^{55}Fe ε decay

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Huo Junde	NDS 109, 787 (2008)	30-Apr-2007

Parent: ^{55}Fe: E=0.0; $J^{\pi}=3/2^-$; $T_{1/2}=2.744$ y *9*; Q(ε)=231.21 *18*; %ε decay=100.0

Additional information 1.

1972Pe06 measured capture ratios with a multiwire, wall-less anticoincidence proportional counter: ε(L)/ε(K)=0.117 *1*, ε(M)/ε(L)=0.157 *3*. Theoretical values quoted from 1977Ba48 are 0.111 and 0.160, respectively. See also 1959Sc32, 1961Fi07, 1962Ma26, and 1963Mo12.

K x ray and Auger electrons due to ε decay:

For measurements on the internal bremsstrahlung accompanying electron capture: for a general survey in the field, see 1976Be24 and 1977Ba48. (1) for energy and intensity, see 1946Br05, 1951Ma50, 1952Be45, 1953Mi12, 1954Ma30, 1954Si18, 1956Sa32, 1962Bi04, 1969Ka13, 1969Ra14, 1989NoZY, 1990Is06, 1990Zl01, 1991No07, 1993Wi05. (2) for a coincidence with K x ray, see 1962Bi04. (3) for circular polarization of internal bremsstrahlung (see 1960Pa02). (4) for double internal bremsstrahlung, see 1979Lj01, 1989Do08.

Internal ionization accompanying electron capture: measured by 1953Ch01, 1953Po02, 1963Pe18, 1971Na30, 1974Br43, and 1975Ki04; calculated in theory by 1972In01, 1973La02, 1974Mu06, 1981Mu15, and 1983Pi02.

1992Zl01: measured inner-bremsstrahlung spectrum of ^{55}Fe, coaxial HPGE placed inside an active shield of NaI scintillator consisting of annular detector and a plug detector.

Kα$_1$ x ray 5.898 keV, I(x ray): 16.2 4 (1988BaZG)
$p_K\omega_K$=0.283 2 (1982Sm07)
$p_K\omega_K$=0.275 5 (1984KoZQ)

(1) K x ray spectrum, see 1986Ca08, 1989Ki08, 1989Wa32, 1992Ha15, 1992Be53, 1993Ge09, 1993Br18, 1993Ko54, 1993Kr19, 1993Mc09, 1994Do24, 1994Fe03, 1994Ka35, 1994Sa52, 1994Su28, 1995Hu20, 1996An27, 1996Sz04.

(2) K Auger spectrum, see 1967Lu01 and 1983Br09.

(3) Kβ x ray/Kα x ray=0.1388 15 (1994Le29), Kβ x ray/Kα x ray=0.1225 7 (2007Ya02); Kα$_2$ x ray/Kα$_1$ x ray=0.5063 18 (2007Ya02), Kβ$_1$ x ray/Kα$_1$ x ray=0.1137 34 (2007Ya02). I(Kα x ray)=24.40%, I(Kβ x ray)=2.86% (1994Ma13). Kα x ray/Kβ x ray in several compounds and doped crystals, see 1978La24.

(4) $p_K\omega_K$, see also 1982Lo23.

(5) double K-vacancy creation probability $p_{kk}=1.3\times10^{-4}$ 2 (1991Ca06).

^{55}Mn Levels

E(level)	J^{π}
0.0	$5/2^-$
126.0	$7/2^-$

ε radiations

E(decay)	E(level)	Iε[†]	Log *ft*	Comments
(105.21 *18*)	126.0	1.3×10^{-7} *1*	14.15 *3*	
(231.21 *18*)	0.0	100	6.00 *2*	εK=0.885 *9*; εL=0.0974 *10*

[†] Absolute intensity per 100 decays.

^{55}Fe ε decay (continued)

γ(^{55}Mn)

E_γ †	I_γ †‡	E_i(level)	J_i^π	E_f	J_f^π
126.0 *1*	1.28×10^{-7} *2*	126.0	7/2$^-$	0.0	5/2$^-$

† From 1992Zl01.
‡ Absolute intensity per 100 decays.

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Decay Scheme

Intensities: $I_{(\gamma+ce)}$ per 100 parent decays