平成 29 年 8 月 1 日

非線形発展方程式セミナーのご案内

上海の Fudan 大学から Hao Wu 教授をお招きし, 下記のような研究集会を行いますのでご案内申し上げます. 皆さまのご参加をお待ちしております.

記

研究集会名: 第 6 回 非線形発展方程式セミナー @KUE
日時: 平成 29 年 8 月 24 日 (木)
場所: 〒 612-8522 京都市伏見区深草藤森町 1　京都教育大学 A 棟 4 階 1A413
開催責任者: 深尾 武史 (京都教育大学 教育学部) fukao@kyokyo-u.ac.jp

プログラム

8 月 24 日 (木)

[1] 14:00〜14:50 **Hao Wu（School of Mathematical Sciences, Fudan University）**

Title: Long-time Behavior of Nonlinear Evolution Equations: An Introduction to the Lojasiewicz–Simon Approach

Abstract: In this talk we will introduce the Lojasiewicz–Simon approach, which is an efficient method to investigate the long-time behavior of nonlinear evolution equations with multiple steady states. We first explain the main idea by using a simple example, i.e., the Allen–Cahn equation. Then we discuss the possible extensions to evolution equations with different structure.

14:50〜15:10 Coffee Break

[2] 15:10〜16:00 **Hao Wu（School of Mathematical Sciences, Fudan University）**

Title: Analysis of the Cahn–Hilliard–Hele-Shaw System with Singular Potential

Abstract: The Cahn–Hilliard–Hele-Shaw system is a fundamental diffuse-interface model for an incompressible binary fluid confined in a Hele-Shaw cell. In this talk, we will discuss the CHHS system with a physically relevant potential (i.e., of logarithmic type). We first prove the existence of global weak solutions with finite energy. Then in dimension two, we further obtain the uniqueness and regularity of global weak solutions. In particular, we show that any weak solution satisfies the so-called strict separation property. When the spatial dimension is three, we prove the existence of a unique global strong solution, provided that the initial datum is regular enough and sufficiently close to any local minimizer of the free energy. This also yields the local Lyapunov stability of the local minimizer itself. Finally, we show that any global solution will converge to a single equilibrium as time goes to infinity. This is a joint work with A. Giorgini and M. Grasselli (Politecnico di Milano).

[3] 16:00〜 Free Discussion