



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

Colloquium

**Asymptotic behavior and blow-up of solutions for infinitely degenerate
semi-linear parabolic equations with logarithmic nonlinearity**

by

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Abstract

In this talk, we shall report the initial-boundary value problem for infinitely degenerate semi-linear parabolic equations with logarithmic nonlinearity $u_t - \triangle_{\mathbf{X}} u = u \log |u|$, where $\mathbf{X} = (X_1, X_2, \dots, X_m)$ is an infinitely degenerate system of vector fields, and $\triangle_{\mathbf{X}} := \sum_{j=1}^m X_j^2$ is an infinitely degenerate elliptic operator. Using potential well method, we first prove the invariance of some sets and vacuum isolating of solutions. Then, by the Galerkin method and the logarithmic Sobolev inequality, we obtain the global existence and blow-up at $+\infty$ of solutions with low initial energy or critical initial energy. Also, we discuss the asymptotic behavior of the solutions.

Date : 27 June, 2018 (Wednesday)

Time : 4:00p.m. – 5:00p.m.

Venue : TU801, The Hong Kong Polytechnic University

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