^{87}Zr IT decay (14.0 s) 1972Tu03,1974Vo03,1977Ko05

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	T. D. Johnson and W. D. Kulp(a)	NDS 129, 1 (2015)	27-Jul-2015

Parent: ^{87}Zr: E=335.84 *19*; $J^\pi=(1/2)^-$; $T_{1/2}$=14.0 s *2*; %IT decay=100.0
1972Tu03: produced by ^{89}Y(p,3n); measured γ singles, $\gamma\gamma$ coincidences.
1974Vo03: produced by spallation by 660 MeV p on Ag target.
1977Ko05: produced by ^{58}Ni(^{32}S,3p).

^{87}Zr Levels

E(level)	J^π[†]	$T_{1/2}$	Comments
0.0	$9/2^+$		
200.91 *12*	$7/2^+$		
335.84 *19*	$1/2^-$	14.0 s *2*	$T_{1/2}$: from 1972Tu03, γ(t).

[†] From ^{87}Zr Adopted Levels.

$\gamma(^{87}Zr)$

The decay curves of the 135- and 201-keV γ's show a half-life of 14 s.

E_γ[‡]	I_γ[#@]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	δ[#]	α[†]	Comments
134.93 *15*	27.2 *3*	335.84	$1/2^-$	200.91	$7/2^+$	E3		2.67 *4*	α(exp)=2.64 *16* B(E3)(W.u.)=0.0643 *15* α(K)=1.97 *4*; α(L)=0.568 *10*; α(M)=0.1014 *18* α(N)=0.01286 *22*; α(O)=0.000313 *5* Mult.: from α(exp).
201.02 *14*	96.4	200.91	$7/2^+$	0.0	$9/2^+$	M1+E2	−0.35	0.0370	α(K)=0.0323 *5*; α(L)=0.00386 *6*; α(M)=0.000671 *10* α(N)=9.41×10^{-5} *14*; α(O)=6.17×10^{-6} *9* Mult.,δ: from Adopted Levels.

[†] Additional information 1.
[‡] From Adopted Levels
[#] Given Iγ(135γ)/Iγ(201γ)=0.285 *8* from 1972To03, mult(201γ)=M1+E2 with δ=−0.35 or −2.6 from $\gamma(\theta)$ in (HI,xnγ), the requirement of an intensity balance at the 201 level, and Iγ normalization to Iγ(1+α)=100 for each transition, one gets α(135γ)(exp)=2.79 *11* or 2.64 *11* for the two values of δ, either of which establishes mult=E3 with α=2.67 *4* and thus Iγ(135γ)=27.2 *3*. One then has Iγ(201γ)=95.8 *31* which gives α(201γ)(exp)=0.044 *33* from which one gets δ<2, eliminating the larger solution. With α(201γ)=0.037 for δ=−0.35 one gets Iγ(201γ)=96.4 with an uncertainty depending on that for δ, unspecified by the authors. For an uncertainty of 30%, one gets Iγ=96.4 *4*.
[@] Absolute intensity per 100 decays.

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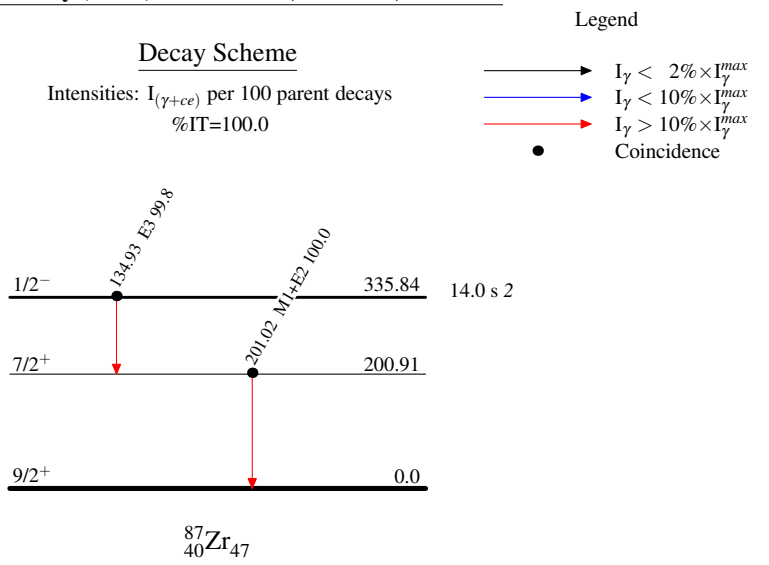
Decay Scheme

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

%IT=100.0



$^{87}_{40}Zr_{47}$