



DEPARTMENT OF APPLIED MATHEMATICS

應 用 數 學 系

**The Hong Kong Polytechnic University
Department of Applied Mathematics**

Colloquium

**Traveling wave solutions for a bacteria system with
density-suppressed motility**

by

Professor Roger Lui

Worcester Polytechnic Institute

Abstract

In 2011, Liu et. al. proposed a three-component reaction-diffusion system to model the spread of bacteria and its signaling molecules (AHL) in an expanding cell population. At high AHL levels the bacteria are immotile, but diffuse with a positive diffusion constant at low distributions of AHL. In 2012, Fu et. al. studied a reduced system and made heuristic arguments about the existence of traveling wave solutions. In this talk, I shall outline the proofs of the existence of traveling wave solutions for the reduced system under some simple conditions. Nothing more than undergraduate ordinary differential equations is required to understand the talk. This is joint work with Professor Hirokazu Ninomiya from Meiji University, Japan.

Date : 3 July, 2018 (Tuesday)

Time : 10:30a.m. – 11:30a.m.

Venue : TU717, The Hong Kong Polytechnic University

*** * * ALL ARE WELCOME * * ***