Acta Math., 169 (1992), 153–228

Estimates for the $\bar{\partial}$-Neumann problem in pseudoconvex domains of finite type in $\mathbf{C}^2$

by

D.-C. CHANG
University of Maryland
College Park, MD, U.S.A.

A. NAGEL
University of Wisconsin
Madison, WI, U.S.A.

and

E. M. STEIN([1])
Princeton University
Princeton, NJ, U.S.A.

Contents

§0. Introduction

The object of this paper is to construct a parametrix for the $\bar{\partial}$-Neumann problem for arbitrary bounded pseudoconvex domains in $\mathbf{C}^2$ of finite type, and to use this parametrix to obtain sharp regularity results for the associated Neumann operator and for solutions of $\bar{\partial}u=f$. As an application, we obtain an extension of the Henkin–Skoda theorem, which characterizes the zero sets of functions in the Nevanlinna class in strictly pseudoconvex domains, to pseudoconvex domains of finite type in $\mathbf{C}^2$.

The $\bar{\partial}$-Neumann problem is a boundary value problem for an elliptic system of partial differential equations. Let $\Omega\subset\mathbf{C}^n$ be a smoothly bounded domain. Let U be a neighborhood of the boundary $\partial\Omega$ and let $\varrho: U\to\mathbf{R}$ be a defining function so that

([1]) All three authors are supported by grants from the National Science Foundation.

11–928286 *Acta Mathematica* 169. Imprimé le 10 novembre 1992