

Abstract Submitted
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Photon Statistics of Quantum Dot Resonance Fluorescence under the Influence of a Non-Resonant Laser¹ DISHENG CHEN, GARY LANDER, KYLE KROWPMAN, West Virginia University, GLENN SOLOMON, Joint Quantum Institute, NIST, EDWARD FLAGG, West Virginia University — We study the statistical behavior of resonance fluorescence from self-assembled InAs quantum dots (QDs) as a function of the density of free charge carriers introduced by a HeNe laser. Second-order correlation measurements show bunching behavior that changes with HeNe laser power which is absent in HeNe-only excited emission. Resonant photoluminescence excitation spectra indicate that the QD experiences discrete spectral shifts and continuous drift due to changes in the local charge environment. These spectral changes, combined with tunneling of charges from the environment to the QD, provide an explanation of the bunching observed in the correlations.

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