P. Kiernan and S. Kobayashi
Nagoya Math. J.
Vol. 50 (1973), 199–216

HOLOMORPHIC MAPPINGS INTO PROJECTIVE SPACE WITH LACUNARY HYPERPLANES

PETER KIERNAN AND SHOSHICHI KOBAYASHI*)

1. Introduction

In this note, we shall examine some results of Bloch [2] and Cartan [3] concerning complex projective space minus hyperplanes in general position. The purpose is to restate their results in a more general setting by using the intrinsic pseudo-distance defined on a complex space [16] and the concept of tautness introduced by Wu in [18]. In the process we shall generalize some results of Dufresnoy [4] and Fujimoto [7].

Before investigating projective space minus hyperplanes in general position, we consider in § 2 a more general situation.

2. Hyperbolically or tautly imbedded complex spaces

Throughout this section, let Y be a complex space, M a relatively compact open subset of Y and Δ a closed complex subspace of Y. (The example we have in mind is the one where Y is $P_n(C)$, M is the complement of $n+2$ hyperplanes in general position and Δ is the union of a certain set of hyperplanes to be defined in § 3).

We denote the open unit disk in C by D, the polydisk $D \times \cdots \times D$ in C^k by D^k, the disk of radius r by D_r and the intrinsic pseude-distance of M by d_M (see [16] for its definition and basic properties). The space of holomorphic maps from N to M with the compact-open topology will be denoted by $\mathrm{Hol}(N, M)$.

When Δ is empty, most of the following definitions reduce to familiar ones which have been studied extensively in [1], [5], [12], [13], [14], [16] and [18]. The motivation for these modified definitions will become apparent in § 3 when we consider the theorems of Bloch and Cartan.

Received November 16, 1972.
*) Partially supported by NSF Grant.