^{44}Ca(p,p′γ) 1970La09

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Jun Chen, Balraj Singh and John A. Cameron	NDS 112, 2357 (2011)	31-Jul-2011

1970La09: E=6.72, 8.06 MeV proton beam produced from the Liverpool University tandem accelerator. Target of enriched calcium carbonate (98.6% ^{44}Ca). Five 12.7 cm diam. by 15.2 cm long NaI(Tl) crystals and a 30 cm^3 Ge(Li) detector for detecting γ-rays. Measured Eγ, Iγ, γγ, pγ(θ). Deduced levels, J, γ-branching, mixing ratios.

1972Gr04: E=4.235 MeV proton beam produced from the Groningen 5 MV Van Graaff accelerator. Target of 87 μg/cm^2 CaO on a 185 μg/cm^2 carbon backing (81% ^{43}Ca, 5% ^{44}Ca). A 30 cm^3 true-coaxial Ge(Li) detector and a 7.6 by 7.6 cm NaI crystal for detecting γ-rays. Measured Eγ,Iγ, pγ-coin. Deduced information mainly for ^{43}Ca, also $T_{1/2}$ for the levels of 1157 and 1885 keV in ^{44}Ca using DSAM.

Others:

1982Mi06: E=0.775-5.05 MeV. Measured γ-yields.

1982Sh12: E=2.315-2.9903 MeV.

1983Sh22: E=2.8-3.01 MeV. Measured Eγ, Iγ. Deduced resonances for ^{45}Sc.

All data from 1970La09, unless otherwise noted.

^{44}Ca Levels

E(level)†	Jπ‡	$T_{1/2}$#	E(level)†	Jπ‡	E(level)†	Jπ‡
0	0^+	2.0 ps *+8–5*	3047.8 *14*	4^+	3664.1 *18*	1
1157.6 *9*	2^+		3302.2 *20*	2^+	3674.7 *13*	
1884.5 *13*	0^+	>1.4 ps	3309.1 *12*	3^-	3775.4 *12*	2
2283.8 *12*	4^+		3357.9 *16*		4199 *7*	2
2658.0 *12*	2^+		3586.7 *22*	(0^+)		

† From least-squares fit to Eγ data.
‡ From pγ(θ) in 1970La09.
# From 1972Gr04 by DSAM.

γ(^{44}Ca)

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.†	δ†
1157.6	2^+	1158 *1*	100	0	0^+	E2	
1884.5	0^+	727 *1*	100	1157.6	2^+	E2	
2283.8	4^+	1127 *1*	100	1157.6	2^+	E2(+M3)	−0.05 *+4–3*
2658.0	2^+	1501 *2*	100 *2*	1157.6	2^+	M1+E2	−0.15 *+4–9*
		2656 *3*	17 *4*	0	0^+	E2	
3047.8	4^+	764 *1*	100 *8*	2283.8	4^+	M1+E2	−0.25 *+9–31*
		1890 *2*	96 *3*	1157.6	2^+	E2(+M3)	−0.08 *+3–6*
3302.2	2^+	2144 *2*	100 *9*	1157.6	2^+		
		3304 *4*	49 *8*	0	0^+	E2	
3309.1	3^-	652 *1*	7 *4*	2658.0	2^+		
		1026 *1*	28 *7*	2283.8	4^+		
		2150 *2*	100 *8*	1157.6	2^+		
3357.9		1074 *1*	100	2283.8	4^+		
		2201‡	<5	1157.6	2^+		
3586.7	(0^+)	2429 *2*	100	1157.6	2^+	(E2)	
3664.1	1	1780 *2*		1884.5	0^+	D	
		2508 *3*		1157.6	2^+		
		3659 *4*		0	0^+	D	
3674.7		367 *1*		3309.1	3^-		
		1015 *1*		2658.0	2^+		

Continued on next page (footnotes at end of table)

^{44}Ca(p,p′γ) 1970La09 (continued)

γ(^{44}Ca) (continued)

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.[†]	δ[†]
3674.7		2520 *3*		1157.6	2^+		
3775.4	2	1118	8 *4*	2658.0	2^+		
		2617	100 *4*	1157.6	2^+	D+Q	−0.62 *+7−8*
4199	2	3040 *10*	30 *7*	1157.6	2^+		
		4200 *10*	100 *4*	0	0^+	Q	

[†] From pγ(θ) in 1970La09.
[‡] Placement of transition in the level scheme is uncertain.

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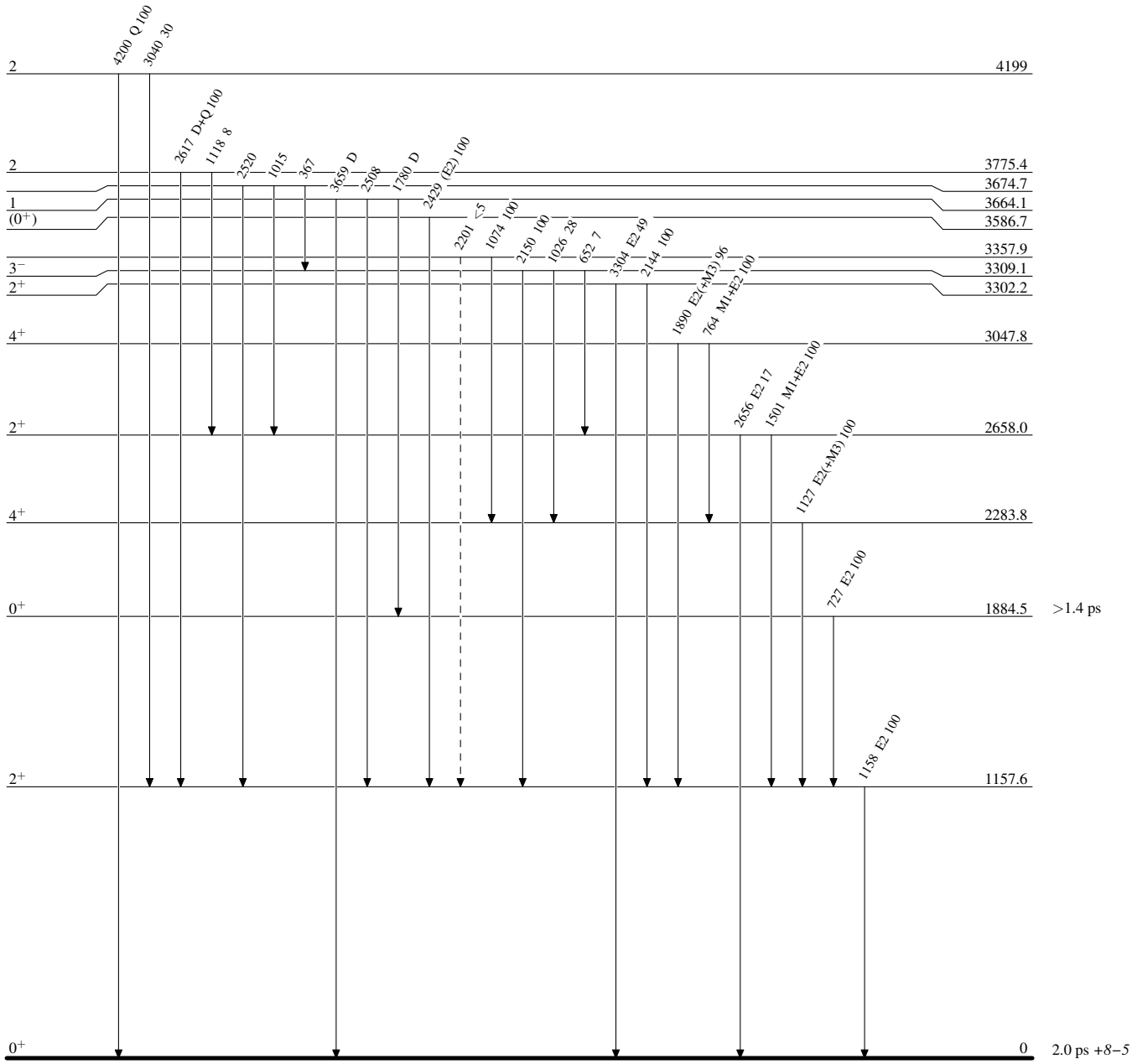
Legend

Level Scheme

Intensities: Relative photon branching from each level

γ Decay (Uncertain)



$^{44}_{20}Ca_{24}$