
Fractional Diffusion and the Linear Boltzmann equation

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Abstract

In this talk, we consider the linear Boltzmann equation of radiative transfer in a half-space. Assume that the radiation intensity satisfies the Lambert (i.e. diffuse) reflection law with a given albedo coefficient and under the Stefan-Boltzmann law for the temperature of radiation, we prove that, under a certain asymptotic, the radiation pressure exerted on the boundary of the half-space is governed by a fractional diffusion equation. This result provides an example of fractional diffusion asymptotic limit of a kinetic model which differs from most of other such limits for kinetic models in the literature, based on specific properties of the equilibrium distributions. This is a joint work with Claude Bardos and François Golse.

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