

Luis Guijarro: Ricci flow, pinching sets and the differentiable sphere theorem.

Ricci flow is an evolution equation defined on the space of metrics in a manifold that aims to improve a given metric by deforming it in the direction indicated by its Ricci tensor. Although for an arbitrary metric such equation has no solution for all time, some conditions on the curvature tensor (the pinching sets in the title) imply the convergence of the flow to a constant curvature metric on the manifold. Such approach has been used in the recent proof of Brendle and Schoen of the differentiable sphere theorem that states that any Riemannian manifold whose sectional curvature is pinched between 1 and 4 was diffeomorphic to the sphere. Along the way we will also prove the positive curvature operator theorem of Böhm and Wilking.