^{208}Pb(^{36}S,Xγ) 2010Wa20

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Jun Chen and Balraj Singh	NDS 199,1 (2025)	30-Sep-2024

2010Wa20: 215 MeV $^{36}S^{9+}$ beam was produced from the Tandem-ALPI accelerator complex at the INFN Legnaro National Laboratory, Italy. Target was ^{208}Pb isotopically enriched to 99.7% with thickness of 300 μg/cm^2 on a 20 μg/cm^2 carbon backing. Projectile-like fragments were analyzed with PRISMA, a large acceptance-angle magnetic spectrometer. Identification of fragments made by Time-Of-Flight (tof), energy loss and total energy with detectors of a ten-element 100 cm long multi-wire parallel-plate avalanche counter (MWPPAC), a position-sensitive micro-channel plate (MCP) and a 10x4 element ionization chamber. Gamma rays detected by an array of 25 escape-suppressed Ge clover detectors (CLARA) in coincidence with the detection of recoils. Measured Eγ, Iγ, (projectile-like fragments)γ coin. Deduced levels, J, π. The $\gamma\gamma$ coin was not possible due to low counting rates. Comparison with *1ħω p-sd-pf* large-scale shell-model calculations.

Additional information 1.

Level scheme here is established by 2010Wa20 on the basis that in binary grazing reactions, yrast or near yrast states are preferentially populated.

^{33}Si Levels

E(level)†	J$^\pi$‡
0	3/2$^+$
1010 *1*	1/2$^+$
1435 *2*	7/2$^-$
1981.0 *15*	(3/2$^-$)
3159 *3*	(9/2$^-$)
4090 *3*	(11/2$^-$)
4931? *4*	(11/2$^-$)

† From Eγ data.
‡ As proposed by 2010Wa20 based on shell-model predictions.

γ(^{33}Si)

E$_\gamma$†	I$_\gamma$†	E$_i$(level)	J$_i^\pi$	E$_f$	J$_f^\pi$
971 *1*	22 *3*	1981.0	(3/2$^-$)	1010	1/2$^+$
1010 *1*	100 *5*	1010	1/2$^+$	0	3/2$^+$
1435 *2*	86 *7*	1435	7/2$^-$	0	3/2$^+$
1724 *2*	49 *4*	3159	(9/2$^-$)	1435	7/2$^-$
1772‡ *2*	14 *2*	4931?	(11/2$^-$)	3159	(9/2$^-$)
2655 *2*	24 *3*	4090	(11/2$^-$)	1435	7/2$^-$

† From 2010Wa20.
‡ Placement of transition in the level scheme is uncertain.

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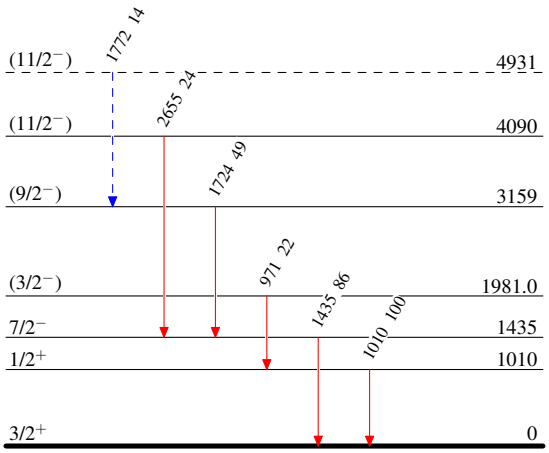
Level Scheme

Intensities: Relative I_γ

Legend

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



$^{33}_{14}Si_{19}$