Lectures On Riemann Surfaces: Jacobi Varieties (Princeton Legacy Library)

Synopsis

A sequel to Lectures on Riemann Surfaces (Mathematical Notes, 1966), this volume continues the discussion of the dimensions of spaces of holomorphic cross-sections of complex line bundles over compact Riemann surfaces. Whereas the earlier treatment was limited to results obtainable chiefly by one-dimensional methods, the more detailed analysis presented here requires the use of various properties of Jacobi varieties and of symmetric products of Riemann surfaces, and so serves as a further introduction to these topics as well. The first chapter consists of a rather explicit description of a canonical basis for the Abelian differentials on a marked Riemann surface, and of the description of the canonical meromorphic differentials and the prime function of a marked Riemann surface. Chapter 2 treats Jacobi varieties of compact Riemann surfaces and various subvarieties that arise in determining the dimensions of spaces of holomorphic cross-sections of complex line bundles. In Chapter 3, the author discusses the relations between Jacobi varieties and symmetric products of Riemann surfaces relevant to the determination of dimensions of spaces of holomorphic cross-sections of complex line bundles. The final chapter derives Torelli's theorem following A. Weil, but in an analytical context. Originally published in 1973. The Princeton Legacy Library uses the latest print-on-demand technology to again make available previously out-of-print books from the distinguished backlist of Princeton University Press. These paperback editions preserve the original texts of these important books while presenting them in durable paperback editions. The goal of the Princeton Legacy Library is to vastly increase access to the rich scholarly heritage found in the thousands of books published by Princeton University Press since its founding in 1905.

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Customer Reviews

This books introduces the major concepts of algebraic geometry in its study of Riemann surfaces. In a clear and focused style, it covers all the major points of Riemann surfaces using cohomology to study the line bundle structures on them. Whereas it never explicitly introduces connections or holomorphic structures, it does cover these topics from a purely cohomological point of view. In fact, the book does study the abelian version of Simpson's work in a disguised manner (in particular by studying the flat bundles as a space of holomorphic bundles; also, on the topic of uniformization, it relates projective and affine structures to fundamental group representations). Overall, a great book, very relevant despite its age.

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