Some vanishing theorems of sufficient character about holomorphically projective mappings of Kahlerian spaces on the whole

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The generalized Bochner technique (see, for example, [1]) allows to broad to the noncompact but compete Kahlerian spaces some well-known theorems of holomorphically projective unique definability that have been proved previously only to the compact ones (see, for example, [2]). In particular, the next statements are true.

Theorem 1. *Complete connected Kahlerian C^r-spaces K^n $(n > 2,\ r > 3)$ with positive definite Ricci form don't admit non-trivial (different from affine) holomorphically projective mappings on the whole.*

Corollary 2. *Complete connected Kahlerian C^r-spaces K^n $(n > 2,\ r > 3)$ that have sign-definite metric form sign of which coincides with the sign of scalar curvature don't admit non-trivial (different from affine) holomorphically projective mappings on the whole.*

Corollary 3. *Complete connected Kahlerian C^r-spaces K^n $(n > 2,\ r > 3)$ that have positively definite metric form and non-positively definite on the set of symmetric tensors b^{ij} form*

$$R_{\alpha\gamma\sigma\beta}b^{\alpha\beta}b^{\gamma\sigma}$$

don't admit non-trivial (different from affine) holomorphically projective mappings on the whole.

Examples of Kahlerian spaces of considered types are known. In particular, complete connected Kahlerian C^r-spaces K^n $(n > 2,\ r > 3)$ of constant non-positive holomorphic curvature with positively definite metric form satisfies conditions of the both corollaries.

References

[1] Pigola S., Rigoli M., Setti A.G. *Vanishing in finitness results in geometric analysis.* in *A Generalization of the Bochner Technique.*, Berlin: Birkhauser Varlag AG, 2008

[2] Sinyukova, H.N. On some classes of holomorphically-projectively uniquely defined Kahlerian spaces on the whole, *Proc. Intern. Geom. Center*, 3(4) : 15–24, 2010.