^{169}Tm(^{40}Ar,6nγ) 2013Ja06

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	F. G. Kondev	NDS 177, 509, 2021	4-Jul-2021

2013Ja06: E(^{40}Ar)=205 MeV provided by the K-130 cyclotron at the Accelerator Laboratory, University of Jyvaskyla (JYFL). Target: 99.8% enriched ^{169}Tm. RITU gas filed separator, GREAT spectrometer, JUROGAM γ-ray array (43 Compton-suppressed HPGe). Measured: Eγ, Iγ, Eα, Iα, E(ce), I(ce), recoil-$\gamma\gamma$-t-coin, recoil-(ce)γ-t-coin, ; recoil-decay tagging technique. Others (same collaboration): 2016Ja07,2005Uu02.

^{203}Fr Levels

E(level)[†]	J$^\pi$[‡]	$T_{1/2}$	Comments
0.0[#]	9/2$^-$	0.55 s *1*	$T_{1/2}$: From the Adopted Levels. configuration: $\pi(h^{+1}_{9/2})$. Eα=7130 keV *6* (2005Uu02).
161.9? *4*	7/2$^-$		configuration: Dominant $\pi(f^{+1}_{7/2})$.
≈337?	5/2$^-$		configuration: Dominant $\pi(h^{+1}_{9/2})\otimes 2^+$.
≈357	1/2$^+$	43 ms *4*	%α=20 *4* (2013Ja06) $T_{1/2}$: Weighted average of 41 ms *+5−4*, deduced from 7256α(t) time spectrum, when gating on Eα=6643 keV (^{199}At), and 45 ms *5* from recoil(^{203}Fr)-ce(Δt) (2013Ja06). Other: 60 ms *+30−20* (2005Uu02). Eα=7246 keV *5* (2013Ja06), 7227 keV *8* (2005Uu02). configuration: $\pi(s^{+1}_{1/2})$.
426.0[@] *10*	13/2$^+$	0.37 μs *5*	$T_{1/2}$: From recoil(^{203}Fr)-ce(Δt) (2013Ja06). configuration: $\pi(i^{+1}_{13/2})$.
476.40[#] *10*	13/2$^-$		configuration: Dominant $\pi(h^{+1}_{9/2})\otimes 2^+$.
789.1?[@] *11*	(15/2$^+$)		
1035.00[#] *23*	17/2$^-$		
1035.6?[@] *11*	(17/2$^+$)		
1672.7?[#] *4*	(21/2$^-$)		

[†] From a least squares fit to Eγ.
[‡] From 2013Ja06.
[#] Seq.(A): Sequence based on the ground state.
[@] Seq.(B): Sequence based on the J^π=13/2$^+$ isomer.

γ(^{203}Fr)

E$_\gamma$[†]	I$_\gamma$[†]	E$_i$(level)	J$_i^\pi$	E$_f$	J$_f^\pi$	Mult.[†]	Comments
≈20[‡#]		≈357	1/2$^+$	≈337?	5/2$^-$	[M2]	
161.9 *4*	7 *2*	161.9?	7/2$^-$	0.0	9/2$^-$	[M1]	
≈175[‡#]		≈337?	5/2$^-$	161.9?	7/2$^-$	[M1]	
≈195[‡#]		≈357	1/2$^+$	161.9?	7/2$^-$	[E3]	
245.5[#] *4*	7 *2*	1035.6?	(17/2$^+$)	789.1?	(15/2$^+$)		
[x]279.0 *5*	6 *2*						
[x]344.2 *6*	5 *2*						
362.5[#] *3*	13 *3*	789.1?	(15/2$^+$)	426.0	13/2$^+$		
[x]367.8 *3*	3 *2*						
426 *1*		426.0	13/2$^+$	0.0	9/2$^-$	M2	Mult.: from K/(L+M+..)=3.3 *4* (2013Ja06).
476.4 *1*	100 *6*	476.40	13/2$^-$	0.0	9/2$^-$		
[x]481.1 *6*	7 *3*						

Continued on next page (footnotes at end of table)

^{169}Tm(^{40}Ar,6nγ) 2013Ja06 (continued)

$\gamma(^{203}Fr)$ (continued)

E_γ †	I_γ †	E_i(level)	J_i^π	E_f	J_f^π	E_γ †	I_γ †	E_i(level)	J_i^π	E_f	J_f^π
x492.5 *3*	19 *3*					x600.0 *7*	24 *9*				
x516.0 *5*	13 *4*					x603.5 *9*	18 *7*				
558.6 *2*	51 *5*	1035.00	17/2$^-$	476.40	13/2$^-$	611.1# *5*	16 *5*	1035.6?	(17/2$^+$)	426.0	13/2$^+$
x578.1 *2*	60 *6*					637.7# *3*	18 *4*	1672.7?	(21/2$^-$)	1035.00	17/2$^-$

† From 2013Ja06.
‡ Value determined from the ce data (2013Ja06).
# Placement of transition in the level scheme is uncertain.
x γ ray not placed in level scheme.

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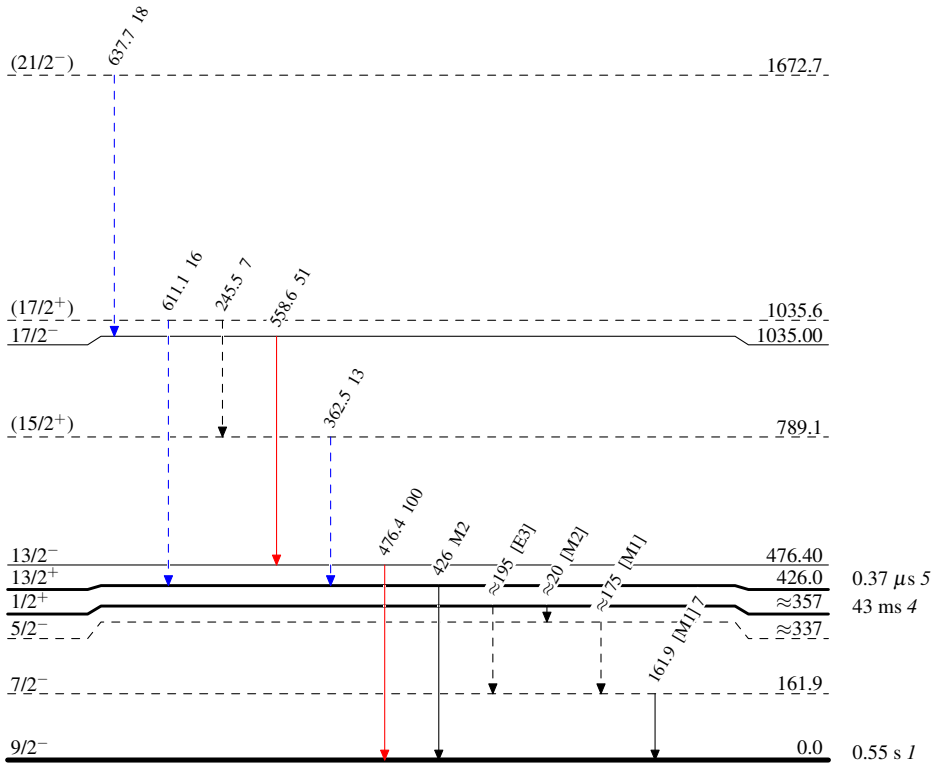
Level Scheme

Intensities: Relative I_γ

Legend

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



$^{203}_{87}Fr_{116}$

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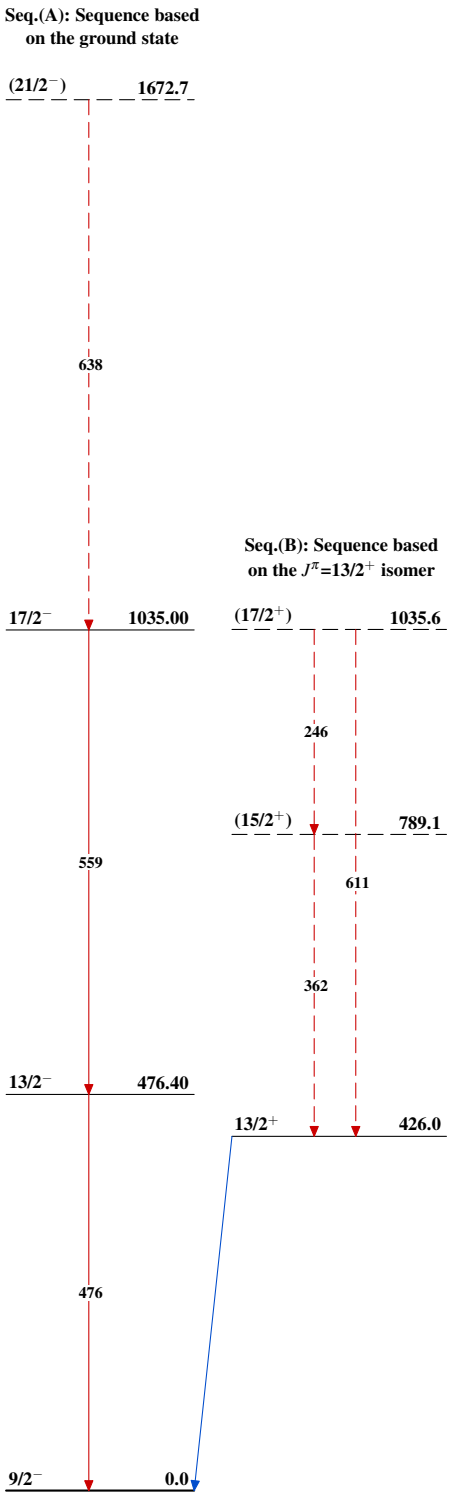

$^{203}_{87}Fr_{116}$