Adopted Levels, Gammas

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Jun Chen	NDS 146, 1 (2017)	30-Sep-2017

Q(β^-)=6284 *7*; S(n)=4464 *4*; S(p)=12920 *50*; Q(α)=−1687 *5* 2017Wa10
S(2n)=7413 *5*, S(2p)=24380 *300* (syst), Q(β^-n)=2589 *9*, Q(2β^+)=14276 *5* (2017Wa10).
First identification of ^{138}Te nuclide by 1975As04 via ^{235}U(n,F) (see 2013Ka01).
Mass measurements: 2013Va12, 2012Ha25, 2010Li02, 2008Su19, 2004Ge18.
Nuclear structure calculations:
2016Si06: calculated energy levels, B(E2), quadrupole moments.
2013Bi08: calculated levels, J, π, B(E2), B(M1).
2013Wa02: calculated levels, B(E2), α-decay widths.
2012Ch48, 2009Co21, 2007Ma09, 2006Ka46, 2005Ni02, 2005Pa71: calculated half-life.
2010Sh32: calculated binding energies, quadrupole deformation parameters, hexadecupole moments, charge radii, two-neutron separation energies.
2008Sa32: calculated binding energies, levels, J, π, B(E2), configuration mixing, magnetic dipole moments, electric quadrupole moments.
2007Ji05, 2007Ji14: calculated levels, J, π, B(E2), g factors.
2004Sh46: calculated level energies, B(E2), quadrupole matrix elements, g factors.
Other theoretical calculations: 2015Ry07, 2015Mc02, 2014Mu02, 2014Po11, 2008Ga15, 1996Bo11, 1996Sh18, 1982Ru01, 1981Al25.

^{138}Te Levels

Cross Reference (XREF) Flags

A ^{138}Sb β^- decay
B ^{139}Sb β^-n decay
C ^{140}Sb β^-2n decay
D ^{248}Cm SF decay

E(level)†	J$^\pi$‡	$T_{1/2}$	XREF	Comments
0.0#	0$^+$	1.4 s *4*	ABCD	%β^-=100; %β^-n=6.3 *21* (1975As04) $T_{1/2}$: from 1975As04, weighted average of $T_{1/2}$ values from β^- and delayed neutrons. Other: 1.15 s *3* from a preliminary analysis of decay curve in 2006KeZZ. Theoretical $T_{1/2}$=7.9 s, %β^-n=1.5 (2003Mo09).
460.8# *5*	(2$^+$)		ABCD	
903.6# *7*	(4$^+$)		ABCD	
1323.4 *7*			AB	
1439.1# *9*	(6$^+$)		B D	
1531.2 *9*			AB	
1581.1 *7*			A	
1615.3 *7*	(3$^+$,4$^+$)		A D	
1682.1 *9*			AB	
1774.20 *25*	(5$^+$,6$^+$)		D	
1863.21 *25*	(5$^+$,6$^+$)		D	
2021.79@ *23*	(7$^+$)		D	
2039.7 *9*			A	
2088.2# *12*	(8$^+$)		D	
2152.0 *4*	(5,6$^+$)		D	
2198.8& *12*	(8$^+$)		D	
2534.1 *5*	(7,8$^+$)		D	
2588.99@ *21*	(9$^+$)		D	

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Adopted Levels, Gammas (continued)

^{138}Te Levels (continued)

E(level)†	Jπ‡	XREF	E(level)†	Jπ‡	XREF
2673.90& *21*	(10+)	D	3208.9& *3*	(12+)	D
2759.8# *16*	(10+)	D	3471.8@ *4*	(13+)	D
3068.74@ *23*	(11+)	D	3743.3& *4*	(14+)	D
			4471.5& *5*		D

† From least-squares fit to γ-ray energies.
‡ From 2016Ur01 in ^{248}Cm SF decay, based on γγ(θ), γ intensity pattern and systematics of N=86 nuclei, with brackets added by evaluator, unless otherwise noted.
# Band(A): Band 1, GS band.
@ Band(B): Band 2, γ band.
& Band(C): Band 3.

γ(^{138}Te)

E_i(level)	J_i^π	E_γ†	I_γ†	E_f	J_f^π	Mult.‡	δ‡	Comments
460.8	(2+)	460.1@ *1*	100	0.0	0+	(E2)		Additional information 1.
903.6	(4+)	443.2@ *1*	100	460.8	(2+)	(E2)		Additional information 2.
1323.4		862.6# *5*	100	460.8	(2+)			
1439.1	(6+)	535.5 *1*	100	903.6	(4+)	(E2)		Additional information 3.
1531.2		627.6# *5*	100	903.6	(4+)			
1581.1		1120.3# *5*	100	460.8	(2+)			
1615.3	(3+,4+)	1156.3 *3*	100	460.8	(2+)			E_γ: 1154.5 *5* from ^{138}Sb β^- decay (2015Le14).
1682.1		778.5# *5*	100	903.6	(4+)			
1774.20	(5+,6+)	869.9 *2*	100	903.6	(4+)			
1863.21	(5+,6+)	958.9 *2*	100	903.6	(4+)			
2021.79	(7+)	581.9 *2*	100	1439.1	(6+)	(M1+E2)	0.11 *3*	
2039.7		1136.1# *5*	100	903.6	(4+)			
2088.2	(8+)	649.2 *1*	100	1439.1	(6+)	(E2)		
2152.0	(5,6+)	1247.7 *3*	100	903.6	(4+)			
2198.8	(8+)	110.6 *2*	41 *5*	2088.2	(8+)			
		177.8 *2*	31 *7*	2021.79	(7+)			
		759.9 *1*	100 *5*	1439.1	(6+)	(E2)		
2534.1	(7,8+)	1094.3 *4*	100	1439.1	(6+)			
2588.99	(9+)	389.3 *1*	100	2198.8	(8+)	(M1+E2)	0.10 *3*	
2673.90	(10+)	474.2 *2*	21 *4*	2198.8	(8+)			
		584.9 *1*	100 *8*	2088.2	(8+)			
2759.8	(10+)	561.1 *1*	100 *8*	2198.8	(8+)			
		671.8 *1*	55 *11*	2088.2	(8+)	(E2)		
3068.74	(11+)	308.0 *2*	100 *12*	2759.8	(10+)	(M1+E2)	0.25 *9*	
		394.8 *3*	21 *9*	2673.90	(10+)			
		479.7 *2*	88 *9*	2588.99	(9+)			
3208.9	(12+)	139.9 *3*	20 *7*	3068.74	(11+)			
		535.0 *4*	100 *33*	2673.90	(10+)			
3471.8	(13+)	262.8 *2*	100 *16*	3208.9	(12+)			
		403.5 *4*	39 *12*	3068.74	(11+)			
3743.3	(14+)	271.5 *2*	100 *22*	3471.8	(13+)			

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Adopted Levels, Gammas (continued)

$\gamma(^{138}Te)$ (continued)

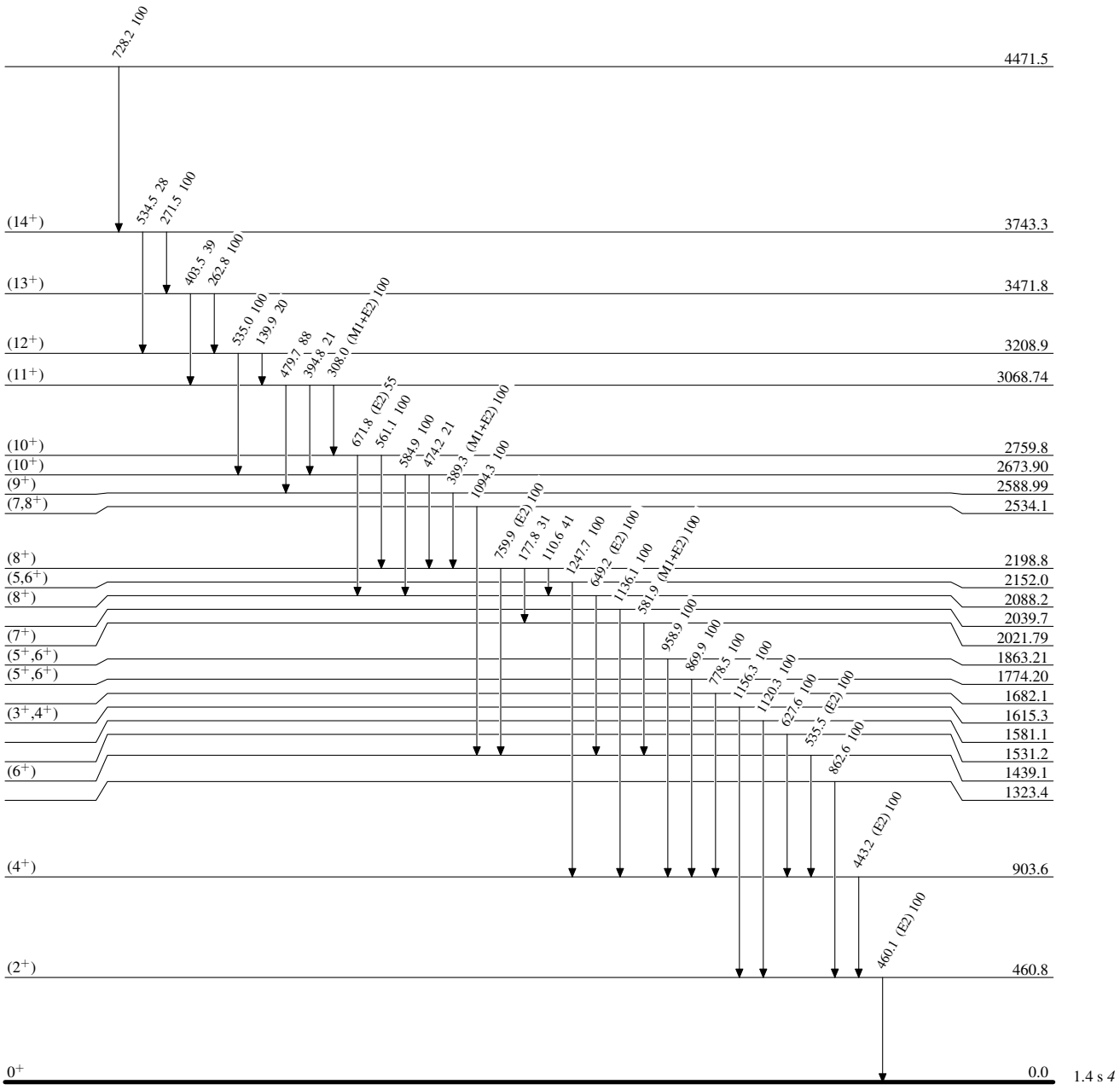
E_i(level)	J_i^π	E_γ †	I_γ †	E_f	J_f^π
3743.3	(14^+)	534.5 *4*	28 *17*	3208.9	(12^+)
4471.5		728.2 *3*	100	3743.3	(14^+)

† From ^{248}Cm SF decay (2016Ur01), unless otherwise noted.
‡ From ^{248}Cm SF decay based on $\gamma\gamma(\theta)$, with brackets added by evaluator where applicable since no direct experimental evidence is provided for the assigned polarities.
# From ^{138}Sb β^- decay (2015Le14).
@ 461.1γ and 442.8γ are placed in reversed order by 1999Ho30 in ^{248}Cm SF decay, making a level at 443.1 instead of the level at 460.8.

Adopted Levels, Gammas

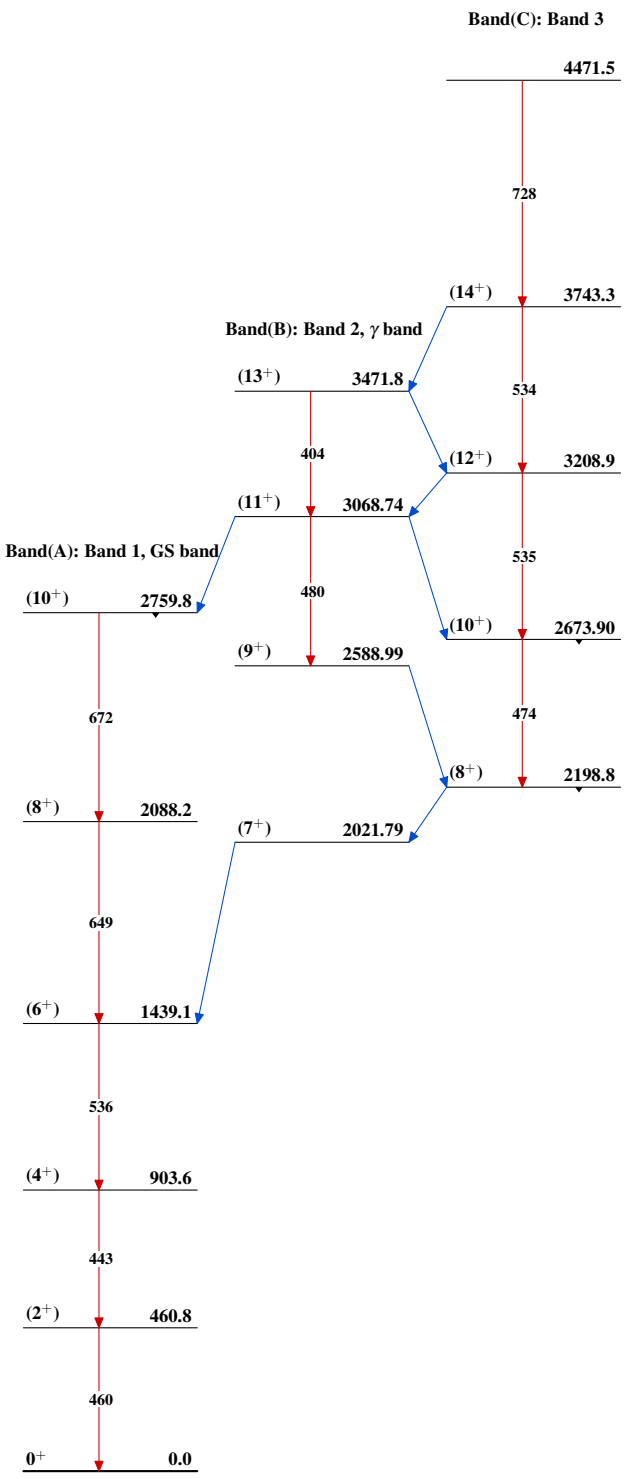
Level Scheme

Intensities: Relative photon branching from each level



$^{138}_{52}Te_{86}$

Adopted Levels, Gammas



$^{138}_{52}Te_{86}$