Adopted Levels, Gammas

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh	ENSDF	28-Feb-2011

Q(β^-)=11688.4 *9*; S(n)=5398.3 *12*; S(p)=1.45×10^4 *syst*; Q(α)=−1.368×10^4 *10* 2012Wa38
Note: Current evaluation has used the following Q record 1.097E+4 7 *6.27*×10^3 *7* 13890 syst-1438E1 14 2009AuZZ,2003Au03.
Estimated ΔSP=306 keV (2009AuZZ,2003Au03).
Q(β^-n)=5.820 MeV *70*, S(2n)=10770 *70*, S(2p)=34380 *600* (syst) (2009AuZZ,2003Au03).
Q(β^-): 2003Au03 adopted the data of 1986Mi08. However, there appears to be a discrepancy in Eβ's with the data of 1983RaZR; see ^{49}K β^- decay.

Z=19, N=30, neutron rich nucleus, near major shells Z=20 and N=28, shell model calculations. Test of multi-nucleon transfer reaction to study neutron rich nuclei.

Identification of ^{49}K in ^{238}U(p,F) (1972Kl04,1972RiZJ).
1983RaZR, 1982Ca04: U(p,X)E=600 MeV. Measured β's (scin), γ's, β(t) and γ(t), n's (long counter), and βn and γn. The thesis of 1983RaZR is apparently a more complete report of the work presented by 1982Ca04.
2009No01: calculated levels, J, π, shell model in large space.

^{49}K Levels

Cross Reference (XREF) Flags

A ^{50}Ar β^-n decay (85 ms)
B ^{238}U(^{48}Ca,Xγ)

E(level)	J$^\pi$[†]	T$_{1/2}$	XREF	Comments
0.0	(1/2$^+$,3/2$^+$)	1.26 s *5*	AB	%β^-=100; %β^-n=86 *9* (1982Ca04) $ $\pi d_{3/2}^{-1}$ or $\pi s_{1/2}^{-1}$ state. J$^\pi$: from shell-model predictions in 2010Br14, but another calculation (2009No01) gives 3/2$^+$ as g.s. and 1/2$^+$ slightly above this energy. ≤5/2 from log *ft*=6.1 to 3/2$^+$ in β^- decay to ^{49}Cr. 3/2$^+$ from log *ft*=5.4 to 1/2 (5.3 MeV) and log *ft*=4.5 to 5/2$^+$ in β^- decay to ^{49}Cr. Note, however, that correspondence between unbound states observed in ^{49}K β^- decay and ^{48}Ca(n,X),(n,γ) should not be considered as well established. T$_{1/2}$: from β and neutron counting (1982Ca04). Other: 1.10 s *30* (1978De17, decay curve for γ rays from ^{49}K decay). %β^-n: If %β^-n(^{9}Li)=50% *4* (1982Ca04). Other: 90% *14* (1983La23. Ir(p,X) E=10 GeV. βn-coin, 4π scin).
91.7 *3*	(1/2$^+$,3/2$^+$)	8 ns *5*	B	$ $\pi d_{3/2}^{-1}$ or $\pi s_{1/2}^{-1}$ state. T$_{1/2}$: >3 ns from recoil-distance method, <13 ns from $\gamma\gamma$ time distribution of 771-92 $\gamma\gamma$ events (2010Br14).
862.8 *3*	(5/2$^+$)	2.2 ps *4*	B	T$_{1/2}$: from recoil-distance method (2010Br14). Effective half-life, includes feeding from higher-lying stated.
1102.9? *8*	(5/2$^+$)		B	Placement of 1011γ is either to 92-keV level as shown in figure 3 of 2010Br14 or to the g.s.
1438.3 *4*	(7/2$^+$)	>0.35 ps	B	T$_{1/2}$: from thick-target data where 575γ appears as a narrow line (2010Br14). The fit to the ratio I$_{after}$/[I$_{before}$+I$_{after}$] gave T$_{1/2}$=3.4 ps *7* for 575.5γ which could imply T$_{1/2}$ is much shorter than 2.2 ps for the 863-keV state which is populated by 575γ.
2104.2 *5*	(7/2$^-$)	>0.35 ps	B	$\pi f_{7/2}$ state. T$_{1/2}$: from thick-target data where 1241γ appears as a narrow line (2010Br14).

[†] From shell-model predictions (2010Br14).

Adopted Levels, Gammas (continued)

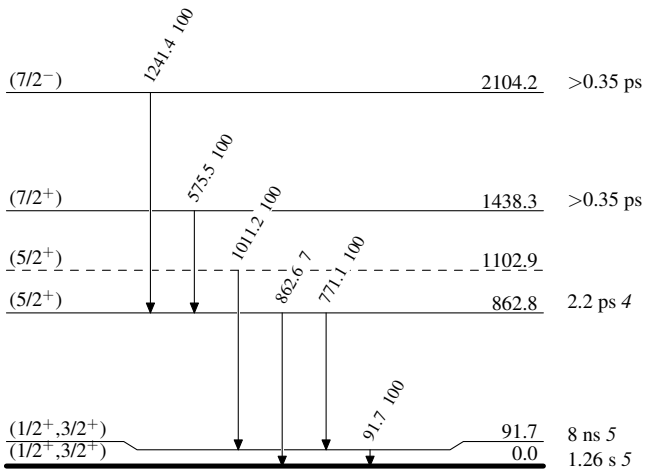
$\gamma(^{49}K)$

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	Comments
91.7	$(1/2^+,3/2^+)$	91.7 *3*	100	0.0	$(1/2^+,3/2^+)$	
862.8	$(5/2^+)$	771.1 *2*	100	91.7	$(1/2^+,3/2^+)$	
		862.6 *8*	7 *7*	0.0	$(1/2^+,3/2^+)$	
1102.9?	$(5/2^+)$	1011.2 *8*	100	91.7	$(1/2^+,3/2^+)$	Placement of 1011γ is either to 92-keV level as shown in figure 3 of 2010Br14 or to the g.s.
1438.3	$(7/2^+)$	575.5 *2*	100	862.8	$(5/2^+)$	
2104.2	$(7/2^-)$	1241.4 *4*	100	862.8	$(5/2^+)$	

Adopted Levels, Gammas

Level Scheme

Intensities: Relative photon branching from each level



$^{49}_{19}K_{30}$