Oberseminar Analysis und Theoretische Physik

Dr. Willem van Zuijlen

Weierstraß–Institut Berlin

Anderson Models, from Schrödinger operators to singular SPDEs

The name Anderson model is used to refer either to the stochastic partial differential equation (SPDE) called the parabolic Anderson model or to the corresponding operator called the Anderson Hamiltonian. The operator is a random Schrödinger operator and in solid state physics this operator describes the evolution of a quantum state via the Schrödinger equation. On the other hand, the operator describes a random motion in a random environment by means of the parabolic Anderson model. Therefore the solution to both equations can be described by the spectral properties of the operator.

I will discuss the Anderson Hamiltonian and the parabolic Anderson model with a white noise potential, which, due to its low regularity, brings us into the realm of singular SPDEs. One of the beauties of the parabolic Anderson model is the Feynman-Kac representation of the solution, by which one is able to derive the behaviour of its solution.

I will motivate the model, give a feeling for the singularity and the construction of the Anderson Hamiltonian and describe how the relation to the parabolic Anderson is used to describe the asymptotic behaviour of its total mass.

Dienstag, 12.12.2023, 15:00 Uhr, Raum c311
Hauptgebäude der Leibniz Universität

Dazu laden herzlich ein:
Prof. Dr. Wolfram Bauer, Prof. Dr. Joachim Escher, Prof. Dr. Johannes Lankeit,
Prof. Dr. Elmar Schrohe, Prof. Dr. Alexander Strohmaier, Dr. Alden Waters,
Prof. Dr. Christoph Walker