ROTATIONAL SPECTROSCOPY AND MOLECULAR STRUCTURE OF $^{15}N_2$-$^{14}N_2O$

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The rotational spectrum of $^{15}N_2 -^{14} N_2O$ has been recorded in the 7-19 GHz region using a pulsed molecular beam, Fourier transform microwave spectrometer. Both *a*- and *b*-type transitions have been observed. The analysis of the hyperfine structure due to the two ^{14}N nuclei in the N_2O subunit reveals that the energy levels are doubled, owing to a tunneling motion of the $^{15}N_2$ subunit. The rotational constants support a planar, T-shaped structure, with $^{15}N_2$ forming the leg of the T. This geometry is consistent with that obtained using infrared spectroscopy. [a] The nuclear quadrupole coupling constants of the two ^{14}N nuclei indicate that the *b*-axis of the complex forms an angle between 10-12° with the N_2O axis.

[a] R. W. Randall, T. D. Dyke, and B. J. Howard, *Faraday Discuss. Chem. Soc.* **86,** 21 (1988).