LOCAL CLASSIFICATION OF QUOTIENTS OF COMPLEX MANIFOLDS BY DISCONTINUOUS GROUPS

By David Prill

Table of Contents

I. Introduction. Let G be a properly discontinuous group of holomorphic homeomorphisms of a complex manifold. Its orbit space M/G is a complex analytic space [3]. Satake [15] named the analytic spaces that are locally equivalent to orbit spaces "complex V-manifolds."

We define an equivalence relationship on the class of all pairs (X, p) with X an arbitrary analytic space and $p \in X$. Pairs (X, p) and (Y, q) are equivalent if there is a biholomorphic map from some neighborhood of p in X to a neighborhood of q in Y mapping p to q. An equivalence class is called an equivalence class of germs of analytic spaces or, more briefly, a singularity. Singularities represented by pairs (X, p) with X a V-manifold we call V-germs. This paper classifies and gives an abstract characterization of V-germs. A by-product is the classification of those normal singularities of two dimensional varieties for which the boundary of a "regular neighborhood" of the singular point has finite fundamental group.

The key to our results is the geometric construction described in §IIA. This construction is local in nature. It reverses the process passing from a complex manifold to an orbit space.

II. Branched coverings of singularities.

A. Construction of some branched coverings.

Let V be a variety with singular locus W. Let $p \in V$ be a point at which V is irreducible. Triangulate V so p is a vertex and W is the support of a sub-

Received June 16, 1966. The results of this paper are contained in the author's 1965 Princeton thesis. The author thanks Professor Gunning, his thesis advisor, for many helpful conversations. This work was supported in part by the NSF.