

Abstract Submitted  
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**Control of Lamb shift by driving field** SHUAI YANG, Institute for Quantum Studies and Department of Physics, Texas A&M University, College Station, Texas 77843, HANG ZHENG, Department of Physics, Shanghai Jiao Tong University, Shanghai, China and Department of Physics, Hong Kong Baptist University, Hong Kong, China, RAN HONG, Department of Physics, Shanghai Jiao Tong University, Shanghai, China, SHI-YAO ZHU, Department of Physics, Hong Kong Baptist University, Hong Kong, China, SUHAIL ZUBAIRY, Institute for Quantum Studies and Department of Physics, Texas A&M University, College Station, Texas 77843 — The energy level shift of the atom coupled with both vacuum electromagnetic field and a driving laser is studied by using a unitary transformation approach, which directly includes the effect of the counter-rotating terms of the interaction between the atom and the vacuum field. The Lamb shift of the energy levels is shown to depend on the Rabi frequency and the detuning of the driving laser which couples another two levels. This relation provides a way to control the Lamb shift coherently.

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