Adopted Levels, Gammas

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh and Jun Chen	NDS 194,460 (2024)	31-Oct-2022

Q(β^-)=3023.4 *17*; S(n)=6555.2 *24*; S(p)=8184.1 *18*; Q(α)=−1222 *11*   2021Wa16
S(2n)=12136 *4*, S(2p)=18593.0 *18* (2021Wa16).
Mass measurement: 2020Vi04.
1983Gr02: ^{165}Tb produced and identified in SF decay of ^{252}Cf followed by separation of terbium fraction by liquid
    chromatographic technique. Measured Eγ, Iγ from ^{165}Tb decay to ^{165}Dy.
From x-ray and γ-ray spectra, 1998Ic02 suggest that a 50.3-keV γ ray in ^{165}Tb is associated with the β decay of ^{165}Gd to ^{165}Tb.
Theoretical calculations: 2019No05.

^{165}Tb Levels

Cross Reference (XREF) Flags

A ^{9}Be(^{238}U,Fγ)

E(level)	J$^{\pi\dagger}$	T$_{1/2}$	XREF	Comments
0	(3/2$^+$)	2.11 min *10*	A	%β^-=100 T$_{1/2}$: from γ(t) in 1983Gr02. Configuration=π3/2[411] (2017Gu08); systematics of Z=65 deformed odd-A nuclei.
55 *4*	(5/2$^+$)		A	J$^\pi$: (M1) γ to (3/2$^+$); (E1) γ from (7/2$^-$).
131 *5*	(7/2$^+$)		A	J$^\pi$: (M1) γ to (5/2$^+$); (E1) γ from (7/2$^-$).
207 *5*	(7/2$^-$)	0.81 μs *8*	A	%IT=100 Configuration=π7/2[523] (2017Gu08). T$_{1/2}$: half-life for hydrogen-like ion from 2017Gu08 (ion-γ correlated decay curves: weighted average by authors of 0.82 μs *14* from (implants)(76γ) and 0.8 μs *1* from (implants)(152γ)).

$\dagger$ As given by 2017Gu08 in ^{9}Be(^{238}U,Fγ), based on configuration assignment for the g.s. and the 0.81−μs isomer. Other J$^\pi$
    assignments from multipolarity assignments.

γ(^{165}Tb)

E$_i$(level)	J$_i^\pi$	E$_\gamma^\dagger$	I$_\gamma^\dagger$	E$_f$	J$_f^\pi$	Mult.‡	$\alpha^\#$	Comments
55	(5/2$^+$)	55 *4*	100	0	(3/2$^+$)	(M1)	12.3 *13*	α(theory) for 55 *2*. For Eγ=55 *4*, value is 12 *10* as Eγ is within 1 keV of K-shell binding energy of 51.996 keV. 2017Gu08 list 12.28 *18*. This γ may correspond to the 50.3-keV γ proposed by 1998Ic02 in ^{165}Tb as associated with the β decay of ^{165}Gd to ^{165}Tb.
131	(7/2$^+$)	76$^@$ *2*	100	55	(5/2$^+$)	(M1)	4.8 *4*	
207	(7/2$^-$)	76$^@$ *2*	38 *5*	131	(7/2$^+$)	(E1)	0.62 *5*	B(E1)(W.u.)=1.40×10^{-7} +29−24
		152 *2*	100 *16*	55	(5/2$^+$)	(E1)	0.098 *4*	B(E1)(W.u.)=4.6×10^{-8} *6*

$\dagger$ From ^{9}Be(^{238}U,Fγ).
$\ddagger$ Assigned by 2017Gu08 in ^{9}Be(^{238}U,Fγ), based on intensity balances.
$\#$ 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.
$@$ Multiply placed.

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Level Scheme

Intensities: Relative photon branching from each level

$^{165}_{65}$Tb$_{100}$