

OBSERVATION AND ROTATIONAL ANALYSIS OF BANDS IN THE $C''\ ^5\Pi_{u_i}-A'\ ^5\Sigma_g^+$ SYSTEM OF N_2

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The singlet and triplet electronic states of N_2 have been extensively studied, but the quintet manifold has been relatively unexplored. We developed an experimental set-up in order to record the high resolution optogalvanic absorption spectrum of the $C''\ ^5\Pi_{u_i}-A'\ ^5\Sigma_g^+$ (Herman InfraRed) system of N_2 excited in a discharge through a supersonic jet. This very sensitive technique has allowed us to observe of all the spin orbit components of the $C''\ ^5\Pi_{u_i}$ state for the first time. A partial analysis of the spectra has been published, which provides the separation between the spin-orbit components F_1 and F_2 of the $C''\ ^5\Pi_{u_i}$ state.^b The experimental value has been confirmed using semi-empirical calculations^c based on the spin-orbit parameters of previously observed states of N_2 (see next presentation). In this talk, we will present the experimental set-up used for this study, the recent complete analysis of our spectra including all five spin-orbit components of the upper state, and a discussion about the values of the fitted parameters.

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