

Abstract Submitted
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Generation of long-living entanglement between two atoms passing by a microsphere OZGUR ÇAKIR, Department of Physics Bilkent University Bilkent ANKARA 06800 TURKEY, HO T. DUNG, Institute of Physics, National Center, DIRK-GUNNAR WELSCH, LUDWIG KNÖLL, Theoretisch-Physikalisches Institut, — A scheme for deterministic generation of long-living maximally entangled states between two spatially well separated atoms is proposed[1,2]. In the scheme, Λ -type atoms pass a resonator-like equipment of dispersing and absorbing macroscopic bodies giving rise to body-assisted electromagnetic field resonances of well-defined heights and widths. Strong atom-field coupling is combined with weak atom-field coupling to realize entanglement transfer from the dipole-allowed transitions to the dipole-forbidden transitions, thereby the entanglement being preserved when the atoms depart from the bodies and from each other. The theory is applied to the case of the atoms passing by a microsphere[3,4]. [1] Ö. Çakır, H.T. Dung, D.G. Welsch, L. Knöll, *quant-ph/0410033* [2] M.A. Can, Ö. Çakır, A. Klyachko, and A. Shumovsky, *Phys. Rev. A* **68**, 022305 (2003). [3] L. Knöll, S. Scheel, and D.-G. Welsch, in *Coherence and Statistics of Photons*, ed. J. Perina (Wiley, New York, 2001), p. 1 (for an update, see *quant-ph/0003121*). [4] Ho Trung Dung, S. Scheel, D.-G. Welsch, and L. Knöll, *J. Opt B: Quantum Semiclass. Opt.* **4**, 169 (2002).

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