Coulomb excitation　　1981Sk01,1978Br20,1959El42

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	M. Shamsuzzoha Basunia	NDS 102, 719 (2004)	1-Jun-2004

All data are from 1981Sk01, except as noted.

Reactions:

$(^{40}\text{Ca},^{40}\text{Ca}')$ E=168 MeV, (p,p′) E=2 MeV.

Measured level half-lives: Doppler shift attenuation (DSAM) and recoil distance (RDM) methods (1981Sk01).

(α,α') E=9.0 to 13.5 MeV. Measured $d\sigma$(elast)/$d\sigma$(inel). (1978Br20).

(p,p′) (d,d′) E=4.5 MeV. (1959El42).

Others: 1956Go47, 1956He78, 1956Hu49, 1958Ma36, 1960Be16, 1966Bo16, 1967Se09, 1970Ga19.

Values of B(E2) and B(M1) deduced for the g.s. band are in excellent agreement with those predicted by the rotational model with
Q$_0$=7.42 and g$_K$-g$_R$=0.392.

^{175}Lu Levels

E(level)[†]	J$^\pi$[‡]	T$_{1/2}$[#]	Comments
0.0	7/2$^+$	stable	
113.80 8	9/2$^+$	82 ps 3	B(E2)↑=2.28 4
			B(E2)↑: 2.28 4, weighted average of 2.13 12 (1981Sk01), 2.283 46 (1978Br20) and 2.34 10 (1959El42).
			T$_{1/2}$: from B(E2) and adopted γ-ray properties. Other value: 95 ps 6 from microwave method in 1971Da17.
			B(M1)=0.103 12.
251.60 8	11/2$^+$	32.4 ps 16	B(E2)↑=0.586 14
			B(E2)↑: 0.586 14, weighted average of 0.58 4 (1981Sk01), 0.588 15 (1978Br20) and 0.57 8 (1959El42).
			T$_{1/2}$: weighted average of 29.1 ps 14 (from RDM) (1981Sk01) and 32.5 ps 10 (from B(E2)) and adopted properties.
412.49 10	13/2$^+$	12.7 ps 4	
595.42 11	15/2$^+$	7.65 ps 13	
800.09 11	17/2$^+$	4.05 ps 14	
1024.55 13	19/2$^+$	2.25 ps 17	
1268.81 14	21/2$^+$	1.52 ps 12	
1530.93 14	23/2$^+$	1.05 ps 9	
1810.91 17	(25/2$^+$)	0.72 ps 9	
2106.0 2	(27/2$^+$)		

[†] Deduced by evaluator from a least-squares fit to γ-ray energies.

[‡] From Adopted Levels.

[#] Weighted average of DSAM and RDM values, except as noted.

γ(^{175}Lu)

E$_\gamma$	I$_\gamma$	E$_i$(level)	J$^\pi_i$	E$_f$	J$^\pi_f$	Mult.[†]	δ[‡]	α[#]
113.8 1	100.0 6	113.80	9/2$^+$	0.0	7/2$^+$	M1+E2	0.45 2	2.52
137.8 1	74.5 5	251.60	11/2$^+$	113.80	9/2$^+$	M1+E2	0.45 2	1.43
160.9 1	42.1 4	412.49	13/2$^+$	251.60	11/2$^+$	M1+E2	0.42 2	0.917
183.6 1	26.6 4	595.42	15/2$^+$	412.49	13/2$^+$	M1+E2	0.40 4	0.633
204.7 1	10.7 3	800.09	17/2$^+$	595.42	15/2$^+$	M1+E2	0.39 4	0.467
224.5 1	4.1 3	1024.55	19/2$^+$	800.09	17/2$^+$	(M1+E2)		0.29 10
244.3 1		1268.81	21/2$^+$	1024.55	19/2$^+$			
251.6 1	57.4 5	251.60	11/2$^+$	0.0	7/2$^+$	E2		0.133
262.1 1		1530.93	23/2$^+$	1268.81	21/2$^+$			

Coulomb excitation　　**1981Sk01,1978Br20,1959El42 (continued)**

$\gamma(^{175}\text{Lu})$ (continued)

E_γ	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Mult.[†]	α[#]
280[@]		1810.91	$(25/2^+)$	1530.93	$23/2^+$		
298.7 *1*	82.8 *7*	412.49	$13/2^+$	113.80	$9/2^+$	E2	0.0782
343.8 *1*	71.2 *7*	595.42	$15/2^+$	251.60	$11/2^+$	E2	0.0517
387.6 *1*	45.5 *6*	800.09	$17/2^+$	412.49	$13/2^+$	E2	0.0368
429.1 *1*	23.8 *5*	1024.55	$19/2^+$	595.42	$15/2^+$	E2	0.0278
468.7 *1*	10.4 *3*	1268.81	$21/2^+$	800.09	$17/2^+$	E2	0.0220
506.4 *1*	3.6 *3*	1530.93	$23/2^+$	1024.55	$19/2^+$	(E2)	0.0182
542.1 *1*		1810.91	$(25/2^+)$	1268.81	$21/2^+$		
575.1 *1*		2106.0	$(27/2^+)$	1530.93	$23/2^+$		

[†] From $\gamma(\theta)$ and multiple Coulomb excitation cross sections.

[‡] From $\gamma(\theta)$.

[#] Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ-ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.

[@] Placement of transition in the level scheme is uncertain.

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Legend

Level Scheme

Intensities: Relative I_γ

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

Level	J^π	Energy	Half-life
(27/2$^+$)		2106.0	
(25/2$^+$)		1810.91	0.72 ps 9
23/2$^+$		1530.93	1.05 ps 9
21/2$^+$		1268.81	1.52 ps 12
19/2$^+$		1024.55	2.25 ps 17
17/2$^+$		800.09	4.05 ps 14
15/2$^+$		595.42	7.65 ps 13
13/2$^+$		412.49	12.7 ps 4
11/2$^+$		251.60	32.4 ps 16
9/2$^+$		113.80	82 ps 3
7/2$^+$		0.0	stable

Transition labels:

575.1
542.1
280
506.4 (E2) 3.6
262.1
468.7 E2 10.4
244.3
429.1 E2 23.8
224.5 (M1+E2) 4.1
204.7 M1+E2 10.7
387.6 E2 45.5
343.8 E2 71.2
183.6 M1+E2 26.6
298.7 E2 82.8
160.9 M1+E2 42.1
251.6 E2 57.4
137.8 M1+E2 74.5
113.8 M1+E2 100.0

$^{175}_{71}$Lu$_{104}$