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FAKULTÄT FÜR MATHEMATIK
Dekan Univ.-Prof. Dr. Radu Ioan Bot

Einladung zur öffentlichen Defensio

Annemarie Grass

Thema der Dissertation
Modelling under Uncertainty

Abstract: The thesis addresses model uncertainty in mathematical finance as well as in infectious disease modelling. In this talk, we will focus on uncertainty within the context of derivative pricing in mathematical finance.

We first give a brief overview of the worst-case approach to derivative pricing, emphasising robust pricing of variance options. Central to this discussion is the Skorokhod Embedding problem (SEP), which is to represent a given probability measure as a Brownian motion stopped at a specific stopping time. Via two specific solutions to the SEP, namely the Root and Rost solutions, lower and upper robust bounds for variance options can be derived. We present an elementary probabilistic argument, linking these solutions to associated optimal stopping problems, facilitating their numerical computation.

Importantly, our approach extends to the multi-marginal setting. This extension allows for the computation of robust variance option bounds using market data quoted for multiple maturities. We conclude by discussing empirical findings based on an analysis of S&P 500 data.

Prüfungssenat
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Zeit und Ort

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