ON TRANSFORMATION GROUPS PRESERVING CERTAIN GEOMETRIC STRUCTURES

Stefan Rosemann

Universität Jena, Mathematisches Institut, Ernst-Abbe Platz 2,07743 Jena, Germany
[stefan.rosemann@uni-jena.de]

The basic geometric structure in h-projective geometry is the family of h-planar curves associated to a given Kähler metric. These curves can be seen as generalisations of geodesics on Kähler manifolds. A diffeomorphism of the manifold is then called an h-projective transformation, if it preserves the set of h-planar curves. Since the h-projective transformations form a group, which contains the isometries of the given Kähler metric as a subgroup, it is natural to ask in which cases both groups are essentially different from each other.

The result which I want to present in my talk is the solution of a classical conjecture attributed to Yano and Obata and was obtained in a joint work together with V. S. Matveev: the complex projective space with Fubini-Study metric is the only compact Kähler manifold (up to isomorphism and multiplication of the metric with a constant) in which the dimension of the group of h-projective transformations is bigger than the dimension of the group of isometries.