ANALYSIS OF THE CORIOLIS- AND FERMI-COUPLED TRIAD NEAR 315 cm^{-1} OF BENZONITRILE ($\mathrm{C_6H_5CN}$)

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We previously presented the least-squares fit of the benzonitrile ($\mathrm{C_6H_5CN}$, C_{2v}, μ_a = 4.5 D) ground vibrational state, which was fit to a partial octic Hamiltonian, as well as the first analysis of its two Coriolis-coupled, lowest-energy fundamental states, ν_{22} and ν_{33}.[1] Herein, we present the continuation of this work: the analysis and fitting of the Coriolis- and Fermi-coupled triad of the overtone and combination states (ν_{22} = 2, ν_{33} = 2, and ν_{22} + ν_{33}) near 315 cm^{-1}. Approximately 3000 transitions are assigned for each state, including multiple resonances, and their least-squares fitting results in precise energy separations that are in agreement with those expected based on the energy separation determined for ν_{22} and ν_{33}.

1. Zdanovskaia, M. A.; Esselman, B. J.; Lau, H. S.; Bates, D. M.; Woods, R. C.; McMahon, R. J.; Kisiel, Z. The 103 - 360 GHz Rotational Spectrum of Benzonitrile, the First Interstellar Benzene Derivative Detected by Radioastronomy. *J.Mol.Spectrosc.* **2018**, 351, 39-48.