

Raman Theory for a Molecule in a Vibrating Microcavity Oscillating in Fundamental Resonance

YANG Xiao-Xue¹ and WU Ying²

¹ Department of Physics, Huazhong University of Science and Technology, Wuhan 430074, China

² Wuhan Institute of Physics and Mathematics, The Chinese Academy of Sciences, Wuhan 430071, China

(Received: 2000-12-15; Revised:)

Abstract: We propose a model to describe the energy structure and dynamics of a system of a molecule interacting with infinite photon modes in a vibrating microcavity whose boundary oscillates in the fundamental resonance. By constructing an $so(2,1)$ Lie algebra for the infinite photon modes, we obtain analytical expressions of the energy eigenstates, energy eigenvalues and the system's evolution operator for this Raman model under certain conditions.

PACS: 42.50.Gy, 32.80.Qk, 42.65.Dr, 03.75.Fi

Key words: Raman theory, vibrating microcavity, dynamical Casimir effect

[\[Full text: PDF\]](#)

Close