Adopted Levels, Gammas

	Type	Author	History Citation	Literature Cutoff Date
	Full Evaluation	Jun Chen	NDS 179, 1 (2022)	30-Nov-2021

Q(β^-)=9930 *17*; S(n)=5059 *17*; S(p)=20060 *SY*; Q(α)=−15576 *18*   2021Wa16

ΔS(p)=200 (syst,2021Wa16).

S(2n)=8726 *17*, S(2p)=37570 *400* (syst), Q(β^-n)=5286 *17* (2021Wa16).

Mass measurements: 2020Mo25 (Mass excess (M.E.)=−22355 *17*), 2020Me06 (M.E.=−22390 *260*), 2018Mi08 (M.E.=−22330 keV *120*), 2015Me01 (M.E.=−22280 keV *310*).

2012We08: ^{48}Ar isotopes were produced from ISOLDE at CERN. Measured ^{48}Ar β^- decay, T$_{1/2}$ with three setups: 1) $\beta\gamma$ detector setup; 2) β-telescope setup; 3) with the secondary ECR ion source.

1979Da16: ^{48}Ca(π^-,π^+), E=290 MeV. Measured σ(E(π')). See also 1981KaZW.

2004Gr20,2003Gr22: Be(^{48}Ca,X) E=60 MeV/nucleon at GANIL. Isotopes were selected by the LISE3 spectrometer, identified by ΔE-tof particle identification, and implanted in a 16-strip DSDD. β^- particles were detected by plastic scintillator. Measured T$_{1/2}$.

Nuclear structure calculations: 2019Sa58, 2018Yo06, 2017Ko24, 2015Sh21, 2015Wu07, 2014Eb02, 2014So09, 2014Wa03, 2013Wa05, 2013Xu01, 2013Xu15, 2012Ch48, 2011Ka03, 2005Va32, 2004Gr20, 2003Gr22, 1999La18, 1998La02, 1997Ma77, 1997Pa38, 1997Re04.

^{48}Ar Levels

Cross Reference (XREF) Flags

A	^{9}Be(^{48}K,^{48}Arγ)
B	^{48}Ca(^{238}U,Xγ)
C	Coulomb excitation

E(level)	J$^{\pi\dagger}$	T$_{1/2}$	XREF	Comments
0.0	0$^+$	416 ms *19*	ABC	%β^-=100; %β^-n=38 *6* (2012We08)
				T$_{1/2}$: weighted average of 381 ms *35* ($\beta\gamma$-setup), 412 ms *19* (β telescope), and 430 ms *70* ($\beta\gamma$ with secondary ECR) in 2012We08, and 475 ms *40* from implant-β(t) in 2004Gr20 and 2003Gr22.
				%β^-n: estimated by 2012We08 from the intensities of 2013γ from ^{47}K β^- decay and 3832γ from ^{48}K β^- decay.
1039 *6*	(2$^+$)	6.7 ps +*16*−*11*	ABC	B(E2)↑=0.0346 *55* (2012Wi05)
				T$_{1/2}$: deduced by the evaluator from B(E2)↑.
2195 *17*	(2$^+$)		B	
2754 *13*	(4$^+$)		AB	
3279?	(3$^+$)		B	

† Assignments for excited states are from comparisons with shell-model calculations (2008Bh09), and systematics of even-even Ar isotopes.

γ(^{48}Ar)

E$_i$(level)	J$_i^\pi$	E$_\gamma$	I$_\gamma$	E$_f$	J$_f^\pi$	Comments
1039	(2$^+$)	1039 *6*	100	0.0	0$^+$	E$_\gamma$: weighted average of 1040 *7* (2012Wi05) in Coulomb excitation, 1037 *6* (2009Ga09) in (^{48}K,^{48}Arγ), and 1041 *9* (2008Bh09) in (^{238}U,Xγ).
2195	(2$^+$)	1156 *15*	100	1039	(2$^+$)	E$_\gamma$,I$_\gamma$: from (^{238}U,Xγ) (2008Bh09) only.
		2197†	<30	0.0	0$^+$	E$_\gamma$,I$_\gamma$: γ not observed, upper intensity limit relative to I$_\gamma$(1156) is given in (^{238}U,Xγ) (2008Bh09) only.

Adopted Levels, Gammas (continued)

$\gamma(^{48}$Ar$)$ (continued)

E_i(level)	J^π_i	E_γ	I_γ	E_f	J^π_f	Comments
2754	(4^+)	1715 11	100	1039	(2^+)	E_γ: weighted average of 1706 10 (2009Ga09) in $(^{48}$K,^{48}Ar$\gamma)$ and 1729 13 (2008Bh09) in $(^{238}$U,X$\gamma)$.
3279?	(3^+)	1085†		2195	(2^+)	

† Placement of transition in the level scheme is uncertain.

Adopted Levels, Gammas

Legend

Level Scheme

Intensities: Relative photon branching from each level

- - - - - - ▶ γ Decay (Uncertain)

$^{48}_{18}$Ar$_{30}$