Courses 2017-18

Arthur Vavasseur

23-27 April 2018 (5 sessions)
09:30 - 11:30 (a total of 10 hours)

AN INTRODUCTION TO KINETIC EQUATIONS

The main goal of the lecture will be to give an overview of the problem studied in the field of kinetic equations. Those PDEs appear naturally in the modelling of systems composed by a large number of objects which are all subjected to the same physical laws. The panorama of objects that can be considered with those equations is very large: one can think about the electrons in a plasma or the stars in a galaxy (Vlasov equation), the particle of dust in suspension in a gas (Fokker-Plank equation), or the molecules of a gas (Boltzmann equation). We will particularly focus on the rigorous physical derivation of the equations, the well definition of their solutions, the large time asymptotic when it can be established, and the derivation of simpler equations.

PREREQUISITES
Basic knowledge in functional analysis: distributions, Lp spaces. Most of the specific technics to study those PDE will be explained during the lecture. Some probability knowledge will be necessary for the lecture of Wednesday.

*Registration is free, but inscription is required before 18th April: So as to inscribe send an e-mail to reception@bcamath.org. Student grants are available. Please, let us know if you need support for travel and accommodation expenses.