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## **On the role of the irreducible mass in a repetitive Penrose process in a Kerr black hole**

*Monday, 8 July 2024 16:00 (30 minutes)*

We consider repetitive decays in the ergosphere of an initially extreme Kerr BH and show that these processes are highly irreversible. For each decay, including the BH capture of the particle falling into the horizon, the increase of the irreducible mass is much larger than the extracted energy. By considering the decay at different points within the ergosphere, we conclude that the repetitive Penrose processes either cause a tiny change in the BH spin and the rotational energy, leaving most of it to be extracted (by other means), or it can approach a final state of a Schwarzschild BH by converting the rotational energy into irreducible mass, without actual energy extraction.

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**Session Classification:** Repetitive Penrose process