

EXISTENCE OF GLOBAL SOLUTIONS FOR THE CAUCHY PROBLEM OF SOME PARABOLIC EQUATIONS

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Abstract. We consider the Cauchy problem

$$\begin{cases} w_t = \Delta w + \sum_{k=1}^m g_k(x, t)w^{p_k}, & x \in \mathbf{R}^n, t > 0, \\ w(x, 0) = f(x) \geq 0, & x \in \mathbf{R}^n, \end{cases}$$

where $m \in \mathbf{N}$, $n \geq 3$, $1 < p_1 < p_2 < \cdots < p_m$ and f is a non-negative bounded continuous function in \mathbf{R}^n . In this paper, we will show the existence of global, classical and non-negative solution for the above Cauchy problem when g_1, g_2, \dots, g_m satisfy some conditions.