

Gil', M. I.

Estimates of solutions of quasilinear systems of parabolic type. (Russian) Zbl 0706.35064
Differ. Uravn. 25, No. 4, 723-726 (1989).

The author obtains bounds - that do not assume the construction of a Lyapunov functional - for strong solutions of the system

$$du/dt = \Phi(S)u + F(u, t), \quad t \geq 0, \quad u \in L^2(\Lambda, \mu, \mathbb{C}^n),$$

Λ a set with a finite measure μ , $u(t) \in \mathbb{C}^n$, $\Phi(S) = \sum_{k=0}^p a_k S^k$, a_k , $k = 1, \dots, p$, $(n \times n)$ matrices, S a normal operator on L^2 that commutes with the operators on L^2 given by these a_k matrices. With $D =$ domain of $\Phi(S)$, $F : D \times [0, \infty) \mapsto L^2$ and satisfies

$$\|S^{-\eta} F(u, t)\|_{L^2} \leq q(t) \|u\|_{L^2} + \nu(t), \quad t \geq 0, \quad \|u\|_{L^2} \leq r,$$

$0 \leq \eta < p$, q and ν measurable and positive.

Reviewer: [J.E.Bouillet](#)

MSC:

- [35K55](#) Nonlinear parabolic equations
- [35B45](#) A priori estimates in context of PDEs
- [35G10](#) Initial value problems for linear higher-order PDEs
- [35K25](#) Higher-order parabolic equations

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