

(HI,xnγ) 1988Ga13,1986Ho22

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh	NDS 74,63 (1995)	22-Dec-1994

1988Ga13: ⁴⁰Ca(³⁹K,n2pγ) E=120 MeV. Measured γ, γγ, γ(θ), proton-neutron-γ coin, excitation functions, cross section.
1986Ho22: ⁴⁰Ca(⁴⁰Ca,n3pγ) E=142 MeV. Measured delayed γ, T_{1/2} for a microsecond isomer. Four γ rays from the decay of the isomer are reported.
 The main level scheme is from [1988Ga13](#). [1986Ho22](#) report data on the 3.2-μs isomer.

⁷⁶Rb Levels

E(level) [‡]	J ^π [†]	T _{1/2}	Comments
0.0 [#]	1 ⁽⁻⁾		
101.29 [#] 4	(2 ⁻)		
246.38 [#] 6	(3 ⁻)		
316.93 [@] 8	(4 ⁺)	3.20 μs 10	T _{1/2} : from (evaporation residue) γ(t) (1986Ho22). J ^π : syst of Rb-Kr-Br isotones with N=41, 39 (1988Ga13). Similar 4 ⁺ bands in ⁷⁶ Br, ⁷⁸ Rb and ⁷⁴ Br.
454.4 [#] 2	(4 ⁻)		
497.2 [@] 3	(5 ⁺)		
689.6 [#] 2	(5 ⁻)		
707.2 [@] 3	(6 ⁺)		
977.8 [@] 3	(7 ⁺)		
1009.8 [#] 3	(6 ⁻)		
1256.4 [@] 4	(8 ⁺)		
1332.9 [#] 3	(7 ⁻)		
1620.1 [@] 4	(9 ⁺)		
2019.1 [@] 5	(10 ⁺)		
0.0+x			
104.4+x			
345.9+x			
636.7+x			
969.7+x			
1362.1+x			

[†] From possible band assignments. γ(θ) data indicate ΔJ=1 for selected transitions in a band.

[‡] From least-squares fit to Eγ's.

[#] Band(A): K=1⁻ band.

[@] Band(B): K=4⁺ band.

γ(⁷⁶Rb)

A₂ and A₄ values are from [1988Ga13](#). Estimates of α(exp) from [1986Ho22](#) are probably from intensity balances.
 The delayed relative γ intensities from the isomer are: 71, 77, 100 and 14 for 70γ, 101γ, 145γ and 246γ, respectively ([1986Ho22](#)).

(HI,xn γ) 1988Ga13,1986Ho22 (continued) $\gamma(^{76}\text{Rb})$ (continued)

E_γ ‡	I_γ †	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult.	Comments
70.55@ 5	41 4	316.93	(4 ⁺)	246.38	(3 ⁻)	D	Mult.: from $\alpha(\text{exp})\geq 0.4$ 2 (from intensity balance at 317 level) or ≤ 1.1 2 (from intensity balance at 246 level) (1988Ga13). 1986Ho22 give $\alpha(\text{exp})<1.8$. There is a tentative suggestion of a 317 γ from this level from ^{76}Sr ε decay. Using branching ratio from that data, expected $I_\gamma(317\gamma)=25$ 15 which would give $\alpha(\text{exp})<0.25$. But RUL of 100 for E3 gives $I_\gamma(317\gamma)<2.2$.
101.30@ 4	100 10	101.29	(2 ⁻)	0.0	1 ⁽⁻⁾	D#	$A_2=-0.15$ 4, $A_4=-0.08$ 4 (1988Ga13). $\alpha(\text{exp})<1.8$ (1986Ho22).
104.4 3	18 4	104.4+x		0.0+x			$A_2=0.3$ 2, $A_4=-0.1$ 1.
145.11@ 5	100 10	246.38	(3 ⁻)	101.29	(2 ⁻)	D#	$A_2=-0.21$ 3, $A_4=0.02$ 4 (1988Ga13). $\alpha(\text{exp})<1.6$ (1986Ho22).
180.2 3	54 6	497.2	(5 ⁺)	316.93	(4 ⁺)		$A_2=-0.6$ 2, $A_4=0.01$ 6.
208.2 3	15 3	454.4	(4 ⁻)	246.38	(3 ⁻)		$A_2=-0.34$ 8, $A_4=-0.03$ 4.
210.0 3	31 3	707.2	(6 ⁺)	497.2	(5 ⁺)		$A_2=-0.7$ 2, $A_4=0.04$ 8.
235.1 3	9 2	689.6	(5 ⁻)	454.4	(4 ⁻)		$A_2=-0.2$ 1, $A_4=-0.1$ 2.
241.5 3	26 3	345.9+x		104.4+x			$A_2=-0.5$ 2, $A_4=0.03$ 5.
246.32@ 10	6 1	246.38	(3 ⁻)	0.0	1 ⁽⁻⁾		$\alpha(\text{exp})<9.8$ (1986Ho22).
270.7 3	15 3	977.8	(7 ⁺)	707.2	(6 ⁺)		
278.7 3	10 2	1256.4	(8 ⁺)	977.8	(7 ⁺)		$A_2=-0.7$ 3, $A_4=0.1$ 4.
290.8 3	14 3	636.7+x		345.9+x			$A_2=-0.7$ 3, $A_4=0.1$ 4.
320.4 3	3 1	1009.8	(6 ⁻)	689.6	(5 ⁻)		
323.2 3	2 1	1332.9	(7 ⁻)	1009.8	(6 ⁻)		
333.2 3	7 2	969.7+x		636.7+x			$A_2=-0.8$ 4, $A_4=0.01$ 4.
352.9 3	2 1	454.4	(4 ⁻)	101.29	(2 ⁻)		
363.8 3	3 1	1620.1	(9 ⁺)	1256.4	(8 ⁺)		$A_2=-0.4$ 3, $A_4=0.05$ 8.
390.3 3	4 1	707.2	(6 ⁺)	316.93	(4 ⁺)		
392.2 3	2 1	1362.1+x		969.7+x			
398.5&		2019.1	(10 ⁺)	1620.1	(9 ⁺)		
443.3 3	3 1	689.6	(5 ⁻)	246.38	(3 ⁻)		$A_2=0.2$ 3, $A_4=-0.4$ 6.
480.6 3	3 1	977.8	(7 ⁺)	497.2	(5 ⁺)		
532.1		636.7+x		104.4+x			
549.2 3	5 1	1256.4	(8 ⁺)	707.2	(6 ⁺)		$A_2=0.2$ 1, $A_4=-0.2$ 3.
555.2 3	2 1	1009.8	(6 ⁻)	454.4	(4 ⁻)		
623.6 3	2 1	969.7+x		345.9+x			
642.2 3	2 1	1620.1	(9 ⁺)	977.8	(7 ⁺)		
643.2 3	1.0 5	1332.9	(7 ⁻)	689.6	(5 ⁻)		
725.6 3	1.0 5	1362.1+x		636.7+x			
762.7 3	1.0 5	2019.1	(10 ⁺)	1256.4	(8 ⁺)		

† From 1988Ga13 at 90°. Uncertainties on I_γ 's are assigned as follows based on a general statement by 1988Ga13 that these are 10% for strong and 40% for weak lines: 10% for $I_\gamma>20$, 20% for $I_\gamma=5-20$, 40% for $I_\gamma<5$.

‡ From 1988Ga13 unless otherwise stated.

From $\gamma(\theta)$ (1988Ga13) and intensity balance between 101 γ and 145 γ (1986Ho22).

@ From 1986Ho22.

& Placement of transition in the level scheme is uncertain.

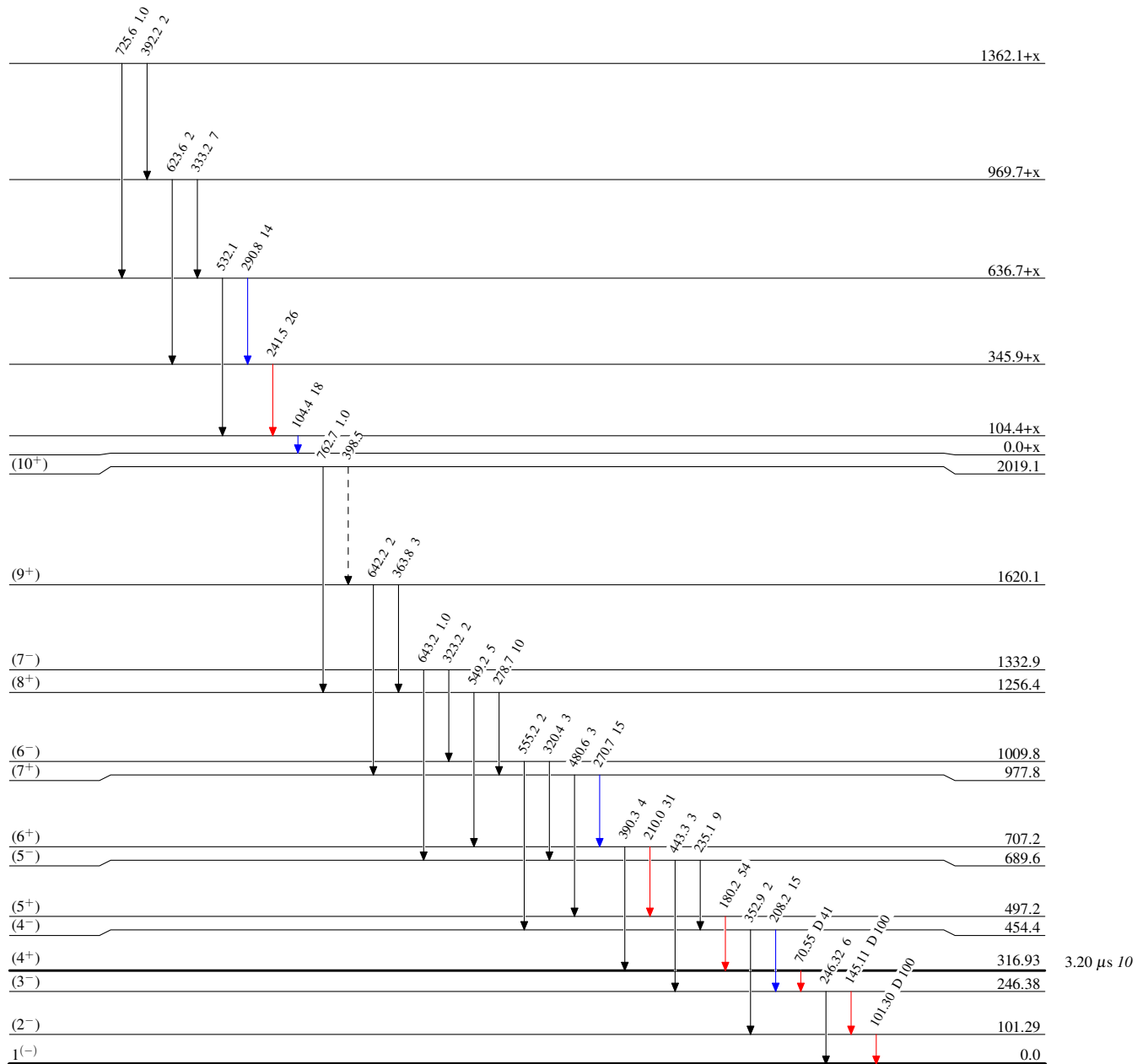
(HI,xn γ) 1988Ga13,1986Ho22

Legend

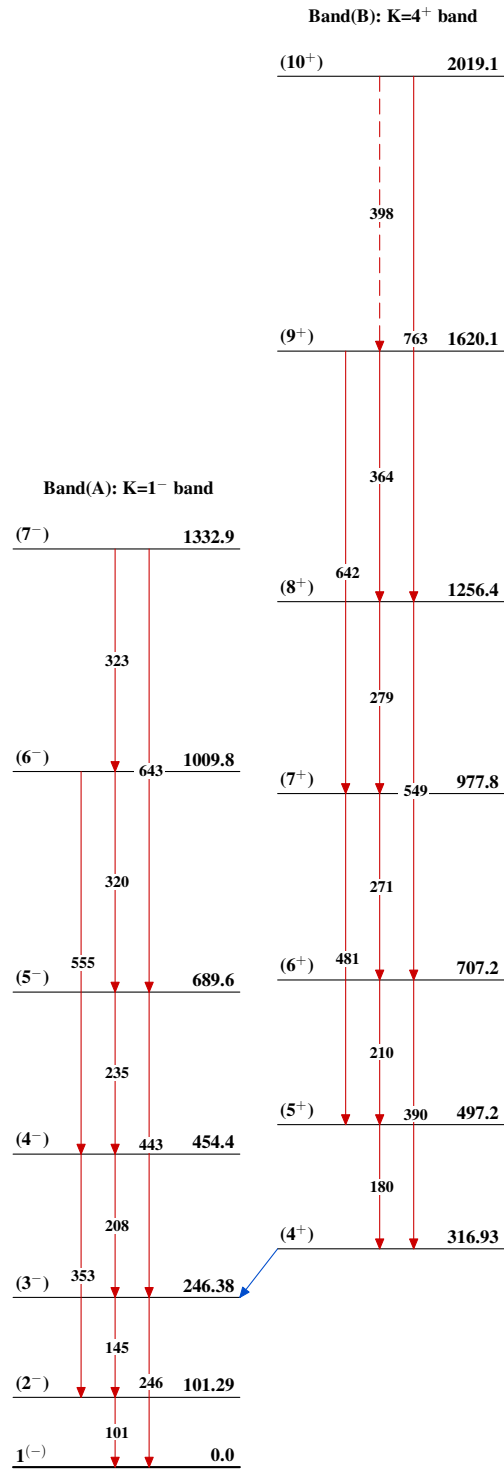
Level Scheme

Intensities: Relative I_γ

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



$^{76}_{37}\text{Rb}_{39}$

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