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New convergence results for the Ricci flow I (Evolution of geometric quantities under the Ricci flow and Hamilton's maximum principle)

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Abstract

A family of Riemannian metrics on a compact manifold $\big(M, g(t)\big)$ is said to be a solution to the Ricci flow if $g'(t) = -2\,\mathrm{Ric}$. Hamilton showed that this equation leads to a parabolic evolution equation for the curvature tensor $R(t)$ of the Riemannian metric $g(t)$, for which in turn a maximum principle can be derived. We also sketch Shi's result on the smoothing properties of the Ricci flow.