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**Maria Trnkova\*** ([mtrnkova@math.ucdavis.edu](mailto:mtrnkova@math.ucdavis.edu)), One Shields Ave, Davis, CA 95616. *Geodesics of hyperbolic manifolds.*

A computer program "SnapPea" and its descendant "SnapPy" compute many invariants of a hyperbolic 3-manifold  $M$ . Some of their results can be rigorous but some not. In this talk we will discuss computation of geodesics length and will mention a number of applications when it is crucial to know the precise length spectrum up to some cut off.

C.Hodgson and J.Weeks introduced a practical length spectrum algorithm implemented in SnapPea. The algorithm uses a tiling of the universal cover by translations of a Dirichlet domain of  $M$  by elements of a fundamental group. In theory the algorithm is rigorous but in practice its output does not guaranty the correct result. One of the obstacles is the requirement to use the exact data for the Dirichlet domain which is available only in some special cases. We show that under some assumptions on  $M$  an approximate Dirichlet domain can work equally well as the exact Dirichlet domain. Our result explains the empirical fact that the program "SnapPea" works surprisingly well despite it does not use exact data. (Received September 14, 2020)