

Towards scalable quantum dots

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We demonstrate a gated GaAs/AlGaAs based four-dot system fabricated using electron beam lithography. The metal gates are employed to define a pair of double quantum dots, together with two quantum point contacts (QPCs) adjacent to the main system. These QPCs serve as noninvasive detectors. During cryogenic measurements, the device is tuned to operate as a quantum cellular automaton (QCA) cell, and in a subsequent experiment, we configure it to study photon assisted tunneling. Further investigations include the use of this layout for a two-dimensional array of quantum dots, as suggested by the QIST Roadmap.