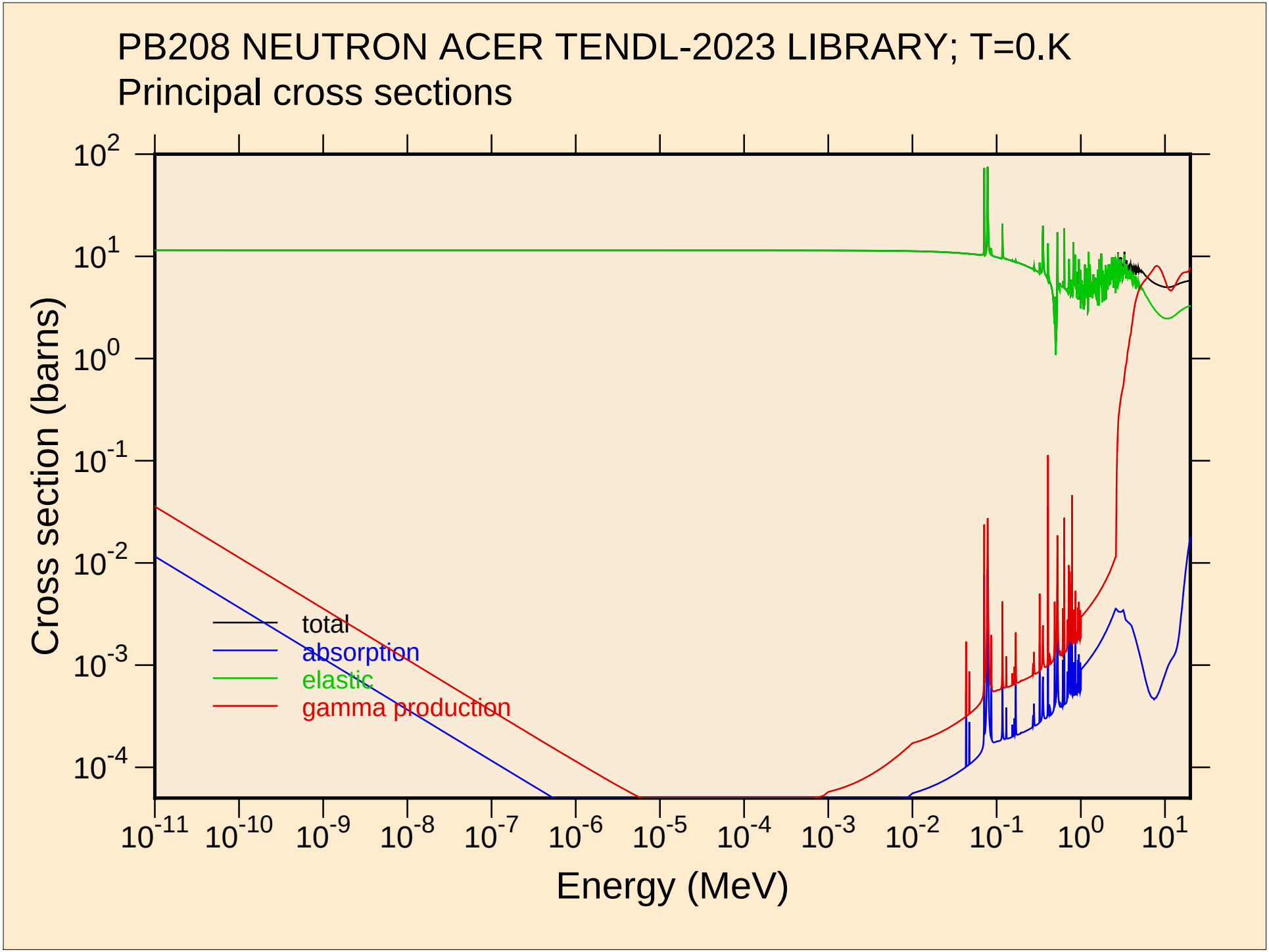
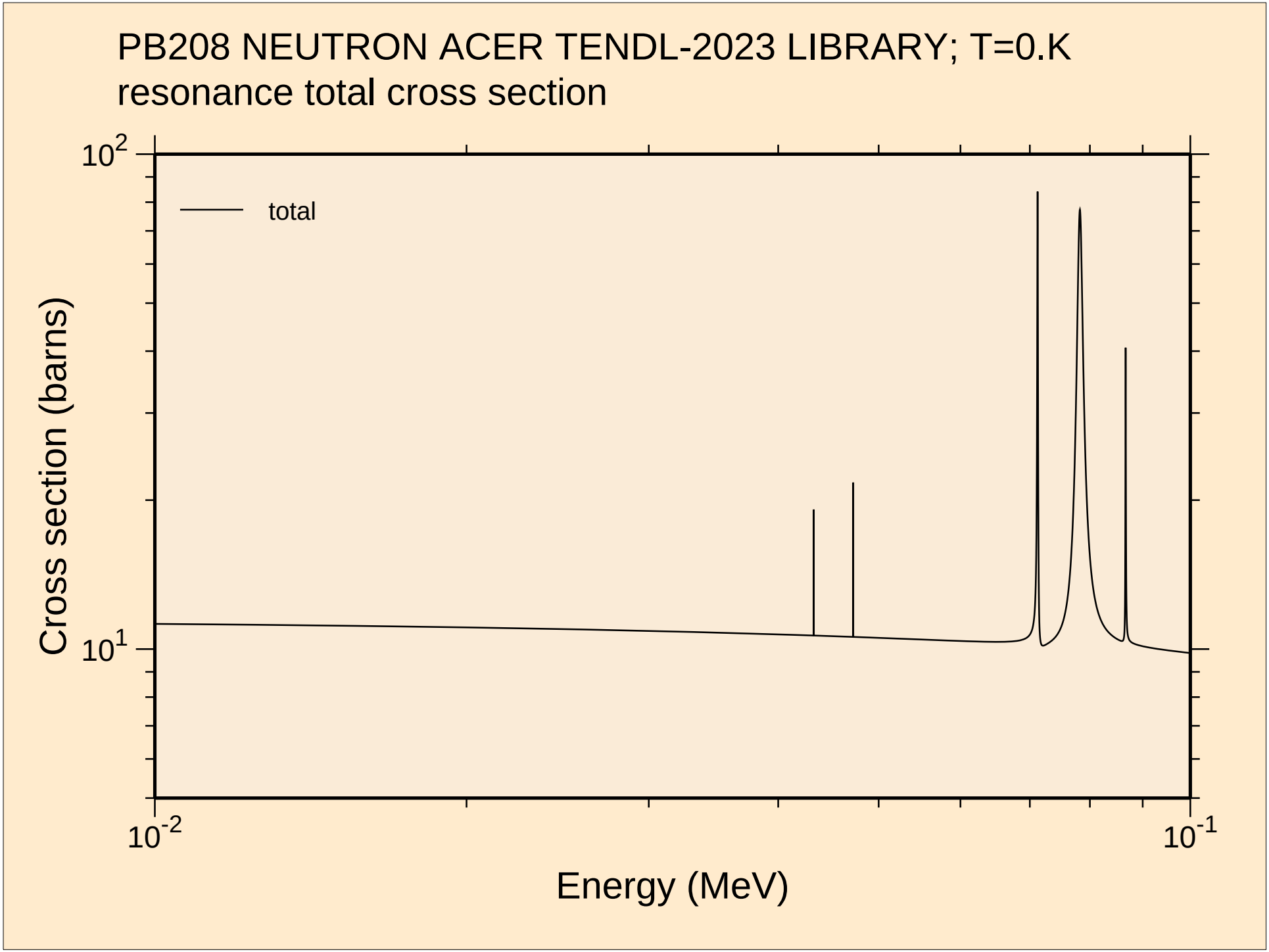
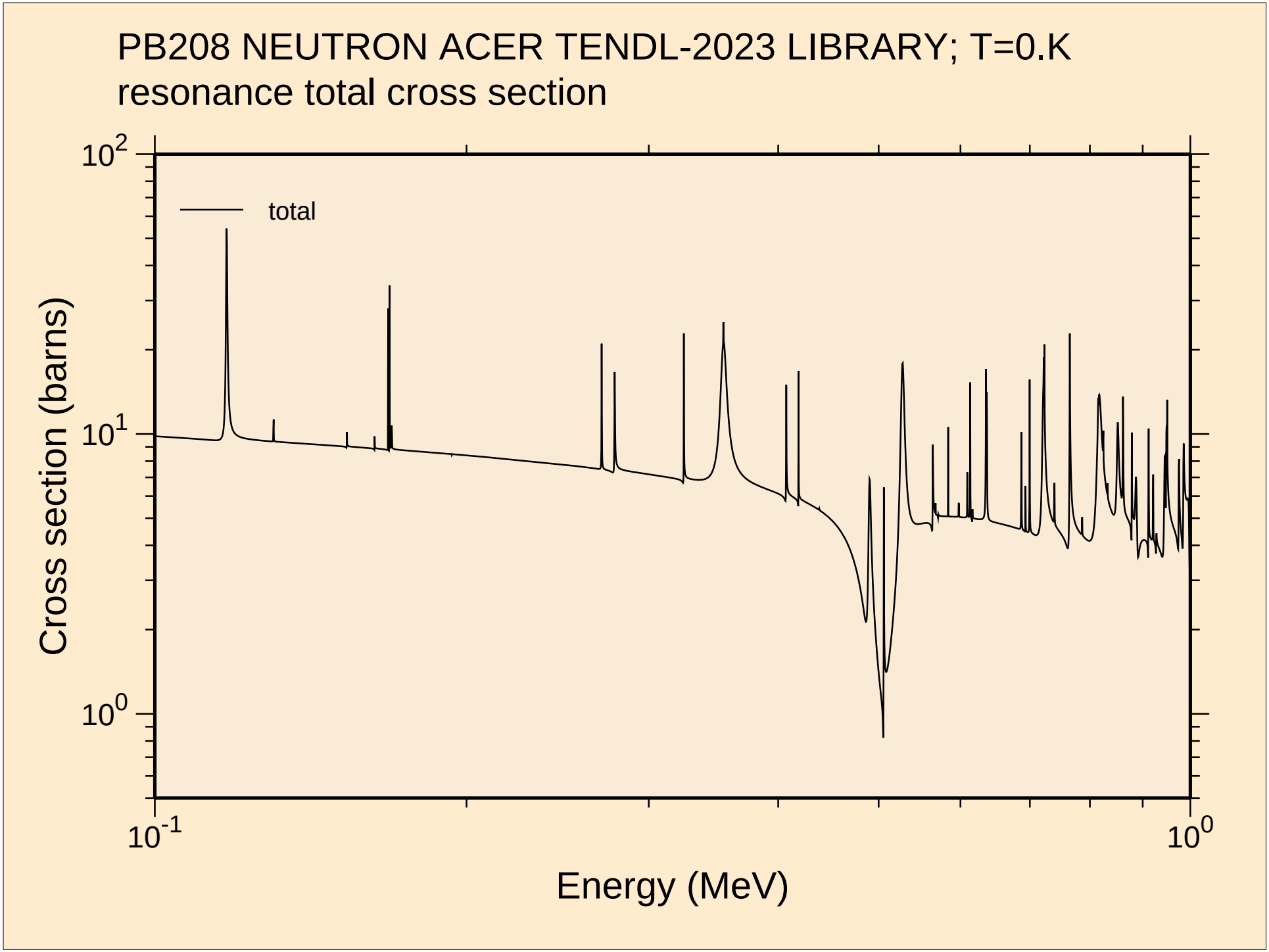
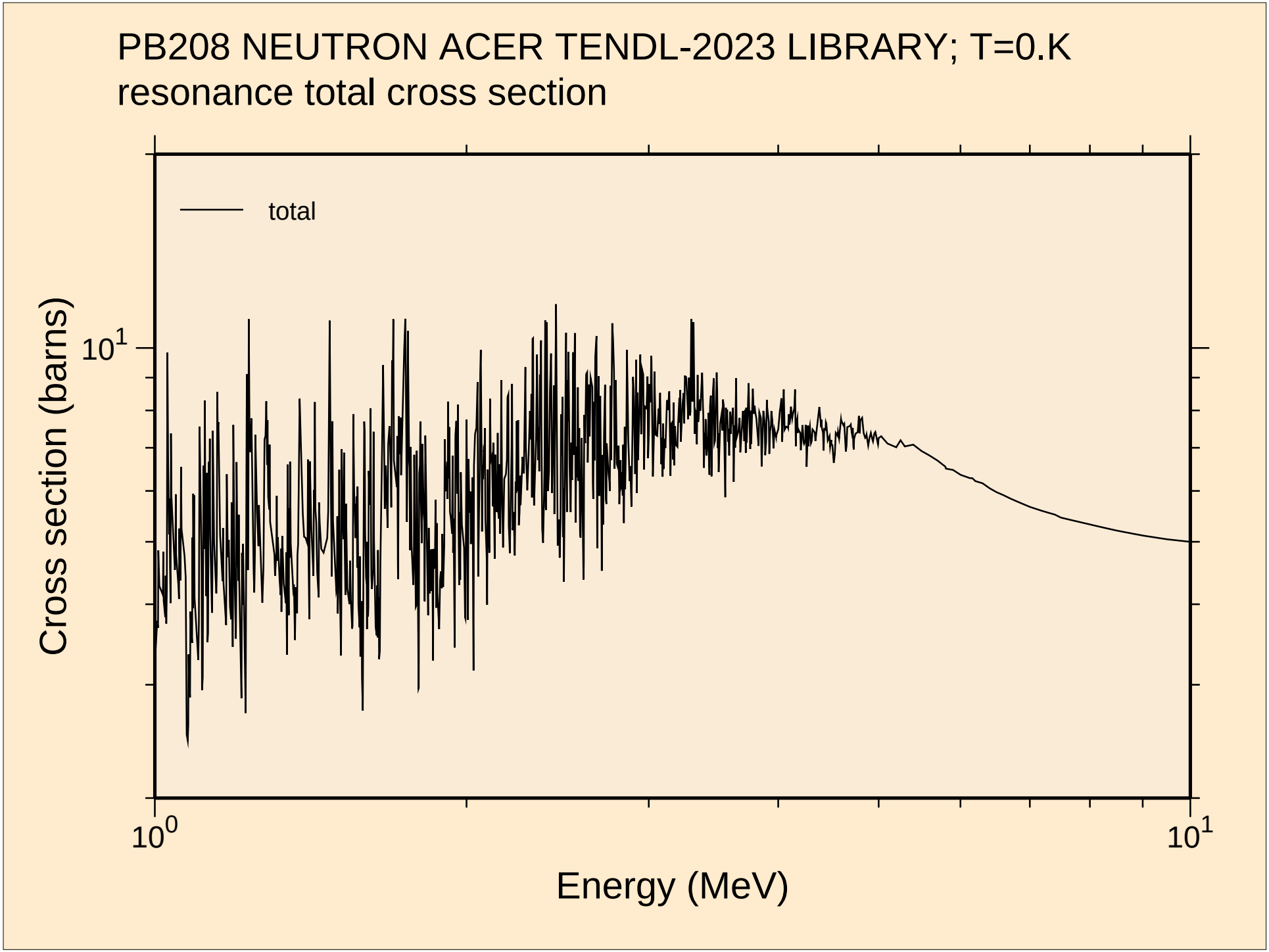
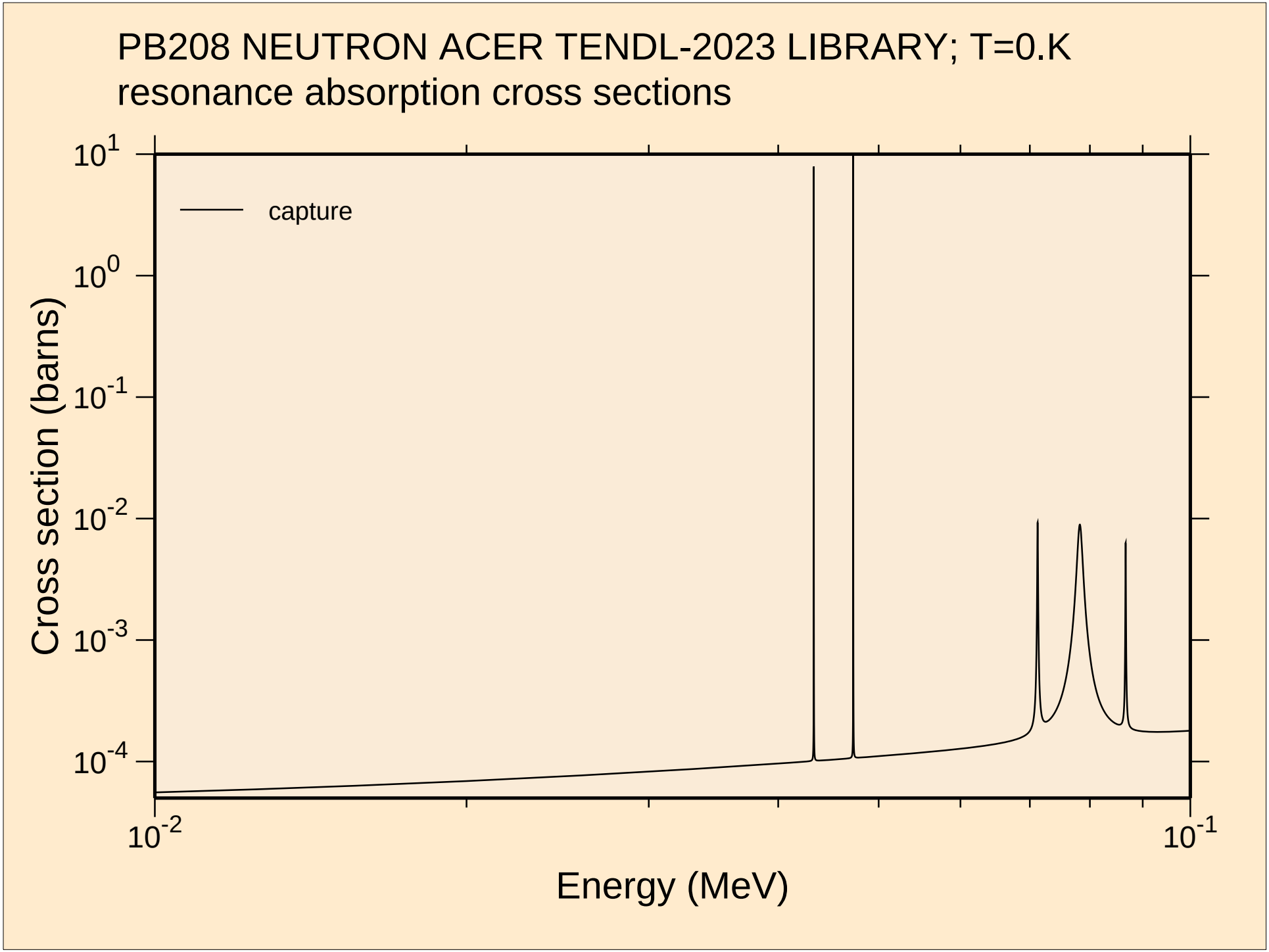

PB208 NEUTRON ACER TENDL-2023 LIBRARY; T=0.K
Principal cross sections
Cross section (barns)
Energy (MeV)
total
absorption
elastic
gamma production

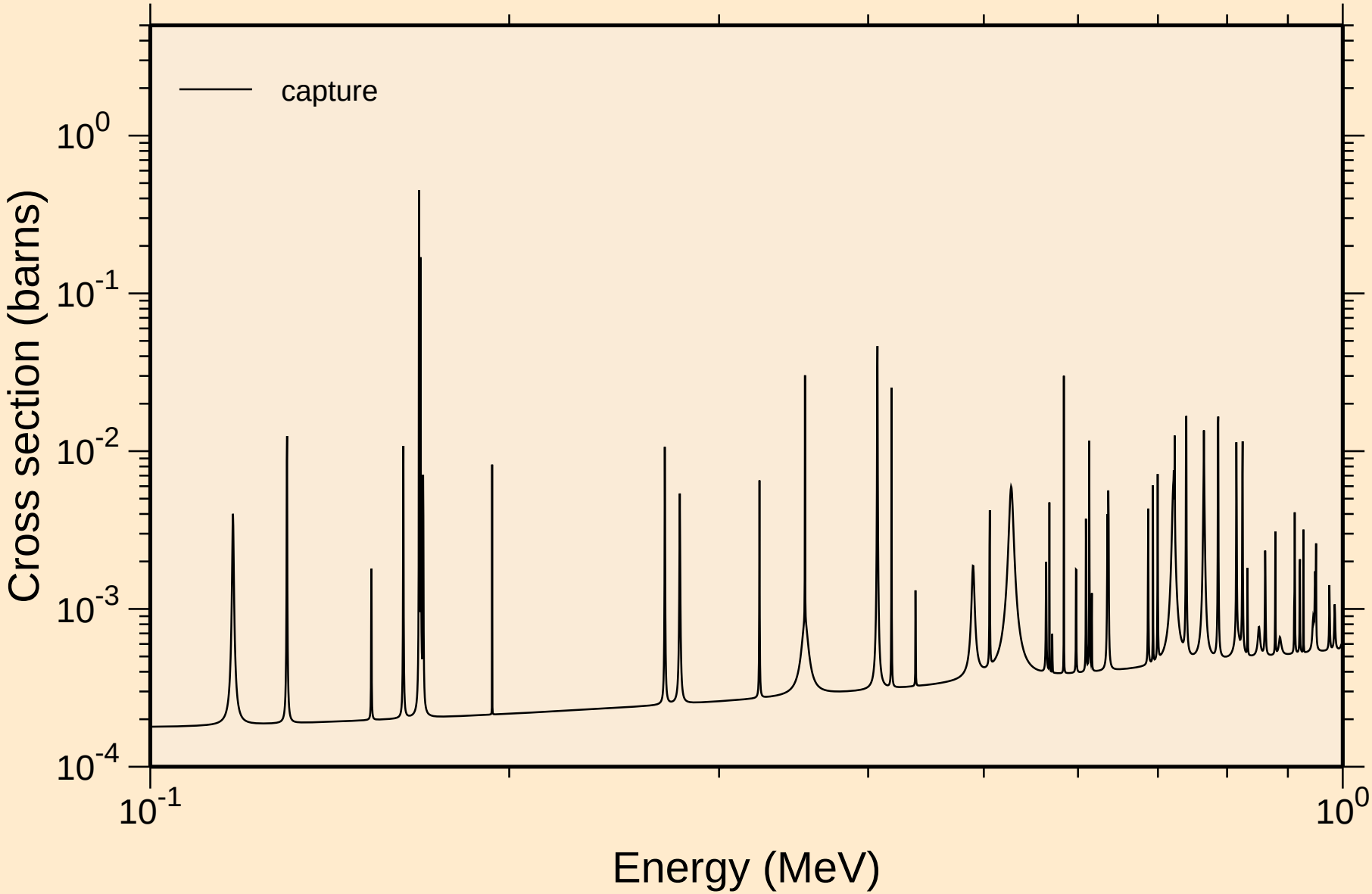

PB208 NEUTRON ACER TENDL-2023 LIBRARY; T=0.K
resonance total cross section
total
Cross section (barns)
10^2
10^1
10^{-2}
10^{-1}
Energy (MeV)

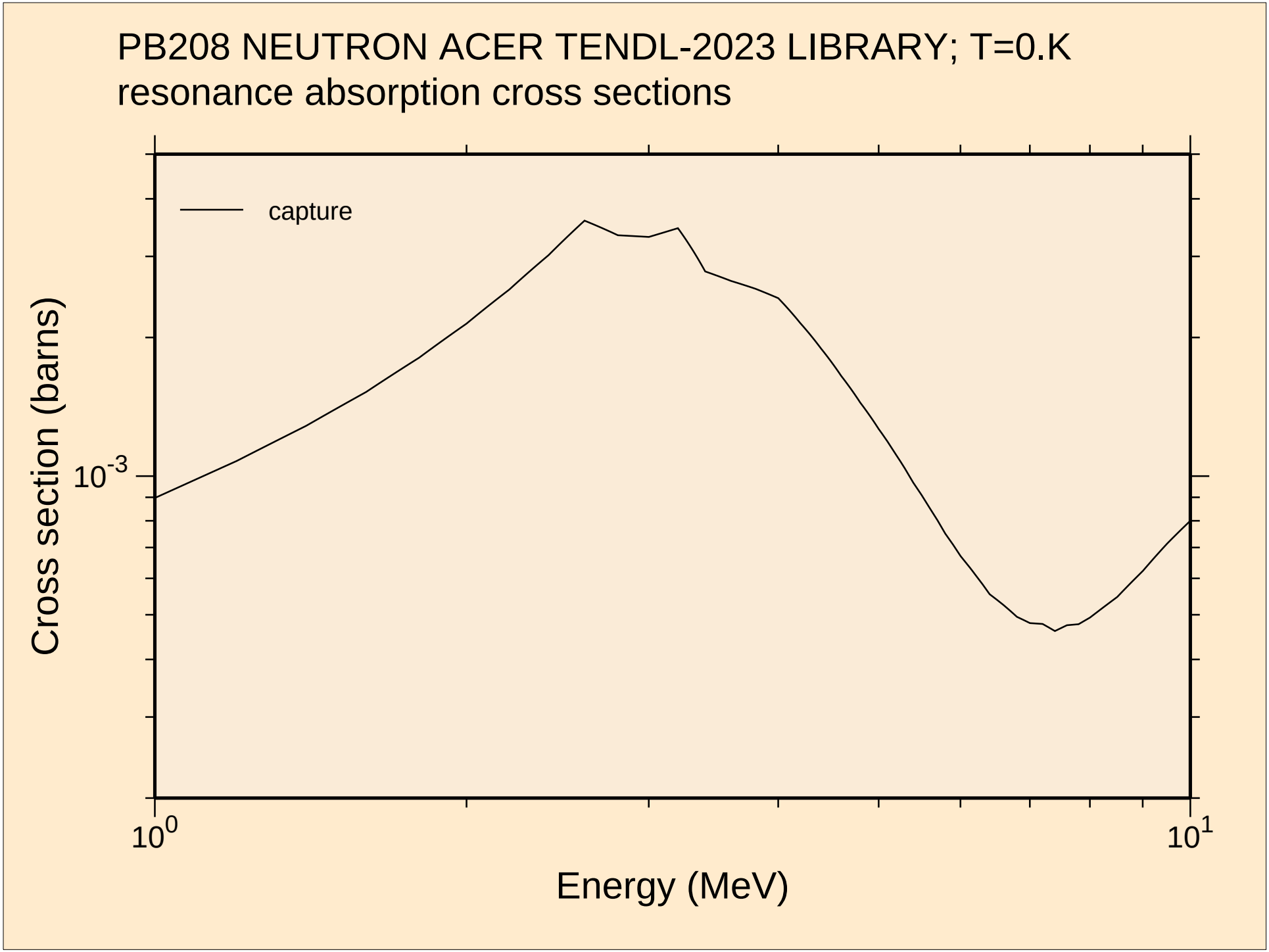

PB208 NEUTRON ACER TENDL-2023 LIBRARY; T=0.K
resonance total cross section
total
Cross section (barns)
10^2
10^1
10^0
10^{-1}
10^0
Energy (MeV)

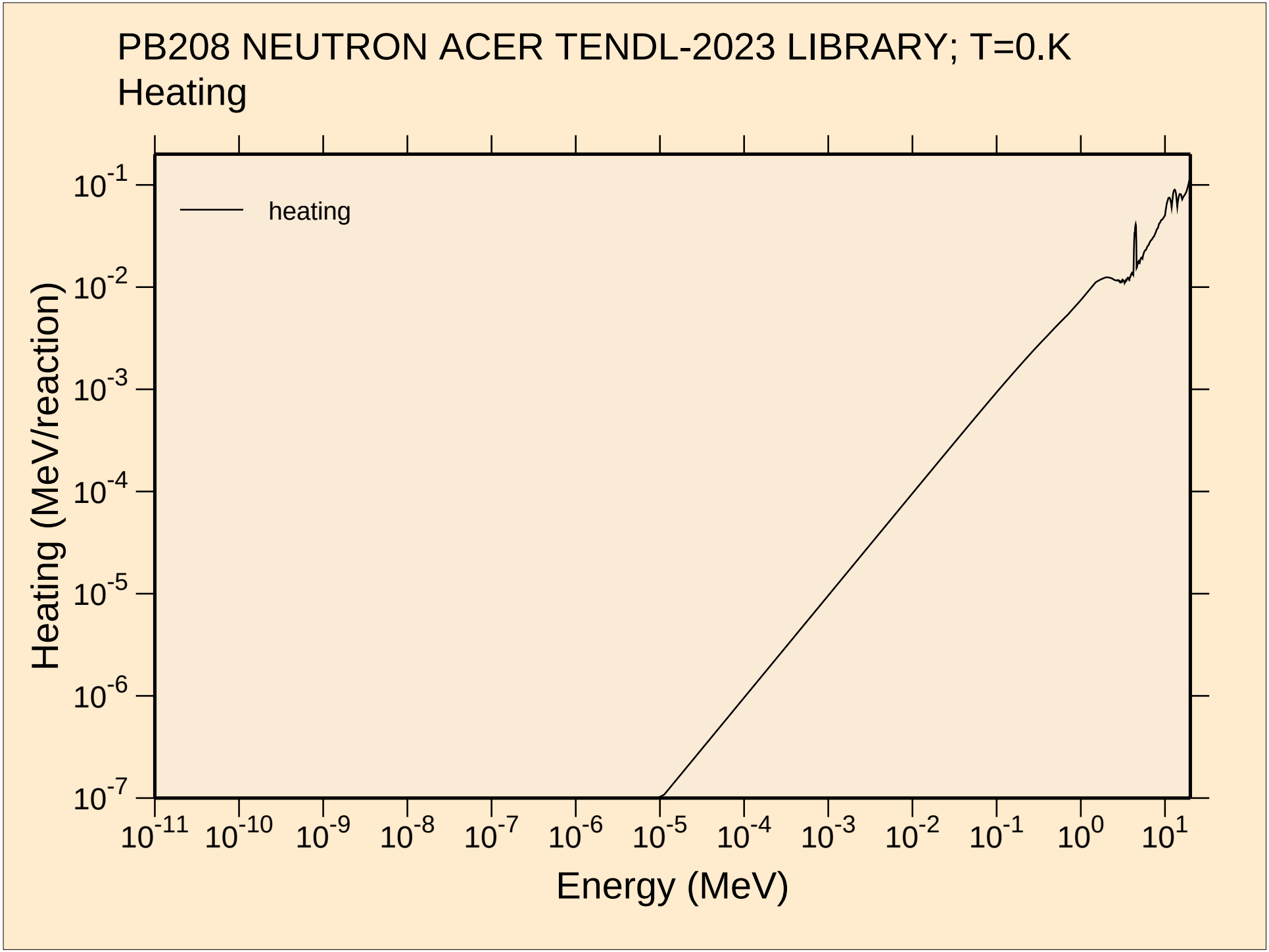

PB208 NEUTRON ACER TENDL-2023 LIBRARY; T=0.K
resonance total cross section
total
Cross section (barns)
10^1
10^0
10^1
Energy (MeV)


PB208 NEUTRON ACER TENDL-2023 LIBRARY; T=0.K
resonance absorption cross sections
capture
Cross section (barns)
10^1
10^0
10^-1
10^-2
10^-3
10^-4
10^-2
10^-1
Energy (MeV)

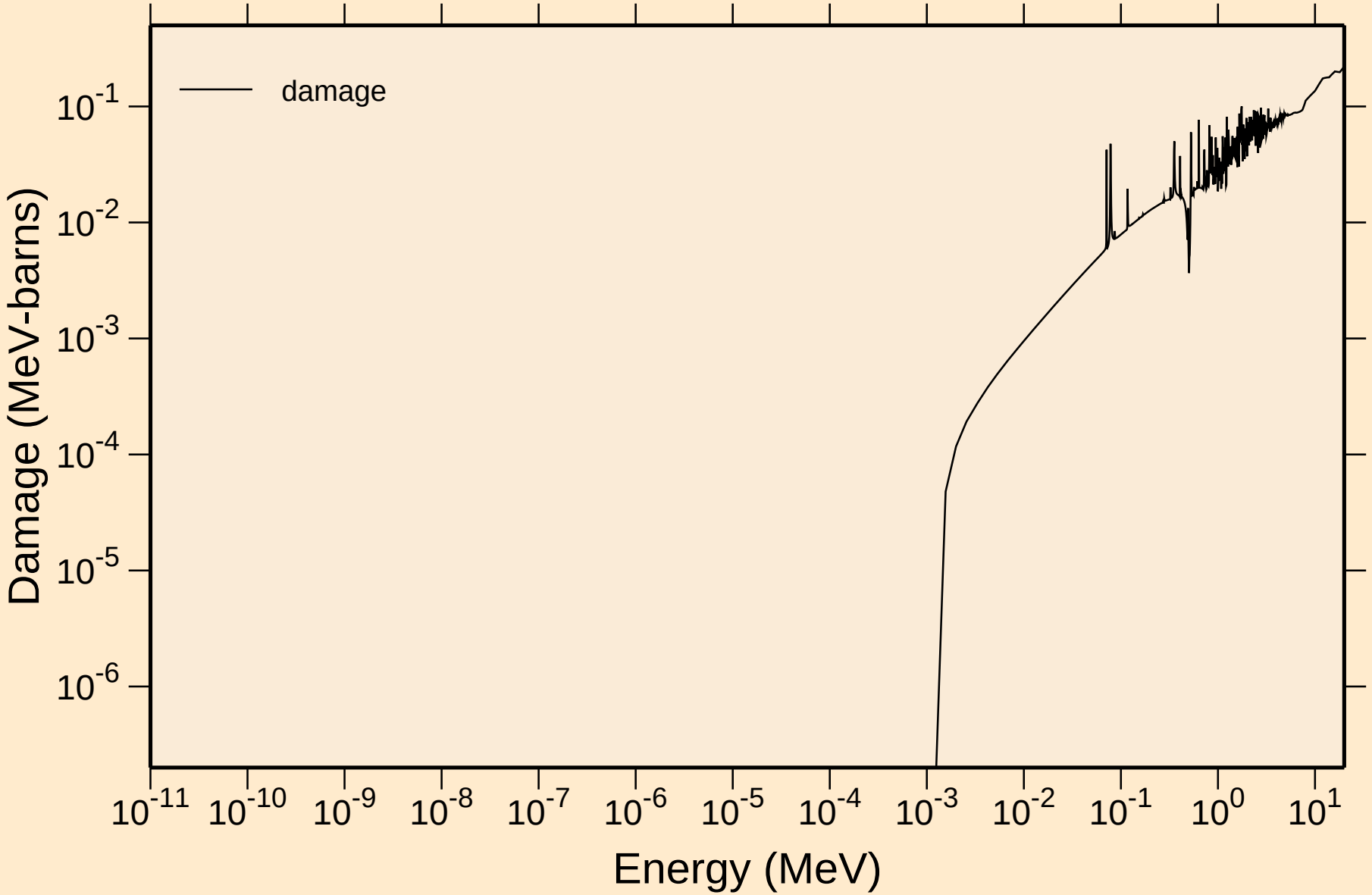
PB208 NEUTRON ACER TENDL-2023 LIBRARY; T=0.K
resonance absorption cross sections

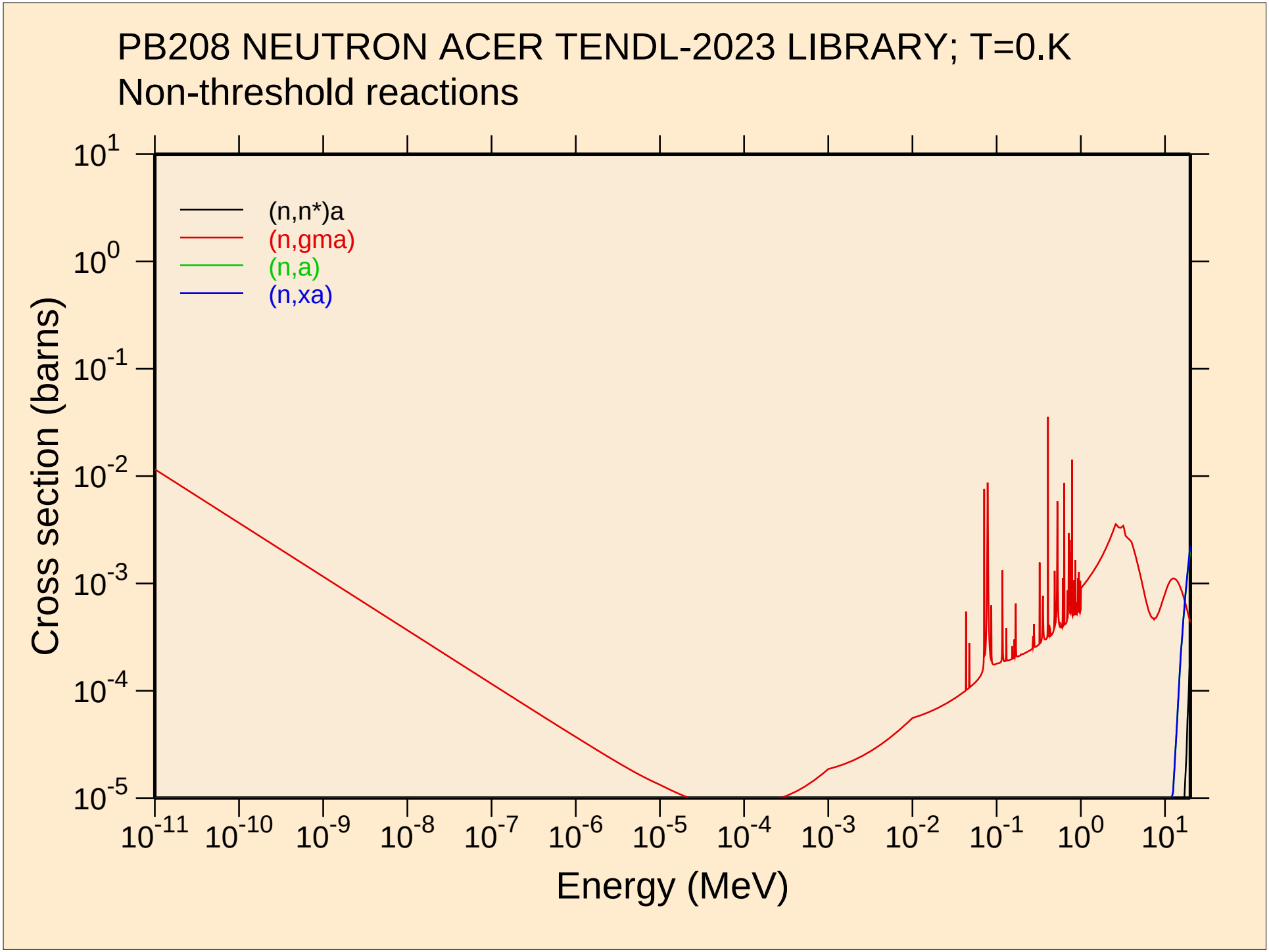


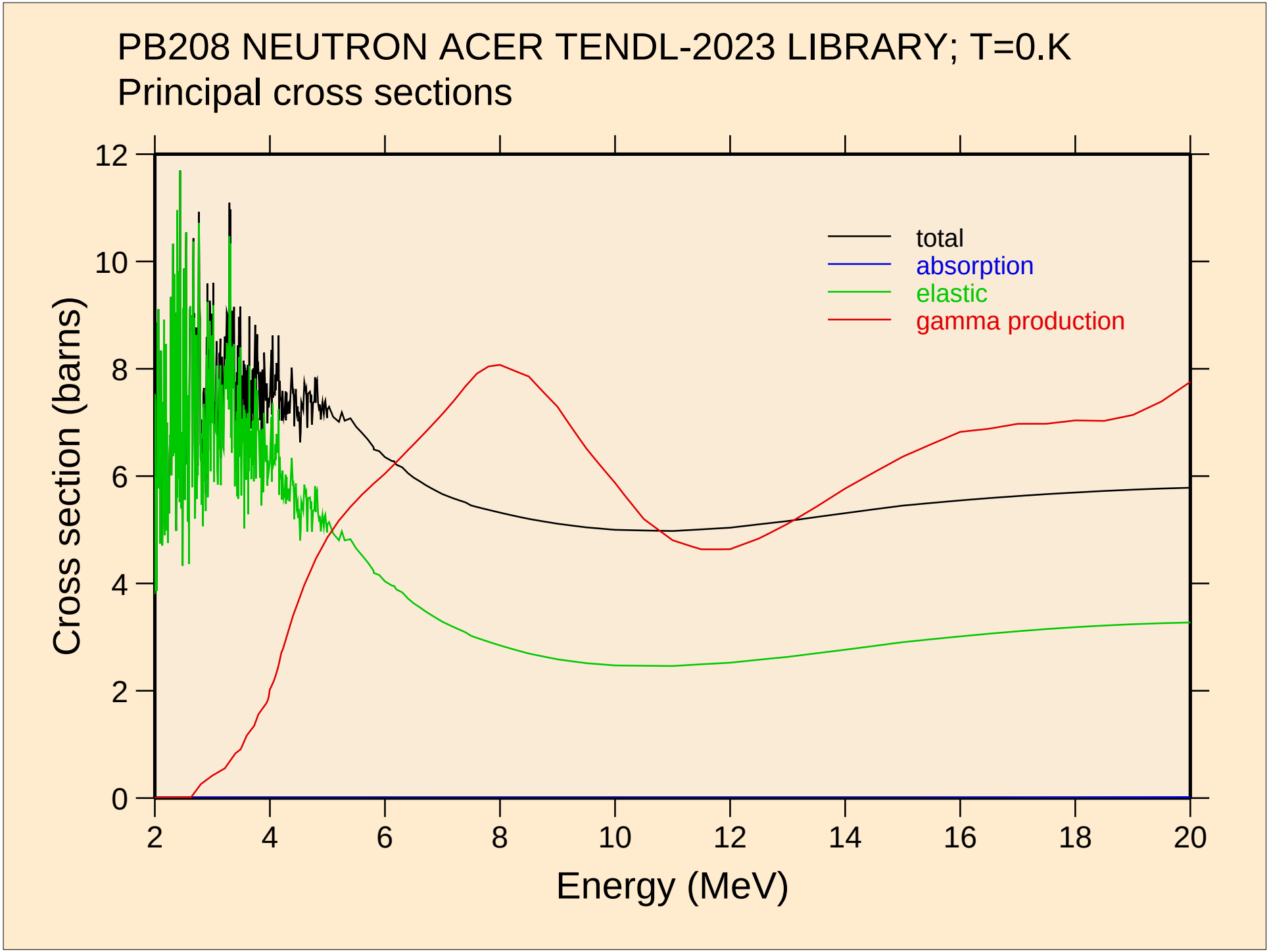

PB208 NEUTRON ACER TENDL-2023 LIBRARY; T=0.K
resonance absorption cross sections
capture
Cross section (barns)
10-3
100
101
Energy (MeV)

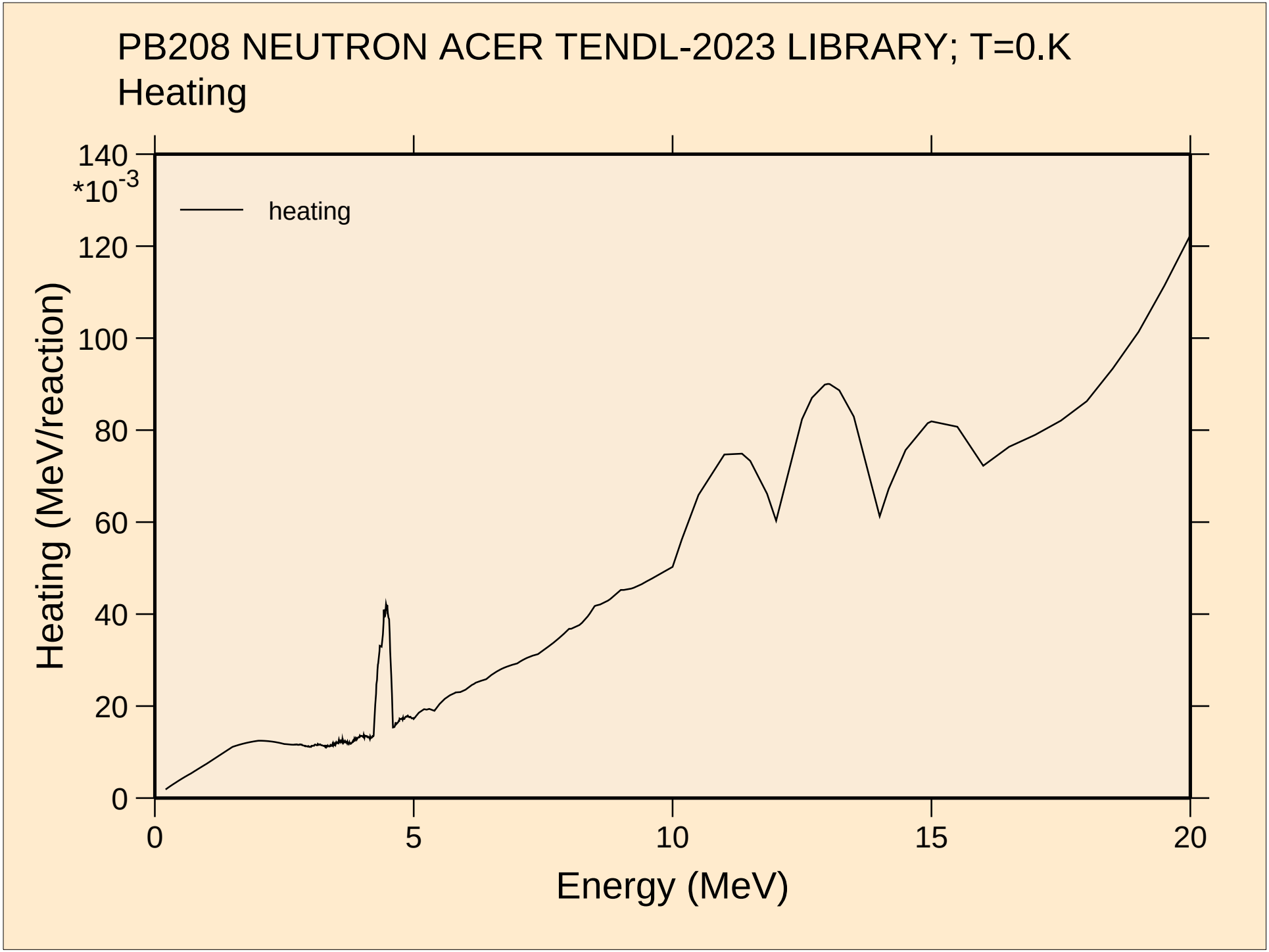

PB208 NEUTRON ACER TENDL-2023 LIBRARY; T=0.K
Heating
heating
Heating (MeV/reaction)
Energy (MeV)
10-1
10-2
10-3
10-4
10-5
10-6
10-7
10-11
10-10
10-9
10-8
10-7
10-6
10-5
10-4
10-3
10-2
10-1
100
101

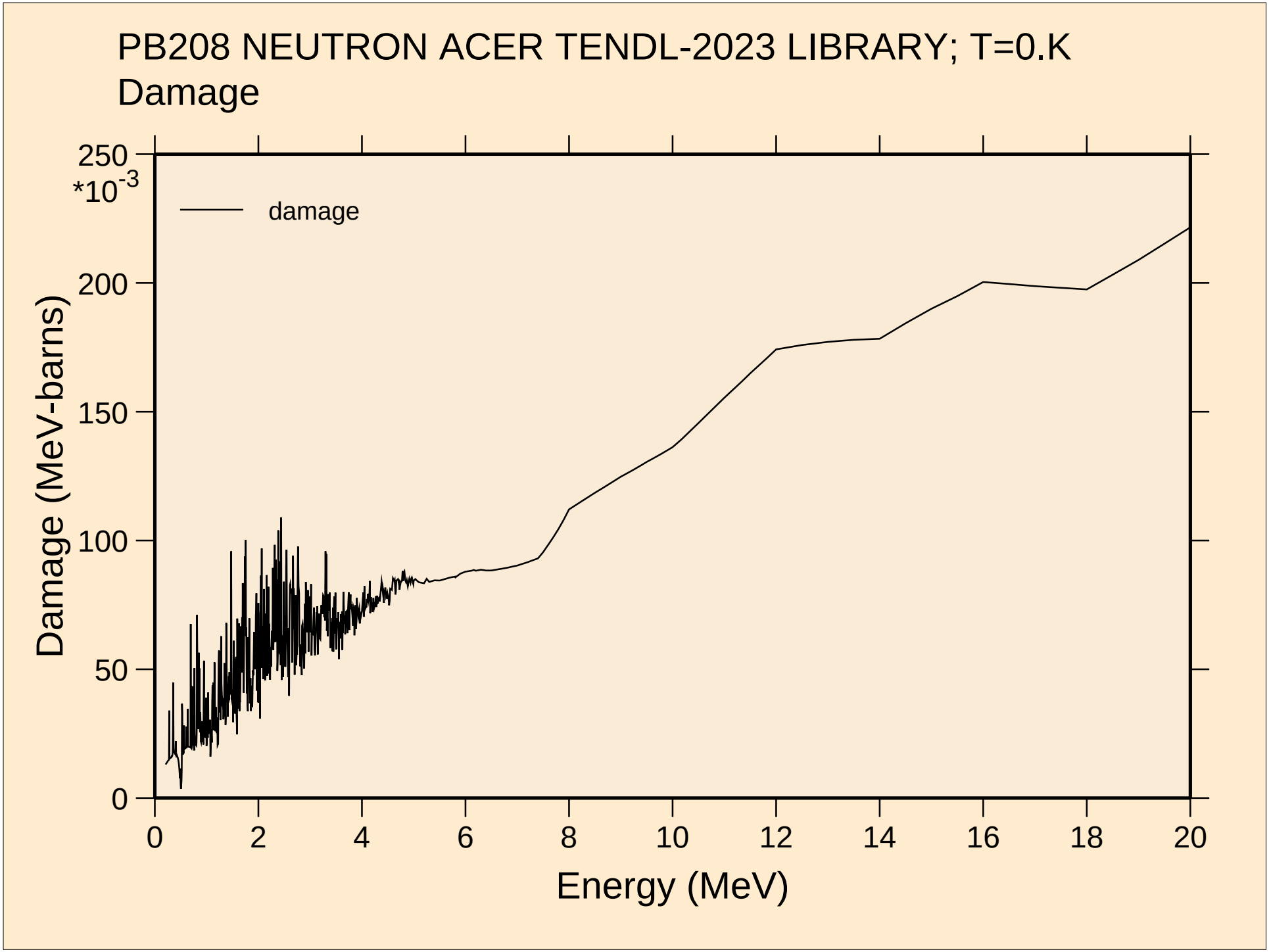
PB208 NEUTRON ACER TENDL-2023 LIBRARY; T=0.K
Damage

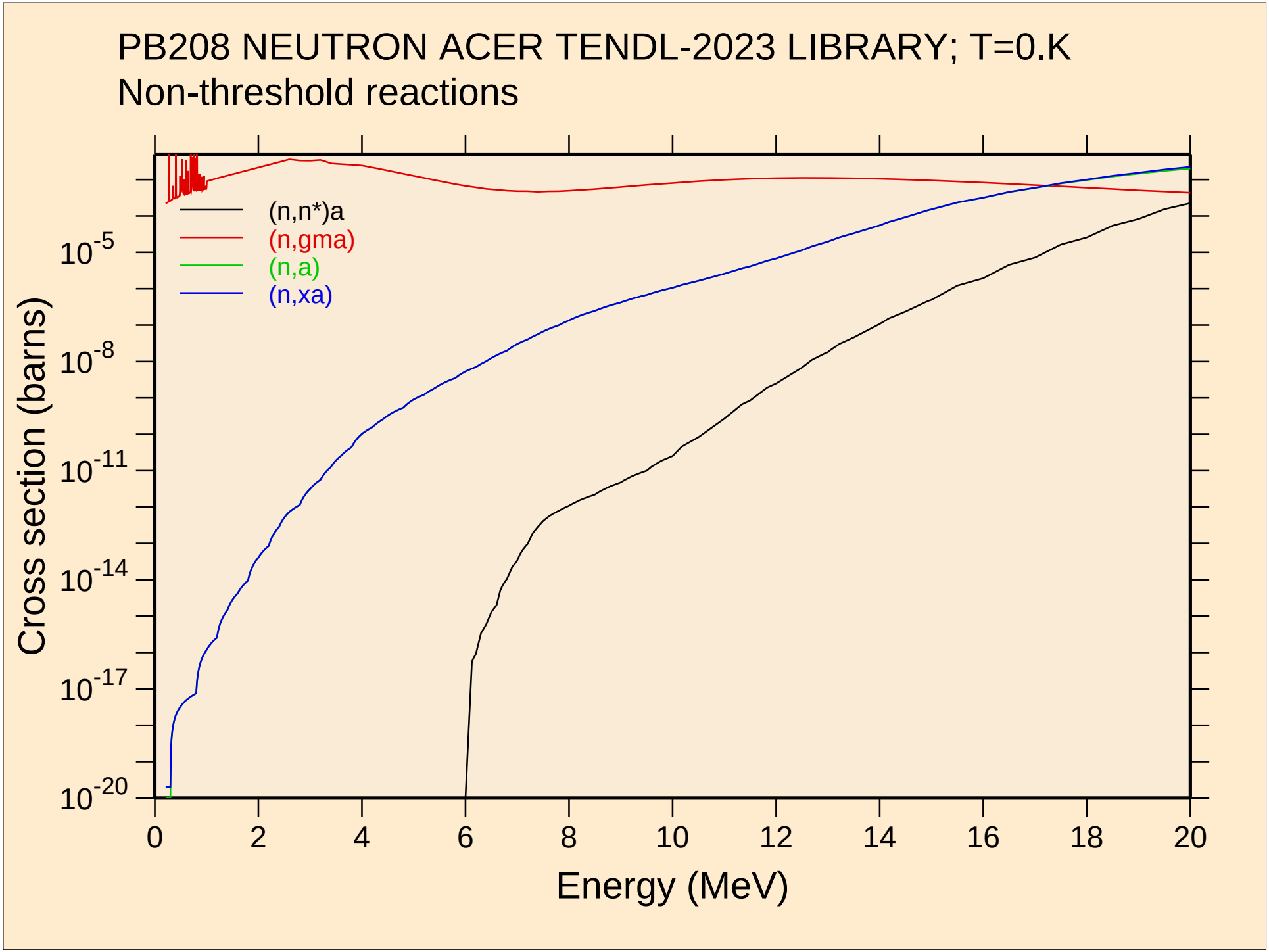


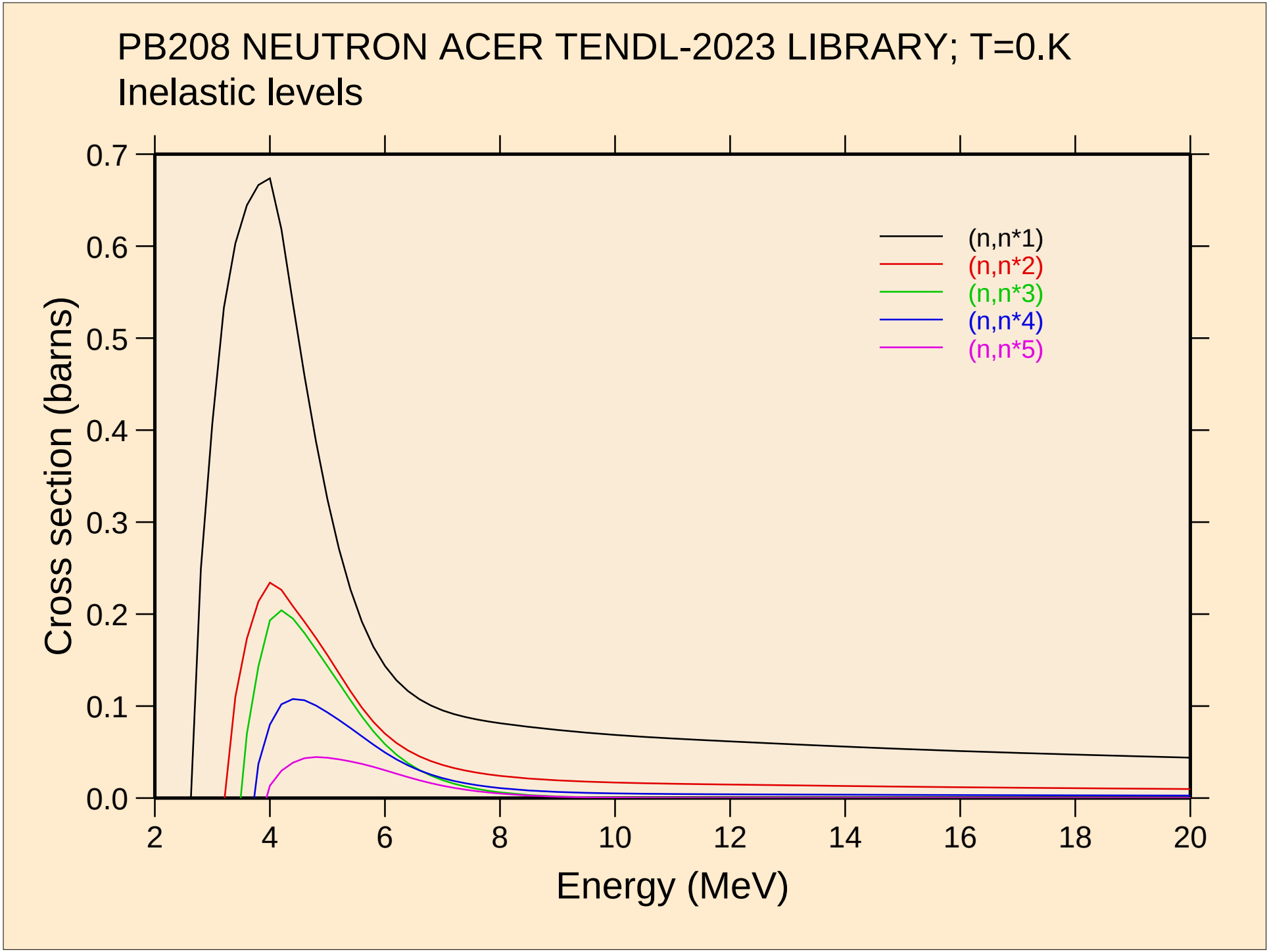

PB208 NEUTRON ACER TENDL-2023 LIBRARY; T=0.K
Non-threshold reactions
(n,n*)a
(n,gma)
(n,a)
(n,xa)
Cross section (barns)
Energy (MeV)
10^1
10^0
10^-1
10^-2
10^-3
10^-4
10^-5
10^-11
10^-10
10^-9
10^-8
10^-7
10^-6
10^-5
10^-4
10^-3
10^-2
10^-1
10^0
10^1

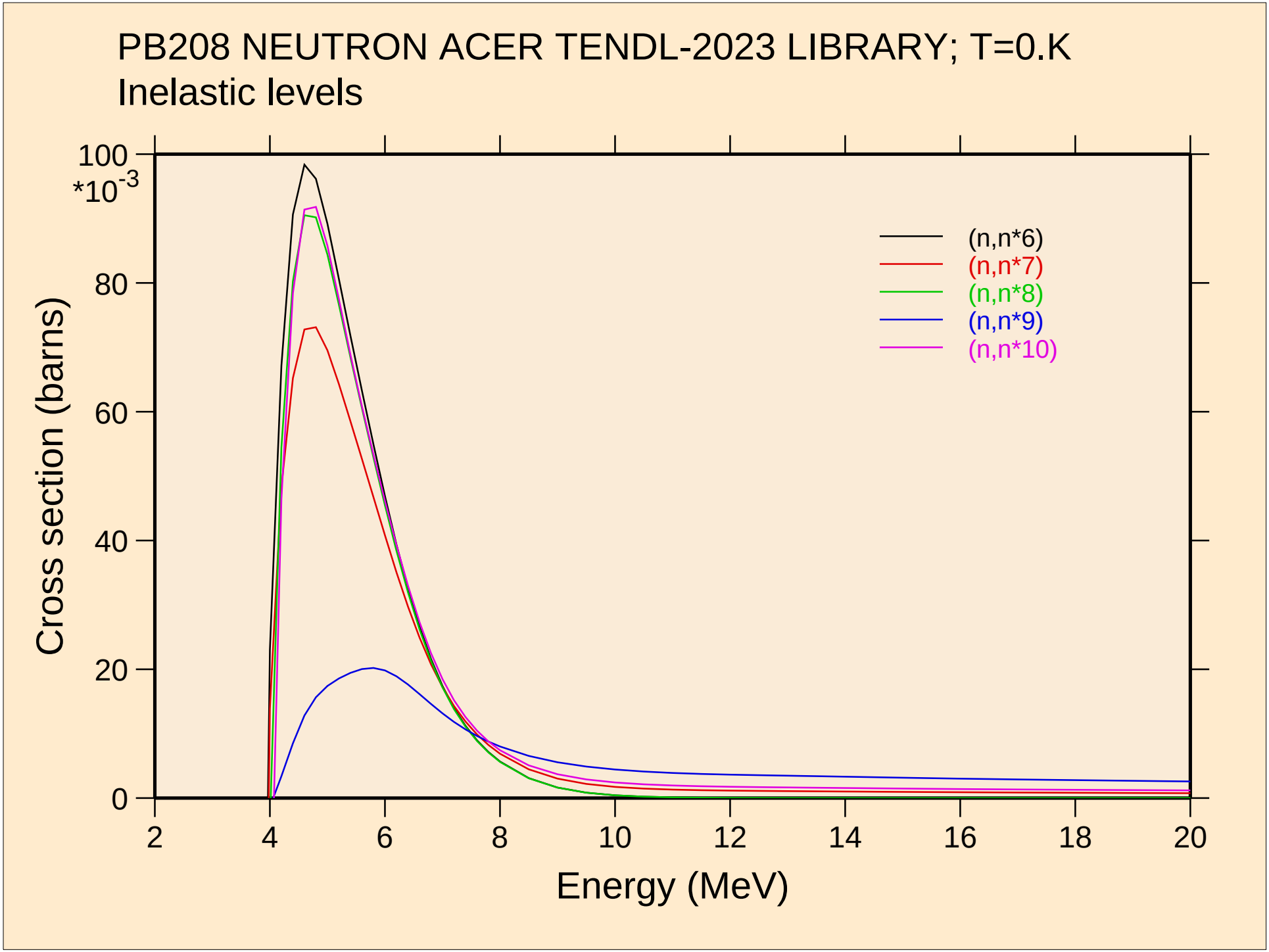

PB208 NEUTRON ACER TENDL-2023 LIBRARY; T=0.K
Principal cross sections
Cross section (barns)
Energy (MeV)
0
2
4
6
8
10
12
2
4
6
8
10
12
14
16
18
20
total
absorption
elastic
gamma production

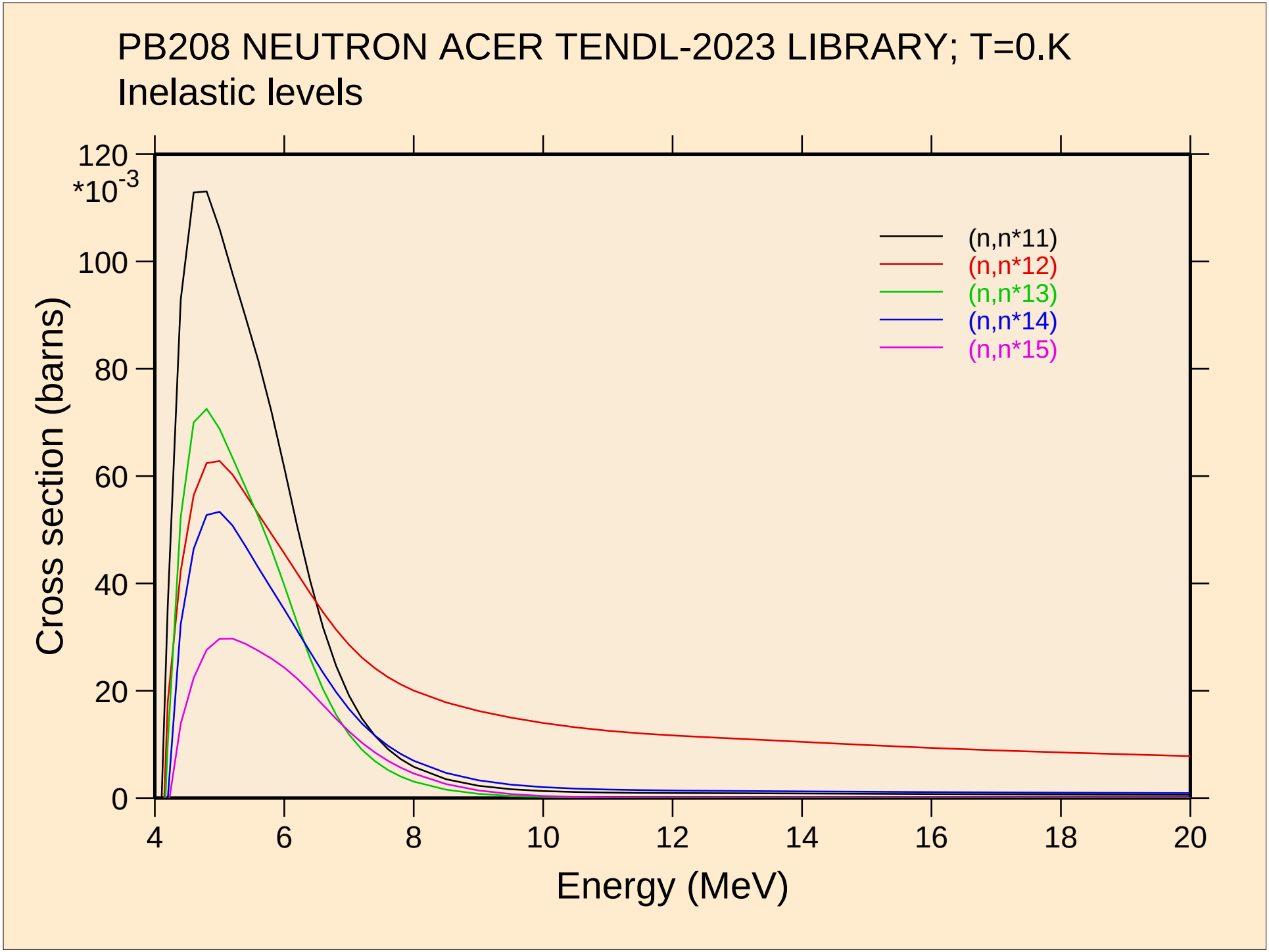

PB208 NEUTRON ACER TENDL-2023 LIBRARY; T=0.K
Heating
140
*10-3
120
100
80
60
40
20
0
heating
Heating (MeV/reaction)
0
5
10
15
20
Energy (MeV)

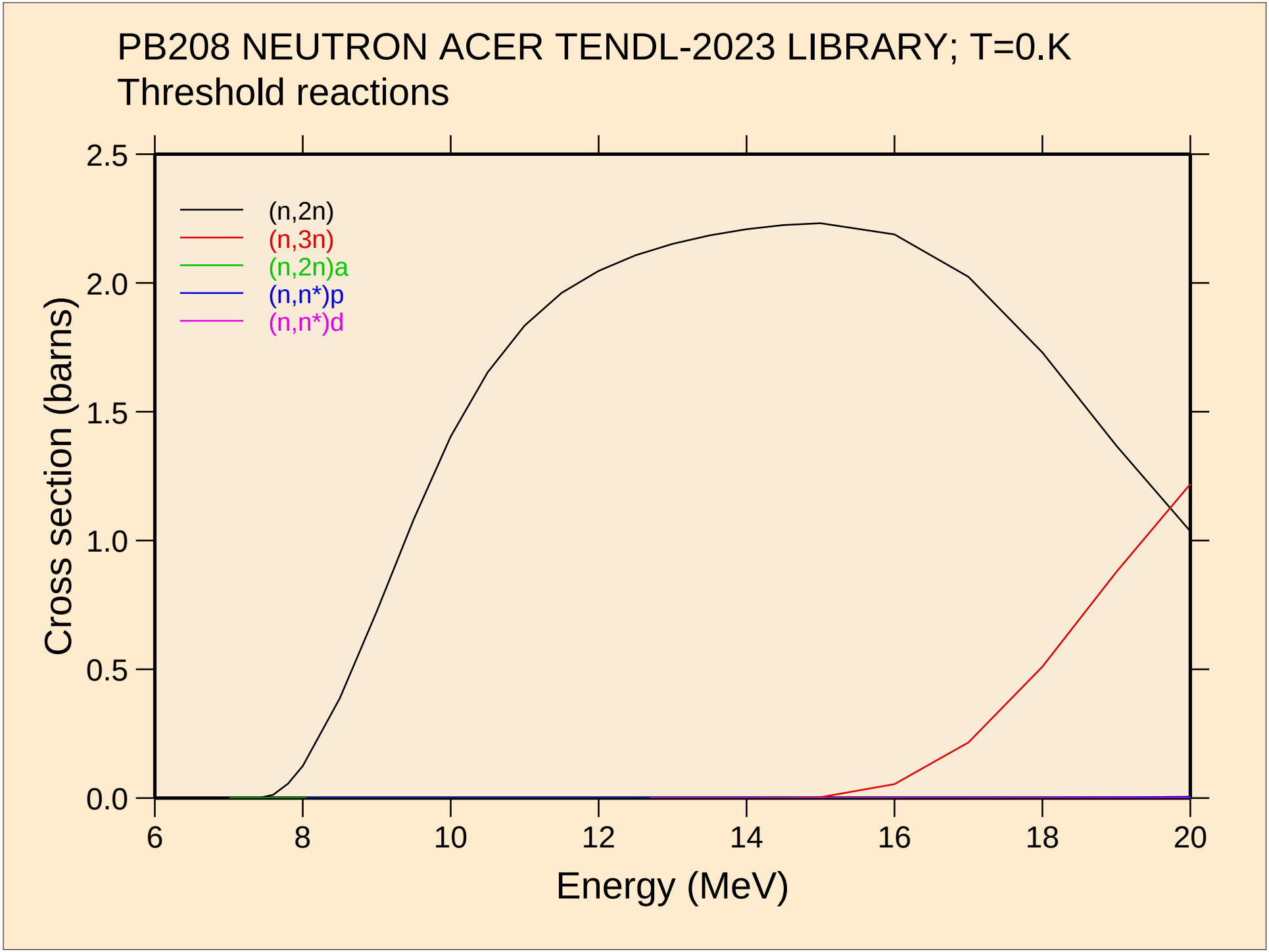

PB208 NEUTRON ACER TENDL-2023 LIBRARY; T=0.K
Damage
250
*10-3
damage
200
150
100
50
0
Damage (MeV-barns)
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

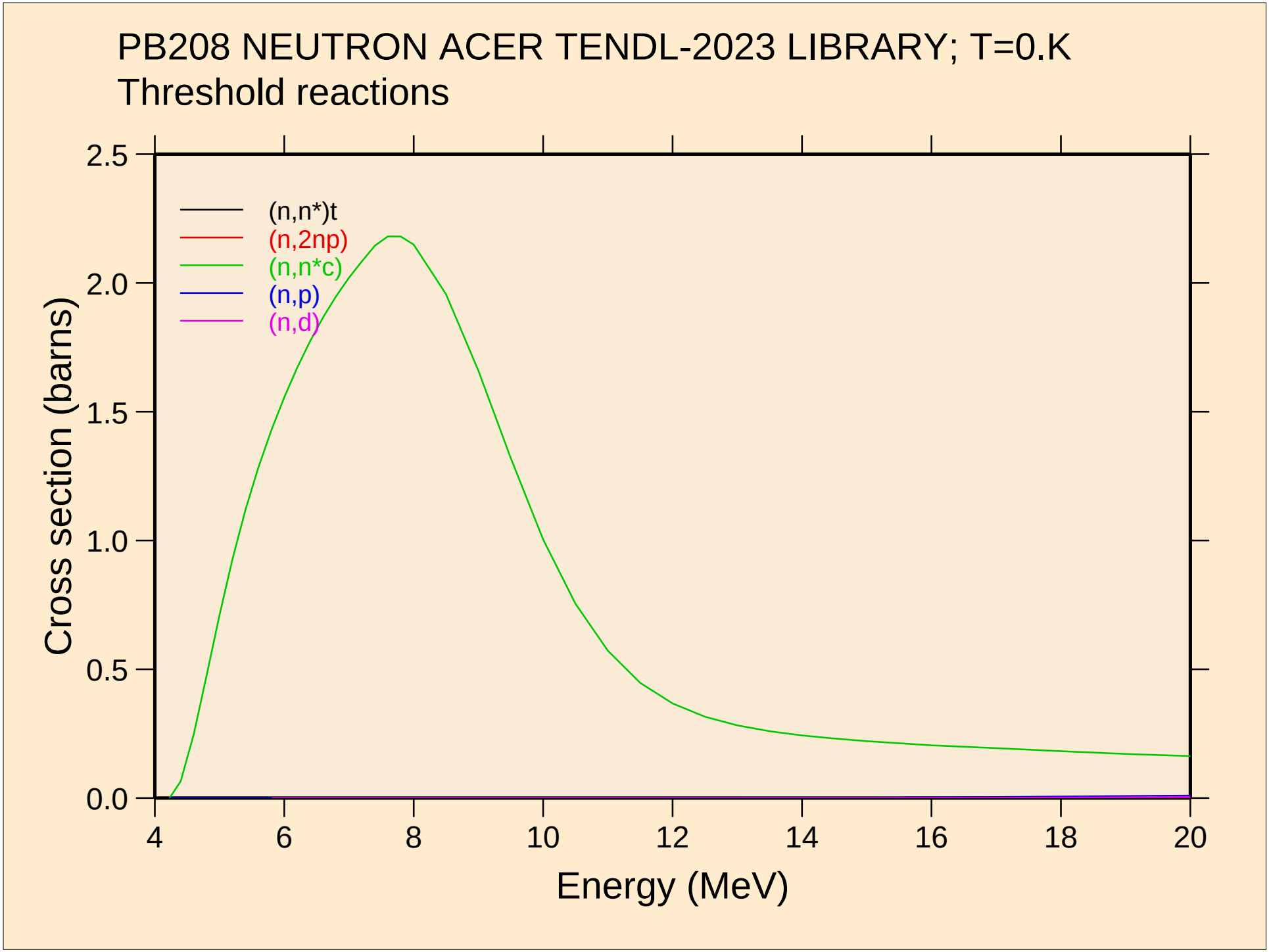

PB208 NEUTRON ACER TENDL-2023 LIBRARY; T=0.K
Non-threshold reactions
(n,n*)a
(n,gma)
(n,a)
(n,xa)
Cross section (barns)
10-5
10-8
10-11
10-14
10-17
10-20
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

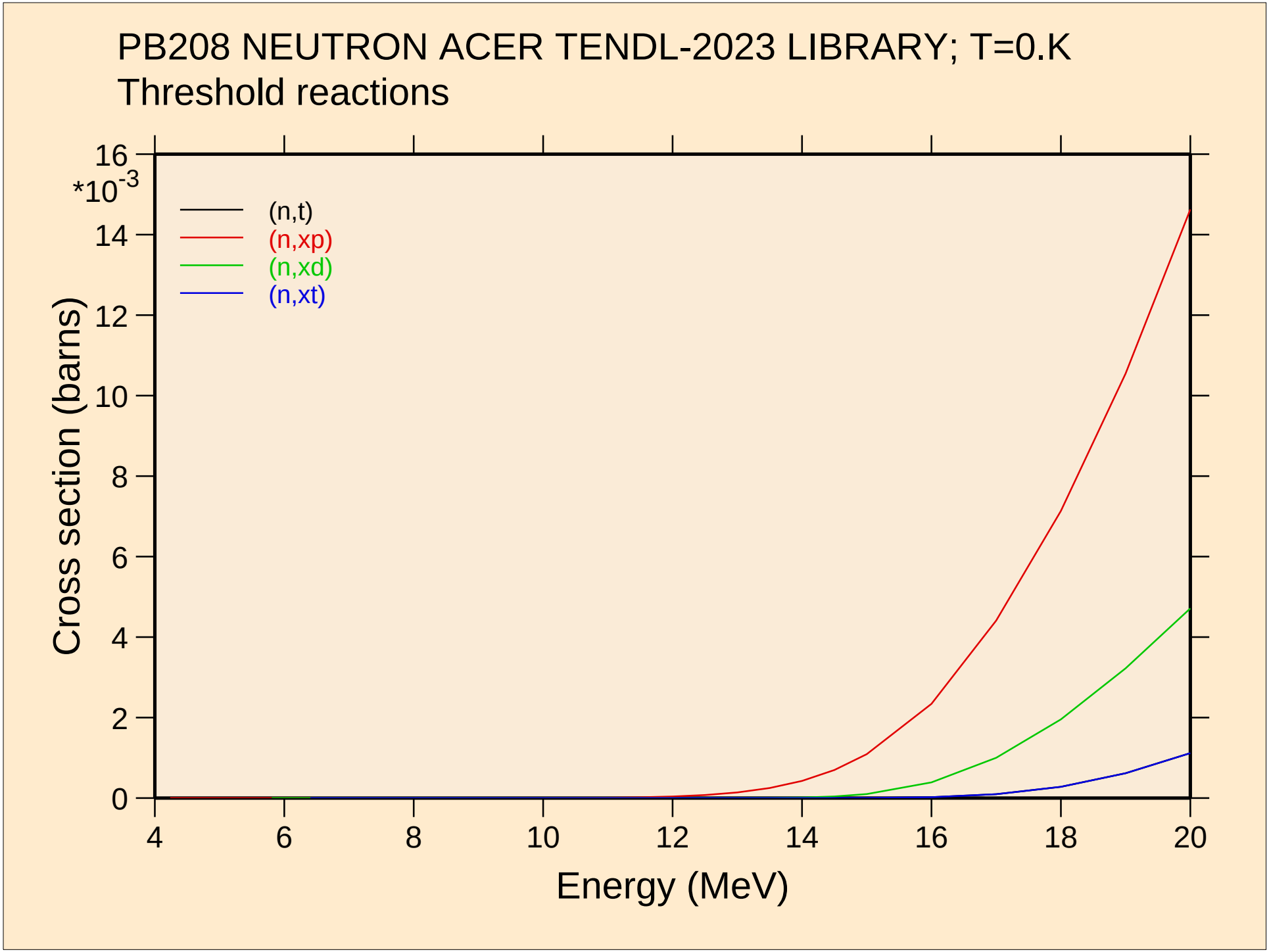

PB208 NEUTRON ACER TENDL-2023 LIBRARY; T=0.K
Inelastic levels
Cross section (barns)
Energy (MeV)
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
2
4
6
8
10
12
14
16
18
20
(n,n*1)
(n,n*2)
(n,n*3)
(n,n*4)
(n,n*5)

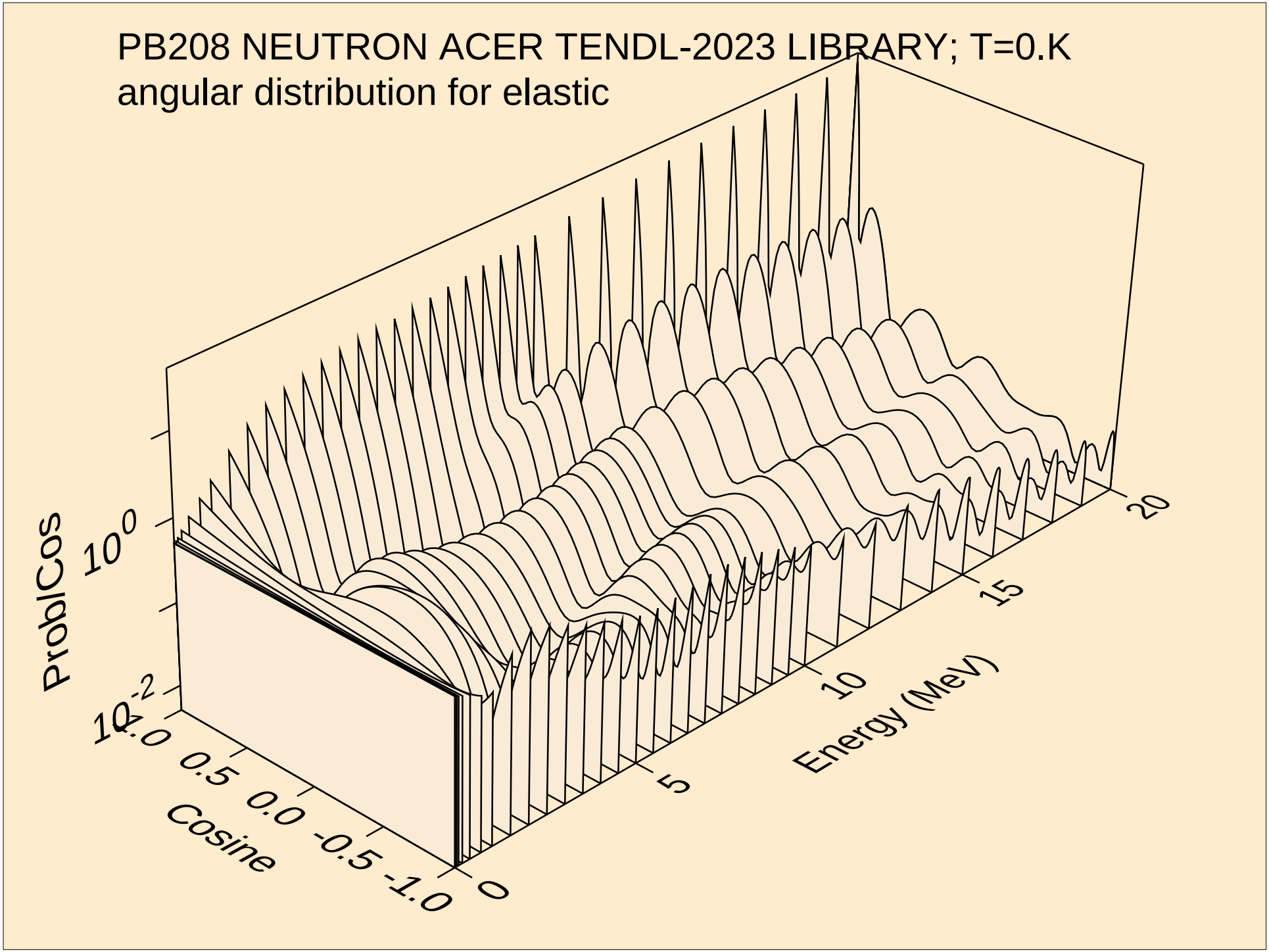

PB208 NEUTRON ACER TENDL-2023 LIBRARY; T=0.K
Inelastic levels
100
*10-3
80
60
40
20
0
Cross section (barns)
2
4
6
8
10
12
14
16
18
20
Energy (MeV)
(n,n*6)
(n,n*7)
(n,n*8)
(n,n*9)
(n,n*10)

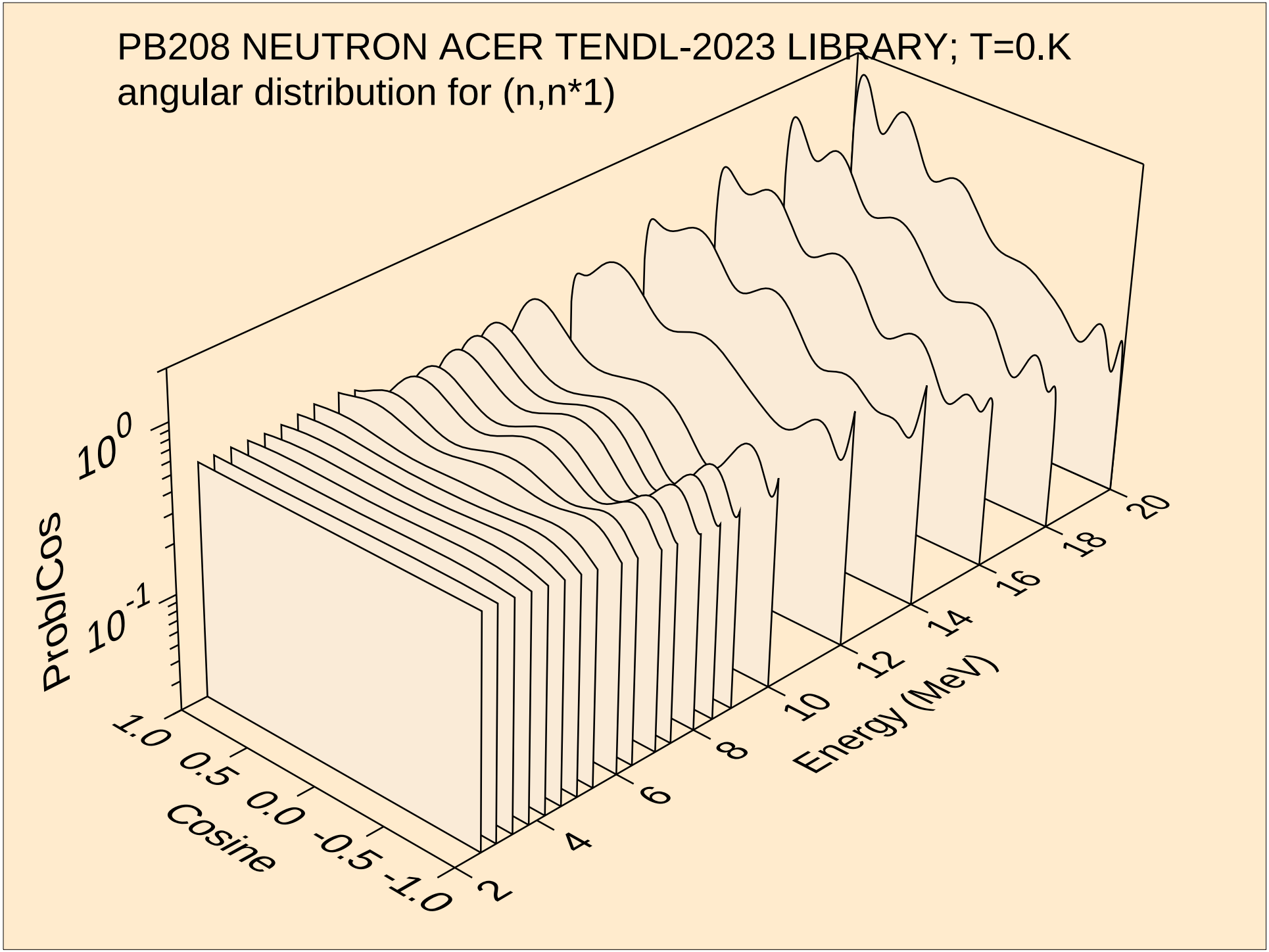

PB208 NEUTRON ACER TENDL-2023 LIBRARY; T=0.K
Inelastic levels
120
*10-3
100
80
60
40
20
0
Cross section (barns)
4
6
8
10
12
14
16
18
20
Energy (MeV)
(n,n*11)
(n,n*12)
(n,n*13)
(n,n*14)
(n,n*15)

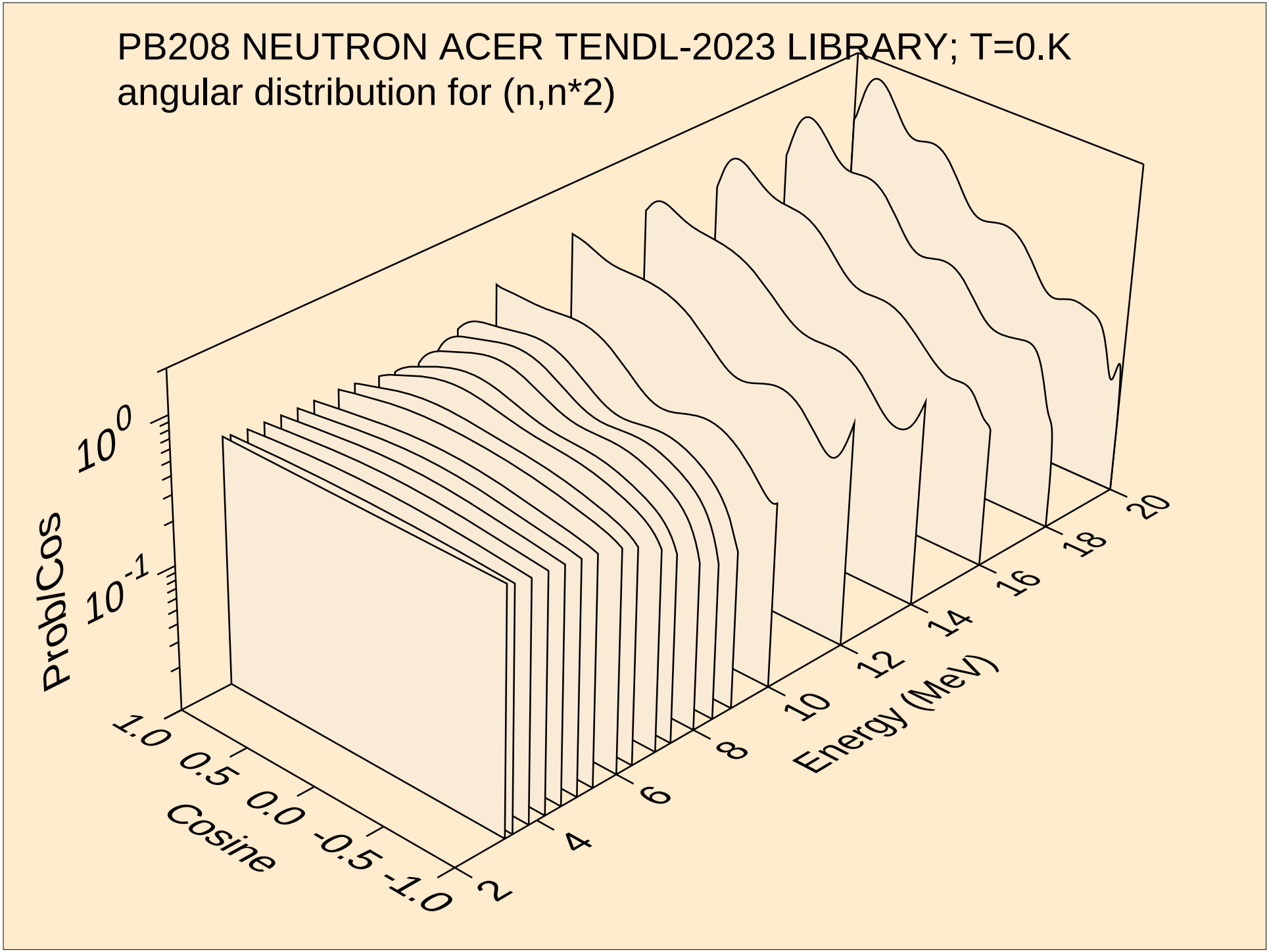

PB208 NEUTRON ACER TENDL-2023 LIBRARY; T=0.K
Threshold reactions
(n,2n)
(n,3n)
(n,2n)a
(n,n*)p
(n,n*)d
Cross section (barns)
Energy (MeV)
0.0
0.5
1.0
1.5
2.0
2.5
6
8
10
12
14
16
18
20

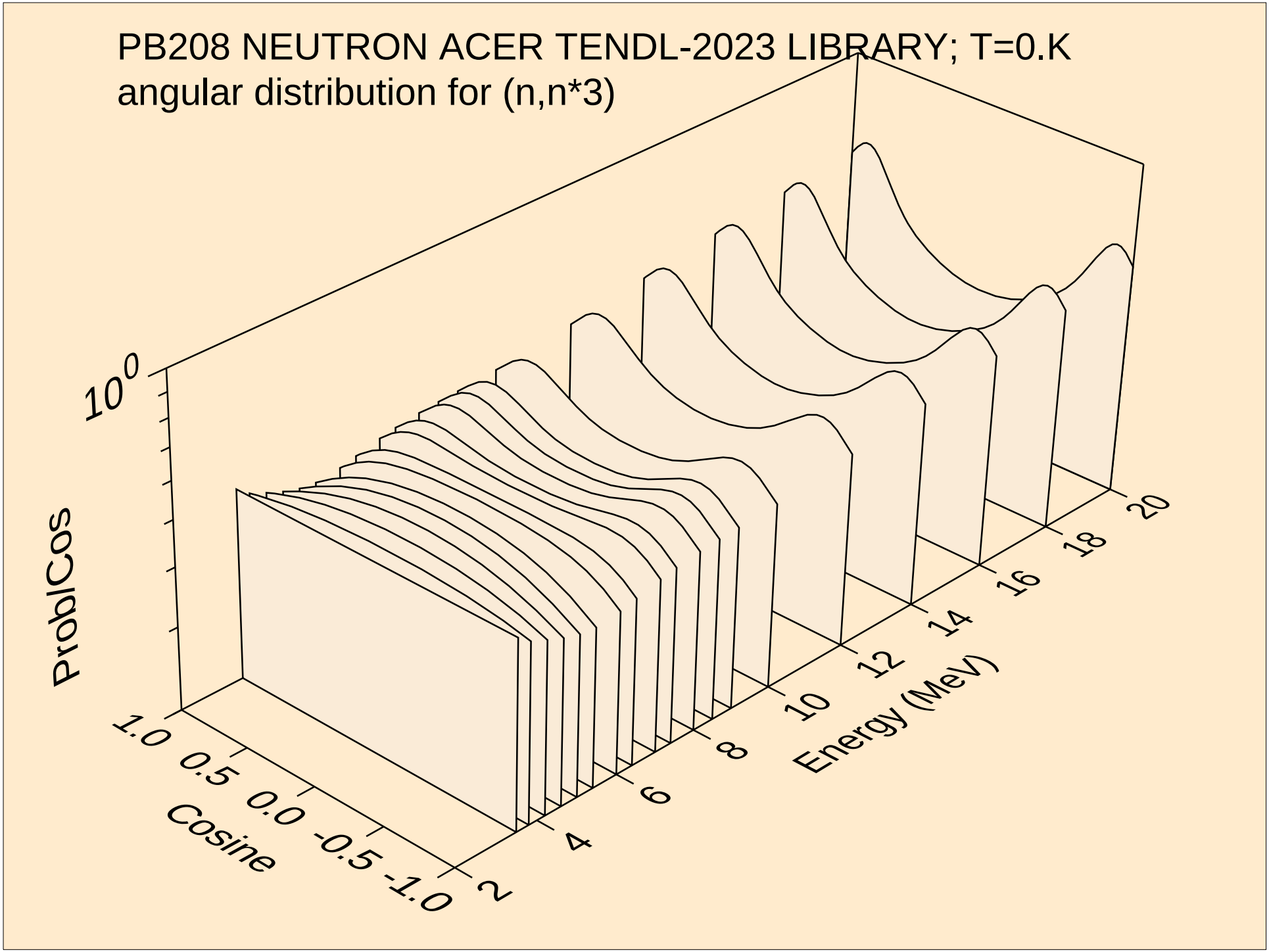

PB208 NEUTRON ACER TENDL-2023 LIBRARY; T=0.K
Threshold reactions
(n,n*)t
(n,2np)
(n,n*c)
(n,p)
(n,d)
Cross section (barns)
Energy (MeV)
0.0
0.5
1.0
1.5
2.0
2.5
4
6
8
10
12
14
16
18
20

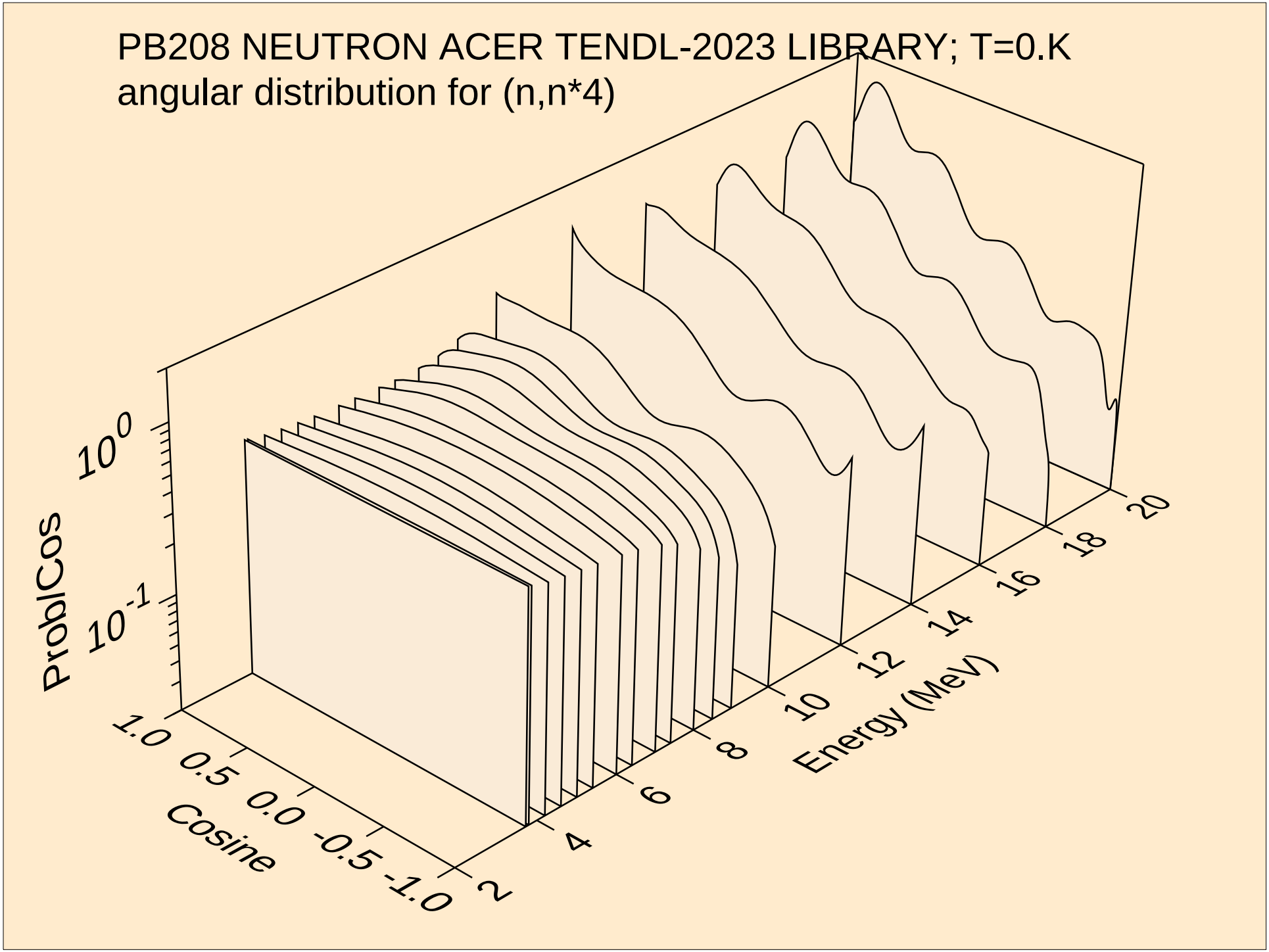

PB208 NEUTRON ACER TENDL-2023 LIBRARY; T=0.K
Threshold reactions
*10-3
16
14
12
10
8
6
4
2
0
(n,t)
(n,xp)
(n,xd)
(n,xt)
Cross section (barns)
4
6
8
10
12
14
16
18
20
Energy (MeV)

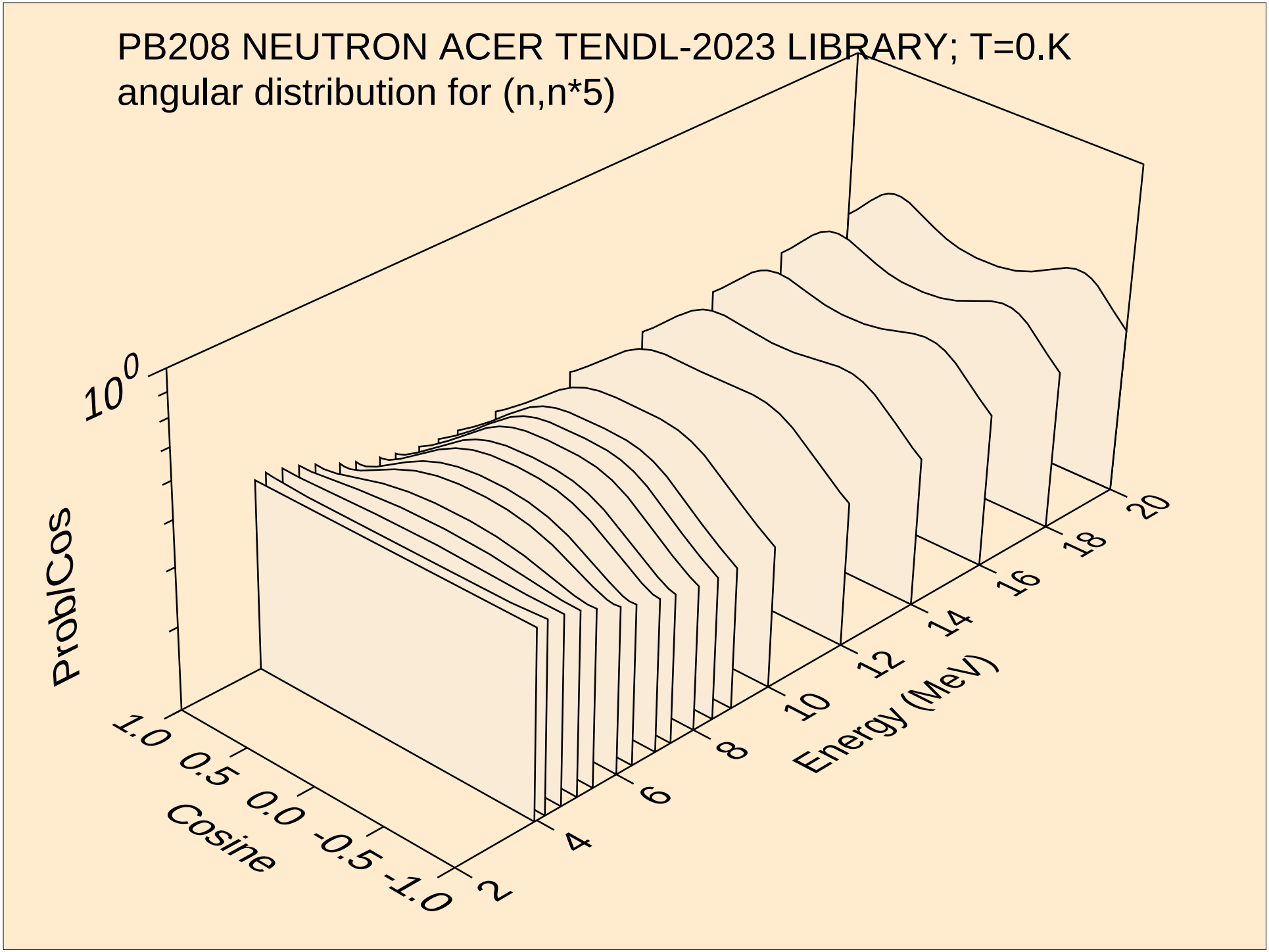

PB208 NEUTRON ACER TENDL-2023 LIBRARY; T=0.K
angular distribution for elastic
Prob\Cos
10^0
10^-2
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
Energy (MeV)

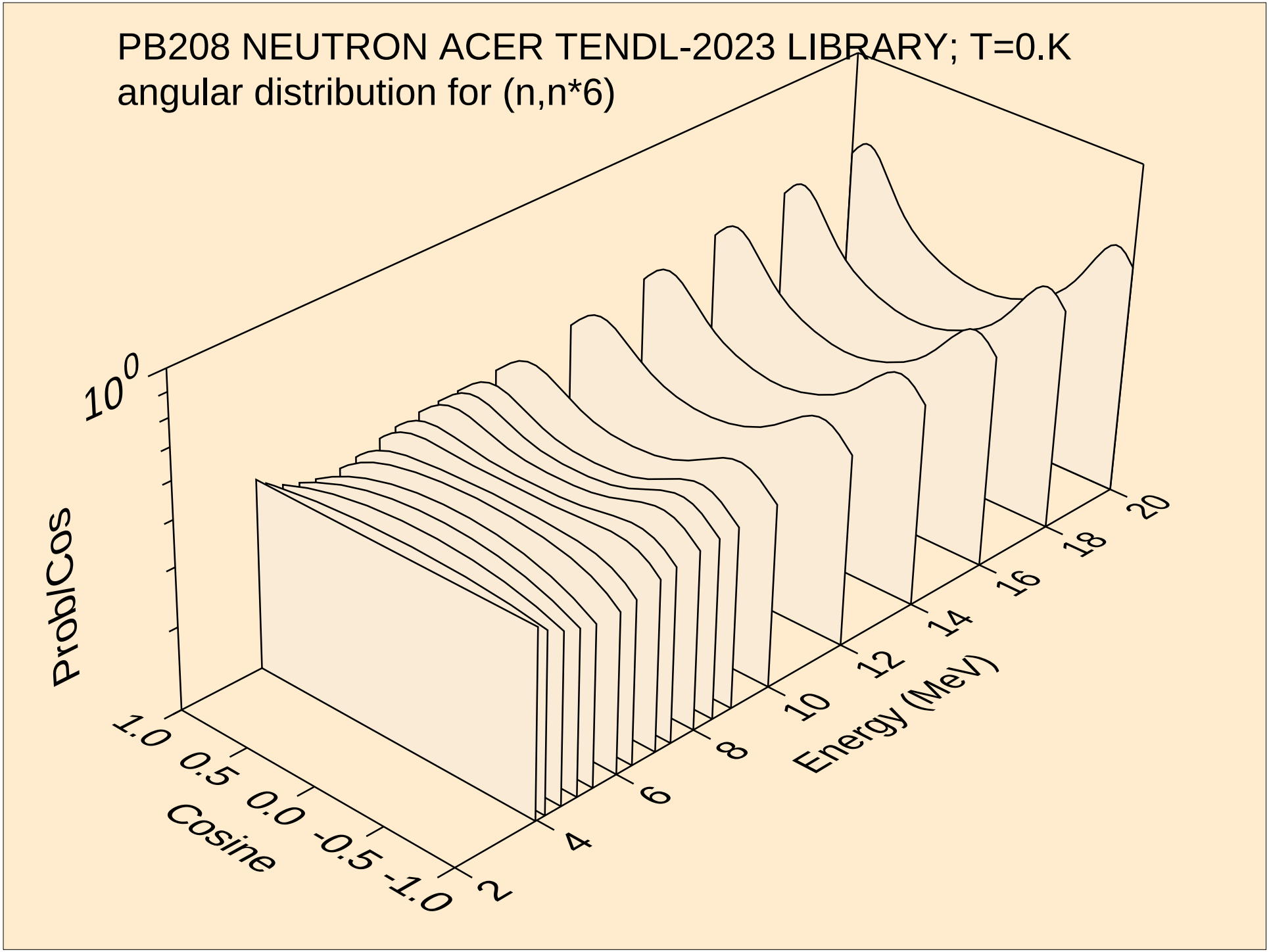

PB208 NEUTRON ACER TENDL-2023 LIBRARY; T=0.K
angular distribution for (n,n*1)
Prob\Cos
10^0
10^-1
1.0
0.5
0.0
-0.5
-1.0
Cosine
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

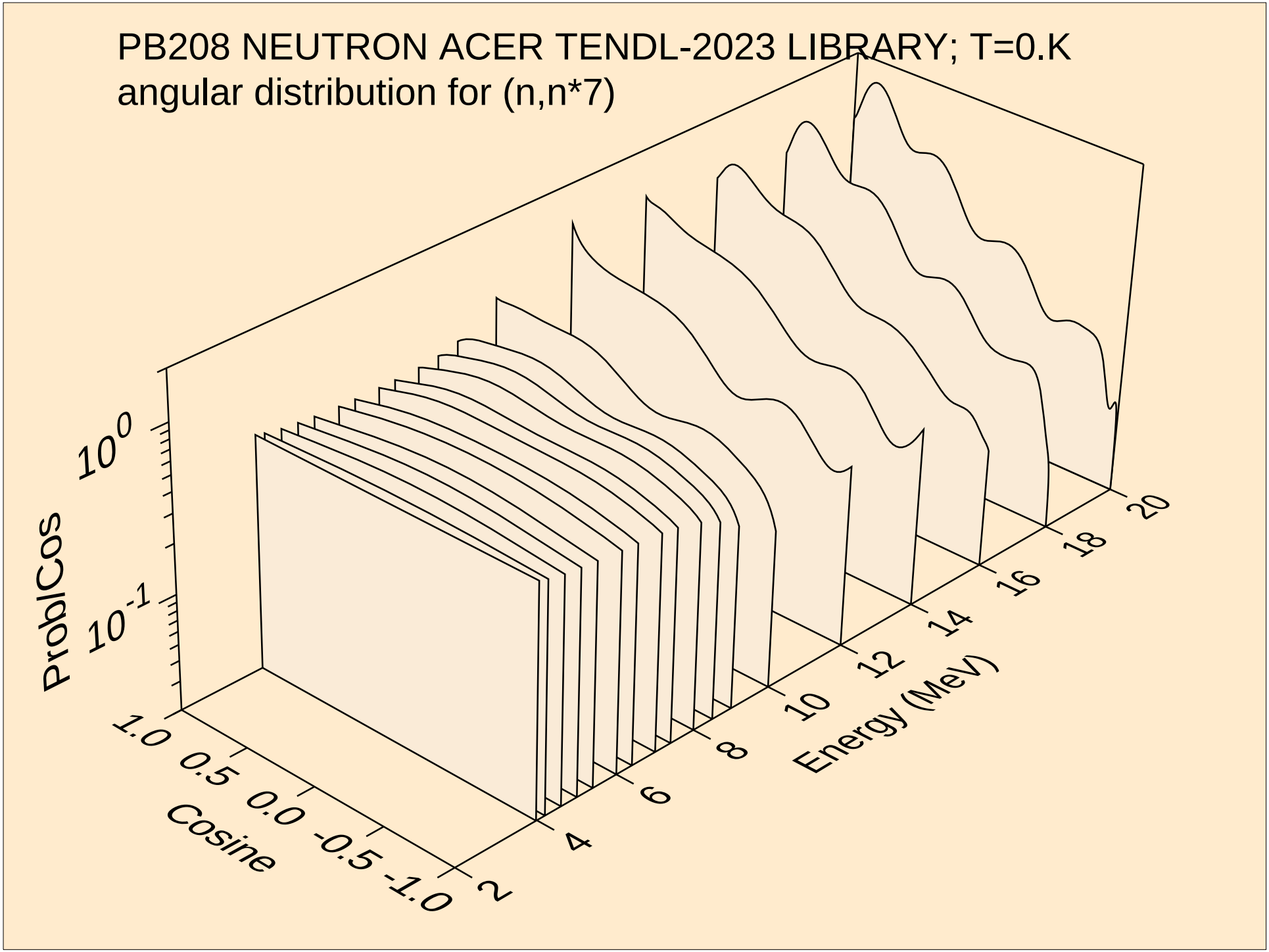

PB208 NEUTRON ACER TENDL-2023 LIBRARY; T=0.K
angular distribution for (n,n*2)
Prob\Cos
10^0
10^-1
1.0
0.5
0.0
-0.5
-1.0
Cosine
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

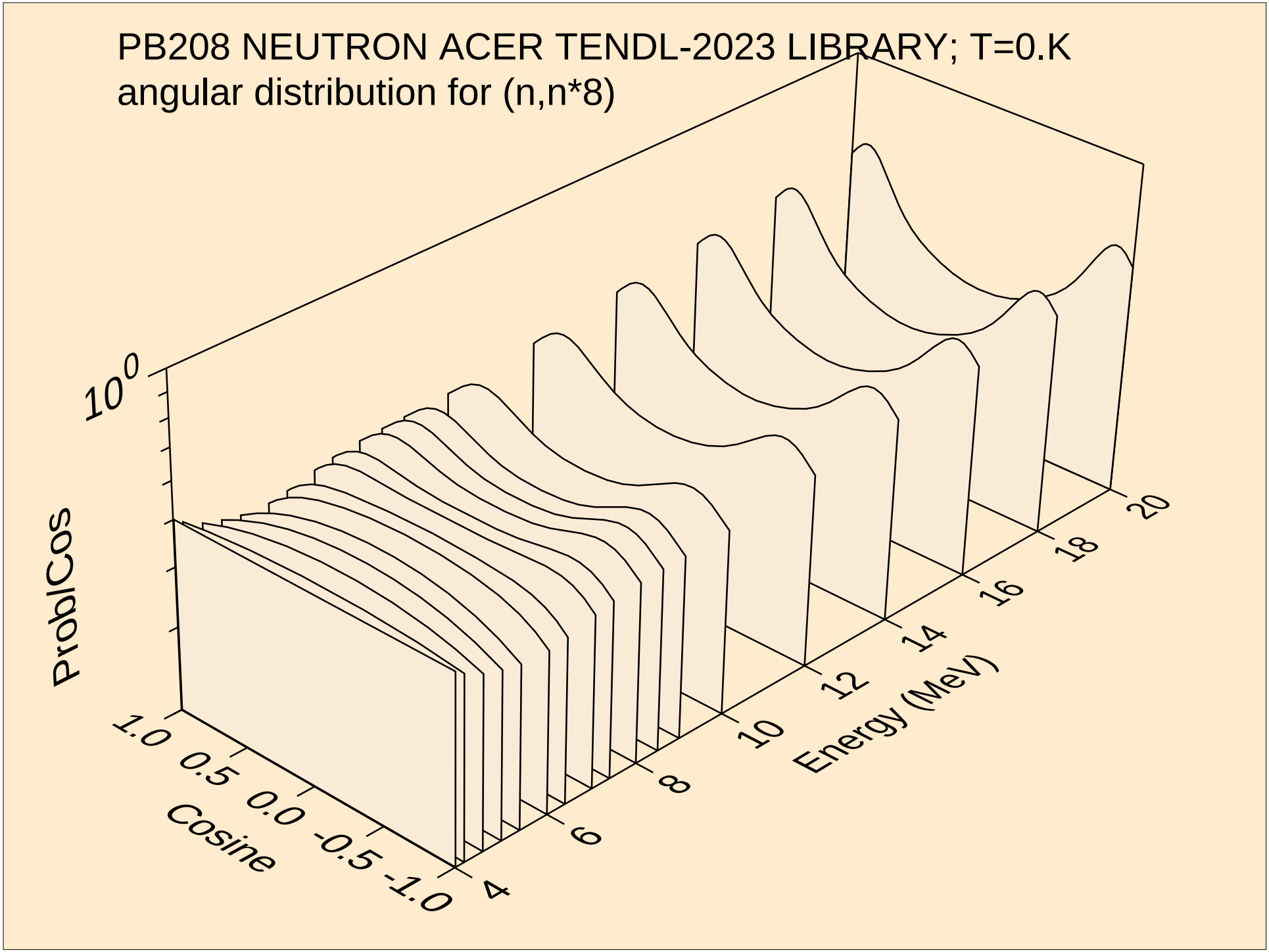

PB208 NEUTRON ACER TENDL-2023 LIBRARY; T=0.K
angular distribution for (n,n*3)
10^0
ProbICos
1.0
0.5
0.0
-0.5
-1.0
Cosine
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

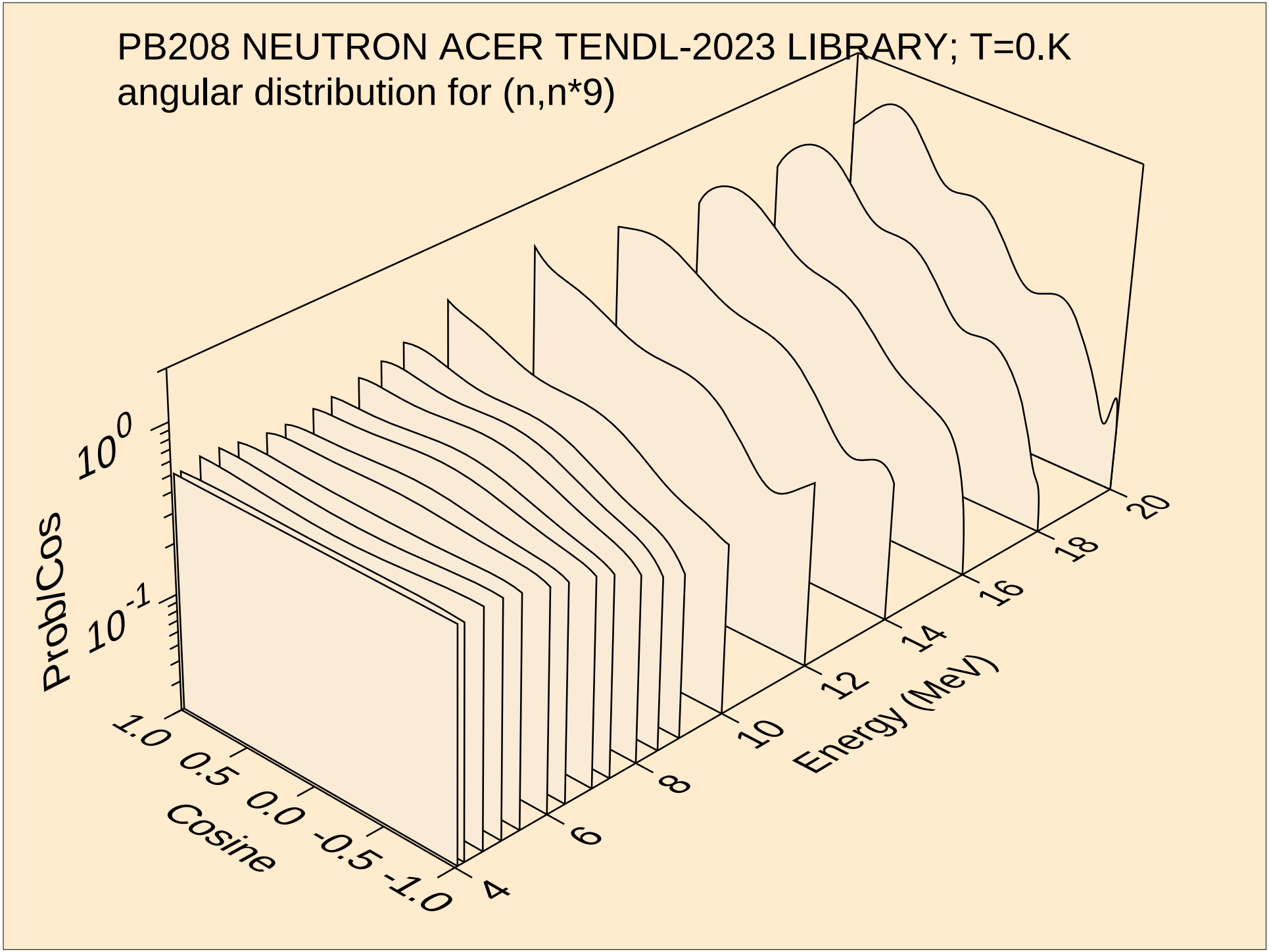

PB208 NEUTRON ACER TENDL-2023 LIBRARY; T=0.K
angular distribution for (n,n*4)
Prob\Cos
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

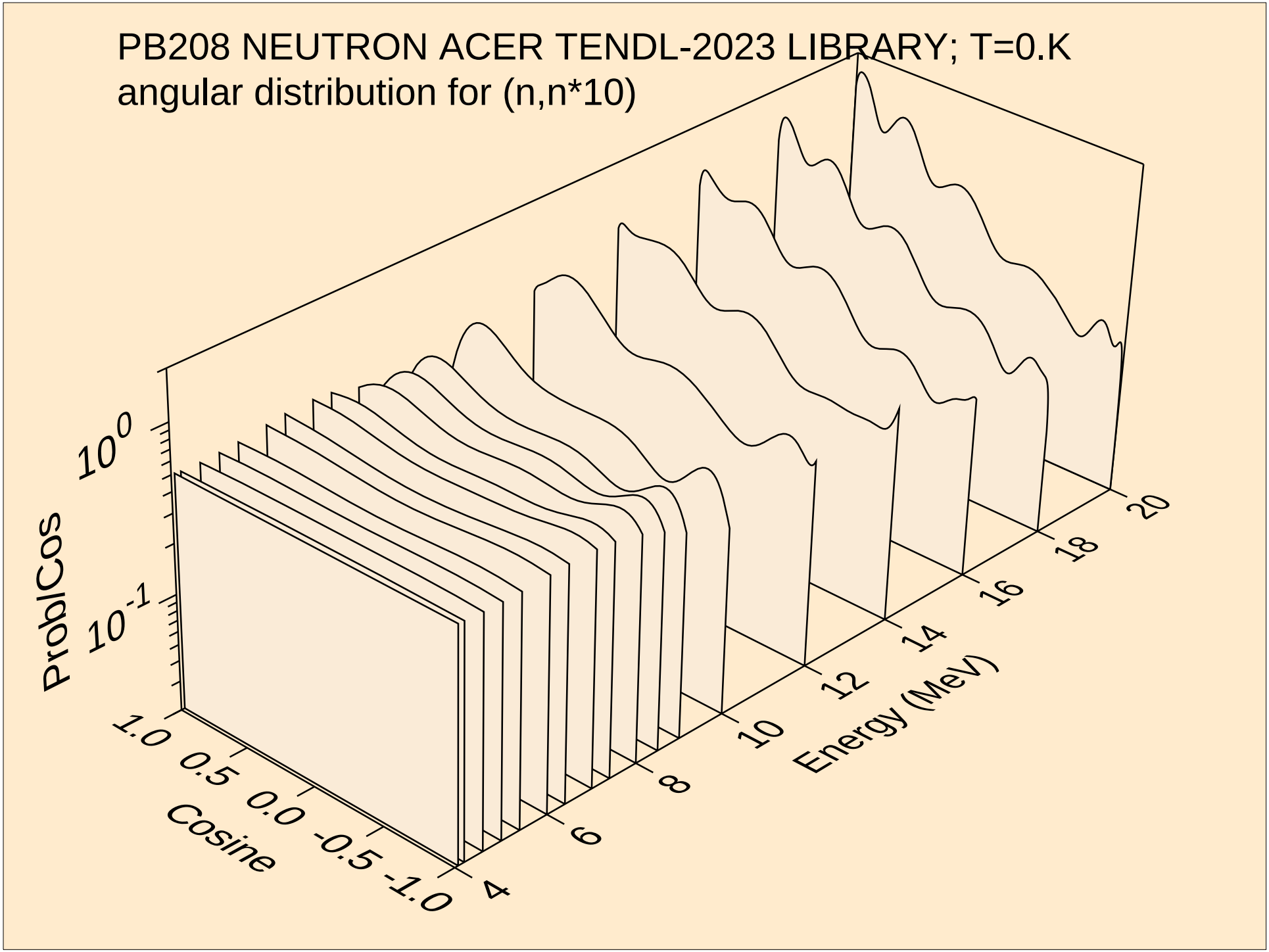

PB208 NEUTRON ACER TENDL-2023 LIBRARY; T=0.K
angular distribution for (n,n*5)
10^0
ProbICos
1.0
0.5
0.0
-0.5
-1.0
Cosine
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

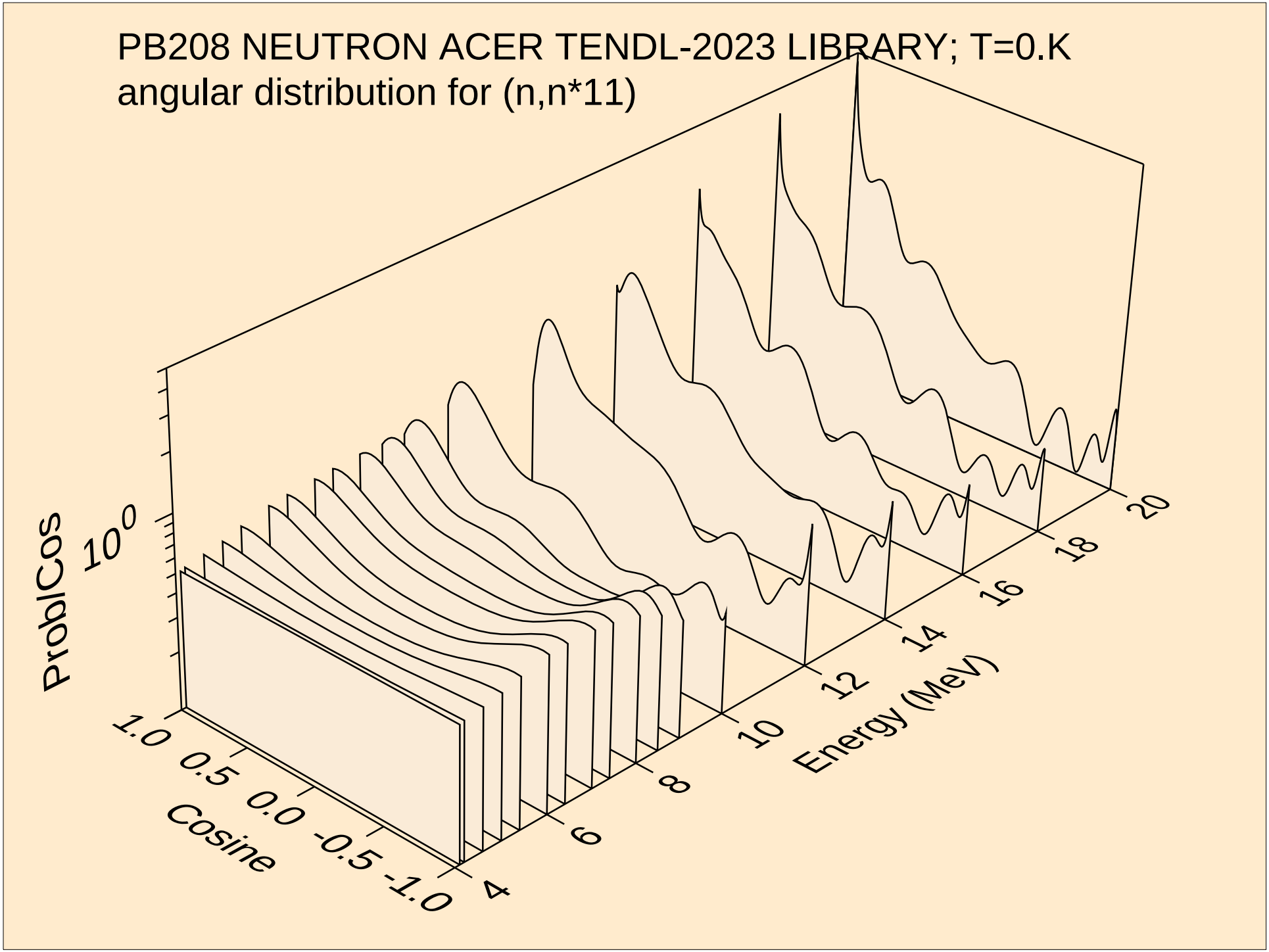

PB208 NEUTRON ACER TENDL-2023 LIBRARY; T=0.K
angular distribution for (n,n*6)
10^0
ProbICos
1.0
0.5
0.0
-0.5
-1.0
Cosine
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

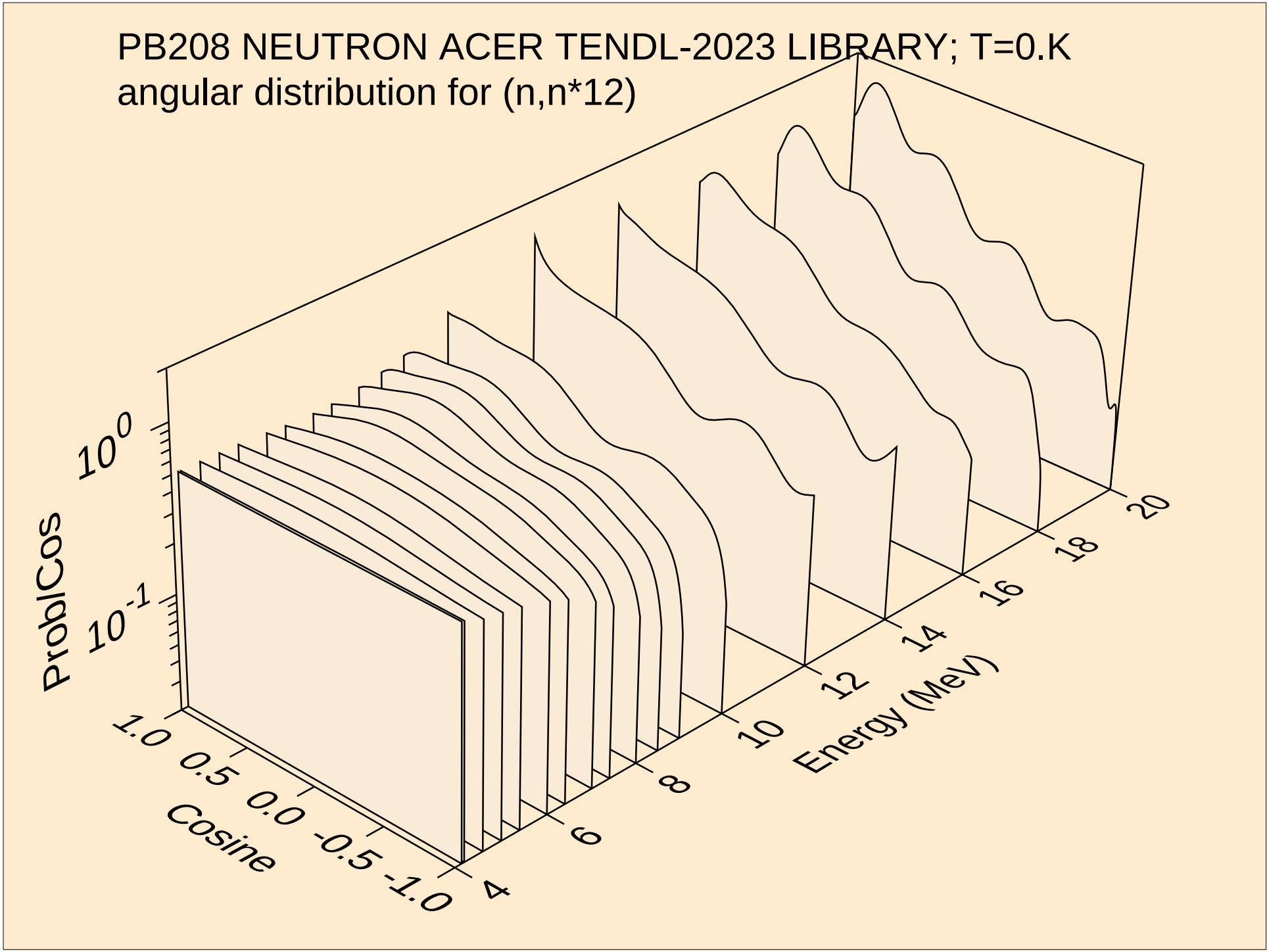

PB208 NEUTRON ACER TENDL-2023 LIBRARY; T=0.K
angular distribution for (n,n*7)
Prob\Cos
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

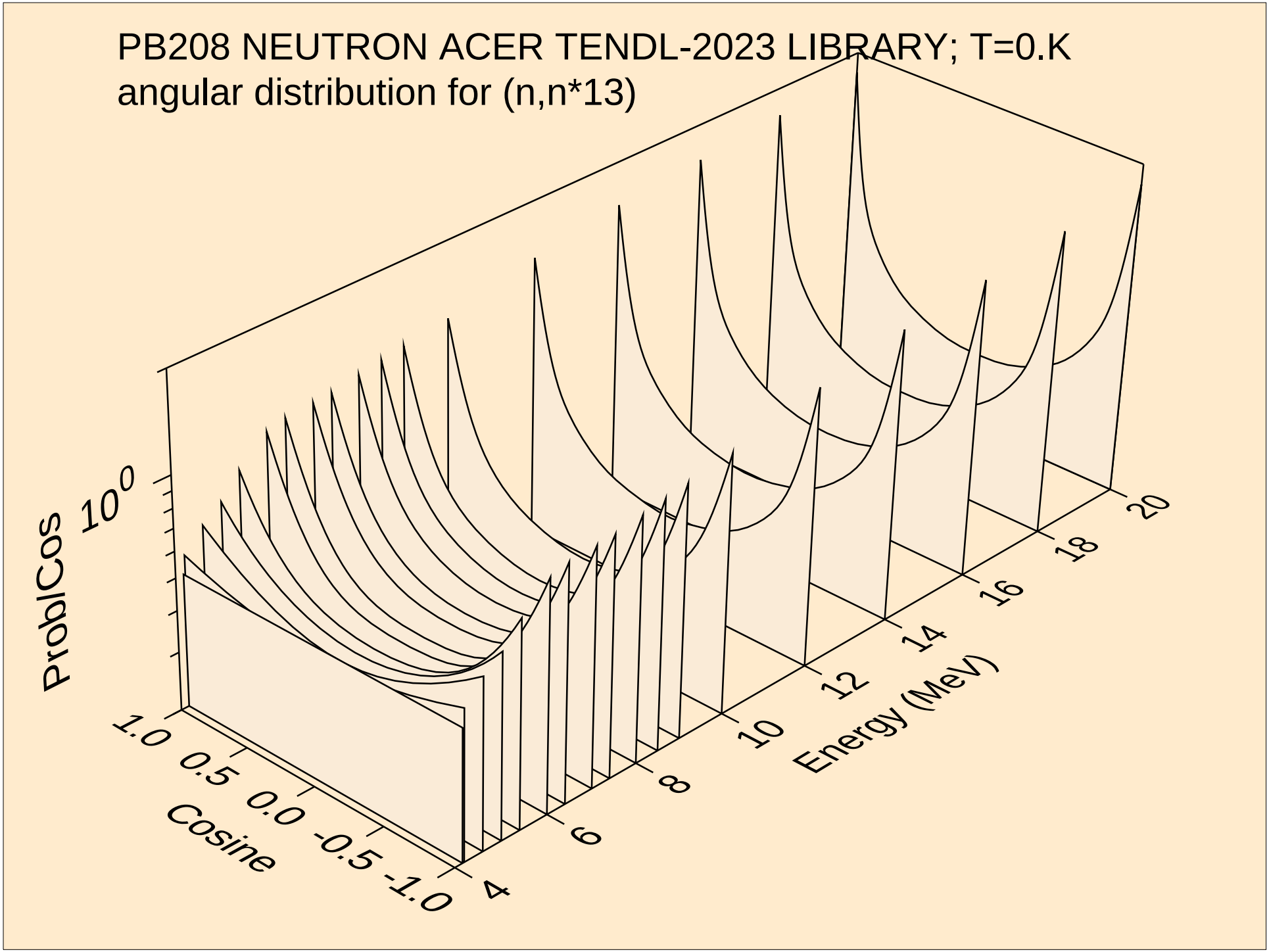

PB208 NEUTRON ACER TENDL-2023 LIBRARY; T=0.K
angular distribution for (n,n*8)
10^0
ProbICos
1.0
0.5
0.0
-0.5
-1.0
Cosine
4
6
8
10
12
14
16
18
20
Energy (MeV)

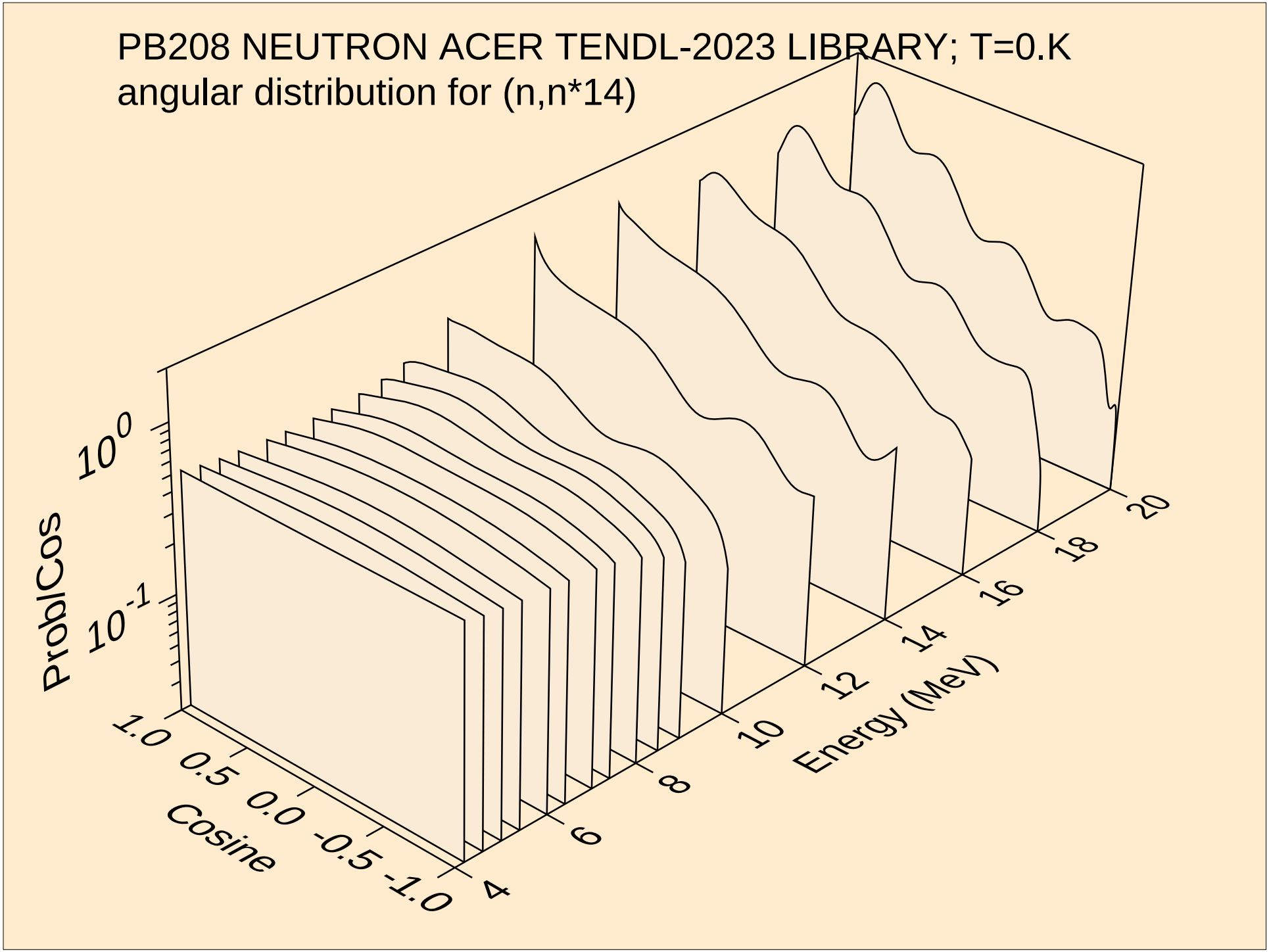

PB208 NEUTRON ACER TENDL-2023 LIBRARY; T=0.K
angular distribution for (n,n*9)
Prob\Cos
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
4
6
8
10
12
14
16
18
20
Energy (MeV)

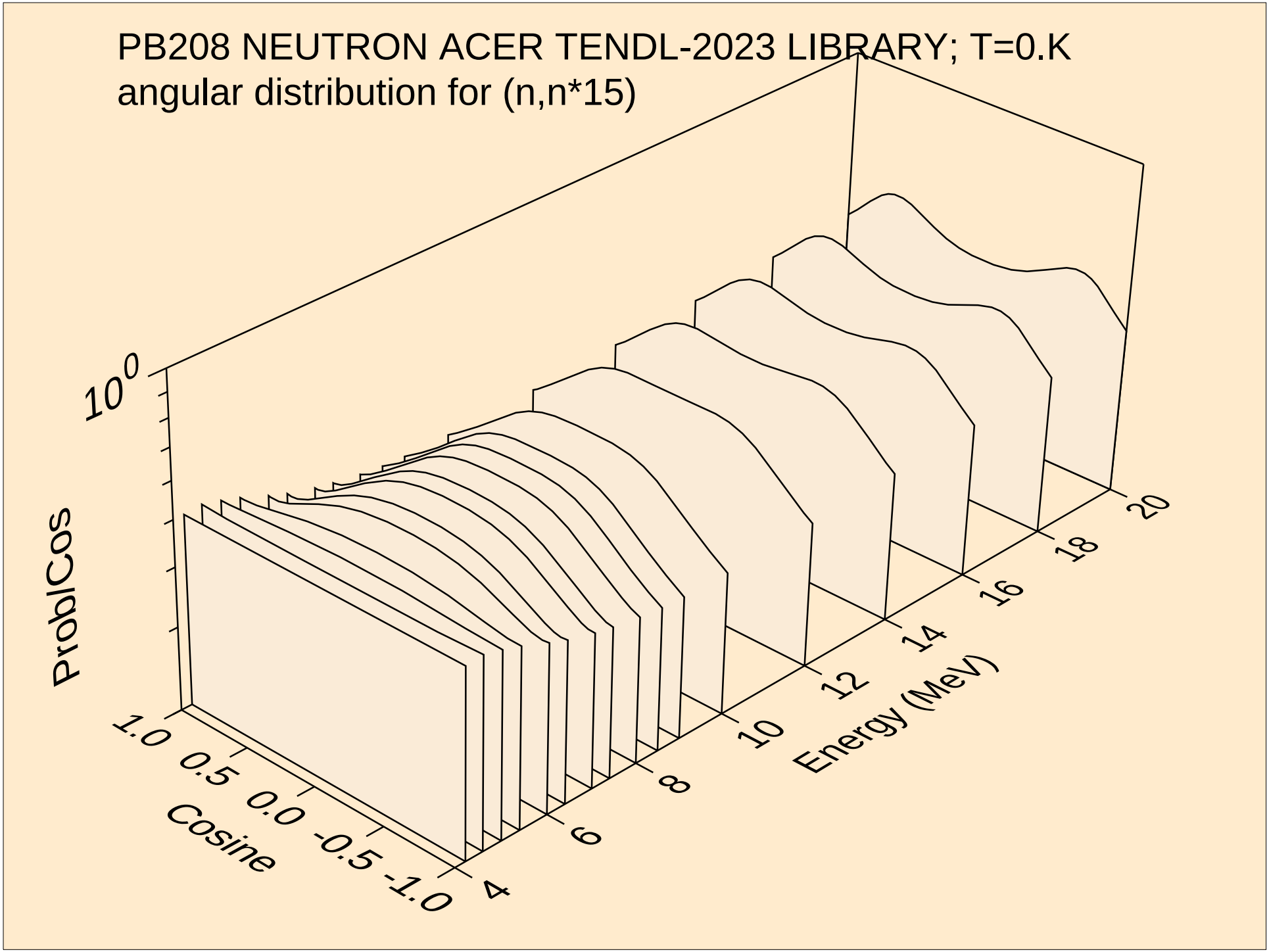

PB208 NEUTRON ACER TENDL-2023 LIBRARY; T=0.K
angular distribution for (n,n*10)
Prob\Cos
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
4
6
8
10
12
14
16
18
20
Energy (MeV)

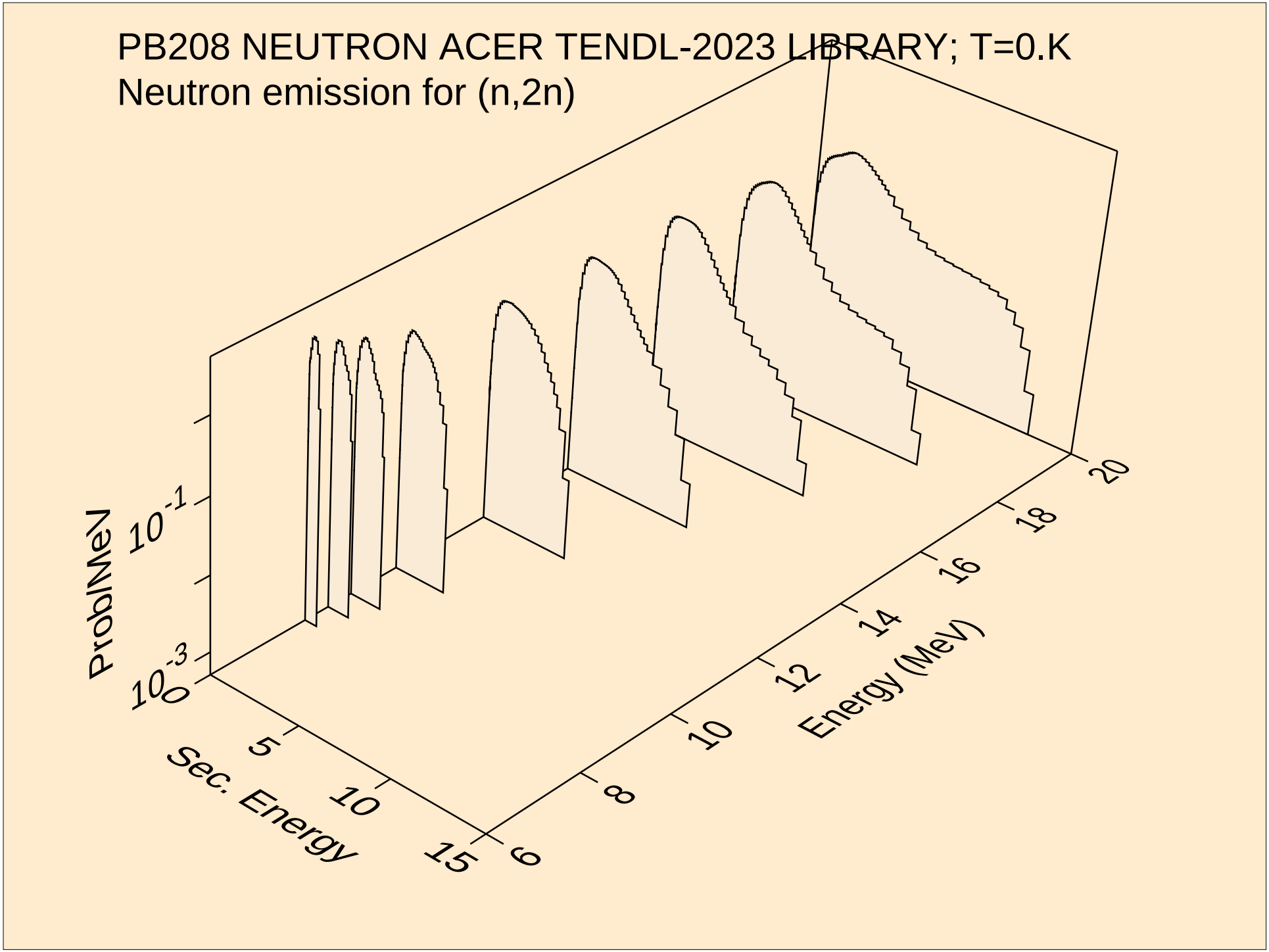

PB208 NEUTRON ACER TENDL-2023 LIBRARY; T=0.K
angular distribution for (n,n*11)
ProbICos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
4
6
8
10
12
14
16
18
20
Energy (MeV)

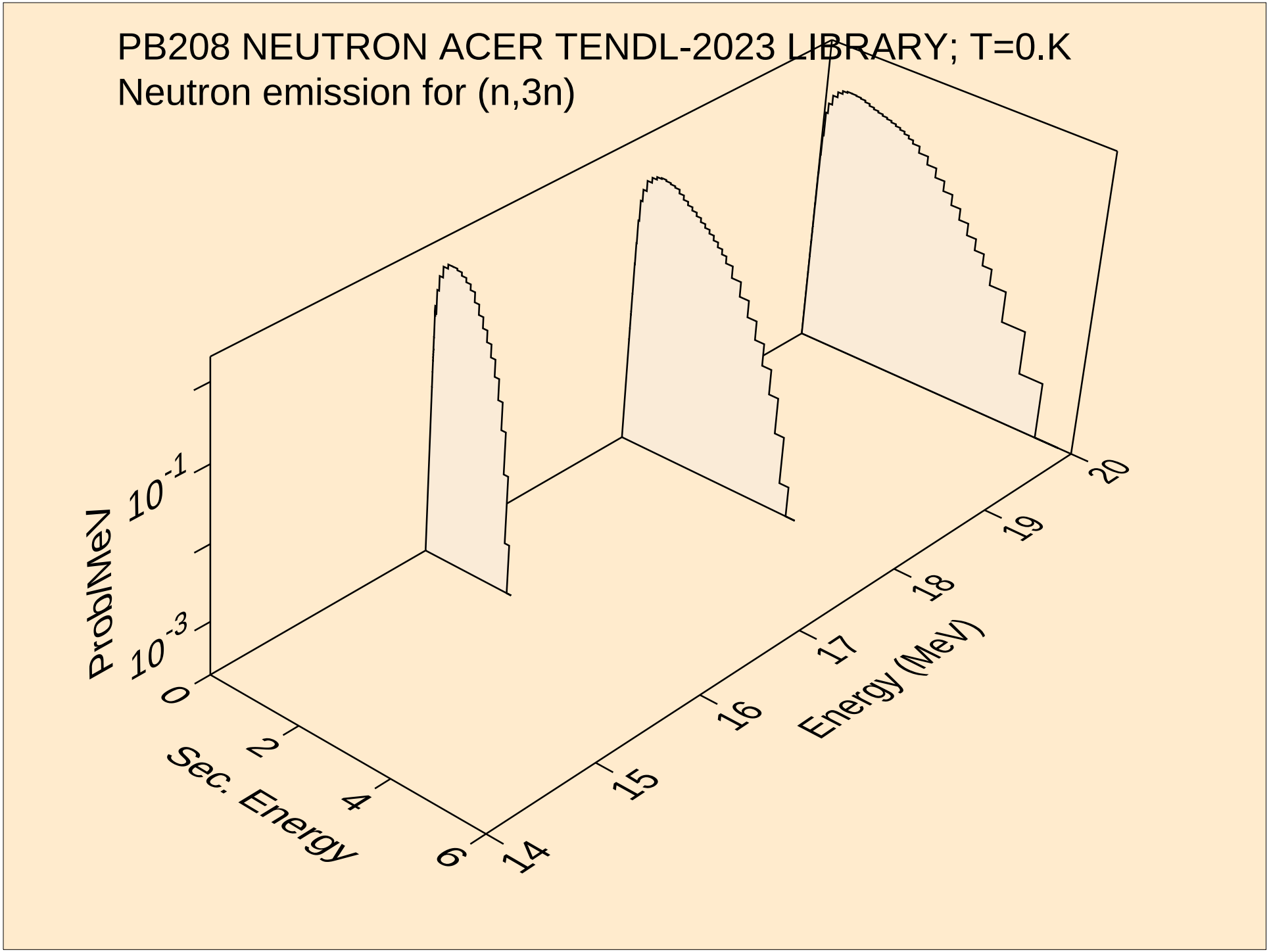

PB208 NEUTRON ACER TENDL-2023 LIBRARY; T=0.K
angular distribution for (n,n*12)
Prob\Cos
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
4
6
8
10
12
14
16
18
20
Energy (MeV)

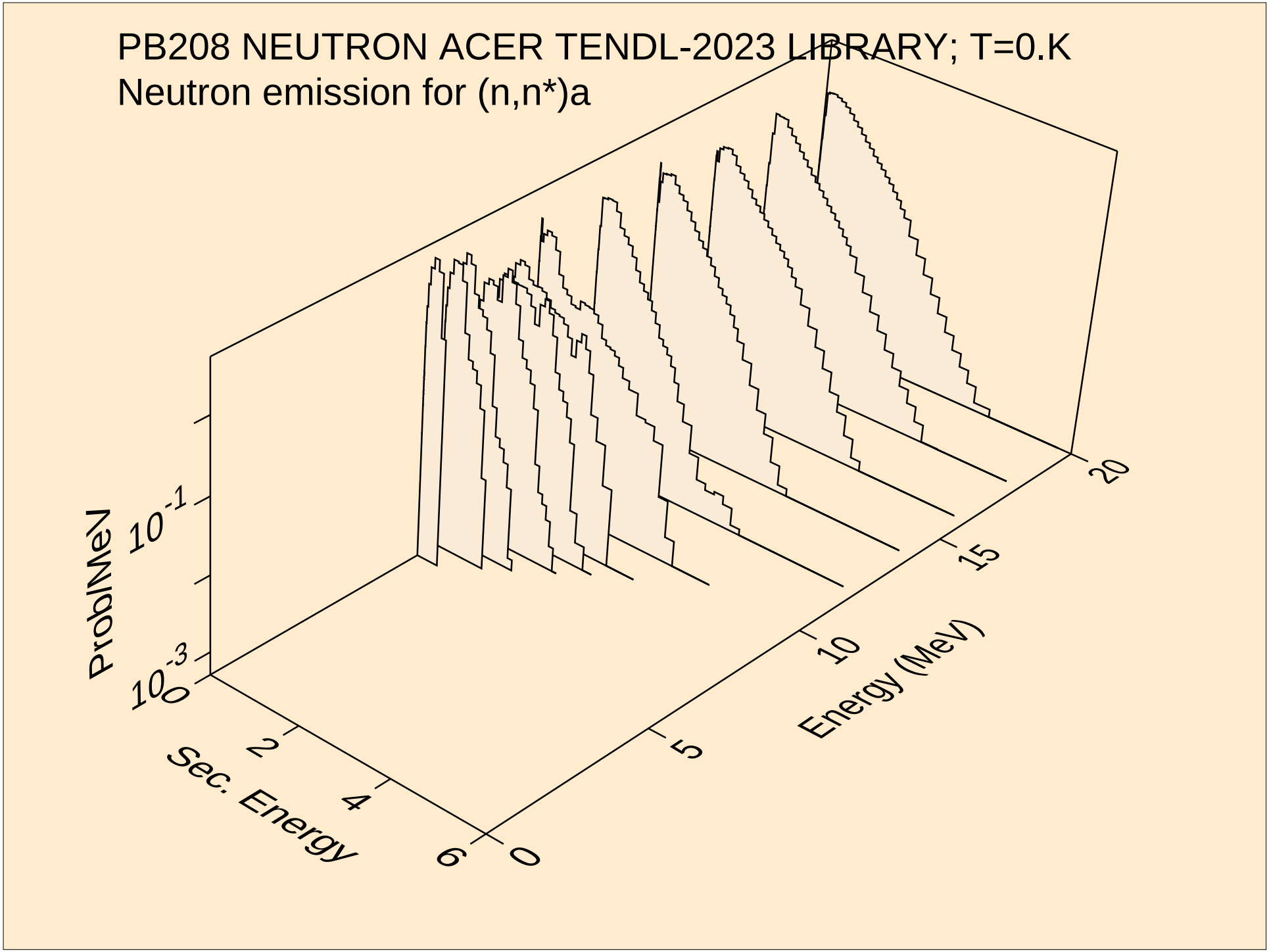

PB208 NEUTRON ACER TENDL-2023 LIBRARY; T=0.K
angular distribution for (n,n*13)
Prob\Cos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
4
6
8
10
12
14
16
18
20
Energy (MeV)

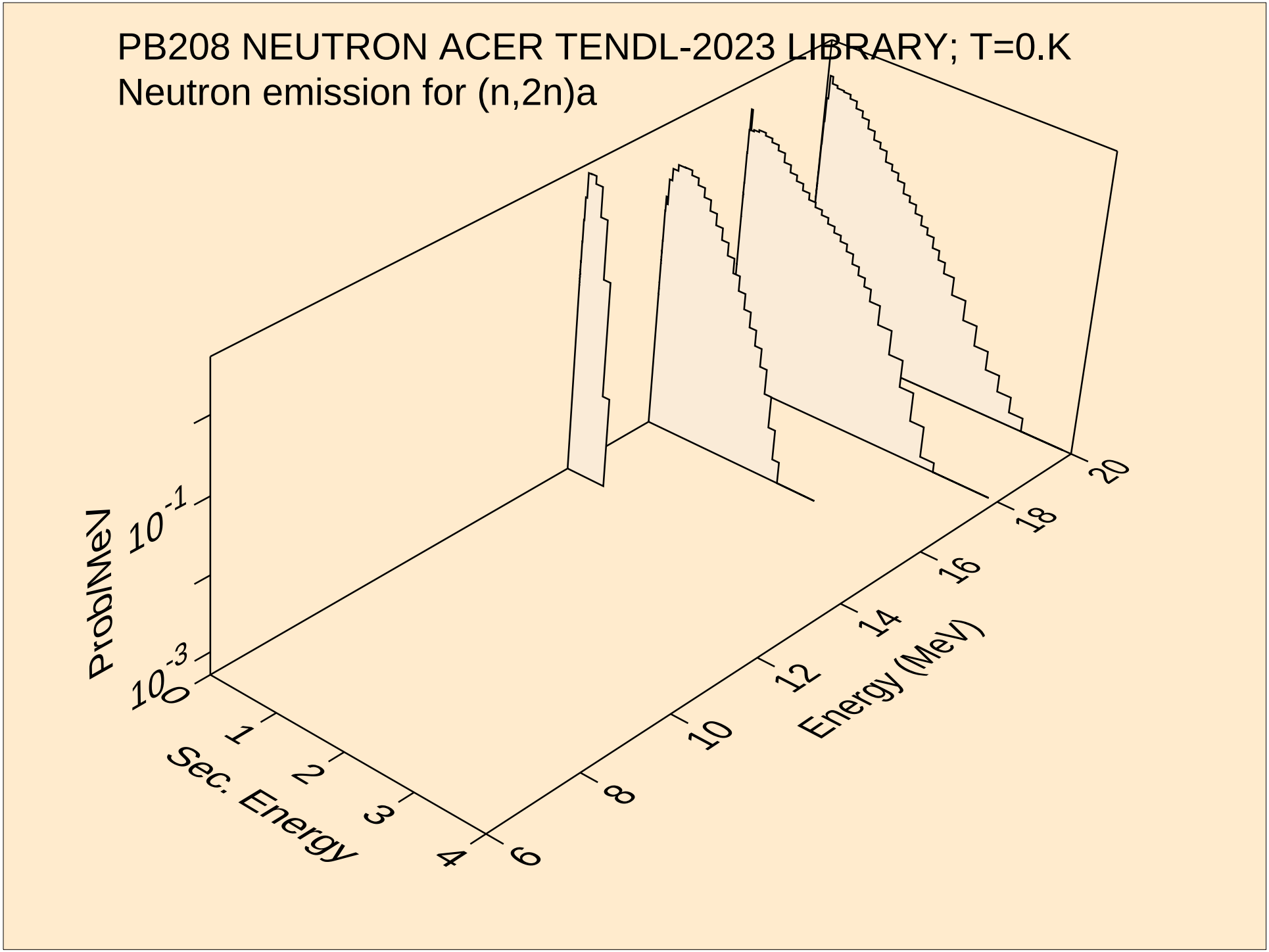

PB208 NEUTRON ACER TENDL-2023 LIBRARY; T=0.K
angular distribution for (n,n*14)
Prob\Cos
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
4
6
8
10
12
14
16
18
20
Energy (MeV)

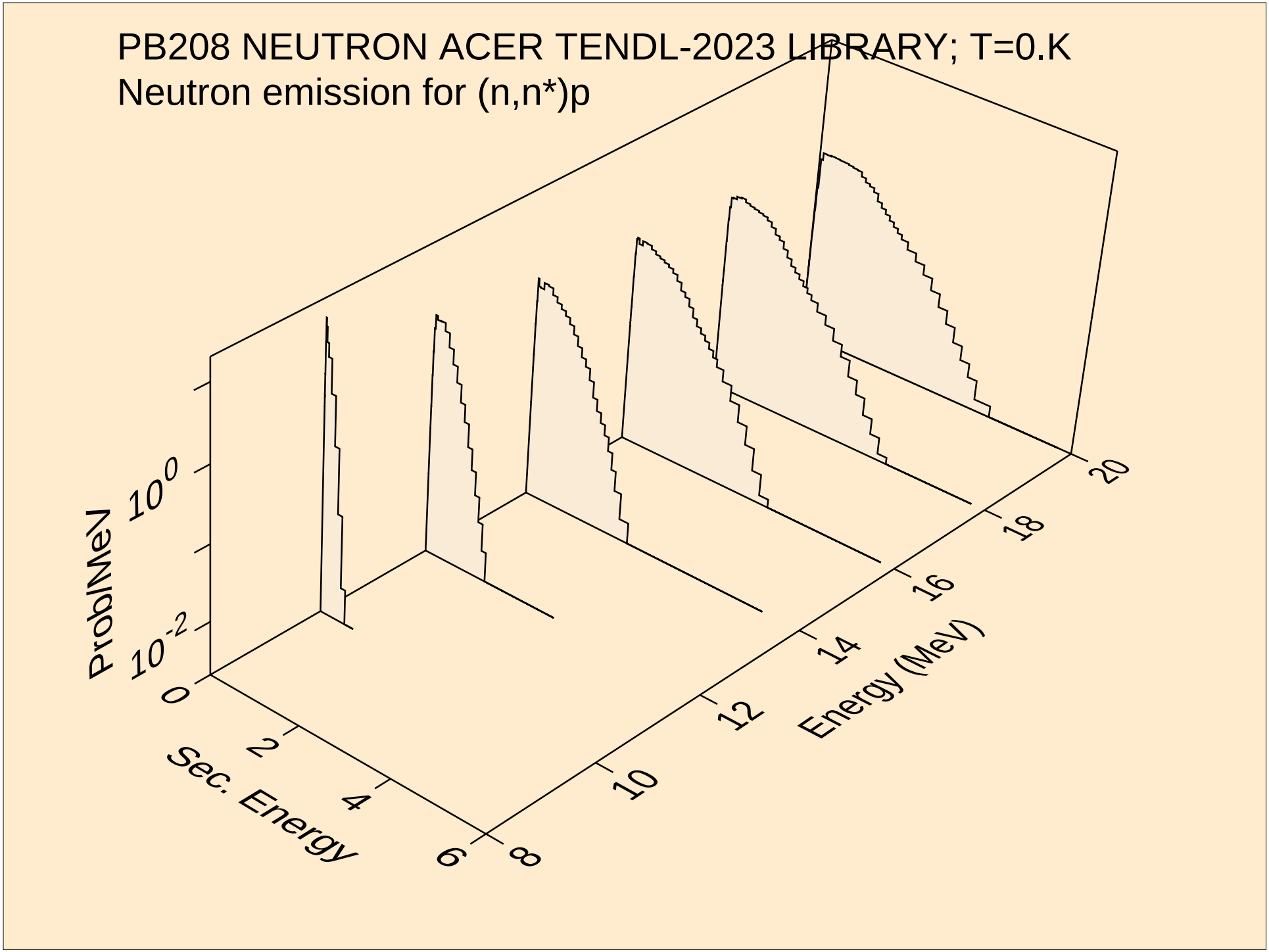

PB208 NEUTRON ACER TENDL-2023 LIBRARY; T=0.K
angular distribution for (n,n*15)
10^0
ProbICos
1.0
0.5
0.0
-0.5
-1.0
Cosine
4
6
8
10
12
14
16
18
20
Energy (MeV)

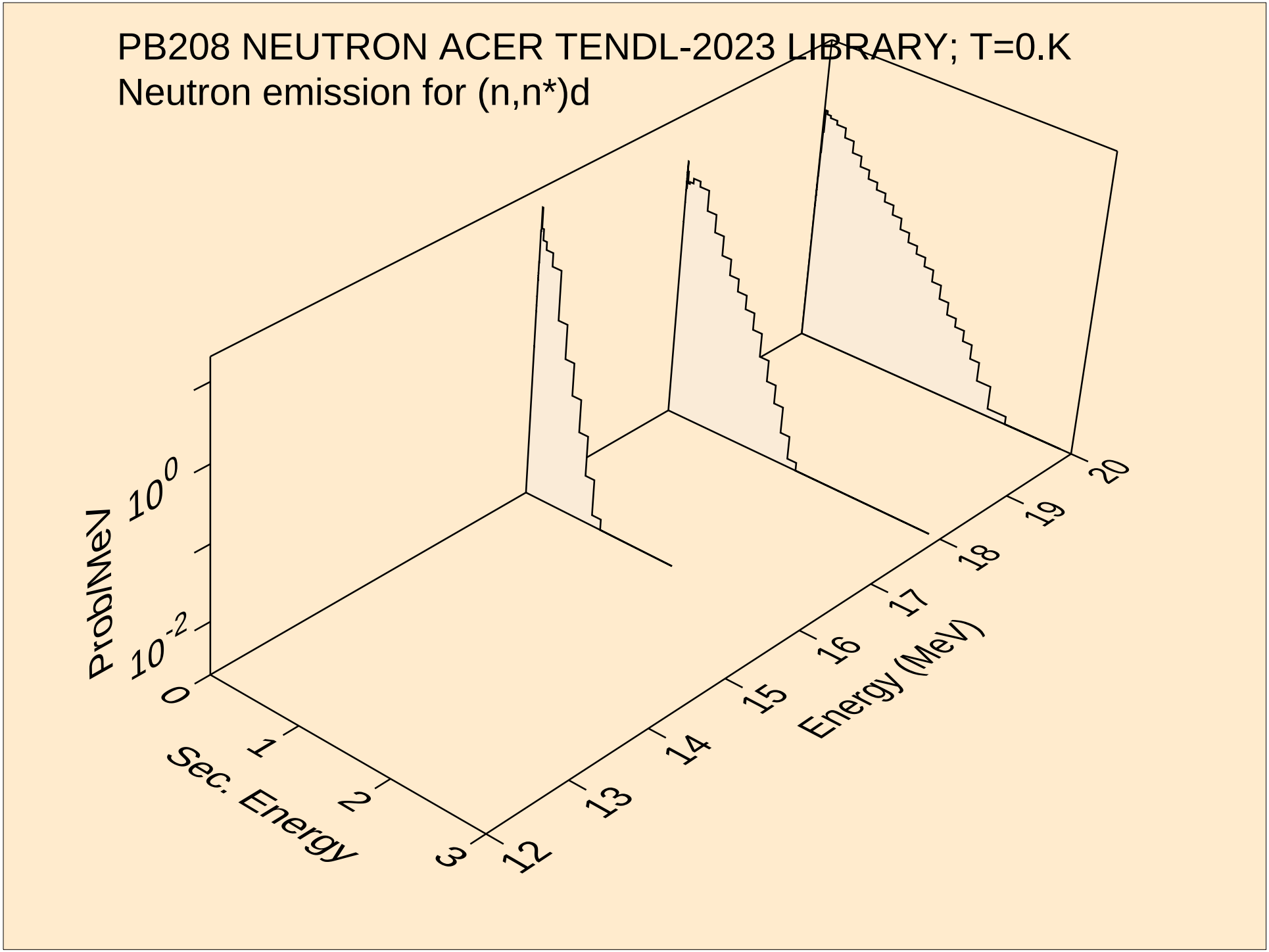

PB208 NEUTRON ACER TENDL-2023 LIBRARY; T=0.K
Neutron emission for (n,2n)
Prob/MeV
10-1
10-3
0
5
10
15
Sec. Energy
6
8
10
12
14
16
18
20
Energy (MeV)

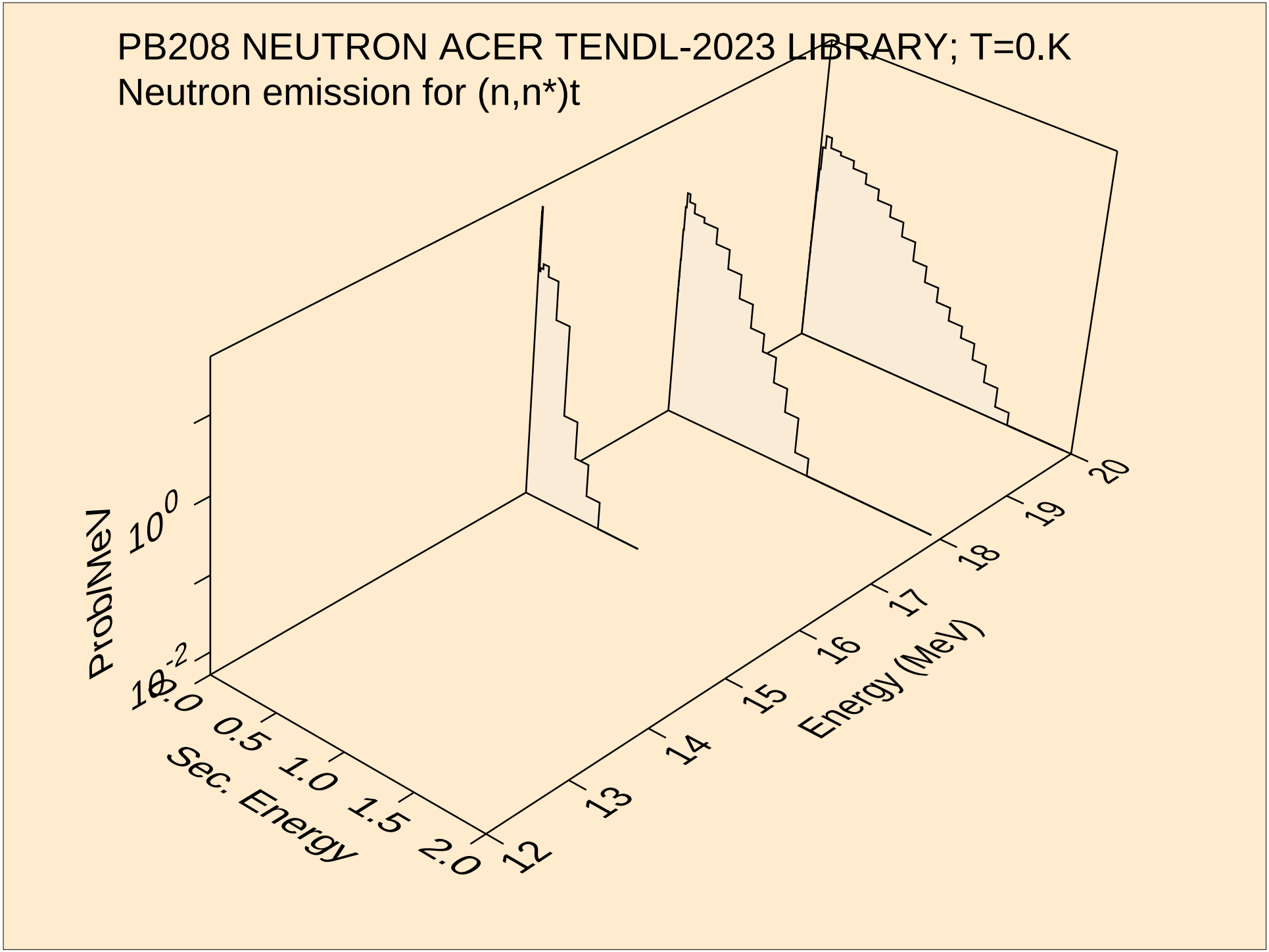

PB208 NEUTRON ACER TENDL-2023 LIBRARY; T=0.K
Neutron emission for (n,3n)
Prob/MeV
10-1
10-3
0
Sec. Energy
2
4
6
14
15
16
17
18
19
20
Energy (MeV)

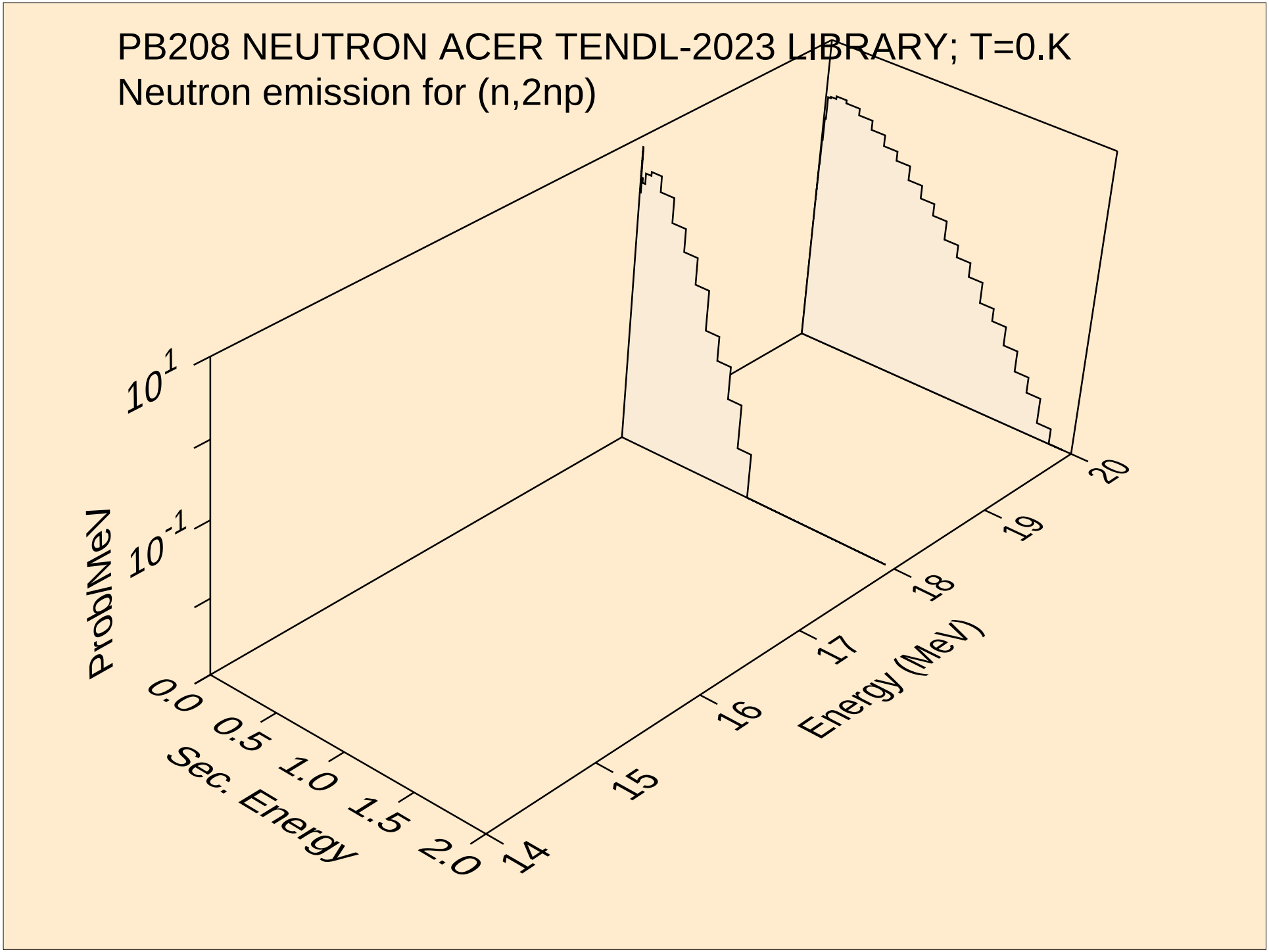

PB208 NEUTRON ACER TENDL-2023 LIBRARY; T=0.K
Neutron emission for (n,n*)a
Prob/MeV
10-1
10-3
0
2
4
6
Sec. Energy
0
5
10
15
20
Energy (MeV)

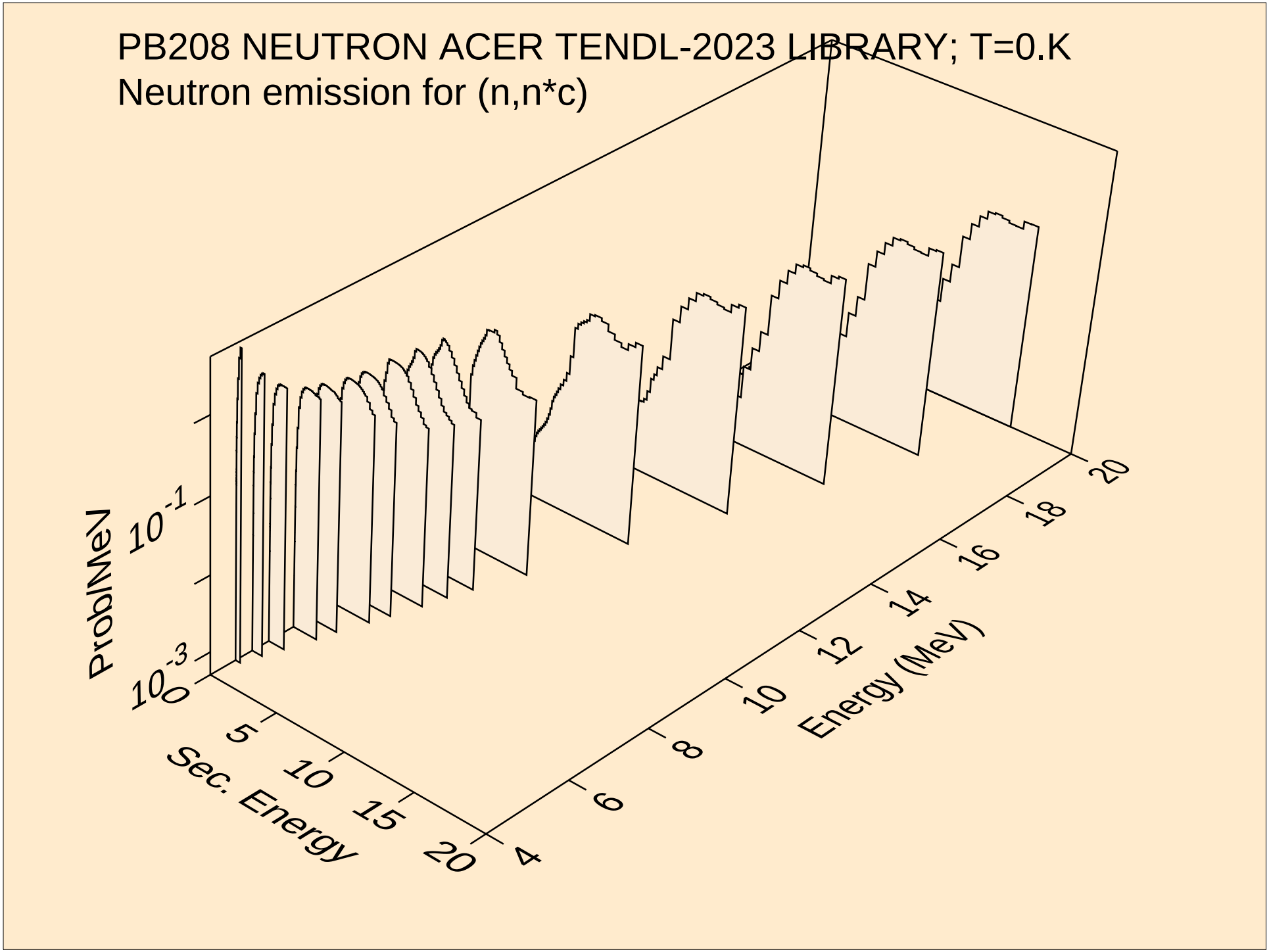

PB208 NEUTRON ACER TENDL-2023 LIBRARY; T=0.K
Neutron emission for (n,2n)a
Prob/MeV
10-1
10-3
0
1
2
3
4
Sec. Energy
6
8
10
12
14
16
18
20
Energy (MeV)

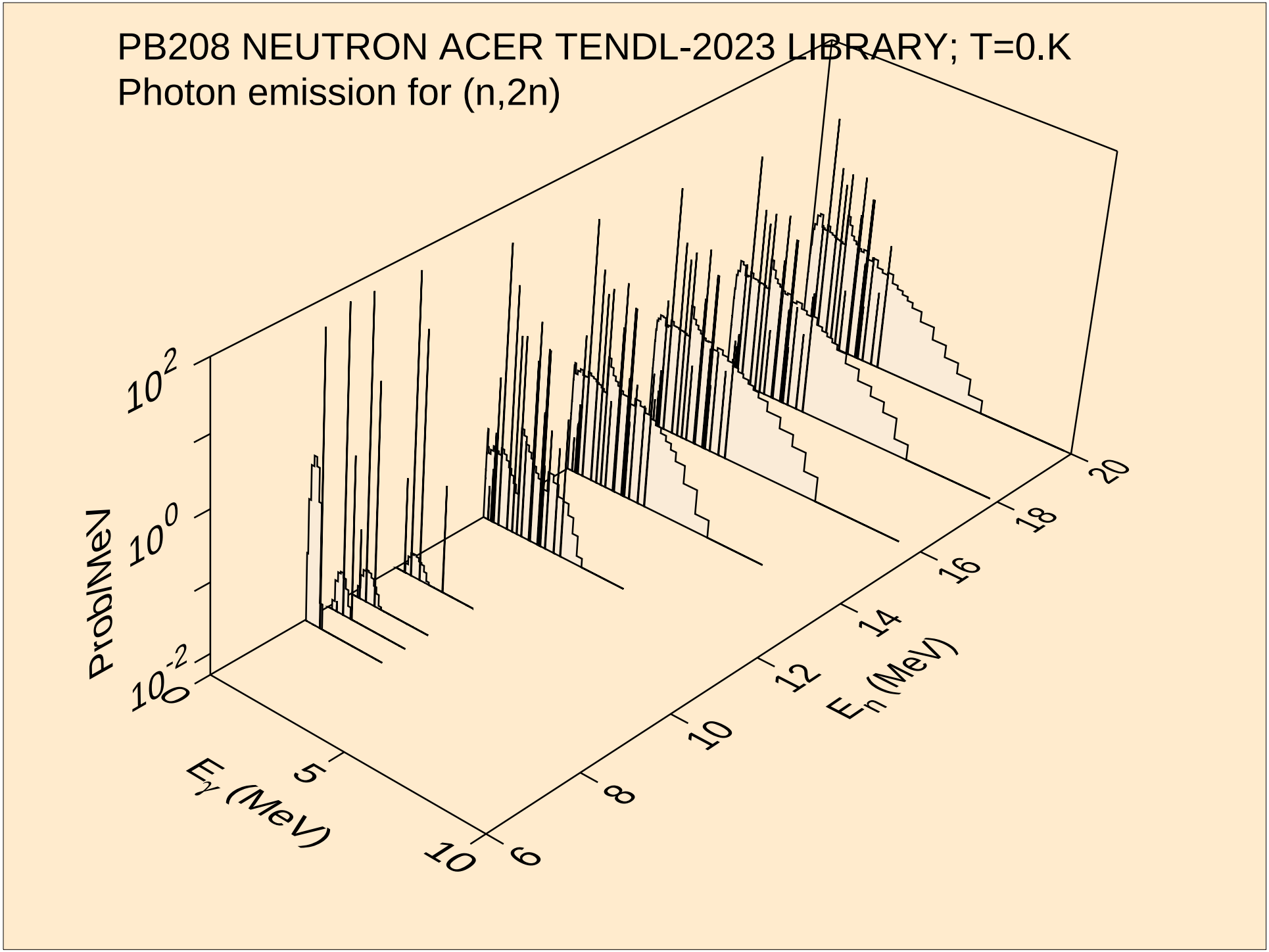

PB208 NEUTRON ACER TENDL-2023 LIBRARY; T=0.K
Neutron emission for (n,n*)p
Prob/MeV
10^0
10^-2
0
2
4
6
8
Sec. Energy
10
12
14
16
18
20
Energy (MeV)

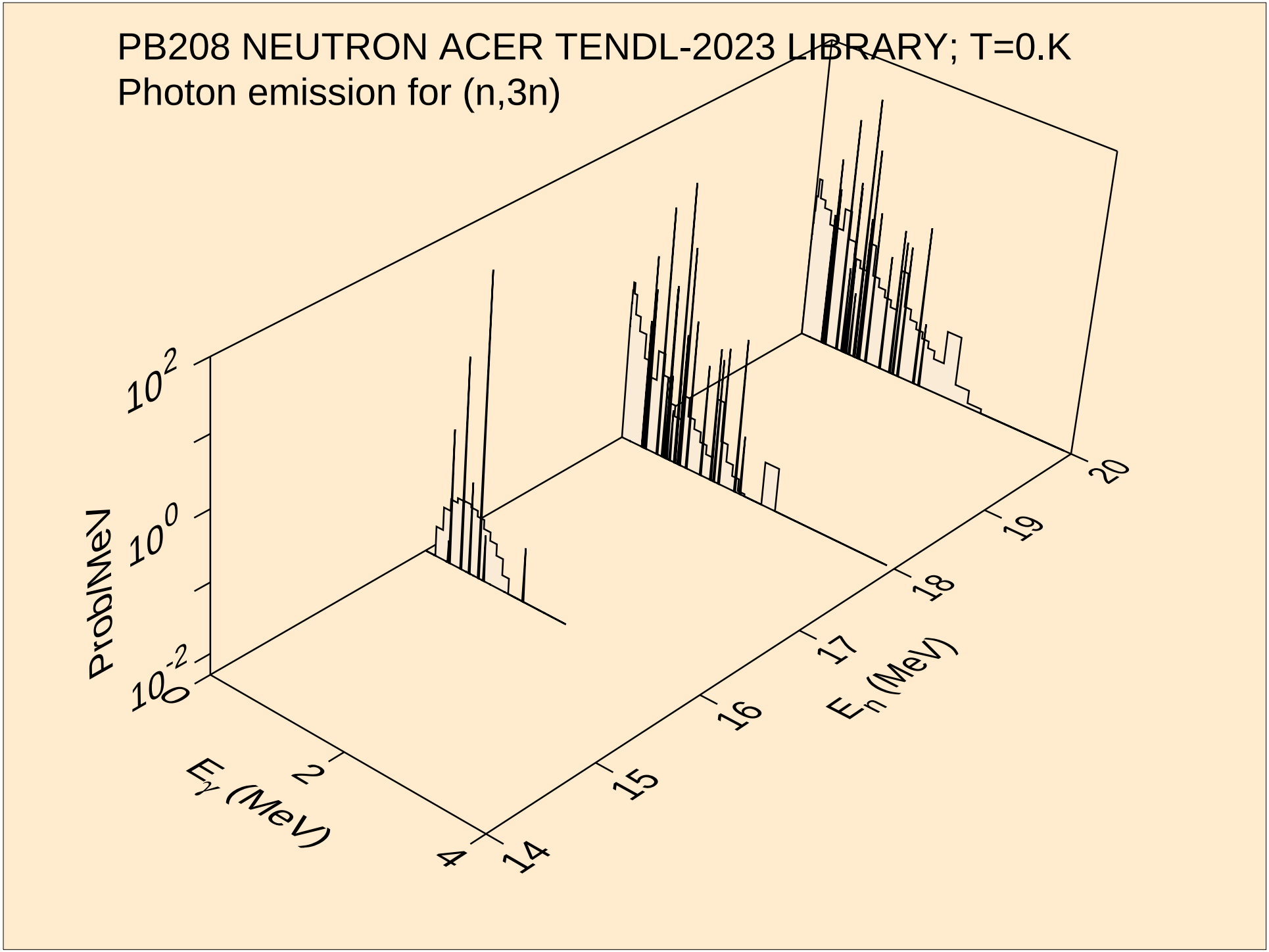

PB208 NEUTRON ACER TENDL-2023 LIBRARY; T=0.K
Neutron emission for (n,n*)d
Prob/MeV
10^0
10^-2
0
Sec. Energy
1
2
3
Energy (MeV)
12
13
14
15
16
17
18
19
20

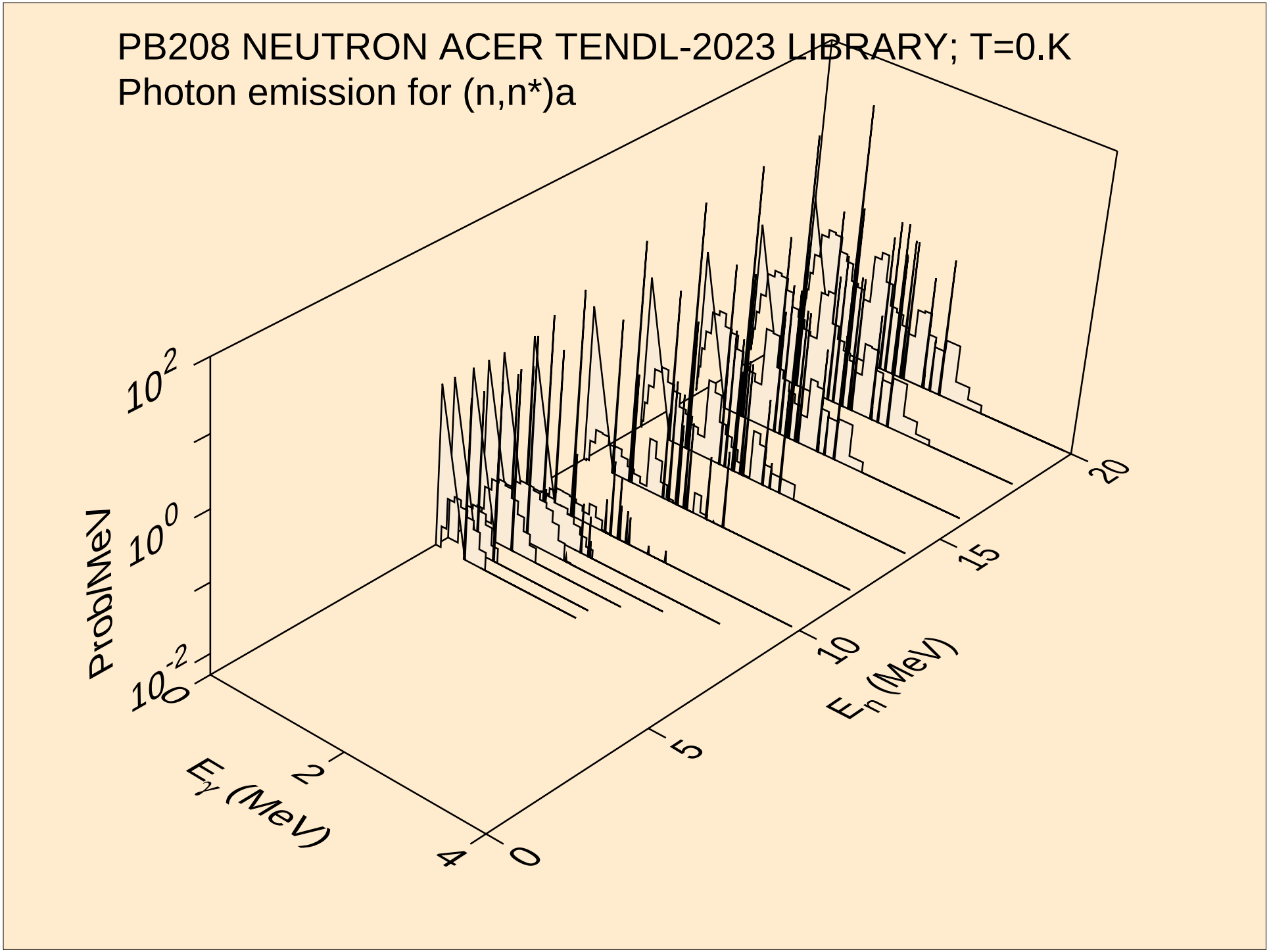

PB208 NEUTRON ACER TENDL-2023 LIBRARY; T=0.K
Neutron emission for (n,n*)t
Prob/MeV
10^0
10^-2
0.0
0.5
1.0
1.5
2.0
Sec. Energy
12
13
14
15
16
17
18
19
20
Energy (MeV)

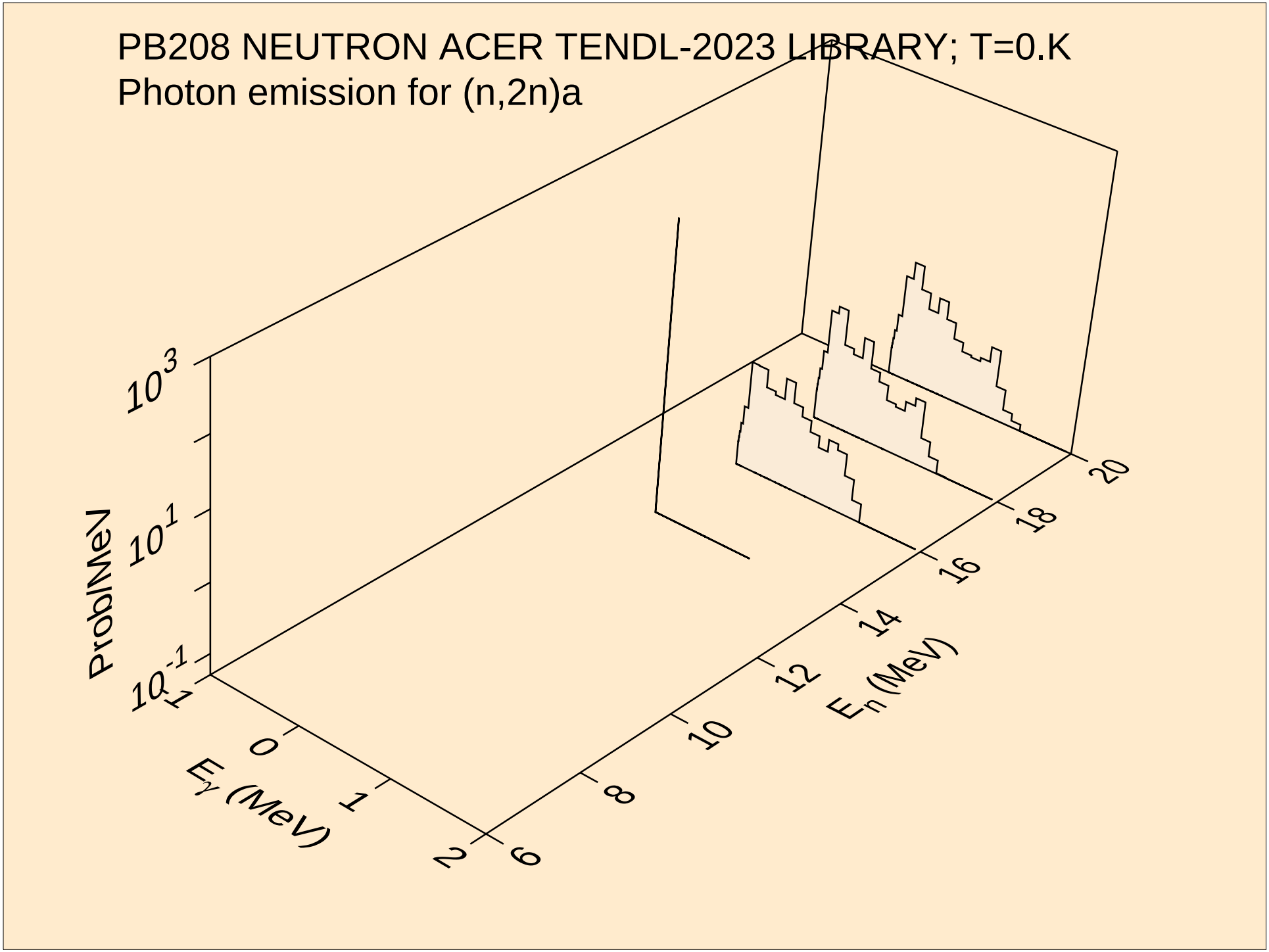

PB208 NEUTRON ACER TENDL-2023 LIBRARY; T=0.K
Neutron emission for (n,2np)
Prob/MeV
10^{1}
10^{-1}
0.0
0.5
1.0
1.5
2.0
Sec. Energy
14
15
16
17
18
19
20
Energy (MeV)

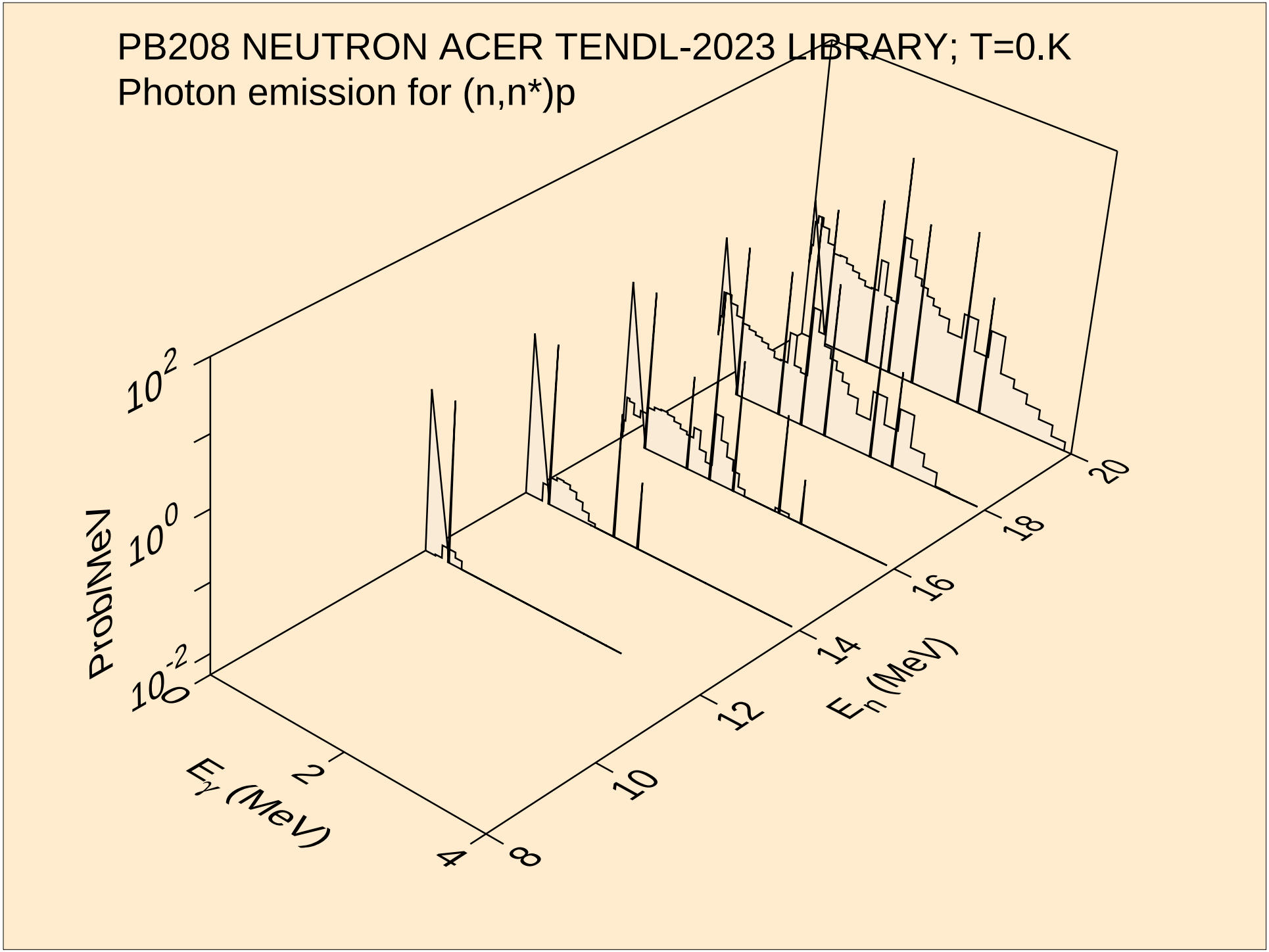

PB208 NEUTRON ACER TENDL-2023 LIBRARY; T=0.K
Neutron emission for (n,n*c)
Prob/MeV
10-1
10-3
0
5
10
15
20
Sec. Energy
4
6
8
10
12
14
16
18
20
Energy (MeV)

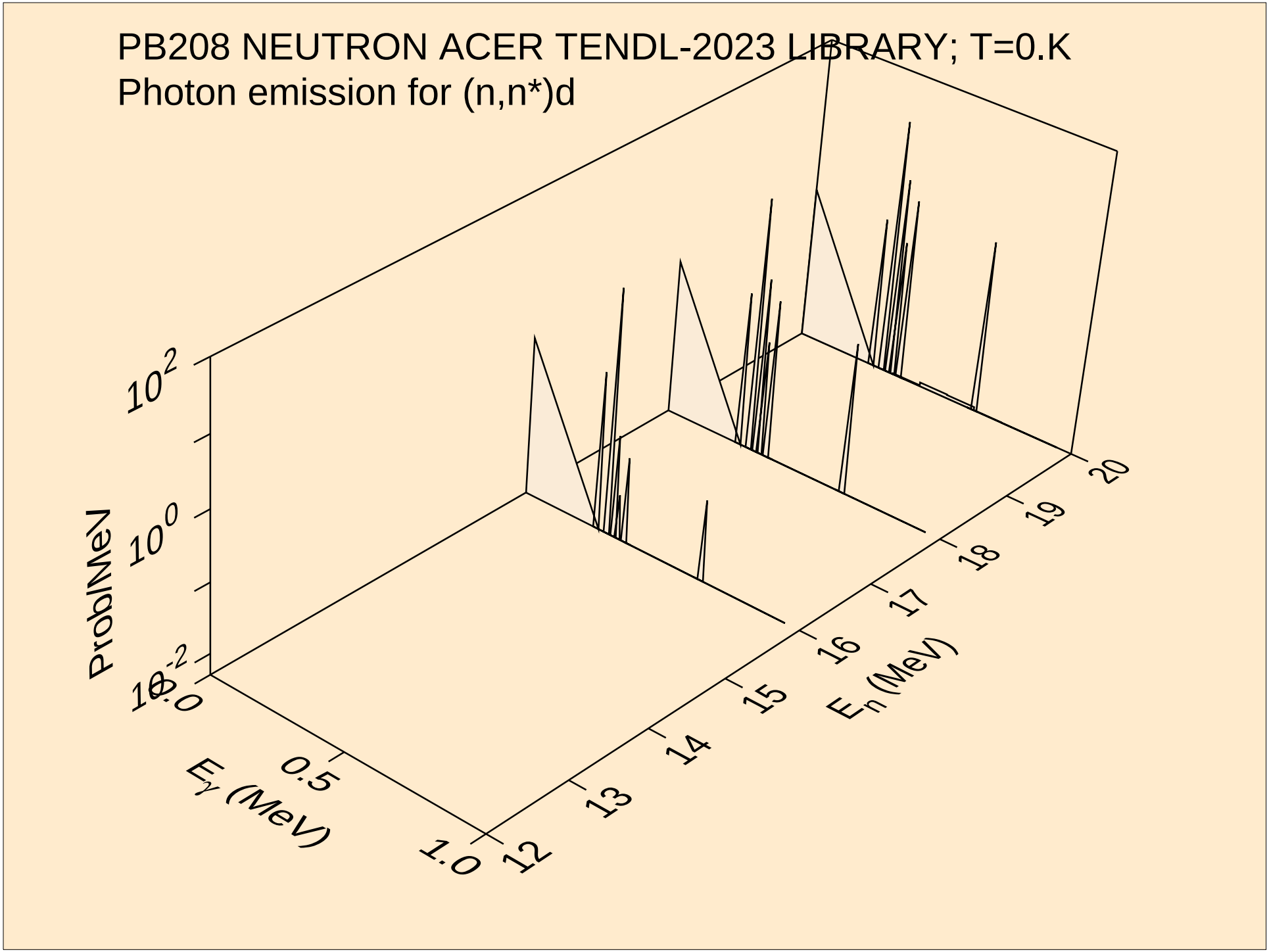

PB208 NEUTRON ACER TENDL-2023 LIBRARY; T=0.K
Photon emission for (n,2n)
Prob/MeV
10^{2}
10^{0}
10^{-2}
0
5
10
E_γ (MeV)
6
8
10
12
14
16
18
20
E_n (MeV)

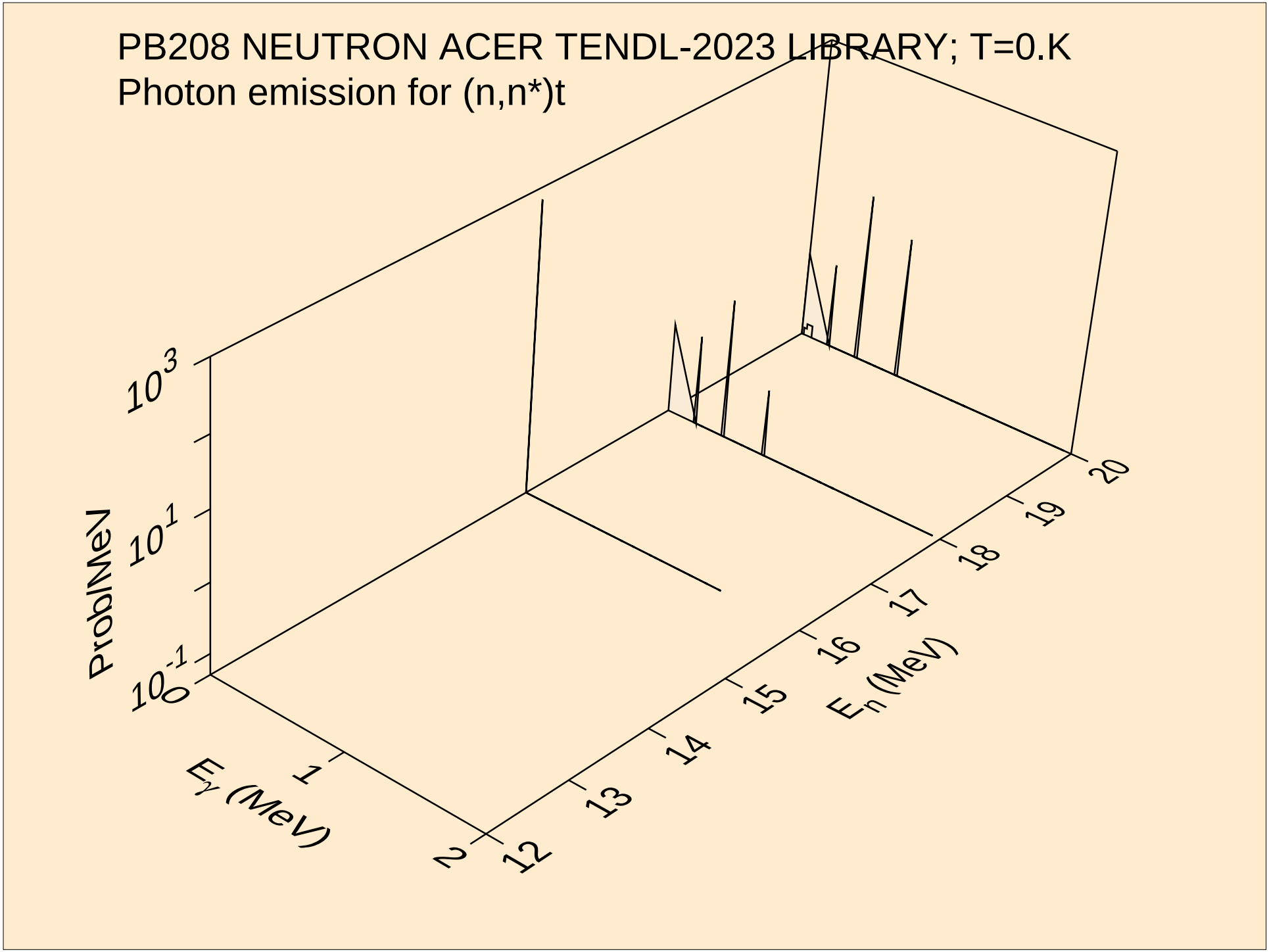

PB208 NEUTRON ACER TENDL-2023 LIBRARY; T=0.K
Photon emission for (n,3n)
Prob/MeV
10^{2}
10^{0}
10^{-2}
E_γ (MeV)
0
2
4
E_n (MeV)
14
15
16
17
18
19
20

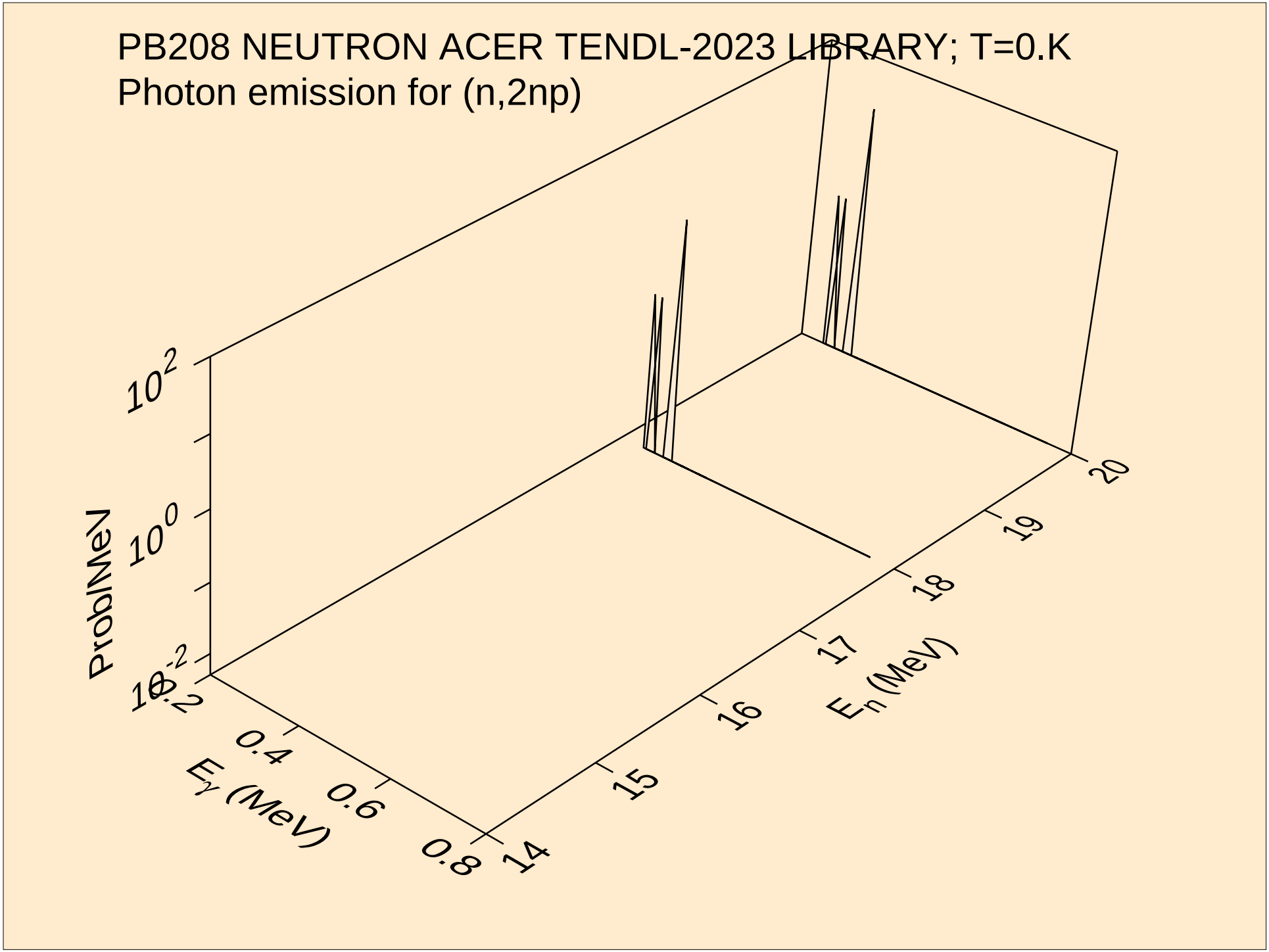

PB208 NEUTRON ACER TENDL-2023 LIBRARY; T=0.K
Photon emission for (n,n*)a
Prob/MeV
10^{2}
10^{0}
10^{-2}
E_γ (MeV)
0
2
4
E_n (MeV)
0
5
10
15
20

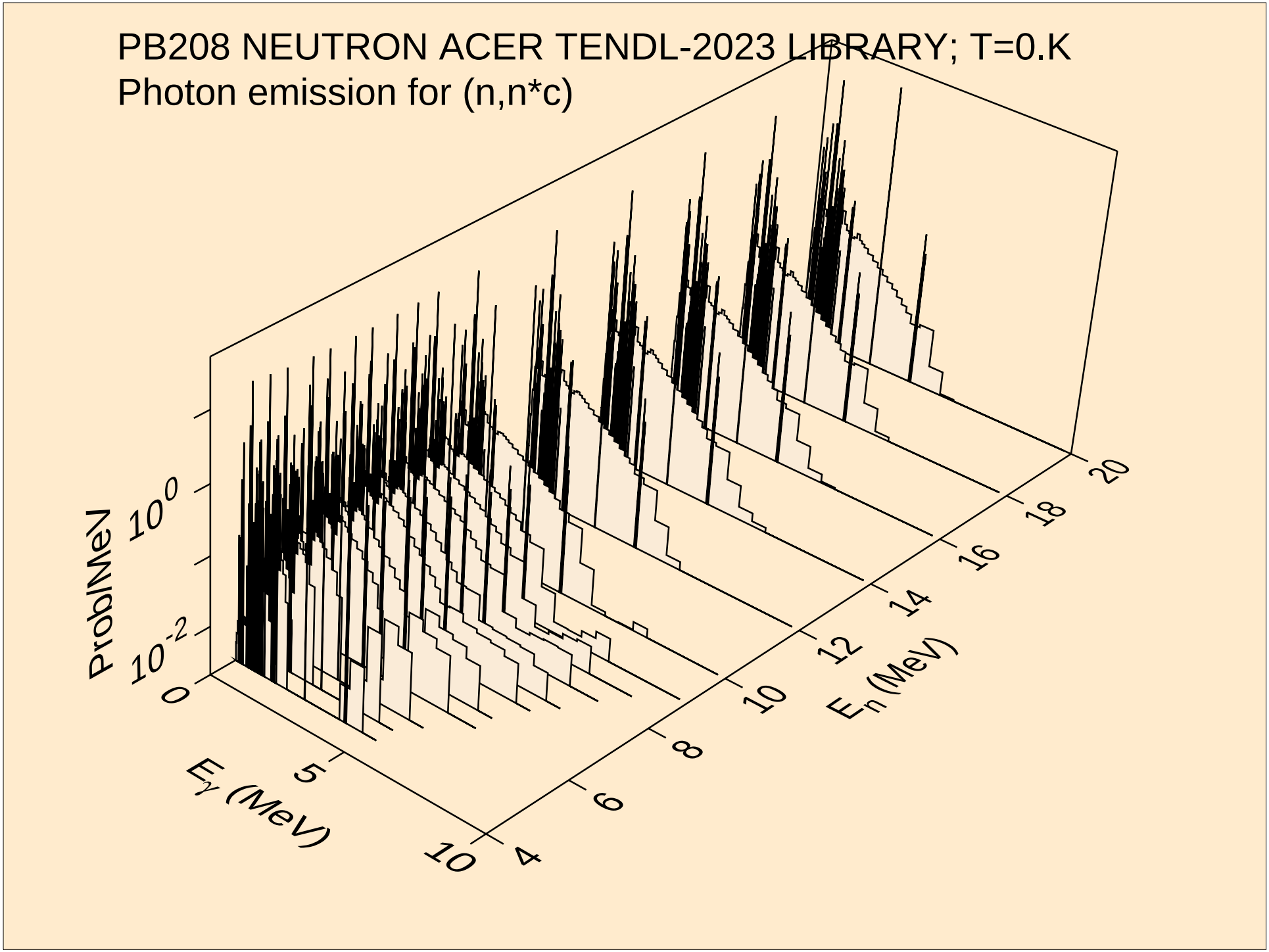

PB208 NEUTRON ACER TENDL-2023 LIBRARY; T=0.K
Photon emission for (n,2n)a
Prob/MeV
10^{3}
10^{1}
10^{-1}
E_γ (MeV)
-1
0
1
2
E_n (MeV)
6
8
10
12
14
16
18
20

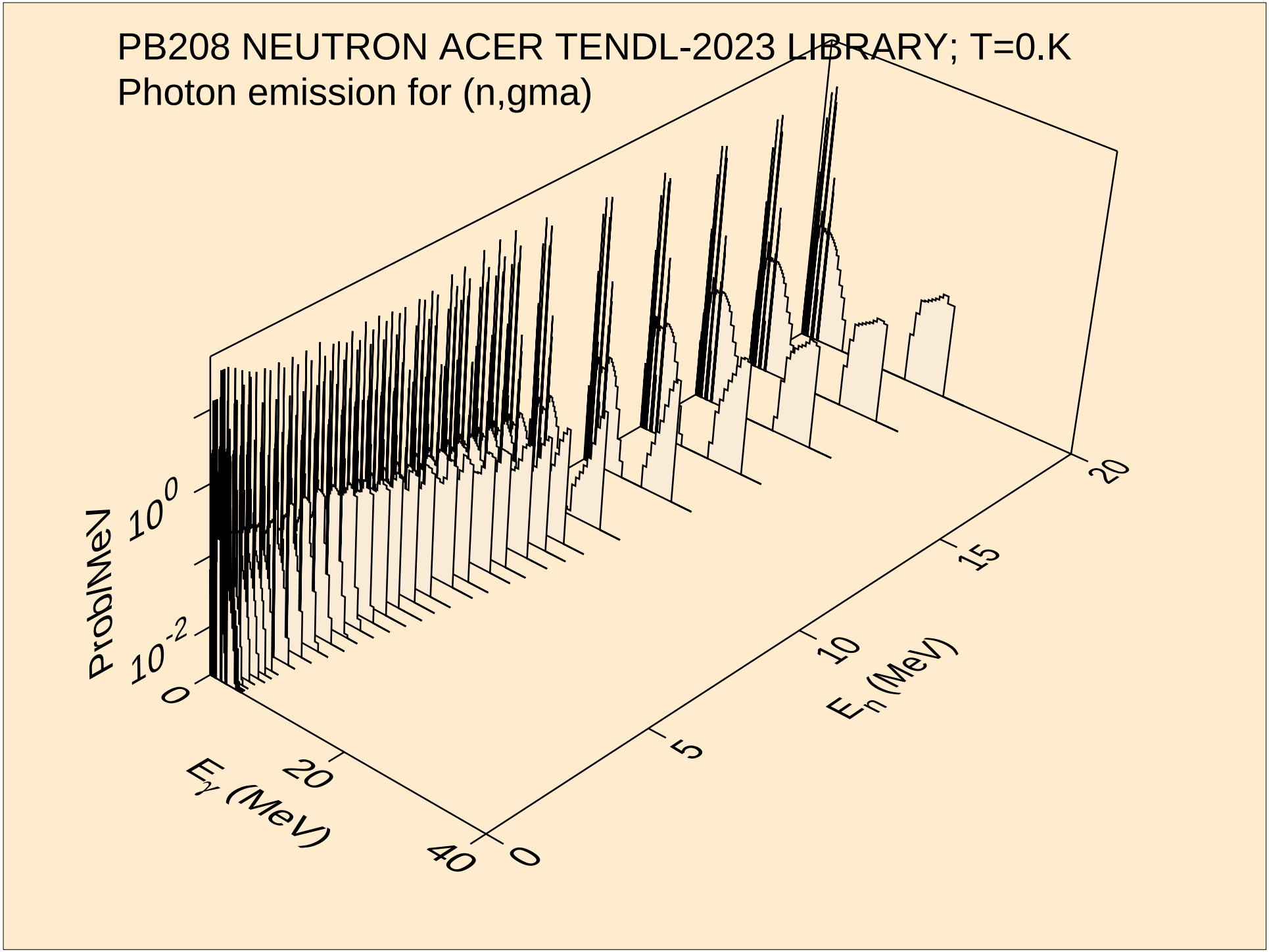

PB208 NEUTRON ACER TENDL-2023 LIBRARY; T=0.K
Photon emission for (n,n*)p
Prob/MeV
10^{2}
10^{0}
10^{-2}
0
2
4
E_γ (MeV)
8
10
12
14
16
18
20
E_n (MeV)

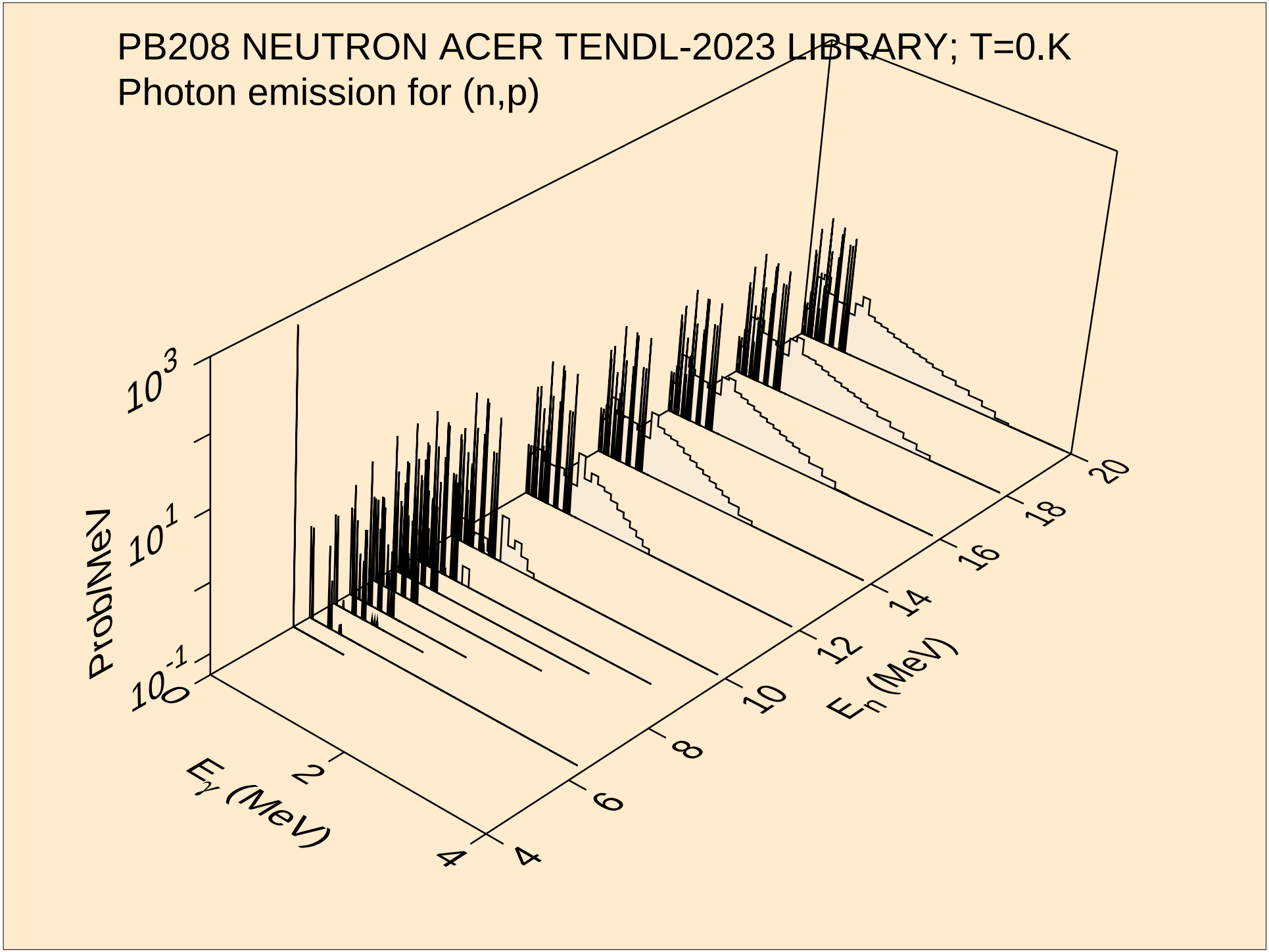

PB208 NEUTRON ACER TENDL-2023 LIBRARY; T=0.K
Photon emission for (n,n*)d
Prob/MeV
10^{2}
10^{0}
10^{-2}
0.0
0.5
1.0
E_γ (MeV)
12
13
14
15
16
17
18
19
20
E_n (MeV)

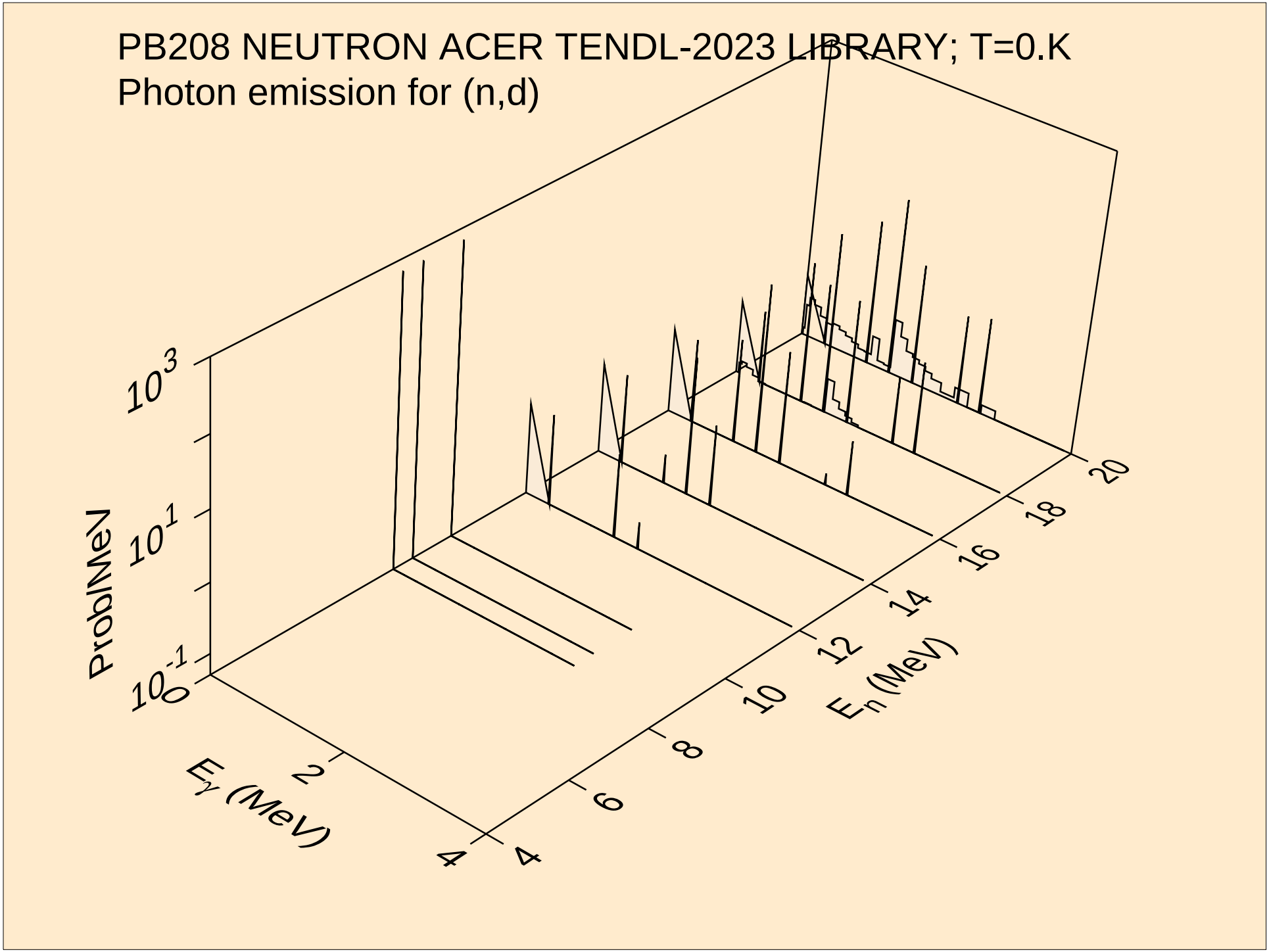

PB208 NEUTRON ACER TENDL-2023 LIBRARY; T=0.K
Photon emission for (n,n*)t
Prob/MeV
10^{3}
10^{1}
10^{-1}
0
1
2
E_γ (MeV)
12
13
14
15
16
17
18
19
20
E_n (MeV)

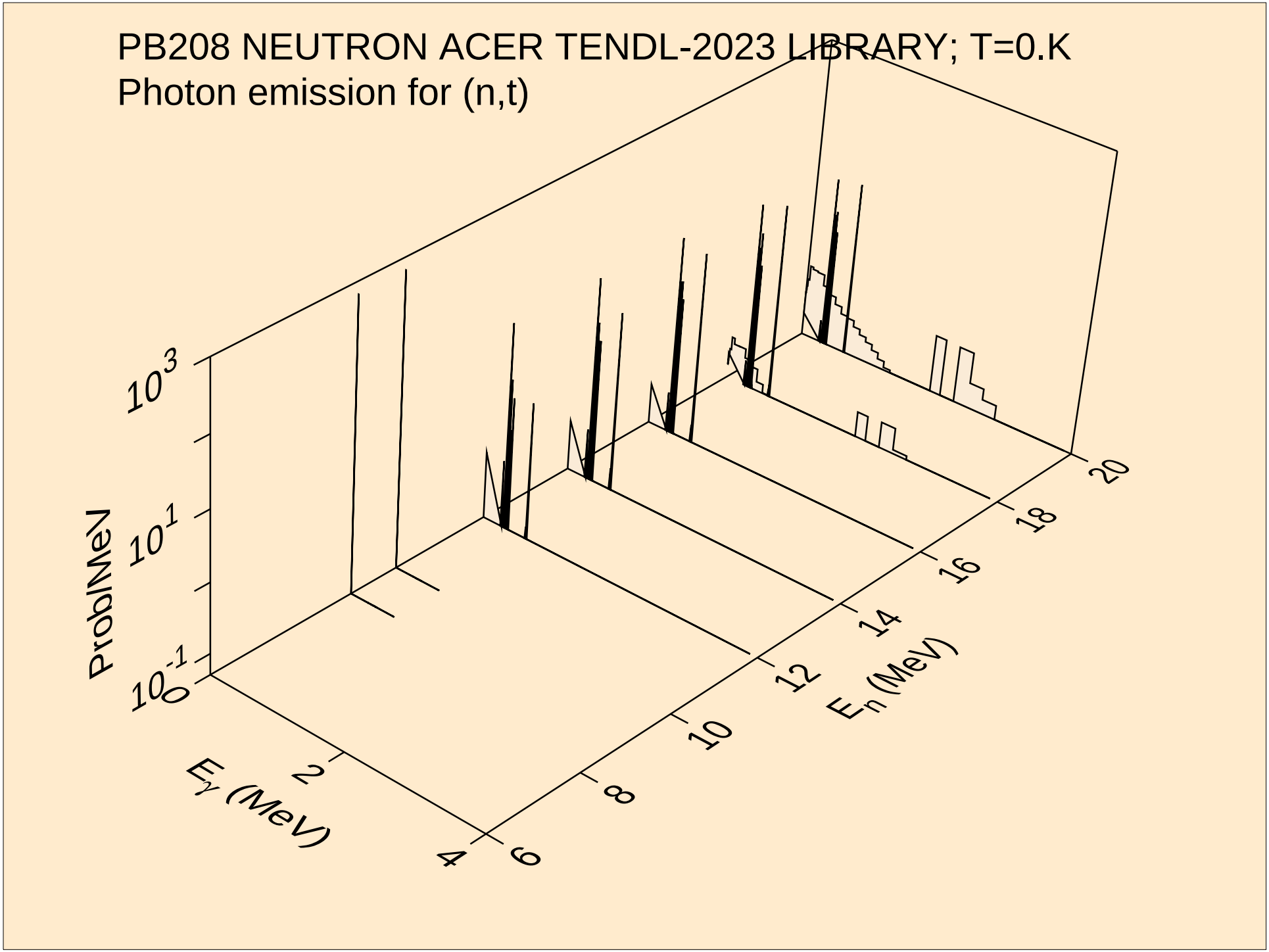

PB208 NEUTRON ACER TENDL-2023 LIBRARY; T=0.K
Photon emission for (n,2np)
Prob/MeV
10^{2}
10^{0}
10^{-2}
0.2
0.4
0.6
0.8
E_γ (MeV)
14
15
16
17
18
19
20
E_n (MeV)

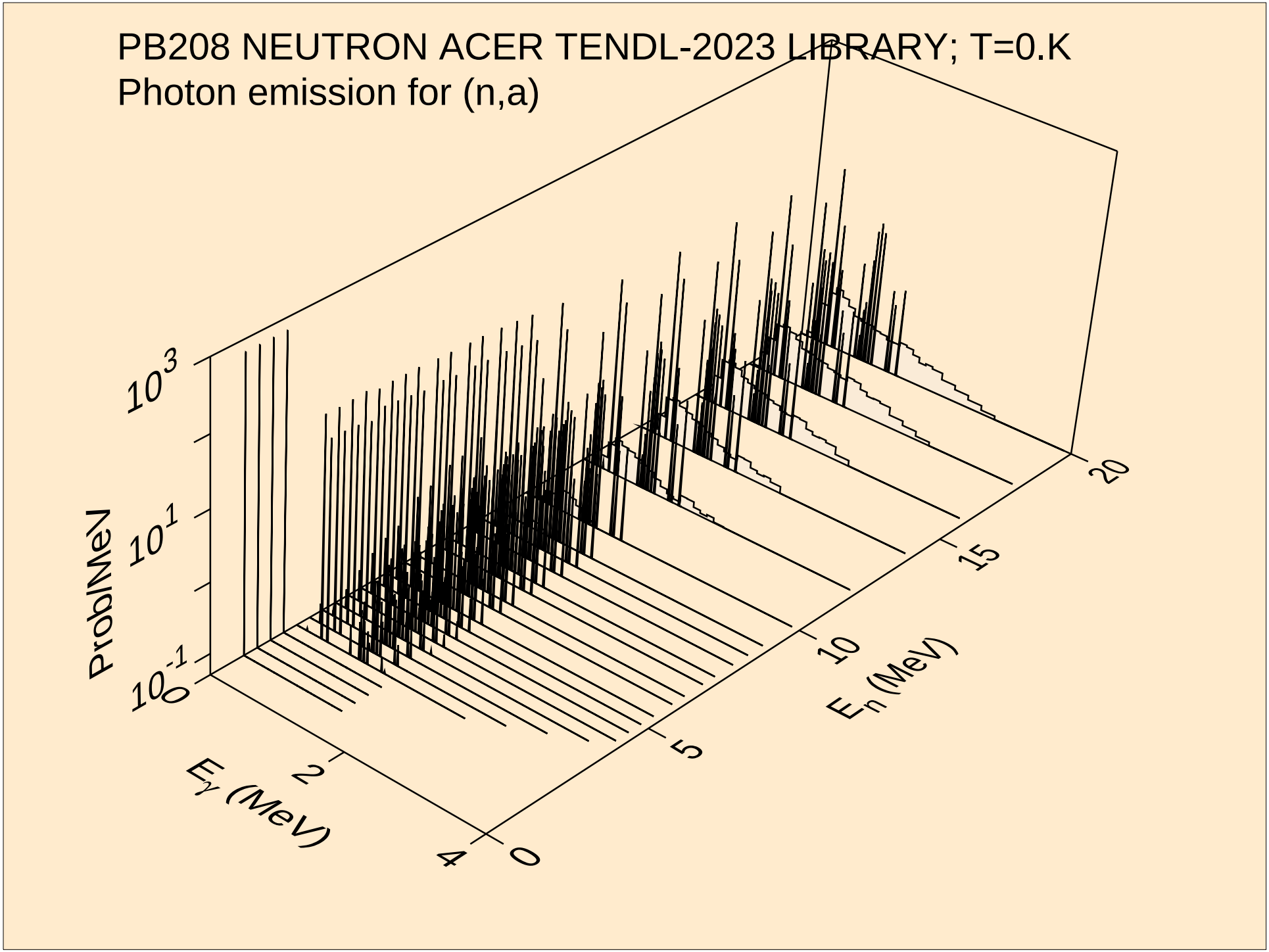

PB208 NEUTRON ACER TENDL-2023 LIBRARY; T=0.K
Photon emission for (n,n*c)
Prob/MeV
10^0
10^-2
0
5
10
Eγ (MeV)
4
6
8
10
12
14
16
18
20
En (MeV)

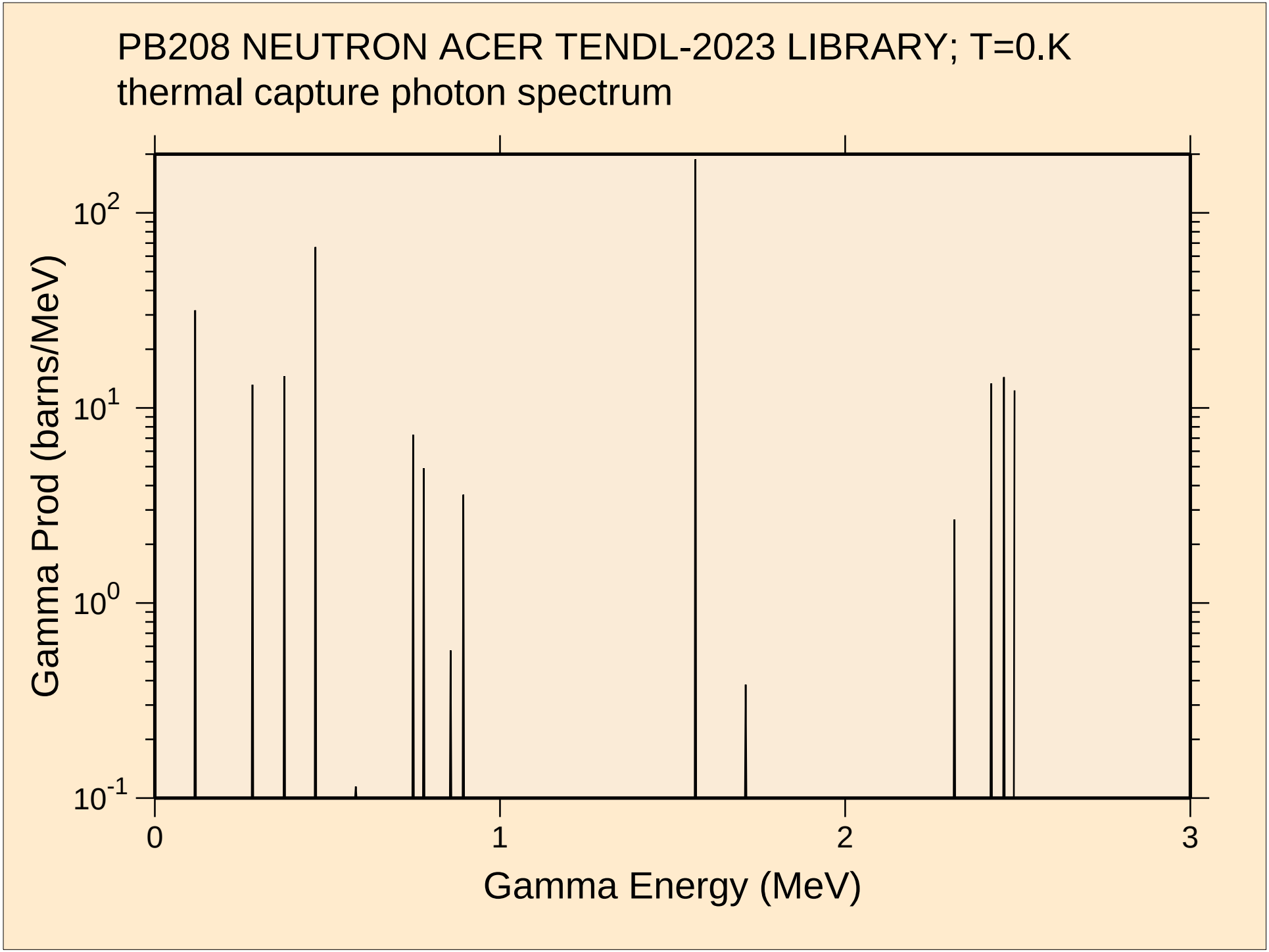

PB208 NEUTRON ACER TENDL-2023 LIBRARY; T=0.K
Photon emission for (n,gma)
Prob/MeV
10^0
10^-2
0
20
E_γ (MeV)
40
0
5
10
15
20
E_n (MeV)

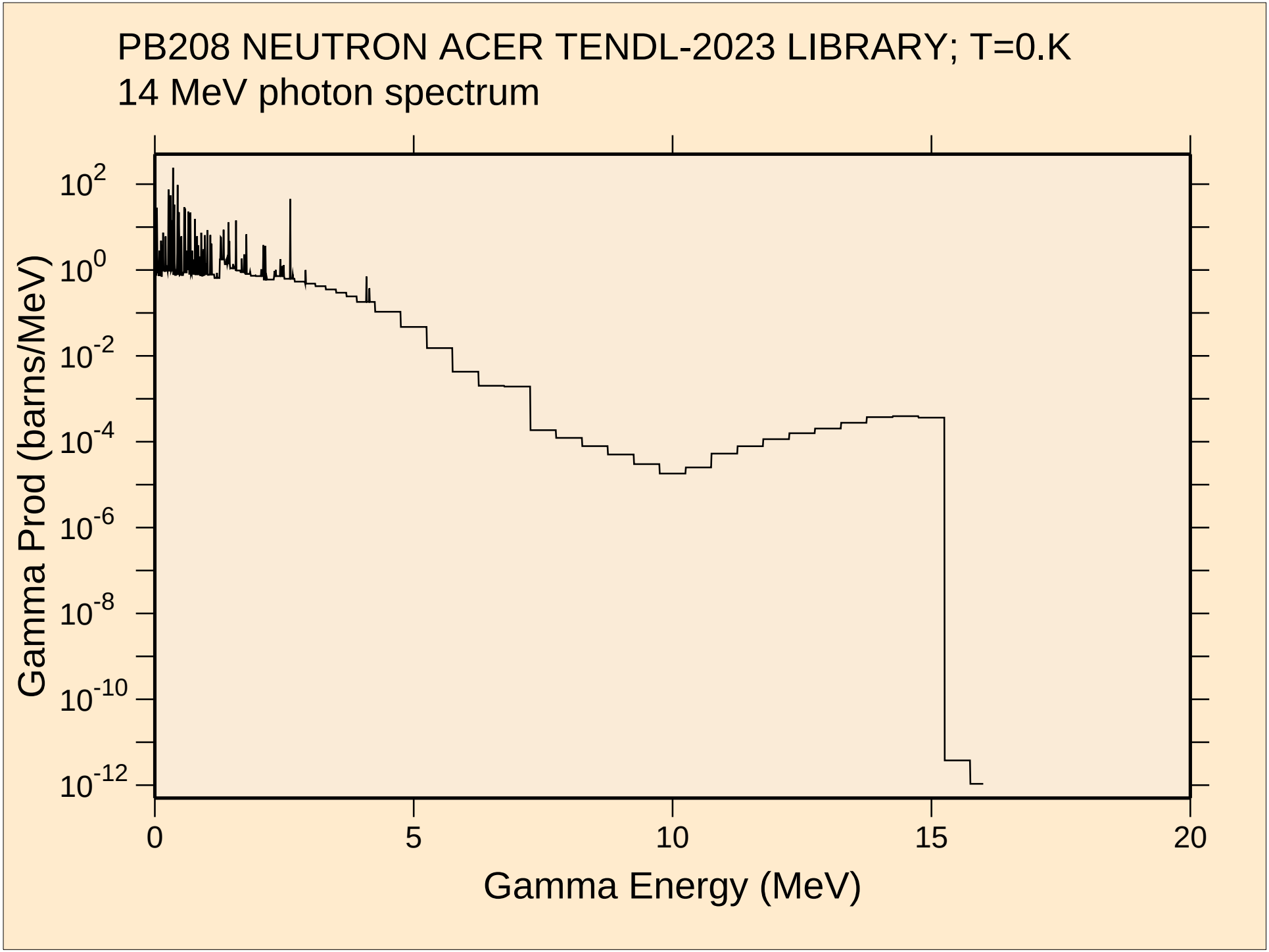

PB208 NEUTRON ACER TENDL-2023 LIBRARY; T=0.K
Photon emission for (n,p)
Prob/MeV
10^{3}
10^{1}
10^{-1}
0
2
4
E_γ (MeV)
4
6
8
10
12
14
16
18
20
E_n (MeV)

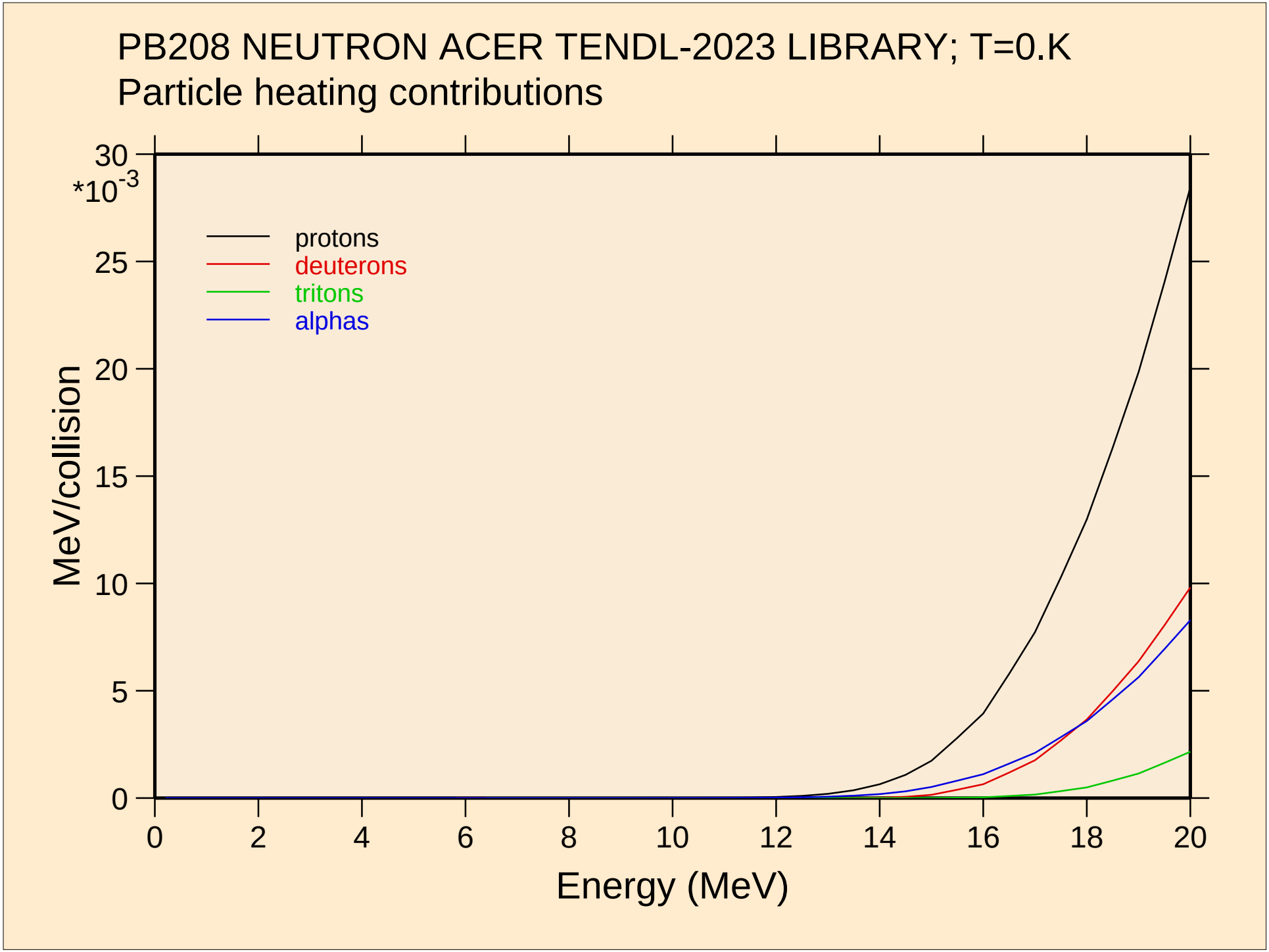

PB208 NEUTRON ACER TENDL-2023 LIBRARY; T=0.K
Photon emission for (n,d)
Prob/MeV
10^{3}
10^{1}
10^{-1}
0
2
4
E_γ (MeV)
4
6
8
10
12
14
16
18
20
E_n (MeV)

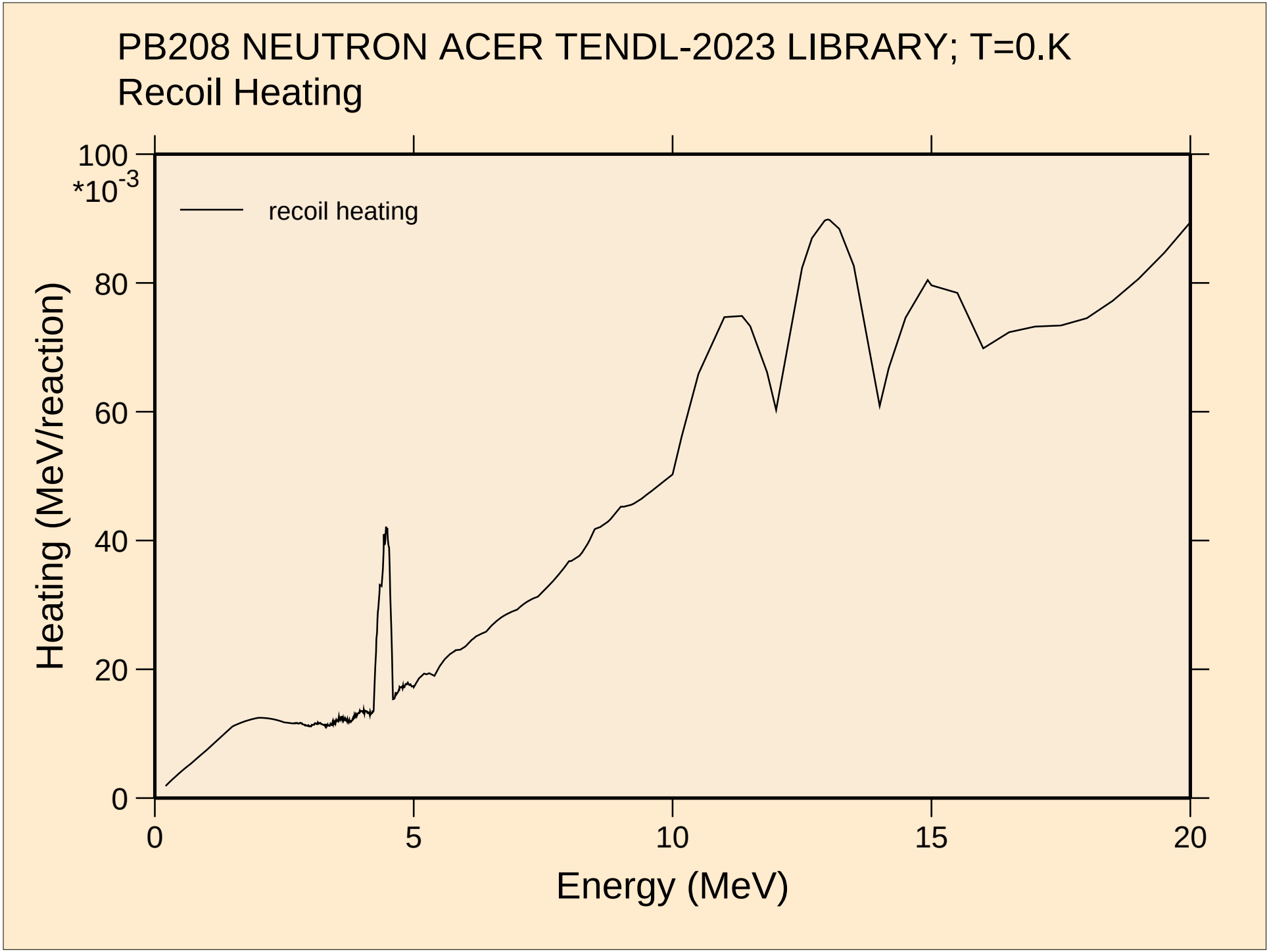

PB208 NEUTRON ACER TENDL-2023 LIBRARY; T=0.K
Photon emission for (n,t)
Prob/MeV
10^{3}
10^{1}
10^{-1}
0
2
4
6
8
10
12
14
16
18
20
E_γ (MeV)
E_n (MeV)

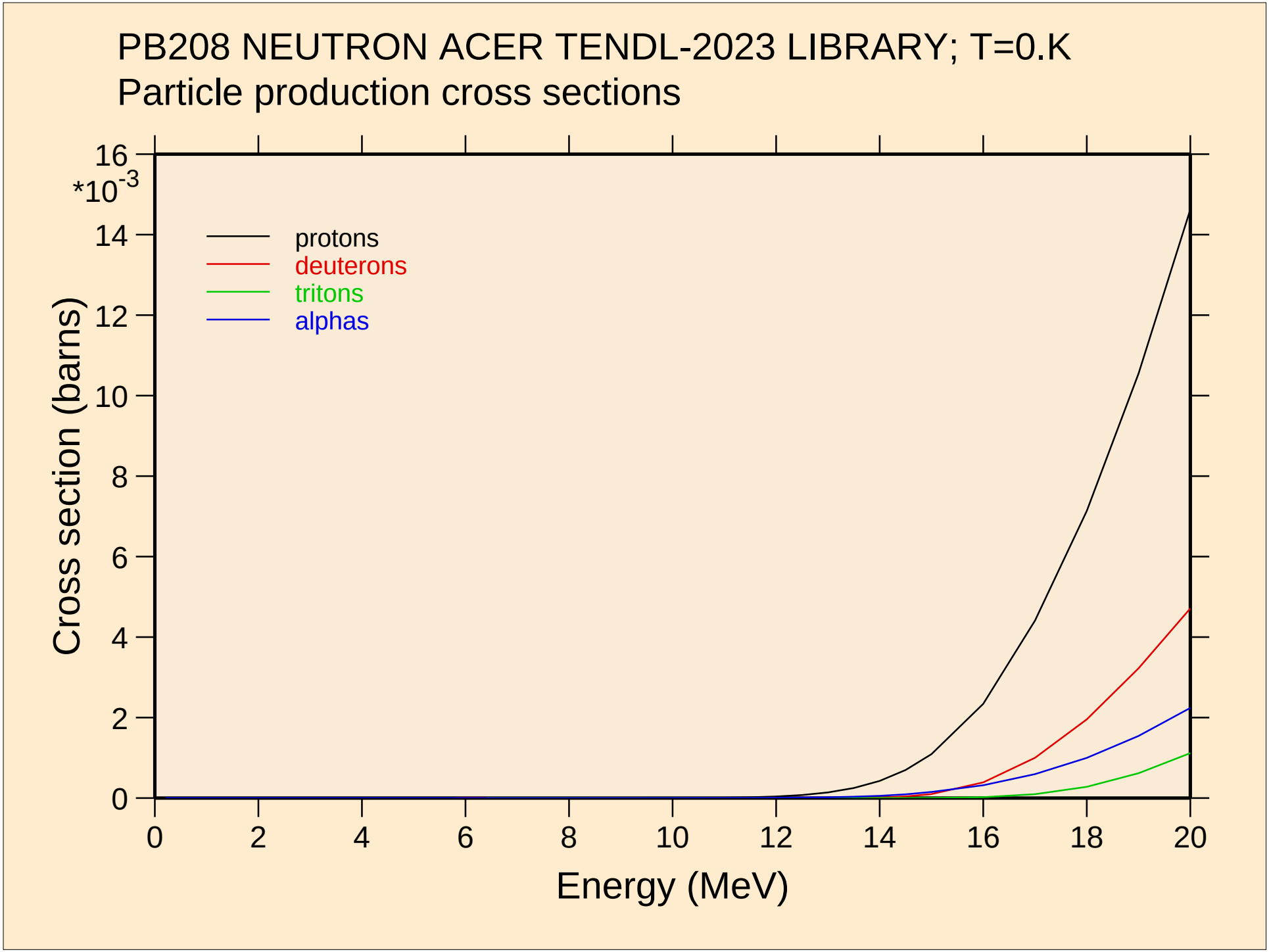

PB208 NEUTRON ACER TENDL-2023 LIBRARY; T=0.K
Photon emission for (n,a)
Prob/MeV
10^{3}
10^{1}
10^{-1}
0
2
4
E_γ (MeV)
0
5
10
15
20
E_n (MeV)

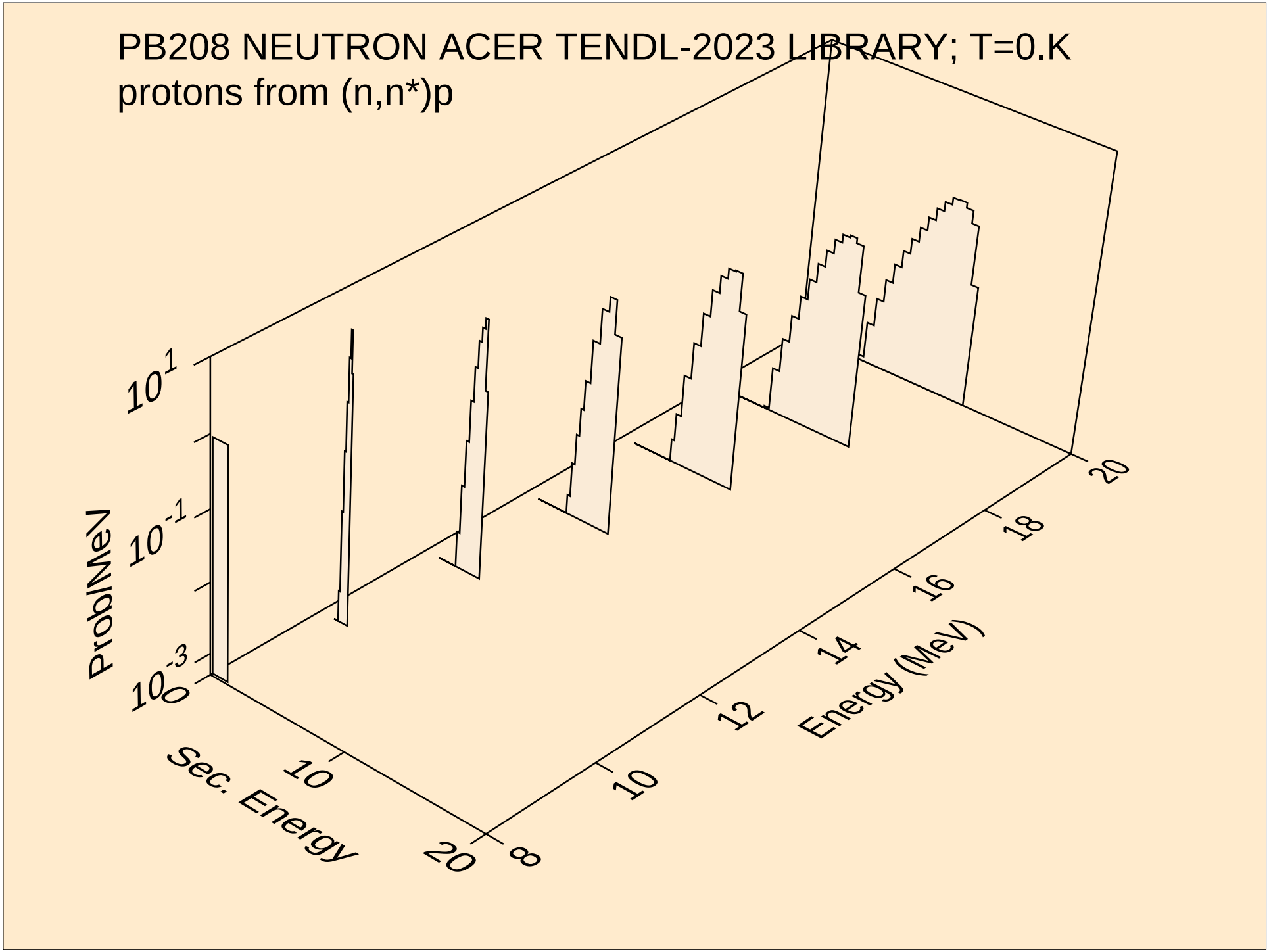

PB208 NEUTRON ACER TENDL-2023 LIBRARY; T=0.K
thermal capture photon spectrum
Gamma Prod (barns/MeV)
10^2
10^1
10^0
10^-1
0
1
2
3
Gamma Energy (MeV)

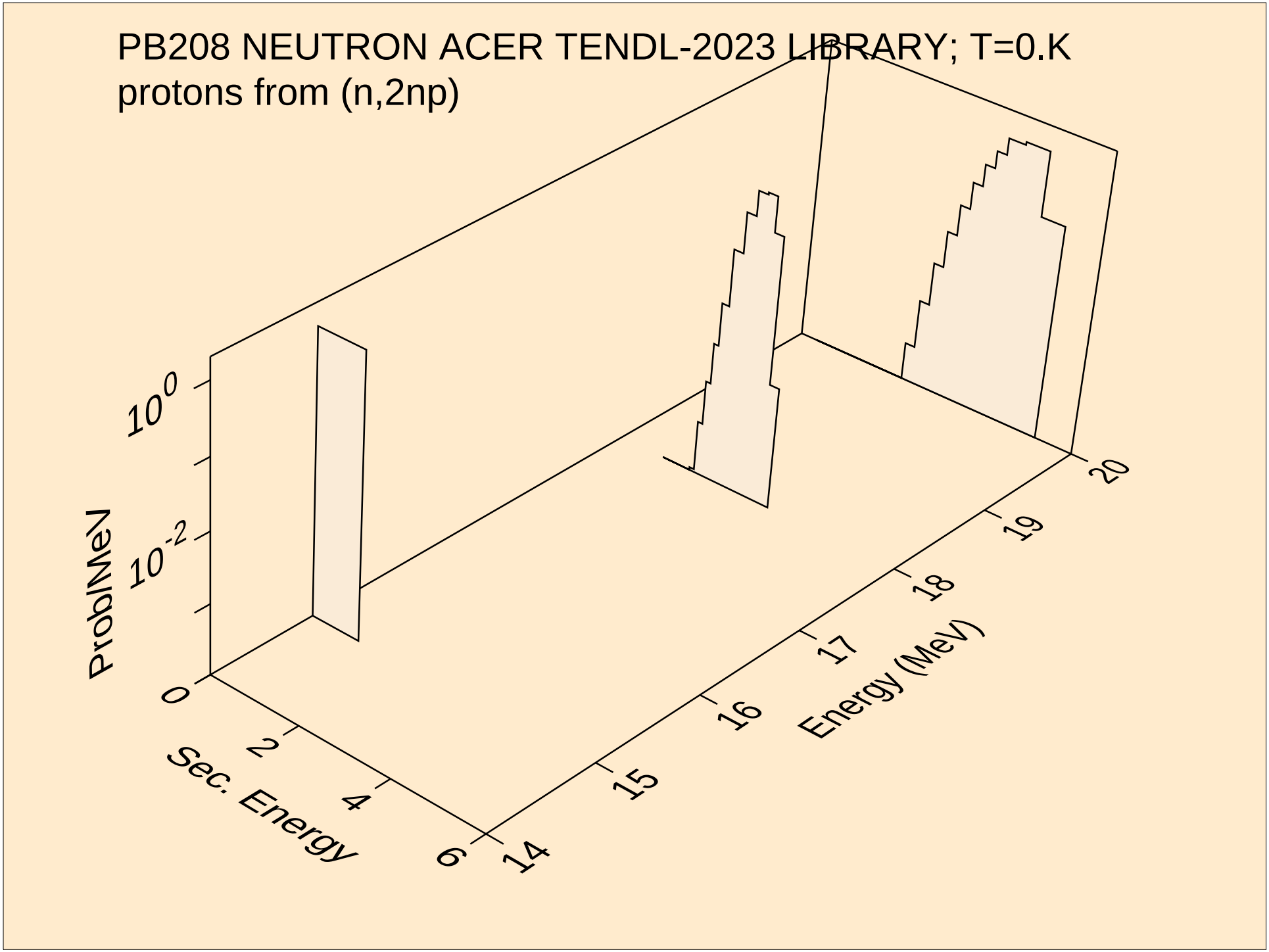

PB208 NEUTRON ACER TENDL-2023 LIBRARY; T=0.K
14 MeV photon spectrum
Gamma Prod (barns/MeV)
10^2
10^0
10^-2
10^-4
10^-6
10^-8
10^-10
10^-12
0
5
10
15
20
Gamma Energy (MeV)

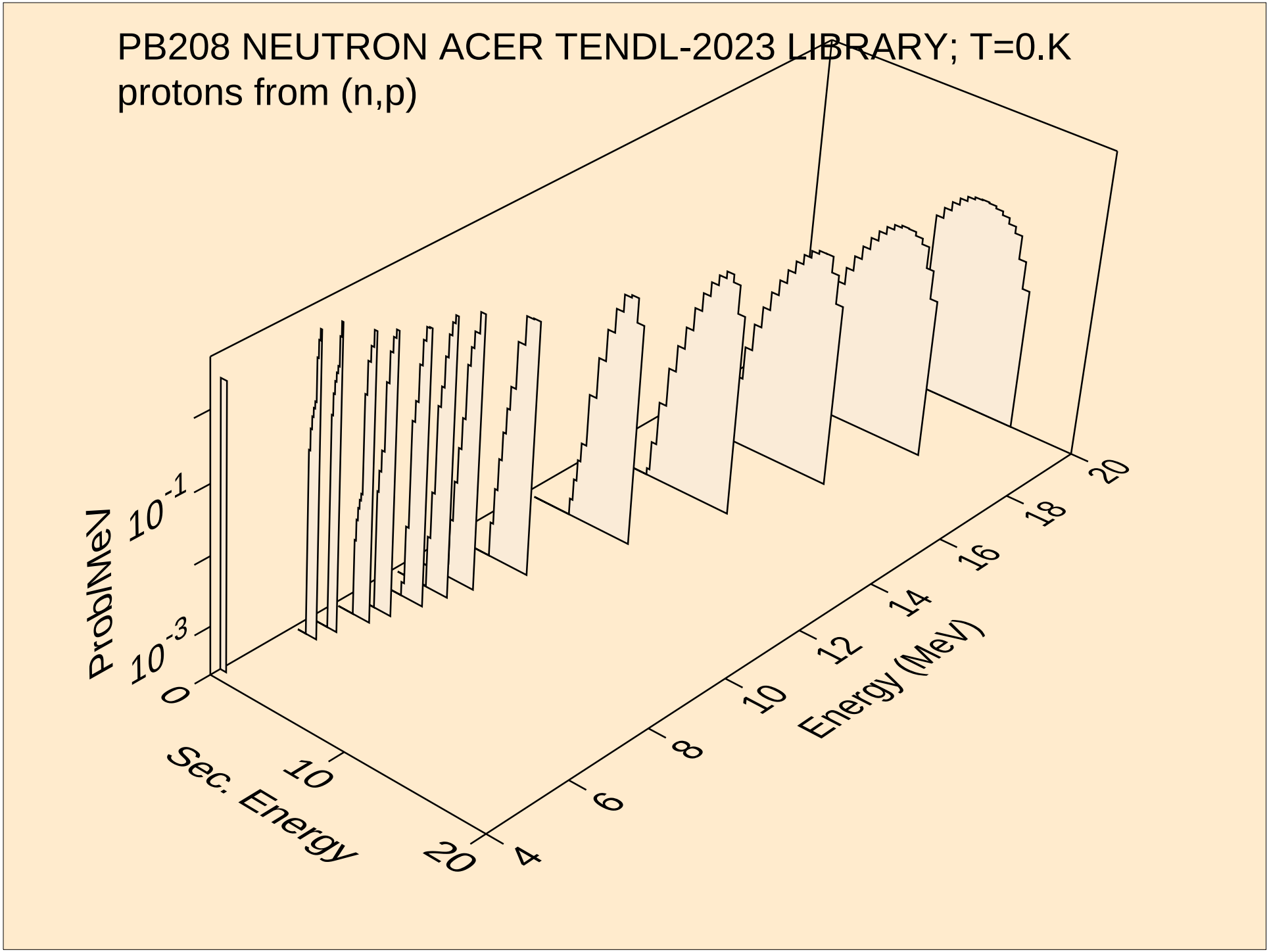

PB208 NEUTRON ACER TENDL-2023 LIBRARY; T=0.K
Particle heating contributions
*10-3
30
25
20
15
10
5
0
protons
deuterons
tritons
alphas
MeV/collision
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

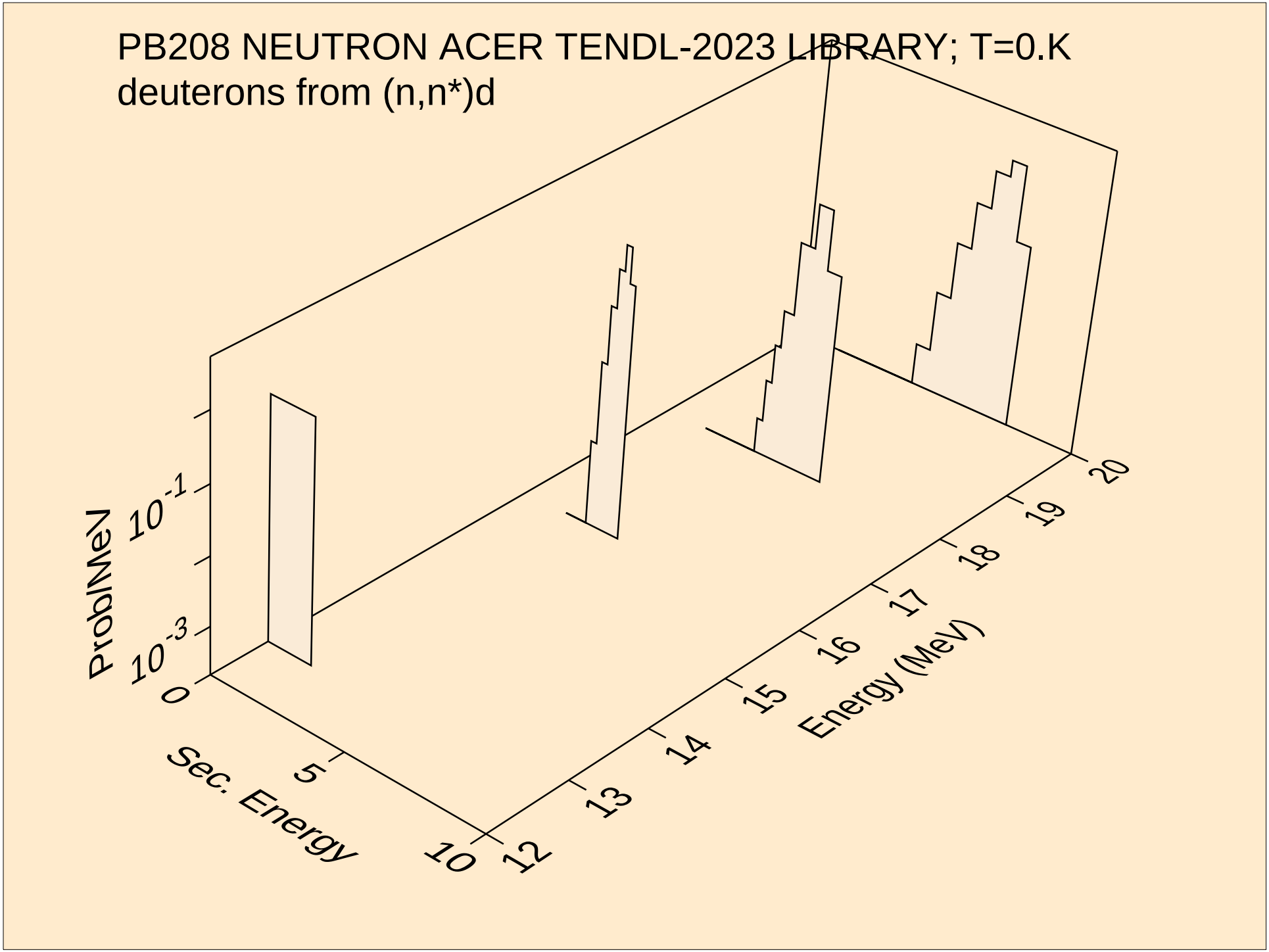

PB208 NEUTRON ACER TENDL-2023 LIBRARY; T=0.K
Recoil Heating
100
*10-3
80
60
40
20
0
recoil heating
Heating (MeV/reaction)
0
5
10
15
20
Energy (MeV)

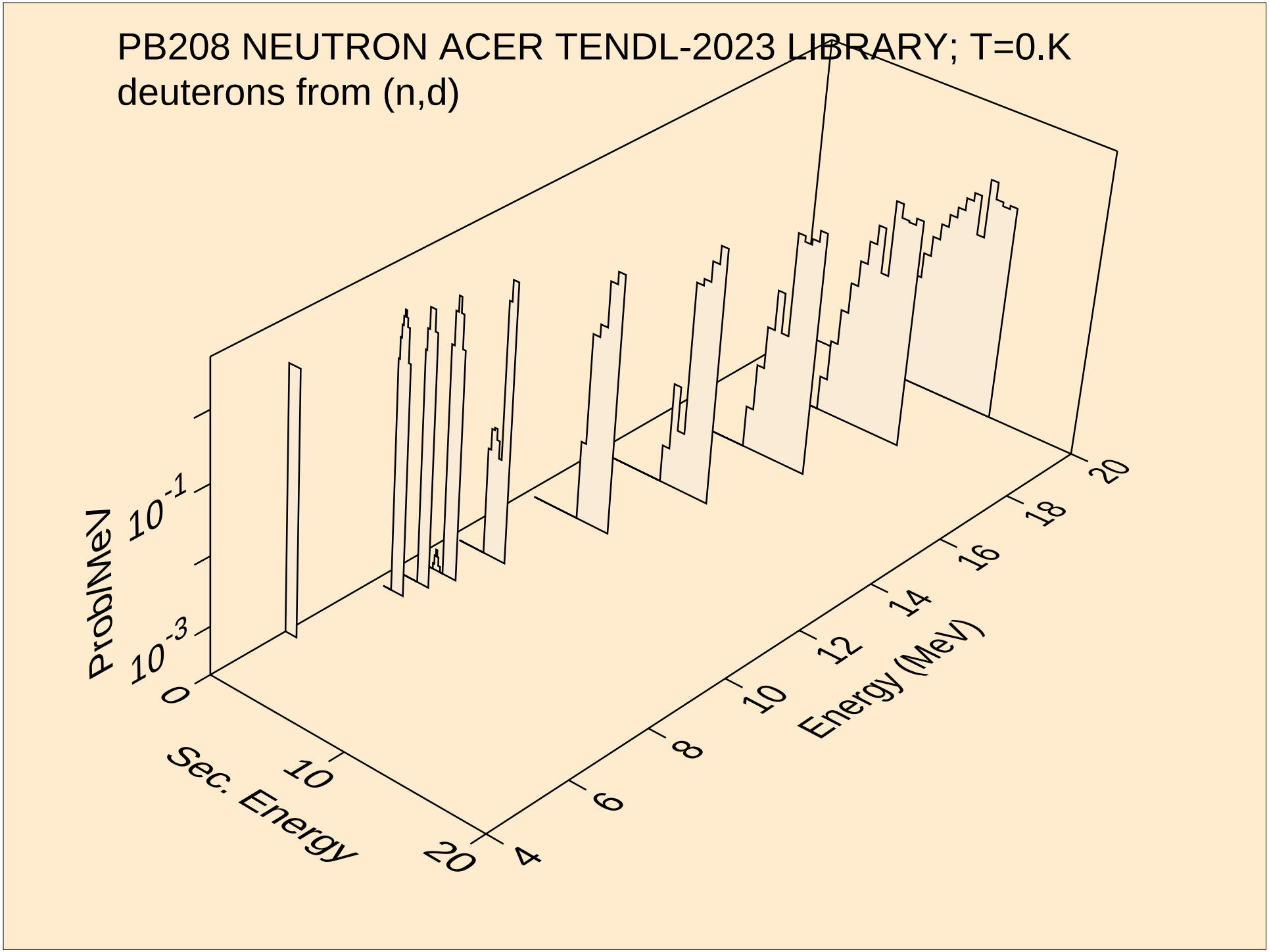

PB208 NEUTRON ACER TENDL-2023 LIBRARY; T=0.K
Particle production cross sections
*10-3
16
14
12
10
8
6
4
2
0
protons
deuterons
tritons
alphas
Cross section (barns)
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

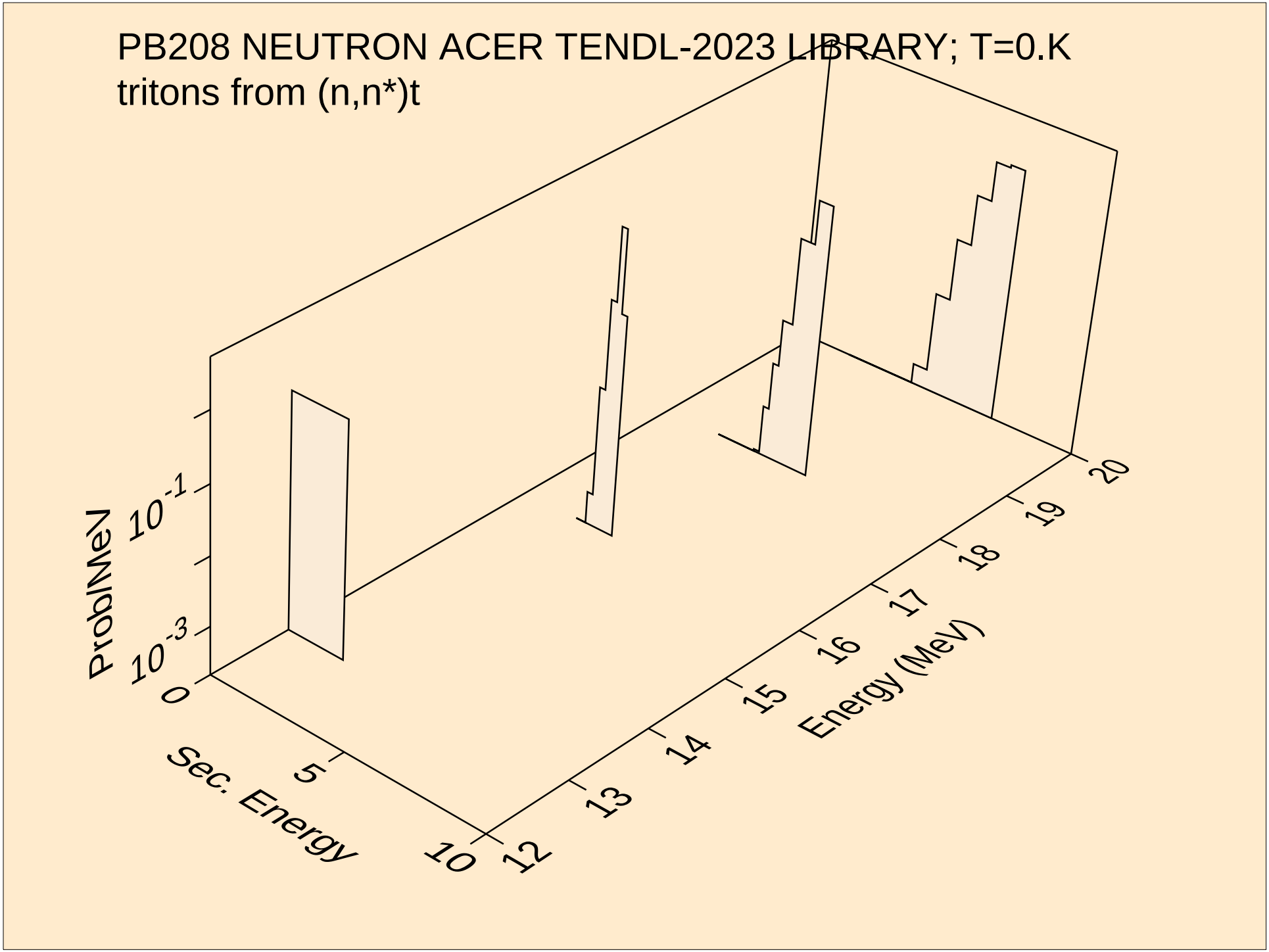

PB208 NEUTRON ACER TENDL-2023 LIBRARY; T=0.K
protons from (n,n*)p
Prob/MeV
10^{1}
10^{-1}
10^{-3}
0
10
20
Sec. Energy
8
10
12
14
16
18
20
Energy (MeV)

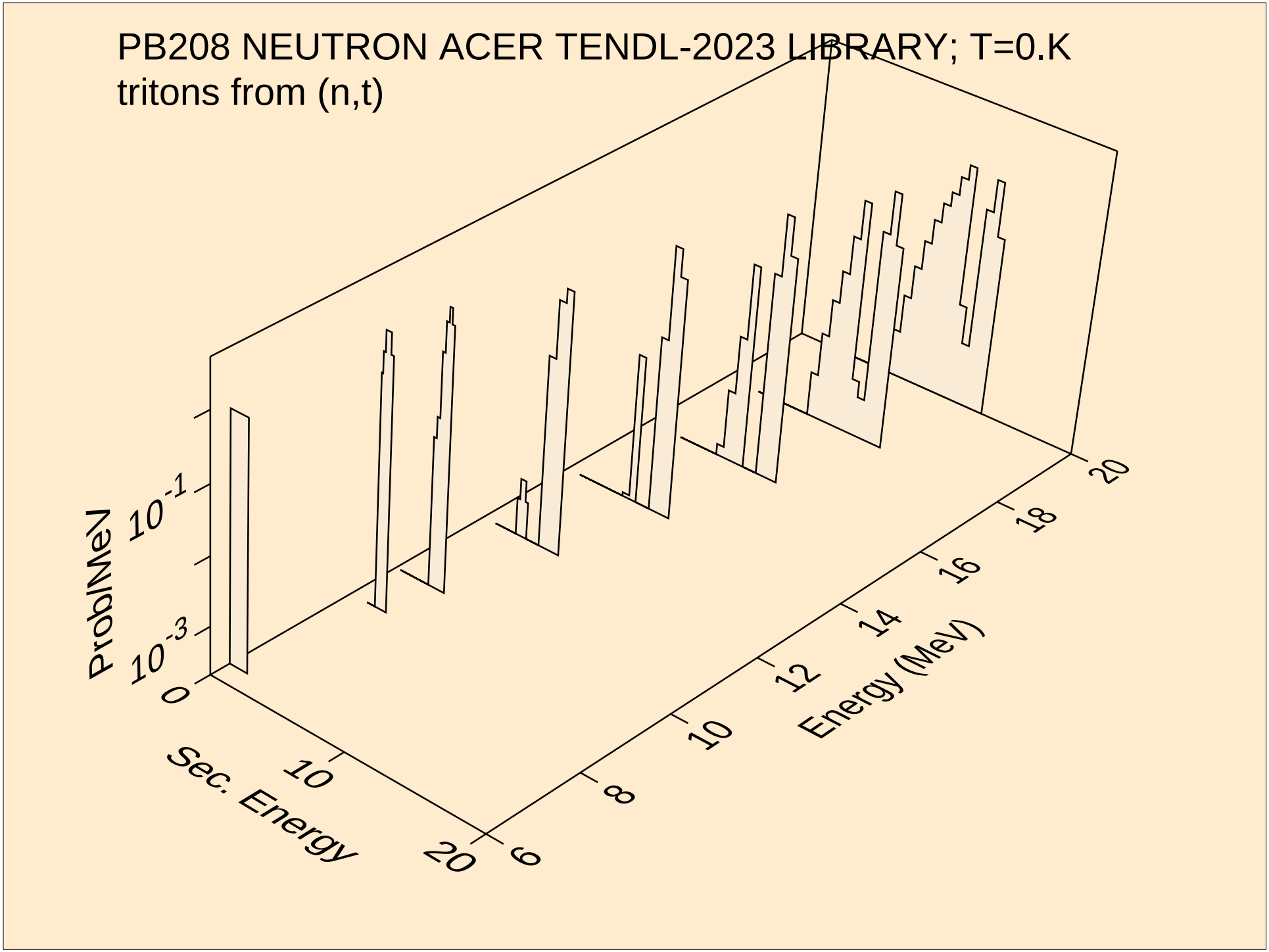

PB208 NEUTRON ACER TENDL-2023 LIBRARY; T=0.K
protons from (n,2np)
Prob/MeV
10^0
10^-2
0
2
4
6
Sec. Energy
14
15
16
17
18
19
20
Energy (MeV)

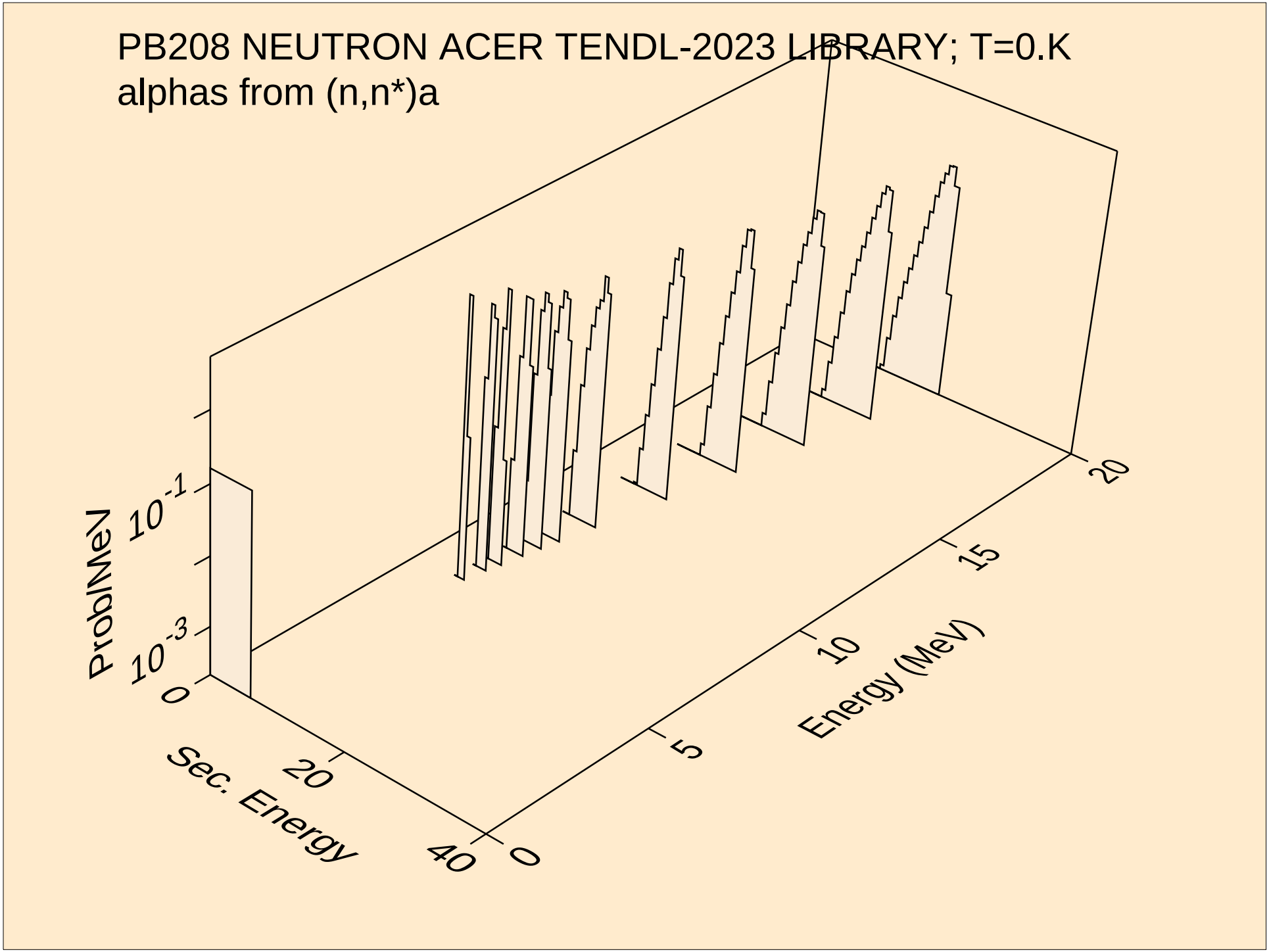

PB208 NEUTRON ACER TENDL-2023 LIBRARY; T=0.K
protons from (n,p)
Prob/MeV
10-1
10-3
0
Sec. Energy
10
20
4
6
8
10
12
14
16
18
20
Energy (MeV)

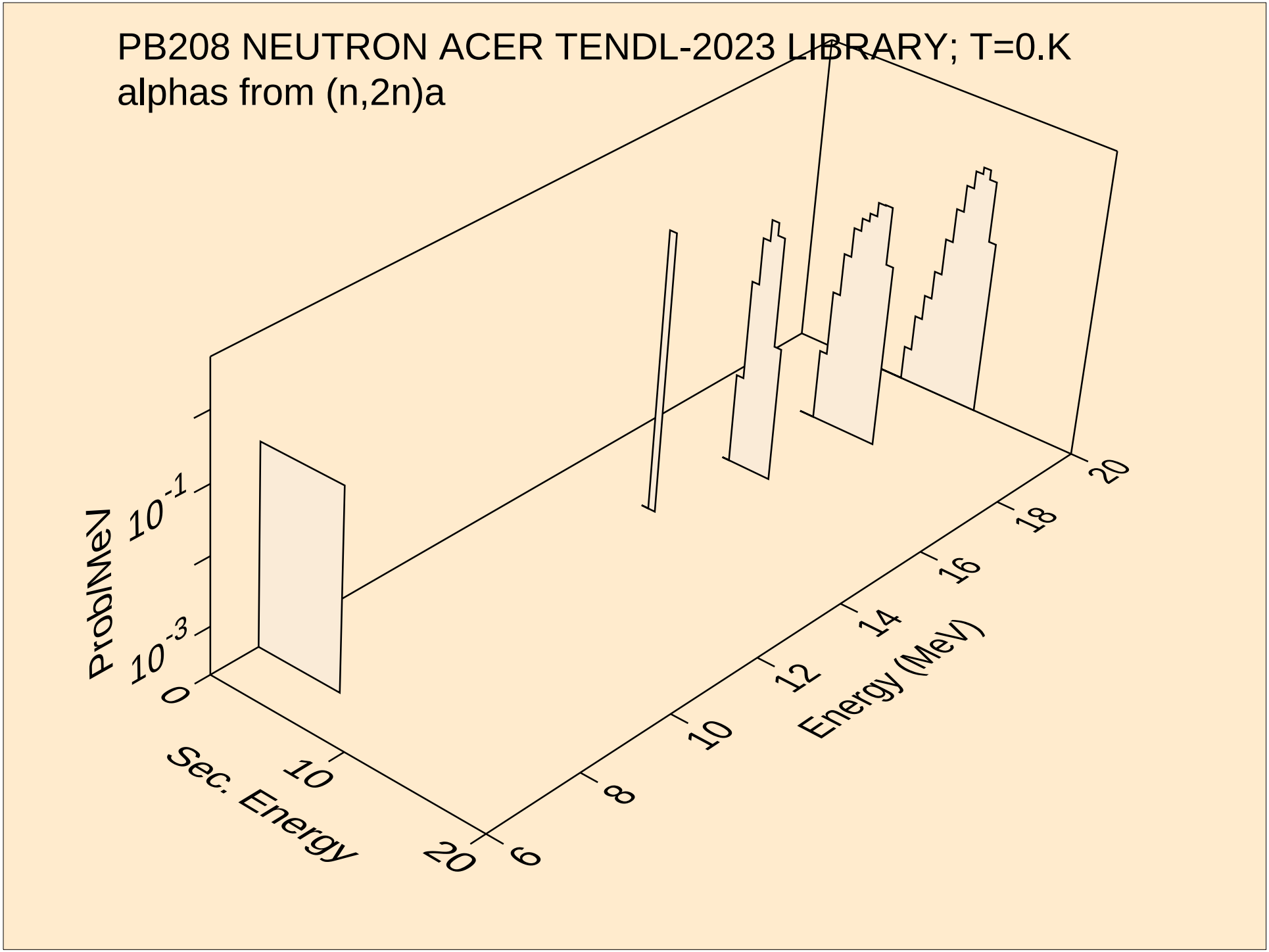

PB208 NEUTRON ACER TENDL-2023 LIBRARY; T=0.K
deuterons from (n,n*)d
Prob/MeV
10-1
10-3
0
Sec. Energy
5
10
12
13
14
15
16
17
18
19
20
Energy (MeV)

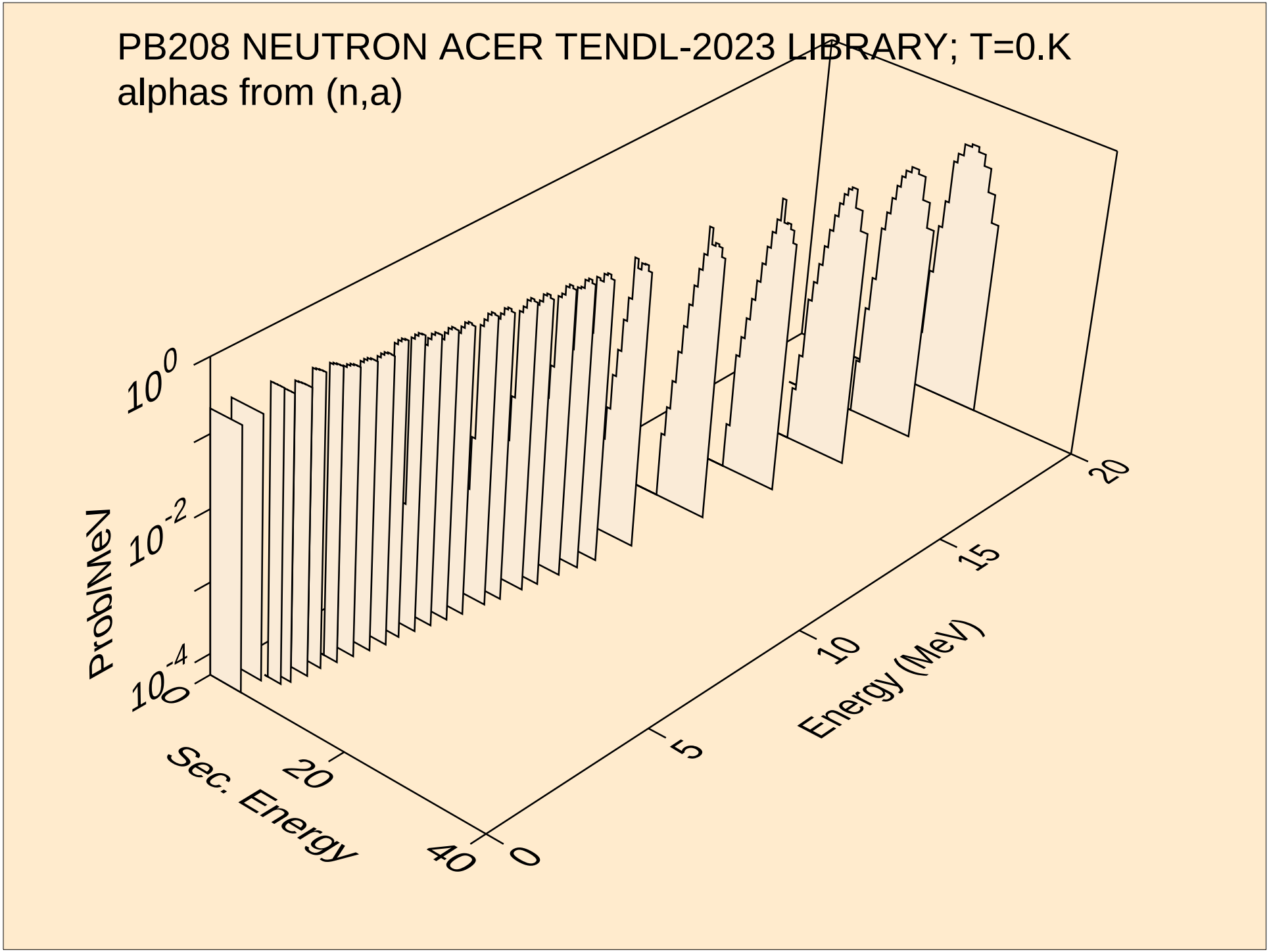

PB208 NEUTRON ACER TENDL-2023 LIBRARY; T=0.K
deuterons from (n,d)
Prob/MeV
10-1
10-3
0
Sec. Energy
10
20
4
6
8
10
12
14
16
18
20
Energy (MeV)


PB208 NEUTRON ACER TENDL-2023 LIBRARY; T=0.K
tritons from (n,n*)t
Prob/MeV
10-1
10-3
0
Sec. Energy
5
10
12
13
14
15
16
17
18
19
20
Energy (MeV)


PB208 NEUTRON ACER TENDL-2023 LIBRARY; T=0.K
tritons from (n,t)
Prob/MeV
10^-1
10^-3
0
Sec. Energy
10
20
6
8
10
12
14
16
18
20
Energy (MeV)


PB208 NEUTRON ACER TENDL-2023 LIBRARY; T=0.K
alphas from (n,n*)a
Prob/MeV
10-1
10-3
0
Sec. Energy
20
40
0
5
10
15
20
Energy (MeV)


PB208 NEUTRON ACER TENDL-2023 LIBRARY; T=0.K
alphas from (n,2n)a
Prob/MeV
10-1
10-3
0
Sec. Energy
10
20
6
8
10
12
14
16
18
20
Energy (MeV)


PB208 NEUTRON ACER TENDL-2023 LIBRARY; T=0.K
alphas from (n,a)
Prob/MeV
10^{0}
10^{-2}
10^{-4}
Sec. Energy
0
20
40
Energy (MeV)
0
5
10
15
20