^{40}Ca(α,$\alpha'\gamma$) 1962Be23,1968Ko02

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

1962Be23: E=22 MeV. Measured Eγ, $\alpha\gamma$ coin with a NaI crystal and a solid-state detector (FWHM=150 keV). Deduced levels.
1968Ko02: E=31 MeV. Measured Eα, Eγ for 6290, 6560 levels; $\alpha\gamma(\theta)$ for 6940 level.
Others:
1988Ka21, 1987Ma25: E=13.62 MeV. Measured $\alpha\gamma$ coin, lifetime for 4490 level, g factors for 3740 and 4490 levels.
1979Ni04: E=16.17 MeV. Measured $\alpha\gamma(\theta)$, g-factor for 3740 level.
1976Ja16, 1976Ja20, 1977LiZM: E=16.17 MeV. Measured $\alpha\gamma(\theta$,H); γ-fact0r by recoil in vacuum for 3740 level.
1959Sh62: E=43 MeV. Measured $\alpha\gamma(\theta)$ for 4490 level.

^{40}Ca Levels

E(level)[†]	J$^\pi$[‡]	$T_{1/2}$	Comments
0	0^+		
3348	0^+		
3730	3^-		g=0.55 *13* g: weighted average of +0.56 *13* from 1976Ja16 and +0.52 *18* from 1979Ni04.
3900	2^+		
4483	5^-	295 ps *5*	$T_{1/2}$: from 3740γ(t) (1988Ka21,1987Ma25). g-factor(3730)/g-factor(4483)=1.01 *10* (1987Ma25).
5500[#]			
5700[#]			
6100[#]			
6290[@]	3^-[@]		
6560[@]	3^-[@]		
6940[@]	(1^-)[@]		E(level),J$^\pi$: possible doublet or triplet, but from decay mode and DWBA fit to $\sigma(\theta)$, principally 1^- (1968Ko02).
7500[#]			
8700[#]			
9600[#]			

[†] From 1962Be23, unless otherwise stated.
[‡] From Adopted Levels, unless otherwise stated.
[#] From α group in coincidence with γ rays (1962Be23).
[@] From 1968Ko02.

$\gamma(^{40}Ca)$

E$_i$(level)	J$_i^\pi$	E$_\gamma$[†]	I$_\gamma$[‡]	E$_f$	J$_f^\pi$	Mult.	Comments
3730	3^-	3730	100	0	0^+		A_2=+0.92 *7*; A_4=+0.03 *12*; A_6=−0.85 *8* (1987Ma25)
3900	2^+	3900	100	0	0^+		
4483	5^-	583[#]	<10	3900	2^+		
		753	100	3730	3^-	Q	A_2=+0.32 *7*; A_4=−0.40 *7* (1987Ma25)
		1135[#]	<10	3348	0^+		
		4483[#]	<5	0	0^+		
6290	3^-	1810	75 *5*	4483	5^-		E$_\gamma$,I$_\gamma$: reported in 1968Ko02.
		2390	25 *5*	3900	2^+		E$_\gamma$,I$_\gamma$: reported in 1968Ko02.
6560	3^-	2660[#]	<10	3900	2^+		E$_\gamma$,I$_\gamma$: reported in 1968Ko02.

Continued on next page (footnotes at end of table)

^{40}Ca(α,$\alpha'\gamma$) 1962Be23,1968Ko02 (continued)

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

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Comments
6560	3^-	2830	100	3730	3^-	E_γ,I_γ: reported in 1968Ko02.
6940	(1^-)	3040[#]		3900	2^+	E_γ: reported in 1968Ko02.
		3210[#]		3730	3^-	E_γ: reported in 1968Ko02.
		6940	60 *10*	0	0^+	E_γ,I_γ: reported in 1968Ko02. 1968Ko02 report that this transition takes 60% *10* of the total γ-ray transition intensities from 6940 level.

[†] From level-energy differences. Reported in 1962Be23, unless otherwise noted.
[‡] % branching from each level.
[#] Placement of transition in the level scheme is uncertain.

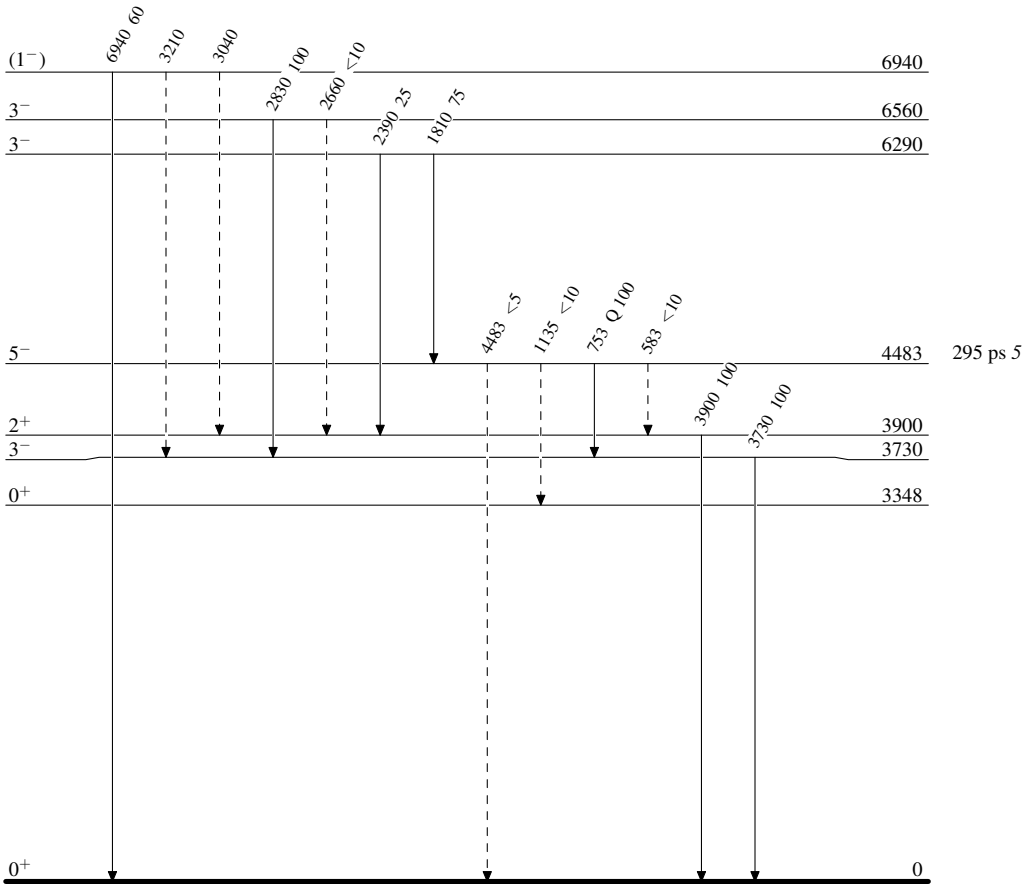
^{40}Ca(α,$\alpha'\gamma$) **1962Be23,1968Ko02**

Legend

Level Scheme

Intensities: % photon branching from each level

γ Decay (Uncertain)



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