



## 1 Decay Scheme

$^{41}\text{Ca}$  disintegrates by 100% electron-capture transition to the ground state of the stable nuclide  $^{41}\text{K}$ .

*Le calcium 41 se désintègre exclusivement par capture électronique vers le niveau fondamental du potassium 41.*

## 2 Nuclear Data

$$T_{1/2}(^{41}\text{Ca}) : 1,002 \quad (17) \quad 10^5 \text{ a}$$

$$Q^+(^{41}\text{Ca}) : 421,63 \quad (14) \quad \text{keV}$$

### 2.1 Electron Capture Transitions

	Energy (keV)	Probability (%)	Nature	lg $ft$	P <sub>K</sub>	P <sub>L</sub>	P <sub>M+</sub>
$\epsilon_{0,0}$	421,63 (14)	100	Unique 1st forbidden	10,53	0,894 (9)	0,0916 (9)	0,01482 (15)

## 3 Atomic Data

### 3.1 K

$$\omega_K : 0,143 \quad (4)$$

$$\bar{\omega}_L : 0,00181 \quad (36)$$

$$n_{KL} : 1,654 \quad (6)$$

**3.1.1 X Radiations**

	Energy (keV)	Relative probability
$X_K$		
$K\alpha_2$	3,3111	50,55
$K\alpha_1$	3,3138	100
$K\beta_1$	3,5896	} 18,44
$K\beta_5''$	3,6028	
$X_L$		
$L\ell$	0,2604	
$L\eta$	0,263	
$L\beta$	0,29654 - 0,3618	
$L\gamma$	0,29917 - 0,29917	

**3.1.2 Auger Electrons**

	Energy (keV)	Relative probability
Auger K		
KLL	2,615 - 2,985	100
KLX	3,183 - 3,296	24,5
KXY	3,540 - 3,572	1,5
Auger L		
	0,226 - 0,342	

**4 Electron Emissions**

	Energy (keV)	Electrons (per 100 disint.)
$e_{AL}$ (K)	0,226 - 0,342	9,16 (9)
$e_{AK}$ (K)		} 76,6 (9)
KLL	2,615 - 2,985	
KLX	3,183 - 3,296	
KXY	3,540 - 3,572	

## 5 Photon Emissions

### 5.1 X-Ray Emissions

		Energy (keV)	Photons (per 100 disint.)		
XL	(K)	0,2604 - 0,3618	0,017 (4)		
XK $\alpha_2$	(K)	3,3111	3,82 (12)	}	K $\alpha$
XK $\alpha_1$	(K)	3,3138	7,56 (23)		
XK $\beta_1$	(K)	3,5896	1,40 (5)	}	K' $\beta_1$
XK $\beta_5''$	(K)	3,6028			

## 6 Main Production Modes

Possible impurities :	<sup>40</sup> Ca(n, $\gamma$ ) <sup>41</sup> Ca	$\sigma$ : 0,41 (2) barns	}
	<sup>44</sup> Ca(n, $\gamma$ ) <sup>45</sup> Ca	$\sigma$ : 0,88 (5) barns	

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