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A NONREMOVABLE GENERIC 4-BALL IN THE UNIT SPHERE OF $\mathbb{C}^3$

B. JÖRICKE AND N. SHCHERBINA

1. Introduction. The title of this paper is related to a subject that became quite popular during the last decade, namely, the subject of removable singularities in various situations of multidimensional complex analysis. In this paper we deal with a global problem in the aforementioned field. Global problems are, as a rule, less understood than local ones, and quite often they are related to interesting geometric problems in several variables.

Recall the basic definitions of removability. For more background information and motivation, the reader is referred to previous papers on the subject, for example, [ChSt], [Jö1], [Jö2], [Jö3], [St], [Lu]. We apologize for omitting references on a large number of interesting papers in the field.

For a smooth real hypersurface in $\mathbb{C}^n$, as usual, we let $\bar{\partial}_b$ denote the system of tangential Cauchy-Riemann operators.

Definition 1. Let $\Omega \subset \mathbb{C}^n$, $n \geq 2$, be a bounded, strictly pseudoconvex domain with boundary $\partial\Omega$ of class C^2. A compact subset K of $\partial\Omega$ is called $(L^p, \bar{\partial}_b)$-removable if any function f of class L^p on $\partial\Omega$ (with respect to $(2n-1)$-dimensional surface measure), which satisfies the (weak) equations $\bar{\partial}_b f = 0$ on $\partial\Omega \setminus K$, satisfies these equations on the whole of $\partial\Omega$.

Here $p \in [1, \infty]$.

In classical situations (like the Cauchy-Riemann equation in the complex plane), there do not exist nonempty removable singularities for L^1-functions. The situation changes for tangential Cauchy-Riemann operators. This effect is based on compulsory analytic extension of solutions to the tangential Cauchy-Riemann equations, which motivates the following.

Definition 2. Let $\Omega \subset \mathbb{C}^n$, $n \geq 2$, be a bounded, strictly pseudoconvex domain with C^2 boundary. A compact $K \subset \partial\Omega$ is called removable if any continuous (but not necessarily bounded) function f on $\partial\Omega \setminus K$, which satisfies there the tangential Cauchy-Riemann equations $\bar{\partial}_b f = 0$, extends to an analytic function in Ω.

It is difficult to give a geometric description of removable singularities in strictly pseudoconvex boundaries in the general case. Having in mind some analogy to the classical Painlevé problem, we can ask for removability of singularities contained in

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