

Quantum Physics

Spatial entanglement using quantum walk on many body system

Sandeep K. Goyal, C. M. Chandrashekar

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Evolution of many particles on a one dimensional lattice subjected to quantum walk can cause spatial entanglement in the lattice position which can be exploited for quantum information/communication purposes. We demonstrate the evolution of spatial entanglement and its dependence on the quantum coin operation parameters, number of particles present in the lattice and the number of steps of quantum walk on the system. Thus, the spatial entanglement can be controlled and optimized using many particle quantum walk as per requirement.

Comments: 8 pages, 9 figures. V2: revised with expanded explanation

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