

Institut für Geometrie

## Mathematisches Kolloquium

20.1.2012, 14:30 (Kaffee im Foyer), 15:00 (Vortrag)

Hörsaal BE01, Steyrergasse 30

# Optimal Transport in Geometry, Analysis and Probability

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We give a brief survey on recent progress in optimal transportation on manifolds and metric spaces.

In particular, we will introduce the Riemannian structure on the space  $P(M)$  of probability measures induced by optimal transports on a given Euclidean or Riemannian space  $M$ . And we recall the characterization of the heat equation on  $M$  as the gradient flow for the relative entropy on the  $L^2$ -Wasserstein space  $P(M)$ . We explain how convexity properties of the relative entropy on the Wasserstein space are related with functional inequalities (e.g. logarithmic Sobolev inequalities), with concentration of measure and with equilibration and contraction properties of the associated stochastic processes.

Convexity properties of the relative entropy also play an important role in a powerful concept of generalized Ricci curvature bounds for metric measure spaces, introduced by Lott and Villani, and the author.

J. Wallner, W. Woess