



1 Decay Scheme

Rb-82 decays by electron capture to excited levels and to the ground state of Kr-82.

Le rubidium 82 se désintègre par capture électronique vers des niveaux excités et le niveau fondamental du krypton 82.

2 Nuclear Data

$$T_{1/2}({}^{82}\text{Rb}) : 1,2652 \quad (45) \quad \text{min}$$

$$Q^+({}^{82}\text{Rb}) : 4403 \quad (3) \quad \text{keV}$$

2.1 Electron Capture Transitions

	Energy (keV)	Probability (%)	Nature	lg <i>ft</i>	<i>P_K</i>	<i>P_L</i>	<i>P_M</i>
ε _{0,24}	446,9 (30)	0,00009 (2)		7,1	0,8722 (15)	0,1061 (12)	0,0192 (4)
ε _{0,23}	491,9 (30)	0,00010 (2)		7,1			
ε _{0,22}	521,9 (30)	0,00024 (5)		6,8			
ε _{0,21}	567,2 (30)	0,00089 (5)		6,3			
ε _{0,20}	587,9 (30)	0,0019 (8)		5,6			
ε _{0,19}	661 (3)	0,0036 (6)		5,9			
ε _{0,18}	686,2 (30)	0,008 (3)		5,8			
ε _{0,17}	838,4 (30)	0,0034 (31)		6			
ε _{0,16}	945,5 (30)	0,000111 (23)		7,7			
ε _{0,15}	1047,7 (30)	0,00134 (13)		6,7			
ε _{0,14}	1216,2 (30)	0,0265 (15)		5,5	0,8763 (15)	0,1028 (12)	0,0185 (4)
ε _{0,13}	1458,9 (30)	0,0500 (19)		5,4	0,8766 (15)	0,1025 (12)	0,0185 (4)
ε _{0,12}	1747,2 (30)	0,0142 (17)		6,1	0,8770 (14)	0,1022 (12)	0,0184 (4)
ε _{0,11}	1841,3 (30)	0,0011 (6)		7,3			
ε _{0,10}	1846,7 (30)	0,00023 (11)		10			
ε _{0,9}	1894 (3)	0,0011 (6)		7,4			
ε _{0,8}	1923,3 (30)	0,0682 (14)		5,5	0,8771 (14)	0,1021 (12)	0,0184 (4)
ε _{0,7}	1952,9 (30)	0,0105 (8)		6,3	0,8771 (14)	0,1021 (12)	0,0184 (4)
ε _{0,6}	2231,3 (30)	0,283 (5)	Allowed	5	0,8773 (14)	0,1019 (12)	0,0184 (4)
ε _{0,5}	2446,2 (30)	0,0047 (8)		6,7			
ε _{0,4}	2582,4 (30)	0,00003 (3)	Unique 2nd Forbidden	11,5			
ε _{0,3}	2915,4 (30)	0,0096 (9)	Allowed	6,7			
ε _{0,2}	2928,1 (30)	0,0284 (14)	Allowed	6,3	0,8776 (14)	0,1017 (12)	0,0183 (4)

	Energy (keV)	Probability (%)	Nature	lg <i>ft</i>	<i>P_K</i>	<i>P_L</i>	<i>P_M</i>
ε _{0,1}	3626,5 (30)	1,06 (2)	Allowed	4,8	0,8778 (14)	0,1016 (12)	0,0183 (4)
ε _{0,0}	4403 (3)	3,01 (3)	Allowed	4,6	0,8779 (14)	0,1014 (12)	0,0183 (4)

2.2 β⁺ Transitions

	Energy (keV)	Probability (%)	Nature	lg <i>ft</i>
β _{0,12} ⁺	725,2 (30)	0,00284 (34)		6,1
β _{0,11} ⁺	819,3 (30)	0,00033 (19)		7,3
β _{0,10} ⁺	824,7 (30)	0,00007 (4)		10
β _{0,9} ⁺	872 (3)	0,00041 (25)		7,4
β _{0,8} ⁺	901,3 (30)	0,0288 (7)		5,5
β _{0,7} ⁺	930,9 (30)	0,0050 (4)		6,3
β _{0,6} ⁺	1209,3 (30)	0,317 (6)	Allowed	5
β _{0,5} ⁺	1424,2 (30)	0,00890 (14)		6,7
β _{0,4} ⁺	1560,4 (30)	0,00007 (7)	Unique 2nd Forbidden	11,5
β _{0,3} ⁺	1893,4 (30)	0,0444 (41)	Allowed	6,7
β _{0,2} ⁺	1906,1 (30)	0,135 (7)	Allowed	6,3
β _{0,1} ⁺	2604,5 (30)	13,10 (19)	Allowed	4,8
β _{0,0} ⁺	3381 (3)	81,81 (24)	Allowed	4,6

2.3 Gamma Transitions and Internal Conversion Coefficients

	Energy (keV)	P _{γ+ce} (%)	Multipolarity	α _K (10 ⁻⁴)	α _L (10 ⁻⁵)	α _M (10 ⁻⁶)	α _T (10 ⁻⁴)
γ _{8,5} (Kr)	522,923 (36)	0,0045 (15)					
γ _{6,2} (Kr)	696,786 (32)	0,071 (6)					
γ _{2,1} (Kr)	698,372 (14)	0,159 (11)					
γ _{3,1} (Kr)	711,10 (7)	0,060 (4)					
γ _{1,0} (Kr)	776,522 (10)	15,03 (19)	E2	8,19 (12)	8,84 (13)	14,3 (2)	9,23 (13)
γ _{20,13} (Kr)	871 (1)	0,0014 (8)					
γ _{7,2} (Kr)	975,20 (9)	0,0084 (11)					
γ _{8,3} (Kr)	992,10 (8)	0,0018 (8)					
γ _{9,3} (Kr)	1021,4 (5)	0,0015 (9)					
γ _{4,1} (Kr)	1044,08 (40)	0,0009 (6)					
γ _{10,2} (Kr)	1081,4 (7)	0,00030 (15)					
γ _{11,2} (Kr)	1086,8 (5)	0,0014 (8)					
γ _{13,4} (Kr)	1123,54 (40)	0,0008 (6)					
γ _{12,3} (Kr)	1168,20 (12)	0,0014 (6)					
γ _{5,1} (Kr)	1180,275 (22)	0,0165 (15)					
γ _{12,2} (Kr)	1180,93 (10)	0,0030 (15)					
γ _{6,1} (Kr)	1395,158 (32)	0,529 (8)	E2	2,12 (3)	2,24 (4)	3,63 (5)	2,90 (4)
γ _{2,0} (Kr)	1474,894 (10)	0,0904 (24)	E2	1,90 (3)	2,00 (3)	3,24 (5)	2,89 (4)
γ _{17,5} (Kr)	1607,8 (3)	0,00225 (30)					
γ _{7,1} (Kr)	1673,57 (9)	0,0071 (5)					
γ _{14,3} (Kr)	1699,20 (9)	0,0015 (8)					
γ _{8,1} (Kr)	1703,198 (32)	0,0505 (11)					
γ _{14,2} (Kr)	1711,93 (5)	0,00165 (30)					

	Energy (keV)	P _{γ+ce} (%)	Multipolarity	α _K (10 ⁻⁴)	α _L (10 ⁻⁵)	α _M (10 ⁻⁶)	α _T (10 ⁻⁴)
γ _{19,5} (Kr)	1785,16 (8)	0,0030 (6)					
γ _{12,1} (Kr)	1879,3 (1)	0,0101 (6)					
γ _{5,0} (Kr)	1956,797 (20)	0,0068 (6)					
γ _{13,1} (Kr)	2167,618 (41)	0,0431 (6)					
γ _{18,2} (Kr)	2241,94 (15)	0,0009 (8)					
γ _{14,1} (Kr)	2410,30 (5)	0,0233 (12)					
γ _{8,0} (Kr)	2479,72 (3)	0,0401 (16)					
γ _{15,1} (Kr)	2578,80 (19)	0,00105 (11)					
γ _{12,0} (Kr)	2655,82 (10)	0,0026 (6)					
γ _{17,1} (Kr)	2788,08 (30)	0,00114 (8)					
γ _{18,1} (Kr)	2940,31 (15)	0,0071 (29)					
γ _{13,0} (Kr)	2944,14 (4)	0,0075 (15)					
γ _{19,1} (Kr)	2965,44 (8)	0,00060 (5)					
γ _{21,1} (Kr)	3059,3 (5)	0,00068 (5)					
γ _{22,1} (Kr)	3104,6 (5)	0,00015 (5)					
γ _{15,0} (Kr)	3355,32 (19)	0,000285 (30)					
γ _{16,0} (Kr)	3457,5 (7)	0,000111 (23)					
γ _{20,0} (Kr)	3815,1 (10)	0,000451 (31)					
γ _{21,0} (Kr)	3835,8 (5)	0,000219 (23)					
γ _{22,0} (Kr)	3881,1 (5)	0,000087 (21)					
γ _{23,0} (Kr)	3911,1 (10)	0,000105 (15)					
γ _{24,0} (Kr)	3956,1 (10)	0,000090 (15)					

3 Atomic Data

3.1 Kr

ω _K	:	0,652	(4)
ω _L	:	0,0215	(6)
n _{KL}	:	1,149	(4)

3.1.1 X Radiations

	Energy (keV)	Relative probability
X _K		
Kα ₂	12,599	51,86
Kα ₁	12,65	100
Kβ ₃	14,105	} 23,96
Kβ ₁	14,113	
Kβ ₅ ''	14,238	
Kβ ₂	14,315	} 2,42
Kβ ₄	14,328	
X _L		
Lℓ	1,387	
Lα	1,585 - 1,586	
Lη	1,439	
Lβ	1,637 - 1,831	
Lγ	1,706 - 1,911	

3.1.2 Auger Electrons

	Energy (keV)	Relative probability
Auger K		
KLL	10,398 - 10,885	100
KLX	12,077 - 12,637	34,7
KXY	13,741 - 14,298	3,02
Auger L	1,09 - 1,91	

4 Electron and Positron Emissions

		Energy (keV)	Electrons (per 100 disint.)
e _{AL}	(Kr)	1,09 - 1,91	4,961 (25)
e _{AK}	(Kr)		
	KLL	10,398 - 10,885	} 1,394 (20)
	KLX	12,077 - 12,637	
	KXY	13,741 - 14,298	
$\beta_{0,0}^+$	max:	3381 (3)	} 81,81 (24)
	avg:	1535,6 (15)	
$\beta_{0,1}^+$	max:	2604,5 (30)	} 13,10 (19)
	avg:	1168,5 (15)	
$\beta_{0,2}^+$	max:	1906,1 (30)	} 0,135 (7)
	avg:	844,1 (14)	
$\beta_{0,3}^+$	max:	1893,4 (30)	} 0,0444 (41)
	avg:	838,3 (14)	
$\beta_{0,4}^+$	max:	1560,4 (30)	} 0,00007 (7)
	avg:	735,6 (15)	
$\beta_{0,5}^+$	max:	1424,2 (30)	} 0,00890 (14)
	avg:	624,8 (14)	
$\beta_{0,6}^+$	max:	1209,3 (30)	} 0,317 (6)
	avg:	528,6 (14)	
$\beta_{0,7}^+$	max:	930,9 (30)	} 0,0050 (4)
	avg:	405,7 (14)	
$\beta_{0,8}^+$	max:	901,3 (30)	} 0,0288 (7)
	avg:	392,7 (14)	
$\beta_{0,9}^+$	max:	872 (3)	} 0,00041 (25)
	avg:	380,0 (14)	
$\beta_{0,10}^+$	max:	824,7 (30)	} 0,00007 (4)
	avg:	359,4 (14)	
$\beta_{0,11}^+$	max:	819,3 (30)	} 0,00033 (19)
	avg:	357,0 (14)	

		Energy (keV)	Electrons (per 100 disint.)
$\beta_{0,12}^+$	max:	725,2 (30)	0,00284 (34)
	avg:	316,2 (13)	

5 Photon Emissions

5.1 X-Ray Emissions

		Energy (keV)	Photons (per 100 disint.)		
XL	(Kr)	1,387 - 1,911	0,1066 (18)		
XK α_2	(Kr)	12,599	0,760 (9)	}	K α
XK α_1	(Kr)	12,65	1,466 (16)		
XK β_3	(Kr)	14,105	0,351 (5)	}	K' β_1
XK β_1	(Kr)	14,113			
XK β_5''	(Kr)	14,238			
XK β_2	(Kr)	14,315	0,0354 (12)	}	K' β_2
XK β_4	(Kr)	14,328			

5.2 Gamma Emissions

	Energy (keV)	Photons (per 100 disint.)
$\gamma^\pm$	511	190,9 (6)
$\gamma_{8,5}(\text{Kr})$	522,8 (5)	0,0045 (15)
$\gamma_{6,2}(\text{Kr})$	696,86 (15)	0,071 (6)
$\gamma_{2,1}(\text{Kr})$	698,37 (5)	0,159 (11)
$\gamma_{3,1}(\text{Kr})$	711,2 (1)	0,060 (4)
$\gamma_{1,0}(\text{Kr})$	776,52 (1)	15,02 (19)
$\gamma_{20,13}(\text{Kr})$	869,3 (4)	0,0014 (8)
$\gamma_{7,2}(\text{Kr})$	975,2 (1)	0,0084 (11)
$\gamma_{8,3}(\text{Kr})$	992,2 (1)	0,0018 (8)
$\gamma_{9,3}(\text{Kr})$	1021,4 (5)	0,0015 (9)
$\gamma_{4,1}(\text{Kr})$	1044,1 (5)	0,0009 (6)
$\gamma_{10,2}(\text{Kr})$	1081,4 (7)	0,00030 (15)
$\gamma_{11,2}(\text{Kr})$	1086,8 (5)	0,0014 (8)
$\gamma_{13,4}(\text{Kr})$	1123,6 (7)	0,0008 (6)
$\gamma_{12,3}(\text{Kr})$	1168,2 (2)	0,0014 (6)
$\gamma_{5,1}(\text{Kr})$	1180,27 (2)	0,0165 (15)
$\gamma_{12,2}(\text{Kr})$	1181,3	0,0030 (15)

	Energy (keV)	Photons (per 100 disint.)
$\gamma_{6,1}(\text{Kr})$	1395,14 (3)	0,529 (8)
$\gamma_{2,0}(\text{Kr})$	1474,88 (1)	0,0904 (24)
$\gamma_{17,5}(\text{Kr})$	1607,7 (3)	0,00225 (30)
$\gamma_{7,1}(\text{Kr})$	1673,55 (9)	0,0071 (5)
$\gamma_{14,3}(\text{Kr})$	1698,7 (3)	0,0015 (8)
$\gamma_{8,1}(\text{Kr})$	1703,19 (4)	0,0505 (11)
$\gamma_{14,2}(\text{Kr})$	1711,9 (4)	0,00165 (30)
$\gamma_{19,5}(\text{Kr})$	1785,13 (7)	0,0030 (6)
$\gamma_{12,1}(\text{Kr})$	1879,18 (15)	0,0101 (6)
$\gamma_{5,0}(\text{Kr})$	1956,75 (4)	0,0068 (6)
$\gamma_{13,1}(\text{Kr})$	2167,59 (4)	0,0431 (6)
$\gamma_{18,2}(\text{Kr})$	2241,98 (17)	0,0009 (8)
$\gamma_{14,1}(\text{Kr})$	2410,26 (5)	0,0233 (12)
$\gamma_{8,0}(\text{Kr})$	2479,65 (4)	0,0401 (16)
$\gamma_{15,1}(\text{Kr})$	2578,7 (2)	0,00105 (11)
$\gamma_{12,0}(\text{Kr})$	2655,85 (15)	0,0026 (6)
$\gamma_{17,1}(\text{Kr})$	2788,4 (5)	0,00114 (8)
$\gamma_{18,1}(\text{Kr})$	2940,0 (3)	0,0071 (29)
$\gamma_{13,0}(\text{Kr})$	2944,0 (2)	0,0075 (15)
$\gamma_{19,1}(\text{Kr})$	2966,3 (7)	0,00060 (5)
$\gamma_{21,1}(\text{Kr})$	3059,2 (5)	0,00068 (5)
$\gamma_{22,1}(\text{Kr})$	3104,5 (5)	0,00015 (5)
$\gamma_{15,0}(\text{Kr})$	3355,6 (5)	0,000285 (30)
$\gamma_{16,0}(\text{Kr})$	3457,4 (7)	0,000111 (23)
$\gamma_{20,0}(\text{Kr})$	3815 (1)	0,000451 (31)
$\gamma_{21,0}(\text{Kr})$	3836 (1)	0,000219 (23)
$\gamma_{22,0}(\text{Kr})$	3881 (1)	0,000087 (21)
$\gamma_{23,0}(\text{Kr})$	3911 (1)	0,000105 (15)
$\gamma_{24,0}(\text{Kr})$	3956 (1)	0,000090 (15)

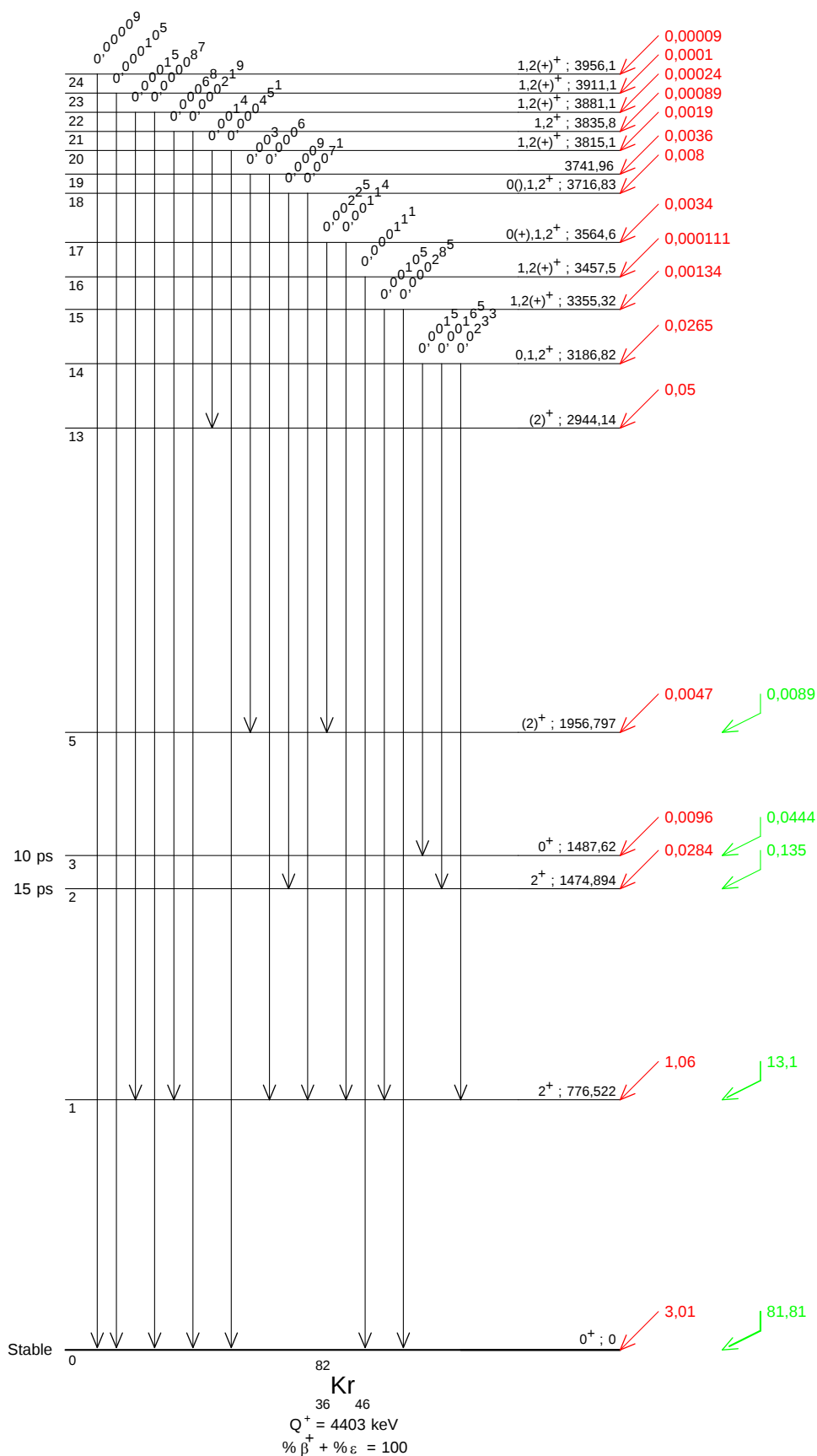
6 Main Production Modes

- $\left\{ \begin{array}{l} \text{Rb} - \text{nat}(\text{p}, \text{xn})\text{Sr} - 82 \\ \text{Possible impurities: Sr} - 85 \end{array} \right.$
- $\left\{ \begin{array}{l} \text{Rb} - 85(\text{p}, 4\text{n})\text{Sr} - 82 \\ \text{Possible impurities: Sr} - 85 \end{array} \right.$
- $\text{Sr} - 82(\text{E.C.})\text{Rb} - 82$

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(Q)

1⁺; 0 1,2652 (45) min ϵ β^+ ⁸²Rb
37 45 γ Emission intensities per 100 disintegrations

⁸²Rb₃₇⁴⁵

γ Emission intensities per 100 disintegrations

