

PERSISTENT HOMOLOGY OF SELF-MAPS

Marian Mrozek

Jagiellonian University, Poland

mrozek@ii.uj.edu.pl

When a topological space is known only from sampling, persistence provides a useful tool to study its homological properties. In many applications one can sample not only the space, but also a map acting on the space. The understanding of the topological features of the map is often of interest, in particular in the analysis of time series dynamics but also in the dynamics of a map or differential equation given explicitly when the rigorous study is computationally too expensive and only numerical experiments are available. The aim of the talk is to present an extension of persistent homology to the case of a continuous self-map together with the associated algorithm and numerical examples based on the implementation of the algorithm.

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