

Adopted Levels, Gammas

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

Q(β^-)=1710.66 4; S(n)=7935.65 4; S(p)=8644.81 6; Q(α)=-9879.07 6 2021Wa16
 S(2n)=20246.66 8, S(2p)=23018.7 19 (2021Wa16).
 Mass deduced by IMME analysis: 2021Ka45, 2010Ka30, 2006Tr03.
 Structure calculations:
 2020Fo04,2018Hu12,2018Lu08,2009Be26: calculated levels, J, π .

³²P Levels

Cross Reference (XREF) Flags

A	³² Si β^- decay (157 y)	G	³⁰ Si(³ He,p γ)	M	³² S(d, ² He)
B	² H(³¹ P,p γ)	H	³⁰ Si(α ,d)	N	³⁴ S(p, ³ He)
C	¹⁸ O(¹⁶ O,pn γ)	I	³¹ P(n, γ) E=thermal	O	³⁴ S(pol d, α),(d, α)
D	²⁹ Si(α ,p)	J	³¹ P(n,n),(n, γ),(n,X):res	P	³⁵ Cl(K ⁻ ,x ray γ), ³⁷ Cl(K ⁻ ,x ray γ)
E	²⁹ Si(α ,p γ)	K	³¹ P(pol d,p),(d,p)		
F	³⁰ Si(³ He,p)	L	³² S(μ^- , γ)		

E(level) [†]	J ^{π}	T _{1/2} [@]	XREF	Comments
0.0	1 ⁺	14.266 d 4	ABCDEFGHIJ KLMNOP	% β^- =100 μ =-0.2528 2 (1957Fe32,2019StZV) J ^{π} , μ : spin and magnetic moment from electron-nuclear double resonance method (1957Fe32); parity from L(pol d,p)=0+2 from 1/2 ⁺ target. T _{1/2} : average by Normalized Residuals Method (NRM) of 14.263 d 3 (2002Un02), 14.26 d 1 (1994Co02), 14.28 d 4 (1979Pr14), 14.35 d 5 (1977Mu07), 14.268 d 42 (1969La34), 14.32 d 1 (1969Pe04, Δ T increased to 0.02 d in NRM), 14.290 d 14 (1966Go16), 14.282 d 10 (1961Ma46), 14.2 d 3 (1958Da10), 14.223 d 15 (1957An03), 14.30 d 9 (1950Ba94), 14.35 d 5 (1948Kl28), 14.07 d 3 (1940Mu01); Δ T increased to 0.072 in NRM, 14.5 d 3 (1938Ca02), 14.30 d 3 (1938Ca01), with a reduced χ^2 =2.6, using the V.AveLib tool. The weighted average gives 14.267 d 7 with a reduced χ^2 =6.8 and the unweighted average is 14.284 d 24. Others (most are consistently higher than the set of values above): 12 d 2 (1977Be59), 14.55 d 6 (1959Ro51), 14.50 d 4 (1953Lo09), 14.60 d 5 (1951Si25), 14.5 d 3 (1937Ne02), 15.0 d 1 (1936Si01), 15.0 d 15 (Compt Rend 201, 722 (1935)), 17.5 d 11 (1934Am01).
78.071 19	2 ⁺ [‡]	278 ps 12	BCDEFGHI KLMNOP	T _{1/2} : weighted average of 278 ps 9 from DSAM in (α ,p γ), 253 ps 25 from $\gamma\gamma$ (t) in (n, γ) E=thermal, and 360 ps +62-35 from delayed-coincidence in (d,p γ).
512.700 28	0 ⁺ [‡]	2.08 ps 59	B DEFG I KL	T _{1/2} : other: 1997Ka15 in ² He(³¹ P,p γ) and 1990En08 evaluation quote a τ =2.64 ps 8 from an unpublished work.
1149.388 22	1 ⁺ [‡]	182 fs 12	B DEFGHI KLM O	T _{1/2} : from DSAM in (³¹ P,p γ). Other: 162 fs 42 from (α ,p γ).
1322.835 26	2 ⁺	335 fs +24-18	BCDEFGHI KLM O	J ^{π} : spin=2 from p γ (θ) in (α ,p γ); parity from L(d,p)=2 from 1/2 ⁺ . T _{1/2} : weighted average of 358 fs 24 from (³¹ P,p γ), 330 fs +26-16 from (¹⁶ O,pn γ), and 267 fs 49 from (α ,p γ).
1755.03 4	3 ⁺ [‡]	411 fs 28	BCDEFGHI KL O	T _{1/2} : weighted average of 426 fs 28 from (³¹ P,p γ), 427 fs +45-32 from (¹⁶ O,pn γ), and 341 fs 49 from (α ,p γ).
2177.26 5	3 ⁺	49 fs 9	BC EF hI K O	XREF: h(2175) J ^{π} : spin=3 from p γ (θ) in (α ,p γ); parity from L(d, α)=4 from 0 ⁺ .

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Adopted Levels, Gammas (continued) ^{32}P Levels (continued)

E(level) [†]	J ^π	T _{1/2} [@]	XREF	Comments
2217.73 6	2 ⁺ [‡]	159 fs 20	B EF hI K O	T _{1/2} : weighted average of 59 fs 10 from (³¹ P,py) and 41 fs 9 from (α,py). XREF: F(2220)h(2175)K(2221.9)o(2220)
2229.741 30	1 ⁺	25 fs 14	EFG I K M O	T _{1/2} : weighted average of 165 fs 20 from (³¹ P,py) and 141 fs 35 from (α,py). XREF: o(2220) J ^π : from L(d,p)=0+2 from 1/2 ⁺ ; L(³ He,p)=2(+0) from 0 ⁺ .
2313.0? 4			I	
2579.14? 17			I	
2657.64 4	2 ⁺ [‡]	8.3 fs 28	B EF HI KL O	T _{1/2} : from DSAM in (n,γ) E=thermal. Other: <7 fs from (α,py).
2740.46 5	1 ⁺	15 fs 6	B EF HI K M O	J ^π : spin=1 from py(θ) in (α,py); L(d,p)=2 from 1/2 ⁺ . T _{1/2} : weighted average of 14 fs 5 from (³¹ P,py) and 49 fs 28 from (α,py).
3004.9 6	3 ⁺	54 fs 13	B DEF HI K MNO	XREF: M(3030) Additional information 1. E(level): from (α,py). J ^π : spin=3 from py(θ) in (α,py); L(d,α)=2 from 0 ⁺ . T _{1/2} : unweighted average of 73 fs 11 from (³¹ P,py), 60 fs 15 (1973Ca18) and 28 fs 9 (1973Va14) from (α,py).
3074.04? 21			I	
3149.3 5	4 ⁺	367 fs 56	CDE I K O	XREF: K(3144.4) J ^π : spin=4 from py(θ) in (α,py); L(d,α)=4 from 0 ⁺ .
3264.013 24	2 ⁻	108 fs 15	B DEF HI KLM O	J ^π : spin=2 from py(θ) in (α,py); L(d,p)=1 from 1/2 ⁺ . T _{1/2} : weighted average of 115 fs 15 from (³¹ P,py), 90 fs 21 from (α,py), and 146 fs +70-42 from (n,γ) E=thermal.
3320.8 8	3 ⁻	164 fs 39	C EF KL O	J ^π : L(d,p)=3 from 1/2 ⁺ gives 2 ⁻ , 3 ⁻ , 4 ⁻ ; π=natural from analyzing power in (pol d,α). Other: (2,4) ⁻ from (pol d,p) is inconsistent.
3444.2 6	4 ⁻ [‡]	264 fs 31	BCdEf H K	XREF: d(3440)f(3445) T _{1/2} : weighted average of 264 fs 31 from (³¹ P,py) and 263 fs 56 from (α,py). Other: <683 fs from (¹⁶ O,pnγ).
3444.39 4	(1,2)	24 fs 12	dEf I	XREF: d(3440)f(3445) J ^π : (0,1,2) from py(θ) in (α,py); 565γ from 2 ⁻ , 3366γ to 2 ⁺ .
3792.58 23	(1) ⁺	4.0 fs 14	B d f I K M	XREF: d(3800)f(3798) J ^π : L(d,p)=0+2 from 1/2 ⁺ for a group at 3795, which is possibly a doublet of 3792+3797, with L=0 component for 3792 and L=2 for 3797. See also comment for 3797 level.
3797.3 4	3 ⁺	49 fs 29	dEf O	XREF: d(3800)f(3798)O(3793) Additional information 2. E(level): from (α,py). J ^π : spin=3 from py(θ) in (α,py); 3719γ M1+E2 to 2 ⁺ . 3 ⁺ also from L(d,α)=2 from 0 ⁺ and analyzing power for a group at 3793, which could be a doublet of 3792+3797.
3881.0 5	2 ⁺ [‡]	19 fs 16	B E K O	XREF: O(3875) Additional information 3. E(level): from (α,py). T _{1/2} : other: <14 fs from DSAM in (³¹ P,py).
3988.7 5	(3) ⁺	12 fs 6	B E K	Additional information 4. E(level): from (α,py). J ^π : L(d,p)=2(+0) from 1/2 ⁺ , 1989Ec03 in (d,p) point out 3 ⁺ gives a better agreement with theoretical spectroscopic factor.
4009.01 4	2 ⁻	130 fs 28	B E HI K	T _{1/2} : other: <10 fs from DSAM in (³¹ P,py). J ^π : L(d,p)=1 from 1/2 ⁺ ; L(α,d)=3 from 0 ⁺ .
4024.3 10			Cd f l	T _{1/2} : from DSAM in (³¹ P,py). XREF: d(4030)f(4036)l(4036)

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Adopted Levels, Gammas (continued) ^{32}P Levels (continued)

E(level) [†]	J ^π	T _{1/2} [@]	XREF	Comments
4035.588 29	1 ⁻	1.7 fs 6	B dE f I K l	XREF: d(4030)f(4036)l(4036) J ^π : 3522.7γ E1 to 0 ⁺ . T _{1/2} : weighted average of 1.5 fs 6 from (³¹ P,py) and 3.5 fs 2l from (n,γ) E=thermal.
4036.2 8	4 ⁺	24 fs 17	CdE f l	XREF: d(4030)f(4036)l(4036) J ^π : spin=4 from py(θ) in (α,pγ); 3958γ E2(+M3) to 2 ⁺ . T _{1/2} : other <71 fs from (¹⁶ O,pnγ).
4067.3 12 4148.8 4	3 ⁻	22 fs 7	C B DEF I K 0	Additional information 5. E(level): from (α,pγ). J ^π : spin=3 from py(θ) in (α,pγ); L(d,p)=3 from 1/2 ⁺ . But 4 ⁻ proposed in (d,p) from analyzing power is inconsistent. T _{1/2} : weighted average of 19 fs 7 from (³¹ P,pγ) and 39 fs 17 from (α,pγ).
4204.3 6	1 ^{+‡}	2.9 fs 8	B E I KLM 0	Additional information 6. E(level): from (d,p). Others: 4205.3 10 from (n,γ) E=thermal, 4203 3 from (α,pγ). T _{1/2} : from DSAM in (³¹ P,pγ).
4276.0 7	5 ⁻	0.53 ps 8	CDE H K 0	J ^π : 832γ M1+E2, ΔJ=1 to 4 ⁻ ; 955γ Q, ΔJ=2 to 3 ⁻ . T _{1/2} : other: <0.684 ps from (¹⁶ O,pnγ).
4312.5 7	(3) ⁺	55 fs 28	E K 0	XREF: K(4316.6)O(4313) Additional information 7. E(level): from (α,pγ). J ^π : L(d,p)=2(+4) from 1/2 ⁺ .
4409.8 12	0 ⁻	13.2 fs 2l	B I K 0	Additional information 8. E(level): from (n,γ) E=thermal. Other: 4409.8 12 from (d,p). J ^π : L(d,p)=1 from 1/2 ⁺ and analyzing power; π=unnatural from analyzing power in (pol d,α); T _{1/2} : from DSAM in (³¹ P,pγ).
4549.22 12	1 ⁺		f I m 0	XREF: f(4560)m(4550)O(4554) J ^π : 4036γ to 0 ⁺ ; π=unnatural from analyzing power in (pol d,α) for a group at 4554.
4554.4 8	2 ^{+‡}		Ef K m	XREF: f(4560)m(4550) Additional information 9. E(level): from (α,pγ). Other: 4554.7 6 from (d,p). 4554 from (pol d,α) is not the same level as the 2 ⁺ level here since π=unnatural is from analyzing power in (pol d,α).
4613.1 18 4620?	3 ⁺ (0 ⁺)		K D	J ^π : L(d,p)=2+4 from 1/2 ⁺ . J ^π : from σ(θ) analysis in (α,p).
4661.53 4	2 ⁻	2.8 fs 5	B F I KL 0	J ^π : L(d,p)=1 from 1/2 ⁺ ; π=unnatural from analyzing power in (pol d,α); 0 ⁻ is unlikely since it would require Mult(3338γ)=M2 which is ruled out by RUL. T _{1/2} : from DSAM in (³¹ P,pγ). Other: 0.02 ps +17-2 from (n,γ) E=thermal.
4698.3 8	(5) ⁺	<449 fs	C E h K	XREF: h(4696) J ^π : L(d,p)=4+(2) from 1/2 ⁺ target; 5 ⁺ is proposed in in-beam γ-ray data of 2010Gh02, which is possible if L(d,p)=4; 2115.8γ from (6 ⁻) favors 5 ⁺ over 3 ⁺ . T _{1/2} : from (¹⁶ O,pnγ).
4710.44 15	1 ⁺		hI KLM	XREF: h(4696) J ^π : from L(d, ² He)=0 from 0 ⁺ ; L(d,p)=0+2 from 1/2 ⁺ .
4743.3 4	5 ⁺	97 fs 28	DE K 0	Additional information 10. E(level): from (α,pγ). J ^π : L(pol d,α)=4 from 0 ⁺ and analyzing power.

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Adopted Levels, Gammas (continued) ^{32}P Levels (continued)

E(level) [†]	J ^π	T _{1/2} [@]	XREF			Comments
4849.9 7	(3 ⁺ ,4 ⁻ ,5 ⁺)		E	K	0	Additional information 11. E(level): from (α,pγ). Other: 4847.5 11 from (d,p). J ^π : π=unnatural from analyzing power in (pol d,α); 1701γ to 4 ⁺ , 2673γ to 3 ⁺ .
4877.42 4	1 ⁻	4.0 fs 8	B	FG I KL		J ^π : 4365γ E1 to 0 ⁺ . T _{1/2} : from (³¹ P,pγ). Other: <2.1 fs from (n,γ) E=thermal.
4940.7 25			F	K	0	XREF: F(4944)O(4944) J ^π : π=(natural) from analyzing power in (pol d,α).
4990.0 12			C			
5011.8 30				K	0	XREF: O(5010) E(level): from (d,p). Other: 5010 from (pol d,α). J ^π : π=unnatural and J not 0 from analyzing power in (pol d,α).
5072.53 8	0 ⁺		FGHI		N	T=2 J ^π : spin=0 from pγ(θ) in (³ He,pγ); L(³ He,p)=0 from 0 ⁺ . L(α,d)=(1) from 0 ⁺ for a group at 5077 is inconsistent.
5081.5 15	(4) ⁻	104 fs 35	E	K	0	Additional information 12. E(level): from (α,pγ). Other: 5080.5 13 from (pol d,p). J ^π : L(d,p)=3(+5) from 1/2 ⁺ and π=unnatural from analyzing power (1977Ba68) in (pol d,α). But (2 ⁺) proposed by 1982Ma25 based on analyzing power and L(d,α)=(2) for a group at 5070 is inconsistent.
5129.4 15				F	K	
5233.5 14	(2) ⁻			F	K	XREF: F(5232) J ^π : L(pol d,p)=1(+3) and analyzing power.
5252.9 12		<59 fs	Ef			XREF: f(5232) Additional information 13.
5307.58? 11	(1,2 ⁺)				I	E(level): from (α,pγ). J ^π : 4793γ to 0 ⁺ .
5326.00? 14	(1,2 ⁺)				I	J ^π : 4811γ to 0 ⁺ .
5349.64 4	2 ⁻	5.3 fs 6	B	FG I K		J ^π : spin=2 from γγ(θ) in (n,γ) E=thermal; L(d,p)=1 from 1/2 ⁺ . T _{1/2} : from (³¹ P,pγ). Other: 11 fs +35-11 from (n,γ) E=thermal.
5396.4 12					K	
5481.3 9	5 ⁻	<155 fs	C			J ^π : 381γ M1, ΔJ=1 from 6 ⁻ ; 2037γ to 4 ⁻ . T _{1/2} : from DSAM in (¹⁶ O,pnγ).
5497.8 34					K	
5509.347 30	(1) ⁻	7.1 fs 10	B	F HI K		J ^π : (0,1) ⁻ from L(d,p)=1 from 1/2 ⁺ and analyzing power; possible 5431γ to 2 ⁺ . T _{1/2} : from DSAM in (³¹ P,pγ).
5550.1 12			C		K 0	XREF: K(5554.4)O(5550) J ^π : π=natural from analyzing power in (pol d,α).
5583.2 12			C		K	XREF: K(5587.9)
5663.4 15					K m	XREF: m(5670)
5673.5 15	(1) ⁺				K m	XREF: m(5670) J ^π : L(d,p)=2 from 1/2 ⁺ ; 1 ⁺ from analysis of σ(θ) in (d, ² He) for a group at 5670, which could be a doublet of 5663+5674.
5701.49 7	(2) ⁻				I K	J ^π : L(d,p)=1 from 1/2 ⁺ ; 3946γ to 3 ⁺ .
5724.8 9	(4) ⁻				K	J ^π : L(d,p)=3(+5) from 1/2 ⁺ .
5778.737 31	1 ⁻ $\frac{1}{2}$	1.0 fs 5	B	I K		T _{1/2} : from (³¹ P,pγ). Other: 4 fs +8-4 from (n,γ) E=thermal.
5815.2 16	(3,4) ⁻				K	J ^π : L(pol d,p)=3 from 1/2 ⁺ and analyzing power.
5830.1 9				h	K	XREF: h(5849)
5860.2 11	(2) ⁻			h	K	XREF: h(5849) J ^π : L(pol d,p)=1(+3) from 1/2 ⁺ and analyzing power.

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Adopted Levels, Gammas (continued) ^{32}P Levels (continued)

E(level) [†]	J ^π	T _{1/2} [@]	XREF		Comments
5862.3 8	6 ⁻	<493 fs	C		J ^π : 2418γ E2+M3, ΔJ=2 to 4 ⁻ ; 1586γ to 5 ⁻ . T _{1/2} : from DSAM in (¹⁶ O,pnγ).
5890	2 ⁺			0	J ^π : L(pol d,α)=2 from 0 ⁺ and analyzing power.
5968.7 22				K	
5971.8 21				K	
5989? 8				K	
6026.2 10	2 ⁻ ,3 ⁻ ,4 ⁻			K	J ^π : L(d,p)=3 from 1/2 ⁺ .
6062.14 5	1 ⁻ $\frac{3}{2}$	1.0 fs 4	B	I K	T _{1/2} : from DSAM in (³¹ P,pγ).
6104.8 8	3 ⁺			K	J ^π : L(d,p)=2+4 from 1/2 ⁺ .
6147.2 22	1 ⁺ ,2 ⁺ ,3 ⁺			h K	XREF: h(6140)
6160? 8				h K	J ^π : L(d,p)=2 from 1/2 ⁺ . XREF: h(6140)K(?6160)
6196.35 5	1 ⁻	<3.5 fs	B	I K	J ^π : L(pol d,p)=1 from 1/2 ⁺ and analyzing power; 5683γ to 0 ⁺ . T _{1/2} : from DSAM in (³¹ P,pγ).
6278.7 23				K	
6298.1 14				K m	XREF: m(6310)
6310.7 19				K m	XREF: m(6310)
6332.54 18	(0,1) ⁺	<3.5 fs	B	I K m	XREF: m(6310)
6378.0 15				K	J ^π : L(d,p)=0 from 1/2 ⁺ . T _{1/2} : from DSAM in (³¹ P,pγ).
6396.2 27				K	
6415.1 12		<150 fs	C	K	XREF: K(6413.0)
6434.1 32	5 ⁺			K 0	T _{1/2} : from (¹⁶ O,pnγ). XREF: O(6430)
6477.0 27	(4) ⁻			K	J ^π : L(pol d,α)=4 from 0 ⁺ and analyzing power.
6510.62 19	(1 ⁺ ,2 ⁺)			I M	J ^π : L(d,p)=3(+5) from 1/2 ⁺ . XREF: I(?)
6530.7 22	2 ⁻ ,3 ⁻ ,4 ⁻			h K	J ^π : σ(θ) in (d, ² He) indicates presence of higher multipoles: (1,2) ⁻ and (2,3) ⁺ from neighboring unresolved states, unable to assign a distinct spin.
6557.99 11	(1,2,3 ⁺)			hI K	XREF: h(6530)
6581.89 6	(0 ⁺ ,1,2,3 ⁺)			I K	J ^π : L(d,p)=3 from 1/2 ⁺ . XREF: h(6530)K(6553.0)
6682.3 33				K	J ^π : 1209γ to 2 ⁻ , 6478γ to 2 ⁺ ; 6556γ to 1 ⁺ ; primary 1378γ from 1 ⁺ neutron capture state.
6685.0 20				K	J ^π : primary 1354γ from 1 ⁺ neutron capture state; 6503γ to 2 ⁺ .
6705.3 12				K	
6707.8 15				K	
6733.8 10				K	
6738.1 11				K	
6783.69 15	(0 ⁺ ,1,2,3 ⁺)			I K	XREF: K(6780.5)
6814.2 9	(6 ⁻)		C		J ^π : primary 1152γ from 1 ⁺ state; 4126γ to 2 ⁺ .
6835.0 12		<131 fs	C		J ^π : proposed in (¹⁶ O,pnγ) based on theoretical predictions.
6858.0 12				H K	T _{1/2} : from DSAM in (¹⁶ O,pnγ). XREF: H(6880)
6996.9 33	1 ⁺			K M	J ^π : L(α,d)=(6) from 0 ⁺ for a group at 6880 gives (5 ⁺ ,6 ⁺ ,7 ⁺). XREF: M(7010)
7067 3				K	J ^π : L(d, ² He)=0 from 0 ⁺ .
7190	(4) ⁺			0	J ^π : L(pol d,α)=4 from 0 ⁺ and analyzing power.
7339.8 20				K	
7343.1 18				K	

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Adopted Levels, Gammas (continued) ^{32}P Levels (continued)

E(level) [†]	J^π	$T_{1/2}$ [@]	XREF		Comments
7392.7 23				K	
7417.1 11	7 ⁽⁺⁾	<796 fs	C	H	XREF: H(7420) J^π : 1555 γ D+Q, $\Delta J=1$ to 6 ⁻ ; L=(6) from 0 ⁺ .
7655.4 34				K	
7679.0 14				K	
7767.2 25				K	
7806.6 26	2 ⁻ ,3 ⁻ ,4 ⁻			K	J^π : L(d,p)=3 from 1/2 ⁺ .
7810.2 34	(4) ⁻			K	J^π : L(d,p)=3(+5) from 1/2 ⁺ .
7851.7 20	2 ⁻ ,3 ⁻ ,4 ⁻			K	J^π : L(d,p)=3 from 1/2 ⁺ .
7875.3 36	3 ⁺ ,4 ⁺ ,5 ⁺			K	J^π : L(d,p)=4 from 1/2 ⁺ .
7925.5 20				K	
(7935.764 22)	1 ⁺		I		J^π : s-wave capture in ^{31}P g.s. with $J^\pi=1/2^+$; 2863 γ to 0 ⁺ .
7939.6 20				K	
7957.9 28	5 ⁺			K	XREF: O(7960)
7961.56 4		<0.003 keV		JK	J^π : L(pol d, α)=4 from 0 ⁺ and analyzing power.
7990.5 28				K	E(level): from (n,n):res. Other: 7963.1 32 from (pol d,p).
8017.0 1	(0 ⁻) [#]	<0.03 keV		J	
8018.1 27	2 ⁻ ,3 ⁻ ,4 ⁻			K	J^π : L(d,p)=3 from 1/2 ⁺ .
8025.47 11		<0.03 keV		J	
8037.45 11	(1,2) ⁺	<0.04 keV		JK	E(level): from (n,n):res. Other: 8036.7 33 from (pol d,p).
8039.8 1		<0.04 keV		Jk	J^π : L(pol d,p)=2 from 1/2 ⁺ and analyzing power.
8045.5 1		<0.04 keV		Jk	XREF: k(8042.2)
8078.6 1	(0 ⁻) [#]	<0.06 keV		JK	XREF: k(8042.2)
8082.6 18				K	E(level): from (n,n):res. Other: 8076.7 36 from (pol d,p).
8086.8 1	(1 ⁻) [#]	<0.06 keV		J	
8087.6 1	1 ⁺	2.03 keV 14		J	J^π : s-wave capture in 1/2 ⁺ g.s. of ^{31}P .
8090	5 ⁺			O	J^π : L(pol d, α)=4 from 0 ⁺ and analyzing power.
8092.1 2	(0 ⁺) [#]	1.7 keV 6		J	
8098.7 21				K	
8113.4 2	(1 ⁺) [#]	1.3 keV 2		J	
8148.5 2	(1 ⁺) [#]	0.91 keV 7		J	
8153.4 2	(1 ⁻) [#]	<0.1 keV		J	
8156.7 2	(1 ⁻) [#]	0.65 keV 7		J	
8158.1 26	2 ⁻ ,3 ⁻ ,4 ⁻			K	J^π : L(d,p)=3 from 1/2 ⁺ .
8166.3 2	(1 ⁺) [#]	0.41 keV 3		JK	E(level): from (n,n):res. Other: 8165.7 34 from (pol d,p).
8182.4 2	(1 ⁺) [#]	0.21 keV 2		J	
8196.5 2	(1 ⁻) [#]	0.31 keV 3		J	
8201.6 2	(1 ⁻) [#]	<0.13 keV		J	
8202.5 33	2 ⁻ ,3 ⁻ ,4 ⁻			K	J^π : L(d,p)=3 from 1/2 ⁺ .
8241.3 3	(0 ⁻) [#]	<0.15 keV		J	
8247.4 28				K	
8279.1 3	(1 ⁻) [#]	<0.18 keV		J	
8284.8 3	(0 ⁺) [#]	1.2 keV 3		J	
8291.1 3	(1 ⁺) [#]	25 keV		J	
8292.0 3	(1 ⁻) [#]	0.46 keV 8		J	
8300.0 3	(2 ⁻) [#]	0.64 keV 10		J	
8329.8 3	(2 ⁻) [#]	<0.2 keV		J	
8336.8 3	(1 ⁺) [#]	1.2 keV 2		JK	E(level): from (n,n):res. Other: 8337.2 29 from (pol d,p).

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued) ^{32}P Levels (continued)

<u>E(level)[†]</u>	<u>J^π</u>	<u>T_{1/2}[@]</u>	<u>XREF</u>	<u>Comments</u>
				J ^π : L(d,p)=2 from 1/2 ⁺ .
8353.8 4	(2 ⁻) [#]	0.58 keV 7	J	
8356.8 4	(1 ⁻) [#]	<0.2 keV	J	
8357.9	(1 ⁺) [#]	<20 keV	J	
8363.1 26			K	
8383.1 5	(1 ⁻) [#]	1.3 keV 3	J	
8406.0 5	(1 ⁻) [#]	1.3 keV 3	J	
8414.2 5	(2 ⁻) [#]	<0.3 keV	J	
8540	5 ⁺		0	J ^π : L(pol d,α)=5 from 0 ⁺ and analyzing power.
8815		8.3 keV 7	J	
9226		9.8 keV 6	J	
9637.5 15	(8 ⁻)	<173 fs	C	J ^π : proposed in (¹⁶ O,pnγ) based on theoretical predictions.
10.20×10 ³		13.1 keV 6	J	
10380			0	
11.04×10 ³		13.6 keV 12	J	
12.05×10 ³		21.8 keV 16	J	
13.70×10 ³		21.8 keV 23	J	
16.64×10 ³		74 keV 14	J	

[†] From a least-squares fit to γ -ray energies with uncertainties for levels connected with γ transitions, and from particle-transfer reactions for other levels, unless otherwise noted. Note that E(level) values of some levels having decaying γ transitions have been directly taken from (α ,p γ) because energies of all γ transitions connected with those levels have no uncertainties and have been deduced instead from differences of the known level energies from references as noted in the individual datasets.

[‡] From L(d,p) and measured analyzing power $A_y(\theta)$ in $^{31}\text{P}(\text{pol d,p})$.

[#] From assumed s-wave or p-wave capture in 1/2⁺ g.s. of ^{31}P .

[@] From DSAM in (α ,p γ) for excited levels, unless otherwise noted.

Adopted Levels, Gammas (continued)

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

Additional information 14.

$E_i(\text{level})$	J_i^π	E_γ^\ddagger	I_γ^\ddagger	E_f	J_f^π	Mult. @	$\delta^@$	α^\dagger	Comments
78.071	2 ⁺	78.105 25	100	0.0	1 ⁺	[M1]		0.00906 13	B(M1)(W.u.)=0.165 7 $\alpha(\text{K})=0.00837$ 12; $\alpha(\text{L})=0.000636$ 9; $\alpha(\text{M})=4.81 \times 10^{-5}$ 7 E_γ : weighted average of 78.2 1 from ($\alpha, p\gamma$), 78.099 25 from (n, γ) E=thermal, and 78.1 1 from ($\text{K}^-, x \text{ ray}\gamma$). Other: 78.2 10 from ($^{16}\text{O}, p n\gamma$).
512.700	0 ⁺	512.696	100	0.0	1 ⁺	[M1]			B(M1)(W.u.)=0.079 +30-18 E_γ : from level-energy difference.
1149.388	1 ⁺	636.670 28	100.0 34	512.700	0 ⁺	M1&			B(M1)(W.u.)=0.235 16 I_γ : from ($\alpha, p\gamma$). Others: 100 25 from (n, γ) E=thermal and 100 11 from (μ^-, γ).
		1071.270 33	85.6 26	78.071	2 ⁺	M1+E2&	+0.14& 7		B(M1)(W.u.)=0.0414 31; B(E2)(W.u.)=3.0 +36-23 I_γ : weighted average of 86.1 26 from ($\alpha, p\gamma$) and 79.3 88 from (μ^-, γ). Other: 80 20 from (n, γ) E=thermal.
		1149.331 42	13.8 13	0.0	1 ⁺	[M1,E2]		2.8×10^{-5} 4	$\alpha(\text{K})=2.30 \times 10^{-5}$ 33; $\alpha(\text{L})=1.71 \times 10^{-6}$ 25; $\alpha(\text{M})=1.30 \times 10^{-7}$ 19 $\alpha(\text{IPF})=3.0 \times 10^{-6}$ 6 I_γ : weighted average of 15.1 14 from ($\alpha, p\gamma$), 11.8 28 from (n, γ) E=thermal, and 13.2 13 from (μ^-, γ).
1322.835	2 ⁺	1244.77 4	68.1 17	78.071	2 ⁺	M1+E2	+0.27 7	3.07×10^{-5} 6	B(M1)(W.u.)=0.0055 6 if M1, B(E2)(W.u.)=17.8 20 if E2. $\alpha(\text{K})=1.737 \times 10^{-5}$ 30; $\alpha(\text{L})=1.293 \times 10^{-6}$ 22; $\alpha(\text{M})=9.82 \times 10^{-8}$ 17 $\alpha(\text{IPF})=1.198 \times 10^{-5}$ 26 B(M1)(W.u.)=0.0129 +9-11; B(E2)(W.u.)=2.6 +14-12 E_γ : weighted average of 1245.1 10 from ($^{16}\text{O}, p n\gamma$) and 1244.764 39 from (n, γ) E=thermal. I_γ : weighted average of 68.4 17 from ($\alpha, p\gamma$), 63 16 from (n, γ) E=thermal, and 63 7 from (μ^-, γ). Other: 88.7 19 from ($^{16}\text{O}, p n\gamma$) is discrepant. δ : another solution -8 +3-11 also from $\gamma\gamma(\theta)$ in ($\alpha, p\gamma$) (1973Va14); the small value is adopted by the evaluator considering that the large δ would require a much larger B(E2) and is probably disfavored by RUL, compared to the small value.
		1322.85 4	100.0 17	0.0	1 ⁺	(M1)		4.04×10^{-5} 6	$\alpha(\text{K})=1.528 \times 10^{-5}$ 21; $\alpha(\text{L})=1.137 \times 10^{-6}$ 16; $\alpha(\text{M})=8.64 \times 10^{-8}$ 12 $\alpha(\text{IPF})=2.388 \times 10^{-5}$ 33

8

Adopted Levels, Gammas (continued)

E _i (level)	J _i ^π	<u>γ(³²P) (continued)</u>							Comments
		E _γ [‡]	I _γ [‡]	E _f	J _f ^π	Mult. [@]	δ [@]	α [†]	
1755.03	3 ⁺	432.4 10	2.05 10	1322.835	2 ⁺	M1+E2	+0.12 10		B(M1)(W.u.)=0.0169 11 E _γ : weighted average of 1323.1 10 from (¹⁶ O,pnγ) and 1322.850 38 from (n,γ) E=thermal. I _γ : from (α,pγ). Others: 100.0 19 from (¹⁶ O,pnγ), 100 24 from (n,γ) E=thermal, and 100 11 from (μ ⁻ ,γ). Mult.: D, ΔJ=1 from γ(anisotropy) in (¹⁶ O,pnγ); Δπ=no from level scheme.
		1676.99 5	100.0 5	78.071	2 ⁺	M1+E2	+0.73 5	0.0001470 25	B(M1)(W.u.)=0.0129 12; B(E2)(W.u.)=4.2 +116-41 E _γ : from (¹⁶ O,pnγ). I _γ : weighted average of 2.04 10 from (¹⁶ O,pnγ) and 2.09 21 from (α,pγ). B(M1)(W.u.)=0.0072 6; B(E2)(W.u.)=5.8 7 α(K)=1.069×10 ⁻⁵ 16; α(L)=7.96×10 ⁻⁷ 12; α(M)=6.05×10 ⁻⁸ 9 α(IPF)=0.0001355 23
		1755.1 10	1.6 6	0.0	1 ⁺	E2		0.0002092 30	E _γ : weighted average of 1677.1 10 from (¹⁶ O,pnγ) and 1676.992 45 from (n,γ) E=thermal. I _γ : from (α,pγ). Other: 100.0 21 from (¹⁶ O,pnγ). B(E2)(W.u.)=0.21 8 α(K)=1.076×10 ⁻⁵ 15; α(L)=8.00×10 ⁻⁷ 11; α(M)=6.08×10 ⁻⁸ 9 α(IPF)=0.0001976 28 E _γ : from (¹⁶ O,pnγ). I _γ : unweighted average of 1.02 10 from (¹⁶ O,pnγ) and 2.2 5 from (α,pγ). Mult.: δ(O/Q)=0.0 3 from pγ(θ) in (α,pγ); M2 ruled out by RUL.
2177.26	3 ⁺	2099.67 12	100.0 10	78.071	2 ⁺	M1+E2	-0.14 3	0.000296 4	B(M1)(W.u.)=0.045 +10-7; B(E2)(W.u.)=0.85 +45-33 α(K)=7.01×10 ⁻⁶ 10; α(L)=5.21×10 ⁻⁷ 7; α(M)=3.96×10 ⁻⁸ 6 α(IPF)=0.000288 4 E _γ : other: 2098.8 10 from (¹⁶ O,pnγ). I _γ : from (α,pγ). Other: 100.0 19 from (¹⁶ O,pnγ). B(E2)(W.u.)=2.4 +20-14 α(K)=7.31×10 ⁻⁶ 28; α(L)=5.43×10 ⁻⁷ 21; α(M)=4.13×10 ⁻⁸ 16 α(IPF)=0.000399 10 E _γ : from (¹⁶ O,pnγ). I _γ : unweighted average of 3.41 31 from (¹⁶ O,pnγ) and 9.9 10 from (α,pγ).
		2177.4 10	6.7 33	0.0	1 ⁺	E2(+M3)	+0.09 11	0.000407 10	B(M1)(W.u.)=0.053 +6-12; B(E2)(W.u.)<43
2217.73	2 ⁺	895.10 13	55 6	1322.835	2 ⁺	(M1(+E2))	0.0 3		

Adopted Levels, Gammas (continued)

$\gamma(^{32}\text{P})$ (continued)

$E_i(\text{level})$	J_i^π	E_γ^\ddagger	I_γ^\ddagger	E_f	J_f^π	Mult. @	$\delta^@$	α^\dagger	Comments
2217.73	2 ⁺	1068.32	20.3 27	1149.388	1 ⁺	[M1,E2]			I_γ : unweighted average of 67.0 32 from ($\alpha,\text{p}\gamma$), 53 13 (1989Mi16) and 45.3 25 (1997Ka15) from (n,γ) E=thermal. Mult.: D(+Q) from $\text{p}\gamma(\theta)$ in ($\alpha,\text{p}\gamma$); $\Delta\pi$ =no from level scheme. E_γ : from level-energy difference. I_γ : weighted average of 19 4 from ($\alpha,\text{p}\gamma$) and 20.9 27 from (n,γ) E=thermal (1997Ka15). B(M1)(W.u.)=0.0116 +23-19 if M1, B(E2)(W.u.)=43 +9-7 if E2. $\alpha(\text{K})=7.12\times 10^{-6}$ 35; $\alpha(\text{L})=5.30\times 10^{-7}$ 26; $\alpha(\text{M})=4.03\times 10^{-8}$ 20 $\alpha(\text{IPF})=0.00034$ 4 E_γ : from level-energy difference. I_γ : weighted average of 26 4 from ($\alpha,\text{p}\gamma$) and 22.8 25 from (n,γ) E=thermal (1997Ka15). B(M1)(W.u.)=0.00168 +31-25 if M1, B(E2)(W.u.)=1.57 +29-23 if E2.
		2139.58	23.7 25	78.071	2 ⁺	[M1,E2]		0.00035 4	
		2217.52 9	100 4	0.0	1 ⁺	M1+E2	-0.5 2	0.000360 12	B(M1)(W.u.)=0.0051 +11-10; B(E2)(W.u.)=1.1 +8-7 $\alpha(\text{K})=6.53\times 10^{-6}$ 12; $\alpha(\text{L})=4.86\times 10^{-7}$ 9; $\alpha(\text{M})=3.69\times 10^{-8}$ 7 $\alpha(\text{IPF})=0.000353$ 12
2229.741	1 ⁺	907.07 25	2.0 5	1322.835	2 ⁺	[M1,E2]			I_γ : from ($\alpha,\text{p}\gamma$). Other: 100 4 from (n,γ) E=thermal (1997Ka15). B(M1)(W.u.)=0.022 +23-10 if M1. B(E2)(W.u.)=1.1 $\times 10^2$ +12-5 exceeds RUL=100 if E2.
		2151.621 41	100 4	78.071	2 ⁺	[M1,E2]		0.00036 4	$\alpha(\text{K})=7.06\times 10^{-6}$ 35; $\alpha(\text{L})=5.25\times 10^{-7}$ 26; $\alpha(\text{M})=3.99\times 10^{-8}$ 20 $\alpha(\text{IPF})=0.00035$ 4
		2229.86 30	6.1 9	0.0	1 ⁺	[M1,E2]		0.00039 4	I_γ : from ($\alpha,\text{p}\gamma$). Other: 100 15 from (n,γ) E=thermal. B(M1)(W.u.)=0.08 +8-3 if M1, B(E2)(W.u.)=8 $\times 10^1$ +7-3 if E2. $\alpha(\text{K})=6.65\times 10^{-6}$ 31; $\alpha(\text{L})=4.94\times 10^{-7}$ 23; $\alpha(\text{M})=3.76\times 10^{-8}$ 17 $\alpha(\text{IPF})=0.00038$ 4
2313.0?		558.51 ^b 8	100	1755.03	3 ⁺				I_γ : other: 24 4 from ($\alpha,\text{p}\gamma$) is discrepant.
2579.14?		1256.24 ^a 19		1322.835	2 ⁺				B(M1)(W.u.)=0.0045 +45-17 if M1, B(E2)(W.u.)=3.8 +39-15 if E2.
		1429.89 ^a 37		1149.388	1 ⁺				
2657.64	2 ⁺	902.65 18	9.4 23	1755.03	3 ⁺	[M1+E2]	<0.4		$I_\gamma(1429.89\gamma)/I_\gamma(1256.24)=64$ 16/100 25 for the two γ doublets. B(M1)(W.u.)=0.24 +24-12.
		2579.20 35	29.4 26	78.071	2 ⁺	[M1,E2]		0.00055 5	δ : deduced by the evaluator based on RUL=100 for B(E2)(W.u.). $\alpha(\text{K})=5.24\times 10^{-6}$ 19; $\alpha(\text{L})=3.90\times 10^{-7}$ 14; $\alpha(\text{M})=2.96\times 10^{-8}$ 11 $\alpha(\text{IPF})=0.00054$ 5

Adopted Levels, Gammas (continued)

$\gamma(^{32}\text{P})$ (continued)

<u>E_i(level)</u>	<u>J_i^{π}</u>	<u>E_{γ}^{\ddagger}</u>	<u>I_{γ}^{\ddagger}</u>	<u>E_f</u>	<u>J_f^{π}</u>	<u>Mult.[@]</u>	<u>$\delta^@$</u>	<u>α^\dagger</u>	<u>Comments</u>
2657.64	2 ⁺	2657.55 6	100.0 26	0.0	1 ⁺	(M1(+E2))	-0.05 16	0.000527 9	I _{γ} : weighted average of 28.2 26 from (α ,p γ) and 34 5 from (n, γ) E=thermal. B(M1)(W.u.)=0.033 +17-9 if M1, B(E2)(W.u.)=21 +11-6 if E2. B(M1)(W.u.)=0.10 +6-3; B(E2)(W.u.)<4.1 α (K)=4.84×10 ⁻⁶ 7; α (L)=3.60×10 ⁻⁷ 5; α (M)=2.73×10 ⁻⁸ 4 α (IPF)=0.000522 8 I _{γ} : from (α ,p γ). Other: 100 15 from (n, γ) E=thermal. Mult.: D(+Q) from p γ (θ) in (α ,p γ); $\Delta\pi$ =no from level scheme.
2740.46	1 ⁺	1591.03	2.3 4	1149.388	1 ⁺	[M1,E2]		0.000122 18	α (K)=1.21×10 ⁻⁵ 10; α (L)=9.0×10 ⁻⁷ 7; α (M)=6.8×10 ⁻⁸ 6 α (IPF)=0.000109 17 E _{γ} : from level-energy difference. I _{γ} : other: <13.5 from (α ,p γ). B(M1)(W.u.)=0.0060 +41-20 if M1, B(E2)(W.u.)=10 +7-3 if E2.
		2227.80 9	100.0 16	512.700	0 ⁺	[M1]		0.000347 5	B(M1)(W.u.)=0.10 +6-3 α (K)=6.36×10 ⁻⁶ 9; α (L)=4.73×10 ⁻⁷ 7; α (M)=3.60×10 ⁻⁸ 5 α (IPF)=0.000340 5 I _{γ} : other: 100 6 from (α ,p γ).
		2740.38 11	37.4 21	0.0	1 ⁺	[M1,E2]		0.00062 6	α (K)=4.76×10 ⁻⁶ 16; α (L)=3.54×10 ⁻⁷ 12; α (M)=2.69×10 ⁻⁸ 9 α (IPF)=0.00061 6 I _{γ} : weighted average of 35 6 from (α ,p γ), 38.6 21 (1997Ka15) and 32 5 (1989Mi16) from (n, γ) E=thermal.
3004.9	3 ⁺	827.6	4.7 [#] 4	2177.26	3 ⁺	(M1(+E2))	-0.11 16		B(M1)(W.u.)=0.019 +12-6 if M1, B(E2)(W.u.)=11 +7-3 if E2. B(M1)(W.u.)=0.028 +14-9; B(E2)(W.u.)<18 Mult.: D(+Q) from p γ (θ) in (α ,p γ); $\Delta\pi$ =no from level scheme.
		1682.0	5.2 [#] 6	1322.835	2 ⁺	M1+E2	-1.7 8	0.000166 13	B(M1)(W.u.)=0.0010 +13-5; B(E2)(W.u.)=4.2 +15-19 α (K)=1.13×10 ⁻⁵ 5; α (L)=8.4×10 ⁻⁷ 4; α (M)=6.37×10 ⁻⁸ 28 α (IPF)=0.000154 13
		2926.7	100 [#] 1	78.071	2 ⁺	(M1(+E2))	0.02 4	0.000636 9	α (K)=4.18×10 ⁻⁶ 6; α (L)=3.11×10 ⁻⁷ 4; α (M)=2.362×10 ⁻⁸ 33 α (IPF)=0.000632 9 B(M1)(W.u.)=0.0138 +47-29; B(E2)(W.u.)<0.033 Mult.: D(+Q) from p γ (θ) in (α ,p γ); $\Delta\pi$ =no from level scheme.
		3004.8	7.9 [#] 7	0.0	1 ⁺	E2(+M3)	0.0 2	0.000791 21	B(E2)(W.u.)=0.48 +14-11 α (K)=4.24×10 ⁻⁶ 16; α (L)=3.15×10 ⁻⁷ 12; α (M)=2.39×10 ⁻⁸ 9 α (IPF)=0.000787 21
3074.04?		1318.94 ^a 21	100	1755.03	3 ⁺				

Adopted Levels, Gammas (continued)

$\gamma(^{32}\text{P})$ (continued)									
$E_i(\text{level})$	J_i^π	E_γ^{\ddagger}	I_γ^{\ddagger}	E_f	J_f^π	Mult. @	$\delta^@$	α^\dagger	Comments
3149.3	4 ⁺	972.1 10	39 5	2177.26	3 ⁺	M1+E2	+0.11 4		B(M1)(W.u.)=0.0146 +30-24; B(E2)(W.u.)=0.8 +7-5 E _γ : from (¹⁶ O,pn γ). I _γ : unweighted average of 44.6 18 from (¹⁶ O,pn γ) and 34.0 5 from (α ,p γ).
		1394.4 10	23.2 10	1755.03	3 ⁺	M1+E2	+4.8 12	7.10×10 ⁻⁵ 12	B(M1)(W.u.)=1.2×10 ⁻⁴ +10-5; B(E2)(W.u.)=6.2 +12-10 α (K)=1.699×10 ⁻⁵ 26; α (L)=1.265×10 ⁻⁶ 19; α (M)=9.61×10 ⁻⁸ 15 α (IPF)=5.27×10 ⁻⁵ 9 E _γ : from (¹⁶ O,pn γ). I _γ : weighted average of 25.0 18 from (¹⁶ O,pn γ) and 22.6 10 from (α ,p γ).
		1825.7 10	100.0 10	1322.835	2 ⁺	E2(+M3)	-0.07 7	0.000240 4	B(E2)(W.u.)=7.3 +18-14 α (K)=1.005×10 ⁻⁵ 24; α (L)=7.47×10 ⁻⁷ 18; α (M)=5.68×10 ⁻⁸ 14 α (IPF)=0.000229 4 E _γ : from (¹⁶ O,pn γ). I _γ : from (α ,p γ). Other: 100 4 from (¹⁶ O,pn γ).
		3071.3 10	10.5 16	78.071	2 ⁺	E2(+M3)	+0.05 10	0.000819 15	B(E2)(W.u.)=0.057 +23-17 α (K)=4.10×10 ⁻⁶ 9; α (L)=3.05×10 ⁻⁷ 7; α (M)=2.32×10 ⁻⁸ 5 α (IPF)=0.000814 15 I _γ : unweighted average of 8.9 7 from (¹⁶ O,pn γ) and 12.0 5 from (α ,p γ).
3264.013	2 ⁻	1034.316 41	19.7 19	2229.741	1 ⁺	[E1]			B(E1)(W.u.)=5.2×10 ⁻⁴ +10-8 I _γ : unweighted average of 23.4 21 from (α ,p γ), 17.7 3 (1997Ka15) and 18 5 (1989Mi16) from (n, γ) E=thermal.
		1509.017 44	26.4 5	1755.03	3 ⁺	[E1]		0.000282 4	B(E1)(W.u.)=2.24×10 ⁻⁴ +36-28 α (K)=7.80×10 ⁻⁶ 11; α (L)=5.80×10 ⁻⁷ 8; α (M)=4.41×10 ⁻⁸ 6 α (IPF)=0.000273 4 I _γ : weighted average of 26.5 18 from (α ,p γ), 26.4 5 (1997Ka15) and 28 8 (1989Mi16) from (n, γ) E=thermal. Other: 47 5 from (μ^- , γ) is discrepant.
		1941.160 49	35.6 8	1322.835	2 ⁺	E1(+M2)&	-0.1& 8	6.0×10 ⁻⁴ 21	B(E1)(W.u.)=1.41×10 ⁻⁴ +32-75 α (K)=5.4×10 ⁻⁶ 34; α (L)=4.0×10 ⁻⁷ 25; α (M)=3.0×10 ⁻⁸ 19 α (IPF)=6.0×10 ⁻⁴ 21

Adopted Levels, Gammas (continued)

$\gamma(^{32}\text{P})$ (continued)

<u>E_i(level)</u>	<u>J_i^{π}</u>	<u>E_{γ}^{\ddagger}</u>	<u>I_{γ}^{\ddagger}</u>	<u>E_f</u>	<u>J_f^{π}</u>	<u>Mult.[@]</u>	<u>$\delta^@$</u>	<u>α^\dagger</u>	<u>Comments</u>
3264.013	2 ⁻	2114.483 41	100.0 11	1149.388	1 ⁺	E1(+M2)&	+0.01& 3	0.000727 10	I _{γ} : weighted average of 38.8 25 from (α ,p γ), 35.4 6 (1997Ka15) 37 10 (1989Mi16) from (n, γ) E=thermal. Other: 19.0 30 from (μ^- , γ) is discrepant.
		3185.76 6	26.2 13	78.071	2 ⁺	[E1]		1.34×10 ⁻³ 2	B(E1)(W.u.)=3.1×10 ⁻⁴ +6-5; B(M2)(W.u.)<0.61 α (K)=4.70×10 ⁻⁶ 7; α (L)=3.49×10 ⁻⁷ 5; α (M)=2.65×10 ⁻⁸ 4 α (IPF)=0.000722 10 I _{γ} : from 1997Ka15 in (n, γ) E=thermal. Others: 100.0 34 from (α ,p γ), 100 15 from 1989Mi16 in (n, γ) E=thermal, 100 10 from (μ^- , γ).
		3263.41 20	5.1 11	0.0	1 ⁺	E1+M2&	-0.10& 3	1.36×10 ⁻³ 2	B(E1)(W.u.)=2.36×10 ⁻⁵ +39-31 α (K)=2.72×10 ⁻⁶ 4; α (L)=2.022×10 ⁻⁷ 28; α (M)=1.537×10 ⁻⁸ 22 α (IPF)=0.001334 19 I _{γ} : weighted average of 32 5 from (α ,p γ), 26.4 9 (1997Ka15) and 24.6 12 from (n, γ) E=thermal, and 37 4 from (μ^- , γ).
3320.8	3 ⁻	1997.9	34.2# 26	1322.835	2 ⁺	[E1]		0.000647 9	B(E1)(W.u.)=4.2×10 ⁻⁶ +12-10; B(M2)(W.u.)=0.018 +14-10 α (K)=2.66×10 ⁻⁶ 4; α (L)=1.979×10 ⁻⁷ 30; α (M)=1.504×10 ⁻⁸ 23 α (IPF)=0.001362 20 I _{γ} : unweighted average of 7.0 21 from (α ,p γ), 3.4 5 (1997Ka15) and 5.01 25 (1989Mi16) from (n, γ) E=thermal.
		3242.5 10	100.0# 26	78.071	2 ⁺	(E1(+M2))	-0.02 8		B(E1)(W.u.)=1.31×10 ⁻⁴ +41-26 α (K)=5.09×10 ⁻⁶ 7; α (L)=3.79×10 ⁻⁷ 5; α (M)=2.88×10 ⁻⁸ 4 α (IPF)=0.000641 9 B(E1)(W.u.)=8.9×10 ⁻⁵ +31-20; B(M2)(W.u.)<0.52 E _{γ} : from (¹⁶ O,pn γ). Mult.: D(+Q) from p γ (θ) in (α ,p γ); $\Delta\pi$ =yes from level scheme.
3444.2	4 ⁻	1267.3 10	4.1 23	2177.26	3 ⁺	(E1(+M2))	-0.05 16	0.0001137 35	α (K)=1.05×10 ⁻⁵ 9; α (L)=7.8×10 ⁻⁷ 6; α (M)=5.9×10 ⁻⁸ 5 α (IPF)=0.000102 4 B(E1)(W.u.)=4.9×10 ⁻⁵ +37-31 E _{γ} : from (¹⁶ O,pn γ).

Adopted Levels, Gammas (continued)

$\gamma(^{32}\text{P})$ (continued)

<u>E_i(level)</u>	<u>J_i^π</u>	<u>E_γ[‡]</u>	<u>I_γ[‡]</u>	<u>E_f</u>	<u>J_f^π</u>	<u>Mult.[@]</u>	<u>δ[@]</u>	<u>α[†]</u>	<u>Comments</u>
3444.2	4 ⁻	1689 1	100.0 13	1755.03	3 ⁺	(E1)		0.000422 6	I _γ : unweighted average of 1.83 31 from (¹⁶ O,pnγ) and 6.4 13 from (α,pγ). Mult.: D(+Q) from pγ(θ) in (α,pγ); Δπ=yes from level scheme. B(M2)(W.u.)<10 upper limit exceeds RUL=3. α(K)=6.54×10 ⁻⁶ 9; α(L)=4.86×10 ⁻⁷ 7; α(M)=3.69×10 ⁻⁸ 5 α(IPF)=0.000415 6 B(E1)(W.u.)=5.1×10 ⁻⁴ +7-6 E _γ : from (¹⁶ O,pnγ). I _γ : from (α,pγ). Other: 100.0 26 from (¹⁶ O,pnγ). Mult.: D, ΔJ=1 from γ(anisotropy) in (¹⁶ O,pnγ); Δπ=yes from level scheme. Other: δ(Q/D)=-0.05 3 from (α,pγ). I _γ : weighted average of 43 8 from (α,pγ) and 70 18 from (n,γ) E=thermal. B(E1)(W.u.)=0.0031 +27-12 if E1, B(M1)(W.u.)=0.102 +87-39 if M1. B(E2)(W.u.)=2.9×10 ² +24-11 exceeds RUL=100 if pure E2. I _γ : other: 112 10 from (α,pγ). B(E1)(W.u.)=2.9×10 ⁻⁴ +25-10 if E1, B(M1)(W.u.)=0.0093 +80-33 if M1, B(E2)(W.u.)=3.5 +30-12 if E2. I _γ : other: 100 12 from (α,pγ). B(E1)(W.u.)=2.8×10 ⁻⁴ +24-10 if E1, B(M1)(W.u.)=0.0093 +79-32 if M1, B(E2)(W.u.)=3.3 +29-12 if E2.
3444.39	(1,2)	1214.56 9	48 10	2229.741	1 ⁺	[D,E2]			
		3366.21 10	94 5	78.071	2 ⁺	[D,E2]			
		3444.27 10	100 5	0.0	1 ⁺	[D,E2]			
3792.58	(1) ⁺	1613.7 ^{ab} 12 3713.86 44	<250 100 5	2177.26 78.071	3 ⁺ 2 ⁺	[M1,E2]		0.00100 7	
3797.3	3 ⁺	2474.4	100.0 [#] 15	1322.835	2 ⁺	(M1+(E2))	0.00 3	0.000450 6	B(M1)(W.u.)=0.023 +25-9; B(E2)(W.u.)<0.034 α(K)=5.40×10 ⁻⁶ 8; α(L)=4.01×10 ⁻⁷ 6; α(M)=3.05×10 ⁻⁸ 4 α(IPF)=0.000445 6 Mult.: D(+Q) from pγ(θ) in (α,pγ); Δπ=no from level scheme. B(M1)(W.u.)=0.0014 +15-7; B(E2)(W.u.)=0.16 +25-14 α(K)=2.98×10 ⁻⁶ 5; α(L)=2.21×10 ⁻⁷ 4; α(M)=1.683×10 ⁻⁸ 30 α(IPF)=0.00097 4
		3719.0	28.2 [#] 15	78.071	2 ⁺	M1+E2	+0.6 5	0.00097 4	
3881.0	2 ⁺	3802.7	47 [#] 8	78.071	2 ⁺	[M1,E2]		0.00103 7	α(K)=2.91×10 ⁻⁶ 7; α(L)=2.16×10 ⁻⁷ 5; α(M)=1.64×10 ⁻⁸ 4 α(IPF)=0.00103 7

Adopted Levels, Gammas (continued)

γ(³²P) (continued)

<u>E_i(level)</u>	<u>J_i^π</u>	<u>E_γ[‡]</u>	<u>I_γ[‡]</u>	<u>E_f</u>	<u>J_f^π</u>	<u>Mult.[@]</u>	<u>δ[@]</u>	<u>α[†]</u>	<u>Comments</u>
3881.0	2 ⁺	3880.8	100 [#] 8	0.0	1 ⁺	[M1,E2]		0.00106 7	B(M1)(W.u.)=0.007 +8-3 if M1, B(E2)(W.u.)=2.0 +24-10 if E2. α(K)=2.83×10 ⁻⁶ 6; α(L)=2.10×10 ⁻⁷ 5; α(M)=1.60×10 ⁻⁸ 4 α(IPF)=0.00106 7
3988.7	(3) ⁺	3910.4	100	78.071	2 ⁺	[M1,E2]		0.00107 7	B(M1)(W.u.)=0.014 +17-7 if M1, B(E2)(W.u.)=3.8 +47-18 if E2. α(K)=2.80×10 ⁻⁶ 6; α(L)=2.08×10 ⁻⁷ 5; α(M)=1.580×10 ⁻⁸ 35 α(IPF)=0.00107 7
4009.01	2 ⁻	564.62 745.04 5	4.3 6 73 3	3444.39 3264.013	(1,2) 2 ⁻	[M1+E2]	<0.5		B(M1)(W.u.)=0.08 +4-3 I _γ : from 1997Ka15 in (n,γ) E=thermal. Other: 108 27 (1973Ca18) in (n,γ) E=thermal; 50 from (α,pγ). δ: deduced by the evaluator based on RUL=100 for B(E2)(W.u.).
		1004.1 1351.34	5.1 7 7.9 15	3004.9 2657.64	3 ⁺ 2 ⁺	[E1] [E1]		0.0001697 24	B(E1)(W.u.)=7.1×10 ⁻⁵ +23-15 α(K)=9.36×10 ⁻⁶ 13; α(L)=6.96×10 ⁻⁷ 10; α(M)=5.29×10 ⁻⁸ 7 α(IPF)=0.0001596 22 B(E1)(W.u.)=4.5×10 ⁻⁵ +16-11
		1429.89 ^{ab} 37 1791.23	16 4 7.2 11	2579.14? 2217.73	2 ⁺	[E1]		0.000498 7	α(K)=5.98×10 ⁻⁶ 8; α(L)=4.45×10 ⁻⁷ 6; α(M)=3.38×10 ⁻⁸ 5 α(IPF)=0.000492 7
		1831.69	6.7 9	2177.26	3 ⁺	[E1]		0.000528 7	B(E1)(W.u.)=1.8×10 ⁻⁵ +6-4 α(K)=5.78×10 ⁻⁶ 8; α(L)=4.30×10 ⁻⁷ 6; α(M)=3.27×10 ⁻⁸ 5 α(IPF)=0.000521 7
		2253.90	24.9 18	1755.03	3 ⁺	[E1]		0.000820 11	B(E1)(W.u.)=1.53×10 ⁻⁵ +49-33 α(K)=4.29×10 ⁻⁶ 6; α(L)=3.19×10 ⁻⁷ 4; α(M)=2.426×10 ⁻⁸ 34 α(IPF)=0.000815 11
		2685.99 48	19 6	1322.835	2 ⁺	[E1]		1.08×10 ⁻³ 2	B(E1)(W.u.)=3.0×10 ⁻⁵ +9-6 α(K)=3.39×10 ⁻⁶ 5; α(L)=2.519×10 ⁻⁷ 35;

Adopted Levels, Gammas (continued)

$\gamma(^{32}\text{P})$ (continued)

<u>E_i(level)</u>	<u>J_i^{π}</u>	<u>E_{γ}^{\ddagger}</u>	<u>I_{γ}^{\ddagger}</u>	<u>E_f</u>	<u>J_f^{π}</u>	<u>Mult.[@]</u>	<u>δ[@]</u>	<u>α[†]</u>	<u>Comments</u>
4009.01	2 ⁻	2859.49	20.6 18	1149.388	1 ⁺	[E1]		1.18×10 ⁻³ 2	$\alpha(\text{M})=1.915\times 10^{-8}$ 27 $\alpha(\text{IPF})=0.001075$ 15 B(E1)(W.u.)=1.4×10 ⁻⁵ +6-5 I _{γ} : unweighted average of 24.2 18 (1997Ka15) and 12.9 19 (1989Mi16) in (n, γ) E=thermal.
		3930.19 19	84 4	78.071	2 ⁺	[E1]		1.65×10 ⁻³ 2	$\alpha(\text{K})=3.12\times 10^{-6}$ 4; $\alpha(\text{L})=2.321\times 10^{-7}$ 33; $\alpha(\text{M})=1.764\times 10^{-8}$ 25 B(E1)(W.u.)=1.2×10 ⁻⁵ +4-3 $\alpha(\text{K})=2.100\times 10^{-6}$ 29; $\alpha(\text{L})=1.561\times 10^{-7}$ 22; $\alpha(\text{M})=1.186\times 10^{-8}$ 17 $\alpha(\text{IPF})=0.001653$ 23 B(E1)(W.u.)=1.9×10 ⁻⁵ +6-4 I _{γ} : weighted average of 87 6 (1997Ka15) and 82 4 (1973Ca18) in (n, γ) E=thermal.
		4008.66 9	100 5	0.0	1 ⁺	[E1]		1.69×10 ⁻³ 2	$\alpha(\text{K})=2.051\times 10^{-6}$ 29; $\alpha(\text{L})=1.524\times 10^{-7}$ 21; $\alpha(\text{M})=1.158\times 10^{-8}$ 16 $\alpha(\text{IPF})=0.001683$ 24 B(E1)(W.u.)=2.2×10 ⁻⁵ +6-4
4024.3 4035.588	1 ⁻	579.9 10 771.51 12	2.2 5	3444.39 (1,2) 3264.013	2 ⁻	[M1+E2]	<0.3		E _{γ} : from (¹⁶ O,pn γ) only. B(M1)(W.u.)=0.4 +5-2 δ : deduced by the evaluator from RUL=100 for B(E2)(W.u.).
		1377.83 ^a 12	<3.5	2657.64	2 ⁺	[E1]		0.0001872 26	$\alpha(\text{K})=9.06\times 10^{-6}$ 13; $\alpha(\text{L})=6.74\times 10^{-7}$ 9; $\alpha(\text{M})=5.12\times 10^{-8}$ 7 $\alpha(\text{IPF})=0.0001774$ 25 B(E1)(W.u.)<0.006
		1805.70 35	5.5 14	2229.741	1 ⁺	[E1]		0.000509 7	$\alpha(\text{K})=5.91\times 10^{-6}$ 8; $\alpha(\text{L})=4.39\times 10^{-7}$ 6; $\alpha(\text{M})=3.34\times 10^{-8}$ 5 $\alpha(\text{IPF})=0.000502$ 7 B(E1)(W.u.)=0.0025 +16-8
		2712.76 25	2.23 34	1322.835	2 ⁺	[E1]		1.09×10 ⁻³ 2	$\alpha(\text{K})=3.35\times 10^{-6}$ 5; $\alpha(\text{L})=2.487\times 10^{-7}$ 35; $\alpha(\text{M})=1.890\times 10^{-8}$ 26 $\alpha(\text{IPF})=0.001091$ 15 B(E1)(W.u.)=0.00030 +17-9
		2886.09 6	31 5	1149.388	1 ⁺	E1+M2&	+0.08& 7	1.18×10 ⁻³ 2	$\alpha(\text{K})=3.11\times 10^{-6}$ 7; $\alpha(\text{L})=2.31\times 10^{-7}$ 5; $\alpha(\text{M})=1.75\times 10^{-8}$ 4 $\alpha(\text{IPF})=0.001180$ 20 B(E1)(W.u.)=0.0034 +19-10 I _{γ} : other: 25.3 from (α ,p γ). B(M2)(W.u.)=12 +34-11 exceeds RUL=3.
		3522.708 44	100 5	512.700	0 ⁺	E1&		1.49×10 ⁻³ 2	$\alpha(\text{K})=2.400\times 10^{-6}$ 34; $\alpha(\text{L})=1.784\times 10^{-7}$ 25;

Adopted Levels, Gammas (continued)

$\gamma(^{32}\text{P})$ (continued)

<u>E_i(level)</u>	<u>J_i^{π}</u>	<u>E_{γ}^{\ddagger}</u>	<u>I_{γ}^{\ddagger}</u>	<u>E_f</u>	<u>J_f^{π}</u>	<u>Mult.[@]</u>	<u>$\delta^{\textcircled{a}}$</u>	<u>α^{\dagger}</u>	<u>Comments</u>
4035.588	1 ⁻	3956.97 <i>11</i>	4.8 <i>3</i>	78.071	2 ⁺	E1+M2 ^{&}	-0.12 ^{&} <i>8</i>	1.65×10 ⁻³ <i>3</i>	$\alpha(\text{M})=1.355\times 10^{-8}$ <i>19</i> $\alpha(\text{IPF})=0.001487$ <i>21</i> B(E1)(W.u.)=0.0061 +34-16 $\alpha(\text{K})=2.10\times 10^{-6}$ <i>5</i> ; $\alpha(\text{L})=1.564\times 10^{-7}$ <i>35</i> ; $\alpha(\text{M})=1.189\times 10^{-8}$ <i>27</i> $\alpha(\text{IPF})=0.001650$ <i>32</i> B(E1)(W.u.)=0.00020 +11-6; B(M2)(W.u.)=0.9 +17-7 I _{γ} : other: 8.0 <i>13</i> from ($\alpha,\text{p}\gamma$) is discrepant.
		4035.6 ^a <i>11</i>	<0.35	0.0	1 ⁺	[E1]		1.70×10 ⁻³ <i>2</i>	$\alpha(\text{K})=2.035\times 10^{-6}$ <i>28</i> ; $\alpha(\text{L})=1.512\times 10^{-7}$ <i>21</i> ; $\alpha(\text{M})=1.149\times 10^{-8}$ <i>16</i> $\alpha(\text{IPF})=0.001693$ <i>24</i> B(E1)(W.u.)<2.4×10 ⁻⁵
4036.2	4 ⁺	2281.0 <i>10</i>	100.0 [#] <i>31</i>	1755.03	3 ⁺	(M1(+E2))	0.00 <i>3</i>	0.000369 <i>5</i>	B(M1)(W.u.)=0.05 +6-2; B(E2)(W.u.)<0.092 $\alpha(\text{K})=6.13\times 10^{-6}$ <i>9</i> ; $\alpha(\text{L})=4.56\times 10^{-7}$ <i>6</i> ; $\alpha(\text{M})=3.46\times 10^{-8}$ <i>5</i> $\alpha(\text{IPF})=0.000362$ <i>5</i> E _{γ} : from (¹⁶ O,pn γ). Mult.: D(+Q) from p γ (θ) in ($\alpha,\text{p}\gamma$); $\Delta\pi$ =no from level scheme.
		3957.9	54 [#] <i>3</i>	78.071	2 ⁺	E2(+M3)	-0.09 <i>9</i>	1.15×10 ⁻³ <i>2</i>	B(E2)(W.u.)=1.4 +37-7 $\alpha(\text{K})=2.81\times 10^{-6}$ <i>6</i> ; $\alpha(\text{L})=2.09\times 10^{-7}$ <i>4</i> ; $\alpha(\text{M})=1.588\times 10^{-8}$ <i>34</i> $\alpha(\text{IPF})=0.001151$ <i>21</i> I _{γ} : other: 4.76 <i>24</i> from (n, γ) E=thermal is discrepant. E _{γ} : from (¹⁶ O,pn γ) only.
4067.3		623.1 <i>10</i>		3444.2	4 ⁻				B(M1)(W.u.)=0.076 +40-24 if M1.
4148.8	3 ⁻	884.8	7.7 <i>17</i>	3264.013	2 ⁻	[M1,E2]			B(E2)(W.u.)=4.2×10 ² +22-13 exceeds RUL=100 if E2.
		1491.1	17.5 <i>13</i>	2657.64	2 ⁺	[E1]		0.000268 <i>4</i>	B(E1)(W.u.)=0.0011 +5-3 $\alpha(\text{K})=7.96\times 10^{-6}$ <i>11</i> ; $\alpha(\text{L})=5.92\times 10^{-7}$ <i>8</i> ; $\alpha(\text{M})=4.50\times 10^{-8}$ <i>6</i> $\alpha(\text{IPF})=0.000259$ <i>4</i> I _{γ} : weighted average of 17.5 <i>13</i> from ($\alpha,\text{p}\gamma$) and 17.2 <i>37</i> from (n, γ) E=thermal (1997Ka15).
		1931.0	13.3 <i>18</i>	2217.73	2 ⁺	[E1]		0.000599 <i>8</i>	$\alpha(\text{K})=5.35\times 10^{-6}$ <i>7</i> ; $\alpha(\text{L})=3.98\times 10^{-7}$ <i>6</i> ; $\alpha(\text{M})=3.02\times 10^{-8}$ <i>4</i> $\alpha(\text{IPF})=0.000594$ <i>8</i> B(E1)(W.u.)=0.00039 +19-10 I _{γ} : weighted average of 14.2 <i>16</i> from ($\alpha,\text{p}\gamma$) and 9.7 <i>33</i> from (n, γ) E=thermal (1997Ka15).

Adopted Levels, Gammas (continued)

γ(³²P) (continued)

<u>E_i(level)</u>	<u>J_i^π</u>	<u>E_γ[‡]</u>	<u>I_γ[‡]</u>	<u>E_f</u>	<u>J_f^π</u>	<u>Mult. @</u>	<u>δ[@]</u>	<u>α[†]</u>	<u>Comments</u>
4148.8	3 ⁻	2393.7	6.9 23	1755.03	3 ⁺	[E1]		0.000907 13	α(K)=3.95×10 ⁻⁶ 6; α(L)=2.94×10 ⁻⁷ 4; α(M)=2.234×10 ⁻⁸ 3I α(IPF)=0.000903 13 B(E1)(W.u.)=1.1×10 ⁻⁴ +6-4 B(E1)(W.u.)=0.00031 +14-8; B(M2)(W.u.)=1.2 +21-10 α(K)=2.03×10 ⁻⁶ 4; α(L)=1.511×10 ⁻⁷ 3I; α(M)=1.149×10 ⁻⁸ 23 α(IPF)=0.001693 30 I _γ : from (α,pγ). Other: 100 7 from (n,γ) E=thermal (1997Ka15). Mult.: D+Q from pγ(θ) in (α,pγ); Δπ=yes from level scheme.
		4070.5	100.0 19	78.071	2 ⁺	(E1+M2)	+0.12 7	1.70×10 ⁻³ 3	
4204.3	1 ⁺	2027.0 4125.9	<100 100	2177.26 78.071	3 ⁺ 2 ⁺	[M1,E2]		0.00114 8	α(K)=2.59×10 ⁻⁶ 5; α(L)=1.93×10 ⁻⁷ 4; α(M)=1.464×10 ⁻⁸ 3I α(IPF)=0.00114 8 B(M1)(W.u.)=0.072 +36-19 if M1, B(E2)(W.u.)=18 +9-5 if E2. B(M1)(W.u.)=0.054 +10-7; B(E2)(W.u.)=6.5 +24-18 E _γ : from (¹⁶ O,pnγ). I _γ : other: 100 16 from (¹⁶ O,pnγ). Mult.: other: M1, ΔJ=1 from γ(anisotropy) and γ(pol) in (¹⁶ O,pnγ). B(E2)(W.u.)<7.9 Mult.: Q, ΔJ=2 from γ(anisotropy) in (¹⁶ O,pnγ); M2 is less likely based on RUL.
4276.0	5 ⁻	832.2 10	100.0 [#] 16	3444.2	4 ⁻	M1+E2	-0.14 2		B(E1)(W.u.)=2.0×10 ⁻⁴ +5-4 α(K)=1.30×10 ⁻⁵ 4; α(L)=9.69×10 ⁻⁷ 33; α(M)=7.36×10 ⁻⁸ 25 α(IPF)=2.02×10 ⁻⁵ 5 I _γ : other: 30 16 from (¹⁶ O,pnγ). Mult.: D(+Q) from pγ(θ) in (α,pγ); Δπ=yes from level scheme.
		955.1 10	<3.9 [#]	3320.8	3 ⁻	(E2)			
		1126.5 10	29.9 [#] 16	3149.3	4 ⁺	(E1(+M2))	+0.07 7	3.43×10 ⁻⁵ 6	
4312.5	(3) ⁺	4234.1	100	78.071	2 ⁺	[M1,E2]		0.00118 8	α(K)=2.50×10 ⁻⁶ 5; α(L)=1.86×10 ⁻⁷ 4; α(M)=1.412×10 ⁻⁸ 29 α(IPF)=0.00118 8 B(M1)(W.u.)=0.0053 +46-18 if M1, B(E2)(W.u.)=1.3 +11-4 if E2.
4409.8	0 ⁻	3260.2	15 3	1149.388	1 ⁺				

Adopted Levels, Gammas (continued)

γ(³²P) (continued)

E _i (level)	J ^π _i	E _γ [‡]	I _γ [‡]	E _f	J ^π _f	Mult. [@]	α [†]	Comments
4409.8	0 ⁻	4409.5	100 3	0.0	1 ⁺			
4549.22	1 ⁺	1808.49 33 4035.6 ^a 11	100 27 <13.8	2740.46 512.700	1 ⁺ 0 ⁺			
4554.4	2 ⁺	1549.5 1896.7 2336.6 2377.1	100 [#] 5 42 [#] 5 32 [#] 5 90 [#] 5	3004.9 2657.64 2217.73 2177.26	3 ⁺ 2 ⁺ 2 ⁺ 3 ⁺			
4661.53	2 ⁻	1217.65 39	2.8 7	3444.39	(1,2)	[D,E2]		B(E1)(W.u.)=0.0029 +10-8 if E1, B(M1)(W.u.)=0.094 +31-26 if M1.
		1921.68 29	4.1 10	2740.46	1 ⁺	[E1]	0.000593 8	B(E2)(W.u.)=269 +94-75 exceeds RUL=100 if pure E2. α(K)=5.39×10 ⁻⁶ 8; α(L)=4.01×10 ⁻⁷ 6; α(M)=3.04×10 ⁻⁸ 4 α(IPF)=0.000587 8
		2431.87 15	9.4 14	2229.741	1 ⁺	[E1]	0.000930 13	B(E1)(W.u.)=0.00106 +36-29 α(K)=3.87×10 ⁻⁶ 5; α(L)=2.88×10 ⁻⁷ 4; α(M)=2.186×10 ⁻⁸ 31 α(IPF)=0.000926 13
		3338.84 29	6.53 34	1322.835	2 ⁺	[E1]	1.41×10 ⁻³ 2	B(E1)(W.u.)=0.00120 +32-24 α(K)=2.57×10 ⁻⁶ 4; α(L)=1.906×10 ⁻⁷ 27; α(M)=1.449×10 ⁻⁸ 20 α(IPF)=0.001403 20
		3511.58 28	7.05 34	1149.388	1 ⁺	[E1]	1.48×10 ⁻³ 2	B(E1)(W.u.)=3.2×10 ⁻⁴ +7-5 α(K)=2.410×10 ⁻⁶ 34; α(L)=1.791×10 ⁻⁷ 25; α(M)=1.361×10 ⁻⁸ 19 α(IPF)=0.001482 21
		4661.11 6	100 5	0.0	1 ⁺	[E1]	1.91×10 ⁻³ 3	B(E1)(W.u.)=3.0×10 ⁻⁴ +7-5 α(K)=1.715×10 ⁻⁶ 24; α(L)=1.274×10 ⁻⁷ 18; α(M)=9.68×10 ⁻⁹ 14 α(IPF)=0.001910 27
4698.3	(5) ⁺	662.1 10	9.5 [#] 7	4036.2	4 ⁺	[M1,E2]		B(E1)(W.u.)=0.00182 +40-28 E _γ : from (¹⁶ O,pnγ). I _γ : other: 17.7 24 from (¹⁶ O,pnγ) is discrepant. B(M1)(W.u.)>0.012 if M1. B(E2)(W.u.)>117 exceeds RUL=100 if E2.
		1254.2 10	100.0 [#] 12	3444.2	4 ⁻	[E1]	0.0001050 16	α(K)=1.063×10 ⁻⁵ 15; α(L)=7.91×10 ⁻⁷ 11; α(M)=6.01×10 ⁻⁸ 8 α(IPF)=9.36×10 ⁻⁵ 15 B(E1)(W.u.)>6.1×10 ⁻⁴ E _γ : from (¹⁶ O,pnγ). I _γ : other: 100 10 from (¹⁶ O,pnγ).
		1549	11.8 [#] 11	3149.3	4 ⁺	[M1,E2]	0.000107 16	α(K)=1.27×10 ⁻⁵ 11; α(L)=9.4×10 ⁻⁷ 8; α(M)=7.2×10 ⁻⁸ 6

Adopted Levels, Gammas (continued)

$\gamma(^{32}\text{P})$ (continued)									
$E_i(\text{level})$	J_i^π	E_γ^{\ddagger}	I_γ^{\ddagger}	E_f	J_f^π	Mult. @	$\delta^@$	α^\dagger	Comments
									$\alpha(\text{IPF})=9.3\times 10^{-5}$ 15 B(M1)(W.u.)>0.0012 if M1, B(E2)(W.u.)>2.1 if E2.
4710.44	1 ⁺	3387.4 ^a 6 3560.5 ^a 5 4632.0 9	<91 <109 100 5	1322.835 2 ⁺ 1149.388 1 ⁺ 78.071 2 ⁺					
4743.3	5 ⁺	707.1	26.3 [#] 15	4036.2 4 ⁺		(M1(+E2))	-0.03 5		B(M1)(W.u.)=0.079 +42-23; B(E2)(W.u.)<6.6 Mult.: D(+Q) from $\text{py}(\theta)$ in (α,py) ; $\Delta\pi$ =no from level scheme.
		1594.0	100.0 [#] 28	3149.3 4 ⁺		M1+E2	-0.12 4	0.0001051 15	B(M1)(W.u.)=0.026 +10-6; B(E2)(W.u.)=0.6 +6-4 $\alpha(\text{K})=1.107\times 10^{-5}$ 16; $\alpha(\text{L})=8.24\times 10^{-7}$ 12; $\alpha(\text{M})=6.26\times 10^{-8}$ 9 $\alpha(\text{IPF})=9.32\times 10^{-5}$ 14
		1738.4	26.1 [#] 24	3004.9 3 ⁺		E2(+M3)	-0.06 6	0.0002014 32	B(E2)(W.u.)=7.4 +43-24 $\alpha(\text{K})=1.101\times 10^{-5}$ 23; $\alpha(\text{L})=8.20\times 10^{-7}$ 17; $\alpha(\text{M})=6.23\times 10^{-8}$ 13 $\alpha(\text{IPF})=0.0001895$ 31
		2565.9	61.3 [#] 24	2177.26 3 ⁺		E2		0.000594 8	B(E2)(W.u.)=2.5 +10-6 $\alpha(\text{K})=5.47\times 10^{-6}$ 8; $\alpha(\text{L})=4.06\times 10^{-7}$ 6; $\alpha(\text{M})=3.09\times 10^{-8}$ 4 $\alpha(\text{IPF})=0.000588$ 8
4849.9	(3 ⁺ ,4 ⁻ ,5 ⁺)	1700.6 2672.5 3094.7	100.0 27 50.8 23 74.9 25	3149.3 4 ⁺ 2177.26 3 ⁺ 1755.03 3 ⁺					
4877.42	1 ⁻	1432.66 34	3.1 8	3444.39 (1,2)		[D,E2]			B(E1)(W.u.)=0.00122 +51-33 if E1, B(M1)(W.u.)=0.040 +17-11 if M1, B(E2)(W.u.)=83 +35-23 if E2.
		1613.7 ^a 12	<9.9	3264.013 2 ⁻		[M1,E2]		0.000130 19	$\alpha(\text{K})=1.17\times 10^{-5}$ 9; $\alpha(\text{L})=8.7\times 10^{-7}$ 7; $\alpha(\text{M})=6.6\times 10^{-8}$ 5 $\alpha(\text{IPF})=0.000117$ 18 B(M1)(W.u.)<0.12 if M1. B(E2)(W.u.)<188 upper limit exceeds RUL=100 if E2.
		2136.62 24	5.8 9	2740.46 1 ⁺		[E1]		0.000742 10	$\alpha(\text{K})=4.63\times 10^{-6}$ 6; $\alpha(\text{L})=3.44\times 10^{-7}$ 5; $\alpha(\text{M})=2.61\times 10^{-8}$ 4 $\alpha(\text{IPF})=0.000737$ 10 B(E1)(W.u.)=0.00069 +21-15
		3554.38 14	11.9 6	1322.835 2 ⁺		[E1]		1.50×10^{-3} 2	$\alpha(\text{K})=2.374\times 10^{-6}$ 33; $\alpha(\text{L})=1.764\times 10^{-7}$ 25;

Adopted Levels, Gammas (continued)

γ(³²P) (continued)

<u>E_i(level)</u>	<u>J_i^π</u>	<u>E_γ[‡]</u>	<u>I_γ[‡]</u>	<u>E_f</u>	<u>J_f^π</u>	<u>Mult.[@]</u>	<u>α[†]</u>	<u>Comments</u>
4877.42	1 ⁻	4364.45 6	100 5	512.700	0 ⁺	E1&	1.82×10 ⁻³ 3	α(M)=1.341×10 ⁻⁸ 19 α(IPF)=0.001501 21 B(E1)(W.u.)=3.1×10 ⁻⁴ +8-5 B(E1)(W.u.)=0.00140 +35-24 α(K)=1.853×10 ⁻⁶ 26; α(L)=1.377×10 ⁻⁷ 19; α(M)=1.046×10 ⁻⁸ 15
		4799.56 30	4.19 20	78.071	2 ⁺	[E1]	1.96×10 ⁻³ 3	α(IPF)=0.001819 25 α(K)=1.657×10 ⁻⁶ 23; α(L)=1.231×10 ⁻⁷ 17; α(M)=9.36×10 ⁻⁹ 13 α(IPF)=0.001961 27
		4876.78 11	14.3 7	0.0	1 ⁺	[E1]	1.99×10 ⁻³ 3	B(E1)(W.u.)=4.4×10 ⁻⁵ +11-8 α(K)=1.627×10 ⁻⁶ 23; α(L)=1.208×10 ⁻⁷ 17; α(M)=9.18×10 ⁻⁹ 13 α(IPF)=0.001985 28
4990.0		713.9 10		4276.0	5 ⁻			B(E1)(W.u.)=1.43×10 ⁻⁴ +37-25 E _γ : from (¹⁶ O,pnγ) only.
5072.53	0 ⁺	2842.85 28	7.8 10	2229.741	1 ⁺			I _γ : weighted average of 7.2 10 from (³ He,pγ) and 9.1 14 from (n,γ) E=thermal.
		3922.90 10	100.0 18	1149.388	1 ⁺			I _γ : from (³ He,pγ). Other: 100 5 from (n,γ) E=thermal.
		5071.4 13	10.5 17	0.0	1 ⁺			I _γ : from (³ He,pγ) (1971Ad06,1972Fo12). Other: 2.80 16 from (n,γ) E=thermal (1989Mi16) is discrepant.
5081.5	(4) ⁻	1760.7	100 [#] 5	3320.8	3 ⁻	[M1,E2]	0.000186 25	α(K)=1.00×10 ⁻⁵ 7; α(L)=7.4×10 ⁻⁷ 5; α(M)=5.7×10 ⁻⁸ 4 α(IPF)=0.000176 25
		3326.3	64 [#] 5	1755.03	3 ⁺	[E1]	1.40×10 ⁻³ 2	B(M1)(W.u.)=0.024 +12-6 if M1, B(E2)(W.u.)=33 +17-8 if E2. α(K)=2.58×10 ⁻⁶ 4; α(L)=1.915×10 ⁻⁷ 27; α(M)=1.456×10 ⁻⁸ 20 α(IPF)=0.001397 20 B(E1)(W.u.)=6.8×10 ⁻⁵ +36-17
5252.9		1808.7	100	3444.2	4 ⁻			
5307.58?	(1,2 ⁺)	4792.9 11	100 4	512.700	0 ⁺			
		5228.0 8	92 4	78.071	2 ⁺			
		5306.7 9	92 4	0.0	1 ⁺			
5326.00?	(1,2 ⁺)	4003.3 ^a 8	<113	1322.835	2 ⁺			
		4811.2 10	100 5	512.700	0 ⁺			
		5326.8 9	62.5 31	0.0	1 ⁺			
5349.64	2 ⁻	1314.35 19	6.7 16	4035.588	1 ⁻	[M1,E2]	4.6×10 ⁻⁵ 7	α(K)=1.75×10 ⁻⁵ 20; α(L)=1.30×10 ⁻⁶ 15; α(M)=9.9×10 ⁻⁸ 11 α(IPF)=2.7×10 ⁻⁵ 5 B(M1)(W.u.)=0.081 +22-20 if M1. B(E2)(W.u.)=2.0×10 ² 5 exceeds RUL=100 if E2.
		1340.64 20	11.9 29	4009.01	2 ⁻	[M1,E2]	5.1×10 ⁻⁵ 8	α(K)=1.68×10 ⁻⁵ 19; α(L)=1.25×10 ⁻⁶ 14; α(M)=9.5×10 ⁻⁸ 11 α(IPF)=3.3×10 ⁻⁵ 6 B(M1)(W.u.)=0.135 +36-33 if M1. B(E2)(W.u.)=3.2×10 ² +9-8 exceeds RUL=100 if E2.

Adopted Levels, Gammas (continued)

<u>γ(³²P) (continued)</u>									
<u>E_i(level)</u>	<u>J_i^π</u>	<u>E_γ[‡]</u>	<u>I_γ[‡]</u>	<u>E_f</u>	<u>J_f^π</u>	<u>Mult.[@]</u>	<u>δ[@]</u>	<u>α[†]</u>	<u>Comments</u>
5349.64	2 ⁻	2276.34 ^b 27	7.3 11	3074.04?					
		2609.23 21	4.6 7	2740.46	1 ⁺	[E1]		1.03×10 ⁻³ 1	α(K)=3.52×10 ⁻⁶ 5; α(L)=2.62×10 ⁻⁷ 4; α(M)=1.989×10 ⁻⁸ 28 α(IPF)=0.001029 14 B(E1)(W.u.)=2.15×10 ⁻⁴ +44-38
		3119.86 20	12.5 6	2229.741	1 ⁺	[E1]		1.30×10 ⁻³ 2	α(K)=2.79×10 ⁻⁶ 4; α(L)=2.076×10 ⁻⁷ 29; α(M)=1.578×10 ⁻⁸ 22 α(IPF)=0.001302 18 B(E1)(W.u.)=3.42×10 ⁻⁴ +48-39
		4026.6 10	1.57 7	1322.835	2 ⁺	[E1]		1.69×10 ⁻³ 2	α(K)=2.040×10 ⁻⁶ 29; α(L)=1.516×10 ⁻⁷ 21; α(M)=1.152×10 ⁻⁸ 16 α(IPF)=0.001690 24 B(E1)(W.u.)=2.00×10 ⁻⁵ +30-23
		4199.92 6	100 5	1149.388	1 ⁺	E1(+M2)	+0.04 7	1.75×10 ⁻³ 3	B(E1)(W.u.)=0.00112 +23-19 α(K)=1.942×10 ⁻⁶ 31; α(L)=1.443×10 ⁻⁷ 23; α(M)=1.096×10 ⁻⁸ 17 α(IPF)=0.001753 26 B(M2)(W.u.)<4.2 upper limit exceeds RUL=3.
5349.03 20		7.6 4	0.0	1 ⁺	[E1]		2.13×10 ⁻³ 3	α(K)=1.462×10 ⁻⁶ 20; α(L)=1.086×10 ⁻⁷ 15; α(M)=8.25×10 ⁻⁹ 12 α(IPF)=0.002126 30 B(E1)(W.u.)=4.1×10 ⁻⁵ +6-5	
5481.3	5 ⁻	2036.7 10	100	3444.2	4 ⁻	[M1,E2]		0.00030 4	α(K)=7.7×10 ⁻⁶ 4; α(L)=5.76×10 ⁻⁷ 31; α(M)=4.38×10 ⁻⁸ 24 α(IPF)=0.00030 4 E _γ : from (¹⁶ O,pny) only. B(M1)(W.u.)>0.017 if M1, B(E2)(W.u.)>17 if E2.
5509.347	(1) ⁻	1305.0	8.8 7	4204.3	1 ⁺	[E1]		0.0001391 19	α(K)=9.93×10 ⁻⁶ 14; α(L)=7.39×10 ⁻⁷ 10; α(M)=5.61×10 ⁻⁸ 8 α(IPF)=0.0001284 18 B(E1)(W.u.)=0.00220 +42-32
		1473.72 1	38.9 13	4035.588	1 ⁻	[M1,E2]		8.3×10 ⁻⁵ 13	α(K)=1.39×10 ⁻⁵ 13; α(L)=1.04×10 ⁻⁶ 10; α(M)=7.9×10 ⁻⁸ 7 α(IPF)=6.8×10 ⁻⁵ 11 E _γ : weighted average of 38.9 13 (1997Ka15) and 37 9 (1989Mi16) in (n,γ) E=thermal. B(M1)(W.u.)=0.222 +38-29 if M1.
		2768.76	3.2 6	2740.46	1 ⁺	[E1]		1.13×10 ⁻³ 2	B(E2)(W.u.)=4.4×10 ² +8-6 exceeds RUL=100 if E2. α(K)=3.26×10 ⁻⁶ 5; α(L)=2.421×10 ⁻⁷ 34;

Adopted Levels, Gammas (continued)

$\gamma(^{32}\text{P})$ (continued)

$E_i(\text{level})$	J_i^π	E_γ^{\ddagger}	I_γ^{\ddagger}	E_f	J_f^π	Mult. [@]	α^\dagger	Comments
								$\alpha(\text{M})=1.840\times 10^{-8}$ 26 $\alpha(\text{IPF})=0.001124$ 16 $\text{B}(\text{E}1)(\text{W.u.})=8.4\times 10^{-5}$ +22-18
5509.347	(1) ⁻	3196.9 ^b 7 4359.83 9	6.81 34 100.0 23	2313.0? 1149.388	1 ⁺	[E1]	1.82×10^{-3} 3	$\alpha(\text{K})=1.855\times 10^{-6}$ 26; $\alpha(\text{L})=1.378\times 10^{-7}$ 19; $\alpha(\text{M})=1.048\times 10^{-8}$ 15 $\alpha(\text{IPF})=0.001817$ 25 $\text{B}(\text{E}1)(\text{W.u.})=0.00067$ +11-9
		5431.35 ^{ab} 24	<14.3	78.071	2 ⁺	[E1]	2.15×10^{-3} 3	$\alpha(\text{K})=1.437\times 10^{-6}$ 20; $\alpha(\text{L})=1.067\times 10^{-7}$ 15; $\alpha(\text{M})=8.11\times 10^{-9}$ 11 $\alpha(\text{IPF})=0.002149$ 30 $\text{B}(\text{E}1)(\text{W.u.})<5.7\times 10^{-5}$
		5508.2 6	4.87 25	0.0	1 ⁺	[E1]	2.17×10^{-3} 3	$\alpha(\text{K})=1.414\times 10^{-6}$ 20; $\alpha(\text{L})=1.050\times 10^{-7}$ 15; $\alpha(\text{M})=7.98\times 10^{-9}$ 11 $\alpha(\text{IPF})=0.002168$ 30 $\text{B}(\text{E}1)(\text{W.u.})=1.62\times 10^{-5}$ +29-22
5550.1		1274.0 10		4276.0	5 ⁻			E_γ : from (¹⁶ O,pn γ) only.
5583.2		2139.0 ^a 10		3444.2	4 ⁻			E_γ : from (¹⁶ O,pn γ) only.
5701.49	(2) ⁻	1152.12 ^a 18 3482.89 ^a 36 3945.9 9 4551.6 7 5622.17 ^a 37	<458 <251	4549.22 2217.73 1755.03 1149.388 78.071	1 ⁺ 2 ⁺ 3 ⁺ 1 ⁺ 2 ⁺			
5778.737	1 ⁻	1229.44 19	6.4 16	4549.22	1 ⁺	[E1]	8.85×10^{-5} 12	$\alpha(\text{K})=1.101\times 10^{-5}$ 15; $\alpha(\text{L})=8.19\times 10^{-7}$ 11; $\alpha(\text{M})=6.22\times 10^{-8}$ 9 $\alpha(\text{IPF})=7.67\times 10^{-5}$ 11 $\text{B}(\text{E}1)(\text{W.u.})=0.009$ +9-4
		2514.68 6	39 6	3264.013	2 ⁻	[M1,E2]	0.00052 5	$\alpha(\text{K})=5.46\times 10^{-6}$ 21; $\alpha(\text{L})=4.06\times 10^{-7}$ 16; $\alpha(\text{M})=3.08\times 10^{-8}$ 12 $\alpha(\text{IPF})=0.00051$ 5 $\text{B}(\text{M}1)(\text{W.u.})=0.22$ +20-8 if M1. $\text{B}(\text{E}2)(\text{W.u.})=1.5\times 10^2$ +13-5 exceeds RUL=100 if E2.
		3548.74 10	28.0 14	2229.741	1 ⁺	[E1]	1.50×10^{-3} 2	$\alpha(\text{K})=2.379\times 10^{-6}$ 33; $\alpha(\text{L})=1.768\times 10^{-7}$ 25; $\alpha(\text{M})=1.343\times 10^{-8}$ 19 $\alpha(\text{IPF})=0.001498$ 21 $\text{B}(\text{E}1)(\text{W.u.})=0.0017$ +15-6
		3560.5 ^a 5	<4.95	2217.73	2 ⁺	[E1]	1.51×10^{-3} 2	$\alpha(\text{K})=2.369\times 10^{-6}$ 33; $\alpha(\text{L})=1.760\times 10^{-7}$ 25; $\alpha(\text{M})=1.338\times 10^{-8}$ 19 $\alpha(\text{IPF})=0.001504$ 21 $\text{B}(\text{E}1)(\text{W.u.})<6.3\times 10^{-4}$
		4456.26 27	6.38 33	1322.835	2 ⁺	[E1]	1.85×10^{-3} 3	$\alpha(\text{K})=1.808\times 10^{-6}$ 25; $\alpha(\text{L})=1.343\times 10^{-7}$ 19; $\alpha(\text{M})=1.021\times 10^{-8}$ 14 $\alpha(\text{IPF})=0.001848$ 26 $\text{B}(\text{E}1)(\text{W.u.})=0.00020$ +18-7
		4629.08 27	14.6 7	1149.388	1 ⁺	[E1]	1.90×10^{-3} 3	$\alpha(\text{K})=1.729\times 10^{-6}$ 24; $\alpha(\text{L})=1.284\times 10^{-7}$ 18; $\alpha(\text{M})=9.76\times 10^{-9}$ 14 $\alpha(\text{IPF})=0.001899$ 27 $\text{B}(\text{E}1)(\text{W.u.})=0.00040$ +36-14

Adopted Levels, Gammas (continued)

γ(³²P) (continued)

<u>E_i(level)</u>	<u>J_i^π</u>	<u>E_γ[‡]</u>	<u>I_γ[‡]</u>	<u>E_f</u>	<u>J_f^π</u>	<u>Mult.[@]</u>	<u>α[†]</u>	<u>Comments</u>
5778.737	1 ⁻	5265.47 7	100 5	512.700	0 ⁺	E1&	2.10×10 ⁻³ 3	B(E1)(W.u.)=0.0019 +16-6 α(K)=1.489×10 ⁻⁶ 21; α(L)=1.106×10 ⁻⁷ 15; α(M)=8.40×10 ⁻⁹ 12 α(IPF)=0.002100 29
		5700.31 14	19.9 10	78.071	2 ⁺	[E1]	2.22×10 ⁻³ 3	α(K)=1.359×10 ⁻⁶ 19; α(L)=1.010×10 ⁻⁷ 14; α(M)=7.67×10 ⁻⁹ 11 α(IPF)=0.002214 31 B(E1)(W.u.)=0.00029 +26-10
		5778.13 8	31.2 16	0.0	1 ⁺	[E1]	2.23×10 ⁻³ 3	α(K)=1.339×10 ⁻⁶ 19; α(L)=9.94×10 ⁻⁸ 14; α(M)=7.56×10 ⁻⁹ 11 α(IPF)=0.002233 31 B(E1)(W.u.)=0.00044 +39-15
5862.3	6 ⁻	380.6 10	9.2 5	5481.3	5 ⁻	M1		B(M1)(W.u.)>0.061 Mult.: from γγ(anisotropy) and γγ(pol) in (¹⁶ O,pnγ), ΔJ=1.
		1586.2 10	2.92 23	4276.0	5 ⁻	[M1,E2]	0.000120 18	α(K)=1.21×10 ⁻⁵ 10; α(L)=9.0×10 ⁻⁷ 8; α(M)=6.9×10 ⁻⁸ 6 α(IPF)=0.000107 17 B(M1)(W.u.)>2.6×10 ⁻⁴ if M1, B(E2)(W.u.)>0.44 if E2.
		2418.4 10	100 2	3444.2	4 ⁻	E2+M3	0.000522 8	α(K)=6.10×10 ⁻⁶ 11; α(L)=4.54×10 ⁻⁷ 8; α(M)=3.45×10 ⁻⁸ 6 α(IPF)=0.000515 8 Mult.: Q+O, ΔJ=2 from γγ(anisotropy) in (¹⁶ O,pnγ); M2+E2 ruled out by RUL.
6062.14	1 ⁻	754.52 10 3482.89 ^{ab} 36 4738.80 38	54 13 <24.5 31.1 16	5307.58? (1,2 ⁺) 2579.14? 1322.835	2 ⁺	[E1]	1.94×10 ⁻³ 3	α(K)=1.682×10 ⁻⁶ 24; α(L)=1.250×10 ⁻⁷ 17; α(M)=9.50×10 ⁻⁹ 13 α(IPF)=0.001939 27 B(E1)(W.u.)=0.00068 +43-20
		4912.30 11	100 5	1149.388	1 ⁺	[E1]	2.00×10 ⁻³ 3	α(K)=1.613×10 ⁻⁶ 23; α(L)=1.198×10 ⁻⁷ 17; α(M)=9.11×10 ⁻⁹ 13 α(IPF)=0.001995 28 B(E1)(W.u.)=0.0020 +12-6
		5549.27 30	20.7 10	512.700	0 ⁺	[E1]	2.18×10 ⁻³ 3	B(E1)(W.u.)=0.00028 +18-8 α(K)=1.402×10 ⁻⁶ 20; α(L)=1.041×10 ⁻⁷ 15; α(M)=7.91×10 ⁻⁹ 11 α(IPF)=0.002177 30
		5983.4 6	9.3 4	78.071	2 ⁺	[E1]	2.29×10 ⁻³ 3	α(K)=1.287×10 ⁻⁶ 18; α(L)=9.56×10 ⁻⁸ 13; α(M)=7.26×10 ⁻⁹ 10 α(IPF)=0.002285 32 B(E1)(W.u.)=1.0×10 ⁻⁴ +6-3
6196.35	1 ⁻	6061.40 12 1318.94 ^a 21	61.5 31 <63	0.0 4877.42	1 ⁺ 1 ⁻	[E1] [M1,E2]	4.7×10 ⁻⁵ 7	B(E1)(W.u.)=0.00064 +40-19 α(K)=1.73×10 ⁻⁵ 20; α(L)=1.29×10 ⁻⁶ 15; α(M)=9.8×10 ⁻⁸ 11 α(IPF)=2.8×10 ⁻⁵ 5
		5683.20 12	100 5	512.700	0 ⁺	[E1]	2.21×10 ⁻³ 3	B(E1)(W.u.)>3.4×10 ⁻⁴ α(K)=1.364×10 ⁻⁶ 19; α(L)=1.013×10 ⁻⁷ 14; α(M)=7.70×10 ⁻⁹ 11 α(IPF)=0.002209 31

Adopted Levels, Gammas (continued)

$\gamma(^{32}\text{P})$ (continued)

$E_i(\text{level})$	J_i^π	E_γ^{\ddagger}	I_γ^{\ddagger}	E_f	J_f^π	Mult. @	α^\ddagger	Comments
6196.35	1 ⁻	6117.63 32 6195.87 13	37.2 18 94 5	78.071 0.0	2 ⁺ 1 ⁺	[E1] [E1]		B(E1)(W.u.)>9.8×10 ⁻⁵ B(E1)(W.u.)>2.4×10 ⁻⁴
6332.54	(0,1) ⁺	5180.9 8	18.8 9	1149.388	1 ⁺	[M1,E2]	0.00146 8	$\alpha(\text{K})=1.895\times 10^{-6}$ 34; $\alpha(\text{L})=1.408\times 10^{-7}$ 26; $\alpha(\text{M})=1.070\times 10^{-8}$ 19 $\alpha(\text{IPF})=0.00146$ 8 B(M1)(W.u.)>0.0058 if M1, B(E2)(W.u.)>0.92 if E2. B(E2)(W.u.)>0.3 B(M1)(W.u.)>0.018 if M1, B(E2)(W.u.)>1.9 if E2. E_γ : from (¹⁶ O,pn γ).
6415.1	(1 ⁺ ,2 ⁺)	6252.8 10 6332.01 19	16.1 9 100 5	78.071 0.0	2 ⁺ 1 ⁺	[E2] [M1,E2]		
6510.62		2139.0 ^a 10 1800.42 25	100 25	4276.0 4710.44	5 ⁻ 1 ⁺			
6557.99	(1,2,3 ⁺)	5359.8 10 6508.7 30	38.1 19 12.5 6	1149.388 0.0	1 ⁺ 1 ⁺			
		1208.92 29 4246.4 18	100 25 23.4 13	5349.64 2313.0?	2 ⁻			
6581.89	(0 ⁺ ,1,2,3 ⁺)	6478.2 19 6556.2 9	11.7 7 26.6 13	78.071 0.0	2 ⁺ 1 ⁺			
		1256.24 ^a 19 4003.3 ^a 8	<81 <23.8	5326.00? 2579.14?	(1,2 ⁺)			
		5431.35 ^a 24 6503.17 27	<56.2 100 5	1149.388 78.071	1 ⁺ 2 ⁺			
		6581.02 21 4043.2 8	66.7 33 27.0 13	0.0 2740.46	1 ⁺ 1 ⁺			
6783.69	(0 ⁺ ,1,2,3 ⁺)	4125.73 31 5634.8 7	100 5 19.8 9	2657.64 1149.388	2 ⁺ 1 ⁺			
6814.2	(6 ⁻)	951.7 10 2115.8 10		5862.3 4698.3	6 ⁻ (5) ⁺			E_γ : from (¹⁶ O,pn γ). E_γ : from (¹⁶ O,pn γ).
6835.0	7 ⁽⁺⁾	2558.8 10		4276.0	5 ⁻			E_γ : from (¹⁶ O,pn γ).
7417.1		602.7 10 1554.9 10		6814.2 5862.3	(6 ⁻) 6 ⁻	(E1+M2)	0.000315 5	$\alpha(\text{K})=7.57\times 10^{-6}$ 17; $\alpha(\text{L})=5.63\times 10^{-7}$ 12; $\alpha(\text{M})=4.28\times 10^{-8}$ 9 $\alpha(\text{IPF})=0.000307$ 5 Mult.: D+Q from $\gamma\gamma$ (anisotropy) in (¹⁶ O,pn γ), $\Delta J=1$; $\Delta\pi$ =(yes) from level scheme.
(7935.764)	1 ⁺	1152.12 ^a 18 1353.83 6 1377.83 ^a 12 1425.33 24 1739.40 5 1873.534 49 2156.954 41	<1.7 4.7 12 <2.6 0.97 24 8.3 21 12.4 28 48 7	6783.69 6581.89 6557.99 6510.62 6196.35 6062.14 5778.737	(0 ⁺ ,1,2,3 ⁺) (0 ⁺ ,1,2,3 ⁺) (1,2,3 ⁺) (1 ⁺ ,2 ⁺) 1 ⁻ 1 ⁻ 1 ⁻			

Adopted Levels, Gammas (continued)

$\gamma(^{32}\text{P})$ (continued)

$E_i(\text{level})$	J_i^π	E_γ^\ddagger	I_γ^\ddagger	E_f	J_f^π	Comments
(7935.764)	1 ⁺	2234.12 7	4.7 7	5701.49	(2) ⁻	
		2426.30 5	10.7 16	5509.347	(1) ⁻	
		2586.008 48	35 6	5349.64	2 ⁻	
		2609.23 ^a 21	<0.93	5326.00?	(1,2) ⁺	
		2863.15 11	11.5 18	5072.53	0 ⁺	
		3058.174 47	39.2 20	4877.42	1 ⁻	
		3224.92 19	1.92 10	4710.44	1 ⁺	
		3274.055 45	28.9 15	4661.53	2 ⁻	
		3387.4 ^a 6	<0.71	4549.22	1 ⁺	
		3899.946 47	100 5	4035.588	1 ⁻	
		3926.48 10	12.6 6	4009.01	2 ⁻	
		4142.75 26	1.17 6	3792.58	(1) ⁺	
		4491.07 6	11.3 6	3444.39	(1,2)	
		4671.39 5	66.3 34	3264.013	2 ⁻	
		4860.5 9	0.427 23	3074.04?		
		5194.92 7	7.25 34	2740.46	1 ⁺	
		5277.73 7	6.29 34	2657.64	2 ⁺	
		5355.2 9	0.376 17	2579.14?		
		5622.17 ^a 37	<0.56	2313.0?		
		5705.40 7	14.4 7	2229.741	1 ⁺	
		5717.55 13	2.23 11	2217.73	2 ⁺	
		5758.05 5	0.478 23	2177.26	3 ⁺	
		6179.4 7	0.309 17	1755.03	3 ⁺	
		6612.02 40	0.455 23	1322.835	2 ⁺	
		6785.48 7	83 4	1149.388	1 ⁺	
		7422.05 8	27.5 14	512.700	0 ⁺	
		7856.65 9	4.92 25	78.071	2 ⁺	
		7934.68 11	2.07 12	0.0	1 ⁺	
9637.5	(8 ⁻)	2220.4 10		7417.1	7 ⁽⁺⁾	E_γ : from (¹⁶ O,pn γ).

† [Additional information 15.](#)

‡ From (n, γ) E=thermal (1989Mi16), unless otherwise noted. E_γ values without uncertainties are from level-energy differences, where E(level) have been determined from other E_γ values with uncertainties or from other sources as noted in comments.

From (α ,p γ).

@ From p γ (θ) in (α ,p γ) with magnetic/electric nature determined based on RUL where level T_{1/2} is known, unless otherwise noted.

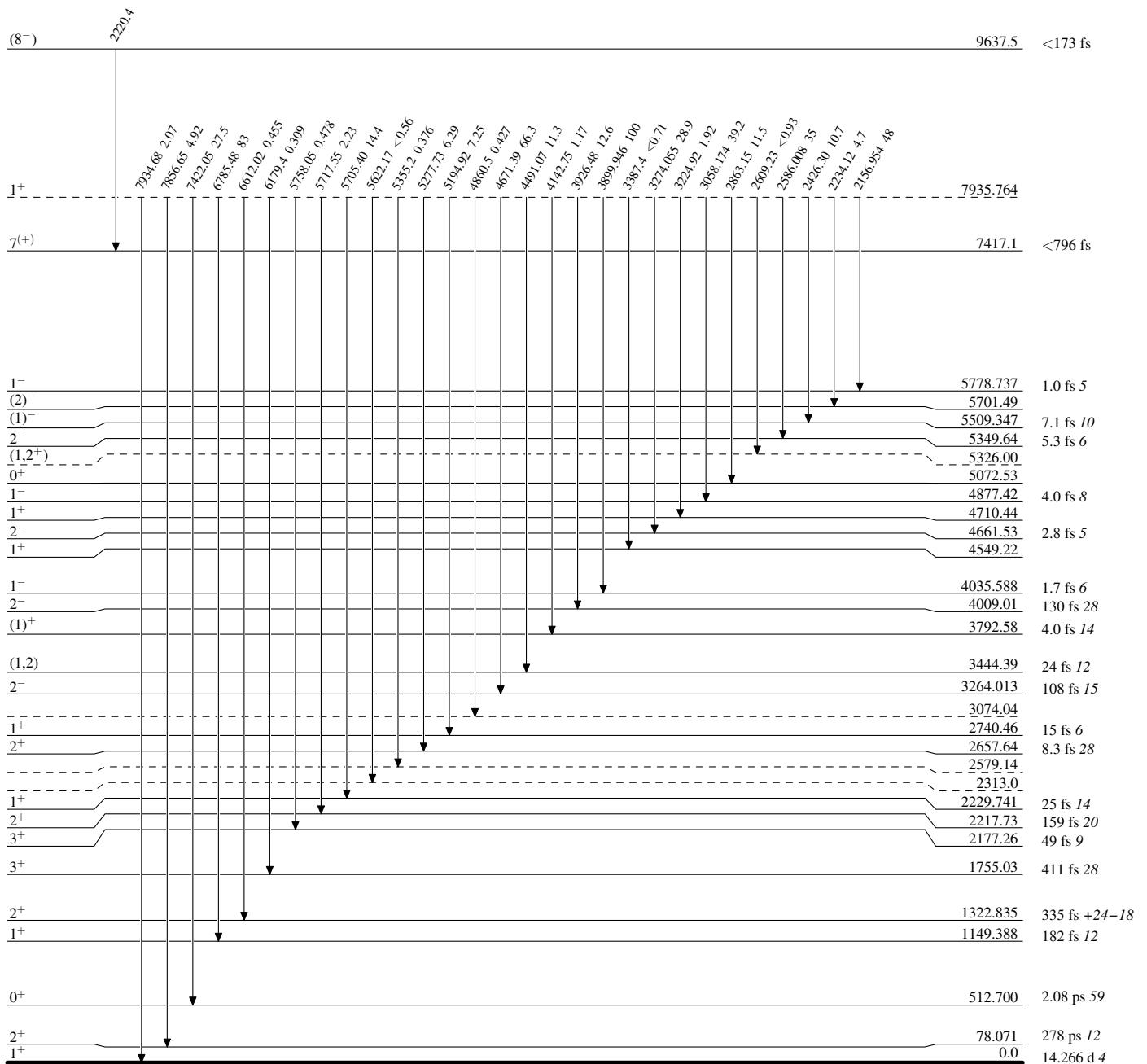
& From γ (circ pol) in (n, γ) E=thermal.

^a Multiply placed.

^b Placement of transition in the level scheme is uncertain.

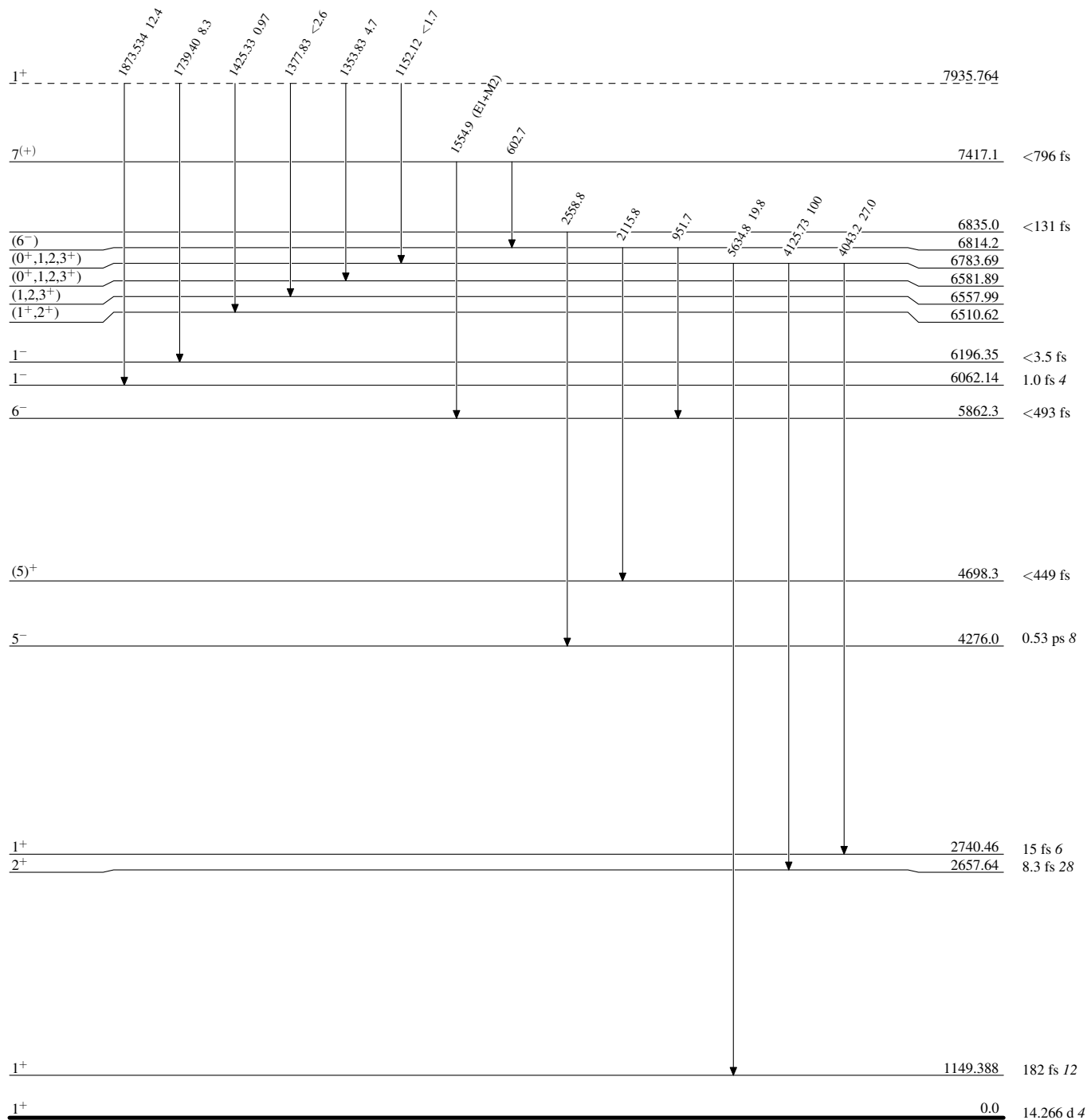
Adopted Levels, GammasLevel Scheme

Intensities: Relative photon branching from each level

 $^{32}_{15}\text{P}_{17}$

Adopted Levels, GammasLevel Scheme (continued)

Intensities: Relative photon branching from each level

 $^{32}\text{P}_{17}$

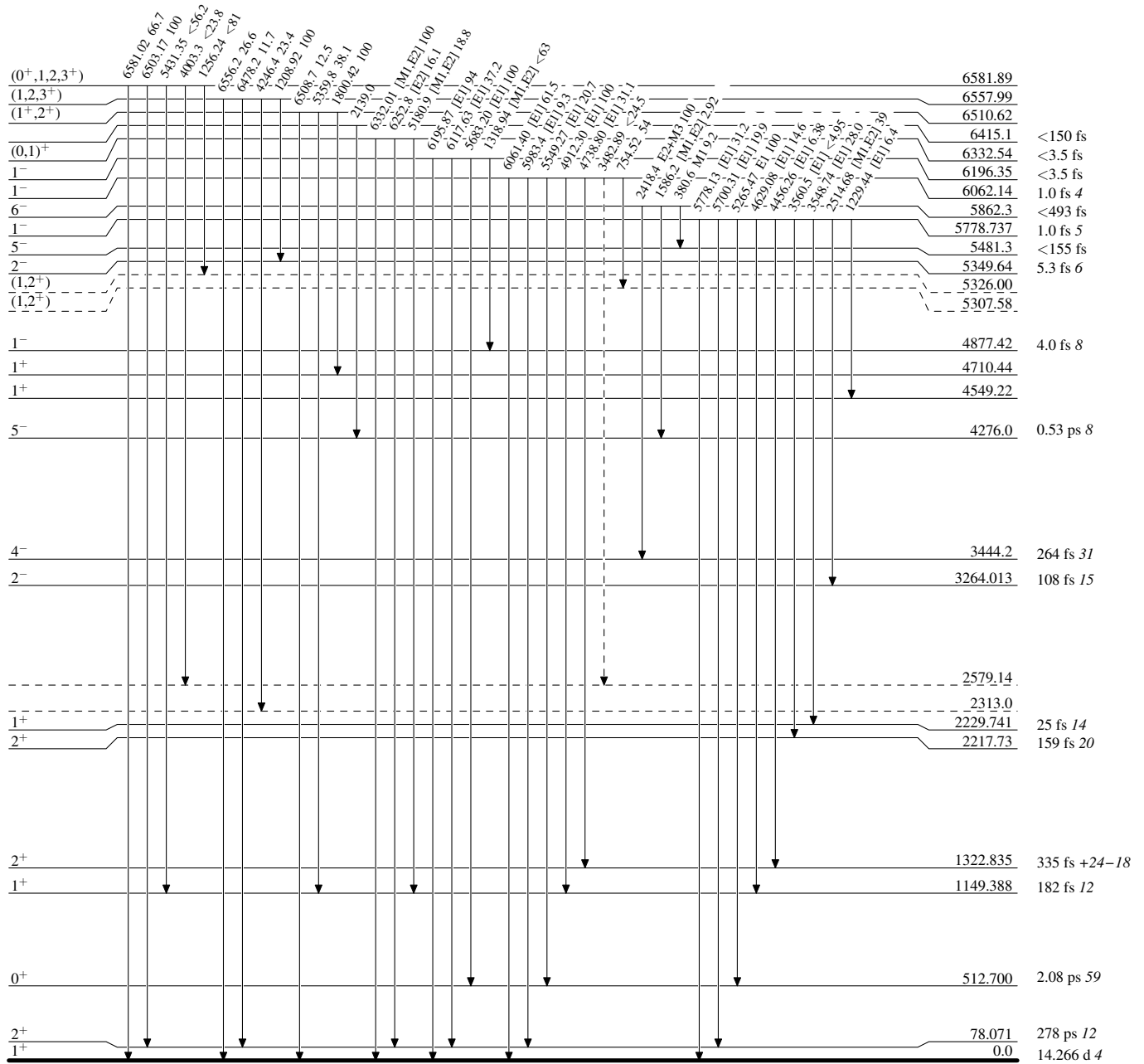
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

-----> γ Decay (Uncertain)



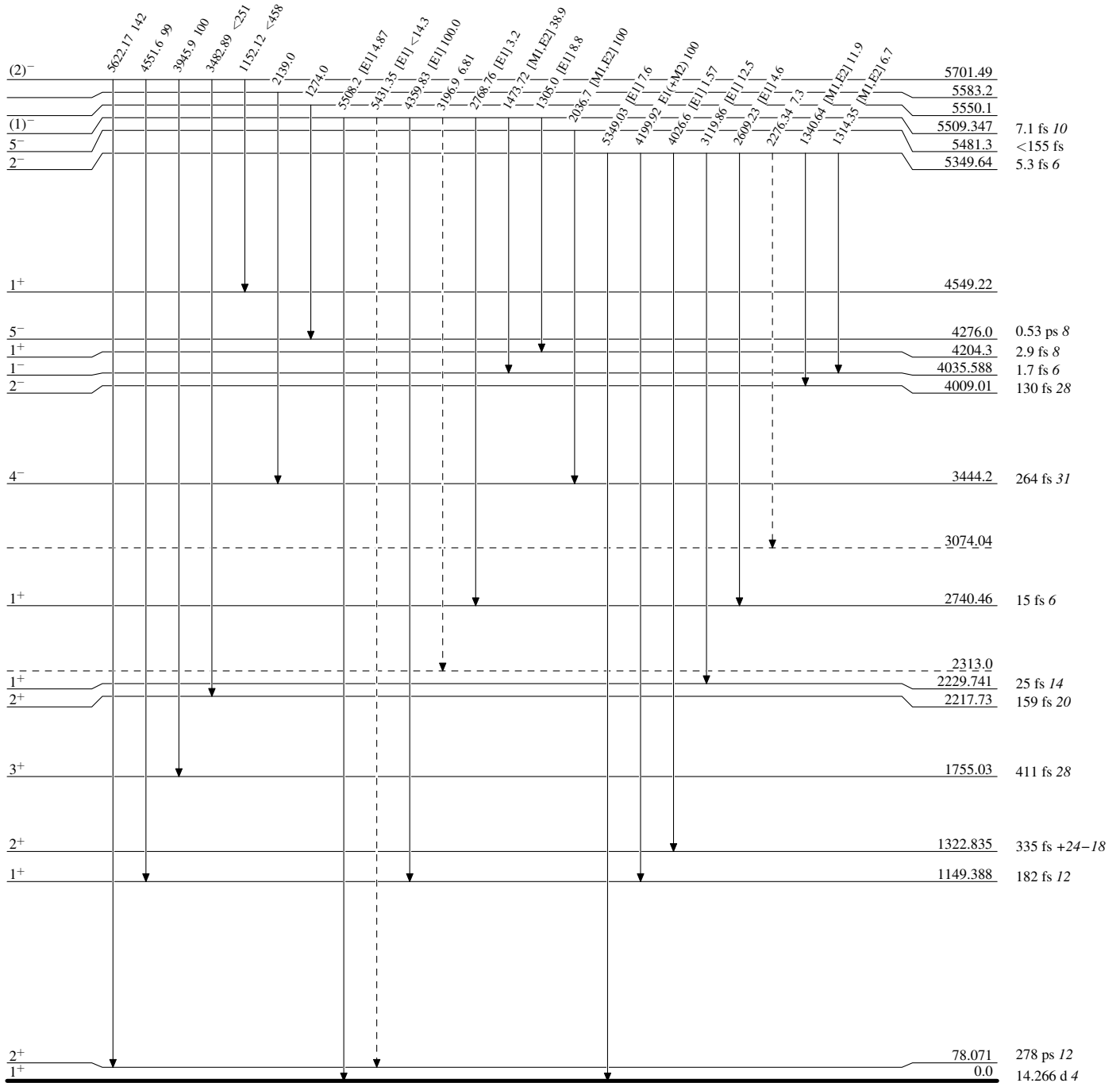
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

-----> γ Decay (Uncertain)

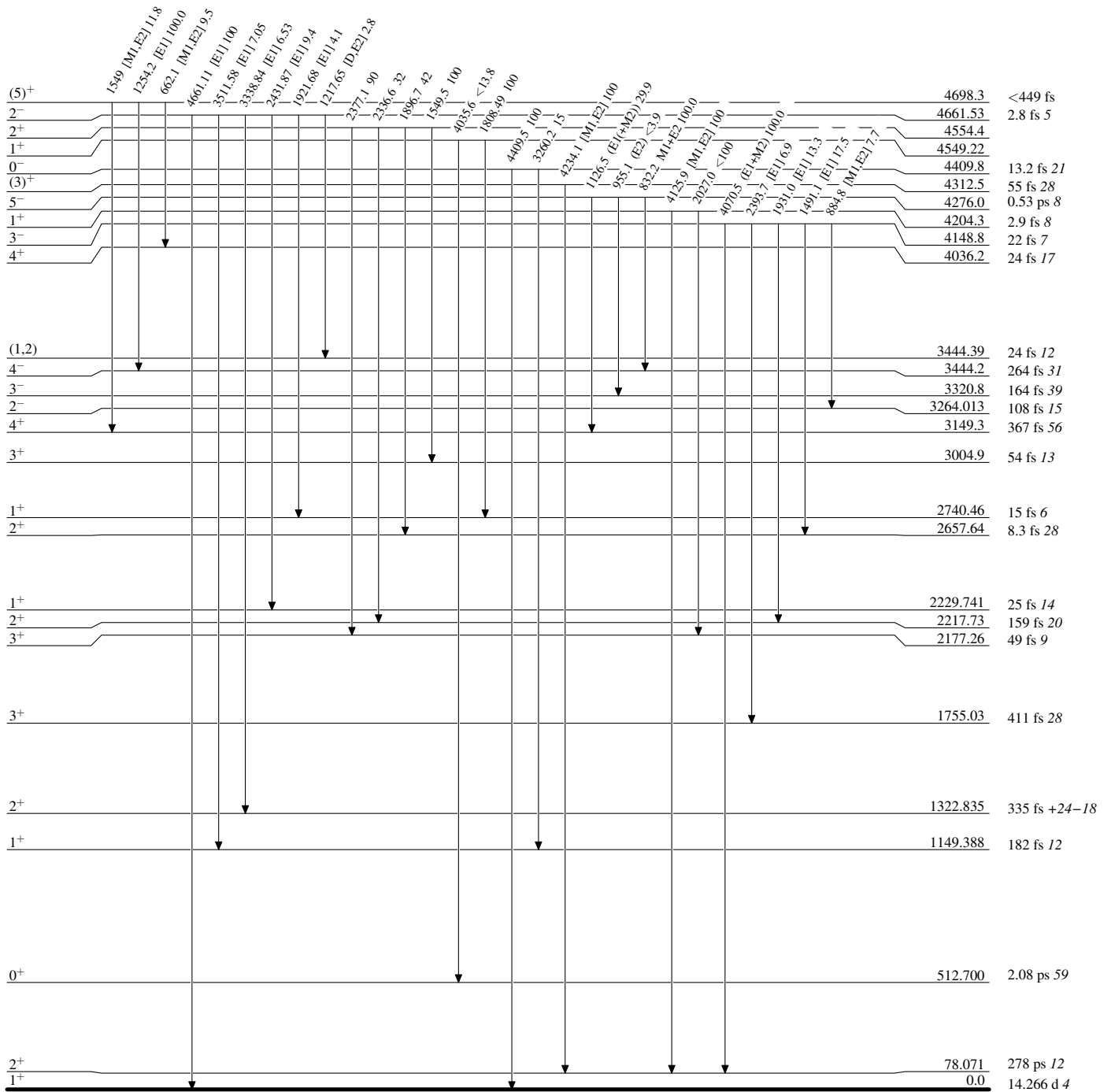


$^{32}\text{P}_{17}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

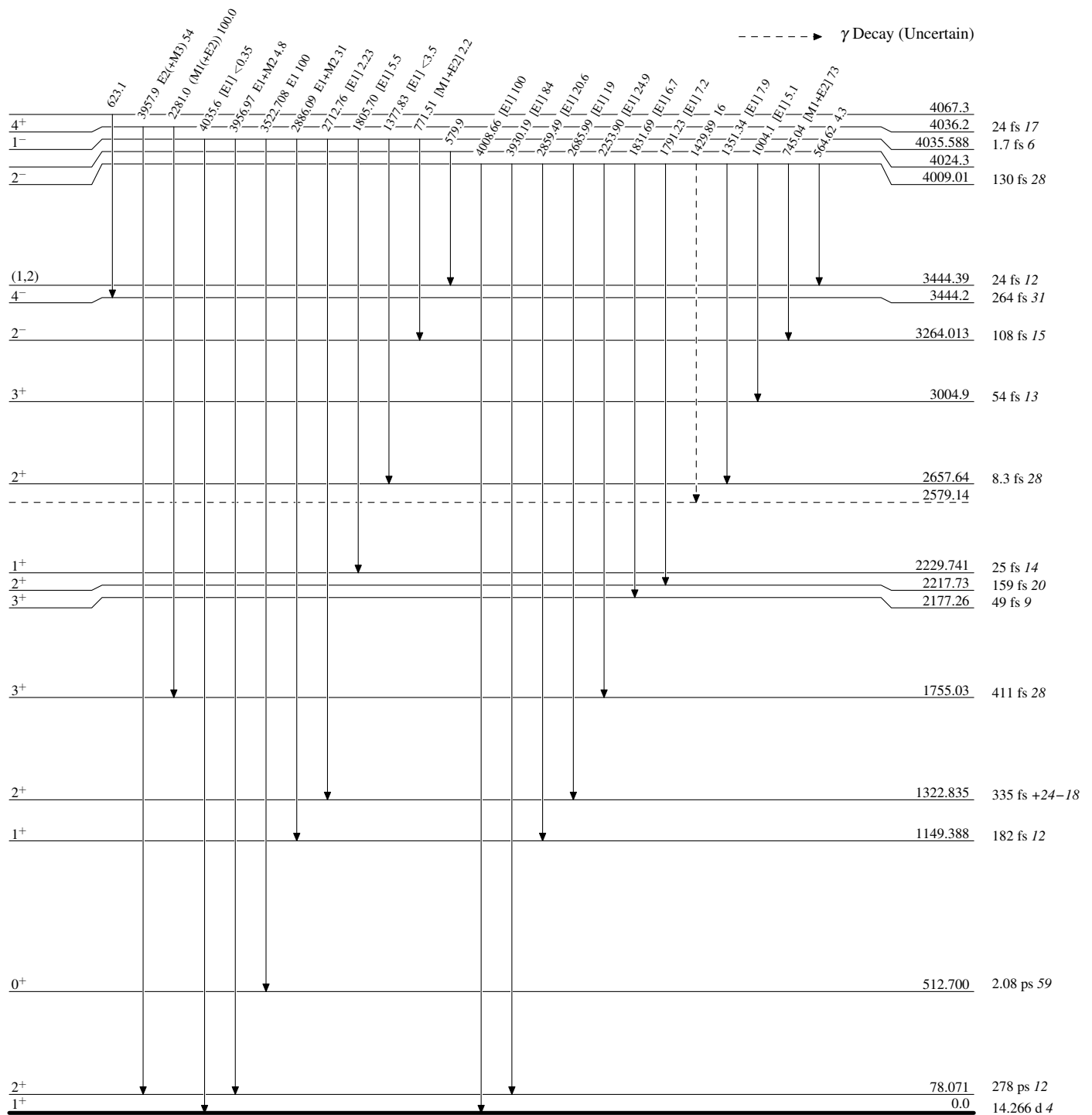


³²P₁₇

Adopted Levels, Gammas**Level Scheme (continued)**

Intensities: Relative photon branching from each level

Legend

 $^{32}_{15}\text{P}_{17}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

