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Colloquium

Existence and Asymptotic Large Time Behavior of Singular Solutions of the Fast Diffusion Equation

Professor Kin Ming Hui
Institute of Mathematics
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Abstract: In this talk I will prove the existence and asymptotic large time behavior of singular solutions of the fast diffusion equation $u_t = \Delta u^m$, $u > 0$, in $R^n \setminus \{0\} \times (0, \infty)$ for any $0 < m < \frac{n-2}{n}$, $n > 2$. We will construct self-similar singular solutions of the fast diffusion equation in $R^n \setminus \{0\} \times (0, \infty)$ 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 30, 2016 (Friday)
Venue: Room 222, Lady Shaw Building,
            The Chinese University of Hong Kong, Shatin
Time: 10:30am ~ 11:30am

All are Welcome