^{208}Pb(^{3}He,3nγ)

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	M. J. Martin	NDS 108,1583 (2007)	1-Jun-2007

1973Na18 E=28 MeV.
1985Ra21 E=19.0-27.6 MeV.
The decay scheme is that proposed by 1985Ra21 based on $\gamma\gamma$ data. The evaluators have added a level At 3399.9 on the basis of the agreement In energy of the 697.0γ, unplaced by 1985Ra21, with the transition deexciting the 3399.5 level In ^{208}Pb(α,4nγ) and In (^{9}Be,5nγ).

^{208}Po Levels

E(level)	J$^{\pi}$[†]	$T_{1/2}$	Comments
0.0	0^+		
686.5	2^+		
1263.0	2^+		
1346.5	4^+		
1420.0	3^+		J$^{\pi}$: J=3 from $\gamma(\theta)$ (1985Ra21).
1524.1	6^+		
1528.1	8^+	380 ns *50*	g=0.913 *9* $T_{1/2}$: from 1985Ra21. g-factor: from 1973Na18 based on stroboscopic resonance method. Value is corrected for Knight shift (1.4% 4) and diamagnetism (−1.9% 2) (see 1976Ha56). The value of 1973Na18 is a weighted average of their value In that work, and an earlier value by the same authors. The uncorrected weighted average is 0.913 *4*.
1539.5	2^+		
1583.0	4^+		
2041.1	$(6,7)^+$		
2160.0	8^+		
2240.6	9^+		
2293.3	$(6)^+$		
2335.2	$(7)^+$		
2369.3	7^-		
2414.4	$(7)^+$		
2506.9	$(5,6,7)^+$		
2554.4	10^+		
2555.7	$(7)^+$		
2574.3	$(6,7)^-$		
2702.9	11^-		
2800.3	9^-		
3399.9?	12^-		

[†] Spin and parity values are those given under adopted values.

γ(^{208}Po)

E$_\gamma$[†]	I$_\gamma$[‡]	E$_i$(level)	J$_i^{\pi}$	E$_f$	J$_f^{\pi}$	Mult.[#]	α[&]	Comments
4.02 *3*		1528.1	8^+	1524.1	6^+	E2		E$_\gamma$: from ^{208}At ε decay. 1985Ra21 report 4.0 *2* from differences of energy sums. Mult.: from Adopted Gammas.
x110[@]								
148.5	3	2702.9	11^-	2554.4	10^+	E1	0.172	
177.5	35	1524.1	6^+	1346.5	4^+	E2		Mult.: α(L)exp=0.36 *4*$.
x197.6[@]								

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^{208}Pb(^{3}He,3nγ) (continued)

γ(^{208}Po) (continued)

E_γ[†]	I_γ[‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	δ[#]	α[&]	Comments
205.3	0.9	2574.3	$(6,7)^-$	2369.3	7^-	M1(+E2)	≤0.27	1.47 *4*	Mult.: α(L)exp=0.10 *1*$.
236.5	0.9	1583.0	4^+	1346.5	4^+	M1(+E2)	≤0.39	0.96 *5*	Mult.: α(K)exp=0.80 *5*$.
[x]245.6									
252.2	0.4	2293.3	$(6)^+$	2041.1	$(6,7)^+$				
[x]262.5									
[x]275.0									
313.7	2.5	2554.4	10^+	2240.6	9^+	M1+E2	−0.09 *1*	0.465 *1*	Mult.: α(K)exp=0.37 *2*$.
[x]389.7									
430.9	1.7	2800.3	9^-	2369.3	7^-	E2		0.0469	Mult.: α(K)exp=0.047 *5*$.
[x]465.9									
517.0	4.6	2041.1	$(6,7)^+$	1524.1	6^+	M1+E2	0.37 *5*	0.111 *3*	Mult.: α(K)exp=0.091 *3*$.
576.5	3.4	1263.0	2^+	686.5	2^+	M1(+E2)	≤0.48	0.085 *7*	Mult.: α(K)exp=0.071 *5*$.
631.8	5.8	2160.0	8^+	1528.1	8^+	M1+E2	0.42 *11*	0.064 *4*	Mult.: α(K)exp=0.052 *4*$.
660.0	72	1346.5	4^+	686.5	2^+	E2			Mult.: α(K)exp=0.0127 *4*$.
686.5	100	686.5	2^+	0.0	0^+	E2			
697.0		3399.9?	12^-	2702.9	11^-	M1+E2	−0.21 *5*	0.0542 *8*	
712.5	7.2	2240.6	9^+	1528.1	8^+	M1+E2	−0.29 *18*	0.049 *3*	Mult.: α(K)exp=0.040 *3*$.
733.5	6.4	1420.0	3^+	686.5	2^+	M1+E2	0.71 *17*	0.037 *4*	Mult.: α(K)exp=0.033 *5*$.
769.4	1.4	2293.3	$(6)^+$	1524.1	6^+	M1(+E2)	≤0.6	0.039 *4*	
807.1	2.1	2335.2	$(7)^+$	1528.1	8^+	M1(+E2)	≤0.27	0.0373 *9*	
[x]843.7[@]									
845.0	9.6	2369.3	7^-	1524.1	6^+	E1		0.00371	Mult.: α(K)exp=0.004 *1*$.
852.5	0.9	1539.5	2^+	686.5	2^+	M1+E2	0.70 *20*	0.026 *3*	Mult.: α(K)exp=0.019 *3*$.
[x]873.3									
886.3	1.7	2414.4	$(7)^+$	1528.1	8^+	M1+E2	0.6 *3*	0.023 *5*	
896.5	<24	1583.0	4^+	686.5	2^+	E2		0.0092	I_γ: peak contains impurity contributions. From branching In Adopted Gammas one expects Iγ=8.8.
[x]906.7									
946.9	1.2	2293.3	$(6)^+$	1346.5	4^+	E2		0.00826	
[x]974.8									
982.8	1.3	2506.9	$(5,6,7)^+$	1524.1	6^+	M1+E2	0.35 *15*	0.0212 *12*	Mult.: α(K)exp=0.012 *3*$.
[x]1008.5[a]	3.1								E_γ: probably not the same As the 1008.5γ assigned to the 3564 level In ε decay since the much stronger 989.9γ from that level is not seen.
[x]1014.4[@]									
1026.3	2	2554.4	10^+	1528.1	8^+	E2		0.0071	
1027.6	1	2555.7	$(7)^+$	1528.1	8^+	M1+E2	0.42 *+20−25*	0.0185 *17*	
1174.8	1.3	2702.9	11^-	1528.1	8^+	E3		0.0119	
[x]1223.7									
[x]1238.4[@]									
1263.0	1.9	1263.0	2^+	0.0	0^+	E2			Mult.: α(K)exp≈0.0043.
[x]1368[@]									
1539.0[a]		1539.5	2^+	0.0	0^+				not listed In authors′ table, but shown In their level scheme.

[†] From 1985Ra21. The authors quote a single set of energies for their (^{3}He,3nγ) and (p,2nγ) experiments. The uncertainties are

Continued on next page (footnotes at end of table)

^{208}Pb(^{3}He,3nγ) (continued)

γ(^{208}Po) (continued)

stated As being typically 0.1 to 0.2 keV. The unplaced transitions without intensities are from the authors′s spectrum.

‡ From 1985Ra21. Relative prompt data taken At E(^{3}He)=27 MeV, θ=125°. $\Delta I\gamma$ are In the range 1-20%.

From adopted γ′s. α(K)exp and α(L)exp data of 1985Ra21, given here, are based on I(ce)/Iγ, normalized so that α(K)(686.5γ)=0.0118 (E2 theory).

@ Tentative transition.

& 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.

a Placement of transition in the level scheme is uncertain.

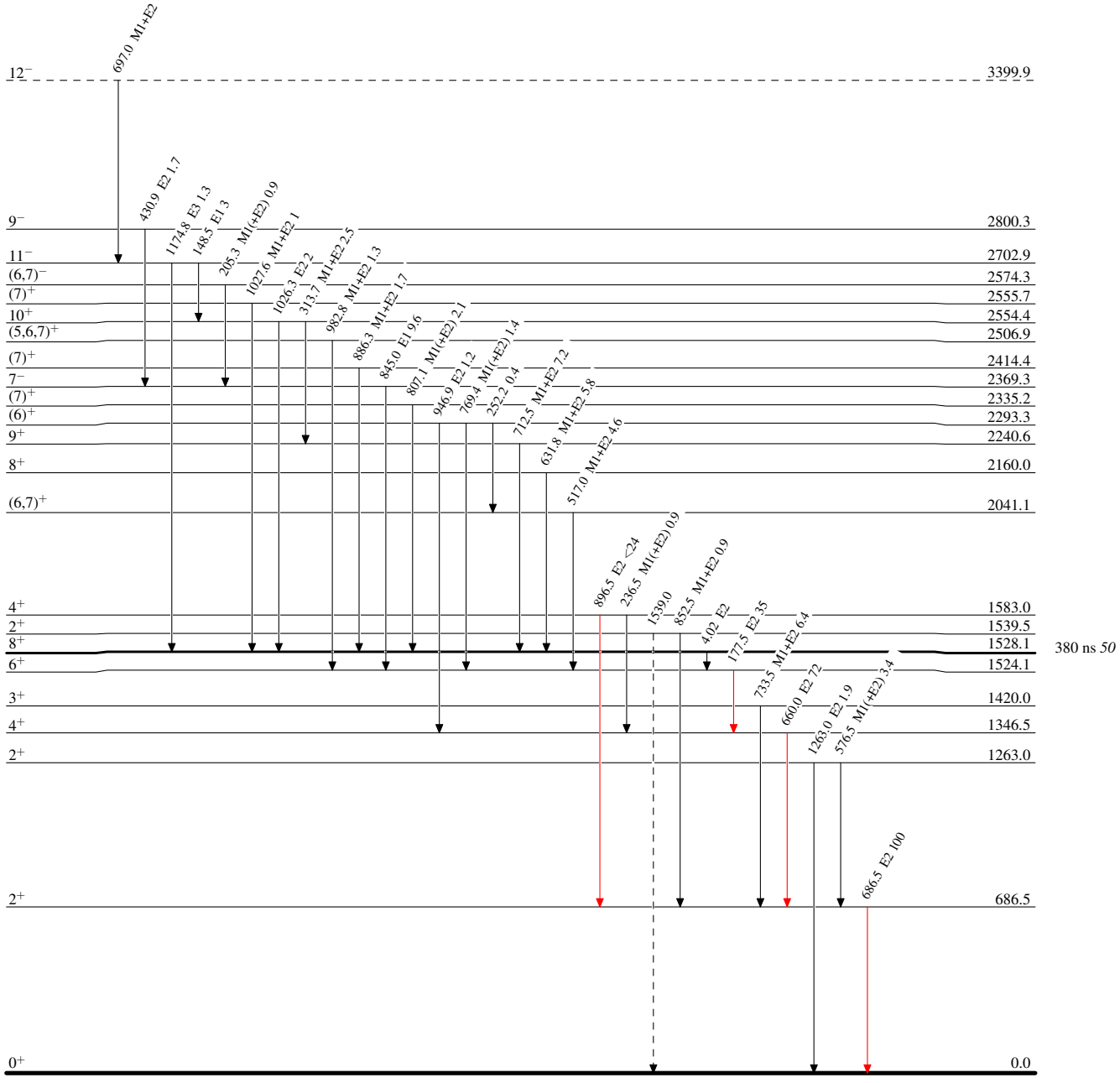
x γ ray not placed in level scheme.

^{208}Pb(^{3}He,3nγ)

Level Scheme

Intensities: Relative I_γ

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



$^{208}_{84}Po_{124}$