^{76}Ge(^{13}C,3nγ) 2014KuZZ

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Alexandru Negret, Balraj Singh	NDS 124, 1 (2015)	30-Nov-2014

2014KuZZ: E=45 MeV. Measured Eγ, Iγ, $\gamma\gamma$ coin, DCO ratios, $\gamma\gamma$(linear pol) using INGA array of 15 Compton-suppressed Clover HPGe detectors at Pelletron facility of TIFR. Deduced high-spin levels, J, π, bands, multipolarity, configurations. Comparison with shell-model and TAC calculations.

^{86}Sr Levels

Additional information 1.

E(level)[†]	J$^{\pi}$[‡]	$T_{1/2}$	Comments
0.0[@]	0^+		
1076.7[@] *3*	2^+		
1854.7 *5*	2^+		
2229.5[@] *4*	4^+		
2482.9[&] *7*	3^-		
2672.7[&] *5*	5^-		
2857.0[@] *5*	6^+		
2955.7[@] *5*	8^+	0.455 μs *7*	%IT=100 $T_{1/2}$: from Adopted Levels.
3056.1[&] *6*	$5^{(-)}$		
3291.5[&] *6*	6^-		
3664.2[&] *5*	7^-		
3782.5[a] *5*	6^+		
4153.7[a] *5*	8^+		
4708.5[@] *6*	10^+		
4925.0[&] *7*	9^-		
4975.6[a] *6*	10^+		
5011.8 *7*	11^-		
5543.8 *7*	9^-		
5659.8 *8*	(12)		
5833.9[c] *6*	11^-		
5847.6 *8*	10^-		
5984.1 *7*	11^-		
5985.0[&] *10*	(11^-)		
6040.1 *8*	(11)		
6060.4[c] *7*	12^-		
6190.1[c] *7*	$13^{(-)}$		
6204.4[a] *6*	12^+		
6314.4 *8*	(12)		
6686.5 *7*	(13)		
6878.3[b] *6*	12^+		
6889.6[c] *7*	$14^{(-)}$		
7070.8 *10*	(13)		
7240.3 *8*	(14)		
7336.0[b] *7*	13^+		
7460.9[c] *8*	$15^{(-)}$		
7640.0[a] *7*	14^+		
7843.7[b] *7*	14^+		

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^{76}Ge(^{13}C,3nγ) 2014KuZZ (continued)

^{86}Sr Levels (continued)

E(level)†	Jπ‡	E(level)†	Jπ‡	E(level)†	Jπ‡
7894.1 *8*	(14)	8813.5[b] *7*	16^+	9430.2[b] *8*	17^+
8266.4 *10*	(15)	8963.7 *9*	(16^-)#	10004.8[b] *8*	18^+
8337.3[b] *7*	15^+	9401.7 *10*	(16)	10873.0[b] *10*	19^+

† From least-squares fit to Eγ data.
‡ As proposed in 2014KuZZ based on their DCO and POL data, band associations and previous assignments. See also Adopted Levels.
# parity assigned by evaluators.
@ Band(A): Yrast cascade.
& Band(B): γ cascade based on 3^-.
a Band(C): Band based on 6^+.
b Band(D): Band based on 12^+.
c Band(E): Band based on 11^-.

γ(^{86}Sr)

DCO ratios correspond to 90° and 157° geometry with gates on ΔJ=2, quadrupole transitions or ΔJ=1, dipole transitions. Expected DCO values are: 1.0 for ΔJ=2, quadrupole and 0.52 for ΔJ=1, dipole when gated on ΔJ=2, quadrupole. 1.0 for ΔJ=1, dipole and 1.92 for ΔJ=2, quadrupole when gated on ΔJ=1, dipole. The gates are on 303.8, 476.2, 821.9, 1076.6, 1752.8 transitions; 821.9γ, 1076.6γ and 1752.8γ are ΔJ=2, quadrupole transitions; and 303.8γ, 476.2γ are ΔJ=1, dipole.

E_γ	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Mult.‡	Comments
76.3 *5*	4.8 *12*	6060.4	12^-	5984.1	11^-		
98.7 *3*	29.2 *9*	2955.7	8^+	2857.0	6^+	(E2)	DCO=0.96 *2*; gate on 476.2γ, ΔJ=1,dipole.
129.8 *3*	22.6 *11*	6190.1	$13^{(-)}$	6060.4	12^-	D	DCO=0.57 *8*; gate on 1076.6γ, ΔJ=2,quadrupole.
184.4 *5*	6.8 *8*	2857.0	6^+	2672.7	5^-	D+Q	DCO=0.69 *23*; gate on 1076.6γ, ΔJ=2,quadrupole.
190.0 *7*		2672.7	5^-	2482.9	3^-		
192.6 *7*	0.9 *3*	6040.1	(11)	5847.6	10^-	D+Q	DCO=0.64 *12*; gate on 1076.6γ, ΔJ=2,quadrupole.
226.5 *3*	36.6 *18*	6060.4	12^-	5833.9	11^-	M1	DCO=0.65 *9*; gate on 1076.6γ, ΔJ=2,quadrupole. POL=−0.05 *3*.
235.4 *5*	2.1 *7*	3291.5	6^-	3056.1	$5^{(-)}$	D+Q	DCO=0.79 *11*; gate on 1076.6γ, ΔJ=2,quadrupole.
254.0 *5*	2.7 *8*	6314.4	(12)	6060.4	12^-		DCO=1.79 *33*; gate on 226.5γ, ΔJ=1,dipole.
303.3 *5*	4.3 *11*	5011.8	11^-	4708.5	10^+	(E1)	DCO=0.62 *9*; gate on 1752.8γ, ΔJ=2,quadrupole. POL=+0.023 *57*.
303.8 *7*	1.3 *5*	5847.6	10^-	5543.8	9^-	M1	DCO=0.79 *11*; gate on 821.9γ, ΔJ=2,quadrupole. POL=−0.057 *33*.
371.2 *3*	10.7 *12*	4153.7	8^+	3782.5	6^+	E2	DCO=1.06 *11*; gate on 1553.0γ, ΔJ=2,quadrupole. POL=+0.11 *33*.
372.8 *5*	2.1 *11*	3664.2	7^-	3291.5	6^-	M1	DCO=1.02 *24*; gate on 489.5γ, ΔJ=1,dipole. POL=−0.049 *23*.
383.4 *7*	1.6 *6*	3056.1	$5^{(-)}$	2672.7	5^-	M1	DCO=0.61 *18*; gate on 821.9γ, ΔJ=2,quadrupole. POL=−0.12 *7*.
443.2 *5*	8.2 *8*	2672.7	5^-	2229.5	4^+	E1	DCO=0.63 *7*; gate on 821.9γ, ΔJ=2,quadrupole. POL=+0.055 *26*.
457.6 *3*	12.6 *7*	7336.0	13^+	6878.3	12^+	(M1)	DCO=1.01 *2*; gate on 476.2γ, ΔJ=1,dipole. POL=−0.029 *25*.
476.2 *3*	16.0 *8*	8813.5	16^+	8337.3	15^+	(M1)	DCO=0.52 *6*; gate on 1076.6γ, ΔJ=2,quadrupole. POL=−0.027 *26*.
489.5 *3*	20.8 *11*	4153.7	8^+	3664.2	7^-	E1	DCO=0.54 *4*; gate on 821.9γ, ΔJ=2,quadrupole. POL=+0.046 *15*.
493.5 *3*	14.6 *16*	8337.3	15^+	7843.7	14^+	(M1)	DCO=0.93 *7*; gate on 476.2γ, ΔJ=1,dipole. POL=−0.02 *3*.
507.6 *3*	13.6 *16*	7843.7	14^+	7336.0	13^+	(M1)	DCO=1.01 *8*; gate on 476.2γ, ΔJ=1,dipole. POL=−0.031 *27*.

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^{76}Ge(^{13}C,3nγ) 2014KuZZ (continued)

γ(^{86}Sr) (continued)

E_γ	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Mult.‡	Comments
554.0 *5*	4.31 *30*	7240.3	(14)	6686.5	(13)	(M1)	I_γ: uncertainty increased from 0.03 to 0.30 by evaluators. DCO=1.2 *3*; gate on 476.2γ, ΔJ=1,dipole. POL=−0.063 *21*.
568.2 *7*	1.6 *6*	5543.8	9^-	4975.6	10^+		
571.3 *3*	10.4 *2*	7460.9	$15^{(-)}$	6889.6	$14^{(-)}$	M1	DCO=0.55 *6*; gate on 1752.8γ, ΔJ=2,quadrupole. POL=−0.042 *21*.
574.6 *3*	11.5 *6*	10004.8	18^+	9430.2	17^+	M1	DCO=1.07 *9*; gate on 476.2γ, ΔJ=1,dipole. POL=−0.056 *19*.
603.7 *5*	4.86 *30*	7843.7	14^+	7240.3	(14)		I_γ: uncertainty increased from 0.03 to 0.30 by evaluators. DCO=1.36 *22*; gate on 476.2γ, ΔJ=1,dipole.
616.7 *3*	14.5 *14*	9430.2	17^+	8813.5	16^+	M1	DCO=0.89 *6*; gate on 476.2γ, ΔJ=1,dipole. POL=−0.046 *17*.
619.0 *7*		3291.5	6^-	2672.7	5^-		
627.4 *3*	84.3 *11*	2857.0	6^+	2229.5	4^+	E2	DCO=1.03 *7*; gate on 1076.6γ, ΔJ=2,quadrupole. POL=+0.11 *3*.
628.4 *7*		2482.9	3^-	1854.7	2^+		
646.4 *5*	3.4† *11*	6686.5	(13)	6040.1	(11)		
648.0 *7*	3.4† *11*	5659.8	(12)	5011.8	11^-		
649.0 *7*	3.4† *11*	7336.0	13^+	6686.5	(13)		
674.0 *5*	7.4 *8*	6878.3	12^+	6204.4	12^+	(E2)	DCO=1.98 *30*; gate on 476.2γ, ΔJ=1,dipole. POL=+0.15 *3*. Mult.: ΔJ=0 transition.
697.2 *3*	11.4 *12*	8337.3	15^+	7640.0	14^+	(M1)	DCO=0.41 *4*; gate on 821.9γ, ΔJ=2,quadrupole. POL=−0.016 *23*.
699.6 *3*	18.2 *8*	6889.6	$14^{(-)}$	6190.1	$13^{(-)}$	M1	DCO=0.46 *8*; gate on 1752.8γ, ΔJ=2,quadrupole. POL=−0.041 *13*.
708.5 *5*	2.7 *8*	3664.2	7^-	2955.7	8^+	E1	DCO=0.59 *11*; gate on 821.9γ, ΔJ=2,quadrupole. POL=+0.07 *5*.
756.4 *5*	2.1 *11*	7070.8	(13)	6314.4	(12)		
778.0 *7*	1.0 *8*	1854.7	2^+	1076.7	2^+		
807.2 *3*	26.5 *12*	3664.2	7^-	2857.0	6^+	E1	DCO=0.58 *5*; gate on 821.9γ, ΔJ=2,quadrupole. POL=+0.052 *9*.
817.9 *7*	1.5 *6*	6878.3	12^+	6060.4	12^-		
821.9 *3*	44.1 *8*	4975.6	10^+	4153.7	8^+	E2	DCO=0.98 *7*; gate on 1076.6γ, ΔJ=2,quadrupole. POL=+0.112 *23*.
826.6 *5*	2.0 *5*	3056.1	$5^{(-)}$	2229.5	4^+	(E1)	DCO=0.53 *19*; gate on 821.9γ, ΔJ=2,quadrupole. POL=+0.001 *39*.
868.2 *5*	2.9 *5*	10873.0	19^+	10004.8	18^+	(M1)	DCO=0.95 *20*; gate on 476.2γ, ΔJ=1,dipole. POL=−0.022 *53*.
894.2 *7*	1.7 *6*	6878.3	12^+	5984.1	11^-		
925.4 *5*	3.9 *6*	3782.5	6^+	2857.0	6^+		
1026.8 *5*	4.4 *11*	6686.5	(13)	5659.8	(12)	(E2)	DCO=0.99 *20*; gate on 1752.8γ, ΔJ=2,quadrupole. POL=+0.11 *5*.
1044.0 *7*	1.2 *7*	6878.3	12^+	5833.9	11^-		
1060.0 *7*	1.2 *6*	5985.0	(11^-)	4925.0	9^-		
1076.6 *3*	100 *4*	1076.7	2^+	0.0	0^+	E2	DCO=1.05 *8*; gate on 821.9γ, ΔJ=2,quadrupole. POL=+0.081 *8*.
1125.4 *3*	44.2 *11*	5833.9	11^-	4708.5	10^+	E1	DCO=0.48 *4*; gate on 1752.8γ, ΔJ=2,quadrupole. POL=+0.039 *16*.
1131.8 *7*	1.9 *7*	7336.0	13^+	6204.4	12^+	E2+M1	DCO=0.44 *15*; gate on 821.9γ, ΔJ=2,quadrupole. POL=+0.18 *7*.
1152.8 *3*	98.4 *13*	2229.5	4^+	1076.7	2^+	E2	DCO=1.01 *7*; gate on 1076.6γ, ΔJ=2,quadrupole. POL=+0.089 *18*.
1198.0 *3*	10.8 *5*	4153.7	8^+	2955.7	8^+	(E2)	DCO=1.28 *32*; gate on 821.9γ, ΔJ=2,quadrupole. POL=+0.15 *4*. Mult.: ΔJ=0 transition.

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^{76}Ge(^{13}C,3nγ) 2014KuZZ (continued)

γ(^{86}Sr) (continued)

E_γ	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Mult.‡	Comments
1228.8 *3*	27.2 *11*	6204.4	12^+	4975.6	10^+	E2	DCO=0.97 *8*; gate on 821.9γ, ΔJ=2,quadrupole. POL=+0.084 *22*.
1260.8 *5*	3.1 *11*	4925.0	9^-	3664.2	7^-	E2	DCO=1.11 *24*; probably gated on ΔJ=2,quadrupole. POL=+0.17 *11*.
1275.5 *5*	2.4 *5*	5984.1	11^-	4708.5	10^+	E1	DCO=0.39 *14*; gate on 1752.8γ, ΔJ=2,quadrupole. POL=+0.09 *6*.
1296.7 *5*	3.7 *4*	4153.7	8^+	2857.0	6^+	E2	DCO=0.97 *19*; gate on 1076.6γ, ΔJ=2,quadrupole. POL=+0.08 *6*.
1353.0 *7*		8813.5	16^+	7460.9	$15^{(-)}$		
1376.7 *7*	1.7 *8*	8266.4	(15)	6889.6	$14^{(-)}$		DCO=0.54 *20*; gate on 1752.8γ, ΔJ=2,quadrupole.
1390.1 *5*	2.2 *8*	5543.8	9^-	4153.7	8^+	E1	DCO=0.45 *13*; gate on 303.8γ, ΔJ=1,dipole. POL=+0.07 *5*.
1435.6 *3*	12.8 *8*	7640.0	14^+	6204.4	12^+	E2	DCO=0.83 *14*; gate on 821.9γ, ΔJ=2,quadrupole. POL=+0.12 *4*.
1507.6 *5*	2.6 *6*	9401.7	(16)	7894.1	(14)		
1553.0 *5*	7.3 *5*	3782.5	6^+	2229.5	4^+	E2	DCO=0.92 *23*; gate on 1076.6γ, ΔJ=2,quadrupole. POL=+0.07 *6*.
1639.3 *7*	1.6 *5*	7843.7	14^+	6204.4	12^+		DCO=0.76 *19*; gate on 821.9γ, ΔJ=2,quadrupole.
1752.8 *3*	54.8 *12*	4708.5	10^+	2955.7	8^+	E2	DCO=1.9 *4*; gate on 476.2γ, ΔJ=1,dipole. POL=+0.12 *4*.
1833.7 *5*	3.1 *8*	7894.1	(14)	6060.4	12^-		
1855.0 *7*		1854.7	2^+	0.0	0^+		
1902.6 *7*	1.4 *4*	6878.3	12^+	4975.6	10^+	(E2)	DCO=1.2 *7*; gate on 821.9γ, ΔJ=2,quadrupole. POL=+0.15 *17*.
2074.0 *5*	2.1 *6*	8963.7	(16^-)	6889.6	$14^{(-)}$	(E2)	DCO=1.4 *3*; gate on 226.5γ, ΔJ=1,dipole. POL=+0.09 *19*.
2169.7 *5*	3.7 *8*	6878.3	12^+	4708.5	10^+	E2	DCO=0.97 *38*; gate on 821.9γ, ΔJ=2,quadrupole. POL=+0.16 *8*.

† Intensity for composite 646.4+648.0+649.0.
‡ From DCO ratios and linear polarization data.

^{76}Ge(^{13}C,3nγ) 2014KuZZ

Level Scheme

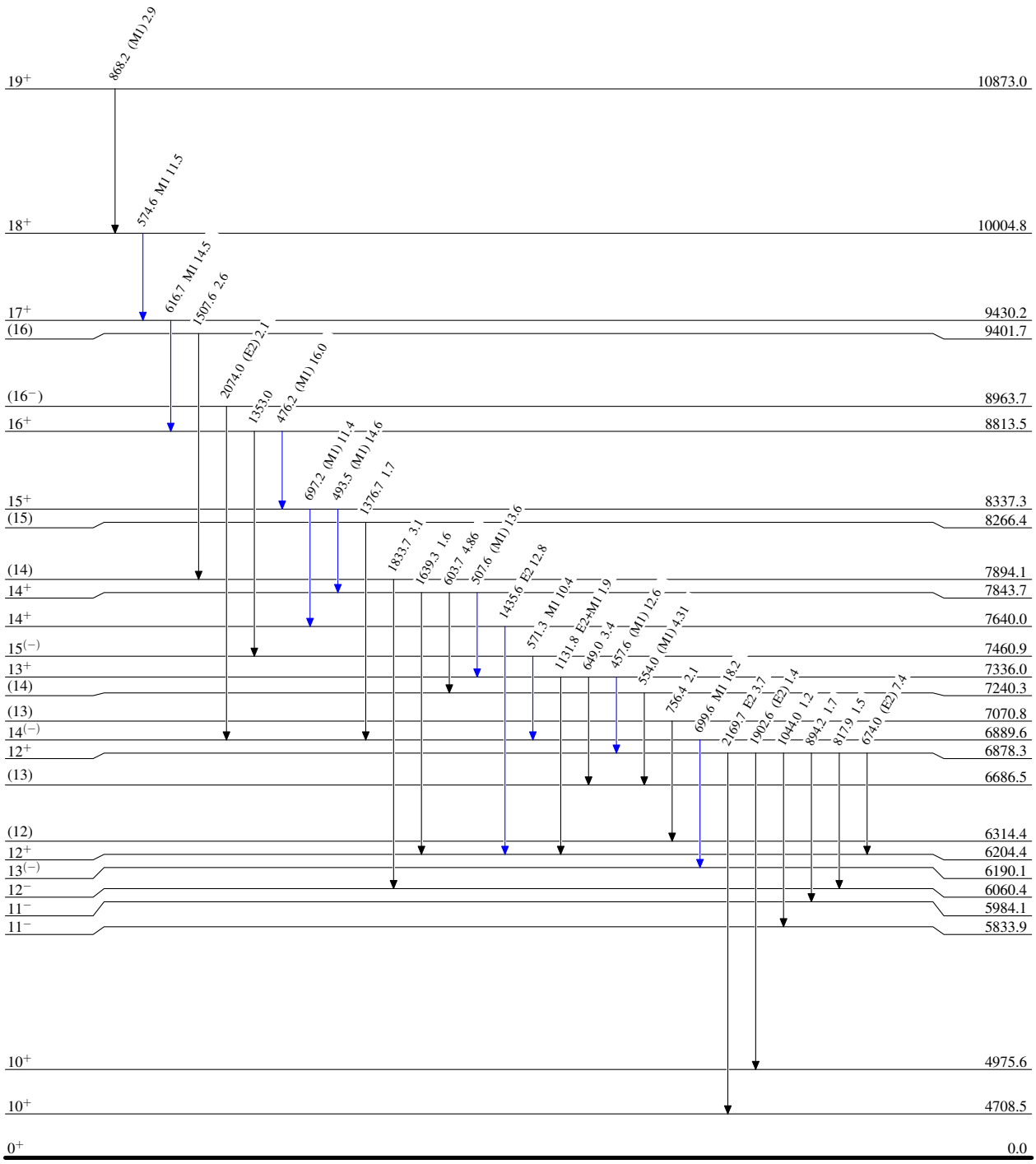
Intensities: Relative I_γ

Legend

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

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

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

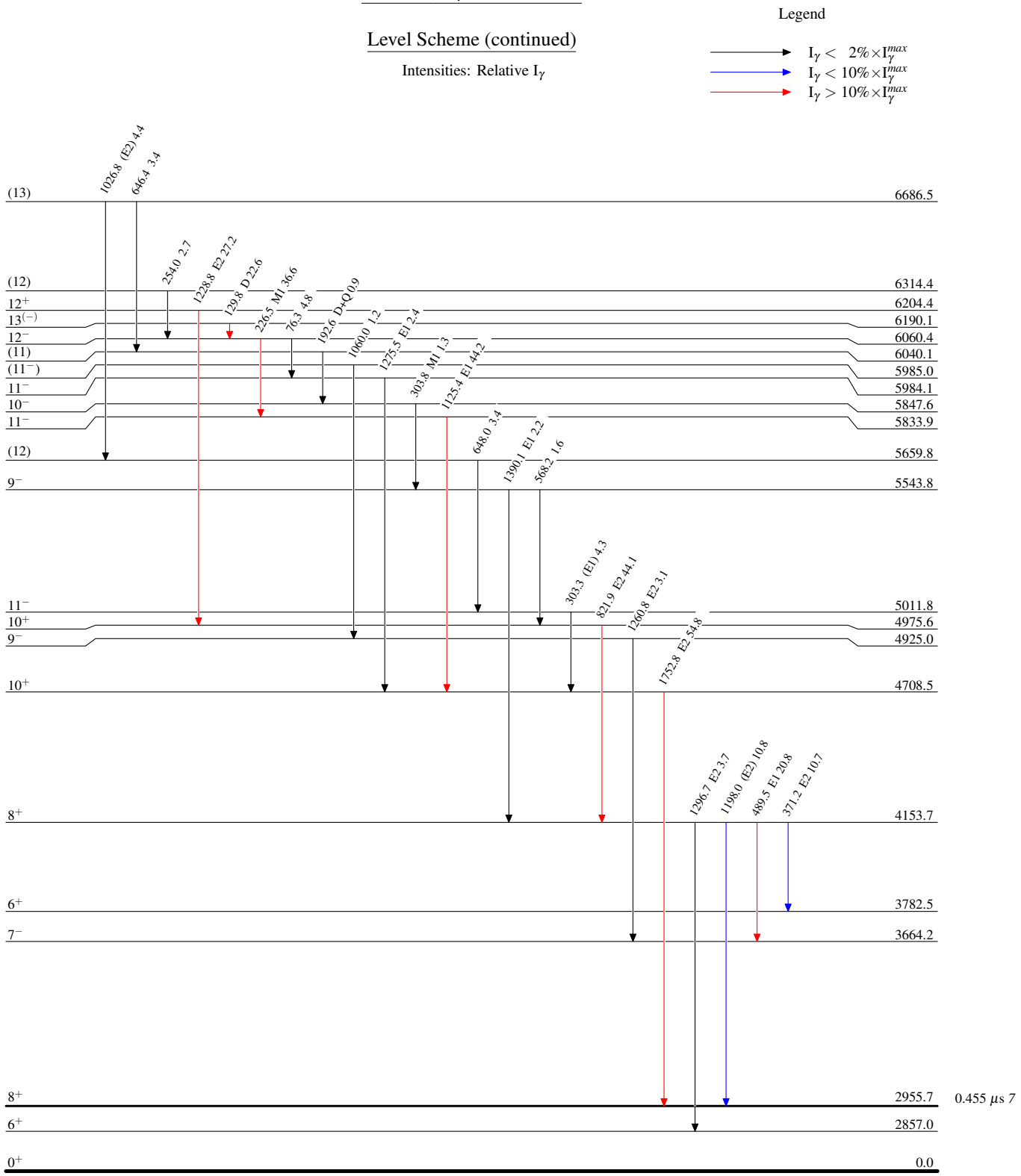


$^{86}_{38}Sr_{48}$

^{76}Ge(^{13}C,3nγ) 2014KuZZ

Level Scheme (continued)

Intensities: Relative I_γ

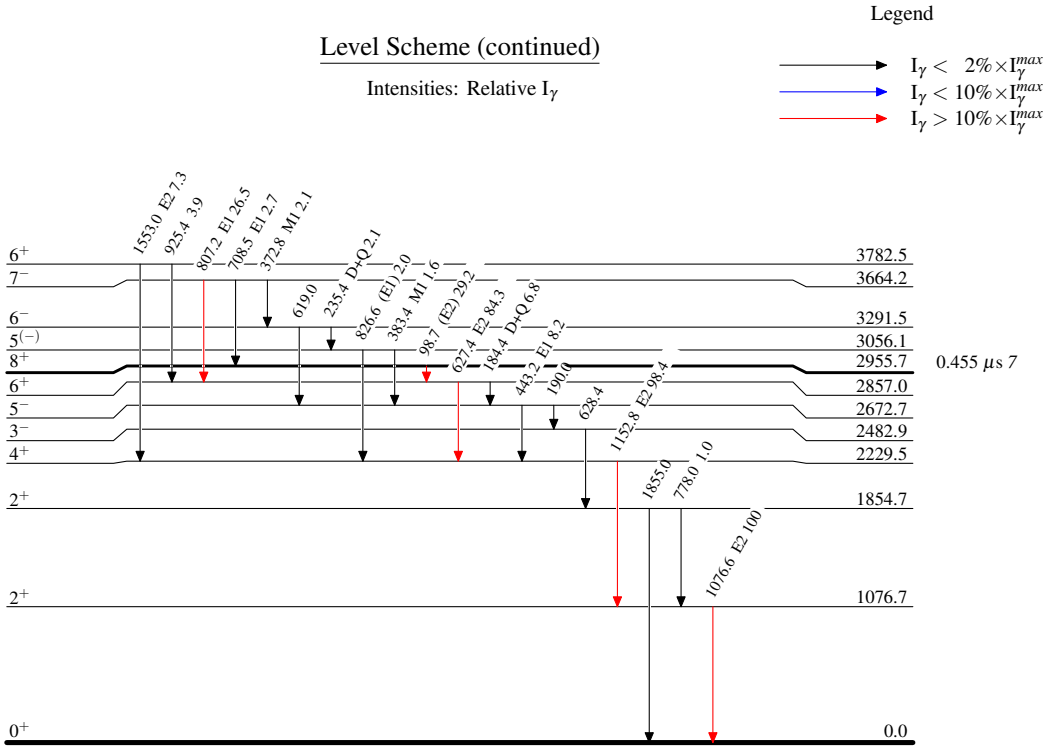


$^{86}_{38}Sr_{48}$

^{76}Ge(^{13}C,3nγ) 2014KuZZ

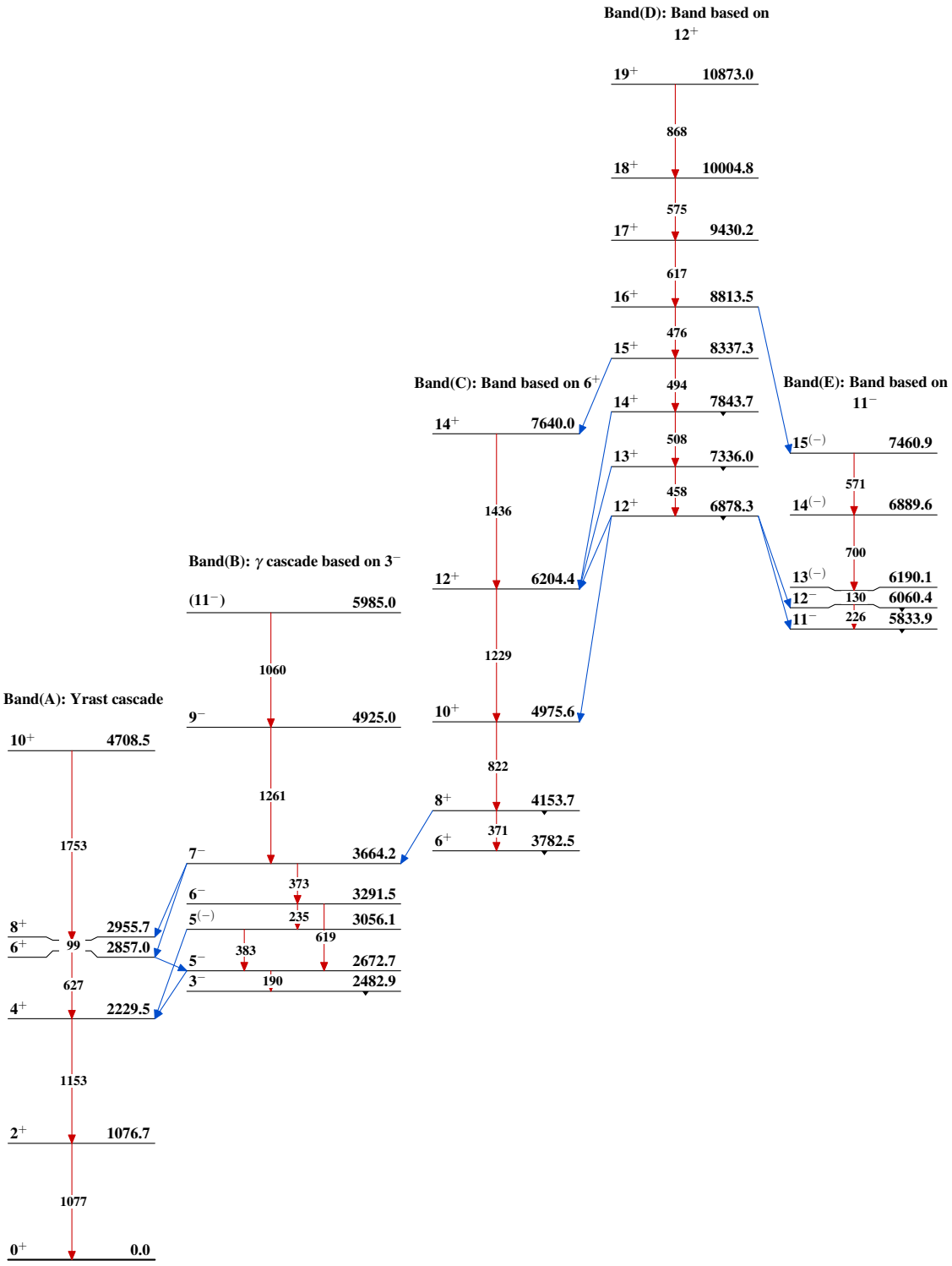
Level Scheme (continued)

Intensities: Relative I_γ



$^{86}_{38}Sr_{48}$

^{76}Ge(^{13}C,3nγ) 2014KuZZ



$^{86}_{38}Sr_{48}$