

Abstract Submitted  
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**The Intensity and the Lifetime Variation of the Single Quantum Dot with its Mirror Image System**<sup>1</sup> JUI WEN CHOU — We propose to observe the oscillation effects on the spontaneous emission intensity and the lifetime under the condition of distance variation of the single quantum dot and its mirror image system. We start from the wave function and use the superposition principle to predict the self-interference phenomena of the system; and the lifetime of the system is theoretically predicted damping oscillated. The spontaneous emission intensity and the lifetime were observed as the function of the distance between the single quantum dot and its mirror image. We first demonstrate the method of observing self-interference and superradiant spontaneous emission at room temperature by the single quantum dot with its mirror image distance variation system. Because of the phenomena is observable at room temperature, it could be potentially applied as the basic quantum bit in the quantum information processing and computation.

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