Functional Matter
Designer Materials and Quantum Technologies
Ein fakultätsübergreifendes Kooperationszentrum
TU WIEN

Invitation

Directed Spontaneous Emission from an Extended Ensemble of *N* Atoms: Timing is everything

Marlan O. SCULLY
Texas A&M University and Princeton University

A collection of *N* static atoms is fixed in a crystal at a low temperature and prepared by a pulse of incident radiation of wave vector $\vec{k}_0$. The *N* atoms are well described by an entangled Dicke-like state, in which each atom carries a characteristic phase factor $\exp\left(i\vec{k}_0 \cdot \vec{r}_j\right)$ where $\vec{r}_j$ is the atomic position in the crystal. It is shown that a single photon absorbed by the *N* atoms will be followed by spontaneous emission in the same direction. Furthermore, phase matched emission is found when one photon is absorbed by *N* atoms followed by two-photon down-conversion.

and an additional related short talk

Similar experiments with resonant gamma-radiation

Yuji HASEGAWA
Atominstitut Wien

Dienstag, 8. Juli 2008
11 Uhr c.t.

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