

Entanglement and indistinguishability in photons from quantum dots

Semiconductor quantum dots (QDs) of InAs in GaAs are bright emitters of discrete photons. They can be used in a variety of fundamental quantum optics experiments and will likely contribute to emerging applications in quantum information. I will discuss our recent experiments in manipulating individual QDs states to tailor the character of the emitted photons. Using optical cavities and tuning fields we can control the degree of entanglement and indistinguishability of these photons. These experiments demonstrate that while photons emitted from solid-state structures are often adversely influenced by their environment, this can be rectified.

Glenn Solomon
Joint Quantum Institute
NIST & University of Maryland
solomon@nist.gov