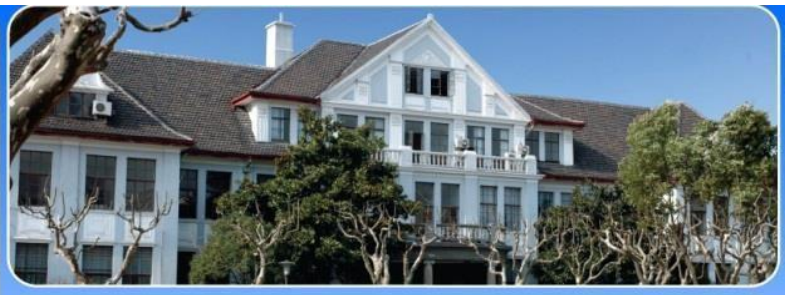


复旦大学数学科学学院
数学综合报告会

报告题目：Twin Brownian particle method for the study of Oberbeck-Boussinesq fluid flows

报告人：LI Jiawei (英国爱丁堡大学)

时间：2023-07-25 星期二 10:00 - 11:00

地点：光华楼东主楼1601室

报告摘要：

By Oberbeck-Boussinesq flows, we mean fluid flows governed by approximation equations of motion for heat-conducting fluid flows. In this talk, we will introduce a stochastic functional integral representation for solutions of Oberbeck-Boussinesq equations in the form of McKean-Vlasov-type mean field equation, which can be used to design numerical schemes for calculating solutions and implementing Monte-Carlo simulations of Oberbeck-Boussinesq flows. Our approach is based on the duality of conditional laws for a class of diffusion processes associated with solenoidal vector fields, which allows us to obtain a novel integral representation theorem for the solution of some linear parabolic equation in terms of the Green function and the pinned measure of the associated diffusion. I will also present some numerical results to show the efficiency of the numerical schemes, which are capable of revealing numerically the details of Oberbeck-Boussinesq flows within their thin boundary layer.

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