1063-58-34 **Christina Sormani*** (sormanic@member.ams.org). *The Intrinsic Flat Distance between Riemannian Manifolds with Boundary.*

We define a new distance between oriented Riemannian manifolds with boundary that we call the intrinsic flat distance based upon Ambrosio-Kirchheim's theory of integral currents on metric spaces. Limits of sequences of manifolds, with a uniform upper bound on their volumes, the volumes of their boundaries and diameters are countably $\mathcal{H}^m$ rectifiable metric spaces with an orientation and multiplicity that we call integral current spaces. Collapsing sequences of manifolds converge to the 0 integral current space.

Recall that Greene-Petersen have proven that sequences of Riemannian manifolds with uniform geometric contractibility functions and a uniform upper bound on volume have a subsequence converging in the Gromov-Hausdorff sense to a metric space. We prove that when the geometric contractibility function is linear, the intrinsic flat limit agrees with the Gromov-Hausdorff limit revealing that the limit space is countably $\mathcal{H}^m$ rectifiable. When the function is not linear, the limit space need not have any rectifiability.

See http://comet.lehman.cuny.edu/sormani/research/intrinsicflat.html

This is joint work with S. Wenger and R. Schul. (Received July 14, 2010)