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Quantum Physics

Scheme for generating coherent state superpositions with realistic cross-Kerr nonlinearity

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(Submitted on 22 Jan 2009 (v1), last revised 21 Feb 2009 (this version, v3))

We present a simple scheme using two identical cross-phase modulation processes in decoherence environment to generate superpositions of two coherent states with the opposite phases, which are known as cat states. The scheme is shown to be robust against decoherence due to photon absorption losses and other errors, and the design of its experimental setup is also discussed.

Comments:	Published version
Subjects:	**Quantum Physics (quant-ph)**
Journal reference:	PHYSICAL REVIEW A 79, 035802 (2009)
DOI:	10.1103/PhysRevA.79.035802
Cite as:	**arXiv:0901.3505v3** [quant-ph]

Submission history

From: Bing He [view email]

[v1] Thu, 22 Jan 2009 15:56:07 GMT (137kb)
[v2] Thu, 12 Feb 2009 06:11:19 GMT (143kb)
[v3] Sat, 21 Feb 2009 21:22:12 GMT (143kb)

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