



1 Decay Scheme

⁵⁵Fe disintegrates by electron capture. A γ transition with a small probability ($1,3 \times 10^{-7}$ %) has been observed. A background radiation, due to an inner-bremsstrahlung, with an intensity relative to K capture of $3,24\ (6) \times 10^{-5}$ photons produces a continuous spectrum up to 231,12 keV.

Le ⁵⁵Fe se désintègre par capture électronique. Une transition γ de faible probabilité ($1,3 \times 10^{-7}$ %) a été observée. Un rayonnement de freinage interne produit une émission radiative continue jusqu'à 231,12 keV, dont la probabilité relative à la capture électronique K est de $3,24\ (6) \times 10^{-5}$.

2 Nuclear Data

$T_{1/2}({}^{55}\text{Fe})$

:

2,75614

(41)

a

$Q^+({}^{55}\text{Fe})$

:

231,12

(18)

keV

2.1 Electron Capture Transitions

	Energy (keV)	Probability (%)	Nature	log <i>ft</i>	<i>P_K</i>	<i>P_L</i>	<i>P_M</i>
$\epsilon_{0,1}$	105,17 (18)	0,00000013 (1)	2nd Forbidden	12,8	0,8179 (8)	0,1570 (6)	0,02393 (19)
$\epsilon_{0,0}$	231,12 (18)	100	Allowed	5,99	0,88044 (34)	0,10238 (23)	0,01606 (10)

2.2 Gamma Transitions and Internal Conversion Coefficients

	Energy (keV)	<i>P_{γ+ce}</i> (%)	Multipolarity	α_K	α_L	α_M	α_T
$\gamma_{1,0}(\text{Mn})$	125,949 (10)	0,00000013 (1)	M1+(E2)	0,09 (8)	0,009 (8)	0,0012 (11)	0,10 (9)

3 Atomic Data

3.1 Mn

ω_K	:	0,321	(5)
$\bar{\omega}_L$:	0,0047	(7)
$\bar{\omega}_M$:	0,000027	(2)
n_{KL}	:	1,478	(4)
\bar{n}_{LM}	:	1,996	(8)

3.1.1 X Radiations

	Energy (keV)		Relative probability
X _K			
K α_2	5,88772		51
K α_1	5,89881		100
K β_1	6,49051	}	20,5
K β_5''	6,5354		
X _L			
L ℓ	0,5576		
L α	0,6394 - 0,6404		
L η	0,5695		
L β	0,64636 - 0,7694		
L γ	0,65826 - 0,65826		

3.1.2 Auger Electrons

	Energy (keV)	Relative probability
Auger K		
KLL	4,953 - 5,210	100
KLX	5,671 - 5,895	27,2
KXY	6,370 - 6,532	1,85
Auger L		
	0,47 - 0,67	

4 Electron Emissions

		Energy (keV)	Electrons (per 100 disint.)
e _{AL}	(Mn)	0,47 - 0,67	139,8 (8)
e _{AK}	(Mn)		
	KLL	4,953 - 5,210	} 59,8 (5)
	KLX	5,671 - 5,895	
	KXY	6,370 - 6,532	

5 Photon Emissions

5.1 X-Ray Emissions

		Energy (keV)	Photons (per 100 disint.)		
XL	(Mn)	0,5576 - 0,7694	0,523 (21)		
XK α_2	(Mn)	5,88772	8,40 (14)	}	K α
XK α_1	(Mn)	5,89881	16,48 (26)		
XK β_1	(Mn)	6,49051	} 3,38 (7)		K' β_1
XK β_5''	(Mn)	6,5354			

5.2 Gamma Emissions

		Energy (keV)	Photons (per 100 disint.)
$\gamma_{1,0}$	(Mn)	125,949 (10)	0,00000013 (1)

6 Main Production Modes

- $^{54}\text{Fe}(\text{n},\gamma)^{55}\text{Fe}$

Possible impurities: ^{59}Fe

$^{55}\text{Mn}(\text{p},\text{n})^{55}\text{Fe}$

$^{54}\text{Fe}(\text{d},\text{p})^{55}\text{Fe}$

Possible impurities: ^{55}Co

$\sigma : 2,30 \text{ (7) barns}$

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