

Threshold behavior of solutions for semilinear heat equations with supercritical nonlinearity

Yuki Naito

Ehime University, Japan

We consider the Fujita equation $u_t = \Delta u + u^p$ in \mathbf{R}^N with $N \geq 3$. We study the behavior of threshold solutions for $p_S < p < p_{JL}$, where $p_S = (N+2)/(N-2)$ and p_{JL} is the Joseph-Lundgren exponent which appear when $N > 10$. Making use of some properties of self-similar solutions together with the intersection number principle, we will investigate the existence and the asymptotic behavior of ancient and entire solutions. In particular, we are interested in the relation between the singular steady state and the blow-up profile of solutions. This is a joint work with Takasi Senba (Fukuoka University).