

$^{92}\text{Mo}(^{40}\text{Ca},\alpha 2\text{pn}\gamma)$ 2002Pe15

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	J. Katakura	NDS 112, 495 (2011)	1-Jan-2010

2002Pe15: E=190 MeV. Measured $E\gamma$, $I\gamma$, $\gamma\gamma$, $\gamma\gamma(\theta)$ (DCO) using the GASP array. Light charged particles were detected with the ISIS ball, composed of 40 ΔE -E Si telescopes.

XUNDL data set compiled by M. Lee and B. Singh (McMaster), Nov. 14, 2002, is consulted.

 ^{125}Ce Levels

E(level) [†]	J ^{π}	Comments
0 [#]	(7/2 ⁻)	
0+x? ^d	(7/2 ⁻)	Additional information 1.
92.1 ^b 6	(1/2 ⁺)	
93.8+x? ^d 5	(9/2 ⁻)	
116.0 ^c 4	(3/2 ⁺)	
134.62 [@] 16	(9/2 ⁻)	
135.60 ^{&} 19	(5/2 ⁺)	
265.8 ^b 4	(5/2 ⁺)	
266.9+x? ^d 6	(11/2 ⁻)	
282.08 ^a 23	(7/2 ⁺)	
301.18 [#] 16	(11/2 ⁻)	
321.7 ^c 3	(7/2 ⁺)	
462.33 ^{&} 23	(9/2 ⁺)	
512.38 [@] 19	(13/2 ⁻)	
580.7 ^b 4	(9/2 ⁺)	
660.4 ^c 3	(11/2 ⁺)	
678.13 ^a 25	(11/2 ⁺)	
737.01 [#] 21	(15/2 ⁻)	
746.0+x? ^d 6	(15/2 ⁻)	
912.1 ^{&} 3	(13/2 ⁺)	
1022.2 ^b 4	(13/2 ⁺)	
1026.43 [@] 23	(17/2 ⁻)	
1125.0 ^c 3	(15/2 ⁺)	
1181.0 ^a 3	(15/2 ⁺)	
1292.55 [#] 25	(19/2 ⁻)	
1359.9+x? ^d 6	(19/2 ⁻)	
1464.6 ^{&} 4	(17/2 ⁺)	
1568.6 ^b 4	(17/2 ⁺)	
1657.0 [@] 3	(21/2 ⁻)	
1687.1 ^c 4	(19/2 ⁺)	
1779.8 ^a 4	(19/2 ⁺)	
1946.9 [#] 3	(23/2 ⁻)	
2083.7+x? ^d 7	(23/2 ⁻)	
2100.9 ^{&} 4	(21/2 ⁺)	
2187.8 ^b 5	(21/2 ⁺)	
2320.6 ^c 5	(23/2 ⁺)	
2368.9 [@] 5	(25/2 ⁻)	
2449.8 ^a 4	(23/2 ⁺)	

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⁹²Mo(⁴⁰Ca,α2pnγ) **2002Pe15** (continued)

¹²⁵Ce Levels (continued)

E(level) [†]	J ^π	E(level) [†]	J ^π	E(level) [†]	J ^π	E(level) [†]	J ^π
2656.8 [#] 6	(27/2 ⁻)	3579.8 ^c 5	(31/2 ⁺)	4978.4 ^c 6	(39/2 ⁺)	6770.2 ^c 8	(47/2 ⁺)
2785.8 ^{&} 4	(25/2 ⁺)	3667.1 [@] 6	(33/2 ⁻)	5109.2 ^{?‡b} 10	(37/2 ⁺)	7014.4+x? ^d 18	(43/2 ⁻)
2807.0 ^b 5	(25/2 ⁺)	3800.8+x? ^d 10	(31/2 ⁻)	5219.9 [@] 7	(41/2 ⁻)	7315.4 [@] 13	(49/2 ⁻)
2900.7+x? ^d 9	(27/2 ⁻)	3985.3 [#] 6	(35/2 ⁻)	5678.1 [#] 7	(43/2 ⁻)	7819.8 ^c 10	(51/2 ⁺)
2967.4 ^c 5	(27/2 ⁺)	4234.0 ^c 6	(35/2 ⁺)	5823.0 ^c 6	(43/2 ⁺)	7857.5 [#] 13	(51/2 ⁻)
3054.0 [@] 6	(29/2 ⁻)	4250.4 ^{?‡b} 9	(33/2 ⁺)	5843.4+x? ^d 15	(39/2 ⁻)	8309.4+x? ^d 21	(47/2 ⁻)
3316.8 [#] 6	(31/2 ⁻)	4378.2 [@] 7	(37/2 ⁻)	6045.9 ^{?‡b} 11	(41/2 ⁺)	8967.8 ^c 14	(55/2 ⁺)
3478.6 ^{?‡b} 7	(29/2 ⁺)	4767.2 [#] 6	(39/2 ⁻)	6200.4 [@] 7	(45/2 ⁻)	10208.8 ^c 17	(59/2 ⁺)
3529.8 ^{?‡&} 11	(29/2 ⁺)	4777.8+x? ^d 14	(35/2 ⁻)	6712.5 [#] 8	(47/2 ⁻)	11537.8 ^c 20	(63/2 ⁺)

[†] From least-squares fit to Eγ's (by evaluators).

[‡] Not confirmed in ⁶⁴Zn(⁶⁴Zn,2pnγ), questionable.

[#] Band(A): ν7/2[523], α=-1/2.

[@] Band(a): ν7/2[523], α=+1/2.

[&] Band(B): ν5/2[402], α=+1/2.

^a Band(b): ν5/2[402], α=-1/2.

^b Band(C): ν1/2[411], α=+1/2.

^c Band(c): ν1/2[411], α=-1/2.

^d Band(D): Band based on (7/2⁻). J^π based on h_{9/2} or f_{7/2} intruder configuration. Not confirmed in ⁶⁴Zn(⁶⁴Zn,2pnγ), questionable.

γ(¹²⁵Ce)

DCO ratios are for gates on stretched quadrupole transitions.

E _γ [†]	I _γ	E _i (level)	J _i ^π	E _f	J _f ^π	Mult. [‡]	Comments
55.7 10	0.6 2	321.7	(7/2 ⁺)	265.8	(5/2 ⁺)		
79.4 10	<0.2	660.4	(11/2 ⁺)	580.7	(9/2 ⁺)		
93.8 5	5 1	93.8+x?	(9/2 ⁻)	0+x?	(7/2 ⁻)	D+Q	DCO=0.76 20
134.6 2	104 4	134.62	(9/2 ⁻)	0	(7/2 ⁻)	D	DCO=0.59 4
135.5 2	45 2	135.60	(5/2 ⁺)	0	(7/2 ⁻)	D+Q	DCO=0.83 33
146.5 2	29 1	282.08	(7/2 ⁺)	135.60	(5/2 ⁺)	D+Q	DCO=0.73 15
149.8 2	9.4 5	265.8	(5/2 ⁺)	116.0	(3/2 ⁺)	D+Q	DCO=0.86 28
166.6 2	100 2	301.18	(11/2 ⁻)	134.62	(9/2 ⁻)	D	DCO=0.48 6
173.1 2	12.0 6	266.9+x?	(11/2 ⁻)	93.8+x?	(9/2 ⁻)	D+Q	DCO=0.28 11
173.7 5	4.8 16	265.8	(5/2 ⁺)	92.1	(1/2 ⁺)	Q	DCO=0.92 36
180.3 2	26 1	462.33	(9/2 ⁺)	282.08	(7/2 ⁺)	D	DCO=0.52 9
186.2 5	1.4 1	321.7	(7/2 ⁺)	135.60	(5/2 ⁺)		
198.0 2	6.6 7	660.4	(11/2 ⁺)	462.33	(9/2 ⁺)		
205.6 2	20.4 8	321.7	(7/2 ⁺)	116.0	(3/2 ⁺)	Q	DCO=1.09 13
211.2 2	46 1	512.38	(13/2 ⁻)	301.18	(11/2 ⁻)	D	DCO=0.48 6
212.5 10	0.8 2	1125.0	(15/2 ⁺)	912.1	(13/2 ⁺)		
215.8 2	9.2 5	678.13	(11/2 ⁺)	462.33	(9/2 ⁺)	D	DCO=0.48 20
224.6 2	22 1	737.01	(15/2 ⁻)	512.38	(13/2 ⁻)	D	DCO=0.46 4
234.2 2	6.2 7	912.1	(13/2 ⁺)	678.13	(11/2 ⁺)	D	DCO=0.43 14
259.2 5	4.0 4	580.7	(9/2 ⁺)	321.7	(7/2 ⁺)	D+Q	DCO=0.87 26
262.7 2	5.2 3	3316.8	(31/2 ⁻)	3054.0	(29/2 ⁻)	D	DCO=0.67 11

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$^{92}\text{Mo} (^{40}\text{Ca}, \alpha 2\text{pn}\gamma)$ 2002Pe15 (continued) $\gamma(^{125}\text{Ce})$ (continued)

E_γ †	I_γ	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. ‡	Comments
266.1 2	9.0 4	1292.55	(19/2 ⁻)	1026.43	(17/2 ⁻)	D	DCO=0.45 6
269.2 5	4.0 6	1181.0	(15/2 ⁺)	912.1	(13/2 ⁺)	D	DCO=0.55 14
282.7 5	3.2 7	282.08	(7/2 ⁺)	0	(7/2 ⁻)		
283.3 5	3.0 7	1464.6	(17/2 ⁺)	1181.0	(15/2 ⁺)	D+Q	DCO=0.38 17
287.8 5	4.8 8	2656.8	(27/2 ⁻)	2368.9	(25/2 ⁻)		
289.4 2	16 2	1026.43	(17/2 ⁻)	737.01	(15/2 ⁻)	D	DCO=0.49 8
289.9 2	5.4 8	1946.9	(23/2 ⁻)	1657.0	(21/2 ⁻)		
301.2 2	27 2	301.18	(11/2 ⁻)	0	(7/2 ⁻)	Q	DCO=0.96 20
315.0 2	7.8 7	580.7	(9/2 ⁺)	265.8	(5/2 ⁺)	Q	DCO=0.95 20
315.5 5	3.4 6	1779.8	(19/2 ⁺)	1464.6	(17/2 ⁺)	D	DCO=0.54 20
318.0 5	4.6 6	3985.3	(35/2 ⁻)	3667.1	(33/2 ⁻)	D	DCO=0.43 17
320.5 5	4.0 6	2100.9	(21/2 ⁺)	1779.8	(19/2 ⁺)	D	DCO=0.57 36
326.6 2	9 1	462.33	(9/2 ⁺)	135.60	(5/2 ⁺)		
337 1	2.8 3	2785.8	(25/2 ⁺)	2449.8	(23/2 ⁺)		
338.6 2	31 1	660.4	(11/2 ⁺)	321.7	(7/2 ⁺)	Q	DCO=0.93 15
348 1	4 1	2449.8	(23/2 ⁺)	2100.9	(21/2 ⁺)		
351 1	4.8 5	3667.1	(33/2 ⁻)	3316.8	(31/2 ⁻)	D	DCO=0.54 17
356.6 5	3.4 3	678.13	(11/2 ⁺)	321.7	(7/2 ⁺)		
361.4 5	2.8 5	1022.2	(13/2 ⁺)	660.4	(11/2 ⁺)		
364.4 2	6.2 7	1657.0	(21/2 ⁻)	1292.55	(19/2 ⁻)	D	DCO=0.51 14
377.7 2	30.4 8	512.38	(13/2 ⁻)	134.62	(9/2 ⁻)	Q	DCO=0.97 14
378.3 2	10 1	660.4	(11/2 ⁺)	282.08	(7/2 ⁺)	Q	DCO=0.92 26
388.9 5	4.0 2	4767.2	(39/2 ⁻)	4378.2	(37/2 ⁻)		
392.9 5	2.4 2	4378.2	(37/2 ⁻)	3985.3	(35/2 ⁻)		
396.1 2	10.4 9	678.13	(11/2 ⁺)	282.08	(7/2 ⁺)	Q	DCO=0.98 31
397.1 2	6.6 3	3054.0	(29/2 ⁻)	2656.8	(27/2 ⁻)	D	DCO=0.46 9
422.0 5	4.8 6	2368.9	(25/2 ⁻)	1946.9	(23/2 ⁻)	D	DCO=0.60 15
435.9 2	32 4	737.01	(15/2 ⁻)	301.18	(11/2 ⁻)	Q	DCO=1.01 10
441.5 2	12.2 6	1022.2	(13/2 ⁺)	580.7	(9/2 ⁺)	Q	DCO=1.26 26
443.5 5	1.0 2	1568.6	(17/2 ⁺)	1125.0	(15/2 ⁺)		
446.9 5	3.4 5	1125.0	(15/2 ⁺)	678.13	(11/2 ⁺)		
449.7 2	10.2 8	912.1	(13/2 ⁺)	462.33	(9/2 ⁺)	Q	DCO=1.02 35
464.6 2	28.0 9	1125.0	(15/2 ⁺)	660.4	(11/2 ⁺)	Q	DCO=0.98 9
479.1 2	10.0 1	746.0+x?	(15/2 ⁻)	266.9+x?	(11/2 ⁻)	Q	DCO=1.0 5
502.7 2	11.6 7	1181.0	(15/2 ⁺)	678.13	(11/2 ⁺)	Q	DCO=0.96 25
514.0 2	23 1	1026.43	(17/2 ⁻)	512.38	(13/2 ⁻)	Q	DCO=0.98 15
546.4 2	12 1	1568.6	(17/2 ⁺)	1022.2	(13/2 ⁺)	Q	DCO=0.96 24
552.6 2	14 1	1464.6	(17/2 ⁺)	912.1	(13/2 ⁺)		
555.6 2	34 2	1292.55	(19/2 ⁻)	737.01	(15/2 ⁻)	Q	DCO=1.00 10
562.1 2	27 2	1687.1	(19/2 ⁺)	1125.0	(15/2 ⁺)	Q	DCO=1.09 11
598.8 2	10.6 8	1779.8	(19/2 ⁺)	1181.0	(15/2 ⁺)		
612.4 2	15.8 6	3579.8	(31/2 ⁺)	2967.4	(27/2 ⁺)	Q	DCO=0.90 15
613.0 2	11 1	3667.1	(33/2 ⁻)	3054.0	(29/2 ⁻)		
613.9 2	9.9 7	1359.9+x?	(19/2 ⁻)	746.0+x?	(15/2 ⁻)	(Q)	DCO=0.88 44
619.2# 2	10# 1	2187.8	(21/2 ⁺)	1568.6	(17/2 ⁺)	Q	DCO=0.96 21 DCO is for a doublet at 619.
619.2# 2	8# 1	2807.0	(25/2 ⁺)	2187.8	(21/2 ⁺)	Q	DCO=0.96 21 DCO is for a doublet at 619.
630.5 2	14 1	1657.0	(21/2 ⁻)	1026.43	(17/2 ⁻)	Q	DCO=1.08 14
633.5 2	23.6 6	2320.6	(23/2 ⁺)	1687.1	(19/2 ⁺)	Q	DCO=1.04 15
636.3 2	14 2	2100.9	(21/2 ⁺)	1464.6	(17/2 ⁺)		
646.8 2	18.6 6	2967.4	(27/2 ⁺)	2320.6	(23/2 ⁺)	Q	DCO=0.97 12
654.2 2	11.6 8	4234.0	(35/2 ⁺)	3579.8	(31/2 ⁺)	Q	DCO=1.00 10 DCO is for a doublet at 654.
654.4 2	30 2	1946.9	(23/2 ⁻)	1292.55	(19/2 ⁻)	Q	DCO=1.00 10

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$^{92}\text{Mo}(^{40}\text{Ca},\alpha 2p\text{n}\gamma)$ **2002Pe15** (continued)

$\gamma(^{125}\text{Ce})$ (continued)

E_γ [†]	I_γ	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. [‡]	Comments
							$\pi=+$ quoted for initial and final levels in table 1 of 2002Pe15 is a misprint.
							DCO is for a doublet at 654.
660.2 2	17.0 5	3316.8	(31/2 ⁻)	2656.8	(27/2 ⁻)	Q	DCO=1.10 13
668.5 2	16.8 5	3985.3	(35/2 ⁻)	3316.8	(31/2 ⁻)	Q	DCO=0.97 17
670.0 2	11.6 8	2449.8	(23/2 ⁺)	1779.8	(19/2 ⁺)	Q	DCO=1.04 30
671.6 5	3.0 5	3478.6?	(29/2 ⁺)	2807.0	(25/2 ⁺)	Q	DCO=1.12 32
684.9 2	15 2	2785.8	(25/2 ⁺)	2100.9	(21/2 ⁺)	Q	DCO=0.84 21
685.1 2	12.6 7	3054.0	(29/2 ⁻)	2368.9	(25/2 ⁻)	Q	DCO=0.83 18
710 1	24 4	2656.8	(27/2 ⁻)	1946.9	(23/2 ⁻)		
711 1	8 2	4378.2	(37/2 ⁻)	3667.1	(33/2 ⁻)		
712 1	12 3	2368.9	(25/2 ⁻)	1657.0	(21/2 ⁻)		
723.8 2	7.0 6	2083.7+x?	(23/2 ⁻)	1359.9+x?	(19/2 ⁻)		
744 1	14 2	3529.8?	(29/2 ⁺)	2785.8	(25/2 ⁺)		
744.4 2	9.2 6	4978.4	(39/2 ⁺)	4234.0	(35/2 ⁺)	Q	DCO=1.02 35
771.8 5	1.9 3	4250.4?	(33/2 ⁺)	3478.6?	(29/2 ⁺)		
781.9 2	9 1	4767.2	(39/2 ⁻)	3985.3	(35/2 ⁻)		
817.0 5	5.0 6	2900.7+x?	(27/2 ⁻)	2083.7+x?	(23/2 ⁻)		
841.7 2	6.2 6	5219.9	(41/2 ⁻)	4378.2	(37/2 ⁻)		
844.6 2	6.2 4	5823.0	(43/2 ⁺)	4978.4	(39/2 ⁺)	Q	DCO=1.06 18
858.8 5	1.5 5	5109.2?	(37/2 ⁺)	4250.4?	(33/2 ⁺)		
900.1 5	4.0 3	3800.8+x?	(31/2 ⁻)	2900.7+x?	(27/2 ⁻)		
910.9 2	5.4 8	5678.1	(43/2 ⁻)	4767.2	(39/2 ⁻)		
936.7 5	1.3 5	6045.9?	(41/2 ⁺)	5109.2?	(37/2 ⁺)		
947.2 5	4.2 4	6770.2	(47/2 ⁺)	5823.0	(43/2 ⁺)	Q	DCO=0.88 36
977 1	3.6 6	4777.8+x?	(35/2 ⁻)	3800.8+x?	(31/2 ⁻)		
980.5 2	5.8 7	6200.4	(45/2 ⁻)	5219.9	(41/2 ⁻)		
1034.4 5	2.6 6	6712.5	(47/2 ⁻)	5678.1	(43/2 ⁻)		
1049.6 5	2.4 4	7819.8	(51/2 ⁺)	6770.2	(47/2 ⁺)		
1065.6 5	2.6 5	5843.4+x?	(39/2 ⁻)	4777.8+x?	(35/2 ⁻)		
1115 1	2.2 6	7315.4	(49/2 ⁻)	6200.4	(45/2 ⁻)		
1145 1	2.0 6	7857.5	(51/2 ⁻)	6712.5	(47/2 ⁻)		
1148 1	1.0 2	8967.8	(55/2 ⁺)	7819.8	(51/2 ⁺)		
1171 1	2.5 5	7014.4+x?	(43/2 ⁻)	5843.4+x?	(39/2 ⁻)		
1241 1	<1	10208.8	(59/2 ⁺)	8967.8	(55/2 ⁺)		
1295 1	1.9 4	8309.4+x?	(47/2 ⁻)	7014.4+x?	(43/2 ⁻)		
1329 1	<0.5	11537.8	(63/2 ⁺)	10208.8	(59/2 ⁺)		

[†] $\Delta(E_\gamma)$ assigned as 0.2 keV for $I_\gamma > 5\%$, $E_\gamma < 1000$; 0.5 keV for $1\% < I_\gamma < 5\%$, $E_\gamma > 1000$; and 1 keV in all other cases. These assignments are based on a general statement by **2002Pe15**.

[‡] From DCO.

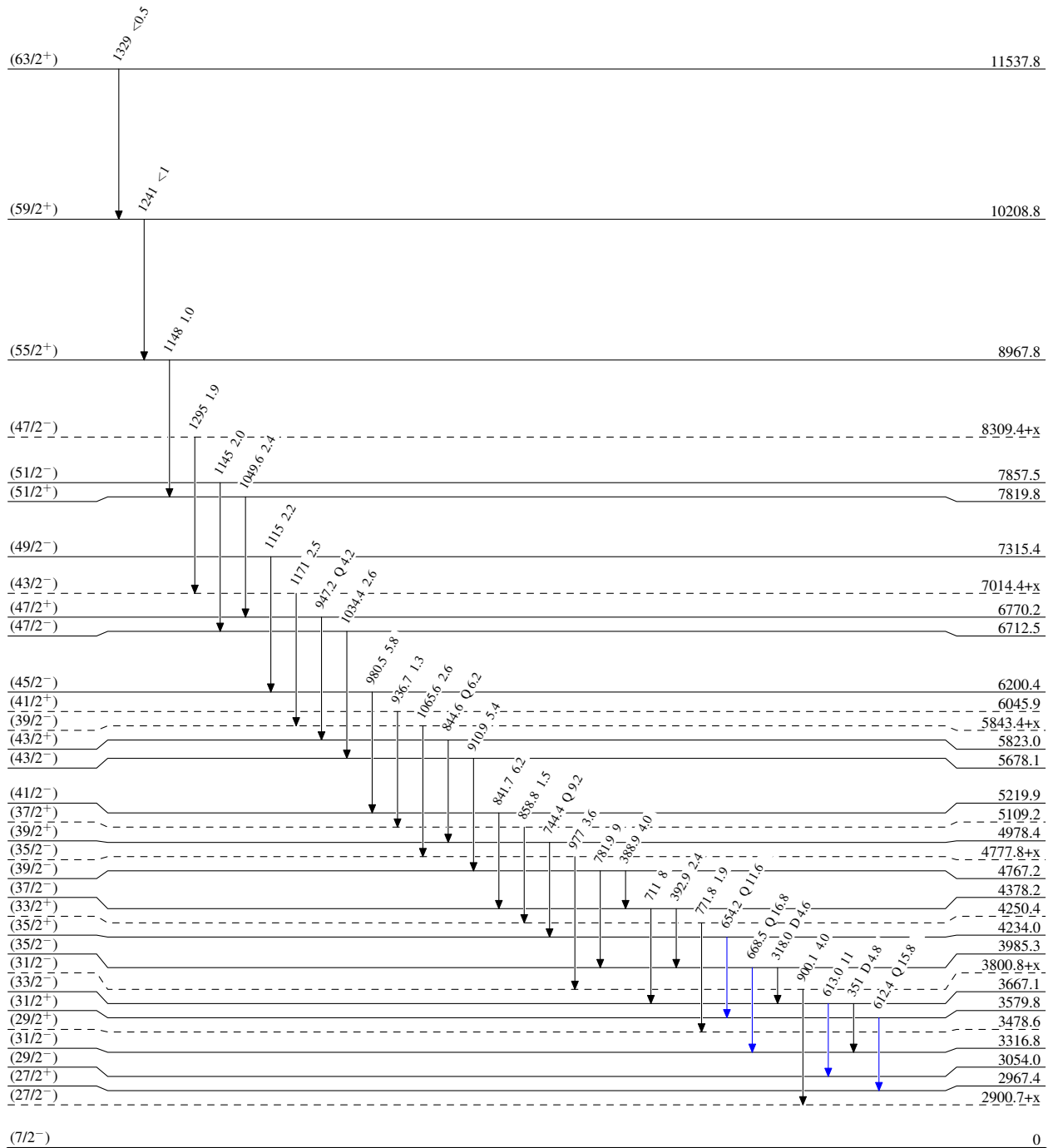
[#] Multiply placed with intensity suitably divided.

$^{92}\text{Mo}(\alpha^{40}\text{Ca}, \alpha 2p n \gamma)$ 2002Pe15

Level Scheme
Intensities: Relative I_γ

Legend

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



$^{125}_{58}\text{Ce}_{67}$

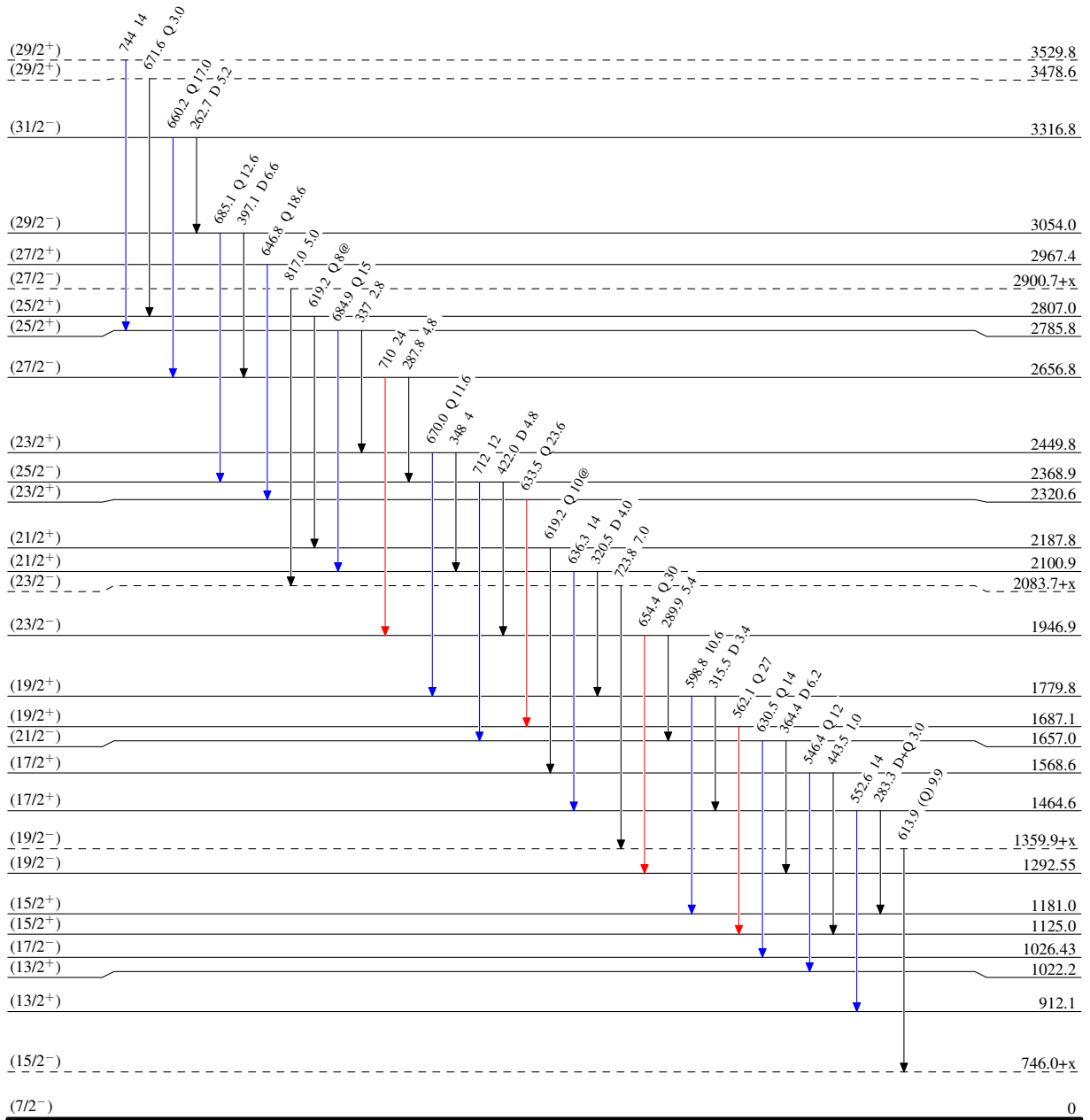
⁹²Mo(⁴⁰Ca,α2pnγ) 2002Pe15

Level Scheme (continued)

Legend

Intensities: Relative I_γ
@ Multiply placed: intensity suitably divided

- I_γ < 2% × I_γ^{max}
- I_γ < 10% × I_γ^{max}
- I_γ > 10% × I_γ^{max}



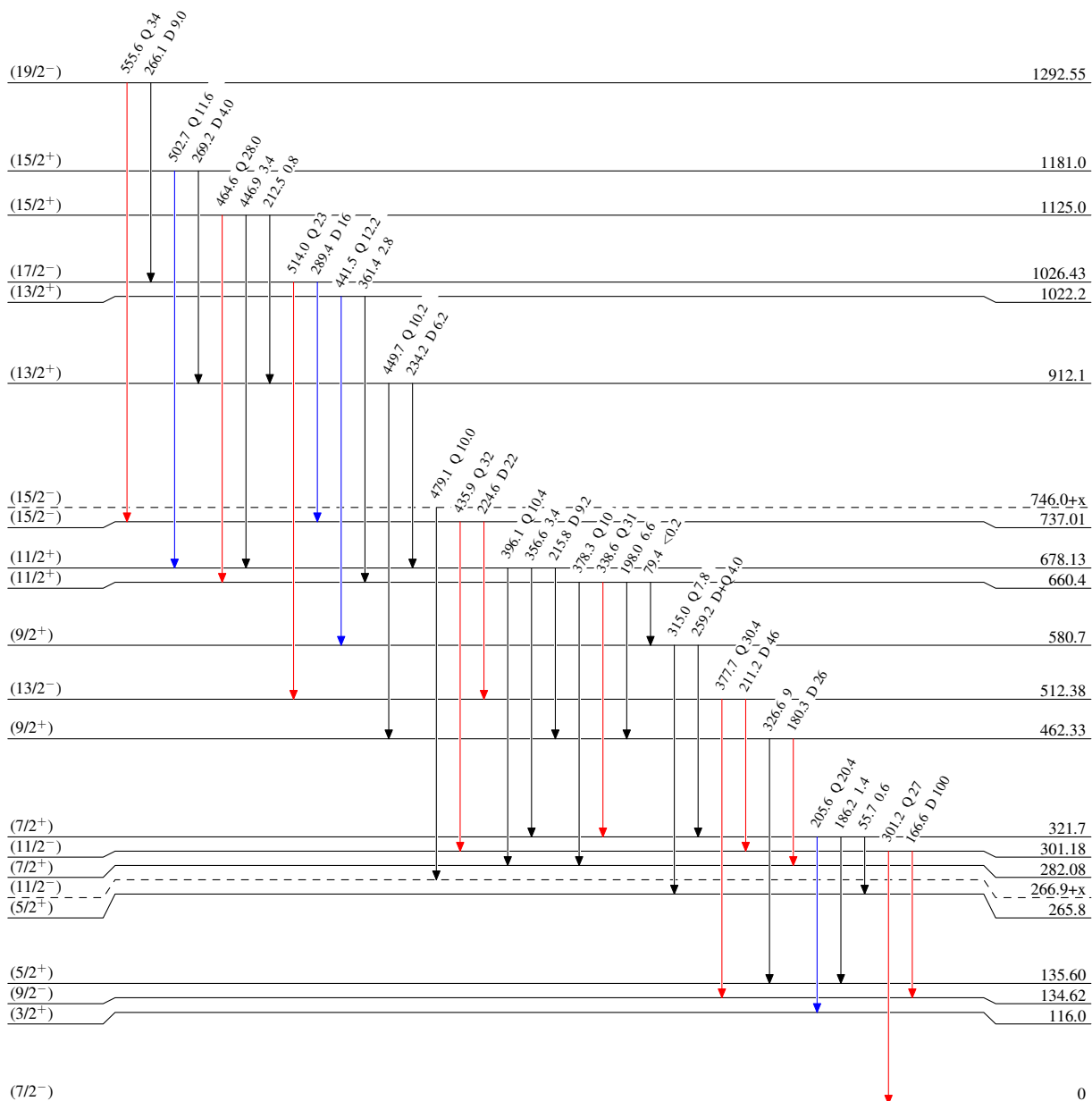
$^{92}\text{Mo}(\alpha^{40}\text{Ca}, \alpha 2\text{pn}\gamma)$ 2002Pe15

Level Scheme (continued)

Intensities: Relative I_γ
 @ Multiply placed: intensity suitably divided

Legend

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



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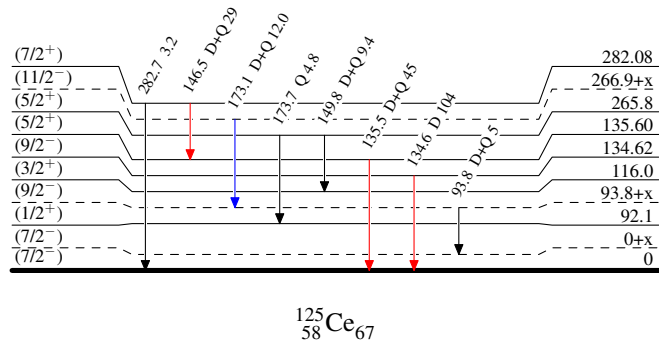
Level Scheme (continued)

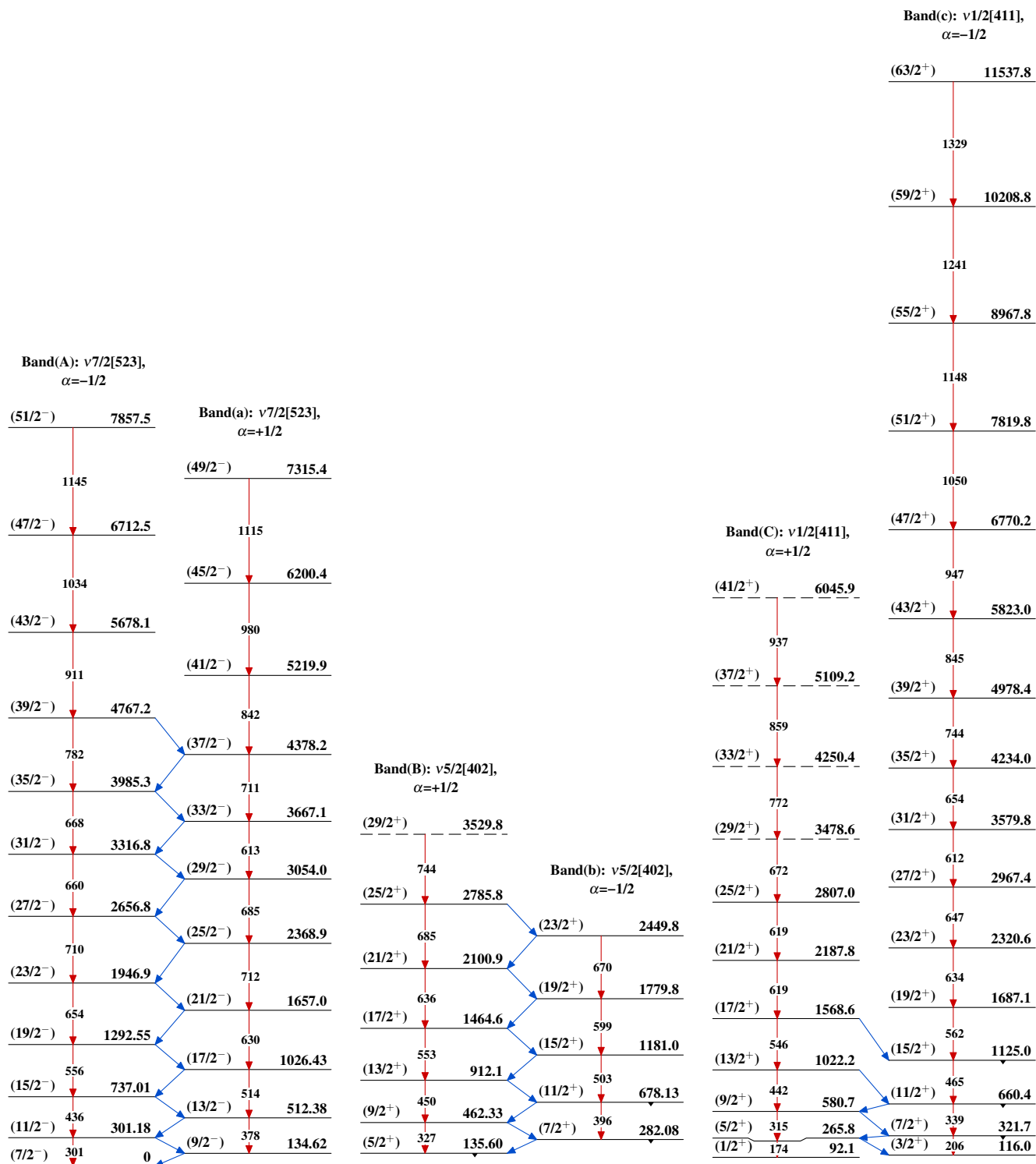
Intensities: Relative I_γ

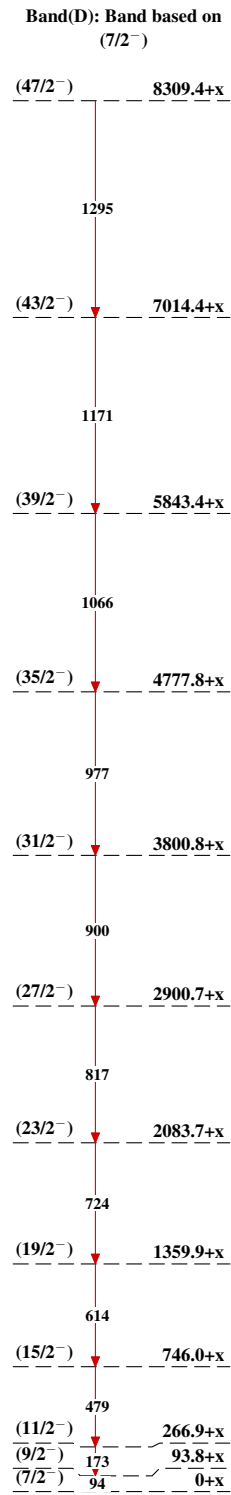
@ Multiply placed: intensity suitably divided

Legend

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



$^{92}\text{Mo}(\alpha^{40}\text{Ca}, \alpha 2\text{pn}\gamma)$ 2002Pe15

$^{92}\text{Mo}({}^{40}\text{Ca}, \alpha 2p\gamma)$ 2002Pe15 (continued) $^{125}_{58}\text{Ce}_{67}$