

1135-55-1744      **Henry Adams\*** ([adams@math.colostate.edu](mailto:adams@math.colostate.edu)). *The theory of Vietoris-Rips complexes.*

Given a metric space  $X$  and a scale parameter  $r > 0$ , the Vietoris-Rips simplicial complex has as its simplices the finite subsets of  $X$  of diameter less than  $r$ . These complexes have been applied to problems in computational topology and topological data analysis as a way to “thicken” a finite sampling. Indeed, when given a dataset sampled sufficiently densely from a manifold, the Vietoris-Rips complex of the dataset can be used to recover topological information about the manifold. In this talk I will survey known results and open questions about Vietoris-Rips complexes of manifolds, and describe Vietoris-Rips complexes of  $n$ -spheres at the first scale parameter when the homotopy type changes. (Received September 24, 2017)