

UNGERADE POLYADS IN THE 45800 – 46500 CM^{-1} REGION OF THE S_1 STATE OF C_2H_2

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We present an analysis of *ungerade* vibrational polyads in the 45800 – 46500 cm^{-1} region of the S_1 state of C_2H_2 . This congested region is expected to hold at least 22 highly interacting vibrational levels. The polyads were observed in IR-UV double resonance LIF spectra, using $\nu_3''(\sigma_u^+)$, $\nu_3 + \nu_4''(\Pi_u)$, and $\nu_1 + \nu_5''(\Pi_u)$ as ground state vibrational intermediates. The assignments of the levels will be discussed, as well as a comparison between the observed structure and that predicted by effective constants from lower energy polyads, supplemented by *ab initio* theory where such constants are not available. We will also discuss local regions of interest, including perturbations. The goals of this analysis are to enable an extension of our understanding of the level structure to higher energies, nearing the *cis-trans* transition state, as well as to establish the *trans* level structure comprehensively, thereby permitting the identification of interloper states belonging to the *cis* manifold.