

Ricci flow and the uniformization of complete noncompact Kähler surface with positive holomorphic bisectional curvature

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Abstract

The uniformization of complex manifolds is an important and difficult problem. By studying Ricci flow on noncompact Kähler surface of positive holomorphic bisectional curvature, we prove that the curvature is quadratic decay in some average sense if the volume growth of the manifold is maximal, then the Poincaré-Lelong equation can be solved. We imitate the procedure of Mok of studying the algebra of all polynomial growth holomorphic functions to embed the manifold as a quasiprojective algebraic variety. Then the manifold is biholomorphic to the complex euclidean space. The key information obtained from the analysis of the parabolic equation is needed when we try to control the multiplicities of holomorphic functions.