$^{85}_{38}\mathrm{Sr}_{47}$

1 Decay Scheme

The Sr-85 disintegrates by electron capture to the Rb-85 excited levels, mainly to the 514 keV level.
Le strontium 85 se désintégre par capture électronique vers les niveaux excités de rubidium 85, principalement vers celui de 514 keV.

2 Nuclear Data

$T_{1/2}(^{85}\mathrm{Sr})$	:	64,850	(7)	d
$Q^{+}(^{85}\mathrm{Sr})$	:	1065	(3)	keV

2.1 Electron Capture Transitions

	Energy keV	Probability × 100	Nature	lg ft	P_K	P_L	P_M
$\epsilon_{0,4}$	196 (3)	0,0129 (4)	1st Forbidden	9,1	0,8610 (16)	0,1146 (13)	0,0214 (4)
$\epsilon_{0,3}$	551 (3)	99,2 (4)	Allowed	6,2	0,8718 (15)	0,1059 (12)	0,0195 (4)
$\epsilon_{0,2}$	784 (3)	0,0005	Unique 3rd Forbidden	11,8			
$\epsilon_{0,1}$	914 (3)	0,0005	3rd Forbidden	11,5			
$\epsilon_{0,0}$	1065 (3)	0,8 (4)	Unique 1st Forbidden	9,3	0,85 (3)	0,12 (3)	0,03 (1)

2.2 Gamma Transitions and Internal Conversion Coefficients

	Energy keV	$P_{\gamma+ce}$ × 100	Multipolarity	α_K	α_L (10^{-3})	α_M (10^{-3})	α_T
$\gamma_{2,1}$(Rb)	129,826 (10)	0,0005	(M1)	0,0635 (19)	7,17 (21)	1,208 (36)	0,0721 (22)
$\gamma_{1,0}$(Rb)	151,160 (6)	0,0012 (9)	M1+E2	0,0430 (13)	4,85 (15)	0,817 (25)	0,0488 (15)
$\gamma_{4,3}$(Rb)	354,97 (5)	0,0005 (2)	(E1)	0,00225 (7)	0,242 (7)	0,0405 (12)	0,00253 (8)
$\gamma_{3,1}$(Rb)	362,847 (6)	0,0014 (3)	(E3)	0,0292 (9)	3,97 (12)	0,67 (2)	0,0339 (10)
$\gamma_{3,0}$(Rb)	514,007 (3)	99,2 (4)	M2	0,00635 (19)	0,722 (22)	0,1219 (37)	0,00721 (22)

	Energy keV	$P_{\gamma+ce}$ × 100	Multipolarity	α_K	α_L (10^{-3})	α_M (10^{-3})	α_T
$\gamma_{4,1}$(Rb)	717,81 (5)	0,00032 (3)	(E2)	0,00109 (3)	0,120 (4)	0,0202 (6)	0,00124 (4)
$\gamma_{4,0}$(Rb)	868,98 (5)	0,0121 (4)	M1+E2	0,00065 (2)	0,070 (2)	0,01176 (35)	0,00073 (3)

3 Atomic Data

3.1 Rb

ω_K	:	0,674	(4)
$\bar{\omega}_L$	:	0,0237	(6)
n_{KL}	:	1,125	(4)

3.1.1 X Radiations

		Energy keV		Relative probability
X_K				
	$K\alpha_2$	13,3359		51,95
	$K\alpha_1$	13,3955		100
	$K\beta_3$	14,9519	}	
	$K\beta_1$	14,9614	}	
	$K\beta_5''$	15,085	}	24,34
	$K\beta_2$	15,1856	}	
	$K\beta_4$	15,205	}	2,82
X_L				
	$L\ell$	1,48		
	$L\gamma$	– 2,05		

3.1.2 Auger Electrons

	Energy keV	Relative probability
Auger K		
KLL	10,987 – 11,503	100
KLX	12,782 – 13,381	35,8
KXY	14,556 – 15,172	3,2
Auger L	1,1 – 2,0	

4 Electron Emissions

		Energy keV		Electrons per 100 disint.
e_{AL}	(Rb)	1,1 - 2,0		96,5 (4)
e_{AK}	(Rb)			28,6 (4)
	KLL	10,987 - 11,503	}	
	KLX	12,782 - 13,381	}	
	KXY	14,556 - 15,172	}	
$ec_{3,0\ K}$	(Rb)	498,811 (12)		0,630 (19)

5 Photon Emissions

5.1 X-Ray Emissions

		Energy keV		Photons per 100 disint.	
XL	(Rb)	1,48 — 2,05		2,30 (5)	
$XK\alpha_2$	(Rb)	13,3359		17,16 (17)	} $K\alpha$
$XK\alpha_1$	(Rb)	13,3955		33,04 (29)	}
$XK\beta_3$	(Rb)	14,9519	}		
$XK\beta_1$	(Rb)	14,9614	}	8,04 (10)	$K'\beta_1$
$XK\beta_5''$	(Rb)	15,085	}		
$XK\beta_2$	(Rb)	15,1856	}		
$XK\beta_4$	(Rb)	15,205	}	0,93 (4)	$K'\beta_2$

5.2 Gamma Emissions

	Energy keV	Photons per 100 disint.
$\gamma_{2,1}$(Rb)	129,826 (10)	0,0005
$\gamma_{1,0}$(Rb)	151,160 (6)	0,0012 (9)
$\gamma_{4,3}$(Rb)	354,97 (5)	0,0005 (2)
$\gamma_{3,1}$(Rb)	362,847 (6)	0,0014 (3)
$\gamma_{3,0}$(Rb)	514,0048 (22)	98,5 (4)
$\gamma_{4,1}$(Rb)	717,81 (5)	0,00032 (3)
$\gamma_{4,0}$(Rb)	868,98 (5)	0,0121 (4)

6 Main Production Modes

$$\begin{cases} \mathrm{Sr-84(n,\gamma)Sr-85} \quad \sigma : 0{,}35\ (7)\ \mathrm{barns} \\ \text{Possible impurities : } \mathrm{Sr-89,\ Rb-84} \end{cases}$$

$$\begin{cases} \mathrm{Sr-84(n,\gamma)Sr-85m} \quad \sigma : 0{,}60\ (6)\ \mathrm{barns} \\ \text{Possible impurities : } \mathrm{Sr-89,\ Rb-84} \end{cases}$$

$$\begin{cases} \mathrm{Sr-85m(I.T.)Sr-85} \\ \text{Possible impurities : } \mathrm{Sr-85m,\ half-life:\ 68\ min} \end{cases}$$

7 References

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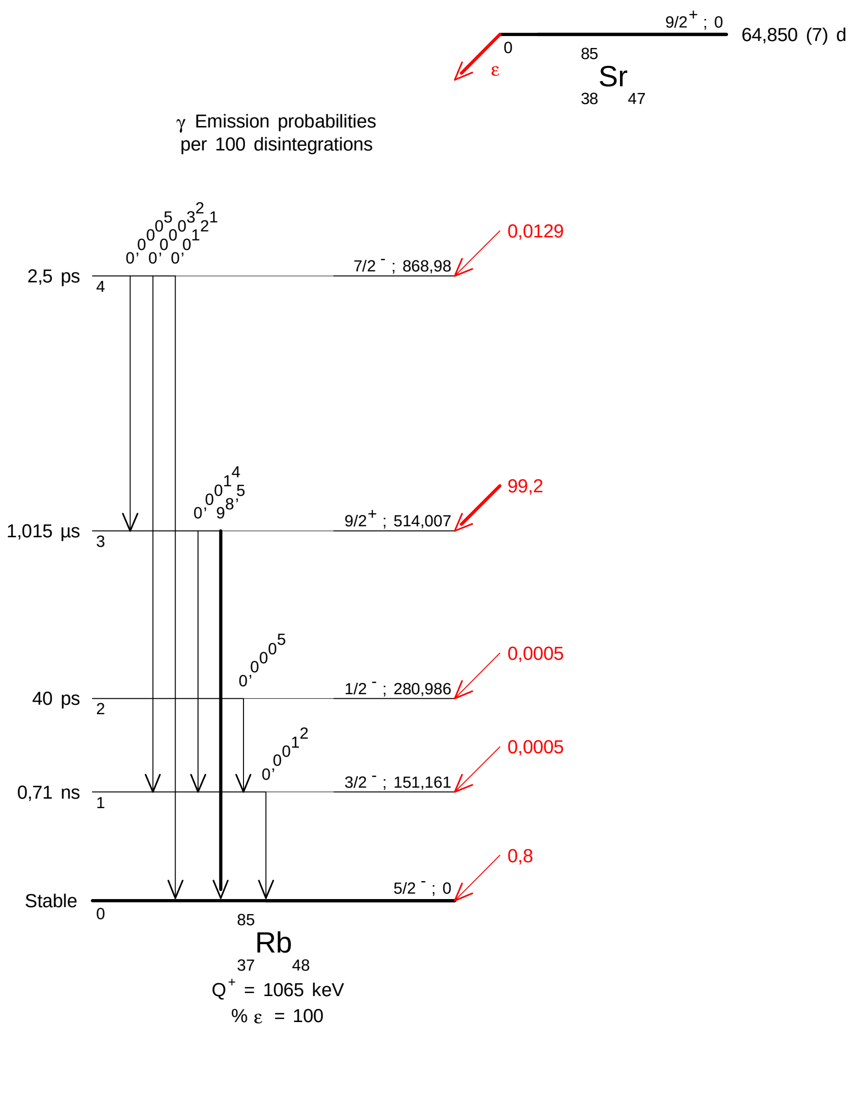
9/2+ ; 0
64,850 (7) d
0
ε
85
Sr
38
47
γ Emission probabilities
per 100 disintegrations
0,0129
99,2
0,0005
0,0005
0,8
2,5 ps
1,015 µs
40 ps
0,71 ns
Stable
7/2 - ; 868,98
9/2+ ; 514,007
1/2 - ; 280,986
3/2 - ; 151,161
5/2 - ; 0
85
Rb
37
48
Q+ = 1065 keV
% ε = 100