國立陽明交通大學應用數學系
學術演講公告

主講人：Prof. Toshiyuki Ogawa 小川知之 (Meiji University, Japan)

講　題：Pattern dynamics appearing on metric graph

時　間：114 年 3 月 18 日(星期二) 下午 14:00 –15:00

地　點：(光復校區) 科學一館 213 室

Abstract

The study of reaction-diffusion equations on metric graphs has been drawing attention recently. Two different research directions will be introduced. First topic is related to the question of whether excitation waves propagate along the branching of axons of nerve cells or not. Namely, we are going to consider a scaler reaction diffusion equation on a star-shaped metric graph. We can observe propagation blocking depending on the numbers of input and output edges. We also discuss the related problem. Second, we study pattern dynamics on compact metric graphs. We consider systems of reaction-diffusion equations on compact metric graphs with Turing or Wave instability. We construct eigenfunctions of Laplacian on specific metric graphs to see pattern onsets depending on the lengths of the edges. By using the normal form analysis and symmetry arguments we study the local bifurcation structures around the bifurcation points. In both cases, we impose natural boundary conditions, namely, Neumann–Kirchhoff conditions at the junction.

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