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## A photon traveling 6000 km in two directions at the same time

Cavity quantum electrodynamics (CQED) is a field where the emission properties of atoms are modified by coupling with modes of cavities. Using Rydberg atoms coupled with ultra high finesse microwave cavities, the CQED team of LKB achieved a strong coupling regime, where the interaction of atoms with light is much stronger than decoherence. The very long life-time of the cavities made it possible to realize numerous experiments exploring the foundations of quantum mechanics of the last decade. In this work, we have built a set-up with two microwave cavities. We have then prepared entangled states of this two cavities, where a photon is spread on the two of them. This states show a lifetime of about 20 milliseconds, corresponding to an effective length of 6000 km in this single photon interferometer.

### Language

English

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