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Inverse source problem for the Boltzmann equation

by

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ABSTRACT

Cosmic Microwave Background (CMB) is the thermal radiation remnant from the Big Bang. It is a primary source of information regarding the early universe. An outstanding question is what information can be inferred from it. In this talk, we use the kinetic model to show some determination results. Mathematically, we study the inverse source problem for the Boltzmann equation and prove that the source term which is connected to the metric perturbation can be stably determined from the photon observation on Cauchy surfaces for generic absorption coefficients and scattering kernels. Our proof relies on the microlocal analysis of an integral transform in Lorentzian geometry (called the light ray transform), and its interplay with wave equations.



~ALL ARE WELCOME~

