ON THE CLASSIFICATION OF THREE-DIMENSIONAL COMPACT KAEHLER MANIFOLDS OF NONNEGATIVE BISECTIONAL CURVATURE

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0. Introduction

After the solution of Frankel conjecture by Mori [5] and Siu & Yau [8], it is natural to consider the classification of compact Kaehler manifolds of non-negative bisectional curvature. In this direction there are some previous works, for example, the characterization of hyperquadrics by Siu [7], and the splitting theorem of Kaehler manifolds of nonnegative bisectional curvature by Howard, Smyth, and Wu [3], [9]. Besides these general dimensional studies there is a low dimensional result by Howard & Smyth [2] that is the complete classification of two-dimensional compact Kaehler manifolds of nonnegative curvature. In this paper, proceeding in this direction, we consider the case of three-dimension and obtain some results which, combined together with the above results of Howard, Smyth and Wu, [2], [3] and [9], enable us to settle the classification of three-dimensional compact Kaehler manifolds of nonnegative bisectional curvature. Namely our goal is the following theorem.

Theorem 3. *Let M be a three-dimensional compact Kaehler manifold of nonnegative bisectional curvature. If M has quasipositive Ricci curvature, then M is biholomorphic to one of the following: P^3, Q^3, $P^1 \times P^2$, $P^1 \times P^1 \times P^1$.*

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1. Notations

Let M be an n-dimensional Kaehler manifold with a Kaehler metric g. We can define the holomorphic tangent bundle TM and the antiholomorphic