



Sommerfeld Theory Colloquium

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Information return in Hawking radiation,
a Gaussian quantum information theory perspective

One possible solution to Hawking's black hole information paradox is to postulate that a pure quantum state of a collapsing object evolves unitarily to a pure quantum black hole, which in turn evolves unitarily to a pure state of Hawking radiation, when all the black hole will have radiated away. By assumption the final state then involves only known physics, though of very high-dimensional states. We idealize (simplify) by supposing that all the Hawking particles are photons. The constraint that a total state over some set of photonic modes is pure while all the marginals are thermal is a quantum marginal problem. If such problems can be solved or not depend in a surprisingly simple way on the properties of the marginals, i.e. on the mode temperatures. I will discuss what implications these and related developments may have for the information return scenario. The talk is partly based on joint work with Pawel Horodecki and Michal Eckstein, JCAP01(2022)014.

Wednesday, 26 April 2023, 16:15h, Room A348/and/via/Zoom, Theresienstr. 37/III

Prof. Slava Mukhanov