The cm-, -mm and submm-wave spectrum of allyl isocyanide and radioastronomical observations in Orion KL and the Primos line survey.

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Last year we presented at Columbus 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 $v_1 = 1$ and $v_2 = 1$, calculated to be at 156 cm^{-1} (A′) and 167 cm^{-1} (A′′) respectively (MP2/aug-cc-pvtz), from 150 GHz to 600 GHz. Strong perturbations were observed in the 150-310 GHz range for low values of the quantum number Ka starting from Ka = 0, 1. The anharmonicities appeared as well at higher frequencies for larger quantum numbers. The two modes were fitted together with the SPFIT/SPCAT [1] suite of programs and a set of Coriolis parameters was accurately determined. The fit contains more than 3000 lines up to J = 99 and Ka = 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.

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[1] H. Pickett, J. Mol. Spec. **1991** 148, 371.
[2] I. Haykal, L. Margulès, T. R. Huet et al. ApJ **2013** (in press).