

$^{84}\text{Sr}(\alpha,2n\gamma), ^{86}\text{Sr}(^3\text{He},3n\gamma)$  1983Ha30,1978Ki06

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	Alexandru Negret, Balraj Singh		NDS 124, 1 (2015)	30-Nov-2014

1983Ha30:  $^{84}\text{Sr}(\alpha,2n\gamma)$  E=55 MeV.  $^{86}\text{Sr}(^3\text{He},3n\gamma)$  E=27 MeV. Enriched target. Measured  $E_\gamma$ ,  $\gamma(\theta)$ ,  $\gamma\gamma(t)$ .

1978Ki06:  $^{84}\text{Sr}(\alpha,2n\gamma)$  E=17-35 MeV. Enriched target. Measured  $E_\gamma$ ,  $I_\gamma$ ,  $\gamma\gamma$ ,  $\gamma(\theta)$ ,  $\gamma(t)$ .

Other:

1983Fi06:  $^{86}\text{Sr}(^3\text{He},3n\gamma)$ , E=33 MeV. Enriched target. Measured  $E_\gamma$ ,  $\gamma\gamma$ ,  $\gamma(\theta)$ ,  $\gamma(t)$ .

 $^{86}\text{Zr}$  Levels

Level scheme is mainly from 1983Ha30. Other: 1978Ki06.

E(level)	$J^\pi^\dagger$	$T_{1/2}^\ddagger$	E(level)	$J^\pi^\dagger$	$T_{1/2}^\ddagger$	E(level)	$J^\pi^\dagger$
0	$0^+$		3016.9 16			4418.3 16	$10^+$
752.0 8	$2^+$		3030.1 15	$(5^+,6^+)$		4428.9 17	$(9^-)$
1422.2 8	$(2^+)$		3271.3 16	$(6^-)$		5233.2 19	$(11^-)$
1666.6 11	$4^+$		3298.4 15	$8^+$		5388.4 20	$(11^-)$
2042.3 10	$(0^+ \text{ to } 4^+)$		3422.9 14	$(7^-)$		5396.0 18	$(12^+)$
2343.6 11	$(4^+,3^-)$		3532.5 15	$8^+$	<5 ns	5647?	
2566.5 13			3645.7 17	$(7^-)$		5973.7 22	$(12^-)$
2670.1 13	$6^+$	<5 ns	3790.1 17	$(7)$		6320.7 20	$(14^+)$
2705.3 13			4132.3 19	$(8^-)$			
2705.5 12	$(5^-)$		4325.9 17	$10^+$			

$^\dagger$  From Adopted Levels.

$^\ddagger$  From  $\gamma(t)$  (1983Fi06).

 $\gamma(^{86}\text{Zr})$ 

$A_2$  and  $A_4$  are from 1978Ki06.

A  $237.4\gamma$  with  $T_{1/2}=40$  ns 10 observed only by 1978Ki06 is probably not due to  $^{86}\text{Zr}$ , thus omitted here.

$E_\gamma^\dagger$	$I_\gamma^\ddagger$	$E_i(\text{level})$	$J_i^\pi$	$E_f$	$J_f^\pi$	Comments
222.8		3645.7	$(7^-)$	3422.9	$(7^-)$	
234.1		3532.5	$8^+$	3298.4	$8^+$	
258 <sup>#</sup>		3790.1	$(7)$	3532.5	$8^+$	
311.6		3016.9		2705.5	$(5^-)$	
360.0 <sup>#</sup>		3030.1	$(5^+,6^+)$	2670.1	$6^+$	
362		2705.5	$(5^-)$	2343.6	$(4^+,3^-)$	
566.0	4	3271.3	$(6^-)$	2705.5	$(5^-)$	
620.1		2042.3	$(0^+ \text{ to } 4^+)$	1422.2	$(2^+)$	
628.3	28	3298.4	$8^+$	2670.1	$6^+$	
663		2705.3		2042.3	$(0^+ \text{ to } 4^+)$	
670.1		1422.2	$(2^+)$	752.0	$2^+$	
677		2343.6	$(4^+,3^-)$	1666.6	$4^+$	
709.5 <sup>#</sup>		4132.3	$(8^-)$	3422.9	$(7^-)$	
717.5	22	3422.9	$(7^-)$	2705.5	$(5^-)$	$A_2=+0.32$ 4.
740.5		5973.7	$(12^-)$	5233.2	$(11^-)$	
751.9	100	752.0	$2^+$	0	$0^+$	$A_2=+0.19$ 4.
752.8		3422.9	$(7^-)$	2670.1	$6^+$	

Continued on next page (footnotes at end of table)

$^{84}\text{Sr}(\alpha,2n\gamma),^{86}\text{Sr}(^3\text{He},3n\gamma)$  **1983Ha30,1978Ki06 (continued)** $\gamma(^{86}\text{Zr})$  (continued)

$E_\gamma^\dagger$	$I_\gamma^\ddagger$	$E_i(\text{level})$	$J_i^\pi$	$E_f$	$J_f^\pi$	Comments
814.9		5233.2	(11 <sup>-</sup> )	4418.3	10 <sup>+</sup>	
861.0		4132.3	(8 <sup>-</sup> )	3271.3	(6 <sup>-</sup> )	
862.4		3532.5	8 <sup>+</sup>	2670.1	6 <sup>+</sup>	
885.7		4418.3	10 <sup>+</sup>	3532.5	8 <sup>+</sup>	
914.7	83	1666.6	4 <sup>+</sup>	752.0	2 <sup>+</sup>	$A_2=+0.23$ 8, $A_4=-0.13$ 8.
921.3		2343.6	(4 <sup>+</sup> ,3 <sup>-</sup> )	1422.2	(2 <sup>+</sup> )	
924.7		6320.7	(14 <sup>+</sup> )	5396.0	(12 <sup>+</sup> )	
959.5		5388.4	(11 <sup>-</sup> )	4428.9	(9 <sup>-</sup> )	
977.8		5396.0	(12 <sup>+</sup> )	4418.3	10 <sup>+</sup>	
1003.5	35	2670.1	6 <sup>+</sup>	1666.6	4 <sup>+</sup>	$A_2=+0.35$ 4.
1006.0		4428.9	(9 <sup>-</sup> )	3422.9	(7 <sup>-</sup> )	
1027.4		4325.9	10 <sup>+</sup>	3298.4	8 <sup>+</sup>	
1038.8	30	2705.5	(5 <sup>-</sup> )	1666.6	4 <sup>+</sup>	$A_2=-0.23$ 4.
1070.1		5396.0	(12 <sup>+</sup> )	4325.9	10 <sup>+</sup>	
<sup>x</sup> 1107.0 2	26					$A_2=+0.18$ 8, $A_4=-0.22$ 8.
1120		3790.1	(7)	2670.1	6 <sup>+</sup>	
1120.0		4418.3	10 <sup>+</sup>	3298.4	8 <sup>+</sup>	
1144.3		2566.5		1422.2	(2 <sup>+</sup> )	
1229 <sup>#</sup>		5647?		4418.3	10 <sup>+</sup>	
1290.2		2042.3	(0 <sup>+</sup> to 4 <sup>+</sup> )	752.0	2 <sup>+</sup>	
1363.4		3030.1	(5 <sup>+</sup> ,6 <sup>+</sup> )	1666.6	4 <sup>+</sup>	
1422.3		1422.2	(2 <sup>+</sup> )	0	0 <sup>+</sup>	

<sup>†</sup> From **1983Ha30**.  $\Delta E$  not given but probably a few tenths of a keV.

<sup>‡</sup> From **1978Ki06** at 28 MeV.

<sup>#</sup> Placement of transition in the level scheme is uncertain.

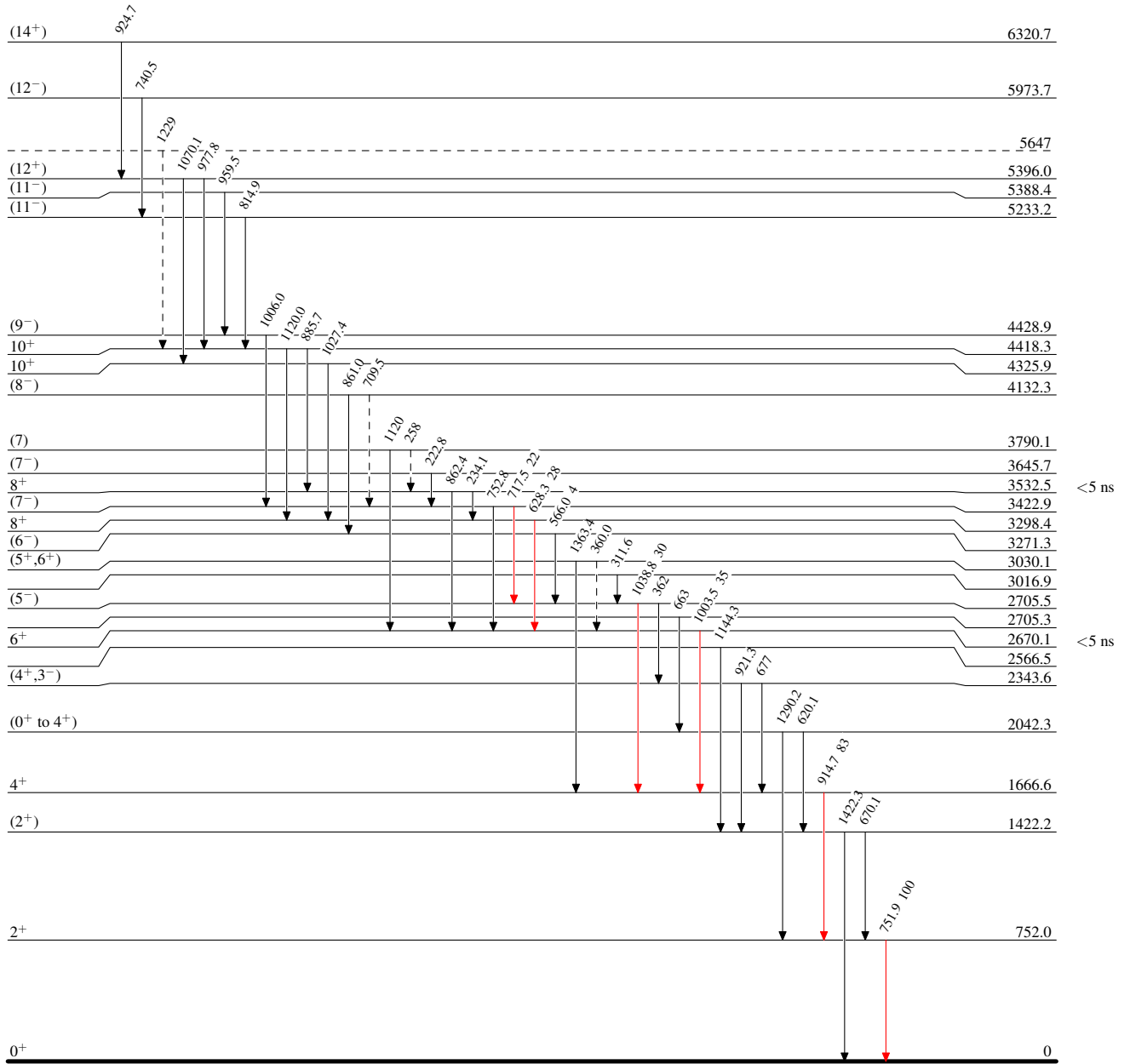
<sup>x</sup>  $\gamma$  ray not placed in level scheme.

<sup>84</sup>Sr( $\alpha, 2n\gamma$ ), <sup>86</sup>Sr( $^3\text{He}, 3n\gamma$ ) 1983Ha30, 1978Ki06

Legend

Level Scheme  
Intensities: Relative I <sub>$\gamma$</sub>

- I <sub>$\gamma$</sub>  < 2% × I <sub>$\gamma$</sub> <sup>max</sup>
- I <sub>$\gamma$</sub>  < 10% × I <sub>$\gamma$</sub> <sup>max</sup>
- I <sub>$\gamma$</sub>  > 10% × I <sub>$\gamma$</sub> <sup>max</sup>
- - - - -  $\gamma$  Decay (Uncertain)



<sup>86</sup>Zr<sub>46</sub>