



DEPARTMENT OF APPLIED MATHEMATICS

應 用 數 學 系

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

Colloquium

**Morphological evolution of crystal surfaces below the roughening
temperature: from mesoscopic and macroscopic view**

by

Prof. Jianguo Liu

Duke University

Abstract

During the heteroepitaxial growth on vicinal surface, step-flow is one of various structures created on crystal surfaces. Understanding and mastering the thin film growth is a major challenge of materials science. We first introduce the step flow dynamics for mesoscopic models and their continuum limit to 4th order degenerate parabolic equations. Then we use the regularized method to obtain a global weak solution to the slope equation, which is sign-preserved almost everywhere. Further, using the maximal monotone operator in non-reflexive space, we investigate the singularity when the solution approaches zero. The established framework can be applied to a wide class of degenerate parabolic equations. This is a joint work with Dr. Yuan Gao from HKUST.

Date : 4 July, 2017 (Tuesday)

Time : 11:00a.m. – 12:00noon

Venue : TU801, The Hong Kong Polytechnic University

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