^{58}Ni(p,nγ) 2003Li38

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Caroline D. Nesaraja, Scott D. Geraedts and Balraj Singh	NDS 111, 897 (2010)	12-Jan-2010

2003Li38 (also 2005Co22): E=14 MeV. Enriched target. Measured Eγ, Iγ, γγ, γγ(θ), γ(lin pol) using five Compton-suppressed Ge detectors and one Compton-suppressed EUROBALL cluster detector. 2005Co22 report lifetime measurement using four Compton-suppressed Ge detectors and delayed γ-radio frequency coincidence method.
1972St26: E=12.0-13.03 MeV. Enriched target. Measured Eγ, Iγ, nγ, γγ, lifetimes by Doppler-shift attenuation method (DSAM).
1971Ki17: E=7-16 MeV. Enriched targets. Measured Eγ, Iγ.
Others: 1980Ba27, 1977YoZL, 1967Co13, 1966Ha14.
All data for levels above 1652 are from 2003Li38.

^{58}Cu Levels

E(level)†	Jπ‡	$T_{1/2}$#	Comments
0.0	1^+		T=0
203.16 *20*	0^+		T=1
444.32 *15*	3^+	324 ps *59*	T=0 J≥2 from γ(θ)(1972St26). $T_{1/2}$: from 2005Co22, delayed γ-radio frequency coin method. Corresponding B(E2) value is consistent with 3^+ state as a collective quadrupole excitation of the 1^+ g.s.
1051.67 *23*	1^+	78 fs *+19−13*	T=0
1428.30 *18*	2^+	>0.66 ps	T=0
1550.10 *24*	$4^{(+)}$	>0.34 ps	T=0
1647.64 *16*	3^+	>0.90 ps	T=0
1652.83 *20*	2^+	35 fs *7*	T=1
2066.33 *23*	$5^{(+)}$		T=0
2249.6 *3*			
2750.74 *23*	$4^{(+)}$		T=1
2815.65 *23*			
2921.9 *4*	(5^+)		
2931.2 *3*			
3280.5 *3*			
3423.0 *4*	(7^+)		
3514.6 *5*			

† From least-squares fit to Eγ′s, assuming Δ(Eγ)=0.3 keV when quoted to nearest tenth of a keV, 1 keV otherwise.
‡ From 'Adopted Levels'.
# From DSAM (1972St26).

γ(^{58}Cu)

Relative intensities are given in 1971Ki17 for a few transitions at an unspecified beam energy, relative to 100.0 *9* for 203γ: 23.5 *24* for 444.5γ, 23 *3* for 848.6γ, 67 *3* for 1105.8γ, 65.6 *14* for 1208.2γ, 24 *3* for 1428.1γ, 48.9 *23* for 1647.5γ,

E_i(level)	J_i^π	E_γ†	I_γ	E_f	J_f^π	Mult.‡	δ‡	Comments
203.16	0^+	203.2 *3*	100	0.0	1^+			Additional information 1. No anisotropy observed for 203γ (1972St26).
444.32	3^+	241@	<2#	203.16	0^+			
		444.5 *2*	100	0.0	1^+	E2(+M3)	−0.02 *4*	Additional information 2. Mult.: RUL used to assign E2 to L≥2 transition from γ(θ).

Continued on next page (footnotes at end of table)

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γ(^{58}Cu) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ	E_f	J_f^π	Mult.[‡]	δ[‡]	Comments
1051.67	1+	607[@]	<4.3	444.32	3+			
		848.6 *2*	94 *7*	203.16	0+			Additional information 3.
		1052[@]	<8.7	0.0	1+			
1428.30	2+	376.6	3.0 *17*	1051.67	1+			
		984.2	8 *4*	444.32	3+	(M1+E2)	−0.8 *+2−15*	
		1225.1	1.5 *4*	203.16	0+			
		1428.1 *3*	88 *4*	0.0	1+			Additional information 4.
1550.10	4(+)	1105.8 *3*	100	444.32	3+	(M1+E2)	−0.77 *5*	Additional information 5.
1647.64	3+	220[@]	<3.4	1428.30	2+			
		596[@]	<4[#]	1051.67	1+			
		1203.5	21 *6*	444.32	3+	(M1+E2)	+0.53 *13*	
		1445[@]	<15[#]	203.16	0+			
		1647.5 *2*	79 *6*	0.0	1+	(E2(+M3))	−0.06 *+16−27*	Additional information 6.
1652.83	2+	601.4	5.3 *16*	1051.67	1+	(M1(+E2))	+0.02 *5*	I_γ: other: Iγ(601)/Iγ(1208)= 0.05 *2* (1972St26).
		1208.2 *3*	90 *3*	444.32	3+	(M1(+E2))	−0.02 *2*	Additional information 7.
		1449.5	4.8 *16*	203.16	0+	[E2]		
		1653[@]	<3.7	0.0	1+			
2066.33	5(+)	418.6	7 *4*	1647.64	3+			
		516.3	17 *6*	1550.10	4(+)			
		1622.0	76 *7*	444.32	3+	(E2+M3)	−0.12 *4*	
2249.6		596.7	89 *5*	1652.83	2+			
		821.3	11 *5*	1428.30	2+			
2750.74	4(+)	1103.1	40 *8*	1647.64	3+	(M1(+E2))	−0.07 *+5−12*	
		1200.6	55 *9*	1550.10	4(+)	(M1(+E2))	0.00 *5*	
		2306.4	4.9 *18*	444.32	3+			
2815.65		1162.7	42 *8*	1652.83	2+			
		1387.2	24 *6*	1428.30	2+			
		2371.5	34 *8*	444.32	3+			
2921.9	(5+)	856[@]	<2.8	2066.33	5(+)			
		1274[@]	<2.8	1647.64	3+			
		1372[@]	<2.8	1550.10	4(+)			
		2477.5	96 *4*	444.32	3+			
2931.2		1278.3	77 *6*	1652.83	2+			
		1503.0	23 *6*	1428.30	2+			
3280.5		1627.7	84 *5*	1652.83	2+			
		1852.2	16 *5*	1428.30	2+			
3423.0	(7+)	1356.7	100	2066.33	5(+)			
3514.6		592.7	100	2921.9	(5+)			

[†] Unweighted average of 2003Li38 and 1972St26 when common γ rays are reported. Uncertainty of 0.3 keV assigned (by evaluators) to Eγ In 2003Li38.
[‡] From γγ(θ) (2003Li38). Measured correlation coefficients are not listed by 2003Li38.
[#] Upper limit from 1972St26.
[@] Placement of transition in the level scheme is uncertain.
[x] γ ray not placed in level scheme.

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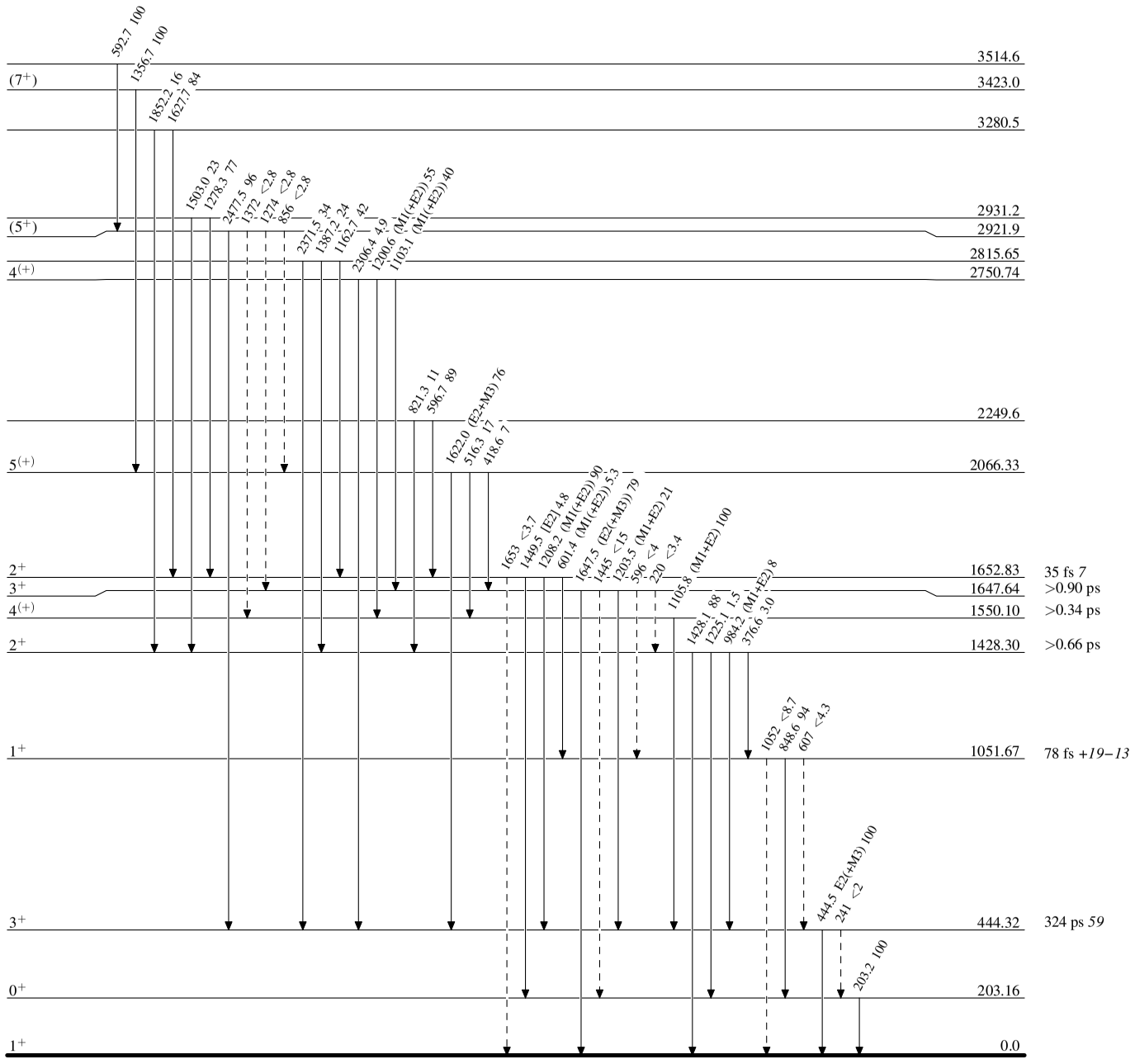
Legend

Level Scheme

Intensities: % photon branching from each level

γ Decay (Uncertain)



$^{58}_{29}Cu_{29}$