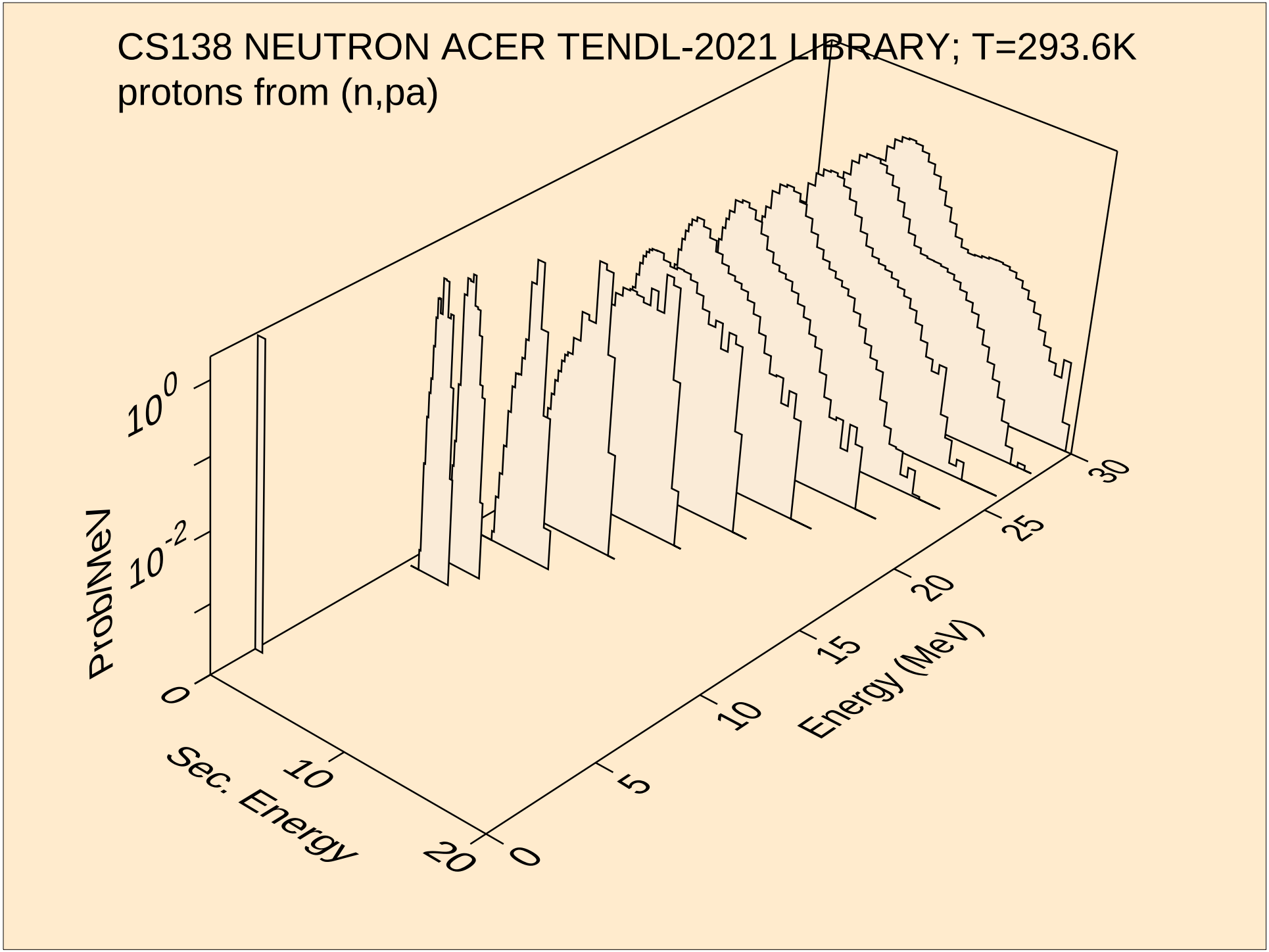

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
protons from (n,3np)
Prob/MeV
10^0
10^-2
0
Sec. Energy
5
10
20
22
24
26
28
30
Energy (MeV)

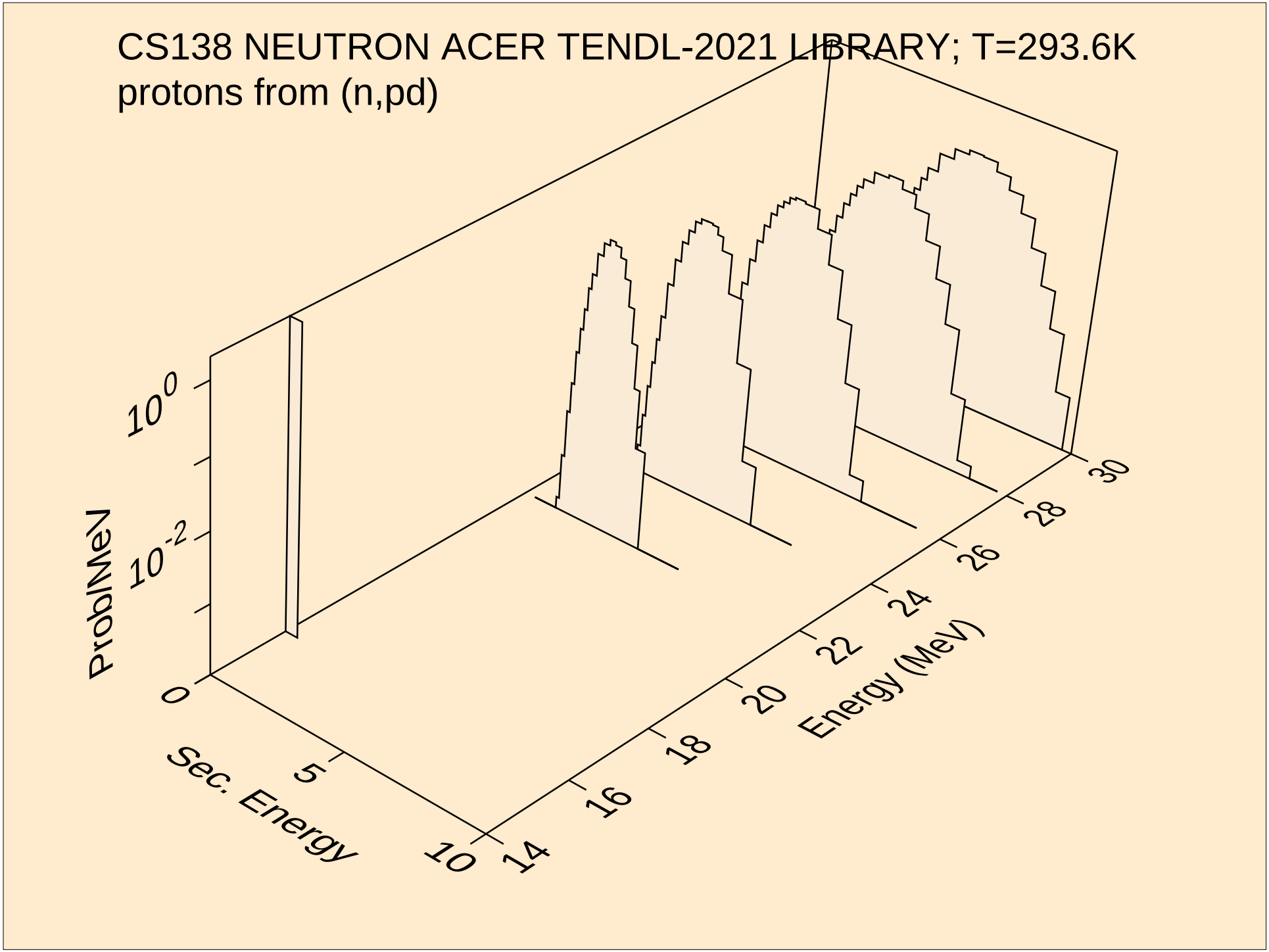

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
protons from (n,2np)
Prob/MeV
10^0
10^-2
10^-4
Sec. Energy
0
5
10
18
20
22
24
26
28
30
Energy (MeV)

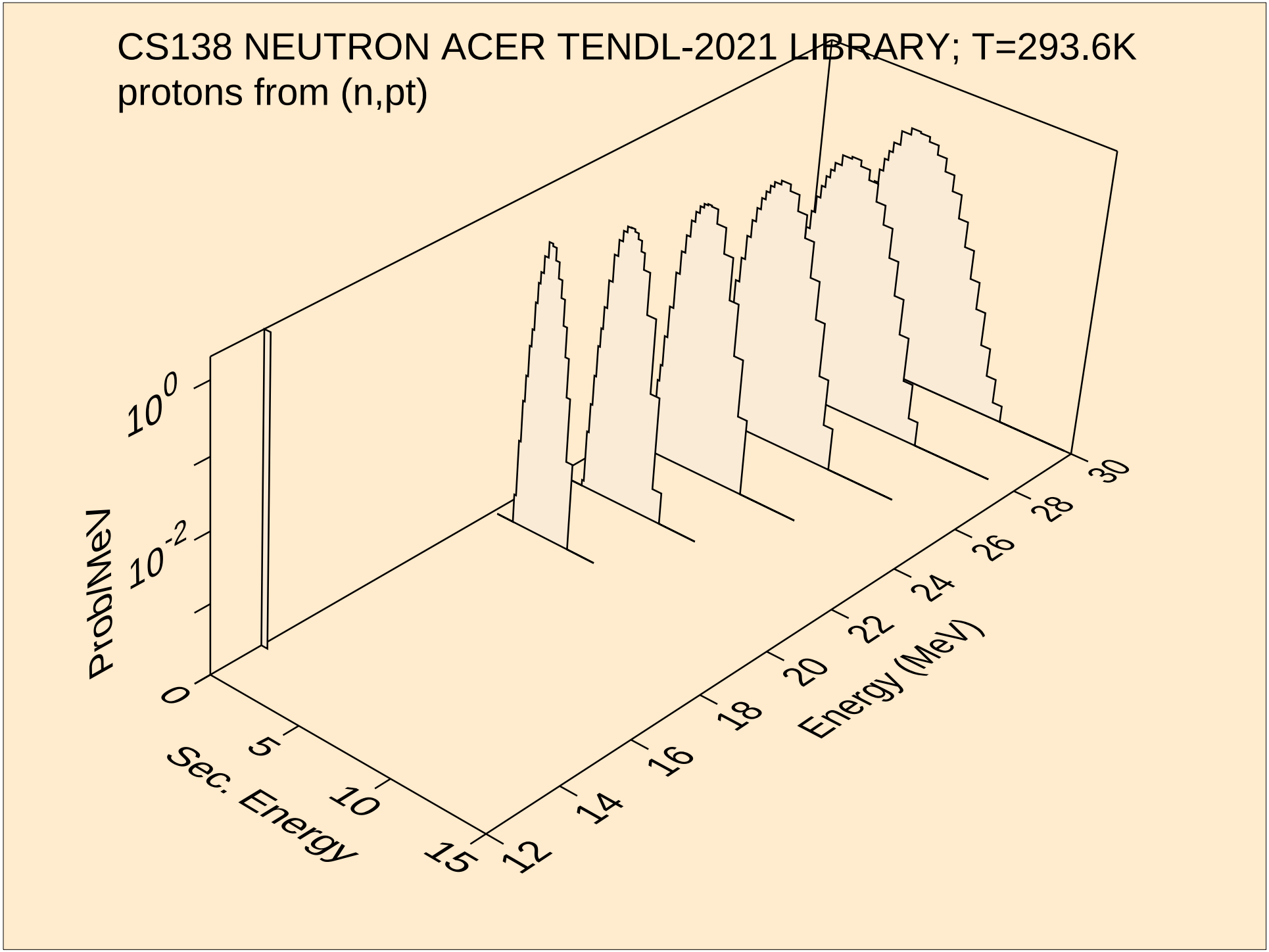

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
protons from (n,npa)
Prob/MeV
10^{0}
10^{-2}
10^{-4}
0
Sec. Energy
10
20
5
10
15
20
25
30
Energy (MeV)

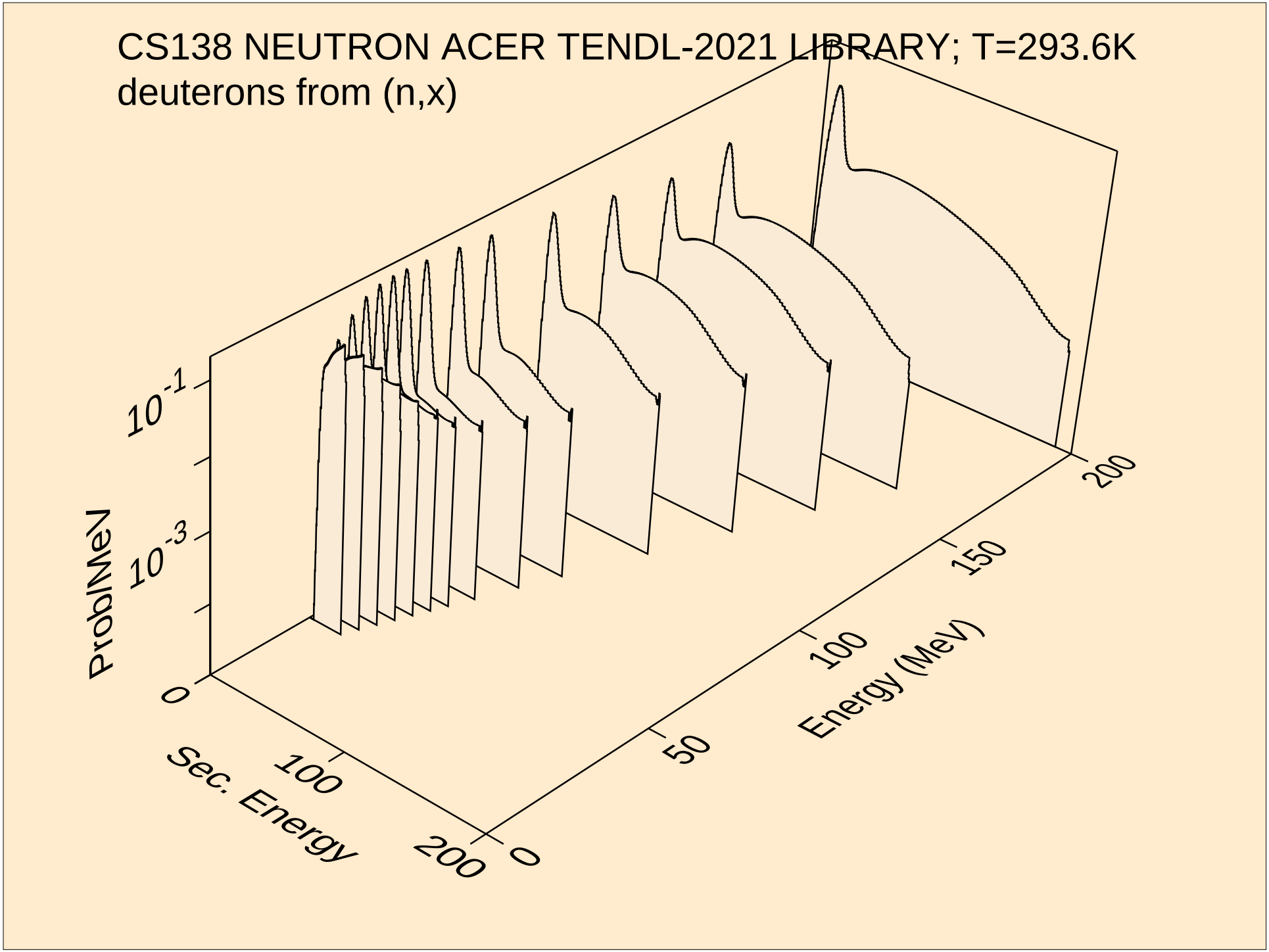

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
protons from (n,p)
Prob/MeV
10-1
10-3
0
Sec. Energy
20
40
0
5
10
15
20
25
30
Energy (MeV)

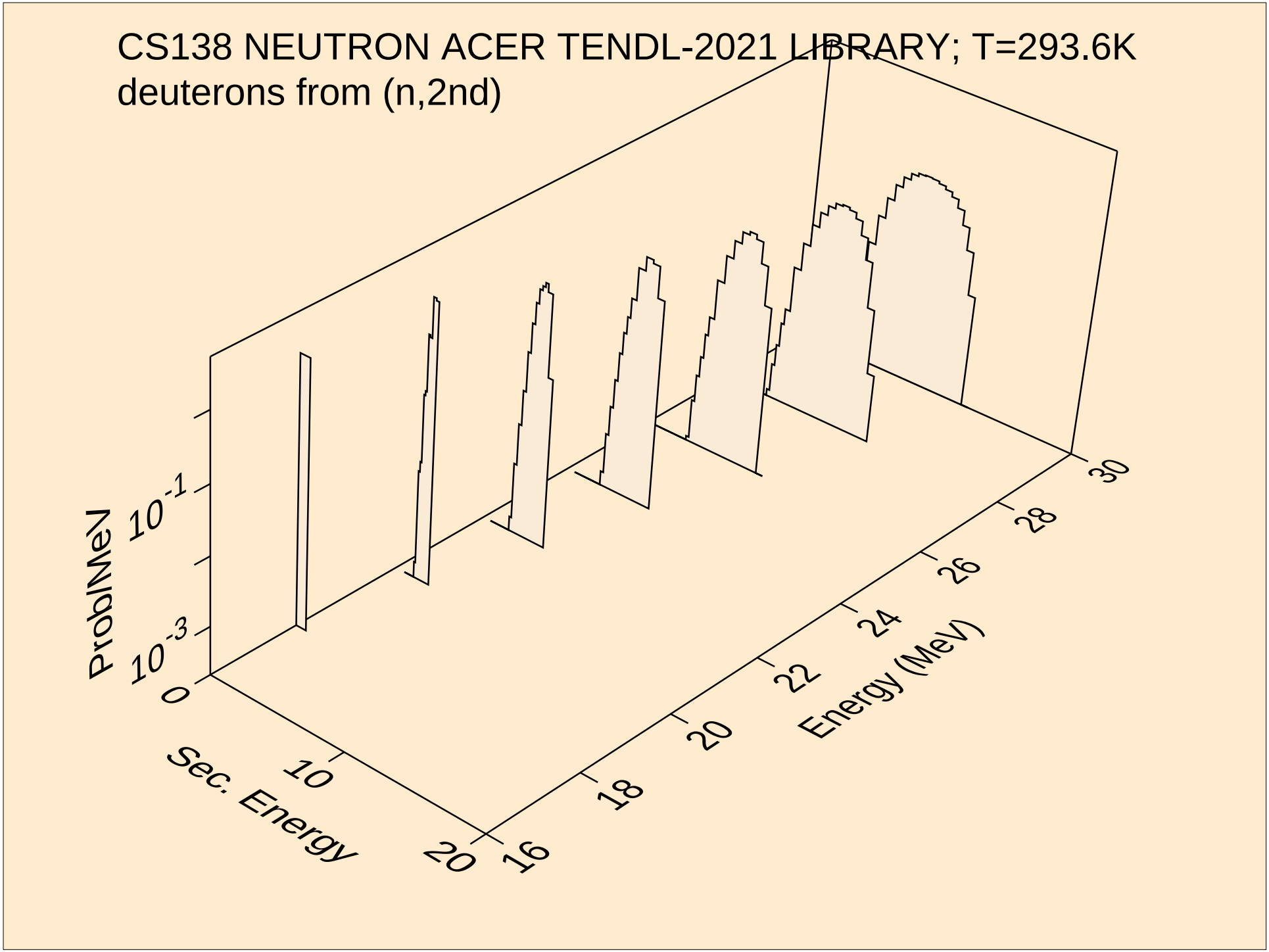

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
protons from (n,2p)
Prob/MeV
10^{0}
10^{-2}
0
Sec. Energy
10
20
Energy (MeV)
12
14
16
18
20
22
24
26
28
30

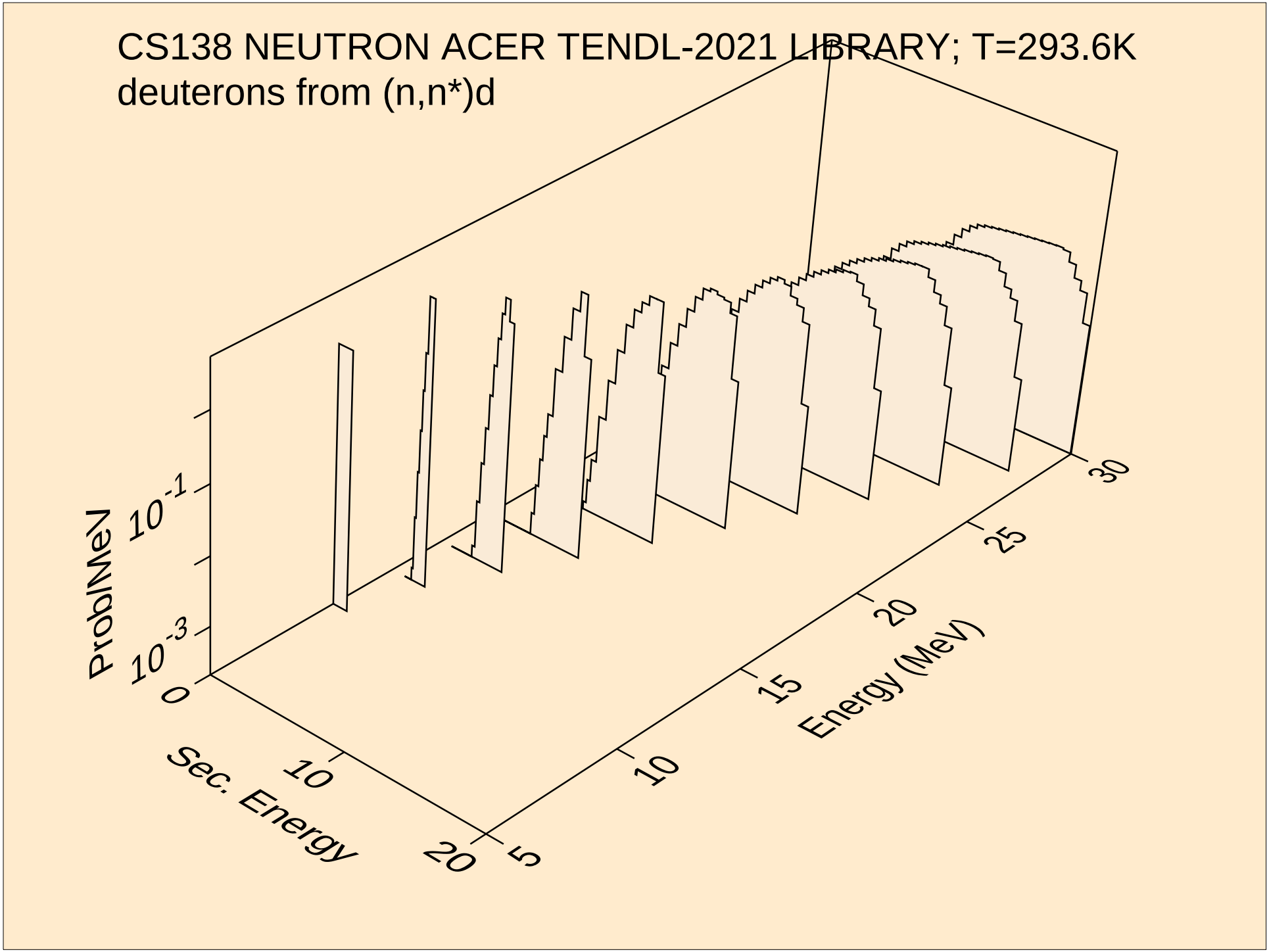

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
protons from (n,pa)
Prob/MeV
10^0
10^-2
0
Sec. Energy
10
20
0
5
10
15
20
25
30
Energy (MeV)

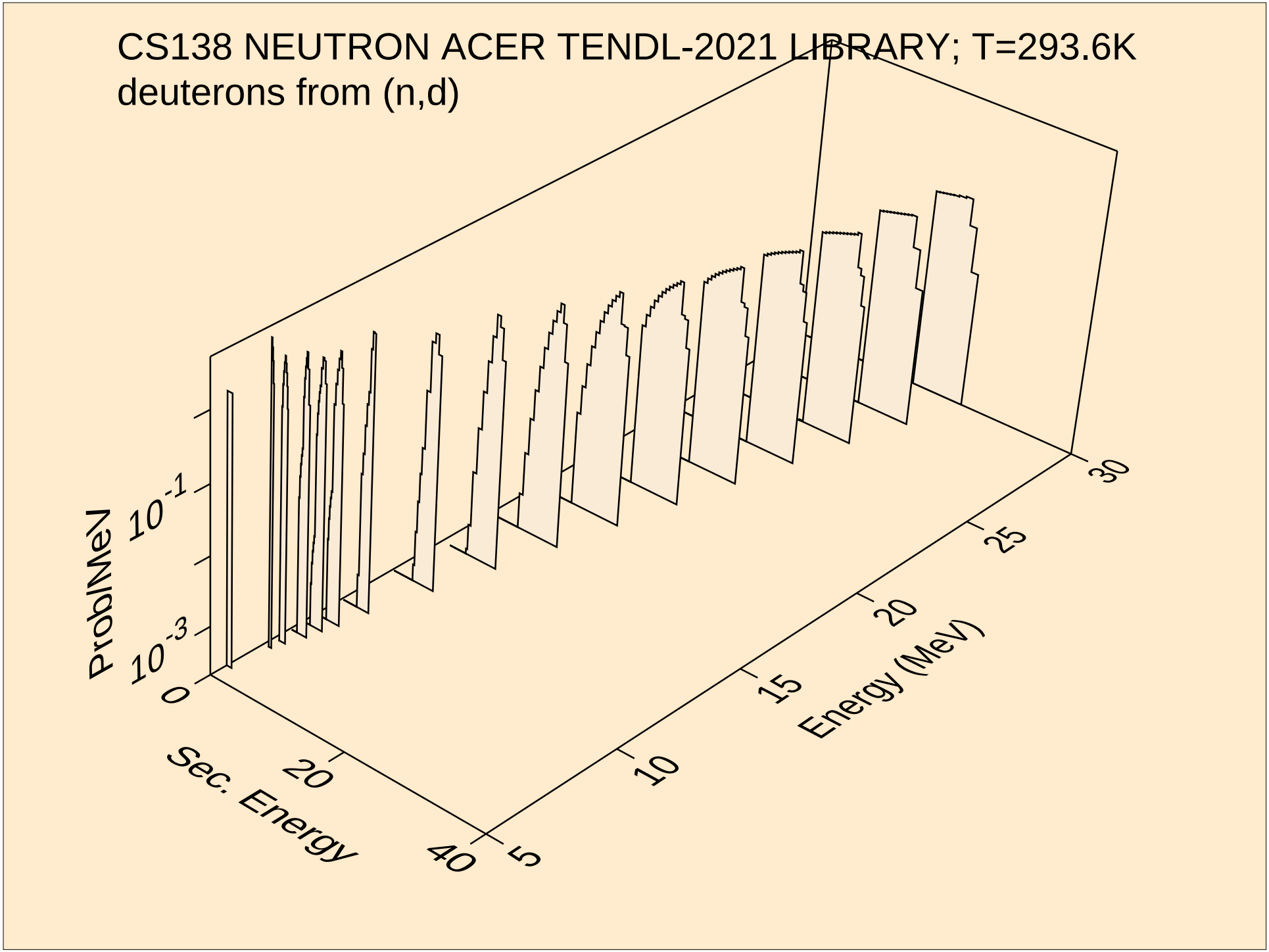

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
protons from (n,pd)
Prob/MeV
10^0
10^-2
0
Sec. Energy
5
10
14
16
18
20
22
24
26
28
30
Energy (MeV)

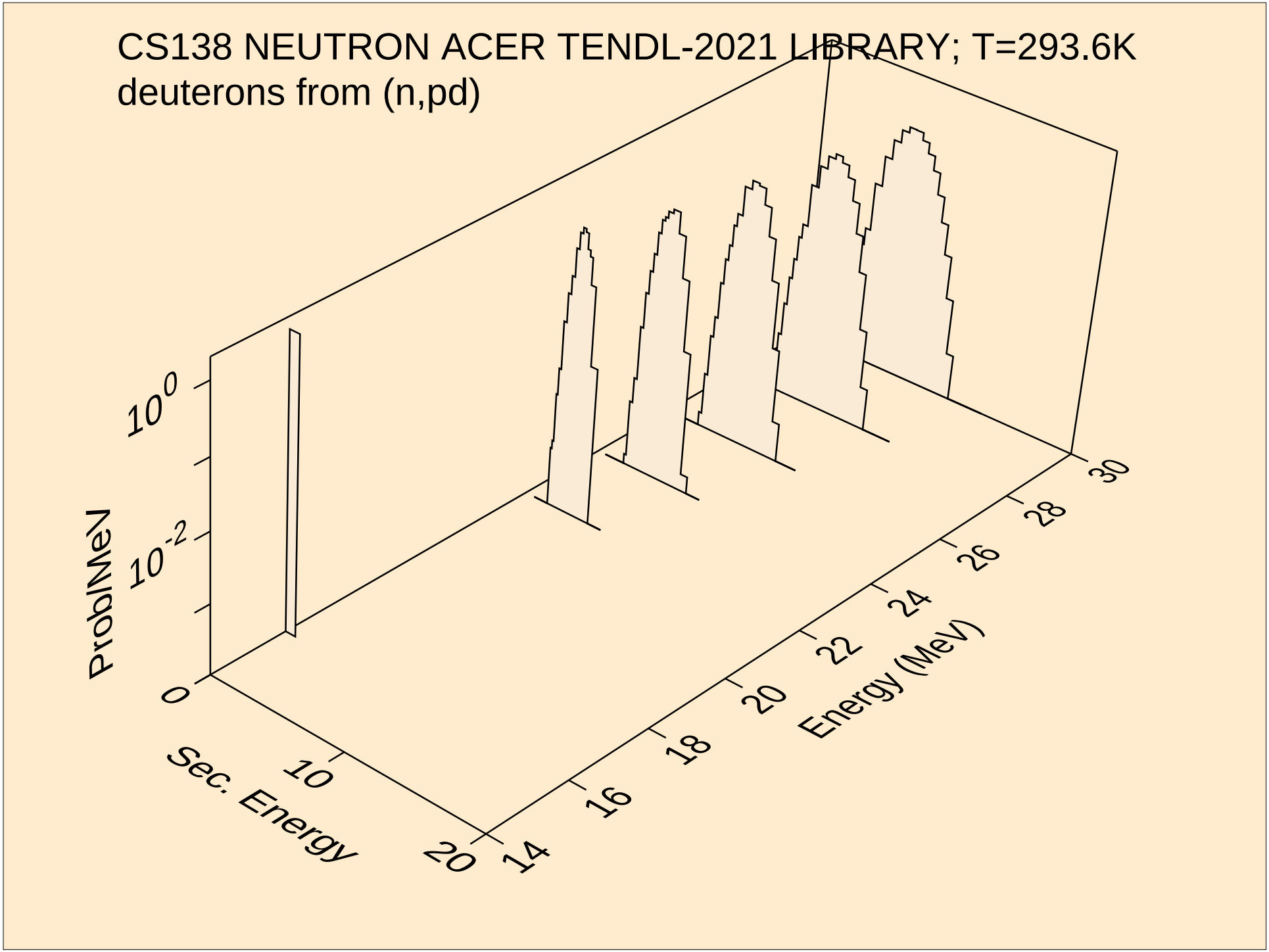

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
protons from (n,pt)
Prob/MeV
10^0
10^-2
0
Sec. Energy
5
10
15
Energy (MeV)
12
14
16
18
20
22
24
26
28
30

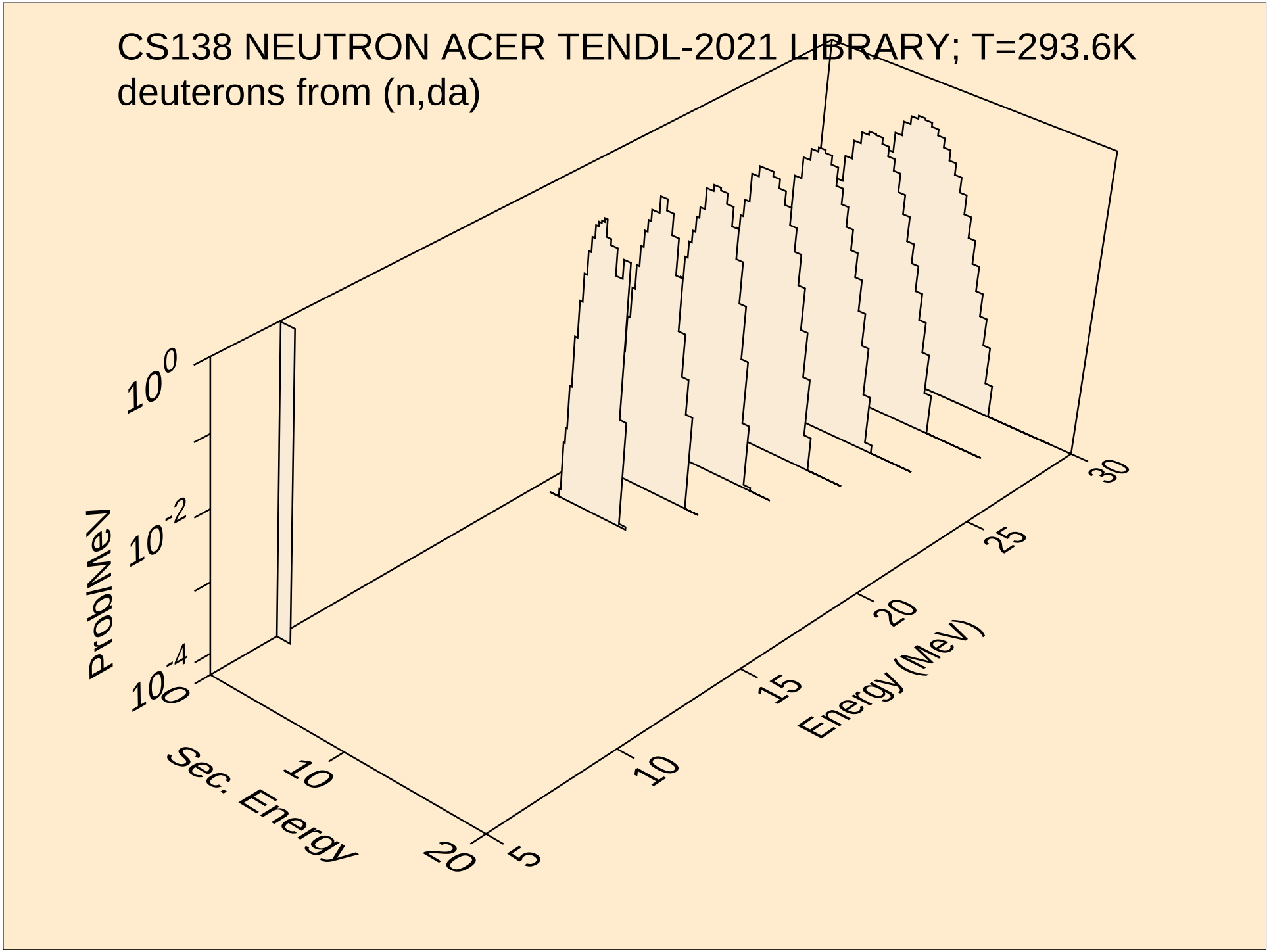

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
deuterons from (n,x)
Prob/MeV
10-1
10-3
0
Sec. Energy
100
200
0
50
100
150
200
Energy (MeV)

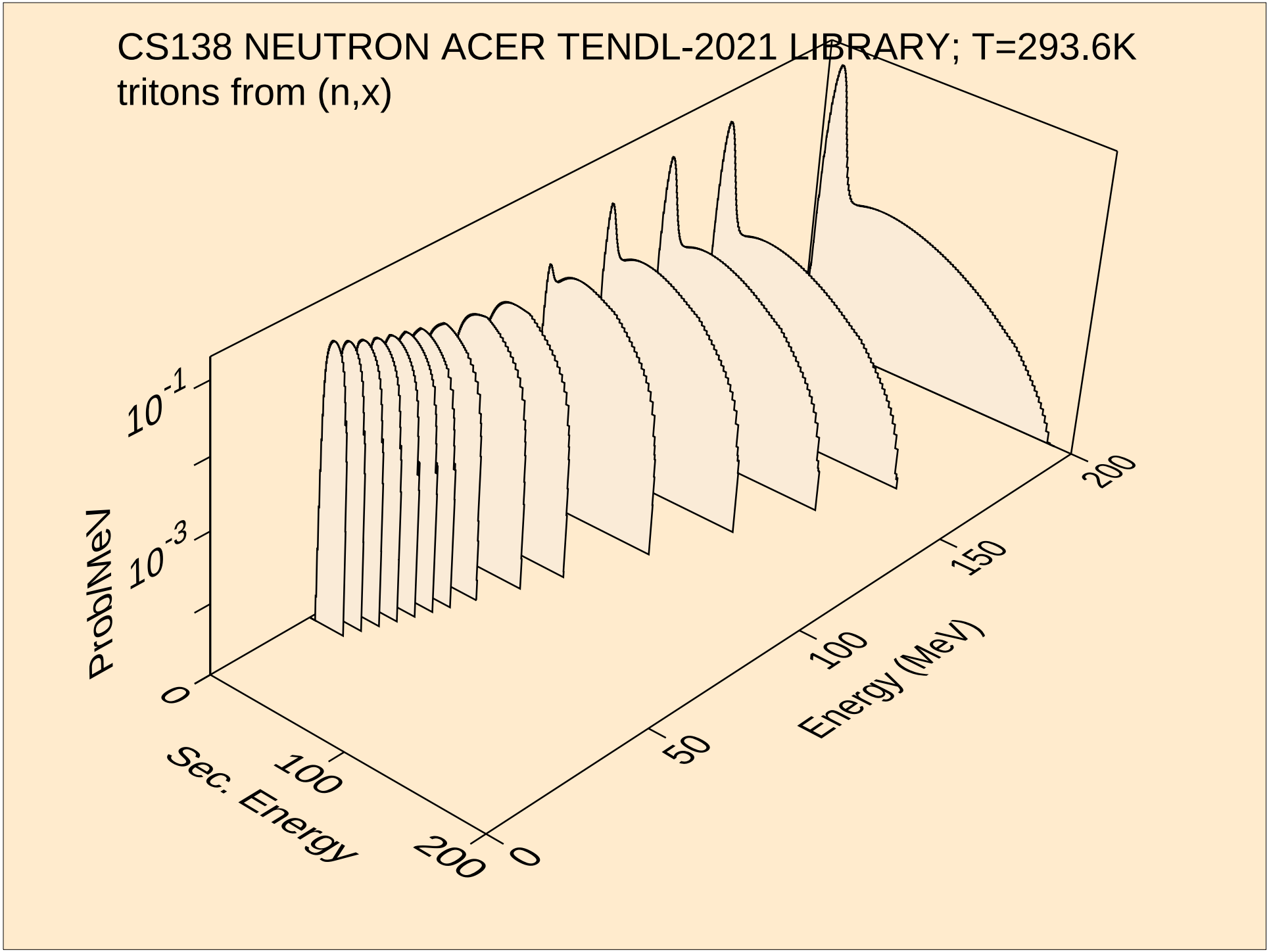

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
deuterons from (n,2nd)
Prob/MeV
10-1
10-3
0
Sec. Energy
10
20
16
18
20
22
24
26
28
30
Energy (MeV)

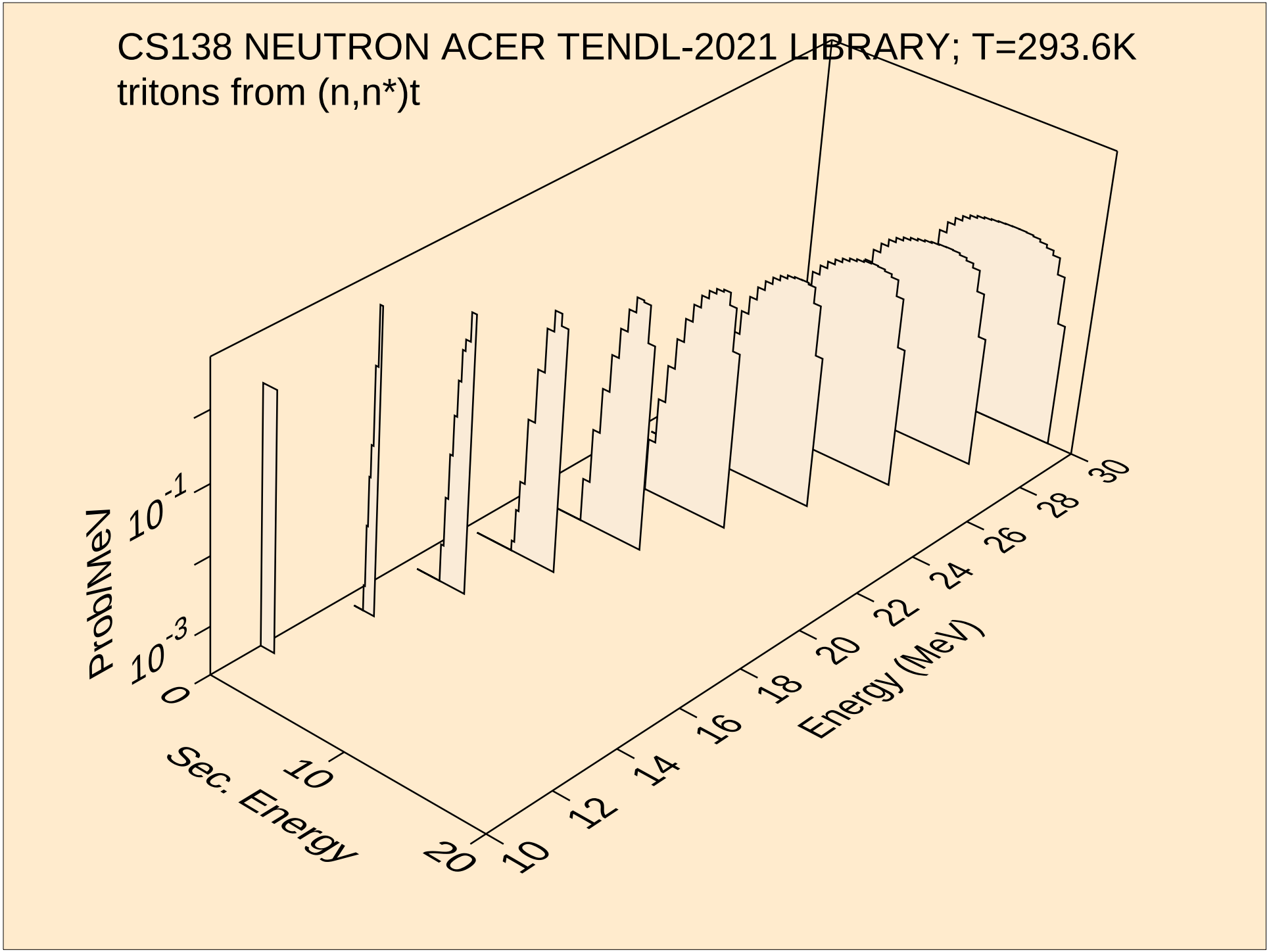

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
deuterons from (n,n*)d
Prob/MeV
10-1
10-3
0
Sec. Energy
10
20
5
10
15
20
25
30
Energy (MeV)

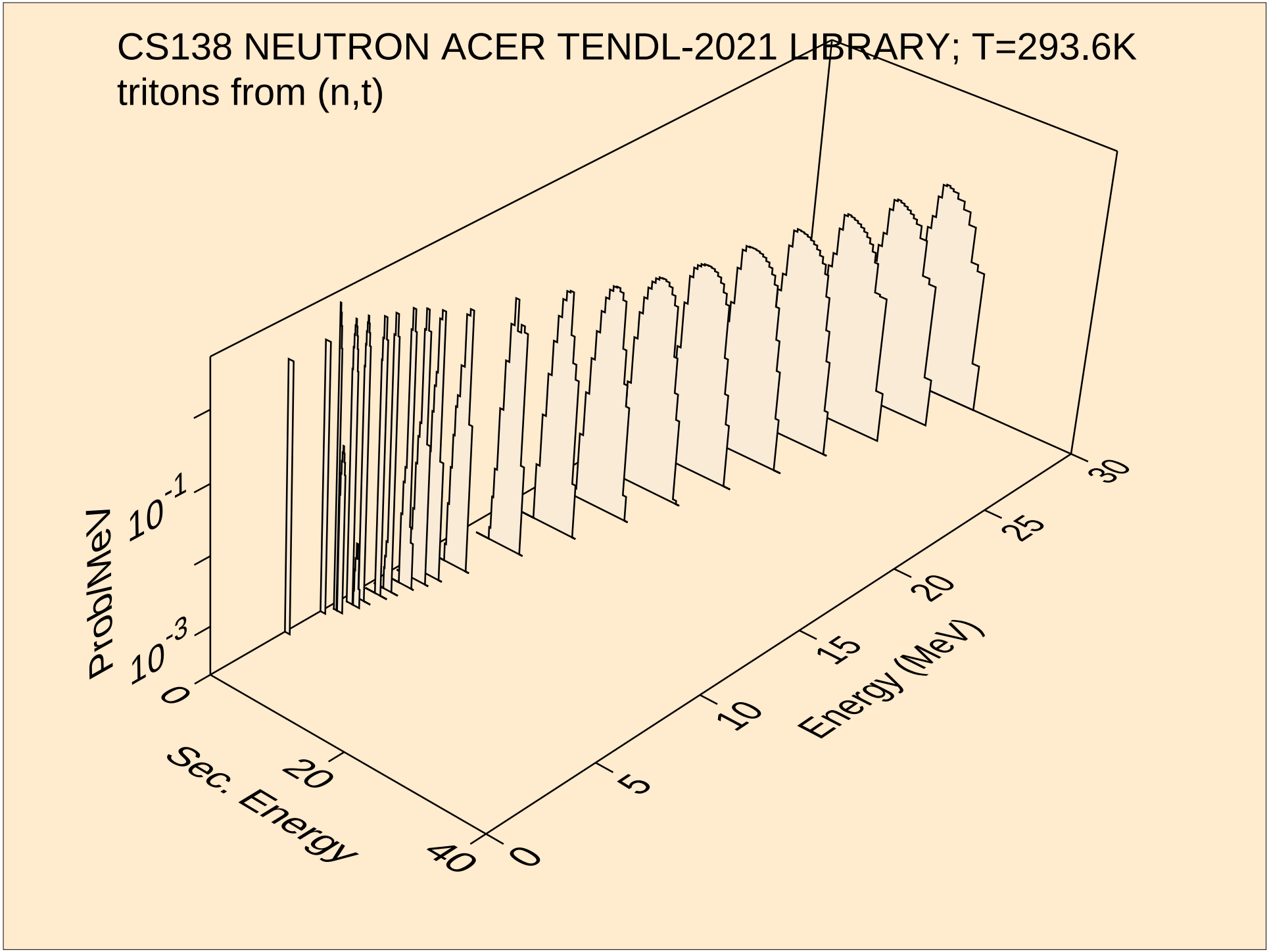

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
deuterons from (n,d)
Prob/MeV
10-1
10-3
0
Sec. Energy
20
40
5
10
15
20
25
30
Energy (MeV)

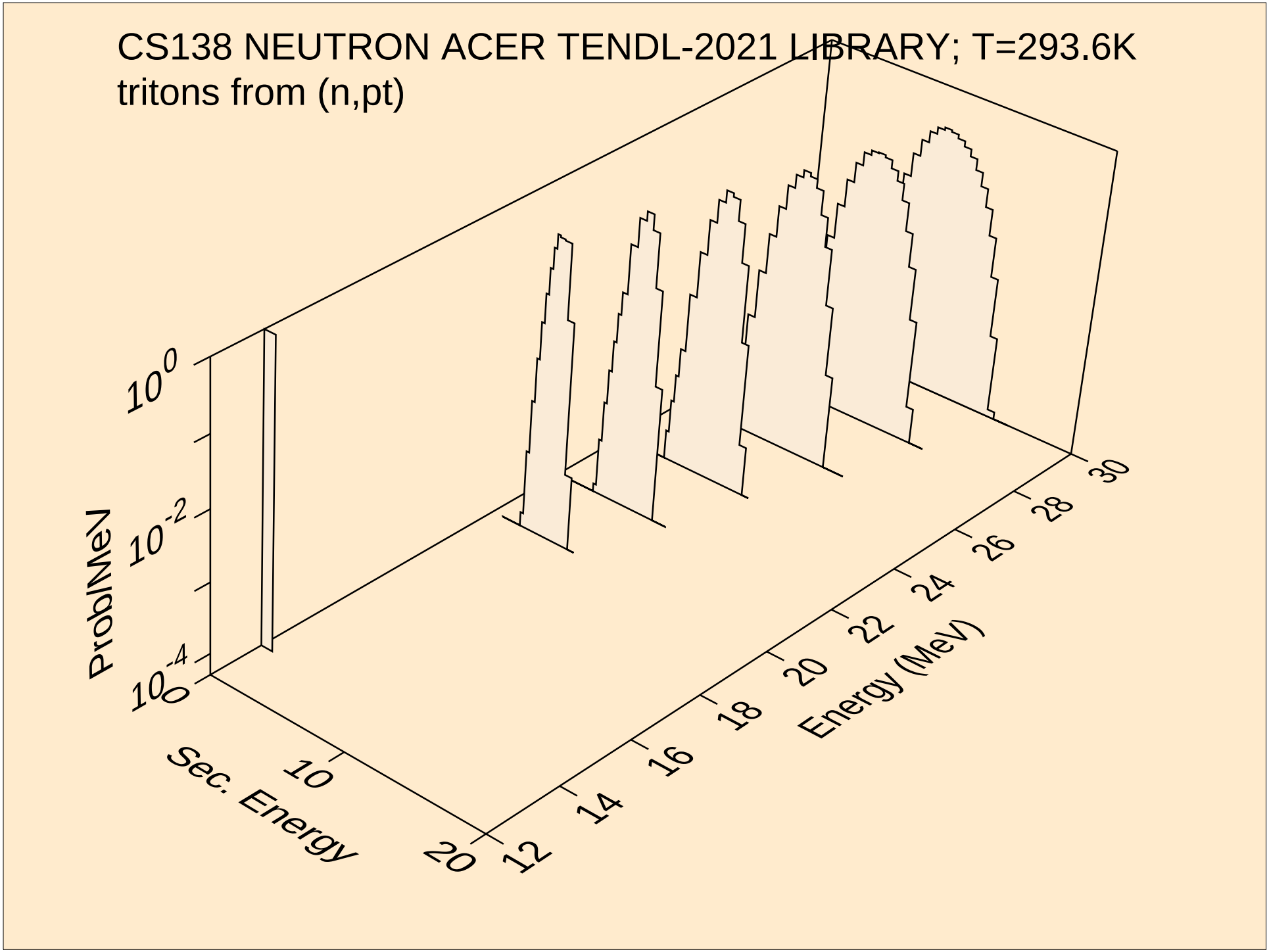

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
deuterons from (n,pd)
Prob/MeV
10^0
10^-2
0
Sec. Energy
10
20
14
16
18
20
22
24
26
28
30
Energy (MeV)

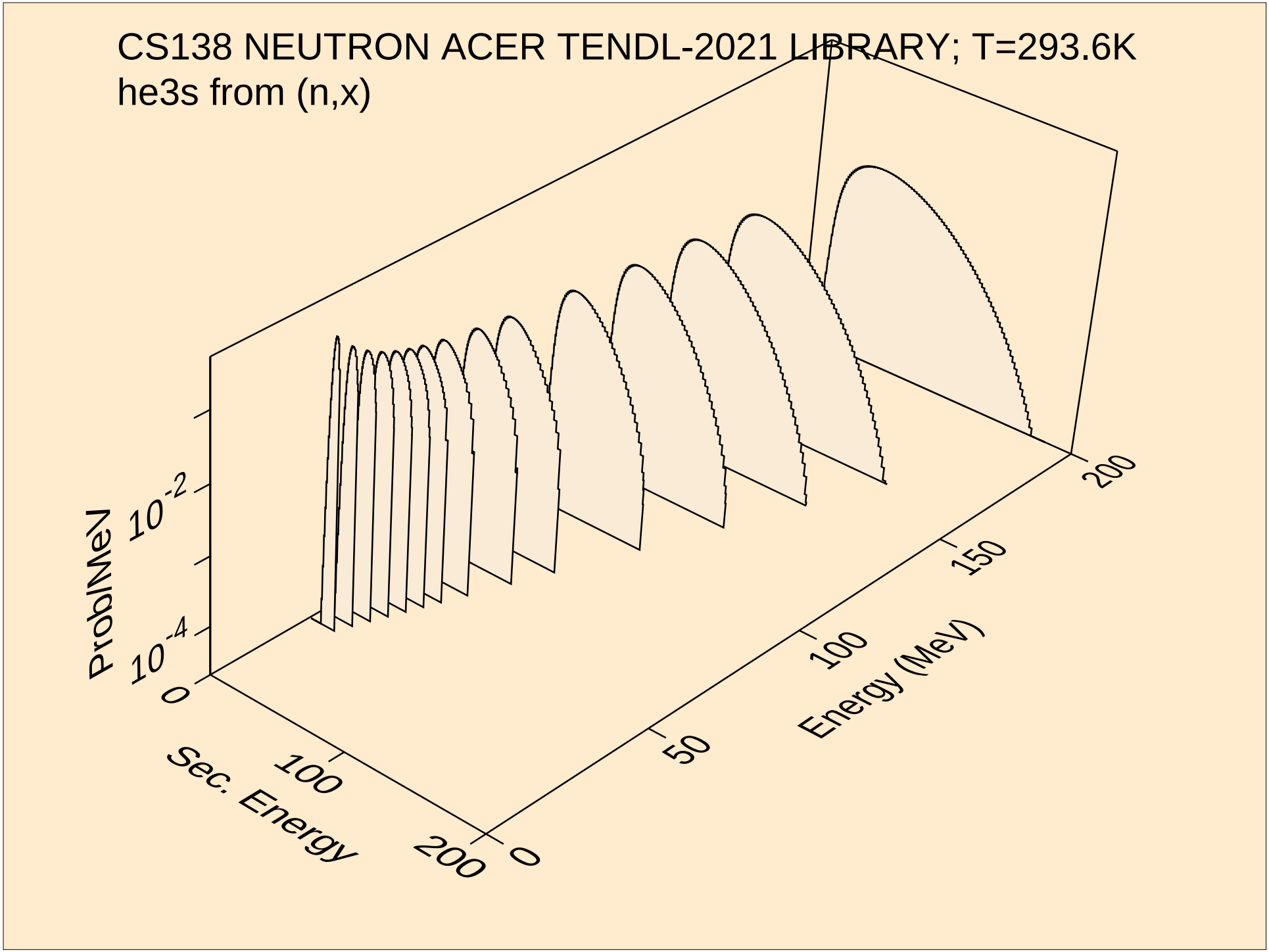

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
deuterons from (n,da)
Prob/MeV
10^0
10^-2
10^-4
0
Sec. Energy
10
20
5
10
15
20
25
30
Energy (MeV)

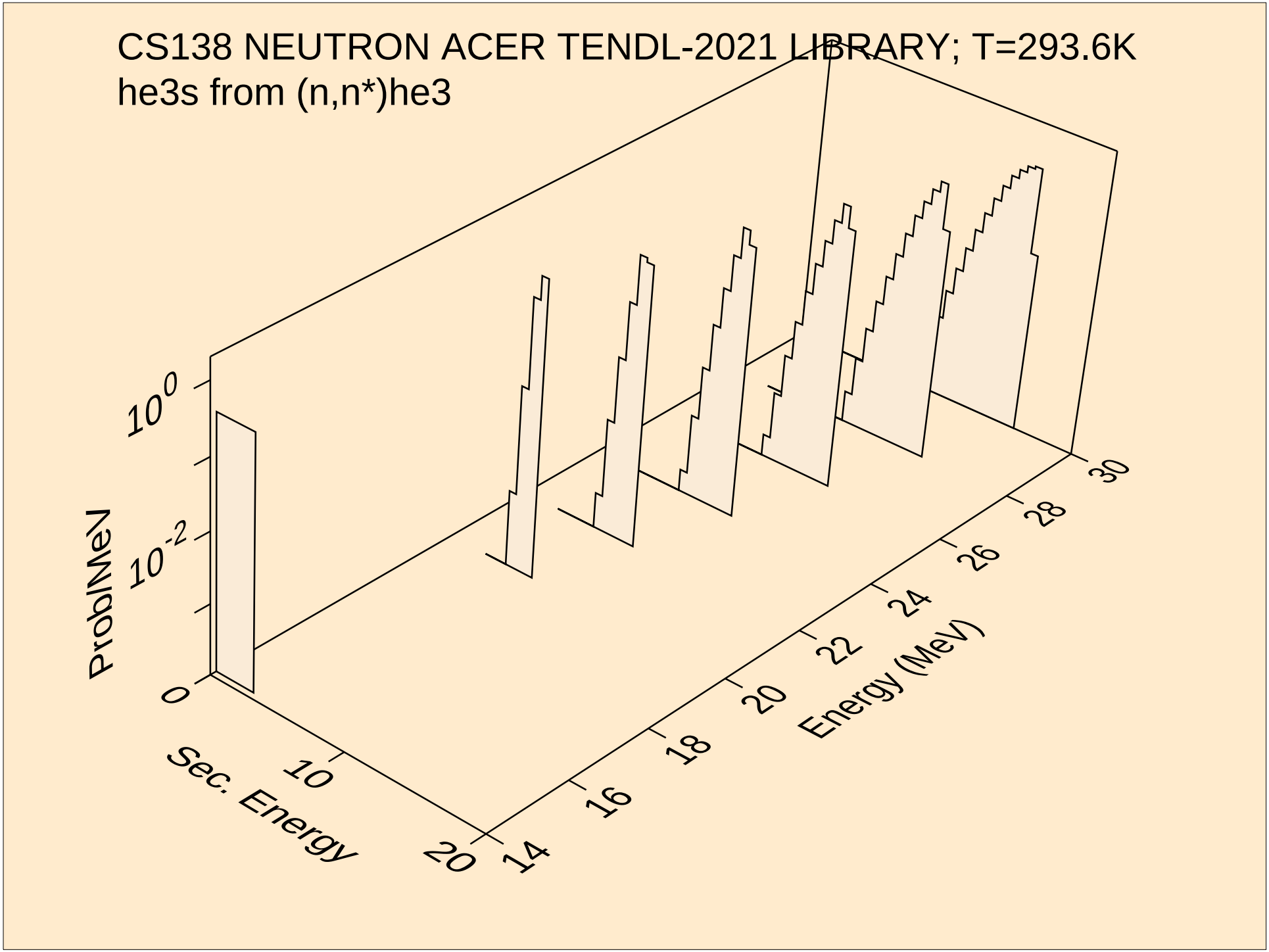

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
tritons from (n,x)
Prob/MeV
10-1
10-3
0
Sec. Energy
100
200
0
50
100
150
200
Energy (MeV)

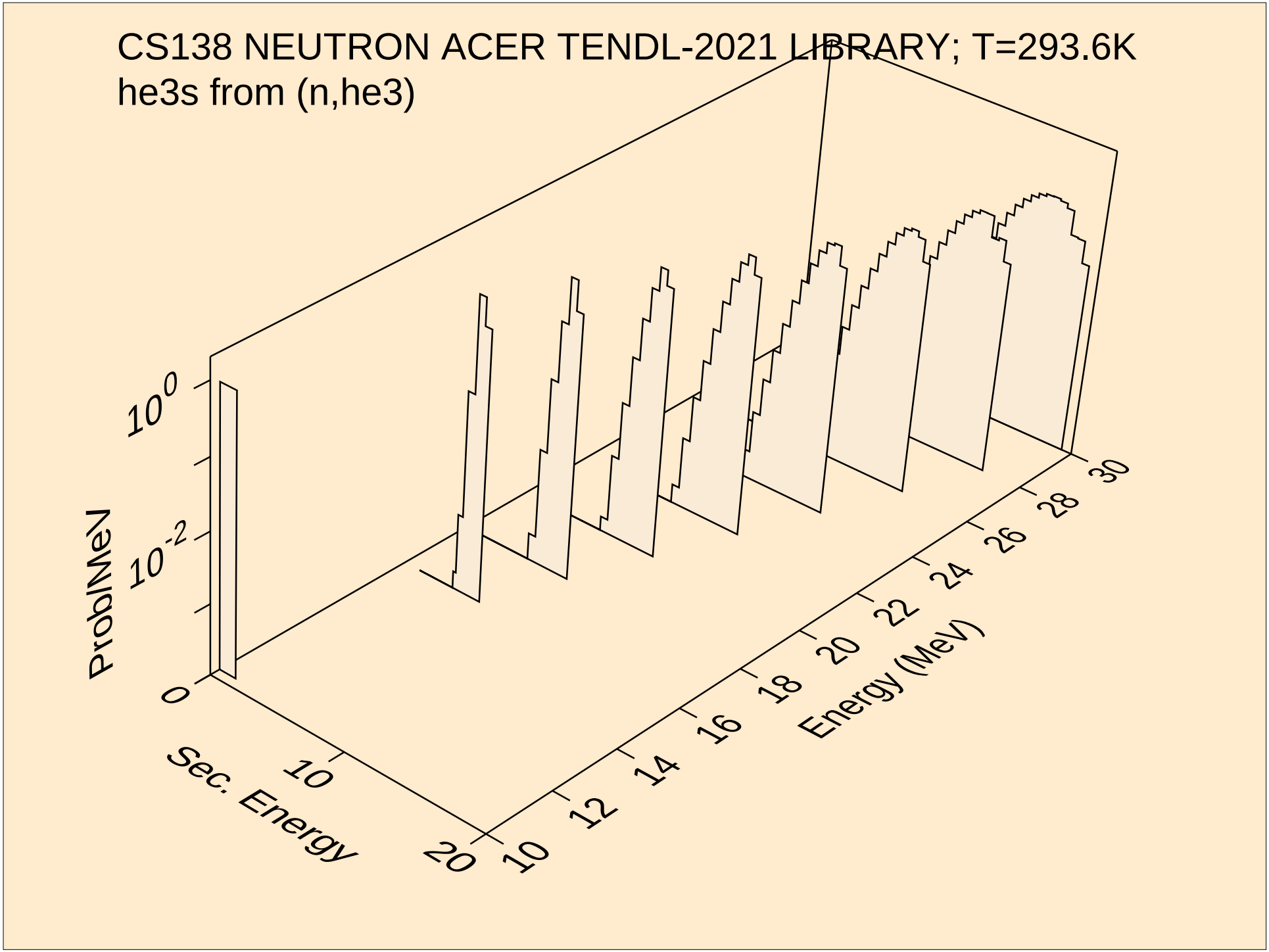

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
tritons from (n,n*)t
Prob/MeV
10-1
10-3
0
Sec. Energy
10
20
Energy (MeV)
10
12
14
16
18
20
22
24
26
28
30

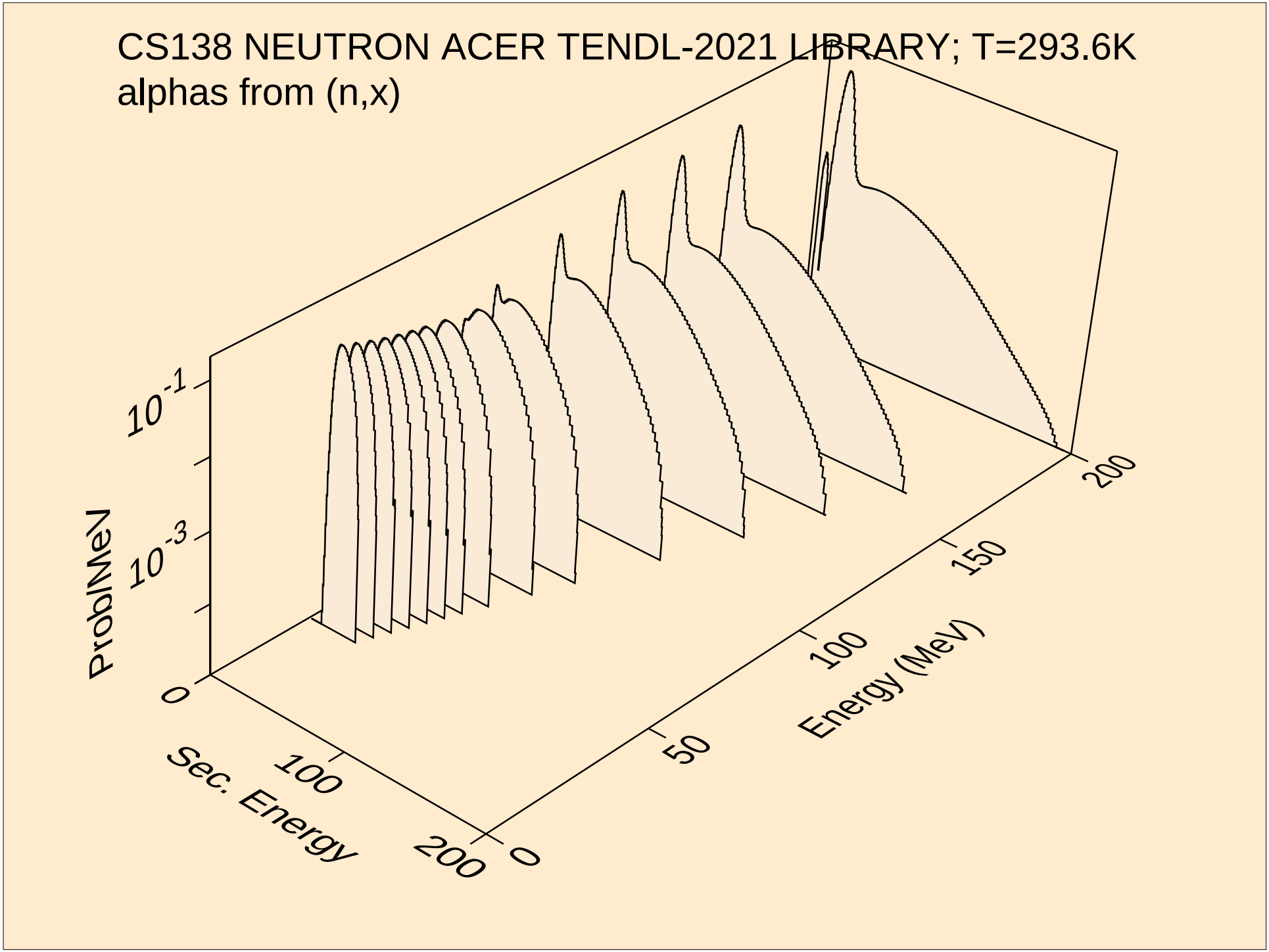

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
tritons from (n,t)
Prob/MeV
10-1
10-3
0
Sec. Energy
20
40
0
5
10
15
20
25
30
Energy (MeV)

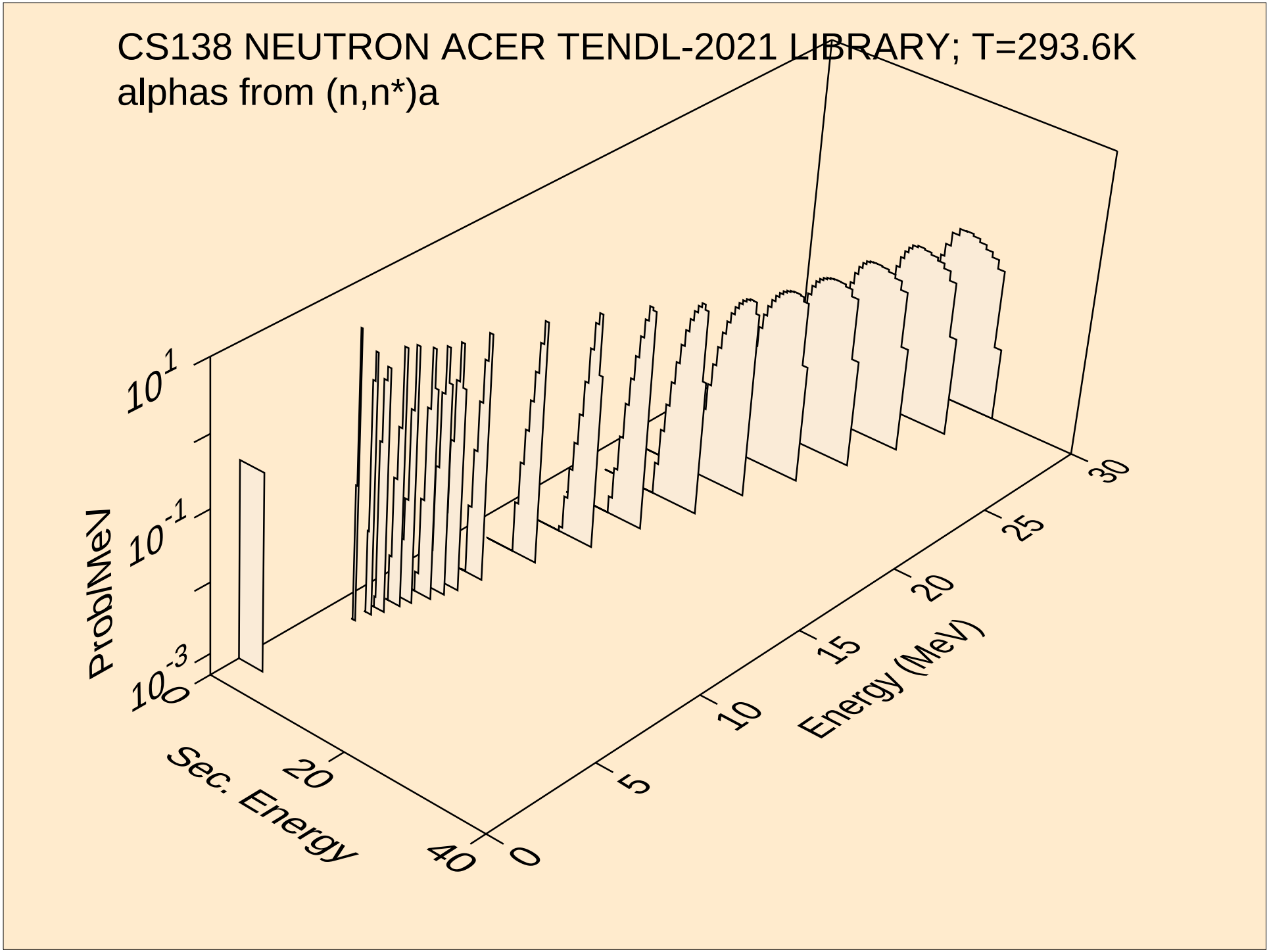

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
tritons from (n,pt)
Prob/MeV
10^{0}
10^{-2}
10^{-4}
0
Sec. Energy
10
20
Energy (MeV)
12
14
16
18
20
22
24
26
28
30

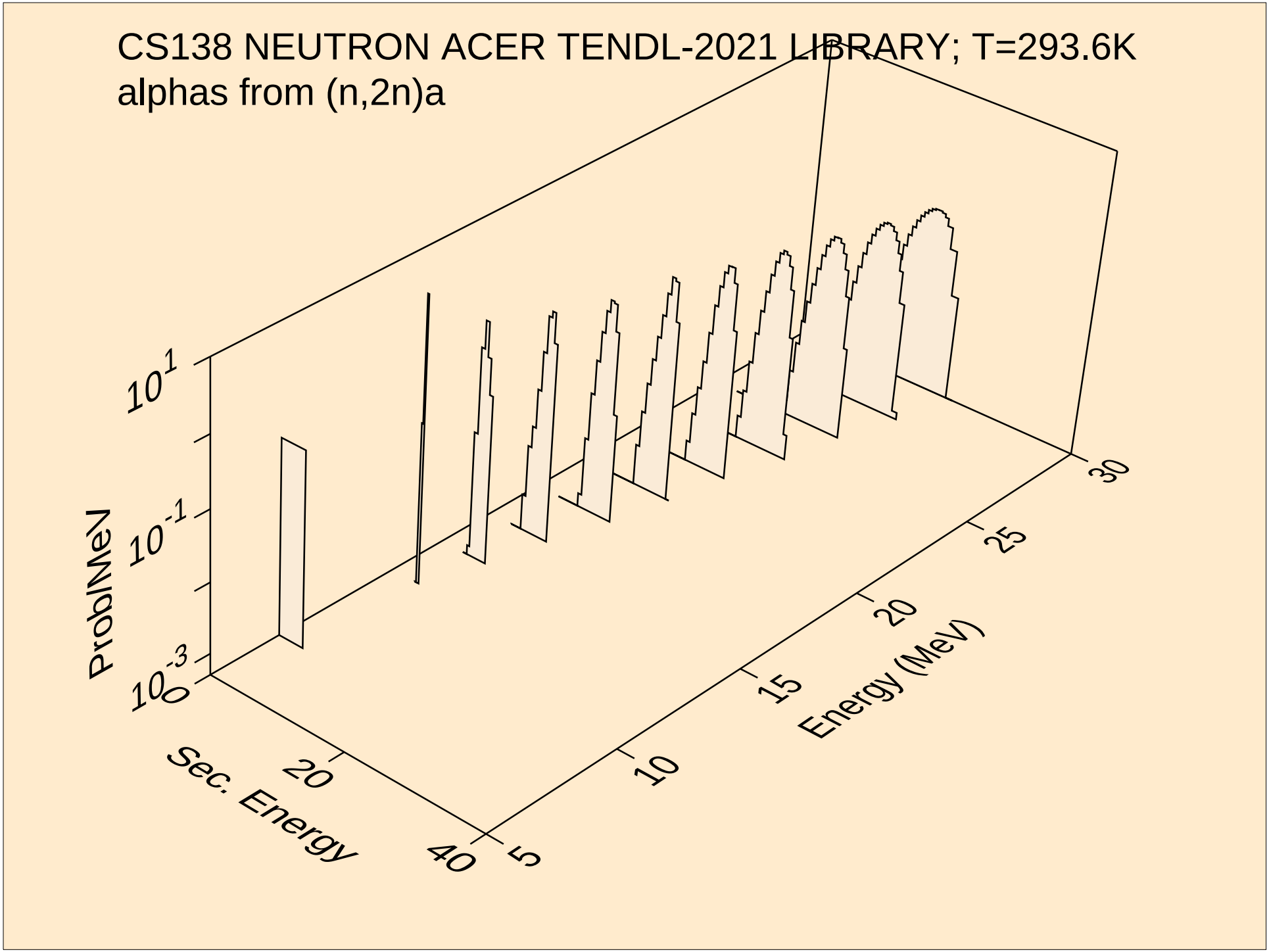

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
he3s from (n,x)
Prob/MeV
10-2
10-4
0
Sec. Energy
100
200
0
50
100
150
200
Energy (MeV)

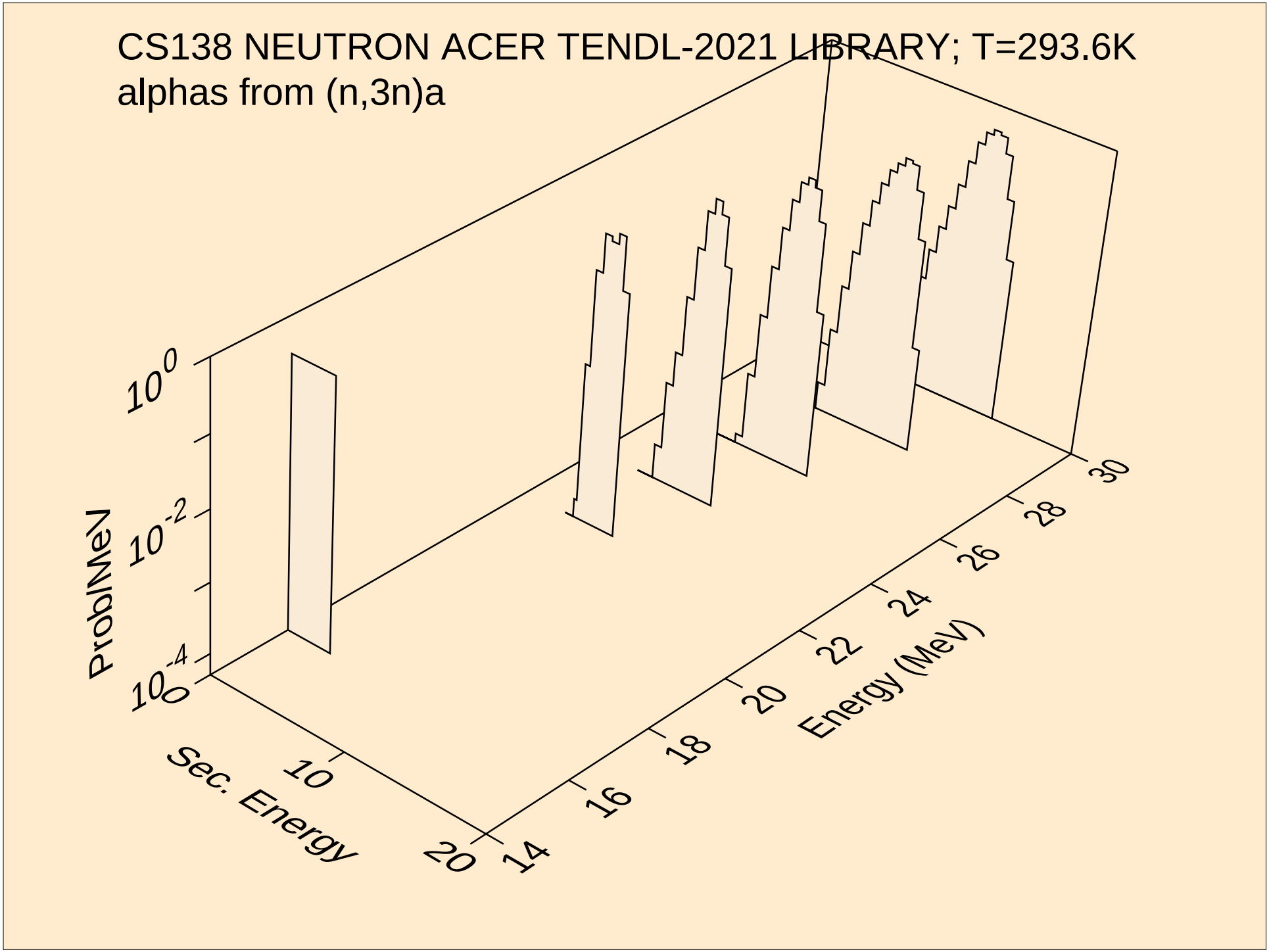

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
he3s from (n,n*)he3
Prob/MeV
10^0
10^-2
0
Sec. Energy
10
20
14
16
18
20
22
24
26
28
30
Energy (MeV)

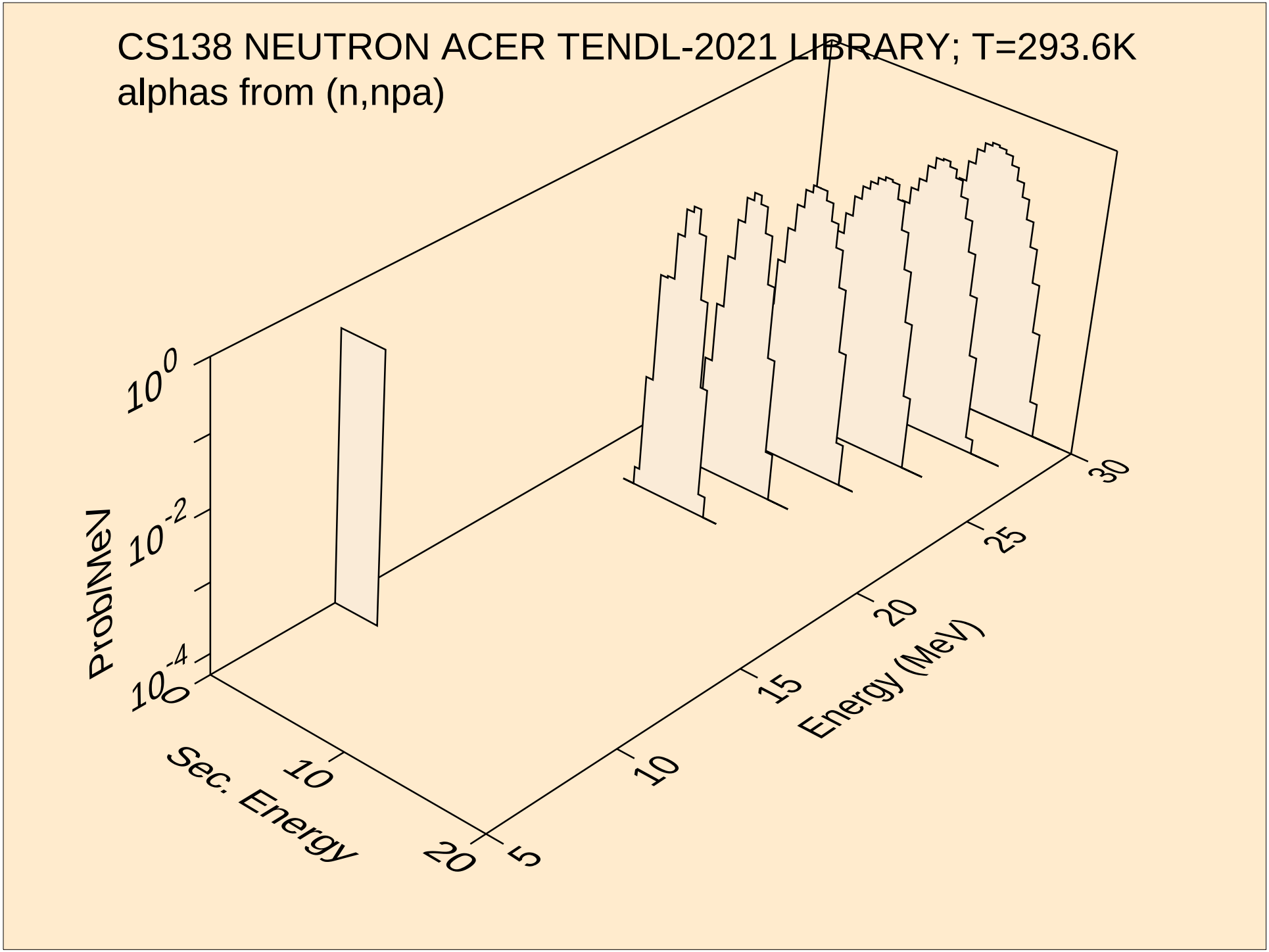

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
he3s from (n,he3)
Prob/MeV
10^0
10^-2
0
Sec. Energy
10
20
Energy (MeV)
10
12
14
16
18
20
22
24
26
28
30

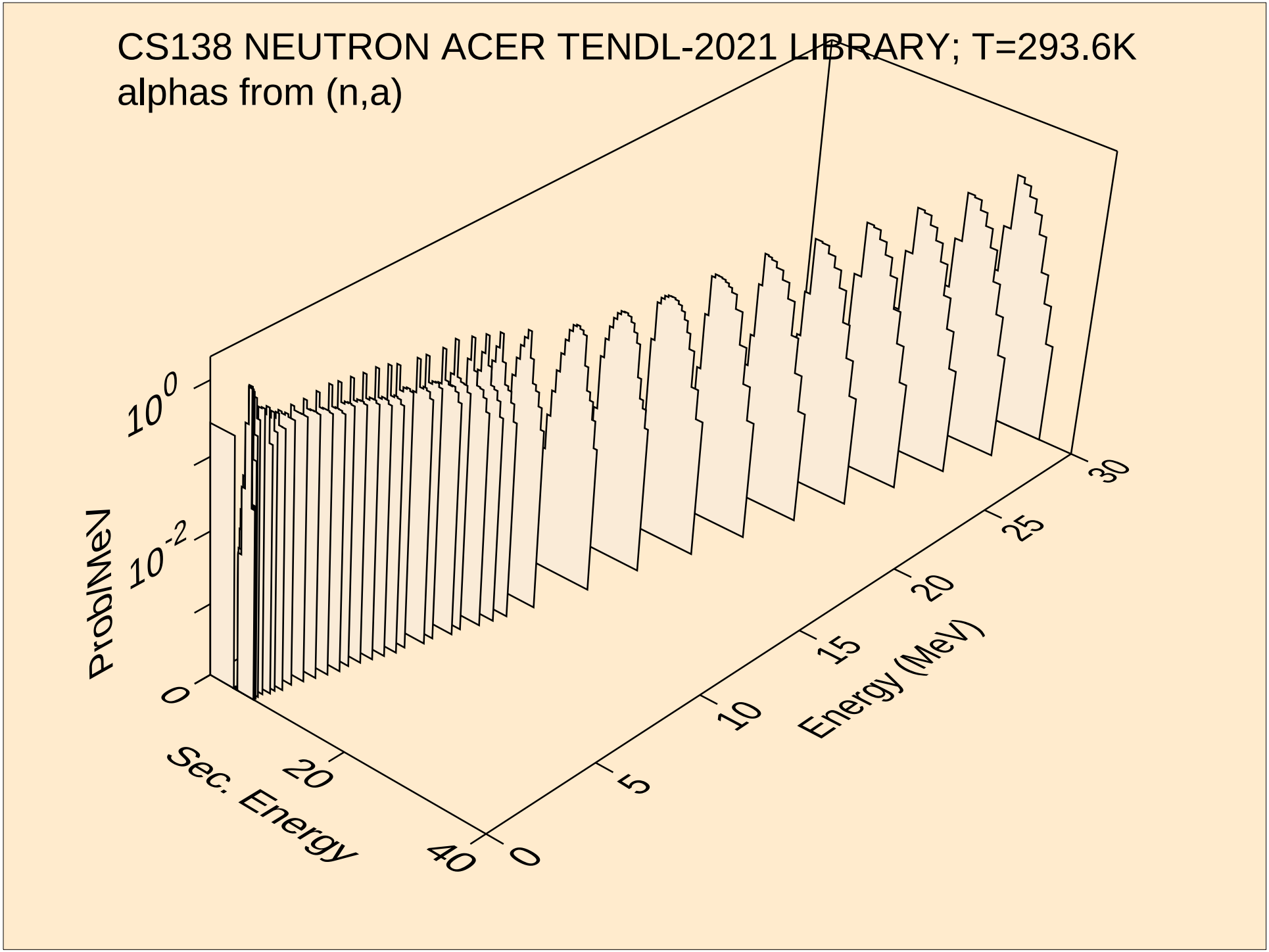

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
alphas from (n,x)
Prob/MeV
10-1
10-3
0
Sec. Energy
100
200
0
50
100
150
200
Energy (MeV)

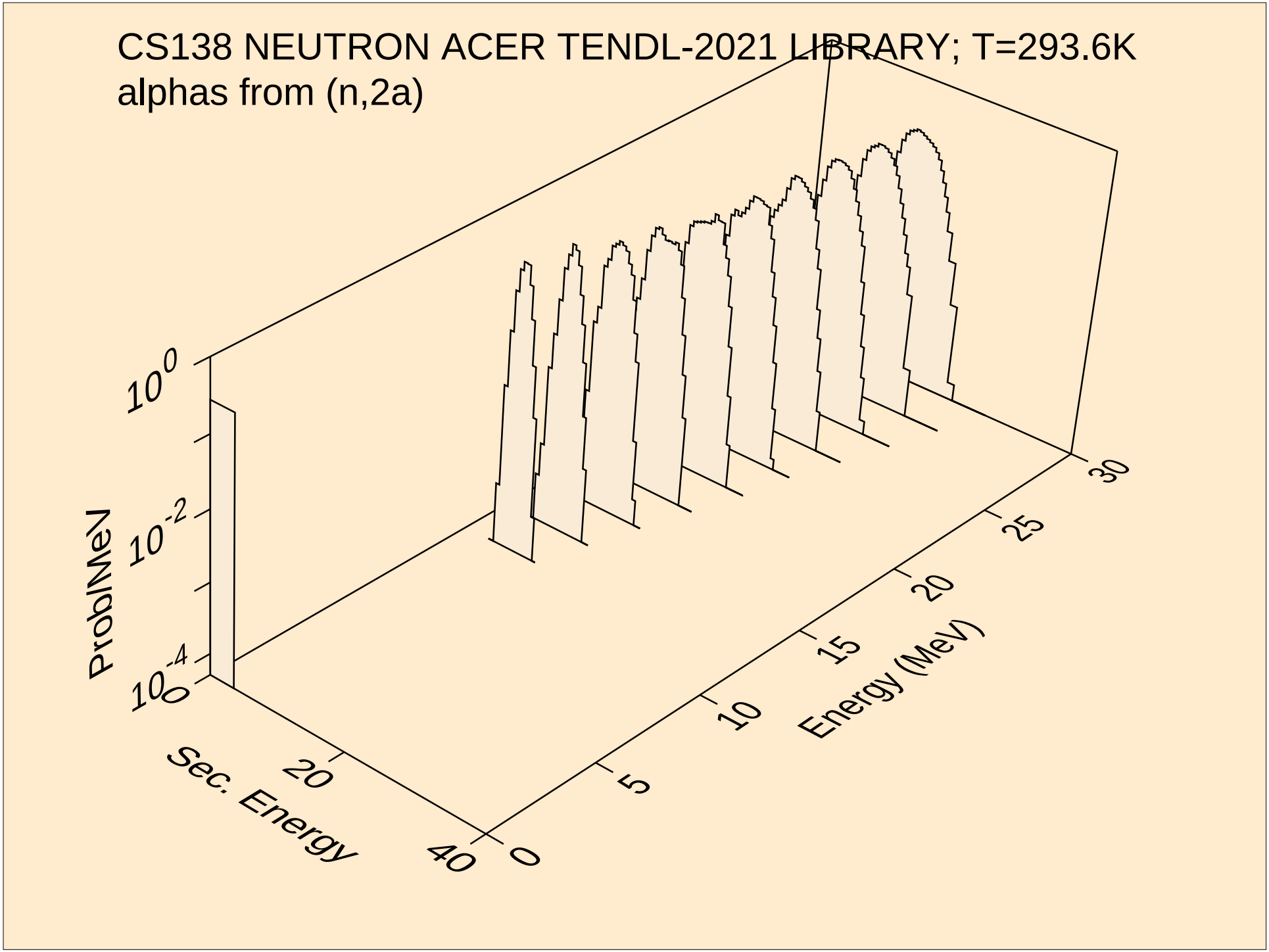

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
alphas from (n,n*)a
Prob/MeV
10^1
10^-1
10^-3
0
20
40
Sec. Energy
0
5
10
15
20
25
30
Energy (MeV)

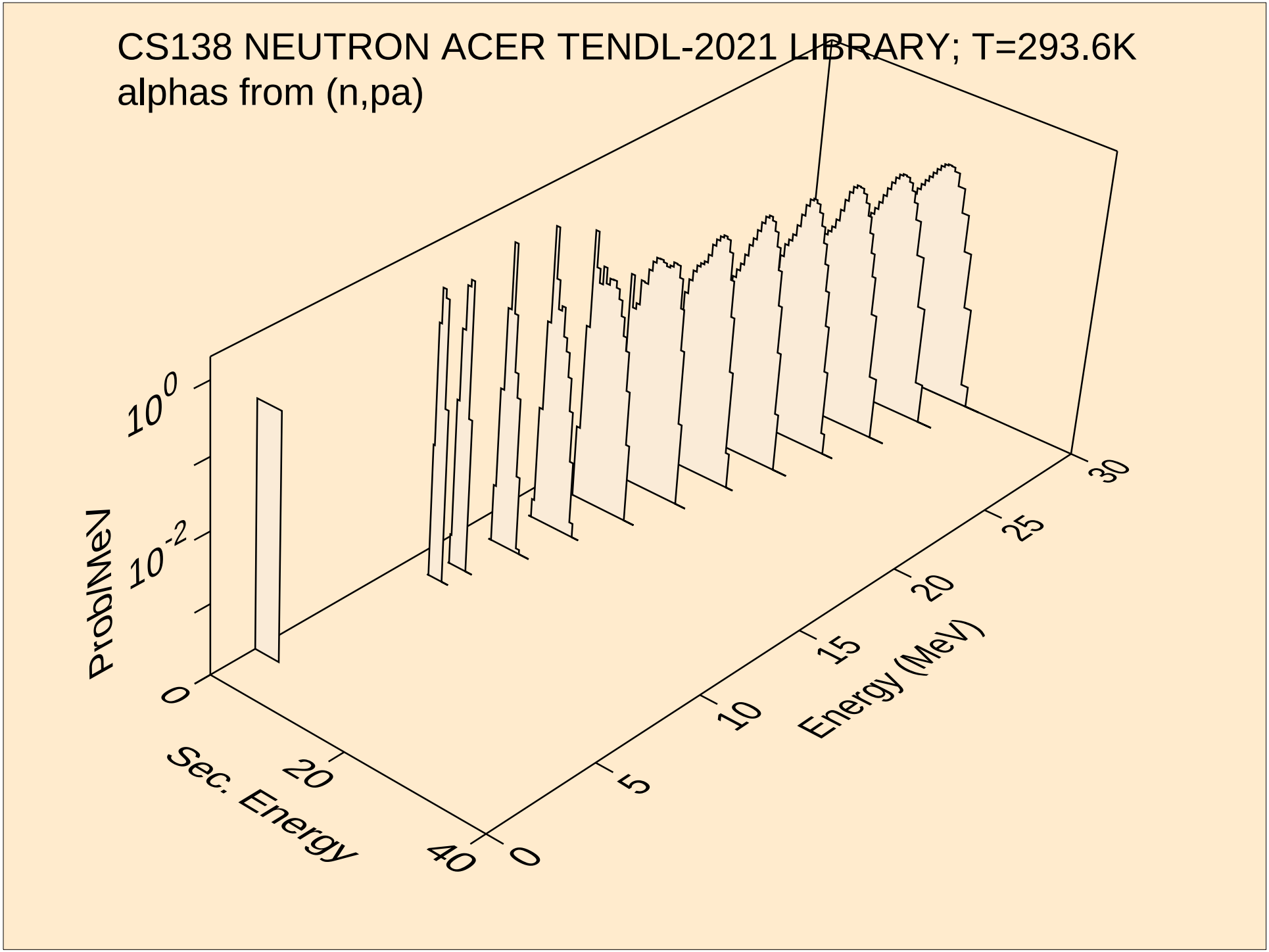

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
alphas from (n,2n)a
Prob/MeV
10^1
10^-1
10^-3
0
20
40
Sec. Energy
5
10
15
20
25
30
Energy (MeV)

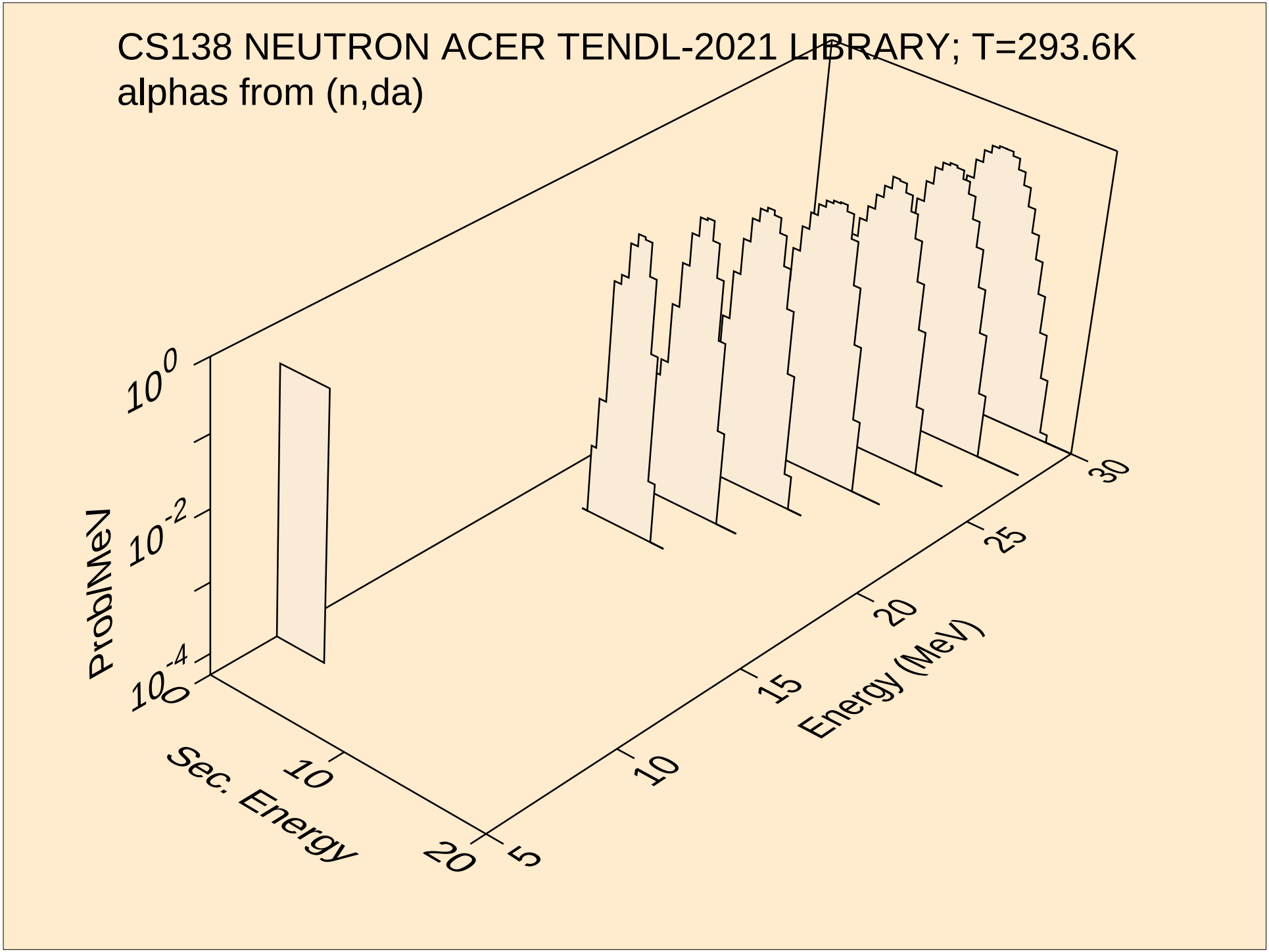

CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
alphas from (n,3n)a
Prob/MeV
10^0
10^-2
10^-4
0
Sec. Energy
10
20
14
16
18
20
22
24
26
28
30
Energy (MeV)


CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
alphas from (n,npa)
Prob/MeV
10^{0}
10^{-2}
10^{-4}
0
Sec. Energy
10
20
5
10
15
20
25
30
Energy (MeV)


CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
alphas from (n,a)
Prob/MeV
10^0
10^-2
0
Sec. Energy
20
40
0
5
10
15
20
25
30
Energy (MeV)


CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
alphas from (n,2a)
Prob/MeV
10^0
10^-2
10^-4
Sec. Energy
0
20
40
Energy (MeV)
0
5
10
15
20
25
30


CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
alphas from (n,pa)
Prob/MeV
10^0
10^-2
0
Sec. Energy
20
40
0
5
10
15
20
25
30
Energy (MeV)


CS138 NEUTRON ACER TENDL-2021 LIBRARY; T=293.6K
alphas from (n,da)
Prob/MeV
10^0
10^-2
10^-4
0
Sec. Energy
10
20
5
10
15
20
25
30
Energy (MeV)