



Universität
Basel

Research Project

Cold atom semiconductor hybrid quantum system

Third-party funded project

Project title Cold atom semiconductor hybrid quantum system

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Organisation / Research unit

Departement Physik / Experimental Physics (Warburton)

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Department

Project start 01.04.2012

Probable end 31.12.2012

Status Completed

We propose a best-of-both-worlds hybrid quantum system for a single photon quantum memory. An ensemble of cold atoms provides both quantum coherence and strong absorption. A single quantum dot, spectrally matched to the cold atoms, provides high repetition rate, narrow bandwidth single photons on demand. The project combines know-how in atomic and semiconductor physics and may enable fundamentally different quantum objects to be entangled.

Keywords quantum memory, quantum dot, cold atoms

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Add publication

Published results

2302314, Rakher, Matthew T.; Warburton, Richard J.; Treutlein, Philipp, Prospects for storage and retrieval of a quantum-dot single photon in an ultracold 87Rb ensemble, 1050-2947, Physical review. A, Atomic, Molecular, and Optical Physics, Publication: JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)

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