

## Quantum Physics

# Experimental Quantum Teleportation and Multi-Photon Entanglement via Interfering Narrowband Photon Sources

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(Submitted on 4 Jan 2009 (v1), last revised 6 Sep 2009 (this version, v2))

In this letter, we report a realization of synchronization-free quantum teleportation and narrowband three-photon entanglement through interfering narrowband photon sources. Since both the single-photon and the entangled photon pair utilized are completely autonomous, it removes the requirement of high demanding synchronization technique in long-distance quantum communication with pulsed spontaneous parametric down-conversion sources. The frequency linewidth of the three-photon entanglement realized is on the order of several MHz, which matches the requirement of atomic ensemble based quantum memories. Such a narrowband multi-photon source will have applications in some advanced quantum communication protocols and linear optical quantum computation.

Subjects: **Quantum Physics (quant-ph)**  
Journal reference: Phys. Rev. A 80, 042321 (2009)  
DOI: [10.1103/PhysRevA.80.042321](https://doi.org/10.1103/PhysRevA.80.042321)  
Cite as: **arXiv:0901.0351v2 [quant-ph]**

## Submission history

From: Xiao-Hui Bao [[view email](#)]

[v1] Sun, 4 Jan 2009 03:56:09 GMT (283kb)

[v2] Sun, 6 Sep 2009 21:23:45 GMT (281kb)

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