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Entanglement distillation by adiabatic passage in coupled quantum dots[1] JAROSLAV FABIAN, University of Regensburg, ULRICH HOHENESTER, University of Graz — Adiabatic passage of two correlated electrons in three coupled quantum dots is shown to provide a robust and controlled way of distilling, transporting and detecting spin entanglement, as well as of measuring the rate of spin disentanglement. Employing tunable interdot coupling the scheme creates, from an unentangled two-electron state, a superposition of spatially separated singlet and triplet states. A single measurement of a dot population (charge) collapses the wave function to either of these states, realizing entanglement to charge conversion. The scheme is robust, with the efficiency close to 100%, for a large range of realistic spectral parameters.

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