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**Dan F. Knopf\*** ([danknopf@math.utexas.edu](mailto:danknopf@math.utexas.edu)), University of Texas, Department of Mathematics, 1 University Station, C1200, Austin, TX 78712-0257. *Convergence and stability of locally  $\mathbb{R}^N$ -invariant solutions of Ricci flow.*

Many solutions of Ricci flow exist for all positive time but fail to converge. Instead, they collapse with bounded curvature. Among homogeneous metrics, this behavior is modeled by a dynamical system on a finite-dimensional space; for general metrics, an infinite-dimensional Banach space is required. There is a sense in which collapsing solutions may converge (after pullback to the universal cover and modification by diffeomorphisms) to homogeneous Ricci soliton metrics on nilpotent or solvable Lie groups.

We will explain the role of locally  $G$ -invariant solutions in this picture, and discuss what they tell us about the stability of homogeneous Ricci soliton metrics in the infinite-dimensional setting. (Received August 19, 2009)