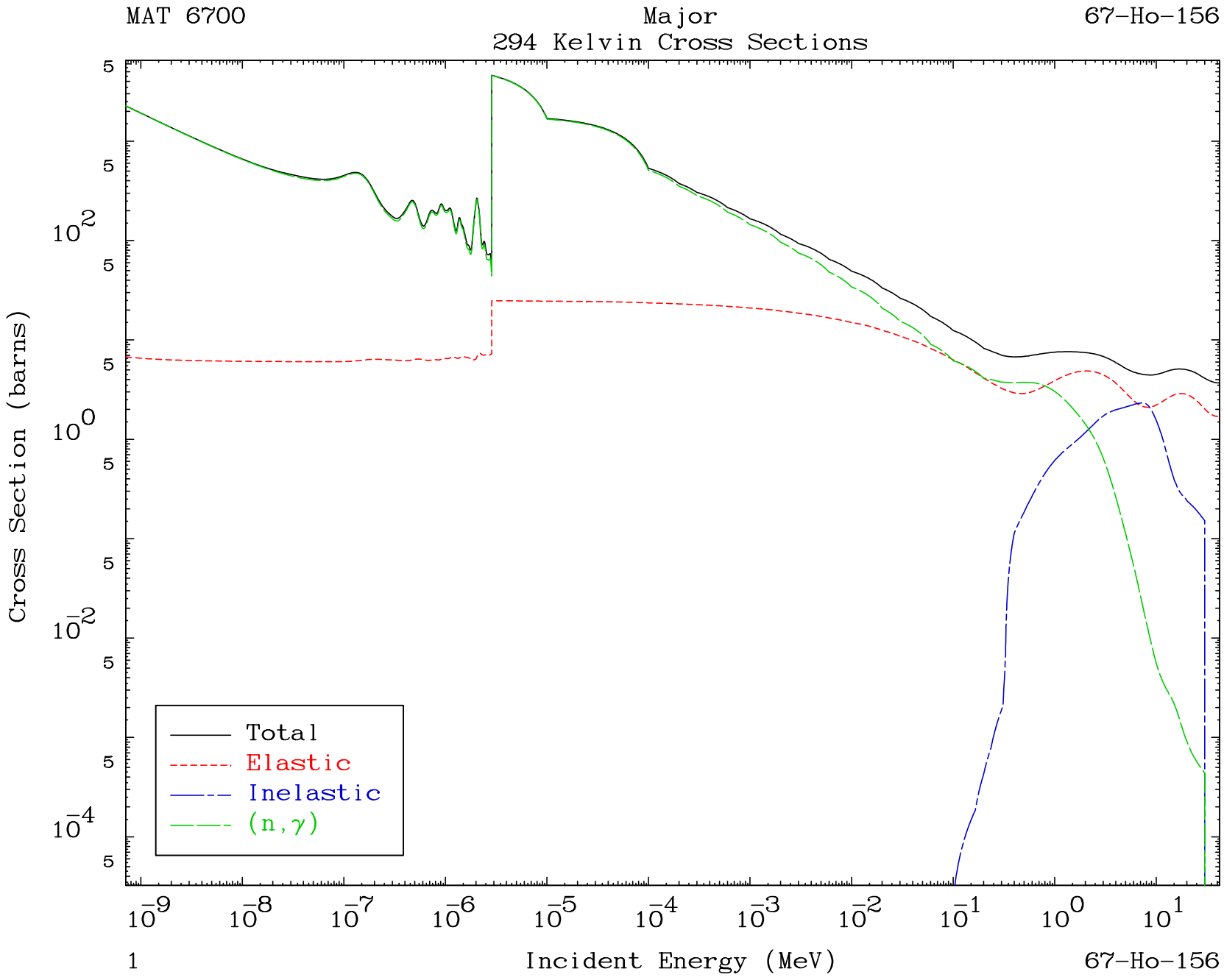
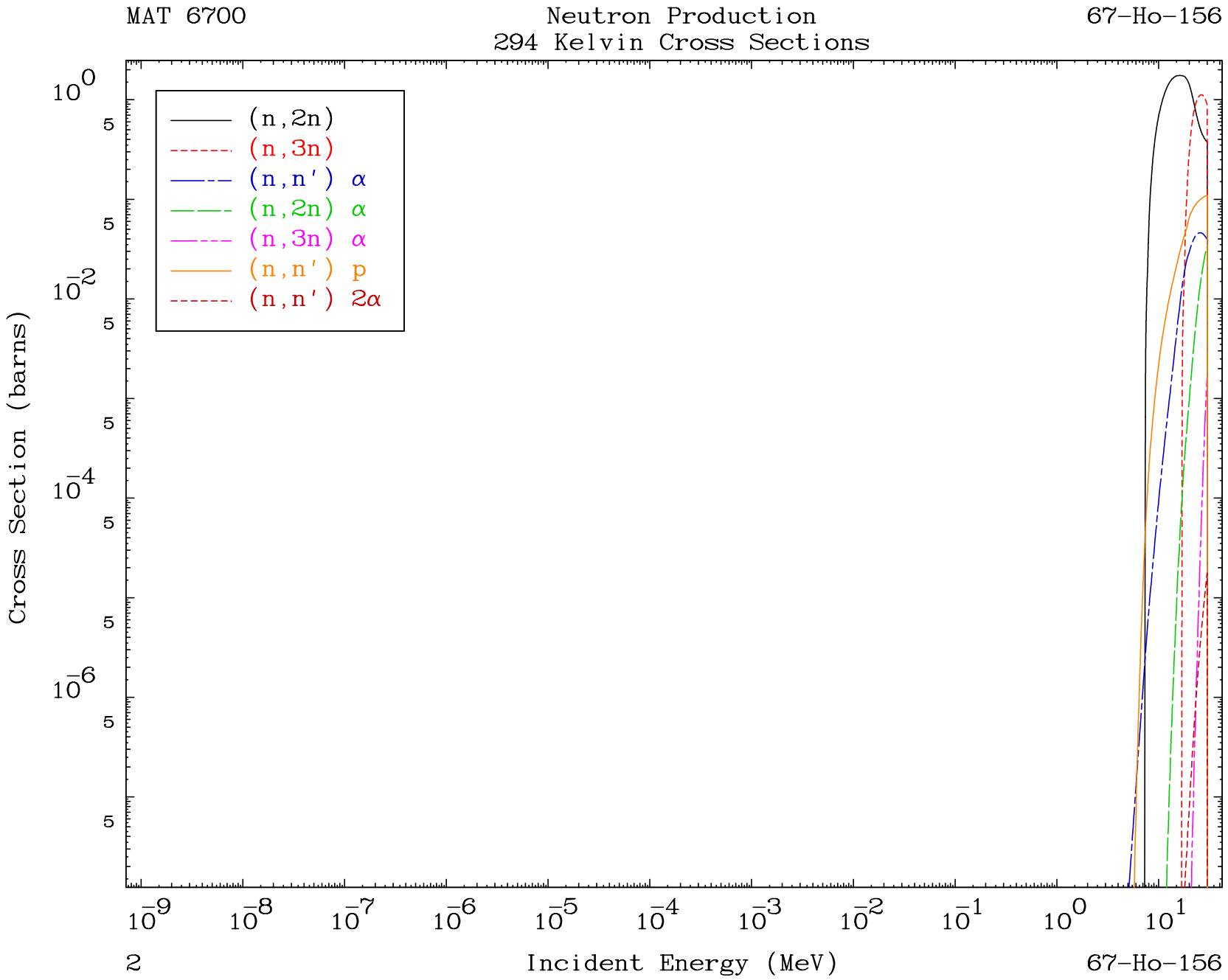
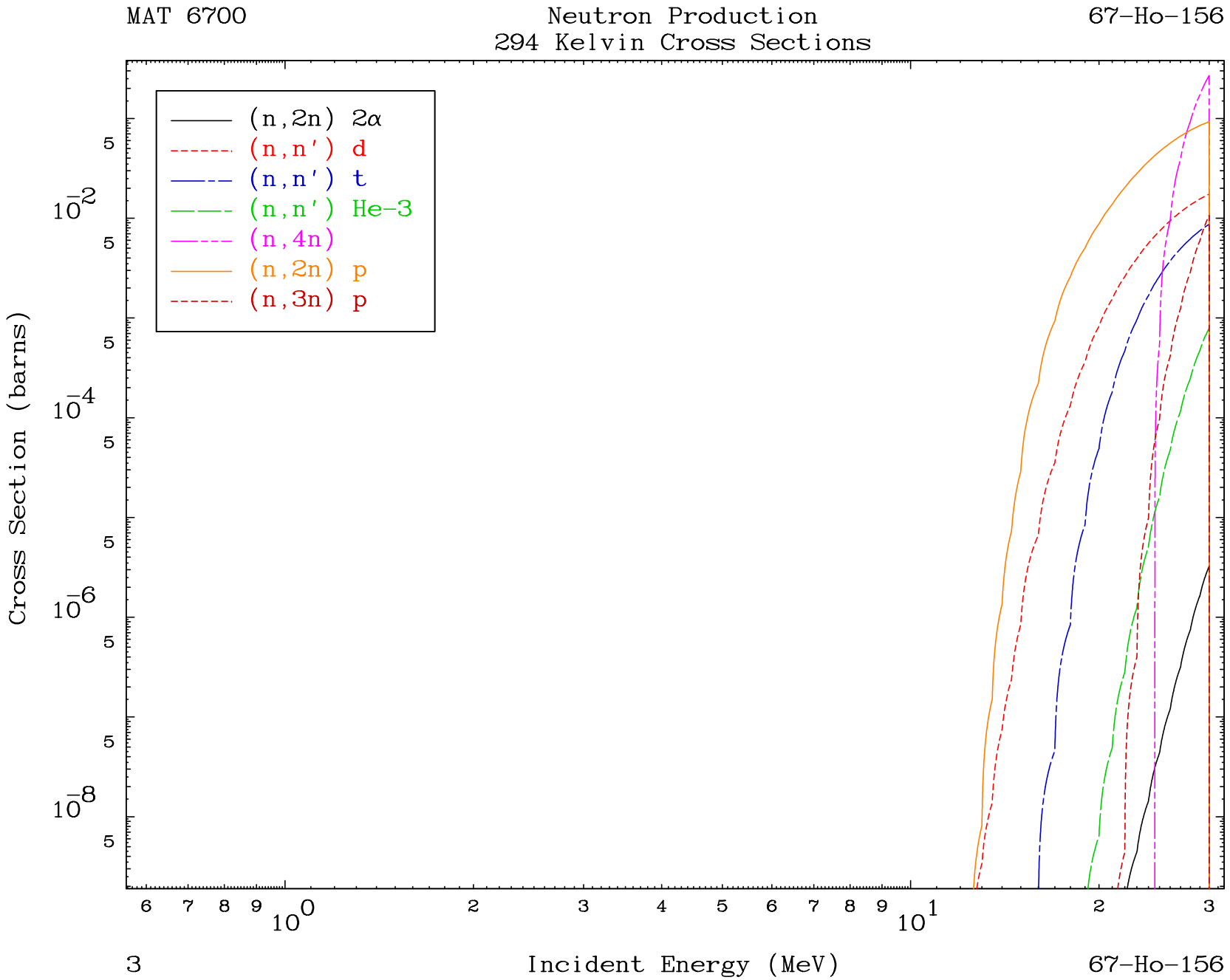
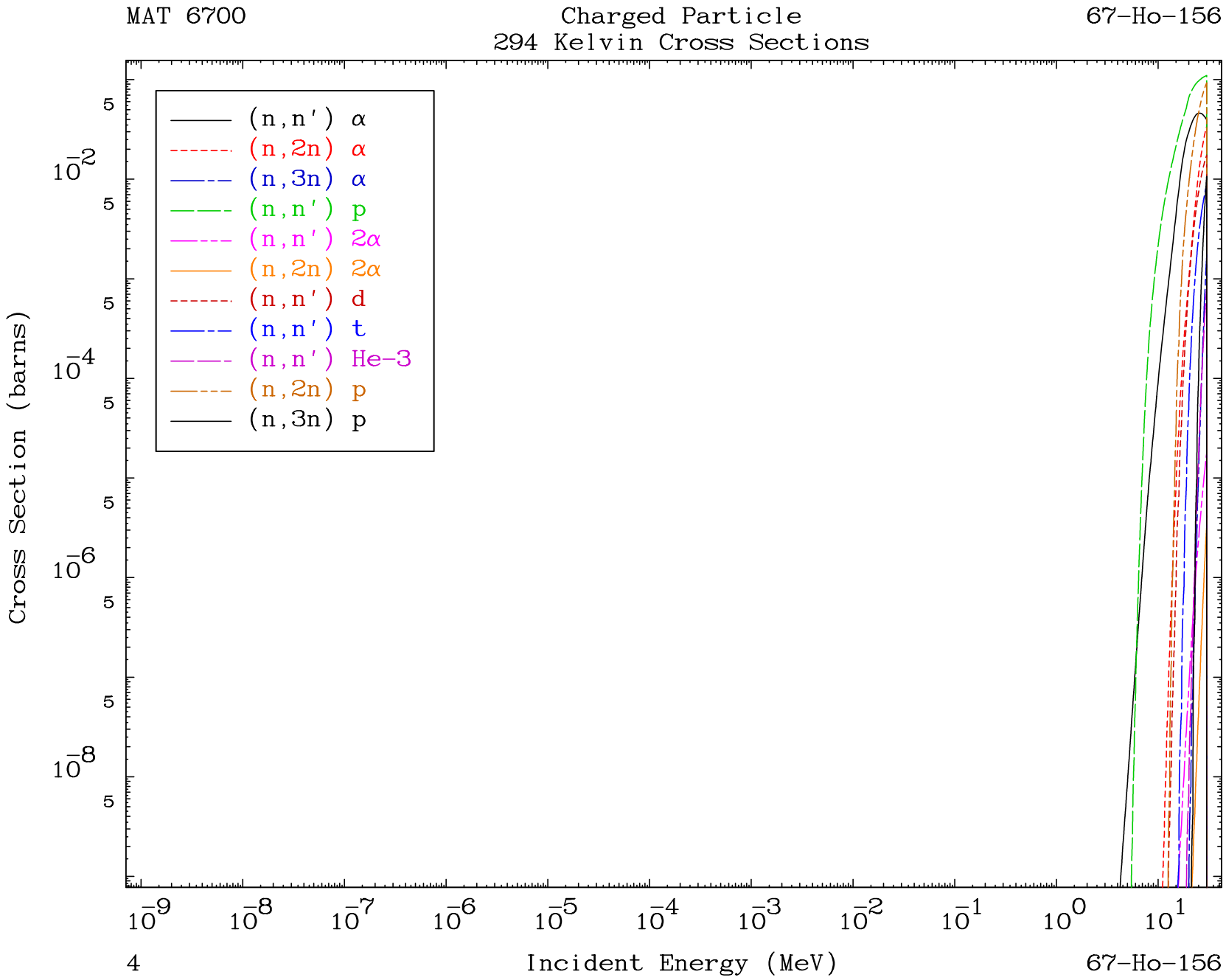
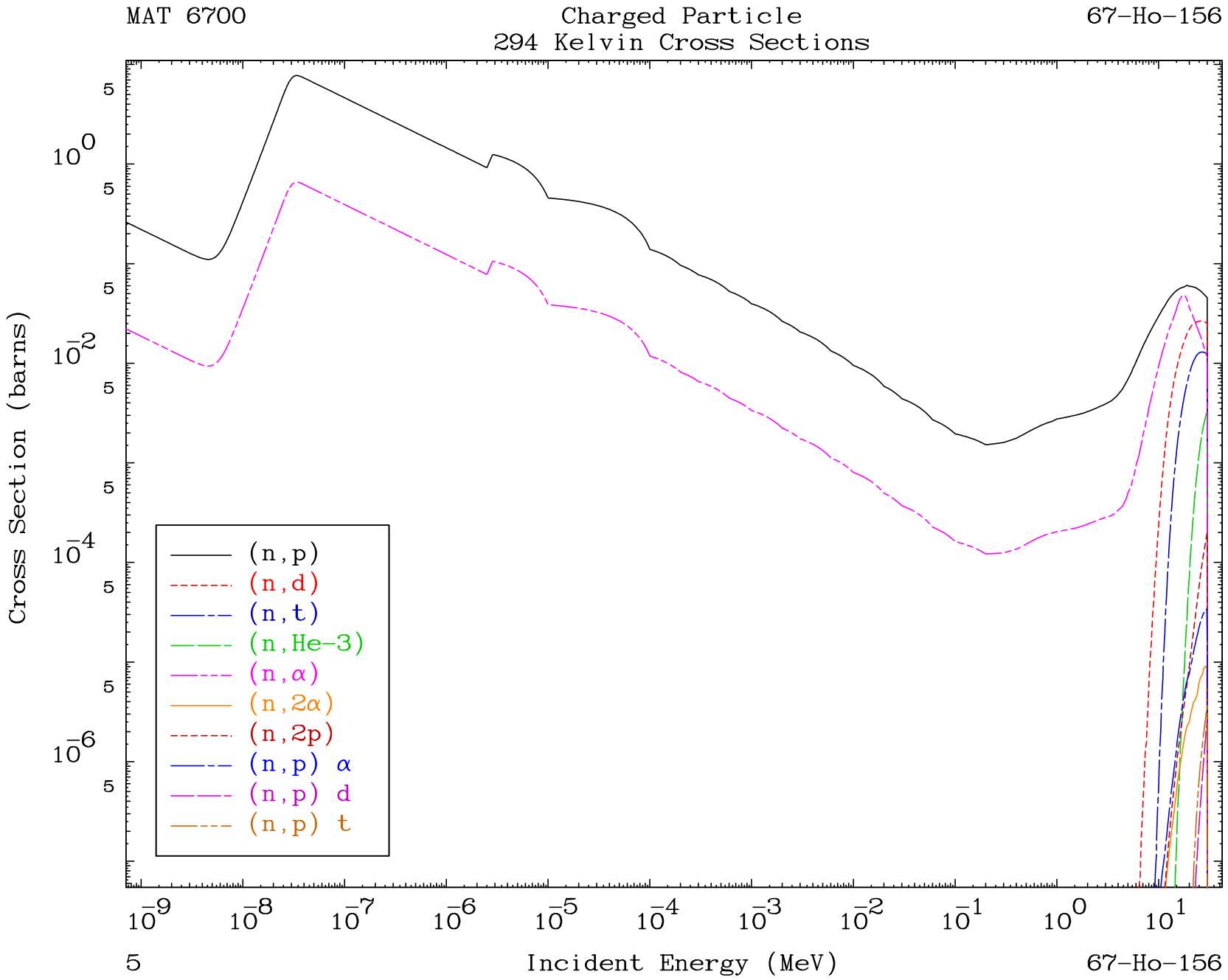
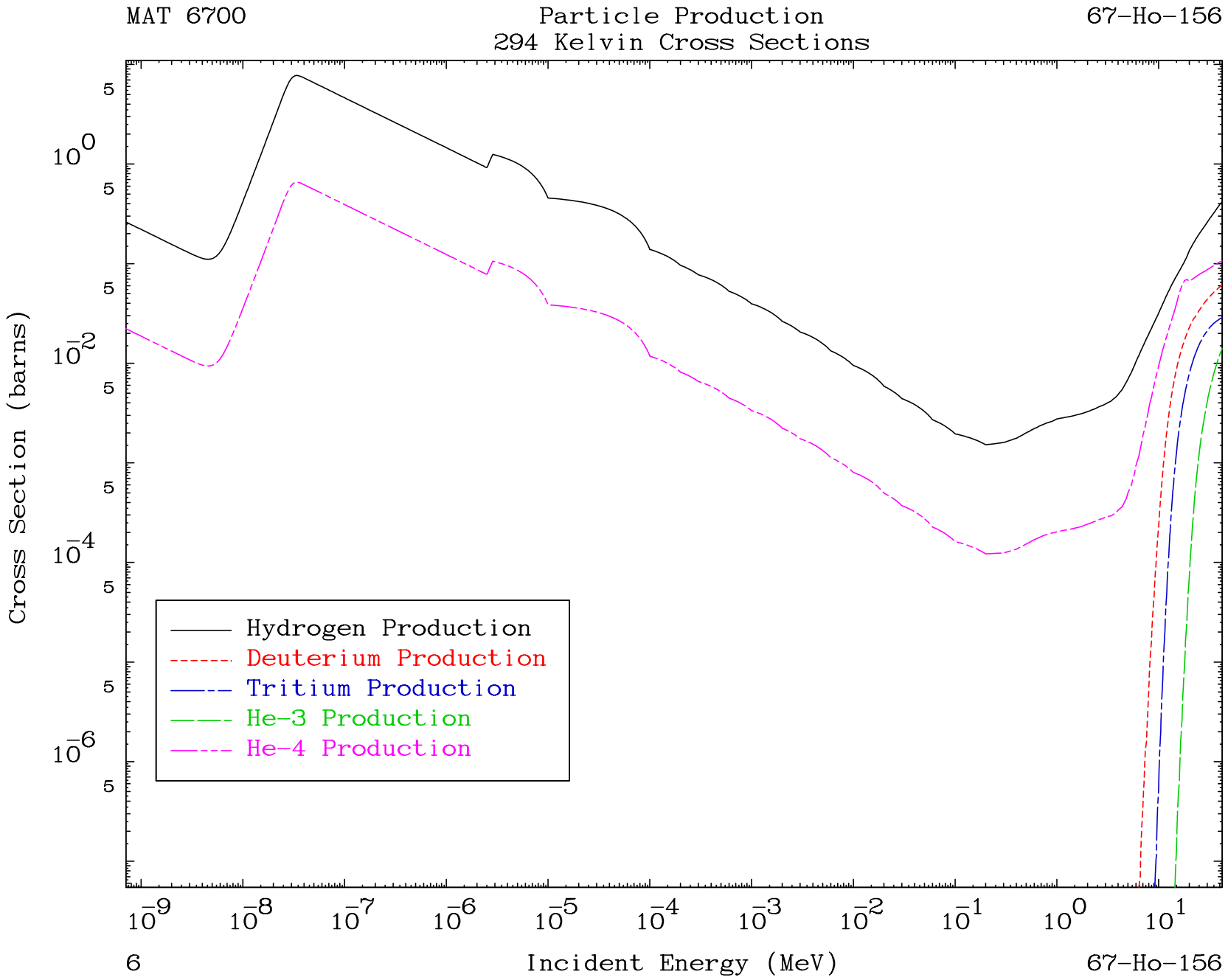

MAT 6700
Major
67-Ho-156
294 Kelvin Cross Sections
Cross Section (barns)
Incident Energy (MeV)
67-Ho-156
Total
Elastic
Inelastic
(n,γ)

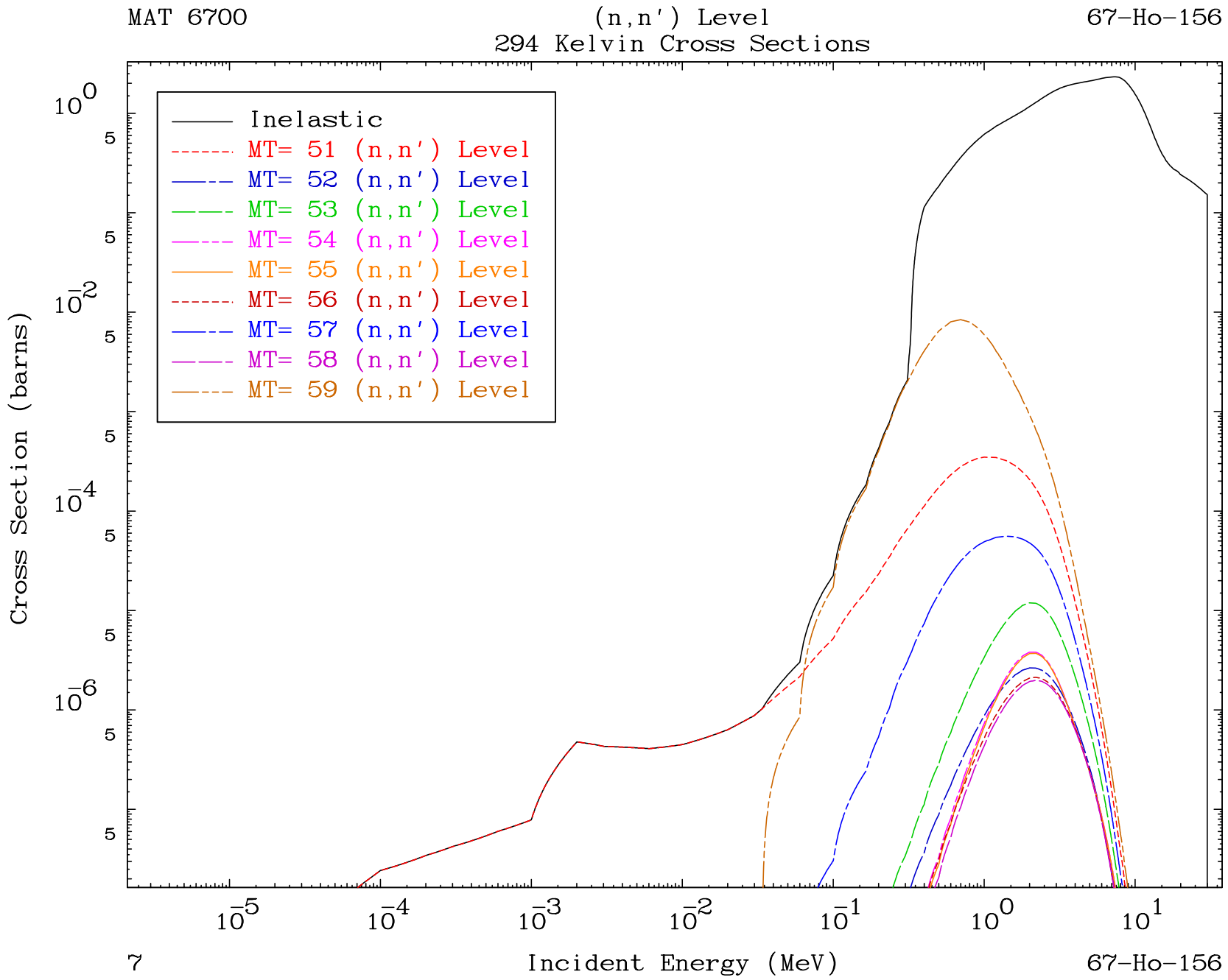

MAT 6700
Neutron Production
294 Kelvin Cross Sections
67-Ho-156
(n,2n)
(n,3n)
(n,n') α
(n,2n) α
(n,3n) α
(n,n') p
(n,n') 2α
Cross Section (barns)
Incident Energy (MeV)
67-Ho-156
2

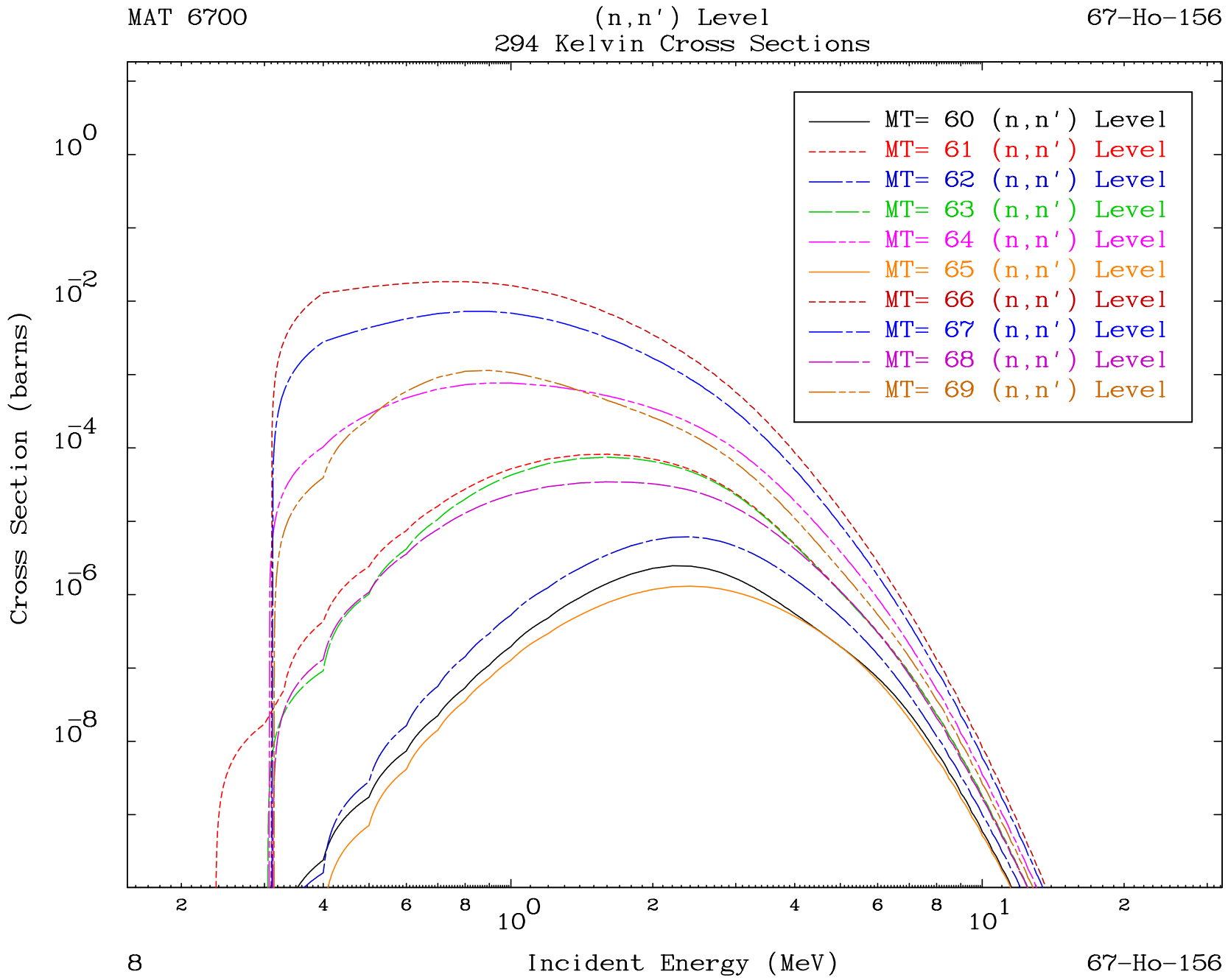

MAT 6700
Neutron Production
294 Kelvin Cross Sections
67-Ho-156
(n,2n) 2α
(n,n') d
(n,n') t
(n,n') He-3
(n,4n)
(n,2n) p
(n,3n) p
Cross Section (barns)
10-2
10-4
10-6
10-8
5
6 7 8 9 100 2 3 4 5 6 7 8 9 101 2 3
Incident Energy (MeV)
3
67-Ho-156

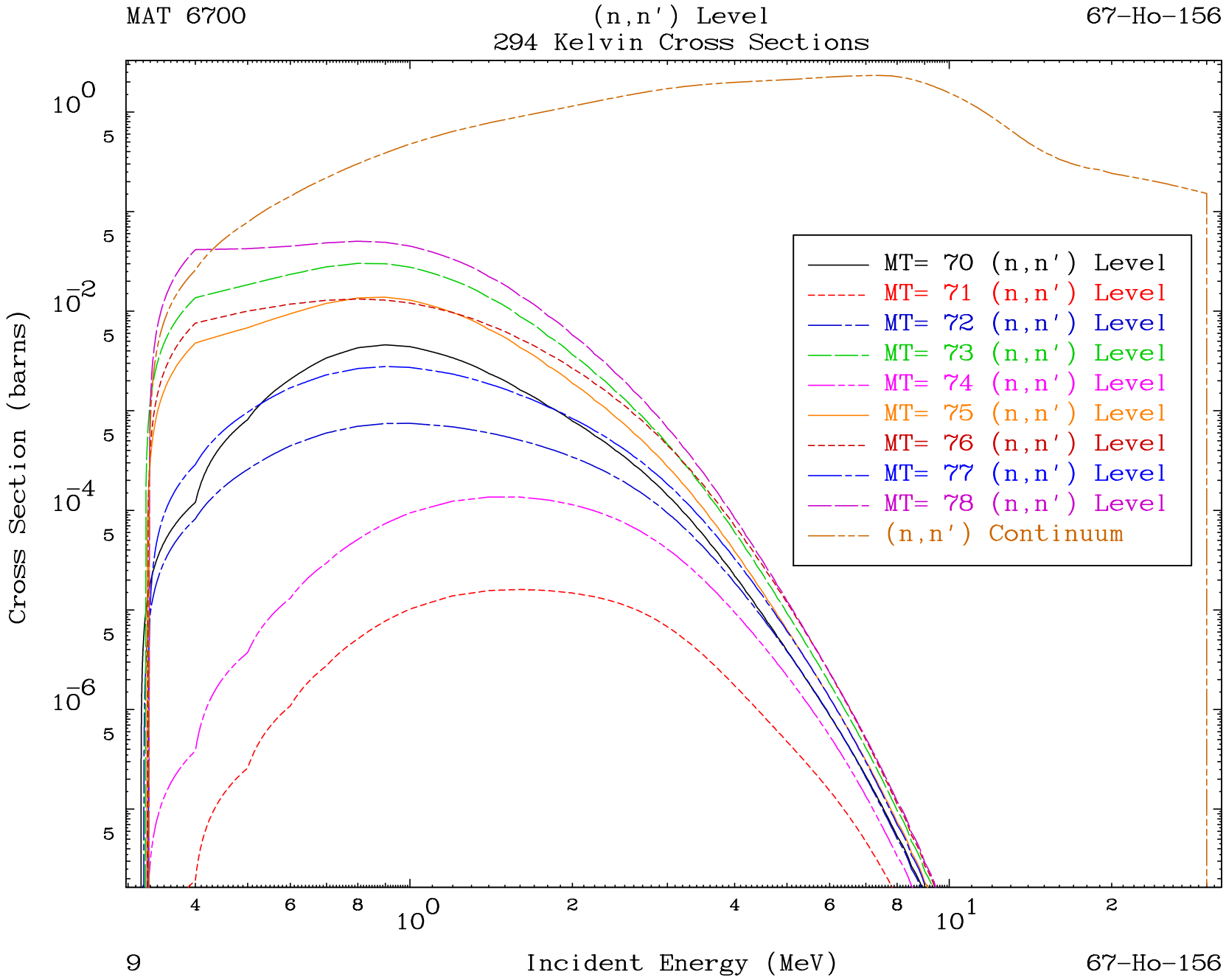

MAT 6700
Charged Particle
294 Kelvin Cross Sections
67-Ho-156
(n,n') α
(n,2n) α
(n,3n) α
(n,n') p
(n,n') 2α
(n,2n) 2α
(n,n') d
(n,n') t
(n,n') He-3
(n,2n) p
(n,3n) p
Cross Section (barns)
Incident Energy (MeV)
67-Ho-156
4

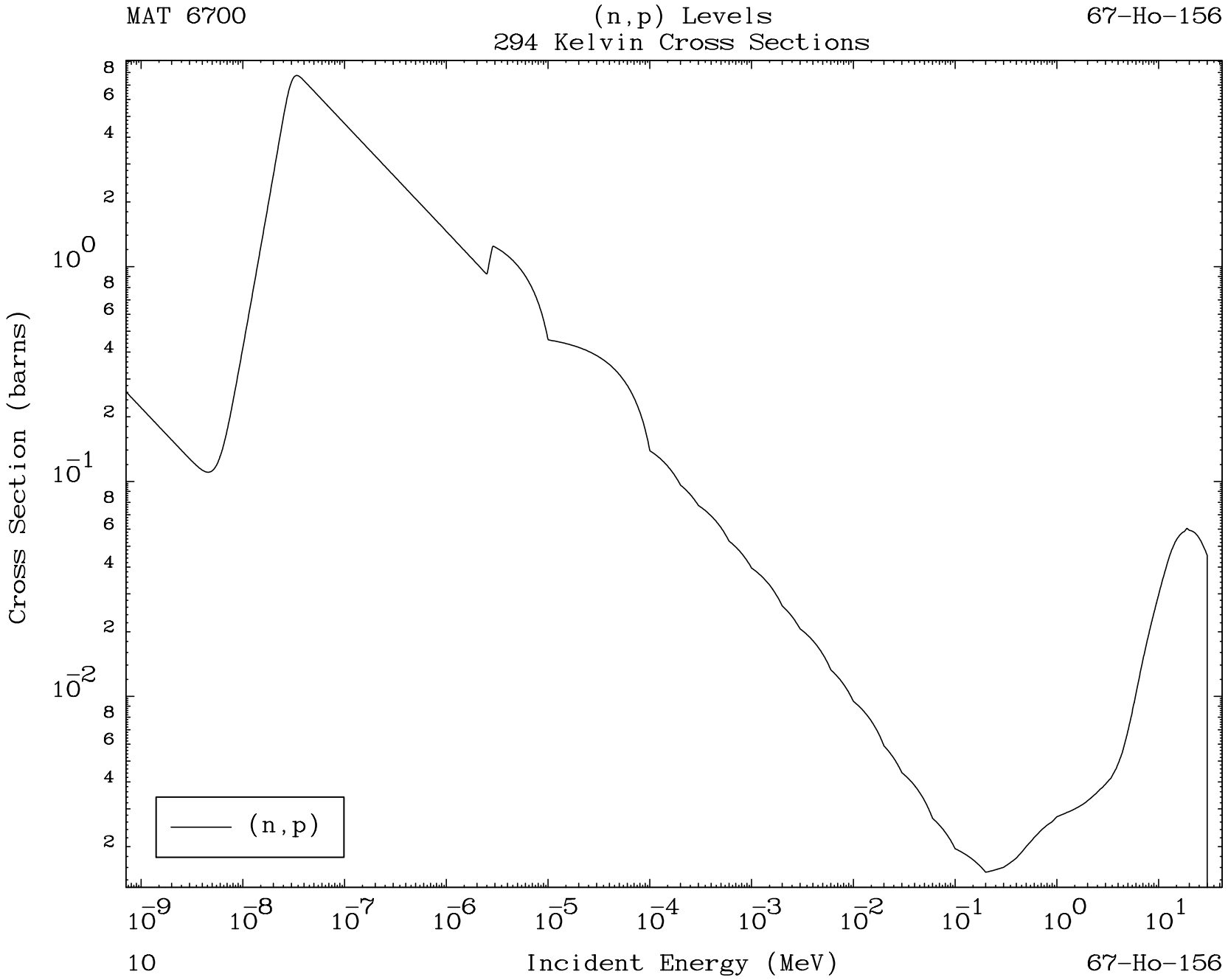

MAT 6700
Charged Particle
294 Kelvin Cross Sections
67-Ho-156
Cross Section (barns)
Incident Energy (MeV)
67-Ho-156
(n,p)
(n,d)
(n,t)
(n,He-3)
(n,α)
(n,2α)
(n,2p)
(n,p) α
(n,p) d
(n,p) t

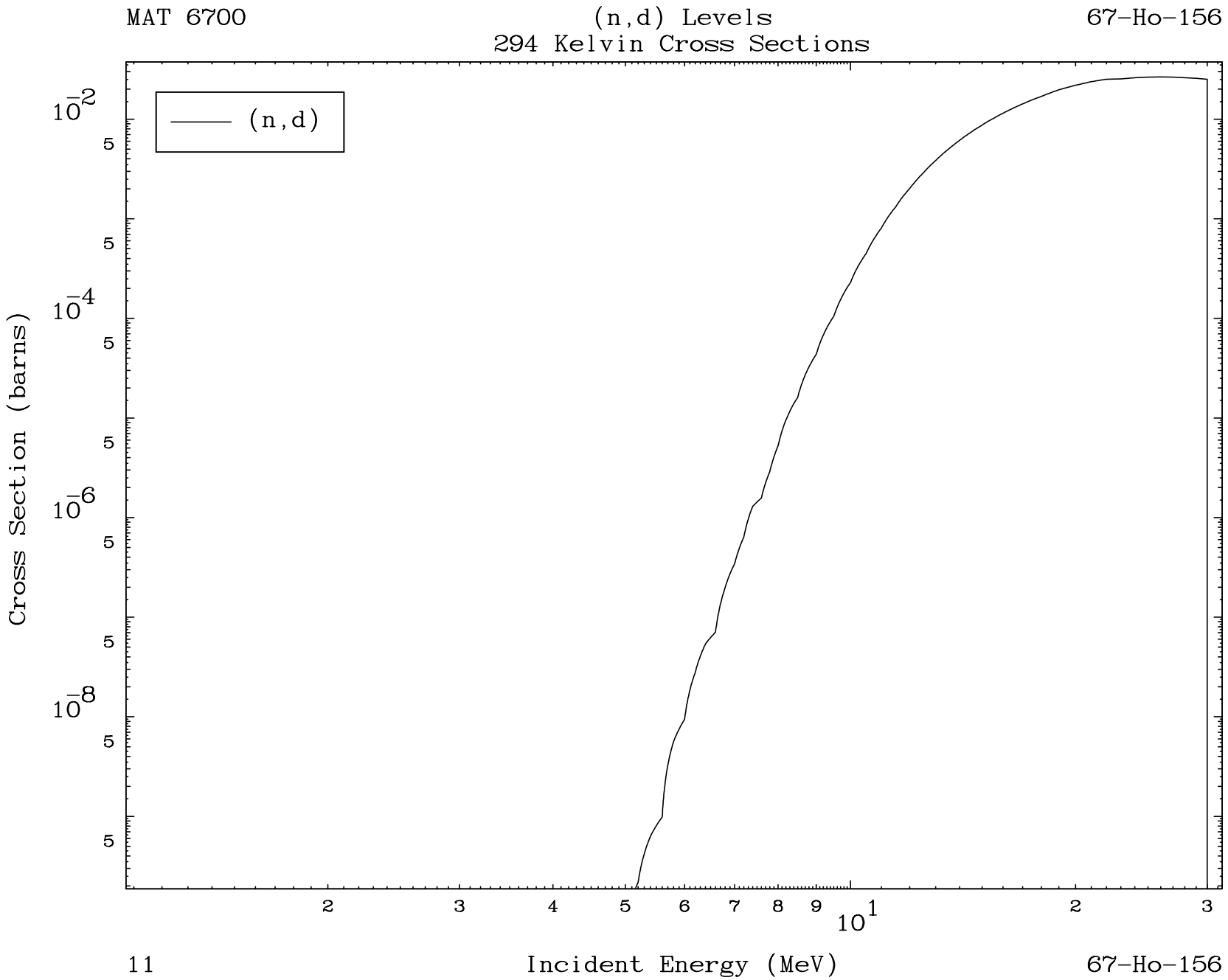

MAT 6700
Particle Production
294 Kelvin Cross Sections
67-Ho-156
Cross Section (barns)
Incident Energy (MeV)
Hydrogen Production
Deuterium Production
Tritium Production
He-3 Production
He-4 Production
6
67-Ho-156

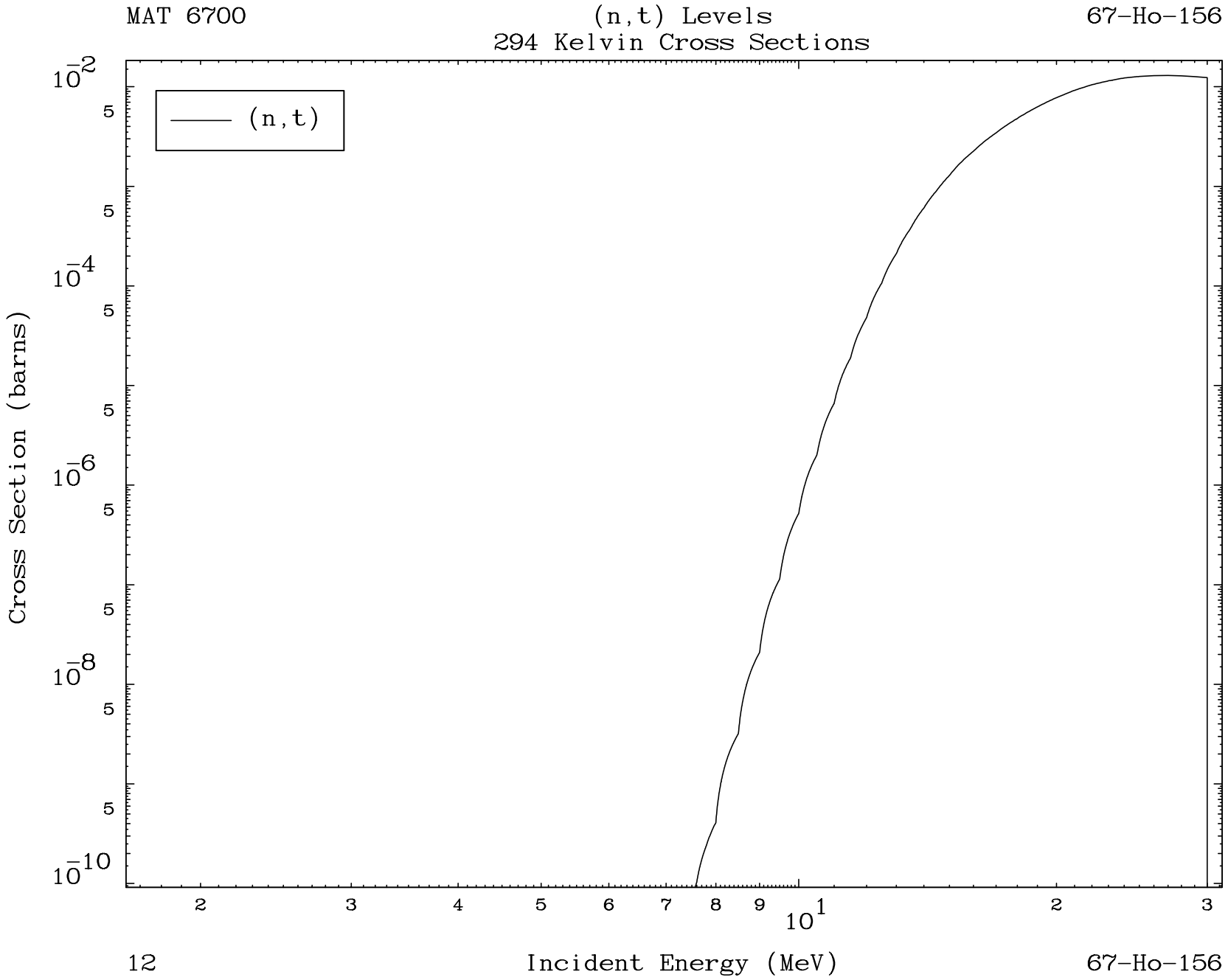

MAT 6700
(n,n') Level
67-Ho-156
294 Kelvin Cross Sections
Inelastic
MT= 51 (n,n') Level
MT= 52 (n,n') Level
MT= 53 (n,n') Level
MT= 54 (n,n') Level
MT= 55 (n,n') Level
MT= 56 (n,n') Level
MT= 57 (n,n') Level
MT= 58 (n,n') Level
MT= 59 (n,n') Level
Cross Section (barns)
Incident Energy (MeV)
7
67-Ho-156

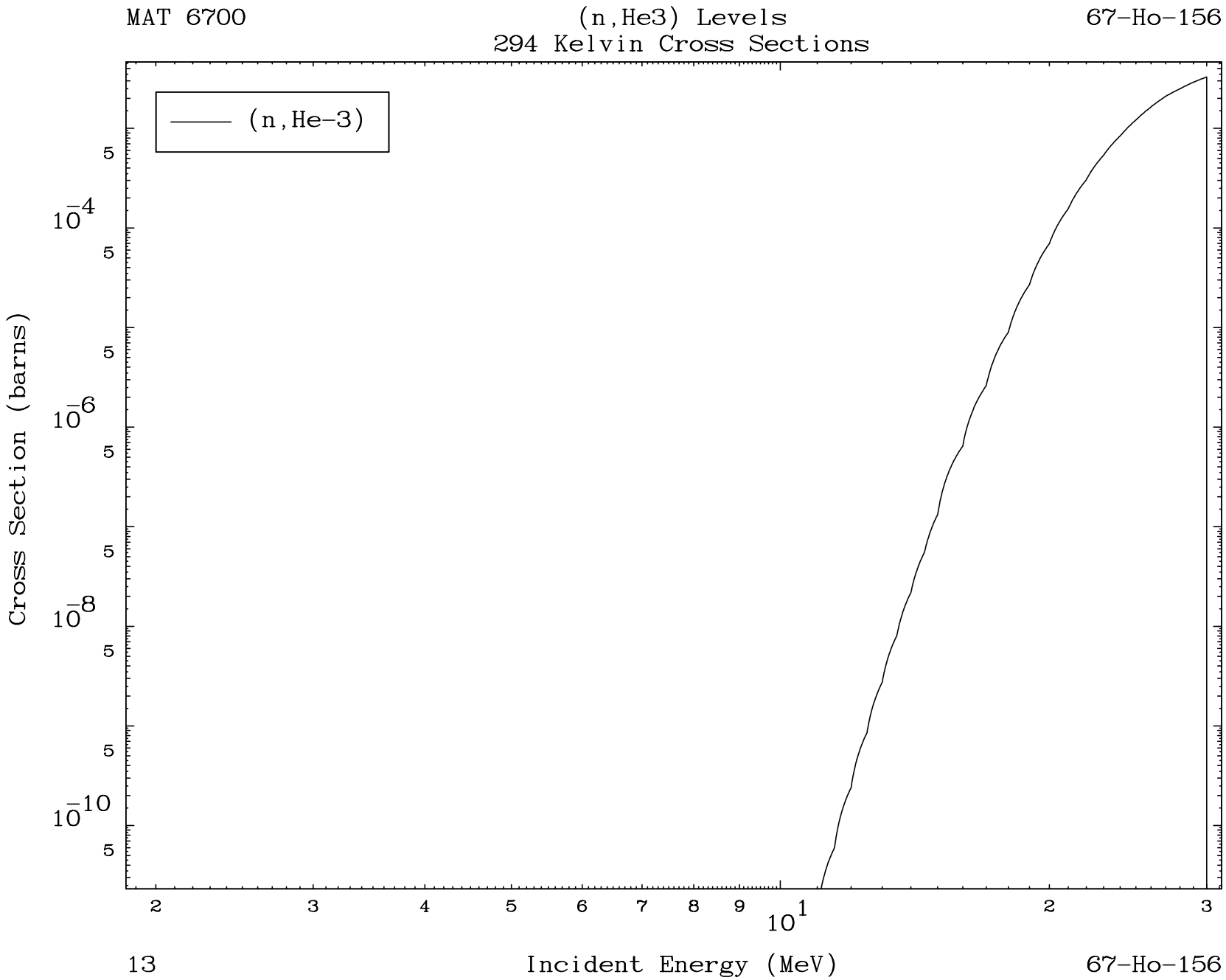

MAT 6700
(n,n') Level
294 Kelvin Cross Sections
67-Ho-156
MT= 60 (n,n') Level
MT= 61 (n,n') Level
MT= 62 (n,n') Level
MT= 63 (n,n') Level
MT= 64 (n,n') Level
MT= 65 (n,n') Level
MT= 66 (n,n') Level
MT= 67 (n,n') Level
MT= 68 (n,n') Level
MT= 69 (n,n') Level
Cross Section (barns)
Incident Energy (MeV)
8
67-Ho-156

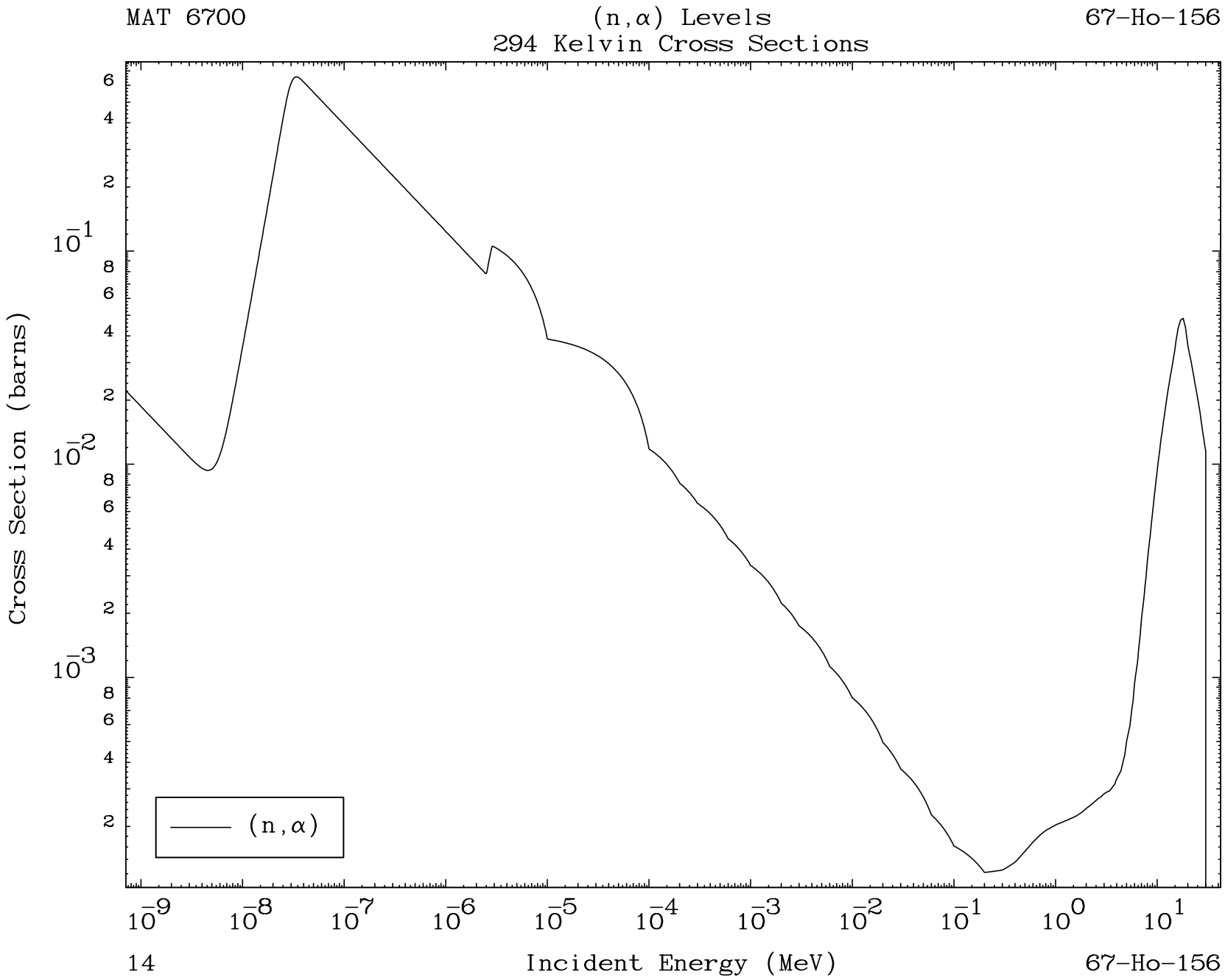

MAT 6700
(n,n') Level
294 Kelvin Cross Sections
67-Ho-156
Cross Section (barns)
Incident Energy (MeV)
MT= 70 (n,n') Level
MT= 71 (n,n') Level
MT= 72 (n,n') Level
MT= 73 (n,n') Level
MT= 74 (n,n') Level
MT= 75 (n,n') Level
MT= 76 (n,n') Level
MT= 77 (n,n') Level
MT= 78 (n,n') Level
(n,n') Continuum
9
67-Ho-156

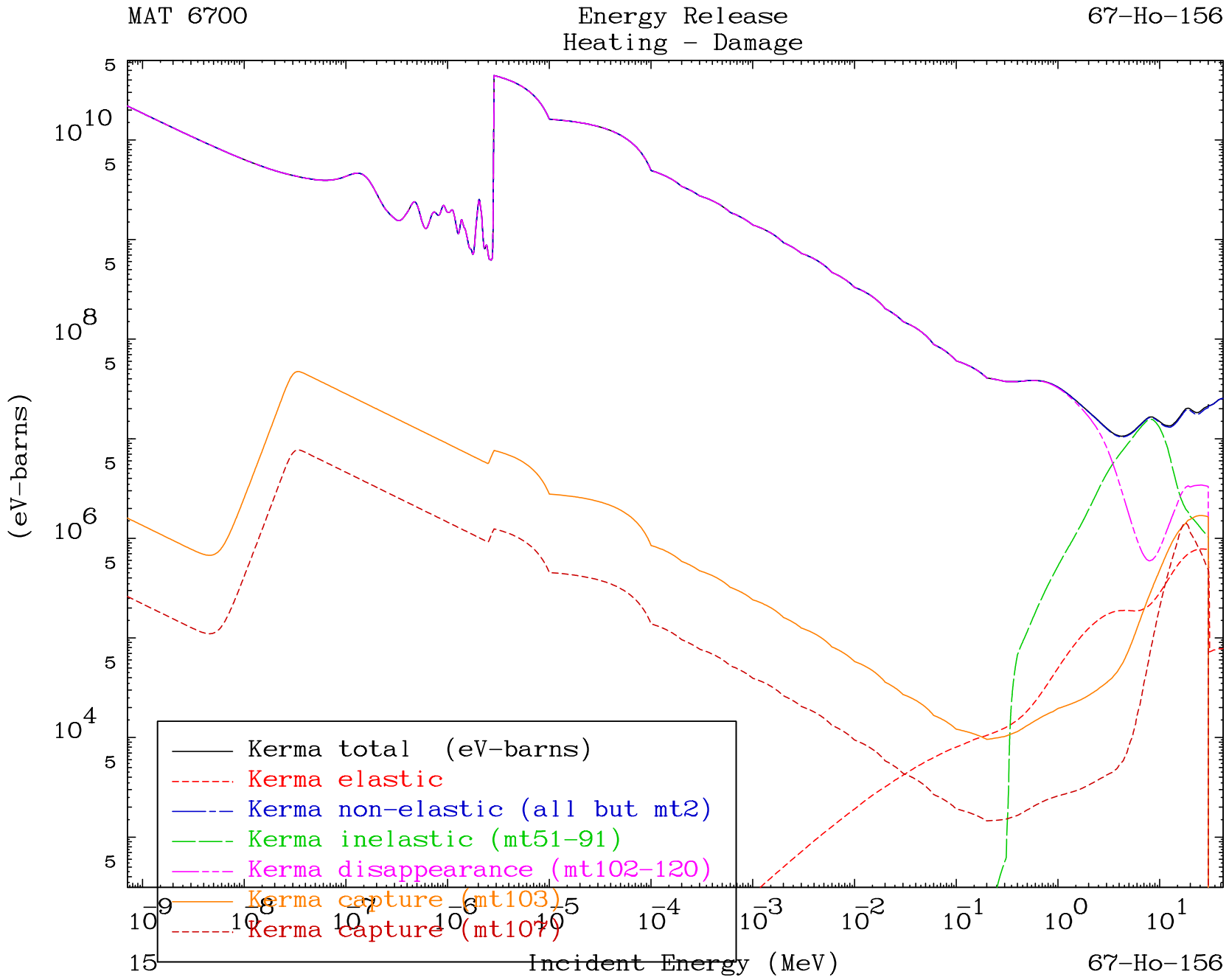

MAT 6700
(n,p) Levels
67-Ho-156
294 Kelvin Cross Sections
Cross Section (barns)
(n,p)
Incident Energy (MeV)
67-Ho-156

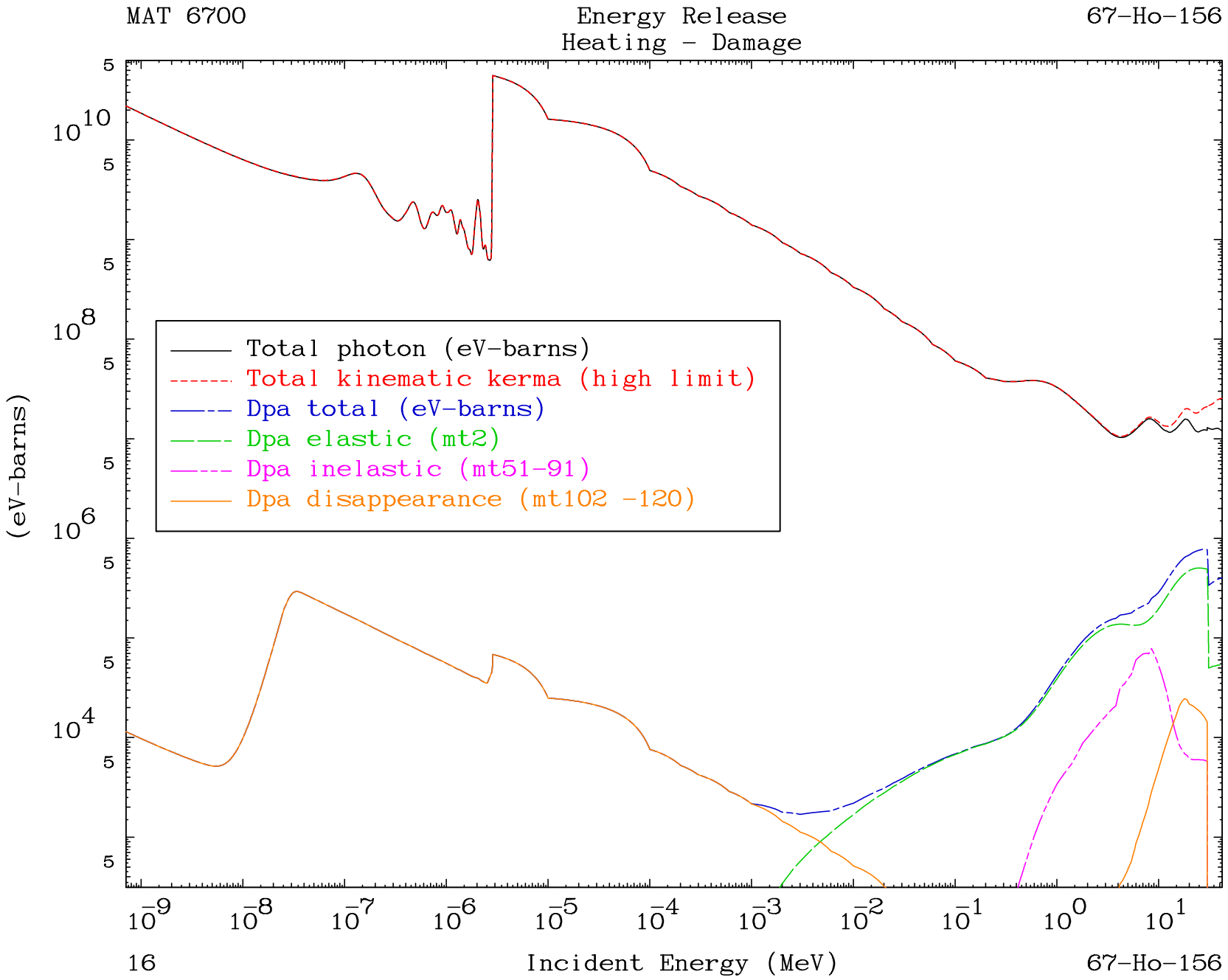

MAT 6700
(n,d) Levels
67-Ho-156
294 Kelvin Cross Sections
(n,d)
Cross Section (barns)
10-2
10-4
10-6
10-8
5
2
3
4
5
6
7
8
9
101
2
3
11
Incident Energy (MeV)
67-Ho-156

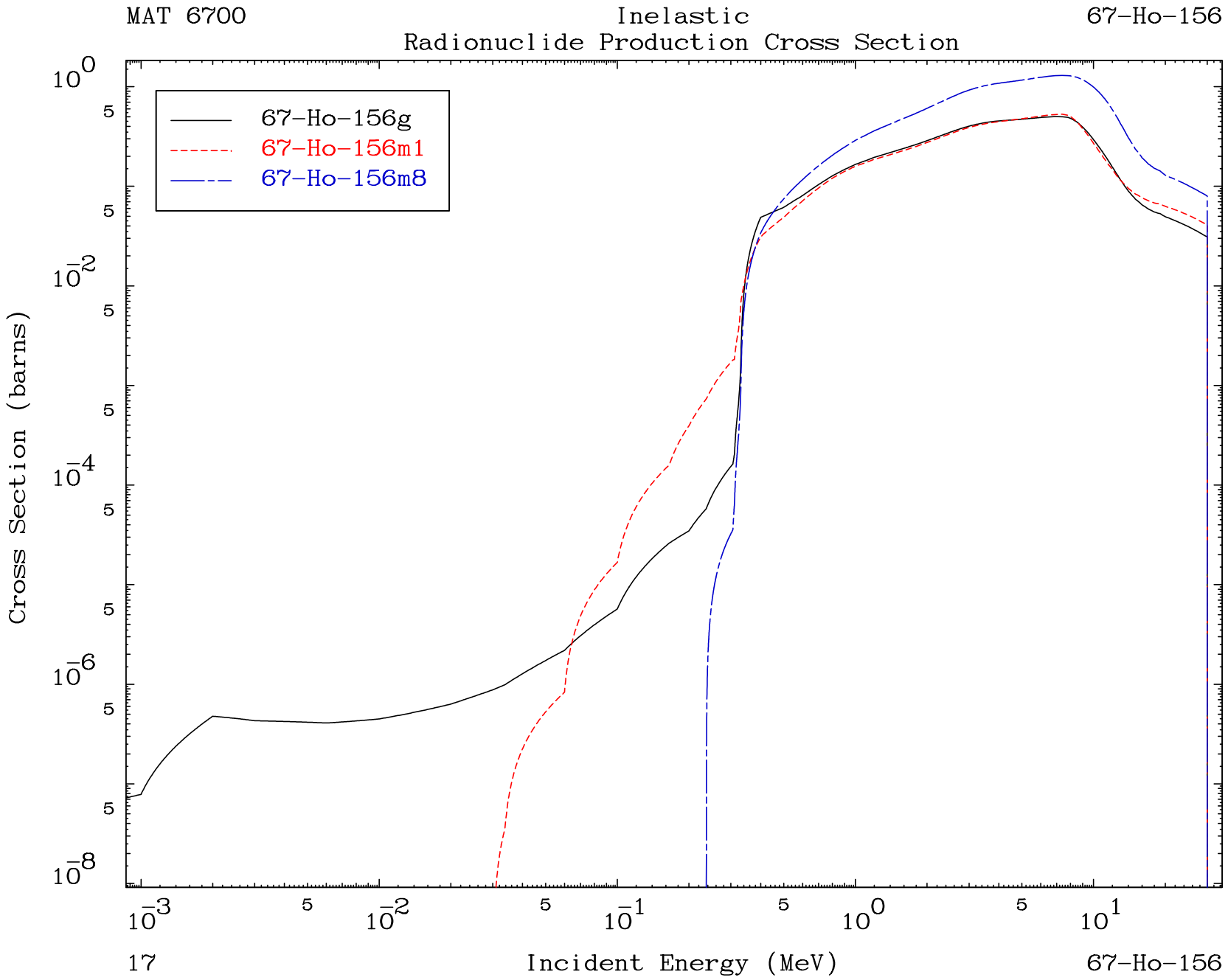

MAT 6700
(n,t) Levels
67-Ho-156
294 Kelvin Cross Sections
(n,t)
Cross Section (barns)
Incident Energy (MeV)
12
67-Ho-156

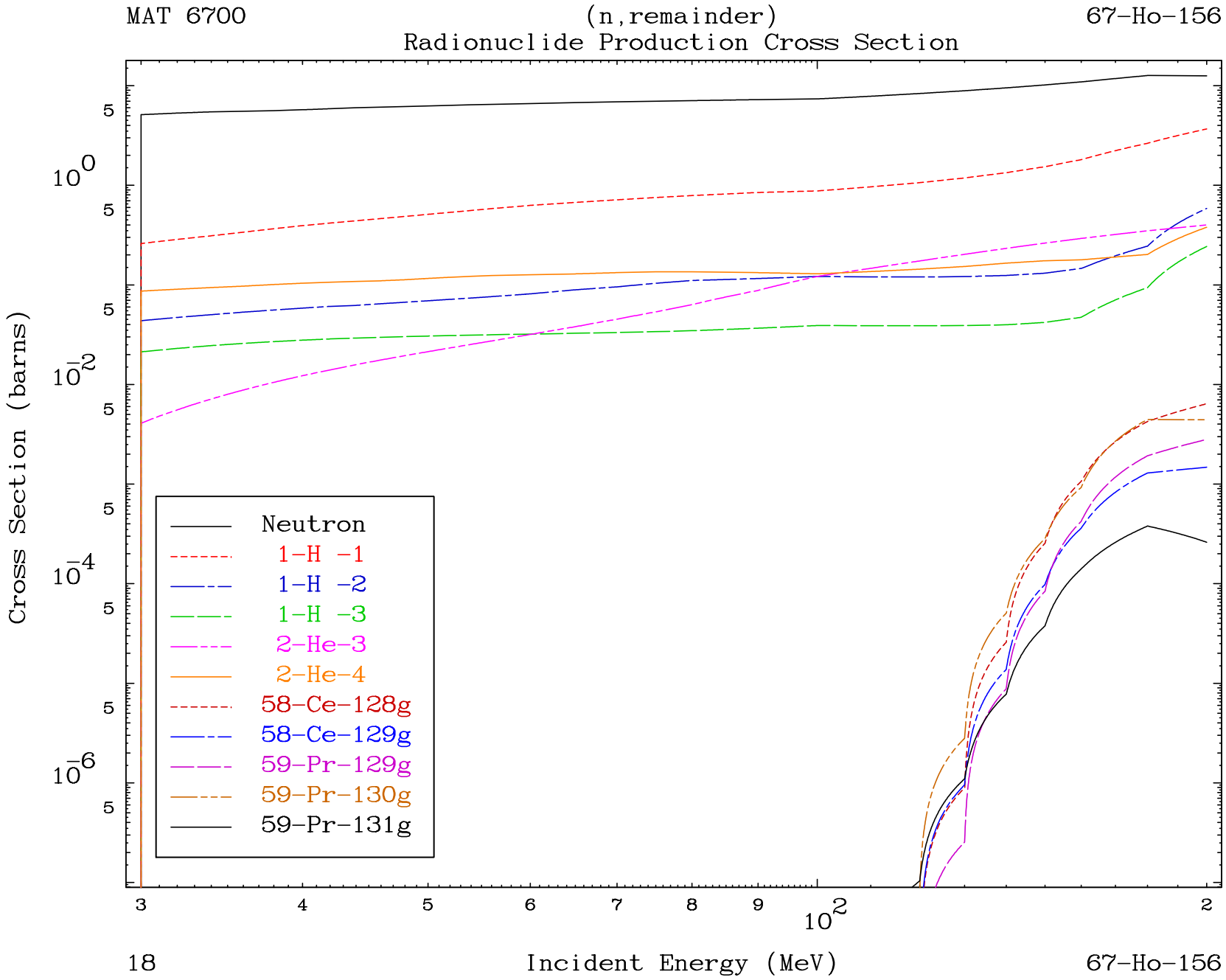

MAT 6700
(n,He3) Levels
67-Ho-156
294 Kelvin Cross Sections
(n,He-3)
Cross Section (barns)
10^-4
10^-6
10^-8
10^-10
5
2
3
4
5
6
7
8
9
10^1
2
3
13
Incident Energy (MeV)
67-Ho-156

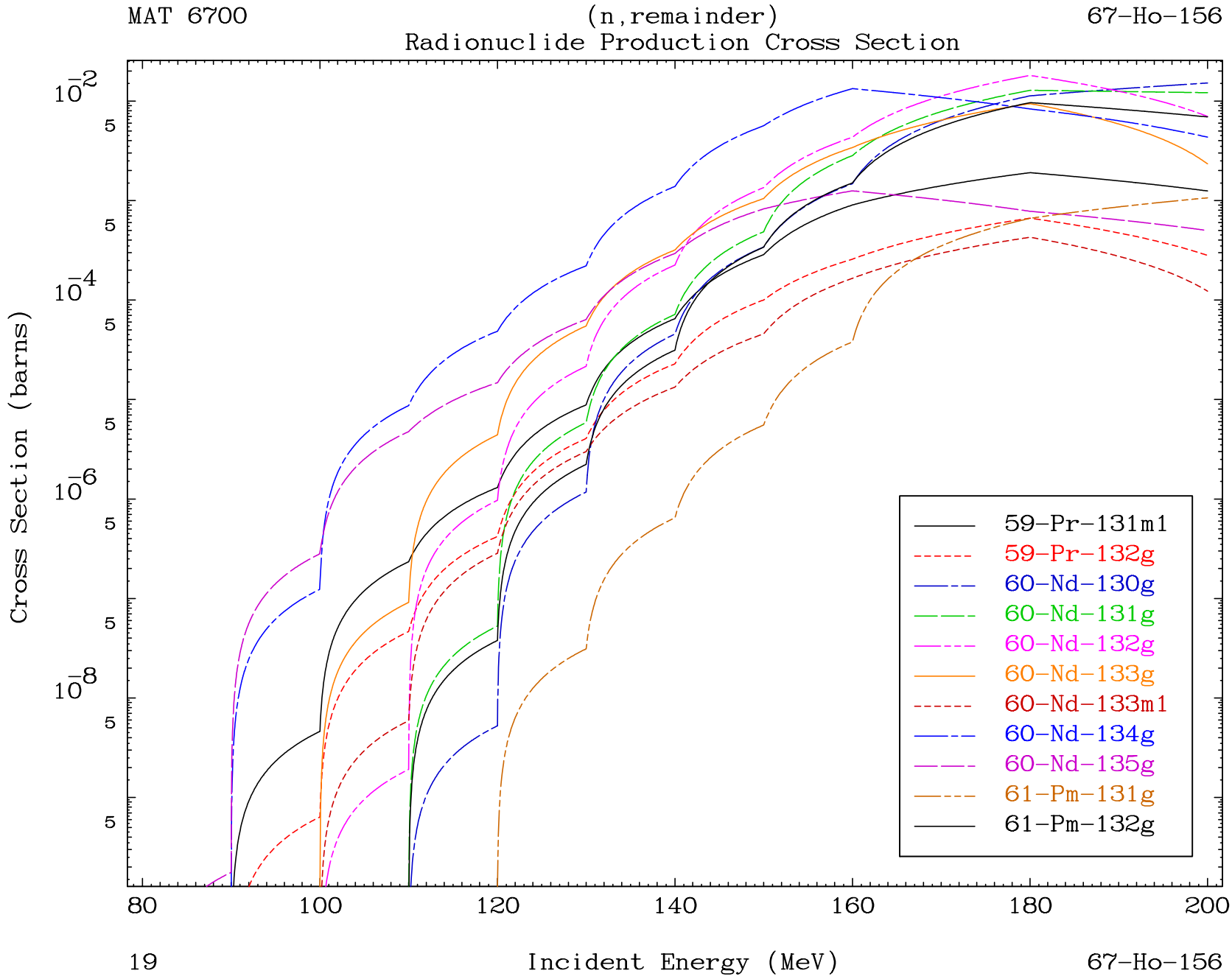

MAT 6700
(n,α) Levels
67-Ho-156
294 Kelvin Cross Sections
Cross Section (barns)
(n,α)
Incident Energy (MeV)
14
67-Ho-156

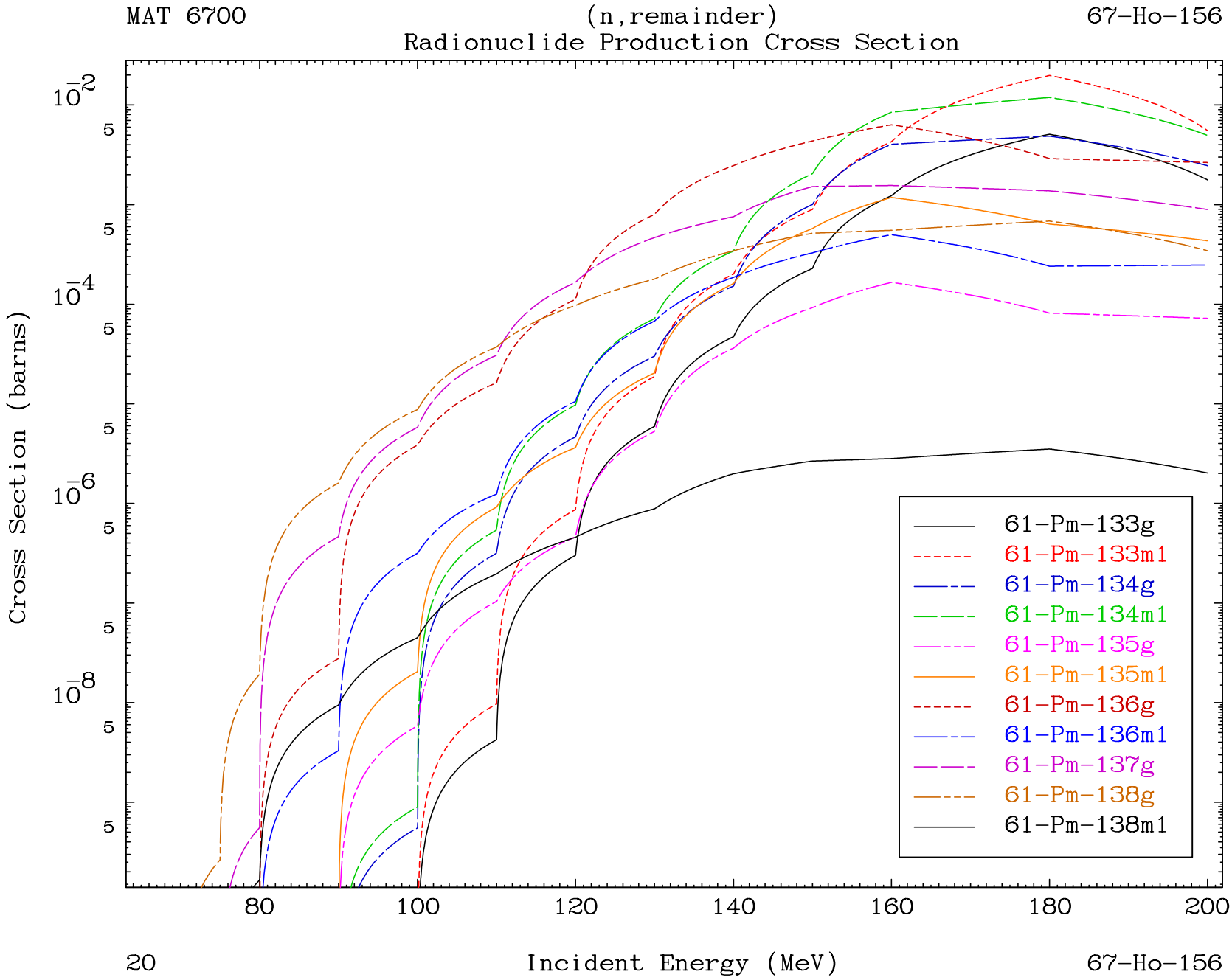

MAT 6700
Energy Release
Heating - Damage
67-Ho-156
(eV-barns)
Incident Energy (MeV)
67-Ho-156
Kerma total (eV-barns)
Kerma elastic
Kerma non-elastic (all but mt2)
Kerma inelastic (mt51-91)
Kerma disappearance (mt102-120)
Kerma capture (mt103)
Kerma capture (mt107)

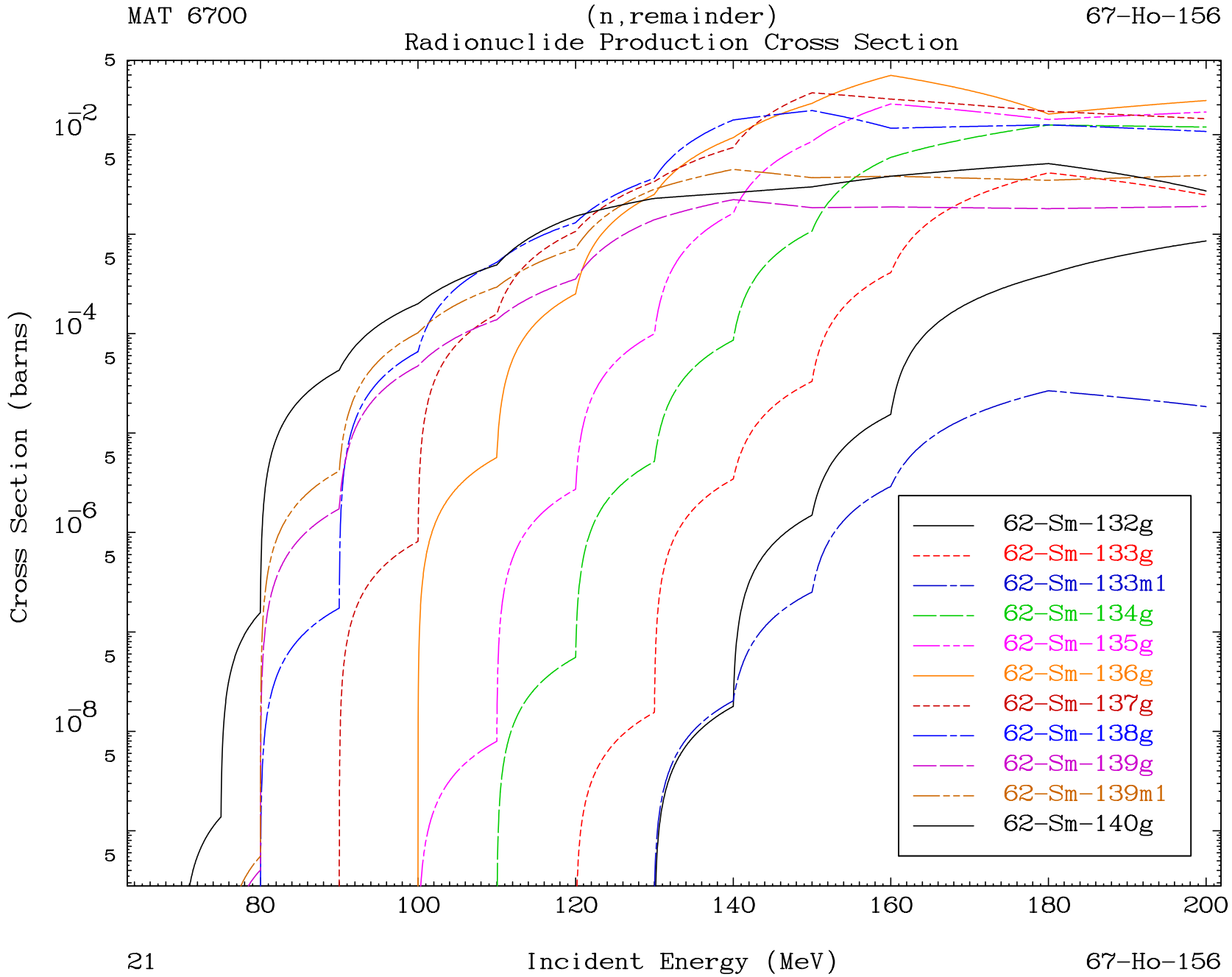

MAT 6700
Energy Release
Heating - Damage
67-Ho-156
(eV-barns)
Total photon (eV-barns)
Total kinematic kerma (high limit)
Dpa total (eV-barns)
Dpa elastic (mt2)
Dpa inelastic (mt51-91)
Dpa disappearance (mt102 -120)
Incident Energy (MeV)
16
67-Ho-156


MAT 6700
Inelastic
67-Ho-156
Radionuclide Production Cross Section
67-Ho-156g
67-Ho-156m1
67-Ho-156m8
Cross Section (barns)
Incident Energy (MeV)
17
67-Ho-156

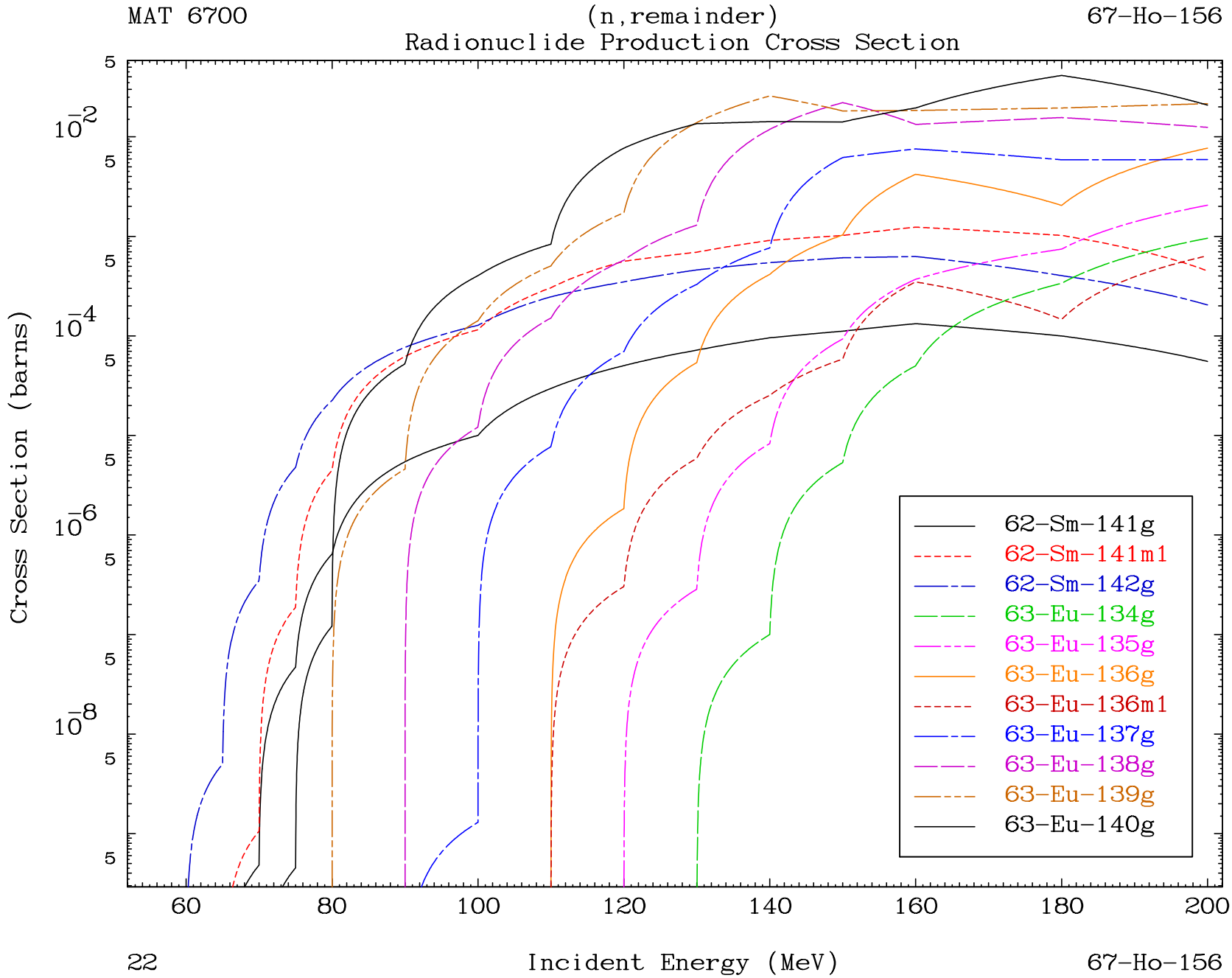

MAT 6700
(n,remainder)
67-Ho-156
Radionuclide Production Cross Section
Cross Section (barns)
10^0
10^-2
10^-4
10^-6
5
3
4
5
6
7
8
9
10^2
2
Neutron
1-H -1
1-H -2
1-H -3
2-He-3
2-He-4
58-Ce-128g
58-Ce-129g
59-Pr-129g
59-Pr-130g
59-Pr-131g
18
Incident Energy (MeV)
67-Ho-156


MAT 6700
(n,remainder)
67-Ho-156
Radionuclide Production Cross Section
Cross Section (barns)
10-2
10-4
10-6
10-8
80
100
120
140
160
180
200
Incident Energy (MeV)
19
67-Ho-156
59-Pr-131m1
59-Pr-132g
60-Nd-130g
60-Nd-131g
60-Nd-132g
60-Nd-133g
60-Nd-133m1
60-Nd-134g
60-Nd-135g
61-Pm-131g
61-Pm-132g

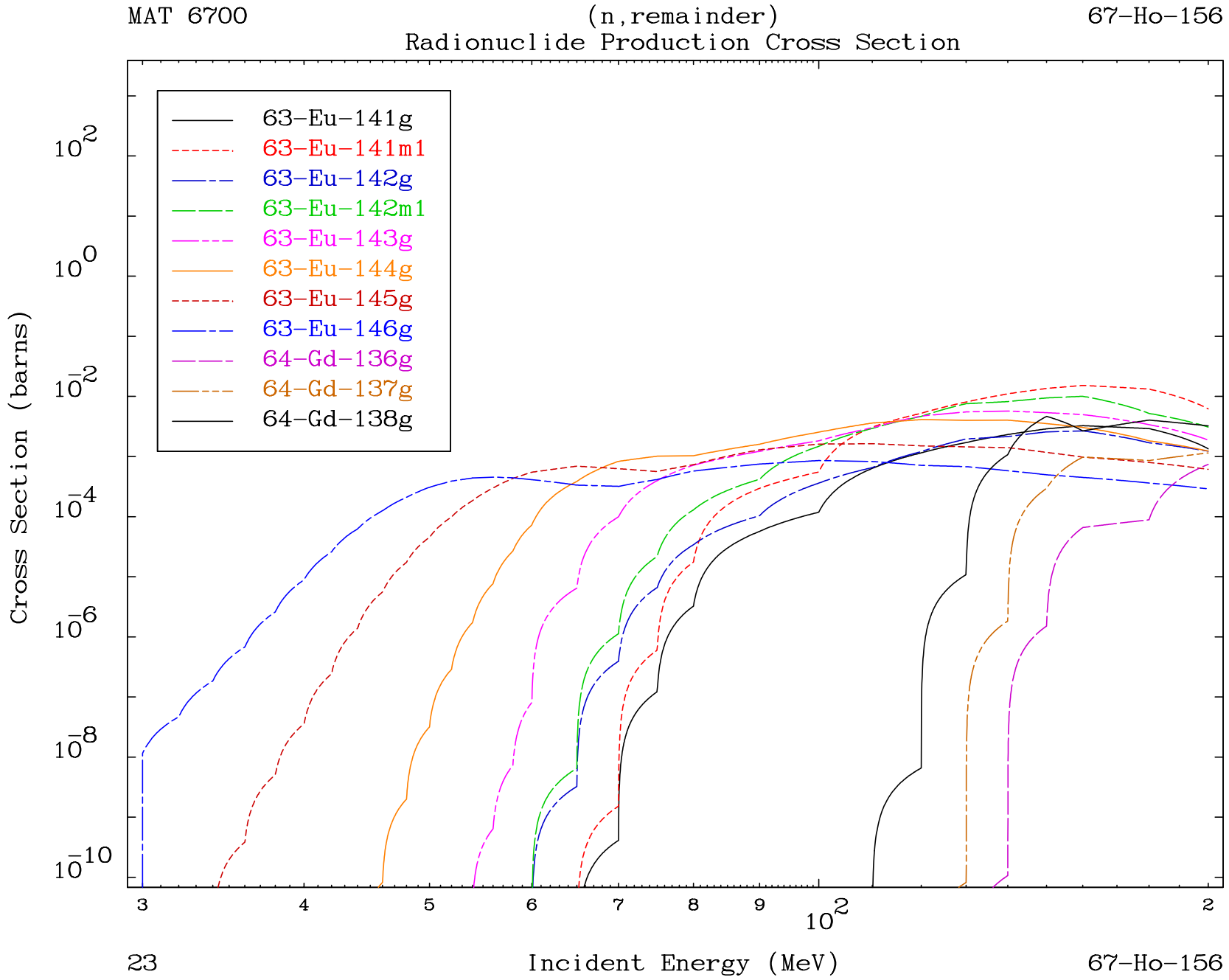

MAT 6700
(n,remainder)
67-Ho-156
Radionuclide Production Cross Section
Cross Section (barns)
10-2
5
10-4
5
10-6
5
10-8
5
80
100
120
140
160
180
200
20
Incident Energy (MeV)
67-Ho-156
61-Pm-133g
61-Pm-133m1
61-Pm-134g
61-Pm-134m1
61-Pm-135g
61-Pm-135m1
61-Pm-136g
61-Pm-136m1
61-Pm-137g
61-Pm-138g
61-Pm-138m1

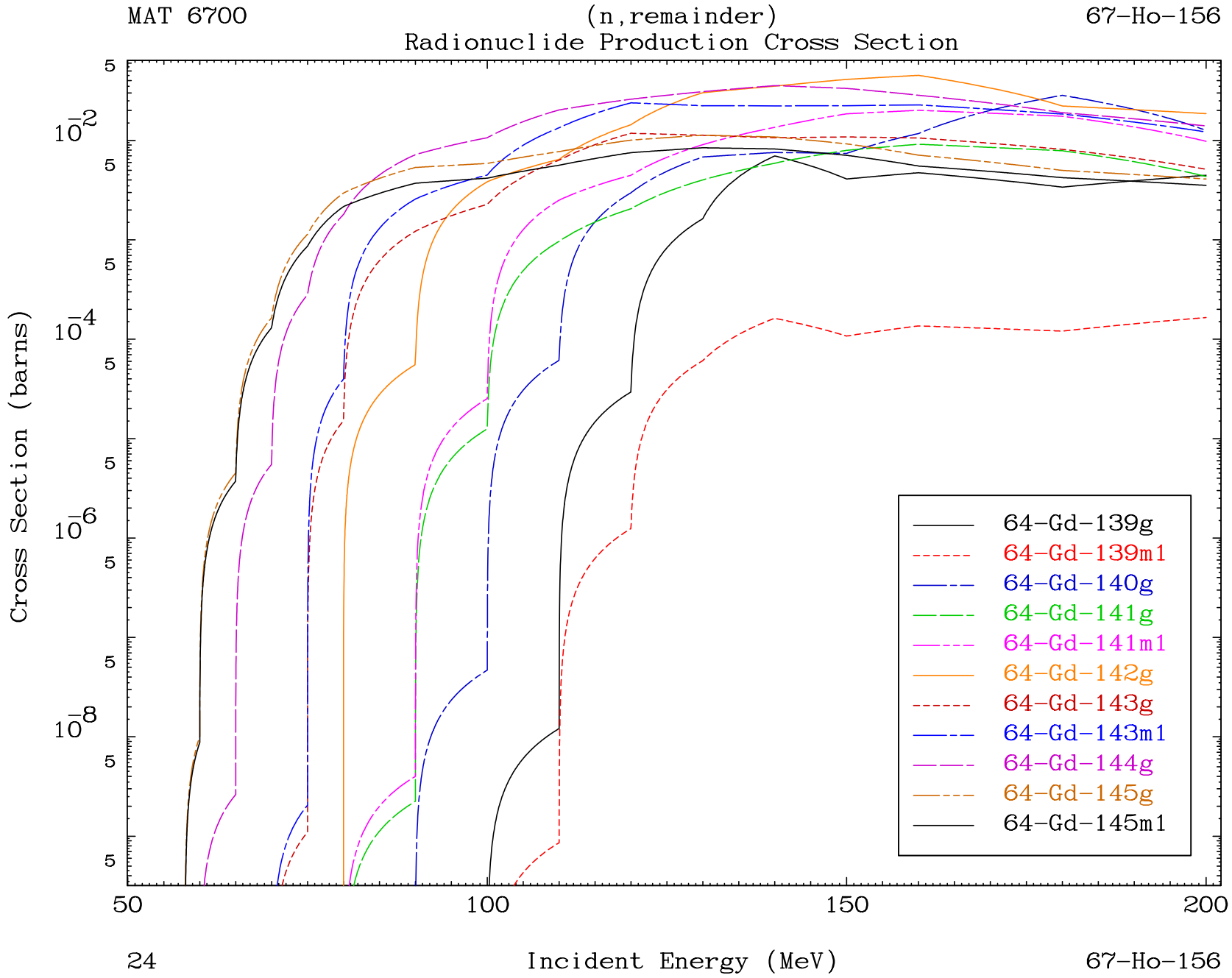

MAT 6700
(n,remainder)
67-Ho-156
Radionuclide Production Cross Section
Cross Section (barns)
10-2
10-4
10-6
10-8
80
100
120
140
160
180
200
Incident Energy (MeV)
62-Sm-132g
62-Sm-133g
62-Sm-133m1
62-Sm-134g
62-Sm-135g
62-Sm-136g
62-Sm-137g
62-Sm-138g
62-Sm-139g
62-Sm-139m1
62-Sm-140g

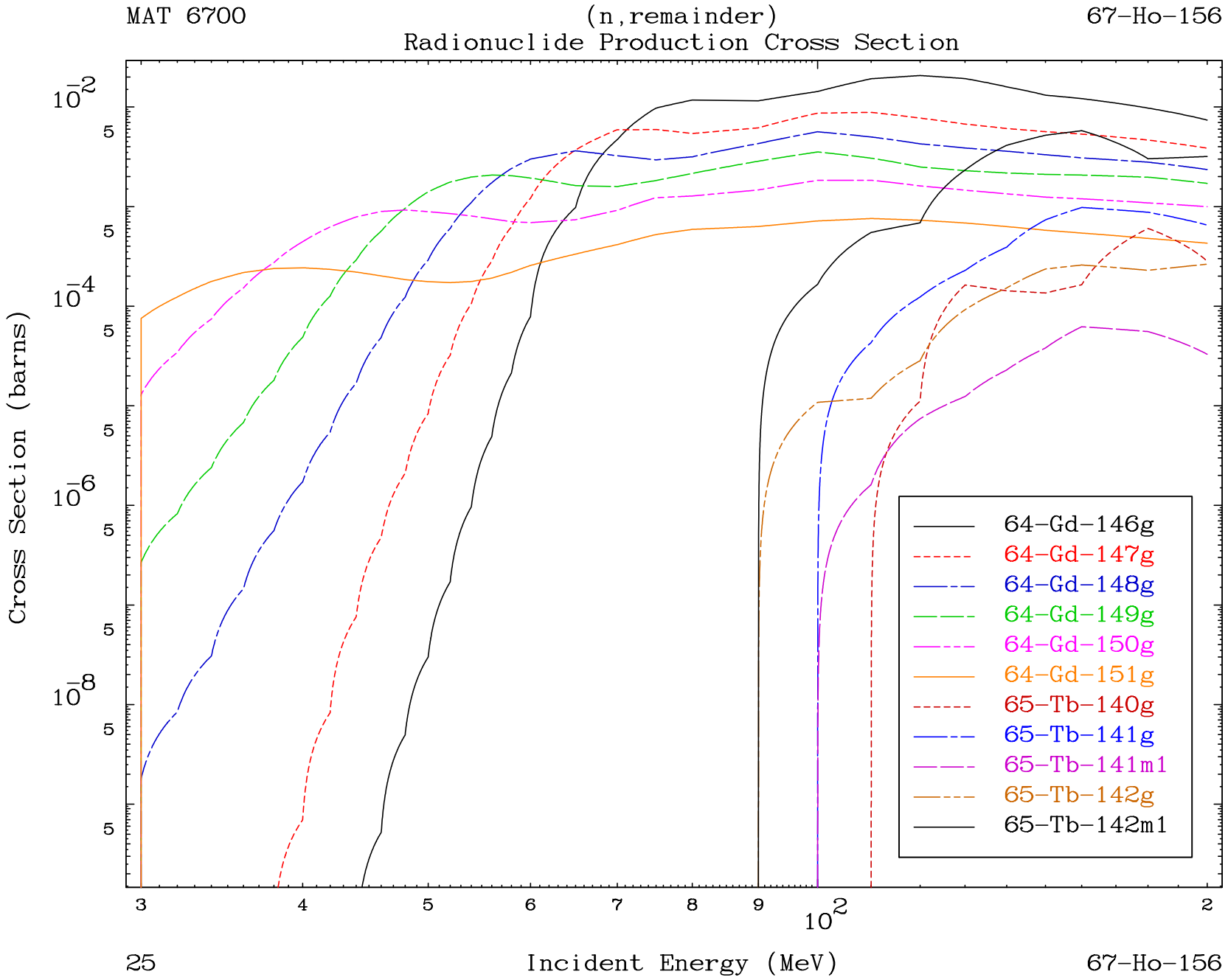
67-Ho-156

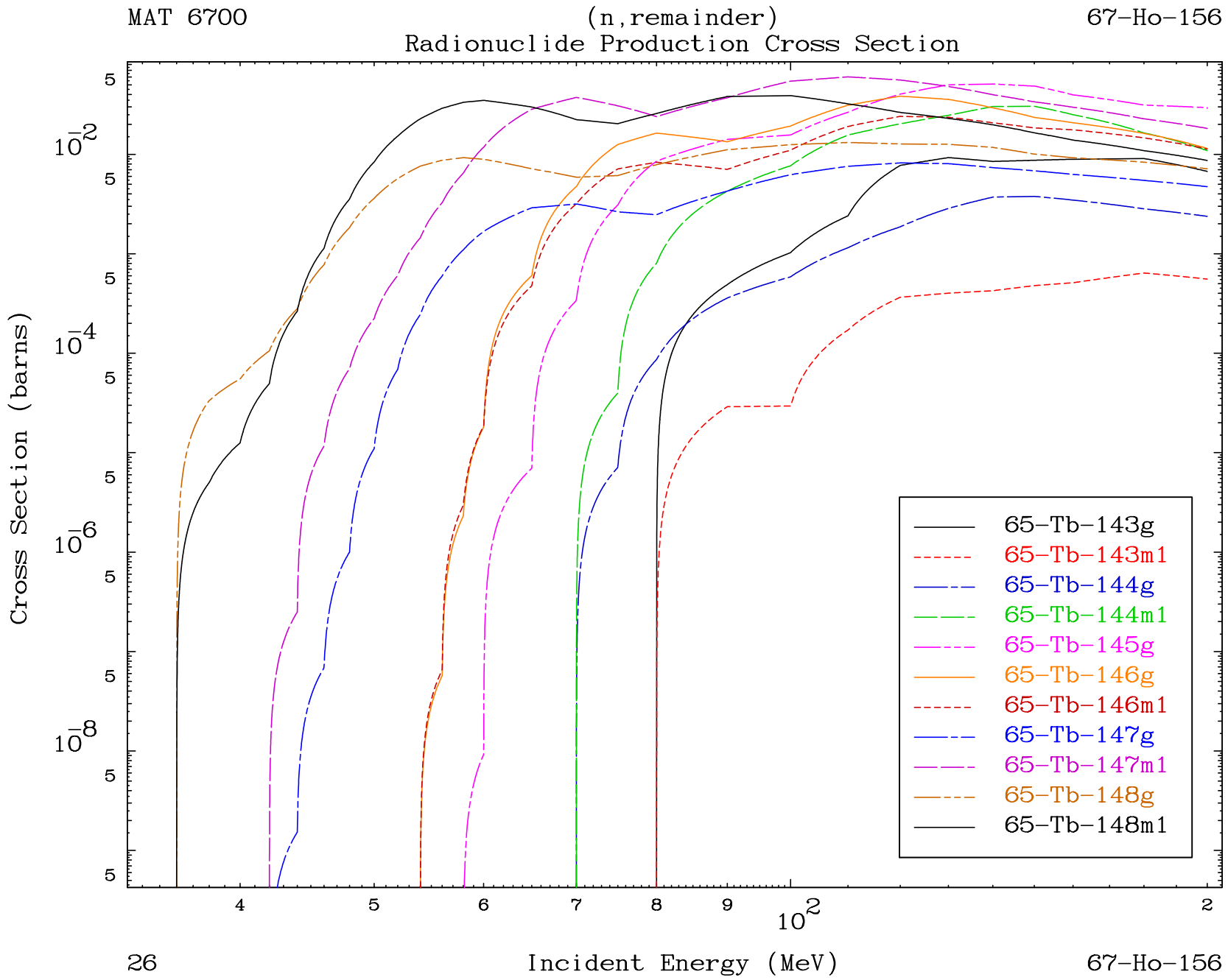

MAT 6700
(n,remainder)
67-Ho-156
Radionuclide Production Cross Section
Cross Section (barns)
10-2
10-4
10-6
10-8
60
80
100
120
140
160
180
200
Incident Energy (MeV)
62-Sm-141g
62-Sm-141m1
62-Sm-142g
63-Eu-134g
63-Eu-135g
63-Eu-136g
63-Eu-136m1
63-Eu-137g
63-Eu-138g
63-Eu-139g
63-Eu-140g

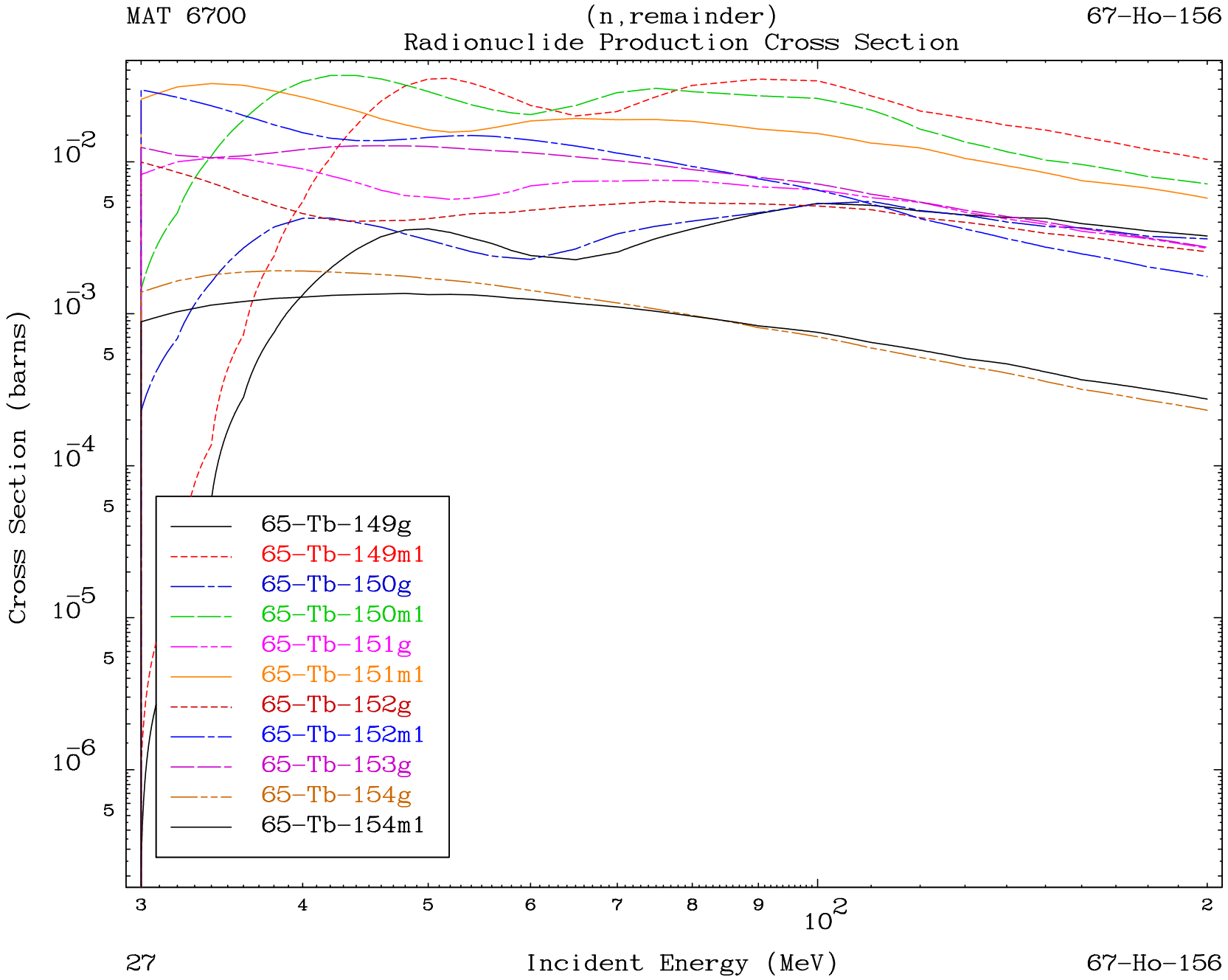
67-Ho-156

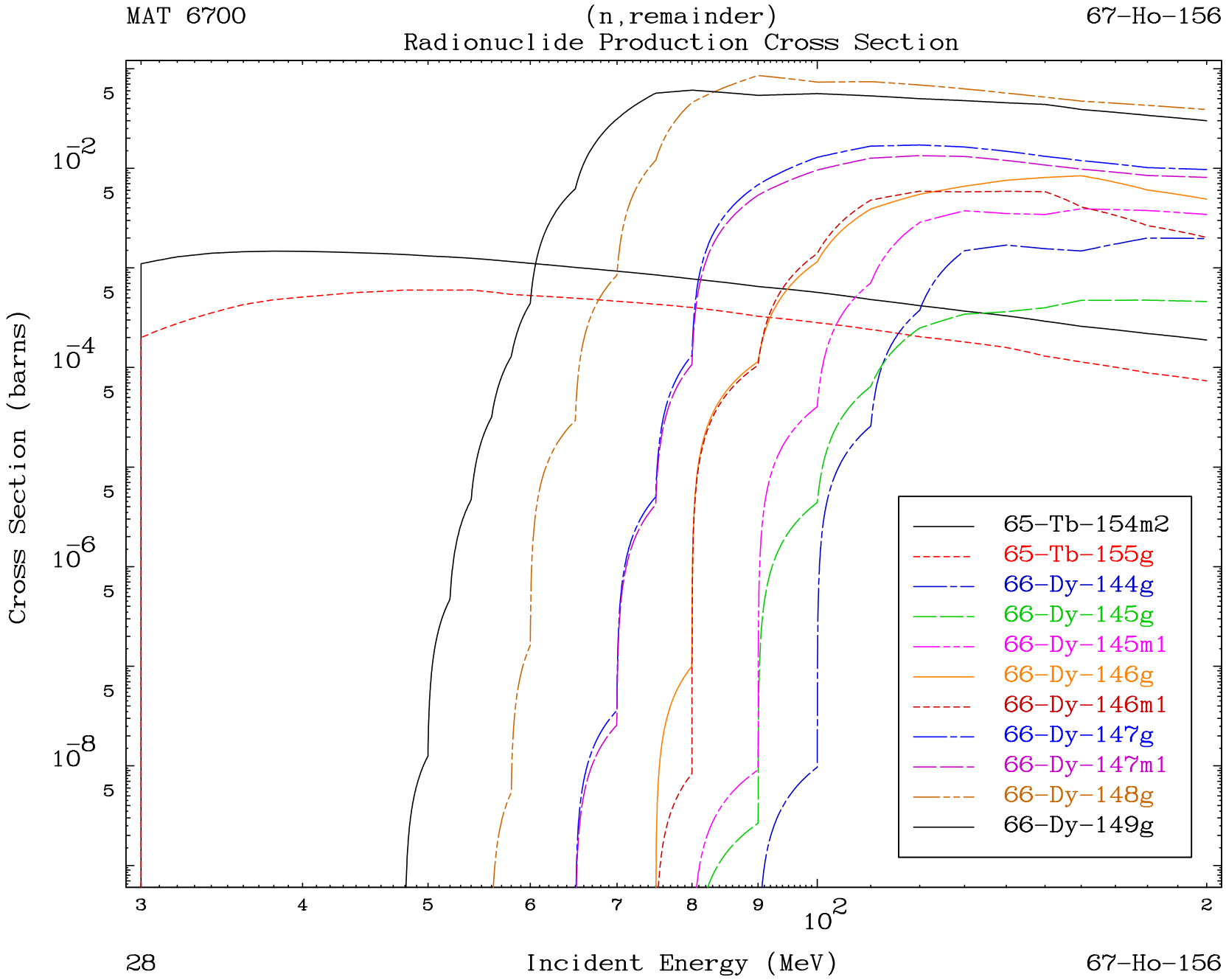

MAT 6700
(n,remainder)
67-Ho-156
Radionuclide Production Cross Section
63-Eu-141g
63-Eu-141m1
63-Eu-142g
63-Eu-142m1
63-Eu-143g
63-Eu-144g
63-Eu-145g
63-Eu-146g
64-Gd-136g
64-Gd-137g
64-Gd-138g
Cross Section (barns)
10^2
10^0
10^-2
10^-4
10^-6
10^-8
10^-10
3
4
5
6
7
8
9
10^2
2
23
Incident Energy (MeV)
67-Ho-156

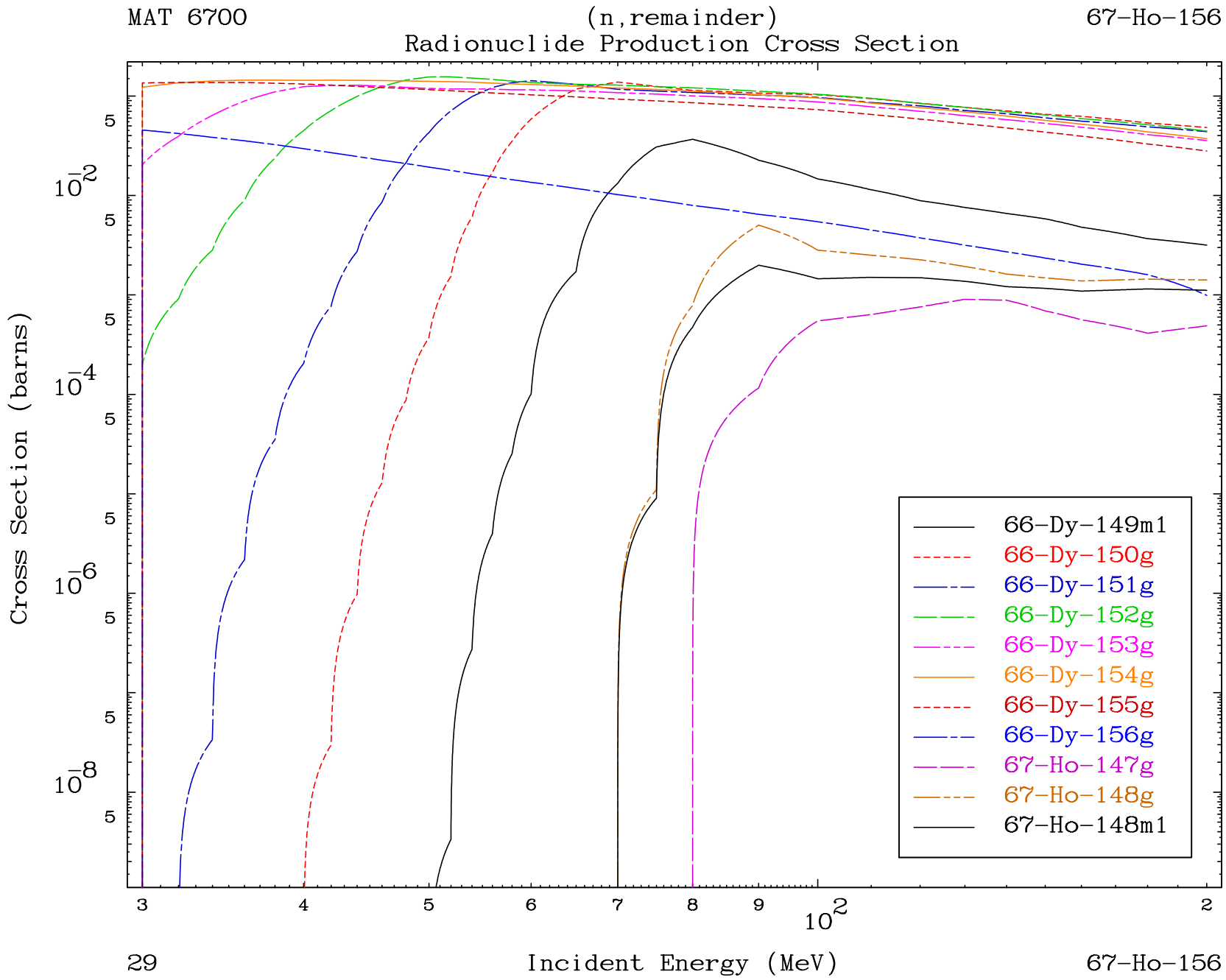

MAT 6700
(n,remainder)
67-Ho-156
Radionuclide Production Cross Section
Cross Section (barns)
10-2
10-4
10-6
10-8
5
50
100
150
200
24
Incident Energy (MeV)
67-Ho-156
64-Gd-139g
64-Gd-139m1
64-Gd-140g
64-Gd-141g
64-Gd-141m1
64-Gd-142g
64-Gd-143g
64-Gd-143m1
64-Gd-144g
64-Gd-145g
64-Gd-145m1


MAT 6700
(n,remainder)
67-Ho-156
Radionuclide Production Cross Section
Cross Section (barns)
10-2
10-4
10-6
10-8
3
4
5
6
7
8
9
10 2
2
Incident Energy (MeV)
25
67-Ho-156
64-Gd-146g
64-Gd-147g
64-Gd-148g
64-Gd-149g
64-Gd-150g
64-Gd-151g
65-Tb-140g
65-Tb-141g
65-Tb-141m1
65-Tb-142g
65-Tb-142m1

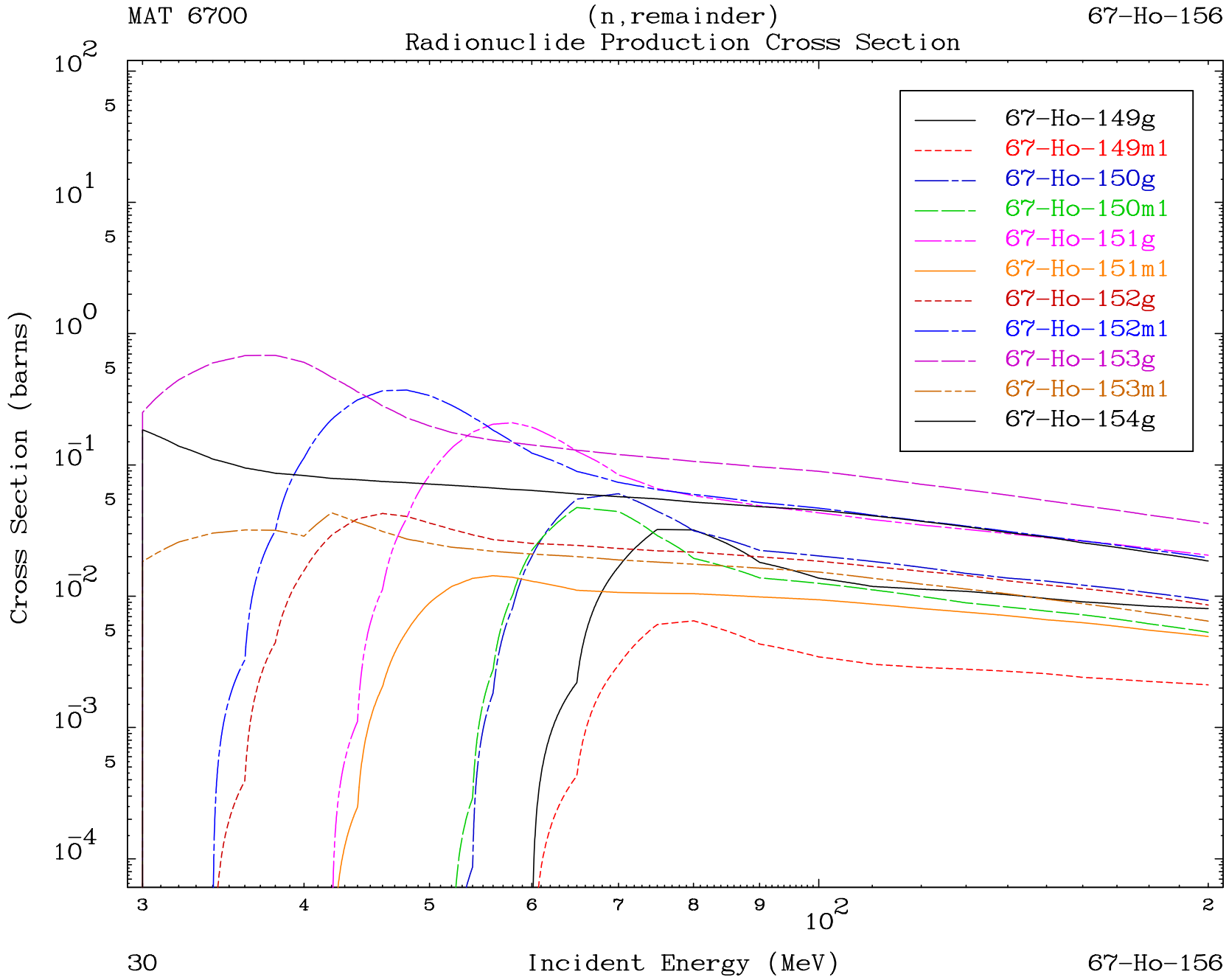

MAT 6700
(n,remainder)
67-Ho-156
Radionuclide Production Cross Section
Cross Section (barns)
Incident Energy (MeV)
26
67-Ho-156
65-Tb-143g
65-Tb-143m1
65-Tb-144g
65-Tb-144m1
65-Tb-145g
65-Tb-146g
65-Tb-146m1
65-Tb-147g
65-Tb-147m1
65-Tb-148g
65-Tb-148m1

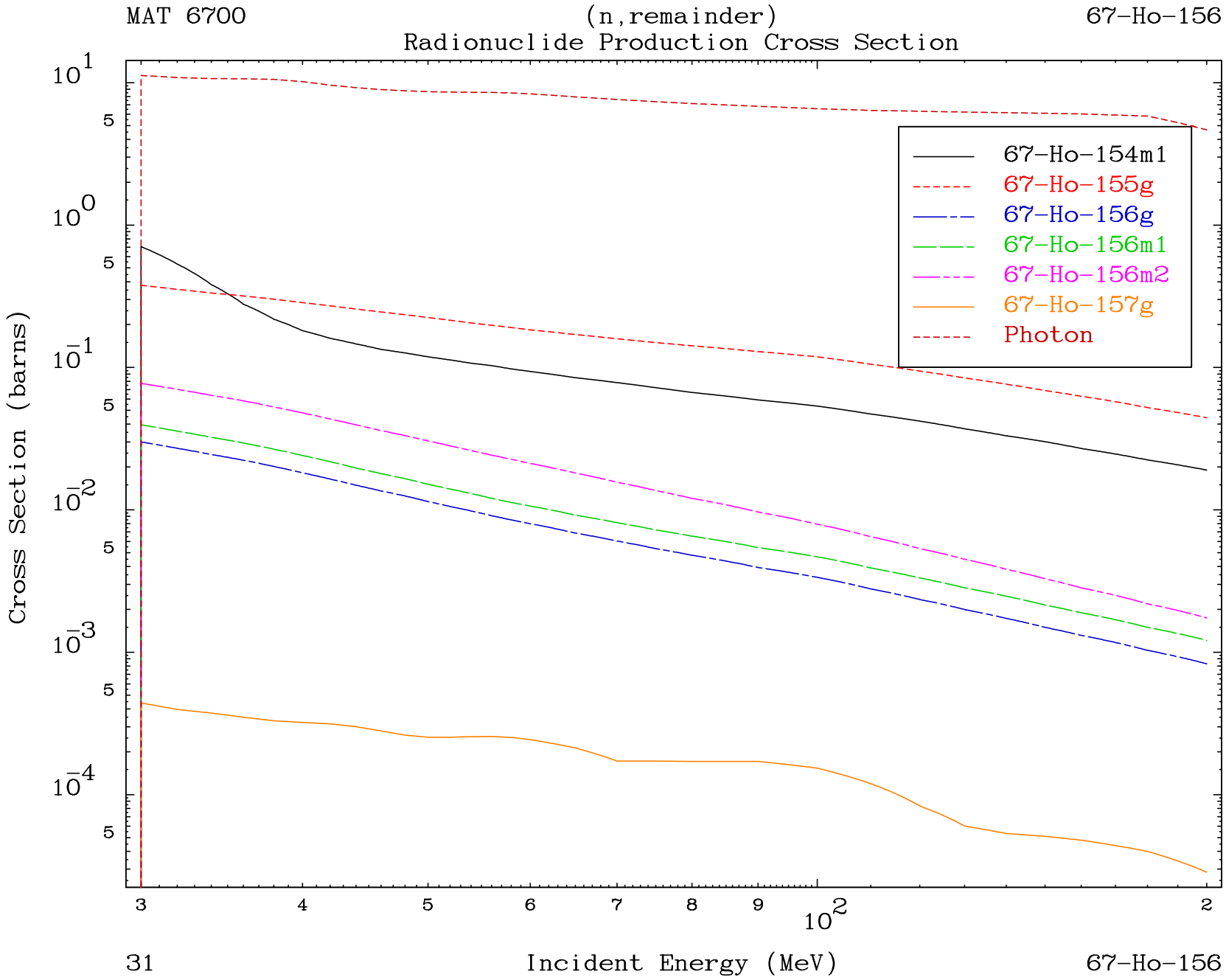

MAT 6700
(n,remainder)
67-Ho-156
Radionuclide Production Cross Section
Cross Section (barns)
10-2
5
10-3
5
10-4
5
10-5
5
10-6
5
65-Tb-149g
65-Tb-149m1
65-Tb-150g
65-Tb-150m1
65-Tb-151g
65-Tb-151m1
65-Tb-152g
65-Tb-152m1
65-Tb-153g
65-Tb-154g
65-Tb-154m1
3
4
5
6
7
8
9
10 2
2
27
Incident Energy (MeV)
67-Ho-156

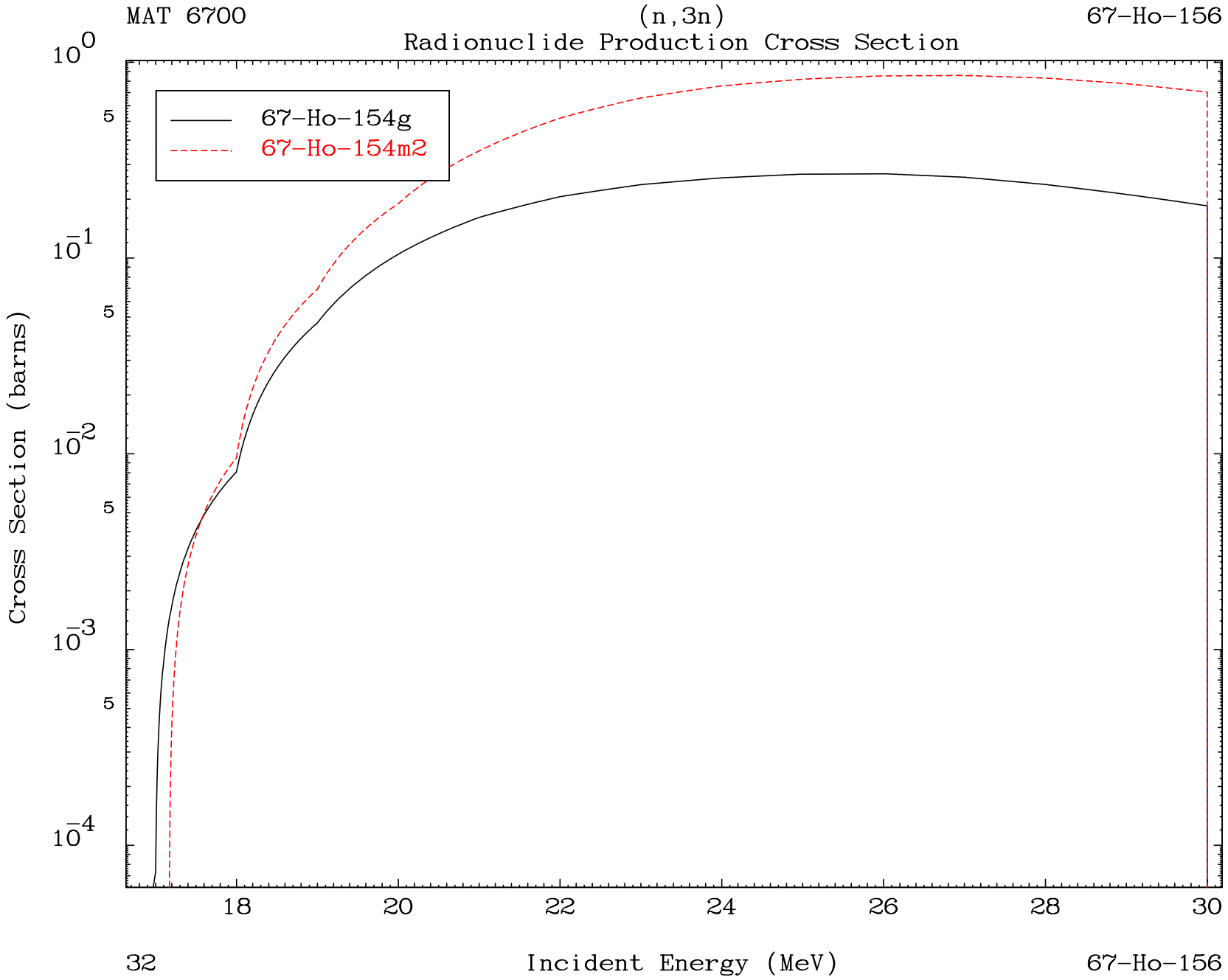

MAT 6700
(n,remainder)
67-Ho-156
Radionuclide Production Cross Section
Cross Section (barns)
10-2
10-4
10-6
10-8
5
3
4
5
6
7
8
9
10 2
2
Incident Energy (MeV)
65-Tb-154m2
65-Tb-155g
66-Dy-144g
66-Dy-145g
66-Dy-145m1
66-Dy-146g
66-Dy-146m1
66-Dy-147g
66-Dy-147m1
66-Dy-148g
66-Dy-149g

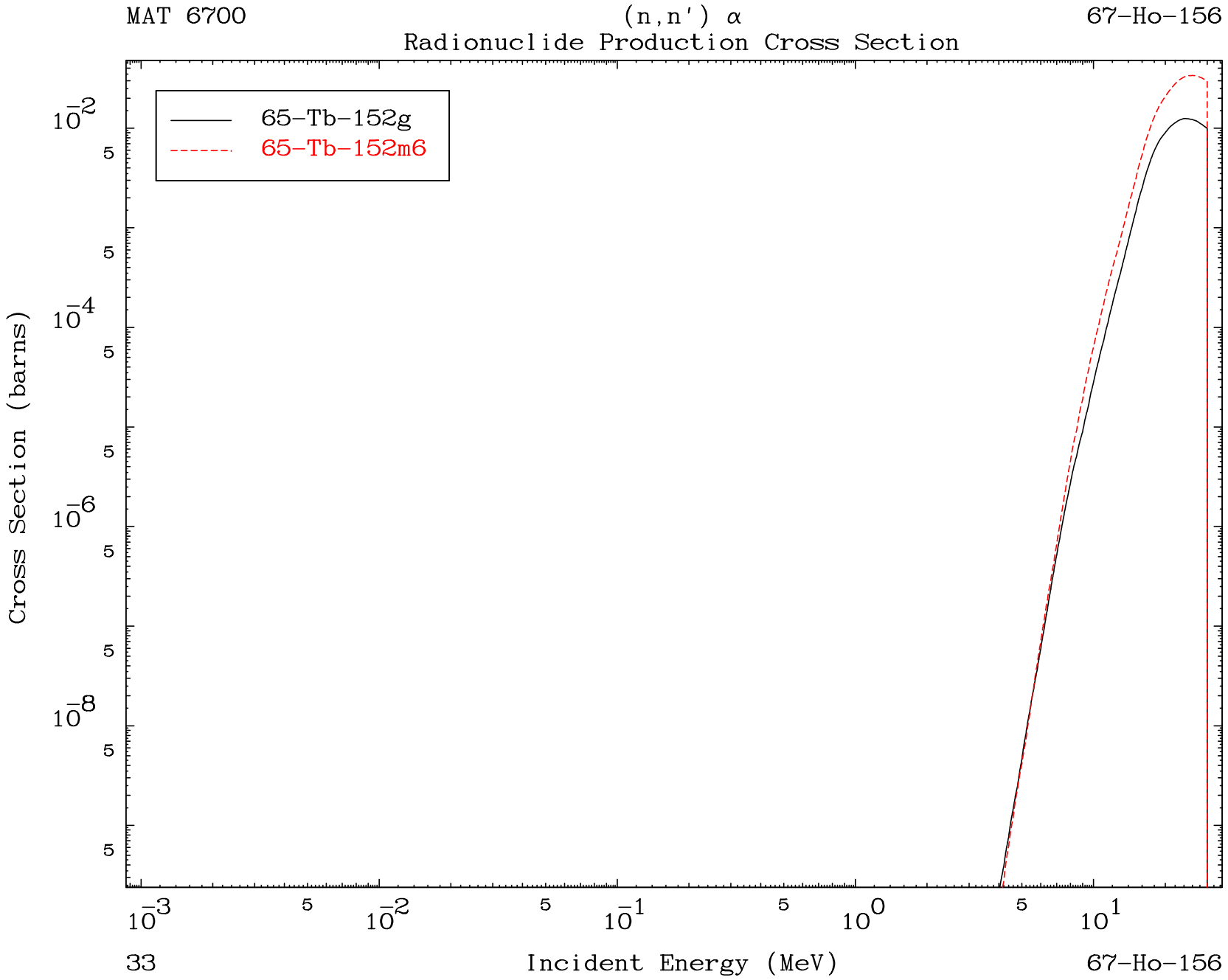

MAT 6700
(n,remainder)
67-Ho-156
Radionuclide Production Cross Section
Cross Section (barns)
10-2
10-4
10-6
10-8
3
4
5
6
7
8
9
10^2
2
Incident Energy (MeV)
66-Dy-149m1
66-Dy-150g
66-Dy-151g
66-Dy-152g
66-Dy-153g
66-Dy-154g
66-Dy-155g
66-Dy-156g
67-Ho-147g
67-Ho-148g
67-Ho-148m1

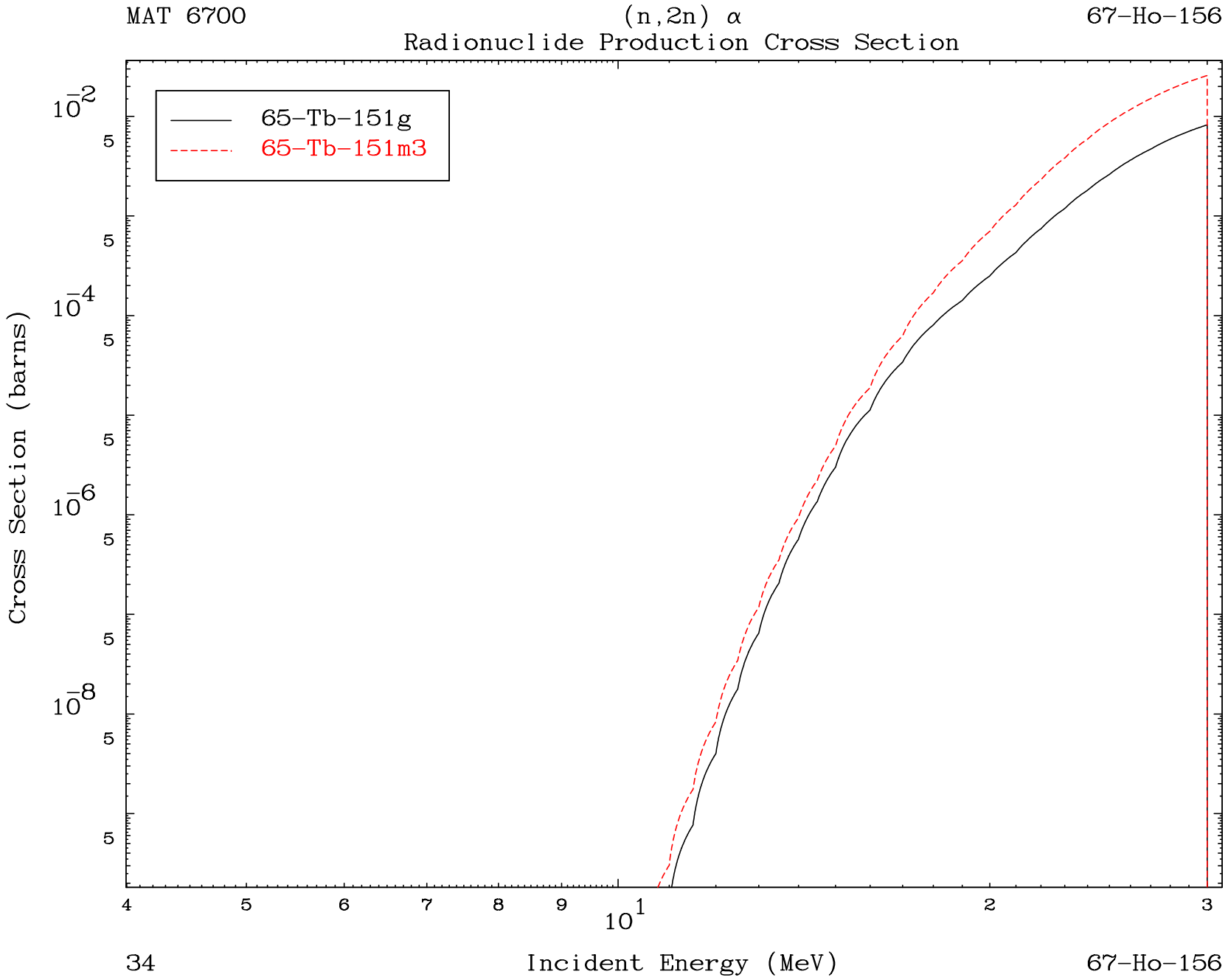
67-Ho-156

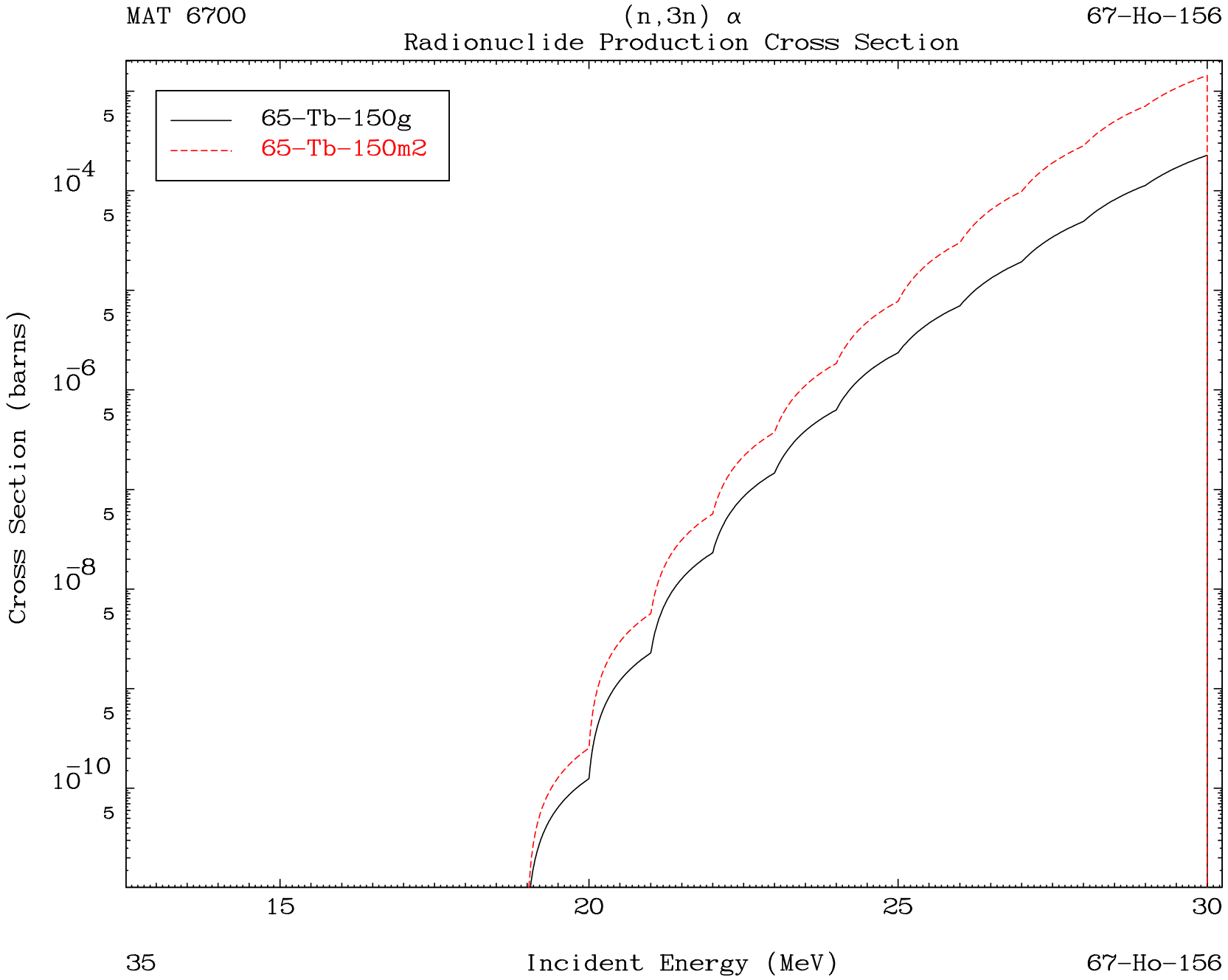

MAT 6700
(n,remainder)
67-Ho-156
Radionuclide Production Cross Section
Cross Section (barns)
Incident Energy (MeV)
30
67-Ho-156
67-Ho-149g
67-Ho-149m1
67-Ho-150g
67-Ho-150m1
67-Ho-151g
67-Ho-151m1
67-Ho-152g
67-Ho-152m1
67-Ho-153g
67-Ho-153m1
67-Ho-154g

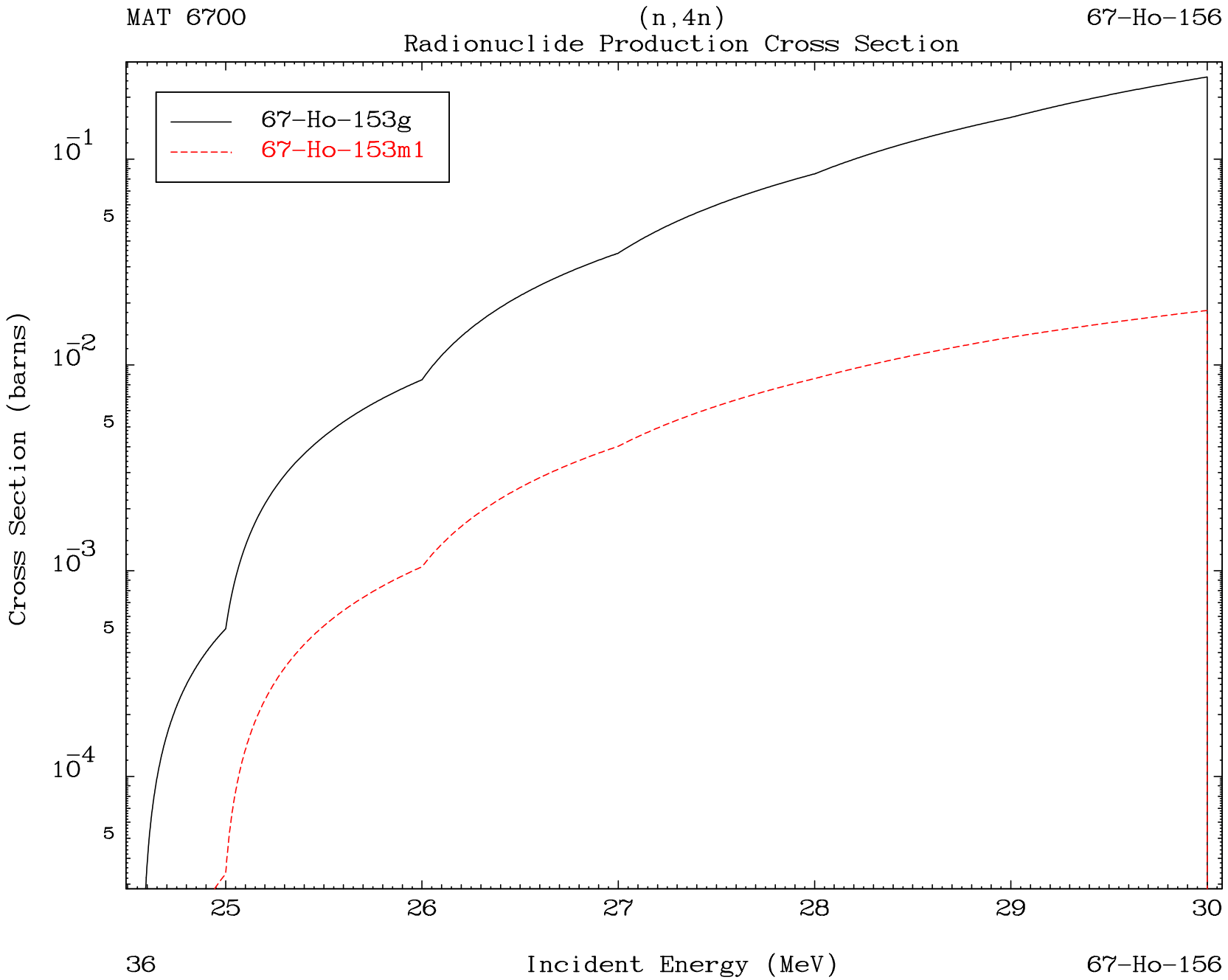

MAT 6700
(n,remainder)
67-Ho-156
Radionuclide Production Cross Section
Cross Section (barns)
10^1
5
10^0
5
10^-1
5
10^-2
5
10^-3
5
10^-4
5
3
4
5
6
7
8
9
10^2
2
67-Ho-154m1
67-Ho-155g
67-Ho-156g
67-Ho-156m1
67-Ho-156m2
67-Ho-157g
Photon
31
Incident Energy (MeV)
67-Ho-156

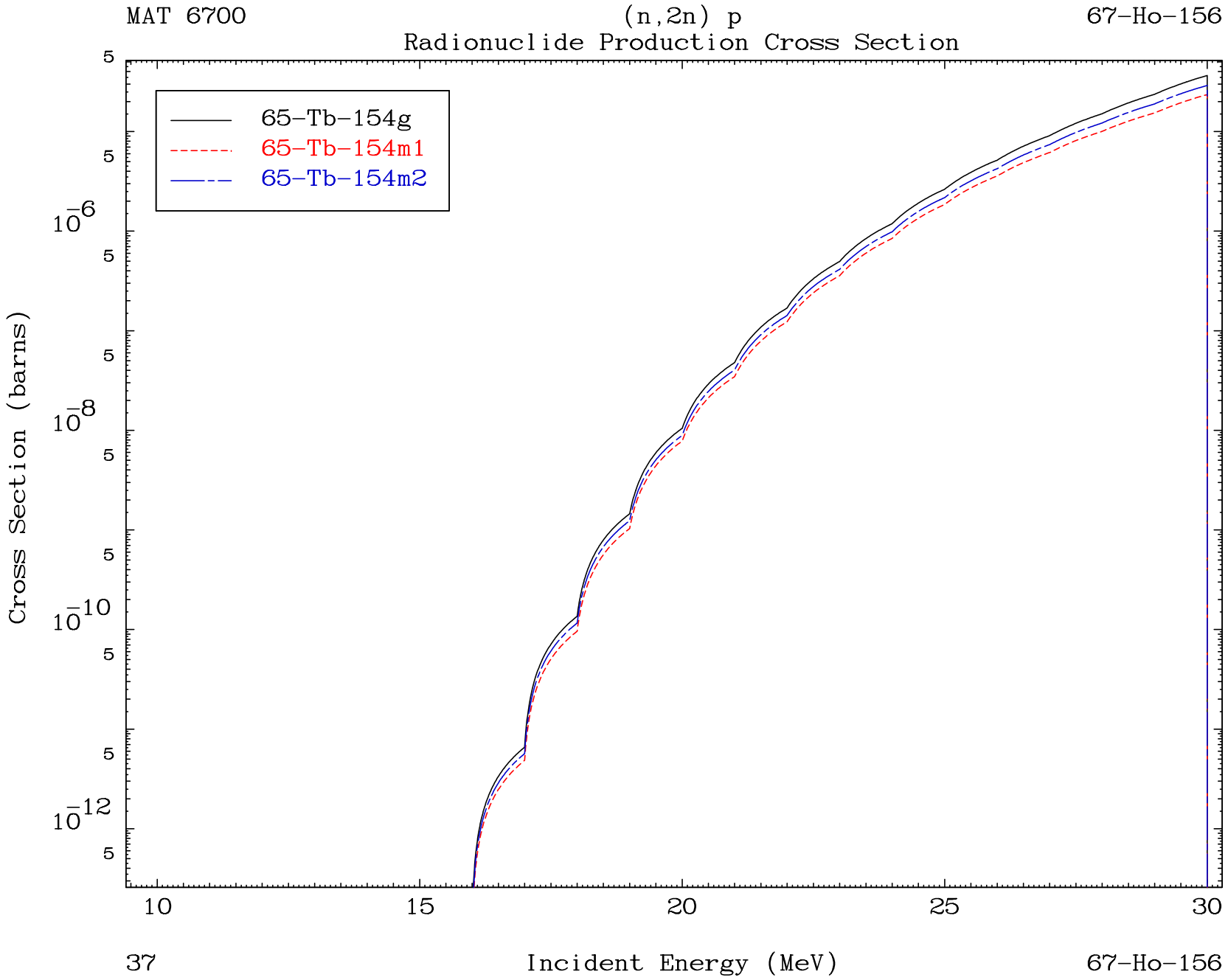

MAT 6700
(n,3n)
67-Ho-156
Radionuclide Production Cross Section
67-Ho-154g
67-Ho-154m2
Cross Section (barns)
10^0
5
10^-1
5
10^-2
5
10^-3
5
10^-4
18
20
22
24
26
28
30
32
Incident Energy (MeV)
67-Ho-156

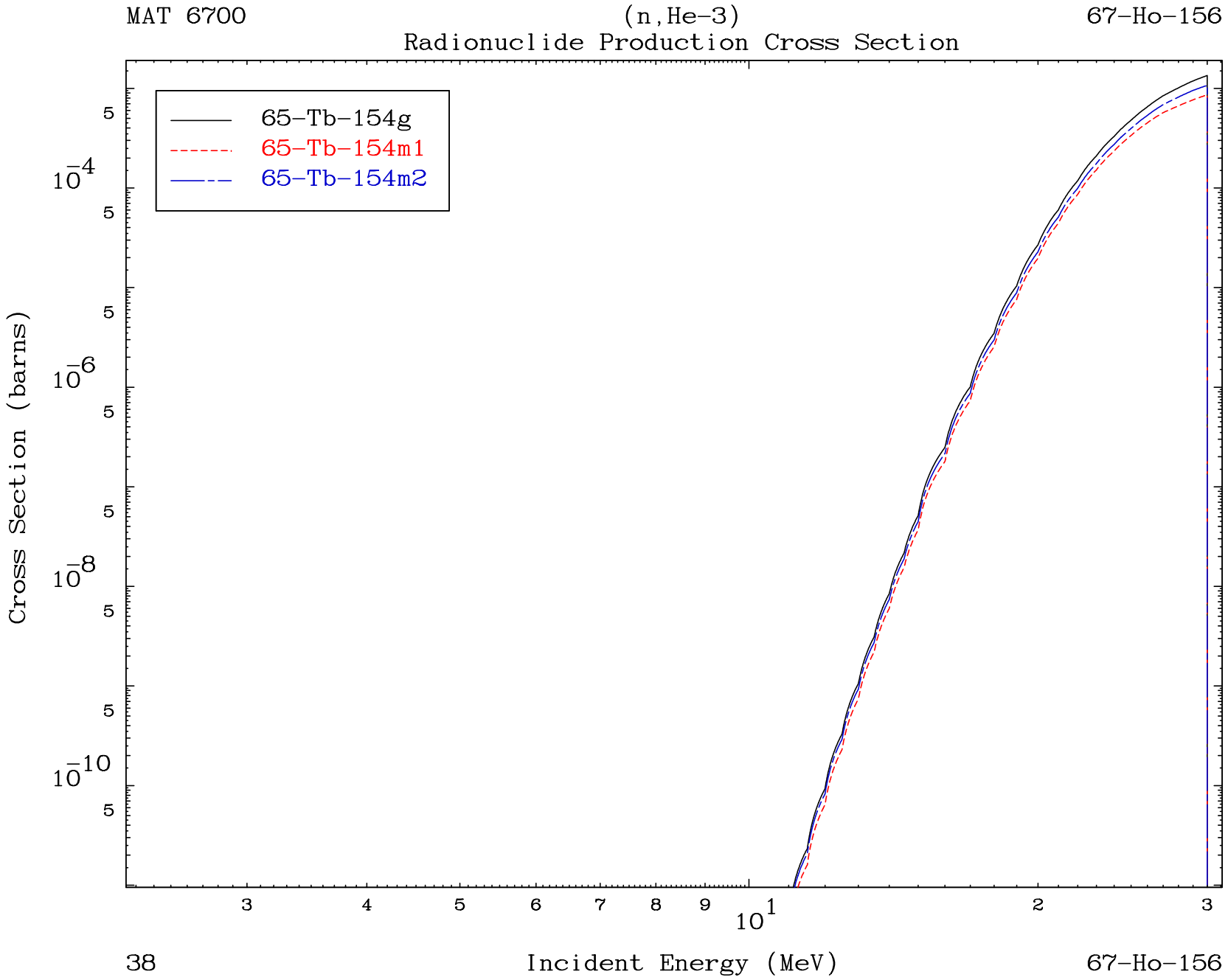

MAT 6700
(n,n') α
67-Ho-156
Radionuclide Production Cross Section
65-Tb-152g
65-Tb-152m6
Cross Section (barns)
Incident Energy (MeV)
33
67-Ho-156

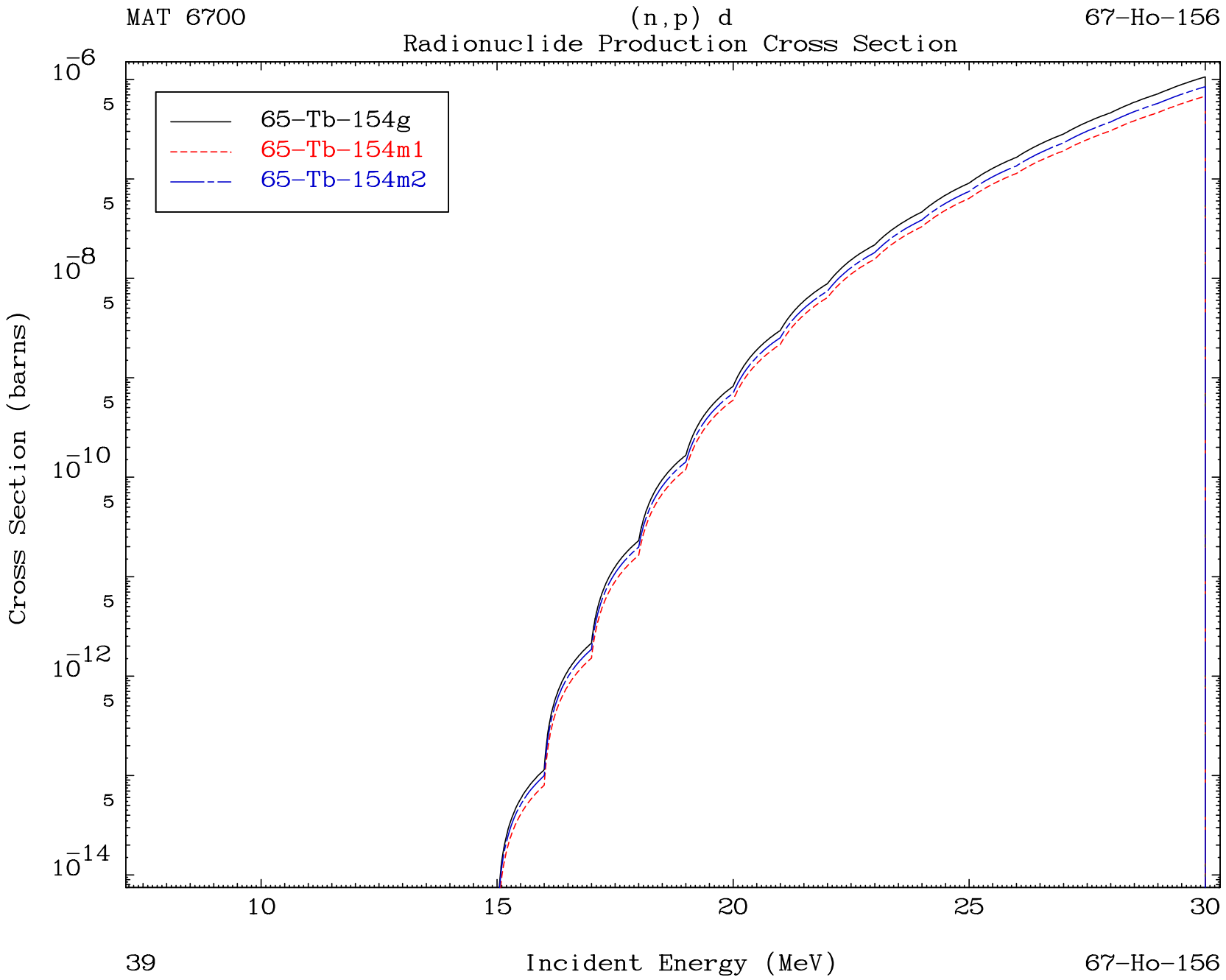

MAT 6700
(n,2n) α
67-Ho-156
Radionuclide Production Cross Section
65-Tb-151g
65-Tb-151m3
Cross Section (barns)
10-2
10-4
10-6
10-8
4
5
6
7
8
9
101
2
3
34
Incident Energy (MeV)
67-Ho-156


MAT 6700
(n,3n) α
67-Ho-156
Radionuclide Production Cross Section
65-Tb-150g
65-Tb-150m2
Cross Section (barns)
10-4
10-6
10-8
10-10
15
20
25
30
35
Incident Energy (MeV)
67-Ho-156


MAT 6700
(n,4n)
67-Ho-156
Radionuclide Production Cross Section
67-Ho-153g
67-Ho-153m1
Cross Section (barns)
10-1
5
10-2
5
10-3
5
10-4
5
25
26
27
28
29
30
36
Incident Energy (MeV)
67-Ho-156


MAT 6700
(n,2n) p
67-Ho-156
Radionuclide Production Cross Section
65-Tb-154g
65-Tb-154m1
65-Tb-154m2
Cross Section (barns)
10^-6
10^-8
10^-10
10^-12
5
10
15
20
25
30
37
Incident Energy (MeV)
67-Ho-156


MAT 6700
(n,He-3)
67-Ho-156
Radionuclide Production Cross Section
65-Tb-154g
65-Tb-154m1
65-Tb-154m2
Cross Section (barns)
10-4
10-6
10-8
10-10
5
3
4
5
6
7
8
9
101
2
3
38
Incident Energy (MeV)
67-Ho-156


MAT 6700
(n,p) d
67-Ho-156
Radionuclide Production Cross Section
65-Tb-154g
65-Tb-154m1
65-Tb-154m2
Cross Section (barns)
10^-6
10^-8
10^-10
10^-12
10^-14
10
15
20
25
30
39
Incident Energy (MeV)
67-Ho-156