^{92}Mo(^{54}Fe,2pnγ) 2000Ol10

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	E. Browne, J. K. Tuli	NDS 113, 715 (2012)	31-May-2011

2000Ol10: E=240 MeV. Measured Eγ, Iγ, $\gamma\gamma$, and $\gamma\gamma(\theta)$(DCO) using GASP spectrometer consisting of 40 Compton-suppressed high-efficiency HPGe detectors, and an 80-element BGO inner ball, in conjunction with the multi-telescope light-charged-particle detector array, ISIS.

2005Ri17: ^{92}Mo(^{54}Fe,2pnγ), E=25 MeV. Measured Eγ, Iγ, $\gamma\gamma$ coin using the jurogam array of 43 HPGe detectors with the recoil ion transport unit (RITU).

^{143}Dy Levels

E(level)[†]	J$^\pi$[‡]	$T_{1/2}$	Comments
0.0	(1/2$^+$)		
66.70 *20*	(1/2$^+$)		
250.9 *4*	3/2$^-$		
310.7[#@b] *6*	11/2$^-$		
319.7[@]			
405.7[@]		1.2 μs *3*	$T_{1/2}$: From the decay of the 95-keV γ ray. Other value: 3 μs *2*, from the decay of the 86-keV γ ray. Both from 2005Ri17.
433.3 *7*			
471.8 *5*	7/2$^-$		
693.6[f] *5*	11/2$^-$		
805.9[b] *6*	15/2$^-$		
845.5[e] *5*	11/2$^-$		
923.1 *6*			
1010.6 *6*	13/2$^-$		
1044.2[f] *5*	15/2$^-$		
1409.7[e] *5*	15/2$^-$		
1497.6 *6*			
1529.4[b] *6*	19/2$^-$		
1558.4[&] *6*	(17/2$^-$)		
1581.5[f] *6*	19/2$^-$		
1850.0[g] *7*	(19/2$^-$)		
1875.4 *6*	17/2$^-$		
1942.1[a] *6*	(19/2$^-$)		
2059.1 *6*	19/2$^-$		
2073.7[e] *6*	19/2$^-$		
2091.6[d] *6*	(13/2$^+$)		
2231.6[f] *6*	23/2$^-$		
2235.2[&] *6*	(21/2$^-$)		
2312.3[g] *7*	(23/2$^-$)		
2379.8 *6*	23/2$^-$		
2442.2[b] *6*	23/2$^-$		
2556.1[a] *6*	(23/2$^-$)		
2579.0[d] *6*	(17/2$^+$)		
2589.9 *7*	(21/2$^-$)		
2760.6[e] *6*	23/2$^-$		
2806.3[c] *8*	(21/2)		
2873.9[&] *6*	(25/2$^-$)		
2915.6[f] *6*	27/2$^-$		
3038.2[b] *6*	25/2$^-$		

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^{92}Mo(^{54}Fe,2pnγ) 2000Ol10 (continued)

^{143}Dy Levels (continued)

E(level)†	Jπ‡	E(level)†	Jπ‡	E(level)†	Jπ‡	E(level)†	Jπ‡
3103.8[d] 6	(21/2+)	3666.3 7	29/2−	4384.4[a] 7	35/2−	5583.5[g] 8	
3133.7[a] 6	27/2−	3675.1[d] 7	(25/2+)	4387.8 7		5793.1[d] 8	(37/2+)
3163.0[c] 8	(25/2)	3676.5[a] 7	31/2−	4436.2[c] 9	(33/2)	5916.7[g] 8	
3175.8 7		3713.5[c] 9	(29/2)	4466.1? 7		6029.4[g] 10	
3201.6? 6		3851.9[b] 7	31/2−	4655.5[b] 7	35/2−	6165.5 7	
3248.0[b] 7	27/2−	3908.9 7		4820.9[g] 8	(31/2−)	6278.9[b] 8	43/2−
3272.2 7		4040.4 7		4860.0[&] 7	(37/2−)	6628.6[d] 8	(41/2+)
3372.4[g] 7	(27/2−)	4060.2[&] 7	33/2+	5019.6[d] 7	33/2−	7010.3[b] 8	47/2−
3440.7[&] 7	29/2−	4232.1[f] 8	35/2−	5231.3[a] 7	(39/2−)	7527.1[d] 9	(45/2+)
3587.5[f] 7	31/2−	4312.3[d] 7	(29/2+)	5294.6[c] 10	(37/2)	7903.4[b] 8	51/2−
3651.4[g] 7	(29/2−)	4376.5 9		5509.5[b] 7	39/2−	8497.5[d] 11	(49/2+)

† Deduced by evaluators from least-squares fit to γ-ray energies in 2005Ri17.

‡ As given in 2000Ol10. The assignments are based on $\gamma\gamma(\theta)$(DCO) data for selected transitions and expected band structures from model calculations.

Probably an isomer; decay mode is unknown.

@ Reported in 2005Ri17 only.

& Band(A): Band based on (17/2−), α=+1/2. Above 27/2−, strong dipole (M1) transitions suggest possible magnetic-rotational character with configuration=$\pi h^2_{11/2}\nu h^{-1}_{11/2}$ (2000Ol10).

[a] Band(a): Band based on (17/2−), α=−1/2. See comments for its signature partner.

[b] Band(B): Yrast structure (irregular) based on $\nu h_{11/2}$. Probably a weakly deformed structure.

[c] Band(C): Band based on (21/2).

[d] Band(D): Band based on (13/2+). Possibly based on $\nu i_{13/2}$ orbital.

[e] Band(E): Band based on 11/2−.

[f] Band(F): Band based on 11/2−.

[g] Band(G): γ cascade based on (19/2−).

γ(^{143}Dy)

Multipolarities of transitions are not explicitly quoted here. From $\gamma\gamma(\theta)$(DCO) data, R(DCO)=1.0 implies ΔJ=2, stretched quadrupole (E2 in general); R(DCO)=0.56 implies ΔJ=1, stretched dipole; and R(DCO)=1.07 implies ΔJ=0, dipole for the geometry used in 2000Ol10.

Eγ†	Iγ	Ei(level)	J^π_i	E_f	J^π_f	Mult.	Comments
(29.9 5)	0.19 3	1558.4	(17/2−)	1529.4	19/2−		Eγ,Iγ: inferred from γγ data.
66.7 2	2 1	66.70	(1/2+)	0.0	(1/2+)		
86[@]		405.7		319.7		(E2)	Iγ(95)/Iγ(86)= 1.47 39 (2005Ri17).
95[@]		405.7		310.7	11/2−	(E2)	Iγ(95)/Iγ(86)= 1.47 39 (2005Ri17).
112.7 5	0.32 3	6029.4		5916.7			R(DCO)=0.44 15.
122.1 5	1.0[‡] 3	433.3		310.7	11/2−		R(DCO)=0.57 15.
151.5 5	0.02 3	845.5	11/2−	693.6	11/2−		
161.2 5	0.36 8	471.8	7/2−	310.7	11/2−		R(DCO)=1.08 23.
183.8 2	5.0 3	2059.1	19/2−	1875.4	17/2−		R(DCO)=0.52 7.
184.2 5	0.4 5	250.9	3/2−	66.70	(1/2+)		R(DCO)=1.18 15.
185.7 2	1.85 11	3851.9	31/2−	3666.3	29/2−		

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^{92}Mo(^{54}Fe,2pnγ) 2000Ol10 (continued)

γ(^{143}Dy) (continued)

E_γ †	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Comments
198.7 *5*	0.07 *6*	1044.2	15/2$^-$	845.5	11/2$^-$	
209.8 *2*	11.1 *4*	3248.0	27/2$^-$	3038.2	25/2$^-$	R(DCO)=0.55 *6*.
220.9 *2*	1.09 *21*	471.8	7/2$^-$	250.9	3/2$^-$	R(DCO)=1.3 *2*.
221.8 *2*	1.84 *17*	693.6	11/2$^-$	471.8	7/2$^-$	R(DCO)=0.94 *20*.
236.0 *2*	5.41 *22*	3676.5	31/2$^-$	3440.7	29/2$^-$	R(DCO)=0.61 *5*.
250.9 *5*	0.4 *4*	250.9	3/2$^-$	0.0	(1/2$^+$)	R(DCO)=1.08 *15*.
260.0 *2*	2.01 *13*	3133.7	27/2$^-$	2873.9	(25/2$^-$)	R(DCO)=0.60 *13*.
279.0 *2*	2.01 *16*	3651.4	(29/2$^-$)	3372.4	(27/2$^-$)	R(DCO)=0.59 *10*.
293.3 *2*	2.39 *19*	2235.2	(21/2$^-$)	1942.1	(19/2$^-$)	
307.0 *2*	12.3 *5*	3440.7	29/2$^-$	3133.7	27/2$^-$	R(DCO)=0.57 *3*.
318.0 *2*	3.42 *24*	2873.9	(25/2$^-$)	2556.1	(23/2$^-$)	
321.2 *2*	5.3 *4*	2556.1	(23/2$^-$)	2235.2	(21/2$^-$)	R(DCO)=0.58 *21*.
324.2 *2*	3.67 *19*	4384.4	35/2$^-$	4060.2	33/2$^+$	R(DCO)=0.45 *18*.
327.7[a] *2*	2.4 *24*	3201.6?		2873.9	(25/2$^-$)	
333.2 *2*	1.02 *10*	5916.7		5583.5		R(DCO)=0.44 *15*.
350.7 *2*	3.65 *20*	1044.2	15/2$^-$	693.6	11/2$^-$	
356.7 *2*	2.1 *6*	3163.0	(25/2)	2806.3	(21/2)	R(DCO)=0.84 *7*.
366.2 *5*	0.14 *8*	1409.7	15/2$^-$	1044.2	15/2$^-$	
370.9 *2*	1.52 *16*	5231.3	(39/2$^-$)	4860.0	(37/2$^-$)	
373.6 *2*	2.08 *23*	845.5	11/2$^-$	471.8	7/2$^-$	R(DCO)=0.94 *16*.
383.5 *2*	26.8 *12*	2442.2	23/2$^-$	2059.1	19/2$^-$	R(DCO)=0.97 *12*.
383.8 *2*	5.7 *6*	1942.1	(19/2$^-$)	1558.4	(17/2$^-$)	
383.9 *2*	7.1 *5*	4060.2	33/2$^+$	3676.5	31/2$^-$	
418.4 *2*	3.05 *25*	3666.3	29/2$^-$	3248.0	27/2$^-$	R(DCO)=0.66 *9*.
444.4 *2*	3.7 *3*	1942.1	(19/2$^-$)	1497.6		
462.3 *2*	3.3 *5*	2312.3	(23/2$^-$)	1850.0	(19/2$^-$)	R(DCO)=1.19 *13*.
467.6 *5*	0.7 *3*	4376.5		3908.9		
468.2 *2*	3.9 *4*	3908.9		3440.7	29/2$^-$	
475.6 *2*	2.51 *21*	4860.0	(37/2$^-$)	4384.4	35/2$^-$	
487.5 *2*	1.08 *18*	2579.0	(17/2$^+$)	2091.6	(13/2$^+$)	
495.0 *2*	100.0[#] *10*	805.9	15/2$^-$	310.7	11/2$^-$	R(DCO)=1.00 *6*.
501.1 *2*	5.6 *5*	2059.1	19/2$^-$	1558.4	(17/2$^-$)	
504.5 *5*	0.21 *14*	2579.0	(17/2$^+$)	2073.7	19/2$^-$	
513.6 *5*	0.88 *21*	3103.8	(21/2$^+$)	2589.9	(21/2$^-$)	R(DCO)=1.2 *3*.
524.9 *2*	4.2 *5*	3103.8	(21/2$^+$)	2579.0	(17/2$^+$)	R(DCO)=1.06 *17*.
529.5 *2*	15.8 *9*	2059.1	19/2$^-$	1529.4	19/2$^-$	R(DCO)=1.17 *7*.
535.9 *2*	2.2 *3*	4387.8		3851.9	31/2$^-$	
537.3 *2*	4.1 *3*	1581.5	19/2$^-$	1044.2	15/2$^-$	R(DCO)=1.12 *11*.
542.8 *2*	7.7 *4*	3676.5	31/2$^-$	3133.7	27/2$^-$	R(DCO)=1.19 *15*.
550.5 *2*	2.0 *4*	3713.5	(29/2)	3163.0	(25/2)	
557.2[a] *2*	1.49 *15*	4466.1?		3908.9		
564.1 *2*	3.2 *3*	1409.7	15/2$^-$	845.5	11/2$^-$	R(DCO)=1.04 *12*.
571.3 *2*	6.4 *6*	3675.1	(25/2$^+$)	3103.8	(21/2$^+$)	R(DCO)=1.25 *20*.
574.5 *2*	5.3 *7*	1497.6		923.1		
577.2 *2*	9.8 *14*	1010.6	13/2$^-$	433.3		R(DCO)=0.57 *11*.
577.4 *2*	5.6 *4*	3133.7	27/2$^-$	2556.1	(23/2$^-$)	
596.3 *2*	17.1 *7*	3038.2	25/2$^-$	2442.2	23/2$^-$	R(DCO)=0.46 *6*.
603.7 *2*	10.1 *4*	3851.9	31/2$^-$	3248.0	27/2$^-$	R(DCO)=0.92 *10*.
612.4 *2*	9.55 *10*	923.1		310.7	11/2$^-$	
613.9 *2*	8.5 *6*	2556.1	(23/2$^-$)	1942.1	(19/2$^-$)	
619.2 *2*	2.26 *23*	4060.2	33/2$^+$	3440.7	29/2$^-$	
628.2[a] *2*	1.6 *3*	3666.3	29/2$^-$	3038.2	25/2$^-$	
635.3 *2*	4.4 *5*	1558.4	(17/2$^-$)	923.1		
637.2 *2*	5.4 *5*	4312.3	(29/2$^+$)	3675.1	(25/2$^+$)	
638.7 *2*	8.4 *6*	2873.9	(25/2$^-$)	2235.2	(21/2$^-$)	

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^{92}Mo(^{54}Fe,2pnγ) 2000Ol10 (continued)

$\gamma(^{143}Dy)$ (continued)

E_γ [†]	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Comments
644.6 *5*	0.68 *18*	4232.1	35/2$^-$	3587.5	31/2$^-$	R(DCO)=1.1 *4*.
645.4[a] *2*	5.6 *5*	3201.6?		2556.1	(23/2$^-$)	
650.1 *2*	4.0 *3*	2231.6	23/2$^-$	1581.5	19/2$^-$	R(DCO)=1.25 *12*.
658.0 *2*	1.90 *22*	3038.2	25/2$^-$	2379.8	23/2$^-$	
663.9 *2*	2.6 *3*	2073.7	19/2$^-$	1409.7	15/2$^-$	R(DCO)=0.95 *13*.
671.9 *2*	1.9 *4*	3587.5	31/2$^-$	2915.6	27/2$^-$	R(DCO)=1.33 *16*.
676.4 *2*	6.4 *7*	2235.2	(21/2$^-$)	1558.4	(17/2$^-$)	
682.8 *5*	0.9 *4*	2091.6	(13/2$^+$)	1409.7	15/2$^-$	
684.0 *2*	2.89 *24*	2915.6	27/2$^-$	2231.6	23/2$^-$	R(DCO)=1.2 *2*.
686.9 *2*	1.24 *25*	2760.6	23/2$^-$	2073.7	19/2$^-$	
700.2 *2*	1.9 *6*	1010.6	13/2$^-$	310.7	11/2$^-$	
706.2 *2*	5.4 *6*	2235.2	(21/2$^-$)	1529.4	19/2$^-$	
707.3 *2*	5.0 *4*	5019.6	33/2$^-$	4312.3	(29/2$^+$)	
707.9 *2*	5.4 *4*	4384.4	35/2$^-$	3676.5	31/2$^-$	R(DCO)=1.15 *13*.
722.7 *2*	1.3 *4*	4436.2	(33/2)	3713.5	(29/2)	
723.4 *2*	68 *3*	1529.4	19/2$^-$	805.9	15/2$^-$	R(DCO)=1.08 *4*.
731.4 *2*	4.54 *25*	7010.3	47/2$^-$	6278.9	43/2$^-$	R(DCO)=1.1 *2*.
733.6 *2*	5.1 *6*	3175.8		2442.2	23/2$^-$	
752.5 *2*	25.8 *22*	1558.4	(17/2$^-$)	805.9	15/2$^-$	
753.8 *2*	12.2 *8*	3133.7	27/2$^-$	2379.8	23/2$^-$	R(DCO)=1.05 *7*.
762.6 *2*	1.9 *3*	5583.5		4820.9	(31/2$^-$)	
769.4 *2*	6.1 *3*	6278.9	43/2$^-$	5509.5	39/2$^-$	R(DCO)=1.01 *18*.
773.5 *2*	3.1 *4*	5793.1	(37/2$^+$)	5019.6	33/2$^-$	
799.8 *2*	2.4 *3*	4860.0	(37/2$^-$)	4060.2	33/2$^+$	
803.6 *2*	10.6 *5*	4655.5	35/2$^-$	3851.9	31/2$^-$	R(DCO)=1.12 *13*.
821.7[a] *2*	3.9 *6*	3201.6?		2379.8	23/2$^-$	
835.4 *2*	2.1 *3*	6628.6	(41/2$^+$)	5793.1	(37/2$^+$)	
847.1 *2*	3.4 *4*	5231.3	(39/2$^-$)	4384.4	35/2$^-$	
850.0 *2*	30.5 *16*	2379.8	23/2$^-$	1529.4	19/2$^-$	R(DCO)=1.08 *3*.
854.0 *2*	7.3 *4*	5509.5	39/2$^-$	4655.5	35/2$^-$	R(DCO)=1.12 *17*.
858.4 *5*	1.00 *21*	5294.6	(37/2)	4436.2	(33/2)	
864.6 *2*	2.6 *4*	4040.4		3175.8		
865.0 *2*	4.1 *7*	1875.4	17/2$^-$	1010.6	13/2$^-$	R(DCO)=1.26 *7* (for 865γ+a contaminant).
892.4 *2*	3.7 *6*	3272.2		2379.8	23/2$^-$	
893.1 *2*	1.84 *18*	7903.4	51/2$^-$	7010.3	47/2$^-$	R(DCO)=1.16 *28*.
898.5 *5*	0.81 *25*	7527.1	(45/2$^+$)	6628.6	(41/2$^+$)	
934.2 *2*	3.5 *3*	6165.5		5231.3	(39/2$^-$)	
970.4 *5*	0.24 *22*	8497.5	(49/2$^+$)	7527.1	(45/2$^+$)	
1044.1 *2*	5.4 *19*	1850.0	(19/2$^-$)	805.9	15/2$^-$	R(DCO)=1.09 *16*.
1049.9 *5*	2.3 *5*	2579.0	(17/2$^+$)	1529.4	19/2$^-$	R(DCO)=0.68 *24*.
1060.1[&] *5*	4.8[&] *12*	2589.9	(21/2$^-$)	1529.4	19/2$^-$	R(DCO)=0.35 *16*.
1060.1[&] *2*	2.9[&] *5*	3372.4	(27/2$^-$)	2312.3	(23/2$^-$)	R(DCO)=0.61 *9*.
1069.4 *2*	1.7 *4*	1875.4	17/2$^-$	805.9	15/2$^-$	
1169.5 *2*	1.86 *23*	4820.9	(31/2$^-$)	3651.4	(29/2$^-$)	R(DCO)=0.55 *16*.
1276.9 *5*	1.5 *6*	2806.3	(21/2)	1529.4	19/2$^-$	R(DCO)=0.57 *10*.

[†] $\Delta(E\gamma)$=0.2 keV for Iγ>1; 0.5 keV for transitions with I$\gamma\leq$1 and for transitions of Eγ>1 MeV, based on a general statement by 2000Ol10.
[‡] May be an underestimate due to probable decay from an isomeric state.
[#] From sum of intensity of feeding transitions (723γ+752γ+1044γ+1069γ) normalized to 100.
[@] Reported in 2005Ri17 only.
[&] Multiply placed with intensity suitably divided.
[a] Placement of transition in the level scheme is uncertain.

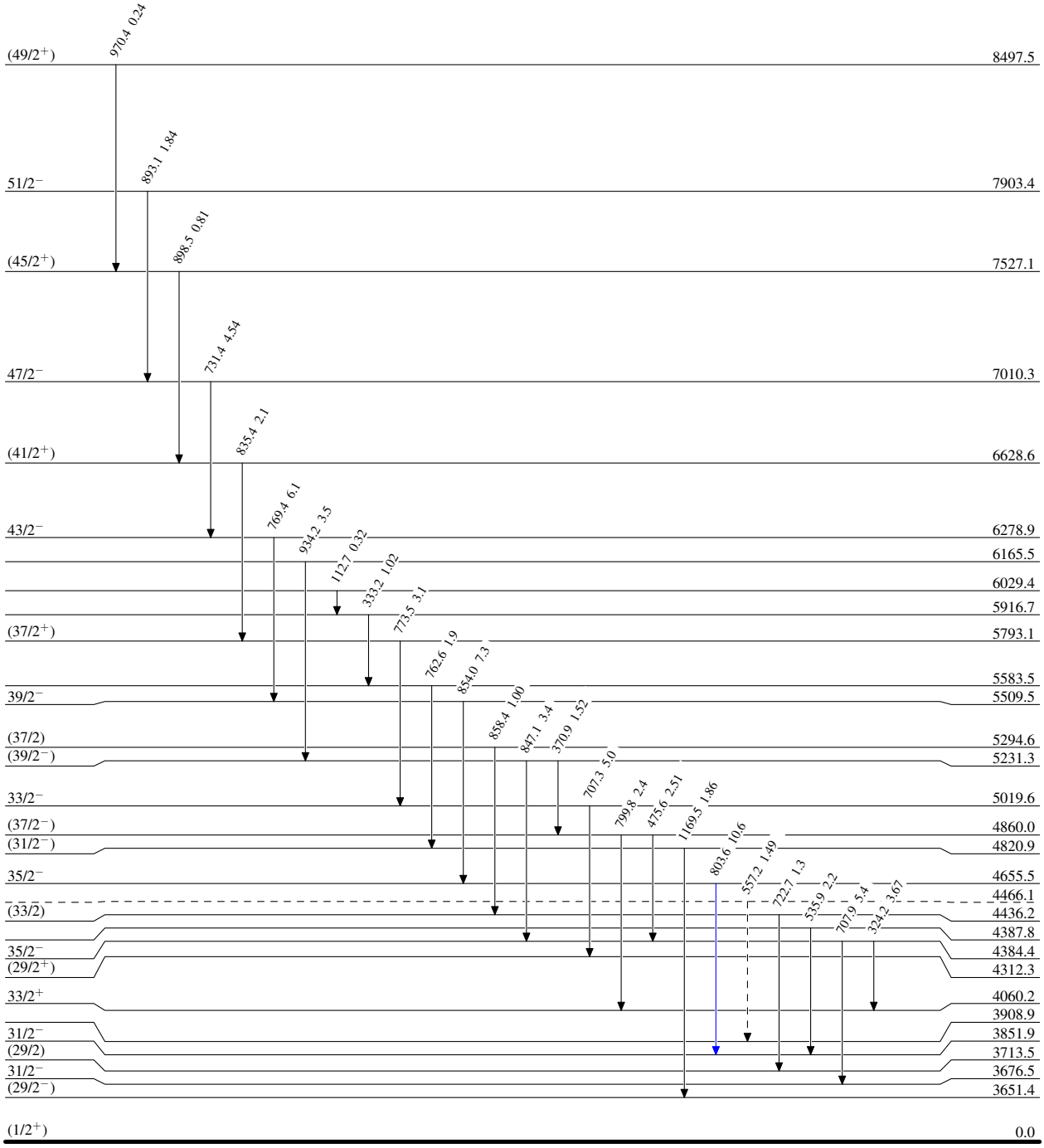
^{92}Mo(^{54}Fe,2pnγ) 2000Ol10

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)



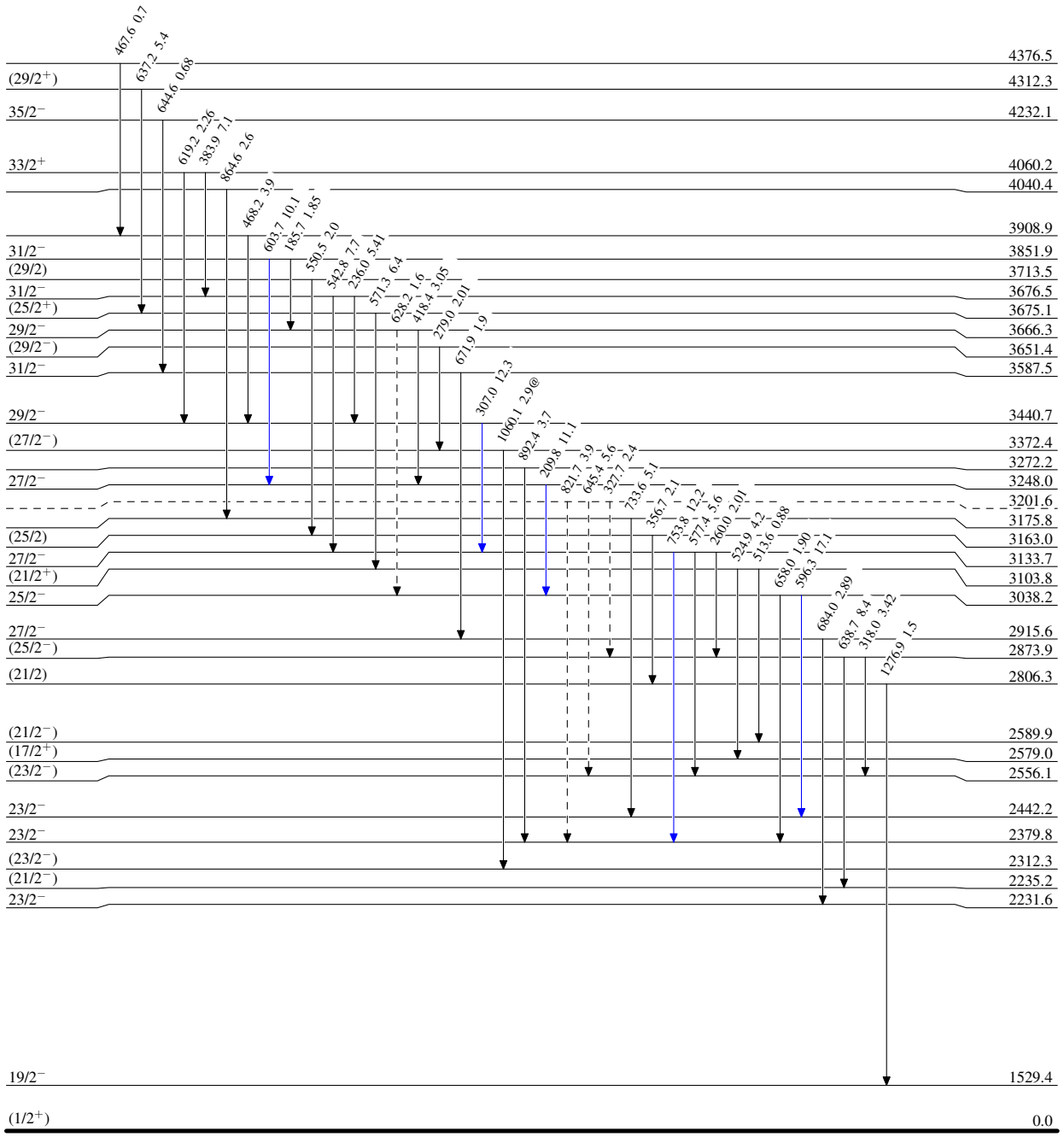
$^{143}_{66}Dy_{77}$

^{92}Mo(^{54}Fe,2pnγ) 2000OI10

Level Scheme (continued)

Intensities: Relative I_γ
@ Multiply placed: intensity suitably divided

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)



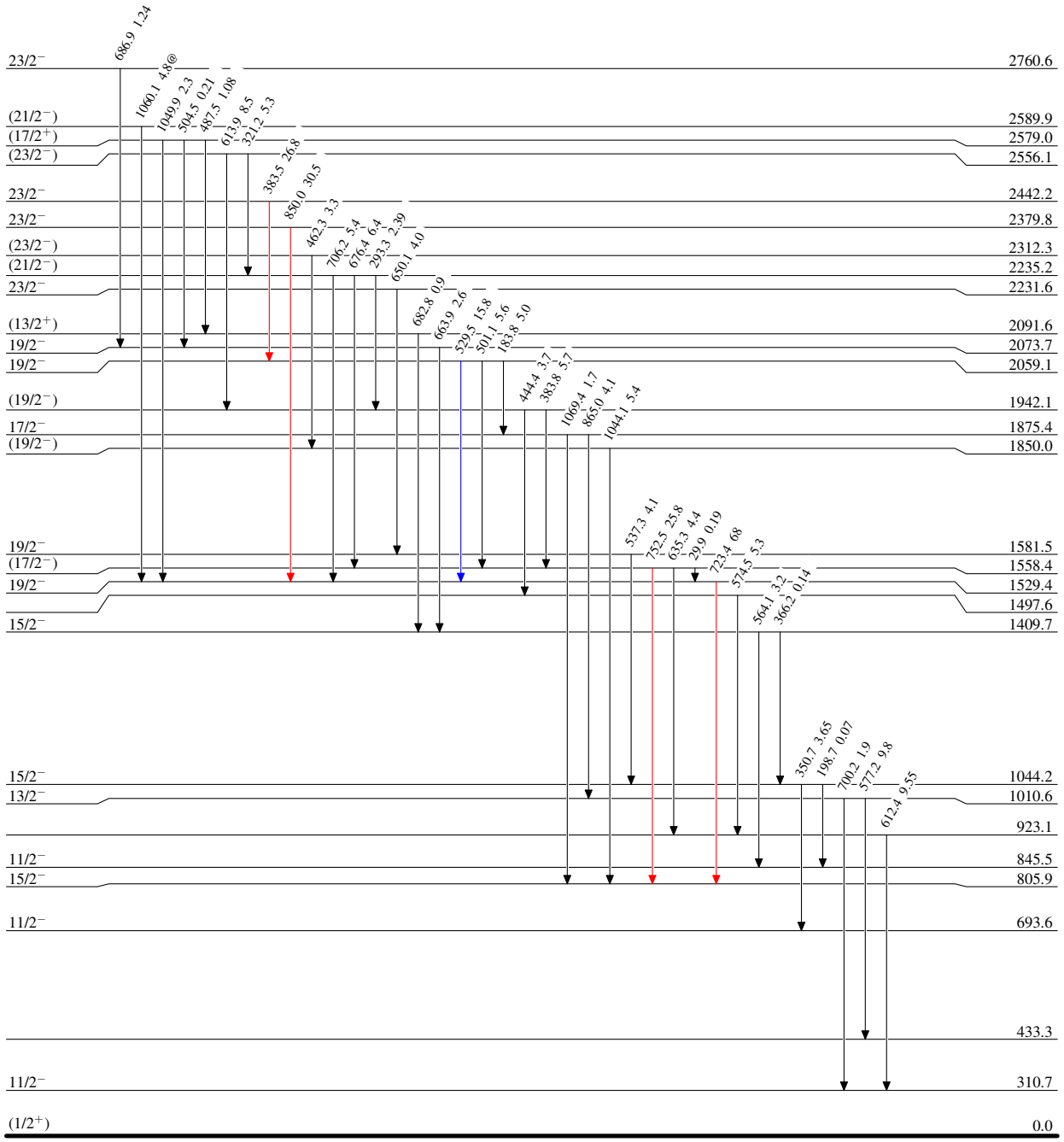
$^{143}_{66}Dy_{77}$

^{92}Mo(^{54}Fe,2pnγ) 2000Ol10

Level Scheme (continued)

Intensities: Relative I_γ
@ Multiply placed: intensity suitably divided

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)



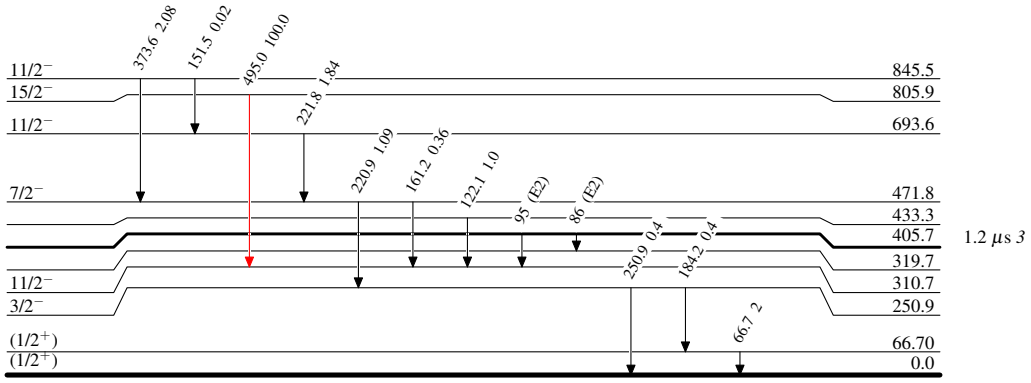
$^{143}_{66}Dy_{77}$

^{92}Mo(^{54}Fe,2pnγ) 2000Ol10

Level Scheme (continued)

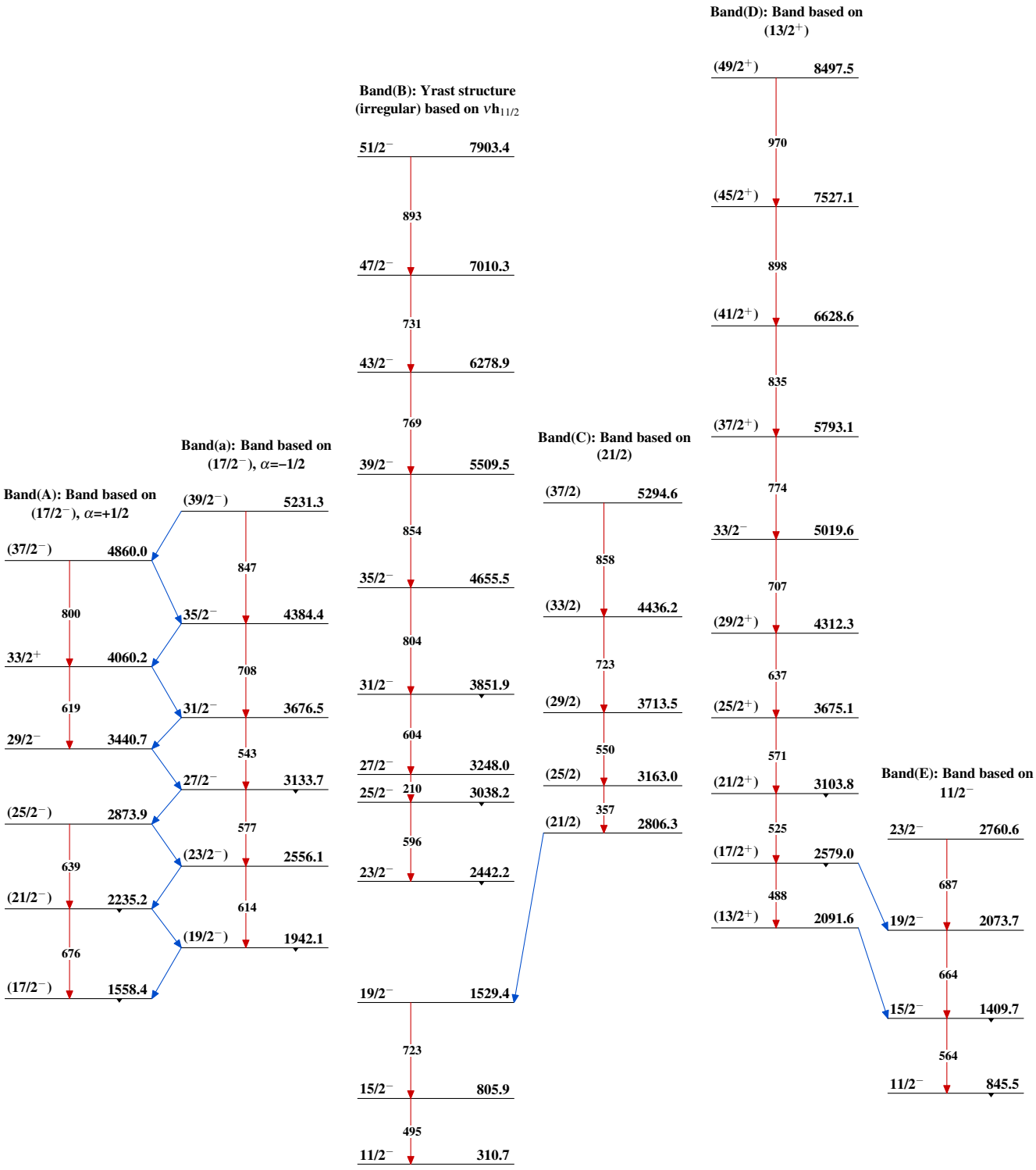
Intensities: Relative I_γ
@ Multiply placed: intensity suitably divided

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



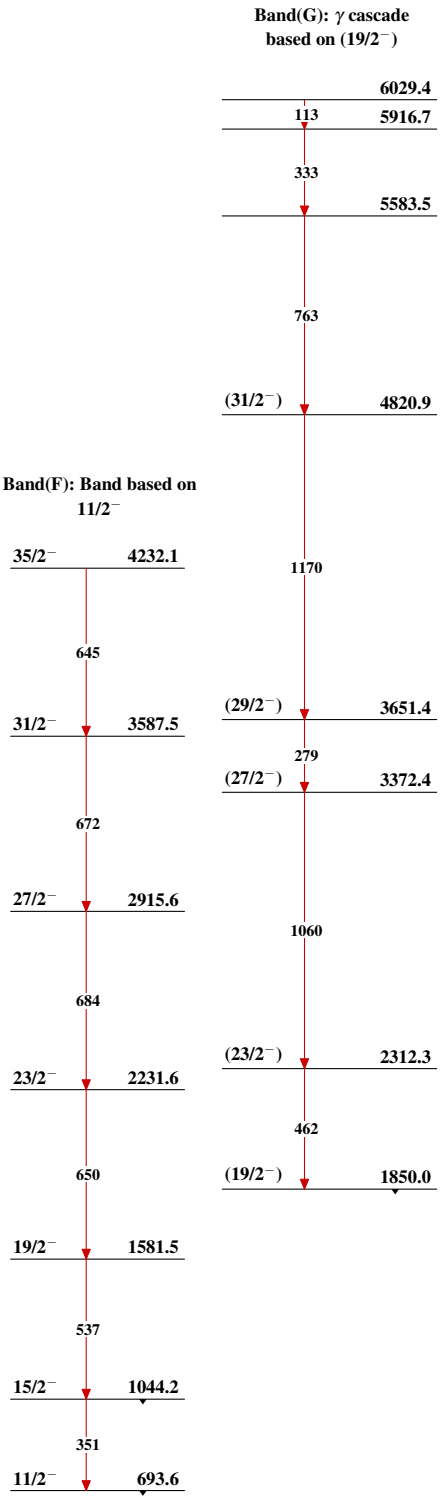
$^{143}_{66}Dy_{77}$

^{92}Mo(^{54}Fe,2pnγ) 2000Ol10



$^{143}_{66}Dy_{77}$

^{92}Mo(^{54}Fe,2pnγ) 2000Ol10 (continued)



$^{143}_{66}Dy_{77}$