

# An optical analogue of gravity-induced instabilities

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In the context of field theory in curved spacetimes, it is known that suitable background spacetime geometries can trigger instabilities of fields, leading to exponential growth of their (quantum and classical) fluctuations — a phenomenon called vacuum awakening in the quantum context, which in some classical scenarios seeds spontaneous scalarization. Despite its conceptual interest, an actual observation in nature of this effect is uncertain since it depends on the existence of fields with proper mass and couplings and strong-gravity regimes. In this letter, we propose an analogue model for this gravity-induced instability based on nonlinear optics which could, in principle, be observed in laboratory.

## References

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