



# General Mathematics Seminar (GMS)

## of the University of Luxembourg

in cooperation with the Luxembourg Mathematical Society

Thursday, 15th of March 2018, 4 pm  
Maison du Nombre, MNO 1.040

**Prof. Qi S. Zhang** (University of California, Riverside)

Qi S. Zhang is Professor at University of California Riverside. He is interested in Partial Differential Equations and Geometric Analysis, and has worked in particular on parabolic equations and systems with singular coefficients, Navier-Stokes systems, heat kernel estimates in various settings, Ricci flow, and blow up phenomenon of parabolic and wave equations. Qi S. Zhang obtained his Ph.D. at Purdue University, and has done research at MSRI, University of California Berkeley and University of Memphis before joining University of California Riverside.



### *Minimizers of the sharp Log entropy on manifolds with non-negative Ricci curvature and flatness*

Consider the scaling invariant, sharp log entropy (functional) introduced by Weissler on non-compact manifolds with nonnegative Ricci curvature. It can also be regarded as a sharpened version of Perelman's  $W$  entropy in the stationary case. We prove that it has a minimizer if and only if the manifold is isometric to the Euclidean space.

Using this result, it is proven that a class of noncompact manifolds with nonnegative Ricci curvature is isometric to  $\mathbb{R}^n$ . Comparing with earlier well known flatness results on asymptotically flat manifolds and asymptotically locally Euclidean (ALE) manifolds, their decay or integral condition on the curvature tensor is replaced by the condition that the metric converges to the Euclidean one in the  $C^1$  sense at infinity. No second order condition on the metric is needed.

Coffee and cookies: 15:40 on the 6th floor of the MNO, in the kitchen corner of maximal distance to the elevator.

Time and place of the talk: 16:00 (4 p.m.) in the Maison du Nombre, MNO 1.040.

University of Luxembourg contact : Anton Thalmaier

Coordinator: Alexander D. Rahm