^{40}Ca(p,p′γ) 1973Te04,1969Po04,1969An09

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Jun Chen	NDS 140, 1 (2017)	30-Sep-2015

1973Te04: E=12 MeV ^{3}He beam was produced from the Van de Graaff Tandem accelerator at CEN Saclay. Charged particles were detected with solid state detector telescopes and γ rays were detected with NaI and Ge(Li) detectors. Measured Eγ, Iγ, pγ-coin, Doppler-shift attenuation. Deduced levels, lifetimes, γ-ray branching ratios.

1969Po04: E=8.5-9.0 MeV beams were produced from the Stanford University Tandem Van de Graaff accelerator. Target was 2 mg/cm^2 evaporated metallic calcium. Measured Eγ, Iγ, $\gamma(\theta)$, Doppler-shift attenuation. Deduced levels, J, π, γ-ray branching ratios, transition strengths.

1969An09: E=8.5-10 MeV proton beams were produced from the Oxford University tandem generator incident on natural calcium targets of different thickness. γ rays were detected with Ge(Li) detectors and NaI counter. Measured Eγ, Iγ, p$\gamma(\theta)$, $\gamma\gamma(\theta)$, Doppler-shift attenuation. Deduced levels, $T_{1/2}$, J, π, lifetimes.

1968Ma05, 1969Ma19, 1971Ma03: E=8-10, 7.73, 7.32 MeV. Measured p$\gamma\gamma$ coin, p$\gamma(\theta)$, $\gamma\gamma(\theta)$, lifetimes by DSAM.

1966Gr03: E=13.065 MeV. Measured pγ coin, p$\gamma(\theta)$.

Others:

1988Ga22: E=10.2 MeV. Measured pair production spectra.

1984Sc37: E=5.08 MeV. Measured $\gamma\gamma(\theta)$ for double γ decay from first excited 0^+ state.

1980Al13: E=6.253 MeV. Measured p$\gamma(\theta)$, pγ(t).

1977Ul01: E=7-10 MeV. Measured proton-pair coin, deduced E0 branching from 0^+ levels.

1974He13: E=7.68, 9.27 MeV. Measured $\gamma(\theta$,H,t), hyperfine fields and magnetic moment.

1973Te04, 1971Te02, 1970Te01, 1969Te03: E=12 MeV. Measured pγ coin, lifetimes by DSAM.

1972Ta17: E=8.7 MeV. Measured pγ(t).

1972Si01: E=10.81 MeV. Measured p$\gamma\gamma$ coin, p$\gamma(\theta)$, lifetimes by DSAM.

1970Ha27: E≈5.08 MeV. Measured $\gamma\gamma$ coin.

1969Ca17: E=6.14 MeV. Measured $\gamma\gamma\gamma$ coin.

1968Ba64: (p,p′γ) E=13 MeV. 16 levels reported.

1967Sc39: E=5.4 MeV. Measured pγ(t).

1965Ne04 (also 1963Ro30): E=150 MeV. Measured pγ coin, p$\gamma(\theta)$.

1963Su12: E=4.4, 5.08 MeV. Measured p$\gamma\gamma$ coin; deduced E0 branch.

Others: 1967Ba02, 1966Go23 (also 1963Go34,1961Go30,1960Go20,1958Go90), 1962Ne02, 1960Wa15, 1959Kl46, 1959Ch28, 1958Hi66, 1958Be15, 1957Ty36, 1955Be73.

^{40}Ca Levels

E(level)[†]	J^{π}[#]	$T_{1/2}$[‡]	Comments
0	0^+		
3352.7 *6*	0^+	2.15 ns *8*	Additional information 1. $T_{1/2}$: from 1966Go23 (also 1967Sc39). Other: 1.9 ns *7* (1973Te04).
3736.96 *24*	3^-	41 ps *4*	Additional information 2. $T_{1/2}$: from 1972Ta17 by particle-gamma delayed coincidence technique.
3904.63 *24*	2^+	33 fs *7*	$T_{1/2}$: from lifetime=47 fs *10*, weighted average of 64 fs *19* (1968Ma05), 0.07 ps *5* (1969Po04), 30 fs *20* (1973Te04), 48 fs *10* (1971Ma03), 40 fs *16* (1972Si01).
4491.6 *3*	5	272 ps *8*	g=+0.54 *10* (1974He13) Additional information 3. $T_{1/2}$: from 1969Ma19 by delayed coincidence. Other: >7 ps (1969Po04).
5212.4 *4*	(0^+)	1.02 ps *21*	Additional information 4. $T_{1/2}$: from 1969Po04. Other: 1.8 ps *+10−5* (1968Ma05), 0.7 ps (1973Te04). J^{π}: 1 is not ruled out; adopted $J^{\pi}=0^+$.
5248.6 *3*	2^+	94 fs *17*	$T_{1/2}$: from lifetime=135 fs *26*, weighted average of 190 fs *30* (1968Ma05), 150 fs *70* (1969Po04), 110 fs *20* (1973Te04).
5277.7 *3*	4^+	225 fs *35*	$T_{1/2}$: from lifetime=324 fs *50*, weighted average of 260 fs *80* (1968Ma05), 0.41 ps *10* (1969Po04), 330 fs *50* (1973Te04), 340 fs *80* (1972Si01), 310 fs *60* (1971Ma03).
5614.1 *3*	4^-	0.69 ps *10*	J^{π}: stretched dipole to J=3 and γ to J=5.

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^{40}Ca(p,p′γ) 1973Te04,1969Po04,1969An09 (continued)

^{40}Ca Levels (continued)

E(level)†	Jπ#	$T_{1/2}$‡	Comments
			$T_{1/2}$: from lifetime=0.99 ps *15*, weighted average of 0.95 ps *+28−19* (1969An09), 0.83 ps *20* (1969Po04), 1.10 fs *15* (1973Te04).
5628.8 *4*	2^+	42 fs *15*	Jπ: assigned to this level which was not resolved from 5613 by 1966Gr03. $T_{1/2}$: from lifetime=61 fs *22*, weighted average of 76 fs *21* (1969An09), 30 fs *30* (1973Te04). Other: $T_{1/2}$<70 fs (1969Po04).
5903.3 *13*	1^-	42 fs *14*	$T_{1/2}$: from 1969An09. Other: 10 fs *10* (1973Te04), <70 fs (1969Po04). Additional information 5.
6025.9 *4*	2,3	171 fs *21*	$T_{1/2}$: from lifetime=246 fs *30*, weighted average of 0.26 ps *3* (1969An09), 0.17 ps *9* (1969Po04), 240 fs *30* (1973Te04). Additional information 6. Jπ: 2^- in Adopted Levels.
6029.1 *4*	2,3	0.40 ps *8*	$T_{1/2}$: from lifetime=0.58 ps *12*, weighted average of 0.56 ps *19* (1969An09), 0.44 ps *+17−12* (1969Po04), 0.70 fs *12* (1973Te04). Jπ: 3^+ in Adopted Levels.
6284.9 *3*	3	0.35 ps *4*	$T_{1/2}$: from lifetime=0.50 ps *5*, weighted average of 410 fs *12* (1968Ma05), 0.57 ps *10* (1969Po04), 0.50 fs *5* (1973Te04).
6508.0 *4*	4^+	128 fs *21*	$T_{1/2}$: from lifetime=184 fs *30*, weighted average of 0.16 ps *6* (1969An09), 190 fs *30* (1973Te04).
6542.9 *4*	4^+	121 fs *21*	Additional information 7. $T_{1/2}$: from lifetime=174 fs *30*, weighted average of 0.19 ps *6* (1969An09), 170 fs *30* (1973Te04).
6582.2 *4*	2,3	173 fs *28*	Jπ: 3^- in Adopted Levels. $T_{1/2}$: from lifetime=250 fs *40*, weighted average of 0.25 ps *7* (1969An09), 250 fs *40* (1973Te04). Additional information 8.
6751.3 *4*	2^-	96 fs *28*	Additional information 9. Jπ: from 1972Si01. $T_{1/2}$: from lifetime=138 fs *40*, weighted average of 120 fs *40* (1973Te04), 185 fs *65* (1972Si01).
6910.8 *10*		<10 fs	Additional information 10.
6929.3 *5*		104 fs *28*	Additional information 11. E(level): could be the 6830+6931 doublet.
6938.1 *16*		0.42 ps *17*	Additional information 12.
6952.6 *13*		<10 fs	Additional information 13.
7112.4 *5*		55 fs *28*	Additional information 14.
7115.2 *4*		35 fs *21*	Additional information 15.
7238.4 *5*		97 fs *49*	Additional information 16.
7278.1 *6*		49 fs *35*	Additional information 17.
7298.9 *6*		118 fs *35*	Additional information 18.
7397.0 *7*		0.47 ps *14*	Additional information 19.
7422.0 *13*		0.20 ps *14*	Additional information 20.
7446.3 *7*		140 fs *49*	Additional information 21.
7468.5 *10*		<10 fs	Additional information 22.
7531.4 *8*		149 fs *35*	Additional information 23.
7559.7 *4*		166 fs *42*	Additional information 24.
7623.3 *6*		111 fs *28*	Additional information 25.
7658.7 *7*		<10 fs	Additional information 26.
7677.0 *6*		208 fs *49*	Additional information 27.
7694.7 *6*		<10 fs	Additional information 28.
7771.9 *9*		166 fs *35*	Additional information 29.
7814@ *3*			
7873.7 *10*		<14 fs	Additional information 30.
7927.2 *7*		49 fs *35*	Additional information 31.
7977.1 *5*		21 fs *21*	Additional information 32.
8018@ *3*			
8087.5 *21*		<28 fs	Additional information 33.

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$^{40}Ca(p,p'\gamma)$ 1973Te04,1969Po04,1969An09 (continued)

^{40}Ca Levels (continued)

E(level)[†]	$T_{1/2}$[‡]	Comments
8115.3 *20*	<14 fs	Additional information 34.
8134.6 *7*	<28 fs	Additional information 35.
8188.8 *9*	<17 fs	Additional information 36.
8268[@] *4*		
8275[@] *4*		
8321.8 *9*	42 fs *21*	Additional information 37.
8357.8 *14*	104 fs *21*	Additional information 38.
8364[@] *5*		
8425.5 *16*	<17 fs	Additional information 39.
8437[@] *4*		
8485.4 *21*	24 fs *14*	Additional information 40.
8541.0 *11*	14 fs *14*	Additional information 41.
8552.6 *16*	<17 fs	Additional information 42.
8573 *4*	<21 fs	Additional information 43.
8587[@] *6*		
8633[@] *6*		
8671[@] *6*		
8676[@] *6*		
8717[@] *8*		
8756[@] *8*		
8769[@] *8*		
8819[@] *10*		
8860[@] *10*		
8922[@] *10*		
8949[@] *10*		
9010[@] *10*		

† From a least-squares fit to γ-ray energies, where no uncertainty in Eγ is given, ΔEγ=1 keV is assumed by the evaluator; unless otherwise noted. Above 6580, all levels are from 1973Te04.

‡ From DSAM, weighted average are taken from all available data. Above 6751, all levels are from 1973Te04, unless otherwise noted.

From 1969An09 and 1966Gr03. Parities are from $\Delta\pi$ suggested by RUL. Values from Adopted Levels are listed under comments in cases where these differ.

@ Values are from 1973Te04. No Eγ values with uncertainties are reported by 1973Te04 from these levels.

$\gamma(^{40}Ca)$

A_2 and A_4 coefficients are from 1969An09 and/or 1966Gr03.

E_i(level)	J^π_i	E_γ[†#]	I_γ[‡#]	E_f	J^π_f	Mult.[@]	Comments
3352.7	0^+	3353		0	0^+	E0	Decays to g.s. by electron-positron internal pair formation. I(ce)/I(e+e- internal pair)=0.00694 *20* (1962Ne02); I(2-photon)/I(e+e- internal pair)=0.00036 *9* (weighted average from 1984Sc37 and 1973Be24). Earlier measurements: only upper limits deduced.
3736.96	3^-	3736.7 *3*	100	0	0^+	E3	Additional information 44. A_2=+0.81 *3*, A_4=+0.17 *6*, A_6=+0.33 *8* (1966Gr03).

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^{40}Ca(p,p′γ) 1973Te04,1969Po04,1969An09 (continued)

γ(^{40}Ca) (continued)

E_i(level)	J^π_i	E_γ[†#]	I_γ[‡#]	E_f	J^π_f	Mult.[@]	δ[@]	Comments
3904.63	2^+	552[&]	<1.5	3352.7	0^+			E_γ,I_γ: from 1968Ma05.
		3904.4 *4*	100	0	0^+	E2		Additional information 45. A_2=+0.59 *3*, A_4=−1.20 *5* (1966Gr03).
4491.6	5	754.7 *2*	100	3736.96	3^-	Q(+O)	+0.05 *5*	Additional information 46. δ: from 1966Gr03. A_2=+0.33 *5*, A_4=−0.26 *8* (1966Gr03).
		4491[&]	<0.5	0	0^+			E_γ,I_γ: from 1966Gr03. This transition is unlikely since it would require multipolarity=E5 based on J^π=5$^-$ in Adopted Levels.
5212.4	(0^+)	1307.7 *3*	100	3904.63	2^+			Additional information 47. A_2=0.00 *1*, A_4=−0.01 *1* (1966Gr03).
		5212[&]		0	0^+			I_γ: I(e+e- internal pair)<0.14 (1977Ul01).
5248.6	2^+	1344.4 *3*	19 *4*	3904.63	2^+	M1+E2	+13 *+6−3*	Additional information 48. I_γ: from 1969An09. Others: 15 *4* (1969Po04), 20 (1968Ma05), <10 (1966Gr03), 17 (1973Te04). δ: from 1969An09. A_2=−0.02 *4*, A_4=−0.20 *6* (1969An09).
		1512[&]	<2	3736.96	3^-			E_γ,I_γ: from 1968Ma05 only.
		1895	4 *2*	3352.7	0^+	(E2)		I_γ: from 1969An09, not seen in 1969Po04. Others: <2.5 (1968Ma05), 3 (1973Te04).
		5247.9 *6*	77 *4*	0	0^+	E2		Additional information 49. I_γ: from 1969An09). Others: 84 *4* (1969Po04), 80 (1968Ma05), 80 (1973Te04). A_2=+0.46 *3*, A_4=−0.63 *3* (1969An09). A2=+0.49 3, A4=−0.39 5 (1966Gr03).
5277.7	4^+	786[&]	<3	4491.6	5			E_γ,I_γ: from 1968Ma05 only.
		1373.1 *1*	100	3904.63	2^+	Q(+O)	+0.02 *4*	Additional information 50. δ: from 1966Gr03. A_2=+0.46 *4*, A_4=−0.28 *5* (1966Gr03).
		1541[&]	<7	3736.96	3^-			E_γ,I_γ: from 1968Ma05 only.
5614.1	4^-	1122.8 *2*	28 *3*	4491.6	5			Additional information 51. I_γ: from 1969Po04, in better agreement with data from ε decay and (p,γ). Others: 15 *5* (1969An09), 15 (1968Ma05), 30 (1973Te04).
		1876.9 *2*	72 *3*	3736.96	3^-	D		Additional information 52. I_γ: from 1969Po04, in better agreement with data from ε decay and (p,γ). Others: 85 *5* (1969An09), 85 (1968Ma05), 70 (1973Te04). A_2=−0.75 *20* (1966Gr03).
5628.8	2^+	1724[&]	<3	3904.63	2^+			E_γ,I_γ: from 1969An09 only.
		2277.5 *10*	12 *5*	3352.7	0^+			Additional information 53. I_γ: weighted average of 10 *5* (1969An09), 16 *8* (1966Gr03). Others: 10 (1968Ma05), 15 (1973Te04).
		5628.3 *5*	88 *5*	0	0^+	E2		Additional information 54. I_γ: weighted average of 90 *5* (1969An09), 84 *8* (1966Gr03). Others: 90 (1968Ma05), 85 (1973Te04). A_2=+0.38 *5*, A_4=+0.53 *9* (1966Gr03).
5903.3	1^-	2167[&]	<5	3736.96	3^-			I_γ: from 1966Gr03. Other: <6 from 1969An09.
		2551[&]	<5	3352.7	0^+			I_γ: from 1966Gr03. Other: <7 from 1969An09.
		5902.6 *15*	100	0	0^+	D		Additional information 55. A_2=−0.51 *3* (1966Gr03).
6025.9	2,3	2121.0 *6*	25 *3*	3904.63	2^+			Additional information 56.

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$^{40}Ca(p,p'\gamma)$ 1973Te04,1969Po04,1969An09 (continued)

$\gamma(^{40}Ca)$ (continued)

E_i(level)	J^π_i	E_γ[†#]	I_γ[‡#]	E_f	J^π_f	Mult.[@]	δ[@]	Comments
								I_γ: from 1969An09. Others: 17 *+4−7* (1969Po04), 20 (1973Te04). A_2=+0.41 *15*, A_4=+0.07 *22* (1969An09). δ: δ(O/Q)=0.0 *1* (1969An09).
6025.9	2,3	2289.0 *3*	75 *3*	3736.96	3^-	D+Q	−2.8 *5*	Additional information 57. I_γ: from 1969An09. Other: 83 *+7−4* (1969Po04), 80 (1973Te04). A_2=+0.02 *5*, A_4=−0.22 *8* (1969An09). δ: other: −4.7 *+20−10* (1966Gr03) for doublet.
		6025[&]	<3	0	0^+			E_γ,I_γ: from 1969An09 only.
6029.1	2,3	751	<3	5277.7	4^+			I_γ: from 1969An09. Other: <20 (1969Po04).
		780.7 *4*	13 *4*	5248.6	2^+	Q(+D)	>2	I_γ: from 1969Po04. Other: 15 (1973Te04), 9 to 21 (1969An09). Additional information 58. A_2=+0.07 *15*, A_4=+0.53 *22* (1969An09). δ(Q/D)>4 (1969An09).
		2124.4 *3*	87 *4*	3904.63	2^+	Q(+D)	>4	Additional information 59. I_γ: from 1969Po04. Other: 85 (1973Te04), 50 to 79 (1969An09). A_2=+0.06 *7*, A_4=+0.23 *10* (1969An09). A2=+0.13 12, A4=+0.95 11 (1969Po04, derived from data in 1966Gr03). Mult.,δ: from 1969An09.
		2292	<20	3736.96	3^-			I_γ: from 1969Po04. Other: <41 (1969An09). A_2=+0.16 *7*, A_4=+0.03 *9* (1969An09). A_2=+0.00 *7*, A_4=−0.33 *13* (1966Gr03).
		6029[&]	<6	0	0^+			E_γ,I_γ: from 1969An09 only.
6284.9	3	1007[&]	<10	5277.7	4^+			E_γ,I_γ: from 1968Ma05 only.
		1037[&]	<10	5248.6	2^+			E_γ,I_γ: from 1968Ma05 only.
		1793.3 *2*	77 *5*	4491.6	5	Q(+O)	−0.03 *17*	Additional information 60. I_γ: weighted average of 78 *5* (1969Po04), 72 *6* (1966Gr03) and 80 *5* (1966Le08). Others: 74 (1968Ma05), 70 (1973Te04). δ: from 1966Gr03. A_2=+0.18 *4*, A_4=−0.05 *7* (1966Gr03).
		2380.0 *5*	23 *5*	3904.63	2^+	D		Additional information 61. I_γ: weighted average of 22 *5* (1969Po04), 28 *6* (1966Gr03) and 20 *5* (1966Gr03). Others: 25 (1968Ma05), 25 (1973Te04). A_2=−0.52 *12*, A_4=0.00 *17* (1966Gr03).
		2548	<10	3736.96	3^-			E_γ,I_γ: from 1968Ma05. Other: Iγ<10 (1966Le08).
		2932[&]	<5	3352.7	0^+			E_γ,I_γ: from 1966Le08 only.
		6284	1	0	0^+			I_γ: from 1968Ma05. Other: 5 (1973Te04), <10 (1966Le08).
6508.0	4^+	479[&]	<5	6029.1	2,3			E_γ,I_γ: from 1969An09 only.
		879[&]	<5	5628.8	2^+			E_γ,I_γ: from 1969An09 only.
		1230[&]	3 *2*	5277.7	4^+			E_γ,I_γ: from 1969An09 only.
		1260	13 *3*	5248.6	2^+			I_γ: from 1969An09. Other: 15 (1973Te04).
		2603.2 *3*	84 *5*	3904.63	2^+	E2(+M3)	−0.09 *9*	Additional information 62. I_γ: from 1969An09. Other: 85 (1973Te04). δ: from 1969An09. A_2=+0.38 *3*, A_4=−0.40 *4* (1969An09).
6542.9	4^+	914	12 *3*	5628.8	2^+	E2		I_γ: from 1969An09. Other: 20 (1973Te04). A_2=+0.53 *12*, A_4=−0.28 *19* (1969An09).

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^{40}Ca(p,p′γ) 1973Te04,1969Po04,1969An09 (continued)

γ(^{40}Ca) (continued)

E_i(level)	J^π_i	E_γ[†#]	I_γ[‡#]	E_f	J^π_f	Mult.[@]	δ[@]	Comments
6542.9	4^+	1265	7 *3*	5277.7	4^+			I_γ: from 1969An09. Other: 5 (1973Te04).
		1295	9 *3*	5248.6	2^+			I_γ: from 1969An09. Other: 5 (1973Te04).
		2638.1 *3*	72 *9*	3904.63	2^+	E2(+M3)	−0.07 *7*	Additional information 63. I_γ: from 1969An09. Other: 70 (1973Te04). δ: from 1969An09. A_2=+0.41 *3*, A_4=−0.35 *4* (1969An09).
6582.2	2,3	969	5 *2*	5614.1	4^-			E_γ,I_γ: from 1969An09 only.
		2090	5 *2*	4491.6	5			E_γ,I_γ: from 1969An09 only.
		2677	23 *5*	3904.63	2^+			I_γ: from 1969An09. Other: 20 (1973Te04).
		2845.1 *3*	67 *10*	3736.96	3^-	D+Q	+3.1 *+26−11*	Additional information 64. I_γ: from 1969An09. Other: 80 (1973Te04). Mult.,δ: from 1969An09. A_2=+0.11 *15*, A_4=−0.39 *21* (1969An09).
		6582[&]	<6	0	0^+			E_γ,I_γ: from 1969An09 only.
6751.3	2^-	2848.4 *10*	15	3904.63	2^+			Additional information 65.
		3014.0 *3*	85	3736.96	3^-	M1+E2	−0.84 *16*	Additional information 66. Mult.,δ: from pγ(θ) and pγγ(θ) (1972Si01); polarity from RUL.
6910.8		6910.2 *10*	100	0	0^+			Additional information 67.
6929.3		1651.7 *4*	50	5277.7	4^+			Additional information 68.
		3190.0 *15*	50	3736.96	3^-			Additional information 69.
6938.1		3201.0 *15*	>80	3736.96	3^-			Additional information 70.
6952.6		6952.2 *15*	100	0	0^+			Additional information 71.
7112.4		1485	3	5628.8	2^+			
		1899.8 *7*	14	5212.4	(0^+)			Additional information 72.
		3206.8 *6*	18	3904.63	2^+			Additional information 73.
		7112.9 *10*	65	0	0^+			Additional information 74.
7115.2		1501	20	5614.1	4^-			
		2623.2 *3*	20	4491.6	5			Additional information 75.
		3378.5 *3*	60	3736.96	3^-			Additional information 76.
7238.4		1624.5 *7*	20	5614.1	4^-			Additional information 77.
		2746	40	4491.6	5			
		3501.4 *5*	40	3736.96	3^-			Additional information 78.
7278.1		3541.0 *5*	>80	3736.96	3^-			Additional information 79.
7298.9		1670[&]	<10	5628.8	2^+			
		2050.3 *5*	>80	5248.6	2^+			Additional information 80.
7397.0		2119.2 *6*	>80	5277.7	4^+			Additional information 81.
7422.0		3684.9 *12*	>80	3736.96	3^-			Additional information 82.
7446.3		1831.5 *10*	30	5614.1	4^-			Additional information 83.
		2169.1 *15*	40	5277.7	4^+			Additional information 84.
		2198.0 *10*	30	5248.6	2^+			Additional information 85.
7468.5		7467.8 *10*	100	0	0^+			Additional information 86.
7531.4		1917.6 *10*	30	5614.1	4^-			Additional information 87.
		3794	70	3736.96	3^-			
7559.7		2311.1 *3*	40	5248.6	2^+			Additional information 88.
		3822	60	3736.96	3^-			
7623.3		1994	25	5628.8	2^+			
		2009.5 *7*	25	5614.1	4^-			Additional information 89.
		3886	50	3736.96	3^-			
7658.7		2045.0 *10*	50	5614.1	4^-			Additional information 90.
		3167	27	4491.6	5			
		3921	23	3736.96	3^-			
7677.0		2399.2 *5*	>80	5277.7	4^+			Additional information 91.
7694.7		3957.5 *5*	>90	3736.96	3^-			Additional information 92.
7771.9		2158	30	5614.1	4^-			

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^{40}Ca(p,p′γ) 1973Te04,1969Po04,1969An09 (continued)

γ(^{40}Ca) (continued)

E_i(level)	J_i^π	E_γ †#	I_γ ‡#	E_f	J_f^π	Comments
7771.9		4034.3 *15*	70	3736.96	3^-	Additional information 93.
7814		2565	30	5248.6	2^+	
		3908	70	3904.63	2^+	
7873.7		7872.9 *10*	100	0	0^+	Additional information 94.
7927.2		2313.7 *13*	40	5614.1	4^-	Additional information 95.
		3435	50	4491.6	5	
		4190	10	3736.96	3^-	
7977.1		2699	10	5277.7	4^+	
		4072.1 *6*	50	3904.63	2^+	Additional information 96.
		4624	30	3352.7	0^+	
		7977	10	0	0^+	
8018		2770	>80	5248.6	2^+	
8087.5		8092.4 *20*	100	0	0^+	Additional information 97.
8115.3		8114.4 *20*	100	0	0^+	Additional information 98.
8134.6		2506	20	5628.8	2^+	
		3643	40	4491.6	5	
		4229.4 *10*	40	3904.63	2^+	Additional information 99.
8188.8		4451.6 *8*	>80	3736.96	3^-	Additional information 100.
8268		1315	60	6952.6		
		2364	40	5903.3	1^-	
8275		2646	>60	5628.8	2^+	
8321.8		2296	15	6025.9	2,3	
		4584.1 *15*	85	3736.96	3^-	Additional information 101.
8357.8		1405.2 *5*	>90	6952.6		Additional information 102.
8364		3872	>80	4491.6	5	
8425.5		4688.2 *15*	>90	3736.96	3^-	Additional information 103.
8437		2808	>80	5628.8	2^+	
8485.4		4748.1 *20*	>90	3736.96	3^-	Additional information 104.
8541.0		5188	40	3352.7	0^+	
		8540 *4*	60	0	0^+	Additional information 105.
8552.6		4060.8 *15*	100	4491.6	5	Additional information 106.
8573		8572 *4*	100	0	0^+	Additional information 107.
8587		2562	15	6025.9	2,3	
		3309	15	5277.7	4^+	
		4682	10	3904.63	2^+	
		4850	60	3736.96	3^-	
8671		8670	100	0	0^+	
8756		8755	100	0	0^+	
9010		9009	100	0	0^+	

† Weighted average of 1973Te04, 1969Po04 and 1968Ma05 if available. Above 6580 level, all gammas are from 1973Te04, where values with no ΔEγ are from level-energy differences.

‡ From 1969An09, 1969Po04 and 1966Gr03 below 6580 level; above 6580 level, all gammas are from 1973Te04, unless otherwise noted. Quoted values are % branching from each level.

Additional information 108.

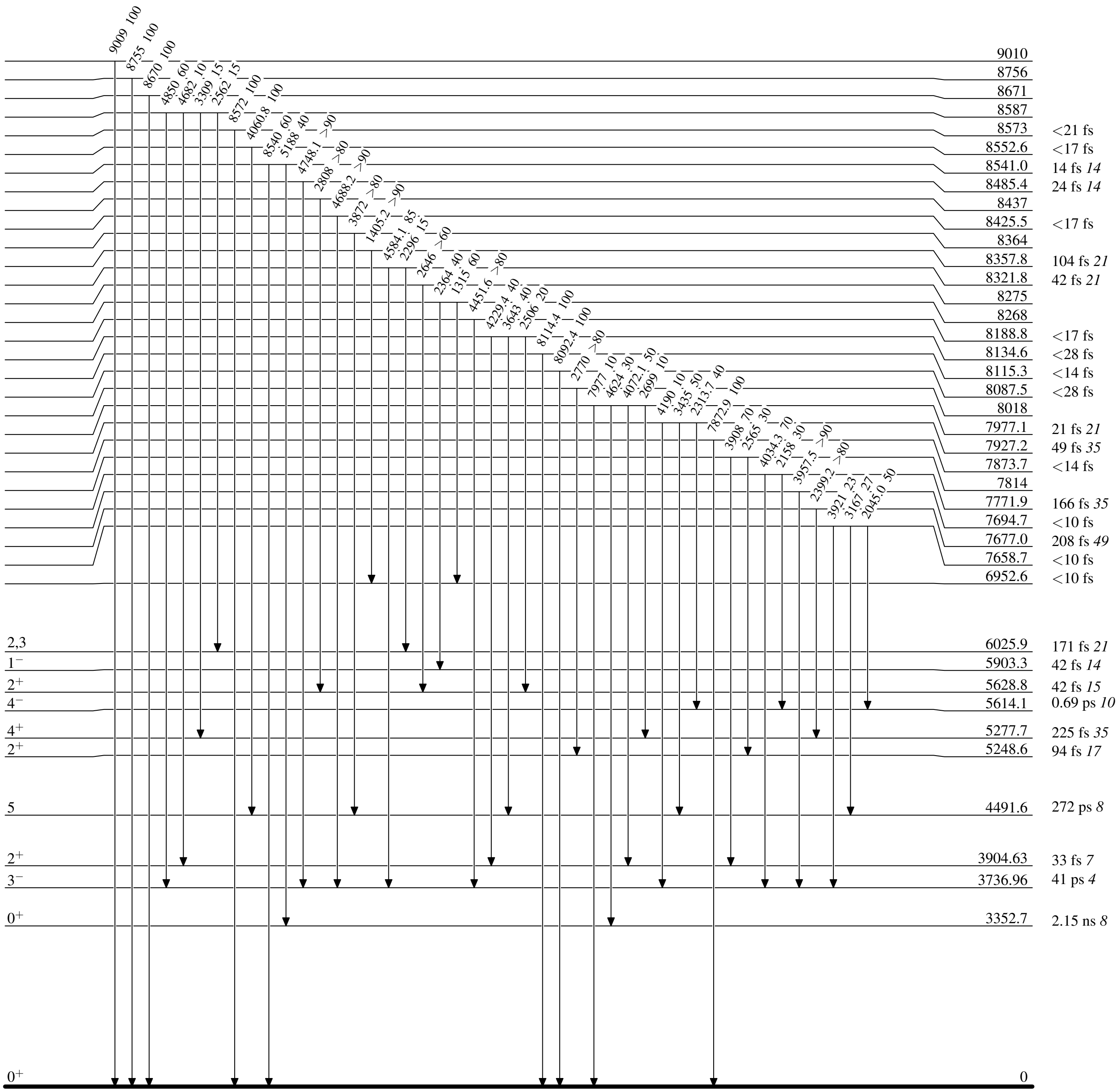
@ From pγγ(θ) (1966Gr03); RUL used for Δπ assignment.

& Placement of transition in the level scheme is uncertain.

$^{40}Ca(p,p'\gamma)$ 1973Te04,1969Po04,1969An09

Level Scheme

Intensities: % photon branching from each level



$^{40}_{20}Ca_{20}$

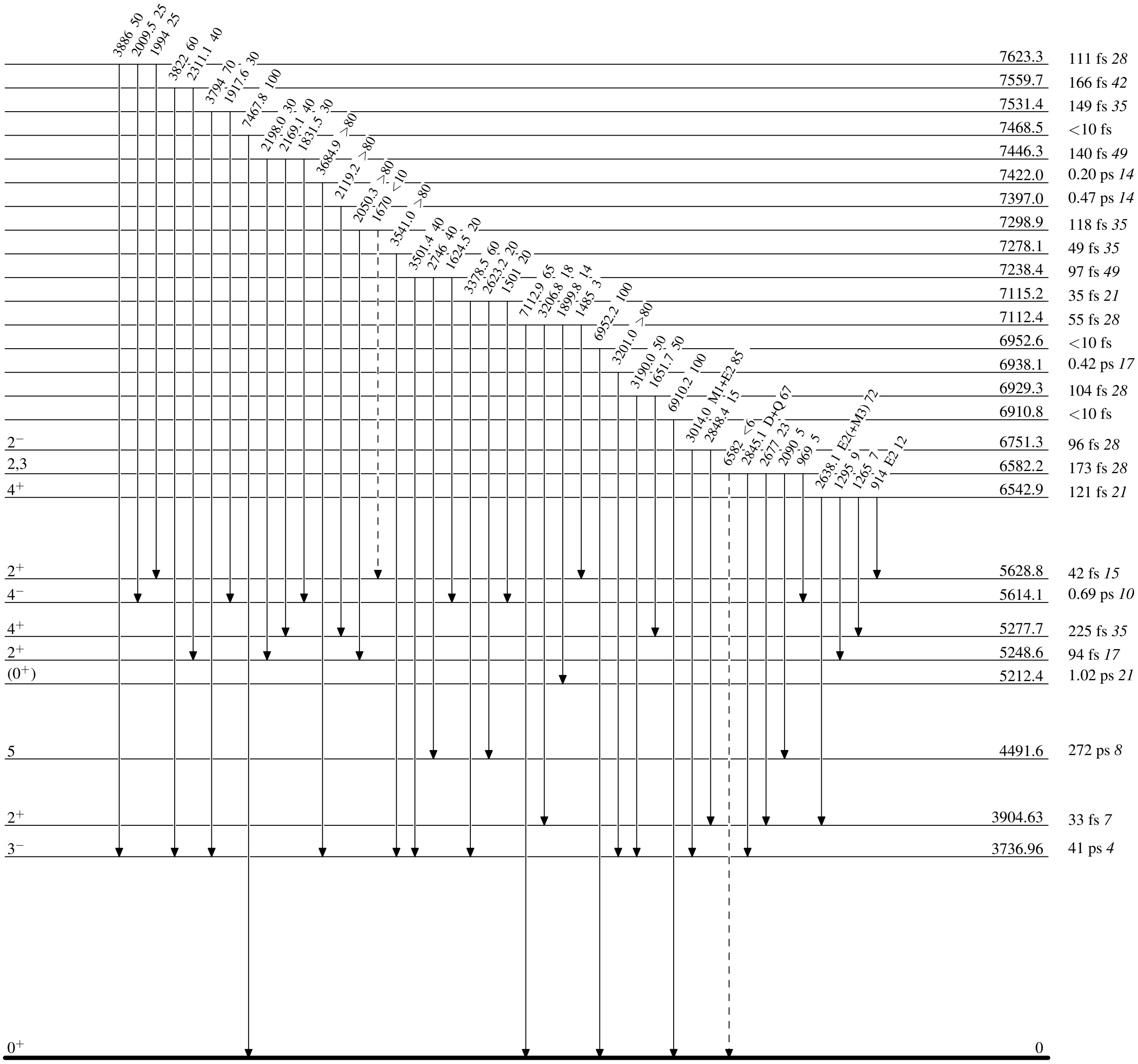
^{40}Ca(p,p′γ) 1973Te04,1969Po04,1969An09

Level Scheme (continued)

Intensities: % photon branching from each level

Legend

γ Decay (Uncertain)



$^{40}_{20}Ca_{20}$

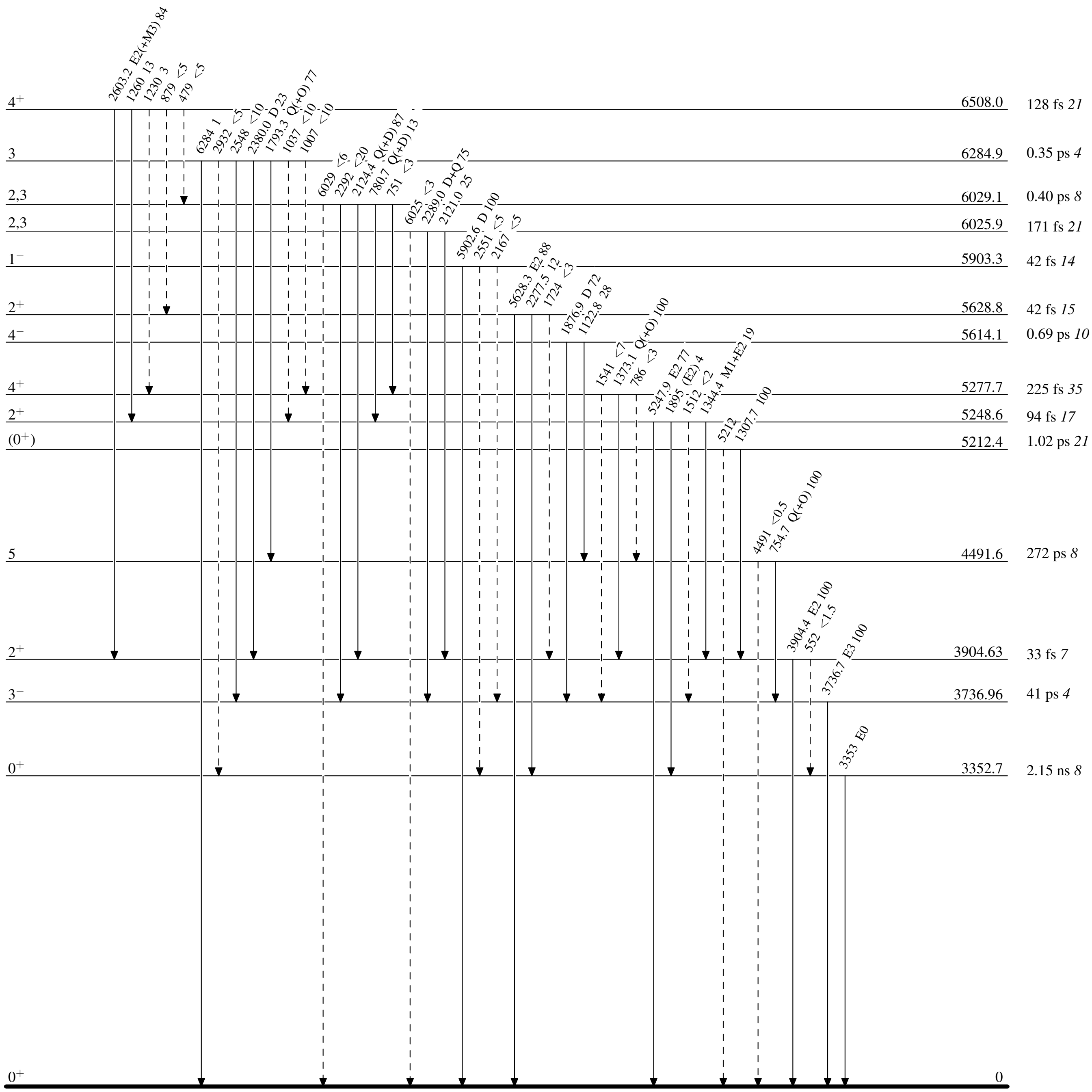
^{40}Ca(p,p′γ) 1973Te04,1969Po04,1969An09

Legend

Level Scheme (continued)

Intensities: % photon branching from each level

γ Decay (Uncertain)



$^{40}_{20}$Ca$_{20}$