^{182}W(^{16}O,5nγ) 1991La07

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	M. Shamsuzzoha Basunia	NDS 143, 1 (2017)	31-Mar-2017

1991La07: ^{182}W(^{16}O,5nγ) E(^{16}O)=109 MeV; intrinsic Ge and Si(Li) detectors and magnetic spectrometer, pulsed beam (200 ns period); measured Eγ, Iγ, Ice, $\gamma\gamma$ coin, γ-ce coin, $\gamma(\theta)$, $\gamma\gamma$(t).

^{193}Pb Levels

E(level)	J$^\pi$	T$_{1/2}$†	Comments
0.0+x	(13/2$^+$)	5.8 min *2*	J$^\pi$,T$_{1/2}$: From Adopted Levels.
881.6+x *2*	(17/2$^+$)		
1022.0+x *2*	(15/2$^+$)		
1401.8+x *3*	(21/2$^+$)		
1550.1+x *3*	(19/2$^+$)		
1585.9+x *4*	(21/2$^-$)	22 ns *2*	
1994.4+x *4*	(25/2$^+$)		
2141.3+x *4*	(23/2$^+$)		
2142.0+x *4*	(23/2$^-$)		
2214.0+x *5*	(25/2$^+$)		
2322.4+x *5*	(27/2$^-$)		
2426.9+x *5*	(27/2$^+$)		
2527.1+x *5*	(29/2$^+$)		
2585.1+x *5*	(29/2$^-$)	11 ns *2*	
2612.6+x *6*	(33/2$^+$)	135 ns *+25−15*	
2966.8+x? *7*	(31/2$^+$)		
3220.4+x? *7*	(33/2$^+$)		E(level): Uncertain level − not adopted. 253.6γ of this placed from 2939.2+x in Adopted Levels.

† Half-lives obtained here from γ(t) or $\gamma\gamma$(t), except as noted.

γ(^{193}Pb)

E_γ	I_γ‡	E_i(level)	J_i^π	E_f	J_f^π	Mult.†	δ†	α#@	$I_{(\gamma+ce)}$	Comments
72.6 *5*		2214.0+x	(25/2$^+$)	2141.3+x	(23/2$^+$)	M1+E2	0.21 *+4−3*	5.3 *4*		α(L)=4.1 *3*; α(M)=0.98 *8* α(N)=0.248 *20*; α(O)=0.048 *4*; α(P)=0.00445 *14* Mult.,δ: From α((L1+L2)/L3)(exp)=8.8 *20*.
85.5 *5*		2612.6+x	(33/2$^+$)	2527.1+x	(29/2$^+$)	E2		12.1 *4*		α(L)=9.0 *3*; α(M)=2.39 *8* α(N)=0.601 *19*; α(O)=0.107 *4*; α(P)=0.00404 *13* Mult.: α(L12/L3)(exp)=0.93 *19*, α(L/M)(exp)=5.1 *17*; theory: α(L12/L3)(M1)=125.2, α(L12/L3)(E2)=1.23, α(L/M)(M1)=4.26, α(L/M)(E2)=3.79.
158.2 *2*	45.0 *53*	2585.1+x	(29/2$^-$)	2426.9+x	(27/2$^+$)	E1		0.1394	50.8 *60*	α(K)=0.1125 *17*; α(L)=0.0206 *3*; α(M)=0.00484 *7* α(N)=0.001213 *18*; α(O)=0.000232 *4*; α(P)=1.95×10^{-5} *3* Mult.: A_2=−0.15 *5*, A_4=−0.002 *74*. α_{L12}(exp)=0.0077 *71*; theory: α_{L12}=0.0170.
180.4 *4*	2.9 *10*	2322.4+x	(27/2$^-$)	2142.0+x	(23/2$^-$)				4.8 *16*	Mult.,δ: E2 in 1991La07. But α_K(exp)=0.283 *51*, α_L(exp)=0.36 *4* indicates M1+E2 and a mixing ratio of 4 *+5−1* for which theory value is α_k=0.28 *5*. Also A_2=+0.20 *7*, A_4=−0.21 *10*. In Adopted Levels placement from (27/2$^-$) to (25/2$^-$).
184.1 *3*	53.0 *36*	1585.9+x	(21/2$^-$)	1401.8+x	(21/2$^+$)	E1+M2	0.049 *+15−20*	0.116 *14*	59.1 *40*	α(K)=0.092 *10*; α(L)=0.018 *3*; α(M)=0.0044 *8* α(N)=0.00111 *19*; α(O)=0.00021 *4*; α(P)=1.9×10^{-5} *4* Mult.,δ: From α_K(exp)=0.0916 *92*. Also A_2=+0.19 *5*, A_4=−0.02 *6*.
204.8 *4*	0.7 *6*	2527.1+x	(29/2$^+$)	2322.4+x	(27/2$^-$)	E1+M2	0.63 *14*	0.0736	2.5 *16*	α(K)=1.24 *38*; α(L)=0.35 *11*; α(M)=0.087 *27* α(N)=0.0224 *70*; α(O)=0.0044 *14*; α(P)=4.2×10^{-4} *14* Mult.,δ: From α_K(exp)=1.9 *16*, α_{L12}(exp)=0.21 *12*; Also A_2=−0.29 *6*, A_4=+0.33 *12*. theory: α_K(E1)=0.0594, α_K(M2)=4.18, α_{L12}(E1)=0.0090, α_{L12}(M2)=1.087.
212.9 *3*	26.0 *33*	2426.9+x	(27/2$^+$)	2214.0+x	(25/2$^+$)	M1		1.100	54.5 *70*	α(K)=0.898 *13*; α(L)=0.1543 *23*; α(M)=0.0362 *6* α(N)=0.00919 *14*; α(O)=0.00183 *3*; α(P)=0.000196 *3* Mult.: A_2=−0.19 *4*, A_4=+0.03 *7*. α_K(exp)=1.05 *6*, α_{L12}(exp)=0.146 *10*.
219.1 *3*	1.6 *7*	2214.0+x	(25/2$^+$)	1994.4+x	(25/2$^+$)	(M1)		1.015	3.1 *12*	α(K)=0.829 *12*; α(L)=0.1424 *21*; α(M)=0.0334 *5* α(N)=0.00848 *13*; α(O)=0.001690 *25*; α(P)=0.000181 *3* Mult.: α_K(exp)=1.14 *13*, α_{L12}(exp)=0.107 *57*; Theory: α_K(M1)=0.829. The anomalously high α(K) conversion coefficient might be due to a

From ENSDF

γ(^{193}Pb) (continued)

E_γ	I_γ‡	E_i(level)	J_i^π	E_f	J_f^π	Mult.†	δ†	α#@	$I_{(\gamma+ce)}$	Comments
										significant E0 component in the transition, ΔJ=0.
253.6 *10*		3220.4+x?	(33/2$^+$)	2966.8+x?	(31/2$^+$)					α(K)=0.553 *10*; α(L)=0.0947 *17*; α(M)=0.0222 *4* α(N)=0.00564 *10*; α(O)=0.001124 *20*; α(P)=0.0001202 *22* E_γ: a comparable 252.3γ from 2939.2+x in Adopted Levels.
381.7 *10*		2966.8+x?	(31/2$^+$)	2585.1+x	(29/2$^-$)					
^{x}497.7 *4*	8.3 *5*					E2		0.0297	8.5 *5*	α(K)=0.0210 *3*; α(L)=0.00659 *10*; α(M)=0.001638 *24* α(N)=0.000415 *6*; α(O)=7.83×10^{-5} *12*; α(P)=6.10×10^{-6} *9* Mult.: α_K(exp)=0.0224 *51*; α_{L12}(exp)=0.0044 *22*.
520.2 *2*	88.1 *78*	1401.8+x	(21/2$^+$)	881.6+x	(17/2$^+$)	E2		0.0267	90.4 *80*	α(K)=0.0191 *3*; α(L)=0.00575 *8*; α(M)=0.001425 *20* α(N)=0.000361 *5*; α(O)=6.84×10^{-5} *10*; α(P)=5.42×10^{-6} *8* Mult.: A_2=+0.24 *5*, A_4=−0.12 *8*. α_K(exp)=0.0225 *15*, α_{L12}(exp)=0.00433 *32*, α_{L3}(exp)=0.0011 *3*.
528.0 *4*	6.0 *10*	1550.1+x	(19/2$^+$)	1022.0+x	(15/2$^+$)	E2		0.0258	6.2 *10*	α(K)=0.0185 *3*; α(L)=0.00550 *8*; α(M)=0.001361 *20* α(N)=0.000345 *5*; α(O)=6.53×10^{-5} *10*; α(P)=5.22×10^{-6} *8* Mult.: A_2=+0.35 *5*, A_4=−0.16 *10*. α_K(exp)=0.0210 *39*.
532.2 *3*	8.5 *5*	2527.1+x	(29/2$^+$)	1994.4+x	(25/2$^+$)	E2(+M3)	0.14 *+5−7*	0.0370 *96*	8.8 *5*	α(K)=0.0267 *70*; α(L)=0.0078 *20*; α(M)=0.00194 *50* α(N)=4.9×10^{-4} *13*; α(O)=9.4×10^{-5} *25*; α(P)=8.0×10^{-6} *24* Mult.: A_2=+0.10 *3*, A_4=−0.01 *5*. α_K(exp)=0.0208 *22*, α_{L12}(exp)=0.0091 *15*. δ: Average of δ=0.08 *+3−5* from α_K, and δ=0.20 *+3−4* from α_{L12}.
556.1 *4*	6.5 *5*	2142.0+x	(23/2$^-$)	1585.9+x	(21/2$^-$)	E2		0.0229	6.6 *5*	α(K)=0.01664 *24*; α(L)=0.00471 *7*; α(M)=0.001162 *17* α(N)=0.000294 *5*; α(O)=5.60×10^{-5} *8*; α(P)=4.56×10^{-6} *7* Mult.: From α_K(exp)=0.015 *3*. Also A_2=+0.13 *5*, A_4=+0.06 *9*.
591.2 *4*	12.5 *29*	2141.3+x	(23/2$^+$)	1550.1+x	(19/2$^+$)	E2		0.0199	12.7 *30*	α(K)=0.01468 *21*; α(L)=0.00394 *6*; α(M)=0.000969 *14* α(N)=0.000245 *4*; α(O)=4.68×10^{-5} *7*; α(P)=3.90×10^{-6} *6* Mult.: α_K(exp)=0.0189 *29*.

^{182}W(^{16}O,5nγ) 1991La07 (continued)

γ(^{193}Pb) (continued)

E_γ	I_γ ‡	E_i(level)	J^π_i	E_f	J^π_f	Mult.†	δ†	α#@	$I_{(\gamma+ce)}$	Comments
593.1 *4*	15.6 *19*	1994.4+x	(25/2$^+$)	1401.8+x	(21/2$^+$)	E2(+M3)	0.16 *3*	0.0289 *85*	16.0 *20*	α(K)=0.0214 *63*; α(L)=0.0057 *17*; α(M)=0.00141 *42* α(N)=3.6×10^{-4} *11*; α(O)=6.9×10^{-5} *22*; α(P)=6.1×10^{-6} *21* Mult.,δ: α_K(exp)=0.0232 *35*, α_{L12}(exp)=0.0048 *10*.
668.7 *3*	9.9 *10*	1550.1+x	(19/2$^+$)	881.6+x	(17/2$^+$)	M1+E2	1.8 *+9−5*	0.023 *4*	10.1 *10*	α(K)=0.019 *4*; α(L)=0.0038 *5*; α(M)=0.00090 *11* α(N)=0.00023 *3*; α(O)=4.5×10^{-5} *6*; α(P)=4.3×10^{-6} *7* Mult.,δ: From α_K(exp)=0.0183 *32*.
739.6 *3*	13.9 *24*	2141.3+x	(23/2$^+$)	1401.8+x	(21/2$^+$)	M1+E2	0.63 *17*	0.031 *3*	14.3 *25*	α(K)=0.0253 *24*; α(L)=0.0044 *4*; α(M)=0.00103 *8* α(N)=0.000261 *20*; α(O)=5.2×10^{-5} *4*; α(P)=5.4×10^{-6} *5* Mult.,δ: From α_K(exp)=0.0255 *23*. Also A_2=−0.47 *8*, A_4=+0.27 *10*.
812.2 *4*	5.0 *15*	2214.0+x	(25/2$^+$)	1401.8+x	(21/2$^+$)	(E2)		0.01008	5.0 *15*	α(K)=0.00785 *11*; α(L)=0.001693 *24*; α(M)=0.000408 *6* α(N)=0.0001033 *15*; α(O)=2.00×10^{-5} *3*; α(P)=1.84×10^{-6} *3* Mult.: α_K(exp)=0.0038 *28*; Theory: α_K(E2)=0.00785 − inconsistent with experimental value.
881.6 *2*	100	881.6+x	(17/2$^+$)	0.0+x	(13/2$^+$)	E2		0.00854	100	α(K)=0.00672 *10*; α(L)=0.001387 *20*; α(M)=0.000332 *5* α(N)=8.42×10^{-5} *12*; α(O)=1.637×10^{-5} *23*; α(P)=1.537×10^{-6} *22* Mult.: A_2=+0.25 *6*, A_4=−0.02 *9*. α_K(exp)=0.0074 *5*, α_{L12}(exp)=0.00147 *16*.
1022.0 *2*	14.5 *18*	1022.0+x	(15/2$^+$)	0.0+x	(13/2$^+$)	(M1+E2)		0.0116 *53*	14.7 *18*	α(K)=0.0095 *44*; α(L)=0.00163 *65*; α(M)=3.8×10^{-4} *15* α(N)=9.7×10^{-5} *38*; α(O)=1.93×10^{-5} *77*; α(P)=2.01×10^{-6} *89* Mult.: A_2=−0.01 *5*, A_4=+0.01 *8*. α_K(exp)=0.0051 *7*.

† The multipolarities have been deduced from the measured conversion coefficients, and the angular distribution coefficients. The mixing ratio for a few transitions has been deduced from the experimental conversion coefficients. Additional information from the other (HI,xnγ) datasets has been also used in assigning the multipolarities listed here (see Adopted dataset).

‡ The γ-ray intensities have been calculated by the evaluator using the measured total intensities and the conversion coefficients obtained from the quoted multipolarities. The calculated relative γ intensities have been normalized to 100 for the 881.6-keV transition.

$^{193}_{82}Pb_{111}$-4

$\gamma(^{193}Pb)$ (continued)

Theoretical total conversion coefficients for the stated multipolarities, and mixing ratio, if available.

@ Additional information 1.

^{x} γ ray not placed in level scheme.

$^{193}_{82}Pb_{111}$-5

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