



复旦大学数学科学学院 数学综合报告会

报告题目: The Schrodinger-Poisson equations under the effect of a general nonlinearity

(Fudan-SCU-SDU Seminar on Analysis and Related Topics)

报告人: 刘兆理 教授 (首都师范大学)

时间: 2026-04-29 星期三 10:00-11:00

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摘要: In this talk, I will talk about how to find more solutions than in the literature for the nonlinear Schrodinger-Poisson equations

$$\begin{cases} -\Delta u + \lambda \phi u = g(u) & \text{in } \mathbb{R}^3, \\ -\Delta \phi = u^2 & \text{in } \mathbb{R}^3, \end{cases}$$

with a general nonlinear term g introduced by Berestycki and Lions. We use a new cut-off and perturbation technique in a variational setting. Nodal properties of the solutions are given. This new technique also enables us to find one more solution, which is sign-changing, to the scalar field equation $-\Delta u = g(u)$ in $\mathbb{R}^N (N \geq 3)$ when g is not odd, than Berestycki and Lions did in their paper [ARMA, 1983], where only signed solutions were obtained.

简介:

刘兆理, 首都师范大学教授, 博士生导师, 国家杰出青年基金获得者, 教育部“长江学者特聘教授”, 北京市特聘教授, 曾获得首都劳动奖章。主要从事非线性分析研究, 在变分法和椭圆型偏微分方程方面做出了多项研究成果, 曾先后四次获得省部级自然科学奖和科技进步奖, 成果发表于AdvMath、JFA、JDE、Nonlinearity、CVPDE等国际知名期刊上。

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