Indistinguishable photons from independent semiconductor single-photon devices THADDEUS LADD\textsuperscript{1}, KAORU SANAKA\textsuperscript{2}, Stanford University, ALEXANDER PAWLIS\textsuperscript{3}, KLAUS LISCHKA, University of Paderborn, Germany, YOSHIHISA YAMAMOTO\textsuperscript{4}, 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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