# SALZBURG MATHEMATICS COLLOQUIUM
## Summer 2016

## Monika Ludwig (Vienna)
## „Valuations on lattice polytopes"
April 28, 2016

Abstract:

Lattice polytopes are convex hulls of finitely many points with integer coordinates in $\mathbb{R}^n$. A function $z$ from a family $\mathcal{F}$ of subsets of $\mathbb{R}^n$ with values in an abelian semi-group is a valuation if

$$z(P)+z(Q)=z(P\cup Q)+z(P\cap Q)$$

whenever $P$, $Q$, $P\cup Q$, $P\cap Q \in \mathcal{F}$ and $z(\emptyset)=0$. The classification of real-valued invariant valuations on lattice polytopes by Betke & Kneser is classical (and will be recalled). It establishes a characterization of the coefficients of the Ehrhart polynomial. Building on this, we establish a classification of Minkowski valuations on lattice polytopes, that is valuations with values in the abelian semi-group of compact convex sets with Minkowski or vector addition (joint work with Károly J. Böröczky). In addition, vector and tensor valuations on lattice polytopes are discussed (joint work with Laura Silverstein).

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