Adopted Levels, Gammas

History			
Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh	ENSDF	30-Apr-2022

Q(β^-)=7290 *40*; S(n)=4160 *30*; S(p)=14680 *30*; Q(α)=−7925 *29* 2021Wa16
S(2n)=11094 *29*, S(2p)=27020 *50*, Q(β^-n)=−10 *30* (2021Wa16).

1990Tu01, 1994Se12: mass excess of ^{55}Ti measured in Th(p,F),E=800 MeV, followed by separation of fragments by A/Q using the Time-of-Flight Isochronous (TOFI) spectrometer at the Los Alamos Meson Physics Facility. Deduced mass excess=−41.81 MeV *24* (1994Se12) and −41.59 MeV *26* (1990Tu01) for ^{55}Ti, in agreement with evaluated mass excess of −41832 keV *29* (2021Wa16).

1996Do23: ^{55}Ti produced and identified in ^{9}Be(^{65}Cu,X), E=64.5 MeV/nucleon reaction using LISE3 separator at GANIL facility. Measured γ spectrum, (implants)β and (implants)$\beta\gamma$-correlated events from which half-life of ^{55}Ti decay was extracted.

1998Am04: ^{55}Ti produced in ^{9}Be(^{86}Kr,X),E=500 MeV/nucleon reaction using FRS fragment separator at GSI facility. Measured half-life of ^{55}Ti decay from (implants)(decay events)-correlated decay curve, with a total of 557 implants of ^{55}Ti.

2003Ma56: ^{55}Ti produced in fragmentation of 140-MeV ^{86}Kr^{34+} beam incident on a ^{9}Be target at NSCL-MSU. The secondary fragments were selected in the A1900 fragment separator, and implanted in a double-sided Si microstrip detector to detect β particles from decay of fragments. Measured Eγ, Iγ, $\gamma\gamma$-coin, $\beta\gamma$-coin, half-life of ^{55}Ti decay using SeGA array with six segmented Ge detectors.

Mass measurement: 2018Le03.

Theoretical calculations: five primary references (four for structure and one for ^{55}Ti decay) retrieved from the NSR database at www.nndc.bnl.gov/nsr/. These are listed in this dataset under 'document' records.

Additional information 1.

^{55}Ti Levels

Configurations given in comments are from 2007Zh37 in ^{9}Be(^{48}Ca,2pγ), based on shell-model calculations.

Cross Reference (XREF) Flags

- A ^{55}Sc β^- decay (96 ms)
- B ^{56}Sc β^-n decay (75 ms)
- C ^{9}Be(^{48}Ca,2pγ)
- D ^{9}Be(^{56}Ti,^{55}Tiγ)

E(level)†	J$^\pi$	T$_{1/2}$	XREF	Comments
0.0	(1/2)$^-$	1.3 s *1*	ABCD	%β^-=100 T$_{1/2}$: from 2003Ma56 (authors' average of three values: 1.2 s *4* from (fragment)β decay curve, 1.34 s *10* from (fragment)β(323γ) decay curve, and 1.32 s *10* from (fragment)β(673γ) decay at NSCL-MSU). Others: 0.32 s *6* (1998Am04, implants-β correlations at GSI); and 0.60 s *4* (1996Do23, 0.62 s *6* from implants-β and 0.58 s *5* from implants-$\beta\gamma$ at GANIL) are in disagreement with that from 2003Ma56, where γ selectivity gives a more reliable value. Additional information 2. J$^\pi$: L(n)=1 momentum distribution in ^{9}Be(^{56}Ti,^{55}Tiγ) from νp$_{1/2}$ orbital, and comparison with shell-model calculations. Dominant configuration=[π(f$^2_{7/2}$)ν(f$^8_{7/2}$, p$^4_{3/2}$)]$_{0+}\otimes\nu$p$^1_{1/2}$ (2007Zh36).
591.7# *3*	(5/2$^-$)‡		ABC	J$^\pi$: 591.7γ to (1/2)$^-$; 1554γ from (9/2$^-$). Dominant configuration=[π(f$^2_{7/2}$)$\otimes\nu$(f$^8_{7/2}$,p$^4_{3/2}$)] $_{0+}\otimes\nu$f$^1_{5/2}$ (2007Zh36).
955 *6*	(3/2)$^-$		D	J$^\pi$: L(n)=1 momentum distribution in ^{9}Be(^{56}Ti,^{55}Tiγ) from νp$_{3/2}$ orbital, and comparison with shell-model calculations. Dominant configuration=[π(f$^2_{7/2}$)$\otimes\nu$(f$^8_{7/2}$,p$^4_{3/2}$)] $_{0+}\otimes\nu$p$^1_{3/2}$ (2007Zh36).
1795.6# *4*	(7/2$^-$)‡		ABC	Dominant configurations of 3p-3h state= πf$^2_{7/2}\otimes\nu$(f$^8_{7/2}$p$^3_{3/2}$p$^1_{1/2}$f$^1_{5/2}$) and πf$^2_{7/2}\otimes\nu$(f$^8_{7/2}$p$^4_{3/2}$f$^1_{5/2}$) (2007Zh36).

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{55}Ti Levels (continued)

E(level)[†]	J^π	XREF	Comments
2145.7[#] *4*	$(9/2^-)$[‡]	A C	Dominant configuration=$\pi f^2_{7/2}\otimes \nu[(f^8_{7/2}p^4_{3/2})_{4+}p^1_{1/2}]$ (2007Zh36).
2507.9 *5*	$(5/2^-,7/2^-,9/2^-)$	A	J^π: probable allowed β feeding (log ft=5.2 *2*) from $(7/2^-)$ parent.
2805.7[#] *7*	$(13/2^-)$[‡]	C	Dominant configuration=$\pi f^2_{7/2}\otimes \nu[(f^8_{7/2}p^4_{3/2})_{6+}p^1_{1/2}]$ (2007Zh36).
3580.7[#] *9*	$(17/2^-)$[‡]	C	Dominant configuration=$\pi f^2_{7/2}\otimes \nu[(f^8_{7/2}p^4_{3/2})_{6+}f^1_{5/2}]$ (2007Zh36).
5461.8[#] *10*	$(19/2^-)$[‡]	C	Dominant configuration= $\pi f^2_{7/2}\otimes\nu(f^8_{7/2}p^3_{3/2}p^1_{1/2}f^1_{5/2})$ (2007Zh36).

[†] From least-squares fit to Eγ data.
[‡] As proposed in ^{9}Be(^{48}Ca,2pγ) (2007Zh37) based on yrast sequence and assigned configurations.
[#] Seq.(A): Yrast sequence.

$\gamma(^{55}$Ti)

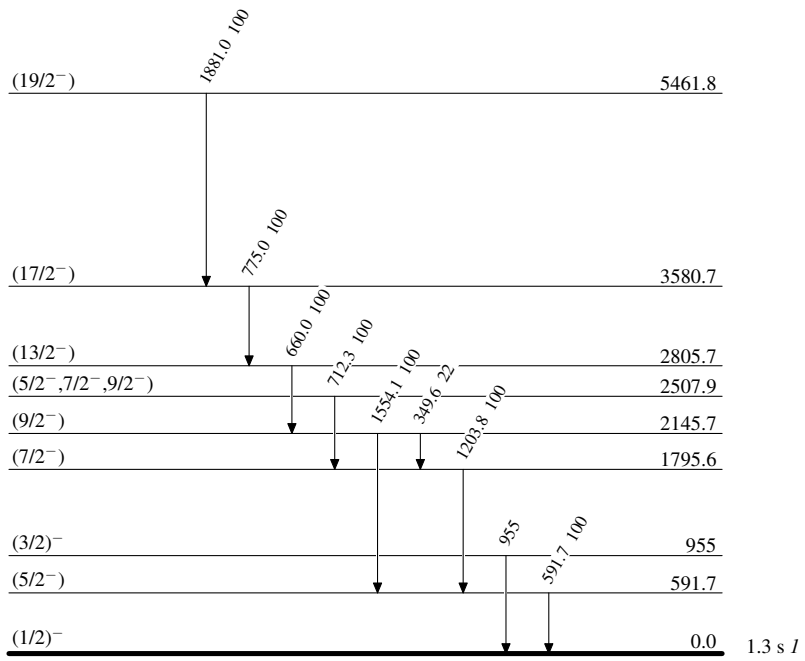
E_i(level)	J^π_i	E_γ	I_γ	E_f	J^π_f	Comments
591.7	$(5/2^-)$	591.7[‡] *3*	100	0.0	$(1/2)^-$	E_γ: other: 592.0 *5* in ^{9}Be(^{48}Ca,2pγ).
955	$(3/2)^-$	955 *6*		0.0	$(1/2)^-$	E_γ: from ^{9}Be(^{56}Ti,^{55}Tiγ) (2009Ma16).
1795.6	$(7/2^-)$	1203.8[‡] *3*	100	591.7	$(5/2^-)$	E_γ: other: 1204.0 *5* in ^{9}Be(^{48}Ca,2pγ).
2145.7	$(9/2^-)$	349.6[‡] *7*	22 *11*	1795.6	$(7/2^-)$	E_γ: other: 351.0 *5* in ^{9}Be(^{48}Ca,2pγ). I_γ: from ^{55}Sc β^- decay.
		1554.1[‡] *3*	100 *11*	591.7	$(5/2^-)$	E_γ: other: 1555.0 *5* in ^{9}Be(^{48}Ca,2pγ). I_γ: from ^{55}Sc β^- decay.
2507.9	$(5/2^-,7/2^-,9/2^-)$	712.3[‡] *3*	100	1795.6	$(7/2^-)$	
2805.7	$(13/2^-)$	660.0[†] *5*	100	2145.7	$(9/2^-)$	
3580.7	$(17/2^-)$	775.0[†] *5*	100	2805.7	$(13/2^-)$	
5461.8	$(19/2^-)$	1881.0[†] *5*	100	3580.7	$(17/2^-)$	

[†] From ^{9}Be(^{48}Ca,2pγ) (2007Zh37).
[‡] From ^{55}Sc β^- decay (2003Ma56).

Adopted Levels, Gammas

Level Scheme

Intensities: Relative photon branching from each level



$^{55}_{22}Ti_{33}$

Adopted Levels, Gammas

$^{55}_{22}Ti_{33}$