

1147-57-656

Maria Trnkova* (mtrnkova@math.ucdavis.edu), One Shields Ave., Davis, CA 95616. *Length Spectra of Hyperbolic Manifolds in dimensions 2 and 3.*

A computer program "SnapPea" constructs a length spectrum of a hyperbolic 3-manifold M using an algorithm described by Hodgson-Weeks. The algorithm uses tiling of the universal cover by translations of a Dirichlet domain of M by elements of a fundamental group. It does not use exact data but works surprisingly well in practice.

In this talk we address some problems concerning the construction of a Dirichlet domain in dimensions 2 and 3. We show that under some assumptions the approximate Dirichlet domain can work equally well as an exact Dirichlet domain. If the difference between their volumes is small enough then the length spectrum algorithm produces the correct spectrum after increasing a tiling radius accordingly.

Our result explains the empirical fact that the program "SnapPea" works surprisingly well despite it does not use exact data. Also we demonstrate a rigorous verification if two words of a fundamental group of a hyperbolic 3-manifold are the same or not. (Received January 28, 2019)