

$^{208}\text{Pb}(^{36}\text{S}, ^{35}\text{P}\gamma) E=230 \text{ MeV}$ 2008Wi09

Type	Author	Citation	History	Literature Cutoff Date
Full Evaluation	Lijie Sun and Jun Chen	NDS 211,1 (2026)		30-Sep-2025

[2008Wi09,2010WiZZ](#): A 230-MeV ^{36}S beam was produced by the Argonne Tandem Linac Accelerator System (ATLAS) with an intensity of 1.5 pA on a 0.5 mg/cm² ^{208}Pb target and an intensity of 0.3 pA on a 44 mg/cm² ^{208}Pb target. In the thin-target run, binary transfer products were detected using a heavy-ion parallel-plate avalanche counter (PPAC) array (CHICO) (Time resolution ≈ 0.7 ns). The polar angle covered was 12° – 85° with respect to the beam. γ rays were detected by Gammasphere consisting of 101 HPGe detectors with FWHM=2-10 keV at $E_\gamma=1$ MeV. Event-by-event Doppler shift correction was applied. In the thick-target run, binary transfer products were stopped in the target. γ rays were detected by Gammasphere consisting of 95 HPGe detectors with FWHM=2-3 keV at $E_\gamma=1$ MeV. Measured E_γ , I_γ , $\gamma\gamma$ -coin. Deduced levels. Comparisons with shell-model calculations. Branching-ratio limits were reported for predicted transitions to the $2\hbar\omega$ bandheads in ^{35}P and ^{34}Si . An e-mail reply from Mathis Wiedeking in April, 2010 ([2010WiZZ](#)) provides relative γ -ray intensities, supplementing [2008Wi09](#).

 ^{35}P Levels

E(level) ^{†‡}	J π [#]	E(level) ^{†‡}	J π [#]	E(level) ^{†‡}	J π [#]
0	1/2 ⁺	4493.3 8	(7/2 ⁻)	5487.7 10	
2386.9 7	3/2 ⁺	4766.0 9	(9/2 ⁻)	5560.1 12	(5/2 ⁻)
3860.6 7	5/2 ⁺	4868.7 8	(5/2 ⁻ ,7/2 ⁻)	6220.4 10	(7/2 ⁻ ,9/2,11/2 ⁻)
4102.1 7	(7/2 ⁻)	4959.3 9	(9/2 ⁻)		
4381.8 10	(5/2 ⁻)	5087.6 10	(11/2 ⁻)		

[†] Additional information 1.

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

[#] From the Adopted Levels.

 $\gamma(^{35}\text{P})$

E_γ [†]	I_γ [†]	E_i (level)	J π_i	E_f	J π_f	Comments
128 1	14 2	5087.6	(11/2 ⁻)	4959.3	(9/2 ⁻)	
241 1	61 4	4102.1	(7/2 ⁻)	3860.6	5/2 ⁺	
273 1	12 2	4766.0	(9/2 ⁻)	4493.3	(7/2 ⁻)	
321 1	27 3	5087.6	(11/2 ⁻)	4766.0	(9/2 ⁻)	
374 1	3 1	4868.7	(5/2 ⁻ ,7/2 ⁻)	4493.3	(7/2 ⁻)	
391 1	35 3	4493.3	(7/2 ⁻)	4102.1	(7/2 ⁻)	
466 1	14 2	4959.3	(9/2 ⁻)	4493.3	(7/2 ⁻)	
487 1	<2	4868.7	(5/2 ⁻ ,7/2 ⁻)	4381.8	(5/2 ⁻)	I_γ : original 1 1 from 2008Wi09 and 2010WiZZ .
632 1	6 1	4493.3	(7/2 ⁻)	3860.6	5/2 ⁺	
663 1	47 4	4766.0	(9/2 ⁻)	4102.1	(7/2 ⁻)	
767 1	5 1	4868.7	(5/2 ⁻ ,7/2 ⁻)	4102.1	(7/2 ⁻)	
856 1	13 2	4959.3	(9/2 ⁻)	4102.1	(7/2 ⁻)	
993 1	5 1	5487.7		4493.3	(7/2 ⁻)	
1009 1	<1	4868.7	(5/2 ⁻ ,7/2 ⁻)	3860.6	5/2 ⁺	
1132 1	<1	6220.4	(7/2 ⁻ ,9/2,11/2 ⁻)	5087.6	(11/2 ⁻)	
1260 1	4 1	6220.4	(7/2 ⁻ ,9/2,11/2 ⁻)	4959.3	(9/2 ⁻)	
1387 1	3 1	5487.7		4102.1	(7/2 ⁻)	
1458 1	7 2	5560.1	(5/2 ⁻)	4102.1	(7/2 ⁻)	
1473 1	15 2	3860.6	5/2 ⁺	2386.9	3/2 ⁺	
1715 1	4 1	4102.1	(7/2 ⁻)	2386.9	3/2 ⁺	
1729 1	4 1	6220.4	(7/2 ⁻ ,9/2,11/2 ⁻)	4493.3	(7/2 ⁻)	
1995 1	2 1	4381.8	(5/2 ⁻)	2386.9	3/2 ⁺	
2386 1	30 4	2386.9	3/2 ⁺	0	1/2 ⁺	
3861 1	100	3860.6	5/2 ⁺	0	1/2 ⁺	
4102 1	33 5	4102.1	(7/2 ⁻)	0	1/2 ⁺	

[†] From [2008Wi09](#) and [2010WiZZ](#).

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Level Scheme

Intensities: Relative I_γ

Legend

- $I_\gamma < 2\% \times I_\gamma^{\text{max}}$
- $I_\gamma < 10\% \times I_\gamma^{\text{max}}$
- $I_\gamma > 10\% \times I_\gamma^{\text{max}}$

