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**Christina Sormani\*** ([sormanic@member.ams.org](mailto:sormanic@member.ams.org)) and **Stefan Wenger**. *A New Convergence for Riemannian Manifolds*.

We define a new distance between oriented Riemannian manifolds that we call the *intrinsic flat distance* based upon Ambrosio-Kirchheim's theory of integral currents on metric spaces. Limits of sequence of manifolds with a uniform upper bound on their volume and diameter are countably  $H^m$  rectifiable metric spaces with an orientation and multiplicity that we call *integral current spaces*.

In general the Gromov-Hausdorff and intrinsic flat limits do not agree. However, we show that they do agree when the sequence of manifolds has nonnegative Ricci curvature and a uniform lower bound on volume and also when the sequence of manifolds has a uniform linear local geometric contractibility function. These results are proven using work of Greene-Petersen, Gromov, Cheeger-Colding and Perelman.

We present an example of three manifolds with positive scalar curvature constructed using Gromov-Lawson connected sums attaching two standard spheres with increasingly many tiny wormholes which converges in the Gromov Hausdorff sense to the standard three sphere but in the intrinsic flat sense to the 0 space due to the cancelling orientation of the two spheres.

This is joint work with S. Wenger. See

<http://comet.lehman.cuny.edu/sormani/intrinsicflat.html> (Received January 24, 2009)