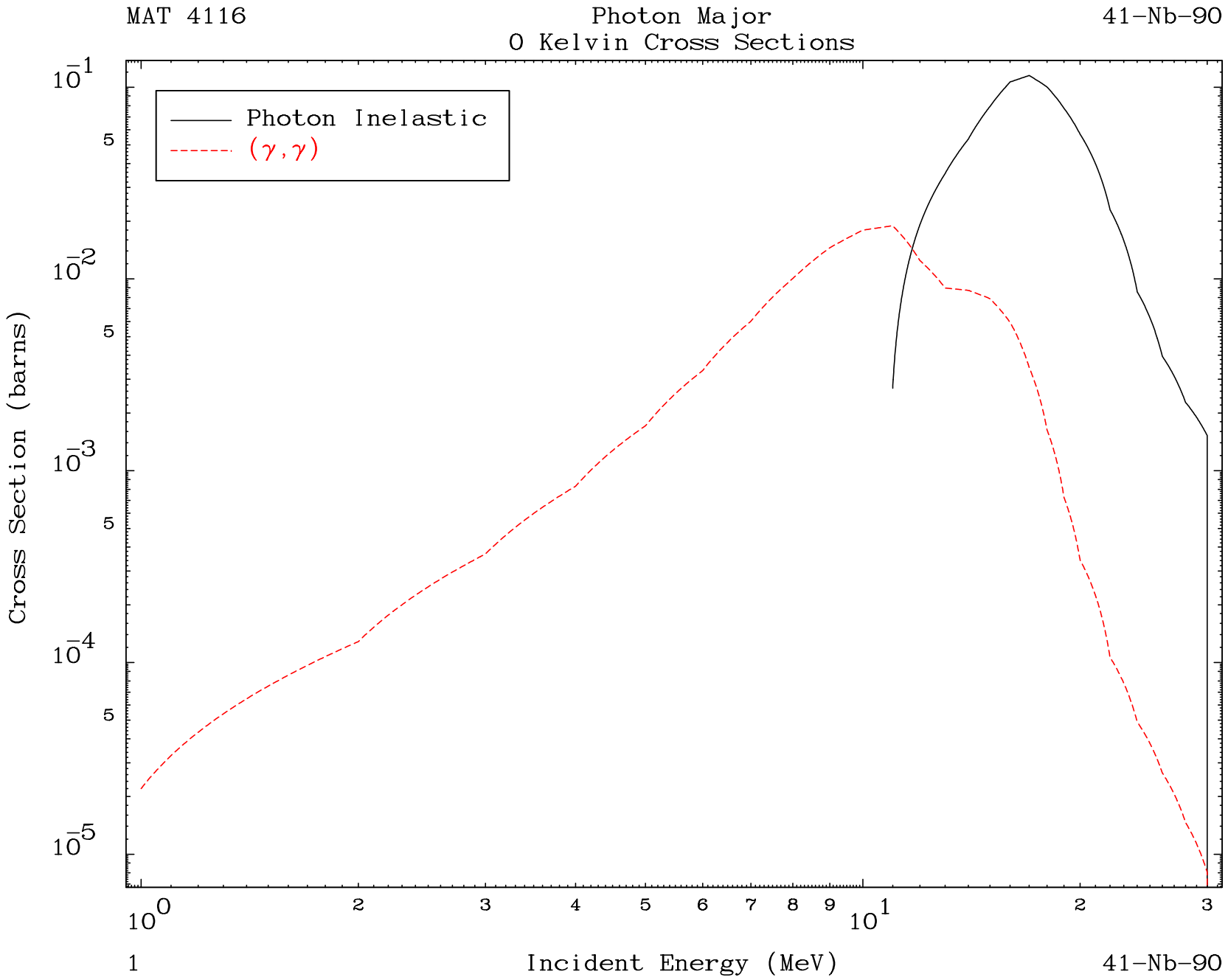
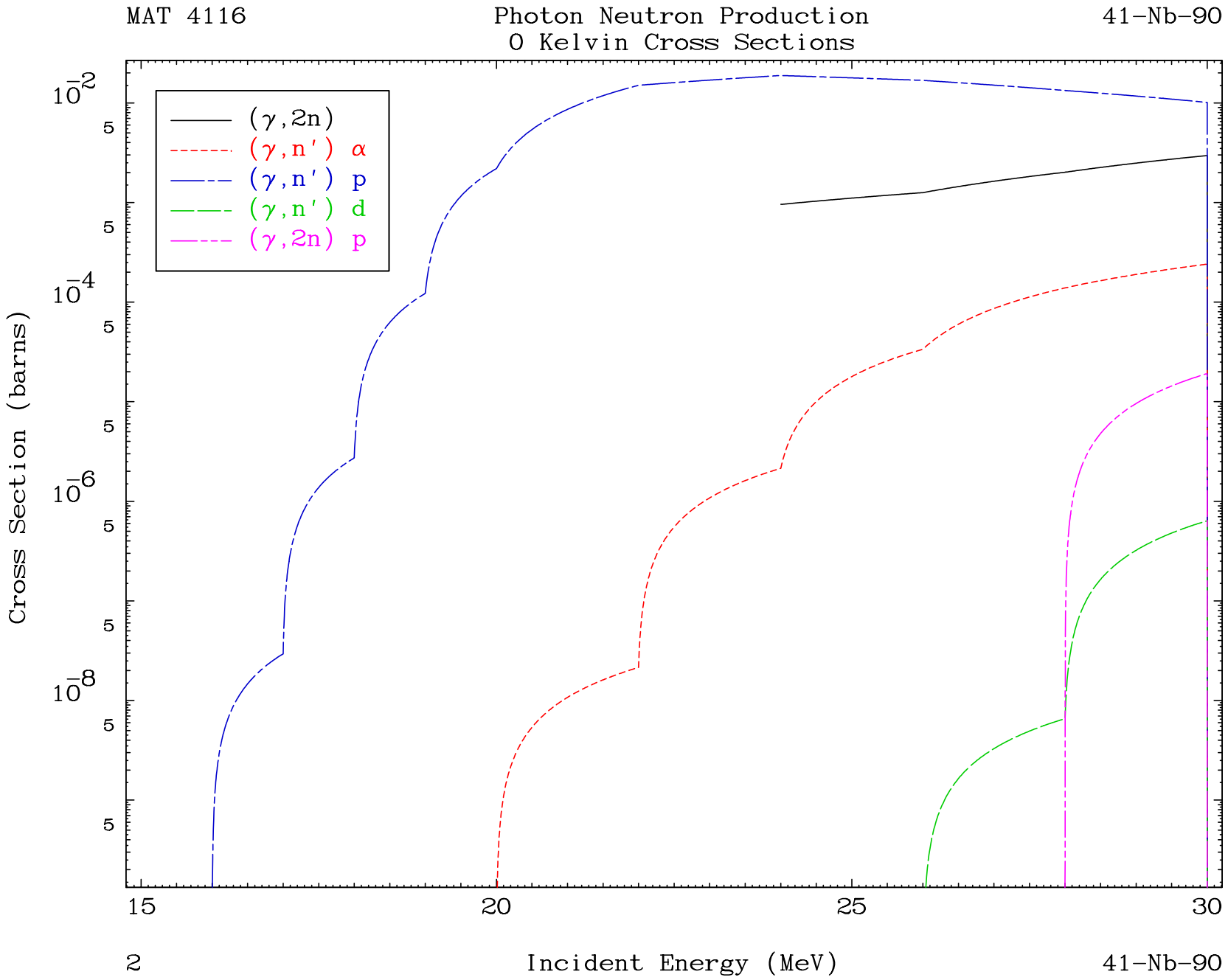
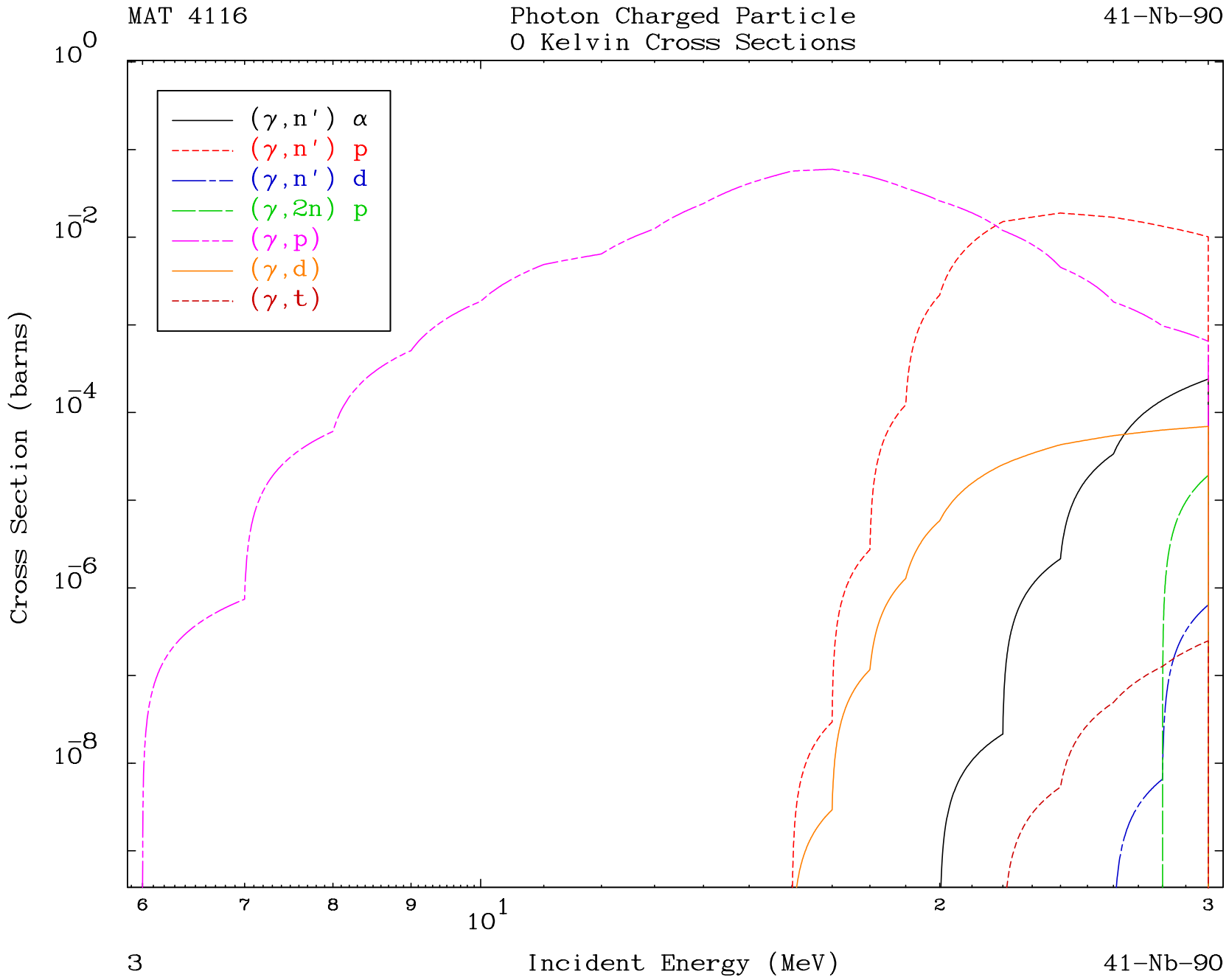
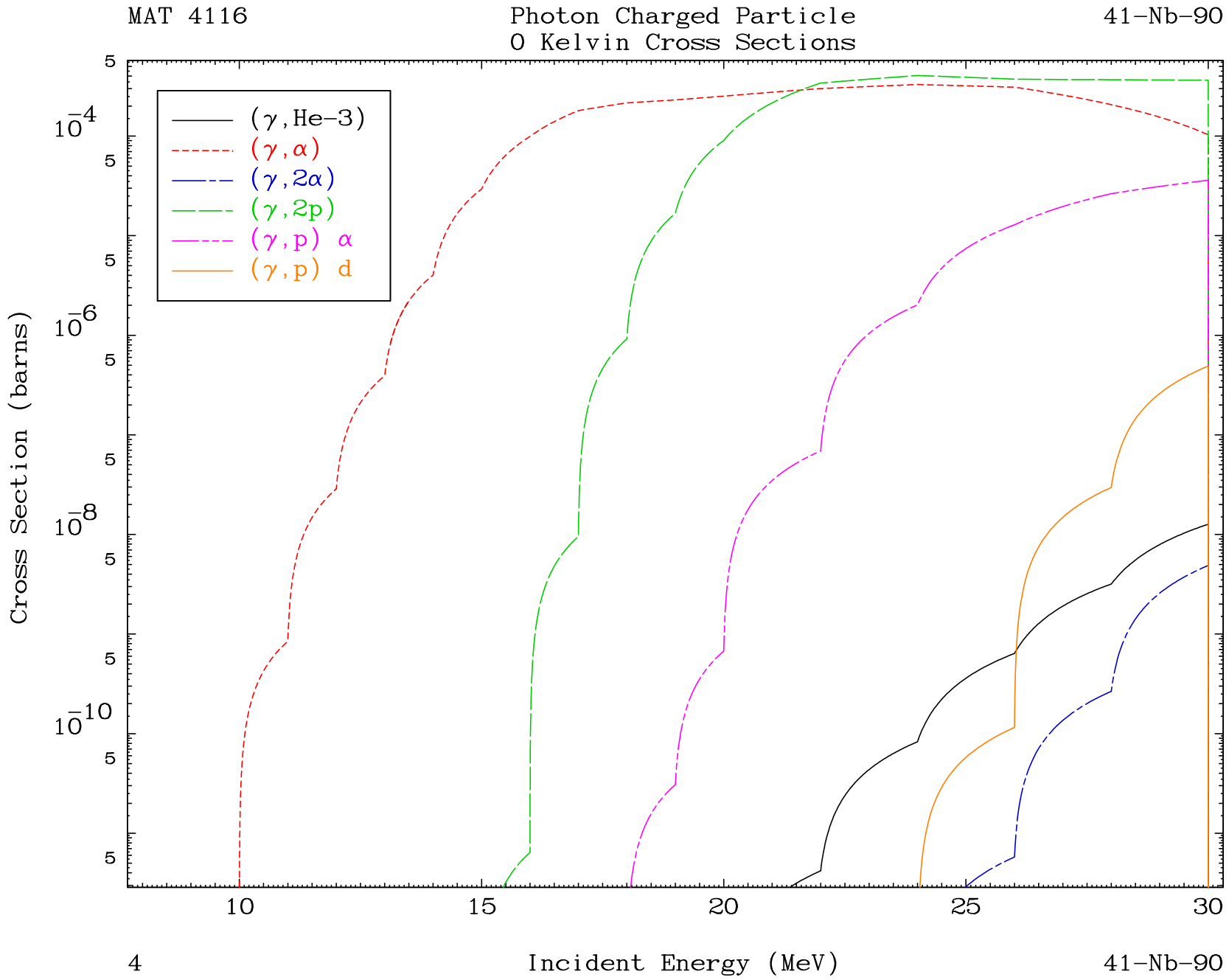
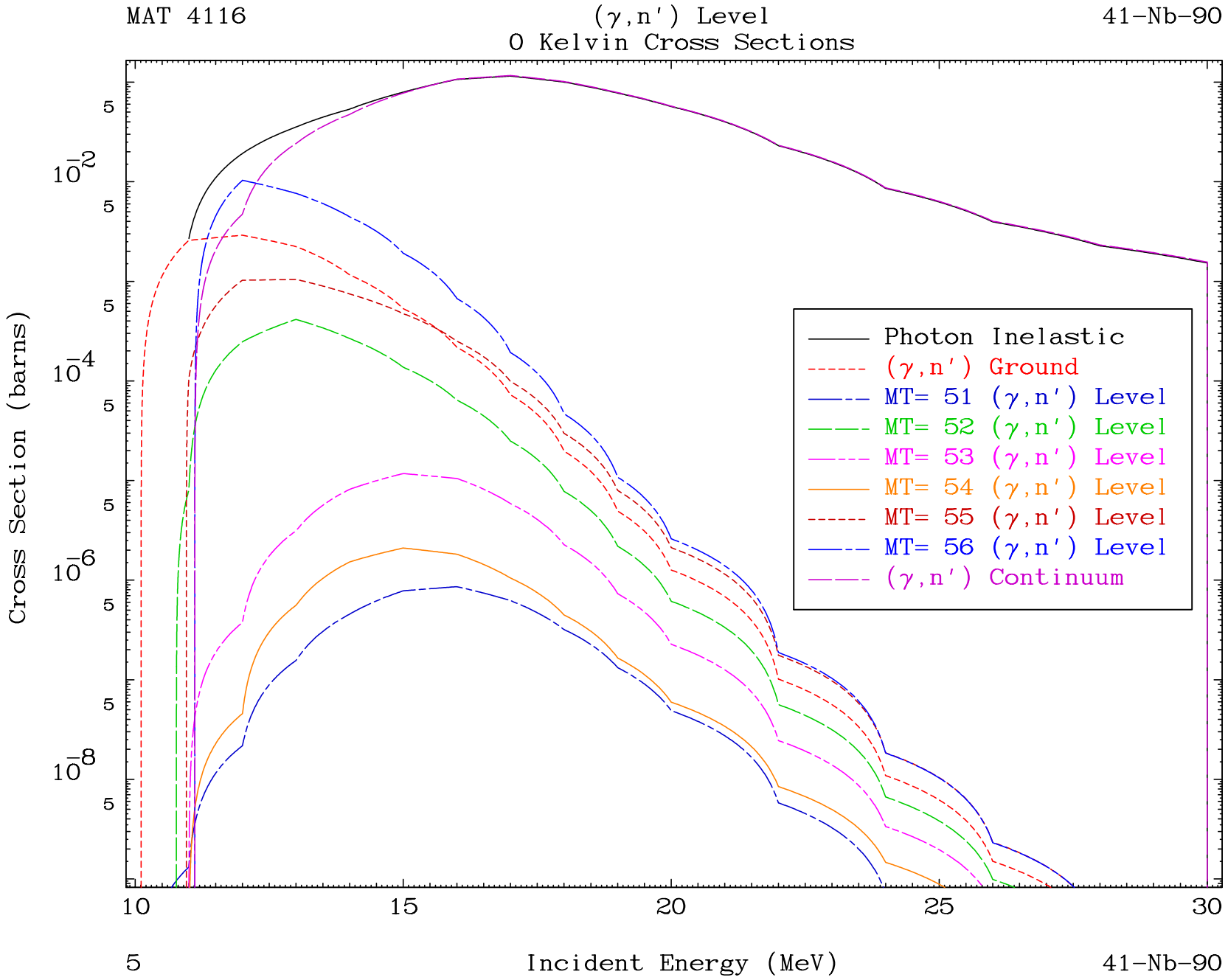
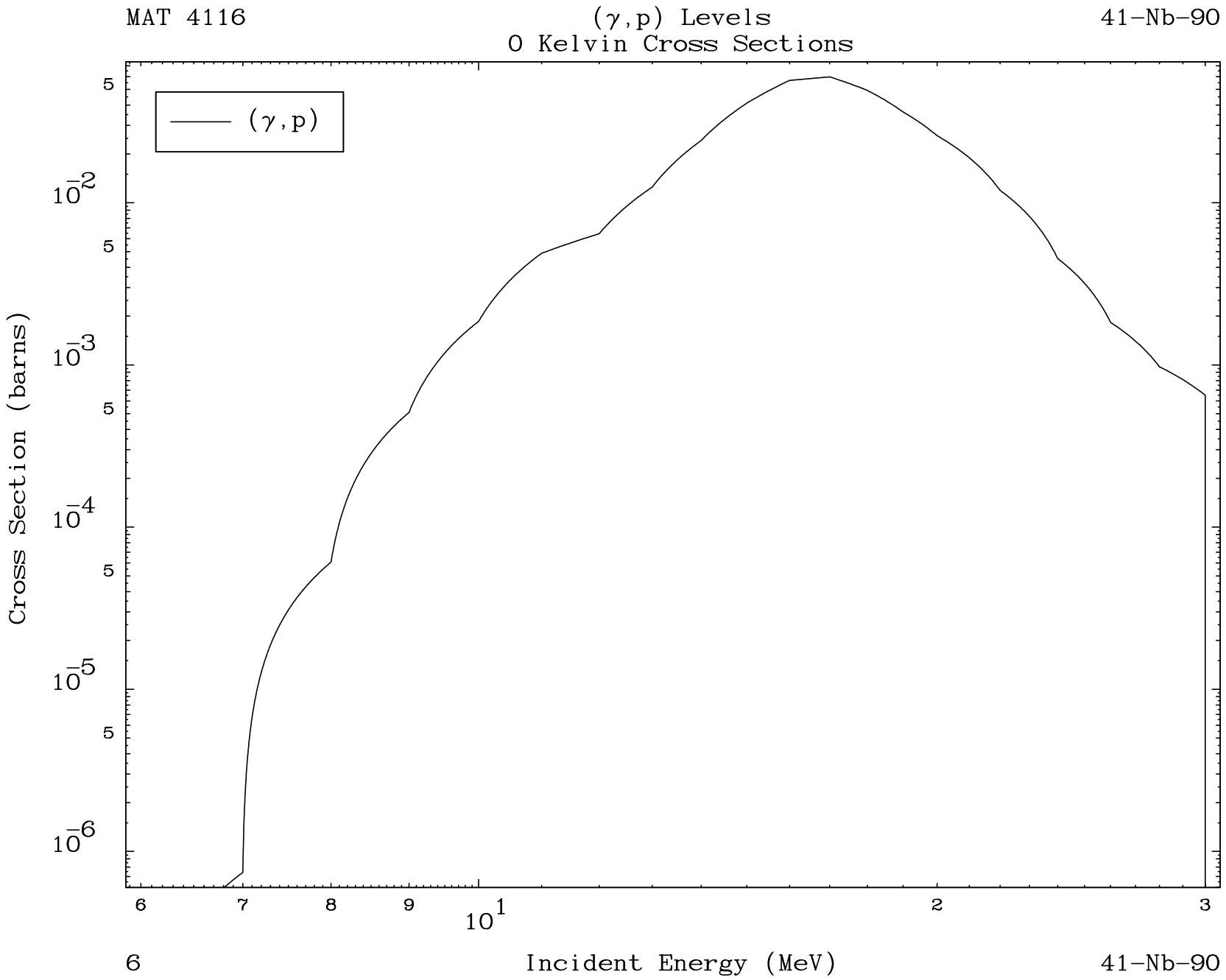

MAT 4116
Photon Major
41-Nb-90
0 Kelvin Cross Sections
Photon Inelastic
(γ,γ)
Cross Section (barns)
Incident Energy (MeV)
41-Nb-90

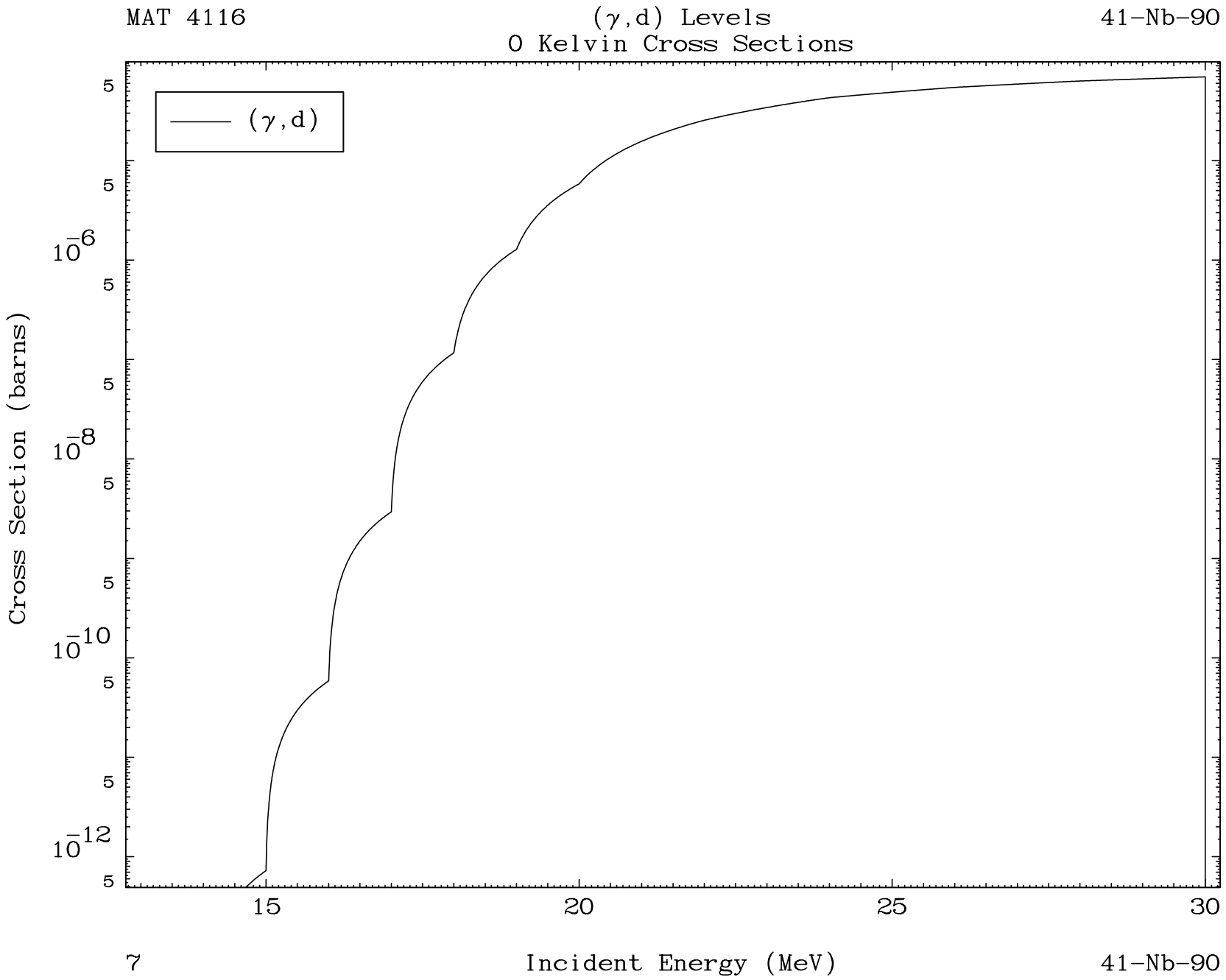

MAT 4116
Photon Neutron Production
0 Kelvin Cross Sections
41-Nb-90
(γ,2n)
(γ,n') α
(γ,n') p
(γ,n') d
(γ,2n) p
Cross Section (barns)
10-2
10-4
10-6
10-8
5
15
20
25
30
2
Incident Energy (MeV)
41-Nb-90

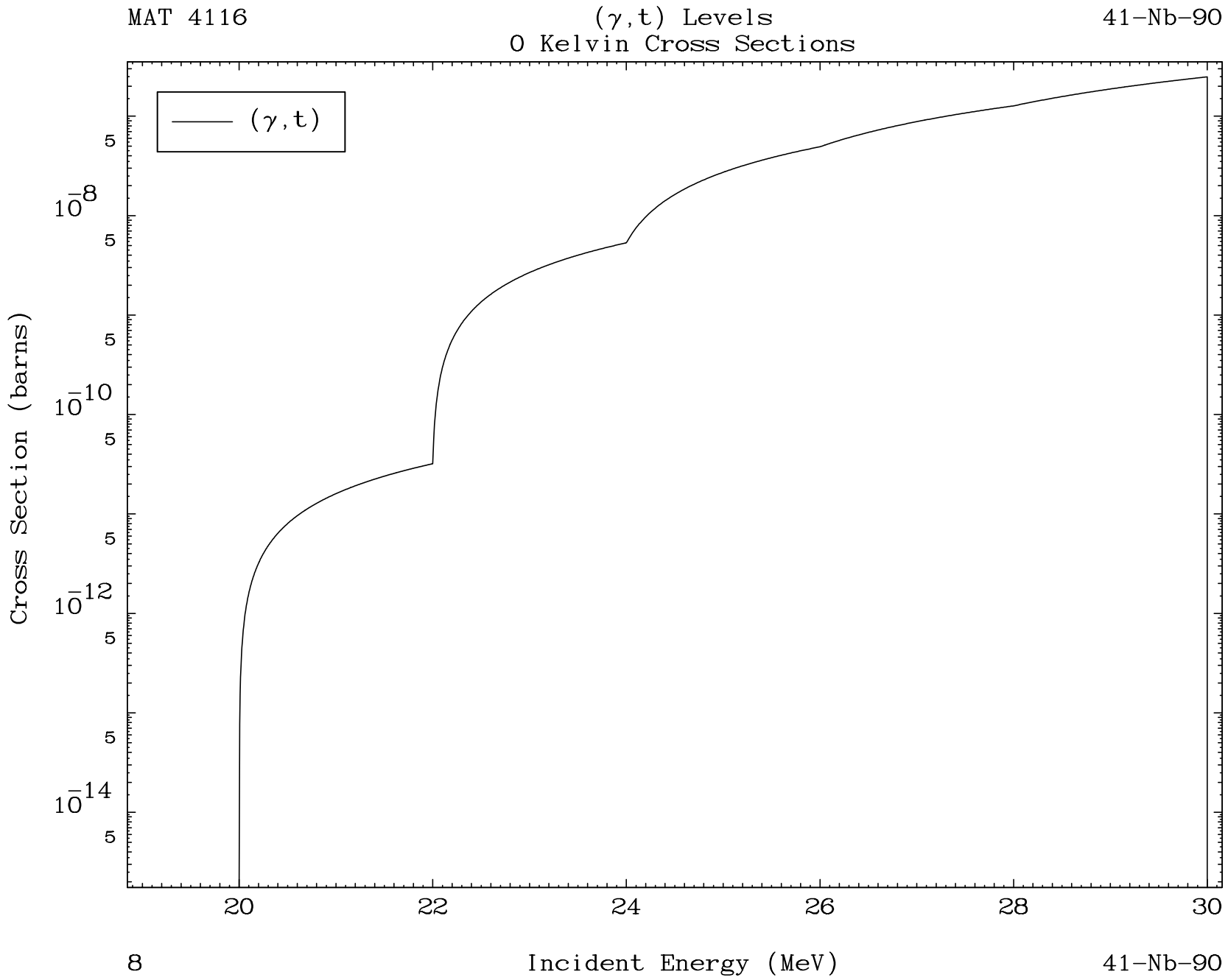

MAT 4116
Photon Charged Particle
0 Kelvin Cross Sections
41-Nb-90
(γ,n') α
(γ,n') p
(γ,n') d
(γ,2n) p
(γ,p)
(γ,d)
(γ,t)
Cross Section (barns)
10^0
10^-2
10^-4
10^-6
10^-8
6
7
8
9
10^1
2
3
3
Incident Energy (MeV)
41-Nb-90

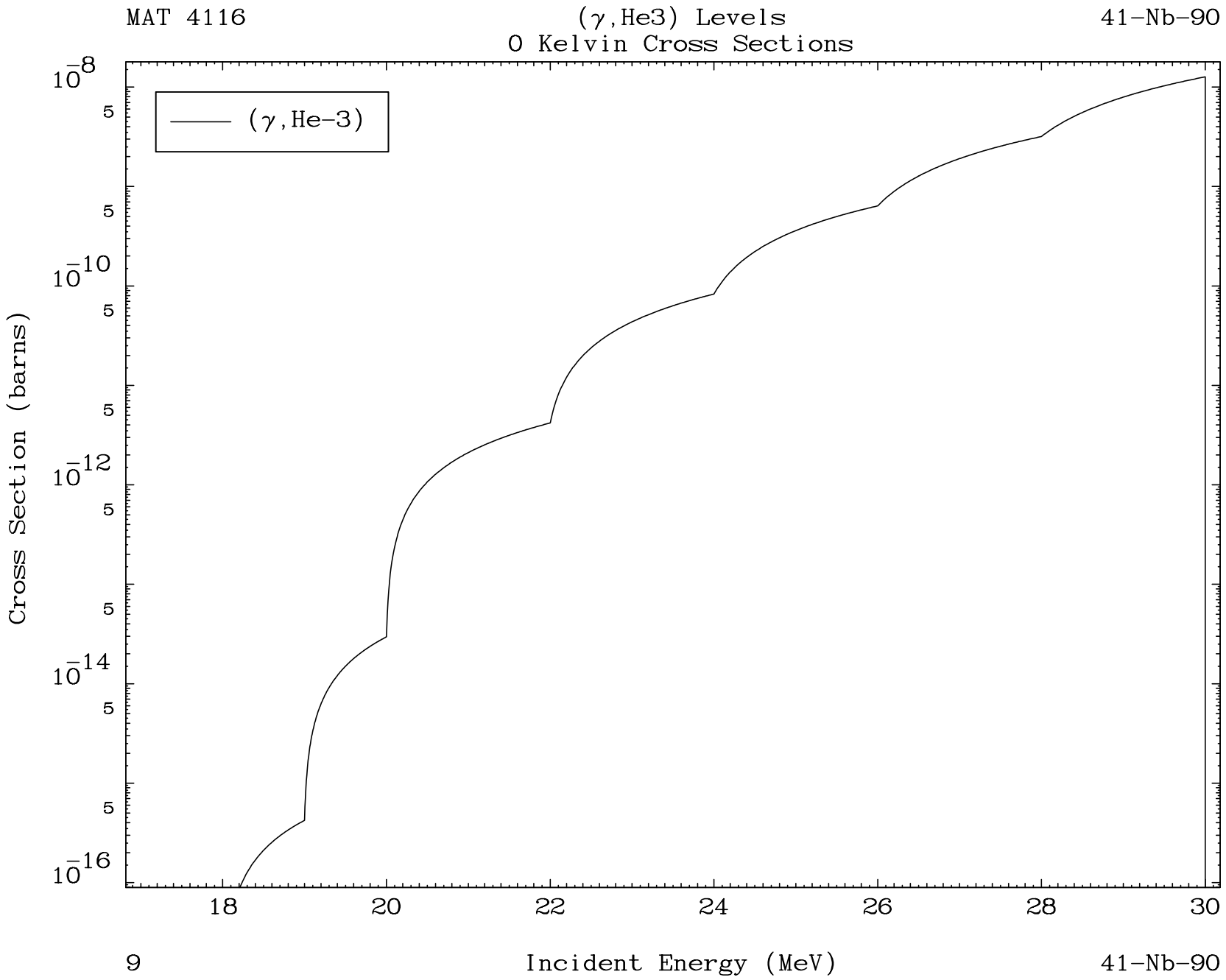

MAT 4116
Photon Charged Particle
0 Kelvin Cross Sections
41-Nb-90
(γ,He-3)
(γ,α)
(γ,2α)
(γ,2p)
(γ,p) α
(γ,p) d
Cross Section (barns)
10^-4
10^-6
10^-8
10^-10
5
10
15
20
25
30
4
Incident Energy (MeV)
41-Nb-90

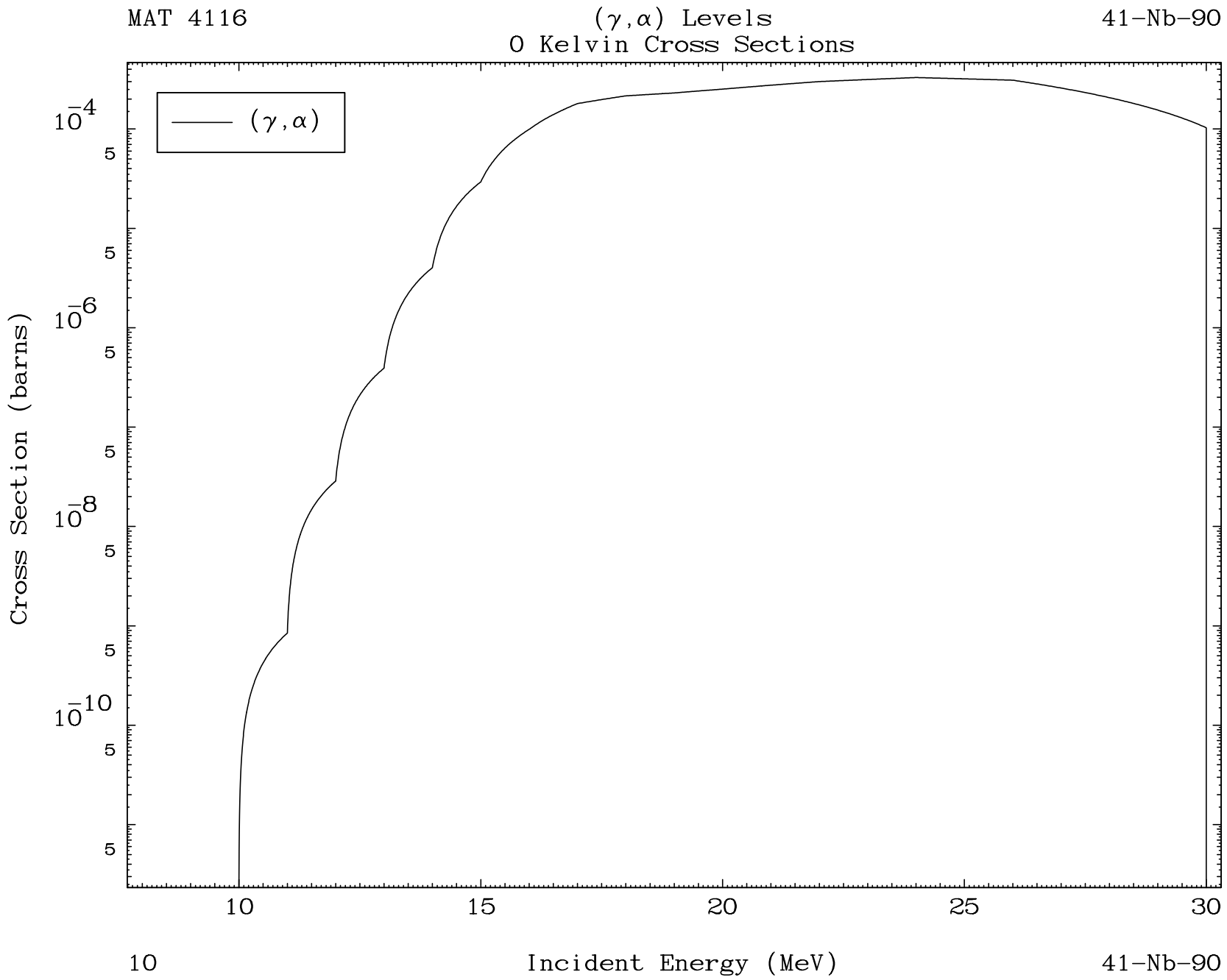

MAT 4116
(γ,n') Level
41-Nb-90
0 Kelvin Cross Sections
Cross Section (barns)
10^-2
10^-4
10^-6
10^-8
5
10
15
20
25
30
Incident Energy (MeV)
41-Nb-90
Photon Inelastic
(γ,n') Ground
MT= 51 (γ,n') Level
MT= 52 (γ,n') Level
MT= 53 (γ,n') Level
MT= 54 (γ,n') Level
MT= 55 (γ,n') Level
MT= 56 (γ,n') Level
(γ,n') Continuum

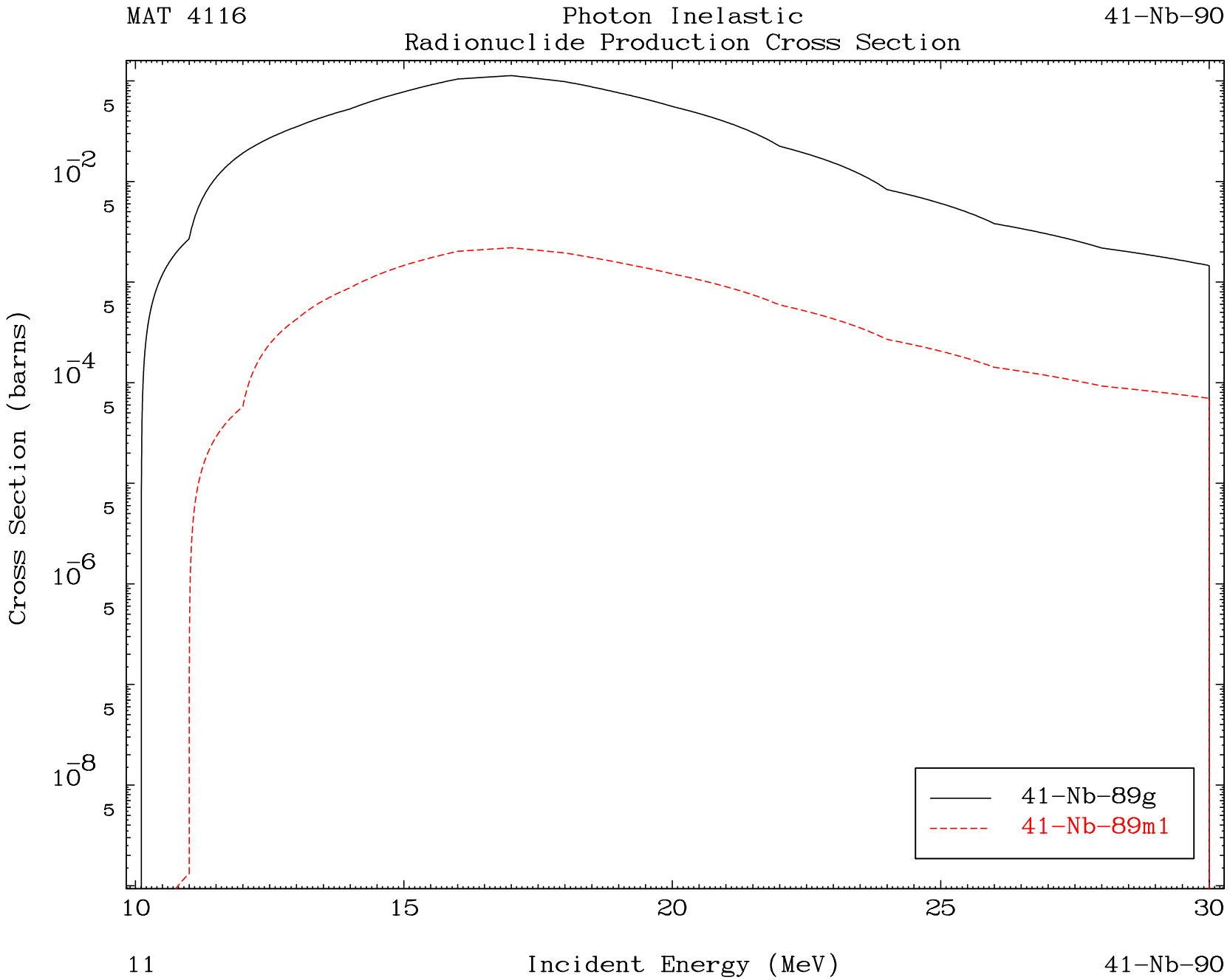

MAT 4116
(γ,p) Levels
41-Nb-90
0 Kelvin Cross Sections
(γ,p)
Cross Section (barns)
10-2
10-3
10-4
10-5
10-6
6
7
8
9
10 1
2
3
Incident Energy (MeV)
6
41-Nb-90

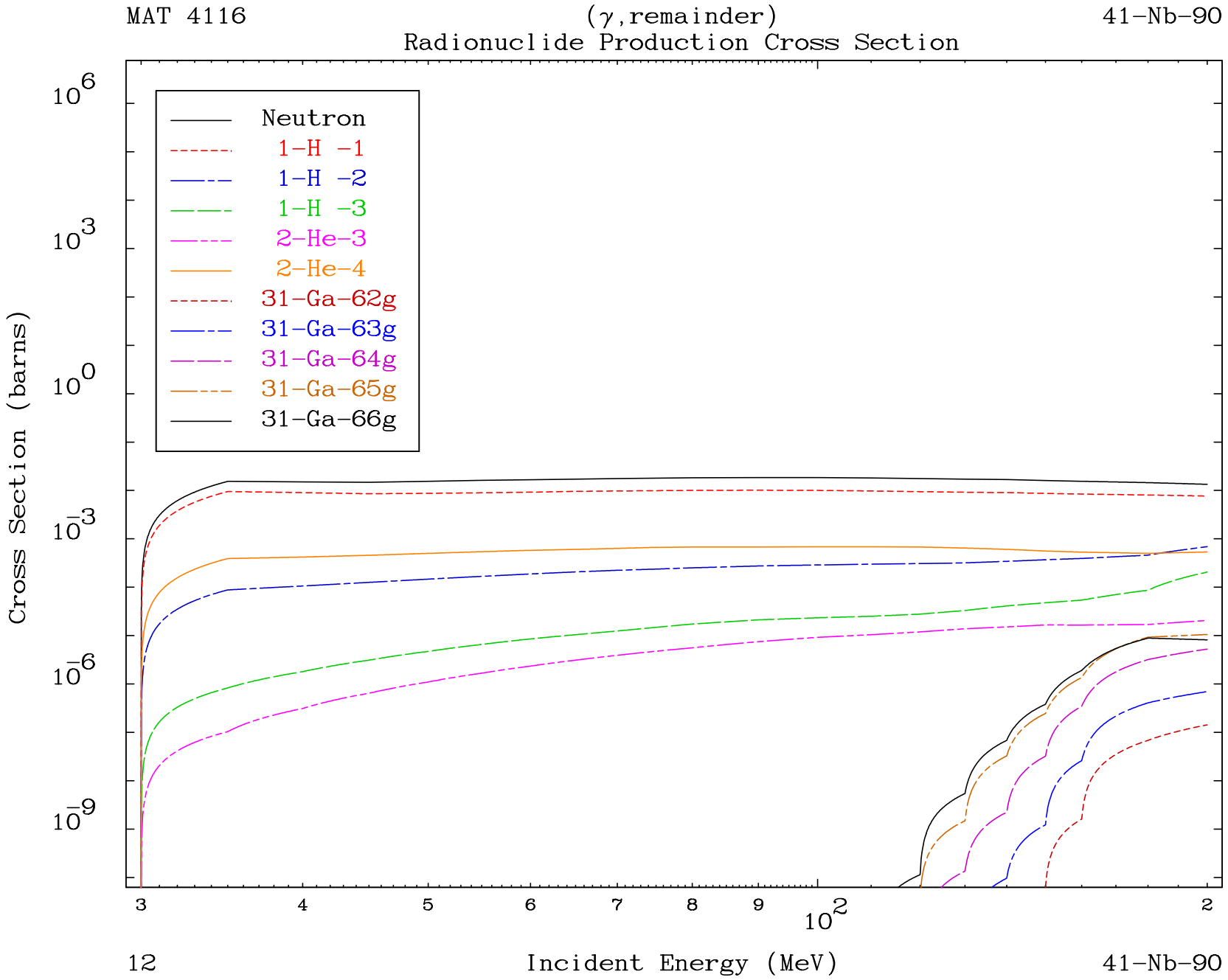

MAT 4116
(γ,d) Levels
41-Nb-90
0 Kelvin Cross Sections
(γ,d)
Cross Section (barns)
10-6
10-8
10-10
10-12
5
15
20
25
30
7
Incident Energy (MeV)
41-Nb-90

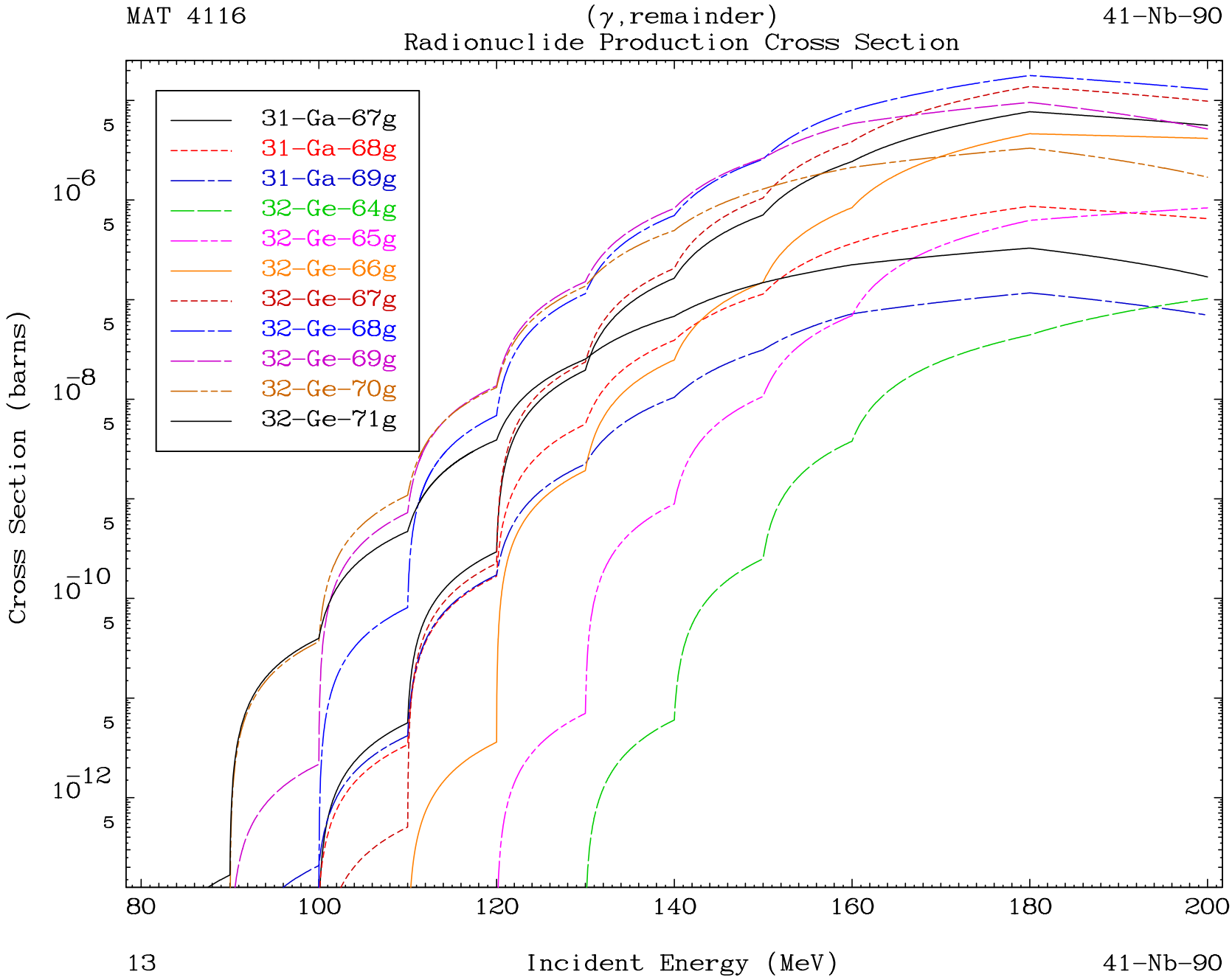

MAT 4116
(γ,t) Levels
41-Nb-90
0 Kelvin Cross Sections
(γ,t)
Cross Section (barns)
10-8
10-10
10-12
10-14
5
20
22
24
26
28
30
Incident Energy (MeV)

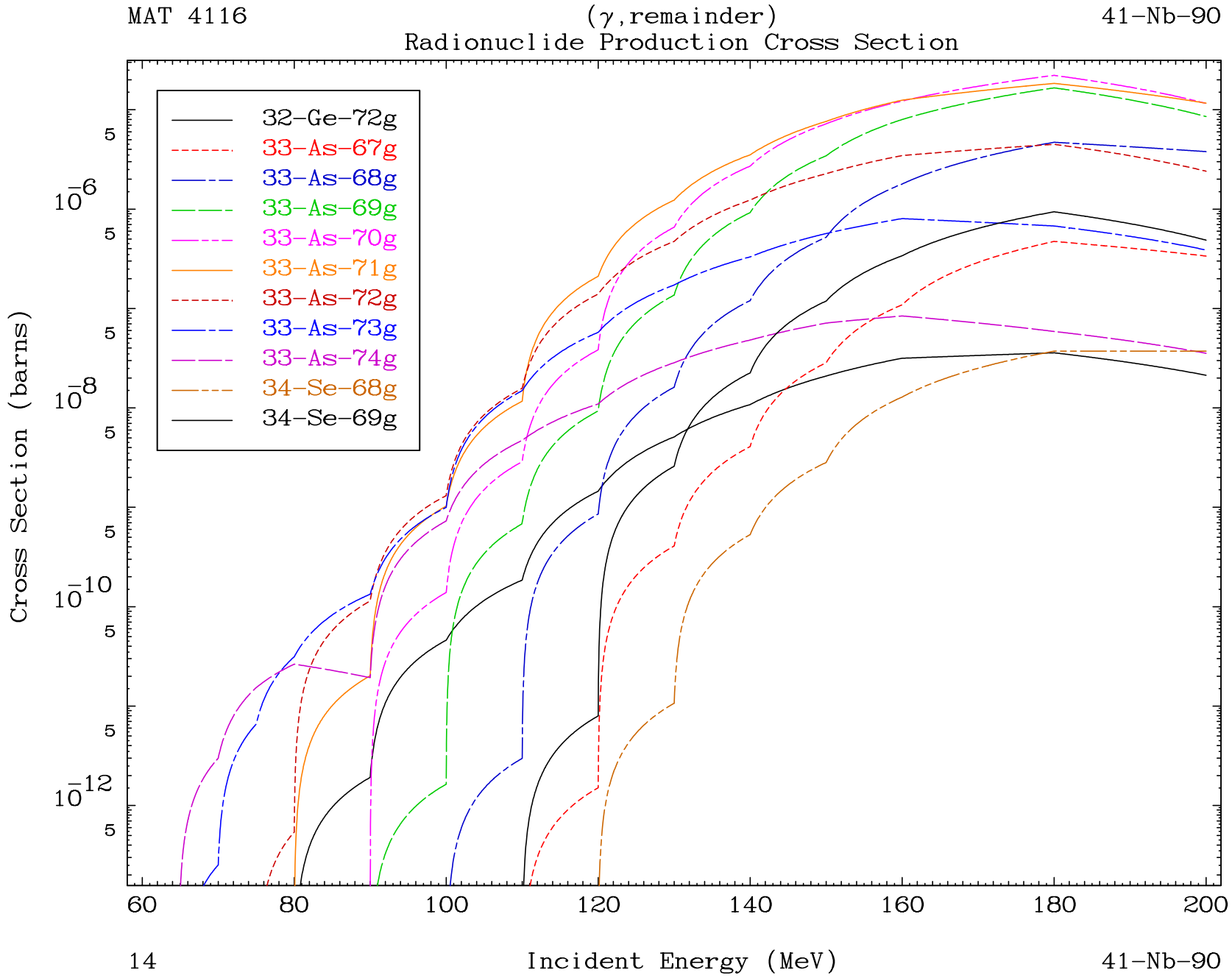

MAT 4116
(γ,He3) Levels
41-Nb-90
0 Kelvin Cross Sections
(γ,He-3)
Cross Section (barns)
10-8
5
10-10
5
10-12
5
10-14
5
10-16
5
18
20
22
24
26
28
30
Incident Energy (MeV)
9
41-Nb-90

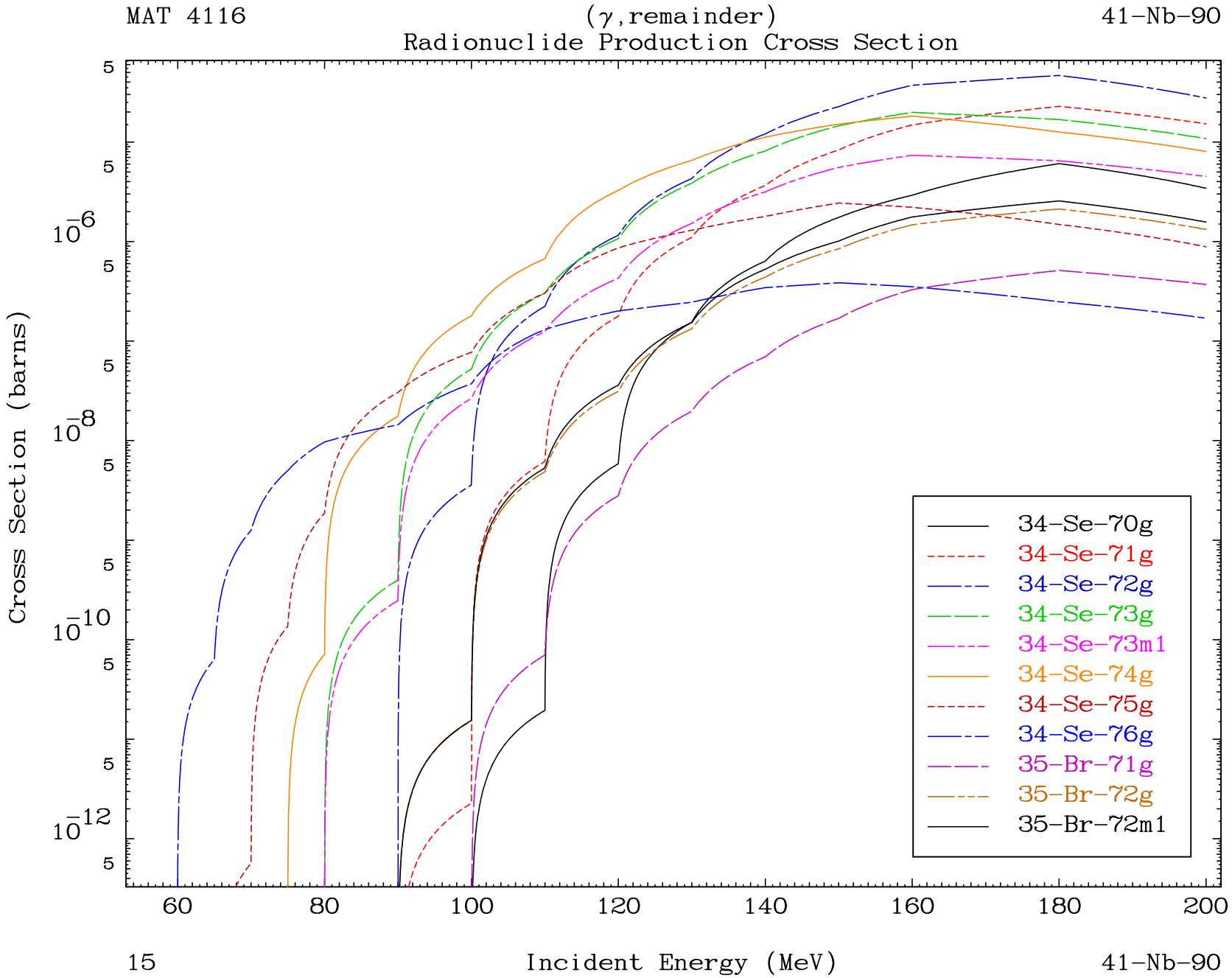

MAT 4116
(γ,α) Levels
41-Nb-90
0 Kelvin Cross Sections
(γ,α)
Cross Section (barns)
10^-4
5
10^-6
5
10^-8
5
10^-10
5
10
15
20
25
30
10
Incident Energy (MeV)
41-Nb-90

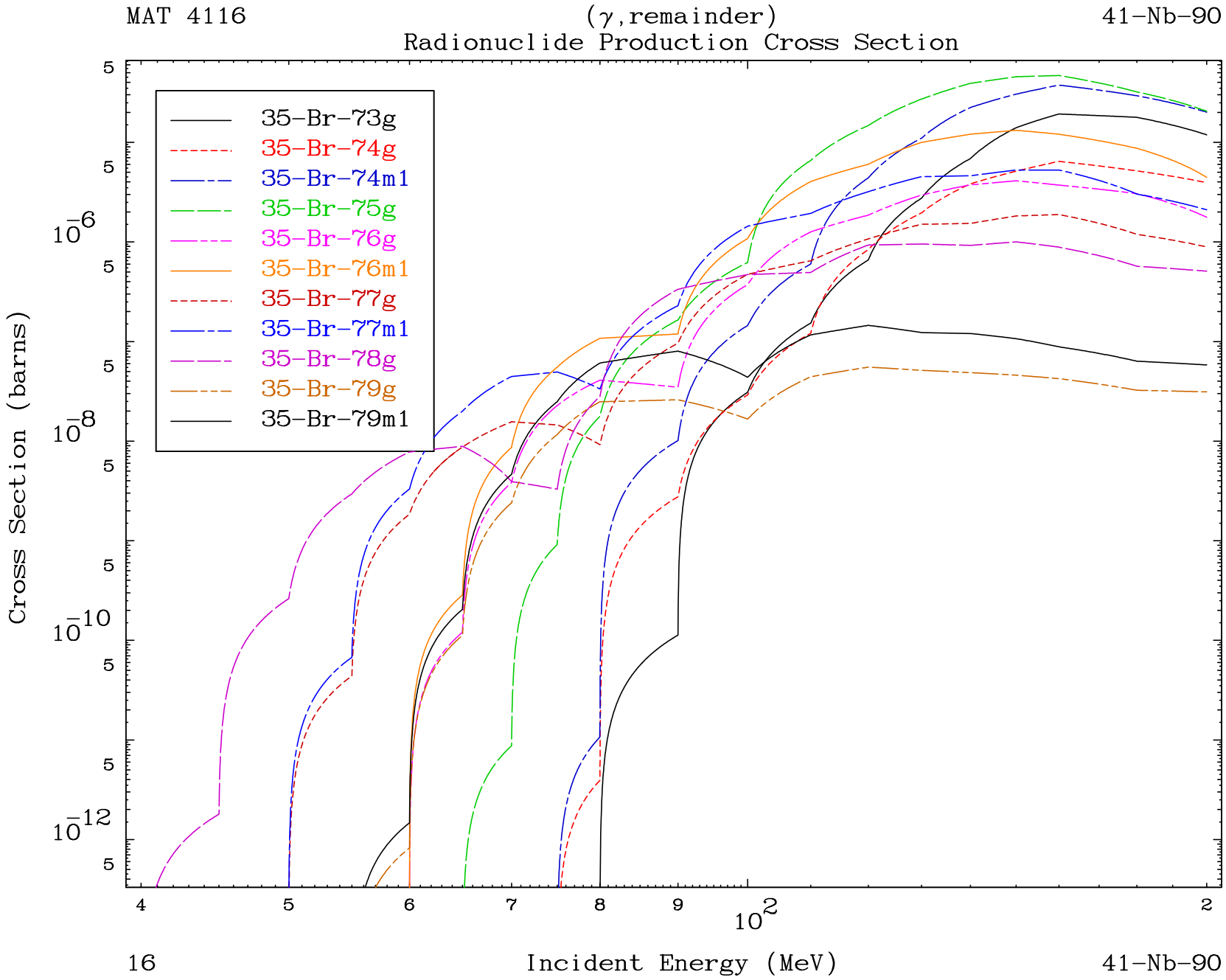

MAT 4116
Photon Inelastic
41-Nb-90
Radionuclide Production Cross Section
Cross Section (barns)
10^-2
10^-4
10^-6
10^-8
5
10
15
20
25
30
11
Incident Energy (MeV)
41-Nb-90
41-Nb-89g
41-Nb-89m1

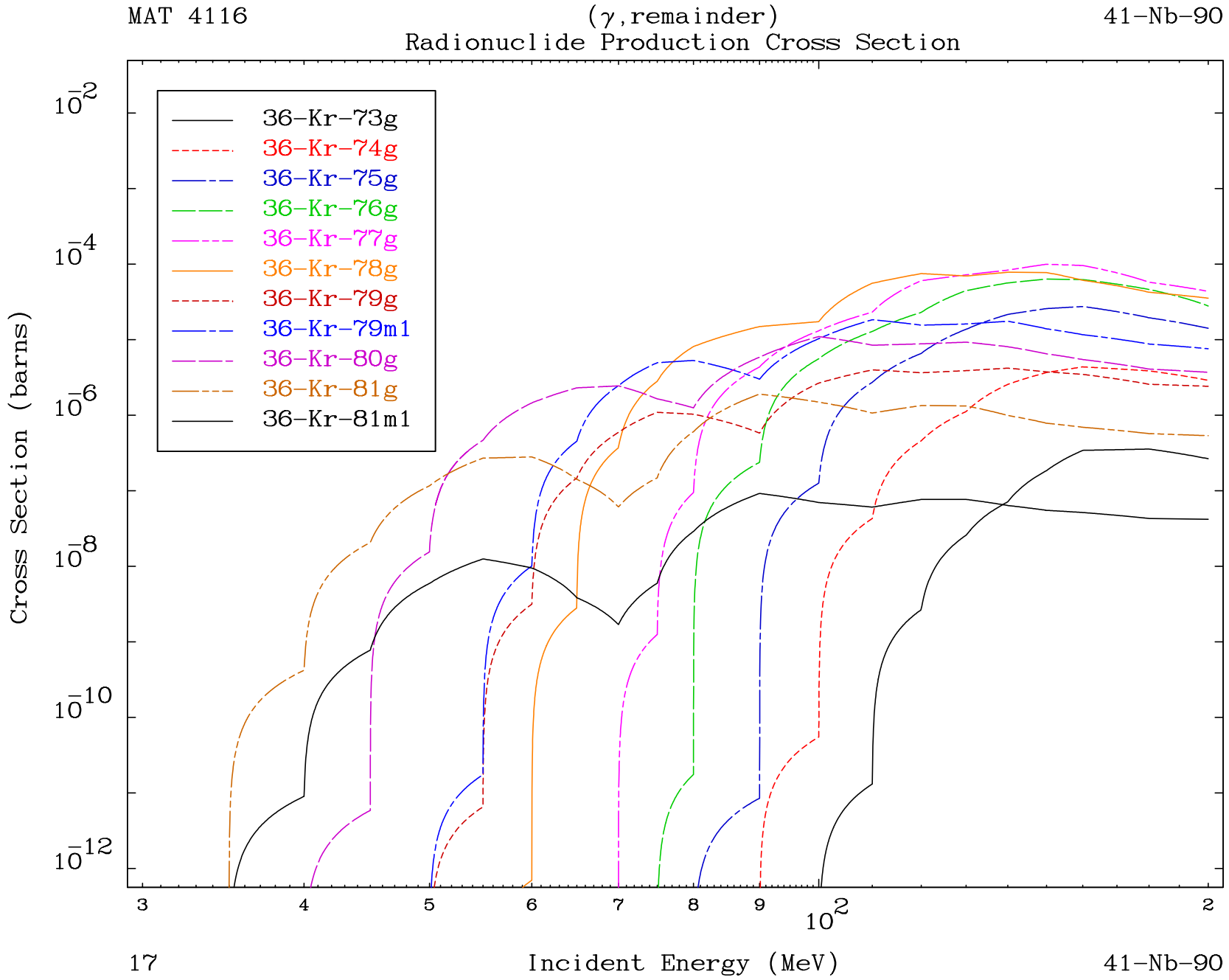

MAT 4116
(γ,remainder)
41-Nb-90
Radionuclide Production Cross Section
Neutron
1-H -1
1-H -2
1-H -3
2-He-3
2-He-4
31-Ga-62g
31-Ga-63g
31-Ga-64g
31-Ga-65g
31-Ga-66g
Cross Section (barns)
10^6
10^3
10^0
10^-3
10^-6
10^-9
3
4
5
6
7
8
9
10^2
2
12
Incident Energy (MeV)
41-Nb-90

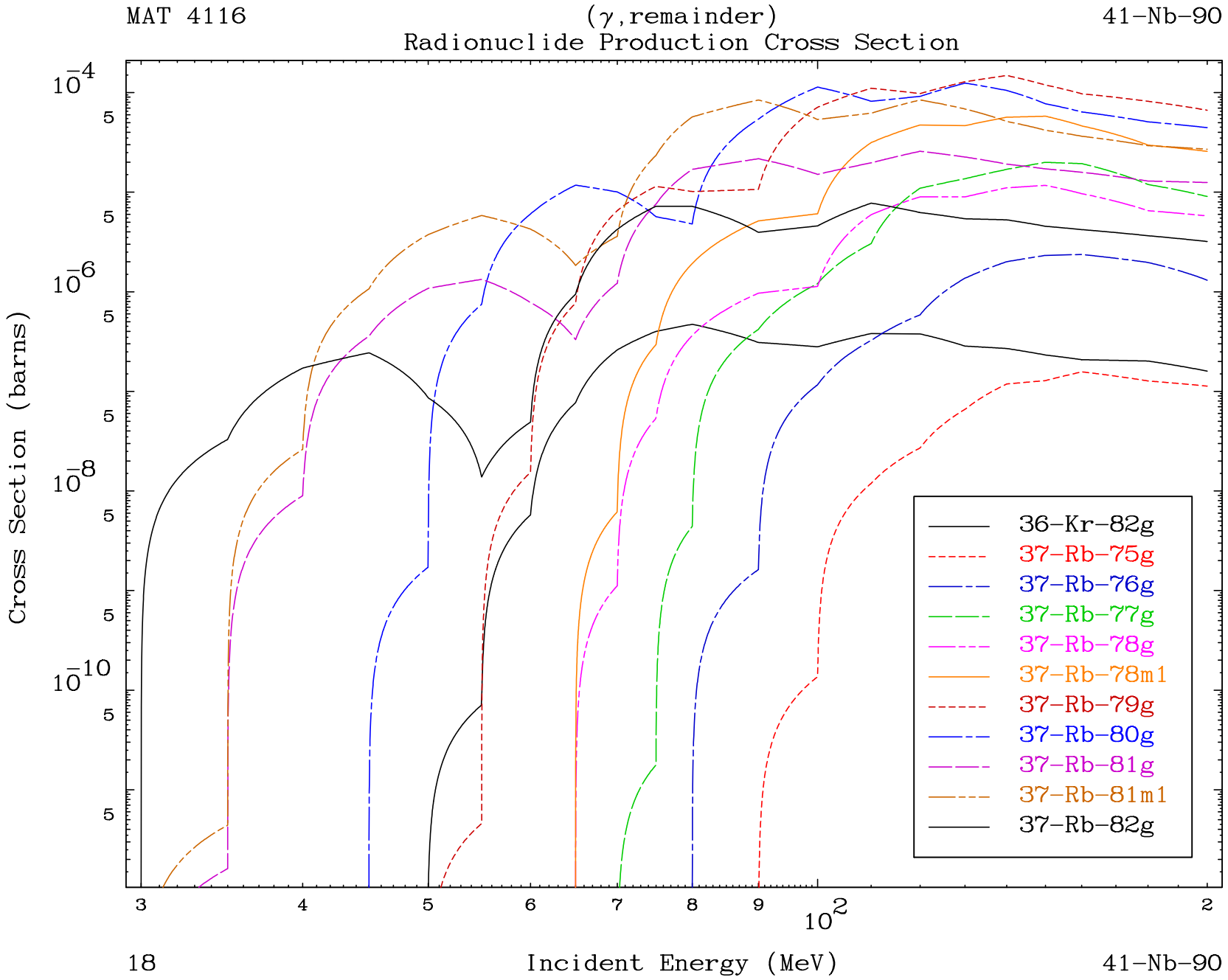

MAT 4116
(γ,remainder)
41-Nb-90
Radionuclide Production Cross Section
31-Ga-67g
31-Ga-68g
31-Ga-69g
32-Ge-64g
32-Ge-65g
32-Ge-66g
32-Ge-67g
32-Ge-68g
32-Ge-69g
32-Ge-70g
32-Ge-71g
Cross Section (barns)
10-6
10-8
10-10
10-12
5
80
100
120
140
160
180
200
13
Incident Energy (MeV)
41-Nb-90


MAT 4116
(γ,remainder)
41-Nb-90
Radionuclide Production Cross Section
32-Ge-72g
33-As-67g
33-As-68g
33-As-69g
33-As-70g
33-As-71g
33-As-72g
33-As-73g
33-As-74g
34-Se-68g
34-Se-69g
Cross Section (barns)
10-6
10-8
10-10
10-12
5
60
80
100
120
140
160
180
200
14
Incident Energy (MeV)
41-Nb-90

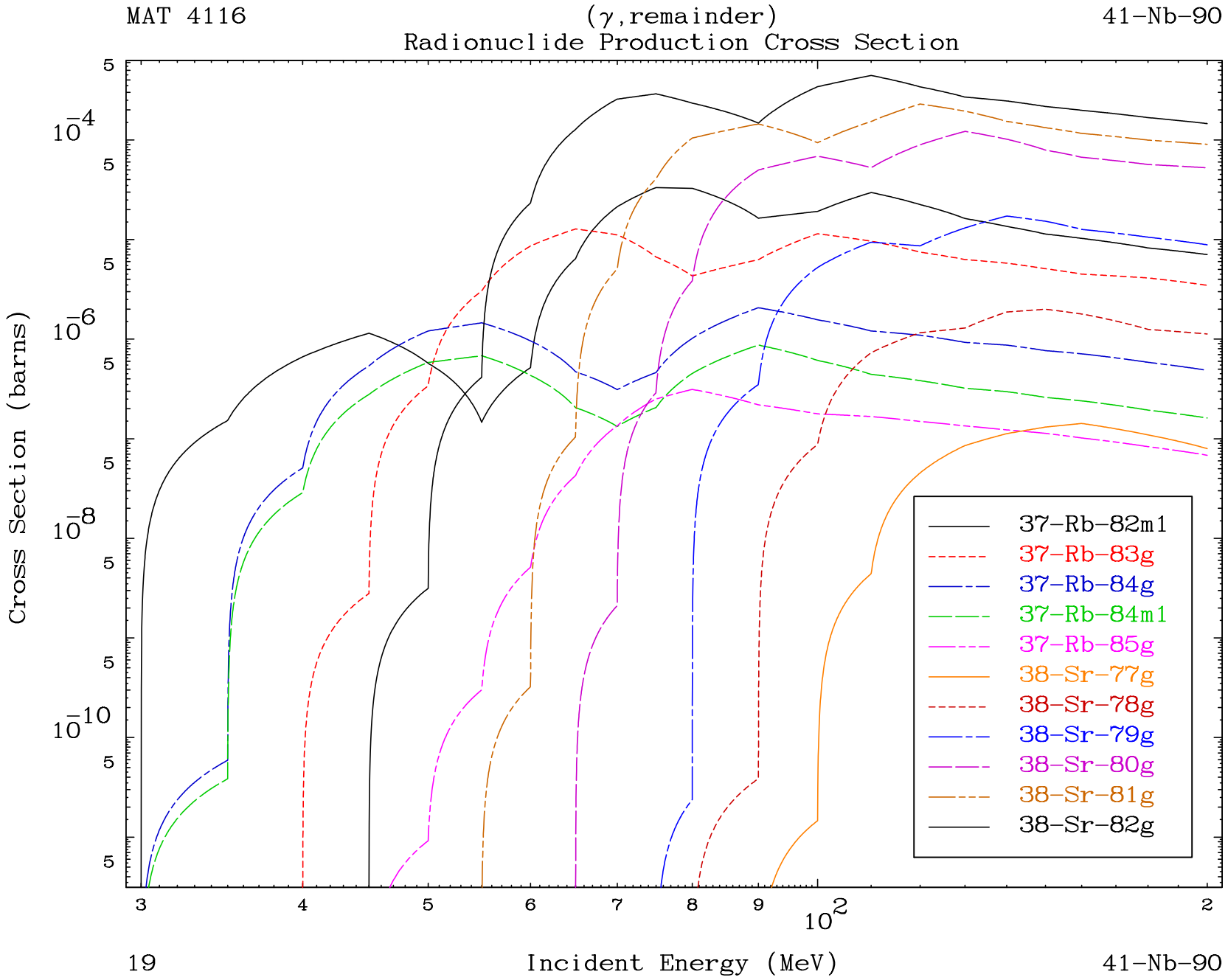

MAT 4116
(γ,remainder)
41-Nb-90
Radionuclide Production Cross Section
Cross Section (barns)
10-6
10-8
10-10
10-12
60
80
100
120
140
160
180
200
15
Incident Energy (MeV)
41-Nb-90
34-Se-70g
34-Se-71g
34-Se-72g
34-Se-73g
34-Se-73m1
34-Se-74g
34-Se-75g
34-Se-76g
35-Br-71g
35-Br-72g
35-Br-72m1


MAT 4116
(γ,remainder)
41-Nb-90
Radionuclide Production Cross Section
35-Br-73g
35-Br-74g
35-Br-74m1
35-Br-75g
35-Br-76g
35-Br-76m1
35-Br-77g
35-Br-77m1
35-Br-78g
35-Br-79g
35-Br-79m1
Cross Section (barns)
10-6
10-8
10-10
10-12
5
4
6
7
8
9
10^2
2
16
Incident Energy (MeV)
41-Nb-90

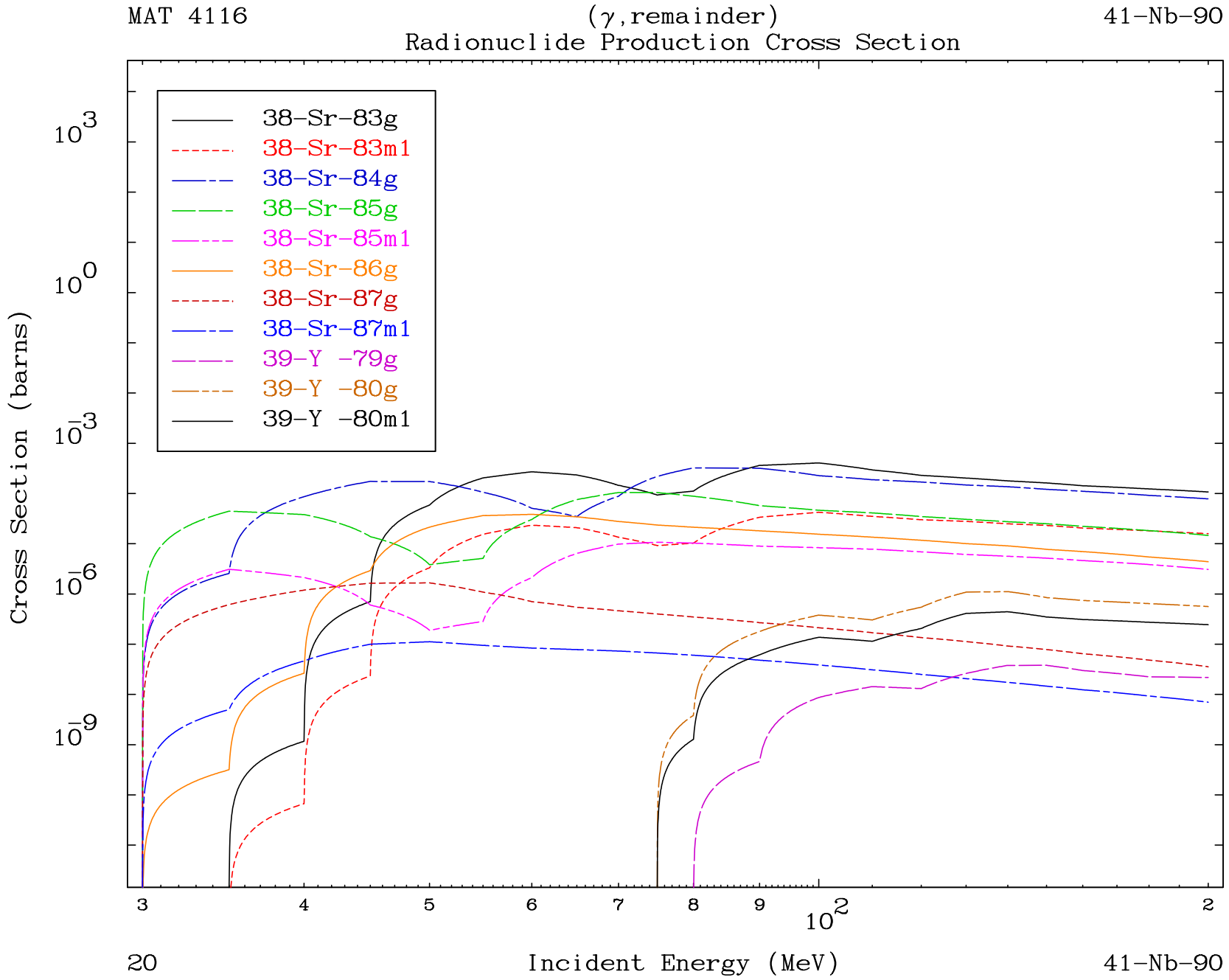

MAT 4116
(γ,remainder)
41-Nb-90
Radionuclide Production Cross Section
36-Kr-73g
36-Kr-74g
36-Kr-75g
36-Kr-76g
36-Kr-77g
36-Kr-78g
36-Kr-79g
36-Kr-79m1
36-Kr-80g
36-Kr-81g
36-Kr-81m1
Cross Section (barns)
10-2
10-4
10-6
10-8
10-10
10-12
3
4
5
6
7
8
9
10 2
2
17
Incident Energy (MeV)
41-Nb-90

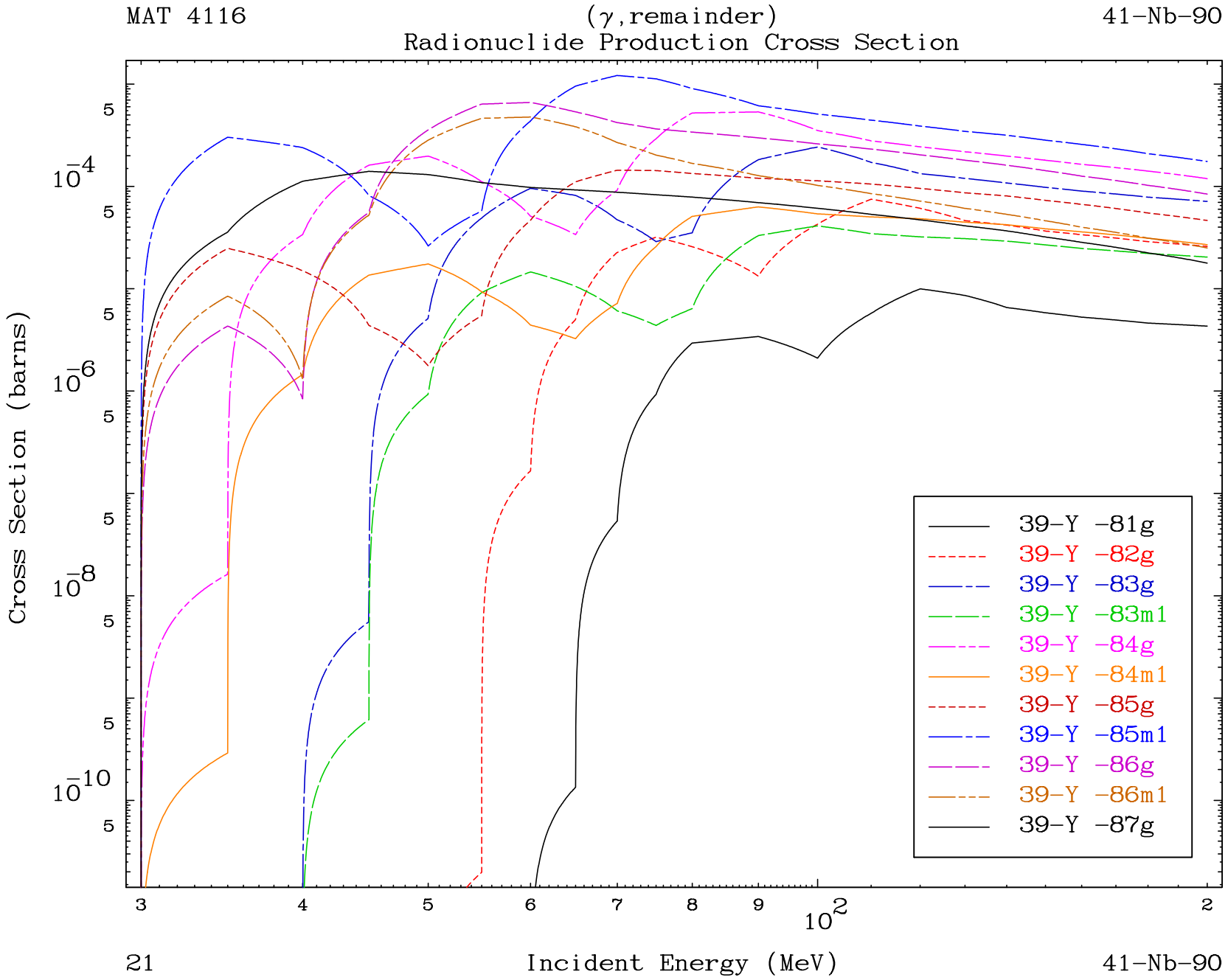

MAT 4116
(γ,remainder)
41-Nb-90
Radionuclide Production Cross Section
Cross Section (barns)
10-4
5
10-6
5
10-8
5
10-10
5
3
4
5
6
7
8
9
10 2
2
Incident Energy (MeV)
36-Kr-82g
37-Rb-75g
37-Rb-76g
37-Rb-77g
37-Rb-78g
37-Rb-78m1
37-Rb-79g
37-Rb-80g
37-Rb-81g
37-Rb-81m1
37-Rb-82g

41-Nb-90

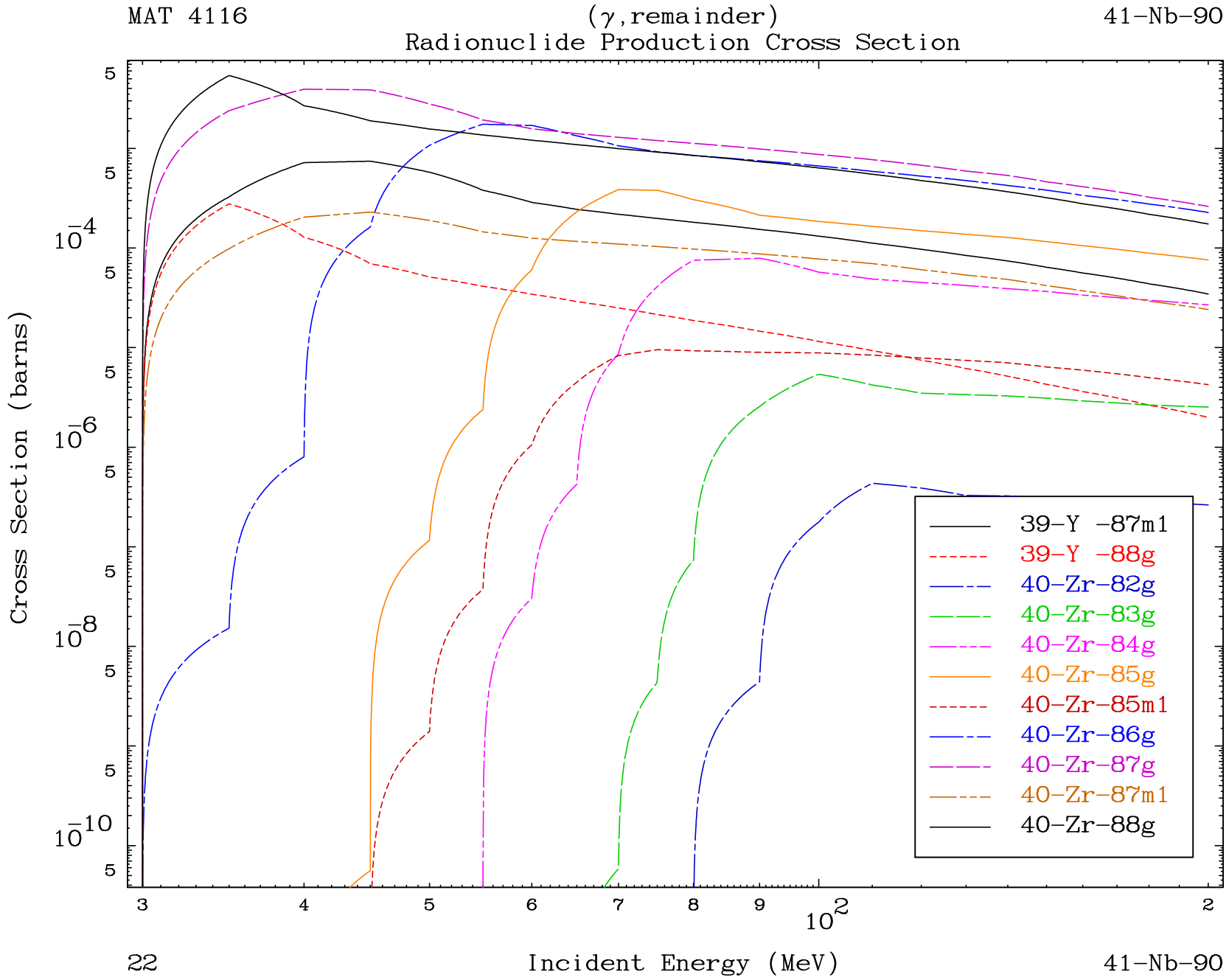

MAT 4116
(γ,remainder)
41-Nb-90
Radionuclide Production Cross Section
Cross Section (barns)
10-4
10-6
10-8
10-10
3
4
5
6
7
8
9
10 2
2
Incident Energy (MeV)
37-Rb-82m1
37-Rb-83g
37-Rb-84g
37-Rb-84m1
37-Rb-85g
38-Sr-77g
38-Sr-78g
38-Sr-79g
38-Sr-80g
38-Sr-81g
38-Sr-82g

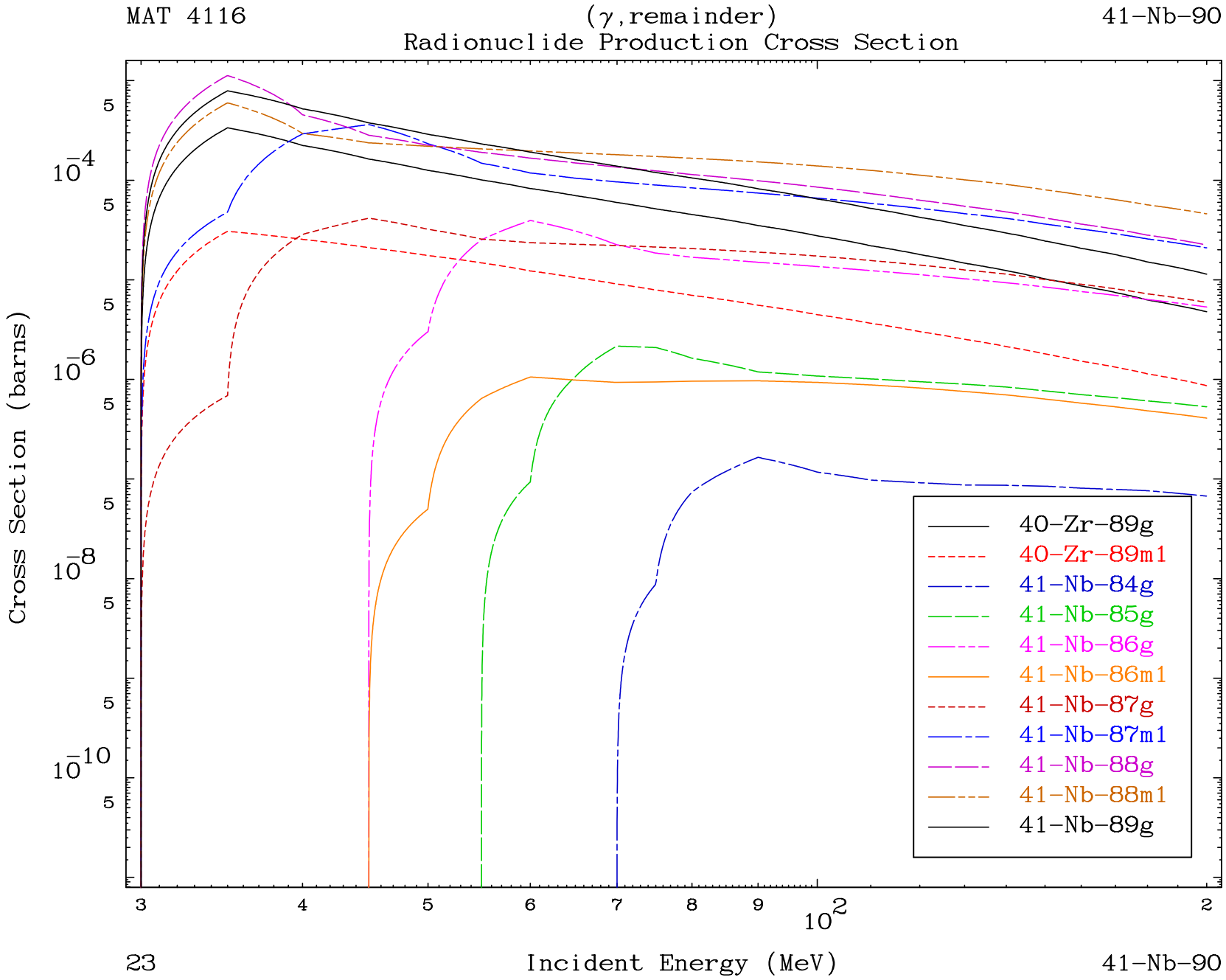
41-Nb-90

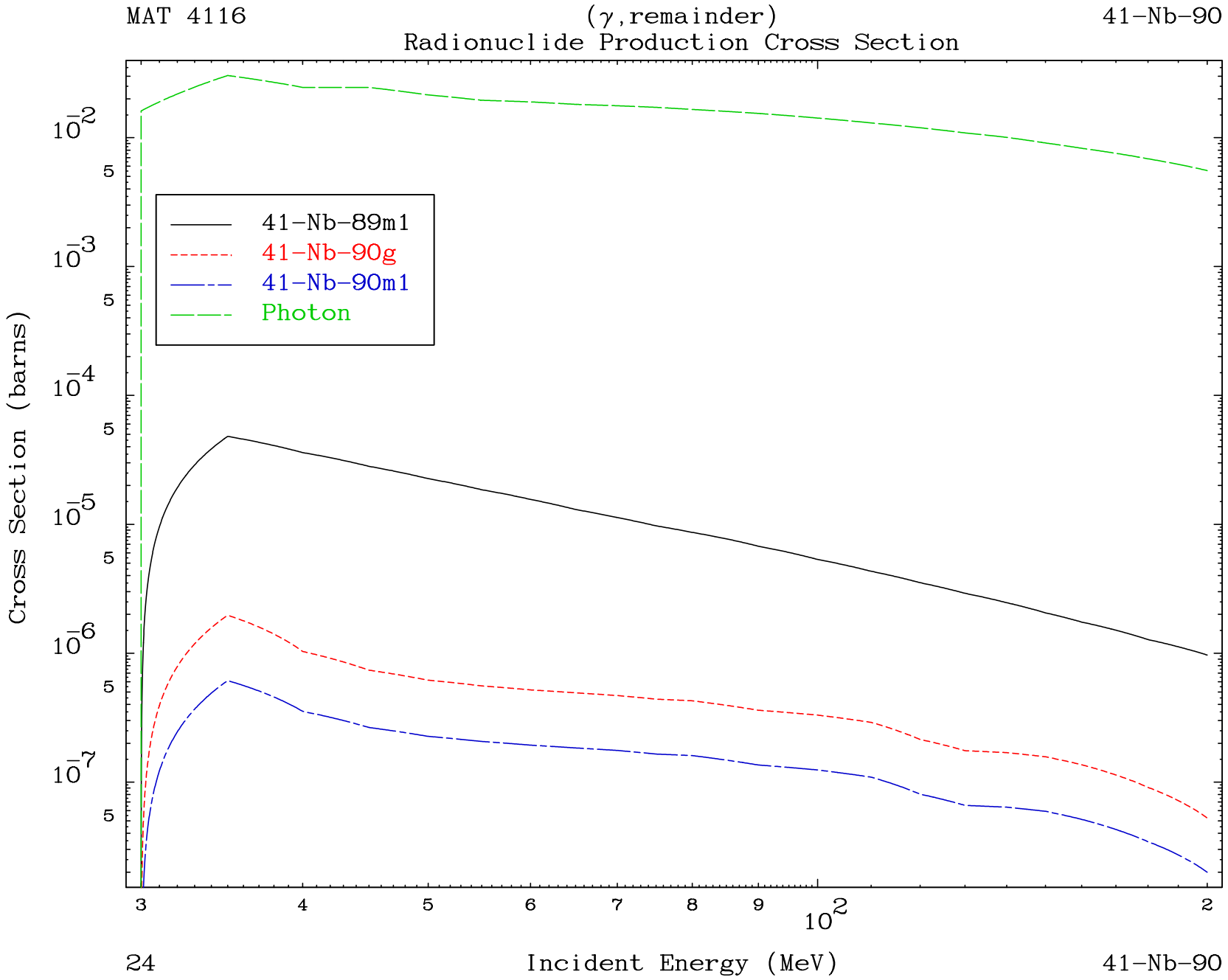

MAT 4116
(γ,remainder)
41-Nb-90
Radionuclide Production Cross Section
38-Sr-83g
38-Sr-83m1
38-Sr-84g
38-Sr-85g
38-Sr-85m1
38-Sr-86g
38-Sr-87g
38-Sr-87m1
39-Y -79g
39-Y -80g
39-Y -80m1
Cross Section (barns)
10^3
10^0
10^-3
10^-6
10^-9
3
4
5
6
7
8
9
10^2
2
20
Incident Energy (MeV)
41-Nb-90

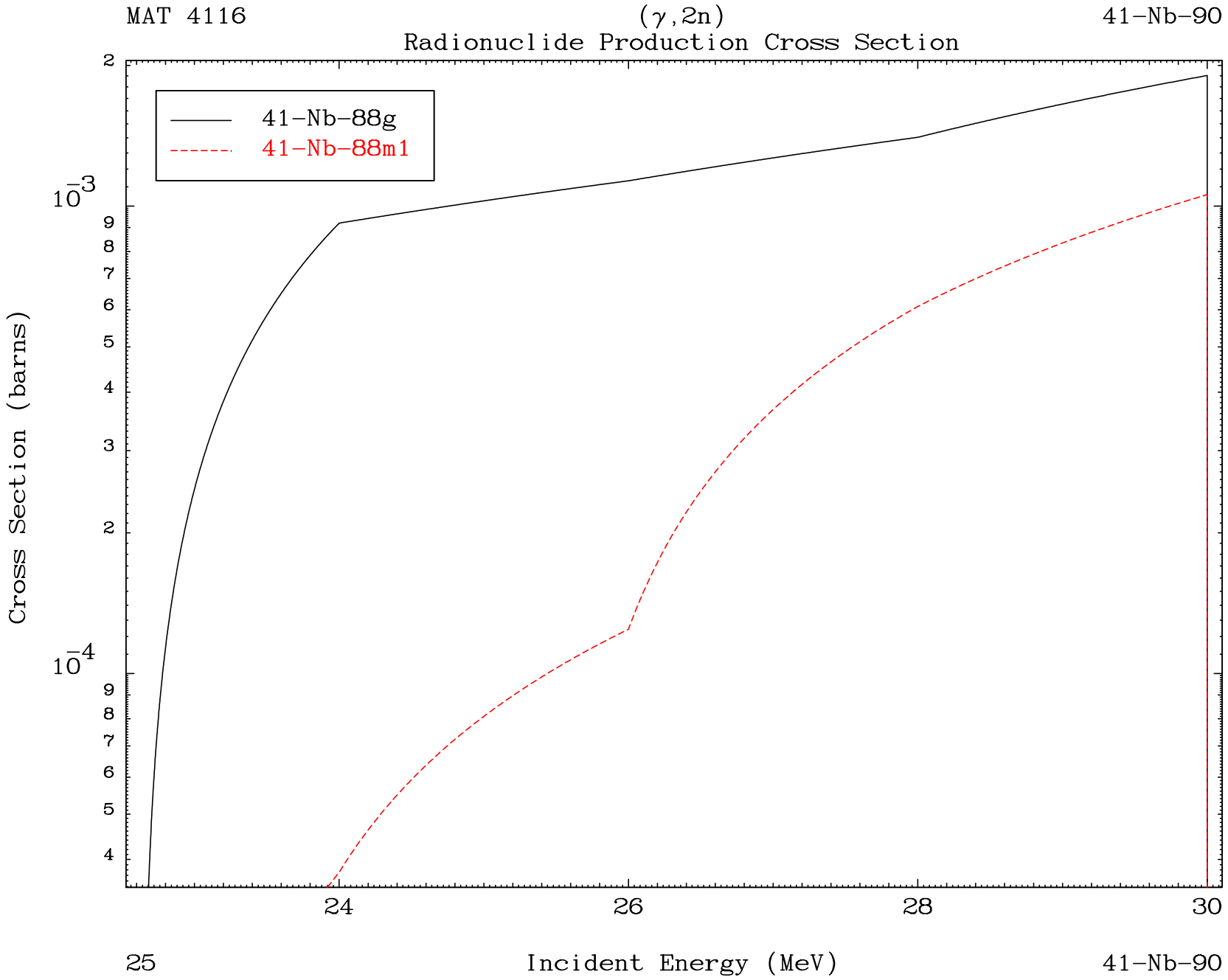

MAT 4116
(γ,remainder)
41-Nb-90
Radionuclide Production Cross Section
Cross Section (barns)
10-4
10-6
10-8
10-10
5
3
4
5
6
7
8
9
10 2
2
Incident Energy (MeV)
39-Y -81g
39-Y -82g
39-Y -83g
39-Y -83m1
39-Y -84g
39-Y -84m1
39-Y -85g
39-Y -85m1
39-Y -86g
39-Y -86m1
39-Y -87g

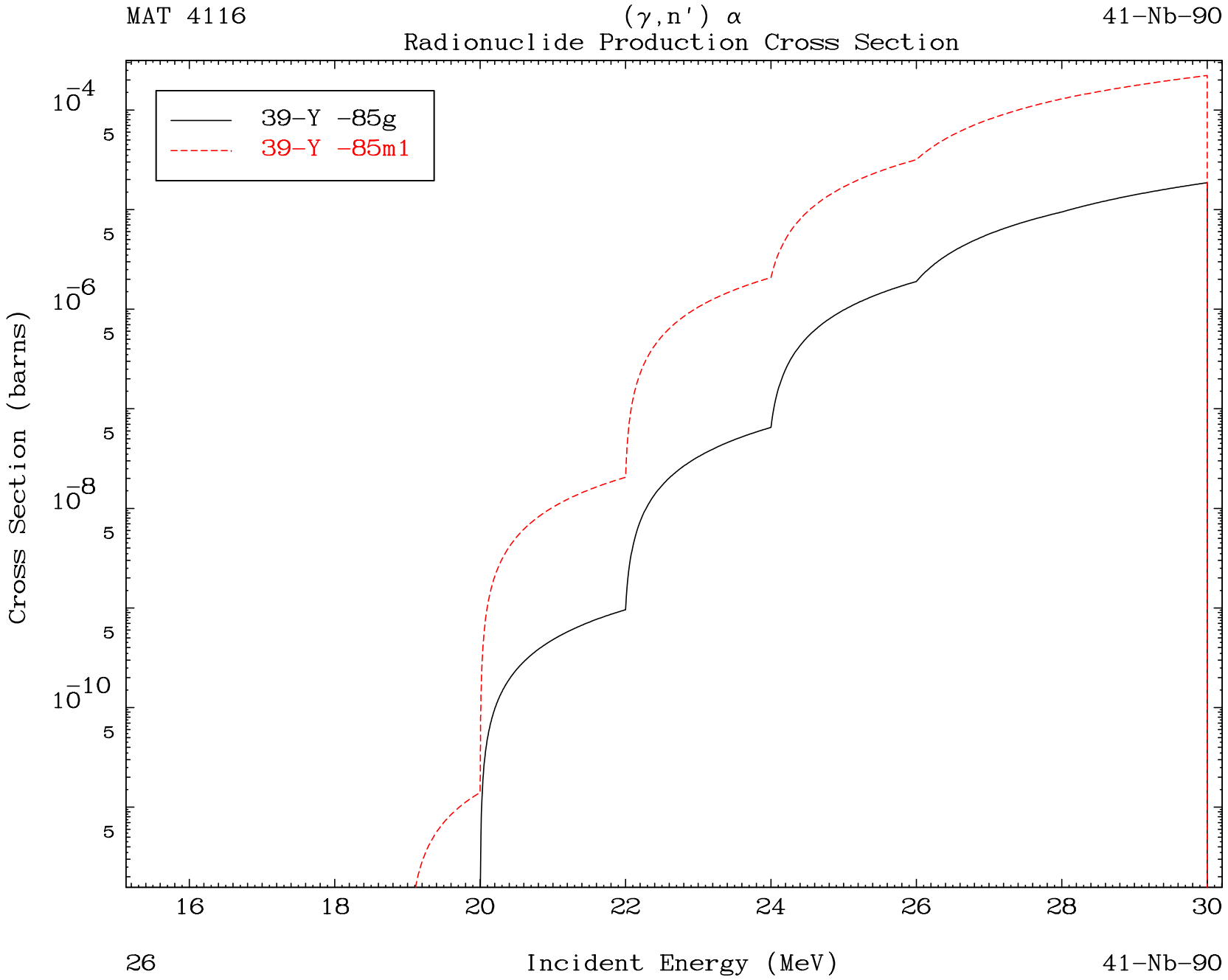
41-Nb-90

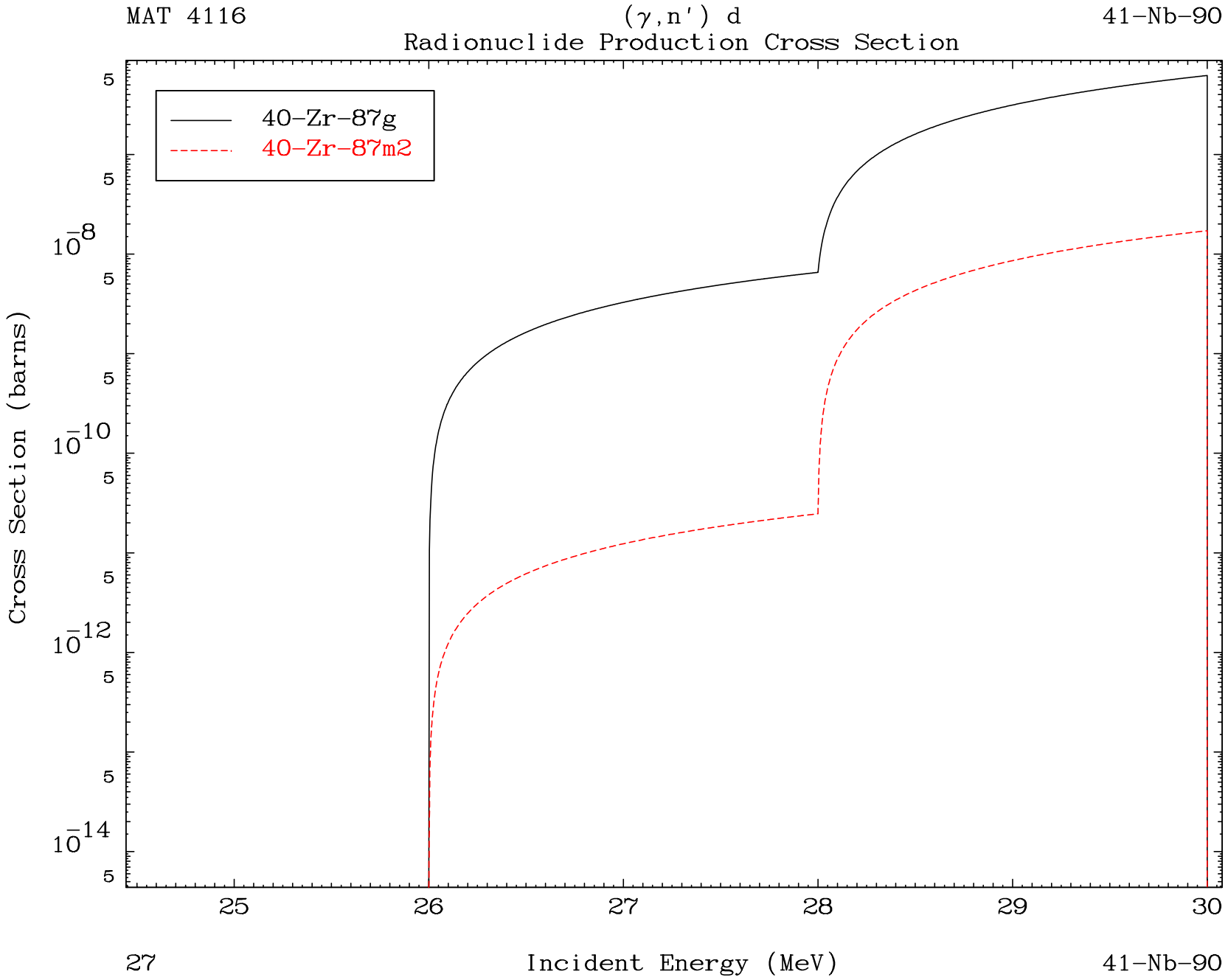

MAT 4116
(γ,remainder)
41-Nb-90
Radionuclide Production Cross Section
Cross Section (barns)
10-4
10-6
10-8
10-10
3
4
5
6
7
8
9
10 2
2
Incident Energy (MeV)
22
41-Nb-90
39-Y -87m1
39-Y -88g
40-Zr-82g
40-Zr-83g
40-Zr-84g
40-Zr-85g
40-Zr-85m1
40-Zr-86g
40-Zr-87g
40-Zr-87m1
40-Zr-88g

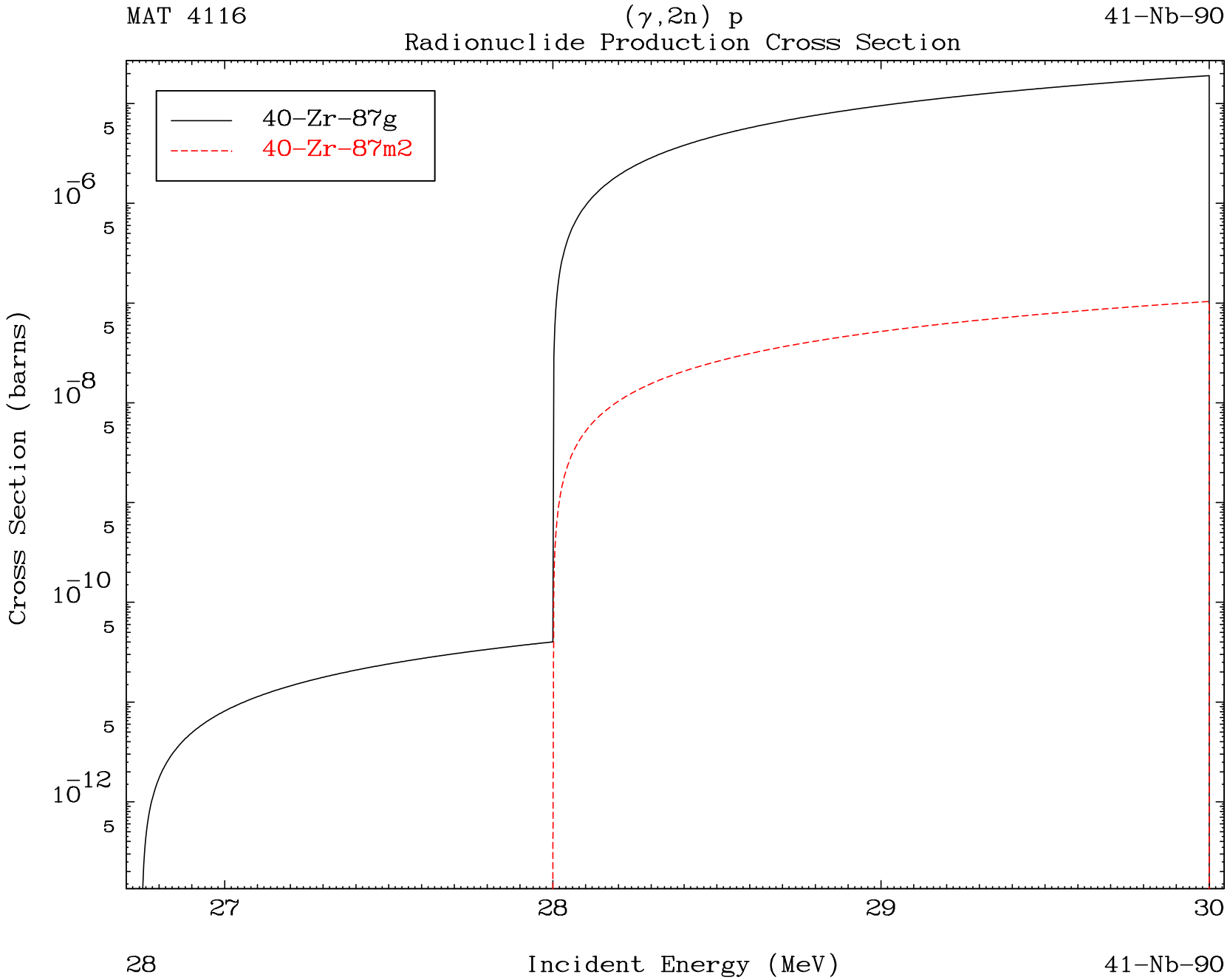

MAT 4116
(γ,remainder)
41-Nb-90
Radionuclide Production Cross Section
Cross Section (barns)
10-4
10-6
10-8
10-10
Incident Energy (MeV)
102
40-Zr-89g
40-Zr-89m1
41-Nb-84g
41-Nb-85g
41-Nb-86g
41-Nb-86m1
41-Nb-87g
41-Nb-87m1
41-Nb-88g
41-Nb-88m1
41-Nb-89g
23
41-Nb-90

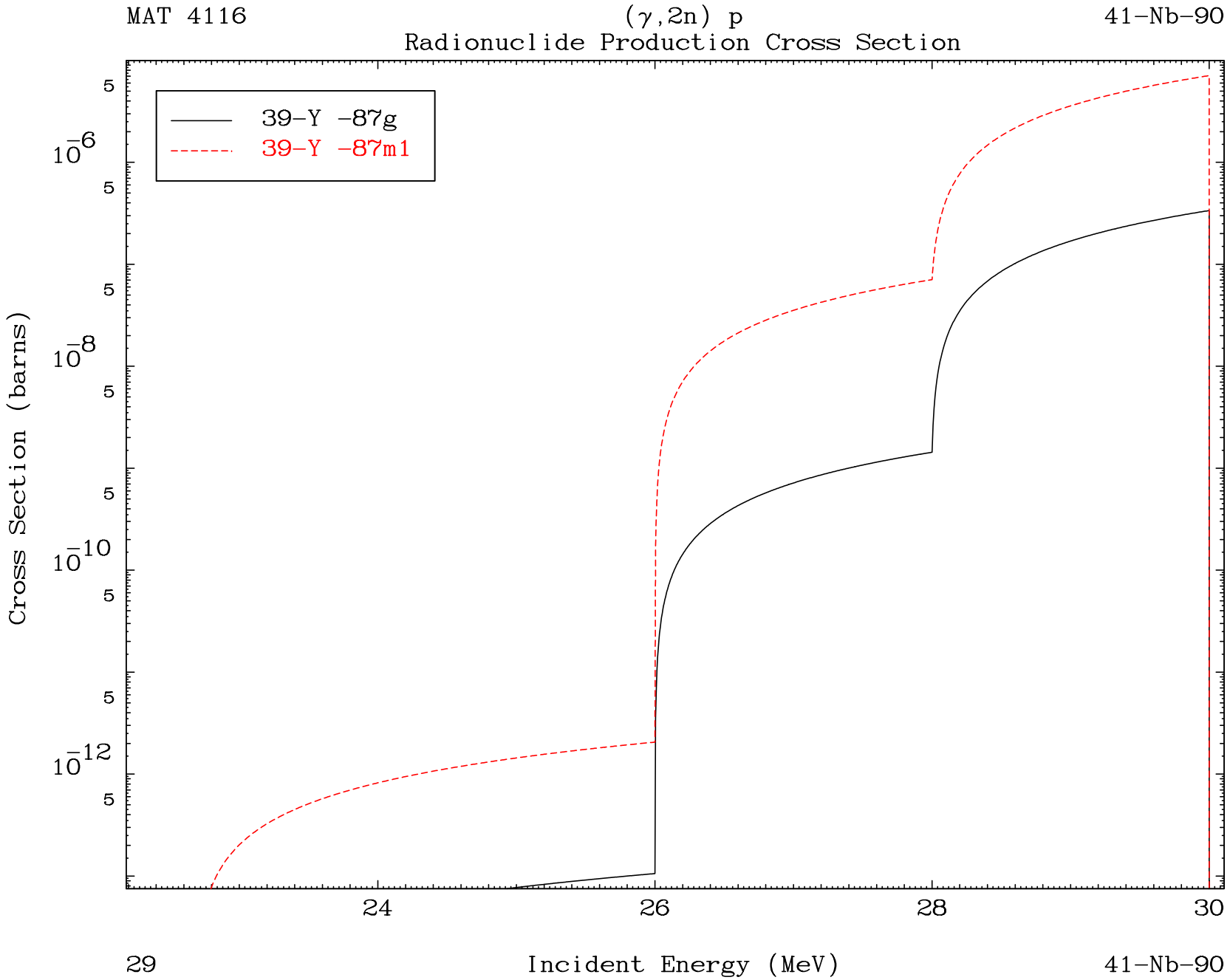

MAT 4116
(γ,remainder)
41-Nb-90
Radionuclide Production Cross Section
41-Nb-89m1
41-Nb-90g
41-Nb-90m1
Photon
Cross Section (barns)
10-2
10-3
10-4
10-5
10-6
10-7
5
3
4
5
6
7
8
9
10 2
2
24
Incident Energy (MeV)
41-Nb-90

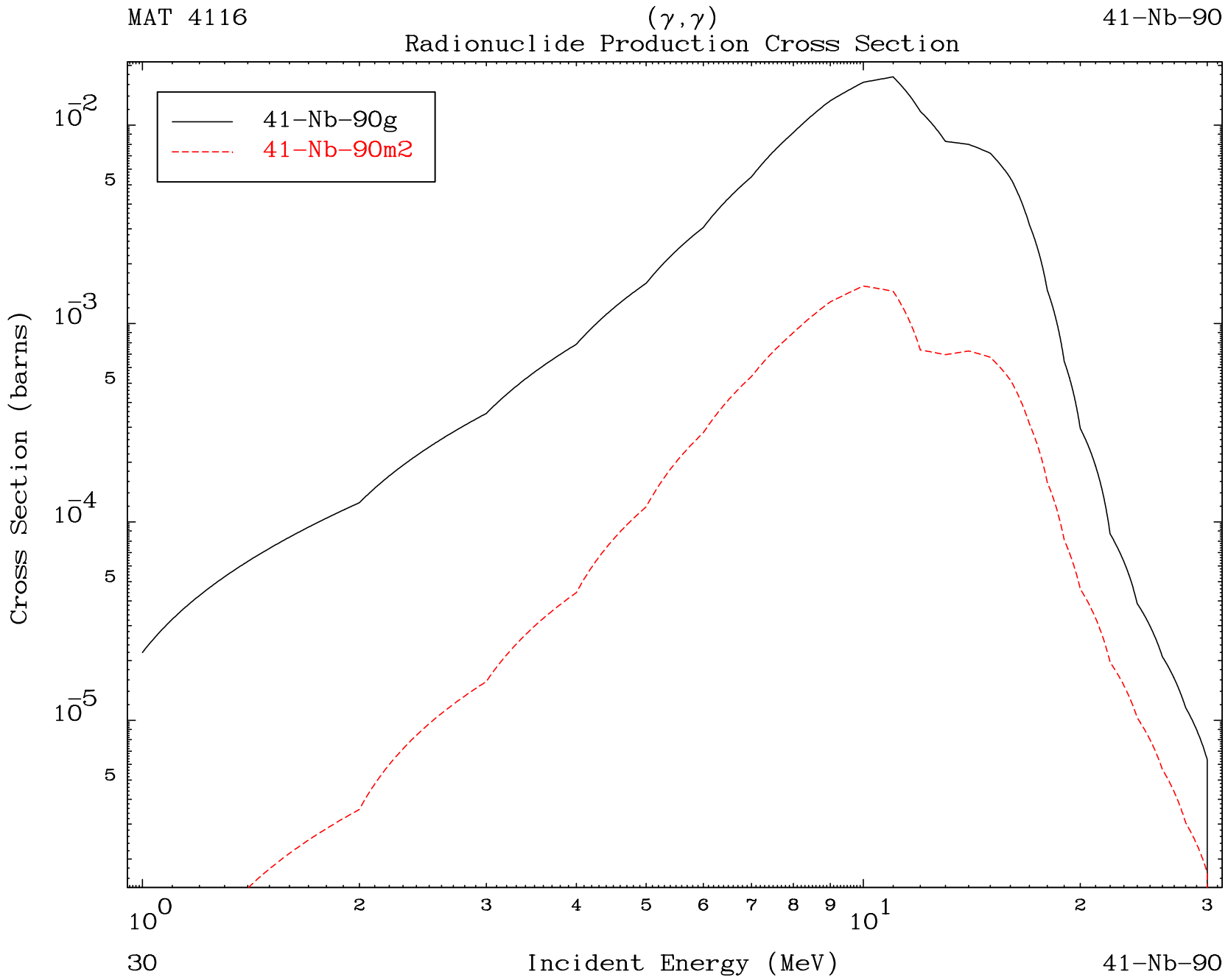

MAT 4116
(γ,2n)
41-Nb-90
Radionuclide Production Cross Section
41-Nb-88g
41-Nb-88m1
Cross Section (barns)
10-3
10-4
24
26
28
30
25
Incident Energy (MeV)
41-Nb-90

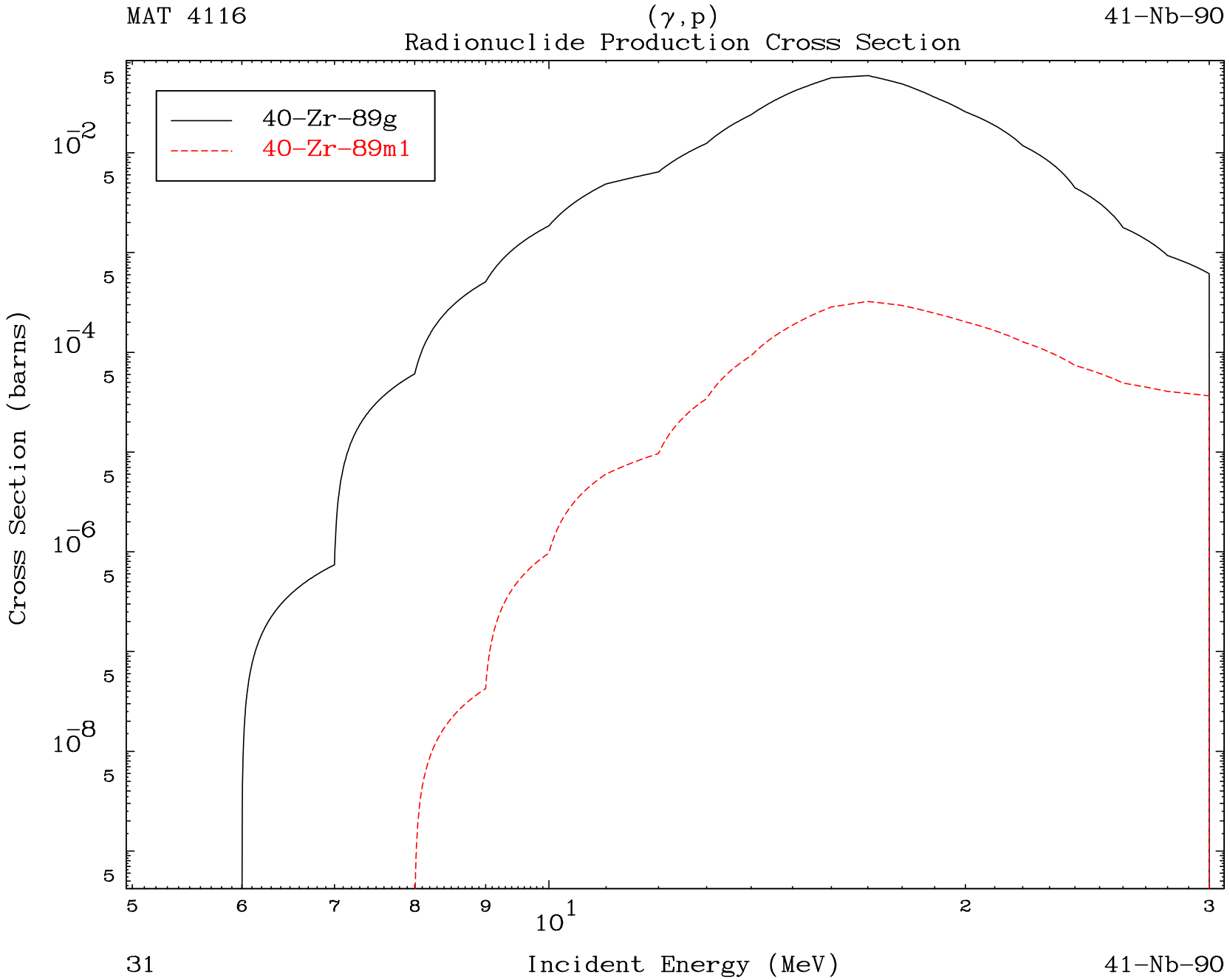

MAT 4116
(γ,n') α
41-Nb-90
Radionuclide Production Cross Section
39-Y -85g
39-Y -85m1
Cross Section (barns)
10-4
10-6
10-8
10-10
5
16
18
20
22
24
26
28
30
26
Incident Energy (MeV)
41-Nb-90

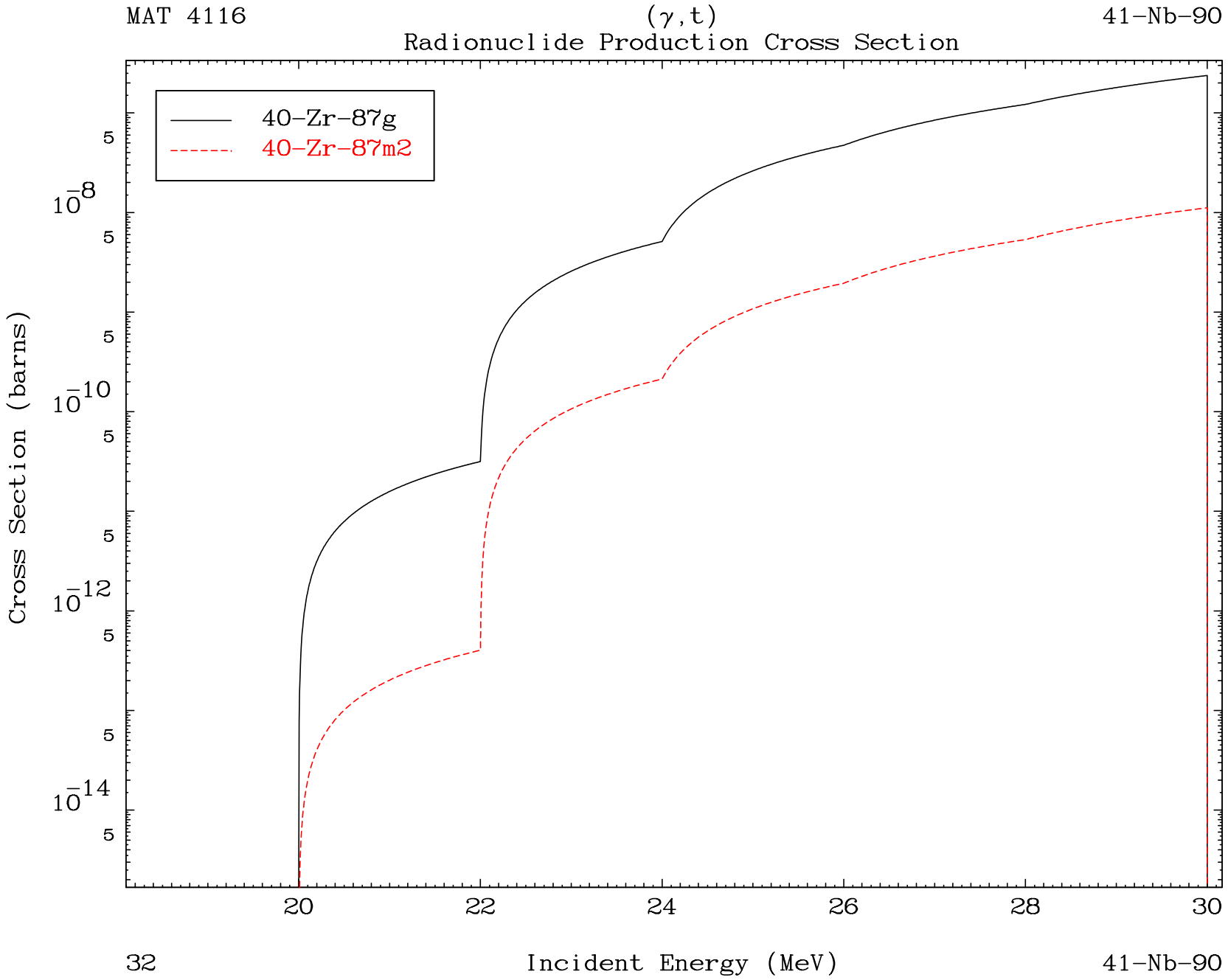

MAT 4116
(γ,n') d
41-Nb-90
Radionuclide Production Cross Section
40-Zr-87g
40-Zr-87m2
Cross Section (barns)
10^-8
10^-10
10^-12
10^-14
5
25
26
27
28
29
30
27
Incident Energy (MeV)
41-Nb-90

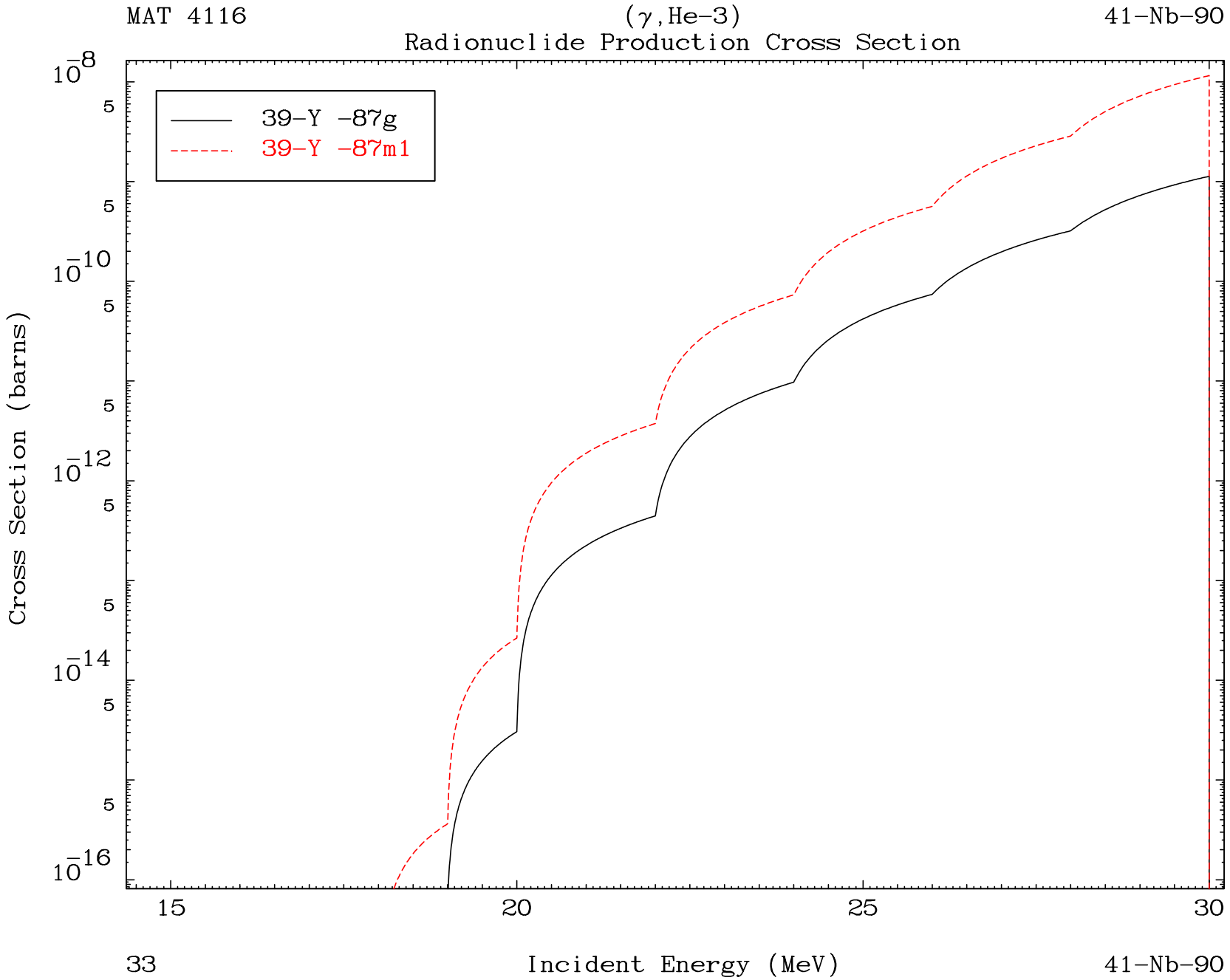

MAT 4116
(γ,2n) p
41-Nb-90
Radionuclide Production Cross Section
40-Zr-87g
40-Zr-87m2
Cross Section (barns)
10-6
10-8
10-10
10-12
5
27
28
29
30
28
Incident Energy (MeV)
41-Nb-90

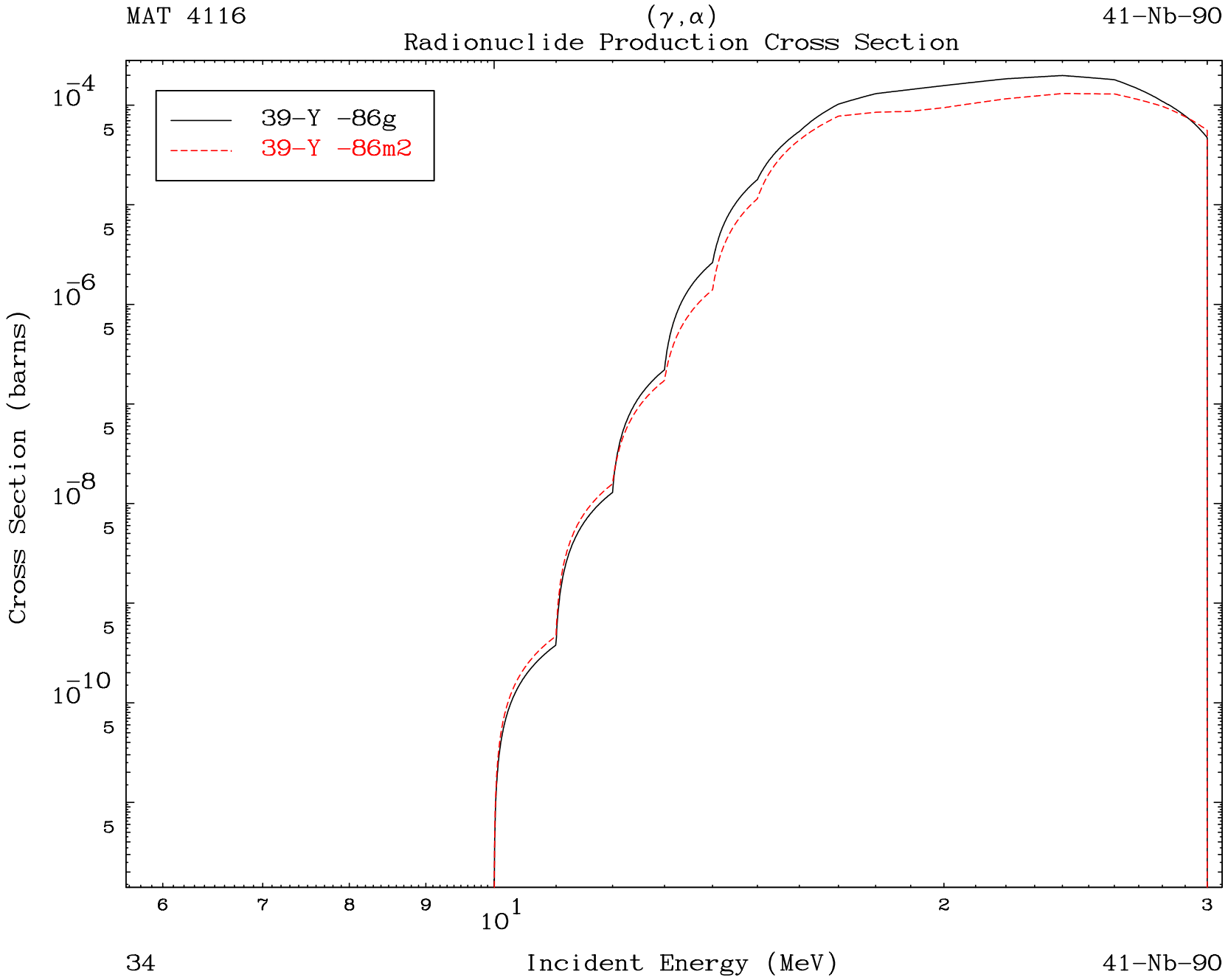

MAT 4116
(γ,2n) p
41-Nb-90
Radionuclide Production Cross Section
39-Y -87g
39-Y -87m1
Cross Section (barns)
10^-6
10^-8
10^-10
10^-12
5
24
26
28
30
29
Incident Energy (MeV)
41-Nb-90

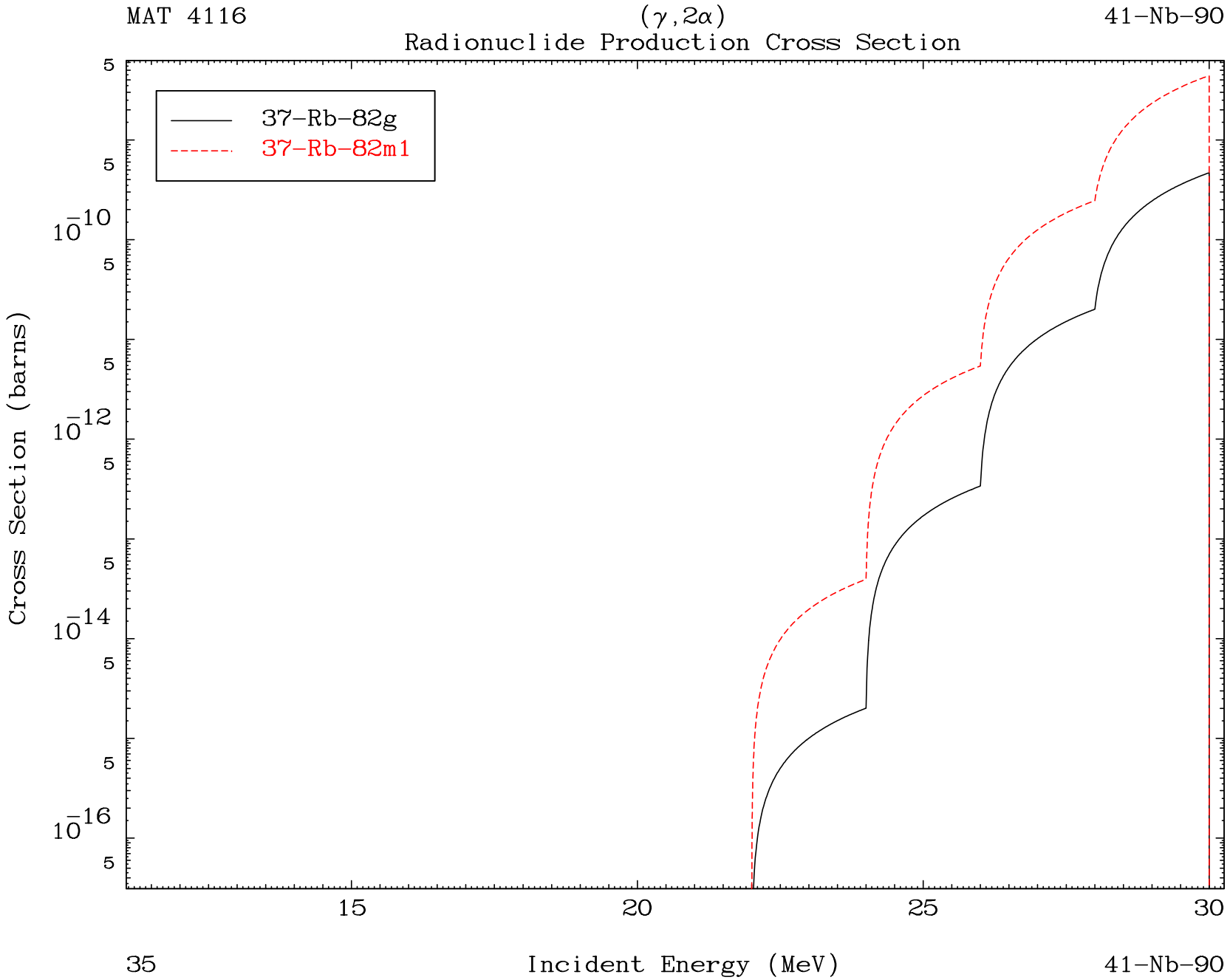

MAT 4116
(γ,γ)
41-Nb-90
Radionuclide Production Cross Section
41-Nb-90g
41-Nb-90m2
Cross Section (barns)
10-2
10-3
10-4
10-5
5
100
2
3
4
5
6
7
8
9
101
2
3
30
Incident Energy (MeV)
41-Nb-90

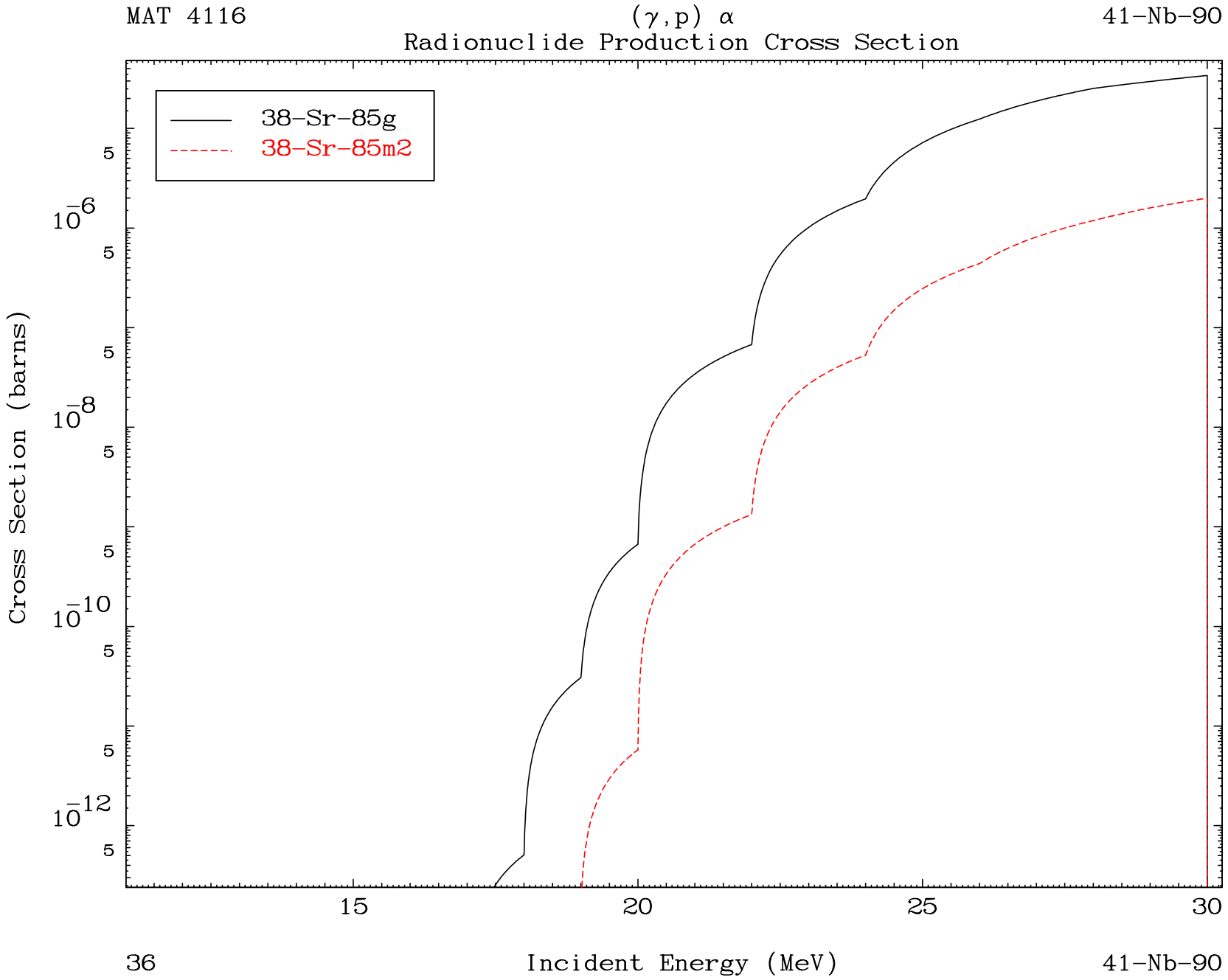

MAT 4116
(γ,p)
41-Nb-90
Radionuclide Production Cross Section
40-Zr-89g
40-Zr-89m1
Cross Section (barns)
10-2
10-4
10-6
10-8
5
6
7
8
9
10 1
2
3
31
Incident Energy (MeV)
41-Nb-90

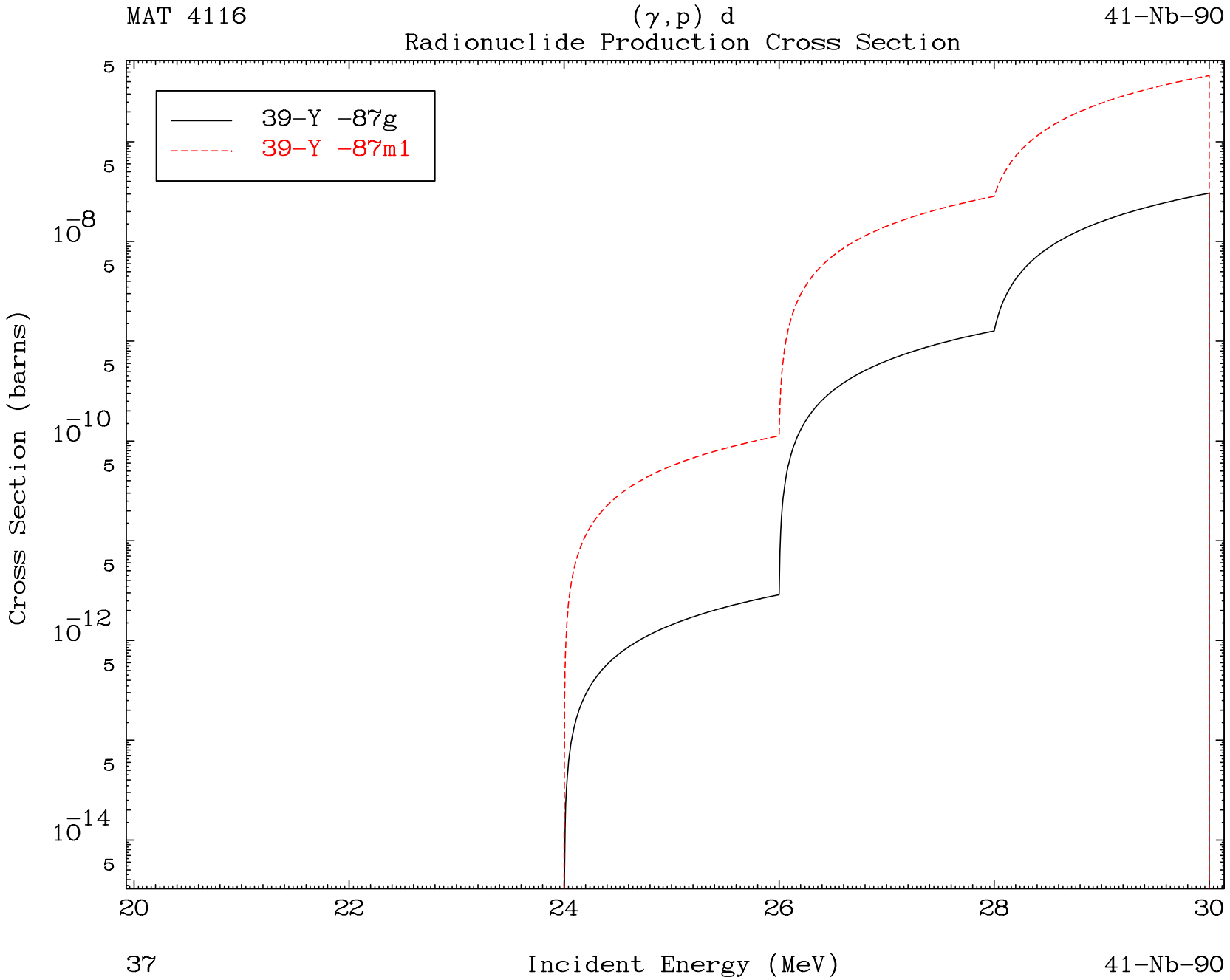

MAT 4116
(γ,t)
41-Nb-90
Radionuclide Production Cross Section
40-Zr-87g
40-Zr-87m2
Cross Section (barns)
10^-8
10^-10
10^-12
10^-14
5
20
22
24
26
28
30
32
Incident Energy (MeV)
41-Nb-90


MAT 4116
(γ,He-3)
41-Nb-90
Radionuclide Production Cross Section
39-Y -87g
39-Y -87m1
Cross Section (barns)
10-8
5
10-10
5
10-12
5
10-14
5
10-16
5
15
20
25
30
33
Incident Energy (MeV)
41-Nb-90


MAT 4116
(γ,α)
41-Nb-90
Radionuclide Production Cross Section
39-Y -86g
39-Y -86m2
Cross Section (barns)
10^-4
10^-6
10^-8
10^-10
6
7
8
9
10^1
2
3
34
Incident Energy (MeV)
41-Nb-90


MAT 4116
(γ,2α)
41-Nb-90
Radionuclide Production Cross Section
37-Rb-82g
37-Rb-82m1
Cross Section (barns)
10^-10
10^-12
10^-14
10^-16
5
15
20
25
30
35
Incident Energy (MeV)
41-Nb-90


MAT 4116
(γ,p) α
41-Nb-90
Radionuclide Production Cross Section
38-Sr-85g
38-Sr-85m2
Cross Section (barns)
10^-6
10^-8
10^-10
10^-12
5
15
20
25
30
36
Incident Energy (MeV)
41-Nb-90


MAT 4116
(γ,p) d
41-Nb-90
Radionuclide Production Cross Section
39-Y -87g
39-Y -87m1
Cross Section (barns)
10-8
10-10
10-12
10-14
5
20
22
24
26
28
30
37
Incident Energy (MeV)
41-Nb-90