

Adopted Levels, Gammas

| Type | Author | History | Citation | Literature Cutoff Date |
|-----------------|---|---------|---------------------|------------------------|
| Full Evaluation | Janos Timar and Zoltan Elekes, Balraj Singh | | NDS 121, 143 (2014) | 31-May-2014 |

Q(β^-)=189 3; S(n)=8840 5; S(p)=6802 3; Q(α)=-2676 4 [2012Wa38](#)

S(2n)=15666 5, S(2p)=16386 6 ([2012Wa38](#)).

¹²⁹I identified by [1949Pa19](#), [1949Li09](#) and [1951Ka16](#); also an earlier preliminary report by S. Katcoff in Phys. Rev. 71, 826 (1947). Later studies of ¹²⁹I decay: [1985Ba73](#), [1977Ra23](#), [1965Wa13](#), [1954De17](#).

¹²⁹I Levels

Cross Reference (XREF) Flags

| | | | |
|----------|--|----------|---|
| A | ¹²⁹ Te β^- decay (69.6 min) | E | ¹²⁹ I(γ,γ):Mossbauer |
| B | ¹²⁹ Te β^- decay (33.6 d) | F | Coulomb excitation |
| C | ¹²⁴ Sn(⁷ Li,2n γ) | G | ¹²⁸ Te(³ He,d) |
| D | ¹²⁸ Te(p,p),(p,p') IAR | H | ¹²⁸ Te(α,t) |

| E(level) [†] | J π^{\ddagger} | T _{1/2} | XREF | Comments |
|-----------------------|--------------------|--------------------------|-----------------|--|
| 0.0 | 7/2 ⁺ | 1.57×10 ⁷ y 4 | ABC EFGH | $\% \beta^- = 100$ $\mu = +2.6210$ 3 (1951Wa12,2014StZZ) $Q = -0.488$ 8 (1953Li16,2013StZZ,2014StZZ) μ : From NMR (1951Wa12). Q: quadrupole resonance, microwave absorption (1953Li16). Value recommended in 2013StZZ evaluation based on original value of -0.553 from 1953Li16 . Others: -0.498 7 (2001Bi17 , re-evaluated from measured Q(¹²⁹ I)/Q(¹²⁷ I)=0.701213 15 (1953LI16)); -0.482 10 (reanalysis of Q ₂ for ¹²⁷ I by 2000Ha64). J π : spin from microwave spectroscopy (1949Li09). Parity from L(³ He,d)=4. T _{1/2} : from specific activity (1972Em01). Others: 1.97×10 ⁷ y 14 (1973Ku17), 1.56×10 ⁷ y 6 (1957Ru65), 1.72×10 ⁷ y 9 (1951Ka16), 3.0×10 ⁷ y (1949Pa19), ≈10 ⁸ y (S. Katcoff, Phys. Rev. 71, 826 (1947)). |
| 27.793 20 | 5/2 ⁺ | 16.8 ns 2 | ABC EFGH | $\mu = +2.8045$ 26 (1981De35,2014StZZ) $Q = -0.604$ 10 (1972Ro41,2013StZZ,2014StZZ) μ : Mossbauer effect (1981De35). Q: Mossbauer effect, value recommended by 2013StZZ evaluation based on original value of -0.685 from 1972Ro41 . Others: -0.616 9 (2001Bi17 , re-evaluated data from 1972Ro41); -0.598 13 (reanalysis of 1972Ro41 data and Q ₂ for ¹²⁷ I by 2000Ha64); -0.42 2 (1987Gr28 , Mossbauer effect measurement). J π : L(³ He,d)=2; M1+E2 γ to 7/2 ⁺ . T _{1/2} : from (β)(0.0278 ce(L))(t) (1966Sa06). Others (from $\beta\gamma(t)$ or $\gamma\gamma(t)$): 16.4 ns 11 (1965Pa04), 14.4 ns 5 (1964Ka09), 14.4 ns 7 (1964Jh02), 15.9 ns 13 (1963Go17), 18.6 ns 11 (1962De18). |
| 278.381 23 | 3/2 ⁺ | 0.104 ns 12 | AB FGH | J π : L(³ He,d)=2; E2 γ to 7/2 ⁺ ; γ from 1/2 ⁺ . T _{1/2} : from delayed γ (1969BoZR). 0.27 ns is deduced from B(E2) in Coulomb ex. |
| 487.346 25 | 5/2 ⁺ | 11.6 ps 27 | AB FGH | J π : L(³ He,d)=2; M1+E2 gammas to 7/2 ⁺ , 5/2 ⁺ and 3/2 ⁺ . T _{1/2} : deduced by compilers from B(E2)(\uparrow)=0.016 3 in Coulomb excitation. Other: 0.05 ns (from $\gamma(t)$, 1969BoZR). |
| 559.61 3 | 1/2 ⁺ | | A GH | J π : L(³ He,d)=0. |
| 695.89 5 | 11/2 ⁺ | 4.3 ps 5 | BC F | J π : $\Delta J=2$, (E2) g to 7/2 ⁺ ; Coulomb excited; population in (⁷ Li,2n γ) supports 11/2 over 3/2. T _{1/2} : deduced by compilers from B(E2)=0.122 13 in Coulomb ex. |

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Adopted Levels, Gammas (continued)

¹²⁹I Levels (continued)

| E(level) [†] | J ^π [‡] | T _{1/2} | XREF | Comments |
|-----------------------|---------------------------------------|------------------|---------|--|
| 729.57 3 | (9/2) ⁺ | 3.8 ps 4 | ABC F | J ^π : log ft=9.9 from 11/2 ⁻ ; M1+E2 γ to 7/2 ⁺ . T _{1/2} : deduced by compilers from B(E2)=0.078 8 in Coul. ex. |
| 768.75 3 | (7/2) ⁺ | | AB F | J ^π : log f ^{1u} t=11.6 from 11/2 ⁻ ; M1+E2 γ to 5/2 ⁺ . |
| 829.91 3 | 3/2 ⁺ ,5/2 ⁺ | | A F | J ^π : log ft=7.2 from 3/2 ⁺ ; Coulomb excited. |
| 844.82 3 | (7/2) ⁺ | | ABC F H | J ^π : log f ^{1u} t=11.9 from 11/2 ⁻ ; M1+E2 γ to 5/2 ⁺ ; Coulomb excited. J=(9/2) proposed in (⁷ Li,2nγ) is inconsistent with M1+E2 G to 5/2 ⁺ . |
| 1047.35 4 | 3/2 ⁺ ,5/2 ⁺ | | A GH | XREF: G(1052). J ^π : L(³ He,d)=2. |
| 1050.21 3 | (7/2) ⁺ | | AB F | J ^π : log f ^{1u} t=10.6 from 11/2 ⁻ ; M1+E2 γ to 5/2 ⁺ . |
| 1111.645 25 | 5/2 ⁺ | | A GH | J ^π : L(³ He,d)=2; M1+E2 gammas to 7/2 ⁺ . |
| 1196.65 13 | | | A | |
| 1203.71 9 | (7/2 ⁺) | | B | J ^π : log f ^{1u} t=11.8 from 11/2 ⁻ ; gammas to 7/2 ⁺ and 3/2 ⁺ . |
| 1209.80 10 | 1/2 ⁺ | | A GH | J ^π : L(³ He,d)=0. |
| 1260.65 3 | 3/2 ⁺ ,5/2 ⁺ | | A GH | J ^π : L(³ He,d)=2. |
| 1281.99 4 | (7/2 ⁺) | | B H | J ^π : log f ^{1u} t=11.4 from 11/2 ⁻ ; γ to 3/2 ⁺ . |
| 1291.94 4 | (3/2 ⁺ ,5/2 ⁺) | | A | J ^π : log ft=6.3 from 3/2 ⁺ ; gammas to 1/2 ⁺ and 7/2 ⁺ . |
| 1376.2 2 | (13/2 ⁺) | | C | J ^π : ΔJ=2, Q γ to (9/2) ⁺ ; ΔJ=1 γ to 11/2 ⁺ . |
| 1401.43 3 | (9/2) ⁻ | | BC GH | J ^π : L(α,t)=5; ΔJ=1, dipole γ to (7/2) ⁺ . J=(11/2) proposed in (⁷ Li,2nγ) is not likely with (7/2) assignment for 845 level. |
| 1469.7 3 | (15/2 ⁺) | | C | J ^π : ΔJ=2, Q γ to 11/2 ⁺ . |
| 1483 5 | 1/2 ⁺ | | GH | J ^π : L(³ He,d)=0. |
| 1521 6 | (7/2 to 11/2) | | H | J ^π : L(α,t)=(4,5). |
| 1566 10 | 3/2 ⁺ ,5/2 ⁺ | | GH | XREF: H(1569). J ^π : L(³ He,d)=2. |
| 1621 10 | 3/2 ⁺ ,5/2 ⁺ | | GH | XREF: H(1619). J ^π : L(³ He,d)=2. |
| 1666.9 4 | (13/2 ⁺) | | C | J ^π : ΔJ=(2) γ to (9/2) ⁺ . |
| 1741 10 | | | GH | E(level): possible doublet. L(³ He,d)=0; L(α,t)=(4+0). |
| 1823 10 | 1/2 ⁺ | | G | J ^π : L(³ He,d)=0. |
| 1833.5 3 | (15/2 ⁺) | | C | J ^π : ΔJ=1 γ to (13/2 ⁺); γ to (15/2 ⁺). |
| 1850.2 4 | (15/2) | | C | J ^π : gammas to (13/2 ⁺) and (15/2 ⁺). |
| 1861 10 | 3/2 ⁺ ,5/2 ⁺ | | GH | XREF: H(1867). J ^π : L(³ He,d)=2. |
| 1909 8 | | | H | |
| 1940 8 | | | H | |
| 1963 10 | | | GH | |
| 2002 8 | | | H | |
| 2012 10 | 1/2 ⁺ | | G | J ^π : L(³ He,d)=0. |
| 2026 8 | | | H | |
| 2050 8 | | | H | |
| 2073 10 | 3/2 ⁺ ,5/2 ⁺ | | GH | XREF: H(2071). J ^π : L(³ He,d)=2. |
| 2099.3 5 | (17/2 ⁺) | | C | J ^π : ΔJ=1 γ to (15/2 ⁺). |
| 2150 8 | | | H | |
| 2208 10 | 1/2 ⁺ | | G | J ^π : L(³ He,d)=0. |
| 2324.7 4 | (19/2 ⁺) | | C | J ^π : ΔJ=2 γ to (15/2 ⁺). |
| 2400 10 | 1/2 ⁺ | | G | J ^π : L(³ He,d)=0. |
| 2529.6 5 | | | C | J ^π : γ to (19/2 ⁺) suggests 19/2, 21/2, 23/2 ⁺ . |
| 2569? 1 | | | C | |
| 2590 20 | 1/2 ⁺ | | G | J ^π : L(³ He,d)=0. |
| 2633.1 4 | (23/2 ⁺) | | C | J ^π : ΔJ=2 γ to (19/2 ⁺). |
| 2790 20 | 1/2 ⁺ | | G | J ^π : L(³ He,d)=0. |
| 2850 20 | 3/2 ⁺ ,5/2 ⁺ | | G | J ^π : L(³ He,d)=2. |
| 2882.3 7 | | | C | |
| 2910 20 | 1/2 ⁺ | | G | J ^π : L(³ He,d)=0. |
| 2924? 1 | | | C | |

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Adopted Levels, Gammas (continued) ^{129}I Levels (continued)

| E(level) [†] | J ^π [‡] | XREF | Comments |
|-----------------------|---------------------------------------|------|--|
| 2933.8 5 | (25/2 ⁺) | C | J ^π : ΔJ=1 γ to (23/2 ⁺). |
| 2950 20 | 1/2 ⁺ | G | J ^π : L(³ He,d)=0. |
| 3200 20 | 1/2 ⁺ | G | J ^π : L(³ He,d)=0. |
| 3250 20 | 1/2 ⁺ | G | J ^π : L(³ He,d)=0. |
| 3350 20 | 1/2 ⁺ | G | J ^π : L(³ He,d)=0. |
| 3408? 1 | | C | |
| 3450 20 | 1/2 ⁺ | G | J ^π : L(³ He,d)=0. |
| 14666 20 | 3/2 ⁺ ,5/2 ⁺ | D | J ^π : L=2 in (p,p') IAR. |
| 14854 20 | 1/2 ⁺ | D | J ^π : L=0 in (p,p') IAR. |
| 15643 20 | 3/2 ⁺ ,5/2 ⁺ | D | J ^π : L=2 in (p,p') IAR. |
| 15969 20 | 3/2 ⁺ ,5/2 ⁺ | D | J ^π : L=2 in (p,p') IAR. |
| 16759 20 | 5/2 ⁻ ,7/2 ⁻ | D | J ^π : L=3 in (p,p') IAR. |
| 16869 20 | 5/2 ⁻ ,7/2 ⁻ | D | J ^π : L=3 in (p,p') IAR. |
| 16915 25 | 1/2 ⁻ ,3/2 ⁻ | D | J ^π : L=1 in (p,p') IAR. |
| 16998 20 | 1/2 ⁻ ,3/2 ⁻ | D | J ^π : L=1 in (p,p') IAR. |
| 17344 20 | 1/2 ⁻ ,3/2 ⁻ | D | J ^π : L=1 in (p,p') IAR. |
| 17622 20 | (5/2 ⁻ ,7/2 ⁻) | D | J ^π : L=(3) in (p,p') IAR. |
| 18409 20 | 1/2 ⁻ ,3/2 ⁻ | D | J ^π : L=1 in (p,p') IAR. |

[†] From least-squares fit to the adopted E_γ values for levels populated in γ-ray studies. For others weighted averages are taken.

[‡] For levels populated in high-spin studies, ascending order of spins with excitation energy is assumed based on yrast pattern of population.

Adopted Levels, Gammas (continued)

| $E_i(\text{level})$ | J_i^π | E_γ^\dagger | I_γ^\dagger | E_f | J_f^π | Mult. [†] | $\gamma(^{129}\text{I})$ | | Comments |
|---------------------|-------------------------------------|--------------------|--------------------|---------|------------------|--------------------|--------------------------|-------------------|--|
| | | | | | | | δ^\dagger | α^\ddagger | |
| 27.793 | 5/2 ⁺ | 27.81 5 | 100 | 0.0 | 7/2 ⁺ | M1+E2 | -0.053 3 | 5.07 11 | $\alpha(\text{L})=4.06$ 9; $\alpha(\text{M})=0.825$ 18; $\alpha(\text{N})=0.165$ 4; $\alpha(\text{O})=0.0186$ 4 B(M1)(W.u.)=0.01001 23; B(E2)(W.u.)=24 3 δ : from L1/L2/L3 ratio in ¹²⁹ Te decay (1965Be26) and $\delta=-0.045$ 14 (from ratio of lines in Mossbauer spectrum (1970De37). See 1970Va06 for possible penetration effects for 27.81 γ . |
| 278.381 | 3/2 ⁺ | 250.62 5 | 68 2 | 27.793 | 5/2 ⁺ | M1+E2 | +0.56 +16-12 | 0.0628 16 | $\alpha(\text{K})=0.0534$ 11; $\alpha(\text{L})=0.0076$ 5; $\alpha(\text{M})=0.00153$ 9 $\alpha(\text{N})=0.000308$ 18; $\alpha(\text{O})=3.49\times 10^{-5}$ 15 B(M1)(W.u.)=0.0039 8; B(E2)(W.u.)=13 6 B(E2)(W.u.)=47 6 |
| | | 278.43 5 | 100 3 | 0.0 | 7/2 ⁺ | E2 | | 0.0512 | $\alpha(\text{K})=0.0422$ 6; $\alpha(\text{L})=0.00723$ 11; $\alpha(\text{M})=0.001483$ 21 $\alpha(\text{N})=0.000293$ 5; $\alpha(\text{O})=3.12\times 10^{-5}$ 5 |
| 487.346 | 5/2 ⁺ | 208.96 5 | 2.34 7 | 278.381 | 3/2 ⁺ | M1+E2 | -0.18 4 | 0.0983 15 | $\alpha(\text{K})=0.0844$ 13; $\alpha(\text{L})=0.01110$ 20; $\alpha(\text{M})=0.00224$ 4 $\alpha(\text{N})=0.000452$ 8; $\alpha(\text{O})=5.27\times 10^{-5}$ 9 B(M1)(W.u.)=0.0039 10; B(E2)(W.u.)=1.9 10 |
| | | 459.60 5 | 100 3 | 27.793 | 5/2 ⁺ | M1+E2 | -0.08 +4-5 | 0.01259 | $\alpha(\text{K})=0.01089$ 16; $\alpha(\text{L})=0.001369$ 20; $\alpha(\text{M})=0.000275$ 4 $\alpha(\text{N})=5.57\times 10^{-5}$ 8; $\alpha(\text{O})=6.56\times 10^{-6}$ 10 B(M1)(W.u.)=0.016 4; B(E2)(W.u.)=0.3 +4-3 |
| | | 487.39 5 | 18.4 6 | 0.0 | 7/2 ⁺ | M1+E2 | +0.50 +17-10 | 0.01057 24 | $\alpha(\text{K})=0.00911$ 22; $\alpha(\text{L})=0.001169$ 18; $\alpha(\text{M})=0.000235$ 4 $\alpha(\text{N})=4.75\times 10^{-5}$ 8; $\alpha(\text{O})=5.55\times 10^{-6}$ 10 B(M1)(W.u.)=0.0020 6; B(E2)(W.u.)=1.4 9 |
| 559.61 | 1/2 ⁺ | 281.26 5 | 100 3 | 278.381 | 3/2 ⁺ | M1+E2 | -0.08 4 | 0.0442 | $\alpha(\text{K})=0.0381$ 6; $\alpha(\text{L})=0.00487$ 7; $\alpha(\text{M})=0.000980$ 15 $\alpha(\text{N})=0.000199$ 3; $\alpha(\text{O})=2.33\times 10^{-5}$ 4 |
| 695.89 | 11/2 ⁺ | 531.83 5 | 53 2 | 27.793 | 5/2 ⁺ | | | | B(E2)(W.u.)=20.8 25 |
| 729.57 | (9/2) ⁺ | 695.88 6 | 100 | 0.0 | 7/2 ⁺ | (E2) | | | $\alpha(\text{K})=0.0661$ 10; $\alpha(\text{L})=0.01207$ 17; $\alpha(\text{M})=0.00248$ 4 $\alpha(\text{N})=0.000490$ 7; $\alpha(\text{O})=5.13\times 10^{-5}$ 8 B(E2)(W.u.)=4.2 8 B(E2)(W.u.)=0.78 10 B(M1)(W.u.)=0.0129 16; B(E2)(W.u.)=1.9 7 |
| | | 242.2 1 | 0.094 13 | 487.346 | 5/2 ⁺ | [E2] | | 0.0812 | |
| | | 701.76 5 | 3.56 13 | 27.793 | 5/2 ⁺ | [E2] | | | |
| | | 729.57 5 | 100 4 | 0.0 | 7/2 ⁺ | M1+E2 | -0.34 6 | | |
| 768.75 | (7/2) ⁺ | 281.38 20 | <0.34 | 487.346 | 5/2 ⁺ | | | | |
| | | 490.34 20 | <0.86 | 278.381 | 3/2 ⁺ | | | | |
| | | 740.96 5 | 100 3 | 27.793 | 5/2 ⁺ | M1+E2 | -0.27 10 | | |
| | | 768.77 5 | 10 1 | 0.0 | 7/2 ⁺ | | | | |
| 829.91 | 3/2 ⁺ , 5/2 ⁺ | 270.37 6 | 2.4 2 | 559.61 | 1/2 ⁺ | | | | |
| | | 342.54 5 | 4.4 4 | 487.346 | 5/2 ⁺ | | | | |
| | | 551.50 5 | 1.9 2 | 278.381 | 3/2 ⁺ | | | | |
| | | 802.10 5 | 100 3 | 27.793 | 5/2 ⁺ | | | | |
| | | 829.93 5 | 3.3 12 | 0.0 | 7/2 ⁺ | | | | |

Adopted Levels, Gammas (continued)

| $\gamma(^{129}\text{I})$ (continued) | | | | | | | | | |
|--------------------------------------|-------------------------------------|------------|-------------|---------|-------------------------------------|--------------------|------------------|-------------------|---|
| $E_i(\text{level})$ | J_i^π | E_γ | I_γ | E_f | J_f^π | Mult. [†] | δ^\dagger | α^\ddagger | Comments |
| 844.82 | (7/2) ⁺ | 76.10 5 | 0.35 8 | 768.75 | (7/2) ⁺ | [M1+E2] | | 3.1 15 | $\alpha(\text{K})=2.1$ 7; $\alpha(\text{L})=0.8$ 7; $\alpha(\text{M})=0.18$ 15 $\alpha(\text{N})=0.03$ 3; $\alpha(\text{O})=0.0032$ 24 $\alpha(\text{K})=0.59$ 17; $\alpha(\text{L})=0.15$ 10; $\alpha(\text{M})=0.031$ 20 $\alpha(\text{N})=0.006$ 4; $\alpha(\text{O})=0.0006$ 4 |
| | | 115.30 16 | 0.29 9 | 729.57 | (9/2) ⁺ | [M1+E2] | | 0.8 3 | |
| | | 357.48 20 | ≤ 0.15 | 487.346 | 5/2 ⁺ | | | | |
| | | 817.04 5 | 100 3 | 27.793 | 5/2 ⁺ | M1+E2 | +0.46 4 | | |
| 1047.35 | 3/2 ⁺ , 5/2 ⁺ | 844.81 5 | 37.6 21 | 0.0 | 7/2 ⁺ | | | | |
| | | 560.05 6 | 100 6 | 487.346 | 5/2 ⁺ | | | | |
| | | 769.01 5 | 11.8 11 | 278.381 | 3/2 ⁺ | | | | |
| | | 1019.43 6 | 37 9 | 27.793 | 5/2 ⁺ | | | | |
| 1050.21 | (7/2) ⁺ | 281.44 5 | 2.9 3 | 768.75 | (7/2) ⁺ | [M1+E2] | | 0.047 3 | $\alpha(\text{K})=0.0394$ 15; $\alpha(\text{L})=0.0059$ 11; $\alpha(\text{M})=0.00120$ 23 $\alpha(\text{N})=0.00024$ 5; $\alpha(\text{O})=2.7 \times 10^{-5}$ 4 $\alpha(\text{K})=0.0271$ 4; $\alpha(\text{L})=0.0039$ 5; $\alpha(\text{M})=0.00079$ 11 $\alpha(\text{N})=0.000159$ 19; $\alpha(\text{O})=1.78 \times 10^{-5}$ 14 |
| | | 320.64 11 | 3.4 5 | 729.57 | (9/2) ⁺ | [M1+E2] | | 0.0319 7 | |
| 1111.645 | 5/2 ⁺ | 562.82 20 | ≤ 2.6 | 487.346 | 5/2 ⁺ | | | | |
| | | 771.80 16 | 1.7 2 | 278.381 | 3/2 ⁺ | | | | |
| | | 1022.43 5 | 97 5 | 27.793 | 5/2 ⁺ | M1(+E2) | -0.02 2 | | |
| | | 1050.21 5 | 100 8 | 0.0 | 7/2 ⁺ | | | | |
| | | 281.7 1 | 0.31 6 | 829.91 | 3/2 ⁺ , 5/2 ⁺ | | | | |
| | | 342.88 5 | 10.0 1 | 768.75 | (7/2) ⁺ | [M1+E2] | | 0.0264 | $\alpha(\text{K})=0.0224$ 6; $\alpha(\text{L})=0.0032$ 3; $\alpha(\text{M})=0.00065$ 7 $\alpha(\text{N})=0.000129$ 12; $\alpha(\text{O})=1.46 \times 10^{-5}$ 8 |
| 1196.65 | (7/2) ⁺ | 382.08 14 | 0.13 5 | 729.57 | (9/2) ⁺ | [E2] | | 0.0188 | $\alpha(\text{K})=0.01579$ 23; $\alpha(\text{L})=0.00242$ 4; $\alpha(\text{M})=0.000492$ 7 $\alpha(\text{N})=9.81 \times 10^{-5}$ 14; $\alpha(\text{O})=1.077 \times 10^{-5}$ 16 |
| | | 551.98 5 | 0.28 5 | 559.61 | 1/2 ⁺ | | | | |
| | | 624.34 5 | 19.7 6 | 487.346 | 5/2 ⁺ | M1(+E2) | +0.01 5 | 0.00595 16 | $\alpha=0.00595$ 16; $\alpha(\text{K})=0.00515$ 14; $\alpha(\text{L})=0.000641$ 14; $\alpha(\text{M})=0.000129$ 3 $\alpha(\text{N})=2.60 \times 10^{-5}$ 6; $\alpha(\text{O})=3.07 \times 10^{-6}$ 8 |
| | | 833.28 5 | 9.25 28 | 278.381 | 3/2 ⁺ | | | | |
| 1203.71 | (7/2) ⁺ | 1083.85 5 | 100 3 | 27.793 | 5/2 ⁺ | M1+E2 | +0.56 +24-14 | | |
| | | 1111.64 5 | 38.8 16 | 0.0 | 7/2 ⁺ | M1(+E2) | +0.06 5 | | |
| | | 918.29 15 | 100 25 | 278.381 | 3/2 ⁺ | | | | |
| | | 1168.8 2 | ≤ 7.5 | 27.793 | 5/2 ⁺ | | | | |
| 1209.80 | 1/2 ⁺ | 716.60 16 | < 100 | 487.346 | 5/2 ⁺ | | | | |
| | | 924.5 20 | ≤ 26 | 278.381 | 3/2 ⁺ | | | | |
| | | 1176.0 5 | 40 20 | 27.793 | 5/2 ⁺ | | | | |
| | | 1203.59 11 | 100 20 | 0.0 | 7/2 ⁺ | | | | |
| 1209.80 | 1/2 ⁺ | 722.5 2 | ≤ 100 | 487.346 | 5/2 ⁺ | | | | |
| | | 931.57 25 | 90 40 | 278.381 | 3/2 ⁺ | | | | |
| | | 1181.96 11 | 50 20 | 27.793 | 5/2 ⁺ | | | | |

Adopted Levels, Gammas (continued)

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

| $E_i(\text{level})$ | J_i^π | E_γ^\dagger | I_γ^\dagger | E_f | J_f^π | Mult. ‡ | δ^\dagger | α^\ddagger | Comments |
|---------------------|---------------------------------------|--------------------|--------------------|---------|------------------------------------|-------------------|------------------|-------------------|--|
| 1260.65 | 3/2 ⁺ ,5/2 ⁺ | 210.66 19 | 8.2 43 | 1050.21 | (7/2) ⁺ | [M1+E2] | | 0.113 18 | $\alpha(\text{K})=0.093$ 12; $\alpha(\text{L})=0.016$ 5; $\alpha(\text{M})=0.0032$ 11 $\alpha(\text{N})=0.00063$ 21; $\alpha(\text{O})=6.8 \times 10^{-5}$ 18 |
| | | 415.88 14 | 3.8 14 | 844.82 | (7/2) ⁺ | | | | |
| | | 491.93 14 | 7.2 14 | 768.75 | (7/2) ⁺ | | | | |
| | | 701.10 16 | 8.2 19 | 559.61 | 1/2 ⁺ | | | | |
| | | 773.54 17 | 1.4 10 | 487.346 | 5/2 ⁺ | | | | |
| | | 982.27 5 | 100 3 | 278.381 | 3/2 ⁺ | | | | |
| | | 1232.82 5 | 47 2 | 27.793 | 5/2 ⁺ | | | | |
| | | 1260.63 5 | 70 4 | 0.0 | 7/2 ⁺ | | | | |
| 1281.99 | (7/2 ⁺) | 552.43 5 | 40 13 | 729.57 | (9/2) ⁺ | | | | |
| | | 794.60 21 | 80 20 | 487.346 | 5/2 ⁺ | | | | |
| | | 1003.65 9 | 100 20 | 278.381 | 3/2 ⁺ | | | | |
| | | 1254.13 8 | 60 7 | 27.793 | 5/2 ⁺ | | | | |
| | | 1281.96 11 | 31 5 | 0.0 | 7/2 ⁺ | | | | |
| 1291.94 | (3/2 ⁺ ,5/2 ⁺) | 462.04 20 | <1 | 829.91 | 3/2 ⁺ ,5/2 ⁺ | | | | |
| | | 732.62 16 | 6.1 11 | 559.61 | 1/2 ⁺ | | | | |
| | | 804.60 13 | 100 1 | 487.346 | 5/2 ⁺ | | | | |
| | | 1013.57 8 | 6.1 14 | 278.381 | 3/2 ⁺ | | | | |
| | | 1264.16 5 | 37.9 14 | 27.793 | 5/2 ⁺ | | | | |
| | | 1291.50 13 | 1.29 18 | 0.0 | 7/2 ⁺ | | | | E_γ : poor fit, level-energy difference=1291.94; quoted uncertainty may be underestimated. |
| 1376.2 | (13/2 ⁺) | 646.5 3 | 29 5 | 729.57 | (9/2) ⁺ | Q | | | |
| | | 680.4 2 | 100 11 | 695.89 | 11/2 ⁺ | D+Q | | | |
| 1401.43 | (9/2) ⁻ | 556.65 5 | 100 3 | 844.82 | (7/2) ⁺ | (E1(+M2)) | -0.06 2 | | |
| | | 671.84 5 | 21 8 | 729.57 | (9/2) ⁺ | | | | |
| | | 705.52 7 | 4.4 4 | 695.89 | 11/2 ⁺ | | | | |
| | | 1373.75 9 | 0.23 2 | 27.793 | 5/2 ⁺ | | | | |
| | | 1401.36 6 | 2.94 8 | 0.0 | 7/2 ⁺ | | | | |
| 1469.7 | (15/2 ⁺) | 773.9 3 | 100 | 695.89 | 11/2 ⁺ | Q | | | |
| 1666.9 | (13/2 ⁺) | 937.3 4 | 100 | 729.57 | (9/2) ⁺ | (Q) | | | |
| 1833.5 | (15/2 ⁺) | 363.8 4 | 8.6 29 | 1469.7 | (15/2 ⁺) | | | | |
| | | 457.3 3 | 100 11 | 1376.2 | (13/2 ⁺) | D+Q | | | |
| 1850.2 | (15/2) | 183.2 4 | 21 7 | 1666.9 | (13/2 ⁺) | | | | |
| | | 380.5 3 | 100 14 | 1469.7 | (15/2 ⁺) | | | | |
| 2099.3 | (17/2 ⁺) | 265.8 3 | 100 | 1833.5 | (15/2 ⁺) | D+Q | | | |
| 2324.7 | (19/2 ⁺) | 855.0 2 | 100 | 1469.7 | (15/2 ⁺) | Q | | | |
| 2529.6 | | 204.9 4 | 100 | 2324.7 | (19/2 ⁺) | | | | |
| 2569? | | 470 [#] | | 2099.3 | (17/2 ⁺) | | | | |
| 2633.1 | (23/2 ⁺) | 308.4 2 | 100 | 2324.7 | (19/2 ⁺) | Q | | | |
| 2882.3 | | 352.7 4 | 100 | 2529.6 | | | | | |
| 2924? | | 825 [#] | | 2099.3 | (17/2 ⁺) | | | | |

Adopted Levels, Gammas (continued)

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

| <u>$E_i(\text{level})$</u> | <u>J_i^π</u> | <u>E_γ</u> [†] | <u>I_γ</u> [†] | <u>E_f</u> | <u>J_f^π</u> | <u>Mult.</u> [†] |
|---------------------------------------|-----------------------------|---|---|-------------------------|-----------------------------|---------------------------|
| 2933.8 | (25/2 ⁺) | 300.7 | 3 | 2633.1 | (23/2 ⁺) | D+Q |
| 3408? | | 474 [#] | | 2933.8 | (25/2 ⁺) | |

[†] From ^{129}Te β^- decays ([1976Ma35](#)) for low-spin ($J \leq 11/2$) states and from $^{124}\text{Sn}(^7\text{Li}, 2n\gamma)$ ([2013De02](#)) for high-spin ($J \geq 13/2$) states.

[‡] 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.

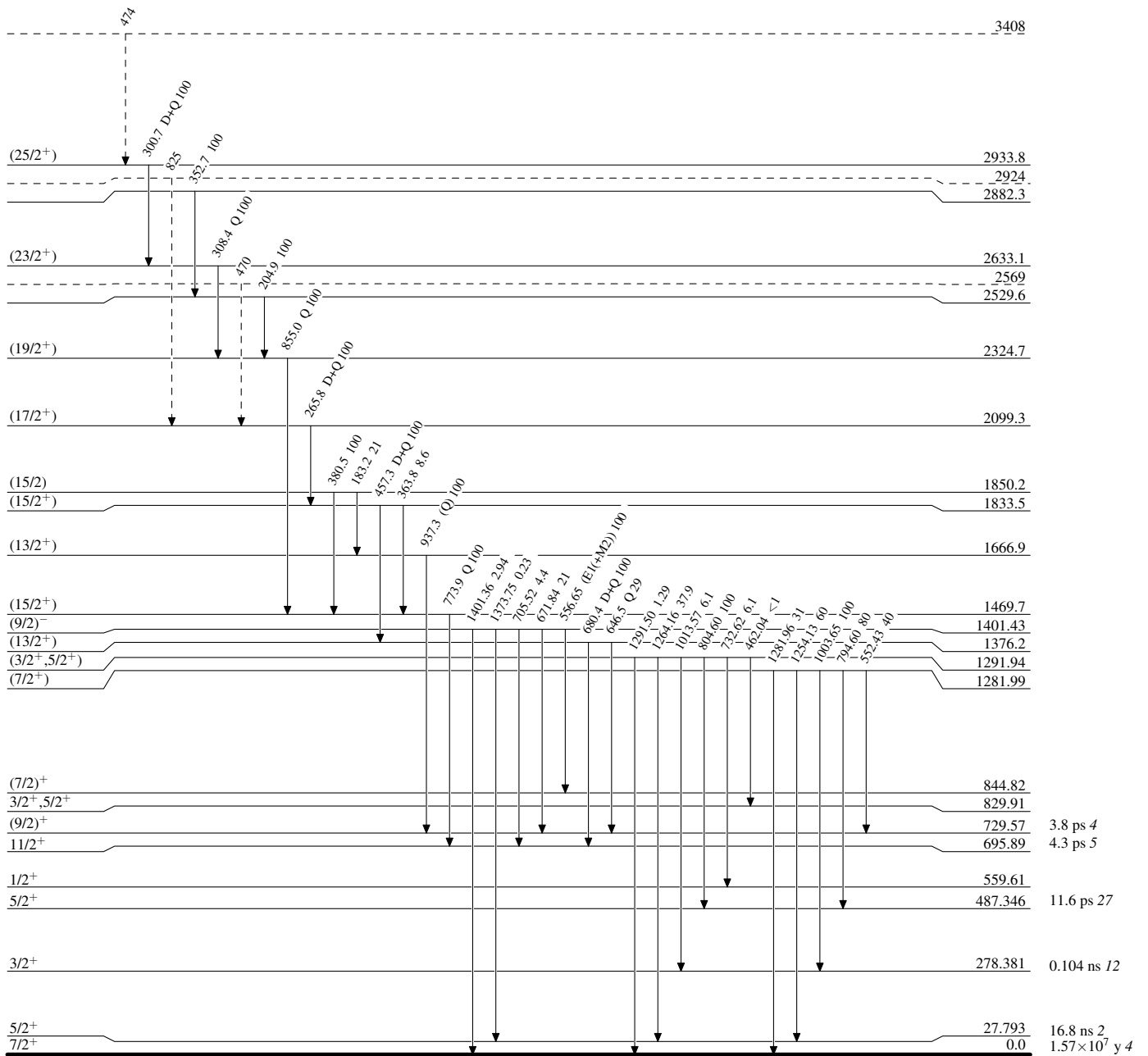
[#] Placement of transition in the level scheme is uncertain.

Adopted Levels, Gammas

Legend

Level Scheme

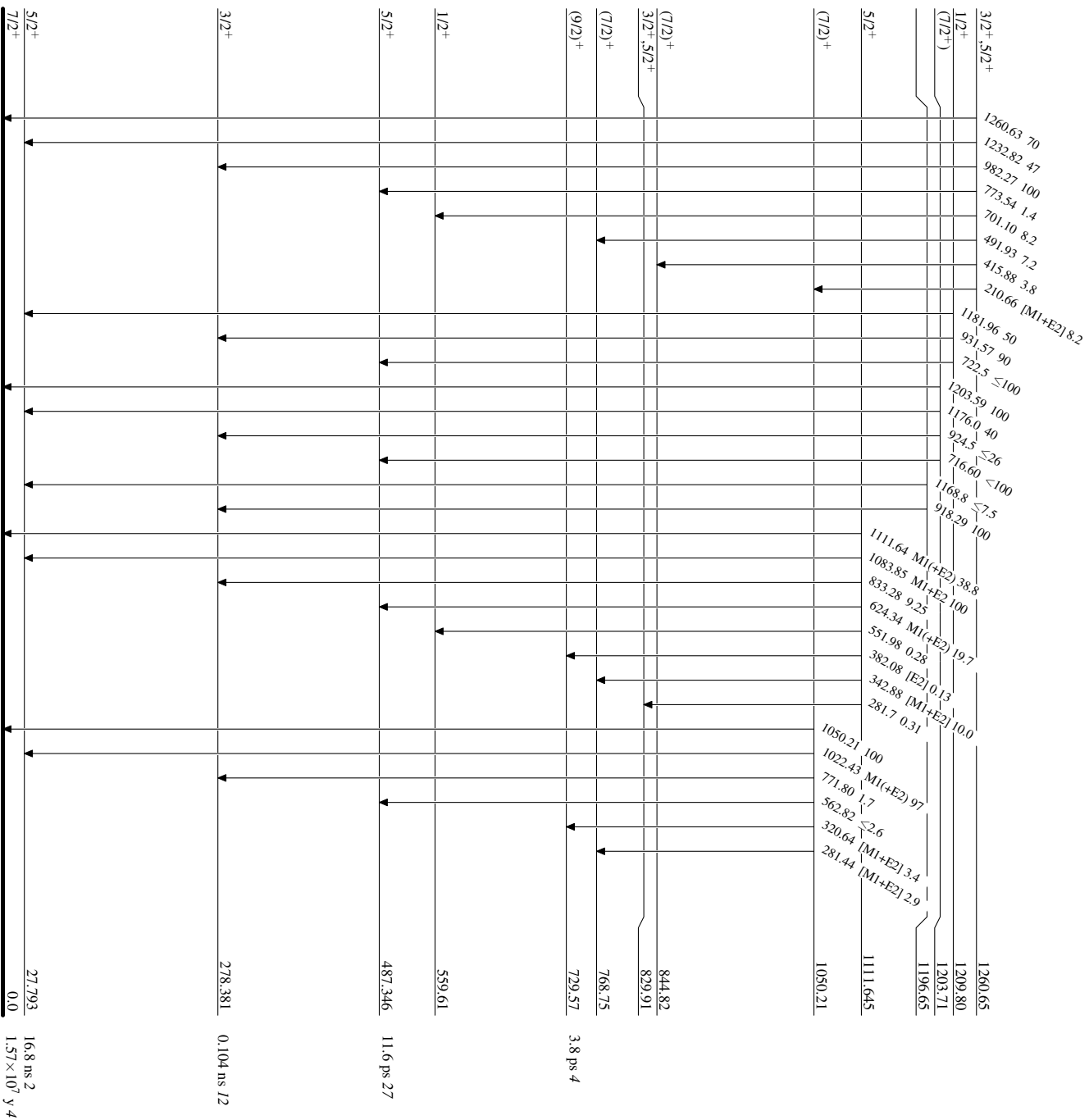
Intensities: Relative photon branching from each level

-----▶ γ Decay (Uncertain) $^{129}_{53}\text{I}_{76}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level



$^{129}\text{I}_{76}$

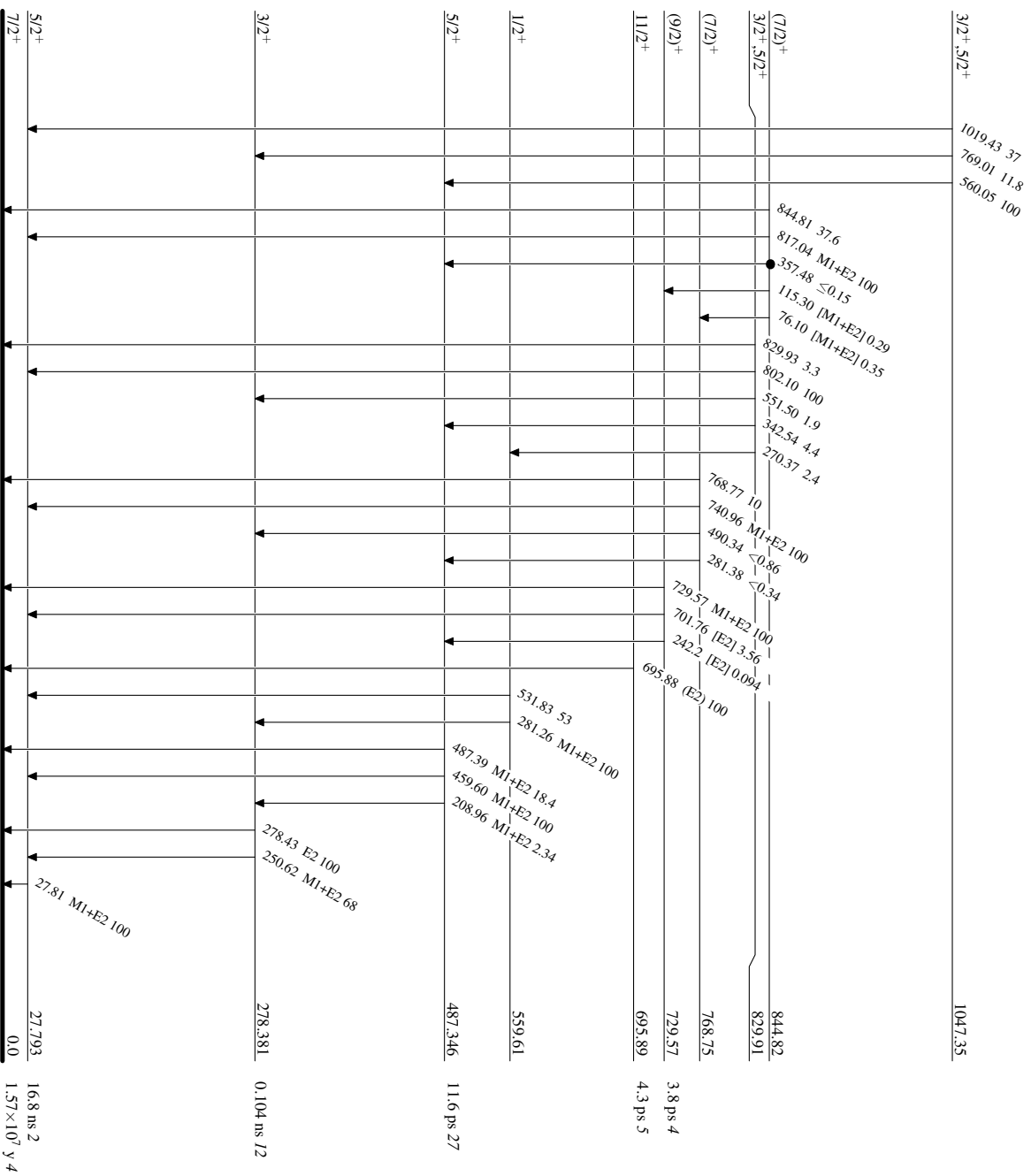
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

● Coincidence



¹²⁹I₇₆