

^{83}Kr IT decay (1.83 h) [1971Ru17](#),[1972Ko35](#),[1989St05](#)

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	E. A. Mccutchan	NDS 125,201 (2015)	31-Dec-2014

Parent: ^{83}Kr : $E=41.5575$ 7; $J^\pi=1/2^-$; $T_{1/2}=1.83$ h 2; %IT decay=100

[2012SI01](#): $^{83\text{m}}\text{Kr}$ activity from $^{\text{nat}}\text{Kr}(\text{p},\text{xn})$ reaction followed by chemical separation. Measured precise E_γ of 9.4γ using Si(Li) detector (FWHM=224 eV at 9.4 keV).

[2009Ka30](#): $^{83\text{m}}\text{Kr}$ activity from ^{83}Rb ε decay. Measured Ece, Ice, ce(t) in liquid Xe scintillator.

[2006Ve03](#): $^{83\text{m}}\text{Kr}$ activity from $^{\text{nat}}\text{Kr}(\text{p},\text{xn})$ reaction followed by chemical separation. Measured precise E_γ of 32γ using Si(Li) detector (FWHM=330 eV at 33 keV).

[1992Pi10](#), [1992Pi11](#): $^{83\text{m}}\text{Kr}$ activity from ^{83}Rb ε decay. Measured Ece, Ice, precise E_γ of 9.4γ and 32γ using solenoid retarding spectrometer (SRS) (FWHM=2 keV at 20 keV).

[1989St05](#): $^{83\text{m}}\text{Kr}$ activity from Na-Rb stearate followed by chemical separation. Measured precise E_γ of 32γ using Si(Li) detector (FWHM=330 eV at 33 keV).

[1972Ko35](#): $^{83\text{m}}\text{Kr}$ activity from thermal neutron irradiation of ^{82}Kr . Measured E_γ , I_γ with Si(Li) detector and a xenon-proportional counter and Ece, Ice using a double-focusing β spectrometer.

[1971Ru17](#): Measured E_γ , I_γ , Ece, Ice, $\gamma(t)$ with Si(Li) (FWHM=550 eV at 9.4 keV).

Others: [2010Li13](#), [1995Co31](#), [1993Ko45](#), [1992La09](#).

Additional information 1.

I_γ normalization: [Additional information 2](#).

I_γ normalization: [Additional information 3](#).

α : [Additional information 4](#).

 ^{83}Kr Levels

E(level) [†]	J^π [†]	$T_{1/2}$	Comments
0	$9/2^+$	stable	
9.4057 6	$7/2^+$	156.94 ns 34	$T_{1/2}$: from time difference between 32γ and 9.4γ (2009Ka30). Other: 147 ns 4 from $\gamma\gamma(t)$ (1963Ru03).
41.5575 7	$1/2^-$	1.83 h 2	$T_{1/2}$: weighted average of 1.856 h 36 from ce(t) of 32.1γ (2009Ka30), 1.846 h 49 from ce(t) of 9.4γ (2009Ka30), 1.82 h 2 (2010Li13), 1.83 h 2 (1971Ru17).

[†] From the Adopted Levels.

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$\gamma(^{83}\text{Kr})$

I_γ normalization: 0.058 *I* from decay scheme using I(γ+ce)(9γ)=100 and α(9.4γ)=16.31 24, 0.046 from α(32γ)=1950.

E_γ	$I_\gamma^{\dagger\ddagger}$	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult.	δ	α	$I_{(\gamma+ce)}^\#$	Comments
9.4057 6	100 3	9.4057	7/2 ⁺	0	9/2 ⁺	M1+E2	0.0129 3	16.31 24	100	α(exp)=19.5 15; ce(L)/(γ+ce)=0.800 7; ce(M)/(γ+ce)=0.1296 24; ce(N)/(γ+ce)=0.01259 25; ce(N+)/(γ+ce)=0.01259 25 α(L)=13.85 20; α(M)=2.24 4; α(N)=0.218 4 E _γ : weighted average of 9.4058 3 (2012Si01), 9.396 3 (1993Ko45), and 9.4059 8 (1992Pi10). Others: 9.40 keV 2 (1971Ru17), 9.40 keV 3 (1972De67), 9.40 keV 1 (1972Ko35), and 9.39 keV 1 (1976Va03). δ: weighted average of 0.00129 3 (1993Ko45) and 0.00130 8 (1980Sp07). Derived from L/M-subshell conversion ratio. α(exp): deduced from α(K)exp/(α(L)exp + α(M)exp)=0.312 5 of the 32γ (weighted average of 0.305 9 (1972Ko35) and 0.315 6 (1980Sp07)). Ratio of K x ray to 9.4γ=3.14 4 (weighted average of 3.15 6 (1972Ko35) and 3.13 5 (1971Ru17)), fluorescence yield=0.643 19 (1979Kr13) and α(K)exp(32γ)=462 18 (1971Ru17).
32.1516 5	1.12 6	41.5575	1/2 ⁻	9.4057	7/2 ⁺	E3		1.95×10 ³	100	ce(K)/(γ+ce)=0.248 5; ce(L)/(γ+ce)=0.637 8; ce(M)/(γ+ce)=0.1069 20; ce(N)/(γ+ce)=0.00783 16; ce(N+)/(γ+ce)=0.00783 16 α(K)=483 7; α(L)=1242 18; α(M)=208 3; α(N)=15.25 22 E _γ : weighted average of 32.1517 5 (2006Ve03), 32.1515 11 (1992Pi10), 32.1510 8 (1989St05), and 32.1521 8 (1993GoZL). Values from 1989St05 and 1993GoZL have been corrected for change in ²⁴¹ Am standard. Others: 32.16 keV 2 (1971Ru17), 32.1 keV 1 (1972De67), 32.14 keV 5 (1972Ko35), and 32.16 keV 3 (1976Va03). α(K)exp=462 18 (1971Ru17), corrected for fluorescence yield=0.643 (1979Kr13). Mult.: from α(K)exp (1971Ru17).

[†] From unweighted average of I_γ(32γ)/I_γ(9γ)=0.0106 (1971Ru17) and 0.0118 (1972De67).

[‡] For absolute intensity per 100 decays, multiply by ≈0.055.

[#] Absolute intensity per 100 decays.

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