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CURVATURE AND COMPLEX ANALYSIS. II[1]

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This announcement is a continuation of Greene-Wu [**1**]; we shall present additional theorems relating curvature to function theory on noncompact Kähler manifolds. The first theorem improves Theorem 3 of [**1**].

THEOREM 1. *Let M be a complete simply connected Kähler manifold with nonpositive sectional curvature such that, for some* $0 \in M$,

$$|\textit{sectional curvature}\ (p)| \leqq C(d(0, p))^{-2-\varepsilon}$$

for some positive constants C and ε, *where d is the distance function associated with the Kähler metric; then M admits no bounded holomorphic functions.*

This theorem is false if $\varepsilon \leqq 0$. Indeed, on the unit disc, the Kähler metric $(1 - z\bar{z})^{-n} dz d\bar{z}$ (where n is any integer $\geqq 3$) is complete and its curvature function K satisfies $K < 0$ and $|K(z)| \leqq C(d(0, z))^{-2}$. ($0$ = origin of C.)

The next theorem and its corollary provide information about the absence of holomorphic p-forms ($p \geqq 1$) when the manifold is positively curved. For compact M, the result was known (Kobayashi-Wu [**6**]).

THEOREM 2. *Let M be a complete Kähler manifold of positive scalar curvature; then M possesses no holomorphic n-form in* L^2 ($n = \dim M$). *If the eigenvalues* $r_1, \ldots, r_n$ *of the Ricci tensor satisfy*

$$r_{i_1} + \ldots + r_{i_p} > 0 \quad \textit{for all}\ i_1 < \ldots < i_p,$$

then M admits no holomorphic p-form in L^2.

COROLLARY. (A) *If M is a complete Kähler manifold with positive Ricci*

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