


复旦大学数学科学学院
数学综合报告会

报告题目：Some recent results on the so-called “Cahn-Hilliard-Keller-Segel” system

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报告时间：2026 年 4 月 21 日星期二，10：30—11：30

报告地点：光华楼东主楼 1801 室

报告摘要：In this talk we will present some mathematical results regarding the so-called “Cahn-Hilliard-Keller-Segel” system. This is a recently proposed model which couples the Cahn-Hilliard system for phase separation with a further equation describing the evolution of an additional variable σ. The main application of the model refers to tumor growth processes, in which the phase variable φ represents the local proportion of active cancer cells, whereas σ denotes the concentration of a chemical substance (for instance a nutrient or a drug) affecting the evolution of the tumor. In this setting, the equation for σ may be characterized by a quadratic cross-diffusion term similar to that occurring in the Keller-Segel model for chemotaxis. In the talk we will discuss about existence, uniqueness and regularity of several classes of solutions (“weak”, “strong” and “entropic”) under various assumptions on the mass and nutrient source terms occurring in the system; in a specific situation we will also analyze the long-time behavior of solutions under the perspective of infinite-dimensional dynamical systems.

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