

On the blow up of solutions for the exponential reaction-diffusion equation

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Abstract

I will discuss some results concerning the radial solutions of the equation

$$\begin{cases} u_t = \Delta u + e^u, & x \in \Omega, \quad t > 0, \\ u = 0, & x \in \partial\Omega, \quad t > 0, \\ u(x, 0) = u_0(x) \geq 0, & x \in \Omega, \end{cases} \quad (1)$$

where $\Omega = B(R) = \{x \in \mathbb{R}^n; |x| < R\}$ and the initial condition is nonincreasing and the dimension of the space is in the supercritical range $n \in [3, 9]$. These results characterize the blow up rate, the final time blow up profile and the selfsimilar blow up profile of the solutions. This is a joint work with M. Fila.