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Chen-Yun Lin*, cylin@math.toronto.edu, and **Christina Sormani**. *Bartnik's mass and Hamilton's modified Ricci flow.*

Two of the most important quasilocal masses studied in Riemannian General Relativity are the Hawking mass and Bartnik mass of a surface. Via a quantity which we call the “asphericity mass”, we relate these two quasilocal masses. In this talk, I will discuss that the Bartnik mass is bounded from above by the Hawking mass and the asphericity mass, defined by applying Hamilton’s modified Ricci flow and depends only upon the restricted metric of the surface and not on its mean curvature. The theorem is proven by studying a class of asymptotically flat Riemannian manifolds foliated by surfaces satisfying Hamilton’s modified Ricci flow with prescribed scalar curvature. Furthermore, I will discuss the rigid case when the Hawking mass of the inner surface of the manifold agrees with its ADM mass. (Received December 13, 2016)