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Haotian Wu* (hwu@uoregon.edu), Department of Mathematics, University of Oregon, Eugene, OR 97403. *Asymptotic shapes of neckpinch singularities in geometric flows.*

Geometric flows such as Ricci flow and mean curvature flow are natural and important tools to understand the geometry and topology of Riemannian manifolds. Geometric flows are nonlinear parabolic (heat) partial differential equations (PDEs) that tend to develop singularities in finite time. A useful approach to analyzing the singularities is the technique of matched asymptotics, which can provide detailed and precise information including the rates of curvature blow-up, the set of points where a singularity forms, and the behavior of the solution in a space-time neighborhood of that singularity. In this talk, we will survey the results concerning the asymptotic shapes of neckpinch singularities in Ricci flow and mean curvature flow. (Received February 01, 2016)