RELATIVE INTENSITY MEASUREMENTS WITH THE TAMU FAST SCAN BWO SPECTROMETER: ORTHO-PARA HI DIMER

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The rotation-tunneling transitions K = 0 ← 0 of HI dimer have a rich hyperfine structure (HFS) due to the large quadrupole moments of two iodine nuclei with the spin 5/2 and two hydrogen nuclei with the spin 1/2. Because HI dimer has two pairs of identical nuclei with Fermi-Dirac spin statistics, a large amplitude tunneling motion, a number of possible spin-spin and spin-rotational interactions, the measurements of relative intensity of the HFS components are consequently very interesting and were made as a part of the study of its sub-mm spectrum. Some parameters of the current upgraded version of the TAMU pulsed jet sub-mm spectrometer related to these measurements and the observed and simulated hyperfine structure of some transitions as well as the results of the comparison of measured amplitude with calculated intensity of HI dimer HFS components will be presented. The symmetry of spin wavefunctions and a sum rule for the intensity of transitions associated with J, V, F1, F energy level will be also discussed.