Adopted Levels, Gammas

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh and Jun Chen[#]	NDS 126, 1 (2015)	31-Mar-2015

Q(β^-)=7.69×10^3 *10*; S(n)=7.48×10^3 *17*; S(p)=13.97×10^3 *10*; Q(α)=−13.92×10^3 *13* 2012Wa38
S(2n)=13160 *120*, S(2p)=33920 *120*, Q(β^-n)=2030 *100* (2012Wa38).
First identification of ^{43}Cl nuclide by 1976Ka24.
^{43}Cl production and identification:
1976Ka24: ^{48}Ca(^{3}He,^{8}B) E=74 MeV.
1981Vo04: U,Nb(p,X) E=600 MeV.
1991Zh24, 1990Tu01: Th(p,X) E=800 MeV followed by measurement of fragment spectra.
1998WiZX: fragmentation of ^{48}Ca beam E(^{48}Ca)=70 MeV/nucleon with a Be target. Measured γ, $\gamma\gamma$ coin, $\beta\gamma\gamma$ coin.
2006Wi10: ^{43}Cl isotope produced by fragmentation of a ^{48}Ca beam at 70 MeV/nucleon hitting a ^{9}Be target. The fragments were separated by A1200 fragment separator at NSCL, MSU facility. Measured Eγ, Iγ, $\gamma\gamma$, β, $\beta\gamma$ coin, half-life using two Ge detectors for γ-rays and a plastic scintillator for β particles.
Mass measurements: 1976Ka24, 1990Tu01, 1991Zh24, 2000Sa21, 2007Ju03.
Mean-square radius from energy-integrated cross sections: 2006Kh08.
Structure calculations: 2011Ka03, 2009No01, 1987Sa19.
Level scheme is essentially that proposed in ^{9}Be(^{48}K,Xγ) (2012St12).

^{43}Cl Levels

Cross Reference (XREF) Flags

A	^{43}S β^- decay (265 ms)	D	^{9}Be(^{48}K,Xγ)
B	^{44}S β^-n decay (100 ms)	E	^{9}Be(^{48}Ca,Xγ)
C	^{1}H(^{46}Ar,Xγ)	F	^{208}Pb(^{40}Ar,Xγ)

E(level)	J$^\pi$[†]	T$_{1/2}$	XREF	Comments
0	(1/2$^+$)	3.13 s *9*	ABCDEF	%β^-=100 Measured mean-square radius (r_0^2)=1.184 fm^2 *21* (2006Kh08). T$_{1/2}$: from fit to decay curve (2006Wi10). Earlier result from this group: 3.07 s *7* (1998WiZX). Others: 3.3 s *2* (1981Vo04), 3.4 s *3* (1981HuZT). J$^\pi$: 3/2$^+$ proposed (2012Au07) from syst.
328 *2*	(3/2$^+$)		CDEF	
884? *4*	(1/2,3/2)		CDE	E(level): tentative level proposed in (^{48}K,Xγ) from 882 *14* γ not in coin with any other γ-ray (2012St12). Eγ=888 *6* in ^{1}H(^{46}Ar,Xγ) (2006Ga31) and 881 *5* placed from an 1830 level. J$^\pi$: possible γ to (1/2$^+$) is dipole.
943 *5*	(5/2$^+$)		CDE	
1668 *6*	(7/2$^+$)		CDE	E(level): level proposed in (^{48}K,Xγ) from 1338 *15* γ in coin with 327γ (2012St12). Eγ=1342 *7* in ^{1}H(^{46}Ar,Xγ) (2006Ga31) and 1338 *6* placed from a 1338 level.
1924 *7*			D	

[†] From transition multipolarities determined from $\gamma(\theta)$ data in ^{9}Be(^{48}Ca,Xγ) and shell-model predictions (2004So30,2012St12).

Adopted Levels, Gammas (continued)

γ(^{43}Cl)

E_i(level)	J_i^π	E_γ[†]	I_γ	E_f	J_f^π	Mult.[‡]
328	(3/2$^+$)	328 *2*	100	0	(1/2$^+$)	D
884?	(1/2,3/2)	884[#] *4*	100	0	(1/2$^+$)	D
943	(5/2$^+$)	615 *5*	100	328	(3/2$^+$)	D
1668	(7/2$^+$)	1340 *6*	100	328	(3/2$^+$)	(Q)
1924		256 *4*	100	1668	(7/2$^+$)	

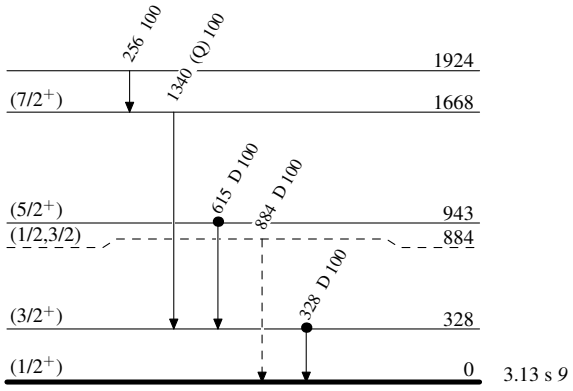
[†] Weighted average of all available values.
[‡] From $\gamma(\theta)$ in ^{9}Be(^{48}Ca,Xγ); mult=D indicates $\Delta J=1$ transition and mult=(Q) a $\Delta J=2$ transition.
[#] Placement of transition in the level scheme is uncertain.

Adopted Levels, Gammas

Level Scheme

Intensities: Relative photon branching from each level

Legend
- - - - - - ▶ γ Decay (Uncertain)
● Coincidence



$^{43}_{17}Cl_{26}$