

# 國立陽明交通大學應用數學系

## 演講公告

主講人：Professor Takashi Okada (Hiroshima University)

講題：Network Structure Shapes Dynamics of Chemical  
Reaction Networks

時間：115 年 7 月 31 日(星期五) 下午 14:00 –15:00

地點：(光復校區) 科學一館 213 室

### Abstract

In living cells, biochemical reactions form intricate networks, such as metabolic pathways, that give rise to essential cellular functions. However, the complexity of these network structures, together with our limited knowledge of their detailed kinetics, makes it challenging to understand how these functions emerge from network dynamics.

In this presentation, we introduce a method that enables us to determine system responses based solely on network structure. Using this method, we show that the effects of parameter perturbations on the steady state are confined to subnetworks satisfying specific topological conditions. Furthermore, we show that these subnetworks govern the steady-state bifurcations of reaction systems, including which parameters control the onset of bifurcations and which chemical species exhibit bifurcating behavior. Our findings demonstrate that network topology can underlie biological robustness and plasticity, two fundamental characteristics of living systems.

敬請公告 歡迎參加

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