



Wintersemester 2017/18

Oberseminar
Geometrische Analysis, Differentialgeometrie und Relativitätstheorie

Am Donnerstag, den 01.02.2018 spricht um 15 Uhr c. t. im Raum S6

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über das Thema

Quantitative logarithmic Sobolev inequalities and the Ricci flow

In this talk we will present a quantitative version of the logarithmic Sobolev inequality and stability results — known as the logarithmic Sobolev deficit — recently found by M. Fathi, E. Indrei and M. Ledoux.

We will present the results on the Gauss space and mention how they can be generalised to weighted manifolds satisfying the Bakry–Emery Curvature dimension criterion. In order to prove these results, we will first show how to: obtain the logarithmic Sobolev inequality on Gauss space; introduce the Curvature-Dimension criterion; and prove a famous transportation-cost inequality due to M. Talagrand. The proofs of these results will allow us (at least formally) to present Lojasiewicz inequalities (with optimal exponents) on the 2-Wasserstein space.

Next, we will introduce G. Perelman's \mathcal{F} and \mathcal{W} functionals and show how they generalise the logarithmic Sobolev inequality. We then discuss a potential way to generalise the results from the first part of the talk to this Ricci flow setting. Our hope is that these results will allow us to analyse the behaviour of “almost” steady and shrinking gradient Ricci solitons. If time permits, we will state a gradient Lojasiewicz inequality for steady solitons due to Haslhofer–Mueller.

Hierzu wird herzlich eingeladen.

C. Cederbaum, G. Huisken