

# SALZBURG MATHEMATICS COLLOQUIUM

Summer 2018

Mokshay Madiman (Delaware)

## „The geometry of convex measures“

June 14, 2018

### Abstract:

While convexity of sets and functions on linear spaces is bread-and-butter to any mathematician, the notion of convexity for measures – although deeply studied by Christer Borell starting in the 1970s – is far less well known. An exposition will be provided of the theory of convex measures (especially the important and ubiquitous subclass of log-concave measures), focusing on developing a geometric understanding. In particular, we will describe the concentration of information phenomenon for such measures, which asserts that high-dimensional convex measures are in a sense close to uniform distributions on the annulus between two nested convex sets (generalizing the well known fact that the standard Gaussian measure is concentrated on a thin spherical annulus). Applications that motivated the development of these results include communication theory, geometric functional analysis, and random matrix theory.

The talk will be based on multiple joint works with Sergey Bobkov (University of Minnesota), Jiange Li (MIT), Matthieu Fradelizi (Université Paris-Est), and Liyao Wang (J. P. Morgan).

Thursday, **15:00-15:45**

Hörsaal 414, 1. Stock