

Black hole as a quantum field configuration

Friday, 18 December 2020 10:30 (1 hour)

In quantum theory, black holes evaporate. We adopt this property as the 0th approximation and provide a field-theoretic description of black holes. To do that, we analyze time evolution of a spherical collapsing matter together with the back reaction of (pre)Hawking radiation by solving the semi-classical Einstein eq coupled with N massless scalar quantum fields. We find a 4D self-consistent non-perturbative solution w.r.t. \hbar . It describes the most part of the black hole in the semi-classical level while it connects the semi-classical region to the quantum gravity region smoothly. [arxiv:2002.10331]

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Session Classification: Invited talks