Stability results in Ricci flow.

Miles Simon

Let (M,h) be Euclidean space, or hyperbolic space, or the sphere, and let g be another smooth Riemannian metric on M. We are interested in the following question:

If we flow g by the scaled Ricci flow, can we show that the solution lives for all time and converges back to h? If it does, it will only do so up to diffeomorphisms.

In this course, we show that g does flow back to h, if the notion of 'closeness' is defined appropriately.

Topics covered include:

     (i) short time existence for Ricci-DeTurk flow on non-compact manifolds.

     (ii) monotonicity formulae for Ricci-DeTurk flow and their consequences.

     (iii) long-time existence and convergence results for the Ricci-DeTurk flow.