



复旦大学数学科学学院 数学综合报告会

报告题目: **On the nonlocal Cahn-Hilliard equation with singular potential: separation property and regularity results**

报告人: Dr. Andrea Giorgini (米兰理工大学)

报告时间: 2016-06-07 星期二 13:30-14:30

报告地点: 光华楼东主楼 1501

摘要: The Cahn-Hilliard system has been introduced in material science to describe at a macroscopic level the formation and evolution of microstructures during the phase segregation in a binary alloys system. This phenomenon occurs when a homogeneous mixture undergoes a rapid cooling below a critical temperature. More recently, a nonlocal version of the Cahn-Hilliard system has been proposed by Giacomini and Lebowitz. This macroscopic equation has been rigorously derived starting from a microscopic formulation and taking into account long range repulsive interactions between different species and short hard collisions between all particles. The resulting model is a conserved gradient flow associated to the so called nonlocal Helmholtz free energy. During the talk we will discuss some recent results concerning the nonlocal Cahn-Hilliard system in the case of thermodynamically relevant logarithmic potentials. More precisely, we will show the long-time regularity of weak solutions and the validity of the separation property.

非线性数学模型与计算方法教育部重点实验室
中法应用数学国际联合实验室
上海市现代应用数学重点实验室
复旦大学数学研究所