

$^{32}\text{S}(\gamma, \gamma'), (\text{pol } \gamma, \gamma')$ 2002Ba28

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Jun Chen	NDS 201,1 (2025)	31-Oct-2024

2002Ba28: (γ, γ') bremsstrahlung was produced from E=9.9 MeV electrons from S-DALINAC at Darmstadt impinging on copper. Target was natural sulfur powder. Emitted γ rays were detected with 4-fold Ge detectors with BGO shields. Measured E_γ , I_γ , $\gamma(\theta)$, γ -ray yields. Deduced levels, J, π , widths, lifetimes, transition strengths. Comparisons with available data and theoretical calculations.

1984Be26: (pol γ, γ') polarized bremsstrahlung was from the University of Giessen 65 MeV electron linac from E=18 MeV electrons impinging on Al foil. γ rays were detected with Ge(Li) detectors. Measured E_γ , I_γ , $\gamma(\theta)$. Deduced levels, J, π , widths, branching ratios. Comparisons with shell-model calculation.

2013Lo05: (pol γ, γ') high-intensity photon beam was produced from laser Compton backscattering at the HI γ S facility of TUNL. Emitted γ rays were detected with four HPGe detectors with eight LaBr₃:Ce scintillators. Measured E_γ , I_γ . Deduced precise γ -ray branching ratios for 8125 level.

2008Bu21: measured $\gamma(\text{lin pol})$ for transitions of levels with known parity at TU Darmstadt.

1989Al01: $E_\gamma=17\text{--}28$ MeV at University of Illinois. Measured $\sigma(E_\gamma)$. Giant dipole resonance.

Others: [1964Ma01](#), [1964Bo22](#), [1961Bo02](#).

 ^{32}S Levels

$\Gamma_{\gamma 0}$ and $\Gamma_{\gamma 1}$ under comments are widths of γ decays to g.s. and 2231 level, respectively. Quoted values are from [2002Ba28](#), unless otherwise noted.

E(level) [†]	J π [‡]	T _{1/2} [@]	Comments
0			
2230.67 14	2	163 fs 24	$\Gamma=0.0031$ eV 5 T _{1/2} : weighted average of 147 fs 24 (2002Ba28), 229 fs 56, and 187 fs 63 (1964Bo22). Additional information 1 .
4281.84 30	2	32 fs 5	$\Gamma=0.0144$ eV 22 $\Gamma_{\gamma 0}=0.0124$ eV 21, $\Gamma_{\gamma 1}=0.00198$ eV 51. Additional information 2 .
5796.81 34	1	5.6 fs 9	$\Gamma=0.082$ eV 14 Additional information 3 .
7484.1 4		9.4 fs 16	$\Gamma=0.0483$ eV 80 $\Gamma_{\gamma 0}=0.0379$ eV 73, $\Gamma_{\gamma 1}=0.0104$ eV 33. Additional information 4 .
8125.42 20	1 ⁺ #	0.132 fs 21	$\Gamma=3.52$ eV 52 $\Gamma_{\gamma 0}=3.044$ eV 508, $\Gamma_{\gamma 1}=0.480$ eV 114; $\Gamma_{\gamma 0}=2.6$ eV 3 (1984Be26). Additional information 5 .
8499.4 4	1	1.30 fs 24	J π : from 1984Be26 . $\Gamma=0.351$ eV 64 $\Gamma_{\gamma 0}=0.231$ eV 50, $\Gamma_{\gamma 1}=0.115$ eV 40; $\Gamma_\alpha=0.0054$ eV from $^{28}\text{Si}(\alpha, \gamma)$. Additional information 6 .
9207.1 5	1 ⁺ #	4.2 fs 14	T _{1/2} : includes $\Gamma_\alpha=0.0054$ eV from $^{28}\text{Si}(\alpha, \gamma)$ (2002Ba28). $\Gamma=0.109$ eV 36 $\Gamma_{\gamma 0}=0.043$ eV 13, $\Gamma_{\gamma 1}=0.066$ eV 33; $\Gamma_{\gamma 0}=0.36$ eV 11 from 1984Be26 is inconsistent. Additional information 7 .
9660.6 11	1 ⁺ #		J π : from 1984Be26 . E(level): from 1984Be26 . $\Gamma_{\gamma 0}=1.5$ eV 4 (1984Be26).

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

[‡] Spin from $\gamma(\theta)$ in [2002Ba28](#), unless otherwise noted.

$^{32}\text{S}(\gamma, \gamma'), (\text{pol } \gamma, \gamma')$ 2002Ba28 (continued) ^{32}S Levels (continued)

From $\gamma(\theta)$ with polarized bremsstrahlung in 1984Be26.

@ From 2002Ba28, deduced from measured width and branching ratios, unless otherwise noted.

 $\gamma(^{32}\text{S})$

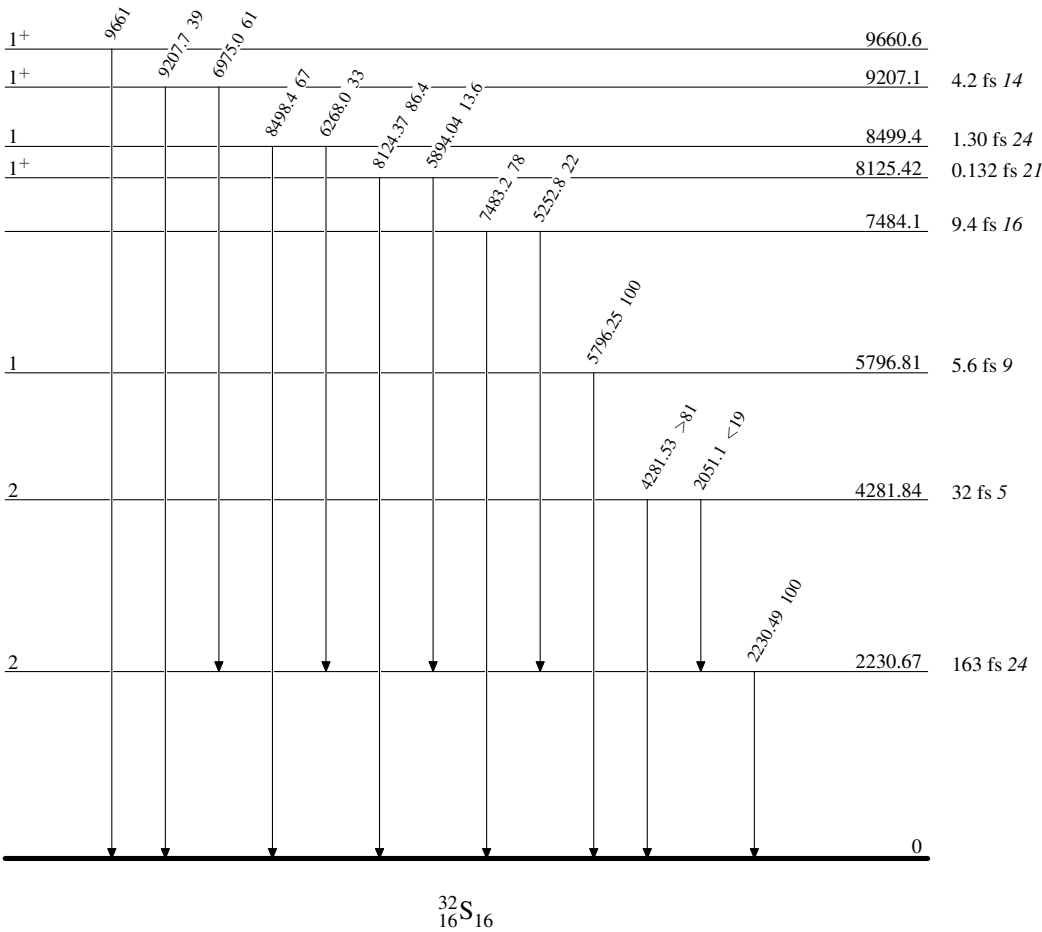
$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\dagger$	E_f	J_f^π	Comments
2230.67	2	2230.49 15	100	0		
4281.84	2	2051.1	<19	2230.67 2		E_γ : from level-energy difference.
		4281.53 30	>81	0		
5796.81	1	5796.25 34	100	0		
7484.1		5252.8 6	22 7	2230.67 2		
		7483.2 5	78 19	0		
8125.42	1 ⁺	5894.04 34	13.6 4	2230.67 2		I_γ : from $I_\gamma(5894\gamma)/I_\gamma(8124\gamma)=15.7$ 3, with an additional 3% systematic uncertainty to be added (2013Lo05). Other: 14 3 (2002Ba28).
		8124.37 24	86.4 4	0		I_γ : See comment for 5894 γ . Others: 86 19 (2002Ba28), 87 4 (1984Be26).
8499.4	1	6268.0 5	33 13	2230.67 2		
		8498.4 8	67 18	0		
9207.1	1 ⁺	6975.0 5	61 36	2230.67 2		
		9207.7 9	39 17	0		I_γ : other: 100 from 1984Be26 is inconsistent.
9660.6	1 ⁺	9661		0		E_γ : from level-energy difference.

[†] From 2002Ba28, unless otherwise noted.

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Level Scheme

Intensities: % photon branching from each level



$^{32}_{16}\text{S}_{16}$