INFRARED LASER VELOCITY MODULATION SPECTROSCOPY OF $SiCl^+$ ($X^1\Sigma^+$) UP TO V=6

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Many fundamental and hot band absorption lines of $^{28}Si^{35}Cl^+$, $^{28}Si^{37}Cl^+$, $^{29}Si^{35}Cl^+$ and $^{30}Si^{35}Cl^+$ have been detected between 630 and 700 cm^{-1} in a $SiCl_4$/He ac discharge using diode laser velocity modulation spectroscopy. The data have been fitted to give mass independent coefficients U_{kl}. The derived spectroscopic constants for $^{28}Si^{35}Cl^+$ include $\omega_e = 678.24316(18)$ cm^{-1} and $B_e = 0.2870288(14)$ cm^{-1}. The equilibrium internuclear distance is r_e=1.9439105(46)$\AA$. The equilibrium dissociation energy calculated from the expanded Dunham-Morse potential is D_e=49431(57)cm^{-1}.