

THE MICROWAVE SPECTRUM AND STRUCTURE OF HNO₃-NH₃

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We report the microwave spectrum of HNO₃-NH₃ obtained by pulsed nozzle Fourier transform microwave spectroscopy. The complex is the weakly bound precursor to ammonium nitrate, which is an important aerosol in the earth's troposphere. The a-type spectrum has been recorded up to J=3 and the hyperfine structure fully analyzed. The a-type transitions follow a rigid rotor pattern, but the b-type spectra apparently do not. Preliminary analysis of the rotational constants indicates that the nitric acid forms a near-linear hydrogen bond to the ammonia with an intermolecular N-H separation of about 1.8 Å. This rather short distance is discussed in the context of incipient proton transfer.