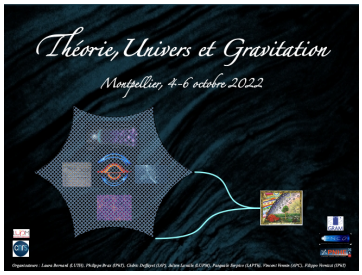

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Quantum vacuum excitation of a quasi-normal mode in an analog model of black hole spacetime

mardi 4 octobre 2022 11:35 (25 minutes)

Vacuum quantum fluctuations near horizons are known to yield correlated emission by the Hawking effect. We use a driven-dissipative quantum fluid of microcavity polaritons as an analog model of a quantum field theory on a black-hole spacetime and numerically calculate correlated emission. We show that, in addition to the Hawking effect at the sonic horizon, quantum fluctuations may result in a sizeable stationary excitation of a quasi-normal mode of the field theory. Observable signatures of the excitation of the quasi-normal mode are found in the spatial density fluctuations as well as in the spectrum of Hawking emission. This suggests a general and intrinsic fluctuation-driven mechanism leading to the quantum excitation of quasi-normal modes on black hole spacetimes. With this talk, I would like to discuss the possible generalisation of our results to generic fields on black hole spacetimes.

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