Title: Short geodesic segments on closed Riemannian manifolds.

Abstract: A well-known result of J. P. Serre states that for an arbitrary pair of points on a closed Riemannian manifold there exist infinitely many geodesics connecting these points. A natural question is whether one can estimate the length of the “$k$-th” geodesic in terms of the diameter of a manifold. We will demonstrate that given any pair of points on a closed Riemannian manifold of dimension $n$ and diameter $d$, there always exist at least $k$ geodesics of length at most $4nk^2d$ connecting them. We will also demonstrate that for any two points of a manifold that is diffeomorphic to the 2-sphere there always exist at least $k$ geodesics between them of length at most $22kd$. (Joint with A. Nabutovsky).