Program EVALPLOT
(Version 2017-1)
by
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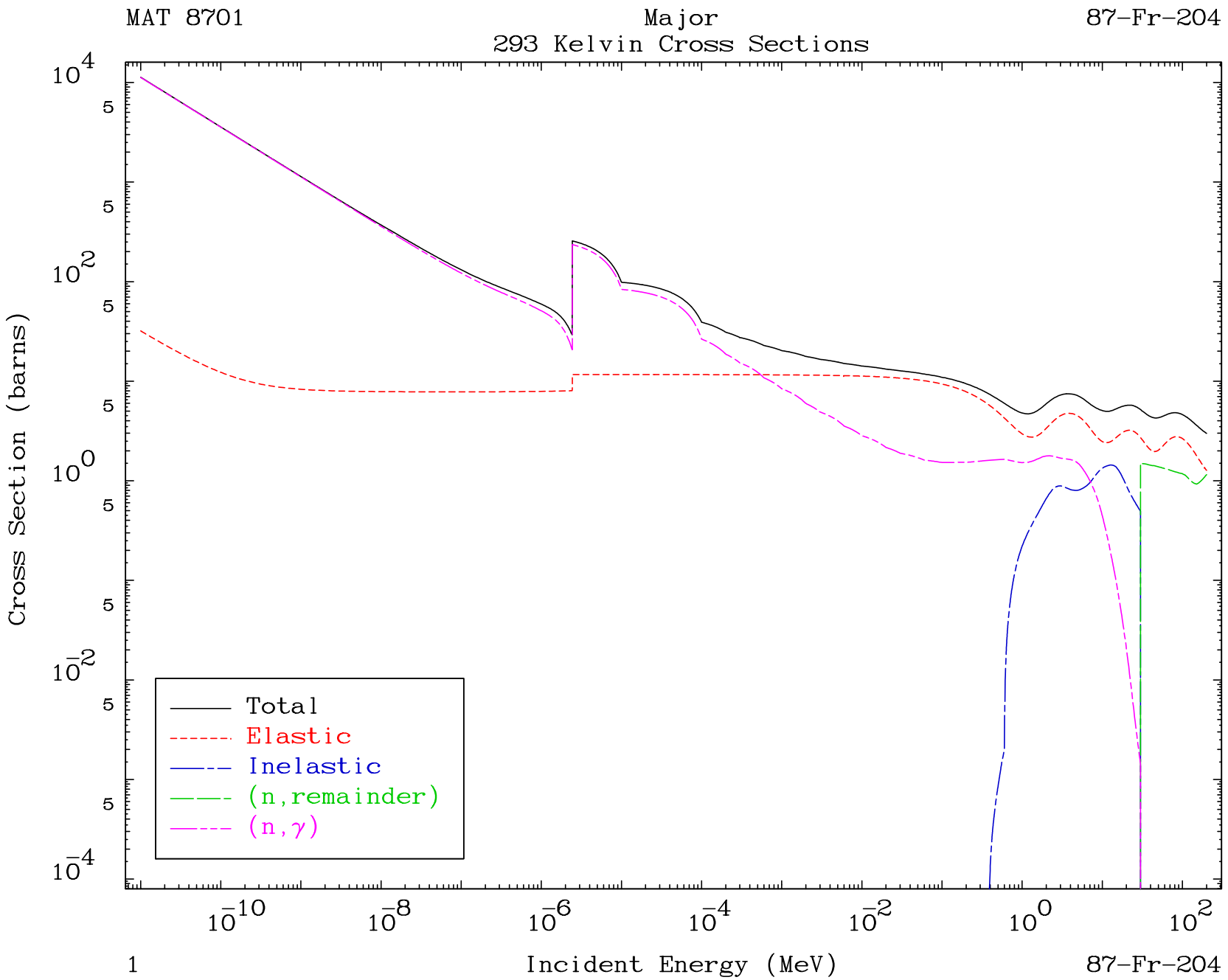
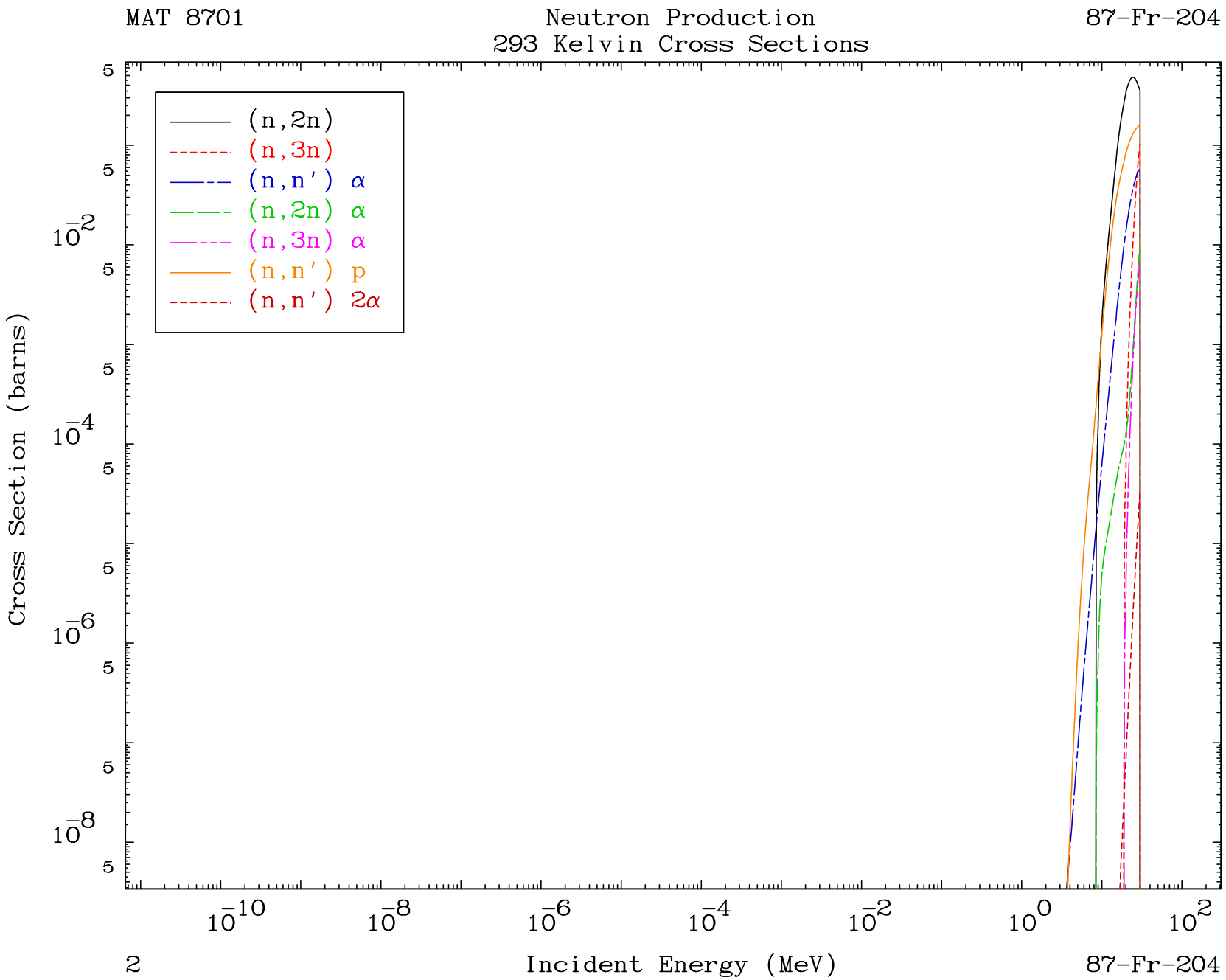
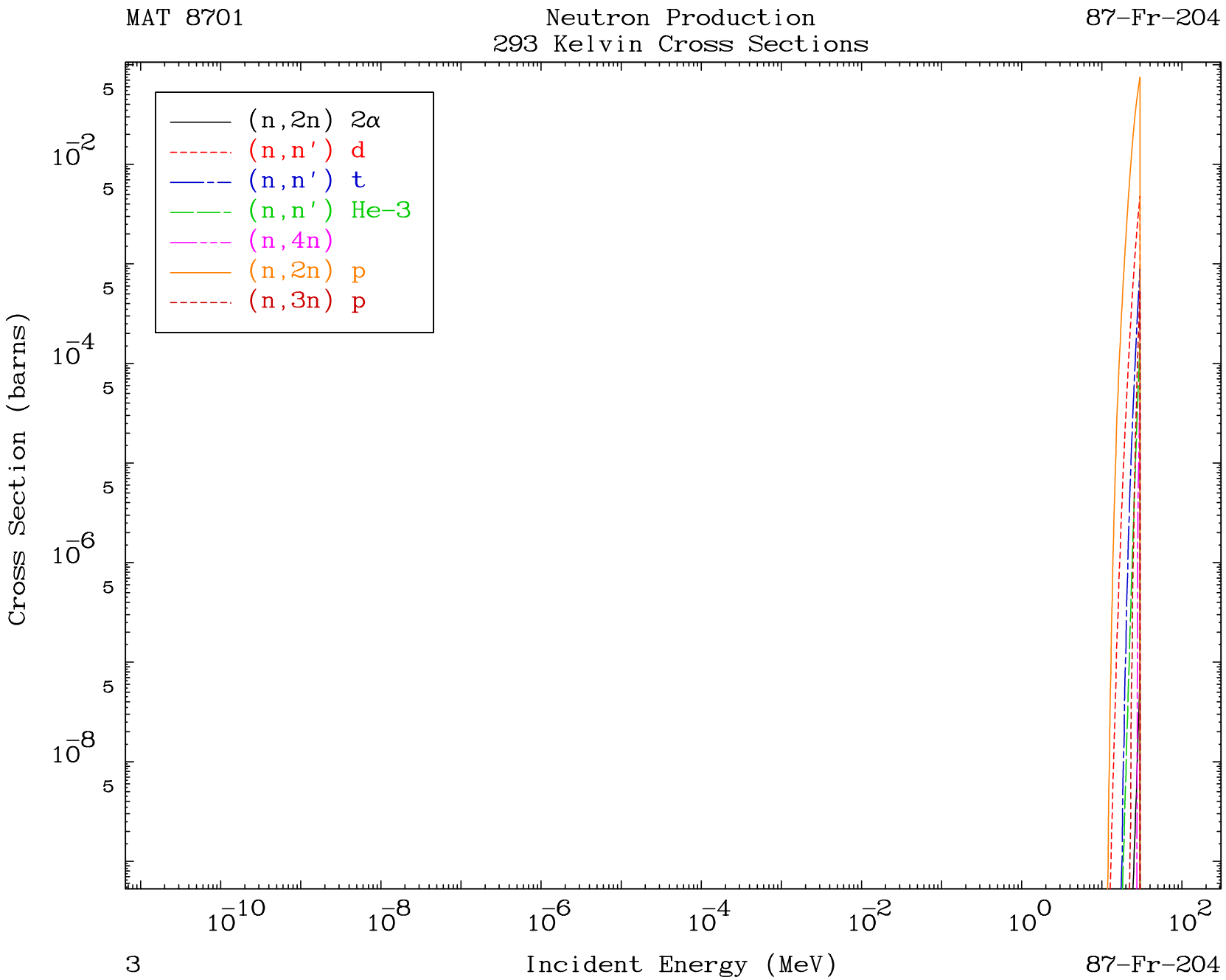
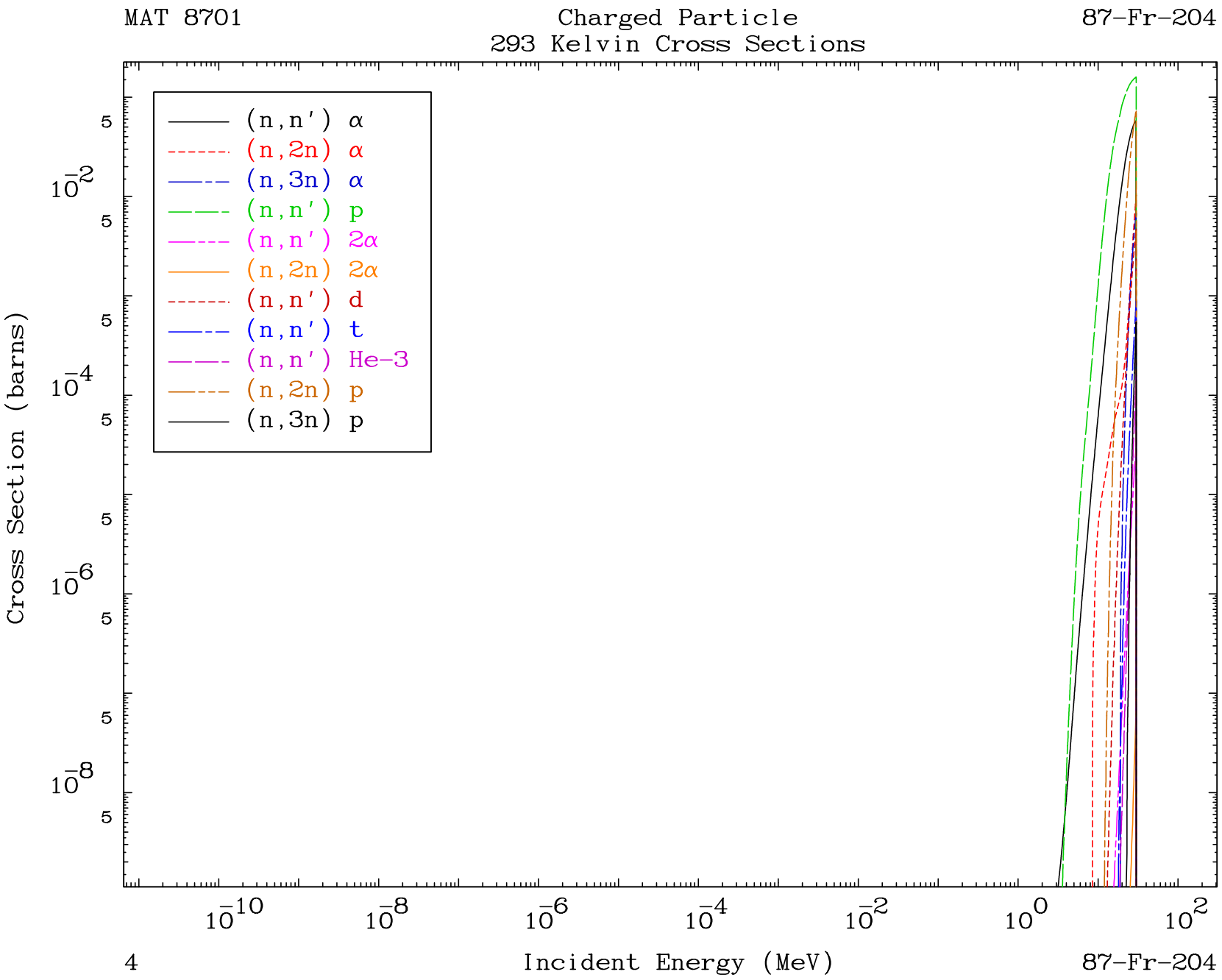
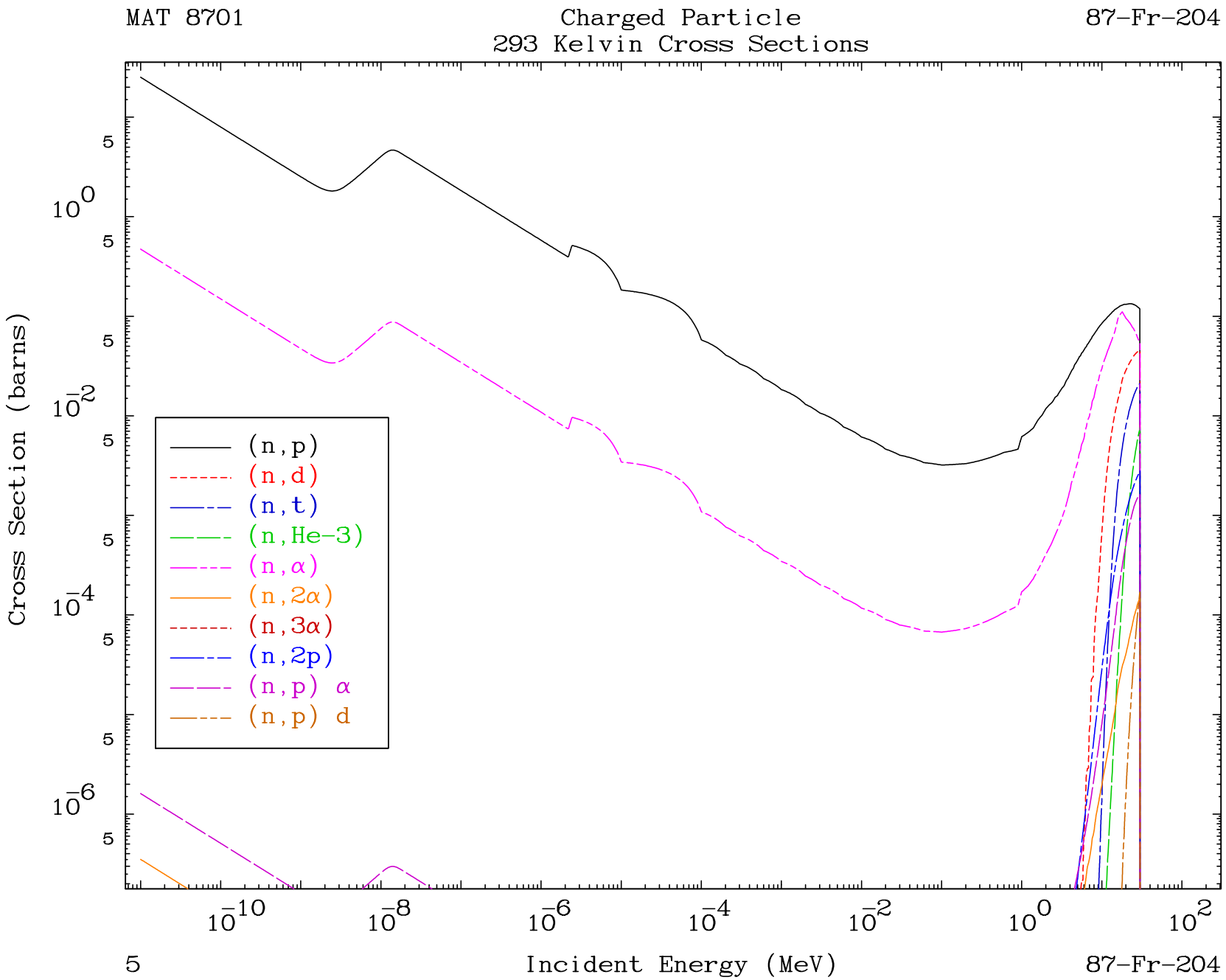
Press Mouse Button to Start

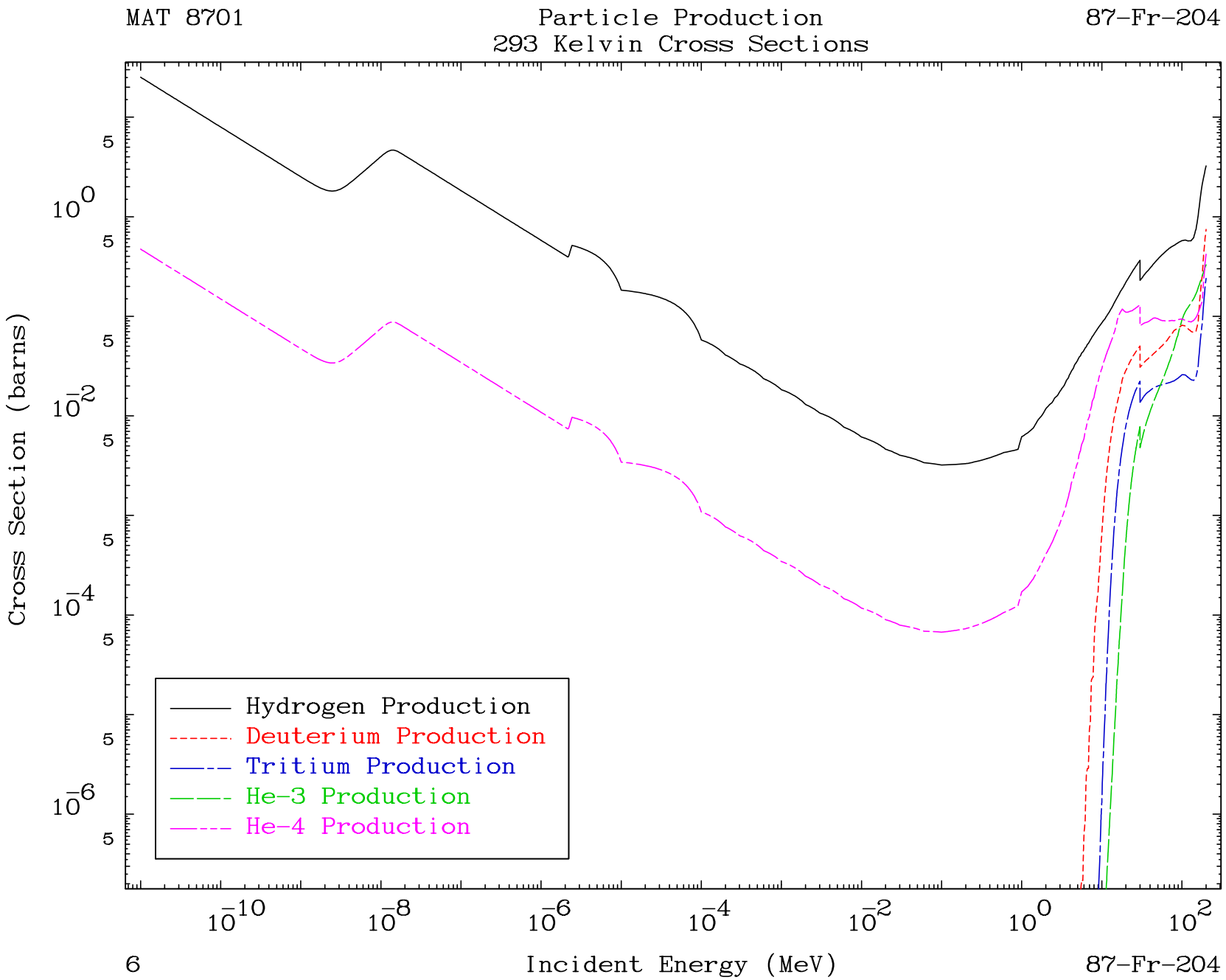

MAT 8701
Major
87-Fr-204
293 Kelvin Cross Sections
Cross Section (barns)
Incident Energy (MeV)
Total
Elastic
Inelastic
(n,remainder)
(n,γ)
1
87-Fr-204

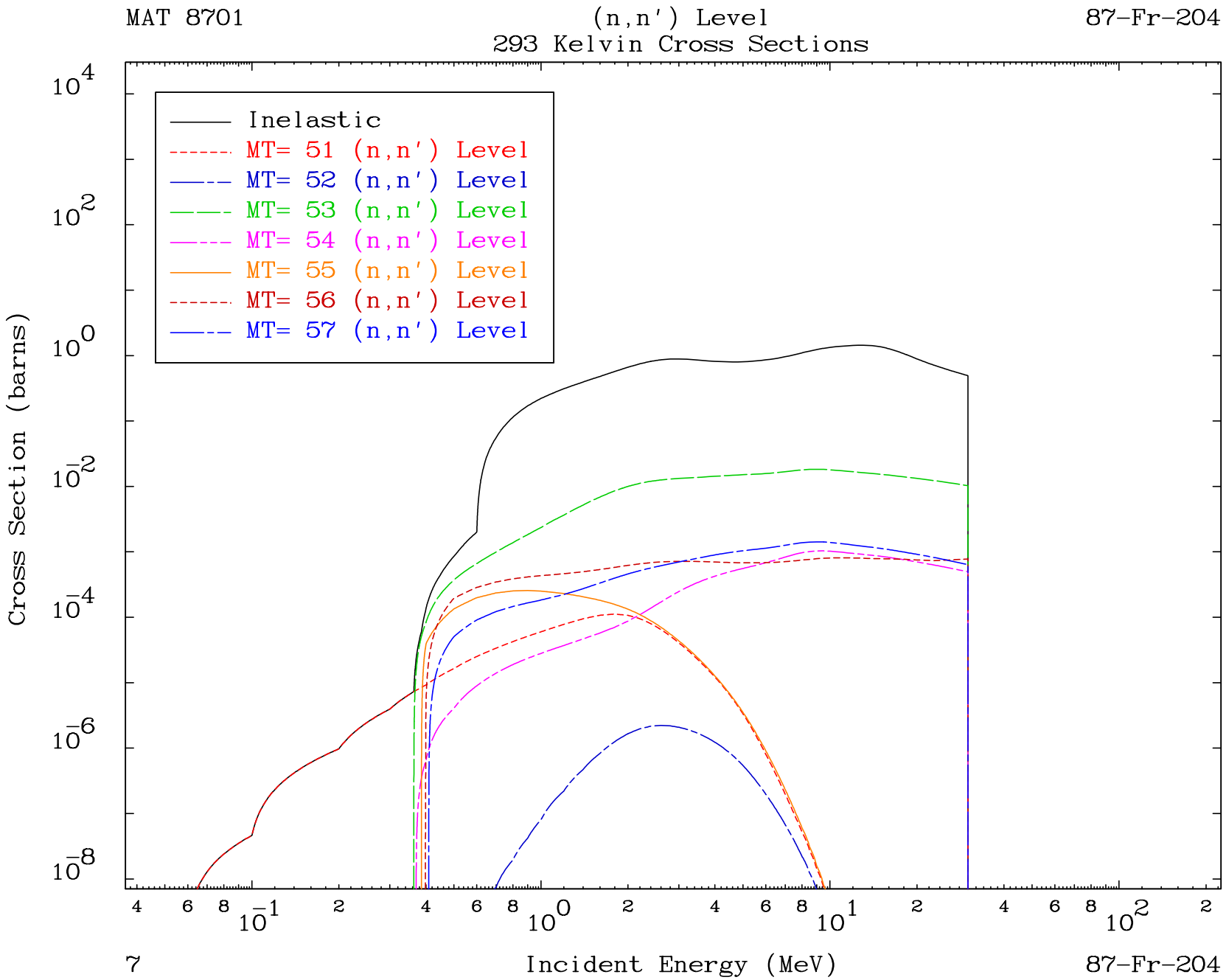

MAT 8701
Neutron Production
293 Kelvin Cross Sections
87-Fr-204
(n,2n)
(n,3n)
(n,n') α
(n,2n) α
(n,3n) α
(n,n') p
(n,n') 2α
Cross Section (barns)
Incident Energy (MeV)
2
87-Fr-204

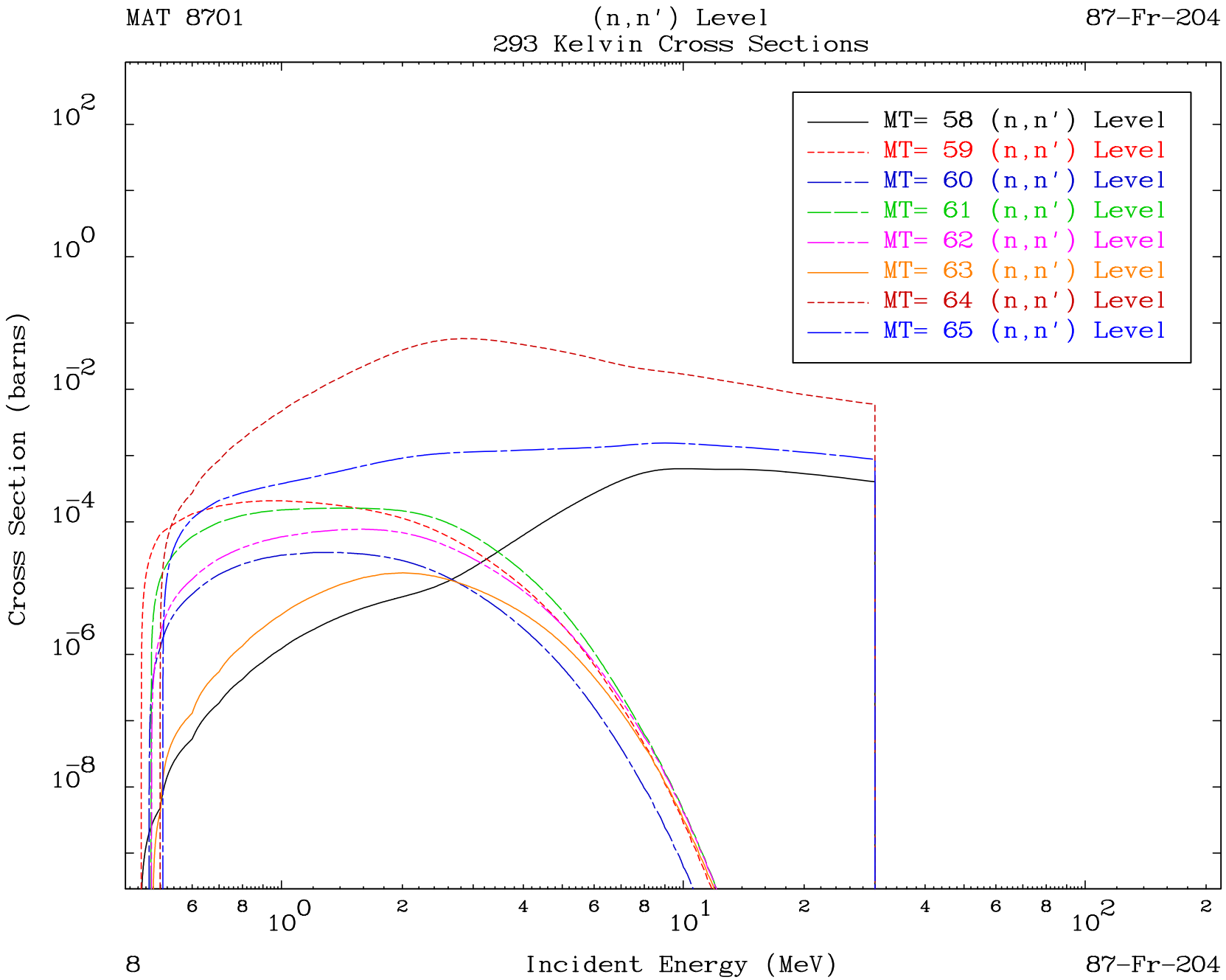

MAT 8701
Neutron Production
293 Kelvin Cross Sections
87-Fr-204
(n,2n) 2α
(n,n') d
(n,n') t
(n,n') He-3
(n,4n)
(n,2n) p
(n,3n) p
Cross Section (barns)
10^-2
10^-4
10^-6
10^-8
10^-10
10^0
10^2
Incident Energy (MeV)
3
87-Fr-204

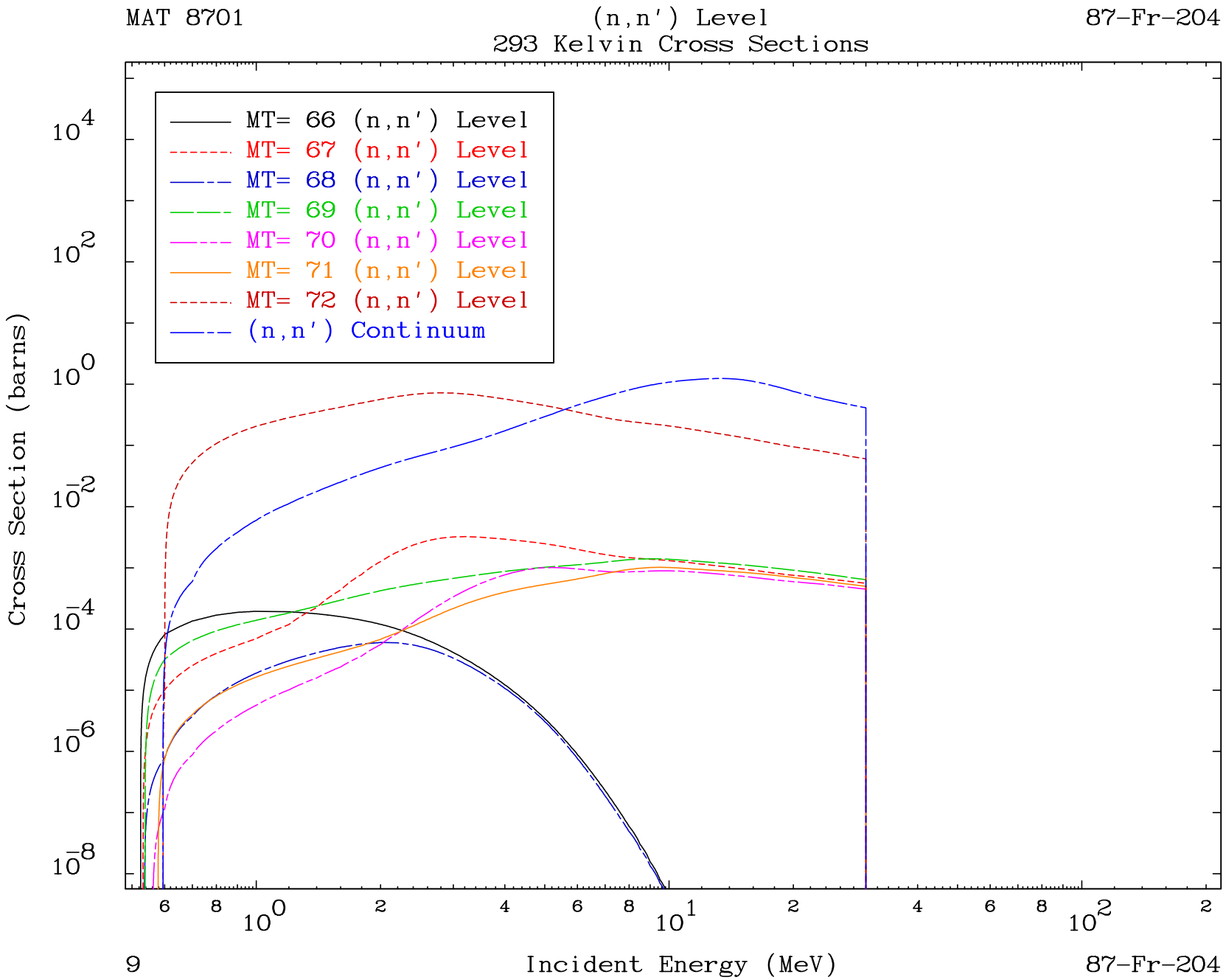

MAT 8701
Charged Particle
87-Fr-204
293 Kelvin Cross Sections
(n,n') α
(n,2n) α
(n,3n) α
(n,n') p
(n,n') 2α
(n,2n) 2α
(n,n') d
(n,n') t
(n,n') He-3
(n,2n) p
(n,3n) p
Cross Section (barns)
Incident Energy (MeV)
4
87-Fr-204

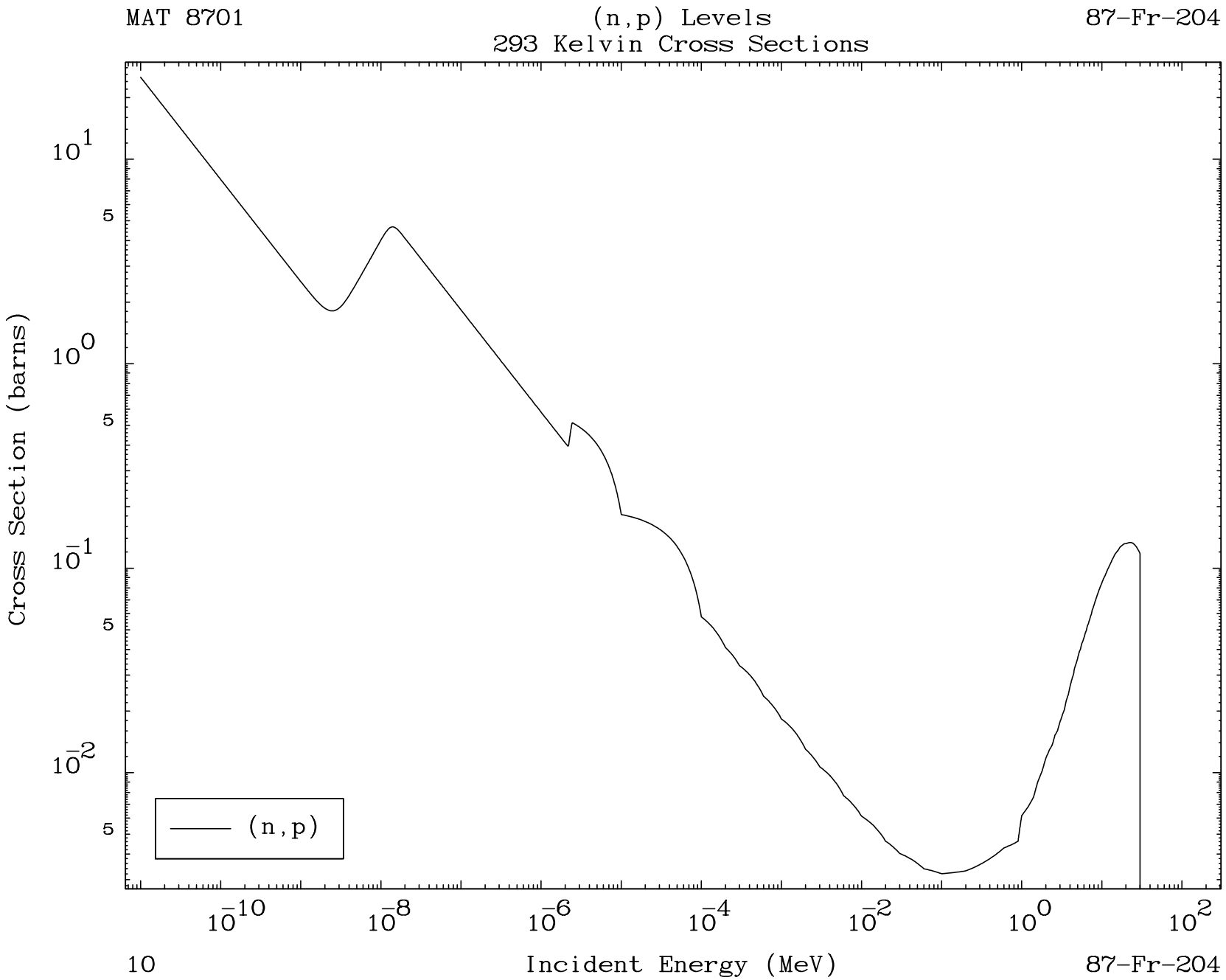

MAT 8701
Charged Particle
293 Kelvin Cross Sections
87-Fr-204
Cross Section (barns)
Incident Energy (MeV)
87-Fr-204
5
(n,p)
(n,d)
(n,t)
(n,He-3)
(n,α)
(n,2α)
(n,3α)
(n,2p)
(n,p) α
(n,p) d

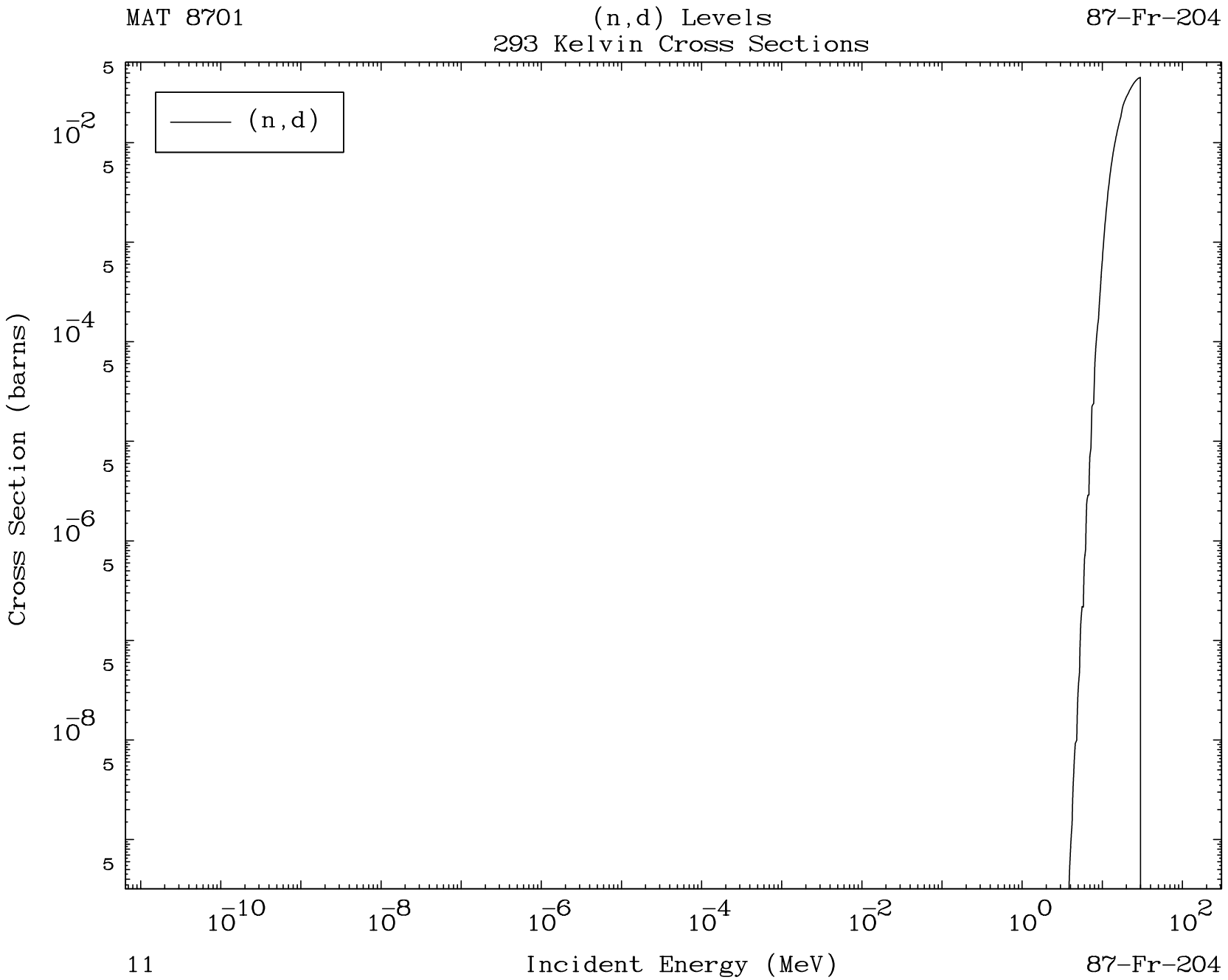

MAT 8701
Particle Production
293 Kelvin Cross Sections
87-Fr-204
Cross Section (barns)
10^0
10^-2
10^-4
10^-6
5
Hydrogen Production
Deuterium Production
Tritium Production
He-3 Production
He-4 Production
10^-10
10^-8
10^-6
10^-4
10^-2
10^0
10^2
Incident Energy (MeV)
6
87-Fr-204

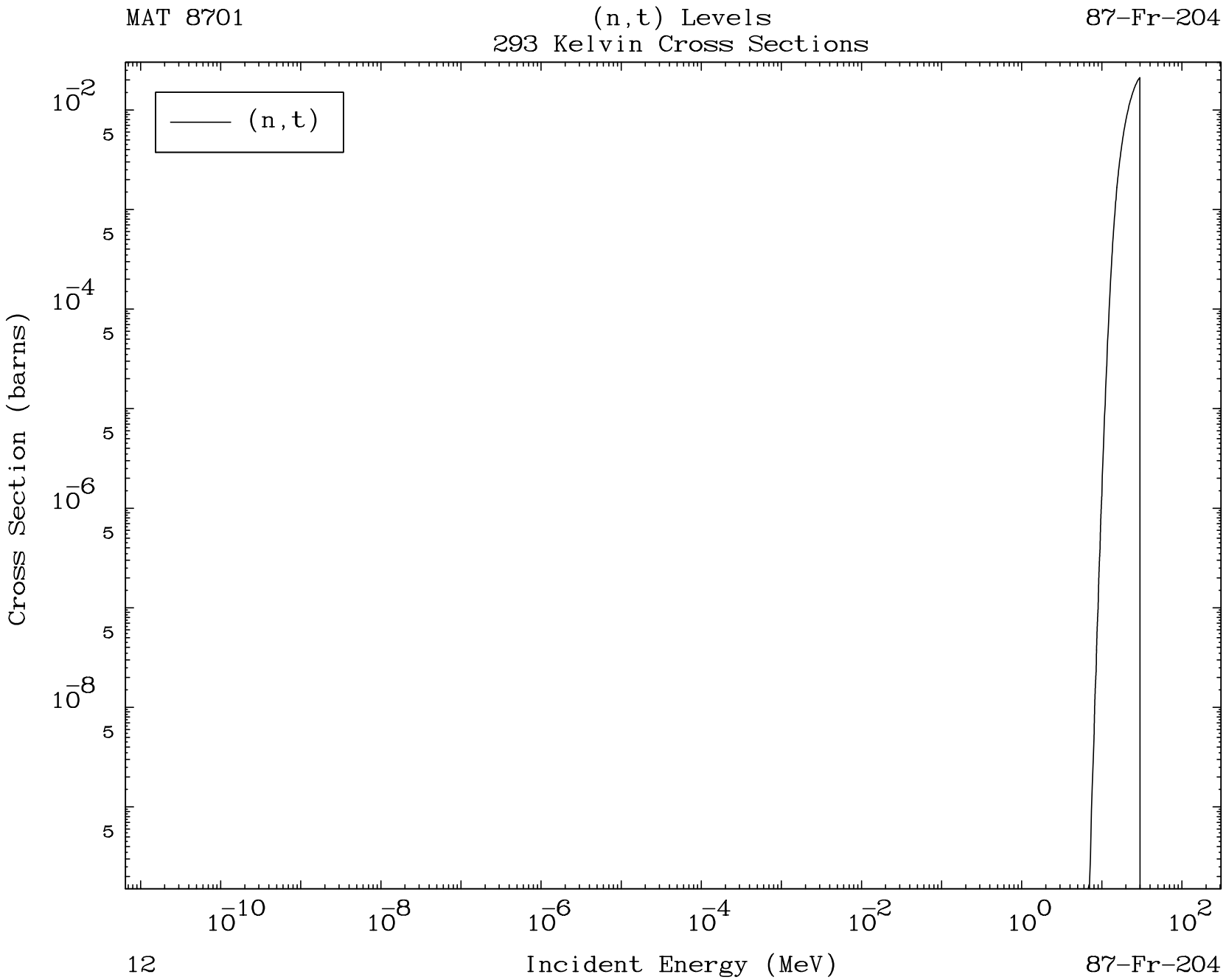

MAT 8701
(n,n') Level
87-Fr-204
293 Kelvin Cross Sections
Inelastic
MT= 51 (n,n') Level
MT= 52 (n,n') Level
MT= 53 (n,n') Level
MT= 54 (n,n') Level
MT= 55 (n,n') Level
MT= 56 (n,n') Level
MT= 57 (n,n') Level
Cross Section (barns)
Incident Energy (MeV)
7
87-Fr-204

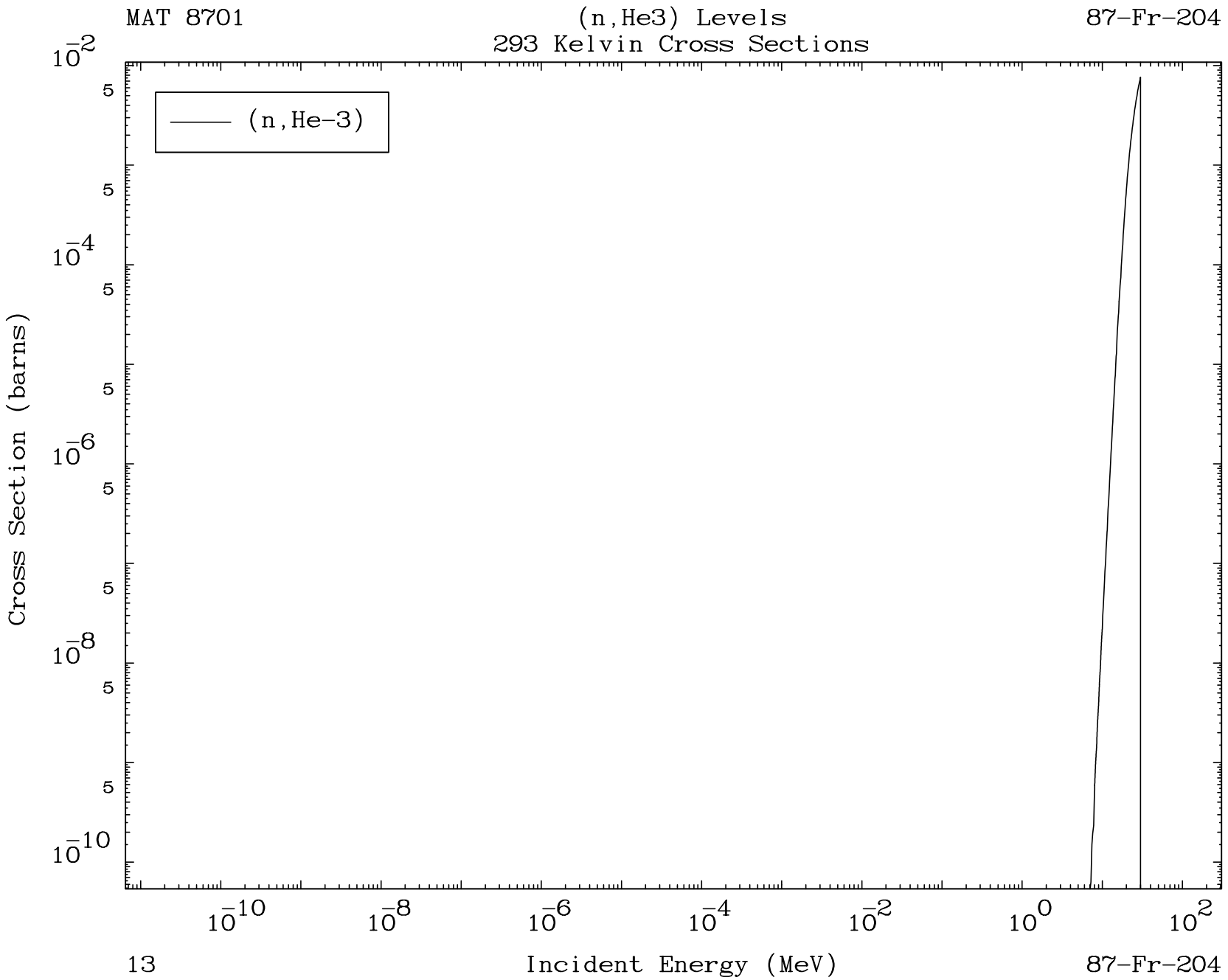

MAT 8701
(n,n') Level
87-Fr-204
293 Kelvin Cross Sections
MT= 58 (n,n') Level
MT= 59 (n,n') Level
MT= 60 (n,n') Level
MT= 61 (n,n') Level
MT= 62 (n,n') Level
MT= 63 (n,n') Level
MT= 64 (n,n') Level
MT= 65 (n,n') Level
Cross Section (barns)
Incident Energy (MeV)
8
87-Fr-204

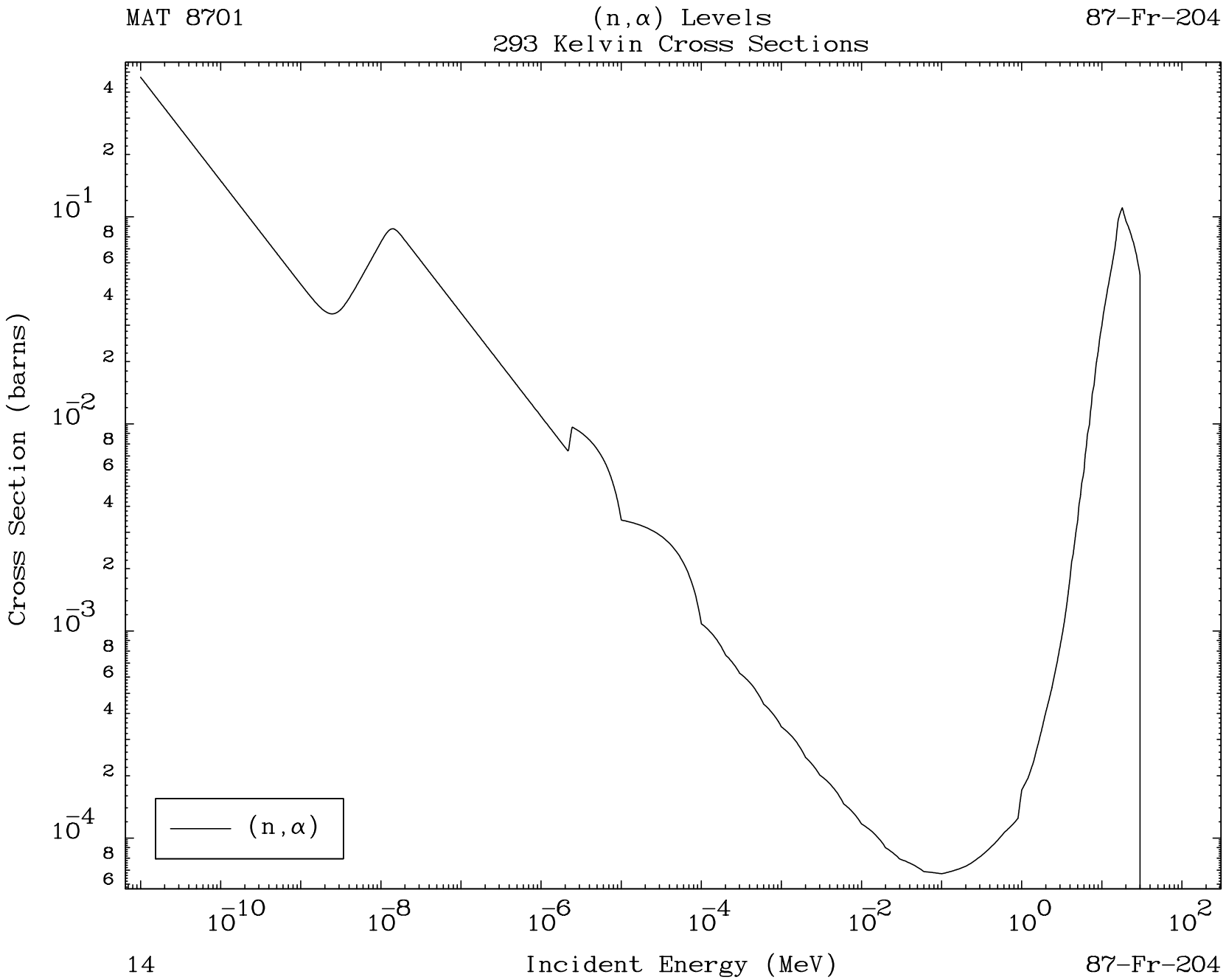

MAT 8701
(n,n') Level
87-Fr-204
293 Kelvin Cross Sections
MT= 66 (n,n') Level
MT= 67 (n,n') Level
MT= 68 (n,n') Level
MT= 69 (n,n') Level
MT= 70 (n,n') Level
MT= 71 (n,n') Level
MT= 72 (n,n') Level
(n,n') Continuum
Cross Section (barns)
Incident Energy (MeV)
9
87-Fr-204

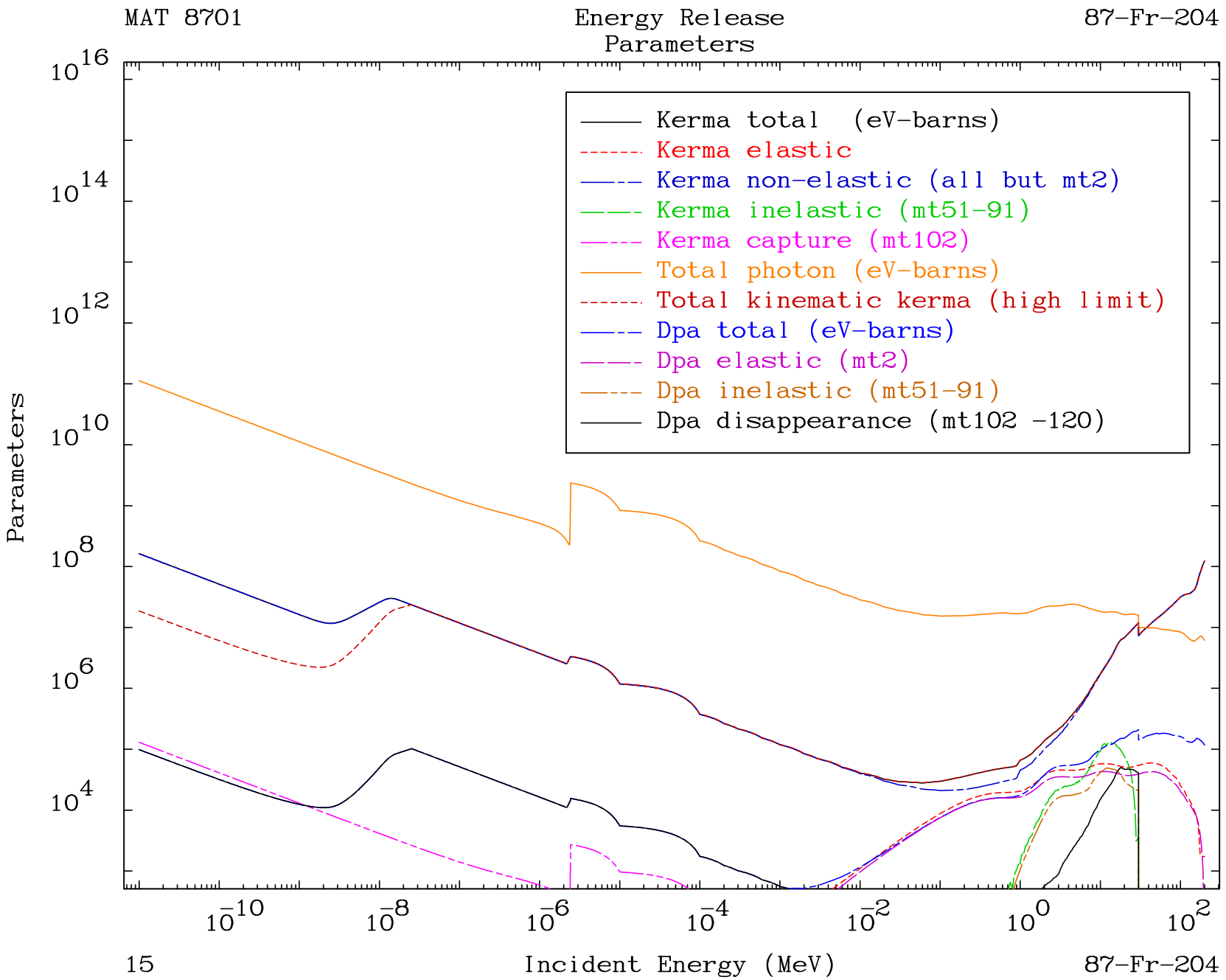

MAT 8701
(n,p) Levels
87-Fr-204
293 Kelvin Cross Sections
Cross Section (barns)
10^1
5
10^0
5
10^-1
5
10^-2
5
(n,p)
10^-10
10^-8
10^-6
10^-4
10^-2
10^0
10^2
10
Incident Energy (MeV)
87-Fr-204

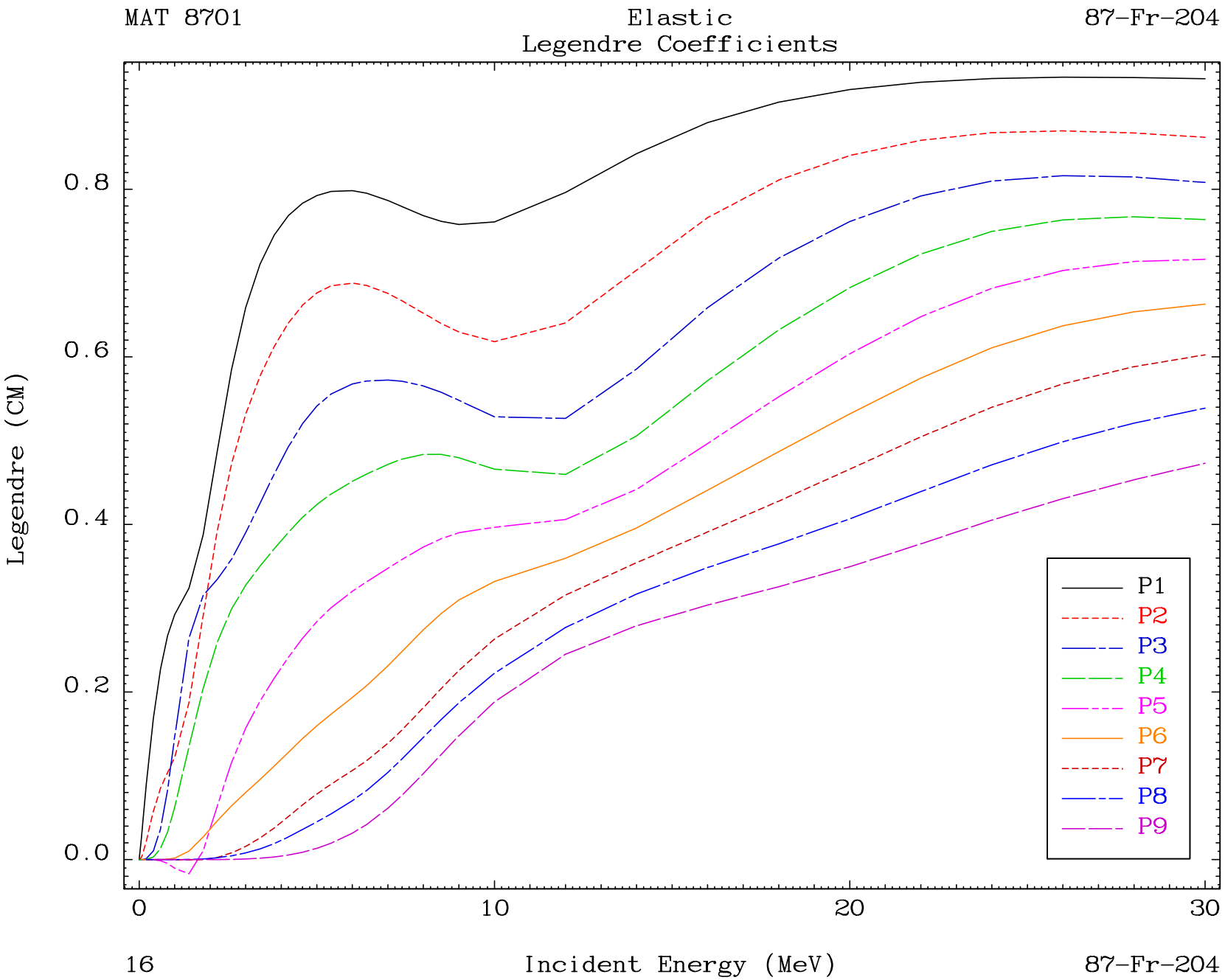

MAT 8701
(n,d) Levels
87-Fr-204
293 Kelvin Cross Sections
(n,d)
Cross Section (barns)
Incident Energy (MeV)
11
87-Fr-204

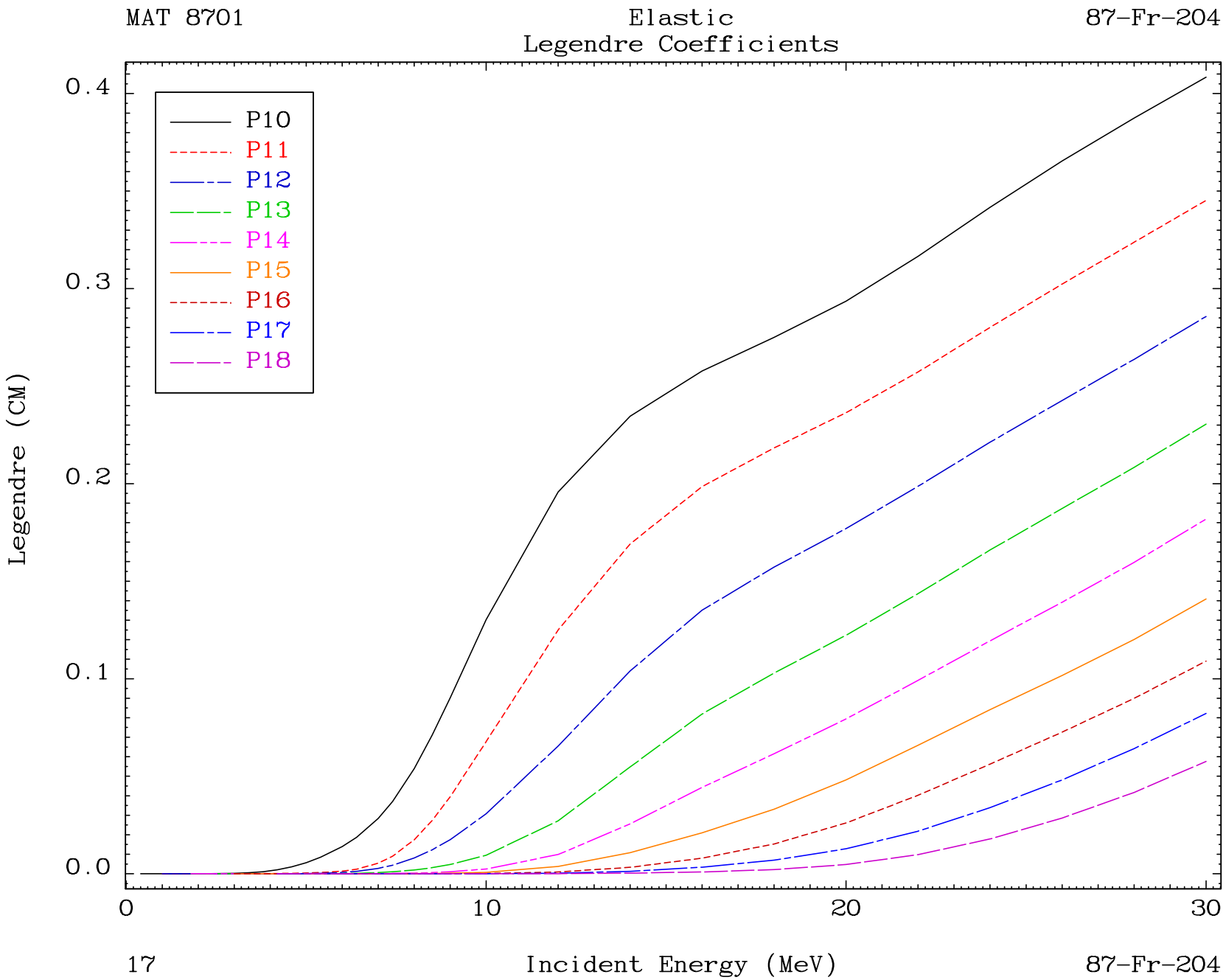

MAT 8701
(n,t) Levels
87-Fr-204
293 Kelvin Cross Sections
(n,t)
Cross Section (barns)
Incident Energy (MeV)
12
87-Fr-204

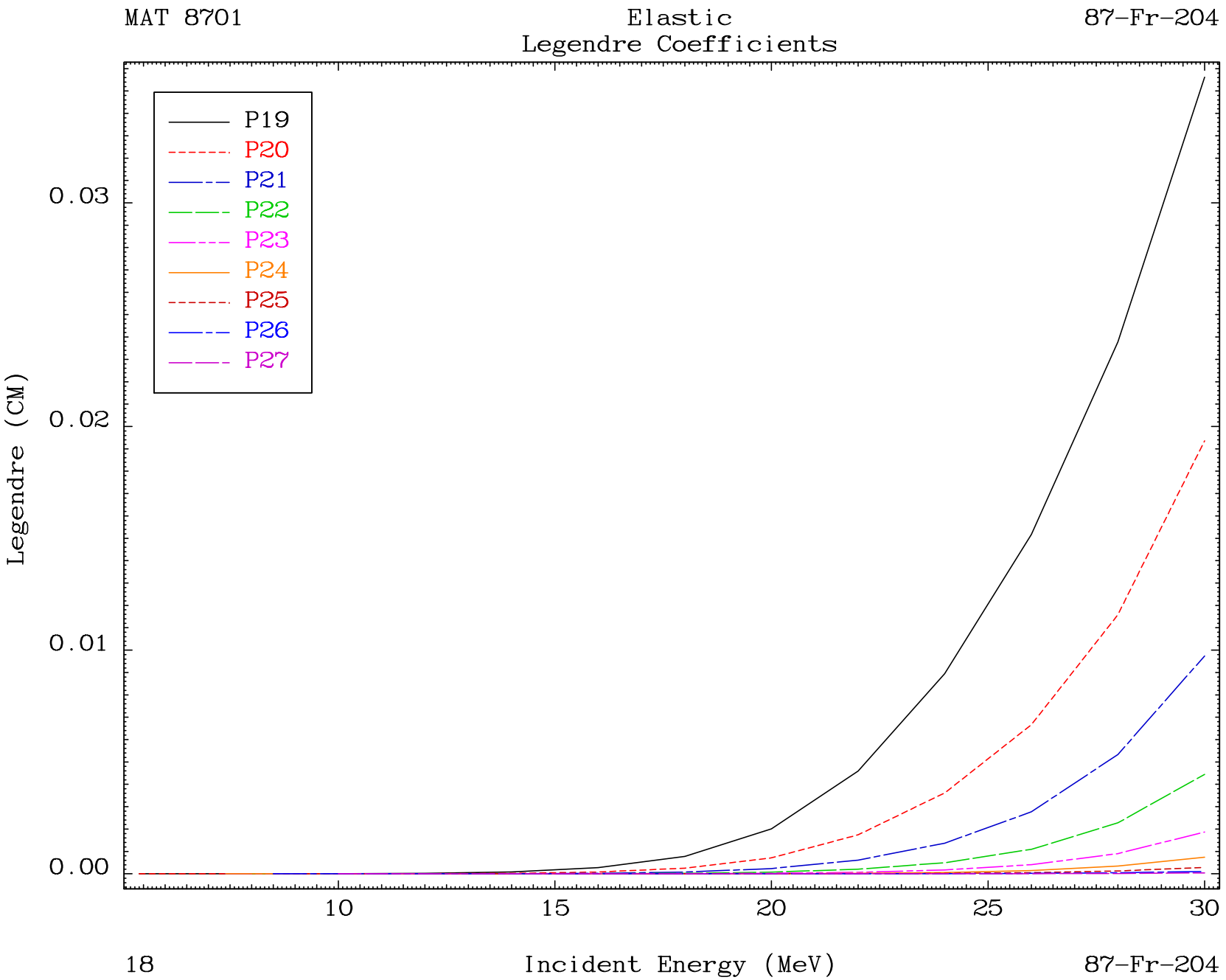

MAT 8701
(n,He3) Levels
87-Fr-204
293 Kelvin Cross Sections
(n,He-3)
Cross Section (barns)
Incident Energy (MeV)
13
87-Fr-204

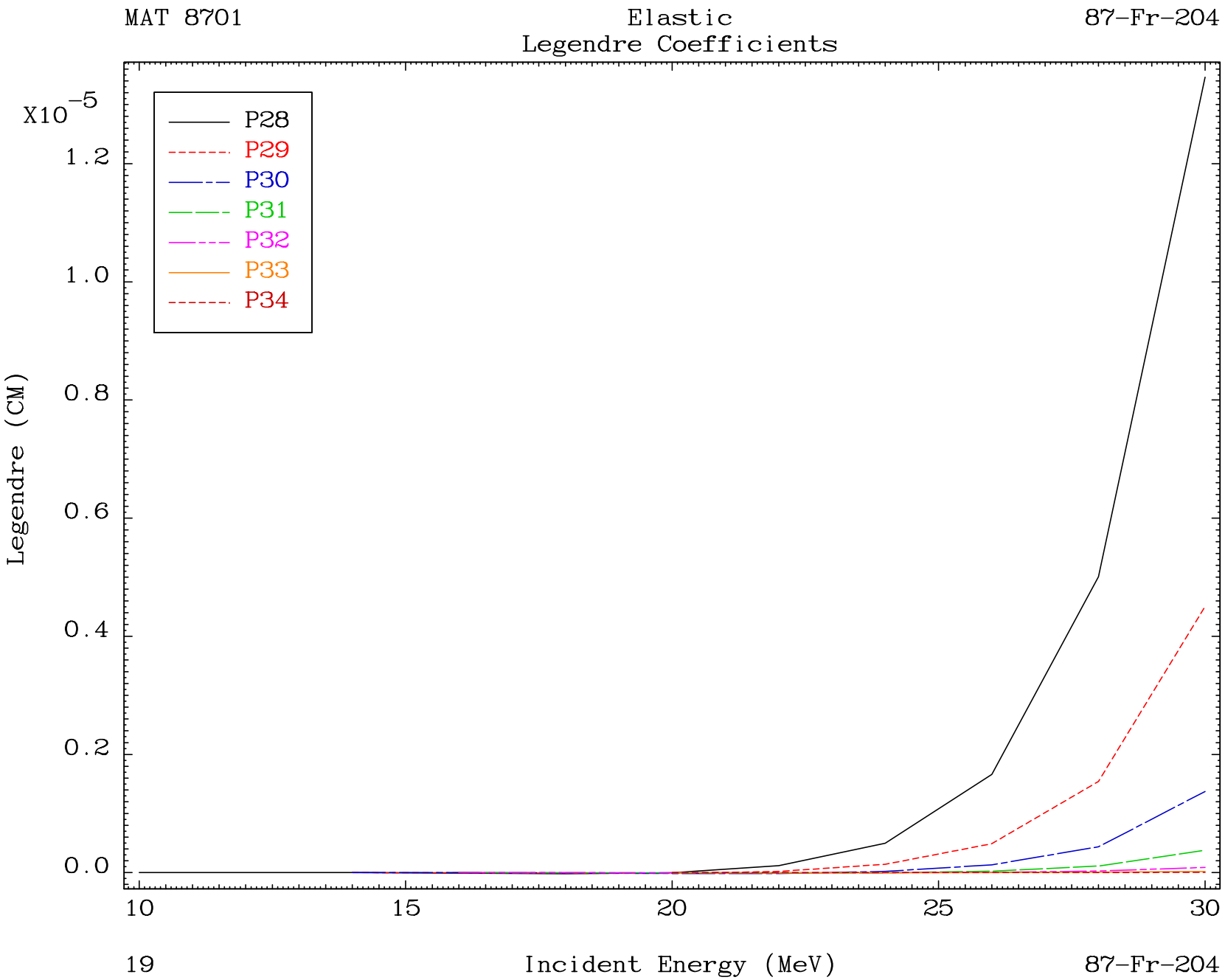

MAT 8701
(n,α) Levels
87-Fr-204
293 Kelvin Cross Sections
Cross Section (barns)
(n,α)
Incident Energy (MeV)
14
87-Fr-204

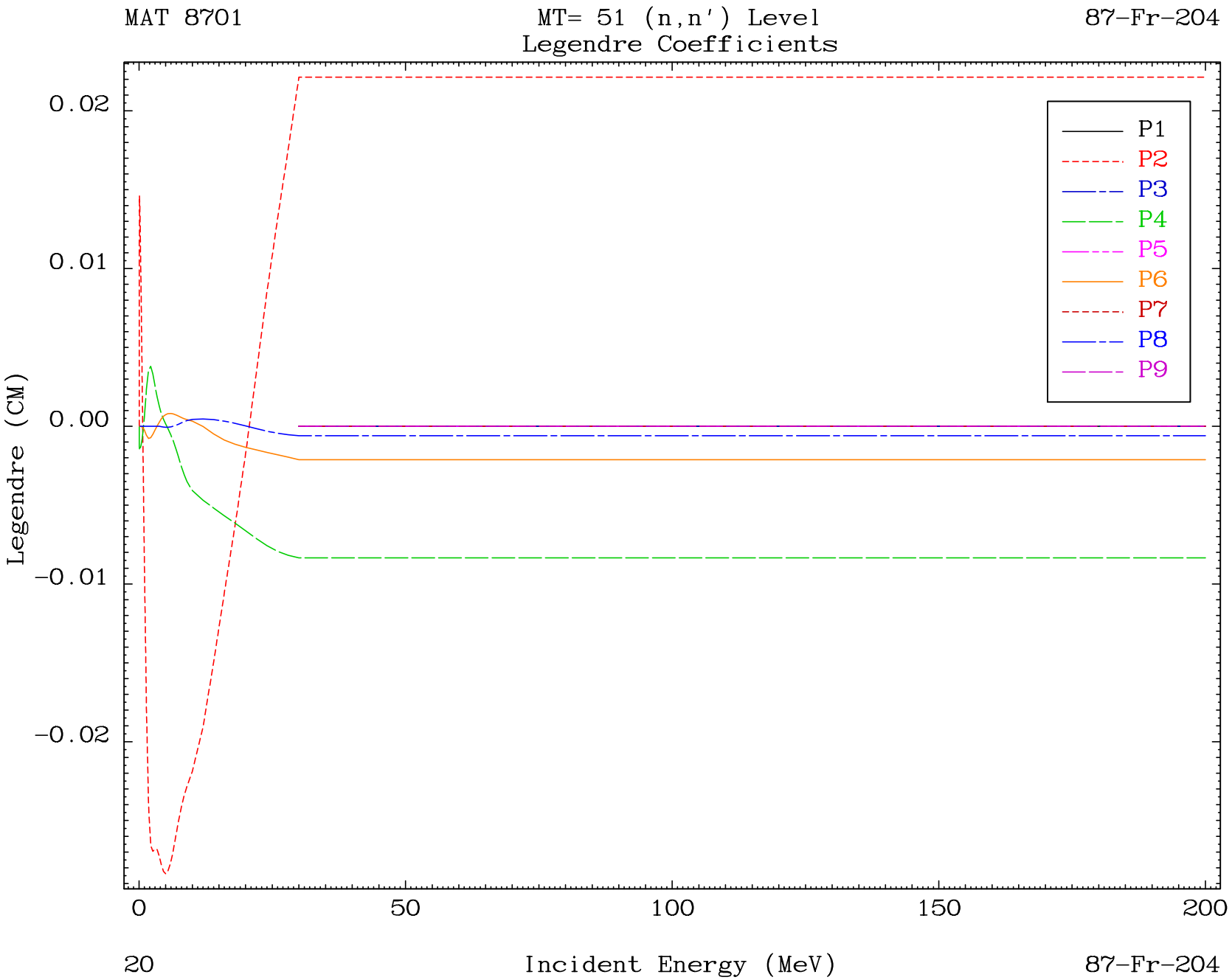

MAT 8701
Energy Release
Parameters
87-Fr-204
Kerma total (eV-barns)
Kerma elastic
Kerma non-elastic (all but mt2)
Kerma inelastic (mt51-91)
Kerma capture (mt102)
Total photon (eV-barns)
Total kinematic kerma (high limit)
Dpa total (eV-barns)
Dpa elastic (mt2)
Dpa inelastic (mt51-91)
Dpa disappearance (mt102 -120)
Parameters
Incident Energy (MeV)
15
87-Fr-204

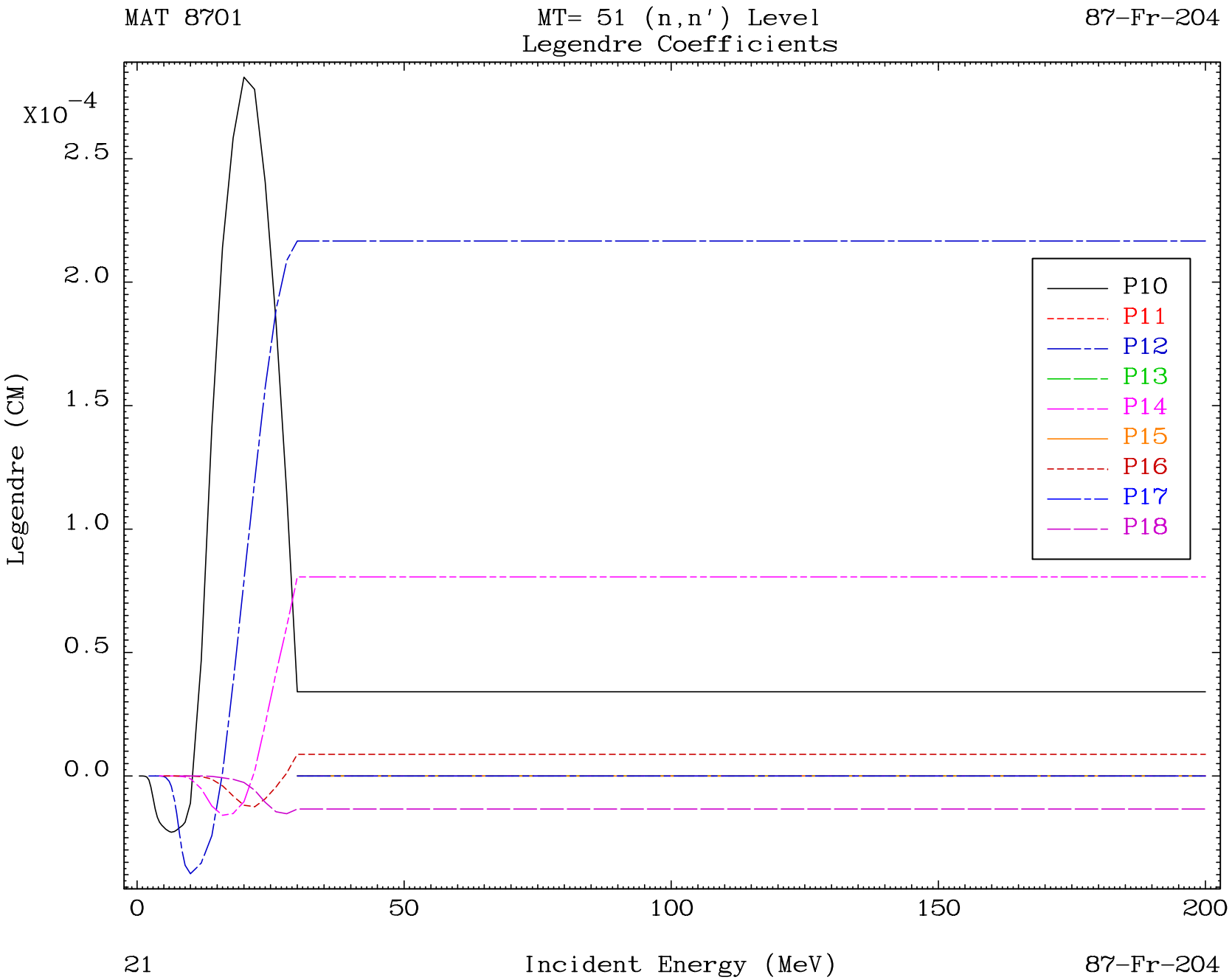

MAT 8701
Elastic
Legendre Coefficients
87-Fr-204
Legendre (CM)
0.0
0.2
0.4
0.6
0.8
0
10
20
30
16
Incident Energy (MeV)
87-Fr-204
P1
P2
P3
P4
P5
P6
P7
P8
P9

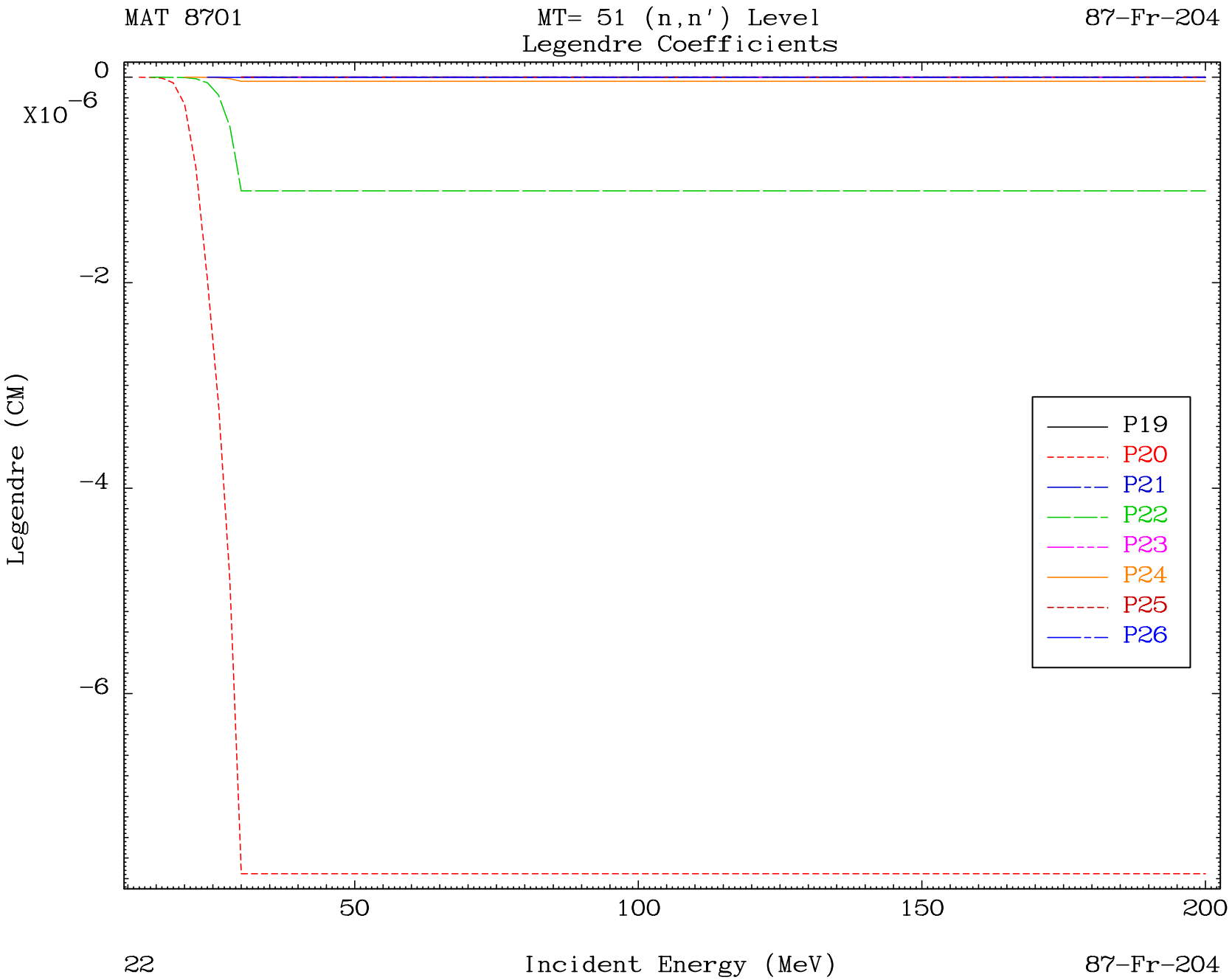

MAT 8701
Elastic
Legendre Coefficients
87-Fr-204
P10
P11
P12
P13
P14
P15
P16
P17
P18
Legendre (CM)
0.4
0.3
0.2
0.1
0.0
0
10
20
30
17
Incident Energy (MeV)
87-Fr-204

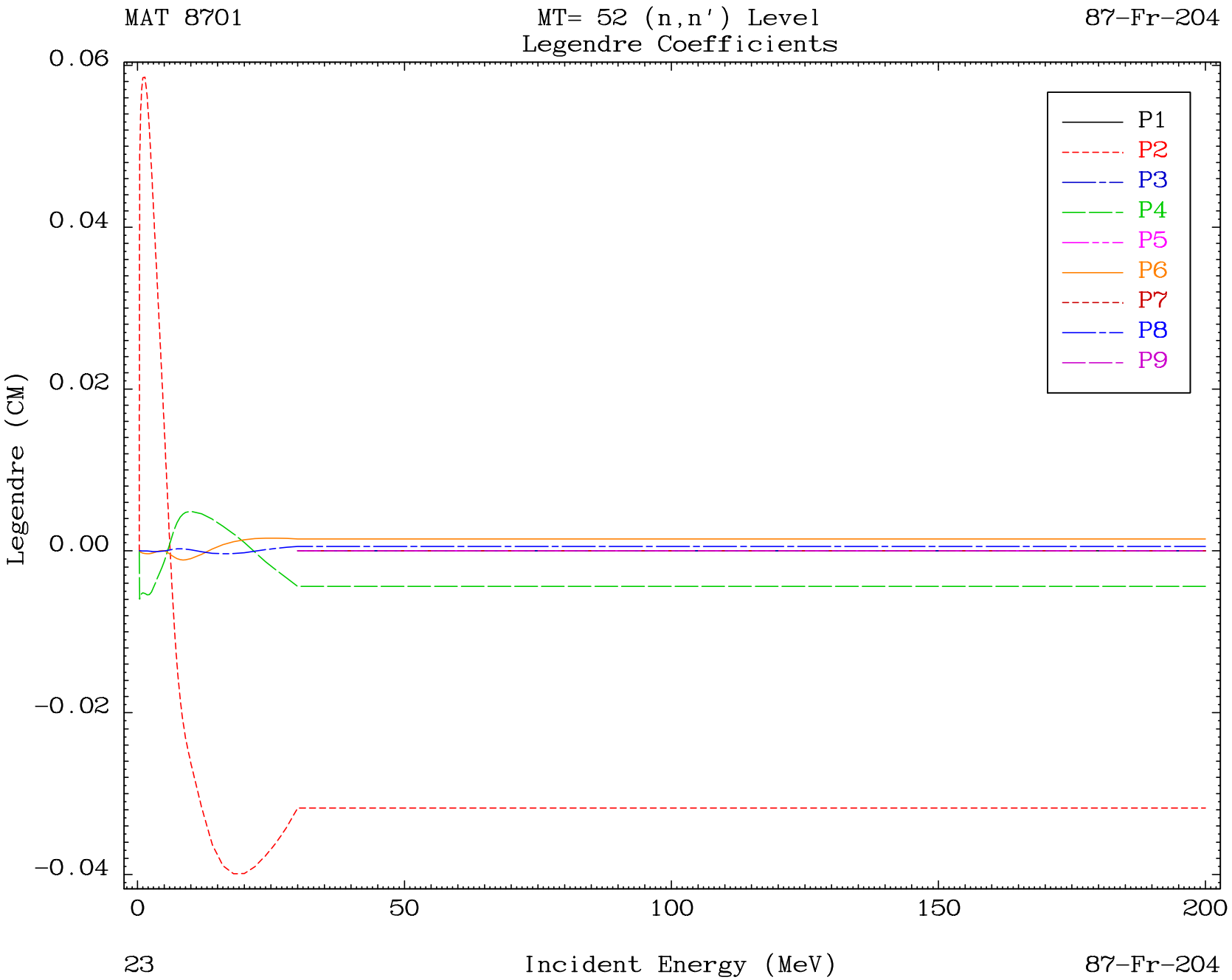

MAT 8701
Elastic
Legendre Coefficients
87-Fr-204
P19
P20
P21
P22
P23
P24
P25
P26
P27
0.03
0.02
0.01
0.00
Legendre (CM)
10
15
20
25
30
18
Incident Energy (MeV)
87-Fr-204

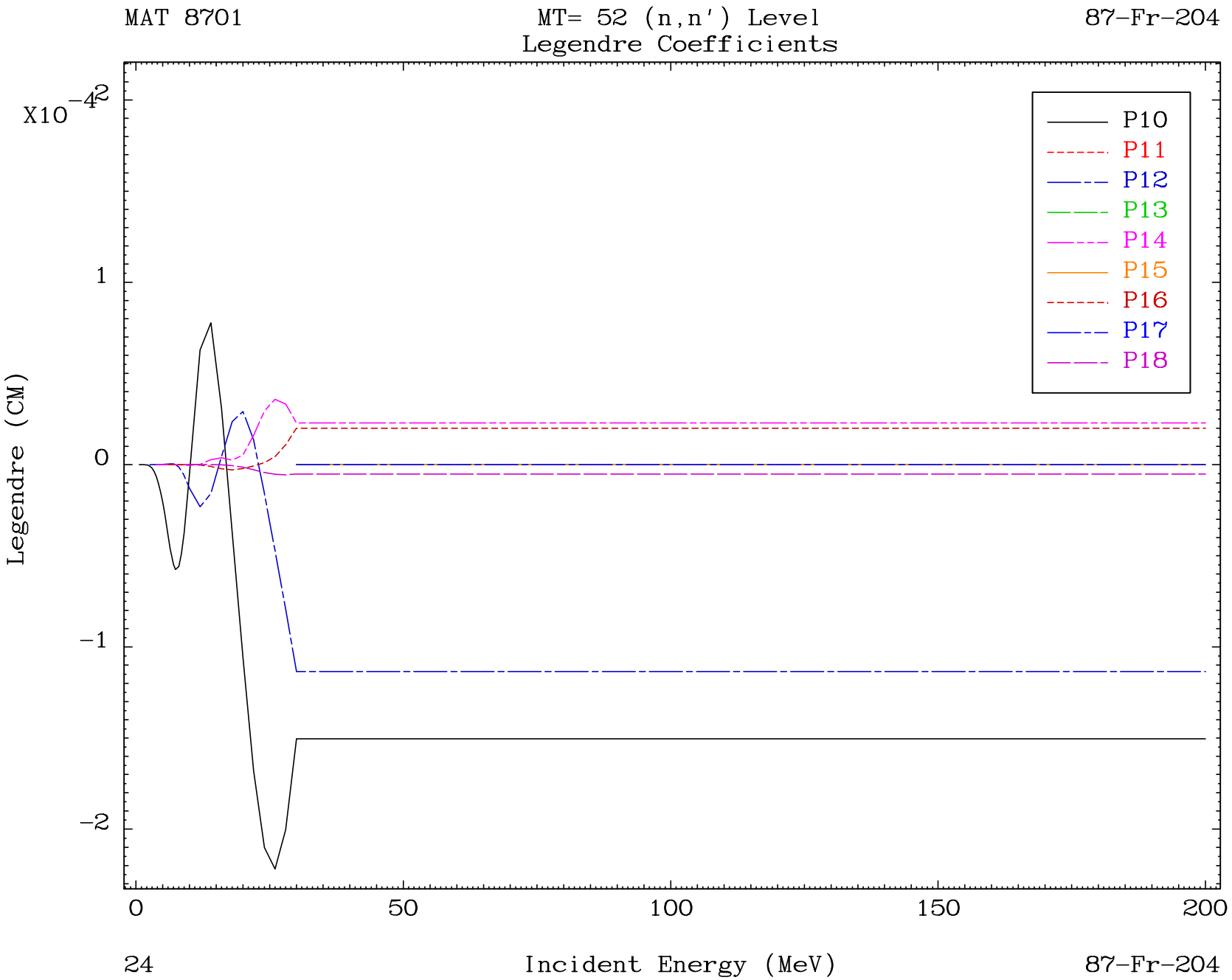

MAT 8701
Elastic
Legendre Coefficients
87-Fr-204
X10 -5
1.2
1.0
0.8
0.6
0.4
0.2
0.0
Legendre (CM)
P28
P29
P30
P31
P32
P33
P34
10
15
20
25
30
19
Incident Energy (MeV)
87-Fr-204

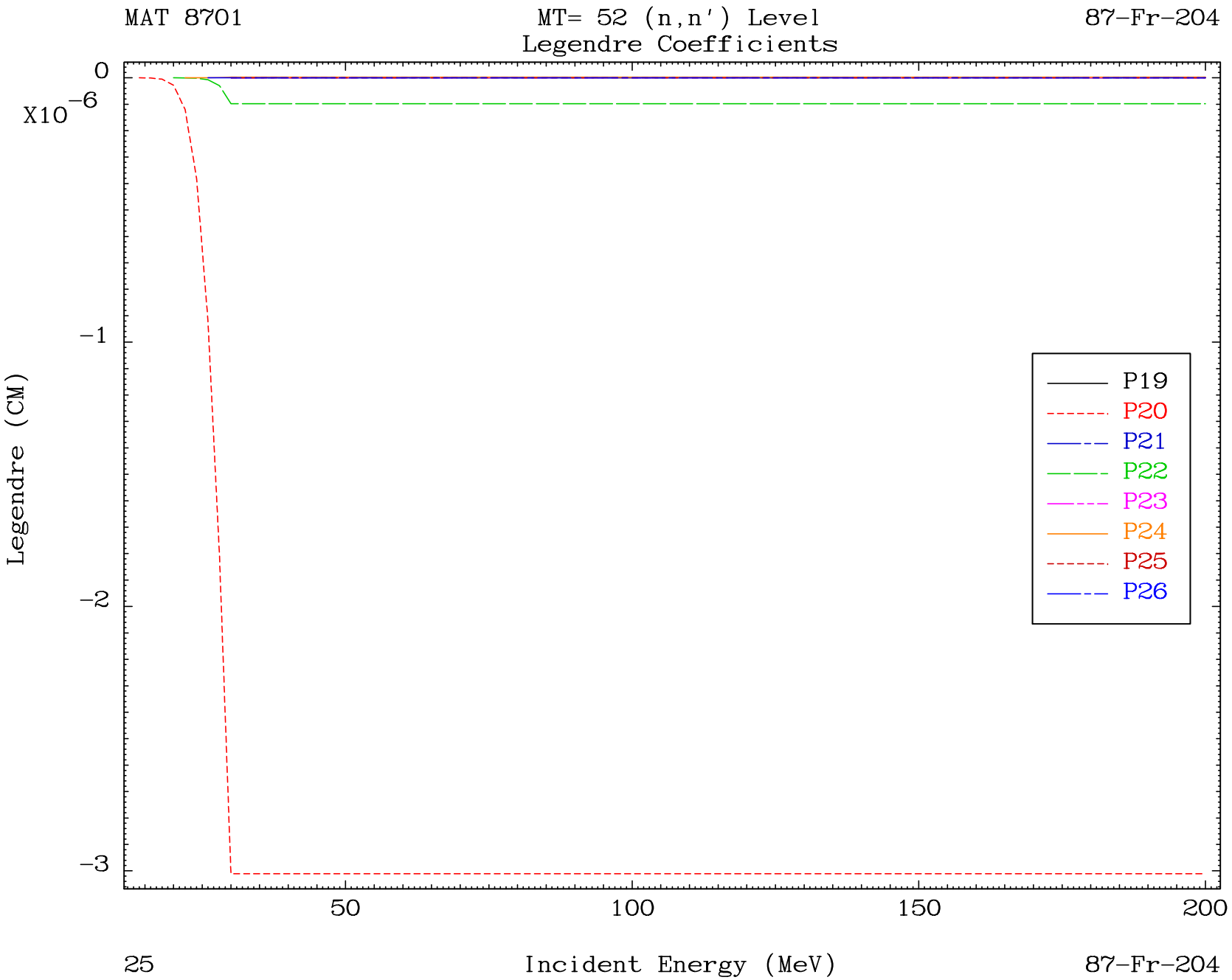

MAT 8701
MT= 51 (n,n') Level
Legendre Coefficients
87-Fr-204
0.02
0.01
0.00
-0.01
-0.02
Legendre (CM)
P1
P2
P3
P4
P5
P6
P7
P8
P9
0
50
100
150
200
20
Incident Energy (MeV)
87-Fr-204

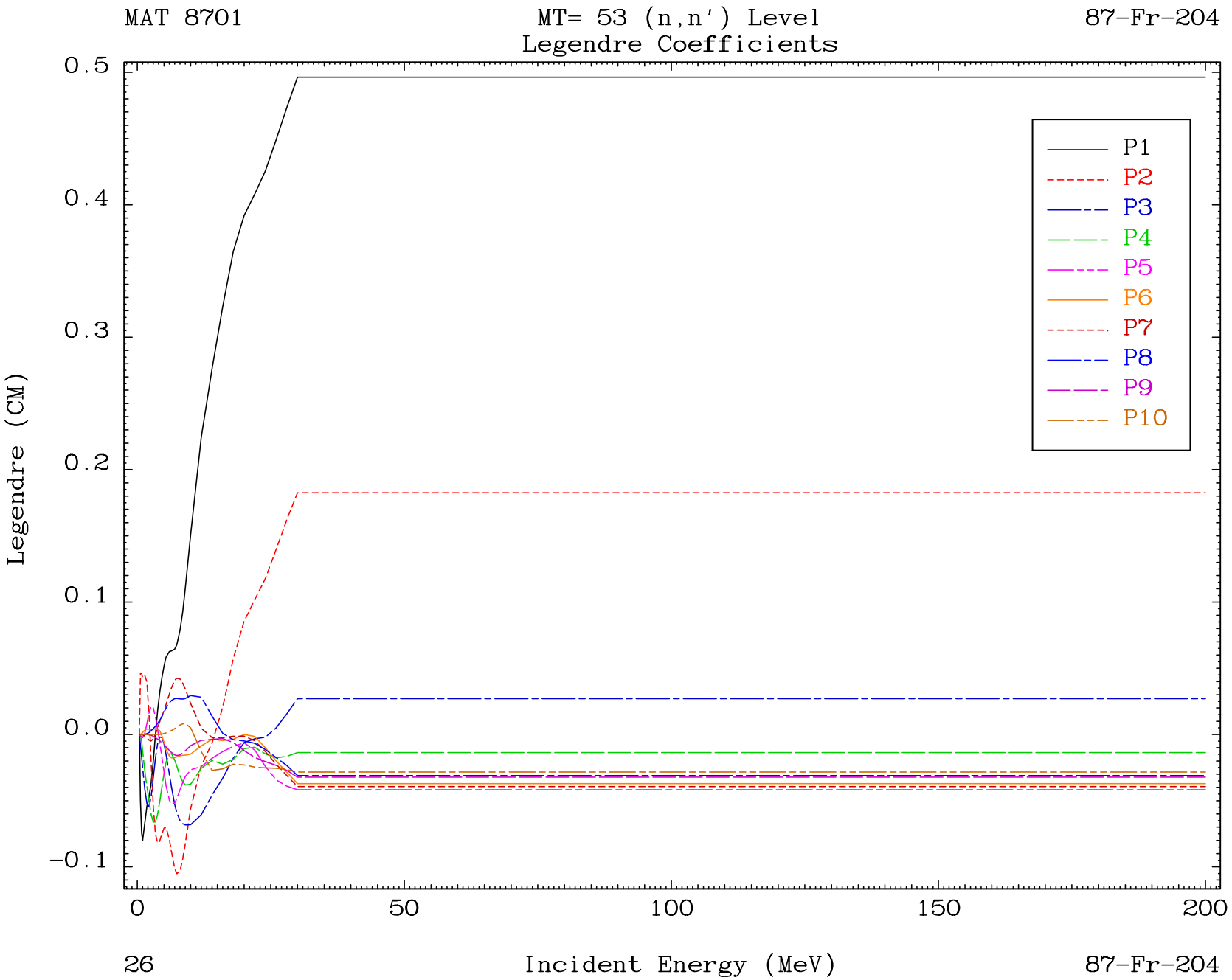

MAT 8701
MT= 51 (n,n') Level
Legendre Coefficients
87-Fr-204
X10^-4
2.5
2.0
1.5
1.0
0.5
0.0
Legendre (CM)
P10
P11
P12
P13
P14
P15
P16
P17
P18
0
50
100
150
200
21
Incident Energy (MeV)
87-Fr-204

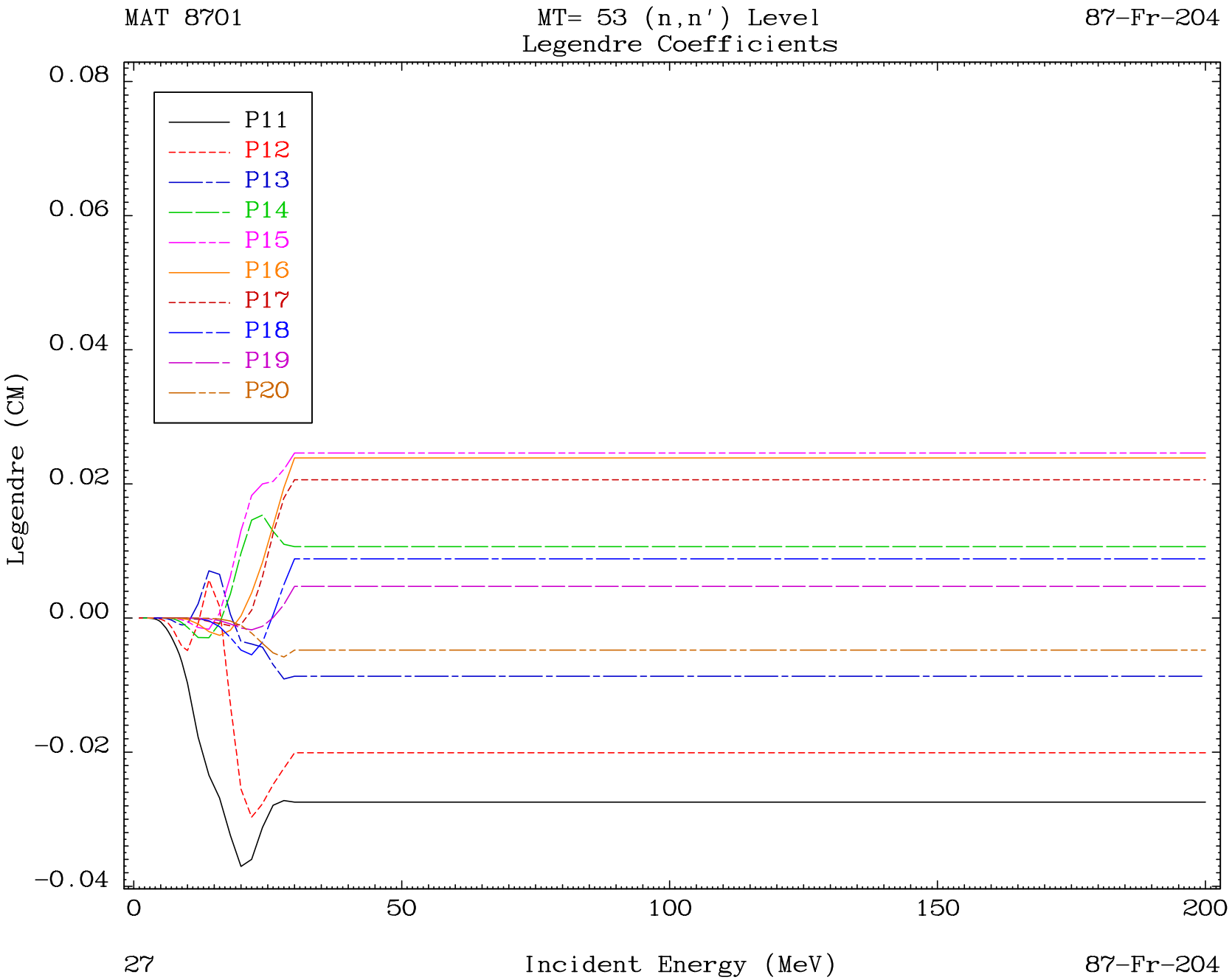

MAT 8701
MT= 51 (n,n') Level
Legendre Coefficients
87-Fr-204
0
X10 −6
−2
−4
−6
Legendre (CM)
P19
P20
P21
P22
P23
P24
P25
P26
50
100
150
200
22
Incident Energy (MeV)
87-Fr-204

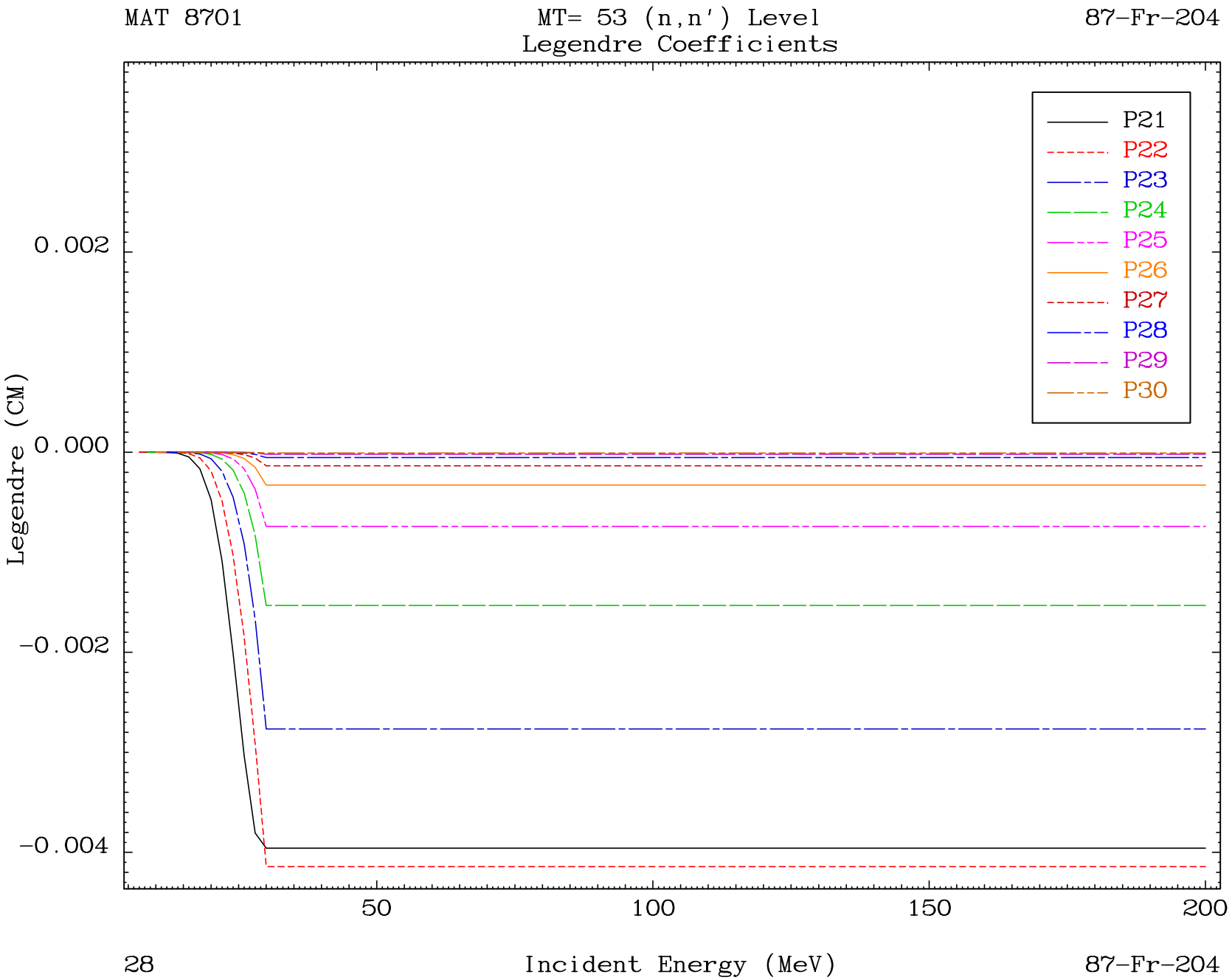

MAT 8701
MT= 52 (n,n') Level
Legendre Coefficients
87-Fr-204
0.06
0.04
0.02
0.00
-0.02
-0.04
Legendre (CM)
P1
P2
P3
P4
P5
P6
P7
P8
P9
0
50
100
150
200
23
Incident Energy (MeV)
87-Fr-204

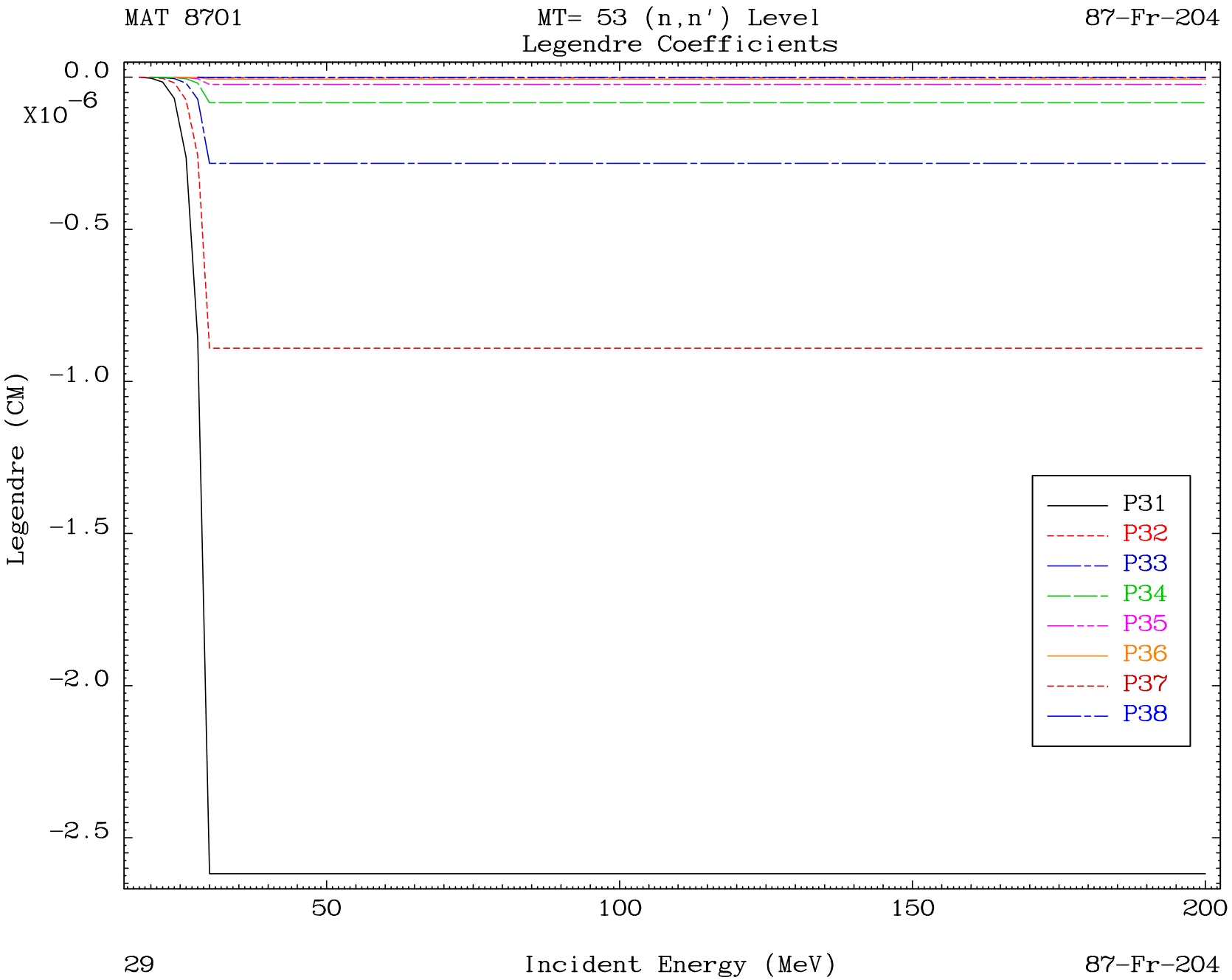

MAT 8701
MT= 52 (n,n') Level
Legendre Coefficients
87-Fr-204
X10^-42
1
0
-1
-2
Legendre (CM)
P10
P11
P12
P13
P14
P15
P16
P17
P18
0
50
100
150
200
24
Incident Energy (MeV)
87-Fr-204

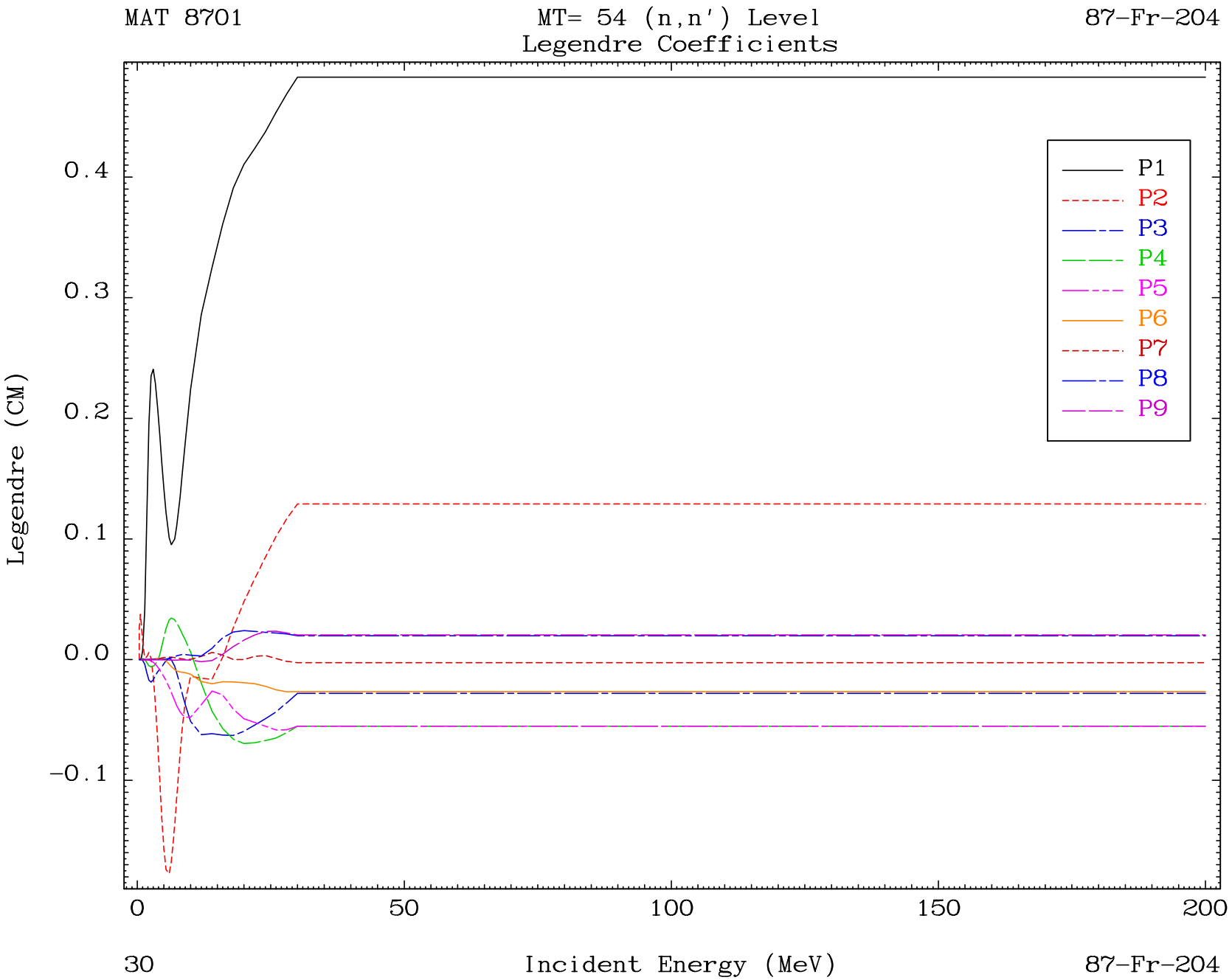

MAT 8701
MT= 52 (n,n') Level
Legendre Coefficients
87-Fr-204
0
X10 −6
−1
−2
−3
Legendre (CM)
P19
P20
P21
P22
P23
P24
P25
P26
50
100
150
200
25
Incident Energy (MeV)
87-Fr-204

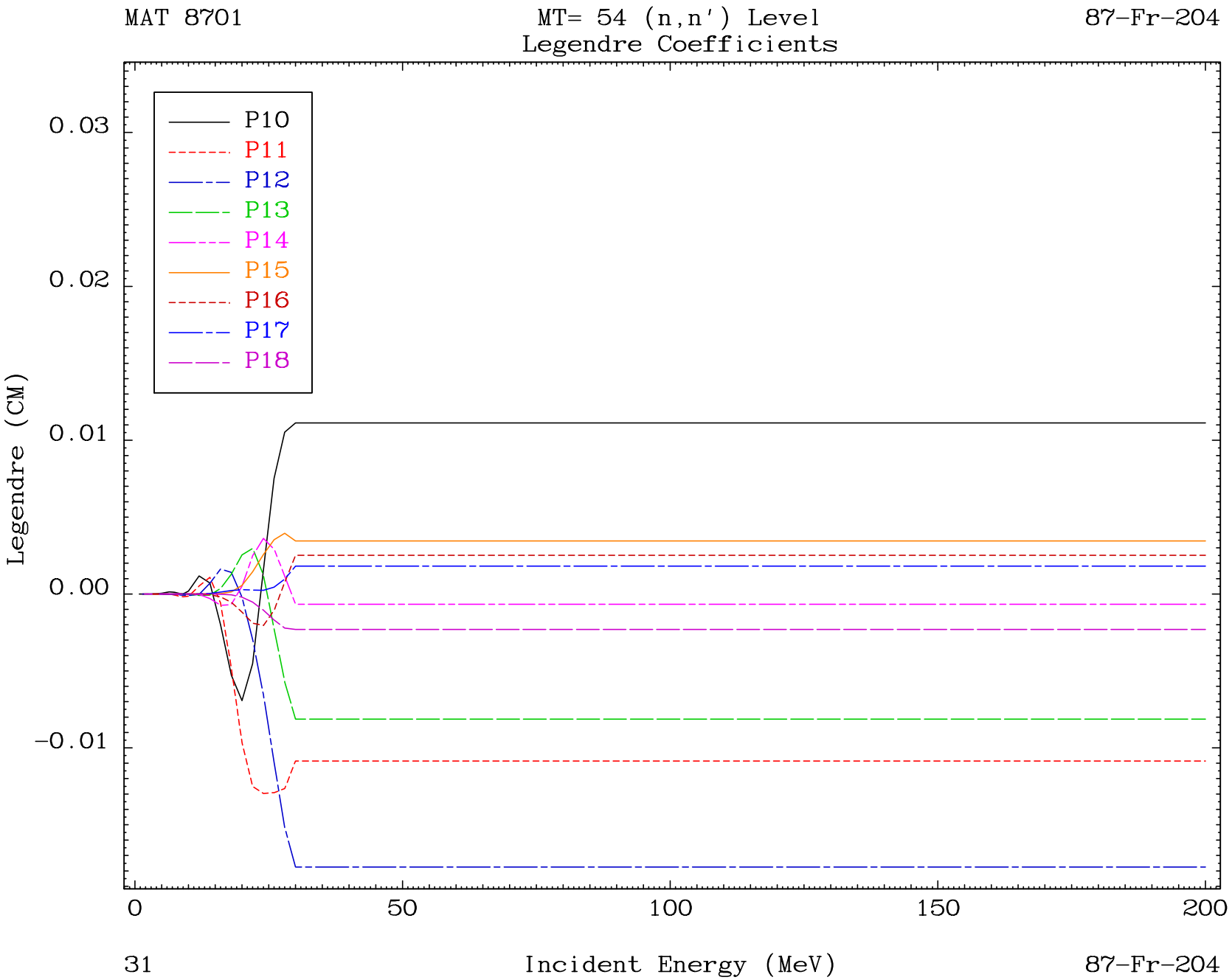

MAT 8701
MT= 53 (n,n') Level
Legendre Coefficients
87-Fr-204
Legendre (CM)
0.5
0.4
0.3
0.2
0.1
0.0
-0.1
0
50
100
150
200
Incident Energy (MeV)
26
87-Fr-204
P1
P2
P3
P4
P5
P6
P7
P8
P9
P10

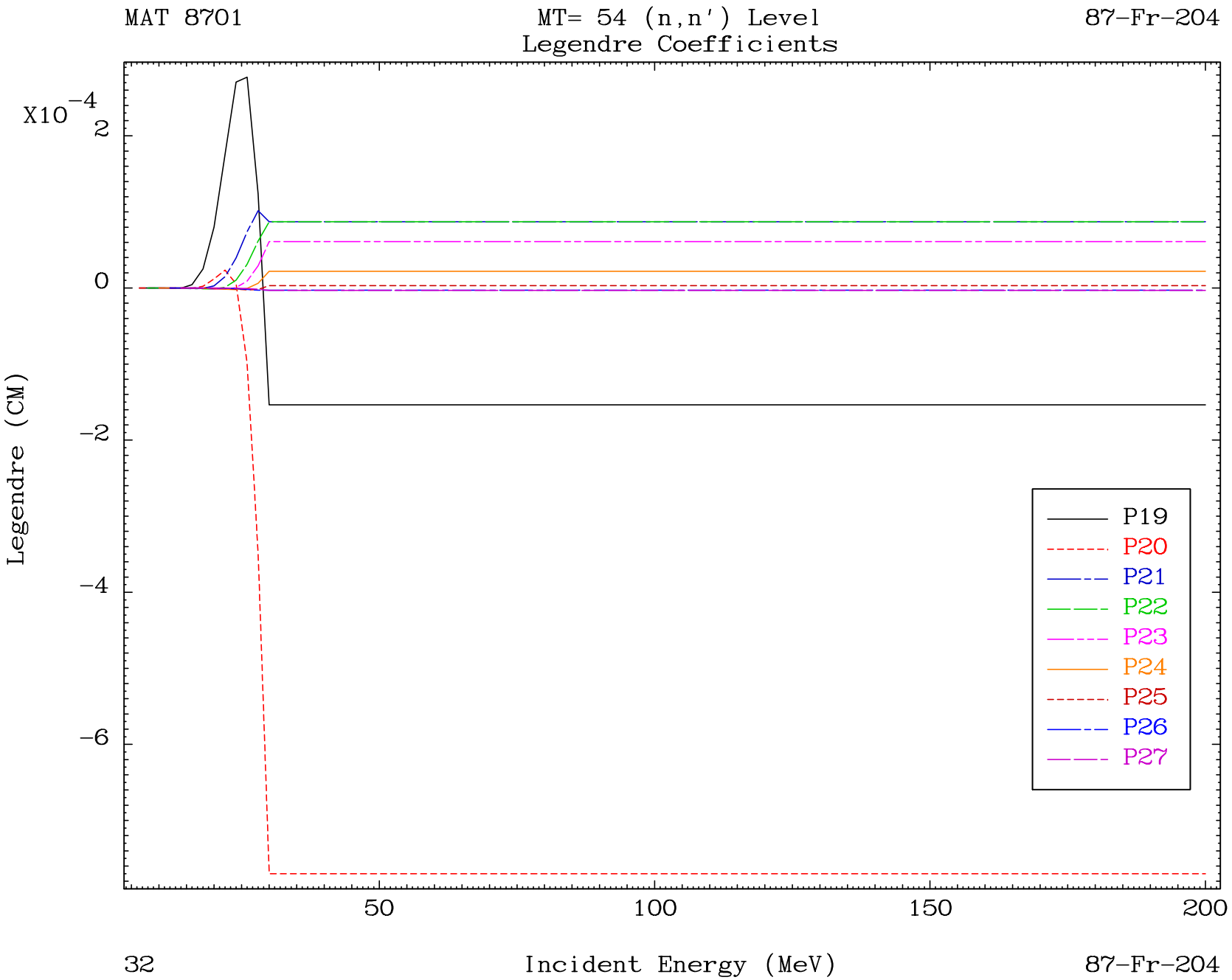

MAT 8701
MT= 53 (n,n') Level
Legendre Coefficients
87-Fr-204
P11
P12
P13
P14
P15
P16
P17
P18
P19
P20
0.08
0.06
0.04
0.02
0.00
-0.02
-0.04
Legendre (CM)
0
50
100
150
200
27
Incident Energy (MeV)
87-Fr-204

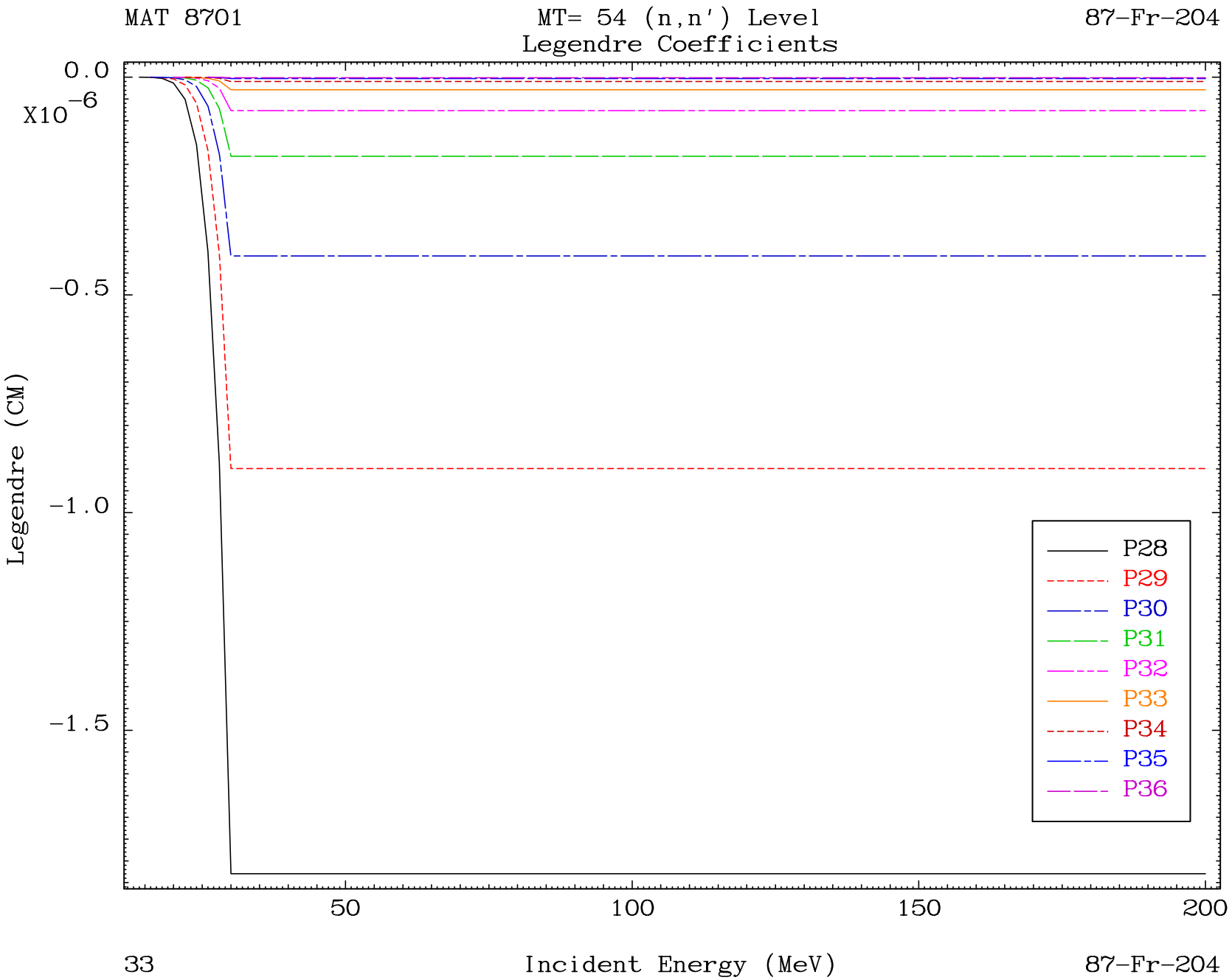

MAT 8701
MT= 53 (n,n') Level
Legendre Coefficients
87-Fr-204
P21
P22
P23
P24
P25
P26
P27
P28
P29
P30
0.002
0.000
-0.002
-0.004
Legendre (CM)
50
100
150
200
28
Incident Energy (MeV)
87-Fr-204

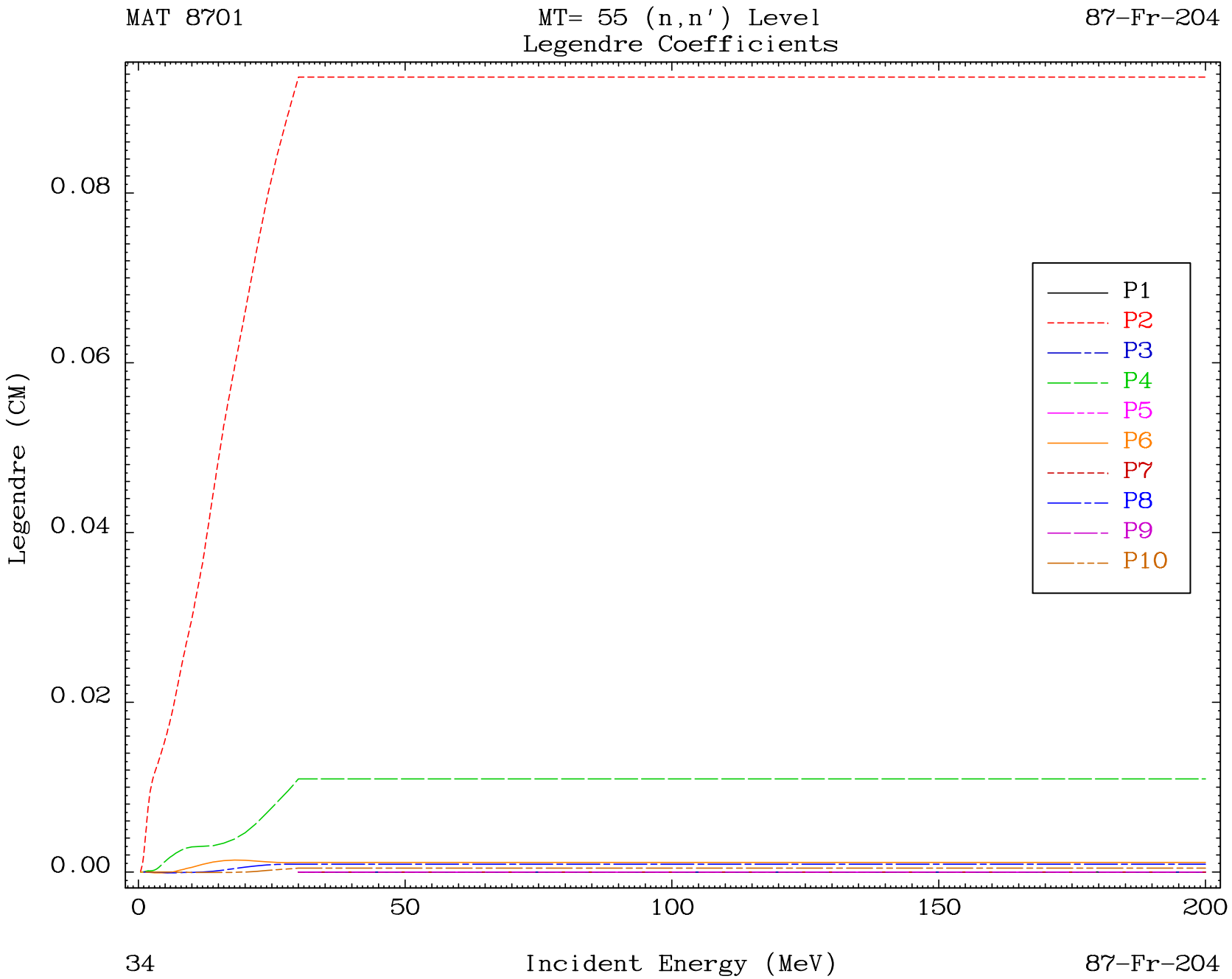

MAT 8701
MT= 53 (n,n') Level
Legendre Coefficients
87-Fr-204
0.0
X10^-6
-0.5
-1.0
-1.5
-2.0
-2.5
Legendre (CM)
50
100
150
200
29
Incident Energy (MeV)
87-Fr-204
P31
P32
P33
P34
P35
P36
P37
P38

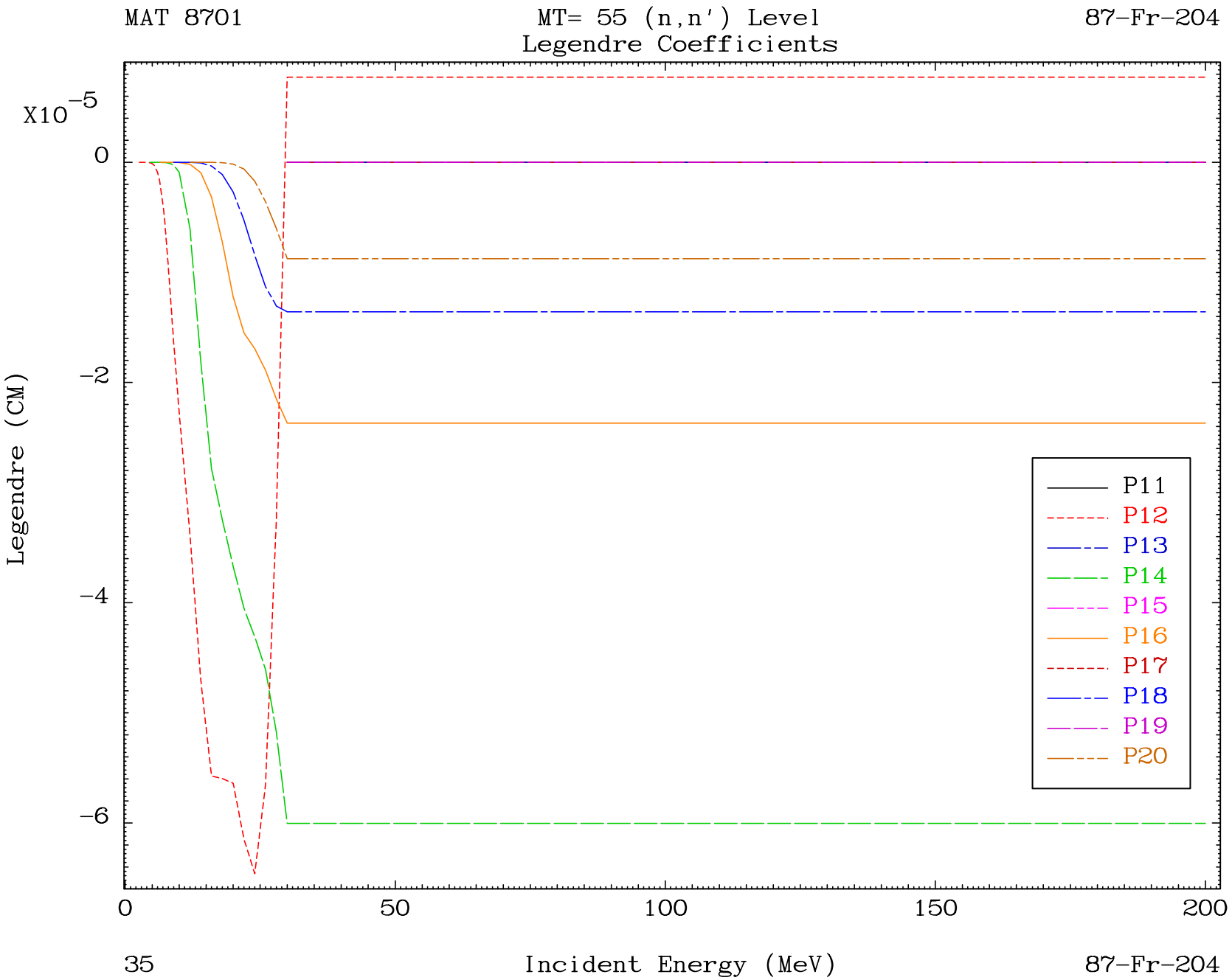

MAT 8701
MT= 54 (n,n') Level
Legendre Coefficients
87-Fr-204
Legendre (CM)
0.4
0.3
0.2
0.1
0.0
-0.1
P1
P2
P3
P4
P5
P6
P7
P8
P9
0
50
100
150
200
30
Incident Energy (MeV)
87-Fr-204

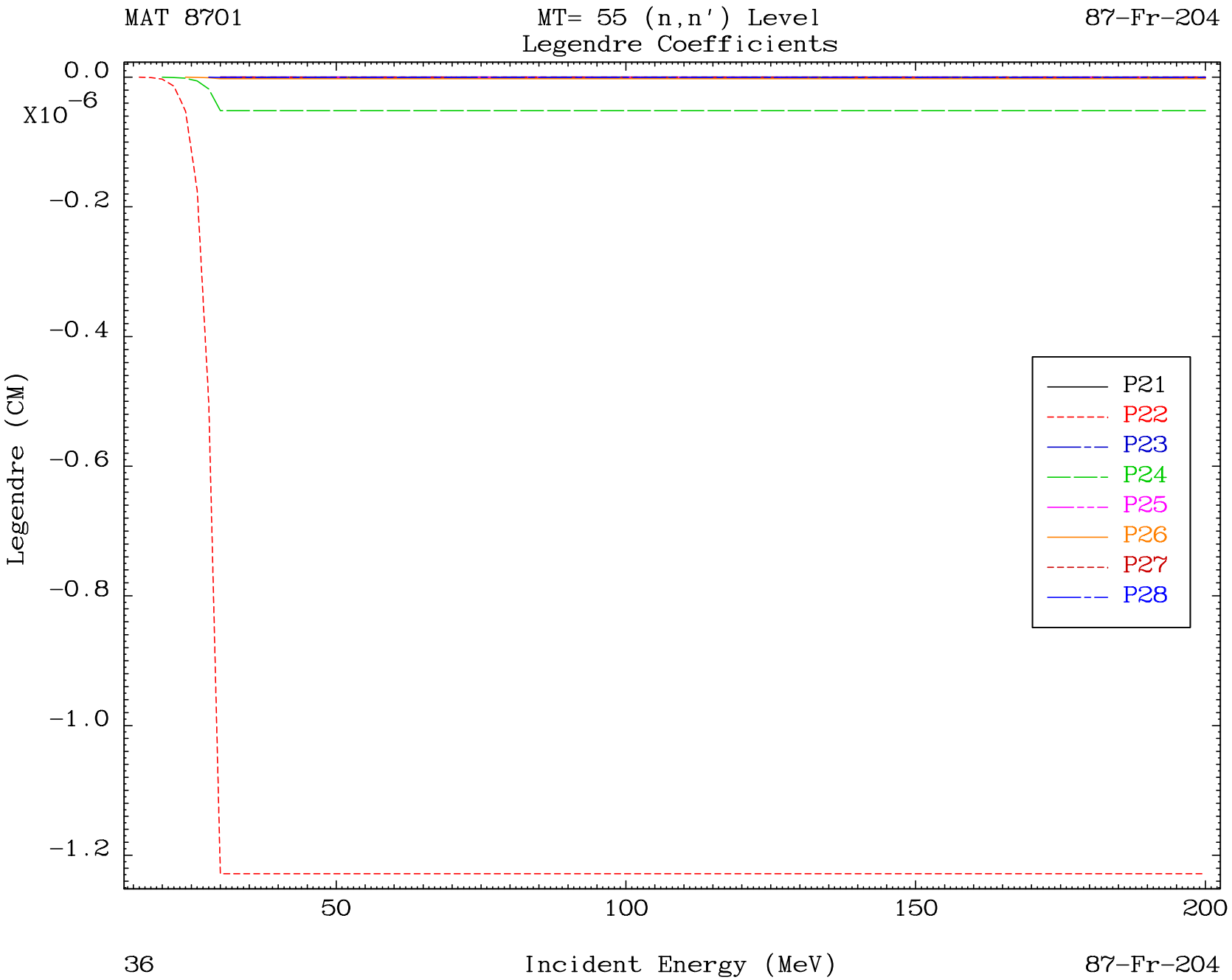

MAT 8701
MT= 54 (n,n') Level
Legendre Coefficients
87-Fr-204
P10
P11
P12
P13
P14
P15
P16
P17
P18
0.03
0.02
0.01
0.00
-0.01
Legendre (CM)
0
50
100
150
200
31
Incident Energy (MeV)
87-Fr-204

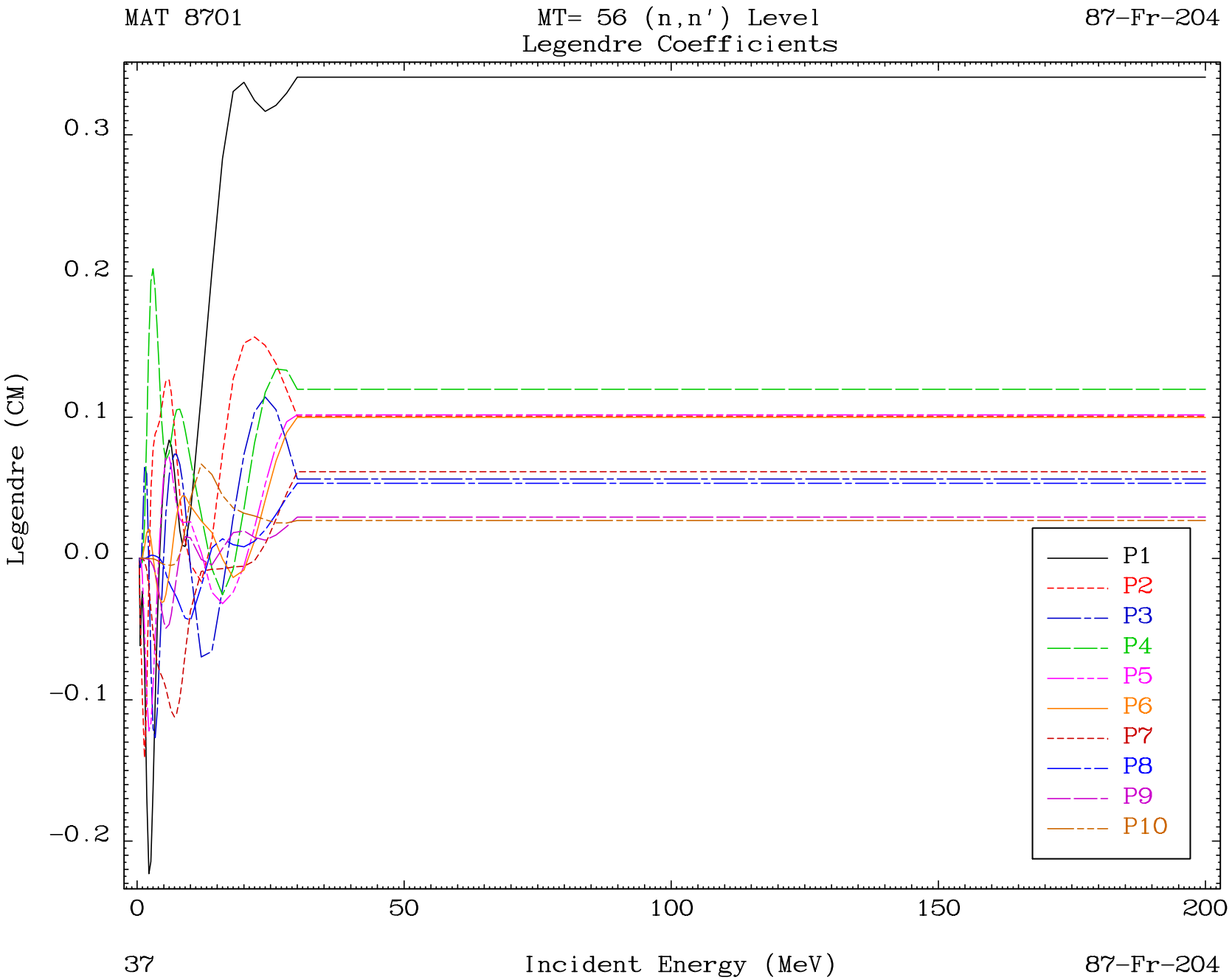

MAT 8701
MT= 54 (n,n') Level
Legendre Coefficients
87-Fr-204
X10^-4
2
0
-2
-4
-6
Legendre (CM)
50
100
150
200
32
Incident Energy (MeV)
87-Fr-204
P19
P20
P21
P22
P23
P24
P25
P26
P27

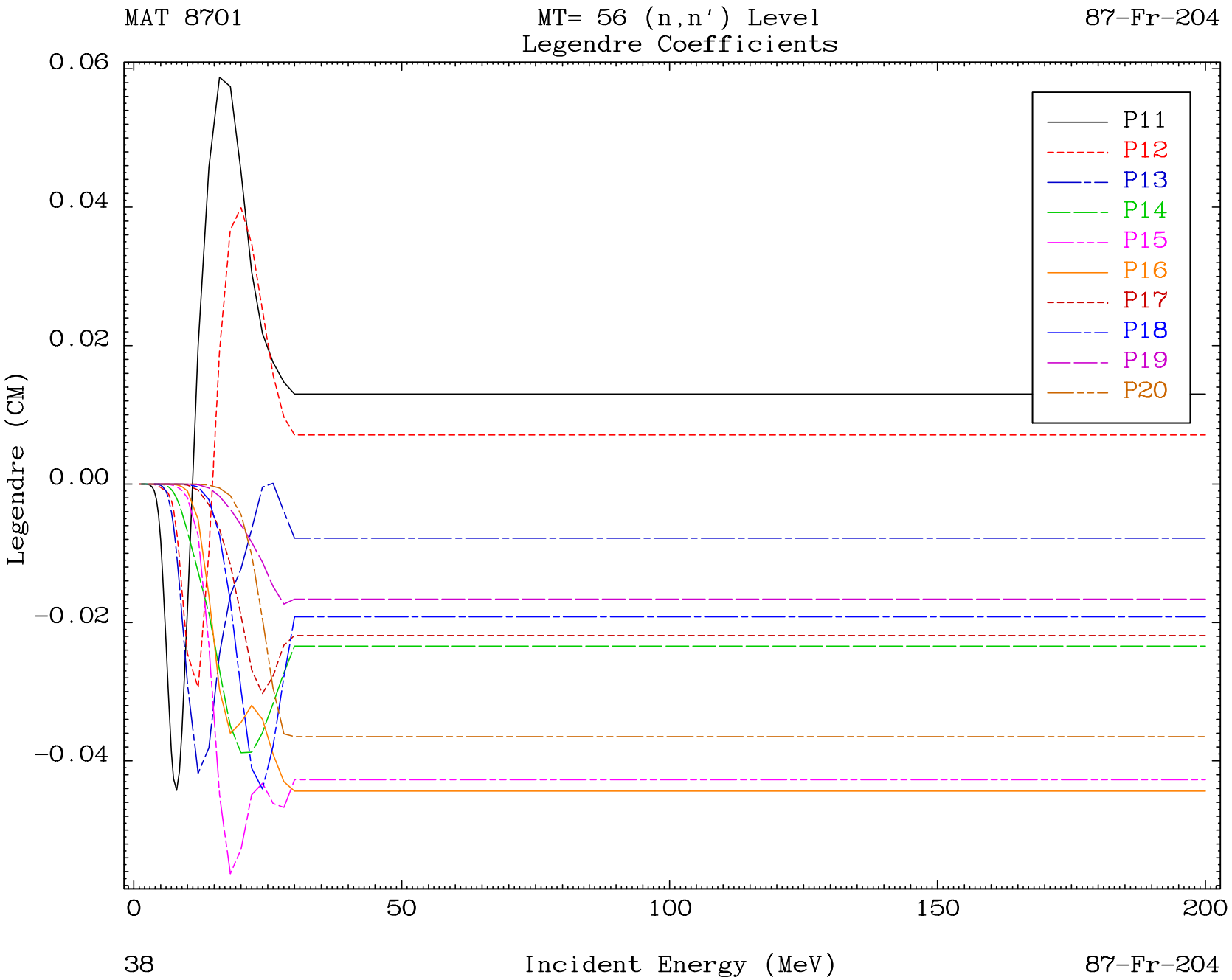

MAT 8701
MT= 54 (n,n') Level
Legendre Coefficients
87-Fr-204
0.0
X10^-6
-0.5
-1.0
-1.5
Legendre (CM)
50
100
150
200
P28
P29
P30
P31
P32
P33
P34
P35
P36
33
Incident Energy (MeV)
87-Fr-204

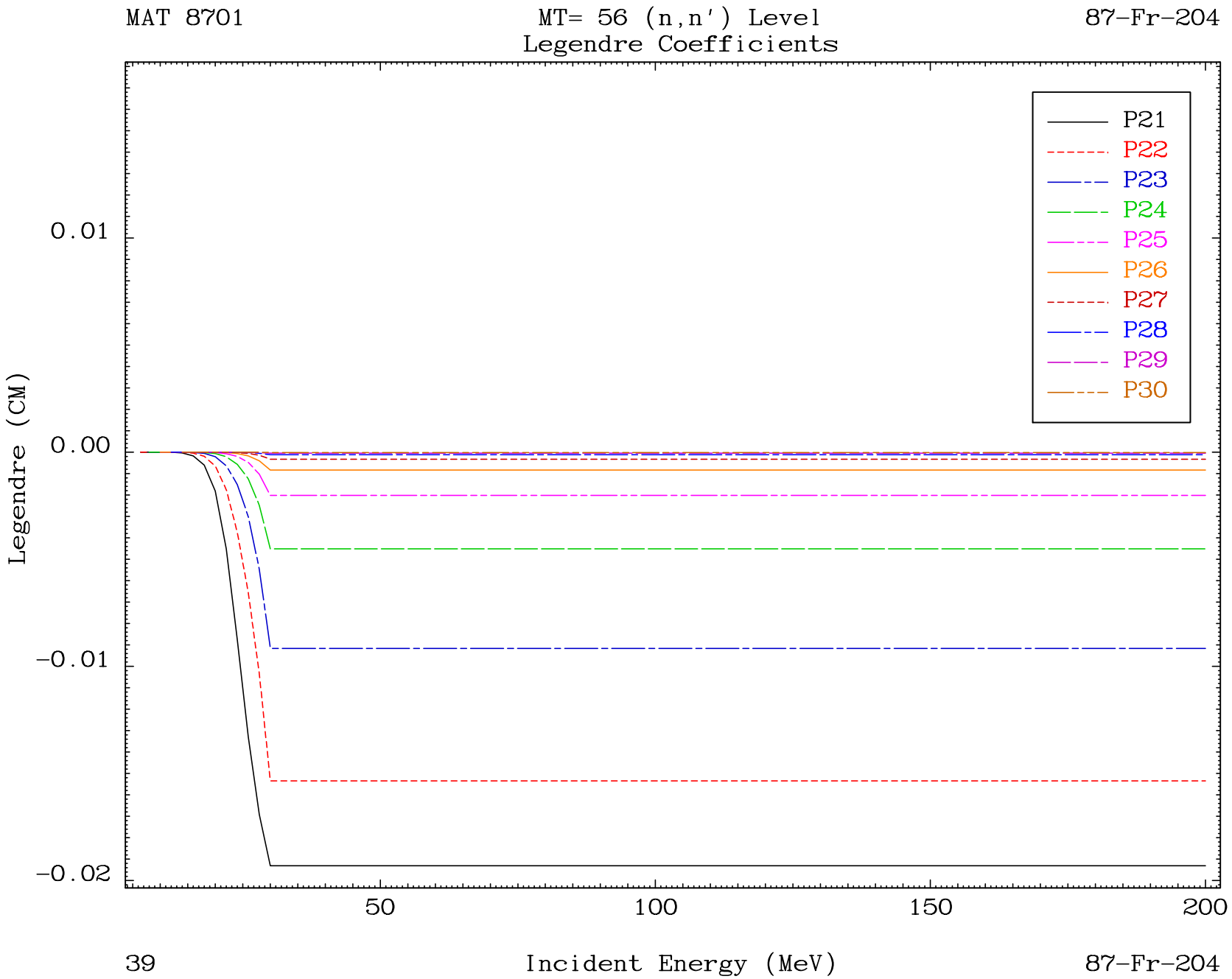

MAT 8701
MT= 55 (n,n') Level
Legendre Coefficients
87-Fr-204
Legendre (CM)
0.08
0.06
0.04
0.02
0.00
0
50
100
150
200
34
Incident Energy (MeV)
87-Fr-204
P1
P2
P3
P4
P5
P6
P7
P8
P9
P10

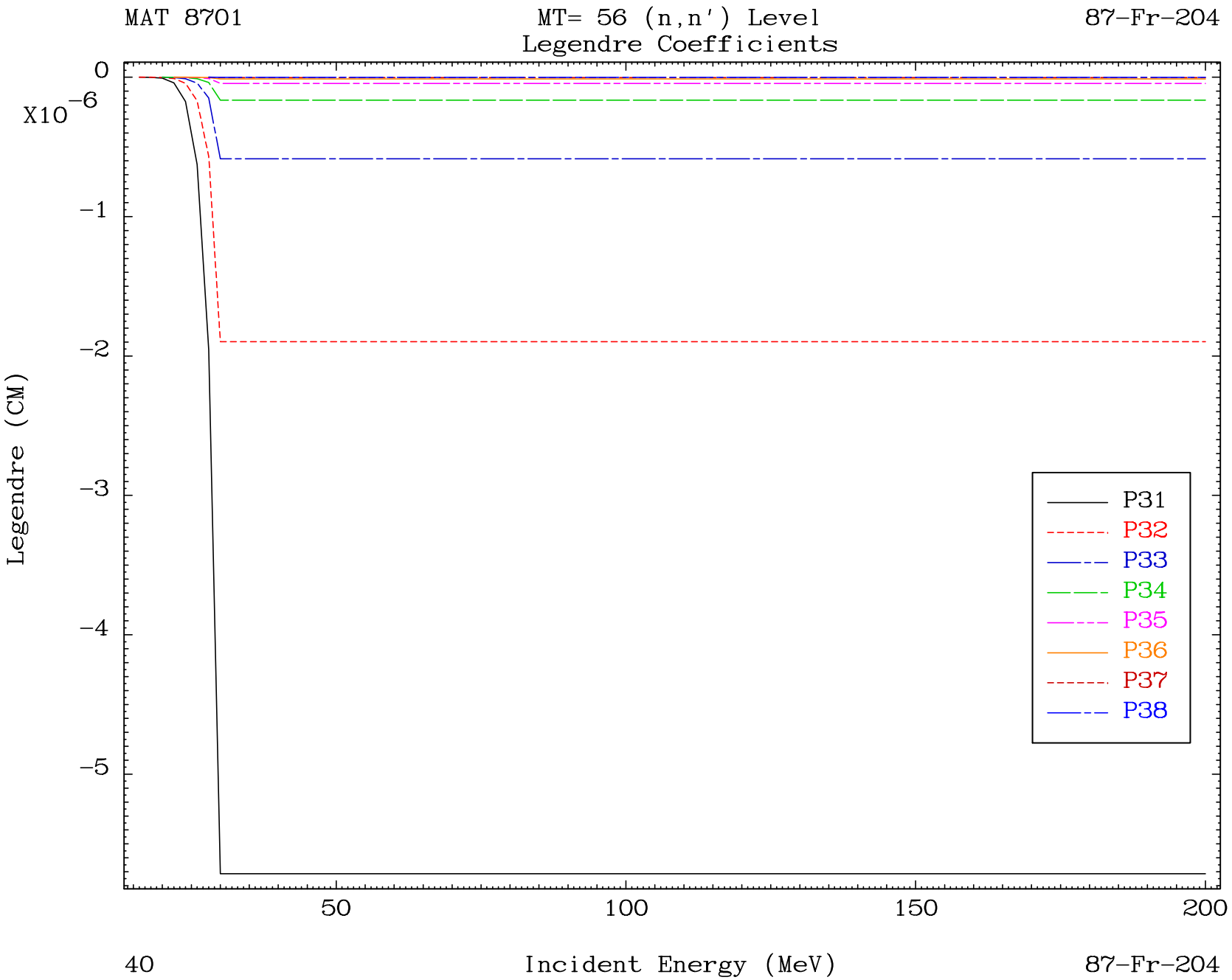

MAT 8701
MT= 55 (n,n') Level
Legendre Coefficients
87-Fr-204
X10−5
0
−2
−4
−6
Legendre (CM)
0
50
100
150
200
35
Incident Energy (MeV)
87-Fr-204
P11
P12
P13
P14
P15
P16
P17
P18
P19
P20

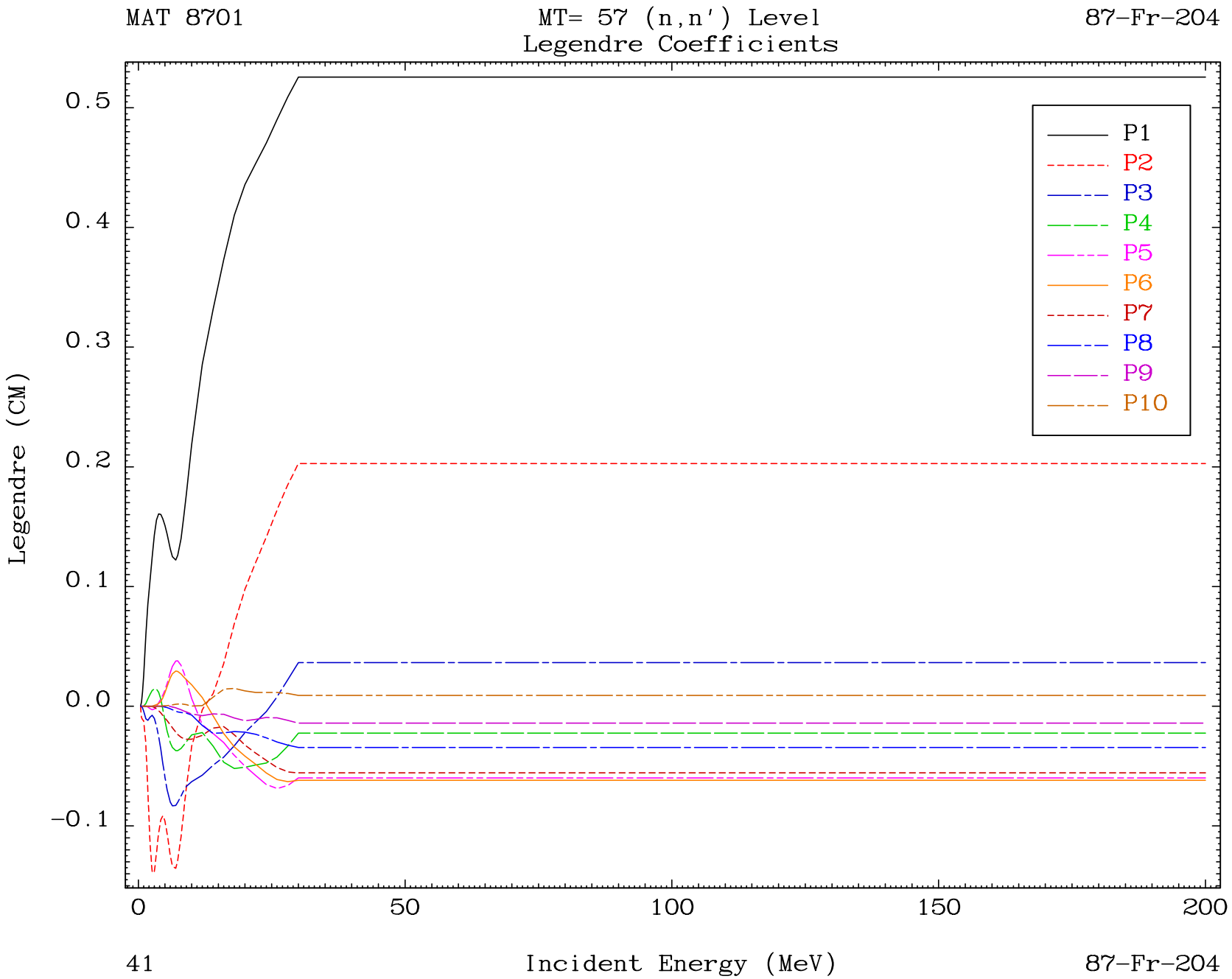

MAT 8701
MT= 55 (n,n') Level
Legendre Coefficients
87-Fr-204
0.0
X10^-6
-0.2
-0.4
-0.6
-0.8
-1.0
-1.2
Legendre (CM)
50
100
150
200
P21
P22
P23
P24
P25
P26
P27
P28
36
Incident Energy (MeV)
87-Fr-204

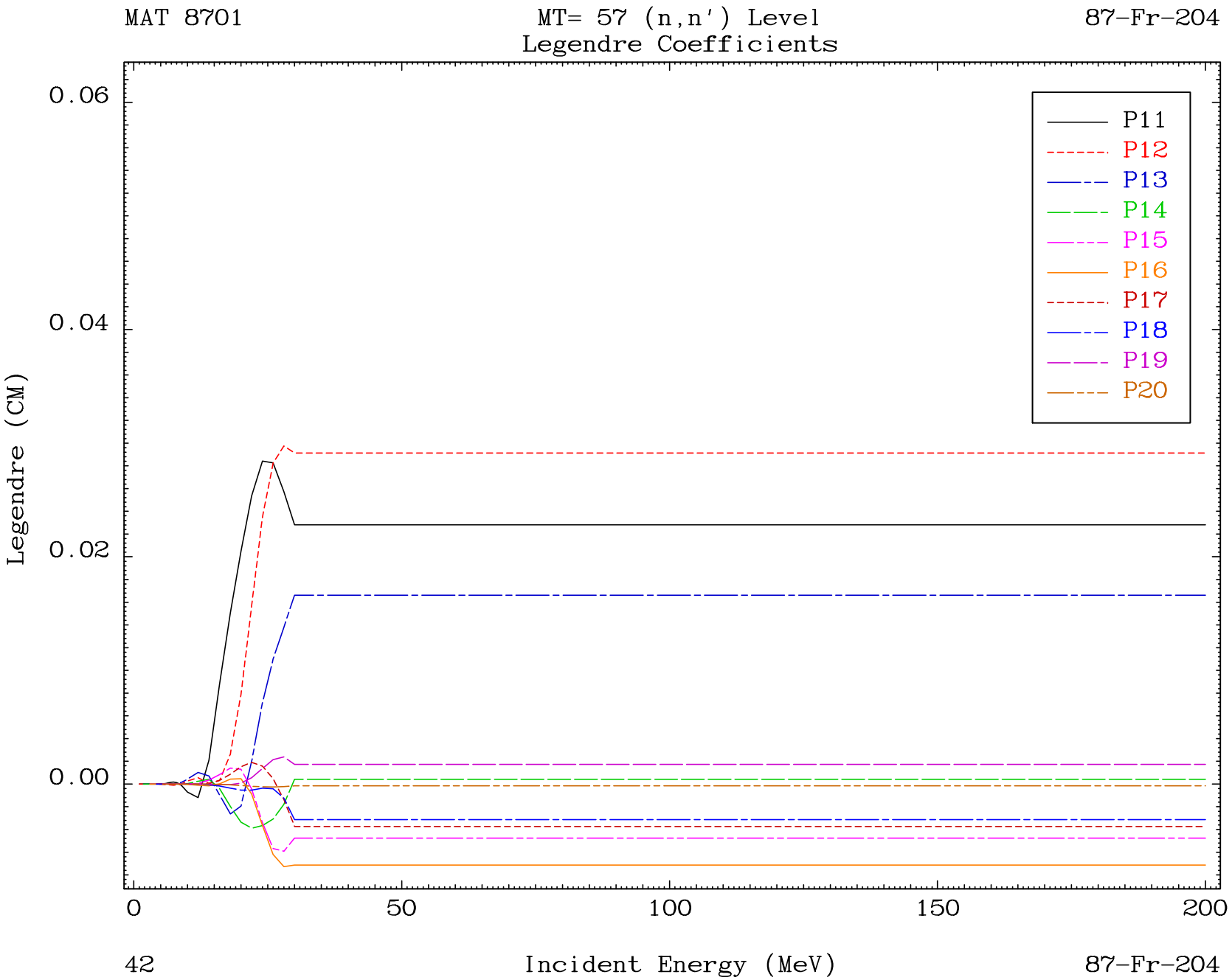

MAT 8701
MT= 56 (n,n') Level
Legendre Coefficients
87-Fr-204
Legendre (CM)
0.3
0.2
0.1
0.0
-0.1
-0.2
0
50
100
150
200
37
Incident Energy (MeV)
87-Fr-204
P1
P2
P3
P4
P5
P6
P7
P8
P9
P10

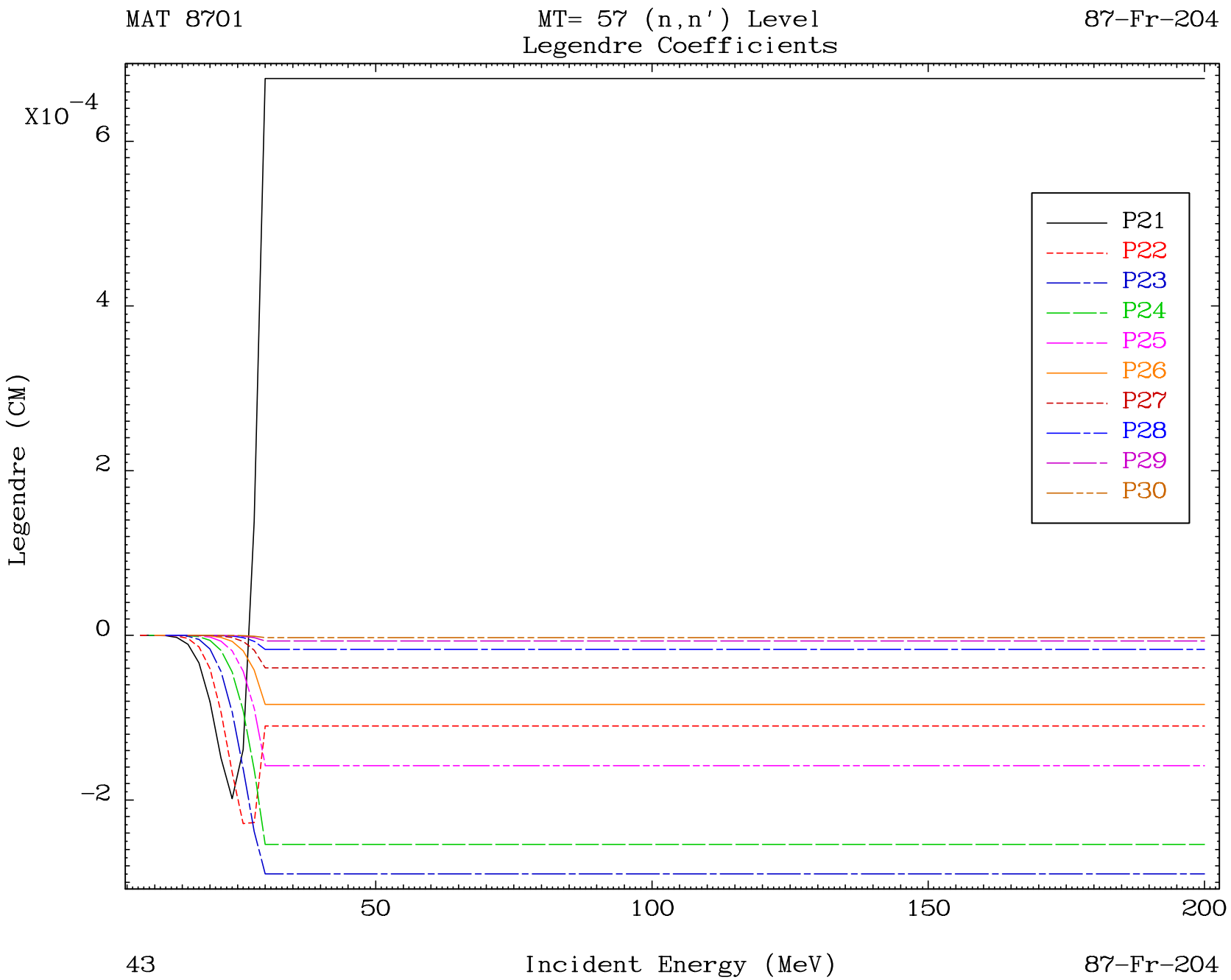

MAT 8701
MT= 56 (n,n') Level
Legendre Coefficients
87-Fr-204
0.06
0.04
0.02
0.00
-0.02
-0.04
Legendre (CM)
P11
P12
P13
P14
P15
P16
P17
P18
P19
P20
0
50
100
150
200
38
Incident Energy (MeV)
87-Fr-204

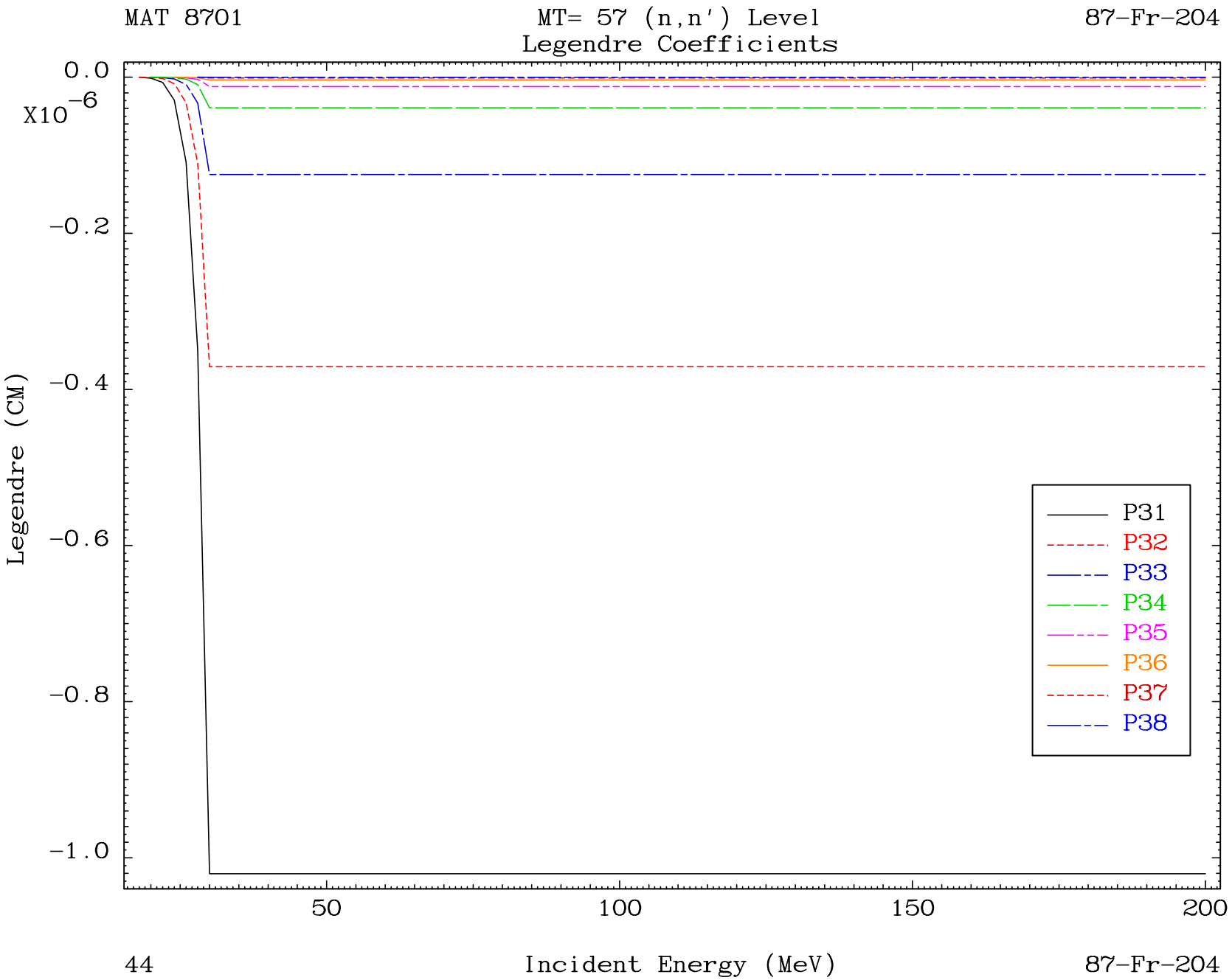

MAT 8701
MT= 56 (n,n') Level
Legendre Coefficients
87-Fr-204
P21
P22
P23
P24
P25
P26
P27
P28
P29
P30
0.01
0.00
-0.01
-0.02
Legendre (CM)
50
100
150
200
39
Incident Energy (MeV)
87-Fr-204

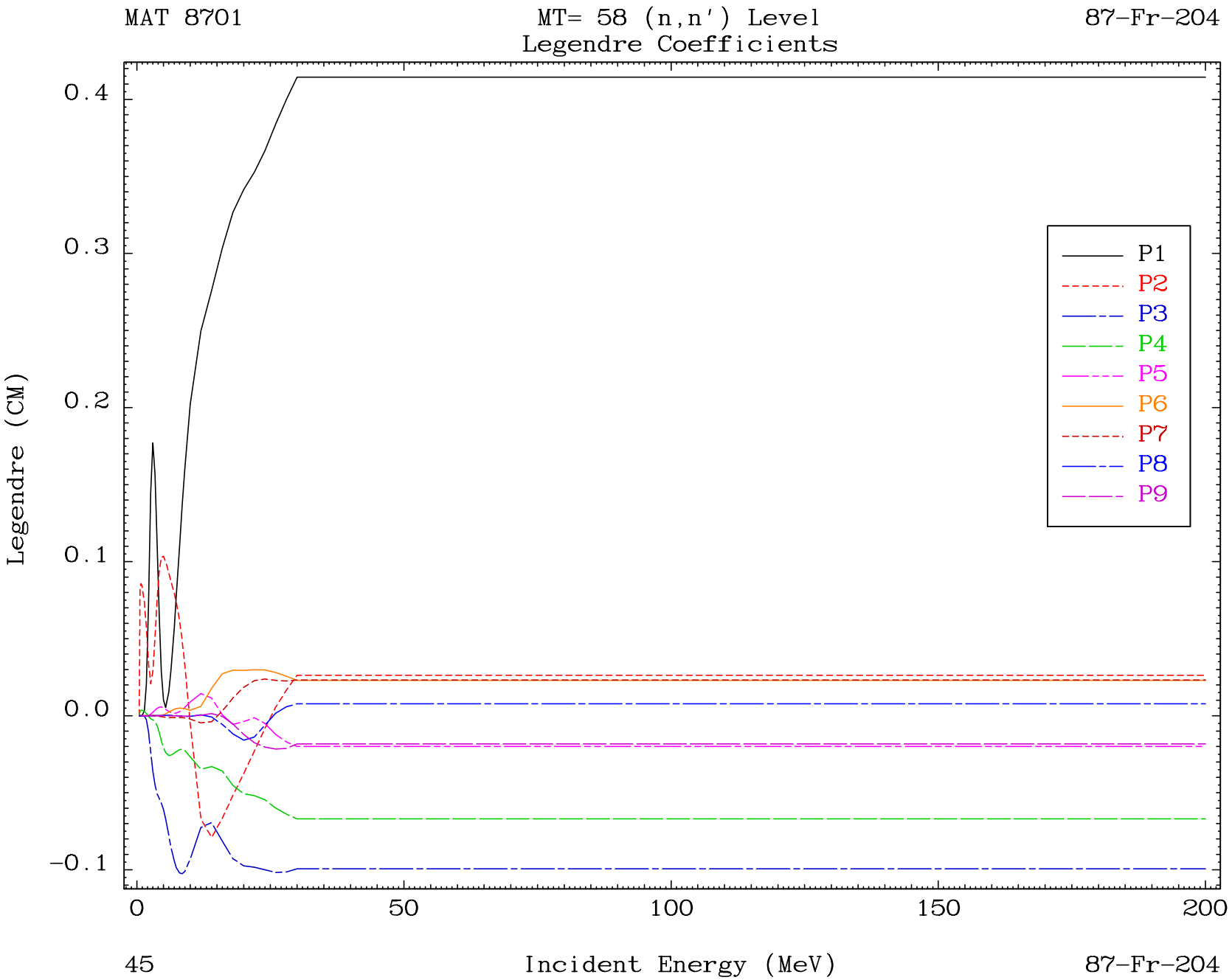

MAT 8701
MT= 56 (n,n') Level
Legendre Coefficients
87-Fr-204
0
X10 −6
−1
−2
−3
−4
−5
Legendre (CM)
50
100
150
200
40
Incident Energy (MeV)
87-Fr-204
P31
P32
P33
P34
P35
P36
P37
P38

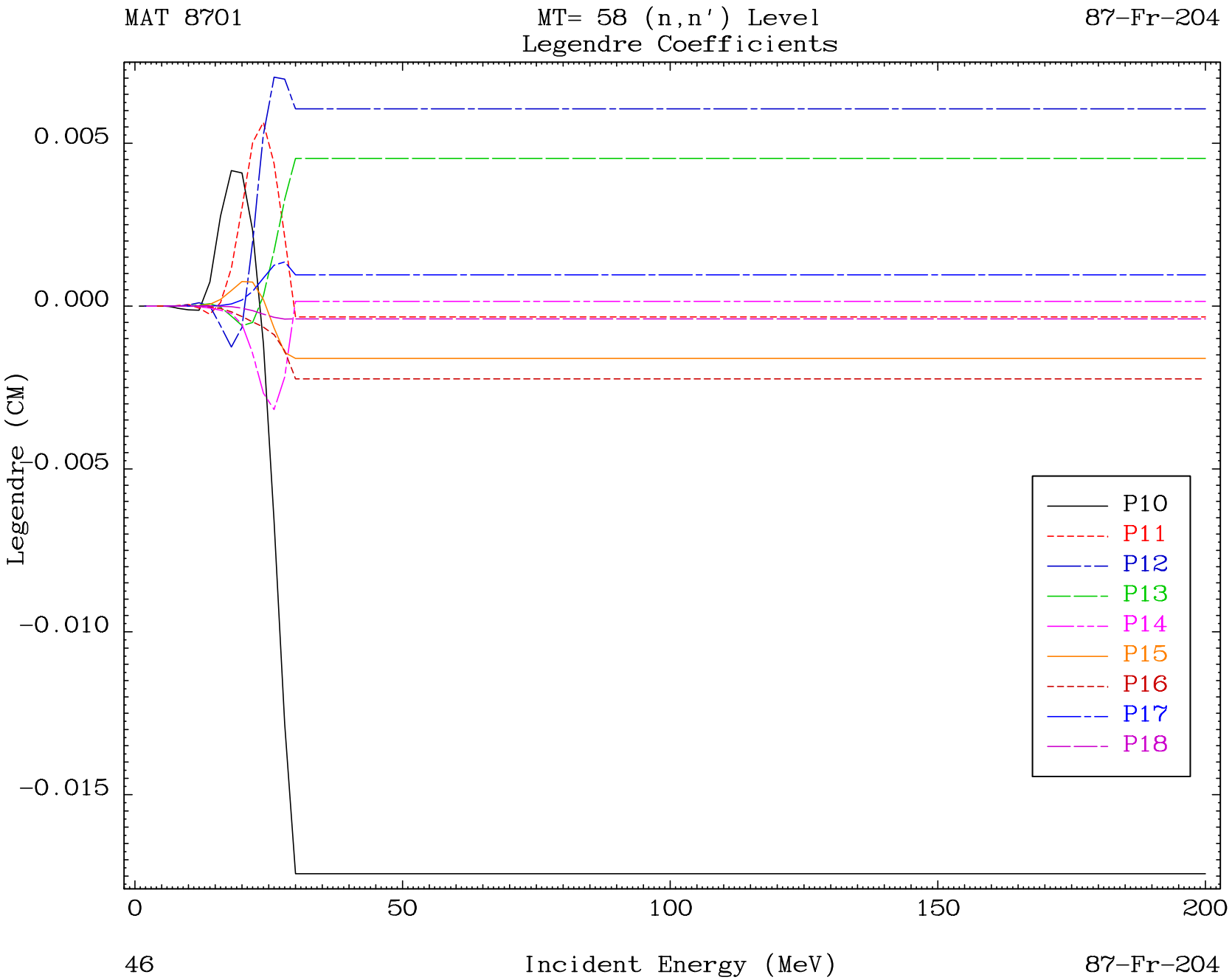

MAT 8701
MT= 57 (n,n') Level
Legendre Coefficients
87-Fr-204
Legendre (CM)
0.5
0.4
0.3
0.2
0.1
0.0
-0.1
0
50
100
150
200
Incident Energy (MeV)
41
87-Fr-204
P1
P2
P3
P4
P5
P6
P7
P8
P9
P10

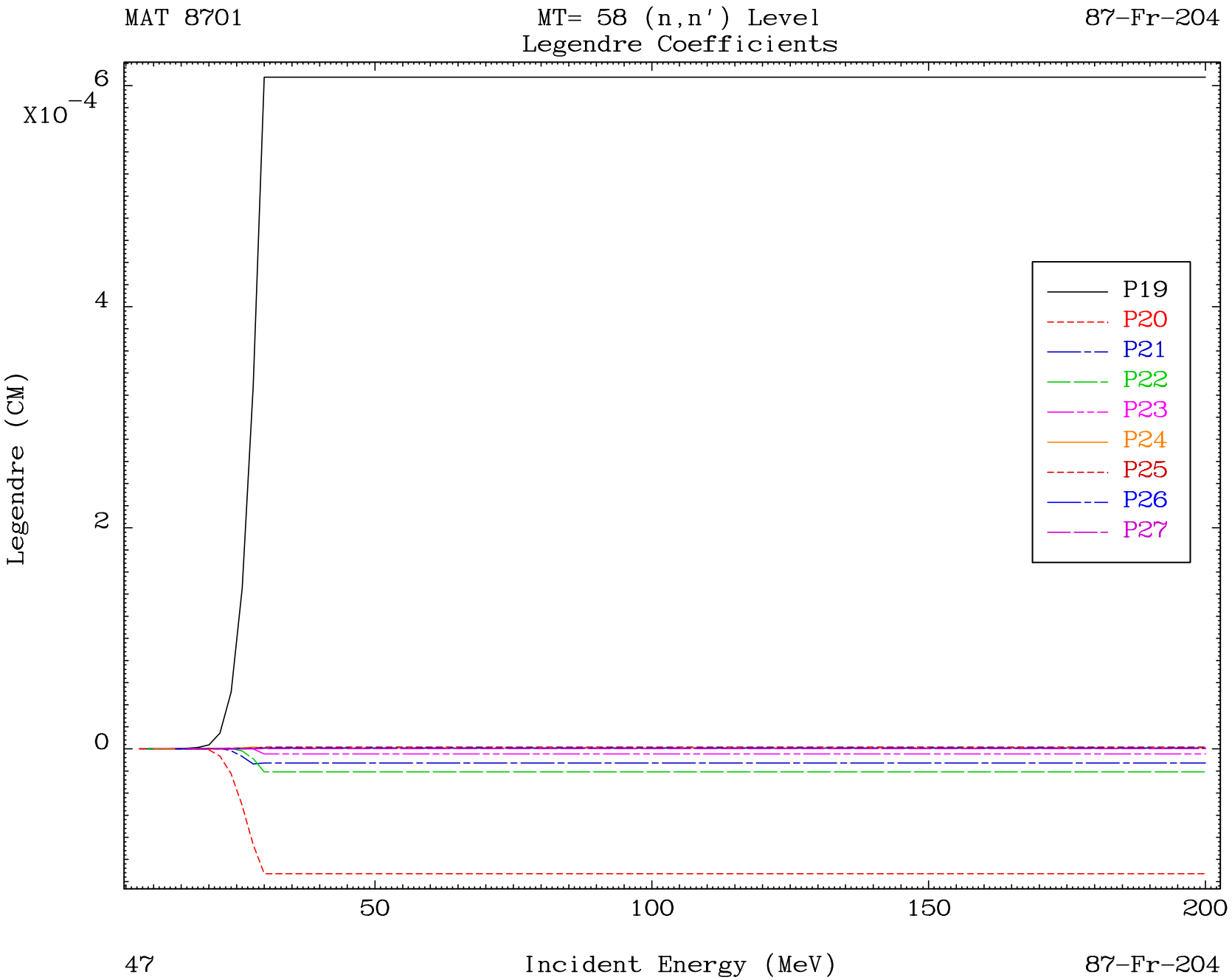

MAT 8701
MT= 57 (n,n') Level
Legendre Coefficients
87-Fr-204
0.06
0.04
0.02
0.00
Legendre (CM)
P11
P12
P13
P14
P15
P16
P17
P18
P19
P20
0
50
100
150
200
42
Incident Energy (MeV)
87-Fr-204

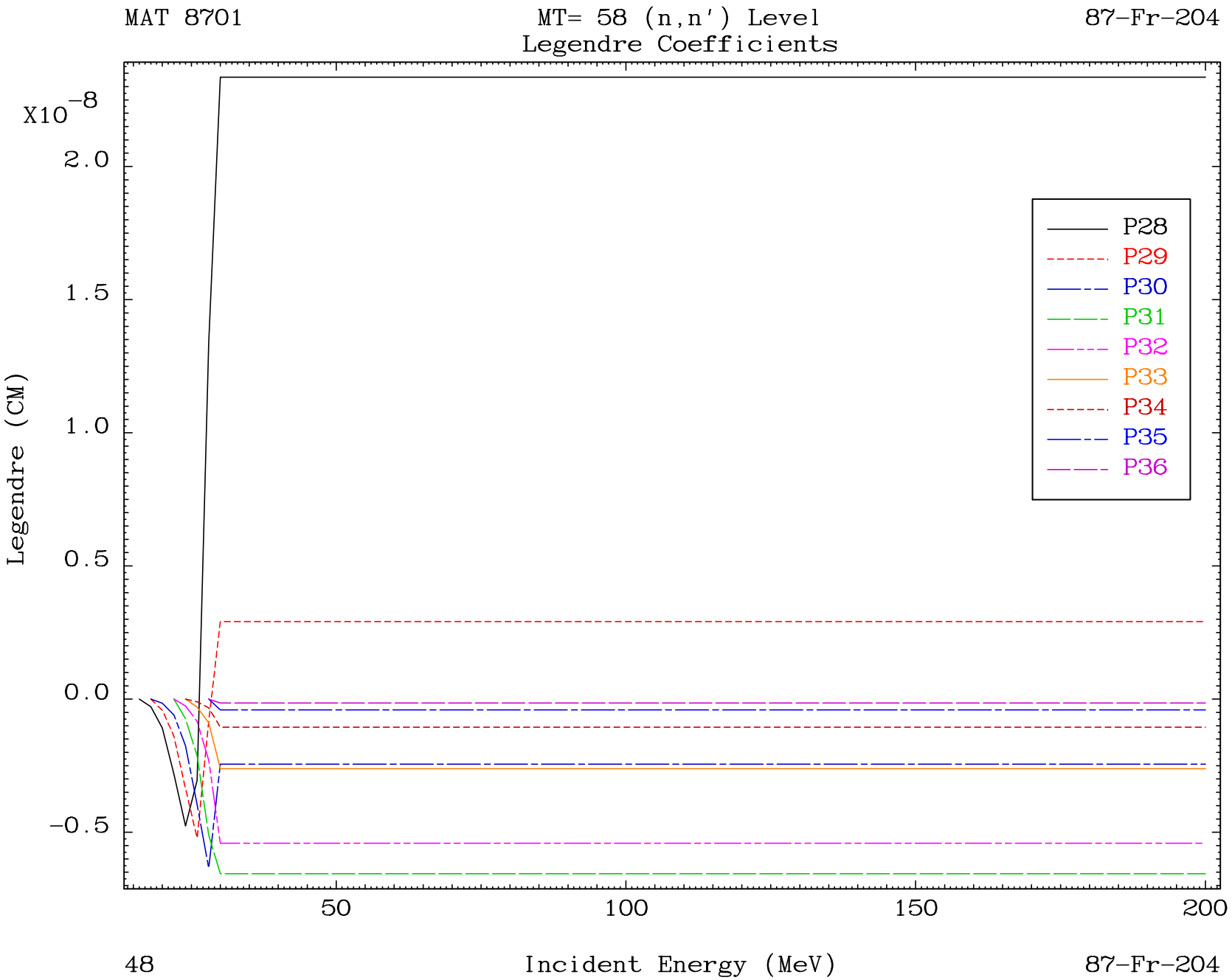

MAT 8701
MT= 57 (n,n') Level
Legendre Coefficients
87-Fr-204
X10^-4
6
4
2
0
-2
Legendre (CM)
P21
P22
P23
P24
P25
P26
P27
P28
P29
P30
50
100
150
200
43
Incident Energy (MeV)
87-Fr-204

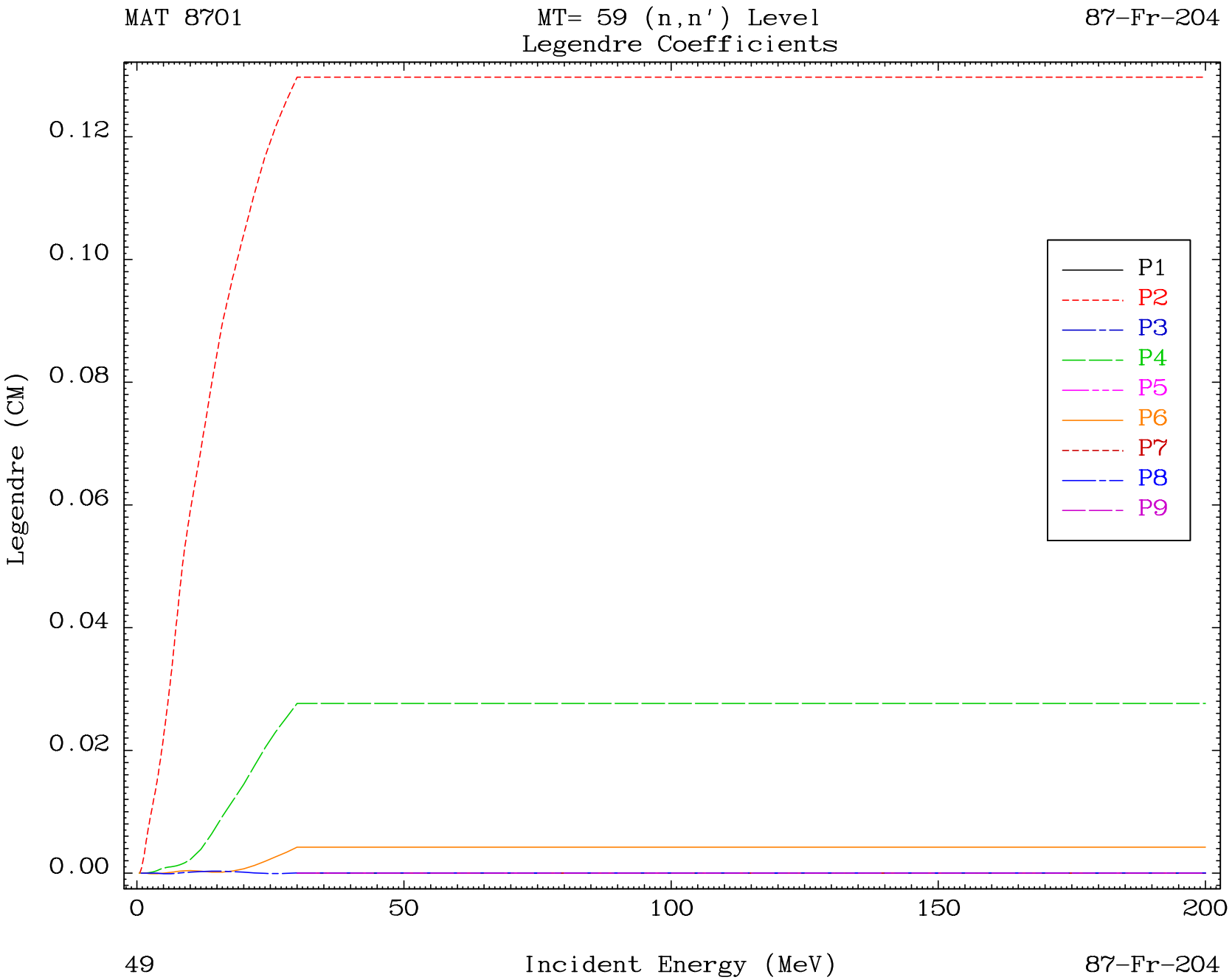

MAT 8701
MT= 57 (n,n') Level
Legendre Coefficients
87-Fr-204
0.0
X10^-6
-0.2
-0.4
-0.6
-0.8
-1.0
Legendre (CM)
50
100
150
200
P31
P32
P33
P34
P35
P36
P37
P38
44
Incident Energy (MeV)
87-Fr-204

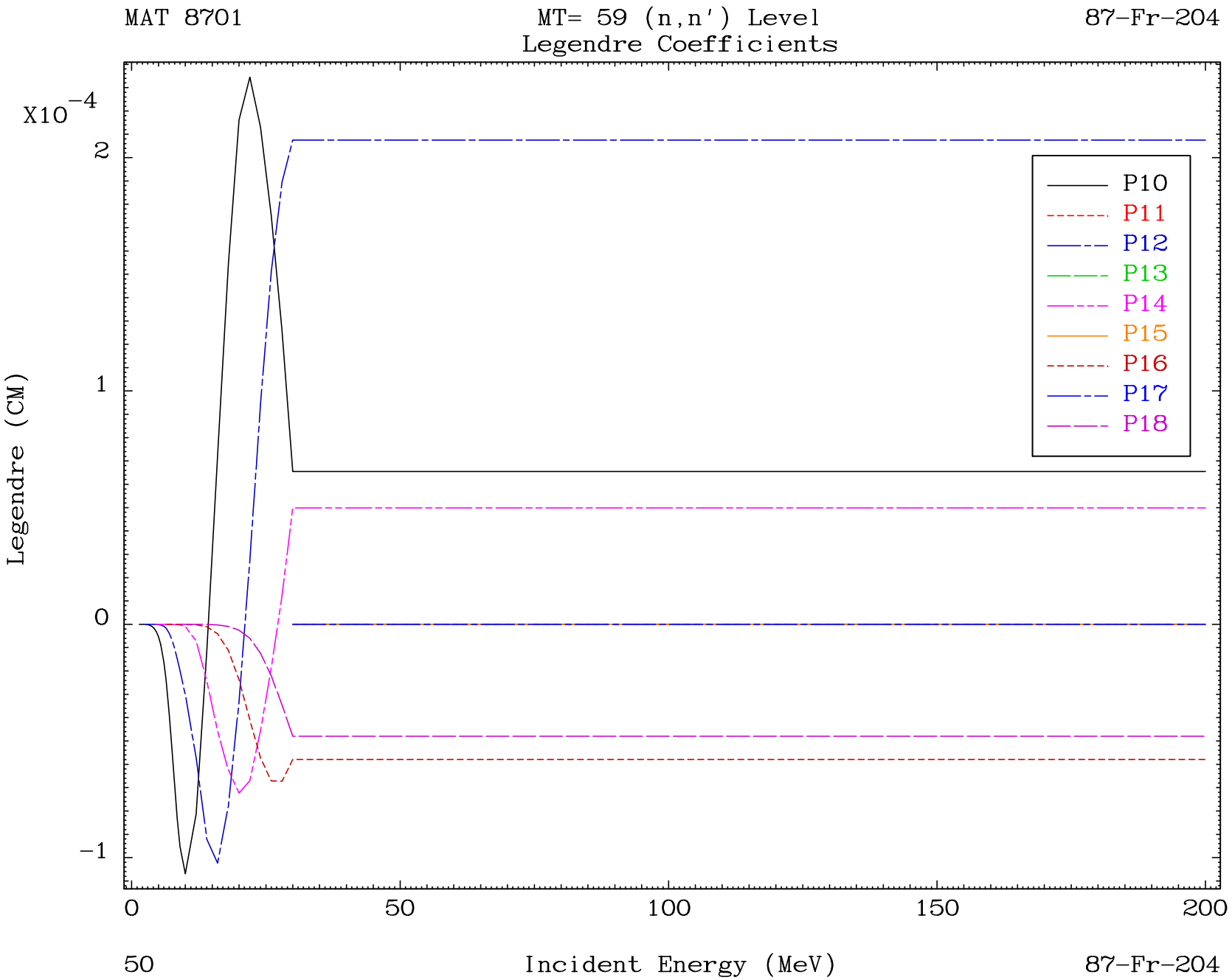

MAT 8701
MT= 58 (n,n') Level
Legendre Coefficients
87-Fr-204
Legendre (CM)
0.4
0.3
0.2
0.1
0.0
-0.1
0
50
100
150
200
45
Incident Energy (MeV)
87-Fr-204
P1
P2
P3
P4
P5
P6
P7
P8
P9

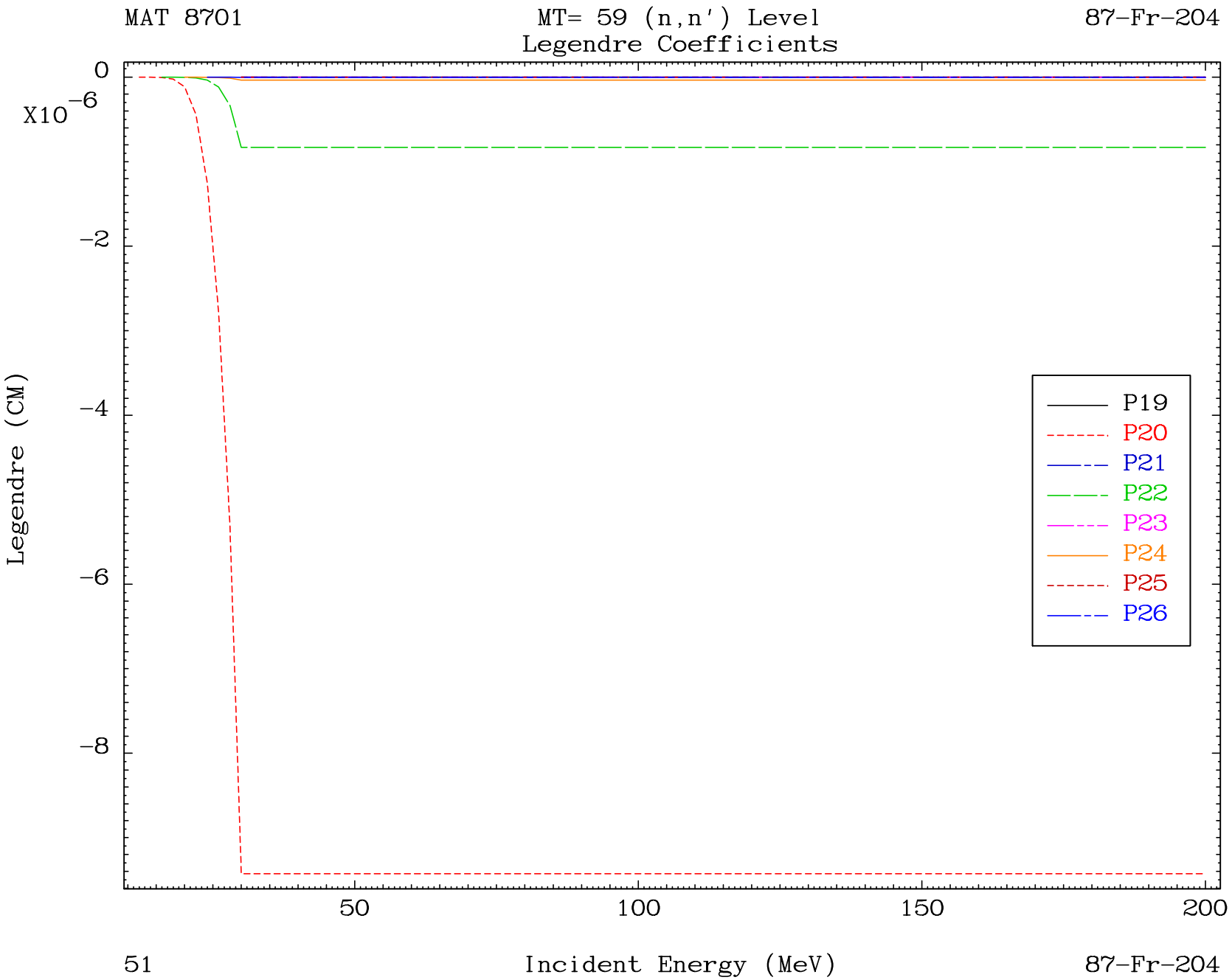

MAT 8701
MT= 58 (n,n') Level
Legendre Coefficients
87-Fr-204
0.005
0.000
-0.005
-0.010
-0.015
Legendre (CM)
0
50
100
150
200
46
Incident Energy (MeV)
87-Fr-204
P10
P11
P12
P13
P14
P15
P16
P17
P18

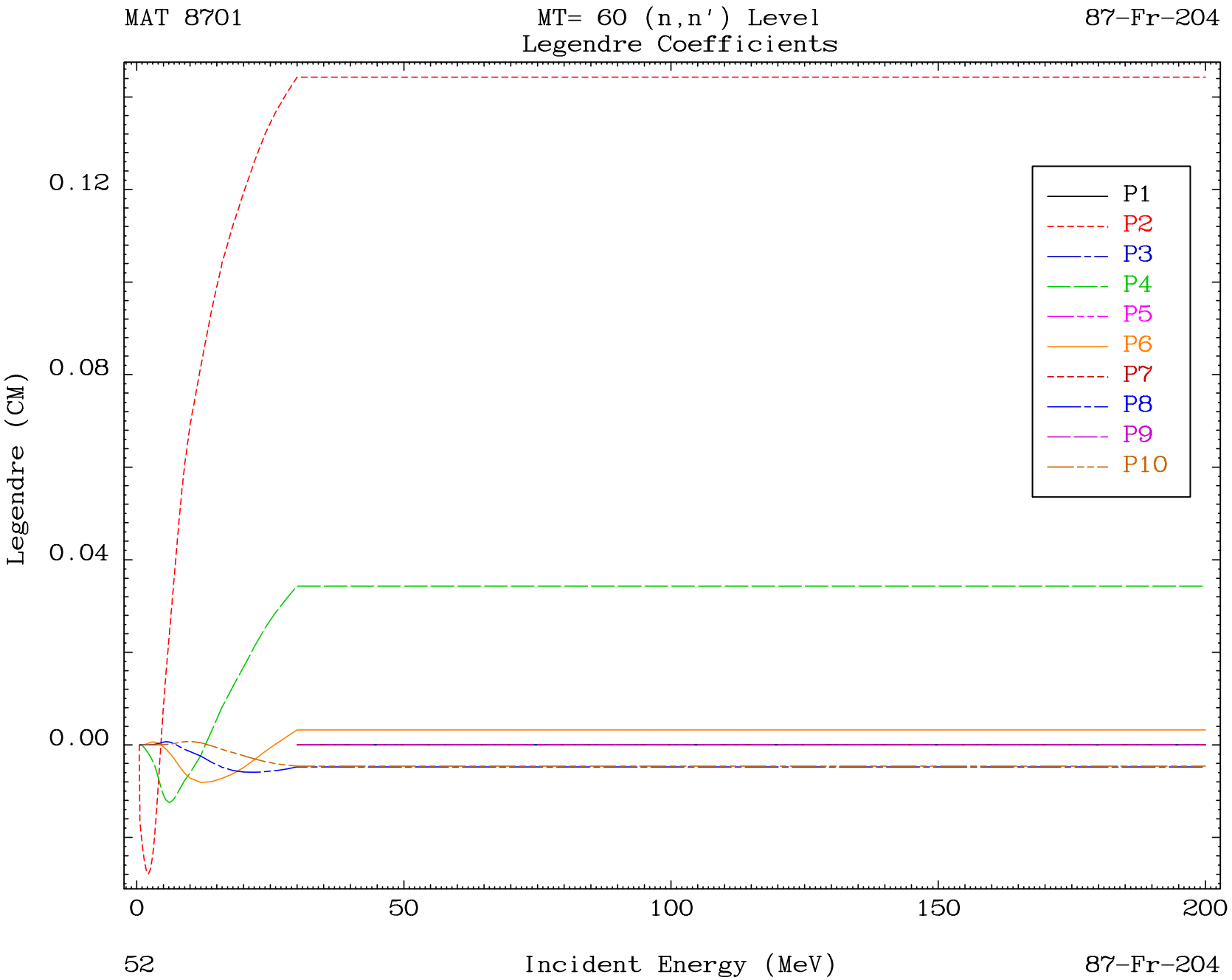

MAT 8701
MT= 58 (n,n') Level
Legendre Coefficients
87-Fr-204
X10 -4
6
4
2
0
Legendre (CM)
P19
P20
P21
P22
P23
P24
P25
P26
P27
50
100
150
200
47
Incident Energy (MeV)
87-Fr-204

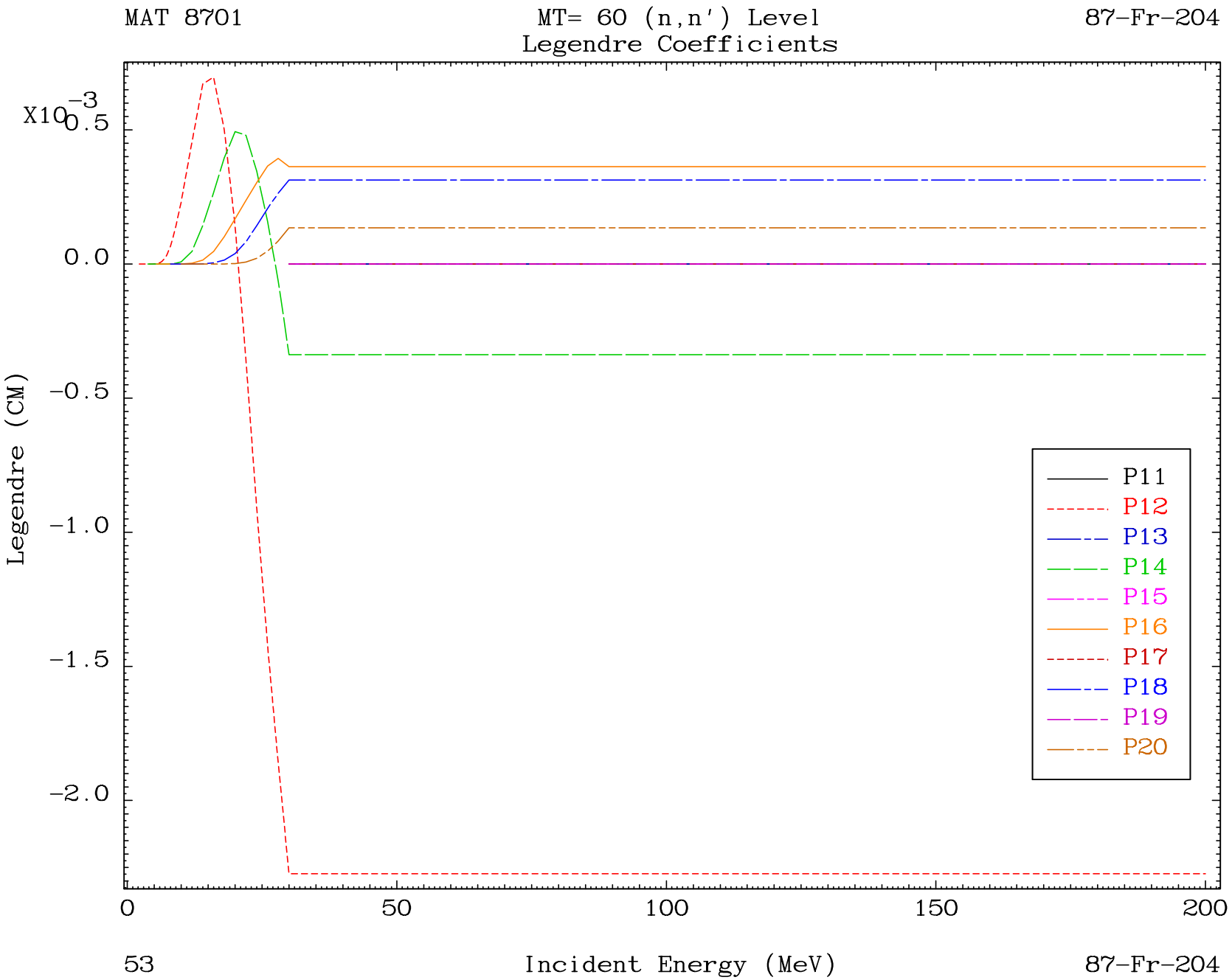

MAT 8701
MT= 58 (n,n') Level
Legendre Coefficients
87-Fr-204
X10^-8
2.0
1.5
1.0
0.5
0.0
-0.5
Legendre (CM)
P28
P29
P30
P31
P32
P33
P34
P35
P36
50
100
150
200
48
Incident Energy (MeV)
87-Fr-204

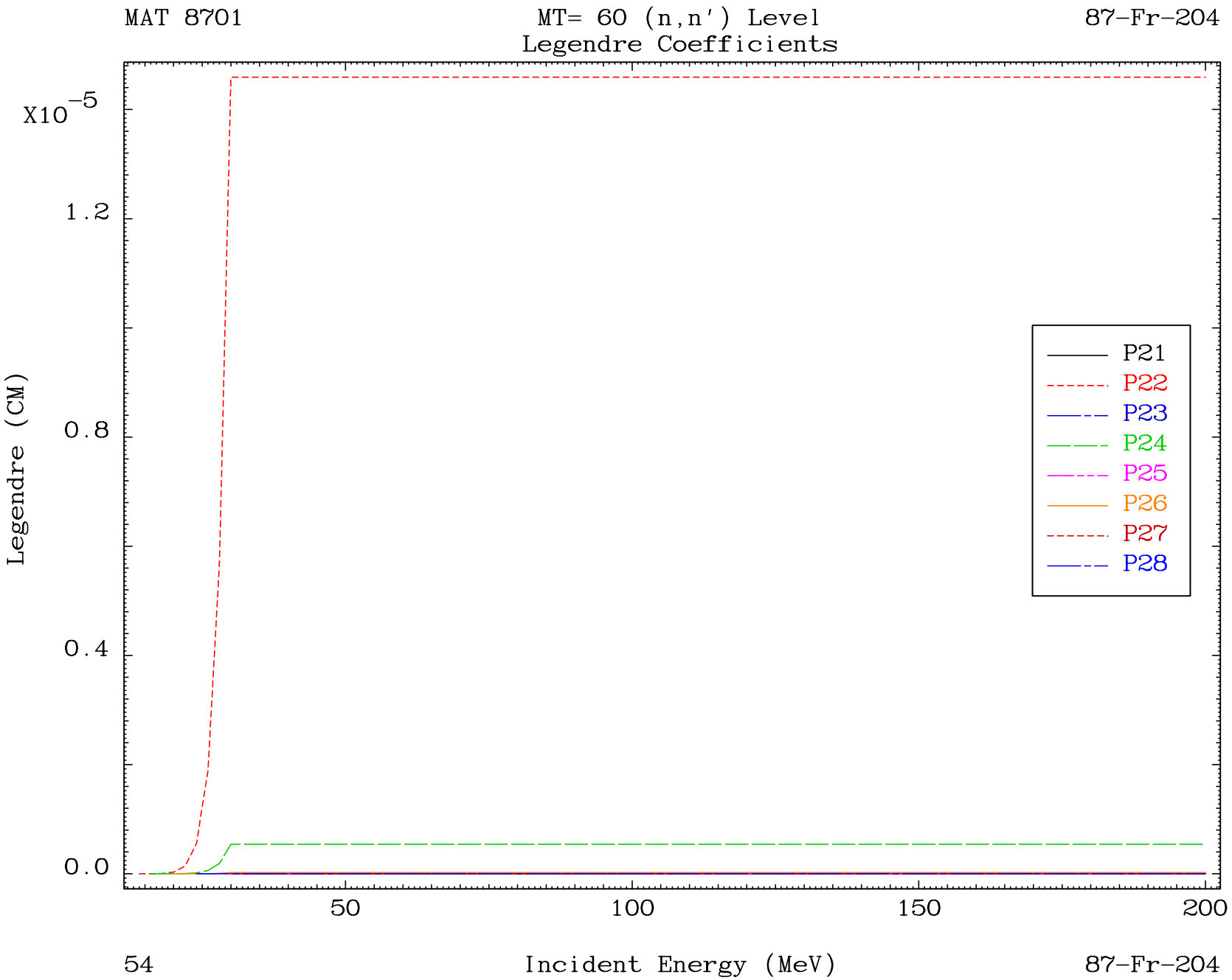

MAT 8701
MT= 59 (n,n') Level
Legendre Coefficients
87-Fr-204
Legendre (CM)
0.12
0.10
0.08
0.06
0.04
0.02
0.00
0
50
100
150
200
P1
P2
P3
P4
P5
P6
P7
P8
P9
49
Incident Energy (MeV)
87-Fr-204

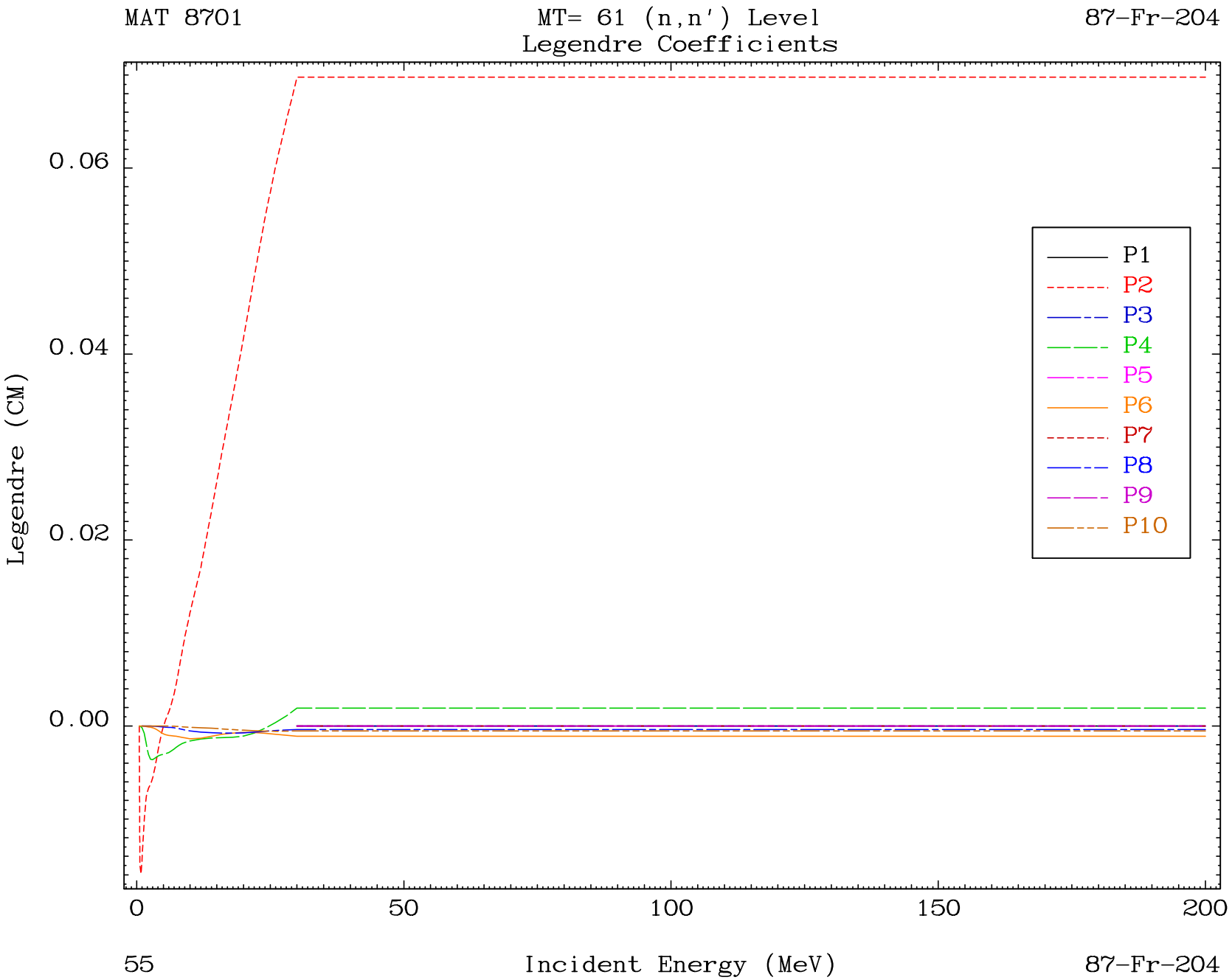

MAT 8701
MT= 59 (n,n') Level
Legendre Coefficients
87-Fr-204
X10^-4
2
1
0
-1
Legendre (CM)
P10
P11
P12
P13
P14
P15
P16
P17
P18
0
50
100
150
200
50
Incident Energy (MeV)
87-Fr-204

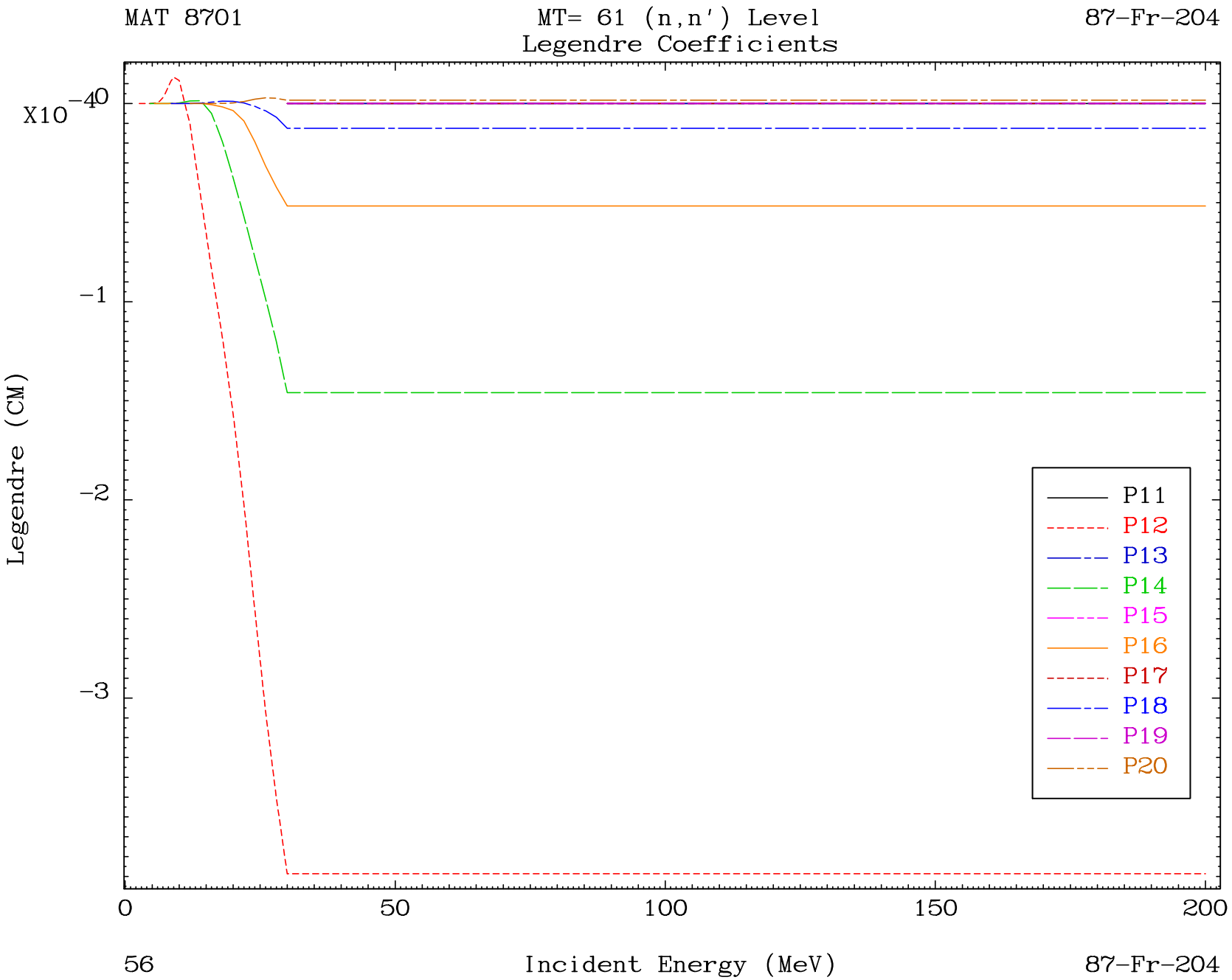

MAT 8701
MT= 59 (n,n') Level
Legendre Coefficients
87-Fr-204
0
X10 −6
−2
−4
−6
−8
Legendre (CM)
P19
P20
P21
P22
P23
P24
P25
P26
50
100
150
200
51
Incident Energy (MeV)
87-Fr-204

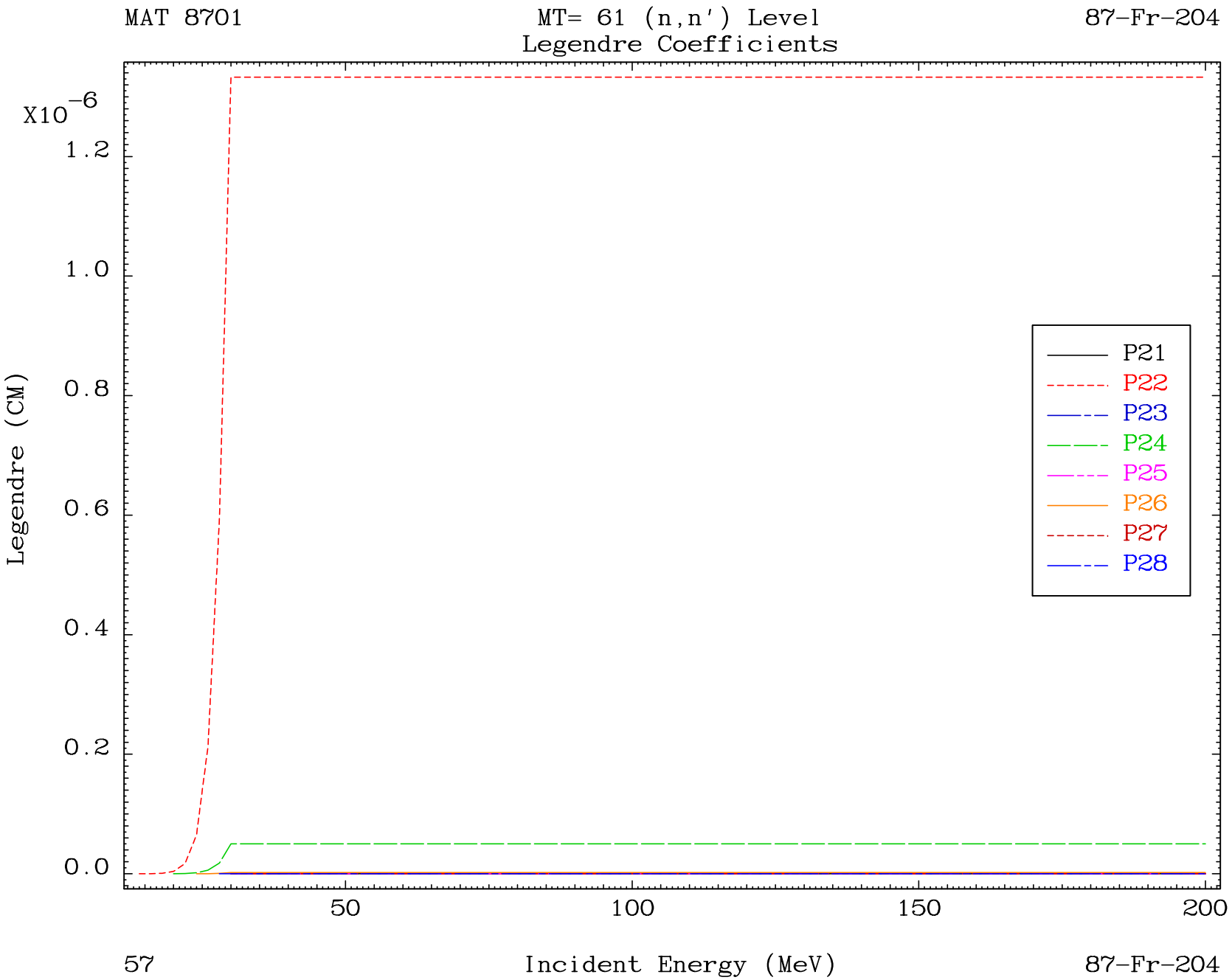

MAT 8701
MT= 60 (n,n') Level
Legendre Coefficients
87-Fr-204
0.12
0.08
0.04
0.00
Legendre (CM)
P1
P2
P3
P4
P5
P6
P7
P8
P9
P10
0
50
100
150
200
52
Incident Energy (MeV)
87-Fr-204

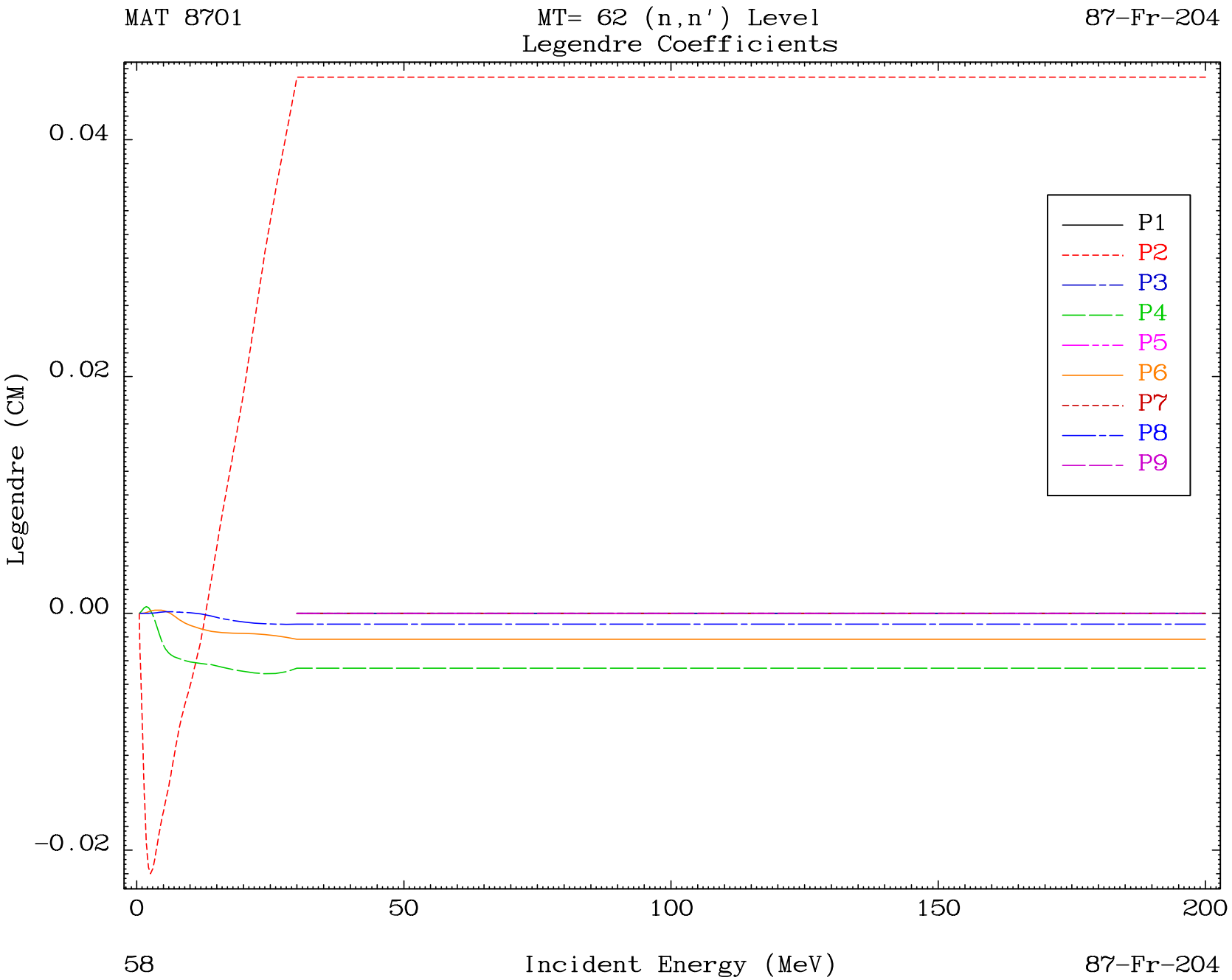

MAT 8701
MT= 60 (n,n') Level
Legendre Coefficients
87-Fr-204
X10^-3
0.5
0.0
-0.5
-1.0
-1.5
-2.0
Legendre (CM)
0
50
100
150
200
P11
P12
P13
P14
P15
P16
P17
P18
P19
P20
53
Incident Energy (MeV)
87-Fr-204

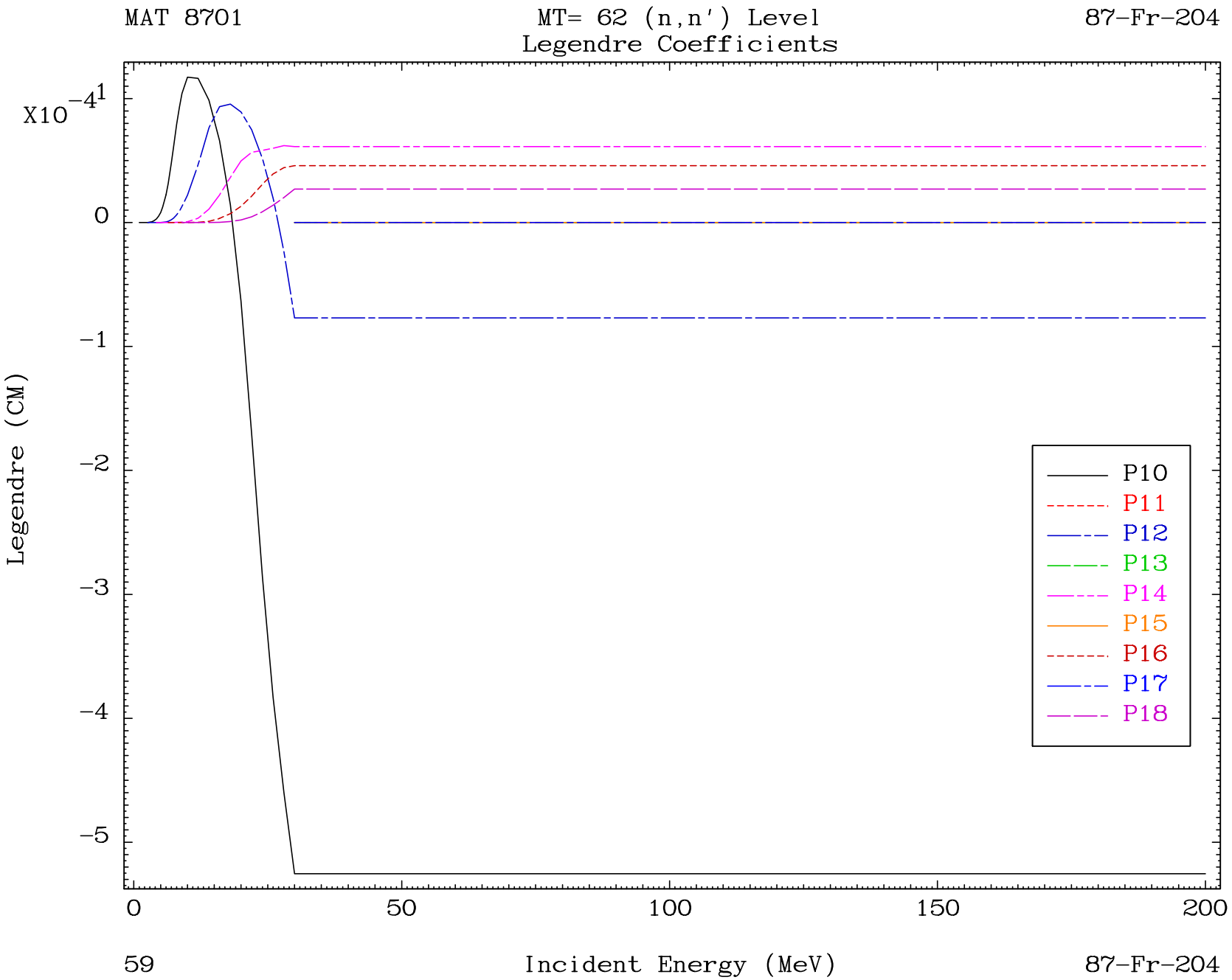

MAT 8701
MT= 60 (n,n') Level
Legendre Coefficients
87-Fr-204
X10^-5
1.2
0.8
0.4
0.0
Legendre (CM)
50
100
150
200
54
Incident Energy (MeV)
87-Fr-204
P21
P22
P23
P24
P25
P26
P27
P28

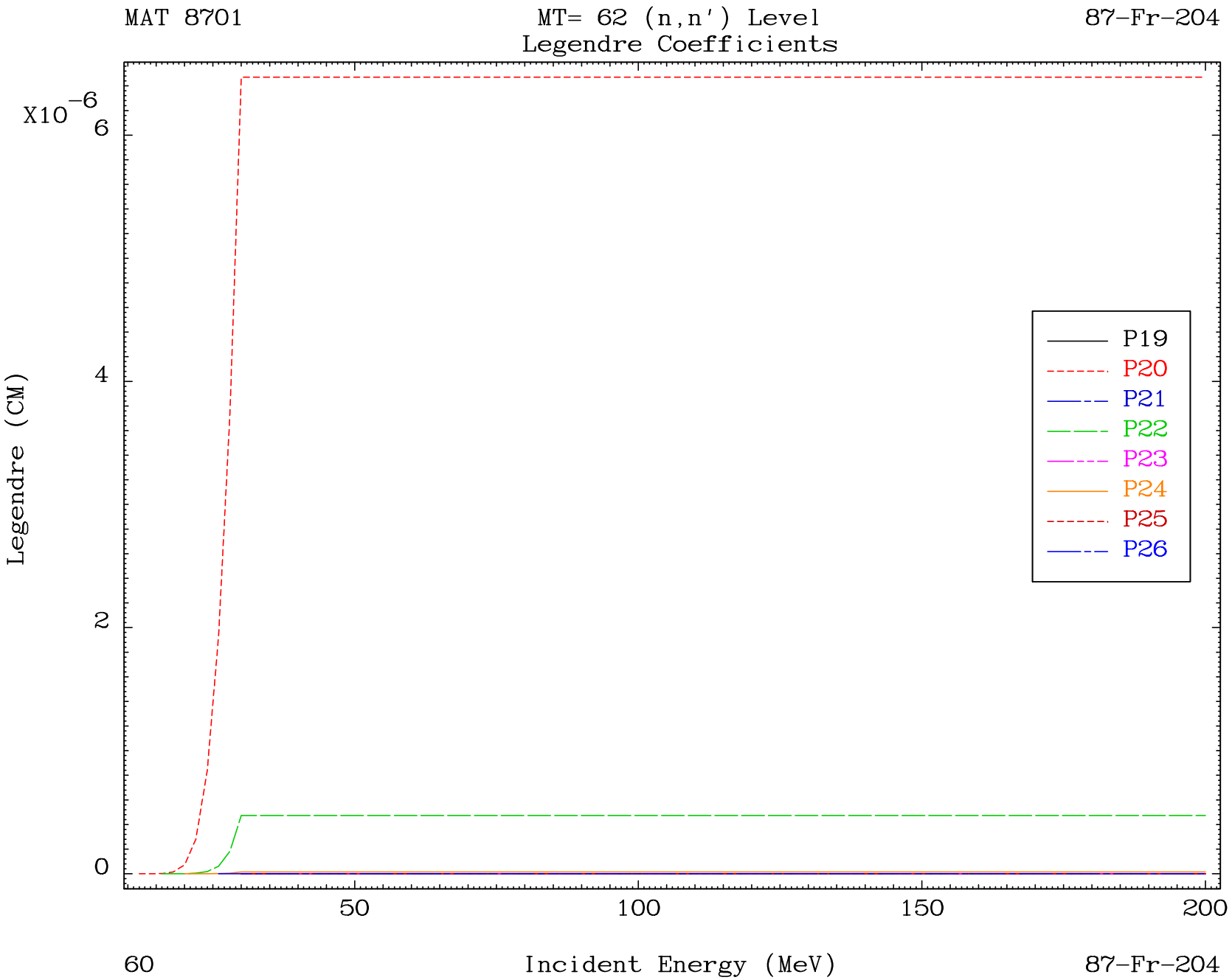

MAT 8701
MT= 61 (n,n') Level
Legendre Coefficients
87-Fr-204
0.06
0.04
0.02
0.00
Legendre (CM)
P1
P2
P3
P4
P5
P6
P7
P8
P9
P10
0
50
100
150
200
55
Incident Energy (MeV)
87-Fr-204

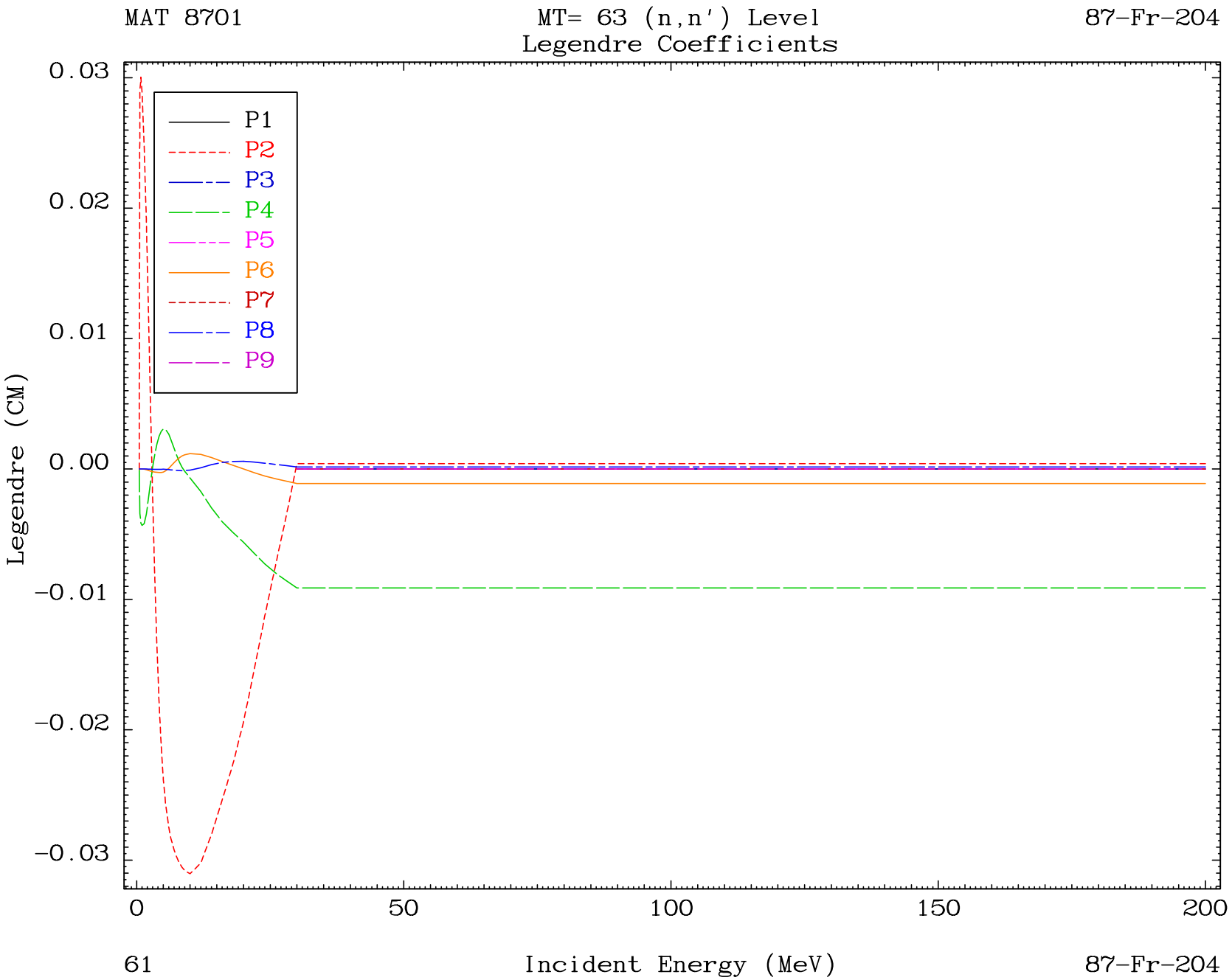

MAT 8701
MT= 61 (n,n') Level
Legendre Coefficients
87-Fr-204
X10^-40
-1
-2
-3
Legendre (CM)
0
50
100
150
200
56
Incident Energy (MeV)
87-Fr-204
P11
P12
P13
P14
P15
P16
P17
P18
P19
P20

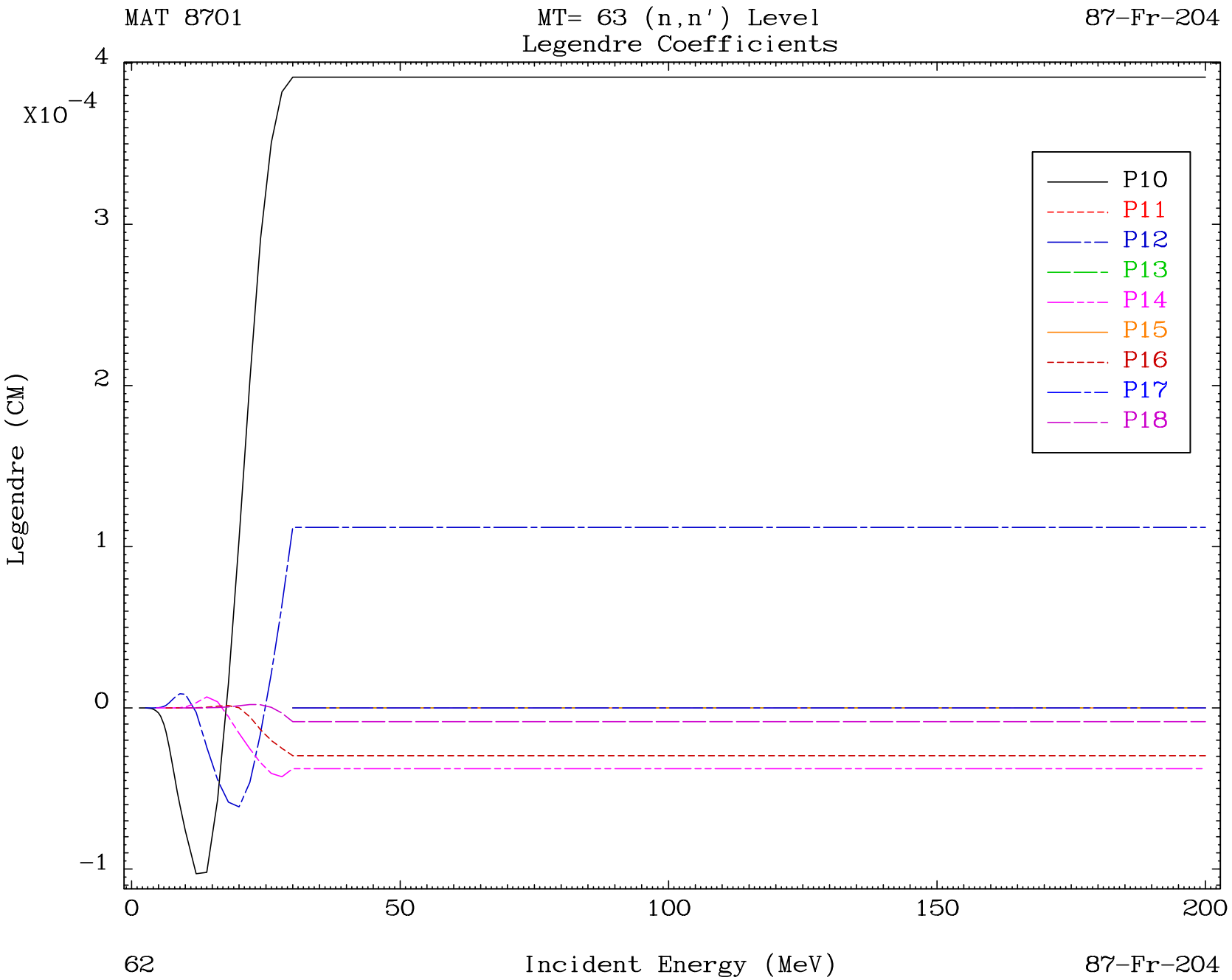

MAT 8701
MT= 61 (n,n') Level
Legendre Coefficients
87-Fr-204
X10^-6
1.2
1.0
0.8
0.6
0.4
0.2
0.0
Legendre (CM)
P21
P22
P23
P24
P25
P26
P27
P28
50
100
150
200
57
Incident Energy (MeV)
87-Fr-204

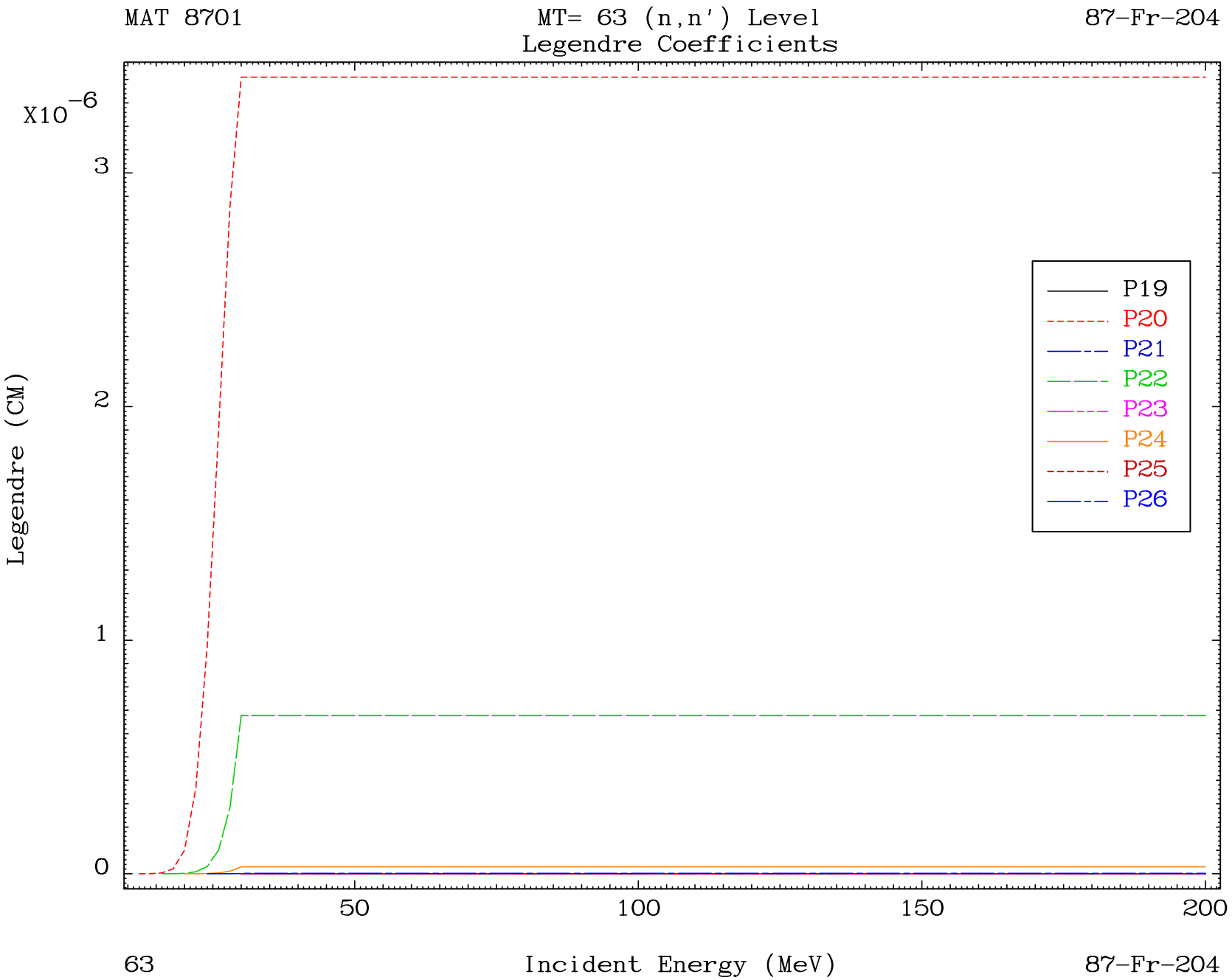

MAT 8701
MT= 62 (n,n') Level
Legendre Coefficients
87-Fr-204
0.04
0.02
0.00
-0.02
Legendre (CM)
P1
P2
P3
P4
P5
P6
P7
P8
P9
0
50
100
150
200
58
Incident Energy (MeV)
87-Fr-204

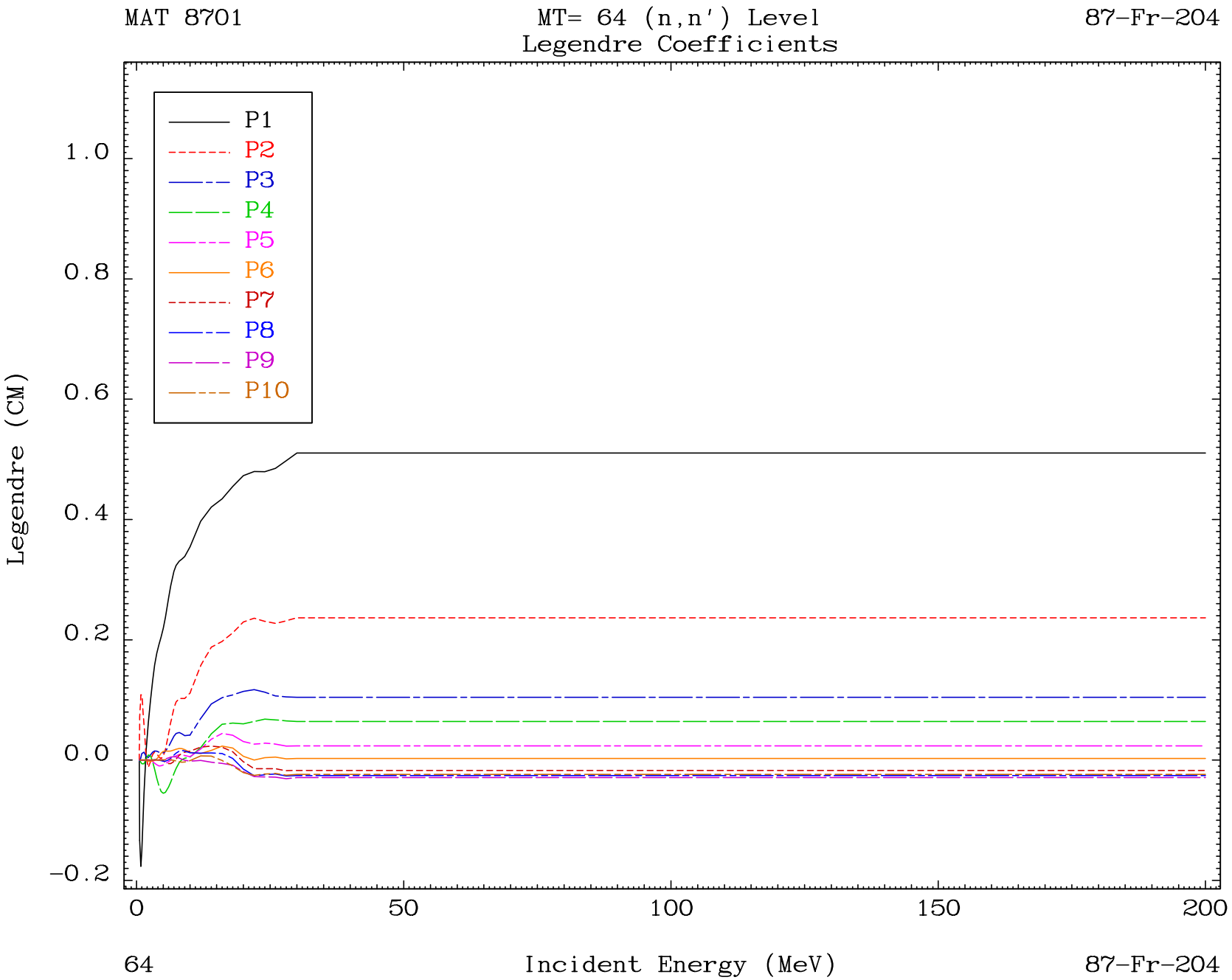

MAT 8701
MT= 62 (n,n') Level
Legendre Coefficients
87-Fr-204
X10^-41
0
-1
-2
-3
-4
-5
Legendre (CM)
0
50
100
150
200
59
Incident Energy (MeV)
87-Fr-204
P10
P11
P12
P13
P14
P15
P16
P17
P18

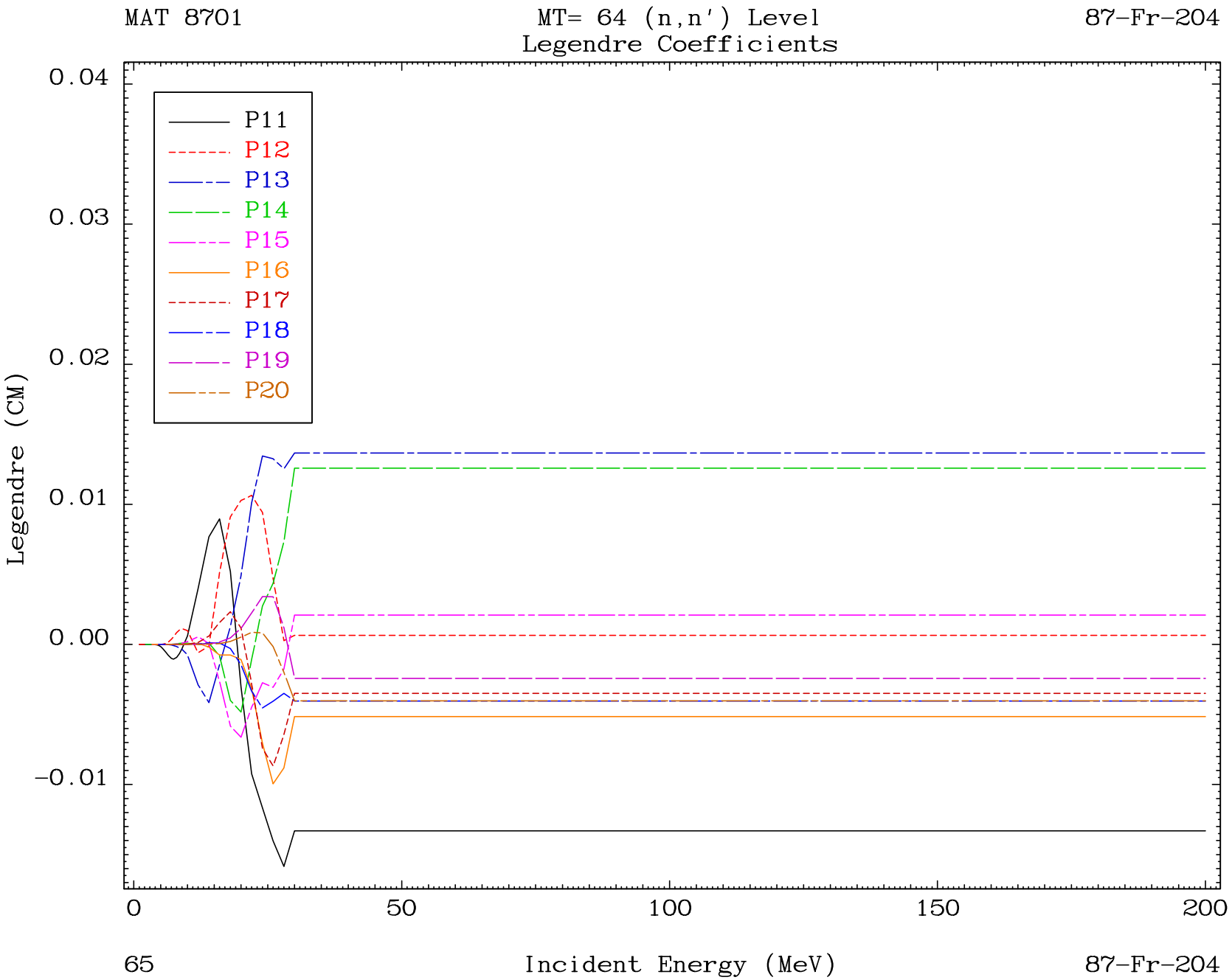

MAT 8701
MT= 62 (n,n') Level
Legendre Coefficients
87-Fr-204
X10 -6
6
4
2
0
Legendre (CM)
P19
P20
P21
P22
P23
P24
P25
P26
50
100
150
200
60
Incident Energy (MeV)
87-Fr-204

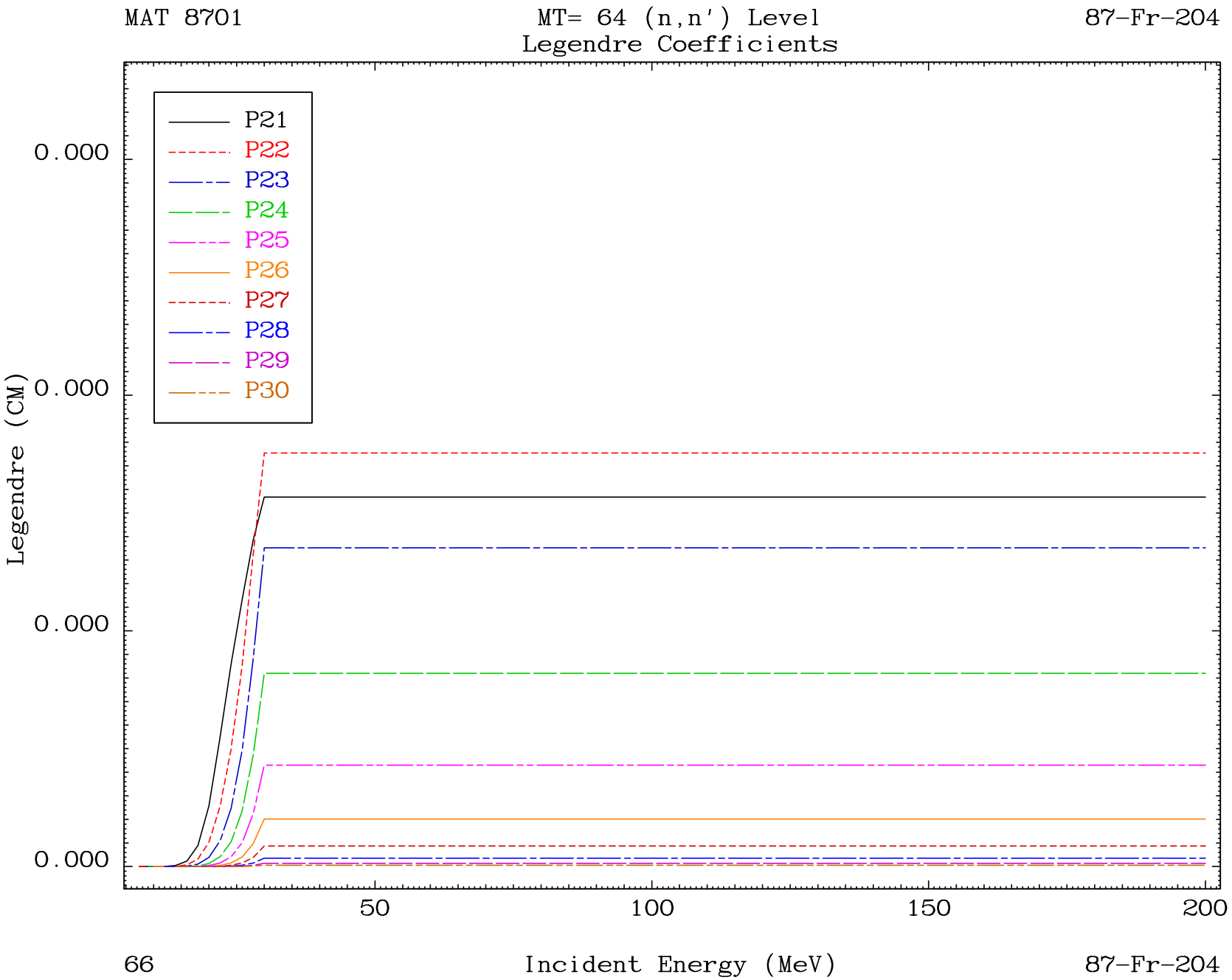

MAT 8701
MT= 63 (n,n') Level
Legendre Coefficients
87-Fr-204
P1
P2
P3
P4
P5
P6
P7
P8
P9
0.03
0.02
0.01
0.00
-0.01
-0.02
-0.03
Legendre (CM)
0
50
100
150
200
61
Incident Energy (MeV)
87-Fr-204

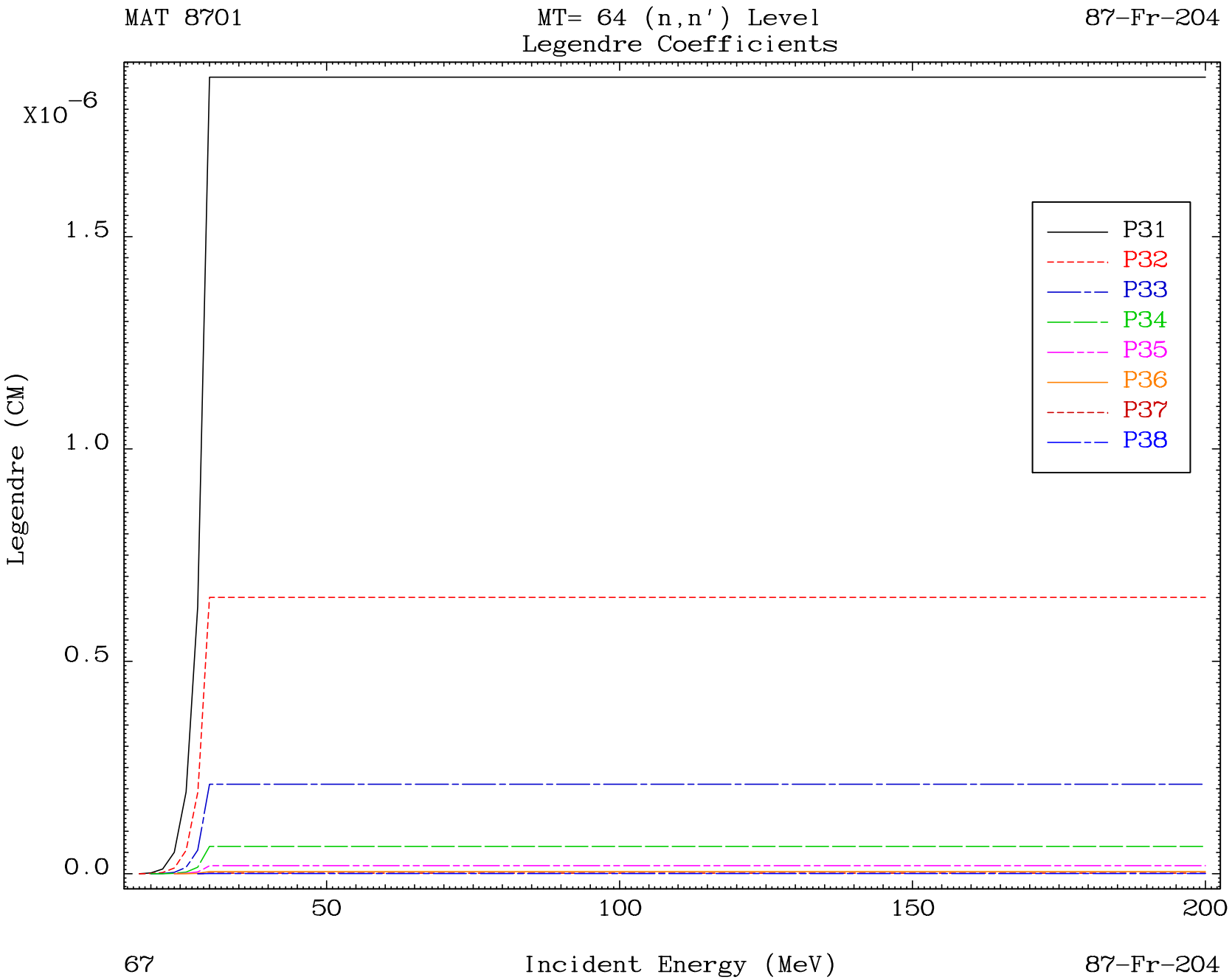

MAT 8701
MT= 63 (n,n') Level
Legendre Coefficients
87-Fr-204
X10^-4
4
3
2
1
0
-1
Legendre (CM)
P10
P11
P12
P13
P14
P15
P16
P17
P18
0
50
100
150
200
62
Incident Energy (MeV)
87-Fr-204

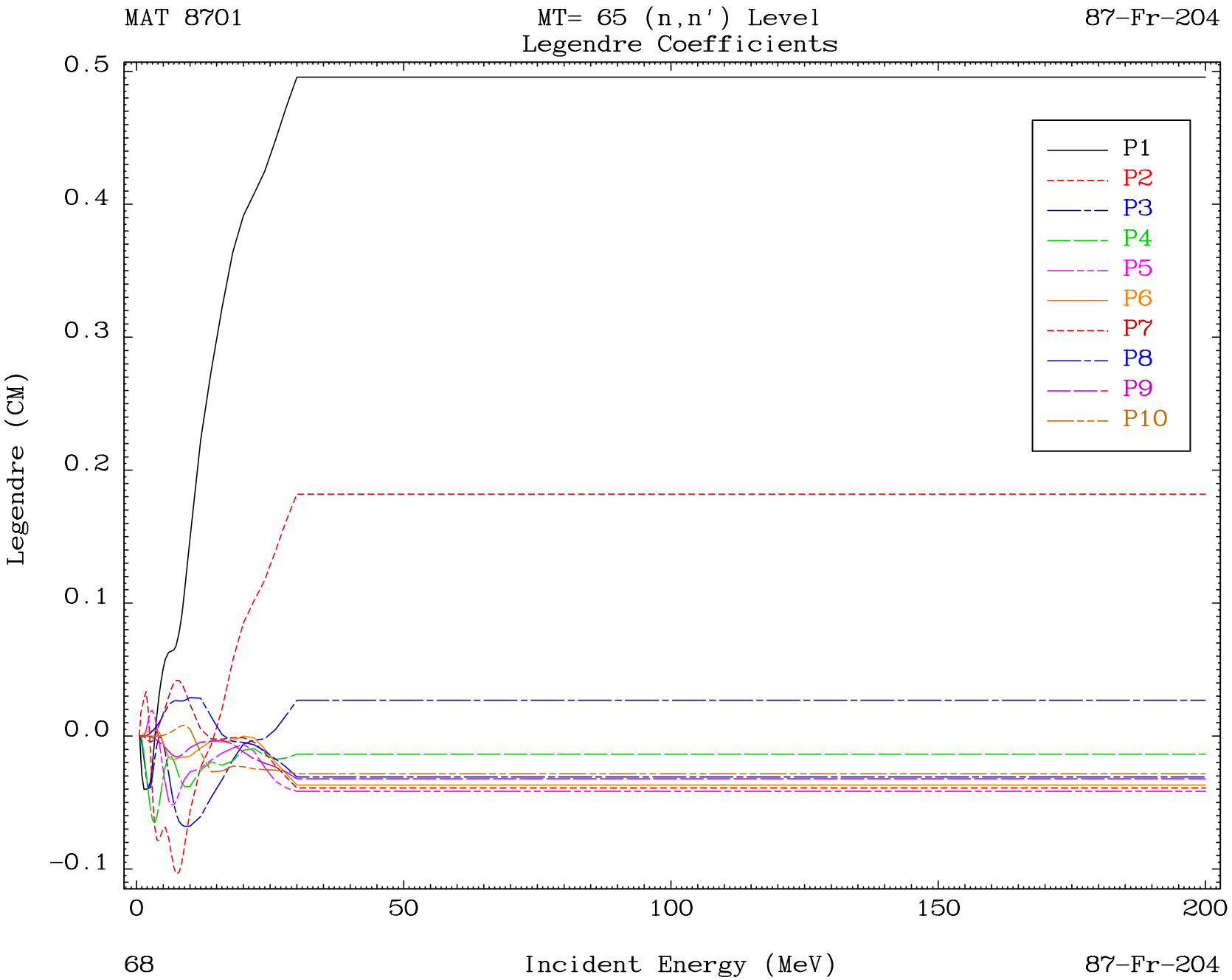

MAT 8701
MT= 63 (n,n') Level
Legendre Coefficients
87-Fr-204
X10^-6
3
2
1
0
Legendre (CM)
P19
P20
P21
P22
P23
P24
P25
P26
50
100
150
200
63
Incident Energy (MeV)
87-Fr-204

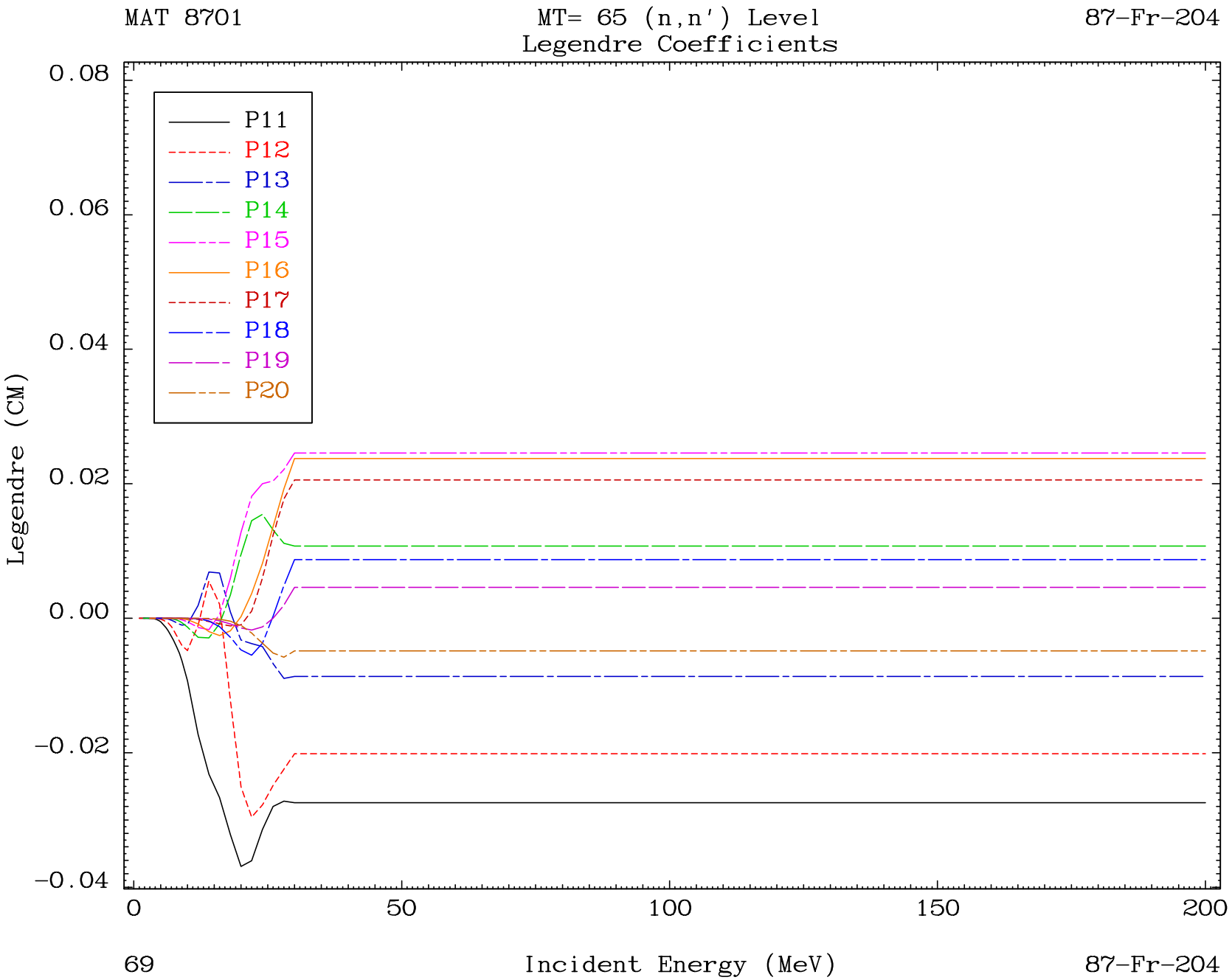

MAT 8701
MT= 64 (n,n') Level
Legendre Coefficients
87-Fr-204
P1
P2
P3
P4
P5
P6
P7
P8
P9
P10
Legendre (CM)
1.0
0.8
0.6
0.4
0.2
0.0
-0.2
0
50
100
150
200
64
Incident Energy (MeV)
87-Fr-204

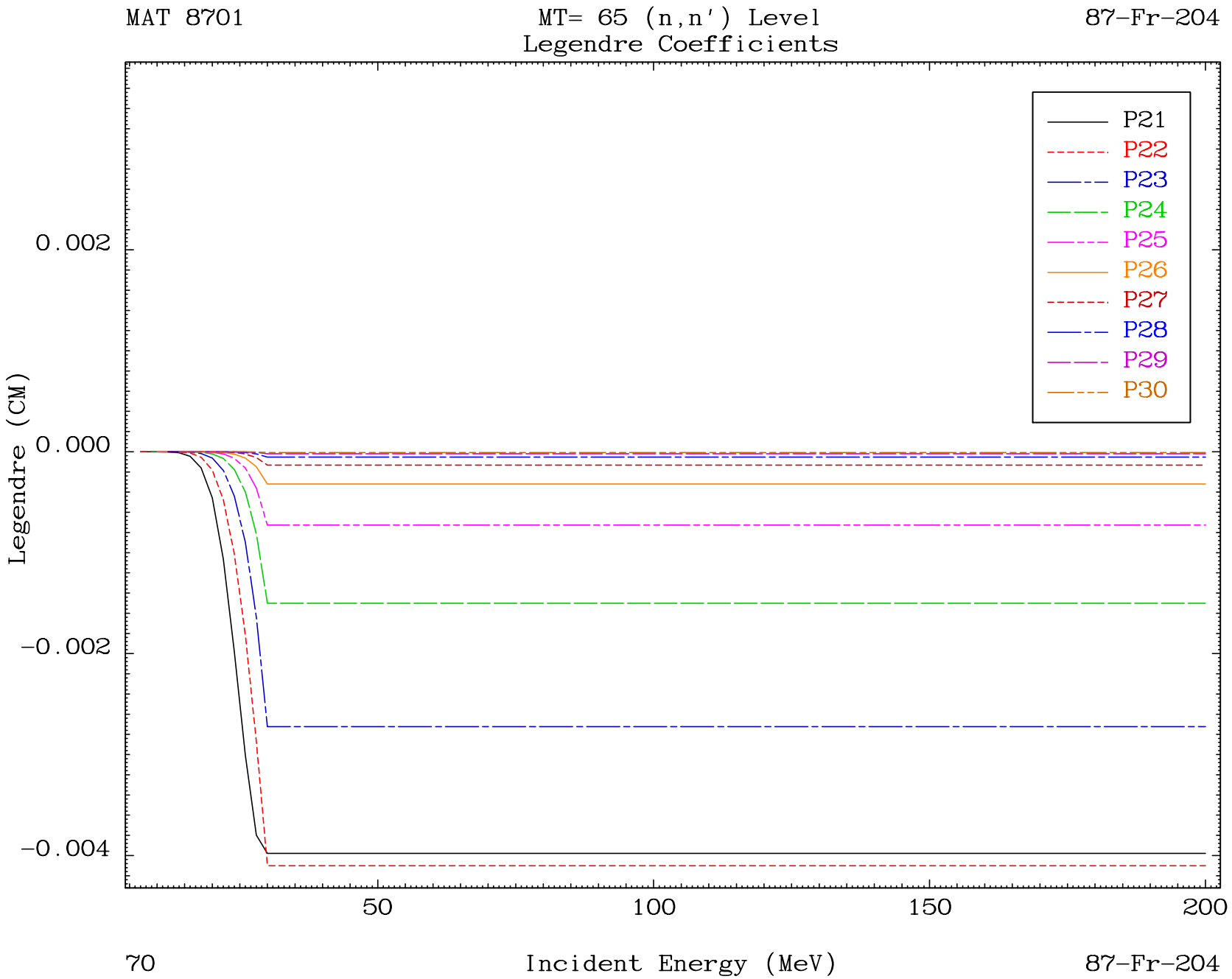

MAT 8701
MT= 64 (n,n') Level
Legendre Coefficients
87-Fr-204
P11
P12
P13
P14
P15
P16
P17
P18
P19
P20
0.04
0.03
0.02
0.01
0.00
-0.01
Legendre (CM)
0
50
100
150
200
65
Incident Energy (MeV)
87-Fr-204

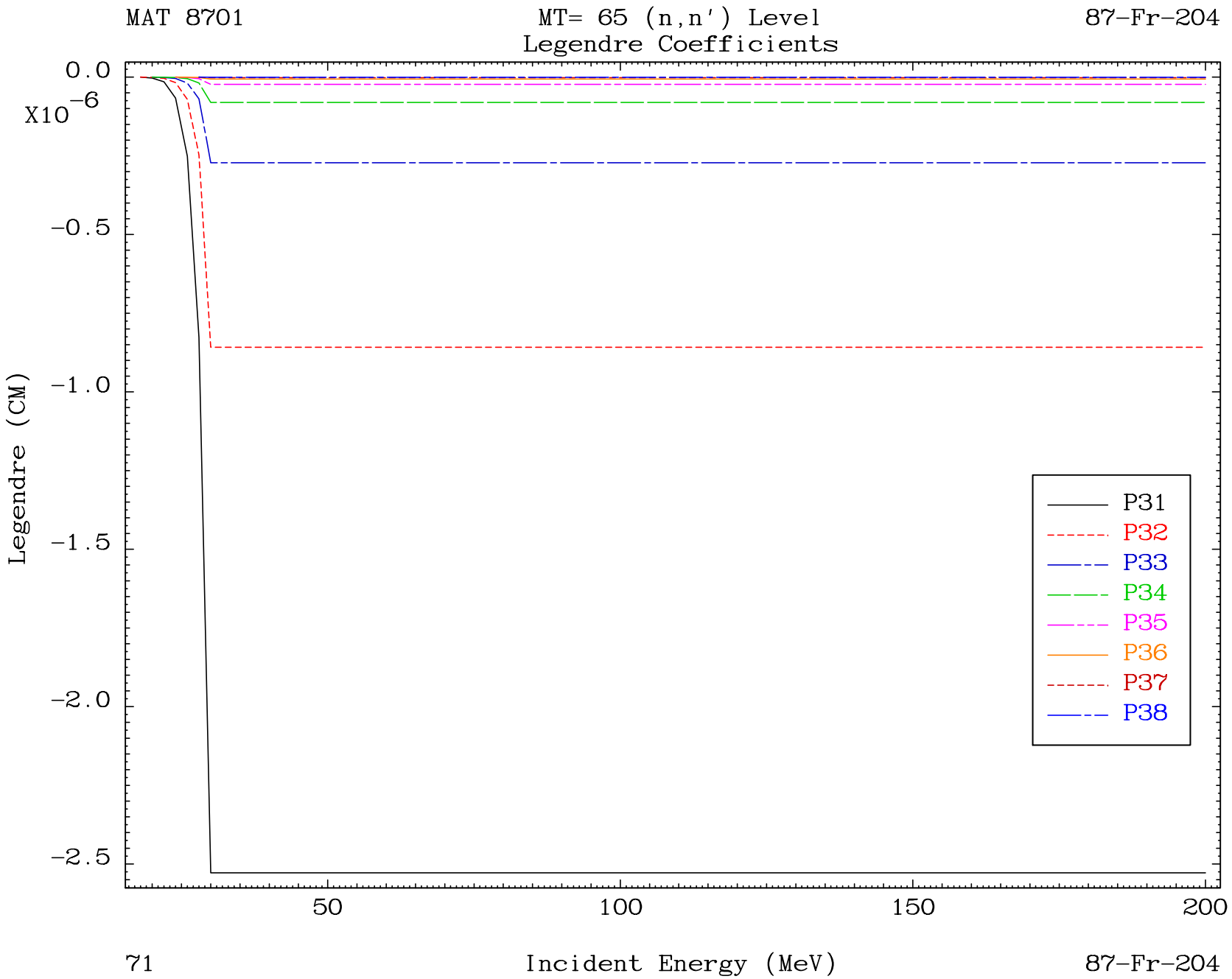

MAT 8701
MT= 64 (n,n') Level
Legendre Coefficients
87-Fr-204
P21
P22
P23
P24
P25
P26
P27
P28
P29
P30
0.000
0.000
0.000
0.000
Legendre (CM)
50
100
150
200
66
Incident Energy (MeV)
87-Fr-204

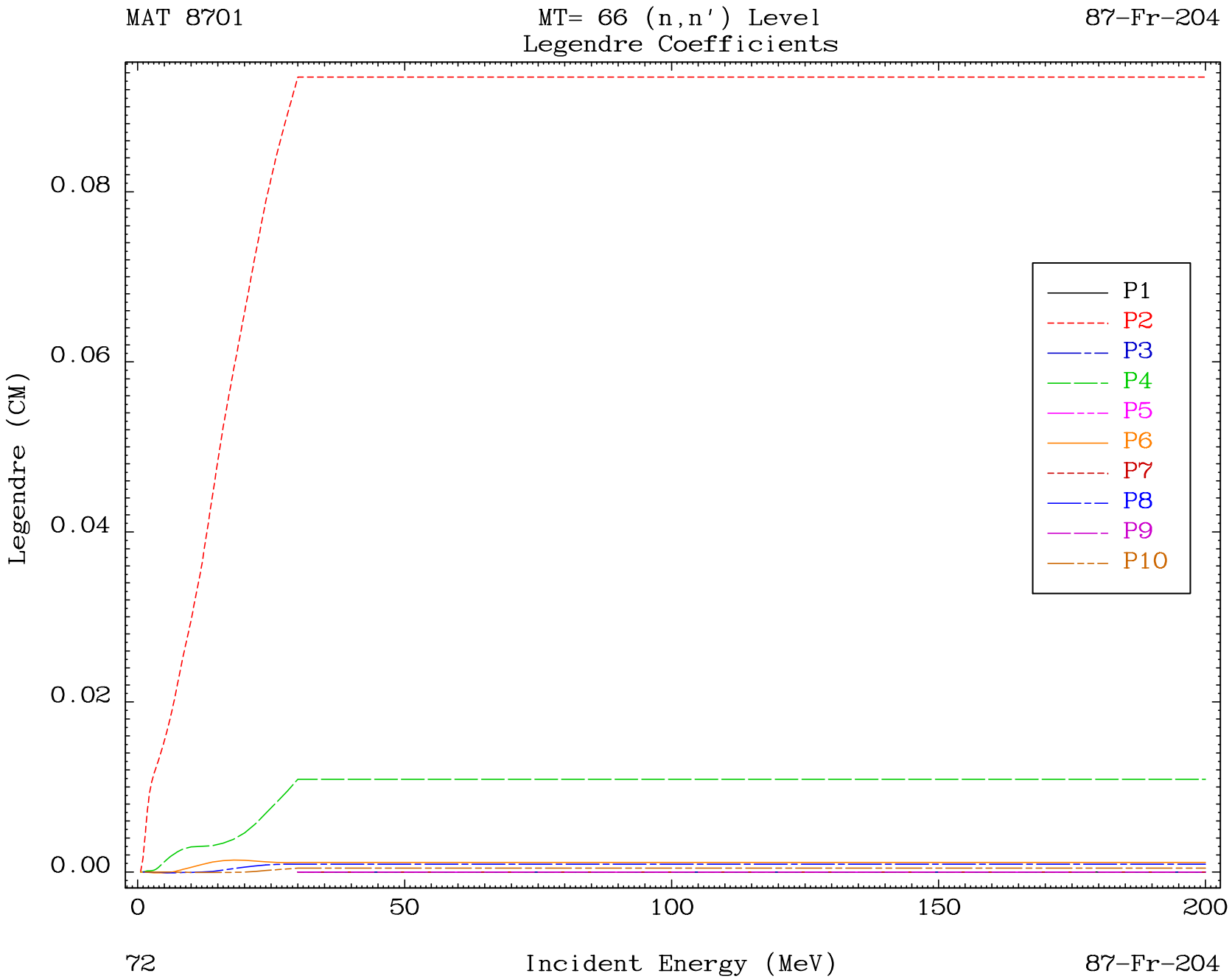

MAT 8701
MT= 64 (n,n') Level
Legendre Coefficients
87-Fr-204
X10 −6
1.5
1.0
0.5
0.0
Legendre (CM)
P31
P32
P33
P34
P35
P36
P37
P38
50
100
150
200
67
Incident Energy (MeV)
87-Fr-204

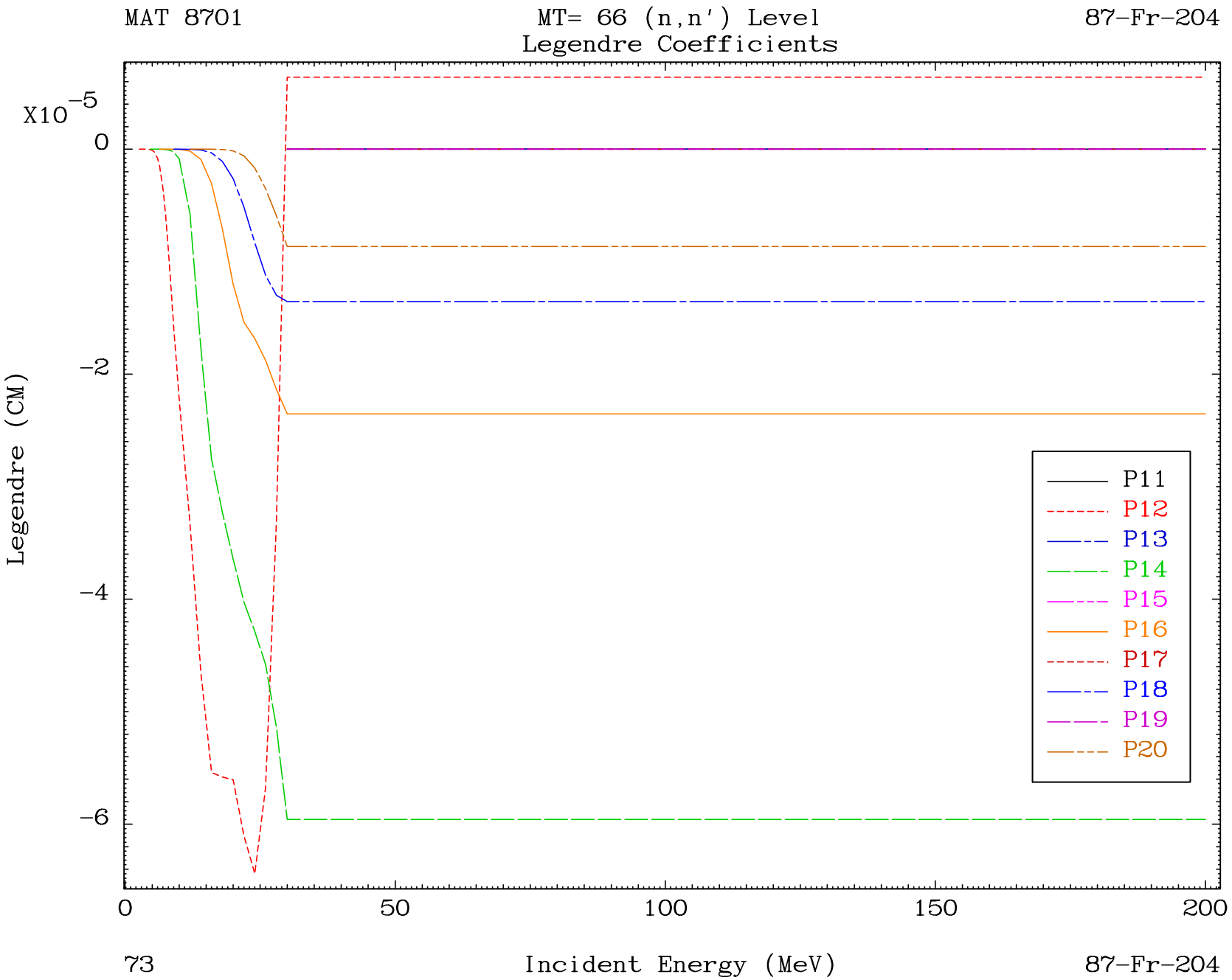

MAT 8701
MT= 65 (n,n') Level
Legendre Coefficients
87-Fr-204
0.5
0.4
0.3
0.2
0.1
0.0
-0.1
Legendre (CM)
P1
P2
P3
P4
P5
P6
P7
P8
P9
P10
0
50
100
150
200
68
Incident Energy (MeV)
87-Fr-204

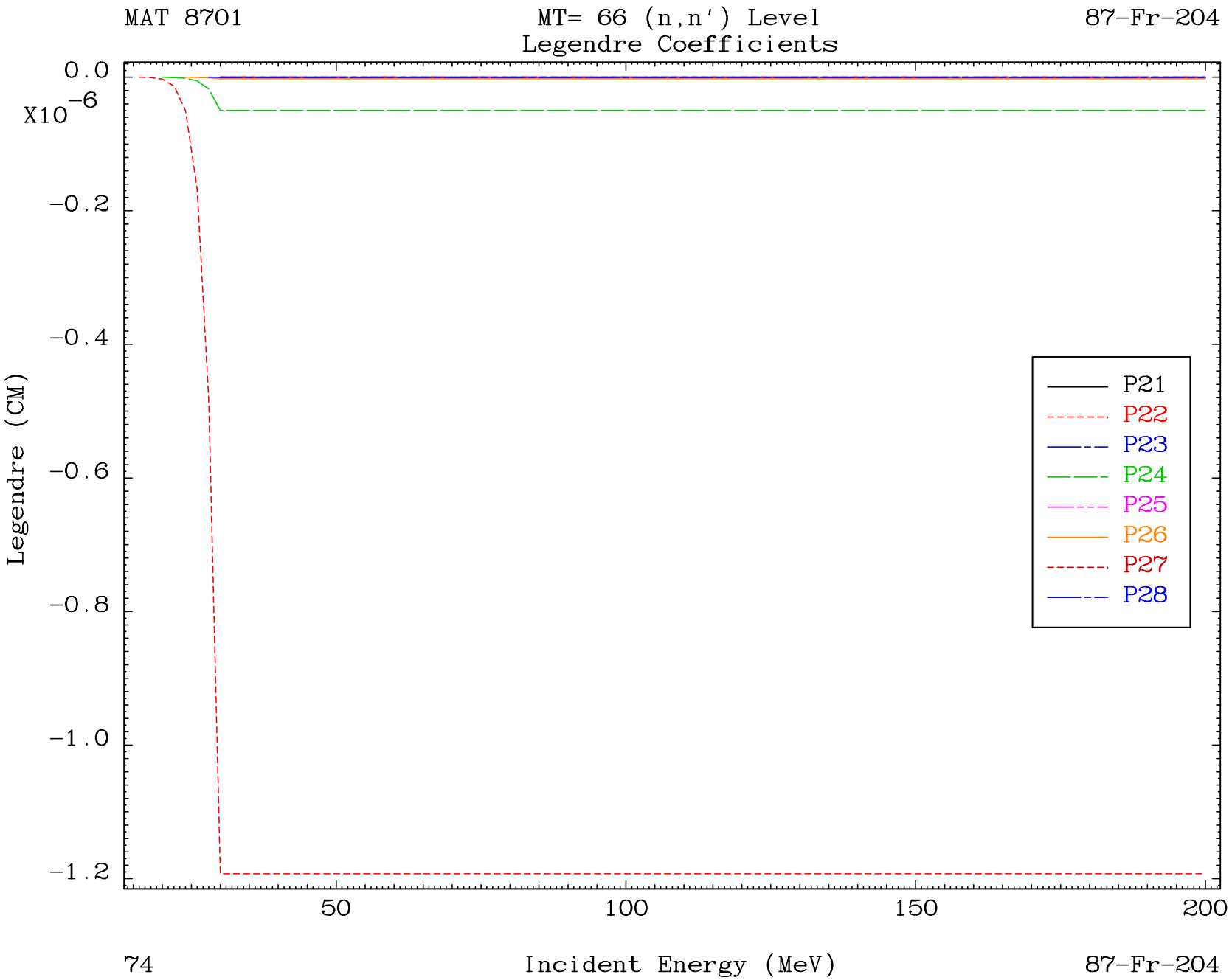

MAT 8701
MT= 65 (n,n') Level
Legendre Coefficients
87-Fr-204
P11
P12
P13
P14
P15
P16
P17
P18
P19
P20
0.08
0.06
0.04
0.02
0.00
-0.02
-0.04
Legendre (CM)
0
50
100
150
200
69
Incident Energy (MeV)
87-Fr-204

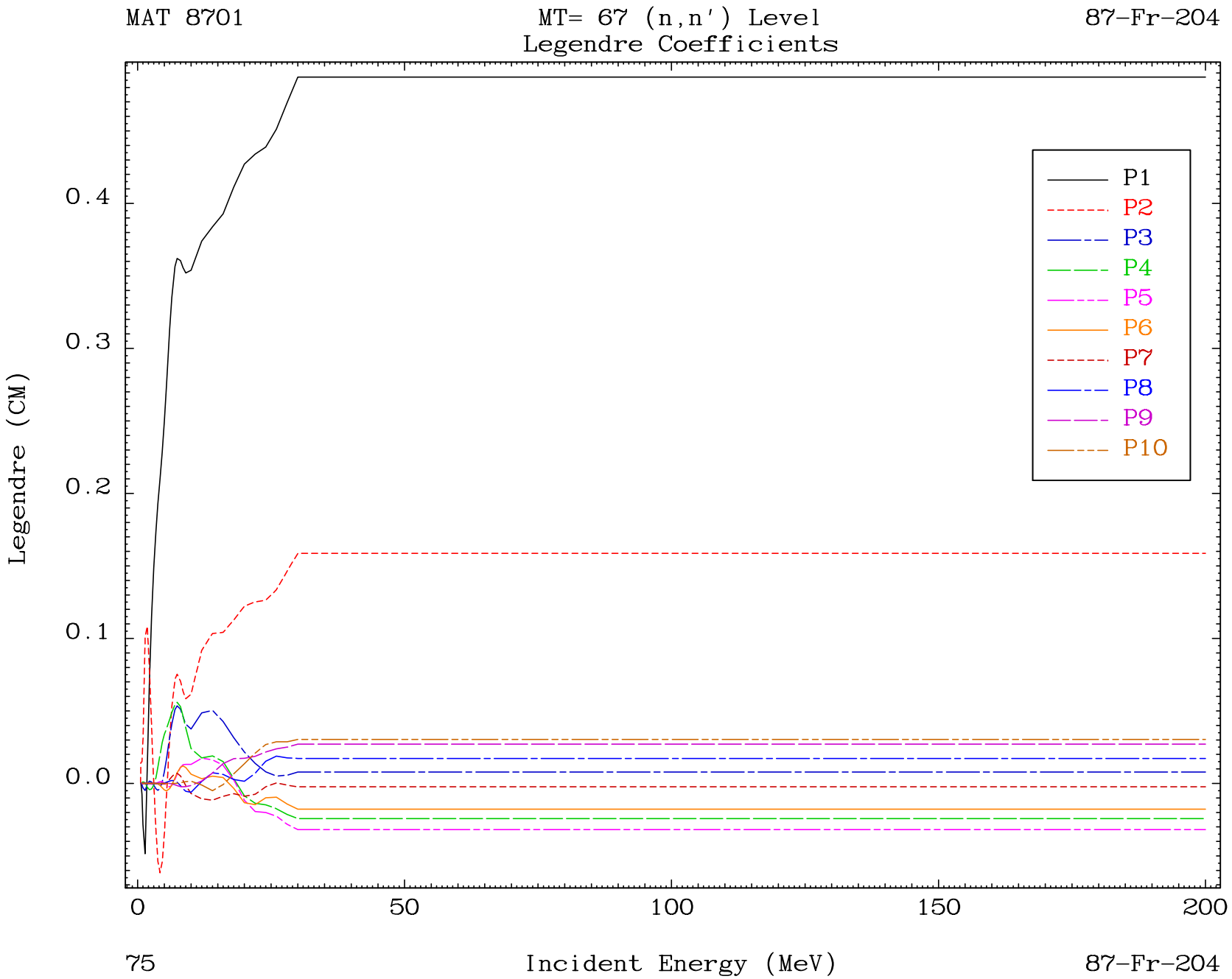

MAT 8701
MT= 65 (n,n') Level
Legendre Coefficients
87-Fr-204
P21
P22
P23
P24
P25
P26
P27
P28
P29
P30
0.002
0.000
-0.002
-0.004
Legendre (CM)
50
100
150
200
70
Incident Energy (MeV)
87-Fr-204

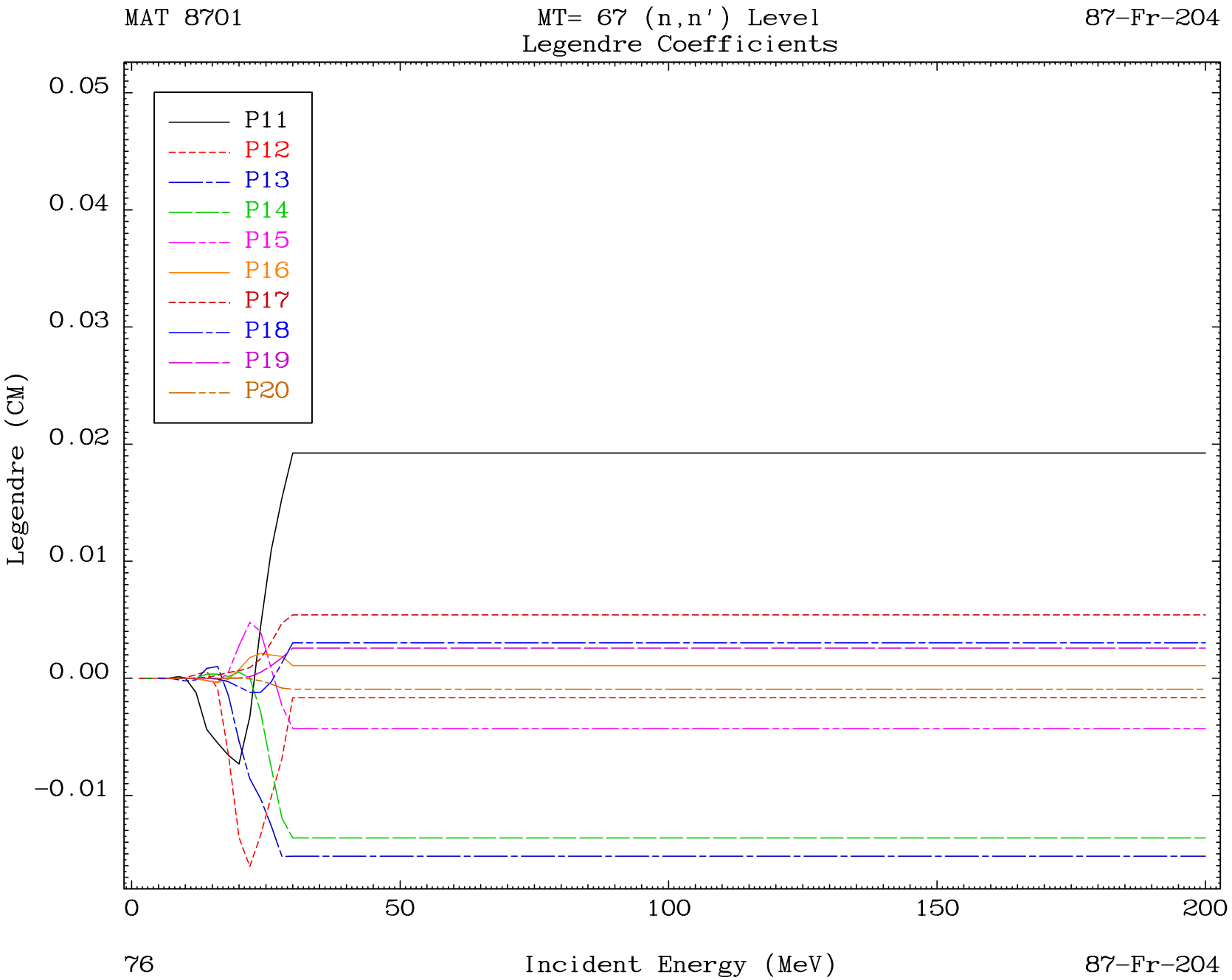

MAT 8701
MT= 65 (n,n') Level
Legendre Coefficients
87-Fr-204
0.0
X10^-6
-0.5
-1.0
-1.5
-2.0
-2.5
Legendre (CM)
50
100
150
200
71
Incident Energy (MeV)
87-Fr-204
P31
P32
P33
P34
P35
P36
P37
P38

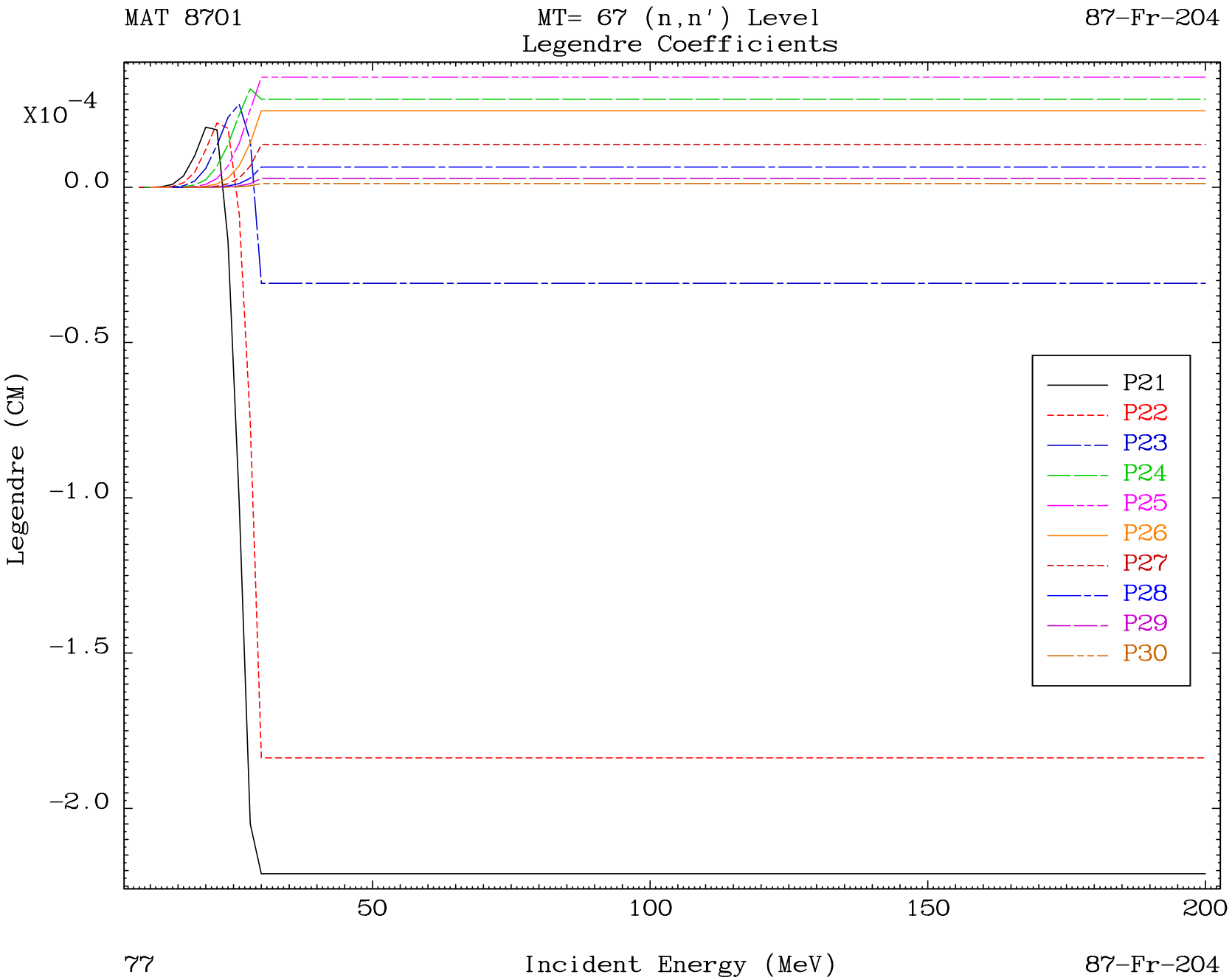

MAT 8701
MT= 66 (n,n') Level
Legendre Coefficients
87-Fr-204
Legendre (CM)
0.08
0.06
0.04
0.02
0.00
0
50
100
150
200
P1
P2
P3
P4
P5
P6
P7
P8
P9
P10
72
Incident Energy (MeV)
87-Fr-204

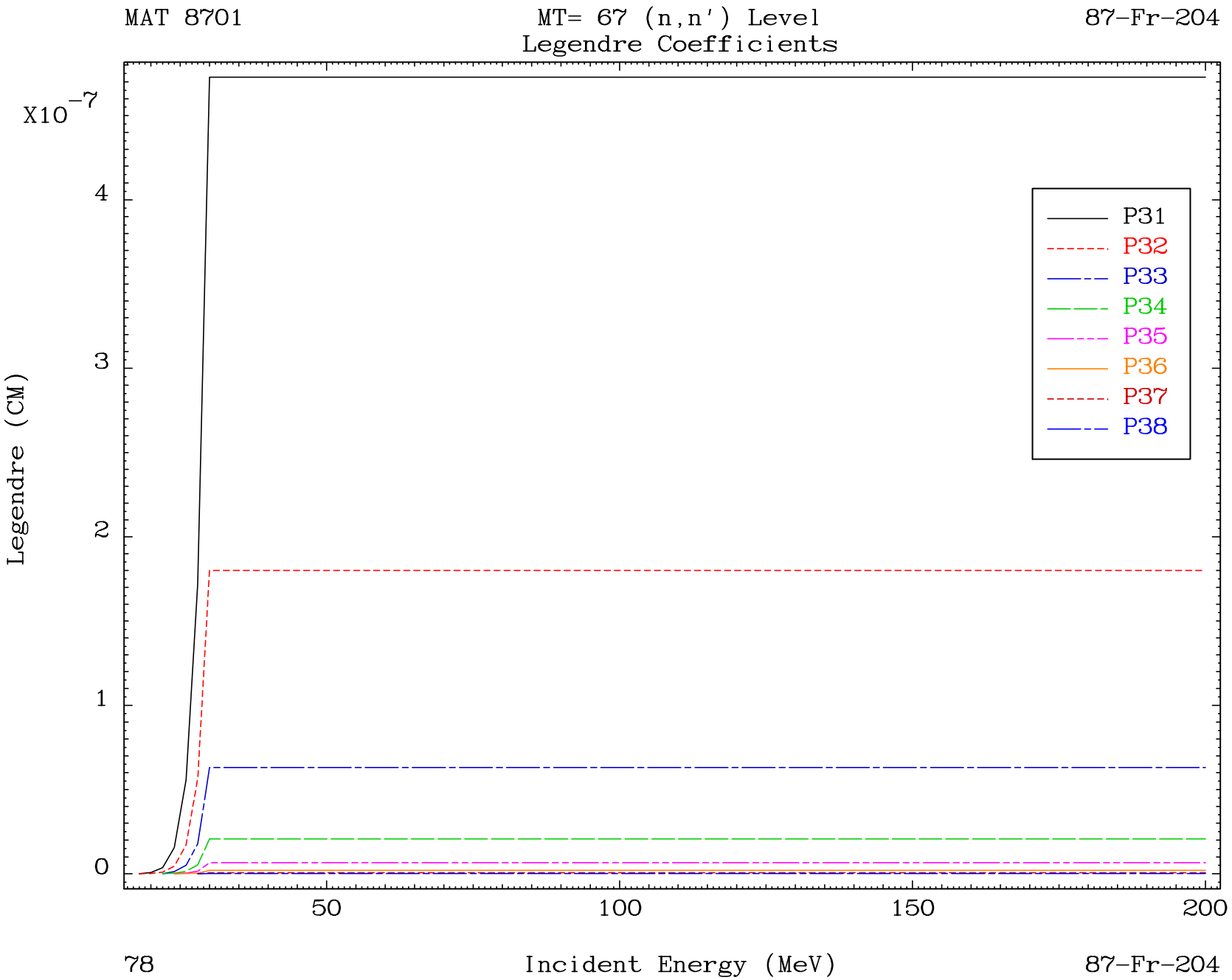

MAT 8701
MT= 66 (n,n') Level
Legendre Coefficients
87-Fr-204
X10^-5
0
-2
-4
-6
Legendre (CM)
0
50
100
150
200
73
Incident Energy (MeV)
87-Fr-204
P11
P12
P13
P14
P15
P16
P17
P18
P19
P20

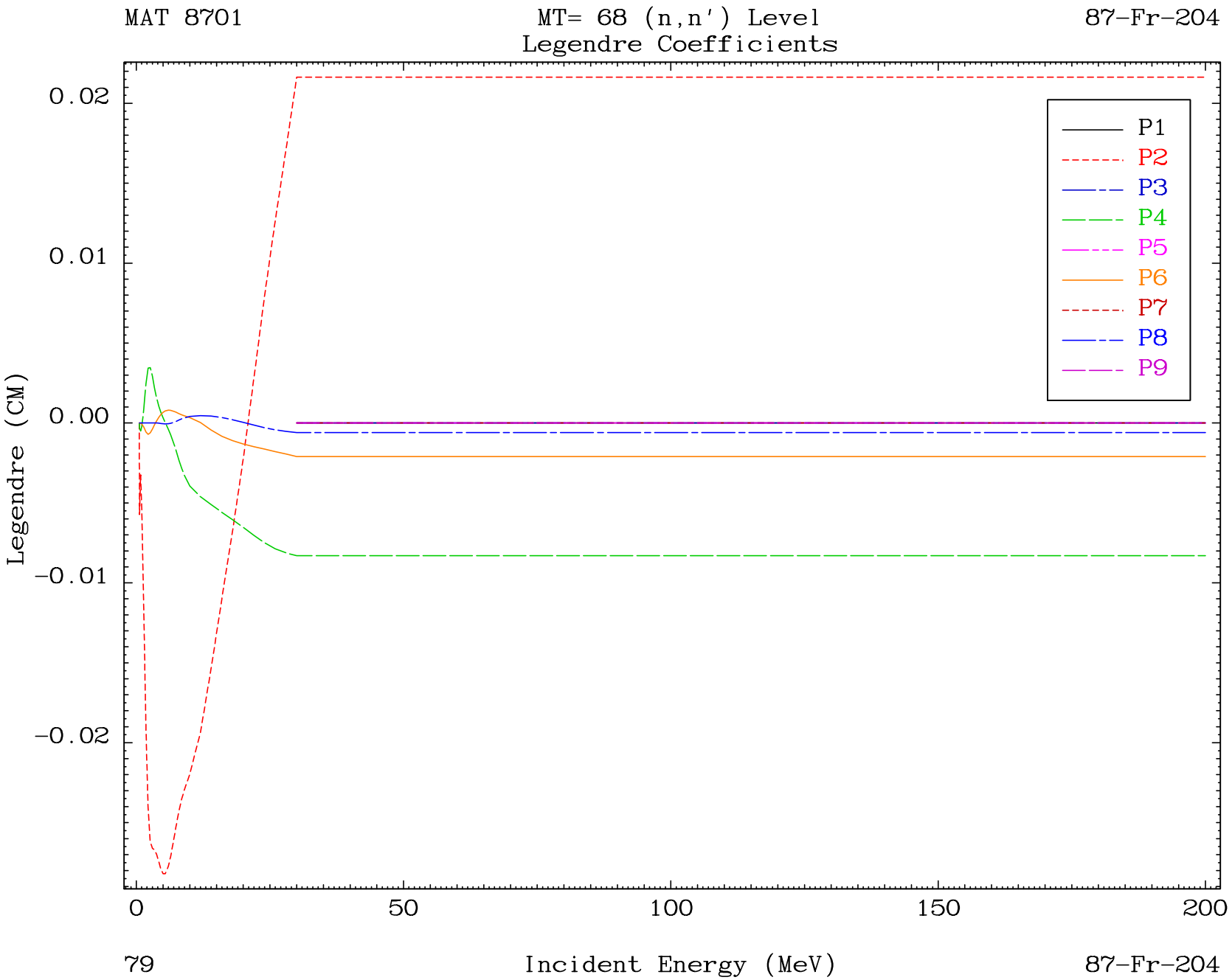

MAT 8701
MT= 66 (n,n') Level
Legendre Coefficients
87-Fr-204
0.0
X10^-6
-0.2
-0.4
-0.6
-0.8
-1.0
-1.2
Legendre (CM)
50
100
150
200
74
Incident Energy (MeV)
87-Fr-204
P21
P22
P23
P24
P25
P26
P27
P28

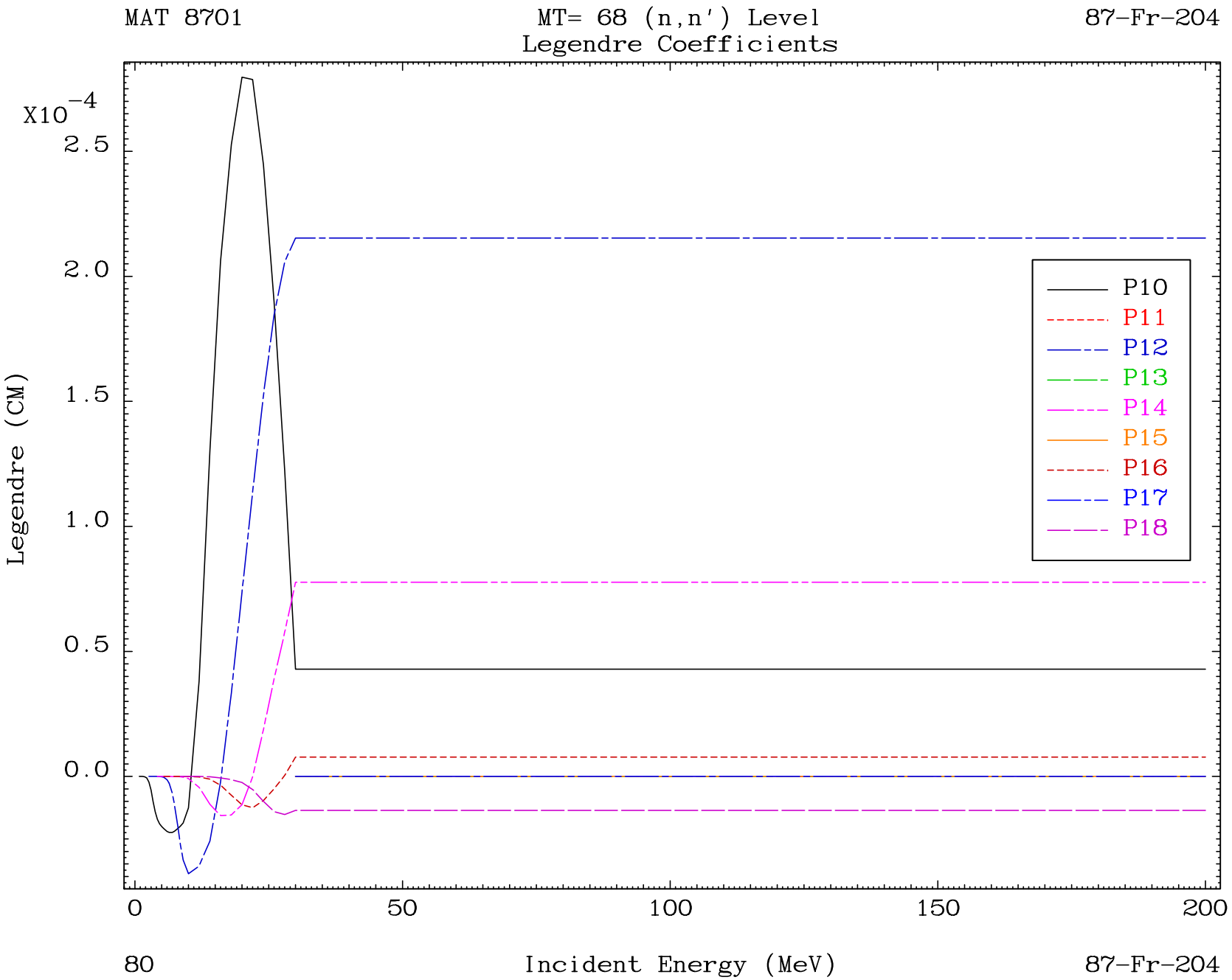

MAT 8701
MT= 67 (n,n') Level
Legendre Coefficients
87-Fr-204
Legendre (CM)
0.4
0.3
0.2
0.1
0.0
0
50
100
150
200
75
Incident Energy (MeV)
87-Fr-204
P1
P2
P3
P4
P5
P6
P7
P8
P9
P10

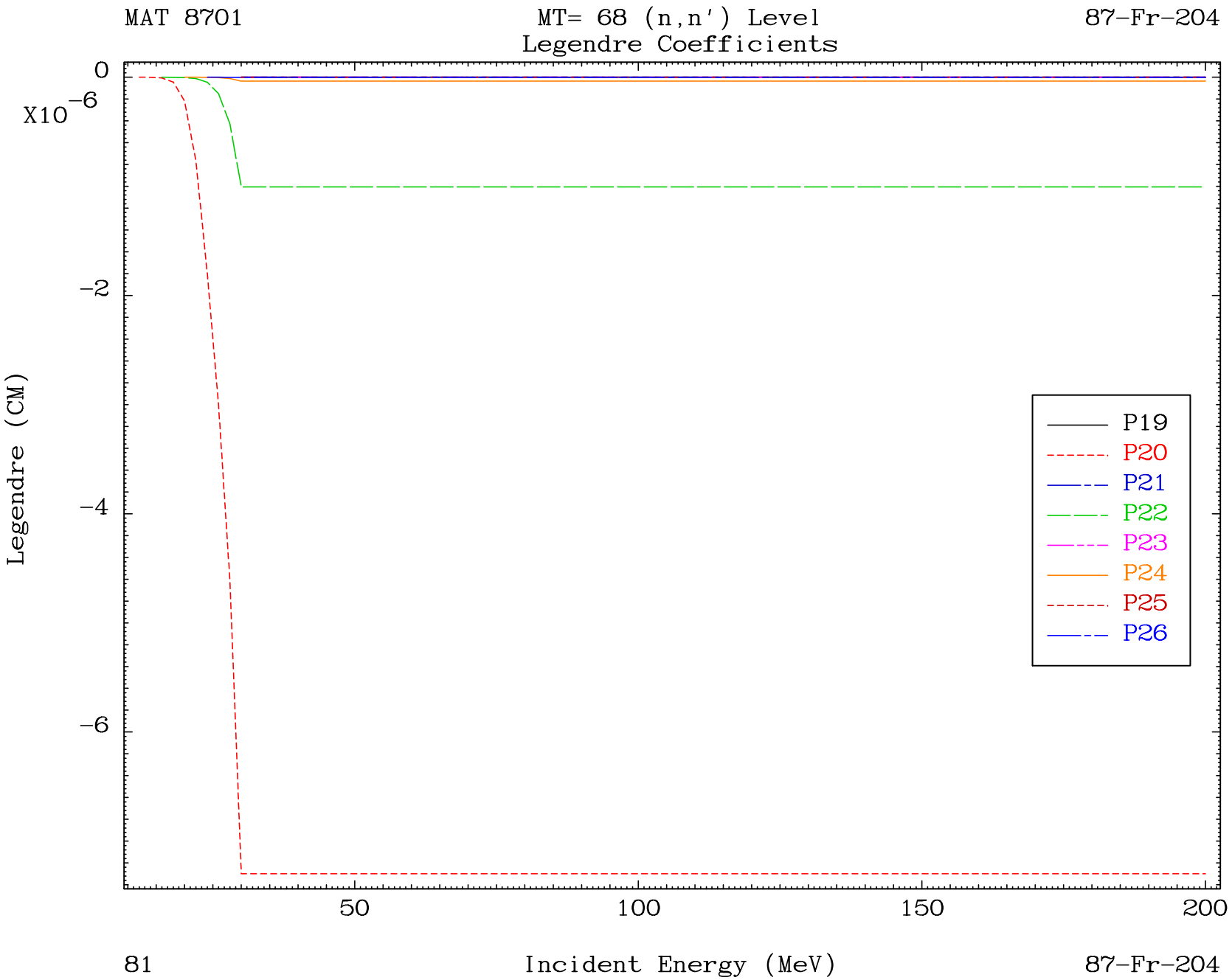

MAT 8701
MT= 67 (n,n') Level
Legendre Coefficients
87-Fr-204
P11
P12
P13
P14
P15
P16
P17
P18
P19
P20
0.05
0.04
0.03
0.02
0.01
0.00
-0.01
Legendre (CM)
0
50
100
150
200
76
Incident Energy (MeV)
87-Fr-204

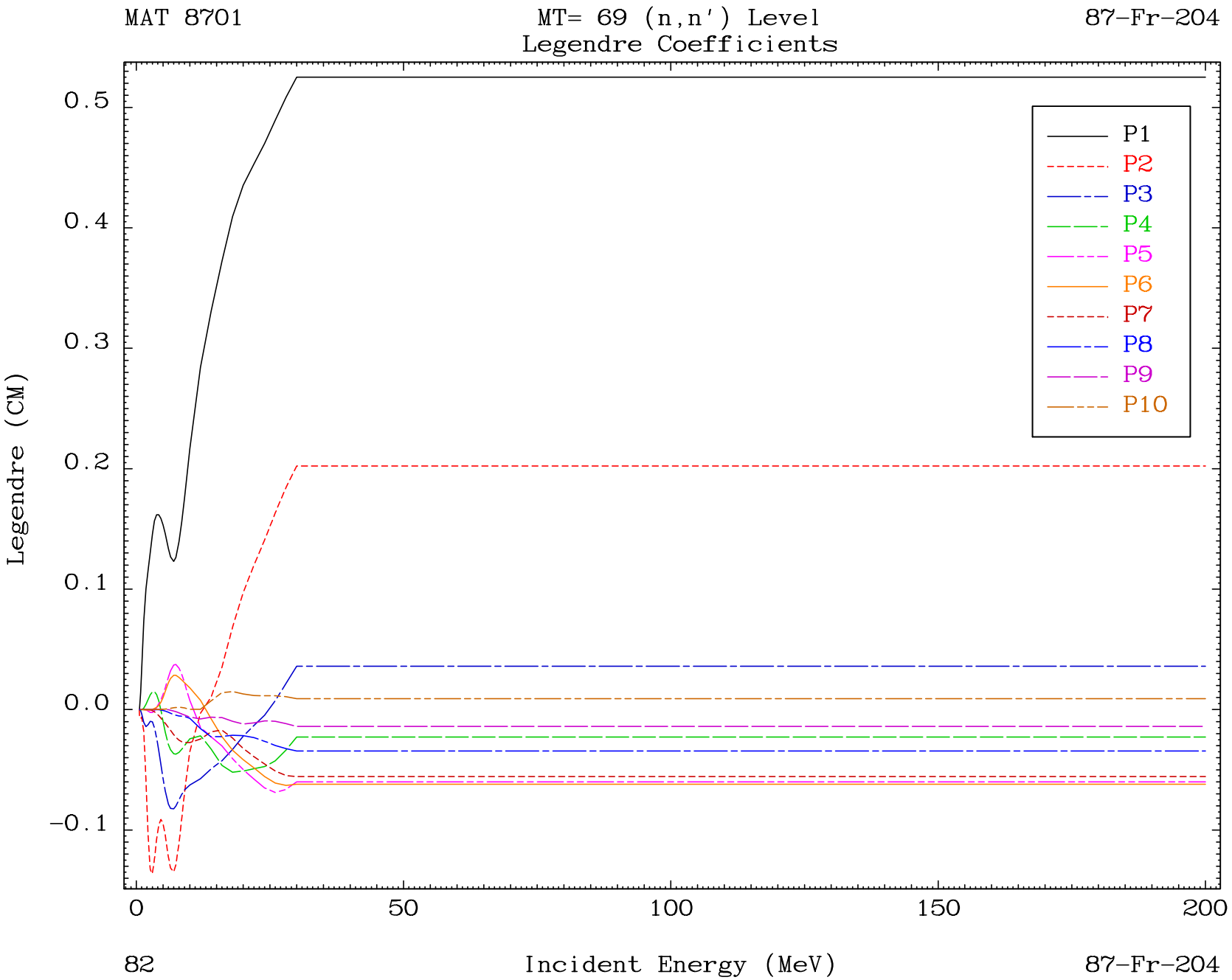

MAT 8701
MT= 67 (n,n') Level
Legendre Coefficients
87-Fr-204
X10^-4
0.0
-0.5
-1.0
-1.5
-2.0
Legendre (CM)
P21
P22
P23
P24
P25
P26
P27
P28
P29
P30
50
100
150
200
77
Incident Energy (MeV)
87-Fr-204

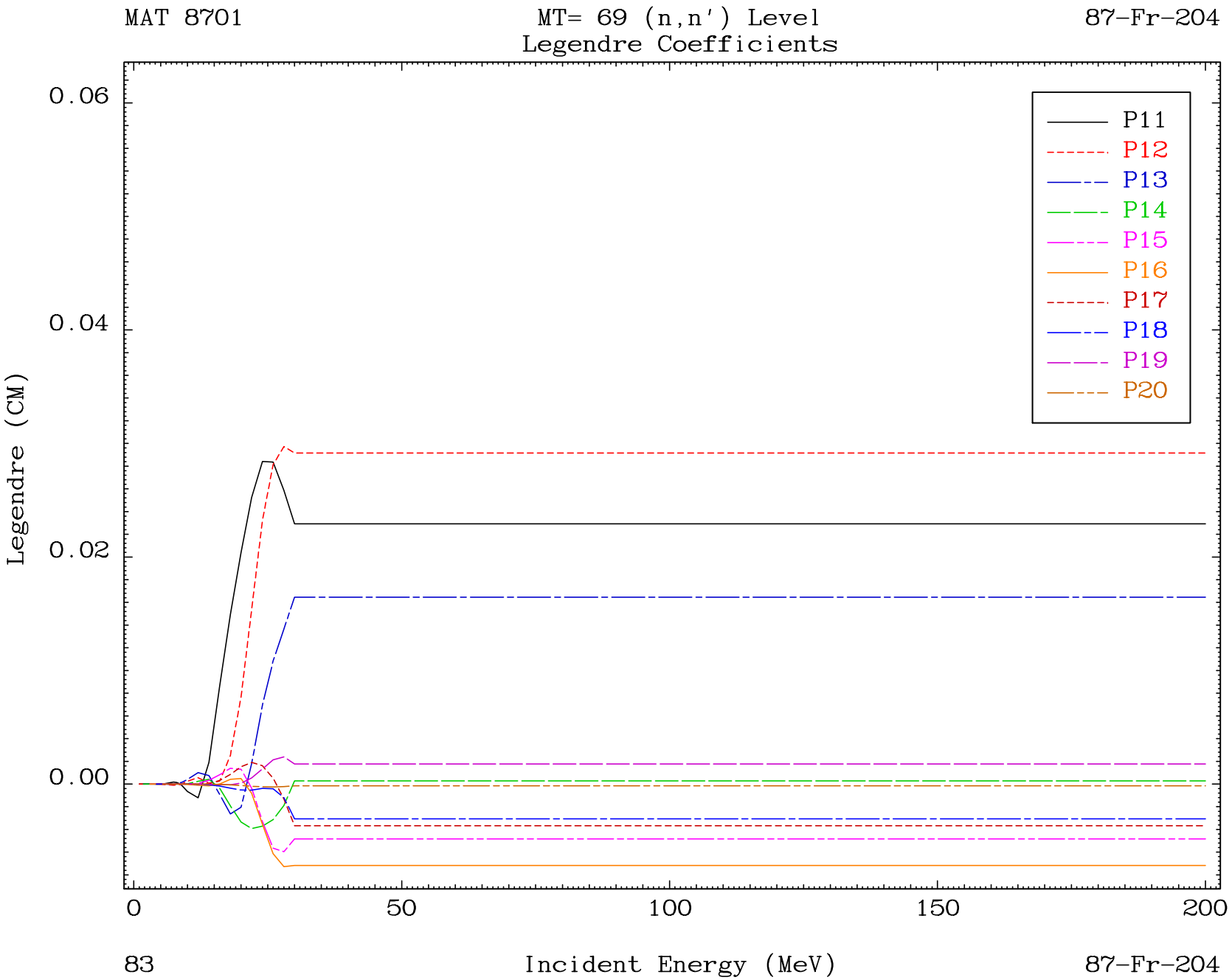

MAT 8701
MT= 67 (n,n') Level
Legendre Coefficients
87-Fr-204
X10^-7
4
3
2
1
0
Legendre (CM)
P31
P32
P33
P34
P35
P36
P37
P38
50
100
150
200
78
Incident Energy (MeV)
87-Fr-204

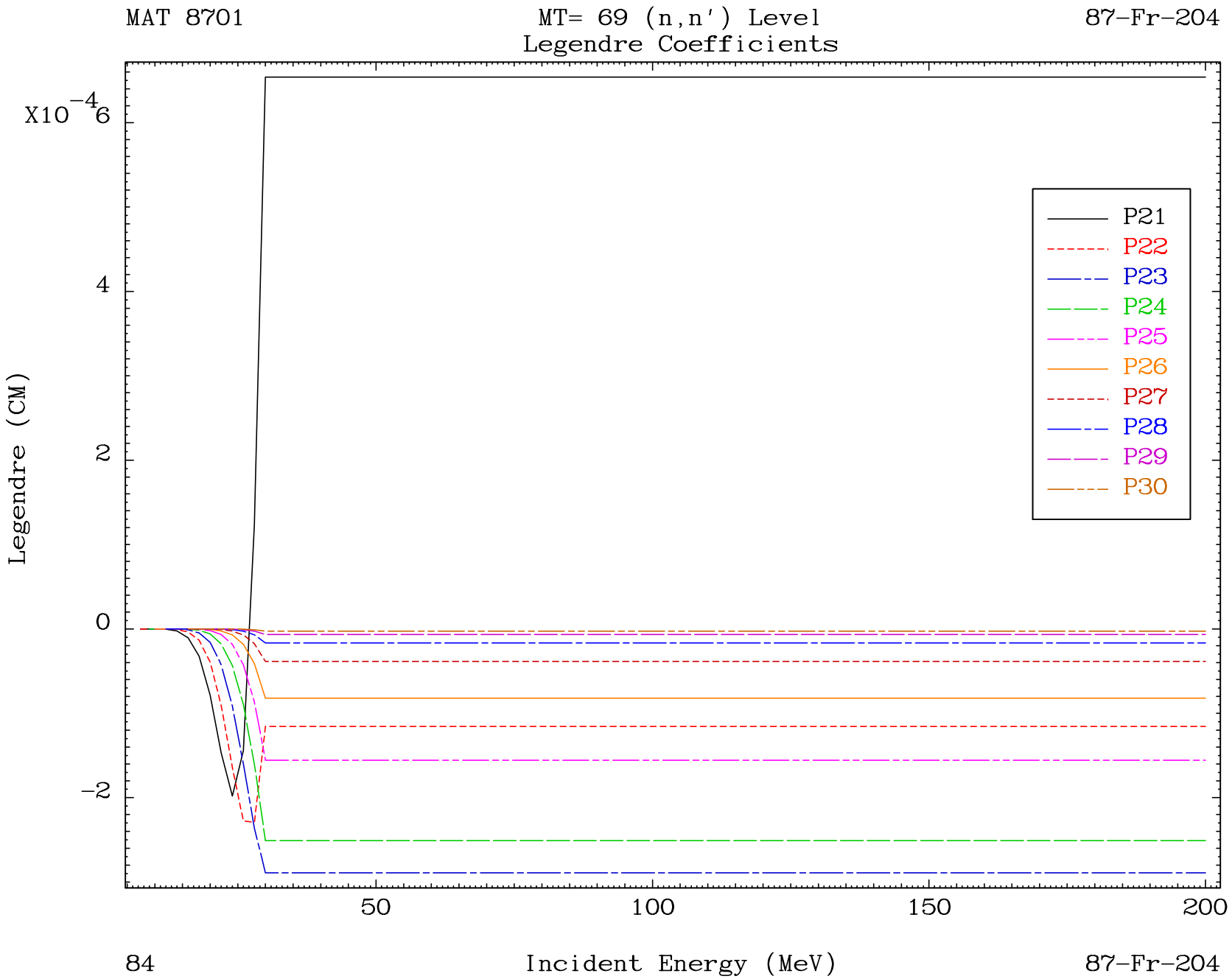

MAT 8701
MT= 68 (n,n') Level
Legendre Coefficients
87-Fr-204
0.02
0.01
0.00
-0.01
-0.02
Legendre (CM)
P1
P2
P3
P4
P5
P6
P7
P8
P9
0
50
100
150
200
79
Incident Energy (MeV)
87-Fr-204

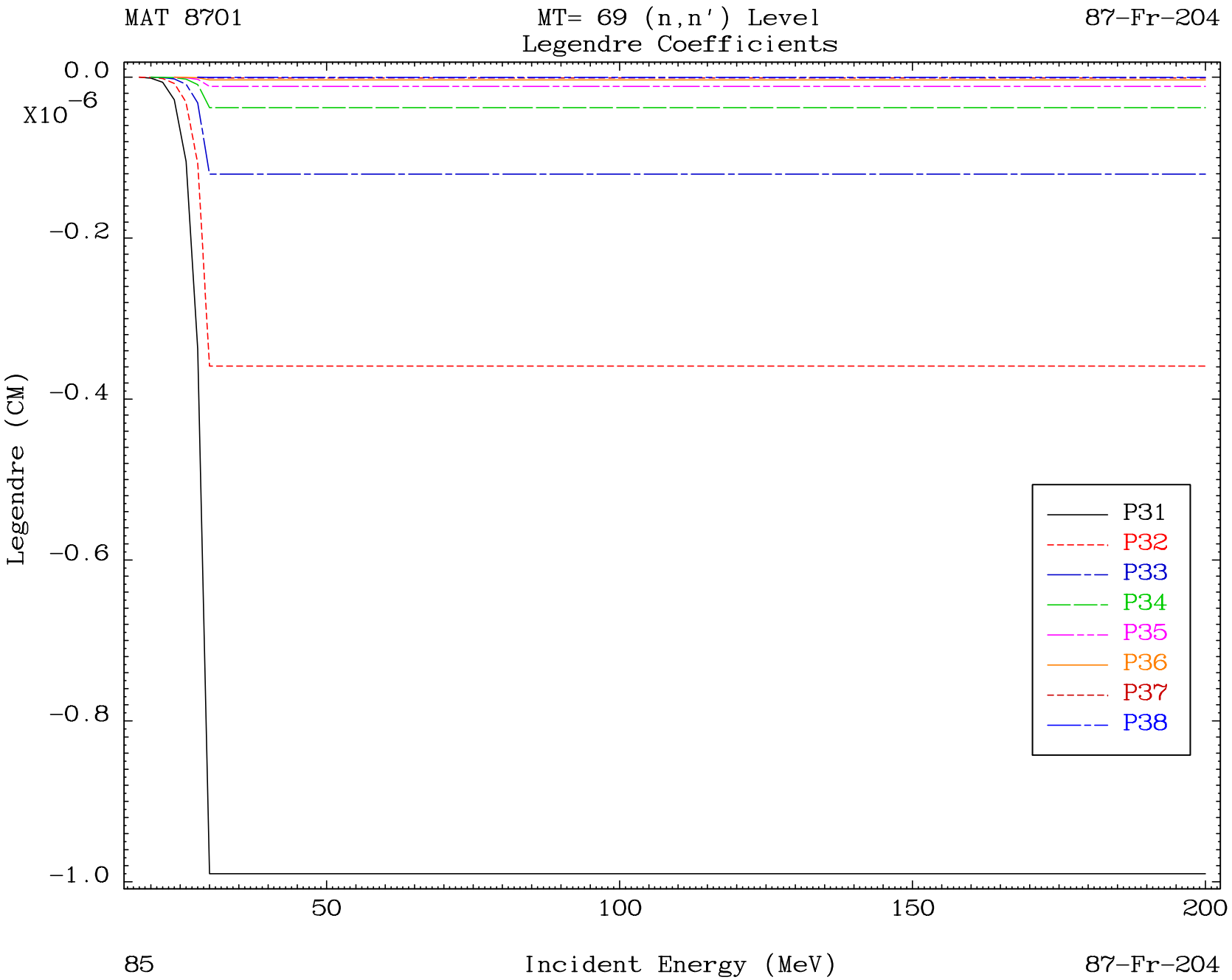

MAT 8701
MT= 68 (n,n') Level
Legendre Coefficients
87-Fr-204
X10^-4
2.5
2.0
1.5
1.0
0.5
0.0
Legendre (CM)
P10
P11
P12
P13
P14
P15
P16
P17
P18
0
50
100
150
200
80
Incident Energy (MeV)
87-Fr-204

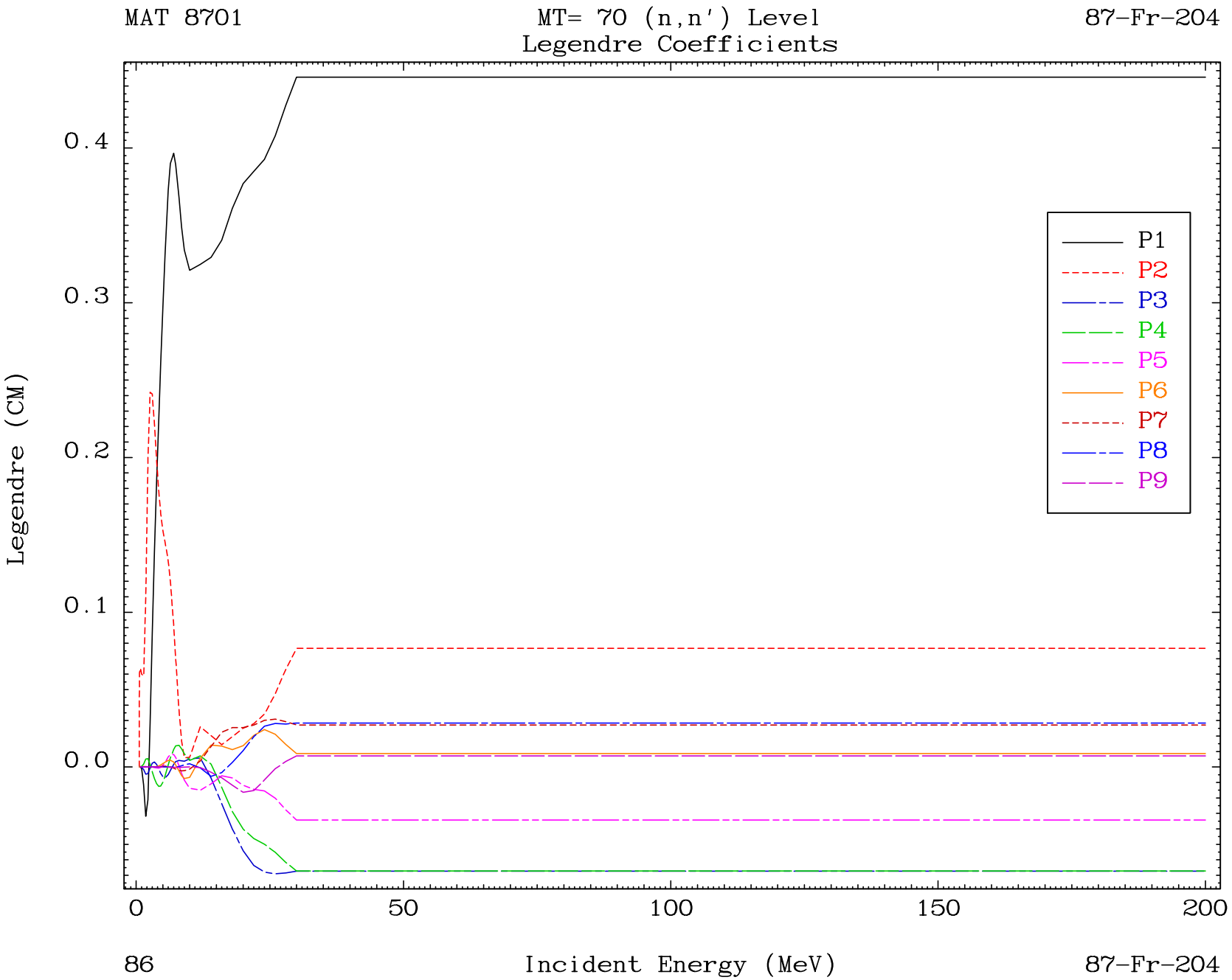

MAT 8701
MT= 68 (n,n') Level
Legendre Coefficients
87-Fr-204
0
X10 −6
−2
−4
−6
Legendre (CM)
P19
P20
P21
P22
P23
P24
P25
P26
50
100
150
200
81
Incident Energy (MeV)
87-Fr-204

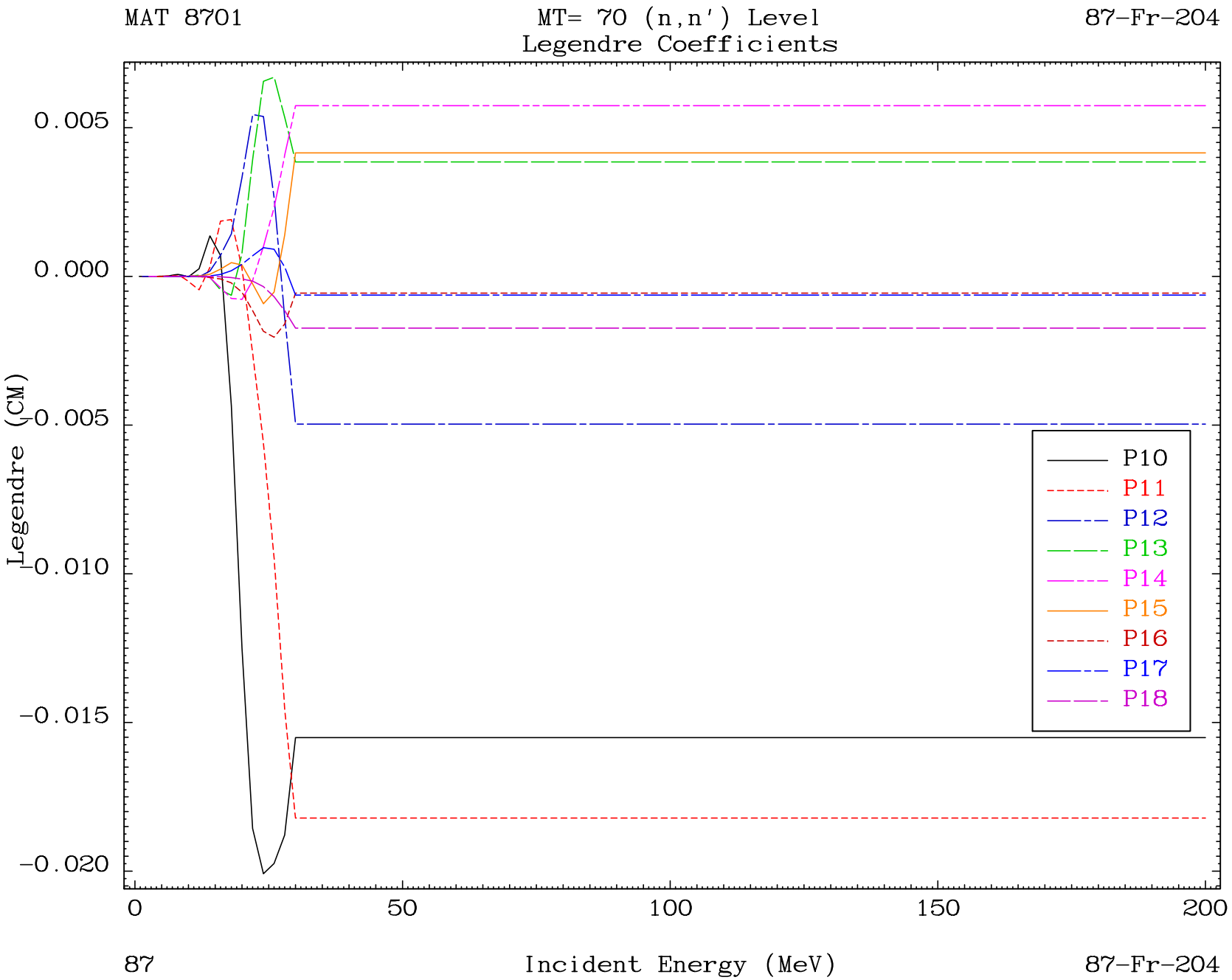

MAT 8701
MT= 69 (n,n') Level
Legendre Coefficients
87-Fr-204
Legendre (CM)
0.5
0.4
0.3
0.2
0.1
0.0
-0.1
0
50
100
150
200
Incident Energy (MeV)
82
87-Fr-204
P1
P2
P3
P4
P5
P6
P7
P8
P9
P10

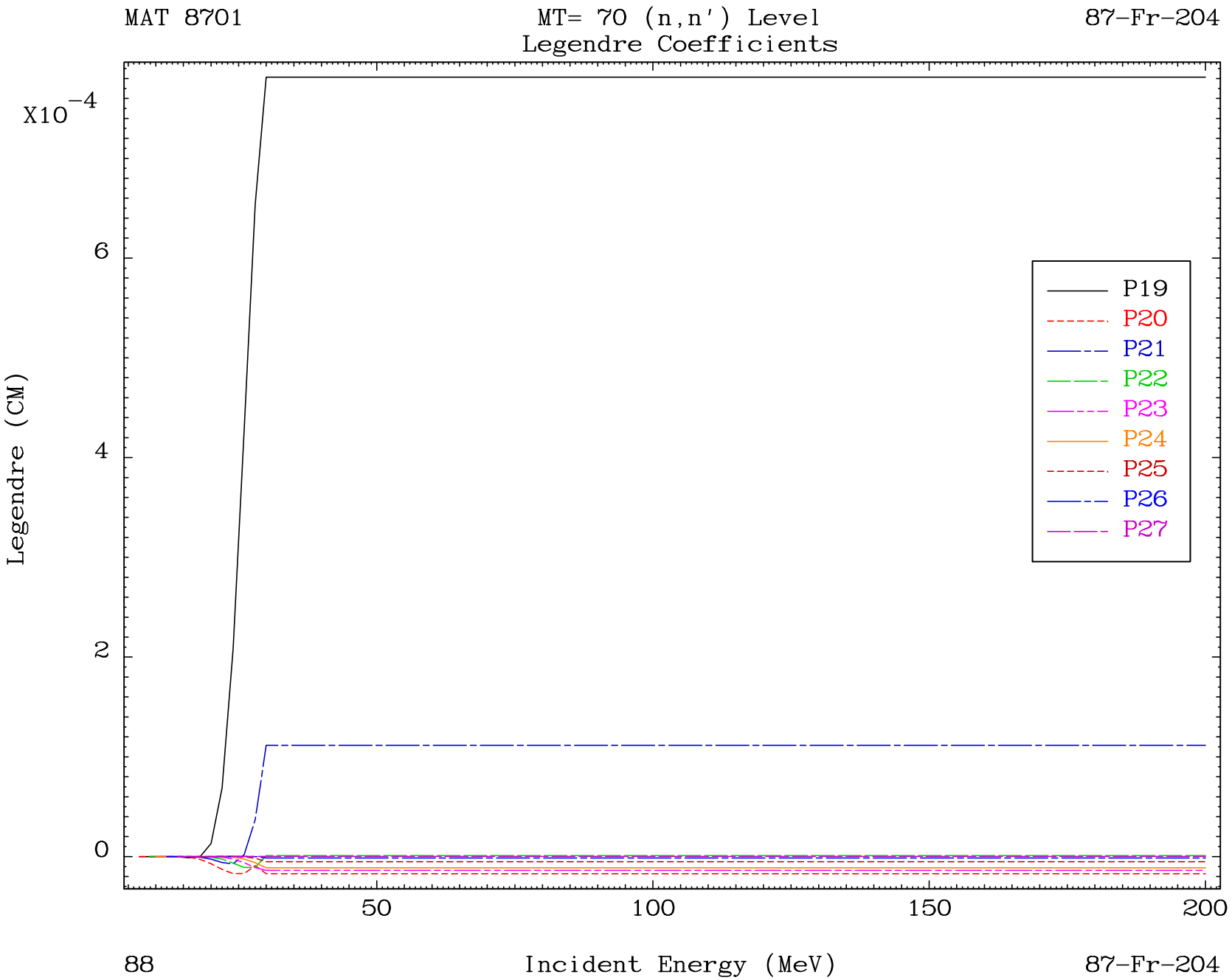

MAT 8701
MT= 69 (n,n') Level
Legendre Coefficients
87-Fr-204
0.06
0.04
0.02
0.00
Legendre (CM)
P11
P12
P13
P14
P15
P16
P17
P18
P19
P20
0
50
100
150
200
83
Incident Energy (MeV)
87-Fr-204

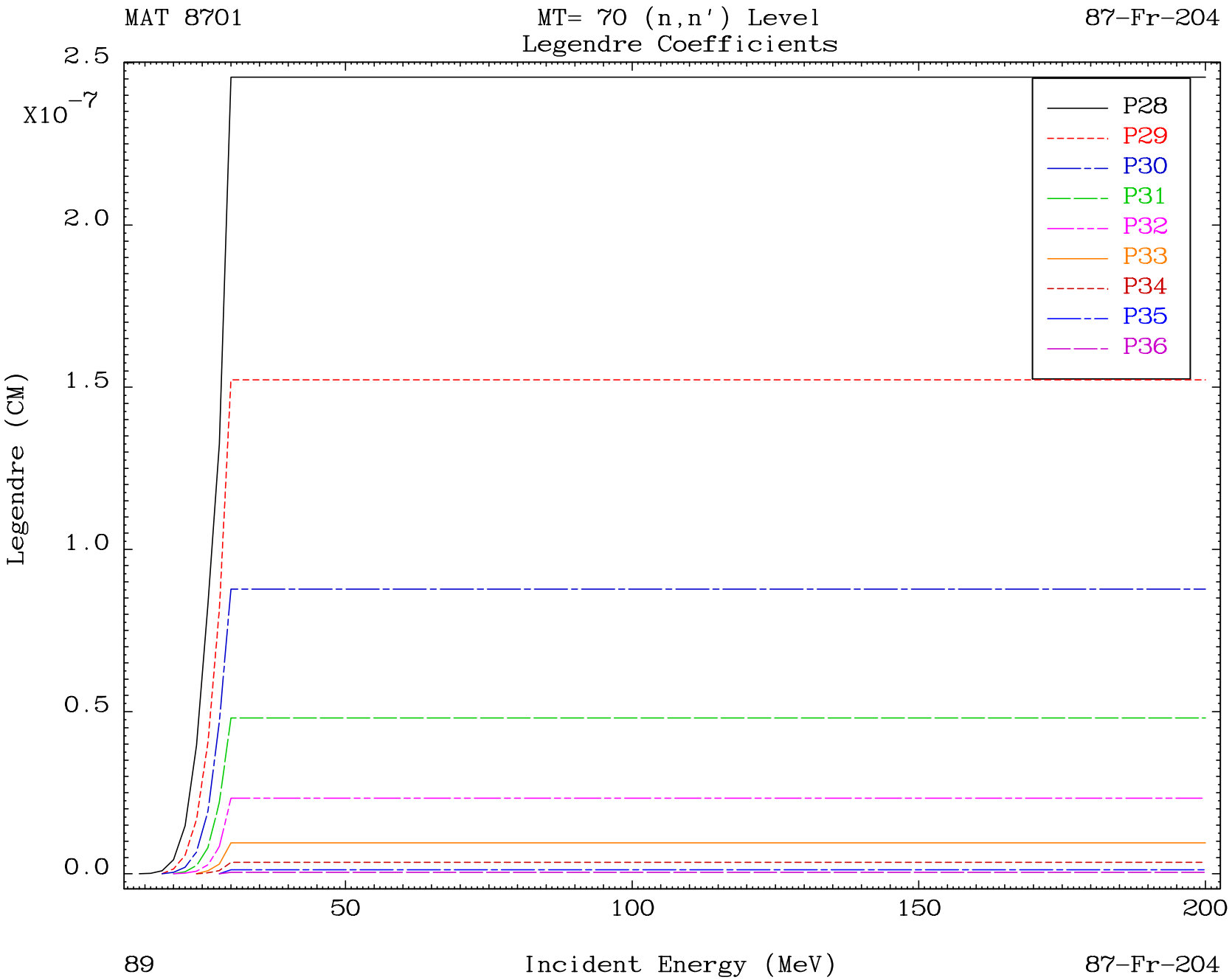

MAT 8701
MT= 69 (n,n') Level
Legendre Coefficients
87-Fr-204
X10 -4
6
4
2
0
-2
Legendre (CM)
P21
P22
P23
P24
P25
P26
P27
P28
P29
P30
50
100
150
200
84
Incident Energy (MeV)
87-Fr-204

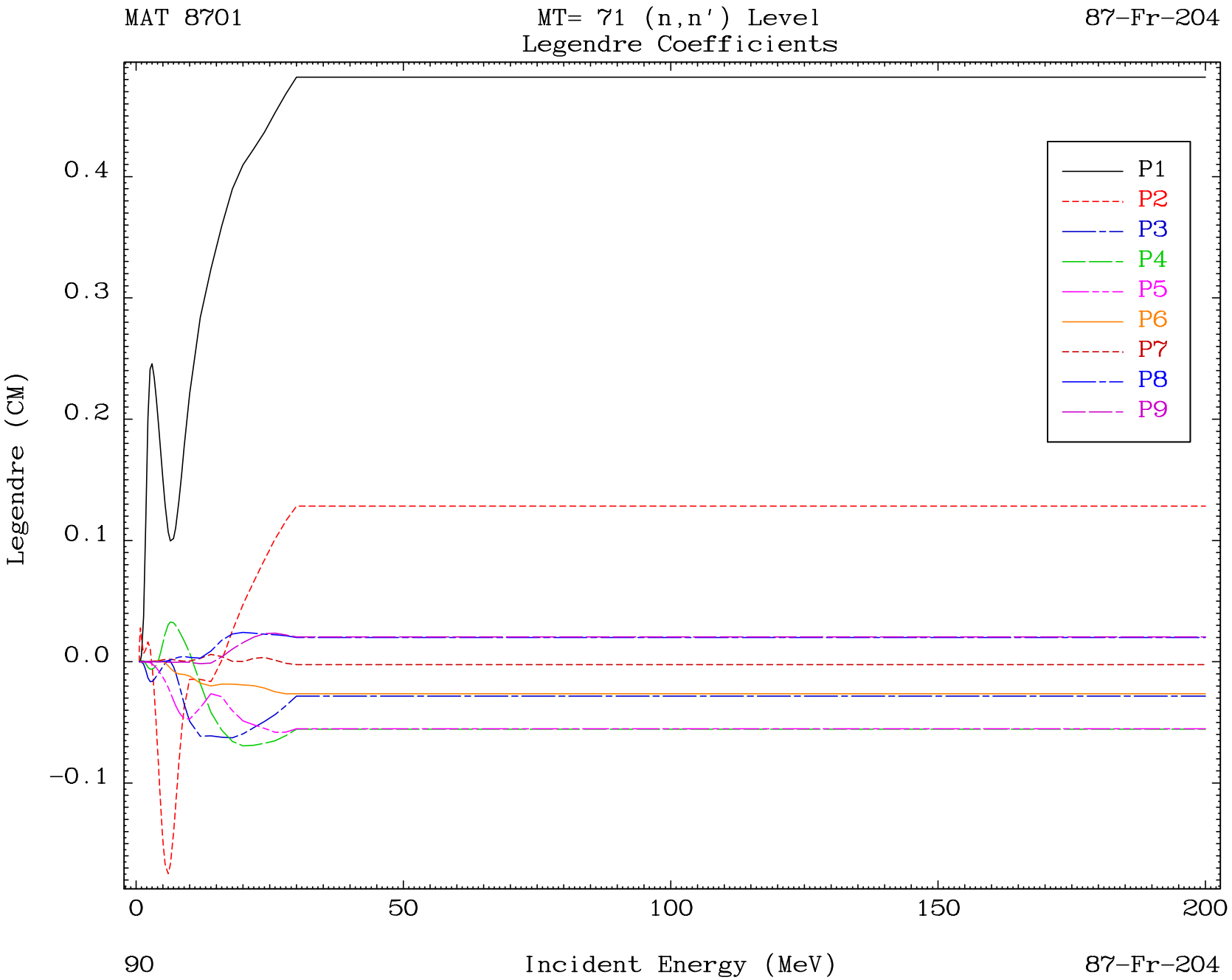

MAT 8701
MT= 69 (n,n') Level
Legendre Coefficients
87-Fr-204
0.0
X10^-6
-0.2
-0.4
-0.6
-0.8
-1.0
Legendre (CM)
50
100
150
200
85
Incident Energy (MeV)
87-Fr-204
P31
P32
P33
P34
P35
P36
P37
P38

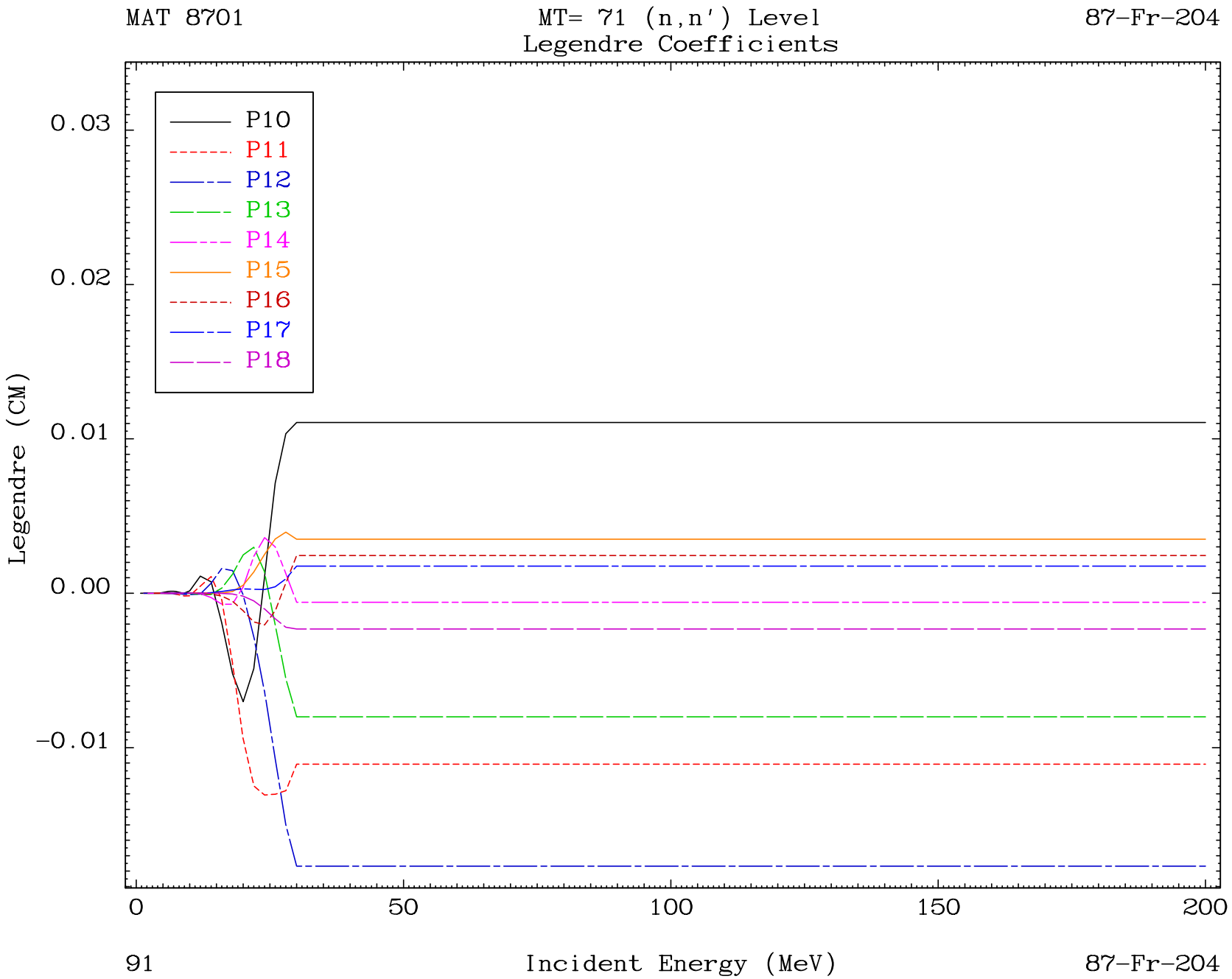

MAT 8701
MT= 70 (n,n') Level
Legendre Coefficients
87-Fr-204
Legendre (CM)
0.4
0.3
0.2
0.1
0.0
0
50
100
150
200
P1
P2
P3
P4
P5
P6
P7
P8
P9
86
Incident Energy (MeV)
87-Fr-204

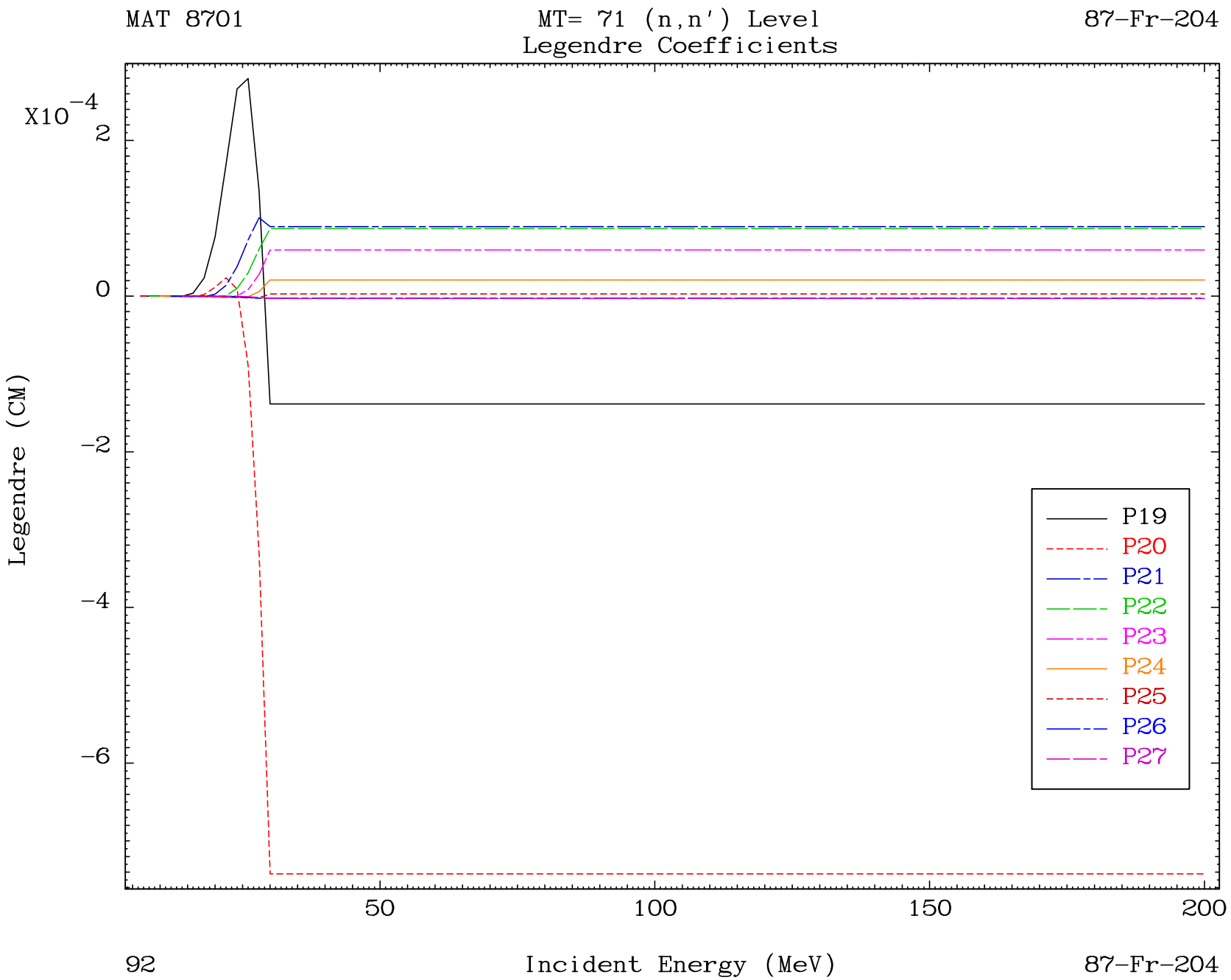

MAT 8701
MT= 70 (n,n') Level
Legendre Coefficients
87-Fr-204
0.005
0.000
−0.005
−0.010
−0.015
−0.020
Legendre (CM)
0
50
100
150
200
87
Incident Energy (MeV)
87-Fr-204
P10
P11
P12
P13
P14
P15
P16
P17
P18

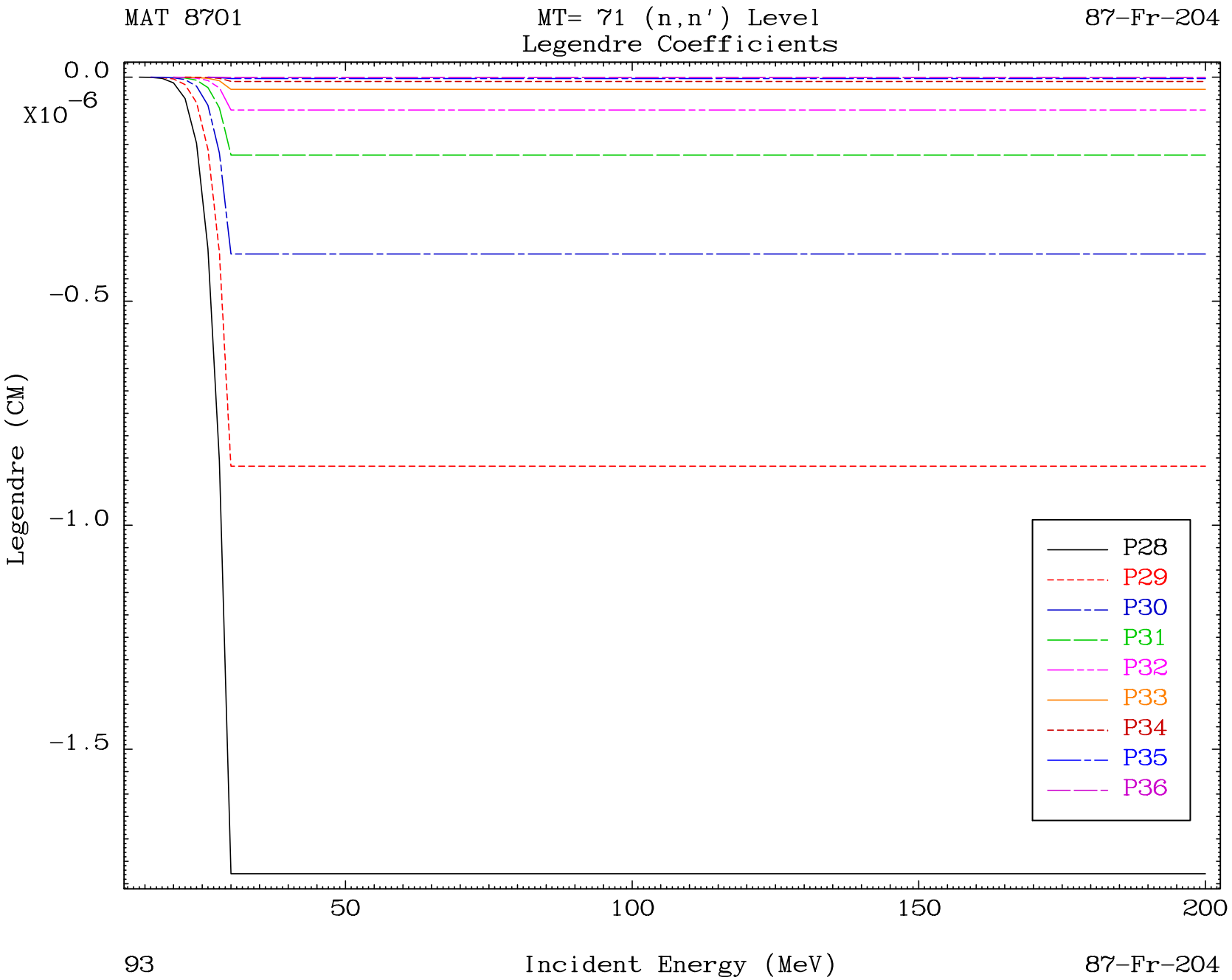

MAT 8701
MT= 70 (n,n') Level
Legendre Coefficients
87-Fr-204
X10^-4
6
4
2
0
Legendre (CM)
P19
P20
P21
P22
P23
P24
P25
P26
P27
50
100
150
200
88
Incident Energy (MeV)
87-Fr-204

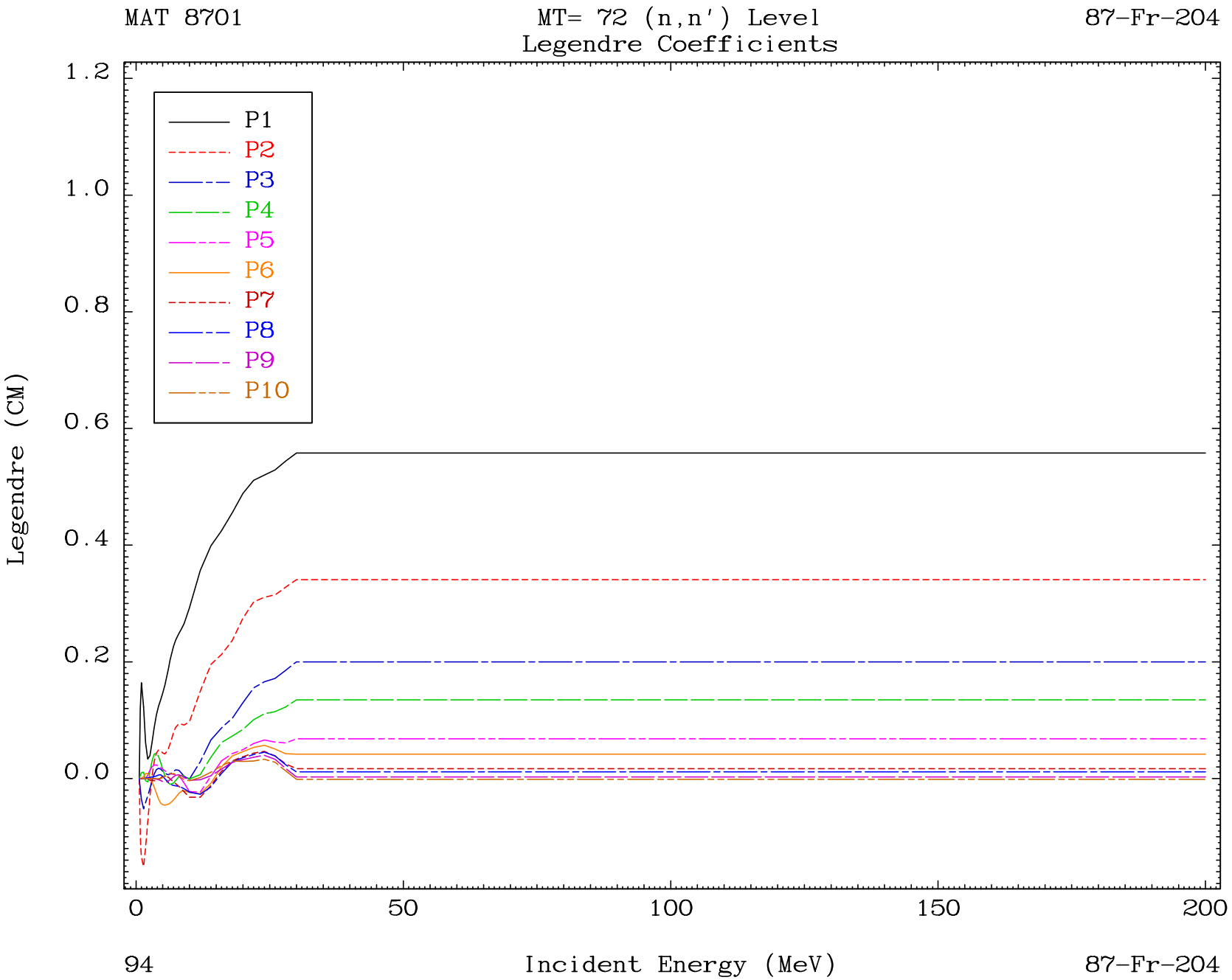

MAT 8701
MT= 70 (n,n') Level
Legendre Coefficients
87-Fr-204
X10^-7
2.5
2.0
1.5
1.0
0.5
0.0
Legendre (CM)
P28
P29
P30
P31
P32
P33
P34
P35
P36
50
100
150
200
89
Incident Energy (MeV)
87-Fr-204

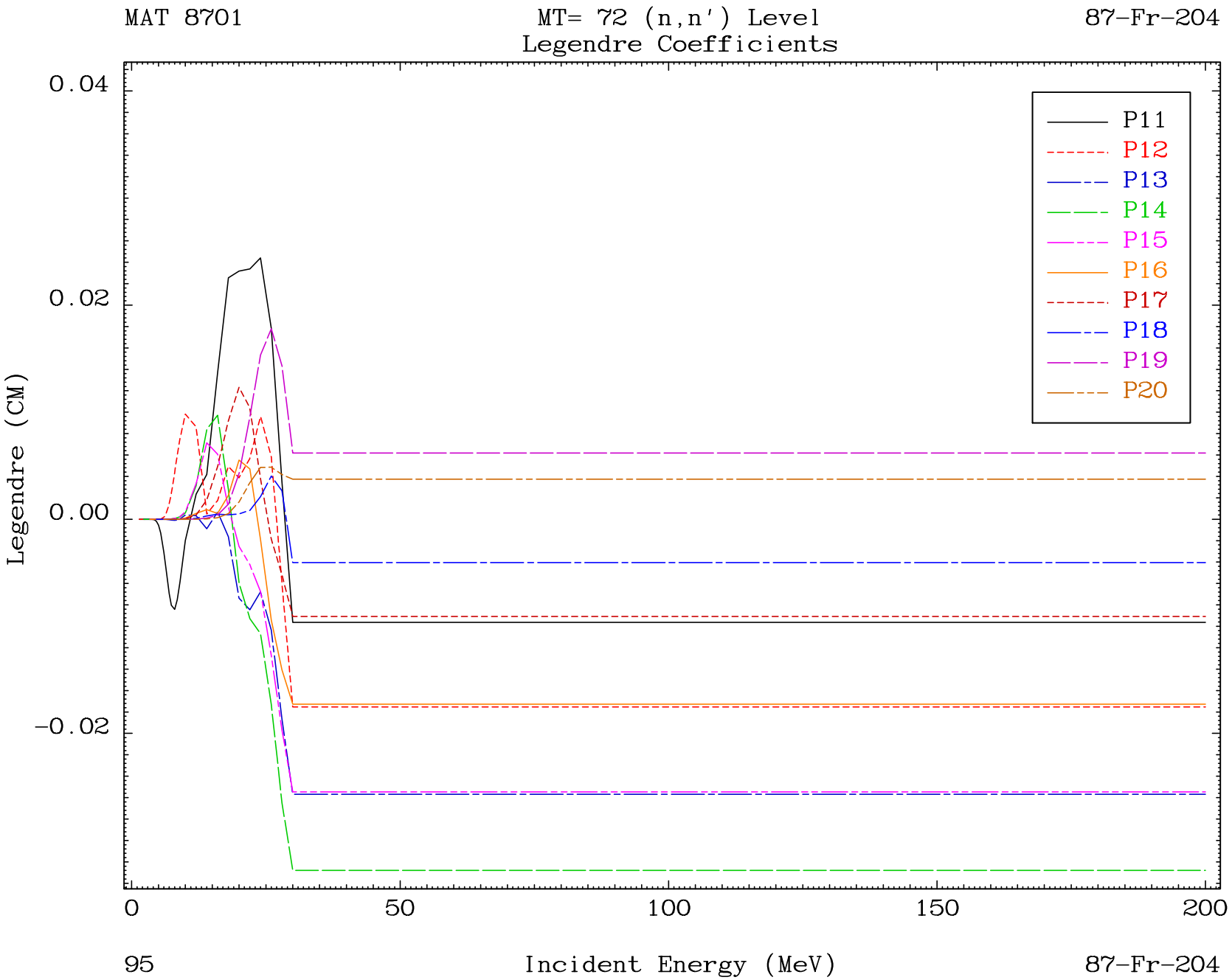

MAT 8701
MT= 71 (n,n') Level
Legendre Coefficients
87-Fr-204
Legendre (CM)
0.4
0.3
0.2
0.1
0.0
-0.1
P1
P2
P3
P4
P5
P6
P7
P8
P9
0
50
100
150
200
90
Incident Energy (MeV)
87-Fr-204

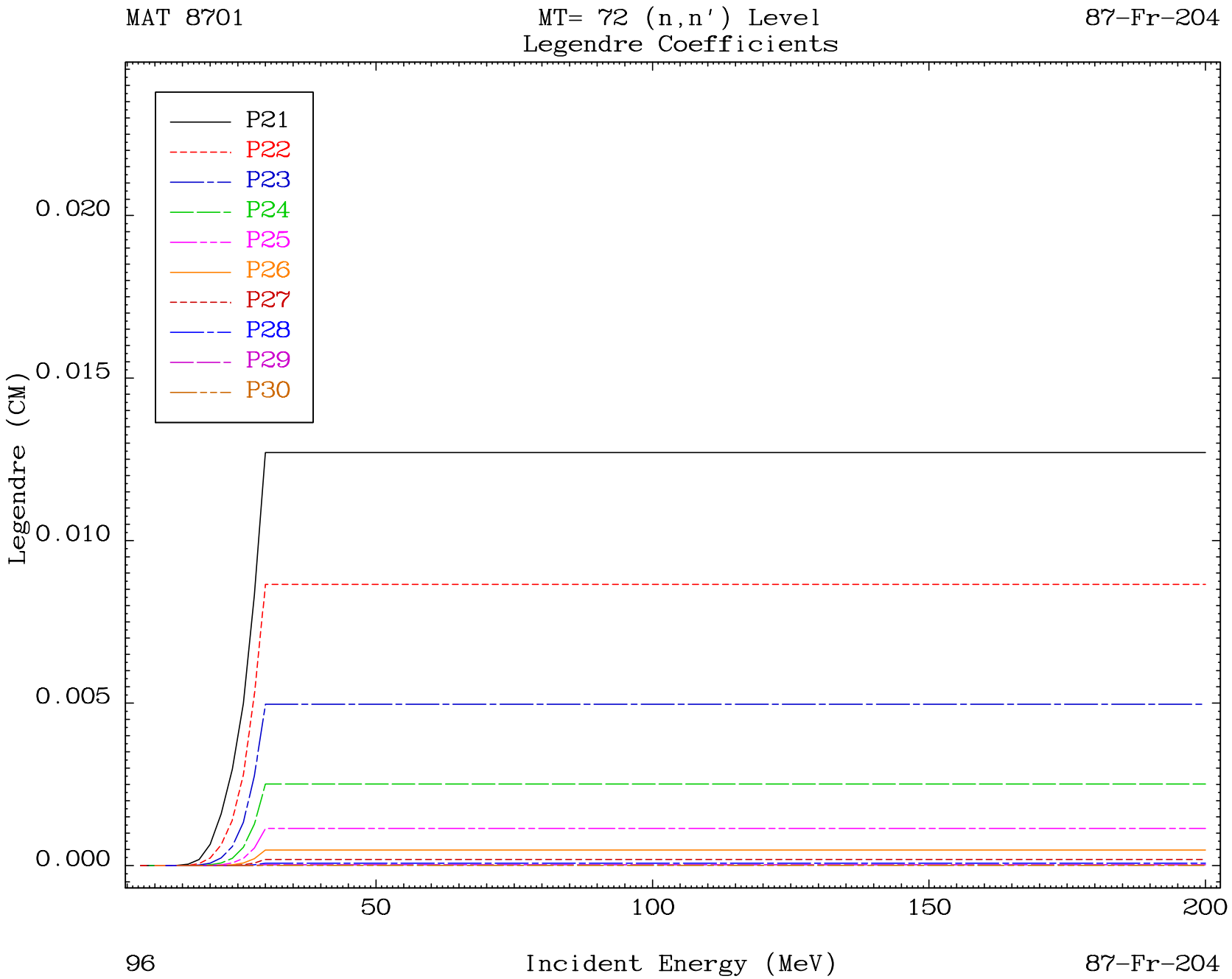

MAT 8701
MT= 71 (n,n') Level
Legendre Coefficients
87-Fr-204
P10
P11
P12
P13
P14
P15
P16
P17
P18
0.03
0.02
0.01
0.00
-0.01
Legendre (CM)
0
50
100
150
200
91
Incident Energy (MeV)
87-Fr-204

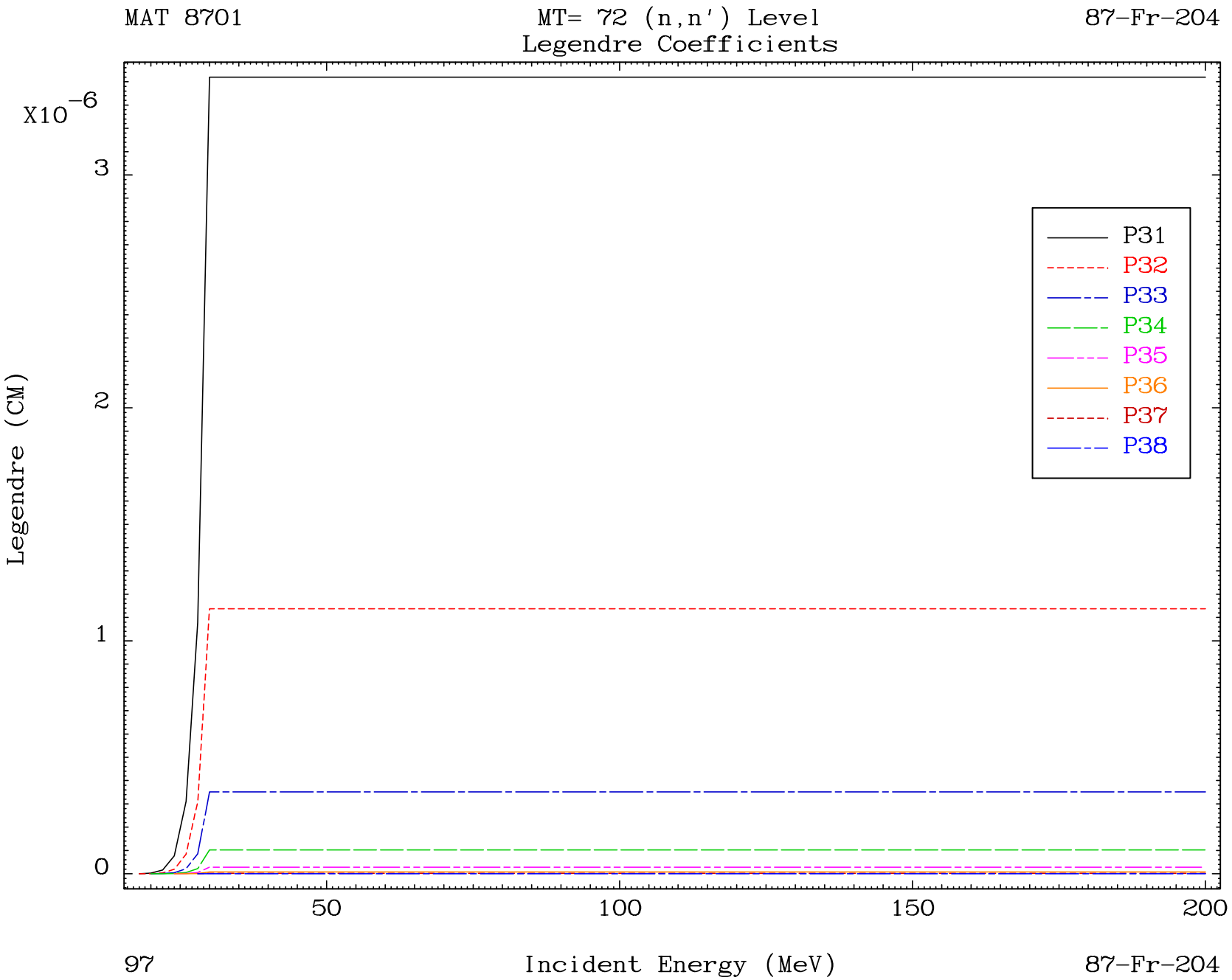

MAT 8701
MT= 71 (n,n') Level
Legendre Coefficients
87-Fr-204
X10^-4
2
0
-2
-4
-6
Legendre (CM)
50
100
150
200
92
Incident Energy (MeV)
87-Fr-204
P19
P20
P21
P22
P23
P24
P25
P26
P27

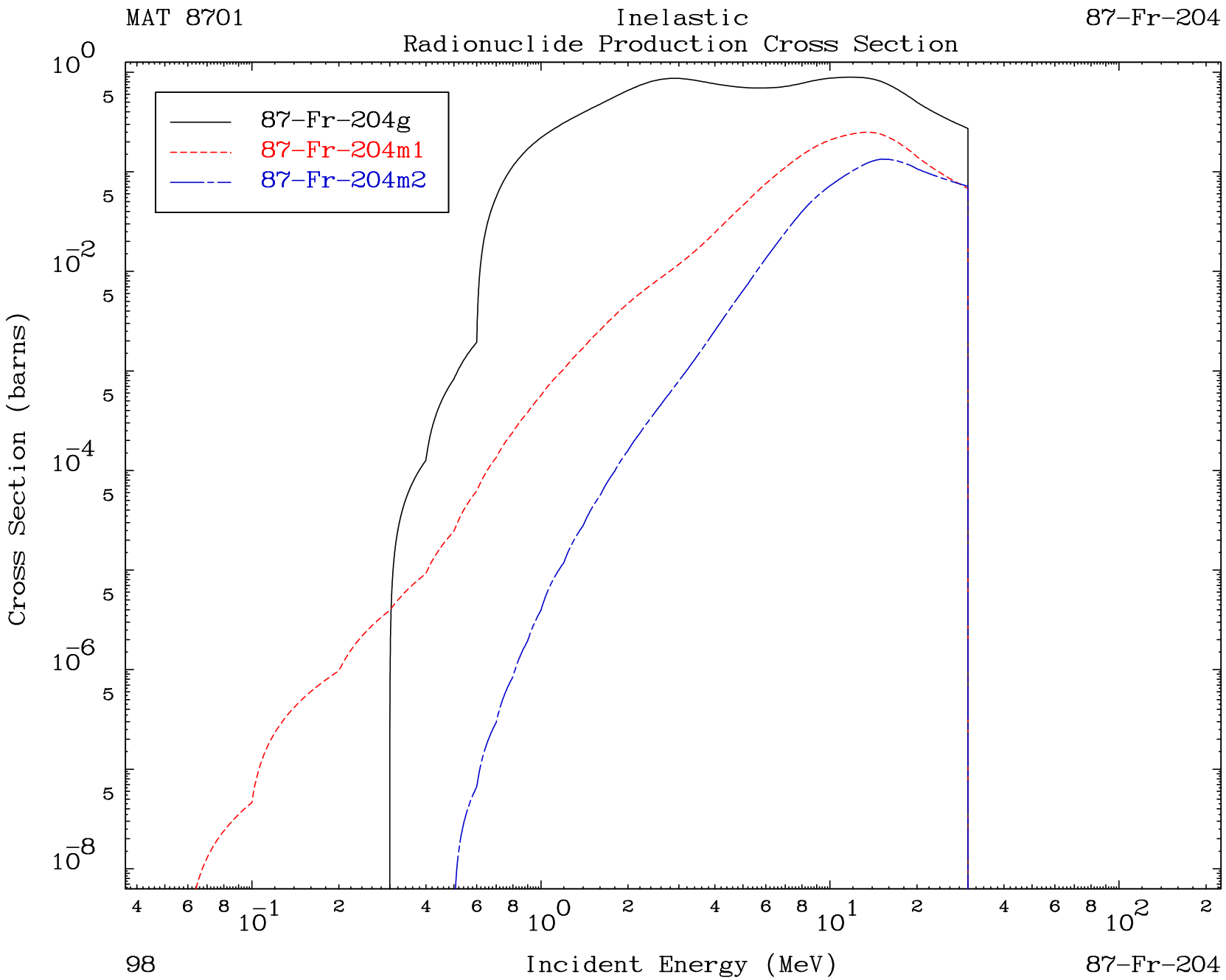

MAT 8701
MT= 71 (n,n') Level
Legendre Coefficients
87-Fr-204
0.0
X10^-6
-0.5
-1.0
-1.5
Legendre (CM)
50
100
150
200
93
Incident Energy (MeV)
87-Fr-204
P28
P29
P30
P31
P32
P33
P34
P35
P36

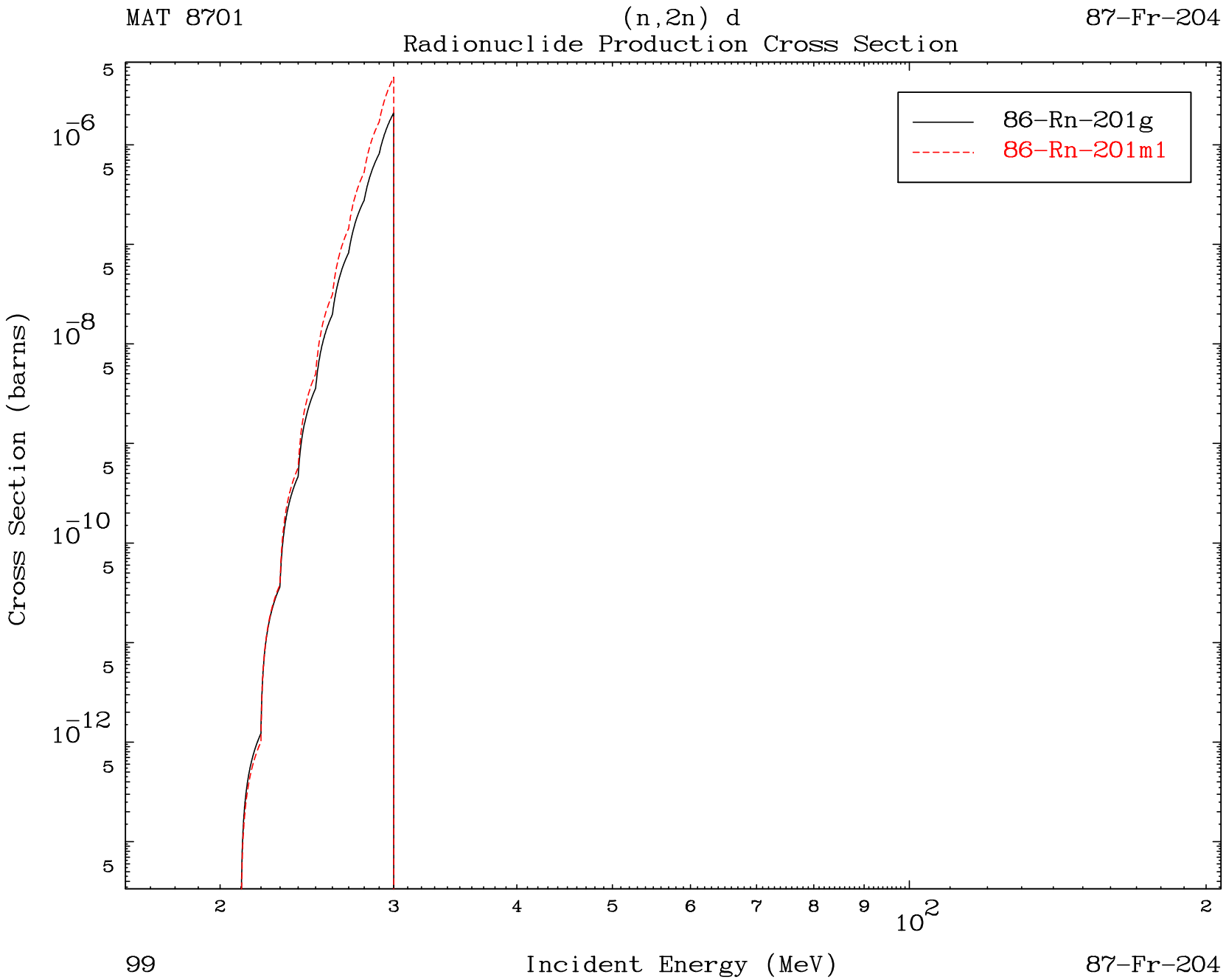

MAT 8701
MT= 72 (n,n') Level
Legendre Coefficients
87-Fr-204
P1
P2
P3
P4
P5
P6
P7
P8
P9
P10
Legendre (CM)
1.2
1.0
0.8
0.6
0.4
0.2
0.0
0
50
100
150
200
94
Incident Energy (MeV)
87-Fr-204

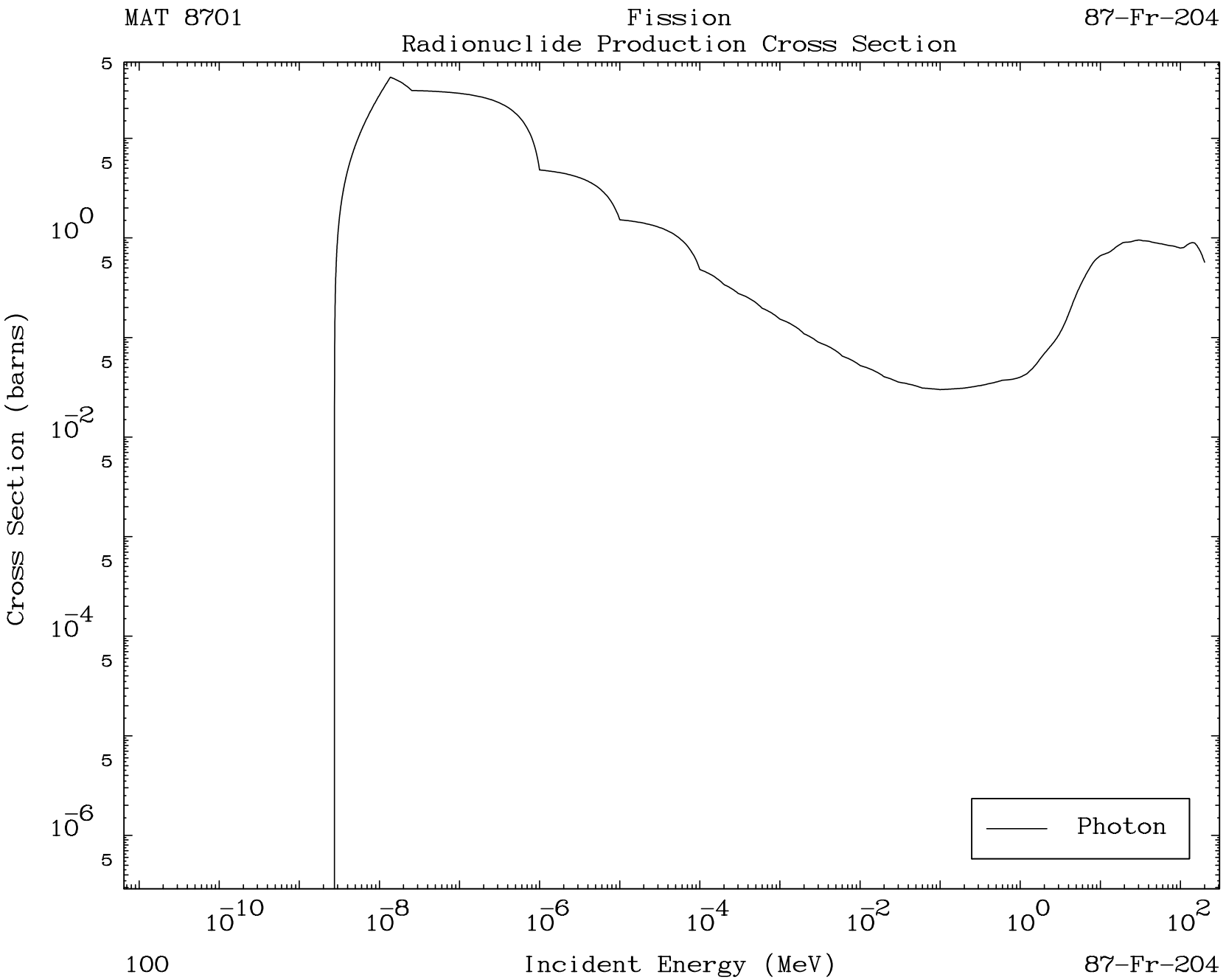

MAT 8701
MT= 72 (n,n') Level
Legendre Coefficients
87-Fr-204
0.04
0.02
0.00
-0.02
Legendre (CM)
P11
P12
P13
P14
P15
P16
P17
P18
P19
P20
0
50
100
150
200
95
Incident Energy (MeV)
87-Fr-204

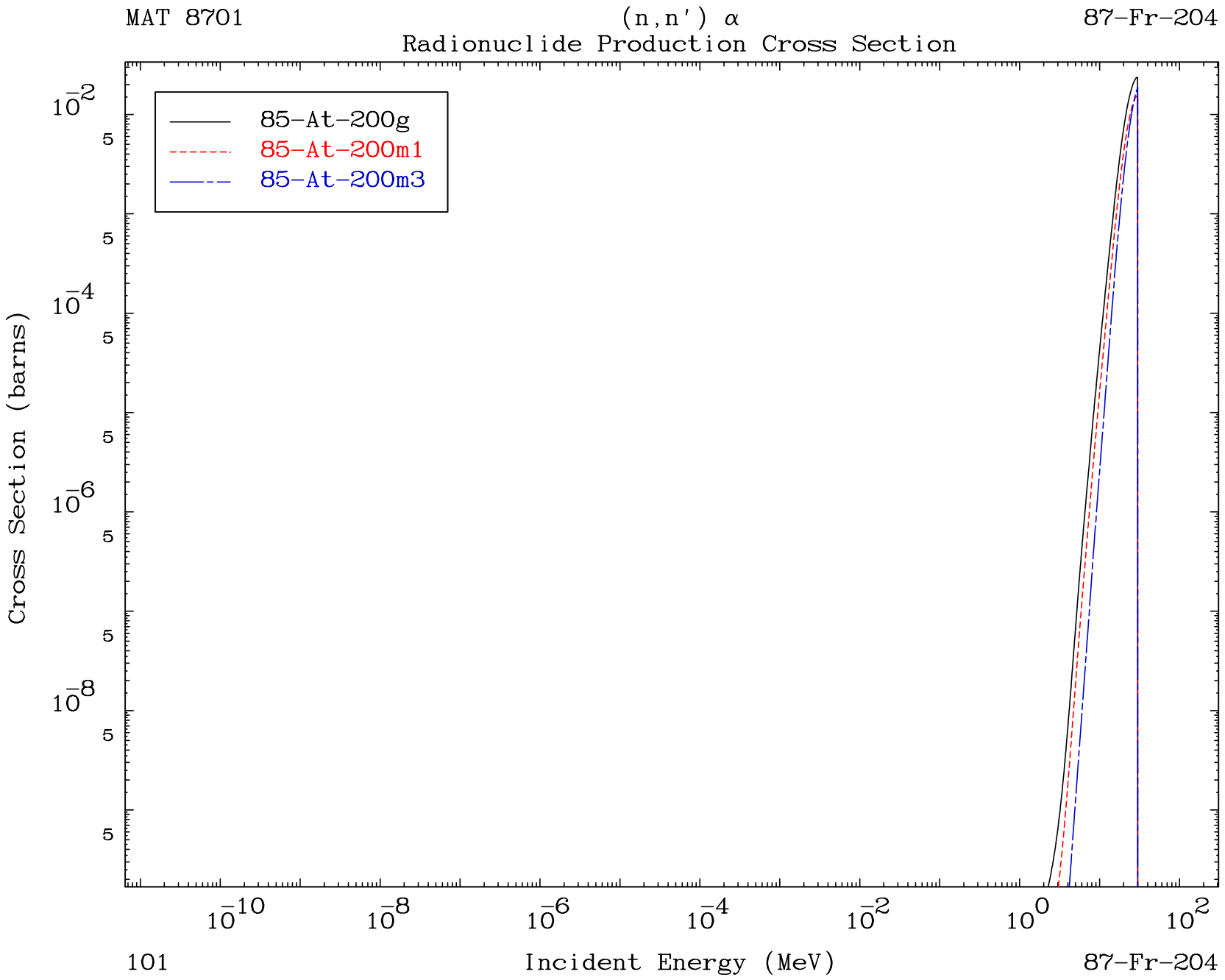

MAT 8701
MT= 72 (n,n') Level
Legendre Coefficients
87-Fr-204
P21
P22
P23
P24
P25
P26
P27
P28
P29
P30
0.020
0.015
0.010
0.005
0.000
Legendre (CM)
50
100
150
200
96
Incident Energy (MeV)
87-Fr-204

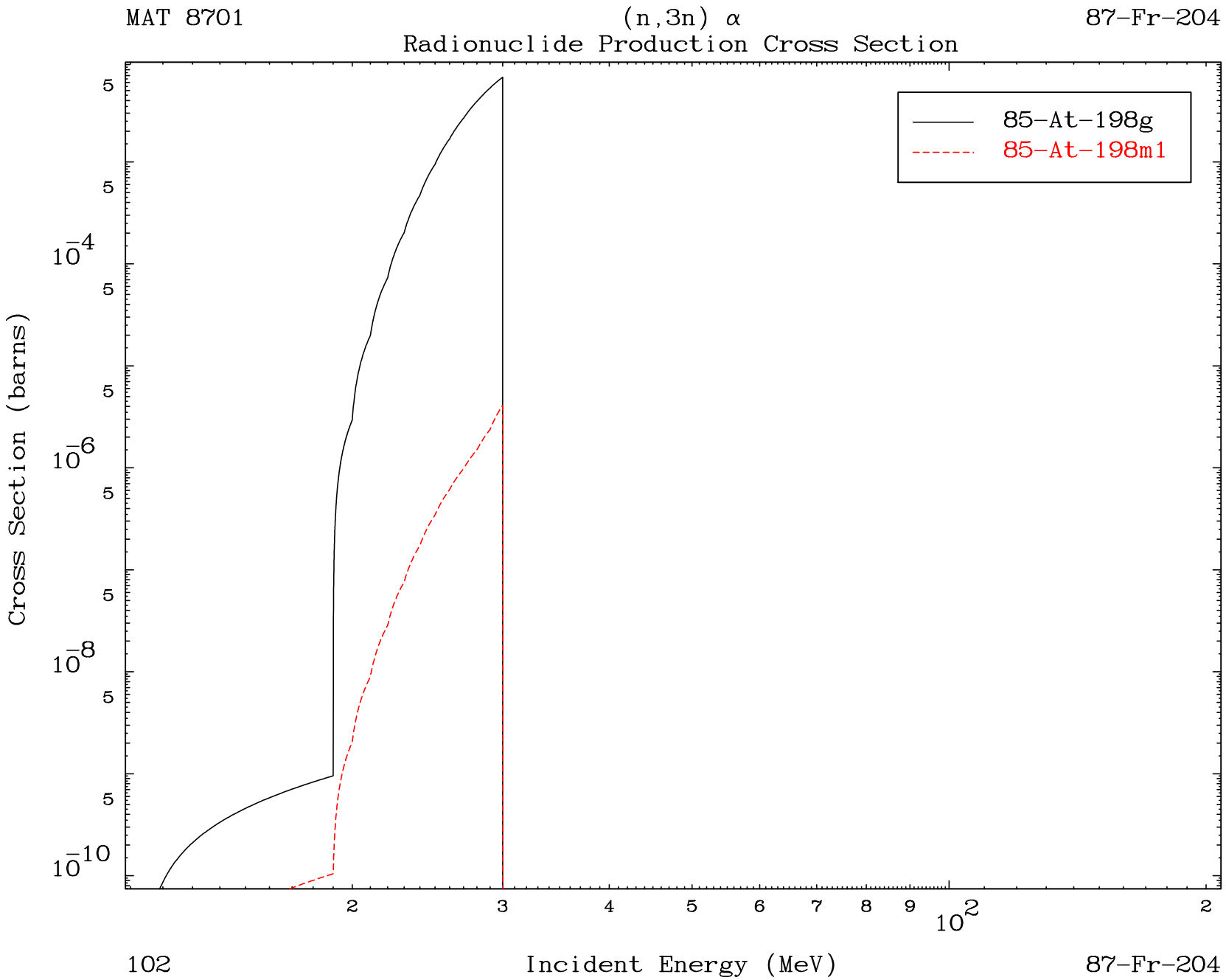

MAT 8701
MT= 72 (n,n') Level
Legendre Coefficients
87-Fr-204
X10 −6
3
2
1
0
Legendre (CM)
P31
P32
P33
P34
P35
P36
P37
P38
50
100
150
200
97
Incident Energy (MeV)
87-Fr-204

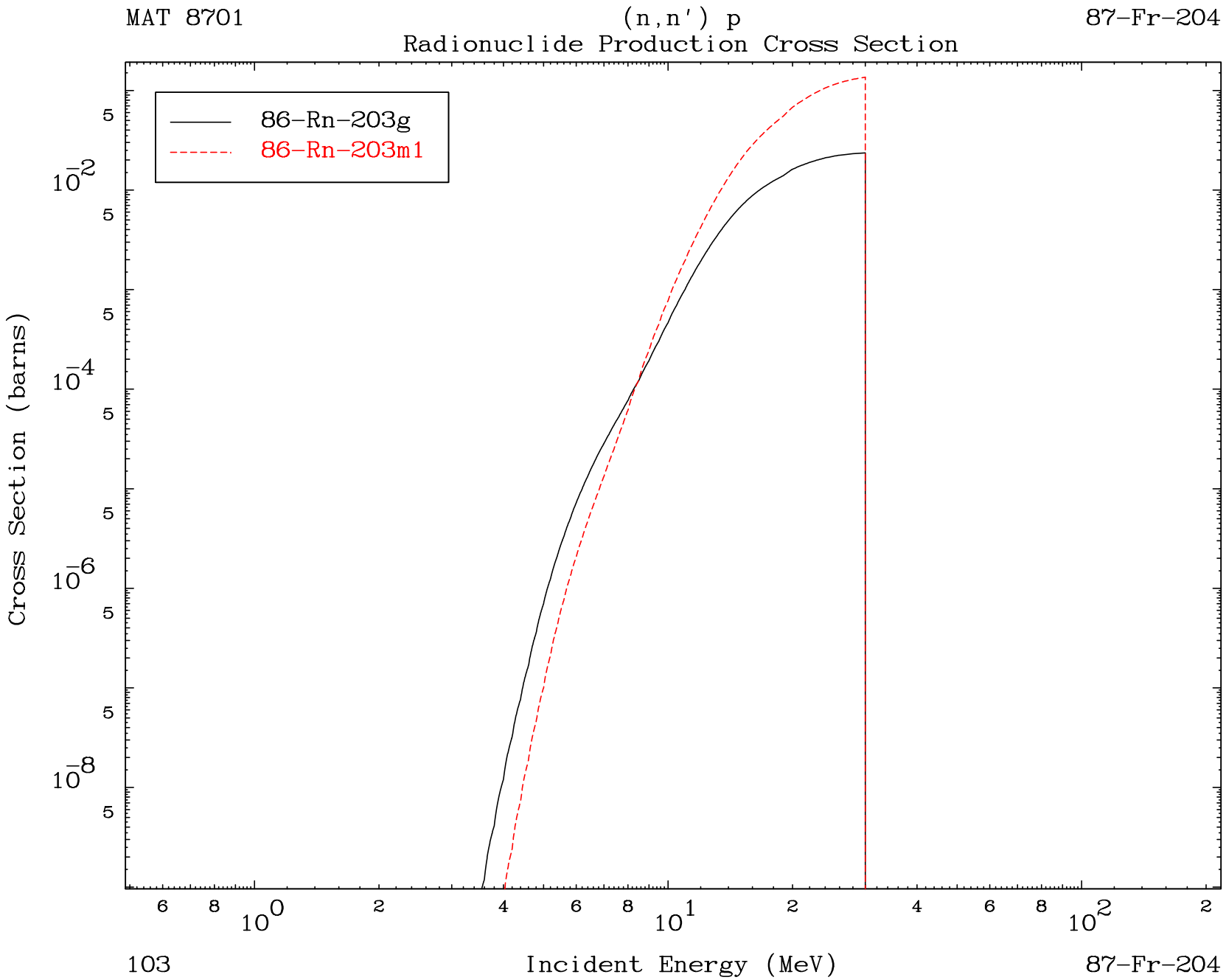

MAT 8701
Inelastic
87-Fr-204
Radionuclide Production Cross Section
87-Fr-204g
87-Fr-204m1
87-Fr-204m2
Cross Section (barns)
Incident Energy (MeV)
98
87-Fr-204

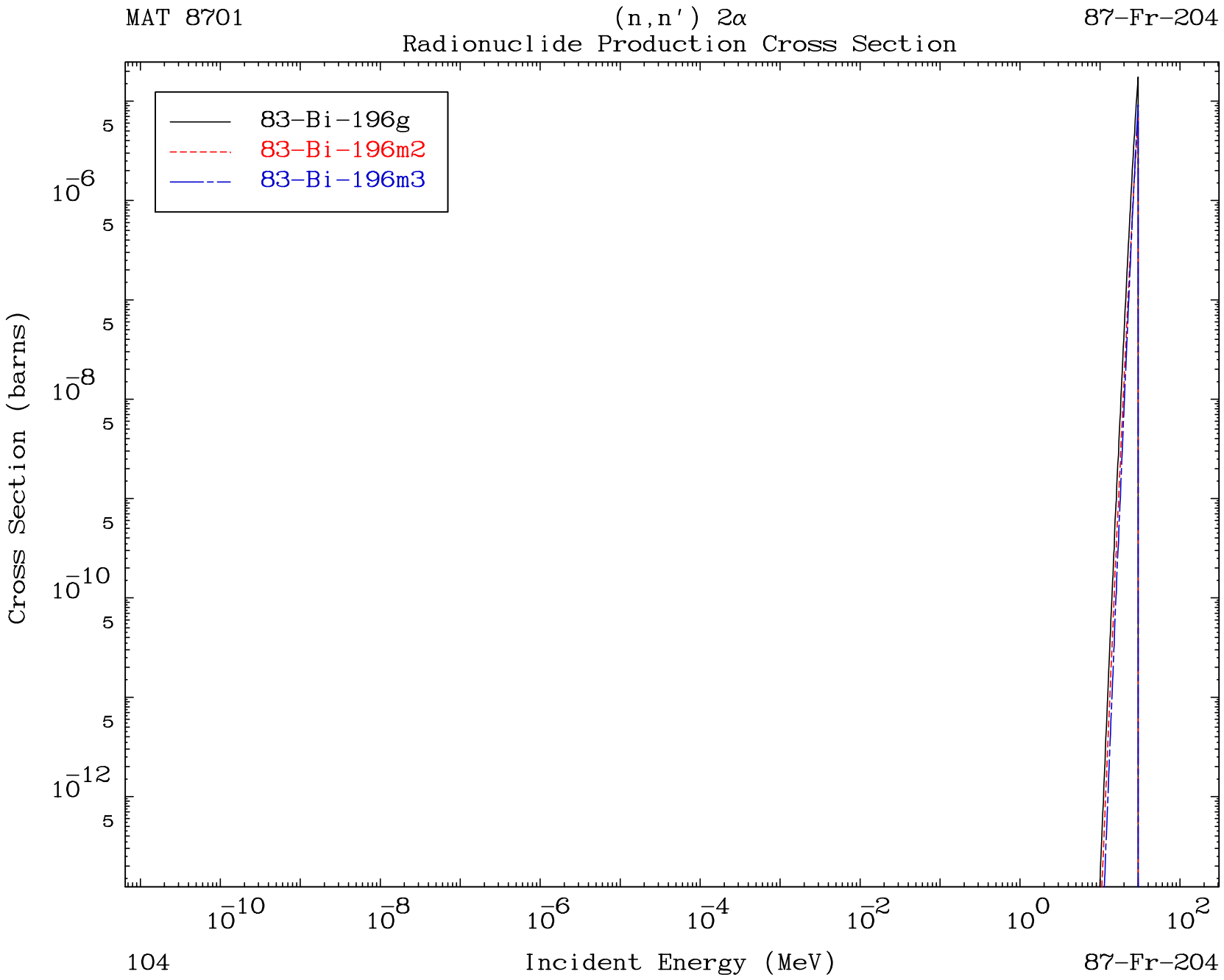

MAT 8701
(n,2n) d
87-Fr-204
Radionuclide Production Cross Section
86-Rn-201g
86-Rn-201m1
Cross Section (barns)
Incident Energy (MeV)
99
87-Fr-204

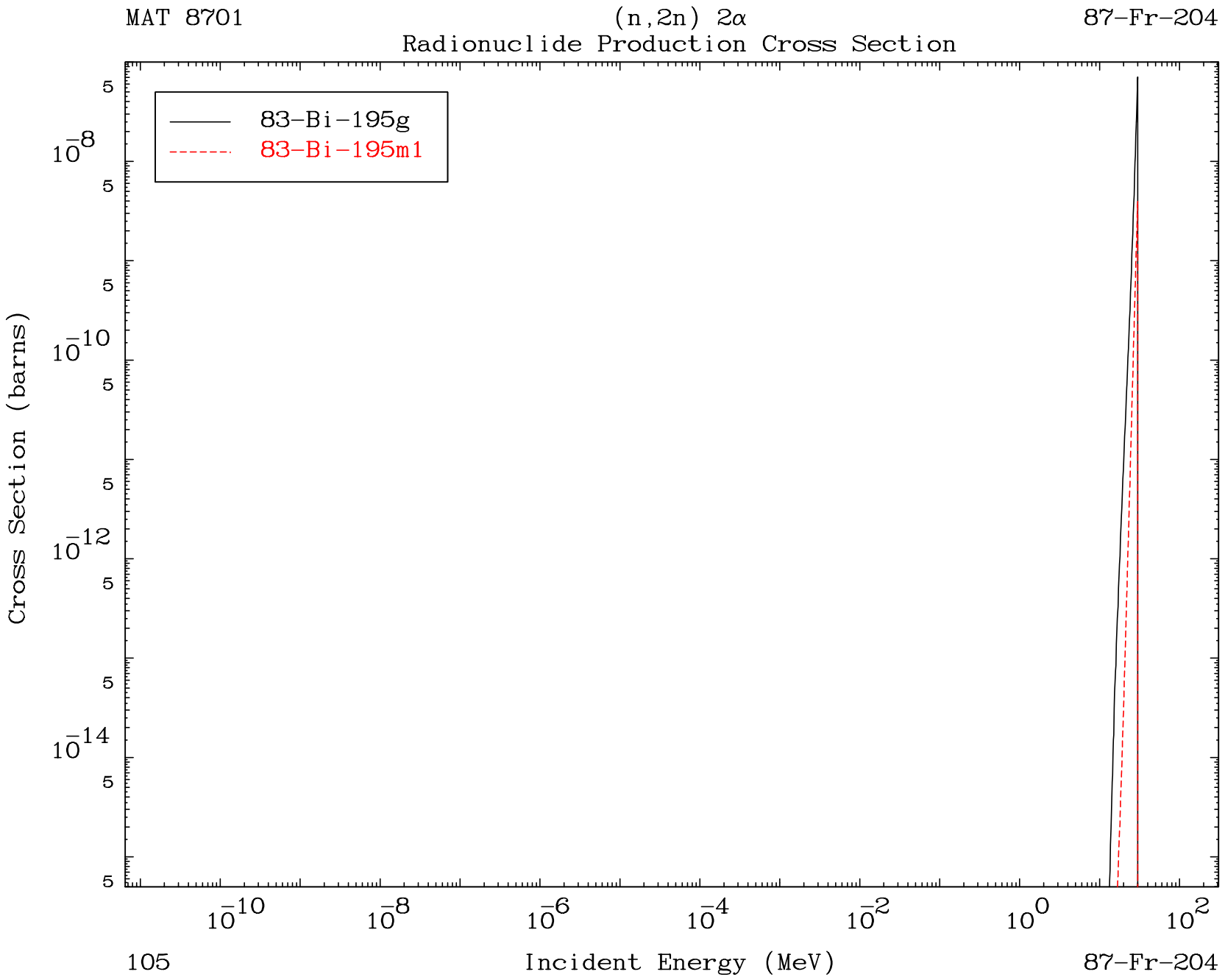

MAT 8701
Fission
87-Fr-204
Radionuclide Production Cross Section
Cross Section (barns)
$10^{0}$
$10^{-2}$
$10^{-4}$
$10^{-6}$
5
$10^{-10}$
$10^{-8}$
$10^{-6}$
$10^{-4}$
$10^{-2}$
$10^{0}$
$10^{2}$
Photon
100
Incident Energy (MeV)
87-Fr-204

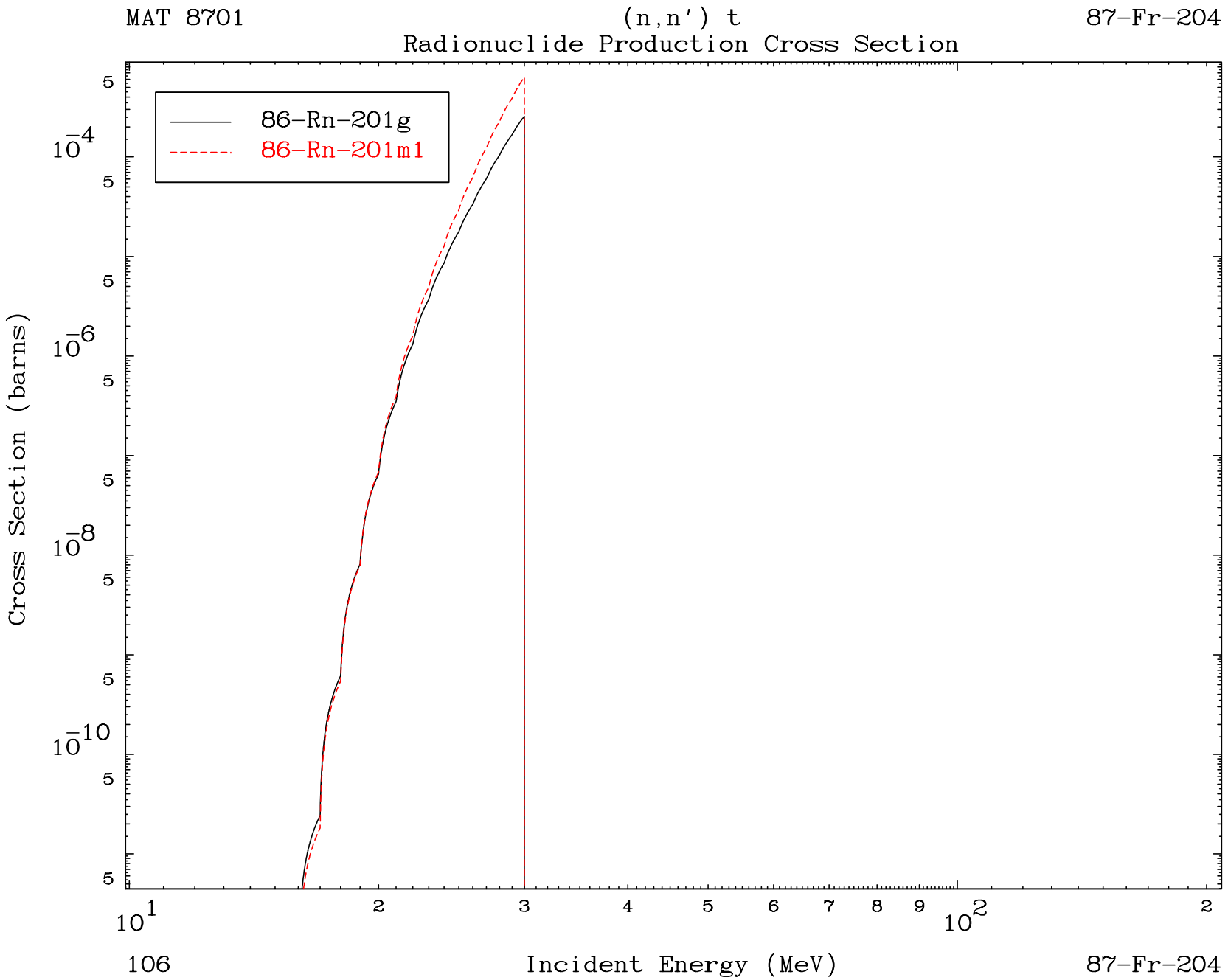

MAT 8701
(n,n') α
87-Fr-204
Radionuclide Production Cross Section
85-At-200g
85-At-200m1
85-At-200m3
Cross Section (barns)
Incident Energy (MeV)
101
87-Fr-204

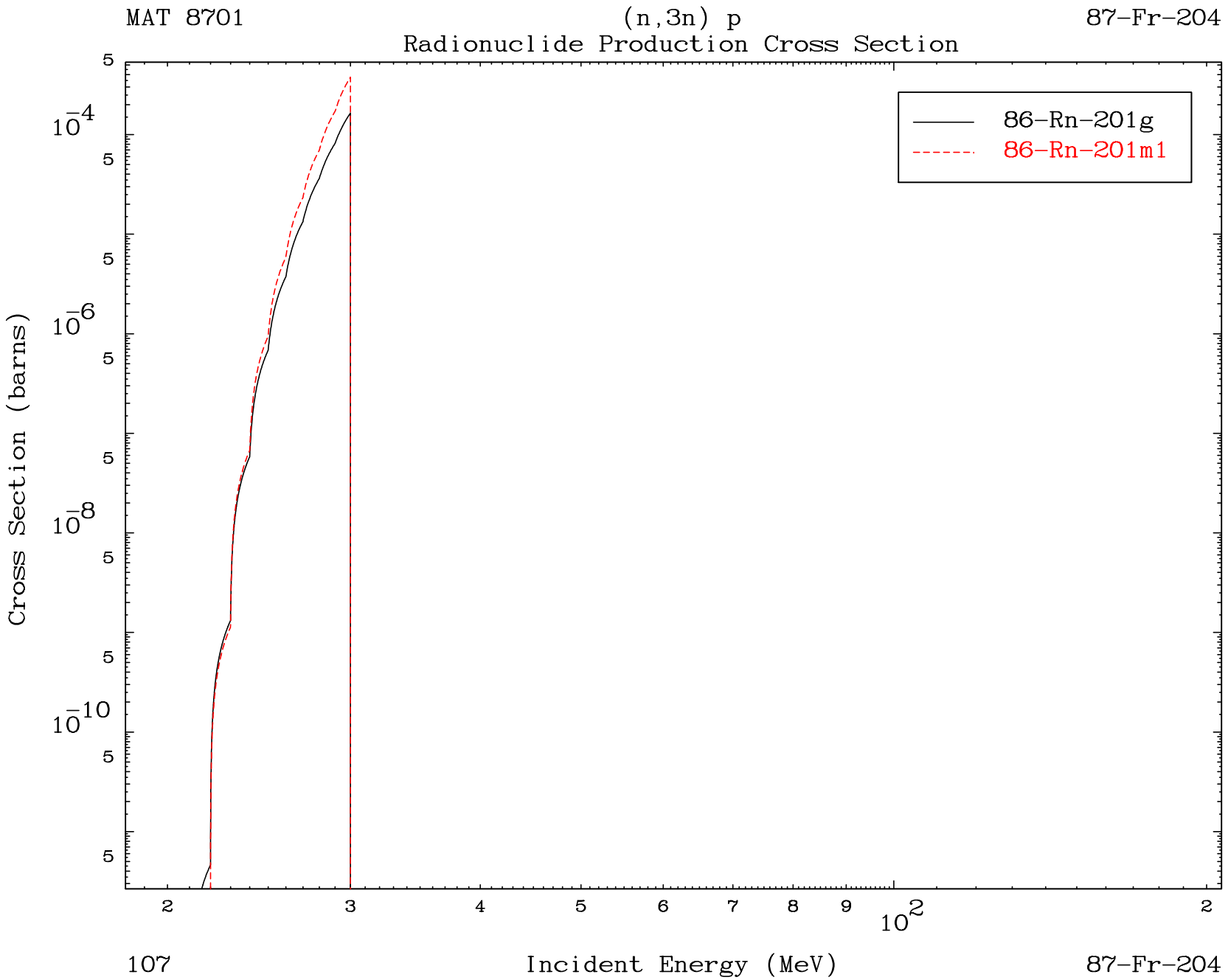

MAT 8701
(n,3n) α
87-Fr-204
Radionuclide Production Cross Section
85-At-198g
85-At-198m1
Cross Section (barns)
10-4
10-6
10-8
10-10
5
2
3
4
6
7
8
9
10^2
Incident Energy (MeV)
102
87-Fr-204

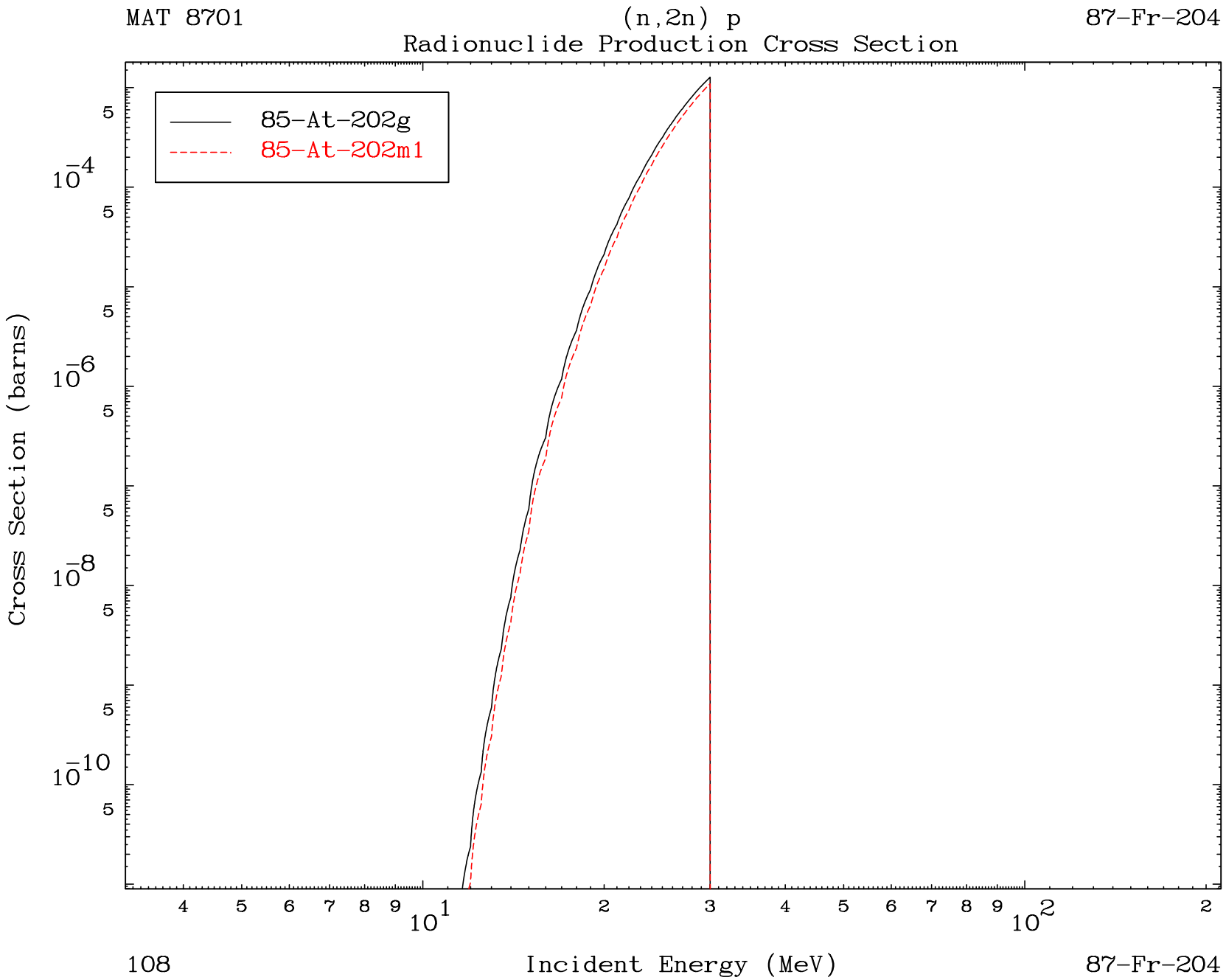

MAT 8701
(n,n') p
87-Fr-204
Radionuclide Production Cross Section
86-Rn-203g
86-Rn-203m1
Cross Section (barns)
10-2
10-4
10-6
10-8
5
100
101
102
2
4
6
8
103
Incident Energy (MeV)
87-Fr-204

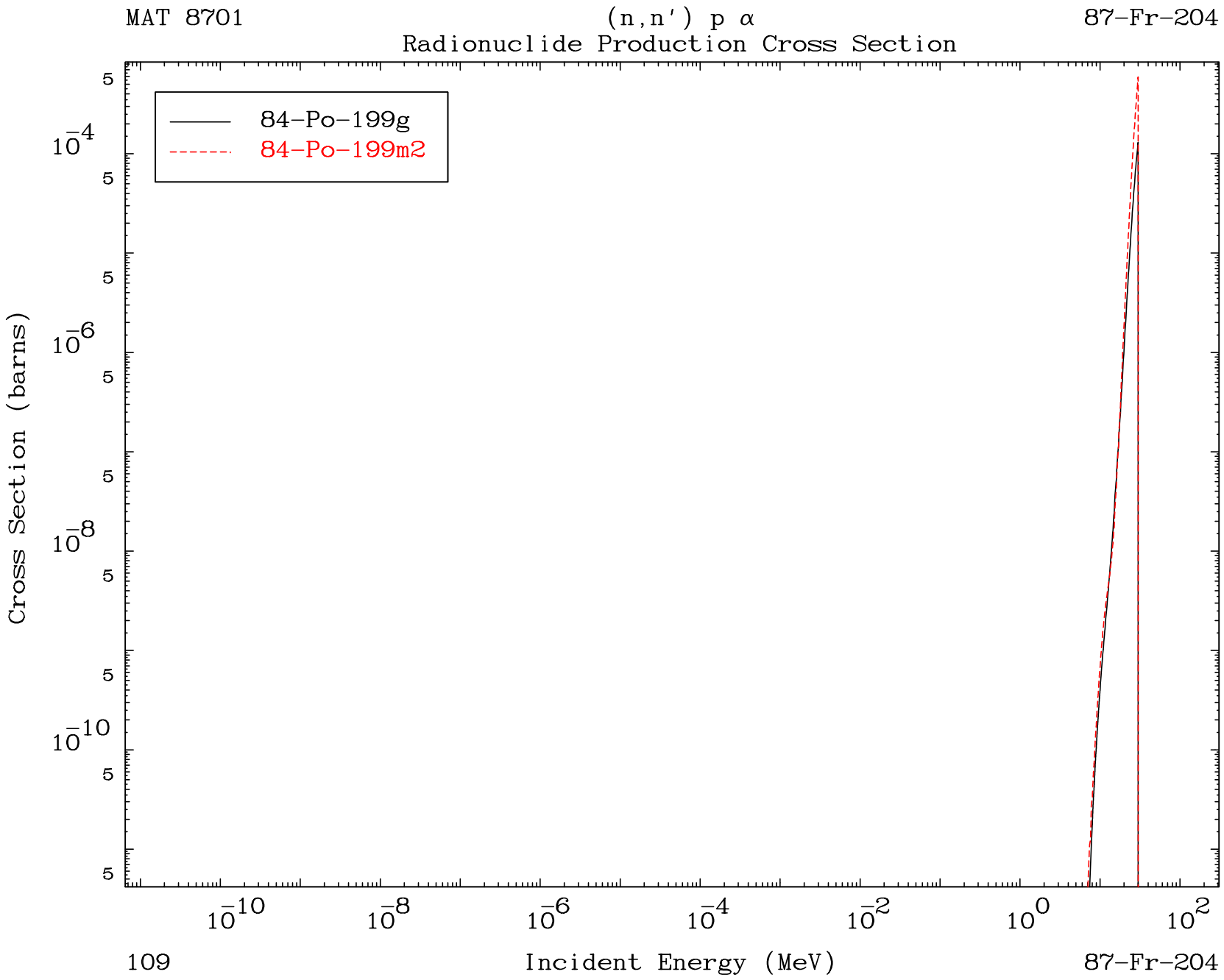

MAT 8701
(n,n') 2α
87-Fr-204
Radionuclide Production Cross Section
83-Bi-196g
83-Bi-196m2
83-Bi-196m3
Cross Section (barns)
Incident Energy (MeV)
104
87-Fr-204

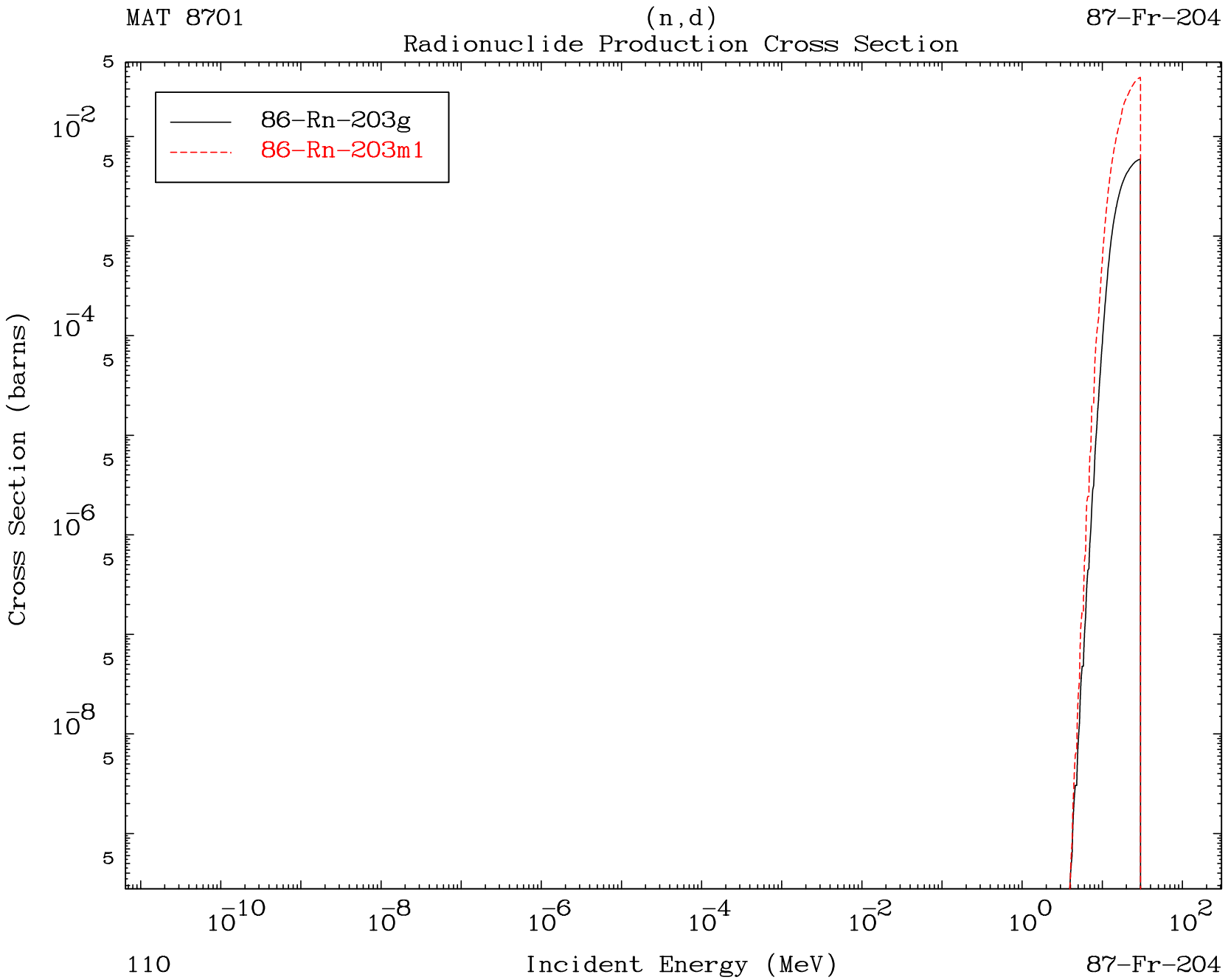

MAT 8701
(n,2n) 2α
87-Fr-204
Radionuclide Production Cross Section
83-Bi-195g
83-Bi-195m1
Cross Section (barns)
Incident Energy (MeV)
105
87-Fr-204

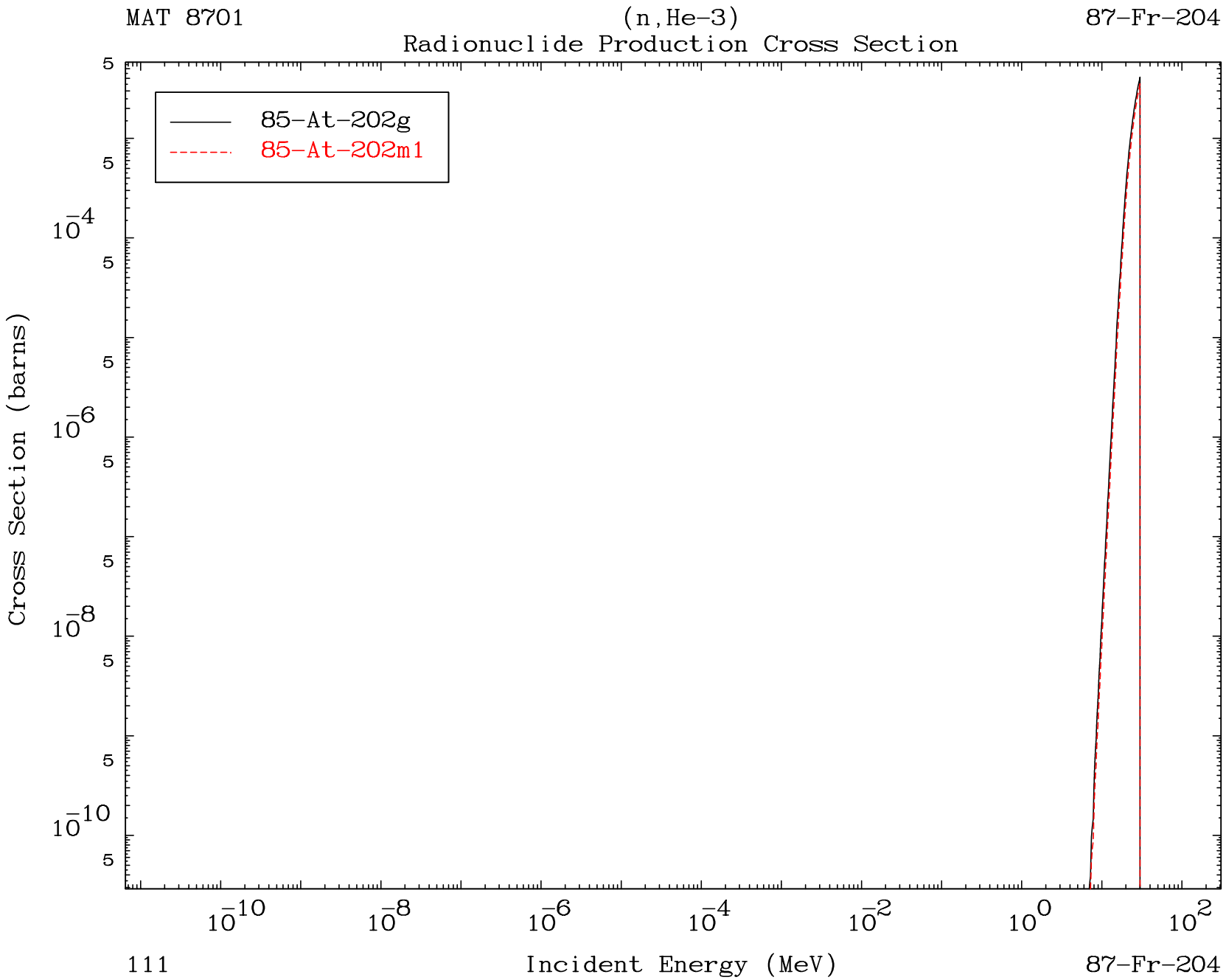

MAT 8701
(n,n') t
87-Fr-204
Radionuclide Production Cross Section
86-Rn-201g
86-Rn-201m1
Cross Section (barns)
Incident Energy (MeV)
106
87-Fr-204

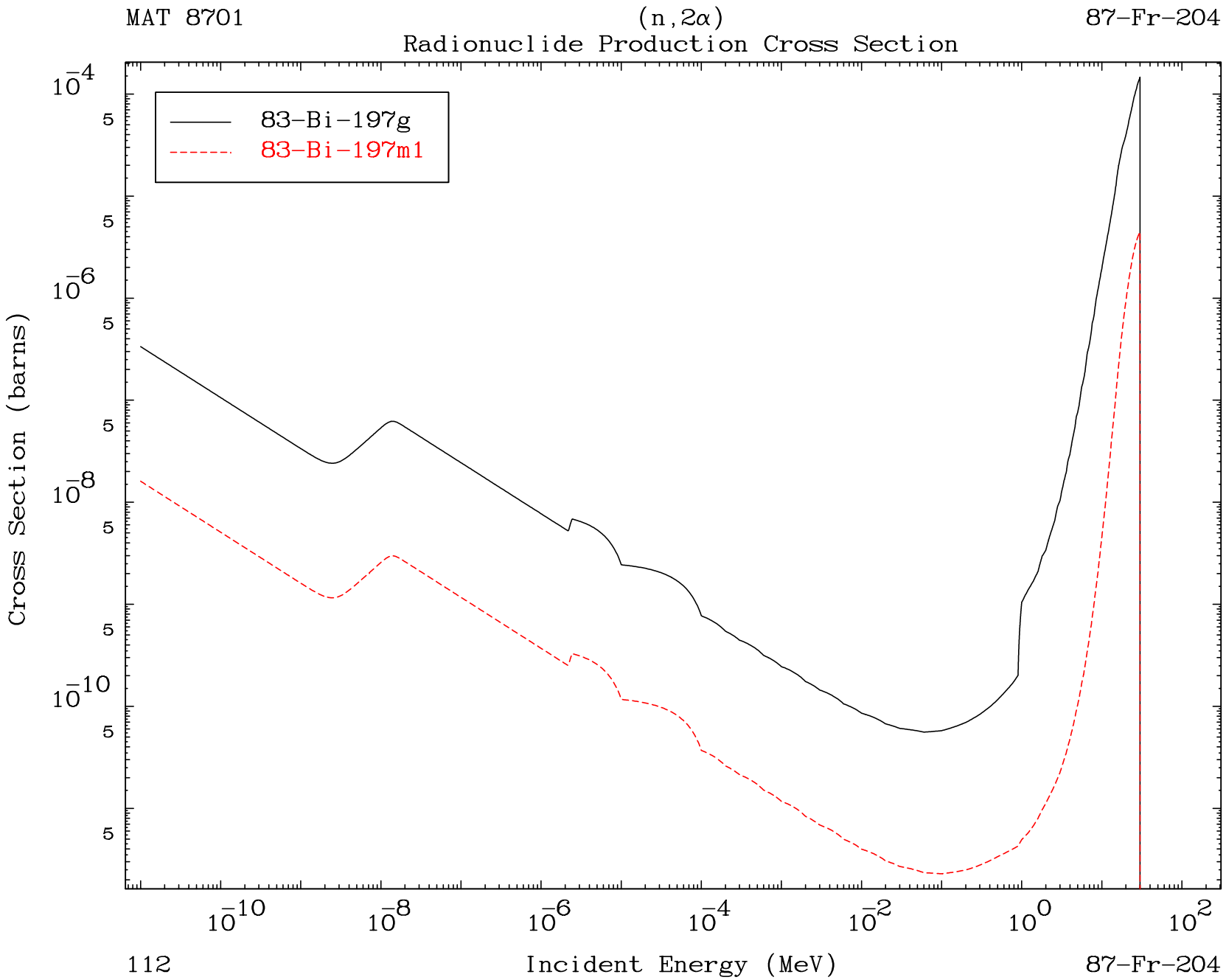

MAT 8701
(n,3n) p
87-Fr-204
Radionuclide Production Cross Section
86-Rn-201g
86-Rn-201m1
Cross Section (barns)
Incident Energy (MeV)
107
87-Fr-204

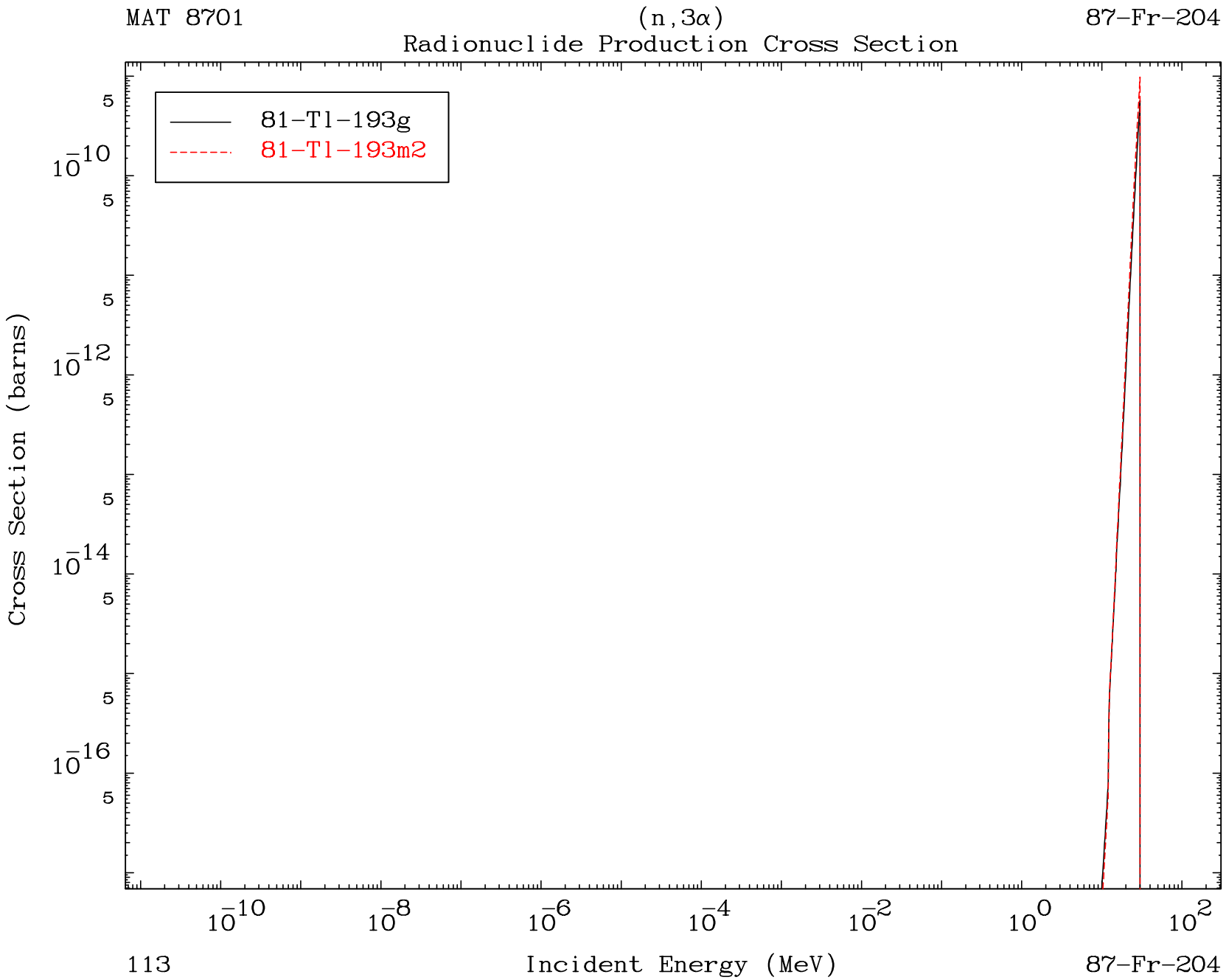

MAT 8701
(n,2n) p
87-Fr-204
Radionuclide Production Cross Section
85-At-202g
85-At-202m1
Cross Section (barns)
Incident Energy (MeV)
108
87-Fr-204

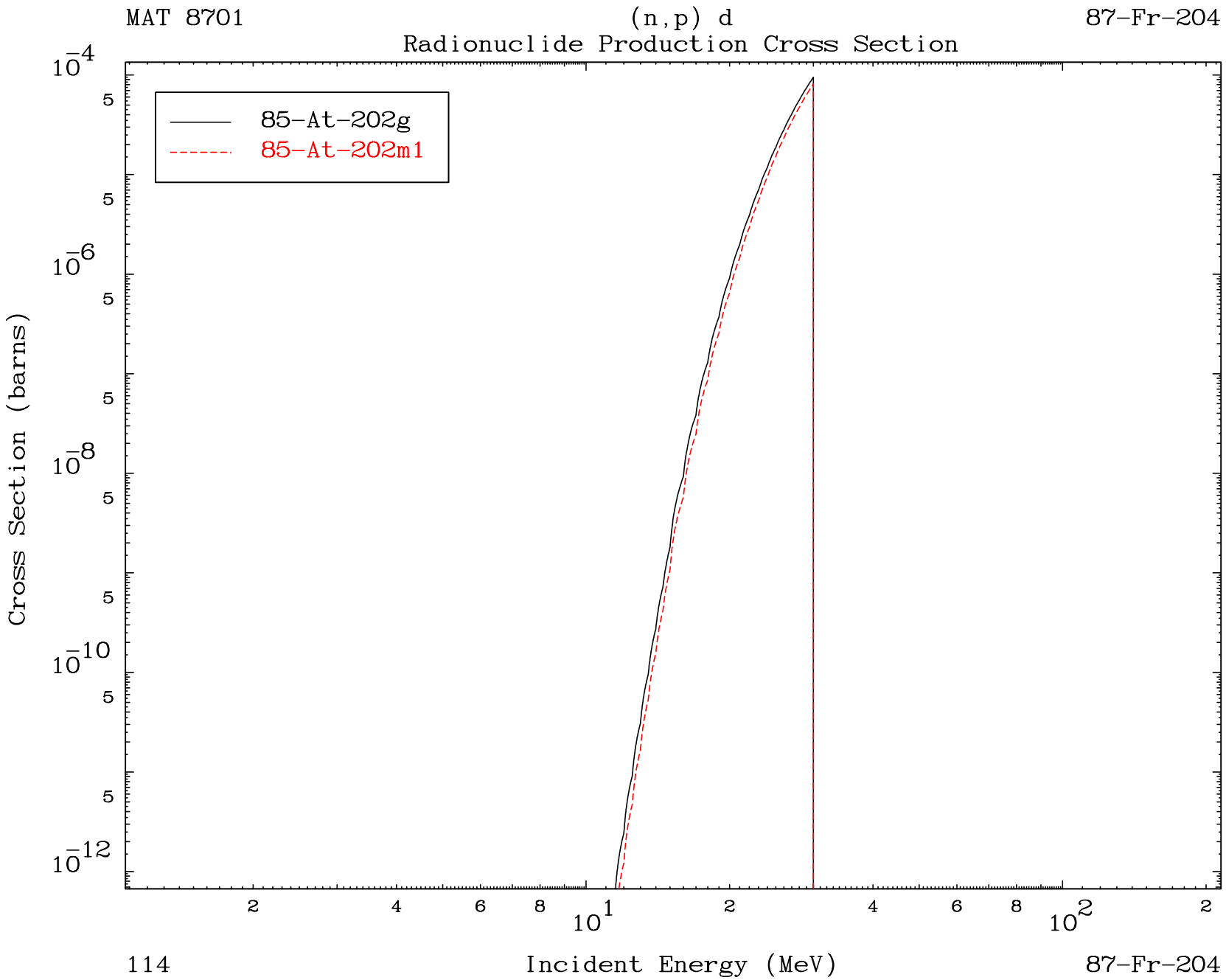

MAT 8701
(n,n') p α
87-Fr-204
Radionuclide Production Cross Section
84-Po-199g
84-Po-199m2
Cross Section (barns)
Incident Energy (MeV)
109
87-Fr-204

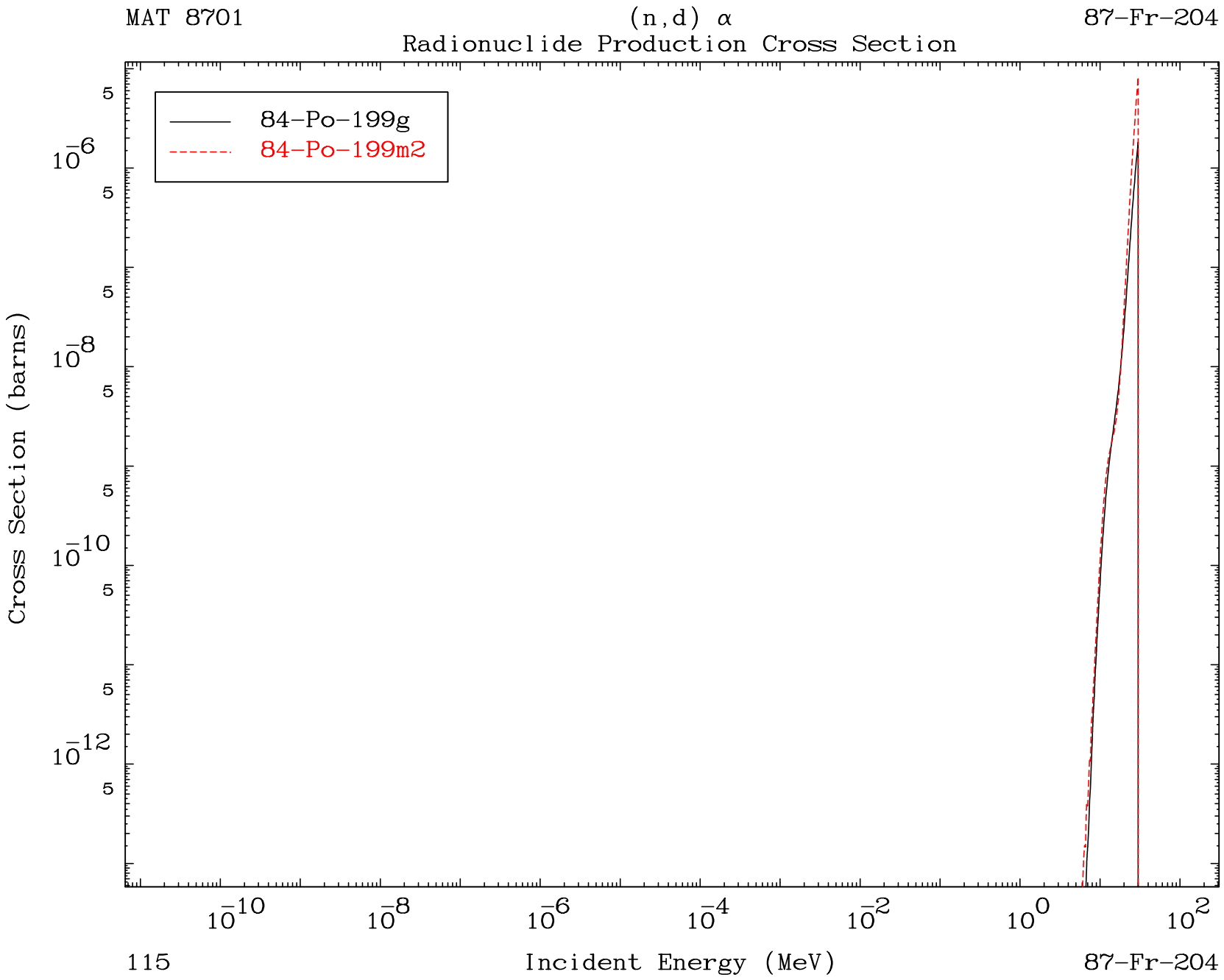

MAT 8701
(n,d)
87-Fr-204
Radionuclide Production Cross Section
86-Rn-203g
86-Rn-203m1
Cross Section (barns)
Incident Energy (MeV)
110
87-Fr-204


MAT 8701
(n,He-3)
87-Fr-204
Radionuclide Production Cross Section
85-At-202g
85-At-202m1
Cross Section (barns)
Incident Energy (MeV)
111
87-Fr-204


MAT 8701
(n,2α)
87-Fr-204
Radionuclide Production Cross Section
83-Bi-197g
83-Bi-197m1
Cross Section (barns)
Incident Energy (MeV)
112
87-Fr-204


MAT 8701
(n,3α)
87-Fr-204
Radionuclide Production Cross Section
81-Tl-193g
81-Tl-193m2
Cross Section (barns)
Incident Energy (MeV)
113
87-Fr-204


MAT 8701
(n,p) d
87-Fr-204
Radionuclide Production Cross Section
85-At-202g
85-At-202m1
Cross Section (barns)
Incident Energy (MeV)
114
87-Fr-204


MAT 8701
(n,d) α
87-Fr-204
Radionuclide Production Cross Section
84-Po-199g
84-Po-199m2
Cross Section (barns)
Incident Energy (MeV)
115
87-Fr-204