ROVIBRONIC INTERACTIONS AND l-UNCOUPLING IN THE HIGH-RYDBERG STATES OF HCO CONVERGING TO THE (010) STATE OF THE CATION

ERIC J. ZÜCKERMAN, ROBERT J. FOLTYNOWICZ, JASON D. ROBINSON, HARTMUT G. HEDDERICH, and EDWARD R. GRANT, Department of Chemistry, Purdue University, West Lafayette, Indiana 47906.

We report the ionization-detected absorption spectra of vibrationally autoionizing Rydberg states converging to the (010) level of HCO⁺. Resonances are isolated by transitions from photoslected rotational levels in the Σ⁺ and Σ⁻ Renner-Teller components of the (010) band of the 3pπ²Π Rydberg state. We systematically compare spectra in order to characterize observed resonances in terms of the good total angular momentum quantum number, \( N \). Rydberg analysis establishes the convergence of series to detailed cation-core rotational quantum numbers, \( N^+ \). Interactions between Rydberg orbital and core rotational angular momentum are found to conform with a coupling intermediate between Hund’s cases (b) and (d). Splitting patterns further assign certain features according to predominant case (b) composition.