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Some New Results On Ricci Flow

After a few reminiscences on past PNGS meetings, I plan to discuss two recent Ricci flow projects I have worked on. The first, a collaboration with Chris Guenther and Eric Bahuaud, investigates the “convergence stability” of Ricci flow for flat metrics on the torus and for the hyperbolic geometry in the space of asymptotically hyperbolic metrics. We explain the meaning of convergence stability for parabolic flows, we discuss the steps needed to prove that this property holds, and we outline our proof of convergence stability for two examples. The second, a collaboration with Tim Carson, Dan Knopf, and Natasa Sesum, examines singularity formation in Ricci flow solutions for multi-warped product complete geometries on non-compact manifolds. After stating our main theorem and outlining its proof, we discuss how our result can be used to provide insight regarding the stability of generalized cylinders under Ricci flow and to investigate essential blow up sequences for Ricci flow solutions with Type I singularities at spatial infinity.