^{208}Pb(^{36}S,Xγ) 2019Gr08

History

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

2019Gr08: E=225 MeV ^{36}S beam was provided by Tandem-ALPI accelerator complex at the INFN Legnaro National Laboratory. Target was 99.7% enriched in ^{208}Pb with a thickness of 1 mg/cm^2 deposited on 1 mg/cm^2 Nb backing, and mounted onto Cologne differential plunger. Recoiling projectile-like fragments were separated and identified by the PRISMA magnetic spectrometer. The γ rays were detected with the AGATA demonstrator array of five triple cluster modules of 36-fold segmented Ge crystals at a distance of 18 cm from the reaction target position, covering backward angles 135° to 175°. Measured Eγ, (^{33}P)γ-coin, and level lifetime using differential recoil-distance method. Comparison with shell-model calculations using PSDPF effective interaction.

^{33}P Levels

E(level)[†]	J$^\pi$[‡]	T$_{1/2}$[#]	Comments
0	1/2$^+$		
1431	3/2$^+$	<1.4 ps	T$_{1/2}$: estimated mean lifetime is <2 ps (2019Gr08), as the statistical uncertainty is large.
1848	5/2$^+$	<1.4 ps	T$_{1/2}$: estimated mean lifetime is <2 ps (2019Gr08), as the statistics were poor.
3491	5/2$^+$		
3626	7/2$^+$		
4226	7/2$^-$		
5451	9/2$^-$		
5636	11/2$^-$		

[†] From Eγ data.
[‡] As quoted in 2019Gr08 from an earlier work of ^{208}Pb+^{36}S in a PhD thesis by A. Hodsdon, 2009.
[#] From differential recoil-distance method (DRDM) (2019Gr08).

γ(^{33}P)

E$_\gamma$[†]	E$_i$(level)	J$_i^\pi$	E$_f$	J$_f^\pi$
185[‡]	5636	11/2$^-$	5451	9/2$^-$
1225	5451	9/2$^-$	4226	7/2$^-$
1431	1431	3/2$^+$	0	1/2$^+$
1643[‡]	3491	5/2$^+$	1848	5/2$^+$
1848	1848	5/2$^+$	0	1/2$^+$
2195	3626	7/2$^+$	1431	3/2$^+$
2378	4226	7/2$^-$	1848	5/2$^+$

[†] From 2019Gr08.
[‡] γ not shown in spectral Fig. 2 of 2019Gr08, but quoted from an earlier work in a PhD thesis by A. Hodsdon, University of Paisley, 2007.

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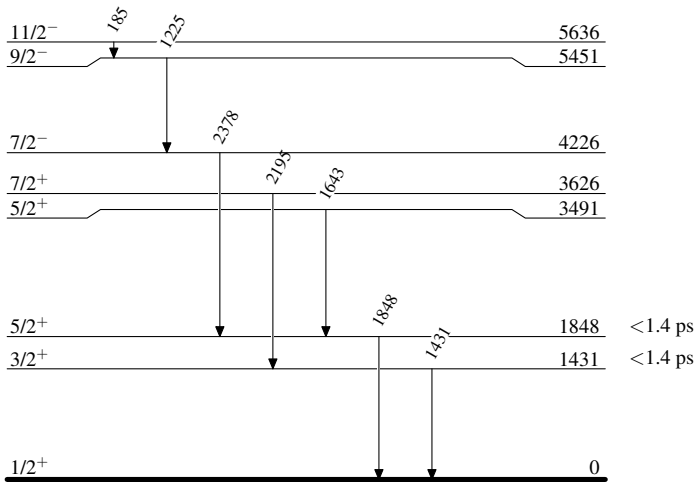
Level Scheme



$^{33}_{15}P_{18}$