

Adopted Levels, Gammas

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	D. Abriola(a), A. A. Sonzogni		NDS 111,1 (2010)	1-May-2009

$Q(\beta^-)=442.8$ 23; $S(n)=8888$ 4; $S(p)=12723$ 3; $Q(\alpha)=-7107$ 4 [2012Wa38](#)

Note: Current evaluation has used the following Q record 442.8 238888 3 12723 3 -7107 4 [2009AuZZ](#).

α : [Additional information 1](#).

 ^{72}Zn LevelsCross Reference (XREF) Flags

- A** ^{72}Cu β^- decay
B $^{208}\text{Pb}(^{64}\text{Ni}, X\gamma)$
C $^{70}\text{Zn}(t, p)$
D Coulomb excitation

E(level) [‡]	J π	T _{1/2}	XREF	Comments
0.0 [#]	0 ⁺	46.5 h 1	ABCD	$\% \beta^- = 100$ T _{1/2} : weighted average of 46.5 h 1 (1961Kj02), 46.5 h 1 (1963Th03) and 46.6 h 2 (1971Ba28).
652.70 [#] 5	2 ⁺	14 ps 3	ABCD	J π : from Coul. Excitation, L=2 in (t,p). T _{1/2} : From B(E2) in Coul. Excitation.
1499.52 [#] 8	(4 ⁺) [†]		AB	
1511.00 12	0 ⁺		A C	J π : L=0 in (t,p).
1612.6 3			A	
1657.30 10	2 ⁺		A C	J π : L=2 in (t,p).
2057.0 5			A	
2169.0 3			A	
2192.52 11			A	
2441.97 22	(3,4)		A	
2476 10	0 ⁺		C	J π : L=0 in (t,p).
2645.63 12	(3,4)		A C	XREF: C(2658). J π : L=(4) in (t,p), observed in β^- decay of ^{72}Cu with J=(2).
2653.4 [#] 5	(6 ⁺) [†]		B	
2792.1 4			A	
2804.82 15			A	
2908.66 11	(3,4)		A C	J π : γ 's to 2 ⁺ and (4 ⁺) levels, no γ to 0 ⁺ g.s..
2924.2 5			B	
2978? 10			C	
3026.8 5			B	
3048? 10			C	
3061.9 3			A	
3094? 10			C	
3110.0 5			A	
3154? 10			C	
3192.7 20			A	
3246.6 4	(1,2)		A	J π : γ 's to 2 ⁺ and 0 ⁺ levels, observed in β^- decay of ^{72}Cu with J=(2).
3395.5 6			A	
3569.7 [#] 6	(8 ⁺) [†]		B	
3574.6 3			A	
3661.65 13			A	
3697.8 4			A	
3707.27 13	(2 ⁺)		A	J π : γ 's to 0 ⁺ , 2 ⁺ and (4 ⁺).
3752.2 4			A	

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Adopted Levels, Gammas (continued) ^{72}Zn Levels (continued)

E(level) [‡]	J ^π	XREF	Comments
3865.6 5	(1,2)	A	J ^π : γ's to 2 ⁺ and 0 ⁺ levels, observed in β ⁻ decay of ^{72}Cu with J=(2).
4001.2 6		A	
4130.2 6		A	
4174.8 5		A	
4358.8 4		A	
4427.2 5		A	
4429.1 4		A	
4594.4 7	(10 ⁺) [†]	A	
4770.3 [#] 7		B	

[†] g.s. γ-ray cascade observed in $^{208}\text{Pb}(^{64}\text{Ni},\text{X}\gamma)$.

[‡] From least-squares fit to E_γ, except for the levels populated only in $^{70}\text{Zn}(\text{t,p})$.

[#] Band(A): Yrast band.

γ(^{72}Zn)

E _i (level)	J _i ^π	E _γ [†]	I _γ [†]	E _f	J _f ^π	Mult.	α	Comments
652.70	2 ⁺	652.68 5	100	0.0	0 ⁺	[E2]	0.000896 13	α(K)=0.000802 12; α(L)=8.14×10 ⁻⁵ 12; α(M)=1.164×10 ⁻⁵ 17; α(N+..)=4.59×10 ⁻⁷ B(E2)(W.u.)=19 5
1499.52	(4 ⁺)	846.75 7	100	652.70	2 ⁺			
1511.00	0 ⁺	858.3 1	100	652.70	2 ⁺			
1612.6		959.9 3	100	652.70	2 ⁺			
1657.30	2 ⁺	1004.7 2	100 5	652.70	2 ⁺			
		1657.6 2	68 3	0.0	0 ⁺			
2057.0		1404.3 5	100	652.70	2 ⁺			
2169.0		2169.0 3	100	0.0	0 ⁺			
2192.52		535.3 2	9.4 9	1657.30	2 ⁺			
		1540.0 2	100 6	652.70	2 ⁺			
2441.97	(3,4)	942.4 3	59 10	1499.52	(4 ⁺)			
		1789.3 3	100 15	652.70	2 ⁺			
2645.63	(3,4)	988.24 9	27.1 14	1657.30	2 ⁺			
		1146.4 2	17.1 14	1499.52	(4 ⁺)			
		1993.1 9	100 6	652.70	2 ⁺			
2653.4	(6 ⁺)	1153.3	100	1499.52	(4 ⁺)			
2792.1		599.6 3	100	2192.52				
2804.82		612.3 1	100	2192.52				
2908.66	(3,4)	716.18 7	9.6 11	2192.52				
		1251.5 1	100 5	1657.30	2 ⁺			
		1408.3 3	9.7 12	1499.52	(4 ⁺)			
		2255.6 3	74 4	652.70	2 ⁺			
2924.2		1424.1	100	1499.52	(4 ⁺)			
3026.8		1526.7	100	1499.52	(4 ⁺)			
3061.9		2409.2 3	100	652.70	2 ⁺			
3110.0		1610.5 5	100	1499.52	(4 ⁺)			
3192.7		2540 2	100	652.70	2 ⁺			
3246.6	(1,2)	2594.0 4	100 12	652.70	2 ⁺			
		3246.3 6	41 12	0.0	0 ⁺			
3395.5		1896.0 6	100	1499.52	(4 ⁺)			
3569.7	(8 ⁺)	916.3	100	2653.4	(6 ⁺)			
3574.6		928.6 7	14 3	2645.63	(3,4)			
		1917.3 3	88 6	1657.30	2 ⁺			
		2921.9 5	100 13	652.70	2 ⁺			

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Adopted Levels, Gammas (continued) $\gamma(^{72}\text{Zn})$ (continued)

$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\dagger$	E_f	J_f^π	$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\dagger$	E_f	J_f^π
3661.65		753.1 2	8.8 12	2908.66	(3,4)	3752.2		2094.9 3	36 3	1657.30	2 ⁺
		1016.0 1	100 6	2645.63	(3,4)			3100 2	100 6	652.70	2 ⁺
		1469.0 2	14.5 14	2192.52		3865.6	(1,2)	3212.9 5	15.2 20	652.70	2 ⁺
		2004.4 3	82 4	1657.30	2 ⁺			3865 1	100 5	0.0	0 ⁺
		3008.9 5	73 4	652.70	2 ⁺	4001.2		3348.4 6	100	652.70	2 ⁺
3697.8		2040.5 3	100	1657.30	2 ⁺	4130.2		3477.4 6	100	652.70	2 ⁺
3707.27	(2 ⁺)	798.7 1	78 4	2908.66	(3,4)	4174.8		2517.5 4	100	1657.30	2 ⁺
		1516 2	48 4	2192.52		4358.8		2859.2 4	100	1499.52	(4 ⁺)
		2050.3 5	24 4	1657.30	2 ⁺	4427.2		2769.8 4	100	1657.30	2 ⁺
		2206.7 3	70 4	1499.52	(4 ⁺)	4429.1		2236.5 3	100	2192.52	
		3054.7 5	100 9	652.70	2 ⁺	4594.4		3941.6 7	100	652.70	2 ⁺
		3706.9 7	96 9	0.0	0 ⁺	4770.3	(10 ⁺)	1200.6	100	3569.7	(8 ⁺)

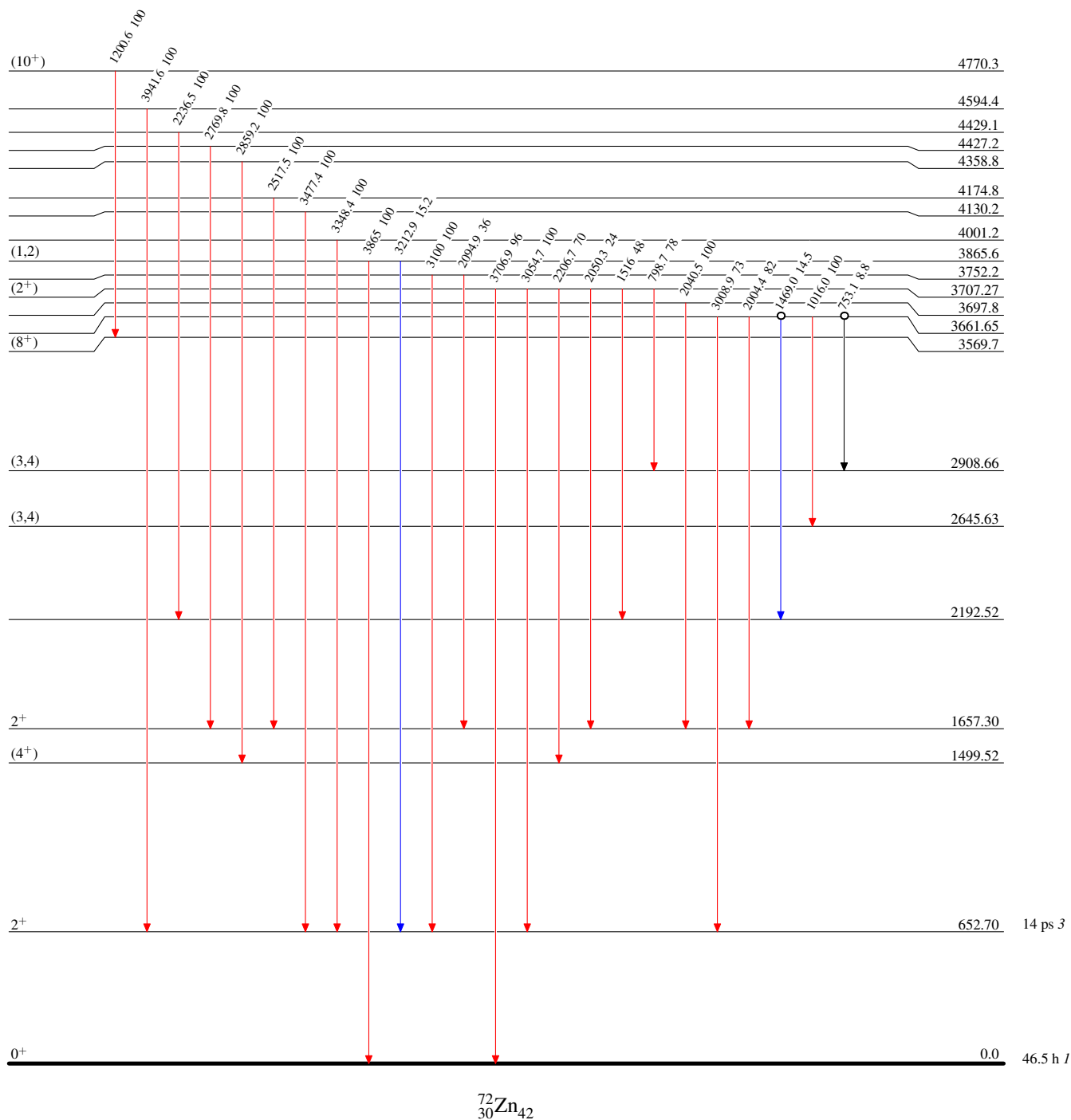
[†] From ^{72}Cu β^- decay, unless not allowed by xref.

Adopted Levels, Gammas**Level Scheme**

Intensities: Type not specified

Legend

- ▶ $I_\gamma < 2\% \times I_\gamma^{\max}$
 —▶ $I_\gamma < 10\% \times I_\gamma^{\max}$
 —▶ $I_\gamma > 10\% \times I_\gamma^{\max}$
 ● Coincidence
 ○ Coincidence (Uncertain)

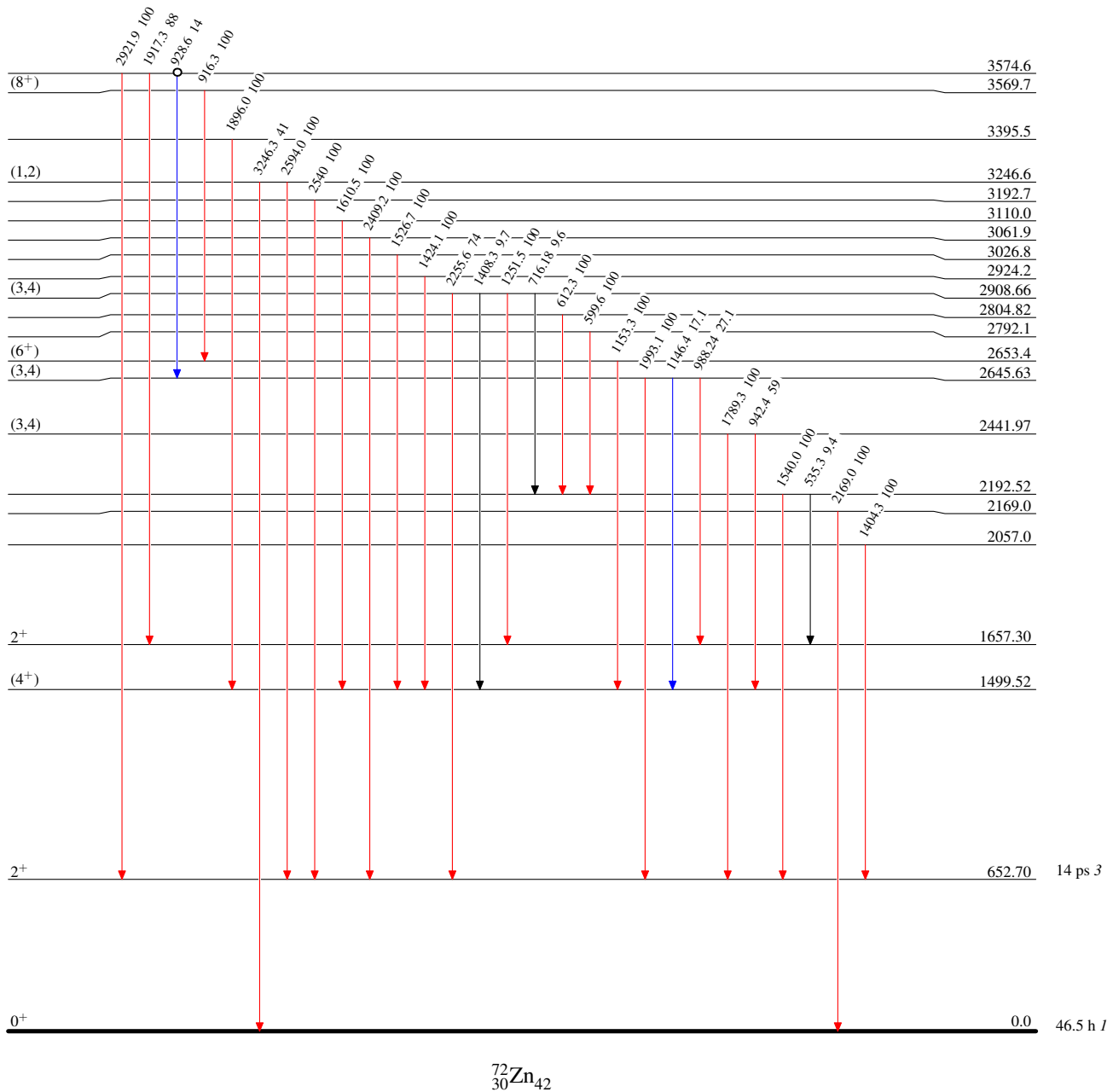


Adopted Levels, Gammas**Level Scheme (continued)**

Intensities: Type not specified

Legend

- $I_\gamma < 2\% \times I_\gamma^{\max}$
- $I_\gamma < 10\% \times I_\gamma^{\max}$
- $I_\gamma > 10\% \times I_\gamma^{\max}$
- Coincidence
- Coincidence (Uncertain)



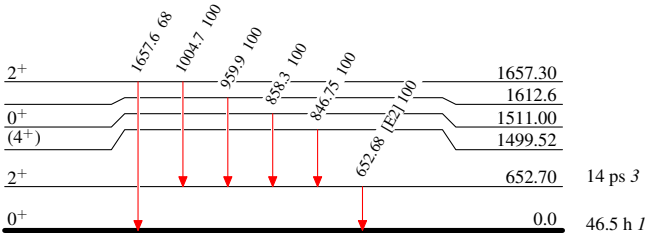
Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Type not specified

Legend

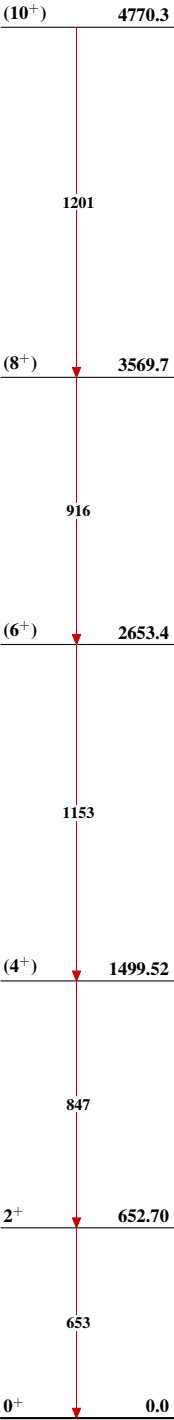
- $\longrightarrow$ $I_\gamma < 2\% \times I_\gamma^{max}$
- $\longrightarrow$ $I_\gamma < 10\% \times I_\gamma^{max}$
- $\longrightarrow$ $I_\gamma > 10\% \times I_\gamma^{max}$



$^{72}_{30}\text{Zn}_{42}$

Adopted Levels, Gammas

Band(A): Yrast band



$^{72}_{30}\text{Zn}_{42}$