^{238}U(^{12}C,Fγ) 2014As01

History

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

Includes ^{208}Pb(^{18}O,Fγ).

E(^{12}C)=90 MeV, E(^{18}O=85 MeV. Targets=47 mg/cm^2 ^{238}U and 100 mg/cm^2 ^{208}Pb. Measured Eγ, Iγ, $\gamma\gamma$-coin, level half-lives by delayed coincidence techniques using SAPhIR and Euroball arrays. Deduced levels, J, π.

^{126}Te Levels

E(level)[†]	J$^\pi$[‡]	T$_{1/2}$	Comments
0.0[#]	0$^+$		
666.0[#] *2*	2$^+$		
1360.6[#] *4*	4$^+$		
1775.0[#] *5*	6$^+$		
2217.6 *11*	5$^-$		
2495.2[@] *5*	7$^-$		
2764.3[#] *5*	8$^+$		
2810.6 *15*	(7$^-$)		
2838.1 *7*	(6)$^+$		J$^\pi$: from Adopted Levels. But 2014As01 suggests (6$^-$) with no argument.
2972.4[&] *6*	10$^+$	10.7 ns *9*	T$_{1/2}$: from Adopted Levels.
3191.4[@] *6*	9$^-$		
3194.6 *9*			
3685.6[&] *7*	12$^+$		
3762.8[@] *7*	11$^-$		
4137.4 *8*			
4175.0 *7*	(12$^-$)		
4450.3 *8*	(13$^+$)		J$^\pi$: 2014As01 propose J^π=(13$^+$) without evidence to support it.
4535.7[&] *7*	(14$^+$)		
4584.9[@] *7*	(13$^-$)		
4631.9 *7*	(14$^+$)		
4724.4 *10*	(13$^-$)		
5093.0[&] *8*	(15$^+$)		
5111.4[@] *7*	(15$^-$)		
5535.4[&] *9*	(16$^+$)		
5693.1 *9*	(16$^+$)		
6057.2[@] *9*	(17$^-$)		

[†] From least-squares fit to Eγ data.

[‡] 2014As01 proposed J^π assignments from $\gamma\gamma(\theta)$ data for the most intense transitions and assuming the spin values increase with excitation energy and an M1 charactor for low-energy transition. ;J^π assignments for low-lying levels below 2972 keV are from adopted Levels.

[#] Band(A): γ sequence, yrast structure.

[@] Band(B): γ sequence based on 7$^-$.

[&] Seq.(C): γ sequence based on 10$^+$ isomer.

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γ(^{126}Te)

R=angular correlation yield at different angles.

E_γ [†]	I_γ [#]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	Comments
208.1 *3*	35 *7*	2972.4	10^+	2764.3	8^+	Q	
356.5 *5*	1.0 *5*	3194.6		2838.1	$(6)^+$		
410.0 *5*	2 *1*	4584.9	(13^-)	4175.0	(12^-)		E_γ: doublet with 412.1γ and 414.4γ.
412.1 *4*	5 *2*	4175.0	(12^-)	3762.8	11^-		E_γ: doublet with 414.4γ and 410.0γ.
414.4 *2*	92 *14*	1775.0	6^+	1360.6	4^+	Q	doublet with 410.0γ and 412.1γ. (414.4γ)(666.0γ)(θ): R(22°)=1.12 *8*, R(46°)=1.06 *5*, R(75°)=1.00. (414.4γ)(694.6γ+696.2γ)(θ): R(22°)=1.08 *7*, R(46°)=1.05 *5*, R(75°)=1.00.
442.4 *5*	2.3 *11*	5535.4	(16^+)	5093.0	(15^+)		
451.8 *5*	1.8 *9*	4137.4		3685.6	12^+		
461.0 *5*	1.2 *6*	5093.0	(15^+)	4631.9	(14^+)		
526.4 *4*	4.9 *15*	5111.4	(15^-)	4584.9	(13^-)		
549 *1*	2 *1*	4724.4	(13^-)	4175.0	(12^-)		
557.4 *5*	2.8 *14*	5093.0	(15^+)	4535.7	(14^+)		
571.4 *3*	23 *5*	3762.8	11^-	3191.4	9^-	Q	(571.4γ)[696.2γ][720.2γ](414.4γ)(θ): R(22°)=1.11 *8*, R(46°)=1.04 *5*, R(75°)=1.00. (571.4γ)[696.2γ](720.2γ)(θ): R(22°)=0.93 *6*, R(46°)=0.98 *5*, R(75°)=1.00.
575.7 *5*	1.5 *7*	5111.4	(15^-)	4535.7	(14^+)		
593 *1*	5.0 *2*	2810.6	(7^-)	2217.6	5^-		
666.0 *2*	100	666.0	2^+	0.0	0^+	Q	(414.4γ)[694.6γ](666.0γ)(θ): R(22°)=1.12 *8*, R(46°)=1.06 *5*, R(75°)=1.00.
694.6 *3*	96 *14*	1360.6	4^+	666.0	2^+	Q	E_γ: doublet with 696.2γ. (414.4γ)(694.6γ+696.2γ)(θ): R(22°)=1.08 *7*, R(46°)=1.05 *5*, R(75°)=1.00.
696.2 *3*	28 *6*	3191.4	9^-	2495.2	7^-	Q	E_γ: doublet with 694.6γ. (720.2γ)(694.6γ+696.2γ)(θ): R(22°)=0.94 *6*, R(46°)=0.98 *5*, R(75°)=1.00.
713.2 *3*	30 *6*	3685.6	12^+	2972.4	10^+	Q	(713.2γ)[208.1γ][989.3γ](414.4γ)(θ): R(22°)=1.10 *9*, R(46°)=1.03 *5*, R(75°)=1.00. (713.2γ)(208.1γ)(θ): R(22°)=1.09 *7*, R(46°)=1.03 *6*, R(75°)=1.00.
720.2 *3*	34 *7*	2495.2	7^-	1775.0	6^+	D	(720.2γ)(414.4γ)(θ): R(22°)=0.90 *7*, R(46°)=0.95 *5*, R(75°)=1.00. (720.2γ)(694.6γ+696.2γ)(θ): R(22°)=0.94 *6*, R(46°)=0.98 *5*, R(75°)=1.00.
764.7 *4*	4.2 *17*	4450.3	(13^+)	3685.6	12^+		
822.1 *4*	7 *2*	4584.9	(13^-)	3762.8	11^-		
850.1 *4*	13 *3*	4535.7	(14^+)	3685.6	12^+	Q	(850.1γ)[713.2γ](208.1γ)(θ): R(22°)=1.10 *7*, R(46°)=1.03 *6*, R(75°)=1.00.
857 *1*	10 *3*	2217.6	5^-	1360.6	4^+		
945.8 *5*	1.5 *7*	6057.2	(17^-)	5111.4	(15^-)		
946.3 *4*	5.5 *16*	4631.9	(14^+)	3685.6	12^+		
962 *1*	1.6 *8*	4724.4	(13^-)	3762.8	11^-		
989.3 *3*	45 *9*	2764.3	8^+	1775.0	6^+	Q	(989.3γ)(414.4γ)(θ): R(22°)=1.15 *9*, R(46°)=1.08 *6*, R(75°)=1.00.
1061.2 *5*	1.3 *6*	5693.1	(16^+)	4631.9	(14^+)		
1063.1 *5*	5.1 *15*	2838.1	$(6)^+$	1775.0	6^+		

[†] The authors′ values are systematically low. An average of all the transitions with Iγ>10 gives a deviation of −0.44 keV. In

Continued on next page (footnotes at end of table)

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γ(^{126}Te) (continued)

adopted gammas the authors′ energies are increased by 0.4 keV.
‡ From γγ(θ) data, mult=Q corresponds to ΔJ=2, most likely E2.
# Relative intesities to I(666.0γ)=100.

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Level Scheme

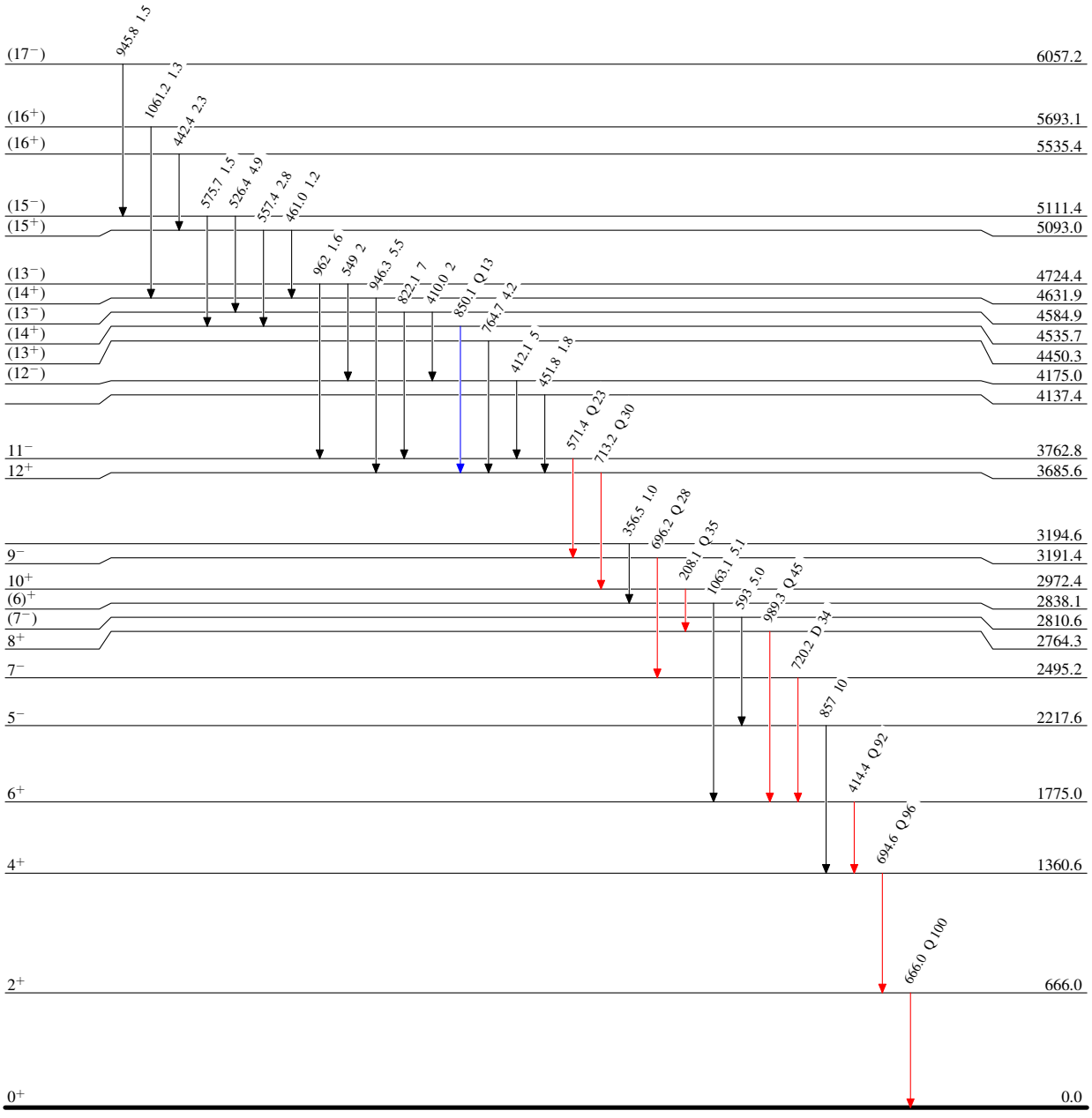
Intensities: Relative I_γ

Legend

$I_\gamma < 2\% \times I_\gamma^{max}$

$I_\gamma < 10\% \times I_\gamma^{max}$

$I_\gamma > 10\% \times I_\gamma^{max}$



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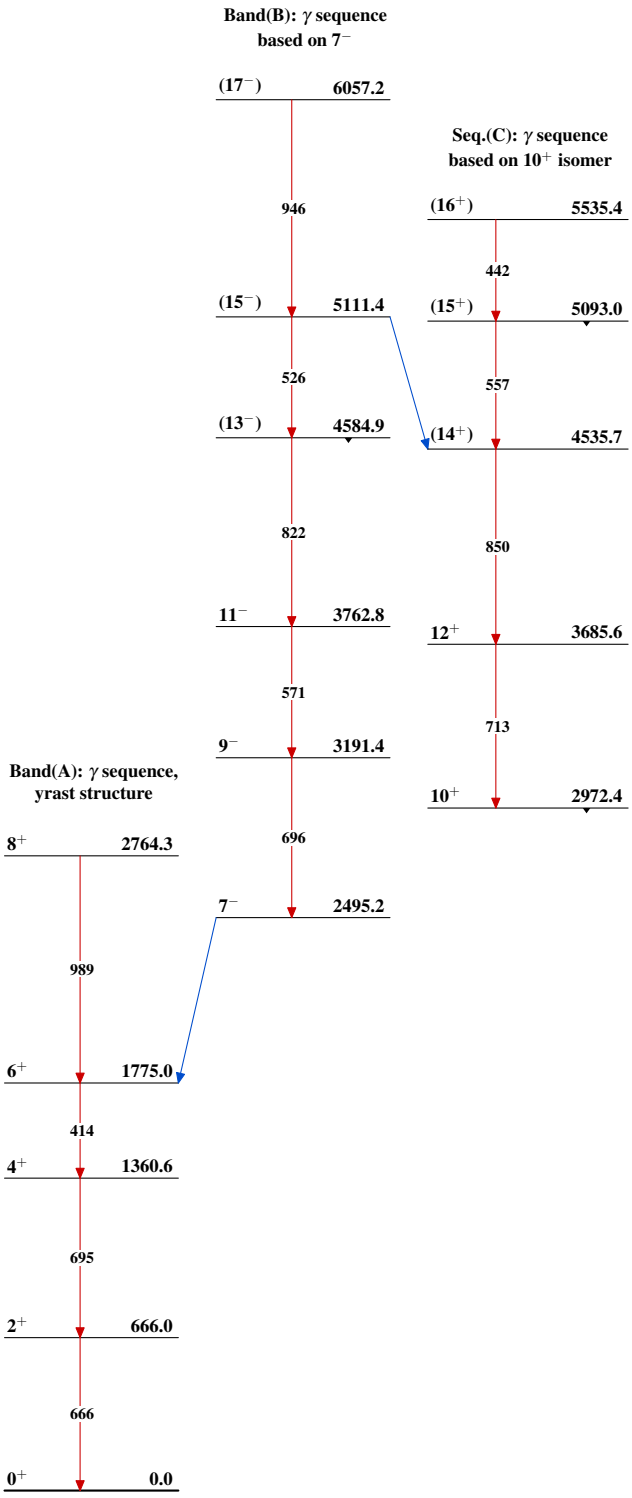

$^{126}_{52}Te_{74}$