

## SALZBURG MATHEMATICS COLLOQUIUM

## Martin Widmer (London)

## "From number theory to model theory via geometry" November 24, 2016

## Abstract:

Which subsets of  $\mathbb{R}^n$  have the property that their *m*-volumes of the orthogonal projections to any *m*dimensional subspace can be bounded solely in terms of the *m*-volumes of the projections to the *m*dimensional coordinate spaces? Or which subsets of  $\mathbb{R}^n$  have a boundary that can be parameterised by a fixed number of maps  $\phi_i : [0, 1]^{n-1} \to \mathbb{R}^n$ , each satisfying a Lipschitz condition with Lipschitz constant a fixed multiple of the diameter of the set? These geometric problems are motivated by concrete number theoretic problems (on the distribution of lattice points in subsets of  $\mathbb{R}^n$ ). It turns out that o-minimality, a notion from model theory, is a great tool to describe large classes of sets in  $\mathbb{R}^n$  with these required properties. The aim of this talk is to give a short gentle introduction to o-minimality, and then to show the power of this concept by means of concrete examples. (Parts of the talk are joint work with Fabrizio Barroero.)

Thursday, 15:00-15:45 Hörsaal 414, 1. Stock

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