

$^{205}\text{Tl}(^{48}\text{Ca},2n\gamma)$ 2007Ch26,2020Br08

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	C. Morse	NDS 189,111 (2023)	23-Sep-2022

2020Br08: E(^{48}Ca)=218 from the Accelerator Laboratory of the University of Jyvaskyla. Targets consisted of ^{205}Tl of 300 $\mu\text{g}/\text{cm}^2$ thickness (99.45% enrichment) sandwiched between a C backing of 20 $\mu\text{g}/\text{cm}^2$ thickness and a C protection layer of 10 $\mu\text{g}/\text{cm}^2$ thickness. Recoil nuclei separated by RITU gas-filled spectrometer and ΔE and time-of-flight measurements and implanted into a set of Double-Sided Silicon Strip Detectors. Measured $E\gamma$, $I\gamma$, $\gamma\gamma$, recoil- γ , Ece, Ice, recoil-ce using 20 coaxial and 24 clover HPGe detectors and a 90-fold segmented Si detector.

2007Ch26: E($^{48}\text{Ca}^{10+}$)=214 MeV. Measured $E\gamma$, $I\gamma$, $\gamma\gamma$ coin using JUROGAM array of 43 Compton-suppressed Ge detectors.

The fusion evaporation residues were separated from fission fragments, beam- or target-like reaction products and the primary beam using the gas-filled RITU separator at Jyvaskyla facility.

 ^{251}Md Levels

E(level)	J $\pi^{\#}$	Comments
0 †	7/2 $^{-}$	configuration= $\pi 7/2^{-}$ [514] (2020Br08); g=0.69 +19-16 (2020Br08)
55 ‡ 10	1/2 $^{-}$	configuration= $\pi 1/2^{-}$ [521] (2007Ch26,2020Br08) E(level): 2020Br08 takes this energy from 2006Ch52.
61.0 † 10	9/2 $^{-}$	
95 ‡ 10	5/2 $^{-}$	
133.0 † 10	11/2 $^{-}$	
182 ‡ 10	9/2 $^{-}$	
222.8 † 10	13/2 $^{-}$	
322.0 † 12	15/2 $^{-}$	
326 ‡ 10	13/2 $^{-}$	
437.6 † 12	17/2 $^{-}$	
521 ‡ 10	17/2 $^{-}$	
560.8 † 13	19/2 $^{-}$	
701.4 † 12	21/2 $^{-}$	
766 ‡ 10	21/2 $^{-}$	
849.8 † 16	23/2 $^{-}$	
1012.6 † 13	25/2 $^{-}$	
1058 ‡ 10	25/2 $^{-}$	
1183.8 † 19	27/2 $^{-}$	
1370.6 † 17	29/2 $^{-}$	
1394 ‡ 10	29/2 $^{-}$	
1559.8 † 22	31/2 $^{-}$	
1771 ‡ 10	33/2 $^{-}$	
2186 ‡ 10	37/2 $^{-}$	
2635 ‡ 11	41/2 $^{-}$	
3118 ‡ 11	45/2 $^{-}$	
3631 ‡ 11	49/2 $^{-}$	

† Band(A): $\pi 7/2^{-}$ [514].

‡ Band(B): $\pi 1/2^{-}$ [521].

$^{\#}$ Based on the assigned configurations and rotational bands built on top of them.

²⁰⁵Tl(⁴⁸Ca,2n γ) **2007Ch26,2020Br08 (continued)**

$\gamma(^{251}\text{Md})$

E_γ [‡]	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult.	δ	Comments
(40 [†])	95	5/2 ⁻	55	1/2 ⁻			
(61 [†])	61.0	9/2 ⁻	0	7/2 ⁻			
87 [†] 2	182	9/2 ⁻	95	5/2 ⁻			
(133 [†])	133.0	11/2 ⁻	0	7/2 ⁻			
144 [†] 2	326	13/2 ⁻	182	9/2 ⁻			
161.8 3	222.8	13/2 ⁻	61.0	9/2 ⁻			
189.0 7	322.0	15/2 ⁻	133.0	11/2 ⁻			
195.4 2	521	17/2 ⁻	326	13/2 ⁻			
214.8 5	437.6	17/2 ⁻	222.8	13/2 ⁻			
238.8 4	560.8	19/2 ⁻	322.0	15/2 ⁻			
244.7 3	766	21/2 ⁻	521	17/2 ⁻			
263.8 3	701.4	21/2 ⁻	437.6	17/2 ⁻			
289 1	849.8	23/2 ⁻	560.8	19/2 ⁻			
291.7 2	1058	25/2 ⁻	766	21/2 ⁻			
311.2 6	1012.6	25/2 ⁻	701.4	21/2 ⁻			
334 1	1183.8	27/2 ⁻	849.8	23/2 ⁻			
336.0 2	1394	29/2 ⁻	1058	25/2 ⁻			
358 1	1370.6	29/2 ⁻	1012.6	25/2 ⁻			
376 1	1559.8	31/2 ⁻	1183.8	27/2 ⁻			
376.8 2	1771	33/2 ⁻	1394	29/2 ⁻			
^x 389					M2(+E3)	≤0.35	$\alpha(\text{K})_{\text{exp}}=1.84$ 50 (2020Br08); $\alpha(\text{L})_{\text{exp}}<0.75$ (2020Br08) Mult., δ : Based on measured conversion coefficients. This γ ray is tentatively proposed in 2020Br08 to connect an octupole-vibrational state with configuration $\{\pi 7/2^+ [633] \otimes 2^- \} 3/2^-$ to the as-yet unobserved $\pi 7/2^+ [633]$ state.
415.1 4	2186	37/2 ⁻	1771	33/2 ⁻			
449.4 10	2635	41/2 ⁻	2186	37/2 ⁻			
483 1	3118	45/2 ⁻	2635	41/2 ⁻			E_γ : From 2007Ch26. 2020Br08 suggests an energy of 478 2 keV, but there is very little evidence for this peak in their γ spectrum.
513 1	3631	49/2 ⁻	3118	45/2 ⁻			
^x 582							
^x 596							
^x 608							
^x 630							
^x 860							

[†] Inferred based on moment of inertia. Peaks were also observed in electron spectroscopy in 2020Br08 for the 87 and 144-keV transitions. The evaluator has assigned a 2-keV uncertainty to these transition energies.

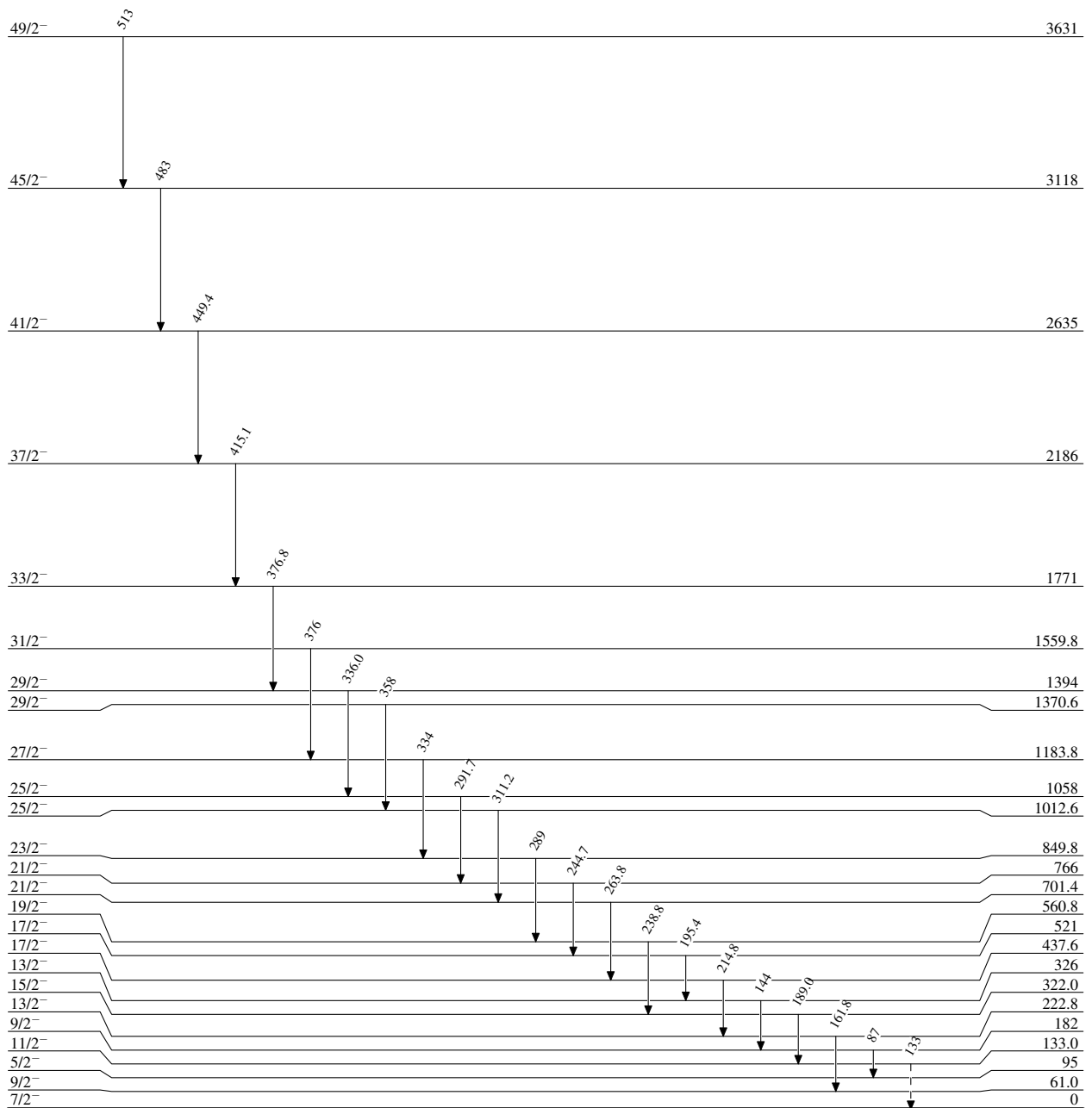
[‡] From 2007Ch26, 2020Br08. In cases where a γ -ray is observed in multiple studies, the weighted average is used unless otherwise noted.

^x γ ray not placed in level scheme.

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Legend

Level Scheme

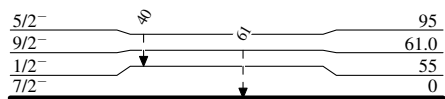
-----► γ Decay (Uncertain) $^{251}_{101}\text{Md}_{150}$

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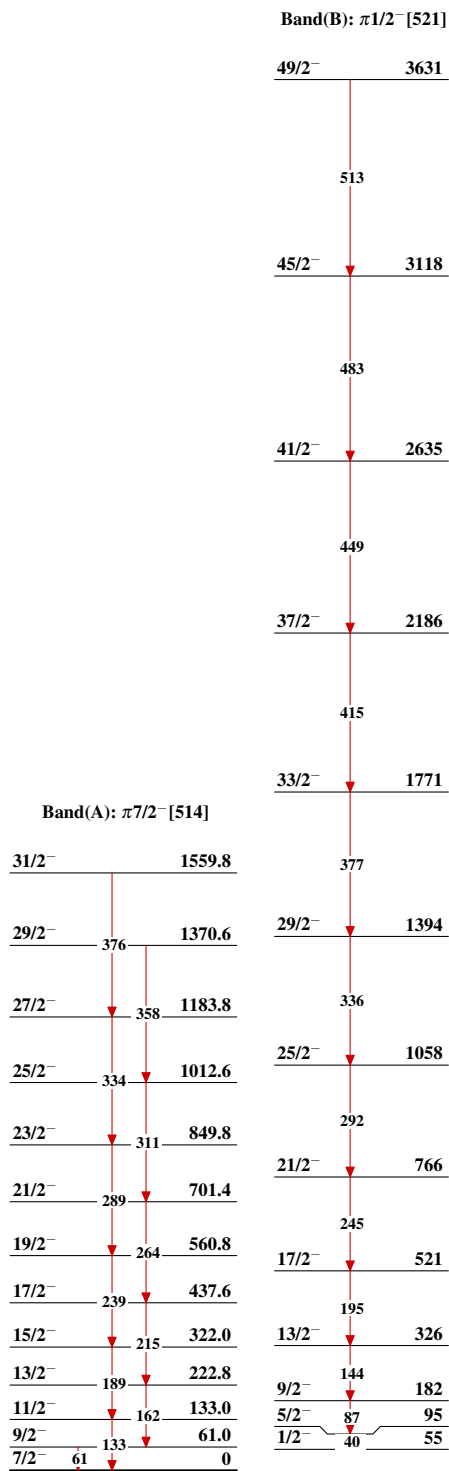
Legend

Level Scheme (continued)

-----► γ Decay (Uncertain)



$^{251}_{101}\text{Md}_{150}$

$^{205}\text{Tl}(^{48}\text{Ca},2n\gamma)$ 2007Ch26,2020Br08 $^{251}_{101}\text{Md}_{150}$