Fractals and geometric measure theory 2023/24 II. Semester

Neptun code: BMETE95MM06
Lecturer: Dr. Balázs Bárány

<u>Prerequisites:</u> This is an elective subject for MSc and PhD students. There are no further prerequisites.

<u>Topics:</u>
- 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

<u>Requirements:</u> The subject ends with a midterm test of theoretical questions on the 14th week. There are two options to complete the subject:

- Writing the 90-minutes long midterm test with two theoretical questions;

- Holding a 20-minute-long mini-lecture on the 13th week, which is worked out by the student on his/her own about a recent paper in the field, and writing the 45-minutes long midterm test with one theoretical question.

Materials for the mini-lecture can be asked from the lecturer during the semester.

5th February 2024.

Balázs Bárány
Lecturer.