^{191}Ir(α,4nγ) 1979Go15

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

Others: 1974Tj02, 1975LaYS, 1976Go22, 1977Go12, 1985Ko13.

1979Go15 target: 89% enriched ^{191}Ir. Projectile: α, E=51 MeV. Measured γ-rays, $\gamma\gamma$(t), α $\gamma(\theta)$, θ=90° to 165° in 15° steps; detector: Ge(Li). Supersedes 1977Go12 and 1976Go22.

1985Ko13: target: 89% enriched ^{191}Ir. Projectile: α, E=50 MeV. Measured γ rays and conversion electrons, $\gamma\gamma$ coin, (ce) (ce) coin, (ce)γ coin, $\gamma\gamma$(t), (ce) (ce) (t), (ce)γ(t). Detectors: Ge(Li), magnetic spectrometer.

^{191}Au Levels

The observed $h_{11/2}$ and $h_{9/2}$ bands have been interpreted as rotation-aligned bands (decoupled bands) originating from proton-hole and proton states, respectively, coupled to a symmetric rotating core (1976Go22,1977Go12).

E(level)†	J$^{\pi}$[a]	T$_{1/2}$[b]	Comments
0.0	3/2$^+$		
252.7	(5/2$^+$)		
266.4‡ *12*	(11/2$^-$)		
540.5@ *12*	(9/2$^-$)	10 ns *2*	T$_{1/2}$: 274γ(t) pulsed Eα=51 MeV (1979Go15).
686.5‡ *12*	(15/2$^-$)		
844.9# *12*	(13/2$^-$)		
897.4& *13*	(11/2$^-$)		
911.5@ *13*	(13/2$^-$)		
1351.4& *13*	(15/2$^-$)		
1376.9# *13*	(17/2$^-$)		
1411.6‡ *13*	(19/2$^-$)		
1430.9@ *13*	(17/2$^-$)		
1991.0 *13*	(21/2$^+$)	<0.3 ns	T$_{1/2}$: Other value: <2 ns (1979Go15).
2032.0@ *14*	(21/2$^-$)		
2158.8 *14*	(25/2$^+$)	0.96 ns *10*	
2186.9‡ *13*	(23/2$^-$)		
2198.6 *14*	(23/2$^+$)		
2422.8 *14*	(27/2$^+$)	<0.2 ns	
2446.7‡ *14*	(27/2$^-$)	0.89 ns *9*	
2489.8	(31/2$^+$)	>400 ns	T$_{1/2}$: In 1985Ko13 from 264K electron-γ measurements. Other: >100 ns (1979Go15).
2502.7‡	(31/2$^-$)	6.1 ns *5*	T$_{1/2}$: Other values: 6 ns *2* – most likely for this level (in 1979Go15 for 2447 level (259γ(t))); 10 ns *2* – most likely for this level (in 1974Tj02 for 1991 level (579.3γ(t))). E(level): from 1985Ko13.
2748.1 *14*	(29/2)		
2803.7‡	(33/2$^-$)	<0.4 ns	E(level),T$_{1/2}$: From 1985Ko13. Half-life from electron(t) with respect to cyclotron beam burst.
3147.4 *14*	(31/2)		
3202.7‡	(35/2$^-$)	<0.3 ns	E(level),T$_{1/2}$: From 1985Ko13. Half-life from electron(t) with respect to cyclotron beam burst.
3821.6			E(level): Level not adopted. See comments for 674.2γ.

† From a least-squares fit to γ-ray energies. DEγ=1 keV was assumed for missing Eγ uncertainty and no uncertainty is listed for the corresponding level energies.

Continued on next page (footnotes at end of table)

^{191}Ir(α,4nγ) 1979Go15 (continued)

^{191}Au Levels (continued)

‡ Member of favored h11/2 decoupled band.
# Member of unfavored h11/2 decoupled band.
@ Member of favored h9/2 decoupled band.
& Member of unfavored h9/2 decoupled band.
[a] from γ-ray multipolarities and rotational structure.
[b] From 1985Ko13, except where otherwise noted. Reported half-lives in 1985Ko13 were from conversion electron-electron cascade time spectra measurements, except otherwise noted.

γ(^{191}Au)

E_γ[†]	I_γ[#]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[&]	δ[b]	α[c]	Comments
13.7 *6*		266.4	(11/2⁻)	252.7	(5/2⁺)				E_γ: from Adopted Gammas.
56[‡]		2502.7	(31/2⁻)	2446.7	(27/2⁻)	(E2)[a]		72.3 *10*	α(L)=54.2 *8*; α(M)=14.07 *20* α(N)=3.45 *5*; α(O)=0.549 *8*; α(P)=0.000583 *8*
67[‡]		2489.8	(31/2⁺)	2422.8	(27/2⁺)	(E2)[a]		30.4 *4*	α(L)=22.78 *32*; α(M)=5.92 *8* α(N)=1.454 *20*; α(O)=0.2316 *32*; α(P)=0.000304 *4*
167.8 *3*	18 *1*	2158.8	(25/2⁺)	1991.0	(21/2⁺)	E2		0.694 *11*	A_2=+0.24 *2*; A_4=−0.08 *3* α(K)=0.259 *4*; α(L)=0.326 *5*; α(M)=0.0843 *14* α(N)=0.02075 *33*; α(O)=0.00337 *5*; α(P)=2.65×10⁻⁵ *4* Mult.: From α,γ(θ) and RUL (1979Go15).
207.6 *3*	5 *1*	2198.6	(23/2⁺)	1991.0	(21/2⁺)	D			A_2=−0.20 *5*; A_4=−0.05 *8*
252.7		252.7	(5/2⁺)	0.0	3/2⁺				E_γ: From 1976Go22.
259.8 *3*	26 *4*	2446.7	(27/2⁻)	2186.9	(23/2⁻)	E2		0.1588 *23*	A_2=+0.24 *4*; A_4=−0.07 *6* α(K)=0.0886 *13*; α(L)=0.0529 *8*; α(M)=0.01344 *20* α(N)=0.00332 *5*; α(O)=0.000549 *8*; α(P)=9.29×10⁻⁶ *13* Mult.: From α,γ(θ) and RUL (1979Go15).
264.0 *3*	13 *1*	2422.8	(27/2⁺)	2158.8	(25/2⁺)	D			A_2=−0.01 *3*; A_4=−0.04 *5*
274.1 *3*	10 *2*	540.5	(9/2⁻)	266.4	(11/2⁻)				A_2=0.00 *3*; A_4=−0.02 *5*
301[‡]		2803.7	(33/2⁻)	2502.7	(31/2⁻)	(M1)[a]		0.329 *5*	α(K)=0.271 *4*; α(L)=0.0447 *6*; α(M)=0.01035 *14* α(N)=0.00258 *4*; α(O)=0.000475 *7*; α(P)=3.21×10⁻⁵ *5*
301.4 *3*	9 *1*	2748.1	(29/2)	2446.7	(27/2⁻)	D			A_2=−0.06 *3*; A_4=−0.04 *5*
356.9 *3*	4 *1*	897.4	(11/2⁻)	540.5	(9/2⁻)	D+Q	−0.9 +*10*−*6*		A_2=−0.48 *13*; A_4=−0.04 *19* δ: From −1.97<δ<−0.34 in 1977Go12.
371.0 *3*	8 *1*	911.5	(13/2⁻)	540.5	(9/2⁻)	E2		0.0558 *8*	A_2=+0.26 *4*; A_4=−0.10 *6* α(K)=0.0372 *5*; α(L)=0.01406 *20*; α(M)=0.00350 *5* α(N)=0.000865 *12*; α(O)=0.0001466 *21*; α(P)=4.05×10⁻⁶ *6*
399[‡]		3202.7	(35/2⁻)	2803.7	(33/2⁻)	(M1)[a]		0.1538 *22*	α(K)=0.1268 *18*; α(L)=0.02077 *29*; α(M)=0.00481 *7* α(N)=0.001198 *17*; α(O)=0.0002204 *31*; α(P)=1.497×10⁻⁵ *21*

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^{191}Ir(α,4nγ) 1979Go15 (continued)

$\gamma(^{191}Au)$ (continued)

E_γ [†]	I_γ [#]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [&]	δ [b]	Comments
399.3 *3*	5 *1*	3147.4	(31/2)	2748.1	(29/2)	D		A_2=−0.20 *5*; A_4=−0.04 *8*
420.1 *3*	100 *7*	686.5	(15/2$^-$)	266.4	(11/2$^-$)	Q		A_2=+0.29 *2*; A_4=−0.06 *3*
439.9 *3*	1 *1*	1351.4	(15/2$^-$)	911.5	(13/2$^-$)	D+Q	−1.0 *+50−10*	A_2=−0.55 *33*; A_4=+0.20 *50* δ: From −5.95<δ<−0.05 in 1977Go12.
519.4 *3*	5 *1*	1430.9	(17/2$^-$)	911.5	(13/2$^-$)	Q		A_2=+0.30 *7*; A_4=−0.06 *10*
578.5 *3*	≤57 [@]	844.9	(13/2$^-$)	266.4	(11/2$^-$)			A_2=−0.16 *2*; A_4=−0.02 *3* A_2, A_4 for the doublet 578.5γ+579.4γ.
579.4 *3*	≤57 [@]	1991.0	(21/2$^+$)	1411.6	(19/2$^-$)			A_2=−0.16 *2*; A_4=−0.02 *3* A_2, A_4 for the doublet 578.5γ+579.4γ.
601.1 *3*	2 *1*	2032.0	(21/2$^-$)	1430.9	(17/2$^-$)			A_2=+0.35 *21*; A_4=−0.06 *31*
674.2		3821.6		3147.4	(31/2)			E_γ: From 1976Go22. Not listed in their latest publication 1979Go15. In 1976Go22, 674.2γ and 675.3γ are shown in their level schemes for ^{191}Au and ^{193}Au. In 1979Go15, only 674.8γ has been listed for ^{193}Au in Table 3, which appears to be the average of 674.2γ and 675.3γ. This Eγ not adopted.
690.4 *3*	3 *1*	1376.9	(17/2$^-$)	686.5	(15/2$^-$)	D+Q	+0.58 *23*	A_2=+0.35 *13*; A_4=−0.28 *19* δ: From 0.35<δ<0.81 in 1977Go12.
725.1 *3*	86 *12*	1411.6	(19/2$^-$)	686.5	(15/2$^-$)	Q		A_2=+0.29 *4*; A_4=−0.07 *6*
775.3 *3*	26 *2*	2186.9	(23/2$^-$)	1411.6	(19/2$^-$)	Q		A_2=+0.34 *3*; A_4=−0.05 *5*

† From 1979Go15, unless otherwise specified. ΔEγ=0.3 keV from the footnote of Table 2.
‡ From 1985Ko13. Eγ listed in Table 1 for the corresponding conversion electron shells.
# From 1979Go15.
@ Iγ=53 *4* for 578.5γ+579.4γ.
& From α,$\gamma(\theta)$, unless otherwise specified, by the evaluator. A_2 and A_4 (1979Go15,1977Go12) are listed in comments.
a From ce data. α(exp) given only in a figure, without specification of the normalization procedure (1985Ko13).
b From the analysis of α,$\gamma(\theta)$ (1977Go12).
c Additional information 1.

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Level Scheme

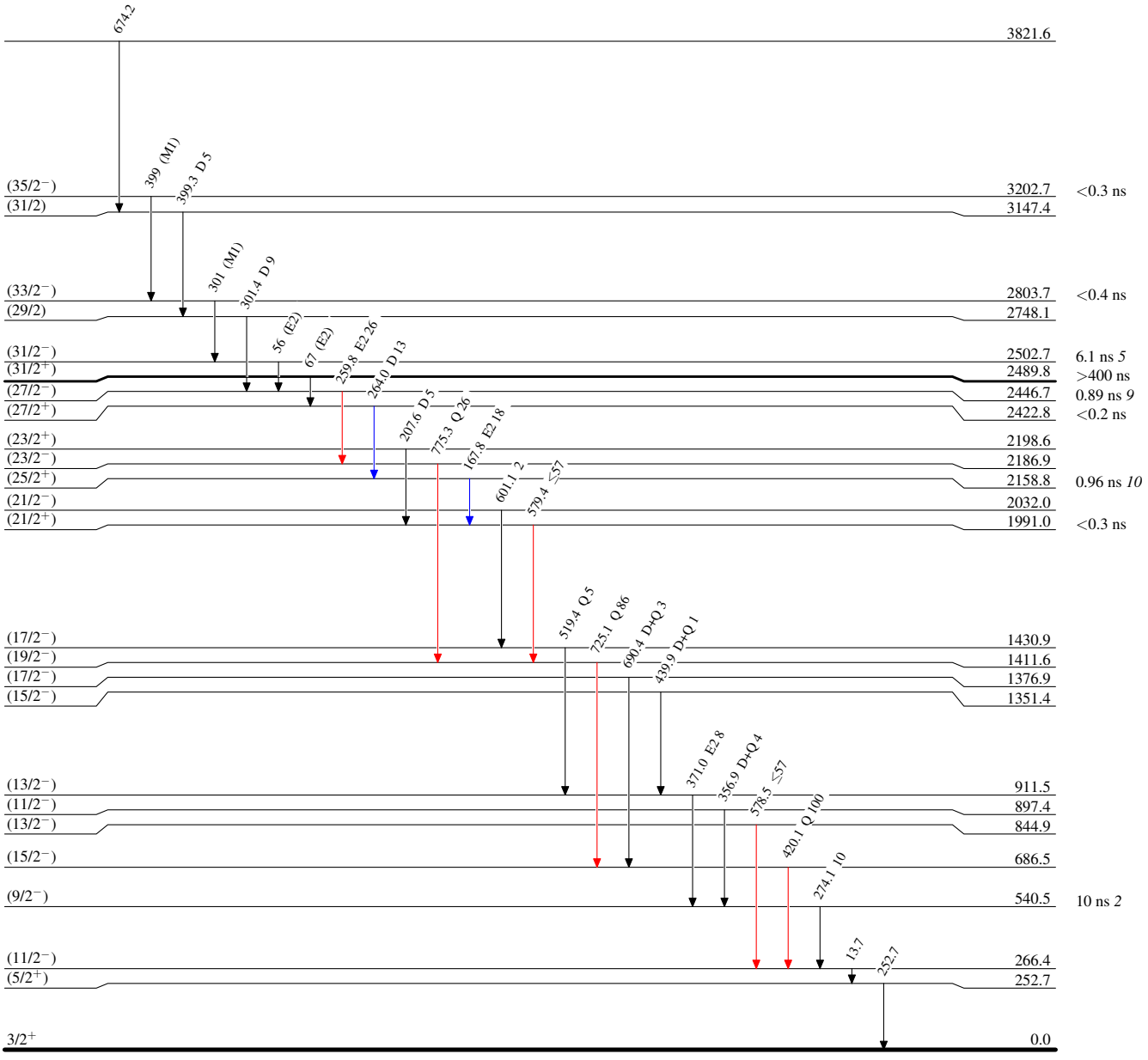
Intensities: Relative I_γ

Legend

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

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

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



$^{191}_{79}Au_{112}$