
Workshop on Hyperbolic Partial Differential Equations (III)

双曲偏微分方程研讨会 (III)

2021 年 6 月 4 日

组织委员会:

邓师瑾(上海交通大学)

李亚纯 (上海交通大学)

王维克 (上海交通大学)

时间: 下午 15:30-18:00, 主题演讲及小组讨论。

地点: 上海交通大学数学科学学院 理科大楼 6 号楼 706

15:30-16:15 主题演讲 I: 王志强 (复旦大学), 主持: 李亚纯

Title: Observability and controllability of coupled wave equations

Abstract: In this talk, we consider the observability and controllability of wave equations coupled by first order terms on a compact manifold. We prove that the weak observability inequality holds for such systems if and only if a class of ordinary differential equations related to the symbol of the first order terms along the Hamiltonian flow are exactly controllable. The observability constant and the observation time are also analyzed. By duality, we obtain a criteria for the controllability of the dual system in a finite co-dimensional space. Finally, some examples with special structures are given as applications.

16:15-16:45 茶歇

16:45-17:30 主题演讲 II: 吴昊 (复旦大学), 主持: 邓师瑾

Title: On a Sixth-order Cahn-Hilliard Type Equation with Logarithmic Potential

Abstract: We consider a class of six-order Cahn-Hilliard equations with logarithmic potential. The singularity of the configuration potential guarantees that the solution always stays in the physical relevant domain $[-1,1]$. On the other hand, the system is characterized by some highly singular diffusion terms that make the mathematical analysis more involved. We first prove the existence and uniqueness of global weak solutions. Besides, we investigate long-time behavior of the system by proving the existence of global attractor in a suitable complete metric space. This is a joint work with Prof. G. Schimperna (University of Pavia, Italy).

17:30-18:00 小组讨论