



北京理工大学

数学与统计学院学术报告

The Schrodinger-Poisson equations under the effect of a general nonlinearity

报告人：刘兆理(首都师范大学)

时间：2026年4月14日（周二上午）10:00—11:00

地点：文萃楼E708

报告人简介：刘兆理，曾任山东大学数学学院教授，现任首都师范大学数学科学学院教授，从事非线性分析方向的研究，发展了下降流不变集方法，在非线性的椭圆型方程解的存在性方面获得多项有意义的研究成果。曾获得国家杰出青年科学基金、教育部“长江学者”特聘教授称号、4项省部级科研一等奖和二等奖、北京市首批高层次人才称号、首都劳动奖章、北京市优秀博士学位论文指导教师称号、国务院政府特殊津贴。目前担任国内外6个数学期刊的编委。

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.