(HI,xnγ) 2001Ro15

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Yu. Khazov, A. Rodionov and G. Shulyak	NDS 136, 163 (2016)	14-Jul-2016

2001Ro15: ^{92}Mo(^{58}Ni,4p), E=260 MeV; measured Eγ, Iγ, γγ, γγ(θ)(DCO). ^{146}Dy; deduced high-spin levels, J^π, configurations. Comparison with shell model predictions. Tandem, NORDBALL array, efficient particle selection system.
1992De23: ^{90}Zr(^{58}Ni,2p), E=250 MeV; ^{112}Sn(^{35}Cl,p), E=160 MeV; measured γγ, γ(recoil) coin., DCO. ^{146}Dy; deduced levels, J^π, γ branching. Tandem, recoil mass-spectrometer, Compton suppressed Ge detectors.
Other: 1982Gu07.
The level scheme is as proposed by 2001Ro15.

^{146}Dy Levels

E(level)†	Jπ‡	$T_{1/2}$	E(level)†	Jπ‡	E(level)†	Jπ‡
0	0^+		4262.5[&] *5*	11^-	6183.7 *5*	(16)
682.50[@&] *20*	2^+		4472.2[&] *5*	12^-	6258.2 *5*	17^-
1607.61[@&] *23*	4^+		4847.6[&] *5*	13^-	6323.7 *5*	17^-
1783.0[@&] *3*	3^-		4848.5 *5*	13^+	6369.6 *7*	17^-
2281.10[@&] *24*	5^-		5011.1[&] *5*	14^-	6466.0 *8*	18^-
2458.1 *4*	(5)		5064.7 *5*	13^-	6562.7 *5*	17^+
2517.7[@&] *4*	7^-		5153.3[&] *5*	14^+	6576.0 *6*	18^-
2634.7[&] *4*	6^+		5259.0 *6*	13^+	6717.3 *6*	17^-
2804.9 *6*	(6,7)		5268.5 *5*	14^-	6722.7 *6*	18^-
2806.9[@&] *4*	7^-		5327.5 *6*	14^-	6892.4 *6*	18^+
2807.2 *6*			5331.2[&] *5*	15^-	6923.2 *6*	18^+
2934.1[#@&] *4*	10^+	150 ms *20*	5376.5 *5*	14^+	7035.5 *6*	19^-
2985.6[&] *4*	(8^+)		5417.4 *5*	15^-	7187.9 *6*	19^+
3091.2 *6*	$(7,9^-)$		5550.3 *5*	15^-	7260.9 *6*	$(19)^+$
3159.6[&] *4*	8^-		5731.3 *7*	15^-	7266.7 *5*	18^-
3299.7 *6*	$(7,8^+)$		5741.1[&] *5*	16^-	7278.5 *6*	18^-
3336.0 *5*	$(7,8^+)$		5808.0 *8*	15,16	7423.7 *6*	19^-
3338.1 *5*	(8^-)		5857.8 *10*	14^+	7444.7 *7*	$(19)^-$
3438.3 *4*	9^-		5919.4 *6*		7500.8 *6*	19^-
3630.0[&] *5*	11^+		5931.4 *5*	16^-	7740.5 *7*	20^-
3691.4 *7*	$(9,11^-)$		5980.9 *5*	15^+	7790.2 *7*	20^-
3768.9 *6*	9^-		5983.2 *8*	(16)	7942.4 *7*	21^-
3898.2 *5*	10^-		6045.6 *6*	15^+	8057.7 *7*	21^-
4026.1[&] *5*	12^+		6092.1[a] *5*	16^+	8508.5 *8*	22^-
4194.0 *5*	11^-		6114.2 *5*	16^-	8886.0 *9*	23^-

† From a least-squares fit to Eγ's, normalized χ^2=0.8.
‡ Mostly based on value of DCO=2×Iγ(143°)/[Iγ(79°)+Iγ(101°)], generally expected E2 crossover transitions, also shell model calculations and systematics for N=80 even-even nuclei (2001Ro15).
# $T_{1/2}$ from Iγ(t) (1982Gu07).
@ Suggested also in 1982Gu07.
& Suggested also in 1992De23.
a The level decays by 760.5γ *3* to 5351.2 *5*, $J^\pi=15^-$ level and 939.7γ *2* to 5153.3 *5*, $J^\pi=14^+$ level (2001Ro15). The levels of 6094 and 6095 keV were introduced in 1992De23, they decay by 761γ and 939γ to 5333 and 5155, $J^\pi=14^+$ levels, correspondingly; the evaluators take them for one level.

(HI,xnγ) 2001Ro15 (continued)

γ(^{146}Dy)

E_γ †	I_γ †	E_i(level)	J_i^π	E_f	J_f^π	Mult. ‡	α [a]	Comments
68.6 *3*	5 *1*	6114.2	16^-	6045.6	15^+			DCO=0.9 *1*.
100.5 *3*	2 *1*	3438.3	9^-	3338.1	(8^-)			
117.5 *5*	4 *1*	5376.5	14^+	5259.0	13^+	M1	1.51 *3*	α(K)=1.271 *24*; α(L)=0.187 *4*; α(M)=0.0410 *8* α(N)=0.00949 *18*; α(O)=0.00139 *3*; α(P)=7.92×10^{-5} *15* DCO=1.2 *3*.
127.0 *3*	0.9 *9*	2934.1	10^+	2806.9	7^-	E3	13.34 *25*	α(K)=2.16 *4*; α(L)=8.51 *17*; α(M)=2.13 *5* α(N)=0.481 *10*; α(O)=0.0569 *11*; α(P)=0.0001219 *20* E_γ,I_γ,Mult.: from 1982Gu07; Iγ normalized to 2001Ro15.
133.3 *4*	6 *1*	6114.2	16^-	5980.9	15^+			DCO=0.5 *1*.
145.4 *3*	5 *1*	7423.7	19^-	7278.5	18^-	M1	0.826	α(K)=0.695 *11*; α(L)=0.1018 *16*; α(M)=0.0224 *4* α(N)=0.00517 *8*; α(O)=0.000757 *12*; α(P)=4.33×10^{-5} *7* DCO=0.6 *1*.
149.1 *3*	14 *2*	5417.4	15^-	5268.5	14^-	M1	0.769	α(K)=0.648 *10*; α(L)=0.0948 *15*; α(M)=0.0208 *4* α(N)=0.00482 *8*; α(O)=0.000705 *11*; α(P)=4.03×10^{-5} *6* DCO=0.71 *7*.
163.5 *3*	8 *2*	5011.1	14^-	4847.6	13^-	M1	0.594	α(K)=0.501 *8*; α(L)=0.0731 *11*; α(M)=0.01606 *24* α(N)=0.00371 *6*; α(O)=0.000544 *9*; α(P)=3.11×10^{-5} *5* DCO=1.0 *1*.
173.8 *2*	10 *2*	5550.3	15^-	5376.5	14^+			DCO=0.68 *7*.
178.3# *3*	3.3# *6*	5919.4		5741.1	16^-			I_γ: for the doublet of 178.8+178.3, Iγ=8 *1*.
178.8# *3*	4.7# *9*	2985.6	(8^+)	2806.9	7^-	(E1) @	0.0653	α(K)=0.0551 *8*; α(L)=0.00805 *12*; α(M)=0.00176 *3* α(N)=0.000402 *6*; α(O)=5.64×10^{-5} *9*; α(P)=2.75×10^{-6} *4* I_γ: for the doublet of 178.8+178.3, Iγ=8 *1*. DCO=0.65 *8*.
201.9 *2*	9 *2*	7942.4	21^-	7740.5	20^-			DCO=0.6 *1*.
203.8 *3*	7 *1*	5268.5	14^-	5064.7	13^-	M1	0.322	α(K)=0.272 *4*; α(L)=0.0395 *6*; α(M)=0.00868 *13* α(N)=0.00201 *3*; α(O)=0.000294 *5*; α(P)=1.686×10^{-5} *25* DCO=0.59 *16*.
209.5# *3*	12# *2*	6323.7	17^-	6114.2	16^-	M1	0.299	α(K)=0.252 *4*; α(L)=0.0366 *6*; α(M)=0.00804 *12* α(N)=0.00186 *3*; α(O)=0.000272 *4*; α(P)=1.562×10^{-5} *23* I_γ: for the doublet of 209.8+209.5, Iγ=40 *6*.
209.8# *3*	28# *5*	4472.2	12^-	4262.5	11^-	M1	0.298	α(K)=0.251 *4*; α(L)=0.0365 *6*; α(M)=0.00801 *12* α(N)=0.00185 *3*; α(O)=0.000271 *4*; α(P)=1.556×10^{-5} *23* I_γ: for the doublet of 209.8+209.5, Iγ=40 *6*. DCO=0.71 *4*.
223.2 *5*	2 *1*	5376.5	14^+	5153.3	14^+			
231.6 *2*	17 *3*	6323.7	17^-	6092.1	16^+	(E1) @	0.0332	α(K)=0.0280 *4*; α(L)=0.00403 *6*; α(M)=0.000880 *13* α(N)=0.000201 *3*; α(O)=2.85×10^{-5} *4*; α(P)=1.442×10^{-6} *21* DCO=0.69 *5*.
234.1 *2*	17 *3*	7500.8	19^-	7266.7	18^-	M1	0.220	α(K)=0.186 *3*; α(L)=0.0270 *4*; α(M)=0.00592 *9* α(N)=0.001369 *20*; α(O)=0.000201 *3*;

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(HI,xnγ) 2001Ro15 (continued)

γ(^{146}Dy) (continued)

E_γ †	I_γ †	E_i(level)	J_i^π	E_f	J_f^π	Mult. ‡	α [a]	Comments
								α(P)=1.152×10^{-5} *17* DCO=0.77 *6*.
236.4# *3*	2.2# *9*	4262.5	11$^-$	4026.1	12$^+$			I_γ: for the doublet of 236.7+236.4, Iγ=44 *7*.
236.7# *3*	42# *7*	2517.7	7$^-$	2281.10	5$^-$	E2	0.1360	α(K)=0.0963 *14*; α(L)=0.0307 *5*; α(M)=0.00714 *11* α(N)=0.001615 *24*; α(O)=0.000208 *3*; α(P)=4.78×10^{-6} *7* I_γ: for the doublet of 236.7+236.4, Iγ=44 *7*. DCO=1.35 *6*.
239.7 *3*	13 *2*	7740.5	20$^-$	7500.8	19$^-$	M1	0.207	α(K)=0.174 *3*; α(L)=0.0253 *4*; α(M)=0.00555 *8* α(N)=0.001283 *19*; α(O)=0.000188 *3*; α(P)=1.080×10^{-5} *16* DCO=0.89 *8*.
251.9# *3*	3.3# *9*	5983.2	(16)	5731.3	15$^-$			I_γ: for the triplet of 251.9+252.3+252.6, Iγ=11 *2*.
252.3# *3*	4.3# *11*	6576.0	18$^-$	6323.7	17$^-$	M1	0.180	α(K)=0.1518 *22*; α(L)=0.0220 *4*; α(M)=0.00482 *7* α(N)=0.001115 *16*; α(O)=0.0001634 *24*; α(P)=9.39×10^{-6} *14* I_γ: for the triplet of 251.9+252.3+252.6, Iγ=11 *2*. DCO=0.66 *7*.
252.6# *3*	3.3# *9*	6183.7	(16)	5931.4	16$^-$			I_γ: for the triplet of 251.9+252.3+252.6, Iγ=11 *2*.
257.5 *2*	8 *1*	5268.5	14$^-$	5011.1	14$^-$	&		DCO=1.6 *2*.
264.7 *2*	4 *1*	7187.9	19$^+$	6923.2	18$^+$	M1	0.1580	α(K)=0.1334 *19*; α(L)=0.0193 *3*; α(M)=0.00423 *6* α(N)=0.000978 *14*; α(O)=0.0001434 *21*; α(P)=8.25×10^{-6} *12* DCO=0.7 *2*.
267.5 *2*	13 *2*	8057.7	21$^-$	7790.2	20$^-$	M1	0.1536	α(K)=0.1296 *19*; α(L)=0.0187 *3*; α(M)=0.00411 *6* α(N)=0.000950 *14*; α(O)=0.0001393 *20*; α(P)=8.01×10^{-6} *12* DCO=0.73 *8*.
278.6 *2*	11 *2*	3438.3	9$^-$	3159.6	8$^-$	M1	0.1377	α(K)=0.1162 *17*; α(L)=0.01677 *24*; α(M)=0.00368 *6* α(N)=0.000851 *12*; α(O)=0.0001248 *18*; α(P)=7.18×10^{-6} *11* DCO=0.61 *9*.
289.0 *2*	19 *3*	2806.9	7$^-$	2517.7	7$^-$	&		DCO=1.4 *1*.
295.6 *3*	5 *1*	7187.9	19$^+$	6892.4	18$^+$	M1	0.1175	α(K)=0.0992 *15*; α(L)=0.01429 *21*; α(M)=0.00313 *5* α(N)=0.000725 *11*; α(O)=0.0001063 *16*; α(P)=6.12×10^{-6} *9* DCO=0.7 *1*.
316.4 *4*	4 *1*	5327.5	14$^-$	5011.1	14$^-$	&		DCO=1.7 *4*.
320.1 *1*	31 *5*	5331.2	15$^-$	5011.1	14$^-$	M1	0.0950	α(K)=0.0803 *12*; α(L)=0.01154 *17*; α(M)=0.00253 *4* α(N)=0.000585 *9*; α(O)=8.58×10^{-5} *12*; α(P)=4.95×10^{-6} *7* DCO=0.48 *3*.
323.7 *1*	14 *2*	5741.1	16$^-$	5417.4	15$^-$	M1	0.0922	α(K)=0.0779 *11*; α(L)=0.01119 *16*; α(M)=0.00245 *4* α(N)=0.000568 *8*; α(O)=8.33×10^{-5} *12*; α(P)=4.80×10^{-6} *7* DCO=0.71 *6*.
329.8 *3*	7 *1*	6892.4	18$^+$	6562.7	17$^+$			DCO=0.80 *7*.
337.7 *3*	2 *1*	7260.9	(19)$^+$	6923.2	18$^+$			

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(HI,xnγ) 2001Ro15 (continued)

γ(^{146}Dy) (continued)

E_γ[†]	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	α[a]	Comments
346.8 *4*	2 *1*	2804.9	(6,7)	2458.1	(5)			
350.9 *2*	8 *1*	2985.6	(8^+)	2634.7	6^+			
352.5 *2*	9 *2*	3159.6	8^-	2806.9	7^-			
360.5 *2*	15 *3*	6923.2	18^+	6562.7	17^+	M1	0.0694	α(K)=0.0587 *9*; α(L)=0.00840 *12*; α(M)=0.00184 *3* α(N)=0.000426 *6*; α(O)=6.25×10^{-5} *9*; α(P)=3.61×10^{-6} *5* DCO=0.9 *1*.
366.5[#] *3*	8.3[#] *13*	7790.2	20^-	7423.7	19^-	M1	0.0664	α(K)=0.0562 *8*; α(L)=0.00804 *12*; α(M)=0.001761 *25* α(N)=0.000407 *6*; α(O)=5.98×10^{-5} *9*; α(P)=3.45×10^{-6} *5* I_γ: for the doublet of 368.4+366.5, Iγ=13 *2*. DCO=0.66 *8*.
368.4[#] *3*	4.7[#] *10*	7260.9	$(19)^+$	6892.4	18^+			I_γ: for the doublet of 368.4+366.5, Iγ=13 *2*.
375.5[#] *4*	16.1[#] *16*	4847.6	13^-	4472.2	12^-	M1	0.0623	α(K)=0.0527 *8*; α(L)=0.00754 *11*; α(M)=0.001651 *24* α(N)=0.000382 *6*; α(O)=5.61×10^{-5} *8*; α(P)=3.24×10^{-6} *5* I_γ: for the doublet of 375.5+377.5, Iγ=21 *2*. DCO=0.90 *7*.
377.5[#] *4*	4.9[#] *9*	8886.0	23^-	8508.5	22^-			I_γ: for the doublet of 375.5+377.5, Iγ=21 *2*.
395.7 *5*	21 *3*	4026.1	12^+	3630.0	11^+	M1	0.0544	α(K)=0.0460 *7*; α(L)=0.00656 *10*; α(M)=0.001437 *21* α(N)=0.000333 *5*; α(O)=4.88×10^{-5} *7*; α(P)=2.82×10^{-6} *4* DCO=0.63 *5*.
397.5[#] *5*	2.8[#] *9*	5550.3	15^-	5153.3	14^+			I_γ: for the doublet of 397.5+398.5, Iγ=21 *3*.
398.5[#] *5*	18.2[#] *8*	6722.7	18^-	6323.7	17^-	M1	0.0534	α(K)=0.0451 *7*; α(L)=0.00644 *10*; α(M)=0.001411 *21* α(N)=0.000326 *5*; α(O)=4.79×10^{-5} *7*; α(P)=2.77×10^{-6} *4* I_γ: for the doublet of 397.5+398.5, Iγ=21 *3*. DCO=0.62 *5*.
403.8 *4*	4 *1*	5731.3	15^-	5327.5	14^-	M1	0.0516	α(K)=0.0436 *7*; α(L)=0.00622 *9*; α(M)=0.001363 *20* α(N)=0.000315 *5*; α(O)=4.63×10^{-5} *7*; α(P)=2.68×10^{-6} *4* DCO=0.5 *1*.
406.3 *1*	26 *4*	5417.4	15^-	5011.1	14^-	M1	0.0507	α(K)=0.0429 *6*; α(L)=0.00612 *9*; α(M)=0.001341 *19* α(N)=0.000310 *5*; α(O)=4.55×10^{-5} *7*; α(P)=2.63×10^{-6} *4* DCO=0.80 *5*.
409.8 *2*	13 *2*	5741.1	16^-	5331.2	15^-	M1	0.0496	α(K)=0.0420 *6*; α(L)=0.00599 *9*; α(M)=0.001311 *19* α(N)=0.000303 *5*; α(O)=4.45×10^{-5} *7*; α(P)=2.58×10^{-6} *4* DCO=0.41 *5*.
416.5 *3*	19 *6*	2934.1	10^+	2517.7	7^-	(E3)	0.0799	α(K)=0.0532 *8*; α(L)=0.0206 *3*; α(M)=0.00488 *7* α(N)=0.001109 *16*; α(O)=0.0001434 *21*; α(P)=3.22×10^{-6} *5* E_γ,I_γ,Mult.: from 1982Gu07; Iγ normalized to 2001Ro15.

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(HI,xnγ) 2001Ro15 (continued)

γ(^{146}Dy) (continued)

E_γ[†]	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	α[a]	Comments
420.9 *3*	11 *2*	5268.5	14⁻	4847.6	13⁻	M1	0.0463	α(K)=0.0392 *6*; α(L)=0.00558 *8*; α(M)=0.001222 *18* α(N)=0.000283 *4*; α(O)=4.15×10⁻⁵ *6*; α(P)=2.40×10⁻⁶ *4* DCO=0.9 *1*.
438.2 *5*	5 *1*	6369.6	17⁻	5931.4	16⁻	M1	0.0417	α(K)=0.0353 *5*; α(L)=0.00502 *8*; α(M)=0.001099 *16* α(N)=0.000254 *4*; α(O)=3.73×10⁻⁵ *6*; α(P)=2.16×10⁻⁶ *3* DCO=0.9 *3*.
446.0 *1*	53 *5*	4472.2	12⁻	4026.1	12⁺	(E1)[@&]	0.00665	α(K)=0.00565 *8*; α(L)=0.000782 *11*; α(M)=0.0001703 *24* α(N)=3.92×10⁻⁵ *6*; α(O)=5.64×10⁻⁶ *8*; α(P)=3.07×10⁻⁷ *5* DCO=1.63 *7*.
450.8 *4*	9 *1*	8508.5	22⁻	8057.7	21⁻	M1	0.0388	α(K)=0.0328 *5*; α(L)=0.00466 *7*; α(M)=0.001021 *15* α(N)=0.000236 *4*; α(O)=3.47×10⁻⁵ *5*; α(P)=2.01×10⁻⁶ *3* DCO=0.60 *8*.
459.5 *2*	5 *1*	7035.5	19⁻	6576.0	18⁻	M1	0.0369	α(K)=0.0312 *5*; α(L)=0.00444 *7*; α(M)=0.000971 *14* α(N)=0.000225 *4*; α(O)=3.30×10⁻⁵ *5*; α(P)=1.91×10⁻⁶ *3* DCO=0.4 *1*.
470.4 *2*	17 *3*	6562.7	17⁺	6092.1	16⁺	M1	0.0347	α(K)=0.0294 *5*; α(L)=0.00417 *6*; α(M)=0.000913 *13* α(N)=0.000211 *3*; α(O)=3.10×10⁻⁵ *5*; α(P)=1.80×10⁻⁶ *3* DCO=0.75 *9*.
483.5 *4*	7 *1*	5331.2	15⁻	4847.6	13⁻	E2	0.01655	α(K)=0.01328 *19*; α(L)=0.00255 *4*; α(M)=0.000574 *9* α(N)=0.0001312 *19*; α(O)=1.80×10⁻⁵ *3*; α(P)=7.41×10⁻⁷ *11* DCO=1.3 *2*.
498.1 *3*	6 *1*	2281.10	5⁻	1783.0	3⁻	E2	0.01530	α(K)=0.01232 *18*; α(L)=0.00233 *4*; α(M)=0.000524 *8* α(N)=0.0001198 *17*; α(O)=1.652×10⁻⁵ *24*; α(P)=6.89×10⁻⁷ *10* DCO=2.0 *4*.
514.1 *2*	12 *2*	5931.4	16⁻	5417.4	15⁻	M1	0.0277	α(K)=0.0234 *4*; α(L)=0.00332 *5*; α(M)=0.000725 *11* α(N)=0.0001679 *24*; α(O)=2.47×10⁻⁵ *4*; α(P)=1.431×10⁻⁶ *20* DCO=0.77 *8*.
517.1 *2*	16 *3*	6258.2	17⁻	5741.1	16⁻	M1	0.0273	α(K)=0.0231 *4*; α(L)=0.00327 *5*; α(M)=0.000715 *10* α(N)=0.0001654 *24*; α(O)=2.43×10⁻⁵ *4*; α(P)=1.410×10⁻⁶ *20* DCO=0.44 *5*.
531.6 *4*	7 *2*	3338.1	(8⁻)	2806.9	7⁻			DCO=1.2 *2*.
534.5 *5*	5 *1*	6466.0	18⁻	5931.4	16⁻	E2	0.01276	α(K)=0.01034 *15*; α(L)=0.00189 *3*; α(M)=0.000424 *6* α(N)=9.71×10⁻⁵ *14*; α(O)=1.346×10⁻⁵ *20*; α(P)=5.82×10⁻⁷ *9* DCO=1.3 *3*.
538.9[#] *1*	86[#] *15*	5011.1	14⁻	4472.2	12⁻	E2	0.01250	α(K)=0.01013 *15*; α(L)=0.00184 *3*; α(M)=0.000414 *6* α(N)=9.48×10⁻⁵ *14*; α(O)=1.315×10⁻⁵ *19*; α(P)=5.71×10⁻⁷ *8* I_γ: for the doublet of 538.9+539.5, Iγ=90 *14*. DCO=1.56 *6*.

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(HI,xnγ) 2001Ro15 (continued)

γ(^{146}Dy) (continued)

E_γ[†]	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	α[a]	Comments
539.5[#] *6*	4[#] *1*	5808.0	15,16	5268.5	14^-			I_γ: for the doublet of 538.9+539.5, Iγ=90 *14*.
550.1 *5*	6 *1*	7266.7	18^-	6717.3	17^-	M1	0.0233	α(K)=0.0197 *3*; α(L)=0.00279 *4*; α(M)=0.000609 *9* α(N)=0.0001410 *20*; α(O)=2.07×10^{-5} *3*; α(P)=1.204×10^{-6} *17* DCO=0.8 *1*.
573.5 *4*	8 *1*	3091.2	$(7,9^-)$	2517.7	7^-	&		DCO=1.4 *2*.
592.5 *4*	5 *1*	5064.7	13^-	4472.2	12^-	M1	0.0193	α(K)=0.01636 *23*; α(L)=0.00230 *4*; α(M)=0.000504 *8* α(N)=0.0001166 *17*; α(O)=1.713×10^{-5} *25*; α(P)=9.97×10^{-7} *14* DCO=0.6 *1*.
600.2 *4*	8 *2*	3691.4	$(9,11^-)$	3091.2	$(7,9^-)$	&		DCO=1.4 *2*.
632.4[#] *2*	4.2[#] *13*	4262.5	11^-	3630.0	11^+	&		I_γ: for the doublet of 632.4+633.4, Iγ=7 *2*. DCO=1.3 *2*.
633.4[#] *3*	3.0[#] *11*	6183.7	(16)	5550.3	15^-			I_γ: for the doublet of 632.4+633.4, Iγ=7 *2*.
642.0 *2*	13 *3*	3159.6	8^-	2517.7	7^-	M1	0.01578	α(K)=0.01338 *19*; α(L)=0.00188 *3*; α(M)=0.000411 *6* α(N)=9.50×10^{-5} *14*; α(O)=1.397×10^{-5} *20*; α(P)=8.14×10^{-7} *12* DCO=0.82 *9*.
665.0 *4*	6 *1*	3299.7	$(7,8^+)$	2634.7	6^+			
673.5 *1*	57 *9*	2281.10	5^-	1607.61	4^+	(E1)[@]	0.00271	α(K)=0.00231 *4*; α(L)=0.000312 *5*; α(M)=6.79×10^{-5} *10* α(N)=1.565×10^{-5} *22*; α(O)=2.27×10^{-6} *4*; α(P)=1.276×10^{-7} *18* DCO=0.99 *4*.
682.5 *2*	85 *13*	682.50	2^+	0	0^+	E2	0.00704	α(K)=0.00581 *9*; α(L)=0.000961 *14*; α(M)=0.000214 *3* α(N)=4.91×10^{-5} *7*; α(O)=6.93×10^{-6} *10*; α(P)=3.32×10^{-7} *5* DCO=1.45 *5*.
695.9 *1*	65 *10*	3630.0	11^+	2934.1	10^+	M1	0.01291	α(K)=0.01095 *16*; α(L)=0.001533 *22*; α(M)=0.000335 *5* α(N)=7.75×10^{-5} *11*; α(O)=1.140×10^{-5} *16*; α(P)=6.65×10^{-7} *10* DCO=0.42 *2*.
700.9[#] *2*	8.3[#] *15*	7423.7	19^-	6722.7	18^-	M1	0.01268	α(K)=0.01076 *15*; α(L)=0.001506 *22*; α(M)=0.000329 *5* α(N)=7.61×10^{-5} *11*; α(O)=1.119×10^{-5} *16*; α(P)=6.53×10^{-7} *10* I_γ: for the doublet of 701.3+700.9, Iγ=13 *2*. DCO=1.1 *1*.
701.3[#] *3*	4.7[#] *10*	3336.0	$(7,8^+)$	2634.7	6^+			I_γ: for the doublet of 701.3+700.9, Iγ=13 *2*.
703.6 *3*	1 *1*	7266.7	18^-	6562.7	17^+			According to table 1 (2001Ro15) transition from $J^\pi=18^+$, however in fig. 2 from $J^\pi=18^-$. Apparently, it is a typo in the table 1.
712.3 *3*	6 *1*	5980.9	15^+	5268.5	14^-	(E1)	0.00242	α(K)=0.00206 *3*; α(L)=0.000278 *4*; α(M)=6.04×10^{-5} *9* α(N)=1.392×10^{-5} *20*; α(O)=2.02×10^{-6} *3*; α(P)=1.141×10^{-7} *16* DCO=0.7 *1*.

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(HI,xnγ) 2001Ro15 (continued)

γ(^{146}Dy) (continued)

E_γ[†]	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	α[a]	Comments
								Mult.: assumed by evaluators. Mult=M1 from fig. 4 of 2001Ro15 is inconsistent with the level scheme (fig. 2), where transition connects levels of the opposite parities.
727.4 *4*	5 *1*	7444.7	$(19)^-$	6717.3	17^-			
730.5 *4*	5 *1*	5741.1	16^-	5011.1	14^-			
738.6 *2*	6 *1*	3898.2	10^-	3159.6	8^-	E2	0.00587	α(K)=0.00486 *7*; α(L)=0.000784 *11*; α(M)=0.0001740 *25* α(N)=4.00×10^{-5} *6*; α(O)=5.67×10^{-6} *8*; α(P)=2.79×10^{-7} *4* DCO=1.6 *2*.
755.7 *3*	13 *3*	4194.0	11^-	3438.3	9^-	E2	0.00557	α(K)=0.00462 *7*; α(L)=0.000740 *11*; α(M)=0.0001641 *23* α(N)=3.77×10^{-5} *6*; α(O)=5.36×10^{-6} *8*; α(P)=2.65×10^{-7} *4* DCO=1.5 *1*.
760.3 *3*	17 *3*	6092.1	16^+	5331.2	15^-	(E1)[@]	0.00212	α(K)=0.00181 *3*; α(L)=0.000243 *4*; α(M)=5.28×10^{-5} *8* α(N)=1.217×10^{-5} *17*; α(O)=1.771×10^{-6} *25*; α(P)=1.002×10^{-7} *14* DCO=1.07 *9*.
783.1 *4*	8 *1*	6114.2	16^-	5331.2	15^-	M1	0.00964	α(K)=0.00818 *12*; α(L)=0.001141 *16*; α(M)=0.000249 *4* α(N)=5.77×10^{-5} *9*; α(O)=8.48×10^{-6} *12*; α(P)=4.96×10^{-7} *7* DCO=0.72 *7*.
821.5[#] *3*	23.2[#] *11*	4847.6	13^-	4026.1	12^+	(E1)[@]	0.00182	α(K)=0.001552 *22*; α(L)=0.000208 *3*; α(M)=4.51×10^{-5} *7* α(N)=1.040×10^{-5} *15*; α(O)=1.516×10^{-6} *22*; α(P)=8.62×10^{-8} *12* I_γ: for the doublet of 821.5+822.4, Iγ=27 *1*.
822.4[#] *3*	3.8[#] *7*	4848.5	13^+	4026.1	12^+			I_γ: for the doublet of 821.5+822.4, Iγ=27 *1*. DCO=0.91 *6*.
842.2 *2*	28 *4*	4472.2	12^-	3630.0	11^+	(E1)[@]	1.73×10^{-3}	α(K)=0.001479 *21*; α(L)=0.000198 *3*; α(M)=4.29×10^{-5} *6* α(N)=9.90×10^{-6} *14*; α(O)=1.443×10^{-6} *21*; α(P)=8.22×10^{-8} *12* DCO=0.96 *7*.
850.5 *3*	4 *1*	2458.1	(5)	1607.61	4^+			
925.1 *1*	79 *12*	1607.61	4^+	682.50	2^+	E2[&]	0.00358	α(K)=0.00300 *5*; α(L)=0.000454 *7*; α(M)=0.0001002 *14* α(N)=2.31×10^{-5} *4*; α(O)=3.31×10^{-6} *5*; α(P)=1.730×10^{-7} *25* DCO=1.35 *5*.
938.7 *2*	14 *2*	6092.1	16^+	5153.3	14^+	E2	0.00347	α(K)=0.00291 *4*; α(L)=0.000439 *7*; α(M)=9.68×10^{-5} *14* α(N)=2.23×10^{-5} *4*; α(O)=3.20×10^{-6} *5*; α(P)=1.679×10^{-7} *24* DCO=1.4 *1*.
1008.4 *5*	4 *1*	7266.7	18^-	6258.2	17^-	M1	0.00520	α(K)=0.00442 *7*; α(L)=0.000612 *9*;

Continued on next page (footnotes at end of table)

(HI,xnγ) 2001Ro15 (continued)

γ(^{146}Dy) (continued)

E_γ [†]	I_γ [†]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [‡]	α [a]	Comments
								α(M)=0.0001334 *19* α(N)=3.09×10^{-5} *5*; α(O)=4.54×10^{-6} *7*; α(P)=2.67×10^{-7} *4* DCO=0.8 *2*.
1027.0 *3*	17 *3*	2634.7	6$^+$	1607.61	4$^+$	E2	0.00288	α(K)=0.00242 *4*; α(L)=0.000358 *5*; α(M)=7.87×10^{-5} *11* α(N)=1.81×10^{-5} *3*; α(O)=2.62×10^{-6} *4*; α(P)=1.398×10^{-7} *20* DCO=1.5 *1*.
1083.8 *5*	2 *1*	7266.7	18$^-$	6183.7	(16)			
1092.1 *1*	100 *15*	4026.1	12$^+$	2934.1	10$^+$	E2	0.00254	α(K)=0.00214 *3*; α(L)=0.000313 *5*; α(M)=6.86×10^{-5} *10* α(N)=1.582×10^{-5} *23*; α(O)=2.29×10^{-6} *4*; α(P)=1.236×10^{-7} *18* DCO=1.44 *4*.
1100.5 *3*	7 *2*	1783.0	3$^-$	682.50	2$^+$	(E1) [@]	1.05×10^{-3}	α(K)=0.000895 *13*; α(L)=0.0001183 *17*; α(M)=2.57×10^{-5} *4* α(N)=5.92×10^{-6} *9*; α(O)=8.66×10^{-7} *13*; α(P)=5.00×10^{-8} *7*; α(IPF)=1.72×10^{-6} *3* DCO=0.9 *1*.
1127.3 *3*	31 *5*	5153.3	14$^+$	4026.1	12$^+$	E2	0.00238	α(K)=0.00201 *3*; α(L)=0.000292 *4*; α(M)=6.40×10^{-5} *9* α(N)=1.476×10^{-5} *21*; α(O)=2.13×10^{-6} *3*; α(P)=1.161×10^{-7} *17*; α(IPF)=7.62×10^{-7} *14* DCO=1.33 *8*.
1132.5 *4*	3 *1*	5980.9	15$^+$	4848.5	13$^+$	E2	0.00236	α(K)=0.00199 *3*; α(L)=0.000289 *4*; α(M)=6.34×10^{-5} *9* α(N)=1.461×10^{-5} *21*; α(O)=2.11×10^{-6} *3*; α(P)=1.150×10^{-7} *17*; α(IPF)=9.09×10^{-7} *18* DCO=1.2 *3*.
1167.4 *4*	6 *1*	6717.3	17$^-$	5550.3	15$^-$	E2	0.00222	α(K)=0.00187 *3*; α(L)=0.000271 *4*; α(M)=5.93×10^{-5} *9* α(N)=1.368×10^{-5} *20*; α(O)=1.98×10^{-6} *3*; α(P)=1.083×10^{-7} *16*; α(IPF)=2.55×10^{-6} *5* DCO=1.4 *2*.
1196.9 *4*	5 *1*	6045.6	15$^+$	4848.5	13$^+$	E2	0.00212	α(K)=0.00178 *3*; α(L)=0.000257 *4*; α(M)=5.62×10^{-5} *8* α(N)=1.296×10^{-5} *19*; α(O)=1.88×10^{-6} *3*; α(P)=1.031×10^{-7} *15*; α(IPF)=5.01×10^{-6} *8* DCO=1.5 *2*.
1199.6 *5*	3 *3*	2807.2		1607.61	4$^+$			
1218.5 *5*	11 *2*	4848.5	13$^+$	3630.0	11$^+$	E2	0.00205	α(K)=0.001724 *25*; α(L)=0.000247 *4*; α(M)=5.41×10^{-5} *8* α(N)=1.248×10^{-5} *18*; α(O)=1.81×10^{-6} *3*; α(P)=9.96×10^{-8} *14*; α(IPF)=7.40×10^{-6} *12* DCO=1.8 *2*.
1233.5 *6*	3 *1*	5259.0	13$^+$	4026.1	12$^+$			
1251.2 *5*	3 *1*	3768.9	9$^-$	2517.7	7$^-$	E2	0.00195	α(K)=0.001637 *23*; α(L)=0.000234 *4*; α(M)=5.11×10^{-5} *8* α(N)=1.179×10^{-5} *17*; α(O)=1.712×10^{-6} *24*; α(P)=9.46×10^{-8} *14*; α(IPF)=1.173×10^{-5} *18* DCO=1.2 *2*.
1328.5 *2*	26 *4*	4262.5	11$^-$	2934.1	10$^+$	(E1) [@]	8.33×10^{-4}	α(K)=0.000641 *9*; α(L)=8.41×10^{-5} *12*;

Continued on next page (footnotes at end of table)

(HI,xnγ) 2001Ro15 (continued)

γ(^{146}Dy) (continued)

E_γ [†]	I_γ [†]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [‡]	α [a]	Comments
								α(M)=1.82×10^{-5} *3* α(N)=4.20×10^{-6} *6*; α(O)=6.16×10^{-7} *9*; α(P)=3.59×10^{-8} *5*; α(IPF)=8.55×10^{-5} *12* DCO=0.77 *5*. Mult.: assumed by evaluators. Mult=M1 from fig. 4 of 2001Ro15 is inconsistent with the level scheme (fig. 2), where transition connects levels of the opposite parity.
1350.3 *3*	7 *1*	5376.5	14$^+$	4026.1	12$^+$	E2	1.70×10^{-3}	α(K)=0.001413 *20*; α(L)=0.000199 *3*; α(M)=4.36×10^{-5} *7* α(N)=1.005×10^{-5} *14*; α(O)=1.462×10^{-6} *21*; α(P)=8.16×10^{-8} *12*; α(IPF)=2.99×10^{-5} *5* DCO=1.2 *2*.
1537.7 *4*	5 *1*	7278.5	18$^-$	5741.1	16$^-$	E2	1.39×10^{-3}	α(K)=0.001104 *16*; α(L)=0.0001532 *22*; α(M)=3.34×10^{-5} *5* α(N)=7.72×10^{-6} *11*; α(O)=1.126×10^{-6} *16*; α(P)=6.38×10^{-8} *9*; α(IPF)=8.60×10^{-5} *13* DCO=1.1 *2*.
1628.5 *6*	1 *1*	5259.0	13$^+$	3630.0	11$^+$			DCO=1 *1*.
1831.6 *9*	1 *1*	5857.8	14$^+$	4026.1	12$^+$			DCO=1 *1*.

† From 2001Ro15, except as noted.

‡ From 2001Ro15, obtained by the evaluators from fig. 4. The authors suppose crossover transitions as E2. Other transitions have dipole type according to DCO ratios, but the authors have tagged them all as M1, although there are E1 transitions. These E1 transitions are assigned by the evaluators according to the proposed level schemes.

Unresolved structure in 2001Ro15, γ intensity and DCO ratios are combined for two (or three) components. Based on width of arrows as shown in the level scheme figures, the evaluators have obtained separate γ intensities for the components; ΔIγ=0.7 has added quadratically to the uncertainties to allow for systematic errors.

@ Imposed by evaluators as (E1) transition between positive-negative parities level structures according to statement in 2001Ro15.

& ΔJ=0 or 2 from DCO ratio >1 (not crossover transition).

a Additional information 1.

(HI,xnγ) 2001Ro15

Level Scheme

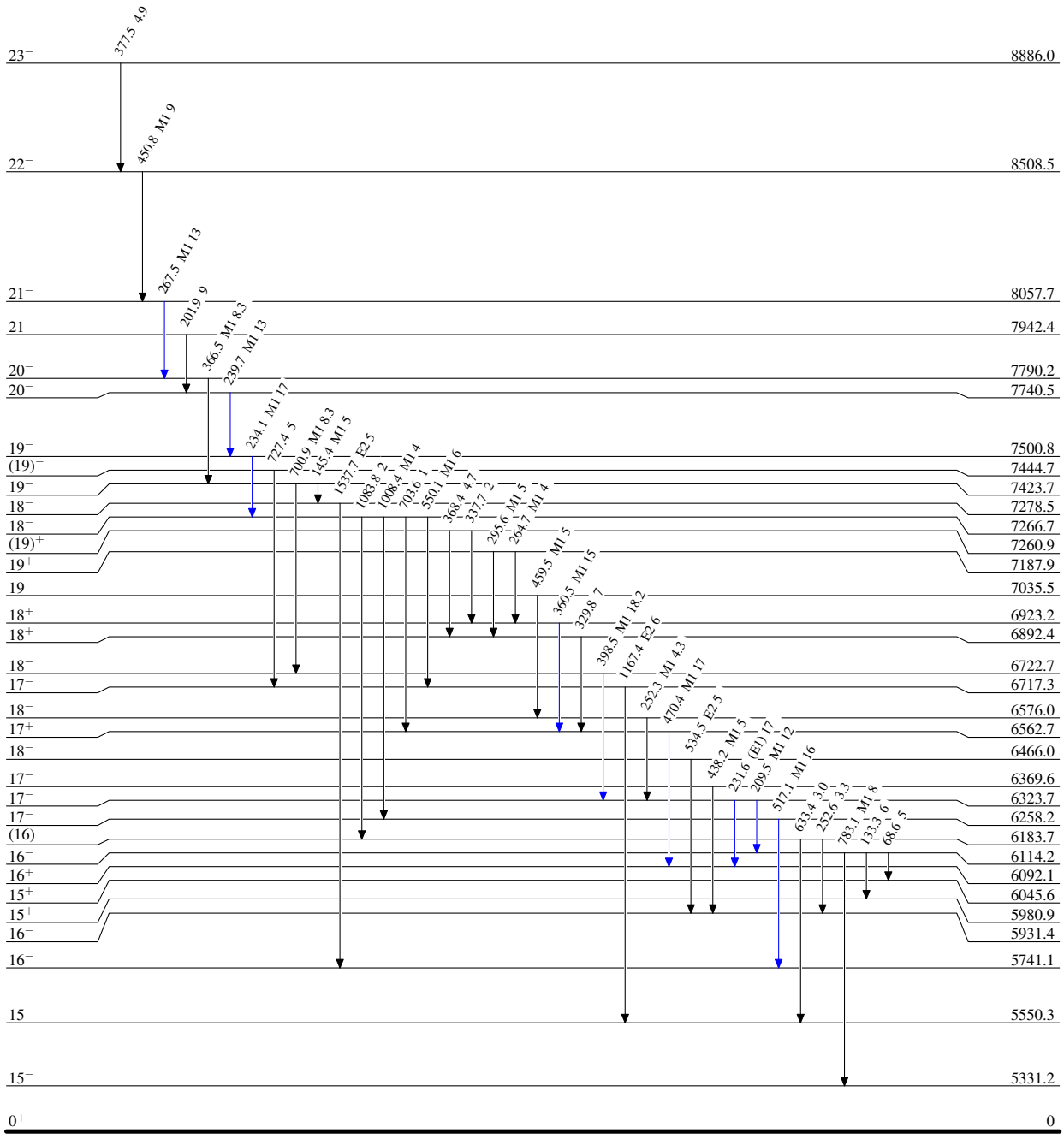
Intensities: Relative I_γ

Legend

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

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

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



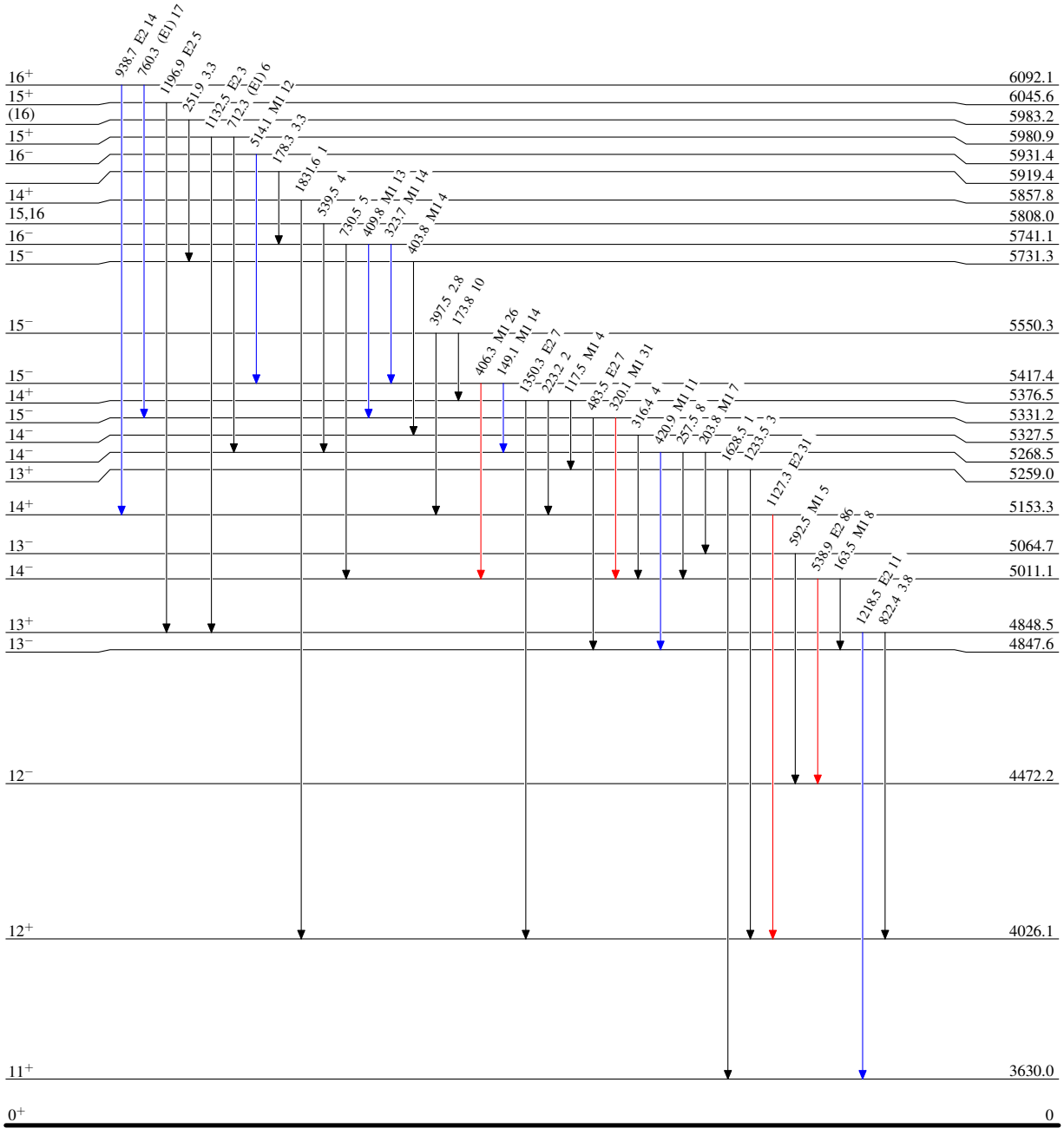
$^{146}_{66}Dy_{80}$

(HI,xnγ) 2001Ro15

Level Scheme (continued)

Intensities: Relative I_γ

Legend
$I_\gamma < 2\% \times I_\gamma^{max}$
$I_\gamma < 10\% \times I_\gamma^{max}$
$I_\gamma > 10\% \times I_\gamma^{max}$



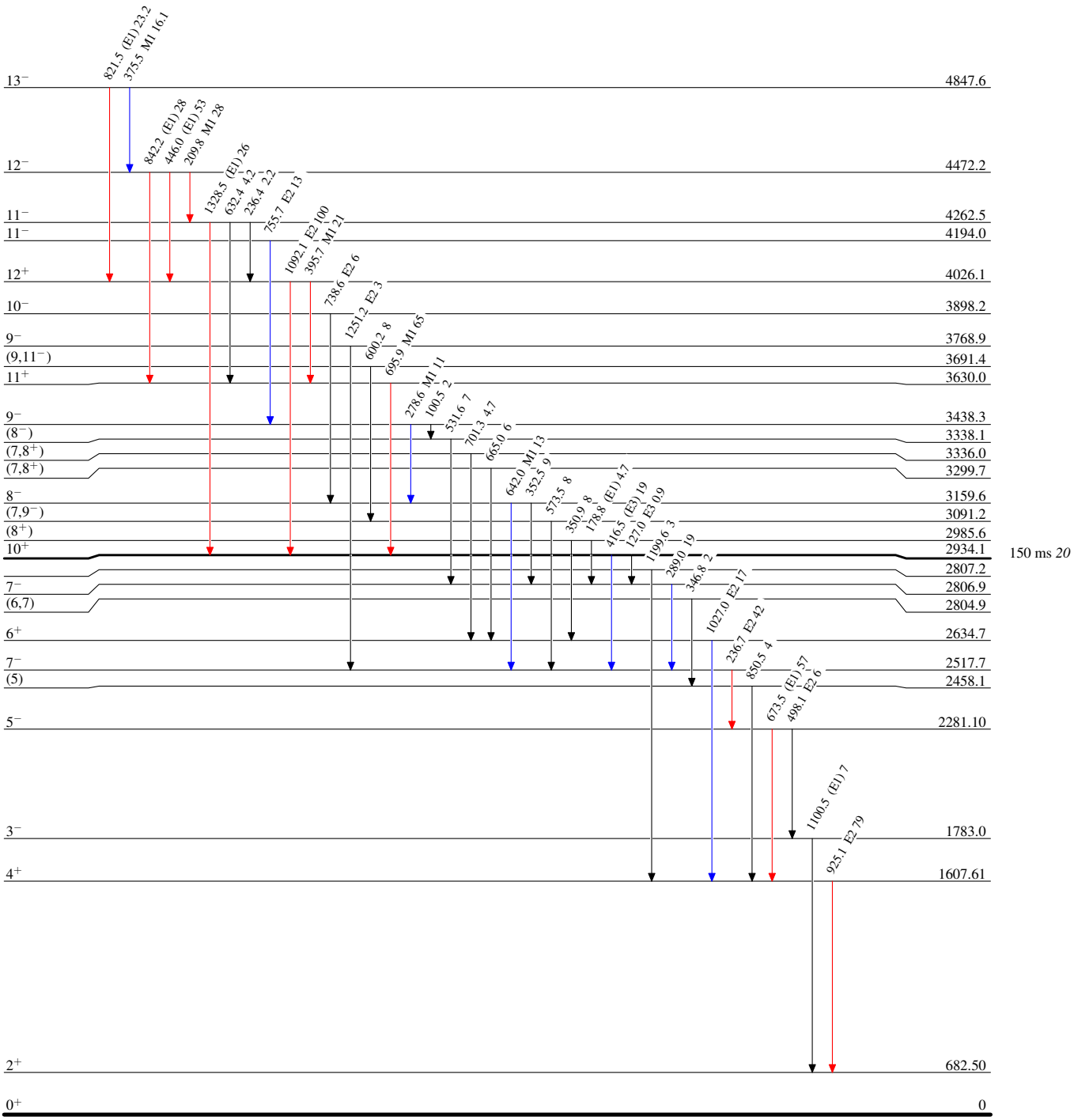
$^{146}_{66}Dy_{80}$

(HI,xnγ) 2001Ro15

Level Scheme (continued)

Intensities: Relative I_γ

Legend
$I_\gamma < 2\% \times I_\gamma^{max}$
$I_\gamma < 10\% \times I_\gamma^{max}$
$I_\gamma > 10\% \times I_\gamma^{max}$



$^{146}_{66}Dy_{80}$