Adopted Levels, Gammas

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Jun Chen and Balraj Singh	NDS 157, 1 (2019)	15-Apr-2019

Q(β^-)=13861 *8*; S(n)=4188 *8*; S(p)=15830 *SY*; Q(α)=−14.29×10^3 *21* 2017Wa10
Δ(S(p))=400 (syst, 2017Wa10).
Q(β^-n)=7501 *8*, S(2n)=9586 *8*, S(2p)=36030 *500*(syst) (2017Wa10).
1983RaZR,1982Ca04: U(p,X),E=600 MeV. Measured neutron and γ spectra, nγ-coincidences.
1983La23: U(p,X) E=600 MeV. Measured β^-n coincidences using scintillation detectors.
1986Mi08: U(p,X) E=600 MeV. See ^{50}K β^- decay for details.
1990Tu01: ^{232}Th(p,X), LAMPF. Measured fragment charge, mass spectra.
Mass measurement: 2012La05.
Other: 1978De17.
Theory references: consult the NSR database (www.nndc.bnl.gov/nsr/) for seven references for structure calculations.
Additional information 1.

^{50}K Levels

Cross Reference (XREF) Flags

A ^{50}Ar β^- decay (106 ms)
B ^{50}K IT decay (131 ns)

E(level)	J$^\pi$	T$_{1/2}$	XREF	Comments
0.0	0$^{(-)}$	472 ms *4*	AB	%β^-=100; %β^-n=29 *3*; %β^-2n=? δ<r^2>(^{47}K,^{50}K)=+0.438 fm^2 *8*(stat) *47*(syst); $\delta\nu$(^{47}K,^{50}K)=+206.5 MHz *9*(stat) *9*(syst) (2014Kr04, 2014Pa45); collinear laser spectroscopy at ISOLDE-CERN. Theoretical T$_{1/2}$=684.6 ms, %β^-n=19 (2019Mo01). Theoretical T$_{1/2}$=215 ms, %β^-n=2.4, %β^-2n=0.3 (2016Ma12). %β^-n: from 1982Ca04. Other: 28 *4* (1983La23). J$^\pi$: spin from observation of only one line in the laser hyperfine structure, as shown in figure 3 in 2014Pa45, and figure 4 in 2014Kr04. Dominant configuration=$\pi 1d_{3/2}^{-1}\otimes\nu 2p_{3/2}^{-1}$ (2014Pa45) from shell-model calculations. See also 1998Ba80 and 1991Wa23. T$_{1/2}$: from β^-n coincidence decay curve (1983La23). Other: 470 ms *20* (1983HuZW, 1981HuZT, from γ decay curve).
44.0? *6*	(1,2$^-$)		B	J$^\pi$: 44γ to 0$^{(-)}$.
70.2? *7*	(1,2$^-$)		B	J$^\pi$: 70γ to 0$^{(-)}$.
172.0 *4*	(2$^-$)	131 ns *40*	B	J$^\pi$: 171.4γ to 0$^{(-)}$, possibly E2. (3$^-$) proposed in 2010Da06, 2009Cr03, 1999DaZQ, with (1$^-$) for the g.s. T$_{1/2}$: from IT decay (2012Ka36, 1999DaZQ).

γ(^{50}K)

E$_i$(level)	J$_i^\pi$	E$_\gamma$[†]	I$_\gamma$[†]	E$_f$	J$_f^\pi$	Mult.	Comments
44.0?	(1,2$^-$)	44[‡] *1*		0.0	0$^{(-)}$		
70.2?	(1,2$^-$)	70[‡] *1*		0.0	0$^{(-)}$		
172.0	(2$^-$)	101[‡] *1*		70.2?	(1,2$^-$)		
		128.1[‡] *5*	82 *22*	44.0?	(1,2$^-$)	(E2)[#]	B(E2)(W.u.)=3.4 *15* If M1, B(M1(W.u.)=3.7×10^{-5} *16*. If E1, B(E1)(W.u.)=8.2×10^{-7} *35*.

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

$\gamma(^{50}K)$ (continued)

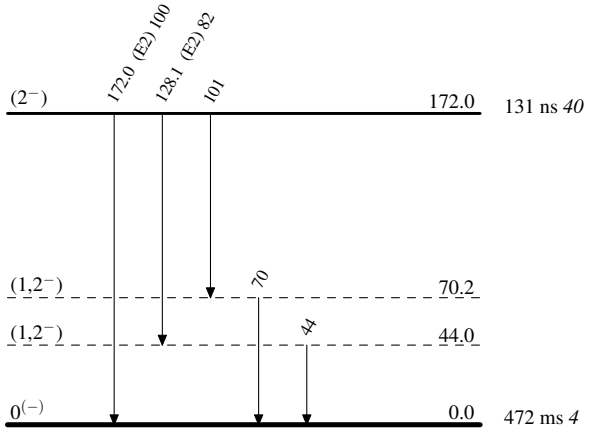
E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.	Comments
172.0	(2^-)	172.0 *5*	100 *25*	0.0	$0^{(-)}$	(E2)[#]	B(E2)(W.u.)=1.4 *6* If M1, B(M1)(W.u.)=1.8×10^{-5} *8*. If E1, B(E1)(W.u.)=4.1×10^{-7} *14*.

[†] From ^{50}K IT decay.
[‡] Ordering of the 127-44 and 101-70 γ cascades can be reversed as in 2009Cr03 for the 127-44 cascade.
[#] E2 suggested by 1999DaZQ, in contrast to M1 or E1, based on Weisskopf estimates for E2, M1 and E1 transitions.

Adopted Levels, Gammas

Level Scheme

Intensities: Relative photon branching from each level



$^{50}_{19}K_{31}$