^{71}Br ε decay (21.4 s) 1982Ha32

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh and Jun Chen	NDS 188,1 (2023)	17-Jan-2023

Parent: ^{71}Br: E=0.0; $J^\pi=(5/2)^-$; $T_{1/2}$=21.4 s *6*; Q(ε)=6644 *6*; %ε+%$β^+$ decay=100

^{71}Br-J^π,$T_{1/2}$: From ^{71}Br Adopted Levels.

^{71}Br-Q(ε): From 2021Wa16.

1982Ha32: ^{71}Br isotope produced in ^{40}Ca(^{35}Cl,2p2n) E=132 MeV. Measured Eγ, Iγ, γγ-coin, γ(t), γγ(t), γ(x ray)(t).

Other: 1981Vo04.

The decay scheme is considered as incomplete by the evaluators in view of large energy region of ≈5 MeV, where no level population is known. Also 1982Ha32 state that many γ rays could not be definitely assigned to the decay of ^{71}Br.

^{71}Se Levels

E(level)†	J^π‡	$T_{1/2}$‡	Comments
0.0	(5/2⁻)	4.74 min *5*	$T_{1/2}$: from γ-decay in a well-type NaI detector. Other: 4.93 min *10* (1969Hu13). Same value in the Adopted Levels.
48.79 *5*	(1/2⁻)	5.6 μs *7*	$T_{1/2}$: from γγ(t) and (γ)(Se x ray)(t).
171.52 *6*	(3/2⁻)		
260.5 *1*	(9/2⁺)	19.0 μs *5*	$T_{1/2}$: value from this dataset: 19 μs *3* from γγ(t).
282.44 *8*	(3/2⁻)		
647.80 *18*	(5/2⁺,7/2,9/2⁻)		
756.97 *15*	(5/2⁻)		
796.4? *4*	(5/2⁻)		

† From a least-squares fit to Eγ data.

‡ From the Adopted Levels.

ε,$β^+$ radiations

$β^+$ branching intensities to excited states have large uncertainties estimated by 1982Ha32 to be comparable to the branching intensities, thus not given here.

E(decay)	E(level)	Iβ⁺ †	Iε†	Log *ft*	I(ε+β⁺)†	Comments
(6644 *6*)	0.0	60 *15*	0.38 *10*	5.2 *1*	60 *15*	av Eβ=2616.8 *30*; εK=0.005600 *18*; εL=0.0006350 *2*; εM+=0.0001242 *4* Iβ⁺: from 1982Ha32 based on their measured value of I(positrons)/I(261γ)=12.1 *36* and proposed level scheme.

† Absolute intensity per 100 decays.

γ(^{71}Se)

Iγ normalization: from I(positrons)/I(261γ)=12.1 *36* (1982Ha32), ignoring contribution from electron capture decay.

Eγ	Iγ†	E_i(level)	J_i^π	E_f	J_f^π	Mult.	α‡	Comments
48.78 *5*	17 *3*	48.79	(1/2⁻)	0.0	(5/2⁻)	E2	11.86	α(K)=9.42; α(L)=2.016; α(M)=0.316 α(K)exp=9.6 *21* α(K)exp: from ratio of delayed γ rays and x-rays, with fluorescent yield and Kα x ray/K x ray. Mult.: from α(K)exp.

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γ(^{71}Se) (continued)

E_γ	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.	Comments
122.72 *5*	64 *5*	171.52	(3/2$^-$)	48.79	(1/2$^-$)		
171.6 *1*	77 *6*	171.52	(3/2$^-$)	0.0	(5/2$^-$)		
233.7 *1*	81 *6*	282.44	(3/2$^-$)	48.79	(1/2$^-$)		
260.5 *1*	100 *5*	260.5	(9/2$^+$)	0.0	(5/2$^-$)	[M2]	
282.4 *1*	31 *6*	282.44	(3/2$^-$)	0.0	(5/2$^-$)		
387.4 *2*	21 *3*	647.80	(5/2$^+$,7/2,9/2$^-$)	260.5	(9/2$^+$)		
474.6 *2*	26 *4*	756.97	(5/2$^-$)	282.44	(3/2$^-$)		
647.6 *3*	15 *3*	647.80	(5/2$^+$,7/2,9/2$^-$)	0.0	(5/2$^-$)		
756.9 *2*	50 *5*	756.97	(5/2$^-$)	0.0	(5/2$^-$)		
796.4[#] *4*	56 *6*	796.4?	(5/2$^-$)	0.0	(5/2$^-$)		

[†] For absolute intensity per 100 decays, multiply by 0.0826 *25*.

[‡] Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ-ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.

[#] Placement of transition in the level scheme is uncertain.

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Decay Scheme

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