

Global Marcinkiewicz estimates for nonlinear parabolic equations with nonsmooth coefficients

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Abstract. Consider the parabolic equation with measure data

$$\begin{cases} u_t - \operatorname{div}_x(Du, x, t) = \mu & \text{in } \Omega_T \\ u = 0 & \text{on } \partial_p \Omega_T, \end{cases}$$

where Ω is a bounded domain in \mathbb{R}^n , $\Omega_T = \Omega \times (0, T)$, $\partial_p \Omega_T = (\partial \Omega \times (0, T)) \cup (\Omega \times \{0\})$, and μ is a signed Borel measure with finite total mass. Assume that the nonlinearity \mathbf{a} satisfies a small BMO-seminorm condition, and Ω is a Reifenberg flat domain. This paper proves a global Marcinkiewicz estimate for the SOLA (Solution Obtained as Limits of Approximation) to the parabolic equation.

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