学术报告

报 告 人：张希承教授 (北京理工大学)

报告题目: Second order fractional mean-field SDEs with singular kernels and measure initial datas

报告时间: 2022年12月30日, 16:30-17:30

报告地点: 腾讯会议 980 459 070

发布平台: 哈尔滨工业大学数学研究院

报告摘要: In this paper we establish the local and global well-posedness of weak and strong solutions to second order fractional mean-field SDEs with singular/distribution interaction kernels and measure initial values, where the kernel can be Newton or Coulomb potential, Riesz potential, Biot-Savart law, etc. Moreover, we also show the stability, smoothness and the short time singularity and large time decay estimates of the density. Our results reveal a phenomenon that for *nonlinear* mean-field equations, the regularity of the initial density could balance the singularity of the kernel. The precise relationship between the singularity of kernel and the regularity of initial values are calculated, which belongs to the subcritical regime in scaling sense. In particular, our results provide microscopic probability explanation and establish a unified treatment for many physical models such as fractional Vlasov-Poisson-Fokker-Planck system, 2d-point vortex system, surface quasi-geostrophic models, fractional porous media equation with viscosity, etc.