The problem of optimal transport has been introduced by Gaspard Monge in the year 1781. In modern language this involves the question of the existence of a map $T: \mathbb{R}^n \to \mathbb{R}^n$, which maps two measures $\mu$ and $\nu$ to each other via the so-called push forward $T_\# \mu = \nu$, and which minimizes the transport cost $\int c(x, T(x)) \, d\mu(x)$. It took almost 200 years to find a mathematically satisfying answer to this problem. Since then the developed tools and concepts have found many applications in the theory of partial differential equations, geometry, and dynamic systems.

The seminar gives an introduction to the problem and considers applications like gradient flows and geometry of singular spaces.

**Prerequisites**

Probability theory

**Preliminary meeting**

Thursday, 10.10.2019, 2:15 pm in seminar room 1.007 in Endenicher Allee 60.

**References**

Luigi Ambrosio and Nicola Gigli: A user’s guide to optimal transport
Filippo Santambrogio: Optimal transport for Applied Mathematicians
Cédric Villani: Topics in optimal transport

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