

## RTG 2522 Kickoff



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# Poor foundations of a heated debate; semi-classical black hole evaporation

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Back in the 70s Stephen Hawking suggested from semi-classical gravity arguments (i.e. coupling classical general relativity to a quantum field theory as a matter model) that black holes can evaporate in a way which leads to non-reversible time evolution. This suggestion has proved to be controversial, especially among those working in quantum gravity. As such, this scenario is often referred to as the information loss paradox. We note that the semi-classical foundations on which this paradox is built, are still poorly understood. In this talk I will highlight some open questions concerning semi-classical black hole evaporation. Hopefully this will allow us to settle if black holes truly evaporate within the semi-classical theory, such that we can finally address potential implications of this on quantum gravity theories from firmer ground, whilst expanding our understanding of quantum fields on curved space-times and semi-classical gravity in the process.

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