

Zajączkowski, W. M.

L_∞ -estimate for qualitatively bounded weak solutions of nonlinear degenerate diagonal parabolic systems. (English) [Zbl 0867.35055](#)

J. Appl. Anal. 2, No. 1, 1-12 (1996).

We show only boundedness of qualitatively bounded weak solutions to the following Dirichlet problem for a diagonal parabolic system

$$u_{it} - \operatorname{div}(a_i(x, t, u, \nabla u) \cdot \nabla u_i) = b_i(x, t, u, \nabla u) \text{ in } \Omega^T, \quad u_i|_{t=0} = u_{0i} \text{ in } \Omega, \quad u_i = u_{bi} \text{ on } S^T,$$

where $i = 1, \dots, m$, $\Omega \subset \mathbb{R}^n$, $\Omega^T = \Omega \times (0, T)$, $S^T = S \times (0, T)$, S is the boundary of Ω , and dot denotes the scalar product in \mathbb{R}^n . We assume the following growth conditions

$$a_i(x, t, u, \nabla u) \cdot \nabla u_i \cdot \nabla u_i \geq \alpha_0 |\nabla u|^{p-2} |\nabla u_i|^2 - \varphi_{1i}(x, t),$$

$$b_i(x, t, u, \nabla u) \leq \beta_0 |\nabla u|^{p-2} |\nabla u_i|^2 + \varphi_{2i}(x, t),$$

where $i = 1, \dots, m$, α_0, β_0 are positive constants, and $\varphi_{1i}, \varphi_{2i}$ are positive functions.

MSC:

[35K65](#) Degenerate parabolic equations

[35B50](#) Maximum principles in context of PDEs

[35D10](#) Regularity of generalized solutions of PDE (MSC2000)

[35K50](#) Systems of parabolic equations, boundary value problems (MSC2000)

[35K60](#) Nonlinear initial, boundary and initial-boundary value problems for linear parabolic equations

Cited in 1 Document

Keywords:

nonlinear degenerate diagonal parabolic system

Full Text: [DOI](#) [EuDML](#)