Species Tag: 37005  Name: DCl+
Version: 2  Chloroniumyl cation
Date: Dec. 2016  v = 1 ← 0
Contributors: B. J. Drouin  $^2\Pi_{1/2} ← ^2\Pi_{3/2}$

$^2\Sigma ← ^2\Pi$

Lines Listed: 779  Q(300.0)= 90.9282
Freq. (GHz) < 86000  Q(225.0)= 67.2334
Max. J: 40  Q(150.0)= 45.4749
LOGSTR0= -8.0  Q(75.00)= 24.7062
LOGSTR1= -10.0  Q(37.50)= 14.5767
Isotope Corr.: -0.611  Q(18.75)= 9.9131
Egy. (cm$^{-1}$) > 0.0  Q(9.375)= 8.2563
$\mu_0$ = 1.0  A=
$\mu'$ = 0.1959  B= 293443.75
$\mu_{el}$ = 0.13  C=

and the optical spectra in W. D. Sheasley, 1972, Ph.D. Dissertation, The Ohio State
University; Ann Arbor, MI. is expanded to include vibrational data from Doménech,
Drouin, Cernicharo et al. ApJL 833 L32 (2016). The transition dipole moments are
assumed to be the same as the main isotopologue for infrared ($\mu'$ and optical ($\mu_{el}$)
are calculated by A. Pradhan et al. 1991, J. Chem. Phys, 95, 9010. The magnetic
dipole, which predicts fine structure transitions in the mid and far-ir was taken to be
1 Bohr magneton. The state identifiers v = 20 and v = 21 refer to the ground and
first excited vibrational levels, respectively. The $^2\Sigma$ ground vibrational state has a
state identifier of 60. There is no hyperfine splitting included.

<table>
<thead>
<tr>
<th>state identifier (v)</th>
<th>state</th>
<th>HFS</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>$^2\Pi$ v = 0</td>
<td>no</td>
</tr>
<tr>
<td>21</td>
<td>$^2\Pi$ v = 1</td>
<td>no</td>
</tr>
<tr>
<td>50</td>
<td>$^2\Sigma$ v = 0</td>
<td>no</td>
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