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COMPACT ANALYTICAL VARIETIES

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INTRODUCTION

These lectures deal with the vanishing theorem of Kodaira (cf. e.g. [2], p. 344) and some of its consequences, and with Lefschetz' theorem on hyperplane sections (cf. [1]). Only complex manifolds (and not complex spaces) are considered, but most of the results in the first part could be carried over to the more general case (with similar proofs).

1. PRELIMINARIES

We first give some definitions:

Definition 1.1. Let V be a complex manifold and D a relatively compact, open subset of V. Then D is *strongly pseudoconvex* if for every $x_0 \in \partial D$ there exist a neighbourhood U of x_0 and a real-valued C^2-function φ defined in U such that

(1) $$d\varphi(x_0) \neq 0\,,$$

(2) $$H(\varphi)(x_0) > 0 \text{ for all } \alpha = (\alpha_1, \ldots, \alpha_n) \in \mathbf{C}^n - \{0\}\,.$$

(Here $H(\varphi)$ is the complex Hessian form

$$\sum_{i,\,j=1}^{n} \frac{\partial^2 \varphi}{\partial z_i\, \partial \bar{z}_j} \alpha_i \bar{\alpha}_j$$