

## Quantum Physics

# Entanglement Generation by a Three-Dimensional Qubit Scattering: Concurrence vs. Path (In)Distinguishability

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A scheme for generating an entangled state in a two spin-1/2 system by means of a spin-dependent potential scattering of another qubit is presented and analyzed in three dimensions. The entanglement is evaluated in terms of the concurrence both at the lowest and in full order in perturbation with an appropriate renormalization for the latter, and its characteristics are discussed in the context of (in) distinguishability of alternative paths for a quantum particle.

Comments: 4 pages, 2 figures; minor corrections in the text, references updated, typos in a couple of equations corrected

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