

$^{208}\text{Pb}(^{40}\text{Ar},\text{X}\gamma)$ 2013Sz02

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Jun Chen	NDS 149, 1 (2018)	1-Jan-2018

2013Sz02: E=255 MeV ^{40}Ar beam was provided by the ECR ion source and accelerated by the superconducting ALPI-Linac accelerator of the Laboratori Nazionali di Legnaro. Target was $300 \mu\text{g}/\text{cm}^2$ ^{208}Pb . γ rays were detected with the Clara array and fragments were measured with the magnetic spectrometer Prisma. Measured $E\gamma$, $I\gamma$, $\gamma\gamma$ -coin, (fragment) γ -coin. Deduced levels, J, π . Comparisons with large-scale shell-model calculations.

 ^{39}Cl Levels

<u>E(level)[†]</u>	<u>J^π[‡]</u>	<u>E(level)[†]</u>	<u>J^π[‡]</u>	<u>E(level)[†]</u>	<u>J^π[‡]</u>	<u>E(level)[†]</u>	<u>J^π[‡]</u>
0.0	3/2 ⁺	1722.2 15	5/2 ⁺	2236.9 7	1/2 ⁺	2962.2 7	(11/2 ⁻) [#]
396.4 1	1/2 ⁺	1744.9 4	(7/2 ⁺)	2423.7 7	(9/2 ⁺)	3517.1 11	(15/2 ⁺) [#]
1301.3 3	(5/2 ⁺)	1785.8 5	(7/2 ⁻)	2572.2 6	(9/2 ⁻) [#]		
1697.8 3	5/2 ⁻	2060.1 9	5/2 ⁺	2834.3 7	(11/2 ⁺) [#]		

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

[‡] From Adopted Levels, unless otherwise noted.

[#] From 2013Sz02 based on shell-model predictions.

 $\gamma(^{39}\text{Cl})$

<u>E_{γ}</u>	<u>I_{γ}</u> [†]	<u>E_i(level)</u>	<u>J_i^π</u>	<u>E_f</u>	<u>J_f^π</u>
396.4 1	130 9	396.4	1/2 ⁺	0.0	3/2 ⁺
396.5 1	3.0 30	1697.8	5/2 ⁻	1301.3	(5/2 ⁺)
410.6 4	24.0 30	2834.3	(11/2 ⁺)	2423.7	(9/2 ⁺)
443.7 3	14.0 20	1744.9	(7/2 ⁺)	1301.3	(5/2 ⁺)
484.5 4	63.0 30	1785.8	(7/2 ⁻)	1301.3	(5/2 ⁺)
637.8 7	45 9	2423.7	(9/2 ⁺)	1785.8	(7/2 ⁻)
679 [‡]		2423.7	(9/2 ⁺)	1744.9	(7/2 ⁺)
682.8 8	30 5	3517.1	(15/2 ⁺)	2834.3	(11/2 ⁺)
874.4 5	5.0 20	2572.2	(9/2 ⁻)	1697.8	5/2 ⁻
^x 1065 1	5.0 30				
1089 1	16.0 30	2834.3	(11/2 ⁺)	1744.9	(7/2 ⁺)
1123 1	17 4	2423.7	(9/2 ⁺)	1301.3	(5/2 ⁺)
1176.4 5	21.0 30	2962.2	(11/2 ⁻)	1785.8	(7/2 ⁻)
1301.3 3	130 9	1301.3	(5/2 ⁺)	0.0	3/2 ⁺
1326 2	12.0 30	1722.2	5/2 ⁺	396.4	1/2 ⁺
1696 [‡]		1697.8	5/2 ⁻	0.0	3/2 ⁺
1722 2	15.0 30	1722.2	5/2 ⁺	0.0	3/2 ⁺
1744.5 8	43 6	1744.9	(7/2 ⁺)	0.0	3/2 ⁺
1840.5 7	13.0 20	2236.9	1/2 ⁺	396.4	1/2 ⁺
2060.0 9	19.0 30	2060.1	5/2 ⁺	0.0	3/2 ⁺
2238 [‡]		2236.9	1/2 ⁺	0.0	3/2 ⁺

[†] Quoted values are I _{γ} values from 2013Sz02 divided by 10, with the latter in effective number of counts after taking into account detector efficiency.

[‡] Placement of transition in the level scheme is uncertain.

^x γ ray not placed in level scheme.

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Legend

Level Scheme

Intensities: Relative I_γ

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

