^{209}Bi(^{14}C,2nγ) 1994Ai01

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Ashok Jain, Sukhjeet Singh, Suresh Kumar, Jagdish Tuli	NDS 108, 883 (2007)	15-Jan-2007

1994Ai01: E=63– 65 MeV. Measured Eγ, Iγ, ce, $\gamma\gamma$, ce-γ coin Used 12 Compton suppressed Ge-detectors and BAF2 multidetector filter array; ce Si(Li).

^{221}Ac Levels

E(level)	J$^{\pi}$[&]	Comments
0[‡]	(3/2$^-$)	
9.0[#] *4*	(5/2$^-$)	E(level): Deduced from the level scheme.
148.4[‡] *3*	(7/2$^-$)	
201.2[#] *4*	(9/2$^-$)	
321.1[†] *4*	(9/2$^+$)	
380.7[‡] *4*	(11/2$^-$)	
413.7[@] *4*	(11/2$^+$)	
459.5[#] *4*	(13/2$^-$)	
523.2[†] *4*	(13/2$^+$)	
639.0[@] *4*	(15/2$^+$)	
663.1[‡] *4*	(15/2$^-$)	
762.7[#] *4*	(17/2$^-$)	
789.9[†] *4*	(17/2$^+$)	
926.3[@] *5*	(19/2$^+$)	
980.1[‡] *4*	(19/2$^-$)	
1096.9[#] *5*	(21/2$^-$)	
1106.1[†] *5*	(21/2$^+$)	
1261.2[@] *5*	(23/2$^+$)	
1324.9[‡] *5*	(23/2$^-$)	
1457.0[#] *5*	(25/2$^-$)	
1459.8[†] *5*	(25/2$^+$)	
1631.2[@] *5*	(27/2$^+$)	
1697.3[‡] *5*	(27/2$^-$)	
1843.5[#] *6*	(29/2$^-$)	
1843.8[†] *5*	(29/2$^+$)	
2029.7[@] *6*	(31/2$^+$)	
2095.4[‡] *6*	(31/2$^-$)	
2255.1[#] *6*	(33/2$^-$)	
2255.6[†] *6*	(33/2$^+$)	
2454.0[@] *7*	(35/2$^+$)	
2514.5[‡] *6*	(35/2$^-$)	

[†] Band(A): 9/2$^+$ band.
[‡] Band(B): 3/2$^-$ band.
[#] Band(C): 5/2$^-$ band, s=–i.
[@] Band(D): 11/2$^+$ band, s=–i.
[&] Derived from theory performed for odd-A actinides using reflection- asymmetric mean-field approach. Excited-state assignments are based on assumption of 3/2$^-$ and 5/2$^-$ for the g.s. and the 9.0 keV level, respectively.

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$\gamma(^{221}Ac)$

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.[†]	Comments
9.0	(5/2$^-$)	(9.0 *5*)		0	(3/2$^-$)		
148.4	(7/2$^-$)	139.4		9.0	(5/2$^-$)	M1	α(L)exp(139γ)/α(L)exp(192γ)= 3.0 *10*.
		148.4 *3*		0	(3/2$^-$)	(E2)	α(L)exp(148γ)/α(L)exp(232γ)= 8.2 *31*.
201.2	(9/2$^-$)	52.8 *5*		148.4	(7/2$^-$)	M1	E_γ: Deduced from the level scheme.
		192.2 *3*		9.0	(5/2$^-$)	E2	α(K)exp/α(L)exp= 0.6 *2*.
321.1	(9/2$^+$)	172.7 *3*		148.4	(7/2$^-$)	E1	α(L)exp(173γ)/α(L)exp(232γ)<0.5.
380.7	(11/2$^-$)	59.6 *3*	23 *6*	321.1	(9/2$^+$)	E1	
		179.5 *3*	<44	201.2	(9/2$^-$)	M1	α(K)exp/α(L)exp= 3.5 *18*.
		232.3 *3*	77 *6*	148.4	(7/2$^-$)	E2	α(K)exp/α(L)exp= 1.1 *4*.
413.7	(11/2$^+$)	212.5 *3*	100	201.2	(9/2$^-$)		
459.5	(13/2$^-$)	45.8 *3*		413.7	(11/2$^+$)		
		78.8		380.7	(11/2$^-$)	M1	
		258.3 *3*		201.2	(9/2$^-$)	E2	α(K)exp/α(L)exp= 0.9 *4*.
523.2	(13/2$^+$)	142.5 *3*	90 *2*	380.7	(11/2$^-$)	E1	α(exp)<1.2.
		202.2 *3*	10 *2*	321.1	(9/2$^+$)		
639.0	(15/2$^+$)	179.6 *3*		459.5	(13/2$^-$)		
		225.2 *3*		413.7	(11/2$^+$)		
663.1	(15/2$^-$)	139.9 *3*	<79	523.2	(13/2$^+$)	E1	(α(L1)exp+α(L2)exp)/α(L3)exp>5.
		203.7 *3*	23 *5*	459.5	(13/2$^-$)	M1	α(exp)>2.0.
		282.4 *3*	77 *5*	380.7	(11/2$^-$)	E2	
762.7	(17/2$^-$)	123.7 *3*	63 *3*	639.0	(15/2$^+$)		
		303.3 *3*	37 *3*	459.5	(13/2$^-$)		
789.9	(17/2$^+$)	126.7 *3*	76 *3*	663.1	(15/2$^-$)		
		150.8 *3*	6 *2*	639.0	(15/2$^+$)		
		266.7 *3*	18 *2*	523.2	(13/2$^+$)		
926.3	(19/2$^+$)	163.6 *3*	87 *2*	762.7	(17/2$^-$)		
		287.2 *3*	13 *2*	639.0	(15/2$^+$)		
980.1	(19/2$^-$)	190.1 *3*	85 *5*	789.9	(17/2$^+$)		
		317.0 *3*	15 *5*	663.1	(15/2$^-$)		
1096.9	(21/2$^-$)	170.7 *3*	72 *4*	926.3	(19/2$^+$)		
		334.1 *3*	28 *4*	762.7	(17/2$^-$)		
1106.1	(21/2$^+$)	126.0 *3*	66 *4*	980.1	(19/2$^-$)		
		316.2 *3*	34 *4*	789.9	(17/2$^+$)		
1261.2	(23/2$^+$)	164.3 *3*	73 *3*	1096.9	(21/2$^-$)		
		334.9 *3*	27 *3*	926.3	(19/2$^+$)		
1324.9	(23/2$^-$)	218.8 *3*	85 *4*	1106.1	(21/2$^+$)		
		344.9 *3*	15 *4*	980.1	(19/2$^-$)		
1457.0	(25/2$^-$)	195.8 *3*	67 *3*	1261.2	(23/2$^+$)		
		360.2 *3*	33 *3*	1096.9	(21/2$^-$)		
1459.8	(25/2$^+$)	134.8 *3*	52 *4*	1324.9	(23/2$^-$)		
		353.7 *3*	48 *4*	1106.1	(21/2$^+$)		
1631.2	(27/2$^+$)	174.1 *3*	61 *3*	1457.0	(25/2$^-$)		
		369.9 *3*	39 *3*	1261.2	(23/2$^+$)		
1697.3	(27/2$^-$)	237.5 *3*		1459.8	(25/2$^+$)		
		372.4 *3*		1324.9	(23/2$^-$)		
1843.5	(29/2$^-$)	212.3 *3*	67 *4*	1631.2	(27/2$^+$)		
		386.6 *3*	33 *4*	1457.0	(25/2$^-$)		
1843.8	(29/2$^+$)	146.4 *3*		1697.3	(27/2$^-$)		
		384.0 *3*		1459.8	(25/2$^+$)		
2029.7	(31/2$^+$)	186.3 *3*	61 *5*	1843.5	(29/2$^-$)		
		398.4 *3*	39 *5*	1631.2	(27/2$^+$)		
2095.4	(31/2$^-$)	251.4 *3*		1843.8	(29/2$^+$)		
		398.3 *3*		1697.3	(27/2$^-$)		
2255.1	(33/2$^-$)	225.4 *3*		2029.7	(31/2$^+$)		
		411.5 *3*		1843.5	(29/2$^-$)		

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$\gamma(^{221}Ac)$ (continued)

E_i(level)	J_i^π	E_γ	E_f	J_f^π
2255.6	(33/2$^+$)	160.3 *3*	2095.4	(31/2$^-$)
		411.7 *3*	1843.8	(29/2$^+$)
2454.0	(35/2$^+$)	198.8 *3*	2255.1	(33/2$^-$)
		425.2 *8*	2029.7	(31/2$^+$)
2514.5	(35/2$^-$)	259.0 *3*	2255.6	(33/2$^+$)
		419.1 *3*	2095.4	(31/2$^-$)

† From ce data.

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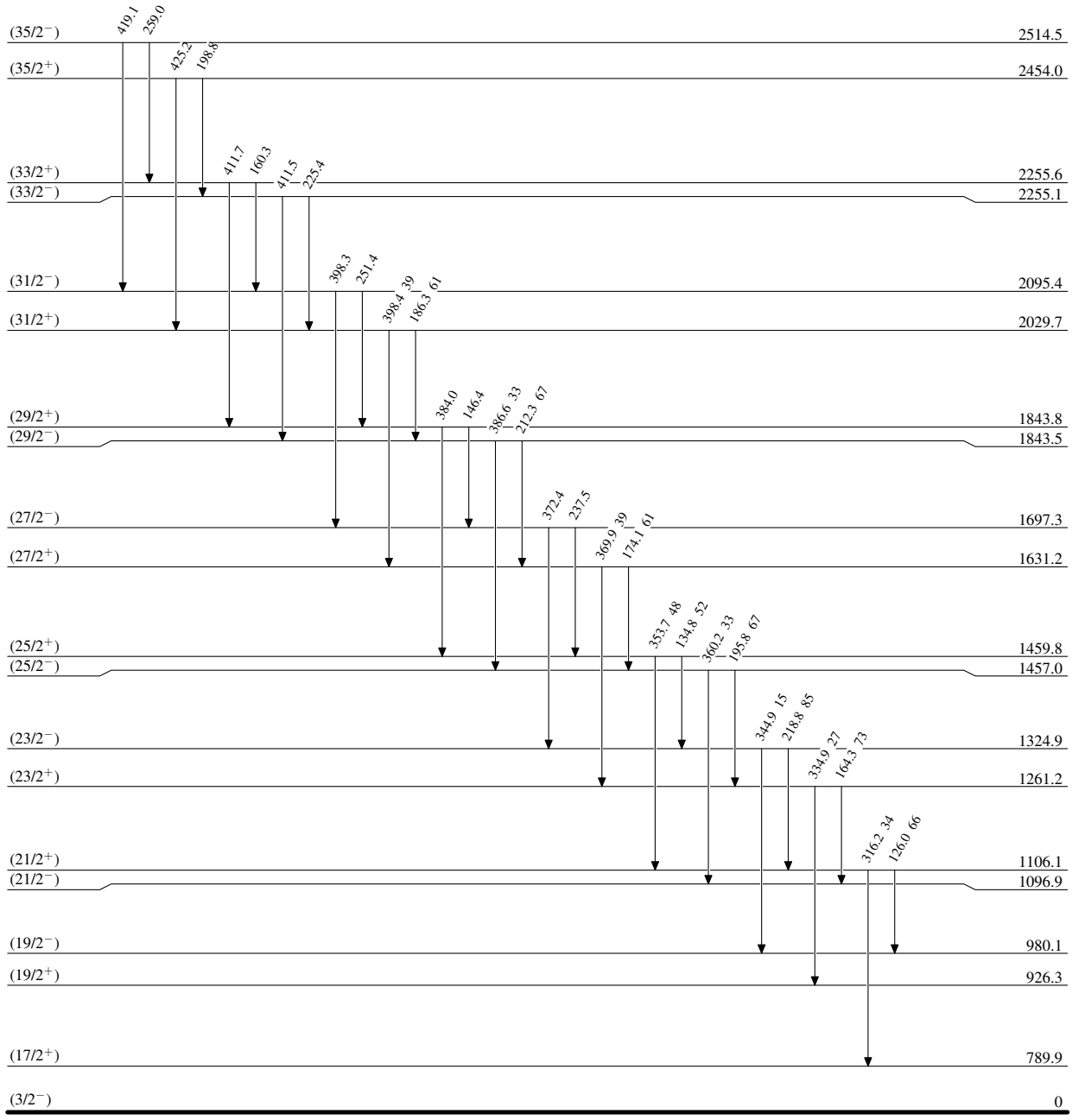
Level Scheme

Intensities: % photon branching from each level



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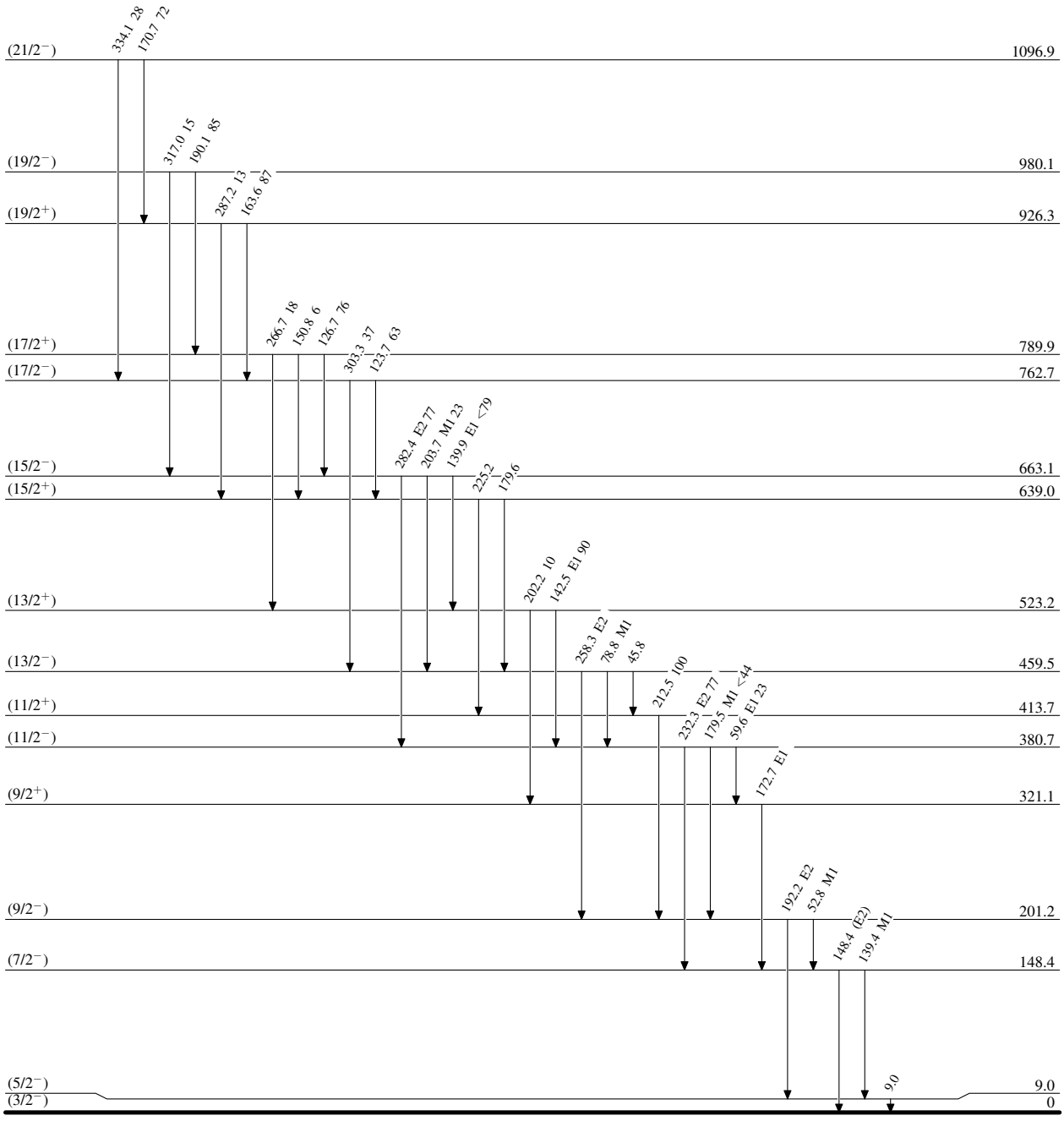
Legend

Level Scheme (continued)

Intensities: % photon branching from each level

γ Decay (Uncertain)



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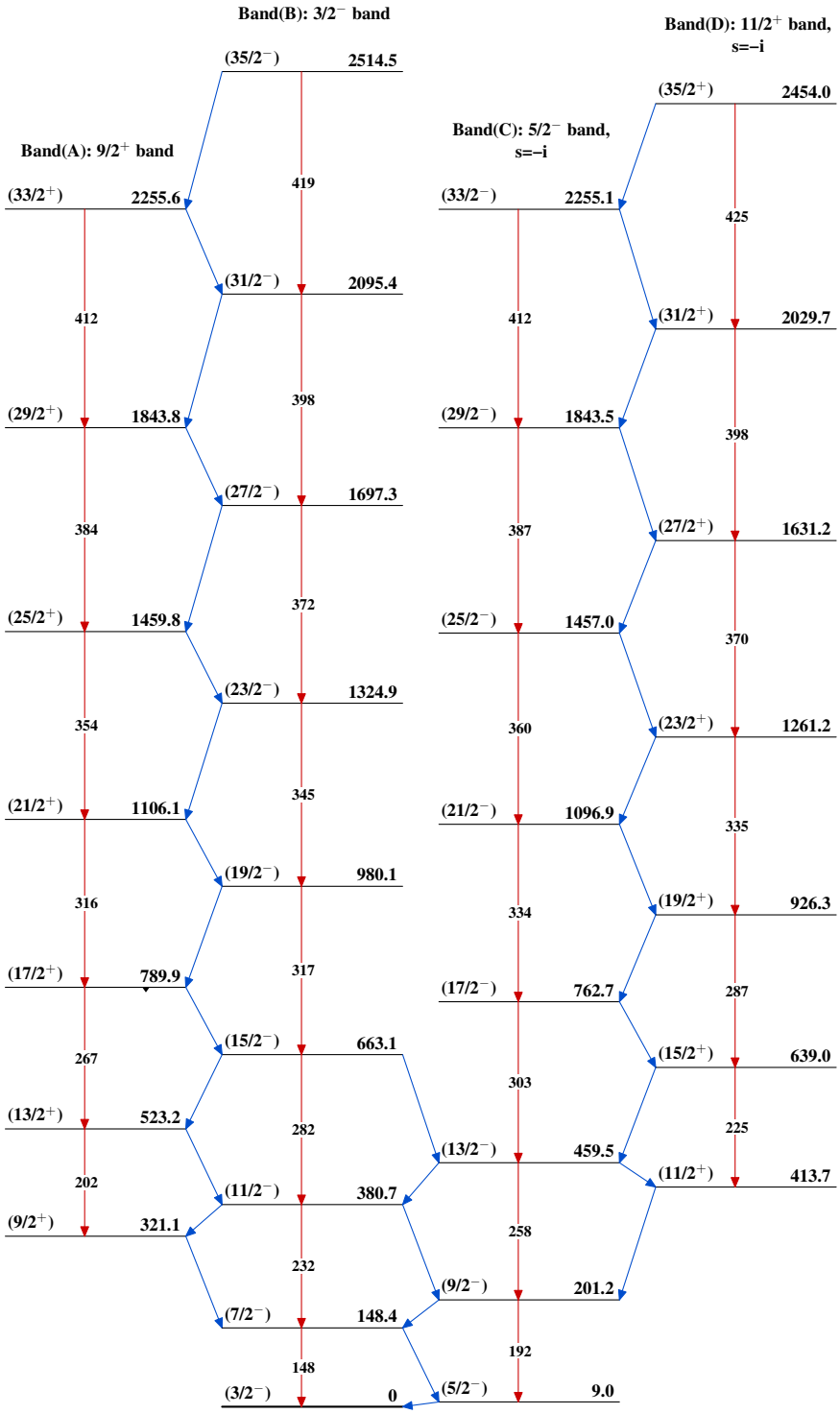

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