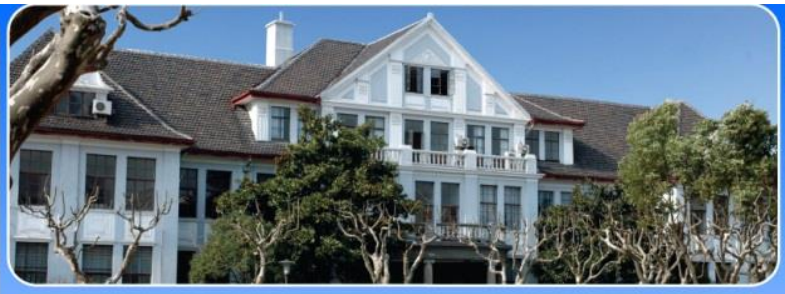


# 复旦大学数学科学学院
# 数学综合报告会

报告题目：A chemotaxis model with indirect signal production and phenotype switching in space dimension two

报告人：Philippe Laurencot (Laboratoire de Mathématiques (LAMA), CNRS & Université Savoie Mont Blanc)

报告时间：2024 年 11 月 25 日星期一，14：00—15：00

报告地点：光华楼东主楼 1801 室

报告摘要：

The dynamics of a partially diffusive chemotaxis model with indirect signal production and phenotype switching is investigated in a bounded domain of $\mathbb{R}^2$ with smooth boundary and homogeneous Neumann boundary conditions. Such a model takes into account phenotype-dependent response of a population to a chemoattractant. It is shown that the initial boundary value problem is globally well-posed but that a threshold behaviour takes place, depending on the initial total mass $M$ of the population. Solutions are bounded when $M$ lies below a threshold value but may be unbounded when $M$ lies above. Such a phenomenon is reminiscent from the dynamics of the classical two-dimensional Keller-Segel chemotaxis model, for which singularities occur in finite time for sufficiently large masses, and it is the presence of an intermediate species producing the chemoattractant which shifts the finite singularity to infinite time. In this connection, we also investigate the connection between the two models (joint works with Christian Stinner).

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