上海交通大學 SHANGHAI JIAO TONG UNIVERSITY | 数学科学学院 SCHOOL OF MATHEMATICAL SCIENCES

Workshop on Nonlinear Partial Differential Equations XXV

May 16-18, 2025

Program

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1. Workshop Information

Announcement:

In order to enhance the communications among the mathematicians on the subject of partial differential equations, geometric analysis and related topics, we plan to hold "Workshop on nonlinear partial differential equations XXV" on May 16-18, 2025. We will invite some experts to share ideas and results on recent research, and discuss current challenging issues.

Organizing Committee:

Congming Li, Shanghai Jiao Tong University (Chair)
Yahong Guo, Shanghai Jiao Tong University
Yingshu Lv, Shanghai Normal University
Hui Yang, Shanghai Jiao Tong University
Chunqin Zhou, Shanghai Jiao Tong University
Ran Zhuo, Shanghai Normal University

Venues:

Room 208, No. 6 Science Building
Minhang Campus
Shanghai Jiao Tong University, 800 Dongchuan Road

Contact Us

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2. Arrangement

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5.17		08:30
5.17		11:40
5.17		12:50
5.17		14:10
5.17		17:20

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domains. The existence and non-existence of nonnegative solutions in exterior domains can also be obtained.

A free boundary problem in plasma physics

Ruijun Wu (Beijing Institute of Technology)

We study a Grad-Shafranov type equations, describing in dimension $N = 2$ the equilibrium configurations of a plasma in a Tokamak. First we establish some uniqueness results which is sharp in 2d and new in higher dimensions. Then we discuss the spike analysis of the singular limits, giving a converse results of the existence results by Flucher-Wei. We will also talk about some recent progress on the 2D spike analysis. This is based on joint work with A. Jevnikar and D. Bartolucci.

Regularity estimates for subquadratic quasilinear elliptic equations

Fengping Yao (Shanghai University)

While the Laplace equation represents a linear model, elliptic p-Laplacian quasilinear equations allow for a more general description of physical and mathematical phenomena. Due to their nonlinear and quasilinear nature, traditional linear methods are often ineffective. This has led to the development of powerful techniques such as variational methods, monotonicity methods, and the theory of weak solutions. In this talk, we shall report some recent results on regularity estimates for subquadratic quasilinear elliptic problems, including p-Laplace and more general quasilinear elliptic equations. It deserves to be specially noted that the subquadratic case is a little different from the superquadratic case since the modulus of ellipticity in the present case tends to infinity when the modulus of the gradient tends to 0.