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Convergence Stability of the Ricci Flow

We define the principle of $convergence\ stability$ for geometric flows, which says that if a solution exists for all time and converges to a stable fixed point, then solutions that start at nearby geometries also converge to fixed points. In particular, convergence results obtained for symmetrical spaces can be extended to geometries without symmetries. We show convergence stability of the Ricci flow on compact manifolds, by first using analytic semigroup methods to prove long time continuous dependence of solutions on initial conditions, and then invoking known stability results at flat (or hyperbolic) fixed points. We further present our current work to generalize these results to asymptotically hyperbolic manifolds. This is joint work with Eric Bahuaud (Seattle University) and James Isenberg (University of Oregon).