

¹²⁹Sb β⁻ decay (4.366 h) 1989WaZJ,1995StZZ

| Type | Author | History | Citation | Literature Cutoff Date |
|-----------------|---|---------|---------------------|------------------------|
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Parent: ¹²⁹Sb: E=0.0; J^π=7/2⁺; T_{1/2}=4.366 h 26; Q(β⁻)=2376 21; %β⁻ decay=100.0

¹²⁹Sb-Q(β⁻): From 2012Wa38.

¹²⁹Sb-J^π,T_{1/2}: From ¹²⁹Sb Adopted Levels.

1989WaZJ: ¹²⁹Sb from fission, mass separated source, measured Eγ, Iγ, γγ coin.

1995StZZ: measured γ(θ) by low-temperature nuclear orientation method, deduced mixing ratios. This report is based on a thesis by M. Lindroos, Chalmers University of Technology, Goteborg, Sweden.

1970Oh05: source from ¹³⁰Te(γ,p). Measured Eγ, Iγ, β; γγ- and βγ-coin. A total of 55 γ rays were reported with 48 placed amongst 22 levels; only one level at 1736 is not confirmed in 1989WaZJ.

1970Ca23: ²³⁵U(n,F) and ¹³⁰Te(γ,p). Measured Eγ, Iγ, γγ. A total of 85 gamma rays were reported with 60 placed amongst 33 levels, nine of these levels have not been confirmed by 1989WaZJ.

The present decay scheme is from 1989WaZJ, which represents an extension and major revision of previous decay schemes proposed in 1970Ca23 and 1970Oh05.

¹²⁹Te Levels

The following levels proposed in 1970Ca23 have been omitted since not confirmed by 1989WaZJ: 244.5, 350.1, 948.6, 1302.0, 1415.2, 2042.0, 2199.0, 2221.6 and 2262.5.

| E(level) [†] | J ^π [‡] | T _{1/2} [‡] | Comments |
|-----------------------|---|-------------------------------|--|
| 0.0 | 3/2 ⁺ | 69.6 min 3 | |
| 105.49 4 | 11/2 ⁻ | 33.6 d 1 | %IT=63 17; %β ⁻ =37 17 |
| 180.37 4 | 1/2 ⁺ | | J ^π : isotropic γ(θ) consistent with 1/2. |
| 464.64 6 | 9/2 ⁽⁻⁾ | | J ^π : 7/2 ⁻ not allowed by γ(θ). |
| 544.64 4 | 5/2 ⁺ | | |
| 633.85 4 | 5/2 ⁺ | | |
| 759.83 7 | 7/2 ⁻ | | J ^π : γ(θ) can fit 7/2, 9/2 and 11/2, but 7/2 ⁻ from Adopted Levels. |
| 812.96 4 | 7/2 ⁺ | | |
| 875.00 5 | 3/2 ⁺ | | |
| 966.86 4 | 5/2 ⁺ | | |
| 1227.98 5 | (7/2 ⁻ ,9/2 ⁺) | | J ^π : from γ(θ). 5/2 ruled out by γ(θ) of 500γ from 1727 level; 9/2 less favorable from γ(θ) of 525γ from 1754 level but not ruled out. |
| 1281.72 5 | 5/2 ⁺ | | J ^π : from γ(θ) and decay modes; 7/2 ⁺ is not allowed by 1282γ(θ). |
| 1318.23 5 | 7/2 ⁺ | | |
| 1384.96 10 | (3/2 ⁻ ,5/2,7/2 ⁺) | | |
| 1405.69 8 | (5/2,7/2,9/2 ⁺) | | |
| 1460.82 9 | (5/2,7/2,9/2 ⁺) | | |
| 1481.26 8 | (3/2 ⁻ ,5/2,7/2 ⁺) | | |
| 1483.35 8 | 7/2 ⁺ | | |
| 1545.14 11 | 7/2 ⁺ ,9/2 ⁺ | | |
| 1581.99 6 | 7/2 ⁺ | | |
| 1600.05 6 | 5/2 ⁺ | | J ^π : from γ(θ). J ^π =5/2 ⁻ and 7/2 ⁺ are not allowed by γ(θ). |
| 1632.57 6 | 7/2 ⁻ ,9/2 ⁺ | | J ^π : from γ(θ). 9/2 ⁻ ruled out by 405γ(θ). |
| 1656.12 7 | 5/2 ⁺ | | J ^π : from γ(θ). 7/2 ruled out by 1656γ(θ). |
| 1727.95 5 | (9/2) ⁺ | | |
| 1751.11 13 | (5/2,7/2,9/2) | | |
| 1753.32 6 | 5/2 ⁺ | | J ^π : from γ(θ) and particle-transfer data. 3/2 ⁺ not allowed by 525γ(θ) and 941γ(θ). |
| 1762.46 8 | (5/2 ⁺) | | |
| 1777.8 10 | (5/2,7/2,9/2 ⁺) | | |
| 1779.79 10 | 5/2 ⁺ | | |
| 1843.62 5 | (9/2) ⁺ | | J ^π : from γ(θ) and log ft=5.3 from 7/2 ⁺ . |

Continued on next page (footnotes at end of table)

¹²⁹Sb β⁻ decay (4.366 h) 1989WaZJ,1995StZZ (continued)

¹²⁹Te Levels (continued)

| E(level) [†] | J ^π [‡] | Comments |
|-----------------------|---------------------------------------|---|
| 1867.71 11 | (5/2,7/2 ⁺) | |
| 1871.61 5 | 5/2 ⁺ | J ^π : from γ(θ) and decay modes. J=5/2 ⁻ ,7/2 ⁻ not allowed by 1327γ(θ). |
| 1921.30 11 | (5/2) ⁺ | |
| 1939.45 7 | (5/2,7/2,9/2) | |
| 2071.42 5 | 5/2 ⁺ | J ^π : from γ(θ). 7/2 ⁺ ruled out by 2071γ(θ). |
| 2086.10 6 | (7/2 ⁺) | |
| 2114.62 4 | 5/2 ⁺ | J ^π : from γ(θ). 7/2 ⁺ ruled out by 2115γ(θ). |
| 2131.24 8 | 7/2 ⁻ | |
| 2134.89 8 | (5/2 ⁻ ,7/2 ⁺) | |
| 2265.29 8 | (5/2 ⁺ ,7/2 ⁺) | |

[†] From least-squares fit to E_γ data by assuming minimum uncertainty of 0.1 keV for E_γ. In addition following E_γ values were left out of the fitting procedure due to their poor fit in the level scheme: 314.4 from 1481 level, 1646.79 from 1753 level, 1211.89 from 2086 level, 1669.16 from 2134 level. Without making these adjustments and using the uncertainties as quoted in 1989WaZJ, reduced χ²=64 and 53 E_γ values fall outside 3σ. Using 0.05 minimum uncertainty for E_γ improved the fit but still with reduced χ²=5.0 and about 15 γ rays deviating from the fitted values by more than 3σ.

[‡] From Adopted Levels.

β⁻ radiations

| E(decay) | E(level) | Iβ ^{-†‡} | Log ft | Comments |
|-----------|----------|-------------------|--------|----------------|
| (111 21) | 2265.29 | 0.46 4 | 4.8 3 | av Eβ=28.9 59 |
| (241 21) | 2134.89 | 0.119 3 | 6.5 1 | av Eβ=67.1 65 |
| (245 21) | 2131.24 | 0.216 9 | 6.3 1 | av Eβ=68.2 66 |
| (261 21) | 2114.62 | 2.06 4 | 5.4 1 | av Eβ=73.3 66 |
| (290 21) | 2086.10 | 0.67 7 | 6.0 1 | av Eβ=82.3 68 |
| (305 21) | 2071.42 | 2.46 4 | 5.5 1 | av Eβ=87.0 68 |
| (437 21) | 1939.45 | 0.174 4 | 7.18 8 | av Eβ=131.0 73 |
| (455 21) | 1921.30 | 0.100 3 | 7.48 7 | av Eβ=137.3 74 |
| (504 21) | 1871.61 | 1.533 23 | 6.45 7 | av Eβ=154.8 75 |
| (508 21) | 1867.71 | 0.105 4 | 7.62 7 | av Eβ=156.2 76 |
| (532 21) | 1843.62 | 25.5 4 | 5.31 6 | av Eβ=164.8 76 |
| (596 21) | 1779.79 | 0.0781 22 | 7.99 6 | av Eβ=188.1 78 |
| (598 21) | 1777.8 | 0.053 25 | 8.2 2 | av Eβ=188.8 78 |
| (614 21) | 1762.46 | 0.0656 20 | 8.11 6 | av Eβ=194.5 79 |
| (623 21) | 1753.32 | 2.16 5 | 6.61 6 | av Eβ=197.9 79 |
| (625 21) | 1751.11 | 1.55 4 | 6.76 6 | av Eβ=198.7 79 |
| (648 21) | 1727.95 | 29.9 5 | 5.53 5 | av Eβ=207.3 79 |
| (720 21) | 1656.12 | 1.410 23 | 7.02 5 | av Eβ=234.6 81 |
| (743 21) | 1632.57 | 3.15 7 | 6.72 5 | av Eβ=243.7 82 |
| (776 21) | 1600.05 | 2.94 5 | 6.82 5 | av Eβ=256.3 82 |
| (794 21) | 1581.99 | 0.441 22 | 7.68 5 | av Eβ=263.3 83 |
| (831 21) | 1545.14 | 0.050 4 | 8.69 6 | av Eβ=277.8 84 |
| (893 21) | 1483.35 | 0.54 4 | 7.77 5 | av Eβ=302.4 85 |
| (895 21) | 1481.26 | 0.292 14 | 8.04 5 | av Eβ=303.2 85 |
| (915 21) | 1460.82 | 0.192 20 | 8.26 6 | av Eβ=311.4 85 |
| (970 21) | 1405.69 | 0.109 4 | 8.60 4 | av Eβ=333.8 86 |
| (991 21) | 1384.96 | 0.128 10 | 8.56 5 | av Eβ=342.2 86 |
| (1058 21) | 1318.23 | 4.02 7 | 7.17 4 | av Eβ=369.6 87 |
| (1094 21) | 1281.72 | 0.693 21 | 7.99 4 | av Eβ=384.7 88 |
| (1148 21) | 1227.98 | 2.07 8 | 7.59 4 | av Eβ=407.2 89 |
| (1409 21) | 966.86 | 2.29 13 | 7.89 4 | av Eβ=518.6 91 |

Continued on next page (footnotes at end of table)

^{129}Sb β^- decay (4.366 h) 1989WaZJ,1995StZZ (continued) β^- radiations (continued)

| <u>E(decay)</u> | <u>E(level)</u> | <u>$I\beta^{-\dagger\ddagger}$</u> | <u>Log ft</u> | <u>Comments</u> |
|-----------------|-----------------|---|----------------------------|----------------------|
| (1563 21) | 812.96 | 3.1 6 | 7.93 9 | av $E\beta=585.7$ 93 |
| (1616 21) | 759.83 | 3.77 6 | 7.90 3 | av $E\beta=609.1$ 93 |
| (1742 21) | 633.85 | 1.08 4 | 8.57 3 | av $E\beta=664.9$ 94 |
| (1831 21) | 544.64 | 2.74 17 | 8.26 4 | av $E\beta=704.7$ 94 |
| (1911 21) | 464.64 | 0.38 3 | 9.19 4 | av $E\beta=740.6$ 95 |
| (2271 21) | 105.49 | 3 1 | 9.76 ^{1u} 15 | av $E\beta=899.8$ 94 |

$I\beta^-$: measured in singles β spectrum (1966Ta05). This value is consistent with a total feeding of ^{129}Te g.s.=84.3% 11 in the fission yield study by 1969Er01.

[†] From γ -ray intensity balance, unless otherwise stated. From the level scheme, β feeding to 180.37, $1/2^+$ level is 0.34% 17, whereas none is expected. In the opinion of the evaluators, this apparent feeding is due to poor knowledge of the intensity of 180.42 γ ; note that $I\gamma=2.389$ in 1989WaZJ is much lower which gives a non-physical negative β feeding of about 1.5%.

[‡] Absolute intensity per 100 decays.

γ(¹²⁹Te)

I_γ normalization: Summed I(γ+ce)=97 I to g.s. and 105.5 level. Beta feeding to 105.49, 11/2⁻ level is taken as 3% I (1966Ta05). No β feeding is expected to g.s. About 1.5% absolute γ-ray intensity remains unplaced in level scheme.

U₂A₂ values are from 1995StZZ.

Following weak γ rays with E_γ (I_γ) reported in 1970Ca23 have not been confirmed by 1989WaZJ and are omitted: 125.1 (w), 136.8 (w), 165.0 (0.08 2), 197.4 (0.15 5), 217.2 (0.03 2), 226.3 (0.05 2), 232.1 (0.70 2), 950.6 (0.05 3), 984.3 (0.15 5), 1066.8 (0.12 7), 1139.2 (0.4 I), 1155.0 (w), 1161.8 (0.25 5), 1223.3 (0.4 I), 1752.3 (0.10 15), 1919.2 (0.06 2), 1975.0 (0.17 3), 2011.1 (0.010 5), 2030.5 (0.02 I), 2042.0 (0.010 5), 2091.5 (0.04 I), 2198.9 (0.13 3), 2262.5. Energy uncertainty is ≈1 keV.

| E _γ [†] | I _γ ^{‡&} | E _i (level) | J _i ^π | E _f | J _f ^π | Mult. [@] | α ^a | Comments |
|-----------------------------|----------------------------------|------------------------|-------------------------------------|----------------|--|--------------------|----------------|---|
| 95.42 3 | 0.093 3 | 1727.95 | (9/2) ⁺ | 1632.57 | 7/2 ⁻ , 9/2 ⁺ | [D,E2] | 1.1 9 | Additional information 34. |
| 105.50 5 | | 105.49 | 11/2 ⁻ | 0.0 | 3/2 ⁺ | M4 | 429 7 | α(K)=217 3; α(L)=165.3 24; α(M)=38.5 6; α(N)=7.43 11; α(O)=0.656 10 E _γ ,Mult.: from Adopted Gammas. I _(γ+ce) : total transition intensity feeding the 105.5 level is 27.4 2, out of which 17.3 units proceed by isomeric transition. |
| 115.84 4 | 0.181 6 | 1843.62 | (9/2) ⁺ | 1727.95 | (9/2) ⁺ | [M1+E2] | 0.7 3 | Additional information 48. |
| 146.11 1 | 0.188 3 | 1727.95 | (9/2) ⁺ | 1581.99 | 7/2 ⁺ | [M1+E2] | 0.34 11 | Additional information 35. |
| 180.42 1 | 5.9 3 | 180.37 | 1/2 ⁺ | 0.0 | 3/2 ⁺ | [M1] | 0.1318 | I _γ : from 1970Oh05. Value of 2.389 19 in 1989WaZJ seems too low which gives non-physical negative β feeding of ≈1.5%. Additional information 5. |
| 244.53 1 | 0.837 8 | 1727.95 | (9/2) ⁺ | 1483.35 | 7/2 ⁺ | [M1+E2] | 0.067 9 | U ₂ A ₂ =+0.03 2. Additional information 36. |
| 268.48 2 | 0.444 7 | 812.96 | 7/2 ⁺ | 544.64 | 5/2 ⁺ | (M1+E2) | 0.051 5 | U ₂ A ₂ =+0.35 11. Additional information 12. |
| ^x 290.48 4 | 0.124 5 | | | | | | | δ(E2/M1)=+0.47 19 or +8.5 59 from U ₂ A ₂ =-0.33 17. |
| 295.26 1 | 1.718 17 | 759.83 | 7/2 ⁻ | 464.64 | 9/2 ⁽⁻⁾ | (M1+E2) | 0.038 3 | Additional information 10. δ(E2/M1)=-0.07 4 or -6.3 15 for J(760)=7/2; δ(E2/M1)=-0.65 9 or +3.5 8 for J(634)=9/2; δ(E2/M1)=+0.13 3 or -20 to +80 for J(634)=11/2 from U ₂ A ₂ =+0.05 5. |
| 314.40 2 | 0.255 5 | 1281.72 | 5/2 ⁺ | 966.86 | 5/2 ⁺ | | | Additional information 19. |
| 318.36 1 | 0.471 5 | 1600.05 | 5/2 ⁺ | 1281.72 | 5/2 ⁺ | | | Additional information 27. |
| 330.33 4 | 0.151 7 | 875.00 | 3/2 ⁺ | 544.64 | 5/2 ⁺ | | | |
| 333.21 2 | 0.354 8 | 966.86 | 5/2 ⁺ | 633.85 | 5/2 ⁺ | | | Additional information 14. |
| 351.46 11 | 0.156 17 | 1318.23 | 7/2 ⁺ | 966.86 | 5/2 ⁺ | | | |
| 354.13 8 | 0.201 20 | 1581.99 | 7/2 ⁺ | 1227.98 | (7/2 ⁻ , 9/2 ⁺) | | | |
| 359.20 1 | 4.96 5 | 464.64 | 9/2 ⁽⁻⁾ | 105.49 | 11/2 ⁻ | (M1+E2) | 0.0216 4 | Additional information 6. δ(E2/M1)=-0.025 22 or -27 14 from U ₂ A ₂ =+0.20 3. |
| 364.21 3 | 0.632 16 | 544.64 | 5/2 ⁺ | 180.37 | 1/2 ⁺ | [E2] | 0.0209 | |
| ^x 398.97 5 | 0.143 6 | | | | | | | |
| 404.64 1 | 2.432 24 | 1632.57 | 7/2 ⁻ , 9/2 ⁺ | 1227.98 | (7/2 ⁻ , 9/2 ⁺) | (M1+E2) | 0.013 2 | Additional information 30. |

¹²⁹Sb β⁻ decay (4.366 h) [1989WaZJ,1995StZZ](#) (continued)

γ(¹²⁹Te) (continued)

| <u>E_γ[†]</u> | <u>I_γ^{‡&}</u> | <u>E_i(level)</u> | <u>J_i^π</u> | <u>E_f</u> | <u>J_f^π</u> | <u>Mult. @</u> | <u>α^a</u> | <u>Comments</u> |
|----------------------------------|---------------------------------------|-----------------------------|---|----------------------|---------------------------------------|----------------|----------------------|--|
| | | | | | | | | δ(E2/M1)=+0.47 5 or +3.65 65 for 9/2 to 7/2; δ(E2/M1)=+0.10 4 or +0.71 16 for 9/2 to 9/2; δ(E2/M1)=+0.12 19 or +0.93 34 for 7/2 to 7/2; δ(E2/M1)=-0.45 to -1.73 for 7/2 to 9/2 from U ₂ A ₂ =-0.44 6. |
| 409.71 2 | 0.480 10 | 1727.95 | (9/2) ⁺ | 1318.23 | 7/2 ⁺ | | | |
| 415.17 4 | 0.200 8 | 1227.98 | (7/2 ⁻ ,9/2 ⁺) | 812.96 | 7/2 ⁺ | | | |
| 421.72 10 | 0.104 8 | 966.86 | 5/2 ⁺ | 544.64 | 5/2 ⁺ | | | E _γ : poor fit, level-energy difference=422.22. |
| ^x 434.74 | 0.231 | | | | | | | Additional information 1. |
| 435.04 [#] 9 | 0.44 3 | 1753.32 | 5/2 ⁺ | 1318.23 | 7/2 ⁺ | | | |
| 453.44 1 | 1.116 13 | 633.85 | 5/2 ⁺ | 180.37 | 1/2 ⁺ | | | Additional information 8. |
| 471.54 9 | 0.094 8 | 1753.32 | 5/2 ⁺ | 1281.72 | 5/2 ⁺ | | | |
| 499.99 1 | 0.892 9 | 1727.95 | (9/2) ⁺ | 1227.98 | (7/2 ⁻ ,9/2 ⁺) | | | Additional information 37. |
| | | | | | | | | δ(E2/M1)=-0.14 to -3.2 for J(1228)=7/2 from U ₂ A ₂ =+0.8 3; no fit if J(1228)=5/2 or 9/2. |
| 505.33 1 | 1.074 11 | 1318.23 | 7/2 ⁺ | 812.96 | 7/2 ⁺ | | | Additional information 22. |
| 514.43 8 | 0.304 25 | 1481.26 | (3/2 ⁻ ,5/2,7/2 ⁺) | 966.86 | 5/2 ⁺ | | | |
| 523.13 [#] 12 | 3.21 6 | 1751.11 | (5/2,7/2,9/2) | 1227.98 | (7/2 ⁻ ,9/2 ⁺) | | | Additional information 42. |
| | | | | | | | | U ₂ A ₂ =-0.24 6. |
| 525.23 | 0.341 | 1753.32 | 5/2 ⁺ | 1227.98 | (7/2 ⁻ ,9/2 ⁺) | | | Additional information 43. |
| | | | | | | | | δ(E2/M1)=-0.34 7 or +4.0 75 for J(1228)=7/2 from U ₂ A ₂ =-0.24 6; no fit if J(1228)=9/2. |
| ^x 539.52 6 | 0.159 12 | | | | | | | |
| 544.56 1 | 32.0 3 | 544.64 | 5/2 ⁺ | 0.0 | 3/2 ⁺ | (M1+E2) | 0.0070 6 | Additional information 7. |
| | | | | | | | | δ(E2/M1)=+0.49 3 or +6.0 7 from U ₂ A ₂ =-0.43 2. |
| ^x 566.96 2 | 0.283 5 | | | | | | | |
| 589.98 25 | 0.046 13 | 1871.61 | 5/2 ⁺ | 1281.72 | 5/2 ⁺ | | | |
| 592.77 6 | 0.086 6 | 1405.69 | (5/2,7/2,9/2 ⁺) | 812.96 | 7/2 ⁺ | | | |
| 606.22 4 | 0.302 9 | 1481.26 | (3/2 ⁻ ,5/2,7/2 ⁺) | 875.00 | 3/2 ⁺ | | | |
| ^x 630.29 | | | | | | | | |
| 633.74 1 | 5.24 5 | 633.85 | 5/2 ⁺ | 0.0 | 3/2 ⁺ | (M1+E2) | | Additional information 9. |
| | | | | | | | | δ(E2/M1)=+0.58 5 or +4.3 7 for J(634)=5/2 from U ₂ A ₂ =-0.41 3. |
| | | | | | | | | Possible doublet. |
| 647.94 2 | 0.258 6 | 1460.82 | (5/2,7/2,9/2 ⁺) | 812.96 | 7/2 ⁺ | | | |
| 654.28 1 | 6.16 6 | 759.83 | 7/2 ⁻ | 105.49 | 11/2 ⁻ | | | Additional information 11. |
| | | | | | | | | E2 for J(760)=7/2; δ(E2/M1)=-0.26 3 or -2.95 25 for J(634)=9/2; δ(E2/M1)=-0.34 5 or +1.35 11 for J(634)=11/2 from U ₂ A ₂ =-0.19 3. |
| 657.61 | | 1939.45 | (5/2,7/2,9/2) | 1281.72 | 5/2 ⁺ | | | |
| 670.31 4 | 1.99 7 | 1483.35 | 7/2 ⁺ | 812.96 | 7/2 ⁺ | | | Additional information 25. |
| 682.77 [#] 1 | 11.94 12 | 1227.98 | (7/2 ⁻ ,9/2 ⁺) | 544.64 | 5/2 ⁺ | | | E _γ : poor fit, level-energy difference=683.34. |
| | | | | | | | | Additional information 17. |
| | | | | | | | | E2 for J(1228)=9/2; δ(E2/M1)=+0.46 8 or +4.8 14 for J(1228)=7/2 from U ₂ A ₂ =-0.36 2. |

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¹²⁹Sb β⁻ decay (4.366 h) [1989WaZJ,1995StZZ](#) (continued)

γ(¹²⁹Te) (continued)

| <u>E_γ[†]</u> | <u>I_γ^{‡&}</u> | <u>E_i(level)</u> | <u>J_i^π</u> | <u>E_f</u> | <u>J_f^π</u> | <u>Mult.[@]</u> | <u>Comments</u> |
|----------------------------------|---------------------------------------|-----------------------------|---|----------------------|---------------------------------------|--------------------------|---|
| 684.18 1 | 1.290 13 | 1318.23 | 7/2 ⁺ | 633.85 | 5/2 ⁺ | | |
| ^x 688.59 8 | 0.34 3 | | | | | | |
| 694.77 3 | 0.837 20 | 875.00 | 3/2 ⁺ | 180.37 | 1/2 ⁺ | | |
| ^x 697.78 | 0.528 | | | | | | |
| ^x 703.36 5 | 0.198 8 | | | | | | |
| 707.08 3 | 0.286 9 | 1581.99 | 7/2 ⁺ | 875.00 | 3/2 ⁺ | | |
| ^x 715.49 14 | 0.105 17 | | | | | | |
| 737.07 1 | 0.921 9 | 1281.72 | 5/2 ⁺ | 544.64 | 5/2 ⁺ | (M1+E2) | Additional information 20. δ(E2/M1)=-0.11 18 or +2.4 10 from U ₂ A ₂ =-0.28 16. |
| 761.12 1 | 8.96 9 | 1727.95 | (9/2) ⁺ | 966.86 | 5/2 ⁺ | (E2) | Additional information 38. Mult.: U ₂ A ₂ =-0.43 3 consistent with E2. |
| 768.98 2 | 0.665 10 | 1581.99 | 7/2 ⁺ | 812.96 | 7/2 ⁺ | | |
| 773.37 1 | 5.86 6 | 1318.23 | 7/2 ⁺ | 544.64 | 5/2 ⁺ | | Additional information 23. δ(E2/M1)=+0.03 4 or +1.53 14 from U ₂ A ₂ =-0.41 3. |
| 786.36 1 | 2.221 22 | 966.86 | 5/2 ⁺ | 180.37 | 1/2 ⁺ | [E2] | Additional information 15. |
| 787.16 1 | 3.60 4 | 1600.05 | 5/2 ⁺ | 812.96 | 7/2 ⁺ | (M1+E2) | I _γ : from 1995StZZ, 1989WaZJ list 1.819 4. δ(E2/M1)=+0.06 24 or -1.4 79 from U ₂ A ₂ =+0.11 9. |
| 796.21 6 | 0.084 6 | 2114.62 | 5/2 ⁺ | 1318.23 | 7/2 ⁺ | | |
| 812.97 1 | 100.0 10 | 812.96 | 7/2 ⁺ | 0.0 | 3/2 ⁺ | (E2) | Additional information 13. Mult.: U ₂ A ₂ =-0.41 3 consistent with E2. |
| 819.51 2 | 2.88 6 | 1632.57 | 7/2 ⁻ ,9/2 ⁺ | 812.96 | 7/2 ⁺ | | |
| 826.75 16 | 0.14 4 | 1460.82 | (5/2,7/2,9/2 ⁺) | 633.85 | 5/2 ⁺ | | |
| 832.99 16 | 0.13 3 | 2114.62 | 5/2 ⁺ | 1281.72 | 5/2 ⁺ | | |
| 840.17 22 | 0.057 19 | 1384.96 | (3/2 ⁻ ,5/2,7/2 ⁺) | 544.64 | 5/2 ⁺ | | |
| 849.57 5 | 0.157 6 | 2131.24 | 7/2 ⁻ | 1281.72 | 5/2 ⁺ | | |
| 861.00 3 | 0.141 3 | 1405.69 | (5/2,7/2,9/2 ⁺) | 544.64 | 5/2 ⁺ | | |
| 874.89 3 | 1.108 10 | 875.00 | 3/2 ⁺ | 0.0 | 3/2 ⁺ | (M1+E2) | δ(E2/M1)=0.00 2 or +3.9 4 from U ₂ A ₂ =-0.40 3. |
| 876.65 3 | 5.70 13 | 1843.62 | (9/2) ⁺ | 966.86 | 5/2 ⁺ | | Additional information 49. |
| 903.19 8 | 0.291 15 | 2131.24 | 7/2 ⁻ | 1227.98 | (7/2 ⁻ ,9/2 ⁺) | | |
| 914.96 1 | 48.4 5 | 1727.95 | (9/2) ⁺ | 812.96 | 7/2 ⁺ | (M1+E2) | Additional information 39. δ(E2/M1)=+0.105 15 or -15.5 30 from U ₂ A ₂ =+0.10 2. |
| ^x 939.52 | 0.398 | | | | | | |
| 940.51 [#] 12 | 1.59 7 | 1753.32 | 5/2 ⁺ | 812.96 | 7/2 ⁺ | | Additional information 44. δ(E2/M1)=-0.68 to -1.11 from U ₂ A ₂ =-0.45 5. |
| 966.78 1 | 18.58 19 | 966.86 | 5/2 ⁺ | 0.0 | 3/2 ⁺ | (M1+E2) | Additional information 16. δ(E2/M1)=+0.18 1 or -9.1 10 from U ₂ A ₂ =+0.02 2. |
| 992.70 4 | 0.217 8 | 1867.71 | (5/2,7/2 ⁺) | 875.00 | 3/2 ⁺ | | |
| 996.54 3 | 0.365 8 | 1871.61 | 5/2 ⁺ | 875.00 | 3/2 ⁺ | | Additional information 53. |
| 1000.50 8 | 0.104 8 | 1545.14 | 7/2 ⁺ ,9/2 ⁺ | 544.64 | 5/2 ⁺ | | Additional information 26. |
| 1022.12 7 | 0.061 6 | 1656.12 | 5/2 ⁺ | 633.85 | 5/2 ⁺ | | |
| 1030.65 1 | 31.4 3 | 1843.62 | (9/2) ⁺ | 812.96 | 7/2 ⁺ | (M1+E2) | Additional information 50. δ(E2/M1)=+0.077 13 or -10.8 15 from U ₂ A ₂ =+0.146 21. |
| 1037.29 4 | 0.636 20 | 2265.29 | (5/2 ⁺ ,7/2 ⁺) | 1227.98 | (7/2 ⁻ ,9/2 ⁺) | | |

¹²⁹Sb β⁻ decay (4.366 h) 1989WaZJ,1995StZZ (continued)

| $\gamma(^{129}\text{Te})$ (continued) | | | | | | | |
|---------------------------------------|---------------|---------------|---|--------|--------------------|---------|---|
| E_γ † | I_γ ‡& | E_i (level) | J_i^π | E_f | J_f^π | Mult. @ | Comments |
| ^x 1042.30 6 | 0.088 6 | | | | | | |
| ^x 1053.02 5 | 0.109 6 | | | | | | |
| 1087.98 3 | 0.852 18 | 1632.57 | 7/2 ⁻ ,9/2 ⁺ | 544.64 | 5/2 ⁺ | | Additional information 31. |
| 1104.52 1 | 0.707 7 | 2071.42 | 5/2 ⁺ | 966.86 | 5/2 ⁺ | (M1+E2) | Additional information 59. $\delta(E2/M1)=-0.13$ 12 or +2.45 75 from $U_2A_2=-0.25$ 11. |
| 1122.48 3 | 0.191 6 | 1227.98 | (7/2 ⁻ ,9/2 ⁺) | 105.49 | 11/2 ⁻ | | Additional information 18. |
| 1126.57 3 | 0.248 6 | 1939.45 | (5/2,7/2,9/2) | 812.96 | 7/2 ⁺ | | Additional information 58. |
| 1147.59 3 | 0.185 5 | 2114.62 | 5/2 ⁺ | 966.86 | 5/2 ⁺ | | Additional information 66. |
| 1167.95 2 | 0.525 7 | 1632.57 | 7/2 ⁻ ,9/2 ⁺ | 464.64 | 9/2 ⁽⁻⁾ | | Additional information 32. |
| 1179.63 4 | 0.112 4 | 1939.45 | (5/2,7/2,9/2) | 759.83 | 7/2 ⁻ | | |
| 1196.42 2 | 0.177 3 | 2071.42 | 5/2 ⁺ | 875.00 | 3/2 ⁺ | | |
| 1209.03 3 | 1.95 3 | 1753.32 | 5/2 ⁺ | 544.64 | 5/2 ⁺ | (M1+E2) | E_γ : poor fit, level-energy difference=1208.68. Additional information 45. $\delta(E2/M1)=-0.30$ 5 or +4.0 75 from $U_2A_2=-0.08$ 5. E_γ : poor fit, level-energy difference=1211.10. |
| 1211.89 17 | 0.79 13 | 2086.10 | (7/2 ⁺) | 875.00 | 3/2 ⁺ | | |
| 1233.2 6 | 0.11 5 | 1777.8 | (5/2,7/2,9/2 ⁺) | 544.64 | 5/2 ⁺ | | |
| 1237.81 # 12 | 0.501 10 | 1871.61 | 5/2 ⁺ | 633.85 | 5/2 ⁺ | (M1+E2) | Additional information 54. $\delta(E2/M1)=+0.09$ 6 or -5.3 17 for $J(634)=3/2$; $\delta(E2/M1)=-0.65$ 17 or -7 to +10 for $J(634)=5/2$ from $U_2A_2=+0.18$ 10. |
| ^x 1238.62 | | | | | | | |
| 1258.44 1 | 0.834 8 | 2071.42 | 5/2 ⁺ | 812.96 | 7/2 ⁺ | (M1+E2) | Additional information 60. $\delta(E2/M1)=-0.37$ 15 or -2.05 65 from $U_2A_2=-0.24$ 10. |
| 1263.30 1 | 1.887 19 | 1727.95 | (9/2 ⁺) | 464.64 | 9/2 ⁽⁻⁾ | (E1) | Additional information 40. $U_2A_2=-0.43$ 6 consistent with E1. |
| 1273.10 2 | 0.341 7 | 2086.10 | (7/2 ⁺) | 812.96 | 7/2 ⁺ | | Additional information 64. |
| ^x 1276.13 7 | 0.213 19 | | | | | | |
| 1281.72 1 | 1.160 12 | 1281.72 | 5/2 ⁺ | 0.0 | 3/2 ⁺ | (M1+E2) | Additional information 21. $\delta(E2/M1)=-0.10$ 7 or -2.45 45 from $U_2A_2=+0.49$ 12. |
| 1287.45 3 | 0.208 5 | 1921.30 | (5/2 ⁺) | 633.85 | 5/2 ⁺ | | |
| 1298.7 4 | 0.24 8 | 2265.29 | (5/2 ⁺ ,7/2 ⁺) | 966.86 | 5/2 ⁺ | | |
| 1301.45 5 | 0.419 16 | 2114.62 | 5/2 ⁺ | 812.96 | 7/2 ⁺ | | Additional information 67. |
| 1318.30 1 | 0.958 10 | 1318.23 | 7/2 ⁺ | 0.0 | 3/2 ⁺ | | Additional information 24. $\delta(E2/M1)=+0.55$ 8 or +4.8 13 from $U_2A_2=-0.49$ 7. |
| 1326.98 1 | 1.442 14 | 1871.61 | 5/2 ⁺ | 544.64 | 5/2 ⁺ | (M1+E2) | Additional information 55. $\delta(E2/M1)=+0.30$ 15 or +0.92 24 from $U_2A_2=-0.56$ 6. |
| 1384.98 3 | 0.208 5 | 1384.96 | (3/2 ⁻ ,5/2,7/2 ⁺) | 0.0 | 3/2 ⁺ | | |
| 1419.40 12 | 0.818 10 | 1600.05 | 5/2 ⁺ | 180.37 | 1/2 ⁺ | (E2) | Additional information 28. E2 from $U_2A_2=-0.36$ 8. |
| ^x 1421.23 | 0.078 | | | | | | |
| 1437.52 2 | 0.655 10 | 2071.42 | 5/2 ⁺ | 633.85 | 5/2 ⁺ | (M1+E2) | Additional information 61. $\delta(E2/M1)=+0.03$ 8 or -4.1 13 for $J(634)=3/2$; $\delta(E2/M1)=-1.0$ 4 or -2.2 to +45 for $J(634)=5/2$ from $U_2A_2=+0.28$ 13. |
| 1475.91 3 | 0.145 3 | 1656.12 | 5/2 ⁺ | 180.37 | 1/2 ⁺ | | |

¹²⁹Sb β⁻ decay (4.366 h) [1989WaZJ,1995StZZ](#) (continued)

γ(¹²⁹Te) (continued)

| E_γ † | I_γ ‡& | E_i (level) | J_i^π | E_f | J_f^π | Mult. @ | Comments |
|-------------------------|---------------|---------------|---------------------------------------|--------|--------------------|-----------|---|
| 1480.94 [#] 12 | 0.774 11 | 2114.62 | 5/2 ⁺ | 633.85 | 5/2 ⁺ | | Additional information 68. |
| ^x 1483.04 | 0.085 | | | | | | |
| 1501.04 4 | 0.124 4 | 2134.89 | (5/2 ⁻ ,7/2 ⁺) | 633.85 | 5/2 ⁺ | | Additional information 71. |
| 1526.84 1 | 1.136 11 | 2071.42 | 5/2 ⁺ | 544.64 | 5/2 ⁺ | (M1+E2) | Additional information 62. δ(E2/M1)=-0.10 9 or +2.1 5 from U ₂ A ₂ =-0.28 8. |
| 1541.47 3 | 0.139 4 | 2086.10 | (7/2 ⁺) | 544.64 | 5/2 ⁺ | | Additional information 65. |
| 1570.09 1 | 1.810 18 | 2114.62 | 5/2 ⁺ | 544.64 | 5/2 ⁺ | (M1+E2) | Additional information 69. δ(E2/M1)=-0.10 5 or +2.1 3 from U ₂ A ₂ =-0.28 5. |
| 1582.11 5 | 0.070 3 | 1762.46 | (5/2 ⁺) | 180.37 | 1/2 ⁺ | | Additional information 46. |
| 1600.13 1 | 1.201 12 | 1600.05 | 5/2 ⁺ | 0.0 | 3/2 ⁺ | (M1+E2) | Additional information 29. δ(E2/M1)=+0.77 11 or +2.7 6 from U ₂ A ₂ =-0.65 7. |
| 1606.72 1 | 0.041 4 | 2071.42 | 5/2 ⁺ | 464.64 | 9/2 ⁽⁻⁾ | | |
| 1622.46 1 | 0.431 4 | 1727.95 | (9/2) ⁺ | 105.49 | 11/2 ⁻ | (E1(+M2)) | Additional information 41. δ(E2/M1)=-0.07 10 or -17 13 from U ₂ A ₂ =+0.06 14; but Δ(J ^π) required E1. |
| 1646.79 5 | 0.056 2 | 1753.32 | 5/2 ⁺ | 105.49 | 11/2 ⁻ | [E3] | E _γ : poor fit, level-energy difference=1647.83. |
| 1656.10 1 | 2.72 3 | 1656.12 | 5/2 ⁺ | 0.0 | 3/2 ⁺ | (M1+E2) | Additional information 33. δ(E2/M1)=+0.02 3 or -3.65 40 from U ₂ A ₂ =+0.29 5. |
| 1669.16 7 | 0.045 3 | 2134.89 | (5/2 ⁻ ,7/2 ⁺) | 464.64 | 9/2 ⁽⁻⁾ | | E _γ : poor fit, level-energy difference=1670.25. |
| 1691.24 4 | 0.088 3 | 1871.61 | 5/2 ⁺ | 180.37 | 1/2 ⁺ | | Additional information 56. |
| ^x 1724.31 2 | 0.276 4 | | | | | | Additional information 2. |
| ^x 1727.77 2 | 0.060 13 | | | | | | |
| 1738.16 1 | 15.46 15 | 1843.62 | (9/2) ⁺ | 105.49 | 11/2 ⁻ | | Additional information 51. U ₂ A ₂ =+0.114 19. |
| 1762.42 5 | 0.066 2 | 1762.46 | (5/2 ⁺) | 0.0 | 3/2 ⁺ | | |
| 1779.78 4 | 0.162 4 | 1779.79 | 5/2 ⁺ | 0.0 | 3/2 ⁺ | | Additional information 47. |
| 1843.49 ^b 1 | 0.043 12 | 1843.62 | (9/2) ⁺ | 0.0 | 3/2 ⁺ | [M3] | Additional information 52. |
| 1871.58 1 | 0.739 7 | 1871.61 | 5/2 ⁺ | 0.0 | 3/2 ⁺ | (M1+E2) | Additional information 57. δ(E2/M1)=-0.07 6 or -2.75 55 from U ₂ A ₂ =+0.43 10. |
| 1891.10 7 | 0.033 2 | 2071.42 | 5/2 ⁺ | 180.37 | 1/2 ⁺ | | |
| ^x 1917.36 3 | 0.112 3 | | | | | | Additional information 3. |
| ^x 1934.24 3 | 0.112 3 | | | | | | Additional information 4. |
| ^x 2002.36 6 | 0.065 3 | | | | | | |
| 2071.36 1 | 1.513 15 | 2071.42 | 5/2 ⁺ | 0.0 | 3/2 ⁺ | (M1+E2) | Additional information 63. δ(E2/M1)=-0.29 8 or +1.55 25 from U ₂ A ₂ =+0.74 8. |
| 2086.11 2 | 0.112 2 | 2086.10 | (7/2 ⁺) | 0.0 | 3/2 ⁺ | | |
| 2114.67 1 | 0.868 9 | 2114.62 | 5/2 ⁺ | 0.0 | 3/2 ⁺ | (M1+E2) | Additional information 70. δ(E2/M1)=+0.17 5 or -9.2 33 from U ₂ A ₂ =+0.04 8. |
| 2134.86 3 | 0.077 2 | 2134.89 | (5/2 ⁻ ,7/2 ⁺) | 0.0 | 3/2 ⁺ | | Additional information 72. |
| ^x 2223.42 5 | 0.058 2 | | | | | | |
| 2265.27 4 | 0.070 2 | 2265.29 | (5/2 ⁺ ,7/2 ⁺) | 0.0 | 3/2 ⁺ | | Additional information 73. |

$\gamma(^{129}\text{Te})$ (continued)

- † From 1989WaZJ. The evaluators assign minimum uncertainty of 0.1 keV for the purpose of least-squares fit. In Adopted dataset increased uncertainties are used when taken from this dataset. Values from 1970Ca23 and 1970Oh05 are listed in the dataset under 'documentation' records.
- ‡ From 1989WaZJ, unless otherwise stated. The evaluators assign minimum uncertainty of 1% for gamma-ray intensity in cases where 1989WaZJ quote an uncertainty lower than 1%. Values from 1970Ca23 and 1970Oh05 are listed in the dataset under 'documentation' records.
- # Doublet.
- @ From $\gamma(\theta)$ and other considerations as explained in 1995StZZ. Almost all mixing ratios are double values (a low δ and a high δ); these are given under comments.
- & For absolute intensity per 100 decays, multiply by 0.482 6.
- ^a Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ -ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.
- ^b Placement of transition in the level scheme is uncertain.
- ^x γ ray not placed in level scheme.

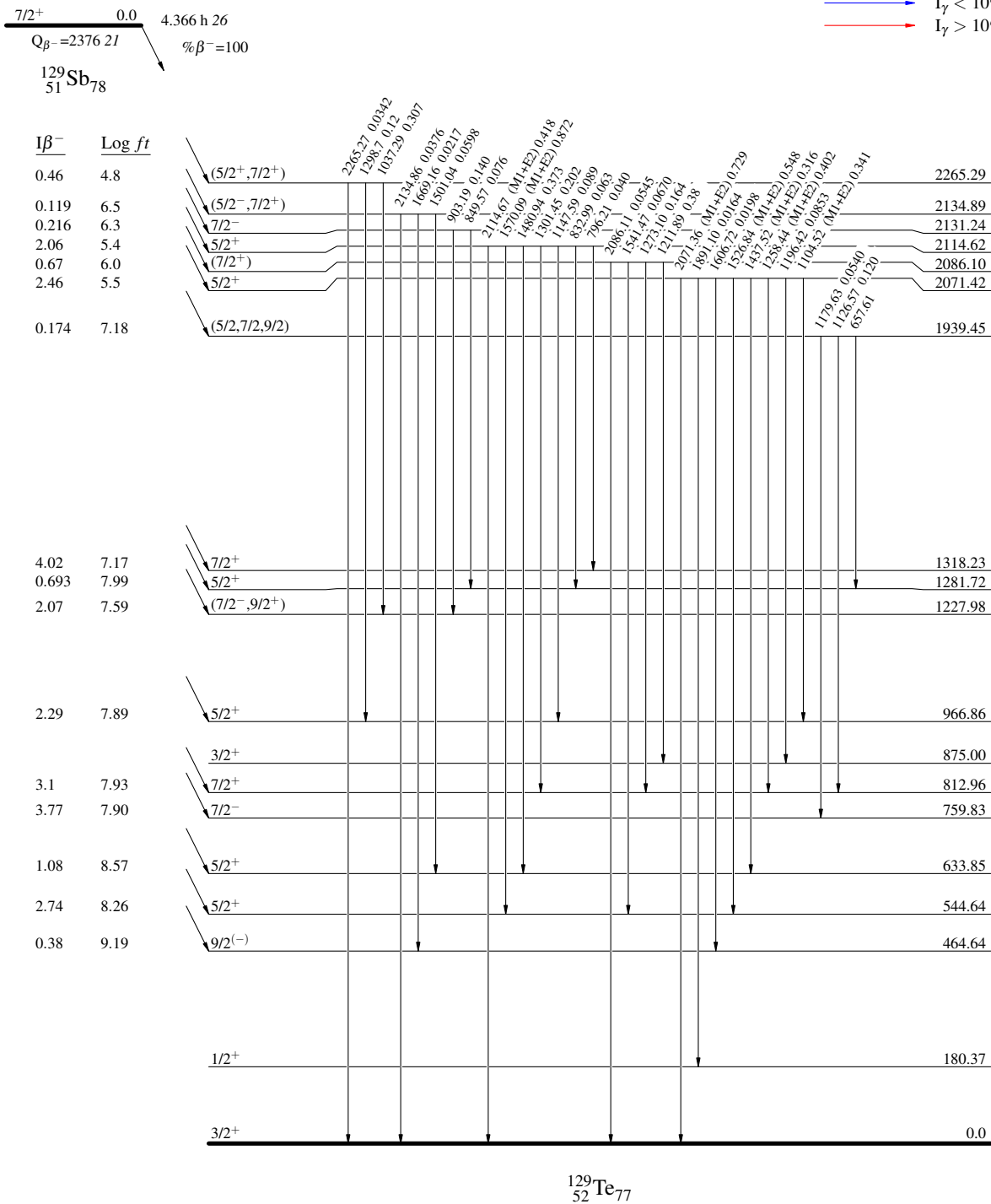
$^{129}\text{Sb} \beta^-$ decay (4.366 h) 1989WaZJ,1995StZZ

Decay Scheme

Intensities: $I_{(\gamma+ce)}$ per 100 parent decays

Legend

- $I_{\gamma} < 2\% \times I_{\gamma}^{max}$
- $I_{\gamma} < 10\% \times I_{\gamma}^{max}$
- $I_{\gamma} > 10\% \times I_{\gamma}^{max}$



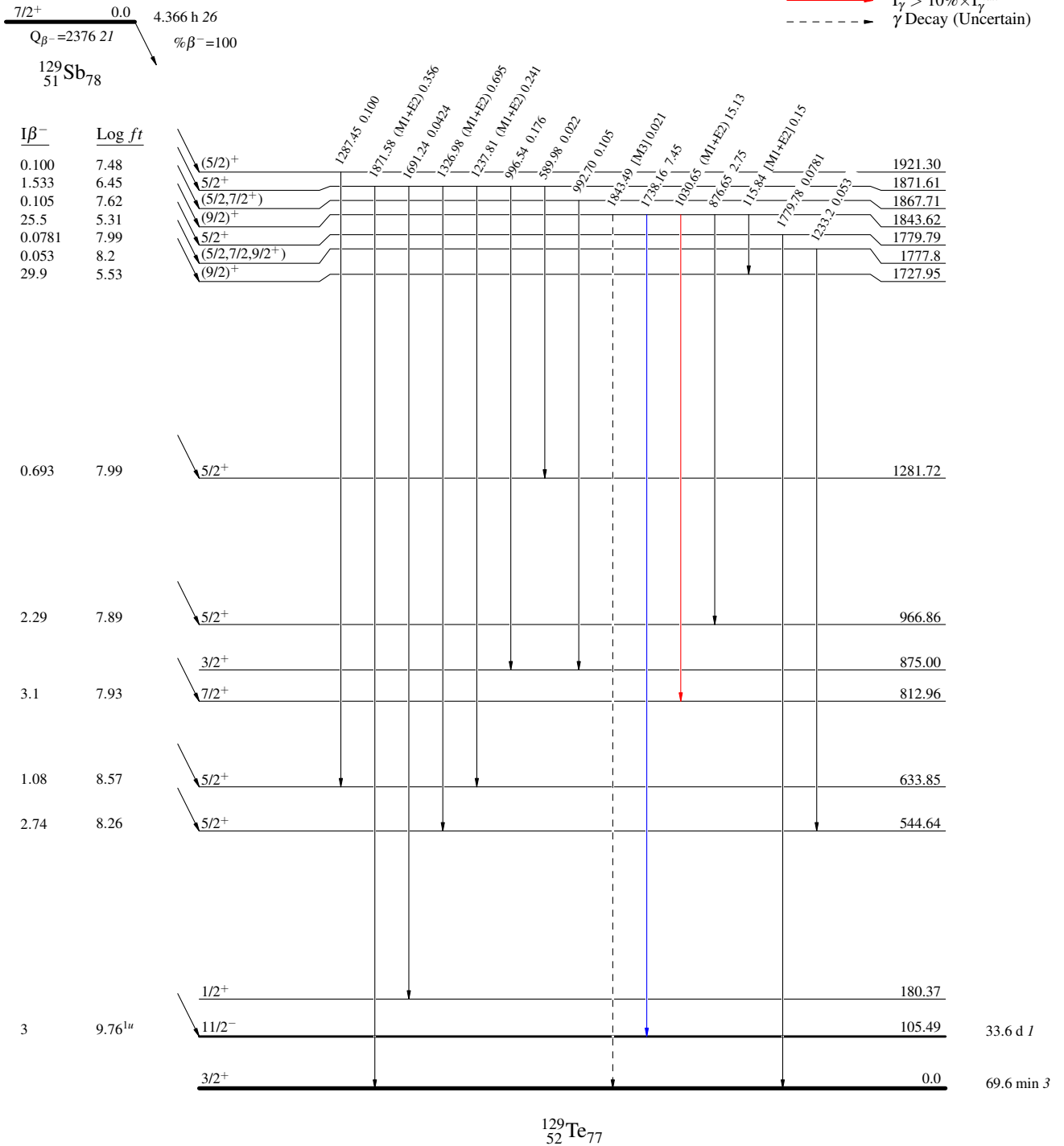
$^{129}\text{Sb} \beta^-$ decay (4.366 h) 1989WaZJ,1995StZZ

Decay Scheme (continued)

Intensities: $I_{(\gamma+ce)}$ per 100 parent decays

Legend

- $I_\gamma < 2\% \times I_\gamma^{max}$
- $I_\gamma < 10\% \times I_\gamma^{max}$
- $I_\gamma > 10\% \times I_\gamma^{max}$
- - - - - γ Decay (Uncertain)



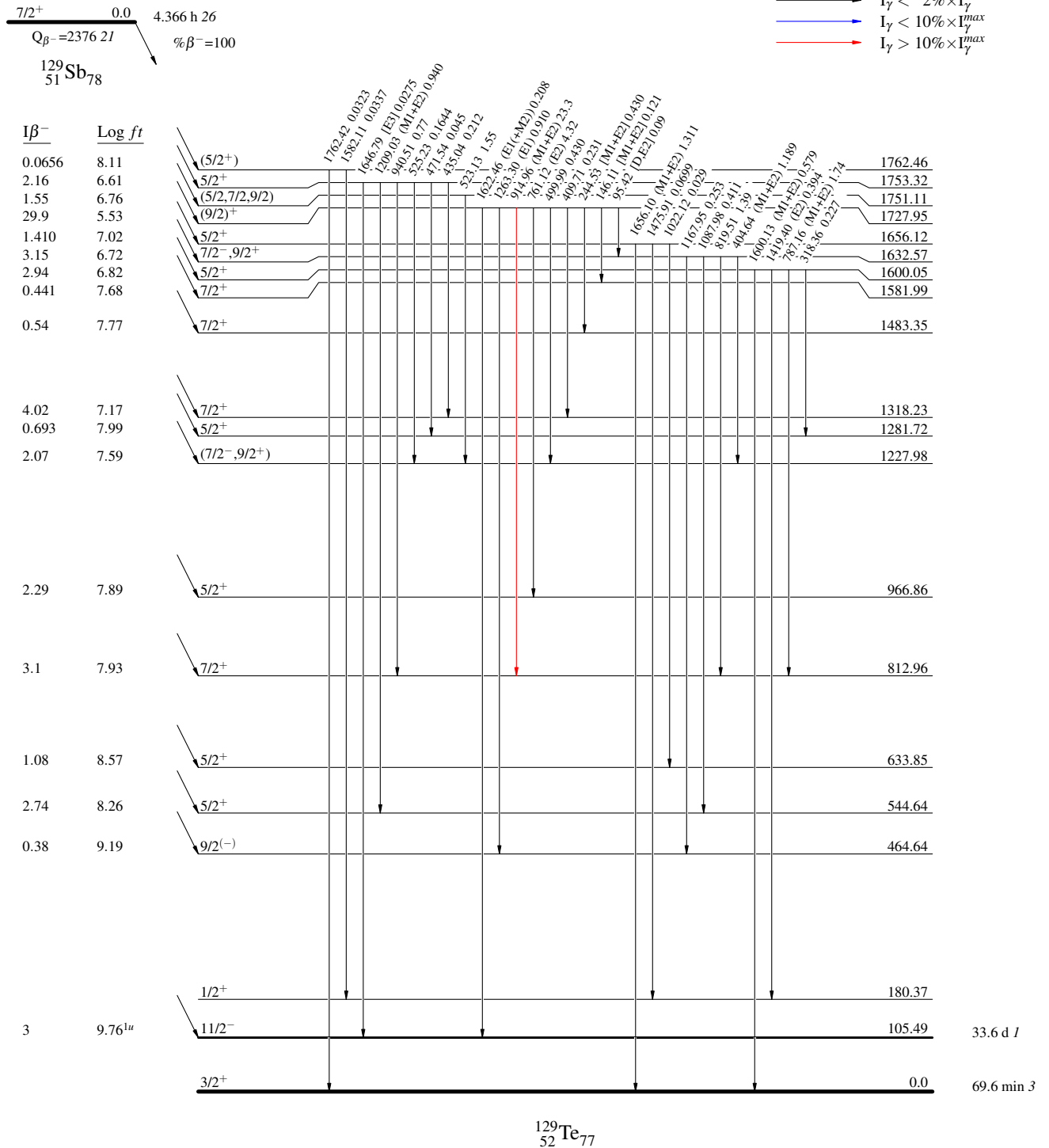
$^{129}\text{Sb} \beta^-$ decay (4.366 h) 1989WaZJ,1995StZZ

Decay Scheme (continued)

Intensities: $I_{(\gamma+ce)}$ per 100 parent decays

Legend

- $I_{\gamma} < 2\% \times I_{\gamma}^{max}$
- $I_{\gamma} < 10\% \times I_{\gamma}^{max}$
- $I_{\gamma} > 10\% \times I_{\gamma}^{max}$



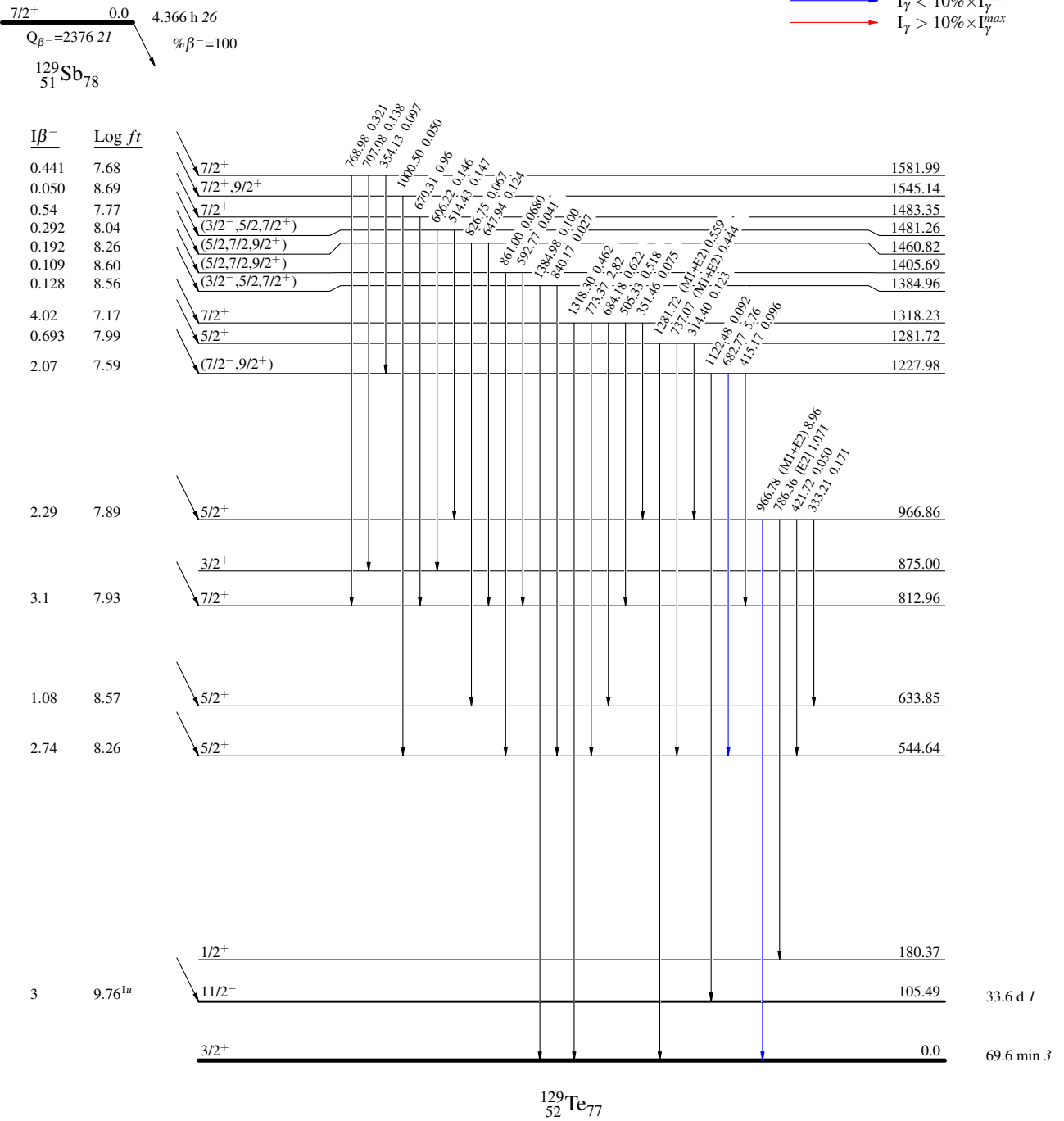
$^{129}\text{Sb} \beta^-$ decay (4.366 h) 1989WaZJ,1995StZZ

Decay Scheme (continued)

Intensities: $I_{(\gamma+ce)}$ per 100 parent decays

Legend

- $I_\gamma < 2\% \times I_\gamma^{max}$
- $I_\gamma < 10\% \times I_\gamma^{max}$
- $I_\gamma > 10\% \times I_\gamma^{max}$



$^{129}\text{Sb} \beta^-$ decay (4.366 h) 1989WaZJ,1995StZZ

Decay Scheme (continued)

Intensities: $I_{(\gamma+ce)}$ per 100 parent decays

Legend

