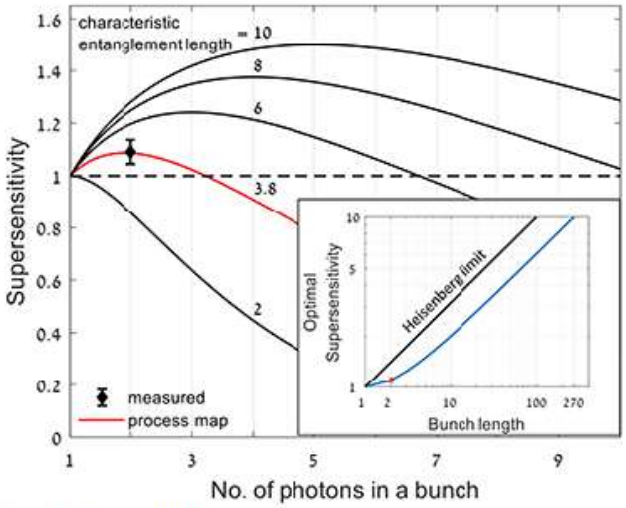

EDITORS' SUGGESTION

Towards supersensitive optical phase measurement using a deterministic source of entangled multiphoton states (/prb/abstract/10.1103/PhysRevB.101.245406)

In principle, the use of entangled photons provides enhanced precision in optical phase measurements. This precision significantly surpasses the classical shot-noise limit, and thereby has many possible applications in science and technology. In practice, however, entangled multiphoton states have been generated so far using various intrinsically probabilistic and unscalable processes, thereby counteracting the advantages that the entangled photon states might have. The authors overcome these limitations here by using a quantum knitting machine, based on a single semiconductor quantum dot, to generate a polarization-entangled multiphoton state in a deterministic manner. The multiphoton state is then used to demonstrate super-sensitive optical phase measurement. The results pave the way for realizing genuine quantum enhanced optical measurements in the very near future.

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