^{255}Md ε decay 2000Ah02,1970Fi12

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	E. Browne, J. K. Tuli	NDS 114, 1041 (2013)	1-Nov-2011

Parent: ^{255}Md: E=0.0; J^π=(7/2$^-$); $T_{1/2}$=27 min *2*; Q(ε)=1043 *8*; %ε+%β^+ decay=93 *1*

^{255}Md-%ε+%β^+ decay: From I(K x ray)/α = 11.2 *10* (1970Fi12), Iγ(169γ)=6.4 *7*, Iγ(231γ)=9.2 *1* (2000Ah02), using theoretical conversion coefficients (BrIcc) α(K)(169γ, M1+50%E2)=6.4, and α(K)((231γ, M1+50%E2)=2.5, and theoretical values of pk=ε(K)/ε(total)=0.71 and ω(K)=0.976).

Additional information 1.

1970Fi12: Activity produced by irradiating with α particles a target of ^{253}Es, ^{254}Es, and ^{255}Es, E=46 MeV. Md was chemically separated from fission products. Measured α particles, γ rays, Fm K x ray. Detectors: Au-Si for α particles,Ge(Li) for γ and x rays, and Au-Si, Na I for αγ coin.

2000Ah02: Activity produced by ^{253}Es(α,2n), E=35-45 MeV. Measured α particles, γ rays, αγ coin, x rays. Detectors: Si for α particles,Ge(Li) for γ rays and Fm K x ray.

^{255}Fm Levels

E(level)	J^π
0.0†	7/2$^+$
61.7† *3*	(9/2$^+$)
231.1‡ *2*	(9/2)$^+$

† Band(A): 7/2(613).
‡ Band(B): 9/2(615).

ε,β^+ radiations

E(decay)	E(level)	Iε†	Log *ft*	Comments
(812 *8*)	231.1	29 *4*	5.56 *6*	εK=0.7046 *8*; εL=0.2145 *6*; εM+=0.08095 *25*
(981 *8*)	61.7	64 *4*	5.47 *4*	εK=0.7175; εL=0.2056 *4*; εM+=0.07691 *16* I(ε+β^+): ε feeding is to g.s. and 61.6-keV level.

† For absolute intensity per 100 decays, multiply by 0.93 *1*.

γ(^{255}Fm)

Iγ normalization: From total number of vacancies = I(K x ray) x (ε(K)/ε(total)) (theory) x 1/ω(K)=175 *12* x 1.408/0.971 = 254 *17*. Then Iγ normalization=93 *1*/254 *17* = 0.37 *3*.

Fm Iγ(Kα_2 x ray)= 65 *4*, Iγ(Kα_1 x ray)= 100, Iγ(Kβ_1' x ray)=35 *2*, Iγ(Kβ_2' x ray)=14 *1* (2000Ah02).

E_γ†	I_γ†‡	E_i(level)	J_i^π	E_f	J_f^π	Mult.
(61.7)		61.7	(9/2$^+$)	0.0	7/2$^+$	
169.6 *2*	6.4 *7*	231.1	(9/2)$^+$	61.7	(9/2$^+$)	[M1+E2]
231.4 *2*	9.2 *10*	231.1	(9/2)$^+$	0.0	7/2$^+$	[M1+E2]

† From 2000Ah02.
‡ For absolute intensity per 100 decays, multiply by 0.36 *3*.

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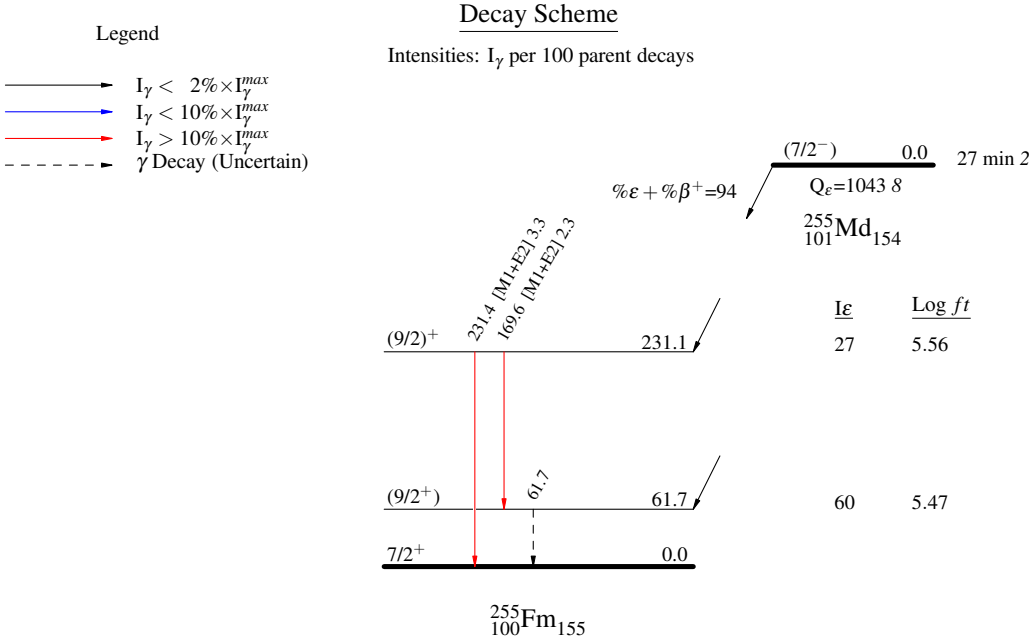
Decay Scheme

Intensities: I_γ per 100 parent decays



$^{255}_{100}Fm_{155}$

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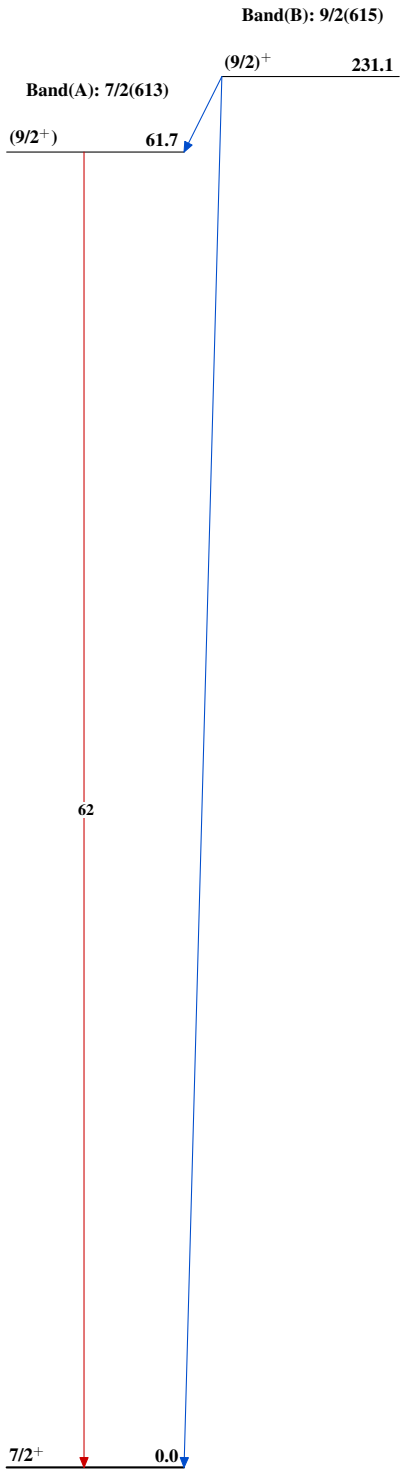

$^{255}_{100}Fm_{155}$