

# EXTENDED ANALYSIS OF THE ROTATIONAL SPECTRUM OF METHOXYISOCYANATE IN THE GROUND AND LOWEST EXCITED VIBRATIONAL STATES

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Methoxyisocyanate,  $\text{CH}_3\text{ONCO}$  is a methoxy derivative of isocyanic acid  $\text{HNCO}$  detected in the interstellar medium back in 1972<sup>a</sup>. Recent detections of methyl isocyanate, a methyl derivative of  $\text{HNCO}$ , towards Sgr B2(N)<sup>b</sup>, and in the Orion<sup>c</sup>, as well as the detection of methoxymethanol<sup>d</sup> motivated us to study the rotational spectrum of  $\text{CH}_3\text{ONCO}$  as a candidate molecule for searches in the interstellar medium. The previously presented study of the rotational spectrum of methoxyisocyanate<sup>e</sup> showed the complexity of the problem owing to the large amplitude motion, a skeletal torsion along ON bond. The analysis revealed the existence of the "ladder" Coriolis-type interactions between the ground and lowest skeletal torsional states. We present here the extension of the rotational spectrum analysis that includes new types of resonances as well as the assignment of new excited vibrational states of methoxyisocyanate. In particular, the inclusion of new resonances permitted to assign and fit within experimental accuracy high  $K_a$  transitions of the ground vibrational state.

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<sup>a</sup>Snyder, L.E. and Buhl, D. 1972, *ApJ*, **177**, 619

<sup>b</sup>Halfen, D.T., Ilyushin, V.V. and Ziurys, L.M. 2015, *ApJ*, **812**, L5

<sup>c</sup>Cernicharo, J. et al. 2016, *A&A*, **587**, L4

<sup>d</sup>McGuire, B.M. 2017, *ApJ* **851**, L46 (2017)

<sup>e</sup>Pienkina, A. et al. 2017, 72nd ISMS, WA03