^{126}Te(^{3}He,3nγ), ^{126}Te(α,4nγ) 1982Ha44,1983Ku04

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	H. Iimura, J. Katakura, S. Ohya	NDS 180,1 (2022)	1-Oct-2021

1982Ha44: E(^{3}He)=20-27 MeV, magnetic spectrograph, Si(Li), $\gamma\gamma$(t).
1983Ku04: E(α)=49-50 MeV, $\gamma(\theta)$, $\gamma\gamma\alpha$-coin.
Others: 1969Be04: ^{124}Te(α,2nγ) E=28 MeV, semi γ, $\gamma(\theta)$. 1967Be07: ^{126}Te(^{3}He,3nγ) E=19 MeV, semi γ. 1965Mo10: ^{126}Te(α,4nγ) E=52 MeV, scin γ.

^{126}Xe Levels

E(level)	J$^{\pi}$†	E(level)	J$^{\pi}$†	E(level)	J$^{\pi}$†	E(level)	J$^{\pi}$†
0.0[#]	0^+	1867.2 *3*	(6^+)	2562.3 *3*	6^-	3314.3[@] *3*	10^+
388.6[#] *1*	2^+	1903.5[&] *2*	5^+	2591.6[‡a] *2*	7^-	3359.9[#] *3*	10^+
879.8[&] *2*	2^+	2187.9 *2*		2622.3? *3*		3884.7[@] *3*	12^+
942.0[#] *2*	4^+	2214.3[&] *2*	6^+	2661.3[&] *3*	7^+	4619.6[@] *4*	14^+
1317.6[&] *2*	3^+	2363.4 *3*	5^+	2678.7 *4*	7^-		
1488.5[&] *2*	4^+	2435.9[#] *2*	8^+	2758.3[a] *3*	8^-		
1635.0[#] *2*	6^+	2492.4? *3*		3064.4[a] *4*	9^-		

† Spin and parity values are those given under the Adopted Levels, unless otherwise mentioned.
‡ 1982Ha44 reports 1.9 ns *5* as $T_{1/2}$ of this level, but the half-life is due to the 2758-keV 8^- state from (α,nγ) (1996Ko16).
# Band(A): member of a yrast band based on g.s.
@ Band(B): member of a band based on 10^+ 3314.3-keV state.
& Band(C): quasi-γ band member based on 2^+ 879.8-keV state.
a Band(D): Member of a band based on $\nu(H_{11/2}+S_{1/2})$ or $\nu(h_{11/2}+d_{3/2})$.

^{126}Te(^{3}He,3nγ), ^{126}Te(α,4nγ) 1982Ha44,1983Ku04 (continued)

$\gamma(^{126}Xe)$

α(K)exp: from 1982Ha44.

E_γ [†]	I_γ [‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [&]	δ [a]	α [b]	Comments
166.7 *2*	2.2 *2*	2758.3	8^-	2591.6	7^-	M1+E2	−7.1 *11*	0.301 *1*	α(K)=0.232 *1*; α(L)=0.0549 *3*; α(M)=0.0115 *1*; α(N+..)=0.00277 *1* α(K)exp=0.170 *15*. A_2=−0.24 *2*, A_4=+0.16 *2* (1982Ha44).
170.9[c] *2*	0.3 *1*	1488.5	4^+	1317.6	3^+				A_2=−0.43 *20*, A_4=+0.12 *30* (1982Ha44).
306.1 *2*	0.5 *1*	3064.4	9^-	2758.3	8^-	M1+E2	−1.4 *+9−5*	0.0392 *2*	α(K)=0.0328 *6*; α(L)=0.0051 *6*; α(M)=0.00104 *13*; α(N+..)=0.00026 *3* α(K)exp=0.029 *5*. A_2=−0.82 *4*, A_4=+0.23 *6* (1982Ha44).
375.5 *2*	2.9 *3*	1317.6	3^+	942.0	4^+	E2(+M1)	<−3	0.0220 *11*	α(K)=0.0187 *12*; α(L)=0.00263 *9*; α(M)=0.00053 *2*; α(N+..)=0.00013 *1* α(K)exp=0.017 *4*. A_2=−0.04 *4*, A_4=+0.09 *5* (1982Ha44).
377.3 *2*	0.4 *1*	2591.6	7^-	2214.3	6^+				
388.56[#] *13*	100 *10*	388.6	2^+	0.0	0^+	Q			I_γ: 100 *3* in (α,4nγ) (1983Ku04). A_2=+0.12 *1*, A_4=−0.02 *1* (1982Ha44), A_2=+0.255 *6*, A_4=−0.009 *10* (1983Ku04).
415.0 *2*	1.1 *1*	1903.5	5^+	1488.5	4^+	Q+D	+9 *+50−4*		A_2=+0.11 *4*, A_4=+0.14 *5* (1982Ha44).
437.8 *2*	7.6 *8*	1317.6	3^+	879.8	2^+	E2(+M1)	>+7	0.0131	α(K)=0.0110; α(L)=0.00166; α(M)=0.00034 α(K)exp=0.010 *2*. A_2=+0.05 *3*, A_4=+0.04 *3* (1982Ha44).
459.9 *2*	0.6 *2*	2363.4	5^+	1903.5	5^+	E2(+M1)			α(K)exp=0.008 *3*.
491.00[#] *20*	20.0 *20*	879.8	2^+	388.6	2^+	E2(+M1)			I_γ: 8.0 *19* in (α,4nγ) (1983Ku04). α(K)exp=0.007 *1*. A_2=−0.03 *1*, A_4=+0.00 *1* (1982Ha44).
524.87[@] *15*		3884.7	12^+	3359.9	10^+	(Q)			I_γ: 4.9 *7* in (α,4nγ) (1983Ku04). A_2=+0.31 *7*, A_4=−0.05 *12* (1983Ku04).
546.4 *2*	3.9 *4*	1488.5	4^+	942.0	4^+	M1+E2	+4 *+4−1*	0.00723 *9*	α(K)=0.00609 *8*; α(L)=0.00086 *1* α(K)exp=0.007 *1*. A_2=−0.03 *2*, A_4=+0.06 *3* (1982Ha44).
553.16[#] *13*	56 *6*	942.0	4^+	388.6	2^+	E2		0.00688	α(K)=0.00579 *18*; α(L)=0.00082 *3* I_γ: 87 *3* in (α,4nγ) (1983Ku04). α(K)exp=0.0055 *2*. A_2=+0.20 *2*, A_4=−0.03 *2* (1982Ha44), A_2=+0.278 *7*, A_4=−0.042 *11* (1983Ku04).
570.40[#] *15*		3884.7	12^+	3314.3	10^+				I_γ: 6.5 *8* in (α,4nγ) (1983Ku04). A_2=+0.31 *5*, A_4=−0.05 *9* (1983Ku04).
579.2 *2*	0.8 *2*	2214.3	6^+	1635.0	6^+	M1,E2			α(K)exp=0.005 *2*.

$^{126}_{54}Xe_{72}$-2

^{126}Te(^{3}He,3nγ), ^{126}Te(α,4nγ) 1982Ha44,1983Ku04 (continued)

$\gamma(^{126}Xe)$ (continued)

E_γ [†]	I_γ [‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[&]	α[b]	Comments
585.9 *2*	7.7 *8*	1903.5	5^+	1317.6	3^+	E2	0.00590	α(K)=0.00497 *15*; α(L)=0.00069 *2* α(K)exp=0.006 *1*. A_2=+0.20 *1*, A_4=+0.01 *1* (1982Ha44).
608.6 *2*	7.9 *8*	1488.5	4^+	879.8	2^+	E2	0.00534	α(K)=0.00451 *14*; α(L)=0.00062 *2* α(K)exp=0.0042 *5*. A_2=+0.18 *1*, A_4=−0.05 *1* (1982Ha44).
658.8 *2*	7.5 *8*	2562.3	6^-	1903.5	5^+			α(K)exp=0.0024 *4*. A_2=+0.16 *3*, A_4=+0.01 *4* (1982Ha44). Mult.: 1982Ha44 suggests (E2) from $\gamma(\theta)$ and α(exp), which is in conflict with E1 from $\gamma(\theta)$ and pol. in ^{123}Te(α,nγ).
688.4[c] *2*	0.4 *1*	2591.6	7^-	1903.5	5^+	(M2)	0.0147	α(K)=0.0125 *4*; α(L)=0.00168 *5* Not observed in other reaction. This placement is questionable. α(K)exp=0.010 *3*.
692.93[#] *13*	24.3 *25*	1635.0	6^+	942.0	4^+	E2	0.00383	α(K)=0.00325 *10*; α(L)=0.00044 *1* I_γ: 67.6 *25* in (α,4nγ) (1983Ku04). α(K)exp=0.0029 *3*. A_2=+0.24 *2*, A_4=−0.01 *2* (1982Ha44), A_2=+0.293 *8*, A_4=−0.062 *13* (1983Ku04).
725.9 *2*	3.4 *4*	2214.3	6^+	1488.5	4^+	E2	0.00342	α(K)=0.00290 *9*; α(L)=0.00039 *1* α(K)exp=0.0041 *7*. A_2=+0.36 *3*, A_4=−0.05 *3* (1982Ha44).
734.82[@] *15*		4619.6	14^+	3884.7	12^+	Q		I_γ: 10.8 *10* in (α,4nγ) (1983Ku04). A_2=+0.31 *4*, A_4=−0.043 *6* (1983Ku04).
757.8 *2*	2.3 *3*	2661.3	7^+	1903.5	5^+	(E2)	0.00308	α(K)=0.00262 *8*; α(L)=0.00035 *1* α(K)exp=0.0030 *7*. A_2=+0.10 *10*, A_4=−0.07 *14* (1982Ha44).
800.85[#] *14*	5.2 *5*	2435.9	8^+	1635.0	6^+	E2	0.00270	α(K)=0.00230 *7*; α(L)=0.00030 *1* I_γ: 41.6 *18* in (α,4nγ) (1983Ku04). α(K)exp=0.0025 *3*. A_2=+0.28 *2*, A_4=−0.4 *3* (1982Ha44), A_2=+0.313 *12*, A_4=−0.085 *19* (1983Ku04).
857.4 *2*	0.9 *3*	2492.4?		1635.0	6^+			
878.43 *16*	1.4 *2*	3314.3	10^+	2435.9	8^+	(Q)		I_γ: 17.0 *12* in (α,4nγ) (1983Ku04). A_2=+0.302 *25*, A_4=−0.04 *4* (1983Ku04). E_γ: from 1983Ku04.
879.9 *2*	5.0 *5*	879.8	2^+	0.0	0^+	E2	0.00217	α(K)=0.00185 *6*; α(L)=0.00024 *1* α(K)exp=0.0027 *8*. A_2=+0.21 *2*, A_4=+0.03 *3* (1982Ha44).
923.96[@] *15*		3359.9	10^+	2435.9	8^+	Q		I_γ: 12.6 *11* in (α,4nγ) (1983Ku04). A_2=+0.31 *3*, A_4=−0.07 *5* (1982Ha44).
925.2 *2*	0.8 *3*	1867.2	(6^+)	942.0	4^+	(E2)	0.00194	α(K)=0.00166 *5*; α(L)=0.00021 *1* α(K)exp=0.0018 *7*. A_2=+0.25 *15*, A_4=+0.06 *20* (1982Ha44).

$^{126}_{54}Xe_{72}$-3

^{126}Te(^{3}He,3nγ), ^{126}Te(α,4nγ) 1982Ha44,1983Ku04 (continued)

γ(^{126}Xe) (continued)

E_γ [†]	I_γ [‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [&]	δ [a]	α [b]	Comments
929.3 *2*	7.0 *7*	1317.6	3^+	388.6	2^+	M1+E2	+1.6 *+3−7*	0.00211 *18*	α(K)=0.00180 *16*; α(L)=0.00023 *2* α(K)exp=0.0016 *4*. A_2=+0.32 *1*, A_4=+0.05 *1* (1982Ha44).
956.40[#] *15*	3.3 *3*	2591.6	7^-	1635.0	6^+	E1+M2	+0.05 *2*	0.00075	α(K)=0.00065 *2* I_γ: 16.8 *12* in (α,4nγ) (1983Ku04). α(K)exp=0.0007 *2*. A_2=−0.13 *1*, A_4=+0.02 *2* (1982Ha44), A_2=−0.173 *24*, A_4=+0.03 *5* (1983Ku04).
961.7 *2*	3.2 *4*	1903.5	5^+	942.0	4^+	M1+E2	+0.49 *5*	0.00227 *2*	α(K)=0.00195 *2*; α(L)=0.00024 α(K)exp=0.0021 *6*. A_2=+0.29 *2*, A_4=+0.02 *3* (1982Ha44).
987.3 *2*	1.7 *5*	2622.3?		1635.0	6^+	E2(+M1)			α(K)exp=0.0012 *3*. A_2=+0.05 *2*, A_4=−0.03 *3* (1982Ha44).
1043.7 *3*	2.3 *6*	2678.7	7^-	1635.0	6^+	(E1)		0.00064	α(K)=0.00055 *2* α(K)exp=0.0005 *2*. A_2=−0.13 *3*, A_4=−0.08 *4* (1982Ha44). Iγ, α(K)exp, A_2, A_4: contain about 30% impurity.
1100.2 *2*	1.4 *2*	1488.5	4^+	388.6	2^+	(Q)			A_2=+0.34 *2*, A_4=+0.04 *3* (1982Ha44).
1245.93[#] *17*		2187.9		942.0	4^+				I_γ: 4.0 *8* in (α,4nγ) (1983Ku04). A_2=−0.17 *9*, A_4=+0.02 *22* (1983Ku04).

[†] From 1982Ha44 at 125°, unless otherwise noted.
[‡] From 1982Ha44 at 125°. Iγ's of (α,4nγ) in 1983Ku04 are given in comment column.
[#] From 1983Ku04.
[@] From 1983Ku04, but not given in 1982Ha44.
[&] From Iγ(θ) (1983Ku04), α(K)exp (1982Ha44).
[a] From A_2, A_4 values (1982Ha44,1983Ku04).
[b] 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.
[c] Placement of transition in the level scheme is uncertain.

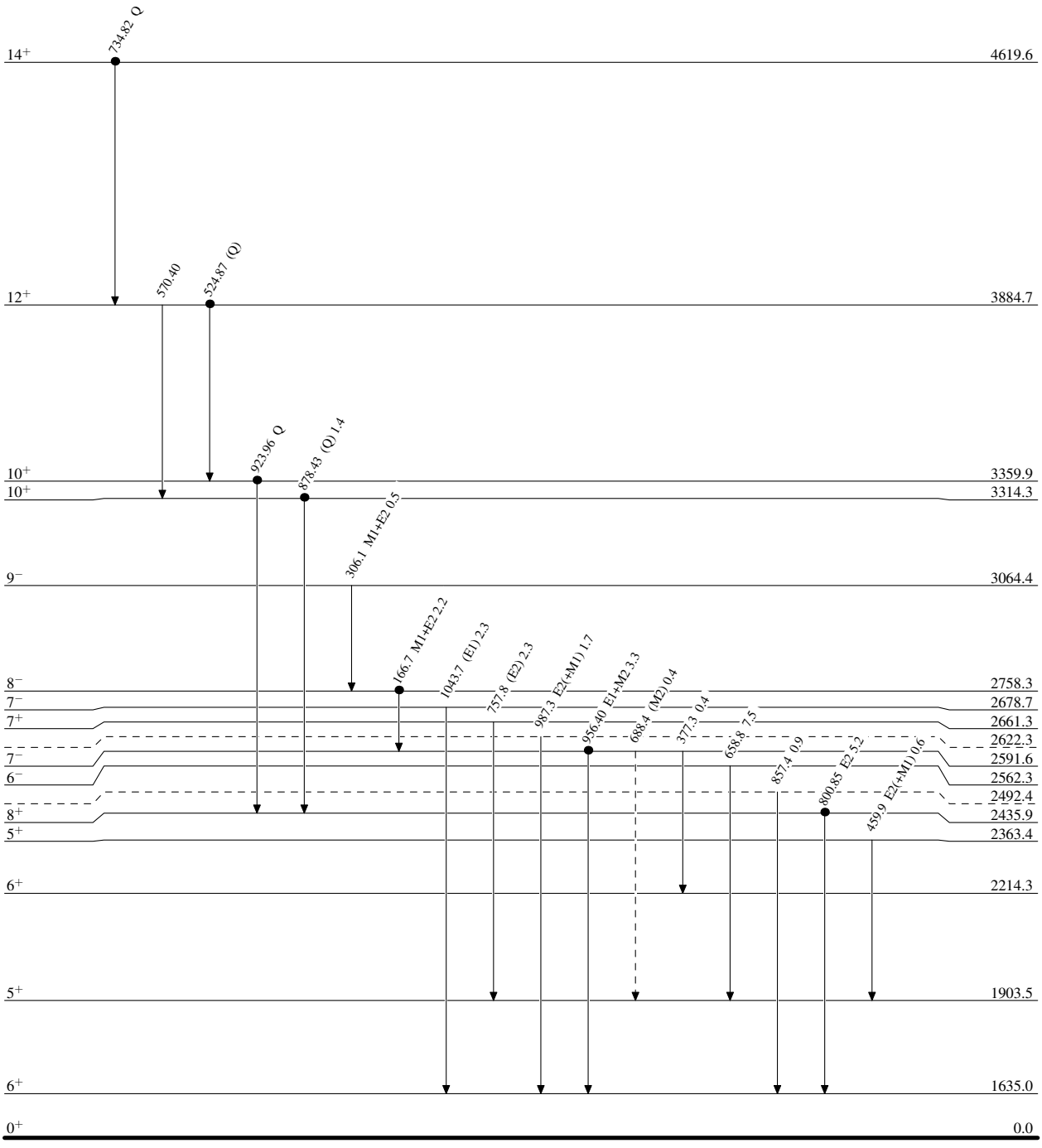
$^{126}_{54}Xe_{72}$-4

^{126}Te(^{3}He,3nγ), ^{126}Te(α,4nγ) 1982Ha44,1983Ku04

Level Scheme

Intensities: Relative I_γ

Legend
- $I_\gamma < 2\% \times I_\gamma^{max}$
- $I_\gamma < 10\% \times I_\gamma^{max}$
- $I_\gamma > 10\% \times I_\gamma^{max}$
- γ Decay (Uncertain)
- Coincidence

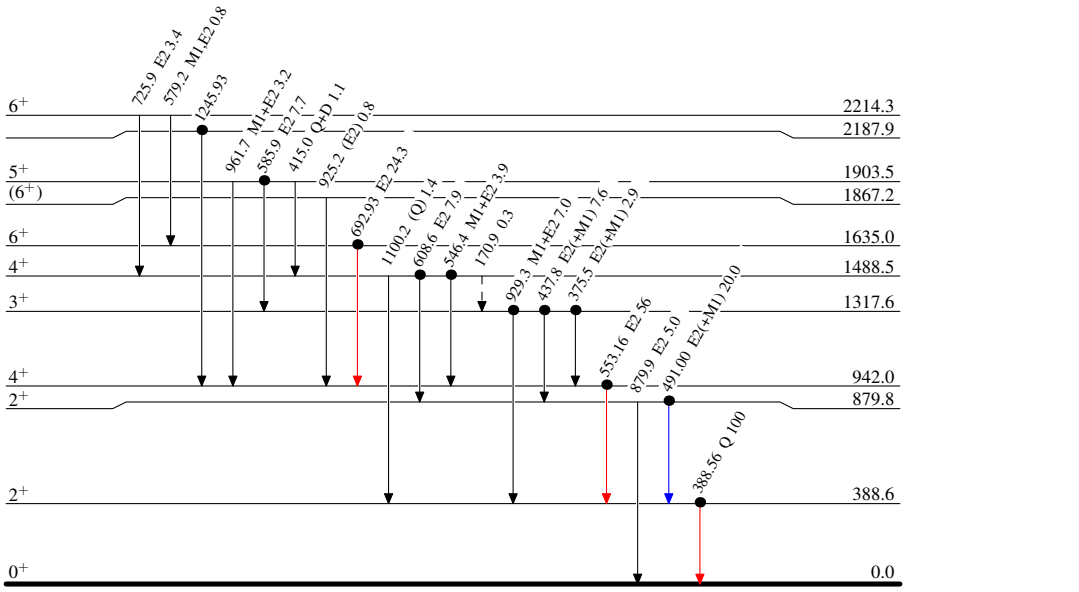


$^{126}_{54}Xe_{72}$

^{126}Te(^{3}He,3nγ), ^{126}Te(α,4nγ) 1982Ha44,1983Ku04

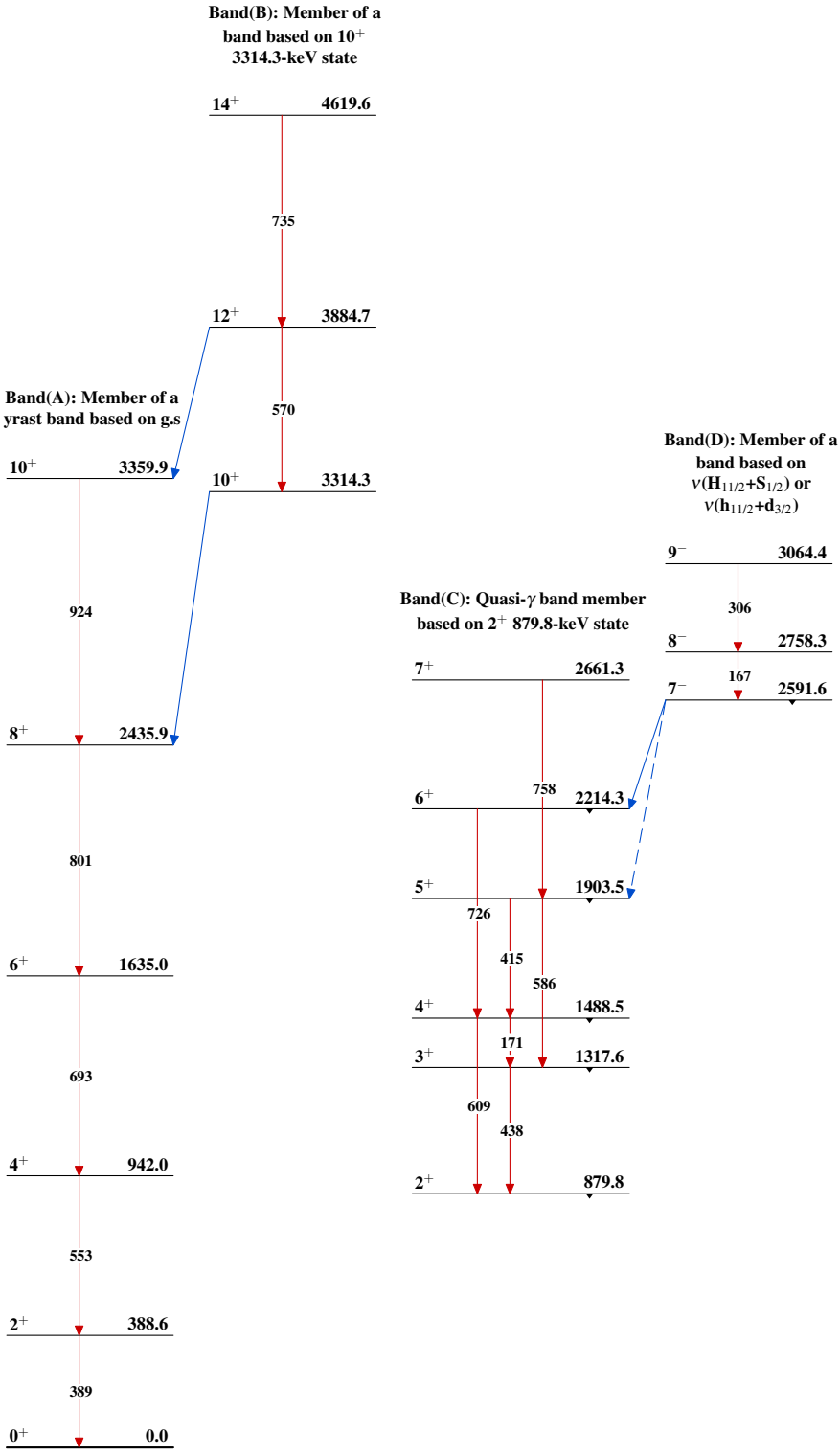
Level Scheme (continued)

Intensities: Relative I_γ



$^{126}_{54}Xe_{72}$

^{126}Te(^{3}He,3nγ), ^{126}Te(α,4nγ) 1982Ha44,1983Ku04



$^{126}_{54}Xe_{72}$