1084-68-105 **Tamal Dey** and **Yusu Wang***, yusu@cse.ohio-state.edu. *Reeb graphs: Approximation and Persistence.*

Given a continuous function $f : X \to R$ on a topological space X, its level set $f^{-1}(a)$ changes continuously as the real value a changes. Consequently, the connected components in the level sets appear, disappear, split and merge. The Reeb graph of f summarizes this information into a graph structure. Previous work on Reeb graph mainly focused on its efficient computation. In this talk, we will study two different aspects of the Reeb graph which can facilitate its broader applications in shape and data analysis.

The first one is the approximation of the Reeb graph of a function on a smooth compact manifold M without boundary. The approximation is computed from a set of points P sampled from M. The second aspect concerns the definition and computation of the persistent Reeb graph homology for a sequence of Reeb graphs defined on a filtered space.

This is joint work with T. K. Dey. (Received August 26, 2012)