^{43}Ca(p,p′γ) 1972Gr04

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh and Jun Chen[#]	NDS 126, 1 (2015)	31-Mar-2015

1972Gr04: E=4.235 MeV proton beam was produced from the Groningen 5 MV Van de Graaff accelerator. Target consisted of a layer of 87 μg/cm^2 *9* CaO evaporated onto a 185 μg/cm^2 carbon foil, 81% in ^{43}Ca. γ-rays were detected by a 30 cm^3 true-coaxial Ge(Li) detector. Measured Eγ, Iγ, pγ coin. Deduced levels, J, π, γ-branching, $T_{1/2}$ by DSAM.

Other:
1968Ch12: 2.550, 3.235, 3.605 MeV. Measured γ, γγ, excitation functions.
1967Fo01: Measured $T_{1/2}$ of the 593 keV level p′γ-coin..
1985Ki07: Measured thick target relative γ-yields.

^{43}Ca Levels

E(level)[†]	Jπ[‡]	$T_{1/2}$[#]	E(level)[†]	Jπ[‡]	$T_{1/2}$[#]
0	7/2$^-$		2067.10 *17*	7/2$^-$	21 fs *7*
372.76 *7*	5/2$^-$	>3.5 ps	2093.85 *20*	9/2$^-$	1.2 ps *4*
593.38 *8*	3/2$^-$	160[@] ps *10*	2224.1 *4*	3/2$^-$,5/2$^-$	>49 fs
990.27 *9*	3/2$^+$	>4.9 ps	2248.95 *14*	9/2$^-$	40 fs *8*
1394.55 *9*	5/2$^+$	1.73 ps *35*	2272.4 *5*	3/2$^+$,5/2$^+$	>0.35 ps
1677.89 *19*	11/2$^-$	0.83 ps *14*	2409.74 *18*	9/2$^+$	1.2 ps *+6−4*
1901.99 *16*	7/2$^+$	0.55 ps *10*	2673.5 *3*	5/2$^-$,7/2$^-$	31 fs *13*
1931.48 *15*	5/2$^-$	0.11 ps *3*	2695.7 *15*	3/2$^+$,5/2$^+$	<70 fs
2045.9 *6*	3/2$^-$	>0.49 ps			

[†] From least-squares fit to Eγ data.
[‡] From Adopted Levels.
[#] From DSAM (1972Gr04).
[@] From p′γ(t) (1967Fo01).

γ(^{43}Ca)

Measured limits of Iγ values of γ-rays (involving ΔJ>2 or ΔJ=2, Δπ=yes) from different levels are as follows:
990 level: Iγ<1.5 to g.s.
1678 level: Iγ<2 to 373 level, Iγ<1 to 593 level, Iγ<0.5 to 990 and 1395 levels
1901 level: Iγ<4 to 1678 level, Iγ<3 to 593 level
1931 level: Iγ<7 to 1678 level
2067 level: Iγ<5 to 990 level
2093 level: Iγ<1 to 1395 level, Iγ<2 to 990 level, Iγ<4 to 593 level
2249 level: Iγ<1.3 to 1395 level, Iγ<2.5 to 990 and 593 levels
2409 level: Iγ<6.7 to 990 level, Iγ<4.4 to 593 level, Iγ<9 to 373 level

E_i(level)	J_i^π	E_γ[†]	I_γ	E_f	J_f^π	E_i(level)	J_i^π	E_γ[†]	I_γ	E_f	J_f^π
372.76	5/2$^-$	372.83 *10*	100	0	7/2$^-$	1394.55	5/2$^+$	1021.80 *7*	77 *2*	372.76	5/2$^-$
593.38	3/2$^-$	220.66 *10*	33 *2*	372.76	5/2$^-$			1394.5 *2*	3.7 *6*	0	7/2$^-$
		593.36 *10*	67 *2*	0	7/2$^-$	1677.89	11/2$^-$	1677.8 *2*	100	0	7/2$^-$
990.27	3/2$^+$	396.9 *2*	13 *2*	593.38	3/2$^-$	1901.99	7/2$^+$	507.8[‡] *3*	17 *2*	1394.55	5/2$^+$
		617.51 *7*	87 *2*	372.76	5/2$^-$			911.7 *5*	13 *4*	990.27	3/2$^+$
1394.55	5/2$^+$	404.3 *2*	13 *1*	990.27	3/2$^+$			1529[#]	<3	372.76	5/2$^-$
		801.1 *16*	6 *1*	593.38	3/2$^-$			1901.8 *2*	70 *4*	0	7/2$^-$

Continued on next page (footnotes at end of table)

^{43}Ca(p,p′γ) 1972Gr04 (continued)

γ(^{43}Ca) (continued)

E_i(level)	J_i^π	E_γ †	I_γ	E_f	J_f^π
1931.48	$5/2^-$	537#	<8.6	1394.55	$5/2^+$
		941#	<19	990.27	$3/2^+$
		1339.5‡ *16*	9 *4*	593.38	$3/2^-$
		1558.7 *2*	33 *5*	372.76	$5/2^-$
		1931.4 *2*	58 *5*	0	$7/2^-$
2045.9	$3/2^-$	2045.8 *6*	100	0	$7/2^-$
2067.10	$7/2^-$	389#	<2.5	1677.89	$11/2^-$
		672#	<2.5	1394.55	$5/2^+$
		1474#	<6.3	593.38	$3/2^-$
		1694.2 *3*	20 *2*	372.76	$5/2^-$
		2067.1 *2*	80 *2*	0	$7/2^-$
2093.85	$9/2^-$	416#	<1	1677.89	$11/2^-$
		1721#	<5	372.76	$5/2^-$
		2093.8 *2*	100	0	$7/2^-$
2224.1	$3/2^-$,$5/2^-$	1632 *2*	60 *8*	593.38	$3/2^-$
		1851.3 *4*	40 *8*	372.76	$5/2^-$
2248.95	$9/2^-$	347#	<1.3	1901.99	$7/2^+$
		570.7‡ *5*	2.0 *5*	1677.89	$11/2^-$
		1876.2 *2*	18 *5*	372.76	$5/2^-$
		2248.9 *2*	80 *5*	0	$7/2^-$
2272.4	$3/2^+$,$5/2^+$	877.8‡ *5*	100	1394.55	$5/2^+$
2409.74	$9/2^+$	508.0‡ *10*	11 *2*	1901.99	$7/2^+$
		732#	<6.7	1677.89	$11/2^-$
		1015.2 *2*	44 *4*	1394.55	$5/2^+$
		2409.6 *3*	45 *4*	0	$7/2^-$
2673.5	$5/2^-$,$7/2^-$	1276.0# *10*	20	1394.55	$5/2^+$
		2300.7 *3*	100	372.76	$5/2^-$
2695.7	$3/2^+$,$5/2^+$	2322.9‡ *15*	100	372.76	$5/2^-$

† Recoil correction applied by 1972Gr04 is removed (evaluators).
‡ From coin spectra.
# Placement of transition in the level scheme is uncertain.

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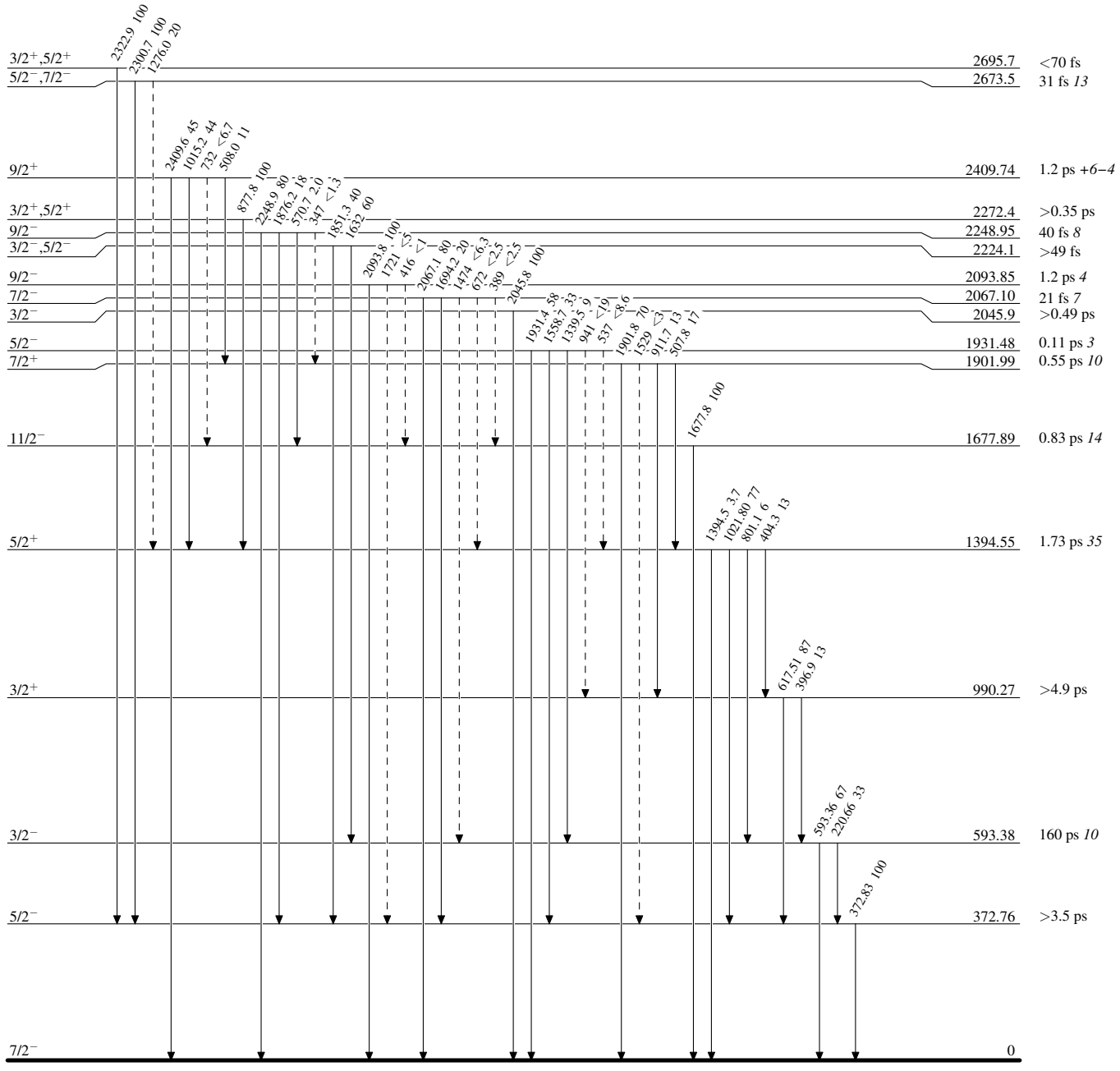
Legend

Level Scheme

Intensities: % photon branching from each level

- - - - - - ► γ Decay (Uncertain)



$^{43}_{20}Ca_{23}$