Abstract Submitted
for the MAR15 Meeting of
The American Physical Society

Resonance Fluorescence Spectrum from a Quantum Dot Driven by a Periodically-Pulsed Laser KUMARSIRI KONTHASINGHE, MANOJ PEIRIS, BENJAMIN PETRAK, University of South Florida, YING YU, ZHICHUAN NIU, Chinese Academy of Sciences, ANDREAS MULLER, University of South Florida — We report the measurement of the spectrum of the light scattered near-resonantly by a quantum dot under excitation by a periodically-pulsed laser, i.e., a frequency comb. Even though the scattered light spectrum under monochromatic excitation, the "Mollow triplet", is well known, the resonance fluorescence spectrum under pulsed excitation has so far only been investigated theoretically. By using a high resolution Fabry-Perot interferometer and a stabilized mode-locked laser source we were able to measure the spectrum and second-order correlation function of the scattered light. In particular, the coherently and incoherently scattered light can be distinguished by virtue of the frequency comb scattering. The spectrum exhibits predicted features such as multiple sidebands when the pulse duration is long enough. In addition, Rabi oscillations are found to proceed with different phases for the two components of the scattered light. Satisfactory agreement is found between the experimental data and simulations when the effect of spectral diffusion is included

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Date submitted: 13 Nov 2014 Electronic form version 1.4