

Blow-up phenomena for a quasilinear parabolic equation with time-dependent coefficient source under homogeneous Neumann boundary condition

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ABSTRACT

We study a class of quasilinear parabolic equations with time-dependent coefficient source under homogeneous Neumann boundary condition. By using the technique of differential inequalities, we establish conditions on the time-dependent coefficient $k(t)$ and data ρ, f to guarantee that $u(x, t)$ exists globally or blows up at some finite time, respectively. Meanwhile, we derive an upper bound for the blow-up time. Under somewhat more restrictive conditions, we also obtain a lower bound for the blow-up time if blow-up does occur.

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