COVERING MANIFOLDS FOR ANALYTIC FAMILIES
OF LEAVES OF FOLIATIONS BY ANALYTIC CURVES

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To Jürgen Moser for his seventieth birthday

Introduction

This paper deals with the foliations of Stein manifolds by analytic curves. A single fiber of such a foliation is a Riemann surface which may be parabolic or hyperbolic. The universal covering over this fiber is either a complex line, or a disk. Now let us take an analytic family of fibers, that is, the saturation of an analytic cross-section by fibers. The main problem in the context, still unsolved, is to find a uniformization of the fibers analytic with respect to the parameter. Precise definitions look like follows.

DEFINITION 1. A *skew cylinder* is a tuple (M, B, π), where M is a complex manifold, B is a complex hypersurface in M, $\pi : M \to B$ is an analytic retraction with the constant rank equal to dim $M - 1$ and with simply connected fibers. The manifold M is called a *total space* of the skew cylinder.

DEFINITION 2. A skew cylinder is *standard*, if $M \subset B \times \widehat{\mathbb{C}}$, and π is the retraction to $B \times \{0\}$ along the second factor.

REMARK. Different standard skew cylinders may be conformally nonequivalent. The simplest example is provided by a ball and a bidisk foliated by parallel lines.