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**Regina Rotman\*** ([rina@math.toronto.edu](mailto:rina@math.toronto.edu)), Department of Mathematics, University of Toronto, 40 St. George street, Toronto, Ontario M5S 2E4, Canada. *Short geodesic loops on complete Riemannian manifolds*. Preliminary report.

I will talk about diameter and volume upper bounds for the length of geodesic loops on complete Riemannian manifolds. In particular, I will talk about the following result obtained jointly with A. Nabutovsky: At each point  $p$  of a closed Riemannian manifold  $M$  of dimension  $n$  and diameter  $d$  there exist at least  $k$  distinct geodesic loops based at  $p$  of length  $\leq 100nk^2d$ . I will also show that on any complete Riemannian manifold of a finite volume there exists a geodesic loop of an arbitrarily small length. (Received January 27, 2009)