^{31}P(p,γ) E=res 1997Br07,1975Bo42,1972Co13

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Target $J^{\pi}(^{31}\text{P g.s.})=1/2^{+}$.

1997Br07: E=2.0-3.3 MeV proton beams were produced from 7 MV Van de Graaff accelerator of the University of Freiburg. Targets were 20 μg/cm^2 water cooled Cd_2P_3 on a tantalum sheet (for yield), 20-40 or 50-100 μg/cm^2 P_3N_5 on tantalum sheets. γ rays were detected with Ge detectors. Measured Eγ, Iγ, $\gamma(\theta)$, γ-ray yields. Deduced levels, J, π, γ-ray branching ratios, multipolarities, mixing ratios. Comparisons with available data. 1997Br07 also report data for ^{32}S from ^{29}Si(α,nγ) measurement.

1975Bo42: E=0.4-1.75 MeV protons were produced from the 800 kV electrostatic accelerator at the University of Melbourne and from the 3 MV Van de Graaff accelerator at AAEC research establishment at Lucas Heights. Targets were natural Zn_2P_3 and pure phosphorus. γ rays were detected with Ge detectors. Measured Eγ, Iγ. Deduced levels, γ-ray branching ratios. Comparisons with available data. Also from same group: 1975Ob02.

1972Co13: E=0.3-1.1 MeV protons were produced from Cockroft-Walton accelerator, E=1-2 MeV from 3-MV Van de Graaff at Atomic Energy Board South Africa. Targets were zinc phosphide on copper or tantalum backings. γ rays were detected with Ge(Li) and NaI(Tl) detectors. Measured Eγ, Iγ, $\gamma(\theta)$, γ-ray yields, Doppler-shift attenuation. Deduced levels, J, π, $T_{1/2}$, resonance strengths and widths, γ-ray multipolarities, branching ratios, mixing ratios. Comparisons with available data. Reported absolute resonance strengths are normalized to $\omega\gamma$=0.52 eV *8* for E(p)=624−keV resonance in 1966En04.

1973Ve08,1976Ve03: E=1.24-1.60 MeV from 4-MV Van de Graaff accelerator at Orsay Institute and a 2-MV Van de Graaff at the Centre for Nuclear Research, Strasbourg-Cronenbourg. Natural Phosphorus targets. Measured Eγ, Iγ, $\gamma(\theta)$, Doppler-shift attenuation using Ge and NaI detectors. Deduced levels, J, π, $T_{1/2}$, γ-ray branching ratios, multipolarities, mixing ratios, transition strengths. Also by the same group: 1973Ve06, 1970Ga26 with E=3.1-3.3 MeV. Authors state that uncertainty in branching ratio is 10% for I≥10, 20-40% for others. The evaluators has assigned 20% for Iγ≥5, 30% for Iγ≥2 and 40% for the rest.

1974Vi02: E=0.3-1.4 MeV protons from Helsinki University 3-MV Van de Graaff. Ge detectors for Eγ, Iγ and angular distribution measurements. Zn_3P_3 targets. Authors state that uncertainties in γ branching ratios of resonances ranges from about 5% for strong lines and to about 50% for weak lines. The evaluator has assigned 5% for Iγ≥50, 10% for Iγ≥30, 20% for Iγ≥10, 30% for Iγ≥5, 50% for the rest. See 1970Fo13 with E=2.0-2.4 from the same lab.

1972Le29: E=1.1-1.6 MeV protons from 4-MV Van de Graaff accelerator at the Center for Nuclear Studies Bordeaux-Gradignan. Ge and NaI detectors. Zinc phosphorus targets. Measured Iγ and resonance strengths. Also from same group: 1969Th03 with E=0.811-1.555 MeV and DSAM for lifetime measurements.

Others:

2006Tr03: E=3 MeV protons from the University of Washington FN tandem accelerator. Target of ^{31}P implanted in a tantalum foil backing. HPGe detector for γ-rays. Measured Eγ, mass excess.

2000Ya23: E=1.557 and 1.583 MeV protons from the 3-MV Pelletron accelerator at the Tokyo Institute of Technology. Ge detector with annular NaI Compton suppressor. High purity (99.99%) Zn_3P_2 targets. Centroid shift DSAM determination of lifetimes.

1998Ka31: E=1.0-1.6 MeV protons from 5-MV Van de Graaff accelerator, Institute of Nuclear Research in Debrecen. Target of ^{31}P implanted in Ta backing. γ-rays detected using Ge detector with BGO veto for high precision DSAM lifetime measurements. Monte-Carlo lineshape analysis. Comparison between shell model and experimental branching ratios and lifetimes.

1993Il01: E=0.16-0.37 MeV protons from the Ruhr-Universitat 400-KV accelerator. Implanted ^{31}P targets in Ta backing from SNICS source at the University of Notre Dame of roughly 13 keV at 355 keV incident energy. Ge detector for excitation function and Resonance Strength measurements.

1991Il01: E=0.28-0.62 MeV protons from the 3-MV Pelletron tandem accelerator at the Kellogg Radiation Laboratory of the California Institute of Technology as well as the 1 MV Van de Graaff accelerator at the University of Toronto. Targets of implanted ^{31}P in Ta backing, target thickness of roughly 15 keV at 355 keV incident energy. Measured excitation function, Iγ and resonance strengths using a Ge detector.

1986Zi08: E=1 MeV protons from the Utrecht 3-MV Van de Graaff accelerator. 99.99% pure ^{31}P targets. Measured yields to get resonance strengths using Ge detectors.

1981He09: E=1.15 MeV protons from the Helsinki University Van de Graaff. Ge detectors. Measured Eγ, Iγ, $\gamma(\theta)$, and γ yields; deduced resonance strengths. Reported resonance strengths $S_{p\gamma}$ are relative to a known value of 0.24 eV *4* for E(p)=642−keV resonance deduced based on evaluated data in 1979En05.

1978Pa03: E=0.5-0.9 MeV protons from 5-MV Pelletron accelerator at the University of Melbourne. Ge and NaI detectors for resonance strength measurement. Reported $S_{p\gamma}$ of E(p)=811−keV resonance is relative to 3.26 eV *4* for E(p)=633−keV resonance in ^{27}Al(p,γ). See also 1979Pa16 with E(p)=0.5-2.0 MeV.

1974Gr15: E=0.8-2.0 MeV protons from the McMaster University 3-MV KN Van de Graaff accelerator. γ rays were detected with

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a Ge(Li) detector. Measured Eγ, Iγ, Doppler-shift attenuation. Deduced levels, $T_{1/2}$, branching ratios.

1973Ko28: E=1.8-2.7 MeV protons from electrostatic accelerator at the Physical Technical Institute of the Ukranian Academy of Sciences. Zn_3P_2 targets with Germanium detectors for Eγ measurements. See also 1977Ko07 with E=1.121, 1.151, 1.557 and 1.954 MeV for $\gamma(\theta)$ measurements.

1975Ob02: E=0.33-1.75 MeV protons from 800 kV electrostatic accelerator at the University of Melbourne. 99.999% pure red phosphorus targets. Ge detectors for yield and thus resonance strength measurements. Reported $S_{p\gamma}$ values are normalized to 0.25 eV *3* for E(p)=642−keV resonance.

1971Re15: E=0.5-0.8 MeV protons from 1 MeV Cockroft-Walton accelerator at the University of Witwatersrand. Compressed natural red phosphorus targets. Authors claim Zinc phosphide in their energy range produced Doppler shifts too small to accurately measure. Ge detectors used for DSAM determination of lifetimes.

1971In02: E=1.555 MeV proton from the 3-MV Van de Graaff accelerator at Queens University. Ge detectors used for Eγ, Iγ, $\gamma(\theta)$. Natural zinc phosphide targets. 1971In02 also report data from ^{32}S(p,p$'\gamma$).

1969Ma34: E=9.5-11.5 MeV protons from Oxford tandem Van de Graaff. Measured σ(Eγ,θ). Deduced giant resonance parameters.

1969Pi10: 1.248-1.583 MeV protons from the University of Oregon Van de Graaff accelerator. Ultrapure (99.999%) Zn_3P_2 targets. Ge detectors for Iγ, angular distribution measurements. DSAM for lifetime measurements. Also 1974Ch09 by the same group.

1968Do14: protons from the University of Oslo Van de Graaff. Zn_3P_2 targets. NaI detectors for angular correlation measurements.

1966En04: 0.3-2.1 MeV protons from the Utrecht 850 keV Cockroft-Walton generator and the 3 MeV Van de Graaff. NaI crystals for absolute resonance strength measurements.

1965An08: E=1.147-1.581 MeV protons from the University of Oslo Van de Graaff accelerator. Measured Eγ, Iγ, yields, $\gamma\gamma(\theta)$ with NaI(Tl) detectors. Deduced levels, J, π, resonance strengths, γ-ray branching ratios.

1964Sm03: Protons from Utrecht cascade and Van de Graaff generators. Targets of Zn_3P_2. NaI crystals for Eγ and angular distributions.

1963Ch04: University of Michigan facility. Zn_3P_2 and P_4S_6 targets. Measured yields, Iγ and angular distributions.

1963Sp03, 1965Sp05: protons from Helsinki University 3-MV Van de Graaff. NaI detectors for Eγ, Iγ, $\gamma(\theta)$, $\gamma\gamma(\theta)$ and resonance strength measurements.

1963Te01: protons from the 500-kV Van de Graaff generator at the Natuurkundig Laboratory der Rikksuniversiteit, Groningen. Zinc phosphide targets. NaI detectors for Iγ and $\gamma(\theta)$ measurements.

1962Ne10: protons from 550 kV Cockroft-Walton at Iowa State University. Thick amorphous phosphorus targets. NaI detectors for angular distribution measurements.

1962Be39: protons from 800 kV Cockroft-Walton accelerator at the Central Research Institute, Budapest. NaI and plastic detectors for Eγ, $\gamma(\theta)$ measurements.

1961An01,1961An14: 700-1600 keV protons from Blindern Van de Graaff accelerator. 90 degree electrostatic analyzer and NaI scintillation counter with PMT. Targets of Zn_3P_2 and Cu_3P_2.

1955Pa58: E=1.0-2.3 MeV protons from Chalk River electrostatic generator. Measured Eγ, Iγ, $\gamma(\theta)$ with NaI(Tl) detectors.

Others: 1961Bi13, 1962Ch04, 1965De12, 1965Ho14, 1970Vi04, 1971Si29, 1972Vi12.

^{32}S Levels

Resonance strength $S_{p\gamma}$ given under comments are defined as $(2J+1)\Gamma_p\Gamma_\gamma/\Gamma$. Values quoted from following references are obtained by normalizing measured relative strength to that of a resonance with known resonance strength either measured from their work or taken from a previous work as noted in parentheses: 1997Br07 (27 eV for E(p)=2349), 1991Il01 and 1986Zi08 (1.00 eV *8* of E(p)=811 from 1979Pa16,1975Ob02), 1975Ob02 (0.25 eV *3* of E(p)=642), 1973Ve08 (also 1973Ve06) and 1972Co13 (0.52 eV *8* of E(p)=642 from 1966En04), 1972Le29 (9.2 eV of E(p)=1248 for E(p)=1100-1300 and 11 eV of E(p)=1555 for E(p)=1300-1600 from 1967En05 evaluation). Note that the reference $S_{p\gamma}$=0.52 eV *8* for E(p)=642 measured by 1966En04 is discrepant with values of other work: 0.25 eV *3* (1975Ob02), 0.23 eV *5* (1964Sm03) and also has a large deviation from 0.36 eV *18* (1963Sp03). The evaluator has renormalized values in 1973Ve08 and 1972Co13 to an average $S_{p\gamma}$=0.23 eV *2* for E(p)=642 resonance (see comments about this average at 9486 level).

E(level)[†]	J$^\pi$	$T_{1/2}$[‡]	Comments
0	0^+		
2230.3 *3*	2^+	142 fs *21*	E(level): weighted average of 2230.0 *3* (1974Vi02), 2230.5 *3* (1972Co13), 2231.1 *10* (1973Ve08). J$^\pi$: spin from $\gamma(\theta)$ in 1973Ve08; 2051γ E2(+M1) from 2^+.

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^{31}P(p,γ) E=res 1997Br07,1975Bo42,1972Co13 (continued)

^{32}S Levels (continued)

E(level)[†]	J$^{\pi}$	T$_{1/2}$[‡]	Comments
			T$_{1/2}$: weighted average of 175 fs *28* (1998Ka31), 135 fs *49* (1974Ch09), 128 fs *52* (1972Co13), 180 fs *55* (1969Th03), 121 fs *21* (1971Re15). Additional information 1.
3777.2 *12*	0$^+$	0.59 ps *+14−12*	E(level): weighted average of 3776.0 *12* (1974Vi02), 3778.2 *18* (1972Co13), 3778.1 *14* (1973Ve08). J$^{\pi}$: 1549$\gamma(\theta)$ is isotropic (1971In02); M2 for 1547γ to 2$^+$ is ruled out by RUL. T$_{1/2}$: weighted average of 0.9 ps *3* (1998Ka31), 0.36 ps *+21−7* (1969Pi10), 0.70 ps *14* (1974Ch09), 0.83 ps *38* (1972Co13). Additional information 2.
4281.4 *10*	2$^+$	29.8 fs *35*	E(level): weighted average of 4281.2 *10* (1974Vi02), 4282.2 *10* (1972Co13), 4280.8 *10* (1973Ve08). J$^{\pi}$: 4281γ E2, ΔJ=2 to 0$^+$. T$_{1/2}$: unweighted average of 40.0 fs *14* (1998Ka31), 20.1 fs *14* (1969Pi10), 35 fs *9* (1969Th03), 25 fs *6* (1972Co13), 29.0 fs *27* (2000Ya23). Additional information 3.
4458.6 *8*	4$^+$	0.14 ps *6*	E(level): weighted average of 4458.4 *8* (1974Vi02), 4458.9 *10* (1972Co13). J$^{\pi}$: 2229γ E2, ΔJ=2 to 2$^+$. T$_{1/2}$: from 1974Ch09. Additional information 4.
4695.5 *4*	1	0.218 ps *46*	E(level): 4695.6 *5* (1974Vi02), 4695.3 *4* (1972Co13), 4696.0 *10* (1973Ve08). J$^{\pi}$: spin from $\gamma(\theta)$ 1973Ve08. T$_{1/2}$: unweighted average of 0.367 ps *35* (1969Pi10), 0.119 ps *70* (1969Th03), 0.277 ps *28* (1998Ka31), 0.170 ps *35* (1974Ch09), 0.159 ps *38* (1972Co13). Additional information 5.
5006.2 *3*	3$^-$	0.56 ps *14*	E(level): weighted average of 5006.2 *3* (1976Ve03), 5006.5 *10* (1972Co13), 5005.4 *8* (1974Vi02), 5007.8 *14* (1973Ve08). J$^{\pi}$: from $\gamma(\theta$,pol) in 1968Do14; spin also from $\gamma(\theta)$ (1973Ve08). T$_{1/2}$: unweighted average of 1.04 ps *+180−49* (1969Pi10), 0.173 ps *35* (1969Th03), 0.263 ps *49* (1998Ka31), 1.07 ps *26* (1974Ch09), 0.69 ps *28* (1971Re15), 0.243 ps *56* (1972Co13), 0.42 ps *10* (1976Ve03). Additional information 6.
5412.4 *10*	3$^+$	102 fs *23*	E(level): weighted average of 5412.6 *10* (1972Co13), 5410.4 *15* (1974Vi02), 5413.8 *14* (1973Ve08). J$^{\pi}$: spin from $\gamma(\theta)$ 1972Co13; 3182γ M1+E2 to 2$^+$. T$_{1/2}$: weighted average of 67.2 fs *35* (1969Pi10), 67 fs *18* (1972Co13), 111 fs *28* (1976Ve03), 164 fs *28* (1998Ka31). Additional information 7.
5547.9 *12*	2$^+$	56 fs *8*	E(level): weighted average of 5546.2 *12* (1974Vi02), 5548.5 *14* (1972Co13), 5550.3 *17* (1973Ve08). J$^{\pi}$: spin from $\gamma(\theta)$ in 1997Br07; 3319γ E2+M1 to 2$^+$. T$_{1/2}$: weighted average of 0.030 ps *24* (1969Pi10), 0.047 ps *8* (1969Th03), 0.066 ps *8* (1998Ka31), 0.07 ps *2* (1972Co13). Additional information 8.
5797.5 *10*		5.5 fs *35*	E(level): weighted average of 5797.2 *19* (1974Vi02), 5797.6 *10* (1972Co13). T$_{1/2}$: from 1972Co13. Additional information 9.
6222.7 *8*	2	48 fs *6*	E(level): 6224.3 *9* (1976Ve03), 6224.2 *10* (1972Co13), 6222.9 *8* (1974Vi02). J$^{\pi}$: spin from $\gamma(\theta)$ 1973Ve08. T$_{1/2}$: weighted average of 76 fs *35* (1969Pi10), 42 fs *10* (1969Th03), 52.8 ps *65* (2000Ya23), 90 ps *28* (1971Re15), 38 fs *7* (1972Co13), 52 fs *10* (1976Ve03). Additional information 10.
6410 *2*	(4)		E(level): from 1974Vi02. J$^{\pi}$: 4599γ D(+Q) from J=4 and 5259γ D+Q from 5$^+$ based on $\gamma(\theta)$ in 1997Br07; (1,2,3,4) from $\gamma(\theta)$ in 1976Ve03.
6621.5 *3*	4$^-$	0.36 ps *6*	E(level): 6621.7 *3* (1976Ve03), 6621.0 *10* (1972Co13), 6620.6 *8* (1974Vi02). J$^{\pi}$: from $\gamma(\theta$,pol) in 1968Do14; spin also from $\gamma(\theta)$ 1973Ve08 and 1974Gr15.

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^{32}S Levels (continued)

E(level)[†]	J$^\pi$	T$_{1/2}$[‡]	Comments
			T$_{1/2}$: weighted average of 0.26 ps *6* (1969Pi10), 0.55 ps *8* (1998Ka31), 0.39 ps *8* (1974Ch09), 0.29 ps *7* (1972Co13), and 0.68 ps *17* (1976Ve03). Other: >0.7 ps (1969Th03). Additional information 11.
6665.7 *10*	2$^+$	42 fs *10*	E(level): weighted average of 6666.1 *10* (1972Co13), 6664 *2* (1972Le29). J$^\pi$: 2888γ E2 to 0$^+$. T$_{1/2}$: unweighted average of 37 fs *9* (1969Pi10), 61 fs *6* (1998Ka31), 54.1 fs *58* (2000Ya23), 15 fs *5* (1972Co13). Additional information 12.
6761.6 *10*	5$^-$	260 fs *35*	E(level): from 1972Co13. J$^\pi$: from Adopted Levels. (3,4,5) from $\gamma(\theta)$ in 1976Ve03 and 1974Gr15. T$_{1/2}$: from 1998Ka31. Other: >210 fs (1974Gr15). Additional information 13.
6852.4 *15*	4$^+$	66 fs *17*	E(level): weighted average of 6853.5 *16* (1972Co13), 6851.5 *15* (1974Vi02). T$_{1/2}$: from 1972Co13. Additional information 14. J$^\pi$: spin from $\gamma(\theta)$ (1981He09); 2571γ E2 to 2$^+$.
7001.8 *5*	1	1.4 fs *5*	E(level): weighted average of 7001.44 *36* (2006Tr03), 7003.7 *10* (1972Co13), 7004.4 *16* (1974Vi02), 7000.8 *14* (1973Ve08). J$^\pi$: from $\gamma(\theta)$ in 1973Ve08. T$_{1/2}$: from 1998Ka31. Other: <3.5 fs (1972Co13). Additional information 15.
7115.3 *10*	2$^+$	1.59 fs *35*	E(level): weighted average of 7116.5 *10* (1972Co13), 7114 *2* (1972Le29), 7115.7 *10* (1974Vi02), 7112.8 *14* (1973Ve08). J$^\pi$: spin from $\gamma(\theta)$ in 1974Vi02; 4884γ M1+E2 to 2$^+$. T$_{1/2}$: from 1998Ka31. Other: <3.5 fs (1972Co13). Additional information 16.
7190.2 *15*		4.9 fs *17*	E(level): 7189.0 *15* (1972Co13), 7189 *5* (1972Le29), 7192.4 *20* (1974Vi02). T$_{1/2}$: from 2000Ya23. Additional information 17.
7350.0 *6*	3		E(level): weighted average of 7350.2 *6* (1997Br07), 7348 *2* (1974Vi02). J$^\pi$: spin from $\gamma(\theta)$ in 1997Br07.
7367			E(level): from γ decay in 1997Br07.
7434 *3*			E(level): from 1974Vi02.
7484.0 *10*	2$^+$	5.5 fs *8*	E(level): weighted average of 7484.8 *10* (1972Co13), 7485 *3* (1972Le29), 7482.6 *12* (1974Vi02). J$^\pi$: spin from $\gamma(\theta)$ 1981He09; 7482γ E2 to 0$^+$. T$_{1/2}$: weighted average of 4.8 fs *12* (1998Ka31) and 5.8 fs *8* (2000Ya23). Additional information 18.
7535.7 *10*			E(level): weighted average of 7535.5 *10* (1972Co13), 7535 *5* (1972Le29), 7535.7 *10* (1974Vi02), 7536.0 *14* (1973Ve08).
7567			E(level): from γ decay in 1997Br07.
7637.0 *10*			E(level): from 1997Br07.
7701.6 *4*	3	67 fs *20*	E(level): weighted average of 7701.44 *36* (2006Tr03), 7702.4 *10* (1972Co13), 7701.8 *5* (1997Br07), 7701 *2* (1974Vi02). J$^\pi$: from $\gamma(\theta)$ in 1997Br07. T$_{1/2}$: from 2000Ya23. Additional information 19.
7882.9 *9*	4		E(level): from 1997Br07. J$^\pi$: from $\gamma(\theta)$ in 1997Br07.
7921.0 *10*			E(level): from 1997Br07.
7950.1 *4*	4$^-$	97 fs *18*	E(level): weighted average of 7950.0 *4* (1976Ve03), 7950.8 *10* (1972Co13), 7950.1 *14* (1997Br07), 7950 *3* (1972Le29). J$^\pi$: spin from $\gamma(\theta)$ 1976Ve03; 2944γ E2+M1 to 3$^-$. T$_{1/2}$: weighted average of 146 fs *35* (1998Ka31), 90 fs *18* (1976Ve03), and 76 fs *+42−28* (1974Gr15). Additional information 20.

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^{31}P(p,γ) E=res 1997Br07,1975Bo42,1972Co13 (continued)

^{32}S Levels (continued)

E(level)[†]	J$^{\pi}$	T$_{1/2}$[‡]	Comments
7974.9 *7*	3		E(level): from 1997Br07. J$^{\pi}$: from $\gamma(\theta)$ in 1997Br07.
8125.43 *26*			E(level): weighted average of 8125.32 *24* (2006Tr03), 8126.2 *10* (1972Co13), 8125 *5* (1972Le29), 8128.0 *15* (1974Vi02).
8191.1 *6*	4		E(level): from 1997Br07. J$^{\pi}$: from $\gamma(\theta)$ in 1997Br07.
8270			E(level): from γ decay in (1997Br07).
8296.1 *10*	3		E(level): from 1997Br07. Other: 8294 *3* (1974Vi02). J$^{\pi}$: from $\gamma(\theta)$ in 1997Br07. Additional information 21.
8346.3 *14*			E(level): from 1997Br07.
8407.0 *14*	2		E(level): from 1997Br07. J$^{\pi}$: from $\gamma(\theta)$ in 1997Br07.
8504 *6*			E(level): from 1974Vi02.
8690			E(level): from γ decay in 1997Br07.
8729.3 *6*	3^{+}		J$^{\pi}$: spin from $\gamma(\theta)$ 1997Br07; negative parity rejected because it would required an unrealistically large B(M2) for 2940γ from the 5^{+} resonance. E(level): from 1997Br07.
8745.6 *8*	3		E(level): from 1997Br07. J$^{\pi}$: from $\gamma(\theta)$ in 1997Br07.
8861	2^{+}		E(level): from γ decay in 1997Br07.
9023			E(level): from 1991Il01. E(p)=163 at resonance.
9058 *2*			E(level): E(p)=200 *2* (1993Il01). S$_{p\gamma}$=4.8×10^{-7} eV 16 (1993Il01).
9065			E(level): from 1991Il01. E(p)=206 at resonance.
9170 *3*			E(level): from 1991Il01. E(p)=316 at resonance. S$_{p\gamma}$≤0.037 meV (1991Il01).
9196			E(level): quoted in 1991Il01, from 1995Ro22. E(p)=342 at resonance. S$_{p\gamma}$≤0.061 meV (1991Il01).
9207.6 *7*	1^{+}		E(level): from 2006Tr03. E(p)=355 *6* (1962Be39), 355 *1* (1974Vi02), 355 *1* (1991Il01), 355 (1993Il01). J$^{\pi}$: spin from $\gamma(\theta)$ in 1963Te01 and 1962Ne10. π=+ is proposed by 1962Ne10 based on the argument of observed isotropic $\sigma(\theta)$ consistent with s-wave proton capture. S$_{p\gamma}$=4.2 meV *7* (1991Il01), 17 meV *2* (1975Ob02), 1.3 meV *5* (1972Co13; renormalized from 3 meV *1*).
9235 *2*			E(level): E(p)=383 *2* (1991Il01). S$_{p\gamma}$=0.060 meV *12* (1991Il01), <0.15 meV (1964Sm03).
9254 *2*			E(level): E(p)=403 *2* (1991Il01). S$_{p\gamma}$=0.45 meV *7* (1991Il01).
9289 *1*	1^{+}		E(level): E(p)=439 *1* (1991Il01), 439 *1* (1974Vi02), 440 *6* (1962Be39). J$^{\pi}$: from $\gamma(\theta)$ (1963Te01) and $\gamma\gamma(\theta)$ (1962Ne10). π=+ is proposed by 1962Ne10 based on the argument of observed isotropic $\sigma(\theta)$ consistent with s-wave proton capture. S$_{p\gamma}$=25 meV *4* (1991Il01), 130 meV *20* (1975Ob02), 111 meV *33* (1972Co13; renormalized from 250 meV *75*).
9388 *1*	2	<0.7 fs	E(level): E(p)=541 *1* (1974Vi02), 541 *1* (1991Il01), 540 *6* (1962Be39). J$^{\pi}$: spin from $\gamma(\theta)$ (1963Ch04). T$_{1/2}$: from 1971Re15. S$_{p\gamma}$=0.12 eV *2* (1991Il01), 0.51 eV *6* (1975Ob02), 0.44 eV eV *13* (1972Co13; renormalized from 1.0 eV *3*).
9463.4 *10*			E(level): E(p)=618.9 *10* (1964Sm03), 619 *1* (1991Il01). S$_{p\gamma}$=1.1 meV *2* (1991Il01), 6 meV 4 (1975Ob02), 2.7 meV *9* (1972Co13; renormalized from 6 meV *2*), 3 meV (1964Sm03).
9485.8 *10*	1		E(level): E(p)=642.1 *10* (1964Sm03), 642 *1* (1974Vi02). J$^{\pi}$: from $\gamma(\theta)$ (1964Sm03,1963Sp03). S$_{p\gamma}$=0.25 eV *3* (1975Ob02), 0.23 eV *5* (1964Sm03), 0.36 eV *18* (1963Sp03), 0.22 eV *2* (1979Pa16); 0.52 eV *8* (1966En04). Note that value from 1966En04 has been used as

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^{32}S Levels (continued)

E(level)†	Jπ	Comments
		normalization reference in some later studies (1973Ve08 and 1972Co13) while a different normalization reference is used in other studies. The average of other four values in agreement is 0.23 eV *2*. See the comment about normalization of $S_{p\gamma}$ at the top of this table.
9650.2 *5*	2	E(level): E(p)=811.8 *5* (1961An01), 811 *1* (1974Vi02). Jπ: from $\gamma(\theta)$ and $\gamma\gamma(\theta)$ (1963Sp03). $S_{p\gamma}$=1.9 eV *4* (1963Sp03), 0.93 eV *12* (1979Pa16), 0.95 eV *20* (1978Pa03), 1.06 eV *11* (1975Ob02), 1.0 eV 3 (1972Co13; renormalized from 2.2 eV *7*). 1979Pa16 report a value of 1.00 eV *8* from average of their value and that of 1975Ob02 and this value has been used as a normalization reference in some later studies. See the comment about different normalization references of $S_{p\gamma}$ at the top of this table.
9659 *1*		E(level): E(p)=821 *1* (1974Vi02). $S_{p\gamma}$=0.23 eV *4* (1975Ob02), 0.19 eV *7* (1972Co13; renormalized from 0.43 eV *15*). Average of the two is 0.22 eV *4*.
9711.9 *14*		E(level): E(p)=875.5 *14* (1964Sm03). $S_{p\gamma}$=0.060 eV *20* (1975Ob02), 0.13 eV *5* (1972Co13; renormalized from 0.29 eV *10*), 0.03 eV (1964Sm03).
9724 *1*	2,3,4	E(level): E(p)=888 *1* (1974Vi02). Jπ: from $\gamma(\theta)$ 1972Co13. $S_{p\gamma}$=0.034 eV *17* (1975Ob02), 0.08 eV *3* (1972Co13; renormalized from 0.18 eV *6*).
9727.9 *5*		E(level): E(p)=892.0 *5* (1961An01). Additional information 22.
9731 *1*		E(level): E(p)=895 *1* (1974Vi02). $S_{p\gamma}$=0.31 eV *7* (1975Ob02), 0.3 eV *1* (1972Co13; renormlaized from 0.7 eV *2*).
9816.8 *10*		E(level): E(p)=983.8 *10* (1972Co13), 983 *1* (1974Vi02). $S_{p\gamma}$=0.091 eV *15* (1975Ob02), 0.08 eV *2* (1972Co13; renormlaized from 0.18 eV *6*).
9827? *3*		E(level): E(p)=994 *3* (1975Ob02). 1997Br07 legitimately criticizes if this this level truly exists. Γ=4.0 keV *8* from 1975Ob02. $S_{p\gamma}$=<0.3 eV (1975Ob02).
9848 *1*		E(level): E(p)=1016 *1* (1974Vi02), 1016 *3* (1975Ob02). $S_{p\gamma}$=31 meV *9* (1975Ob02).
9883.3 *5*		E(level): E(p)=1052.5 *5* (1961An01), 1053 *1* (1974Vi02).
9887.2 *6*		E(level): E(p)=1056.5 *6* (1972Co13). $S_{p\gamma}$=0.49 eV *15* (1972Co13; renormlaized from 1.1 eV *3*), 0.55 eV 6 (1975Ob02).
9918.1 *7*		E(level): E(p)=1088.4 *7*, weighted average of 1089.6 *6* (1972Co13), 1088.0 *5* (1961An01), 1087 *1* (1974Vi02). $S_{p\gamma}$=0.17 eV *5* (1972Co13; renormlaized from 0.38 eV *12*), 0.19 eV *6* (1975Ob02). Additional information 23.
9946.4 *10*	1	E(level): E(p)=1117.7 *10*, unweighted average of 1120.7 *6* (1972Co13), 1116.2 *5* (1961An01), 1117 *1* (1974Vi02), 1117 *1* (1972Le29). Jπ: from $\gamma(\theta)$ in 1963Sp03. $S_{p\gamma}$=1.6 eV *4* (1963Sp03), 1.3 eV *4* (1972Co13; renormlaized from 3.0 eV *9*), 1.04 eV *13* (1975Ob02), 1.7 eV 7 (1972Le29). Additional information 24.
9977.7 *7*	4	E(level): E(p)=1150.0 *7* (1981He09). See comments for 9978.2 level. Jπ: from $\gamma(\theta)$ 1981He09. $S_{p\gamma}$=0.11 eV *3* (1981He09). See comments for 9978.2 level for other values undivided for the doublet. Additional information 25.
9978.2 *7*	3	E(level): E(p)=1150.5 *7* (1981He09). The doublet of 1150.0+1150.5 is only identified by 1981He09. Others (unresolved doublet): 1150.5 *6* (1972Co13), 1146 *1* (1972Le29), 146 *1* (1972Le29), 1147.5 *5* (1961An01). Jπ: from $\gamma(\theta)$ 1981He09 and $\gamma\gamma(\theta)$ in 1965An08. But J=2 from $\gamma(\theta)$ in 1970Ho25 is inconsistent. $S_{p\gamma}$=1.0 eV *2* (1981He09). Others: 4.2 eV *9* (1963Sp03), 1.3 eV *3* (1965An08), 1.7 eV *7* (1972Co13; renormlaized from 3.9 eV *12*), 5.4 eV *22* (1972Le29), 1.85 eV *22* (1975Ob02) undivided between 9977.7 and 9978.2 doublet. Additional information 26.
9982.7 *6*	2	E(level): E(p)=1155.1 *6* (1972Co13), 1151 *1* (1972Le29). Jπ: from $\gamma(\theta)$ (1970Ho25). $S_{p\gamma}$=0.7 eV *2* (1972Co13; renormlaized from 1.5 eV *5*), 0.66 eV *8* (1975Ob02), 1.3 eV *5* (1972Le29).
10072.9 *11*	2	E(level): E(p)=1248.3 *11*, unweighted average of 1251.4 *6* (1972Co13), 1246.5 *6* (1961An01), 1247.4 *15*

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^{31}P(p,γ) E=res 1997Br07,1975Bo42,1972Co13 (continued)

^{32}S Levels (continued)

E(level)†	Jπ	Comments
		(1973Ve08), 1248 *1* (1972Le29). Other: 1247 (1976Ve03).
		Jπ: spin from $\gamma(\theta)$ 1973Ve08 and $\gamma\gamma(\theta)$ in 1965An08.
		$S_{p\gamma}$=1.27 eV *16* (corrected value 1997Br07). Other: 4.9 eV *15* (1972Co13; renormlaized from 11 eV *3*), 4.6 eV *6* (1975Ob02), 4.3 eV *5* (1986Zi08), 5.2 eV *11* (1973Ve08; renormlaized from 11.8 eV *24*), 9.2 eV 37 (1972Le29), 2.0 eV *4* (1965An08).
		Additional information 27.
		Γ_γ=0.86 eV *11* (1986Zi08).
10102.2 *10*	4	E(level): E(p)=1278.5 *10*, weighted average of 1278.2 *10* (1997Br07), 1279.1 *15* (1973Ve08).
		Jπ: spin from $\gamma(\theta)$ in 1997Br07.
		$S_{p\gamma}$=0.11 eV *2* (1973Ve08; renormlaized from 0.25 eV *5*).
10219.5 *6*	3	E(level): E(p)=1399.6 *6*, weighted average of 1400.1 *6* (1972Co13), 1399.3 *8* (1973Ve08), 1400 *1* (1974Vi02), 1398 *1* (1972Le29). Other: 1396.5 *7* (1961An01) is discrepant.
		Jπ: spin from $\gamma(\theta)$ in 1974Vi02 and 1973Ve08.
		$S_{p\gamma}$=0.6 eV *2* (1972Co13; renormlaized from 1.3 eV *4*), 0.7 eV *2* (1975Ob02), 0.6 eV *2* (1973Ve08; renormlaized from 1.3 eV *3*), 1.8 eV *7* (1972Le29).
		Additional information 28.
10222.1 *6*	3	E(level): E(p)=1402.3 *6*, weighted average of 1402.9 *6* (1972Co13), 1401.9 *15* (1973Ve08), 1402 *1* (1974Vi02), 1401 *1* (1972Le29). Other: 1398.7 *7* (1961An01) seems discrepant.
		Jπ: spin from $\gamma(\theta)$ 1973Ve08.
		$S_{p\gamma}$=2.2 eV *7* (1972Co13; renormlaized from 5.0 eV *15*), 2.0 eV *6* (1975Ob02), 1.7 eV *4* (1973Ve08; renormlaized from 3.8 eV *8*), 5.8 eV *23* (1972Le29).
		Additional information 29.
10224.8 *15*		E(level): E(p)=1405.1 *15* (1973Ve08). Other: 1404 (1972Le29).
		$S_{p\gamma}$=0.11 eV *5* (1973Ve08; renormlaized from 0.25 eV *10*).
10230.1 *6*	1^+	E(level): E(p)=1410.6 *6*, weighted average of 1411.4 *6* (1972Co13), 1410.6 *8* (1973Ve08), 1410 *1* (1974Vi02), 1409 *1* (1972Le29).
		Jπ: spin from $\gamma(\theta)$ in 1973Ve08; parity from $\gamma(\theta$,pol) in 1968Do14.
		$S_{p\gamma}$=0.9 eV *3* (1972Co13; renormlaized from 2.0 eV *6*), 0.5 eV *1* (1975Ob02), 0.4 eV *1* (1973Ve08; renormlaized from 1.0 eV *2*), 1.5 eV *6* (1972Le29).
10256.0 *7*	4^-	E(level): E(p)=1437.3 , weighted average of 1438.3 *7* (1972Co13), 1436.3 *7* (1961An01), 1437.3 *15* (1973Ve08), 1437 *1* (1972Le29).
		Jπ: spin from $\gamma(\theta)$ in 1974Gr15, 1973Ve08 and 1972Co13.
		$S_{p\gamma}$=4.9 eV *15* (1972Co13; renormlaized from 11 eV *3*), 4.8 eV *6* (1975Ob02), 3.7 eV *8* (1973Ve08; renormlaized from 8.3 eV *17*), 20 eV *8* (1972Le29), 3.0 eV *7* (1965An08).
		Additional information 30.
10286.2 *7*	2	E(level): E(p)=1468.5 *7*, weighted average of 1468.6 *7* (1961An01), 1469.0 *15* (1973Ve08), 1468 *1* (1972Le29).
		Jπ: from $\gamma\gamma(\theta)$ in 1965An08.
		$S_{p\gamma}$=0.07 eV *1* (1973Ve08; renormlaized from 0.15 eV *3*), 0.5 eV *2* (1965An08).
		Additional information 31.
10290.2 *6*	2	E(level): E(p)=1472.5 *7*, weighted average of 1473.1 *6* (1972Co13), 1472.1 *15* (1973Ve08), 1471 *1* (1972Le29).
		Jπ: from $\gamma(\theta)$ 1973Ve08.
		$S_{p\gamma}$=1.1 eV *3* (1972Co13; renormlaized from 2.4 eV *7*), 1.2 eV *2* (1975Ob02), 0.7 eV *1* (1973Ve08; renormlaized from 1.5 eV *3*), 2.4 eV *10* (1972Le29).
10291.8 *15*		E(level): E(p)=1474.3 *15* (1973Ve08), 1474 (1972Le29).
		$S_{p\gamma}$=0.17 eV *7* (1973Ve08; renormlaized from 0.38 eV *15*).
10330.9 *15*		E(level): E(p)=1514.7 *15* (1973Ve08).
		$S_{p\gamma}$=0.8 eV *2* (1975Ob02), 1.0 eV *2* (1973Ve08; renormlaized from 2.2 eV *5*).
10370.4 *7*	2	E(level): E(p)=1555.5 *7*, weighted average of 1556.6 *6* (1972Co13), 1553.9 *8* (1961An01), 1555.4 *15* (1973Ve08), 1555 *1* (1972Le29).
		Jπ: spin from $\gamma\gamma(\theta)$ in 1965An08.
		$S_{p\gamma}$=4.0 eV *12* (1972Co13; renormlaized from 9 eV *3*), 4.2 eV *5* (1975Ob02), 3.8 eV *8* (1973Ve08; renormlaized from 8.7 eV *18*), 11 eV *5* (1972Le29), 2.3 eV *5* (1965An08).
		Additional information 32.
10396.5 *6*	4^-	E(level): E(p)=1582.4 *6*, weighted average of 1582.9 *6* (1972Co13), 1581.5 *8* (1961An01), 1581.1 *15*

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^{31}P(p,γ) E=res 1997Br07,1975Bo42,1972Co13 (continued)

^{32}S Levels (continued)

E(level)†	Jπ	Comments
		(1973Ve08), 1583 *1* (1972Le29).
		Jπ: spin from $\gamma(\theta)$ in 1974Gr15, 1973Ve08 and 1972Co13.
		$S_{p\gamma}$=3.5 eV *11* (1972Co13; renormlaized from 2.4 eV *7*), 4.6 eV *6* (1975Ob02), 3.5 eV *7* (1973Ve08; renormlaized from 7.9 eV *16*), 15 eV *6* (1972Le29), 2.5 eV *6* (1965An08).
		Additional information 33.
10399.2 *15*		E(level): E(p)=1585.2 15 (1973Ve08).
10508.4 *10*		E(level): E(p)=1697.9, weighted average of 1696.9 *10* (1997Br07), 1698.9 *10* (1972Co13).
		$S_{p\gamma}$=0.4 eV *1* (1972Co13; renormlaized from 0.9 eV *3*), 0.70 eV *15* (1975Ob02).
10555.8? *10*		E(level): E(p)=1746.9 *10* (1972Co13).
		$S_{p\gamma}$=1.3 eV *4* (1972Co13; renormlaized from 2.9 eV *9*), possibly due to ^{13}C(p,γ)^{14}N contamination (1975Ob02), or ^{23}Na(p,γ) (1997Br07). Level not observed in 1975Bo42.
10573.2 *10*	5^+	E(level): E(p)=1764.9 *10*, weighted average of 1765.5 *10* (1997Br07), 1764.2 *10* (1972Co13).
		Jπ: spin=5 from $\gamma(\theta)$ in 1997Br07, parity from rejecting L=5 as a result of strong centrifugal barrier. Other: 2^+,(3^-) from 1972Co13 based on 10571γ to 0^+, 8342γ to 2^+, 6114γ to 4^+, 5151γ to 3^+ and estimated strengths, however, 10571γ and 8342γ are not seen from this resonance by much more detailed study of 1997Br07. It is probably there are two different resonances around this energy.
		$S_{p\gamma}$=0.4 eV *1* (1972Co13; renormlaized from 0.9 eV *3*).
10603.5 *10*		E(level): E(p)=1796.1 *10* (1972Co13).
		$S_{p\gamma}$=0.5 eV *2* (1972Co13; renormlaized from 1.1 eV *4*).
10635.8 *10*		E(level): E(p)=1829.5 *10* (1997Br07).
10695.9 *10*		E(level): E(p)=1891.5 *10* (1972Co13). Other: 1891 *3* (1973Ko28).
		$S_{p\gamma}$=1.0 eV *3* (1972Co13; renormlaized from 2.2 eV *7*); 14 eV (1965Sp05) is discrepant.
10700.2 *10*		E(level): E(p)=1896.0 *10* (1972Co13).
		$S_{p\gamma}$=1.1 eV *3* (1972Co13; renormlaized from 2.5 eV *8*).
10704.8 *10*		E(level): E(p)=1900.7 *10* (1997Br07).
10756.3 *10*	3	E(level): E(p)=1953.9 *10*, weighted average of 1953.7 *10* (1997Br07) and 1954.0 *10* (1972Co13). Other: 1952 (1973Ko28).
		Jπ: from $\gamma(\theta)$ in 1997Br07.
		$S_{p\gamma}$=6.4 eV *19* (1997Br07), 3 eV *1* (1972Co13; renormlaized from 7 eV *2*).
10778.3 *10*		E(level): E(p)=1976.6 *10*, weighted average of 1976.6 *10* (1997Br07), 1977.1 *10* (1972Co13), 1975 *2* (1973Ko28).
		$S_{p\gamma}$=6.7 eV *20* (1997Br07), 1.7 eV *5* (1972Co13; renormlaized from 3.9 eV *12*).
10783.2 *10*		E(level): E(p)=1981.7 *10* (1997Br07). Others: 1983.6 *10* (1972Co13) and 1981 (1973Ko28) could be the unresolved 1981.7+1982.5 doublet that is divided in 1997Br07.
		$S_{p\gamma}$=9.3 eV *28* (1997Br07), 3.5 eV *11* (1972Co13; renormlaized from 8 eV *3*).
10784.0 *10*		E(level): E(p)=1982.5 *10* (1997Br07).
		$S_{p\gamma}$=0.64 eV *19* (1997Br07).
10791.4 *10*		E(level): E(p)=1990.2 *10*, weighted average of 1989.5 *10* (1997Br07) and 1990.9 *10* (1972Co13). Other: 1989 (1973Ko28).
		$S_{p\gamma}$=2.3 eV *7* (1972Co13; renormlaized from 5.3 eV *16*).
10824.9 *10*		E(level): E(p)=2024.7 *10* (1997Br07). Other: 2020 (1970Fo13).
		$S_{p\gamma}$=11.2 eV *34* (1997Br07).
10827.0 *10*		E(level): E(p)=2026.6 *10* (1972Co13). Others: 2023 (1970Fo13); 2023 *2* (1973Ko28). Note that this resonance is considered as different from E(p)=2024.7 *10* in 1997Br07 based on γ-decay patterns, also considering that 1970Fo13 report two resonances at E(p)=2020 and 2023, respectively, which are also seen by 1988Fa01 in (p,p):resonance.
		$S_{p\gamma}$=7 eV *2* (1972Co13; renormlaized from 15 eV *5*), 7 (1965Sp05).
10915 *2*		E(level): E(p)=2118 *2* (1973Ko28); this resonance is not seen in other studies.
10933.1 *10*	3	E(level): E(p)=2136.5 *10* (1997Br07). Other: 2133 (1970Fo13).
		Jπ: from $\gamma(\theta)$ in 1997Br07.
		$S_{p\gamma}$=6.2 eV *19* (1997Br07).
11009.4 *10*	4	E(level): E(p)=2215.2 *10* (1997Br07). Other: 2212 (1970Fo13).
		Jπ: from $\gamma(\theta)$ 1997Br07,
		Additional information 34.
		$S_{p\gamma}$=5.4 *16* (1997Br07).
11091.7 *10*	3	E(level): E(p)=2300.2 *10* (1997Br07). Other: 2301 (1970Fo13).

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^{31}P(p,γ) E=res 1997Br07,1975Bo42,1972Co13 (continued)

^{32}S Levels (continued)

E(level)†	Jπ	Comments
		Jπ: from $\gamma(\theta)$ in 1997Br07.
		$S_{p\gamma}$=4.9 eV *15* (1997Br07).
11114 *2*		E(level): E(p)=2323 *2* (1973Ko28). This resonance is not seen in other studies.
11122 *1*		E(level): E(p)=2331 *1* (1997Br07). Other: 2329 (1970Fo13).
		$S_{p\gamma}$=10.9 eV *33* (1997Br07).
11131 *2*		E(level): E(p)=2341 *2* (1973Ko28). This resonance is not seen in other studies.
11139.2 *10*		E(level): E(p)=2349.3 *10* (1997Br07). Other: 2350 (1970Fo13).
		$S_{p\gamma}$=27 eV *8*(1997Br07).
11234.9 *10*	3	E(level): E(p)=2448.1 *10* (1997Br07).
		Jπ: from $\gamma(\theta)$ in 1997Br07.
		$S_{p\gamma}$=3.8 eV *12* (1997Br07).
11253.3 *10*	3	E(level): E(p)=2467.1 *10* (1997Br07).
		Jπ: from $\gamma(\theta)$ in 1997Br07.
		$S_{p\gamma}$=4.4 eV *13* (1997Br07).
11332.2 *10*		E(level): E(p)=2548.5 *10* (1997Br07).
11463 *2*		E(level): E(p)=2684 *2* (1973Ko28). This resonance is not seen in other studies.
11474.0 *10*	3	E(level): E(p)=2695.0 *10* (1997Br07).
		Jπ: from $\gamma(\theta)$ in 1997Br07.
		$S_{p\gamma}$=15.2 *46* (1997Br07).
11485.2 *10*		E(level): E(p)=2706.5 *10* (1997Br07).
11589.1 *10*		E(level): E(p)=2813.8 *10* (1997Br07).
		$S_{p\gamma}$=3.1 eV *10* (1997Br07).
11601.8 *10*		E(level): E(p)=2826.9 *10* (1997Br07).
11636.5 *10*		E(level): E(p)=2862.8 *10* (1997Br07).
		$S_{p\gamma}$=15.1 eV *45* (1997Br07).
11669.0 *10*	5^+	E(level): E(p)=2896.3 *10* (1997Br07).
		Jπ: spin=5 from $\gamma(\theta)$ 1997Br07; π=− would require L=5 capture which is effectively suppressed by the centrifugal barrier (1997Br07). L=4 for π=+.
		$S_{p\gamma}$=6.1 *18* (1997Br07).
11696.1 *10*	5^+	E(level): E(p)=2924.3 *10* (1997Br07).
		Jπ: spin=5 from $\gamma(\theta)$ 1997Br07; π=− would require L=5 capture which is effectively suppressed by the centrifugal barrier (1997Br07). L=4 for π=+.
		$S_{p\gamma}$=2.5 *8* (1997Br07).
11758.2 *10*		E(level): E(p)=2988.4 *10* (1997Br07).
		$S_{p\gamma}$=5.5 eV *17* (1997Br07).
11939.5 *10*	3	E(level): E(p)=3175.6 *10* (1997Br07).
		Jπ: from $\gamma(\theta)$ in 1997Br07.
		$S_{p\gamma}$=3.8 eV *12* (1997Br07).
12043.3 *10*	2,3,4	T=1
		E(level): E(p)=3282.8 *10* (1997Br07). Other: 3283 *3* (1973Ve06).
		Jπ: spin=2,3,4 from $\gamma(\theta)$ 1973Ve06; 4^- with l_p=3 from (p,p) elastic scattering (1973Ve06).
		$S_{p\gamma}$=3.1 eV *6* (1973Ve06; renormlaized from 7.0 eV *14*).
		Γ=0.47 keV *5* (1973Ve06).
12047.96 *28*	0^+	T=2
		E(level): from 2006Tr03. Other: 12049 *3* from E(p)=3289 *3* (1973Ve06).
		Jπ: from $\gamma(\theta)$ 1973Ve06; analog of 5073, 0^+ level in ^{32}P.
		$S_{p\gamma}$=1.1 eV *2* (1973Ve06; renormlaized from 2.4 eV *5*).
		Γ<0.17 keV (1973Ve06).

† Values for levels up to 9023 are from 1972Co13, 1973Ve08, 1974Vi02, and 1997Br07 determined based on measured γ-ray energies that are not explicitly listed in those references; values above that energy for resonance levels are derived E(p)(cm)+S(p), where S(p)=8863.9640 *15* (2021Wa16), unless otherwise noted.

‡ All quoted $T_{1/2}$ values are measured using DSAM, unless otherwise noted. Note that for resonance level with measured $S_{p\gamma}$ but no width, a lower limit of width can be estimated from $S_{p\gamma}$ using $\Gamma \geq 4S_{p\gamma}/(2J+1)$, which is deduced based on

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^{31}P(p,γ) E=res 1997Br07,1975Bo42,1972Co13 (continued)

^{32}S Levels (continued)

$S_{p\gamma}=(2J+1)\Gamma_p\Gamma_\gamma/\Gamma$ and $\Gamma=\Gamma_p+\Gamma_\gamma$. The estimated lower limit of the width will be used in Adopted Gammas together with RUL to determine the adopted electric or magnetic nature of a γ-ray multipolarity deduced based on measured $\gamma(\theta)$ or $\gamma\gamma(\theta)$ in this dataset where applicable.

$\gamma(^{32}S)$

A_2 and A_4 given under comments are from $\gamma(\theta)$ data. Multiple pairs of A_2 and A_4 listed from the same reference under the same transition are obtained at different resonances.

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[#@]	δ[#@]	Comments
2230.3	2^+	2230.2	100	0	0^+			$\gamma(\theta)$: A_2=+0.081 *27*, A_4=−0.098 *27* (1970Fo13). $\gamma\gamma(\theta)$: A_2=−0.16 *15*, A_4=+0.99 *17*, A_2=+0.17 *9*, A_4=0.00 *10* (1963Sp03).
3777.2	0^+	1546.9	100	2230.3	2^+	[E2]		
		3777.0[c]		0	0^+	[E0]		$I_{(\gamma+ce)}$: <10 reported in 1975Bo42.
4281.4	2^+	504.2[c]	<0.4	3777.2	0^+	[E2]		
		2051.0	13.0 *5*	2230.3	2^+	E2(+M1)	+29 *17*	I_γ: others: 12 *4* (1972Co13), 16 *2* (1974Vi02), 15 *3* (1972Le29), 12 (1973Ko28), 14.5 *7* (1971In02), 15 *3* (1970Fo13). A_2=+0.33, A_4=+0.74 (1971In02). δ: δ(Q/D)=+29 *17* from $\gamma(\theta)$ (1971In02); M2 ruled out by RUL.
		4281.1	87.0 *5*	0	0^+	E2		Mult.: Q, ΔJ=2 from $\gamma(\theta)$ in 1997Br07; M2 ruled by RUL. I_γ: others: 88 *4* (1972Co13), 84 *2* (1974Vi02), 85 *3* (1972Le29), 88 (1973Ko28), 85.5 *7* (1971In02), 85 *3* (1970Fo13). A_2=+0.33 *8*, A_4=−0.12 *10* (1997Br07). A_2=+0.37 *3*, A_4=−0.22 *4* (1997Br07). A_2=+0.41 *2*, A_4=−0.30 *3* (1997Br07). A_2=+0.41 *6*, A_4=−0.32 *6* (1997Br07).
4458.6	4^+	681.4[c]	<0.3	3777.2	0^+			
		2228.2	100	2230.3	2^+	E2		Mult.: Q, ΔJ=2 from $\gamma(\theta)$ in 1997Br07; M2 ruled out by RUL. A_2=+0.34 *1*, A_4=−0.12 *1* (1997Br07).
		4458.3[c]	<1	0	0^+			I_γ: others: other: <2 (1972Co13).
4695.5	1	414.1[c]	<0.6	4281.4	2^+			I_γ: others: <0.5 (1972Co13).
		918.3[c]	<0.4	3777.2	0^+			
		2465.1	61 *1*	2230.3	2^+	D(+Q)	−0.08 *11*	I_γ: others: 61 *3* (1972Co13), 55 *3* (1974Vi02), 64 *4* (1972Le29), 55 (1965Sp05), 56 (1973Ko28), 50 *10* (1970Fo13). A_2=−0.38 *9*, A_4=+0.14 *9* (1974Vi02). Mult.,δ: from $\gamma(\theta)$ in 1974Vi02.
		4695.1	39 *1*	0	0^+			I_γ: others: 39 *3* (1972Co13), 45 *3* (1974Vi02), 36 *4* (1972Le29), 45 (1965Sp05), 44 (1973Ko28), 50 *10* (1970Fo13).
5006.2	3^-	724.8[c]	<0.1	4281.4	2^+			
		1229.0[c]	<0.04	3777.2	0^+			
		2775.8	96.6 *4*	2230.3	2^+	(E1(+M2))	0.00 *5*	I_γ: from 1976Ve03. Others: 96 *1* (1975Bo42), 92 *5* (1972Co13), 96 *2* (1974Vi02), 96 *2* (1972Le29), 97 (1973Ko28), 97 (1974Gr15).

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^{31}P(p,γ) E=res 1997Br07,1975Bo42,1972Co13 (continued)

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

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[#@]	δ[#@]	Comments
								Mult.,δ: others: 0.00 *3* (1976Ve03), +0.03 *2* (1973Ve08); +3.5 *8* (1969Pi10) is discrepant. $\Delta\pi$=yes from level scheme. A_2=−0.279 *27*, A_4=−0.063 *30* (1969Pi10). A_2=−0.17 *3*, A_4=−0.03 *3* (1973Ve08). A_2=−0.18 *4*, A_4=−0.07 *4* (1973Ve08). A_2=−0.23 *3*, A_4=−0.02 *3* (1976Ve03). A_2=−0.23 *1*, A_4=−0.02 *1* (1976Ve03). A_2=−0.30 *2*, A_4=0.00 *2* (1997Br07).
5006.2	3$^-$	5005.8	3.4 *4*	0	0$^+$	[E3]		I_γ: from 1976Ve03. Others: 4 *1* (1975Bo42), 8 *5* (1972Co13), 4 *2* (1974Vi02), 4 *2* (1972Le29), 3 (1973Ko28), 3 (1974Gr15); 100 (1965Sp05) only γ ray seen. Additional information 35.
5412.4	3$^+$	406.2[c]	<2	5006.2	3$^-$			
		716.9[c]	<1	4695.5	1			
		953.8[c]	<1	4458.6	4$^+$			
		1131.0[c]	<6	4281.4	2$^+$			I_γ: other: <10 (1972Co13).
		1635.2[c]	<20	3777.2	0$^+$			I_γ: from 1972Co13.
		3181.9	100	2230.3	2$^+$	M1+E2	+6.9 *+24−14*	Mult.,δ: δ(Q/D) is weighted average of +7.1 *−14+24* (1997Br07) and +6.3 *−16+51* (1997Br07); M2 ruled out by RUL. Other: δ>20 (1976Ve03). I_γ: others: 90 *5* (1972Co13), 100 (1974Vi02), 100 (1972Le29), 100 (1973Ko28). A_2=+0.066 *40*, A_4=+0.077 *41* (1969Pi10). A_2=−0.12 *6*, A_4=+0.07 *7* (1976Ve03). A_2=+0.32 *4*, A_4=+0.22 *4* (1976Ve03). A_2=+0.17 *5*, A_4=+0.12 *6* (1976Ve03). A_2=+0.38 *3*, A_4=+0.28 *4* (1997Br07). A_2=+0.28 *3*, A_4=+0.05 *4* (1997Br07).
		5411.9[c]	<5	0	0$^+$			I_γ: other: <10 (1972Co13).
5547.9	2$^+$	541.7[c]	<0.4	5006.2	3$^-$			
		852.4[c]	<1	4695.5	1			
		1089.3[c]	<2	4458.6	4$^+$			
		1266.5[c]	<1	4281.4	2$^+$			
		1770.7[c]	<1	3777.2	0$^+$			
		3317.4	60.0 *15*	2230.3	2$^+$	E2+M1	−6.3 *+11−32*	A_2=+0.06 *5*, A_4=−0.02 *3* (1997Br07). Mult.,δ: D+Q from $\gamma(\theta)$ in 1997Br07; M2 ruled out by RUL. I_γ: others: 59 *5* (1972Co13), 55 *5* (1974Vi02), 62 *4* (1972Le29), 70 (1965Sp05), 54 (1973Ko28), 60 *10* (1970Fo13).
		5547.4	40.0 *15*	0	0$^+$	E2		A_2=+0.50 *1*, A_4=−0.35 *2* (1981He09). I_γ: others: 41 *5* (1972Co13), 45 *5* (1974Vi02), 38 *4* (1972Le29), 30 (1965Sp05), 46 (1973Ko28), 40 *10* (1970Fo13). Mult.: not given in 1981He09; Q implied from $\gamma(\theta)$ in 1981He09, M2 ruled out by RUL.
5797.5		791.3[c]	<1	5006.2	3$^-$			
		1102.0[c]	<1	4695.5	1			
		1338.9[c]	<1.5	4458.6	4$^+$			
		1516.1[c]	<1	4281.4	2$^+$			
		2020.2[c]	<1.5	3777.2	0$^+$			

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^{31}P(p,γ) E=res 1997Br07,1975Bo42,1972Co13 (continued)

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

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[#@]	δ[#@]	Comments
5797.5		3567.0[c]	<5[&]	2230.3	2^+			
		5796.9	100	0	0^+			
6222.7	2	810.3[c]	<0.2	5412.4	3^+			
		1216.5	3 *2*	5006.2	3^-			I_γ: from 1976Ve03. Others <2 (1975Bo42), 3 *2* (1976Ve03), 3 (1974Gr15).
		1527.2[c]	<0.5	4695.5	1			
		1764.1[c]	<0.6	4458.6	4^+			
		1941.2[c]	<1.5	4281.4	2^+			
		2445.4[c]	<0.8	3777.2	0^+			
		3992.1	97 *2*	2230.3	2^+	D+Q	−0.07 *3*	Mult.,δ: from $\gamma(\theta)$ in 1976Ve03. Others: +0.05 *4* (1973Ve08), +0.14 *2* (1969Pi10), I_γ: from 1976Ve03. Others: 100 (1975Bo42), 100 (1972Co13), 100 (1974Vi02), 100 (1972Le29), 97 (1974Gr15). A_2=+0.100 *4*, A_4=0.001 *4* (1969Pi10). A_2=+0.21 *2*, A_4=−0.04 *2* (1973Ve08). A_2=+0.23 *2*, A_4=−0.09 *3* (1973Ve08). A_2=+0.14 *1*, A_4=−0.01 *1* (1976Ve03).
		6222.1[c]	<1.5	0	0^+			I_γ: others: <2 (1972Co13), <0.5 (1976Ve03), <1 (1974Vi02).
6410	(4)	4179	100	2230.3	2^+			Mult.,δ: +0.28 *14* if 3^- or −0.13 *11* if 4^+ (1976Ve03). A_2=+0.17 *9*, A_4=−0.15 *9* (1976Ve03). A_2=+0.32 *3*, A_4=−0.18 *4* (1997Br07). A_2=+0.45 *9*, A_4=−0.26 *2* (1997Br07). A_2=−0.31 *5*, A_4=+0.09 *6* (1997Br07).
6621.5	4^-	1209.1	1.4 *2*	5412.4	3^+	[E1]		I_γ: from 1976Ve03, seen indirectly. Others: 3 *2* (1972Co13), 2 (1974Gr15), <0.9 (1975Bo42). Additional information 36.
		1615.3	73 *1*	5006.2	3^-	E2+M1	+4.8 *6*	I_γ: others: 66 *5* (1972Co13), 75 *3* (1976Ve03), 76 *4* (1974Vi02), 74 *4* (1972Le29), 90 (1965Sp05), 73 (1973Ko28), 85 *10* (1970Fo13), 75 (1974Gr15). Mult.,δ: δ(Q/D) is unweighted average of +2.9 *8* (1997Br07), +5.5 *4* (1976Ve03), +5.7 *3* and +6.2 *3* (1973Ve08), +3.7 *+14−4* (1974Gr15); M2 ruled out by RUL. A_2=+0.29 *2*, A_4=+0.14 *2* (1972Co13). Additional information 37. A_2=+0.49 *4*, A_4=+0.22 *4* (1969Pi10). A_2=+0.27 *2*, A_4=+0.25 *2* (1973Ve08). A_2=+0.28 *3*, A_4=+0.18 *3* (1973Ve08). A_2=+0.32 *1*, A_4=+0.21 *1* (1976Ve03). A_2=+0.31 *1*, A_4=+0.22 *1* (1976Ve03). A_2=+0.53 *3*, A_4=+0.26 *5* (1997Br07). A_2=+0.40 *4*, A_4=+0.21 *4* (1974Gr15).
		1925.9[c]	<0.3	4695.5	1			
		2162.8	24.0 *7*	4458.6	4^+	(E1+M2)	−0.05 *2*	Mult.,δ: D+Q from 1976Ve03; $\Delta\pi$=yes from level scheme. Others: −0.24 *4* (1973Ve08), or −0.21 *5* (1973Ve08), +0.3 *+8−5* (1974Gr15). I_γ: others: 28 *5* (1972Co13), 22 *3* (1976Ve03), 22 *4* (1974Vi02), 24 *4* (1972Le29), 24 (1973Ko28), 15 *10* (1970Fo13), 21 (1974Gr15).

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^{31}P(p,γ) E=res 1997Br07,1975Bo42,1972Co13 (continued)

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

E_i(level)	J_i^π	E_γ †	I_γ ‡	E_f	J_f^π	Mult.#@	δ#@	Comments
								A_2=+0.31 *3*, A_4=−0.09 *4* (1972Co13).
								Additional information 38.
								A_2=+0.559 *20*, A_4=−0.031 *22* (1969Pi10).
								A_2=+0.25 *2*, A_4=+0.07 *3* (1973Ve08).
								A_2=+0.23 *4*, A_4=−0.03 *4* (1973Ve08).
								A_2=+0.35 *1*, A_4=−0.03 *1* (1976Ve03).
								A_2=+0.35 *2*, A_4=−0.02 *2* (1976Ve03).
								A_2=+0.43 *4*, A_4=+0.01 *5* (1974Gr15).
6621.5	4^-	2340.0[c]	<0.2	4281.4	2^+			
		2844.2[c]	<0.6	3777.2	0^+			
		4390.9	3.0 *3*	2230.3	2^+	M2+E3	−0.41 *8*	Mult.,δ: δ(O/Q) from $\gamma(\theta)$ in 1976Ve03; E2+M3 ruled out by RUL.
								Additional information 39.
								I_γ: others: 3 *2* (1972Co13), 1.7 *3* (1976Ve03), 2 *1* (1974Vi02), 2 *1* (1972Le29), 10 (1965Sp05), 2 (1973Ko28), 2 (1974Gr15).
								A_2=+0.05 *5*, A_4=−0.30 *5* (1976Ve03).
								A_2=+0.02 *3*, A_4=−0.28 *3* (1976Ve03).
		6620.8[c]	<0.3	0	0^+			
6665.7	2^+	1253.3[c]	<1	5412.4	3^+			
		1659.5[c]	<4	5006.2	3^-			
		1970.1	14 *2*	4695.5	1			
		2207.0[c]	<3	4458.6	4^+			
		2384.2[c]	<7	4281.4	2^+			
		2888.4	49 *5*	3777.2	0^+	E2		I_γ: others: (50) (1972Co13), 52 *7* (1972Le29), 52 (1973Ko28).
								Mult.: Q from $\gamma(\theta)$ in 1997Br07; M2 ruled out by RUL.
								A_2=+0.42 *7*, A_4=−0.31 *2* (1997Br07).
		4435.1	37 *4*	2230.3	2^+			I_γ: others: (50) (1972Co13), 48 *7* (1972Le29), 48 (1973Ko28).
		6665.0[c]	<3	0	0^+			I_γ: others: <6 (1972Co13).
6761.6	5^-	1349.2[c]	<3	5412.4	3^+			
		1755.4	74 *30*	5006.2	3^-			I_γ: others: (97) (1972Co13), 71 (1998Ka31), 80 (1974Gr15).
		2066.0[c]	<8	4695.5	1			
		2302.9	24 *10*	4458.6	4^+	D+Q	+0.12 *3*	Mult.,δ: from $\gamma(\theta)$ in 1976Ve03.
								Additional information 40.
								I_γ: others: 35 *10* (1976Ve03), 29 *6* (1998Ka31), 20 (1974Gr15).
								A_2=−0.04 *2*, A_4=−0.03 *3* (1976Ve03).
		2480.1[c]	<3	4281.4	2^+			
		2984.3[c]	<4	3777.2	0^+			
		4531.0[c]	<7	2230.3	2^+			I_γ: others: <25 (1972Co13).
		6760.8[c]	2 *1*	0	0^+			I_γ: others: 3 *2* (1972Co13), <1 (1976Ve03).
								The unrealistically large B(E5)(W.u.)=1.6×10^8 *+13−8* makes this placement questionable, which may indicate it is g.s. transition from a different level with a lower spin. This transition is omitted in Adopted Gammas.
6852.4	4^+	1440.0	10 *5*	5412.4	3^+	D+Q[b]	−0.27[b] *7*	I_γ: from 1974Vi02. Others: <5 from 1975Bo42, <5 (1972Le29), <2 (1998Ka31), 10 *5* (1970Fo13).
								A_2=+0.14 *4*, A_4=−0.24 *5* (1981He09).

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^{31}P(p,γ) E=res 1997Br07,1975Bo42,1972Co13 (continued)

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

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[#@]	δ[#@]	Comments
6852.4	4^+	1846.1[c]	<13	5006.2	3^-			
		2156.8[c]	<5	4695.5	1			
		2393.7	10 *5*	4458.6	4^+	D+Q[b]	<9[b]	I_γ: from 1974Vi02. Others: 20 *10* (1975Bo42), 21 *9* (1972Le29), 27 *4* (1998Ka31), 20 *10* (1970Fo13). A_2=−0.19 *3*, A_4=−0.31 *4* (1981He09).
		2570.9	80 *10*	4281.4	2^+	E2		Mult.,δ: δ(O/Q)=+0.04 *3* from 1981He09, +0.09 *9* if J=4 and 0.50 *12* if J=3 from 1976Ve03; M2 and M3 ruled out by RUL. I_γ: from 1975Bo42 and 1974Vi02. I_γ: from 1974Vi02. Others: 100 (1972Co13), 80 *10* (1975Bo42), 79 *9* (1972Le29), 73 *7* (1998Ka31), 70 *10* (1970Fo13). A_2=+0.48 *4*, A_4=−0.10 *4* (1976Ve03). A_2=+0.37 *2*, A_4=−0.33 *2* (1981He09).
		3075.0[c]	<8	3777.2	0^+			
		4621.7[c]	<7	2230.3	2^+			I_γ: others: <20 (1972Co13).
		6851.6[c]	<8	0	0^+			I_γ: others: <10 (1972Co13).
7001.8	1	1589.4[c]	<1	5412.4	3^+			
		1995.5[c]	<2	5006.2	3^-			
		2306.2[c]	<1	4695.5	1			
		2543.1[c]	<2	4458.6	4^+			
		2720.3[c]	<2	4281.4	2^+			I_γ: other: <8 (1972Co13).
		3224.4	10 *5*	3777.2	0^+			I_γ: from 1974Vi02. Others: <16 (1975Bo42), <10 (1972Co13).
		4770.49 *33*	90 *5*	2230.3	2^+			E_γ: from 2006Tr03. I_γ: from 1974Vi02. Other: 100 (1975Bo42), 100 (1975Bo42), 90 *5* (1972Co13), 100 (1973Ve06), 100 (1972Le29), 100 (1973Ko28). A_2=+0.02 *2*, A_4=−0.04 *2* (1973Ve08).
		7001.0[c]	<2	0	0^+			I_γ: others: <1 (1972Co13), 100 (1965Sp05) only γ seen so impossible to compare.
7115.3	2^+	1702.9[c]	<0.5	5412.4	3^+			
		2109.0[c]	<1	5006.2	3^-			
		2419.7	9 *1*	4695.5	1			I_γ: others: 7 *3* (1974Vi02), 9 *4* (1972Le29).
		2656.6[c]	<1	4458.6	4^+			
		2833.8	3 *1*	4281.4	2^+			I_γ: others: 4 *3* (1972Co13), 3 *2* (1974Vi02); 30 (1965Sp05) and 50 (1973Ko28) are discrepant.
		3337.9[c]	<1.4	3777.2	0^+			I_γ: others: 3 *2* (1974Vi02), <5 (1972Co13).
		4884.6	86 *2*	2230.3	2^+	M1+E2	+0.38 *3*	Mult.,δ: D+Q from $\gamma(\theta)$ in 1973Ve08; M2 ruled out by RUL. Others: δ=−2.7 *3* or +0.07 *3* (1981He09), +0.06 *4* or +1.8 *3* (1976Ve03), +2.7 *2* or −0.05 *3* (1973Ve08). I_γ: others: 92 *5* (1972Co13), 80 *10* (1974Vi02), 91 *4* (1972Le29), 70 (1965Sp05), 50 (1973Ko28). A_2=+0.28 *5*, A_4=−0.11 *6* (1973Ve08). A_2=+0.38 *3*, A_4=+0.02 *3* (1976Ve03). A_2=+0.27 *3*, A_4=−0.10 *4* (1981He09). A_2=+0.33 *4*, A_4=−0.13 *5* (1974Vi02).
		7114.5	2.0 *5*	0	0^+			I_γ: others: 4 *3* (1972Co13), 7 *3* (1974Vi02).
7190.2		2183.9[c]	<28	5006.2	3^-			
		2494.6[c]	<25	4695.5	1			
		2731.5[c]	<54	4458.6	4^+			

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^{31}P(p,γ) E=res 1997Br07,1975Bo42,1972Co13 (continued)

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

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[#@]	Comments
7190.2		2908.7[c]	<35	4281.4	2^+		
		3412.8[c]	<55	3777.2	0^+		
		4959.5	59 *12*	2230.3	2^+		I_γ: others: 60 *10* (1972Co13), <20 (1974Vi02), 60 *10* (1972Le29); 1974Vi02 disagrees with both 1975Bo42 and 1972Co13.
		7189.3	41 *12*	0	0^+		I_γ: others: 40 *10* (1972Co13), 100 (1974Vi02), 40 *10* (1972Le29), 100 (1973Ko28).
7350.0	3	2654.4	100	4695.5	1	Q	I_γ: recent results from 1998Ka31 find only 59 *15* of the intensity of the decay in this γ, this level may decay by unknown branches. Mult.: from $\gamma(\theta)$ in 1997Br07. I_γ: others: 100 (1997Br07), 100 (1974Vi02), (100) (1972Le29), 59 *15* (1998Ka31). A_2=+0.42 *6*, A_4=−0.13 *7* (1997Br07).
7434		3152	20 *10*	4281.4	2^+		I_γ: from 1974Vi02. Other: 40 (1965Sp05).
		5203	20 *10*	2230.3	2^+		I_γ: from 1974Vi02.
		7433	60 *15*	0	0^+		I_γ: from 1974Vi02. Other: 60 (1965Sp05).
7484.0	2^+	2071.5[c]	<10	5412.4	3^+		
		2477.7[c]	<9	5006.2	3^-		
		2788.4[c]	<6	4695.5	1		
		3025.3[c]	<14	4458.6	4^+		
		3202.4[c]	<13	4281.4	2^+		I_γ: others: <13 (1975Bo42), <5 (1972Co13), 20 *10* (1970Fo13).
		3706.6[c]	<15	3777.2	0^+		I_γ: others: <15 (1975Bo42), (30) (1972Co13).
		5253.2[c]	<7	2230.3	2^+		I_γ: others: <7 (1975Bo42), <25 (1972Co13), 20 *10* (1970Fo13).
		7483.1	100	0	0^+	E2	Mult.: Q from $\gamma(\theta)$ in 1981He09; M2 ruled out by RUL. I_γ: others: 70 *20* (1972Co13), 100 (1974Vi02), 100 (1972Le29), 100 (1973Ko28), 60 *15* (1970Fo13). A_2=+0.44 *4*, A_4=−0.44 *5* (1981He09).
7535.7		2123.2[c]	<10	5412.4	3^+		
		2529.4[c]	<5	5006.2	3^-		
		2840.1	100	4695.5	1		I_γ: other: 100 (1972Co13), 100 (1974Vi02), 100 (1972Le29).
		3076.9[c]	<6	4458.6	4^+		
		3254.1[c]	<8	4281.4	2^+		
		3758.3[c]	<11	3777.2	0^+		
		5304.9[c]	<14	2230.3	2^+		I_γ: other: <6 (1972Co13).
		7534.8[c]	<7	0	0^+		I_γ: other: <5 (1972Co13).
7567		2155		5412.4	3^+		E_γ: from 1997Br07. A_2=+0.45 *5*, A_4=−0.09 *7* (1997Br07).
7637.0		3355.4	100	4281.4	2^+		I_γ: other: 100 (1997Br07).
7701.6	3	2289.1[c]	<50	5412.4	3^+		
		2695.3[c]	<50	5006.2	3^-		
		3006.0[c]	<50	4695.5	1		
		3242.8[c]	<50	4458.6	4^+		
		3420.0[c]	<70	4281.4	2^+		I_γ: other: 50 (1965Sp05).
		3924.1[c]	<45	3777.2	0^+		
		5470.8	100	2230.3	2^+	D+Q	A_2=−0.37 *7*, A_4=−0.04 *9* (1997Br07). Mult.,δ: −0.05 *3* or −2.5 *7* (1997Br07). I_γ: other: 100 (1972Co13).
		7700.6[c]	<60	0	0^+		I_γ: other: 50 (1965Sp05).
7882.9	4	2334.9	11 *5*	5547.9	2^+		I_γ: from 1997Br07.
		2876.6	14 *5*	5006.2	3^-		I_γ: from 1997Br07.
		5652.1	75 *5*	2230.3	2^+		I_γ: from 1997Br07. A_2=+0.41 *2*, A_4=−0.07 *3* (1997Br07).

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^{31}P(p,γ) E=res 1997Br07,1975Bo42,1972Co13 (continued)

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

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[#@]	δ[#@]	Comments
7921.0		5690.2	>80	2230.3	2^+			I_γ: from 1997Br07. I_γ: others: >80 (1997Br07).
7950.1	4^-	2537.6	40 *10*	5412.4	3^+			I_γ: others: 45 *5* (1972Le29), 30 *10* (1998Ka31).
		2943.8	60 *7*	5006.2	3^-	E2+M1	−9.0 *15*	Mult.,δ: δ(Q/D) is weighted average of −7.9 *15* and −11 *2* (1976Ve03); E1+M2 ruled out by RUL. I_γ: others: 65 (1972Co13), 65 *7* (1976Ve03), 55 *5* (1972Le29), 60 *10* (1998Ka31), 75 (1974Gr15). A_2=−0.15 *2*, A_4=+0.18 *2* (1976Ve03). A_2=−0.13 *8*, A_4=+0.29 *9* (1976Ve03).
		3254.4[c]	<3	4695.5	1			I_γ: other: <8 (1972Co13).
		3491.3[c]	<8	4458.6	4^+			I_γ: others: <6 (1972Co13), <15 (1976Ve03), 3 *1* (1998Ka31), 25 (1974Gr15). 1974Gr15 claim that because of the good Ge resolution, a 25% branch is established from the spectra taken at E(p)=1583−keV resonance.
		3668.5[c]	<10	4281.4	2^+			I_γ: other: <10 (1972Co13).
		4172.6[c]	<2	3777.2	0^+			I_γ: other: <15 (1972Co13).
		5719.3[c]	<4	2230.3	2^+			I_γ: other: <5 (1972Co13).
		7949.0[c]	<0.5	0	0^+			I_γ: other: <2 (1972Co13).
7974.9	3	2968.6	19 *5*	5006.2	3^-			I_γ: other: 19 *5* (1997Br07).
		5744.1	50 *5*	2230.3	2^+			I_γ: other: 50 *5* (1997Br07). 21% of intensity unaccounted for (1997Br07).
8125.43		2712.9[c]	<4	5412.4	3^+			
		3119.1[c]	<2	5006.2	3^-			
		3429.7[c]	<4	4695.5	1			
		3666.6[c]	<4	4458.6	4^+			
		3843.8[c]	<3	4281.4	2^+			I_γ: others: <12 (1972Co13).
		4347.9[c]	<10	3777.2	0^+			
		5894.32 *28*	15 *5*	2230.3	2^+			E_γ: from 2006Tr03. I_γ: from 1974Vi02. Others: 9 *6* (1975Bo42), 16 *5* (1972Co13), 16 (1973Ve06), 23 *13* (1972Le29).
		8124.12 *24*	85 *5*	0	0^+			E_γ: from 2006Tr03. I_γ: from 1974Vi02. Others: 91 *6* (1975Bo42), 84 *5* (1972Co13), 84 (1973Ve06), 77 *13* (1972Le29).
8191.1	4	2643.1	30 *6*	5547.9	2^+	Q		I_γ: from 1997Br07. Mult.: from $\gamma(\theta)$ in 1997Br07. A_2=+0.42 *6*, A_4=−0.20 *8* (1997Br07).
		2778.6	24 *5*	5412.4	3^+	D+Q		Mult.,δ: −0.03 *8* or −2.9 *7* (1997Br07). I_γ: from 1997Br07. A_2=−0.47 *9*, A_4=+0.20 *13* (1997Br07).
		3732.3	28 *6*	4458.6	4^+	D+Q		Mult.,δ: +2.2 *−160+10* (1997Br07). I_γ: from 1997Br07. A_2=+0.51 *9*, A_4=−0.18 *14* (1997Br07).
		3909.4	18 *3*	4281.4	2^+			I_γ: from 1997Br07.
8296.1	3	4014.4	27 *9*	4281.4	2^+			I_γ: others: 28 *6* (1997Br07).
		6065.2	54 *9*	2230.3	2^+			I_γ: others: 54 *9* (1997Br07), 40 *20* (1974Vi02), 40 *20* (1970Fo13).
		8295.0[c]		0	0^+			E_γ,I_γ: not seen in 1997Br07; but author claim that 19% of the intensity is unaccounted. This transition is seen in 1974Vi02 with Iγ=60 *20*, and in 1970Fo13 with Iγ=60 *20*.
8407.0	2	3711.3	10 *2*	4695.5	1			I_γ: from 1997Br07.
		4125.3	9 *2*	4281.4	2^+			I_γ: from 1997Br07.
		4629.4	51 *5*	3777.2	0^+			I_γ: from 1997Br07. 30% of intensity unaccounted for by 1997Br07.

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^{31}P(p,γ) E=res 1997Br07,1975Bo42,1972Co13 (continued)

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

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[#@]	Comments
8504		6273	100	2230.3	2^+		
8729.3	3^+	1876.8	10 *2*	6852.4	4^+		I_γ: from 1997Br07.
		2107.7	16 *3*	6621.5	4^-		I_γ: from 1997Br07.
		3316.7	18 *3*	5412.4	3^+		I_γ: from 1997Br07.
							54% of intensity unaccounted for by 1997Br07.
8745.6	3	1893.1	12 *5*	6852.4	4^+		I_γ: from 1997Br07.
		2124.0	34 *5*	6621.5	4^-		I_γ: from 1997Br07.
		2336	40 *5*	6410	(4)		I_γ: from 1997Br07.
		3197.5	8 *4*	5547.9	2^+		I_γ: others: 8 *4* (1997Br07).
		3333.0	7 *3*	5412.4	3^+		I_γ: from 1997Br07.
9058		6828		2230.3	2^+		E_γ: seen in 1993Il01.
9207.6	1^+	911.5[c]	<1	8296.1	3		I_γ: from 1963Te01.
		1324.7[c]	<1	7882.9	4		I_γ: from 1963Te01.
		2017.3	2.8[a] *7*	7190.2			I_γ: other: 2 *1* (1963Te01).
		2984.8	9.1[a] *8*	6222.7	2		I_γ: others: 11 (1972Co13), 9 *3* (1974Vi02), 9 *2* (1963Te01).
		3409.9	6.2[a] *12*	5797.5			I_γ: others: 5 (1972Co13), 9 *3* (1974Vi02), 8 *2* (1963Te01).
		3659.5	7.1[a] *11*	5547.9	2^+		I_γ: others: 5 (1972Co13), 5 *2* (1974Vi02), 4 *1* (1963Te01).
		4748.6[c]		4458.6	4^+		I_γ: 3.0 *6* (1963Te01), but not seen in other studies.
		4925.8	2.1[a] *6*	4281.4	2^+		I_γ: other: 1 (1963Te01).
		5429.9	4.1[a] *6*	3777.2	0^+		I_γ: others: 6 (1972Co13), 4 *2* (1974Vi02), 5 *1* (1963Te01).
		6976.5	34.1[a] *20*	2230.3	2^+		I_γ: others: 35 (1972Co13), 35 *4* (1974Vi02), 37 *7* (1963Te01).
							A_2=+0.03 *6* (1962Be39).
		9206.1 *7*	34.5[a] *20*	0	0^+	D	E_γ: from 2006Tr03.
							I_γ: others: 38 (1972Co13), 38 *4* (1974Vi02), 30 *6* (1963Te01).
							Mult.: from $\gamma(\theta)$ in 1963Te01.
							A_2=+0.26 *10*, A_4=−0.13 *15* (1962Be39).
							A_2=+0.16 *5*, A_4=+0.02 *5* (1963Te01).
9235		4539	17[a] *8*	4695.5	1		
		5457	47[a] *12*	3777.2	0^+		
		7004	36[a] *9*	2230.3	2^+		
9254		2588	8.9[a] *16*	6665.7	2^+		
		3031	6.0[a] *11*	6222.7	2		
		3706	4.3[a] *13*	5547.9	2^+		
		3841	5.2[a] *14*	5412.4	3^+		
		4248	14.0[a] *21*	5006.2	3^-		
		4558	24.5[a] *23*	4695.5	1		
		4972	5.6[a] *13*	4281.4	2^+		
		7023	32[a] *3*	2230.3	2^+		
9289	1^+	785[c]		8504			E_γ,I_γ: from 1963Te01 with Iγ=4 *1* but not seen in other studies.
		1164[c]	<1	8125.43			I_γ: from 1963Te01.
		1753	5.6[a] *5*	7535.7			I_γ: others: 7.4 *9* (1975Bo42), 7 (1972Co13), 11 *4* (1974Vi02), 5 *1* (1963Te01).
		2174	15.6[a] *9*	7115.3	2^+		I_γ: others: 19 *4* (1975Bo42), 18 (1972Co13), 19 *6* (1974Vi02), 17 (1963Te01).
		2287	1.0[a] *2*	7001.8	1		I_γ: other: 2 *1* (1963Te01).
		2623[c]	<0.4	6665.7	2^+		
		2667[c]	<0.4	6621.5	4^-		
		3066	2.5[a] *3*	6222.7	2		I_γ: others: 1.8 *3* (1975Bo42), 2 (1972Co13), 4 *2* (1974Vi02).
		3491	1.1[a] *2*	5797.5			I_γ: other: <0.9 (1975Bo42).

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^{31}P(p,γ) E=res 1997Br07,1975Bo42,1972Co13 (continued)

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

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[#@]	δ[#@]	Comments
9289	1^+	3741[c]	<1.4	5547.9	2^+			
		3876[c]	<0.9	5412.4	3^+			
		4283[c]	<1.1	5006.2	3^-			
		4593	15.6[a] *9*	4695.5	1			I_γ: others: 13 *1* (1975Bo42), 13 (1972Co13), 13 *4* (1974Vi02), 17 (1963Te01).
		4830[c]	<0.7	4458.6	4^+			E_γ: this transition is not confirmed in later studies. I_γ: other: 2 (1963Te01). Mult.,δ: 1962Ne10 assign J(4460)=1 with $\delta^2(4830\gamma)$=0.02 *1* based on $\gamma\gamma(\theta)$, while adopted J(4460)=4^+ doesn′t support the placement this transition. $\gamma\gamma(\theta)$: A_2=−0.48 *7*, A_4=+0.11 *11* (1962Ne10).
		5007[c]	<1.1	4281.4	2^+			
		5511[c]	<0.8	3777.2	0^+			
		7058	18.7[a] *9*	2230.3	2^+	D(+Q)	0.10 *+4−10*	I_γ: others: 19 *2* (1975Bo42), 20 (1972Co13), 21 *4* (1974Vi02), 20 (1963Te01). $\gamma(\theta)$: A_2=−0.04 *3* (1962Be39). $\gamma\gamma(\theta)$: A_2=−0.31 *5*, A_4=−0.09 *8* (1962Ne10). Mult.,δ: from $\gamma\gamma(\theta)$ in 1962Ne10. Additional information 41.
		9288	39.9[a] *17*	0	0^+	D		I_γ: others: 40 *5* (1975Bo42), 40 (1972Co13), 32 *3* (1974Vi02), 32 (1963Te01). Mult.: from $\gamma(\theta)$ in 1963Te01. Additional information 42. A_2=−0.02 *2*, A_4=+0.04 *5* (1962Be39). A_2=−0.09 *2*, A_4=+0.04 *4* (1963Te01).
9388	2	1263	1.3[a] *1*	8125.43				I_γ: other: 1.9 *3* (1975Bo42), 1 (1972Co13), 2 *1* (1974Vi02).
		2626[c]	<0.4	6761.6	5^-			
		2722[c]	<0.4	6665.7	2^+			
		2766	1.3[a] *3*	6621.5	4^-			I_γ: others: 1.3 *3* (1975Bo42), 1 (1972Co13), 1.0 *5* (1974Vi02).
		3165	15.9[a] *7*	6222.7	2			I_γ: others: 18 *3* (1975Bo42), 17 (1972Co13), 14 *4* (1974Vi02).
		3590	1.9[a] *3*	5797.5				I_γ: others: 1.1 *3* (1975Bo42), 2 (1972Co13), 2 *1* (1974Vi02).
		3840	1.7[a] *3*	5547.9	2^+			I_γ: others: 1.2 *3* (1975Bo42), 1 (1972Co13), <1 (1974Vi02).
		3975	0.9[a] *1*	5412.4	3^+			I_γ: other: <0.9 (1975Bo42).
		4382	7.8[a] *4*	5006.2	3^-			I_γ: others: 10 *1* (1975Bo42), 9 (1972Co13), 8 *3* (1974Vi02).
		4692	2.0[a] *2*	4695.5	1			I_γ: others: 1.6 *6* (1975Bo42), 2 (1972Co13), 1.0 *5* (1974Vi02).
		4929[c]	<0.6	4458.6	4^+			
		5106[c]	1.9[a] *2*	4281.4	2^+			I_γ: others: 1.9 *5* (1975Bo42), 2 (1972Co13), 3.0 *15* (1974Vi02).
		5610[c]	<0.5	3777.2	0^+			
		7157	62.6[a] *23*	2230.3	2^+			I_γ: others: 62 *5* (1975Bo42), 63 (1972Co13), 68 *4* (1974Vi02). A_2=+0.35 *2*, A_4=+0.042 *28* (1962Be39).
		9387	2.5[a] *1*	0	0^+			I_γ: others: 2.3 *2* (1975Bo42), 2 (1972Co13), 1.0 *5* (1974Vi02).
9463.4		2348.0	5.4[a] *15*	7115.3	2^+			

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^{31}P(p,γ) E=res 1997Br07,1975Bo42,1972Co13 (continued)

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

E_i(level)	J_i^π	E_γ †	I_γ ‡	E_f	J_f^π	Comments
9463.4		4767.5	21[a] *3*	4695.5	1	I_γ: other: 27 (1972Co13).
		5685.7	4.7[a] *13*	3777.2	0^+	
		7232.2	26[a] *3*	2230.3	2^+	I_γ: other: 22 (1972Co13).
		9461.9	42[a] *4*	0	0^+	I_γ: other: 51 (1972Co13).
9485.8	1	1360.3[c]		8125.43		E_γ,I_γ: from 1963Sp03 with Iγ=3 but not confirmed in other studies.
		2370.4[c]	<8.3	7115.3	2^+	I_γ: others: 4.5 (1972Co13), 3.0 *15* (1974Vi02).
		2864.2[c]		6621.5	4^-	E_γ,I_γ: from 1963Sp03 with Iγ=7 but not confirmed in other studies.
		3262.9[c]	<2.4	6222.7	2	
		3688.1	3.6 *8*	5797.5		I_γ: others: 0.5 (1972Co13), 4 *2* (1974Vi02).
		3937.6[c]	<2	5547.9	2^+	
		4073.1[c]	<1.4	5412.4	3^+	
		4479.3	3.1 *7*	5006.2	3^-	I_γ: others: 3.5 (1972Co13), 4 *2* (1974Vi02).
		4789.9[c]	<3	4695.5	1	
		5026.8[c]	<0.8	4458.6	4^+	I_γ: other: 2 (1963Sp03).
		5204.0	8 *1*	4281.4	2^+	I_γ: others: 9.5 (1972Co13), 12 *4* (1974Vi02), 10 (1963Sp03).
		5708.1[c]	<1.8	3777.2	0^+	
		7254.6[c]	<2.3	2230.3	2^+	I_γ: other: 4 (1963Sp03).
		9484.3	85 *7*	0	0^+	I_γ: others: 82 (1972Co13), 77 *4* (1974Vi02), 75 (1963Sp03). A_2=+0.20 (1963Sp03), A_2=−0.273 *15* (1964Sm03).
9650.2	2	2216[c]		7434		E_γ,I_γ: from 1963Sp03 with Iγ=1, but not confirmed in other studies. A_2=+0.15 *8*, A_4=+0.50 *9* (1963Sp03).
		3427.3[c]	<0.6	6222.7	2	
		3852.5[c]	<0.8	5797.5		
		4102.0	0.6 *3*	5547.9	2^+	I_γ: from 1974Vi02. Others: <0.5 (1975Bo42), 2 (1963Sp03).
		4237.5	1.7 *4*	5412.4	3^+	I_γ: average of 1.7 *4* (1975Bo42) and 1.8 *9* (1974Vi02). Other: 0.9 (1972Co13).
		4643.6	0.7 *4*	5006.2	3^-	I_γ: from 1974Vi02. Others: <0.6 (1975Bo42), 2 (1963Sp03).
		4954.3	37 *2*	4695.5	1	I_γ: from 1974Vi02. Others: 40 *3* (1975Bo42), 38 (1972Co13), 38 (1963Sp03).
		5191.2[c]	<1.2	4458.6	4^+	
		5368.3[c]	<0.4	4281.4	2^+	
		5872.4	0.6 *3*	3777.2	0^+	I_γ: from 1974Vi02. Others: <0.4 (1975Bo42), 1 (1963Sp03).
		7419.0	59 *3*	2230.3	2^+	I_γ: from 1974Vi02. Others: 58 *5* (1975Bo42), 61 (1972Co13), 57 (1963Sp03). A_2=+0.35 *4* (1963Sp03), $\gamma\gamma(\theta)$: A_2=−0.37 *13*, A_4=+0.27 *13* (1963Sp03).
		9648.6	0.4 *2*	0	0^+	I_γ: average of 0.4 *2* (1975Bo42) and 0.3 *2* (1974Vi02). Other: 0.1 (1972Co13).
9659		2175	0.3 *1*	7484.0	2^+	
		2469	2.1 *9*	7190.2		I_γ: others: 4 (1972Co13), 2 *1* (1974Vi02).
		3436[c]	<0.3	6222.7	2	
		3861[c]	<0.7	5797.5		
		4111	2.2 *3*	5547.9	2^+	I_γ: others: 2 (1972Co13), 2 *1* (1974Vi02).
		4246[c]	<0.2	5412.4	3^+	
		4652[c]	<0.3	5006.2	3^-	
		4963	2.3 *10*	4695.5	1	I_γ: others: 3 (1972Co13), 4 *2* (1974Vi02).
		5200[c]	<0.4	4458.6	4^+	
		5377[c]	<0.2	4281.4	2^+	
		5881	1.8 *3*	3777.2	0^+	I_γ: others: 2 (1972Co13), 2 *1* (1974Vi02).
		7428	10 *1*	2230.3	2^+	I_γ: others: 15 (1972Co13), 12 *4* (1974Vi02).
		9657	81 *8*	0	0^+	I_γ: others: 74 (1972Co13), 78 *4* (1974Vi02).

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^{31}P(p,γ) E=res 1997Br07,1975Bo42,1972Co13 (continued)

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

E_i(level)	J_i^π	E_γ [†]	I_γ [‡]	E_f	J_f^π	Comments
9711.9		1586.4	2.9 *7*	8125.43		
		2596.5	3.1 *5*	7115.3	2^+	
		2710.0	3.1 *5*	7001.8	1	
		3489.0[c]	<1.7	6222.7	2	
		3914.1	3.6 *9*	5797.5		
		4163.7[c]	<1.8	5547.9	2^+	
		4299.2[c]	<1.3	5412.4	3^+	
		4705.3	2.1 *10*	5006.2	3^-	
		5016.0	26 *2*	4695.5	1	I_γ: other: 34 (1972Co13).
		5252.8	1.2 *5*	4458.6	4^+	
		5430.0	2.8 *8*	4281.4	2^+	
		5934.1	6.4 *20*	3777.2	0^+	
		7480.7	43 *7*	2230.3	2^+	I_γ: other: 59 (1972Co13).
		9710.3	6.6 *7*	0	0^+	I_γ: other: 7 (1972Co13).
9724	2,3,4	1774[c]	<0.7	7950.1	4^-	
		2022	1.0 *5*	7701.6	3	
		2188[c]	<0.4	7535.7		
		2609[c]	<0.5	7115.3	2^+	
		2962	5.1 *20*	6761.6	5^-	
		3102	41 *3*	6621.5	4^-	I_γ: others: 46 (1972Co13), 42 *4* (1974Vi02). A_2=+0.32 *6*, A_4=−0.11 *8* (1972Co13).
		3501	13.0 *14*	6222.7	2	I_γ: others: 14 (1972Co13), 14 *4* (1974Vi02).
		3926[c]	<0.4	5797.5		
		4176[c]	<0.8	5547.9	2^+	
		4311[c]	<0.9	5412.4	3^+	
		4717	39 *3*	5006.2	3^-	I_γ: others: 40 (1972Co13), 44 *5* (1974Vi02). A_2=+0.64 *15*, A_4=+0.11 *18* (1972Co13).
		5028[c]	<0.9	4695.5	1	
		5265[c]	<0.7	4458.6	4^+	
		5442[c]	<0.9	4281.4	2^+	
		5946[c]	<1.2	3777.2	0^+	
		7493	0.8 *2*	2230.3	2^+	
		9722[c]	<0.4	0	0^+	
9731		1606	4.2 *6*	8125.43		I_γ: others: 4 (1972Co13), 3.0 *15* (1974Vi02).
		1781	1.2 *3*	7950.1	4^-	
		2029[c]	<0.6	7701.6	3	
		2616	1.0 *5*	7115.3	2^+	I_γ: from 1974Vi02; not seen in 1975Bo42. Other: 2 (1972Co13).
		3109[c]	<0.3	6621.5	4^-	
		3508	20 *2*	6222.7	2	I_γ: others: 18 (1972Co13), 27 *6* (1974Vi02).
		3933	20 *2*	5797.5		I_γ: others: 19 (1972Co13), 22 *5* (1974Vi02).
		4183	1.0 *5*	5547.9	2^+	I_γ: others: 3 (1972Co13), 2 *1* (1974Vi02).
		4318[c]	<1.4	5412.4	3^+	
		4724	3.0 *15*	5006.2	3^-	I_γ: others: 4 (1972Co13), 1.0 *5* (1974Vi02).
		5035	5.2 *9*	4695.5	1	I_γ: others: 5 (1972Co13), 1.0 *5* (1974Vi02).
		5272[c]	<0.5	4458.6	4^+	
		5449	22 *2*	4281.4	2^+	I_γ: others: 24 (1972Co13), 25 *5* (1974Vi02).
		5953[c]	<0.8	3777.2	0^+	
		7500	19 *2*	2230.3	2^+	I_γ: others: 18 (1972Co13), 17 *5* (1974Vi02).
		9729	4.0 *5*	0	0^+	I_γ: others: 3 (1972Co13), 4 *2* (1974Vi02).
9816.8		2701.4	8.6 *6*	7115.3	2^+	I_γ: others: 9 (1972Co13), 8 *3* (1974Vi02).
		3195.1[c]	<0.6	6621.5	4^-	
		3593.9	5.6 *7*	6222.7	2	I_γ: others: 6 (1972Co13), 7 *2* (1974Vi02).

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^{31}P(p,γ) E=res 1997Br07,1975Bo42,1972Co13 (continued)

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

E_i(level)	E_γ[†]	I_γ[‡]	E_f	J^π_f	Comments
9816.8	4019.0	2.7 *3*	5797.5		I_γ: others: 3 (1972Co13), 3.0 *15* (1974Vi02).
	4268.6[c]	<0.7	5547.9	2^+	
	4404.1[c]	<1.5	5412.4	3^+	
	4810.2	50 *3*	5006.2	3^-	I_γ: others: 52 (1972Co13), 43 *4* (1974Vi02).
	5120.9[c]	<0.9	4695.5	1	
	5357.7	1.7 *4*	4458.6	4^+	I_γ: others: 1.6 (1972Co13), 4 *2* (1974Vi02).
	5534.9	10 *2*	4281.4	2^+	I_γ: others: 9 (1972Co13), 12 *4* (1974Vi02).
	6039.0[c]	<0.8	3777.2	0^+	
	7585.5	20 *2*	2230.3	2^+	I_γ: others: 19 (1972Co13), 22 *5* (1974Vi02).
	9815.2	0.7 *2*	0	0^+	I_γ: others: 0.4 (1972Co13), 1.0 *5* (1974Vi02).
9848	2733	27 *2*	7115.3	2^+	I_γ: other: 27 *6* (1974Vi02).
	3182	1.4 *4*	6665.7	2^+	
	3226[c]	<0.5	6621.5	4^-	
	3625[c]	<2.2	6222.7	2	
	4050	5.7 *10*	5797.5		I_γ: other: 8 *3* (1974Vi02).
	4300[c]	<0.9	5547.9	2^+	
	4435[c]	<1.7	5412.4	3^+	
	4841[c]	<1	5006.2	3^-	
	5152	2.4 *5*	4695.5	1	
	5389[c]	<1.3	4458.6	4^+	
	5566	1.8 *6*	4281.4	2^+	
	6070[c]	<0.5	3777.2	0^+	
	7617	51 *4*	2230.3	2^+	I_γ: other: 56 *3* (1974Vi02).
	9846	10 *1*	0	0^+	I_γ: other: 9 *3* (1974Vi02).
9887.2	2771.8	45 *6*	7115.3	2^+	I_γ: others: 46 (1972Co13), 44 *5* (1974Vi02).
	2885.3	24 *3*	7001.8	1	I_γ: others: 24 (1972Co13), 23 *5* (1974Vi02).
	3221.3	3.6 *4*	6665.7	2^+	
	3664.3[c]	<0.5	6222.7	2	
	4089.4[c]	<0.3	5797.5		
	4339.0	11 *1*	5547.9	2^+	I_γ: others: 9 (1972Co13), 11 *4* (1974Vi02).
	4474.5[c]	<1.2	5412.4	3^+	
	4880.6[c]	<7	5006.2	3^-	
	5191.3	5.0 *10*	4695.5	1	I_γ: others: 5 (1972Co13), 5 *2* (1974Vi02).
	5428.1	0.2 *1*	4458.6	4^+	
	5605.3	3.8 *5*	4281.4	2^+	I_γ: others: 5 (1972Co13), 7 *2* (1974Vi02).
	6109.4[c]	<0.6	3777.2	0^+	
	7655.9	10 *1*	2230.3	2^+	I_γ: others: 10 (1972Co13), 10 *3* (1974Vi02).
	9885.6	1.7 *2*	0	0^+	I_γ: others: 1 (1972Co13), <1 (1974Vi02).
9918.1	2382.3	0.8 *4*	7535.7		
	2434.0	2.9 *3*	7484.0	2^+	I_γ: other: 3.0 *15* (1974Vi02).
	2802.7	9 *1*	7115.3	2^+	I_γ: others: 8 (1972Co13), 14 *4* (1974Vi02).
	3065.5	7.4 *10*	6852.4	4^+	I_γ: others: 10 (1972Co13), 7 *2* (1974Vi02).
	3252.2[c]	<5	6665.7	2^+	
	3296.4[c]	<1.1	6621.5	4^-	
	3695.2[c]	<2.3	6222.7	2	
	4120.3[c]	<1.3	5797.5		
	4369.9	35 *3*	5547.9	2^+	I_γ: others: 31 (1972Co13), 35 *4* (1974Vi02).
	4505.4	2.7 *10*	5412.4	3^+	I_γ: other: 3 (1972Co13).
	4911.5[c]	<1.1	5006.2	3^-	
	5222.1[c]	<11	4695.5	1	
	5459.0[c]	<1.4	4458.6	4^+	
	5636.2	1.2 *7*	4281.4	2^+	I_γ: other: 2 (1972Co13).
	6140.3[c]	<1.3	3777.2	0^+	

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^{31}P(p,γ) E=res 1997Br07,1975Bo42,1972Co13 (continued)

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

E_i(level)	J_i^π	E_γ [†]	I_γ [‡]	E_f	J_f^π	Mult.[#@]	δ[#@]	Comments
9918.1		7686.8	41 *4*	2230.3	2^+			I_γ: others: 46 (1972Co13), 41 *4* (1974Vi02).
		9916.5[c]	<1.1	0	0^+			I_γ: other: 0.5 (1972Co13).
9946.4	1	1820.9	7.8 *6*	8125.43		D+Q	+0.10 *6*	Mult.,δ: from $\gamma(\theta)$ in 1977Ko07. I_γ: others: 7 (1972Co13), 7 *2* (1974Vi02), 7 (1972Le29), 8 (1963Sp03). A_2=+0.30 *4*, A_4=+0.09 *4* (1977Ko07).
		2831.0	1.5 *2*	7115.3	2^+			I_γ: others: 1.5 *8* (1974Vi02), 2 (1972Le29), 5 (1963Sp03).
		2944.5	0.4 *1*	7001.8	1			I_γ: others: 0.5 *3* (1974Vi02), <1 (1972Le29).
		3324.7[c]	<0.5	6621.5	4^-			
		3723.5[c]	<0.4	6222.7	2			
		4148.6[c]	<0.3	5797.5				
		4398.2[c]	<0.8	5547.9	2^+			I_γ: other: 4 (1963Sp03).
		4533.7[c]	<0.3	5412.4	3^+			
		4939.8[c]	<0.3	5006.2	3^-			
		5250.4	1.5 *3*	4695.5	1			I_γ: others: 2 (1972Co13), 2 *1* (1974Vi02), 2 (1972Le29), 5 (1963Sp03).
		5487.3[c]	<1	4458.6	4^+			
		5664.5	2.2 *3*	4281.4	2^+			I_γ: others: 2 (1972Co13), 2 *1* (1974Vi02), 1 (1972Le29).
		6168.6	2.8 *6*	3777.2	0^+			I_γ: others: 3 (1972Co13), 3.0 *15* (1974Vi02), 2 (1972Le29), 6 (1963Sp03).
		7715.1	8.1 *9*	2230.3	2^+	D+Q	+0.7 *1*	Mult.,δ: from $\gamma(\theta)$ in 1977Ko07. I_γ: others: 9 (1972Co13), 10 *3* (1974Vi02), 10 (1972Le29), 8 (1963Sp03). A_2=+0.76 *10*, A_4=−0.16 *10* (1977Ko07). A_2=+0.22 (1963Sp03).
		9944.7	76 *7*	0	0^+	D		Mult.,δ: δ(Q/D)=0 (1977Ko07). I_γ: others: 77 (1972Co13), 74 *4* (1974Vi02), 76 (1972Le29), 65 (1963Sp03). A_2=+0.03 *16*, A_4=+0.21 *17* (1977Ko07). A_2=−0.17 *2* (1963Sp03).
9977.7	4	3356.0	25 *3*	6621.5	4^-	D+Q[b]	−0.5[b] *2*	I_γ: from 1981He09. Others: 3.5 *3* (1975Bo42), 5 (1972Co13), 3 (1972Le29) from the undivided doublet, equivalent to branchings from this level of 28.2 *32*, 29.4, 37.5, respectively. A_2=+0.61 *4*, A_4=−0.24 *6* (1981He09).
		3754.8	26 *3*	6222.7	2	Q(+O)[b]	+0.04[b] *5*	I_γ: from 1981He09. Others: 2.4 *10* (1975Bo42), 4 (1972Co13), 2 (1972Le29) from the undivided doublet, equivalent to branchings from this level of 19.4 *66*, 23.5, 25.0, respectively. A_2=+0.42 *5*, A_4=−0.43 *5* (1981He09).
		4971.1	49 *4*	5006.2	3^-	D+Q[b]	+2.4[b] *2*	I_γ: from 1981He09. Others: 6.5 *6* (1975Bo42), 8 (1972Co13), 3 (1972Le29) from the undivided doublet, equivalent to branchings from this level of 52.4 *50*, 47.1, 37.5, respectively. A_2=−0.71 *2*, A_4=+0.46 *3* (1981He09).
9978.2	3	1631.9	0.8 *2*	8346.3		D+Q[b]	+3.4[b] *4*	I_γ: from 1981He09 only. A_2=−0.42 *7*, A_4=+0.57 *1* (1981He09).
		2276.5[c]		7701.6	3			E_γ: only seen in 1963Sp03 but not confirmed in later studies. A_2=+0.22 *5*, A_4=0.00 *2* (1963Sp03).
		2494.1	4.0 *4*	7484.0	2^+	D(+Q)[b]	0.00[b] *2*	A_2=−0.33 *2*, A_4=−0.03 *3* (1981He09).

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^{31}P(p,γ) E=res 1997Br07,1975Bo42,1972Co13 (continued)

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

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[#@]	δ[#@]	Comments
								I_γ: from 1981He09. Others: 3.9 *3* (1975Bo42), 4 (1972Co13), 3 (1972Le29) from the undivided doublet, equivalent to branchings from this level of 4.5 *4*, 4.8, 3.4, respectively.
9978.2	3	2628.1[c]		7350.0	3			E_γ,I_γ: unresolved doublet with Iγ=3 from 1972Le29, but not seen in later studies.
		2862.8	4.9 *5*	7115.3	2^+	D+Q[b]	−0.05[b] *2*	I_γ: from 1981He09. Others: 4.0 *7* (1975Bo42), 3 (1972Co13), 4 (1972Le29) from the undivided doublet, equivalent to branchings from this level of 4.6 *8*, 3.6, 4.5, respectively. A_2=−0.23 *2*, A_4=+0.03 *3* (1981He09).
		2976.3	1.3 *2*	7001.8	1	Q(+O)	+0.10 *10*	Mult.,δ: from $\gamma(\theta)$ in 1981He09. E_γ,I_γ: from 1981He09 only. A_2=+0.34 *5*, A_4=−0.11 *7* (1981He09).
		3125.6	7.2 *7*	6852.4	4^+	D+Q[b]	−0.05[b] *2*	I_γ: from 1981He09. Others: 6.5 *7* (1975Bo42), 5 (1972Co13), 9 (1972Le29) from the undivided doublet, equivalent to branchings from this level of 7.4 *7*, 6.0, 10.1, respectively. A_2=−0.22 *2*, A_4=−0.04 *2* (1981He09).
		3312.3[c]	<0.6	6665.7	2^+			E_γ,I_γ: from 1975Bo42 only, unresolved doublet.
		4180.4[c]	<1.4	5797.5				E_γ,I_γ: from 1975Bo42 with Iγ=1.1 *3*, unresolved doublet.
		4430.0	31 *3*	5547.9	2^+	D+Q[b]	+0.06[b] *3*	Mult.,δ: other: −5.3 *18* (1977Ko07) is discrepant. I_γ: from 1981He09. Others: 28 *2* (1975Bo42), 26 (1972Co13), 31 (1972Le29) from the undivided doublet, equivalent to branchings from this level of 32 *2*, 31, 35, respectively. A_2=−0.34 *4*, A_4=+0.04 *4* (1977Ko07). A_2=−0.45 *1*, A_4=0.00 *1* (1981He09).
		4565.5	6.1 *6*	5412.4	3^+	D+Q[b]	+0.49[b] *4*	I_γ: from 1981He09. Others: 6.6 *6* (1975Bo42), 7 (1972Co13), 6 (1972Le29) from the undivided doublet, equivalent to branchings from this level of 7.5 *7*, 8.4, 6.7, respectively. A_2=−0.03 *1*, A_4=−0.13 *2* (1981He09).
		5282.2[c]	<0.4	4695.5	1			I_γ: others: <0.4 (1975Bo42).
		5519.1	7.7 *8*	4458.6	4^+	D+Q[b]	+0.34[b] *4*	A_2=+0.29 *2*, A_4=−0.08 *3* (1981He09). I_γ: from 1981He09. Others: 7.6 *7* (1975Bo42), 6 (1972Co13), 6 (1972Le29) from the undivided doublet, equivalent to branchings from this level of 8.7 *8*, 7.2, 6.7, respectively.
		5696.3[c]	<1	4281.4	2^+			E_γ,I_γ: from 1975Bo42, unresolved doublet.
		6200.4[c]	<0.9	3777.2	0^+			E_γ,I_γ: from 1975Bo42, unresolved doublet.
		7746.9	37 *3*	2230.3	2^+	D+Q[b]	−0.22[b] *2*	Mult.,δ: other: +0.1 *1* (1977Ko07). I_γ: from 1981He09. Others: 31 *3* (1975Bo42), 32 (1972Co13), 30 (1972Le29) from the undivided doublet, equivalent to branchings from this level of 35 *3*, 39, 34, respectively. A_2=0.00 *4*, A_4=+0.10 *4* (1977Ko07). A_2=+0.09 *1*, A_4=+0.01 *1* (1981He09), A_2=+0.18 *6*, A_4=−0.10 *7* (1970Ho25). $\gamma\gamma(\theta)$: A_2=+0.20 *9*, A_4=+0.1 *10* (1963Sp03).
		9976.5[c]	<0.5	0	0^+			E_γ,I_γ: from 1975Bo42, unresolved doublet. Other: 0.3 (1972Co13).
9982.7	2	2867.3	0.8 *3*	7115.3	2^+			

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^{31}P(p,γ) E=res 1997Br07,1975Bo42,1972Co13 (continued)

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

E_i(level)	J_i^π	E_γ [†]	I_γ [‡]	E_f	J_f^π	Mult.[#@]	δ[#@]	Comments
9982.7	2	2980.8	1.8 *5*	7001.8	1			I_γ: other: 2 (1972Le29).
		3130.1	0.8 *2*	6852.4	4^+			
		3361.0	1.2 *4*	6621.5	4^-			I_γ: others: 0.6 (1972Co13), 1 (1972Le29).
		3760[c]	<1.1	6222.7	2			I_γ: others: <1.1 (1975Bo42), 0.4 (1972Co13).
		4184.9[c]	<0.9	5797.5				
		4434.5	9.4 *9*	5547.9	2^+			I_γ: others: 12 (1972Co13), 10 (1972Le29).
		4570.0[c]	<1	5412.4	3^+			I_γ: other: 1 (1972Co13).
		4976.1[c]	<1	5006.2	3^-			I_γ: others: 1 (1972Co13), 2 (1972Le29).
		5286.7	21 *2*	4695.5	1			I_γ: others: 19 (1972Co13), 23 (1972Le29).
		5523.6[c]	<0.9	4458.6	4^+			
		5700.8	1.6 *5*	4281.4	2^+			I_γ: others: 2 (1972Co13), 2 (1972Le29).
		6204.9[c]	<0.6	3777.2	0^+			
		7751.4	62 *6*	2230.3	2^+			I_γ: others: 64 (1972Co13), 60 (1972Le29). A_2=+0.28 *6*, A_4=+0.14 *9* (1970Ho25).
		9981.0	0.7 *1*	0	0^+			I_γ: others: 0.5 (1972Co13), <1 (1972Le29).
10072.9	2	1569[c]	0.2 *1*	8504				I_γ: from 1973Ve08, 1976Ve03.
		1776.8[c]	0.4 *2*	8296.1	3			I_γ: from 1973Ve08, 1976Ve03.
		1947.4[c]	0.3 *1*	8125.43				I_γ: from 1973Ve08, 1976Ve03.
		2371.2[c]	0.3 *1*	7701.6	3			
		2957.5[c]	0.7 *3*	7115.3	2^+			E_γ,I_γ: from 1973Ve08,1976Ve03, but not seen in other studies.
		3407.0[c]	<0.7	6665.7	2^+			
		3451.2[c]	<0.7	6621.5	4^-			
		3850.0	49 *2*	6222.7	2	D(+Q)	+0.02 *2*	Mult.,δ: from 1973Ve08. Others: 0.02 *3* (1976Ve03), +0.07 *3* (1969Pi10). I_γ: from 1986Zi08. Others: 46 *3* (1975Bo42), 45 (1972Co13), 50 *5* (1973Ve08), 49 (1972Le29), 47 (1969Pi10). A_2=+0.238 *15*, A_4=+0.044 *14* (1969Pi10). A_2=+0.35 *3*, A_4=−0.06 *3* (1973Ve08). A_2=+0.33 *3*, A_4=0.00 *3* (1976Ve03).
		4275.1[c]	<1.5	5797.5				
		4524.7[c]	<0.7	5547.9	2^+			
		4660.1	4.3 *3*	5412.4	3^+	D(+Q)	0.00 *3*	Mult.,δ: from 1976Ve03. Other: −0.1 *1* (1969Pi10). I_γ: from 1986Zi08. Others: 3.8 *7* (1975Bo42), 4 (1972Co13), 4 *1* (1973Ve08,1976Ve03), 4 (1972Le29), 4 (1969Pi10). A_2=−0.17 *9*, A_4=−0.05 *10* (1969Pi10). A_2=−0.11 *2*, A_4=+0.03 *2* (1976Ve03).
		5066.3	13.8 *7*	5006.2	3^-	D+Q	−0.06 *1*	Mult.,δ: from 1976Ve03. Others: −0.08 *5* (1973Ve08), −0.02 *3* (1969Pi10). I_γ: from 1986Zi08. Others: 13 *1* (1975Bo42), 12 (1972Co13), 12 *3* (1973Ve08,1976Ve03), 12 (1972Le29), 14 (1969Pi10). A_2=−0.130 *24*, A_4=+0.042 *27* (1969Pi10). A_2=−0.02 *3*, A_4=−0.06 *3* (1973Ve08). A_2=−0.03 *1*, A_4=0.00 *1* (1976Ve03).
		5376.9	0.7 *1*	4695.5	1			I_γ: from 1986Zi08. Others: 0.9 *2* (1975Bo42), (1) (1972Co13), 0.9 *4* (1973Ve08,1976Ve03), 1 (1972Le29), 2 (1969Pi10).
		5613.8[c]	<0.5	4458.6	4^+			
		5790.9	1.5 *1*	4281.4	2^+	D(+Q)	−0.05 *9*	Mult.,δ: from 1976Ve03. I_γ: from 1986Zi08. Others: 1.5 *2* (1975Bo42), 2 (1972Co13), 1.6 *7* (1973Ve08,1976Ve03), 1

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^{31}P(p,γ) E=res 1997Br07,1975Bo42,1972Co13 (continued)

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

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[#@]	δ[#@]	Comments
								(1972Le29), 2 (1969Pi10). A_2=+0.29 *8*, A_4=+0.01 *8* (1976Ve03).
10072.9	2	6295.0[c]	<0.4	3777.2	0^+			
		7841.6	29.6 *15*	2230.3	2^+	D(+Q)	+0.02 *3*	Mult.,δ: from 1976Ve03. Others: +0.10 *2* (1973Ve08), +0.06 *2* (1969Pi10), +0.05 *2* (1965An08). I_γ: from 1986Zi08. Others: 32 *3* (1975Bo42), 34 (1972Co13), 28 *3* (1973Ve08,1976Ve03), 31 (1972Le29), 29 (1969Pi10). A_2=+0.278 *32*, A_4=+0.015 *34* (1969Pi10). A_2=+0.43 *2*, A_4=−0.04 *3* (1973Ve08). A_2=+0.36 *2*, A_4=−0.01 *2* (1976Ve03).
		10071.2	1.7 *1*	0	0^+	Q		I_γ: from 1986Zi08. Others: 2.0 *2* (1975Bo42), 2 (1972Co13), 1.8 *7* (1973Ve08,1976Ve03), 2 (1972Le29), 2 (1969Pi10). Mult.: from 1976Ve03. A_2=+0.52 *13*, A_4=0.00 *13* (1969Pi10). A_2=+0.50 *3*, A_4=−0.07 *4* (1973Ve08). A_2=+0.43 *1*, A_4=−0.02 *1* (1976Ve03).
10102.2	4	4689.4	7.0 *6*	5412.4	3^+			I_γ: from 1997Br07.
		5095.6	21.1 *6*	5006.2	3^-			I_γ: from 1997Br07.
		5643.1	19.8 *6*	4458.6	4^+	D+Q	+7.1 *+10−8*	A_2=−0.15 *7*, A_4=−0.29 *9* (1997Br07).
		5820.2	9.7 *5*	4281.4	2^+	Q		A_2=+0.64 *1*, A_4=−0.45 *2* (1997Br07). I_γ: from 1997Br07.
		7870.9	42.4 *9*	2230.3	2^+			I_γ: from 1997Br07.
10219.5	3	2735.4	1.1 *2*	7484.0	2^+			
		3029.2	0.5 *1*	7190.2				
		3104.0	41 *3*	7115.3	2^+	D+Q	+0.233 *17*	I_γ: others: 44 (1972Co13), 39 *4* (1973Ve08), 40 *4* (1974Vi02), 52 (1972Le29). Mult.,δ: from 1974Vi02. Other: 0.06 *3* (1973Ve08). A_2=−0.28 *4*, A_4=−0.05 *4* (1974Vi02).
		3553.6	0.7 *2*	6665.7	2^+			
		3597.8[c]	<0.6	6621.5	4^-			
		3996.5[c]	<0.7	6222.7	2			
		4421.7[c]	<0.6	5797.5				
		4671.2	6.8 *7*	5547.9	2^+			I_γ: others: 6 (1972Co13), 8 *2* (1973Ve08), 6 *2* (1974Vi02).
		4806.7	2.9 *3*	5412.4	3^+			I_γ: others: 3.5 (1972Co13), 4 *1* (1973Ve08), 5 *2* (1974Vi02), 3 (1972Le29).
		5212.8	4.9 *7*	5006.2	3^-			
		5523.5	19 *2*	4695.5	1	Q		I_γ: others: 25 (1972Co13), 22 *2* (1973Ve08), 19 *6* (1974Vi02), 25 (1972Le29). Mult.,δ: δ(O/Q)=−0.22 *8* from 1974Vi02, +0.04 *6* from 1973Ve08. But the O component is unlikely, based on RUL with Γ<10 eV (1973Ve08) and Γ_γ>0.1 eV implied from measured $S_{p\gamma}$ of this resonance. A_2=+0.43 *6*, A_4=−0.28 *7* (1974Vi02).
		5760.3	5.3 *5*	4458.6	4^+			I_γ: others: 5 (1972Co13), 8 *3* (1973Ve08), 9 *3* (1974Vi02).
		5937.5	6.8 *6*	4281.4	2^+	D+Q	−0.65 *5*	I_γ: others: 6 (1972Co13), 7 *2* (1973Ve08), 9 *3* (1974Vi02), 7 (1972Le29). δ: or −6.8 *18* (1974Vi02). A_2=−0.67 *11*, A_4=+0.09 *10* (1974Vi02).

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^{31}P(p,γ) E=res 1997Br07,1975Bo42,1972Co13 (continued)

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

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[#@]	δ[#@]	Comments
10219.5	3	6441.6[c]	<0.7	3777.2	0^+			
		7988.1	12 *1*	2230.3	2^+	D+Q	−0.70 *5*	I_γ: others: 10 (1972Co13), 12 1 (1973Ve08), 12 *4* (1974Vi02), 11 (1972Le29). Mult.,δ: from 1974Vi02. Others: −0.26 *3* or −1.53 *7* (1973Ve08). A_2=−0.83 *9*, A_4=+0.12 *9* (1974Vi02).
		10217.8[c]	1.6 *2*	0	0^+			I_γ: others: 0.5 (1972Co13), 0.6 *3* (1974Vi02), 2 (1972Le29). 1973Ve08 state that this transition seen in earlier work attributed to this E(p)=1399.6 resonance is probably due to a braod resonance located at aournd this energy. For adopted J^π(10219.5)=3^+, this transition would have a mult=M3, which would require a γ-decay partial $T_{1/2}$>88 fs based on RUL=10 for B(M3)(W.u.), corresponding to Γ_γ<0.005 eV. However, measured $S_{p\gamma}=(2J+1)\Gamma_p\Gamma_\gamma/\Gamma\approx$0.7 eV implies Γ_γ>0.1 eV, wihch doesn′t allow this M3 transition placed here. Therefore, the evaluator considers this placement questionable and does not adopt it in Adopted Gammas.
10222.1	3	2738.0[c]	<0.4	7484.0	2^+			
		3106.6	2.0 *15*	7115.3	2^+	D+Q	+0.04 *1*	Mult.,δ: from 1976Ve03. Other: 0.06 *3* (1973Ve08). I_γ: others: 4 (1972Co13), 2 *1* (1974Vi02). A_2=−0.20 *3*, A_4=0.00 *3* (1973Ve08). A_2=−0.25 *1*, A_4=−0.04 *1* (1976Ve03).
		3556.2	0.7 *2*	6665.7	2^+			
		3600.4[c]	<0.6	6621.5	4^-			
		3999.1[c]	<0.6	6222.7	2			
		4424.3[c]	<0.8	5797.5				
		4673.8[c]	<1	5547.9	2^+			
		4809.3	0.4 *2*	5412.4	3^+			
		5215.4	62 *5*	5006.2	3^-	D(+Q)	−0.02 *2*	Mult.,δ: from 1976Ve03. Other: −0.02 *5* (1973Ve08). I_γ: others: 63 (1972Co13), 66 *7* (1973Ve08,1976Ve03), 69 *4* (1974Vi02), 67 (1972Le29). A_2=+0.37 *5*, A_4=−0.03 *5* (1973Ve08). A_2=+0.39 *1*, A_4=+0.01 *1* (1976Ve03).
		5526.1[c]	<1	4695.5	1	Q(+O)	+0.02 *4*	I_γ: others: 4 (1972Co13), <1 (1974Vi02). Mult.,δ: from 1976Ve03. Other: −0.04 *6* (1973Ve08). A_2=+0.52 *7*, A_4=−0.27 *9* (1973Ve08). A_2=+0.51 *7*, A_4=−0.26 *9* (1976Ve03).
		5762.9	21 *2*	4458.6	4^+	D+Q	−0.07 *2*	Mult.,δ: from 1973Ve08. I_γ: others: 18 (1972Co13), 22 *2* (1973Ve08,1976Ve03), 18 *6* (1974Vi02), 22 (1972Le29). A_2=−0.03 *2*, A_4=−0.04 *2* (1973Ve08).
		5940.1[c]	<1	4281.4	2^+			
		6444.2[c]	<0.2	3777.2	0^+			
		7990.7	14 *1*	2230.3	2^+	D+Q	−0.07 *1*	Mult.,δ: from 1973Ve08. I_γ: others: 11 (1972Co13), 12 *3* (1973Ve08,1976Ve03), 11 *4* (1974Vi02), 11 (1972Le29). A_2=−0.76 *8*, A_4=+0.09 *6* (1973Ve08). A_2=−0.19 *2*, A_4=−0.01 *1* (1973Ve08).

Continued on next page (footnotes at end of table)

^{31}P(p,γ) E=res 1997Br07,1975Bo42,1972Co13 (continued)

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

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[#@]	δ[#@]	Comments
10222.1	3	10220.4	0.3 *2*	0	0^+			
10230.1	1^+	2694.3	5.4 *7*	7535.7				I_γ: others: 4 (1972Co13), 4 *1* (1973Ve08), 5 *2* (1974Vi02), 6 (1972Le29).
		3039.8	0.9 *2*	7190.2				
		3114.6	3.2 *10*	7115.3	2^+			I_γ: others: 3 (1972Co13), 6 1 (1973Ve08), 4 *2* (1974Vi02), 5 (1972Le29).
		3228.1	47 *3*	7001.8	1	D+Q		Mult.,δ: $-0.21\geq\delta\geq-4.7$ (1973Ve08). I_γ: others: 48 (1972Co13), 41 *4* (1973Ve08), 42 *4* (1974Vi02), 50 (1972Le29). A_2=−0.05 *3*, A_4=−0.03 *3* (1973Ve08).
		3377.5[c]	<1	6852.4	4^+			
		3468.3[c]	<1.1	6761.6	5^-			
		3564.2[c]	<1	6665.7	2^+			
		3608.4[c]	<0.9	6621.5	4^-			
		4007.1	4.2 *9*	6222.7	2			I_γ: others: 2 (1972Co13), 5 *1*(1973Ve08), 7 *2* (1974Vi02).
		4432.3[c]	<1	5797.5				
		4681.8	2.5 *5*	5547.9	2^+			I_γ: other: 4 *1* (1973Ve08).
		4817.3	3.2 *3*	5412.4	3^+			I_γ: others: 5 *1* (1973Ve08), 6 *2* (1974Vi02), 3 (1972Le29).
		5223.4[c]	<1.4	5006.2	3^-			I_γ: others: 4 (1972Co13), <1 (1974Vi02).
		5534.1	4.3 *6*	4695.5	1			I_γ: others: 7 (1972Co13), 8 *2* (1973Ve08), 7 *2* (1974Vi02), 6 (1972Le29).
		5770.9[c]	<1	4458.6	4^+			I_γ: other: 3 (1972Co13).
		5948.1	11 *1*	4281.4	2^+			I_γ: others: 11 (1972Co13), 11 *1* (1973Ve08), 14 *4* (1974Vi02), 11 (1972Le29). A_2=+0.04 *2*, A_4=−0.03 *2* (1973Ve08).
		6452.2	2.8 *6*	3777.2	0^+			I_γ: others: 2 (1972Co13), 2 *1* (1973Ve08), <1 (1974Vi02), 6 (1972Le29).
		7998.7	9.0 *9*	2230.3	2^+			I_γ: others: 9 (1972Co13), 7 *2* (1973Ve08), 8 *3* (1974Vi02), 9 (1972Le29).
		10228.4	7.6 *8*	0	0^+			I_γ: others: 7 (1972Co13), 7 *2* (1973Ve08), 7 *2* (1974Vi02), 4 (1972Le29). A_2=−0.08 *3*, A_4=+0.03 *2* (1973Ve08).
10256.0	4^-	2305.8	5.6 *6*	7950.1	4^-	D+Q	−0.18 *2*	Mult.,δ: from 1976Ve03. I_γ: others: 4 (1972Co13), 6.4 *13* (1973Ve08), 6.2 *25* (1976Ve03), 6 (1972Le29), 9 (1969Pi10), 5 (1974Gr15). A_2=+0.31 *1*, A_4=−0.03 *1* (1976Ve03). A_2=+0.40 *7*, A_4=+0.01 *8* (1974Gr15).
		2554.3[c]	<0.3	7701.6	3			I_γ: others: 0.5 *2* (1973Ve08), <0.5 (1976Ve03).
		2905.9[c]	<1	7350.0	3			I_γ: from 1976Ve03.
		3403.4[c]	<0.8	6852.4	4^+			I_γ: from 1976Ve03.
		3494.2	2.6 *6*	6761.6	5^-			I_γ: others: 3 (1972Co13), 3.2 *10* (1973Ve08), 4.1 *16* (1976Ve03), 3 (1974Gr15). A_2=−0.25 *3*, A_4=+0.01 *3* (1976Ve03). A_2=−0.20 *7*, A_4=−0.02 *7* (1974Gr15).
		3634.3	76 *5*	6621.5	4^-	D(+Q)	+0.02 *4*	Mult.,δ: from 1976Ve03. Others: −0.03 *2* (1973Ve08), +0.9 *3* (1972Co13), +0.3 *+2−1* (1974Gr15). I_γ: others: 77 (1972Co13), 75 *8* (1973Ve08), 77 *7* (1976Ve03), 79 (1972Le29), 76 (1969Pi10), 78

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^{31}P(p,γ) E=res 1997Br07,1975Bo42,1972Co13 (continued)

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

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[#@]	δ[#@]	Comments
								(1974Gr15). A_2=+0.42 *2*, A_4=−0.08 *4* (1972Co13). A_2=+0.66 *3*, A_4=+0.03 *3* (1969Pi10). A_2=+0.42 *3*, A_4=−0.01 *4* (1973Ve08). A_2=+0.46 *1*, A_4=−0.02 *1* (1976Ve03). A_2=+0.54 *3*, A_4=−0.01 *4* (1974Gr15).
10256.0	4$^-$	3846[c]	0.5 *2*	6410	(4)	D+Q	+0.50 *8*	Mult.,δ: +0.50 *8* (1976Ve03). I_γ: from 1976Ve03; not seen in 1975Bo42. Others: 1.0 *4* (1973Ve08), <1 (1972Le29). A_2=+0.55 *3*, A_4=0.00 *4* (1976Ve03).
		4707.7[c]	<0.3	5547.9	2$^+$			I_γ: other: 0.4 *2* (1973Ve08).
		4843.2[c]	<0.2	5412.4	3$^+$			I_γ: other: <0.1 (1976Ve03).
		5249.3	4.7 *5*	5006.2	3$^-$	D+Q	−0.11 *2*	Mult.,δ: from 1976Ve03. Others: −0.15 *3* (1973Ve08), −0.2 *1* or −2.2 *5* (1972Co13), −0.2 *1* (1974Gr15). I_γ: others: 4 (1972Co13), 4 *1* (1973Ve08,1976Ve03), 4 (1972Le29), 5 (1969Pi10), 4 (1974Gr15). A_2=−0.31 *4*, A_4=−0.22 *4* (1969Pi10). A_2=−0.51 *11*, A_4=−0.03 *14* (1972Co13). A_2=−0.54 *8*, A_4=+0.04 *8* (1973Ve08). A_2=−0.52 *2*, A_4=0.00 *2* (1976Ve03). A_2=−0.57 *6*, A_4=+0.02 *7* (1974Gr15).
		5560.0[c]	<0.1	4695.5	1			
		5796.8	9.7 *7*	4458.6	4$^+$	D(+Q)	+0.03 *4*	Mult.,δ: from 1976Ve03. Others: +0.07 *13* (1973Ve08), +0.9 *3* (1972Co13), +0.15 *20* (1974Gr15). I_γ: others: 11 (1972Co13), 8 *2* (1973Ve08,1976Ve03), 10 (1972Le29), 9 (1969Pi10), 9 (1974Gr15). A_2=+0.61 *6*, A_4=+0.01 *6* (1969Pi10). A_2=+0.43 *2*, A_4=−0.07 *3* (1972Co13). A_2=+0.51 *9*, A_4=−0.02 *1* (1973Ve08). A_2=+0.46 *1*, A_4=−0.03 *1* (1976Ve03). A_2=+0.53 *5*, A_4=+0.05 *6* (1974Gr15).
		5974.0[c]	<0.2	4281.4	2$^+$			I_γ: other: <0.1 (1976Ve03).
		6478.1[c]	<0.1	3777.2	0$^+$			
		8024.6	0.9 *1*	2230.3	2$^+$	Q+O	−0.02 *1*	Mult.,δ: from 1976Ve03. I_γ: others: 1 (1972Co13), 0.6 *3* (1973Ve08), 0.5 *2* (1976Ve03), 1 (1972Le29), 1 (1969Pi10), 1 (1974Gr15). A_2=+0.44 *2*, A_4=−0.25 *2* (1976Ve03).
		10254.2[c]	<0.3	0	0$^+$			I_γ: other: <0.1 (1969Pi10).
10286.2	2	5279.5	74 *8*	5006.2	3$^-$			I_γ: from 1973Ve08. Other: 68 (1972Le29).
		5827.0	15 *2*	4458.6	4$^+$			I_γ: from 1973Ve08. Other: 11 (1972Le29).
		8054.8	11 *1*	2230.3	2$^+$			I_γ: from 1973Ve08. Other: 14 (1972Le29). Mult.,δ: −0.02 *3* (1965An08).
		10284.4[c]		0	0$^+$			E_γ,I_γ: from 1972Le29 with Iγ=7; not seen in 1973Ve08.
10290.2	2	2164.7	3.4 *10*	8125.43				I_γ: others: 2 (1972Co13), 2.4 *7* (1973Ve08).
		2806.1[c]	<2.3	7484.0	2$^+$			
		3288.2[c]		7001.8	1			E_γ,I_γ: from 1973Ve08 with Iγ= 1.5 *6*; not seen in 1975Bo42.

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^{31}P(p,γ) E=res 1997Br07,1975Bo42,1972Co13 (continued)

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

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[#@]	δ[#@]	Comments
10290.2	2	3624.3	1.8 *9*	6665.7	2^+			I_γ: others: 2.3 *7* (1973Ve08), 4 (1972Le29).
		3668.5[c]	<1.4	6621.5	4^-			
		4067.2	29 *2*	6222.7	2	D+Q	−0.10 *4*	Mult.,δ: from 1973Ve08. I_γ: others: 31 (1972Co13), 36 *4* (1973Ve08), 35 (1972Le29). A_2=+0.22 *2*, A_4=−0.05 *2* (1973Ve08).
		4492.4	2.4 *8*	5797.5				I_γ: other: 1.6 *7* (1973Ve08).
		4741.9[c]	<1.7	5547.9	2^+			I_γ: other: 2 (1972Le29).
		4877.4	<3.0	5412.4	3^+			I_γ: 2.2 *8* (1975Bo42), 2 (1972Co13), 1.5 *6* (1973Ve08), unresolved with γ from 7115 to 2231.
		5283.5	24 *1*	5006.2	3^-	D+Q	−0.29 *6*	Mult.,δ: from 1973Ve08. I_γ: others: 25 (1972Co13), 19 *2* (1973Ve08), 24 (1972Le29). A_2=+0.16 *2*, A_4=−0.10 *3* (1973Ve08).
		5594.2[c]	<1	4695.5	1			
		5831.0[c]	<3	4458.6	4^+			
		6008.2	2.8 *4*	4281.4	2^+			I_γ: others: 2 (1972Co13), 1.5 *6* (1973Ve08).
		6512.3[c]	<1.5	3777.2	0^+			
		8058.8	35 *4*	2230.3	2^+	D+Q	+0.11 *4*	Mult.,δ: from 1973Ve08. I_γ: others: 36 (1972Co13), 32 *3* (1973Ve08), 33 (1972Le29). A_2=+0.42 *4*, A_4=−0.09 *5* (1973Ve08).
		10288.4	4.0 *4*	0	0^+			I_γ: others: 2 (1972Co13), 2.2 *7* (1973Ve08), 2 (1972Le29).
10330.9		2205.4	5 *1*	8125.43				I_γ: other: 6 *1* (1973Ve08).
		3328.9[c]	<2.1	7001.8	1			
		3569.1[c]	<2.9	6761.6	5^-			
		3665.0[c]	<2.2	6665.7	2^+			
		3709.2[c]	<2.6	6621.5	4^-			
		4107.9[c]	<2.5	6222.7	2			
		4533.1[c]	<3.4	5797.5				
		4782.6[c]	<11	5547.9	2^+			I_γ: other: 6 *1* (1973Ve08).
		4918.1[c]	<2.6	5412.4	3^+			
		5324.2[c]	<1.3	5006.2	3^-			
		5634.9	12 *1*	4695.5	1			I_γ: other: 15 *2* (1973Ve08).
		5871.7[c]	<1.3	4458.6	4^+			
		6048.9[c]	<0.8	4281.4	2^+			
		6553.0[c]	<2.3	3777.2	0^+			
		8099.5	68 *6*	2230.3	2^+			I_γ: other: 61 *6* (1973Ve08).
		10329.1	15 *2*	0	0^+			I_γ: other: 12 *1* (1973Ve08).
10370.4	2	2886.3	1.40 *18*	7484.0	2^+			I_γ: from 1998Ka31. Others: 2.6 *9* (1975Bo42), 2 (1972Co13), 2 (1969Pi10), 3 (1972Le29).
		3020.3[c]	0.3	7350.0	3			I_γ: from 1998Ka31; not seen in other studies.
		3180.0	1.5 *4*	7190.2				I_γ: from 1998Ka31. Others: 1.2 *9* (1975Bo42), 2 (1972Co13), 1 (1969Pi10), 2 (1972Le29).
		3368.4	0.20 *7*	7001.8	1			I_γ: from 1998Ka31. Other: <0.6 (1975Bo42).
		3517.8[c]	<0.6	6852.4	4^+			I_γ: from 1975Bo42.
		3704.5	19.8 *18*	6665.7	2^+	D+Q	+0.72 *26*	Mult.,δ: from 1977Ko07. I_γ: from 1998Ka31. Others: 14 *1* (1975Bo42), 14 (1972Co13), 13 (1969Pi10), 18 (1972Le29). A_2=+0.44 *3*, A_4=−0.057 *32* (1977Ko07).
		3748.7[c]	<0.6	6621.5	4^-			I_γ: from 1998Ka31. Others: <0.6 (1975Bo42).

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^{31}P(p,γ) E=res 1997Br07,1975Bo42,1972Co13 (continued)

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

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[#@]	δ[#@]	Comments
10370.4	2	4147.4	2.5 *3*	6222.7	2			I_γ: from 1998Ka31. Others: 2.0 *3* (1975Bo42), 2 (1972Co13), 3 (1969Pi10), 3 (1972Le29).
		4572.6[c]	<0.6	5797.5				I_γ: from 1975Bo42.
		4822.1	3.3 *4*	5547.9	2^+			I_γ: from 1998Ka31. Others: 2.7 *3* (1975Bo42), 2 (1972Co13), 4 (1969Pi10), 3 (1972Le29).
		4957.6	12.6 *13*	5412.4	3^+	D+Q	+2.8 *5*	Mult.,δ: from 1977Ko07. I_γ: from 1998Ka31. Others: 12 *1* (1975Bo42), 13 (1972Co13), 12 (1969Pi10), 11 (1972Le29). A_2=+0.140 *9*, A_4=+0.009 *10* (1977Ko07).
		5363.7	2.7 *3*	5006.2	3^-			I_γ: from 1998Ka31. Others: 2.3 *2* (1975Bo42), 1.5 (1972Co13), 2.0 (1969Pi10), 3 (1972Le29).
		5674.4	10.7 *10*	4695.5	1	D(+Q)	−0.10 *10*	Mult.,δ: from 1977Ko07. I_γ: from 1998Ka31. Others: 9.2 *7* (1975Bo42), 8 (1972Co13), 11 (1969Pi10), 11 (1972Le29), <11 (1969Pi10). A_2=−0.276 *35*, A_4=−0.171 *36* (1977Ko07).
		5911.2[c]	<0.3	4458.6	4^+			I_γ: from 1975Bo42. Other: 1 (1972Le29).
		6088.4	37.4 *26*	4281.4	2^+	D+Q	−0.08 *2*	Mult.,δ: from 1977Ko07. Other: 0.04 *3* (1965An08). I_γ: from 1998Ka31. Others: 40 *3* (1975Bo42), 43 (1972Co13), 40 (1969Pi10), 35 (1972Le29), 40 (1969Pi10). A_2=+0.544 *33*, A_4=−0.088 *34* (1977Ko07).
		6592.5[c]		3777.2	0^+			E_γ: from 1975Bo42 with Iγ=0.6 *2*, but not seen in 1998Ka31, so not adopted here.
		8139.0	7.6 *8*	2230.3	2^+	D+Q	−0.08 *3*	Mult.,δ: from 1977Ko07. Other: 0.16 *2* (1965An08). I_γ: from 1998Ka31. Others: 12 *1* (1975Bo42), 12 (1972Co13), 11 (1969Pi10), 12 (1972Le29), 11 (1969Pi10). A_2=+0.479 *41*, A_4=−0.024 *43* (1977Ko07).
		10368.6	0.30 *8*	0	0^+			I_γ: from 1998Ka31. Others: 1.0 *2* (1975Bo42), 0.5 (1972Co13), <0.5 (1969Pi10), <0.5 (1972Le29).
10396.5	4^-	2271.0	0.20 *4*	8125.43				I_γ: from 1998Ka31. Other: 0.8 *5* (1975Bo42).
		2421.5[c]	<0.4	7974.9	3			I_γ: from 1998Ka31.
		2446.3	4.7 *5*	7950.1	4^-	D(+Q)	−0.05 *11*	Mult.,δ: from 1976Ve03. I_γ: from 1998Ka31. Others: 3.9 *4* (1975Bo42), 2.9 (1972Co13), 4.9 *15* (1973Ve08), 4.2 *17* (1976Ve03), 4 (1972Le29), 4 (1969Pi10), 4 (1974Gr15). A_2=+0.41 *6*, A_4=−0.02 *7* (1976Ve03). A_2=+0.54 *7*, A_4=−0.07 *7* (1974Gr15).
		2694.8	0.70 *9*	7701.6	3			I_γ: from 1998Ka31. Others: <0.3 (1975Bo42), 0.3 (1972Co13), 0.5 *2* (1973Ve08), 0.7 *3* (1976Ve03), 0.7 (1974Gr15).
		2829	0.3 *6*	7567				I_γ: from 1998Ka31.
		3029	0.70 *11*	7367				I_γ: from 1998Ka31.
		3394.5	0.30 *7*	7001.8	1			I_γ: from 1998Ka31.
		3543.9	1.60 *22*	6852.4	4^+	D(+Q)	−0.03 *3*	Mult.,δ: from 1976Ve03. I_γ: from 1998Ka31. Others: 1.0 *4* (1973Ve08), 1.3 *5* (1976Ve03), 1 (1974Gr15). A_2=+0.57 *9*, A_4=−0.03 *10* (1976Ve03).
		3634.7	2.7 *4*	6761.6	5^-	D+Q	−0.07 *5*	Mult.,δ: from 1976Ve03.

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^{31}P(p,γ) E=res 1997Br07,1975Bo42,1972Co13 (continued)

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

E_i(level)	E_γ[†]	I_γ[‡]	E_f	J^π_f	Mult.[#@]	δ[#@]	Comments
							I_γ: from 1998Ka31. Others: 2.2 *17* (1975Bo42), 2.4 (1972Co13), 2.3 *7* (1973Ve08), 2.7 *11* (1976Ve03), 2 (1974Gr15). A_2=−0.07 *5*, A_4=+0.01 *6* (1976Ve03). A_2=−0.07 *9*, A_4=+0.03 *10* (1974Gr15).
10396.5	3774.8	82.0 *16*	6621.5	4^-	D+Q	−0.05 *3*	Mult.,δ: from 1976Ve03. Others: −0.05 *4* (1973Ve08), +0.9 *3* (1972Co13), +0.05 *10* (1974Gr15). I_γ: from 1998Ka31. Others: 82 *5* (1975Bo42), 84 (1972Co13), 83 *9* (1973Ve08), 84 *8* (1976Ve03), 89 (1972Le29), 85 (1969Pi10), 85 (1974Gr15). A_2=+0.38 *4*, A_4=−0.04 *5* (1973Ve08). A_2=+0.39 *1*, A_4=−0.09 *2* (1972Co13). A_2=+0.41 *1*, A_4=−0.01 *1* (1976Ve03). A_2=+0.48 *2*, A_4=−0.01 *2* (1974Gr15).
	3986	0.5 *2*	6410	(4)			I_γ: from 1976Ve03. Others: 0.7 *3* (1973Ve08), <0.4 (1998Ka31).
	4173.5[c]	<0.4	6222.7	2			I_γ: from 1998Ka31. Other: <2 (1975Bo42).
	4598.7	0.30 *6*	5797.5				I_γ: from 1998Ka31. Other: <1 (1975Bo42).
	4848.2[c]	<0.5	5547.9	2^+			I_γ: from 1975Bo42.
	4983.7	0.10 *3*	5412.4	3^+			I_γ: from 1998Ka31. Others: <0.2 (1975Bo42), <0.2 (1976Ve03).
	5389.8	4.9 *6*	5006.2	3^-	D+Q	+0.19 *2*	Mult.,δ: from 1976Ve03. Others: +0.21 *4* (1973Ve08), +0.2 *1* (1972Co13), +0.2 *1* (1974Gr15). I_γ: from 1998Ka31. Others: 6.4 *5* (1975Bo42), 5.6 (1972Co13), 5.8 *12* (1973Ve08), 5.6 *22* (1976Ve03), 6 (1972Le29), 7 (1969Pi10), 4.5 (1974Gr15). A_2=+0.04 *5*, A_4=+0.02 *9* (1973Ve08). A_2=+0.04 *3*, A_4=−0.07 *3* (1972Co13). A_2=+0.06 *1*, A_4=−0.03 *1* (1976Ve03). A_2=+0.11 *4*, A_4=+0.08 *4* (1974Gr15).
	5700.5[c]	<0.3	4695.5	1			I_γ: from 1975Bo42.
	5937.3	1.00 *14*	4458.6	4^+	D(+Q)	−0.02 *6*	Mult.,δ: from 1976Ve03. Other: +0.8 *+6−4* (1974Gr15). I_γ: from 1998Ka31. Others: 1.4 *4* (1975Bo42), 1.8 (1972Co13), 1.3 *5* (1973Ve08), 1.1 *4* (1976Ve03), 1 (1972Le29), 1 (1969Pi10), 1 (1974Gr15). A_2=+0.43 *3*, A_4=−0.02 *3* (1976Ve03). A_2=+0.39 *10*, A_4=−0.16 *12* (1972Co13). A_2=+0.52 *10*, A_4=−0.28 *10* (1974Gr15).
	6114.5	0.30 *19*	4281.4	2^+			I_γ: from 1998Ka31. Others: 1.8 *5* (1975Bo42), 2 (1972Co13), 2 (1969Pi10), 0.7 (1974Gr15), <0.1 (1976Ve03).
	6618.6[c]	<0.3	3777.2	0^+			I_γ: from 1975Bo42 only.
	8165.1	0.20 *3*	2230.3	2^+	Q(+O)	0.00 *6*	Mult.,δ: from 1976Ve03. I_γ: from 1998Ka31. Others: 0.8 *3* (1975Bo42), 1 (1972Co13), 0.5 *2* (1973Ve08), 0.3 *1* (1976Ve03), <0.5 (1972Le29), <1.0 (1969Pi10), 1 (1974Gr15). A_2=+0.36 *5*, A_4=−0.12 *5* (1976Ve03).
	10394.7[c]	<0.9	0	0^+			I_γ: from 1975Bo42. Other: <0.5 (1969Pi10).
10399.2	2273.7	24 *3*	8125.43				I_γ: from 1973Ve08.
	4601.3	76 *8*	5797.5				I_γ: from 1973Ve08.
10508.4	3158.2	1.1 *3*	7350.0	3			
	3318.0	4.6 *3*	7190.2				I_γ: other: 3.8 *4* (1975Bo42).
	3392.9	49.4 *9*	7115.3	2^+			I_γ: others: 40 *4* (1975Bo42), 39 (1972Co13).
	3506.4[c]	<4	7001.8	1			I_γ: from 1975Bo42 only.

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^{31}P(p,γ) E=res 1997Br07,1975Bo42,1972Co13 (continued)

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

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[#@]	Comments
10508.4		3655.8[c]	<1.5	6852.4	4^+		I_γ: from 1975Bo42 only.
		3746.6[c]	<1.5	6761.6	5^-		I_γ: from 1975Bo42 only.
		3842.5	1.5 *3*	6665.7	2^+		I_γ: other: <3 (1975Bo42).
		3886.7[c]	<1.5	6621.5	4^-		I_γ: from 1975Bo42 only.
		4285.4[c]	<7.3	6222.7	2		I_γ: from 1975Bo42 only.
		4710.5	2.0 *2*	5797.5			I_γ: other: <2.1 (1975Bo42).
		4960.1[c]		5547.9	2^+		I_γ: 1975Bo42 report a Iγ=2.7 *5*, but not confirmed in 1997Br07, so not adopted here.
		5095.6	6.9 *3*	5412.4	3^+		I_γ: others: 7.4 *6* (1975Bo42), 8 (1972Co13).
		5501.7	1.1 *2*	5006.2	3^-		I_γ: other: 3.3 *6* (1975Bo42).
		5812.3	0.8 *2*	4695.5	1		I_γ: others: 2.5 *8* (1975Bo42), 8 (1972Co13).
		6049.2[c]	<1.4	4458.6	4^+		I_γ: from 1975Bo42 only.
		6226.4	6.7 *4*	4281.4	2^+		I_γ: others: 11 *1* (1975Bo42), 15 (1972Co13).
		6730.4[c]	<2.5	3777.2	0^+		I_γ: from 1975Bo42 only.
		8277.0	20.6 *5*	2230.3	2^+		I_γ: others: 21 *2* (1975Bo42), 25 (1972Co13).
		10506.6	5.3 *8*	0	0^+		I_γ: others: 8.8 *9* (1975Bo42), 5 (1972Co13).
10555.8?		8324.3	60[&]	2230.3	2^+		
		10553.9	40[&]	0	0^+		
10573.2	5^+	2303	2.1 *2*	8270			
		3223.0	3.7 *3*	7350.0	3		
		3811.4	3.3 *3*	6761.6	5^-		
		3951.4	2.4 *3*	6621.5	4^-		
		4163	1.5 *4*	6410	(4)		
		5160.4	28.7 *5*	5412.4	3^+	Q	I_γ: other: 33 (1972Co13). A_2=+0.43 *3*, A_4=−0.23 *5* (1997Br07).
		6114.0	54.7 *9*	4458.6	4^+		I_γ: other: 16 (1972Co13).
		8341.7[c]		2230.3	2^+		E_γ: from 1972Co13 with a large branching of 44%, but not seen in 1997Br07. It is likely this transition is from a different resonance.
		10571.3[c]		0	0^+		E_γ: from 1972Co13 with Iγ=7 but not seen in 1997Br07, so not adopted.
10603.5		2478.0	3[&]	8125.43			
		3488.0	10[&]	7115.3	2^+		
		4805.6	5[&]	5797.5			
		5055.2	39[&]	5547.9	2^+		
		5190.7	10[&]	5412.4	3^+		
		5596.8	8[&]	5006.2	3^-		
		8372.0	6[&]	2230.3	2^+		
		10601.6	19[&]	0	0^+		
10635.8		2685.6	16.0 *8*	7950.1	4^-		
		2934.1	3.9 *6*	7701.6	3		
		3874.0	9.4 *9*	6761.6	5^-		
		4014.0	70.6 *15*	6621.5	4^-		
10695.9		2994.2	0.5[&]	7701.6	3		
		3160.0	0.5[&]	7535.7			
		4898.0	3[&]	5797.5			I_γ: other: 2 (1973Ko28).
		5147.6	2[&]	5547.9	2^+		I_γ: other: 2 (1973Ko28).
		5689.2	3[&]	5006.2	3^-		I_γ: other: 1 (1973Ko28).
		5999.8	2[&]	4695.5	1		I_γ: other: 1 (1973Ko28).
		6236.7	1[&]	4458.6	4^+		

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^{31}P(p,γ) E=res 1997Br07,1975Bo42,1972Co13 (continued)

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

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[#@]	δ[#@]	Comments
10695.9		6413.8	10[&]	4281.4	2^+			I_γ: other: 11 (1973Ko28).
		6917.9	3[&]	3777.2	0^+			I_γ: other: 2 (1973Ko28).
		8464.4	5[&]	2230.3	2^+			I_γ: other: 5 (1973Ko28).
		10694.0	70[&]	0	0^+			I_γ: other: 76 (1973Ko28).
10700.2		4902.3	4[&]	5797.5				
		6004.1	3[&]	4695.5	1			
		6922.2	4[&]	3777.2	0^+			
		8468.7	5[&]	2230.3	2^+			
		10698.3	84[&]	0	0^+			
10704.8		3003.1	8.7 *9*	7701.6	3			
		3942.9	31.1 *15*	6761.6	5^-			
		4083.0	52.1 *17*	6621.5	4^-			
		6245.6	8.1 *20*	4458.6	4^+			
10756.3	3	1691	0.7 *2*	9065				
		2026.9	1.0 *3*	8729.3	3^+			
		3054.5	2.0 *2*	7701.6	3			
		3406.1	3.5 *2*	7350.0	3			
		3640.8	1.5 *2*	7115.3	2^+			
		3903.6	3.1 *2*	6852.4	4^+			
		4090.3[c]		6665.7	2^+			E_γ: from 1973Ko28 with Iγ=2, but not confirmed in 1997Br07, so not adopted here.
		4134.5	1.3 *3*	6621.5	4^-			
		5208.0	18.0 *6*	5547.9	2^+	D+Q	+0.19 *4*	Mult.,δ: other: +0.86 *11* (1977Ko07). I_γ: others: 19 (1972Co13), 18 (1973Ko28). A_2=−0.20 *9*, A_4=−0.03 *8* (1977Ko07). A_2=−0.02 *5*, A_4=+0.08 *7* (1997Br07).
		5343.4	7.6 *4*	5412.4	3^+	D+Q	+0.48 *12*	Mult.,δ: from 1977Ko07. I_γ: other: 11 (1973Ko28). A_2=+0.23 *7*, A_4=0.00 *10* (1977Ko07).
		6297.0	56.7 *9*	4458.6	4^+	D+Q	−0.12 *9*	Mult.,δ: other: −0.45 *15* (1977Ko07). I_γ: others: 70 (1972Co13), 64 (1973Ko28). A_2=−0.19 *4*, A_4=+0.04 *4* (1977Ko07). A_2=+0.03 *3*, A_4=−0.02 *3* (1997Br07).
		6474.2	3.5 *2*	4281.4	2^+			I_γ: others: 2 (1973Ko28).
		8524.8	1.1 *2*	2230.3	2^+			I_γ: others: 2 (1972Co13), 3 (1973Ko28).
10778.3		1755	1.2 *1*	9023				
		2371.2	0.2 *1*	8407.0	2			
		2803.3	2.1 *2*	7974.9	3			
		3294.1	0.8 *1*	7484.0	2^+			I_γ: other: 1 (1973Ko28).
		3428.1	0.3 *1*	7350.0	3			
		3776.3	12.9 *3*	7001.8	1			I_γ: other: 4 (1972Co13).
		4112.3	1.6 *2*	6665.7	2^+			
		4980.4	0.6 *1*	5797.5				I_γ: other: 3 (1973Ko28).
		5229.9	0.6 *1*	5547.9	2^+			
		5365.4	7.1 *2*	5412.4	3^+			I_γ: others: 4 (1972Co13), 3 (1973Ko28).
		6082.2	4.5 *2*	4695.5	1			I_γ: other: 2 (1972Co13).
		6496.2	16.7 *3*	4281.4	2^+			I_γ: others: 21 (1972Co13), 20 (1973Ko28).
		8546.8	42.9 *9*	2230.3	2^+			I_γ: others: 60 (1972Co13), 58 (1973Ko28).
		10776.4	8.3 *2*	0	0^+			I_γ: others: 9 (1972Co13), 15 (1973Ko28).
10783.2		2862.1	1.3 *1*	7921.0				
		3146.0	0.7 *1*	7637.0				
		3667.7	0.3 *1*	7115.3	2^+			
		3781.2	1.6 *1*	7001.8	1			I_γ: other: 6 (1973Ko28).

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^{31}P(p,γ) E=res 1997Br07,1975Bo42,1972Co13 (continued)

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

E_i(level)	E_γ[†]	I_γ[‡]	E_f	J^π_f	Comments
10783.2	4117.2	1.9 *1*	6665.7	2^+	I_γ: other: 2 (1973Ko28).
	4373[c]	5	6410	(4)	E_γ: from 1973Ko28 with Iγ=1.5, but not seen in 1997Br07, so not adopted here.
	5234.8	11.9 *3*	5547.9	2^+	I_γ: others: 13 (1972Co13), 11.9 *3* (1997Br07), 14 (1973Ko28).
	5776.4[c]		5006.2	3^-	E_γ: from 1973Ko28 with Iγ=0.5, but not seen in 1997Br07, so not adopted here.
	6087.1	10.4 *4*	4695.5	1	I_γ: others: 11 (1972Co13), 9.5 (1973Ko28).
	6323.9[c]		4458.6	4^+	E_γ,I_γ: tentative γ with Iγ=1 from 1972Co13.
	6501.1	3.7 *2*	4281.4	2^+	I_γ: others: 3 (1972Co13), 2 (1973Ko28).
	7005.2	1.7 *2*	3777.2	0^+	I_γ: others: 2 (1972Co13), 2.5 (1973Ko28).
	8551.7	14.7 *4*	2230.3	2^+	I_γ: others: 16 (1972Co13), 15 (1973Ko28).
	10781.3	51.7 *6*	0	0^+	I_γ: others: 54 (1972Co13), 47 (1973Ko28).
10784.0	3782.0	100	7001.8	1	
10791.4	2665.9	1.9 *1*	8125.43		
	3675.9	4.0 *1*	7115.3	2^+	I_γ: others: 4 (1972Co13), 5 (1973Ko28).
	3789.4	4.6 *1*	7001.8	1	I_γ: other: 2 (1973Ko28).
	4993.5	0.6 *1*	5797.5		
	5243.0	1.8 *2*	5547.9	2^+	
	5378.5	4.2 *2*	5412.4	3^+	I_γ: other: 2 (1973Ko28).
	5784.6	9.2 *3*	5006.2	3^-	I_γ: others: 10 (1972Co13), 12 (1973Ko28).
	6095.3	3.3 *3*	4695.5	1	I_γ: others: 5 (1972Co13), 4 (1973Ko28).
	6509.3	7.1 *4*	4281.4	2^+	I_γ: others: 9 (1972Co13), 10 (1973Ko28).
	8559.9	46.1 *5*	2230.3	2^+	I_γ: others: 49 (1972Co13), 41 (1973Ko28).
	10789.5	17.2 *4*	0	0^+	I_γ: others: 23 (1972Co13), 24 (1973Ko28).
10824.9	3822.9	4.3 *3*	7001.8	1	
	5027.0[c]		5797.5		E_γ: from 1970Fo13 with Iγ=6, not seen from this resonance in 1997Br07, so not adopted here. This transition could be unresolved with the similar one from E(p)=2026 resonance.
	5276.5	5.5 *12*	5547.9	2^+	
	5412.0	4.9 *12*	5412.4	3^+	I_γ: other: 3 (1970Fo13).
	5818.1	9.4 *17*	5006.2	3^-	I_γ: other: 6 (1970Fo13).
	6542.8	25.3 *22*	4281.4	2^+	I_γ: other: 8 (1970Fo13).
	8593.4	32.1 *28*	2230.3	2^+	I_γ: other: 14 (1970Fo13).
	10822.9	18.6 *27*	0	0^+	I_γ: other: 62 (1970Fo13). I_γ: 1970Fo13 report most of the intensity from this γ but did not see several other transitions seen in 1997Br07. It is likely that this transition in 1970Fo13 is unresolved with the similar one from E(p)=2026 resonance.
10827.0	3711.5	1[&]	7115.3	2^+	
	4161.0[c]		6665.7	2^+	E_γ: from 1973Ko28 with Iγ=2 but not seen in 1972Co13 and 1970Fo13, so not adopted here.
	4205.2[c]		6621.5	4^-	E_γ: from 1973Ko28 with Iγ=1.5 but not seen in 1972Co13 and 1970Fo13, so not adopted here.
	5029.1	3[&]	5797.5		I_γ: others: 3 (1973Ko28), 6 (1970Fo13).
	5278.6[c]		5547.9	2^+	E_γ: from 1973Ko28 with Iγ=2 but not seen in 1972Co13 and 1970Fo13, so not adopted here.
	5414.1	3[&]	5412.4	3^+	I_γ: other: 2.5 (1973Ko28).
	5820.2	6[&]	5006.2	3^-	I_γ: others: 7 (1973Ko28), 4 (1970Fo13).
	6130.9	2[&]	4695.5	1	I_γ: other: 3 (1973Ko28).
	6544.9	22[&]	4281.4	2^+	I_γ: others: 19 (1973Ko28), 19 (1970Fo13).
	7049.0	2[&]	3777.2	0^+	I_γ: other: 1 (1973Ko28).
	8595.5	37[&]	2230.3	2^+	I_γ: others: 26 (1973Ko28), 29 (1970Fo13).
	10825.0	24[&]	0	0^+	I_γ: others: 33 (1973Ko28), 42 (1970Fo13).

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^{31}P(p,γ) E=res 1997Br07,1975Bo42,1972Co13 (continued)

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

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[#@]	δ[#@]	Comments
10915		8683	29	2230.3	2^+			I_γ: from 1973Ko28.
		10913	64	0	0^+			I_γ: from 1973Ko28. There is an unidentified intensity of 7 (1973Ko28).
10933.1	3	1221.2	2.3 *1*	9711.9				
		2243	2.4 *1*	8690				
		3448.9	2.4 *2*	7484.0	2^+			
		3582.9	9.5 *2*	7350.0	3	D(+Q)	−0.02 *11*	I_γ: other: 10 (1970Fo13). A_2=+0.40 *5*, A_4=+0.02 *7* (1997Br07).
		3817.6	1.9 *2*	7115.3	2^+			
		4080.4	20.9 *3*	6852.4	4^+	D(+Q)	−0.03 *7*	I_γ: other: 20 (1970Fo13). A_2=−0.10 *4*, A_4=−0.01 *5* (1997Br07).
		4523	7.1 *2*	6410	(4)			I_γ: other: 9 (1970Fo13).
		5384.7	4.7 *2*	5547.9	2^+			
		5520.2	4.2 *2*	5412.4	3^+			I_γ: other: 8 (1970Fo13).
		6473.8	7.3 *3*	4458.6	4^+			I_γ: other: 8 (1970Fo13).
		6651.0	31.2 *3*	4281.4	2^+	D(+Q)	0.00 *6*	I_γ: other: 33 (1970Fo13). A_2=−0.45 *5*, A_4=−0.05 *6* (1997Br07).
		8701.5	6.0 *2*	2230.3	2^+			I_γ: other: 7 (1970Fo13).
		10931.1[c]	<1	0	0^+			I_γ: from 1970Fo13.
11009.4	4	2739	0.7 *1*	8270				
		3059.1	0.3 *1*	7950.1	4^-			
		3126.3	2.1 *1*	7882.9	4	D(+Q)	≤+0.62	A_2=+0.66 *1*, A_4=−0.17 *8* (1997Br07).
		3307.6	1.1 *1*	7701.6	3			
		3525.2	0.4 *1*	7484.0	2^+			
		3575[c]		7434				E_γ,I_γ: seen by 1970Fo13 with Iγ=12 but not subsequently seen by the much more detailed study of 1997Br07.
		3659.2	1.2 *1*	7350.0	3			
		3893.9	0.5 *1*	7115.3	2^+			
		4247.5	0.5 *1*	6761.6	5^-			
		4343.4	1.4 *1*	6665.7	2^+			
		4387.6	0.3 *1*	6621.5	4^-			
		4599	7.9 *1*	6410	(4)	D(+Q)	≤+1.0	A_2=+0.58 *4*, A_4=−0.11 *5* (1997Br07).
		5596.5	1.5 *1*	5412.4	3^+			
		6002.6	18.2 *3*	5006.2	3^-	D+Q	−0.12 *6*	I_γ: other: 10 (1970Fo13). A_2=−0.53 *4*, A_4=+0.05 *6* (1997Br07).
		6550.1	48.0 *5*	4458.6	4^+	D(+Q)	≤+0.73	I_γ: other: 49 (1970Fo13). A_2=+0.57 *1*, A_4=−0.11 *2* (1997Br07).
		6727.2	11.3 *2*	4281.4	2^+			I_γ: other: 14 (1970Fo13).
		8777.8	4.3 *1*	2230.3	2^+			I_γ: other: 15 (1970Fo13).
		11007.4[c]	<1	0	0^+			I_γ: from 1970Fo13.
11091.7	3	2795.5	5.4 *2*	8296.1	3	D+Q	−0.47 *24*	I_γ: other: 6 (1970Fo13). A_2=+0.75 *6*, A_4=−0.08 *9* (1997Br07).
		2900.5	0.7 *2*	8191.1	4			
		3116.6	3.1 *1*	7974.9	3	D(+Q)	+0.00 *+29−7*	A_2=+0.45 *9*, A_4=+0.09 *2* (1997Br07).
		3141.4	4.3 *2*	7950.1	4^-			
		3389.9	12.1 *3*	7701.6	3	D(+Q)	≤+1.0	I_γ: other: 11 (1970Fo13). A_2=+0.53 *4*, A_4=−0.13 *6* (1997Br07).
		4329.8	0.7 *4*	6761.6	5^-			
		4469.9	23.4 *4*	6621.5	4^-	D(+Q)	−0.05 *5*	I_γ: others: 23.4 *4* (1997Br07), 14 (1970Fo13). A_2=−0.07 *3*, A_4=0.00 *5* (1997Br07).
		4868.6	12.9 *4*	6222.7	2			I_γ: others: 12.9 *4* (1997Br07), 5 (1970Fo13).
		6084.9	20.0 *6*	5006.2	3^-			I_γ: others: 20.0 *6* (1997Br07), 17 (1970Fo13).
		6632.4	14.8 *6*	4458.6	4^+			I_γ: others: 14.8 *6* (1997Br07), 8 (1970Fo13).

Continued on next page (footnotes at end of table)

^{31}P(p,γ) E=res 1997Br07,1975Bo42,1972Co13 (continued)

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

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[#@]	δ[#@]	Comments
11091.7	3	6809.5	2.4 *4*	4281.4	2^+			
		8860.1[c]		2230.3	2^+			E_γ,I_γ: seen by 1970Fo13, attributing their highest intensity (33) to this transition but not subsequently seen by the much more detailed study of 1997Br07.
		11089.6[c]		0	0^+			E_γ,I_γ: seen by 1970Fo13 with %Iγ=6 but not subsequently seen by the much more detailed study of 1997Br07.
11114		4490	1	6621.5	4^-			I_γ: from 1973Ko28.
		6109	3	5006.2	3^-			I_γ: from 1973Ko28.
		8881	10	2230.3	2^+			I_γ: from 1973Ko28.
		11113	86	0	0^+			I_γ: from 1973Ko28.
11122		3586	5.1 *2*	7535.7				
		4120	6.4 *2*	7001.8	1			
		6426	4.7 *2*	4695.5	1			I_γ: other: 9 (1970Fo13).
		7344	6.7 *2*	3777.2	0^+			I_γ: other: 11 (1970Fo13).
		8890	10.1 *3*	2230.3	2^+			I_γ: other: 25 (1970Fo13).
		11120	70.0 *5*	0	0^+			I_γ: other: 47 (1970Fo13). E_γ: 1970Fo13 also report a transition to a 8595 level with %Iγ=8, which is not seen by the much more detailed study of 1997Br07.
11131		3941	1	7190.2				I_γ: from 1973Ko28.
		5583[c]	<0.5	5547.9	2^+			I_γ: from 1973Ko28.
		6435	2	4695.5	1			I_γ: from 1973Ko28.
		8899	9	2230.3	2^+			I_γ: from 1973Ko28.
		11129	88	0	0^+			I_γ: from 1973Ko28.
11139.2		3603.3	0.4 *1*	7535.7				
		4137.1	0.6 *1*	7001.8	1			
		4916.1	0.4 *1*	6222.7	2			
		6443.0	2.3 *2*	4695.5	1			I_γ: other: 3 (1970Fo13).
		7361.1	1.8 *2*	3777.2	0^+			
		8907.6	9.2 *6*	2230.3	2^+			I_γ: other: 12 (1970Fo13).
		11137.1	84.8 *7*	0	0^+			I_γ: other: 85 (1970Fo13).
11234.9	3	2545	1.4 *1*	8690				
		3043.6	3.1 *1*	8191.1	4			
		3533.1	1.5 *1*	7701.6	3			
		4825	2.0 *2*	6410	(4)			
		5686.5	1.3 *2*	5547.9	2^+			
		5821.9	3.4 *2*	5412.4	3^+			
		6775.5	3.1 *2*	4458.6	4^+			
		6952.7	36.8 *6*	4281.4	2^+	D(+Q)	−0.02 *4*	A_2=−0.41 *4*, A_4=−0.05 *8* (1997Br07).
		9003.2	47.5 *6*	2230.3	2^+			
11253.3	3	2392	0.9 *1*	8861	2^+			
		2523.9	0.8 *1*	8729.3	3^+			
		2563	2.4 *1*	8690				
		2846.2	2.7 *1*	8407.0	2	D(+Q)	0.00 *3*	A_2=−0.32 *9*, A_4=−0.06 *9* (1997Br07).
		2957.1	0.4 *1*	8296.1	3			
		3062.0	4.8 *1*	8191.1	4			
		3303.0	1.8 *1*	7950.1	4^-			
		3551.5	0.8 *1*	7701.6	3			
		4400.6	1.2 *1*	6852.4	4^+			
		4587.3	1.9 *1*	6665.7	2^+			
		4843	1.6 *1*	6410	(4)			
		5704.9	1.1 *1*	5547.9	2^+			
		5840.3	1.2 *1*	5412.4	3^+			
		6246.5	4.7 *2*	5006.2	3^-			
		6557.1	1.1 *1*	4695.5	1			

Continued on next page (footnotes at end of table)

^{31}P(p,γ) E=res 1997Br07,1975Bo42,1972Co13 (continued)

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

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[#@]	δ[#@]	Comments
11253.3	3	6971.1	5.6 *2*	4281.4	2^+	D+Q	+0.09 *3*	A_2=−0.15 *9*, A_4=−0.06 *1* (1997Br07).
		9021.6	65.7 *5*	2230.3	2^+			
11332.2		1673	9.2 *9*	9659				
		3206.6	14.6 *7*	8125.43				
		4216.6	6.5 *8*	7115.3	2^+			
		4330.1	1.9 *8*	7001.8	1			
		4922	8.1 *9*	6410	(4)			
		6325.3	5.9 *9*	5006.2	3^-			
		6636.0	5.0 *9*	4695.5	1			
		7050.0	17.8 *12*	4281.4	2^+			
		11330.1	31.1 *20*	0	0^+			
11463		6050	12	5412.4	3^+			I_γ: from 1973Ko28.
		7004	6	4458.6	4^+			I_γ: from 1973Ko28.
		7181	82	4281.4	2^+			I_γ: from 1973Ko28.
11474.0	3	2728.3	3.7 *1*	8745.6	3	D+Q		Mult.,δ: 0.00 *5* or +1.0 *1* (1997Br07). A_2=+0.45 *3*, A_4=−0.06 *3* (1997Br07).
		2744.6	3.7 *1*	8729.3	3^+	D+Q		Mult.,δ: −0.02 *1* or +1.10 *12* (1997Br07). A_2=+0.44 *3*, A_4=−0.10 *3* (1997Br07).
		4621.2	1.2 *1*	6852.4	4^+			
		4807.9	1.9 *1*	6665.7	2^+	D(+Q)	+0.03 *6*	A_2=−0.28 *7*, A_4=−0.02 *8* (1997Br07).
		4852.1	1.7 *1*	6621.5	4^-			
		5064	0.4 *1*	6410	(4)			
		5250.8	0.7 *1*	6222.7	2			
		5925.5	1.0 *1*	5547.9	2^+			
		6061.0	6.7 *1*	5412.4	3^+	D+Q	−0.07 *4*	A_2=+0.42 *7*, A_4=−11 *4* (1997Br07).
		7014.6	4.7 *1*	4458.6	4^+			
		7191.7	74.2 *4*	4281.4	2^+			
11485.2		3359.6	24 *4*	8125.43				
		6478.3	34 *6*	5006.2	3^-			
		7707.0	43 *5*	3777.2	0^+			
11589.1		3181.9	1.7 *1*	8407.0	2			
		4473.5	9.8 *3*	7115.3	2^+			
		4923.0	0.4 *2*	6665.7	2^+			
		5179	0.3 *2*	6410	(4)			
		6582.2	2.9 *3*	5006.2	3^-			
		6892.8	0.7 *2*	4695.5	1			
		7129.7	6.9 *4*	4458.6	4^+			
		7306.8	21.5 *4*	4281.4	2^+			
		7810.9	3.2 *3*	3777.2	0^+			
		9357.3	14.5 *5*	2230.3	2^+			
		11586.9	38.0 *7*	0	0^+			
11601.8		4065.8	5.4 *7*	7535.7				
		4411.3	14.3 *7*	7190.2				
		6053.3	17.0 *9*	5547.9	2^+			
		6594.9	20.3 *10*	5006.2	3^-			
		6905.5	45.0 *14*	4695.5	1			
11636.5		3290.0	0.7 *1*	8346.3				
		3715.3	0.5 *1*	7921.0				
		4152.2	0.4 *1*	7484.0	2^+			
		4202	0.2 *1*	7434				
		4446.0	0.4 *1*	7190.2				
		4634.3	0.7 *1*	7001.8	1			
		4970.4	0.6 *1*	6665.7	2^+			
		5413.3	0.5 *1*	6222.7	2			
		5838.4	0.6 *1*	5797.5				
		6088.0	3.1 *1*	5547.9	2^+			

Continued on next page (footnotes at end of table)

^{31}P(p,γ) E=res 1997Br07,1975Bo42,1972Co13 (continued)

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

E_i(level)	J_i^π	E_γ [†]	I_γ [‡]	E_f	J_f^π	Mult.[#@]	δ[#@]	Comments
11636.5		6940.2	1.9 *1*	4695.5	1			
		7858.3	1.1 *1*	3777.2	0^+			
		9404.7	2.4 *2*	2230.3	2^+			
		11634.2	87.4 *5*	0	0^+			
11669.0	5^+	2939.6	0.4 *1*	8729.3	3^+			
		3322.5	3.9 *2*	8346.3				
		3477.7	9.6 *2*	8191.1	4	D(+Q)	−0.03 *3*	A_2=−0.35 *3*, A_4=−0.06 *4* (1997Br07).
		4102	13.5 *2*	7567		D(+Q)	0.00 *9*	A_2=+0.48 *2*, A_4=−0.03 *2* (1997Br07).
		4907.0	0.4 *1*	6761.6	5^-			
		5259	63.0 *4*	6410	(4)	D+Q	+0.12 *4*	A_2=−0.09 *1*, A_4=−0.01 *1* (1997Br07).
		7209.5	9.1 *2*	4458.6	4^+	D(+Q)	+0.03 *3*	A_2=−0.26 *4*, A_4=−0.04 *4* (1997Br07).
11696.1	5^+	3349.6	4.0 *1*	8346.3				
		3504.8	6.1 *1*	8191.1	4	D(+Q)	+0.02 *4*	A_2=−0.31 *5*, A_4=+0.09 *6* (1997Br07).
		4129	8.8 *2*	7567				
		4345.8	1.0 *1*	7350.0	3			
		5074.2	0.9 *2*	6621.5	4^-			
		5286	60.1 *4*	6410	(4)	D+Q	−0.40 *4*	A_2=−1.01 *2*, A_4=+0.17 *2* (1997Br07).
		7236.6	19.2 *2*	4458.6	4^+			
11758.2		3461.9	7.7 *2*	8296.1	3			
		3807.9	7.8 *6*	7950.1	4^-			
		4996.2	55.0 *6*	6761.6	5^-			
		5136.3	27.2 *5*	6621.5	4^-			
		6751.2	2.4 *4*	5006.2	3^-			
11939.5	3	3532.3	0.5 *1*	8407.0	2			
		3989.1	2.3 *1*	7950.1	4^-			
		5086.7	0.8 *1*	6852.4	4^+			
		5317.5	5.6 *2*	6621.5	4^-			
		5716.3	2.2 *1*	6222.7	2			
		6390.9	7.7 *3*	5547.9	2^+	D+Q	+0.09 *7*	A_2=−0.23 *8*, A_4=+0.11 *9* (1997Br07).
		6526.4	9.9 *2*	5412.4	3^+	D+Q	+0.16 *12*	A_2=+0.52 *5*, A_4=+0.05 *7* (1997Br07).
		7480.0	35.6 *4*	4458.6	4^+	D(+Q)	−0.02 *3*	A_2=−0.10 *3*, A_4=−0.06 *4* (1997Br07).
		7657.1	17.8 *2*	4281.4	2^+			
		9707.6	17.6 *3*	2230.3	2^+			
12043.3	2,3,4	4092.9	2.5 *4*	7950.1	4^-			
		5281.2	14.9 *8*	6761.6	5^-			
		5421.3	2.1 *4*	6621.5	4^-			
		7036.3	78.6 *10*	5006.2	3^-	D(+Q)	0.00 *3*	I_γ: other: >99 (1973Ve06). A_2=+0.284 *11* (1973Ve06).
		7583.7	2.0 *3*	4458.6	4^+			
		9811.4[c]	<1	2230.3	2^+			I_γ: from 1973Ve06.
12047.96	0^+	2840.32 *14*	9.4 *7*	9207.6	1^+			E_γ,I_γ: from 2006Tr03. Other: Iγ=11 *2* (1973Ve06).
		3922.37 *15*	84.3 *9*	8125.43				E_γ,I_γ: from 2006Tr03. Other: Iγ=83 *8* (1973Ve06).
		5046.1 *4*	6.3 *7*	7001.8	1			E_γ,I_γ: from 2006Tr03. Other: Iγ=6 *1* (1973Ve06).
		9816.0[c]	≤0.25	2230.3	2^+			E_γ,I_γ: from 2006Tr03. Other: Iγ<0.8 (1973Ve06).

[†] Values without uncertainties are from level-energy differences, unless otherwise noted.
[‡] From 1975Bo42 up to 10331 level and from 1997Br07 above that, unless otherwise noted.
[#] From $\gamma(\theta)$ in 1997Br07, unless otherwise noted.
[@] Additional information 43.

Continued on next page (footnotes at end of table)

^{31}P(p,γ) E=res 1997Br07,1975Bo42,1972Co13 (continued)

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

[&] From 1972Co13.
[a] From 1991Il01.
[b] From $\gamma(\theta)$ in 1981He09.
[c] Placement of transition in the level scheme is uncertain.

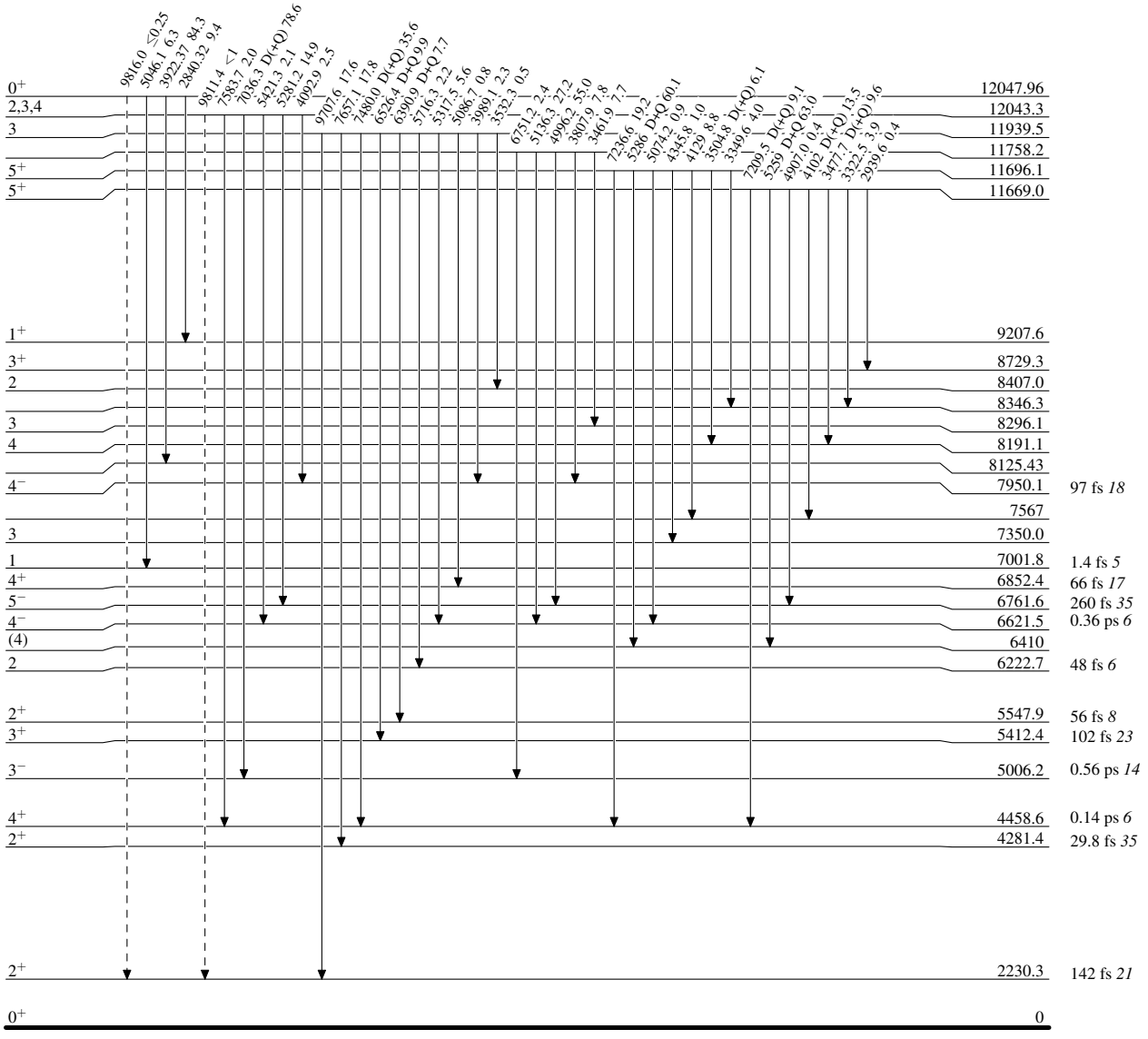
^{31}P(p,γ) E=res 1997Br07,1975Bo42,1972Co13

Legend

Level Scheme

Intensities: % photon branching from each level

γ Decay (Uncertain)

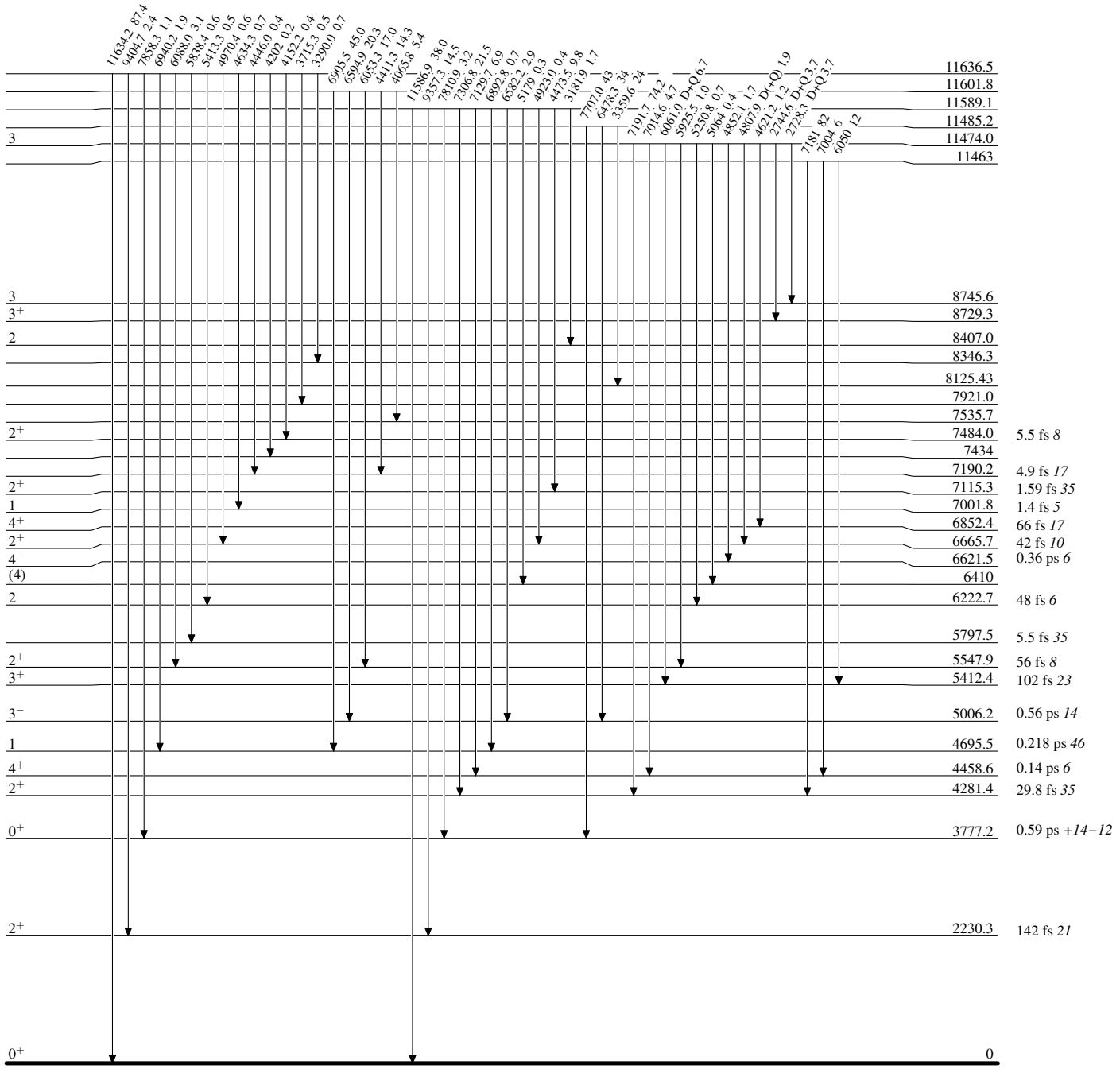


$^{32}_{16}S_{16}$

^{31}P(p,γ) E=res 1997Br07,1975Bo42,1972Co13

Level Scheme (continued)

Intensities: % photon branching from each level



$^{32}_{16}S_{16}$

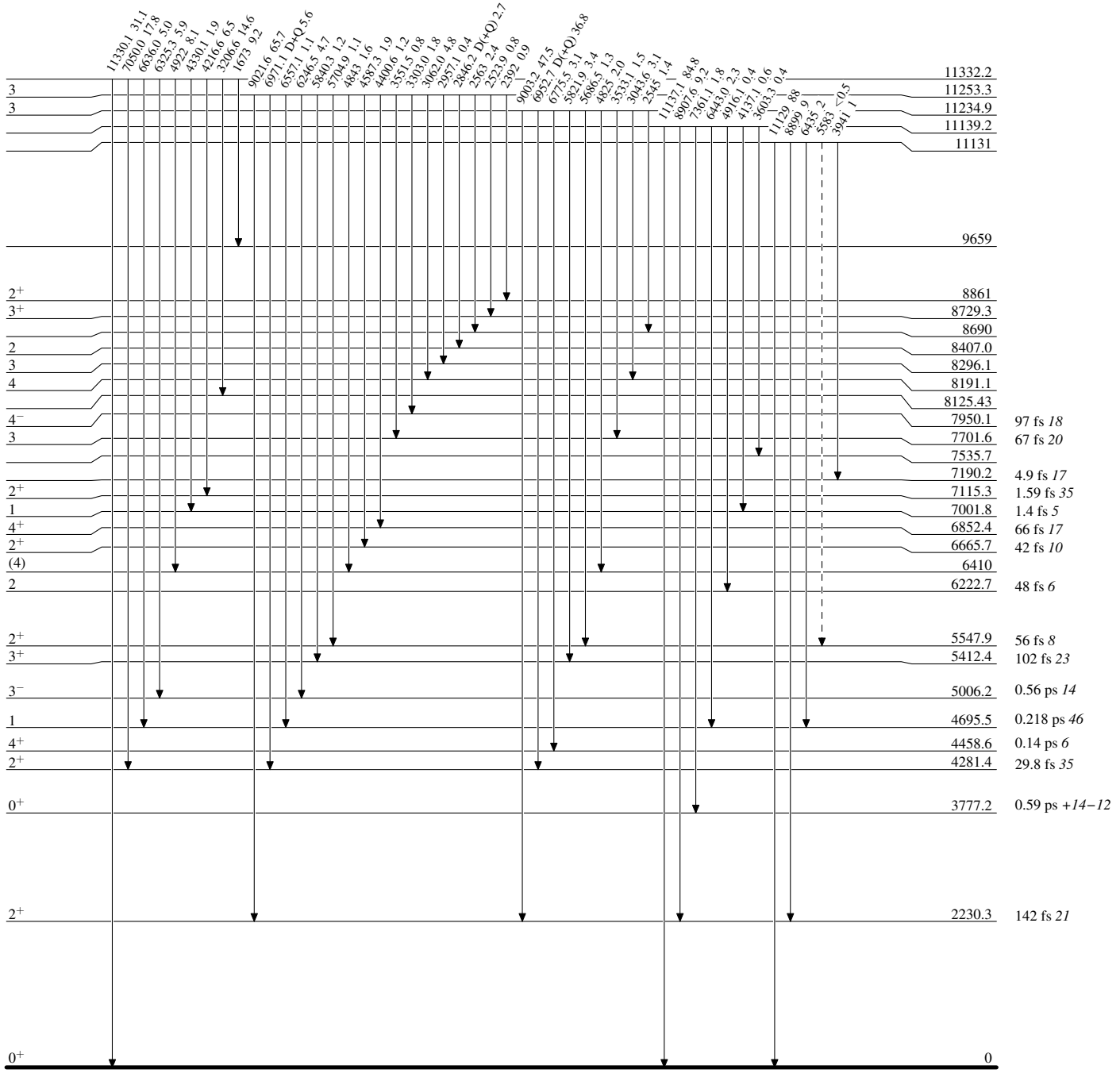
^{31}P(p,γ) E=res 1997Br07,1975Bo42,1972Co13

Legend

Level Scheme (continued)

Intensities: % photon branching from each level

γ Decay (Uncertain)



$^{32}_{16}S_{16}$

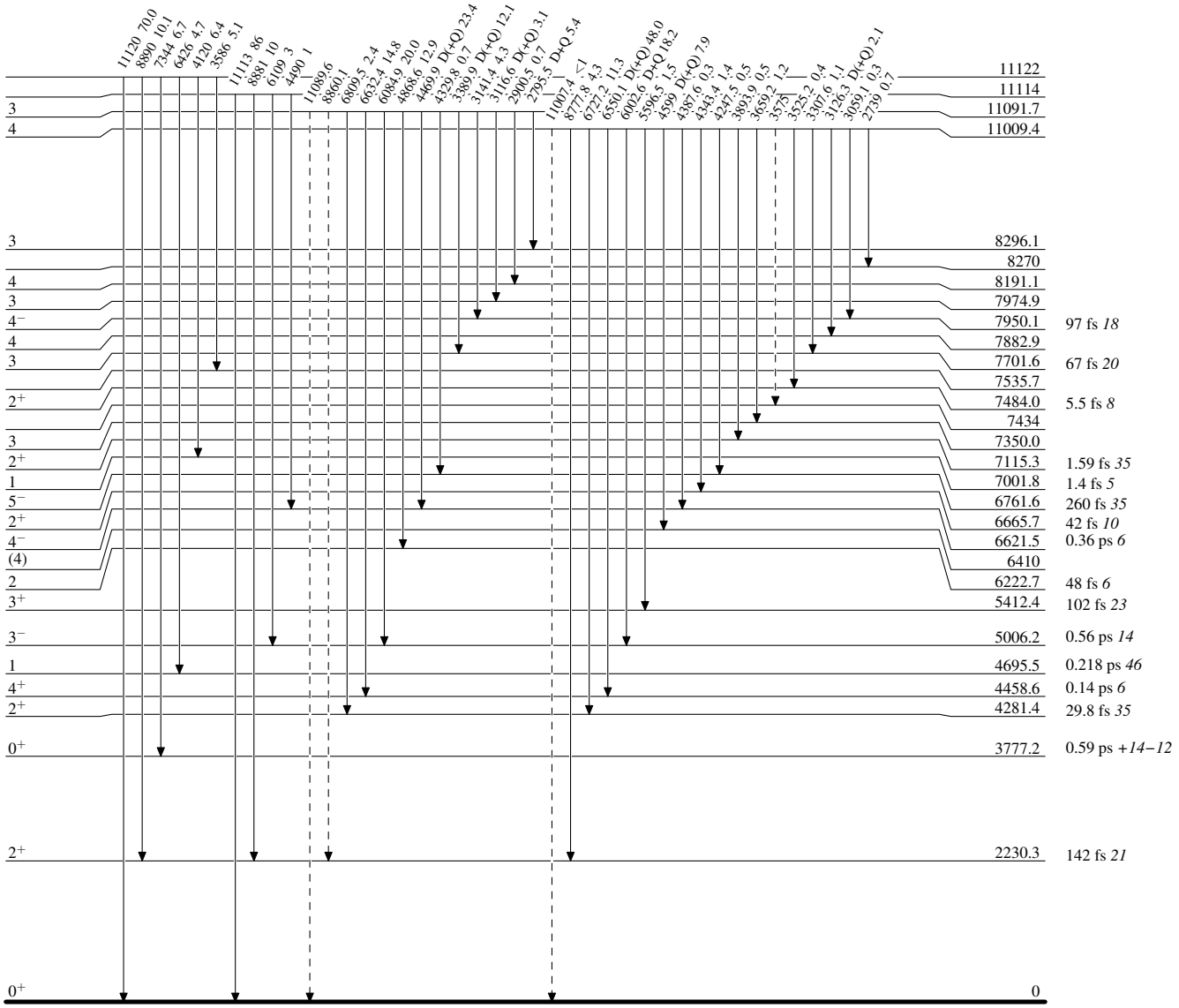
^{31}P(p,γ) E=res 1997Br07,1975Bo42,1972Co13

Legend

Level Scheme (continued)

Intensities: % photon branching from each level

γ Decay (Uncertain)



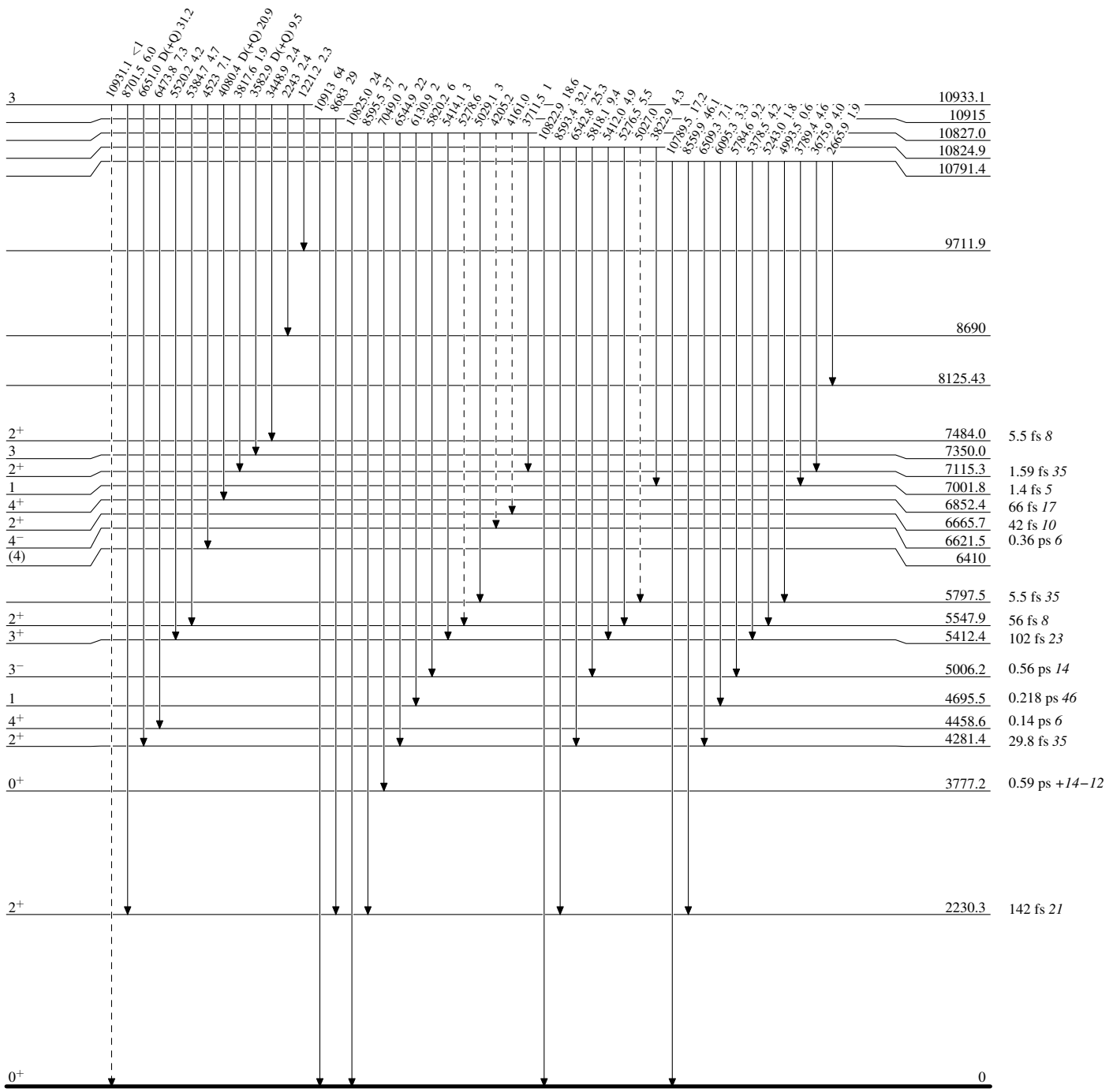
^{31}P(p,γ) E=res 1997Br07,1975Bo42,1972Co13

Legend

Level Scheme (continued)

Intensities: % photon branching from each level

γ Decay (Uncertain)



$^{32}_{16}S_{16}$

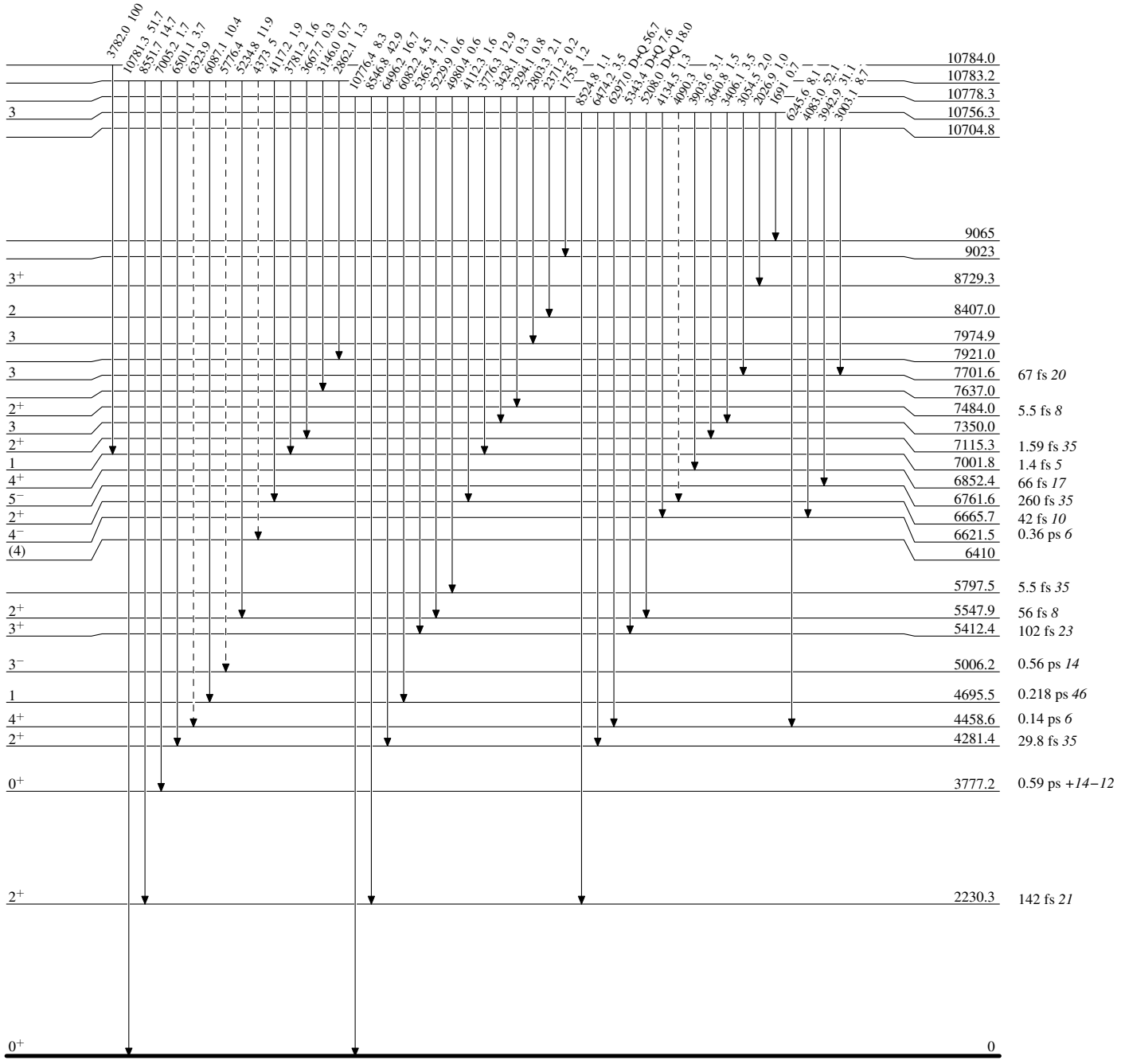
^{31}P(p,γ) E=res 1997Br07,1975Bo42,1972Co13

Legend

Level Scheme (continued)

Intensities: % photon branching from each level

γ Decay (Uncertain)



$^{32}_{16}S_{16}$

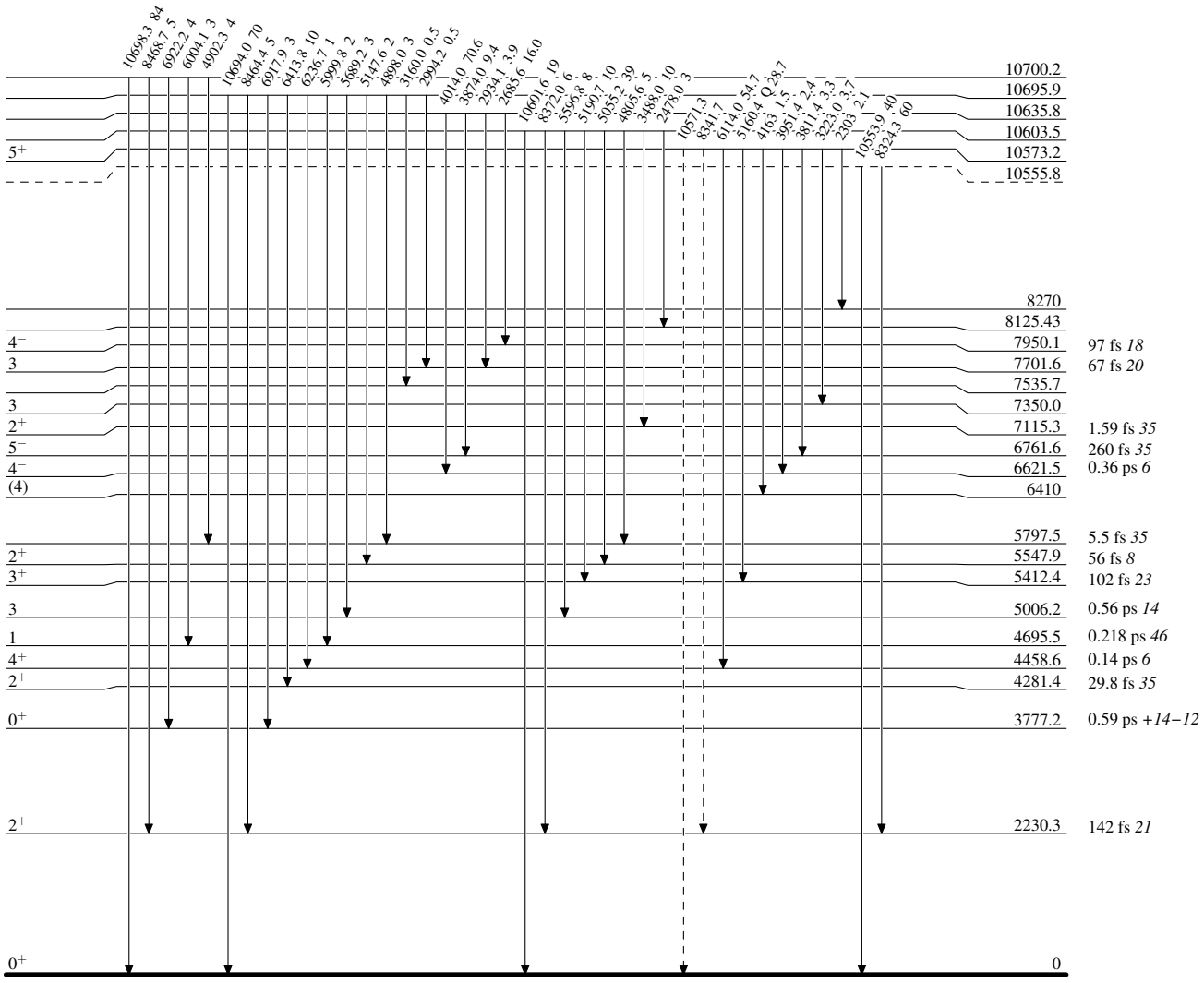
^{31}P(p,γ) E=res 1997Br07,1975Bo42,1972Co13

Legend

Level Scheme (continued)

Intensities: % photon branching from each level

γ Decay (Uncertain)



$^{32}_{16}S_{16}$

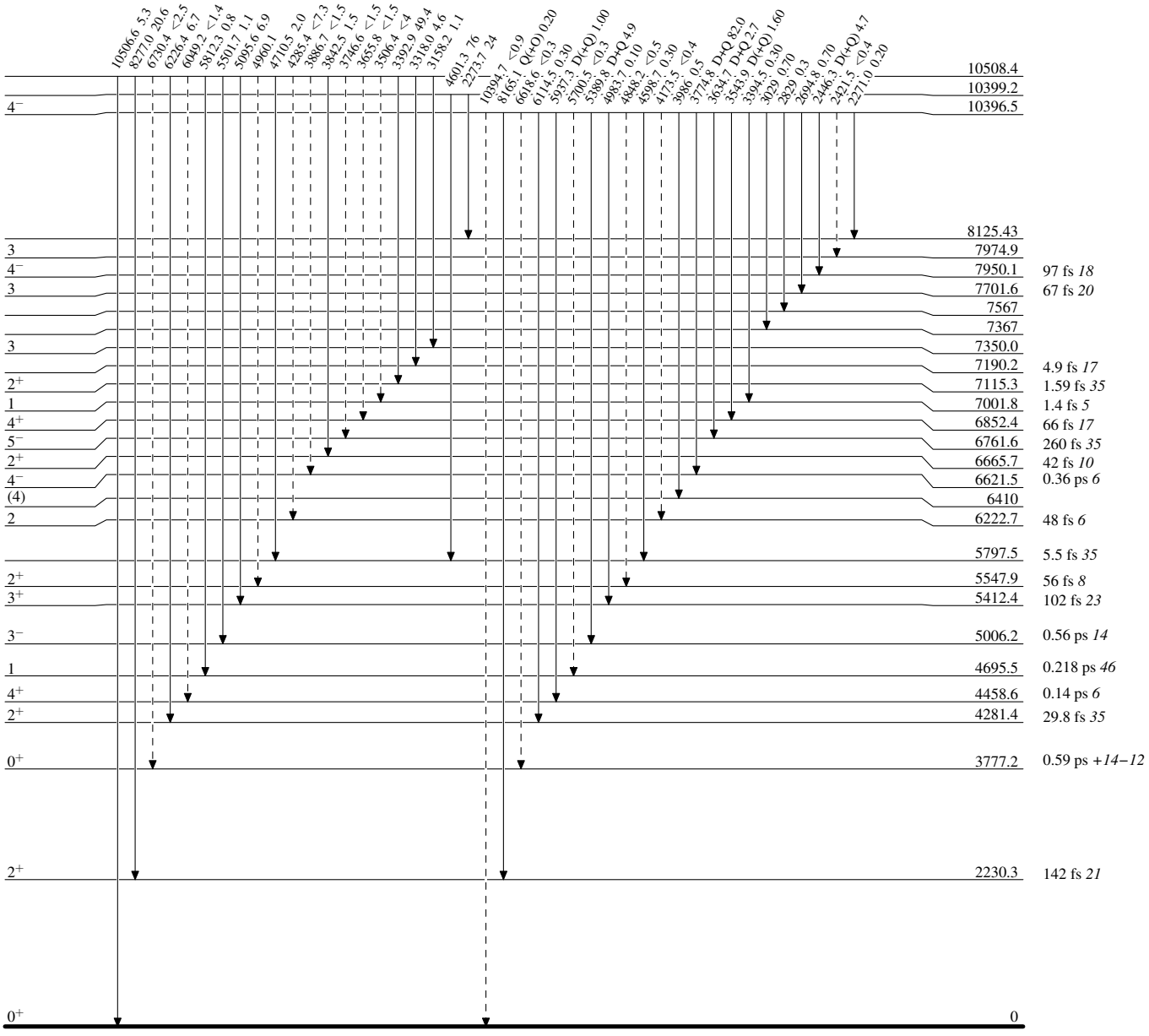
^{31}P(p,γ) E=res 1997Br07,1975Bo42,1972Co13

Legend

Level Scheme (continued)

Intensities: % photon branching from each level

γ Decay (Uncertain)



$^{32}_{16}S_{16}$

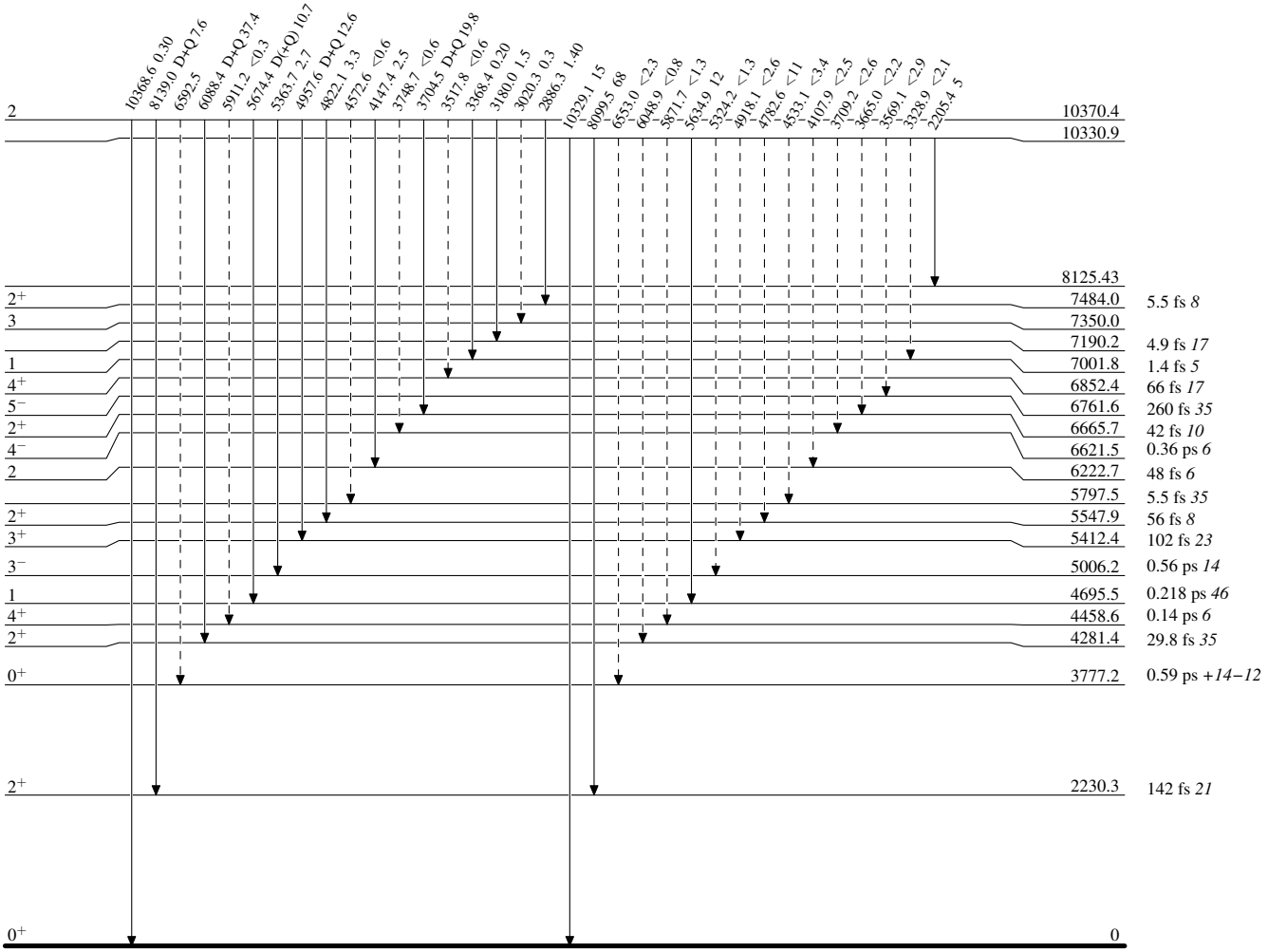
^{31}P(p,γ) E=res 1997Br07,1975Bo42,1972Co13

Legend

Level Scheme (continued)

Intensities: % photon branching from each level

γ Decay (Uncertain)



$^{32}_{16}S_{16}$

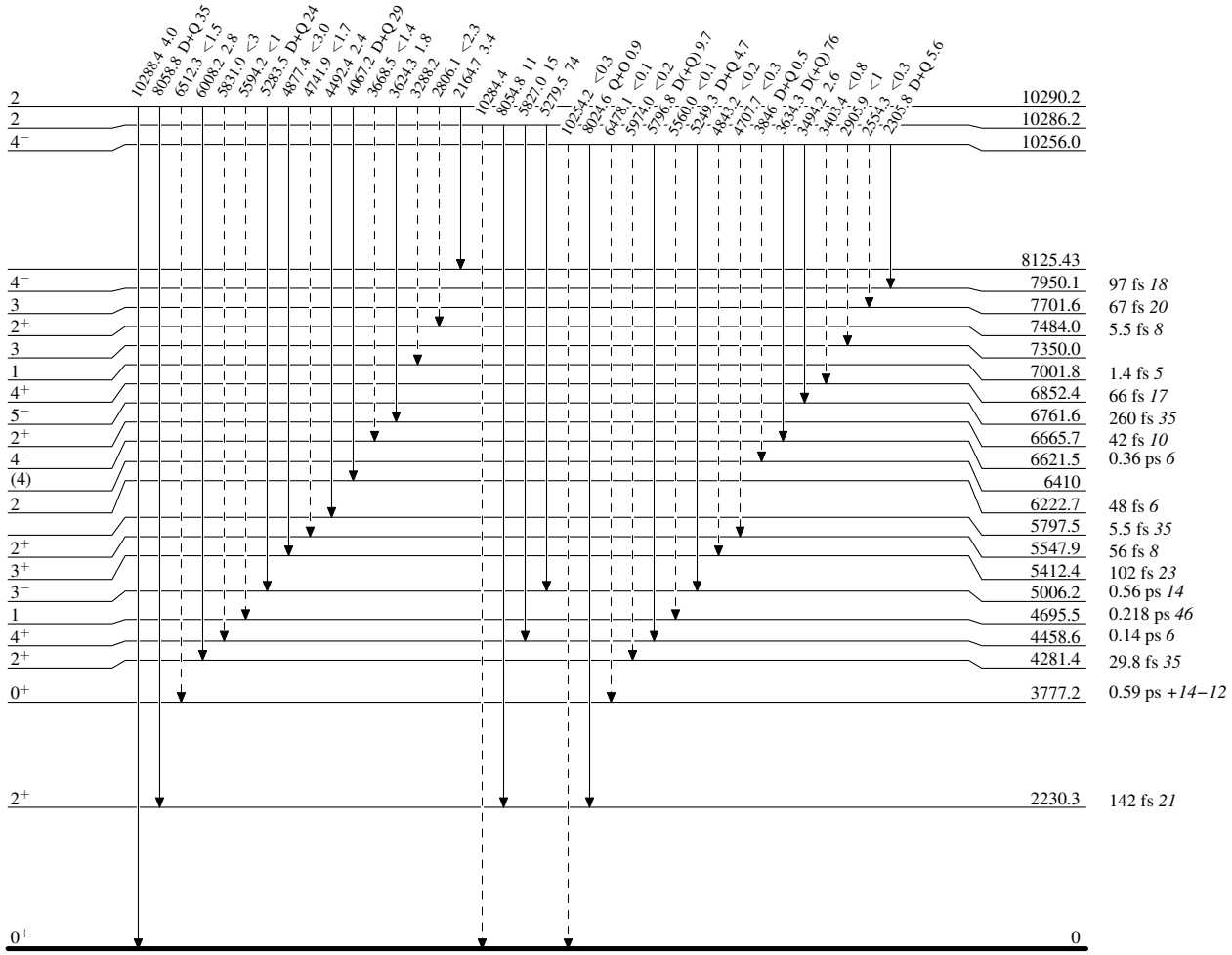
^{31}P(p,γ) E=res 1997Br07,1975Bo42,1972Co13

Legend

Level Scheme (continued)

Intensities: % photon branching from each level

γ Decay (Uncertain)



$^{32}_{16}S_{16}$

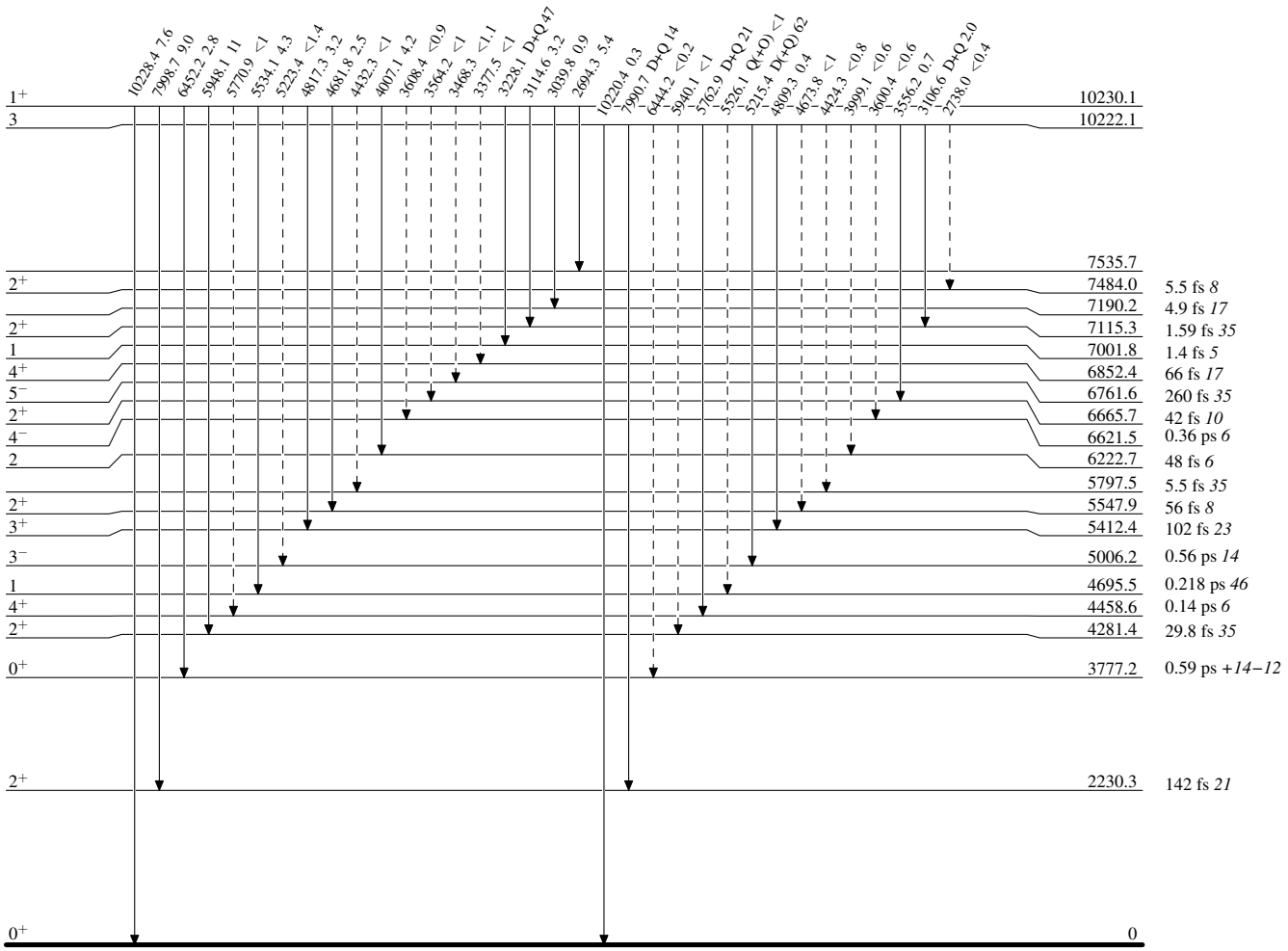
^{31}P(p,γ) E=res 1997Br07,1975Bo42,1972Co13

Legend

Level Scheme (continued)

Intensities: % photon branching from each level

γ Decay (Uncertain)



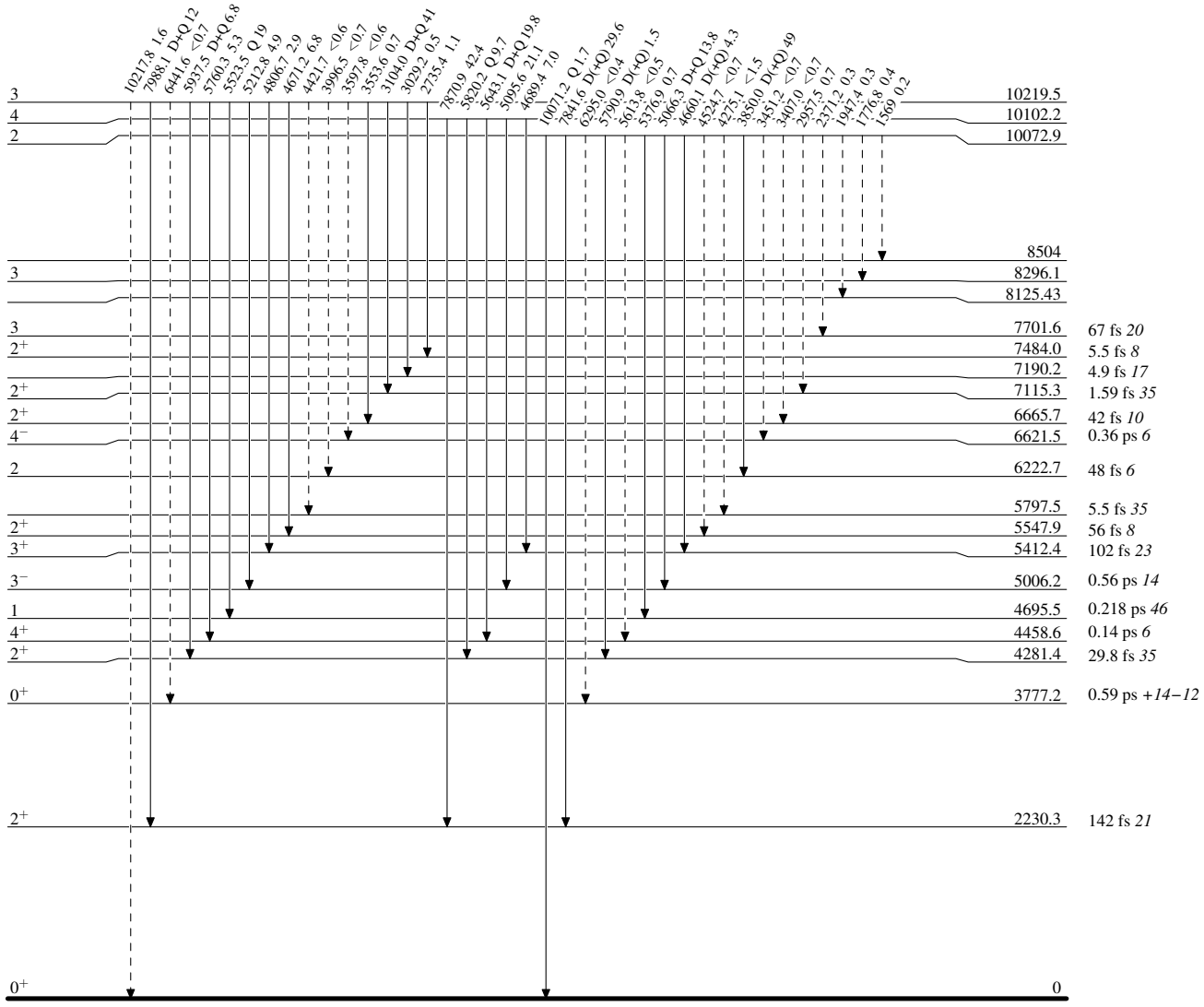
$^{32}_{16}S_{16}$

^{31}P(p,γ) E=res 1997Br07,1975Bo42,1972Co13 Legend

Level Scheme (continued)

Intensities: % photon branching from each level

– – – – – – ► γ Decay (Uncertain)



$^{32}_{16}S_{16}$

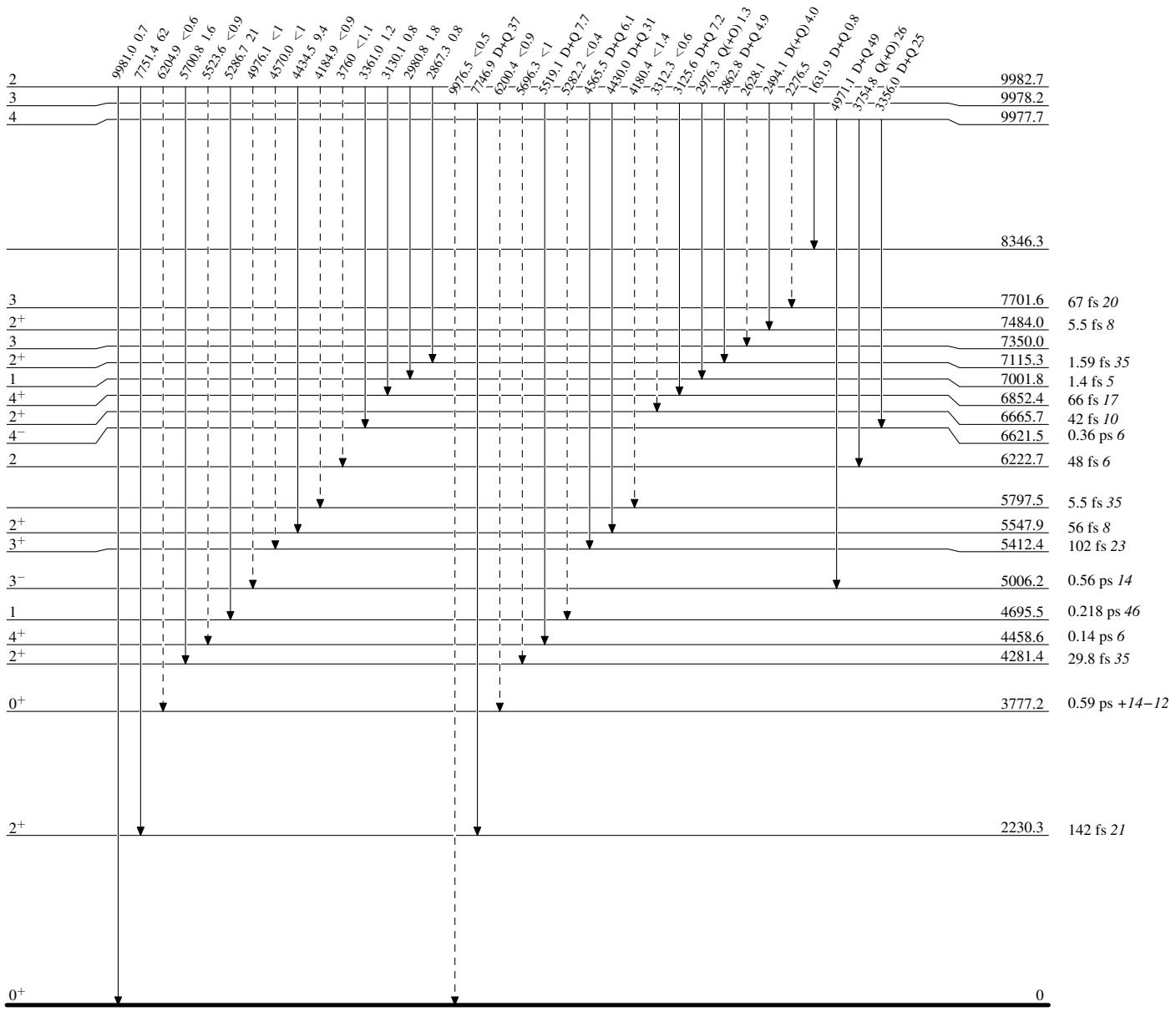
^{31}P(p,γ) E=res 1997Br07,1975Bo42,1972Co13

Legend

Level Scheme (continued)

Intensities: % photon branching from each level

γ Decay (Uncertain)



$^{32}_{16}S_{16}$

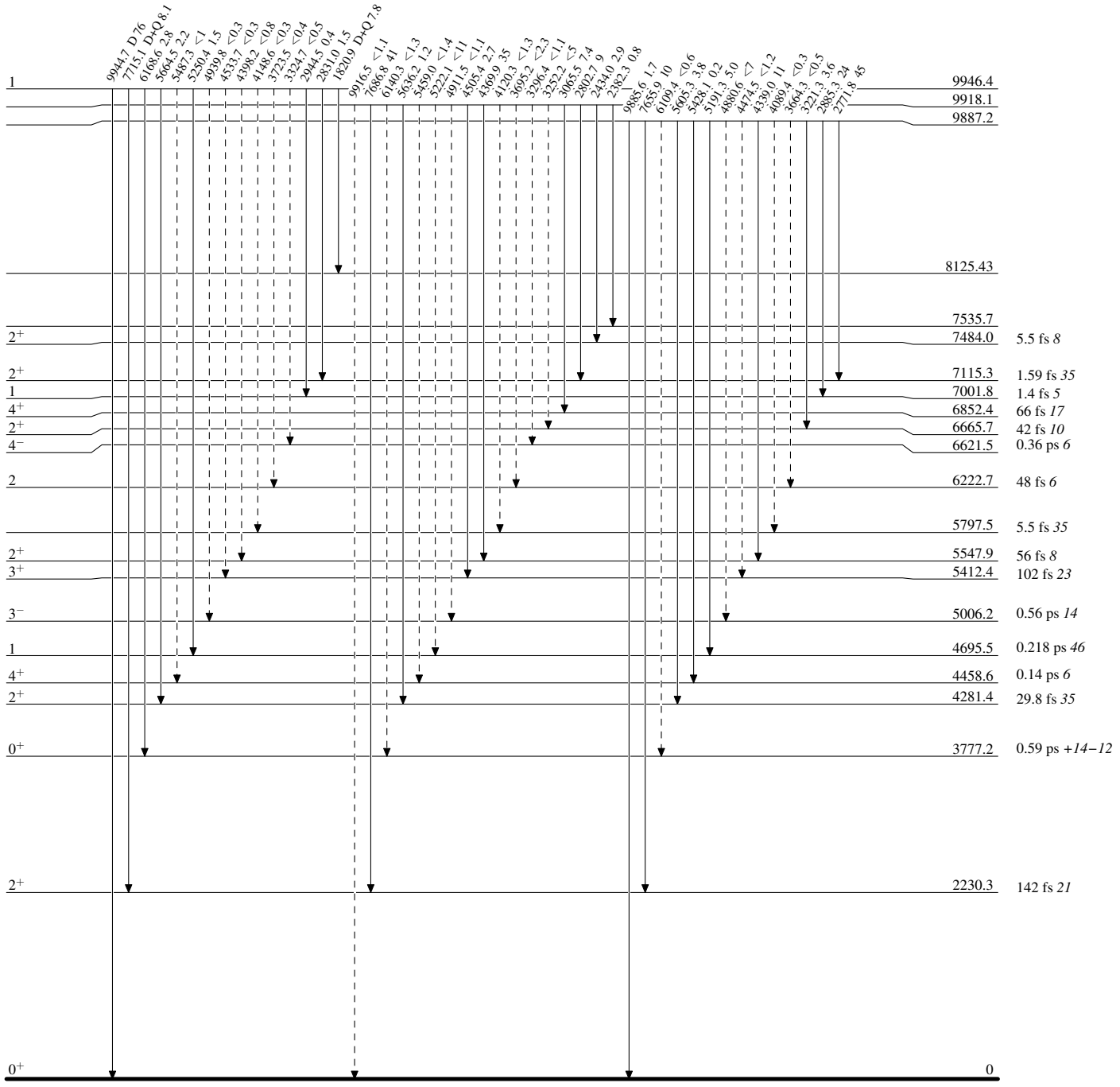
^{31}P(p,γ) E=res 1997Br07,1975Bo42,1972Co13

Legend

Level Scheme (continued)

Intensities: % photon branching from each level

γ Decay (Uncertain)



$^{32}_{16}S_{16}$

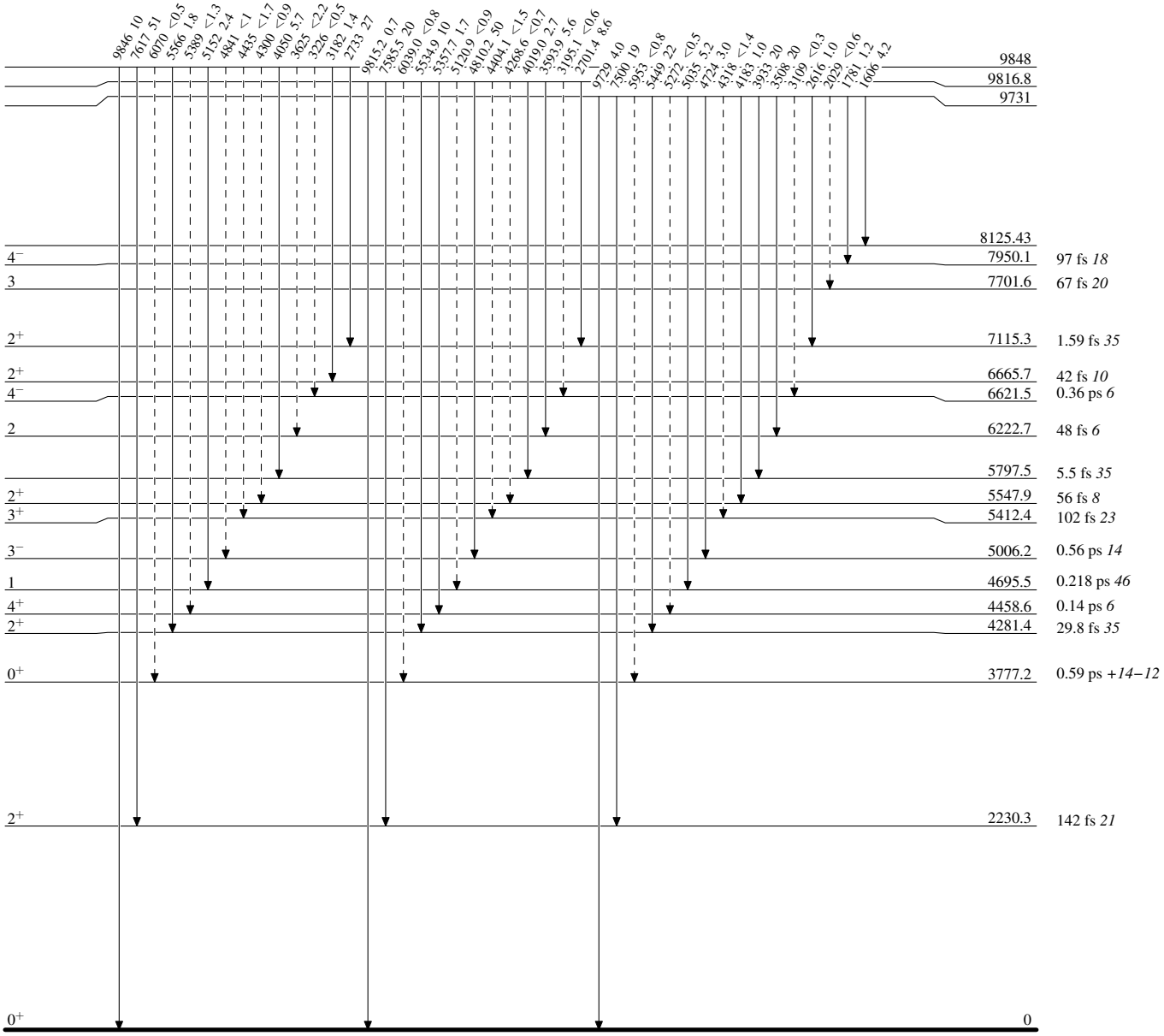
^{31}P(p,γ) E=res 1997Br07,1975Bo42,1972Co13

Legend

Level Scheme (continued)

Intensities: % photon branching from each level

γ Decay (Uncertain)



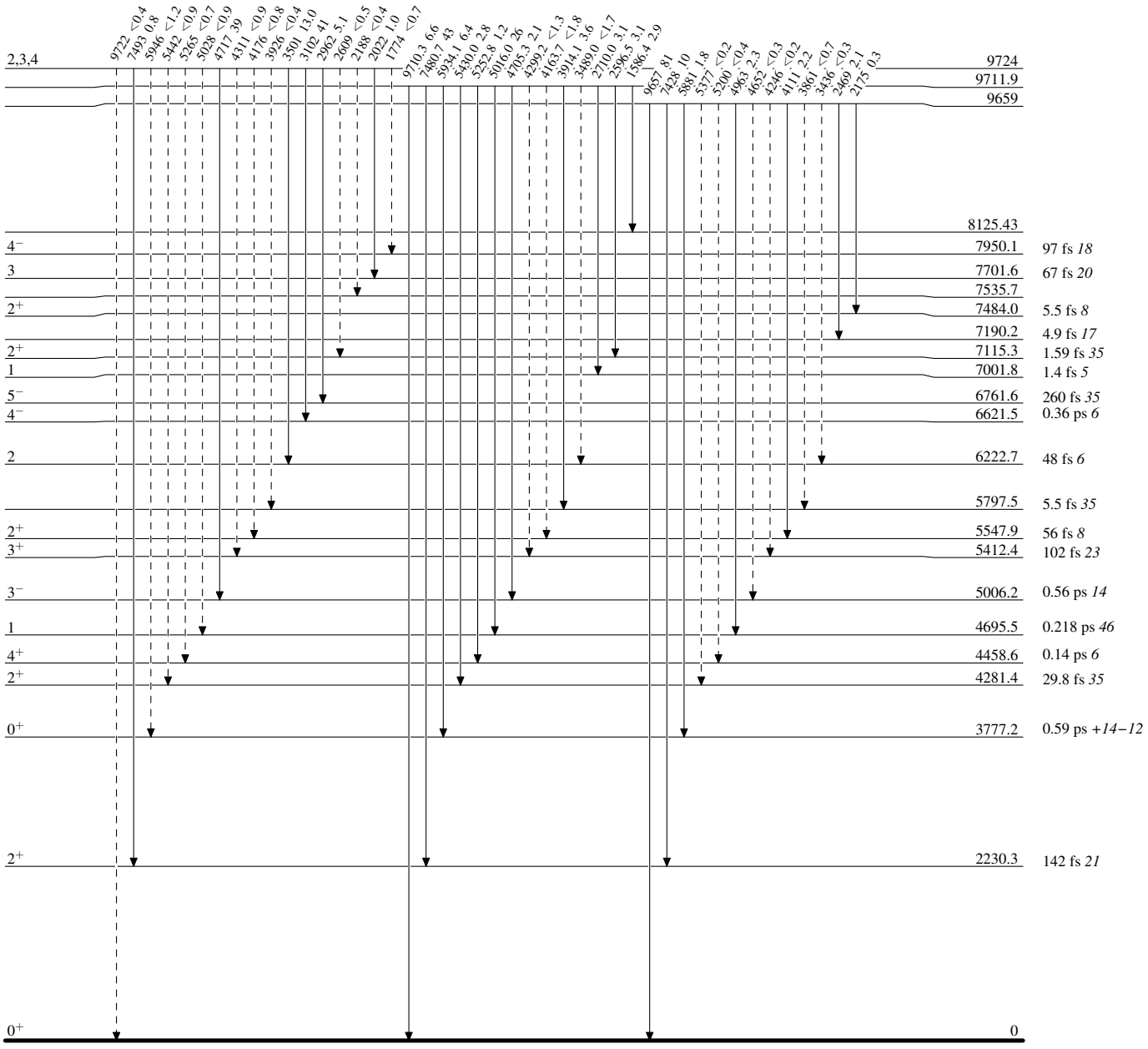
^{31}P(p,γ) E=res 1997Br07,1975Bo42,1972Co13

Legend

Level Scheme (continued)

Intensities: % photon branching from each level

γ Decay (Uncertain)



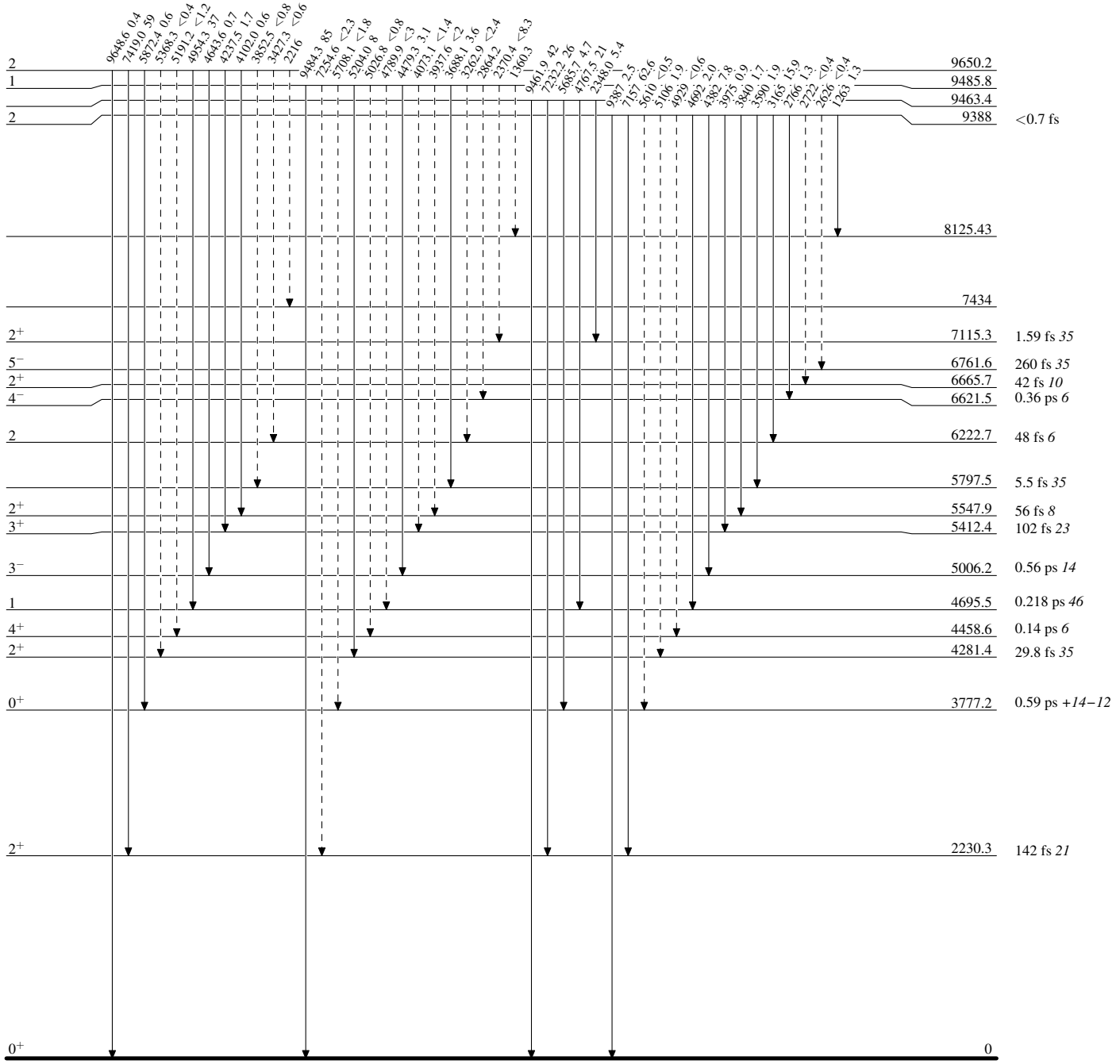
$^{32}_{16}S_{16}$

^{31}P(p,γ) E=res 1997Br07,1975Bo42,1972Co13 Legend

Level Scheme (continued)

Intensities: % photon branching from each level

γ Decay (Uncertain)



$^{32}_{16}S_{16}$

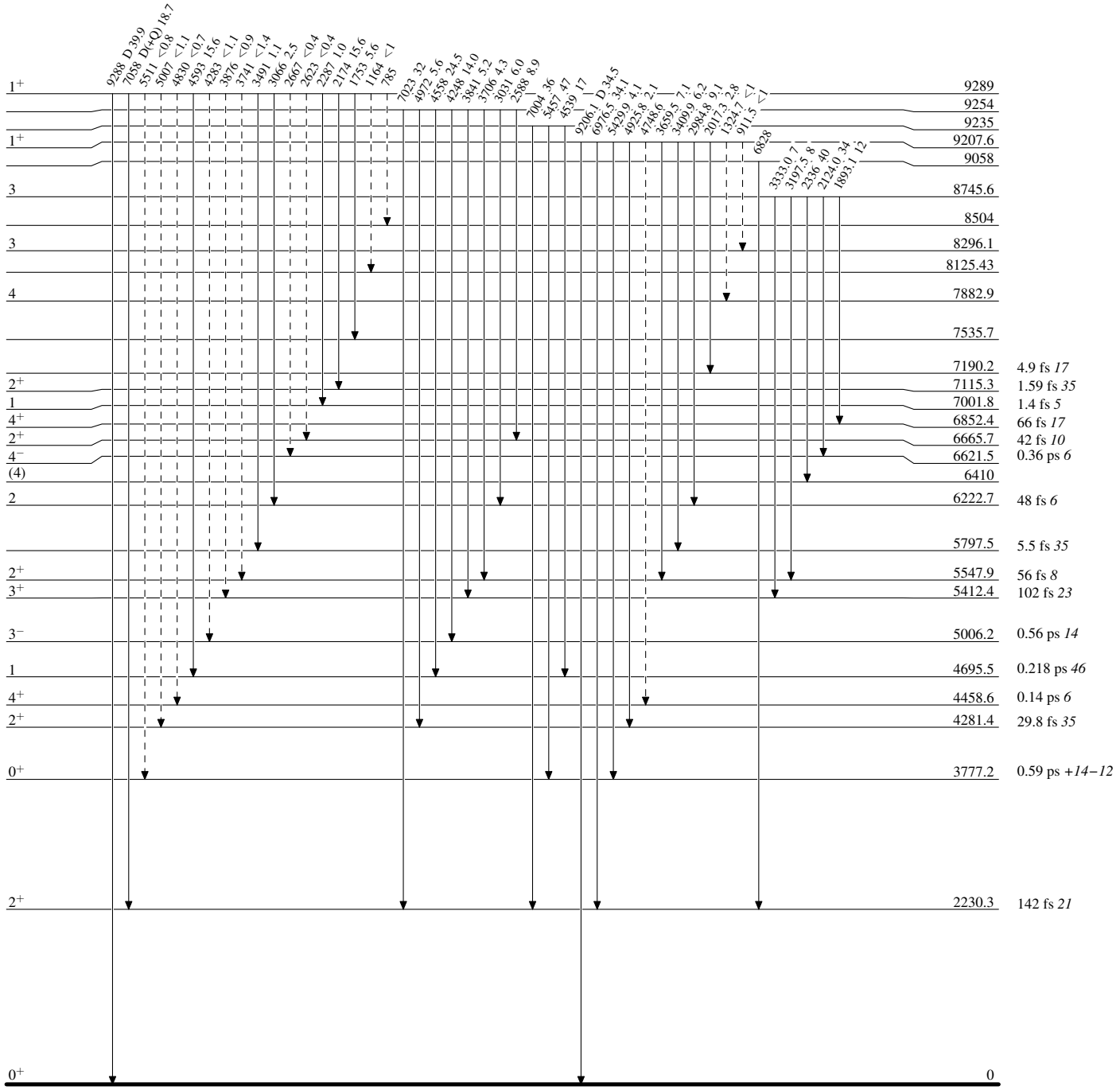
^{31}P(p,γ) E=res 1997Br07,1975Bo42,1972Co13

Legend

Level Scheme (continued)

Intensities: % photon branching from each level

γ Decay (Uncertain)



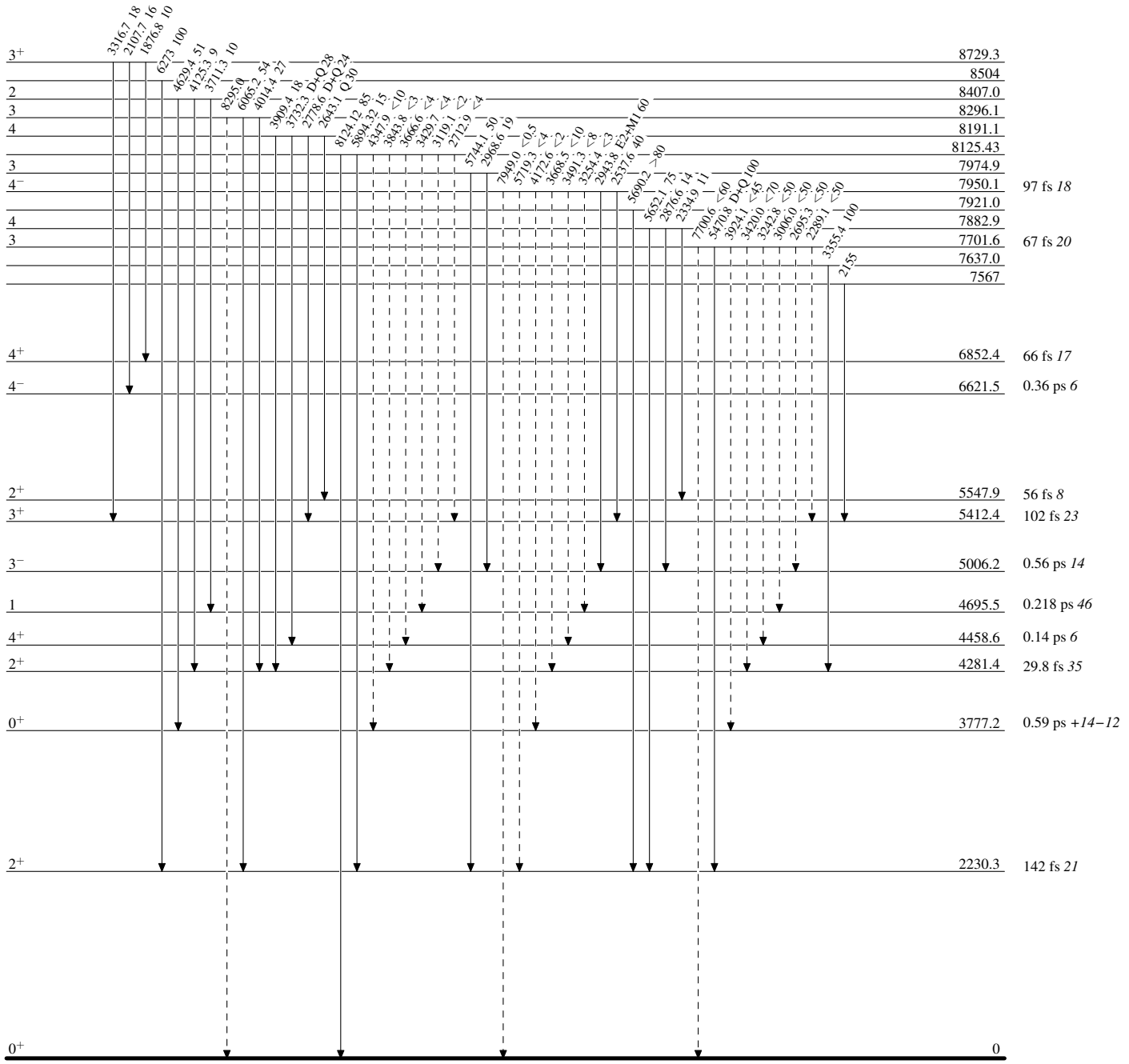
$^{32}_{16}S_{16}$

^{31}P(p,γ) E=res 1997Br07,1975Bo42,1972Co13 Legend

Level Scheme (continued)

Intensities: % photon branching from each level

γ Decay (Uncertain)



$^{32}_{16}S_{16}$

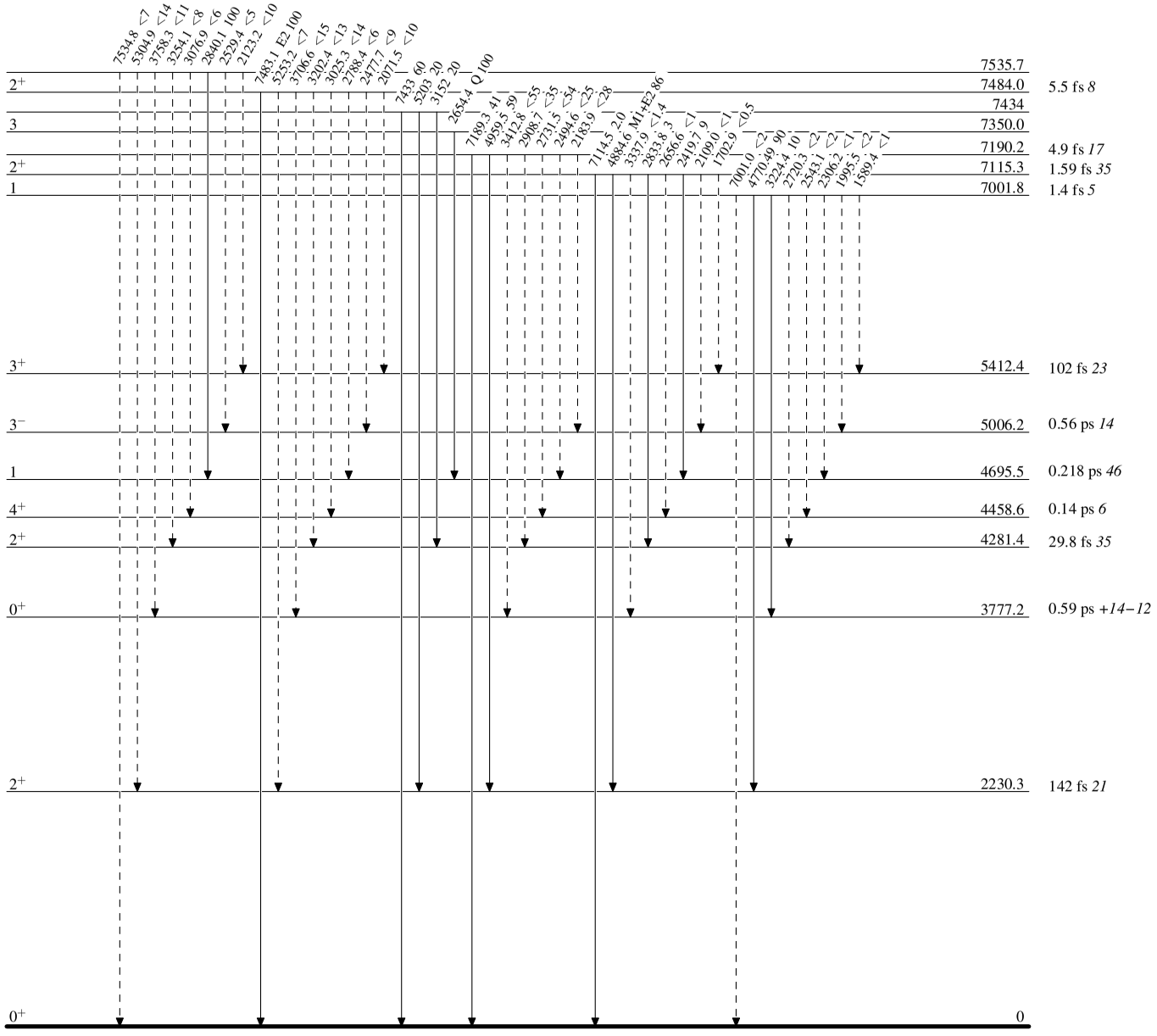
^{31}P(p,γ) E=res 1997Br07,1975Bo42,1972Co13

Legend

Level Scheme (continued)

Intensities: % photon branching from each level

– – – – – – ► γ Decay (Uncertain)



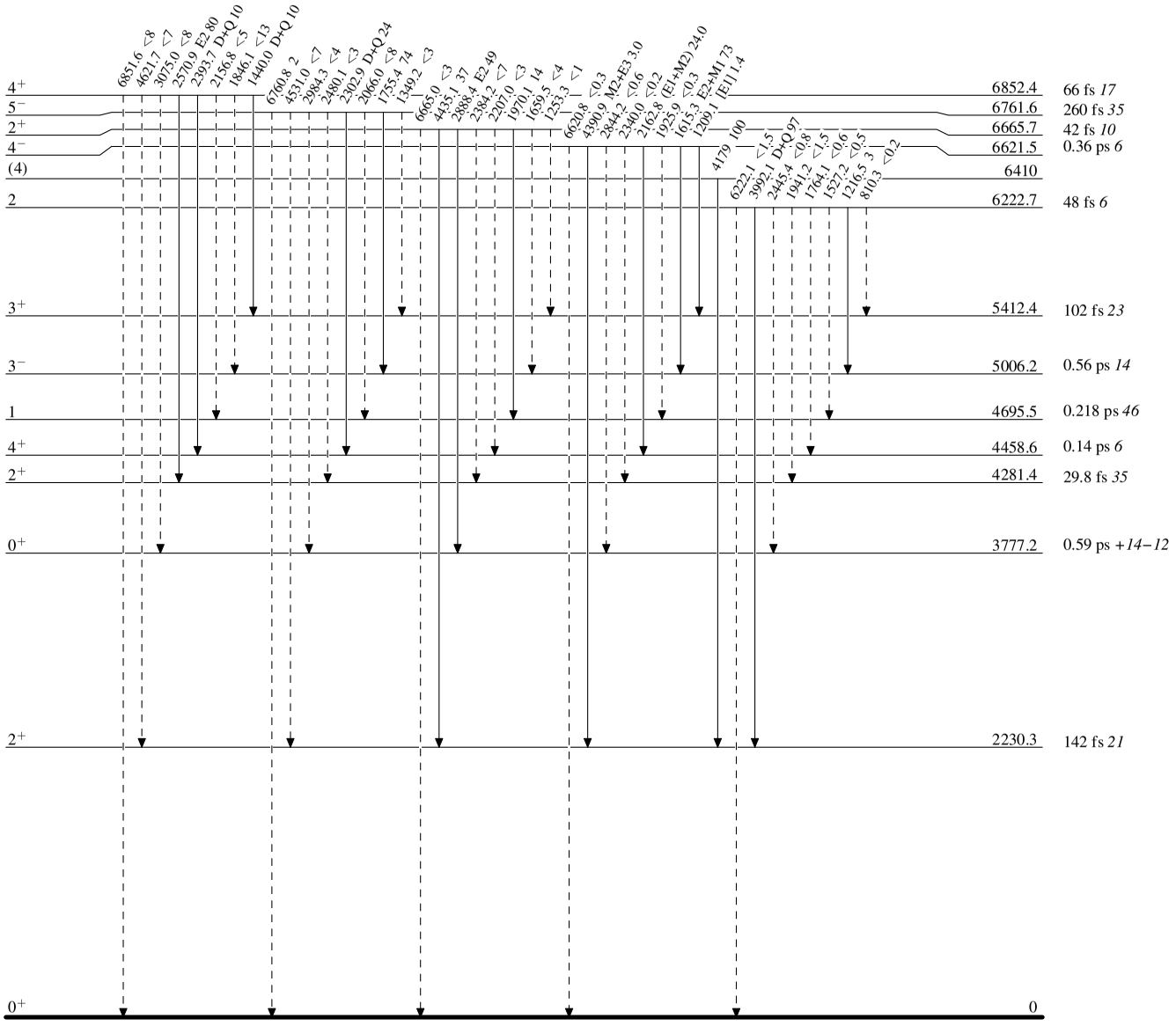
^{31}P(p,γ) E=res 1997Br07,1975Bo42,1972Co13

Legend

Level Scheme (continued)

Intensities: % photon branching from each level

γ Decay (Uncertain)



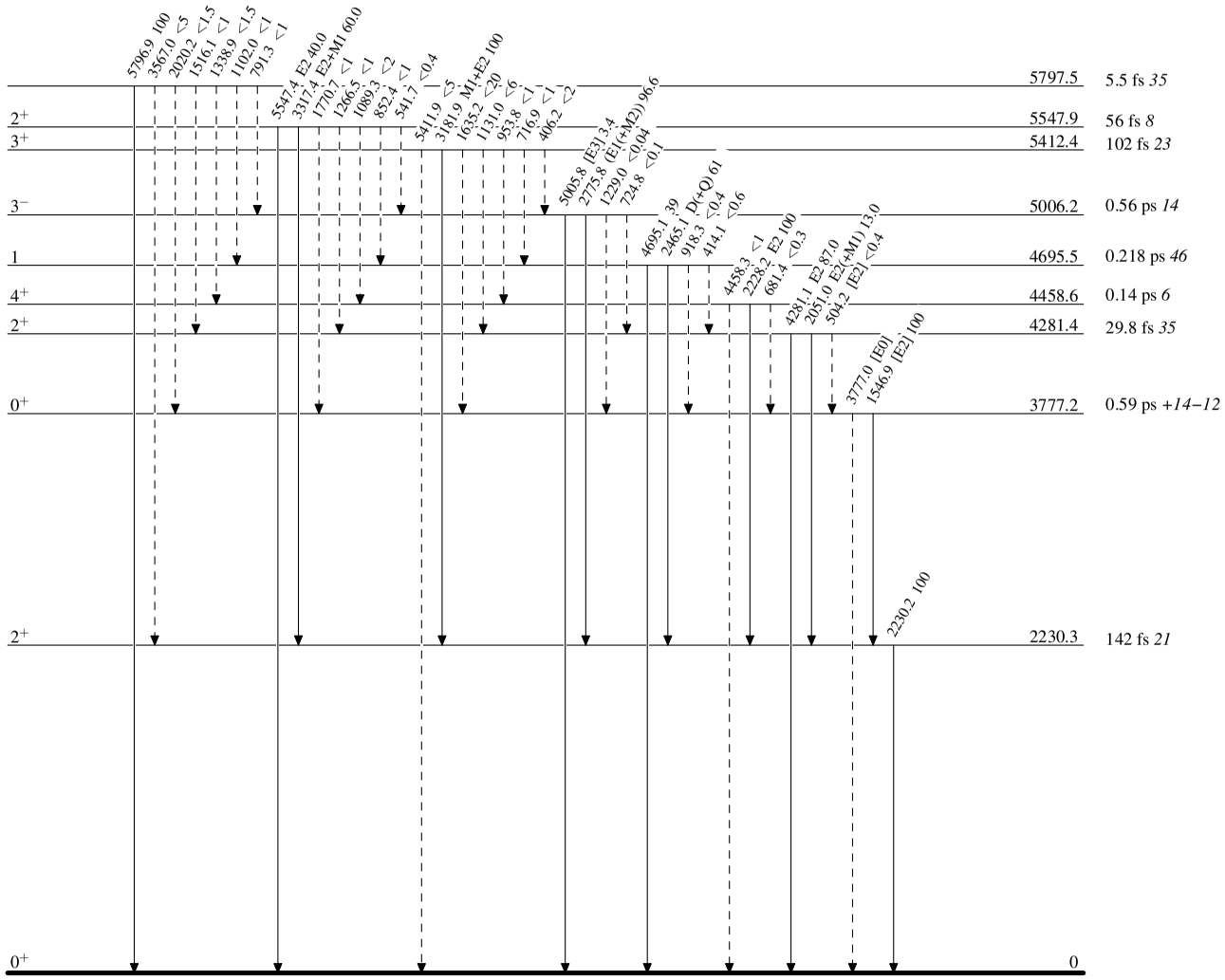
$^{32}_{16}S_{16}$

^{31}P(p,γ) E=res 1997Br07,1975Bo42,1972Co13 Legend

Level Scheme (continued)

Intensities: % photon branching from each level

– – – – – – ► γ Decay (Uncertain)



$^{32}_{16}S_{16}$