Adopted Levels, Gammas

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Jun Chen	NDS 201,1 (2025)	31-Oct-2024

Q(β^-)=−24190 *syst*; S(n)=21600 *syst*; S(p)=2455 *4*; Q(α)=−8.70×10^3 *16* 2021Wa16
ΔQ(β^-)=400, ΔS(n)=200 (syst,2021Wa16).
S(2n)=40410 *180* (syst), S(2p)=2719.0 *18*, Q(εp)=9553.2 *18* (2021Wa16).
First identification of ^{32}Ar nuclide: 1977Ha29: isotope produced by V(p,X) E=600 MeV, followed by mass separation at ISOLDE-CERN facility.
Mass measurements: 2003Bl17.
Mass deduced from IMME analysis: 2021Ka45, 2006Tr03.
Other measurements:
2004Ga33: ^{9}Be(^{32}Ar,^{31}ArX) E=65.1 MeV/nucleon. Deduced occupancy of deeply-bound neutron state.
2002Oz03: C(^{32}Ar,x) E≈950 MeV/nucleon. Measured interaction cross section, deduced proton skin features.
1985Bj01: ^{32}Ar produced by ^{40}Ca(p,3p6n) reaction at E=600 MeV, followed by mass separation at ISOLDE-CERN facility.
Structure calculations:
2021Li26,2017Ro08,2013Wa05: calculated levels, J, π.
2013Le08: calculated B(E2), B(M1).
2008Ba08: calculated B(E1), isovector dipole strength.
Additional information 1.

^{32}Ar Levels

Cross Reference (XREF) Flags

- A ^{9}Be(^{34}Ar,Xγ)
- B ^{9}Be(^{37}Ca,xγ)
- C ^{32}S(π^+,π^-)
- D Coulomb excitation

E(level)	J$^\pi$	T$_{1/2}$ or Γ	XREF	Comments
0	0$^+$	98 ms *2*	ABCD	%ε+%β^+=100; %εp=35.58 *22* (2008Bh08) T$_{1/2}$: from timing of delayed protons distinguishing β^+ and γ-rays through pulse shape discrimination (1985Bj01). Others: 2008Bh08 quote 100.5 ms *3* from unpublished ISOLDE-CERN data (reference 10 in 2008Bh08 and this value was also communicated to one of the previous evaluators by A. Garcia in an e-mail reply of November 21, 2006); 75 ms *+75−30* (1977Ha29). %εp: other: 43 *3* (1985Bj01). Evaluated <r^2>$^{1/2}$=3.3468 fm *62* (2013An02). Measured <r^2>(^{38}Ar−^{32}Ar)=−0.38 fm^2 *10* (1996Kl04); statistical uncertainty=0.038, systematic uncertainty=0.096. Effective rms radii: matter radius R^m=3.08 fm *9*, neutron radius R^n=2.87 fm *22*, proton radius R^p=3.228 fm *18* (2002Oz03). Major decay branch by superallowed β transition (0$^+$ to 0$^+$) to ^{32}Cl.
1855 *16*	2$^+$	0.48 ps *+17−10*	AB D	B(E2)↑=0.027 *7* (2002Co09) E(level): From Eγ. J$^\pi$: level Coulomb excited from 0$^+$. T$_{1/2}$: deduced from B(E2)↑ and adopted Eγ=1855 *16* by the evaluator.
24.7×10^3† *3*	(0$^+$,2$^+$)	4.0† MeV *15*	C	T=2 J$^\pi$: L(π^+,π^-)=(1); double-isovector giant-dipole resonance.
28.7×10^3† *4*	(0$^+$,2$^+$)	3.6† MeV *15*	C	T=2 J$^\pi$: L(π^+,π^-)=(1); double-isovector giant-dipole resonance.

† From (π^+,π^-) (1988Mo15).

Adopted Levels, Gammas (continued)

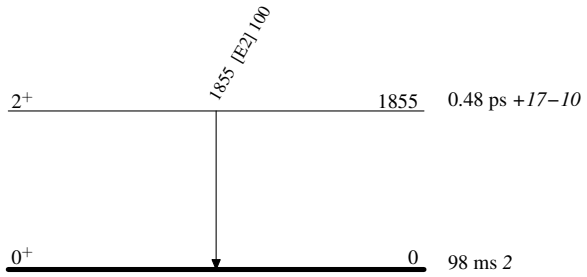
$\gamma(^{32}Ar)$

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.	Comments
1855	2^+	1855 *16*	100	0	0^+	[E2]	B(E2)(W.u.)=8.9 *+30−27* E_γ: unweighted average of 1867 *8* from (^{34}Ar,Xγ), 1824 *12* from Coulomb excitation and 1873 *20* from (^{37}Ca,Xγ).

Adopted Levels, Gammas

Level Scheme

Intensities: Relative photon branching from each level



$^{32}_{18}Ar_{14}$