

⁶⁹Kr ε decay (28 ms) 2014De41,2011Ro47

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	C. D. Nesaraja	ENSDF	31-Mar-2015

Parent: ⁶⁹Kr: E=0; J^π=(5/2⁻); T_{1/2}=28 ms I; Q(ε)=13680 SY; %ε+%β⁺ decay=100.0

⁶⁹Kr-J^π,T_{1/2}: From ⁶⁹Kr Adopted Levels.

⁶⁹Kr-Q(ε): 13680 400 (syst,2012Wa38). Others: 13987 104 (2011Ro47), 13.05 MeV 30 (2014De41) from theoretical value of B(GT)=0.048 (log ft=3.303), thus Q(β) of 9.90 MeV 30 for IAS at 3153 53.

⁶⁹Kr-%ε+%β⁺ decay: %εp=99 +1-11 (2011Ro47).

2014De41: ⁶⁹Kr isotope produced in the fragmentation of 70 MeV/nucleon ⁷⁸Kr beam with Be target at NSCL. Fragments selected with the A1900 separator and purified before being implanted onto double-sided silicon strip detector (DSSD) at the NSCL Beta Counting System (BCS) for β and proton detection. BCS was surrounded by 16 Segmented Germanium Array (SeGA) for detection of prompt and β delayed gamma with a photopeak efficiency of 7% at 1 MeV. Three PIN detectors were used to measure beam loss for particle identification. Measured E(p), Eγ, βp correlations, (β-delayed proton)γ-coin, I(ε+β⁺), T_{1/2}⁶⁹Kr.

2011Ro47: ⁶⁹Kr isotope produced in the fragmentation of 70 MeV/nucleon ⁷⁸Kr beam with Ni target. Fragments selected with the LISE3 separator at GANIL and identified by time-of-flight and energy loss. Measured E(p), Eβ, Eγ, βp correlations, ⁶⁹Kr half-life using set of four Si detectors (an energy loss ΔE detector, a degrade, DSSD and Si(Li)) for particles surrounded by four HPGe Clover detectors, three EXOGAM and one mini-clover Ge detector for γ rays.

1997Xu01: β-delayed proton decay of ⁶⁹Kr. ⁶⁹Kr produced by ⁴⁰Ca(³²S,3n) reaction using a E(³²S)=170 MeV beam incident on a natural calcium target. Measured T_{1/2} and delayed proton emission by pulsed-beam technique and ΔE-E telescope and Si(Au) surface barrier detectors.

⁶⁹Br Levels

E(level) [†]	J ^π [†]	Comments
0	(5/2 ⁻)	E(p)=641 42 (2014De41) from analysis of proton spectrum (doublet peak).
0+x	(3/2 ⁻)	E(p)=751 keV +132-42 from analysis of proton spectrum in 2014De41 is in good agreement with value of 785 keV reported by 2011Ro18.
3153 55	(5/2 ⁻)	%p=100 T=3/2 This level decays by protons since S(p)(⁶⁹ Br)=-641 42 (2014De41). E(level): from 2014De41. Others: 3039 keV 64 (2011Ro47) and 3.85 MeV 53 (1997Xu01). Proton group 2.939 MeV 22 (2014De41) is consistent with 2.97 MeV 5 (2011Ro47) that depopulates this isobaric analog state (IAS) in ⁶⁹ in correlation with the 854γ from the first 2 ⁺ state in ⁶⁸ Se. However, E(p)=4.07 MeV 5 in 1997Xu01, implying proton decay to the g.s. of ⁶⁸ Se, is in disagreement with results from 2014De41 and 2011Ro47.

[†] From 2014De41 with the level ordering based on results in 2014De41, 2011Ro18, and pf- shell model calculation. For J^π, see also Adopted Levels for arguments.

ε,β⁺ radiations

E(decay)	E(level)	Iβ ⁺ ‡	Iε ‡	Log ft	I(ε+β ⁺) ‡	Comments
(10527 SY)	3153	52 6	0.080 15	3.43 11	52.5 65	av Eβ=4.52×10 ³ 20; εK=0.00134 19; εL=0.000153 21; εM+=3.1×10 ⁻⁵ 5 I(ε+β ⁺): from 2014De41. Other: 50 19 (2011Ro47).
(6840 [#] SY)	0+x				2.4 [†] 5	
(13680 SY)	0	2.4 5	0.0016 4	>5.4	2.4 [†] 5	av Eβ=6.09×10 ³ 20; εK=0.00058 6; εL=6.6×10 ⁻⁵ 7; εM+=1.31×10 ⁻⁵ 13

[†] Combined value for g.s. and 0+X level from analysis of β-delayed proton spectrum of ⁶⁹Kr in 2014De41 with two

^{69}Kr ε decay (28 ms) [2014De41,2011Ro47](#) (continued)

ε, β^+ radiations (continued)

closely-spaced states decaying by protons. The analysis of the doublet peak was supported by shell model calculations.

‡ Absolute intensity per 100 decays.

Estimated for a range of levels.