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Mathematical theory of persistent homology

TDA enables us to utilize the mathematical concept of topology for data analysis, and the research is actively conducted from theory to applications. It does not follow a unidirectional flow from mathematical theory to application, and new mathematical problems often arise from applications. We work on such mathematical problems. I already have worked on inverse problem on persistence diagrams and field choice problem on persistent homology.

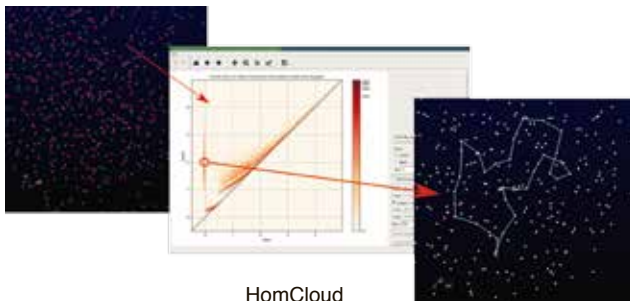


Möbius strip and its boundary

Development of HomCloud, data analysis software based on PH

In order to connect the theory of persistent homology with applications, data analysis software is indispensable. For this reason, we develop “HomCloud”, data analysis software based on PH. We focus on applications, and practical functionalities such as visualization, machine learning/

statistics, and inverse analysis. HomCloud is a test platform to see if mathematical theories work effectively, and we are implementing ideas from our research as soon as possible.



HomCloud