

Abstract Submitted
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Eliminating the fine structure splitting of excitons in self-assembled InAs/GaAs quantum dots via combined stresses LIXIN HE, JIANPING WANG, University of Science and Technology of China, MING GONG, Washington State University, G.-C. GUO, University of Science and Technology of China — Eliminating the fine structure splitting (FSS) of excitons in self-assembled quantum dots (QDs) is essential to the generation of high quality entangled photon pairs. We show by an extended two-level model that the FSS of excitons in a general self-assembled InGaAs/GaAs QD can be fully suppressed via combined stresses along the [110] and [010] directions. The results of the model Hamiltonian are confirmed by atomic empirical pseudopotential calculations. For all the QDs we calculated, the FSS can be tuned to be vanishingly small ($< 0.1 \mu\text{eV}$), which is sufficient small for high quality entangled photon emission.

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