Adopted Levels, Gammas

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh	NDS 108,79 (2007)	15-Oct-2006

Q(β^-)=451.4 *7*; S(n)=7584.27 *6*; S(p)=6478.2 *21*; Q(α)=174.5 *20* 2012Wa38
Note: Current evaluation has used the following Q record $ 452.0 6 *7584.25 15* 6476 3 169.9 *17* 2003Au03.
1991Ma65: Interacting Boson-Fermion Model used to interpret levels in ^{199}Au.
Additional information 1.

^{199}Au Levels

Cross Reference (XREF) Flags

A	^{199}Pt β^- decay (30.8 min)	D	^{198}Au(n,γ) E=th
B	^{199}Au IT decay (0.44 ms)	E	^{198}Pt(^{3}He,d)
C	^{197}Au(t,p)	F	^{198}Pt(α,t)

E(level)†	Jπ‡	$T_{1/2}$#	XREF	Comments
0.0@	3/2$^+$	3.139 d *7*	ABCDEF	%β^-=100 μ=+0.2715 *7* (1989Ra17,1967Va16) Q=+0.510 *16* (1993Hi10) <r^2>$^{1/2}$=5.444 fm *4* (2004An14, evaluation). Jπ: spin from atomic beam (1956Ch08); parity from M1+E2 γ from 1/2$^+$. Also L(t,p)=0 and L(^{3}He,d)=2. $T_{1/2}$: weighted av: 3.13 d *9* (1972Em01), 3.129 d *11* (1969La34), 3.14 d *2* (1957Wr37), 3.148 d *10* (1955Be42). μ: from atomic−beam magnetic resonance (1967Va16). Other: +0.282 *2*, +0.261 *2* (laser-resonance ionization mass spectroscopy,1990Sa21). See also compilation by 2005St24. Q: nuclear magnetic resonance on oriented nuclei (1993Hi10). Others: 0.64 *6* (1985Ka16,1982Ha39); 0.55 *3* (1984Ri15,1982Ha39); +0.37 *1* (Mossbauer effect,1983Pe22,1983He26). Q(^{198}Au)/Q(^{199}Au)=1.24 *2*(1988Ed01), 1.26 *3* (1983He26), 1.37 *3* (1983Ha48). See also compilation by 2005St24.
77.1942@ *19*	1/2$^+$	1.3 ns *2*	A CDEF	Jπ: L(^{3}He,d)=0.
317.0569 *18*	5/2$^+$	<55 ps	A Def	Jπ: M1+E2 γ to 3/2$^+$; $\gamma\gamma(\theta)$ in ^{199}Pt β^- decay (1969Ok02).
323.6509 *19*	3/2$^+$	35 ps *20*	A CDef	Jπ: M1(+E2) γ to 1/2$^+$; not 1/2$^+$ from log *ft*=7.62 from 5/2$^-$. Configuration=3/2[431] (1980AtZZ).
493.7729 *20*	(7/2)$^+$	<35 ps	ABCD	Jπ: E2 γ to 3/2$^+$; M2+E3 γ from (11/2)$^-$.
542.9987@ *16*	5/2$^+$	<30 ps	A Def	Jπ: E2 γ to 1/2$^+$; E1 γ from 7/2$^-$.
548.9405 *21*	(11/2)$^-$	0.44 ms *3*	AB Def	%IT=100 Jπ: L(^{3}He,d)=5; syst of isomers in Au isotopes; E2 γ from 7/2$^-$. Configuration=1/2[501] (1980AtZZ). $T_{1/2}$: from ^{199}Pt β^- decay (1968Bo22). %IT: From log *ft* systematics, %β^- is negligible (%$\beta^-\approx 1\times10^{-6}$ for log *ft*≈6 for β^- transition to the 13/2$^+$ level in ^{199}Hg).
734.7082 *18*	7/2$^-$	0.36 ns *4*	A DEF	Jπ: $\gamma\gamma(\theta)$ in ^{199}Pt β^- (1969Ok02). Configuration=1/2[501] (1980AtZZ).
791.7775 *25*	3/2$^+$	<50 ps	A CDEF	Jπ: M1+E2 γ to 5/2$^+$; M1(+E2) γ to 1/2$^+$; L(t,p)=0.
822.538 *3*	1/2$^+$		A CDEF	Jπ: L(^{3}He,d)=0. Configuration=1/2[440] (1980AtZZ).
907.265 *4*	3/2$^+$		CD	Jπ: L(t,p)=0.
968.339 *3*	3/2$^+$,5/2$^+$	<100 ps	A CD	Jπ: L(t,p)=2; log *ft*=6.8 from 5/2$^-$; γ to 1/2$^+$.
1070.128 *4*	3/2$^+$,5/2$^+$		A CDE	Jπ: γ to 1/2$^+$; L(t,p)=2; log *ft*=7.8 from 5/2$^-$. Possible configuration=1/2[440] (1980AtZZ).

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{199}Au Levels (continued)

E(level)[†]	Jπ[‡]	XREF	Comments
1103.965 *4*	(3/2,5/2,7/2)$^{(+)}$	A CD	Jπ: log *ft*=7.6 from 5/2$^-$; L(t,p)=(2).
1159.383 *5*	(3/2$^+$,5/2$^+$,7/2$^+$)	A CDEF	Jπ: γ to 3/2$^+$; L(p,t)=(2); log *ft*=7.46 from 5/2$^-$. L(^{3}He,d)=0 is inconsistent.
1185 *5*	(1/2 to 7/2)$^+$	C EF	Jπ: L(t,p)=2. L(^{3}He,d)=(5,6) is inconsistent.
1249.715 *4*	3/2$^+$,5/2$^+$,7/2$^+$	A CDEF	Jπ: L(t,p)=2; not 1/2$^+$ from log *ft*=8.2 (log $f^{1u}t$<8.2) from 5/2$^-$. L(^{3}He,d)=(0) is inconsistent with adopted Jπ.
1312 *5*		C EF	Jπ: L(^{3}He,d)=6 for 1314 group (1980AtZZ) suggests 11/2$^+$,13/2$^+$; but L(^{3}He,d)=3 for a 1335 group (1978Mu08) suggests 5/2$^-$,7/2$^-$.
1344 *5*		C	
1396.295 *9*	5/2$^+$,7/2$^+$	A CD	Jπ: log *ft*=7.1 from 5/2$^-$; L(t,p)=4.
1432 *5*		C	
1454 *5*	(5/2 to 11/2)$^+$	C	Jπ: L(t,p)=4.
1489 *5*	(5/2 to 11/2)$^+$	C	Jπ: L(t,p)=4.
1539 *5*	(11/2$^+$,13/2$^+$)	C EF	Jπ: L(^{3}He,d)=(6).
1572.178 *5*	(5/2,7/2)$^+$	CDEF	Jπ: γ to 3/2$^+$; L(t,p)=4. L(^{3}He,d)=0 (1980AtZZ) for a 1563 group suggests 1/2$^+$, but L(^{3}He,d)=(2) for a 1580 group (1978Mu08) suggests (3/2$^+$,5/2$^+$).
1583.0 *5*		D	
1602 *5*	(5/2 to 11/2)$^+$	C	Jπ: L(t,p)=4.
1635 *5*		C	
1660 *7*		C	
1709 *5*	(5/2 to 11/2)$^+$	C EF	XREF: E(1696)F(1696). Jπ: L(t,p)=4.
1729		EF	Jπ: L(^{3}He,d)=(6) for 1729 group (1980AtZZ) suggests (11/2$^+$,13/2$^+$); but L(^{3}He,d)=3 for a 1770 group (1978Mu08) suggests 5/2$^-$,7/2$^-$.
1770.47 *4*	(5/2,7/2)$^+$	CD	Jπ: γ to 3/2$^+$; L(t,p)=4.
1801 *5*	3/2$^+$	C EF	Jπ: L(t,p)=0.
1849 *5*	9/2$^-$,11/2$^-$	C EF	XREF: E(1861)F(1861). Jπ: L(^{3}He,d)=5 for a strong 1861 group. Configuration=9/2[514] (1980AtZZ).
1909 *5*	(11/2$^+$,13/2$^+$)	C EF	XREF: E(1890)F(1890). Jπ: L(^{3}He,d)=(6).
1926 *5*		C	
1948 *5*	(1/2 to 7/2)$^+$	C	Jπ: L(t,p)=2.
1967 *5*		C	
1994 *5*		C	
2008 *7*		C	
2038 *5*		C	
2073 *5*		C	
2107 *5*	(1/2$^+$)	C EF	XREF: E(2112)F(2112). Jπ: L(^{3}He,d)=(0).
2139 *5*		C	
2174 *5*		C	
2205 *5*	(1/2$^+$)	C EF	XREF: E(2221)F(2221). Jπ: L(^{3}He,d)=(0).
2324	(1/2$^-$,3/2$^-$)	EF	Jπ: L(^{3}He,d)=(1).
2374	(5/2$^-$,7/2$^-$)	EF	Jπ: L(^{3}He,d)=(3).
2412	(1/2$^+$)	EF	Jπ: L(^{3}He,d)=(0).
2484	(7/2$^+$,9/2,11/2$^-$)	EF	Jπ: L(^{3}He,d)=(4,5).
2512	(3/2$^+$,5/2,7/2$^-$)	EF	Jπ: L(^{3}He,d)=(2,3).
2592	(3/2$^+$,5/2,7/2$^-$)	EF	Jπ: L(^{3}He,d)=(2,3).
2734	(1/2$^+$)	EF	Jπ: L(^{3}He,d)=(0).
2795	(3/2$^+$,5/2,7/2$^-$)	EF	Jπ: L(^{3}He,d)=(2,3).
2863	(9/2$^-$,11/2,13/2$^+$)	EF	Jπ: L(^{3}He,d)=(5,6). Possible configuration=13/2[606] (1980AtZZ).

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Adopted Levels, Gammas (continued)

^{199}Au Levels (continued)

E(level)[†]	J^{π}[‡]	XREF	Comments
3013	$(3/2^+,5/2,7/2^-)$	E	J^{π}: L(^{3}He,d)=(2,3).
3044	$(5/2^-,7/2^-)$	EF	J^{π}: L(^{3}He,d)=(3). Possible configuration=7/2[523] (1980AtZZ).
3083	$(5/2^-,7/2,9/2^+)$	E	J^{π}: L(^{3}He,d)=(3,4).
3400	$(11/2^+,13/2^+)$	EF	J^{π}: L(^{3}He,d)=(6). Possible configuration=$i_{13/2}$ (1978Mu08).
3570	$(5/2^-,7/2^-)$	EF	J^{π}: L(^{3}He,d)=(3).

† From least-squares fit to adopted Eγ's for levels seen in ^{199}Pt β^- decay and ^{198}Au(n,γ), omitting doublets from the fitting procedure. From (t,p) and/or (^{3}He,d) for levels seen in reaction experiments only. The uncertainties for levels above 1300 keV from (^{3}He,d) may be underestimated due to possible calibration problems.

‡ In ^{197}Au(t,p), J^{π}(^{197}Au target)=$3/2^+$. Above 1 MeV, the data available for (^{3}He,d) and (α,t) from 1980AtZZ and 1978Mu08 are not in very good agreement. For this reason L(^{3}He,d) values for levels above 1 MeV are considered as tentative, except for a strongly populated 1861 level (1849 is the 'adopted' energy) for which L=5 seems quite definitive from both studies.

From ^{199}Pt β^- decay, unless otherwise noted.

@ Band(A): 1/2[431] band (1980AtZZ).

Adopted Levels, Gammas (continued)

γ(^{199}Au)

E_i(level)	J_i^π	E_γ [†]	I_γ [‡]	E_f	J_f^π	Mult.[#]	δ[#]	α[&]	Comments
77.1942	1/2$^+$	77.160 *19*	100	0.0	3/2$^+$	M1+E2	0.22 *+6−2*	3.5 *4*	α(L)=2.6 *3*; α(M)=0.63 *7*; α(N+..)=0.197 *21* B(M1)(W.u.)=0.0078 *15*; B(E2)(W.u.)=24 *13*
317.0569	5/2$^+$	239.864 *2*	3.33 *9*	77.1942	1/2$^+$	[E2]		0.207	α(K)=0.109; α(L)=0.0737; α(M)=0.0187; α(N+..)=0.00583 B(E2)(W.u.)>5.4
		317.056 *3*	100.0 *3*	0.0	3/2$^+$	M1+E2	−0.60 *10*	0.241 *14*	α(K)=0.194 *13*; α(L)=0.0362 *10*; α(M)=0.0085 *2*; α(N+..)=0.0027 *1* B(M1)(W.u.)>0.0065; B(E2)(W.u.)>7.1
323.6509	3/2$^+$	246.456 *1*	100.0 *5*	77.1942	1/2$^+$	M1(+E2)	<0.45	0.56 *3*	α(K)=0.45 *3*; α(L)=0.0792 *12*; α(M)=0.0184 *2*; α(N+..)=0.00578 *5* B(M1)(W.u.)=0.007 *4*; B(E2)(W.u.)<41
		323.663 *3*	10.5 *2*	0.0	3/2$^+$	[M1,E2]		0.18 *10*	α(K)=0.14 *9*; α(L)=0.031 *7*; α(M)=0.0073 *15*; α(N+..)=0.0023 *5* E_γ: level-energy difference=323.651.
493.7729	(7/2)$^+$	170.6[@b] *10*	0.4[@] *2*	323.6509	3/2$^+$	[E2]		0.664	α(K)=0.253; α(L)=0.308; α(M)=0.0791; α(N+..)=0.0246 B(E2)(W.u.)>6.0
		176.2[@b] *10*	0.5[@] *3*	317.0569	5/2$^+$	[M1,E2]		1.0 *5*	α(K)=0.7 *5*; α(L)=0.24 *2*; α(M)=0.058 *11*; α(N+..)=0.018 *3*
		493.772 *2*	100.0 *5*	0.0	3/2$^+$	E2		0.0269	α(K)=0.0195; α(L)=0.00565; α(M)=0.00136; α(N+..)=0.00042 B(E2)(W.u.)>7.6
542.9987	5/2$^+$	219.36[@] *4*	2.60[@] *4*	323.6509	3/2$^+$	M1+E2	0.60 *10*	0.67 *4*	α(K)=0.53 *4*; α(L)=0.110; α(M)=0.0261 *1*; α(N+..)=0.0082 B(M1)(W.u.)>0.0010; B(E2)(W.u.)>2.3
		225.945 *4*	1.11 *3*	317.0569	5/2$^+$	M1+E2	0.6 *2*	0.62 *7*	α(K)=0.49 *7*; α(L)=0.1002 *11*; α(M)=0.0238; α(N+..)=0.0074 B(M1)(W.u.)>0.00037; B(E2)(W.u.)>0.55
		465.806 *3*	5.57 *23*	77.1942	1/2$^+$	E2		0.0311	α(K)=0.0222; α(L)=0.00667; α(M)=0.00163; α(N+..)=0.00051 B(E2)(W.u.)>0.58
		542.993 *2*	100.0 *6*	0.0	3/2$^+$	M1(+E2)	−0.06 *+7−10*	0.071	α(K)=0.0583 *9*; α(L)=0.00947 *11* B(M1)(W.u.)>0.0038
548.9405	(11/2)$^-$	55.150 *19*	100	493.7729	(7/2)$^+$	M2+E3	0.11 *6*	334 *40*	α(L)=247 *43*; α(M)=66 *13*; α(N+..)=22 *5* B(M2)(W.u.)=0.0120 *24*; B(E3)(W.u.)=27 *+36−23*
734.7082	7/2$^-$	185.768 *1*	100.0 *9*	548.9405	(11/2)$^-$	E2		0.490	α(K)=0.206; α(L)=0.213; α(M)=0.0546; α(N+..)=0.0170 B(E2)(W.u.)=46 *6*
		191.709 *1*	61.7 *17*	542.9987	5/2$^+$	E1		0.0807	α(K)=0.0660; α(L)=0.0113; α(M)=0.00260; α(N+..)=0.00080 B(E1)(W.u.)=2.1×10^{-5} *3*

$^{199}_{79}Au_{120}$-4

Adopted Levels, Gammas (continued)

γ(^{199}Au) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[#]	δ[#]	α[&]	Comments
734.7082	7/2$^-$	240.9[@b] *10*	<1.7[@]	493.7729	(7/2)$^+$	[E1]		0.0459	α(K)=0.0377; α(L)=0.00628; α(M)=0.00145; α(N+..)=0.00044 B(E1)(W.u.)=1.8×10^{-7} *18*
		417.657 *3*	8.2 *23*	317.0569	5/2$^+$	[E1]		0.0127	α(K)=0.0105; α(L)=0.00167; α(M)=0.000384; α(N+..)=0.00012 B(E1)(W.u.)=2.3×10^{-7} *9*
791.7775	3/2$^+$	298.2[@] *3*	2.0[@] *3*	493.7729	(7/2)$^+$	[E2]		0.105	α(K)=0.0635; α(L)=0.0315; α(M)=0.00792; α(N+..)=0.00247 B(E2)(W.u.)>0.66
		468.130[a] *4*	46[a] *9*	323.6509	3/2$^+$	M1(+E2)	<0.45	0.098 *6*	α(K)=0.081 *5*; α(L)=0.0135 *7*; α(M)=0.00311 *14*; α(N+..)=0.00098 *5* B(M1)(W.u.)>0.00070 I$_\gamma$: γ is multiply placed in (n,γ).
		474.719 *3*	53 *10*	317.0569	5/2$^+$	M1+E2	0.12 *2*	0.0997 *4*	α(K)=0.0821 *4*; α(L)=0.0134; α(M)=0.00311; α(N+..)=0.00098 B(M1)(W.u.)>0.00063; B(E2)(W.u.)>0.010
		714.583 *3*	100.0 *7*	77.1942	1/2$^+$	M1(+E2)	<0.6	0.032 *3*	α(K)=0.026 *3*; α(L)=0.0043 *4* B(M1)(W.u.)>0.00032
		791.777 *6*	62 *4*	0.0	3/2$^+$	M1(+E2)	<0.46	0.0253 *15*	α(K)=0.0205 *15*; α(L)=0.00337 *17* B(M1)(W.u.)>0.00016
822.538	1/2$^+$	505.480 *2*	100	317.0569	5/2$^+$	[E2]		0.0254	α(K)=0.0186; α(L)=0.00517
907.265	3/2$^+$	590.209 *3*	100	317.0569	5/2$^+$	[M1,E2]		0.037 *20*	α(K)=0.030 *17*; α(L)=0.0054 *22*
968.339	3/2$^+$,5/2$^+$	425.340 *3*	12 *3*	542.9987	5/2$^+$	[M1,E2]		0.09 *5*	α(K)=0.07 *4*; α(L)=0.014 *5*; α(M)=0.0032 *10*; α(N+..)=0.0010 *3*
		474.68[b] *4*		493.7729	(7/2)$^+$				
		644.684 *8*	7.3 *6*	323.6509	3/2$^+$	[M1,E2]		0.030 *15*	α(K)=0.024 *13*; α(L)=0.0043 *17* Mult.: D,E2 from RUL.
		649.8[@] *15*	0.92[@] *16*	317.0569	5/2$^+$	[M1,E2]		0.029 *15*	α(K)=0.024 *13*; α(L)=0.0042 *17*
		891.3[@] *2*	2.35[@] *9*	77.1942	1/2$^+$	[M1,E2]		0.014 *6*	α(K)=0.011 *5*; α(L)=0.0019 *7* Mult.: D,Q from RUL.
		968.328 *7*	100.0 *7*	0.0	3/2$^+$	(M1,E2)		0.011 *5*	α(K)= 0.009 *4*; α(L)=0.0015 *6*
1070.128	3/2$^+$,5/2$^+$	746.483 *4*	73 *14*	323.6509	3/2$^+$	[M1,E2]		0.021 *10*	α(K)=0.017 *9*; α(L)=0.0029 *12*
		753.061 *4*	100 *5*	317.0569	5/2$^+$	[M1,E2]		0.020 *10*	α(K)=0.017 *9*; α(L)=0.0029 *12*
		992.3[@b] *7*	27.3[@] *23*	77.1942	1/2$^+$	[M1,E2]		0.010 *5*	α(K)=0.009 *4*; α(L)=0.0014 *6*
1103.965	(3/2,5/2,7/2)$^{(+)}$	610.191 *3*	48 *8*	493.7729	(7/2)$^+$	[M1,E2]		0.034 *18*	α(K)=0.028 *15*; α(L)=0.0050 *20*
		780.337[a] *7*	112[a] *7*	323.6509	3/2$^+$	[M1,E2]		0.019 *9*	α(K)=0.015 *8*; α(L)=0.0026 *11* I$_\gamma$: from ^{199}Pt β$^-$, γ is multiply placed in (n,γ).
		786.8 *2*	84 *7*	317.0569	5/2$^+$	[M1,E2]		0.018 *9*	α(K)=0.015 *7*; α(L)=0.0026 *10* E$_\gamma$,I$_\gamma$: from ^{199}Pt β$^-$, γ masked by a γ from ^{200}Hg in (n,γ).

$^{199}_{79}Au_{120}$-5

Adopted Levels, Gammas (continued)

γ(^{199}Au) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[#]	α[&]	Comments
1103.965	(3/2,5/2,7/2)$^{(+)}$	1103.964 *12*	100 *4*	0.0	3/2$^+$			
1159.383	(3/2$^+$,5/2$^+$,7/2$^+$)	665.0[@b] *1*	325[@] *12*	493.7729	(7/2)$^+$			
		835.5[@b] *1*	138[@] *11*	323.6509	3/2$^+$			
		842.324 *4*	100 *8*	317.0569	5/2$^+$			
		1159.44 *4*	71 *12*	0.0	3/2$^+$			
1249.715	3/2$^+$,5/2$^+$,7/2$^+$	706.715 *3*	44 *2*	542.9987	5/2$^+$	[M1,E2]	0.024 *12*	α(K)=0.019 *11*; α(L)=0.0034 *14* E_γ,I_γ: From (n,γ), not seen in ^{199}Pt β$^-$.
		1249.718 *14*	100 *6*	0.0	3/2$^+$			
1396.295	5/2$^+$,7/2$^+$	902.0[@] *6*	74[@] *22*	493.7729	(7/2)$^+$	[M1,E2]	0.013 *6*	α(K)=0.011 *5*; α(L)=0.0018 *7*
		1072.641 *8*	100 *5*	323.6509	3/2$^+$			
		1077.0[@] *14*	47[@] *4*	317.0569	5/2$^+$			
1572.178	(5/2,7/2)$^+$	468.130[a] *4*	42[a] *2*	1103.965	(3/2,5/2,7/2)$^{(+)}$			
		603.779 *19*	3 *1*	968.339	3/2$^+$,5/2$^+$			E_γ: level-energy difference=603.838.
		664.913 *3*	57 *1*	907.265	3/2$^+$			
		780.337[a] *7*	100[a] *5*	791.7775	3/2$^+$			
		1572.16 *3*	30 *14*	0.0	3/2$^+$			
1770.47	(5/2,7/2)$^+$	1446.81 *4*	100	323.6509	3/2$^+$			

[†] From ^{198}Au(n,γ) data where available, otherwise from ^{199}Pt β$^-$ decay.
[‡] Weighted average of measurements in ^{199}Pt β$^-$ decay and ^{198}Au(n,γ), unless otherwise noted.
[#] From ^{199}Pt β$^-$ decay.
[@] From ^{199}Pt β$^-$ only, not reported in (n,γ). Placement treated as questionable by the evaluator, since with the intensity quoted in ^{199}Pt β$^-$, it should have been seen in (n,γ).
[&] Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ-ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.
[a] Multiply placed with intensity suitably divided.
[b] Placement of transition in the level scheme is uncertain.

$^{199}_{79}Au_{120}$-6

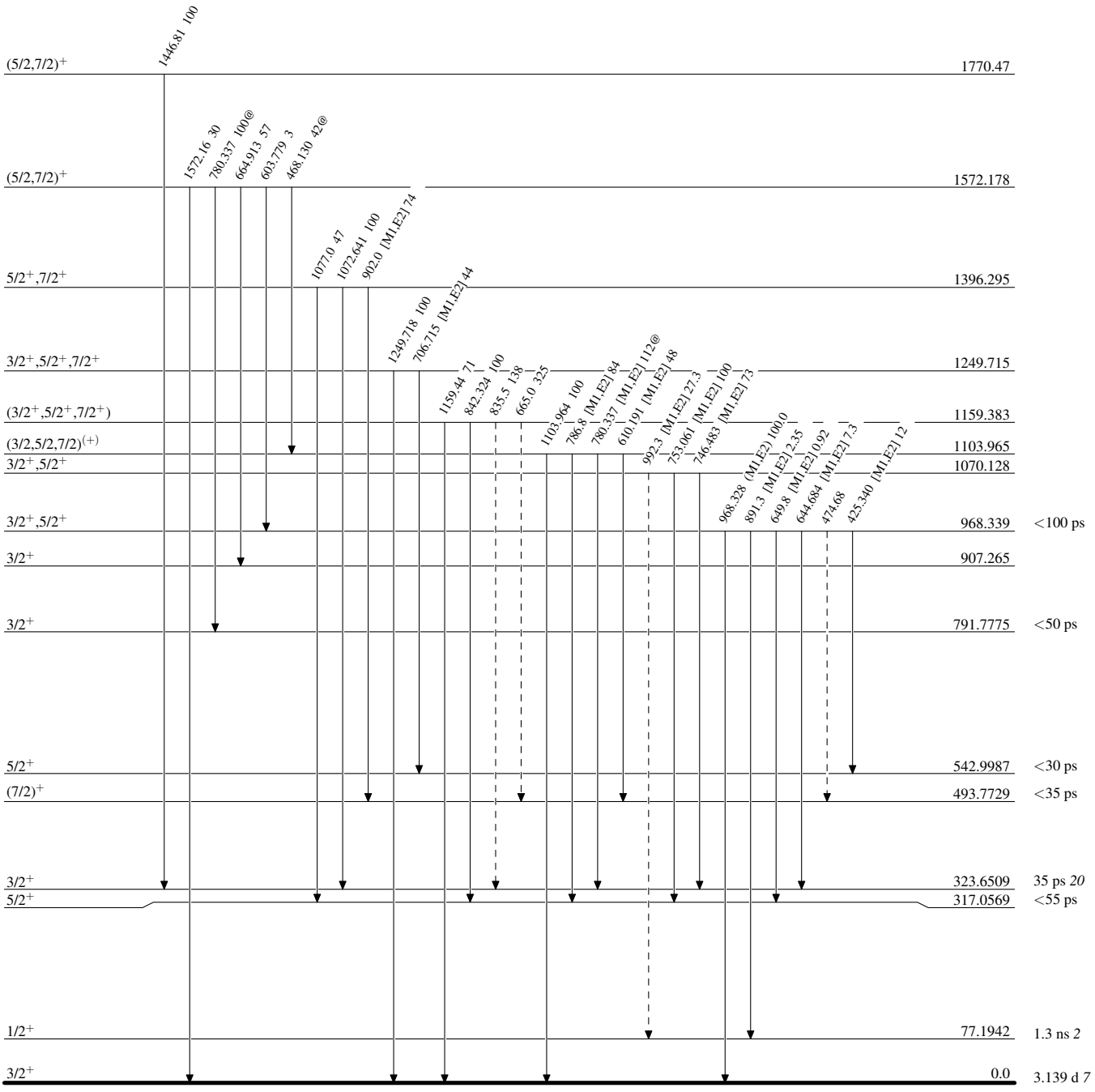
Adopted Levels, Gammas

Legend

Level Scheme

Intensities: Relative photon branching from each level
@ Multiply placed: intensity suitably divided

γ Decay (Uncertain)



$^{199}_{79}Au_{120}$

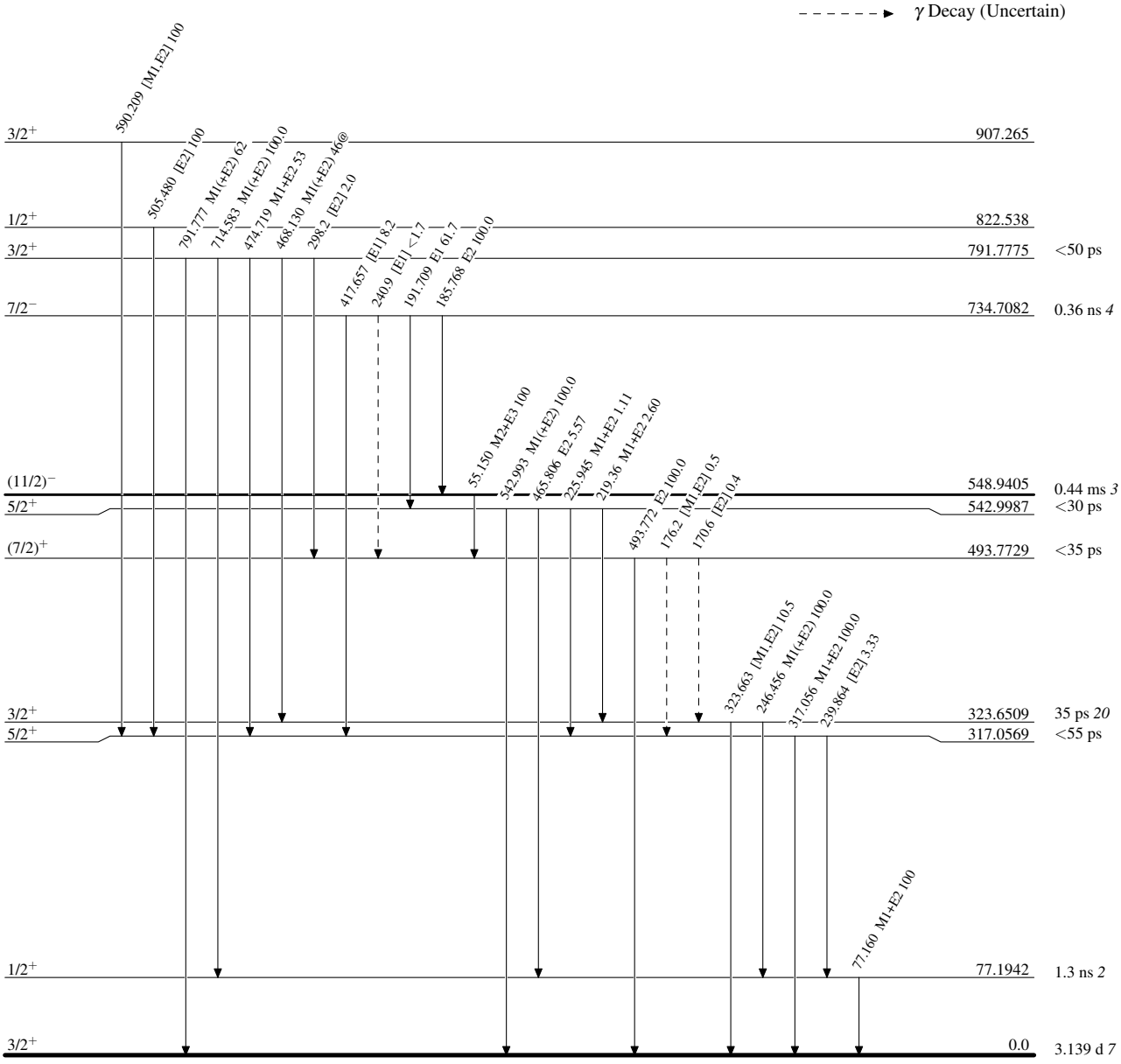
Adopted Levels, Gammas

Legend

Level Scheme (continued)

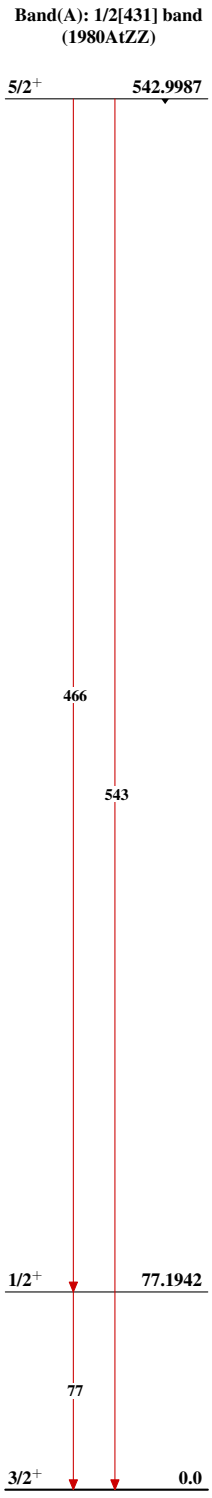
Intensities: Relative photon branching from each level
@ Multiply placed: intensity suitably divided

- - - - - - ► γ Decay (Uncertain)



$^{199}_{79}Au_{120}$

Adopted Levels, Gammas



$^{199}_{79}Au_{120}$