^{51}V(α,p),(α,pγ) 1980St04,1979SmZQ

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Yang Dong, Huo Junde	NDS 121, 1 (2014)	20-Jun-2014

$J^\pi(^{51}V)=7/2^-$.

1980St04: E=10 MeV. Measured Eγ, pγ-coin, DSAM, surface-barrier detectors, Ge(Li).

1979SmZQ: E=12 MeV. ΔE-E telescope at 120°, Ge(Li) at 55° and 90°. 5-parameter coincidence system.

1992Go12: E=27.2 MeV. ΔE-E telescope, ΔE: surface-barriers detectors 100 um thick, E: Si(Li) detector 4-4.5 mm thick, Measured sigma(theta) for ground state and the first excited state.

See also 1988Yu01.

^{54}Cr Levels

E(level)[†]	J$^\pi$[#]	$T_{1/2}$[@]	Comments
0.0	0^+		
835.0 *3*	2^+	>4.2 ps	
1824.3 *4*	4^+	2.4 ps *+12−8*	
2618.9 *5*	2^+	0.11 ps *+3−2*	$T_{1/2}$: other: $T_{1/2}$=0.25 ps.
2830.0 *1*	0^+	0.15 ps *+6−4*	$T_{1/2}$: other: $T_{1/2}$>0.97 ps.
3075.2 *7*	2^+	<0.017[&] ps	E(level): from 1979SmZQ. $T_{1/2}$: other: $T_{1/2}$<0.010 ps.
3160.0 *5*	4^+	0.24 ps *+5−4*	$T_{1/2}$: weighted average for the two listed transitions in 1980St04, $T_{1/2}$=0.46 ps from 1979SmZQ.
3222.2 *7*	6^+	0.40 ps *+8−7*	$T_{1/2}$: other: $T_{1/2}$=0.30 ps.
3393.3 *6*	$(1^-,2^-)$	<19[&] fs	
3437.1 *6*	2^+	<10[&] fs	$T_{1/2}$: account has been taken of the measured target composition for those states which decay almost entirely in the target material. Other: $T_{1/2}$<7 fs.
3468?			E(level): this level reported by 1979SmZQ, not confirmed by 1980St04, probably belongs to ^{55}Cr (1966Ma42).
3514?[‡]			
3656.2 *6*	4^+	<6[&] fs	$T_{1/2}$: account has been taken of the measured target composition for those states which decay almost entirely in the target material. Other: $T_{1/2}$=0.30 ps.
3719.1 *1*	$1^+,2^+$	<30[&] fs	E(level): 3725 level reported only by 1979SmZQ corresponds to the level. $T_{1/2}$: other: >0.62 ps>(1979SmZQ).
3786.0 *7*	$(4,5)^+$	>2.8 ps	$T_{1/2}$: other: $T_{1/2}$=0.76 ps.
3799.2 *5*	4^+	51 fs *+9−8*	$T_{1/2}$: other: $T_{1/2}$=0.5 ps.
3869.7 *6*		>28 fs	E(level): this level not confirmed by 1980St04, reported by 1979SmZQ only.
3934?[‡]			
3987.3 *7*		>42 fs	E(level): this level reported by 1979SmZQ only, not confirmed by 1980St04, probably belongs to ^{55}Cr (1966Ma42).
4043.0 *9*	5^+	28 fs *+13−10*	

[†] From 1980St04, except as noted.
[‡] From 1979SmZQ.
[#] From Adopted Levels.
[@] From DSAM (1980St04), except as noted. The values quoted as others are from 1979SmZQ.
[&] This upper limit corresponds to 2 σ of the experimental f(τ) values.

^{51}V(α,p),(α,pγ) 1980St04,1979SmZQ (continued)

γ(^{54}Cr)

E_γ [†]	I_γ [#]	E_i(level)	J_i^π	E_f	J_f^π	Comments
563.7[‡] *2*	48	3786.0	$(4,5)^+$	3222.2	6^+	
594.0[@] *2*	(100)	3987.3		3393.3	$(1^-,2^-)$	E_γ: not reported by 1980St04.
820.8 *6*		4043.0	5^+	3222.2	6^+	
835.0 *3*	100	835.0	2^+	0.0	0^+	
889.2[‡] *4*	49	3719.1	$1^+,2^+$	2830.0	0^+	
989.3 *3*	100	1824.3	4^+	835.0	2^+	
1100.3[‡] *3*	51	3719.1	$1^+,2^+$	2618.9	2^+	
1250.8[‡@] *5*	<100	3869.7		2618.9	2^+	E_γ: not reported by 1980St04.
1335.7 *4*	60 *5*	3160.0	4^+	1824.3	4^+	
1398.0 *5*	100	3222.2	6^+	1824.3	4^+	
1783.8 *4*	94 *3*	2618.9	2^+	835.0	2^+	
1831.9 *3*	100	3656.2	4^+	1824.3	4^+	
1961.7 *5*	52	3786.0	$(4,5)^+$	1824.3	4^+	
1974.8[‡] *6*	56	3799.2	4^+	1824.3	4^+	
1995.0 *10*	100	2830.0	0^+	835.0	2^+	
2240.2[‡] *6*	100	3075.2	2^+	835.0	2^+	
2325.0 *7*	40 *5*	3160.0	4^+	835.0	2^+	
2558.3 *5*	100	3393.3	$(1^-,2^-)$	835.0	2^+	
2602.0 *5*	100	3437.1	2^+	835.0	2^+	
2619.8 *5*	6 *3*	2618.9	2^+	0.0	0^+	I_γ: reported branching ratio only in 1980St04.
2964.1 *4*	44	3799.2	4^+	835.0	2^+	
3034.6[‡@] *13*		3869.7		835.0	2^+	E_γ: not reported by 1980St04.
3719.1 *7*		3719.1	$1^+,2^+$	0.0	0^+	

[†] From 1980St04. Uncertainties are from gamma-ray centroid measurements and ap 0.3 keV added in quadrature to reflect gamma-ray energy calibration.
[‡] From difference between the two levels in 1980St04.
[#] Obtained from γ-ray relative intensities at 26° below 3.3 MeV by 1980St04. Other from 1979SmZQ.
[@] Placement of transition in the level scheme is uncertain.

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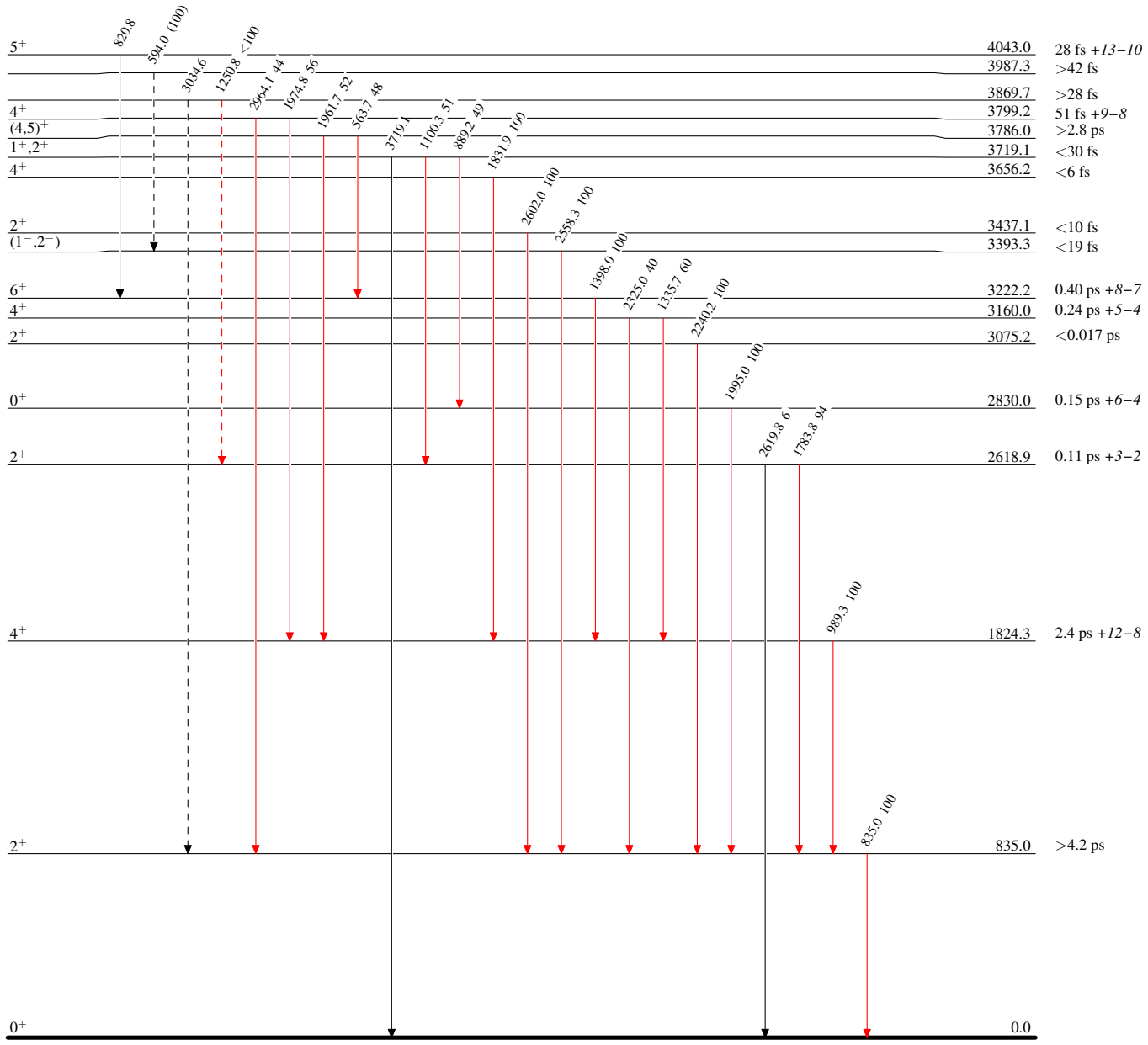
Level Scheme

Intensities: Relative I_γ

Legend

- $I_\gamma < 2\% \times I_\gamma^{max}$
- $I_\gamma < 10\% \times I_\gamma^{max}$
- $I_\gamma > 10\% \times I_\gamma^{max}$
- γ Decay (Uncertain)



$^{54}_{24}Cr_{30}$