^{84}Rb ε decay 1982Gr07,1970Go44,1971Bo01

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	J. K. Tuli, A. Luca, S. Juutinen, and B. Singh	NDS 110,2815 (2009)	30-Sep-2009

Parent: ^{84}Rb: E=0; $J^\pi=2^-$; $T_{1/2}$=32.82 d *7*; Q(ε)=2686.3 *27*; %ε+%$β^+$ decay=96.1 *20*

^{84}Rb-Q(ε): from 2009AuZZ. Other: 2681.0 23 (2003Au03).

1982Gr07: Ge(Li), FWHM=2.0 keV at 1.33 MeV. Measured Eγ, Iγ.

1979Gr01: Ge(Li). Eγ precision measurement making use of cascade-crossover relationships.

1970Go44: Ge(Li), CsI, NaI. Measured βγ, xγ. Deduced ε/$β^+$.

1971Bo01: magnetic spectrometer. Measured $β^+$ spectra.

See also 1966He11, 1971Ge10, 1958Ko92, 1967Vr07.

Measurements of special observables:

βγ directional correlation: 1971Ma43, 1969De21, 1965Si09.

βγ circular-polarization correlation: 1973Sc02, 1963Bo20.

$β^+$ endpoint energy and spectrum shape factor: 1980HuZS, 1971Bo01, 1964La03, 1958Be81.

Extraction of matrix elements and theoretical analysis are reported by 1980HuZS, 1973Sc02, 1971De02, 1971Ma43, and 1965Si10.

The γγ(θ) measurement of 1965Ro06 disagrees with other experiments (see ^{83}Kr(n,γ) and ^{84}Br $β^-$ decay (31.76 min)) and was therefore not adopted by the evaluators.

^{84}Kr Levels

E(level)†	J^π‡	$T_{1/2}$
0	0^+	stable
881.615 *3*	2^+	
1897.784 *10*	2^+	

† From least-squares fit to Eγ′s.

‡ From Adopted Levels.

ε,$β^+$ radiations

E(decay)	E(level)	Iβ+ †	Iε†	Log *ft*	I(ε+β+)†	Comments
(789 *3*)	1897.784		1.09 *4*	8.085 *17*	1.09 *4*	εK= 0.875; εL= 0.1038; εM+=0.02138
781.5 *13*	881.615	12.6 *7*	56.0 *23*	7.114 *11*	68.6 *16*	av Eβ= 340.5 *13*; εK= 0.6959 *19*; εL= 0.08111 *23*; εM+= 0.01666 *5* Iε: ε/$β^+$=4.43 *18* deduced from εK(exp)/$β^+$=3.96 *16* and εL(exp)/εK(exp)=0.119 *2* (1970Go44); other measurements: ε/$β^+$=5.75 *7* (1971Ge10); ε/$β^+$=5.72 *12* (1958Ko92); ε/$β^+$=5.66 *42* (1955We40). Theoretical value: εK/$β^+$=3.44 (allowed transition), εK/$β^+$=4.2 to 4.7 (first-forbidden transition, model dependent, see 1970Go44). As discussed by 1970Go44 the values of 1955We40 and 1958Ko92 are probably too high because of summation and pileup effects. Also from theoretical considerations the lower value of 1970Go44 is preferred.
1657.8 *8*	0	13.1 *6*	13.4 *6*	9.509[1u] *19*	26.5 *11*	av Eβ= 758.5 *14*; εK= 0.4419 *15*; εL= 0.05180 *17*; εM+= 0.01065 *4* Deviation of 2% from unique-forbidden shape (1971Bo01,1980HuZS).

† Absolute intensity per 100 decays.

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γ(^{84}Kr)

E_γ [†]	I_γ [‡#]	E_i(level)	J_i^π	E_f	J_f^π	Comments
881.6041 *16*	100	881.615	2^+	0	0^+	
1016.158 *11*	0.506 *15*	1897.784	2^+	881.615	2^+	
1897.751 *11*	1.07 *3*	1897.784	2^+	0	0^+	E_γ: sum of 881γ+1016γ (1995HeZZ).

[†] From recommended standard energies (1995HeZZ).
[‡] From 1982Gr07. Others: 1966He11, 1971Ge10.
[#] For absolute intensity per 100 decays, multiply by 0.689 *21*.

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Decay Scheme

Intensities: $I_{(\gamma+ce)}$ per 100 parent decays