

## Colloquium

# Two Positive Solutions to Non-autonomous Schrödinger-Poisson Systems

主講人：孫俊濤 教授  
山東理工大學

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地點：應用數學系多媒體教室（理408室）

摘要：

We study the following non-autonomous Schrödinger-Poisson system

$$\begin{cases} -\Delta u + u + K(x)\phi u = a(x)|u|^{p-2}u & \text{in } \mathbb{R}^3 \\ -\Delta \phi = K(x)u^2 & \text{in } \mathbb{R}^3 \end{cases}$$

where  $2 < p < 4$ , and both  $K(x)$  and  $a(x)$  are non-negative functions in  $\mathbb{R}^3$ . By proposing a new analytical method along with the Lusternik-Schnirelmann category, we prove the existence of two bounded positive solutions in  $H^1(\mathbb{R}^3) \times D^{1,2}(\mathbb{R}^3)$ , whose energy levels are positive and lie in a definite range.

The main feature which distinguishes this paper from other related works lies in the fact that it is the first attempt to study two positive solutions of the above Schrödinger-Poisson system with  $2 < p < 4$ .