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The theory of optical black hole lasers

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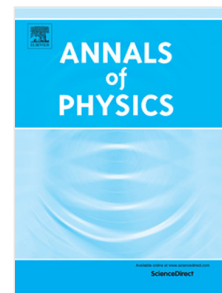
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Highlights

- We develop the conditions to obtain the correct kinematics for the optical black hole laser.
- Proposing an action and an inner product, we prove the amplification of Hawking radiation for the optical case.
- We derive the forward propagation of modes and check the results for backward propagation.
- A model is proposed to calculate the phase difference and use it to approximate the amplification rate.
- We perform numerical simulations of a probe pulse trapped between two fundamental solitons forming a stable cavity.

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