Coulomb excitation   1985Ta19,1981Ch42,1971Bo08

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	S. Lalkovski, J. Timar and Z. Elekes	NDS 161, 1 (2019)	1-Apr-2019

1985Ta19: Facility: Panjab University cyclotron; Beam: E(p)=2-4 MeV; Target: enriched to 91.4% in ^{105}Pd; Detectors: one Ge(Li); Measured: γ, Eγ, Iγ; Deduced: B(E2) and T$_{1/2}$.

1981Ch42 Facility: Saha Institute of Nuclear Physics (Calcutta) cyclotron; Beam: E(p)=3.2 MeV; Target: ^{nat}Pd (22.2%); Detectors: Ge(Li); Measured: Measured: γ, Eγ, Iγ; Deduced: B(E2) and T$_{1/2}$.

1974Er05: Facility FTI, USSR; Beam (^{12}C)=35 MeV; Target: enriched in ^{105}Pd; Detectors: one Ge(Li); Measured: γ, γ(t), Eγ; Deduced: T$_{1/2}$ from DSAM.

1974Er05: Facility FTI, USSR; Beam (^{12}C)=35 MeV; Target: enriched in ^{105}Pd; Detectors: one Ge(Li); Measured: γ, γ(t), Eγ; Deduced: T$_{1/2}$ from DSAM.

1971Bo08: Facility: Argonne National Lab tandem Van de Graaf accelerator; Beam: E(α)=4.4-8.0 MeV; Target: two 65 mg/cm^2 self-supported, enrhiched to 77.2% in ^{105}Pd and $^{nat.}$Pd; Detectors: Ge(Li); Measured: excit. function, Eγ, Iγ; Deduced: level scheme, matrix elements.

1971SiYQ: Beam: E(^{35}Cl)=100 MeV; Target: enriched in ^{105}Pd 350 μg/cm thick and 0.45 mg/cm^2 Ni backing foil; Detectors: one co-axial Ge(Li); Measured: γ, γ(t) Eγ, Iγ; Deduced: T$_{1/2}$ from RDDS; Also from the colaboration: 1971SiYG.

1970GeZQ: Facility: Yale university; Beam: E(α)=10 MeV; Target: enriched to 77.2% in ^{105}Pd; Detectors: two Ge(Li); Measured: γ, γ-γ coinc. Eγ, Iγ; Deduced: B(E2), level scheme; Also, from the same collaboration 1970GeZY.

1968Ga22: Facility: FTI cyclotron; Beam: E(^{14}N)=46.1 MeV; Target: ^{105}Pd enriched to 86.8%; Detector: one Ge(Li); Measured: γ, Eγ, Iγ; Deduced: B(E2) and T$_{1/2}$.

Others: 1972SiZP, 1970GeZY, 1966Gu10, 1964Al27, 1964Al28, 1962Va20, 1956Te26, 1955Ma37, 1955Mc02.

^{105}Pd Levels

E(level)†	J$^{\pi\ddagger}$	Comments
0.0	5/2$^+$	
280.38 6	3/2$^+$	B(E2)↑: 0.0095 5.
		B(E2)↑: weighted average of 0.0085 7 (1985Ta19), 0.0073 16 (1981Ch42), 0.0110 10 (1971Bo08); 0.0097 16 (1970GeZQ); Other: 0.002 1 (1968Ga22), ≤0.013 (1962Va20).
306.25 8	7/2$^+$	B(E2)↑: 0.00117 11.
		B(E2)↑: weighted average of 0.0012 1 (1985Ta19), 0.0012 2 (1971Bo08), 0.0011 1 (1970GeZQ), 0.004 1 (1968Ga22); Other: 0.0011 2 (1970GeZQ).
319.08 5	5/2$^+$	B(E2)↑: 0.0082 4.
		B(E2)↑: weighted average of 0.0073 8 (1985Ta19), 0.0095 20 (1981Ch42), 0.0081 10 (1971Bo08), 0.0088 7 (1970GeZQ), 0.008 2 (1968Ga22).
344.55 10	1/2$^+$	B(E2)↑: 0.0022 5.
		B(E2)↑: weighted average 0.0023 3 (1985Ta19), 0.0015 3 (1971Bo08), 0.0027 3 (1970GeZQ), 0.020 4 (1968Ga22) Other: 0.0028 3 (1970GeZQ),≤0.026 (1962Va20).
442.27 8	(7/2)$^+$	T$_{1/2}$: 3.8 ps 10 from DSAM in 1971SiYG, 3.81 ps 14 from RDDS in 1971SiYQ.
		B(E2)↑: 0.185 7.
		B(E2)↑: weighted average of 0.190 16 (1985Ta19), 0.162 27 (1981Ch42), 0.165 13 (1971Bo08), 0.197 10 (1970GeZQ); Others: 0.18 4 (1968Ga22), 0.19 1 (1970GeZY) , 0.21 (1962Va20).
560.75 19	3/2$^+$	T$_{1/2}$: 1.9 ps 5 (1974Er05).
		B(E2)↑: 0.0095 9.
		B(E2)↑: weighted average of 0.0092 14 (1985Ta19), 0.0111 38 (1981Ch42), 0.0075 10 (1971Bo08), 0.0110 7 (1970GeZQ), 0.006 2 (1968Ga22).
650.58 10	(3/2)$^+$	B(E2)↑: 0.0078 6.
		B(E2)↑: weighted average of 0.0086 17 (1985Ta19), 0.0066 13 (1971Bo08), 0.0079 7 (1970GeZQ), 0.017 5 (1968Ga22).
672.96 11	1/2$^+$	T$_{1/2}$: >2 ps (1974Er05).
		B(E2)↑: 0.0082 9.
		B(E2)↑: weighted average of 0.0089 16 (1985Ta19), 0.0057 11 (1971Bo08), 0.0092 7 (1970GeZQ), 0.005 3 (1968Ga22).
696.4 6	(7/2$^+$)	B(E2)↑: 0.0020 10 (1985Ta19).

Coulomb excitation   1985Ta19,1981Ch42,1971Bo08 (continued)

^{105}Pd Levels (continued)

E(level)[†]	J$^\pi$[‡]	Comments
727.53 19	5/2$^+$	B(E2)↑: 0.0057 25.
		B(E2)↑: weighted average of 0.0043 9 (1985Ta19), 0.0024 6 (1971Bo08), 0.0123 8 (1970GeZQ), 0.010 3 (1968Ga22).
781.77 9	9/2$^+$	$T_{1/2}$: 1.7 ps 4 from DSAM in 1971SiYG, 1.80 ps 28 from RDDS in 1971SiYQ, 1.11 ps 28 (1974Er05).
		B(E2)↑: 0.101 7.
		B(E2)↑: weighted average of 0.0966 80 (1985Ta19), 0.119 30 (1981Ch42), 0.0827 83 (1971Bo08); 0.113 6 (1970GeZQ); Other: 0.059 (1962Va20).
785.0 10	(1/2$^+$ to 9/2$^+$)	B(E2)↑: 0.05 1 (1968Ga22).
945.0 10		B(E2)↑: 0.020 5 (1968Ga22).
961.5 5	(1/2,3/2)$^+$	B(E2)↑: 0.008 5.
		B(E2)↑: weighted average of 0.016 3(1985Ta19), 0.005 2 (1968Ga22).

[†] From a least-squares fit to Eγ.
[‡] From Adopted Levels.

γ(^{105}Pd)

E$_\gamma$[†]	I$_\gamma$[†]	E$_i$(level)	J$^\pi_i$	E$_f$	J$^\pi_f$	Mult.[@]	δ[@]	α[&]	I$_{(\gamma+ce)}$
64.2[#]		344.55	1/2$^+$	280.38	3/2$^+$	M1(+E2)	−0.025 30		
90[#a]		650.58	(3/2)$^+$	560.75	3/2$^+$				
112.6[#a]		672.96	1/2$^+$	560.75	3/2$^+$				
123[#a]		442.27	(7/2)$^+$	319.08	5/2$^+$				
136[#a]		442.27	(7/2)$^+$	306.25	7/2$^+$				
136[#]		696.4	(7/2$^+$)	560.75	3/2$^+$				
216[#]		560.75	3/2$^+$	344.55	1/2$^+$				
254[#]		696.4	(7/2$^+$)	442.27	(7/2)$^+$				
280[#a]		560.75	3/2$^+$	280.38	3/2$^+$				
280.37 6	128	280.38	3/2$^+$	0.0	5/2$^+$	M1+E2	+0.143 7		
285[#a]		727.53	5/2$^+$	442.27	(7/2)$^+$	M1			
288[#]		961.5	(1/2,3/2)$^+$	672.96	1/2$^+$	M1			
306[#a]		650.58	(3/2)$^+$	344.55	1/2$^+$				
306.25 8	12.0	306.25	7/2$^+$	0.0	5/2$^+$	M1+E2	+0.055 2	0.01894	100
311[#]		961.5	(1/2,3/2)$^+$	650.58	(3/2)$^+$	M1			
319.08 5	78.3	319.08	5/2$^+$	0.0	5/2$^+$	M1+E2	+0.103 8	0.01710	99.2
328.6[#]		672.96	1/2$^+$	344.55	1/2$^+$	(M1)			
331.48 10	6.68	650.58	(3/2)$^+$	319.08	5/2$^+$	M1+E2	−0.084 7	0.01550	58
339.49 6	31.8	781.77	9/2$^+$	442.27	(7/2)$^+$	M1(+E2)	−0.04 4		
344.55 10	8.71	344.55	1/2$^+$	0.0	5/2$^+$	E2		0.01889	63
353.8[#a]		672.96	1/2$^+$	319.08	5/2$^+$				
370.0 5	1.2	650.58	(3/2)$^+$	280.38	3/2$^+$	M1+E2	0.11 3		
392.56 10	6.80	672.96	1/2$^+$	280.38	3/2$^+$	M1+E2	+0.06 3		
400[#]		961.5	(1/2,3/2)$^+$	560.75	3/2$^+$	M1			
408.1[#]		727.53	5/2$^+$	319.08	5/2$^+$	M1(+E2)			
415.8[#a]		696.4	(7/2$^+$)	280.38	3/2$^+$				
421[#a]		727.53	5/2$^+$	306.25	7/2$^+$	M1(+E2)			
442.24 8	892	442.27	(7/2)$^+$	0.0	5/2$^+$	M1+E2	−0.23 6		100
447[#a]		727.53	5/2$^+$	280.38	3/2$^+$	M1+E2	0.9 +9−5		
475.6[#]		781.77	9/2$^+$	306.25	7/2$^+$				

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Coulomb excitation   1985Ta19,1981Ch42,1971Bo08 (continued)

$\gamma(^{105}$Pd) (continued)

E_γ[†]	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[@]	$I_{(\gamma+ce)}$
560.74 *20*	23.1	560.75	$3/2^+$	0.0	$5/2^+$	M1+E2	95.9
617[#]		961.5	$(1/2,3/2)^+$	344.55	$1/2^+$	M1(+E2)	
650.65 *20*	3.74	650.58	$(3/2)^+$	0.0	$5/2^+$	M1+E2	32
673.1 *3*	3.73	672.96	$1/2^+$	0.0	$5/2^+$	E2	33
682[#]		961.5	$(1/2,3/2)^+$	280.38	$3/2^+$	M1(+E2)	
696.2[#]		696.4	$(7/2^+)$	0.0	$5/2^+$		
727.54 *19*	3.10	727.53	$5/2^+$	0.0	$5/2^+$	M1(+E2)	25
781.90 *19*	48.0	781.77	$9/2^+$	0.0	$5/2^+$	E2	54
785[‡]		785.0	$(1/2^+$ to $9/2^+)$	0.0	$5/2^+$		
945[‡]		945.0		0.0	$5/2^+$		
962[#]		961.5	$(1/2,3/2)^+$	0.0	$5/2^+$	M1	

[†] From 1971Bo08, unless noted otherwise. Iγ per 1×10^{10} incident α particles at Eα=7.2 MeV.

[‡] From 1968Ga22.

[#] From 1985Ta19.

[@] From the adopted gammas.

[&] 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.

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

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Level Scheme

Intensities: Type not specified