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A CHARACTERIZATION OF CERTAIN DOMAINS WITH GOOD BOUNDARY POINTS IN THE SENSE OF GREENE-KRANTZ, III

Dedicated to Professor Masaru Takeuchi on his 60th birthday

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Introduction

This is a continuation of our previous papers [9, 10, 12]. For a domain D in C^n, we denote by Aut(D) the group of all biholomorphic automorphisms of D and write ∂D (resp. $\bar{D}$) for the boundary (resp. closure) of D.

Let D be a bounded domain in C^n and $x \in \partial D$. Assume that x is an accumulation point of an Aut(D)-orbit. *Can we then determine the global structure of D from the local shape of ∂D near x?* Of course, this is impossible without any further assumptions, as one may see in the examples such as the direct product of the open unit disk in C and an arbitrary bounded domain in C^{n-1}. In the previous papers [2,8,9,10,12], this was exclusively studied in the case where ∂D near x coincides with the boundary of a generalized complex ellipsoid

$$E(n;n_1,\cdots,n_s;p_1,\cdots,p_s)$$
$$=\{(z_1,\cdots,z_s)\in C^{n_1}\times\cdots\times C^{n_s};\ \sum_{i=1}^{s}\|z_i\|^{2p_i}<1\}$$

in $C^n=C^{n_1}\times\cdots\times C^{n_s}$, where $p_1,\cdots,p_s$ are positive real numbers and $n_1,\cdots,n_s$ are positive integers with $n=n_1+\cdots+n_s$.

The purpose of this paper is to establish the following extension of some results obtained in [2, 9, 10, 12]:

Theorem. *Let D be a bounded domain in C^n and $E=E(n;n_1,\cdots,n_s;p_1,\cdots,p_s)$ a generalized complex ellipsoid in C^n. Let $x\in\partial D$. Assume that the following three conditions are satisfied:*

(1) *$p_1,\cdots,p_s$ are all positive integers;*

(2) *$x\in\partial E$ and there exists an open neighborhood Q of x in C^n such that*

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