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ON THE EQUIVALENCE PROBLEM FOR A CERTAIN CLASS OF GENERALIZED SIEGEL DOMAINS, II

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Introduction. Let $\mathfrak{D}$ be a generalized Siegel domain in $\boldsymbol{C}^N$ with exponent 1/2 and $\mathfrak{g}(\mathfrak{D})$ the Lie algebra consisting of all complete holomorphic vector fields on $\mathfrak{D}$. In [3], Kaup, Matsushima and Ochiai studied the structure of $\mathfrak{g}(\mathfrak{D})$ and applied the results to the equivalence problem for Siegel domain of the second kind. They showed that every biholomorphic isomorphism of a Siegel domain of the second kind onto another one is birational. Moreover, using this fact they showed also that two Siegel domains of the second kind are holomorphically equivalent only if they are linearly equivalent. Motivated by these results, in [5] we studied the equivalence problem for a certain class of generalized Siegel domains.

The purpose of this note is to generalize our previous results in [5]. After some preparations in section 1, we show the following theorems in section 2.

Theorem 1. *Every biholomorphic isomorphism between two generalized Siegel domains in $\boldsymbol{C}\times\boldsymbol{C}^m$ with exponent 1/2 is birational.*

By means of this theorem and our result in [5], we obtain

Theorem 2. *Let $\mathfrak{D}$ and $\mathfrak{D}'$ be generalized Siegel domains in $\boldsymbol{C}\times\boldsymbol{C}^m$ with exponent 1/2. Then $\mathfrak{D}$ and $\mathfrak{D}'$ are holomorphically equivalent only if they are linearly equivalent, that is, there exists a non-singular linear mapping $\mathcal{L}$: $\boldsymbol{C}\times\boldsymbol{C}^m\to\boldsymbol{C}\times\boldsymbol{C}^m$ such that $\mathcal{L}(\mathfrak{D})=\mathfrak{D}'$.*

Throughout this note we use the same notations as in [4], unless otherwise stated.

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1. Preliminaries

According to Kaup, Matsushima and Ochiai [3], we say that a domain $\mathfrak{D}$ in $\boldsymbol{C}^n\times\boldsymbol{C}^m$ is a *generalized Siegel domain with exponent* 1/2 if it satisfies the following conditions: