Adopted Levels, Gammas

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Jun Chen[#] and Balraj Singh	NDS 135, 1 (2016)	31-May-2016

Q(β^-)=−17490 *SY*; S(n)=17478 *28*; S(p)=3751.22 *27*; Q(α)=−5471.1 *3* 2012Wa38
Estimated uncertainty for Q(β^-)=300 (syst,2012Wa38).
S(2n)=32400 *160*, S(2p)=4836.20 *28*, Q(εp)=2744.25 *24* (2012Wa38).
Identification and production of ^{42}TI nuclide by 1962Ob03 using ^{40}Ca(^{3}He,n) which measured a half-life of 0.25 s *4*.
2009Ku19: ^{42}Ti produced in ^{40}Ca(^{3}He,nγ) E=17 MeV, beam from the Ion Guide Isotope Separator On-Line (IGISOL) facility at the Accelerator Laboratory of the University of Jyvaskyla. Target of a 1.5 mg/cm^2 natural Ca. Measured Eγ, $\beta\gamma$-coin, $T_{1/2}$, mass differences using JYFLTRAP Penning-trap spectrometer.

^{42}Ti Levels

Cross Reference (XREF) Flags

A	^{43}Cr εp decay (21.2 ms)	D	^{40}Ca(^{3}He,nγ)
B	^{45}Fe ε3p decay (2.45 ms)	E	^{40}Ca(^{12}C,^{10}Be)
C	^{40}Ca(^{3}He,n)	F	^{42}Ca(π^+,π^-)

E(level)[†]	J$^\pi$	$T_{1/2}$[#]	XREF	Comments
0	0$^+$	208.65 ms *80*	ABCD F	%ε+%β^+=100 $T_{1/2}$: weighted average of 211.7 ms *19* (2015Mo01, from analysis of β-decay and correlated implantations), 209.5 ms *52* (2015Mo01, from the analysis of γ-ray data), 208.14 ms *45* (2009Ku19, also 2011KuZY, from decay timing of positrons emitted by a pure ^{42}Ti source deposited on a mylar tape and counted by a 4π cylindrical plastic scintillator, source production used Penning-trap system; uncertainty increased by evaluators by a factor of 2), 230 ms *50* (1972Zi02, β counting), 202 ms *5* (1969Ga27, γ counting), and 200 ms *20* (1969Ni03, γ counting), 250 ms *40* (1962Ob03). Other: 173 ms *14* (1969Al12, β counting) seems discrepant as compared to all the other values. 2015Ha07 review gives $T_{1/2}$=208.09 ms *55*.
1554.6[‡] *3*	2$^+$	0.44 ps *11*	A CD F	J$^\pi$: L(^{3}He,n)=2.
1854.2 *12*	0$^+$	>0.14 ps	CD	J$^\pi$: L(^{3}He,n)=0.
2396.1[‡] *10*	(2$^+$)	0.22 ps *13*	A CD	J$^\pi$: γ to 0$^+$; RUL; systematics.
2676.6 *8*	4$^+$	>1.4 ps	CD	J$^\pi$: L(^{3}He,n)=4.
2730? *35*			C	
2945? *25*			C	
3043.0 *15*	6$^+$	3.12 ns *21*	CDE	J$^\pi$: L(^{3}He,n)=6.
3130? *45*			C	
3280 *40*			C	
3335?			D	
3440 *30*	1$^-$		C	J$^\pi$: L(^{3}He,n)=1.
3540 *30*			C	
3660 *25*			C	
3744 *3*	2$^+$	<0.17 ps	CD	J$^\pi$: L(^{3}He,n)=2.
3850 *25*			C	
3990 *25*			C	
4130 *25*			C	
4245 *25*	0$^+$		C	J$^\pi$: L(^{3}He,n)=0.
4375 *20*	3$^-$		C	J$^\pi$: L(^{3}He,n)=3.
4.40×10^3 *20*			E	
4440 *20*	2$^+$		C	J$^\pi$: L(^{3}He,n)=2.
4665 *20*	2$^+$		C	J$^\pi$: L(^{3}He,n)=2.
4730 *30*			C	

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{42}Ti Levels (continued)

E(level)†	Jπ	XREF	Comments
4890? *45*		C	
4950 *25*	4^+	C	Jπ: L(^{3}He,n)=4.
5160? *50*		C	
5220 *30*	4^+	C	Jπ: L(^{3}He,n)=4.
5555 *20*	0^+	C	Jπ: L(^{3}He,n)=0.
6370 *30*	(0^+)	C	Jπ: L(^{3}He,n)=(0).
6445 *40*		C	
7.50×10^3 *20*		E	

† From (^{3}He,nγ) and (^{3}He,n).
‡ From Eγ in ^{43}Cr εcp decay.
# From DSAM in (^{3}He,nγ), unless otherwise noted.

$\gamma(^{42}Ti)$

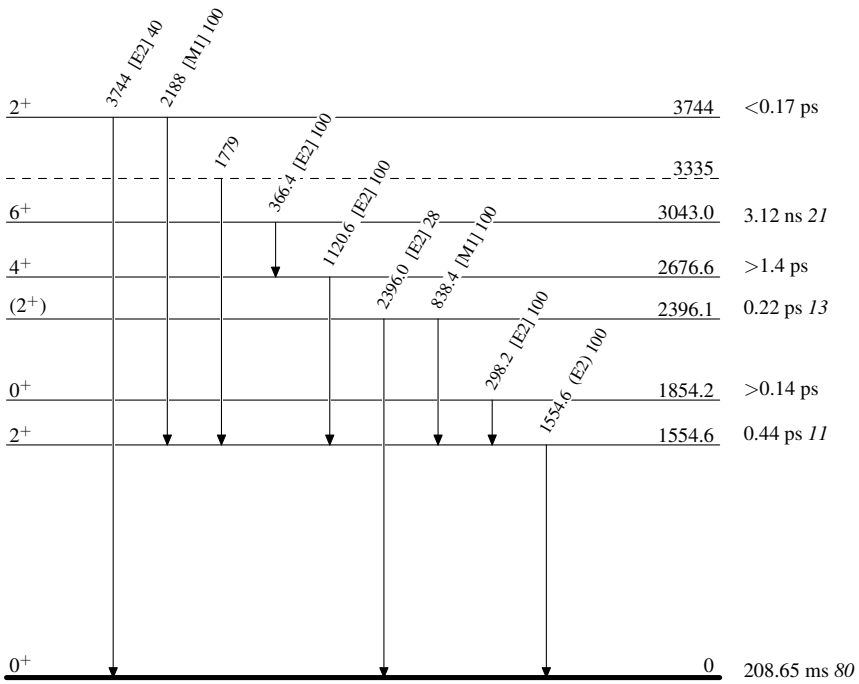
E_i(level)	J_i^π	E_γ†	I_γ#	E_f	J_f^π	Mult.	Comments
1554.6	2^+	1554.6‡ *3*	100	0	0^+	(E2)	B(E2)(W.u.)=16 *4*
1854.2	0^+	298.2	100	1554.6	2^+	[E2]	
2396.1	(2^+)	838.4‡ *10*	100	1554.6	2^+	[M1]	B(M1)(W.u.)=0.13 *8*
		2396.0	28 *10*	0	0^+	[E2]	B(E2)(W.u.)=0.8 *6*
2676.6	4^+	1120.6	100	1554.6	2^+	[E2]	
3043.0	6^+	366.4	100	2676.6	4^+	[E2]	B(E2)(W.u.)=3.2 *2*
3335?		1779		1554.6	2^+		
3744	2^+	2188	100 *9*	1554.6	2^+	[M1]	
		3744	40 *9*	0	0^+	[E2]	

† From level-energy differences, recoil correction removed, unless otherwise noted.
‡ From ^{43}Cr εcp decay.
# From (^{3}He,nγ).

Adopted Levels, Gammas

Level Scheme

Intensities: Relative photon branching from each level



$^{42}_{22}Ti_{20}$