Spectral Data for Highly Ionized Krypton, Kr V through Kr XXXVI

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Wavelengths, energy levels, ionization energies, line classifications, intensities and transition probabilities for Kr V through Kr XXXVI, with the exception of Kr XI through Kr XVII, are tabulated. No data have been published for Kr XI through Kr XVII. These data are based on the energy levels compilation of Sugar and Musgrove [13]. Transition probabilities for selected M1 lines have been reported and are quoted here. A short review of the line identifications and wavelength measurements is given for each stage of ionization. The literature has been surveyed through February 1995. *©1995 American Institute of Physics and American Chemical Society.*

Key words: atomic data; energy levels; Grotrian diagrams; krypton; ions; spectra; transition probabilities; wavelengths.

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List of Tables of Spectroscopic Data

1. Introduction

We have undertaken publication of a series of compilations of spectra of highly ionized atoms of particular interest to the fusion energy community. These selected elements occur as impurities in wall materials of fusion machines or are specifically injected into the hot plasmas for diagnostics and plasma control. Much work on these spectra has appeared in recent years. We have critically compiled these data into single monographs for each element, including wavelengths, line classifications, intensities, transition probabilities, and a short review of the literature for each ion. We cite the uncertainties of the data as given by the authors. These rarely include the confidence level, but it is reasonable to assume that they represent at least one standard deviation of the measurements. We have previously published such compilations [1–9] for Ti, V, Cr, Mn, Fe, Co, Ni, Cu and Mo (Z=22–29, 42). The present compilation contains data for Kr V through Kr XXXVI, except for Kr XI through Kr XVII, for which no data have been

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published. One of the authors (T. S.) will supply Grotrian diagrams upon request from readers.

All relevant papers published through February 1995 were collected and critically evaluated, and the best measurements, in our judgement, were included in the tables. We also consulted the following comprehensive compilations: for wavelengths the tables by Kelly [10], for forbidden lines arising within ground configurations of the type ns^2np^k (n=2 and 3, k=1 to 5) the paper by Kaufman and Sugar [11], and a review article by Fawcett [12].

Sugar and Musgrove [13] have published a critical compilation of energy levels of Kr in all stages of ionization. Their values are adopted for this compilation, except where superseded by more recent data. For the He- and H-isoelectronic sequences, only theoretical results are given since they are considered to be more accurate than the experimental values. The latter are cited in the brief review.

We caution that the intensity estimates in experimental work are usually visual estimates of relative plate blackening. There is generally no correlation between intensity estimates by different authors, or by the same author for widely different wavelength ranges.

We give wavelengths in air above 2000 Å and in vacuum below 2000 Å. For conversion of ionization energies from cm^{-1} to eV, we use the conversion factor 8065.5410±0.0024 cm^{-1}/eV given by Cohen and Taylor [14]. In the following section we give brief comments on each ion, including the accuracy of the wavelength data.

1.1. Acknowledgments

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1.2. References for Introduction

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2. Brief Comments on Spectra of Each Krypton Ion

Kr v (Ge sequence)

Ground state $1s^22s^22p^63s^23p^63d^{10}4s^24p^2\ ^3\mathrm{P}_0$

Ionization energy 521 800 cm^{-1} (64.7 eV)

The $4s^24p^2-4s^24p4d$ and $4s^24p^2-4s4p^3$ transition arrays were identified by Fawcett and Bromage [1]. They measured 29 lines in the range of 465−811 Å with an uncertainty of ±0.03 Å. More accurate wavelengths and an extended analysis were given by Trigueiros *et al.* [2] in the range of 434−910 Å. They augmented the identifications to 50 lines, including revisions of classifications of a few lines in Ref. 1. Observations were made with a theta-pinch plasma source with a measurement uncertainty of ±0.01 Å. We have adopted their results.

Kr vi (Ga sequence)

Ground state $1s^22s^22p^63s^23p^63d^{10}4s^24p\ ^2\mathrm{P}^\circ_{1/2}$

Ionization energy 633 100 cm^{-1} (78.5 eV)

The $4s^24p-4s4p^2$ and $4s^24p-4s^24d$ transition arrays were identified by Fawcett *et al.* [3] in a Z-pinch plasma source. Trigueiros *et al.* [4] reobserved the spectrum more fully in a wider range of 450−960 Å using a theta-pinch plasma source. They classified seven lines in the range of 936−960 Å as the $4s^24d\ ^2\mathrm{D}-4s^25p\ ^2\mathrm{P}^\circ$ doublet. The uncertainty of their wavelengths is ±0.01 Å.

Twenty-two emission lines, including intercombination transitions, from the terms of $4s4p^2\ ^4\mathrm{P}$, $4p^3\ ^4\mathrm{S}^\circ$, $^2\mathrm{D}^\circ$, $^2\mathrm{P}^\circ$, $4s^25s\ ^2\mathrm{S}$, and $4s^24f\ ^2\mathrm{F}^\circ$ were identified by Tauheed *et al.* [5] in a beam-foil spectrum in the range of 363−1054 Å. The uncertainty of their wavelengths varies from ±0.2 Å to ±0.5 Å. The spectrum was observed from 230−2540 Å by Pagan *et al.* [6] with an uncertainty of ±0.01 to ±0.005 Å. New values for the $4s4p^2\ ^2\mathrm{S}$ level and the $4s^25p\ ^2\mathrm{P}^\circ_{1/2,3/2}$ were found, replacing those given in Ref. 4. The $4s^24f\,^2\mathrm{F}^\circ_{5/2,7/2}$ levels reported in Ref. 5 were revised and the designations were changed to $4s4p(^1\mathrm{P}^\circ)4d\ ^2\mathrm{F}^\circ$ in accordance with a calculation of the eigenvectors. The value for the $4p^3\ ^2\mathrm{P}^\circ_{1/2}$ level given in Ref. 5 was also changed. In addition to these corrections Pagan *et al.* [6] identified most of the levels of the $4s4p4d$ configuration and all but one of the $4s4p5s$. They have reevaluated all of the energy levels with their new measurements and have given percentage compositions for them.

It should be noted that earlier works of Druetta and Buchet [7] and Livingston [8] are less accurate and incompatible with the level scheme adopted here.

Jacquet *et al.* [9] observed three-electron capture transitions $4s^26g-4s^27h$ and $4s^26h-4s^27i$ at 3381.7 Å and 3394.7 Å.

Kr VII (Zn sequence)

Ground state $1s^22s^22p^63s^23p^63d^{10}4s^2\ ^1S_0$

Ionization energy 895 300 cm^{-1} (111.0 eV)

The first observation was reported by Fawcett *et al.* [3], who identified the $4s^2\ ^1S_0-4s4p\ ^1P^\circ_1$ resonance line at 585.37 Å and the $4s4p\ ^3P^\circ_2-4p^2\ ^3P_2$ line at 618.67 Å in a Z-pinch plasma discharge. The analysis was extended by Druetta and Buchet [7], Livingston [8], and Pinnington *et al.* [10] with beam-foil plasma sources and by Trigueiros *et al.* [11] using a theta-pinch plasma source. Trigueiros *et al.* [11] identified 22 lines as transitions between levels of the $4s^2$, $4s4d$, $4p^2$, and $4s4p$ configurations with an uncertainty of ±0.01 Å. Their results are given here.

Trigueiros *et al.* [12] identified 17 new lines in the range of 200−2070 Å comprising the $n=4-4$, $n=4-5$, and $n=5-5$ transitions, with an uncertainty of ±0.01 Å. The $n=4-5$ transitions were also observed by Bouchama *et al.* [13] in an experiment on electron capture into excited states. Extended analyses were made by Pinnington *et al.* [14] in a beam-foil experiment. They reobserved the spectrum in the range of 554−2080 Å with uncertainties of ±0.2 Å to ±0.5 Å. Wavelengths adopted here are taken from Refs. 12, 13, and 14. Five lines in Ref. 12 from the upper levels $4s5s\ ^1S_0$ and $4s5p\ ^1P^\circ_1$ and $^3P^\circ_0$ at 200.07 Å, 356.33 Å, 704.32 Å, 831.07 Å, and 2068.83 Å have been omitted, because they are inconsistent with the measurements of Bouchama *et al.* [13] and with Pinnington *et al.* [14]. Moreover, the $4s5s\ ^3S_1-4s5p\ ^3P^\circ_{1,0}$ lines at 1832.5 Å and 1847.5 Å in Ref. 14 disagree by 1.2 Å and 1.3 Å with those calculated from the level values. However, they are retained as tentative classifications.

Jacquet *et al.* [9] observed double-electron-capture transitions by Kr^{8+} ions impinging on neutral Li. Transitions $4snl-4sn'l'$ with $n\geqslant 6$ in the range of 2494−5659 Å were identified. They have been omitted because their classifications are incomplete.

Kr VIII (Cu sequence)

Ground state $1s^22s^22p^63s^23p^63d^{10}4s\ ^2S_{1/2}$

Ionization energy 1 014 665 cm^{-1} (125.802 eV)

The resonance doublet $4s\ ^2S-4p\ ^2P^\circ$ was first identified by Fawcett *et al.* [3] in a Z-pinch plasma and by Druetta and Buchet [7], who also observed the three lines of the $4p\ ^2P^\circ-4d\ ^2D$ doublet in a beam-foil spectrum. Livingston *et al.* [15] reobserved the spectrum in the range of 180−2000 Å with a beam-foil plasma. They identified twenty new transitions, including $4d-4f$, $4f-5g$, $5g-6h$, and $6h-7i$. The $4p\ ^2P^\circ_{1/2,3/2}-5d\ ^2D^\circ_{3/2,5/2}$ lines at 201.1 Å and 204.9 Å were newly identified by McPherson *et al.* [16]. Improved measurements in the range of 288−2000 Å were made by Gallardo *et al.* [17] with a theta-pinch plasma with an uncertainty of ±0.02 Å. The $5p-6s$ transition was observed by them and Bouchama *et al.* [13] who also reported $n=4-6$ transitions.

Reader *et al.* [18] provided identifications of the $3d^{10}nl-3d^{10}n'l'$ transitions through $7i$, as well as $3d^{10}4s-3d^94s4p$, and $3d^{10}4p-3d^94p^2$ transitions in the range of 114−700 Å. Their wavelength uncertainty was ±0.008 Å. They used wavelengths for lines above 1000 Å from Gallardo *et al.* [17] We quote their results. Calculated values are given for the $5p-6s$ and $4d-6p$ lines, because the measured wavelengths [13,17] are inconsistent with those calculated from the levels of Reader *et al.* [18].

In colliding beams of Kr^{8+} and Li Jacquet *et al.* [9] observed 46 lines above 1916 Å and ascribed them to Kr^{7+} due to electron-capture. We adopt all the classifications except for the $7p-7d$, $5f\ ^2F^\circ_{7/2}-6d\ ^2D_{5/2}$, and $6d\ ^2D_{5/2}-7p\ ^2P^\circ_{3/2}$ doublets because of deviations greater than 1 Å present between their wavelengths and those calculated from the levels of Reader *et al.* [18].

Kr IX (Ni sequence)

Ground state $1s^22s^22p^63s^23p^63d^{10}\ ^1S_0$

Ionization energy 1 862 900 cm^{-1} (230.85 eV)

The $3d^{10}-3d^94p$, $4f$ resonance transitions were identified by Fawcett and Gabriel [19] in a theta-pinch plasma. Reader *et al.* [18] made improved measurements for these transitions with an uncertainty of ±0.005 Å in a low-inductance spark discharge.

Kr X (Co sequence)

Ground state $1s^22s^22p^63s^23p^63d^9\ ^2D_{5/2}$

Ionization energy 2 163 000 cm^{-1} (268.2 eV)

Fawcett and Gabriel [19] identified five lines belonging to the $3d^9-3d^84p$ array in the range of 99−104 Å. Reader *et al.* [20] classified 44 lines in the range of 91−105 Å obtained with a spark discharge as the $3p^63d^9-3p^53d^{10}$ and $3p^63d^9-3p^63d^84p$ transitions. The uncertainty of their wavelengths is ±0.005 Å. We quote their results.

Kr XI (Fe sequence)

Ground state $1s^22s^22p^63s^23p^63d^8\ ^3F_4$

Ionization energy 2 486 000 cm^{-1} (308.2 eV)

No wavelengths have been reported for this spectrum.

Kr XII (Mn sequence)

Ground state $1s^22s^22p^63s^23p^63d^7\ ^4F_{9/2}$

Ionization energy 2 824 000 cm^{-1} (350.1 eV)

No wavelengths have been reported for this spectrum.

Kr XIII (Cr sequence)

Ground state $1s^22s^22p^63s^23p^63d^6\ ^5D_4$

Ionization energy 3 153 000 cm^{-1} (390.9 eV)

No wavelengths have been reported for this spectrum.

Kr XIV (V sequence)

Ground state $1s^22s^22p^63s^23p^63d^5\ ^6S_{5/2}$

Ionization energy 3 602 000 cm^{-1} (446.6 eV)

No wavelengths have been reported for this spectrum.

Kr XV (Ti sequence)

Ground state $1s^22s^22p^63s^23p^63d^4\ ^5D_0$

Ionization energy 3 967 000 cm^{-1} (491.8 eV)

No wavelengths have been reported for this spectrum.

Kr XVI (Sc sequence)

Ground state $1s^22s^22p^63s^23p^63d^3\ ^4F_{3/2}$

Ionization energy 4 361 000 cm^{-1} (540.7 eV)

No wavelengths have been reported for this spectrum.

Kr XVII (Ca sequence)

Ground state $1s^22s^22p^63s^23p^63d^2\ ^3F_2$

Ionization energy 4 771 000 cm^{-1} (591.5 eV)

No wavelengths have been reported for this spectrum.

Kr XVIII (K sequence)

Ground state $1s^22s^22p^63s^23p^63d\ ^2D_{3/2}$

Ionization energy 5 170 000 cm^{-1} (641 eV)

The $3p^63d-3p^53d^2$ and $3p^63d-3p^64f$ lines in the ranges of 91.3−93.6 Å and 35.1−35.4 Å, respectively, were first identified by Wyart and the TFR Group [21]. Their tokamak-plasma measurements have an uncertainty of ±0.015 Å. The spectrum in the range of 92.2−102 Å was reobserved by Kaufman *et al.* [22] with an uncertainty of ±0.005 Å in a similar light source. They found four of the seven lines given by Wyart and the TFR Group [21] and identified two new lines at 99.330 Å and 102.001 Å as the $3p^63d\ ^2D_{5/2,3/2}-3p^5(^2P^\circ)3d^2(^1G)\ ^2F^\circ_{7/2}$, $(^3F)\ ^2F^\circ_{5/2}$ transitions.

Kr XIX (Ar sequence)

Ground state $1s^22s^22p^63s^23p^6\ ^1S_0$

Ionization energy 6 339 000 cm^{-1} (785.9 eV)

The resonance transitions $3p^6\ ^1S_0-3p^53d\ ^1P^\circ_1$, $^3D^\circ_1$ were identified by Wyart and the TFR Group [21] as the lines at 96.263±0.015 Å and 118.063±0.015 Å observed in a tokamak plasma. Sugar *et al.* [23] reobserved them at 96.238 Å and 118.672 Å with a similar light source. From a plot of transition energy differences between observed and calculated values along the isoelectronic sequence they derived smoothed values with an uncertainty of ±0.005 Å. We adopted their results.

Kr XX (Cl sequence)

Ground state $1s^22s^22p^63s^23p^5\ ^2P^\circ_{3/2}$

Ionization energy 6 719 000 cm^{-1} (833.0 eV)

Four lines of the $3p^5-3p^43d$ array were identified by the TFR Group and Wyart [26] with an uncertainty of ±0.02 Å. Improved measurements were obtained by Kaufman *et al.* [25] with an uncertainty of ±0.005 Å.

Kr XXI (S sequence)

Ground state $1s^22s^22p^63s^23p^4\ ^3P_2$

Ionization energy 7 129 000 cm^{-1} (883.9 eV)

Six lines of the $3p^4-3p^33d$ array were identified by Kaufman *et al.* [27] with an uncertainty of ±0.007 Å. They predicted energy levels of the $3p^4$ ground configuration and gave predicted wavelengths for the magnetic-dipole transitions: $^3P_0-{}^3P_1$, $^3P_2-{}^3P_1$, $^3P_1-{}^1D_2$, $^3P_2-{}^1D_2$, and $^3P_1-{}^1S_0$. Roberts *et al.* [24] ascribed the line at 1268.7±0.2 Å observed in a tokamak discharge to the $^3P_2-{}^3P_1$ line.

Kr XXII (P sequence)

Ground state $1s^22s^22p^63s^23p^3\ ^4S^\circ_{3/2}$

Ionization energy 7 555 000 cm^{-1} (936.7 eV)

Sugar *et al.* [28] classified six lines of the $3p^3-3p^23d$ array, obtained with an uncertainty of ±0.005 Å in a tokamak discharge. They derived the energy levels of the $3p^3$ ground configuration by interpolation on a curve of calculated minus observed M1 transition energies, and gave a predicted wavelength of 913.1±0.2 Å for the $^2D^\circ_{5/2}-^2P^\circ_{3/2}$ magnetic-dipole transition. This was found by Roberts *et al.* [24] at 912.0±1.0 Å.

Kr xxiii (Si sequence)

Ground state $1s^22s^22p^63s^23p^2\ ^3P_0$

Ionization energy 8 047 000 cm^{-1} (997.7 eV)

Roberts *et al.* [24] observed the $3p^2\ ^3P_1-^3P_2$, $^3P_0-^3P_1$, and $^3P_1-^1D_2$ magnetic-dipole transitions at 3840.9±0.3 Å, 1461.8±0.2 Å, and 853.8±1.0 Å in a tokamak discharge. For the $^3P_0-^3P_1$ line, Benjamin *et al.* [29] obtained the wavelength 1462.65±0.03 Å with the same tokamak.

Four lines of the $3p^2-3p3d$ array were identified by the TFR Group and Wyart [26] in the range of 116−145 Å. More extensive and accurate measurements were made by Sugar *et al.* [30], who ascribed eleven lines to the above array measured with an uncertainty of ±0.005 Å. Their results are given here. Sugar *et al.* [30] revised the classification of $3p^2\ ^3P_2-3p3d\ ^1P^\circ_1$ in Ref. 26 as $3s^23p^2\ ^3P_2-3s3p^3\ ^3S^\circ_1$.

Kr xxiv (Al sequence)

Ground state $1s^22s^22p^63s^23p\ ^2P^\circ_{1/2}$

Ionization energy 8 476 000 cm^{-1} (1050.9 eV)

The $3s^23p-3s^23d$, $3s3p^2$ arrays were identified by Wyart and the TFR Group [21] and the TFR Group and Wyart [26] in a tokamak discharge and by Stewart *et al.* [31] in a *Z*-pinch plasma. These transitions, except for the $3s^23p\ ^2P^\circ_{1/2}-3s3p^2\ ^2P_{1/2}$ at 132.44±0.02 Å, were reobserved by Sugar *et al.* [32] with an uncertainty of ±0.01 Å. An isoelectronic comparison of the measured wavelengths with Hartree-Fock calculations was made by them, and smoothed wavelengths were derived. We give these results. The smoothed wavelength corresponding to the $3s^23p\ ^2P^\circ_{1/2}-3s3p^2\ ^2P_{1/2}$ is 132.498 Å, which is different by 0.06 Å from the value of the TFR Group and Wyart [26].

Three $3s^23p\ ^2P^\circ-3s3p^2\ ^4P$ intercombination transitions were identified by Jupén *et al.* [33] with an uncertainty of ±0.02 Å using a tokamak light source. The $^2P^\circ_{1/2}-^4P_{1/2}$ line at 242.56 Å is blended with the Mg-like intercombination transition $3s^2\ ^1S_0-3s3p\ ^3P^\circ_1$.

Kr xxv (Mg sequence)

Ground state $1s^22s^22p^63s^2\ ^1S_0$

Ionization energy 9 287 000 cm^{-1} (1151.4 eV)

Roberts *et al.* [24] identified the $3s3p\ ^3P^\circ_1-^3P^\circ_2$ magnetic-dipole transition at 1277.1±1.0 Å. The value calculated from the levels derived with E1 lines by Sugar *et al.* [34] is 1275.0 Å.

The first observation of the $3s^2\ ^1S_0-3s3p\ ^1P^\circ_1$ transition was reported by Hinnov [35] at 159.0±0.5 Å using a tokamak discharge. Wyart and the TFR Group [21] observed 11 lines of the $3s^2-3s3p$, $3s3p-3s3d$, $3s3p-3p^2$ arrays in the range of 110−243 Å. They also observed the $3s^2\ ^1S_0-3s4p\ ^1P^\circ_1$ line at 21.840±0.015 Å. The TFR Group and Wyart [26] withdrew the identification of two lines in Ref. 21, the $3s3p\ ^3P^\circ_{1,2}-3s3d\ ^3D_2$ at 129.895 Å and 144.665 Å. The $3s3p\ ^3P^\circ_0-3s3d\ ^3D_1$ line was identified by Stewart *et al.* [31] in a *Z*-pinch plasma. Sugar *et al.* [34] remeasured the $3s^2\ ^1S_0-3s3p\ ^{1,3}P_1$, $3s3p\ ^3P^\circ_2-3p^2\ ^3P_2$, and $3s3p\ (^3P^\circ_{0,2},^1P^\circ_1)-3s3d\ (^3D_{1,3},^1D_2)$ lines with an uncertainty of ±0.005 Å in a tokamak discharge. They derived smoothed wavelengths, except for the $3s3p\ ^3P^\circ_0-3s3d\ ^3D_1$ transition, in an isoelectronic comparison with Dirac-Fock calculations.

Churilov *et al.* [36] analyzed the $3p3d-3d^2$ transitions from the spectrum observed by Stewart *et al.* [31] in the range of 129.3−246 Å. They included data from Ref. 21. They identified 35 $n=3-3$ lines. Seven of them, comprising the $3s3p\ ^3P^\circ_1-3s3d\ ^3D_2$ line and six $3s3p-3p^2$ lines, were reobserved by Jupén *et al.* [33], who ascribed the line at 129.420 Å to the $3s3p\ ^3P^\circ_1-3s3d\ ^3D_2$ transition. The uncertainty of their wavelengths is ±0.02 Å. The $3s3p\ ^1P^\circ_1-3p^2\ ^3P_2$ line at 217.03 Å has a deviation of ±0.06 Å from the value calculated with the levels [34].

It should be noted that many wavelengths taken from Ref. 36, especially those of blended lines, exceed the stated uncertainty of ±0.03 Å, compared with wavelengths calculated from the level values adopted here.

Kr xxvi (Na sequence)

Ground state $1s^22s^22p^63s\ ^2S_{1/2}$

Ionization energy 9 721 300 cm^{-1} (1205.3 eV)

Hinnov [35] first identified the $3s-3p$ resonance doublet in a tokamak plasma. In addition to this doublet, Wyart and the TFR Group [21] measured 12 new lines, including the $3p-3d$, the $4f-5g$, and $n=3-4$ transitions. The uncertainties of the wavelengths above 100 Å and of those below 100 Å are estimated to be ±0.015 Å and ±0.03 Å, respectively. Jupén *et al.* [33] identified the line at 165.12±0.02 Å as the $3p\ ^2P^\circ_{3/2}-3d\ ^2D_{3/2}$ transition. An isoelectronic comparison of the measured wavelengths of the $3s-3p$, $3p-3d$, and $3d-4f$ doublets with Dirac-Fock calculations was made by Reader *et al.* [37] for Ar^{7+} to Xe^{43+}, and least squares adjusted (smoothed) wavelengths were derived. The overall uncertainty estimate is ±0.007 Å. We give these results here.

An extended analysis using a *Z*-pinch plasma was given by Stewart *et al.* [31] in the range of 15−221 Å. They reobserved the above lines and identified the $n=4-5$, and $n=3-5$ transitions with an uncertainty of ±0.03 Å. Additional lines are taken from these results.

The inner-shell $2p-3s$ transitions were observed by Burkhalter *et al.* [38] in the range of 7.3–7.6 Å with a Z-pinch plasma source. Two lines, $2p^6 3s\ ^2\mathrm{S}_{1/2}-2p^5 3s^2\ ^2\mathrm{P}^\circ_{1/2,3/2}$ at 7.322±0.003 Å and 7.570±0.003 Å, are adopted here. The other 10 lines are not resolved.

Kr XXVII (Ne sequence)

Ground state $1s^2 2s^2 2p^6\ ^1\mathrm{S}_0$

Ionization energy 23 616 000 cm^{-1} (2928 eV)

Stewart *et al.* [31] proposed identifications of the $n=3-3$ transitions with 14 lines measured in a Z-pinch plasma source. An extended analysis of the $2p^5 3s-2p^5 3p$ and $2p^5 3p-2p^5 3d$ transitions was made by Buchet *et al.* [39], who identified 28 lines of these transitions in a beam-foil experiment. The uncertainty of the wavelengths ranges from ±0.05 Å to 0.2 Å. The lines at 147.51 Å, 158.45 Å, and 170.55 Å are tentatively identified. The last is confirmed in an isoelectronic study by Nilsen and Scofield [40] but the first is given as 149.77 Å. We adjusted the level values of the $2p^5 3p\ ({}^1/_2,{}^3/_2)^\circ_1$, $2p^5 3d\ ({}^3/_2,{}^5/_2)^\circ_4$, and $2p^5 3d\ ({}^1/_2,{}^5/_2)^\circ_2$ to 14 283 900 cm^{-1}, 14 399 000 cm^{-1}, and 14 858 300 cm^{-1}, so as to get a better agreement with the measured wavelengths.

The $2s-3p$, $2p-3s$, and $3d$ transitions in the range of 6.3–7.6 Å were observed by Burkhalter *et al.* [38] and Gordon *et al.* [41] in a Z-pinch plasma and a laser-produced plasma, respectively. The wavelengths with an uncertainty of ±0.005 Å are from Gordon *et al.* [41]

Kr XXVIII (F sequence)

Ground state $1s^2 2s^2 2p^5\ ^2\mathrm{P}^\circ_{3/2}$

Ionization energy 24 760 000 cm^{-1} (3070 eV)

The $2s^2 2p^5\ ^2\mathrm{P}^\circ_{3/2,1/2}-2s2p^6\ ^2\mathrm{S}_{1/2}$ transitions were identified by Wyart and the TFR Group [21] and reobserved by Dietrich *et al.* [42] using a Z-pinch plasma source. In addition to observing these lines at 52.594±0.020 Å and 68.733±0.030 Å, in a tokamak plasma, Denne *et al.* [43] identified a line at 223.995±0.030 Å as the $^2\mathrm{P}^\circ_{3/2}-{}^2\mathrm{P}^\circ_{1/2}$ magnetic-dipole transition in the ground configuration. We adopted their results.

Burkhalter *et al.* [38] observed the spectrum in the range of 6.1–7.2 Å with a Z-pinch plasma and identified the $2p^5-2p^4$ $3s$, $3d$, $2s^2 2p^5-2s2p^5 3p$, and $2s2p^6-2p^6 3p$ transitions. We have changed the $2p^4$ parent term of the $2p^4 3s$ configuration to $^3\mathrm{P}_0$, $^3\mathrm{P}_1$, and $^3\mathrm{P}_1$ for the lines at 7.123 Å, 6.997 Å, and 6.975 Å, respectively based on our calculation of the percent composition of the levels with Cowan's code [44]. Concerning the $2p^5-2p^4 3d$ line at 6.449 Å, we find no correspondence with a theoretical level.

Kr XXIX (O sequence)

Ground state $1s^2 2s^2 2p^4\ ^3\mathrm{P}_2$

Ionization energy 26 030 000 cm^{-1} (3227 eV)

Wyart and the TFR Group [21] identified three lines of the $2s^2 2p^4-2s2p^5$ array in a tokamak discharge. This array was augumented to seven lines by Dietrich *et al.* [42] using a Z-pinch plasma and to nine lines by Denne *et al.* [43] using a tokamak. The latter reference includes two magnetic-dipole transitions $2s^2 2p^4\ ^3\mathrm{P}_2-{}^1\mathrm{D}_2$ and $^3\mathrm{P}_2-{}^3\mathrm{P}_1$ at 190.515 Å±0.03 Å and 235.95±0.10 Å, respectively. We give the results of Denne *et al.* [43] with a measurement uncertainty of ±0.03 Å, supplemented by the $2s^2 2p^4-2s2p^5\ ^1\mathrm{D}_2-{}^1\mathrm{P}^\circ_1$ transition at 53.977±0.015 Å reported by Wyart and TFR Group [21] and the $^3\mathrm{P}_1-{}^3\mathrm{P}^\circ_0$ transition at 58.48±0.05 Å by Dietrich *et al.* [42].

Kr XXX (N sequence)

Ground state $1s^2 2s^2 2p^3\ ^4\mathrm{S}^\circ_{3/2}$

Ionization energy 27 270 000 cm^{-1} (3381 eV)

Denne *et al.* [43] identified the magnetic-dipole lines $2s^2 2p^3\ ^2\mathrm{S}^\circ_{3/2}-{}^2\mathrm{D}^\circ_{3/2,5/2}$ at 259.807±0.020 Å and 205.247 ±0.025 Å in a tokamak discharge. In addition, the $^4\mathrm{S}^\circ_{3/2}-{}^2\mathrm{P}^\circ_{1/2}$ line was tentatively identified at 160.90±0.10 Å. They also reported the three strong lines of the $2s^2 2p^3\ ^4\mathrm{S}^\circ-2s2p^4\ ^4\mathrm{P}$ multiplet and four weaker lines of this multiplet in the range of 54–111 Å with an uncertainty varying from ±0.025 Å to ±0.06 Å.

Kr XXXI (C sequence)

Ground state $1s^2 2s^2 2p^2\ ^3\mathrm{P}_0$

Ionization energy 28 990 000 cm^{-1} (3594 eV)

The magnetic-dipole line, $2s^2 2p^2\ ^3\mathrm{P}_0-{}^3\mathrm{P}_1$ at 252.001±0.020 Å and eight lines of the $2s^2 2p^2-2s2p^3$ array were identified by Denne *et al.* [43] in a tokamak plasma and measured with an uncertainty between ±0.02 Å and ±0.05 Å. The line at 56.976±0.050 Å is tentatively identified as the $2s^2 2p^2\ ^3\mathrm{P}_1-2s2p^3\ ^3\mathrm{S}^\circ_1$ transition. Beam-foil observations by Martin *et al.* [45] comprised four $2s^2 2p^2-2s2p^3$ transitions, including one new line, the $^3\mathrm{P}_1-{}^3\mathrm{P}^\circ_0$ transition at 64.14±0.05 Å. They also identified the $2s2p^3\ ^3\mathrm{P}^\circ_1-2p^4\ ^3\mathrm{P}_0$ transition at 79.45±0.05 Å.

Kr XXXII (B sequence)

Ground state $1s^2 2s^2 2p\ ^2\mathrm{P}^\circ_{1/2}$

Ionization energy 30 330 000 cm^{-1} (3760 eV)

The $2s^2 2p\ ^2\mathrm{P}^\circ_{1/2}-{}^2\mathrm{P}^\circ_{3/2}$ magnetic-dipole line was identified at 203.021±0.020 Å by Denne *et al.* [43] in a tokamak plasma, together with four lines of the $2s^2 2p-2s2p^2$ array. Two of them, the $^2\mathrm{P}^\circ_{3/2}-{}^2\mathrm{P}_{3/2}$ at 64.65±0.10 Å and $^2\mathrm{P}^\circ_{3/2}-{}^2\mathrm{D}_{5/2}$ at 84.94±0.10 Å, are tentative identifications. Reobservation of this array by Martin *et al.* [45] in a beam-foil experiment produced five lines of this array with uncertainties of ±0.05 Å to ±0.20 Å. Three of them, not found by Denne *et al.* [43], are adopted here. Martin *et al.* [45] identified the lines at 78.90±0.20 Å and 93.75±0.20 Å as the $2s2p^2-2p^3$ transitions.

Kr XXXIII (Be sequence)

Ground state $1s^22s^2\ ^1S_0$

Ionization energy 31 990 000 cm^{-1} (3966 eV)

The intercombination line $2s^2\ ^1S_0-2s2p\ ^3P_1^o$ was measured by Dietrich *et al.* [46] at 169.9±0.5 Å in a beam-foil spectrum and by Denne *et al.* [43] at 169.845±0.025 Å in a tokamak discharge. Denne *et al.* [43] also identified the magnetic-dipole transition $2s2p\ ^3P_1^o-^3P_2^o$ with a weak and blended line at 235.48±0.05 Å, and the resonance line $2s^2\ ^1S_0-2s2p\ ^1P_1^o$ at 72.756±0.020 Å. Their results are given here. Nine lines of the $2s2p-2p^2$ transitions were obtained by Martin *et al.* [45] in a beam-foil experiment. The uncertainties of the wavelengths are estimated to be between ±0.05 Å and ±0.20 Å.

Kr XXXIV (Li sequence)

Ground state $1s^22s\ ^2S_{1/2}$

Ionization energy 33 137 600 cm^{-1} (4108.54 eV)

The resonance doublet $2s\ ^2S_{1/2}-2p\ ^2P^o_{3/2,1/2}$ was observed by Dietrich *et al.* [46] and Martin *et al.* [45] in beam-foil spectra and by Denne *et al.* [43] in a tokamak plasma. The wavelengths of 91.049±0.025 Å and 174.036±0.026 Å are from Denne *et al.* [43].

Vainshtein and Safronova [47] calculated energy levels of the $1s^2nl$ configurations with $n=2-5$, and $l=s$, p, and d. Their results are adjusted to the $1s^22p\ ^2P^o_{1/2,3/2}$ experimental levels of Denne *et al.* [43] by adding 1360 cm^{-1}. They also calculated wavelengths of the $1s^22s-1s2s2p$, $1s^22p-1s2p^2$, $1s^22p-1s2s^2$ transitions. We use their results to derive these autoionizing energy levels. All the wavelengths given here are derived from the adjusted energy levels from Ref. 47.

Kr XXXV (He sequence)

Ground state $1s^2\ ^1S_0$

Ionization energy 139 511 000 cm^{-1} (17297.16 eV)

Four beam-foil experiments were reported. Gould and Marrus [48] gave the $1s^2\ ^1S_0-1s2s\ ^3S_1$ transition. The $1s^2\ ^1S_0-1s2p\ ^1P_1^o$ and $^3P^o_{1,2}$ transitions were identified by Briand *et al.* [49] at 0.94545 Å, 0.95198 Å, and 0.94708 Å with an uncertainty of ±0.00010 Å. Indelicato *et al.* [50] gave the wavelengths 0.94533 Å and 0.95176 Å for the first two transitions. Martin *et al.* [45] observed the $1s2s\ ^3S_1-1s2p\ ^3P^o_{0,2}$ lines at 279.80±0.20 Å and 111.11± 0.03 Å. We adopt the results of Refs. 45 and 50 in combination with calculated values for the $^{1,3}S$ terms by Drake [51,52].

Drake [51,52] calculated values for the energy levels of the configurations $1snl$ with $n=2-3$ and $l=s$, p, and d. An improved calculation of $1s2p\ ^{1,3}P^o$ levels by Cheng *et al.* [53] shows that Drake's [51,52] energy levels should be increased by 3600 cm^{-1}. The observed levels [50] are about 4100 cm^{-1} still higher than this but their uncertainties are about the same. We therefore estimate the uncertainties of Drake's [51,52] corrected values to be ±4000 cm^{-1}. For the levels with $n=4-5$, values calculated by Vainshtein and Safronova [47] have been tabulated after increasing them by 9 000 cm^{-1} to correspond with the corrected values of Drake [51,52] for $n=2,3$. Vainshtein and Safronova [47] also calculated wavelengths of the transitions $1s2s-2s2p$, $1s2p-2s^2$, and $1s2p-2p^2$, which we have compiled.

The ionization energy is taken from the calculations of Cheng *et al.* [53].

Kr XXXVI (H sequence)

Ground state $1s\ ^2S_{1/2}$

Ionization energy 144 665 280 cm^{-1} (17 936.21 eV)

Tavernier *et al.* [54] observed the $1s\ ^2S_{1/2}-2p\ ^2P^o_{3/2}$ transition at 0.91779±0.00004 Å in a beam-foil experiment.

We have tabulated the wavelengths calculated from the theoretical energy levels of Johnson and Soff [55] for the $n=2$ shell whose estimated uncertainty is ±100 cm^{-1}. Their energy differences are in close agreement with those of Mohr [56]. The binding energies for the levels with $n=2-5$ have been calculated by Erickson [57]. We subtract Erickson's values from the binding energy of the ground state calculated by Johnson and Soff [55] to obtain corrected values for Erickson's levels. Erickson's value for 2*s* then differs from that of Johnson and Soff by 880 cm^{-1}. Assuming that this is due to the omission of the QED correction by Erickson, and that QED scales as $1/n^3$ we estimate the error in 3*s* as $(^2/_3)^3$ x 880 cm^{-1}.

3. Explanation of Tables of Spectroscopic Data

Kr V, Kr XXXVI, etc.

According to spectroscopic convention, Kr I indicates the first spectrum, i.e., the spectrum of the neutral atom; Kr II denotes the second spectrum, belonging to the singly ionized atom; and so on.

H-Sequence, C-Sequence,etc.

Indicates that the respective Kr ion has the same number of electrons as neutral hydrogen, neutral carbon, etc.

IP

Principal ionization energy of the tabulated ions in cm^{-1} (eV).

λ(Å)

Wavelength in Å units (10^{-8}cm).

C,T,P

Superscripts to the right of a wavelength value have the following meanings:

^{C} wavelength calculated from energy level data using the Ritz combination principle.
^{T} wavelength tentatively identified.
^{P} wavelength predicted along an isoelectronic sequence.

Classification

Standard spectroscopic designation for lower (first) and upper levels generating the spectral lines; electronic configurations followed by the term in *LS*-, *jj*- or *jl*-coupling notation. The superscript "°" on the term indicates odd parity. A term enclosed in parentheses refers to an intermediate state. Where only the total angular momentum *J* is given in successive listings, the preceding configuration and term labels apply.

Energy Levels

Level values (in cm^{-1}) for lower (first) and upper (second) level of the transition. A question mark "?" after the level value indicates level was derived from a tentatively classified line. Calculated level values are given in square brackets.

Int.

Approximate intensity of a spectral line, generally visually estimated from the blackness (or density) of the line on photographic plates.

Type

Mode of decay of the atom: E2, E3, ..., M1, M2, M3, ... No entry means electric-dipole transition (E1).

A

Radiative transition probability in s^{-1}. 1.23+11 means 1.23×10^{11}.

References

Reference sources for the data. The numbers are keyed to the bibliographic listing following the tables. When several references are listed, they are distinguished by superscripts on the numbers as follows:

$^{\circ}$ reference from which the quoted wavelength is taken.
* reference for the adopted transition probability.
$^{\Delta}$ reference from which the estimated intensity is taken.

4. Spectroscopic Data for Kr v through Kr xxxvi

Kr v (Ge sequence)

λ (Å)	Classification				Energy Levels (cm^{-1})		Int.	Type	A(s^{-1})	References
909.63	$4s^24p^2$	$^1D_2$	$4s4p^3$	$^3D^\circ_1$	19 723	129 658	7			2
908.63		$_2$		$_2$	19 723	129 779	7			2
898.53		$_2$		$_3$	19 723	131 016	6			2
819.25	$4s^24p^2$	$^3P_2$	$4s4p^3$	$^3D^\circ_1$	7 595	129 658	10			2
818.43		$_2$		$_2$	7 595	129 779	9			2
810.23		$_2$		$_3$	7 595	131 016	10			2
794.19		$_1$		$_1$	3 743	129 658	10			2
793.43		$_1$		$_2$	3 743	129 779	10			2
771.25		$_0$		$_1$	0	129 658	10			2
777.82	$4s^24p^2$	$^1D_2$	$4s4p^3$	$^3P^\circ_1$	19 723	148 287	3			2
775.53		$_2$		$_2$	19 723	148 668	6			2
710.77	$4s^24p^2$	$^3P_2$	$4s4p^3$	$^3P^\circ_1$	7 595	148 287	10			2
708.85		$_2$		$_2$	7 595	148 668	10			2
693.57		$_1$		$_0$	3 743	147 925	10			2
691.84		$_1$		$_1$	3 743	148 287	10			2
690.01		$_1$		$_2$	3 743	148 668	10			2
674.36		$_0$		$_1$	0	148 287	10			2
696.07	$4s^24p^2$	$^1D_2$	$4s4p^3$	$^1D^\circ_2$	19 723	163 387	9			2
645.85	$4s^24p^2$	$^1S_0$	$4s4p^3$	$^1P^\circ_1$	39 204	194 041	10			2
641.88	$4s^24p^2$	$^3P_2$	$4s4p^3$	$^1D^\circ_2$	7 595	163 387	5			2

Kr v (Ge sequence) — Continued

λ (Å)	Classification				Energy Levels (cm^{-1})		Int.	Type	$A(s^{-1})$	References
573.67	$4s^24p^2$	$^1D_2$	$4s4p^3$	$^1P^\circ_1$	19 723	194 041	10			2
563.49	$4s^24p^2$	$^3P_2$	$4s4p^3$	$^3S^\circ_1$	7 595	185 064	10			2
551.51		$_1$		$_1$	3 743	185 064	10			2
540.35		$_0$		$_1$	0	185 064	10			2
536.34	$4s^24v^2$	$^3P_2$	$4s4p^3$	$^1P^\circ_1$	7 595	194 041	10			2
525.49		$_1$		$_1$	3 743	194 041	4			2
515.35		$_0$		$_1$	0	194 041	6			2
521.87	$4s^24p^2$	$^1D_2$	$4s^24p4d$	$^3P^\circ_2$	19 723	211 337	3			2
507.23	$4s^24p^2$	$^1D_2$	$4s^24p4d$	$^1D^\circ_2$	19 723	216 875	2			2
503.73	$4s^24p^2$	$^1S_0$	$4s^24p4d$	$^1P^\circ_1$	39 204	237 721	7			2
502.45	$4s^24p^2$	$^1D_2$	$4s^24p4d$	$^3D^\circ_1$	19 723	218 747	2			2
500.84		$_2$		$_3$	19 723	219 382	2			2
499.75		$_2$		$_2$	19 723	219 823	2			2
490.81	$4s^24p^2$	$^3P_2$	$4s^24p4d$	$^3P^\circ_2$	7 595	211 337	7			2
484.64		$_2$		$_1$	7 595	213 933	3			2
481.72		$_1$		$_2$	3 743	211 337	6			2
475.75		$_1$		$_1$	3 743	213 933	6			2
470.20		$_1$		$_0$	3 743	216 420	5			2
467.45		$_0$		$_1$	0	213 933	6			2
477.82	$4s^24p^2$	$^3P_2$	$4s^24p4d$	$^1D^\circ_2$	7 595	216 875	5			2
469.20		$_1$		$_2$	3 743	216 875	2			2
473.59	$4s^24p^2$	$^3P_2$	$4s^24p4d$	$^3D^\circ_1$	7 595	218 747	5			2
472.19		$_2$		$_3$	7 595	219 382	7			2
471.21		$_2$		$_2$	7 595	219 823	5			2
465.11		$_1$		$_1$	3 743	218 747	6			2
462.77		$_1$		$_2$	3 743	219 823	7			2
457.15		$_0$		$_1$	0	218 747	4			2
466.43	$4s^24p^2$	$^1D_2$	$4s^24p4d$	$^1F^\circ_3$	19 723	234 121	7			2
441.44	$4s^24p^2$	$^3P_2$	$4s^24p4d$	$^1F^\circ_3$	7 595	234 121	2			2
434.55	$4s^24p^2$	$^3P_2$	$4s^24p4d$	$^1P^\circ_1$	7 595	237 721	4			2

Kr vi (Ga sequence)

λ (Å)	Classification				Energy Levels (cm^{-1})		Int.	Type	$A(s^{-1})$	References
3394.7	$4s^26h$	$^2H^\circ$	$4s^27i$	^2I						9
3381.7	$4s^26g$	^2G	$4s^27h$	$^2H^\circ$						9
2051.06	$4s^25s$	$^2S_{1/2}$	$4s^25p$	$^2P^\circ_{1/2}$	275 380	324 120	100			6
1950.20		$_{1/2}$		$_{3/2}$	275 380	326 657	50			6
1817.45	$4s^24d$	$^2D_{5/2}$	$4p^3$	$^2D^\circ_{5/2}$	223 040	278 062	8			6
1061.069	$4s4p^2$	$^2P_{3/2}$	$4p^3$	$^2D^\circ_{5/2}$	183 817	278 062	75			6
1045.23		$_{1/2}$		$_{3/2}$	180 339	276 011	30			6
1053.3	$4s4p^2$	$^2P_{3/2}$	$4p^3$	$^4S^\circ_{3/2}$	183 817	278 787				5
1015.77		$_{1/2}$		$_{3/2}$	180 339	278 787	11			6

Kr VI (Ga sequence) — Continued

λ (Å)	Classification				Energy Levels (cm^{-1})		Int.	Type	A(s^{-1})	References
1011.14	$4s^25s$	$^2S_{1/2}$	$4s4p(^3P^o)4d$	$^2P^o_{3/2}$	275 380	374 279	8			6
1002.8	$4s^24p$	$^2P^o_{3/2}$	$4s4p^2$	$^4P_{1/2}$	8 110	107 836				5
970.2		3/2		3/2	8 110	111 193				5
931.4		3/2		5/2	8 110	115 479				5
927.4		1/2		1/2	0	107 836				5
899.4		1/2		3/2	0	111 193				5
980.411	$4s^24d$	$^2D_{3/2}$	$4s^25p$	$^2P^o_{1/2}$	222 122	324 120	30			6
965.093		5/2		3/2	223 040	326 657	20			6
956.615		3/2		3/2	222 122	326 657	12			6
944.05	$4s4p^2$	$^2S_{1/2}$	$4p^3$	$^2D^o_{3/2}$	170 084	276 011	15			6
919.934	$4s4p^2$	$^2S_{1/2}$	$4p^3$	$^4S^o_{3/2}$	170 084	278 787	9			6
918.14	$4s^24d$	$^2D_{5/2}$	$4s4p(^3P^o)4d$	$^4P^o_{5/2}$	223 040	331 956	8			6
910.47		3/2		5/2	222 122	331 956	3			6
868.96	$4s^24d$	$^2D_{5/2}$	$4s4p(^3P^o)4d$	$^4D^o_{7/2}$	223 040	338 119	9			6
859.65		3/2		5/2	222 122	338 447	3			6
834.17	$4s4p^2$	$^2P_{3/2}$	$4p^3$	$^2P^o_{1/2}$	183 817	303 697				6
822.8		3/2		3/2	183 817	305 385				5
810.65		1/2		1/2	180 339	303 697				6
799.8		1/2		3/2	180 339	305 385				5
830.11	$4s^24d$	$^2D_{5/2}$	$4s4p(^3P^o)4d$	$^2D^o_{5/2}$	223 040	343 505	7			6
825.98		3/2		3/2	222 122	343 190	5			6
823.84		3/2		5/2	222 122	343 505	3			6
780.92	$4s^25s$	$^2S_{1/2}$	$4s4p(^3P^o)5s$	$^2P^o_{1/2}$	275 380	403 436	5			6
751.10		1/2		3/2	275 380	408 520	2			6
766.72	$4s^24d$	$^2D_{3/2}$	$4s4p(^3P^o)4d$	$^2F^o_{5/2}$	222 122	352 547	6			6
735.316		5/2		7/2	223 040	359 035	10			6
750.277	$4s4p^2$	$^2D_{5/2}$	$4p^3$	$^2D^o_{3/2}$	142 727	276 011	30			6
744.3		3/2		3/2	141 672	276 011	5			5
738.9		5/2		5/2	142 727	278 062				5
733.2		3/2		5/2	141 672	278 062				5
748.70	$4s^24p$	$^2P^o_{3/2}$	$4s4p^2$	$^2D_{3/2}$	8 110	141 672	9			4
742.83		3/2		5/2	8 110	142 727				4
705.85		1/2		3/2	0	141 672	8			4
739.096	$4s4p^2$	$^2S_{1/2}$	$4p^3$	$^2P^o_{3/2}$	170 084	305 385	20			6
735.1	$4s4p^2$	$^2D_{5/2}$	$4p^3$	$^4S^o_{3/2}$	142 727	278 787				5
729.4		3/2		3/2	141 672	278 787				5
700.06	$4s4p^2$	$^2P_{3/2}$	$4s^25p$	$^2P^o_{3/2}$	183 817	326 657	3			6
675.033	$4s4p^2$	$^2P_{3/2}$	$4s4p(^3P^o)4d$	$^4P^o_{5/2}$	183 817	331 956	10			6
657.20	$4s^24d$	$^2D_{3/2}$	$4s4p(^3P^o)4d$	$^2P^o_{3/2}$	222 122	374 279	3			6
638.68	$4s4p^2$	$^2S_{1/2}$	$4s^25p$	$^2P^o_{3/2}$	170 084	326 657	5			6
626.220	$4s4p^2$	$^2P_{3/2}$	$4s4p(^3P^o)4d$	$^2D^o_{5/2}$	183 817	343 505	10			6
614.05		1/2		3/2	180 339	343 190	9			6
622.8	$4s4p^2$	$^4P_{5/2}$	$4p^3$	$^2D^o_{3/2}$	115 479	276 011				5
615.07		5/2		5/2	115 479	278 062	10			6
606.726		3/2		3/2	111 193	276 011	20			6
599.26		3/2		5/2	111 193	278 062	1			6
594.618		1/2		3/2	107 836	276 011	12			6

Kr VI (Ga sequence) — Continued

λ (Å)	Classification				Energy Levels (cm^{-1})		Int.	Type	A(s^{-1})	References
617.379	$4s^24p$	$^2P^o_{3/2}$	$4s4p^2$	$^2S_{1/2}$	8 110	170 084	9			6
587.94		$_{1/2}$		$_{1/2}$	0	170 084	12			6
617.18	$4s4p^2$	$^2D_{3/2}$	$4p^3$	$^2P^o_{1/2}$	141 672	303 697	150*bl*			6
614.9		$_{5/2}$		$_{3/2}$	142 727	305 385				5
610.828		$_{3/2}$		$_{3/2}$	141 672	305 385	5			6
612.4	$4s4p^2$	$^4P_{5/2}$	$4p^3$	$^4S^o_{3/2}$	115 479	278 787				5
596.7		$_{3/2}$		$_{3/2}$	111 193	278 787				5
584.958		$_{1/2}$		$_{3/2}$	107 836	278 787	11			6
599.79	$4s^25s$	$^2S_{1/2}$	$4s4p(^1P^o)5s$	$^2P^o_{1/2}$	275 380	442 106	9			6
595.970		$_{1/2}$		$_{3/2}$	275 380	443 176	9			6
593.56	$4s^24d$	$^2D_{3/2}$	$4s4p(^1P^o)4d$	$^2D^o_{3/2}$	222 122	390 595	4			6
592.28		$_{5/2}$		$_{5/2}$	223 040	391 878	4			6
592.68	$4s4p^2$	$^2P_{3/2}$	$4s4p(^3P^o)4d$	$^2F^o_{5/2}$	183 817	352 547	2			6
588.31	$4s^24d$	$^2D_{5/2}$	$4s4p(^1P^o)4d$	$^2P^o_{3/2}$	223 040	393 018	9			6
585.14		$_{3/2}$		$_{3/2}$	222 122	393 018	4			6
580.63	$4s^24p$	$^2P^o_{3/2}$	$4s4p^2$	$^2P_{1/2}$	8 110	180 339	6			4
569.13		$_{3/2}$		$_{3/2}$	8 110	183 817	9			4
554.51		$_{1/2}$		$_{1/2}$	0	180 339	8			4
544.02		$_{1/2}$		$_{3/2}$	0	183 817	6			4
577.68	$4s4p^2$	$^2S_{1/2}$	$4s4p(^3P^o)4d$	$^2D^o_{3/2}$	170 084	343 190	6			6
569.354	$4s^24d$	$^2D_{5/2}$	$4s4p(^1P^o)4d$	$^2F^o_{7/2}$	223 040	398 678	11			6
563.44		$_{3/2}$		$_{5/2}$	222 122	399 599	7			6
548.107	$4s4p^2$	$^2D_{3/2}$	$4s^25p$	$^2P^o_{1/2}$	141 672	324 120	10			6
543.689		$_{5/2}$		$_{3/2}$	142 727	326 657	10			6
540.587		$_{3/2}$		$_{3/2}$	141 672	326 657	4			6
528.457	$4s4p^2$	$^2D_{5/2}$	$4s4p(^3P^o)4d$	$^4P^o_{5/2}$	142 727	331 956	5			6
525.04	$4s4p^2$	$^2P_{3/2}$	$4s4p(^3P^o)4d$	$^2P^o_{3/2}$	183 817	374 279	6			6
516.96		$_{3/2}$		$_{1/2}$	183 817	377 255	1			6
507.82		$_{1/2}$		$_{1/2}$	180 339	377 255	6			6
522.30	$4s4p^2$	$^2D_{3/2}$	$4s4p(^3P^o)4d$	$^4D^o_{3/2}$	141 672	333 133	2			6
511.79		$_{5/2}$		$_{7/2}$	142 727	338 119	1			6
498.061	$4s4p^2$	$^2D_{5/2}$	$4s4p(^3P^o)4d$	$^2D^o_{5/2}$	142 727	343 505	9			6
496.237		$_{3/2}$		$_{3/2}$	141 672	343 190	8			6
495.46		$_{3/2}$		$_{5/2}$	141 672	343 505	7			6
489.738	$4s4p^2$	$^2S_{1/2}$	$4s4p(^3P^o)4d$	$^2P^o_{3/2}$	170 084	374 279	7			6
482.702		$_{1/2}$		$_{1/2}$	170 084	377 255	3			6
480.63	$4s4p^2$	$^2P_{3/2}$	$4s4p(^1P^o)4d$	$^2D^o_{5/2}$	183 817	391 878	2			6
475.62		$_{1/2}$		$_{3/2}$	180 339	390 595	8			6
478.016	$4s4p^2$	$^2P_{3/2}$	$4s4p(^1P^o)4d$	$^2P^o_{3/2}$	183 817	393 018	7			6
470.191		$_{1/2}$		$_{3/2}$	180 339	393 018	5			6
474.209	$4s4p^2$	$^2D_{3/2}$	$4s4p(^3P^o)4d$	$^2F^o_{5/2}$	141 672	352 547	7			6
462.31		$_{5/2}$		$_{7/2}$	142 727	359 035	8			6
467.25	$4s^24p$	$^2P^o_{3/2}$	$4s^24d$	$^2D_{3/2}$	8 110	222 122	6			4
465.27		$_{3/2}$		$_{5/2}$	8 110	223 040	9			4
450.20		$_{1/2}$		$_{3/2}$	0	222 122	8			4

Kr VI (Ga sequence) — Continued

λ (Å)	Classification				Energy Levels (cm^{-1})		Int.	Type	A(s^{-1})	References
461.94	$4s4p^{2}$	$^{4}\mathrm{P}_{5/2}$	$4s4p(^{3}\mathrm{P}^{\circ})4d$	$^{4}\mathrm{P}^{\circ}_{5/2}$	115 479	331 956	4			6
452.972		3/2		5/2	111 193	331 956	7			6
448.668		5/2		3/2	115 479	338 364	5			6
440.840		3/2		1/2	111 193	338 032	5			6
440.192		3/2		3/2	111 193	338 364	5			6
433.79		1/2		3/2	107 836	338 364	1			6
459.47	$4s4p^{2}$	$^{4}\mathrm{P}_{5/2}$	$4s4p(^{3}\mathrm{P}^{\circ})4d$	$^{4}\mathrm{D}^{\circ}_{3/2}$	115 479	333 133	2*bl*			6
450.581		3/2		3/2	111 193	333 133	6			6
449.15		5/2		7/2	115 479	338 119	7			6
448.95		3/2		1/2	111 193	333 936	2*bl*			6
448.502		5/2		5/2	115 479	338 447	4			6
443.858		1/2		3/2	107 836	333 133	6			6
442.28		1/2		1/2	107 836	333 936	6			6
440.038		3/2		5/2	111 193	338 447	2			6
445.0	$4s4p^{2}$	$^{2}\mathrm{P}_{3/2}$	$4s4p(^{3}\mathrm{P}^{\circ})5s$	$^{2}\mathrm{P}^{\circ}_{3/2}$	183 817	408 520	1			6
430.46	$4s4p^{2}$	$^{4}\mathrm{P}_{3/2}$	$4s4p(^{3}\mathrm{P}^{\circ})4d$	$^{2}\mathrm{D}^{\circ}_{5/2}$	111 193	343 505	4			6
424.91		1/2		3/2	107 836	343 190	4			6
428.56	$4s4p^{2}$	$^{2}\mathrm{S}_{1/2}$	$4s4p(^{3}\mathrm{P}^{\circ})5s$	$^{2}\mathrm{P}^{\circ}_{1/2}$	170 084	403 436	6			6
419.42		1/2		3/2	170 084	408 520	6			6
410.59	$4s4p^{2}$	$^{4}\mathrm{P}_{5/2}$	$4s4p(^{3}\mathrm{P}^{\circ})4d$	$^{2}\mathrm{F}^{\circ}_{7/2}$	115 479	359 035	4			6
403.43	$4s4p^{2}$	$^{2}\mathrm{D}_{5/2}$	$4s4p(^{1}\mathrm{P}^{\circ})4d$	$^{2}\mathrm{D}^{\circ}_{3/2}$	142 727	390 595	2			6
399.54	$4s4p^{2}$	$^{2}\mathrm{D}_{5/2}$	$4s4p(^{1}\mathrm{P}^{\circ})4d$	$^{2}\mathrm{P}^{\circ}_{3/2}$	142 727	393 018	2			6
390.70	$4s4p^{2}$	$^{2}\mathrm{D}_{5/2}$	$4s4p(^{1}\mathrm{P}^{\circ})4d$	$^{2}\mathrm{F}^{\circ}_{7/2}$	142 727	398 678	6			6
389.29		5/2		5/2	142 727	399 599	2			6
387.72		3/2		5/2	141 672	399 599	4			6
387.17	$4s4p^{2}$	$^{2}\mathrm{P}_{3/2}$	$4s4p(^{1}\mathrm{P}^{\circ})5s$	$^{2}\mathrm{P}^{\circ}_{1/2}$	183 817	442 106	4			6
382.01		1/2		1/2	180 339	442 106	6			6
380.48		1/2		3/2	180 339	443 176	2			6
382.01	$4s4p^{2}$	$^{2}\mathrm{D}_{3/2}$	$4s4p(^{3}\mathrm{P}^{\circ})5s$	$^{2}\mathrm{P}^{\circ}_{1/2}$	141 672	403 436	6			6
376.23		5/2		3/2	142 727	408 520	6			6
374.74		3/2		3/2	141 672	408 520	4			6
374.2	$4s^{2}4p$	$^{2}\mathrm{P}^{\circ}_{3/2}$	$4s^{2}5s$	$^{2}\mathrm{S}_{1/2}$	8 110	275 380				5
363.2		1/2		1/2	0	275 380				5
366.17	$4s4p^{2}$	$^{2}\mathrm{S}_{1/2}$	$4s4p(^{1}\mathrm{P}^{\circ})5s$	$^{2}\mathrm{P}^{\circ}_{3/2}$	170 084	443 176	4			6
357.99	$4s4p^{2}$	$^{4}\mathrm{P}_{5/2}$	$4s4p(^{3}\mathrm{P}^{\circ})5s$	$^{4}\mathrm{P}^{\circ}_{3/2}$	115 479	394 817	2			6
351.93		5/2		5/2	115 479	399 630	6*bl*			6
348.45		1/2		3/2	107 836	394 817	1			6
346.69		3/2		5/2	111 193	399 630	4			6
332.83	$4s4p^{2}$	$^{2}\mathrm{D}_{5/2}$	$4s4p(^{1}\mathrm{P}^{\circ})5s$	$^{2}\mathrm{P}^{\circ}_{3/2}$	142 727	443 176	6			6
332.83		3/2		1/2	141 672	442 106	6			6
331.65		3/2		3/2	141 672	443 176	1			6

Kr VII (Zn sequence)

λ (Å)	Classification				Energy Levels (cm^{-1})		Int.	Type	A(s^{-1})	References
2076.3	$4s4f$	$^3F^\circ_2$	$4s5d$	$^3D_1$	530 380	578 520				14
2073.3		$_3$		$_2$	530 550	578 770				14
2068.3		$_4$		$_3$	530 820	579 150				14
2056.8		$_3$		$_3$	530 550	579 150				14
2049.8		$_2$		$_3$	530 380	579 150				14
1985.5	$4s5s$	$^1S_0$	$4s5p$	$^1P^\circ_1$	447 400	497 760				14
1847.5^T	$4s5s$	$^3S_1$	$4s5p$	$^3P^\circ_0$	438 643.9	492 810				14
1832.5^T		$_1$		$_1$	438 643.9	493 250				14
1756.36		$_1$		$_2$	438 643.9	495 578.4	10			12°,14
1202.7	$4s5p$	$^3P^\circ_2$	$4s5d$	$^3D_2$	495 578.4	578 770				14
1197.1		$_2$		$_3$	495 578.4	579 150				14
1172.8		$_1$		$_1$	493 250	578 520				14
1169.3		$_1$		$_2$	493 250	578 770				14
1166.6		$_0$		$_1$	492 810	578 520				14
1168.8	$4s5p$	$^1P^\circ_1$	$4s5d$	$^1D_2$	497 760	583 320				14
960.638	$4s4p$	$^1P^\circ_1$	$4p^2$	$^3P_0$	170 835.0	274 931.7	5			11
920.983		$_1$		$_1$	170 835.0	279 414.5	5			11
852.120		$_1$		$_2$	170 835.0	288 190.2	5			11
918.446	$4s4p$	$^1P^\circ_1$	$4p^2$	$^1D_2$	170 835.0	279 714.8	60			11
845.5	$4s4d$	$^1D_2$	$4s5p$	$^1P^\circ_1$	379 488.3	497 760				14
832.682	$4s^2$	$^1S_0$	$4s4p$	$^3P^\circ_1$	0	120 094.8	9			11
700.1	$4s4d$	$^3D_1$	$4s5p$	$^3P^\circ_0$	349 973.1	492 810				14
700.1		$_2$		$_1$	350 416.8	493 250				14
697.9		$_1$		$_1$	349 973.1	493 250				14
692.22		$_3$		$_2$	351 116.2	495 578.4	10			12°,14
688.89		$_2$		$_2$	350 416.8	495 578.4	10			12°,14
686.76		$_1$		$_2$	349 973.1	495 578.4	1			12
662.43	$4s4p$	$^1P^\circ_1$	$4p^2$	$^1S_0$	170 835.0	321 794	10			12
654.189	$4s4p$	$^3P^\circ_2$	$4p^2$	$^3P_1$	126 553.0	279 414.5	50			11
645.847		$_1$		$_0$	120 094.8	274 931.7	30			11
627.668		$_1$		$_1$	120 094.8	279 414.5	30			11
618.664		$_2$		$_2$	126 553.0	288 190.2	40			11
617.189		$_0$		$_1$	117 389.6	279 414.5	30			11
594.899		$_1$		$_2$	120 094.8	288 190.2	30			11
652.905	$4s4p$	$^3P^\circ_2$	$4p^2$	$^1D_2$	126 553.0	279 714.8	5			11
626.486		$_1$		$_2$	120 094.8	279 714.8	4			11
585.361	$4s^2$	$^1S_0$	$4s4p$	$^1P^\circ_1$	0	170 835.0	15			11
558.221	$4s4p$	$^1P^\circ_1$	$4s4d$	$^3D_1$	170 835.0	349 973.1	4			11
556.855		$_1$		$_2$	170 835.0	350 416.8	4			11
557.3	$4s4d$	$^3D_3$	$4s4f$	$^3F^\circ_3$	351 116.2	530 550				14
556.5		$_3$		$_4$	351 116.2	530 820				14
555.2		$_2$		$_3$	350 416.8	530 550				14
554.3		$_1$		$_2$	349 973.1	530 380				14
487.4	$4p^2$	$^3P_2$	$4s5p$	$^3P^\circ_1$	288 190.2	493 250				13
482.19		$_2$		$_2$	288 190.2	495 578.4	2			12
462.63		$_1$		$_2$	279 414.5	495 578.4	3			12°,13
457.6		$_0$		$_1$	274 931.7	493 250				13
479.264	$4s4p$	$^1P^\circ_1$	$4s4d$	$^1D_2$	170 835.0	379 488.3	25			11

Kr VII (Zn sequence) — Continued

λ (Å)	Classification				Energy Levels (cm^{-1})		Int.	Type	A(s^{-1})	References
458.5	$4p^2$	$^1D_2$	$4s5p$	$^1P^\circ_1$	279 714.8	497 760				13
447.606	$4s4p$	$^3P^\circ_2$	$4s4d$	$^3D_1$	126 553.0	349 973.1	3			11
446.700		$_2$		$_2$	126 553.0	350 416.8	8			11
445.309		$_2$		$_3$	126 553.0	351 116.2	20			11
435.018		$_1$		$_1$	120 094.8	349 973.1	8			11
434.140		$_1$		$_2$	120 094.8	350 416.8	15			11
429.98		$_0$		$_1$	117 389.6	349 973.1	4			12
385.51	$4s4p$	$^3P^\circ_1$	$4s4d$	$^1D_2$	120 094.8	379 488.3	4			12
362.0	$4s4p$	$^1P^\circ_1$	$4s5s$	$^1S_0$	170 835.0	447 400				13
320.41	$4s4p$	$^3P^\circ_2$	$4s5s$	$^3S_1$	126 553.0	438 643.9	2			12
313.92		$_1$		$_1$	120 094.8	438 643.9	3			12
311.26		$_0$		$_1$	117 389.6	438 643.9	1			12
221.4	$4s4p$	$^3P^\circ_2$	$4s5d$	$^3D_2$	126 553.0	578 770				13
200.9	$4s^2$	$^1S_0$	$4s5p$	$^1P^\circ_1$	0	497 760				13

Kr VIII (Cu sequence)

λ (Å)	Classification				Energy Levels (cm^{-1})		Int.	Type	A(s^{-1})	References
6065.5	$3d^{10}9l$	^2L	$3d^{10}10m$	$^2M^\circ$	927 985	944 467				9
6056.3	$3d^{10}9k$	$^2K^\circ$	$3d^{10}10l$	^2L	927 948	944 456				9
5848.8^T	$3d^{10}7s$	$^2S_{1/2}$	$3d^{10}7p$	$^2P^\circ_{3/2}$	796 490	813 577				9
4667.9	$3d^{10}10m$	$^2M^\circ$	$3d^{10}12n$	^2N	944 467	965 884				9
4338.1	$3d^{10}8k$	$^2K^\circ$	$3d^{10}9l$	^2L	904 940	927 985				9
4337.7	$3d^{10}8i$	^2I	$3d^{10}9k$	$^2K^\circ$	904 901	927 948				9
4332.7	$3d^{10}8h$	$^2H^\circ$	$3d^{10}9i$	^2I						9
4299.5	$3d^{10}8g$	^2G	$3d^{10}9h$	$^2H^\circ$						9
3929.2	$3d^{10}8f$	$^2F^\circ$	$3d^{10}9g$	^2G						9
3770.7	$3d^{10}7d$	$^2D_{3/2}$	$3d^{10}8p$	$^2P^\circ_{1/2}$	840 501	867 014				9
3702.9^T		$_{5/2}$		$_{3/2}$	840 686	867 694				9
3677.8^T		$_{3/2}$		$_{3/2}$	840 501	867 694				9
3759.0	$3d^{10}6f$	$^2F^\circ_{5/2}$	$3d^{10}7d$	$^2D_{3/2}$	813 913	840 501				9
3727.4		$_{7/2}$		$_{5/2}$	813 865	840 686				9
3712.7	$3d^{10}7d$	$^2D_{5/2}$	$3d^{10}7f$	$^2F^\circ_{7/2}$	840 686	867 613				9
3710.5		$_{5/2}$		$_{5/2}$	840 686	867 633				9
3684.1		$_{3/2}$		$_{5/2}$	840 501	867 633				9
3590.0	$3d^{10}8p$	$^2P^\circ_{3/2}$	$3d^{10}9s$	$^2S_{1/2}$	867 694	895 541				9
3506.2		$_{1/2}$		$_{1/2}$	867 014	895 541				9
3558.8^T	$3d^{10}6s$	$^2S_{1/2}$	$3d^{10}6p$	$^2P^\circ_{1/2}$	692 482	720 565				9
3337.4		$_{1/2}$		$_{3/2}$	692 482	722 429				9
3486.9	$3d^{10}9l$	^2L	$3d^{10}11m$	$^2M^\circ$	927 985	956 656				9
3483.5	$3d^{10}9k$	$^2K^\circ$	$3d^{10}11l$	^2L	927 948	956 647				9

Kr VIII (Cu sequence) — Continued

λ (Å)	Classification				Energy Levels (cm^{-1})		Int.	Type	A(s^{-1})	References
3189.4	$3d^{10}7g$	$^2\mathrm{G}$	$3d^{10}8f$	$^2\mathrm{F}^\circ$						9
2973.5	$3d^{10}7i$	$^2\mathrm{I}$	$3d^{10}8k$	$^2\mathrm{K}^\circ$	871 319.5	904 940				9
2970.4	$3d^{10}7h$	$^2\mathrm{H}^\circ$	$3d^{10}8i$	$^2\mathrm{I}$	871 245	904 901				9
2949.2	$3d^{10}7g$	$^2\mathrm{G}$	$3d^{10}8h$	$^2\mathrm{H}^\circ$						9
2529.9	$3d^{10}8k$	$^2\mathrm{K}^\circ$	$3d^{10}10l$	$^2\mathrm{L}$	904 940	944 456				9
2527.8	$3d^{10}8i$	$^2\mathrm{I}$	$3d^{10}10k$	$^2\mathrm{K}^\circ$	904 901	944 449				9
2425.3	$3d^{10}8d$	$^2\mathrm{D}_{5/2}$	$3d^{10}9f$	$^2\mathrm{F}^\circ_{7/2}$						9
2418.3		3/2		5/2						9
2295.7$^{\mathrm{T}}$	$3d^{10}7p$	$^2\mathrm{P}^\circ_{3/2}$	$3d^{10}8s$	$^2\mathrm{S}_{1/2}$	813 577	857 086				9
2292.2	$3d^{10}6d$	$^2\mathrm{D}_{3/2}$	$3d^{10}7p$	$^2\mathrm{P}^\circ_{1/2}$	768 898	812 506				9
2276.5	$3d^{10}5f$	$^2\mathrm{F}^\circ_{5/2}$	$3d^{10}6d$	$^2\mathrm{D}_{3/2}$	724 997.3	768 898				9
2237.2	$3d^{10}6d$	$^2\mathrm{D}_{5/2}$	$3d^{10}6f$	$^2\mathrm{F}^\circ_{7/2}$	769 179	813 865				9
2219.9		3/2		5/2	768 898	813 913				9
2152.3$^{\mathrm{T}}$	$3d^{10}6p$	$^2\mathrm{P}^\circ_{3/2}$	$3d^{10}6d$	$^2\mathrm{D}_{3/2}$	722 429	768 898				9
2137.8		3/2		5/2	722 429	769 179				9
2068.7		1/2		3/2	720 565	768 898				9
1929.10	$3d^{10}6h$	$^2\mathrm{H}^\circ$	$3d^{10}7i$	$^2\mathrm{I}$	819 482.0	871 319.5	2			17
1916.7	$3d^{10}6g$	$^2\mathrm{G}$	$3d^{10}7f$	$^2\mathrm{F}^\circ$	815 450	867 623				9
1766.99	$3d^{10}5s$	$^2\mathrm{S}_{1/2}$	$3d^{10}5p$	$^2\mathrm{P}^\circ_{1/2}$	490 090.2	546 683.7	4			17
1656.78		1/2		3/2	490 090.2	550 448.0	5			17
1276.94	$3d^{10}4f$	$^2\mathrm{F}^\circ_{5/2}$	$3d^{10}5d$	$^2\mathrm{D}_{3/2}$	562 763.8	641 075.6	6			17
1267.68		7/2		5/2	562 738.1	641 623.1	7			17
1199.22	$3d^{10}5d$	$^2\mathrm{D}_{5/2}$	$3d^{10}5f$	$^2\mathrm{F}^\circ_{7/2}$	641 623.1	725 010.6	8			17
1191.59		3/2		5/2	641 075.6	724 997.3	2			17
1157.60	$3d^{10}5g$	$^2\mathrm{G}$	$3d^{10}6h$	$^2\mathrm{H}^\circ$	733 095.6	819 482.0	4			17
1096.77	$3d^{10}5p$	$^2\mathrm{P}^\circ_{3/2}$	$3d^{10}5d$	$^2\mathrm{D}_{5/2}$	550 448.0	641 623.1	11			17
1059.41		1/2		3/2	546 683.7	641 075.6	20			17
704.057$^{\mathrm{C}}$	$3d^{10}5p$	$^2\mathrm{P}^\circ_{3/2}$	$3d^{10}6s$	$^2\mathrm{S}_{1/2}$	550 448.0	692 482				17
685.879$^{\mathrm{C}}$		1/2		1/2	546 683.7	692 482				13
695.918	$3d^{10}4s$	$^2\mathrm{S}_{1/2}$	$3d^{10}4p$	$^2\mathrm{P}^\circ_{1/2}$	0	143 695.3	2000			18
651.566		1/2		3/2	0	153 476.1	4000			18
587.121	$3d^{10}4f$	$^2\mathrm{F}^\circ_{5/2}$	$3d^{10}5g$	$^2\mathrm{G}_{7/2}$	562 763.8	733 086.4	45			18
586.969		7/2		9/2	562 738.1	733 104.8	50			18
579.246	$3d^{10}4d$	$^2\mathrm{D}_{3/2}$	$3d^{10}5p$	$^2\mathrm{P}^\circ_{1/2}$	374 046.5	546 683.7	40			18
571.203		5/2		3/2	375 381.0	550 448.0	60			18
533.753	$3d^{10}4d$	$^2\mathrm{D}_{5/2}$	$3d^{10}4f$	$^2\mathrm{F}^\circ_{7/2}$	375 381.0	562 738.1	500			18
533.651		5/2		5/2	375 381.0	562 763.8	10			18
529.893		3/2		5/2	374 046.5	562 763.8	400			18
453.360	$3d^{10}4p$	$^2\mathrm{P}^\circ_{3/2}$	$3d^{10}4d$	$^2\mathrm{D}_{3/2}$	153 476.1	374 046.5	500			18
450.649		3/2		5/2	153 476.1	375 381.0	5000			18
434.124		1/2		3/2	143 695.3	374 046.5	3500			18

Kr VIII (Cu sequence) — Continued

λ (Å)	Classification				Energy Levels (cm^{-1})		Int.	Type	A(s^{-1})	References
297.077	$3d^{10}4p$	$^2P^\circ_{3/2}$	$3d^{10}5s$	$^2S_{1/2}$	153 476.1	490 090.2	2000			18
288.684		1/2		1/2	143 695.3	490 090.2	1000			18
288.585^{C}	$3d^{10}4d$	$^2D_{3/2}$	$3d^{10}6p$	$^2P^\circ_{1/2}$	374 046.5	720 565				13
288.145^{C}		5/2		3/2	375 381.0	722 429				13
204.862	$3d^{10}4p$	$^2P^\circ_{3/2}$	$3d^{10}5d$	$^2D_{5/2}$	153 476.1	641 623.1	8			18
201.061		1/2		3/2	143 695.3	641 075.6	10			18
185.525	$3d^{10}4p$	$^2P^\circ_{3/2}$	$3d^{10}6s$	$^2S_{1/2}$	153 476.1	692 482	130			18
182.222		1/2		1/2	143 695.3	692 482	70			18
182.922	$3d^{10}4s$	$^2S_{1/2}$	$3d^{10}5p$	$^2P^\circ_{1/2}$	0	546 683.7	600			18
181.673		1/2		3/2	0	550 448.0	1000			18
162.416	$3d^{10}4p$	$^2P^\circ_{3/2}$	$3d^{10}6d$	$^2D_{5/2}$	153 476.1	769 179	35			18
159.948		1/2		3/2	143 695.3	768 898	15			18
155.518	$3d^{10}4p$	$^2P^\circ_{3/2}$	$3d^{10}7s$	$^2S_{1/2}$	153 476.1	796 490	50			18
153.187		1/2		1/2	143 695.3	796 490	35			18
145.516	$3d^{10}4p$	$^2P^\circ_{3/2}$	$3d^{10}7d$	$^2D_{5/2}$	153 476.1	840 686	10			18
143.512		1/2		3/2	143 695.3	840 501	3			18
142.123	$3d^{10}4p$	$^2P^\circ_{3/2}$	$3d^{10}8s$	$^2S_{1/2}$	153 476.1	857 086	10			18
140.177		1/2		1/2	143 695.3	857 086	3			18
138.780	$3d^{10}4s$	$^2S_{1/2}$	$3d^{10}6p$	$^2P^\circ_{1/2}$	0	720 565	100			18
138.422		1/2		3/2	0	722 429	200			18
127.738	$3d^{10}4s$	$^2S_{1/2}$	$3d^9(^2D)4s4p(^3P^\circ)$	$^4P^\circ_{3/2}$	0	782 852	90			18
126.692		1/2		1/2	0	789 316	40			18
126.813	$3d^{10}4s$	$^2S_{1/2}$	$3d^9(^2D)4s4p(^3P^\circ)$	$^4F^\circ_{3/2}$	0	788 563	15			18
125.437	$3d^{10}4s$	$^2S_{1/2}$	$3d^9(^2D)4s4p(^3P^\circ)$	$^2D^\circ_{3/2}$	0	797 213	450			18
125.301	$3d^{10}4p$	$^2P^\circ_{3/2}$	$3d^9(^2D)4p^2(^1D)$	$^2S_{1/2}$	153 476.1	951 580	10			18
123.776		1/2		1/2	143 695.3	951 580	50			18
125.014	$3d^{10}4p$	$^2P^\circ_{3/2}$	$3d^9(^2D)4p^2(^1D)$	$^2P_{3/2}$	153 476.1	953 414	20			18
123.570		3/2		1/2	153 476.1	962 734	20			18
123.495		1/2		3/2	143 695.3	953 414	30			18
124.823	$3d^{10}4s$	$^2S_{1/2}$	$3d^9(^2D)4s4p(^3P^\circ)$	$^2P^\circ_{3/2}$	0	801 134	550			18
124.759		1/2		1/2	0	801 545	450			18
124.481	$3d^{10}4s$	$^2S_{1/2}$	$3d^9(^2D)4s4p(^3P^\circ)$	$^4D^\circ_{1/2}$	0	803 335	50			18
123.891		1/2		3/2	0	807 161	120			18
123.076	$3d^{10}4s$	$^2S_{1/2}$	$3d^{10}7p$	$^2P^\circ_{1/2}$	0	812 506	35			18
122.914		1/2		3/2	0	813 577	50			18
121.890	$3d^{10}4p$	$^2P^\circ_{1/2}$	$3d^9(^2D)4p^2(^3P)$	$^4F_{3/2}$	143 695.3	964 107	80			18
121.595	$3d^{10}4p$	$^2P^\circ_{3/2}$	$3d^9(^2D)4p^2(^3P)$	$^2D_{5/2}$	153 476.1	975 878	250			18
121.577		1/2		3/2	143 695.3	966 219	90			18
121.493	$3d^{10}4p$	$^2P^\circ_{3/2}$	$3d^9(^2D)4p^2(^3P)$	$^4P_{3/2}$	153 476.1	976 569	35			18
119.603		1/2		1/2	143 695.3	979 794	5			18
121.303	$3d^{10}4p$	$^2P^\circ_{3/2}$	$3d^9(^2D)4p^2(^3P)$	$^2P_{1/2}$	153 476.1	977 863	20			18
120.958		3/2		3/2	153 476.1	980 229	100			18
119.880		1/2		1/2	143 695.3	977 863	20			18
119.538		1/2		3/2	143 695.3	980 229	3			18

Kr VIII (Cu sequenced) — Continued

λ (Å)	Classification				Energy Levels (cm^{-1})		Int.	Type	A(s^{-1})	References
120.906	$3d^{10}4p$	$^2P^o_{1/2}$	$3d^9(^2D)4p^2(^1D)$	$^2D_{3/2}$	143 695.3	970 784	100			18
119.447	$3d^{10}4s$	$^2S_{1/2}$	$3d^9(^2D)4s4p(^1P^o)$	$^2P^o_{3/2}$	0	837 191	600			18
118.178		$_{1/2}$		$_{1/2}$	0	846 181	350			18
117.355	$3d^{10}4p$	$^2P^o_{3/2}$	$3d^9(^2D)4p^2(^1S)$	$^2D_{5/2}$	153 476.1	1 005 591	12			18
116.047		$_{3/2}$		$_{3/2}$	153 476.1	1 015 205	1			18
114.742		$_{1/2}$		$_{3/2}$	143 695.3	1 015 205	4			18
115.248	$3d^{10}4s$	$^2S_{1/2}$	$3d^{10}8p$	$^2P^o_{3/2}$	0	867 694	5			18

Kr IX (Ni sequence)

λ (Å)	Classification				Energy Levels (cm^{-1})		Int.	Type	A(s^{-1})	References
117.709	$3d^{10}$	$^1S_0$	$3d^9(^2D)4p$	$^3P^o_1$	0	849 553	30			18
115.738	$3d^{10}$	$^1S_0$	$3d^9(^2D)4p$	$^1P^o_1$	0	864 020	1000			18
114.948	$3d^{10}$	$^1S_0$	$3d^9(^2D)4p$	$^3D^o_1$	0	869 959	400			18
76.789	$3d^{10}$	$^1S_0$	$3d^9(^2D)4f$	$^3P^o_1$	0	1 302 270	5			18
76.296	$3d^{10}$	$^1S_0$	$3d^9(^2D)4f$	$^3D^o_1$	0	1 310 680	20			18
75.455	$3d^{10}$	$^1S_0$	$3d^9(^2D)4f$	$^1P^o_1$	0	1 325 290	40			18

Kr X (Co sequence)

λ (Å)	Classification				Energy Levels (cm^{-1})		Int.	Type	A(s^{-1})	References
104.618	$3p^63d^9$	$^2D_{3/2}$	$3p^63d^8(^3F)4p$	$^4G^o_{5/2}$	10 367	966 252	25			20
103.493		$_{5/2}$		$_{5/2}$	0	966 252	100			20
104.369	$3p^63d^9$	$^2D_{3/2}$	$3p^53d^{10}$	$^2P^o_{3/2}$	10 367	968 510	75			20
103.251		$_{5/2}$		$_{3/2}$	0	968 510	20000			20
96.690		$_{3/2}$		$_{1/2}$	10 367	1 044 605	200			20
104.023	$3p^63d^9$	$^2D_{3/2}$	$3p^63d^8(^3F)4p$	$^2D^o_{3/2}$	10 367	971 691	1000			20
103.796		$_{3/2}$		$_{5/2}$	10 367	973 832	50			20
102.914		$_{5/2}$		$_{3/2}$	0	971 691	300			20
102.687		$_{5/2}$		$_{5/2}$	0	973 832	10000			20
103.572	$3p^63d^9$	$^2D_{5/2}$	$3p^63d^8(^3F)4p$	$^4D^o_{3/2}$	0	965 513	10000			20
102.837	$3p^63d^9$	$^2D_{5/2}$	$3p^63d^8(^3F)4p$	$^2F^o_{7/2}$	0	972 410	8000			20
101.367		$_{5/2}$		$_{5/2}$	0	986 513	10000			20
102.750	$3p^63d^9$	$^2D_{3/2}$	$3p^63d^8(^3F)4p$	$^4F^o_{3/2}$	10 367	983 596	200			20
102.151		$_{5/2}$		$_{5/2}$	0	978 945	1500			20
101.985		$_{5/2}$		$_{7/2}$	0	980 534	5000			20
101.668		$_{5/2}$		$_{3/2}$	0	983 596	200			20

Kr x (Co sequence) — Continued

λ (Å)	Classification				Energy Levels (cm^{-1})		Int.	Type	A(s^{-1})	References
102.299	$3p^63d^9$	$^2D_{3/2}$	$3p^63d^8(^3P)4p$	$^4P^o_{3/2}$	10 367	987 902	1500			20
102.260		$_{3/2}$		$_{5/2}$	10 367	988 265	1500			20
101.224		$_{5/2}$		$_{3/2}$	0	987 902	100			20
101.181		$_{5/2}$		$_{5/2}$	0	988 265	30			20
101.719	$3p^63d^9$	$^2D_{5/2}$	$3p^63d^8(^3F)4p$	$^2G^o_{7/2}$	0	983 099	250			20
101.691	$3p^63d^9$	$^2D_{3/2}$	$3p^63d^8(^1D)4p$	$^2F^o_{5/2}$	10 367	993 739	300			20
100.075		$_{5/2}$		$_{7/2}$	0	999 248	4000			20
101.162	$3p^63d^9$	$^2D_{3/2}$	$3p^63d^8(^1D)4p$	$^2D^o_{3/2}$	10 367	998 883	1500			20
100.876		$_{3/2}$		$_{5/2}$	10 367	1 001 691	100			20
100.111		$_{5/2}$		$_{3/2}$	0	998 883	125			20
99.831		$_{5/2}$		$_{5/2}$	0	1 001 691	3000			20
101.065	$3p^63d^9$	$^2D_{3/2}$	$3p^63d^8(^1D)4p$	$^2P^o_{1/2}$	10 367	999 829	5			20
100.261		$_{3/2}$		$_{3/2}$	10 367	1 007 768	150			20
100.662	$3p^63d^9$	$^2D_{3/2}$	$3p^63d^8(^3P)4p$	$^4D^o_{3/2}$	10 367	1 003 790	100			20
100.653		$_{3/2}$		$_{1/2}$	10 367	1 003 879	150			20
100.297		$_{3/2}$		$_{5/2}$	10 367	1 007 410	100			20
99.262		$_{5/2}$		$_{5/2}$	0	1 007 410	2000			20
98.410		$_{5/2}$		$_{7/2}$	0	1 016 191	1200			20
99.648	$3p^63d^9$	$^2D_{3/2}$	$3p^63d^8(^3P)4p$	$^2P^o_{1/2}$	10 367	1 013 897	1200			20
99.530		$_{3/2}$		$_{3/2}$	10 367	1 015 092	1000			20
98.513		$_{5/2}$		$_{3/2}$	0	1 015 092	250			20
99.530	$3p^63d^9$	$^2D_{3/2}$	$3p^63d^8(^3P)4p$	$^2D^o_{5/2}$	10 367	1 015 092	1000			20
99.196		$_{3/2}$		$_{3/2}$	10 367	1 018 468	5			20
98.513		$_{5/2}$		$_{5/2}$	0	1 015 092	250			20
98.187		$_{5/2}$		$_{3/2}$	0	1 018 468	150			20
99.246	$3p^63d^9$	$^2D_{5/2}$	$3p^63d^8(^1G)4p$	$^2F^o_{7/2}$	0	1 007 600	8000			20
99.037		$_{3/2}$		$_{5/2}$	10 367	1 020 095	6000			20
98.910	$3p^63d^9$	$^2D_{3/2}$	$3p^63d^8(^3P)4p$	$^2S^o_{1/2}$	10 367	1 021 383	75			20
97.012	$3p^63d^9$	$^2D_{5/2}$	$3p^63d^8(^1G)4p$	$^2G^o_{7/2}$	0	1 030 797	100			20
91.768	$3p^63d^9$	$^2D_{5/2}$	$3p^63d^8(^1S)4p$	$^2P^o_{3/2}$	0	1 089 708	50			20

Kr XVIII (K sequence)

λ (Å)	Classification				Energy Levels (cm^{-1})		Int.	Type	A(s^{-1})	References
102.001	$3s^23p^63d$	$^2D_{3/2}$	$3s^23p^5(^2P^\circ)3d^2(^3F)$	$^2F^\circ_{5/2}$	0	980 380	50			22
99.330	$3s^23p^63d$	$^2D_{5/2}$	$3s^23p^5(^2P^\circ)3d^2(^1G)$	$^2F^\circ_{7/2}$	15 694	1 022 440	100			22
93.569	$3s^23p^63d$	$^2D_{5/2}$	$3s^23p^5(^2P^\circ)3d^2(^3F)$	$^2D^\circ_{3/2}$	15 694	1 084 470	2			21
93.349		5/2		5/2	15 694	1 086 940	100			22
92.211		3/2		3/2	0	1 084 470	100			22
92.005		3/2		5/2	0	1 086 940	3			21
92.949	$3s^23p^63d$	$^2D_{3/2}$	$3s^23p^5(^2P^\circ)3d^2(^3P)$	$^2P^\circ_{1/2}$	0	1 075 860	20			22
92.721		5/2		3/2	15 694	1 094 200	30			22
91.391		3/2		3/2	0	1 094 200	5			21
35.397	$3s^23p^63d$	$^2D_{5/2}$	$3s^23p^64f$	$^2F^\circ_{7/2}$	15 694	2 840 800	20			21
35.190		3/2		5/2	0	2 841 700	10			21

Kr XIX (Ar sequence)

λ (Å)	Classification				Energy Levels (cm^{-1})		Int.	Type	A(s^{-1})	References
118.667	$3p^6$	$^1S_0$	$3p^53d$	$^3D^\circ_1$	0	842 690	15			$23^{\circ},21^{\Delta}$
96.232	$3p^6$	$^1S_0$	$3p^53d$	$^1P^\circ_1$	0	1 039 160	45			$23^{\circ},21^{\Delta}$

Kr XX (Cl sequence)

λ (Å)	Classification				Energy Levels (cm^{-1})		Int.	Type	A(s^{-1})	References
103.021	$3s^23p^5$	$^2P^\circ_{3/2}$	$3s^23p^4(^1D)3d$	$^2S_{1/2}$	0	970 680	200			25
100.254	$3s^23p^5$	$^2P^\circ_{1/2}$	$3s^23p^4(^3P)3d$	$^2D_{3/2}$	87 287	1 084 750	20			25
99.156		3/2		5/2	0	1 008 510	200			25
99.660	$3s^23p^5$	$^2P^\circ_{3/2}$	$3s^23p^4(^3P)3d$	$^2P_{3/2}$	0	1 003 410	60			25

Kr XXI (S sequence)

λ (Å)	Classification				Energy Levels (cm^{-1})		Int.	Type	A(s^{-1})	References
1268.7	$3s^23p^4$	$^3P_2$	$3s^23p^4$	$^3P_1$	0	78 680				24
108.854	$3s^23p^4$	$^1S_0$	$3s^23p^3(^2P^\circ)3d$	$^1P^\circ_1$	225 100	1 143 760	5			27
107.709	$3s^23p^4$	$^3P_1$	$3s^23p^3(^4S^\circ)3d$	$^3D^\circ_2$	78 680	1 007 100	10			27
107.173	$3s^23p^4$	$^3P_2$	$3s^23p^3(^2P^\circ)3d$	$^3P^\circ_2$	0	933 070	15			27
104.028	$3s^23p^4$	$^1D_2$	$3s^23p^3(^2D^\circ)3d$	$^1F^\circ_3$	114 820	1 076 100	10			27
103.684	$3s^23p^4$	$^3P_2$	$3s^23p^3(^2D^\circ)3d$	$^3P^\circ_2$	0	964 470	5			27
103.268	$3s^23p^4$	$^3P_2$	$3s^23p^3(^2P^\circ)3d$	$^1F^\circ_3$	0	968 350	100			27

Kr XXII (P sequence)

λ (Å)	Classification				Energy Levels (cm^{-1})		Int.	Type	A(s^{-1})	References
912.0	$3s^23p^3$	$^2D^o_{5/2}$	$3s^23p^3$	$^2P^o_{3/2}$	106 960	216 479		M1	5.59+3	24°,58*
114.005	$3s^23p^3$	$^2P^o_{3/2}$	$3s^23p^2(^3P)3d$	$^2D_{5/2}$	216 479	1 093 630	10			28
111.669	$3s^23p^3$	$^4S^o_{3/2}$	$3s^23p^2(^3P)3d$	$^4P_{5/2}$	0	895 500	100			28
110.063		$_{3/2}$		$_{3/2}$	0	908 570	20			28
109.648	$3s^23p^3$	$^2D^o_{3/2}$	$3s^23p^2(^1D)3d$	$^2D_{3/2}$	77 801	989 810	10			28
108.977		$_{3/2}$		$_{5/2}$	77 801	995 430	10			28
108.362	$3s^23p^3$	$^2D^o_{5/2}$	$3s^23p^2(^3P)3d$	$^2F_{7/2}$	106 960	1 029 790	300			28

Kr XXIII (Si sequence)

λ (Å)	Classification				Energy Levels (cm^{-1})		Int.	Type	A(s^{-1})	References
3840.9	$3s^23p^2$	$^3P_1$	$3s^23p^2$	$^3P_2$	68 369	94 397		M1	1.46+2	24°,58*
1462.65		$_0$		$_1$	0	68 369		M1	4.91+3	29°,58*
853.8	$3s^23p^2$	$^3P_1$	$3s^23p^2$	$^1D_2$	68 369	185 490		M1	8.43+3	24°,58*
144.666	$3s^23p^2$	$^3P_2$	$3s3p^3$	$^3S^o_1$	94 397	785 644	5			30
130.703	$3s^23p^2$	$^1D_2$	$3s^23p3d$	$^3D^o_3$	185 490	950 580	30			30
127.653		$_2$		$_2$	185 490	968 860	20			30
124.322	$3s^23p^2$	$^3P_1$	$3s^23p3d$	$^3P^o_2$	68 369	872 750	5			30
114.005		$_1$		$_0$	68 369	945 520	10			30
112.586		$_1$		$_1$	68 369	956 580	5			30
118.850	$3s^23p^2$	$^1D_2$	$3s^23p3d$	$^1F^o_3$	185 490	1 026 920	10			30
118.468	$3s^23p^2$	$^3P_2$	$3s^23p3d$	$^1D^o_2$	94 397	938 520	5			30
114.921		$_1$		$_2$	68 369	938 520	8			30
116.797	$3s^23p^2$	$^3P_2$	$3s^23p3d$	$^3D^o_3$	94 397	950 580	10			30
112.586		$_0$		$_1$	0	888 210	50			30
107.231	$3s^23p^2$	$^3P_2$	$3s^23p3d$	$^1F^o_3$	94 397	1 026 920	7			30

Kr XXIV (Al sequence)

λ (Å)	Classification				Energy Levels (cm^{-1})		Int.	Type	A(s^{-1})	References
272.54	$3s^23p$	$^2P^o_{3/2}$	$3s3p^2$	$^4P_{3/2}$	97 312	464 230	70			33
248.07		$_{3/2}$		$_{5/2}$	97 312	500 420	180			33
242.56		$_{1/2}$		$_{1/2}$	0	412 270	720			33
194.420	$3s^23p$	$^2P^o_{3/2}$	$3s3p^2$	$^2D_{5/2}$	97 312	611 662	2			32
172.471		$_{1/2}$		$_{3/2}$	0	579 808	10			32
152.111	$3s^23p$	$^2P^o_{3/2}$	$3s3p^2$	$^2P_{1/2}$	97 312	754 727	10			32
149.765		$_{3/2}$		$_{3/2}$	97 312	765 062	50			32
132.44		$_{1/2}$		$_{1/2}$	0	754 727				26
130.702		$_{1/2}$		$_{3/2}$	0	765 062	30			32
152.016	$3s^23p$	$^2P^o_{1/2}$	$3s3p^2$	$^2S_{1/2}$	0	657 825	20			32
134.097	$3s^23p$	$^2P^o_{3/2}$	$3s^23d$	$^2D_{3/2}$	97 312	843 013	15			32
131.795		$_{3/2}$		$_{5/2}$	97 312	856 066	200			32
118.626		$_{1/2}$		$_{3/2}$	0	843 013	50			32

Kr xxv (Mg sequence)

λ (Å)	Classification				Energy Levels (cm^{-1})		Int.	Type	A(s^{-1})	References
242.548	$3s^2$	$^1S_0$	$3s3p$	$^3P^\circ_1$	0	412 290	20			34
217.03	$3s3p$	$^1P^\circ_1$	$3p^2$	$^3P_2$	632 187	1 092 830	5			33
217.03	$3s3d$	$^3D_2$	$3p3d$	$^3F^\circ_3$	1 184 970	1 645 700	6			36
192.92		$_3$		$_4$	1 196 618	1 715 000	*bl*			36
197.620	$3s3p$	$^3P^\circ_2$	$3p^2$	$^1D_2$	490 722	996 610	7			21
171.14		$_1$		$_2$	412 290	996 610	70			33
195.63	$3s3p$	$^3P^\circ_2$	$3p^2$	$^3P_1$	490 722	1 001 890	20			33
192.92		$_1$		$_0$	412 290	930 645	*bl*			36
169.61		$_1$		$_1$	412 290	1 001 890	40			33
166.083		$_2$		$_2$	490 722	1 092 830	2			34
163.32		$_0$		$_1$	389 580	1 001 890	60			33
146.942		$_1$		$_2$	412 290	1 092 830				34
186.79	$3s3d$	$^3D_3$	$3p3d$	$^3D^\circ_2$	1 196 618	1 731 900	8			36
175.77		$_3$		$_3$	1 196 618	1 765 500	10			36
172.38		$_2$		$_3$	1 184 970	1 765 500	10			36
181.90	$3s3d$	$^1D_2$	$3p3d$	$^1F^\circ_3$	1 319 434	1 869 500?	18			36
174.86	$3s3d$	$^1D_2$	$3p3d$	$^1P^\circ_1$	1 319 434	1 891 300	6			36
174.01	$3s3p$	$^1P^\circ_1$	$3p^2$	$^1S_0$	632 187	1 206 900	10			36
168.9	$3s3d$	$^3D_2$	$3p3d$	$^3P^\circ_2$	1 184 970	1 777 000	*bl*			36
168.9		$_1$		$_0$	1 177 690	1 769 800	*bl*			36
168.55		$_1$		$_1$	1 177 690	1 771 700	*bl*			36
168.55	$3p3d$	$^1F^\circ_3$	$3d^2$	$^1G_4$	1 869 500?	2 464 200?	*bl*			36
161.31	$3p3d$	$^3P^\circ_2$	$3d^2$	$^3F_3$	1 777 000	2 396 500	4			36
158.181	$3s^2$	$^1S_0$	$3s3p$	$^1P^\circ_1$	0	632 187	600			34
155.09	$3p3d$	$^3D^\circ_3$	$3d^2$	$^3F_4$	1 765 500	2 410 000	15			36
150.42		$_2$		$_3$	1 731 900	2 396 500	13			36
144.40		$_1$		$_2$	1 689 400	2 381 900	8			36
149.768	$3p^2$	$^1D_2$	$3p3d$	$^1D^\circ_2$	996 610	1 664 300	23			36
148.61	$3p^2$	$^3P_2$	$3p3d$	$^3D^\circ_3$	1 092 830	1 765 500	16			36
136.97		$_1$		$_2$	1 001 890	1 731 900	14			36
131.789		$_0$		$_1$	930 645	1 689 400	*bl*			36
146.15	$3p^2$	$^1S_0$	$3p3d$	$^1P^\circ_1$	1 206 900	1 891 300	*bl*			36
146.15	$3p^2$	$^3P_2$	$3p3d$	$^3P^\circ_2$	1 092 830	1 777 000	7			36
129.895		$_1$		$_1$	1 001 890	1 771 700	*bl*			36
145.508	$3s3p$	$^1P^\circ_1$	$3s3d$	$^1D_2$	632 187	1 319 434	10			34
145.498	$3p3d$	$^3P^\circ_2$	$3d^2$	$^3P_2$	1 777 000	2 465 611	25			36
143.90	$3p3d$	$^3F^\circ_4$	$3d^2$	$^3F_4$	1 715 000	2 410 000	10			36
133.24		$_3$		$_3$	1 645 700	2 396 500	*bl*			36
143.90	$3s3p$	$^3P^\circ_2$	$3s3d$	$^3D_2$	490 722	1 184 970	*bl*			36
141.664		$_2$		$_3$	490 722	1 196 618	15			34
129.420		$_1$		$_2$	412 290	1 184 970	50			33
126.886		$_0$		$_1$	389 580	1 177 690	4			34
136.04	$3p^2$	$^1D_2$	$3p3d$	$^3D^\circ_2$	996 610	1 731 900	11			36
129.895		$_2$		$_3$	996 610	1 765 500	*bl*			36

Kr XXV (Mg sequenced) — Continued

λ (Å)	Classification				Energy Levels (cm^{-1})		Int.	Type	$A(s^{-1})$	References
110.242	$3s3p$	$^3P^\circ_1$	$3s3d$	$^1D_2$	412 290	1 319 434	10			21
21.840	$3s^2$	$^1S_0$	$3s4p$	$^1P^\circ_1$	0	4 579 000	5			21

Kr XXVI (Na sequence)

λ (Å)	Classification				Energy Levels (cm^{-1})		Int.	Type	$A(s^{-1})$	References
220.064	$2p^63s$	$^2S_{1/2}$	$2p^63p$	$^2P^\circ_{1/2}$	0	454 413	50			37°,21$^\Delta$
178.994		$_{1/2}$		$_{3/2}$	0	558 678	70			37°,21$^\Delta$
165.160	$2p^63p$	$^2P^\circ_{3/2}$	$2p^63d$	$^2D_{3/2}$	558 678	1 164 182				37
159.920		$_{3/2}$		$_{5/2}$	558 678	1 183 991	30			37°,21$^\Delta$
140.891		$_{1/2}$		$_{3/2}$	454 413	1 164 182	25			37°,21$^\Delta$
59.459	$2p^64f$	$^2F^\circ_{7/2}$	$2p^65g$	$^2G_{9/2}$	5 070 800	6 752 600	8			21
59.377		$_{5/2}$		$_{7/2}$	5 067 200	6 751 400	6			21
55.93	$2p^64d$	$^2D_{5/2}$	$2p^65f$	$^2F^\circ_{7/2}$	4 955 600	6 743 600				31
55.71		$_{3/2}$		$_{5/2}$	4 947 400	6 742 400				31
50.86	$2p^64p$	$^2P^\circ_{3/2}$	$2p^65d$	$^2D_{5/2}$	4 720 300	6 686 500				31
49.93		$_{1/2}$		$_{3/2}$	4 679 700	6 683 100				31
48.59	$2p^64s$	$^2S_{1/2}$	$2p^65p$	$^2P^\circ_{1/2}$	4 492 700	6 550 700				31
48.11		$_{1/2}$		$_{3/2}$	4 492 700	6 571 200				31
25.728	$2p^63d$	$^2D_{5/2}$	$2p^64f$	$^2F^\circ_{7/2}$	1 183 991	5 070 800	40			37°,21$^\Delta$
25.621		$_{3/2}$		$_{5/2}$	1 164 182	5 067 200	30			37°,21$^\Delta$
25.416	$2p^63p$	$^2P^\circ_{3/2}$	$2p^64s$	$^2S_{1/2}$	558 678	4 492 700	30			21
24.766		$_{1/2}$		$_{1/2}$	454 413	4 492 700	10			21
22.743	$2p^63p$	$^2P^\circ_{3/2}$	$2p^64d$	$^2D_{5/2}$	558 678	4 955 600	10			21
22.257		$_{1/2}$		$_{3/2}$	454 413	4 947 400	5			21
21.369	$2p^63s$	$^2S_{1/2}$	$2p^64p$	$^2P^\circ_{1/2}$	0	4 679 700	10			21
21.185		$_{1/2}$		$_{3/2}$	0	4 720 300	15			21
17.99	$2p^63d$	$^2D_{5/2}$	$2p^65f$	$^2F^\circ_{7/2}$	1 183 991	6 743 600				31
17.94		$_{3/2}$		$_{5/2}$	1 164 182	6 742 400				31
16.34	$2p^63p$	$^2P^\circ_{3/2}$	$2p^65d$	$^2D_{3/2}$	558 678	6 683 100				31
16.07		$_{1/2}$		$_{3/2}$	454 413	6 683 100				31
15.21	$2p^63s$	$^2S_{1/2}$	$2p^65p$	$^2P^\circ_{1/2}$	0	6 550 700				31
15.21		$_{1/2}$		$_{3/2}$	0	6 571 200				31
7.570	$2p^63s$	$^2S_{1/2}$	$2p^53s^2$	$^2P^\circ_{3/2}$	0	13 210 000				38
7.322		$_{1/2}$		$_{1/2}$	0	13 657 000				38

Kr XXVII (Ne sequence)

λ (Å)	Classification				Energy Levels (cm^{-1})		Int.	Type	A(s^{-1})	References
242.85	$2p^5(^2P^{\circ}_{3/2})3s$	$(^3/_2,^1/_2)^{\circ}_1$	$2p^5(^2P^{\circ}_{3/2})3p$	$(^3/_2,^1/_2)_2$	13 326 500	13 738 200				39
242.25		$_2$		$_1$	13 300 500	13 713 300				39
228.50		$_2$		$_2$	13 300 500	13 738 200				39
241.37	$2p^5(^2P^{\circ}_{1/2})3s$	$(^1/_2,^1/_2)^{\circ}_1$	$2p^5(^2P^{\circ}_{1/2})3p$	$(^1/_2,^1/_2)_1$	13 758 000	14 172 300				39
234.18		$_0$		$_1$	13 745 300	14 172 300				39
170.55^T		$_1$		$_0$	13 758 000	14 344 300?				39
196.30	$2p^5(^2P^{\circ}_{3/2})3s$	$(^3/_2,^1/_2)^{\circ}_1$	$2p^5(^2P^{\circ}_{3/2})3p$	$(^3/_2,^3/_2)_1$	13 326 500	13 835 900				39
188.38		$_2$		$_3$	13 300 500	13 831 300	11			39,31$^{\Delta}$
183.90		$_1$		$_2$	13 326 500	13 870 200	4			39°,31$^{\Delta}$
175.55		$_2$		$_2$	13 300 500	13 870 200	10			39°,31$^{\Delta}$
147.51^T		$_1$		$_0$	13 326 500	14 004 200?				39°
190.14	$2p^5(^2P^{\circ}_{1/2})3s$	$(^1/_2,^1/_2)^{\circ}_1$	$2p^5(^2P^{\circ}_{1/2})3p$	$(^1/_2,^3/_2)_1$	13 758 000	14 283 900				39
186.70		$_1$		$_2$	13 758 000	14 293 600	8			39°,31$^{\Delta}$
185.65		$_0$		$_1$	13 745 300	14 283 900	4			39°,31$^{\Delta}$
188.38	$2p^5(^2P^{\circ}_{3/2})3p$	$(^3/_2,^3/_2)_2$	$2p^5(^2P^{\circ}_{3/2})3d$	$(^3/_2,^5/_2)^{\circ}_2$	13 870 200	14 401 100	11			39°,31$^{\Delta}$
176.15		$_3$		$_4$	13 831 300	14 399 000	10			39°,31$^{\Delta}$
173.05		$_2$		$_3$	13 870 200	14 448 200	10			39°,31$^{\Delta}$
162.08		$_3$		$_3$	13 831 300	14 448 200				39
177.65	$2p^5(^2P^{\circ}_{3/2})3p$	$(^3/_2,^3/_2)_3$	$2p^5(^2P^{\circ}_{3/2})3d$	$(^3/_2,^3/_2)^{\circ}_3$	13 831 300	14 394 500				39
169.97		$_1$		$_2$	13 835 900	14 424 300	4			39°,31$^{\Delta}$
174.10	$2p^5(^2P^{\circ}_{1/2})3p$	$(^1/_2,^3/_2)_1$	$2p^5(^2P^{\circ}_{1/2})3d$	$(^1/_2,^5/_2)^{\circ}_2$	14 283 900	14 858 300	10			39°,31$^{\Delta}$
173.60		$_2$		$_3$	14 293 600	14 869 700	9			39°,31$^{\Delta}$
159.06	$2p^5(^2P^{\circ}_{3/2})3p$	$(^3/_2,^1/_2)_1$	$2p^5(^2P^{\circ}_{3/2})3d$	$(^3/_2,^3/_2)^{\circ}_0$	13 713 300	14 342 000				39
158.45^T		$_2$		$_1$	13 738 200	14 369 400				39
152.38		$_1$		$_1$	13 713 300	14 369 400				39
152.38		$_2$		$_3$	13 738 200	14 394 500				39
145.75		$_2$		$_2$	13 738 200	14 424 300				39
150.89	$2p^5(^2P^{\circ}_{3/2})3p$	$(^3/_2,^1/_2)_2$	$2p^5(^2P^{\circ}_{3/2})3d$	$(^3/_2,^5/_2)^{\circ}_2$	13 738 200	14 401 100				39
145.35		$_1$		$_2$	13 713 300	14 401 100				39
149.75	$2p^5(^2P^{\circ}_{1/2})3p$	$(^1/_2,^1/_2)_1$	$2p^5(^2P^{\circ}_{1/2})3d$	$(^1/_2,^3/_2)^{\circ}_2$	14 172 300	14 840 100				39
7.504	$2s^22p^6$	$^1S_0$	$2s^22p^5(^2P^{\circ}_{3/2})3s$	$(^3/_2,^1/_2)^{\circ}_1$	0	13 326 500	9			41
7.268	$2s^22p^6$	$^1S_0$	$2s^22p^5(^2P^{\circ}_{1/2})3s$	$(^1/_2,^1/_2)^{\circ}_1$	0	13 758 000	6			41
6.955	$2s^22p^6$	$^1S_0$	$2s^22p^5(^2P^{\circ}_{3/2})3d$	$(^3/_2,^3/_2)^{\circ}_1$	0	14 369 400	7			41
6.878	$2s^22p^6$	$^1S_0$	$2s^22p^5(^2P^{\circ}_{3/2})3d$	$(^3/_2,^5/_2)^{\circ}_1$	0	14 533 000	10			41
6.694	$2s^22p^6$	$^1S_0$	$2s^22p^5(^2P^{\circ}_{1/2})3d$	$(^1/_2,^3/_2)^{\circ}_1$	0	14 928 000	8			41
6.383	$2s^22p^6$	$^1S_0$	$2s2p^6(^2S_{1/2})3p$	$(^1/_2,^1/_2)^{\circ}_1$	0	15 662 000	5			41
6.333	$2s^22p^6$	$^1S_0$	$2s2p^6(^2S_{1/2})3p$	$(^1/_2,^3/_2)^{\circ}_1$	0	15 783 000	4			41

Kr XXVIII (F sequence)

λ (Å)	Classification				Energy Levels (cm^{-1})		Int.	Type	A(s^{-1})	References
223.995	$2s^22p^5$	$^2P^\circ_{3/2}$	$2s^22p^5$	$^2P^\circ_{1/2}$	0	446 440		M1	1.59+6	43°,58*
68.733	$2s^22p^5$	$^2P^\circ_{1/2}$	$2s2p^6$	$^2S_{1/2}$	446 440	1 901 350	10			43°,21$^{\Delta}$
52.594		3/2		1/2	0	1 901 350	25			43°,21$^{\Delta}$
7.209	$2s^22p^5$	$^2P^\circ_{3/2}$	$2s^22p^4(^3P_2)3s$	$(2,{}^1/_2)_{5/2}$	0	13 872 000				38
7.193		3/2		3/2	0	13 902 000				38
7.209	$2s^22p^5$	$^2P^\circ_{1/2}$	$2s^22p^4(^3P_1)3s$	$(1,{}^1/_2)_{1/2}$	446 440	14 337 000				38
6.997		3/2		3/2	0	14 292 000				38
6.975		3/2		1/2	0	14 337 000				38
7.162	$2s^22p^5$	$^2P^\circ_{1/2}$	$2s^22p^4(^1D_2)3s$	$(2,{}^1/_2)_{3/2}$	446 440	14 409 000				38
6.941		3/2		5/2	0	14 407 000				38
7.123	$2s^22p^5$	$^2P^\circ_{3/2}$	$2s^22p^4(^3P_0)3s$	$(0,{}^1/_2)_{1/2}$	0	14 039 000				38
6.881	$2s^22p^5$	$^2P^\circ_{1/2}$	$2s^22p^4(^3P_2)3d$	$(2,{}^5/_2)_{3/2}$	446 440	14 977 000				38
6.678		3/2		3/2	0	14 977 000				38
6.678		3/2		1/2	0	14 977 000?				38
6.663		3/2		5/2	0	15 008 000				38
6.727	$2s^22p^5$	$^2P^\circ_{1/2}$	$2s^22p^4(^3P_0)3d$	$(0,{}^3/_2)_{3/2}$	446 440	15 312 000				38
6.715	$2s^22p^5$	$^2P^\circ_{3/2}$	$2s^22p^4(^3P_2)3d$	$(2,{}^3/_2)_{1/2}$	0	14 892 000				38
6.699	$2s^22p^5$	$^2P^\circ_{1/2}$	$2s^22p^4(^3P_1)3d$	$(1,{}^5/_2)_{3/2}$	446 440	15 374 000				38
6.502		3/2		5/2	0	15 380 000				38
6.663	$2s^22p^5$	$^2P^\circ_{1/2}$	$2s^22p^4(^1D_2)3d$	$(2,{}^3/_2)_{3/2}$	446 440	15 460 000				38
6.479		3/2		1/2	0	15 434 000				38
6.466		3/2		3/2	0	15 460 000				38
6.466		3/2		5/2	0	15 466 000				38
6.639	$2s^22p^5$	$^2P^\circ_{3/2}$	$2s^22p^4(^1S_0)3d$	$(0,{}^3/_2)_{3/2}$	0	15 062 000				38
6.626	$2s^22p^5$	$^2P^\circ_{3/2}$	$2s^22p^4(^3P_0)3d$	$(0,{}^5/_2)_{5/2}$	0	15 092 000				38
6.626	$2s^22p^5$	$^2P^\circ_{1/2}$	$2s^22p^4(^1D_2)3d$	$(2,{}^5/_2)_{3/2}$	446 440	15 557 000				38
6.614		1/2		1/2	446 440	15 573 000				38
6.428		3/2		3/2	0	15 557 000				38
6.418		3/2		1/2	0	15 573 000				38
6.519	$2s^22p^5$	$^2P^\circ_{3/2}$	$2s^22p^4(^3P_1)3d$	$(1,{}^3/_2)_{5/2}$	0	15 340 000				38
6.428	$2s^22p^5$	$^2P^\circ_{1/2}$	$2s2p^5(^1P^\circ)3p$	$^2S_{1/2}$	446 440	15 990 000?				38
6.259		3/2		1/2	0	15 990 000?				38
6.214	$2s^22p^5$	$^2P^\circ_{1/2}$	$2s2p^5(^3P^\circ)3p$	$^4D_{3/2}$	446 440	16 540 000?				38
6.185	$2s2p^6$	$^2S_{1/2}$	$2p^63p$	$^2P^\circ_{1/2}$	1 901 350	18 069 000				38
6.145		1/2		3/2	1 901 350	18 175 000				38
6.171	$2s^22p^5$	$^2P^\circ_{1/2}$	$2s2p^5(^3P^\circ)3p$	$^4P_{3/2}$	446 440	16 652 000?				38
6.171	$2s^22p^5$	$^2P^\circ_{3/2}$	$2s2p^5(^1P^\circ)3p$	$^2P_{1/2}$	0	16 200 000?				38
6.166	$2s^22p^5$	$^2P^\circ_{3/2}$	$2s2p^5(^1P^\circ)3p$	$^2D_{5/2}$	0	16 218 000?				38
6.145	$2s^22p^5$	$^2P^\circ_{3/2}$	$2s2p^5(^3P^\circ)3p$	$^2S_{1/2}$	0	16 273 000?				38
6.145	$2s^22p^5$	$^2P^\circ_{1/2}$	$2s2p^5(^3P^\circ)3p$	$^2P_{1/2}$	446 440	16 720 000?				38
6.129		3/2		3/2	0	16 316 000?				38

Kr XXIX (O sequence)

λ (Å)	Classification				Enery Levels (cm^{-1})		Int.	Type	A(s^{-1})	References
235.95	$2s^22p^4$	$^3P_2$	$2s^22p^4$	$^3P_1$	0	423 820		M1	1.34+6	43°,58*
190.515	$2s^22p^4$	$^3P_2$	$2s^22p^4$	$^1D_2$	0	524 890		M1	9.82+5	43°,58*
86.98	$2s^22p^4$	$^1D_2$	$2s2p^5$	$^3P^o_2$	524 890	1 674 650				43
74.663		$_2$		$_1$	524 890	1 864 320				43
79.947	$2s^22p^4$	$^3P_1$	$2s2p^5$	$^3P^o_2$	423 820	1 674 650				43
69.414		$_1$		$_1$	423 820	1 864 320				43
59.714		$_2$		$_2$	0	1 674 650				43°,21
58.700		$_0$		$_1$	160 700	1 864 320				43
58.48		$_1$		$_0$	423 820	2 133 800				42
53.640		$_2$		$_1$	0	1 864 320				43°,21
53.977	$2s^22p^4$	$^1D_2$	$2s2p^5$	$^1P^o_1$	524 890	2 377 700				21

Kr XXX (N sequence)

λ (Å)	Classification				Energy Levels (cm^{-1})		Int.	Type	A(s^{-1})	References
259.807	$2s^22p^3$	$^4S^o_{3/2}$	$2s^22p^3$	$^2D^o_{3/2}$	0	384 900		M1	1.21+6	43°,58*
205.247		$_{3/2}$		$_{5/2}$	0	487 220		M1	2.19+5	43°,58*
160.90^T	$2s^22p^3$	$^4S^o_{3/2}$	$2s^22p^3$	$^2P^o_{1/2}$	0	621 500		M1	1.52+6	43°,58*
110.62	$2s^22p^3$	$^2D^o_{5/2}$	$2s2p^4$	$^4P_{5/2}$	487 220	1 391 300				43
86.26		$_{5/2}$		$_{3/2}$	487 220	1 646 580				43
71.875	$2s^22p^3$	$^4S^o_{3/2}$	$2s2p^4$	$^4P_{5/2}$	0	1 391 300				43
60.732		$_{3/2}$		$_{3/2}$	0	1 646 580				43
60.332		$_{3/2}$		$_{1/2}$	0	1 657 500				43
63.671	$2s^22p^3$	$^2D^o_{3/2}$	$2s2p^4$	$^2D_{3/2}$	384 900	1 955 480				43
54.596	$2s^22p^3$	$^2D^o_{5/2}$	$2s2p^4$	$^2P_{3/2}$	487 220	2 318 860				43

Kr XXXI (C sequence)

λ (Å)	Classification				Energy Levels (cm^{-1})		Int.	Type	A(s^{-1})	References
252.001	$2s^22p^2$	$^3P_0$	$2s^22p^2$	$^3P_1$	0	396 820		M1	8.78+5	43°,58*
95.057	$2s^22p^2$	$^3P_2$	$2s2p^3$	$^3D^o_1$	478 200	1 530 200				43
79.557		$_1$		$_2$	396 820	1 653 800				43
76.610		$_2$		$_3$	478 200	1 783 500				43
65.352		$_0$		$_1$	0	1 530 200				43
79.45	$2s2p^3$	$^3P^o_1$	$2p^4$	$^3P_0$	1 999 100	3 258 000				46
64.14	$2s^22p^2$	$^3P_1$	$2s2p^3$	$^3P^o_0$	396 820	1 955 900				46
63.103		$_2$		$_2$	478 200	2 062 900				43
62.411		$_1$		$_1$	396 820	1 999 100				43
59.748	$2s^22p^2$	$^3P_2$	$2s2p^3$	$^3S^o_1$	478 200	2 151 900				43
56.976^T		$_1$		$_1$	396 820	2 151 900				43

Kr XXXII (B sequence)

λ (Å)	Classification				Energy Levels (cm^{-1})		Int.	Type	A(s^{-1})	References
203.021	$2s^22p$	$^2P^\circ_{1/2}$	$2s^22p$	$^2P^\circ_{3/2}$	0	492 560		M1	1.06+6	43°,58*
93.75	$2s2p^2$	$^2D_{5/2}$	$2p^3$	$^2D^\circ_{5/2}$	1 671 000	2 738 000				45
84.89	$2s^22p$	$^2P^\circ_{3/2}$	$2s2p^2$	$^2D_{5/2}$	492 560	1 671 000				45
69.957		1/2		3/2	0	1 430 000				43
78.90	$2s2p^2$	$^2P_{3/2}$	$2p^3$	$^2P^\circ_{3/2}$	2 041 000	3 308 000				45
66.538	$2s^22p$	$^2P^\circ_{1/2}$	$2s2p^2$	$^2S_{1/2}$	0	1 503 000				43
65.00	$2s^22p$	$^2P^\circ_{3/2}$	$2s2p^2$	$^2P_{1/2}$	492 560	2 031 000				45
64.59		3/2		3/2	492 560	2 041 000				45

Kr XXXIII (Be sequence)

λ (Å)	Classification				Energy Levels (cm^{-1})		Int.	Type	A(s^{-1})	References
235.48	$1s^22s2p$	$^3P^\circ_1$	$1s^22s2p$	$^3P^\circ_2$	588 770	1 013 440		M1	9.29+5	43°,58*
169.845	$1s^22s^2$	$^1S_0$	$1s^22s2p$	$^3P^\circ_1$	0	588 770				43
123.10	$1s^22s2p$	$^3P^\circ_2$	$1s^22p^2$	$^3P_1$	1 013 440	1 827 200				45
117.74		1		0	588 770	1 438 100				45
111.65		2		2	1 013 440	1 909 800				45
80.75		1		1	588 770	1 827 200				45
75.66		0		1	505 500	1 827 200				45
75.66		1		2	588 770	1 909 800				45
98.19	$1s^22s2p$	$^1P^\circ_1$	$1s^22p^2$	$^1D_2$	1 374 460	2 391 300				45
77.10	$1s^22s2p$	$^1P^\circ_1$	$1s^22p^2$	$^1S_0$	1 374 460	2 671 500				45
72.756	$1s^22s^2$	$^1S_0$	$1s^22s2p$	$^1P^\circ_1$	0	1 374 460				43
72.66	$1s^22s2p$	$^3P^\circ_2$	$1s^22p^2$	$^1D_2$	1 013 440	2 391 300				45

Kr XXXIV (Li sequence)

λ (Å)	Classification				Energy Levels (cm^{-1})		Int.	Type	A(s^{-1})	References
190.94^{C}	$1s^22p$	$^2P^\circ_{1/2}$	$1s^22p$	$^2P^\circ_{3/2}$	574 594	1 098 310		M1		43
174.036	$1s^22s$	$^2S_{1/2}$	$1s^22p$	$^2P^\circ_{1/2}$	0	574 594				43
91.049		1/2		3/2	0	1 098 310				43
34.532^{C}	$1s^24p$	$^2P^\circ_{3/2}$	$1s^25d$	$^2D_{3/2}$	[25 148 400]	[28 044 300]				47
34.406^{C}		3/2		5/2	[25 148 400]	[28 054 900]				47
33.770^{C}		1/2		3/2	[25 083 100]	[28 044 300]				47
16.382^{C}	$1s^23p$	$^2P^\circ_{3/2}$	$1s^24s$	$^2S_{1/2}$	[18 912 400]	[25 016 500]				47
15.977^{C}		1/2		1/2	[18 757 400]	[25 016 500]				47
15.973^{C}	$1s^23p$	$^2P^\circ_{3/2}$	$1s^24d$	$^2D_{3/2}$	[18 912 400]	[25 173 100]				47
15.920^{C}		3/2		5/2	[18 912 400]	[25 193 700]				47
15.587^{C}		1/2		3/2	[18 757 400]	[25 173 100]				47
15.421^{C}	$1s^23s$	$^2S_{1/2}$	$1s^24p$	$^2P^\circ_{1/2}$	[18 598 400]	[25 083 100]				47
15.267^{C}		1/2		3/2	[18 598 400]	[25 148 400]				47

Kr XXXIV (Li sequence) — Continued

λ (Å)	Classification				Energy Levels (cm^{-1})		Int.	Type	A(s^{-1})	References
11.047^{C}	$1s^23p$	$^2P^\circ_{3/2}$	$1s^25s$	$^2S_{1/2}$	[18 912 400]	[27 964 400]				47
10.861^{C}		$_{1/2}$		$_{1/2}$	[18 757 400]	[27 964 400]				47
10.951^{C}	$1s^23p$	$^2P^\circ_{3/2}$	$1s^25d$	$^2D_{3/2}$	[18 912 400]	[28 044 300]				47
10.938^{C}		$_{3/2}$		$_{5/2}$	[18 912 400]	[28 054 900]				47
10.768^{C}		$_{1/2}$		$_{3/2}$	[18 757 400]	[28 044 300]				47
5.7143^{C}	$1s^22p$	$^2P^\circ_{3/2}$	$1s^23s$	$^2S_{1/2}$	1 098 310	[18 598 400]				47
5.5482^{C}		$_{1/2}$		$_{1/2}$	574 594	[18 598 400]				47
5.5952^{C}	$1s^22p$	$^2P^\circ_{3/2}$	$1s^23d$	$^2D_{3/2}$	1 098 310	[18 970 900]				47
5.5799^{C}		$_{3/2}$		$_{5/2}$	1 098 310	[19 019 700]				47
5.4359^{C}		$_{1/2}$		$_{3/2}$	574 594	[18 970 900]				47
5.3312^{C}	$1s^22s$	$^2S_{1/2}$	$1s^23p$	$^2P^\circ_{1/2}$	0	[18 757 400]				47
5.2875^{C}		$_{1/2}$		$_{3/2}$	0	[18 912 400]				47
4.18092^{C}	$1s^22p$	$^2P^\circ_{3/2}$	$1s^24s$	$^2S_{1/2}$	1 098 310	[25 016 500]				47
4.09133^{C}		$_{1/2}$		$_{1/2}$	574 594	[25 016 500]				47
4.15372^{C}	$1s^22p$	$^2P^\circ_{3/2}$	$1s^24d$	$^2D_{3/2}$	1 098 310	[25 173 100]				47
4.15017^{C}		$_{3/2}$		$_{5/2}$	1 098 310	[25 193 700]				47
4.06529^{C}		$_{1/2}$		$_{3/2}$	574 594	[25 173 100]				47
3.98675^{C}	$1s^22s$	$^2S_{1/2}$	$1s^24p$	$^2P^\circ_{1/2}$	0	[25 083 100]				47
3.97640^{C}		$_{1/2}$		$_{3/2}$	0	[25 148 400]				47
3.72216^{C}	$1s^22p$	$^2P^\circ_{3/2}$	$1s^25s$	$^2S_{1/2}$	1 098 310	[27 964 400]				47
3.65099^{C}		$_{1/2}$		$_{1/2}$	574 594	[27 964 400]				47
3.71113^{C}	$1s^22p$	$^2P^\circ_{3/2}$	$1s^25d$	$^2D_{3/2}$	1 098 310	[28 044 300]				47
3.70967^{C}		$_{3/2}$		$_{5/2}$	1 098 310	[28 054 900]				47
3.64037^{C}		$_{1/2}$		$_{3/2}$	574 594	[28 044 300]				47
3.57163^{C}	$1s^22s$	$^2S_{1/2}$	$1s^25p$	$^2P^\circ_{1/2}$	0	[27 998 400]				47
3.56739^{C}		$_{1/2}$		$_{3/2}$	0	[28 031 700]				47
0.96894^{C}	$1s^22p$	$^2P^\circ_{3/2}$	$1s2s^2$	$^2S_{1/2}$	1 098 310	[104 304 000]				47
0.96405^{C}		$_{1/2}$		$_{1/2}$	574 594	[104 304 000]				47
0.96037^{C}	$1s^22p$	$^2P^\circ_{3/2}$	$1s(^2S)2p^2(^3P)$	$^4P_{1/2}$	1 098 310	[105 225 000]				47
0.95709^{C}		$_{3/2}$		$_{3/2}$	1 098 310	[105 582 000]				47
0.95614^{C}		$_{3/2}$		$_{5/2}$	1 098 310	[105 685 000]				47
0.95556^{C}		$_{1/2}$		$_{1/2}$	574 594	[105 225 000]				47
0.95231^{C}		$_{1/2}$		$_{3/2}$	574 594	[105 582 000]				47
0.95725^{C}	$1s^22s$	$^2S_{1/2}$	$1s(^2S)2s2p(^3P^\circ)$	$^4P^\circ_{1/2}$	0	[104 466 000]				47
0.95652^{C}		$_{1/2}$		$_{3/2}$	0	[104 546 000]				47
0.95500^{C}	$1s^22p$	$^2P^\circ_{3/2}$	$1s(^2S)2p^2(^3P)$	$^2P_{1/2}$	1 098 310	[105 810 000]				47
0.95025^{C}		$_{1/2}$		$_{1/2}$	574 594	[105 810 000]				47
0.94972^{C}		$_{3/2}$		$_{3/2}$	1 098 310	[106 393 000]				47
0.94502^{C}		$_{1/2}$		$_{3/2}$	574 594	[106 393 000]				47
0.95460^{C}	$1s^22p$	$^2P^\circ_{3/2}$	$1s(^2S)2p^2(^1D)$	$^2D_{3/2}$	1 098 310	[105 854 000]				47
0.95137^{C}		$_{3/2}$		$_{5/2}$	1 098 310	[106 210 000]				47
0.94985^{C}		$_{1/2}$		$_{3/2}$	574 594	[105 854 000]				47
0.95288^{C}	$1s^22s$	$^2S_{1/2}$	$1s(^2S)2s2p(^3P^\circ)$	$^2P^\circ_{1/2}$	0	[104 945 000]				47
0.94961^{C}		$_{1/2}$		$_{3/2}$	0	[105 306 000]				47
0.94818^{C}	$1s^22p$	$^2P^\circ_{3/2}$	$1s(^2S)2p^2(^1S)$	$^2S_{1/2}$	1 098 310	[106 564 000]				47
0.94349^{C}		$_{1/2}$		$_{1/2}$	574 594	[106 564 000]				47
0.94804^{C}	$1s^22s$	$^2S_{1/2}$	$1s(^2S)2s2p(^1P^\circ)$	$^2P^\circ_{1/2}$	0	[105 481 000]				47
0.94746^{C}		$_{1/2}$		$_{3/2}$	0	[105 545 000]				47

Kr XXXV (He sequence)

λ (Å)	Classification				Energy Levels (cm^{-1})		Int.	Type	A(s^{-1})	References
4970^{C}	1s4p	$^{3}\mathrm{P}^{\circ}_{2}$	1s4d	$^{3}\mathrm{D}_{2}$	[131 045 300]	[131 065 400]				
2320^{C}		$_{2}$		$_{3}$	[131 045 300]	[131 088 300]				
1150^{C}		$_{1}$		$_{1}$	[130 979 800]	[131 066 600]				
1120^{C}		$_{0}$		$_{1}$	[130 977 100]	[131 066 600]				
4520^{C}	1s5s	$^{3}\mathrm{S}_{1}$	1s5p	$^{3}\mathrm{P}^{\circ}_{1}$	[134 043 100]	[134 065 200]				
1800^{C}		$_{1}$		$_{2}$	[134 043 100]	[134 098 700]				
2300^{C}	1s4s	$^{3}\mathrm{S}_{1}$	1s4p	$^{3}\mathrm{P}^{\circ}_{1}$	[130 936 300]	[130 979 800]				
917^{C}		$_{1}$		$_{2}$	[130 936 300]	[131 045 300]				
2200^{C}	1s5s	$^{1}\mathrm{S}_{0}$	1s5p	$^{1}\mathrm{P}^{\circ}_{1}$	[134 064 500]	[134 110 000]				
1130^{C}	1s4s	$^{1}\mathrm{S}_{0}$	1s4p	$^{1}\mathrm{P}^{\circ}_{1}$	[130 978 400]	[131 067 200]				
963^{C}	1s3s	$^{3}\mathrm{S}_{1}$	1s3p	$^{3}\mathrm{P}^{\circ}_{1}$	[124 183 600]	[124 287 400]				
385.2^{C}		$_{1}$		$_{2}$	[124 183 600]	[124 443 200]				
477.3^{C}	1s3s	$^{1}\mathrm{S}_{0}$	1s3p	$^{1}\mathrm{P}^{\circ}_{1}$	[124 285 900]	[124 495 400]				
279.8	1s2s	$^{3}\mathrm{S}_{1}$	1s2p	$^{3}\mathrm{P}^{\circ}_{0}$	[104 691 700]	105 049 100				45
265.6^{C}		$_{1}$		$_{1}$	[104 691 700]	105 068 200				
111.11		$_{1}$		$_{2}$	[104 691 700]	105 591 700				45
140.9^{C}	1s2s	$^{1}\mathrm{S}_{0}$	1s2p	$^{1}\mathrm{P}^{\circ}_{1}$	[105 073 300]	105 783 200				
91.62^{C}	1s2s	$^{3}\mathrm{S}_{1}$	1s2p	$^{1}\mathrm{P}^{\circ}_{1}$	[104 691 700]	105 783 200				
33.363^{C}	1s4p	$^{1}\mathrm{P}^{\circ}_{1}$	1s5s	$^{1}\mathrm{S}_{0}$	[131 067 200]	[134 064 500]				
33.358^{C}	1s4p	$^{3}\mathrm{P}^{\circ}_{2}$	1s5s	$^{3}\mathrm{S}_{1}$	[131 045 300]	[134 043 100]				
32.645^{C}		$_{1}$		$_{1}$	[130 979 800]	[134 043 100]				
31.960^{C}	1s4s	$^{3}\mathrm{S}_{1}$	1s5p	$^{3}\mathrm{P}^{\circ}_{1}$	[130 936 300]	[134 065 200]				
31.933^{C}	1s4s	$^{1}\mathrm{S}_{0}$	1s5p	$^{1}\mathrm{P}^{\circ}_{1}$	[130 978 400]	[134 110 000]				
15.425^{C}	1s3p	$^{1}\mathrm{P}^{\circ}_{1}$	1s4s	$^{1}\mathrm{S}_{0}$	[124 495 400]	[130 978 400]				
15.424^{C}	1s3d	$^{3}\mathrm{D}_{1}$	1s4p	$^{3}\mathrm{P}^{\circ}_{0}$	[124 493 800]	[130 977 100]				
15.418^{C}		$_{1}$		$_{1}$	[124 493 800]	[130 979 800]				
15.411^{C}		$_{2}$		$_{1}$	[124 491 000]	[130 979 800]				
15.384^{C}		$_{3}$		$_{2}$	[124 545 100]	[131 045 300]				
15.257^{C}		$_{2}$		$_{2}$	[124 491 000]	[131 045 300]				
15.401^{C}	1s3p	$^{3}\mathrm{P}^{\circ}_{2}$	1s4s	$^{3}\mathrm{S}_{1}$	[124 443 200]	[130 936 300]				
15.040^{C}		$_{1}$		$_{1}$	[124 287 400]	[130 936 300]				
15.343^{C}	1s3d	$^{1}\mathrm{D}_{2}$	1s4p	$^{1}\mathrm{P}^{\circ}_{1}$	[124 549 400]	[131 067 200]				
15.164^{C}	1s3p	$^{1}\mathrm{P}^{\circ}_{1}$	1s4d	$^{1}\mathrm{D}_{2}$	[124 495 400]	[131 090 100]				
15.101^{C}	1s3p	$^{3}\mathrm{P}^{\circ}_{2}$	1s4d	$^{3}\mathrm{D}_{2}$	[124 443 200]	[131 065 400]				
15.049^{C}		$_{2}$		$_{3}$	[124 443 200]	[131 088 300]				
14.751^{C}		$_{1}$		$_{1}$	[124 287 400]	[131 066 600]				
14.739^{C}		$_{0}$		$_{1}$	[124 281 700]	[131 066 600]				
14.746^{C}	1s3s	$^{1}\mathrm{S}_{0}$	1s4p	$^{1}\mathrm{P}^{\circ}_{1}$	[124 285 900]	[131 067 200]				
14.714^{C}	1s3s	$^{3}\mathrm{S}_{1}$	1s4p	$^{3}\mathrm{P}^{\circ}_{1}$	[124 183 600]	[130 979 800]				
14.574^{C}		$_{1}$		$_{2}$	[124 183 600]	[131 045 300]				
10.450^{C}	1s3p	$^{1}\mathrm{P}^{\circ}_{1}$	1s5s	$^{1}\mathrm{S}_{0}$	[124 495 400]	[134 064 500]				
10.417^{C}	1s3p	$^{3}\mathrm{P}^{\circ}_{2}$	1s5s	$^{3}\mathrm{S}_{1}$	[124 443 200]	[134 043 100]				
10.250^{C}		$_{1}$		$_{1}$	[124 287 400]	[134 043 100]				

Kr xxxv (He sequence)

λ (Å)	Classification				Energy Levels (cm^{-1})		Int.	Type	A(s^{-1})	References
10.179^C	1*s*3*s*	$^1S_0$	1*s*5*p*	$^1P^\circ_1$	[124 285 900]	[134 110 000]				
10.120^C	1*s*3*s*	$^3S_1$	1*s*5*p*	$^3P^\circ_1$	[124 183 600]	[134 065 200]				
10.086^C		1		2	[124 183 600]	[134 098 700]				
5.4046^C	1*s*2*p*	$^1P^\circ_1$	1*s*3*s*	$^1S_0$	105 783 200	[124 285 900]				
5.3787^C	1*s*2*p*	$^3P^\circ_2$	1*s*3*s*	$^3S_1$	105 591 700	[124 183 600]				
5.2314^C		1		1	105 068 200	[124 183 600]				
5.3287^C	1*s*2*p*	$^1P^\circ_1$	1*s*3*d*	$^1D_2$	105 783 200	[124 549 400]				
5.2912^C	1*s*2*p*	$^3P^\circ_2$	1*s*3*d*	$^3D_2$	105 591 700	[124 491 000]				
5.2761^C		2		3	105 591 700	[124 545 100]				
5.1478^C		1		1	105 068 200	[124 493 800]				
5.1428^C		0		1	105 049 100	[124 493 800]				
5.1488^C	1*s*2*s*	$^1S_0$	1*s*3*p*	$^1P^\circ_1$	[105 073 300]	[124 495 400]				
5.1032^C	1*s*2*s*	$^3S_1$	1*s*3*p*	$^3P^\circ_1$	[104 691 700]	[124 287 400]				
5.0629^C		1		2	[104 691 700]	[124 443 200]				
3.96901^C	1*s*2*p*	$^1P^\circ_1$	1*s*4*s*	$^1S_0$	105 783 200	[130 978 400]				
3.95149^C	1*s*2*p*	$^1P^\circ_1$	1*s*4*d*	$^1D_2$	105 783 200	[131 090 100]				
3.94561^C	1*s*2*p*	$^3P^\circ_2$	1*s*4*s*	$^3S_1$	105 591 700	[130 936 300]				
3.86677^C		1		1	105 068 200	[130 936 300]				
3.92562^C	1*s*2*p*	$^3P^\circ_2$	1*s*4*d*	$^3D_2$	105 591 700	[131 065 400]				
3.92209^C		2		3	105 591 700	[131 088 300]				
3.84639^C		1		1	105 068 200	[131 066 600]				
3.84357^C		0		1	105 049 100	[131 066 600]				
3.84706^C	1*s*2*s*	$^1S_0$	1*s*4*p*	$^1P^\circ_1$	[105 073 300]	[131 067 200]				
3.80400^C	1*s*2*s*	$^3S_1$	1*s*4*p*	$^3P^\circ_1$	[104 691 700]	[130 979 800]				
3.79455^C		1		2	[104 691 700]	[131 045 300]				
3.53591^C	1*s*2*p*	$^1P^\circ_1$	1*s*5*s*	$^1S_0$	105 783 200	[134 064 500]				
3.51477^C	1*s*2*p*	$^3P^\circ_2$	1*s*5*s*	$^3S_1$	105 591 700	[134 043 100]				
3.45126^C		1		1	105 068 200	[134 043 100]				
3.44392^C	1*s*2*s*	$^1S_0$	1*s*5*p*	$^1P^\circ_1$	[105 073 300]	[134 110 000]				
3.40443^C	1*s*2*s*	$^3S_1$	1*s*5*p*	$^3P^\circ_1$	[104 691 700]	[134 065 200]				
3.40055^C		1		2	[104 691 700]	[134 098 700]				
0.95519^C	1*s*^{2}	$^1S_0$	1*s*2*s*	$^3S_1$	0	[104 691 700]		M1		48
0.95176	1*s*^{2}	$^1S_0$	1*s*2*p*	$^3P^\circ_1$	0	105 068 200				49,50°
0.94704^C		0		2	0	105 591 700		M2		49
0.94533	1*s*^{2}	$^1S_0$	1*s*2*p*	$^1P^\circ_1$	0	105 783 200				49,50°
0.93653^C	1*s*2*p*	$^1P^\circ_1$	2*s*^{2}	$^1S_0$	105 783 200	[212 560 000]				47
0.93226^C	1*s*2*p*	$^1P^\circ_1$	2*p*^{2}	$^3P_0$	105 783 200	[213 049 000]				47
0.92872^C		1		1	105 783 200	[213 458 000]				47
0.92308^C		1		2	105 783 200	[214 116 000]				47
0.93030^C	1*s*2*p*	$^3P^\circ_1$	2*s*^{2}	$^1S_0$	105 068 200	[212 560 000]				47
0.92920^C	1*s*2*s*	$^1S_0$	2*s*2*p*	$^3P^\circ_1$	[105 073 300]	[212 693 000]				47

Kr xxxv (He sequence)

λ (Å)	Classification				Energy Levels (cm^{-1})		Int.	Type	A(s^{-1})	References
0.92795^{C}	$1s2p$	$^1P^\circ_1$	$2p^2$	$^1D_2$	105 783 200	[213 548 000]				47
0.92707^{C}	$1s2p$	$^3P^\circ_2$	$2p^2$	$^3P_1$	105 591 700	[213 458 000]				47
0.92609^{C}		1		0	105 068 200	[213 049 000]				47
0.92260^{C}		1		1	105 068 200	[213 458 000]				47
0.92243^{C}		0		1	105 049 100	[213 458 000]				47
0.92145^{C}		2		2	105 591 700	[214 116 000]				47
0.91703^{C}		1		2	105 068 200	[214 116 000]				47
0.92669^{C}	$1s2s$	$^3S_1$	$2s2p$	$^3P^\circ_0$	[104 691 700]	[212 603 000]				47
0.92591^{C}		1		1	[104 691 700]	[212 693 000]				47
0.92160^{C}		1		2	[104 691 700]	[213 199 000]				47
0.92630^{C}	$1s2p$	$^3P^\circ_2$	$2p^2$	$^1D_2$	105 591 700	[213 548 000]				47
0.92183^{C}		1		2	105 068 200	[213 548 000]				47
0.92174^{C}	$1s2s$	$^1S_0$	$2s2p$	$^1P^\circ_1$	[105 073 300]	[213 564 000]				47
0.92039^{C}	$1s2p$	$^1P^\circ_1$	$2p^2$	$^1S_0$	105 783 200	[214 433 000]				47
0.91851^{C}	$1s2s$	$^3S_1$	$2s2p$	$^1P^\circ_1$	[104 691 700]	[213 564 000]				47
0.91437^{C}	$1s2p$	$^3P^\circ_1$	$2p^2$	$^1S_0$	105 068 200	[214 433 000]				47
0.804587^{C}	$1s^2$	$^1S_0$	$1s3p$	$^3P^\circ_1$	0	[124 287 400]				
0.803243^{C}	$1s^2$	$^1S_0$	$1s3p$	$^1P^\circ_1$	0	[124 495 400]				
0.763477^{C}	$1s^2$	$^1S_0$	$1s4p$	$^3P^\circ_1$	0	[130 979 800]				
0.762967^{C}	$1s^2$	$^1S_0$	$1s4p$	$^1P^\circ_1$	0	[131 067 200]				
0.745906^{C}	$1s^2$	$^1S_0$	$1s5p$	$^3P^\circ_1$	0	[134 065 200]				
0.745657^{C}	$1s^2$	$^1S_0$	$1s5p$	$^1P^\circ_1$	0	[134 110 000]				

Kr xxxvi (H sequence)

λ (Å)	Classification				Energy Levels (cm^{-1})		Int.	Type	A(s^{-1})	References
537.3^{C}	$3s$	$^2S_{1/2}$	$3p$	$^2P^\circ_{3/2}$	[128 585 640]	[128 771 760]				
525.7^{C}	$3p$	$^2P^\circ_{1/2}$	$3d$	$^2D_{3/2}$	[128 581 180]	[128 771 410]				
159.11^{C}	$2s$	$^2S_{1/2}$	$2p$	$^2P^\circ_{3/2}$	[108 328 400]	[108 956 890]				
14.4214^{C}	$3d$	$^2D_{5/2}$	$4f$	$^2F^\circ_{7/2}$	[128 832 870]	[135 767 020]				
14.3217^{C}	$3p$	$^2P^\circ_{3/2}$	$4d$	$^2D_{5/2}$	[128 771 760]	[135 754 190]				
14.0002^{C}	$3s$	$^2S_{1/2}$	$4p$	$^2P^\circ_{3/2}$	[128 585 640]	[135 728 370]				
9.86602^{C}	$3d$	$^2D_{5/2}$	$5f$	$^2F^\circ_{7/2}$	[128 832 870]	[138 968 670]				
9.81322^{C}	$3p$	$^2P^\circ_{3/2}$	$5d$	$^2D_{5/2}$	[128 771 760]	[138 962 100]				
9.64949^{C}	$3s$	$^2S_{1/2}$	$5p$	$^2P^\circ_{3/2}$	[128 585 640]	[138 948 880]				
5.03120^{C}	$2p$	$^2P^\circ_{3/2}$	$3d$	$^2D_{5/2}$	[108 956 890]	[128 832 870]				
4.89156^{C}	$2s$	$^2S_{1/2}$	$3p$	$^2P^\circ_{3/2}$	[108 328 400]	[128 771 760]				
3.73172^{C}	$2p$	$^2P^\circ_{3/2}$	$4d$	$^2D_{5/2}$	[108 956 890]	[135 754 190]				

Kr XXXVI (H sequence)

λ (Å)	Classification				Energy Levels (cm^{-1})		Int.	Type	A(s^{-1})	References
3.64964^{C}	$2s$	$^2S_{1/2}$	$4p$	$^2P^o_{3/2}$	[108 328 400]	[135 728 370]				
3.33275^{C}	$2p$	$^2P^o_{3/2}$	$5d$	$^2D_{5/2}$	[108 956 890]	[138 962 100]				
3.26578^{C}	$2s$	$^2S_{1/2}$	$5p$	$^2P^o_{3/2}$	[108 328 400]	[138 948 880]				
0.9232377^{C}	$1s$	$^2S_{1/2}$	$2p$	$^2P^o_{1/2}$	0	[108 314 470]				
0.9177942^{C}		1/2		3/2	0	[108 956 890]				54
0.7777188^{C}	$1s$	$^2S_{1/2}$	$3p$	$^2P^o_{1/2}$	0	[128 581 180]				
0.7765678^{C}		1/2		3/2	0	[128 771 760]				
0.7367656^{C}	$1s$	$^2S_{1/2}$	$4p$	$^2P^o_{3/2}$	0	[135 728 370]				
0.7196891^{C}	$1s$	$^2S_{1/2}$	$5p$	$^2P^o_{3/2}$	0	[138 948 880]				

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