



*Institute of Mathematical Research
Department of Mathematics*

Analysis Seminar

Existence and asymptotic large time behavior of singular solutions of the fast diffusion equation

Professor Kin Ming Hui

Institute of Mathematics, Academia Sinica, Taiwan

Abstract

In this talk I will prove the existence and asymptotic large time behaviour of singular solutions of the fast diffusion equation $u_t = \Delta u^m$, $u > 0$, in $(\mathbb{R}^n \setminus \{0\}) \times (0, \infty)$ for any $0 < m < \frac{n-2}{n}$, $n \geq 3$. We will construct self-similar solutions of the fast diffusion equation in $(\mathbb{R}^n \setminus \{0\}) \times (0, \infty)$ with initial value $A|x|^{-\gamma}$ for some constant $\frac{2}{1-m} < \gamma < \frac{n-2}{m}$. When $\frac{2}{1-m} < \gamma < n$, we prove that if the initial data is some weighted L^1 perturbation of such self-similar singular solution, the singular solution of the fast diffusion equation will converge to the self-similar singular solution as time goes to infinity. This is joint work with Soojung Kim.

Date: September 26, 2017 (Tuesday)

Time: 11:00am – 12:00noon

Venue: Room 210, Run Run Shaw Bldg., HKU