Quantum Physics

Quantum interrogation logic gates

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Quantum interrogation can be used as a basic resource for quantum information. This paper presents its applications to entanglement creation and to optical quantum computation. The starting point will be a photon to particle quantum interrogation CZ gate, from which three families of optical CNOT gates will be derived. These gates are nondestructive and can work with probabilities arbitrarily close to 1. A possible experimental implementation with atomic ensembles is also discussed.

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