

Abstract Submitted
for the MAR09 Meeting of
The American Physical Society

Indistinguishable photons from independent semiconductor single-photon devices THADDEUS LADD¹, KAORU SANAKA², Stanford University, ALEXANDER PAWLIS³, KLAUS LISCHKA, University of Paderborn, Germany, YOSHIHISA YAMAMOTO⁴, Stanford University — We demonstrate quantum interference between single photons generated by the radiative decay processes of excitons that are bound to isolated fluorine donor impurities in ZnSe/ZnMgSe quantum-well nanostructures. Single photon generation is confirmed by auto-correlation experiments, and indistinguishability of single photons from independent devices is confirmed via a Hong-Ou-Mandel dip. These results indicate that donor impurities in appropriately engineered semiconductor structures can portray atom-like homogeneity and coherence properties, potentially enabling scalable technologies for future large-scale optical quantum computers and quantum communication networks.

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Date submitted: 17 Nov 2008

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