VELOCITY MODULATED LASER ABSORPTION SPECTROSCOPY OF $TiCl^+$: ANALYSIS OF THE $[17.9]^3\Delta$-$(1)^3\Delta$ TRANSITION

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The $[17.9]^3\Delta$-$(1)^3\Delta$ (0,0) band of $TiCl^+$ in the 17400-17500 cm^{-1} region has been studied using a dual-beam laser absorption technique. Spectra have been recorded using velocity modulation [a] at the frequency of the discharge (1*f* mode) and concentration modulation at the double frequency of the discharge (2*f* mode). $TiCl^+$ ions were produced in a 1 m long, 10 mm internal diameter glass cell. The discharge was modulated at 25 kHz by a power supply which produced a bipolar sine wave. Principal molecular parameters for the $(1)^3\Delta$ state of the $^{48}Ti^{35}Cl^+$ isotopomer are:

$T_0((1)^3\Delta_3) = 635.191(4)$, $B_0 = 0.178773(8)$,
$T_0((1)^3\Delta_2) = 558.614(3)$, $B_0 = 0.179686(8)$,
$T_0((1)^3\Delta_1) = 431.260(2)$, $B_{0e} = 0.180470(8)$, $B_{0f} = 0.180453(7)$.

Λ-doubling was observed in the $(1)^3\Delta_1$ component of the $(1)^3\Delta$ state. As no $(1)^3\Pi$ state has been observed, the parity assignment was arbitrarily chosen such that the *e*- parity component lies above the *f*- parity component.

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[a] C. S. Gudeman, C. C. Martner, and R. J. Saykally, *Phys. Rev. Lett.* **50**, 727 (1983).