Last year we presented the first rotational analysis of the ground state of the two conformers of allyl isocyanide from 4 GHz to 905 GHz. The analysis of the rotational spectrum of the cis conformer of allyl isocyanide was extended. We resolved Coriolis interactions of \( a \) and \( b \) types between the excited vibrational states \( \nu_1 = 1 \) and \( \nu_2 = 1 \), calculated to be at 156 cm\(^{-1} \) (\( A' \)) and 167 cm\(^{-1} \) (\( A'' \)) respectively (MP2/aug-cc-pvtz), from 150 GHz to 600 GHz\(^a\). Strong perturbations were observed in the 150-310 GHz range for low values of the quantum number \( K_a \) starting from \( K_a = 0 \), \( 1 \). The anharmonicities appeared as well at higher frequencies for larger quantum numbers. The two modes were fitted together with the SPFIT/SPCAT\(^b\) suite of programs and a set of Coriolis parameters was accurately determined. The fit contains more than 3000 lines up to \( J = 99 \) and \( K_a = 12 \) for both modes. We did not detect these species neither in the IRAM 30-m line survey of Orion KL nor in the PRIMOS survey towards SgrB2. Nevertheless, we provided upper limits to their column density in Orion KL. This work was supported by the CNES and the Action sur Projets de l’INSU, PCMI.

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