



Department of Mathematics
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Colloquium

Second Order Elliptic Equations with Critical Drift Terms: Quantitative Estimates and Inverse Problems

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Abstract

In this talk, I would like to discuss some quantitative estimates for solutions of the second order elliptic equation

$$\Delta u + W \cdot \nabla u = 0 \quad \text{in } \mathbb{R}^2. \quad (1)$$

Assume that W is a real vector-valued function and

$$\|W\|_{L^p(\mathbb{R}^2)} \leq K < \infty,$$

where $2 \leq p \leq \infty$. We are interested in the maximal decay rate of any nontrivial solution u of (1). We will pay more attention to the extreme cases, $p = 2$ and $p = \infty$. When $p = 2$, $\|W\|_{L^2(\mathbb{R}^2)}$ is scaling invariant. Besides discussing quantitative estimates, I will also talk about the inverse boundary value problem for (1) in Ω with $W \in L^2(\Omega)$. This problem is related to the two dimensional Calderón problem with conductivities in $W^{1,2}(\Omega)$. Note that the functions in $W^{1,2}(\Omega)$ could be unbounded.

Date: April 27, 2016 (Wednesday)
Venue: Room 222, Lady Shaw Building,
The Chinese University of Hong Kong, Shatin
Time: 10:00am ~ 11:00am

All are Welcome