

RELATIVE INTENSITY OF A CROSSOVER RESONANCE TO LAMB DIPS OBSERVED IN STARK SPECTROSCOPY OF METHANE II

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We carried out Stark-modulation spectroscopy of the ν_3 band of methane [1]. Figure shows observed spectra of the $P(4)E$, $Q(4)E$, and $R(4)E$ transitions with the selection rule of $\Delta M = \pm 1$, where M is the angular momentum quantum number along the Stark field. Each triplet includes two Lamb-dips from $|M''| = 2$ to $|M'| = 1$ and from $|M''| = 0$ to $|M'| = 1$ and a crossover resonance (COR) at the middle. The COR is the largest in intensity in the triplet for the Q- and R-branch transitions, and middle for the P-branch transition. The COR of the Λ -type three-level system overlaps in frequency with that of the V-type three-level system of $|M''| = 1$ and $|M'| = 0$ and 2, and the relative intensity of the COR to the Lamb dips is analyzed using a steady-state solution of rate equations. The model fairly agrees with the observed relative intensity, and detailed analysis is in progress. [1] S. Okuda, H. Sasada, *J. Opt. Soc. Am. B*, **34**, 2558-2568 (2017).

