

# Inn'formal Probability Seminar

**Moritz Dober (University of Vienna)**

“Phase diagram of the Ashkin-Teller model on the square lattice.”

## Abstract

*The Ashkin--Teller (AT) model of statistical physics is a classical lattice spin system and was introduced in 1943 as a generalization of the famous Ising model. Given a graph, it may be represented by a pair of  $\pm 1$  valued (Ising) `spins' placed on each vertex. In the symmetric case, there are two coupling constants  $J, U$  where  $J$  describes the interaction for each of the spins and  $U$  the interaction between the two of them. Depending on which of them is larger, the model is conjectured to admit either a unique or two distinct phase transitions.*

*As a motivation, we will first introduce and briefly discuss the Ising model. We will then move on to the AT model, discuss its basic properties and representations, and sketch its phase diagram on the 2D Euclidean lattice. Afterwards, we will present a coupling of the AT and the six-vertex model.*

*If time permits, we will conclude with a brief outline of an ongoing project on the behaviour of interfaces in the AT model and its consequences in the random-cluster model.*

*Based on collaborations with Yacine Aoun, Alexander Glazman and Sébastien Ott.*

Tuesday | 25.04.2023 | 14:15

SR 734 | civil engineer building