^{164}Dy(^{28}Si,4nγ) 1988Ha15

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	F. G. Kondev, S. Juutinen, D. J. Hartley	NDS 150, 1 (2018)	1-Feb-2018

1988Ha15: E=135-155 MeV. Measured excitation functions, γ, γγ coin, γ(θ) (at 0°, 90°, 150°), γ(lin pol). Multi-detector array with Compton-suppressed Ge detectors.

^{188}Hg Levels

E(level)[†]	Jπ[‡]	E(level)[†]	Jπ[‡]	E(level)[†]	Jπ[‡]	E(level)[†]	Jπ[‡]
0.0[#]	0+	2469.5[&] 4	9−	3679.9[&] 6	13−	4847.5 14	(18)
412.48[#] 19	2+	2489.4[@] 4	10+	3685.7? 8		4946.9[&] 8	19−
880.8[@] 3	2+	2660.9[#] 6	10+	3687.2[@] 6	14+	4986.4[@] 8	18+
1004.2[#] 3	4+	2722.5[#] 8	12+	3818.7[#] 8	16+	5147.7 14	
1207.4[@] 3	4+	2782.6[a] 6	10−	3930.4[a] 12		5302.8 13	
1508.2[@] 3	6+	2945.5 5	10+	4124.7[b] 7	15−	5394.1 14	(20)
1776.4[#] 3	6+	2966.6[b] 6	11−	4157.7? 9		5464.8[#] 13	(20+)
1908.9[&] 4	5−	3009.8[&] 5	11−	4254.4[&] 6	15−	5579.1 9	
1968.5[@] 4	8+	3067.6[@] 5	12+	4327.1[@] 7	16+	5601.6[&] 9	21−
2200.3[&] 4	7−	3159.4[#] 8	14+	4499.5 9	(16)	5681.9[@] 9	20+
2295.0[a] 7	6−	3217.7? 6		4551.6[&] 6	17−	5912.8 14	
2421.4[#] 5	8+	3248.4[a] 7	12−	4578.8[#] 9	18+	6400.5[@] 10	22+
2448.0[a] 6	8−	3445.4[b] 6	13−	4625.7? 10			

† From a least-squares fit to Eγ′s.
‡ From 1988Ha15, based on deduced transition multipolarities and the observed band structures.
\# Band(A): g.s. band (oblate).
@ Band(B): $K^{\pi}=0^{+}$ band (prolate).
& Band(C): negative-parity band (α=1).
a Band(D): negative-parity band (α=0).
b Band(E): negative-parity band (α=1).

γ(^{188}Hg)

Eγ[†]	Iγ	Ei(level)	J^{π}_{i}	Ef	J^{π}_{f}	Mult.[‡]	Comments
61.6 7		2722.5	12+	2660.9	10+		Eγ: From adopted gammas.
153.0 4	1.3 3	2448.0	8−	2295.0	6−	E2	Mult.: A_2=0.18 5.
171.6 4	1.4 3	2660.9	10+	2489.4	10+	E2+M1	Mult.: A_2=0.21 5.
184.0 4	7.5 20	2966.6	11−	2782.6	10−	E2+M1	Mult.: A_2=0.13 5.
248 1	≈2[#]	2448.0	8−	2200.3	7−		
269.2 2	29 4	2469.5	9−	2200.3	7−	E2	Mult.: A_2=0.30 4, A_4=0.01 10, pol=0.5 1.
272.2 4	5.8 20	3217.7?		2945.5	10+	E1	Mult.: A_2=−0.28 10, pol=0.3 1.
291.5 3	11 3	2200.3	7−	1908.9	5−	E2	Mult.: A_2=0.29 5, A_4=0.03 10, pol=0.45 8.
297.3 4	9.4 20	4551.6	17−	4254.4	15−	E2	Mult.: A_2=0.36 9, pol=0.46 14.
300.9 4	8 2	1508.2	6+	1207.4	4+	E2	Mult.: A_2=0.26 6, pol=0.42 12.
313 1	≈15	2782.6	10−	2469.5	9−		Iγ: from γγ coin.
326.7 4	7.1 15	1207.4	4+	880.8	2+	E2	Mult.: A_2=0.33 13, pol=0.43 15.
334.6 4	3.8 10	2782.6	10−	2448.0	8−	(E2)	Mult.: A_2=0.18 10, pol=0.24 7.
348 1	≈4[#]	4847.5	(18)	4499.5	(16)		
386 1	≈2[#]	2295.0	6−	1908.9	5−		

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^{164}Dy(^{28}Si,4nγ) 1988Ha15 (continued)

γ(^{188}Hg) (continued)

$E_γ$[†]	$I_γ$	E_i(level)	$J^π_i$	E_f	$J^π_f$	Mult.[‡]	Comments
395.3 *4*	9 *3*	4946.9	19⁻	4551.6	17⁻	E2	Mult.: A_2=0.35 *15*, pol=0.53 *25*.
412.4 *2*	100 *15*	412.48	2⁺	0.0	0⁺	E2	Mult.: A_2=0.31 *5*, A_4=−0.04 *4*, pol=0.46 *7*.
423.8 *3*	14 *3*	2200.3	7⁻	1776.4	6⁺	E1	Mult.: A_2=−0.20 *8*, A_4=0.0 *1*, pol=0.26 *8*.
426.8 *4*	3.5 *10*	4551.6	17⁻	4124.7	15⁻	E2	Mult.: A_2=0.24 *8*.
436.9 *2*	28 *6*	3159.4	14⁺	2722.5	12⁺	E2	Mult.: A_2=0.29 *7*, A_4=−0.03 *3*, pol=0.43 *10*.
456.0 *4*	6.5 *20*	2945.5	10⁺	2489.4	10⁺	(E2+M1)	Mult.: A_2=0.19 *10*, pol=0.45 *10*.
460.3 *2*	49 *8*	1968.5	8⁺	1508.2	6⁺	E2	Mult.: A_2=0.31 *6*, A_4=−0.04 *4*, pol=0.53 *13*.
465.8 *3*	11 *2*	3248.4	12⁻	2782.6	10⁻	E2	Mult.: A_2=0.21 *5*, A_4=−0.13 *10*, pol=0.25 *8*.
468.0[@] *5*	≈5[@]	880.8	2⁺	412.48	2⁺		
468.0[@] *5*	≈7[@]	3685.7?		3217.7?			$I_γ$: from γγ coin. Mult.: For the composite line, A_2=0.22 *7*, A_4=−0.11 *7*, pol=0.38 *10*.
468.0[@] *5*	≈7[@]	4625.7?		4157.7?			$E_γ$: The ordering of the 468-472 cascade is adopted from 1993BeZJ. It is reversed in 1988Ha15.
472.0 *3*	10 *3*	4157.7?		3685.7?		E2	Mult.: A_2=0.27 *10*, pol=0.38 *11*. $E_γ$: The ordering of the 468-472 cascade is adopted from 1993BeZJ. It is reversed in 1988Ha15 thus defining a level at 4153.8 instead of the present level at 4157.8.
478.8 *3*	17 *4*	3445.4	13⁻	2966.6	11⁻	E2	Mult.: A_2=0.29 *9*, A_4=−0.1 *1*, pol=0.23 *7*.
504.0 *2*	54 *8*	1508.2	6⁺	1004.2	4⁺	E2	Mult.: A_2=0.30 *6*, A_4=−0.1 *1*, pol=0.7 *2*.
520.8 *2*	37 *7*	2489.4	10⁺	1968.5	8⁺	E2	Mult.: A_2=0.39 *9*, A_4=−0.1 *1*, pol=0.56 *12*.
522 *1*	≈5[#]	5147.7		4625.7?			
524.2 *4*	5.6 *16*	2945.5	10⁺	2421.4	8⁺	E2	Mult.: A_2=0.21 *5*, pol=0.4 *2*.
540.3 *3*	19 *4*	3009.8	11⁻	2469.5	9⁻	E2	Mult.: A_2=0.32 *6*, A_4=−0.02 *10*, pol=0.4 *1*.
546.6 *4*	1.6 *7*	5394.1	(20)	4847.5	(18)	E2	Mult.: A_2=0.25 *15*.
569.0 *3*	10 *3*	1776.4	6⁺	1207.4	4⁺	E2	Mult.: A_2=0.37 *10*.
574.5 *3*	10 *3*	4254.4	15⁻	3679.9	13⁻	E2	Mult.: A_2=0.30 *15*.
578.2 *2*	20 *4*	3067.6	12⁺	2489.4	10⁺	E2	Mult.: A_2=0.29 *7*, A_4=−0.14 *10*, pol=0.4 *2*.
591.7 *2*	90 *15*	1004.2	4⁺	412.48	2⁺	E2	Mult.: A_2=0.29 *6*, A_4=−0.06 *10*, pol=0.4 *1*.
610.0 *4*	1.2 *6*	5912.8		5302.8		(E2)	Mult.: A_2=0.3 *2*.
619.6 *3*	14 *4*	3687.2	14⁺	3067.6	12⁺	E2	Mult.: A_2=0.28 *10*, A_4=−0.05 *6*, pol=0.3 *1*.
632.2 *4*	2.2 *10*	5579.1		4946.9	19⁻	(E2)	Mult.: A_2=0.3 *2*.
639.9 *4*	9 *3*	4327.1	16⁺	3687.2	14⁺	E2	Mult.: A_2=0.21 *6*, pol=0.4 *2*.
645.2 *4*	7.5 *20*	2421.4	8⁺	1776.4	6⁺	E2	Mult.: A_2=0.34 *15*, pol=0.58 *25*.
654.7 *4*	5.7 *17*	5601.6	21⁻	4946.9	19⁻	E2	Mult.: A_2=0.33 *15*.
659.3[@] *3*	19[@] *5*	3818.7	16⁺	3159.4	14⁺	(E2)	Mult.: For the composite line, A_2=0.20 *8*, A_4=−0.2 *2*, pol=0.45 *15*.
659.3[@] *3*	≈6[@]	4986.4	18⁺	4327.1	16⁺		
670.0 *3*	19 *5*	3679.9	13⁻	3009.8	11⁻	E2	Mult.: A_2=0.23 *6*, A_4=−0.04 *10*.
679.2 *3*	12 *3*	4124.7	15⁻	3445.4	13⁻	E2	Mult.: A_2=0.35 *15*, A_4=−0.15 *15*.
680.8 *4*	4 *2*	4499.5	(16)	3818.7	16⁺	Q	Mult.: A_2=0.4 *3*.
682 *1*	≈2[#]	3930.4		3248.4	12⁻		
692.2 *3*	10 *2*	2200.3	7⁻	1508.2	6⁺	E1	Mult.: A_2=−0.12 *8*, A_4=−0.01 *10*, pol=0.2 *1*.
695.5 *4*	3.1 *7*	5681.9	20⁺	4986.4	18⁺	E2	Mult.: A_2=0.18 *4*.
718.6 *4*	2.9 *10*	6400.5	22⁺	5681.9	20⁺	E2	Mult.: A_2=0.26 *12*.
724 *1*	≈4[#]	5302.8		4578.8	18⁺		
733 *1*	≈4[#]	4551.6	17⁻	3818.7	16⁺		
760.1 *3*	10 *3*	4578.8	18⁺	3818.7	16⁺	E2	Mult.: A_2=0.33 *7*, pol=0.7 *3*.
772.1 *2*	22 *4*	1776.4	6⁺	1004.2	4⁺	E2	Mult.: A_2=0.26 *10*, A_4=0.06 *10*, pol=0.5 *2*.
794.9 *4*	9 *4*	1207.4	4⁺	412.48	2⁺	E2	Mult.: A_2=0.27 *15*.
809.1 *4*	3.9 *13*	4254.4	15⁻	3445.4	13⁻	E2	Mult.: A_2=0.24 *13*.
881.1 *4*	5.7 *16*	880.8	2⁺	0.0	0⁺	E2	Mult.: A_2=0.2 *1*, pol=0.4 *2*.

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^{164}Dy(^{28}Si,4nγ) 1988Ha15 (continued)

γ(^{188}Hg) (continued)

E_γ†	I_γ	E_i(level)	J^π_i	E_f	J^π_f	Mult.‡	Comments
886 *1*	≈2#	5464.8	(20$^+$)	4578.8	18$^+$		
904.7 *3*	10 *3*	1908.9	5$^-$	1004.2	4$^+$	E1	Mult.: A_2=−0.24 *10*, pol=0.3 *1*.

† Uncertainty of 0.2 to 0.5 keV assigned by the evaluators, based on the γ ray intensity. Energies are systematically lower by ≈0.5 keV, compared to values reported in other in-beam studies (1993BeZJ,1983Ha15) and in ^{188}Tl ε decay (1984Co17).

‡ From 1988Ha15, using $\gamma(\theta)$ and γ(lin pol) data. Positive values of A_2 and pol is indicative of Mult=E2 (ΔJ=2 transition), while a negative value of A_2 and positive pol is indicative of Mult=E1 (ΔJ=1 transition).

Complex line. Iγ from $\gamma\gamma$ coin.

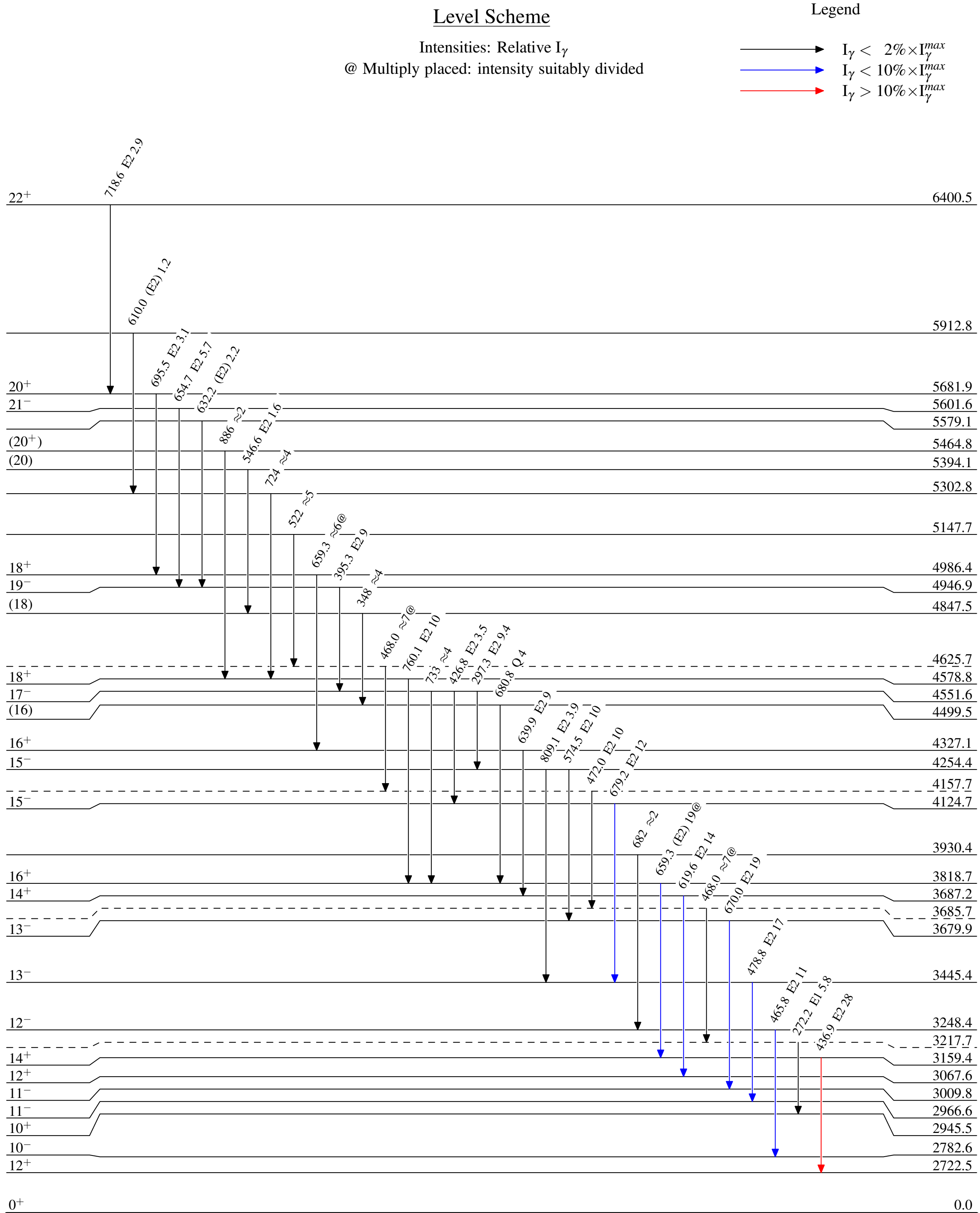
@ Multiply placed with intensity suitably divided.

^{164}Dy(^{28}Si,4nγ) 1988Ha15

Level Scheme

Intensities: Relative I_γ

@ Multiply placed: intensity suitably divided



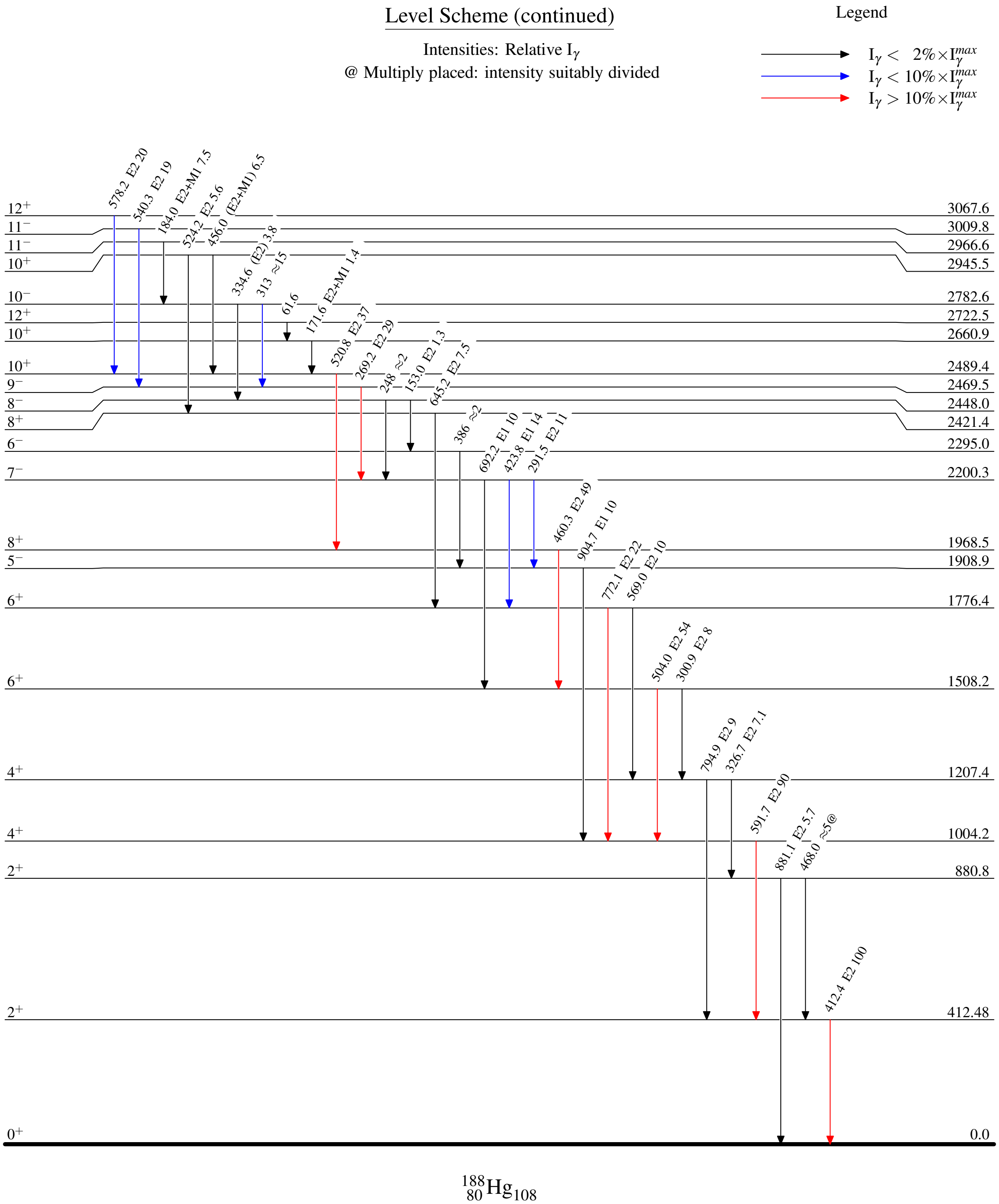
$^{188}_{80}Hg_{108}$

^{164}Dy(^{28}Si,4nγ) 1988Ha15

Level Scheme (continued)

Intensities: Relative I_γ

@ Multiply placed: intensity suitably divided



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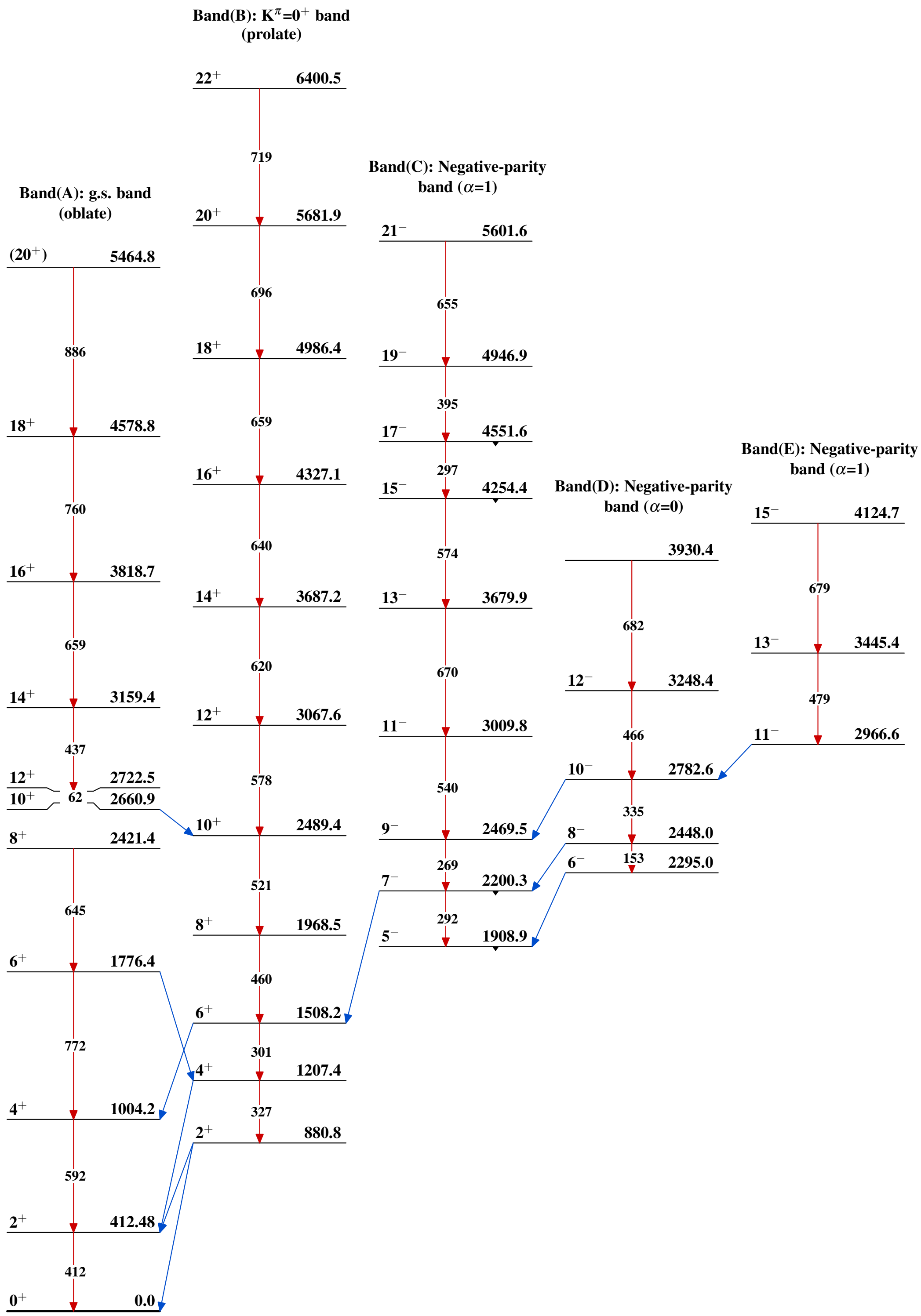

$^{188}_{80}Hg_{108}$