

A U S H A N G

FREIE UNIVERSITÄT BERLIN

Fachbereich Mathematik und Informatik

Promotionsbüro, Arnimallee 14, 14195 Berlin

DISPUTATION

Dienstag, 27. November 2018, 16:15

Ort: Seminarraum 007/008

(Fachbereich Mathematik und Informatik, Arnimallee 6, 14195 Berlin)

Disputation über die Doktorarbeit von

Frau Ana Djurdjevac

Thema der Dissertation:

Random partial differential equations on evolving hypersurfaces

Thema der Disputation:

An introduction to rough paths

Die Arbeit wurde unter der Betreuung von **Prof. Dr. R. Kornhuber** durchgeführt.

Abstract:

The main motivation of this talk is to solve controlled differential equations driven by irregular signals, i.e. differential equations that are in the integral form written as

$$Y_t = Y_0 + \int_0^t f(Y_s) dX_s. \quad (1)$$

Thus, we need to give a meaning to the integral in (1). We will express the notion of irregularity by Hölder continuity. If Y is α -Hölder continuous and X is β -Hölder continuous, for $\alpha + \beta > 1$ we can apply the standard Young's integration theory. However, our main interest is the situation when $\alpha + \beta \leq 1$ and then the rough path theory provides an answer. We will first define the space of rough paths and then introduce the integration against rough paths. With these notions, we can consider the so called rough differential equations, its well-posedness and the continuity of the Itô-Lyons map. As a special and a very important example, we will consider rough paths associated to a Brownian motion and compare stochastic integration and stochastic differential equations with the introduced rough path approach.

Die Disputation besteht aus dem o. g. Vortrag, danach der Vorstellung der Dissertation einschließlich jeweils anschließenden Aussprachen.

Interessierte werden hiermit herzlich eingeladen

Der Vorsitzende der Promotionskommission
Prof. Dr. R. Kornhuber