RESEARCH ANNOUNCEMENTS

The purpose of this department is to provide early announcement of significant new results, with some indications of proof. Although ordinarily a research announcement should be a brief summary of a paper to be published in full elsewhere, papers giving complete proofs of results of exceptional interest are also solicited.

ON THE INITIAL VALUE PROBLEM FOR PARABOLIC SYSTEMS OF DIFFERENTIAL EQUATIONS[1]

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1. **Introduction.** We consider the matrix linear differential operator

$$L \equiv P(x, y; D) - E\frac{\partial}{\partial y}$$

for $x=(x_1, \cdots, x_n)\in E^n$ and $y\in[y', y'']$, where E is the $N\times N$ identity matrix,

$$P(x,y;D) = \left(\sum_{|k|\leq 2b} \overset{(k)}{A_{ij}}(x,y)D^{k}\right)\ [i,j=1,\cdots,N;\ b\geqq 1 \text{ an integer}],$$

$(k)=(k_1, \cdots, k_n)$ for non-negative integers k_j, $|k| = \sum_{j=1}^n k_j$, and $D^k=\partial^{|k|}/\partial x_1^{k_1}\cdots\partial x_n^{k_n}$. We will use D^m to denote an arbitrary D^k with $|k|=m$. Following Petrovskiĭ [6], we say that L is uniformly parabolic in $R=E^n\times[y', y'']$ if there exists a constant $\delta>0$ such that all of the roots $\lambda=\lambda(x, y, \sigma)$ of

$$\det\left\{\left(\sum_{|k|=2b} \overset{(k)}{A_{ij}}(x,y)(i\sigma)^{k}\right) - \lambda E\right\} = O\left[(i\sigma)^{k} = \prod_{j=1}^{n}(i\sigma_j)^{k_j}\right]$$

satisfy $\operatorname{Re}\lambda(x, y, \sigma)<-\delta$ for all $(x, y)\in R$ and real σ such that $\sum_{j=1}^n \sigma_j^2=1$. We assume throughout this paper that: (i) *L is uniformly parabolic in R* and (ii) *the coefficients $A_{ij}^{(k)}(x, y)$ of L are bounded uniformly continuous functions of y and satisfy a uniform Hölder condition (with exponent α, $0<\alpha\leqq 1$) with respect to x in R.* Our main result is a uniqueness theorem for the solution of the initial value problem (i.v.p.)

$$(1.1)\qquad Lu = f(x,y) \text{ in } E^n\times(t, y'']; \qquad u(x,t) = g(x)$$

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