Кафедра ТЕОРИИ ВЕРОЯТНОСТЕЙ

БОЛЬШОЙ СЕМИНАР КАФЕДРЫ ТЕОРИИ ВЕРОЯТНОСТЕЙ

Руководитель — академик РАН, профессор А. Н. Ширяев

12 декабря – 2018 г.   **Jean-François JABIR**   (Международная лаборатория стохастического анализа и его приложений, НИУ ВШЭ, Москва)

Lagrangian stochastic models for turbulent flows and related problems

Lagrangian stochastic models for turbulent models define a particular family of stochastic differential equations, of McKean-Vlasov type, originally conceived in the framework of statistical physics and computational fluid dynamics to model and simulate the motions of a fundamental particle of a fluid flow. These stochastic models are currently applied in various engineering problems such as the simulation of multiphase flows, the design of stochastic filtering methods for wind measurements and the development of stochastic downscaling methods for forecasting windpower at low scale. But, despite their range of applications, Lagrangian stochastic models for turbulent flows, in their full generality, implicate a certain number of original mathematical problems, related to the existence and uniqueness of a solution to the continuous-time stochastic differential equations underlying these models and the consistency of their numerical approximations. The first part of the talk will be dedicated to a short presentation of the characteristic aspects related to the stochastic modeling of turbulent flows. In the rest of the talk, I will discuss more specifically about the general theoretical problems related to Lagrangian stochastic models for turbulent flows, — which more broadly involve the wellposedness and propagation of chaos problems of singular McKean-Vlasov equations, the introduction of boundary conditions in Langevin dynamics and the construction of diffusion processes with weak constraint - and present some resolutions to these problems in some simplified situations.

Семинар проводится по средам в аудитории 12-24 Главного Здания Московского Государственного Университета им. М.В. Ломоносова с 16:45 до 17:45

Координатором семинара на осенний семестр 2018 года назначен
доцент Анатолий Дмитриевич Манита,
ученым секретарем семинара — К.С. Морозов