

Minicourse: Approximation of Set-Valued Functions

First Lecture

Motivation: Reconstruction of 3D objects from their 2D cross-sections by subdivision schemes for sets

The lecture is based on two papers:

1. S. Kels and N. Dyn,
Reconstruction of 3D objects from 2D cross-sections with the 4-point subdivision schemes adapted to sets,
Computer and Graphics, 2011.
2. S. Kels and N. Dyn,
Subdivision schemes of sets and the approximation of set-valued functions in the symmetric difference metric,
Foundation of Computational Mathematics, 2013.

The next three lectures deal with the approximation of set-valued functions (SVFs) in the Hausdorff metric. The material of these lectures is based on our book

*N. Dyn, E. Farkhi and A. Mokhov,
Approximation of Set-Valued Functions by Adaptation of Classical Approximation Operators, ICP 2014.*

This minicourse brings one of the two approaches presented in the book for the adaptation of approximation operators for real-valued functions to SVFs.

Second Lecture

Approximation operators, sets and operations between sets

Third Lecture

Why Minkovski sum of sets fails in the non-convex case?

Fourth Lecture

Metric linear combinations of sets and approximation methods based on them