BOUNDARY KERNEL FUNCTIONS FOR DOMAINS ON COMPLEX MANIFOLDS

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1. Introduction. Let D be a domain with piecewise differentiable boundary on a complex manifold X on which the holomorphic functions separate points. $L^2(d\sigma)$ is the space of square integrable functions on the boundary ∂D of D with respect to a surface measure $d\sigma$ on ∂D associated with a given riemannian metric on X. We can consider the space $H(\bar{D})$ of holomorphic functions on $\bar{D}$ as a subspace of $L^2(d\sigma)$. Let H^2 be the closure of $H(\bar{D})$ in $L^2(d\sigma)$.

The restriction mapping from $H(\bar{D})$ into the space $H(D)$ of holomorphic functions on D is shown to extend to a continuous mapping $i: H^2 \rightarrow H(D)$ (Lemma 4.1). A kernel $k: D \rightarrow H^2$ is associated with this mapping; k is conjugate holomorphic, and $\tilde{k} = i \circ k$ is a holomorphic kernel function on $D \times D^*$ where D^* denotes the space D with the conjugate structure (Theorem 5.1). In § 6 we discuss the special case of Reinhardt domains in C^n, and in § 7 an attempt is made to generalize Theorem 5.1 to domains on analytic spaces.

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2. Nowhere degenerate mappings. In the following X will always be an analytic space of pure dimension n. We assume that X is "countable at infinity" i.e. that it can be covered by a countable number of compact sets. We also assume that the holomorphic functions on X separate points.

Under these hypotheses there are nowhere degenerate holomorphic mappings from X into n-dimensional complex affine space C^n; a nowhere degenerate mapping is a map $f: X \rightarrow C^n$ such that for any $p \in C^n$, $\{f(x) = p\}$ is a discrete set on X. In fact it is proved in [1] that *the set of all nowhere degenerate holomorphic mappings from X into C^n is dense in the Frechet space of all holomorphic mappings from X into C^n* (Theorem 1 in [1]).

If $f: X \rightarrow C^n$ is a holomorphic nowhere degenerate mapping then each point $x \in X$ has a neighborhood U_x with the following property:

$f(U_x)$ is a polycylinder in C^n with center $f(x)$; f is a proper

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