中国科学院
随机复杂结构与数据科学重点实验室
学术报告

报告题目： Uniqueness for (stochastic) Lagrangian trajectories for Leray solutions to 3D Navier-Stokes.

报 告 人： Lucio Galeati

时　间： 2024 年 9 月 12 日（周四）　16：00 – 17：00

地　点： Zoom 会议: 8417529 4884
密码: 123456

报告摘要： We revisit a result due to Robinson and Sadowski (2009), who first showed a.e. uniqueness of Lagrangian trajectories for admissible weak solutions to 3D Navier-Stokes, for sufficiently regular u_0. We give an alternative proof, based on a newly established asymmetric Lusin-Lipschitz property of Leray solutions, exploited crucially in the arguments from Caravenna-Crippa (2021) and Brué-Colombo-De Lellis (2021). This approach is more robust, requiring no assumptions on u_0 and being applicable also to the stochastic characteristics of the system. Finally, if u_0 is regular (say $u_0 \in H^{1/2}$), then we are able to exploit the diffusive behaviour of stochastic trajectories to further prove that, for any fixed $x_0 \in R^d$, path-by-path uniqueness for the SDE $dX_t = u(t, X_t)dt + dB_t, X|_t=0$. Based on the preprint arXiv:2406.12788.