




复旦大学数学科学学院
数学综合报告会

报告题目：On a competitive system in periodic habitats

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时间：2026-11-08 星期日 10:30-11:30

地点：光华东主楼1403

报告摘要：

A competitive system with diffusion and advection in periodic habitats is investigated. The dynamics was understood when both diffusion rates are small or large by Liu and Lou [Methods Appl. Anal., 28 (2021), pp. 423–452] and it was stated there that fully understanding the dynamics is a quite challenging issue. In this paper, we pursue this issue further and obtain much richer results: the global dynamics is determined when one diffusion rate is arbitrarily given and the other one is small or large, when the advection rate is small or large, or when the spatial period is small, improving the existing results in a nontrivial sense. Our main approach is to develop the principal eigenvalue theory. In particular, we establish several new monotonicity results of the principal eigenvalue, where new ingredients are incorporated into the nonlinear analysis of various asymptotic behaviors of positive solutions and principal eigenfunctions.

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