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**Alan Parry\*** ([alan.parry@uconn.edu](mailto:alan.parry@uconn.edu)). *Geometric flows in General Relativity.*

In this talk, we will survey several results from the last 25 years that have used geometric flows to solve important problems in general relativity. These will include the proofs of the Penrose inequality using inverse mean curvature flow by Huisken and Ilmanen and a conformal flow of metrics by Bray. We will also discuss more recent work by authors including Bray, Hayward, Mars, Simon, and Jauregui, generalizing the inverse mean curvature flow. This will include discussing the behavior of these flows with respect to the Hawking mass, and how they might be applied to further generalize the Penrose inequality. (Received January 19, 2016)