^{63}Cu(d,p)   1969Pa07,1967Hj02,1958De32

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh and Jun Chen	NDS 178, 41 (2021).	12-Nov-2021

$J^{\pi}(^{63}$Cu g.s.)=3/2^{-}.

1969Pa07: E=12.0 MeV, magnetic spectrograph, FWHM=7.5 keV, $\sigma(\theta)$ (from 8° to 50°). DWBA calculations. Cross section uncertainty 15%.

1967Hj02: E=15 MeV, magnetic spectrograph, $\sigma(\theta)$, DWBA.

1958De32: E=6.09 MeV, magnetic spectrograph. The spectrum shows at least 65 more levels from 3.8 to 6.0 MeV.

1962Ne15: E=13.6 MeV. Measured $\sigma(\theta)$. Four groups reported.

1959Sc28: E=21.6, 10, 4.37 MeV. Measured $\sigma(\theta)$. Four groups reported.

1951Ha06: E=14 MeV. Measured Q value.

Reaction mechanism studied: 1976Ma10 (theory), 1975Ch03 (E=27.5 MeV), 1975ChZL, 1971Ok04 (E≤11 MeV).

Yield measurement: 1983Va33.

^{64}Cu Levels

E(level)[†]	L[‡]	(2J+1)S[‡]	E(level)[†]	L[‡]	(2J+1)S[‡]	E(level)[†]	L[‡]	(2J+1)S[‡]
0	1+3	0.17+0.73	2050 *8*	(0,1)	0.039[d]	2913? *11*	1	0.031[b]
158 *3*	1+3	0.84+1.09	2069 *8*	4	2.51	2931 *11*	0+2	0.065+0.26
276 *3*	1+3	0.85+0.92	2090 *8*	(3)	0.325	2970[a] *11*	0+4	0.008+0.72
342 *3*	1	1.18	2115? *10*	1	0.028[b]	2985 *11*	0+2	0.006+0.043
361 *3*	1+3	0.14+3.29	2141 *8*	1	0.032	3009 *11*	0(+2)	0.011+0.019
573 *4*	3	3.64	2191 *9*	1	0.074	3030 *11*	2	0.161
606 *4*	1	0.74	2212 *9*	(3)	0.38	3043? *11*		[b]
661 *4*	1	0.16	2230 *9*	(3)	0.36	3055? *11*		[b]
742[#] *4*	1	1.73	2265[#] *9*	2+4(+0)	0.16+0.80	3077 *11*	4	0.49
876 *5*	1	0.17	2311 *9*	1	0.142	3089 *11*	(4)	1.17
893 *5*	1+3	0.20+0.89	2327 *9*	0(+2)	0.017+0.023	3154 *10*	(2)	0.148
923 *5*	1	0.40	2354? *10*		[b]	3192 *10*	0[c]	0.005[c]
1236 *6*	1	0.74	2375? *9*		[b]	3233 *10*	[f]	[f]
1285? *10*		[b]	2389? *9*		[b]	3260 *10*		
1294 *6*	1	0.44	2415?[&] *10*	0+4	0.004+0.17	3290 *10*	0[c]	0.007[c]
1349 *6*	1+3	0.09+0.22	2462 *9*	0+2	0.042+0.258	3311 *10*	[f]	[f]
1435 *6*	1+3	0.05+0.15	2494 *9*	2	0.050	3411 *20*	(0)[c]	0.011[c]
1458[#] *10*	0+4(+2)	0.005+0.09	2520?[#] *10*	(0)	0.023	3448 *10*	[f]	[f]
1495 *6*	0	0.018	2534?[#] *10*	0(+2)	0.014+0.049	3475 *10*	2[c]	0.155[c]
1517 *7*	1	0.40	2581 *10*	3	0.515	3492 *10*	[f]	[f]
1546[@] *7*	4	3.68	2596? *10*		[b]	3515 *10*	[g]	[g]
1589[#] *7*	4	6.34	2611[#] *10*	0	0.012	3604 *10*	2[c]	0.364[c]
1607?		[b]	2622? *10*		[b]	3623 *10*	[f]	[f]
1630? *10*	(3)	0.29[b]	2634[#] *10*	2(+0,1)	0.27+0.02	3687 *10*		
1648? *10*	(2+0)	0.022+0.002[b]	2647[@] *10*	4(+0)	1.17+0.017	3712 *10*		
1678[#] *7*	0(+3)[e]	0.063+1.23	2670? *10*	0	0.019[b]	3763 *10*	(0)[c]	0.015[c]
1701 *7*	2+4	0.64+2.35	2692[@] *10*	0	0.028	3791 *10*	[f]	[f]
1737? *10*		[b]	2720[@] *10*	0+2	0.019+0.03	≈3900	0	0.038
1775 *7*	3(+1)	0.38+0.02	2760[#] *10*	0+2	0.016+0.053	≈4020	2	0.742
1848 *8*	1	0.09	2774 *10*	1	0.180	≈4130	2	0.491
1884? *10*		[b]	2800 *10*	0	0.012	≈4310	(2)	0.193
1900 *8*	1	0.245	2823[@] *10*	0+2	0.023+0.172	≈4420	0	0.026
1939? *10*	(1)	0.04	2854[@] *11*	1	0.116	≈5000	2	0.512
1980 *8*	(1,3)		2876 *11*	1+3	0.054+0.29			
2016 *8*	(1+3)	0.042+0.24	2891 *11*	1+3	0.048+0.14			

Continued on next page (footnotes at end of table)

^{63}**Cu(d,p)**   **1969Pa07,1967Hj02,1958De32 (continued)**

^{64}Cu Levels (continued)

[†] From 1969Pa07 up to 3089, from 1958De32 for 3154 to 3791, from 1967Hj02 for higher levels.

[‡] From 1969Pa07 up to 3089 level, from 1967Hj02 above 3089. Values for levels below 3089 level are also given by 1967Hj02. The S factors are based on average value for p$_{1/2}$ and p$_{3/2}$ orbitals (for L=1); d$_{5/2}$ (for L=2); f$_{5/2}$ (for L=3) and g$_{9/2}$ (for L=4) (1969Pa07).

[#] Doublet.

[@] Possible doublet.

[&] Triplet.

[a] Possible triplet.

[b] Weakly populated (1969Pa07), not reported by 1958De32 and 1967Hj02.

[c] From 1967Hj02 for unresolved doublet or triplet.

[d] For L=1.

[e] 0+2 also possible.

[f] See values for level above.

[g] See values for 3475 level.