^{208}Pb(^{18}O,α2nγ) 1995Sm06,2006Ho03

History

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

Additional information 1.
2006Ho03: E=92 MeV; measured Eα, Iα,Eγ, Iγ,$\gamma\gamma$ coin, $\gamma\gamma\gamma$ coin, $\gamma(\theta)$. Detectors: GASP and ISIS arrays.
1995Sm06: E=95 MeV; measured Eγ, Iγ, $\gamma\gamma$, $\gamma\gamma\gamma$, $\gamma(\theta)$.
1984Bu29: E=83 MeV; measured Eγ, Iγ, $\gamma\gamma$.

^{220}Ra Levels

Level scheme is from 1995Sm06 and agrees with that proposed by 1984Bu29 and also that deduced from the (^{14}C,2nγ) reaction. It is based on coincidence data using energy sums and intensity balance arguments.

E(level)[†]	J$^\pi$[‡]	E(level)[†]	J$^\pi$[‡]	E(level)[†]	J$^\pi$[‡]	E(level)[†]	J$^\pi$[‡]
0[#]	0$^+$	1342.5[#]	10$^+$	2961.3[#]	18$^+$	4873.1[#]	(26$^+$)
178.4[#]	2$^+$	1495.7[@]	11$^-$	3144.2[@]	(19$^-$)	5163.8[@]	(27$^-$)
410.0[#]	4$^+$	1710.9[#]	12$^+$	3417.0[#]	(20$^+$)	5384.0[#]	(28$^+$)
634.6[@]	5$^-$	1863.3[@]	13$^-$	3623.6[@]	(21$^-$)	5702.7[@]	(29$^-$)
687.9[#]	6$^+$	2105.3[#]	14$^+$	3887.9[#]	(22$^+$)	5911.3?[#]	(30$^+$)
872.5[@]	7$^-$	2262.2[@]	15$^-$	4122.2[@]	(23$^-$)	6255.2?[@]	(31$^-$)
1001.1[#]	8$^+$	2522.9[#]	16$^+$	4374.1[#]	(24$^+$)		
1163.2[@]	9$^-$	2689.9[@]	17$^-$	4635.9[@]	(25$^-$)		

[†] Deduced from Eγ (1995Sm06).
[‡] From 1995Sm06. Based on band structure and confirmed by $\gamma(\theta)$ in fourfold coincidences.
[#] 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[†]
128.1 *3*	53 *11*	1001.1	8$^+$	872.5	7$^-$	E1	0.264
152.4 *3*	49 *10*	1863.3	13$^-$	1710.9	12$^+$	E1	0.173
153.6 *3*	50 *10*	1495.7	11$^-$	1342.5	10$^+$	E1	0.170
156.7 *3*	33 *7*	2262.2	15$^-$	2105.3	14$^+$	E1	0.1621
162.5 *2*	63 *6*	1163.2	9$^-$	1001.1	8$^+$	E1	0.1485
166.6 *3*	45 *9*	2689.9	17$^-$	2522.9	16$^+$	E1	0.1398
178.4[#] *2*	95[#] *10*	178.4	2$^+$	0	0$^+$	E2	0.892
178.6[#] *3*	40[#] *8*	1342.5	10$^+$	1163.2	9$^-$	E1	0.1183
182.4 *3*	21 *4*	3144.2	(19$^-$)	2961.3	18$^+$	E1	0.1124
184.9 *2*	84 *8*	872.5	7$^-$	687.9	6$^+$	E1	0.1088
206.4 *3*	21 *4*	3623.6	(21$^-$)	3417.0	(20$^+$)	E1	0.0837
209.7[a] *4*		5911.3?	(30$^+$)	5702.7	(29$^-$)		
215.1 *3*	48 *10*	1710.9	12$^+$	1495.7	11$^-$	E1	0.0759
220.5 *4*	5 *2*	5384.0	(28$^+$)	5163.8	(27$^-$)		
224.6 *3*	48 *10*	634.6	5$^-$	410.0	4$^+$	E1	0.0685
231.6 *2*	100 *10*	410.0	4$^+$	178.4	2$^+$	E2	0.350
233.8 *3*	16 *3*	4122.2	(23$^-$)	3887.9	(22$^+$)	E1	0.0624
237.6[#] *4*	9[#] *3*	4873.1	(26$^+$)	4635.9	(25$^-$)	[E1]	0.0601

Continued on next page (footnotes at end of table)

^{208}Pb(^{18}O,α2nγ) 1995Sm06,2006Ho03 (continued)

γ(^{220}Ra) (continued)

E_γ[‡]	I_γ[@]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[&]	α[†]
237.9[#] *4*	7[#] *2*	872.5	7^-	634.6	5^-	E2	0.319
241.9 *3*	40 *8*	2105.3	14^+	1863.3	13^-	E1	0.0576
252.0 *3*	21 *4*	4374.1	(24^+)	4122.2	(23^-)	E1	0.0524
261.1 *3*	52 *10*	2522.9	16^+	2262.2	15^-	E1	0.0483
261.9 *4*	4 *1*	4635.9	(25^-)	4374.1	(24^+)	[E1]	0.0479
264.4 *3*	21 *4*	3887.9	(22^+)	3623.6	(21^-)	E1	0.0469
271.6 *3*	24 *5*	2961.3	18^+	2689.9	17^-	E1	0.0441
273.2 *3*	24 *5*	3417.0	(20^+)	3144.2	(19^-)	E1	0.0435
278.1 *2*	89 *9*	687.9	6^+	410.0	4^+	E2	0.192
290.7[#] *4*	7[#] *2*	5163.8	(27^-)	4873.1	(26^+)		
290.8[#] *4*	8[#] *2*	1163.2	9^-	872.5	7^-	E2	0.1673
313.3 *3*	30 *6*	1001.1	8^+	687.9	6^+	E2	0.1336
318.2[a] *4*	1	5702.7	(29^-)	5384.0	(28^+)		
332.7 *3*	20 *4*	1495.7	11^-	1163.2	9^-	E2	0.1121
341.5 *3*	13 *3*	1342.5	10^+	1001.1	8^+	E2	0.1040
367.6[#] *3*	38[#] *8*	1863.3	13^-	1495.7	11^-	E2	0.0847
368.2[#] *3*	21[#] *4*	1710.9	12^+	1342.5	10^+	E2	0.0843
394.4 *3*	16 *3*	2105.3	14^+	1710.9	12^+	E2	0.0701
399.1 *3*	46 *9*	2262.2	15^-	1863.3	13^-	E2	0.0679
417.6 *3*	19 *4*	2522.9	16^+	2105.3	14^+	E2	0.0604
427.6 *3*	35 *7*	2689.9	17^-	2262.2	15^-	E2	0.0568
438.4 *3*	22 *5*	2961.3	18^+	2522.9	16^+	E2	0.0533
454.6 *3*	24 *5*	3144.2	(19^-)	2689.9	17^-	E2	0.0487
455.8 *3*	11 *2*	3417.0	(20^+)	2961.3	18^+	E2	0.0484
471.0 *3*	14 *3*	3887.9	(22^+)	3417.0	(20^+)	E2	0.0446
479.4 *3*	19 *4*	3623.6	(21^-)	3144.2	(19^-)	E2	0.0428
486.3 *3*	12 *2*	4374.1	(24^+)	3887.9	(22^+)	E2	0.0413
498.7[#] *4*	6[#] *2*	4873.1	(26^+)	4374.1	(24^+)	[E2]	0.0389
498.9[#] *4*	10[#] *3*	4122.2	(23^-)	3623.6	(21^-)	E2	0.0389
510.8 *4*	7 *2*	5384.0	(28^+)	4873.1	(26^+)		
513.6 *4*	7 *2*	4635.9	(25^-)	4122.2	(23^-)	[E2]	0.0363
527.0[a] *4*		5911.3?	(30^+)	5384.0	(28^+)		
527.7 *4*		5163.8	(27^-)	4635.9	(25^-)		
538.9 *4*	4 *2*	5702.7	(29^-)	5163.8	(27^-)		
552.5[a] *4*		6255.2?	(31^-)	5702.7	(29^-)		

† Additional information 2.

‡ From 1995Sm06. ΔE vary from 0.2 keV for the strongest transitions to 0.4 keV for transitions between the highest spin states observed. The individual uncertainties have been assigned by the evaluator.

Member of a doublet; the uncertainty is probably larger than quoted.

@ Calculated by evaluator from I(γ+ce) of 1995Sm06 and α. ΔIγ range from 10% to 30% (1995Sm06).

& 1995Sm06 have deduced γ multipolarities (stretched D, stretched Q) from $\gamma(\theta)$ which confirm their spin assignments up to J^π=24$^+$ level. The bands have been previously established as alternate parity bands; therefore, the intraband stretched Q are interpreted as E2 and the stretched D interband transitions as E1. However, the authors do not give multipolarities of individual γ's.

a Placement of transition in the level scheme is uncertain.

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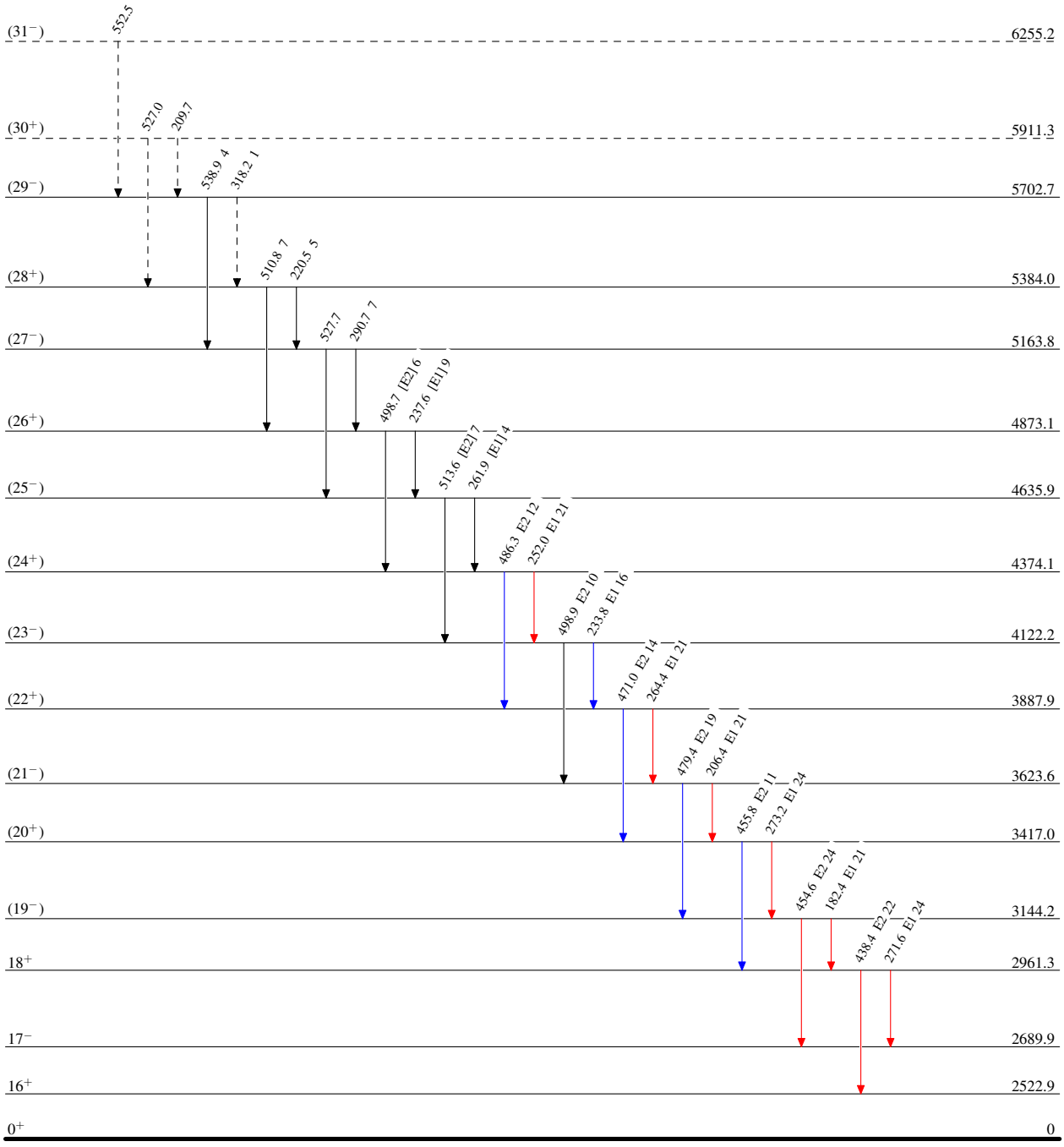
Level Scheme

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(^{18}O,α2nγ) 1995Sm06,2006Ho03

Level Scheme (continued)

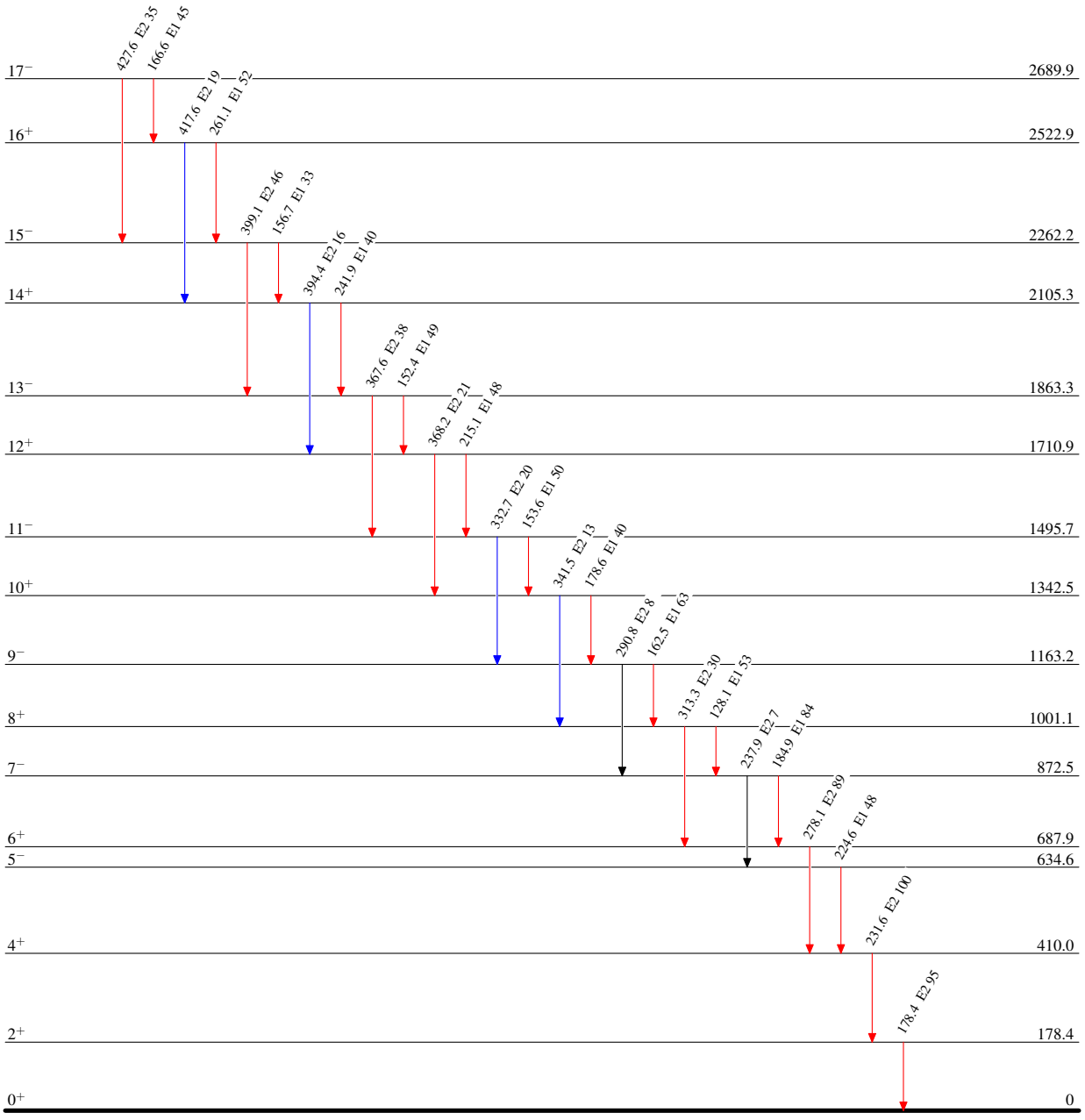
Intensities: Relative I_γ

Legend

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

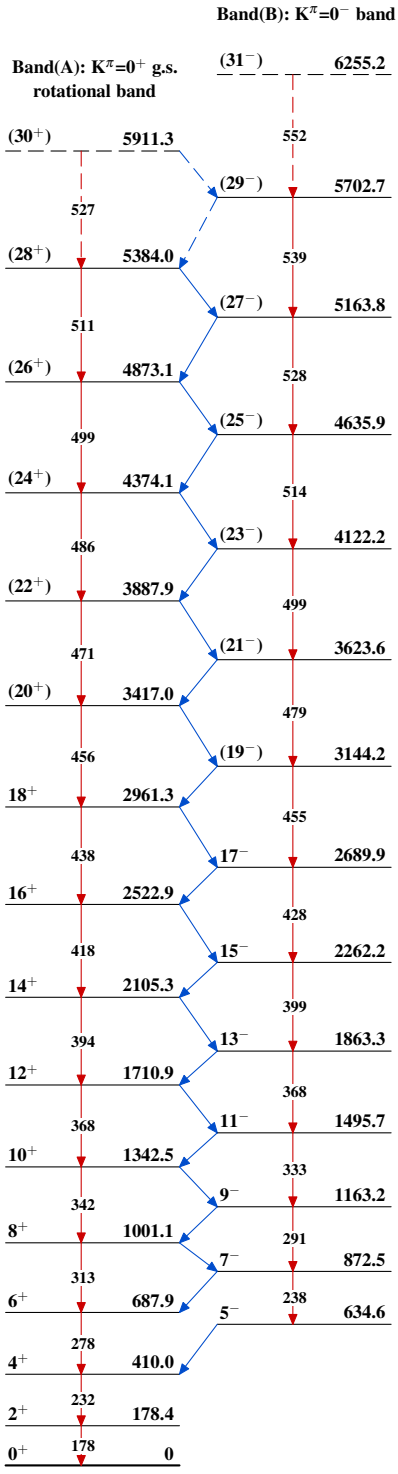
$I_\gamma < 10\% \times I_\gamma^{max}$

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



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

$^{208}Pb(^{18}O,\alpha 2n\gamma)$ 1995Sm06,2006Ho03



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