
Riemann Surfaces

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Abstract

Complex geometry is an entire branch of geometry that focuses on the study of open sets in \mathbb{C}^n . Typical areas of interest include the classification of complex spaces, the study of holomorphic objects associated with them (such as holomorphic vector bundles and sheaves), as well as the relationships between objects in complex geometry and other areas of mathematics as well as theoretical physics.

Complex varieties of dimension 1 are Riemann surfaces. These were introduced by Bernhard Riemann to take into account the singularities and topological complications that accompany certain analytic embeddings of holomorphic functions. The study of Riemann Surfaces (complex geometry in general) lies at the intersection of many mathematical fields, including number theory, algebraic geometry, algebraic topology, and partial differential equations. Some important results on Riemann surfaces include the Riemann-Roch theorem, the uniformisation theorem, and the Kodaira embedding theorem which ensures that every compact Riemann surfaces is a complex algebraic curve.

References

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- [2] **M.Franciosi, F.Maiale**, *Algebraic Geometry C*. Lectures notes.