HYPERFINE STRUCTURE OF ROTATION-INV ERSION LEVELS IN THE EXCITED $\nu_2$ STATE OF AMMONIA

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Hyperfine structures of the rotation-inversion transitions with J = 3 - 2, s - a, and K = 0, 1, 2, and with J = 0 - 1, a - s, and K = 0 in the excited $\nu_2$ vibrational state have been resolved and measured by sub-Doppler saturation spectroscopy using the Cologne terahertz spectrometer with an accuracy of about 1 kHz. The line frequencies of the hyperfine structures of the rotation inversion transitions (at 466, 769, 742, and 763 GHz) have been simultaneously analyzed with the previously published $\nu_2$ transition J = 2 - 1, s - a, K=1 in terms of effective nuclear quadrupole and spin-rotation parameters. In addition to those, the corresponding purely rotation-inversion frequencies deperturbed from the hyperfine effects have been derived.