1047-53-327 **Stefan Wenger*** (wenger@math.uic.edu), Department of Mathematics, University of Illinois at Chicago, 851 S Morgan Street, Chicago, IL 60607. *Compactness for manifolds with bounded volume and diameter.*

Gromov's compactness theorem for metric spaces asserts that every uniformly compact sequence of metric spaces has a subsequence which converges in the Gromov-Hausdorff sense to a compact metric space. This theorem has been of great importance in Riemannian and metric geometry, but also other fields. I will show in this talk that if one replaces the Hausdorff distance appearing in Gromov's theorem by the flat distance then every sequence of oriented k-dimensional Riemannian manifolds with a uniform bound on diameter and volume has a subsequence which converges in this new distance to a countably k-rectifiable metric space. In general, such a sequence does not have a subsequence which converges with respect to the Gromov-Hausdorff distance. The new distance mentioned above was first introduced and studied by Christina Sormani and myself. (Received February 01, 2009)