

Heralded generation of a micro-macro entangled state - DTU Orbit (09/11/2017)

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Using different optical setups based on squeezed state and photon subtraction we show how optical entanglement between a macroscopic and a microscopic state-the so-called Schrodinger cat state or micro-macro state-can be generated. The entangled state is heralded and is thus produced a priori in contrast to previous proposals. We define the macroscopicity of the macroscopic part of the state as their mean distance in phase space and the success rate in discriminating them with homodyne detection, and subsequently, based on these measures we investigate the macroscopicity of different states. Furthermore, we show that the state can be used to map a microscopic qubit onto a macroscopic one thereby linking a qubit processor with a qumode processor.

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