

$^{92}\text{Mo}(^{54}\text{Fe},\alpha 2p\gamma)$ 2006OI09

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	N. Nica	NDS 154, 1 (2018)	20-Nov-2018

2006OI09: $^{92}\text{Mo}(^{54}\text{Fe},\alpha 2p\gamma)$, E=240 MeV, with tandem XTU accelerator of Legnaro National Laboratory, GASP γ -ray HPGe detection array, ISIS charged-particle detector array, and Camel recoil mass spectrometer. Efficiency calibration with standard ^{152}Eu and ^{133}Ba radioactive sources. DCO ratio analysis. Observed nine bands, of which here reported is one band with relatively strong M1 transitions and negligible signature splitting with isomeric band-head indicating a strongly coupled high-K configuration.

 ^{140}Gd Levels

E(level) [†]	J^π [‡]	$T_{1/2}$	Comments
0.0 [#]	0 ⁺		
328.8 [#] 10	2 ⁺		
836.4 [#] 15	4 ⁺		
1464.3 [#] 18	6 ⁺		
2140.1 [#] 18	8 ⁺		
2211.4 [@] 18	8 ⁻	1.5 ns 4	J^π : M2 γ to 6 ⁺ and E1 γ to 8 ⁺ . $T_{1/2}$: based on observed intensity loss and energy shifts of transitions below the isomer. Configuration: $\nu 7/2^+ [404] \otimes \nu 9/2^- [514]$, $K^\pi=8^-$.
2457.2 [@] 18	9 ⁻		
2744.2 [@] 18	10 ⁻		
3061.5 [@] 18	11 ⁻		
3403.5 [@] 18	12 ⁻		
3767.1 [@] 18	13 ⁻		
4150.4 [@] 18	(14 ⁻)		
4553.1 [@] 18	(15 ⁻)		
4976.6 [@] 18	(16 ⁻)		

[†] From least-squares fit to γ energies.

[‡] Assigned by 2006OI09 from γ -ray multiplicities based on DCO measurements, with no listed DCO values or explicit multiplicities; 8⁻ for the isomer established from explicit determination of the multiplicities for its decaying transitions.

[#] Band(A): yrast g.s. band.

[@] Band(B): $K=8^-$ strongly coupled band.

 $\gamma(^{140}\text{Gd})$

E_γ	I_γ [†]	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult.	Comments
71.3 2	0.77 12	2211.4	8 ⁻	2140.1	8 ⁺	E1	Mult.: from $\alpha(\text{exp})=0.72$ ² estimated by 2006OI09 from I(71 γ)/I(676 γ) (observed in 246 and 287 gates).
245.8 1	2.38 20	2457.2	9 ⁻	2211.4	8 ⁻		
287.0 1	2.00 13	2744.2	10 ⁻	2457.2	9 ⁻		
317.4 1	1.40 10	3061.5	11 ⁻	2744.2	10 ⁻		
328.8		328.8	2 ⁺	0.0	0 ⁺		
342.1 1	1.08 8	3403.5	12 ⁻	3061.5	11 ⁻		
363.7 1	0.54 6	3767.1	13 ⁻	3403.5	12 ⁻		
383.3 1	0.64 7	4150.4	(14 ⁻)	3767.1	13 ⁻		
403.1 3	0.23 5	4553.1	(15 ⁻)	4150.4	(14 ⁻)		
423.0 15	0.04 5	4976.6	(16 ⁻)	4553.1	(15 ⁻)		
507.6		836.4	4 ⁺	328.8	2 ⁺		

Continued on next page (footnotes at end of table)

$^{92}\text{Mo}(^{54}\text{Fe},\alpha 2p\gamma)$ [2006OI09](#) (continued) $\gamma(^{140}\text{Gd})$ (continued)

E_γ	$I_\gamma^\dagger$	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult.	Comments
532.9 10	0.36 7	2744.2	10 ⁻	2211.4	8 ⁻		
604.0 3	0.53 8	3061.5	11 ⁻	2457.2	9 ⁻		
627.9		1464.3	6 ⁺	836.4	4 ⁺		
658.8 3	1.08 15	3403.5	12 ⁻	2744.2	10 ⁻		
675.9		2140.1	8 ⁺	1464.3	6 ⁺		
704.9 3	0.60 8	3767.1	13 ⁻	3061.5	11 ⁻		
747.1 3	0.80 18	2211.4	8 ⁻	1464.3	6 ⁺	(M2)	Mult.: E1 or M2 from $\Delta\pi=\text{yes}$; E1 less likely from intensity arguments (2006OI09).
747.1 8	0.16 7	4150.4	(14 ⁻)	3403.5	12 ⁻		
785.7 3	0.71 11	4553.1	(15 ⁻)	3767.1	13 ⁻		
826.3 3	0.65 8	4976.6	(16 ⁻)	4150.4	(14 ⁻)		

[†] Relative to 100 for 4⁺ to 2⁺, 507.6 γ .

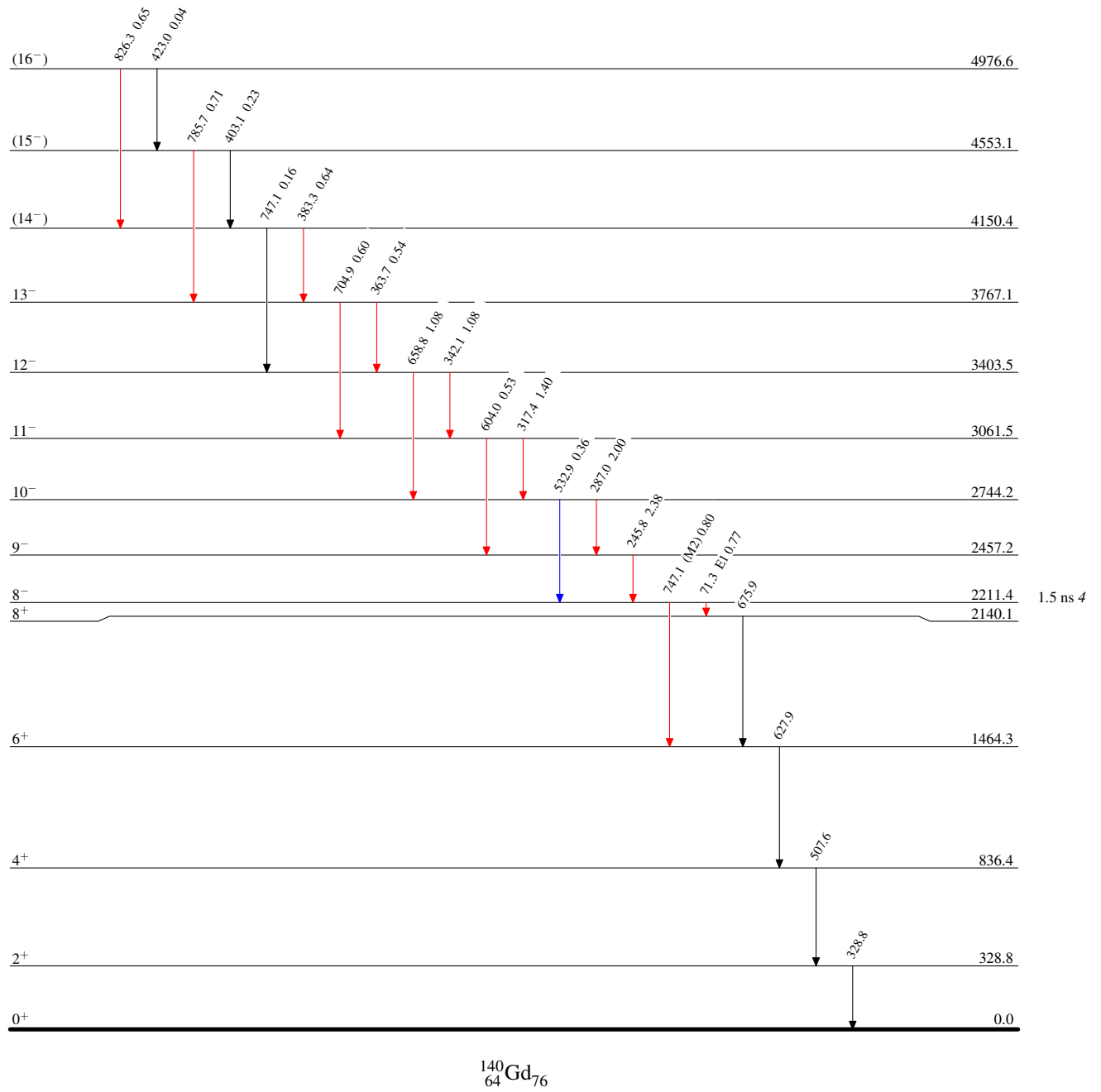
$^{92}\text{Mo}(^{54}\text{Fe}, \alpha 2p\gamma)$ 2006OI09

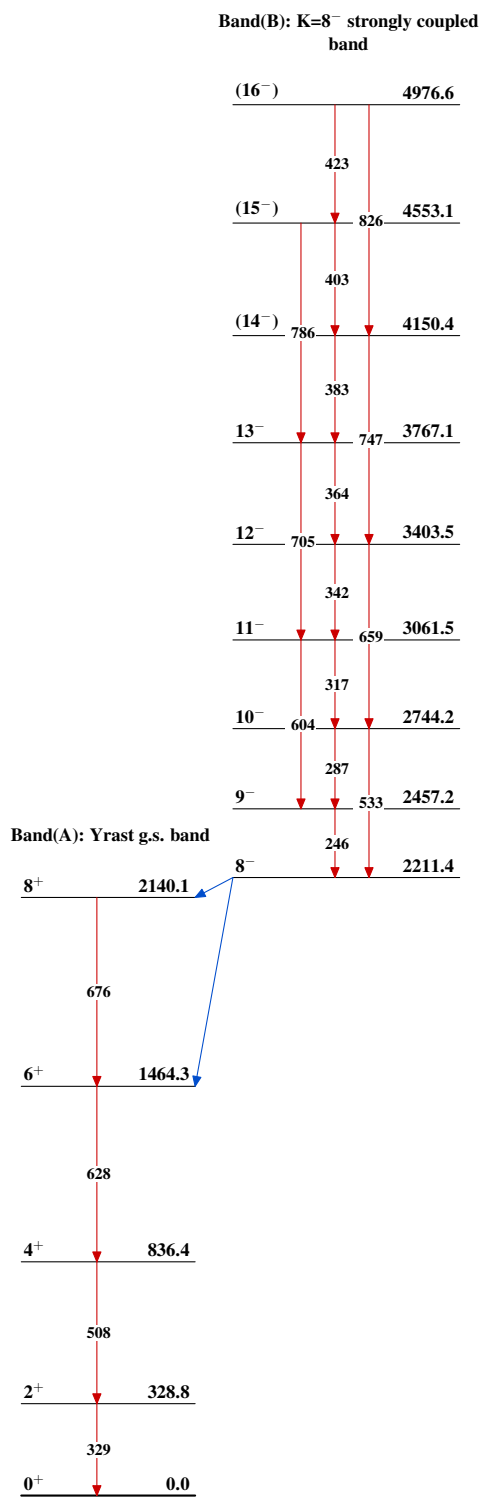
Level Scheme

Intensities: Relative I_γ

Legend

- $I_\gamma < 2\% \times I_\gamma^{\max}$
- $I_\gamma < 10\% \times I_\gamma^{\max}$
- $I_\gamma > 10\% \times I_\gamma^{\max}$



$^{92}\text{Mo}(^{54}\text{Fe}, \alpha 2p\gamma)$ 2006OI09

 $^{140}_{64}\text{Gd}_{76}$