

Fractals and geometric measure theory

II. Semester 2021/22

Neptun code: BMETE95MM06

Lecturer: Dr. Balázs Bárány

Prerequisites: This is an elective subject for MSc and PhD students, there are no further prerequisites.

Topics:

- Hausdorff- and box-counting dimension
- Introduction to Iterated Function Systems
- Self-similar sets without overlaps, dimension and measure
- Local dimension, self-similar measures, multifractal analysis
- Projection and slicing theorems
- Overlapping self-similar set, transversality method
- random Cantor sets and Mandelbrot percolation

Requirements: There are two options to complete the subject.

- holding only a 20 minutes long mini-lecture, which is worked out by the student on his/her own about a recent paper in the field. If the student chooses this option, the best grade that he/she can get is a satisfactory (közepes (3)).
- holding the mini-lecture and writing a midterm on the week of repeats about one theoretical topic.
- writing a midterm on the week of repeats about two theoretical topics without a mini-lecture.

In the last two cases, the students might get the best grade excellent (jeles (5)). Materials for the mini-lecture can be asked from the lecturer during the semester.

7th February 2022.

Balázs Bárány
Lecturer .