

PHYSICAL REVIEW A

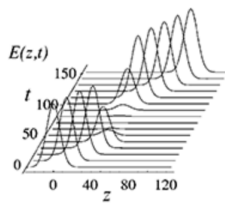
covering atomic, molecular, and optical physics and quantum information

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Physical Review A 50th Anniversary Milestones



2020 marks *Physical Review A*'s 50th anniversary. As part of the celebrations, we are starting a collection of milestone papers. The collection contains papers that have made important contributions to atomic, molecular, and optical physics and quantum information by announcing significant discoveries or by initiating new areas of research. Many of them have had a far-reaching impact on other subjects of physical sciences. Efforts have been made to obtain a distribution of such articles in the various fields of physics covered by the journal.



Quantum memory for photons: Dark-state polaritons

Many quantum technologies rely on photons to carry quantum information from one place to another and on atoms to store and process the information, creating the need to transfer the information from one medium to the other in a way that fully preserves coherence. In this paper and an accompanying Physical Review Letter, Fleischhauer and Lukin showed how photons can be stopped and stored in an atomic vapor using the phenomenon of electromagnetically induced transparency. Since then, the storage and retrieval of light has been achieved in a variety of systems using the method described in this paper.

See also the PRA behind the research webinar series: [Video Recording](#).

[Quantum memory for photons: Dark-state polaritons](#)

M. Fleischhauer and M. D. Lukin

[Phys. Rev. A 65, 022314 \(2002\)](#)