Bernoullis Tafelrunde

GRADUATE STUDENT SEMINAR

Monday, 5 December 2022, 12:15-13:00 Seminarraum 05.002, Spiegelgasse 5

Ulrik Hansen

University of Fribourg

Self-Avoiding Walks and Parafermionic Observables

Abstract

The Self-Avoiding Walk was originally proposed by the chemist Paul Flory as a model of how polymers would stretch out in a liquid solution. Like the Simple Random Walk, the model is a uniform probability measure on nearest-neighbour paths of length n on a graph, but with the condition that the path is simple. This condition more or less completely strips the model of the sorts of recursive relations that make the analysis of the Random Walk tractable and as such, from a mathematical perspective, the model offers an infinite amount of deep combinatorial questions.

In this talk, we shall introduce the model, mention the central question of interest, namely the growth rate of the family of walks as n grows larger, and, in the spirit of this year's Fields Medals, discuss Hugo Duminil-Copin's miraculous exact computation of the growth rate of the Self-Avoiding Walks on the hexagonal lattice using a parafermionic observable.