

HABILITATION

Fachbereich Mathematik und Informatik

EINLADUNG

zum Habilitationsvortrag

Im Rahmen seines Habilitationsverfahrens wird

Herr Dr. Willem Bernard van Zuijlen

am Montag, d. 28. April 2025

um 14:00 Uhr im Hörsaal B (o.1.01), Arnimallee 14, 14195 Berlin

einen Vortrag über das Thema:

The KPZ universality class

halten.

Der Vortrag wird ca. 45 Minuten dauern (Zusammenfassung s.u.).

Die Universitätsöffentlichkeit ist dazu herzlich eingeladen.

gez. Prof. Dr.-Ing. R. Klein

Dekan des FB Mathematik und Informatik

Abstract: Random interface growth is a phenomenon observed in various physical, chemical, and biological systems where a boundary or interface between different phases or materials evolves over time. One could think of the growth of a coffee stain, the spreading of bacteria colonies, crystal growth and many more examples. Kardar, Parisi and Zhang (KPZ) attempted to understand the scaling behaviour of random interface growth and introduced their in the meantime famous equation and predicted a 3:2:1 scaling. Namely, under suitable qualitative assumptions for the interface behaviour, it is conjectured that under the right scaling, the interface fluctuations around the limit of the law of large numbers converge to the same fixed point, the KPZ fixed point. The KPZ equation is one of the models which lies in this KPZ universality class. This KPZ equation describes the evolution of a fluctuating interface in terms of nonlinear stochastic partial differential equations. I will describe the idea of this universality class and the assumptions on locality, smoothing, nonlinear slope dependence and space-time independent noise, by means of some examples. Moreover, I will discuss universality classes of depinning models of elastic systems, meaning interfaces that experience elastic tension and an obstacle field besides an external (pulling) force. For this universality class I will discuss the quenched Edward–Wilkinson equation and the quenched KPZ equation.