

# Homotopy Types of Vietoris-Rips Complexes and Their Connection to Hyperconvexity

*Thursday, 29 August 2024 16:30 (30 minutes)*

The Vietoris-Rips complex, originally introduced by Leopold Vietoris in the early 1900s to develop a homology theory for metric spaces, has since found applications in various areas of mathematics. Eliyahu Rips and Mikhail Gromov further utilized it in their studies of hyperbolic groups. More recently, classifying the homotopy types of Vietoris-Rips complexes has become a significant problem in Topological Data Analysis and Global Metric Geometry. Understanding these complexes can enhance our grasp of the persistence barcode's strength and provide lower bounds for the Gromov-Hausdorff distance between manifolds. In this talk, we will delve into these motivations and introduce the precise connections between Vietoris-Rips complexes, hyperconvex metric spaces, and their homotopy types.

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