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Correlations and the paradox of information loss

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Information is physical, it cannot simply disappear in any physical process. This basic principle of information science constitutes one of the most important elements for the very foundation to our daily life and to our understanding of the universe. However, this fundamental principle is challenged by the physics of black holes. In this talk, I will talk

about how to resolve the paradox with Parikh-Wilczek nonthermal spectrum. Then I will talk about the relation between the area entropy and information about the fallen matter in a black hole. Finally, I will discuss the possibility of experimental testing of quantum gravity theory in lab.

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