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The semiclassical Einstein equation in cosmological spacetimes: Existence and uniqueness of the solutions

Tuesday, 29 August 2023 16:40 (40 minutes)

During this talk we shall discuss some properties of the semiclassical Einstein equation.
This equation is used to model the backreaction of quantum matter on classical backgrounds.
In this talk we shall in particular analyze the case of backgrounds which describe cosmological spacetimes.
The quantum field we shall consider is massive and satisfies a linear equation with a generic coupling to the scalar curvature.
We observe that a nonlocal term with higher order derivatives is present in the expectation value of the matter stress tensor which sources gravity.
This term prevents a direct analysis of that equation, we show how to deal with it in order to put the semiclassical equation in a form which can then be treated with Banach fixed point methods.

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