MICROWAVE-MICROWAVE DOUBLE RESONANCE INVESTIGATION OF THE H_2-N_2O VAN DER WAALS COMPLEX

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The J=2-1 rotational transitions of $ortho$D$_2$-^{15}N$_2$O and $para$D$_2$-^{15}N$_2$O were measured using a microwave-microwave double resonance technique. The experimental setup included a pulsed molecular beam Fourier Transform microwave spectrometer for signal detection and a microwave synthesizer with a K band standard gain horn (frequency range 18 - 26.5 GHz) to generate and transmit the pump radiation. The experimental arrangement was such that the pump radiation propagation was perpendicular to the supersonic molecular expansion. In these experiments, the pump radiation was tuned into resonance with the J_{KaKc}=1_{01}-0_{00} or 1_{11}-0_{00} transition. The resulting population transfer from the rotational ground state facilitated the observation of the J=2-1 transition by significantly enhancing the signal intensity. In addition, a brief update on the solvation studies of nitrous oxide with $para$H$_2$ molecules will be given.