Oscillator Strength and Line Width Measurements of Dipole-Allowed Transitions in $^{14}N_2$ between 93.5 and 99.5 nm

G. Stark
Department of Physics, Wellesley College, Wellesley, Massachusetts 02481

K. P. Huber
Steacie Institute for Molecular Sciences, National Research Council of Canada, Ottawa, Ontario, Canada K1A 0R6

K. Yoshino and Peter L. Smith
Harvard-Smithsonian Center for Astrophysics, Cambridge, Massachusetts 02138

K. Ito
Photon Factory, Institute for Materials Structure Science, High Energy Accelerator Research Organization, 1-1 Oho, Tsukuba, Ibaraki, 305-0801, Japan

Data Archive

This archive contains tables of experimentally determined line *f*-values and line widths for fifteen bands of $^{14}N_2$ in the 93.5–99.5 nm region. The spectra and the data reduction have been discussed in *The Journal of Chemical Physics, Vol…., pp…, 2005.* Tables of line positions and of upper-state term values and molecular parameters for the $b(8)$–$X(0)$ band are also included.

Tables I–XV list line *f*-values and line widths for each of the bands. Band *f*-values derived from line *f*-values and appropriate Hönl-London factors are also listed. The extrapolation of the derived band *f*-values to $J' = 0$ has been described in the above article; it results in "rotationless" *f* values that can be directly compared with predictions of coupled-Schrödinger-equation calculations. Where feasible, the Lorentzian component of the line widths has been extracted from the measurements. Table XVI lists the wave-numbers for the $b(8)$–$X(0)$ rovibronic transitions and the upper-state term values based on the known ground-state energies of Edwards et al. [(J. Mol. Spectrosc. **162**, 257 (1993)]. Table XVII presents the derived molecular parameters for the $b(8)$ vibronic level of $^{14}N_2$.

TABLE I
$b(0) - X(0)$ at 99.190 nm. Line f-values and band f-values.

Line	Line f-value ($\times 10^3$)	Band f-value ($\times 10^3$)
Q(8)	1.26(13)	2.5(3)
Q(9)	1.25(13)	2.5(3)
P(6)	0.48(6)	2.5(3)
P(7)	0.51(8)	2.6(4)
P(8)	0.49(5)	2.4(3)
P(9)	0.46(7)	2.2(3)
R(10)	0.71(8)	2.5(3)
R(11)	0.71(11)	2.5(4)
R(12)	0.60(8)	2.1(3)

TABLE II
$b(1) - X(0)$ at 98.569 nm. Line f-values and band f-values.

Line	Line f-value ($\times 10^3$)	Band f-value ($\times 10^3$)
Q(12)	4.1(2)	8.2(4)
Q(13)	4.2(4)	8.3(8)
Q(14)	3.9(2)	7.9(4)
Q(16)	3.8(3)	7.5(6)
P(10)	1.7(1)	7.9(6)
P(11)	1.8(3)	8.2(12)
P(12)	1.8(1)	8.4(7)
P(14)	1.9(2)	8.5(9)

TABLE III

$b(2) - X(0)$ at 97.893 nm. Line *f*-values, band *f*-values, and Lorentzian line widths.

Line	Line *f*-value ($\times 10^3$)	Band *f*-value ($\times 10^3$)	Lorentzian FWHM ($\times 10^4$ nm)
Q(7)	11(2)	22(4)	5.6(12)
Q(8)	11(1)	22(3)	5.7(7)
Q(17)	9.5(12)	19(2)	3.0(7)
Q(18)	8.2(9)	17(2)	2.7(6)
Q(19)	8.7(11)	17(2)	1.8(7)
Q(20)	8.4(10)	17(2)	1.9(6)
Q(21)	7.7(12)	15(3)	0.7(9)
Q(22)	8.4(11)	17(2)	1.1(8)
Q(23)	8.4(25)	17(5)	0.9(17)
P(6)	3.6(8)	19(4)	4.6(12)
P(15)	4.4(7)	20(3)	3.7(9)
P(16)	4.0(5)	18(2)	3.2(6)
P(17)	3.9(5)	17(2)	2.0(8)
P(18)	4.2(5)	18(2)	2.6(6)
P(19)	4.0(6)	17(3)	1.6(9)
P(20)	4.2(6)	18(2)	1.8(8)
P(21)	3.8(10)	16(4)	0.8(16)
R(10)	5.9(9)	21(3)	4.2(10)
R(11)	6.2(16)	22(6)	4.5(19)
R(12)	5.6(9)	20(3)	3.6(10)
R(13)	5.3(10)	19(4)	3.7(11)
R(14)	5.2(7)	19(3)	3.2(8)
R(16)	4.8(8)	18(3)	2.2(9)
R(19)	4.8(8)	18(3)	1.3(9)
R(20)	4.5(6)	17(2)	0.9(8)
R(21)	4.9(12)	19(4)	1.5(14)
R(22)	4.7(9)	18(4)	1.0(10)

TABLE IV

$b(4) - X(0)$ at 96.573 nm. Line f-values, band f-values, and Lorentzian line widths.

Line	Line f-value ($\times 10^3$)	Band f-value ($\times 10^3$)	Lorentzian FWHM ($\times 10^4$ nm)
Q(3)	31(8)	63(16)	
Q(4)	34(5)	67(10)	3.0(7)
Q(5)	35(6)	69(12)	2.7(10)
Q(10)	32(5)	65(11)	3.0(9)
Q(11)	34(7)	68(13)	3.0(13)
Q(12)	31(4)	62(8)	3.0(5)
Q(13)	32(4)	63(9)	3.0(7)
Q(14)	29(4)	58(8)	2.6(6)
Q(15)	33(5)	66(10)	3.3(9)
Q(16)	29(4)	59(8)	2.4(7)
Q(17)	27(3)	55(6)	2.6(6)
Q(18)	28(3)	56(6)	2.8(7)
Q(19)	26(3)	56(6)	3.3(9)
Q(20)	26(3)	52(6)	2.3(7)
Q(21)	27(3)	53(6)	3.5(8)
Q(22)	26(3)	52(5)	3.4(6)
Q(23)	23(3)	47(7)	2.3(11)
Q(24)	24(3)	48(7)	3.3(10)
Q(26)	23(6)	45(13)	
P(8)	12(3)	58(14)	2.1(16)
P(9)	12(3)	55(15)	
P(10)	12(2)	58(8)	2.8(6)
P(11)	12(2)	56(8)	2.6(9)
P(12)	12(2)	57(8)	2.0(8)
P(13)	12(2)	55(9)	2.5(1.2)
P(14)	12(2)	55(8)	2.4(9)
P(15)	11(1)	51(6)	2.6(7)
P(16)	11(1)	48(6)	2.3(8)
P(17)	11(1)	47(7)	2.2(10)
P(18)	11(1)	48(6)	2.5(8)
P(20)	12(1)	50(6)	3.4(7)
P(21)	10(1)	42(5)	1.9(10)
P(22)	11(1)	47(6)	2.8(9)
P(24)	13(3)	55(12)	
R(12)	20(5)	72(16)	3.3(5)
R(13)	20(8)	73(28)	
R(14)	15(3)	55(12)	
R(15)	18(3)	66(12)	2.6(14)

R(16)	17(3)	63.(10)	2.5(9)
R(18)	19(4)	70.(14)	3.8(17)
R(19)	17(3)	62.(11)	3.2(15)
R(20)	15(2)	56.(8)	2.7(11)
R(22)	14(3)	51.(10)	2.2(16)
R(23)	15(4)	55.(14)	
R(24)	13(3)	51.(11)	

TABLE V

$c_3(0) - X(0)$ at 96.026 nm. Line *f*-values and band *f*-values.

Line	Line *f*-value ($\times 10^3$)	Band *f*-value ($\times 10^3$)
Q(2)	24(3)	48(7)
Q(3)	23(3)	46(7)
Q(6)	25(4)	49(7)
Q(7)	24(3)	48(7)
Q(8)	24(4)	48(7)
Q(9)	23(3)	47(7)
Q(10)	26(4)	52(8)
Q(11)	25(4)	50(7)
Q(12)	27(4)	54(8)
Q(13)	27(4)	53(8)
Q(17)	29(4)	57(7)
Q(18)	27(3)	53(6)
Q(19)	29(4)	58(7)
Q(20)	31(4)	61(7)
Q(21)	29(3)	57(6)
Q(22)	27(3)	53(5)
Q(23)	31(4)	62(7)
Q(24)	30(3)	59(6)
Q(25)	36(5)	72(10)
Q(26)	35(6)	69(12)
P(4)	6.0(9)	36(6)
P(5)	6.2(10)	34(6)
P(6)	6.0(9)	31(5)
P(7)	6.7(11)	33(6)
P(8)	6.9(10)	33(5)
P(9)	6.6(11)	31(5)
P(10)	6.4(10)	30(4)
P(12)	5.9(10)	27(4)
P(13)	7.2(9)	32(4)
P(14)	6.8(8)	31(4)
P(15)	6.9(17)	28(7)
P(16)	6.3(8)	28(4)
P(17)	6.3(7)	27(3)
P(18)	6.5(7)	28(3)
P(19)	7.4(8)	32(4)
P(20)	7.1(8)	31(3)
P(21)	7.9(11)	34(5)
P(22)	8.8(10)	38(4)
P(23)	8.5(25)	36(11)

P(24)	9.1(13)	39(6)
R(7)	19(3)	64(9)
R(9)	20(3)	70(10)
R(10)	23(3)	80(12)
R(11)	23(3)	80(11)
R(12)	21(3)	74(11)
R(13)	23(3)	81(12)
R(14)	22(3)	78(11)
R(15)	25(4)	92(14)
R(16)	25(4)	92(13)
R(20)	24(3)	90(11)
R(21)	23(4)	84(15)
R(22)	25(4)	95(14)
R(23)	26(3)	96(13)
R(24)	24(3)	90(10)
R(25)	24(5)	92(18)
R(26)	26(4)	99(16)

TABLE VI

$c_4'(0) - X(0)$ at 95.856 nm. Line *f*-values and band *f*-values.

Line	Line *f*-value ($\times 10^3$)	Band *f*-value ($\times 10^3$)
P(1)	51(10)	153(30)
P(2)	56(6)	140(15)
P(3)	60(6)	140(14)
P(4)	64(13)	144(29)
P(5)	63(6)	139(13)
P(6)	64(13)	139(28)
P(7)	64(6)	137(13)
P(8)	69(14)	147(30)
P(9)	66(10)	139(21)
P(10)	71(11)	149(23)
P(11)	68(7)	142(15)
P(12)	61(12)	127(25)
P(13)	81(8)	168(17)
P(14)	80(12)	166(25)
P(15)	85(9)	176(19)
P(16)	82(8)	169(17)
P(17)	94(8)	194(16)
P(18)	84(8)	173(16)
P(19)	88(9)	181(18)
P(20)	79(8)	162(16)
P(21)	84(17)	172(35)
P(22)	81(12)	166(25)
P(23)	76(15)	155(31)
P(24)	68(14)	139(29)
P(25)	66(13)	135(27)
R(0)	150(15)	150(15)
R(1)	89(13)	134(20)
R(2)	75(8)	125(13)
R(3)	75(8)	131(14)
R(4)	71(11)	128(20)
R(5)	69(7)	127(13)
R(6)	69(14)	128(26)
R(7)	61(12)	114(23)
R(8)	64(10)	121(19)
R(9)	57(6)	108(11)

TABLE VII
$b'(1) - X(0)$ at 95.768 nm. Line f-values and band f-values

Line	Line f-value ($\times 10^3$)	Band f-value ($\times 10^3$)
P(2)	0.19(4)	0.47(10)
P(3)	0.25(8)	0.58(18)
P(4)	0.22(4)	0.51(10)
P(5)	0.31(7)	0.68(16)
P(6)	0.40(5)	0.87(12)
P(9)	1.3(3)	
P(10)	3.6(7)	
P(11)	11(2)	
P(12)	18(3)	
R(3)	0.35(7)	0.61(13)
R(4)	0.41(5)	0.73(8)
R(5)	0.53(7)	0.97(12)
R(6)	0.61(9)	1.1(2
R(7)	1.0(1)	1.9(2)
R(9)	10(2)	
R(10)	15(3)	

TABLE VIII
$b(5) - X(0)$ at 95.511 nm. Line *f*-values and band *f*-values

Line	Line *f*-value ($\times 10^3$)	Band *f*-value ($\times 10^3$)
Q(1)	1.5(2)	2.9(5)
Q(3)	1.5(2)	3.1(4)
Q(4)	1.8(2)	3.6(5)
Q(5)	1.9(2)	3.8(4)
Q(6)	1.8(2)	3.6(4)
Q(9)	2.1(3)	4.3(5)
Q(10)	2.6(3)	5.2(7)
Q(11)	2.6(3)	5.1(6)
Q(12)	3.0(4)	5.9(8)
Q(13)	3.2(4)	6.3(8)
Q(14)	3.8(5)	7.6(10)
Q(15)	3.8(4)	7.5(9)
Q(16)	5.3(7)	10.7(14)
Q(17)	5.5(8)	10.9(16)
Q(18)	6.6(9)	13.(2)
Q(19)	7.4(12)	15.(2)
Q(20)	8.0(10)	16.(2)
Q(21)	8.4(14)	17.(3)
Q(22)	9.2(14)	18.(3)
P(2)	0.4(1)	3.6(8)
P(3)	0.6(1)	4.0(7)
P(4)	0.8(1)	4.6(7)
P(7)	1.2(2)	6.1(9)
P(8)	1.4(2)	6.8(10)
P(9)	1.6(2)	7.7(9)
P(10)	2.2(3)	10.1(14)
P(11)	2.0(3)	9.4(13)
P(12)	2.8(4)	12.5(17)
P(13)	3.1(4)	13.9(16)
P(14)	4.6(6)	20.(3)
P(15)	5.3(7)	23.(3)
P(16)	5.8(7)	25.(3)
P(17)	7.4(10)	32.(4)
P(18)	8.0(9)	35.(4)
P(19)	10.2(12)	44.(5)
P(21)	14.(2)	59.(8)
P(22)	17.(2)	74.(9)
R(5)	0.72(11)	2.3(3)

R(7)	0.52(9)	1.7(3)
R(8)	0.59(7)	2.0(3)
R(9)	0.47(13)	1.6(4)
R(10)	0.47(12)	1.6(4)
R(11)	0.43(9)	1.5(3)
R(12)	0.48(10)	1.7(3)
R(13)	0.40(10)	1.4(4)
R(14)	0.34(7)	1.2(2)
R(15)	0.55(16)	2.0(6)

TABLE IX
$b(6) - X(0)$ at 94.925 nm. Line f-values and band f-values

Line	Line f-value ($\times 10^3$)	Band f-value ($\times 10^3$)
Q(2)	2.2(4)	4.4(7)
Q(5)	2.0(3)	4.0(6)
Q(6)	1.6(2)	3.3(4)
Q(7)	1.8(3)	3.6(5)
Q(8)	1.6(2)	3.2(4)
Q(9)	1.9(3)	3.7(5)
Q(10)	1.6(2)	3.1(4)
Q(11)	1.7(3)	3.4(5)
Q(12)	1.5(2)	3.0(4)
Q(13)	1.3(3)	2.6(6)
Q(14)	1.3(2)	2.7(4)
P(4)	0.75(24)	4.5(14)
P(6)	0.68(15)	3.6(8)
P(7)	0.76(18)	3.8(9)
P(8)	0.63(10)	3.1(5)
P(9)	0.61(18)	2.9(9)
P(10)	0.59(11)	2.8(5)
P(12)	0.56(12)	2.6(6)
R(5)	1.3(2)	4.2(5)
R(8)	1.0(2)	3.4(5)
R(9)	1.1(2)	3.9(7)
R(10)	0.95(15)	3.3(5)
R(11)	1.2(3)	4.3(9)
R(12)	0.90(16)	3.2(6)
R(13)	1.0(3)	3.6(11)
R(14)	1.0(2)	3.7(8)

TABLE X

$o_3(0) - X(0)$ at 94.623 nm. Line *f*-values and band *f*-values.

Line	Line *f*-value ($\times 10^3$)	Band *f*-value ($\times 10^3$)
Q(2)	0.08(2)	0.16(4)
Q(4)	0.09(2)	0.18(3)
Q(6)	0.11(2)	0.22(3)
Q(7)	0.14(2)	0.28(5)
Q(8)	0.15(2)	0.31(4)
Q(13)	0.28(5)	0.56(10)
Q(14)	0.33(4)	0.66(9)
Q(16)	0.42(6)	0.84(13)
Q(17)	0.54(13)	1.09(25)
P(10)	0.07(2)	0.31(8)
P(12)	0.10(2)	0.44(10)
R(20)	0.54(17)	2.0(6)

TABLE XI
$b(7) - X(0)$ at 94.241 nm. Line *f*-values and band *f*-values.

Line	Line *f*-value ($\times 10^3$)	Band *f*-value ($\times 10^3$)
Q(4)	8.8(13)	17.6(27)
Q(5)	9.7(15)	19.4(31)
Q(6)	8.3(12)	16.6(24)
Q(7)	7.7(11)	15.4(22)
Q(8)	7.8(11)	15.6(22)
Q(9)	8.2(13)	16.5(25)
Q(10)	7.8(11)	15.6(22)
Q(11)	7.0(9)	14.0(19)
Q(12)	6.0(9)	12.1(18)
Q(13)	6.7(10)	13.4(20)
Q(14)	6.9(9)	13.9(18)
Q(15)	6.2(10)	12.3(21)
Q(16)	5.6(8)	11.3(16)
Q(17)	6.3(8)	12.6(17)
Q(18)	5.5(7)	11.0(14)
Q(19)	5.6(7)	11.3(14)
Q(22)	4.1(7)	8.3(13)
P(4)	2.7(5)	16.4(32)
P(5)	2.8(6)	15.6(32)
P(6)	3.0(5)	15.5(27)
P(7)	3.1(7)	15.4(34)
P(8)	3.3(5)	16.2(26)
P(9)	3.0(5)	14.4(22)
P(10)	3.0(5)	14.0(24)
P(11)	2.9(5)	13.4(23)
P(12)	3.1(4)	13.9(19)
P(13)	2.9(5)	13.1(25)
P(14)	2.7(4)	12.3(19)
P(15)	3.0(4)	13.2(18)
P(16)	2.7(3)	11.9(15)
P(17)	2.6(3)	11.5(15)
P(20)	2.3(3)	9.7(14)
R(7)	4.9(11)	15.5(34)
R(8)	4.6(7)	15.6(24)
R(9)	4.7(8)	16.3(27)
R(10)	4.1(7)	14.5(24)
R(11)	4.1(9)	14.4(33)
R(12)	4.4(7)	15.6(27)

R(13)	4.0(7)	14.4(25)
R(14)	3.4(8)	12.5(28)
R(15)	2.8(8)	10.1(31)
R(16)	3.4(6)	12.4(23)
R(18)	2.8(5)	10.3(20)
R(19)	3.1(9)	11.5(32)
R(20)	2.6(6)	9.9(24)

TABLE XII
$c_4'(1) - X(0)$ at 94.011 nm. Line *f*-values and band *f*-values.

Line	Line *f*-value ($\times 10^3$)	Band *f*-value ($\times 10^3$)
P(3)	2.6(6)	6.0(14)
P(4)	2.5(4)	5.7(8)
P(6)	2.2(3)	4.7(7)
P(7)	2.1(3)	4.5(6)
P(8)	2.0(2)	4.2(5)
P(9)	1.8(3)	3.7(6)
P(11)	1.6(3)	3.4(5)
P(12)	1.4(2)	2.8(4)
P(13)	1.5(3)	3.1(7)
P(14)	1.2(2)	2.4(4)

TABLE XIII

$c_3(1) - X(0)$ at 93.872 nm. Line *f*-values, band *f*-values, and Lorentzian line widths.

Line	Line *f*-value ($\times 10^3$)	Band *f*-value ($\times 10^3$)	Lorentzian FWHM ($\times 10^4$ nm)
Q(3)	18(6)	37(12)	
Q(4)	20(4)	39(7)	
Q(6)	19(3)	38(6)	
Q(7)	19(5)	37(9)	
Q(8)	19(3)	38(6)	
Q(11)	20(4)	40(7)	2.2(10)
Q(12)	21(3)	42(7)	3.1(8)
Q(14)	21(3)	43(6)	4.3(6)
Q(15)	31(6)	62(13)	6.2(17)
Q(17)	41(11)	82(22)	10.5(32)
Q(18)	42(9)	83(18)	10.7(25)
Q(20)	26(7)	51(14)	7.0(28)
P(4)	5.5(19)	33(11)	
P(7)	7.4(21)	37(10)	
P(8)	9.0(15)	44(7)	
P(11)	8.0(15)	37(7)	
P(12)	7.0(10)	32(5)	
P(13)	5.8(17)	26(7)	
P(14)	6.2(11)	28(5)	
R(12)	10(4)	36(13)	
R(14)	11(3)	40(12)	
R(16)	12(4)	42(14)	

TABLE XIV

b'(4) – *X*(0) at 93.767 nm. Line *f*-values, band *f*-values, and Lorentzian line widths.

Line	Line *f*-value ($\times 10^3$)	Band *f*-value ($\times 10^3$)	Lorentzian FWHM ($\times 10^4$ nm)
P(1)	0.80(25)	2.4(8)	
P(2)	0.69(17)	1.7(4)	
P(3)	0.85(20)	2.0(5)	
P(4)	1.04(12)	2.3(3)	
P(5)	1.11(13)	2.4(3)	
P(7)	1.7(2)	3.6(5)	3.3(9)
P(8)	1.6(2)	3.5(4)	6.9(9)
P(9)	2.2(3)	4.6(5)	2.9(8)
R(4)	0.60(8)	1.09(15)	0.7(7)
R(5)	0.55(7)	1.01(12)	4.0(48)
R(6)	0.35(10)	0.66(18)	2.8(24)
R(8)	0.36(8)	0.68(16)	0.8(17)
R(9)	0.37(10)	0.70(19)	1.3(21)

TABLE XV
$b(8) - X(0)$ at 93.517 nm. Line f-values and band f-values.

Line	Line f-value ($\times 10^3$)	Band f-value ($\times 10^3$)
Q(4)	0.19(3)	0.38(7)
Q(5)	0.20(5)	0.41(10)
Q(6)	0.14(3)	0.28(5)
Q(7)	0.16(6)	0.31(11)
Q(8)	0.11(3)	0.22(6)
Q(21)	2.0(3)	3.9(5)
Q(22)	2.7(3)	5.4(6)
Q(25)	7.5(15)	15(3)
Q(26)	12(2)	24(4)
P(6)	0.6(1)	0.29(6)
R(6)	0.10(2)	0.33(6)

TABLE XVI

$b(8) - X(0)$ line list[a] and line assignments, and $b(8)$ term values[b]

J''	$P(J'')$	$Q(J'')$	$R(J'')$	J	$T_e(J)$	$T_f(J)$
0			93.5143b			
1		93.5175	93.5134b	1	106935.5	106935.7
2	93.5247b	93.5203b	93.5134b	2	106940.6	106940.5
3	93.5306b	93.5240	93.5143b	3	106948.6	106948.2
4	93.5375b	93.5285	93.5169	4	106959.3	106959.0
5	93.5457	93.5343	93.5203b	5	106972.3	106972.2
6	93.5552	93.5413	93.5247b	6	106988.3	106988.2
7	93.5655	93.5495	93.5306b	7	107007.1	107006.7
8	93.5770	93.5586	93.5375b	8	107028.4	107028.1
9	93.5896	93.5689	93.5453	9	107052.3	107052.1
10	93.6035	93.5802	93.5537	10	107079.1	107078.9
11		93.5929		11	107109.3	107108.2
12				12		
13				13		
14		93.6356	93.5984	14		107214.5
15		93.6518	93.6111	15	107257.2	107255.6
16	93.7061	93.6684b	93.6249	16	107301.9	107300.3
17	93.7264	93.6862	93.6390	17	107349.9	107347.5
18	93.7470	93.7043	93.6538	18	107401.3	107398.4
19		93.7230	93.6684b	19	107456.0	107452.5
20		93.7419	93.6832	20	107514.8	107510.4
21		93.7612	93.6982	21	107577.4	107571.8
22		93.7802	93.7129	22	107643.6	107637.5
23			93.7275	23	107714.2	
24				24	107788.8	
25		93.8371		25		107858.3
26		93.8554		26		107940.7

[a]Wavelengths in nm; uncertainties are ±0.0001 nm for $J''<12$ and ±0.0002 nm for $J>13$. "b" indicates a blended line.

[b]Term values in cm^{-1}; uncertainties are ±0.1 cm^{-1} for $J'<12$ and ±0.2 cm^{-1} for $J'>13$.

TABLE XVII

Molecular parameters[a] for the $b(v = 8)\ ^1\Pi_u$ level. All values in cm^{-1}.

v_o	106932.7(10)
B	1.319(2)
D	$-7.2(11) \times 10^{-5}$
H	$1.75(30) \times 10^{-7}$
H'	$-5.6(20) \times 10^{-11}$
q	0.00151(50)
q'	$2.15(100) \times 10^{-5}$

[a] Rovibronic energies are defined by $T(J,f) = v_0 + Bx - Dx^2 + Hx^3 + H'x^4$ for f-parity levels, where $x=J(J+1)$, and $T(J,e) = T(J,f) + qx + q'x^2$ for e-parity levels.