FUNDAMENTAL AND TORSIONAL COMBINATION BANDS OF N_2O-C_2H_2 AND N_2O-C_2D_2 IN THE N_2O ν_1 REGION

M. DEHGHANY, MAHIN AFSHARI, J. N. OLIAEE, N. MOAZZEN-AHMADI, *Department of Physics and Astronomy, University of Calgary, Calgary, AB T2N 1N4, CANADA*; A.R.W. MCKELLAR, *Steacie Institute for Molecular Sciences, National Research Council of Canada, Ottawa, ON K1A 0R6, CANADA*.

Spectra of the weakly-bound N_2O-C_2H_2 and N_2O-C_2D_2 complexes in the region of the N_2O ν_1 fundamental band (2224 cm^{-1}) are observed in a pulsed supersonic slit jet expansion probed with a tunable diode laser. Two bands are analyzed for each complex: the fundamental (N-N stretch), and a combination involving the intermolecular torsional (out-of-plane bend) vibration. The resulting torsional frequencies are 44.37 and 40.01 cm^{-1} for the C_2H_2 and C_2D_2 complexes, respectively. This represents the first observation of the N_2O-C_2D_2 isotopomer, and the first direct determination of an intermolecular frequency for nitrous oxide - acetylene.