^{63}Cu(^{16}O,pnγ) E=49-58 MeV 1984Wo10

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh	ENSDF	30-Sep-2020

1984Wo10: E=49-58 MeV. Measured γ, $\gamma\gamma$, nγ, $\gamma(\theta)$, $T_{1/2}$(level) by DSAM and RDDS.
Other: 1982ClZZ: ^{63}Cu(^{16}O,np),E=42 MeV pulsed beam. Measured I(K x-ray)/Iγ, $T_{1/2}$: brief conference abstract.

^{77}Kr Levels

E(level)†	J$^\pi$‡	$T_{1/2}$#	E(level)†	J$^\pi$‡	$T_{1/2}$#
0.0&	5/2$^+$		1660.40[a] *12*	15/2$^+$	0.83 ps *14*
66.45[b] *10*	(3/2)$^-$		1918.72& *13*	(17/2$^+$)	0.62 ps *10*
150.41[a] *10*	7/2$^+$	163 ps *14*	2064.34[b] *10*	(15/2)$^-$	0.90 ps *21*
245.48[c] *4*	(5/2)$^-$	37 ps *4*	2521.93[c] *16*	(17/2$^-$)	0.7@ ps *3*
279.04& *6*	9/2$^+$	133 ps *7*	2708.34[a] *23*	(19/2$^+$)	0.28@ ps *14*
499.86[b] *5*	(7/2)$^-$	5.2 ps *8*	2990.6& *5*	(21/2$^+$)	0.18 ps *6*
785.09[a] *8*	11/2$^+$	2.1 ps *3*	3113.44[b] *18*	(19/2$^-$)	
800.00[c] *6*	(9/2)$^-$	2.6 ps *3*	3605.1[c] *5*	(21/2$^-$)	
1003.52& *8*	13/2$^+$	1.87 ps *21*	3771.4[a] *5*	(23/2$^+$)	
1177.92[b] *8*	(11/2)$^-$	1.25 ps *14*	4153.1& *6*	(25/2$^+$)	0.30@ ps *10*
1570.31[c] *8*	(13/2)$^-$	0.69 ps *14*			

† From least-squares fit to Eγ data.
‡ From 1984Wo10 based on $\gamma(\theta)$ data, multipolarity assignments, and band associations. The assignments are essentially the same in Adopted Levels, except for the difference in parentheses for some of the levels.
# From RDDS (1984Wo10).
@ Lifetime not corrected for side feeding.
& Band(A): π=+,α=+1/2. Q(transition)=1.1 to 2.9 implies β_2=0.20 to 0.36 for the two signature partners.
[a] Band(a): π=+,α=−1/2.
[b] Band(B): π=−,α=−1/2. Q(transition)=1.4 to 3.7 implies β_2=0.23 to 0.45 for the two signature partners.
[c] Band(b): π=−,α=+1/2.

$\gamma(^{77}Kr)$

E$_\gamma$	I$_\gamma$†	E$_i$(level)	J$_i^\pi$	E$_f$	J$_f^\pi$	Mult.#	δ‡	Comments
66.5		66.45	(3/2)$^-$	0.0	5/2$^+$			Mult.: from delayed x-ray and γ spectra in ^{63}Cu(^{16}O,pnγ) reaction, 1982ClZZ give α(K)exp<0.78, while α(K)=0.30 for E1 and 0.40 for M1 (2008Ki07). The decay scheme supports E1.
129.2 *5*		279.04	9/2$^+$	150.41	7/2$^+$			
150.0 *3*		150.41	7/2$^+$	0.0	5/2$^+$			
179.07 *5*		245.48	(5/2)$^-$	66.45	(3/2)$^-$			
218.6 *1*	6 *3*	1003.52	13/2$^+$	785.09	11/2$^+$			
254.43 *4*	44 *2*	499.86	(7/2)$^-$	245.48	(5/2)$^-$	D(+Q)	<0.05	A_2=−0.14 *5*; A_4=0.0
258.3 *6*	1.2 *5*	1918.72	(17/2$^+$)	1660.40	15/2$^+$			
279.06 *6*		279.04	9/2$^+$	0.0	5/2$^+$			Iγ(279)/Iγ(129)=12 *2*/88 *2*.
282	<1	2990.6	(21/2$^+$)	2708.34	(19/2$^+$)			
300.21 *5*	22 *1*	800.00	(9/2)$^-$	499.86	(7/2)$^-$	D+Q	−0.08 *3*	A_2=−0.47 *5*; A_4=0.0
377.95 *7*	14 *1*	1177.92	(11/2)$^-$	800.00	(9/2)$^-$	D+Q	−0.18 *3*	A_2=−0.61 *6*; A_4=+0.03 *2*
382	<1	4153.1	(25/2$^+$)	3771.4	(23/2$^+$)			

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^{63}Cu(^{16}O,pnγ) E=49-58 MeV 1984Wo10 (continued)

$\gamma(^{77}Kr)$ (continued)

E_γ	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	δ[‡]	Comments
392.39 *6*	10.7 *11*	1570.31	$(13/2)^-$	1177.92	$(11/2)^-$	D+Q	−0.12 *2*	A_2=−0.51 *4*; A_4=+0.01 *2*
433.35 *6*	12 *2*	499.86	$(7/2)^-$	66.45	$(3/2)^-$			I_γ: intensity is too low by a factor of ≈2 as compared to that of 254γ in several other studies and in Adopted Gammas.
457.8 *2*	5.5 *15*	2521.93	$(17/2^-)$	2064.34	$(15/2)^-$			
494.0 *1*	6.7 *12*	2064.34	$(15/2)^-$	1570.31	$(13/2)^-$			
506.07 *5*	33 *2*	785.09	$11/2^+$	279.04	$9/2^+$	D+Q	−1.15 *15*	A_2=−0.74 *6*; A_4=+0.07 *2*
								δ: inconsistent with δ=−0.35 *6* in Adopted Gammas.
554.39 *8*	24.5 *15*	800.00	$(9/2)^-$	245.48	$(5/2)^-$			
592.9 *2*	<2	3113.44	$(19/2^-)$	2521.93	$(17/2^-)$			E_γ: poor fit. Level energy difference=591.5.
634.64 *7*	12.6 *12*	785.09	$11/2^+$	150.41	$7/2^+$			
657.0 *1*	7 *1*	1660.40	$15/2^+$	1003.52	$13/2^+$	D+Q	−1.5 *3*	A_2=−0.46 *7*; A_4=+0.04 *2*
								δ: inconsistent with δ=−0.21 *5* in Adopted Gammas.
								I_γ: intensity is too low by a factor of ≈2 as compared to that of 874.8γ from other studies and in Adopted Gammas.
678.0 *1*	29.0 *16*	1177.92	$(11/2)^-$	499.86	$(7/2)^-$			
724.46 *5*	100	1003.52	$13/2^+$	279.04	$9/2^+$	E2		A_2=+0.29 *3*; A_4=−0.09 *3*
770.3 *1*	35 *2*	1570.31	$(13/2)^-$	800.00	$(9/2)^-$	E2		A_2=+0.33 *5*; A_4=−0.08 *4*
780.7 *1*	9 *3*	3771.4	$(23/2^+)$	2990.6	$(21/2^+)$			
789.6 *2*	9 *3*	2708.34	$(19/2^+)$	1918.72	$(17/2^+)$			
874.8 *2*	12 *1*	1660.40	$15/2^+$	785.09	$11/2^+$			
886.4 *1*	22.5 *17*	2064.34	$(15/2)^-$	1177.92	$(11/2)^-$			
915.2 *1*	63 *3*	1918.72	$(17/2^+)$	1003.52	$13/2^+$	E2		A_2=+0.32 *3*; A_4=−0.14 *3*
951.8 *2*	11.5 *20*	2521.93	$(17/2^-)$	1570.31	$(13/2)^-$	E2		A_2=+0.35 *3*; A_4=−0.05 *2*
1048 *1*	10 *2*	2708.34	$(19/2^+)$	1660.40	$15/2^+$			
1049.7 *2*	12.7 *17*	3113.44	$(19/2^-)$	2064.34	$(15/2)^-$			
1063[@]	<2	3771.4	$(23/2^+)$	2708.34	$(19/2^+)$			
1072.0 *5*	21 *2*	2990.6	$(21/2^+)$	1918.72	$(17/2^+)$			
1083.2 *4*		3605.1	$(21/2^-)$	2521.93	$(17/2^-)$			
1162.4 *3*	9 *3*	4153.1	$(25/2^+)$	2990.6	$(21/2^+)$			

[†] At E=50 MeV, θ=55°.
[‡] From $\gamma(\theta)$.
[#] From comparison with RUL for transitions from states with measured lifetime and from $\gamma(\theta)$ data for stretched E2 transitions.
[@] Placement of transition in the level scheme is uncertain.

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Level Scheme

Intensities: Relative I_γ

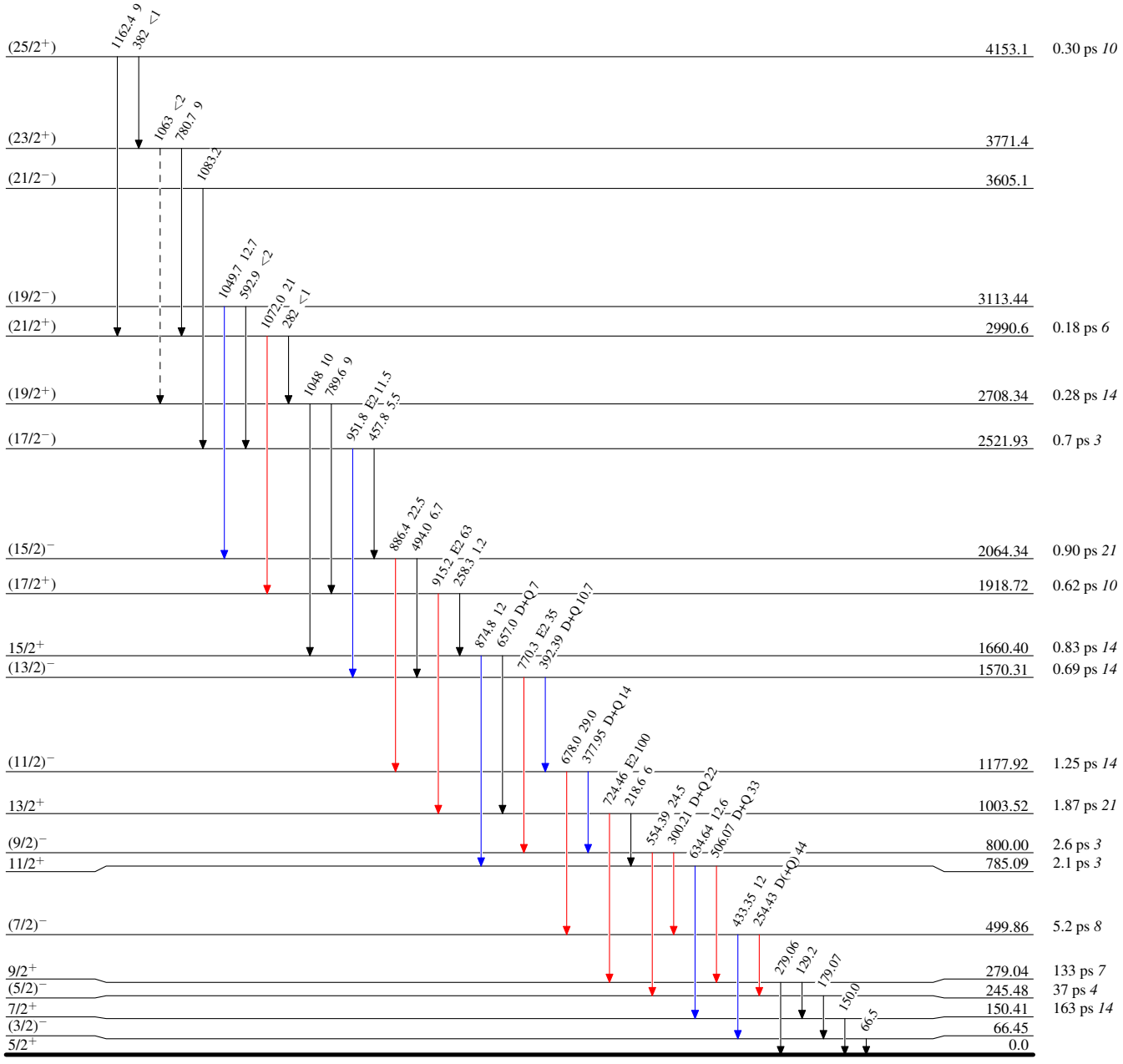
Legend

$I_\gamma < 2\% \times I_\gamma^{max}$

$I_\gamma < 10\% \times I_\gamma^{max}$

$I_\gamma > 10\% \times I_\gamma^{max}$

γ Decay (Uncertain)



$^{77}_{36}Kr_{41}$

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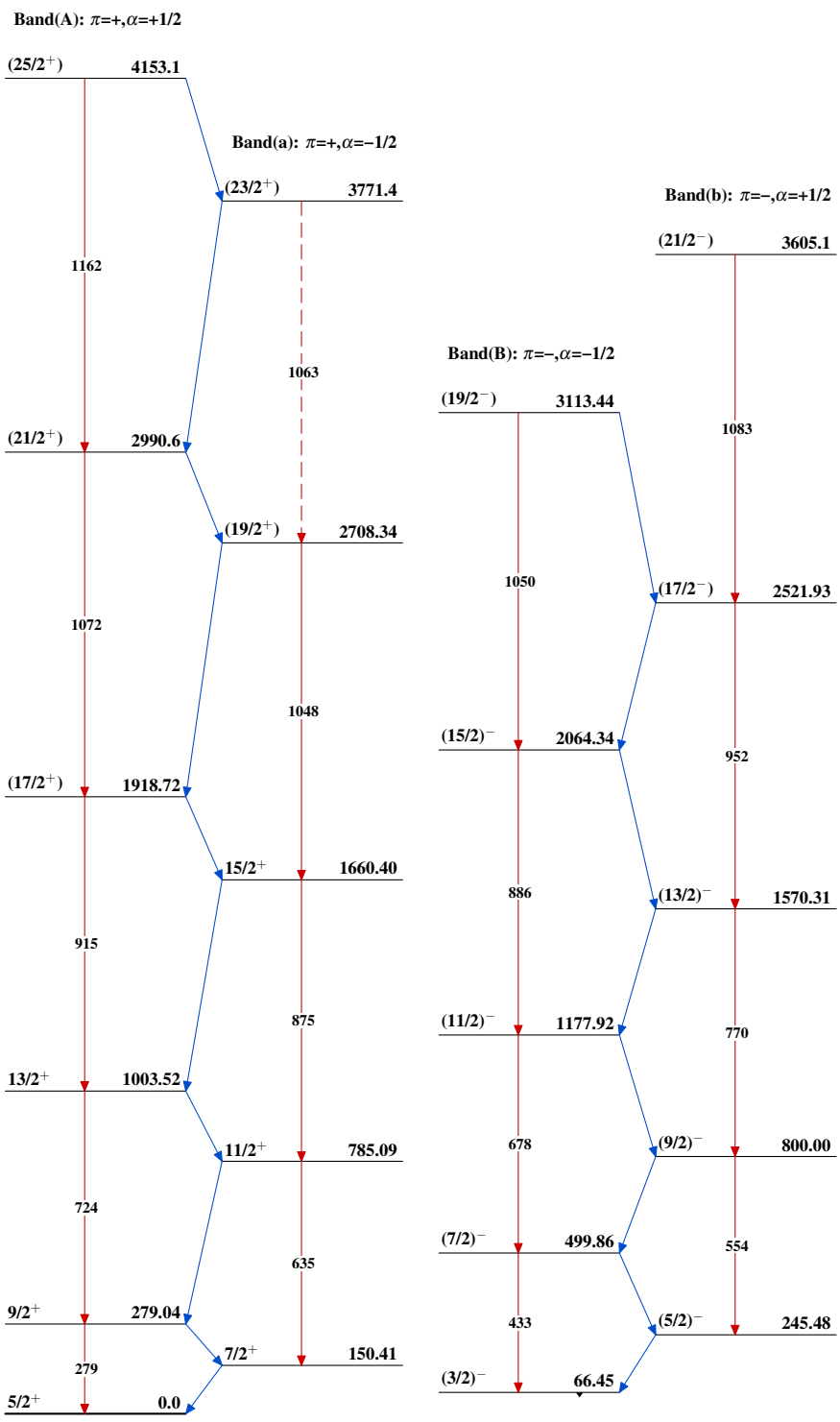

$^{77}_{36}Kr_{41}$