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Regularly hyperbolic systems and Gevrey classes. (English) Zbl 0583.35074
Ann. Mat. Pura Appl., IV. Ser. 140, 133-145 (1985).

This paper deals with the first order Cauchy problem

$$(1) \quad \partial U / \partial t = \sum A_h(t, x) \partial U / \partial x_h + B(t, x), \quad U(0, x) = g(x),$$

$0 \leq t \leq T$, $x \in \mathbb{R}^n$, where A_h ($1 \leq h \leq n$) and B are $N \times N$ real matrices, while U and g are real N -vectors. System (1) is assumed to be regularly hyperbolic. Suppose that the coefficients $A_h(t, x)$ are Hölder continuous of order α in t ($0 < \alpha < 1$) and belong to the Gevrey class of order s in x and that $B(t, x)$ is locally bounded and belongs to the Gevrey class of order s in x . Then the author proves that the Cauchy problem is well posed in the Gevrey class of order s provided that $1 \leq s < 1/(1 - \alpha)$. The method of energy inequalities is used.

Reviewer: [P. Jeanquartier](#)

MSC:

- [35L45](#) Initial value problems for first-order hyperbolic systems
- [35F10](#) Initial value problems for linear first-order PDEs
- [35R25](#) Ill-posed problems for PDEs
- [35L40](#) First-order hyperbolic systems
- [35L85](#) Unilateral problems for linear hyperbolic equations and variational inequalities with linear hyperbolic operators

Cited in **1** Review
Cited in **11** Documents

Keywords:

Cauchy problem; regularly hyperbolic; Gevrey class; energy inequalities

Full Text: [DOI](#)

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