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Title

Millimeter wave continuum absorption in moist nitrogen at temperatures 261-328 K

Source

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Abstract

he paper presents results of extensive experimental study of the water related continuum absorption in a mixture of water vapor and nitrogen in 107-143 GHz frequency range at accurately controlled laboratory conditions. Resonator spectrometer and modified method of measurement that minimizes systematic errors related to water adsorption were employed. It allowed investigation in temperature range 261-328 K, including a first-time laboratory study of the continuum at temperatures below freezing. Coefficients of the common empirical parameterization of the continuum including self (H(2)O-H(2)O) and foreign (H(2)O-N(2)) parts are derived and compared with results of the most known previous experimental and theoretical studies demonstrating very good qualitative and in some cases quantitative agreement. Dominating types of intermolecular interactions leading to the observed continuum are discussed.