

Adopted Levels, Gammas

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	A. M. Mattera, S. Zhu, A. B. Hayes, E. A. Mccutchan		NDS 172, 543 (2021)	1-Jan-2021

Q(β^-)=-5866 SY; S(n)=8049 SY; S(p)=3384 2I; Q(α)=8549 5 2017Wa10

$\Delta Q(\beta^-)$ =238, $\Delta S(n)$ =115 (2017Wa10).

2001Ma74: A 26 d 7, E_α =5.53 MeV 4 transition has been observed in Lr-No fraction in 24-GeV p on W at CERN. Assignment to ²⁵²No or ²⁵⁴Lr isomer is suggested. Calculations for various scenarios for such transitions are given.

²⁵²No Levels

Cross Reference (XREF) Flags

- A ²⁰⁶Pb(⁴⁸Ca,2n γ)
- B ²⁵⁶Rf α decay
- C ²⁵²No IT decay (109 ms)

E(level) ^{†‡}	J π [#]	T _{1/2}	XREF	Comments
0 [@]	0 ⁺	2.46 s 2	ABC	<p>$\% \alpha = 65.3$ 5; $\% \epsilon + \% \beta^+ = 1.7$ 9; $\% SF = 33.0$ 8 T_{1/2}: weighted average of 2.44 4 (2001Og08), 2.46 5 (2006Le29), 2.42 6 (2007Su19) and 2.47 2 (2011Ga19). Other measured values: 2.3 1 (2012Sv02), 2.43 13 (2012He01), 2.38 s +26-22 (2003Be18), 2.4 s 3 (2002He01), 2.4 s 3 (2001Ju05), 2.44 s 12 (1994Wi17), 2.25 s +18-16 (1989La07), 2.30 s 22 (1977Be09), 2.3 s (1976F113), 2.4 s 2 (1970Og05), 4.5 s 15 (1967Mi03), 2.3 s 3 (1967Gh01). %SF: weighted average of 26.9 19 (1977Be09), 32.2 5 (2001Og08), 32 3 (2003Be18), 29.3 9 (2011Ga19), 33.9 3 (2012Su22). Other results: 21.6 42 (1993An10), %SF/%α=0.5 (1967Gh01), %α/%SF=3.3 8 (2006Le29). The result %SF=29 2 (2007Su19) was not included in the calculation: not clear from the publication whether the value is a new result by the authors. %$\epsilon + \% \beta^+$: deduced from the measured %α and %SF. Compatible with the limit ($\epsilon + \beta^+$)/$\alpha < 1.6\%$ 5 set by 2002He01. Other results: %$\epsilon + \% \beta^+ < 10$ (68% confidence level) estimated by 2001Og08. %α: from 2012Su22. Other results: %α=71 3 (2007Su19), not included in the calculation (see %SF). $\delta < r^2 >^{254,252} = -0.105$ fm² 7 (stat) 7 (syst) (2018Ra11).</p>
46.4 [@] 10	(2 ⁺)		A C	
153.6 [@] 13	(4 ⁺)		A C	
320.6 [@] 13	(6 ⁺)		A C	
544.4 [@] 13	(8 ⁺)		A C	
821.6 [@] 13	(10 ⁺)		A C	
929.1 ^{&} 13	(2 ⁻)		A C	
966.4 ^{&} 13	(3 ⁻)		A C	
1014.9 ^{&} 13	(4 ⁻)		A C	
1073.4 ^{&} 13	(5 ⁻)		A C	
1147.9 ^{&} 13	(6 ⁻)		A C	
1150.0 [@] 13	(12 ⁺)		A C	
1229.8 ^{&} 14	(7 ⁻)		A C	
1254.6 ^a 15	(8 ⁻)	109 ms 3	A C	<p>%IT\approx100 T_{1/2}: from (ce)(ER) correlation (2012Su22).</p>
1360.6 ^b 17	(9 ⁻)		A	
1478.6 ^a 17	(10 ⁻)		A	

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Adopted Levels, Gammas (continued)

^{252}No Levels (continued)

E(level) ^{†‡}	J ^π #	XREF	E(level) ^{†‡}	J ^π #	XREF	E(level) ^{†‡}	J ^π #	XREF
1525.5 [@] 14	(14 ⁺)	A	2232.6 ^b 19	(15 ⁻)	A	3027.6 ^b 21	(19 ⁻)	A
1607.6 ^b 17	(11 ⁻)	A	2395.4 [@] 16	(18 ⁺)	A	3252.6 ^a 22	(20 ⁻)	A
1747.6 ^a 18	(12 ⁻)	A	2414.6 ^a 20	(16 ⁻)	A	3480.6 ^b 22	(21 ⁻)	A
1898.6 ^b 18	(13 ⁻)	A	2607.6 ^b 20	(17 ⁻)	A	3719.6 ^a 23	(22 ⁻)	A
1942.2 [@] 14	(16 ⁺)	A	2816.6 ^a 21	(18 ⁻)	A			
2060.6 ^a 19	(14 ⁻)	A	2879.1 [@] 18	(20 ⁺)	A			

[†] From a least-square fit to E_γ data, assuming 1 keV uncertainty where none was available.

[‡] From $^{206}\text{Pb}(^{48}\text{Ca}, 2n\gamma)$.

from band assignment.

@ Band(A): g.s. band.

& Band(B): Possible octupole band.

^a Band(C): $\nu 7/2[624] \otimes \nu 9/2[734], \alpha=0$ (2012Su22). Configuration= $\pi 9/2[624] \otimes \pi 7/2[514]$ ruled out from consideration of g_K value.

^b Band(c): $\nu 7/2[624] \otimes \nu 9/2[734], \alpha=1$ (2012Su22).

$\gamma(^{252}\text{No})$

E _i (level)	J _i ^π	E _γ [†]	I _γ [†]	E _f	J _f ^π	Mult.	α [@]	Comments
46.4	(2 ⁺)	(46.4 10)		0	0 ⁺			E _γ : estimated from extrapolation of spin vs. ω expansion in 2002He01.
153.6	(4 ⁺)	107		46.4	(2 ⁺)			
320.6	(6 ⁺)	166.9 3	100	153.6	(4 ⁺)	(E2) [‡]	3.09	α(K)=0.125 4; α(L)=2.30 7; α(M)=0.666 20; α(N+..)=0.220 7
544.4	(8 ⁺)	223.8 2	100	320.6	(6 ⁺)	(E2) [‡]	0.97	α(K)=0.124 4; α(L)=0.660 20; α(M)=0.190 6; α(N+..)=0.0626 19
821.6	(10 ⁺)	277.2 2	100	544.4	(8 ⁺)			
929.1	(2 ⁻)	883		46.4	(2 ⁺)			
966.4	(3 ⁻)	920		46.4	(2 ⁺)			
1014.9	(4 ⁻)	86		929.1	(2 ⁻)			
		861		153.6	(4 ⁺)			
1073.4	(5 ⁻)	107		966.4	(3 ⁻)			
		920		153.6	(4 ⁺)			
1147.9	(6 ⁻)	75		1073.4	(5 ⁻)			
		133		1014.9	(4 ⁻)			
		827		320.6	(6 ⁺)			
1150.0	(12 ⁺)	328.4 3	100	821.6	(10 ⁺)			
1229.8	(7 ⁻)	156		1073.4	(5 ⁻)			
		685		544.4	(8 ⁺)			
		910		320.6	(6 ⁺)	(E1)		Mult.: from intensity balance in IT decay (109 ms).
1254.6	(8 ⁻)	107 [#]		1147.9	(6 ⁻)			E _γ : from ^{252}No IT decay.
		710		544.4	(8 ⁺)			
1360.6	(9 ⁻)	106 [#]		1254.6	(8 ⁻)			
1478.6	(10 ⁻)	118 [#]		1360.6	(9 ⁻)			
		224		1254.6	(8 ⁻)			
1525.5	(14 ⁺)	375.5 4	100	1150.0	(12 ⁺)			
1607.6	(11 ⁻)	129 [#]		1478.6	(10 ⁻)			
		247		1360.6	(9 ⁻)			
1747.6	(12 ⁻)	140 [#]		1607.6	(11 ⁻)			

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Adopted Levels, Gammas (continued) $\gamma(^{252}\text{No})$ (continued)

$E_i(\text{level})$	J_i^π	E_γ^\dagger	I_γ^\dagger	E_f	J_f^π	$E_i(\text{level})$	J_i^π	E_γ^\dagger	I_γ^\dagger	E_f	J_f^π
1747.6	(12 ⁻)	269		1478.6	(10 ⁻)	2607.6	(17 ⁻)	375		2232.6	(15 ⁻)
1898.6	(13 ⁻)	151 [#]		1747.6	(12 ⁻)	2816.6	(18 ⁻)	209		2607.6	(17 ⁻)
		291		1607.6	(11 ⁻)			402		2414.6	(16 ⁻)
1942.2	(16 ⁺)	416.7 ⁴	100	1525.5	(14 ⁺)	2879.1	(20 ⁺)	483.7 ⁷	100	2395.4	(18 ⁺)
2060.6	(14 ⁻)	162		1898.6	(13 ⁻)	3027.6	(19 ⁻)	211		2816.6	(18 ⁻)
		313		1747.6	(12 ⁻)			420		2607.6	(17 ⁻)
2232.6	(15 ⁻)	172		2060.6	(14 ⁻)	3252.6	(20 ⁻)	225		3027.6	(19 ⁻)
		334		1898.6	(13 ⁻)			436		2816.6	(18 ⁻)
2395.4	(18 ⁺)	453.2 ⁷	100	1942.2	(16 ⁺)	3480.6	(21 ⁻)	228 [#]		3252.6	(20 ⁻)
2414.6	(16 ⁻)	182		2232.6	(15 ⁻)			453		3027.6	(19 ⁻)
		354		2060.6	(14 ⁻)	3719.6	(22 ⁻)	239 [#]		3480.6	(21 ⁻)
2607.6	(17 ⁻)	193		2414.6	(16 ⁻)			467		3252.6	(20 ⁻)

[†] From $^{206}\text{Pb}(^{48}\text{Ca}, 2n\gamma)$.

[‡] From comparison of expected and observed transition intensities in the band.




[#] Weak transitions.

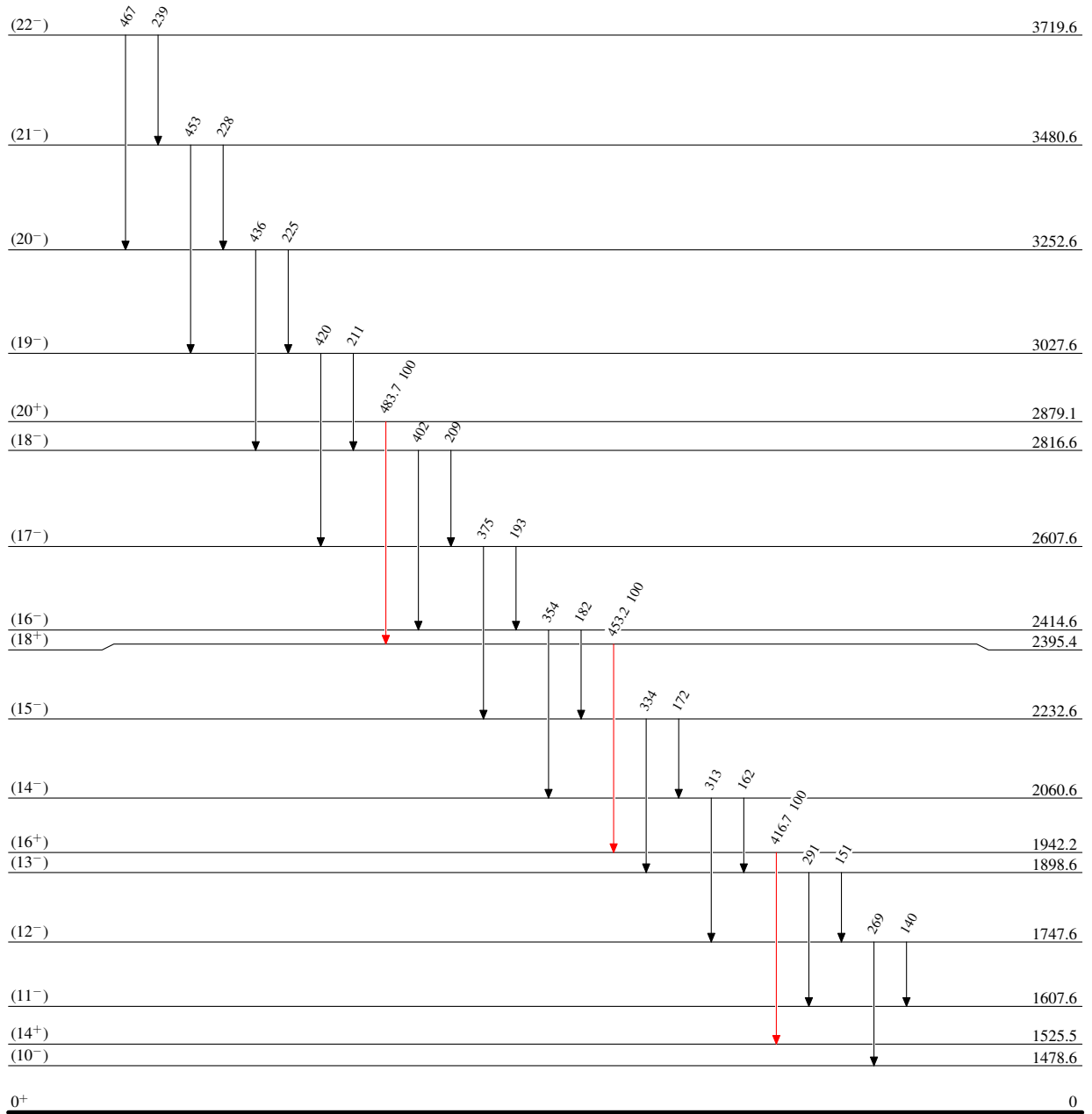
[@] Total theoretical internal conversion coefficients, calculated using the BrIcc code ([2008Ki07](#)) with Frozen orbital approximation based on γ -ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.

Adopted Levels, GammasLevel Scheme

Intensities: Type not specified

Legend

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



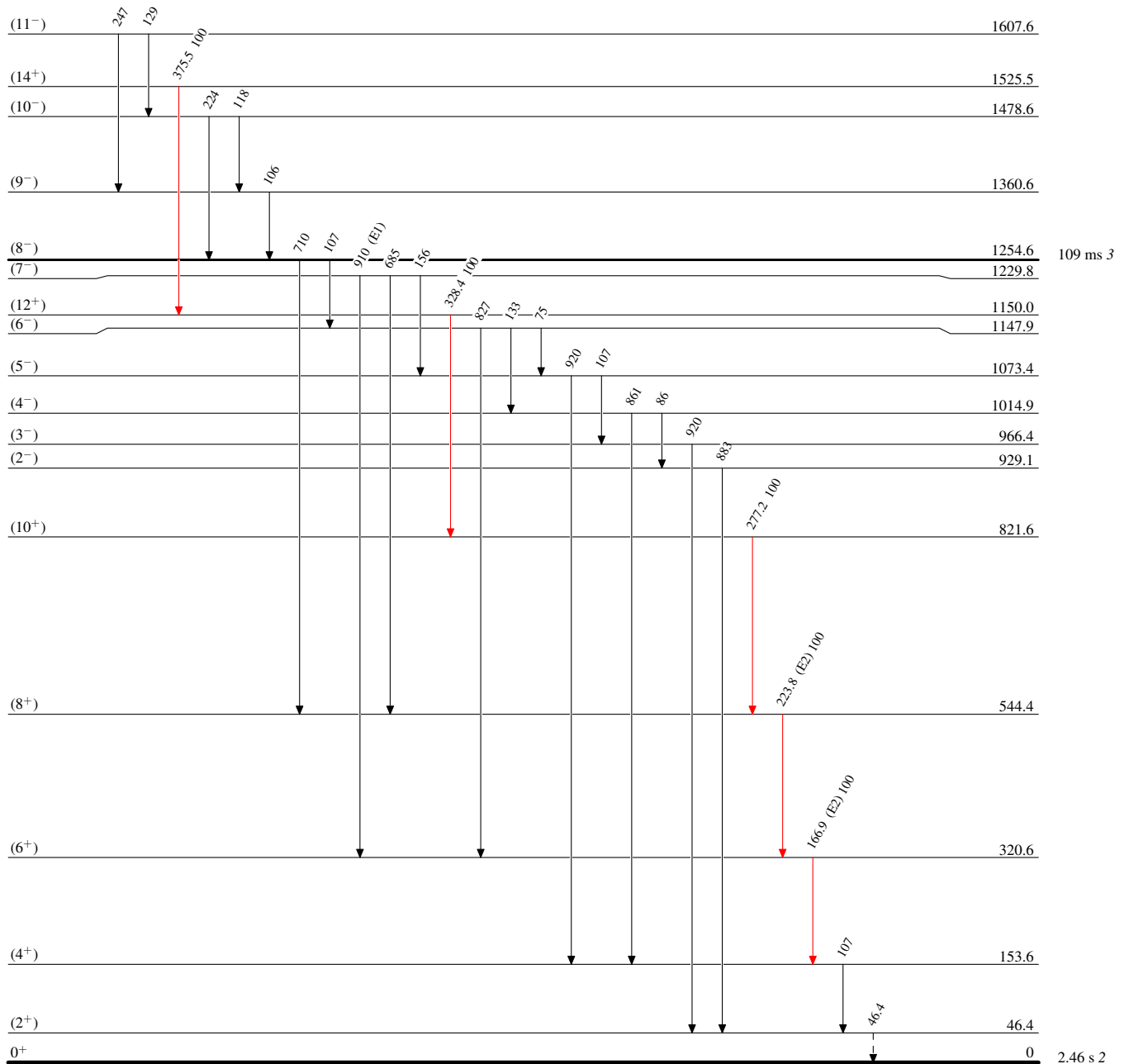
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Type not specified

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

 $^{252}_{102}\text{No}_{150}$

Adopted Levels, Gammas