^{54}Cr(t,pγ) 1976Ba45

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh	ENSDF	25-Mar-2022

1976Ba45: E(t)=2.9 MeV from 3-MV Van de Graaff accelerator at Lockheed Palo Alto Research Laboratory. Measured proton spectra, Eγ, Iγ, p$\gamma(\theta)$, level lifetimes by DSAM using a Ge(Li) detector and an array of five NaI(Tl) detectors for γ rays, and a thick annular silicon detector for protons. Target was >95% enriched and ≈120 μg/cm^2 thick. Comparison with shell-model calculations.
Additional information 1.

^{56}Cr Levels

A special search by 1976ba45 for a 0^+ state between 1.8 and 3.0 MeV excitation proved negative (1976Ba45).

E(level)[†]	J$^\pi$[†]	T$_{1/2}$[‡]	Comments
0.0	0^+		
1007.6 *15*	2	≥1.4 ps	2^+ in the Adopted Levels. T$_{1/2}$: from DSAM (1976Ba45).
1832.2 *26*	2		2^+ in the Adopted Levels.
2327.8 *26*	2	≤0.055 ps	2^+ in the Adopted Levels.
2687 *13*	1,2,3,4		4^+ in the Adopted Levels.
3166 *6*	2,3,4	≤0.21 ps	

[†] From 1976Ba45. Spins from analysis of their p$\gamma(\theta)$ data.
[‡] From attenuated Doppler-shift method in pγ-coin using Ge(Li) detector for γ rays.

γ(^{56}Cr)

E$_i$(level)	J$_i^\pi$	E$_\gamma$	I$_\gamma$[@]	E$_f$	J$_f^\pi$	Mult.[a]	δ[b]	Comments
1007.6	2	1007.6[†] *15*	100	0.0	0^+	Q		A$_2$=+0.71 *6*; A$_4$=−1.49 *8*
1832.2	2	824.6[†] *21*	85 *5*	1007.6	2	D+Q	−1.8 *10*	A$_2$=−0.51 *11*; A$_4$=−0.04 *11*
		1830[‡] *10*	15 *5*	0.0	0^+	Q		A$_2$=+0.33 *15*; A$_4$=−0.85 *19*
2327.8	2	495.5	<5	1832.2	2			
		1320.2[†] *20*	90 *10*	1007.6	2	D(+Q)	+0.17 *30*	A$_2$=+0.49 *10*; A$_4$=+0.20 *9*
		2327.6	<5	0.0	0^+			
2687	1,2,3,4	359[#] *13*	18 *5*	2327.8	2			
		860[‡] *20*	23 *5*	1832.2	2			
		1680[‡] *15*	59 *7*	1007.6	2			A$_2$=+0.51 *11*; A$_4$=+0.22 *12* δ(O/Q)≥+1.73 or +0.35 *35* for J(2687)=4. δ(Q/D)≥+0.27 for J(2687)=3, −0.3 *14* for J(2687)=2, and ≥+0.36 or −0.78 *42* for J(2687)=1.
3166	2,3,4	479[#] *14*	20 *8*	2687	1,2,3,4			
		835[‡c] *15*	≤20[&]	2327.8	2			
		1330[‡c] *10*	≤20[&]	1832.2	2			
		2158[†] *6*	60 *8*	1007.6	2	D+Q,Q		A$_2$=+0.70 *11*; A$_4$=−0.12 *10* δ(Q/D)=+1.0 *11* for J(3166)=2, δ=+2.1 *16* if J(3166)=3. δ(O/Q)=+0.18 *18* if J(3166)=4.

Continued on next page (footnotes at end of table)

^{54}Cr(t,pγ) 1976Ba45 (continued)

$\gamma(^{56}Cr)$ (continued)

† From spectrum using Ge(Li) detector.
‡ From spectrum using NaI(Tl) detector.
# From level-energy difference.
@ Branching ratios from data using NaI(Tl) detector.
& Combined intensity of ≤20% for 835γ and 1330γ.
a Assigned by evaluator based on $\gamma(\theta)$ data in 1976Ba45.
b From p$\gamma(\theta)$ measurement.
c Placement of transition in the level scheme is uncertain.

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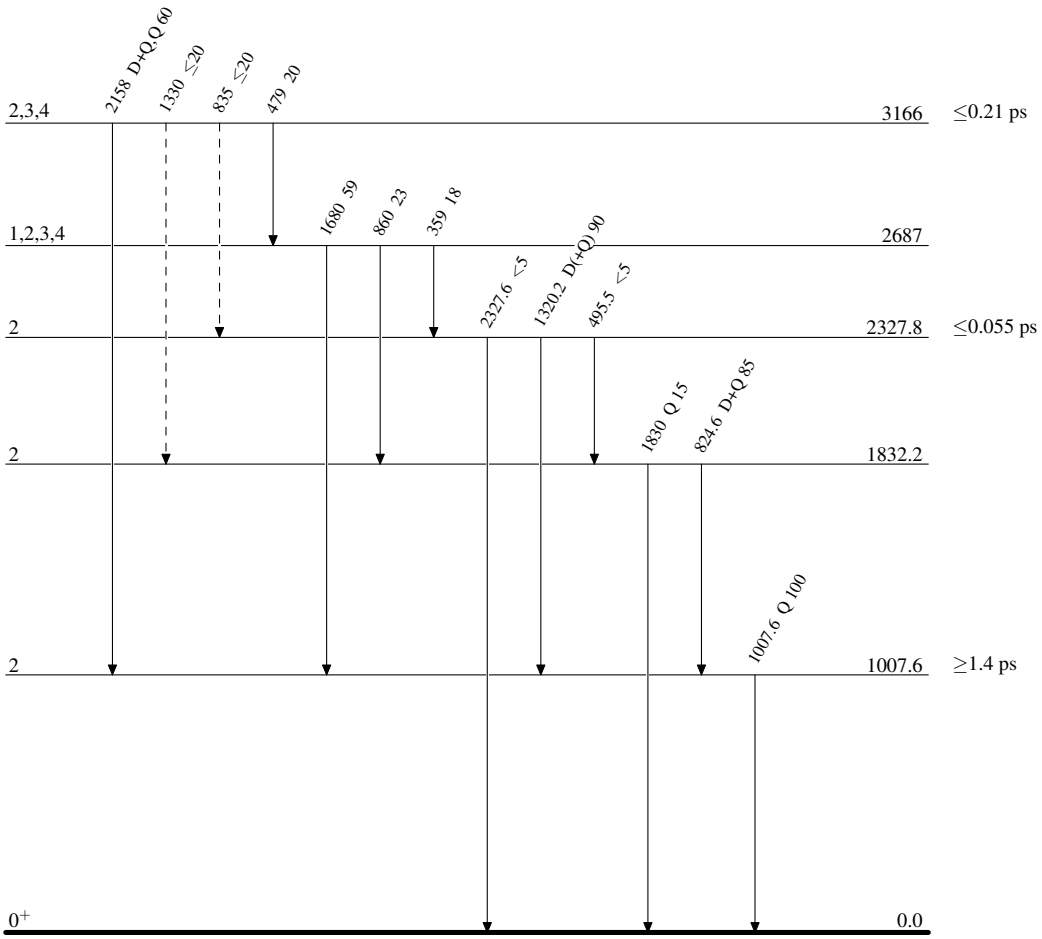
Legend

Level Scheme

Intensities: % photon branching from each level

γ Decay (Uncertain)



$^{56}_{24}Cr_{32}$