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N Santa Rita, Tucson, AZ 85721. *Riemannian groupoids, homogeneous spaces, and Ricci flow.*

I plan to give a brief introduction to Riemannian groupoids as singularity models of Ricci flow by looking at one or more examples of the flow on quotients of 3D unimodular Lie groups with left-invariant metrics. In some instances, the flow converges to a three-dimensional groupoid which has a singular (i.e., lower dimensional) Gromov-Hausdorff limit (for instance, the limit of almost flat nilmanifolds which have collapsed to a point). These limit spaces generally have the structure of homogeneous spaces, at least locally. Understanding the spectrum of partial differential operators (for instance, linearization of the Ricci tensor) on these limit spaces could lead to a more detailed stability analysis of the Ricci flow system. We will try to frame the stability question in this setting, with the hope of generating discussion on how to attack it. (Received August 04, 2009)