First Joint Meeting Brazil Italy of Mathematics Special Session: Control and Asymptotics of Nonlinear PDE Dynamics

Rio de Janeiro, August 29 - September 02, 2016

Title: On the fractional Cahn-Hilliard equation

Authors: Goro Akagi, Giulio Schimperna, Antonio Segatti

Abstract: In this talk we will present some results related to existence, regularity, and long-time behavior of solutions to a fractional version of the Cahn-Hilliard equation settled in a smooth bounded domain $\Omega \subset \mathbb{R}^3$. More precisely, we will consider the case where diffusion is ruled by the so-called "restricted Dirichlet fractional Laplacian", meaning that homogeneous Dirichlet conditions of "solid" type are assumed on the whole of $\mathbb{R}^3 \setminus \Omega$. In particular, we will show that, under suitable conditions, the ω-limit set of any solution trajectory consists of a single point. The proof of this fact relies on a new "fractional" version of the Simon-Łojasiewicz inequality.
(The results presented in this talk have been obtained in collaboration with Goro Akagi (University of Kobe) and Antonio Segatti (University of Pavia).)