PROVIDING THE PRESSURE AND TEMPERATURE BROADENING PARAMETERS OF N_2O FOR OBSERVATION OF EXOPLANET ATMOSPHERES.

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In preparation for the upcoming observing facilities that will observe exoplanets, such as the ELT, ARIEL, and VLTI/ GRAVITY+ and the recently launched JWST, laboratory work is necessary. These facilities will provide an unprecedented sample of spectra of exoplanetary atmospheres and will, therefore, build a 'standard model' of how a planet's chemistry depends on its star and the condition of its birth. Laboratory data on stable molecules that compose exoplanetary atmospheres, however, are far from complete, especially at high temperatures. The impact of dominant gases on the trace species is also rather unknown, thereby making the determination of molecular abundances difficult. Infrared laboratory spectra will therefore be critical to interpret the upcoming data on exoplanetary atmospheres. We use high resolution laboratory infrared spectroscopy to determine the effect of broadening and frequency shifts induced on N_2O from H_2 and He, and from temperature. This work will contribute to the growing database of spectral catalogues available to astronomers for the accurate characterisation of exoplanetary atmospheres.