^{164}Er(^{16}O,4nγ) 1982Dr03

History			
Type	Author	Citation	Literature Cutoff Date
Full Evaluation	M. S. Basunia	NDS 107, 791 (2006)	15-Sep-2005

74% enriched ^{164}Er, E=93.5 MeV. Measured Eγ, Iγ, $\gamma\gamma$ coin, $\gamma\gamma$(t), $\gamma(\theta)$ at six angles between θ=0° and 90°. Detectors:Ge(Li), Compton-suppressedGe(Li).

^{176}Os Levels

E(level)†	Jπ‡	E(level)†	Jπ‡	E(level)†	Jπ‡	E(level)†	Jπ‡
0.0#	0^+	2076.0@ *19*	(9^-)	3381.5# *24*	16^+	4699a *3*	(19)
135.1# *10*	2^+	2167.9# *20*	12^+	3456.9@ *24*	(15^-)	5043?& *1*	(20^-)
395.4# *15*	4^+	2265.3a *20*	(9)	3547a *3*	(15)	5287@ *3*	(21^-)
742.4# *17*	6^+	2395.0& *21*	(10^-)	3566.9 *24*	(16^+)	5349a *4*	(21)
1157.6# *18*	8^+	2474.0@ *20*	(11^-)	3829& *3*	(16^-)	5399# *3*	(22^+)
1475.0& *17*	(4^-)	2571.1 *22*	(12^+)	4019# *3*	18^+	5976@ *4*	(23^-)
1516.5@ *19*	(5^-)	2621.7a *23*	(11)	4024@ *3*	(17^-)	6057a *4*	(23)
1634.0# *19*	10^+	2754.7# *23*	14^+	4100a *3*	(17)	6147# *4*	(24^+)
1708.0& *18*	(6^-)	2817.9& *23*	(12^-)	4176.7 *25*	(18^+)	6683@ *4*	(25^-)
1753.7@ *18*	(7^-)	2937.8@ *22*	(13^-)	4420& *3*	(18^-)		
1978.8a *20*	(7)	3050.8a *25*	(13)	4635@ *3*	(19^-)		
2020.9& *19*	(8^-)	3295& *3*	(14^-)	4683# *3*	(20^+)		

† Deduced by evaluator from a least squares fit to the γ-ray energies assuming ΔE=1 keV for all γ-ray energies.
‡ Assignments are based on rotational band structure, γ-ray angular distributions, and level deexcitation patterns. The g.s. rotational band was interpreted in terms of rotation- alignment of single-particle states with Coriolis mixing included. Arguments for the assignment of two odd-parity bands include the strong similarity with bands observed in ^{178}Os. These bands may be related to each other, and for the low-spin members, to the single-phonon octupole vibration (1982Dr03).
# $K^\pi=0^+$ g.s. rotational band.
@ Rotational band 1.
& Rotational band 2.
a Rotational band 3.

$\gamma(^{176}$Os)

Eγ	Iγ	Ei(level)	J_i^π	E_f	J_f^π	Mult.†	Comments
135.1	52.4 *10*	135.1	2^+	0.0	0^+	E2	A_2=+0.19 *2*, A_4=−0.09 *3*.
225.0#	≤0.9‡	1978.8	(7)	1753.7	(7^-)		
233.0	1.4‡ *3*	1708.0	(6^-)	1475.0	(4^-)		
237.1	2.9‡ *6*	1753.7	(7^-)	1516.5	(5^-)		
260.3	100	395.4	4^+	135.1	2^+	E2	A_2=+0.229 *7*, A_4=−0.07 *1*.
286.4	2.9 *2*	2265.3	(9)	1978.8	(7)	E2	A_2=+0.27 *4*, A_4=−0.14 *5*.
306	1.0‡ *2*	2474.0	(11^-)	2167.9	12^+		
313.2	7.6 *2*	2020.9	(8^-)	1708.0	(6^-)	E2	A_2=+0.228 *25*, A_4=−0.08 *3*.
322.4	11.0 *3*	2076.0	(9^-)	1753.7	(7^-)	E2	A_2=+0.280 *14*, A_4=−0.122 *16*.
347.0	103.5 *12*	742.4	6^+	395.4	4^+	E2	A_2=+0.258 *13*, A_4=−0.096 *18*.
356.4	6.8 *4*	2621.7	(11)	2265.3	(9)	E2	A_2=+0.16 *5*, A_4=−0.09 *6*.
374.0	10.3 *4*	2395.0	(10^-)	2020.9	(8^-)	(E2)	A_2=+0.19 *2*, A_4=−0.05 *3*.
398.3	15.7 *6*	2474.0	(11^-)	2076.0	(9^-)	E2	A_2=+0.293 *19*, A_4=−0.114 *24*.
415.0	87.0 *15*	1157.6	8^+	742.4	6^+	E2	A_2=+0.281 *13*, A_4=−0.108 *15*.

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^{164}Er(^{16}O,4nγ) 1982Dr03 (continued)

γ(^{176}Os) (continued)

E_γ	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Mult.[†]	Comments
422.9	6.3 *6*	2817.9	(12$^-$)	2395.0	(10$^-$)	E2	A_2=+0.32 *7*, A_4=−0.13 *8*.
429.1	7.7 *4*	3050.8	(13)	2621.7	(11)	E2	A_2=+0.38 *9*, A_4=−0.17 *10*.
442.2	3.4[‡] *5*	2076.0	(9$^-$)	1634.0	10$^+$		A_2=(−0.06 *3*).
463.8	14.5 *6*	2937.8	(13$^-$)	2474.0	(11$^-$)	E2	A_2=+0.30 *2*, A_4=−0.13 *3*.
476.3	63.3 *15*	1634.0	10$^+$	1157.6	8$^+$	E2	A_2=+0.29 *2*, A_4=−0.11 *3*. A_2 and A_4 values are doublet.
476.9	3.2[‡] *4*	3295	(14$^-$)	2817.9	(12$^-$)		A_2=+0.29 *2*, A_4=−0.11 *3*. A_2 and A_4 values are doublet.
496.6	8.2 *5*	3547	(15)	3050.8	(13)	E2	A_2=+0.28 *3*, A_4=−0.12 *4*.
519.1	12.0 *5*	3456.9	(15$^-$)	2937.8	(13$^-$)	E2	A_2=+0.26 *2*, A_4=−0.10 *2*.
533.8	46.3 *16*	2167.9	12$^+$	1634.0	10$^+$	E2	A_2=+0.275 *14*, A_4=−0.113 *18*. A_2 and A_4 values are doublet.
534.7	3.4[‡] *5*	3829	(16$^-$)	3295	(14$^-$)		A_2=+0.275 *14*, A_4=−0.113 *18*. A_2 and A_4 values are doublet.
552.6	7.6[‡] *9*	4100	(17)	3547	(15)	(E2)	A_2=(+0.26 *3*), A_4=(−0.11 *4*).
566.9	11.3 *4*	4024	(17$^-$)	3456.9	(15$^-$)	E2	A_2=+0.27 *3*, A_4=−0.12 *4*.
586.8	29.1 *9*	2754.7	14$^+$	2167.9	12$^+$	E2	A_2=+0.20 *3*, A_4=−0.11 *4*.
590.9	2.9 *3*	4420	(18$^-$)	3829	(16$^-$)	(E2)	A_2=+0.35 *12*, A_4=−0.08 *16*.
596.2	15.1 *13*	1753.7	(7$^-$)	1157.6	8$^+$	D	A_2=−0.10 *2*, A_4=−0.01 *3*.
599.0	6[‡] *1*	4699	(19)	4100	(17)		
609.8	≈2[‡]	4176.7	(18$^+$)	3566.9	(16$^+$)		
610.9	8.9 *5*	4635	(19$^-$)	4024	(17$^-$)	E2	A_2=+0.32 *6*, A_4=−0.17 *8*.
623[#]	≤1.8	5043?	(20$^-$)	4420	(18$^-$)		
626.8	21.0 *7*	3381.5	16$^+$	2754.7	14$^+$	E2	A_2=+0.29 *2*, A_4=−0.10 *3*.
631.3	2.9 *4*	2265.3	(9)	1634.0	10$^+$	(D)	A_2=−0.12 *8*.
637.7	12.6 *4*	4019	18$^+$	3381.5	16$^+$	E2	A_2=+0.30 *2*, A_4=−0.08 *3*.
649.9	3.5 *6*	5349	(21)	4699	(19)	(E2)	A_2=+0.20 *7*, A_4=−0.06 *8*.
652.1	4.6 *5*	5287	(21$^-$)	4635	(19$^-$)	(E2)	A_2=+0.24 *6*, A_4=−0.04 *7*.
664.1	6.8 *2*	4683	(20$^+$)	4019	18$^+$	(E2)	A_2=+0.26 *3*, A_4=−0.04 *4*.
688.8	3.6[‡] *5*	5976	(23$^-$)	5287	(21$^-$)		
707.0	2.0[‡] *4*	6683	(25$^-$)	5976	(23$^-$)		
708.3	2.6[‡] *8*	6057	(23)	5349	(21)		
715.6	2.9 *4*	5399	(22$^+$)	4683	(20$^+$)	(E2)	A_2=+0.20 *8*, A_4=−0.04 *9*.
748.5	2.3 *3*	6147	(24$^+$)	5399	(22$^+$)	(E2)	A_2=(+0.14 *9*).
768.9[#]	≤2.0	2937.8	(13$^-$)	2167.9	12$^+$		
774.0	4.7 *2*	1516.5	(5$^-$)	742.4	6$^+$	D	A_2=−0.25 *5*, A_4=+0.00 *6*.
795.3	2.9 *3*	4176.7	(18$^+$)	3381.5	16$^+$	(E2)	A_2=+0.27 *8*, A_4=−0.08 *9*.
812.1	2.8 *3*	3566.9	(16$^+$)	2754.7	14$^+$	(E2)	A_2=+0.24 *7*, A_4=−0.11 *9*.
821.1	3.6 *3*	1978.8	(7)	1157.6	8$^+$	(D)	A_2=−0.18 *12*.
839.7	1.1[‡] *2*	2474.0	(11$^-$)	1634.0	10$^+$		
863.1	≈2.5[‡]	2020.9	(8$^-$)	1157.6	8$^+$		
918.4	3.3 *3*	2076.0	(9$^-$)	1157.6	8$^+$	(D)	A_2=−0.18 *6*.
937.1	3.7 *2*	2571.1	(12$^+$)	1634.0	10$^+$	(E2)	A_2=+0.16 *6*, A_4=−0.08 *7*.
965.7	6.3 *3*	1708.0	(6$^-$)	742.4	6$^+$	(D)	A_2=+0.35 *3*, A_4=+0.00 *4*. Mult.: A_2=0.35 *3*, A_4=0.00 *4* suggest ΔJ=0.
1011.4	1.3 *2*	1753.7	(7$^-$)	742.4	6$^+$	D	A_2=−0.28 *15*.
1079.6	1.32 *15*	1475.0	(4$^-$)	395.4	4$^+$		A_2=+0.33 *11*. A_2=0.33 *11* is consistent with E1 or stretched E2. A_4 was not.
1120.6[#]	1.6 *2*	1516.5	(5$^-$)	395.4	4$^+$		

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^{164}Er(^{16}O,4nγ) 1982Dr03 (continued)

$\gamma(^{176}Os)$ (continued)

† From $\gamma(\theta)$.
‡ From $\gamma\gamma$ coin.
# Placement of transition in the level scheme is uncertain.

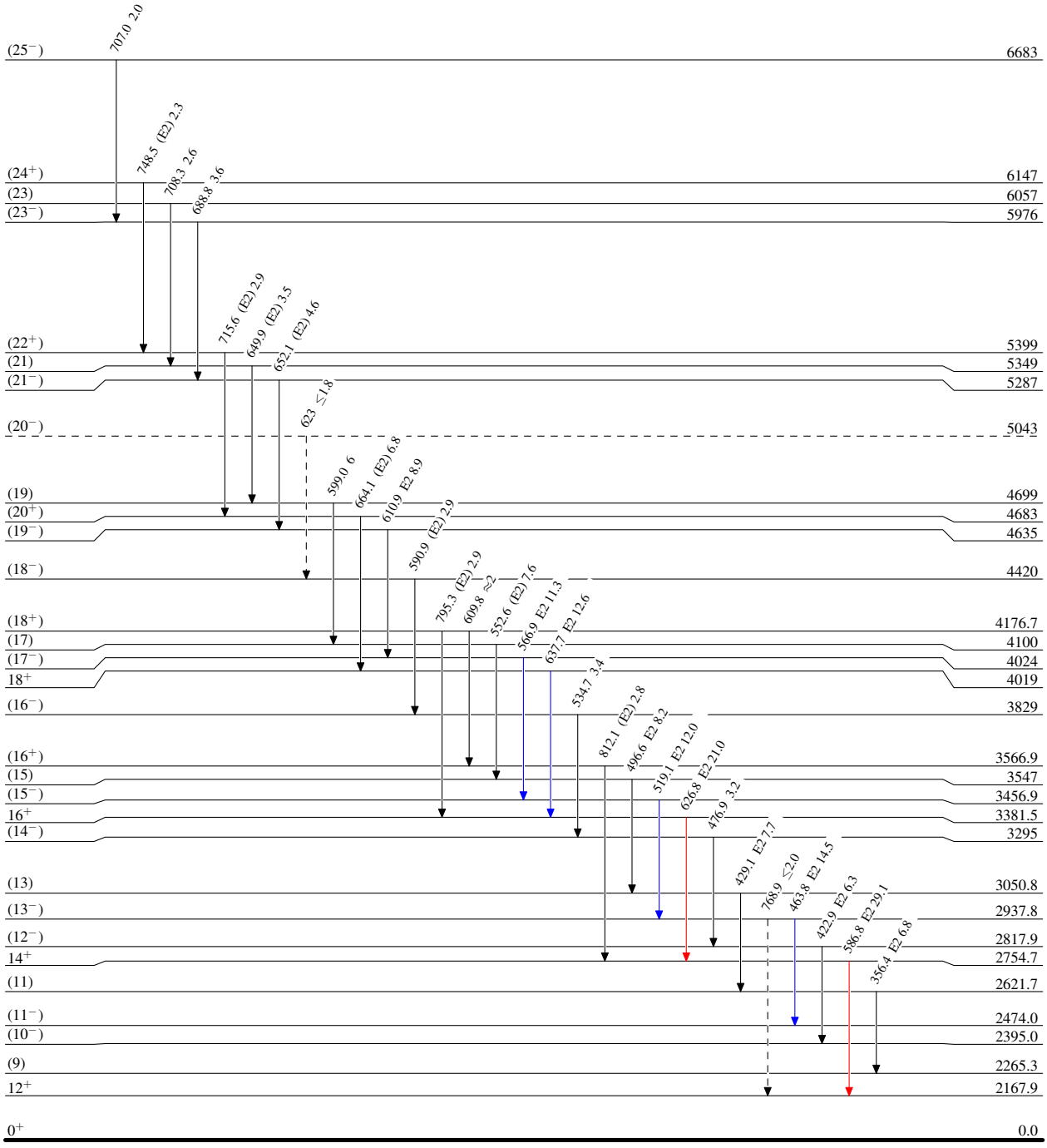
^{164}Er(^{16}O,4nγ) 1982Dr03

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)



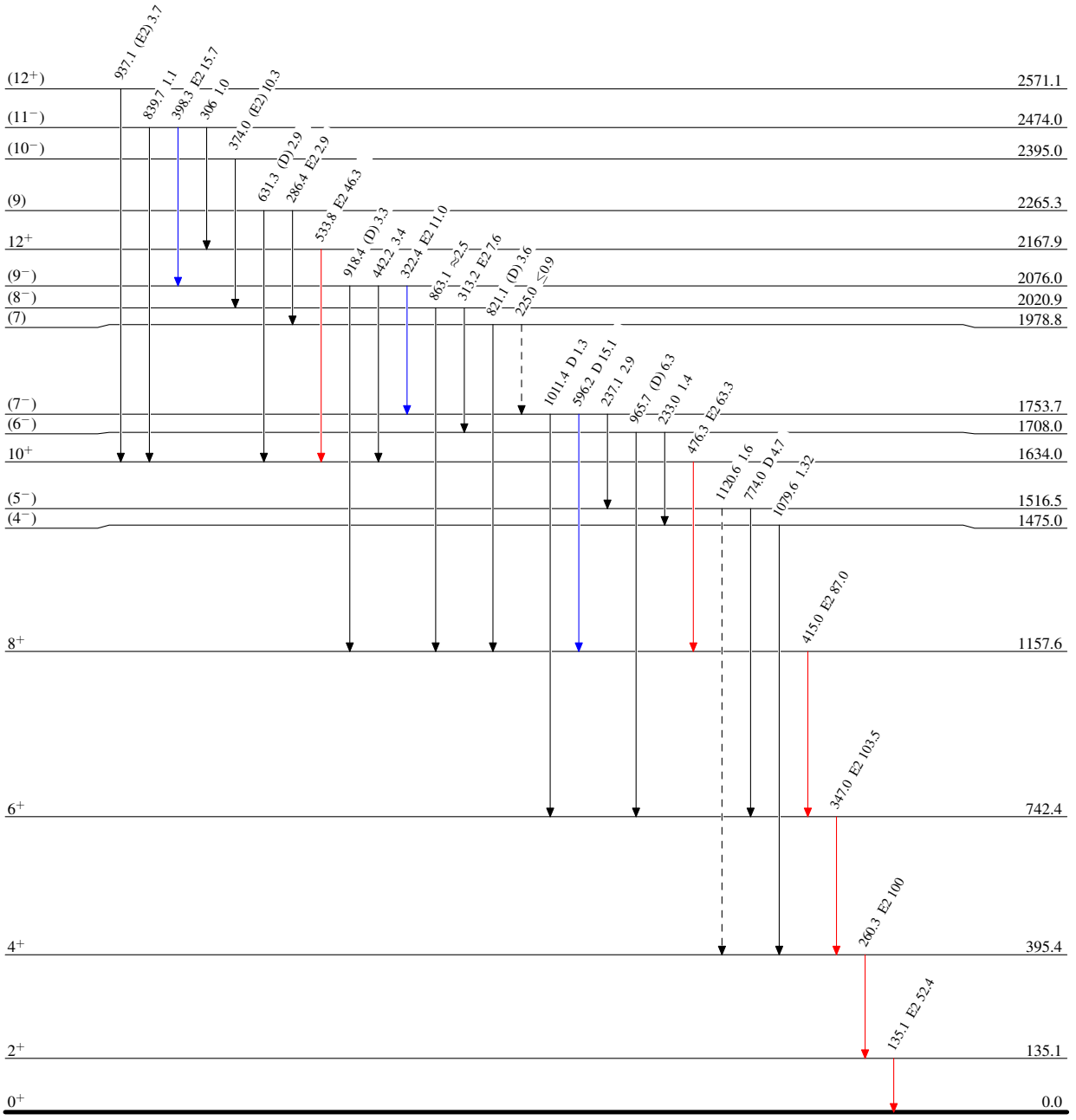
$^{176}_{76}Os_{100}$

$^{164}Er(^{16}O,4n\gamma)$ **1982Dr03**

Level Scheme (continued)

Intensities: Relative I_γ

Legend
- $I_\gamma < 2\% \times I_\gamma^{max}$
- $I_\gamma < 10\% \times I_\gamma^{max}$
- $I_\gamma > 10\% \times I_\gamma^{max}$
- γ Decay (Uncertain)



$^{176}_{76}Os_{100}$