

Photon Correlation Spectroscopy of Semiconductor Nanostructures

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Since the pioneering work of Hanbury Brown and Twiss in 1956 the study of correlations in the intensities received by two detectors has been applied to a large variety of systems including Bosons and Fermions and are now heavily used in quantum optical studies of semiconductor nanostructures. We will review our work of the last decade on photon correlation spectroscopy in semiconductor quantum optics including individual impurity bound excitons, single and coupled quantum dots, single quantum dot nanolasers, and carbon nanotubes. We discuss how one can gain information about such diverse phenomena as single and entangled photon generation, interdot coupling, lasing, and spectral diffusion.