

<<从全纯函数到复流形>>

图书基本信息

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前言

The aim of this book is to give an understandable introduction to the theory of complex manifolds. With very few exceptions we give complete proofs. Many examples and figures along with quite a few exercises are included. Our intent is to familiarize the reader with the most important branches and methods in complex analysis of several variables and to do this as simply as possible. Therefore, the abstract concepts involved with sheaves, coherence, and higher-dimensional cohomology are avoided. Only elementary methods such as power series, holomorphic vector bundles, and one-dimensional co-cycles are used. Nevertheless, deep results can be proved, for example the Remmert-Stein theorem for analytic sets, finiteness theorems for spaces of cross sections in holomorphic vector bundles, and the solution of the Levi problem.

The first chapter deals with holomorphic functions defined in open sub-sets of the space C^n . Many of the well-known properties of holomorphic functions of one variable, such as the Cauchy integral formula or the maximum principle, can be applied directly to obtain corresponding properties of holomorphic functions of several variables. Furthermore, certain properties of differentiable functions of several variables, such as the implicit and inverse function theorems, extend easily to holomorphic functions.

In Chapter II the following phenomenon is considered: For $n > 2$, there're pairs of open subsets $H \subset P \subset C^n$ such that every function holomorphic in H extends to a holomorphic function in P . Special emphasis is put on domains $G \subset C^n$ for which there is no such extension to a bigger domain. They are called domains of holomorphy and have a number of interesting convexity properties. These are described using plurisubharmonic functions. If G is not a domain of holomorphy, one asks for a maximal set E to which all holomorphic functions in G extend. Such an "envelope of holomorphy" exists in the category of Riemann domains, i.e., unbranched domains over C^n .

The common zero locus of a system of holomorphic functions is called an analytic set. In Chapter III we use Weierstrass's division theorem for power series to investigate the local and global structure of analytic sets. Two of the main results are the decomposition of analytic sets into irreducible components and the extension theorem of Remmert and Stein. This is the only place in the book where singularities play an essential role.

Chapter IV establishes the theory of complex manifolds and holomorphic fiber bundles. Numerous examples are given, in particular branched and un-branched coverings of C^n quotient manifolds such as torus and Hopf manifolds, projective spaces and Grassmannians, algebraic manifolds, modifications, and toric varieties. We do not present the abstract theory of complex spaces, but do provide an elementary introduction to complex algebraic geometry. For example.

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内容概要

本书是一部介绍复流形理论的入门书籍。

作者用尽可能简单的方法使读者熟悉多变量复分析中的重要分支和方法，所以避免出现比较抽象的概念，如，层、凝聚和高维上同调等，仅运用了基本方法幂级数、正则向量丛和一维上闭链。

然而，解析集Riemann-Stein定理，正则向量丛中的截面空间有限定理以及Levi问题解这些深层次的都得到了完整的证明。

每章的结束都有大量的例子和练习。

具备实分析、代数、拓扑以及单变量理论知识就可以完全读懂这本书。

本书可以作为学习多变量的入门教程，也是一本很好的参考书。

读者对象：本书适用于数学专业的广大师生。

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