

Asymptotic behavior of the degenerate doubly nonlinear equation on bounded domains

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Abstract

We consider the Dirichlet problem for the doubly nonlinear equation $u_t = \Delta_p u^m$, where $p > 1$, $m > 0$, $m(p-1) > 1$, posed in a bounded domain $\Omega \subset \mathbb{R}^N$ with homogeneous boundary conditions and with non-negative and integrable data. We study the large-time behaviour by proving the uniform convergence of the rescaled solution $t^{1/(m(p-1)-1)}u(t, x)$ to an unique stationary profile. We also prove rates for this convergence by using comparison with special solutions of the doubly nonlinear equation.