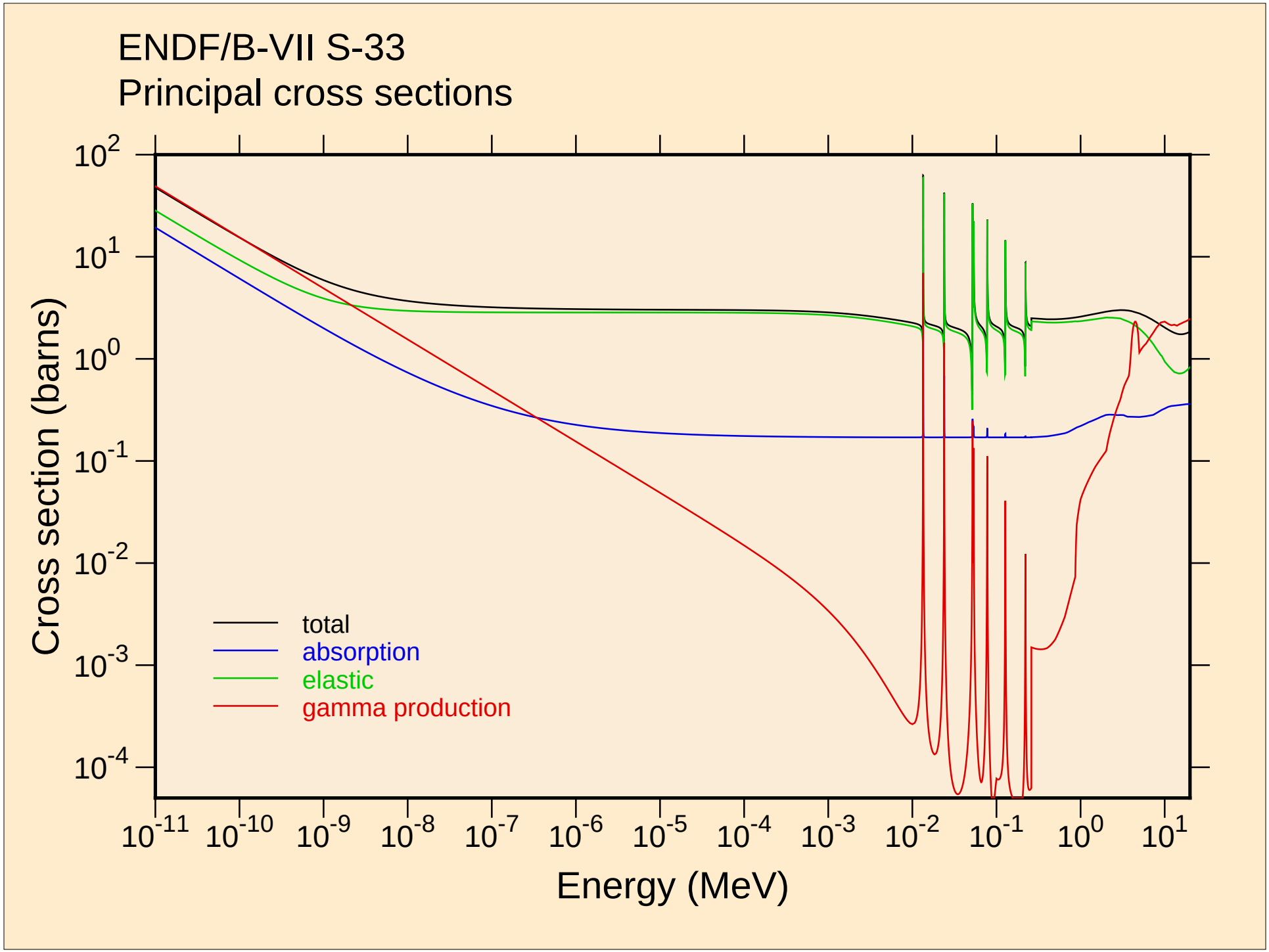
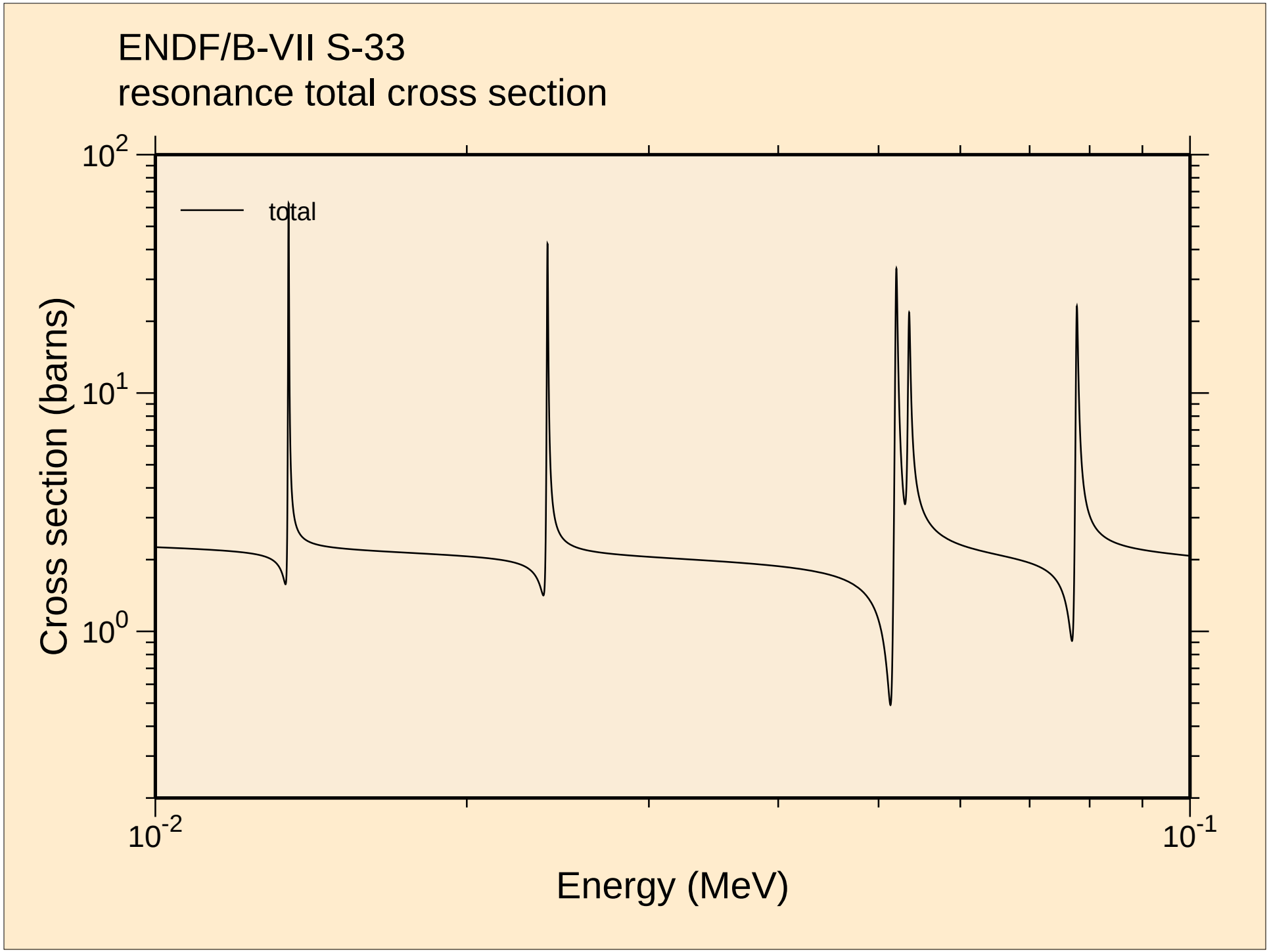
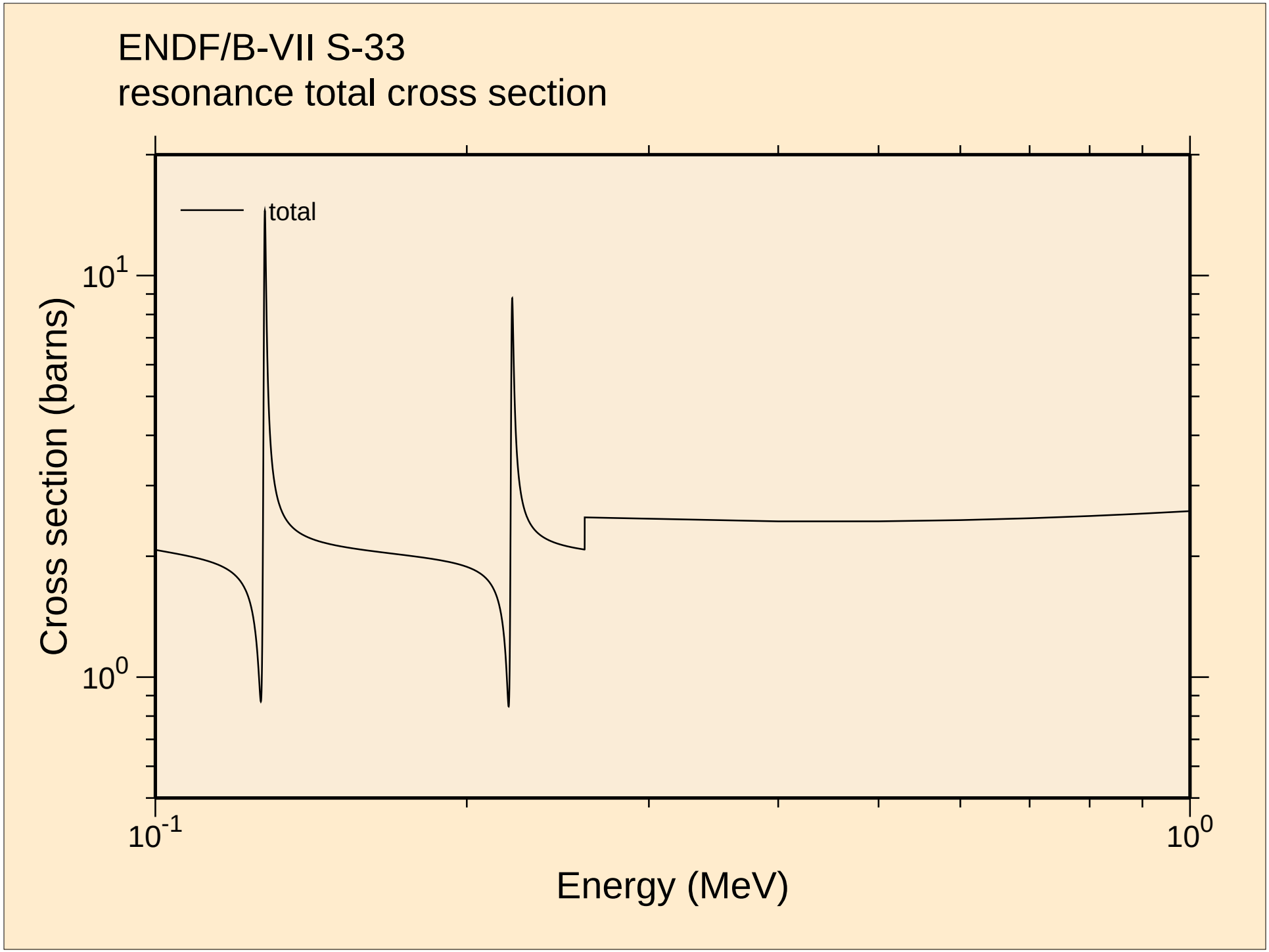
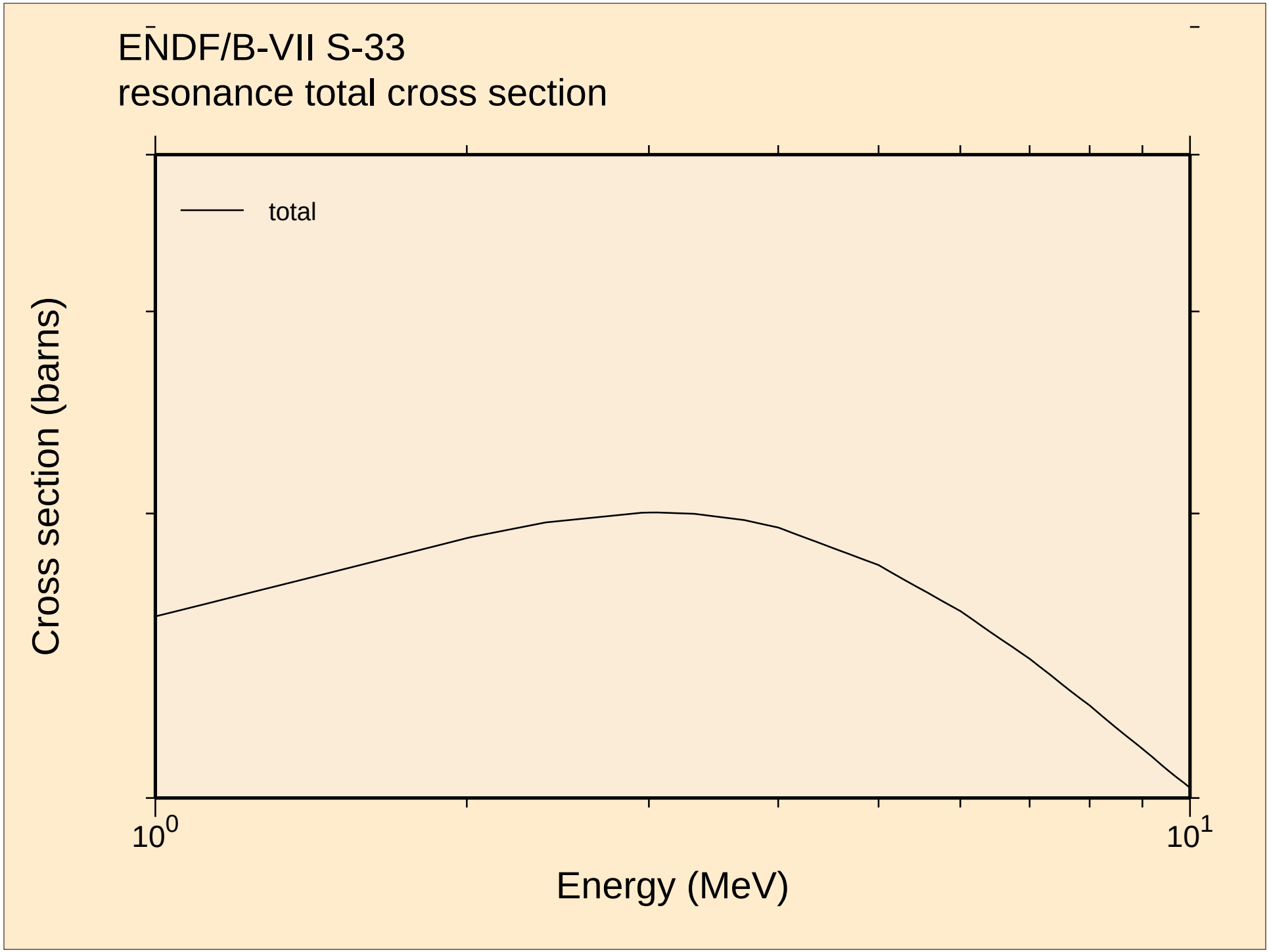
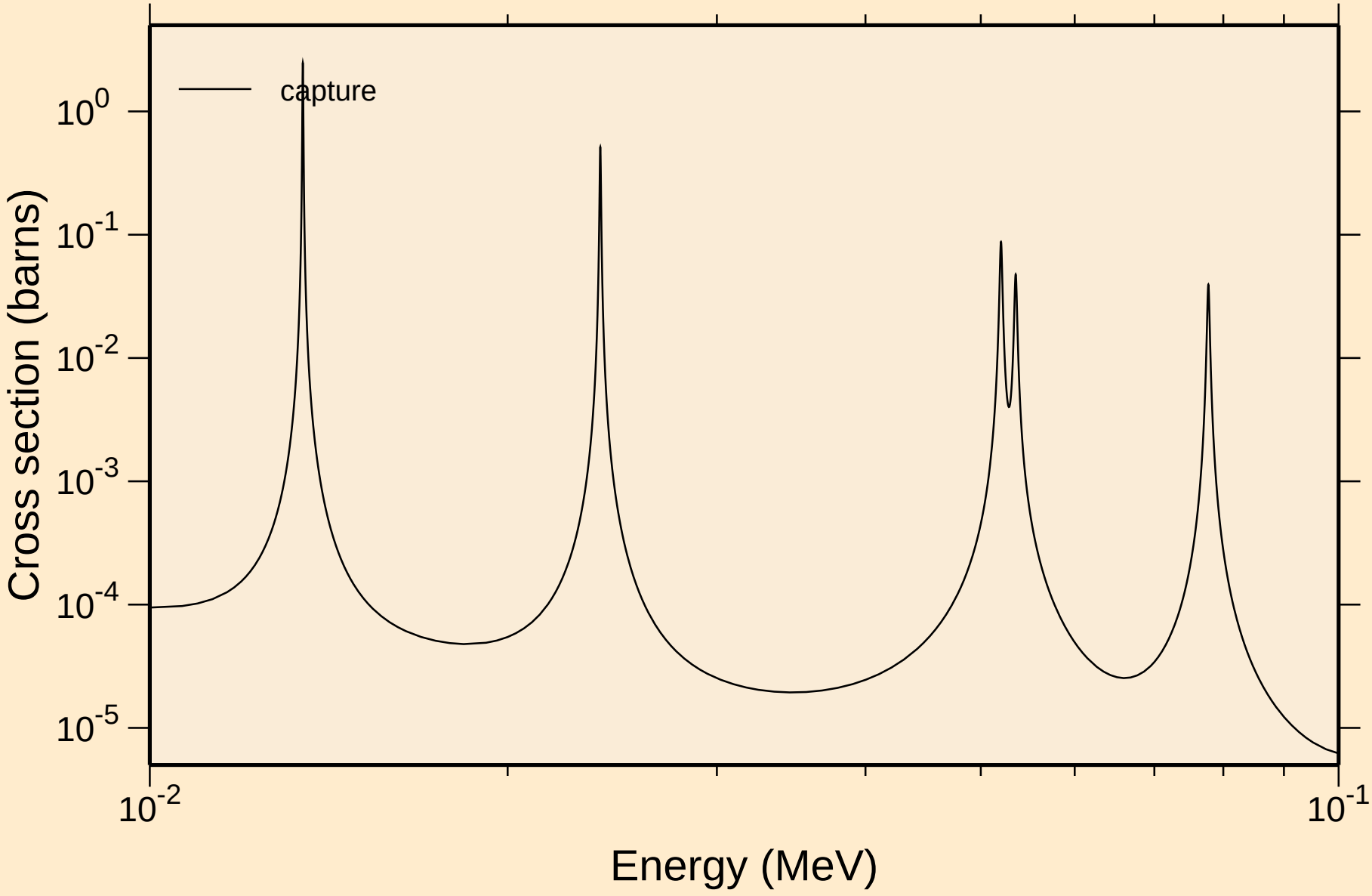

ENDF/B-VII S-33
Principal cross sections
Cross section (barns)
10^{2}
10^{1}
10^{0}
10^{-1}
10^{-2}
10^{-3}
10^{-4}
total
absorption
elastic
gamma production
10^{-11} 10^{-10} 10^{-9} 10^{-8} 10^{-7} 10^{-6} 10^{-5} 10^{-4} 10^{-3} 10^{-2} 10^{-1} 10^{0} 10^{1}
Energy (MeV)

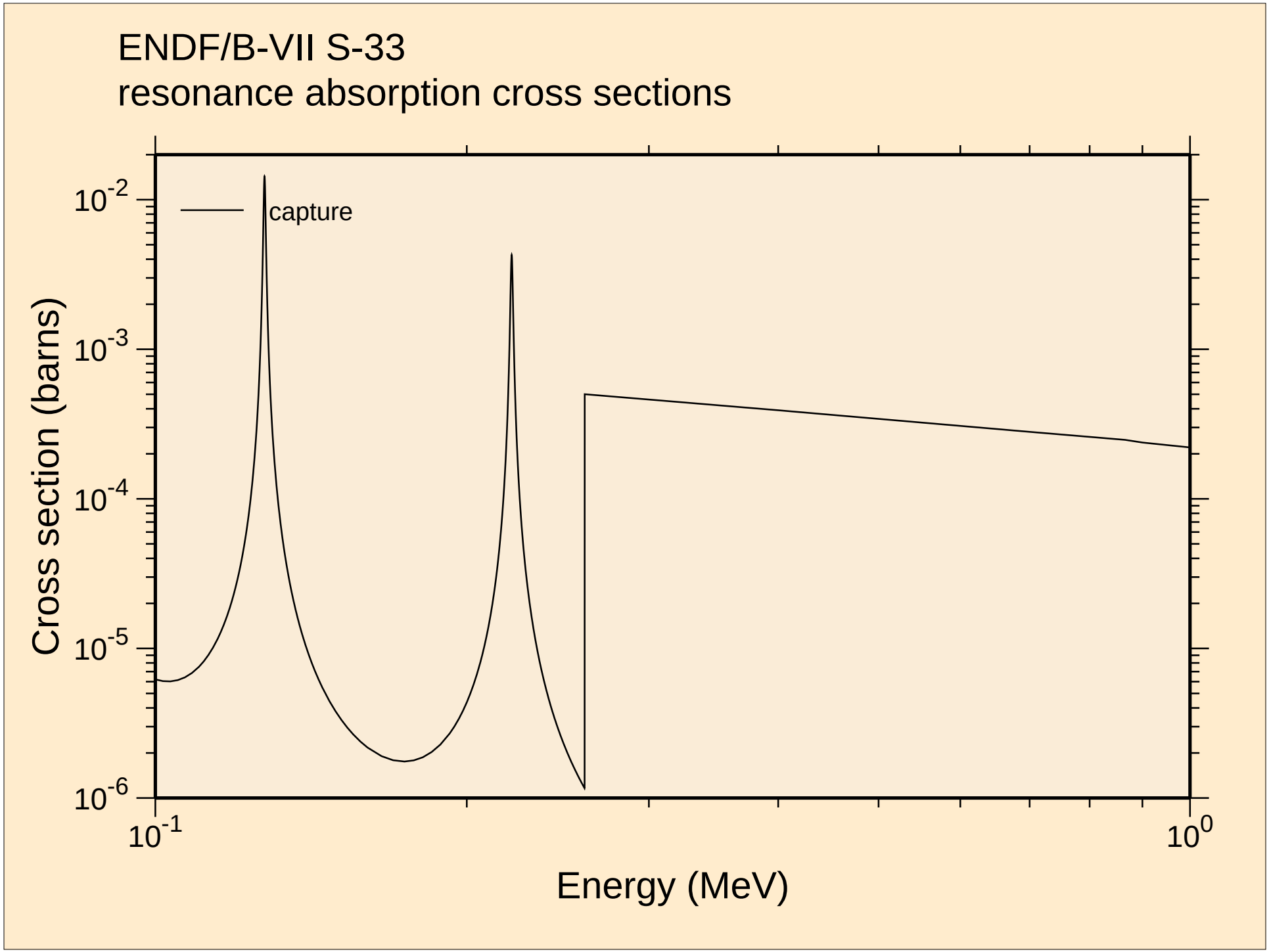

ENDF/B-VII S-33
resonance total cross section
total
Cross section (barns)
10^2
10^1
10^0
10^{-2}
10^{-1}
Energy (MeV)


ENDF/B-VII S-33
resonance total cross section
total
Cross section (barns)
10^1
10^0
10^-1
10^0
Energy (MeV)

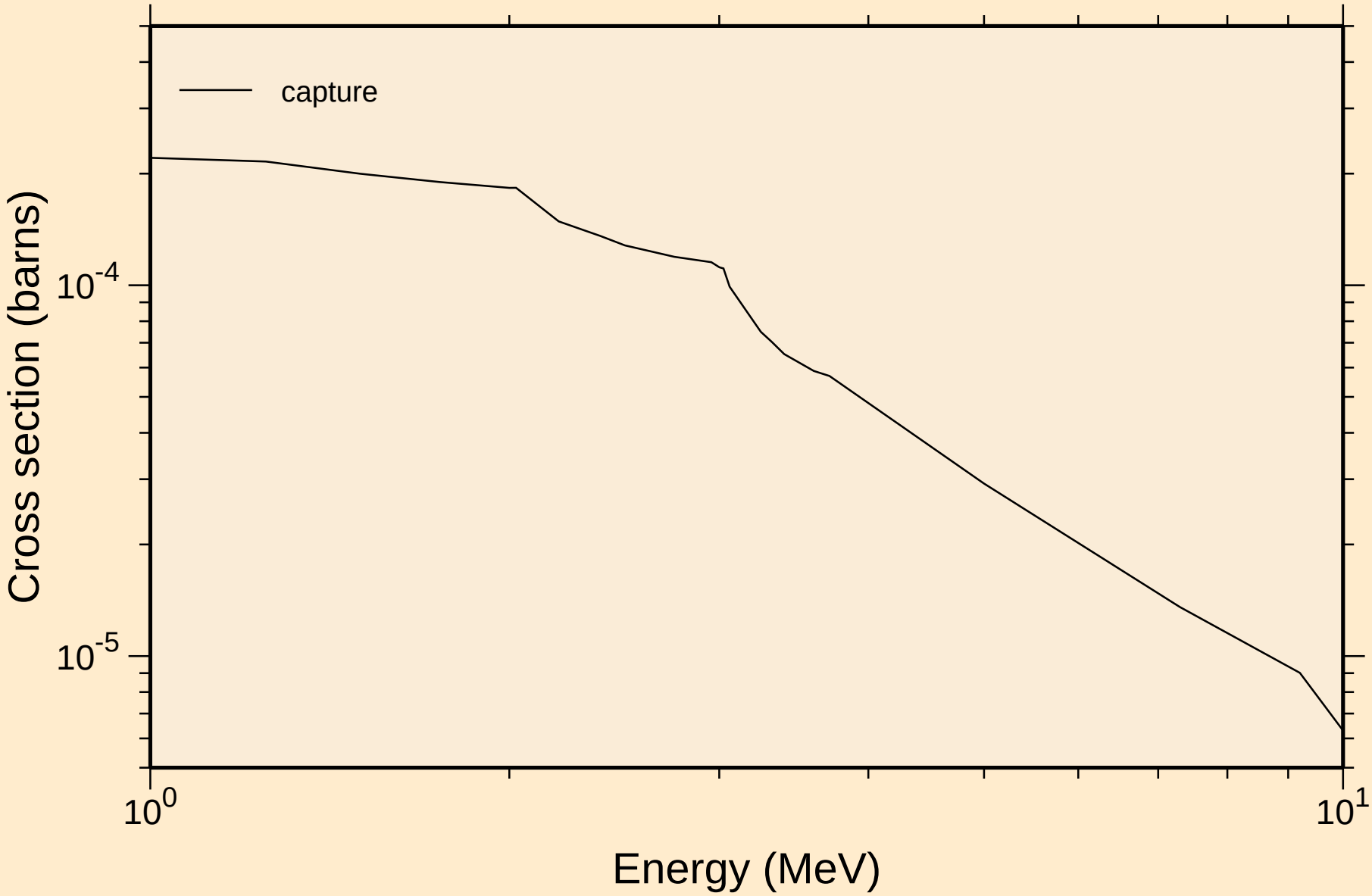

ENDF/B-VII S-33
resonance total cross section
total
Cross section (barns)
10^0
10^1
Energy (MeV)

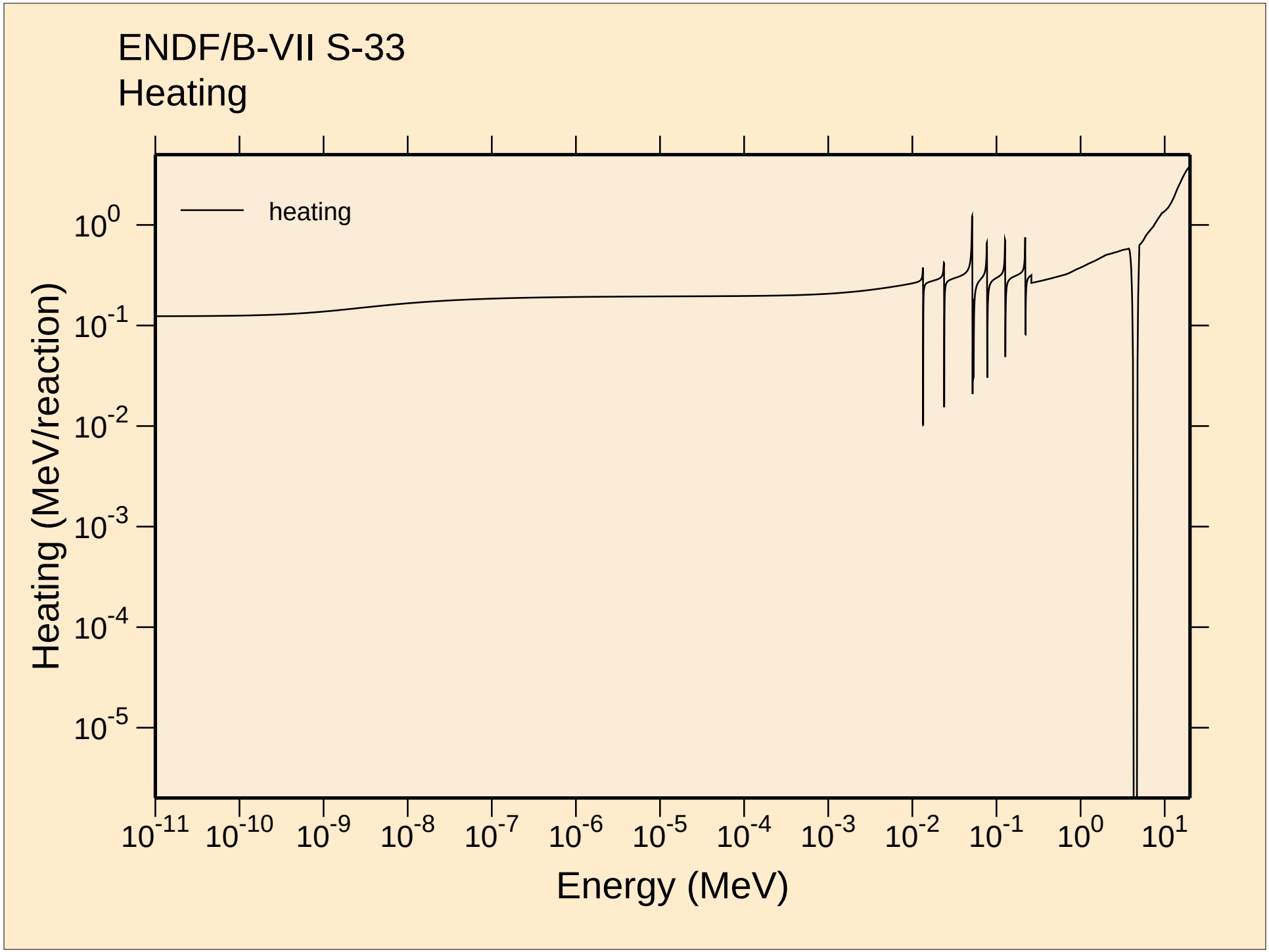
ENDF/B-VII S-33
resonance absorption cross sections

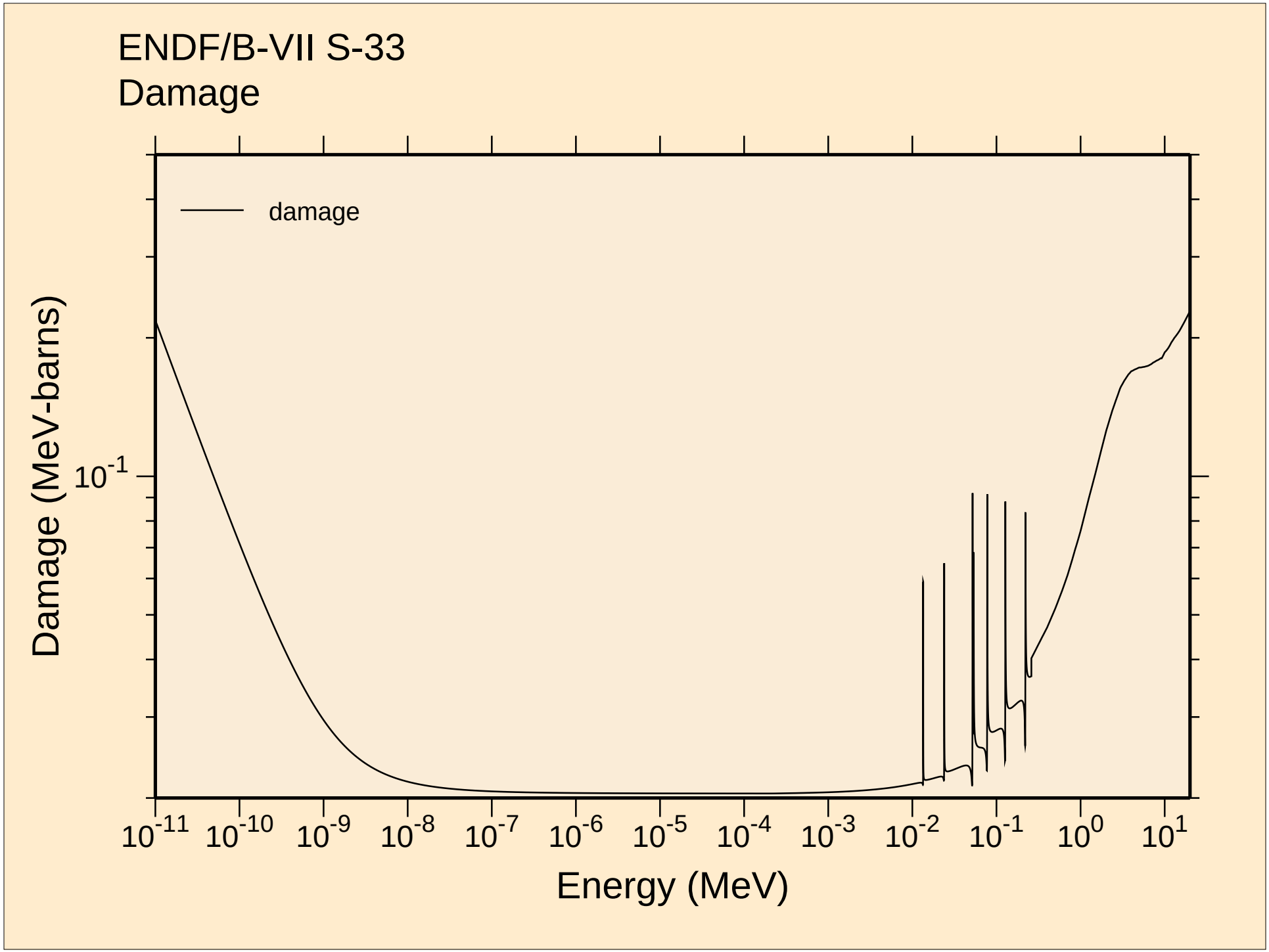


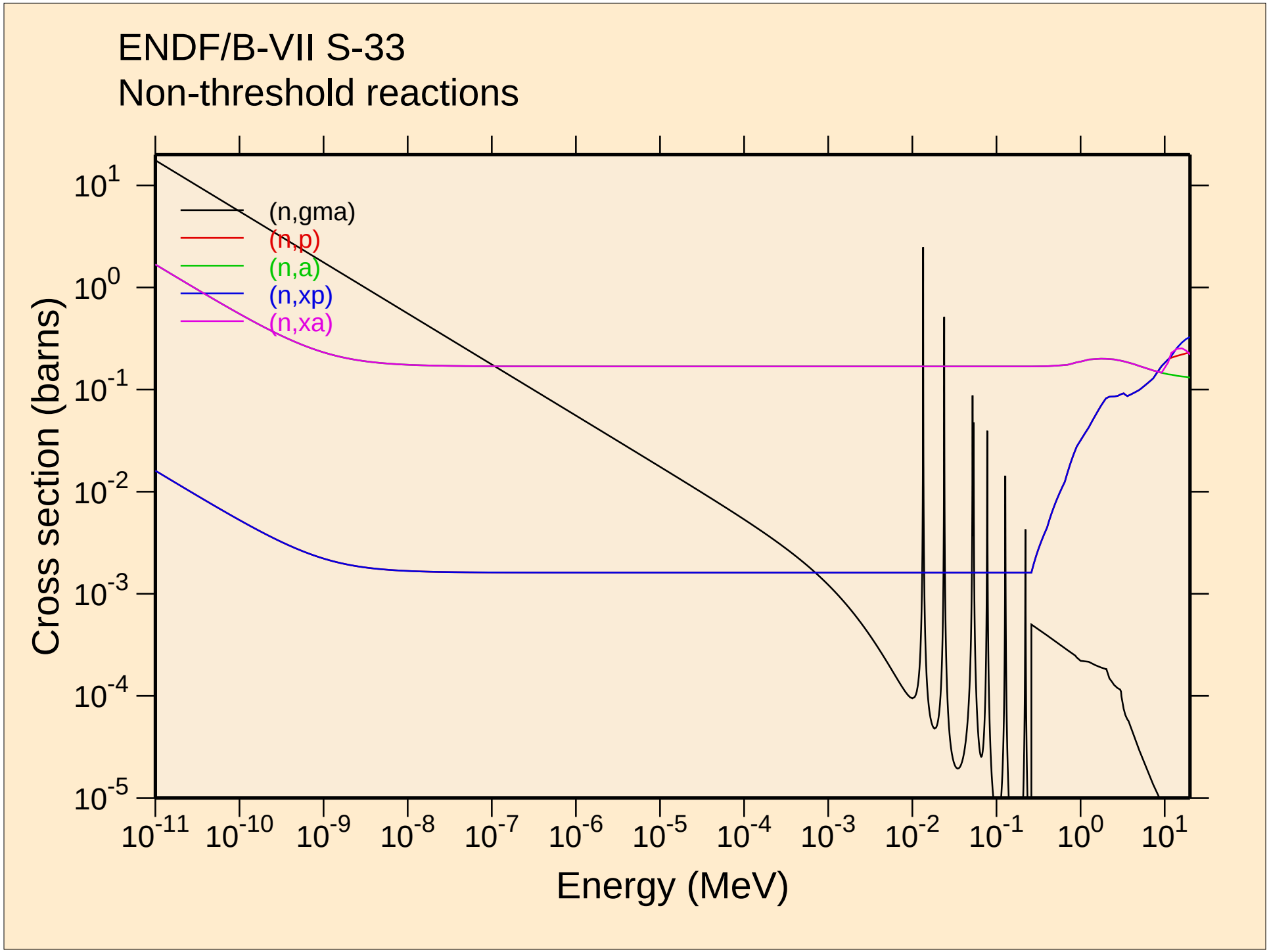

ENDF/B-VII S-33
resonance absorption cross sections
capture
Cross section (barns)
10-2
10-3
10-4
10-5
10-6
10-1
100
Energy (MeV)

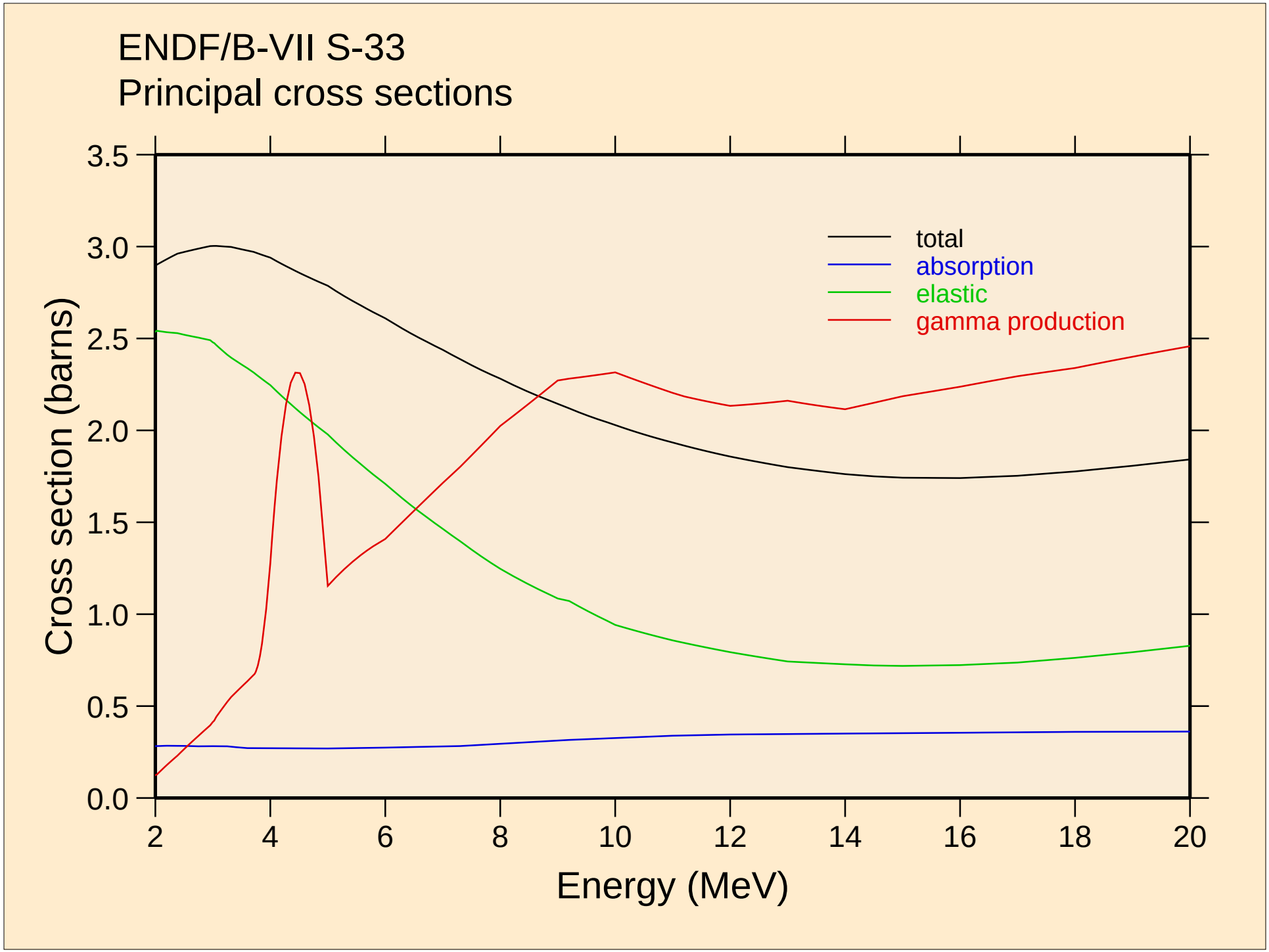
ENDF/B-VII S-33
resonance absorption cross sections

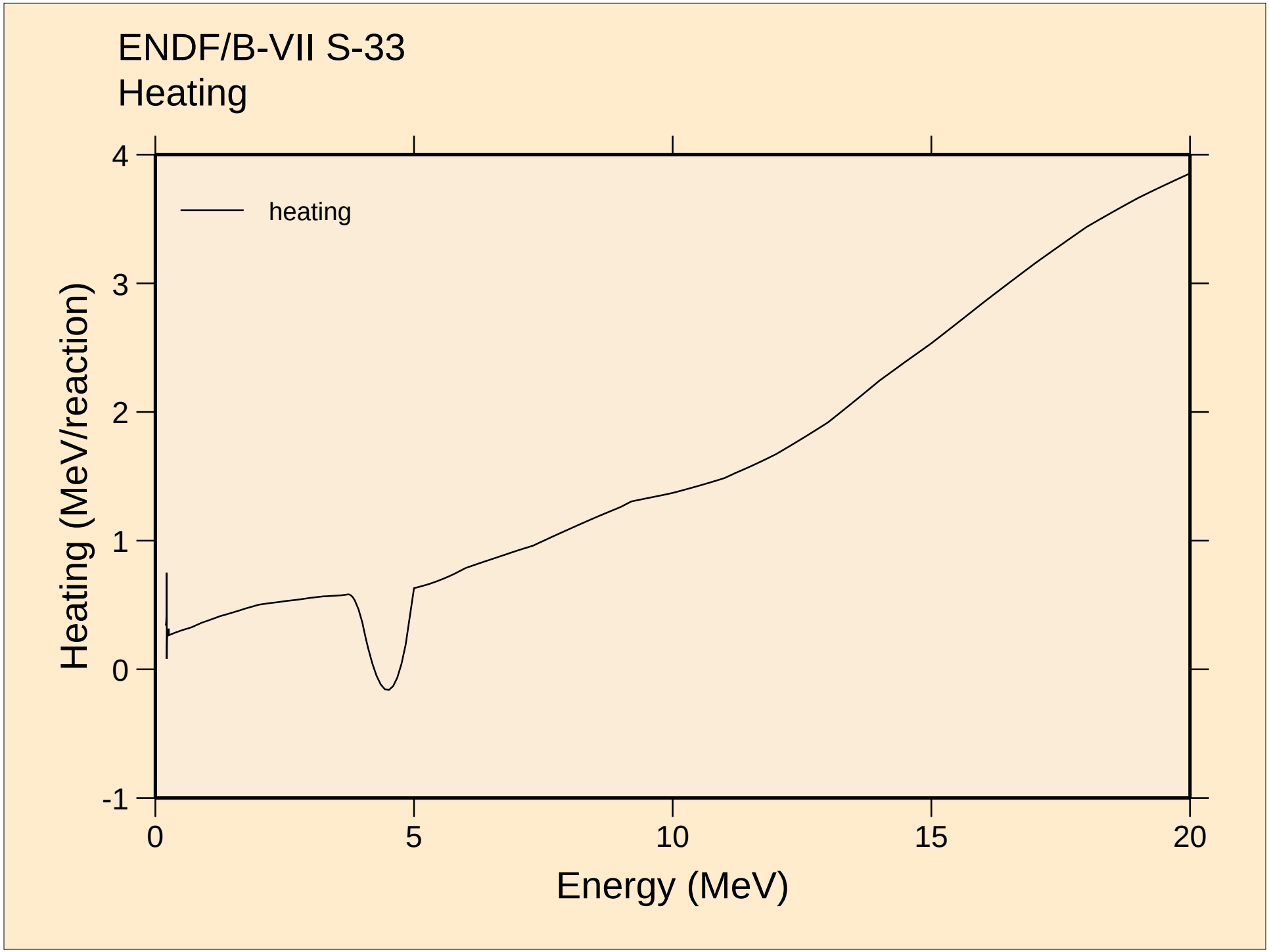


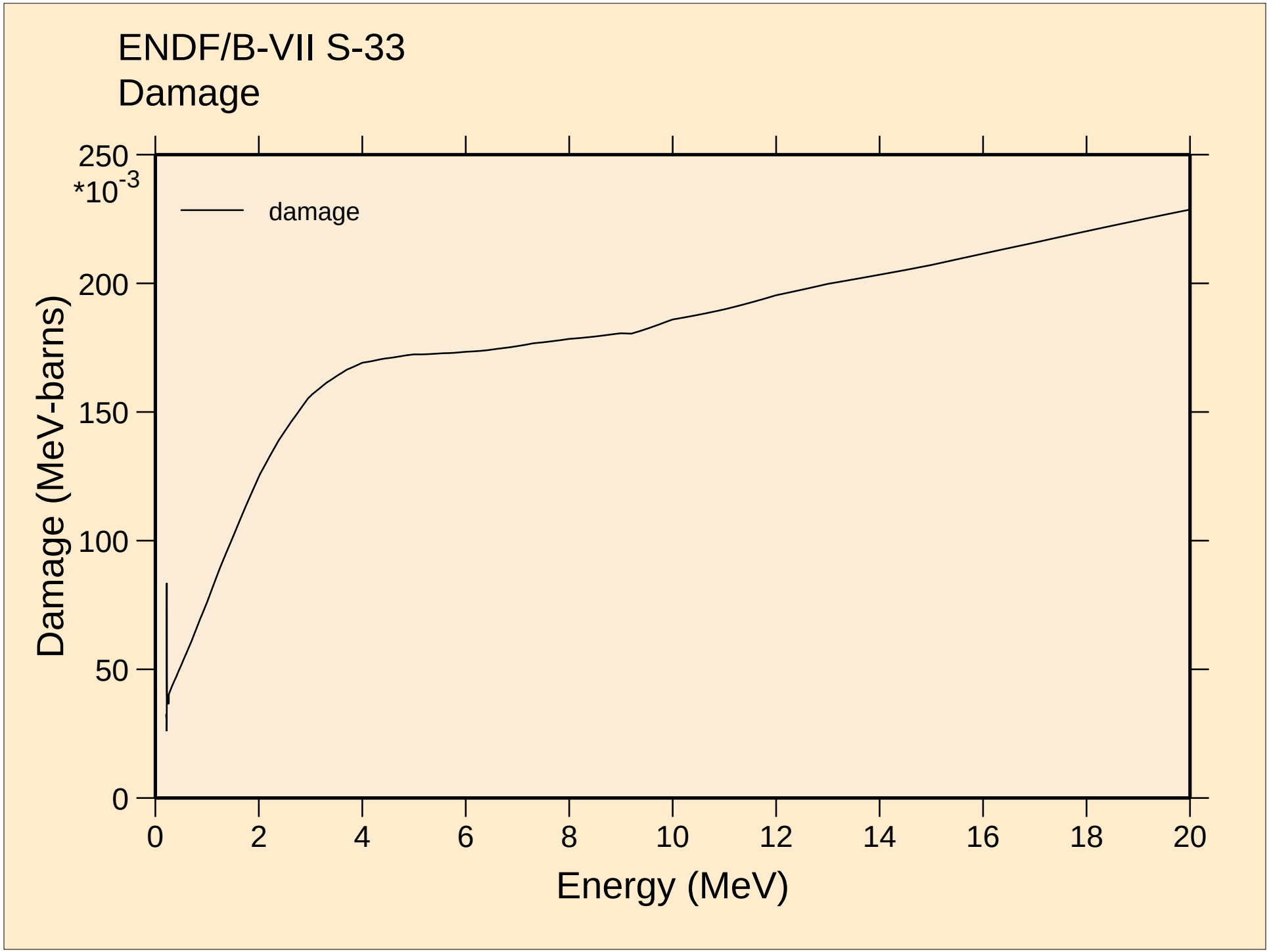

ENDF/B-VII S-33
Heating
heating
Heating (MeV/reaction)
10^{0}
10^{-1}
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-11} 10^{-10} 10^{-9} 10^{-8} 10^{-7} 10^{-6} 10^{-5} 10^{-4} 10^{-3} 10^{-2} 10^{-1} 10^{0} 10^{1}
Energy (MeV)

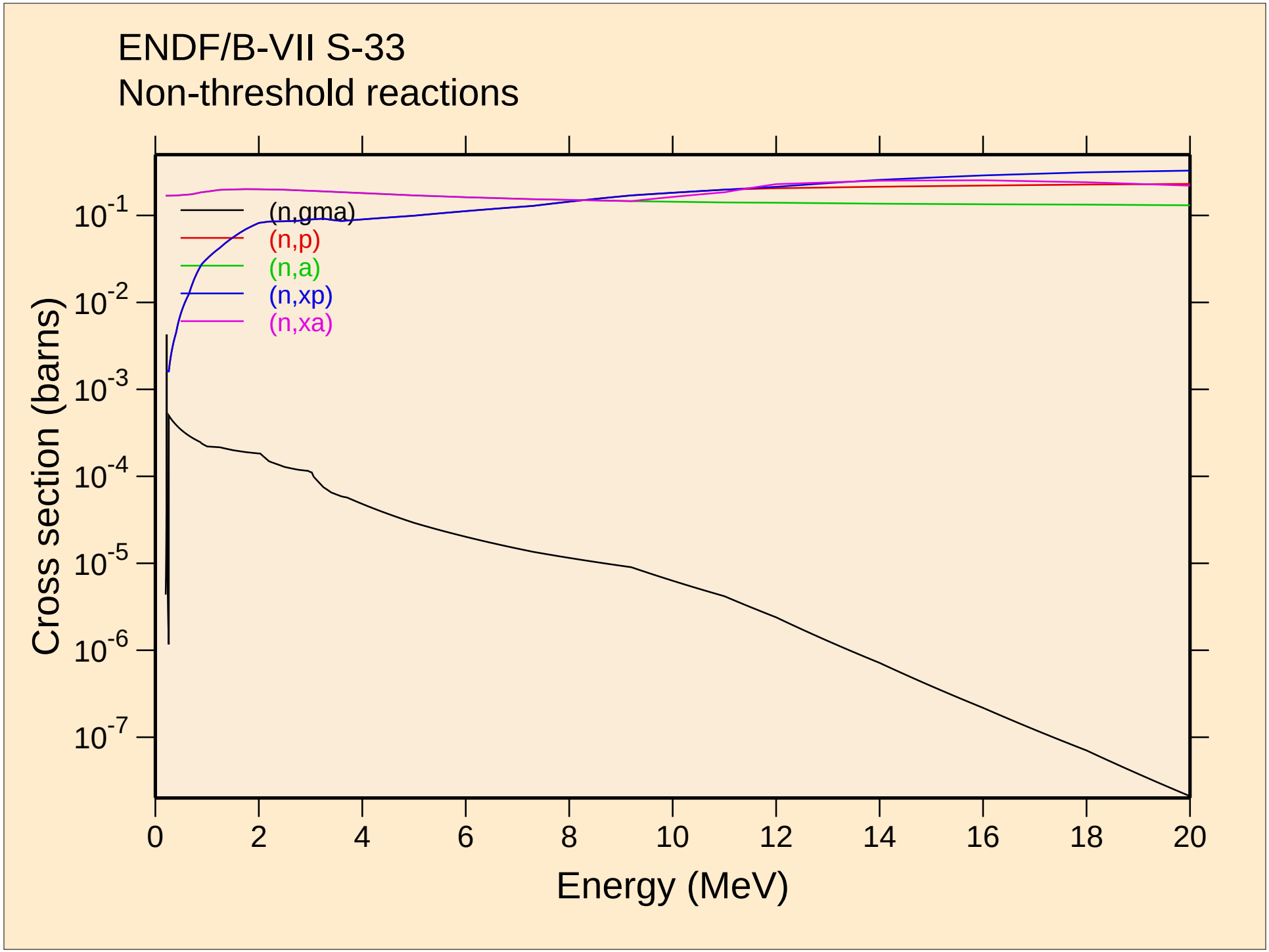

ENDF/B-VII S-33
Damage
damage
Damage (MeV-barns)
10-1
10-11 10-10 10-9 10-8 10-7 10-6 10-5 10-4 10-3 10-2 10-1 100 101
Energy (MeV)

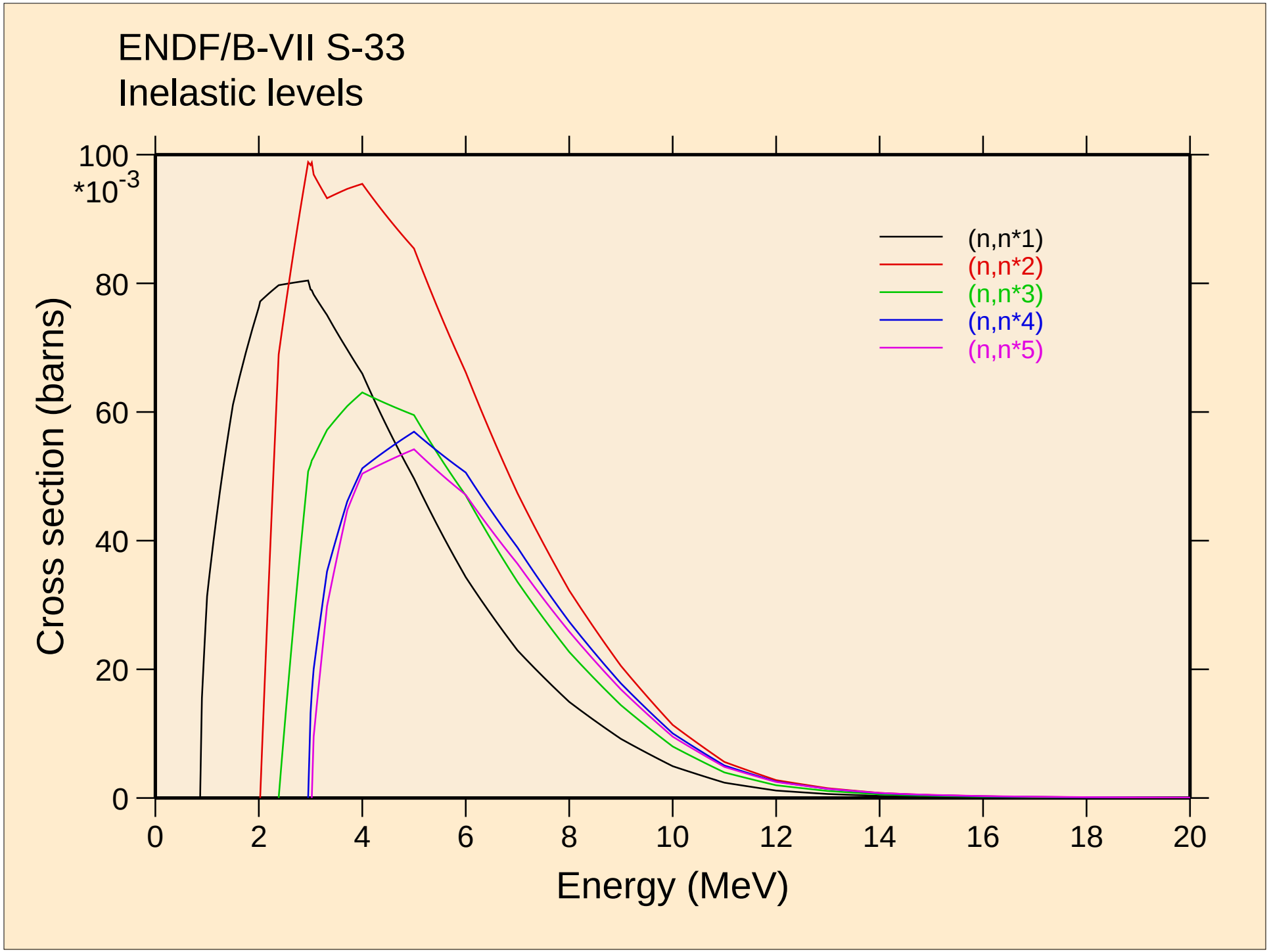

ENDF/B-VII S-33
Non-threshold reactions
(n,gma)
(n,p)
(n,a)
(n,xp)
(n,xa)
Cross section (barns)
Energy (MeV)
10^1
10^0
10^-1
10^-2
10^-3
10^-4
10^-5
10^-11
10^-10
10^-9
10^-8
10^-7
10^-6
10^-5
10^-4
10^-3
10^-2
10^-1
10^0
10^1

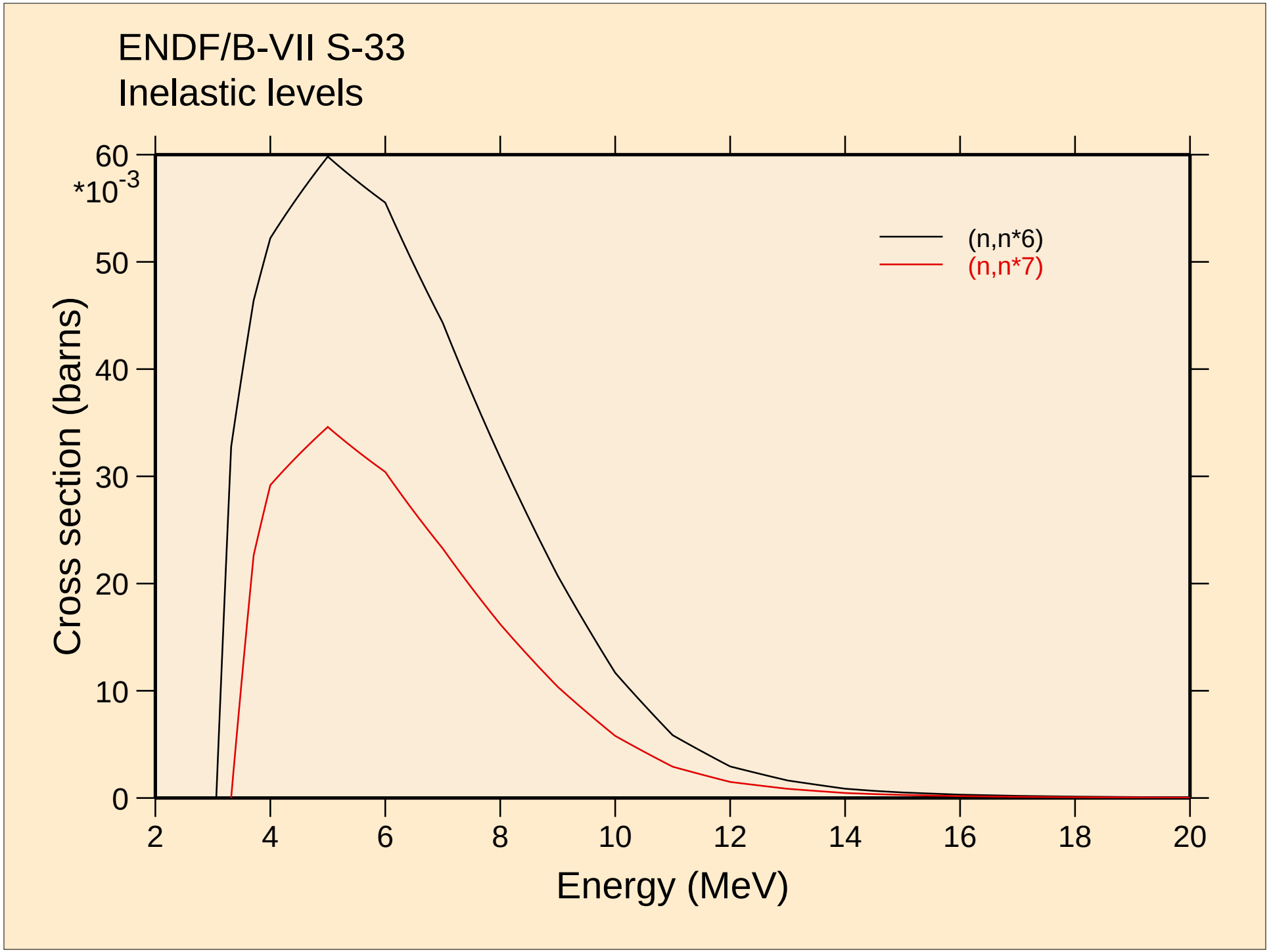

ENDF/B-VII S-33
Principal cross sections
Cross section (barns)
Energy (MeV)
total
absorption
elastic
gamma production
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
2
4
6
8
10
12
14
16
18
20

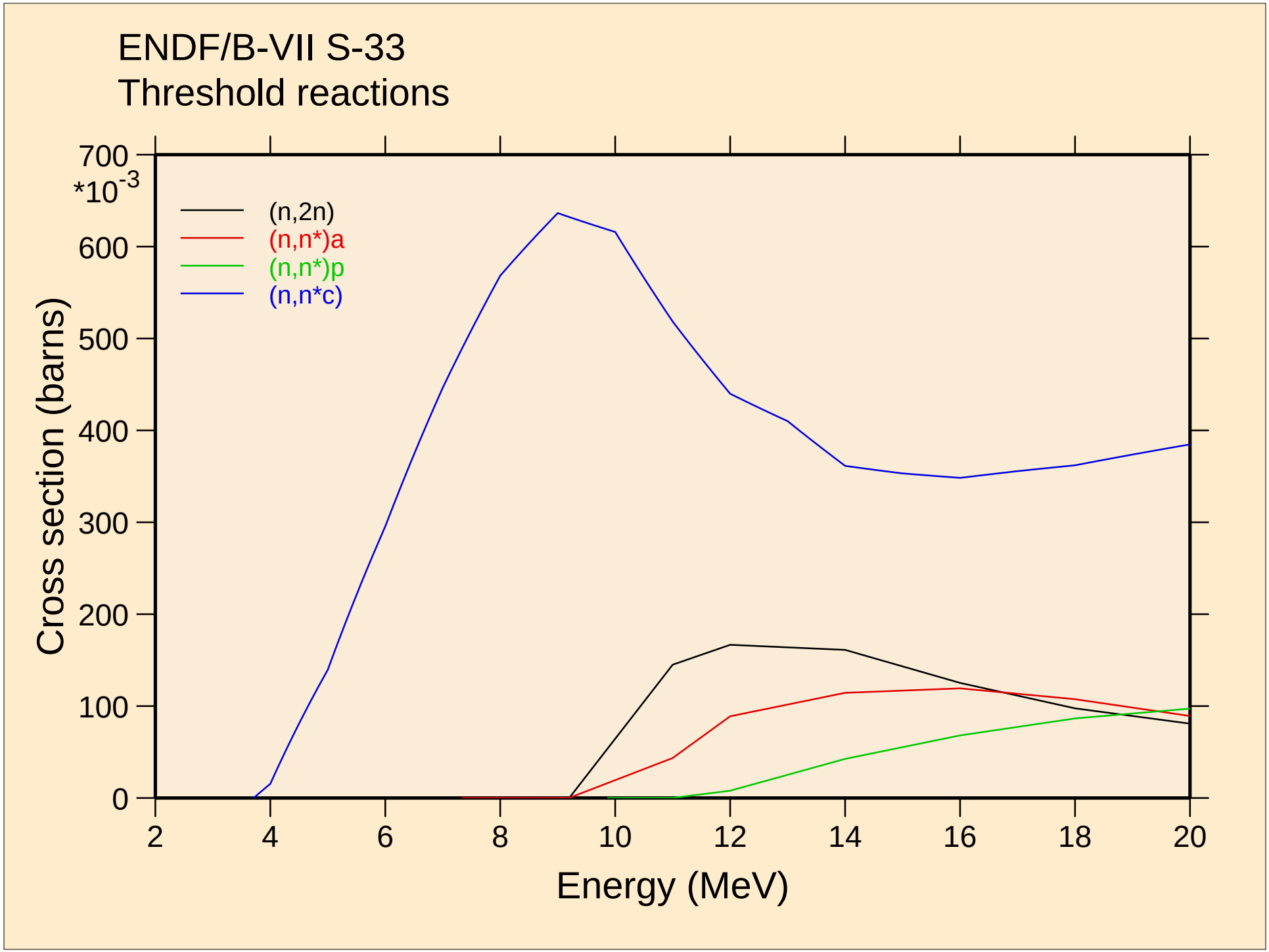

ENDF/B-VII S-33
Heating
heating
Heating (MeV/reaction)
Energy (MeV)
4
3
2
1
0
-1
0
5
10
15
20

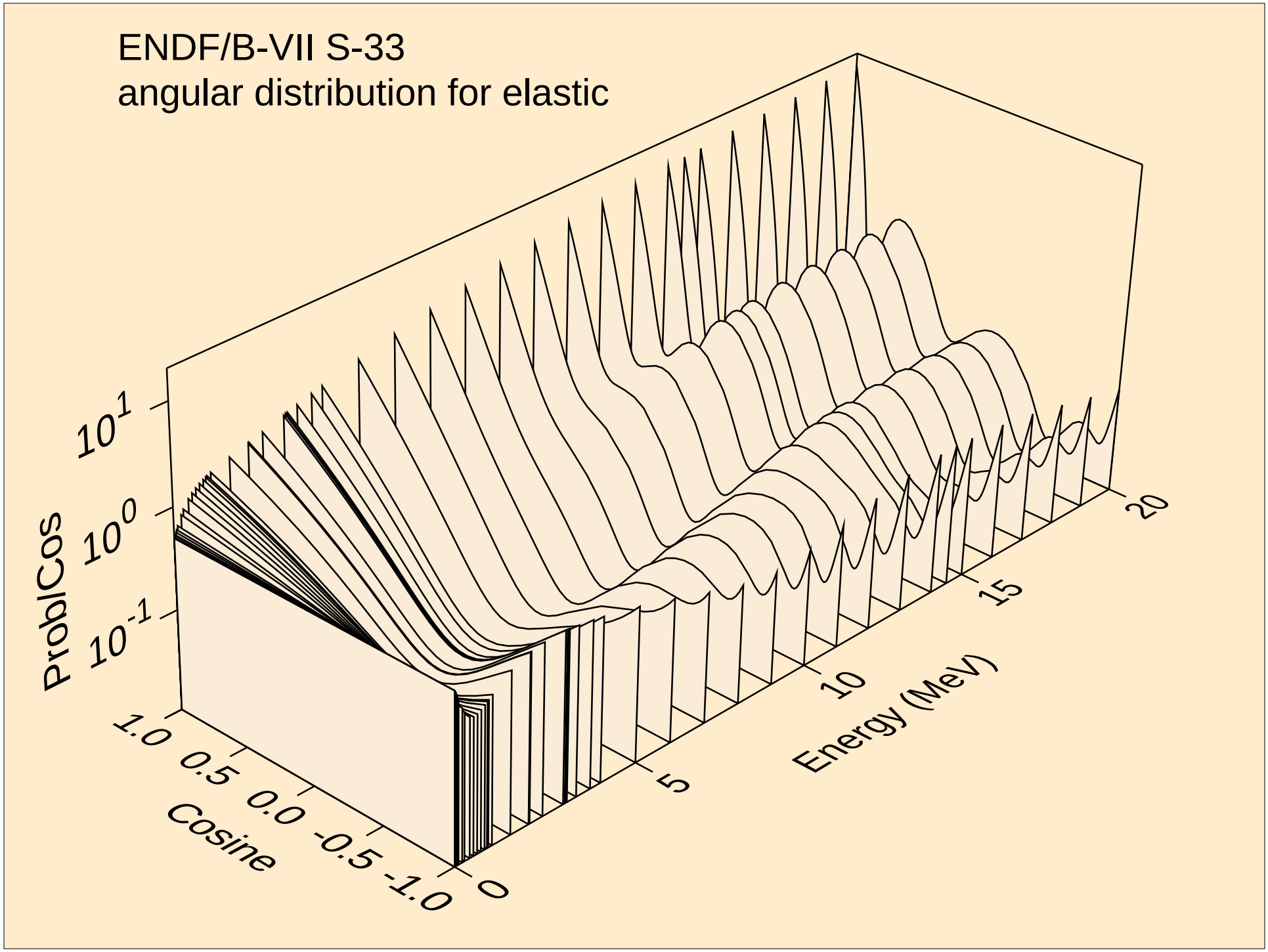

ENDF/B-VII S-33
Damage
250
*10-3
200
150
100
50
0
damage
Damage (MeV-barns)
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

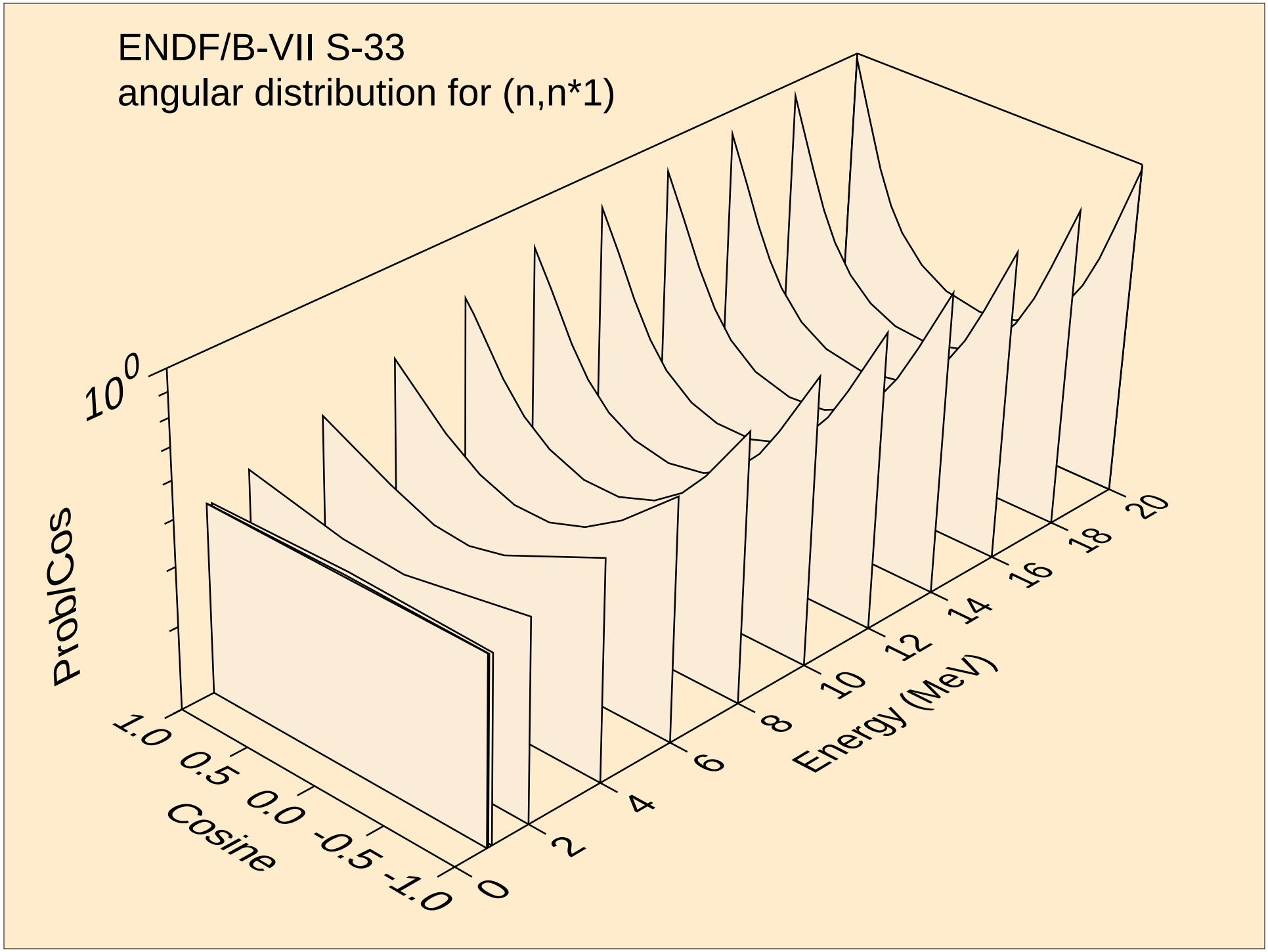

ENDF/B-VII S-33
Non-threshold reactions
Cross section (barns)
Energy (MeV)
(n,gma)
(n,p)
(n,a)
(n,xp)
(n,xa)
10-1
10-2
10-3
10-4
10-5
10-6
10-7
0
2
4
6
8
10
12
14
16
18
20

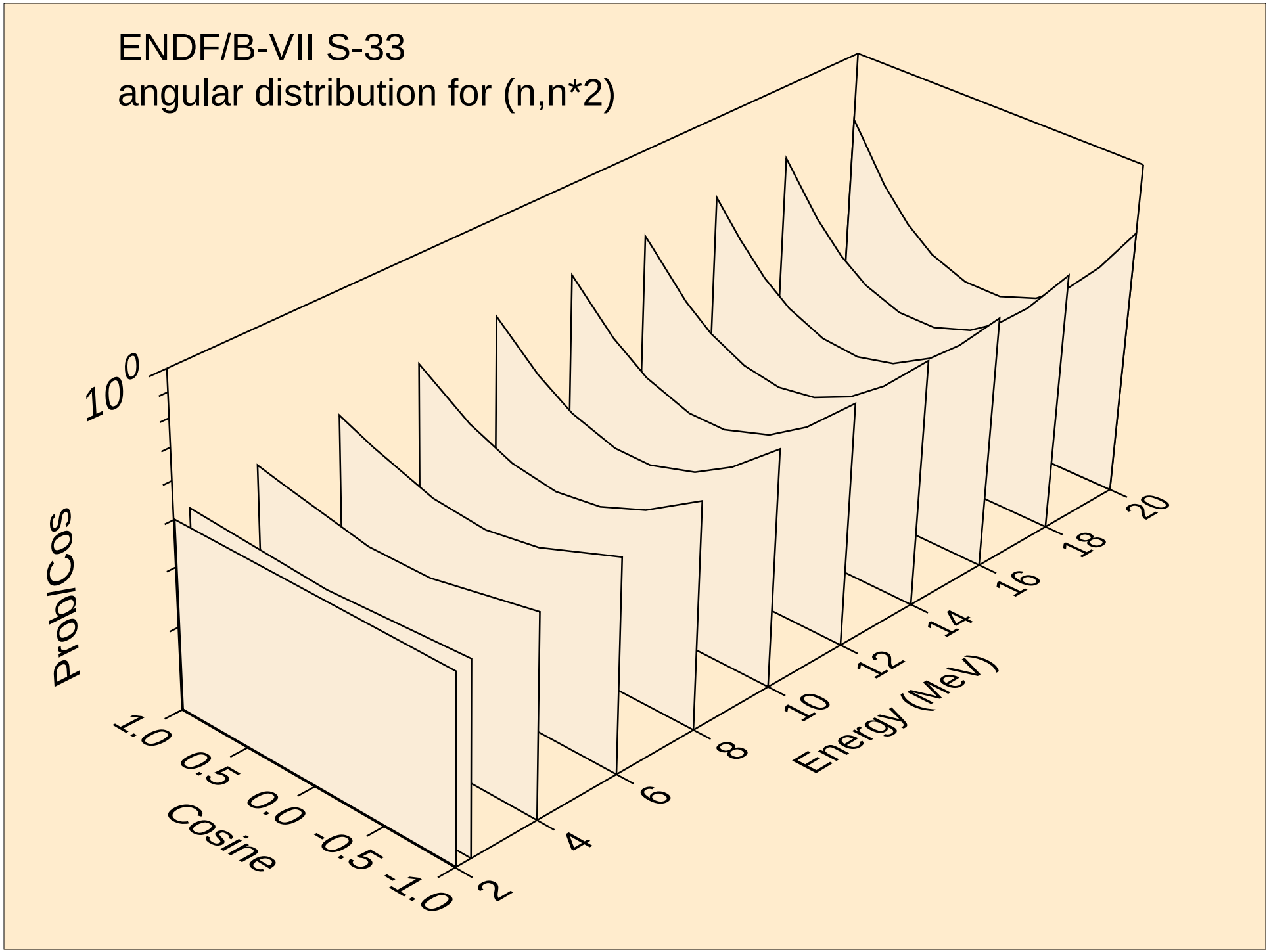

ENDF/B-VII S-33
Inelastic levels
100
*10-3
80
60
40
20
0
Cross section (barns)
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)
(n,n*1)
(n,n*2)
(n,n*3)
(n,n*4)
(n,n*5)

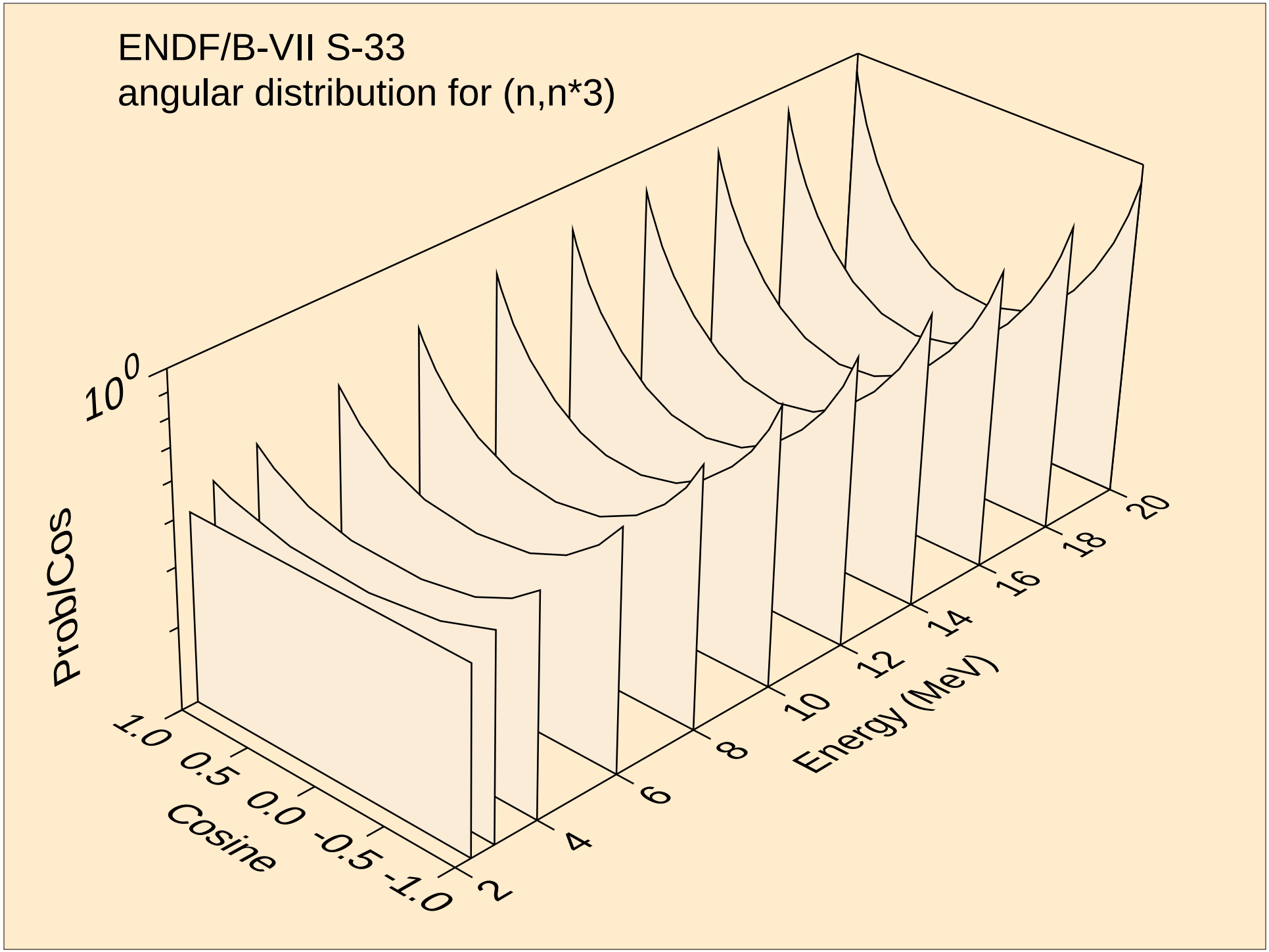

ENDF/B-VII S-33
Inelastic levels
Cross section (barns)
*10-3
60
50
40
30
20
10
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)
(n,n*6)
(n,n*7)

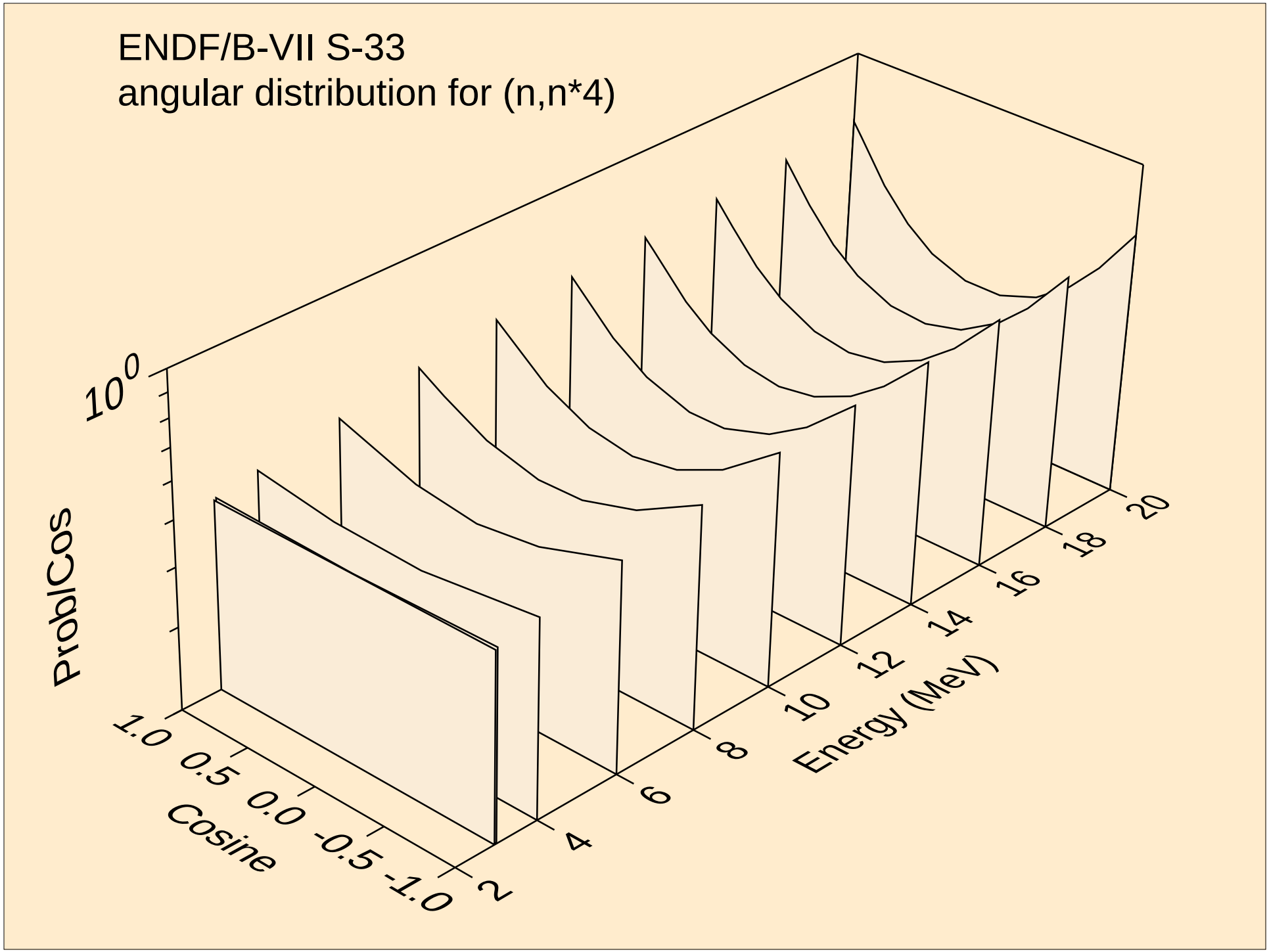

ENDF/B-VII S-33
Threshold reactions
700
*10-3
600
500
400
300
200
100
0
Cross section (barns)
(n,2n)
(n,n*)a
(n,n*)p
(n,n*c)
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

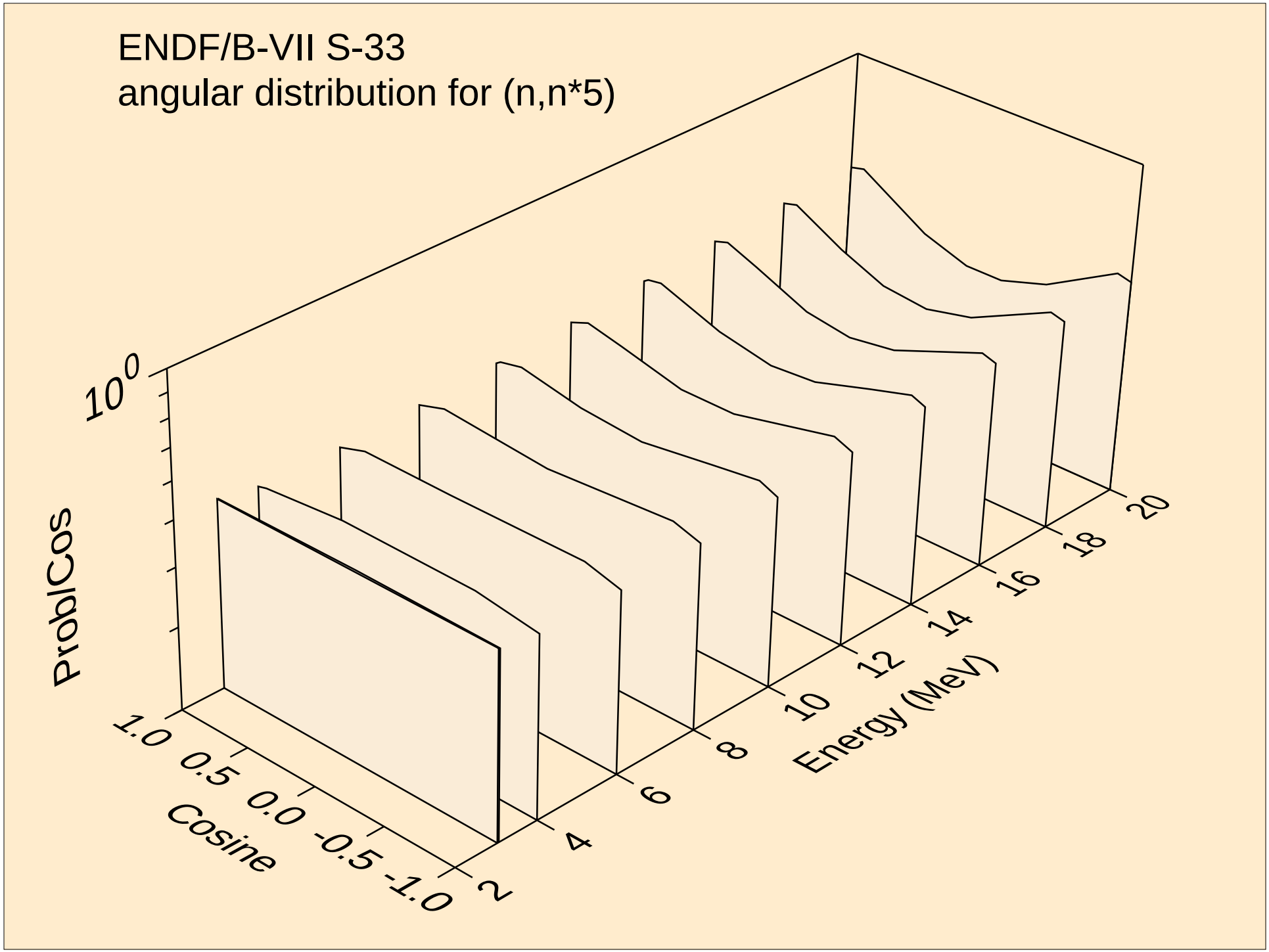

ENDF/B-VII S-33
angular distribution for elastic
ProbICos
10^{1}
10^{0}
10^{-1}
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
5
10
15
20
Energy (MeV)

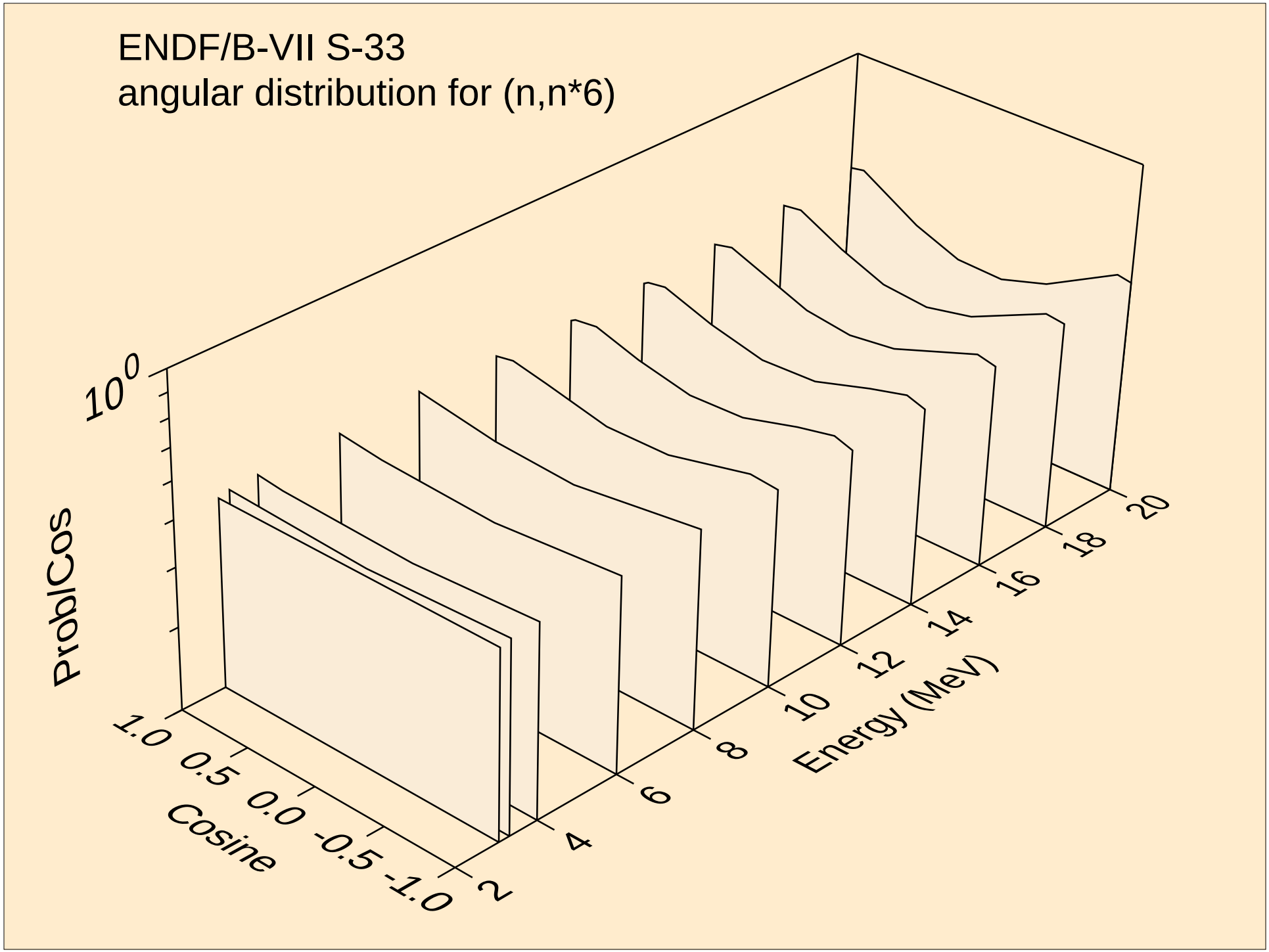

ENDF/B-VII S-33
angular distribution for (n,n*1)
10^0
Prob\Cos
1.0
0.5
0.0
-0.5
-1.0
Cosine
0
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

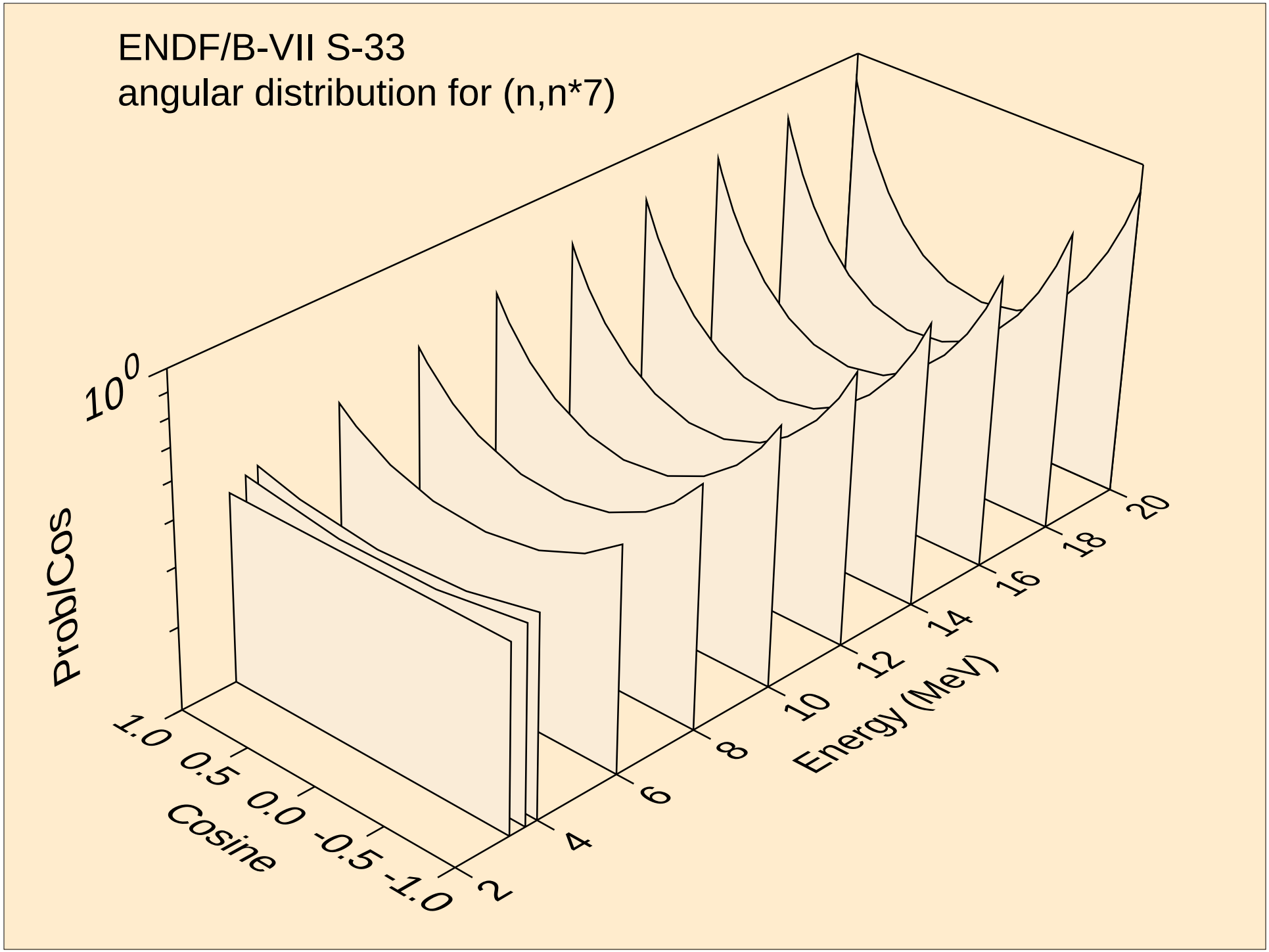

ENDF/B-VII S-33
angular distribution for (n,n*2)
10^0
ProbICos
1.0
0.5
0.0
-0.5
-1.0
Cosine
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

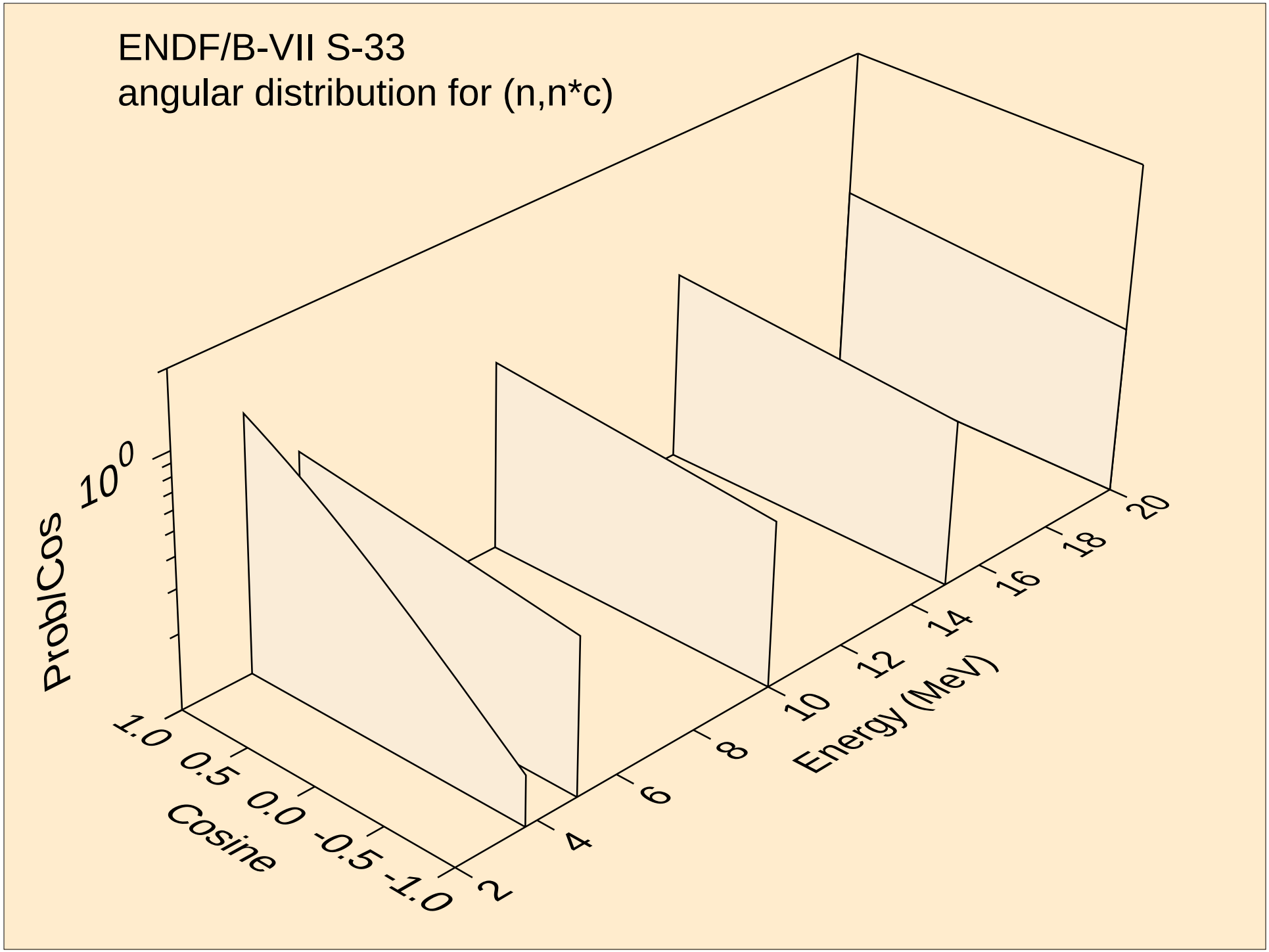

ENDF/B-VII S-33
angular distribution for (n,n*3)
10^0
ProbICos
1.0
0.5
0.0
-0.5
-1.0
Cosine
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

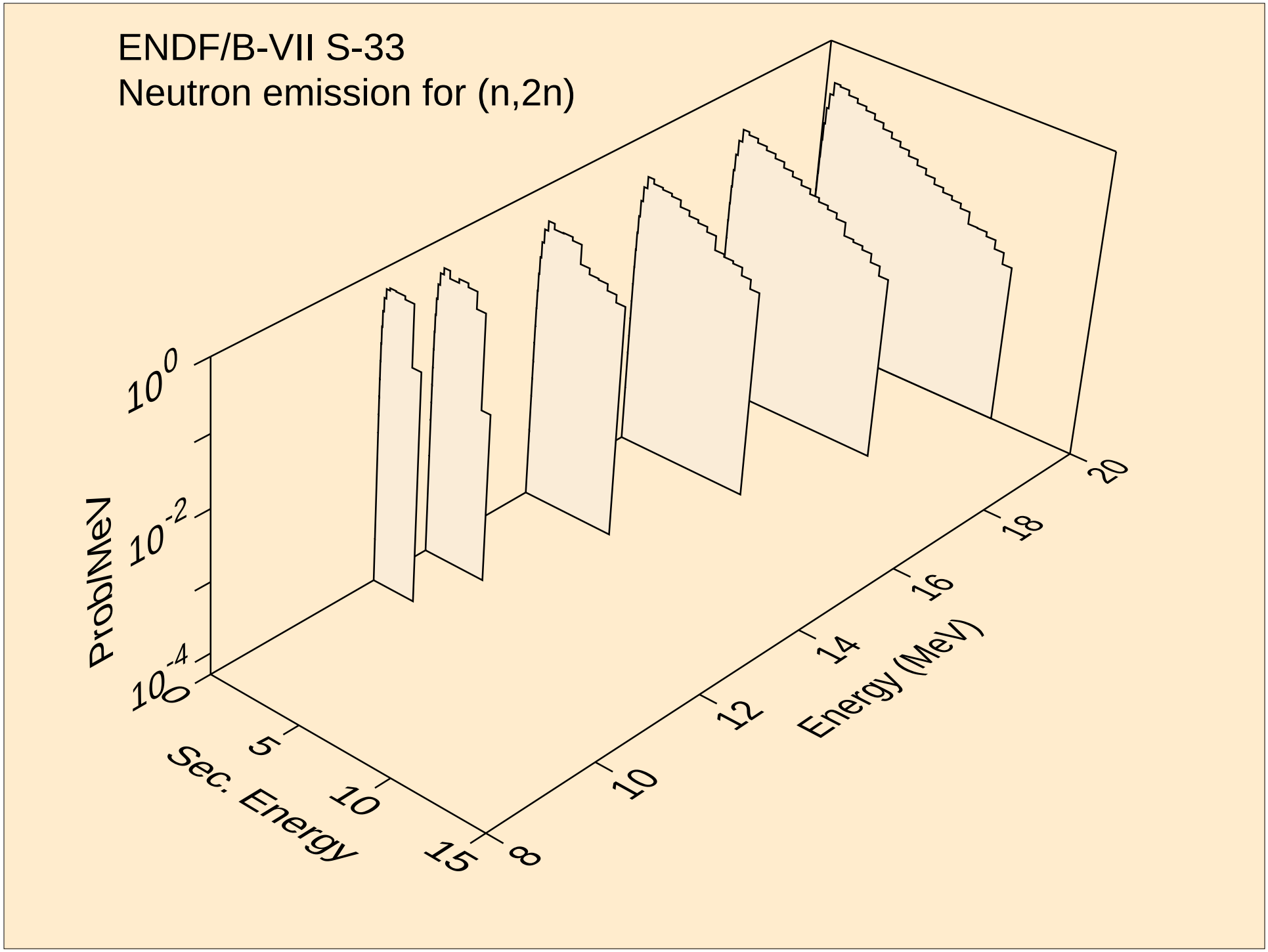

ENDF/B-VII S-33
angular distribution for (n,n*4)
10^0
ProbICos
1.0
0.5
0.0
-0.5
-1.0
Cosine
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

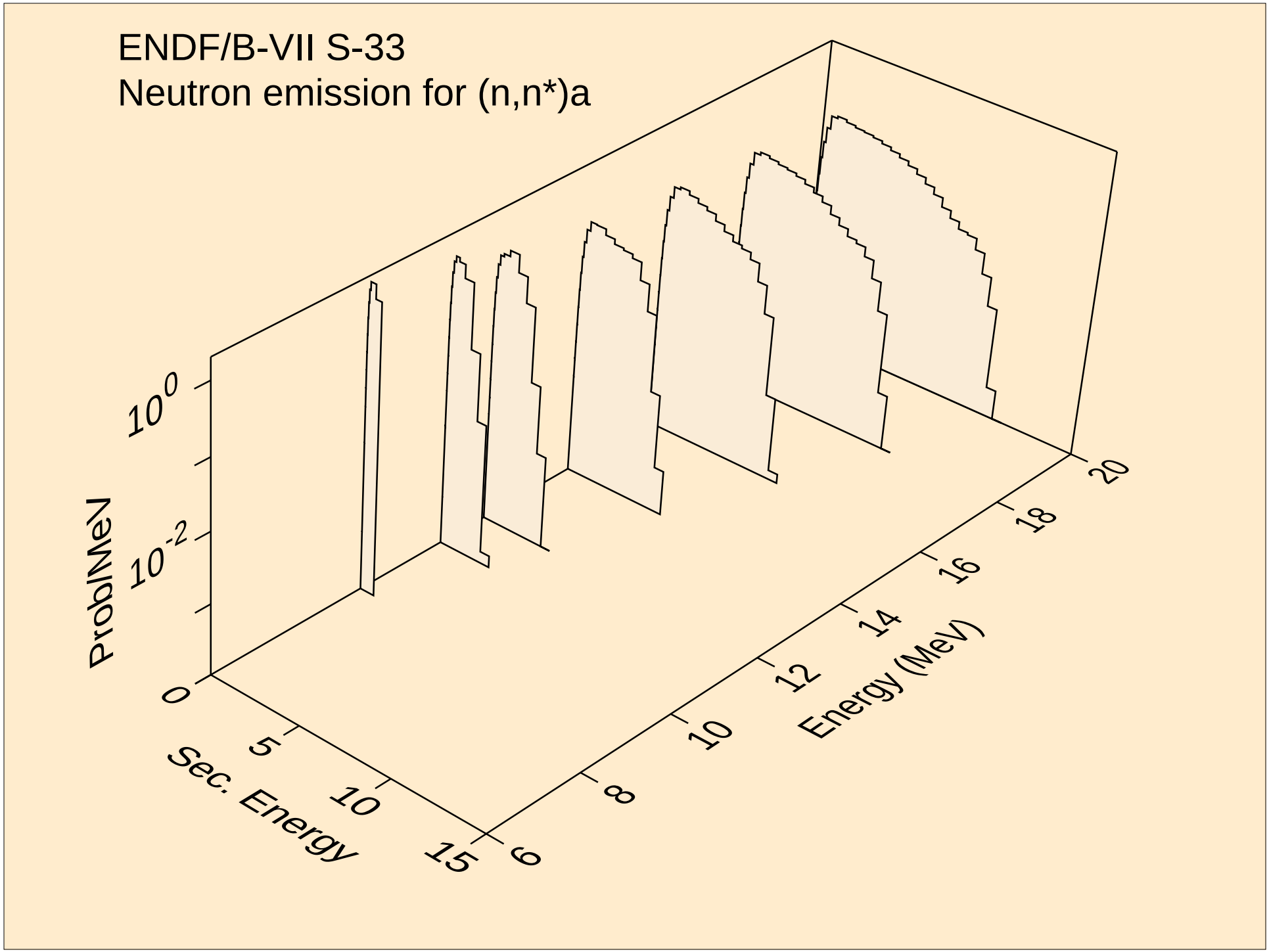

ENDF/B-VII S-33
angular distribution for (n,n*5)
10^0
Prob\Cos
1.0
0.5
0.0
-0.5
-1.0
Cosine
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

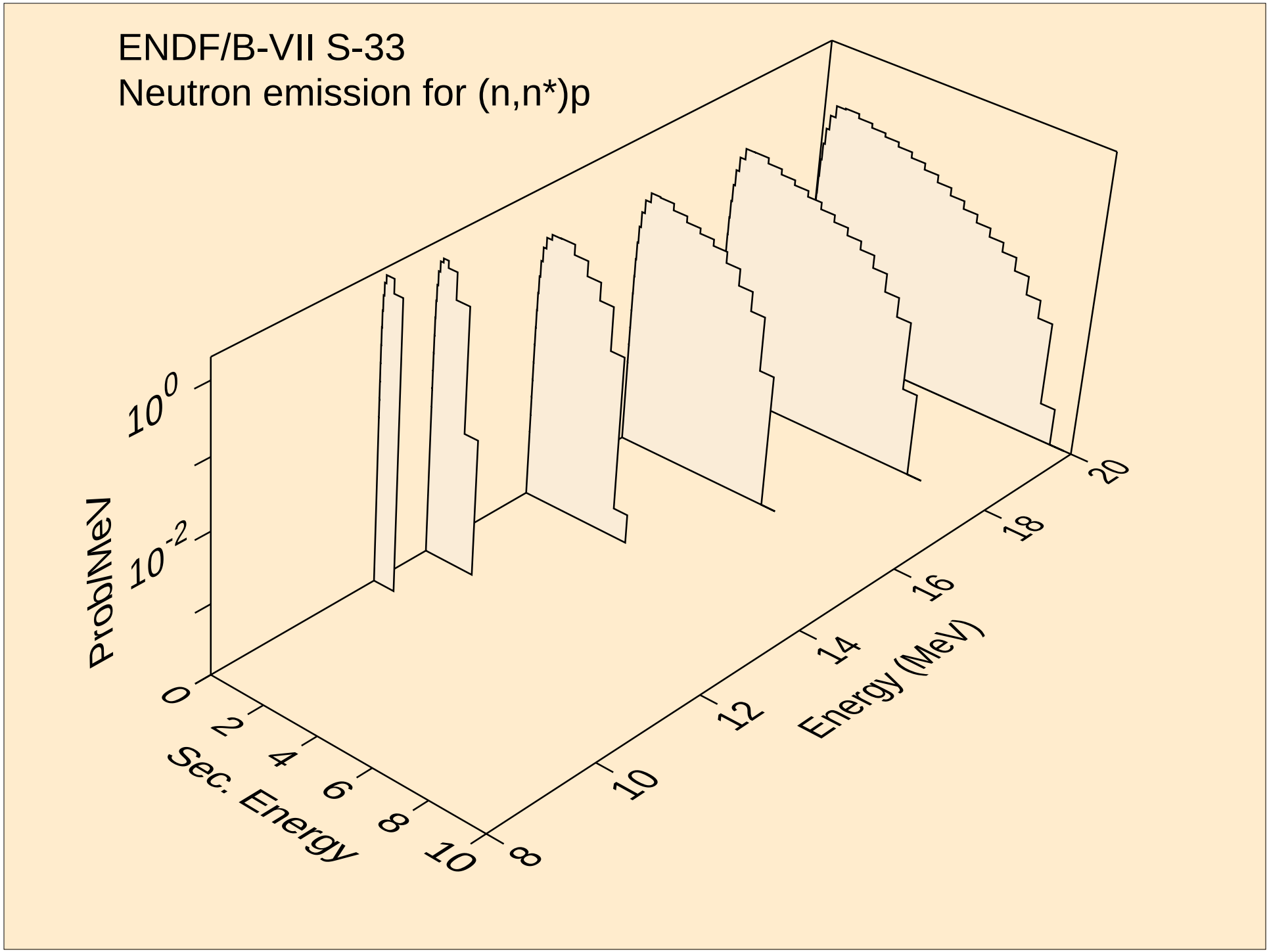

ENDF/B-VII S-33
angular distribution for (n,n*6)
10^0
Prob\Cos
1.0
0.5
0.0
-0.5
-1.0
Cosine
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

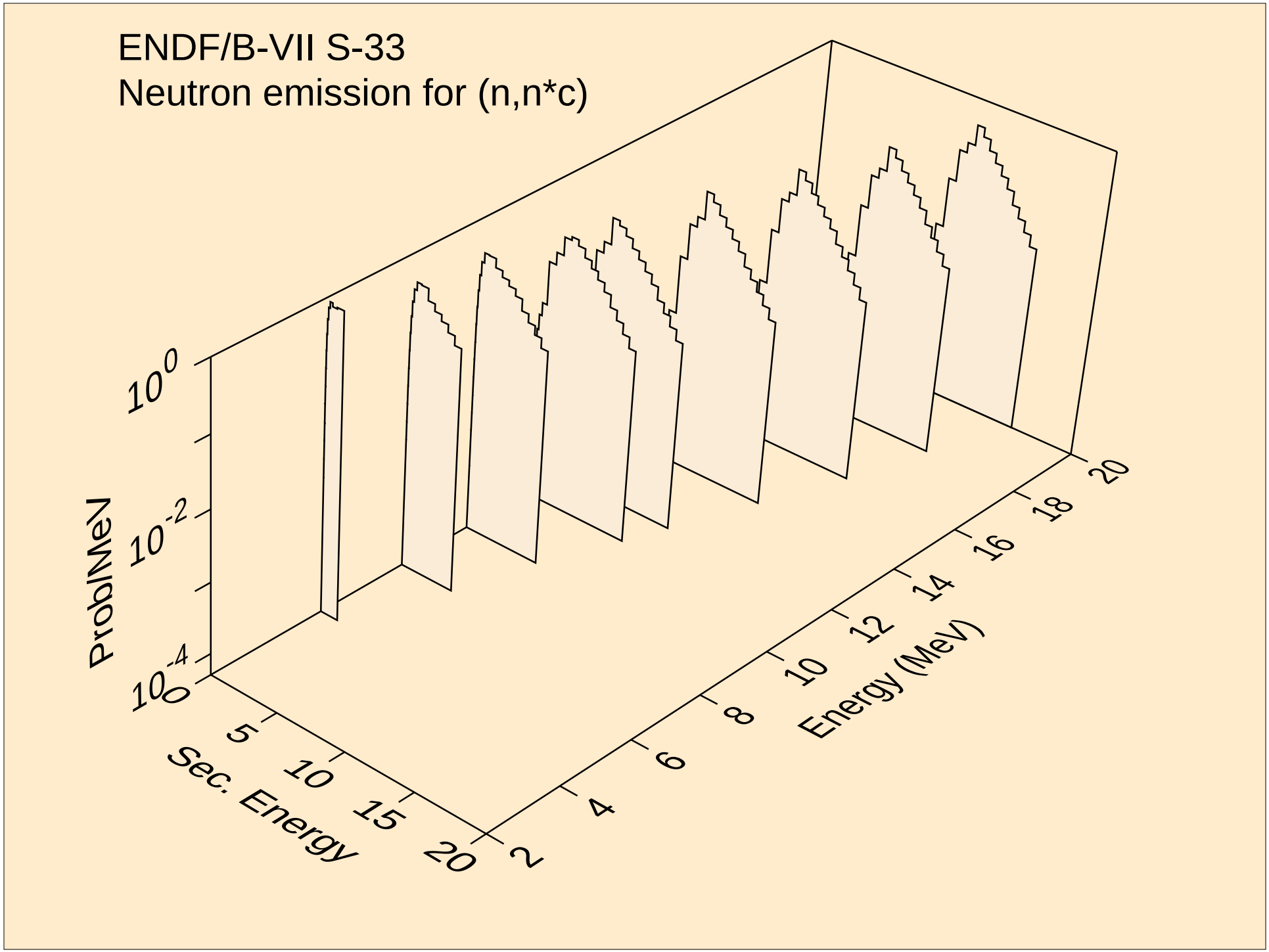

ENDF/B-VII S-33
angular distribution for (n,n*7)
10^0
Prob\Cos
1.0
0.5
0.0
-0.5
-1.0
Cosine
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

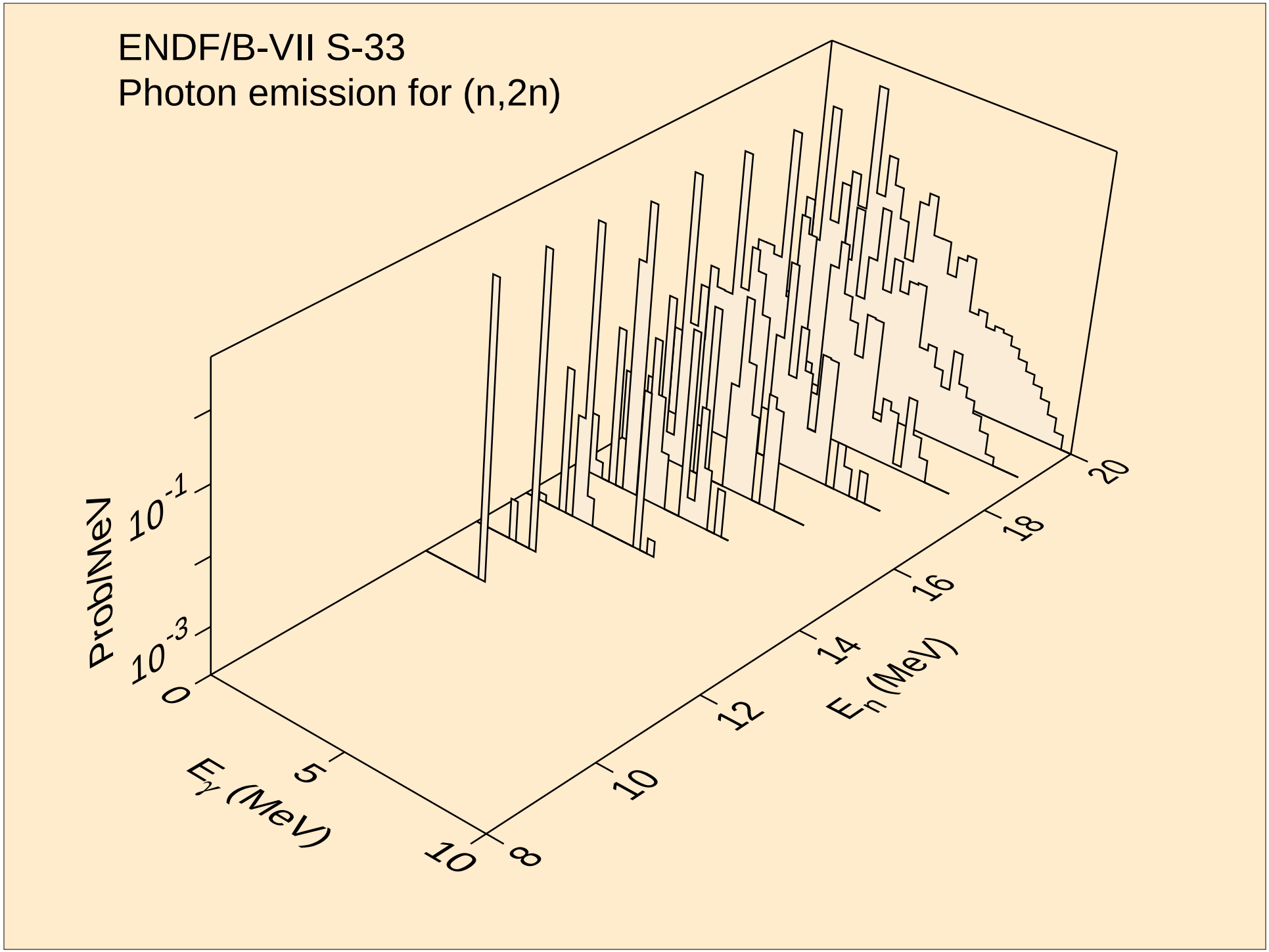

ENDF/B-VII S-33
angular distribution for (n,n*c)
ProbICos
10^0
1.0
0.5
0.0
-0.5
-1.0
Cosine
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

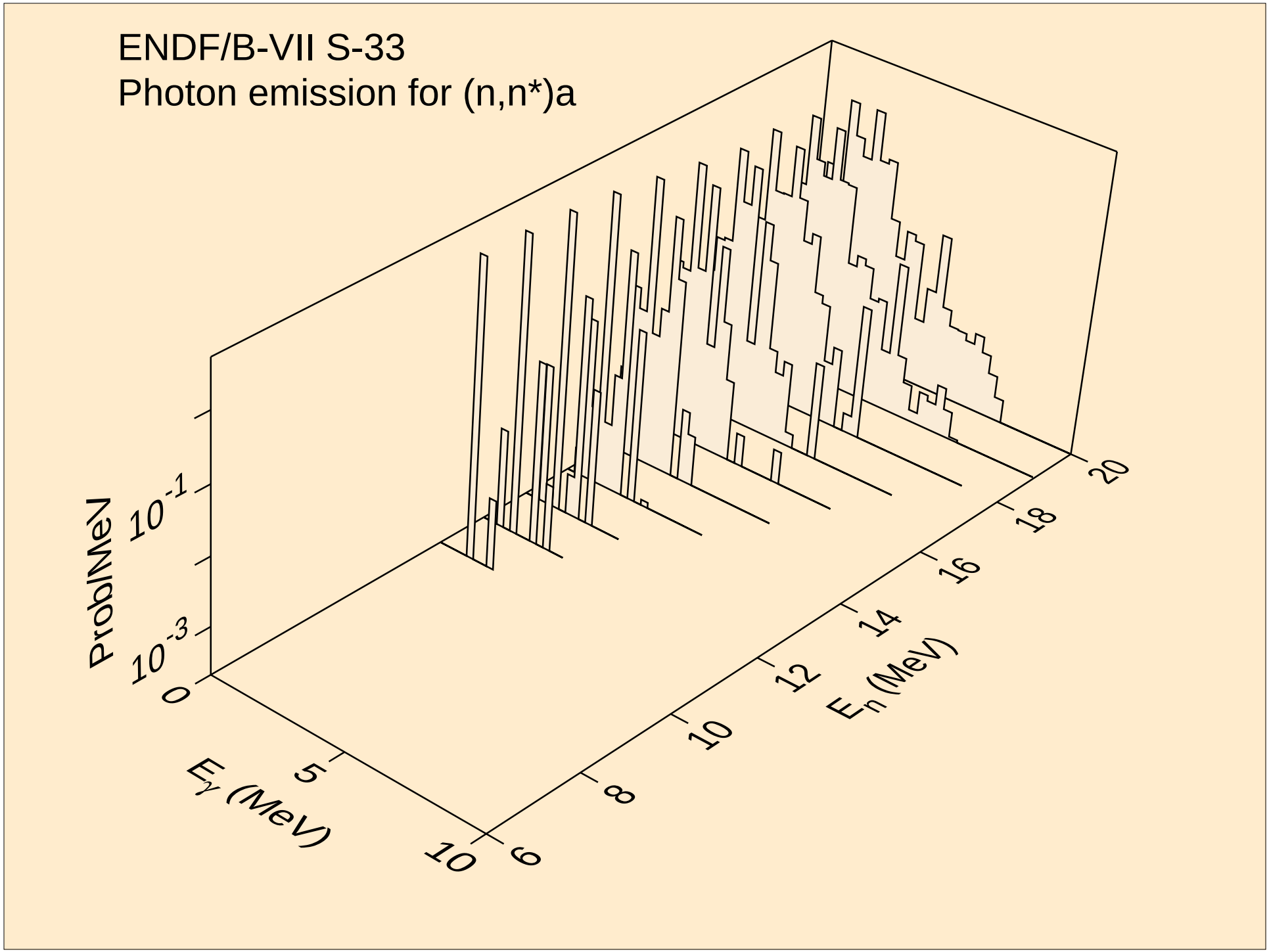

ENDF/B-VII S-33
Neutron emission for (n,2n)
Prob/MeV
10^{0}
10^{-2}
10^{-4}
Sec. Energy
0
5
10
15
20
Energy (MeV)
8
10
12
14
16
18
20

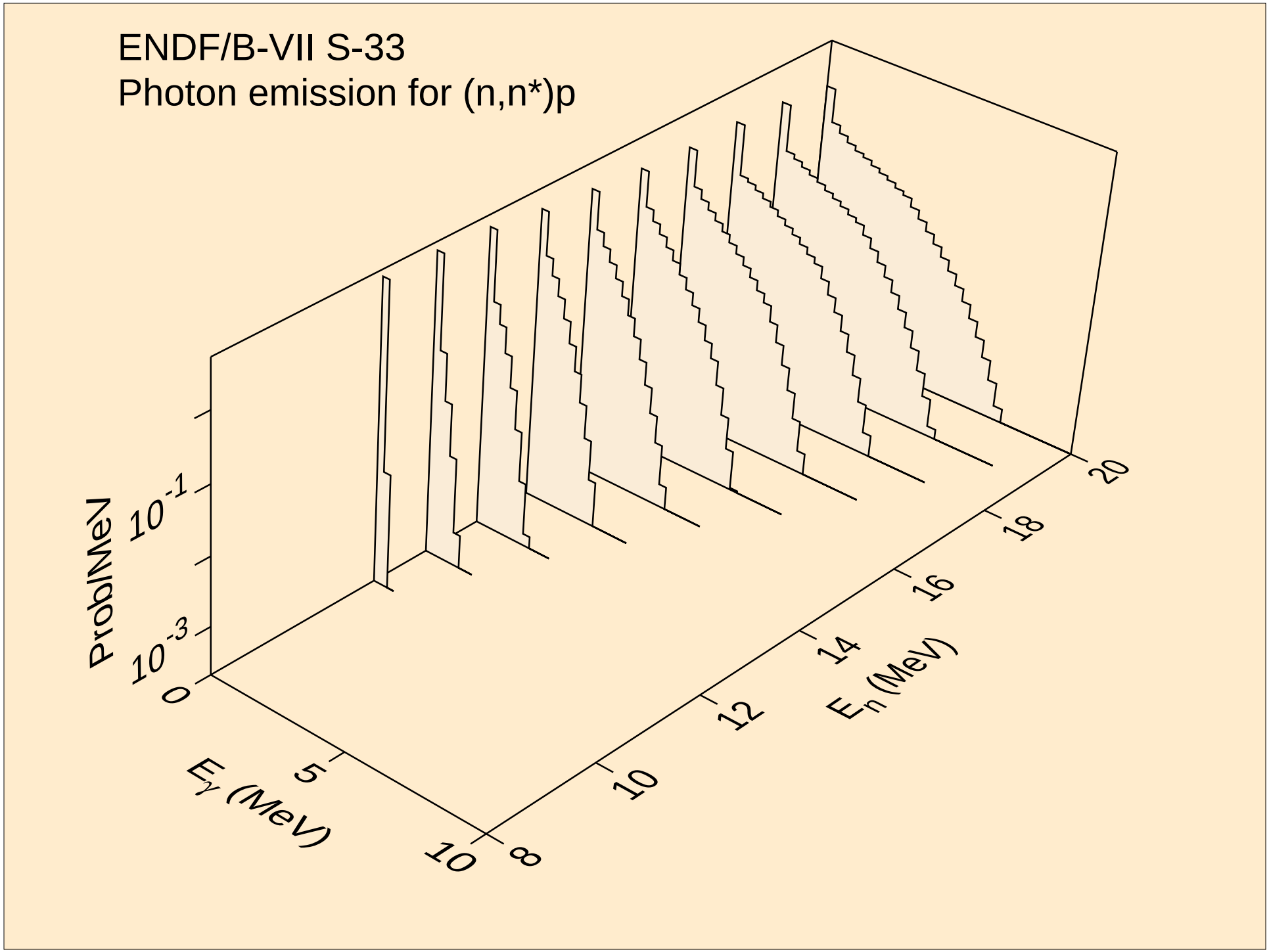

ENDF/B-VII S-33
Neutron emission for (n,n*)a
Prob/MeV
10^{0}
10^{-2}
0
Sec. Energy
5
10
15
6
8
10
12
14
16
18
20
Energy (MeV)

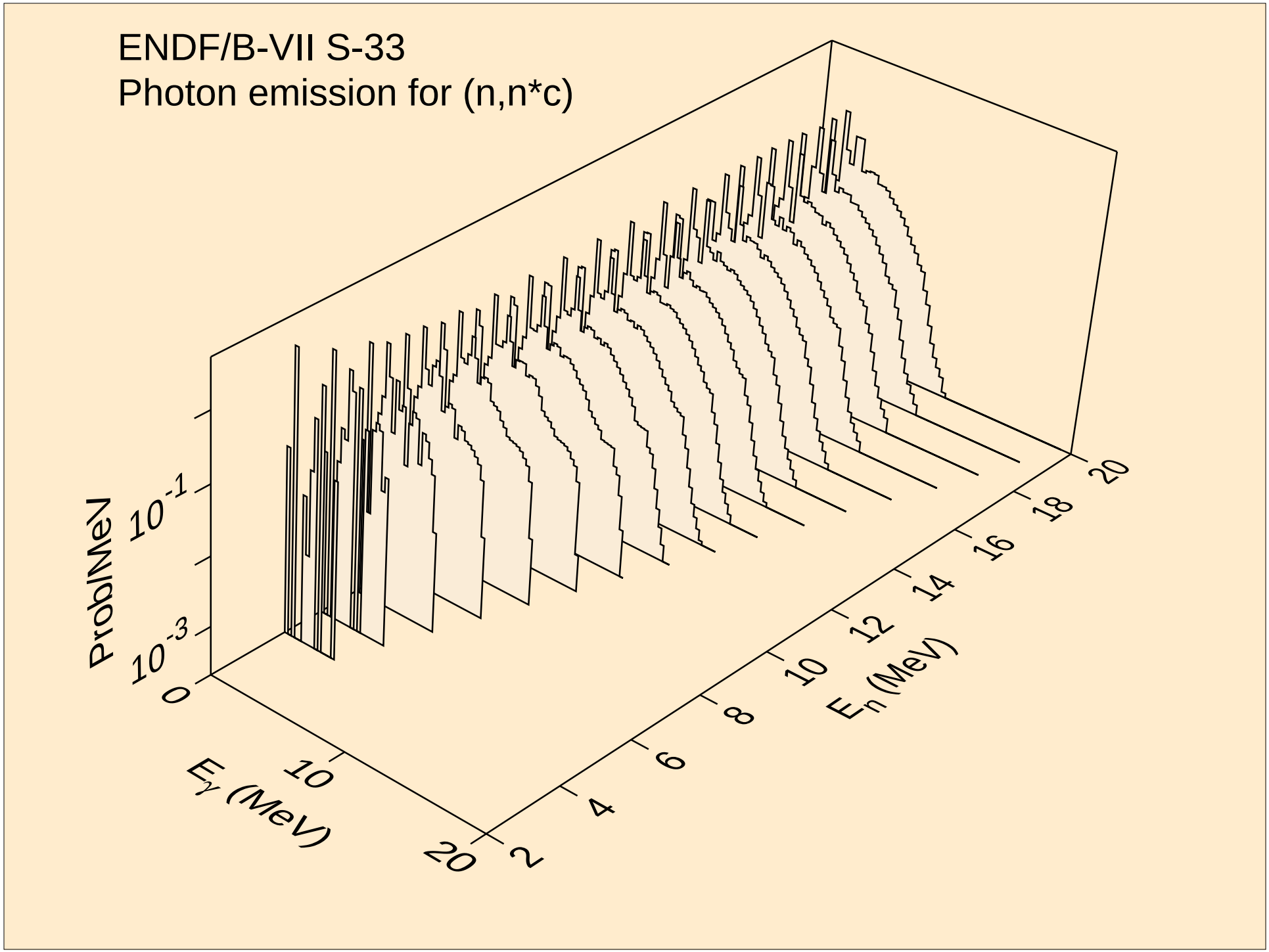

ENDF/B-VII S-33
Neutron emission for (n,n*)p
Prob/MeV
10^{0}
10^{-2}
0
2
4
6
8
10
Sec. Energy
8
10
12
14
16
18
20
Energy (MeV)

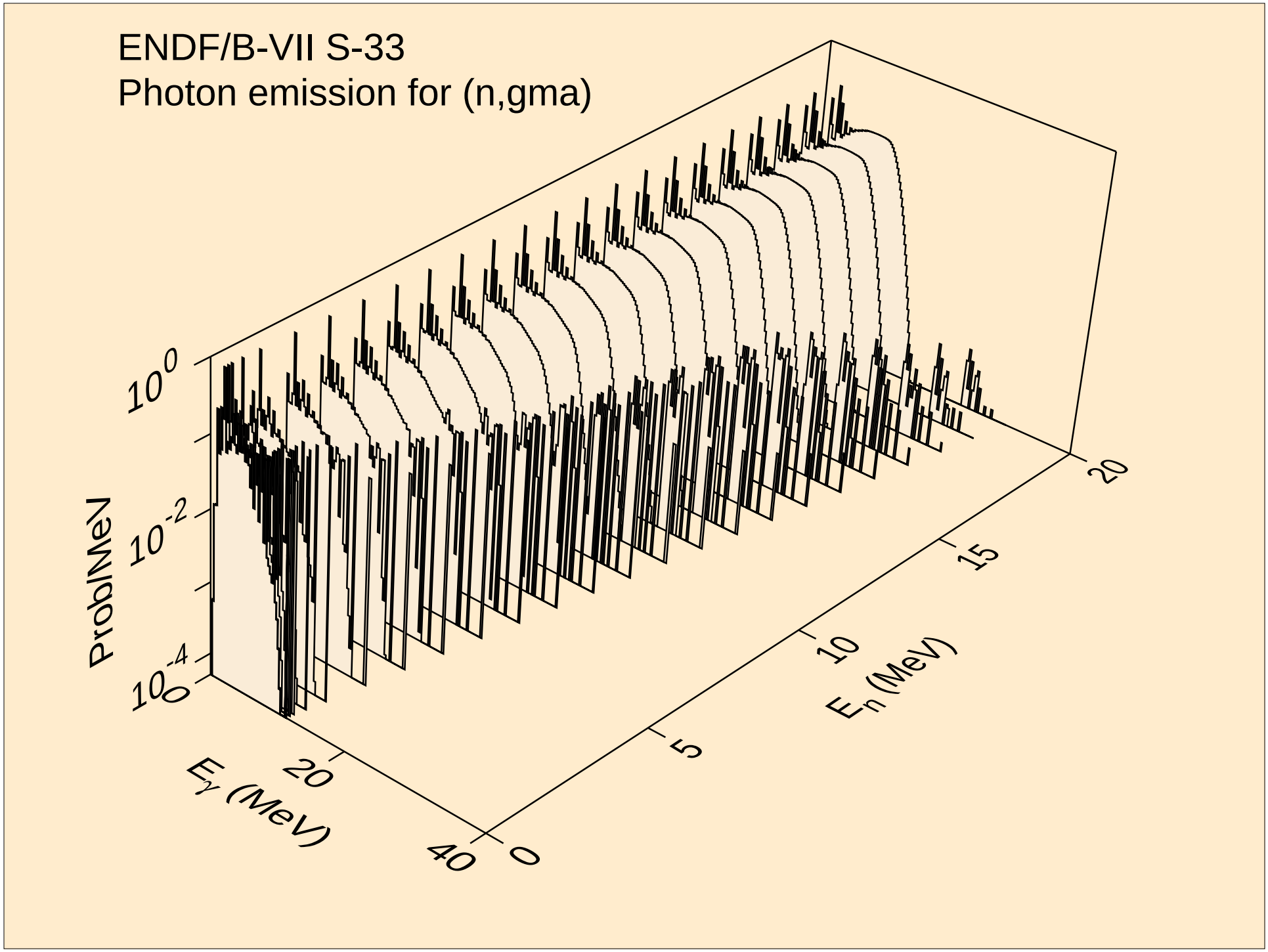

ENDF/B-VII S-33
Neutron emission for (n,n*c)
Prob/MeV
10^{0}
10^{-2}
10^{-4}
0
5
10
15
20
Sec. Energy
2
4
6
8
10
12
14
16
18
20
Energy (MeV)

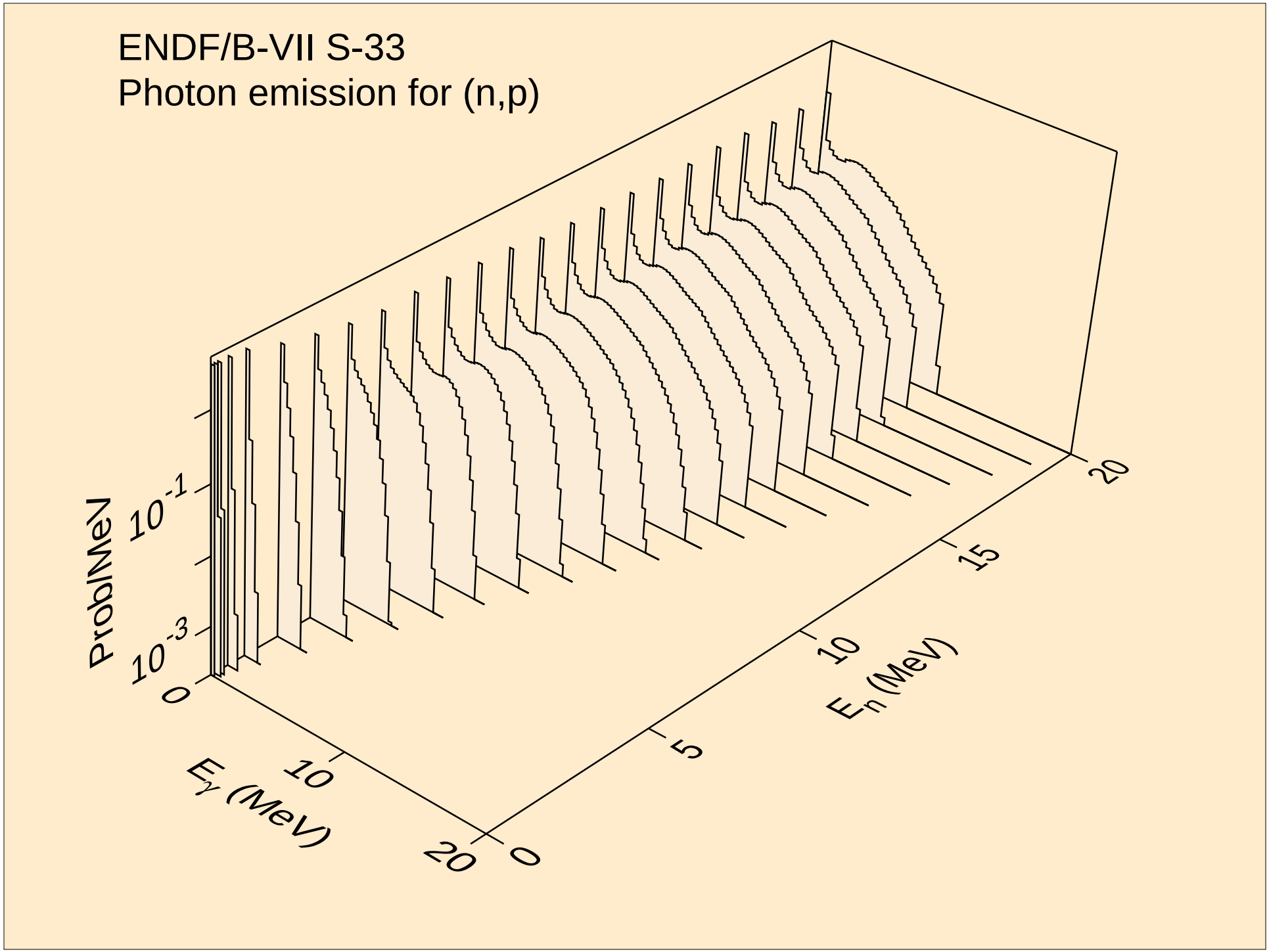

ENDF/B-VII S-33
Photon emission for (n,2n)
Prob/MeV
10^-1
10^-3
0
5
10
E_γ (MeV)
8
10
12
14
16
18
20
E_n (MeV)

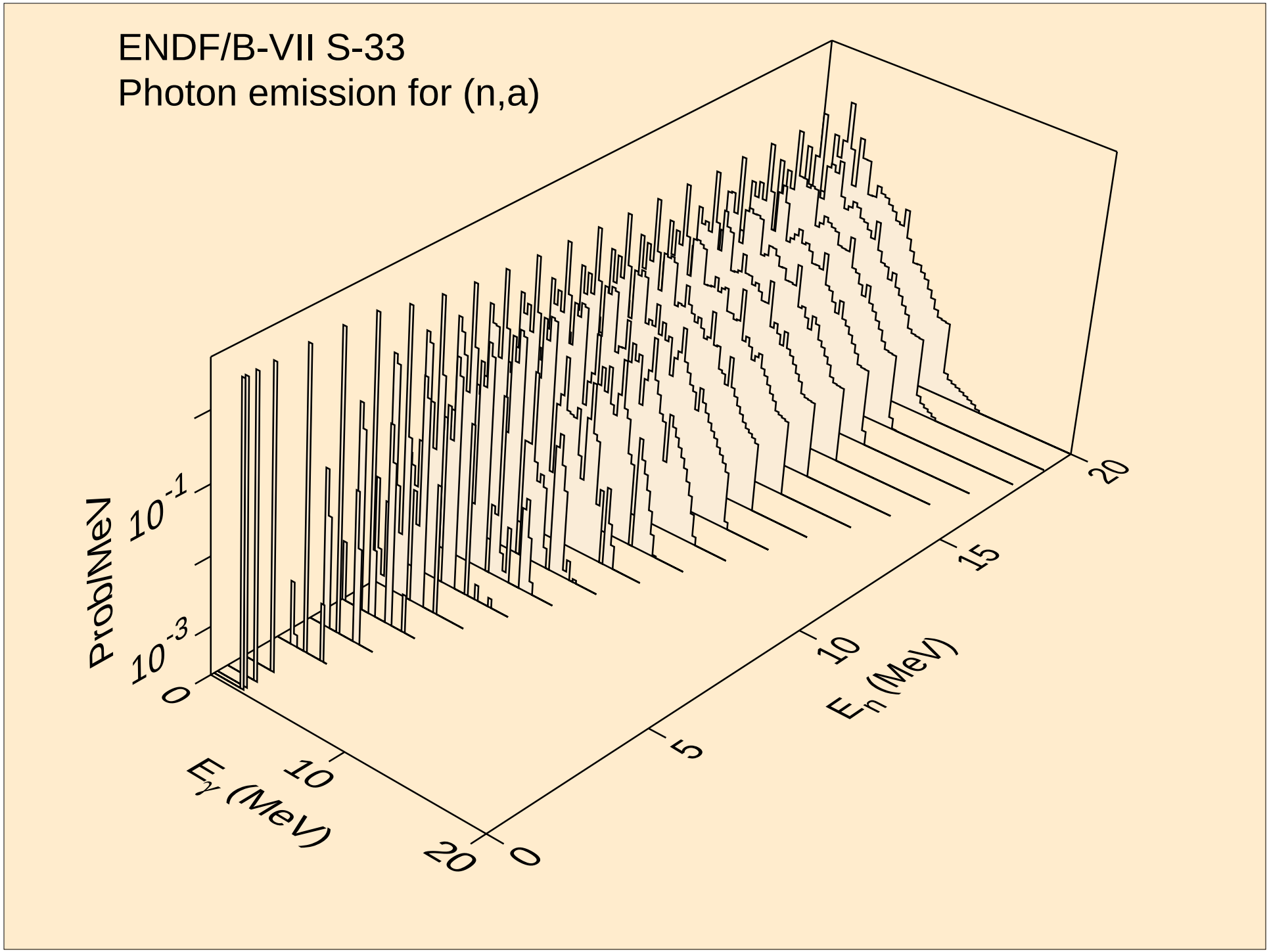

ENDF/B-VII S-33
Photon emission for (n,n*)a
Prob/MeV
10^-1
10^-3
0
E_γ (MeV)
5
10
6
8
10
12
14
16
18
20
E_n (MeV)

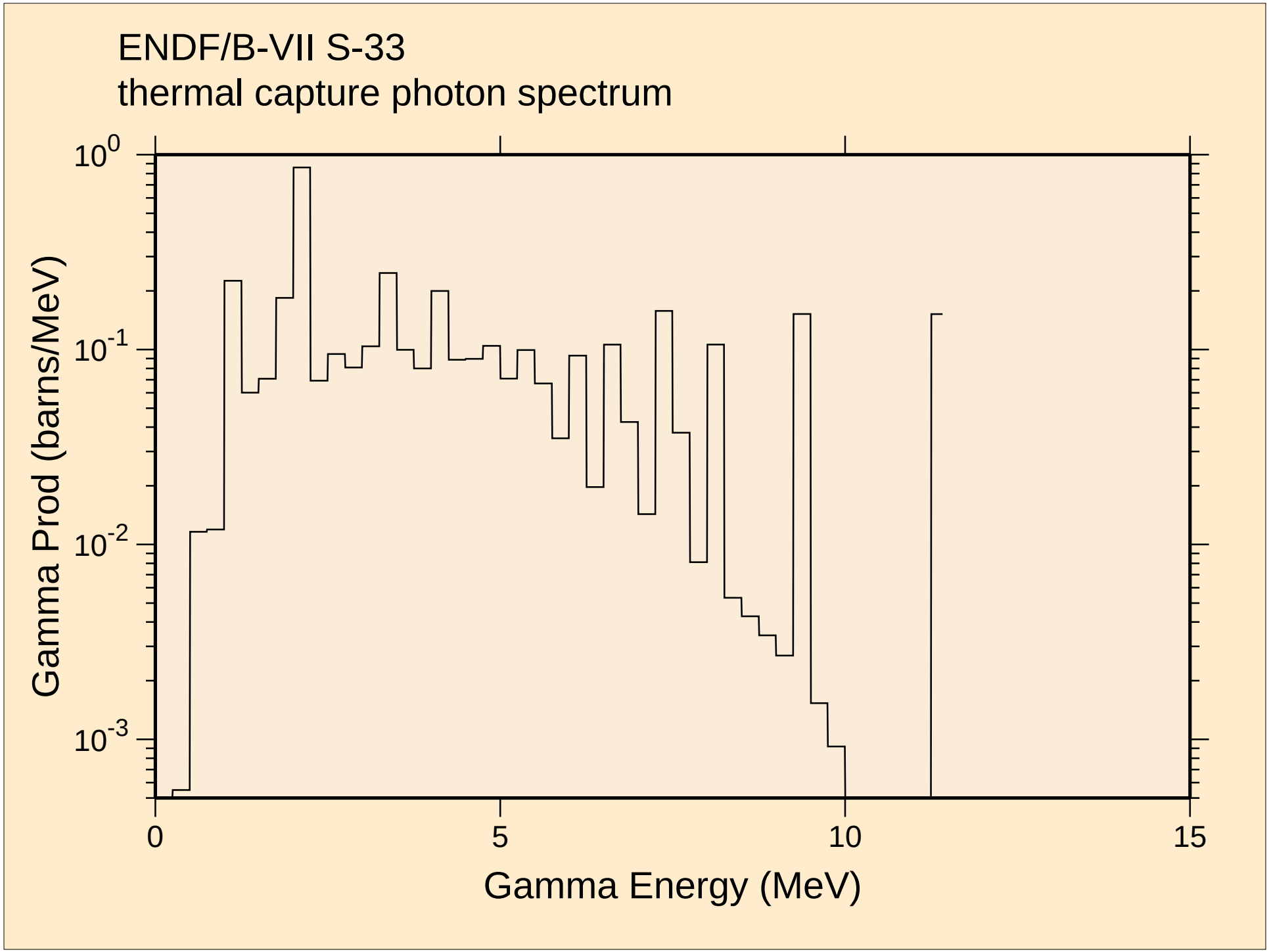

ENDF/B-VII S-33
Photon emission for (n,n*)p
Prob/MeV
10^-1
10^-3
0
5
10
E_γ (MeV)
8
10
12
14
16
18
20
E_n (MeV)

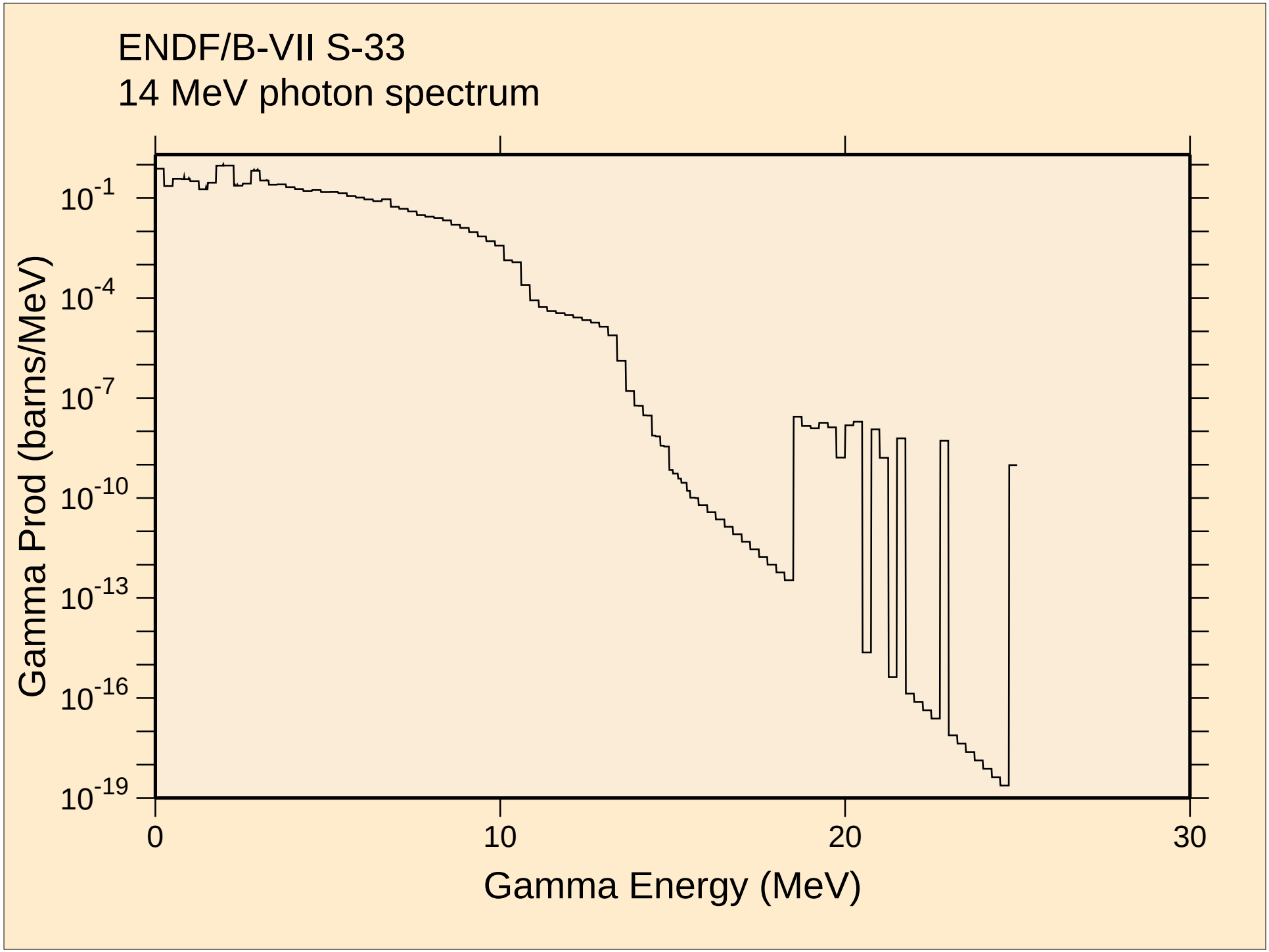

ENDF/B-VII S-33
Photon emission for (n,n*c)
Prob/MeV
10^-1
10^-3
0
E_γ (MeV)
10
20
2
4
6
8
10
12
14
16
18
20
E_n (MeV)


ENDF/B-VII S-33
Photon emission for (n,gma)
Prob/MeV
10^{0}
10^{-2}
10^{-4}
E_γ (MeV)
0
20
40
E_n (MeV)
0
5
10
15
20


ENDF/B-VII S-33
Photon emission for (n,p)
Prob/MeV
10^-1
10^-3
0
10
20
Eγ (MeV)
0
5
10
15
20
En (MeV)


ENDF/B-VII S-33
Photon emission for (n,a)
Prob/MeV
10^-1
10^-3
0
10
20
Eγ (MeV)
0
5
10
15
20
En (MeV)


ENDF/B-VII S-33
thermal capture photon spectrum
Gamma Prod (barns/MeV)
10^0
10^-1
10^-2
10^-3
0
5
10
15
Gamma Energy (MeV)


ENDF/B-VII S-33
14 MeV photon spectrum
Gamma Prod (barns/MeV)
10-1
10-4
10-7
10-10
10-13
10-16
10-19
0
10
20
30
Gamma Energy (MeV)