

# **From microscopic dynamics to macroscopic equations: The Lorentz Gas**

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In this lecture I will give a survey of some recent results concerning the rigorous derivation of macroscopic evolution equations starting from the microscopic model given by the random Lorentz Gas which is a system of non interacting particles in a random distribution of scatterers. In particular, we will focus on the characterization of stationary nonequilibrium states exhibiting transport phenomena by validating the Fick's law of diffusion in a situation of low density. Moreover, we will present some recent progress on the rigorous derivation of linear kinetic equations with an external magnetic field.