Y. ADACHI
KODAI MATH. J.
18 (1995), 408—424

A GENERALIZATION OF THE BIG PICARD THEOREM

YUKINOBU ADACHI

Introduction

The classical big Picard theorem says that any holomorphic map f from the punctured disk Δ^* into $\boldsymbol{P}^1$ which omits three points can be extended to a holomorphic map $f: \Delta \rightarrow \boldsymbol{P}^1$. After Kobayashi's fundamental work [14, VI], Kiernan [9] generalized this theorem to the following result.

Let B an analytic subset of the complex manifold N whose singularities are normal crossings and let M be a hyperbolically imbedded subspace of the complex space X. Then any holomorphic map $f: N \setminus B \rightarrow M$ can be extended to a holomorphic map $f: N \rightarrow X$.

And Fujimoto [5] obtained the following another generalization of the big Picard theorem.

THEOREM. *Let B be a regular analytic subset of a complex manifold N and let M be the complementary domain of $n+2$ hyperplanes in general position in $\boldsymbol{P}^n$. Let $f: N \setminus B \rightarrow M$ be a holomorphic map. Then either the image $f(N \setminus B)$ lies in a diagonal hyperplane in $\boldsymbol{P}^n$ or f can be extended to a holomorphic map $f: N \rightarrow \boldsymbol{P}^n$.*

The purpose of this paper is to consider a generalization of the big Picard theorem of Fujimoto's type for any holomorphic map $f: \Delta^* \rightarrow \boldsymbol{P}^2 \setminus A$ where A is a curve in $\boldsymbol{P}^2$ with 4 or more irreducible components in general position in a certain sence (Theorem 10.1) and for any meromorphic map $f: N \setminus B \rightarrow \boldsymbol{P}^2 \setminus A$, where N is an arbitrary manifold, B is a proper analytic subset of N and A is the same of the former case (Theorem 12.1). To prove the former result, Kizuka's theorem in [11] (see Theorem 7.1 in this paper) as well as Fujimoto's theorem play an important role.

Chapter I. Preliminaries

1. Degeneracy locus of the Kobayashi pseudodistance

Throughout the sections 1~3, let X be a complex manifold of dimension n

Received January 14, 1994; revised October 21, 1994.