Leviton, P. R. A.; Rubinstein, J. H.
Deforming Riemannian metrics on complex projective spaces. (English) Zbl 0642.53074
Geometry and partial differential equations, 2nd Miniconf., Canberra/Aust. 1986, Proc. Cent. Math. Anal. Aust. Natl. Univ. 12, 86-95 (1987).

[For the entire collection see Zbl 0626.00019.]

R. S. Hamilton [J. Differ. Geom. 17, 255-306 (1982; Zbl 0504.53034), and "Four-manifolds with positive curvature operator" (in preparation)] and *G. Huisken* [J. Differ. Geom. 21, 47-62 (1985; Zbl 0606.53026)] have shown a condition for a metric g of a compact Riemannian manifold M to be deformable to a space form, letting g_{ij} evolve according to the equation

$$\frac{\partial g_{ij}}{\partial t} = (2/n) r g_{ij} - 2R_{ij},$$

where $r = \int_M R d\mu / \int_M d\mu$ is the average of the scalar curvature. The aim of this paper is to obtain a condition under which a metric will evolve to a multiple of the Fubini-Study metric on CP $(n = 2m)$ according to a system of the similar equations as above. The result, however, is highly complicated, and a short cut for the solution is shown as follows: Let there be given constants $\delta < 1$ and ϵ_1, ϵ_2, ϵ_3 on an almost Hermitian manifold M. If M is δ-pinched and its curvature and the almost complex structure J satisfy $|\nabla R_m| < \epsilon_1$, $|\nabla J| < \epsilon_2$, $|\nabla \nabla J| < \epsilon_3$, then the metric of M can well be evolved to that of a Kaehler manifold of constant positive holomorphic curvature.

Reviewer: T.Okubo

MSC:

53C55 Global differential geometry of Hermitian and Kählerian manifolds

Keywords:

deformation of the metric; Fubini-Study metric; almost Hermitian manifold; Kaehler manifold; positive holomorphic curvature