Research Report

Kousuke KUTO
Department of Applied Mathematics, Waseda University

Publications

1. Jumpei Inoue, Kousuke Kuto
   On the unboundedness of the ratio of species and resources for the diffusive logistic equation,
   Discrete and Continuous Dynamical Systems B, 26 (2021), 2441-3450.
   doi.org/10.3934/dcdsb.2020186

2. Jumpei Inoue, Kousuke Kuto
   Impact of regional difference in recovery rate on the total population of infected for a diffusive SIS model,
   Mathematics, 9 (2021), issue 8, 11 pages.
   doi.org/10.3390/math9080888

3. Kousuke Kuto
   Full cross-diffusion limit in the stationary Shigesada-Kawasaki-Teramoto model,
   Annales de l'Institut Henri Poincaré C, Analyse non linéaire (in press).
   doi.org/10.1016/j.anihpc.2021.02.006

Talks

1. Cross-diffusion limit in the stationary Shigesada-Kawasaki-Teramoto model
   Japan Mathematical Society Fall General Division Meeting, Functional Equations Theory Division Meeting (Special Lecture)
   September 24, 2020
   Kumamoto University（Online）

2. Full cross-diffusion limit in the stationary Shigesada-Kawasaki-Teramoto model
   Japan Mathematical Society Fall General Division Meeting, Functional Equations Theory Division Meeting
   March 15, 2021
   Keio University（Online）

Conference Organizers

Young Workshop for Nonlinear PDEs
March 2, 2021 (held online)
Co-organized with Hiroshi Matsuzawa (Kanagawa University) and Tomoki Yokota (Tokyo University of Science)

Research Summary

1. I studied the global structure of stationary solutions of the Lotka-Volterra system with cross-diffusion terms. Concerning the limit system derived in 2019, which characterizes the limiting profile of the solution when both cross-diffusion coefficients tend to infinity, some sufficient conditions for the existence of non-constant solutions are obtained. In particular, in the one-dimensional space case, the global bifurcation structure of non-constant solutions is revealed.

2. In collaboration with Mr. Jumpei Inoue, a student of the SGU course of Mathematical and Physical Science, we studied the profile of stationary solutions of a diffusive SIS model by applying a result of our joint research on the diffusion logistic equation, which had already been obtained in 2019.