1. Introduction

In Riemannian geometry all elementary symmetric polynomials of eigenvalues of the Ricci tensor are geometric invariants. In particular, the one of degree 1 is called the scalar curvature.

In this paper, we shall study some properties of the geometric invariants for cohomological Einstein Kaehler manifolds. Let \( M \) be a Kaehler manifold with fundamental 2-form \( \Phi \) and Ricci 2-form \( \gamma \). We say that \( M \) is cohomologically Einsteinian if \( [\gamma] = a \cdot [\Phi] \) for some constant \( a \), where \( [\ast] \) denotes the cohomology class represented by \( \ast \). It is well-known that the first Chern class \( c_1(M) \) is represented by \( \gamma \).

Let \( z_1, \ldots, z_n \) be a local coordinate system in \( M \), \( g = \sum g_{ab} dz_a d\bar{z}_b \) be the Kaehler metric of \( M \), and \( S = \sum R_{ab} dz_a d\bar{z}_b \) be the Ricci tensor of \( M \). Define \( n \) scalars \( \rho_1, \ldots, \rho_n \) by

\[
\frac{\det (g_{ab} + tR_{ab})}{\det (g_{ab})} = 1 + \sum_{k=1}^{n} \rho_k t^k,
\]

and denote the scalar curvature of \( M \) by \( \rho \). Then it is easily seen that \( \rho = 2\rho_1 \), and is also clear that \( \rho_n = \det (R_{ab}) / \det (g_{ab}) \).

We shall prove

**Theorem 1.** Let \( M \) be an \( n \)-dimensional compact cohomological Einstein Kaehler manifold. If \( c_1(M) = a \cdot [\Phi] \), then

\[
\int_M \rho_k * 1 = (2\pi a)^k \binom{n}{k} \int_M * 1,
\]

where \( \binom{n}{k} \) denotes the binomial coefficient, and \( *1 \) the volume element of \( M \).

This results implies that the average of \( \rho_k \), \( \int_M \rho_k * 1 / \int_M * 1 \), does not depend on the metric too strongly.

Let \( P_{n+p}(C) \) be an \( (n + p) \)-dimensional complex projective space with the

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