^{92}Mo(^{32}S,2pnγ) 1991Ce05

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	S. Ohya	NDS 111, 1619 (2010)	20-Jan-2009

Includes ^{106}Cd(^{19}F,3nγ) and ^{92}Mo(^{32}S,X) reactions.

1991Ce05: ^{92}Mo(^{32}S,2pnγ) E=145 MeV measured Eγ, Iγ, $\gamma\gamma$-coin using 15 Compton suppressed Ge array oriented at 79°, 101°, 143° to beam. The Ge was provided with a γ-multiplicity filter and a Si detector ball to select (^{32}S,2pnγ) reaction; B(M1)/B(E2) ratios and total routhian surface calculation.

1991Li04: ^{106}Cd(^{19}F,3nγ) E=95 MeV; measured Eγ, Iγ, $\gamma\gamma$-coin using suppressed Ge array oriented at 79°, 101°, 143° to beam. Compton suppression Ge detector was provided with phoswich charged particle detector to select (^{19}F,3nγ) reaction; deduced E(levels), discussed band structures work overlaps that of 1991Ce05.

1975Bo11,1978Bo20:^{92}Mo(^{32}S,X); measured $T_{1/2}$.

^{121}Ba Levels

E(level)	J^{π}@	$T_{1/2}$	Comments
0.0†	5/2$^{(+)}$	29.7 s *15*	$T_{1/2}$: from delayed proton counting (1978Bo20). I(delayed protons)/I(β^+)=2×10^{-4} *1* (1975Bo11).
134.42† *21*	(7/2$^+$)		
139.36‡ *23*	(5/2$^-$)		
176.0‡ *3*	(7/2$^-$)		
274.0‡ *4*	(9/2$^-$)		
303.87† *23*	(9/2$^+$)		
372.2‡ *4*	(11/2$^-$)		
379.40# *22*	(3/2$^+$)		
502.7† *3*	(11/2$^+$)		
558.9# *3*	(5/2$^+$)		
617.6‡ *4*	(13/2$^-$)		
733.9† *3*	(13/2$^+$)		
747.2‡ *4*	(15/2$^-$)		
774.6# *3*	(7/2$^+$)		
990.5† *4*	(15/2$^+$)		
1024.1# *5*	(9/2$^+$)		
1133.8‡ *5*	(17/2$^-$)		
1270.2‡ *5*	(19/2$^-$)		
1274.1† *4*	(17/2$^+$)		
1289.9# *5*	(11/2$^+$)		
1581.7† *5*	(19/2$^+$)		
1598.0# *6*	(13/2$^+$)		
1783.7‡ *5*	(21/2$^-$)		
1890.7# *6*	(15/2$^+$)		
1904.6† *5*	(21/2$^+$)		
1912.4‡ *6*	(23/2$^-$)		
2248.3# *6*	(17/2$^+$)		
2254.1† *7*	(23/2$^+$)		
2519.9‡ *6*	(25/2$^-$)		
2534.9# *7*	(19/2$^+$)		
2600.0† *6*	(25/2$^+$)		

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$^{92}Mo(^{32}S,2pn\gamma)$ 1991Ce05 (continued)

^{121}Ba Levels (continued)

E(level)	Jπ@	E(level)	Jπ@	E(level)	Jπ@	E(level)	Jπ@
2640.2‡ 7	(27/2⁻)	3752.2# 10	(27/2⁺)	4826.9† 10	(37/2⁺)	6497.9‡ 11	(45/2⁻)
2978.9† 9	(27/2⁺)	3919.5‡ 8	(33/2⁻)	5041.7‡ 9	(39/2⁻)	6654.5† 12	(45/2⁺)
3127.6# 9	(23/2⁺)	4049.8† 9	(33/2⁺)	5260.6† 12	(39/2⁺)	6895.9‡ 11	(47/2⁻)
3246.4‡ 7	(29/2⁻)	4209.4‡ 8	(35/2⁻)	5525.1‡ 11	(41/2⁻)	7114.2† 13	(47/2⁺)
3322.4† 8	(29/2⁺)	4471.0# 11	(35/2⁺)	5690.7† 11	(41/2⁺)	7719.8† 13	(49/2⁺)
3413.9‡ 8	(31/2⁻)	4471.1† 11	(31/2⁺)	5932.5‡ 9	(43/2⁻)	7938.9‡ 12	(51/2⁻)
3725.0† 10	(31/2⁺)	4664.1‡ 9	(37/2⁻)	6136.1† 12	(43/2⁺)	9064.9‡ 13	(55/2⁻)

† Band(A): 5/2⁺[413].
‡ Band(B): 5/2⁻[532].
# Band(C): 3/2⁺[411].
@ Tentative assignment based on excitation function, γ anisotropy, B(M1)/B(E2) ratio and routhian surface calculation in $^{92}Mo(^{32}S,2pn\gamma)$ (1991Ce05).

γ(^{121}Ba)

Eγ†	Iγ‡	Ei(level)	Jπi	Ef	Jπf	Mult.#	Comments
98.0& 3	<90&	274.0	(9/2⁻)	176.0	(7/2⁻)	(D)	Iγ: 90 4 for 98.0γ+ 98.4γ doublet. Anisotropy ratio=0.59 8 (for 98.0γ doublet).
98.4& 3	<90&	372.2	(11/2⁻)	274.0	(9/2⁻)	(D)	Anisotropy ratio=0.59 8 (for 98.0γ doublet).
129.8 3	14 1	747.2	(15/2⁻)	617.6	(13/2⁻)	D	Anisotropy ratio=0.55 7.
134.4 3	41 2	134.42	(7/2⁺)	0.0	5/2⁽⁺⁾	D	Anisotropy ratio=0.71 9.
134.6 5		274.0	(9/2⁻)	139.36	(5/2⁻)		
139.3 3		139.36	(5/2⁻)	0.0	5/2⁽⁺⁾		
169.4 3	10 1	303.87	(9/2⁺)	134.42	(7/2⁺)		
176.0 3		176.0	(7/2⁻)	0.0	5/2⁽⁺⁾		
179.3 3	5 2	558.9	(5/2⁺)	379.40	(3/2⁺)		
196.2 3	60 3	372.2	(11/2⁻)	176.0	(7/2⁻)		
199.2 3	6 1	502.7	(11/2⁺)	303.87	(9/2⁺)		
215.8 3	8 1	774.6	(7/2⁺)	558.9	(5/2⁺)	D	Anisotropy ratio=0.63 9.
231.4 3	5 1	733.9	(13/2⁺)	502.7	(11/2⁺)		
240.0 3	12 1	379.40	(3/2⁺)	139.36	(5/2⁻)	D	Anisotropy ratio=0.73 9.
244.3 5		379.40	(3/2⁺)	134.42	(7/2⁺)		
245.5 3	25 2	617.6	(13/2⁻)	372.2	(11/2⁻)	D	Anisotropy ratio=0.63 7.
249.2 5		1024.1	(9/2⁺)	774.6	(7/2⁺)		
256.4 3	3 1	990.5	(15/2⁺)	733.9	(13/2⁺)		
265.9 5		1289.9	(11/2⁺)	1024.1	(9/2⁺)		
283.4 3	6 4	1274.1	(17/2⁺)	990.5	(15/2⁺)		
286.7 5		2534.9	(19/2⁺)	2248.3	(17/2⁺)		
292.5 5		1890.7	(15/2⁺)	1598.0	(13/2⁺)		
304.0 3	43 3	303.87	(9/2⁺)	0.0	5/2⁽⁺⁾	(Q)	Anisotropy ratio=1.07 14.
307.8 5		1598.0	(13/2⁺)	1289.9	(11/2⁺)		
343.6 3	20 2	617.6	(13/2⁻)	274.0	(9/2⁻)	Q	Anisotropy ratio=1.49 21.
357.9 5		2248.3	(17/2⁺)	1890.7	(15/2⁺)		
368.2 3	38 2	502.7	(11/2⁺)	134.42	(7/2⁺)	(Q)	Anisotropy ratio=1.08 13.
374.9 3	98 4	747.2	(15/2⁻)	372.2	(11/2⁻)	(Q)	Anisotropy ratio=1.14 14.
379.3 3	11 2	379.40	(3/2⁺)	0.0	5/2⁽⁺⁾	D	Anisotropy ratio=0.68 11.
386.7 3	14 3	1133.8	(17/2⁻)	747.2	(15/2⁻)	D	Anisotropy ratio=0.41 6.
395.0 3	15 4	774.6	(7/2⁺)	379.40	(3/2⁺)	Q	Anisotropy ratio=1.20 15.

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^{92}Mo(^{32}S,2pnγ) 1991Ce05 (continued)

γ(^{121}Ba) (continued)

Eγ[†]	Iγ[‡]	Ei(level)	J^{π}_i	Ef	J^{π}_f	Mult.[#]	Comments
424.5[a] *5*		558.9	(5/2+)	134.42	(7/2+)		
429.7 *3*	44 *3*	733.9	(13/2+)	303.87	(9/2+)	Q	Anisotropy ratio=1.29 *14*.
465.5 *5*		1024.1	(9/2+)	558.9	(5/2+)		
487.9 *3*	35 *2*	990.5	(15/2+)	502.7	(11/2+)	Q	Anisotropy ratio=1.40 *17*.
505.7 *3*	13 *1*	3919.5	(33/2−)	3413.9	(31/2−)		
513.3 *5*		1783.7	(21/2−)	1270.2	(19/2−)		
515.3 *5*		1289.9	(11/2+)	774.6	(7/2+)		
516.1 *5*		1133.8	(17/2−)	617.6	(13/2−)		
523.0 *3*	100	1270.2	(19/2−)	747.2	(15/2−)	Q	Anisotropy ratio=1.38 *16*.
540.0 *3*	46 *3*	1274.1	(17/2+)	733.9	(13/2+)	Q	Anisotropy ratio=1.41 *15*.
574.0 *5*		1598.0	(13/2+)	1024.1	(9/2+)		
591.2 *3*	42 *5*	1581.7	(19/2+)	990.5	(15/2+)	Q	Anisotropy ratio=1.34 *12*.
592.7 *5*		3127.6	(23/2+)	2534.9	(19/2+)		
601.0 *5*		1890.7	(15/2+)	1289.9	(11/2+)		
606.2 *5*		3246.4	(29/2−)	2640.2	(27/2−)		
607.5 *5*		2519.9	(25/2−)	1912.4	(23/2−)		
624.6 *5*		3752.2	(27/2+)	3127.6	(23/2+)		
630.5 *3*	43 *3*	1904.6	(21/2+)	1274.1	(17/2+)	Q	Anisotropy ratio=1.34 *16*.
642.2 *3*	97 *6*	1912.4	(23/2−)	1270.2	(19/2−)	Q	Anisotropy ratio=1.46 *11*.
644.1 *5*		2534.9	(19/2+)	1890.7	(15/2+)		
649.9 *3*	23 *2*	1783.7	(21/2−)	1133.8	(17/2−)	Q	Anisotropy ratio=1.38 *18*.
650.1 *5*		2248.3	(17/2+)	1598.0	(13/2+)		
672.4 *5*		2254.1	(23/2+)	1581.7	(19/2+)		
673.1 *5*		3919.5	(33/2−)	3246.4	(29/2−)		
695.4 *3*	40 *4*	2600.0	(25/2+)	1904.6	(21/2+)	Q	Anisotropy ratio=1.43 *15*.
718.9 *5*		4471.1	(31/2+)	3752.2	(27/2+)		
722.4 *5*		3322.4	(29/2+)	2600.0	(25/2+)		
724.7 *5*		2978.9	(27/2+)	2254.1	(23/2+)		
726.5 *5*		3246.4	(29/2−)	2519.9	(25/2−)		
727.4 *5*		4049.8	(33/2+)	3322.4	(29/2+)		
727.7 *5*		2640.2	(27/2−)	1912.4	(23/2−)		
736.1 *5*		2519.9	(25/2−)	1783.7	(21/2−)		
744.6 *5*		4664.1	(37/2−)	3919.5	(33/2−)		
746.1[@] *5*		3725.0	(31/2+)	2978.9	(27/2+)		
746.1[@] *5*		4471.0	(35/2+)	3725.0	(31/2+)		
773.7 *5*		3413.9	(31/2−)	2640.2	(27/2−)	Q	Anisotropy ratio=1.51 *20*.
777.1 *3*	15 *6*	4826.9	(37/2+)	4049.8	(33/2+)		
789.5 *3*	10 *4*	5260.6	(39/2+)	4471.0	(35/2+)		
795.5 *3*	32 *4*	4209.4	(35/2−)	3413.9	(31/2−)	Q	Anisotropy ratio=1.38 *18*.
832.3 *3*	29 *6*	5041.7	(39/2−)	4209.4	(35/2−)	Q	Anisotropy ratio=1.50 *21*.
861.0 *5*		5525.1	(41/2−)	4664.1	(37/2−)		
863.8 *5*		5690.7	(41/2+)	4826.9	(37/2+)		
875.5 *3*	25 *5*	6136.1	(43/2+)	5260.6	(39/2+)		
890.8 *3*	39 *6*	5932.5	(43/2−)	5041.7	(39/2−)		
963.4 *5*		6895.9	(47/2−)	5932.5	(43/2−)		
963.9 *5*		6654.5	(45/2+)	5690.7	(41/2+)		
972.8 *3*	20 *3*	6497.9	(45/2−)	5525.1	(41/2−)		
978.1 *5*		7114.2	(47/2+)	6136.1	(43/2+)		
1043.0 *5*		7938.9	(51/2−)	6895.9	(47/2−)		
1065.3 *5*		7719.8	(49/2+)	6654.5	(45/2+)		
1126.0 *5*		9064.9	(55/2−)	7938.9	(51/2−)		

† From 2p-gated coin. spectrum taken at E(^{32}S)=145 MeV (1991Ce05).

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^{92}Mo(^{32}S,2pnγ) 1991Ce05 (continued)

γ(^{121}Ba) (continued)

‡ From 2p-gated coin. spectrum taken at E(^{32}S)=145 MeV; Iγ′s are normalized to I(523.0 γ)=100; Iγ,s for weak lines were not determined (1991Ce05).

Derived from anisotropy I(37°)/I(79°) relative to 196.2 γ: the values close to 0.6 are expected for stretched dipole transitions. The values close to 1.3 are expected for stretched quadrupole transitions.

@ Multiply placed.

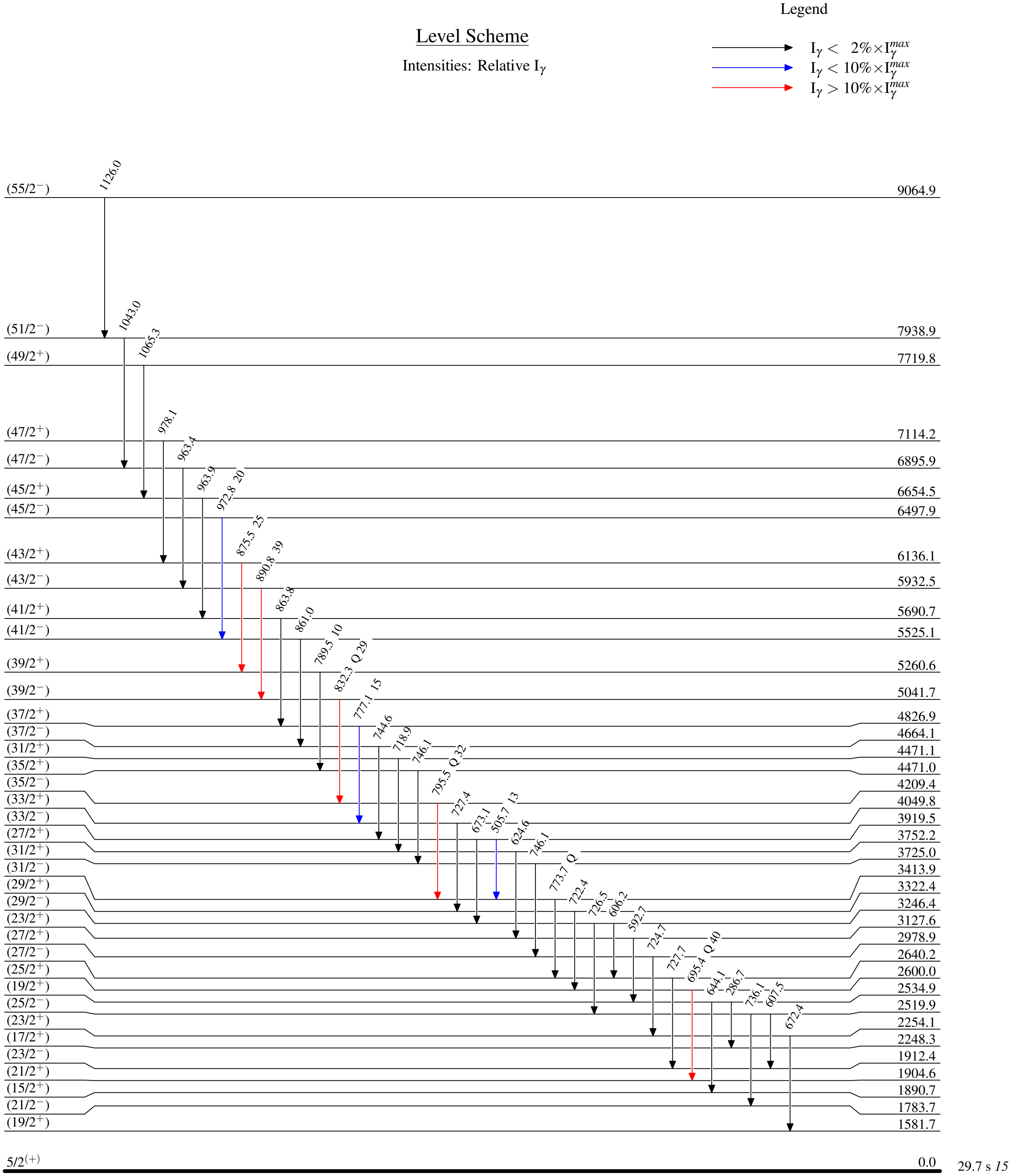
& Multiply placed with undivided intensity.

^{a} Placement of transition in the level scheme is uncertain.

$^{92}Mo(^{32}S,2pn\gamma)$ 1991Ce05

Level Scheme

Intensities: Relative I_γ



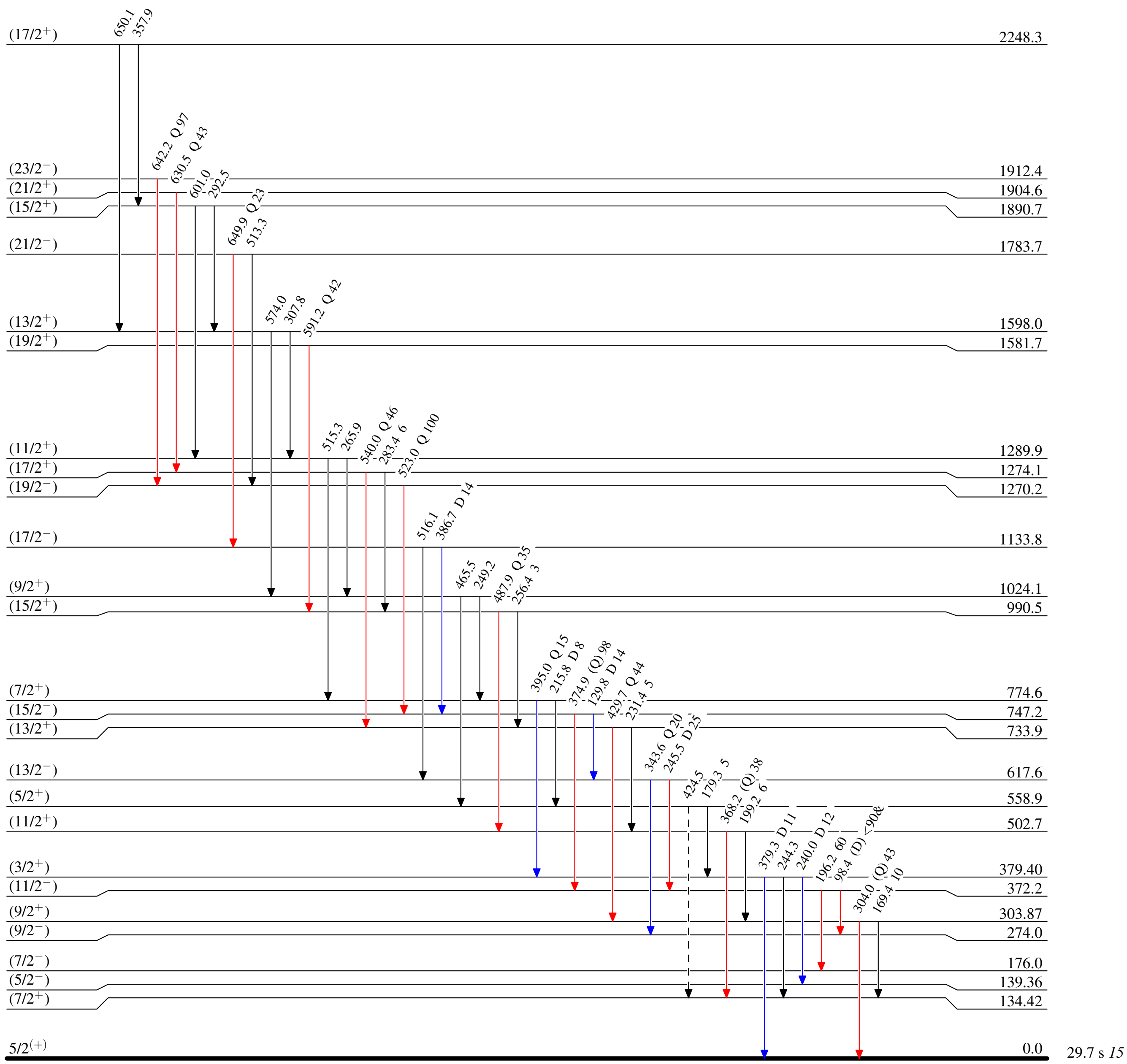
$^{121}_{56}Ba_{65}$

$^{92}Mo(^{32}S,2pn\gamma)$ 1991Ce05

Level Scheme (continued)

Intensities: Relative I_γ
& Multiply placed: undivided intensity given

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)



$^{121}_{56}Ba_{65}$

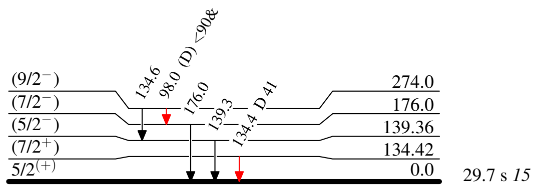
^{92}Mo(^{32}S,2pnγ) 1991Ce05

Level Scheme (continued)

Intensities: Relative I_γ
& Multiply placed: undivided intensity given

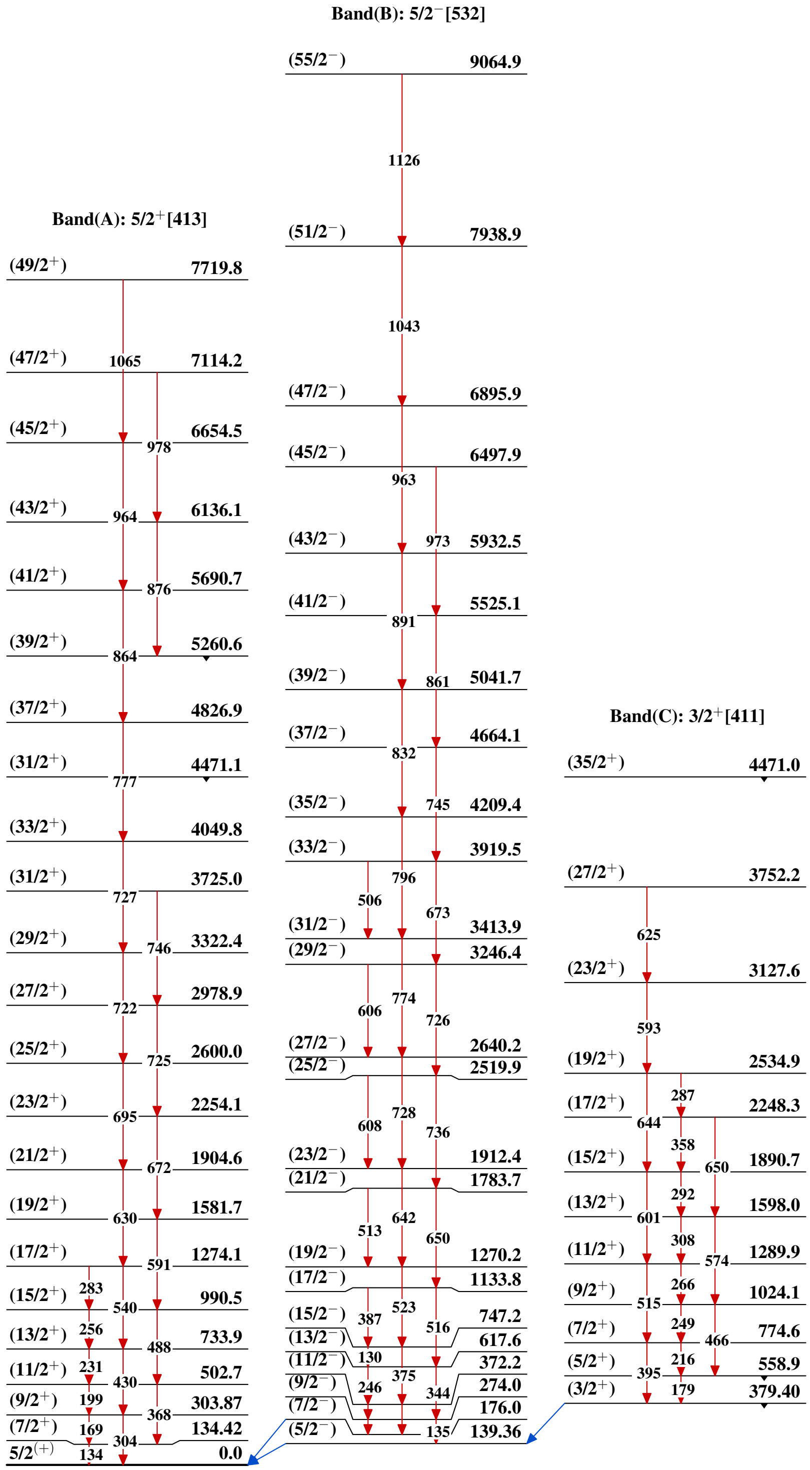
Legend

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



$^{121}_{56}Ba_{65}$

$^{92}Mo(^{32}S,2pn\gamma)$ 1991Ce05



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