第137回

附属社会創造数学センター主催
北大MMCセミナー

Date： 2023年5月9日（火）16：30～18：00

Speaker： Jack Xin
（Chancellor's Professor, University of California, Irvine）

Place： 北海道大学 電子科学研究所
中央キャンパス総合研究棟2号館5階 講義室

Title： Particle and Game Theoretic Methods for Front Speeds
in Fluid Flows

Abstract： We study and compute large time front speeds of Fisher-Kolmogorov-Petrovsky-Piskunov equation in fluid flows with chaotic and stochastic streamlines based on a normalized Feynman-Kac representation and the associated genetic interacting particle (IP) method. Examples of such flows are Arnold-Beltrami-Childress (ABC) flows and their random perturbations. The method is mesh-free and self-adaptive, providing training data for efficient deep learning of the invariant measure of IP evolution in the small molecular diffusivity regime.
We analyze a curvature dependent level set Hamilton-Jacobi equation arising in turbulent combustion, and show the existence of effective front speeds in cellular (BC) flow.
To overcome non-coercivity and non-convexity of the Hamiltonian, we rely on a notion of reachability through Kohn-Serfaty deterministic game characterization, the ordered streamline structure of the BC flow, and comparison principle.

※当日、体調のすぐれない方は出席をご遠慮願います。
※換気のため一部窓を開けて開催します。体温調節可能な服装でお越しください。

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