## Adopted Levels, Gammas

History

| Type | Author | Citation | Literature Cutoff Date |
|---|---|---|---|
| Full Evaluation | T. D. Johnson, D. Symochko(a), M. Fadil(b), and J. K. Tuli | NDS 112,1949 (2011) | 1-Jun-2010 |

Q($\beta^-$)=−7.67×10$^3$ *3*; S(n)=11124 *9*; S(p)=5753 *15*; Q($\alpha$)=607 *12* 2012Wa38
Note: Current evaluation has used the following Q record −7.67E+3 3 *11124* 9 *5753* 14600 12 2011AuZZ.
Q($\varepsilon$p)=−2082 *5* (2011AuZZ).
Values in 2003Au03: Q($\beta^-$)=−7670 *3*, S(n)=11126 *10* ; S(p)=5759 *15*, Q($\alpha$)=600 *13*, Q($\beta^-$n)=−17138 *14*, ; Q($\varepsilon$p)=−2084 *6*.
Some recent nuclear structure, Theory, Calculations:
1999Pr03, 1998La12, 1998Ka41, 1994Ta05, 1993Pi13.
1992Le09: measured optical isotope shift, derived $\Delta<r^2>$.

### $^{142}$Sm Levels

Cross Reference (XREF) Flags

| | | | |
|---|---|---|---|
| A | $^{142}$Eu $\varepsilon$ decay (2.34 s) | D | $^{144}$Sm(p,t) |
| B | $^{142}$Eu $\varepsilon$ decay (1.223 min) | E | $^{124}$Sn($^{24}$Mg,6n$\gamma$):SD |
| C | (HI,xn$\gamma$) | | |

| E(level) | J$^\pi$‡ | T$_{1/2}$ | XREF | Comments |
|---|---|---|---|---|
| 0.0 | 0$^+$ | 72.49 min *5* | ABCD | %$\varepsilon$+%$\beta^+$=100<br>T$_{1/2}$: from 1966Ma15; others: 72.4 min *1* (1968Bl13), 72.5 min *1* (1972De23). |
| 768.08 *19* | 2$^+$ | | ABCD | J$^\pi$: L=2 in (p,t). |
| 1450.6 *6* | (0$^+$) | | A D | J$^\pi$: L=(0) in (p,t). |
| 1572 *6* | | | D | |
| 1657.79 *24* | (2)$^+$ | | A D | J$^\pi$: L=(2) in (p,t), log *ft*=5.4 via 1$^+$ parent. |
| 1784.2 *3* | 3$^-$ | | BC | J$^\pi$: log *ft*=5.1 from 8$^-$ to the 2371 level, E2 $\gamma$ from 2371 to 2347, E2 $\gamma$ from 2347 to 1784, and $\gamma$ from 1784 to 2$^+$ uniquely establishes $J^\pi$(2371)=7$^-$, $J^\pi$(2347)=5$^-$, and $J^\pi$(1784)=3$^-$. |
| 1791.4 *3* | 4$^+$ | | BCD | J$^\pi$: L=4 in (p,t), $\gamma$ to 2$^+$ is stretched E2. |
| 2055.5 *4* | 2$^+$ | | A D | J$^\pi$: L=2 in (p,t). |
| 2173.3 *5* | 0$^+$ | | A D | J$^\pi$: L=0 in (p,t). |
| 2280 *3* | 0$^+$ | | D | J$^\pi$: L=0 in (p,t). |
| 2347.9 *3* | 5$^-$ | | BCD | J$^\pi$: see comment on the 1784 level. |
| 2353.7? *3* | (2$^+$) | | A | |
| 2372.1 *4* | 7$^-$ | 170 ns *2* | BCD | Q=+1.12 *27* (2005St24,1986Da22,1985Be23)<br>J$^\pi$: see comment on the 1784 level.<br>T$_{1/2}$: from $\beta\gamma$(t) in $\varepsilon$ decay of $^{142}$Eu (1975Ke08); other: 175 ns *5* (HI,xn$\gamma$) (1984LaZU). |
| 2373.9? *3* | (2$^+$) | | A | |
| 2416.0 *11* | (4) | | CD | J$^\pi$: L=(4) in (p,t), $J^\pi$=(4$^-$) in (HI,xn$\gamma$). |
| 2420.1 *3* | 6$^+$ | <2 ns | BC | T$_{1/2}$: from $^{142}$Eu(2.4 s) $\varepsilon$ decay (1975Ke08). |
| 2439.4? *11* | (0$^+$) | | A | |
| 2497 *2* | | | D | |
| 2522.19 *21* | (0$^+$) | | A | |
| 2582 *2* | 4$^+$ | | D | J$^\pi$: L=4 in (p,t). |
| 2656 *2* | | | D | |
| 2747 *6* | (2$^+$) | | D | J$^\pi$: L=(2) in (p,t). |
| 2867 *1* | 4$^+$ | | D | J$^\pi$: L=4 in (p,t). |
| 2912.1 *4* | 7$^-$ | | BC | J$^\pi$: $\gamma$ to 7$^-$ ΔJ=0 M1+(E2), log *ft*=6.5 via 8$^-$ parent. |
| 2955 *2* | 4$^+$ | | D | J$^\pi$: L=4 in (p,t). |
| 3003.1 *11* | (6$^+$) | | C | |
| 3007 *5* | | | D | |
| 3031.8? *5* | (0$^+$) | | A | |
| 3052 *3* | | | D | |

Continued on next page (footnotes at end of table)

## Adopted Levels, Gammas (continued)

### $^{142}$Sm Levels (continued)

| E(level) | $J^{\pi}$‡ | $T_{1/2}$ | XREF | Comments |
|---|---|---|---|---|
| 3113.2 *4* | $8^{-}$† | | BC | |
| 3118 *4* | | | D | |
| 3182 *1* | | | D | |
| 3187.8? *3* | $(0^{+})$ | | A | |
| 3220.1? *5* | | | B | |
| 3245 *4* | | | D | |
| 3326.5 *4* | $8^{+}$ | | BC | |
| 3386.9 *5* | $9^{-}$† | | BC | $J^{\pi}$: $\gamma$ to $8^{-}$ is $\Delta$J=1 M1,E2. |
| 3571.0 *4* | | | B | |
| 3640.0 *11* | $11^{-}$† | | C | |
| 3662.2 *7* | $10^{+}$† | 480 ns *60* | C | $T_{1/2}$: from (HI,xn$\gamma$) (1984LaZU); others: >150 (1981Me09), >100 ns (1979BeZK). |
| 3714.0 *4* | | | B | |
| 3798.9 *4* | | | B | |
| 3826.0 *8* | $10^{+}$† | | C | |
| 3974.7 *7* | $10^{-}$ | | C | |
| 4072.2 *4* | $(7^{-})$ | | B | $J^{\pi}$: $\gamma$ to $5^{-}$; log *ft*=6.3 via $8^{-}$ parent. |
| 4210.7 *5* | | | B | |
| 4294.1 *9* | $11^{-}$ | | C | |
| 4309.3 *4* | $(7^{-})$ | | B | $J^{\pi}$: $\gamma$ to $(6^{+})$; log *ft*=6.3 via $8^{-}$ parent. |
| 4371.9 *9* | $11^{-}$ | | C | |
| 4541.6 *11* | $11^{+}$ | | C | |
| 4547.0 *10* | $13^{-}$ | 2.6 ns *6* | C | $T_{1/2}$: from 1984LaZU (HI,xn$\gamma$); others: 2.5 ns (HI,4n$\gamma$) (1981Me09), ≈3 ns ($\alpha$,4n$\gamma$) (1979BeZK). |
| 4630.5 *4* | | | B | |
| 4746.0 *10* | $12^{+}$ | | C | |
| 4970.4 *10* | $(11^{+})$ | | C | |
| 5048.4 *10* | 12 | | C | |
| 5133.7 *11* | 13 | | C | |
| 5224.2 *11* | 14 | | C | |
| 5418.0 *15* | 15 | | C | |
| 5763.7 *18* | 16 | | C | |
| 5803.2 *18* | 16 | | C | |
| 6090.1 *21* | | | C | |
| x# | J1 | | E | Additional information 1. $J^{\pi}$: ≈(25) relative spin predicted according to the method given by 1993Ra07 and priv comm from I. Ragnarsson to G. Hackman (August 1993). |
| 679.70+x# *20* | J1+2 | | E | |
| 1419.10+x# *23* | J1+4 | | E | |
| 2218.81+x# *25* | J1+6 | | E | |
| 3078.8+x# *3* | J1+8 | | E | |
| 3999.2+x# *3* | J1+10 | | E | |
| 4979.8+x# *3* | J1+12 | | E | |
| 6021.1+x# *4* | J1+14 | | E | |
| 7122.9+x# *4* | J1+16 | | E | |
| 8285.8+x# *4* | J1+18 | | E | |
| 9510.2+x# *4* | J1+20 | | E | |
| 10796.4+x# *4* | J1+22 | | E | |
| 12144.6+x# *4* | J1+24 | | E | |
| 13555.6+x# *4* | J1+26 | | E | |

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## Adopted Levels, Gammas (continued)

### $^{142}$Sm Levels (continued)

| E(level) | $J^{\pi}$‡ | XREF | Comments |
|---|---|---|---|
| 15030.1+x# 5 | J1+28 | E | |
| 16568.4+x# 5 | J1+30 | E | |
| 18171.2+x# 5 | J1+32 | E | |
| 19838.8+x# 5 | J1+34 | E | |
| 21571.6+x# 5 | J1+36 | E | |
| 23369.9+x# 7 | J1+38 | E | |
| y@ | J2 | E | Additional information 2. |
| 726.2+y@ 3 | J2+2 | E | |
| 1512.6+y@ 4 | J2+4 | E | |
| 2357.0+y@ 5 | J2+6 | E | |
| 3258.3+y@ 5 | J2+8 | E | |
| 4216.2+y@ 5 | J2+10 | E | |
| 5228.8+y@ 6 | J2+12 | E | |
| 6302.5+y@ 6 | J2+14 | E | |
| 7431.5+y@ 6 | J2+16 | E | |
| 8617.6+y@ 7 | J2+18 | E | |
| 9861.1+y@ 7 | J2+20 | E | |
| 11163.0+y@ 8 | J2+22 | E | |
| 12523.4+y@ 8 | J2+24 | E | |
| 13942.0+y@ 9 | J2+26 | E | |
| 15419.8+y@ 10 | J2+28 | E | |
| 16955.2+y@ 11 | J2+30 | E | |
| 18544.8+y@ 12 | J2+32 | E | |
| 20180.1+y@ 13 | J2+34 | E | |

† Based on $\gamma(\theta)$, $\alpha$ and yield in (HI,xn$\gamma$); however, these data were not given by 1984La29, 1984LaZU, 1981Me09, 1974LuZS.

‡ $\varepsilon$ transitions to levels seen in 2.34-s $^{142}$Eu decay are allowed giving $J^{\pi}=0^+,1^+,2^+$. Levels decaying directly to g.s. are assigned by 1991Fi03 as $2^+$ as low-lying $1^+$ are not expected. Levels decaying to $2^+$ and not the g.s. are assigned by them to be $0^+$.

# Band(A): SD-1 band (1998Ha06,1995Ha29,1993Ha03). Proposed intruder configuration=$\pi 6^1 \nu 7^0$. Q(intrinsic)=11.7 *1* (1998Ha06). The quoted uncertainty is statistical. Additional systematic uncertainty due to stopping powers=10-15%. Percent population=0.5 *1* (1993Ha03).

@ Band(B): SD-2 band (1998Ha06,1993Ha03). Proposed intruder configuration=$\pi 6^2 \nu 7^1$. Q(intrinsic)=13.2 +*8*−*7* (1998Ha06). The quoted uncertainty is statistical. Additional systematic uncertainty due to stopping powers=10-15%. Percent population=0.09 *2* (1995Ha29) of $^{142}$Sm channel or 17% *3* of the SD-1 population.

## Adopted Levels, Gammas (continued)

### γ($^{142}$Sm)

| $E_i$(level) | $J_i^\pi$ | $E_\gamma$ | $I_\gamma$[‡] | $E_f$ | $J_f^\pi$ | Mult.[@] | α[†] | $I_{(\gamma+ce)}$ | Comments |
|---|---|---|---|---|---|---|---|---|---|
| 768.08 | $2^+$ | 768.0 *2* | 100 | 0.0 | $0^+$ | E2 | 0.00444 *7* | | α(K)=0.00373 *6*; α(L)=0.000557 *8*; α(M)=0.0001202 *17*; α(N+..)=3.13×10$^{-5}$ *5*<br>α(N)=2.71×10$^{-5}$ *4*; α(O)=3.97×10$^{-6}$ *6*; α(P)=2.20×10$^{-7}$ *3* |
| 1450.6 | $(0^+)$ | 682.2 *7* | 100 | 768.08 | $2^+$ | | | | |
| | | (1451.1) | | 0.0 | $0^+$ | (E0) | | | Mult.: from $^{142}$Eu (2.34 s) ε decay. |
| 1657.79 | $(2)^+$ | 889.6 *3* | 100 *9* | 768.08 | $2^+$ | | | | |
| | | 1658.1 *5* | 98 *23* | 0.0 | $0^+$ | | | | |
| 1784.2 | $3^-$ | 1016.1 *2* | 100 | 768.08 | $2^+$ | (E1) | 0.001001 *14* | | α(K)=0.000861 *12*; α(L)=0.0001106 *16*; α(M)=2.35×10$^{-5}$ *4*; α(N+..)=6.16×10$^{-6}$<br>α(N)=5.31×10$^{-6}$ *8*; α(O)=7.96×10$^{-7}$ *12*; α(P)=4.99×10$^{-8}$ *7* |
| 1791.4 | $4^+$ | 1023.3 *2* | 100 | 768.08 | $2^+$ | E2 | 0.00237 *4* | | α(K)=0.00201 *3*; α(L)=0.000282 *4*; α(M)=6.06×10$^{-5}$ *9*; α(N+..)=1.583×10$^{-5}$ *23*<br>α(N)=1.368×10$^{-5}$ *20*; α(O)=2.03×10$^{-6}$ *3*; α(P)=1.195×10$^{-7}$ *17* |
| 2055.5 | $2^+$ | 1287.4 *3* | 100 *9* | 768.08 | $2^+$ | | | | |
| | | 2055.5 *10* | 37 *5* | 0.0 | $0^+$ | | | | |
| 2173.3 | $0^+$ | 1405.2 *4* | 100 | 768.08 | $2^+$ | | | | |
| 2347.9 | $5^-$ | 556.6 *2* | 100 *3* | 1791.4 | $4^+$ | E1 | 0.00340 *5* | | α(K)=0.00291 *4*; α(L)=0.000383 *6*; α(M)=8.17×10$^{-5}$ *12*; α(N+..)=2.13×10$^{-5}$ *3*<br>α(N)=1.84×10$^{-5}$ *3*; α(O)=2.74×10$^{-6}$ *4*; α(P)=1.658×10$^{-7}$ *24* |
| | | 563.7 *2* | 9.6 *5* | 1784.2 | $3^-$ | E2,(M1) | 0.013 *4* | | α(K)=0.011 *3*; α(L)=0.0016 *3*; α(M)=0.00034 *6*; α(N+..)=8.8×10$^{-5}$ *16*<br>α(N)=7.6×10$^{-5}$ *14*; α(O)=1.12×10$^{-5}$ *23*; α(P)=6.5×10$^{-7}$ *20* |
| 2353.7? | $(2^+)$ | 2353.7 *3* | 100 | 0.0 | $0^+$ | | | | |
| 2372.1 | $7^-$ | 24.1 *3* | | 2347.9 | $5^-$ | E2 | 1.11×10$^3$ *8* | 95.0 | B(E2)(W.u.)=8.2 *6*<br>ce(L)/(γ+ce)=0.78 *4*; ce(M)/(γ+ce)=0.179 *16*; ce(N+)/(γ+ce)=0.044 *4*<br>ce(N)/(γ+ce)=0.039 *4*; ce(O)/(γ+ce)=0.0047 *5*; ce(P)/(γ+ce)=1.06×10$^{-6}$ *10* |
| | | 580.7[&] *4* | | 1791.4 | $4^+$ | | | ≈0.5 | |
| 2373.9? | $(2^+)$ | 2373.9 *3* | 7.5 *9* | 0.0 | $0^+$ | | | | |
| 2416.0 | (4) | 631.8 | | 1784.2 | $3^-$ | | | | |
| 2420.1 | $6^+$ | 628.7 *2* | 100 | 1791.4 | $4^+$ | | | | |
| 2439.4? | $(0^+)$ | 1671.3 | 12.6 | 768.08 | $2^+$ | | | | |
| 2522.19 | $(0^+)$ | 864.4 *2* | 5.8 *12* | 1657.79 | $(2)^+$ | | | | |
| | | 1754.1 *1* | 100 *8* | 768.08 | $2^+$ | | | | |
| 2912.1 | $7^-$ | 491.8 | | 2420.1 | $6^+$ | | | | |
| | | 540.0 *2* | 100 | 2372.1 | $7^-$ | M1 | 0.01773 | | α(K)=0.01512 *22*; α(L)=0.00205 *3*; α(M)=0.000439 *7*; α(N+..)=0.0001156 *17* |





$^{142}_{62}Sm_{80}$-4

## Adopted Levels, Gammas (continued)

### γ($^{142}$Sm) (continued)

| $E_i$(level) | $J_i^\pi$ | $E_\gamma$ | $I_\gamma$[‡] | $E_f$ | $J_f^\pi$ | Mult.[@] | α[†] | Comments |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | α(N)=9.96×10$^{-5}$ *14*; α(O)=1.499×10$^{-5}$ *21*; α(P)=9.46×10$^{-7}$ *14* |
| 3003.1 | (6$^+$) | 1211.7 | 100 | 1791.4 | 4$^+$ | | | |
| 3031.8? | (0$^+$) | 2263.7 *4* | 100 | 768.08 | 2$^+$ | | | |
| 3113.2 | 8$^-$ | 200.9 *5* | 65 *12* | 2912.1 | 7$^-$ | E2,M1 | 0.222 *17* | α(K)=0.18 *3*; α(L)=0.037 *9*; α(M)=0.0081 *21*; α(N+..)=0.0021 *5*<br>α(N)=0.0018 *5*; α(O)=0.00025 *5*; α(P)=1.0×10$^{-5}$ *3* |
| | | 741.2 *2* | 100 *12* | 2372.1 | 7$^-$ | | | |
| 3187.8? | (0$^+$) | 2419.7 *2* | 100 | 768.08 | 2$^+$ | | | |
| 3220.1? | | 848.0 *3* | 100 | 2372.1 | 7$^-$ | | | |
| 3326.5 | 8$^+$ | 906.4 *3* | 86 *21* | 2420.1 | 6$^+$ | | | |
| | | 954.3 *2* | 100 *14* | 2372.1 | 7$^-$ | | | |
| 3386.9 | 9$^-$ | 273.8 *5* | 100 *17* | 3113.2 | 8$^-$ | E2,M1 | 0.089 *15* | α(K)=0.073 *16*; α(L)=0.0129 *8*; α(M)=0.00282 *22*; α(N+..)=0.00073 *5*<br>α(N)=0.00063 *5*; α(O)=9.05×10$^{-5}$ *21*; α(P)=4.3×10$^{-6}$ *13* |
| | | 474.4 *5* | 63 *8* | 2912.1 | 7$^-$ | | | |
| 3571.0 | | 1151.0 *3* | 90 *18* | 2420.1 | 6$^+$ | | | |
| | | 1198.8 *3* | 100 *26* | 2372.1 | 7$^-$ | | | |
| 3640.0 | 11$^-$ | 253.1 | 100 | 3386.9 | 9$^-$ | | | |
| 3662.2 | 10$^+$ | 275.1 | | 3386.9 | 9$^-$ | [E1] | 0.0183 | B(E1)(W.u.)=7.0×10$^{-9}$ *10*<br>α(K)=0.01564 *22*; α(L)=0.00213 *3*; α(M)=0.000455 *7*; α(N+..)=0.0001182 *17*<br>α(N)=0.0001024 *15*; α(O)=1.500×10$^{-5}$ *21*; α(P)=8.54×10$^{-7}$ *12* |
| | | 336.0 | | 3326.5 | 8$^+$ | [E2] | 0.0397 | B(E2)(W.u.)=1.3×10$^{-3}$ *2*<br>α(K)=0.0314 *5*; α(L)=0.00651 *10*; α(M)=0.001444 *21*; α(N+..)=0.000369 *6*<br>α(N)=0.000322 *5*; α(O)=4.47×10$^{-5}$ *7*; α(P)=1.720×10$^{-6}$ *24* |
| | | 1290.3 | | 2372.1 | 7$^-$ | [E3] | 0.00294 *5* | B(E3)(W.u.)=0.18 *2*<br>α(K)=0.00246 *4*; α(L)=0.000371 *6*; α(M)=8.02×10$^{-5}$ *12*; α(N+..)=2.68×10$^{-5}$ *4*<br>α(N)=1.81×10$^{-5}$ *3*; α(O)=2.67×10$^{-6}$ *4*; α(P)=1.522×10$^{-7}$ *22*; α(IPF)=5.84×10$^{-6}$ *9* |
| 3714.0 | | 1341.9 *2* | 100 | 2372.1 | 7$^-$ | | | |
| 3798.9 | | 886.7 *2* | 88 *9* | 2912.1 | 7$^-$ | | | |
| | | 1426.8 *3* | 100 *19* | 2372.1 | 7$^-$ | | | |
| 3826.0 | 10$^+$ | 163.9 | | 3662.2 | 10$^+$ | | | |
| | | 438.9 | 100 | 3386.9 | 9$^-$ | | | |
| 3974.7 | 10$^-$ | 587.7 | | 3386.9 | 9$^-$ | | | |
| | | 861.6 | | 3113.2 | 8$^-$ | | | |
| 4072.2 | (7$^-$) | 1652.1 *3* | 35 *7* | 2420.1 | 6$^+$ | | | |
| | | 1700.1 *3* | 100 *8* | 2372.1 | 7$^-$ | | | |
| | | 1724.5 *4* | 14 *5* | 2347.9 | 5$^-$ | | | |
| 4210.7 | | 1838.6 *3* | 100 *11* | 2372.1 | 7$^-$ | | | |
| 4294.1 | 11$^-$ | 319.4 | | 3974.7 | 10$^-$ | | | |
| | | 907.2 | | 3386.9 | 9$^-$ | | | |
| 4309.3 | (7$^-$) | 982.0 *5* | 47 *10* | 3326.5 | 8$^+$ | | | |
| | | 1889.0 *4* | 29 *6* | 2420.1 | 6$^+$ | | | |
| | | 1937.6 *3* | 100 *12* | 2372.1 | 7$^-$ | | | |





$^{142}_{62}Sm_{80}$-5

## Adopted Levels, Gammas (continued)

### γ($^{142}$Sm) (continued)

| $E_i$(level) | $J_i^\pi$ | $E_\gamma$ | $I_\gamma$[‡] | $E_f$ | $J_f^\pi$ |
|---|---|---|---|---|---|
| 4371.9 | $11^-$ | 397.1 | | 3974.7 | $10^-$ |
| | | 985 | | 3386.9 | $9^-$ |
| 4541.6 | $11^+$ | 715.6 | | 3826.0 | $10^+$ |
| 4547.0 | $13^-$ | 175.1 | | 4371.9 | $11^-$ |
| | | 252.9 | | 4294.1 | $11^-$ |
| 4630.5 | | 2258.4 *2* | 100 *9* | 2372.1 | $7^-$ |
| 4746.0 | $12^+$ | 920.0 | 100 | 3826.0 | $10^+$ |
| 4970.4 | $(11^+)$ | 1308.4 | | 3662.2 | $10^+$ |
| 5048.4 | 12 | 78.1 | | 4970.4 | $(11^+)$ |
| | | 302.5 | | 4746.0 | $12^+$ |
| | | 506.7 | | 4541.6 | $11^+$ |
| 5133.7 | 13 | 85.5 | | 5048.4 | 12 |
| | | 387.7 | | 4746.0 | $12^+$ |
| 5224.2 | 14 | 90.5 | | 5133.7 | 13 |
| | | 677.1 | | 4547.0 | $13^-$ |
| 5418.0 | 15 | 193.8 | 100 | 5224.2 | 14 |
| 5763.7 | 16 | 345.7 | 100 | 5418.0 | 15 |
| 5803.2 | 16 | 385.2 | | 5418.0 | 15 |
| 6090.1 | | 286.9 | | 5803.2 | 16 |
| 679.70+x | J1+2 | 679.7 *2* | 0.30[#] *17* | x | J1 |
| 1419.10+x | J1+4 | 739.4 *1* | 0.84[#] *19* | 679.70+x | J1+2 |
| 2218.81+x | J1+6 | 799.7 *1* | 0.85[#] *5* | 1419.10+x | J1+4 |
| 3078.8+x | J1+8 | 860.0 *1* | 1.09[#] *6* | 2218.81+x | J1+6 |
| 3999.2+x | J1+10 | 920.4 *1* | 1.02[#] *9* | 3078.8+x | J1+8 |
| 4979.8+x | J1+12 | 980.6 *1* | 0.95[#] *5* | 3999.2+x | J1+10 |
| 6021.1+x | J1+14 | 1041.3 *1* | 1.11[#] *6* | 4979.8+x | J1+12 |
| 7122.9+x | J1+16 | 1101.8 *1* | 0.93[#] *5* | 6021.1+x | J1+14 |
| 8285.8+x | J1+18 | 1162.9 *1* | 0.94[#] *5* | 7122.9+x | J1+16 |
| 9510.2+x | J1+20 | 1224.4 *1* | 1.06[#] *6* | 8285.8+x | J1+18 |
| 10796.4+x | J1+22 | 1286.2 *1* | 0.82[#] *5* | 9510.2+x | J1+20 |
| 12144.6+x | J1+24 | 1348.2 *1* | 0.66[#] *4* | 10796.4+x | J1+22 |
| 13555.6+x | J1+26 | 1410.9 *1* | 0.58[#] *4* | 12144.6+x | J1+24 |
| 15030.1+x | J1+28 | 1474.5 *1* | 0.52[#] *4* | 13555.6+x | J1+26 |
| 16568.4+x | J1+30 | 1538.3 *1* | 0.31[#] *3* | 15030.1+x | J1+28 |
| 18171.2+x | J1+32 | 1602.8 *1* | 0.21[#] *3* | 16568.4+x | J1+30 |
| 19838.8+x | J1+34 | 1667.6 *1* | 0.12[#] *2* | 18171.2+x | J1+32 |
| 21571.6+x | J1+36 | 1732.8 *2* | 0.06[#] *2* | 19838.8+x | J1+34 |





$^{142}_{62}Sm_{80}$-6

## Adopted Levels, Gammas (continued)

### γ($^{142}$Sm) (continued)

| $E_i$(level) | $J_i^\pi$ | $E_\gamma$ | $I_\gamma$ ‡ | $E_f$ | $J_f^\pi$ | Comments |
|---|---|---|---|---|---|---|
| 23369.9+x | J1+38 | 1798.3 *4* | | 21571.6+x | J1+36 | $E_\gamma$: no evidence for 1782.9γ as reported in 1993Ha03. |
| 726.2+y | J2+2 | 726.2 *3* | 0.08# *3* | y | J2 | |
| 1512.6+y | J2+4 | 786.4 *2* | 0.18# *3* | 726.2+y | J2+2 | |
| 2357.0+y | J2+6 | 844.4 *2* | 0.19# *3* | 1512.6+y | J2+4 | |
| 3258.3+y | J2+8 | 901.3 *2* | 0.16# *3* | 2357.0+y | J2+6 | |
| 4216.2+y | J2+10 | 957.9 *2* | 0.17# *3* | 3258.3+y | J2+8 | |
| 5228.8+y | J2+12 | 1012.6 *2* | 0.16# *3* | 4216.2+y | J2+10 | |
| 6302.5+y | J2+14 | 1073.7 *2* | 0.18# *3* | 5228.8+y | J2+12 | |
| 7431.5+y | J2+16 | 1129.0 *2* | 0.25# *6* | 6302.5+y | J2+14 | |
| 8617.6+y | J2+18 | 1186.1 *2* | 0.16# *3* | 7431.5+y | J2+16 | |
| 9861.1+y | J2+20 | 1243.5 *2* | 0.13# *3* | 8617.6+y | J2+18 | |
| 11163.0+y | J2+22 | 1301.9 *3* | 0.12# *3* | 9861.1+y | J2+20 | |
| 12523.4+y | J2+24 | 1360.3 *3* | 0.08# *3* | 11163.0+y | J2+22 | |
| 13942.0+y | J2+26 | 1418.6 *3* | 0.07# *5* | 12523.4+y | J2+24 | |
| 15419.8+y | J2+28 | 1477.8 *4* | 0.08# *2* | 13942.0+y | J2+26 | |
| 16955.2+y | J2+30 | 1535.4 *4* | 0.06# *2* | 15419.8+y | J2+28 | |
| 18544.8+y | J2+32 | 1589.6 *6* | 0.04# *2* | 16955.2+y | J2+30 | |
| 20180.1+y | J2+34 | 1635.3 *5* | 0.04# *2* | 18544.8+y | J2+32 | |

† Additional information 3.
‡ Relative branching ratios, unless otherwise stated.
# Relative intensities within the two SD bands.
@ From ce in $^{142}$Eu (1.223 min) ε decay, unless given otherwise.
& Placement of transition in the level scheme is uncertain.





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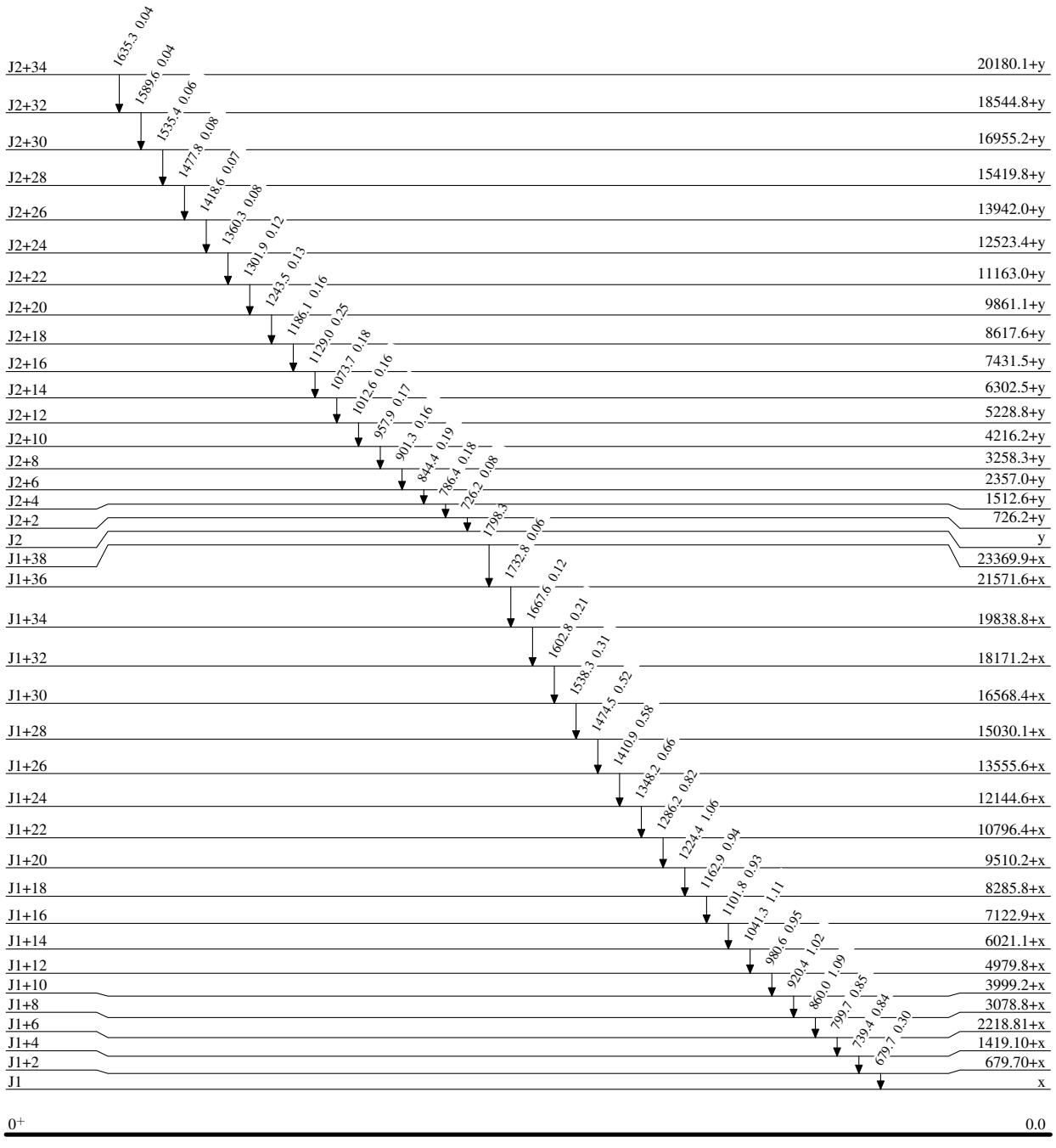
## Adopted Levels, Gammas

### Level Scheme

Intensities: Relative photon branching from each level

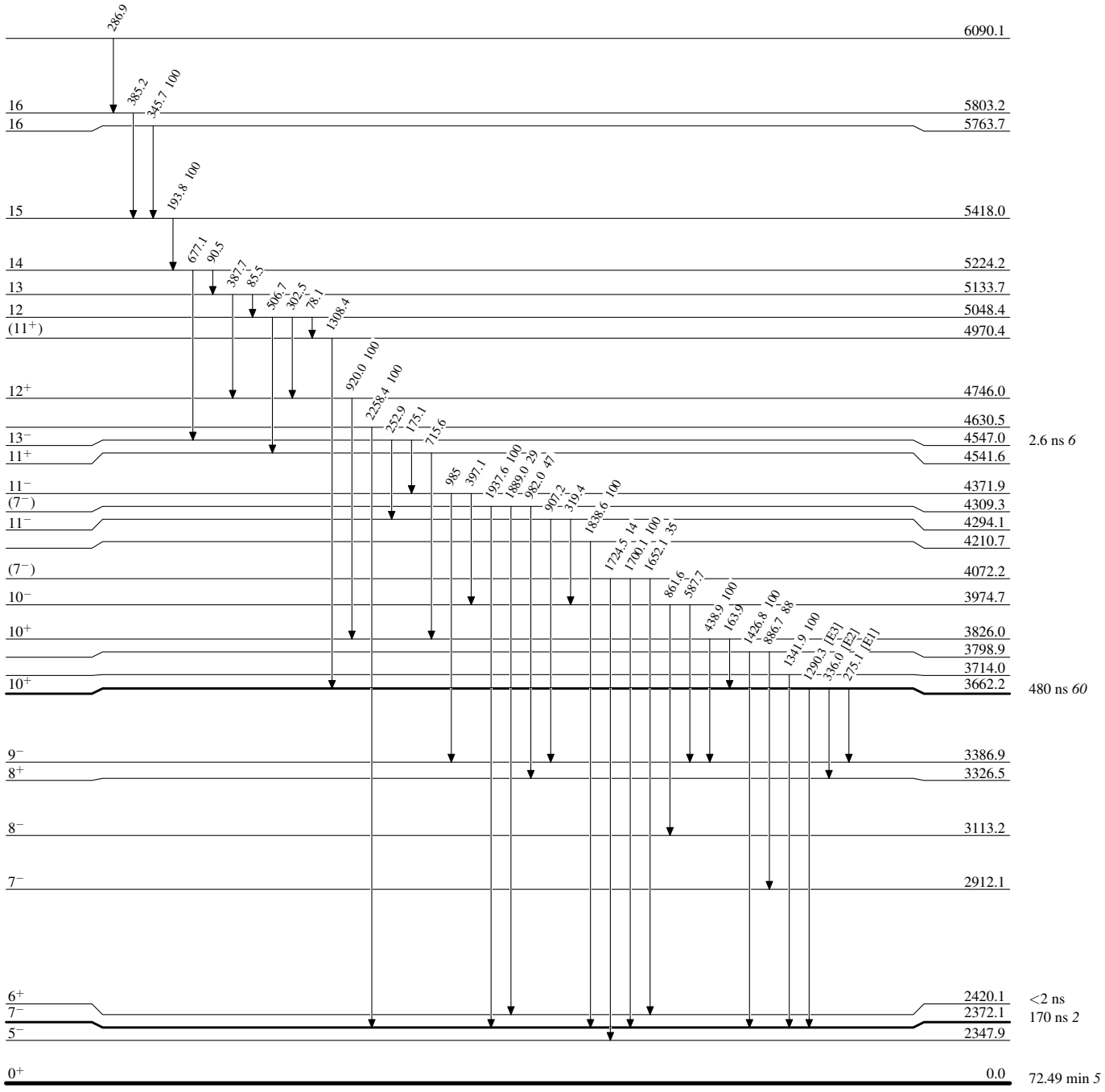



$^{142}_{62}Sm_{80}$

## Adopted Levels, Gammas

### Level Scheme (continued)

Intensities: Relative photon branching from each level




$^{142}_{62}Sm_{80}$

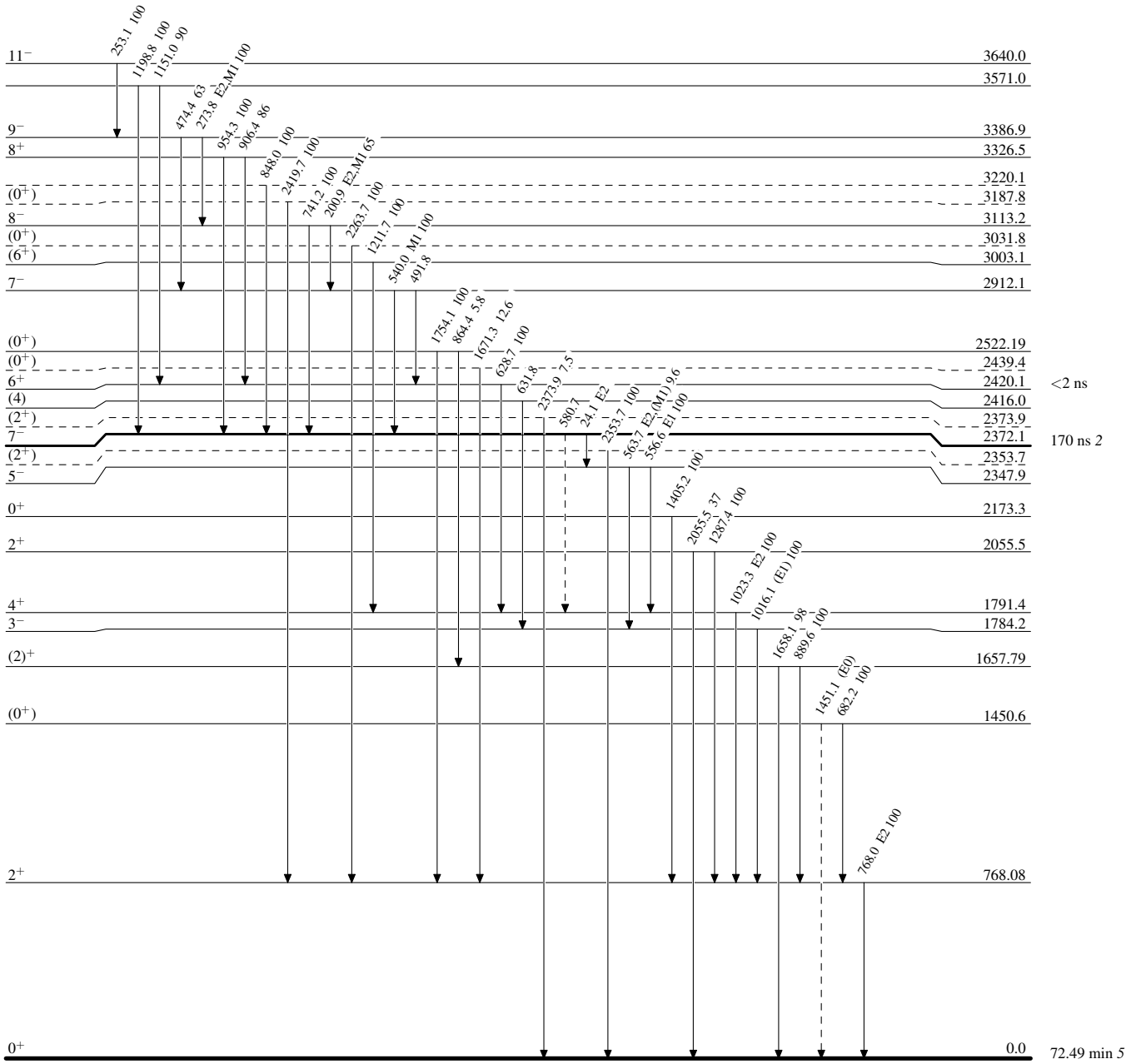
**Adopted Levels, Gammas**

Legend

Level Scheme (continued)

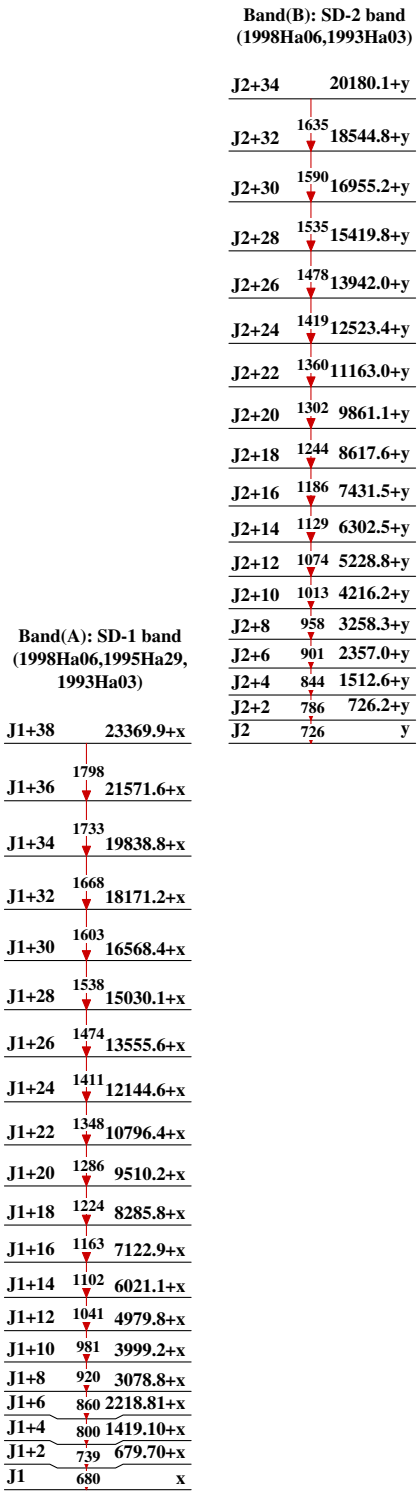
Intensities: Relative photon branching from each level

$\gamma$ Decay (Uncertain)




$^{142}_{62}Sm_{80}$

## Adopted Levels, Gammas




$^{142}_{62}Sm_{80}$