Seminar Information

東京都立大学 理学研究科数理科学専攻

数理解析セミナー

- 4 月 8 日（月） 16:45 ～ 18:00　　　　　　　　　8号館　610 教室

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  題　目： Non-Markovian models of collective motion

  概　要：

  I will give an overview of recent results for models of collective behavior governed by functional differential equations with non-Markovian structure. The talk will focus on models of interacting agents with applications in biology (flocking, swarming), social sciences (opinion formation) and engineering (swarm robotics), where latency (delay) plays a significant role. I will characterize two main sources of delay - inter-agent communications ("transmission delay") and information processing ("reaction delay") - and discuss their impacts on the group dynamics. I will give an ovierview of analytical methods for studying the asymptotic behavior of the models in question and their mean-field limits. In particular, I will show that the transmission vs. reaction delay leads to fundamentally different mathematical structures and requires appropriate choice of analytical tools. Finally, motivated by situations where finite speed of information propagation is significant, I will introduce an interesting class of problems where the delay depends nontrivially and nonlinearly on the state of the system, and discuss the available analytical results and open problems here.

連絡先

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