^{194}Pt(α,7nγ) 1975Li16,1974Be11

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	M. S. Basunia	NDS 195,368 (2024)	1-Dec-2023

1974Be11: ^{194}Pt(α,7n), E=65-108 MeV. In-beam γ ray detection using Ge(Li) detectors. Measured Eγ, Iγ, γγ-coincidences, γ(t), γ(θ).

1975Li16: ^{194}Pt(α,7n), E=95 MeV, 57.2% enriched target in ^{194}Pt. Same detection setup as of 1974Be11. Angular distributions observed with movable Ge(Li) detector in 15° steps from 90° to 165°.

1978Me11: ^{192}Pt(α,5n), E(α)=56 MeV, and ^{192}Pt(^{3}He,4n) at 35 MeV. Iron-free orange-type β spectrometer. Deduced isomeric level half-lives from conversion electron measurements.

^{191}Hg Levels

Additional information 1.

E(level)[†]	Jπ[‡]	$T_{1/2}$	Comments
128[#] *8*	13/2$^{(+)}$	50.8 min *15*	Additional information 2. E(level): from Adopted Levels. Labeled as 0.0+x in the previous evaluation (2007Va21). $T_{1/2}$: from Adopted Levels.
518.4[#] *3*	17/2$^+$		
663.2[@] *3*	15/2$^+$		
1147.3[#] *4*	21/2$^+$		
1299.7[@] *3*	19/2$^+$		
1765.9[&] *4*	21/2$^{(-)}$		
1897.4[#] *5*	25/2$^+$		
1932.5[&] *7*	25/2$^{(-)}$	0.72 ns *7*	$T_{1/2}$: from ce(L2)(167γ), ce(K)(535γ), and ce(K)(781γ)(t) measurements populated in the ^{192}Pt(^{3}He,4n) reaction at 35 MeV (1978Me11). The population of the J^π=33/2$^+$ state in this reaction was negligible.
2251.4[&] *7*	29/2$^{(-)}$		
2559.5[#] *6*	29/2$^+$		
2726.4[#] *8*	33/2$^+$	0.92 ns *6*	$T_{1/2}$: from ce(K)(662γ)(t) measurements populated in the ^{192}Pt(α,5n) reaction at 56 MeV (1978Me11). The J^π=33/2$^+$ state was strongly populated in this reaction.
2818.1[&] *8*	33/2$^{(-)}$		
3206.1[#] *8*	37/2$^+$		
3556.7[&] *8*	37/2$^{(-)}$		

[†] From a least-squares adjustment to the Eγ. Level energies are based on the isomeric state at 128 keV *8*. For total uncertainty, propagate 8 keV in quadrature, except for 128 keV level.

[‡] From 1975Li16, based on the γ-ray multipolarity determined from γ(θ) measurements.

[#] Band(A): Favored branch of $i_{13/2}$ Coriolis-decoupled band See 1977Ta01, 1978Me11 for corresponding bands in ^{193}Hg, ^{195}Hg, ^{197}Hg and comparison with theory.

[@] Band(B): Unfavored branch of $i_{13/2}$ Coriolis-decoupled band.

[&] Band(C): $i_{13/2}$ semidecoupled band.

γ(^{191}Hg)

E_γ[†]	I_γ[@]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[‡]	δ	α[&]	$I_{(\gamma+ce)}$[#]	Comments
166.6[a] *5*	26[a] *5*	1932.5	25/2$^{(-)}$	1765.9	21/2$^{(-)}$	E2		0.747 *13*	43 *9*	A_2=0.24 *2*; A_4=−0.06 *3* (1975Li16) α(K)=0.261 *4*; α(L)=0.364 *7*; α(M)=0.0945 *18* α(N)=0.0235 *5*; α(O)=0.00394 *8*; α(P)=3.29×10^{-5} *5* $I_{(\gamma+ce)}$: for unresolved doublet, intensity from $\gamma\gamma$ coin measurements − (1974Be11, 1975Li16). A_2 and A_4 are for unresolved 166.6-166.9 keV doublet.
166.9[a] *5*	20[a] *5*	2726.4	33/2$^+$	2559.5	29/2$^+$	E2		0.742 *13*	33 *9*	B(E2)(W.u.)=42 *3* A_2=0.24 *2*; A_4=−0.06 *3* (1975Li16) α(K)=0.260 *4*; α(L)=0.361 *7*; α(M)=0.0938 *18* α(N)=0.0233 *4*; α(O)=0.00391 *8*; α(P)=3.27×10^{-5} *5* $I_{(\gamma+ce)}$: for unresolved doublet, intensity from $\gamma\gamma$ coin measurements − (1974Be11, 1975Li16), Mult.: A_2 and A_4 for unresolved 166.6-166.9 keV doublet.
318.9 *3*	24 *6*	2251.4	29/2$^{(-)}$	1932.5	25/2$^{(-)}$	E2		0.0890 *13*	25 *6*	A_2=0.31 *3*; A_4=−0.12 *5* (1975Li16) α(K)=0.0544 *8*; α(L)=0.0260 *4*; α(M)=0.00657 *9* α(N)=0.001637 *24*; α(O)=0.000283 *4*; α(P)=7.05×10^{-6} *10*
390.3 *3*	100 *8*	518.4	17/2$^+$	128	13/2$^{(+)}$	E2		0.0506 *7*	100 *8*	A_2=0.30 *2*; A_4=−0.14 *3* (1975Li16) α(K)=0.0339 *5*; α(L)=0.01266 *18*; α(M)=0.00316 *5* α(N)=0.000788 *11*; α(O)=0.0001381 *20*; α(P)=4.45×10^{-6} *6*
466.3 *3*	30 *6*	1765.9	21/2$^{(-)}$	1299.7	19/2$^+$	(E1)		0.01032 *15*	29 *6*	A_2=−0.19 *3*; A_4=−0.07 *5* (1975Li16) α(K)=0.00856 *12*; α(L)=0.001355 *19*; α(M)=0.000313 *4* α(N)=7.79×10^{-5} *11*; α(O)=1.449×10^{-5} *20*; α(P)=1.000×10^{-6} *14* I_γ: other: I(γ+ce)=29 *6* (1975Li16 supersedes I(γ+ce)=26 *5*).
479.7 *3*	23 *5*	3206.1	37/2$^+$	2726.4	33/2$^+$	E2		0.0298 *4*	23 *5*	A_2=0.31 *2*; A_4=−0.15 *5* (1975Li16) α(K)=0.02132 *30*; α(L)=0.00643 *9*; α(M)=0.001585 *22* α(N)=0.000395 *6*; α(O)=7.03×10^{-5} *10*; α(P)=2.82×10^{-6} *4*
535.3 *3*	22 *8*	663.2	15/2$^+$	128	13/2$^{(+)}$	M1+E2	0.14 *4*	0.0756 *12*	23 *8*	A_2=−0.35 *4*; A_4=0.10 *6* (1975Li16) α(K)=0.0622 *10*; α(L)=0.01026 *16*; α(M)=0.00238 *4* α(N)=0.000597 *9*; α(O)=0.0001130 *18*; α(P)=8.68×10^{-6} *15*
566.7 *3*	18 *7*	2818.1	33/2$^{(-)}$	2251.4	29/2$^{(-)}$	E2		0.02003 *28*	17 *7*	A_2=0.29 *4*; A_4=−0.16 *6* (1975Li16) α(K)=0.01491 *21*; α(L)=0.00389 *5*; α(M)=0.000948 *13* α(N)=0.0002366 *33*; α(O)=4.25×10^{-5} *6*; α(P)=1.980×10^{-6} *28*

^{194}Pt(α,7nγ) 1975Li16,1974Be11 (continued)

γ(^{191}Hg) (continued)

E_γ[†]	I_γ[@]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[‡]	δ	α[&]	$I_{(\gamma+ce)}$[#]	Comments
618.5 *3*		1765.9	21/2$^{(-)}$	1147.3	21/2$^+$				13 *6*	E_γ: line contaminated by 617.7-keV line in ^{193}Hg.
628.7 *3*	81 *6*	1147.3	21/2$^+$	518.4	17/2$^+$	E2		0.01584 *22*	78 *6*	A_2=0.35 *2*; A_4=−0.14 *3* (1975Li16) α(K)=0.01203 *17*; α(L)=0.00290 *4*; α(M)=0.000702 *10* α(N)=0.0001752 *25*; α(O)=3.17×10^{-5} *4*; α(P)=1.596×10^{-6} *22*
636.7 *3*	12 *6*	1299.7	19/2$^+$	663.2	15/2$^+$	E2		0.01540 *22*	12 *6*	A_2=0.27 *6*; A_4=−0.06 *9* (1975Li16) α(K)=0.01172 *16*; α(L)=0.00280 *4*; α(M)=0.000677 *10* α(N)=0.0001690 *24*; α(O)=3.06×10^{-5} *4*; α(P)=1.555×10^{-6} *22* Mult.: A_2=0.27 *6*, A_4=−0.06 *9*.
662.1 *3*	36 *5*	2559.5	29/2$^+$	1897.4	25/2$^+$	E2		0.01413 *20*	35 *5*	A_2=0.29 *3*; A_4=−0.13 *5* (1975Li16) α(K)=0.01082 *15*; α(L)=0.002516 *35*; α(M)=0.000607 *9* α(N)=0.0001516 *21*; α(O)=2.75×10^{-5} *4*; α(P)=1.435×10^{-6} *20*
738.6 *3*	10 *5*	3556.7	37/2$^{(-)}$	2818.1	33/2$^{(-)}$	E2		0.01117 *16*	10 *5*	A_2=0.37 *7*; A_4=−0.20 *10* (1975Li16) α(K)=0.00870 *12*; α(L)=0.001886 *26*; α(M)=0.000452 *6* α(N)=0.0001129 *16*; α(O)=2.062×10^{-5} *29*; α(P)=1.151×10^{-6} *16*
750.1 *3*	47 *8*	1897.4	25/2$^+$	1147.3	21/2$^+$	E2		0.01081 *15*	45 *8*	A_2=0.32 *3*; A_4=−0.18 *5* (1975Li16) α(K)=0.00843 *12*; α(L)=0.001813 *25*; α(M)=0.000434 *6* α(N)=0.0001085 *15*; α(O)=1.982×10^{-5} *28*; α(P)=1.116×10^{-6} *16*
781.3 *3*	21 *5*	1299.7	19/2$^+$	518.4	17/2$^+$	M1+E2	0.14 *4*	0.0283 *5*	21 *5*	A_2=−0.44 *4*; A_4=0.01 *6* (1975Li16) α(K)=0.0234 *4*; α(L)=0.00380 *6*; α(M)=0.000881 *14* α(N)=0.0002208 *35*; α(O)=4.18×10^{-5} *7*; α(P)=3.24×10^{-6} *5*

[†] From 1975Li16 and 1974Be11, except where otherwise noted.

[‡] As assigned in 1975Li16, based on γ-ray angular distribution measurements. Larger positive anisotropies are assumed to indicate stretched E2 transitions, small negative anisotropies correspond to pure or almost pure dipole ΔI=1 transitions, and those with large negative anisotropies, to mixed ΔI=1 dipole-quadrupole transitions, assumed to be M1+E2.

[#] Total transition intensities from 1975Li16, except where noted.

[@] Obtained using the reported total transition intensity and and internal conversion coefficients for the proposed multipolarities followed by rescaling with respect to Iγ(390)=100.

[&] Additional information 3.

[a] Multiply placed with intensity suitably divided.

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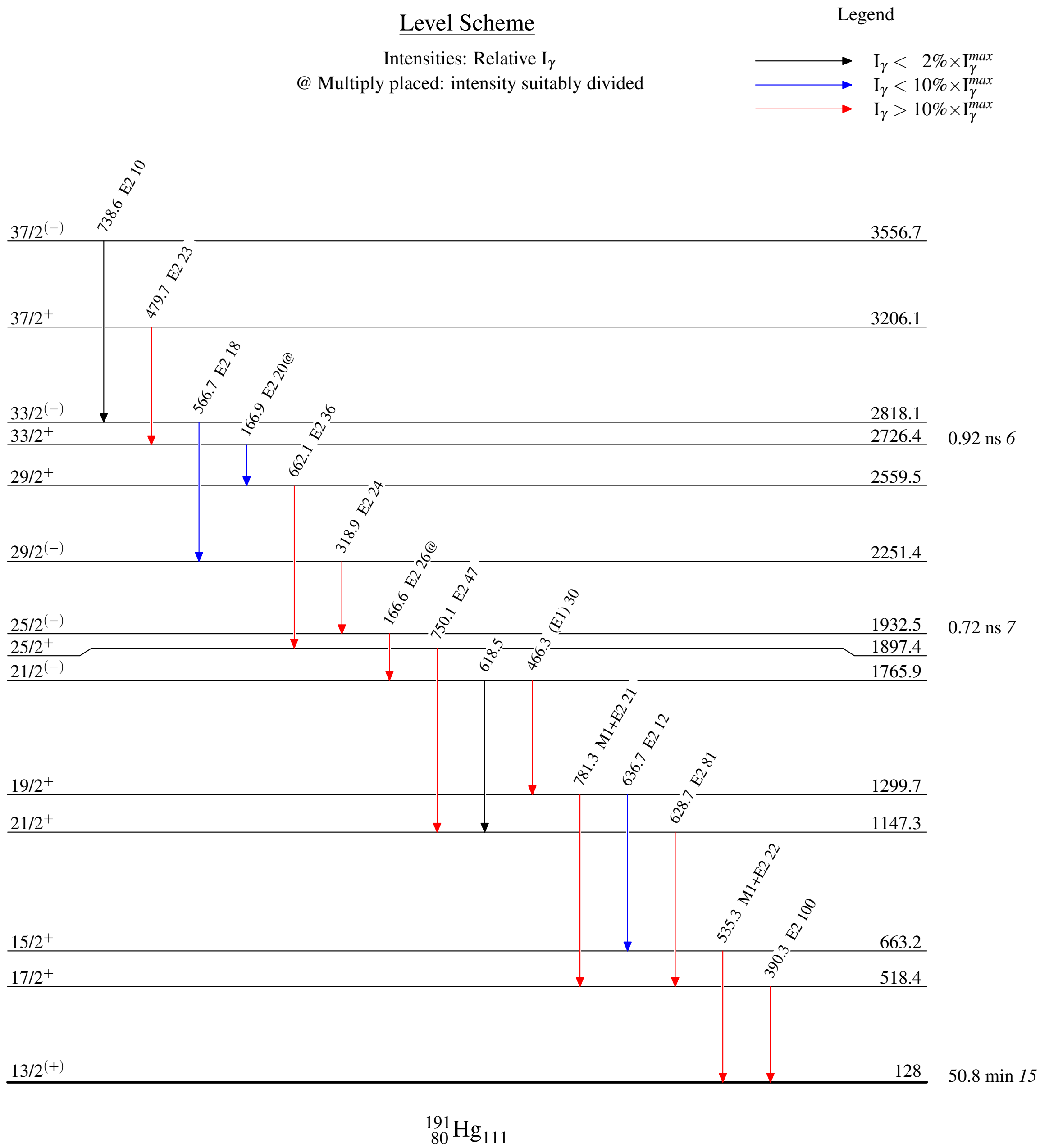
Level Scheme

Intensities: Relative I_γ

@ Multiply placed: intensity suitably divided



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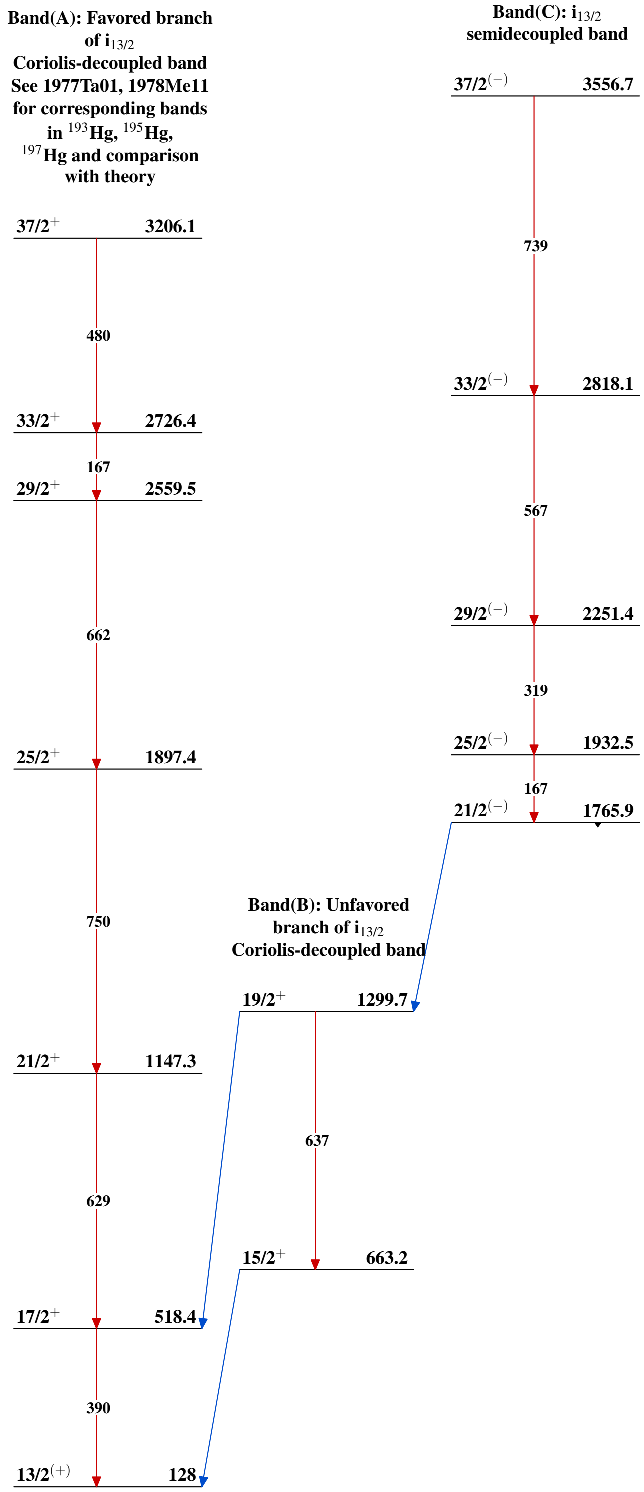

$^{191}_{80}Hg_{111}$