Contribution ID: **105** Type: **Boundaries, Symmetries, and Classical aspects**

# Purification of Hawking radiation: messages from a moving mirror analogue

*Thursday 9 May 2024 16:10 (15 minutes)*

Time-dependent reflective boundary conditions (i.e. a moving mirror) in a scalar field theory in 1+1 dimensions have the power to model key aspects of Hawking radiation. In particular, this valuable pedagogical tool allows one to understand how early thermal quanta could be purified by late field modes. In this talk, we discuss a mirror trajectory that mimics an evaporating black hole; with a time-dependent mass dictated by the amount of energy radiated. We find that this model materializes concretely an exciting scenario previously suggested by Hotta, Schutzhold, and Unruh. Here, Hawking radiation is purified by late-time vacuum fluctuations, which, while carrying no energy or momentum, are still capable of purifying the state. Although not all messages extracted from this analogy may apply to black holes, the calculations reveal interesting lessons about the relation between purification and energy fluxes in evaporating scenarios. A study of similar issues on more realistic black hole scenarios will be discussed at this conference by Beatriz Elizaga Navascués.

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**Session Classification:** Cosmology, Black Holes, and other applications/phenomenology