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NORMAL HOLOMORPHIC MAPPINGS AND CLASSICAL THEOREMS OF FUNCTION THEORY

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§0. Introduction

In [7], O. Lehto and K. I. Virtanen introduced the concept of normal meromorphic functions in connection with the study of boundary behaviour of meromorphic functions of one complex variable.

In this paper, we generalize the theory of normal meromorphic functions to the case of holomorphic mappings into higher dimensional complex spaces in connection with the theory of hyperbolic manifolds and Nevanlinna theory.

The main concern of this paper is the generalizations of the big Picard theorem and Lindelöf's theorem which appear in the classical function theory.

§1. Definition of normal holomorphic mappings

In this section, we define the concept of normal holomorphic mappings similar to normal meromorphic functions (cf. [7]).

Let M and N be complex analytic spaces. We denote the set of holomorphic mappings from M into N by $\mathrm{Hol}(M, N)$. We say a subset $\mathscr{F}$ of $\mathrm{Hol}(M, N)$ to be a *normal family* if $\mathscr{F}$ is relatively compact in $\mathrm{Hol}(M, N)$ in the sence of compact open topology.

DEFINITION 1. Let D be a homogeneous bounded domain in $\boldsymbol{C}^n$ and N be a complex analytic space. We say that a holomorphic mapping f: $D \to N$ is *normal* if the family

$$\mathscr{F} = \{f \circ g;\ g \in \mathrm{Aut}\, D\}$$

is normal, where $\mathrm{Aut}\, D$ denotes the holomorphic automorphism group of D.

DEFINITION 2. We say that a subset $\mathscr{F}$ of $\mathrm{Hol}(D, N)$ is $\mathrm{Aut}\, D$-invariant, if $f \circ g \in \mathscr{F}$ for every $f \in \mathscr{F}$ and every $g \in \mathrm{Aut}\, D$.

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