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Microlocal Analysis for Hyperbolic Equations in the Einstein & de Sitter Spacetime

Abstract

In the talk we consider the waves propagating in the universe modeled by the so-called Einstein & de Sitter cosmological model. The wave equation in the Einstein & de Sitter spacetime is strictly hyperbolic in the domain with positive time, while the coefficients have singularities at time $t = 0$ (the cosmological singularity, the moment of Big Bang). We set initial data on the hyperplane separated from the singularities and investigate asymptotic behavior of the solution as time approaches zero. We give explicit representation formulas and parametrixes of the Cauchy problem in the terms of Fourier integral operators. This allows us to prove rigorously some known physically motivated asymptotics.

Bibliography

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