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Characteristic renormalization and applications to black hole formation

Thursday, 31 August 2023 16:40 (40 minutes)

We present a regularization prescription for Hadamard two-point functions defined on the boundary of a light-cone, which can be used to analyze renormalized quantities for linear scalar fields in a curved background. This can be applied to formulate the semi-classical Einstein equations as a characteristic initial value problem. Furthermore, we shall discuss how these tools can be used to estimate backreaction effects of quantum fields near gravitationally collapsing bodies and study formation of horizons and singularities in semi-classical gravity.

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