DEFORMING RIEMANNIAN METRICS ON COMPLEX PROJECTIVE SPACES

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0. INTRODUCTION

Hamilton [Hm1,Hm2] and Huisken [Hs] have given conditions on the curvature of a compact n-dimensional Riemannian manifold M under which the metric may be deformed to one of constant positive curvature. Their method was to allow the metric to evolve according to the equation

$$(0.1) \qquad \frac{\partial}{\partial t}g_{ij} = \frac{2}{n}rg_{ij} - 2R_{ij} ,$$

where $r = \int_M R d\mu \,/\, \int_M d\mu$ is the average of the scalar curvature, and study its behaviour as $t \to \infty$. They proved the following

THEOREM *If (a) $n = 3$ and M has positive Ricci curvature [Hm1], (b) $n = 4$ and M has positive curvature operator [Hm2] or (c) $n \geq 4$, M has positive scalar curvature and*

$$(0.2) \qquad |W|^2 + |V|^2 < \delta_n |U|^2 ,$$

where W,V and U are the Weyl part, the traceless Ricci part and