Sternin, B. Yu.; **Shatalov, V. E.**

Complex-analytic Cauchy problem in a bounded domain. (English. Russian original)

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Differ. Equations 26, No. 1, 121-131 (1990); translation from Differ. Uravn. 26, No. 1, 136-147 (1990).

This article deals with the global solvability of linear partial differential equation $H\hat{u} = f$ of order m with constant coefficients in the space of (multi-valued) holomorphic functions on a domain $D \subset \mathbb{C}^n$ with (branching) singularity along a complex hypersurface $X = \{s(x) = 0\}$. Let $A_q(X)$ denote the space of such functions satisfying the estimate $|f| \leq C|s(x)|^q$. D is called (H, X)-convex if every bicharacteristic line starting from a point of $X \setminus \partial D$ with the holomorphic conormal direction to ∂D, or from a point of $X \cap \partial D$ with a holomorphic conormal direction to $X \cap \partial D$. Then if X has no characteristic points in Int(D), $\hat{H}u = f \in A_q(X)$ is solvable in $u \in A_{q+m}(X)$. If there are some, it is solvable in the space of functions having singularity further along the subvariety Y formed by the bicharacteristic lines emanating from these characteristic points. The proof is made on examination of the singularity of the solution given by the Radon integral.

Reviewer: A.Kaneko

MSC:

35E20	General theory of PDEs and systems of PDEs with constant coefficients
35C15	Integral representations of solutions to PDEs
35A20	Analyticity in context of PDEs

Keywords:
global solvability; linear partial differential equation; constant coefficients; complex hypersurface