

$^{63}\text{Cu}(\text{p},2\text{n}\gamma)$ 1976Br33

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	Alan L. Nichols, Balraj Singh, Jagdish K. Tuli		NDS 113, 973 (2012)	15-Apr-2012

1976Br33: E=22-31 MeV, measured E_γ , I_γ , $\gamma\gamma$, $\gamma(\theta)$.

1973Ku05: E=17.0-32.5 MeV, measured E_γ , I_γ , excitation functions – this work mainly concerns (p,t) experiment.

 ^{62}Zn Levels

E(level)	$J^\pi^\dagger$
0.0	0^+
954.0 4	2^+
1804.6 4	2^+
2185.8 6	4^+
2384.6 6	3^+
2743.3 12	(4^+)
3586.3? 12	
3707.3 8	$6^{(+)}$
4042.8 12	
4903.3 13	(7)

† As proposed in 1976Br33.

 $\gamma(^{62}\text{Zn})$

$E_\gamma^\dagger$	$I_\gamma^\dagger$	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. ‡	$\delta^\ddagger$	Comments
557.4 5	10 2	2743.3	(4^+)	2185.8	4^+			E_γ : doublet. Contribution of 557 γ in ^{62}Cu has been estimated and subtracted. $\Delta I_\gamma = \pm 25\%$.
580.0 5	6 1	2384.6	3^+	1804.6	2^+	(M1+E2) a	-0.5 1	$A_2 = -0.42$ 10; $A_4 = 0.0$ 1
843 1		3586.3?		2743.3	(4^+)			E_γ : unresolved from the 844 γ in ^{27}Al .
850.5 5	14 2	1804.6	2^+	954.0	2^+	(M1+E2) a	-1.2 +4-5	$A_2 = -0.13$ 3; $A_4 = 0.00$ 4 Additional information 2.
859.2@ $^{925.2}\# \&$	8.0@ 7 40.7# 9	4903.3	(7)	4042.8				
939 1		2743.3	(4^+)	1804.6	2^+			E_γ : weak multiplet γ .
953.9 5	100 10	954.0	2^+	0.0	0^+	(Q)		$A_2 = +0.08$ 3; $A_4 = 0.00$ 3 Additional information 1.
$^{998.7}\#$	18.9# 8							
1196 1	<2	4903.3	(7)	3707.3	$6^{(+)}$			E_γ, I_γ : unresolved from 1194-keV γ in ^{62}Cu . $\Delta I_\gamma = \pm 20\%$.
1231.7 5	42 4	2185.8	4^+	954.0	2^+	(Q)		$A_2 = +0.21$ 3; $A_4 = -0.03$ 5 $\delta(\text{O}/\text{Q}) = 0.00$ 5. Additional information 4.
$^{1285.6}\#$	15.5# 9							
$^{1427.7}\#$	$\approx 14.9\#$							
1431 1		2384.6	3^+	954.0	2^+			Additional information 5. E_γ : unresolved from 1428 γ in ^{59}Ni and 1430 γ in ^{62}Cu .
1521.5 5	8 1	3707.3	$6^{(+)}$	2185.8	4^+	Q		$A_2 = +0.29$ 3; $A_4 = -0.12$ 5 $\delta(\text{O}/\text{Q}) = -0.05$ +3-4.
1804.6 5	9 1	1804.6	2^+	0.0	0^+			E_γ : weakly influenced by the presence of

Continued on next page (footnotes at end of table)

$^{63}\text{Cu}(\text{p},2\text{n}\gamma)$ **1976Br33** (continued) $\gamma(^{62}\text{Zn})$ (continued)

<u>E_γ</u> [†]	<u>I_γ</u> [†]	<u>$E_i(\text{level})$</u>	<u>E_f</u>	<u>J_f^π</u>	Comments
1857	1	<3	4042.8	2185.8	4 ⁺

1808 γ from ^{26}Mg .
 I_γ : other: $I_\gamma(1805)/I_\gamma(851)=0.67$ 10 (**1973Ku05**).
[Additional information 3](#).
 E_γ, I_γ : unresolved from 1861-keV γ in ^{62}Cu . $\Delta I_\gamma=\pm 20\%$.

[†] From **1976Br33**, at 55°, E=26 MeV, $\Delta I_\gamma=\pm 10\%$, except as noted.

[‡] From $\gamma(\theta)$ data (**1976Br33**). Mult=Q is most likely E2.

Unplaced γ reported by **1973Ku05**, probably contributed by an impurity.

@ γ reported by **1973Ku05**, tentative placement by evaluator.

& Uncertain γ ray.

^a $\gamma(\theta)$ data give $\Delta J=1$, D+Q; large mixing ratio consistent with M1+E2 from RUL.

^x γ ray not placed in level scheme.

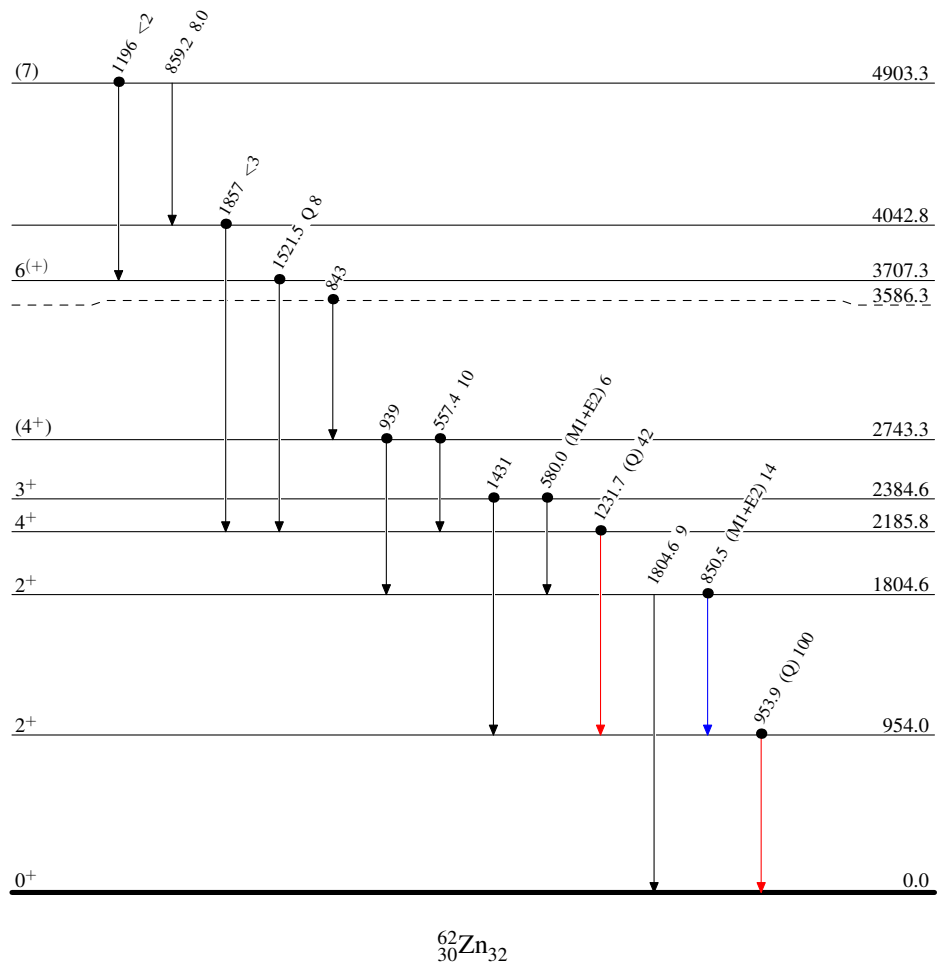
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Level Scheme

Intensities: Relative I_γ

Legend

- ▶ $I_\gamma < 2\% \times I_\gamma^{\text{max}}$
- ▶ $I_\gamma < 10\% \times I_\gamma^{\text{max}}$
- ▶ $I_\gamma > 10\% \times I_\gamma^{\text{max}}$
- Coincidence

 $^{62}_{30}\text{Zn}_{32}$