Adopted Levels, Gammas

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	J. C. Batchelder and A. M. Hurst, M. S. Basunia	NDS 183, 1 (2022)	1-Mar-2022

Q(β^-)=1072.71 *83*; S(n)=6179.591 *5*; S(p)=5828.42 *66*; Q(α)=2078.4 *16* 2021Wa16

^{186}Re Levels

Band assignments are those suggested in 1973Gl06, 2009Wh01, and 2017Ma39. Configurations are also discussed in 1969La11 and 1972Se06.

μ for excited levels: from 2020StZV, based on 1980Za10, corrected for diamagnetic shielding and Knight shift.

Cross Reference (XREF) Flags

A	^{186}Re IT decay (2.0×10^5 y)	E	^{186}W(d,2nγ)
B	^{185}Re(n,γ) E=thermal	F	^{187}Re(p,d)
C	^{185}Re(n,γ) E=2-110 eV	G	^{187}Re(n,2nγ)
D	^{185}Re(d,p)	H	^{187}Re(d,t)

E(level)[†]	J$^\pi$[c]	T$_{1/2}$[h]	XREF	Comments
0.0[m]	1$^-$	3.7185[i] d *5*	ABCDEFGH	%ε=7.50 *10*; %β^-=92.50 *10* μ=+1.734 *3* Q=+0.618 *6* μ: from atomic-beam triple resonance method (2019StZV, based on 1965Ar01). Other: 1980Za10. Q: from atomic beam method (2016St14, 1981Bu13) using ^{185}Re and ^{187}Re (2016St14, 1981Ko11) as reference standards. Other values: +0.54 *9* from static nuclear orientation using ^{187}Re standard (2014StZZ, based on 1983Oe01 and 1985Ha41); +0.60 *6* from static nuclear orientation using ^{187}Re standard (2014StZZ, from 1983Ha49); +0.88 *12* nuclear orientation relative to ^{187}Re reference standard (1981Er01). %ε, %β^-: from ^{186}Re ε decay (3.7186 d). J$^\pi$: J=1 from atomic-beam spectroscopy (1963Do13); π=− from log *ft*=8.0 for 2$^+$ state feeding in ^{186}Re β^- Decay (3.7185 d). configuration: π5/2[402]⊗ν3/2[512], K$^\pi$=1$^-$.
59.010[m] *3*	2$^-$		ABCD FGH	J$^\pi$: M1+E2 to 1$^-$ g.s. (1969La11); J^π=1$^-$ ruled out at 99.9% confidence level from (n,γ) E=2-110 eV (1983Be27, 1980BeYB); band member (1973Gl06,2009Wh01).
99.361[l] *3*	3$^-$	25.5 ns *25*	ABCDEFGH	J$^\pi$: M1+E2 40γ to 2- 59-keV level and E2 99γ to g.s.; π=− from L=1 in ^{185}Re(p,d) because J^π(target)=5/2$^+$ (1969La11); configuration assignment. configuration: π5/2[402]⊗ν1/2[510], K$^\pi$=3$^-$.
146.275[m] *4*	3$^-$		BCD FGH	J$^\pi$: M1(+E2) 87γ to 2$^-$; band member.
148.2[t] *5*	(8$^+$)	2.0×10^5 y	AB E G	%IT=100 %IT: %β^-<10 from ^{186}Re IT decay; no β^- decay has been observed (1972Se06). T$_{1/2}$: from ^{186}Re IT decay (1972Se06). J$^\pi$: (E5) 49γ to 3$^-$. Possible configuration built on K^π=8$^+$ (1972Se06). Energy is comparable with systematics of possible 8$^+$ state in ^{182}Re (154 keV) and in ^{184}Re (188 keV). configuration: π5/2[402]⊗ν11/2[615], K$^\pi$=(8$^+$). E(level): based on placement of 267γ as depopulating the 415-keV level from ^{187}Re(n,2nγ) in 2015Ma60.

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Adopted Levels, Gammas (continued)

^{186}Re Levels (continued)

E(level)[†]	J$^{\pi}$[c]	T$_{1/2}$[h]	XREF	Comments
173.929[k] *4*	4$^-$		BC EF H	XREF: H(177). J$^{\pi}$: M1+E2 75γ to 3- 99-keV level; configuration assignment. configuration: π5/2[402]$\otimes\nu$3/2[512], K$^{\pi}$=4$^-$.
180.2[bw] *7*	(6$^-$)		B DEFG	J$^{\pi}$: Level not populated by primary γ in (n,γ) E=thermal which favors J$\geq$5 since capture state J^{π}=2$^+$,3$^+$ (1969La11,2016Ma35); L=3 in ^{185}Re(d,p) (1969La11) for doublet whose other component is expected to have L=1; systematics of heavier odd-odd Re isotopes. Possible configuration built on K$^{\pi}$=6$^-$ (1969La11,2009Wh01). Level is expected to deexcite via M2 and E2 transitions to the (8$^+$) 148 and 4$^-$ 174-keV levels, respectively (1973Gl06). No deexciting transitions have been reported, however, transitions to these levels proposed at approx. 12 and 38 keV also favor a J^{π}=6$^+$ according to statistical-model predictions in (n,γ) E=thermal (2016Ma35). configuration: π5/2[402]$\otimes\nu$ 7/2[503], K$^{\pi}$=(6$^-$). T$_{1/2}$: Probably a long-lived isomeric state, associated in 1969La11 with T$_{1/2}$=70 μs *1* that was measured by 1964Br27.
210.699[j] *5*	2$^-$	<0.2 ns	BCD FGH	J$^{\pi}$: M1 211γ to 1$^-$ g.s.; M1(+E2) 111γ to 3- 99-keV level; M1+E2 152γ to 2- 59-keV level; configuration assignment. configuration: π5/2[402]$\otimes\nu$1/2[510], K$^{\pi}$=2$^-$.
268.800[m] *6*	4$^-$		BC FG	J$^{\pi}$: M1+E2 169γ to 3- 99-keV level; 4$^-$ from (n,γ) E=2-110 eV while 2$^-$,3$^-$ ruled out at 99.9% confidence level (1983Be27,1980BeYB); band member.
273.627[l] *5*	4$^-$		BCD FGH	J$^{\pi}$: M1+E2 174γ to 3- 99-keV level; band member.
314.009[o] *5*	(3$^+$)	24.1 ns *11*	BC G	μ=+2.18 *6* μ: From time-dependent perturbed angular distribution using ^{19}F(197) standard (2020StZV, based on 1980Za10). J$^{\pi}$: E1 255γ to 2- 59-keV level; E1 215γ to 3- 99-keV level; E=thermal (n,γ) statistical-model analysis favors 3$^+$; configuration assignment. configuration: π5/2[402]$\otimes\nu$11/2[615], K$^{\pi}$=3$^+$.
316.459[r] *10*	(1$^-$)	0.20 ns *10*	BC FG	XREF: F(317.4). J$^{\pi}$: M1 316γ to 1$^-$ g.s.; M1+E2 257γ to 2- 59-keV level; 1$^-$ from (n,γ) E=2-110 eV (1983Be27,1980BeYB); statistical-model analysis from (n,γ) E=thermal favors 1$^-$ (2016Ma35); configuration assignment. configuration: π5/2[402]$\otimes\nu$7/2[503], K$^{\pi}$=1$^-$.
317.846[k] *7*	5$^-$		BC EF	XREF: F(317.4). J$^{\pi}$: M1+E2 144γ to 4$^-$ 174; 2$^-$,3$^-$, and 4$^-$ ruled out from (n,γ) E=2-110 eV (1983Be27,1980BeYB); band member.
322.378[j] *6*	3$^-$		BCD FGH	J$^{\pi}$: M1+E2 112γ to 2- 211-keV level; band member.
324.2[s] *5*	5$^+$	17.3 ns *6*	B E G	μ=+4.62 *11* μ: from time-dependent perturbed angular distribution using ^{19}F(197) standard (2020StZV, based on 1980Za10). J$^{\pi}$: E1 144γ to 6- 180-keV level; E1+M2 150γ to 4- 174-keV level; configuration assignment (1973Gl06). configuration: π 9/2[514]$\otimes\nu$ 1/2[510], K$^{\pi}$=5$^+$.
342? *2*			D	
351.202[p] *16*	(4)$^+$	<0.2 ns	BC G	J$^{\pi}$: E1 252γ to 3- 99-keV level; 4$^+$ favored in E=thermal (n,γ) statistical-model analysis (2016Ma35); configuration assignment. Other value 3$^+$ from possible coupling π9/2[514]-ν3/2[512] (1973Gl06). configuration: π9/2[514]$\otimes\nu$1/2[510], K$^{\pi}$=(4)$^+$.
378.387[r] *10*	(2$^-$)		BCD F H	J$^{\pi}$: M1+E2 62γ to 1- 316-keV level; band member.
414.7[at] *7*	(9$^+$)		B DEFG	J$^{\pi}$: Supported by similarity with 446 level in ^{184}Re and from the shape of the experimental and modeled excitation functions (TALYS and CoH codes) for the 266.7 γ transition (2015Ma60); band member. 7$^-$ assignment suggested in E=thermal (n,γ) from analysis of depopulation data (2020Kr05).
417.794[m] *8*	5$^-$		B F h	J$^{\pi}$: M1+E2 149γ to 4$^-$; no primary transitions to this level in (n,γ) E=2-110 eV (1983Be27,1980BeYB) or (n,γ) E=thermal (1969La11, 2016Ma35)

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Adopted Levels, Gammas (continued)

^{186}Re Levels (continued)

E(level)[†]	J$^{\pi}$[c]	XREF	Comments
			implying J≥5; band member.
420.560[o] 7	(4$^+$)	B Gh	J$^{\pi}$: M1+E2 107γ to (3$^+$) 314-keV level; band member.
425.823 7	(4$^+$)	BC F	J$^{\pi}$: M1+E2 112γ to (3$^+$) 314-keV level; E=thermal (n,γ) statistical-model analysis (2016Ma35). Other value 3$^+$ from possible coupling π9/2[514]-ν3/2[512] (2020Kr05). See (n,γ) E=thermal data set.
462.969[l] 9	5$^-$	BC FG	J$^{\pi}$: M1+E2 189γ to 4- 274-keV level; 2$^-$,3$^-$,4$^-$ ruled out from (n,γ) E=2-110 eV (1983Be27,1980BeYB); band member.
465.4[s] 7	6$^+$	B E G	J$^{\pi}$: M1+E2 141γ to 5$^+$ 324-keV level; band member.
469.794[j] 8	4$^-$	BCd FGh	J$^{\pi}$: M1 296γ to 4- 174-keV level; M1+E2 147γ to 3- 322-keV level; band member; member of possible 3$^-$ & 4$^-$ doublet in (n,γ) E=2-110 eV (1983Be27), the 3$^-$ member of which is assigned as the 470.5 level.
470.509[r] 11	(3$^-$)	BCd h	J$^{\pi}$: M1+E2 92γ to 2- 378-keV level; band member; member of possible 3$^-$ & 4$^-$ doublet in (n,γ) E=2-110 eV (1983Be27); statistical-model analysis from (n,γ) E=thermal favors 3$^-$ (2016Ma35).
497.294[k] 10	(6$^-$)	B DEF	J$^{\pi}$: Intraband 179 γ to 5- 318-keV level; band member; statistical-model analysis from (n,γ) E=thermal favors 6$^-$ (2016Ma35).
500.722[p] 16	(5)$^+$	BC FG	J$^{\pi}$: M1+E2 150γ to (4)$^+$ 351-keV 5$^+$; E=thermal (n,γ) statistical-model analysis (2016Ma35). Other value 4$^+$ if built on K^{π}=3$^+$ configuration (π 9/2[514])-(ν 3/2[512]) (1973Gl06).
534.37[y] 4	(4$^-$)	BCD F H	J$^{\pi}$: M1 360γ to 4- 174-keV level; 4$^-$ favored in (n,γ) E=2-110 eV (1983Be27,1980BeYB) and E=thermal (n,γ) statistical-model analysis (2016Ma35); configuration assignment. configuration: π1/2[411]⊗ν7/2[503], K$^{\pi}$=(4$^-$).
549.330 9	(5$^+$)	B D F	J$^{\pi}$: M1+E2 123γ to 4$^+$ 426-keV level; E=thermal (n,γ) statistical-model analysis (2016Ma35). Other value 4$^+$ if band member built on K^{π}=3$^+$ configuration (2020Kr05).
556.0[bu] 7	(6$^+$)	B dEF h	XREF: F(563.1). J$^{\pi}$: Configuration assignment (2017Ma39); M1+E2 232γ to 5$^+$ 324-keV level; E=thermal (n,γ) statistical-model analysis (2016Ma35). configuration: π9/2[514]⊗ν3/2[512], K$^{\pi}$=(6$^+$).
559.976[o] 9	(5$^+$)	B d FGh	J$^{\pi}$: M1+E2 intraband 139γ to (4$^+$) 421-keV level; band member; E=thermal (n,γ) statistical-model analysis (2016Ma35).
577.720[n] 15	(2$^-$)	BCD F	J$^{\pi}$: (M1) 261γ to (1$^-$) 316-keV level; configuration assignment (1973Gl06,2009Wh01); E=thermal (n,γ) statistical-model analysis (2016Ma35); 2$^-$ or 3$^-$ in (n,γ) E=2-110 eV (1983Be27,1980BeYB). configuration: π5/2[402]⊗ν9/2[505], K$^{\pi}$=2$^-$.
588.705[r] 12	(4$^-$)	BC FG	J$^{\pi}$: Intraband 118γ to 3- 471-keV level; band member; E=thermal (n,γ) statistical-model analysis (2016Ma35); E=2-110 eV (n,γ) (1983Be27,1980BeYB).
595.059[‡m] 3	(6$^-$)[g]	B	
601.57[q] 3	(1$^+$)	B G	J$^{\pi}$: E1+M2 391γ to 2- 211-keV level; E1+M2 285γ to 1- 316-keV level; configuration assignment (1973Gl06); J≥2 ruled out in statistical-model analysis from (n,γ) E=thermal (2016Ma35). configuration: π9/2[514]⊗ν7/2[503], K$^{\pi}$=(1$^+$).
606.8 10		F	
610.1 10		F	
623.89 6	(1$^-$)	BC G	J$^{\pi}$: from (n,γ) E=2-110 eV (1983Be27,1980BeYB); 413γ to 2- 211-keV and 301γ 3- 322-keV level; preferred assignment from statistical-model analysis from (n,γ) E=thermal (2016Ma35). Favored 2$^-$ assignment from depopulation-data analysis in 2020Kr05.
646.346[j] 11	5$^-$	B d F h	J$^{\pi}$: M1+E2 intraband 177γ to 4- 469.8-keV level; band member.
651.6[s] 7	(7$^+$)	B dE h	J$^{\pi}$: Intraband 186γ to 6$^+$ 465.6-keV and 328γ to 5$^+$ 324.4-keV level; band member.
657.98[q] 3	(2$^+$)	B	J$^{\pi}$: M1+E2 intraband 56γ to 1$^+$ 601-keV level; 336γ to 3- 322-keV level; band member.
660.722[‡x] 5	(1$^-$)[g]	B	J$^{\pi}$: Configuration assignment. configuration: π9/2[514]⊗ν11/2[615], K$^{\pi}$=(1$^-$).
665.188[p] 18	(6)$^+$	B G	J$^{\pi}$: M1+E2 164γ to (5)$^+$ 501-keV; band member; 6$^+$ assignment favored in E=thermal (n,γ) statistical-model analysis (2016Ma35). Other value 5$^+$ if built on K$^{\pi}$=3$^+$ configuration (π 9/2[514])-(ν 3/2[512]) (1973Gl06).

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Adopted Levels, Gammas (continued)

^{186}Re Levels (continued)

E(level)[†]	J$^{\pi}$[c]	XREF	Comments
680.05 *12*	(2$^-$)	BCd F h	XREF: d(683)h(687). J$^{\pi}$: 680γ to 1$^-$ g.s. and 357γ to 3- 322-keV level; E=thermal (n,γ) statistical-model analysis (2016Ma35); E=2-110 eV (n,γ) supports 2$^-$ or 3$^-$ (1983Be27,1980BeYB); 2$^-$ favored from depopulation- data analysis in E=thermal (n,γ) (2020Kr05).
686.055[n] *16*	(3$^-$)	BCd F h	XREF: d(683)h(687). J$^{\pi}$: M1+E2 308γ to (2$^-$) 378-keV level; intraband 108γ to (2$^-$) 577-keV level; band member; E=thermal (n,γ) statistical-model analysis (2016Ma35).
689.3	(1$^-$)	Cd F h	XREF: d(683)F(690.3)h(687). J$^{\pi}$: E=2-110 eV (n,γ) (1983Be27,1980BeYB).
691.37[l] *9*	(6$^-$)	B F h	XREF: F(690.3)h(687). J$^{\pi}$: Intraband 228γ to 5- 463-keV level; band member; E=thermal (n,γ) statistical-model analysis (2016Ma35).
705.048[‡] *5*	(6$^+$)[g]	B	J$^{\pi}$: Assignment deduced by evaluator according to rotational band structure. Other value 5$^+$ if band member built on K^{π}=3$^+$ configuration (2020Kr05).
705.2[t] *7*	(10$^+$)	EF	J$^{\pi}$: Intraband 290γ and 557γ to (9$^+$) 557-keV and (8$^+$) 148-keV, respectively; band member.
709.6[k] *4*	(7$^-$)	EF	J$^{\pi}$: Intraband 213γ and 391γ to (6$^-$) 497-keV and 5- 318-keV, respectively; band member.
722.962[‡y] *3*	(5$^-$)[g]	B F h	J$^{\pi}$: Band member.
728.2 *15*		F h	
736.127[r] *15*	(5$^-$)	B F	J$^{\pi}$: Intraband (M1+E2) 147γ to (4$^-$) 589-keV level; band member; no primary γ feeding in (n,γ) E=2-110 eV (1983Be27,1980BeYB) or (n,γ) E=thermal (2016Ma35) favoring J≥5; statistical-model analysis from (n,γ) E=thermal favors 5$^-$ (2016Ma35).
744.80[q] *5*	(3$^+$)	B d	XREF: d(747). J$^{\pi}$: M1 intraband 87γ to (2$^+$) 658-keV level; band member; E=thermal (n,γ) statistical-model analysis (2016Ma35).
753.267[‡] *4*	(2$^-$,3$^-$)	BCd F h	XREF: d(747)h(755). J$^{\pi}$: E=2-110 eV (n,γ) (1983Be27,1980BeYB). (d,p) presumed to excite this, but not the 745-keV, level because the latter's configuration should not be excited in (d,p); (2)$^-$ in (n,γ) E=thermal (2020Kr05).
761.42 *19*	(1$^-$,2$^-$,3$^-$)	BC F h	XREF: h(755). J$^{\pi}$: 439γ to (3)$^-$ 322 keV, possible 762γ to 1$^-$ g.s.; member of π=− doublet (other member not listed here) in (n,γ) E=2-110 eV (1983Be27, 1980BeYB).
773.6[u] *9*	(7$^+$)	EF	J$^{\pi}$: 218γ to (6$^+$) 556-keV level; band member.
774.879[‡z] *18*	(7$^-$)[g]	B	J$^{\pi}$: Configuration assignment. configuration: π5/2[402]⊗ν9/2[505], K$^{\pi}$=(7$^-$).
785.58 *15*	(1$^-$,2$^-$,3$^-$)	B	J$^{\pi}$: 407γ to (2$^-$) 378-keV level, possible 469γ to (1$^-$) 316-keV level; 2$^-$ assignment favored in depopulation analysis (2020Kr05).
791.225[‡] *5*	(1$^-$,2$^-$,3$^-$)	BCd F h	XREF: d(795)h(797). J$^{\pi}$: E=2-110 eV (n,γ) (1983Be27,1980BeYB) 2$^-$ and 3$^-$ ruled out at 99% confidence level; suggested (2,3)$^-$ assignment in (n,γ) E=thermal with preferred 3$^-$ from depopulation data (2020Kr05).
795.9[v] *7*	(10$^+$)	E G	J$^{\pi}$: 381γ to (9$^+$) 415-keV, 648γ to (8$^+$) 148-keV level. configuration: Possible K^{π}=10$^+$, π5/2[402]⊗ν^3(1/2[510],3/2[512],11/2[615]) or π5/2[402]⊗ν11/2[615]⊗2^+_{γ} configuration (2017Ma39).
796.45 *9*	(≤3$^-$)	BCd F h	XREF: d(795)h(797). J$^{\pi}$: 797γ to 1$^-$ g.s.; π=− for doublet (other member not listed here) in E=2-110 eV (n,γ) (1983Be27,1980BeYB); 2$^-$ preferred assignment in (n,γ) E=thermal from depopulation analysis (2020Kr05).
803 *10*		D h	XREF: h(797). E(level): From ^{185}Re(d,p) (1969La11); estimated uncertainty proposed by evaluator.
814.187[‡] *9*	(1$^-$,2$^-$)	BC F h	XREF: h(820). J$^{\pi}$: (1$^-$) from E=2-110 eV (n,γ) (1983Be27,1980BeYB); (1,2)$^-$ from (n,γ) E=thermal with 1$^-$ favored assignment from depopulation data (2020Kr05).

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Adopted Levels, Gammas (continued)

^{186}Re Levels (continued)

E(level)[†]	Jπ[c]	XREF	Comments
819.00 *19*	(2⁻,3⁻)	BC F h	XREF: h(820). Jπ: 645γ to 4- 174-keV, 607γ to 2- 211-keV level; E=2-110 eV (n,γ) (1983Be27,1980BeYB); 3⁻ favored assignment from analysis of depopulation data in (n,γ) E=thermal (2020Kr05).
821.30[1] *6*	(0⁺)[g]	B h	XREF: h(820). Jπ: 220γ to (1⁺) 602-keV, 163γ to (2⁺) 658 allow Jπ=(0⁺,1,2,3⁺); deduced configuration assignment (2020Kr05). configuration: π9/2[514]⊗ν9/2[505], Kπ=(0⁺).
826.150[n] *17*	(4⁻)	BC h	XREF: h(820). Jπ: M1+E2 140γ to (3⁻) 686-keV level; band member; E=2-110 eV (n,γ) (1983Be27,1980BeYB); E=thermal (n,γ) statistical-model analysis (2016Ma35); (n,γ) E=thermal from analysis of depopulation data (2020Kr05).
855.04?[q] *5*	(4⁺)	B d	XREF: d(854). Jπ: Intraband 197γ to (2⁺) 658-keV and 110γ (3⁺) 745-keV levels; band member; E=thermal (n,γ) statistical-model analysis (2016Ma35); (n,γ) E=thermal from analysis of depopulation data (2020Kr05).
856.225[‡] *7*	(2⁻,3⁻)[d]	BCD F	XREF: D(854). Complex level in (d,p) which presumably includes this level but not the 855 level because the latter's configuration should not be excited in (d,p). Jπ: Other: (1,2)⁻ with preferred 2⁻ assignment in (n,γ) E=thermal from analysis of depopulation data (2020Kr05).
860.386[‡][j] *7*	(6⁻)[g]	B	Jπ: Band member.
864.17 *15*	(2⁻,3⁻)[d]	BCd F	XREF: d(867)F(861.2). Jπ: 3⁻ favored assignment in (n,γ) E=thermal from analysis of depopulation data (2020Kr05).
869.2[s] *7*	(8⁺)	E	Jπ: Intraband 218γ to (7⁺) 652-keV and 404γ to (6⁺) 465.5-keV level; band member.
871.0[a] *10*	(2⁻,3⁻,4⁻)[f]	BCd F	XREF: d(867). Jπ: π=− doublet in E=2-110 eV (n,γ) (1983Be27,1980BeYB); 3⁻ favored in (n,γ) E=thermal from analysis of depopulation data (2020Kr05).
879.183[‡] *8*	(2⁻,3⁻)[d]	BCd	XREF: d(881). Jπ: Other: (2,3,4)⁻ with preferred 3⁻ assignment in (n,γ) E=thermal from analysis of depopulation data (2020Kr05).
888.777[‡] *3*	(4⁻)[d]	BCd f	XREF: d(881)f(888.8). Jπ: Other: (3,4)⁻ with preferred 3⁻ assignment in (n,γ) E=thermal from analysis of depopulation data (2020Kr05).
889.676[‡] *4*	(1⁻,2⁻,3⁻)[d]	Cd f	XREF: d(881)f(888.8). Jπ: 3⁻ assignment favored in (n,γ) E=thermal from analysis of depopulation data (2020Kr05).
895.283[‡] *9*	(2⁻,3⁻,4⁻)[d]	BCd F	XREF: d(900). Jπ: 4⁻ assignment favored in (n,γ) E=thermal from analysis of depopulation data (2020Kr05).
902.336[‡] *8*	(2⁻,3⁻)[d]	BCd F	XREF: d(900). Jπ: 2⁻ assignment favored in (n,γ) E=thermal from analysis of depopulation data (2020Kr05).
910.478[‡][1] *11*	(2⁺)[g]	B	E(level): Reported energy below (1⁺) band member at 965.4 due to Newby energy shift (2020Kr05). Jπ: Band member.
912.378[‡][r] *5*	(6⁻)[g]	B	Jπ: Band member.
913.58[‡][a] *3*	(2⁻,3⁻)[d]	BC F	Jπ: Other: (3⁻,4⁻) with preferred 3⁻ assignment in (n,γ) E=thermal from analysis of depopulation data (2020Kr05).
923.629[‡] *3*	(2⁻,3⁻)[d]	BC F	XREF: F(926.8). Jπ: 2⁻ assignment favored in (n,γ) E=thermal from analysis of depopulation data (2020Kr05).

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Adopted Levels, Gammas (continued)

^{186}Re Levels (continued)

E(level)[†]	Jπ[c]	XREF	Comments
929.6[a] 15	(−)[d]	C F	Jπ: π=− doublet in E=2-110 eV (n,γ) (1983Be27,1980BeYB).
935.31[#] 20	(2−,3−)[d]	BC F	XREF: F(937.4).
937.4[a] 15	(1−)[d]	C F	
944.238[‡] 10	(2−,3−)[d]	BC F	XREF: C(946.4). Jπ: 2− assignment favored in (n,γ) E=thermal from analysis of depopulation data (2020Kr05).
953.2[k] 5	(8−)	Ef	Jπ: Intraband 456γ to (6−) 497-keV and tentative 243γ to (7−) 710-keV level; band member.
954.72[#] 23	(2−,3−,4−)[e]	B f	Jπ: 3− assignment favored in (n,γ) E=thermal from analysis of depopulation data (2020Kr05).
965.427[‡1] 4	(1+)[g]	B	E(level): Reported energy above (2+) band member at 910.5 due to Newby energy shift (2020Kr05). Jπ: Band member.
973.861[‡] 8	(2−,3−,4−)[g]	BC F	XREF: C(975). Jπ: 3− assignment favored in (n,γ) E=thermal from analysis of depopulation data (2020Kr05); π=− doublet in E=2-110 eV (n,γ) (1983Be27,1980BeYB).
982.27[#] 18	(2−,3−,4−)[e]	B F	Jπ: 3− assignment favored in (n,γ) E=thermal from analysis of depopulation data (2020Kr05).
988.973[‡] 5	(2−,3−)[d]	BC F	Jπ: Other: (3−,4−) with preferred 3− assignment in (n,γ) E=thermal from analysis of depopulation data (2020Kr05).
996.685[n] 4	(5−)[g]	B	Jπ: Band member.
997.84?[q] 6	(5+)	B	Jπ: Intraband 142γ to (4+) 855-keV level; band member; (n,γ) E=thermal from analysis of depopulation data (2020Kr05).
999.320[‡] 6	(2−,3−,4−)[d]	BC	Jπ: 4− assignment favored in (n,γ) E=thermal from analysis of depopulation data (2020Kr05).
1002.678[‡] 9	(3−,4−,5−)[g]	B f	XREF: f(1003.2). Jπ: 4− assignment favored in (n,γ) E=thermal from analysis of depopulation data (2020Kr05).
1003.526[‡] 4	(2−,3−)[g]	B f	XREF: f(1003.2). Jπ: 3− assignment favored in (n,γ) E=thermal from analysis of depopulation data (2020Kr05).
1004.156[‡] 6	(2−,3−,4−)[d]	BC f	XREF: f(1003.2). Jπ: 3− assignment favored in (n,γ) E=thermal from analysis of depopulation data (2020Kr05).
1007.5 3		FG	
1013.72[#] 25	(2−,3−,4−)[d]	BC	XREF: C(1015).
1017.60[#] 17	(1−,2−,3−)[d]	Bc F	
1018.0[t] 8	(11+)	E	Jπ: Intraband 313γ to (10+) 705-keV and 603γ to (9+) 415-keV level; band member.
1019.7[a] 20	(1−,2−,3−)[d]	c F	
1027.2[a] 20		F	
1040.25[#] 19	(2−,3−,4−)[d]	BC F	
1042.9[&]	(1−)[d]	C	
1046.9[&]	(2−,3−,4−)[d]	C	
1050.7 15		F	
1053.8[#] 6	(1−,2−,3−)[d]	BC F	
1057.5[#] 5	(2−,3−)[d]	BC	
1068.56[#] 22	(2−,3−)[d]	BC f	XREF: f(1070.6).
1071.5[#] 6	(2−,3−)[d]	BC f	XREF: C(1073.3)f(1070.6).
1097.01[#] 18	(4−)[d]	BC	
1101.3[#] 3	(2−,3−)[d]	BC FG	

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{186}Re Levels (continued)

E(level)[†]	Jπ[c]	XREF	Comments
1115.2[s] 8	(9+)	E	Jπ: Intraband 246γ (8+) 869-keV and 464γ to (7+) 652-keV level; band member.
1119.6[v] 7	(11+)	E	Jπ: Intraband 323γ to (10+) 796-keV level; band member; 705γ to (9+) 415-keV level.
1122.50[#] 23	(2−,3−)[d]	BC	XREF: C(1123.9).
1132.07[#] 20	(2−,3−,4−)[e]	B	
1138.1 8	(11+)	E	Jπ: 433γ to (10+) 705-keV and 723γ to (9+) 415-keV level.
1140.9[#] 3	(2−,3−)[d]	BC	
1151.14[#] 18	(4−)[d]	BC	
1157.8[#] 2	(2−,3−,4−)[d]	BC F	
1163.1[a] 5	(1−)[d]	C F	
1172.19[#] 18	(2−,3−,4−)[e]	BC F	XREF: C(1173.6). Jπ: π=− doublet in E=2-110 eV (n,γ) (1983Be27,1980BeYB).
1184.99[#] 19	(2−,3−)[d]	BC	
1194.3[&]	(2−,3−,4−)[d]	C	
1197.89[#] 18	(2−,3−)[d]	BC F	
1212.0[#] 4	(2+,3+,4+)[e]	B F	XREF: F(1213.9).
1219.5[a] 10	(1−)[d]	C F	
1225.8[&]	(1−,2−,3−)[d]	C	
1227.88[#] 21	(2−,3−,4−)[e]	B	
1229.7[a] 15		F	
1231.3[#] 3	(2−,3−)[d]	BC	
1240.3[#] 3	(2−,3−,4−)[e]	B F	
1242.64[#] 21	(2−,3−)[d]	BC	
1248.5[&]	(−)[d]	C	Jπ: π=− doublet in E=2-110 eV (n,γ) (1983Be27,1980BeYB).
1261.3[&]	(1−)[d]	bC	XREF: b(1264).
1266.4[a] 10		b F	XREF: b(1264).
1271.8[&]	(2−,3−,4−)[d]	C	
1275.3[&]	(1−,2−,3−)[d]	C	
1285.8[#] 9	(2−,3−)[d]	BC	
1290.6 9		E	
1298.1[a] 15	(1−,2−,3−)[d]	C F	
1306.4[a] 10	(2−,3−,4−)[f]	BC F	XREF: C(1307.5). Jπ: π=− doublet in E=2-110 eV (n,γ) (1983Be27,1980BeYB).
1317.32[#] 17	(2−,3−,4−)[d]	BC	
1321.64[#] 20	(2−,3−)[d]	BC	
1326.5[a] 10		F	
1342.3[#] 4	(2+,3+,4+)[e]	B F	
1349.1[a] 15		F	
1351.16[#] 19	(4−)[d]	BC	
1352.6[t] 8	(12+)	E	Jπ: Intraband 335γ to (11+) 1018-keV and 648γ to (10+) 705-keV level; band member.
1355.4[#] 3	(2−,3−)[d]	BC F	
1360.3[#] 4	(2−,3−,4−)[d]	BC	
1369.2 15		F	
1375.7[#] 7	(1−,2−,3−)[d]	BC F	
1385.3[&]	(2−,3−)[d]	C	
1386.4[s] 8	(10+)	E	Jπ: Intraband 271γ to (9+) 1115-keV and 517γ to (8+) 869-keV level; band assignment.

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{186}Re Levels (continued)

E(level)[†]	Jπ[c]	XREF	Comments
1390.5[a] 15		F	
1393.0[#] 3	(2⁻,3⁻)[d]	BC	
1398.8[&]	(1⁻,2⁻,3⁻)[d]	C	
1403.2[&]	(1⁻)[d]	C f	XREF: f(1404.3).
1405.43[#] 16	(2⁻,3⁻,4⁻)[d]	BC f	XREF: f(1404.3).
1419.0[#] 3	(2⁻,3⁻)[d]	BC	
1421.7[a] 10		F	
1424.5[&]	(2⁻,3⁻)[d]	C	
1431.0[&]	(4⁻)[d]	C	
1434.2[a] 20		F	
1437.71[#] 24	(2⁻,3⁻,4⁻)[e]	B	
1449.8[#] 4	(1⁻,2⁻,3⁻)[d]	BC F	
1457.45[#] 21	(2⁻,3⁻)[d]	BC F	
1462.4[#] 5	(2⁻,3⁻)[d]	BC	
1472.7[a] 20		F	
1475.9[#] 3	(2⁻,3⁻,4⁻)[e]	BC	Jπ: π=− doublet in E=2-110 eV (n,γ) (1983Be27,1980BeYB).
1486.66[#] 17	(2⁻,3⁻,4⁻)[e]	B F	
1512.7[a] 20		F	
1520.5[a] 20		F	
1525.24[#] 20	(4⁻)[d]	BC	
1529.4[a] 20	(2⁻,3⁻)[d]	C F	
1538.8[&]	(1⁻,2⁻,3⁻)[d]	C	
1544.95[#] 17	(2⁻,3⁻,4⁻)[e]	BC F	Jπ: π=− doublet in E=2-110 eV (n,γ) (1983Be27,1980BeYB).
1550.65[#] 20	(1⁻,2⁻,3⁻)[d]	BC	
1566.35[#] 18	(2⁻,3⁻,4⁻)[d]	BC	
1571.98[#] 20	(1⁻,2⁻,3⁻)[d]	BC	
1575.8[#]	(2⁻,3⁻,4⁻)[d]	C	
1587.05[#] 16	(2⁻,3⁻)[d]	BC F	XREF: C(1591.6).
1601.7[#] 3	(2⁻,3⁻,4⁻)[e]	B F	
1607.10[#] 22	(2⁻,3⁻,4⁻)[e]	B	
1613.8[a] 20		F	
1628.18[#] 22	(2⁻,3⁻,4⁻)[d]	BC	
1633.8[a] 20		F	
1637[@] 5	(2⁻,3⁻,4⁻)[f]	B	
1643.9[&]	(1⁻,2⁻,3⁻)[d]	C	
1646.87[#] 23	(2⁻,3⁻,4⁻)[d]	BC F	
1659.12[#] 15	(2⁻,3⁻,4⁻)[e]	BC F	XREF: C(1662.1). Jπ: π=− doublet in E=2-110 eV (n,γ) (1983Be27,1980BeYB).
1667.8[&]	(2⁻,3⁻,4⁻)[d]	BC	XREF: B(1665).
1672.3[#] 3	(1⁻,2⁻,3⁻)[d]	BC	
1684.2[&]	(2⁻,3⁻,4⁻)[d]	C	
1694.7[#] 4	(2⁻,3⁻)[d]	BC F	
1707.6[a] 20		F	
1711.1[&]	(2⁻,3⁻)[d]	C	
1718.91[#] 24	(2⁻,3⁻,4⁻)[d]	BC F	
1742.4[a] 20		F	

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Adopted Levels, Gammas (continued)

^{186}Re Levels (continued)

E(level)[†]	Jπ[c]	XREF	Comments
1743.16[#] *22*	(2⁻,3⁻,4⁻)[e]	B	
1758.0[#] *4*	(2⁻,3⁻)[d]	BC	
1768.4[a] *20*		B F	
1776.4[a] *20*		F	
1794.0[&]	(2⁻,3⁻,4⁻)[f]	BC	XREF: B(1791). Jπ: π=− doublet in E=2-110 eV (n,γ) (1983Be27,1980BeYB).
1818.1[&]	(2⁻,3⁻,4⁻)[d]	C	
1827.54[#] *17*	(2⁻,3⁻,4⁻)[d]	BC	
1838.7[#] *3*	(1⁻,2⁻,3⁻)[d]	BC	
1846.41[#] *22*	(2⁻,3⁻)[d]	BC	
1881.34[#] *22*	(2⁻,3⁻,4⁻)[e]	B	
1905.8[#] *4*	(2⁻,3⁻,4⁻)[e]	B F	
1964.77[#] *14*	(2⁻,3⁻,4⁻)[e]	B	
1985[@] *4*	(2⁻,3⁻,4⁻)[f]	B	
2004[@] *3*	(2⁻,3⁻,4⁻)[f]	B F	
2055[@] *4*	(2⁻,3⁻,4⁻)[f]	B	
2063[@] *4*	(2⁻,3⁻,4⁻)[f]	B	
2083[@] *3*	(2⁻,3⁻,4⁻)[f]	B	
2106[@] *3*	(2⁻,3⁻,4⁻)[f]	B	
2141.2[@] *10*	(2⁻,3⁻,4⁻)[f]	B	
2203.4[#] *3*	(2⁻,3⁻,4⁻)[e]	B	
2219.19[#] *22*	(2⁻,3⁻,4⁻)[e]	B	
2244.81[#] *15*	(2⁻,3⁻,4⁻)[e]	B	
2261[@] *3*	(2⁻,3⁻,4⁻)[f]	B	
2319.76[#] *23*	(2⁻,3⁻,4⁻)[e]	B F	
2359.0[#] *5*	(2⁺,3⁺,4⁺)[e]	B F	

[†] From least-squares fit to Eγ data, except where otherwise noted, yielding a normalized χ^2=0.86. Tentative γ rays not used in fit to level energies. 2020Kr05 report high precision Eγ, almost all fit poorly and were not used during the fit; in this data set 140 out of 288 deviate by more than 3σ from their calculated values, yielding χ^2=5905 cf. χ^2_{crit}= 1.3. Quoted level energies from 2020Kr05 are marked with a footnote.

[‡] From 2020Kr05 − (n,γ) E=Thermal.

[#] From least-squares fit to (n,γ) E=thermal primary γ-ray data measured in 2016Ma35 together with secondary γ rays from 2016Ma35 and 1969La11, yielding normalized χ^2=0.86.

[@] From ^{185}Re(n,γ) E=thermal (1969La11).

[&] From ^{185}Re(n,γ) E=2-110 eV (1983Be27,1980BeYB).

[a] From ^{187}Re(p,d) (2009Wh01).

[b] From ^{186}W(d,2nγ) (2017Ma39).

[c] All firm assignments are also in agreement with statistical-model calculations using the DICEBOX computer code in the analysis of the partial (n,γ) cross-section data in 2016Ma35. Many of the tentative assignments are also supported by the statistical-model calculations; see comments.

[d] From (n,γ) E=2-110 eV (1983Be27,1980BeYB). Based on analysis of primary Iγ to final level from each of 26 $J^\pi=2^+$ or 3^+ neutron resonances populated in s-wave capture, and on average primary Iγ intensity from all resonances with a given J^π.

[e] From (n,γ) E=thermal (2016Ma35). Spin window deduced from primary γ rays deexciting the capture state ($^{+185}$Re target g.s. $J^\pi=5/2^+$). This assumes the most likely E1 γ via the dominant 3^+ component (98.8% 2016Ma35). The spin window extends to

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Adopted Levels, Gammas (continued)

^{186}Re Levels (continued)

J=1,2,3,4 if taking into account the 2^+ component. Lower-probability M1 primary γ rays also allow for π=+ states.

[f] From (n,γ) E=thermal (1969La11). Spin window deduced from primary γ rays deexciting the capture state ($^{+185}$Re target g.s. $J^\pi=5/2^+$). This assumes the most likely E1 γ via the dominant 3^+ component (98.8% 2016Ma35). The spin window extends to J=1,2,3,4 if taking into account the 2^+ component. Lower-probability M1 primary γ rays also allow for π=+ states.

[g] From analysis of depopulation data in (n,γ) E=thermal (2020Kr05).

[h] From (n,γ) E=thermal, except as noted.

[i] Weighted average of 3.7160 d *24* (89.256 h *58*) (2016Lu16), 3.7186 d *5* (2004Sc04), 3.719 d *8* (89.25 h *18*) (2014Un01 supersedes 2002Un02,1991Co17,1994Co02), and 3.7183 d *11* (89.239 h *26*) (1994Sc39). Other values not used in average because outliers or lower accuracy: 3.6813 d *67* (88.35 h *16*) (2018Ka49), 3.765 d *32* (90.36 h *77*) (2011Bo11), 3.775 d *1* (90.600 h *24*) (1989Ab18), 3.777 d *4* (90.64 h *9*) (1971Mi16), 3.78 d *13* (90.6 h *31*) (1958Gu09), 3.704 d *8* (88.9 h *2*) (1956Po28), 3.867 d *8* (92.8 h *2*) (1947Go01).

[j] Band(A): $K^\pi=2^-$, (π5/2[402])-(ν1/2[510]) band.

[k] Band(B): $K^\pi=4^-$, (π5/2[402])+(ν3/2[512]) band.

[l] Band(C): $K^\pi=3^-$, (π5/2[402])+(ν1/2[510]) band.

[m] Band(D): $K^\pi=1^-$, (π5/2[402])-(ν3/2[512]) band.

[n] Band(E): $K^\pi=2^-$, (π5/2[402])-(ν9/2[505]) band.

[o] Band(F): $K^\pi=3^+$, (π5/2[402])-(ν11/2[615]) band.

[p] Band(G): $K^\pi=(4)^+$, (π9/2[514])-(ν1/2[510]) band. See comments for coupling (1973Gl06).

[q] Band(H): $K^\pi=(1^+)$, (π9/2[514])-(ν7/2[503]) band.

[r] Band(I): $K^\pi=1^-$, (π5/2[402])-(ν7/2[503]) band.

[s] Band(J): $K^\pi=5^+$, (π9/2[514])+(ν1/2[510]) band.

[t] Band(K): $K^\pi=(8^+)$, (π5/2[402])+(ν11/2[615]) band.

[u] Band(L): $K^\pi=(6^+)$, (π9/2[514])+(ν3/2[512]) band.

[v] Band(M): $K^\pi=(10^+)$. Band built on the $J^\pi=(10^+)$ state at 796 keV; see comments.

[w] Band(N): $K^\pi=(6^-)$, (π5/2[402])+(ν7/2[503]) band.

[x] Band(O): $K^\pi=(1^-)$, (π9/2[514])-(ν11/2[615]) band.

[y] Band(a): $K^\pi=(4^-)$, (π1/2[411])+(ν7/2[503]) band.

[z] Band(b): $K^\pi=(7^-)$, (π5/2[402])+(ν9/2[505]) band.

[1] Band(c): $K^\pi=(0^+)$, (π9/2[514])-(ν9/2[505]) band.

Adopted Levels, Gammas (continued)

γ(^{186}Re)

E_i(level)	J_i^π	E_γ [†]	I_γ [†]	E_f	J_f^π	Mult.[a]	δ[a]	α[b]	$I_{(\gamma+ce)}$	Comments
59.010	2⁻	59.009 *4*	100[‡]	0.0	1⁻	M1+E2	0.042 *10*	4.21 *7*		α(L)=3.25 *5*; α(M)=0.744 *12* α(N)=0.1804 *30*; α(O)=0.0302 *5*; α(P)=0.002171 *30*
99.361	3⁻	40.350 *3*	100.0[‡] *7*	59.010	2⁻	M1+E2	0.145 *6*	17.7 *5*		B(M1)(W.u.)=6.5×10^{-4} *+8−6*; B(E2)(W.u.)=3.42 *+50−42* α(L)=13.6 *4*; α(M)=3.21 *9* α(N)=0.773 *22*; α(O)=0.1233 *32*; α(P)=0.00653 *9* δ: Average of 0.146 *6* (from intensity balance through 59-keV level in IT decay (1972Se06)) and 0.124 *+33−45* from subshell ratios in (n,γ) E=thermal (1969La11).
		99.362 *4*	21.3[‡] *9*	0.0	1⁻	E2		4.23 *6*		B(E2)(W.u.)=0.391 *+48−39* α(K)=0.848 *12*; α(L)=2.55 *4*; α(M)=0.650 *9* α(N)=0.1543 *22*; α(O)=0.02198 *31*; α(P)=7.86×10^{-5} *11*
146.275	3⁻	87.266 *4*	100.0 *59*	59.010	2⁻	M1(+E2)	≤0.14	7.64 *11*		α(K)=6.27 *10*; α(L)=1.06 *4*; α(M)=0.243 *10* α(N)=0.0589 *23*; α(O)=0.00982 *33*; α(P)=0.000689 *11*
		146.273 *12*	8.4 *17*	0.0	1⁻					
148.2	(8⁺)	48.84 *50*	100[‡]	99.361	3⁻	(E5)		4.8×10^6 *4*	100	ce(L)/(γ+ce)=0.51 *4*; ce(M)/(γ+ce)=0.38 *4* ce(N)/(γ+ce)=0.098 *11*; ce(O)/(γ+ce)=0.0102 *12*; ce(P)/(γ+ce)=7.7×10^{-6} *8* α(L)=2.48×10^6 *19*; α(M)=1.82×10^6 *16* α(N)=4.7×10^5 *4*; α(O)=4.9×10^4 *4*; α(P)=36.8 *26* B(E5)(W.u.)=0.069 exceeds RUL=0. E_γ: Deduced according to energy-level difference from precision measurement of (8⁺) isomer in 2015Ma60. Mult.: From ^{186}Re IT decay (1972Se06).
173.929	4⁻	74.568 *3*	100.0	99.361	3⁻	M1+E2	0.12 *+5−8*	11.97 *17*		α(K)=9.72 *18*; α(L)=1.73 *12*; α(M)=0.400 *30* α(N)=0.097 *7*; α(O)=0.0160 *10*; α(P)=0.001084 *20*
210.699	2⁻	64.42 *4*	1.67 *30*	146.275	3⁻					
		111.337 *8*	42.0 *59*	99.361	3⁻	M1(+E2)	≤0.27	3.76 *6*		α(K)=3.06 *9*; α(L)=0.540 *35*; α(M)=0.125 *9* α(N)=0.0302 *22*; α(O)=0.00499 *29*; α(P)=0.000334 *11*
		151.686 *5*	80.3 *46*	59.010	2⁻	M1+E2	1.7 *+11−5*	1.03 *11*		α(K)=0.59 *15*; α(L)=0.332 *26*; α(M)=0.082 *7* α(N)=0.0197 *17*; α(O)=0.00291 *20*; α(P)=5.8×10^{-5} *17*
		210.685 *17*	100.0 *59*	0.0	1⁻	M1		0.628 *9*		α(K)=0.520 *7*; α(L)=0.0829 *12*; α(M)=0.01893 *27* α(N)=0.00459 *6*; α(O)=0.000772 *11*; α(P)=5.65×10^{-5} *8*
268.800	4⁻	122.525 *5*	100.0 *71*	146.275	3⁻					

$^{186}_{75}Re_{111}$-11

Adopted Levels, Gammas (continued)

γ(^{186}Re) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[a]	δ[a]	α[b]	Comments
268.800	4⁻	169.431 *8*	19.8 *50*	99.361	3⁻	M1+E2	1.75 *55*	0.71 *10*	α(K)=0.43 *11*; α(L)=0.212 *13*; α(M)=0.052 *4* α(N)=0.0125 *9*; α(O)=0.00186 *10*; α(P)=4.2×10^{-5} *13*
		209.82 *2*	22.5 *22*	59.010	2⁻				
273.627	4⁻	99.696 *4*	27.0 *63*	173.929	4⁻				
		127.352 *4*	68 *15*	146.275	3⁻	M1+E2	1.7 *+70−7*	1.86 *24*	α(K)=0.9 *4*; α(L)=0.70 *12*; α(M)=0.174 *31* α(N)=0.041 *7*; α(O)=0.0061 *9*; α(P)=9.E−5 *5*
		174.271 *9*	100.0 *63*	99.361	3⁻	M1+E2	0.71 *+26−23*	0.88 *8*	α(K)=0.67 *10*; α(L)=0.162 *10*; α(M)=0.0387 *29* α(N)=0.0093 *7*; α(O)=0.00147 *7*; α(P)=7.1×10^{-5} *11*
314.009	(3⁺)	103.310 *6*	20.3 *12*	210.699	2⁻	[E1]		0.352 *5*	B(E1)(W.u.)=8.1×10^{-7} *+7−6* α(K)=0.287 *4*; α(L)=0.0507 *7*; α(M)=0.01162 *16* α(N)=0.00276 *4*; α(O)=0.000433 *6*; α(P)=2.206×10^{-5} *31*
		167.737 *8*	8.64 *45*	146.275	3⁻	E1+M2	0.26 *6*	0.53 *20*	B(E1)(W.u.)=7.5×10^{-8} *6*; B(M2)(W.u.)=0.83 *+39−33* α(K)=0.40 *15*; α(L)=0.10 *4*; α(M)=0.024 *10* α(N)=0.0058 *24*; α(O)=1.0×10^{-3} *4*; α(P)=6.1×10^{-5} *25* B(M2)(W.u.)=0.83 *+39−33* upper bound exceeds RUL=1.
		214.648 *8*	100 *6*	99.361	3⁻	E1		0.0539 *8*	B(E1)(W.u.)=4.45×10^{-7} *25* α(K)=0.0447 *6*; α(L)=0.00716 *10*; α(M)=0.001632 *23* α(N)=0.000391 *5*; α(O)=6.33×10^{-5} *9*; α(P)=3.80×10^{-6} *5*
		254.995 *15*	48.2 *29*	59.010	2⁻	E1		0.0351 *5*	B(E1)(W.u.)=1.28×10^{-7} *10* α(K)=0.0292 *4*; α(L)=0.00460 *6*; α(M)=0.001048 *15* α(N)=0.0002516 *35*; α(O)=4.09×10^{-5} *6*; α(P)=2.533×10^{-6} *35*
316.459	(1⁻)	257.446 *15*	55.2 *32*	59.010	2⁻	M1+E2	0.55 *+22−23*	0.310 *31*	B(M1)(W.u.)=0.0014 *+13−5*; B(E2)(W.u.)=2.6 *+30−17* α(K)=0.250 *30*; α(L)=0.0460 *11*; α(M)=0.01069 *18* α(N)=0.00258 *5*; α(O)=0.000424 *13*; α(P)=2.67×10^{-5} *35*
		316.473 *20*	100.0 *28*	0.0	1⁻	M1		0.2061 *29*	B(M1)(W.u.)=0.0018 *+15−6* α(K)=0.1712 *24*; α(L)=0.0270 *4*; α(M)=0.00616 *9* α(N)=0.001494 *21*; α(O)=0.0002513 *35*; α(P)=1.847×10^{-5} *26*
317.846	5⁻	143.919 *5*	100 *13*	173.929	4⁻	M1+E2	1.5 *+9−5*	1.27 *16*	α(K)=0.74 *22*; α(L)=0.40 *4*; α(M)=0.100 *12* α(N)=0.0238 *29*; α(O)=0.0035 *4*; α(P)=7.3×10^{-5} *25*
		218.6187[e] *5*	5.6 *28*	99.361	3⁻				
322.378	3⁻	111.674 *6*	100 *21*	210.699	2⁻	M1+E2	1.29 *+51−32*	3.08 *16*	α(K)=1.60 *34*; α(L)=1.12 *14*; α(M)=0.28 *4* α(N)=0.067 *9*; α(O)=0.0098 *11*; α(P)=0.00017 *4*
		148.37 *6*	5.9 *14*	173.929	4⁻				
		176.112 *8*	27.1 *57*	146.275	3⁻	M1+E2	0.93 *+43−31*	0.78 *10*	α(K)=0.57 *12*; α(L)=0.164 *11*; α(M)=0.0396 *34* α(N)=0.0095 *8*; α(O)=0.00147 *8*; α(P)=5.9×10^{-5} *14*
		223.035 *15*	35.7 *21*	99.361	3⁻	M1+E2	0.97 *+28−22*	0.38 *4*	α(K)=0.29 *4*; α(L)=0.0717 *10*; α(M)=0.01712 *35* α(N)=0.00412 *8*; α(O)=0.000649 *9*; α(P)=3.0×10^{-5} *5*
		263.33 *20*	16.4 *36*	59.010	2⁻				I_γ: Other value also in (n,γ): 3.7 *15* in 2020Kr05.
324.2	5⁺	144.0[#] *5*	100.0 *49*	180.2	(6⁻)	E1		0.1495 *25*	B(E1)(W.u.)=3.01×10^{-6} *13* α(K)=0.1229 *20*; α(L)=0.02059 *35*; α(M)=0.00471 *8* α(N)=0.001124 *19*; α(O)=0.0001790 *30*; α(P)=9.91×10^{-6} *16*
		150.3[#] *5*	13.2 *10*	173.929	4⁻	E1+M2	0.17 *5*	0.42 *18*	B(E1)(W.u.)=3.38×10^{-7} *30*

$^{186}_{75}Re_{111}$-12

Adopted Levels, Gammas (continued)

γ(^{186}Re) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[a]	δ[a]	α[b]	Comments
									α(K)=0.32 *13*; α(L)=0.08 *4*; α(M)=0.018 *9* α(N)=0.0045 *22*; α(O)=7.E−4 *4*; α(P)=4.6×10^{-5} *24* B(M2)(W.u.)=2.0 *+13−10* exceeds RUL=1.
351.202	(4)$^+$	204.96 *15*	1.29 *36*	146.275	3$^-$				
		251.841 *15*	100 *7*	99.361	3$^-$	E1		0.0362 *5*	α(K)=0.0301 *4*; α(L)=0.00475 *7*; α(M)=0.001082 *15* α(N)=0.000260 *4*; α(O)=4.22×10^{-5} *6*; α(P)=2.61×10^{-6} *4*
378.387	(2$^-$)	61.928 *4*	73 *11*	316.459	(1$^-$)	M1+E2	0.54 *8*	10.0 *15*	α(L)=7.6 *11*; α(M)=1.88 *29* α(N)=0.45 *7*; α(O)=0.067 *9*; α(P)=0.00152 *9* Mult.,δ: ce(L1) peak is complex and assigned M1 in 1969La11. Statistical-model calculations also suggest pure M1 (δ=0) transition based on level intensity balance in 2016Ma35.
		232.100 *16*	36.2 *39*	146.275	3$^-$	M1+E2	0.57 *17*	0.410 *31*	α(K)=0.329 *31*; α(L)=0.0630 *9*; α(M)=0.01469 *23* α(N)=0.00355 *5*; α(O)=0.000578 *9*; α(P)=3.5×10^{-5} *4* I_γ: Resolved from doublet with 231.8γ.
		319.44 *10*	24.2 *15*	59.010	2$^-$				
		378.42 *5*	100.0 *59*	0.0	1$^-$	M1+E2	0.4 *2*	0.116 *11*	α(K)=0.096 *9*; α(L)=0.0157 *9*; α(M)=0.00361 *18* α(N)=0.00087 *4*; α(O)=0.000146 *9*; α(P)=1.03×10^{-5} *11*
414.7	(9$^+$)	266.69[@e] *4*	100	148.2	(8$^+$)				E_γ: Other: 266.1373 *6* (n′γ) E=Thermal.
417.794	5$^-$	144.152[e] *5*	13.16 *70*	273.627	4$^-$				
		148.994 *5*	100 *18*	268.800	4$^-$	M1+E2	1.1 *+8−4*	1.24 *18*	α(K)=0.82 *24*; α(L)=0.32 *4*; α(M)=0.079 *12* α(N)=0.0188 *29*; α(O)=0.00285 *35*; α(P)=8.4×10^{-5} *28*
		271.47 *10*	40 *12*	146.275	3$^-$				
420.560	(4$^+$)	106.550 *4*	100 *12*	314.009	(3$^+$)	M1+E2	1.5 *+16−5*	3.54 *24*	α(K)=1.6 *6*; α(L)=1.46 *27*; α(M)=0.37 *7* α(N)=0.087 *17*; α(O)=0.0127 *23*; α(P)=1.7×10^{-4} *7*
		321.1896 *7*	5.9 *32*	99.361	3$^-$				
425.823	(4$^+$)	111.814 *4*	100 *36*	314.009	(3$^+$)	M1+E2	1.29 *+50−32*	3.06 *16*	α(K)=1.60 *34*; α(L)=1.11 *14*; α(M)=0.28 *4* α(N)=0.066 *9*; α(O)=0.0097 *11*; α(P)=0.00016 *4*
		326.4786 *7*	5.9 *29*	99.361	3$^-$				
462.969	5$^-$	145.131 *8*	14.2 *44*	317.846	5$^-$				
		189.313 *17*	100 *26*	273.627	4$^-$	M1+E2	0.91 *+35−26*	0.64 *7*	α(K)=0.47 *8*; α(L)=0.126 *5*; α(M)=0.0303 *17* α(N)=0.0073 *4*; α(O)=0.00114 *4*; α(P)=4.9×10^{-5} *10*
		193.95 *10*	29.6 *17*	268.800	4$^-$				α(K)=0.42 *24*; α(L)=0.117 *13*; α(M)=0.028 *4* α(N)=0.0068 *10*; α(O)=0.00105 *8*; α(P)=4.3×10^{-5} *28* E_γ,I_γ: Multiply-placed γ; Iγ estimated from statistical-model analysis (2016Ma35); see 691-keV level. I_γ: Other value also in (n,γ): 11.5 *23* in 1969La11 (undivided Iγ); <5.7 in 2020Kr05.
		289.06 *15*	9.2 *27*	173.929	4$^-$				
		363.45 *15*	49.8 *35*	99.361	3$^-$				
465.4	6$^+$	141.1[#] *5*	100.0	324.2	5$^+$	M1+E2	0.7 *+7−6*	1.66 *28*	α(K)=1.2 *4*; α(L)=0.34 *9*; α(M)=0.082 *24* α(N)=0.020 *6*; α(O)=0.0031 *7*; α(P)=1.3×10^{-4} *5*

Adopted Levels, Gammas (continued)

γ(^{186}Re) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[a]	δ[a]	α[b]	Comments
469.794	4⁻	147.417[d] *6*	100.0[d] *29*	322.378	3⁻	M1+E2	0.95 *+27−22*	1.34 *10*	α(K)=0.92 *13*; α(L)=0.320 *25*; α(M)=0.078 *7* α(N)=0.0187 *17*; α(O)=0.00285 *20*; α(P)=9.6×10^{-5} *16*
		200.981 *16*	18.4 *39*	268.800	4⁻				
		295.88 *15*	13.7 *11*	173.929	4⁻	M1		0.2472 *35*	α(K)=0.2053 *29*; α(L)=0.0324 *5*; α(M)=0.00740 *10* α(N)=0.001796 *25*; α(O)=0.000302 *4*; α(P)=2.217×10^{-5} *31*
		370.3793 *7*	8.6 *43*	99.361	3⁻				
470.509	(3⁻)	92.122 *4*	100 *23*	378.387	(2⁻)	M1+E2	0.80 *+44−34*	6.24 *19*	α(K)=3.7 *10*; α(L)=2.0 *6*; α(M)=0.48 *16* α(N)=0.12 *4*; α(O)=0.017 *5*; α(P)=4.0×10^{-4} *11*
		148.09 *6*	6.8 *21*	322.378	3⁻				
		201.78 *10*	6.8 *21*	268.800	4⁻				
		411.18 *20*	54.5 *42*	59.010	2⁻				
497.294	(6⁻)	179.448 *7*	100	317.846	5⁻				
		323.5[#] *5*	13 *1*	173.929	4⁻				
500.722	(5)⁺	149.520 *5*	100 *50*	351.202	(4)⁺	M1+E2	1.8 *+14−5*	1.06 *11*	α(K)=0.59 *15*; α(L)=0.356 *27*; α(M)=0.089 *8* α(N)=0.0212 *18*; α(O)=0.00312 *21*; α(P)=5.8×10^{-5} *17*
		176.2941[d] *3*	11.1[d] *56*	324.2	5⁺				
		401.3 *3*	12.6 *13*	99.361	3⁻	[M2]		0.369 *5*	α(K)=0.293 *4*; α(L)=0.0583 *8*; α(M)=0.01373 *20* α(N)=0.00334 *5*; α(O)=0.000557 *8*; α(P)=3.85×10^{-5} *5* Mult.: [E1] if J^π=4⁺.
534.37	(4⁻)	260.87 *15*	76 *16*	273.627	4⁻	(M1)		0.348 *5*	α(K)=0.289 *4*; α(L)=0.0458 *6*; α(M)=0.01046 *15* α(N)=0.00254 *4*; α(O)=0.000427 *6*; α(P)=3.13×10^{-5} *4* I_γ: Other value also in (n,γ): 31 in 1969La11.
		265.6131 *5*	14.6 *79*	268.800	4⁻				
		354.1162 *2*	100 *15*	180.2	(6⁻)				
		360.43 *4*	100.0 *63*	173.929	4⁻	M1		0.1453 *20*	α(K)=0.1208 *17*; α(L)=0.01898 *27*; α(M)=0.00433 *6* α(N)=0.001050 *15*; α(O)=0.0001766 *25*; α(P)=1.300×10^{-5} *18*
		434.9956 *9*	6.7 *33*	99.361	3⁻				
549.330	(5⁺)	123.507 *6*	100	425.823	(4⁺)	M1+E2	0.75 *35*	2.46 *23*	α(K)=1.7 *4*; α(L)=0.58 *13*; α(M)=0.141 *34* α(N)=0.034 *8*; α(O)=0.0052 *10*; α(P)=1.8×10^{-4} *5*
		128.7442 *5*	11.7 *88*	420.560	(4⁺)				
		375.4003 *12*	<17.5	173.929	4⁻				
556.0	(6⁺)	231.8[#] *5*	100	324.2	5⁺	M1+E2	0.47 *17*	0.430 *32*	α(K)=0.348 *32*; α(L)=0.0633 *10*; α(M)=0.01469 *25* α(N)=0.00355 *6*; α(O)=0.000583 *10*; α(P)=3.7×10^{-5} *4* I_γ: Resolved from doublet with 232.1γ.
559.976	(5⁺)	134.158 *16*	18.1 *22*	425.823	(4⁺)				I_γ: Other value also in (n,γ): 41 *6* in 1969La11.
		139.416 *7*	100 *16*	420.560	(4⁺)	M1+E2	1.8 *+41−7*	1.35 *19*	α(K)=0.72 *27*; α(L)=0.48 *6*; α(M)=0.119 *17* α(N)=0.028 *4*; α(O)=0.0042 *5*; α(P)=7.0×10^{-5} *32*
577.720	(2⁻)	199.5[e]	53 *18*	378.387	(2⁻)				
		261.266 *12*	100 *16*	316.459	(1⁻)	(M1+E2)	0.4 *2*	0.318 *27*	α(K)=0.260 *26*; α(L)=0.0447 *11*; α(M)=0.01031 *18* α(N)=0.00249 *5*; α(O)=0.000413 *12*; α(P)=2.79×10^{-5} *30*
588.705	(4⁻)	118.196 *4*	100.0 *61*	470.509	(3⁻)				

$^{186}_{75}Re_{111}$-14

Adopted Levels, Gammas (continued)

γ(^{186}Re) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[a]	δ[a]	α[b]	Comments
588.705	(4⁻)	266.3501[d] *4*	7.9[d] *30*	322.378	3⁻				
		442.2817 *11*	6.1 *52*	146.275	3⁻				
595.059	(6⁻)	177.2728 *2*	100	417.794	5⁻				
601.57	(1⁺)	223.1878 *4*	6.5 *27*	378.387	(2⁻)				
		285.10 *3*	18.0 *12*	316.459	(1⁻)	E1+M2	0.32 *8*	0.13 *5*	α(K)=0.10 *4*; α(L)=0.021 *8*; α(M)=0.0049 *20* α(N)=0.0012 *5*; α(O)=2.0×10^{-4} *8*; α(P)=1.3×10^{-5} *5*
		390.91 *5*	100.0 *18*	210.699	2⁻	E1+M2	0.26 *8*	0.037 *16*	α(K)=0.030 *12*; α(L)=0.0055 *25*; α(M)=0.0013 *6* α(N)=3.1×10^{-4} *14*; α(O)=5.2×10^{-5} *24*; α(P)=3.6×10^{-6} *17*
623.89	(1⁻)	301.36 *15*	33 *12*	322.378	3⁻				
		350.226 *1*	13.2 *79*	273.627	4⁻				
		413.21 *6*	100.0 *71*	210.699	2⁻				
		524.4963 *7*	34 *11*	99.361	3⁻				
		564.8843 *11*	16.4 *71*	59.010	2⁻				
		623.8411 *10*	20.9 *69*	0.0	1⁻				
646.346	5⁻	176.552 *8*	100 *24*	469.794	4⁻	M1+E2	0.89 *+41−30*	0.79 *10*	α(K)=0.58 *12*; α(L)=0.161 *11*; α(M)=0.0388 *33* α(N)=0.0093 *8*; α(O)=0.00145 *8*; α(P)=6.1×10^{-5} *14*
		228.5199[e] *7*	12.6 *72*	417.794	5⁻				E_γ,I_γ: γ not observed in 2016Ma35; questionable placement of γ.
		328.42[e] *20*	21.0 *63*	317.846	5⁻				α(K)=0.10 *5*; α(L)=0.020 *4*; α(M)=0.0048 *8* α(N)=0.00116 *20*; α(O)=0.00019 *4*; α(P)=1.1×10^{-5} *6* Existence of γ is questionable.
651.6	(7⁺)	186.1[#] *5*	100	465.4	6⁺				E_γ: Other: 186.0535 *5* (2020Kr05 − (n,γ) E=Thermal).
		327.5[#] *5*	9 *1*	324.2	5⁺				
657.98	(2⁺)	56.408 *3*	90 *27*	601.57	(1⁺)	M1+E2	0.85 *25*	24 *7*	α(L)=18 *5*; α(M)=4.5 *14* α(N)=1.08 *32*; α(O)=0.16 *4*; α(P)=0.00159 *33*
		335.66 *20*	41 *14*	322.378	3⁻				
		341.38 *15*	100 *11*	316.459	(1⁻)				
		447.1410 *7*	70 *30*	210.699	2⁻				
660.722	(1⁻)	344.2823 *9*	100	316.459	(1⁻)				
665.188	(6)⁺	164.466 *8*	100 *23*	500.722	(5)⁺	M1+E2	1.1 *+9−4*	0.91 *16*	α(K)=0.62 *19*; α(L)=0.219 *25*; α(M)=0.053 *7* α(N)=0.0128 *17*; α(O)=0.00195 *19*; α(P)=6.4×10^{-5} *23*
		313.9705 *7*	40 *17*	351.202	(4)⁺				
680.05	(2⁻)	357.65 *15*	52.9 *35*	322.378	3⁻				I_γ: Other value also in (n,γ): 81 *15* in 1969La11.
		469.39 *20*	30.2 *27*	210.699	2⁻				I_γ: Other value also in (n,γ) (undivided Iγ): 81 *22* in 1969La11.
		505.9847 *10*	19.2 *77*	173.929	4⁻				
		580.5283[d] *8*	11.5[d] *39*	99.361	3⁻				
		620.8425 *5*	32.7 *77*	59.010	2⁻				
		680.0 *10*	100 *23*	0.0	1⁻				
686.055	(3⁻)	108.336 *5*	25.7 *57*	577.720	(2⁻)				
		215.28 *15*	14.0 *34*	470.509	(3⁻)				

$^{186}_{75}Re_{111}$-15

Adopted Levels, Gammas (continued)

γ(^{186}Re) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[a]	δ[a]	α[b]	Comments
686.055	(3⁻)	307.56 *6*	100.0 *71*	378.387	(2⁻)	M1+E2	0.3 *2*	0.211 *17*	α(K)=0.174 *16*; α(L)=0.0285 *11*; α(M)=0.00653 *20* α(N)=0.00158 *5*; α(O)=0.000264 *11*; α(P)=1.87×10⁻⁵ *18*
691.37	(6⁻)	193.95[e] *10*	90 *18*	497.294	(6⁻)				E_γ,I_γ: Multiply-paced γ with unresolved Iγ (1969La11); not observed in 2016Ma35; see 463-keV level. Questionable placement of γ.
		228.42 *10*	68.5 *71*	462.969	5⁻				I_γ: Other value also in (n,γ): 15.6 *89* in 2020Kr05.
		273.5703 *7*	35 *17*	417.794	5⁻				
		373.49 *15*	100.0 *87*	317.846	5⁻				
705.048	(6⁺)	155.6944 *4*	100	549.330	(5⁺)				
705.2	(10⁺)	290.4[#] *5*	59 *7*	414.7	(9⁺)				
		557.1[#] *5*	100	148.2	(8⁺)				
709.6	(7⁻)	212.7[#] *5*		497.294	(6⁻)				
		391.4[#] *5*		317.846	5⁻				
722.962	(5⁻)	188.5670 *3*	100 *38*	534.37	(4⁻)				
		542.5661[d] *10*	9.4[d] *50*	180.2	(6⁻)				
736.127	(5⁻)	147.417[de] *6*	100[d] *11*	588.705	(4⁻)	(M1+E2)	0.95 *+27−22*	1.34 *10*	α(K)=0.92 *13*; α(L)=0.320 *25*; α(M)=0.078 *7* α(N)=0.0187 *17*; α(O)=0.00285 *20*; α(P)=9.6×10⁻⁵ *16*
		266.3501[d] *4*	11.7[d] *44*	469.794	4⁻				
		318.2979 *7*	26 *14*	417.794	5⁻				
744.80	(3⁺)	86.84 *4*	100.0	657.98	(2⁺)	M1		7.75 *11*	α(K)=6.41 *9*; α(L)=1.037 *15*; α(M)=0.2371 *33* α(N)=0.0575 *8*; α(O)=0.00966 *14*; α(P)=0.000705 *10*
753.267	(2⁻,3⁻)	282.9159 *7*	15.6 *74*	470.509	(3⁻)				
		606.9903 *5*	100 *19*	146.275	3⁻				
		753.2663 *8*	93 *30*	0.0	1⁻				
761.42	(1⁻,2⁻,3⁻)	439.01 *20*	100 *10*	322.378	3⁻				
		444.9631 *7*	49 *21*	316.459	(1⁻)				
		550.9 *5*	95 *32*	210.699	2⁻				
		615.3883 *16*	25 *13*	146.275	3⁻				
		702.6092[e] *19*	30 *16*	59.010	2⁻				
		761.6[c] *10*	131[c] *14*	0.0	1⁻				
773.6	(7⁺)	217.6[#] *5*	100	556.0	(6⁺)				E_γ: Other: 217.8928 *5* (2020Kr05 − (n,γ) E=Thermal).
774.879	(7⁻)	360.6248 *17*	100	414.7	(9⁺)				
		594.5845 *18*	60 *39*	180.2	(6⁻)				
		626.8018 *20*	23 *14*	148.2	(8⁺)				
785.58	(1⁻,2⁻,3⁻)	406.92 *20*	100.0 *96*	378.387	(2⁻)				
		468.8837[d] *15*	14[d] *11*	316.459	(1⁻)				
		726.3659 *12*	68 *23*	59.010	2⁻				
791.225	(1⁻,2⁻,3⁻)	468.8837[d] *15*	14[d] *11*	322.378	3⁻				
		580.5283[d] *8*	50[d] *17*	210.699	2⁻				

$^{186}_{75}Re_{111}$-16

Adopted Levels, Gammas (continued)

γ(^{186}Re) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[a]	δ[a]	α[b]	Comments
791.225	(1⁻,2⁻,3⁻)	644.9220[d] *8*	11[d] *4*	146.275	3⁻				
		691.6333[d] *13*	25[d] *10*	99.361	3⁻				
		732.2170 *8*	100 *22*	59.010	2⁻				
795.9	(10⁺)	381.2[#] *5*	50 *5*	414.7	(9⁺)				
		647.6[#] *5*	100	148.2	(8⁺)				
796.45	(≤3⁻)	218.69 *10*	18.1 *19*	577.720	(2⁻)				I_γ: Other value also in (n,γ): 8.6 *17* in 1969La11.
		418.37 *20*	36 *17*	378.387	(2⁻)				
		473.9867[e] *11*	12 *5*	322.378	3⁻				
		479.3[&]	100.0 *63*	316.459	(1⁻)				E_γ: 479.3 *3* for complex γ (1969La11); 479.68 *6* (2016Ma35).
		584.3 *7*	25 *13*	210.699	2⁻				
		737.1875 *10*	16 *5*	59.010	2⁻				
		796.5 *15*	28 *25*	0.0	1⁻				
814.187	(1⁻,2⁻)	603.4963 *10*	71 *24*	210.699	2⁻				
		813.9455[d] *15*	100[d] *42*	0.0	1⁻				
819.00	(2⁻,3⁻)	496.59 *20*	100.0 *54*	322.378	3⁻				
		545.1537[d] *13*	6.6[d] *36*	273.627	4⁻				
		607.5 *8*	65 *24*	210.699	2⁻				I_γ: Other value also in (n,γ): 27 *11* in 2020Kr05.
		645.3 *8*	30 *11*	173.929	4⁻				I_γ: Other value also in (n,γ): 16 *6* in 2020Kr05.
		672.5994 *14*	8.4 *45*	146.275	3⁻				
		761.6[c] *10*	56[c] *6*	59.010	2⁻				I_γ: Other value also in (n,γ) (undivided Iγ) 83 *26* in 1969La11.
821.30	(0⁺)	163.31 *6*	55 *21*	657.98	(2⁺)				
		219.78 *10*	100.0 *75*	601.57	(1⁺)				
		821.3334 *19*	51 *28*	0.0	1⁻				
826.150	(4⁻)	140.095 *5*	100 *12*	686.055	(3⁻)	M1+E2	2.5 *5*	1.24 *6*	α(K)=0.59 *8*; α(L)=0.495 *18*; α(M)=0.124 *5* α(N)=0.0296 *12*; α(O)=0.00431 *15*; α(P)=5.5×10^{-5} *9*
		237.60 *15*	14 *4*	588.705	(4⁻)				
		355.63 *5*	42.3 *96*	470.509	(3⁻)				
855.04?	(4⁺)	110.240 *4*	100 *11*	744.80	(3⁺)				
		196.98[e] *10*	14.0 *26*	657.98	(2⁺)				Existence of γ is questionable.
856.225	(2⁻,3⁻)	539.7864 *9*	50 *17*	316.459	(1⁻)				
		645.6312 *14*	22 *12*	210.699	2⁻				
		856.2132 *16*	100 *44*	0.0	1⁻				
860.386	(6⁻)	213.8470 *5*	100 *50*	646.346	5⁻				
		362.9614[e] *12*	63 *38*	497.294	(6⁻)				
		397.5339 *8*	75 *38*	462.969	5⁻				
		542.5661[d] *10*	45[d] *23*	317.846	5⁻				
864.17	(2⁻,3⁻)	286.45 *15*	100	577.720	(2⁻)				
869.2	(8⁺)	217.5[#] *5*	100	651.6	(7⁺)				
		403.8[#] *5*	22 *2*	465.4	6⁺				
871.0	(2⁻,3⁻,4⁻)	548.6176 *10*	54 *24*	322.378	3⁻				

$^{186}_{75}Re_{111}$-17

Adopted Levels, Gammas (continued)

γ(^{186}Re) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π
871.0	(2⁻,3⁻,4⁻)	597.9591[e] *8*	98 *27*	273.627	4⁻
		660.1877[d] *12*	14[d] *7*	210.699	2⁻
		696.9010[e] *11*	61 *21*	173.929	4⁻
		771.7231[d] *8*	100[d] *25*	99.361	3⁻
879.183	(2⁻,3⁻)	556.8625 *12*	50 *22*	322.378	3⁻
		610.3402 *14*	28 *14*	268.800	4⁻
		779.7021[e] *10*	100 *38*	99.361	3⁻
888.777	(4⁻)	202.6952 *3*	100 *29*	686.055	(3⁻)
		418.5012 *9*	87 *33*	470.509	(3⁻)
889.676	(1⁻,2⁻,3⁻)	311.9945 *6*	23 *10*	577.720	(2⁻)
		419.8915 *5*	100 *25*	469.794	4⁻
		567.2060[e] *11*	25 *12*	322.378	3⁻
		573.2576 *18*	19 *12*	316.459	(1⁻)
895.283	(2⁻,3⁻,4⁻)	208.9310 *5*	55.6 *31*	686.055	(3⁻)
		577.4762 *12*	100 *44*	317.846	5⁻
		684.5342 *13*	72 *37*	210.699	2⁻
		721.6994 *20*	54 *30*	173.929	4⁻
902.336	(2⁻,3⁻)	324.4419 *7*	29 *17*	577.720	(2⁻)
		579.8404[e] *14*	28 *16*	322.378	3⁻
		691.6333[d] *13*	16[d] *6*	210.699	2⁻
		803.0772[e] *12*	100 *35*	99.361	3⁻
910.478	(2⁺)	253.6189 *6*	87 *45*	657.98	(2⁺)
		308.8557 *5*	100 *53*	601.57	(1⁺)
912.378	(6⁻)	176.2941[d] *3*	100[d] *43*	736.127	(5⁻)
		317.4579[d] *8*	34[d] *18*	595.059	(6⁻)
913.58	(2⁻,3⁻)	644.9220[d] *8*	12.7[d] *47*	268.800	4⁻
		767.1551 *12*	100 *33*	146.275	3⁻
		813.9455[d] *15*	80[d] *33*	99.361	3⁻
923.629	(2⁻,3⁻)	237.5479 *3*	21.4 *64*	686.055	(3⁻)
		453.1551 *14*	18 *13*	470.509	(3⁻)
		545.1537[d] *13*	10.0[d] *55*	378.387	(2⁻)
		601.3946 *7*	68 *18*	322.378	3⁻
		613.3660[e] *13*	15.9 *82*		
		755.8149[e] *10*	100 *27*		
		824.2034 *18*	73 *32*	99.361	3⁻
944.238	(2⁻,3⁻)	733.5210 *11*	100 *36*	210.699	2⁻
		798.042 *2*	64 *36*	146.275	3⁻
953.2	(8⁻)	243[#e] *1*		709.6	(7⁻)
		455.9[#] *5*		497.294	(6⁻)
954.72	(2⁻,3⁻,4⁻)	365.8498[e] *7*	7.4 *37*	588.705	(4⁻)
		484.0470[e] *11*	7.4 *37*	470.509	(3⁻)
		576.1214 *16*	2.3 *17*	378.387	(2⁻)
		743.8408 *18*	7.4 *37*	210.699	2⁻
		808.4161[d] *16*	9.3[d] *37*	146.275	3⁻
		895.9148 *17*	19 *10*	59.010	2⁻
		954.737 *1*	100 *26*	0.0	1⁻
965.427	(1⁺)	144.0450 *3*	100 *42*	821.30	(0⁺)
		304.7179 *6*	84 *34*	660.722	(1⁻)
		307.4080 *8*	48 *28*	657.98	(2⁺)
973.861	(2⁻,3⁻,4⁻)	396.1636 *7*	100 *44*	577.720	(2⁻)
		503.8689[e] *11*	78 *33*	469.794	4⁻
		651.5000 *8*	87 *27*	322.378	3⁻
		704.7114[e] *16*	48 *23*	268.800	4⁻
982.27	(2⁻,3⁻,4⁻)	404.7001 *8*	16.7 *71*	577.720	(2⁻)
		660.1877[d] *12*	3.8[d] *19*	322.378	3⁻
		771.7231[d] *8*	40.5[d] *95*	210.699	2⁻
		808.4161[d] *16*	100[d] *43*	173.929	4⁻
988.973	(2⁻,3⁻)	454.5360 *9*	6.8 *29*	534.37	(4⁻)
		518.5086 *12*	6.8 *39*	470.509	(3⁻)
		815.0087 *23*	12.6 *68*	173.929	4⁻
		842.7101 *6*	100 *17*	146.275	3⁻
		889.866 *3*	25 *17*	99.361	3⁻
996.685	(5⁻)	170.5111 *4*	100 *57*	826.150	(4⁻)
		260.5964 *5*	86 *36*	736.127	(5⁻)
997.84?	(5⁺)	142.80 *4*	100	855.04?	(4⁺)
999.320	(2⁻,3⁻,4⁻)	410.6935 *6*	100 *33*	588.705	(4⁻)
		528.6262 *11*	48 *23*	470.509	(3⁻)
		725.5955 *21*	50 *25*	273.627	4⁻
1002.678	(3⁻,4⁻,5⁻)	266.3501[de] *4*	23.3[d] *83*	736.127	(5⁻)
		414.0423 *9*	100 *50*	588.705	(4⁻)
1003.526	(2⁻,3⁻)	317.4579[d] *8*	13.3[d] *71*	686.055	(3⁻)
		425.8998[e] *6*	38 *14*	577.720	(2⁻)
		533.0151 *5*	100 *24*	470.509	(3⁻)
1004.156	(2⁻,3⁻,4⁻)	415.5635 *12*	61 *37*	588.705	(4⁻)
		426.3975 *7*	100 *43*	577.720	(2⁻)
1007.5		1007.5[@] *3*	100	0.0	1⁻
1018.0	(11⁺)	312.7[#] *5*	26 *13*	705.2	(10⁺)
		603.3[#] *5*	100	414.7	(9⁺)

$^{186}_{75}Re_{111}$-18

Adopted Levels, Gammas (continued)

γ(^{186}Re) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Comments
1101.3	(2⁻,3⁻)	1101.3[@] *3*	100	0.0	1⁻	E_γ: γ decay only observed in ^{187}Re(n,2nγ) (2015Ma60).
1115.2	(9⁺)	246.0[#] *5*	100	869.2	(8⁺)	
		463.7[#] *5*	51 *4*	651.6	(7⁺)	
1119.6	(11⁺)	323.4[#] *5*		795.9	(10⁺)	
		414.3[#] *5*		705.2	(10⁺)	
		705.2[#] *5*		414.7	(9⁺)	
1138.1	(11⁺)	433.0[#] *5*		705.2	(10⁺)	
		723.3[#] *5*		414.7	(9⁺)	
1290.6		494.7[#] *5*	100	795.9	(10⁺)	
1352.6	(12⁺)	334.5[#] *5*		1018.0	(11⁺)	
		647.5[#] *5*		705.2	(10⁺)	
1386.4	(10⁺)	271.2[#] *5*	100	1115.2	(9⁺)	
		517.1[#] *5*	69 *6*	869.2	(8⁺)	

† From (n,γ) E=thermal, unless noted otherwise.
‡ From ^{186}Re IT decay (2.0×10^5 y).
# Energy and corresponding branching ratio (if given) from ^{186}W(d,2nγ) (2017Ma39).
@ Energy and corresponding branching ratio (if given) from ^{187}Re(n,2nγ) (2015Ma60).
& 1-keV uncertainty assumed (by evaluators) during fit.
a Deduced by evaluators from Ice data of 1969La11 (magnetic spectrometer) in (n,γ) E=thermal, except as noted. δ calculated using BrIccMixing code, version 2.3d.
b Additional information 1.
c Multiply placed with undivided intensity.
d Multiply placed with intensity suitably divided.
e Placement of transition in the level scheme is uncertain.

$^{186}_{75}Re_{111}$-19

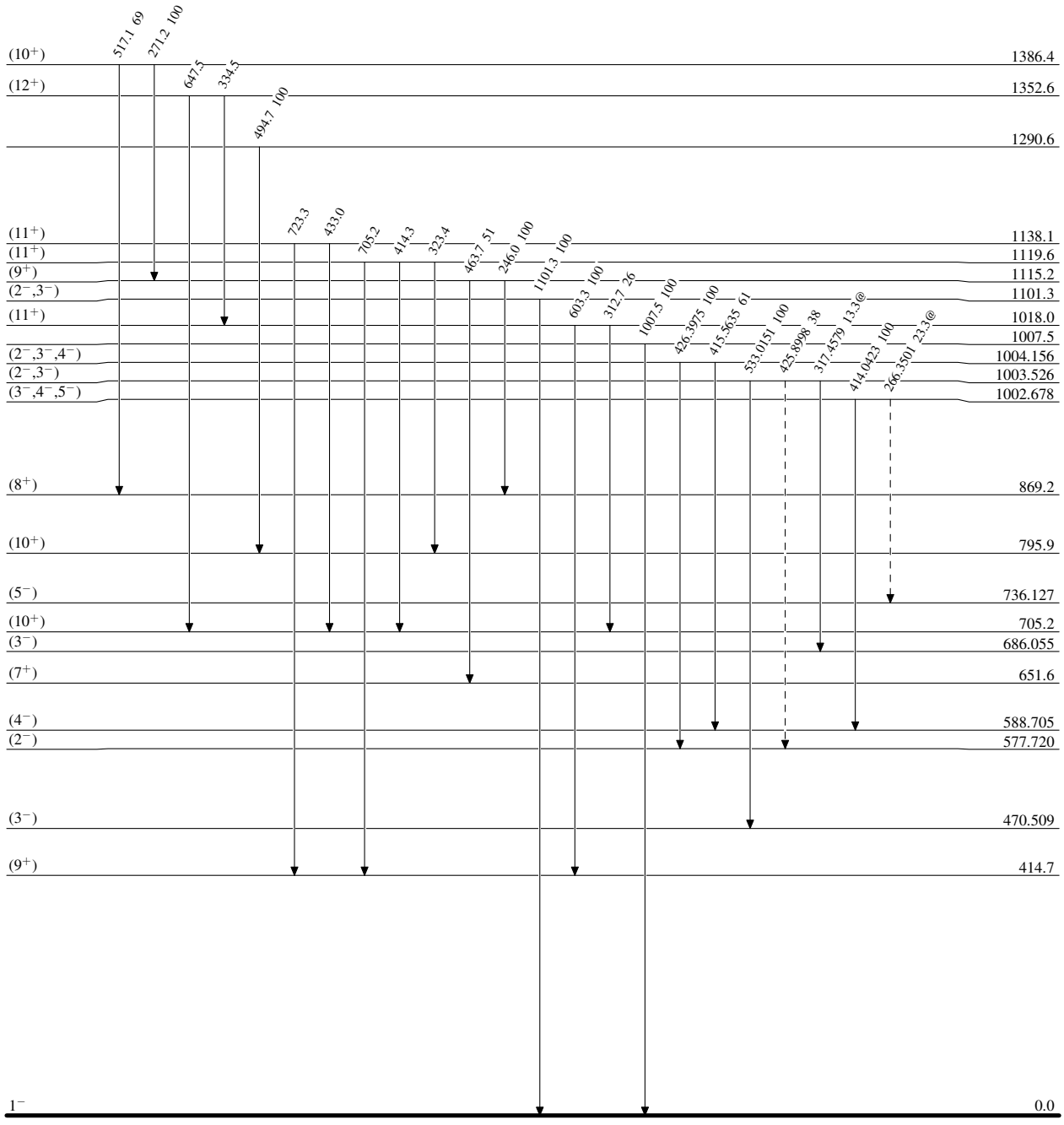
Adopted Levels, Gammas

Legend

Level Scheme

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

- - - - - - ► γ Decay (Uncertain)

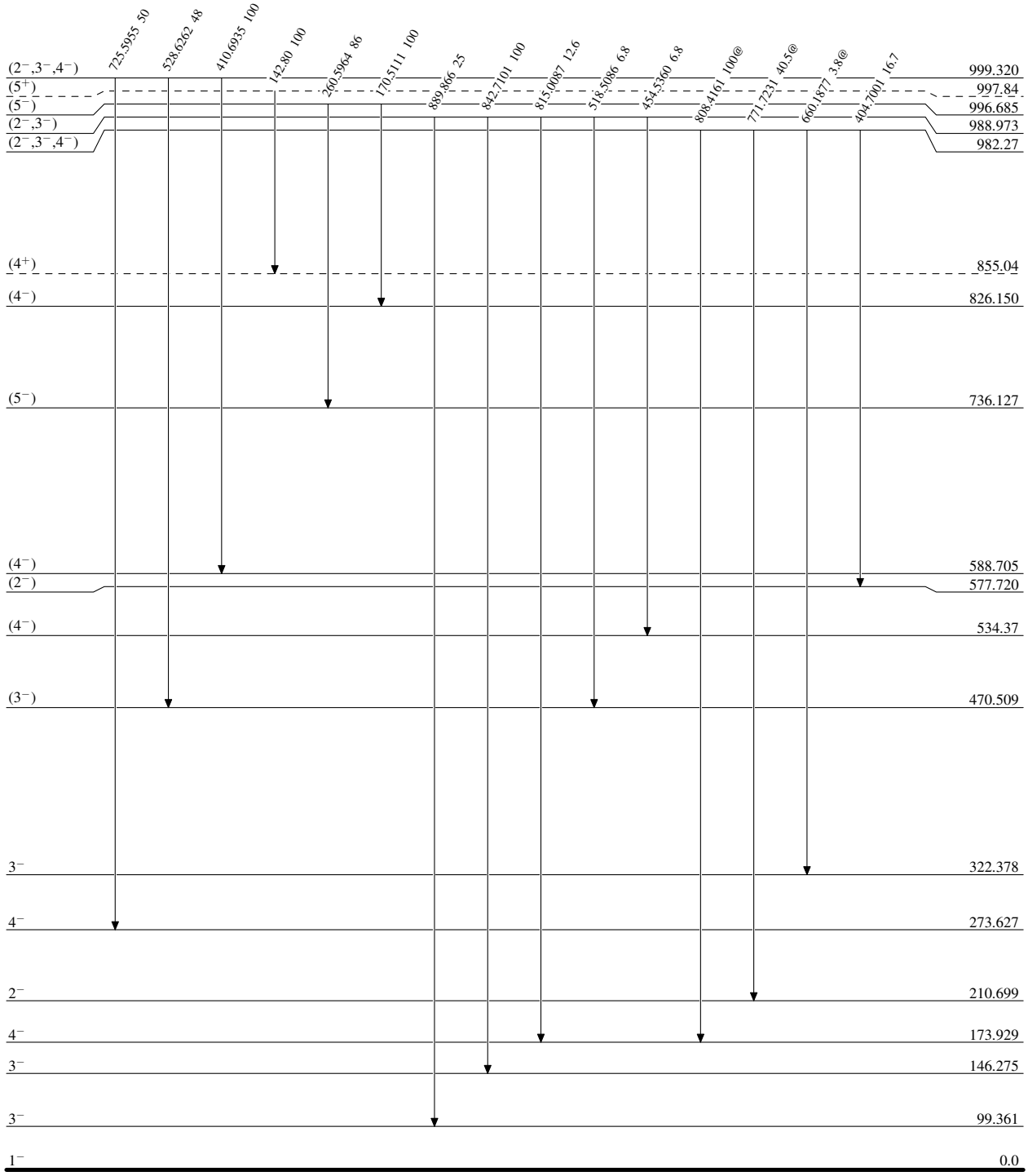


$^{186}_{75}Re_{111}$

Adopted Levels, Gammas

Level Scheme (continued)

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



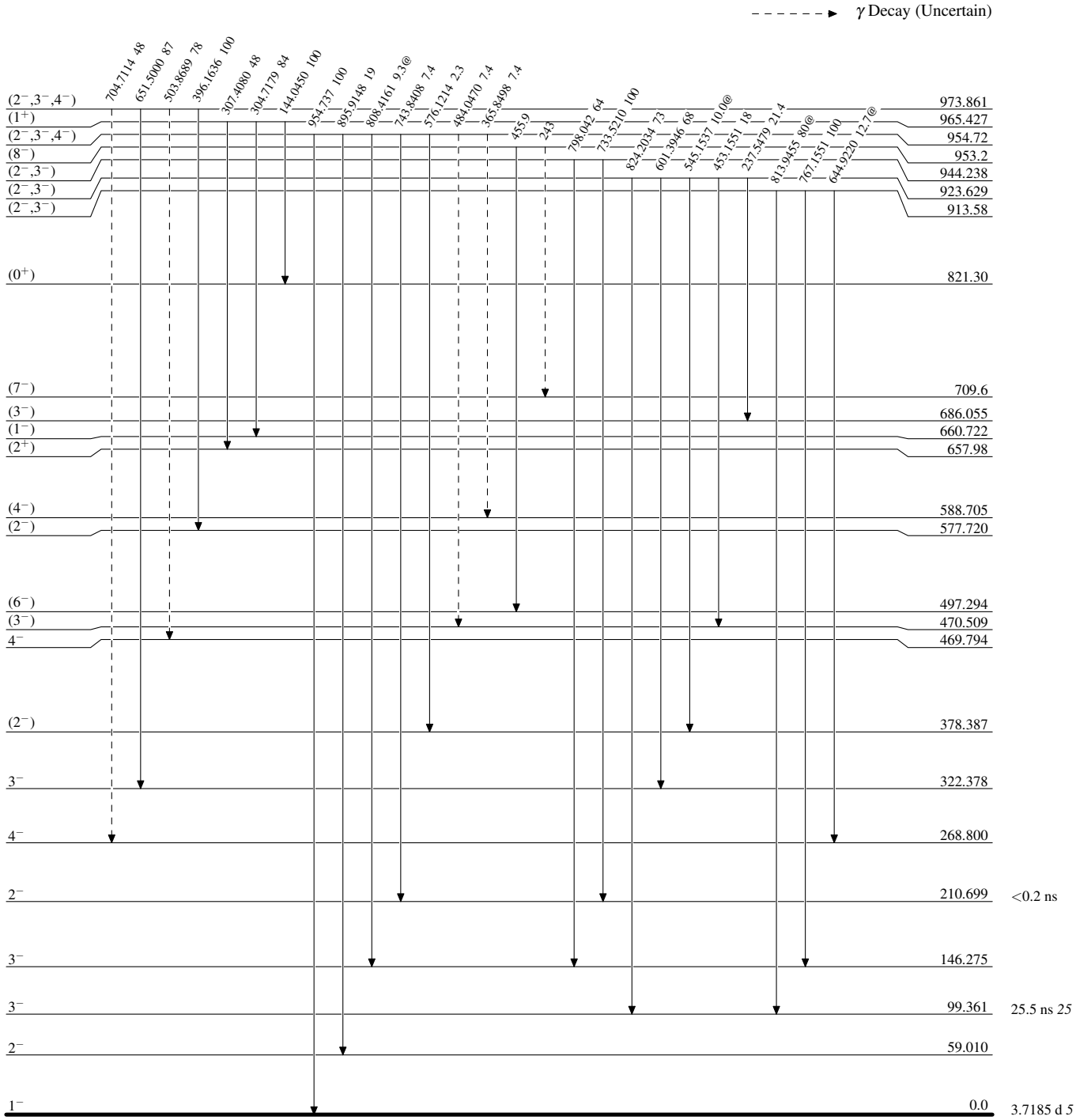
$^{186}_{75}Re_{111}$

Adopted Levels, Gammas

Level Scheme (continued)

Legend

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



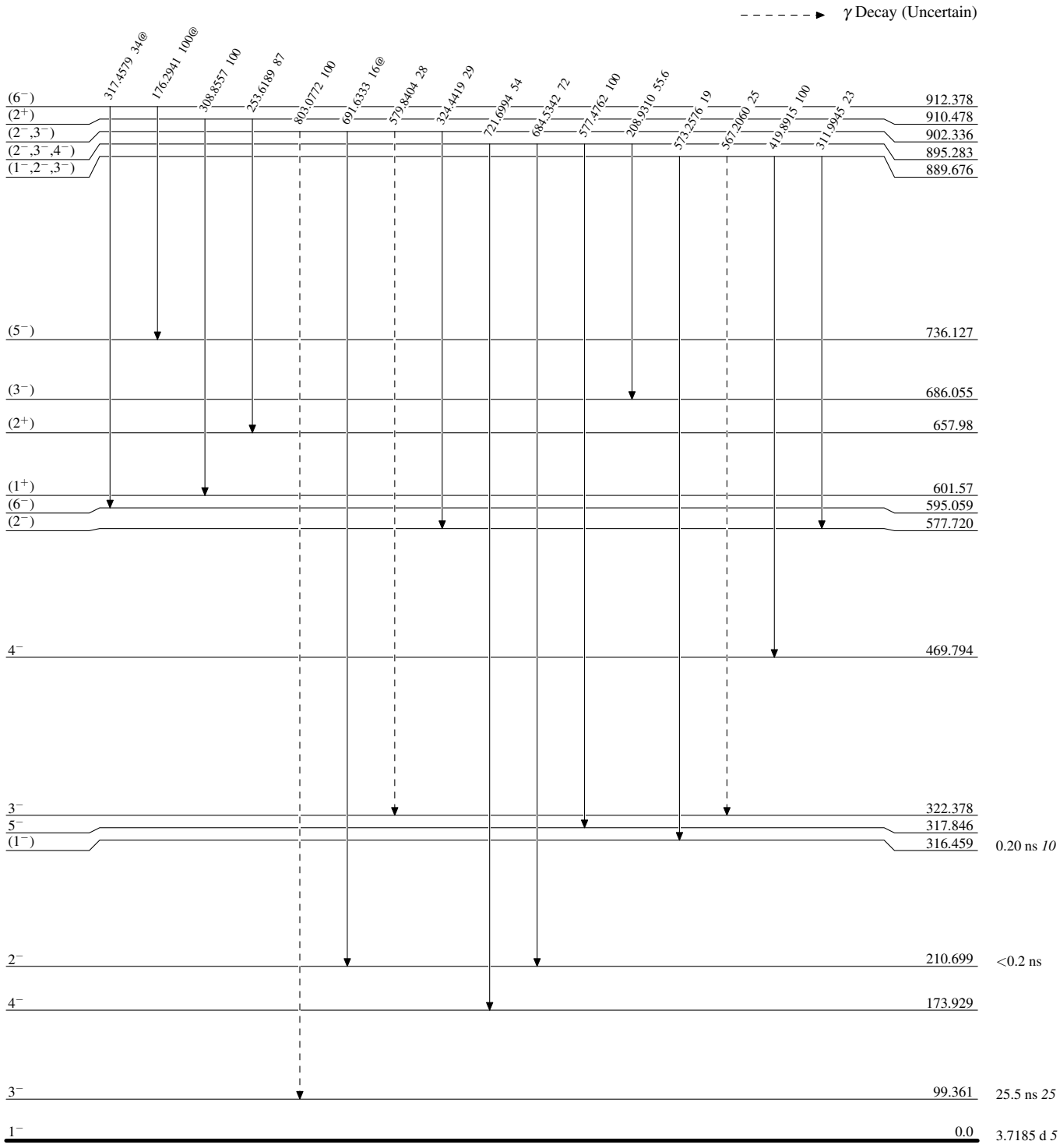
$^{186}_{75}Re_{111}$

Adopted Levels, Gammas

Level Scheme (continued)

Legend

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



$^{186}_{75}Re_{111}$

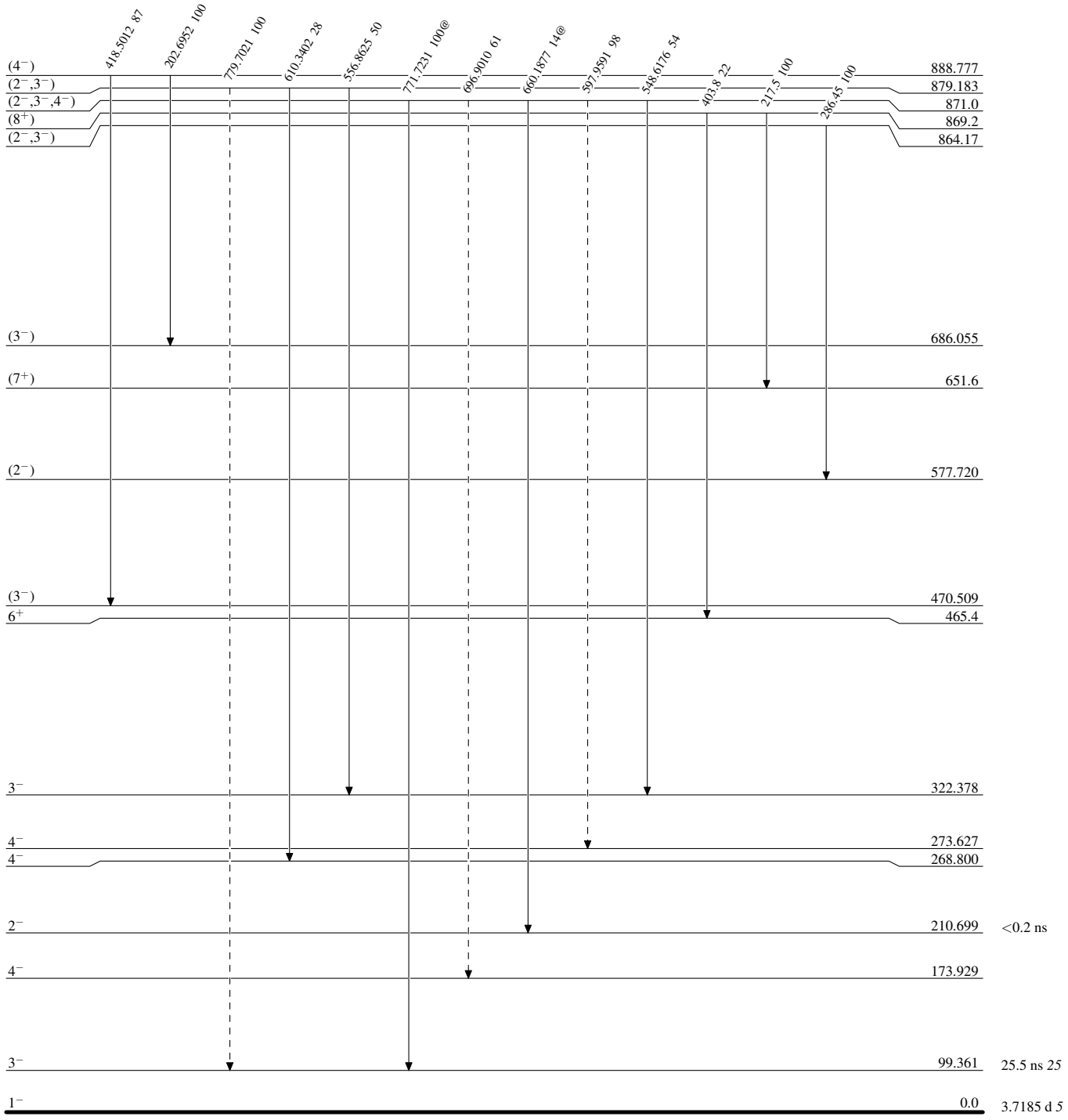
Adopted Levels, Gammas

Level Scheme (continued)

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

Legend

γ Decay (Uncertain)



$^{186}_{75}Re_{111}$

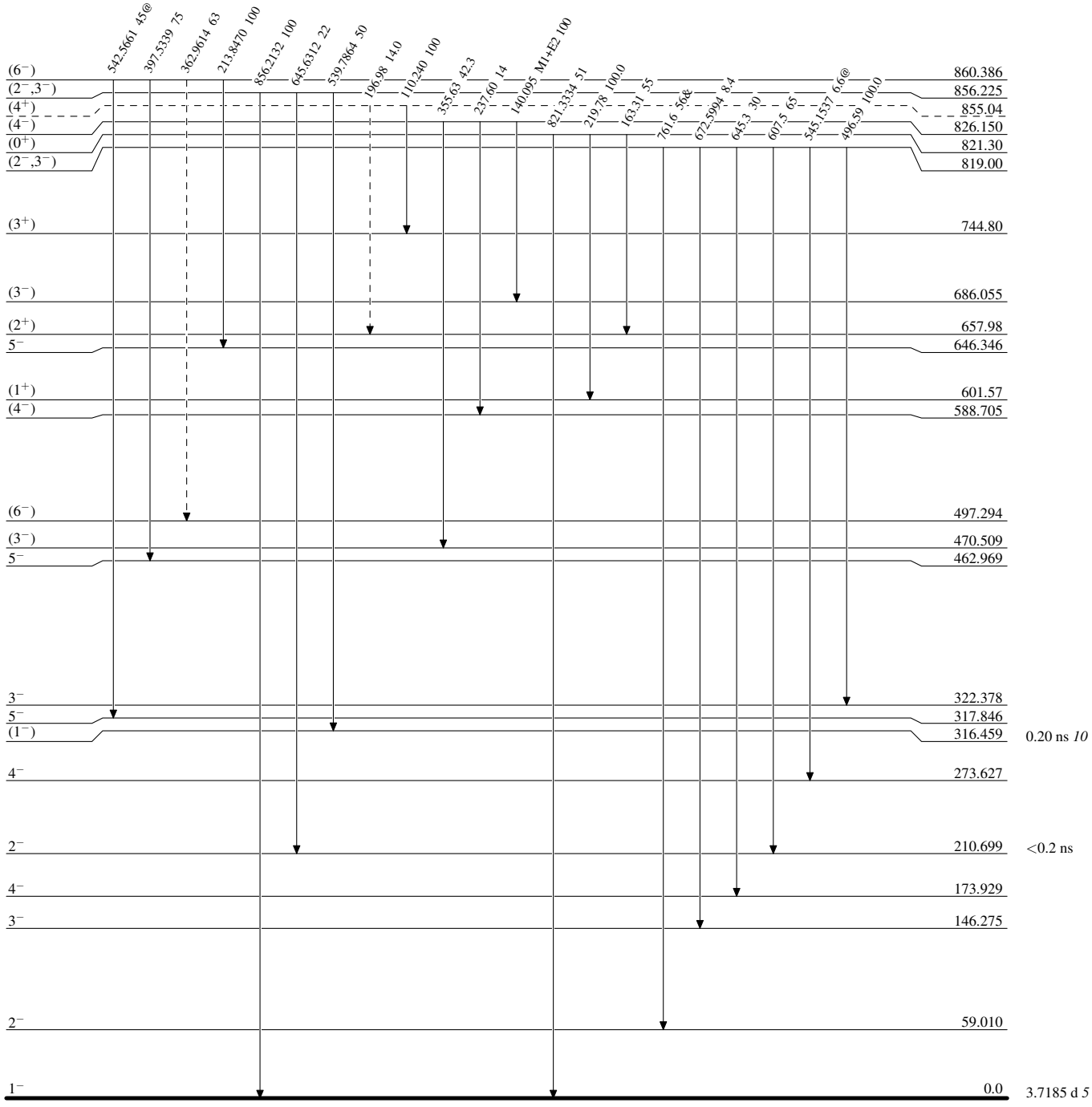
Adopted Levels, Gammas

Level Scheme (continued)

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

Legend

- - - - - - ► γ Decay (Uncertain)



$^{186}_{75}Re_{111}$

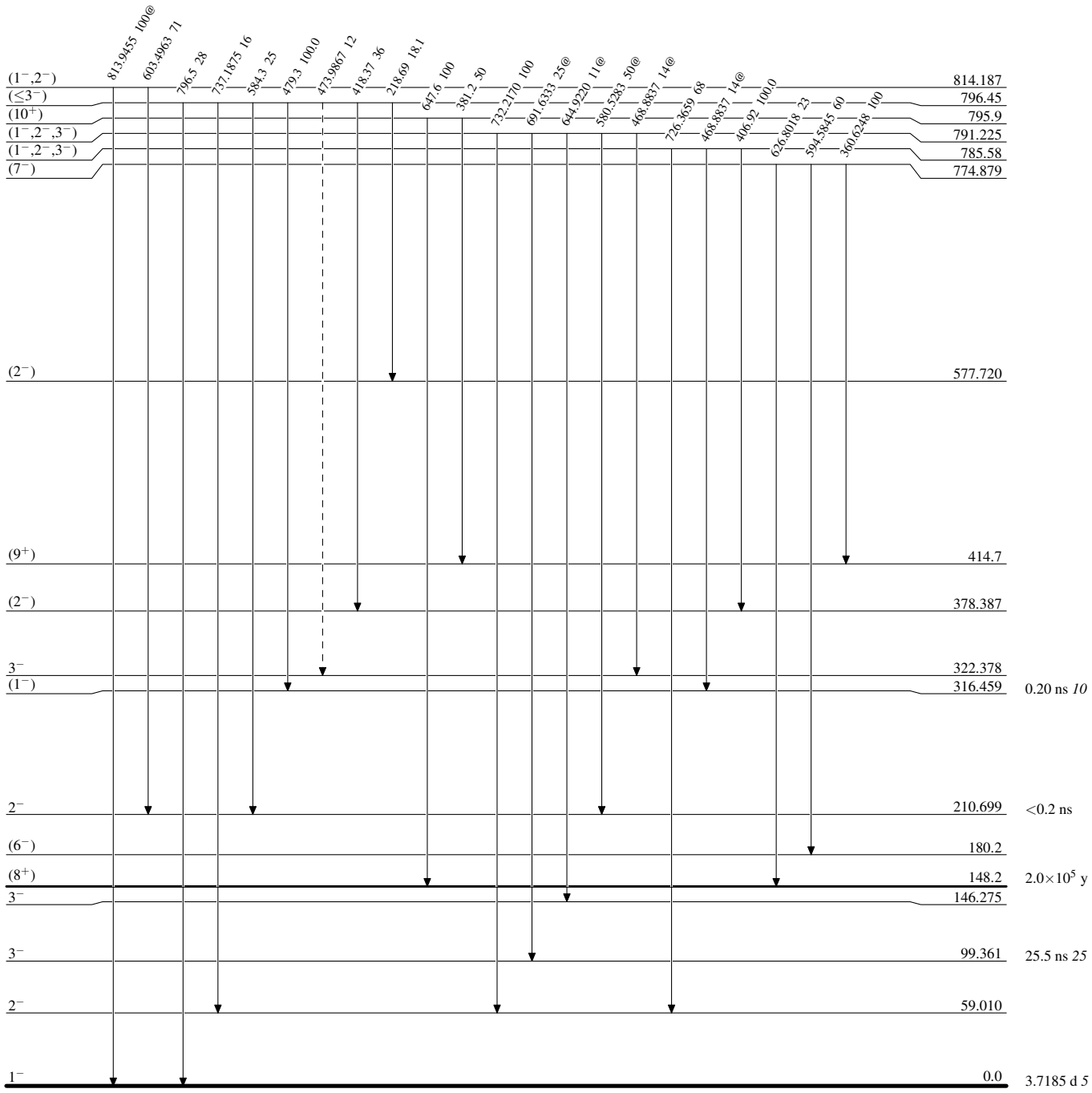
Adopted Levels, Gammas

Level Scheme (continued)

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

Legend

– – – – – – ► γ Decay (Uncertain)



$^{186}_{75}Re_{111}$

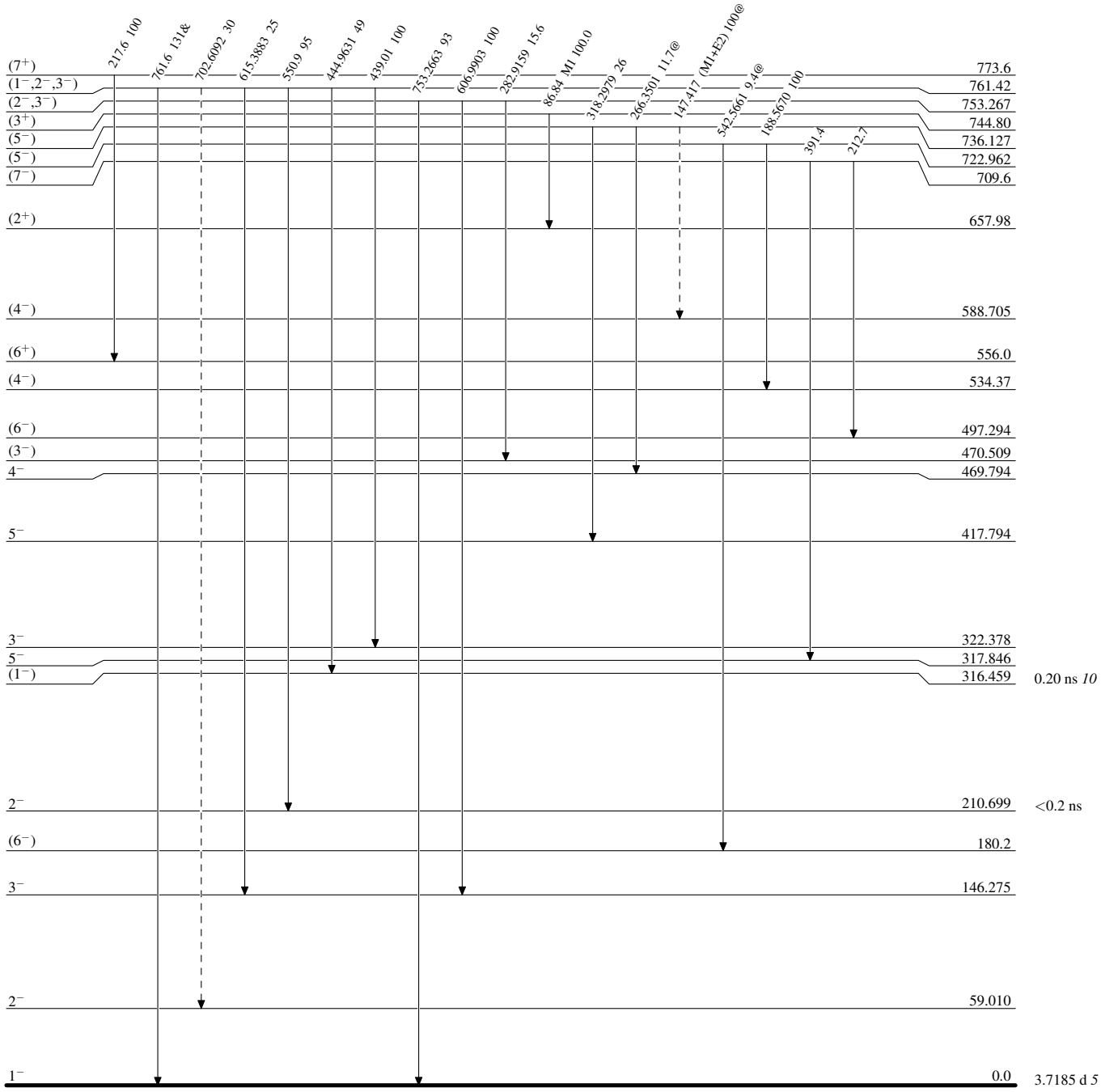
Adopted Levels, Gammas

Level Scheme (continued)

Legend

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

γ Decay (Uncertain)



$^{186}_{75}Re_{111}$

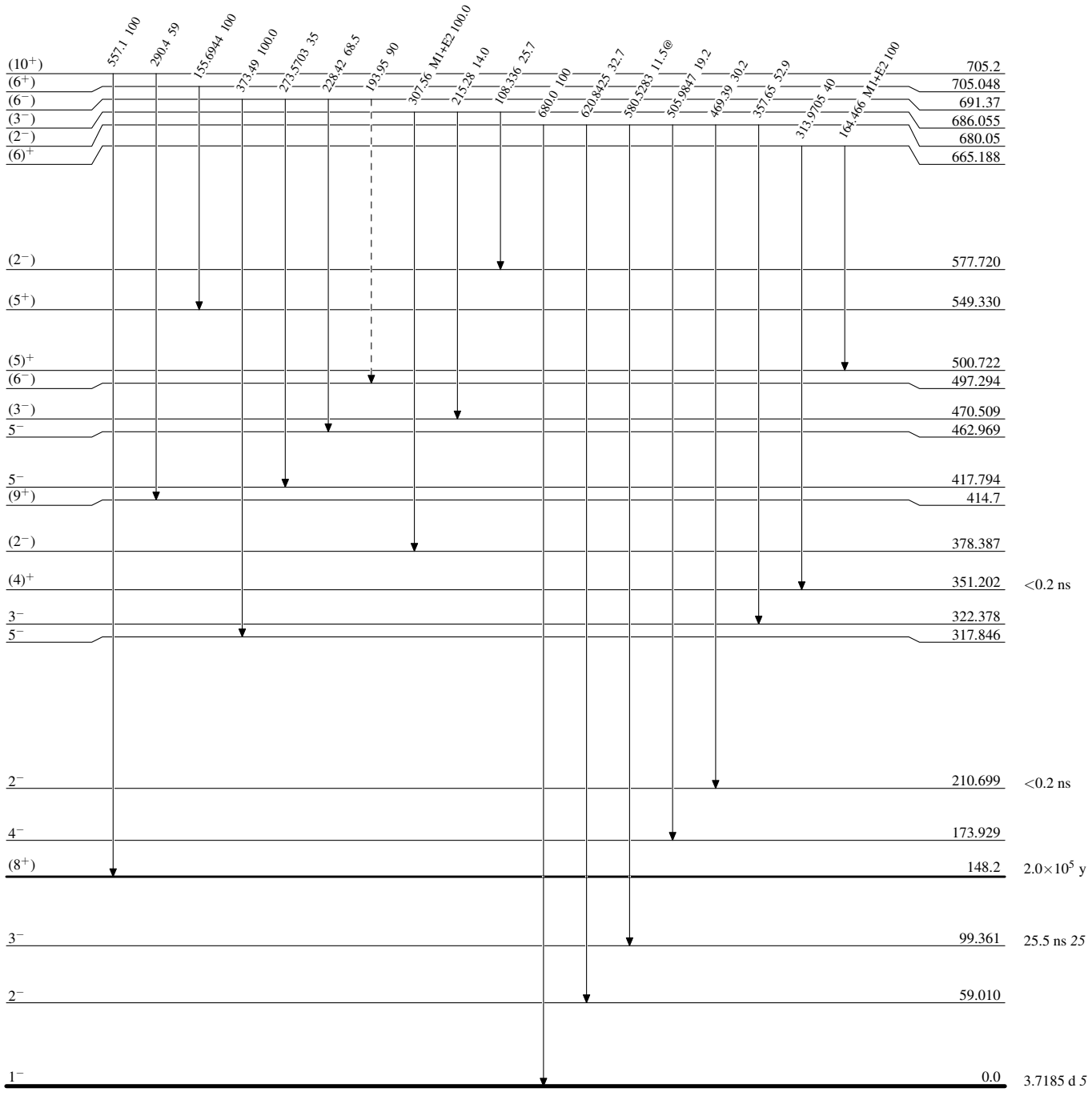
Adopted Levels, Gammas

Level Scheme (continued)

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

Legend

- - - - - - ► γ Decay (Uncertain)



$^{186}_{75}Re_{111}$

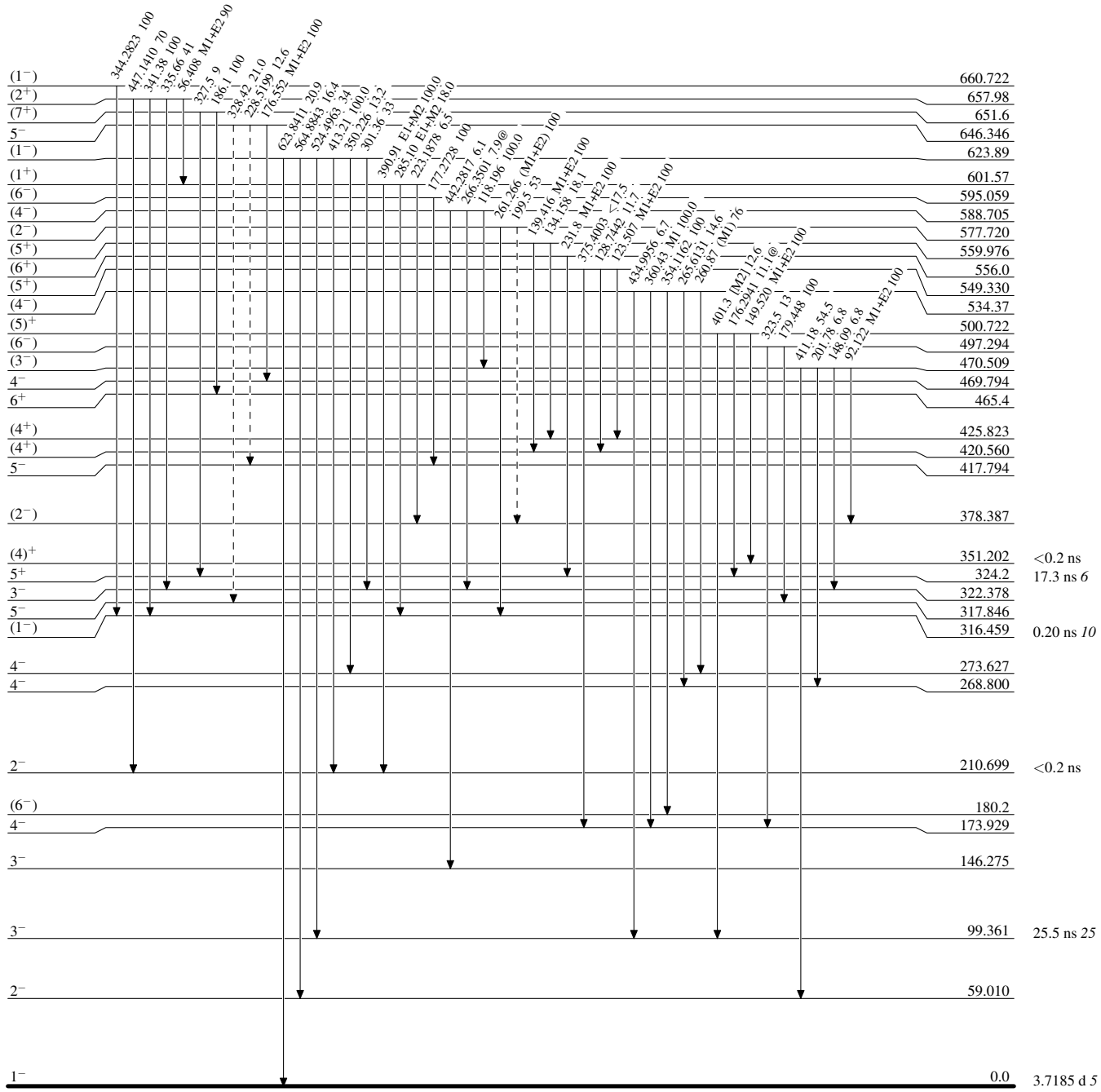
Adopted Levels, Gammas

Level Scheme (continued)

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

Legend

- - - - - - ► γ Decay (Uncertain)



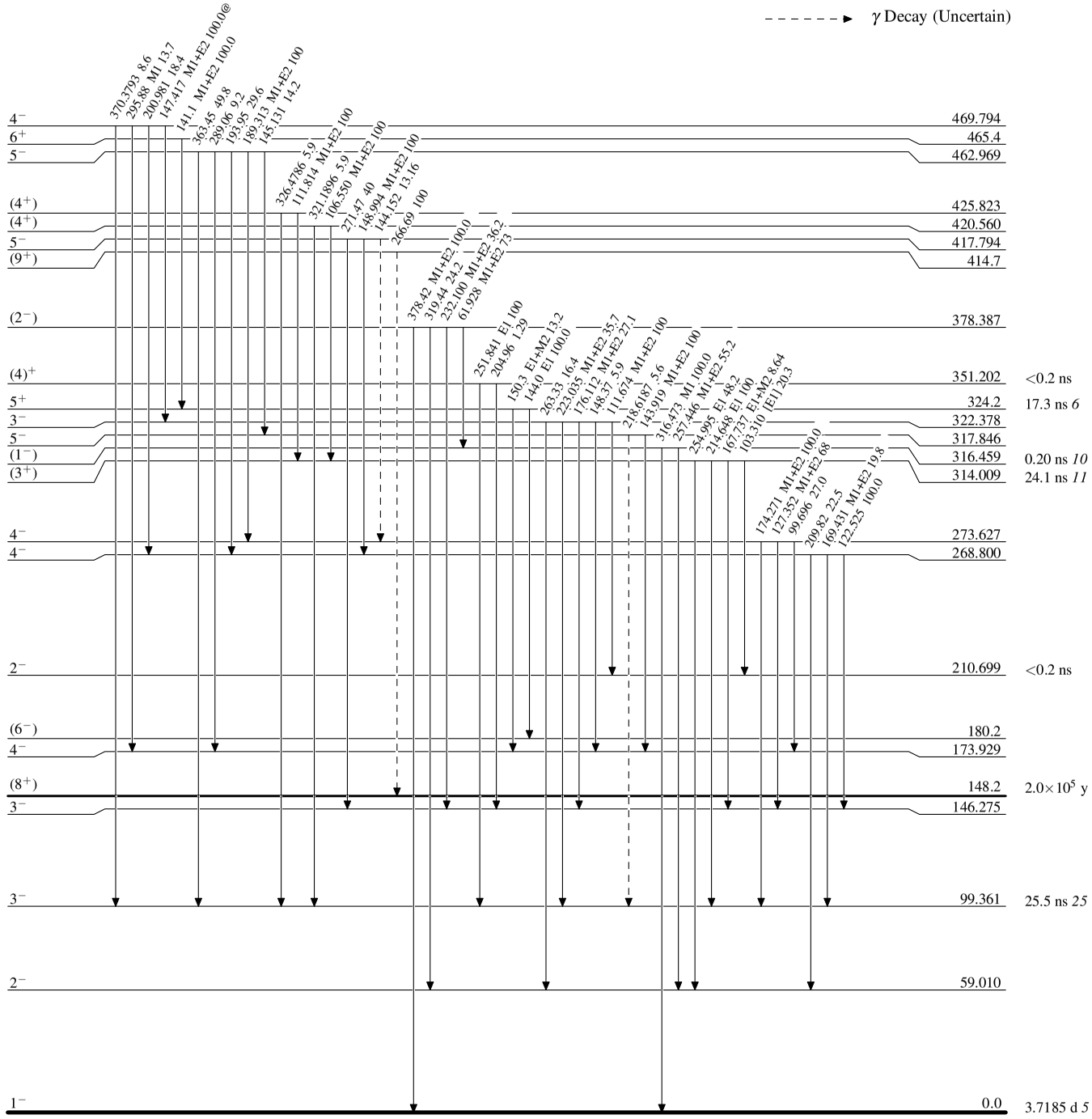
$^{186}_{75}Re_{111}$

Adopted Levels, Gammas

Level Scheme (continued)

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

Legend

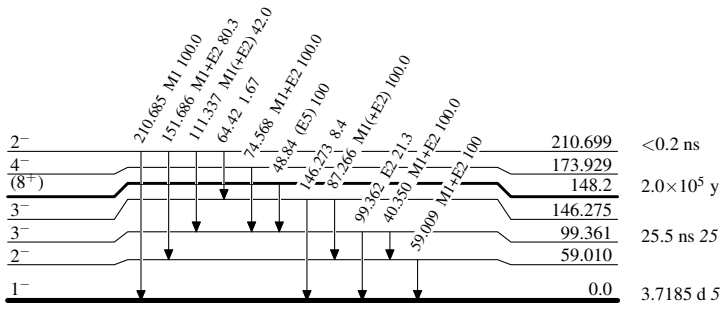


$^{186}_{75}Re_{111}$

Adopted Levels, Gammas

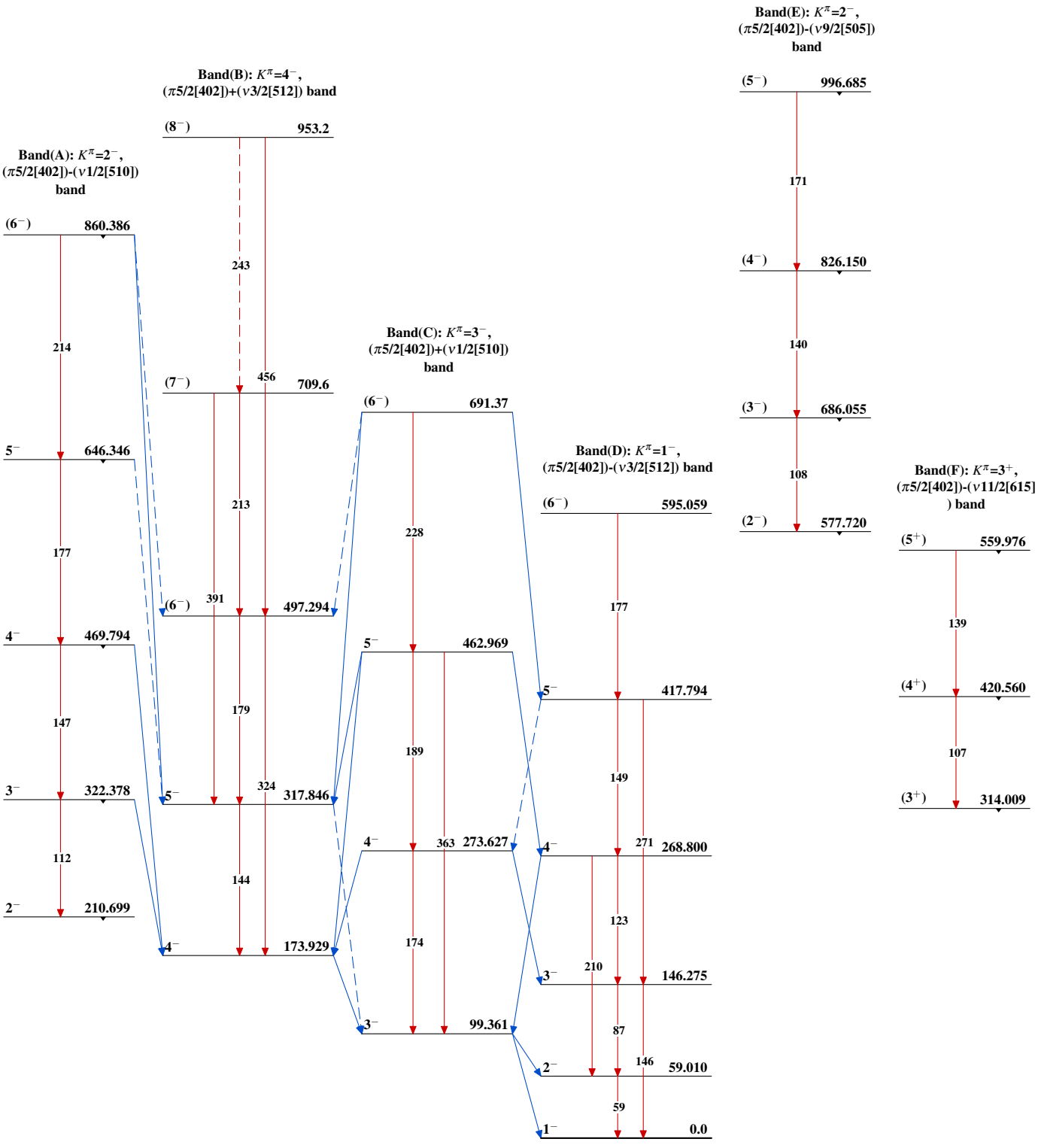
Level Scheme (continued)

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



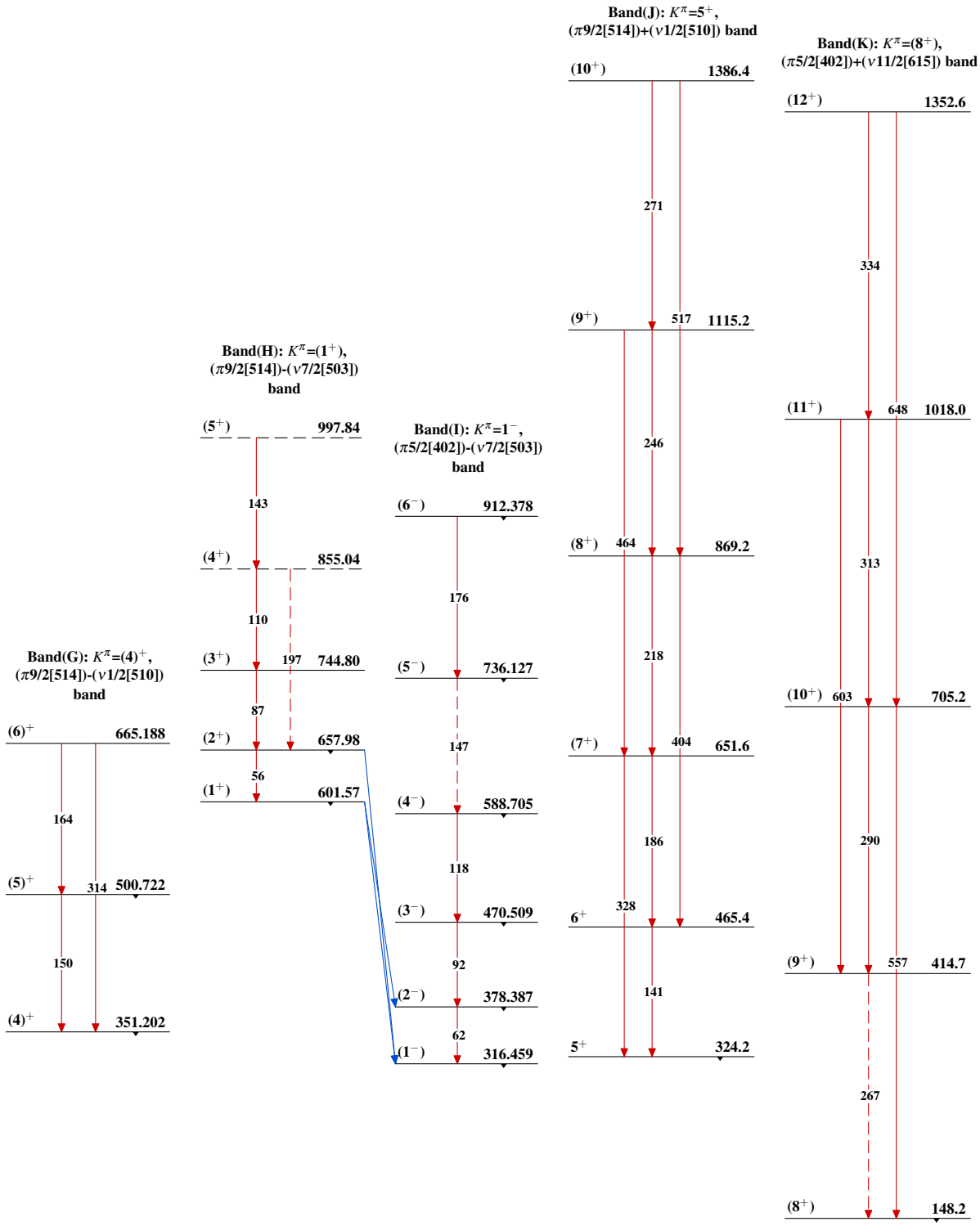
$^{186}_{75}Re_{111}$

Adopted Levels, Gammas



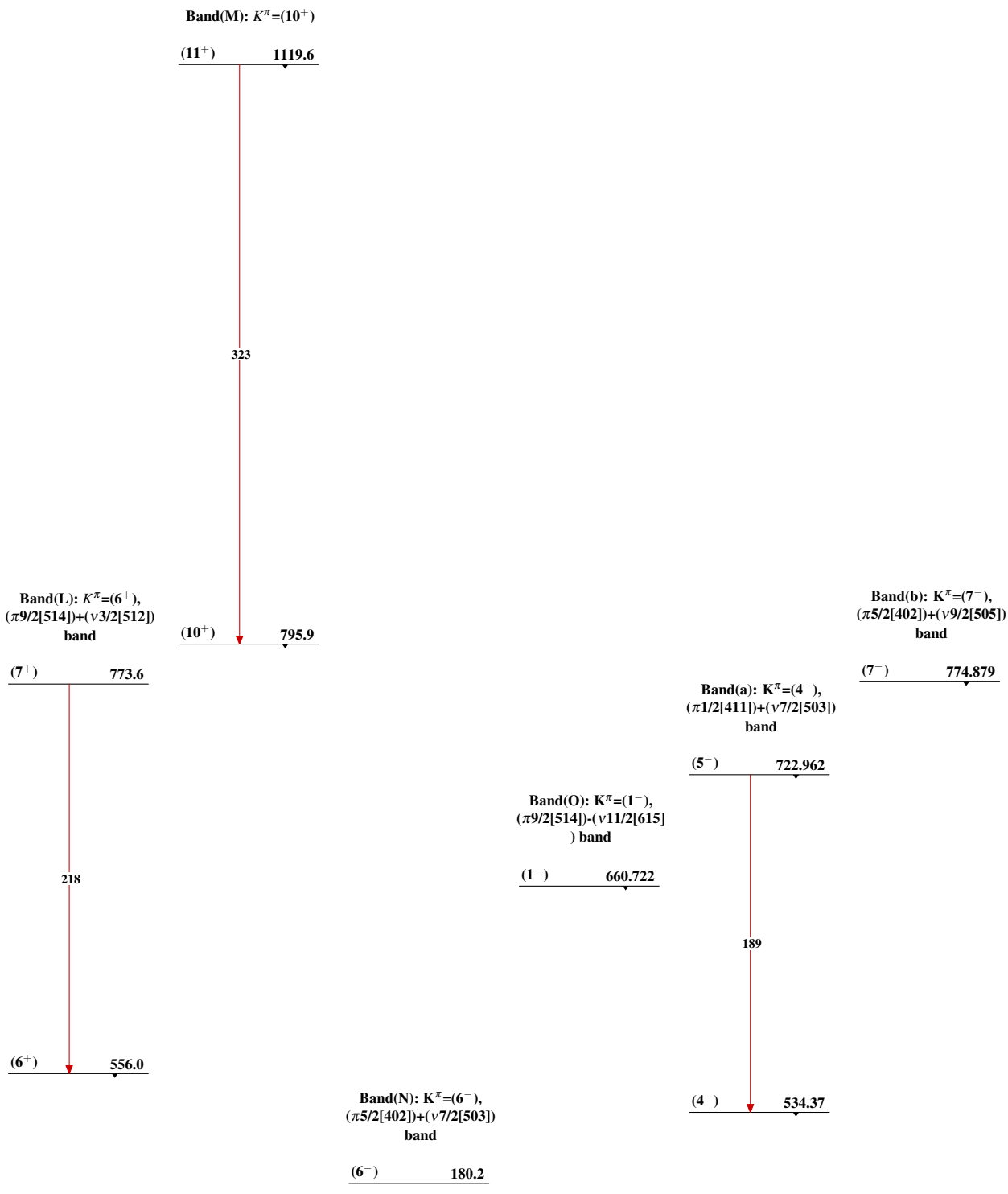
$^{186}_{75}Re_{111}$

Adopted Levels, Gammas (continued)



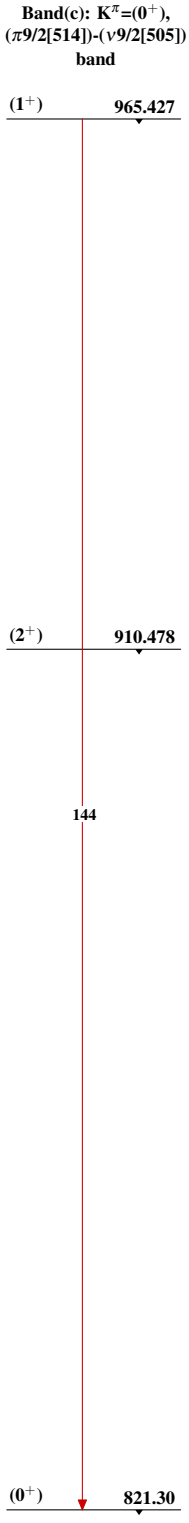
$^{186}_{75}Re_{111}$

Adopted Levels, Gammas (continued)



$^{186}_{75}Re_{111}$

Adopted Levels, Gammas (continued)



$^{186}_{75}Re_{111}$