Adopted Levels, Gammas

History			
Type	Author	Citation	Literature Cutoff Date
Full Evaluation	E. Browne, J. K. Tuli	NDS 114, 1849 (2013)	31-Dec-2012

Q(β^-)=−4170.8 *16*; S(n)=10058.1 *16*; S(p)=4477.4 *16*; Q(α)=−4729.7 *16* 2012Wa38

Other Reactions.

^{55}Mn(^{20}Ne,3α3n): 2010Al19.

^{58}Ni(α,np): 2008Ya21.

Ni(p,X): 2007Al01.

Zn(p,X): 2006Sz03.

^{59}Co(α,3nγ): 2002Sz01.

Others references: 2008Br05, 2007Na31, 2007Vo08, 2005Ha54, 2004Fe04, 2003Ya20.

Atomic Masses: 2010Ka26, 2005Gu36.

Nuclear Structure: 2012Co16, 2004Ho08, 2004Va38.

Arguments for J^π assignments

E(level)	L(^{3}He,t)#	L(^{3}He,p)#	$\gamma(\theta)$ in (α,pnγ)		Other	Adopted
Target J^π=	0$^+$	0$^+$				
0	2	2		a	2$^+$	
62		0+2		b	1$^+$	
287	2	2	2 f		2$^+$	
364		0+2		c	(1$^+$)	
453	4	(2+4)	(3$^+$)		(3$^+$)	
557	4	(4)	(4$^+$)		(4$^+$)	
587	2	(2+4)			(3$^+$)	
670		(0+2)		d	1$^+$	
781	4		(3$^+$)		(3$^+$)	
914	4				(+)	
1421	4				(+)	
1492	4				(+)	
1603	6		(5$^+$)		(5$^+$)	
1694	4				(+)	
1778		(0+2)?	(5$^+$)		(5$^+$)	
1887	4				(+)	
1981	2				(+)	
2026			(5$^+$)		(5$^+$)	
2170	2	(2)?			(+)	
2197			(6$^+$)		(6$^+$)	
2231	2				(+)	
2286	2+4				(+)	
2349	2+4				(+)	
2474	4				(+)	
2536	0	0		g	(0$^+$)	
2691			(6$^+$)		(6$^+$)	
2791	2				(+)	
2817			(6)		(6)	
2915	2+4	(0)			(+)	
3001	2	2?			(+)	
3155			(6$^-$)		(6$^-$)	
3162	4				(+)	
3190			(7$^+$)		(7$^+$)	
3354			(7$^-$)		(7$^-$)	
3592	2+4				(+)	
3705	2+4				(+)	
3772			(7$^-$)		(7$^-$)	
3874	2	(2)			(+)	

3877		h	(4^+)
5188	(9^-)		(9^-)
5990		e	(9^+)

Question marks signify uncertain identification with E(level).
#) Note: These L-transfers are weak arguments.

a. 2 from atomic beam (1989Ra17).
b. 1^+ from ε decay of 0^+ g.s. ^{60}Zn with logft=5.3 *1*.
c. 0^-,1 from ε decay of 0^+ g.s. ^{60}Zn with logft=5.9 *1*.
d. 1^+ from ε decay of 0^+ g.s. ^{60}Zn with logft=4.4 *1*.
e. (9^+) from large cross section and syst in ^{58}Ni(α,d).
f. From $\gamma(\theta)$ of 287γ.
g. 0^+ confirmed by isotropic $\gamma(\theta)$, ^{58}Ni(^{3}He,pγ).
h. From γ decays to 2^+ and (6^+) states, ^{58}Ni(^{3}He,pγ).

^{60}Cu Levels

For $T_{1/2}$ with wide limits from DSAM, see 1982Ts04, (α,pnγ).

Cross Reference (XREF) Flags

A	^{60}Zn ε decay	F	^{58}Ni(α,d)	K	^{60}Ni(p,n)
B	^{58}Ni(^{3}He,pγ), ^{40}Ca(^{23}Na,2pnγ)	G	^{60}Ni(p,nγ)	L	^{60}Ni(π^+,π^0) IAS
C	^{60}Ni(^{3}He,t)	H	^{58}Ni(^{16}O,^{14}N)	M	^{59}Co(^{3}He,2n)
D	^{58}Ni(^{3}He,p)	I	^{63}Cu(γ,3n)	N	^{58}Ni(^{32}S,^{30}P)
E	^{58}Ni(α,pnγ)	J	^{40}Ca(^{24}Mg,3pnγ)		

E(level)[†]	J^π[‡]	$T_{1/2}$	XREF	Comments
0.0	2^+	23.7 min *4*	ABCDEFGH J	%ε+%β^+=100 μ=+1.2186 *5* (2011Vi03) Q=+0.116 *12* (2011Vi03) μ,Q: Fast beam laser spectroscopy (2011Vi03). μ=+1.219 *3* atomic beam (1968Ph04,2005St24,2011StZZ); deduced using a hyperfine-structure ratio and the magnetic moment value of the standard ^{63}Cu. Value subject to hyperfine anomaly correction. $T_{1/2}$: weighted average of five values: 24.39 min *9* (1982Gr10), 24.0 min *3* (1972Du09), 22.9 min *1* (1966Sh12), 23.4 min *2* (1954Nu26), and 24.6 min *3* (1947Le07).
62.20 *21*	1^+	2.00 ns *10*	ABCDEFG J	$T_{1/2}$: from $\gamma\gamma$(t) in ^{60}Zn ε decay.
287.19 *13*	2^+		BCDE G J	
335.64 *25*	(2^+)		ABC G	J^π: γ from (0^+), (4^+).
364.5 *3*	(1^+)		ABCD G	
453.82 *12*	(3^+)		BCDEFGH J	
557.53 *13*	(4^+)		BCDE J	
571.5 *6*			B	
587[&] *5*	(3^+)		CD	
599.9 *8*			B	
670.07 *24*	1^+		ABCD	
781.02 *16*	(3^+)		BCDE J	
904.0[a] *8*			BCD	
914.54 *18*	$(^+)$		B E	
947.1[a] *6*			ABCD	
975.5 *10*			B	
1008.1 *11*			B	
1250.6 *11*			B	

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Adopted Levels, Gammas (continued)

^{60}Cu Levels (continued)

E(level)[†]	Jπ[‡]	XREF	Comments
1333 *10*		C	
1368.2[a] *10*		B	
1421.56 *23*	(+)	B E	
1427?[a] *1*		BC	
1492 *10*	(+)	C	
1504.8 *9*		B	
1603.66 *22*	(5+)	BC E J	
1646[&] *10*		CD F	
1660 *1*		B	
1668.0 *8*		B	
1694 *10*	(+)	C	
1768 *10*		C	
1778.94 *18*	(5+)	B DE J	
1792.6 *11*		B	
1877.8[a] *9*	(+)	BC	
1918[&] *10*	(+)	CD	
1981[&] *10*		CD	
2026.67 *22*	(5+)	B E J	
2036.1 *11*		B	
2170[&] *10*	(+)	CD	
2197.24 *21*	(6+)	B E J	
2231[&] *10*	(+)	Cd	
2245.7[a] *11*		B d	
2286[&] *10*	(+)	CD	E(level): possibly doublet from L=2+4 in ^{60}Ni(^{3}He,t).
2349.56 *24*	(+)	BCDE H	E(level): possibly doublet from L=2+4 in ^{60}Ni(^{3}He,t).
2474 *10*	(+)	C	
2518.7 *11*		B	
2524.6 *7*		B	
2536.0[@] *6*	(0+)	BcD	E(level): probably T=2 analog of ^{60}Ni(g.s.).
2538.7[a] *11*		Bc	
2593 *10*		C	
2633 *10*		C	
2658.2 *11*		B	
2691.8 *3*	(6+)	B E J	
2726[&] *10*		CD	
2790.2[a] *11*	(+)	BCD	
2817.2 *3*	(6)	B E J	
2888 *10*		C	
2915[&] *10*	(+)	CD	E(level): possibly doublet from L=2+4 in ^{60}Ni(^{3}He,t).
3001[&] *10*	(+)	CD	
3044 *10*		C	
3066.59 *24*		B DE	
3094 *10*		C	
3155.57 *25*	(6−)	B DEF J	Jπ: Configuration=((π $1p_{3/2}$)(ν $1g_{9/2}$)+(π $1g_{9/2}$)(ν $1p_{3/2}$)) (1994FI01).
3162 *10*	(+)	C	
3190.9 *3*	(7+)	B E J	
3282[&] *10*		C H	
3314.8[a] *6*		B D	
3344 *10*		C	
3354.56 *25*	(7−)	B EF J	
3452 *10*		C	
3545 *15*		D	
3575.2 *6*		B	

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Adopted Levels, Gammas (continued)

^{60}Cu Levels (continued)

E(level)[†]	J$^\pi$[‡]	XREF	Comments
3594.3[a] *11*	(+)	BC	E(level): possibly doublet from L=2+4 in ^{60}Ni(^{3}He,t).
3623.7 *11*		B	
3699.1[a] *7*	(+)	BCD F	E(level): possibly doublet from L=2+4 in ^{60}Ni(^{3}He,t).
3772.1 *3*	(7$^-$)	B E J	
3837.3 *11*		B	
3874[@] *15*	(+)	CD F	E(level): probably T=2 analog of ^{60}Ni(1332).
3877.2 *8*	(4+)	B E	
≈3980		C	
4092.6 *11*		B	
4478.6 *15*		B EF	
4520.9[#] *3*	(8$^-$)[#]	E J	
4619 *20*		D	
4638 *20*		D	
5188.2 *3*	(9$^-$)	E J	
5648.9[#] *7*	10$^-$[#]	J	
5826.6 *15*		B EF	
5990 *30*	(9+)	EF	J$^\pi$: configuration=((π 1g$_{9/2}$)(ν 1g$_{9/2}$)) (1994Fi01).
6094.6[#] *8*	11$^-$[#]	J	
7.2×10^3? *2*		H	
7394.8[#] *11*	11+[#]	J	
8132.7[#] *11*	13+[#]	J	
10.0×10^3? *2*		H	

[†] Calculated from adopted gammas, except as noted.
[‡] See separate table.
[#] From ^{40}Ca(^{24}Mg,3pnγ).
[@] From ^{58}Ni(^{3}He,p).
[&] From ^{60}Ni(^{3}He,t).
[a] From ^{58}Ni(^{3}He,pγ), ^{40}Ca(^{23}Na,2pnγ).

γ(^{60}Cu)

E$_i$(level)	J$_i^\pi$	Eγ	Iγ[a]	E$_f$	J$_f^\pi$	Mult.[c]	δ[b]	α[†]	Comments
62.20	1+	61.4[#] *6*	100	0.0	2+	M1(+E2)	<0.11	0.226 *24*	α(K)=0.201 *20*; α(L)=0.022 *3*; α(M)=0.0030 *4*; α(N+..)=8.6×10^{-5} *8* α(N)=8.6×10^{-5} *8* B(M1)(W.u.)>0.036?; B(E2)(W.u.)<2.4×10^2? Mult.: from adopted J$^\pi$'s. δ: from T$_{1/2}$ and assumed upper limit of B(E2)(W.u.)=300. Other: −0.17 +5−1 from γ(θ) in ^{58}Ni(α,pnγ).
287.19	2+	224.9[‡] *2*	100 *5*	62.20	1+	M1		0.00656 *10*	α=0.00656 *10*; α(K)=0.00588 *9*; α(L)=0.000594 *9*; α(M)=8.36×10^{-5} *12*; α(N+..)=2.52×10^{-6} *4* α(N)=2.52×10^{-6} *4*
		287.2[‡] *2*	43 *5*	0.0	2+	M1+E2[b]	+0.17 +2−1	0.00383 *8*	α=0.00383 *8*; α(K)=0.00343 *7*; α(L)=0.000346 *8*; α(M)=4.87×10^{-5}

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Adopted Levels, Gammas (continued)

γ(^{60}Cu) (continued)

E_i(level)	J_i^π	E_γ	I_γ[a]	E_f	J_f^π	Mult.[c]	δ[b]	α[†]	Comments
									10; α(N+..)=1.47×10^{-6} *3* α(N)=1.47×10^{-6} *3* Mult.: D+Q from (α,pnγ) and ΔJ$^\pi$.
335.64	(2$^+$)	273.4[#] *4*	100	62.20	1$^+$				
364.5	(1$^+$)	364.6[#] *3*	100	0.0	2$^+$				
453.82	(3$^+$)	166.6[‡] *2*	1.0 *5*	287.19	2$^+$	M1+E2	−0.18 *+2−5*	0.0163 *15*	α(K)=0.0146 *13*; α(L)=0.00151 *14*; α(M)=0.000211 *20*; α(N+..)=6.2×10^{-6} *5* α(N)=6.2×10^{-6} *5* Mult.: D+Q from (α,pnγ) and ΔJ$^\pi$.
		453.8[‡] *2*	100.0 *5*	0.0	2$^+$	E2+M1		0.0019 *7*	α=0.0019 *7*; α(K)=0.0017 *6*; α(L)=0.00017 *6*; α(M)=2.3×10^{-5} *8*; α(N+..)=7.0×10^{-7} *23* α(N)=7.0×10^{-7} *23*
557.53	(4$^+$)	103.7[‡] *2*	53 *6*	453.82	(3$^+$)	D[b]			
		223[@]		335.64	(2$^+$)				
		270.3[‡] *2*	19.0 *18*	287.19	2$^+$	E2		0.01473	α(K)=0.01317 *19*; α(L)=0.001365 *20*; α(M)=0.000191 *3*; α(N+..)=5.41×10^{-6} *8* α(N)=5.41×10^{-6} *8*
		557.5[‡] *2*	100 *7*	0.0	2$^+$	E2		0.001298 *19*	α=0.001298 *19*; α(K)=0.001164 *17*; α(L)=0.0001171 *17*; α(M)=1.643×10^{-5} *23* α(N)=4.89×10^{-7} *7*
571.5		237[@]		335.64	(2$^+$)				
		284[@]		287.19	2$^+$				
		571[@]		0.0	2$^+$				
599.9		600[@]	100	0.0	2$^+$				
670.07	1$^+$	334.4[#] *1*	14 *2*	335.64	(2$^+$)				
		670.3[#] *3*	100 *5*	0.0	2$^+$				
781.02	(3$^+$)	327.2[‡] *2*	82 *11*	453.82	(3$^+$)				
		781.0[‡] *2*	100 *11*	0.0	2$^+$	D+Q[b]	−0.7 *+5−10*		
904.0		904[@]	100	0.0	2$^+$				
914.54	(+)	357.0[‡] *2*	49 *23*	557.53	(4$^+$)				
		460.7[‡] *2*	100 *23*	453.82	(3$^+$)				
947.1		376[@]		571.5					
		493[@]		453.82	(3$^+$)				
		947[@]		0.0	2$^+$				
975.5		418[@]	100	557.53	(4$^+$)				
1008.1		338[@]	100	670.07	1$^+$				
1250.6		915[@]	100	335.64	(2$^+$)				
1368.2		1081[@]	100	287.19	2$^+$				
1421.56	(+)	967.7[‡] *2*	100	453.82	(3$^+$)				
		1422[@]		0.0	2$^+$				

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Adopted Levels, Gammas (continued)

γ(^{60}Cu) (continued)

E_i(level)	J_i^π	E_γ	I_γ[a]	E_f	J_f^π	Mult.[c]	δ[b]	α[†]	Comments
1427?		1427[@d]	100	0.0	2^+				
1504.8		1051[@]	100	453.82	(3^+)				
1603.66	(5^+)	823[&d]		781.02	(3^+)				
		1046.1[‡] *2*		557.53	(4^+)	E2+M1	−0.9 *1*	0.000220 *4*	α=0.000220 *4*; α(K)=0.000198 *4*; α(L)=1.95×10^{-5} *4*; α(M)=2.75×10^{-6} *5*; α(N+..)=8.40×10^{-8} *14* α(N)=8.40×10^{-8} *14*
1668.0		887[@]	100	781.02	(3^+)				
1778.94	(5^+)	1221.4[‡] *2*		557.53	(4^+)				
		1325.1[‡] *2*		453.82	(3^+)	E2		0.0001757 *25*	α=0.0001757 *25*; α(K)=0.0001271 *18*; α(L)=1.254×10^{-5} *18*; α(M)=1.763×10^{-6} *25* α(N)=5.39×10^{-8} *8*; α(IPF)=3.42×10^{-5} *5*
1792.6		1428[@]		364.5	(1^+)				
		1791[@d]		0.0	2^+				
1877.8	$(^+)$	373[@]	100	1504.8					
2026.67	(5^+)	423[@]		1603.66	(5^+)				
		1469.1[‡] *2*		557.53	(4^+)	E2+M1	−1.7 *+8−5*	0.000183 *9*	α=0.000183 *9*; α(K)=0.000101 *3*; α(L)=9.9×10^{-6} *3*; α(M)=1.39×10^{-6} *4*; α(N+..)=7.1×10^{-5} *6* α(N)=4.27×10^{-8} *11*; α(IPF)=7.1×10^{-5} *6*
		1573[&]		453.82	(3^+)	E2		0.000215 *3*	α=0.000215 *3*; α(K)=8.94×10^{-5} *13*; α(L)=8.79×10^{-6} *13*; α(M)=1.236×10^{-6} *18*; α(N+..)=0.0001159 α(N)=3.79×10^{-8} *6*; α(IPF)=0.0001158 *17*
		2027[@]		0.0	2^+				Placement on level scheme implies M3 or E4 multipolarity.
2036.1		1366[@]	100	670.07	1^+				
2197.24	(6^+)	594[&d]		1603.66	(5^+)				
		1639.7[‡] *2*	100	557.53	(4^+)	E2		0.000236 *4*	α=0.000236 *4*; α(K)=8.23×10^{-5} *12*; α(L)=8.10×10^{-6} *12*; α(M)=1.138×10^{-6} *16*; α(N+..)=0.0001445 α(N)=3.49×10^{-8} *5*; α(IPF)=0.0001445 *21*
		1743[@]		453.82	(3^+)				Placement on level scheme implies M3 or E4 multipolarity.
2245.7		642[@]	100	1603.66	(5^+)				
2349.56	$(^+)$	1792.0[‡] *2*	100	557.53	(4^+)				
2518.7		915[@]	100	1603.66	(5^+)				
2524.6		2161[@]	100	364.5	(1^+)				
2536.0	(0^+)	1866[@]	100 *9*	670.07	1^+				

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Adopted Levels, Gammas (continued)

γ(^{60}Cu) (continued)

E_i(level)	J_i^π	E_γ	I_γ[a]	E_f	J_f^π	Mult.[c]	δ[b]	α[†]	Comments
2536.0	(0$^+$)	2171[@]	27 *9*	364.5	(1$^+$)				
		2200[@d]	<7	335.64	(2$^+$)				
		2474[@]	42 *9*	62.20	1$^+$				
2538.7		935[@]	100	1603.66	(5$^+$)				
2658.2		461[@]	100	2197.24	(6$^+$)				
2691.8	(6$^+$)	1088.1[‡] *2*	100	1603.66	(5$^+$)	E2+M1	−1.2 *5*	0.000207 *9*	α=0.000207 *9*; α(K)=0.000186 *8*; α(L)=1.83×10^{-5} *8*; α(M)=2.58×10^{-6} *11*; α(N+..)=7.9×10^{-8} *4* α(N)=7.9×10^{-8} *4*
2790.2	(+)	593[@]	100	2197.24	(6$^+$)				
2817.2	(6)	790.5[‡] *2*	100	2026.67	(5$^+$)	E2+M1		0.00042 *6*	α=0.00042 *6*; α(K)=0.00038 *6*; α(L)=3.8×10^{-5} *6*; α(M)=5.3×10^{-6} *8*; α(N+..)=1.61×10^{-7} *22* α(N)=1.61×10^{-7} *22*
3066.59		2509.0[‡] *2*	100	557.53	(4$^+$)				
3155.57	(6$^-$)	1129[&]		2026.67	(5$^+$)	E1		0.0001083 *16*	α=0.0001083 *16*; α(K)=8.28×10^{-5} *12*; α(L)=8.12×10^{-6} *12*; α(M)=1.142×10^{-6} *16*; α(N+..)=1.622×10^{-5} α(N)=3.50×10^{-8} *5*; α(IPF)=1.618×10^{-5} *23*
		1551.9[‡] *2*		1603.66	(5$^+$)	E1		0.000350 *5*	α=0.000350 *5*; α(K)=4.79×10^{-5} *7*; α(L)=4.68×10^{-6} *7*; α(M)=6.58×10^{-7} *10*; α(N+..)=0.000297 *5* α(N)=2.02×10^{-8} *3*; α(IPF)=0.000297 *5*
3190.9	(7$^+$)	1587.2[‡] *2*	100	1603.66	(5$^+$)	E2		0.000220 *3*	α=0.000220 *3*; α(K)=8.78×10^{-5} *13*; α(L)=8.64×10^{-6} *12*; α(M)=1.214×10^{-6} *17*; α(N+..)=0.0001219 α(N)=3.72×10^{-8} *6*; α(IPF)=0.0001218 *17*
3314.8		1288[@]		2026.67	(5$^+$)				
		1437[@]		1877.8	(+)				
		1536[@]		1778.94	(5$^+$)				
		1893[@]		1421.56	(+)				
		2715[@]		599.9					
3354.56	(7$^-$)	1157.3[‡] *2*	100	2197.24	(6$^+$)	E1		0.0001152 *17*	α=0.0001152 *17*; α(K)=7.91×10^{-5} *11*; α(L)=7.76×10^{-6} *11*; α(M)=1.091×10^{-6} *16*; α(N+..)=2.72×10^{-5} α(N)=3.34×10^{-8} *5*; α(IPF)=2.72×10^{-5} *4*
3575.2		1051[@]		2524.6					
		1378[@]		2197.24	(6$^+$)				
		1971[@]		1603.66	(5$^+$)				
		2628[@]		947.1					

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Adopted Levels, Gammas (continued)

γ(^{60}Cu) (continued)

E_i(level)	J_i^π	E_γ	I_γ[a]	E_f	J_f^π	Mult.[c]	δ[b]	α†	Comments
3594.3	(+)	1397@	100	2197.24	(6+)				
3623.7		1597@	100	2026.67	(5+)				
3699.1	(+)	1175@		2524.6					
		2031@		1668.0					
		2784@		914.54	(+)				
		2795@		904.0					
3772.1	(7−)	417.5‡ *2*	89 *10*	3354.56	(7−)	D+Q[b]	−0.46 *+5−3*		
		616.5‡ *2*	100 *10*	3155.57	(6−)				
3837.3		1640@	100	2197.24	(6+)				
3877.2	(4+)	1680@		2197.24	(6+)				
		3877@		0.0	2+				
4092.6		738@	100	3354.56	(7−)				
4478.6		386@	100	4092.6					
4520.9	(8−)	1166.3‡ *2*		3354.56	(7−)	E2+M1		0.000180 *13*	α=0.000180 *13*; α(K)=0.000158 *11*; α(L)=1.56×10^{-5} *11*; α(M)=2.19×10^{-6} *15*; α(N+..)=4.0×10^{-6} *7* α(N)=6.7×10^{-8} *5*; α(IPF)=4.0×10^{-6} *7*
		1330&		3190.9	(7+)	E1		0.000206 *3*	α=0.000206 *3*; α(K)=6.19×10^{-5} *9*; α(L)=6.07×10^{-6} *9*; α(M)=8.53×10^{-7} *12*; α(N+..)=0.0001371 *20* α(N)=2.62×10^{-8} *4*; α(IPF)=0.0001371 *20*
		1365.3‡ *2*		3155.57	(6−)	E2		0.0001771 *25*	α=0.0001771 *25*; α(K)=0.0001194 *17*; α(L)=1.177×10^{-5} *17*; α(M)=1.654×10^{-6} *24* α(N)=5.06×10^{-8} *7*; α(IPF)=4.43×10^{-5} *7*
5188.2	(9−)	1416.1‡ *2*	100 *13*	3772.1	(7−)	E2(+M3)	−0.18 *2*	0.000189 *4*	α=0.000189 *4*; α(K)=0.0001186 *25*; α(L)=1.171×10^{-5} *25*; α(M)=1.65×10^{-6} *4*; α(N+..)=5.67×10^{-5} *9* α(N)=5.04×10^{-8} *11*; α(IPF)=5.67×10^{-5} *9*
		1833.6‡ *2*	85 *13*	3354.56	(7−)	E2		0.000306 *5*	α=0.000306 *5*; α(K)=6.64×10^{-5} *10*; α(L)=6.52×10^{-6} *10*; α(M)=9.17×10^{-7} *13*; α(N+..)=0.000232 *4* α(N)=2.82×10^{-8} *4*; α(IPF)=0.000232 *4*
5648.9	10−	461		5188.2	(9−)	M1		0.001183 *17*	α=0.001183 *17*; α(K)=0.001062 *15*; α(L)=0.0001058 *15*;

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

γ(^{60}Cu) (continued)

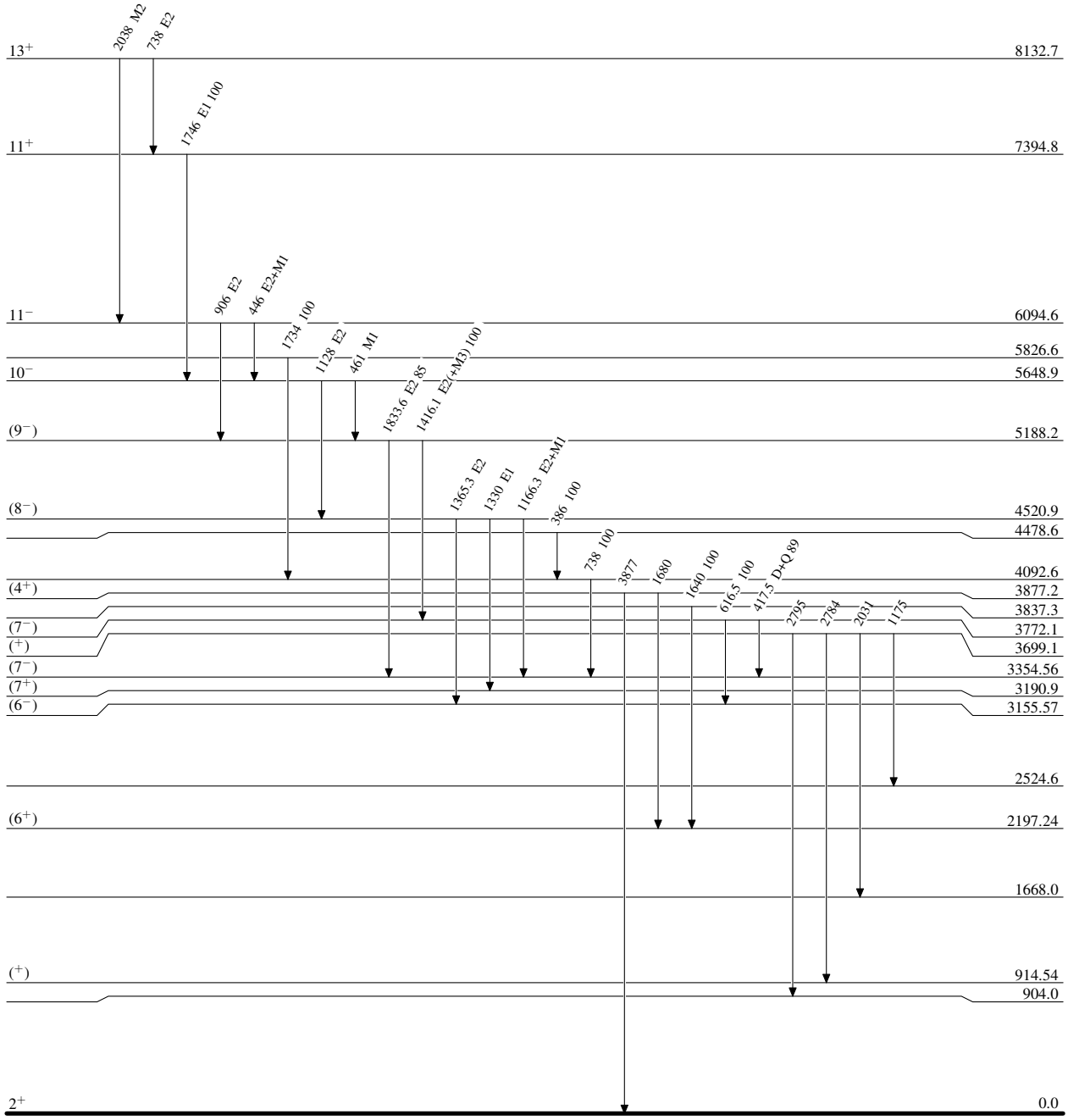
E_i(level)	J_i^π	E_γ	I_γ[a]	E_f	J_f^π	Mult.[c]	α[†]	Comments
								α(M)=1.489×10^{-5} *21* α(N)=4.54×10^{-7} *7*
5648.9	10$^-$	1128		4520.9	(8$^-$)	E2	0.000203 *3*	α=0.000203 *3*; α(K)=0.000181 *3*; α(L)=1.79×10^{-5} *3*; α(M)=2.52×10^{-6} *4*; α(N+..)=1.95×10^{-6} *3* α(N)=7.67×10^{-8} *11*; α(IPF)=1.87×10^{-6} *3*
5826.6		1734[@]	100	4092.6				
6094.6	11$^-$	446		5648.9	10$^-$	E2+M1	0.0019 *7*	α=0.0019 *7*; α(K)=0.0017 *6*; α(L)=0.00018 *7*; α(M)=2.5×10^{-5} *9*; α(N+..)=7.3×10^{-7} *25* α(N)=7.3×10^{-7} *25*
		906		5188.2	(9$^-$)	E2	0.000340 *5*	α=0.000340 *5*; α(K)=0.000305 *5*; α(L)=3.03×10^{-5} *5*; α(M)=4.26×10^{-6} *6*; α(N+..)=1.290×10^{-7} *18* α(N)=1.290×10^{-7} *18*
7394.8	11$^+$	1746	100	5648.9	10$^-$	E1	0.000493 *7*	α=0.000493 *7*; α(K)=3.97×10^{-5} *6*; α(L)=3.88×10^{-6} *6*; α(M)=5.46×10^{-7} *8*; α(N+..)=0.000449 *7* α(N)=1.678×10^{-8} *24*; α(IPF)=0.000449 *7*
8132.7	13$^+$	738		7394.8	11$^+$	E2	0.000580 *9*	α=0.000580 *9*; α(K)=0.000520 *8*; α(L)=5.19×10^{-5} *8*; α(M)=7.29×10^{-6} *11*; α(N+..)=2.19×10^{-7} *3* α(N)=2.19×10^{-7} *3*
		2038		6094.6	11$^-$	M2	0.000250 *4*	α=0.000250 *4*; α(K)=9.13×10^{-5} *13*; α(L)=8.99×10^{-6} *13*; α(M)=1.264×10^{-6} *18*; α(N+..)=0.0001488 α(N)=3.90×10^{-8} *6*; α(IPF)=0.0001487 *21*

† Additional information 1.
‡ From ^{58}Ni(α,pnγ).
# From ^{60}Zn ε decay.
@ From level difference in ^{58}Ni(^{3}He,pγ), ^{40}Ca(^{23}Na,2pnγ).
& From ^{40}Ca(^{23}Na,2pnγ).
[a] Relative photon intensity from each level.
[b] From γ(θ) analysis and $T_{1/2}$<2 ns in ^{58}Ni(α,pnγ), unless noted otherwise.
[c] From DCO and polarization measured in ^{40}Ca(^{24}Mg,3pnγ).
[d] Placement of transition in the level scheme is uncertain.

Adopted Levels, Gammas

Level Scheme

Intensities: Relative photon branching from each level



$^{60}_{29}Cu_{31}$

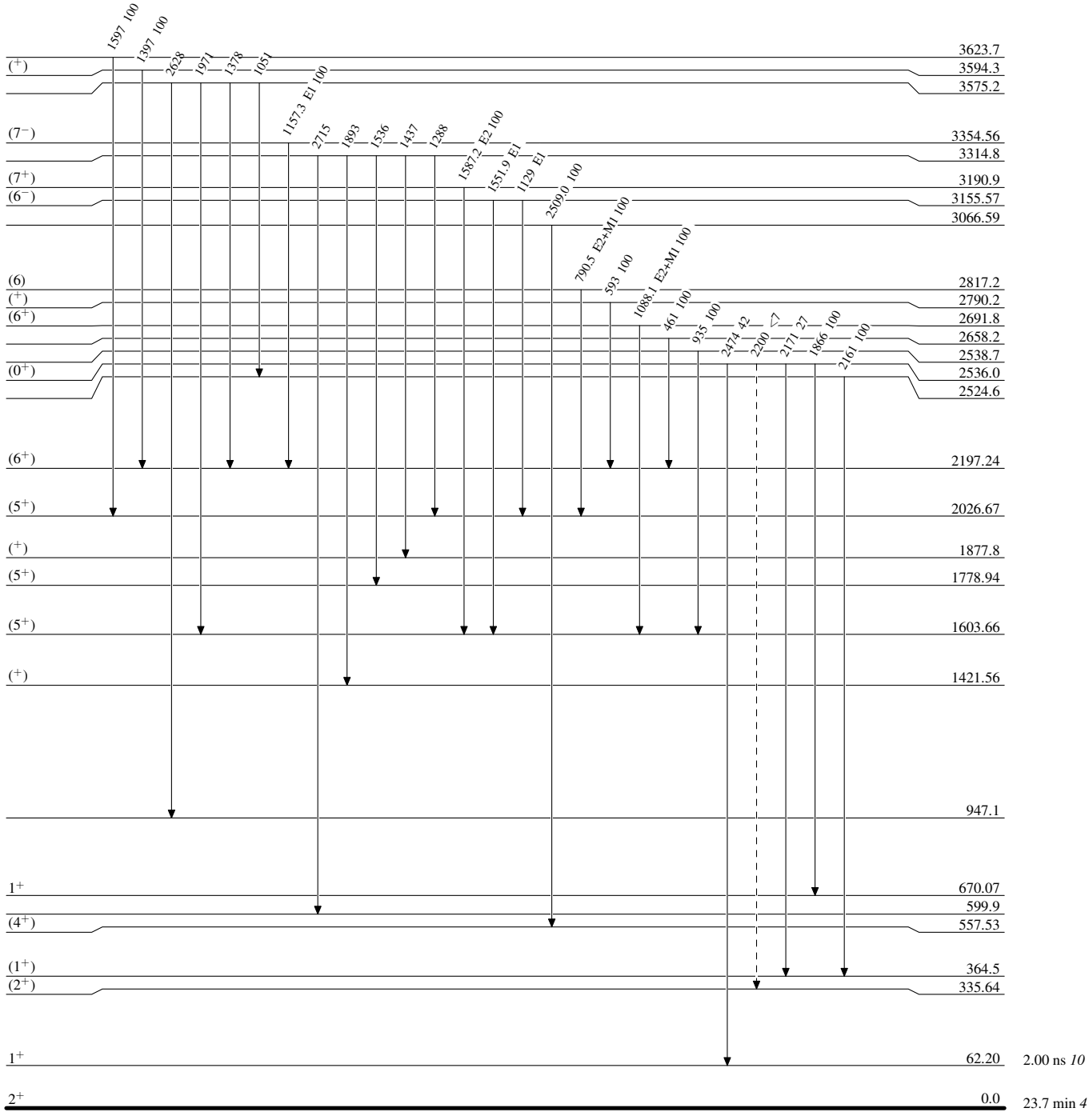
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

γ Decay (Uncertain)



$^{60}_{29}Cu_{31}$

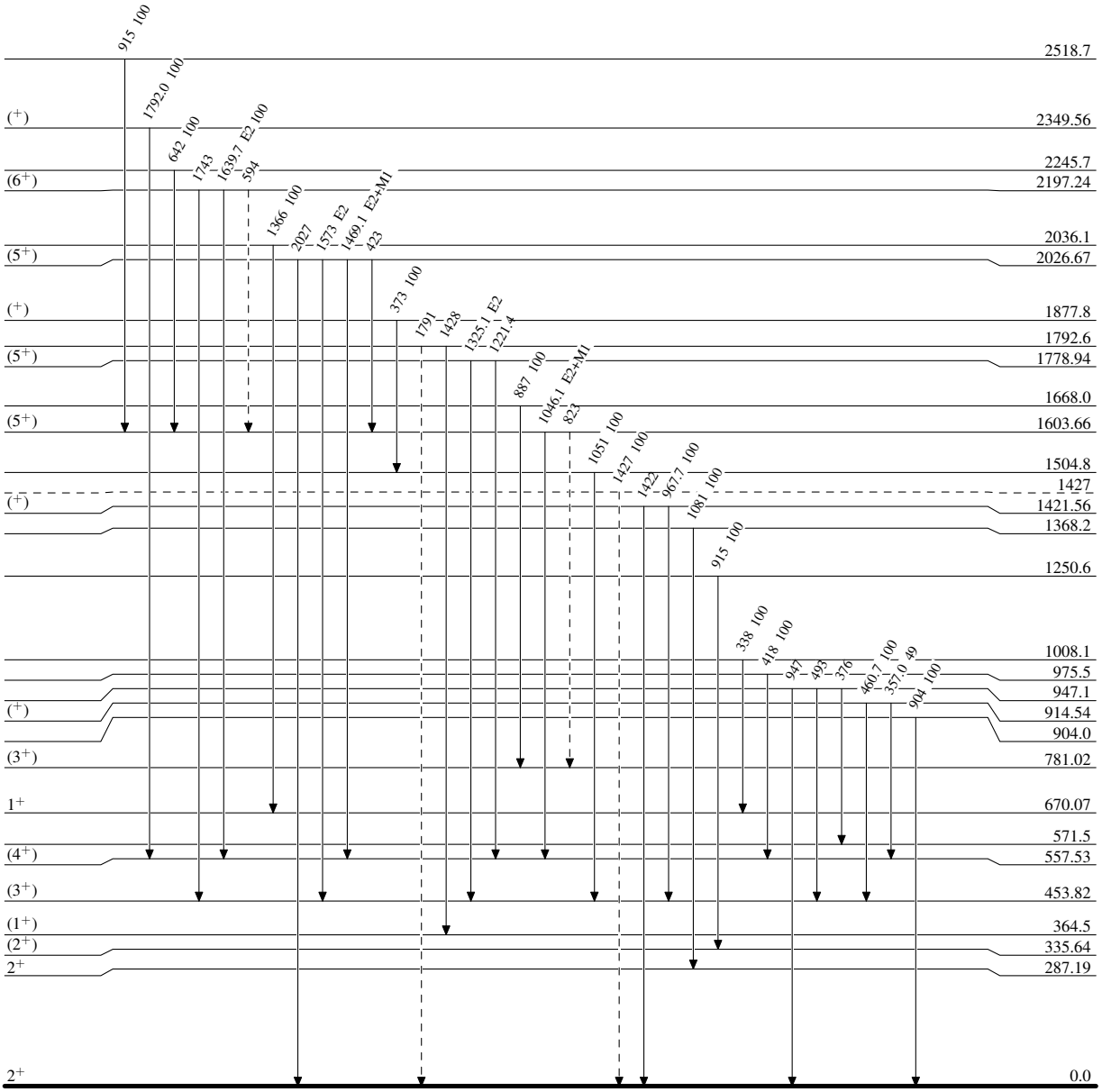
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

– – – – – – ► γ Decay (Uncertain)

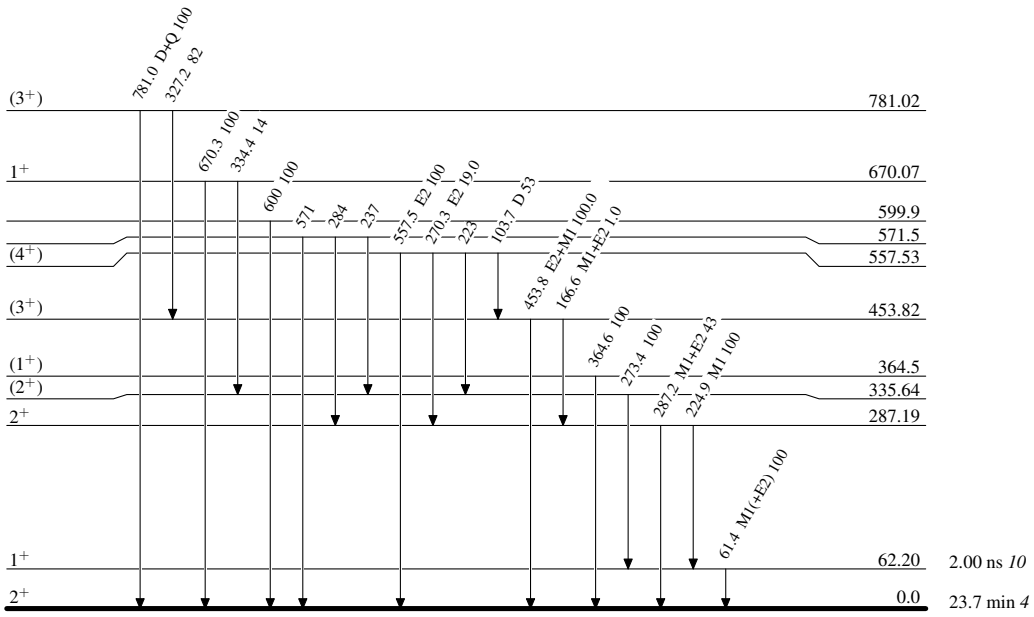


$^{60}_{29}Cu_{31}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level



$^{60}_{29}Cu_{31}$