

VIBRATIONAL AND ROTATIONAL SPECTROSCOPY OF CD₂H⁺

OSKAR ASVANY, PAVOL JUSKO, SANDRA BRÜNKEN, STEPHAN SCHLEMMER, *I. Physikalisches Institut, Universität zu Köln, Köln, Germany.*

The lowest rotational levels ($J=0-5$) of the CD₂H⁺ ground state have been probed by high-resolution rovibrational and pure rotational spectroscopy in a cryogenic 22-pole ion trap. For this, the ν_1 rovibrational band has been revisited^a, detecting 107 transitions, among which 35 are new. The use of a frequency comb system allowed to measure the rovibrational transitions with high precision and accuracy, typically better than 1 MHz. The high precision has been confirmed by comparing combination differences in the ground and vibrationally excited state. For the ground state, this allowed for equally precise predictions of pure rotational transitions, 24 of which have been measured directly by a novel IR - mm-wave double resonance method^b.

^aM.-F. Jagod et al, J. Molec. Spectrosc. 153, 666, 1992

^bS. Gärtner et al, J. Phys. Chem. A 117, 9975, 2013