Fakultät für Mathematik

universität wien

EINLADUNG

Mathematisches Kolloquium
und
Junior Kolloquium

Prof. Dr. Jan Maas *(IST Austria)*
Mittwoch, 2. Dezember 2015

15.00 Uhr – Junior Kolloquium:
Optimal transport and the isoperimetric inequality

15.45 Uhr – Kaffeepause

16.15 – Vortrag:
Optimal transport in discrete probability

Anschließend vinum cum pane

Ort: Fakultät für Mathematik, Oskar Morgenstern-Platz 1, Sky Lounge

Jiri Cerny
Harald Rindler

Junior Kolloquium:
"Optimal transport and the isoperimetric inequality"

Abstract:
Suppose that you are given an amount of mass, located at different spatial locations ("factories"), which needs to be transported to prescribed final destinations ("consumers"). How much mass should be transported from each factory to each consumer, in order to minimise the total transport costs? In recent years, this innocent looking optimisation problem has found many applications in analysis, geometry and probability. I will give a brief introduction to the topic, and show how one can use optimal transport to give an elegant proof of the isoperimetric inequality, which goes back to Gromov.

Vortrag:
"Optimal transport in discrete probability"

Abstract:
Optimal transport has become a flourishing mathematical field, yielding new connections between analysis, probability and geometry. Among the highlights are new interpretations of heat flow and Ricci curvature in terms of a geometric structure on the space of probability measures induced by the Wasserstein metric of optimal transport. In discrete settings this structure degenerates, and the theory appears to break down. We present a new class of transportation metrics, which allow us to apply ideas from optimal transport to problems in discrete probability. In particular, we obtain a notion of discrete Ricci curvature, with interesting geometric and probabilistic consequences. We will also show examples of graphs and interacting particle systems for which explicit curvature bounds can be obtained.