## $^{154}$Sm($^{34}$S,4nγ),$^{172}$Yb($^{16}$O,4nγ) 1990Ca22,1987Ri04,1986Ga21

| | History | | |
|---|---|---|---|
| Type | Author | Citation | Literature Cutoff Date |
| Full Evaluation | Coral M. Baglin | NDS 111,275 (2010) | 1-Oct-2009 |

1990Ca22: $^{154}$Sm($^{34}$S,4nγ), E($^{34}$S)=163 MeV, $^{172}$Yb($^{16}$O,4nγ), E($^{16}$O)=91 MeV measured Eγ, Iγ, γ(θ), γγ-coin, array of Compton-suppressed Ge detectors. See also 1987Ri04.

1986Ga21: $^{154}$Sm($^{34}$S,4nγ), E($^{34}$S)=160 MeV, measured lifetimes of levels, recoil distance technique (27 target to stopper distances); Ge detector, 8-element large NaI sum spectrometer.

### $^{184}$Pt Levels

| E(level)[†] | Jπ[#] | $T_{1/2}$[‡] | Comments |
|---|---|---|---|
| 0.0[&] | 0+ | | |
| 162.6[&] *9* | 2+ | 403 ps *15* | |
| 435.3[&] *11* | 4+ | 25.3 ps *9* | |
| 797.7[&] *14* | 6+ | 6.1 ps *3* | |
| 843.9[f] *9* | 2+ | | |
| 1229.9[&] *16* | 8+ | 2.15 ps *14* | |
| 1234.1[f] *10* | 4+ | | |
| 1305.9[g] *13* | 5+ | | |
| 1675.3[d] *12* | 5− | | |
| 1706.1[&] *17* | 10+ | 1.18 ps *14* | |
| 1729.9[g] *17* | 7+ | | |
| 1793.5[e] *13* | 6− | | |
| 1843.4[b] *19* | 8− | 1.01 ms *5* | $T_{1/2}$: from Adopted Levels. |
| 1914.6[d] *13* | 7− | | |
| 2021.1[c] *20* | 9− | | |
| 2074.7[e] *14* | 8− | | |
| 2203.7[&] *16* | 12+ | 1.59 ps *14* | |
| 2219.9[b] *20* | 10− | | |
| 2229.3[d] *15* | 9− | | |
| 2438.8[c] *21* | 11− | | |
| 2450.3[e] *15* | 10− | | |
| 2592.0[a] *17* | 11− | | |
| 2623.2[d] *15* | 11− | | |
| 2676.7[b] *22* | 12− | | |
| 2725.9[&] *17* | 14+ | 1.39 ps *14* | |
| 2909.9[e] *16* | 12− | | |
| 2931.3[c] *22* | 13− | | |
| 3080.8[a] *16* | 13− | | |
| 3093.9[d] *16* | 13− | | |
| 3200.6[b] *22* | 14− | | |
| 3281.2[&] *19* | 16+ | 1.18 ps *14* | |
| 3432.9[e] *19* | 14− | | |
| 3439.3[a] *17* | 15− | | |
| 3479.2[c] *23* | 15− | | |
| 3595.6[@] *20* | 16(+) | | |
| 3610.2[d] *17* | 15− | | |
| 3766.6[b] *23* | 16− | | |
| 3867.9[&] *20* | 18+ | 1.7 ps *10* | $T_{1/2}$: includes contribution from side-feeding lifetime. |

Continued on next page (footnotes at end of table)

## $^{154}$Sm($^{34}$S,4n$\gamma$),$^{172}$Yb($^{16}$O,4n$\gamma$) 1990Ca22,1987Ri04,1986Ga21 (continued)

### $^{184}$Pt Levels (continued)

| E(level)[†] | J$^\pi$[#] | Comments |
|---|---|---|
| 3901.2[a] *19* | 17$^-$ | J$^\pi$: (18$^+$) suggested In 1986Ga21. |
| 3986.9[e] *22* | 16$^-$ | |
| 4056.8[c] *24* | 17$^-$ | |
| 4171.3[@] *20* | 18$^{(+)}$ | |
| 4174.4[d] *20* | 17$^-$ | |
| 4355.6[b] *24* | 18$^-$ | |
| 4437.8[a] *20* | 19$^-$ | |
| 4492.5[&] *21* | 20$^+$ | |
| 4561.9[e] *24* | 18$^-$ | |
| 4660.2[c] *25* | 19$^-$ | |
| 4788.0[d] *23* | 19$^-$ | |
| 4815.1[@] *21* | 20$^{(+)}$ | |
| 4980.7[b] *25* | 20$^-$ | |
| 5012.8[a] *22* | 21$^-$ | |
| 5166.1[&] *23* | 22$^+$ | |
| 5314[c] *3* | 21$^-$ | |
| 5470.8[d] *25* | 21$^-$ | |
| 5510.3[@] *23* | 22$^{(+)}$ | |
| 5614.1[a] *24* | 23$^-$ | |
| 5667[b] *3* | (22$^-$) | |
| 5896.1[&] *25* | 24$^+$ | |
| 6035[c] *3* | (23$^-$) | |
| 6259[a] *3* | 25$^-$ | |
| 6685[&] *3* | (26$^+$) | |
| 6962[a] *3* | 27$^-$ | |
| 7534[&] *3* | (28$^+$) | |
| 7733[a] *3* | (29$^-$) | |

[†] From least-squares fit to E$\gamma$, assigning 1 keV uncertainty to all data.
[‡] From RDM (1986Ga21), except as noted.
[#] Authors′ suggested values (1990Ca22).
[@] Band(A): $\pi$=(+) band.
[&] Band(B): K$^\pi$=0$^+$ g.s. band.
[a] Band(C): K$^\pi$=0$^-$ band. Probable Configuration=($\pi$ 1/2[660])-($\pi$ 1/2[541]), the only $\pi$=$-$ two-particle configuration which could account for the initial alignment of 10 $\hbar$ (1990Ca22). No signature partner band observed.
[b] Band(D): K$^\pi$=8$^-$, $\alpha$=0 band. Probable Configuration=($\nu$ 9/2[624])+($\nu$ 7/2[514]). Alignment 4-5 $\hbar$; No signature splitting observed.
[c] Band(d): K$^\pi$=8$^-$, $\alpha$=1 band. Probable Configuration=($\nu$ 9/2[624])+($\nu$ 7/2[514]). See comment on signature partner band.
[d] Band(e): K$^\pi$=5$^-$, $\alpha$=1 band. Probable Configuration=($\nu$ 9/2[624])+($\nu$ 1/2[521]). Alignment 4-5 $\hbar$; signature splitting observed, suggesting contribution from a low-K orbital such As ($\nu$ 3$p_{3/2}$) (1990Ca22).
[e] Band(E): K$^\pi$=5$^-$, $\alpha$=0 band. Probable Configuration=($\nu$ 9/2[624])+($\nu$ 1/2[521]). See comment on signature partner band.
[f] Band(F): K$^\pi$=0$^+$ band.
[g] Band(G): K$^\pi$=2$^+$ $\gamma$-vibrational band.

## $^{154}$Sm($^{34}$S,4n$\gamma$),$^{172}$Yb($^{16}$O,4n$\gamma$) 1990Ca22,1987Ri04,1986Ga21 (continued)

### $\gamma$($^{184}$Pt)

| $E_\gamma$ [†] | $I_\gamma$ [†] | $E_i$(level) | $J^\pi_i$ | $E_f$ | $J^\pi_f$ | Mult. [‡] | $\alpha$ [#] | Comments |
|---|---|---|---|---|---|---|---|---|
| 118.1 | 2.0 *2* | 1793.5 | $6^-$ | 1675.3 | $5^-$ | D+Q | | Mult.: $A_2$=−0.9 *3*, $A_4$=+0.24 *21* (1990Ca22). |
| 121.0 | 1.5 *2* | 1914.6 | $7^-$ | 1793.5 | $6^-$ | D+Q | | Mult.: $A_2$=−0.6 *4*, $A_4$=−0.1 *3* (1990Ca22). |
| 154.6 | 1.4 *3* | 2229.3 | $9^-$ | 2074.7 | $8^-$ | | | |
| 160.0 | 1.6 *4* | 2074.7 | $8^-$ | 1914.6 | $7^-$ | | | |
| 162.8 | 64.0 *4* | 162.6 | $2^+$ | 0.0 | $0^+$ | [E2] | 0.740 | |
| 172.9 | | 2623.2 | $11^-$ | 2450.3 | $10^-$ | | | |
| 177.7 | 5.8 *1* | 2021.1 | $9^-$ | 1843.4 | $8^-$ | D+Q | | Mult.: $A_2$=−0.86 *4*, $A_4$=+0.1 *3* (1990Ca22). |
| 198.7 | 6.6 *1* | 2219.9 | $10^-$ | 2021.1 | $9^-$ | D+Q | | Mult.: $A_2$=−0.60 *3*, $A_4$=+0.05 *3* (1990Ca22). |
| 218.8 | 3.3 *4* | 2438.8 | $11^-$ | 2219.9 | $10^-$ | | | |
| 221.0 | 0.7 *2* | 2450.3 | $10^-$ | 2229.3 | $9^-$ | | | |
| 238.0 | 2.4 *1* | 2676.7 | $12^-$ | 2438.8 | $11^-$ | D+Q | | Mult.: $A_2$=−0.84 *5*, $A_4$=+0.09 *5* (1990Ca22). |
| 239.5 | 2.3 *1* | 1914.6 | $7^-$ | 1675.3 | $5^-$ | | | Mult.: $A_2$=+0.15 *4*, $A_4$=+0.05 *5* (1990Ca22). |
| 254.5 | 1.7 *3* | 2931.3 | $13^-$ | 2676.7 | $12^-$ | D+Q | | Mult.: $A_2$=−0.56 *12*, $A_4$=+0.07 *10* (1990Ca22). |
| 269.3 | 3.4 *2* | 3200.6 | $14^-$ | 2931.3 | $13^-$ | D+Q | | Mult.: $A_2$=−0.53 *14*, $A_4$=+0.08 *11* (1990Ca22). |
| 272.8 | 100.0 *3* | 435.3 | $4^+$ | 162.6 | $2^+$ | E2 | | Mult.: Q from $A_2$=+0.34 *1*, $A_4$=−0.12 *1* (1990Ca22); not M2 from RUL. |
| 278.6 | 2.2 *2* | 3479.2 | $15^-$ | 3200.6 | $14^-$ | D+Q | | Mult.: $A_2$=−0.51 *20*, $A_4$=+0.34 *17* (1990Ca22). |
| 281.1 | 2.7 *2* | 2074.7 | $8^-$ | 1793.5 | $6^-$ | (Q) | | Mult.: $A_2$=+0.12 *25*, $A_4$=+0.11 *13* (1990Ca22). |
| 286.7 | 1.0 *1* | 2909.9 | $12^-$ | 2623.2 | $11^-$ | D+Q | | Mult.: $A_2$=−0.26 *13*, $A_4$=−0.04 *14* (1990Ca22). |
| 287.4 | 1.6 *1* | 3766.6 | $16^-$ | 3479.2 | $15^-$ | D+Q | | Mult.: $A_2$=−0.96 *7*, $A_4$=+0.25 *7* (1990Ca22). |
| 290.2 | 1.4 *1* | 4056.8 | $17^-$ | 3766.6 | $16^-$ | D+Q | | Mult.: $A_2$=−0.80 *8*, $A_4$=−0.02 *8* (1990Ca22). |
| 298.8 | | 4355.6 | $18^-$ | 4056.8 | $17^-$ | | | |
| 303.4 | 2.7 *1* | 4171.3 | $18^{(+)}$ | 3867.9 | $18^+$ | | | Mult.: $A_2$=+0.36 *5*, $A_4$=0.00 *6* (1990Ca22). |
| 304.6 | 1.3 *1* | 4660.2 | $19^-$ | 4355.6 | $18^-$ | D+Q | | Mult.: $A_2$=−0.29 *11*, $A_4$=−0.07 *11* (1990Ca22). |
| 314.3 | 3.4 *3* | 3595.6 | $16^{(+)}$ | 3281.2 | $16^+$ | | | |
| 314.7 | 7.4 *3* | 2229.3 | $9^-$ | 1914.6 | $7^-$ | | | |
| 320.5 | 0.5 *1* | 4980.7 | $20^-$ | 4660.2 | $19^-$ | | | |
| 322.7 | 1.1 *1* | 4815.1 | $20^{(+)}$ | 4492.5 | $20^+$ | D+Q | | Mult.: $A_2$=+0.67 *16*, $A_4$=−0.08 *16* (1990Ca22). |
| 344.3 | 1.1 *1* | 5510.3 | $22^{(+)}$ | 5166.1 | $22^+$ | | | |
| 345.3 | 2.3 *4* | 3439.3 | $15^-$ | 3093.9 | $13^-$ | (Q) | | Mult.: $A_2$=+0.43 *8*, $A_4$=+0.12 *9* (1990Ca22). |
| 355.1 | 1.5 *5* | 3080.8 | $13^-$ | 2725.9 | $14^+$ | | | |
| 358.6 | 5.4 *9* | 3439.3 | $15^-$ | 3080.8 | $13^-$ | Q | | Mult.: $A_2$=+0.33 *8*, $A_4$=+0.03 *7* (1990Ca22). |
| 362.4 | 90.0 *4* | 797.7 | $6^+$ | 435.3 | $4^+$ | E2 | | Mult.: Q from $A_2$=+0.36 *1*, $A_4$=−0.09 *1* (1990Ca22); not M2 from RUL. |
| 375.7 | 3.3 *9* | 2450.3 | $10^-$ | 2074.7 | $8^-$ | | | |
| 376.4 | 4.4 *3* | 2219.9 | $10^-$ | 1843.4 | $8^-$ | | | |
| 388.4 | 4.2 *4* | 2592.0 | $11^-$ | 2203.7 | $12^+$ | | | |
| 390.0 | 1.5 *5* | 1234.1 | $4^+$ | 843.9 | $2^+$ | | | |
| 393.8 | 7.0 *1* | 2623.2 | $11^-$ | 2229.3 | $9^-$ | | | Mult.: $A_2$=+0.23 *3*, $A_4$=−0.09 *3* (1990Ca22). |
| 417.8 | 4.6 *1* | 2438.8 | $11^-$ | 2021.1 | $9^-$ | (Q) | | Mult.: $A_2$=+0.24 *3*, $A_4$=+0.16 *3* (1990Ca22). |
| 424 | 1.5 *2* | 1729.9 | $7^+$ | 1305.9 | $5^+$ | | | |
| 432.3 | 91.7 *4* | 1229.9 | $8^+$ | 797.7 | $6^+$ | E2 | | Mult.: Q from $A_2$=+0.32 *1*, $A_4$=−0.08 *1* (1990Ca22); not M2 from RUL. |
| 441.2 | 5.4 *2* | 1675.3 | $5^-$ | 1234.1 | $4^+$ | D | | Mult.: $A_2$=−0.37 *7*, $A_4$=−0.15 *8* (1990Ca22). |
| 456.8 | 4.8 *3* | 2676.7 | $12^-$ | 2219.9 | $10^-$ | | | |
| 457.6 | 2.6 *7* | 3080.8 | $13^-$ | 2623.2 | $11^-$ | | | |
| 459.5 | 4.3 *1* | 2909.9 | $12^-$ | 2450.3 | $10^-$ | Q | | Mult.: $A_2$=+0.38 *6*, $A_4$=−0.11 *6* (1990Ca22). |
| 461.9 | 16.3 *2* | 3901.2 | $17^-$ | 3439.3 | $15^-$ | Q | | Mult.: $A_2$=+0.39 *2*, $A_4$=−0.08 *2* (1990Ca22). |
| 470.7 | 3.1 *2* | 3093.9 | $13^-$ | 2623.2 | $11^-$ | Q | | Mult.: $A_2$=+0.40 *9*, $A_4$=−0.25 *12* (1990Ca22). |
| 476.2 | 82.1 *3* | 1706.1 | $10^+$ | 1229.9 | $8^+$ | E2 | | Mult.: Q from $A_2$=+0.34 *1*, $A_4$=−0.09 *1* (1990Ca22); not M2 from RUL. |
| 487.6 | 1.2 *1* | 1793.5 | $6^-$ | 1305.9 | $5^+$ | | | |
| 488 [@] | 1.0 *1* | 3080.8 | $13^-$ | 2592.0 | $11^-$ | | | |
| 492.5 | 5.6 *1* | 2931.3 | $13^-$ | 2438.8 | $11^-$ | Q | | Mult.: $A_2$=+0.35 *3*, $A_4$=−0.07 *3* (1990Ca22). |

Continued on next page (footnotes at end of table)

## $^{154}$Sm($^{34}$S,4nγ),$^{172}$Yb($^{16}$O,4nγ) 1990Ca22,1987Ri04,1986Ga21 (continued)

### γ($^{184}$Pt) (continued)

| $E_\gamma$ [†] | $I_\gamma$ [†] | $E_i$(level) | $J^\pi_i$ | $E_f$ | $J^\pi_f$ | Mult. [‡] | α [#] | Comments |
|---|---|---|---|---|---|---|---|---|
| 497.6 | 79.0 *4* | 2203.7 | $12^+$ | 1706.1 | $10^+$ | E2 | | Mult.: Q from $A_2$=+0.31 *1*, $A_4$=−0.06 *1* (1990Ca22); not M2 from RUL. |
| 502 | 1.0 *5* | 3093.9 | $13^-$ | 2592.0 | $11^-$ | | | |
| 516.3 | 3.0 *3* | 3610.2 | $15^-$ | 3093.9 | $13^-$ | | | |
| 522.3 | 69.3 *3* | 2725.9 | $14^+$ | 2203.7 | $12^+$ | | | |
| 523 [@] | | 3432.9 | $14^-$ | 2909.9 | $12^-$ | | | |
| 523.8 | | 3200.6 | $14^-$ | 2676.7 | $12^-$ | | | |
| 529.4 | 2.0 *4* | 3610.2 | $15^-$ | 3080.8 | $13^-$ | | | |
| 536.7 | 21.0 *1* | 4437.8 | $19^-$ | 3901.2 | $17^-$ | Q | | Mult.: $A_2$=+0.26 *1*, $A_4$=−0.08 *1* (1990Ca22). |
| 548.0 | 5.7 *4* | 3479.2 | $15^-$ | 2931.3 | $13^-$ | | | |
| 554 [@] | | 3986.9 | $16^-$ | 3432.9 | $14^-$ | | | |
| 555.3 | 50.4 *3* | 3281.2 | $16^+$ | 2725.9 | $14^+$ | E2 | | Mult.: Q from $A_2$=+0.34 *1*, $A_4$=−0.08 *1* (1990Ca22); not M2 from RUL. |
| 564.2 | 5.0 *2* | 4174.4 | $17^-$ | 3610.2 | $15^-$ | Q | | Mult.: $A_2$=+0.37 *7*, $A_4$=−0.10 *7* (1990Ca22). |
| 566.1 | 3.1 *3* | 3766.6 | $16^-$ | 3200.6 | $14^-$ | | | |
| 569.8 | 4.7 *2* | 4437.8 | $19^-$ | 3867.9 | $18^+$ | | | |
| 575 [@] | | 4561.9 | $18^-$ | 3986.9 | $16^-$ | | | see comment on 575.7γ. |
| 575.0 | | 5012.8 | $21^-$ | 4437.8 | $19^-$ | [E2] | 0.01775 | see comment on 575.7γ. |
| 575.7 | <18.8 | 4171.3 | $18^{(+)}$ | 3595.6 | $16^{(+)}$ | | | Iγ=18.8 *2*, $A_2$=+0.30 *2*, $A_4$=−0.09 *2* (1990Ca22) for triplet that is probably dominated by this transition. |
| 577.6 | 4.1 *3* | 4056.8 | $17^-$ | 3479.2 | $15^-$ | | | |
| 586.8 | 34.4 *2* | 3867.9 | $18^+$ | 3281.2 | $16^+$ | Q | | Mult.: $A_2$=+0.31 *1*, $A_4$=−0.07 *1* (1990Ca22). |
| 589.0 | | 4355.6 | $18^-$ | 3766.6 | $16^-$ | | | |
| 601.3 | 14.3 *2* | 5614.1 | $23^-$ | 5012.8 | $21^-$ | Q | | Mult.: $A_2$=+0.29 *3*, $A_4$=−0.07 *3* (1990Ca22). |
| 603.4 | 1.7 *4* | 4660.2 | $19^-$ | 4056.8 | $17^-$ | | | |
| 613.5 | | 1843.4 | $8^-$ | 1229.9 | $8^+$ | | | |
| 613.6 | 3.6 *3* | 4788.0 | $19^-$ | 4174.4 | $17^-$ | | | |
| 620.1 | 7.2 *3* | 3901.2 | $17^-$ | 3281.2 | $16^+$ | | | |
| 624.6 | 22.2 *1* | 4492.5 | $20^+$ | 3867.9 | $18^+$ | Q | | Mult.: $A_2$=+0.31 *1*, $A_4$=−0.07 *1* (1990Ca22). |
| 625.1 | 1.6 *2* | 4980.7 | $20^-$ | 4355.6 | $18^-$ | | | |
| 643.7 | | 4815.1 | $20^{(+)}$ | 4171.3 | $18^{(+)}$ | | | |
| 644.4 | 9.9 *1* | 6259 | $25^-$ | 5614.1 | $23^-$ | | | Mult.: $A_2$=+0.17 *3*, $A_4$=+0.11 *2* (1990Ca22); not consistent with E2 character implied by authors′ level scheme. |
| 653.8 | 1.2 *2* | 5314 | $21^-$ | 4660.2 | $19^-$ | | | |
| 673.7 | 11.2 *1* | 5166.1 | $22^+$ | 4492.5 | $20^+$ | Q | | Mult.: $A_2$=+0.23 *2*, $A_4$=−0.08 *2* (1990Ca22). |
| 682.8 | 1.2 *1* | 5470.8 | $21^-$ | 4788.0 | $19^-$ | Q | | Mult.: $A_2$=+0.37 *21*, $A_4$=−0.19 *20* (1990Ca22). |
| 686.7 | 1.2 *2* | 5667 | $(22^-)$ | 4980.7 | $20^-$ | | | |
| 695.1 | | 5510.3 | $22^{(+)}$ | 4815.1 | $20^{(+)}$ | | | |
| 703.5 | 2.1 *1* | 6962 | $27^-$ | 6259 | $25^-$ | Q | | Mult.: $A_2$=+0.22 *11*, $A_4$=−0.14 *11* (1990Ca22). |
| 713.4 | 8.5 *1* | 3439.3 | $15^-$ | 2725.9 | $14^+$ | (E1) | 0.00400 | Mult.: $A_2$=−0.25 *3*, $A_4$=+0.02 *3* (1990Ca22). Pure ΔJ=1; if Δπ=No, some Q admixture would Be expected, so Δπ=(yes) is assigned. |
| 720.6 | 0.8 *1* | 6035 | $(23^-)$ | 5314 | $21^-$ | | | |
| 730.0 | 3.1 *1* | 5896.1 | $24^+$ | 5166.1 | $22^+$ | (Q) | | Mult.: $A_2$=+0.16 *6*, $A_4$=−0.04 *6* (1990Ca22). |
| 770.5 | | 7733 | $(29^-)$ | 6962 | $27^-$ | | | |
| 788.9 | 1.1 *2* | 6685 | $(26^+)$ | 5896.1 | $24^+$ | | | |
| 798.9 | 1.4 *1* | 1234.1 | $4^+$ | 435.3 | $4^+$ | D+Q | | Mult.: $A_2$=+0.40 *18*, $A_4$=−0.06 *16* (1990Ca22). |
| 843.7 | | 843.9 | $2^+$ | 0.0 | $0^+$ | | | |
| 849.4 | | 7534 | $(28^+)$ | 6685 | $(26^+)$ | | | |
| 870.5 | 1.4 *1* | 1305.9 | $5^+$ | 435.3 | $4^+$ | D+Q | | Mult.: $A_2$=+0.25 *15*, $A_4$=+0.32 *14* (1990Ca22). |
| 877.1 | 2.3 *1* | 3080.8 | $13^-$ | 2203.7 | $12^+$ | D | | Mult.: $A_2$=−0.08 *10*, $A_4$=+0.13 *10* (1990Ca22). |
| 890.0 | | 3093.9 | $13^-$ | 2203.7 | $12^+$ | | | |
| 1071.6 | 2.0 *1* | 1234.1 | $4^+$ | 162.6 | $2^+$ | Q | | Mult.: $A_2$=+0.27 *10*, $A_4$=−0.08 *10* (1990Ca22). |
| 1240.0 | 5.5 *7* | 1675.3 | $5^-$ | 435.3 | $4^+$ | | | |

Continued on next page (footnotes at end of table)

**$^{154}$Sm($^{34}$S,4n$\gamma$),$^{172}$Yb($^{16}$O,4n$\gamma$) 1990Ca22,1987Ri04,1986Ga21 (continued)**

$\gamma$($^{184}$Pt) (continued)

† From 1990Ca22, except as noted.

‡ From $\gamma(\theta)$, except as noted.

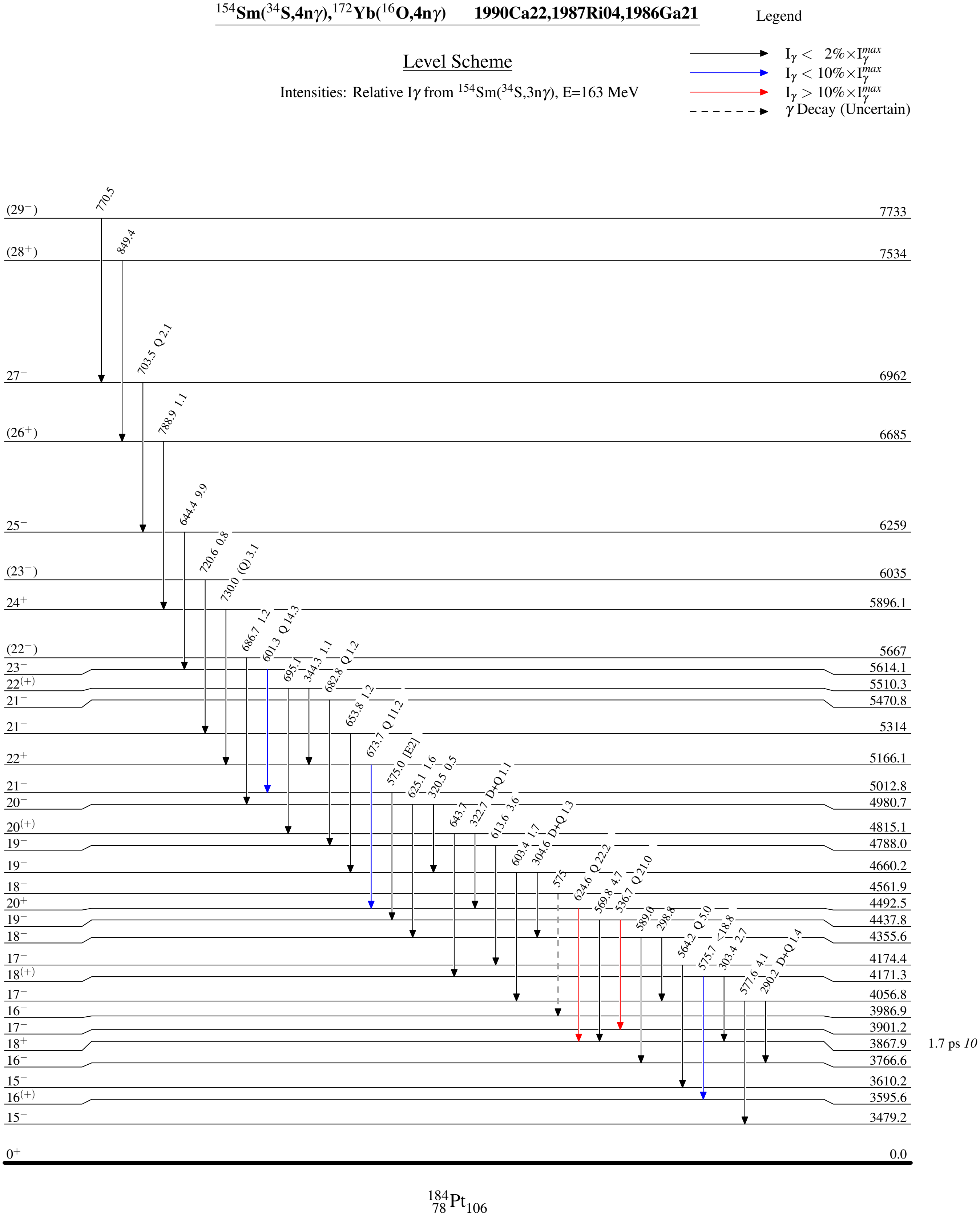
# Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on $\gamma$-ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.

@ Placement of transition in the level scheme is uncertain.

**$^{154}Sm(^{34}S,4n\gamma),^{172}Yb(^{16}O,4n\gamma)$ 1990Ca22,1987Ri04,1986Ga21**

Level Scheme

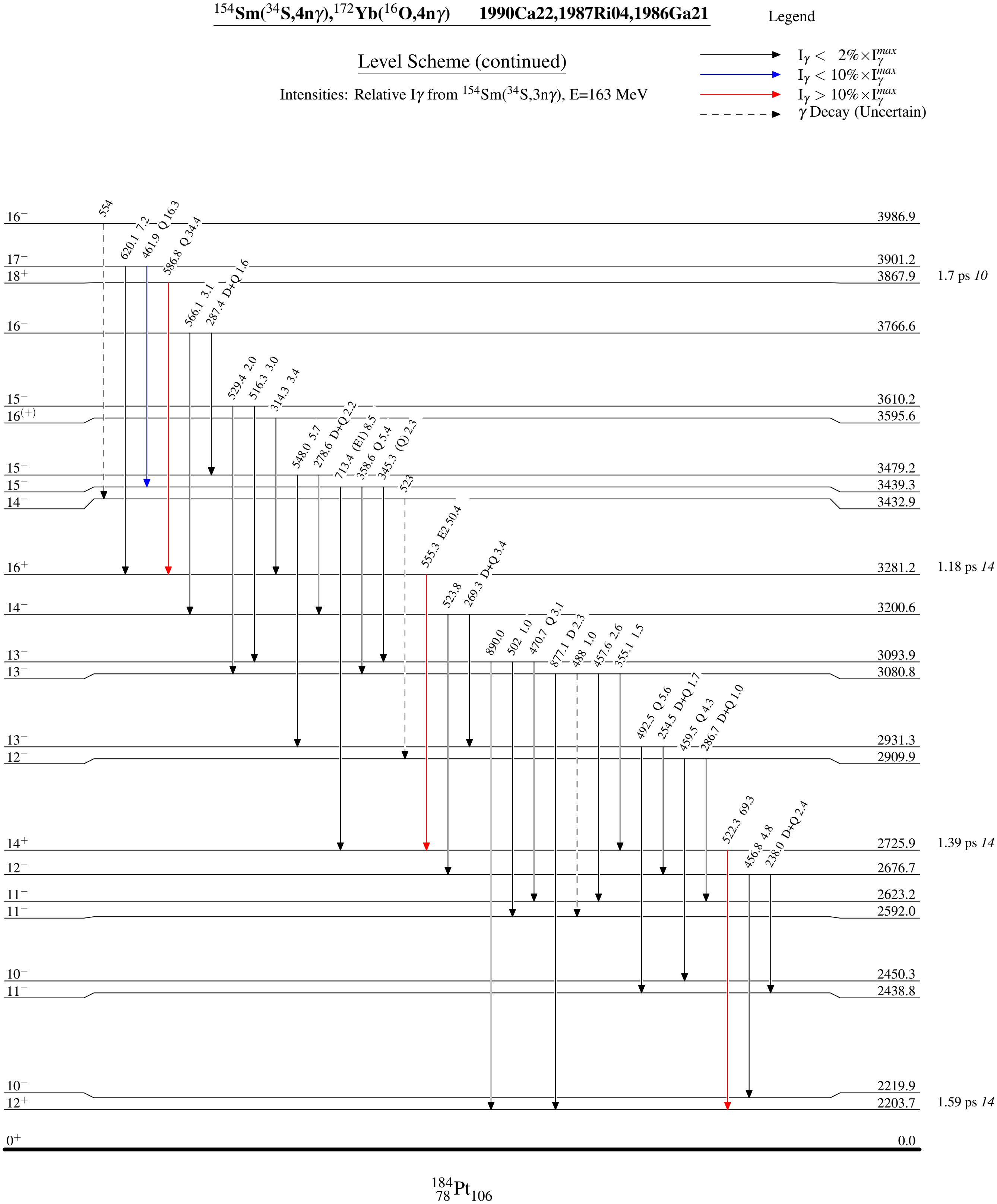
Intensities: Relative I$\gamma$ from $^{154}Sm(^{34}S,3n\gamma)$, E=163 MeV



**$^{154}$Sm($^{34}$S,4nγ),$^{172}$Yb($^{16}$O,4nγ) 1990Ca22,1987Ri04,1986Ga21**

Level Scheme (continued)

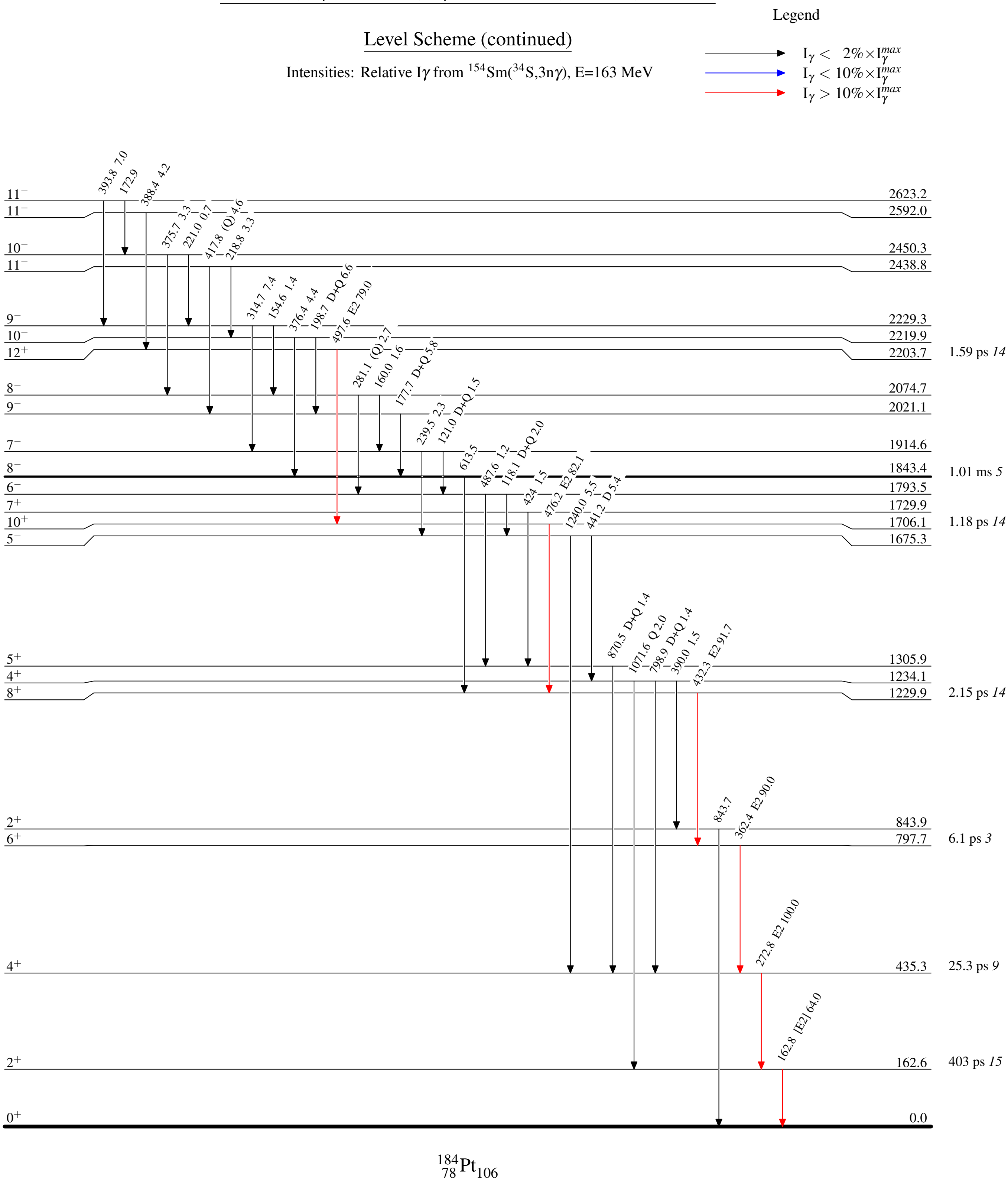
Intensities: Relative Iγ from $^{154}$Sm($^{34}$S,3nγ), E=163 MeV



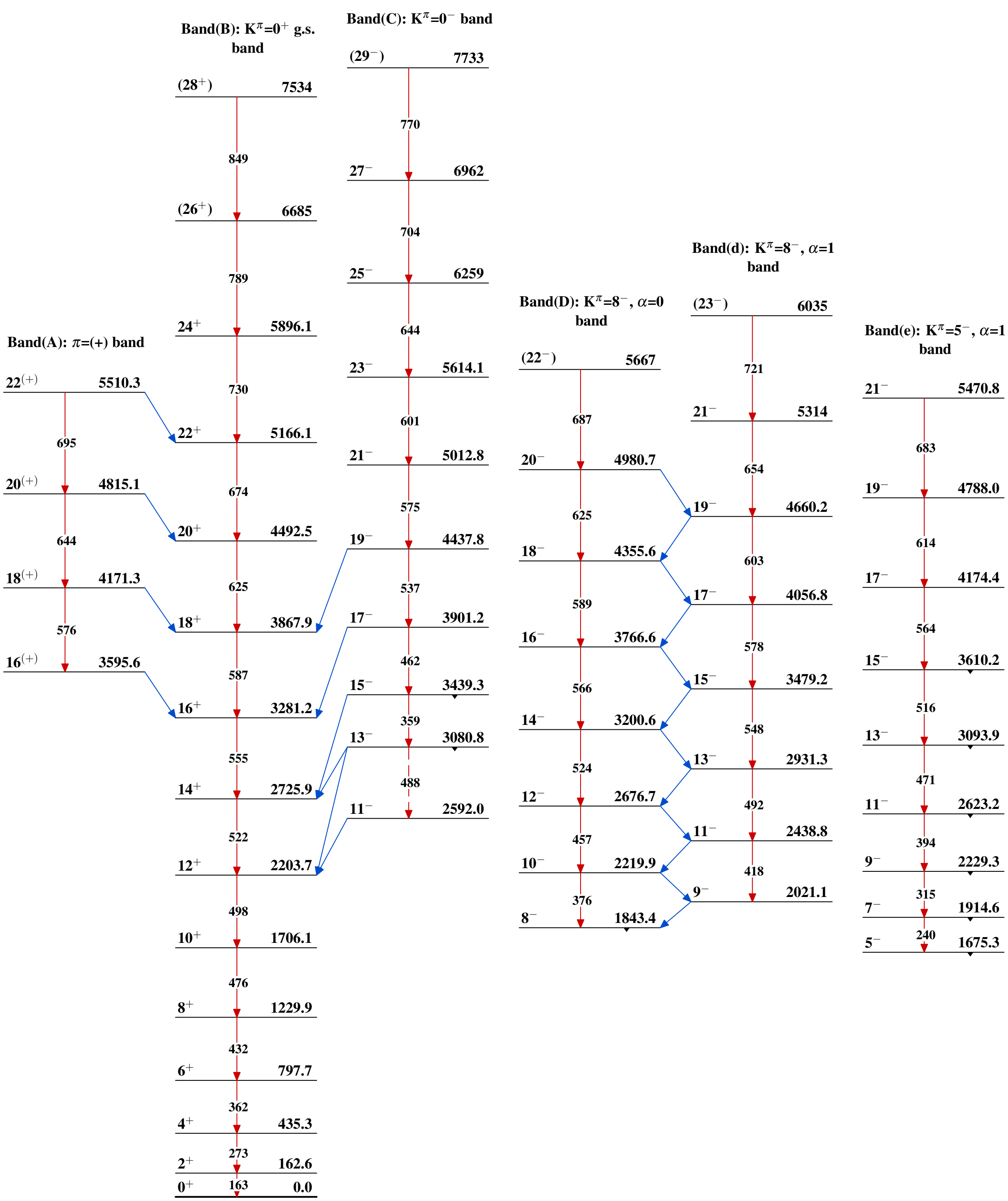
## $^{154}$Sm($^{34}$S,4nγ),$^{172}$Yb($^{16}$O,4nγ) 1990Ca22,1987Ri04,1986Ga21

### Level Scheme (continued)

Intensities: Relative Iγ from $^{154}$Sm($^{34}$S,3nγ), E=163 MeV

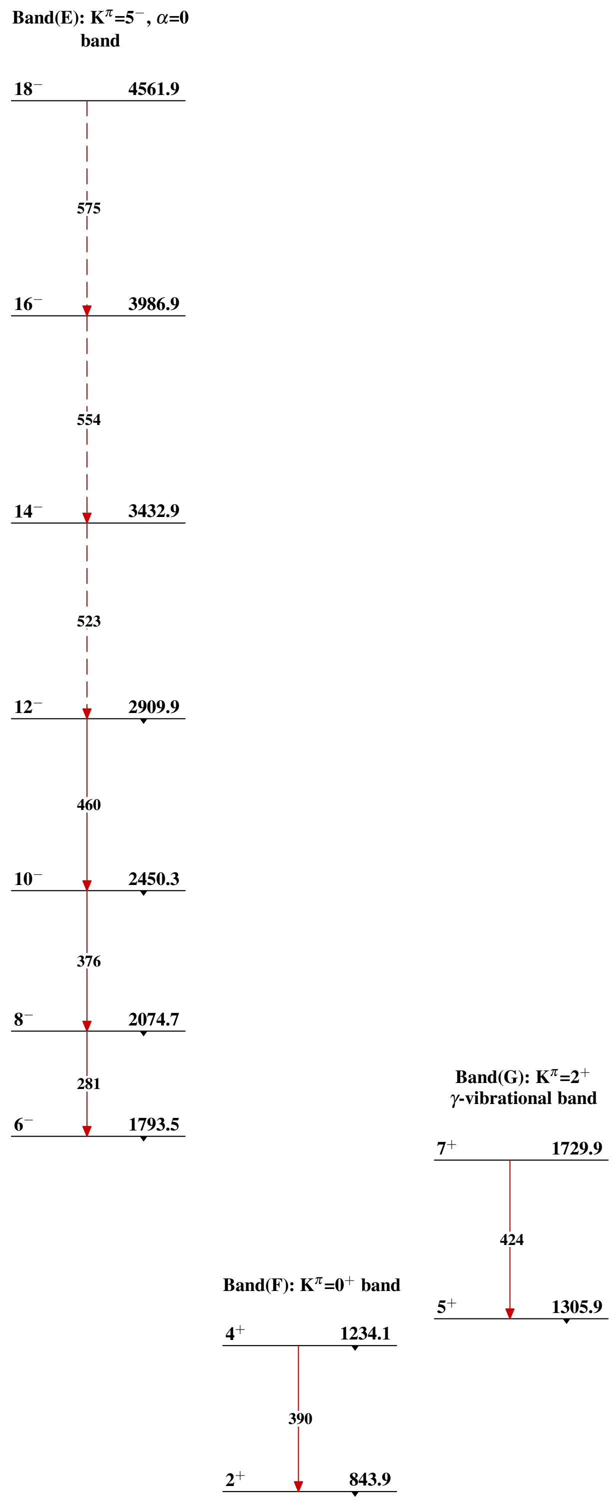


## $^{154}Sm(^{34}S,4n\gamma),^{172}Yb(^{16}O,4n\gamma)$ 1990Ca22,1987Ri04,1986Ga21




$^{184}_{78}Pt_{106}$

## $^{154}Sm(^{34}S,4n\gamma),^{172}Yb(^{16}O,4n\gamma)$ 1990Ca22,1987Ri04,1986Ga21 (continued)




$^{184}_{78}Pt_{106}$