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Article

Resonance Transitions in the Spectra of the Ag^{6+}–Ag^{8+} Ions

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Abstract: The spectrum of silver, excited in a vacuum spark, was recorded in the region 150–350 Å on a 3-m grazing incidence spectrograph. The resonance $4d^k$–($4d^{k-1}5p$ + $4d^{k-1}4f$ + $4p^54d^{k+1}$) was studied in the Ag^{6+}–Ag^{8+} spectra (Ag VII–Ag IX) with k = 5–3, respectively. Several hundred lines were identified with the aid of the Cowan code and orthogonal operator technique calculations. The energy levels were found and the transition probabilities were calculated.

Keywords: vacuum ultraviolet; ion spectra; wavelengths; energy levels; transition probabilities; parametric calculations

1. Introduction

Six- through eight-times ionized silver atoms are the members of the isonuclear sequence of the silver ions with the unfilled $4d^k$ (k = 5–3) ground-state configuration. The spectra of these ions have not been investigated previously. The excitation of the 4d electron leads to the lowest odd configurations $4d^{k-1}5p$ and $4d^{k-1}4f$. The third odd configuration $4p^54d^{k+1}$ is formed by the excitation of the inner shell 4p electron. The resonance transitions are represented by the transitions from these odd configurations to the ground-state configuration. Out of all resonance transitions only the $4d^k$–$4d^{k-1}4p$ (k = 9–6) ones were previously studied in the silver spectra of the lower ionization stages: Ag III [1], Ag IV [2], Ag V [3] and Ag VI [4]. On the other hand, all three resonance transition arrays were investigated in rather simple spectra of ions having 4d and $4d^2$ ground-state configurations: Ag XI [5,6] and Ag X [7]. In this article we report the results of the study of the Ag VII, Ag VIII and Ag IX to fill the gap between the Ag VI and Ag X isonuclear spectra.

This study is part of a project to get atomic data for the ions of lighter than tin chemical elements isoelectronic with Sn IX–Sn XIV which are relevant to a development of bright source for projection lithography at the 135 Å wavelength. The results for the palladium isonuclear spectra were recently published (see [8] and references therein). Such isoelectronic data are necessary for validation of previously reported analyses of the corresponding tin ion spectra [9,10]. Research on these spectra is also of general interest to atomic physics for improving of theoretical methods of calculations of multi-electron heavy atom spectra.

2. Experiment

The experimental technique and the theoretical approaches for spectrum calculations were the same as in our previous publications [7,8]. Briefly, the light source was a low-inductance vacuum spark operated with an additional inductance up to 2.5 µH. A 150 or 12 µF capacitor was charged up to 4.5 kV resulting in the spark peak current in a range of ~10–20 kA. Ionization stages were distinguished by comparing the intensities of the lines at various peak currents. A 3 m grazing incidence spectrograph (85° angle of incidence) equipped with a gold coated holographic grating having 3600 lines/mm was used for taking the spectra. A plate factor of the spectrograph in the region 160–350 Å was 0.32–0.46 Å mm^{-1} respectively. The spectra were recorded on Kodak SWR photographic plates (Eastman Kodak Company, Rochester, NY, USA) and measured on an EPSON EXPRESSION 10000XL scanner (Seiko Epson Corporation, Suwa, Japan). Wavelengths were calibrated using titanium ion lines [11] as the standards. The titanium spectrum was superimposed on some silver exposures. The measured wavelength uncertainty is estimated as ±0.005 Å for the unperturbed lines of moderate intensity. General view of the silver spectrum in the region 150–350 Å is shown in Figure 1, where the lines identified in this work, previously identified, and remaining unidentified are marked by different colours depending on particular spectrum.

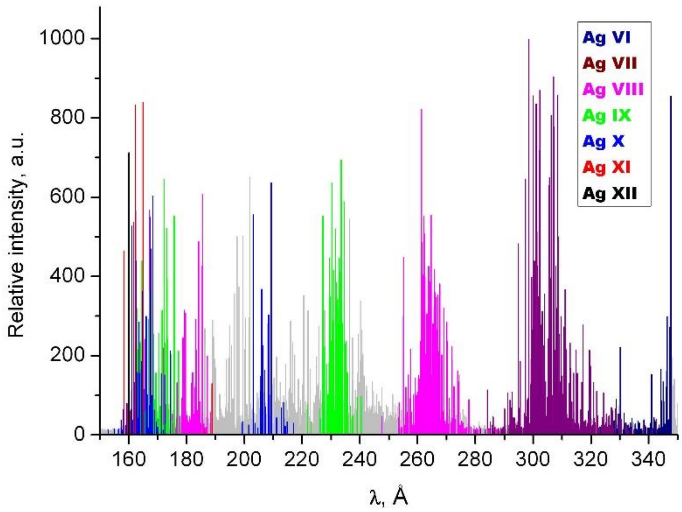

Figure 1. Spectrum of silver in the region 150–350 Å excited in a vacuum spark. Lines of different ion spectra are marked by different colours: Ag VI—royal blue, Ag VII—wine, Ag VIII—magenta, Ag IX—green, Ag X—blue, Ag XI—red, Ag XII—black and unidentified lines—gray.

The relative line intensities were obtained as described in our previous article [8] "from the measured optical densities using an approximate photoplate response curve estimated from different experiments. They should be considered mostly as qualitative ones because of some uncertainty of used photoplate response curve and neglect of the wavelength dependence of the spectrograph efficiency and photoplate sensitivity. Also the saturation effects resulting from the photoplate response nonlinearity can significantly influence the intensity ratios of the weak to strong lines." The intensity I = 1000 was attributed to the strongest line of the $4d^k$–$4d^{k-1}5p$ transition array in each ion spectrum.

The program IDEN [12] was used for the spectrum identification. As in [8], ab initio calculations were performed with the use of the Dirac–Fock (DF) code of Parpia et al. [13], or by the Hartree–Fock method with relativistic corrections (HF) with the use of the Cowan code (Cowan programs RCN, RCN2, RCG, and RCE) [14]. Semiempirical correction of ab initio values of Slater parameters was made with the RCE Cowan code or by using a technique of orthogonal operators [15–18].

The energies derived after the identification of spectral lines were optimized using the program LOPT [19].

3. Results

In the following, the results of the analyses of silver ions in the charge states Ag^{6+}, Ag^{7+} and Ag^{8+} are presented. Line identifications are summarized in Tables A1–A4 (see Appendix A at the end of the document) and energy levels are collected in Tables A5–A11. The data were interpreted using semi-empirical orthogonal parameters and Cowan code calculations resulting in calculated values for the energy levels, wave-function composition, transition probabilities and energy parameters. The semi-empirical energy parameters and their comparison with the corresponding ab initio values are shown in Tables A12–A14.

3.1. Ag VII

A diagram of the low lying configurations of Ag VII with the ground-state configuration $4d^5$ is shown in Figure 2. As in the case of silver ions in lower stages of ionization (Ag III–Ag VI) we were able to make the analysis of only the $4d^5$–$4d^45p$ transition array (Table A1). The lines of these transitions are represented by a compact group in the region 271–343 Å mostly isolated from the other transitions in Ag VII as well as in the neighboring ions (see Figure 1). Three hundred and seventy-eight lines were identified in this transition array, 47 of them were doubly and one trebly identified. Eight lines are probably blended with previously identified Ag VI transitions. Thirty-four levels out of 37 possible $4d^5$ ones were found (Table A5) and 142 levels of the $4d^45p$ configurations were located out of 180 possible levels (Table A6). The relative uncertainty of the level energies given by least-squares optimization [19] ranges from 1 to 4 cm^{-1} for $4d^5$ levels and from 3 to 8 cm^{-1} for $4d^45p$ depending on the number of lines used for the level optimization and on their wavelength uncertainties. Identification was performed with the help of the semi-empirical calculations based on the orthogonal operators. The initial orthogonal energy parameters were extrapolated along the sequence Ag IV–Ag V. Final energy parameters of Ag VII after a fitting of the calculated levels to the found levels are listed in Tables A12 and A13. They are compared with the values from the Parpia et al. code [13]. Only the parameters of the $4d^5$ and $4d^45p$ configurations are listed in the tables although the matrixes of the interacting $4d^5 + 4d^45s + 4d^35s^2$ (even) and $4d^45p + 4d^35s5p + 4d^25s^25p$ (odd) configurations were used in the fittings. The parameters of the unknown configurations were fixed on extrapolated values; the interaction parameters were fixed on values obtained with scaling by 0.85 of the ab initio integrals.

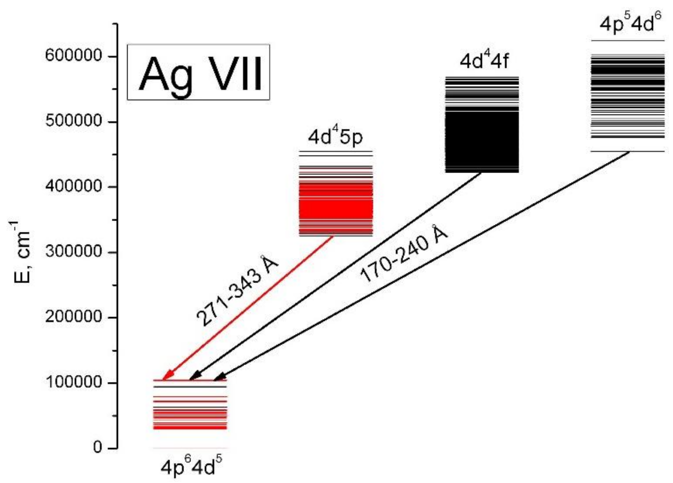

Figure 2. Energy levels of Ag VII. The arrows show electric dipole transitions. The levels found in this work and studied transitions are marked by red color. Black color indicates unknown levels and transitions.

In a treatment of the $4d^5$ shell (as well as of the other $4d^k$ shells) by the orthogonal parameter technique O2, O2′, Ea′ and Eb′ are the orthogonal counterparts of the traditional parameters F^2(4d,4d,), F^4(4d,4d), α and β. The one-electron magnetic (spin-orbit) operator ζ(4d) and the effective 3-particle electrostatic operators T1 and T2 are the same as in Cowan code and (Ac...A0) are additional 2-body magnetic parameters. The $4d^45p$ configuration and the other $4d^{k-1}5p$ configurations contain additional parameters: C1dp–C3pd are the orthogonal counterparts of the Slater exchange integrals

G^1(4d,5p)–G^3(4d,5p); S1dp, S2dp are the effective electrostatic 2-body dp-parameters; Sd.Lp ... SS(dp)20 are magnetic 2-body dp-parameters [15], and T16 to T35 are the electrostatic 3-body ddp-parameters. In case of Ag VII 2-body magnetic parameters were varied at the fitting on one bunch keeping the ratios of the corresponding ab initio values. Root mean square deviations of the fitting σ were 14 and 19 cm^{-1} in even and odd configurations, respectively.

Almost all levels of the $4d^5$ configuration can be well designated with the leading member of their eigenvector composition. Only 48,086 cm^{-1} ($J = 3/2$) and 47119 cm^{-1} ($J = 5/2$) were designated with the second term. For $4d^45p$ configuration, in many cases two wave functions have the same first component leading to non-unique labels for the energy levels. Therefore, the level energies are listed in Table A6 along with the level designations to avoid the ambiguities.

According to our predictions the most intense lines of the $4d^5$–($4d^44f$ + $4p^54d^6$) transitions are expected in the 170–240 Å wavelength range. As it is seen in Figure 1 there are many unknown lines in this region but we were not able to make reliable identification of these lines.

3.2. Ag VIII

The low lying configurations of Ag VIII are shown in Figure 3. The transitions from all low odd configurations decaying to the ground-state $4d^4$ configuration are identified in this spectrum. The $4d^4$–$4d^35p$ transitions are overlapped with some unknown lines of moderate intensity. But nevertheless, 118 lines were identified in this transition array (Table A2). Twenty-one lines were doubly and two lines trebly identified. Twenty-nine (out of 34 possible) $4d^4$ levels were found with the relative uncertainty from 3 to 7 cm^{-1} and collected in Table A7. The levels of the $4d^35p$ configurations are contained in Table A8. It was possible to locate 83 out of 110 possible levels of this configuration. Their uncertainties are from 4 to 14 cm^{-1}. As in Ag VII the identification of the $4d^4$ $4d^35p$ transitions was performed with by means of the semi-empirical calculations based on the orthogonal operators.

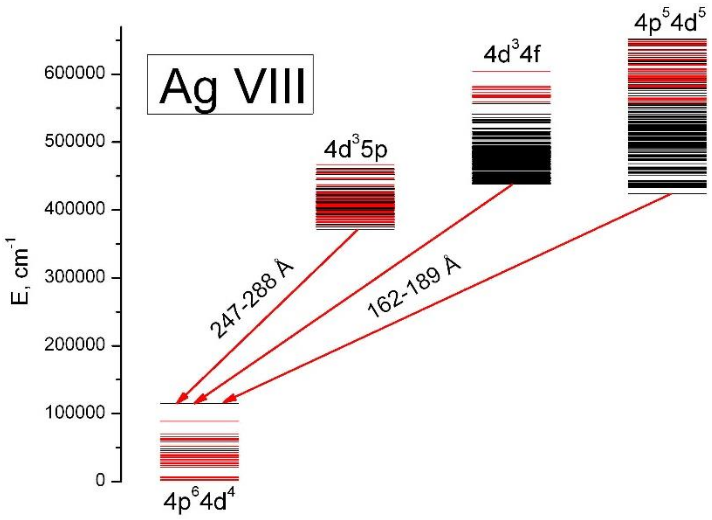

Figure 3. Energy levels of Ag VIII. The arrows show electric dipole transitions studied in this article. The levels found in this work are marked by red color. Black color indicates unknown levels.

The energy parameters obtained in the final fitting are collected in Table A12 for $4d^4$ and Table A13 for $4d^35p$. For the meaning of the energy parameters and the procedure of the calculations see Section 3.1. Root mean square deviations of the fitting were 26 and 47 cm^{-1} in the $4d^4$ and $4d^35p$ configurations, respectively. In case of the $4d^35p$ configuration the fitting is affected by the interaction with the levels of the $4p^54d^5$ configuration. The $4d^35p$ levels above ~424,000 cm^{-1} overlap with the low lying $4p^54d^5$ levels. Their interaction cannot be taken into account in the orthogonal operator code. The LS-coupling scheme is good approximation for the $4d^4$ levels. The value of the first component of the eigenvector composition for all levels is not less than 50%, thus a unique label by the name of the first component can be assigned to all energy levels. To differentiate $4d^4$ terms with the same LS values (recurring terms) the seniority numbers are used in the orthogonal operator code, whereas the Nielson and Koster sequential indices [20] are employed in the Cowan code [14]. Both labels are retained in Table A7 for the $4d^4$ levels because the $4d^4$–($4d^35p$ + $4d^34f$ + $4p^54d^5$) transitions were analyzed with the aid of the Cowan code as described below. Contrary to $4d^4$, the percentage of the first component of the eigenvector composition is less than 50% for many of the $4d^35p$ levels. It goes down to 16%. It makes LS-labeling of many levels meaningless in many cases. Therefore, the energy level values are listed in Table A2 along with the LSJ labels for the wavelength identification.

The identification of the $4d^4$–($4d^35p$ + $4d^34f$ + $4p^54d^5$) transitions using the Cowan code resulted in 118 classified lines in the region 162–189 Å (Table A3). Seventeen lines were doubly classified. The wavelengths and intensities of 10 lines are affected by blending with the Ag IX lines. Table A9 contains the ($4d^34f$ + $4p^54d^5$) levels above 556,000 cm^{-1}. It was possible to find 58 levels of these configurations with the uncertainties from 7 to 19 cm^{-1}. Cowan's calculations of the odd level system were performed for a matrix of interacting configurations $4d^35p$ + $4d^36p$ + $4d^25s5p$ + $4d5s^25p$ + $4d^3$(4f-6f) + $4p^54d^5$ + $4p^54d^45s$. Starting energy parameters for the $4d^35p$, $4d^34f$ and $4p^54d^5$ configurations in Ag VIII were estimated by extrapolation of the scaling factors (the ratios of the fitted to the corresponding Hartree - Fock energy parameters) from Pd VII [21] and Pd VIII [8]. The ab initio electrostatic parameters in the unknown configurations were multiplied by 0.85 scaling factor. The configuration interaction parameters were scaled by 0.8 and the average energies along with the spin-orbit parameters were fixed at the corresponding HF values. Final energy parameters for the $4d^35p$, $4d^34f$ and $4p^54d^5$ configurations obtained in the fitting of the calculated energy levels to the experimental ones using the Cowan code are presented in Table A14. Standard deviation of the fitting σ was 213 cm^{-1}. It should be noted, that for the $4d^3$ levels alone, the fitting by the Cowan code results in σ = 129 cm^{-1} what is 2.7 times larger than at the fitting using the orthogonal parameter code (see Table A13).

All found levels belong to the upper part of configurations ("emissive zone" [22]) from 557,000 to 669,000 cm^{-1}. Only the levels for this energy range are listed in Table A9. According to our calculations full spread of the $4d^34f$ + $4p^54d^5$ levels cover the range up to 424,000 cm^{-1} overlapping with the $4d^35p$ levels. Because of significant uncertainty in prediction of the low lying $4d^34f$ + $4p^54d^5$ levels they are omitted from Table A9.

Examination of Table A9 shows that the percentage contribution of the leading eigenvector component never exceeds 41% and can be as low as 9%. Moreover, the $4d^34f$ wave function can be found as the leading component only at 13 levels with the largest contribution 31%, second component being mostly $4p^54d^5$. Therefore, not only LS-assignment of many levels in Table A3, but also configuration attributions are arbitrary in many cases. Therefore, in Table A9, the upper levels of the transitions are designated by their energies and *J* values, whereas for convenience, a configuration name and LS-label are given according to the output files from the Cowan code in spite of possible ambiguity in many cases.

3.3. Ag IX

The scheme of the $4d^3$, $4d^25p$, $4d^24f$ and $4p^54d^4$ levels for Ag IX is shown in Figure 4. It shows that in comparison with Ag VII and Ag VIII the $4d^25p$ levels are almost fully imbedded within the widely spread $4d^24f$ + $4p^54d^4$ levels. The levels of all odd configurations strongly interact. Their initial prediction in the framework of the Cowan code was performed by cross-extrapolation of the scaling factors and effective parameters from isonuclear Ag VIII (this work) and isoelectronic Pd VIII [8]. The $4d^3$ energies were calculated in the framework of the orthogonal parameters by extrapolation from Ag VII and Ag VIII (Table A12) and used as an input to Cowan's calculations of the $4d^3$–($4d^25p$ + $4d^24f$ + $4p^54d^4$) transition probabilities. Thus predicted energy levels and transition probabilities were then used for the spectrum analysis by the IDEN code [12].

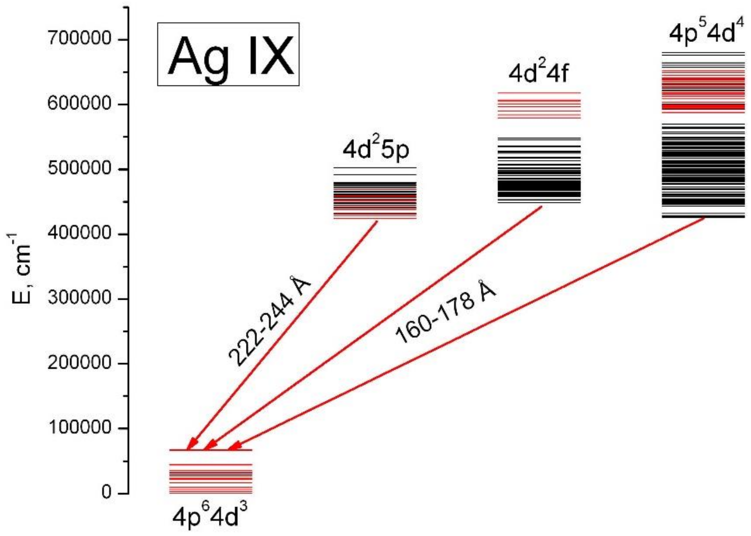

Figure 4. Energy levels of Ag IX. The arrows show electric dipole transitions studied in this article. The levels found in this work are marked by red color. Black color indicates calculated positions of unknown levels.

As a result, 132 lines were identified in the $4d^3$–($4d^25p + 4d^24f + 4p^54d^4$) transition array (Table A4). Nine lines were doubly classified and one line was trebly classified. The $4d^3$–$4d^25p$ part of this transition array lying in the 221–244 Å region is overlapped by unidentified lines (see Figure 1) discussed in Section 3.1. Nevertheless, it was possible to select the majority of the Ag IX lines by observation of their intensities with the change of the vacuum spark excitation conditions. The other $4d^3$–($4d^24f + 4p^54d^4$) part falls in the middle of the region where the spectrum consists of many overlapping lines in Ag VIII–Ag XII. Therefore 10 lines of Ag IX are found to be blended with Ag VIII and 8 with Ag X. In total, 17 levels of the $4d^3$ configuration and 78 levels of the $4d^25p + 4d^24f + 4p^54d^4$ configurations were established and collected in Tables A10 and A11, respectively. The uncertainty of relative positions of the levels after optimization by LOPT [19] ranges from 4 to 17 cm^{-1} for the ground-state configuration and from 6 to 19 cm^{-1} for the excited configurations.

As was mentioned above the energy levels of the $4d^3$ configuration were treated by orthogonal operator technique. As in Ag VII and Ag VIII calculated matrix consisted of three interacting configurations: $4d^3 + 4d^25s + 4d5s^2$ with similar scaling of the energy parameters for unknown configurations. The levels of the $4d^3$ configuration are presented in Table A10 along with the eigenvector compositions and deviations from the orthogonal parameter calculations. Standard deviation of the fitting was 27 cm^{-1}. The resulting energy parameters of this configuration are collected in Table A12 in comparison with those of $4d^4$ (Ag VIII) and $4d^5$ (Ag VII). Table A12 shows regular behavior of the parameters and scaling factors along this part of the isonuclear sequence of silver ions. The labeling of the $4d^3$ energy levels by the fist component of their eigenvectors is unambiguous.

Table A11 contains all 306 levels of the $4d^25p + 4d^24f + 4p^54d^4$ configurations. Because of the numerous blends only 78 levels were found. Similar to Ag VIII, a set of the interacting configurations ($4d^25p + 4d^26p + 4d5s5p + 5s^25p + 4d^2(4f - 6f) + 4p^54d^4 + 4p^55d^35s$) with the same treatment of the unknown configurations was used in the Cowan code calculations. The energy parameters for these configurations in Ag IX are listed in Table A14. The standard deviation of the fitting σ was 327 cm^{-1}, to be compared with σ = 213 cm^{-1} in Ag VIII. It should be noted that in Ag IX more energy parameters than in Ag VIII were fixed on the estimated values for stability of the fitting. Similar considerations are applied to the eigenvector composition of the Ag IX odd levels. There are ambiguities in the LS-labeling and configuration assignment of the levels. Only the level energy and *J* value can serve as unique label, what is used in the list of the identified lines in Table A4.

4. Discussion

The spectra reported in this article are relevant to the verification of the identifications of the EUV spectra of Sn ions [9,10] which are used as a "fuel" in the radiation sources for the projection lithography at the 135 Å wavelength. The previous analyses in [9,10] were performed without any isoelectronic or isoionic support. The isoelectronic sequence Rh VIII–Cd XI was recently studied in [7]. It was found by extrapolation to Sn XIII that the identification of this spectrum should be revised. Similar conclusion was made after the identification of the M1 transitions between the levels of ground-state configurations in Sn XIII and other ions with open 4d- shell [23]. More data on the VUV spectra of the neighboring to Sn elements are needed. The analyses of Ag VII, Ag VIII and Ag IX were performed in this work for the first time and all Ag ion spectra with the $4d^k$ (k = 1–10) ground-state configuration now became known. After the studies of spectra of the 4d- palladium ions ([8] and references therein) the present work on Ag ion spectra is the next step in the study of the ion spectra isoelectronic with Sn IX–Sn XIII. The work on Cd- and In- ion spectra is in progress at this laboratory.

Author Contributions: A.R. recorded the spectra, performed their analyses and wrote the paper; E.K. made spectrum measurements and wrote the paper.

Conflicts of Interest: The authors declare no conflict of interest.

Appendix A

Table A1. Identified lines of the $4d^5-4d^45p$ transitions in the spectrum of Ag^{6+}.

λ (Å) [a]	o-c, (Å) [b]	ν (cm^{-1})	I [c]	gA, (10^8 s^{-1})	5d^5 Term [e]	5d^5 E (cm^{-1})	5d^{4}5p Term [e]	5d^{4}5p E (cm^{-1})
271.910	0.000	367,768.8	36	31	$5^4G_{11/2}$	30,662	$(2^3F)^4F_{9/2}$	398,431
277.706	0.003	360,092.8	11	42	$5^4G_{11/2}$	30,662	$(4^1F)^2G_{9/2}$	390,759
277.852	−0.001	359,904.2	19	37	$5^4G_{5/2}$	29,390	$(2^3F)^4F_{3/2}$	389,293
277.969	0.003	359,752.2	13	51	$5^4D_{7/2}$	36,485	$(2^3P)^4D_{7/2}$	396,241
280.155	−0.002	356,944.6	12	11	$5^4D_{5/2}$	39,299	$(2^3P)^4D_{7/2}$	396,241
280.826	0.000	356,092.1	5	48	$3^2H_{9/2}$	53,797	$(2^1G)^2F_{7/2}$	409,889
281.791	−0.003	354,872.4	13	47	$5^6S_{5/2}$	0	$(4^5D)^4D_{7/2}$	354,869
283.387	0.002	352,874.3	9	44	$3^4F_{3/2}$	53,796	$(2^3F)^4D_{1/2}$	406,673
284.236	−0.003	351,820.2	62	518	$3^2H_{11/2}$	57,962	$(2^1G)^2G_{9/2}$	409,779
284.511	−0.001	351,479.9	12	93	$3^2H_{11/2}$	57,962	$(2^1G)^2H_{11/2}$	409,441
285.168	−0.003	350,670.3	30	276	$5^2G_{9/2}$	59,223	$(2^1G)^2F_{7/2}$	409,889
285.727	0.002	349,984.1	6	153	$5^2F_{7/2}$	59,792	$(2^1G)^2G_{9/2}$	409,779
285.785	0.004	349,912.9	5	55	$3^4F_{9/2}$	49,104	$(2^3F)^4G_{11/2}$	399,022
286.212		349,391.3	32	377	$3^2G_{9/2}$	79,131	$(2^1D)^2F_{7/2}$	428,522
286.254	−0.010	349,339.5	30	159	$3^2H_{9/2}$	53,797	$(2^3F)^4D_{7/2}$	403,133
286.276	0.011	349,313.3	23	76	$3^4F_{9/2}$	49,104	$(2^3F)^4F_{9/2}$	398,431
286.411	−0.002	349,148.6	8	28	$3^4F_{7/2}$	48,712	$(2^3F)^4G_{7/2}$	397,858
286.744	0.009	348,743.4	15	132	$3^4F_{9/2}$	49,104	$(2^3F)^4G_{7/2}$	397,858
287.950	0.001	347,282.9	15	113	$3^2F_{7/2}$	53,353	$(4^1F)^2D_{5/2}$	400,637
288.074	0.003	347,133.0	10	88	$3^4F_{9/2}$	49,104	$(2^3P)^4D_{7/2}$	396,241
288.806	0.002	346,253.7	16	36	$5^4G_{9/2}$	30,907	$(4^3D)^4F_{7/2}$	377,163
288.970	0.003	346,057.0	12	33	$5^6S_{5/2}$	0	$(4^5D)^4F_{7/2}$	346,061
289.226	0.005	345,750.6	16	25	$5^4G_{11/2}$	30,662	$(4^1I)^2I_{13/2}$	376,419
289.431	0.001	345,506.0	5	36	$5^4G_{9/2}$	30,907	$(4^3G)^4G_{11/2}$	376,414
289.575	0.002	345,334.0	18	95	$3^4F_{7/2}$	48,712	$(2^3F)^4F_{5/2}$	394,049
289.665	−0.001	345,225.9	7	28	$3^2H_{9/2}$	53,797	$(2^3F)^4G_{11/2}$	399,022
289.944	0.000	344,894.1	18	114	$5^2G_{9/2}$	59,223	$(2^3F)^2F_{7/2}$	404,117
290.169	0.006	344,626.6	47	326	$3^2H_{9/2}$	53,797	$(2^3F)^4F_{9/2}$	398,431
290.203	−0.003	344,586.3	9	24	$3^4F_{7/2}$	48,712	$(2^3F)^4G_{7/2}$	393,295
290.265	−0.006	344,512.5	12	72	$3^2F_{7/2}$	53,353	$(2^3F)^4G_{7/2}$	397,858
290.415	0.002	344,335.1	18	53	$5^2D_{3/2}$	48,086	$(2^3P)^4D_{1/2}$	392,424
291.263	0.003	343,332.2	52	39	$5^6S_{5/2}$	0	$(4^5D)^4F_{5/2}$	343,336

Table A1. *Cont.*

λ (Å) [a]	o-c, (Å) [b]	ν (cm^{-1})	I [c]	gA, (10^8 s^{-1})	$5d^5$		$5d^45p$	
					Term [e]	E (cm^{-1})	Term [e]	E (cm^{-1})
291.310	0.002	343,277.0	15	113	$3^2G_{7/2}$	79,705	$(2^1D)^2F_{5/2}$	422,985
291.817	0.003	342,680.2	14	79	$3^4F_{7/2}$	48,712	$(2^3F)^4G_{5/2}$	391,396
291.862	−0.002	342,627.8	19	132	$3^4F_{7/2}$	48,712	$(2^3F)^4F_{7/2}$	391,338
291.915	−0.004	342,565.6	32	138	$3^4F_{5/2}$	51,049	$(4^1D)^2P_{3/2}$	393,610
292.019	0.001	342,443.3	46	390	$3^2H_{9/2}$	53,797	$(2^3P)^4D_{7/2}$	396,241
292.260	0.000	342,160.6	44	235	$5^4G_{11/2}$	30,662	$(4^3G)^4H_{13/2}$	372,822
292.700	0.007	341,647.2	53	450	$3^4F_{9/2}$	49,104	$(4^1F)^2G_{9/2}$	390,759
292.860	−0.002	341,460.2	37	80	$5^6S_{5/2}$	0	$(4^5D)^6D_{7/2}$	341,458
293.002	0.001	341,294.3	17	43	$5^4G_{7/2}$	30,378	$(4^3G)^4G_{7/2}$	371,673
293.077	0.000	341,206.8	31	89	$5^2D_{3/2}$	48,086	$(2^3F)^4F_{3/2}$	389,293
293.201	−0.002	341,062.7	2	30	$3^2H_{11/2}$	57,962	$(2^3F)^4G_{11/2}$	399,022
293.388	0.000	340,845.3	17	225	$5^2F_{7/2}$	59,792	$(4^1F)^2D_{5/2}$	400,637
293.457	0.001	340,764.8	8	27	$5^4G_{9/2}$	30,907	$(4^3G)^4G_{7/2}$	371,673
293.516	−0.001	340,696.8	32	201	$3^2F_{7/2}$	53,353	$(2^3F)^4F_{5/2}$	394,049
293.681	−0.002	340,506.1	33	126	$3^4F_{5/2}$	51,049	$(2^3P)^4D_{3/2}$	391,553
293.711	−0.001	340,470.6	14	178	$3^2H_{11/2}$	57,962	$(2^3F)^4F_{9/2}$	398,431
293.822	0.004	340,342.2	5	31	$3^4F_{5/2}$	51,049	$(2^3F)^4G_{5/2}$	391,396
293.865	−0.003	340,292.7	4	101	$3^4F_{5/2}$	51,049	$(2^3F)^4F_{7/2}$	391,338
293.954	−0.001	340,189.4	9	35	$5^4G_{5/2}$	29,390	$(4^3F)^2F_{5/2}$	369,578
294.467	−0.002	339,596.6	24	43	$5^4G_{9/2}$	30,907	$(4^3G)^2H_{9/2}$	370,501
294.526	−0.001	339,529.1	18	44	$5^2I_{11/2}$	44,011	$(4^1I)^2H_{11/2}$	383,539
294.551	−0.001	339,499.6	13	109	$3^2H_{9/2}$	53,797	$(2^3F)^4G_{7/2}$	393,295
294.798	−0.006	339,214.9	26	119	$5^2G_{9/2}$	59,223	$(2^3F)^4F_{9/2}$	398,431
294.834	−0.002	339,174.3	197	342	$5^6S_{5/2}$	0	$(4^5D)^6D_{5/2}$	339,172
294.872	0.003	339,130.2	37	202	$3^2F_{7/2}$	53,353	$(2^3F)^4G_{9/2}$	392,486
294.932	−0.002	339,061.6	23	117	$3^4F_{9/2}$	49,104	$(4^1F)^2G_{7/2}$	388,163
294.980 [d]	0.004	339,006.0	43	199	$3^4F_{5/2}$	51,049	$(2^3F)^4F_{5/2}$	390,060
294.980 [d]	−0.006	339,006.0	43	134	$5^4G_{11/2}$	30,662	$(4^1I)^2I_{11/2}$	369,661
295.091	0.002	338,878.2	19	34	$5^4D_{7/2}$	36,485	$(4^3G)^2G_{7/2}$	375,365
295.253	−0.003	338,692.6	22	61	$3^2H_{9/2}$	53,797	$(2^3F)^4G_{9/2}$	392,486
295.304	0.001	338,633.8	47	203	$5^2G_{9/2}$	59,223	$(2^3F)^4G_{7/2}$	397,858
295.304	−0.005	338,633.8	47	159	$3^4F_{3/2}$	53,796	$(2^3P)^4D_{1/2}$	392,424
295.537	−0.001	338,367.6	90	657	$5^2I_{11/2}$	44,011	$(4^1I)^2H_{9/2}$	382,377
295.648	0.004	338,240.1	12	32	$3^4F_{5/2}$	51,049	$(2^3F)^4F_{3/2}$	389,293
295.801	0.001	338,064.9	20	35	$5^2F_{7/2}$	59,792	$(2^3F)^4G_{7/2}$	397,858
295.944	0.002	337,901.3	22	85	$3^4F_{7/2}$	48,712	$(4^1F)^2G_{7/2}$	386,615
295.980	0.003	337,861.1	10	79	$5^4D_{5/2}$	39,299	$(4^3D)^4F_{7/2}$	377,163
296.056	−0.006	337,773.4	22	55	$5^4G_{11/2}$	30,662	$(4^3G)^4H_{9/2}$	368,429
296.579	0.005	337,177.8	14	87	$5^4G_{5/2}$	29,390	$(4^3F)^4F_{3/2}$	366,573
296.716 [d]	0.004	337,023.2	18	52	$5^4D_{1/2}$	38,685	$(4^3D)^4D_{3/2}$	375,706
296.716 [d]	−0.004	337,023.2	18	117	$5^2G_{9/2}$	59,223	$(2^3P)^4D_{7/2}$	396,241
296.779	0.003	336,950.9	12	116	$3^2D_{5/2}$	72,934	$(2^1G)^2F_{7/2}$	409,889
296.892	−0.001	336,822.6	37	160	$5^4G_{11/2}$	30,662	$(4^3F)^4G_{11/2}$	367,483
296.910	0.001	336,802.8	17	103	$5^4D_{1/2}$	38,685	$(4^3D)^4P_{1/2}$	375,489
296.944	−0.008	336,763.9	17	103	$5^4D_{3/2}$	39,788	$(4^3D)^4F_{5/2}$	376,543
297.106	−0.004	336,580.1	22	55	$5^4G_{9/2}$	30,907	$(4^3F)^4G_{11/2}$	367,483
297.124	0.004	336,559.4	22	35	$3^4P_{5/2}$	32,005	$(4^3F)^4D_{3/2}$	368,569
297.216	−0.002	336,456.2	29	174	$3^4P_{3/2}$	32,994	$(4^3D)^4P_{3/2}$	369,448
297.251	−0.008	336,415.8	12	54	$5^4D_{5/2}$	39,299	$(4^3D)^4D_{3/2}$	375,706
297.324		336,333.8	307	565	$5^6S_{5/2}$	0	$(4^5D)^6P_{3/2}$	336,333
297.504	−0.004	336,130.1	8	44	$5^4D_{1/2}$	38,685	$(4^3P)^2P_{1/2}$	374,810
297.702	−0.007	335,906.6	36	79	$5^4G_{9/2}$	30,907	$(4^3F)^4F_{7/2}$	366,806
297.882	−0.002	335,702.9	16	188	$5^4D_{3/2}$	39,788	$(4^3D)^4P_{1/2}$	375,489
297.911	−0.002	335,670.5	55	299	$3^4F_{9/2}$	49,104	$(4^1D)^2F_{7/2}$	384,772
297.951	−0.003	335,625.9	18	143	$5^2G_{7/2}$	55,773	$(2^3F)^4G_{5/2}$	391,396
298.066 [d]	0.001	335,495.9	40	272	$3^4F_{3/2}$	53,796	$(2^3F)^4F_{3/2}$	389,293
298.066 [d]	−0.008	335,495.9	41	68	$5^4G_{5/2}$	29,390	$(4^3P)^4P_{5/2}$	364,877
298.311	−0.005	335,220.5	52	378	$5^2I_{11/2}$	44,011	$(4^3G)^2G_{9/2}$	379,226
298.367	−0.001	335,157.4	35	58	$3^2D_{3/2}$	71,517	$(2^3F)^4D_{1/2}$	406,673

Table A1. *Cont.*

λ (Å) [a]	o-c, (Å) [b]	ν (cm^{-1})	I [c]	gA, (10^8 s^{-1})	5d^5		5d^{4}5p	
					Term [e]	E (cm^{-1})	Term [e]	E (cm^{-1})
298.564 [d]		334,936.4	660	266	$5^4D_{5/2}$	39,299	$(4^3D)^4P_{3/2}$	374,236
298.564 [d]	−0.001	334,936.4	660	239	$5^4G_{9/2}$	30,907	$(4^3F)^2G_{7/2}$	365,842
298.591 [d]		334,905.8	1000	1405	$5^6S_{5/2}$	0	$(4^5D)^6P_{7/2}$	334,906
298.591 [d]	0.001	334,905.8	1000	621	$5^4G_{11/2}$	30,662	$(4^3F)^4F_{9/2}$	365,569
298.651	0.003	334,839.3	23	100	$3^4P_{1/2}$	34,605	$(4^3D)^4P_{3/2}$	369,448
299.048	0.002	334,394.9	12	251	$3^4F_{7/2}$	48,712	$(4^3D)^2F_{5/2}$	383,109
299.073	−0.011	334,367.0	79	244	$5^4G_{11/2}$	30,662	$(4^3H)^4H_{11/2}$	365,017
299.301 [d]	−0.002	334,111.7	82	115	$5^4G_{11/2}$	30,662	$(4^3F)^4G_{9/2}$	364,772
299.301 [d]	−0.001	334,111.7	82	221	$5^4G_{9/2}$	30,907	$(4^3H)^4H_{11/2}$	365,017
299.346	0.002	334,061.9	26	140	$5^4G_{5/2}$	29,390	$(4^3D)^4F_{3/2}$	363,454
299.396	0.002	334,006.1	12	97	$3^4F_{7/2}$	48,712	$(4^1G)^2G_{9/2}$	382,720
299.432	−0.002	333,966.1	15	119	$3^4P_{1/2}$	34,605	$(4^3F)^4D_{3/2}$	368,569
299.526	0.004	333,861.1	127	498	$5^4G_{9/2}$	30,907	$(4^3F)^4G_{9/2}$	364,772
299.719	0.001	333,645.6	63	419	$5^4G_{7/2}$	30,378	$(4^3D)^2D_{5/2}$	364,025
299.740	0.001	333,622.6	32	180	$3^4F_{9/2}$	49,104	$(4^1G)^2G_{9/2}$	382,728
299.772	−0.002	333,586.8	35	71	$5^4G_{5/2}$	29,390	$(4^3P)^4D_{5/2}$	362,975
299.803	0.000	333,551.8	15	72	$5^4G_{5/2}$	29,390	$(4^3G)^4H_{7/2}$	362,942
299.941	−0.004	333,399.3	32	185	$5^4D_{7/2}$	36,485	$(4^3P)^4D_{7/2}$	369,879
299.954	−0.003	333,384.9	32	46	$5^2I_{11/2}$	44,011	$(4^3F)^2G_{9/2}$	377,393
300.006		333,327.1	315	783	$5^6S_{5/2}$	0	$(4^5D)^6P_{5/2}$	333,327
300.065 [d]	0.001	333,261.5	41	193	$5^2G_{9/2}$	59,223	$(2^3F)^4G_{9/2}$	392,486
300.065 [d]	0.001	333,261.5	41	114	$3^2F_{7/2}$	53,353	$(4^1F)^2G_{7/2}$	386,615
300.216	−0.001	333,093.9	36	178	$5^4D_{7/2}$	36,485	$(4^3F)^2F_{5/2}$	369,578
300.224	0.000	333,084.2	36	113	$3^4P_{3/2}$	32,993	$(4^3F)^4F_{3/2}$	366,077
300.305	−0.003	332,994.5	56	319	$5^4G_{5/2}$	29,390	$(4^3H)^4G_{5/2}$	362,381
300.342	−0.001	332,953.5	74	267	$5^4G_{11/2}$	30,662	$(4^3H)^4I_{13/2}$	363,614
300.419	0.004	332,868.1	12	66	$3^4P_{5/2}$	32,005	$(4^3P)^4P_{5/2}$	364,877
300.473 [d]	0.000	332,808.5	144	274	$5^2I_{13/2}$	45,546	$(4^1I)^2K_{15/2}$	378,355
300.473 [d]	−0.010	332,808.5	144	641	$3^2H_{11/2}$	57,962	$(4^1F)^2G_{9/2}$	390,759
300.693	−0.001	332,564.7	39	203	$5^4G_{7/2}$	30,378	$(4^3G)^4H_{7/2}$	362,942
300.760	−0.007	332,490.7	39	208	$5^4D_{7/2}$	36,485	$(4^3P)^4D_{7/2}$	368,968
300.833	−0.006	332,410.1	26	57	$5^2I_{11/2}$	44,011	$(4^3G)^4G_{11/2}$	376,414
300.855	0.004	332,385.9	26	96	$5^2G_{7/2}$	55,773	$(4^1F)^2G_{7/2}$	388,163
301.047	−0.003	332,174.2	342	1899	$5^2I_{13/2}$	45,546	$(4^1G)^2H_{11/2}$	377,717
301.098	−0.003	332,118.1	16	95	$5^2G_{9/2}$	59,223	$(2^3F)^4F_{7/2}$	391,338
301.141	−0.001	332,070.5	15	141	$5^4G_{7/2}$	30,378	$(4^3G)^4F_{9/2}$	362,447
301.178 [d]	0.006	332,029.0	34	149	$5^4G_{9/2}$	30,907	$(4^3G)^4H_{7/2}$	362,942
301.178 [d]	−0.008	332,029.0	34	192	$3^4P_{5/2}$	32,005	$(4^3D)^2D_{5/2}$	364,025
301.262	0.007	331,936.7	16	143	$5^4D_{7/2}$	36,485	$(4^3G)^4H_{9/2}$	368,429
301.314	−0.006	331,879.4	140	547	$5^4G_{11/2}$	30,662	$(4^3H)^2I_{11/2}$	362,535
301.404 [d]	0.002	331,781.0	147	92	$5^4G_{5/2}$	29,390	$(4^3F)^4G_{7/2}$	361,173
301.404 [d]	0.004	331,781.0	147	712	$5^4G_{11/2}$	30,662	$(4^3G)^4F_{9/2}$	362,447
301.585	0.001	331,581.0	9	152	$5^2I_{11/2}$	44,011	$(4^3D)^4F_{9/2}$	375,593
301.618 [d]	0.001	331,545.3	73	415	$5^2F_{7/2}$	59,792	$(2^3F)^4F_{7/2}$	391,338
301.618 [d]	−0.008	331,545.3	73	58	$5^2G_{9/2}$	59,223	$(4^1F)^2G_{9/2}$	390,759
301.701	−0.004	331,453.7	42	243	$3^4P_{5/2}$	32,005	$(4^3D)^4F_{3/2}$	363,454
301.720	0.001	331,433.2	89	388	$5^4D_{7/2}$	36,485	$(4^3D)^4P_{5/2}$	367,919
301.866	−0.001	331,272.8	28	65	$5^4G_{7/2}$	30,378	$(4^3H)^4G_{9/2}$	361,650
301.920	0.001	331,213.5	60	333	$5^4G_{7/2}$	30,378	$(4^3G)^4F_{7/2}$	361,593
301.932		331,200.4	147	211	$5^6S_{5/2}$	0	$(4^5D)^4P_{3/2}$	331,200
302.140	−0.005	330,972.2	13	41	$5^2F_{7/2}$	59,792	$(4^1F)^2G_{9/2}$	390,759
302.191	0.002	330,916.4	155	680	$5^4G_{7/2}$	30,378	$(4^3F)^4F_{5/2}$	361,296
302.226 [d]	−0.009	330,878.0	351	441	$5^2I_{13/2}$	45,546	$(4^3G)^4G_{11/2}$	376,414
302.226 [d]	−0.005	330,878.0	351	768	$5^2I_{13/2}$	45,546	$(4^1I)^2I_{13/2}$	376,419
302.307 [d]	0.005	330,789.4	146	453	$5^4G_{7/2}$	30,378	$(4^3F)^4G_{7/2}$	361,173
302.307 [d]	0.001	330,789.4	146	248	$5^2D_{5/2}$	47,119	$(4^1S)^2P_{3/2}$	377,910
302.350 [d]	0.001	330,742.4	565	1173	$5^4G_{9/2}$	30,907	$(4^3H)^4G_{9/2}$	361,650
302.350 [d]	0.014	330,742.4	565	619	$3^2G_{9/2}$	79,131	$(2^1G)^2F_{7/2}$	409,889
302.401	−0.001	330,687.0	192	881	$5^4G_{9/2}$	30,907	$(4^3G)^4F_{7/2}$	361,593

Table A1. *Cont.*

λ (Å) [a]	o-c, (Å) [b]	ν (cm^{-1})	I [c]	gA, (10^8 s^{-1})	5d^5		5d^{4}5p	
					Term [e]	E (cm^{-1})	Term [e]	E (cm^{-1})
302.687 [d]	0.002	330,374.0	21	108	$3^4P_{5/2}$	32,005	$(4^3H)^4G_{5/2}$	362,381
302.687 [d]	−0.008	330,374.0	21	186	$3^4F_{7/2}$	48,712	$(4^1F)^2F_{5/2}$	379,077
302.748 [d]	0.002	330,307.5	57	208	$3^2G_{9/2}$	79,131	$(2^1G)^2H_{11/2}$	409,441
302.748 [d]	0.012	330,307.5	57	154	$5^4D_{7/2}$	36,485	$(4^3F)^4F_{7/2}$	366,806
302.784 [d]	−0.001	330,268.8	49	87	$5^2F_{7/2}$	59,792	$(2^3F)^4F_{5/2}$	390,060
302.784 [d]	−0.003	330,268.8	49	84	$5^4G_{9/2}$	30,907	$(4^3F)^4G_{7/2}$	361,173
302.836	−0.004	330,212.1	110	309	$5^4D_{7/2}$	36,485	$(4^3D)^4D_{5/2}$	366,693
302.865	0.008	330,180.0	26	413	$5^2G_{7/2}$	55,773	$(4^3D)^2F_{5/2}$	385,962
302.936 [d]	0.001	330,103.2	34	150	$5^4G_{7/2}$	30,378	$(4^3F)^4G_{9/2}$	360,482
302.936 [d]	0.003	330,103.2	34	225	$3^2F_{5/2}$	59,954	$(2^3F)^4F_{5/2}$	390,060
303.045	−0.003	329,983.8	72	299	$3^4P_{3/2}$	32,994	$(4^3P)^4D_{5/2}$	362,975
303.063	−0.007	329,964.7	29	442	$3^4F_{9/2}$	49,104	$(4^1G)^2G_{7/2}$	379,061
303.133	−0.004	329,888.5	9	47	$5^4D_{1/2}$	38,685	$(4^3F)^4D_{3/2}$	368,569
303.191 [d]	−0.001	329,824.7	95	131	$5^2D_{3/2}$	48,086	$(4^1S)^2P_{3/2}$	377,910
303.191 [d]	−0.005	329,824.7	95	332	$5^4G_{11/2}$	30,662	$(4^3H)^4I_{11/2}$	360,481
303.252	−0.003	329,758.8	20	60	$3^2F_{7/2}$	53,353	$(4^3D)^2F_{5/2}$	383,109
303.340	−0.003	329,663.2	11	147	$5^4D_{3/2}$	39,788	$(4^3D)^4P_{3/2}$	369,448
303.421	0.000	329,575.0	46	170	$5^4G_{9/2}$	30,907	$(4^3F)^4G_{9/2}$	360,482
303.505	−0.002	329,483.4	55	893	$3^2G_{7/2}$	79,705	$(2^1G)^2F_{5/2}$	409,186
303.557	−0.003	329,427.2	12	64	$5^2D_{5/2}$	47,119	$(4^3D)^4F_{5/2}$	376,543
303.670	0.004	329,304.9	103	391	$5^4G_{7/2}$	30,378	$(4^3G)^4G_{7/2}$	359,687
303.791	−0.004	329,173.5	46	331	$5^2F_{5/2}$	57,413	$(4^1S)^2P_{3/2}$	386,582
303.852	0.001	329,107.7	69	335	$5^2I_{11/2}$	44,011	$(4^3G)^4G_{9/2}$	373,120
303.950 [d]	−0.002	329,001.2	111	371	$5^2G_{7/2}$	55,773	$(4^1D)^2F_{7/2}$	384,772
303.950 [d]		329,001.2	111	353	$5^4G_{5/2}$	29,390	$(4^3F)^4G_{5/2}$	358,392
304.087	0.002	328,852.8	35	264	$5^2F_{5/2}$	57,413	$(4^1D)^2D_{5/2}$	386,268
304.087	−0.004	328,852.8	35	61	$3^4P_{1/2}$	34,605	$(4^3D)^4F_{3/2}$	363,454
304.154	−0.001	328,781.1	12	103	$5^4G_{9/2}$	30,907	$(4^3G)^4G_{7/2}$	359,687
304.261	0.000	328,665.6	41	348	$5^2I_{11/2}$	44,011	$(4^3H)^2H_{11/2}$	372,676
304.302	−0.001	328,621.4	28	210	$5^4D_{5/2}$	39,299	$(4^3D)^4P_{5/2}$	367,919
304.338	−0.002	328,582.2	53	421	$3^2H_{9/2}$	53,797	$(4^1I)^2H_{9/2}$	382,377
304.515	0.001	328,391.4	17	97	$5^4D_{7/2}$	36,485	$(4^3P)^4P_{5/2}$	364,877
304.568		328,334.2	12	215	$3^2D_{3/2}$	71,517	$(4^1F)^2D_{3/2}$	399,850
304.608 [d]	−0.004	328,290.9	36	163	$5^4D_{7/2}$	36,485	$(4^3F)^4G_{9/2}$	364,772
304.608 [d]	−0.002	328,290.9	36	55	$3^4F_{9/2}$	49,104	$(4^3F)^2G_{9/2}$	377,393
304.684	0.000	328,208.5	12	112	$3^2F_{5/2}$	59,954	$(4^1F)^2G_{7/2}$	388,163
304.798	0.000	328,086.6	44	281	$3^4P_{5/2}$	32,005	$(4^3P)^4P_{3/2}$	360,092
304.831	0.008	328,050.5	8	50	$3^4F_{9/2}$	49,104	$(4^3D)^4F_{7/2}$	377,162
305.046 [d]	0.000	327,819.4	18	121	$5^2D_{5/2}$	47,119	$(4^3D)^2P_{3/2}$	374,938
305.046 [d]	0.011	327,819.4	18	101	$3^4F_{7/2}$	48,712	$(4^3D)^4F_{5/2}$	376,543
305.152	−0.002	327,705.2	91	266	$3^2D_{5/2}$	72,934	$(4^1F)^2D_{5/2}$	400,637
305.172	−0.002	327,684.1	91	223	$3^4P_{5/2}$	32,005	$(4^3G)^4G_{7/2}$	359,687
305.249	0.001	327,601.6	87	395	$5^4G_{5/2}$	29,390	$(4^3F)^2D_{3/2}$	356,993
305.305	−0.003	327,541.3	32	49	$3^2F_{7/2}$	53,353	$(4^1G)^2F_{5/2}$	380,891
305.341	0.004	327,503.1	49	406	$5^4D_{5/2}$	39,299	$(4^3F)^4F_{7/2}$	366,806
305.441 [t]	−0.003	327,395.2	47	490	$5^2G_{9/2}$	59,223	$(4^1F)^2G_{7/2}$	386,615
305.441 [t]	−0.001	327,395.2	47	234	$5^4D_{5/2}$	39,299	$(4^3D)^4D_{5/2}$	366,693
305.441 [t]	−0.002	327,395.2	47	108	$5^4D_{1/2}$	38,685	$(4^3F)^4F_{3/2}$	366,078
305.469	−0.002	327,365.7	58	111	$3^2G_{9/2}$	79,131	$(2^3F)^2G_{7/2}$	406,495
305.524 [d]	0.000	327,306.8	54	145	$5^2D_{5/2}$	47,119	$(4^3G)^4F_{5/2}$	374,426
305.524 [d]	0.003	327,306.8	54	154	$3^4F_{9/2}$	49,104	$(4^3G)^4G_{11/2}$	376,414
305.554 [d]	0.001	327,274.8	262	868	$5^2I_{13/2}$	45,546	$(4^3G)^4H_{13/2}$	372,822
305.554 [d]	−0.001	327,274.8	262	92	$5^4D_{5/2}$	39,299	$(4^3F)^4F_{3/2}$	366,573
305.689	0.000	327,129.8	295	1616	$5^2I_{13/2}$	45,546	$(4^3H)^2H_{11/2}$	372,676
305.787	0.002	327,025.0	265	1038	$5^4G_{11/2}$	30,662	$(4^3H)^4G_{11/2}$	357,689
305.902	0.003	326,901.5	19	143	$5^4D_{3/2}$	39,788	$(4^3D)^4D_{5/2}$	366,693
305.961	0.004	326,838.8	107	133	$5^4G_{5/2}$	29,390	$(4^3F)^4D_{5/2}$	356,233
306.009 [d]	0.002	326,787.6	173	936	$3^2G_{7/2}$	79,705	$(2^3F)^2G_{7/2}$	406,495
306.009 [d]	−0.002	326,787.6	173	266	$5^4D_{3/2}$	39,788	$(4^3F)^4F_{3/2}$	366,573

Table A1. *Cont.*

λ (Å) [a]	o-c, (Å) [b]	ν (cm^{-1})	I [c]	gA, (10^8 s^{-1})	5d^5		5d^{4}5p	
					Term [e]	E (cm^{-1})	Term [e]	E (cm^{-1})
306.020	0.006	326,775.9	31	397	$5^4G_{9/2}$	30,907	$(4^3H)^4G_{11/2}$	357,689
306.072	0.004	326,720.1	21	146	$5^2D_{3/2}$	48,086	$(4^3P)^2P_{1/2}$	374,810
306.159	0.000	326,627.8	46	361	$3^2F_{5/2}$	59,954	$(4^1S)^2P_{3/2}$	386,582
306.288 [d]	−0.001	326,490.6	372	167	$3^4F_{9/2}$	49,104	$(4^3D)^4F_{9/2}$	375,593
306.288 [d]	−0.001	326,490.6	372	1477	$5^2I_{11/2}$	44,011	$(4^3G)^2H_{9/2}$	370,501
306.303	0.002	326,474.1	77	436	$5^2F_{7/2}$	59,792	$(4^1D)^2D_{5/2}$	386,268
306.425	−0.004	326,344.3	16	55	$5^2D_{3/2}$	48,086	$(4^3G)^4F_{5/2}$	374,426
306.479	0.003	326,286.8	12	110	$5^4D_{3/2}$	39,788	$(4^3F)^4F_{3/2}$	366,078
306.712	−0.001	326,039.2	12	46	$5^4G_{7/2}$	30,378	$(4^3H)^4I_{9/2}$	356,416
306.737	−0.004	326,011.7	23	294	$3^2F_{5/2}$	59,954	$(4^3D)^2F_{5/2}$	385,962
306.781	−0.003	325,965.8	62	360	$5^4D_{7/2}$	36,485	$(4^3G)^4F_{9/2}$	362,447
306.857	0.002	325,884.4	18	51	$5^4D_{7/2}$	36,485	$(4^3H)^4G_{5/2}$	362,381
306.876	0.002	325,864.4	34	417	$5^2F_{5/2}$	57,413	$(4^3D)^2D_{3/2}$	383,280
306.981	0.001	325,753.5	133	394	$5^4G_{11/2}$	30,662	$(4^3H)^4I_{9/2}$	356,416
307.013	0.004	325,719.5	131	656	$3^2F_{7/2}$	53,353	$(4^1F)^2F_{5/2}$	379,077
307.086 [d]	0.008	325,641.9	505	1764	$5^2I_{11/2}$	44,011	$(4^1I)^2I_{11/2}$	369,661
307.086 [d]	0.001	325,641.9	505	213	$5^2I_{11/2}$	44,011	$(4^1I)^2K_{13/2}$	369,654
307.147 [d]	0.001	325,577.1	393	172	$5^4D_{5/2}$	39,299	$(4^3P)^4P_{5/2}$	364,877
307.147 [d]	0.000	325,577.1	393	1711	$3^2H_{11/2}$	57,962	$(4^1I)^2H_{11/2}$	383,539
307.178	0.005	325,543.6	100	607	$5^2G_{9/2}$	59,223	$(4^1D)^2F_{7/2}$	384,772
307.230	−0.002	325,488.8	31	185	$3^4P_{1/2}$	34,605	$(4^3P)^4P_{3/2}$	360,092
307.290	0.003	325,425.5	3	139	$3^2H_{9/2}$	53,797	$(4^3G)^2G_{9/2}$	379,226
307.448	0.006	325,257.7	70	609	$3^2H_{9/2}$	53,797	$(4^1G)^2G_{7/2}$	379,061
307.579	−0.002	325,120.2	83	598	$5^2G_{7/2}$	55,773	$(4^1G)^2F_{5/2}$	380,891
307.608	0.000	325,088.7	14	74	$5^4D_{3/2}$	39,788	$(4^3P)^4P_{5/2}$	364,877
307.707	0.001	324,984.9	49	518	$3^2G_{9/2}$	79,131	$(2^3F)^2F_{7/2}$	404,117
307.871		324,811.2	111	987	$3^2G_{9/2}$	79,131	$(2^3F)^2G_{9/2}$	403,942
307.918 [d]	0.007	324,761.4	147	198	$5^4D_{1/2}$	38,685	$(4^3D)^4F_{3/2}$	363,454
307.918 [d]	−0.003	324,761.4	147	786	$3^2H_{11/2}$	57,962	$(4^1G)^2G_{9/2}$	382,720
307.981	−0.001	324,695.8	53	394	$5^2G_{7/2}$	55,773	$(4^1F)^2F_{7/2}$	380,468
308.024	0.007	324,649.9	11	89	$3^4F_{5/2}$	51,049	$(4^3D)^4D_{3/2}$	375,706
308.114	−0.001	324,555.0	16	110	$5^2D_{5/2}$	47,119	$(4^3G)^4G_{7/2}$	371,673
308.180	0.002	324,486.0	96	453	$3^4P_{5/2}$	32,005	$(4^3F)^4D_{7/2}$	356,493
308.247 [d]	0.003	324,415.1	66	179	$5^2I_{11/2}$	44,011	$(4^3G)^4H_{9/2}$	368,429
308.247 [d]	−0.007	324,415.1	66	167	$3^4F_{7/2}$	48,712	$(4^3G)^4G_{9/2}$	373,120
308.538 [d]	0.005	324,109.7	515	155	$5^2I_{13/2}$	45,546	$(4^1I)^2I_{11/2}$	369,661
308.538 [d]	−0.002	324,109.7	515	1122	$5^2I_{13/2}$	45,546	$(4^1I)^2K_{13/2}$	369,654
308.588 [d]		324,056.3	220	408	$5^4G_{11/2}$	30,662	$(4^3H)^4H_{13/2}$	354,719
308.588 [d]	0.007	324,056.3	220	196	$5^4G_{5/2}$	29,390	$(4^3G)^4H_{7/2}$	353,454
308.640	−0.004	324,001.7	62	284	$5^4D_{7/2}$	36,485	$(4^3F)^4G_{9/2}$	360,482
308.685	0.007	323,954.5	16	31	$5^4G_{9/2}$	30,907	$(4^5D)^4D_{7/2}$	354,869
308.820	−0.003	323,813.2	58	157	$3^2F_{7/2}$	53,353	$(4^3D)^4F_{7/2}$	377,163
308.885	−0.001	323,745.4	59	255	$5^4G_{7/2}$	30,378	$(4^3H)^4H_{9/2}$	354,122
308.922	−0.002	323,706.6	20	195	$5^2G_{7/2}$	55,773	$(4^3G)^2F_{5/2}$	379,478
309.038	0.011	323,584.5	15	156	$3^2H_{9/2}$	53,797	$(4^3F)^2G_{9/2}$	377,393
309.123	0.001	323,496.0	9	163	$5^2G_{9/2}$	59,223	$(4^1G)^2G_{9/2}$	382,720
309.159	0.002	323,458.5	78	311	$5^4G_{11/2}$	30,662	$(4^3H)^4H_{9/2}$	354,122
309.190	−0.005	323,426.0	12	86	$3^2G_{7/2}$	79,705	$(2^3F)^4D_{7/2}$	403,133
309.243 [d]	0.007	323,370.1	45	219	$3^4F_{5/2}$	51,049	$(4^3G)^4F_{5/2}$	374,426
309.243 [d]	−0.004	323,370.1	45	165	$3^2H_{9/2}$	53,797	$(4^3D)^4F_{7/2}$	377,163
309.286	0.001	323,325.0	13	216	$3^2F_{5/2}$	59,954	$(4^3D)^2D_{3/2}$	383,280
309.318	0.002	323,292.4	17	67	$5^4G_{5/2}$	29,390	$(4^3G)^4G_{5/2}$	352,685
309.366	−0.002	323,241.3	55	212	$3^4P_{3/2}$	32,994	$(4^3F)^4D_{5/2}$	356,233
309.426	0.008	323,178.8	90	168	$5^4D_{3/2}$	39,788	$(4^3P)^4D_{5/2}$	362,975
309.450	0.000	323,153.9	90	593	$5^2G_{9/2}$	59,223	$(4^1I)^2H_{9/2}$	382,377
309.633	−0.002	322,963.2	107	582	$3^4F_{7/2}$	48,712	$(4^3G)^4G_{7/2}$	371,673
309.732	0.004	322,859.6	19	119	$3^4P_{5/2}$	32,005	$(4^5D)^4D_{7/2}$	354,869
309.793		322,796.5	32	192	$3^4P_{3/2}$	32,994	$(4^3P)^4P_{1/2}$	355,790

Table A1. *Cont.*

λ (Å) [a]	o-c, (Å) [b]	ν (cm^{-1})	I [c]	gA, (10^8 s^{-1})	5d^5		5d^{4}5p	
					Term [e]	E (cm^{-1})	Term [e]	E (cm^{-1})
309.976	0.011	322,605.2	23	148	$3^2H_{9/2}$	53,797	$(4^3G)^4G_{11/2}$	376,414
310.029	−0.003	322,550.5	73	151	$5^4G_{9/2}$	30,907	$(4^3G)^4H_{7/2}$	353,454
310.140	−0.005	322,434.9	52	310	$3^2G_{9/2}$	79,131	$(2^1G)^2H_{9/2}$	401,561
310.211	−0.011	322,360.8	15	111	$3^4F_{7/2}$	48,712	$(4^3H)^2H_{9/2}$	371,061
310.259	−0.005	322,311.8	37	90	$5^4G_{7/2}$	30,378	$(4^3G)^4G_{5/2}$	352,685
310.340	0.003	322,227.0	48	75	$3^4P_{5/2}$	32,005	$(4^5D)^4D_{5/2}$	354,235
310.604	0.004	321,953.2	51	303	$3^4F_{9/2}$	49,104	$(4^3H)^2H_{9/2}$	371,061
310.663	−0.003	321,892.2	89	407	$3^4F_{9/2}$	49,104	$(4^3F)^2F_{7/2}$	370,993
310.707 [d]	0.002	321,847.2	21	124	$5^2D_{5/2}$	47,119	$(4^3P)^4D_{7/2}$	368,968
310.707 [d]	0.009	321,847.2	21	194	$3^2G_{7/2}$	79,705	$(2^1G)^2H_{9/2}$	401,561
310.885	0.002	321,662.3	5	165	$5^2F_{5/2}$	57,412	$(4^1F)^2F_{5/2}$	379,076
310.923	−0.003	321,622.5	2	86	$5^2G_{7/2}$	55,773	$(4^3F)^2G_{9/2}$	377,393
310.985 [d]	0.009	321,559.0	65	194	$3^2H_{9/2}$	53,797	$(4^3G)^2G_{7/2}$	375,365
310.985 [d]	−0.001	321,559.0	65	225	$5^2I_{11/2}$	44,011	$(4^3F)^4F_{9/2}$	365,569
311.058	0.003	321,483.3	122	687	$3^2F_{7/2}$	53,353	$(4^3H)^4G_{7/2}$	374,839
311.121	0.002	321,418.0	17	38	$5^4G_{11/2}$	30,662	$(4^3H)^4H_{11/2}$	352,082
311.161	0.007	321,376.6	43	223	$3^4F_{9/2}$	49,104	$(4^3G)^4H_{11/2}$	370,488
311.272	0.002	321,262.0	49	513	$3^2H_{11/2}$	57,962	$(4^3G)^2G_{9/2}$	379,226
311.355	−0.002	321,177.0	66	185	$5^4G_{9/2}$	30,907	$(4^3H)^4H_{11/2}$	352,082
311.414	−0.001	321,115.8	8	169	$3^2D_{5/2}$	72,934	$(2^3F)^4F_{5/2}$	394,049
311.453	−0.003	321,076.2	18	81	$3^2F_{7/2}$	53,353	$(4^3G)^4F_{5/2}$	374,426
311.518 [d]	−0.006	321,008.4	60	381	$3^4F_{5/2}$	51,049	$(4^3H)^4G_{5/2}$	372,051
311.518 [d]	−0.002	321,008.4	60	59	$5^2I_{11/2}$	44,011	$(4^3H)^4H_{11/2}$	365,017
311.594 [d]	0.006	320,930.4	36	412	$3^2F_{5/2}$	59,954	$(4^1G)^2F_{5/2}$	380,891
311.594 [d]	0.002	320,930.4	36	154	$3^2G_{7/2}$	79,705	$(4^1F)^2D_{5/2}$	400,637
311.845	0.003	320,672.7	8	146	$3^2D_{5/2}$	72,934	$(4^1D)^2P_{3/2}$	393,610
311.891	0.005	320,624.5	20	135	$3^4F_{3/2}$	53,796	$(4^3G)^4F_{5/2}$	374,426
311.963	0.004	320,551.2	24	164	$3^4P_{3/2}$	32,994	$(4^5D)^4D_{3/2}$	353,549
312.007	0.001	320,505.8	9	78	$5^2I_{11/2}$	44,011	$(4^3H)^2I_{13/2}$	364,518
312.030	0.001	320,481.5	26	118	$5^2D_{3/2}$	48,086	$(4^3F)^4D_{3/2}$	368,569
312.465	0.000	320,035.6	29	140	$3^2D_{3/2}$	71,517	$(2^3P)^4D_{3/2}$	391,553
312.497	0.000	320,002.7	59	466	$5^2G_{9/2}$	59,223	$(4^3G)^2G_{9/2}$	379,226
312.716	0.001	319,779.1	36	152	$3^2H_{9/2}$	53,797	$(4^3F)^4D_{7/2}$	373,577
312.742	0.003	319,752.1	36	149	$3^2H_{11/2}$	57,962	$(4^1G)^2H_{11/2}$	377,717
312.807	0.000	319,685.6	39	345	$5^2F_{7/2}$	59,792	$(4^3G)^2F_{5/2}$	379,478
312.836		319,656.8	99	248	$5^4G_{5/2}$	29,390	$(4^3H)^4H_{7/2}$	349,047
312.895	−0.004	319,596.1	46	332	$5^2G_{7/2}$	55,773	$(4^3G)^2G_{7/2}$	375,365
312.966	0.000	319,523.7	12	123	$3^2F_{5/2}$	59,954	$(4^3G)^2F_{5/2}$	379,478
313.025	0.008	319,463.4	31	228	$5^2I_{13/2}$	45,546	$(4^3H)^4H_{11/2}$	365,017
313.058	0.002	319,429.4	59	513	$3^2H_{11/2}$	57,962	$(4^3F)^2G_{9/2}$	377,393
313.143	0.000	319,343.1	48	115	$5^4G_{7/2}$	30,378	$(4^3H)^4I_{9/2}$	349,721
313.164	0.001	319,321.8	48	199	$3^2H_{9/2}$	53,797	$(4^3G)^4G_{9/2}$	373,120
313.208	0.000	319,276.3	23	81	$3^4P_{3/2}$	32,994	$(4^5D)^4D_{1/2}$	352,270
313.375	0.000	319,106.8	21	191	$3^2F_{5/2}$	59,954	$(4^1G)^2G_{7/2}$	379,061
313.423	0.001	319,057.6	48	155	$5^4G_{11/2}$	30,662	$(4^3H)^4I_{9/2}$	349,721
313.522		318,957.4	32	150	$3^2G_{7/2}$	79,705	$(2^3F)^2F_{5/2}$	398,662
313.599	0.000	318,879.0	9	82	$3^2H_{9/2}$	53,797	$(4^3H)^2H_{11/2}$	372,676
313.641	−0.006	318,835.7	9	72	$3^4F_{5/2}$	51,049	$(4^3P)^4D_{7/2}$	369,878
313.957	0.009	318,514.8	17	92	$5^2I_{11/2}$	44,011	$(4^3H)^2I_{11/2}$	362,535
313.981 [d]	0.003	318,490.5	17	147	$5^2G_{9/2}$	59,223	$(4^1G)^2H_{11/2}$	377,717
313.981 [d]	−0.003	318,490.5	17	165	$5^2D_{3/2}$	48,086	$(4^3F)^4F_{3/2}$	366,573
314.013	−0.001	318,458.5	66	339	$3^2H_{11/2}$	57,962	$(4^1I)^2I_{13/2}$	376,419
314.152	0.003	318,316.8	7	60	$3^2F_{7/2}$	53,353	$(4^3G)^4G_{7/2}$	371,673
314.212	−0.001	318,256.6	22	197	$3^4F_{3/2}$	53,796	$(4^3H)^4G_{5/2}$	372,051
314.298 [d]	−0.006	318,169.6	18	206	$1^2D_{3/2}$	104,821	$(2^1D)^2F_{5/2}$	422,985
314.298 [d]	0.000	318,169.6	18	220	$5^2G_{9/2}$	59,223	$(4^3F)^2G_{9/2}$	377,393
314.370	−0.003	318,096.9	19	75	$3^4F_{7/2}$	48,712	$(4^3F)^4F_{7/2}$	366,806
314.400	0.002	318,065.8	8	69	$5^2I_{13/2}$	45,546	$(4^3H)^4I_{13/2}$	363,614
314.545	0.000	317,919.3	19	184	$3^4F_{5/2}$	51,049	$(4^3P)^4D_{7/2}$	368,968

Table A1. *Cont.*

λ (Å) [a]	o-c, (Å) [b]	ν (cm^{-1})	I [c]	gA, (10^8 s^{-1})	5d^5		5d^{4}5p	
					Term [e]	E (cm^{-1})	Term [e]	E (cm^{-1})
314.650	−0.010	317,813.5	9	113	$5^2G_{7/2}$	55,773	$(4^3F)^4D_{7/2}$	373,577
314.712	−0.001	317,750.9	23	81	$5^4D_{7/2}$	36,485	$(4^5D)^4D_{5/2}$	354,235
314.749	0.002	317,713.4	89	236	$5^4G_{11/2}$	30,662	$(4^5D)^6D_{9/2}$	348,377
314.797	0.000	317,665.5	23	109	$3^4P_{1/2}$	34,605	$(4^5D)^4D_{1/2}$	352,270
314.856	−0.005	317,605.8	22 VI	156	$5^2F_{7/2}$	59,792	$(4^3F)^2G_{9/2}$	377,393
315.100	−0.012	317,359.3	14	145	$5^2G_{7/2}$	55,773	$(4^3G)^4G_{9/2}$	373,120
315.192	−0.003	317,266.6	11	79	$3^2H_{9/2}$	53,797	$(4^3H)^2H_{9/2}$	371,061
315.264 [d]	0.001	317,194.8	83	181	$3^2H_{9/2}$	53,797	$(4^3F)^2F_{7/2}$	370,993
315.264 [d]	−0.004	317,194.8	83	310	$5^2G_{9/2}$	59,223	$(4^3G)^4G_{11/2}$	376,414
315.327 [d]	−0.001	317,130.8	37	284	$3^4F_{7/2}$	48,712	$(4^3F)^2G_{7/2}$	365,842
315.327 [d]	−0.005	317,130.8	37	125	$3^2D_{5/2}$	72,934	$(2^3F)^4F_{5/2}$	390,060
315.552	0.001	316,905.2	16	119	$5^2D_{5/2}$	47,119	$(4^3D)^2D_{5/2}$	364,025
315.751	−0.002	316,705.6	11	124	$3^2H_{9/2}$	53,797	$(4^3G)^2H_{9/2}$	370,501
315.758	−0.007	316,698.2	18	97	$3^2H_{9/2}$	53,797	$(4^3G)^4H_{11/2}$	370,488
315.988	0.003	316,467.3	4	41	$5^2I_{11/2}$	44,011	$(4^3H)^4I_{11/2}$	360,481
316.291	0.000	316,164.3	18	148	$5^2F_{5/2}$	57,413	$(4^3F)^4D_{7/2}$	373,577
316.384	0.010	316,071.5	9	106	$3^2H_{9/2}$	53,797	$(4^3P)^4D_{7/2}$	369,878
316.548	0.006	315,907.6	44	248	$3^4F_{9/2}$	49,104	$(4^3H)^4H_{11/2}$	365,017
316.588	−0.004	315,867.8	12	103	$3^2H_{9/2}$	53,797	$(4^1I)^2I_{11/2}$	369,661
316.780	−0.009	315,676.9	21	149	$3^4F_{9/2}$	49,104	$(4^3F)^4G_{9/2}$	364,772
316.804	−0.001	315,652.9	29	26	$3^4F_{3/2}$	53,796	$(4^3D)^4P_{3/2}$	369,448
316.843	0.002	315,613.8	83	249	$5^2G_{9/2}$	59,223	$(4^3H)^4G_{7/2}$	374,839
317.044	−0.002	315,413.3	8	46	$3^2F_{5/2}$	59,954	$(4^3G)^2G_{7/2}$	375,365
317.146	−0.008	315,312.5	4	18	$5^4G_{5/2}$	29,389	$(4^5D)^4F_{5/2}$	344,697
317.305	−0.001	315,154.6	126	362	$5^4G_{9/2}$	30,907	$(4^5D)^4F_{7/2}$	346,061
317.408	−0.005	315,051.9	14	200	$5^2F_{7/2}$	59,792	$(4^3H)^4G_{7/2}$	374,839
317.572	0.000	314,889.0	15	31	$5^2D_{3/2}$	48,086	$(4^3P)^4D_{5/2}$	362,975
317.594	−0.003	314,867.0	26	65	$5^4D_{1/2}$	38,685	$(4^5D)^4D_{3/2}$	353,549
317.710	−0.001	314,752.3	20	62	$3^2D_{3/2}$	71,517	$(4^1D)^2D_{5/2}$	386,268
317.735	0.000	314,728.1	24	91	$5^2G_{7/2}$	55,773	$(4^3G)^2H_{9/2}$	370,501
317.823	−0.008	314,640.2	31	135	$3^2H_{9/2}$	53,797	$(4^3G)^4H_{9/2}$	368,429
318.013	−0.005	314,452.3	30 VI	156	$5^4D_{3/2}$	39,788	$(4^5D)^4D_{5/2}$	354,235
318.174	0.001	314,293.4	30	125	$5^2D_{3/2}$	48,086	$(4^3H)^4G_{5/2}$	362,381
318.202	−0.003	314,265.9	19	92	$3^4F_{7/2}$	48,712	$(4^3P)^4D_{5/2}$	362,975
318.307	0.001	314,162.5	17	224	$3^2G_{9/2}$	79,131	$(2^3F)^4G_{7/2}$	393,295
318.411	−0.004	314,059.9	11	37	$3^4P_{5/2}$	32,005	$(4^5D)^4F_{7/2}$	346,061
318.791 [d]	−0.004	313,685.3	9	200	$3^2D_{5/2}$	72,934	$(4^1F)^2G_{7/2}$	386,615
318.791 [d]	0.001	313,685.3	9	53	$3^2H_{9/2}$	53,797	$(4^3F)^4G_{11/2}$	367,483
318.832	0.003	313,645.3	26	135	$3^2D_{5/2}$	72,934	$(4^1S)^2P_{3/2}$	386,582
319.143 [d]	−0.005	313,338.9	14	126	$3^2D_{5/2}$	72,934	$(4^1D)^2D_{5/2}$	386,268
319.143 [d]	0.004	313,338.9	14	184	$3^4F_{9/2}$	49,104	$(4^3G)^4F_{9/2}$	362,447
319.273	−0.002	313,211.9	14	46	$5^2D_{3/2}$	48,086	$(4^3F)^4F_{5/2}$	361,296
319.534	0.002	312,955.9	102	256	$5^4G_{7/2}$	30,378	$(4^5D)^4F_{5/2}$	343,336
319.902	−0.003	312,595.6	65	194	$5^4G_{5/2}$	29,390	$(4^5D)^4F_{3/2}$	341,983
320.035	−0.001	312,465.5	12	57	$5^2F_{5/2}$	57,413	$(4^3P)^4D_{7/2}$	369,878
320.251	0.004	312,255.5	14	30	$5^2F_{7/2}$	59,792	$(4^3H)^4G_{5/2}$	372,051
320.366	0.000	312,142.8	18	43	$5^2I_{13/2}$	45,546	$(4^3H)^4G_{11/2}$	357,689
320.625	0.001	311,891.2	28	89	$5^4D_{7/2}$	36,485	$(4^5D)^6D_{9/2}$	348,377
320.752 [d]	0.003	311,767.4	14	62	$5^2G_{9/2}$	59,223	$(4^3F)^2F_{7/2}$	370,993
320.752 [d]	−0.005	311,767.4	9	248	$3^2D_{3/2}$	71,517	$(4^3D)^2D_{3/2}$	383,280
320.823 [d]	0.000	311,698.5	25	82	$3^2H_{11/2}$	57,962	$(4^1I)^2I_{11/2}$	369,661
320.823 [d]	−0.008	311,698.5	25	216	$3^2G_{7/2}$	79,705	$(2^3F)^4G_{5/2}$	391,396
320.900	0.003	311,623.9	60	163	$5^4G_{11/2}$	30,662	$(4^5D)^6D_{9/2}$	342,289
321.154	0.001	311,377.5	15 VI	66	$3^4F_{9/2}$	49,104	$(4^3F)^4G_{9/2}$	360,482
321.198	−0.003	311,334.3	26	136	$3^4P_{5/2}$	32,005	$(4^5D)^4F_{5/2}$	343,336
321.257	0.001	311,277.1	17	19	$5^2G_{9/2}$	59,223	$(4^3G)^2H_{9/2}$	370,501
321.312	−0.004	311,224.0	18	42	$3^2H_{9/2}$	53,797	$(4^3H)^4H_{11/2}$	365,017

Table A1. *Cont.*

λ (Å) [a]	o-c, (Å) [b]	ν (cm^{-1})	I [c]	gA, (10^8 s^{-1})	5d^5		5d^{4}5p	
					Term [e]	E (cm^{-1})	Term [e]	E (cm^{-1})
322.007	−0.001	310,552.4	41	91	$5^4G_{9/2}$	30,907	$(4^5D)^6D_{7/2}$	341,458
322.338		310,233.1	29	579	$1^2D_{5/2}$	103,996	$(2^3F)^2D_{5/2}$	414,230
322.612	0.002	309,969.4	8	57	$3^4P_{5/2}$	32,005	$(4^5D)^4F_{3/2}$	341,976
322.852	0.006	309,739.4	13	74	$5^2G_{9/2}$	59,223	$(4^3P)^4D_{7/2}$	368,968
323.598	0.007	309,025.3	12 VI	118	$3^2G_{9/2}$	79,131	$(4^1F)^2G_{7/2}$	388,163
323.626	0.000	308,998.8	11	5	$5^2G_{7/2}$	55,773	$(4^3F)^4G_{9/2}$	364,772
323.721	−0.001	308,907.5	17	87	$5^2D_{3/2}$	48,086	$(4^3F)^2D_{3/2}$	356,993
323.897	−0.002	308,740.0	22	204	$3^2H_{9/2}$	53,797	$(4^3H)^2I_{11/2}$	362,535
324.055	−0.005	308,589.8	25	199	$3^4F_{9/2}$	49,104	$(4^3H)^4G_{11/2}$	357,689
324.404	0.003	308,257.6	26 VI	79	$5^2G_{9/2}$	59,223	$(4^3F)^4G_{11/2}$	367,483
324.427	−0.003	308,235.7	82	59	$3^4P_{3/2}$	32,994	$(4^5D)^6D_{1/2}$	341,227
324.458	0.003	308,206.7	38	87	$5^4D_{7/2}$	36,485	$(4^5D)^4F_{5/2}$	344,695
324.718	0.002	307,959.3	19	194	$3^2D_{3/2}$	71,517	$(4^3G)^2F_{5/2}$	379,478
325.135	−0.005	307,564.4	5	92	$3^2D_{3/2}$	71,516	$(4^1F)^2F_{5/2}$	379,077
325.170	0.003	307,531.5	15	74	$3^2D_{5/2}$	72,934	$(4^1F)^2F_{7/2}$	380,468
325.319	−0.001	307,390.2	32	161	$3^4F_{9/2}$	49,104	$(4^3F)^4D_{7/2}$	356,493
325.829	0.001	306,909.1	5	51	$3^2G_{7/2}$	79,705	$(4^1F)^2G_{7/2}$	386,615
325.943	0.008	306,802.0	13	4	$3^2H_{11/2}$	57,962	$(4^3F)^4G_{9/2}$	364,772
326.139	0.004	306,618.0	17	19	$3^4P_{1/2}$	34,605	$(4^5D)^6D_{1/2}$	341,227
326.204	−0.001	306,556.6	26 VI	122	$3^2H_{11/2}$	57,962	$(4^3H)^2I_{13/2}$	364,518
326.519	−0.004	306,260.7	9	129	$3^2G_{7/2}$	79,705	$(4^3D)^2F_{5/2}$	385,962
326.609	0.002	306,176.4	13	12	$3^4P_{3/2}$	32,994	$(4^5D)^6D_{5/2}$	339,172
326.915 [d]	0.000	305,890.1	24	41	$3^2H_{9/2}$	53,797	$(4^3G)^4G_{7/2}$	359,687
326.915 [d]	0.003	305,890.1	24	318	$1^2D_{5/2}$	103,996	$(2^1G)^2F_{7/2}$	409,889
327.004	−0.003	305,806.4	11	20	$5^4D_{7/2}$	36,485	$(4^5D)^6D_{9/2}$	342,289
327.048	0.000	305,765.2	39	219	$3^4F_{9/2}$	49,104	$(4^5D)^4D_{7/2}$	354,869
327.307	−0.001	305,523.8	38 VI	119	$3^4F_{7/2}$	48,712	$(4^5D)^4D_{5/2}$	354,235
327.438	−0.002	305,401.0	31	133	$5^4D_{5/2}$	39,299	$(4^5D)^4F_{5/2}$	344,697
327.850	0.001	305,017.1	8	20	$3^4F_{9/2}$	49,104	$(4^3H)^4H_{9/2}$	354,122
328.555	0.002	304,362.8	31 VI	228	$1^2D_{3/2}$	104,821	$(2^1G)^2F_{5/2}$	409,186
329.712	0.003	303,295.2	12	36	$5^4D_{1/2}$	38,685	$(4^5D)^4F_{3/2}$	341,983
329.830	0.000	303,186.1	21	94	$3^4F_{5/2}$	51,049	$(4^5D)^4D_{5/2}$	354,235
330.391	0.000	302,672.1	16	202	$3^2G_{7/2}$	79,705	$(4^1I)^2H_{9/2}$	382,377
330.560	0.004	302,516.8	15	50	$3^2H_{11/2}$	57,962	$(4^3F)^4G_{9/2}$	360,482
332.140	−0.006	301,077.9	12	65	$3^2H_{9/2}$	53,797	$(4^5D)^4D_{7/2}$	354,869
332.353	−0.003	300,885.1	11	69	$3^2F_{7/2}$	53,353	$(4^5D)^4D_{5/2}$	354,235
332.485 [d]	−0.003	300,765.3	12	133	$3^2G_{7/2}$	79,705	$(4^1F)^2F_{7/2}$	380,468
332.485 [d]	0.004	300,765.3	12	76	$3^2F_{7/2}$	53,353	$(4^3H)^4H_{9/2}$	354,122
333.198	−0.001	300,121.8	4	266	$1^2D_{5/2}$	103,996	$(2^3F)^2F_{7/2}$	404,117
334.140	−0.003	299,275.8	12	52	$3^4F_{9/2}$	49,104	$(4^5D)^6D_{9/2}$	348,377
334.911	−0.001	298,587.1	1	53	$3^2G_{9/2}$	79,131	$(4^1G)^2H_{11/2}$	377,717
338.225	−0.001	295,661.2	15	92	$3^2G_{7/2}$	79,705	$(4^3G)^2G_{7/2}$	375,365
341.089	0.008	293,178.3	20	30	$3^4F_{9/2}$	49,104	$(4^5D)^6D_{9/2}$	342,289
342.628	0.000	291,861.7	30	9	$3^2G_{9/2}$	79,131	$(4^3F)^2F_{7/2}$	370,993

[a] Observed wavelengths, d—doubly identified, t—trebly identified; [b] Difference between the observed wavelength and the wavelength derived from the final level energies (Ritz wavelength). A blank value indicates that the upper level is derived only from that line; [c] Relative intensity; VI—line is also identified as Ag VI; [e] The number preceding the terms is seniority number.

Table A2. Identified lines of the $4d^4$–$4d^35p$ transitions in the spectrum of Ag^{7+}.

λ (Å) [a]	o-c, (Å) [b]	ν (cm^{-1})	I [c]	gA, (10^8 s^{-1})	5d^4		5d^{3}5p	
					Term [e]	E (cm^{-1})	Term [f]	E (cm^{-1})
247.539	−0.005	403,976.8	56	150	4^3H_6	28,185	$(3^2F)^3G_5$	432,154
253.534	−0.002	394,424.4	54	114	4^3H_4	23,302	$(3^2H)^3G_3$	417,724
253.627	0.001	394,279.8	98	383	2^3F_4	60,980	$(1^2D)^3F_4$	455,261
253.737	−0.001	394,108.9	60	284	4^5D_3	5292	$(3^4P)^5P_3$	399,399

Table A2. *Cont.*

λ (Å) [a]	o-c, (Å) [b]	ν (cm^{-1})	I [c]	gA, (10^8 s^{-1})	5d^4		5d^{3}5p	
					Term [e]	E (cm^{-1})	Term [f]	E (cm^{-1})
254.226	−0.003	393,350.8	20	174	4^1G_4	43,104	$(3^2F)^1F_3$	436,451
254.451	0.001	393,003.0	23	75	4^3H_6	28,185	$(3^2H)^1I_6$	421,189
254.641	0.000	392,709.8	17	41	2^3F_3	62,552	$(1^2D)^3F_4$	455,261
255.131	0.000	391,955.5	550	1307	4^5D_4	7443	$(3^4P)^5P_3$	399,399
255.214		391,828.0	140	596	2^3F_4	60,980	$(1^2D)^3D_3$	452,808
255.570	0.001	391,282.2	28	99	4^5D_0	0	$(3^4P)^5P_1$	391,283
255.891	0.000	390,791.4	38	78	2^3F_3	62,552	$(1^2D)^1D_2$	453,343
255.891		390,791.4	38	210	4^3G_3	26,967	$(3^2D)^3D_2$	417,758
255.919		390,748.6	115	455	4^5D_3	5292	$(3^4P)^5P_2$	396,041
256.069		390,519.8	61	435	2^1G_4	69,584	$(1^2D)^1F_3$	460,104
256.138	0.002	390,414.5	49	231	4^5D_2	3212	$(3^4P)^5P_2$	393,630
256.446	−0.002	389,945.7	70	320	4^5D_1	1,340	$(3^4P)^5P_1$	391,283
256.757		389,473.3	180	347	4^3H_6	28,185	$(3^2H)^3I_7$	417,658
257.391	−0.001	388,514.0	110	354	4^5D_4	7443	$(3^4F)^5F_5$	395,955
257.505	−0.003	388,342.0	57	314	4^5D_3	5292	$(3^4P)^5P_2$	393,630
257.603	0.003	388,194.3	35	194	4^3G_3	26,967	$(3^4P)^3D_3$	415,165
257.627	0.006	388,158.1	160d	114	4^3H_4	23,302	$(3^2D)^3D_3$	411,469
257.627	0.007	388,158.1	160d	567	4^3F_4	29,555	$(3^2H)^3G_3$	417,724
257.645	−0.004	388,131.0	83	482	4^3G_4	32,698	$(3^2H)^3G_4$	420,822
257.685	0.000	388,070.7	260	437	4^5D_2	3212	$(3^4P)^5P_1$	391,283
257.740	0.001	387,987.9	33	230	4^3P_2	32,134	$(3^2F)^3F_3$	420,123
257.796	−0.002	387,903.6	43	172	4^5D_3	5292	$(3^4F)^5F_4$	393,193
257.947	−0.001	387,676.5	68	289	4^5D_2	3212	$(3^4F)^5F_3$	390,887
258.332	0.004	387,098.8	26	165	4^3F_3	32926	$(3^2P)^3P_2$	420,031
258.347	0.002	387,076.3	29	107	4^3H_5	26,250	$(3^2G)^1H_5$	413,329
258.583	0.003	386,723.0	120	492	4^3H_5	26,250	$(3^2F)^1G_4$	412,977
258.855		386,316.7	22	82	4^5D_0	0	$(3^4F)^5F_1$	386,317
259.104	−0.001	385,945.4	170	944	4^3G_5	35,077	$(3^2H)^3G_5$	421,021
259.192	0.000	385,814.4	130	320	4^3H_6	28,185	$(3^2H)^3I_6$	413,999
259.239	0.000	385,744.4	60d	412	4^3G_5	35,077	$(3^2H)^3G_4$	420,822
259.239	0.004	385,744.4	60d	259	4^5D_4	7443	$(3^4F)^5F_4$	393,193
259.283	−0.001	385,679.0	56	106	2^1G_4	69,584	$(1^2D)^3F_4$	455,261
259.342	0.001	385,591.2	71d	163	4^3P_1	26,526	$(3^2D)^3D_1$	412,118
259.342	0.011	385,591.2	71d	125	4^3H_4	23,302	$(3^2G)^3H_5$	408,910
259.432	0.002	385,457.5	39	120	4^5D_1	1340	$(3^4F)^5F_2$	386,800
259.643	0.000	385,144.2	120	672	4^3H_6	28,185	$(3^2G)^1H_5$	413,329
259.878	−0.001	384,795.9	110d	155	4^3G_4	32,698	$(3^2D)^3F_4$	417,492
259.878	0.001	384,795.9	110d	680	4^3F_3	32,926	$(3^2H)^3G_3$	417,724
259.978	0.003	384,647.9	130	554	4^5D_3	5292	$(3^4F)^3G_3$	389,944
260.115	0.001	384,445.3	37	337	4^1F_3	52,004	$(3^2F)^1F_3$	436,451
260.280	0.002	384,201.6	180	746	4^3H_4	23,302	$(3^2G)^3F_3$	407,506
260.376	0.005	384,060.0	32	172	4^3F_2	28,051	$(3^2D)^3D_1$	412,118
260.443	0.001	383,961.2	81	398	4^5D_1	1340	$(3^4F)^5D_2$	385,302
260.575	0.000	383,766.7	41	302	2^3F_3	62,552	$(1^2D)^3D_3$	446,318
260.695	−0.001	383,590.0	170	198	4^5D_2	3212	$(3^4F)^5F_2$	386,800
260.709	−0.001	383,569.4	130	319	4^5D_0	0	$(3^4F)^5D_1$	383,568
260.989	−0.004	383,157.9	59	220	4^3D_3	36,879	$(3^2P)^3P_2$	420,031
261.086	0.000	383,015.6	290	561	4^5D_4	7443	$(3^4F)^5G_5$	390,458
261.173	0.000	382,888.0	32	207	2^3F_2	61,644	$(1^2D)^3D_2$	444,532
261.247	0.002	382,779.5	26	75	4^3G_3	26,967	$(3^2G)^1F_3$	409,750
261.323	−0.001	382,668.2	1000	1735	4^3H_6	28,185	$(3^2G)^3H_6$	410,851
261.328	0.000	382,660.9	958	1568	4^3H_5	26,250	$(3^2G)^3H_5$	408,910
261.400		382,555.5	94	486	4^3G_3	26,967	$(3^2D)^3F_2$	409,522
261.458	−0.002	382,470.6	99	547	4^3G_4	32,698	$(3^4P)^3D_3$	415,165
261.496	0.000	382,415.0	590	1655	4^3G_5	35,077	$(3^2D)^3F_4$	417,492
261.625	0.001	382,226.5	37	267	4^5D_1	1340	$(3^4F)^5D_1$	383,568

Table A2. *Cont.*

λ (Å) [a]	o-c, (Å) [b]	ν (cm^{-1})	I [c]	gA, (10^8 s^{-1})	5d⁴		5d³5p	
					Term [e]	E (cm^{-1})	Term [f]	E (cm^{-1})
261.718	0.000	382,090.7	250	720	4^5D_2	3212	$(3^4F)^5D_2$	385,302
261.752	−0.003	382,041.0	490	1121	4^5D_3	5292	$(3^4F)^5F_3$	387,329
261.793	0.000	381,981.2	65d	264	2^3F_3	62,552	$(1^2D)^3D_2$	444,532
261.793	0.003	381,981.2	65d	399	4^3H_5	26,250	$(3^4P)^5D_4$	408,236
261.836	−0.003	381,918.4	160	695	4^3F_4	29,555	$(3^2D)^3D_3$	411,469
262.106	−0.003	381,525.0	420	950	4^5D_4	7443	$(3^4F)^5F_4$	388,964
262.160	−0.001	381,446.4	670	1886	4^1I_6	39,744	$(3^2H)^1I_6$	421,189
262.276	−0.001	381,277.8	620	2055	4^1I_6	39,744	$(3^2H)^3G_5$	421,021
262.323	0.000	381,209.4	110	397	4^3P_2	32,134	$(3^2P)^3P_1$	413,344
262.340		381,184.7	100	468	4^5D_1	1340	$(3^4F)^5D_0$	382,525
262.520	−0.004	380,923.3	280d	359	4^3G_5	35,077	$(3^2H)^1H_5$	415,995
262.520		380,923.3	280d	492	4^3H_5	26,250	$(3^4P)^5D_4$	407,173
262.535		380,901.6	490	1502	4^1G_4	43,104	$(3^2P)^3D_3$	424,006
262.653	−0.004	380,730.5	27	162	4^3H_6	28,185	$(3^2G)^3H_5$	408,910
262.787	0.002	380,536.3	51	240	4^3G_3	26,967	$(3^2G)^3F_3$	407,506
262.910		380,358.3	250d	553	4^3F_2	28,051	$(3^2G)^3F_2$	408,409
262.910	−0.002	380,358.3	250d	688	4^5D_2	3212	$(3^4F)^5D_1$	383,568
262.966	0.001	380,277.3	50	392	4^3G_4	32,698	$(3^2F)^1G_4$	412,977
263.020	−0.003	380,199.2	87	269	4^3F_4	29,555	$(3^2G)^1F_3$	409,750
263.150	−0.001	380,011.4	130	687	4^5D_3	5292	$(3^4F)^5D_2$	385,302
263.212	0.003	379,921.9	370	1258	4^5D_3	5292	$(3^4F)^5D_4$	385,218
263.240	0.003	379,881.5	73	306	4^5D_4	7443	$(3^4F)^5F_3$	387,329
263.303		379,790.6	46	267	4^1G_4	43,104	$(3^2F)^3F_3$	422,895
263.336	0.001	379,743.0	35	303	4^3P_1	26,526	$(3^2D)^3D_2$	406,270
263.510	−0.004	379,492.3	250	1114	4^3F_3	32,926	$(3^2P)^3D_2$	412,412
263.811	0.001	379,059.3	520	1894	4^3H_6	28,185	$(3^2H)^3I_5$	407,246
263.914	−0.012	378,911.3	500t	372	4^3H_5	26,250	$(3^2H)^3H_5$	405,144
263.914	0.007	378,911.3	500 t	279	4^3G_5	35,077	$(3^2H)^3I_6$	413,999
263.914	0.001	378,911.3	500 t	1145	4^3H_5	26,250	$(3^2G)^3G_4$	405,162
264.072	−0.003	378,684.6	84	627	4^3F_4	29,555	$(3^4P)^5D_4$	408,236
264.159		378,559.9	140	338	4^3P_0	21,309	$(3^2P)^3P_1$	399,869
264.293	0.000	378,367.9	470	1252	4^5D_2	3212	$(3^4F)^5D_3$	381,580
264.374	0.000	378,252.0	50	384	4^3G_5	35,077	$(3^2G)^1H_5$	413,329
264.409	−0.005	378,201.9	33	130	4^3G_3	26,967	$(3^2G)^3G_4$	405,162
264.546	−0.001	378,006.1	23	208	4^3P_1	26,526	$(3^2P)^3D_1$	404,530
264.581	−0.004	377,956.1	96	406	4^3F_4	29,555	$(3^2G)^3F_3$	407,506
264.705	−0.003	377,779.0	680	2033	4^5D_4	7443	$(3^4F)^5D_4$	385,218
264.752	0.004	377,712.0	65	753	4^1G_4	43,104	$(3^2H)^3G_4$	420,822
264.769	0.002	377,687.7	180	415	4^3F_4	29,555	$(3^2H)^3I_5$	407,246
264.802		377,640.7	73	288	2^1D_2	88,586	$(1^2D)^1P_1$	466,227
265.169	−0.006	377,118.0	83	467	4^3H_5	26,250	$(3^2H)^3H_6$	403,359
265.283	0.002	376,955.9	340	936	4^3H_6	28,185	$(3^2H)^3H_5$	405,144
265.439		376,734.4	320d	1405	4^3G_4	32,698	$(3^2D)^3F_3$	409,432
265.439	0.000	376,734.4	320d	317	2^1G_4	69,584	$(1^2D)^3D_3$	446,318
265.620	0.001	376,477.7	78	366	4^3F_2	28,051	$(3^2P)^3D_1$	404,530
265.728	−0.002	376,324.7	390	725	4^5D_1	1340	$(3^4F)^3D_2$	377,661
265.782	0.002	376,248.2	500	1790	4^1I_6	39,744	$(3^2H)^1H_5$	415,995
265.948	0.001	376,013.3	260	394	4^3D_3	36,879	$(3^4P)^3D_2$	412,894
265.977	−0.007	375,972.3	440d	1413	4^3H_4	23,302	$(3^2G)^1G_4$	399,265
265.977	0.008	375,972.3	440d	291	4^5D_4	7443	$(3^4F)^5G_5$	383,426
266.238	0.002	375,603.8	170	816	4^3F_4	29,555	$(3^2G)^3G_4$	405,162
266.285	0.001	375,537.5	140	292	4^3G_4	32,698	$(3^4P)^5D_4$	408,236
266.384	0.003	375,397.9	420	1410	4^3H_4	23,302	$(3^2G)^3G_3$	398,704
266.545	0.002	375,171.2	320	831	4^3H_6	28,185	$(3^2H)^3H_6$	403,359
266.744		374,891.3	77	345	4^5D_0	0	$(3^4F)^3D_1$	374,891

Table A2. *Cont.*

λ (Å) [a]	o-c, (Å) [b]	ν (cm^{-1})	I [c]	gA, (10^8 s^{-1})	$5d^4$		$5d^35p$	
					Term [e]	E (cm^{-1})	Term [f]	E (cm^{-1})
266.964	0.006	374,582.3	430t	921	4^3D_3	36,879	$(3^2D)^3D_3$	411,469
266.964		374,582.3	430t	529	4^3D_3	36,879	$(3^4P)^5S_2$	411,461
266.964	−0.002	374,582.3	430t	762	4^3F_3	32,926	$(3^2G)^3F_3$	407,506
267.197	0.000	374,255.7	120	277	4^1I_6	39,744	$(3^2H)^3I_6$	413,999
267.281	−0.001	374,138.1	250d	602	4^3P_2	32,134	$(3^2D)^3D_2$	406,270
267.281	−0.001	374,138.1	250d	326	4^5D_4	7443	$(3^4F)^5D_3$	381,580
267.426	0.001	373,935.2	130	462	4^3G_3	26,967	$(3^4P)^5D_2$	400,904
267.676	−0.001	373,586.0	460d	1579	4^1I_6	39,744	$(3^2G)^1H_5$	413,329
267.676	−0.003	373,586.0	460d	310	4^3H_5	26,250	$(3^4F)^3G_5$	399,831
267.942	0.004	373,215.1	28	222	4^3D_1	39,191	$(3^2P)^3D_2$	412,412
268.145	−0.004	372,932.6	48	324	4^3D_1	39,191	$(3^2D)^3D_1$	412,118
268.201	−0.001	372,854.7	81	412	4^3F_2	28,051	$(3^4P)^5D_2$	400,904
268.347	0.001	372,651.8	120	332	4^3H_4	23,302	$(3^4F)^5F_5$	395,955
268.362		372,631.0	250	1228	4^1F_3	52,004	$(3^2D)^1D_2$	424,635
268.487	−0.008	372,457.5	48d	274	4^3G_4	32,698	$(3^2H)^3H_5$	405,144
268.487	0.005	372,457.5	48d	205	4^3G_4	32,698	$(3^2G)^3G_4$	405,162
268.553	0.002	372,366.0	24	110	4^5D_3	5292	$(3^4F)^3D_2$	377,661
268.597	−0.005	372,305.0	28	109	4^3G_3	26,967	$(3^2G)^1G_4$	399,265
268.648	0.001	372,234.3	29	308	4^3F_3	32,926	$(3^2G)^3G_4$	405,162
268.691	−0.004	372,174.7	31	270	4^3G_5	35,077	$(3^2H)^3I_5$	407,246
269.009	0.002	371,734.8	71	618	4^3G_3	26,967	$(3^2G)^3G_3$	398,704
269.074	0.001	371,645.0	390	1249	4^3H_6	28,185	$(3^4F)^3G_5$	399,831
269.420	0.004	371,167.7	24	201	2^3F_4	60,980	$(3^2F)^3G_5$	432,154
269.465	0.001	371,105.7	41	164	4^1I_6	39,744	$(3^2G)^3H_6$	410,851
269.790	−0.004	370,658.7	33	364	4^3F_2	28,051	$(3^2G)^3G_3$	398,704
270.102	0.001	370,230.5	350d	995	4^3H_5	26,250	$(3^4F)^3G_4$	396,481
270.102	−0.004	370,230.5	350d	281	4^1G_4	43,104	$(3^2G)^1H_5$	413,329
270.227	0.006	370,059.3	50	255	4^3G_5	35,077	$(3^2H)^3H_5$	405,144
270.265		370,007.2	37	356	4^3D_2	38,402	$(3^2G)^3F_2$	408,409
270.358		369,879.9	290d	395	2^3F_3	62,552	$(3^2F)^3D_2$	432,431
270.358	−0.005	369,879.9	290d	858	4^1G_4	43,104	$(3^2F)^1G_4$	412,977
270.518		369,661.2	32	330	2^3F_4	60,980	$(3^2F)^3D_3$	430,642
270.958		369,060.9	110	382	2^3P_1	63,371	$(3^2F)^3D_2$	432,431
271.536	0.005	368,275.3	37	205	4^3G_5	35,077	$(3^2H)^3H_6$	403,359
271.933		367,737.7	270	1089	2^1G_4	69,584	$(3^2F)^1G_4$	437,322
272.381	0.000	367,132.8	50	336	4^3G_4	32,698	$(3^4F)^3G_5$	399,831
272.579	0.001	366,866.1	150	1131	2^1G_4	69,584	$(3^2F)^1F_3$	436,451
272.743	−0.003	366,645.5	99	473	4^3H_4	23,302	$(3^4F)^3G_3$	389,944
272.808	0.007	366,558.2	81	500	4^3G_4	32,698	$(3^2G)^1G_4$	399,265
273.055	0.000	366,226.6	48	307	4^3G_3	26,967	$(3^4F)^5F_4$	393,193
273.866	0.000	365,142.1	200	595	4^3G_5	35,077	$(3^4F)^3F_4$	400,219
273.912		365,080.8	43	325	4^3G_4	32,698	$(3^4F)^3F_3$	397,779
273.967		365,007.5	15	109	4^3P_0	21,309	$(3^4F)^5F_1$	386,317
274.155	−0.002	364,757.2	160 d	415	4^3G_5	35,077	$(3^4F)^3G_5$	399,831
274.155	0.000	364,757.2	160 d	663	2^1D_2	88,586	$(1^2D)^1D_2$	453,343
274.705	0.000	364,026.9	31	200	4^3H_4	23,302	$(3^4F)^5F_3$	387,329
275.061	−0.001	363,555.7	27	292	4^3F_3	32,926	$(3^4F)^3G_4$	396,481
275.224	0.000	363,340.4	41	454	4^3D_3	36,879	$(3^4F)^3F_4$	400,219
275.408		363,097.7	24	301	2^3P_1	63,371	$(3^4P)^3S_1$	426,468
275.702	0.003	362,710.5	35	243	4^3H_5	26,250	$(3^4F)^5F_4$	388,964
275.902		362,447.5	22	229	2^3F_3	62,552	$(3^2F)^3F_4$	424,999
276.325	0.000	361,892.7	18	175	4^3F_2	28,051	$(3^4F)^3G_3$	389,944
276.754	0.000	361,331.7	22	251	4^3F_4	29,555	$(3^4F)^5F_3$	390,887
277.091	−0.001	360,892.3	24	140	4^1F_3	52,004	$(3^4P)^3D_2$	412,894
277.749	0.003	360,037.3	110 d	376	2^3F_4	60,980	$(3^2H)^3G_5$	421,021
277.749		360,037.3	110 d	594	4^1F_3	52,004	$(3^2H)^1G_4$	412,041

Table A2. *Cont.*

λ (Å) [a]	o-c, (Å) [b]	ν (cm^{-1})	I [c]	gA, (10^8 s^{-1})	$5d^4$		$5d^35p$	
					Term [e]	E (cm^{-1})	Term [f]	E (cm^{-1})
278.440		359,143.8	24 d	390	2^1D_2	88,586	$(1^2D)^3F_2$	447,730
278.440	−0.001	359,143.8	20 d	237	2^3F_4	60,980	$(3^2F)^3F_3$	420,123
279.517	0.000	357,760.0	17	34	4^3G_4	32,698	$(3^4F)^5G_5$	390,458
280.308	−0.005	356,750.4	22	285	2^3F_4	60,980	$(3^2H)^3G_3$	417,724
280.775	0.003	356,157.1	17	188	4^1G_4	43,104	$(3^2G)^1G_4$	399,265
281.501	0.002	355,238.5	27	130	4^3H_6	28,185	$(3^4F)^5G_5$	383,426
284.333	0.000	351,700.3	12	73	2^3F_2	61,644	$(3^2P)^3P_1$	413,344
284.791	0.000	351,134.7	17	147	4^3P_1	26,526	$(3^4F)^3D_2$	377,661
287.065	−0.003	348,353.2	18	73	4^3G_5	35,077	$(3^4F)^5G_5$	383,426
287.468	0.000	347,864.8	17	227	2^1D_2	88,586	$(3^2F)^1F_3$	436,451

[a] Observed wavelengths, d—doubly identified, t—trebly identified; [b] Difference between the observed wavelength and the wavelength derived from the final level energies (Ritz wavelength). A blank value indicates that the upper level is derived only from that line; [c] Relative intensity; [e] The number preceding the terms is seniority number; [f] Term attribution is arbitrary in a few cases (see text) for the level composition, see Table A8. The number preceding the terms of the $5d^3$ configuration is seniority number.

Table A3. Identified lines of the $4d^4$–($4d^34f$ + $4p^54d^5$) transitions in the spectrum of Ag^{7+}.

λ, Å [a]	o-c, (Å) [b]	ν (cm^{-1})	I [c]	gA, (10^9 s^{-1})	$4d^4$		($4d^34f$ + $4p^54d^5$)		
					Term [e]	E (cm^{-1})	Config. [f]	Term [f]	E (cm^{-1})
162.528	0.001	615,277	32	394	$^3G_4$	32,698	$4p^54d^5$	$(^4F)^3F_3$	647,982
162.554	−0.001	615,182	26	564	$^3G_5$	35,078	$4p^54d^5$	$(^4F)^3F_4$	650,256
164.321	−0.001	608,564	54	1260	$^3H_5$	26,249	$4p^54d^5$	$(^4G)^3G_4$	634,810
164.542	0.001	607,749	534 IX	4247	$^3H_6$	28,185	$4p^54d^5$	$(^4G)^3G_5$	635,935
165.158	0.004	605,482	122	567	$^3F_42$	29,555	$4p^54d^5$	$(^4G)^3G_3$	635,050
165.481		604,300	294	5122	$^1I_6$	39,744	$4p^54d^5$	$(^2H)^1H_5$	644,043
166.744	0.003	599,721	355 IX	2821	$^3G_5$	35,078	$4p^54d^5$	$(^4G)^3G_4$	634,810
166.917	0.006	599,099	72	1966	$^1G_41$	69,585	$4p^54d^5$	$(^2G1)^1F_3$	668,708
167.156	−0.005	598,244	693	1429	$^3F_42$	29,555	$4p^54d^5$	$(^4P)^3D_3$	627,779
167.460		597,158	190 IX	2888	$^5D_4$	7,442	$4p^54d^5$	$(^6S)^5P_3$	604,600
167.731	0.000	596,193	111	275	$^1I_6$	39,744	$4p^54d^5$	$(^4G)^3G_5$	635,935
167.835	−0.003	595,824	83	1261	$^3H_5$	26,249	$4p^54d^5$	$(^4D)^3F_4$	622,060
168.436	0.000	593,698	254 IX	827	$^3G_3$	26,968	$4p^54d^5$	$(^4G)^3F_2$	620,664
168.741	−0.003	592,625	20	509	$^3F_22$	28,051	$4p^54d^5$	$(^4G)^3F_2$	620,664
168.932	−0.002	591,953	109 IX	2031	$^1G_42$	43,105	$4p^54d^5$	$(^4G)^3G_3$	635,050
169.010	−0.003	591,683	24	591	$^5D_2$	3,212	$4p^54d^5$	$(^6S)^5P_2$	594,881
169.235	0.002	590,894	37	432	$^3D_3$	36,878	$4p^54d^5$	$(^4P)^3D_3$	627,779
169.613	0.003	589,578	72 IX	831	$^5D_3$	5292	$4p^54d^5$	$(^6S)^5P_2$	594,881
169.676	0.001	589,357	49	597	$^3G_4$	32,698	$4p^54d^5$	$(^4D)^3F_4$	622,060
170.070		587,994	48	1080	$^3F_31$	62,552	$4p^54d^5$	$(^4F)^3D_2$	650,545
170.271		587,298	39	513	$^1G_42$	43,105	$4p^54d^5$	$(^2D3)^1F_3$	630,389
170.359d	0.002	586,994	312 IX	1490	$^3F_41$	60,981	$4p^54d^5$	$(^4F)^3F_3$	647,982
170.359d	−0.003	586,994	312 IX	664	$^3G_5$	35,078	$4p^54d^5$	$(^4D)^3F_4$	622,060
170.595	0.002	586,184	57	628	$^3G_5$	35,078	$4p^54d^5$	$(^2I)^1I_6$	621,268
170.812	−0.003	585,439	23	881	$^3F_31$	62,552	$4p^54d^5$	$(^4F)^3F_3$	647,982
171.075	0.001	584,539	35	643	$^3F_21$	61,645	$4p^54d^5$	$(^4D)^3P_2$	646,185
171.339	−0.001	583,638	46	492	$^3F_31$	62,552	$4p^54d^5$	$(^4D)^3P_2$	646,185
171.512	−0.001	583,050	34	337	$^1F_3$	52,004	$4p^54d^5$	$(^4G)^3G_3$	635,050
171.539		582,957	383 IX	2207	$^3F_41$	60,981	$4p^54d^5$	$(^2H)^1G_4$	643,939
171.587	0.003	582,795	27	211	$^1F_3$	52,004	$4p^54d^5$	$(^4G)^3G_4$	634,810
171.748	0.004	582,247	20	574	$^3D_2$	38,403	$4p^54d^5$	$(^4G)^3F_2$	620,664
171.960	−0.002	581,530	267	6420	$^1I_6$	39,744	$4p^54d^5$	$(^2I)^1I_6$	621,268
172.171	−0.001	580,818	66	606	$^5D_1$	1340	$4p^54d^5$	$(^6S)^5P_1$	582,154
172.215	0.000	580,671	787	2558	$^1G_41$	69,585	$4p^54d^5$	$(^4F)^3F_4$	650,256
172.372	−0.006	580,140	61	1512	$^1D_21$	88,587	$4p^54d^5$	$(^2G1)^1F_3$	668,708
172.460		579,846	71	1498	$^3F_21$	61,645	$4p^54d^5$	$(^4F)^3F_2$	641,516
172.730	0.001	578,937	92	549	$^5D_2$	3212	$4p^54d^5$	$(^6S)^5P_1$	582,154
172.968	−0.002	578,143	20	1138	$^3H_5$	26,249	$4p^54d^5$	$(^2G1)^3G_4$	604,385
173.327	0.000	576,943	295	5775	$^3H_6$	28,185	$4p^54d^5$	$(^2I)^3H_6$	605,128
173.525	0.000	576,287	28	323	$^3D_3$	36,878	$4p^54d^5$	$(^4G)^3F_4$	613,166
173.682	0.003	575,766	45	1187	$^1F_3$	52,004	$4p^54d^5$	$(^4P)^3D_3$	627,779

Table A3. *Cont.*

λ, Å [a]	o-c, (Å) [b]	ν (cm^{-1})	I [c]	gA, (10^9 s^{-1})	$4d^4$		$(4d^34f + 4p^54d^5)$		
					Term [e]	E (cm^{-1})	Config. [f]	Term [f]	E (cm^{-1})
174.487	−0.004	573,110	104 IX	2384	$^3H_5$	26,249	$4p^54d^5$	$(^4F)^3G_5$	599,345
174.558	−0.002	572,875	16	605	$^3H_4$	23,304	$4p^54d^5$	$(^2I)^3H_4$	596,171
174.618	−0.003	572,678	70 IX	343	$^3F_42$	29,555	$4p^54d^5$	$(^4F)^3F_4$	602,225
174.742	−0.004	572,271	40	486	$^3F_31$	62,552	$4p^54d^5$	$(^4G)^3G_4$	634,810
174.993		571,450	63	2290	$^3G_5$	35,078	$4p^54d^5$	$(^4G)^3G_5$	606,529
175.054d	−0.004	571,253	48	464	$^3G_3$	26,968	$4p^54d^5$	$(^4F)^3G_4$	598,206
175.054d	0.004	571,253	39	1651	$^1G_42$	43,105	$4p^54d^5$	$(^2G1)^1H_5$	614,370
175.086	0.004	571,149	31	1104	$^3H_6$	28,185	$4p^54d^5$	$(^4F)^3G_5$	599,345
175.419d	−0.001	570,063	30	2899	$^1G_42$	43,105	$4p^54d^5$	$(^4G)^3F_4$	613,166
175.419d	−0.004	570,063	37	946	$^3G_5$	35,078	$4p^54d^5$	$(^2I)^3H_6$	605,128
175.580	−0.004	569,541	41	722	$^3G_4$	32,698	$4p^54d^5$	$(^4F)^3F_4$	602,225
175.652	−0.001	569,306	29	470	$^5D_4$	7442	$4d^34f$	$(^4F)^3H_5$	576,746
175.855	0.000	568,651	46	1521	$^3F_42$	29,555	$4p^54d^5$	$(^4F)^3G_4$	598,206
176.130	−0.006	567,761	20	350	$^5D_3$	5292	$4d^34f$	$(^4F)^3H_4$	573,036
176.489	0.002	566,609	40	1205	$^3F_42$	29,555	$4p^54d^5$	$(^2I)^3H_4$	596,171
176.526	−0.002	566,490	18	162	$^3H_4$	23,304	$4p^54d^5$	$(^2H)^3G_4$	589,786
176.699d	−0.021	565,933	160	1440	$^3H_5$	26,249	$4p^54d^5$	$(^2H)^1H_5$	592,118
176.699d	−0.002	565,933	160	2788	$^3H_4$	23,304	$4p^54d^5$	$(^2I)^3H_4$	589,229
176.833	0.001	565,504	52	1171	$^3G_4$	32,698	$4p^54d^5$	$(^4F)^3G_4$	598,206
176.872	0.001	565,381	33	652	$^1I_6$	39,744	$4p^54d^5$	$(^2I)^3H_6$	605,128
177.156	0.000	564,474	33	906	$^3G_3$	26,968	$4p^54d^5$	$(^4F)^3G_3$	591,442
177.484	0.002	563,431	47	688	$^3P_12$	26,525	$4p^54d^5$	$(^2D1)^3P_2$	589,963
177.625	−0.001	562,983	24	435	$^3H_5$	26,249	$4p^54d^5$	$(^2I)^3H_4$	589,229
177.674	−0.003	562,827	15	151	$^3G_3$	26,968	$4p^54d^5$	$(^2H)^3G_4$	589,786
178.240w	0.013	561,041	61	685	$^3F_41$	60,981	$4p^54d^5$	$(^4D)^3F_4$	622,060
178.280	0.004	560,916	60	1099	$^3P_22$	32,137	$4p^54d^5$	$(^2F1)^3D_3$	593,064
178.292	−0.001	560,878	113	1859	$^5D_4$	7442	$4d^34f$	$(^4F)^3I_5$	568,319
178.695d		559,614	299	2756	$^5D_2$	3212	$4p^54d^5$	$(^4G)^5F_3$	562,825
178.695d	−0.001	559,614	299	3408	$^5D_3$	5292	$4p^54d^5$	$(^4F)^5D_4$	564,902
178.728	0.002	559,508	294	1956	$^5D_1$	1340	$4p^54d^5$	$(^4G)^5F_2$	560,857
178.765	0.008	559,394	50	870	$^3G_4$	32,698	$4p^54d^5$	$(^2H)^1H_5$	592,118
178.864d	0.003	559,083	50	587	$^5D_3$	5292	$4p^54d^5$	$(^4F)^5D_4$	564,383
178.864d	0.00	559,083	50	14	$^5D_2$	3212	$4p^54d^5$	$(^4F)^5D_3$	562,295
178.916	−0.003	558,922	50	362	$^5D_1$	1340	$4d^34f$	$(^4F)^5D_2$	560,251
179.217	0.000	557,983	383	3390	$^5D_4$	7442	$4p^54d^5$	$(^4G)^5F_5$	565,427
179.296	−0.002	557,738	68	1058	$^5D_0$	0	$4d^34f$	$(^4F)^5D_1$	557,732
179.323	−0.003	557,653	22	752	$^5D_2$	3212	$4p^54d^5$	$(^4G)^5F_2$	560,857
179.383	−0.003	557,468	17	268	$^5D_4$	7442	$4p^54d^5$	$(^4F)^5D_4$	564,902
179.431	−0.001	557,319	135	903	$^5D_1$	1340	$4p^54d^5$	$(^4G)^5F_1$	558,654
179.531d	0.010	557,007	260	958	$^5D_2$	3212	$4d^34f$	$(^4F)^5D_2$	560,251
179.531d	−0.001	557,007	260	2739	$^5D_3$	5292	$4p^54d^5$	$(^4F)^5D_3$	562,295
179.550	−0.002	556,949	375	3857	$^5D_4$	7442	$4p^54d^5$	$(^4F)^5D_4$	564,383
179.574	−0.005	556,872	111	2462	$^3F_32$	32,925	$4p^54d^5$	$(^2H)^3G_4$	589,786
179.642	−0.009	556,663	35	525	$^3G_3$	26,968	$4p^54d^5$	$(^2G1)^3F_3$	583,603
179.795	−0.002	556,190	18	479	$^3D_3$	36,878	$4p^54d^5$	$(^2F1)^3D_3$	593,064
180.038	0.001	555,437	60	527	$^5D_2$	3212	$4p^54d^5$	$(^4G)^5F_1$	558,654
180.194	0.001	554,959	60	1111	$^5D_3$	5292	$4d^34f$	$(^4F)^5D_2$	560,251
180.229	0.001	554,849	45	770	$^5D_4$	7442	$4p^54d^5$	$(^4F)^5D_3$	562,295
180.288	−0.002	554,667	20	515	$^3D_2$	38,403	$4p^54d^5$	$(^2F1)^3D_3$	593,064
180.338	0.002	554,513	22	408	$^5D_2$	3212	$4d^34f$	$(^4F)^5D_1$	557,732
180.455		554,156	28	1276	$^3P_12$	26,525	$4p^54d^5$	$(^2F2)^3D_2$	580,680
180.685	−0.002	553,449	26	134	$^3H_4$	23,304	$4d^34f$	$(^4F)^3H_5$	576,746
180.819	0.000	553,038	31	748	$^3D_2$	38,403	$4p^54d^5$	$(^4F)^3G_3$	591,442
180.869	0.006	552,888	28	525	$^3D_3$	36,878	$4p^54d^5$	$(^2H)^3G_4$	589,786
180.919	0.001	552,735	55	936	$^3H_6$	28,185	$4d^34f$	$(^4F)^3H_6$	580,923
181.004	−0.002	552,475	50	872	$^3F_42$	29,555	$4d^34f$	$(^4P)^3G_5$	582,024
181.047	0.003	552,343	33	826	$^3D_3$	36,878	$4p^54d^5$	$(^2I)^3H_4$	589,229
181.236	−0.005	551,768	33	611	$^3F_42$	29,555	$4p^54d^5$	$(^2G2)^3G_4$	581,306
181.302	−0.002	551,565	14	364	$^3D_2$	38,403	$4p^54d^5$	$(^2D1)^3P_2$	589,963
181.341	0.007	551,448	46	1007	$^3P_22$	32,137	$4p^54d^5$	$(^2G1)^3F_3$	583,603
181.563	0.002	550,772	60	867	$^3H_6$	28,185	$4d^34f$	$(^2H)^1K_7$	578,963
181.654	0.000	550,496	37	216	$^3H_5$	26,249	$4d^34f$	$(^4F)^3H_5$	576,746
181.752	0.007	550,200	159	2125	$^1F_3$	52,004	$4p^54d^5$	$(^4F)^3F_4$	602,225
181.781	0.001	550,114	17	256	$^3G_3$	26,968	$4p^54d^5$	$(^2H)^3G_3$	577,085
182.043	0.002	549,321	192	2799	$^3G_4$	32,698	$4d^34f$	$(^4P)^3G_5$	582,024
182.137d	−0.008	549,038	157	1393	$^1G_42$	43,105	$4p^54d^5$	$(^2H)^1H_5$	592,118
182.137d	−0.002	549,038	157	2609	$^3F_22$	28,051	$4p^54d^5$	$(^2H)^3G_3$	577,085

Table A3. *Cont.*

λ, Å [a]	o-c, (Å) [b]	ν (cm^{-1})	I [c]	gA, (10^9 s^{-1})	4d^4		(4d^{3}4f + 4p^{5}4d^5)		
					Term [e]	E (cm^{-1})	Config. [f]	Term [f]	E (cm^{-1})
182.354	−0.001	548,384	65	1175	$^3F_32$	32,925	4p^{5}4d^5	(^{2}G2)$^3G_4$	581,306
182.749	−0.003	547,199	145	2520	$^3F_42$	29,555	4d^{3}4f	(^{4}F)$^3H_5$	576,746
183.131	0.004	546,058	234	3198	$^3G_3$	26,968	4d^{3}4f	(^{4}F)$^3H_4$	573,036
183.202	0.000	545,845	355	4991	$^3G_5$	35,078	4d^{3}4f	(^{4}F)$^3H_6$	580,923
183.421	0.002	545,194	27	454	$^3D_2$	38,403	4p^{5}4d^5	(^{2}G1)$^3F_3$	583,603
183.482	0.001	545,014	260	2889	$^3H_4$	23,304	4d^{3}4f	(^{4}F)$^3I_5$	568,319
183.503	0.000	544,949	62	115	$^3P_22$	32,137	4p^{5}4d^5	(^{2}H)$^3G_3$	577,085
183.556	−0.003	544,792	30	721	$^1G_41$	69,585	4p^{5}4d^5	(^{2}G1)$^1H_5$	614,370
183.685	0.006	544,411	41	801	$^3D_3$	36,878	4p^{5}4d^5	(^{2}G2)$^3G_4$	581,306
183.808	0.001	544,047	76	1418	$^3G_4$	32,698	4d^{3}4f	(^{4}F)$^3H_5$	576,746
184.001	0.002	543,474	24	288	$^3F_42$	29,555	4d^{3}4f	(^{4}F)$^3H_4$	573,036
184.113	−0.003	543,144	594	6224	$^3H_5$	26,249	4d^{3}4f	(^{4}F)$^3I_6$	569,385
184.456	−0.003	542,133	102	2095	$^3H_4$	23,304	4p^{5}4d^5	(^{4}G)$^5F_5$	565,427
184.481	0.003	542,061	29	403	$^3H_5$	26,249	4d^{3}4f	(^{4}F)$^3I_5$	568,319
184.560	0.002	541,830	44	1623	$^3F_31$	62,552	4p^{5}4d^5	(^{2}G1)3G4	604,385
184.620	0.005	541,655	32	545	$^3G_5$	35,078	4d^{3}4f	(^{4}F)3H5	576,746
184.641	0.003	541,592	29	74	$^3H_4$	23,304	4p^{5}4d^5	(^{4}F)5D4	564,902
184.780d	0.006	541,184	34	264	$^3H_6$	28,185	4d^{3}4f	(^{4}F)3I6	569,385
184.780d	−0.002	541,184	34	255	$^1I_6$	39,744	4d^{3}4f	(^{4}F)3H6	580,923
185.452	−0.001	539,223	520	6429	$^1I_6$	39,744	4d^{3}4f	(^{2}H)1K7	578,963
185.553		538,930	741	6779	$^3H_6$	28,185	4d^{3}4f	(^{2}H)1K7	567,115
185.607	−0.003	538,773	62	536	$^3F_42$	29,555	4d^{3}4f	(^{4}F)3I5	568,319
185.897	0.001	537,931	31	306	$^3G_3$	26,968	4p^{5}4d^5	(^{4}F)5D4	564,902
185.959	0.010	537,753	27	613	$^1F_3$	52,004	4p^{5}4d^5	(^{2}H)3G4	589,786
186.615	0.003	535,862	24	121	$^3F_42$	29,555	4p^{5}4d^5	(^{4}G)5F5	565,427
187.168		534,280	243	2386	$^1G_41$	69,585	4d^{3}4f	(^{2}D1)1H5	603,864
188.279	0.004	531,127	68	1100	$^3F_41$	60,981	4p^{5}4d^5	(^{2}H)1H5	592,118

[a] Observed wavelengths: d—doubly identified, w—wide; [b] Difference between the observed wavelength and the wavelength derived from the final level energies (Ritz wavelength). A blank value indicates that the upper level is derived only from that line; [c] Relative intensity; IX—line is also identified as Ag IX; [e] Numbers following the term values display Nielson and Koster sequential indices [20]; [f] Designation and configuration attribution is arbitrary in a few cases (see text), for the level composition, see Table A9. Numbers following the term values of the 4d^5 configuration display Nielson and Koster sequential indices [20].

Table A4. Identified lines of the 4d^3–(4d^{2}5p + 4d^{2}4f + 4p^{5}4d^4) transitions in the spectrum of Ag^{8+}.

λ, Å [a]	o-c, (Å) [b]	ν (cm^{-1})	I [c]	gA, (10^9 s^{-1})	4d^3	4d^{2}5p + 4d^{2}4f + 4p^{5}4d^4		
					Term [e]	Config. [f]	Term [f]	E (cm^{-1})
160.837	0.005	621,749	100 X	1092	$^4F_{7/2}$	4p^{5}4d^4	(^{5}D)$^4D_{5/2}$	628,302
161.466	−0.005	619,327	50	3141	$^4F_{9/2}$	4p^{5}4d^4	(^{5}D)$^4D_{7/2}$	629,173
162.302		616,135	250 X	1091	$^2D_{5/2}2$	4p^{5}4d^4	(^{3}P1)$^2P_{3/2}$	649,186
162.411	−0.002	615,723	190	1327	$^2F_{7/2}$	4p^{5}4d^4	(^{1}G1)$^2F_{7/2}$	659,798
162.500		615,383	130	645	$^4F_{3/2}$	4p^{5}4d^4	(^{5}D)$^4D_{1/2}$	615,385
162.644	0.002	614,839	540	2516	$^2H_{9/2}$	4p^{5}4d^4	(^{3}H)$^2G_{7/2}$	647,197
163.010	−0.003	613,458	370	4684	$^2H_{11/2}$	4p^{5}4d^4	(^{3}H)$^2G_{9/2}$	644,980
163.132	0.003	613,001	90	1863	$^2F_{5/2}$	4p^{5}4d^4	(^{3}G)$^2F_{5/2}$	657,606
163.228	−0.003	612,641	80	464	$^2H_{9/2}$	4p^{5}4d^4	(^{3}H)$^2G_{9/2}$	644,980
163.267	0.001	612,494	70	577	$^2G_{7/2}$	4p^{5}4d^4	(^{3}F2)$^2F_{7/2}$	634,657
163.416	0.003	611,937	180	356	$^2D_{5/2}1$	4p^{5}4d^4	(^{3}F1)$^2D_{3/2}$	680,196
163.532	−0.004	611,503	220	2272	$^2D_{3/2}1$	4p^{5}4d^4	(^{3}F1)$^2D_{3/2}$	680,196
163.589	0.004	611,287	110 X	1237	$^2G_{9/2}$	4p^{5}4d^4	(^{3}F2)$^2F_{7/2}$	634,657
163.839		610,356	140	1254	$^2D_{3/2}2$	4p^{5}4d^4	(^{5}D)$^4P_{1/2}$	637,178
163.949	−0.003	609,947	400	1702	$^4P_{5/2}$	4p^{5}4d^4	(^{5}D)$^4P_{5/2}$	632,322
164.099		609,387	110	668	$^4F_{5/2}$	4p^{5}4d^4	(^{5}D)$^4D_{3/2}$	612,491
164.397		608,284	310	2866	$^2D_{5/2}1$	4p^{5}4d^4	(^{3}F1)$^2D_{5/2}$	676,533
164.493		607,930	80	578	$^4P_{5/2}$	4p^{5}4d^4	(^{5}D)$^4P_{3/2}$	630,316
164.542d	0.013	607,749	740 VIII	1677	$^2F_{7/2}$	4p^{5}4d^4	(^{3}P2)$^2D_{5/2}$	651,880
164.542d	−0.005	607,749	740	7777	$^2H_{11/2}$	4p^{5}4d^4	(^{3}H)$^2H_{11/2}$	639,262
164.772	0.004	606,900	170	576	$^2H_{9/2}$	4p^{5}4d^4	(^{3}H)$^2H_{11/2}$	639,262

Table A4. *Cont.*

λ, Å [a]	o-c, (Å) [b]	ν (cm^{-1})	I [c]	gA, ($10^9\ s^{-1}$)	$4d^3$	$4d^25p + 4d^24f + 4p^54d^4$		
					Term [e]	Config. [f]	Term [f]	E (cm^{-1})
164.808	0.005	606,766	370 X	1781	$^4P_{5/2}$	$4p^54d^4$	$(^5D)^4D_{7/2}$	629,173
164.952	−0.000	606,239	70	725	$^4F_{7/2}$	$4p^54d^4$	$(^5D)^4D_{5/2}$	612,769
165.036	−0.003	605,927	170	831	$^4P_{5/2}$	$4p^54d^4$	$(^5D)^4D_{5/2}$	628,302
165.418	0.001	604,531	100	1245	$^2G_{7/2}$	$4p^54d^4$	$(^1D1)^2F_{5/2}$	626,693
165.945	−0.002	602,610	90	1679	$^2F_{5/2}$	$4p^54d^4$	$(^3H)^2G_{7/2}$	647,197
165.999	0.003	602,412	510 X	1403	$^2P_{3/2}$	$4p^54d^4$	$(^3P2)^2P_{3/2}$	638,784
166.023	−0.005	602,325	200	1348	$^2H_{9/2}$	$4p^54d^4$	$(^3F2)^2F_{7/2}$	634,657
166.423	0.005	600,880	90	1650	$^2F_{7/2}$	$4p^54d^4$	$(^3H)^2G_{9/2}$	644,980
166.518	−0.000	600,537	60	509	$^2H_{11/2}$	$4p^54d^4$	$(^3H)^2H_{9/2}$	632,069
166.744	0.000	599,721	490 VIII	5298	$^2H_{9/2}$	$4p^54d^4$	$(^3H)^2H_{9/2}$	632,069
166.872	0.002	599,262	50	862	$^2D_{5/2}2$	$4p^54d^4$	$(^5D)^4P_{5/2}$	632,322
167.307		597,704	620	5028	$^2G_{9/2}$	$4p^54d^4$	$(^1G2)^2G_{9/2}$	621,061
167.460	−0.002	597,158	270 VIII	2912	$^2F_{7/2}$	$4p^54d^4$	$(^1G2)^2F_{7/2}$	641,234
167.492	−0.001	597,042	100	883	$^4F_{7/2}$	$4p^54d^4$	$(^5D)^4F_{9/2}$	603,570
167.814		595,896	120	1278	$^2G_{7/2}$	$4p^54d^4$	$(^3D)^2F_{5/2}$	618,058
167.898	−0.000	595,601	170 X	1248	$^4P_{3/2}$	$4p^54d^4$	$(^5D)^4D_{5/2}$	612,769
168.022	−0.004	595,162	160	1520	$^2D_{5/2}1$	$4p^54d^4$	$(^3P1)^2P_{3/2}$	663,396
168.130		594,778	40	964	$^4P_{1/2}$	$4p^54d^4$	$(^5D)^4D_{3/2}$	612,491
168.159	0.004	594,677	30	322	$^2D_{3/2}1$	$4p^54d^4$	$(^3P1)^2P_{3/2}$	663,396
168.294	−0.002	594,197	90	469	$^2F_{5/2}$	$4p^54d^4$	$(^3P2)^2P_{3/2}$	638,784
168.414	−0.001	593,775	90	707	$^4F_{5/2}$	$4p^54d^4$	$(^5D)^4F_{7/2}$	596,876
168.436d	0.007	593,698	430 VIII	1955	$^2G_{7/2}$	$4p^54d^4$	$(^1G2)^2G_{7/2}$	615,884
168.436d	0.001	593,698	430 VIII	3827	$^4F_{9/2}$	$4p^54d^4$	$(^5D)^4F_{9/2}$	603,570
168.479	−0.002	593,545	110	909	$^2F_{5/2}$	$4p^54d^4$	$(^3F2)^2F_{5/2}$	638,134
168.605	0.005	593,101	50	1153	$^2G_{9/2}$	$4p^54d^4$	$(^3F2)^2G_{9/2}$	616,475
168.766	−0.003	592,537	80	1585	$^2G_{9/2}$	$4p^54d^4$	$(^1G2)^2G_{7/2}$	615,884
168.808	0.002	592,389	110 X	759	$^4F_{7/2}$	$4p^54d^4$	$(^3F1)^4D_{7/2}$	598,929
168.932d	−0.003	591,953	150 VIII	967	$^2P_{3/2}$	$4p^54d^4$	$(^5D)^4D_{5/2}$	628,302
168.932d	−0.000	591,953	150 VIII	1267	$^2G_{9/2}$	$4p^54d^4$	$(^3H)^2H_{11/2}$	615,308
169.049	0.002	591,543	140	3139	$^2D_{5/2}1$	$4p^54d^4$	$(^1G1)^2F_{7/2}$	659,798
169.392d	−0.004	590,346	270	1157	$^2P_{3/2}$	$4p^54d^4$	$(^1D1)^2F_{5/2}$	626,693
169.392d	−0.001	590,346	270	2701	$^4F_{7/2}$	$4p^54d^4$	$(^5D)^4F_{7/2}$	596,876
169.475	0.001	590,058	50 X	548	$^2F_{5/2}$	$4p^54d^4$	$(^3F2)^2F_{7/2}$	634,657
169.595	0.001	589,642	50	428	$^4F_{3/2}$	$4p^54d^4$	$(^5D)^4F_{5/2}$	589,644
169.613	0.000	589,578	100 VIII	765	$^4F_{9/2}$	$4p^54d^4$	$(^1I)^2H_{9/2}$	599,446
169.762	0.000	589,062	50	787	$^4F_{9/2}$	$4p^54d^4$	$(^3F1)^4D_{7/2}$	598,929
169.806	−0.002	588,907	20	1462	$^2D_{3/2}1$	$4p^54d^4$	$(^3G)^2F_{5/2}$	657,606
170.192	0.002	587,572	30	80	$^4F_{7/2}$	$4p^54d^4$	$(^1D1)^2F_{5/2}$	594,111
170.306	−0.001	587,180	60	620	$^4F_{5/2}$	$4d^24f$	$(^3P)^4D_{3/2}$	590,280
170.359t	0.007	586,994	440 VIII	1882	$^4F_{9/2}$	$4d^24f$	$(^3F)^2I_{11/2}$	596,885
170.359t	0.004	586,994	440 VIII	769	$^4F_{9/2}$	$4p^54d^4$	$(^5D)^4F_{7/2}$	596,876
170.359t	−0.001	586,994	440 VIII	1501	$^2G_{7/2}$	$4p^54d^4$	$(^3G)^2G_{7/2}$	609,152
170.490	−0.001	586,545	280	2414	$^4F_{5/2}$	$4p^54d^4$	$(^5D)^4F_{5/2}$	589,644
170.933		585,026	120	2598	$^2D_{5/2}2$	$4d^24f$	$(^3P)^2F_{7/2}$	618,075
171.286		583,818	260	2018	$^4F_{3/2}$	$4d^24f$	$(^3F)^4F_{3/2}$	583,819
171.339	−0.002	583,638	60	848	$^2D_{5/2}1$	$4p^54d^4$	$(^3P2)^2D_{5/2}$	651,880
171.493	−0.000	583,114	40	409	$^4F_{7/2}$	$4p^54d^4$	$(^5D)^4F_{5/2}$	589,644
171.539	0.001	582,957	530 VIII	5000	$^2H_{9/2}$	$4p^54d^4$	$(^3H)^2H_{11/2}$	615,308
171.996	0.001	581,408	40	482	$^2G_{7/2}$	$4p^54d^4$	$(^5D)^4F_{9/2}$	603,570
172.215d	−0.001	580,671	1100	4948	$^4F_{7/2}$	$4p^54d^4$	$(^3H)^4G_{9/21}$	587,200
172.215d	−0.001	580,671	1100	3951	$^4F_{5/2}$	$4d^24f$	$(^3F)^4G_{7/21}$	583,771
172.372		580,140	90	1120	$^2D_{3/2}2$	$4d^24f$	$(^1D)^2D_{3/2}$	606,963
172.556	−0.005	579,521	390	3149	$^4F_{3/2}$	$4d^24f$	$(^3F)^4G_{5/2}$	579,505
173.077	−0.001	577,778	890	5063	$^4F_{9/2}$	$4p^54d^4$	$(^3H)^4G_{11/2}$	587,642
173.224d	0.014	577,288	670	765	$^4F_{9/2}$	$4p^54d^4$	$(^3H)^4G_{9/2}$	587,200
173.224d	−0.000	577,288	670	4944	$^2G_{7/2}$	$4p^54d^4$	$(^1I)^2H_{9/2}$	599,446
173.236	−0.002	577,246	380	932	$^4F_{7/2}$	$4d^24f$	$(^3F)^4G_{7/2}$	583,771
173.445	−0.003	576,551	150	1869	$^4P_{5/2}$	$4p^54d^4$	$(^3F1)^4D_{7/2}$	598,929
173.495	0.005	576,386	60	528	$^4F_{5/2}$	$4d^24f$	$(^3F)^4G_{5/2}$	579,505
173.578	−0.003	576,110	110	1309	$^2D_{5/2}2$	$4p^54d^4$	$(^3G)^2G_{7/2}$	609,152

Table A4. *Cont.*

λ, Å [a]	o-c, (Å) [b]	ν (cm^{-1})	I [c]	gA, (10^9 s^{-1})	$4d^3$	$4d^25p + 4d^24f + 4p^54d^4$		
					Term [e]	Config. [f]	Term [f]	E (cm^{-1})
174.248	0.003	573,895	30	20	$^4F_{9/2}$	$4d^24f$	$(^3F)^4G_{7/2}$	583,771
174.357	−0.002	573,535	360 VIII	3568	$^2G_{9/2}$	$4d^24f$	$(^3F)^2I_{11/2}$	596,885
174.487	0.000	573,110	140	1302	$^4P_{3/2}$	$4d^24f$	$(^3P)^4D_{3/2}$	590,280
174.526	0.002	572,979	40	690	$^2D_{5/2}1$	$4p^54d^4$	$(^1G2)^2F_{7/2}$	641,234
174.618		572,678	100 VIII	1088	$^4P_{5/2}$	$4p^54d^4$	$(^3P1)^4S_{3/2}$	595,066
174.701	−0.004	572,407	340	2551	$^2F_{7/2}$	$4p^54d^4$	$(^3F2)^2G_{9/2}$	616,475
174.908	−0.002	571,730	60	94	$^4P_{5/2}$	$4p^54d^4$	$(^1D1)^2F_{5/2}$	594,111
175.617	0.001	569,422	30	1317	$^2D_{3/2}1$	$4p^54d^4$	$(^3F2)^2F_{5/2}$	638,134
175.738		569,029	940	7991	$^2H_{11/}$	$4d^24f$	$(^3F)^2I_{13/2}$	600,561
176.977	−0.001	565,044	40	328	$^2G_{7/2}$	$4p^54d^4$	$(^3H)^4G_{9/2}$	587,200
177.136d	0.006	564,539	100	1114	$^2F_{5/2}$	$4p^54d^4$	$(^3G)^2G_{7/2}$	609,152
177.216d	0.000	564,283	360	2077	$^2G_{9/2}$	$4p^54d^4$	$(^3H)^4G_{11/2}$	587,642
221.880	−0.001	450,694	80	22	$^4F_{9/2}$	$4d^25p$	$(^3P)^4D_{7/2}$	460,559
223.061	0.001	448,307	40	12	$^2G_{9/2}$	$4d^25p$	$(^1G)^2H_{11/2}$	471,667
226.030	0.003	442,420	120	17	$^4F_{9/2}$	$4d^25p$	$(^1G)^2G_{9/2}$	452,292
226.226	0.000	442,036	60	15	$^2G_{9/2}$	$4d^25p$	$(^3P)^4D_{7/2}$	465,394
227.202	−0.001	440,137	700	144	$^2H_{11/2}$	$4d^25p$	$(^1G)^2H_{11/2}$	471,667
227.723	−0.004	439,130	400	81	$^4F_{9/2}$	$4d^25p$	$(^3F)^2F_{7/2}$	448,989
228.487		437,662	320	67	$^4F_{3/2}$	$4d^25p$	$(^3F)^4D_{1/2}$	437,662
228.963	0.004	436,751	140	45	$^4P_{5/2}$	$4d^25p$	$(^3P)^4P_{3/2}$	459,146
229.415		435,891	520	172	$^4F_{7/2}$	$4d^25p$	$(^3F)^4D_{5/2}$	442,423
229.557		435,621	400	91	$^4F_{5/2}$	$4d^25p$	$(^3F)^4D_{3/2}$	438,725
229.783	0.001	435,193	340	36	$^4F_{5/2}$	$4d^25p$	$(^3F)^4F_{5/2}$	438,297
229.820		435,124	200	32	$^2F_{5/2}$	$4d^25p$	$(^1G)^2F_{5/2}$	479,718
229.877		435,015	100	20	$^2F_{5/2}$	$4d^25p$	$(^1G)^2F_{5/2}$	479,610
230.176	0.004	434,450	230	61	$^2H_{11/2}$	$4d^25p$	$(^1G)^2H_{9/2}$	465,990
230.241		434,328	630	157	$^4F_{9/2}$	$4d^25p$	$(^3F)^4F_{9/2}$	444,195
230.601	−0.005	433,650	350	113	$^2H_{9/2}$	$4d^25p$	$(^1G)^2H_{9/2}$	465,990
230.922	−0.001	433,047	500	89	$^2H_{9/2}$	$4d^25p$	$(^3P)^4D_{7/2}$	465,394
231.179	0.002	432,565	150	16	$^4F_{3/2}$	$4d^25p$	$(^3F)^4F_{5/2}$	432,569
231.545		431,882	620	106	$^2H_{9/2}$	$4d^25p$	$(^1D)^2F_{7/2}$	464,230
231.602d	−0.005	431,774	580	19	$^4F_{7/2}$	$4d^25p$	$(^3F)^4F_{5/2}$	438,297
231.602d	−0.002	431,774	580	149	$^4F_{9/2}$	$4d^25p$	$(^3F)^4D_{7/2}$	441,637
231.819		431,370	300	32	$^2F_{7/2}$	$4p^54d^4$	$(^3G)^4G_{7/2}$	475,453
231.946	−0.003	431,135	450	154	$^4F_{7/2}$	$4d^25p$	$(^3F)^4F_{7/2}$	437,662
232.127		430,799	130	13	$^2D_{3/2}2$	$4d^25p$	$(^3P)^4D_{5/2}$	457,621
232.259	−0.005	430,554	410	251	$^2G_{9/2}$	$4d^25p$	$(^1G)^2G_{7/2}$	453,902
232.337		430,410	330	159	$^2G_{7/2}$	$4d^25p$	$(^1D)^2F_{5/2}$	452,569
232.845	−0.002	429,470	550	102	$^4F_{5/2}$	$4d^25p$	$(^3F)^4F_{5/2}$	432,569
233.133	−0.003	428,940	450	89	$^2G_{9/2}$	$4d^25p$	$(^1G)^2G_{9/2}$	452,292
233.206	−0.005	428,806	50	16	$^4P_{5/2}$	$4d^25p$	$(^3P)^4S_{3/2}$	451,183
233.531	0.000	428,209	750 m	103	$^2H_{9/2}$	$4d^25p$	$(^3P)^4D_{7/2}$	460,559
233.691		427,915	310	91	$^4F_{3/2}$	$4d^25p$	$(^3F)^4F_{3/2}$	427,916
233.759	0.003	427,790	300	17	$^4F_{9/2}$	$4d^25p$	$(^3F)^4F_{7/2}$	437,662
233.877		427,576	170	64	$^4F_{9/2}$	$4d^25p$	$(^3F)^4G_{9/2}$	437,442
234.539		426,368	1000	424	$^2H_{11/2}$	$4d^25p$	$(^3F)^2G_{9/2}$	457,900
234.686	−0.003	426,101	150	22	$^2D_{5/2}2$	$4d^25p$	$(^3P)^4P_{3/2}$	459,146
234.945	0.001	425,631	350	36	$^2G_{9/2}$	$4d^25p$	$(^3F)^2F_{7/2}$	448,989
235.240	−0.002	425,098	360	88	$^2G_{7/2}$	$4d^25p$	$(^3F)^2G_{7/2}$	447,255
235.532d		424,570	200	19	$^4F_{3/2}$	$4d^25p$	$(^3F)^4G_{5/2}$	424,571
235.532d		424,570	200	17	$^2D_{5/2}2$	$4d^25p$	$(^3P)^4D_{5/2}$	457,621
235.581		424,482	190	51	$^2G_{7/2}$	$4d^25p$	$(^3F)^2F_{5/2}$	446,642
235.649		424,360	200	71	$^2D_{3/2}2$	$4d^25p$	$(^3P)^4S_{3/2}$	451,183
235.726		424,222	230	101	$^2F_{5/2}$	$4d^25p$	$(^3P)^2D_{3/2}$	468,817
235.907	0.002	423,895	100	21	$^2G_{9/2}$	$4d^25p$	$(^3F)^2G_{7/2}$	447,255
236.756		422,376	110	32	$^2F_{7/2}$	$4d^25p$	$(^1D)^2D_{5/2}$	466,458
237.222	0.004	421,546	70	33	$^2H_{9/2}$	$4d^25p$	$(^1G)^2G_{7/2}$	453,902

Table A4. *Cont.*

λ, Å [a]	o-c, (Å) [b]	ν (cm^{-1})	I [c]	gA, (10^9 s^{-1})	4d^3	4d^{2}5p + 4d^{2}4f + 4p^{5}4d^4		
					Term [e]	Config. [f]	Term [f]	E (cm^{-1})
237.458	0.001	421,127	80	15	$^4P_{3/2}$	4d^{2}5p	(^{3}F)$^4F_{5/2}$	438,297
239.077	0.003	418,275	160	34	$^2G_{9/2}$	4d^{2}5p	(^{3}F)$^4D_{7/2}$	441,637
239.161	0.002	418,129	60	19	$^2D_{5/2}2$	4d^{2}5p	(^{3}P)$^4S_{3/2}$	451,183
240.423	0.002	415,934	160	32	$^2D_{5/2}2$	4d^{2}5p	(^{3}F)$^2F_{7/2}$	448,989
243.734	−0.001	410,284	160	30	$^2P_{3/2}$	4d^{2}5p	(^{3}F)$^2F_{5/2}$	446,642

[a] Observed wavelengths: d—doubly identified, t—trebly identified; [b] Difference between the observed wavelength and the wavelength derived from the final level energies (Ritz wavelength). A blank value indicates that the upper level is derived only from that line; [c] Relative intensity: X, VIII—line is also identified as respectively Ag X or Ag VIII; m masked by O IV; [e] Numbers following the term values display Nielson and Koster sequential indices [20]; [f] Designation and configuration attribution is arbitrary in a few cases (see text), for the level composition, see Table A11. Numbers following the term values of the 4d^4 configuration display Nielson and Koster sequential indices [20].

Table A5. Energies (in cm^{-1}) of the 4d^5 configuration of Ag VII.

E [a]	o-c [b]	Eigenvector Composition [c]		
		J = 1/2		
94,730 *		98% 3^{2}P	2% 5^{2}S	
63,467 *		96% 5^{2}S	2% 3^{4}P	2% 3^{2}P
38,685	6	67% 5^{4}D	32% 3^{4}P	1% 5^{2}S
34,605	−20	66% 3^{4}P	33% 5^{4}D	1% 5^{2}S
		J = 3/2		
104,821	−27	74% 1^{2}D	18% 5^{2}D	6% 3^{2}P
93,529 *		94% 3^{2}P	4% 1^{2}D	1% 5^{2}D
71,517	−2	97% 3^{2}D	2% 1^{2}D	1% 5^{4}D
53,796	0	55% 3^{4}F	37% 5^{2}D	6% 1^{2}D
48,086	2	42% 5^{2}D	43% 3^{4}F	13% 1^{2}D
39,788	−1	52% 5^{4}D	44% 3^{4}P	1% 3^{4}F
32,994	−4	53% 3^{4}P	44% 5^{4}D	1% 3^{4}F
		J = 5/2		
103,996	34	80% 1^{2}D	19% 5^{2}D	1% 3^{2}D
72,934	−26	91% 3^{2}D	6% 5^{2}F	2% 5^{4}D
59,954	−5	30% 3^{2}F	29% 5^{2}F	19% 5^{2}D
57,413	2	53% 5^{2}F	18% 3^{2}F	17% 5^{2}D
51,049	11	74% 3^{4}F	12% 3^{2}F	8% 5^{2}F
47,119	2	31% 5^{2}D	32% 3^{2}F	13% 3^{4}P
39,299	10	54% 5^{4}D	32% 3^{4}P	7% 5^{2}D
32,005	−19	44% 3^{4}P	35% 5^{4}D	13% 5^{4}G
29,390	27	79% 5^{4}G	8% 3^{2}F	4% 3^{4}P
0	4	98% 5^{6}S	2% 3^{4}P	
		J = 7/2		
79,705	4	96% 3^{2}G	2% 5^{2}F	1% 5^{2}G
59,792	11	75% 5^{2}F	15% 3^{4}F	6% 3^{2}F
55,773	8	74% 5^{2}G	17% 3^{2}F	8% 5^{2}F
53,353	2	47% 3^{2}F	34% 3^{4}F	8% 5^{2}G
48,712	10	45% 3^{4}F	26% 3^{2}F	15% 5^{2}G
36,485	9	92% 5^{4}D	4% 3^{4}F	3% 5^{4}G
30,378	0	93% 5^{4}G	3% 3^{2}F	2% 3^{4}F

Table A5. *Cont.*

E [a]	o-c [b]	Eigenvector Composition [c]		
		J = 9/2		
79,131	−13	99% 3^2G	1% 5^2G	
59,223	2	47% 5^2G	42% 3^2H	10% 3^4F
53,797	−11	52% 3^2H	30% 3^4F	18% 5^2G
49,104	−11	59% 3^4F	34% 5^2G	6% 3^2H
30,907	−2	97% 5^4G	1% 3^4F	1% 3^2H
		J = 11/2		
57,962	2	86% 3^2H	11% 5^2I	2% 5^4G
44,011	1	88% 5^2I	10% 3^2H	1% 5^4G
30,662	−14	96% 5^4G	3% 3^2H	
		J = 13/2		
45,546	3	100% 5^2I		

[a] The star * indicates a calculated value for the level; [b] The difference between the observed and the calculated energies; [c] For the eigenvector composition, up to three components with the largest percentages in the LS-coupling scheme are listed. The number preceding the terms is the seniority number.

Table A6. Energies (in cm^{-1}) of the $4d^45p$ configuration of Ag VII.

E [a]	o-c [b]	Eigenvector Composition [c]		
		J = 1/2		
448,199 *		68% $(0^1S)^2P$	15% $(^1S)^2P$	14% $(2^1D)^2P$
419,718 *		64% $(2^1D)^2P$	12% $(0^1S)^2P$	11% $(^1D)^2P$
409,158 *		47% $(^3P)^2S$	27% $(^3P)^2S$	12% $(2^3P)^2P$
406,673	37	39% $(2^3F)^4D$	20% $(^3F)^4D$	13% $(2^3P)^2P$
405,606 *		28% $(2^3P)^2P$	13% $(2^3F)^4D$	10% $(^3P)^2P$
394,516 *		41% $(2^3P)^4P$	11% $(^3P)^4P$	9% $(2^3P)^4D$
392,424	−57	36% $(2^3P)^4D$	21% $(2^3P)^4D$	11% $(2^3P)^4P$
389,336 *		59% $(^1D)^2P$	9% $(^3P)^4P$	7% $(2^1D)^2P$
380,449 *		48% $(^3D)^2P$	23% $(^1S)^2P$	9% $(^3D)^4D$
375,489	17	64% $(^3D)^4P$	10% $(2^3P)^4P$	6% $(^3D)^4D$
374,810	−24	35% $(^3P)^2P$	16% $(^1S)^2P$	9% $(^3P)^4P$
370,586 *		22% $(^1S)^2P$	19% $(^3P)^2S$	15% $(^3P)^2S$
368,200 *		32% $(^3F)^4D$	30% $(^3D)^4D$	11% $(^3D)^2P$
366,416 *		32% $(^3D)^4D$	31% $(2^3F)^4D$	13% $(2^3F)^4D$
364,278 *		19% $(^3P)^4P$	19% $(^3P)^2P$	11% $(2^3P)^2S$
355,790	−19	32% $(^3P)^4P$	16% $(^3P)^4P$	13% $(2^3P)^2S$
352,270	26	77% $(^5D)^4D$	9% $(^3P)^4D$	4% $(^3D)^4D$
347,791 *		32% $(^3P)^4D$	23% $(2^3P)^4D$	10% $(^3P)^2P$
341,227	−1	65% $(^5D)^6D$	30% $(^5D)^4P$	1% $(2^3P)^2S$
328,555 *		54% $(^5D)^4P$	33% $(2^5D)^6D$	5% $(^3P)^4P$
325,860 *		89% $(^5D)^6F$	3% $(^3P)^4D$	3% $(^5D)^4D$
		J = 3/2		
455,917 *		74% $(0^1S)^2P$	16% $(^1S)^2P$	7% $(2^1D)^2P$
429,981 *		65% $(2^1D)^2D$	24% $(^1D)^2D$	6% $(2^1D)^2P$
416,277 *		29% $(2^3F)^2D$	18% $(^3P)^2D$	14% $(^3P)^2D$
415,087 *		56% $(2^1D)^2P$	6% $(^3P)^2D$	6% $(^1D)^2P$
406,960 *		38% $(2^3F)^4D$	17% $(2^3F)^4D$	11% $(2^3P)^4D$
404,310 *		23% $(2^3P)^2P$	14% $(2^3P)^4S$	13% $(2^3P)^4S$

Table A6. *Cont.*

E [a]	o-c [b]	Eigenvector Composition [c]		
403,643 *		31% $(2^3P)^2P$	22% $(^3P)^4S$	19% $(^3P)^4S$
399,850	2	41% $(^1F)^2D$	13% $(^3F)^2D$	8% $(2^3P)^2D$
395,638 *		39% $(^1F)^2D$	18% $(2^3F)^4F$	12% $(2^3P)^2D$
393,610	−2	22% $(^1D)^2P$	15% $(2^3P)^4P$	8% $(2^3F)^4D$
391,553	7	19% $(2^3P)^4D$	14% $(2^3P)^4D$	14% $(2^3F)^2D$
389,293	26	45% $(2^3F)^4F$	7% $(2^3P)^4D$	7% $(^3D)^2D$
387,806 *		21% $(2^3P)^4P$	10% $(^3P)^4P$	10% $(^1D)^2P$
386,582	−38	31% $(^1S)^2P$	10% $(2^1D)^2D$	8% $(^3D)^2P$
383,280	4	46% $(^3D)^2D$	19% $(^3F)^2D$	9% $(^1D)^2D$
377,910	34	19% $(^1S)^2P$	18% $(^1D)^2D$	17% $(^1D)^2P$
375,706	21	30% $(^3D)^4D$	13% $(^3D)^2P$	11% $(^3D)^4F$
374,938	0	22% $(^3D)^2P$	11% $(^3P)^2P$	11% $(^3D)^4F$
374,236	31	24% $(^3D)^4P$	18% $(^3G)^4F$	9% $(^3D)^4F$
371,218 *		25% $(^3P)^2D$	14% $(2^3P)^2P$	13% $(2^3P)^2D$
369,448	−4	27% $(^3D)^4P$	18% $(^3D)^4D$	15% $(^3P)^2P$
368,569	0	22% $(^3F)^4D$	10% $(^3D)^4D$	8% $(^3D)^4F$
366,573	3	25% $(^3F)^4F$	14% $(^3F)^4D$	9% $(^3F)^2D$
366,078	−4	17% $(^3F)^4F$	16% $(^3P)^4S$	14% $(2^3P)^4S$
363,454	−23	31% $(^3D)^4F$	29% $(^3G)^4F$	12% $(^3P)^4P$
361,846 *		20% $(^3P)^2P$	9% $(^3P)^4S$	9% $(^5D)^4D$
360,092	−51	34% $(^3P)^4P$	14% $(^3P)^4P$	11% $(^3D)^4D$
356,993	−2	20% $(^3F)^2D$	18% $(^3F)^4F$	10% $(^3P)^4D$
353,549	22	44% $(^5D)^4D$	22% $(2^3P)^4D$	8% $(2^3P)^4D$
351,904 *		34% $(^5D)^4D$	16% $(^3P)^4D$	14% $(2^3P)^4D$
342,965 *		48% $(^5D)^4F$	25% $(^5D)^6D$	16% $(^5D)^4P$
341,983	4	31% $(^5D)^4F$	27% $(^5D)^4P$	26% $(^5D)^6D$
336,333	−24	72% $(^5D)^6P$	16% $(^5D)^6D$	6% $(^5D)^4P$
331,200	−4	41% $(^5D)^4P$	31% $(^5D)^6D$	22% $(^5D)^6P$
327,322 *		91% $(^5D)^6F$	3% $(^5D)^4D$	2% $(2^3P)^4D$
		$J = 5/2$		
432,566 *		64% $(2^1D)^2D$	23% $(^1D)^2D$	8% $(2^1D)^2F$
422,985	−10	43% $(2^1D)^2F$	17% $(^1G)^2F$	13% $(^1G)^2F$
414,230	8	46% $(2^3F)^2D$	17% $(^3F)^2D$	14% $(2^3P)^2D$
409,186	50	51% $(2^1G)^2F$	21% $(2^1D)^2F$	8% $(2^3F)^2F$
405,964 *		45% $(2^3F)^4D$	16% $(^3F)^4D$	12% $(2^3P)^4D$
400,637	16	28% $(^1F)^2D$	10% $(2^3P)^4D$	10% $(2^3F)^2F$
398,662	−16	32% $(2^3F)^2F$	22% $(^3F)^4G$	8% $(^3F)^4G$
395,990 *		44% $(2^3P)^4P$	15% $(2^3P)^4P$	10% $(2^3P)^2D$
394,049	7	28% $(2^3F)^4F$	20% $(2^1F)^2D$	12% $(2^3P)^4D$
391,396	28	29% $(2^3F)^4G$	11% $(^3F)^2F$	11% $(^3F)^4G$
390,060	−66	38% $(2^3F)^4F$	11% $(^3P)^4D$	6% $(2^3F)^4D$
387,358 *		20% $(2^3P)^2D$	12% $(2^3F)^2D$	11% $(^1F)^2D$
386,268	−6	25% $(^1D)^2D$	17% $(2^1D)^2F$	9% $(2^3F)^2F$
385,962	10	21% $(^3D)^2F$	13% $(2^3D)^2D$	12% $(^1G)^2F$
383,109	22	25% $(^3D)^2F$	8% $(^1F)^2F$	7% $(^3P)^2D$
380,891	−18	28% $(^1G)^2F$	18% $(^3D)^2D$	8% $(^3F)^2F$
379,478	−25	25% $(^3G)^2F$	21% $(^1D)^2F$	12% $(^3P)^2D$
379,077	−7	29% $(^1F)^2F$	13% $(^3P)^2D$	12% $(2^3P)^2D$
376,543	17	23% $(^3D)^4F$	17% $(^3D)^4D$	9% $(^3G)^4F$
374,426	−0	13% $(^3G)^4F$	11% $(^1G)^2F$	11% $(^3P)^2D$
372,051	−6	24% $(^3H)^4G$	20% $(^3G)^4G$	16% $(^3F)^2F$
370,940 *		16% $(^3D)^4D$	15% $(^3F)^4D$	12% $(^3F)^4F$

Table A6. *Cont.*

E [a]	o-c [b]	Eigenvector Composition [c]		
369,578	12	21% $(^3F)^2F$	15% $(^3D)^4P$	11% $(^3H)^4G$
367,919	13	24% $(^3D)^4P$	23% $(^3P)^4P$	9% $(^3G)^4G$
366,693	−15	14% $(^3D)^4D$	13% $(^3F)^4F$	13% $(^3F)^4D$
364,877	−3	17% $(^3P)^4P$	13% $(^3P)^4P$	8% $(^3P)^2D$
364,025	−28	15% $(^3D)^2D$	14% $(^3D)^4P$	10% $(^3H)^4G$
362,975	3	25% $(^3P)^4D$	17% $(2^3F)^4F$	13% $(^3G)^4F$
362,381	56	20% $(^3H)^4G$	11% $(^3D)^2F$	10% $(^3D)^4F$
361,296	−14	22% $(^3F)^4F$	13% $(^3G)^4F$	11% $(^3F)^2D$
358,392	29	21% $(^3F)^4G$	12% $(^3G)^2F$	8% $(^3P)^4D$
356,233	1	14% $(^3F)^4D$	13% $(^3F)^4G$	12% $(^3P)^4D$
354,235	16	78% $(^5D)^4D$	4% $(^3D)^4D$	2% $(^3F)^4F$
352,685	45	26% $(^3G)^4G$	22% $(^3F)^4G$	14% $(2^3F)^4G$
344,695	6	32% $(^5D)^4F$	30% $(^5D)^4P$	27% $(^5D)^6D$
343,336	−17	42% $(^5D)^4F$	33% $(^5D)^4P$	5% $(^5D)^6P$
339,172	1	50% $(^5D)^6D$	30% $(^5D)^6P$	8% $(^5D)^4P$
333,327	18	61% $(^5D)^6P$	18% $(^5D)^4P$	17% $(^5D)^6D$
329,356 *		89% $(^5D)^6F$	4% $(^5D)^4F$	2% $(^5D)^4D$
		J = 7/2		
428,522	−6	70% $(2^1D)^2F$	15% $(^1D)^2F$	7% $(^1G)^2F$
409,889	5	39% $(2^1G)^2F$	14% $(^1G)^2G$	10% $(2^3F)^2G$
406,495	−4	46% $(2^3F)^2G$	17% $(^3F)^2G$	12% $(2^1G)^2G$
404,117	−8	27% $(2^3F)^2F$	19% $(2^3F)^4D$	9% $(2^1G)^2G$
403,133	−5	25% $(2^3F)^4D$	17% $(^1G)^2G$	10% $(2^3P)^4D$
397,858	12	26% $(2^3F)^4G$	22% $(2^3F)^4F$	9% $(^3F)^4G$
396,241	−22	32% $(2^3P)^4D$	21% $(2^3F)^2F$	15% $(^3P)^4D$
393,295	−10	20% $(2^3F)^4G$	15% $(2^3F)^4D$	13% $(2^3F)^2F$
391,338	32	43% $(2^3F)^4F$	12% $(2^3F)^4G$	12% $(^1D)^2F$
388,163	−3	23% $(^1F)^2G$	14% $(2^3D)^2F$	13% $(^1D)^2F$
386,615	15	26% $(^1F)^2G$	21% $(2^1F)^2F$	7% $(2^3F)^4F$
384,772	25	24% $(^1D)^2F$	16% $(^1G)^2G$	11% $(^3F)^2F$
380,468	−6	20% $(^1F)^2F$	19% $(^3G)^2G$	10% $(^3D)^2F$
379,061	−3	21% $(^1G)^2G$	18% $(^1F)^2F$	15% $(^3D)^2F$
377,163	−3	27% $(^3D)^4F$	17% $(^3D)^4D$	17% $(^3G)^4F$
375,365	3	37% $(^3G)^2G$	9% $(^3D)^2F$	8% $(^3D)^4D$
374,839	−5	14% $(^3H)^4G$	13% $(^1G)^2F$	11% $(^3G)^4F$
373,577	−30	13% $(^3F)^4D$	10% $(^3D)^4D$	10% $(^3G)^2F$
371,673	0	25% $(^3G)^4G$	24% $(^1G)^2F$	7% $(2^1G)^2F$
370,993	−50	33% $(^3F)^2F$	25% $(^3G)^2F$	10% $(^3D)^4D$
369,879	−23	28% $(^3P)^4D$	13% $(^3D)^4F$	11% $(2^3P)^4D$
368,968	3	15% $(^3P)^4D$	10% $(^3H)^4G$	10% $(2^3P)^4D$
366,806	21	29% $(^3F)^4F$	11% $(^3G)^4F$	8% $(^3H)^4G$
365,842	3	16% $(^3F)^2G$	15% $(^3F)^4F$	14% $(^3D)^2F$
362,942	−4	25% $(^3G)^4H$	25% $(^3H)^4H$	10% $(^3H)^2G$
361,593	−18	25% $(^3G)^4F$	18% $(^3D)^4F$	9% $(^5D)^4F$
361,173	−0	39% $(^3F)^4G$	12% $(^3H)^4G$	11% $(^3G)^4H$
359,687	−10	16% $(^3G)^4G$	12% $(^3F)^4D$	12% $(^3H)^4G$
356,493	−0	17% $(^3F)^4D$	11% $(^3G)^4G$	10% $(^3H)^4H$
354,869	−9	68% $(^5D)^4D$	6% $(^3D)^4D$	5% $(^3F)^4F$
353,454	−22	19% $(^3G)^4H$	18% $(^3H)^2G$	9% $(^3F)^4G$
349,047	10	47% $(^3H)^4H$	23% $(^3G)^4H$	9% $(^3H)^2G$
346,061	−1	55% $(^5D)^4F$	28% $(^5D)^6D$	3% $(^5D)^6F$
341,458	1	59% $(^5D)^6D$	18% $(^5D)^4F$	12% $(^5D)^6F$
334,906	25	85% $(^5D)^6P$	6% $(^5D)^6D$	4% $(^5D)^4D$
331,831 *		82% $(^5D)^6F$	8% $(^5D)^4F$	4% $(^5D)^6D$

Table A6. *Cont.*

E [a]	o-c [b]	Eigenvector Composition [c]		
		J = 9/2		
409,779	3	34% (2^{1}G)^{2}G	17% (^{1}G)^{2}G	16% (2^{1}G)^{2}H
403,942	−32	49% (2^{3}F)^{2}G	12% (^{3}F)^{2}G	11% (2^{3}F)^{4}G
401,561	−26	33% (2^{1}G)^{2}H	14% (^{1}G)^{2}H	14% (2^{1}G)^{2}G
398,431	16	37% (2^{3}F)^{4}F	25% (^{3}F)^{4}G	7% (2^{1}G)^{2}H
392,486	12	29% (2^{3}F)^{4}G	21% (^{1}F)^{2}G	17% (2^{3}F)^{4}F
390,759	19	45% (^{1}F)^{2}G	31% (2^{3}F)^{4}F	5% (2^{3}F)^{2}G
382,720	4	31% (^{1}G)^{2}G	22% (^{1}G)^{2}G	18% (^{3}G)^{2}G
382,377	−27	57% (^{1}I)^{2}H	13% (2^{3}G)^{2}H	10% (2^{1}G)^{2}H
379,226	12	20% (^{3}G)^{2}G	12% (2^{3}G)^{4}F	11% (^{1}G)^{2}H
377,393	24	22% (^{3}F)^{2}G	13% (^{3}H)^{2}G	11% (^{3}D)^{4}F
375,593	8	53% (^{3}D)^{4}F	14% (^{3}G)^{2}G	9% (^{3}H)^{2}G
373,120	4	22% (^{3}G)^{4}G	14% (^{3}H)^{2}H	11% (^{3}H)^{4}G
371,061	−6	22% (^{3}H)^{2}H	21% (^{3}G)^{2}H	13% (^{3}H)^{4}G
370,501	1	13% (^{3}G)^{2}H	11% (^{3}G)^{2}G	10% (^{3}H)^{2}H
368,429	−8	25% (^{3}G)^{4}H	17% (^{3}F)^{4}G	14% (^{3}F)^{4}F
365,569	−33	43% (^{3}F)^{4}F	10% (^{3}G)^{2}H	8% (^{3}G)^{4}H
364,772	−14	17% (^{3}F)^{4}G	17% (^{3}G)^{4}F	13% (^{3}H)^{2}G
362,447	−2	30% (^{3}G)^{4}F	22% (^{3}H)^{4}H	6% (^{3}G)^{4}H
361,650	0	34% (^{3}H)^{4}G	22% (^{3}G)^{4}G	13% (^{3}F)^{2}G
360,482	0	15% (^{3}F)^{4}G	13% (^{3}G)^{4}F	12% (^{1}G)^{2}H
356,416	−9	33% (^{3}H)^{4}I	11% (^{3}G)^{4}H	11% (^{3}G)^{4}G
354,122	−6	29% (^{3}H)^{4}H	14% (^{3}H)^{4}I	13% (^{3}H)^{2}G
349,721	−13	27% (^{3}H)^{4}I	27% (^{3}H)^{4}H	18% (^{3}G)^{4}H
348,377	−14	43% (^{5}D)^{6}D	29% (^{5}D)^{4}F	5% (^{3}H)^{4}I
342,289	−12	41% (^{5}D)^{6}D	27% (^{5}D)^{6}F	24% (^{5}D)^{4}F
334,849 *		69% (^{5}D)^{6}F	15% (^{5}D)^{4}F	9% (^{5}D)^{6}D
		J = 11/2		
409,441	8	64% (2^{1}G)^{2}H	26% (^{1}G)^{2}H	5% (^{1}I)^{2}H
399,022	−1	78% (2^{3}F)^{4}G	14% (^{3}F)^{4}G	4% (2^{1}G)^{2}H
383,539	−14	24% (^{1}I)^{2}H	20% (^{1}G)^{2}H	17% (2^{1}G)^{2}H
377,717	14	38% (^{1}G)^{2}H	24% (^{1}I)^{2}H	14% (^{3}G)^{2}H
376,414	−1	32% (^{3}G)^{4}G	23% (^{3}G)^{2}H	18% (^{3}H)^{4}G
372,676	6	45% (^{3}H)^{2}H	14% (^{1}I)^{2}H	14% (^{3}G)^{4}G
370,488	−1	20% (^{3}G)^{4}H	18% (^{3}G)^{2}H	15% (^{3}G)^{4}G
369,661	6	33% (^{1}I)^{2}I	21% (^{3}H)^{2}I	15% (^{3}H)^{2}H
367,483	−2	41% (^{3}F)^{4}G	21% (^{3}H)^{2}I	9% (^{1}I)^{2}I
365,017	−2	28% (^{3}H)^{4}H	23% (^{3}G)^{4}H	17% (^{3}G)^{2}H
362,535	−1	35% (^{3}H)^{2}I	14% (^{3}F)^{4}G	13% (^{3}G)^{2}H
360,481	1	52% (^{3}H)^{4}I	14% (^{3}G)^{4}G	14% (^{3}H)^{4}H
357,689	2	45% (^{3}H)^{4}G	12% (^{3}H)^{2}H	12% (^{3}G)^{4}G
352,082	−7	39% (^{3}H)^{4}H	30% (^{3}H)^{4}I	17% (^{3}G)^{4}H
340,947 *		96% (^{5}D)^{6}F	3% (^{3}F)^{4}G	1% (2^{3}F)^{4}G
		J = 13/2		
376,419	14	55% (^{1}I)^{2}I	38% (^{1}I)^{2}K	4% (^{3}H)^{4}H
372,822	−2	52% (^{3}G)^{4}H	29% (^{3}H)^{2}I	8% (^{3}H)^{4}H
369,654	7	39% (^{1}I)^{2}K	23% (^{1}I)^{2}I	19% (^{3}H)^{2}I
364,518	12	34% (^{3}H)^{2}I	22% (^{3}G)^{4}H	20% (^{3}H)^{4}I
363,614	−26	49% (^{3}H)^{4}I	37% (^{3}H)^{4}H	6% (^{1}I)^{2}K
354,719	3	48% (^{3}H)^{4}H	24% (^{3}H)^{4}I	13% (^{3}H)^{2}I
		J = 15/2		
378,355	9	94% (^{1}I)^{2}K	6% (^{3}H)^{4}I	
365,186 *		94% (^{3}H)^{4}I	6% (^{1}I)^{2}K	

[a] The star * indicates a calculated value for the level; [b] The difference between the observed and the calculated energies; [c] For the eigenvector composition, up to three components with the largest percentages in the LS-coupling scheme are listed. The number preceding the terms is the seniority number.

Table A7. Energies (in cm^{-1}) of the $4d^4$ configuration of Ag VIII.

E [a]	o-c [b]	Eigenvector Composition [c]		
		$J = 0$		
114,851 *		82% 0^1S1	17% 4^1S2	1% 2^3P1
65,762 *		62% 2^3P1	35% 4^3P2	3% 4^1S2
45,338 *		72% 4^1S2	16% 0^1S1	11% 4^3P2
21,309	−37	50% 4^3P2	32% 2^3P1	8% 4^5D
0	−26	92% 4^5D	4% 2^3P1	4% 4^3P2
		$J = 1$		
63,371	−50	63% 2^3P1	37% 4^3P2	0% 4^3D
39,191	−7	95% 4^3D	3% 2^3P1	1% 4^3P2
26,526	19	60% 4^3P2	32% 2^3P1	4% 4^3D
1,340	−10	96% 4^5D	2% 2^3P1	2% 4^3P2
		$J = 2$		
88,586	34	80% 2^1D1	19% 4^1D2	0% 4^3D
61,644	6	68% 2^3F1	24% 4^3F2	5% 4^1D2
58,958 *		64% 2^3P1	28% 4^3P2	3% 4^1D2
48,505 *		61% 4^1D2	13% 2^1D1	10% 4^3D
38,402	17	63% 4^3D	12% 2^3P1	8% 4^3P2
32,134	−19	55% 4^3P2	22% 4^3D	21% 2^3P1
28,051	4	70% 4^3F2	21% 2^3F1	5% 4^1D2
3,212	−7	98% 4^5D	1% 2^3P1	1% 4^3D
		$J = 3$		
62,552	−10	72% 2^3F1	17% 4^3F2	10% 4^1F
52,004	31	85% 4^1F	7% 2^3F1	5% 4^3D
36,879	−39	92% 4^3D	3% 4^1F	1% 2^3F1
32,926	23	50% 4^3F2	42% 4^3G	7% 2^3F1
26,967	11	55% 4^3G	31% 4^3F2	12% 2^3F1
5,292	1	98% 4^5D	1% 4^3F2	1% 4^3D
		$J = 4$		
69,584	−60	66% 2^1G1	28% 4^1G2	4% 2^3F1
60,980	42	83% 2^3F1	10% 4^3F2	6% 2^1G1
43,104	−4	52% 4^1G2	18% 2^1G1	16% 4^3F2
32,698	−11	56% 4^3G	20% 4^3F2	16% 4^1G2
29,555	17	42% 4^3F2	25% 4^3H	21% 4^3G
23,302	−4	68% 4^3H	15% 4^3G	6% 4^3F2
7,443	−5	95% 4^5D	3% 4^3F2	1% 2^3F1
		$J = 5$		
35,077	11	84% 4^3G	16% 4^3H	
26,250	12	84% 4^3H	16% 4^3G	
		$J = 6$		
39,744	−4	91% 4^1I	9% 4^3H	
28,185	−5	91% 4^3H	9% 4^1I	

[a] The star * indicates a calculated value for the level; [b] The difference between the observed and the calculated energies; [c] For the eigenvector composition, up to three components with the largest percentages in the LS-coupling scheme are listed. The number preceding the terms is the seniority number. The number following the terms displays Nielson and Koster sequential indices [20].

Table A8. Energies (in cm^{-1}) of the $4d^35p$ configuration of Ag VIII.

E [a]	o-c [b]	Eigenvector Composition [c]		
		J = 0		
460,564 *		72% $(1^2D)^3P$	26% $(3^2D)^3P$	1% $(3^2P)^3P$
422,372 *		44% $(3^2D)^3P$	30% $(3^2P)^3P$	12% $(3^2P)^1S$
410,445 *		48% $(3^4P)^3P$	27% $(3^2P)^1S$	8% $(3^2D)^3P$
400,473 *		53% $(3^2P)^3P$	15% $(3^4P)^3P$	14% $(3^2D)^3P$
398,971 *		39% $(3^2P)^1S$	39% $(3^4P)^5D$	10% $(3^4F)^5D$
391,021 *		34% $(3^4P)^5D$	27% $(3^4P)^3P$	17% $(3^2P)^1S$
382,525	−78	73% $(3^4F)^5D$	20% $(3^4P)^5D$	2% $(3^2D)^3P$
		J = 1		
466,227	−16	73% $(1^2D)^1P$	18% $(3^2D)^1P$	4% $(1^2D)^3P$
459,403 *		64% $(1^2D)^3P$	22% $(3^2D)^3P$	6% $(1^2D)^3D$
444,840 *		53% $(1^2D)^3D$	19% $(3^2F)^3D$	15% $(3^2D)^3D$
433,769 *		60% $(3^2F)^3D$	26% $(1^2D)^3D$	8% $(3^2D)^1P$
430,256 *		45% $(3^2P)^1P$	13% $(3^4P)^3S$	10% $(3^2D)^1P$
426,468	33	69% $(3^4P)^3S$	10% $(3^2D)^3P$	5% $(3^4P)^3P$
419,422 *		33% $(3^2D)^3P$	22% $(3^2D)^1P$	11% $(3^4P)^3S$
415,902 *		47% $(3^4P)^3D$	27% $(3^2P)^3S$	9% $(3^2P)^3P$
413,344	47	33% $(3^2P)^3P$	25% $(3^4P)^3D$	22% $(3^2P)^3S$
412,118	−9	55% $(3^2D)^3D$	11% $(3^2P)^3S$	7% $(1^2D)^3D$
411,728 *		35% $(3^2P)^1P$	13% $(3^2D)^1P$	10% $(3^2P)^3S$
404,530	9	54% $(3^2P)^3D$	13% $(3^4P)^3P$	9% $(3^2P)^3S$
403,127 *		44% $(3^4P)^3P$	30% $(3^4P)^5D$	8% $(3^2P)^3D$
399,869	32	16% $(3^2P)^3P$	15% $(3^2D)^3P$	14% $(3^4P)^5P$
393,703 *		37% $(3^4P)^5D$	23% $(3^4P)^3P$	19% $(3^4F)^5D$
391,283	81	72% $(3^4P)^5P$	7% $(3^2P)^3S$	6% $(3^2P)^3P$
386,317	−2	53% $(3^4F)^5F$	26% $(3^4F)^3D$	7% $(3^4P)^3D$
383,568	−48	64% $(3^4F)^5D$	21% $(3^4P)^5D$	6% $(3^4F)^5F$
374,891	13	47% $(3^4F)^3D$	36% $(3^4F)^5F$	7% $(3^4F)^5D$
		J = 2		
457,523 *		59% $(1^2D)^3P$	14% $(3^2D)^3P$	12% $(1^2D)^3D$
453,343	−75	36% $(1^2D)^1D$	23% $(1^2D)^3F$	12% $(3^2F)^1D$
447,730	−20	31% $(1^2D)^3F$	21% $(3^2F)^1D$	10% $(3^2D)^3F$
444,532	−36	44% $(1^2D)^3D$	12% $(1^2D)^3F$	12% $(1^2D)^3P$
432,431	−90	54% $(3^2F)^3D$	16% $(1^2D)^3D$	11% $(1^2D)^1D$
431,074 *		30% $(1^2D)^1D$	26% $(3^2F)^1D$	12% $(3^2F)^3D$
424,635	−19	33% $(3^2D)^1D$	26% $(3^2P)^1D$	17% $(3^2F)^3F$
421,941 *		26% $(3^2F)^3F$	22% $(3^2P)^1D$	12% $(3^2P)^3P$
420,031	58	25% $(3^2P)^3P$	22% $(3^4P)^3D$	14% $(3^2D)^3P$
417,758	31	26% $(3^2D)^3D$	16% $(3^2F)^3F$	16% $(3^2P)^3P$
412,894	30	28% $(3^4P)^3D$	21% $(3^4P)^5S$	16% $(3^2D)^3P$
412,412	−44	50% $(3^2P)^3D$	18% $(3^2G)^3F$	11% $(3^2D)^3F$
411,461	−29	48% $(3^4P)^5S$	20% $(3^4P)^3P$	11% $(3^2D)^3P$
409,522	−14	19% $(3^2D)^3F$	15% $(3^2F)^1D$	14% $(3^2D)^1D$
408,409	−16	52% $(3^2G)^3F$	12% $(3^2P)^3D$	9% $(3^2P)^1D$
406,270	−12	25% $(3^2D)^3D$	23% $(3^2P)^3P$	22% $(3^2D)^3P$
402,086 *		25% $(3^4P)^3P$	23% $(3^4P)^5D$	16% $(3^4P)^5P$
400,904	31	23% $(3^4P)^5D$	21% $(3^4F)^3F$	16% $(3^2D)^3F$
396,041	59	36% $(3^4P)^5P$	18% $(3^4P)^5D$	15% $(3^4F)^5D$
394,552 *		52% $(3^4F)^3F$	8% $(3^2D)^3F$	7% $(3^4F)^5G$
393,630	−4	34% $(3^4P)^5P$	27% $(3^4P)^3P$	13% $(3^4F)^3D$
386,800	−9	55% $(3^4F)^5F$	12% $(3^4F)^3D$	5% $(3^4P)^3D$
385,302	−69	55% $(3^4F)^5D$	22% $(3^4P)^5D$	5% $(3^4F)^5F$
377,661	4	38% $(3^4F)^3D$	33% $(3^4F)^5F$	17% $(3^4F)^5D$
371,899 *		86% $(3^4F)^5G$	7% $(3^4F)^3F$	3% $(3^2D)^3F$

Table A8. *Cont.*

E [a]	o-c [b]	Eigenvector Composition [c]		
		J = 3		
460,104	100	62% $(1^2D)^1F$	15% $(3^2D)^1F$	11% $(1^2D)^3F$
452,808	172	41% $(1^2D)^3D$	35% $(1^2D)^3F$	9% $(3^2D)^3F$
446,318	−13	33% $(1^2D)^3D$	26% $(1^2D)^3F$	13% $(1^2D)^1F$
436,451	−25	74% $(3^2F)^1F$	11% $(3^2F)^3D$	5% $(3^2F)^3G$
430,642	2	26% $(3^2F)^3D$	19% $(3^2F)^3F$	19% $(3^2F)^3G$
427,542 *		21% $(3^2H)^3G$	19% $(3^2F)^3D$	18% $(3^2F)^3G$
424,006	−25	24% $(3^2P)^3D$	23% $(3^2D)^1F$	11% $(3^2G)^1F$
422,895	77	25% $(3^2F)^3F$	22% $(3^2D)^3D$	17% $(3^2H)^3G$
420,123	36	24% $(3^2F)^3F$	17% $(3^4P)^3D$	11% $(3^2P)^3D$
417,724	43	24% $(3^2H)^3G$	23% $(3^2F)^3G$	16% $(3^4P)^3D$
415,165	114	24% $(3^4P)^3D$	14% $(3^2G)^1F$	10% $(3^2H)^3G$
411,469	−67	24% $(3^2D)^3D$	18% $(3^2P)^3D$	15% $(3^2F)^3D$
409,750	−9	25% $(3^2G)^1F$	13% $(3^2D)^1F$	11% $(3^2D)^3F$
409,432	−14	31% $(3^2D)^3F$	20% $(3^2G)^3F$	15% $(3^2D)^3D$
407,506	39	23% $(3^2G)^3F$	22% $(3^2G)^3G$	11% $(3^4F)^3F$
402,520 *		62% $(3^4P)^5D$	11% $(3^4F)^5D$	8% $(3^2P)^3D$
399,399	46	72% $(3^4P)^5P$	9% $(3^4F)^3D$	5% $(3^2P)^3D$
398,704	20	35% $(3^2G)^3G$	21% $(3^2G)^1F$	16% $(3^4F)^3G$
397,779	1	59% $(3^4F)^3F$	7% $(3^2D)^3F$	6% $(3^4P)^5P$
390,887	−10	29% $(3^4F)^5F$	21% $(3^4F)^3D$	18% $(3^4F)^3G$
389,944	−8	31% $(3^4F)^3G$	15% $(3^4F)^3D$	14% $(3^4F)^5D$
387,329	−2	34% $(3^4F)^5F$	25% $(3^4F)^5D$	19% $(3^4F)^3G$
381,580	−5	40% $(3^4F)^5D$	29% $(3^4F)^5F$	21% $(3^4F)^3D$
375,456 *		87% $(3^4F)^5G$	5% $(3^4F)^3F$	2% $(3^4F)^3G$
		J = 4		
455,261	29	77% $(1^2D)^3F$	15% $(3^2D)^3F$	3% $(3^2F)^1G$
437,322	112	61% $(3^2F)^1G$	28% $(3^2H)^1G$	6% $(3^2F)^3G$
431,659 *		48% $(3^2F)^3G$	25% $(3^2F)^3F$	18% $(3^2H)^3G$
424,999	1	47% $(3^2F)^3F$	13% $(3^2H)^3G$	11% $(3^2F)^3G$
420,822	37	35% $(3^2H)^3G$	16% $(3^2F)^3G$	14% $(3^2G)^3F$
417,492	−62	67% $(3^2D)^3F$	10% $(1^2D)^3F$	7% $(3^4F)^3F$
412,977	6	22% $(3^2F)^1G$	17% $(3^2G)^1G$	13% $(3^2F)^3G$
412,041	−47	33% $(3^2H)^1G$	28% $(3^2G)^1G$	13% $(3^2H)^3G$
408,236	37	30% $(3^4P)^5D$	14% $(3^2H)^3H$	13% $(3^2G)^3H$
407,173	−50	57% $(3^4P)^5D$	14% $(3^2G)^3F$	9% $(3^2H)^3H$
405,162	−21	52% $(3^2G)^3G$	16% $(3^2G)^3F$	13% $(3^2H)^3H$
400,219	−10	58% $(3^4F)^3F$	18% $(3^2G)^3F$	3% $(3^2H)^3G$
399,265	14	34% $(3^2G)^1G$	18% $(3^2G)^3H$	13% $(3^2H)^3H$
396,481	18	43% $(3^4F)^3G$	19% $(3^2H)^3H$	18% $(3^2G)^3H$
393,193	−2	34% $(3^4F)^5F$	32% $(3^2G)^3H$	11% $(3^2H)^3H$
388,964	4	33% $(3^4F)^5F$	23% $(3^4F)^3G$	16% $(3^4F)^5G$
385,218	−11	67% $(3^4F)^5D$	15% $(3^4F)^5F$	6% $(3^4F)^3F$
379,386 *		80% $(3^4F)^5G$	7% $(3^4F)^3G$	6% $(3^4F)^5F$
		J = 5		
432,154	32	85% $(3^2F)^3G$	13% $(3^2H)^3G$	1% $(3^2G)^1H$
421,021	4	45% $(3^2H)^3G$	16% $(3^2G)^1H$	13% $(3^2H)^1H$
415,995	−15	52% $(3^2H)^1H$	24% $(3^2G)^3G$	17% $(3^2H)^3I$
413,329	57	61% $(3^2G)^1H$	20% $(3^2H)^3G$	10% $(3^2H)^3I$
408,910	1	54% $(3^2G)^3H$	31% $(3^2H)^3H$	9% $(3^2G)^3G$
407,246	−19	38% $(3^2H)^3I$	36% $(3^2G)^3G$	8% $(3^2H)^3G$
405,144	26	26% $(3^2H)^3H$	23% $(3^2H)^1H$	11% $(3^2H)^3I$
399,831	−1	47% $(3^4F)^3G$	23% $(3^4F)^5F$	16% $(3^2H)^3H$
395,955	−2	32% $(3^4F)^5F$	22% $(3^2G)^3H$	16% $(3^2H)^3I$
390,458	−6	40% $(3^4F)^5G$	28% $(3^4F)^5F$	18% $(3^4F)^3G$
383,426	−48	58% $(3^4F)^5G$	15% $(3^4F)^3G$	13% $(3^4F)^5F$

Table A8. *Cont.*

E [a]	o-c [b]	Eigenvector Composition [c]		
		$J = 6$		
421,189	52	67% $(3^2H)^1I$	19% $(3^2G)^3H$	7% $(3^2H)^3I$
413,999	−7	66% $(3^2H)^3I$	24% $(3^2H)^3H$	5% $(3^2H)^1I$
410,851	20	57% $(3^2G)^3H$	25% $(3^2H)^1I$	14% $(3^2H)^3H$
403,359	−13	55% $(3^2H)^3H$	25% $(3^2H)^3I$	14% $(3^2G)^3H$
391,512 *		94% $(3^4F)^5G$	6% $(3^2G)^3H$	
		$J = 7$		
417,658	−35	100% $(3^2H)^3I$		

[a] The star * indicates a calculated value for the level; [b] The difference between the observed and the calculated energies; [c] For the eigenvector composition, up to three components with the largest percentages in the LS-coupling scheme are listed. The number preceding the terms is the seniority number.

Table A9. Energies (in cm^{-1}) of the $4d^34f + 4p^54d^5$ configurations of Ag VIII.

E [a]	o-c [b]	J	Eigenvector Composition [c]		
557,732	258	1	24% $4d^34f\ (^4F)^5D$	20% $4p^54d^5\ (^4F)^5D$	10% $4p^54d^5\ (^4D)^5D$
557,962 *		4	40% $4p^54d^5\ (^2G1)^3H$	10% $4p^54d^5\ (^2D1)^3F$	6% $4p^54d^5\ (^2F2)^3G$
558,654	182	1	22% $4p^54d^5\ (^4G)^5F$	18% $4d^34f\ (^4F)^5F$	17% $4d^34f\ (^4P)^5F$
560,251	257	2	31% $4d^34f\ (^4F)^5D$	27% $4p^54d^5\ (^4F)^5D$	13% $4p^54d^5\ (^4D)^5D$
560,857	186	2	27% $4p^54d^5\ (^4G)^5F$	21% $4d^34f\ (^4F)^5F$	20% $4d^34f\ (^4P)^5F$
560,877 *		4	24% $4p^54d^5\ (^2D1)^3F$	13% $4p^54d^5\ (^2D3)^3F$	11% $4p^54d^5\ (^2G1)^3F$
562,295	122	3	21% $4d^34f\ (^4F)^5D$	21% $4p^54d^5\ (^4F)^5D$	13% $4p^54d^5\ (^4G)^5F$
562,825	92	3	14% $4p^54d^5\ (^4G)^5F$	10% $4d^34f\ (^4P)^5F$	10% $4d^34f\ (^4F)^5F$
564,383	−53	4	20% $4p^54d^5\ (^4F)^5D$	17% $4d^34f\ (^4F)^5D$	16% $4p^54d^5\ (^4G)^5F$
565,233 *		3	14% $4p^54d^5\ (^2D1)^3F$	11% $4p^54d^5\ (^2D1)^1F$	9% $4d^34f\ (^2D1)^1F$
564,902	−365	4	14% $4p^54d^5\ (^4G)^5F$	13% $4p^54d^5\ (^4F)^5D$	10% $4d^34f\ (^4F)^5F$
565,427	−49	5	17% $4p^54d^5\ (^4G)^5F$	10% $4d^34f\ (^4F)^5F$	9% $4d^34f\ (^4P)^5F$
567,115	119	7	21% $4d^34f\ (^2H)^1K$	18% $4d^34f\ (^4F)^3I$	15% $4d^34f\ (^2H)^3I$
568,319	12	5	15% $4d^34f\ (^4F)^3I$	13% $4p^54d^5\ (^2I)^3I$	13% $4p^54d^5\ (^4G)^5F$
568,352 *		2	26% $4p^54d^5\ (^2P)^3D$	14% $4p^54d^5\ (^2D1)^3D$	10% $4p^54d^5\ (^2D1)^3F$
569,385	138	6	22% $4d^34f\ (^4F)^3I$	18% $4p^54d^5\ (^2I)^3I$	18% $4d^34f\ (^2H)^3I$
571,903 *		1	38% $4p^54d^5\ (^2P)^3P$	20% $4p^54d^5\ (^2D1)^3P$	18% $4p^54d^5\ (^2D3)^3P$
573,036	−36	4	17% $4d^34f\ (^4F)^3H$	11% $4p^54d^5\ (^2H)^3H$	8% $4d^34f\ (^2G)^3H$
576,375 *		1	20% $4p^54d^5\ (^2F2)^3D$	10% $4d^34f\ (^2P)^3D$	10% $4d^34f\ (^2D2)^3D$
576,746	−170	5	17% $4d^34f\ (^4F)^3H$	10% $4p^54d^5\ (^2H)^3H$	8% $4d^34f\ (^2G)^3H$
577,085	−795	3	14% $4p^54d^5\ (^2H)^3G$	12% $4d^34f\ (^2G)^3G$	11% $4p^54d^5\ (^2G2)^3G$
578,963	209	7	29% $4d^34f\ (^2H)^1K$	18% $4d^34f\ (^2G)^1K$	14% $4p^54d^5\ (^2I)^1K$
578,767 *		2	21% $4p^54d^5\ (^2P)^3P$	15% $4p^54d^5\ (^2D1)^3P$	12% $4p^54d^5\ (^2D2)^3P$
579,661 *		1	36% $4p^54d^5\ (^2P)^3D$	11% $4p^54d^5\ (^2D1)^3D$	7% $4d^34f\ (^2D1)^3D$
580,373 *		3	15% $4p^54d^5\ (^2D2)^1F$	15% $4p^54d^5\ (^2D1)^3F$	8% $4d^34f\ (^2D2)^1F$
580,680 *		2	13% $4p^54d^5\ (^2F2)^3D$	9% $4d^34f\ (^2P)^3D$	6% $4p^54d^5\ (^2F1)^3D$
580,568 *		0	39% $4p^54d^5\ (^2P)^3P$	20% $4p^54d^5\ (^2D3)^3P$	12% $4p^54d^5\ (^2P)^1S$
581,094 *		1	32% $4d^34f\ (^2D1)^1P$	19% $4d^34f\ (^2D2)^1P$	12% $4p^54d^5\ (^2P)^1P$
580,923	−221	6	22% $4d^34f\ (^4F)^3H$	14% $4p^54d^5\ (^4G)^3H$	14% $4p^54d^5\ (^2H)^3H$
581,306	22	4	11% $4p^54d^5\ (^2G2)^3G$	11% $4d^34f\ (^4P)^3G$	7% $4d^34f\ (^2G)^3G$
582,024	−42	5	13% $4d^34f\ (^4P)^3G$	11% $4p^54d^5\ (^2G2)^3G$	7% $4d^34f\ (^2G)^3G$
582,154	−19	1	30% $4p^54d^5\ (^6S)^5P$	10% $4d^34f\ (^4F)^5P$	10% $4p^54d^5\ (^4P)^3S$
583,603	46	3	15% $4p^54d^5\ (^2G1)^3F$	10% $4d^34f\ (^2D2)^3F$	10% $4p^54d^5\ (^4F)^3F$
585,291 *		3	10% $4p^54d^5\ (^2D2)^3D$	9% $4p^54d^5\ (^2F2)^3D$	6% $4d^34f\ (^2G)^3D$
587,262 *		2	10% $4p^54d^5\ (^2P)^3D$	9% $4p^54d^5\ (^2D1)^3F$	7% $4p^54d^5\ (^2G1)^3F$
589,229	−70	4	12% $4p^54d^5\ (^2I)^3H$	8% $4d^34f\ (^2H)^3H$	5% $4p^54d^5\ (^4F)^3G$
589,963	238	2	12% $4p^54d^5\ (^2D1)^3F$	10% $4p^54d^5\ (^2D1)^3P$	8% $4p^54d^5\ (^2D2)^3D$

Table A9. *Cont.*

E [a]	o-c [b]	*J*	Eigenvector Composition [c]		
589,786	−107	4	9% $4p^54d^5$ (^{2}H)^{3}G	4% $4p^54d^5$ (^{2}I)^{3}H	4% $4d^34f$ (^{2}D2)^{1}G
590,761 *		1	9% $4p^54d^5$ (^{2}D2)^{3}D	8% $4p^54d^5$ (^{2}F1)^{3}D	8% $4p^54d^5$ (^{2}D2)^{1}P
591,056 *		2	13% $4p^54d^5$ (^{2}D1)^{3}F	11% $4p^54d^5$ (^{2}G2)^{3}F	8% $4p^54d^5$ (^{2}G1)^{3}F
591,442	124	3	17% $4p^54d^5$ (^{4}F)^{3}G	6% $4d^34f$ (^{4}F)^{3}G	6% $4p^54d^5$ (^{4}G)^{3}G
591,781 *		1	11% $4p^54d^5$ (^{6}S)^{5}P	11% $4p^54d^5$ (^{2}D1)^{3}P	7% $4p^54d^5$ (^{4}D)^{3}P
592,118	−49	5	9% $4p^54d^5$ (^{2}H)^{1}H	9% $4d^34f$ (^{2}G)^{1}H	8% $4d^34f$ (^{2}D1)^{3}G
593,449 *		2	19% $4p^54d^5$ (^{6}S)^{5}P	6% $4p^54d^5$ (^{2}D2)^{3}F	6% $4p^54d^5$ (^{2}D1)^{3}P
593,578 *		0	17% $4p^54d^5$ (^{4}P)^{3}P	16% $4p^54d^5$ (^{2}D1)^{3}P	15% $4p^54d^5$ (^{4}D)^{3}P
593,064	−698	3	15% $4p^54d^5$ (^{2}F1)^{3}D	11% $4p^54d^5$ (^{4}D)^{3}D	11% $4d^34f$ (^{2}P)^{3}D
594,881	−367	2	27% $4p^54d^5$ (^{6}S)^{5}P	8% $4p^54d^5$ (^{4}D)^{5}P	8% $4p^54d^5$ (^{4}P)^{5}P
596,171	−15	4	9% $4p^54d^5$ (^{2}I)^{3}H	9% $4p^54d^5$ (^{2}G2)^{1}G	8% $4d^34f$ (^{2}H)^{3}H
598,210	207	4	16% $4p^54d^5$ (^{4}F)^{3}G	7% $4p^54d^5$ (^{2}G2)^{3}G	6% $4p^54d^5$ (^{2}F1)^{1}G
598,784 *		3	17% $4p^54d^5$ (^{2}G1)^{3}G	15% $4d^34f$ (^{2}D1)^{3}G	5% $4p^54d^5$ (^{2}F2)^{3}D
599,018	15	1	11% $4p^54d^5$ (^{2}P)^{3}S	10% $4d^34f$ (^{2}F)^{3}P	9% $4p^54d^5$ (^{2}S)^{3}P
599,345	109	5	15% $4p^54d^5$ (^{4}F)^{3}G	10% $4p^54d^5$ (^{2}I)^{3}H	8% $4p^54d^5$ (^{2}G2)^{3}G
602,225	723	4	8% $4p^54d^5$ (^{4}F)^{3}F	7% $4p^54d^5$ (^{2}G2)^{1}G	7% $4d^34f$ (^{2}F)^{1}G
601,789 *		2	11% $4p^54d^5$ (^{2}D3)^{3}P	8% $4d^34f$ (^{2}F)^{3}P	7% $4p^54d^5$ (^{4}P)^{3}P
602,116 *		3	9% $4p^54d^5$ (^{4}F)^{3}G	8% $4d^34f$ (^{2}G)^{3}F	8% $4p^54d^5$ (^{2}G2)^{3}F
603,864	132	5	20% $4d^34f$ (^{2}D1)^{1}H	11% $4p^54d^5$ (^{2}I)^{3}H	9% $4p^54d^5$ (^{2}G1)^{1}H
604,385	−19	4	24% $4p^54d^5$ (^{2}G1)^{3}G	13% $4d^34f$ (^{2}D1)^{3}G	7% $4d^34f$ (^{2}H)^{3}G
604,600	3	3	43% $4p^54d^5$ (^{6}S)^{5}P	12% $4p^54d^5$ (^{4}D)^{5}P	9% $4p^54d^5$ (^{4}P)^{5}P
605,132	−102	6	25% $4p^54d^5$ (^{2}I)^{3}H	14% $4p^54d^5$ (^{2}I)^{1}I	13% $4p^54d^5$ (^{4}G)^{3}H
606,529	91	5	17% $4p^54d^5$ (^{4}G)^{3}G	16% $4p^54d^5$ (^{4}F)^{3}G	8% $4d^34f$ (^{4}F)^{3}G
607,167 *		1	16% $4p^54d^5$ (^{2}P)^{3}S	14% $4p^54d^5$ (^{4}P)^{3}S	6% $4p^54d^5$ (^{2}D3)^{1}P
607,348 *		2	16% $4p^54d^5$ (^{4}D)^{3}P	9% $4p^54d^5$ (^{2}D1)^{3}P	7% $4p^54d^5$ (^{4}P)^{3}P
607,709 *		0	27% $4p^54d^5$ (^{2}P)^{3}P	20% $4p^54d^5$ (^{2}S)^{3}P	19% $4d^34f$ (^{2}F)^{3}P
608,132 *		1	12% $4p^54d^5$ (^{2}D2)^{1}P	10% $4p^54d^5$ (^{2}D2)^{3}D	6% $4d^34f$ (^{2}G)^{3}D
607,628	−663	3	10% $4p^54d^5$ (^{2}F2)^{3}D	10% $4p^54d^5$ (^{2}F1)^{1}F	8% $4d^34f$ (^{2}F)^{1}F
613,166	−109	4	12% $4p^54d^5$ (^{4}G)^{3}F	9% $4p^54d^5$ (^{2}F2)^{1}G	7% $4d^34f$ (^{2}G)^{1}G
614,370	76	5	19% $4p^54d^5$ (^{2}G1)^{1}H	13% $4p^54d^5$ (^{2}G1)^{3}G	6% $4p^54d^5$ (^{2}I)^{1}H
615,653 *		3	11% $4p^54d^5$ (^{2}D1)^{3}D	8% $4p^54d^5$ (^{4}D)^{3}D	7% $4p^54d^5$ (^{2}F1)^{3}D
615,971 *		1	19% $4p^54d^5$ (^{4}D)^{3}D	16% $4p^54d^5$ (^{2}D3)^{3}D	11% $4p^54d^5$ (^{4}P)^{3}D
616,249 *		2	11% $4p^54d^5$ (^{4}D)^{3}D	11% $4p^54d^5$ (^{2}D2)^{1}D	11% $4p^54d^5$ (^{2}D3)^{3}D
617,860 *		1	34% $4p^54d^5$ (^{2}D1)^{3}D	7% $4d^34f$ (^{2}D1)^{3}D	6% $4d^34f$ (^{2}D2)^{1}P
619,061 *		2	26% $4p^54d^5$ (^{2}D1)^{3}D	11% $4p^54d^5$ (^{4}P)^{3}D	9% $4d^34f$ (^{2}D1)^{3}D
620,379 *		3	15% $4p^54d^5$ (^{4}G)^{3}F	13% $4p^54d^5$ (^{4}D)^{3}F	5% $4p^54d^5$ (^{4}G)^{3}G
620,664	128	2	13% $4p^54d^5$ (^{4}G)^{3}F	10% $4p^54d^5$ (^{2}F1)^{1}D	9% $4p^54d^5$ (^{2}D3)^{1}D
621,268	−115	6	41% $4p^54d^5$ (^{2}I)^{1}I	16% $4p^54d^5$ (^{2}I)^{3}H	11% $4d^34f$ (^{2}H)^{1}I
622,060	−146	4	20% $4p^54d^5$ (^{4}D)^{3}F	12% $4p^54d^5$ (^{4}G)^{3}G	8% $4p^54d^5$ (^{2}G1)^{3}F
622,489 *		3	15% $4p^54d^5$ (^{4}D)^{3}D	9% $4p^54d^5$ (^{4}P)^{3}D	7% $4p^54d^5$ (^{4}G)^{3}G
624,693 *		2	15% $4p^54d^5$ (^{2}D2)^{1}D	10% $4p^54d^5$ (^{2}P)^{1}D	8% $4p^54d^5$ (^{4}P)^{3}D
627,779	−430	3	12% $4p^54d^5$ (^{4}P)^{3}D	11% $4p^54d^5$ (^{2}G2)^{1}F	8% $4p^54d^5$ (^{2}F2)^{1}F
630,389	405	3	14% $4p^54d^5$ (^{2}D3)^{1}F	11% $4p^54d^5$ (^{4}G)^{3}G	11% $4p^54d^5$ (^{2}F1)^{1}F
630,848 *		2	14% $4p^54d^5$ (^{2}P)^{1}D	10% $4p^54d^5$ (^{2}F2)^{1}D	7% $4p^54d^5$ (^{4}G)^{3}F
634,810	230	4	33% $4p^54d^5$ (^{4}G)^{3}G	8% $4p^54d^5$ (^{4}F)^{3}G	8% $4p^54d^5$ (^{4}G)^{3}F
635,050	−166	3	22% $4p^54d^5$ (^{4}G)^{3}G	11% $4p^54d^5$ (^{2}F2)^{1}F	7% $4p^54d^5$ (^{2}F1)^{1}F
635,935	510	5	41% $4p^54d^5$ (^{4}G)^{3}G	18% $4p^54d^5$ (^{2}H)^{3}G	13% $4p^54d^5$ (^{4}F)^{3}G
635,583 *		1	29% $4p^54d^5$ (^{2}D3)^{1}P	15% $4p^54d^5$ (^{2}S)^{1}P	6% $4p^54d^5$ (^{2}D3)^{3}D
636,245 *		1	39% $4p^54d^5$ (^{4}P)^{3}S	21% $4p^54d^5$ (^{2}P)^{3}S	8% $4d^34f$ (^{2}F)^{3}S
641,516	56	2	16% $4p^54d^5$ (^{4}F)^{3}F	7% $4p^54d^5$ (^{4}F)^{3}D	5% $4p^54d^5$ (^{4}D)^{3}P
643,491 *		3	18% $4p^54d^5$ (^{4}F)^{3}D	11% $4p^54d^5$ (^{2}D1)^{3}D	9% $4p^54d^5$ (^{2}D1)^{1}F
644,043	065	5	28% $4p^54d^5$ (^{2}H)^{1}H	26% $4p^54d^5$ (^{2}I)^{1}H	21% $4p^54d^5$ (^{2}G2)^{1}H
643,939	−245	4	18% $4p^54d^5$ (^{2}H)^{1}G	15% $4p^54d^5$ (^{4}F)^{3}F	13% $4p^54d^5$ (^{2}G1)^{1}G
644,760 *		1	25% $4p^54d^5$ (^{4}D)^{3}P	10% $4p^54d^5$ (^{2}D2)^{3}P	9% $4p^54d^5$ (^{4}F)^{3}D

Table A9. *Cont.*

E [a]	o-c [b]	*J*	Eigenvector Composition [c]		
645,906	221	2	15% $4p^5 4d^5$ (^{2}D2)^{1}D	11% $4p^5 4d^5$ (^{2}D1)^{1}D	7% $4d^3 4f$ (^{2}D1)^{1}D
646,185	348	2	11% $4p^5 4d^5$ (^{4}D)^{3}P	9% $4p^5 4d^5$ (^{4}F)^{3}F	7% $4p^5 4d^5$ (^{2}D2)^{3}P
647,898 *		0	40% $4p^5 4d^5$ (^{4}D)^{3}P	14% $4p^5 4d^5$ (^{2}D2)^{3}P	10% $4p^5 4d^5$ (^{4}P)^{3}P
647,982	30	3	22% $4p^5 4d^5$ (^{4}F)^{3}F	12% $4p^5 4d^5$ (^{4}F)^{3}D	5% $4p^5 4d^5$ (^{2}G1)^{3}F
650,256	171	4	19% $4p^5 4d^5$ (^{4}F)^{3}F	13% $4p^5 4d^5$ (^{2}G1)^{1}G	11% $4p^5 4d^5$ (^{2}G1)^{3}F
650,545	−375	2	23% $4p^5 4d^5$ (^{4}F)^{3}D	7% $4p^5 4d^5$ (^{2}P)^{3}D	5% $4p^5 4d^5$ (^{4}F)^{3}F
651,358 *		3	18% $4p^5 4d^5$ (^{2}F1)^{1}F	15% $4p^5 4d^5$ (^{2}G2)^{1}F	14% $4p^5 4d^5$ (^{2}D1)^{1}F
664,590 *		1	40% $4p^5 4d^5$ (^{2}P)^{1}P	15% $4p^5 4d^5$ (^{2}D1)^{1}P	9% $4d^3 4f$ (^{2}D1)^{1}P
668,708	−344	3	32% $4p^5 4d^5$ (^{2}G1)^{1}F	15% $4p^5 4d^5$ (^{2}D2)^{1}F	13% $4p^5 4d^5$ (^{2}F2)^{1}F

[a] The star * indicates a calculated value for the level; [b] The difference between the observed and the calculated energies; [c] For the eigenvector composition, up to three components with the largest percentages in the LS-coupling scheme are listed. The number following the terms displays Nielson and Koster sequential indices [20].

Table A10. Energies (in cm^{-1}) of the $4d^3$ configuration of Ag IX.

E [a]	o-c [b]	Eigenvector Composition [c]		
		J = 1/2		
28,502 *		87% ^{2}P	13% ^{4}P	
17,851 *		87% ^{4}P	13% ^{2}P	
		J = 3/2		
68,707	48	76% ^{2}D1	24% ^{2}D2	
36,360	−6	57% ^{2}P	27% ^{2}D2	10% ^{2}D1
26,823	24	41% ^{2}D2	25% ^{4}P	20% ^{2}P
17,169	56	69% ^{4}P	23% ^{2}P	5% ^{2}D2
0	12	95% ^{4}F	3% ^{2}D2	1% ^{2}D1
		J = 5/2		
68,249	−22	83% ^{2}D1	12% ^{2}D2	3% ^{2}F
44,595	−41	96% ^{2}F	2% ^{2}D1	2% ^{2}D2
33,051	10	84% ^{2}D2	12% ^{2}D1	2% ^{4}P
22,387	−10	97% ^{4}P	2% ^{2}D1	1% ^{2}D2
3103	0	98% ^{4}F	1% ^{2}D2	0% ^{2}D1
		J = 7/2		
44,082	−3	98% ^{2}F	1% ^{2}G	0% ^{4}F
22,160	−24	96% ^{2}G	2% ^{4}F	1% ^{2}F
6532	4	97% ^{4}F	2% ^{2}G	0% ^{2}F
		J = 9/2		
32,349	19	57% ^{2}H	41% ^{2}G	2% ^{4}F
23,357	−22	50% ^{2}G	43% ^{2}H	7% ^{4}F
9867	−13	91% ^{4}F	8% ^{2}G	1% ^{2}H
		J = 11/2		
31,532	15	100% ^{2}H		

[a] The star * indicates a calculated value for the level; [b] The difference between the observed and the calculated by orthogonal parameter technique energies; [c] For the eigenvector composition, up to three components with the largest percentages in the LS-coupling scheme are listed. The number following the terms displays Nielson and Koster sequential indices [20].

Table A11. Energies (in cm^{-1}) of the $4d^25p$ + $4d^24f$ + $4p^54d^4$ configurations of Ag IX.

E [a]	o-c [b]	*J*	Config. [c]	Eigenvector Composition [d]		
424,571	90	5/2	$4d^25p$	71% $4d^25p$ $(^3F)^4G$	17% $4d^25p$ $(^3F)^2F$	7% $4d^25p$ $(^1D)^2F$
427,386 *		7/2	$4p^54d^4$	81% $4p^54d^4$ $(^5D)^6D$	11% $4p^54d^4$ $(^5D)^6F$	6% $4p^54d^4$ $(^5D)^6P$
427,916	−112	3/2	$4d^25p$	61% $4d^25p$ $(^3F)^4F$	25% $4d^25p$ $(^3F)^2D$	7% $4d^25p$ $(^3F)^4D$
428,156 *		5/2	$4p^54d^4$	78% $4p^54d^4$ $(^5D)^6D$	9% $4p^54d^4$ $(^5D)^6P$	8% $4p^54d^4$ $(^5D)^6F$
428,306 *		9/2	$4p^54d^4$	85% $4p^54d^4$ $(^5D)^6D$	12% $4p^54d^4$ $(^5D)^6F$	1% $4p^54d^4$ $(^5D)^4F$
430,308 *		3/2	$4p^54d^4$	76% $4p^54d^4$ $(^5D)^6D$	9% $4p^54d^4$ $(^5D)^6P$	5% $4p^54d^4$ $(^5D)^6F$
431,109 *		7/2	$4d^25p$	77% $4d^25p$ $(^3F)^4G$	9% $4d^25p$ $(^3F)^4F$	9% $4d^25p$ $(^3F)^2F$
432,569	157	5/2	$4d^25p$	56% $4d^25p$ $(^3F)^4F$	16% $4d^25p$ $(^3F)^2D$	16% $4d^25p$ $(^3F)^4D$
433,690 *		1/2	$4p^54d^4$	84% $4p^54d^4$ $(^5D)^6D$	6% $4p^54d^4$ $(^5D)^4P$	4% $4p^54d^4$ $(^3D)^4P$
437,442	34	9/2	$4d^25p$	58% $4d^25p$ $(^3F)^4G$	25% $4d^25p$ $(^3F)^4F$	11% $4d^25p$ $(^3F)^2G$
437,662	68	1/2	$4d^25p$	49% $4d^25p$ $(^3F)^4D$	35% $4d^25p$ $(^3P)^4D$	6% $4d^25p$ $(^3P)^2S$
437,662	−478	7/2	$4d^25p$	53% $4d^25p$ $(^3F)^4F$	27% $4d^25p$ $(^3F)^4D$	10% $4d^25p$ $(^3F)^2F$
438,297	−107	5/2	$4d^25p$	29% $4d^25p$ $(^3F)^4F$	22% $4d^25p$ $(^3F)^4G$	22% $4d^25p$ $(^3F)^2F$
438,725	−103	3/2	$4d^25p$	36% $4d^25p$ $(^3F)^4D$	28% $4d^25p$ $(^3F)^4F$	14% $4d^25p$ $(^3F)^2D$
440,957 *		3/2	$4d^25p$	25% $4d^25p$ $(^3P)^4D$	25% $4d^25p$ $(^3F)^2D$	18% $4d^25p$ $(^3P)^2D$
441,473 *		1/2	$4d^25p$	73% $4d^25p$ $(^3P)^2S$	15% $4d^25p$ $(^3P)^4P$	6% $4d^25p$ $(^3F)^4D$
441,637	−122	7/2	$4d^25p$	26% $4d^25p$ $(^3F)^4D$	23% $4d^25p$ $(^3F)^2F$	20% $4d^25p$ $(^3F)^4F$
442,423	120	5/2	$4d^25p$	46% $4d^25p$ $(^3F)^4D$	25% $4d^25p$ $(^3P)^4D$	13% $4d^25p$ $(^1D)^2F$
444,195	220	9/2	$4d^25p$	43% $4d^25p$ $(^3F)^4F$	41% $4d^25p$ $(^3F)^4G$	10% $4d^25p$ $(^3F)^2G$
444,319 *		11/2	$4p^54d^4$	92% $4p^54d^4$ $(^5D)^6F$	5% $4p^54d^4$ $(^3F2)^4G$	1% $4p^54d^4$ $(^3F1)^4G$
444,355 *		3/2	$4d^25p$	50% $4d^25p$ $(^3P)^4S$	15% $4d^25p$ $(^1D)^2P$	6% $4d^25p$ $(^3F)^4D$
445,529 *		5/2	$4p^54d^4$	41% $4p^54d^4$ $(^3H)^4G$	32% $4d^24f$ $(^3F)^4G$	10% $4p^54d^4$ $(^3G)^4G$
446,642	−4	5/2	$4d^25p$	41% $4d^25p$ $(^3F)^2F$	20% $4d^25p$ $(^3F)^2D$	18% $4d^25p$ $(^3P)^2D$
447,243 *		7/2	$4d^25p$	43% $4d^25p$ $(^3F)^2G$	18% $4d^25p$ $(^1G)^2G$	10% $4d^25p$ $(^3F)^4F$
447,255	−279	7/2	$4p^54d^4$	33% $4p^54d^4$ $(^3H)^4G$	30% $4d^24f$ $(^3F)^4G$	11% $4p^54d^4$ $(^3G)^4G$
447,694 *		11/2	$4d^25p$	97% $4d^25p$ $(^3F)^4G$	1% $4d^25p$ $(^1G)^2H$	1% $4d^24f$ $(^3F)^4G$
448,369 *		7/2	$4d^24f$	32% $4d^24f$ $(^3F)^2G$	10% $4p^54d^4$ $(^3H)^2G$	8% $4d^25p$ $(^3F)^2G$
448,623 *		3/2	$4p^54d^4$	28% $4p^54d^4$ $(^3P2)^4S$	11% $4d^25p$ $(^1D)^2P$	8% $4p^54d^4$ $(^3P2)^4P$
448,989	232	7/2	$4d^25p$	31% $4d^25p$ $(^3F)^2F$	22% $4d^25p$ $(^3F)^4D$	12% $4d^25p$ $(^3P)^4D$
448,995 *		1/2	$4d^25p$	54% $4d^25p$ $(^3P)^4D$	36% $4d^25p$ $(^3F)^4D$	3% $4d^25p$ $(^3P)^2P$
449,006 *		9/2	$4p^54d^4$	16% $4p^54d^4$ $(^5D)^6F$	16% $4d^24f$ $(^3F)^4G$	14% $4p^54d^4$ $(^3H)^4G$
450,334 *		3/2	$4p^54d^4$	16% $4p^54d^4$ $(^3G)^4F$	12% $4d^24f$ $(^3F)^4F$	10% $4p^54d^4$ $(^3F2)^4D$
451,183	−53	3/2	$4d^25p$	31% $4d^25p$ $(^3P)^4S$	23% $4d^25p$ $(^1D)^2P$	13% $4d^25p$ $(^1D)^2D$
451,424 *		9/2	$4p^54d^4$	28% $4p^54d^4$ $(^5D)^6F$	14% $4p^54d^4$ $(^3H)^4G$	13% $4d^24f$ $(^3F)^4G$
451,430 *		5/2	$4p^54d^4$	17% $4p^54d^4$ $(^5D)^6F$	16% $4p^54d^4$ $(^3F2)^4D$	12% $4p^54d^4$ $(^5D)^6P$
451,946 *		1/2	$4p^54d^4$	41% $4p^54d^4$ $(^3F2)^4D$	12% $4p^54d^4$ $(^5D)^4D$	12% $4p^54d^4$ $(^3D)^4D$
452,041 *		7/2	$4p^54d^4$	28% $4p^54d^4$ $(^5D)^6F$	11% $4p^54d^4$ $(^3F2)^4D$	9% $4p^54d^4$ $(^5D)^6P$
452,292	198	9/2	$4d^25p$	22% $4d^25p$ $(^1G)^2G$	21% $4d^25p$ $(^3F)^4F$	18% $4d^25p$ $(^3F)^2G$
452,569	249	5/2	$4d^25p$	59% $4d^25p$ $(^1D)^2F$	12% $4d^25p$ $(^3F)^2F$	11% $4d^25p$ $(^3F)^2D$
452,857 *		3/2	$4d^25p$	28% $4d^25p$ $(^3P)^4D$	15% $4d^25p$ $(^3F)^4D$	11% $4p^54d^4$ $(^5D)^6P$
452,951 *		9/2	$4p^54d^4$	21% $4p^54d^4$ $(^5D)^6F$	20% $4d^24f$ $(^3F)^2G$	8% $4p^54d^4$ $(^3H)^2G$
453,404 *		3/2	$4d^25p$	24% $4d^25p$ $(^3P)^4D$	13% $4p^54d^4$ $(^3G)^4F$	11% $4d^25p$ $(^3F)^4D$
453,632 *		11/2	$4p^54d^4$	26% $4d^24f$ $(^3F)^4G$	22% $4p^54d^4$ $(^3H)^4G$	17% $4p^54d^4$ $(^3F2)^4G$
453,902	−209	7/2	$4d^25p$	52% $4d^25p$ $(^1G)^2G$	14% $4d^25p$ $(^1D)^2F$	11% $4d^25p$ $(^3F)^2G$
454,133 *		5/2	$4p^54d^4$	27% $4p^54d^4$ $(^3G)^4F$	12% $4d^24f$ $(^3F)^4F$	10% $4p^54d^4$ $(^3F2)^4D$
455,093 *		7/2	$4p^54d^4$	13% $4p^54d^4$ $(^3F2)^4D$	13% $4p^54d^4$ $(^5D)^6F$	13% $4p^54d^4$ $(^3G)^4F$
455,362 *		3/2	$4p^54d^4$	31% $4p^54d^4$ $(^5D)^6P$	18% $4p^54d^4$ $(^3D)^4P$	15% $4p^54d^4$ $(^3F2)^4D$
455,506 *		5/2	$4p^54d^4$	20% $4p^54d^4$ $(^3P1)^4P$	15% $4d^24f$ $(^3F)^4P$	10% $4p^54d^4$ $(^3P2)^4D$
457,009 *		1/2	$4d^25p$	50% $4d^25p$ $(^1D)^2P$	39% $4d^25p$ $(^3P)^4P$	5% $4d^25p$ $(^3F)^4D$
457,621	41	5/2	$4d^25p$	49% $4d^25p$ $(^3P)^4D$	19% $4d^25p$ $(^3F)^4D$	12% $4d^25p$ $(^3F)^2D$
457,734 *		7/2	$4d^24f$	80% $4d^24f$ $(^3F)^4H$	3% $4p^54d^4$ $(^3G)^4H$	3% $4p^54d^4$ $(^3H)^4G$
457,900	111	9/2	$4d^25p$	52% $4d^25p$ $(^3F)^2G$	33% $4d^25p$ $(^1G)^2G$	10% $4d^25p$ $(^1G)^2H$
457,882 *		9/2	$4p^54d^4$	22% $4d^24f$ $(^3F)^4H$	9% $4d^24f$ $(^3F)^4I$	9% $4p^54d^4$ $(^3H)^4H$
458,434 *		1/2	$4d^24f$	26% $4d^24f$ $(^3F)^2S$	18% $4p^54d^4$ $(^3D)^4P$	16% $4d^24f$ $(^3F)^4P$
458,503 *		9/2	$4d^24f$	34% $4d^24f$ $(^3F)^4H$	33% $4d^24f$ $(^3F)^4I$	7% $4d^24f$ $(^1D)^2H$
458,762 *		11/2	$4p^54d^4$	39% $4d^24f$ $(^3F)^4H$	23% $4p^54d^4$ $(^3H)^4H$	15% $4p^54d^4$ $(^3G)^4H$
459,044 *		7/2	$4p^54d^4$	19% $4d^24f$ $(^3F)^4F$	16% $4p^54d^4$ $(^5D)^6F$	15% $4p^54d^4$ $(^3P2)^4D$
459,146	−45	3/2	$4d^25p$	59% $4d^25p$ $(^3P)^4P$	11% $4d^25p$ $(^1D)^2P$	9% $4d^25p$ $(^1D)^2D$
460,347 *		13/2	$4p^54d^4$	31% $4d^24f$ $(^3F)^4H$	23% $4p^54d^4$ $(^3H)^4H$	22% $4p^54d^4$ $(^3G)^4H$
460,559	−65	7/2	$4d^25p$	37% $4d^25p$ $(^3P)^4D$	15% $4d^25p$ $(^1D)^2F$	12% $4d^25p$ $(^3F)^4D$
460,753 *		5/2	$4p^54d^4$	11% $4p^54d^4$ $(^3F2)^4F$	11% $4d^24f$ $(^3F)^2F$	11% $4d^24f$ $(^3F)^4F$
460,784 *		9/2	$4d^24f$	25% $4p^54d^4$ $(^3D)^4F$	20% $4d^24f$ $(^3F)^4I$	13% $4d^24f$ $(^3F)^4H$
460,974 *		11/2	$4d^24f$	57% $4d^24f$ $(^3F)^4I$	13% $4d^24f$ $(^3F)^4H$	7% $4p^54d^4$ $(^3H)^4I$

Table A11. *Cont.*

E [a]	o-c [b]	*J*	Config. [c]	Eigenvector Composition [d]		
461,009 *		1/2	4d^{2}5p	29% 4d^{2}5p (^{3}P)^{4}P	22% 4d^{2}5p (^{1}D)^{2}P	10% 4d^{2}4f (^{3}F)^{2}S
461,370 *		5/2	4p^{5}4d^4	15% 4p^{5}4d^4 (^{5}D)^{6}P	12% 4d^{2}5p (^{3}P)^{4}P	12% 4d^{2}5p (^{1}D)^{2}D
461,715 *		3/2	4p^{5}4d^4	15% 4d^{2}5p (^{1}D)^{2}D	11% 4p^{5}4d^4 (^{5}D)^{6}F	9% 4d^{2}5p (^{3}P)^{4}P
461,846 *		5/2	4d^{2}5p	30% 4d^{2}5p (^{1}D)^{2}D	22% 4d^{2}5p (^{3}P)^{4}P	10% 4d^{2}5p (^{3}P)^{4}D
461,926 *		3/2	4d^{2}5p	21% 4d^{2}5p (^{1}D)^{2}D	18% 4d^{2}5p (^{3}P)^{4}P	8% 4d^{2}5p (^{1}D)^{2}P
462,202 *		9/2	4d^{2}4f	29% 4p^{5}4d^4 (^{1}I)^{2}H	18% 4d^{2}4f (^{3}F)^{4}I	16% 4d^{2}4f (^{1}G)^{2}H
462,353 *		1/2	4d^{2}5p	17% 4d^{2}4f (^{3}F)^{2}S	14% 4d^{2}5p (^{3}P)^{4}P	11% 4d^{2}4f (^{3}F)^{4}P
462,396 *		5/2	4p^{5}4d^4	16% 4p^{5}4d^4 (^{5}D)^{6}P	15% 4p^{5}4d^4 (^{3}D)^{4}P	10% 4p^{5}4d^4 (^{5}D)^{4}P
462,523 *		7/2	4p^{5}4d^4	20% 4p^{5}4d^4 (^{3}F2)^{4}F	12% 4p^{5}4d^4 (^{3}F1)^{4}F	7% 4p^{5}4d^4 (^{3}D)^{4}F
462,635 *		3/2	4p^{5}4d^4	18% 4p^{5}4d^4 (^{5}D)^{6}F	7% 4p^{5}4d^4 (^{3}P2)^{4}S	7% 4d^{2}4f (^{3}F)^{4}F
463,146 *		9/2	4p^{5}4d^4	31% 4d^{2}4f (^{3}F)^{4}F	20% 4p^{5}4d^4 (^{3}F2)^{4}F	13% 4p^{5}4d^4 (^{3}F1)^{4}F
463,748 *		13/2	4d^{2}4f	53% 4d^{2}4f (^{3}F)^{4}I	26% 4d^{2}4f (^{3}F)^{4}H	16% 4p^{5}4d^4 (^{3}H)^{4}I
464,491 *		15/2	4p^{5}4d^4	58% 4p^{5}4d^4 (^{3}H)^{4}I	40% 4d^{2}4f (^{3}F)^{4}I	1% 4p^{5}4d^4 (^{1}I)^{2}K
464,230	−294	7/2	4d^{2}5p	21% 4d^{2}5p (^{1}D)^{2}F	16% 4d^{2}4f (^{3}F)^{4}D	8% 4p^{5}4d^4 (^{3}P2)^{4}D
464,852 *		11/2	4p^{5}4d^4	21% 4p^{5}4d^4 (^{1}I)^{2}H	18% 4d^{2}4f (^{1}D)^{2}H	16% 4d^{2}4f (^{1}G)^{2}H
465,027 *		1/2	4d^{2}4f	41% 4d^{2}4f (^{3}F)^{4}D	13% 4p^{5}4d^4 (^{5}D)^{6}F	10% 4d^{2}4f (^{3}F)^{2}S
465,143 *		3/2	4p^{5}4d^4	19% 4d^{2}4f (^{3}F)^{4}D	9% 4p^{5}4d^4 (^{1}F)^{2}D	7% 4d^{2}4f (^{1}D)^{2}D
465,394	−335	7/2	4d^{2}5p	28% 4d^{2}5p (^{3}P)^{4}D	17% 4d^{2}5p (^{1}D)^{2}F	11% 4p^{5}4d^4 (^{3}P2)^{4}D
465,872 *		5/2	4d^{2}5p	24% 4d^{2}5p (^{3}P)^{4}P	17% 4d^{2}5p (^{1}D)^{2}D	8% 4d^{2}5p (^{3}P)^{2}D
465,990	62	9/2	4d^{2}5p	68% 4d^{2}5p (^{1}G)^{2}H	28% 4d^{2}5p (^{1}G)^{2}G	1% 4d^{2}5p (^{3}F)^{4}F
466,458	26	5/2	4d^{2}5p	19% 4d^{2}5p (^{1}D)^{2}D	16% 4d^{2}5p (^{3}P)^{4}P	7% 4p^{5}4d^4 (^{3}F2)^{4}F
467,537 *		7/2	4p^{5}4d^4	11% 4d^{2}4f (^{3}F)^{2}G	10% 4p^{5}4d^4 (^{3}H)^{4}H	9% 4p^{5}4d^4 (^{3}G)^{4}G
467,914 *		3/2	4p^{5}4d^4	15% 4d^{2}4f (^{3}F)^{4}D	10% 4d^{2}5p (^{3}P)^{2}D	6% 4d^{2}4f (^{3}F)^{4}P
467,929 *		1/2	4p^{5}4d^4	26% 4p^{5}4d^4 (^{5}D)^{6}F	17% 4p^{5}4d^4 (^{3}F2)^{4}D	14% 4d^{2}4f (^{3}F)^{4}D
468,817	138	3/2	4d^{2}5p	46% 4d^{2}5p (^{3}P)^{2}D	15% 4d^{2}5p (^{3}P)^{2}P	11% 4d^{2}5p (^{3}F)^{2}D
468,895 *		11/2	4p^{5}4d^4	34% 4p^{5}4d^4 (^{3}G)^{4}G	24% 4p^{5}4d^4 (^{3}F2)^{4}G	13% 4d^{2}4f (^{3}F)^{4}H
469,199 *		5/2	4d^{2}4f	45% 4d^{2}4f (^{3}F)^{4}D	6% 4p^{5}4d^4 (^{3}P1)^{4}P	6% 4p^{5}4d^4 (^{5}D)^{6}F
469,249 *		11/2	4d^{2}4f	23% 4d^{2}4f (^{3}F)^{4}H	21% 4d^{2}4f (^{3}F)^{4}I	10% 4p^{5}4d^4 (^{3}H)^{4}H
469,387 *		3/2	4p^{5}4d^4	13% 4d^{2}4f (^{3}P)^{4}D	10% 4p^{5}4d^4 (^{3}F2)^{4}F	6% 4d^{2}4f (^{3}F)^{4}D
469,401 *		7/2	4p^{5}4d^4	19% 4d^{2}4f (^{3}P)^{4}D	14% 4p^{5}4d^4 (^{5}D)^{6}P	13% 4p^{5}4d^4 (^{3}P2)^{4}D
470,136 *		9/2	4p^{5}4d^4	21% 4p^{5}4d^4 (^{3}H)^{4}H	18% 4p^{5}4d^4 (^{3}G)^{4}G	15% 4d^{2}4f (^{3}F)^{4}H
470,867 *		7/2	4d^{2}4f	14% 4d^{2}4f (^{3}P)^{4}D	14% 4d^{2}4f (^{3}F)^{2}F	13% 4p^{5}4d^4 (^{3}H)^{4}H
471,042 *		5/2	4p^{5}4d^4	20% 4d^{2}4f (^{3}P)^{4}D	11% 4d^{2}4f (^{1}D)^{2}D	9% 4p^{5}4d^4 (^{3}D)^{4}D
471,491 *		1/2	4d^{2}5p	46% 4d^{2}5p (^{3}P)^{2}P	17% 4d^{2}4f (^{3}F)^{2}P	8% 4d^{2}4f (^{1}D)^{2}P
471,667	31	11/2	4d^{2}5p	92% 4d^{2}5p (^{1}G)^{2}H	2% 4p^{5}4d^4 (^{3}F2)^{4}G	1% 4d^{2}5p (^{3}F)^{4}G
471,960 *		5/2	4d^{2}5p	25% 4d^{2}5p (^{3}P)^{2}D	13% 4d^{2}5p (^{3}F)^{2}D	11% 4d^{2}5p (^{3}P)^{4}P
472,224 *		3/2	4d^{2}4f	23% 4d^{2}4f (^{3}F)^{2}P	21% 4d^{2}4f (^{1}D)^{2}P	6% 4d^{2}4f (^{3}F)^{4}D
472,431 *		5/2	4p^{5}4d^4	19% 4d^{2}5p (^{3}P)^{2}D	12% 4d^{2}4f (^{1}D)^{2}D	8% 4p^{5}4d^4 (^{1}F)^{2}D
472,982 *		9/2	4p^{5}4d^4	15% 4p^{5}4d^4 (^{3}F2)^{4}G	12% 4p^{5}4d^4 (^{3}G)^{4}G	12% 4d^{2}4f (^{3}F)^{2}G
473,124 *		3/2	4p^{5}4d^4	16% 4p^{5}4d^4 (^{1}S2)^{2}P	14% 4d^{2}4f (^{1}D)^{2}P	11% 4p^{5}4d^4 (^{1}F)^{2}D
473,235 *		13/2	4d^{2}4f	33% 4d^{2}4f (^{3}F)^{4}H	28% 4d^{2}4f (^{3}F)^{4}I	26% 4p^{5}4d^4 (^{3}H)^{4}H
474,478 *		11/2	4d^{2}4f	36% 4d^{2}4f (^{1}G)^{2}I	28% 4d^{2}4f (^{3}F)^{2}I	6% 4p^{5}4d^4 (^{3}F2)^{4}G
474,797 *		7/2	4d^{2}5p	61% 4d^{2}5p (^{1}G)^{2}F	7% 4d^{2}5p (^{1}G)^{2}G	6% 4d^{2}5p (^{1}D)^{2}F
474,983 *		1/2	4d^{2}4f	31% 4d^{2}4f (^{1}D)^{2}P	27% 4d^{2}5p (^{3}P)^{2}P	10% 4p^{5}4d^4 (^{1}D2)^{2}P
475,453	150	7/2	4p^{5}4d^4	19% 4p^{5}4d^4 (^{3}G)^{4}G	13% 4d^{2}5p (^{1}G)^{2}F	7% 4p^{5}4d^4 (^{3}D)^{4}F
475,428 *		9/2	4p^{5}4d^4	32% 4d^{2}4f (^{3}P)^{4}G	18% 4p^{5}4d^4 (^{3}F2)^{4}G	12% 4p^{5}4d^4 (^{1}G2)^{2}G
475,874 *		3/2	4d^{2}5p	23% 4d^{2}5p (^{3}P)^{2}P	10% 4d^{2}4f (^{3}P)^{4}D	8% 4d^{2}5p (^{3}P)^{2}D
476,126 *		5/2	4d^{2}4f	17% 4d^{2}4f (^{3}P)^{4}G	12% 4d^{2}4f (^{3}P)^{2}D	9% 4d^{2}4f (^{3}F)^{4}G
476,268 *		1/2	4p^{5}4d^4	14% 4d^{2}5p (^{3}P)^{2}P	12% 4p^{5}4d^4 (^{1}D2)^{2}P	11% 4d^{2}4f (^{3}F)^{2}P
476,658 *		13/2	4d^{2}4f	39% 4d^{2}4f (^{1}G)^{2}I	19% 4d^{2}4f (^{3}F)^{2}I	12% 4p^{5}4d^4 (^{1}I)^{2}I
476,896 *		15/2	4d^{2}4f	55% 4d^{2}4f (^{3}F)^{4}I	33% 4p^{5}4d^4 (^{3}H)^{4}I	11% 4p^{5}4d^4 (^{1}I)^{2}K
477,099 *		7/2	4p^{5}4d^4	13% 4d^{2}4f (^{3}P)^{4}G	11% 4p^{5}4d^4 (^{1}D2)^{2}F	11% 4p^{5}4d^4 (^{3}F2)^{4}G
477,494 *		1/2	4p^{5}4d^4	28% 4p^{5}4d^4 (^{5}D)^{6}F	24% 4d^{2}4f (^{3}P)^{4}D	14% 4p^{5}4d^4 (^{3}F1)^{4}D
477,525 *		5/2	4p^{5}4d^4	19% 4p^{5}4d^4 (^{3}G)^{4}G	17% 4d^{2}4f (^{1}D)^{2}F	8% 4p^{5}4d^4 (^{3}H)^{4}G
477,730 *		3/2	4d^{2}5p	35% 4d^{2}5p (^{3}P)^{2}P	8% 4d^{2}4f (^{3}P)^{4}D	6% 4d^{2}4f (^{1}D)^{2}D
478,297 *		7/2	4d^{2}4f	31% 4d^{2}4f (^{3}P)^{4}G	10% 4p^{5}4d^4 (^{1}D2)^{2}F	9% 4d^{2}4f (^{1}D)^{2}F
478,563 *		11/2	4p^{5}4d^4	23% 4p^{5}4d^4 (^{3}H)^{4}I	16% 4d^{2}4f (^{3}P)^{4}G	10% 4p^{5}4d^4 (^{3}F1)^{4}G
478,577 *		5/2	4d^{2}4f	28% 4d^{2}5p (^{1}G)^{2}F	14% 4d^{2}4f (^{3}P)^{2}D	6% 4d^{2}4f (^{3}F)^{2}D
479,341 *		9/2	4d^{2}4f	21% 4d^{2}4f (^{3}F)^{2}H	21% 4d^{2}4f (^{1}D)^{2}H	10% 4p^{5}4d^4 (^{3}G)^{2}H
479,610	45	5/2	4p^{5}4d^4	22% 4d^{2}5p (^{1}G)^{2}F	19% 4d^{2}4f (^{3}P)^{4}G	6% 4p^{5}4d^4 (^{1}G1)^{2}F
479,719 *		3/2	4p^{5}4d^4	23% 4p^{5}4d^4 (^{3}P2)^{2}D	9% 4p^{5}4d^4 (^{3}P1)^{2}D	7% 4d^{2}4f (^{3}F)^{2}D
479,718	−233	5/2	4d^{2}5p	35% 4d^{2}5p (^{1}G)^{2}F	14% 4d^{2}4f (^{3}P)^{4}G	5% 4p^{5}4d^4 (^{3}F2)^{4}G
480,710 *		13/2	4p^{5}4d^4	39% 4p^{5}4d^4 (^{3}H)^{4}I	18% 4p^{5}4d^4 (^{3}H)^{2}I	13% 4p^{5}4d^4 (^{3}G)^{4}H
570,288 *		9/2	4p^{5}4d^4	24% 4p^{5}4d^4 (^{1}G2)^{2}H	22% 4p^{5}4d^4 (^{1}G1)^{2}H	16% 4p^{5}4d^4 (^{3}F1)^{2}G
570,992 *		7/2	4p^{5}4d^4	47% 4p^{5}4d^4 (^{1}D1)^{2}F	17% 4p^{5}4d^4 (^{1}G2)^{2}F	12% 4p^{5}4d^4 (^{1}D2)^{2}F

Table A11. *Cont.*

E [a]	o-c [b]	*J*	Config. [c]	Eigenvector Composition [d]		
579,505	472	5/2	4d^{2}4f	32% 4d^{2}4f (^{3}F)^{4}G	28% 4p^{5}4d^4 (^{3}H)^{4}G	15% 4d^{2}4f (^{3}P)^{4}G
583,771	278	7/2	4p^{5}4d^4	32% 4d^{2}4f (^{3}F)^{4}G	31% 4p^{5}4d^4 (^{3}H)^{4}G	14% 4d^{2}4f (^{3}P)^{4}G
583,819	21	3/2	4p^{5}4d^4	22% 4d^{2}4f (^{3}F)^{4}F	20% 4p^{5}4d^4 (^{5}D)^{4}F	18% 4p^{5}4d^4 (^{3}F1)^{4}F
587,200	100	9/2	4p^{5}4d^4	29% 4p^{5}4d^4 (^{3}H)^{4}G	27% 4d^{2}4f (^{3}F)^{4}G	12% 4d^{2}4f (^{3}P)^{4}G
587,642	141	11/2	4d^{2}4f	17% 4p^{5}4d^4 (^{3}H)^{4}G	15% 4d^{2}4f (^{3}F)^{4}G	12% 4d^{2}4f (^{3}F)^{2}H
589,644	137	5/2	4p^{5}4d^4	24% 4p^{5}4d^4 (^{5}D)^{4}F	23% 4d^{2}4f (^{3}F)^{4}F	18% 4p^{5}4d^4 (^{3}G)^{4}F
590,280	472	3/2	4p^{5}4d^4	14% 4d^{2}4f (^{3}P)^{4}D	10% 4p^{5}4d^4 (^{3}F1)^{4}D	10% 4p^{5}4d^4 (^{3}F2)^{4}D
590,209 *		1/2	4p^{5}4d^4	21% 4d^{2}4f (^{3}P)^{4}D	16% 4p^{5}4d^4 (^{3}F1)^{4}D	15% 4d^{2}4f (^{3}F)^{4}D
594,111	557	5/2	4p^{5}4d^4	38% 4p^{5}4d^4 (^{1}D1)^{2}F	16% 4p^{5}4d^4 (^{1}G2)^{2}F	14% 4p^{5}4d^4 (^{1}D2)^{2}F
594533 *		5/2	4p^{5}4d^4	17% 4p^{5}4d^4 (^{3}F1)^{4}D	14% 4d^{2}4f (^{3}P)^{4}D	11% 4d^{2}4f (^{3}F)^{4}D
595,066	−292	3/2	4p^{5}4d^4	27% 4p^{5}4d^4 (^{3}P1)^{4}S	21% 4d^{2}4f (^{3}F)^{4}S	15% 4p^{5}4d^4 (^{3}P2)^{4}S
596,876	171	7/2	4p^{5}4d^4	25% 4p^{5}4d^4 (^{5}D)^{4}F	21% 4d^{2}4f (^{3}F)^{4}F	19% 4p^{5}4d^4 (^{3}G)^{4}F
596,885	−16	11/2	4d^{2}4f	22% 4d^{2}4f (^{3}F)^{2}I	20% 4d^{2}4f (^{1}G)^{2}I	15% 4p^{5}4d^4 (^{3}H)^{4}G
598,929	−85	7/2	4p^{5}4d^4	20% 4p^{5}4d^4 (^{3}F1)^{4}D	11% 4d^{2}4f (^{3}P)^{4}D	10% 4d^{2}4f (^{3}F)^{4}D
599,446	190	9/2	4p^{5}4d^4	18% 4p^{5}4d^4 (^{1}I)^{2}H	15% 4d^{2}4f (^{3}F)^{2}H	13% 4d^{2}4f (^{1}D)^{2}H
600,561	−15	13/2	4d^{2}4f	36% 4d^{2}4f (^{3}F)^{2}I	29% 4d^{2}4f (^{1}G)^{2}I	21% 4p^{5}4d^4 (^{1}I)^{2}I
601,905 *		3/2	4p^{5}4d^4	30% 4p^{5}4d^4 (^{1}S1)^{2}P	26% 4p^{5}4d^4 (^{1}D1)^{2}P	15% 4p^{5}4d^4 (^{1}S2)^{2}P
603,570	205	9/2	4p^{5}4d^4	22% 4p^{5}4d^4 (^{5}D)^{4}F	17% 4p^{5}4d^4 (^{3}G)^{4}F	15% 4d^{2}4f (^{3}F)^{4}F
605,674 *		5/2	4p^{5}4d^4	11% 4d^{2}4f (^{1}D)^{2}F	10% 4p^{5}4d^4 (^{1}G1)^{2}F	8% 4p^{5}4d^4 (^{3}F2)^{2}D
606,963	−39	3/2	4p^{5}4d^4	22% 4d^{2}4f (^{1}D)^{2}D	22% 4p^{5}4d^4 (^{1}F)^{2}D	6% 4p^{5}4d^4 (^{3}F2)^{2}D
609,152	153	7/2	4p^{5}4d^4	14% 4p^{5}4d^4 (^{3}G)^{2}G	13% 4p^{5}4d^4 (^{3}F2)^{2}G	11% 4d^{2}4f (^{3}F)^{2}G
612,491	−463	3/2	4p^{5}4d^4	21% 4p^{5}4d^4 (^{5}D)^{4}D	8% 4p^{5}4d^4 (^{3}F2)^{4}D	7% 4p^{5}4d^4 (^{5}D)^{4}P
612,769	−650	5/2	4p^{5}4d^4	17% 4p^{5}4d^4 (^{5}D)^{4}D	14% 4p^{5}4d^4 (^{5}D)^{4}P	7% 4p^{5}4d^4 (^{3}F2)^{4}D
613,700 *		1/2	4p^{5}4d^4	21% 4p^{5}4d^4 (^{3}P2)^{2}P	19% 4p^{5}4d^4 (^{1}D2)^{2}P	8% 4d^{2}4f (^{3}F)^{2}P
615,308	−172	11/2	4p^{5}4d^4	21% 4p^{5}4d^4 (^{3}H)^{2}H	14% 4d^{2}4f (^{3}F)^{2}H	12% 4p^{5}4d^4 (^{1}I)^{2}H
615,385	−297	1/2	4p^{5}4d^4	40% 4p^{5}4d^4 (^{5}D)^{4}D	10% 4p^{5}4d^4 (^{3}F2)^{4}D	9% 4p^{5}4d^4 (^{3}P2)^{2}S
615,884	−639	7/2	4p^{5}4d^4	19% 4p^{5}4d^4 (^{1}G2)^{2}G	18% 4p^{5}4d^4 (^{3}F1)^{2}G	13% 4d^{2}4f (^{1}G)^{2}G
616,475	−614	9/2	4p^{5}4d^4	15% 4p^{5}4d^4 (^{3}F2)^{2}G	14% 4p^{5}4d^4 (^{3}G)^{2}G	13% 4p^{5}4d^4 (^{1}G1)^{2}G
618,075	152	7/2	4p^{5}4d^4	14% 4d^{2}4f (^{3}P)^{2}F	12% 4d^{2}4f (^{1}D)^{2}F	11% 4p^{5}4d^4 (^{1}G1)^{2}F
618,058	−125	5/2	4p^{5}4d^4	13% 4p^{5}4d^4 (^{3}D)^{2}F	12% 4p^{5}4d^4 (^{1}D1)^{2}F	11% 4p^{5}4d^4 (^{1}F)^{2}D
618,894 *		1/2	4p^{5}4d^4	20% 4p^{5}4d^4 (^{1}S1)^{2}P	15% 4p^{5}4d^4 (^{1}D1)^{2}P	12% 4p^{5}4d^4 (^{3}P2)^{2}S
620,387 *		3/2	4p^{5}4d^4	20% 4p^{5}4d^4 (^{5}D)^{4}D	11% 4p^{5}4d^4 (^{3}D)^{2}P	6% 4d^{2}4f (^{3}F)^{2}P
621,061	107	9/2	4p^{5}4d^4	17% 4p^{5}4d^4 (^{1}G2)^{2}G	17% 4p^{5}4d^4 (^{3}H)^{2}H	11% 4p^{5}4d^4 (^{3}H)^{2}G
622,698 *		1/2	4p^{5}4d^4	15% 4p^{5}4d^4 (^{1}S1)^{2}P	14% 4p^{5}4d^4 (^{1}D1)^{2}P	10% 4p^{5}4d^4 (^{3}D)^{2}P
625,187 *		3/2	4p^{5}4d^4	12% 4p^{5}4d^4 (^{3}D)^{2}P	10% 4p^{5}4d^4 (^{5}D)^{4}P	8% 4p^{5}4d^4 (^{5}D)^{4}D
626,693	543	5/2	4p^{5}4d^4	10% 4p^{5}4d^4 (^{1}D1)^{2}F	10% 4p^{5}4d^4 (^{3}D)^{2}F	9% 4p^{5}4d^4 (^{3}F2)^{2}F
628,302	215	5/2	4p^{5}4d^4	27% 4p^{5}4d^4 (^{5}D)^{4}D	10% 4p^{5}4d^4 (^{3}F2)^{4}D	8% 4p^{5}4d^4 (^{3}F2)^{2}D
629,173	363	7/2	4p^{5}4d^4	56% 4p^{5}4d^4 (^{5}D)^{4}D	15% 4p^{5}4d^4 (^{3}F2)^{4}D	6% 4d^{2}4f (^{3}P)^{4}D
630,316	−277	3/2	4p^{5}4d^4	26% 4p^{5}4d^4 (^{5}D)^{4}P	11% 4p^{5}4d^4 (^{3}D)^{4}P	7% 4d^{2}4f (^{3}F)^{4}P
632,069	−311	9/2	4p^{5}4d^4	29% 4p^{5}4d^4 (^{3}H)^{2}H	12% 4p^{5}4d^4 (^{3}F1)^{2}G	10% 4p^{5}4d^4 (^{3}G)^{2}G
632,322	−117	5/2	4p^{5}4d^4	27% 4p^{5}4d^4 (^{5}D)^{4}P	14% 4p^{5}4d^4 (^{3}D)^{4}P	8% 4d^{2}4f (^{3}F)^{4}P
634,657	4	7/2	4p^{5}4d^4	24% 4p^{5}4d^4 (^{3}F2)^{2}F	19% 4p^{5}4d^4 (^{3}D)^{2}F	12% 4p^{5}4d^4 (^{1}G2)^{2}F
635,225 *		1/2	4p^{5}4d^4	24% 4p^{5}4d^4 (^{3}P1)^{2}P	17% 4p^{5}4d^4 (^{3}P2)^{2}S	14% 4p^{5}4d^4 (^{1}S2)^{2}P
637,178	286	1/2	4p^{5}4d^4	20% 4p^{5}4d^4 (^{5}D)^{4}P	17% 4p^{5}4d^4 (^{3}P2)^{2}S	9% 4p^{5}4d^4 (^{3}P1)^{2}P
638,134	− 70	5/2	4p^{5}4d^4	20% 4p^{5}4d^4 (^{3}F2)^{2}F	14% 4p^{5}4d^4 (^{3}F1)^{2}F	13% 4d^{2}4f (^{3}P)^{2}F
638,784	81	3/2	4p^{5}4d^4	18% 4p^{5}4d^4 (^{3}P2)^{2}P	12% 4p^{5}4d^4 (^{1}D2)^{2}P	11% 4p^{5}4d^4 (^{3}F2)^{2}D
639,262	308	11/2	4p^{5}4d^4	36% 4p^{5}4d^4 (^{3}H)^{2}H	32% 4p^{5}4d^4 (^{1}I)^{2}H	12% 4d^{2}4f (^{1}G)^{2}H
641,234	− 78	7/2	4p^{5}4d^4	16% 4p^{5}4d^4 (^{3}F1)^{2}F	16% 4p^{5}4d^4 (^{1}G2)^{2}F	13% 4p^{5}4d^4 (^{3}G)^{2}F
644,980	−248	9/2	4p^{5}4d^4	33% 4p^{5}4d^4 (^{3}H)^{2}G	17% 4p^{5}4d^4 (^{3}G)^{2}G	14% 4p^{5}4d^4 (^{3}F2)^{2}G
647,197	−45	7/2	4p^{5}4d^4	35% 4p^{5}4d^4 (^{3}H)^{2}G	15% 4p^{5}4d^4 (^{3}G)^{2}G	11% 4p^{5}4d^4 (^{3}F2)^{2}G
649,186	144	3/2	4p^{5}4d^4	20% 4p^{5}4d^4 (^{3}P1)^{2}P	14% 4p^{5}4d^4 (^{1}D2)^{2}P	12% 4p^{5}4d^4 (^{3}P2)^{2}P
651,880	259	5/2	4p^{5}4d^4	19% 4p^{5}4d^4 (^{3}P2)^{2}D	12% 4p^{5}4d^4 (^{3}F1)^{2}D	11% 4p^{5}4d^4 (^{1}D1)^{2}D
657,606	122	5/2	4p^{5}4d^4	38% 4p^{5}4d^4 (^{3}G)^{2}F	11% 4p^{5}4d^4 (^{3}F1)^{2}F	10% 4p^{5}4d^4 (^{1}G1)^{2}F
659,798	−619	7/2	4p^{5}4d^4	24% 4p^{5}4d^4 (^{1}G1)^{2}F	20% 4p^{5}4d^4 (^{3}G)^{2}F	17% 4p^{5}4d^4 (^{3}F1)^{2}F
664,136 *		1/2	4p^{5}4d^4	37% 4p^{5}4d^4 (^{1}S1)^{2}P	16% 4p^{5}4d^4 (^{3}P1)^{2}P	13% 4p^{5}4d^4 (^{1}S2)^{2}P
663,396	−939	3/2	4p^{5}4d^4	30% 4p^{5}4d^4 (^{3}P1)^{2}P	22% 4p^{5}4d^4 (^{1}D1)^{2}P	8% 4d^{2}4f (^{1}G)^{2}P
676,533	735	5/2	4p^{5}4d^4	36% 4p^{5}4d^4 (^{3}F1)^{2}D	13% 4p^{5}4d^4 (^{3}D)^{2}D	8% 4p^{5}4d^4 (^{1}F)^{2}D
680,196	360	3/2	4p^{5}4d^4	42% 4p^{5}4d^4 (^{3}F1)^{2}D	13% 4p^{5}4d^4 (^{3}D)^{2}D	11% 4p^{5}4d^4 (^{1}D1)^{2}D

[a] The star * indicates a calculated value for the level; [b] The difference between the observed and the calculated energies; [c] Configuration attribution is arbitrary in a few cases (see text); [d] For the eigenvector composition, up to three components with the largest percentages in the LS-coupling scheme are listed. The number following the terms of the 4d^4 configuration displays Nielson and Koster sequential indices [20].

Table A12. Energy parameters (in cm^{-1}) of the ground configuration in Ag VII, Ag VIII and Ag IX calculated by orthogonal parameter technique in comparison with the Dirac-Fock (DF) parameters.

Name	AgVII (4d^5)				AgVIII (4d^4)				AgIX (4d^3)			
	FIT	Error [a]	DF	FIT/DF	FIT	Error [a]	DF	FIT/DF	FIT	Error [a]	DF	FIT/DF
E_{av}	51914	3	60,863	0.853	37,710	6	42,776	0.882	27,795	8	31,440	0.884
O2	8652	2	10,175	0.850	8978	6	10,515	0.854	9295	8	10,834	0.858
O2′	5512	3	6923	0.796	5701	7	7128	0.800	5892	8	7323	0.805
Ea′	213	2			223	3			251	6		
Eb′	38	2			45	6			50	f		
ζ	2493	2	2428	1.027	2655	5	2603	1.020	2830	7	2782	1.017
T1	−4.62	0.08			−4.62	0.19			−4.85	0.36		
T2	0.40	f			0.50	f						
Ac	7.80	1.5	13.21	0.6	7.46	f	12.43	0.6	7.08	f	11.81	0.6
A3	1.93	r	3.27	0.6	1.90	f	3.18	0.6	1.87	f	3.13	0.6
A4	3.28	r	5.56	0.6	3.31	f	5.52	0.6	3.32	f	5.53	0.6
A5	3.16	r	5.36	0.6	3.31	f	5.51	0.6	3.42	f	5.71	0.6
A6	0.96	r	1.63	0.6	0.47	f	0.78	0.6	0.00	f	−0.00	1.0
A1	−0.10	r	−0.16	0.6	−0.05	f	−0.08	0.6	0	f	0	0.6
A2	−0.32	r	−0.55	0.6	−0.43	f	−0.72	0.6	−0.53	f	−0.88	0.6
A0	−0.49	r	0.29	0.6	−0.28	f	−0.46	0.6	−0.25	f	−0.42	0.6
σ	14				26				27			

[a] r—parameters are fixed at DF ratio to Ac, f- fixed parameter.

Table A13. Energy parameters (in cm^{-1}) of the 4d^{4}5p configuration in Ag VII and 4d^{3}5p configuration in Ag VIII calculated by orthogonal parameter technique in comparison with the DF parameters.

Name	Ag VII				Ag VIII			
	FIT	Error [a]	DF	FIT/DF	FIT	Error [b]	DF	FIT/DF
E_{av}	37,3862	2	384,168	0.973	41,1052	5	417,702	0.984
O2dd	8849	2	10,418	0.849	9147	8	10,738	0.852
O2′dd	5581	4	7070	0.789	5747	12	7265	0.791
Ea′	216	1			221	6		
Eb′	36	3			31	6		
T1	−4.86	0.09			−5.08	0		
T2	0.48	0.09			0.50	f		
ζ(4d)	2631	4	2572	1.023	2809	8	2747	1.022
Ac	8.01	1.8	12.68	0.63	11.76	f	11.76	1.0
A3	1.97	r1	3.12	0.63	3.44	f	3.44	1.0
A4	3.25	r1	5.15	0.63	5.40	f	5.40	1.0
A5	3.46	r1	5.48	0.63	5.68	f	5.68	1.0
A6	0.64	r1	1.02	0.62	0.18	f	0.18	1.0
A1	−0.17	r1	−0.28	0.63	−0.23	f	−0.23	1.0
A2	−0.63	r1	−1.00	0.63	−0.35	f	−0.35	1.0
A0	−0.69	r1	−1.10	0.63	−0.18	f	−0.19	1.0
C1dp	3702	4	4270	0.867	4012	11	4621	0.868
C2dp	2605	3	2998	0.869	2755	10	3176	0.867
C3dp	1258	4	1411	0.891	1321	10	1471	0.898
S1dp	67	3			63	8		
S2dp	−118	3			−129	8		
ζ(5p)	6317	5	5975	1.057	7268	14	6933	1.048
Sd.Lp	−27.49	1.5	−34.81	0.79	−27.2	f	−34.04	0.8
Sp.Ld	−2.77	r2	−3.52	0.79	−2.7	f	−3.46	0.8
Zp2ppa	−19.98	r2	−25.29	0.79	−20.0	f	−25.01	0.8
Zp2dda	13.74	r2	17.42	0.79	13.5	f	16.93	0.8
Zp1ppa	41.56	r2	52.62	0.79	41.2	f	51.56	0.8
Zp1dda	−2.94	r2	−3.71	0.79	−2.3	f	−2.99	0.8
Zp3ppa	10.85	r2	13.74	0.79	11.0	f	13.81	0.8
Zp3dda	−2.22	r2	−2.82	0.79	−2.3	f	−2.95	0.8
SS(dp)02	−1.53	r2	−1.95	0.79	−1.8	f	−2.32	0.8
SS(dp)20	−0.52	r2	−0.66	0.79	−0.3	f	−0.40	0.8

Table A13. *Cont.*

Name	Ag VII				Ag VIII			
	FIT	Error [a]	DF	FIT/DF	FIT	Error [b]	DF	FIT/DF
t16′	−23.8	2.8			−23.8	f		
t17′	8.0	2.8			8.0	f		
t18′	−10.4	2.9			−10.4	f		
t19′	−8.9	2.1			−8.9	f		
t20′	−42.2	3.6			−42.2	f		
t21′	−3.4	2.3			−3.4	f		
t22′	−14.4	4.6			−14.4	f		
t23′	−4.2	3.9			−4.2	f		
t24′	−7.5	2.9			−7.5	f		
t25′	3.6	2.5			3.6	f		
t26′	−33.5	3.0			−33.5	f		
t27′	18.5	2.4			18.5	f		
t28′	35.6	3.5			35.6	f		
t29′	−12.1	2.5			−12.1	f		
t30′	−45.5	2.7			−45.5	f		
t31′	−4.4	3.0			−4.4	f		
t32′	−0.3	2.2			−0.3	f		
t33′	11.9	2.8			11.9	f		
t34′	−30.2	3.2			−30.2	f		
t35′	−32.3	3.4			−32.3	f		
σ	19				47			

[a] r1—parameters are fixed at DF ratio to Ac, r1 parameters are fixed at DF ratio to Sd.Lp; [b] f—parameter is fixed on predetermined value.

Table A14. Fitted (FIT) with their uncertainties (Unc.) and Hartree - Fock (HF) energy parameters in cm^{-1} of the odd $4d^35p$, $4d^34f$, and $4p^54d^4$ configurations in Ag VIII and $4d^25p$, $4d^24f$ and $4p^54d^3$ configurations in Ag IX calculated with the Cowan code.

Name [a]	Ag VIII				Ag IX			
	HF	FIT	Unc. [b]	FIT/HF [c]	HF	FIT	Unc. [b]	FIT/HF [c]
E_{av}(5p)	417,702	412,728	26	−4974	459,300	455,716	88	−3584
F^2(4d,4d)	95,978	80,972	237	0.844	98,603	83,046	1159	0.842
F^4(4d,4d)	64,366	56,750	484	0.882	66,314	54,364	3227	0.820
α		49	5			71	26	
β		−627	−99			−600	f	
T1		−4	−1					
ζ(4d)	2702	2812	36	1.041	2870	2919	65	1.017
ζ (5p)	6510	7299	66	1.121	7426	8338	165	1.123
F^1(4d,5p)		−2072	−265			−2000	f	
F^2(4d,5p)	39,205	32,005	275	0.816	41,777	35,950	898	0.861
G^1(4d,5p)	12,359	10,505	137	0.850 [d]	12,926	11,649	342	0.901 [d]
G^3(4d,5p)	12,110	10,293	134	0.850 [d]	12,836	11,568	340	0.901 [d]
E_{av}(4f)	508,665	496,302	569	−12,363	522,389	507,990	380	−14,399
F^2(4d,4d)	95,126	80,381	f	0.845	97,640	80,359	f	0.823
F^4(4d,4d)	63,728	55,443	f	0.87	65,594	54,443	f	0.83
α		48	f			62	f	
β		−600	f					
T1		−4	f					
ζ(4d)	2652	2732	f	1.03	2808	2910	f	1.036
ζ(4f)	95	95	f	1.0	124	124	f	1.0

Table A14. *Cont.*

Name [a]	Ag VIII				Ag IX			
	HF	FIT	Unc. [b]	FIT/HF [c]	HF	FIT	Unc. [b]	FIT/HF [c]
F^2(4d,4f)	70,569	64,433	1452	0.913 [d]	78,433	71,374	f	0.91
F^4(4d,4f)	44,636	40,755	919	0.913 [d]	50,344	45,814	f	0.91
G^1(4d,4f)	83,516	72,648	572	0.87	93,840	85,394	f	0.91
G^3(4d,4f)	51,477	47,876	377	0.930 [d]	58,481	53,218	f	0.91
G^5(4d,4f)	36,169	33,640	265	0.930 [d]	41276	37,562	f	0.91
E_{av}(pd)	538,566	526,473	194	−12,093	529,361	52,3487	344	−5874
F^2(4d,4d)	94,305	79,014	393	0.838	97,018	85,702	496	0.883
F^4(4d,4d)	63,119	51,318	598	0.813	65,133	50,607	1080	0.777
α		48	f			60	f	
β		−600	f			−600	f	
T1		−4	f			−4	f	
ζ(4p)	29,355	29,355	f	1	30,239	30,576	415	1.011
ζ(4d)	2602	2849	f	1.095	2767	2782	116	1.005
F^2(4p,4d)	100,314	83,916	1065	0.837	102,723	79,518	973	0.774
G^1(4p,4d)	127,225	101,162	192	0.795 [d]	130,315	101,056	342	0.775 [d]
G^3(4p,4d)	79,353	63097	120	0.795 [d]	81,523	63,219	214	0.775 [d]
σ		213				327		

[a] E_{av}(5p), E_{av}(4f) and E_{av}(pd) stand for $E_{av}(4d^{k-1}5p)$, $E_{av}(4d^{k-1}4f)$ and $E_{av}(4p^5 4d^{k+1})$ for Ag VIII and Ag IX where k = 4 and 3, respectively; [b] f- parameter is fixed on predetermined value; [c] For E_{av} the FIT-HF difference is listed; [d] Adjacent pairs of parameters are linked at their HF ratios.

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