^{208}Pb(^{14}C,2nγ) 1984Co22,1985Ce01,1985Sh25

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	E. Browne, J. K. Tuli	NDS 112, 1115 (2011)	31-Oct-2010

Additional information 1.
1984Co22, 1985Sh25 E=60-68 MeV.
1985Ce01 E=60-83 MeV.

^{220}Ra Levels

The level scheme is that of 1985Sh25 (same as 1984Co22 except for absence of 3419.8 level and deexciting 459.4γ ray). The scheme proposed by 1985Ce01 is consistent with, but not as extensive as, that of 1985Sh25.

E(level)	J$^\pi$†	E(level)	J$^\pi$†	E(level)	J$^\pi$†	E(level)	J$^\pi$†
0‡	0$^+$	687.1‡ *4*	6$^+$	1709.8‡ *4*	12$^+$	2959.7‡ *5*	18$^+$
178.1‡ *2*	2$^+$	871.7# *4*	(7)$^-$	1861.6# *4*	(13)$^-$	3143.2?# *6*	(19$^-$)
409.3‡ *3*	4$^+$	999.9‡ *4*	8$^+$	2103.2‡ *5*	14$^+$	3622.9?# *6*	(21$^-$)
412.5# *3*	(1$^-$)	1162.0# *4*	(9)$^-$	2259.8# *5*	(15)$^-$		
473.8# *3*	(3$^-$)	1341.1‡ *4*	10$^+$	2521.1‡ *5*	16$^+$		
633.5# *4*	(5)$^-$	1494.4# *4*	(11)$^-$	2687.8# *5*	(17)$^-$		

† From Adopted Levels.
‡ Band(A): K$^\pi$=0$^+$ g.s. rotational band.
# Band(B): K$^\pi$=0$^-$ band.

γ(^{220}Ra)

E$_\gamma$‡	I$_\gamma$‡	E$_i$(level)	J$_i^\pi$	E$_f$	J$_f^\pi$	Mult.#	α†	Comments
128.2 *2*	29[a] *1*	999.9	8$^+$	871.7	(7)$^-$	E1	0.263	Mult.: from intensity balance at 872 level (1985Ce01).
151.8 *2*	22 *1*	1861.6	(13)$^-$	1709.8	12$^+$	E1	0.175	
153.2 *2*	30 *1*	1494.4	(11)$^-$	1341.1	10$^+$	E1	0.1712	
156.5 *2*	10 *1*	2259.8	(15)$^-$	2103.2	14$^+$	E1	0.1626	
162.1 *2*	43 *1*	1162.0	(9)$^-$	999.9	8$^+$	E1	0.1494	
166.6@ *2*	5 *1*	2687.8	(17)$^-$	2521.1	16$^+$	E1	0.1398	
178.1 *2*	73 *4*	178.1	2$^+$	0	0$^+$	E2	0.898	
179.0 *2*	34 *4*	1341.1	10$^+$	1162.0	(9)$^-$			
184.5 *2*	55 *1*	871.7	(7)$^-$	687.1	6$^+$	E1	0.1094	
215.4 *2*	23 *1*	1709.8	12$^+$	1494.4	(11)$^-$	E1	0.0757	
224.2 *2*	15 *2*	633.5	(5)$^-$	409.3	4$^+$	E1	0.0688	
231.2 *2*	100	409.3	4$^+$	178.1	2$^+$	E2	0.352	Mult.: stretched ΔJ=2 transition from $\gamma(\theta)$ (1985Ce01).
234.4@ *2*	1.0 *3*	412.5	(1$^-$)	178.1	2$^+$			
238.2@ *2*	3 *1*	871.7	(7)$^-$	633.5	(5)$^-$			
241.6 *2*	23 *1*	2103.2	14$^+$	1861.6	(13)$^-$			
261.2@ *2*	5 *1*	2521.1	16$^+$	2259.8	(15)$^-$			
271.9 *2*	16 *3*	2959.7	18$^+$	2687.8	(17)$^-$			
277.8@ *2*	89 *6*	687.1	6$^+$	409.3	4$^+$	E2	0.193	
290.3@ *2*	17 *3*	1162.0	(9)$^-$	871.7	(7)$^-$			
295.7@ *2*	2 *1*	473.8	(3$^-$)	178.1	2$^+$			

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^{208}Pb(^{14}C,2nγ) 1984Co22,1985Ce01,1985Sh25 (continued)

γ(^{220}Ra) (continued)

E_γ[‡]	I_γ[‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	α[†]	Comments
312.9 *2*	50[a] *2*	999.9	8^+	687.1	6^+	E2	0.1341	
332.4 *2*	25 *2*	1494.4	$(11)^-$	1162.0	$(9)^-$			
341.2 *2*	12 *1*	1341.1	10^+	999.9	8^+			
367.2 *2*	15 *1*	1861.6	$(13)^-$	1494.4	$(11)^-$			
368.7 *2*	11 *1*	1709.8	12^+	1341.1	10^+			
393.4[@] *2*	12 *2*	2103.2	14^+	1709.8	12^+			
398.2 *2*	18 *1*	2259.8	$(15)^-$	1861.6	$(13)^-$			
(412.9)		412.5	(1^-)	0	0^+			E_γ,I_γ: γ line obscured by contaminant.
418.0[&] *2*	4 *1*	2521.1	16^+	2103.2	14^+			
428.1[@b] *2*	8 *2*	2687.8	$(17)^-$	2259.8	$(15)^-$			
439.1[b]	≤1	2959.7	18^+	2521.1	16^+			
455.4[@b] *2*	13 *4*	3143.2?	(19^-)	2687.8	$(17)^-$			
479.7[b] *2*		3622.9?	(21^-)	3143.2?	(19^-)			

[†] Additional information 2.
[‡] From 1985Sh25.
[#] From α(K)exp and α(L)exp of 1985Ce01 based on relative Ice and Iγ normalized to the E2 theory value for the 352γ in ^{218}Ra.
[@] Obscured by strong line in ^{219}Ra.
[&] Obscured by strong line in ^{218}Ra.
[a] There is a discrepancy in the γ-ray branching ratio from the 1001.1-keV 8^+ level between 1985Sh25 and the other authors. Iγ(128.2γ)/Iγ(312.9γ)=0.54 *3* (1985Sh25), 1.07 *24* (1985Ce01), 1.0 (1984Co22) in this reaction, and 1.8 *4* (1995Sm06), 1.2 *3* (1984Bu29) from (^{18}O,α2nγ).
[b] Placement of transition in the level scheme is uncertain.

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Level Scheme

Intensities: Relative I_γ

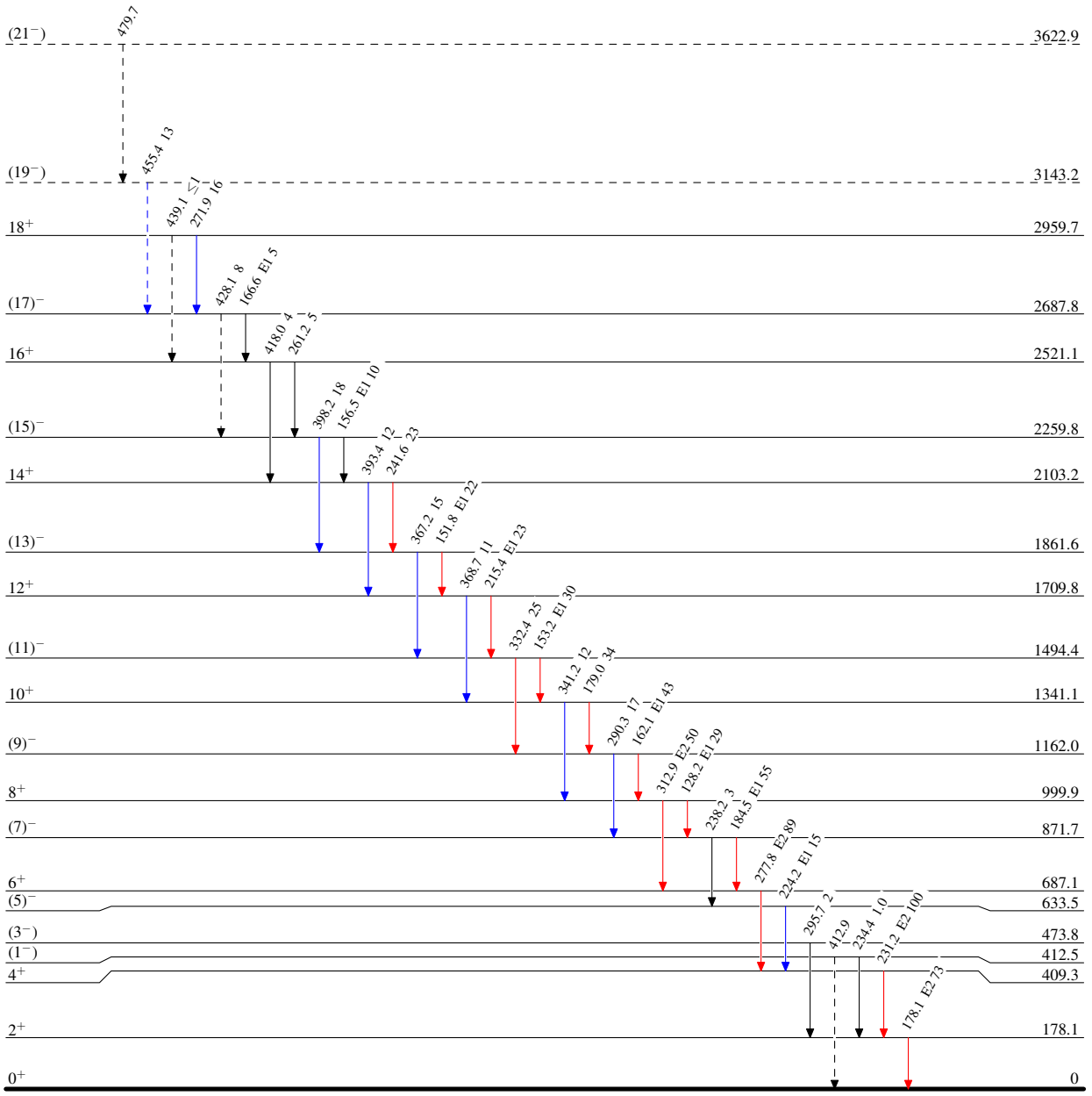
Legend

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

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

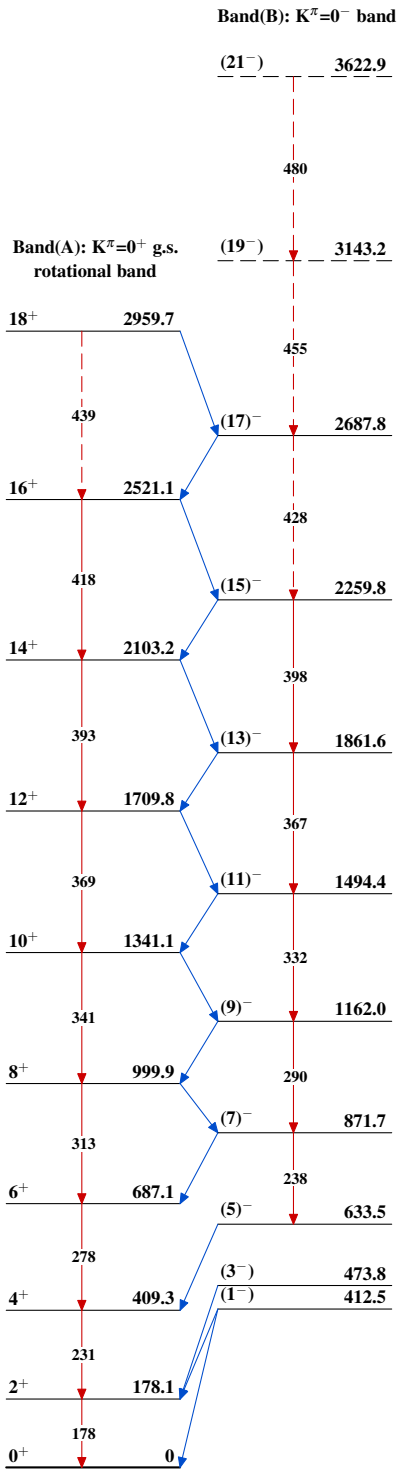
$I_\gamma > 10\% \times I_\gamma^{max}$

γ Decay (Uncertain)



$^{220}_{88}Ra_{132}$

$^{208}Pb(^{14}C,2n\gamma)$ 1984Co22,1985Ce01,1985Sh25



$^{220}_{88}Ra_{132}$