^{149}Er IT decay (9.6 s) 1989Fi01,1985To11

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh and Jun Chen	NDS 185, 2 (2022)	23-Aug-2022

Parent: ^{149}Er: E=741.69 *23*; J^π=(11/2$^-$); $T_{1/2}$=9.6 s *6*; %IT decay=3.5 *7*

^{149}Er-E,J^π,$T_{1/2}$: From the Adopted Levels.

^{149}Er-%IT decay: %IT=3.5 *7*, %ε=96.5 *7* (1989Fi01). Other: %IT=2.7 (1985To11).

1989Fi01: ^{149m}Er ions were produced by the ^{94}Mo(^{58}Ni,2pn) reaction with 242 MeV (center of target) ^{58}Ni beam from the Lawrence Berkeley Laboratory SuperHILAC, separated with the OASIS facility online and collected on a moving tape of the counting station. γ rays were detected with a HPGe and two n-Ge detectors; charged particles were detected with a Si ΔE-E telescope on one side of the tape and a plastic scintillator on the other side. Measured Eγ, Iγ, E(x-ray), I(x-ray), $\gamma\gamma$-coin, γ(t), β-delayed proton spectra. Deduced levels, $T_{1/2}$, conversion coefficients, γ-ray multipolarities.

1985To11: same setup and reaction as 1989Fi01, but with E(^{58}Ni)=262 MeV at the center of target. Measured Eγ, Iγ, E(x-ray), I(x-ray), $\gamma\gamma$-coin. Deduced levels, conversion coefficients, γ-ray multipolarities.

^{149}Er Levels

E(level)	J^π[†]	$T_{1/2}$[†]	Comments
0.0	(1/2$^+$)	4 s *2*	
111.0 *1*	(3/2$^+$)		E(level): from Eγ=111.0 *1*.
741.69 *23*	(11/2$^-$)	9.6 s *6*	E(level),J^π,$T_{1/2}$: from the Adopted Levels. Other: E(level)=741.5 *2* from 630.5γ+111.0γ. $T_{1/2}$: value from this study: 8.9 s *2* from 1989Fi01.

[†] From the Adopted Levels.

γ(^{149}Er)

Iγ normalization: From I(γ+ce)(630.5γ)=100 for per 100 decays through this branch.

E$_\gamma$	I$_\gamma$[†#]	E$_i$(level)	J_i^π	E$_f$	J_f^π	Mult.[‡]	α[@]	Comments
111.0 *1*	12 *2*	111.0	(3/2$^+$)	0.0	(1/2$^+$)	M1	2.110 *30*	α(K)exp=1.82 *11* (1989Fi01); α(K)exp=1.8 *2* (1985To11) α(K)=1.770 *25*; α(L)=0.265 *4*; α(M)=0.0588 *8* α(N)=0.01372 *20*; α(O)=0.001983 *28*; α(P)=0.0001092 *16* %Iγ=1.10 *31* E$_\gamma$: from 1985To11. Other: 111.3 *3* from 1989Fi01.
630.5 *2*	29 *3*	741.69	(11/2$^-$)	111.0	(3/2$^+$)	M4	0.320 *4*	α(K)exp=0.27 *3* (1989Fi01); α(K)exp=0.3 *1* (1985To11) α(K)=0.2432 *34*; α(L)=0.0590 *8*; α(M)=0.01395 *20* α(N)=0.00326 *5*; α(O)=0.000451 *6*; α(P)=2.053×10^{-5} *29* %Iγ=2.7 *5* E$_\gamma$: from 1989Fi01. Other: 630.5 *3* from 1985To11. I$_\gamma$: 1989Fi01 give Iγ=36 but note that Iγ=7 *3* belongs to a γ from ^{149}Ho decay. Other: I(631γ)/I(111γ)=248 *25*/100 (1985To11).

[†] From 1989Fi01, relative to 100 for 1171γ from ^{149}Er ε decay (8.9 s).

[‡] From ce data in 1989Fi01 and 1985To11. Assignments are adopted in the Adopted Gammas.

[#] For absolute intensity per 100 decays, multiply by 0.091 *21*.

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^{149}Er IT decay (9.6 s) 1989Fi01,1985To11 (continued)

$\gamma(^{149}Er)$ (continued)

@ 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.