^{63}Zn ε decay 1974Kl02

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Huo Junde, Yang Dong, Huo Meirong,	ENSDF	28-Aug-2008

Parent: ^{63}Zn: E=0; $J^\pi=3/2^-$; $T_{1/2}$=38.47 min *5*; Q(ε)=3366.5 *16*; %ε+%$β^+$ decay=100.0

^{63}Cu Levels

E(level)	J^π	E(level)	J^π	E(level)	J^π	E(level)	J^π
0.0	$3/2^-$	1861.16 *22*	$7/2^-$	2497.2 *4*	$(3/2^-)$	2806.4 *4*	$3/2^-$
669.66 *5*	$1/2^-$	2011.2 *3*	$3/2^-$	2512.1 *5*	1/2,3/2,5/2	2857.8 *4*	$(1/2^-,3/2^-)$
962.09 *4*	$5/2^-$	2062.22 *9*	$(1/2)^-$	2535.82 *7*	$(5/2)^-$	2889.5 *5*	$1/2^-,3/2,5/2^-$
1327.06 *7*	$7/2^-$	2081.4 *3*	$5/2^{(-)}$	2696.57 *13*	$1/2^-,3/2^-$	3044.7 *8*	$(5/2^-)$
1412.05 *4*	$5/2^-$	2092.67 *14*	$7/2^-$	2716.76 *10*	$3/2^-,5/2^-$	3100.8 *8*	$1/2^-,3/2^-$
1547.04 *6*	$3/2^-$	2336.58 *12*	$5/2^-$	2780.43 *24*	$(1/2^-,3/2^-)$		

ε,$β^+$ radiations

E(decay)	E(level)	I$β^+$ †	Iε†	Log *ft*	I(ε+$β^+$)†	Comments
(265.7 *18*)	3100.8		0.00057 *17*	7.0 *1*	0.00057 *17*	εK=0.8805; εL=0.1016; εM+=0.01786
(321.8 *18*)	3044.7		0.0049 *9*	6.2 *1*	0.0049 *9*	εK=0.88176; εL=0.1007; εM+=0.01767
(477.0 *17*)	2889.5		0.0112 *17*	6.2 *1*	0.0112 *17*	εK=0.8834; εL=0.09922; εM+=0.01738
(508.7 *17*)	2857.8		0.0074 *15*	6.5 *1*	0.0074 *15*	εK=0.8836; εL=0.09904; εM+=0.01735
(560.1 *17*)	2806.4		0.0057 *12*	6.7 *1*	0.0057 *12*	εK=0.8839; εL=0.09878; εM+=0.01729
(586.1 *16*)	2780.43		0.030 *3*	6.0 *1*	0.030 *3*	εK=0.8841; εL=0.09867; εM+=0.01727
(649.7 *16*)	2716.76		0.085 *8*	5.6 *1*	0.085 *8*	εK=0.8843; εL=0.09844; εM+=0.01723
(669.9 *16*)	2696.57		0.119 *9*	5.5 *1*	0.119 *9*	εK=0.8844; εL=0.09838; εM+=0.01721
(830.7 *16*)	2535.82		0.255 *18*	5.34 *3*	0.255 *18*	εK=0.8849; εL=0.09798; εM+=0.01713
(854.4 *17*)	2512.1		0.0098 *17*	6.8 *1*	0.0098 *17*	εK=0.8849; εL=0.09793; εM+=0.01712
(869.3 *17*)	2497.2		0.026 *3*	6.4 *1*	0.026 *3*	εK=0.8850; εL=0.09790; εM+=0.01712
(1029.9 *16*)	2336.58		0.129 *9*	5.84 *4*	0.129 *9*	εK=0.8853; εL=0.09766; εM+=0.01707
(1285.1 *16*)	2081.4	0.00032 *5*	0.026 *4*	6.7 *1*	0.026 *4*	av Eβ=115.4 *7*; εK=0.8746; εL=0.09619; εM+=0.01681
(1304.3 *16*)	2062.22	0.0025 *3*	0.151 *18*	6.0 *1*	0.154 *18*	av Eβ=123.5 *7*; εK=0.8713; εL=0.09580; εM+=0.01674
(1355.3 *16*)	2011.2	0.00039 *9*	0.013 *3*	7.1 *1*	0.013 *3*	av Eβ=144.7 *7*; εK=0.8590; εL=0.09441; εM+=0.01650
(1819.5 *16*)	1547.04	0.040 *5*	0.059 *8*	6.7 *1*	0.099 *10*	av Eβ=341.4 *7*; εK=0.5238 *15*; εL=0.05740 *16*; εM+=0.01003 *3*
(1954.4 *16*)	1412.05	0.50 *4*	0.43 *3*	5.87 *3*	0.93 *5*	av Eβ=400.1 *7*; εK=0.4093 *13*; εL=0.04482 *14*; εM+=0.007828 *24*
(2404.4 *16*)	962.09	4.9 *4*	1.18 *8*	5.61 *3*	6.1 *4*	av Eβ=599.9 *8*; εK=0.1716 *5*; εL= 0.01876 *6*; εM+=0.003276 *10*
(2696.8 *16*)	669.66	7.0 *3*	0.92 *4*	5.82 *2*	7.9 *3*	av Eβ=732.5 *8*; εK=0.1029 *3*; εL=0.01124 *3*; εM+=0.001962 *6*
(3366.5 *16*)	0.0	80.3 *7*	3.74 *5*	5.40 *1*	84.0 *7*	av Eβ=1042.3 *8*; εK=0.03948 *8*; εL=0.004308 *9*

† Absolute intensity per 100 decays.

^{63}Zn ε decay 1974Kl02 (continued)

γ(^{63}Cu)

Iγ normalization: from I(670γ)/I(β^+)=0.0883 *35* (1969Bo15) and theoretical ε/β^+ ratio.

E_γ	I_γ[‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[†]	δ[†]	α[#]
244.3 *5*	0.065 *10*	2780.43	(1/2$^-$,3/2$^-$)	2535.82	(5/2)$^-$			
365.2 *4*	0.14 *3*	1327.06	7/2$^-$	962.09	5/2$^-$	D+Q	−0.060 *5*	0.00211
443.13 *20*	0.20 *5*	2535.82	(5/2)$^-$	2092.67	7/2$^-$			
449.93 *5*	2.88 *20*	1412.05	5/2$^-$	962.09	5/2$^-$	D+Q	+0.115 *10*	0.00130
475.8 *9*	0.07 *4*	2336.58	5/2$^-$	1861.16	7/2$^-$			
515.0 *10*	0.26 *10*	2062.22	(1/2)$^-$	1547.04	3/2$^-$			
533.8 *6*	0.06 *2*	2081.4	5/2$^{(-)}$	1547.04	3/2$^-$	D+Q	+0.23 *+13−11*	
584.82 *15*	0.40 *5*	1547.04	3/2$^-$	962.09	5/2$^-$	D(+Q)	+0.05 *+14−15*	
624.3 *3*	0.17 *4*	2716.76	3/2$^-$,5/2$^-$	2092.67	7/2$^-$			
669.62 *5*	100	669.66	1/2$^-$	0.0	3/2$^-$	M1+E2	+0.104 *6*	0.00053
675.0 *6*	0.18 *4*	2535.82	(5/2)$^-$	1861.16	7/2$^-$			
685.6 *6*	0.05 *2*	2696.57	1/2$^-$,3/2$^-$	2011.2	3/2$^-$			
742.25 *10*	0.82 *10*	1412.05	5/2$^-$	669.66	1/2$^-$	E2		
754.8 *8*	0.08 *3*	2081.4	5/2$^{(-)}$	1327.06	7/2$^-$	D+Q	+0.4 *+5−4*	
765.7 *5*	0.08 *3*	2092.67	7/2$^-$	1327.06	7/2$^-$	D+Q	−0.18 *50*	
877.2 *8*	0.04 *2*	1547.04	3/2$^-$	669.66	1/2$^-$	D+Q	−0.6 *+7−16*	
899.0 *4*	0.15 *3*	1861.16	7/2$^-$	962.09	5/2$^-$	D+Q	+0.040 *7*	
924.3 *5*	0.120 *24*	2336.58	5/2$^-$	1412.05	5/2$^-$			
962.06 *4*	79 *4*	962.09	5/2$^-$	0.0	3/2$^-$	M1+E2	−0.49 *3*	
989.6 *7*	0.047 *13*	2535.82	(5/2)$^-$	1547.04	3/2$^-$			
1048.8 *5*	0.054 *14*	2011.2	3/2$^-$	962.09	5/2$^-$	D+Q	+0.23 *+15−9*	
1123.72 *7*	1.35 *14*	2535.82	(5/2)$^-$	1412.05	5/2$^-$			
1130.67 *25*	0.16 *3*	2092.67	7/2$^-$	962.09	5/2$^-$	D+Q	−1.06 *+23−22*	
1149.50 *16*	0.23 *3*	2696.57	1/2$^-$,3/2$^-$	1547.04	3/2$^-$			
1169.6 *3*	0.094 *20*	2716.76	3/2$^-$,5/2$^-$	1547.04	3/2$^-$			
1208.8 *3*	0.15 *3*	2535.82	(5/2)$^-$	1327.06	7/2$^-$			
1233.7 *5*	0.03 *1*	2780.43	(1/2$^-$,3/2$^-$)	1547.04	3/2$^-$			
1327.03 *8*	0.84 *5*	1327.06	7/2$^-$	0.0	3/2$^-$	E2		
1341.7 *6*	0.03 *1*	2011.2	3/2$^-$	669.66	1/2$^-$	D+Q	−0.6 *+7−16*	
1374.47 *13*	0.42 *3*	2336.58	5/2$^-$	962.09	5/2$^-$	D+Q		
1389.66 *8*	0.52 *7*	2716.76	3/2$^-$,5/2$^-$	1327.06	7/2$^-$			
1392.55 *8*	1.18 *18*	2062.22	(1/2)$^-$	669.66	1/2$^-$			
1412.08 *5*	9.1 *4*	1412.05	5/2$^-$	0.0	3/2$^-$			
1445.8 *4*	0.03 *1*	2857.8	(1/2$^-$,3/2$^-$)	1412.05	5/2$^-$			
1479.1 *5*	0.02 *1*	2806.4	3/2$^-$	1327.06	7/2$^-$			
1547.04 *6*	1.49 *6*	1547.04	3/2$^-$	0.0	3/2$^-$	M1+E2	+0.39 *7*	
1573.71 *20*	0.20 *2*	2535.82	(5/2)$^-$	962.09	5/2$^-$			
1667.2 *6*	0.017 *7*	2336.58	5/2$^-$	669.66	1/2$^-$			
[x]1696.6 *10*	0.024 *12*							

$^{63}_{29}Cu_{34}$-2

^{63}Zn ε decay 1974Kl02 (continued)

γ(^{63}Cu) (continued)

E_γ	I_γ[‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[†]	δ[†]	Comments
1754.9 *5*	0.053 *12*	2716.76	3/2$^-$,5/2$^-$	962.09	5/2$^-$			
1827.0 *5*	0.051 *13*	2497.2	(3/2$^-$)	669.66	1/2$^-$	D+Q		
1861.3 *3*	0.170 *24*	1861.16	7/2$^-$	0.0	3/2$^-$	E2		
1866.1 *3*	0.24 *3*	2535.82	(5/2)$^-$	669.66	1/2$^-$			
1927.2 *7*	0.070 *14*	2889.5	1/2$^-$,3/2,5/2$^-$	962.09	5/2$^-$			
2011.4 *5*	0.13 *2*	2011.2	3/2$^-$	0.0	3/2$^-$	D+Q		
2026.8 *3*	0.68 *7*	2696.57	1/2$^-$,3/2$^-$	669.66	1/2$^-$			
2046.4 *8*	0.045 *13*	2716.76	3/2$^-$,5/2$^-$	669.66	1/2$^-$			
2062.1 *3*	0.42 *4*	2062.22	(1/2)$^-$	0.0	3/2$^-$			
2081.4 *3*	0.18 *2*	2081.4	5/2$^{(-)}$	0.0	3/2$^-$	D+Q		
2092.6 *5*	0.03 *1*	2092.67	7/2$^-$	0.0	3/2$^-$	E2(+M3)	+0.10 *22*	
2110.8 *5*	0.075 *15*	2780.43	(1/2$^-$,3/2$^-$)	669.66	1/2$^-$			
[x]2181.8 *7*	0.016 *10*							
2188.0 *7*	0.02 *1*	2857.8	(1/2$^-$,3/2$^-$)	669.66	1/2$^-$			
2219.9 *7*	0.036 *10*	2889.5	1/2$^-$,3/2,5/2$^-$	669.66	1/2$^-$			
2336.5 *3*	0.91 *6*	2336.58	5/2$^-$	0.0	3/2$^-$	D+Q		
2497.4 *4*	0.26 *3*	2497.2	(3/2$^-$)	0.0	3/2$^-$			Mult.,δ: d(+Q) with δ=−0.1 +*5*−*6* or E2.
2512.0 *5*	0.12 *2*	2512.1	1/2,3/2,5/2	0.0	3/2$^-$			
2536.0 *3*	0.81 *8*	2535.82	(5/2)$^-$	0.0	3/2$^-$	D+Q		
2696.6 *3*	0.49 *5*	2696.57	1/2$^-$,3/2$^-$	0.0	3/2$^-$			
2716.9 *4*	0.16 *2*	2716.76	3/2$^-$,5/2$^-$	0.0	3/2$^-$			
2780.3 *4*	0.19 *2*	2780.43	(1/2$^-$,3/2$^-$)	0.0	3/2$^-$			
2806.6 *6*	0.05 *1*	2806.4	3/2$^-$	0.0	3/2$^-$			
2857.6 *8*	0.04 *1*	2857.8	(1/2$^-$,3/2$^-$)	0.0	3/2$^-$			
2889.4 *8*	0.03 *1*	2889.5	1/2$^-$,3/2,5/2$^-$	0.0	3/2$^-$			
3044.6 *8*	0.06 *1*	3044.7	(5/2$^-$)	0.0	3/2$^-$			
3100.7 *8*	0.007 *2*	3100.8	1/2$^-$,3/2$^-$	0.0	3/2$^-$			

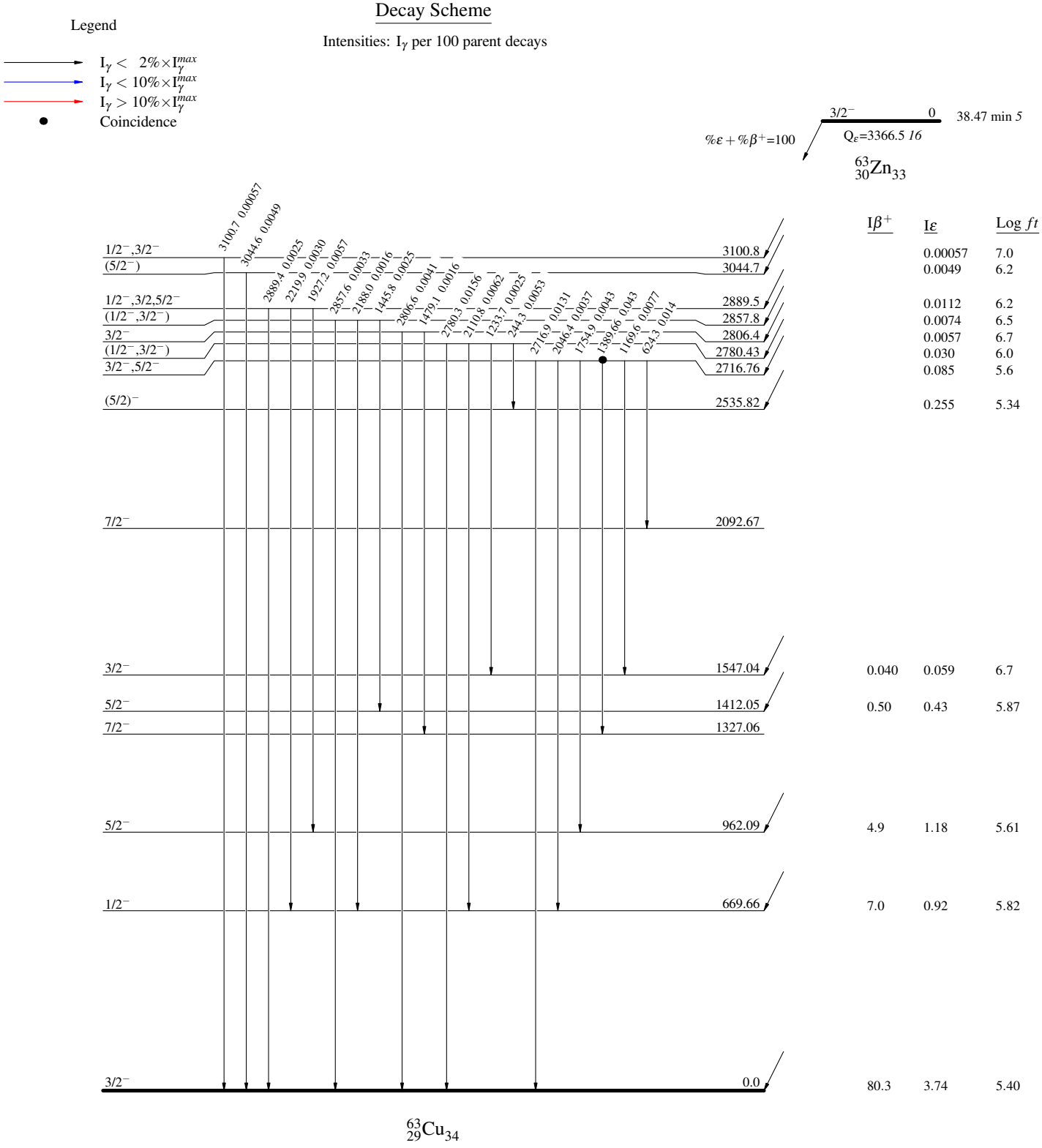
[†] From adopted γ radiations.
[‡] For absolute intensity per 100 decays, multiply by 0.082 *3*.
[#] Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ-ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.
[x] γ ray not placed in level scheme.

$^{63}_{29}Cu_{34}$-3

^{63}Zn ε decay 1974Kl02

Decay Scheme

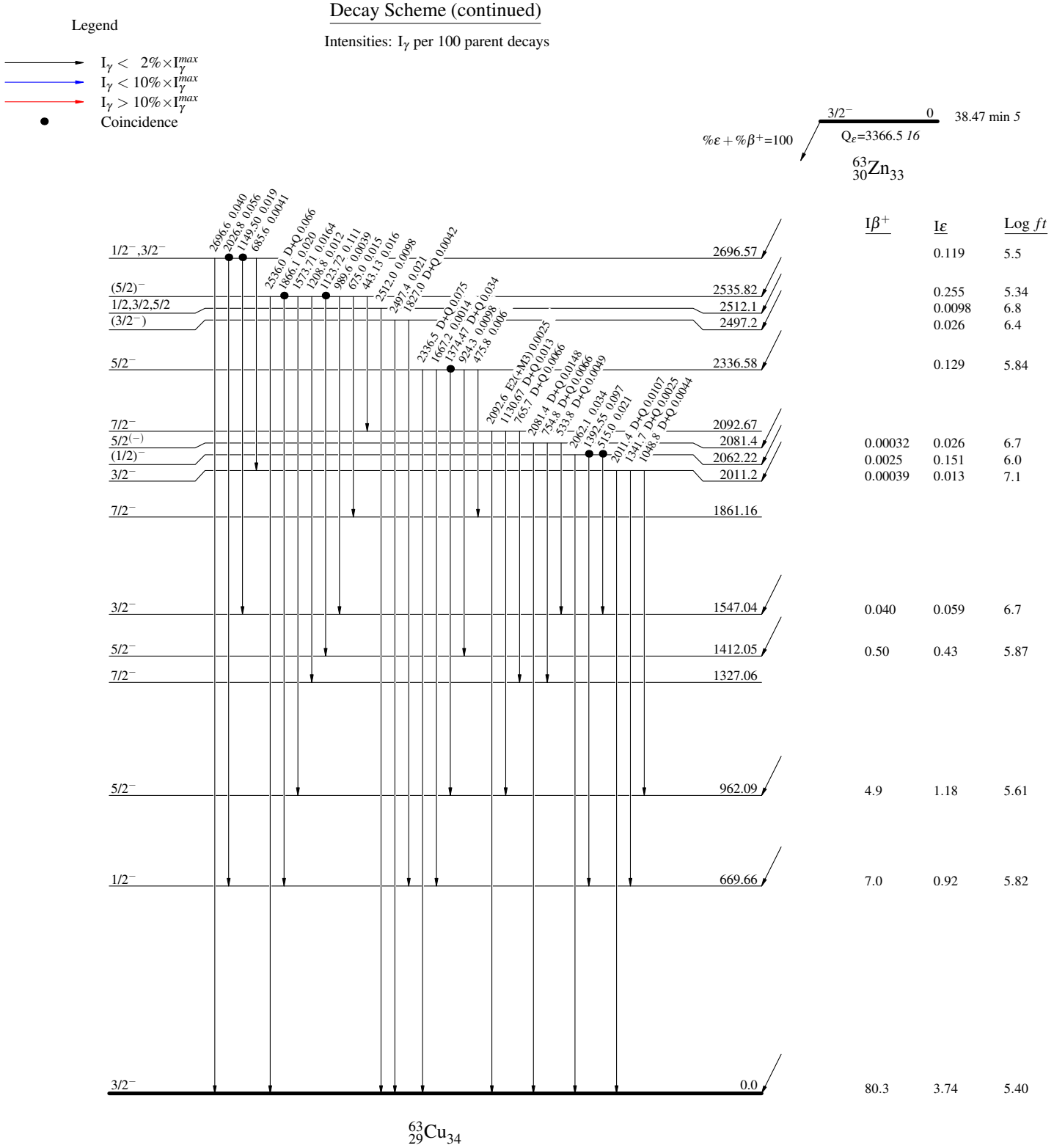
Intensities: I_γ per 100 parent decays



^{63}Zn ε decay 1974Kl02

Decay Scheme (continued)

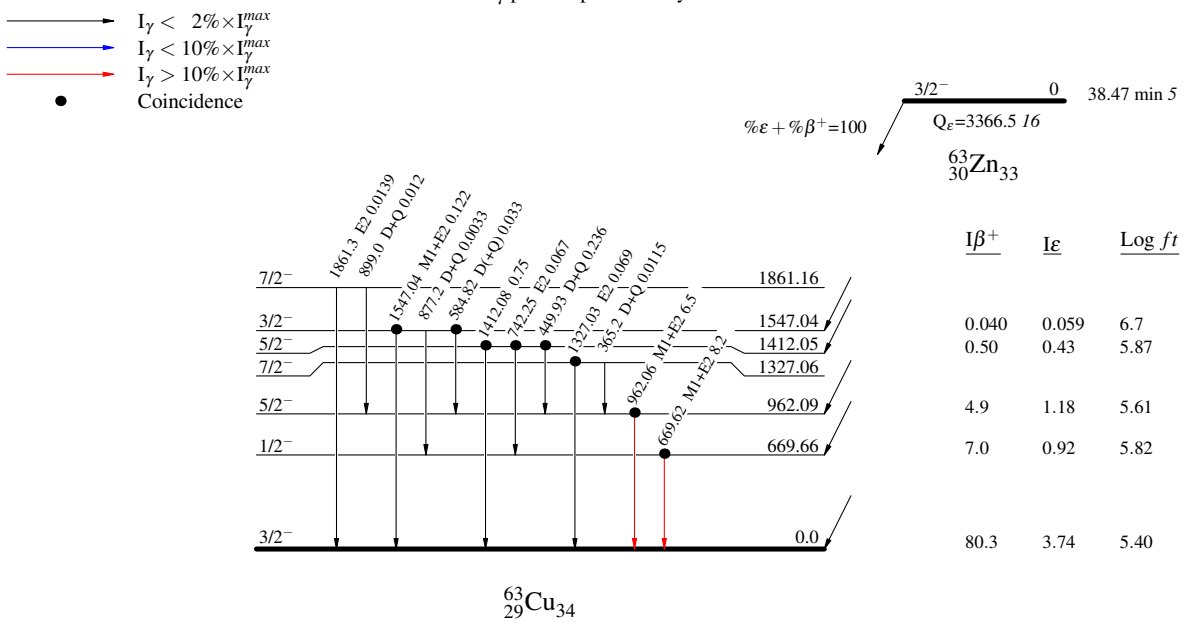
Intensities: I_γ per 100 parent decays



^{63}Zn ε decay 1974Kl02

Decay Scheme (continued)

Intensities: I_γ per 100 parent decays



	Iβ+	Iε	Log *ft*
1547.04	0.040	0.059	6.7
1412.05	0.50	0.43	5.87
962.09	4.9	1.18	5.61
669.66	7.0	0.92	5.82
0.0	80.3	3.74	5.40