



Einladung zur öffentlichen Defensio von

**Stefan Rigger**

Thema der Dissertation

**Probabilistic solutions of the supercooled Stefan problem**

**Abstract:**

We study a probabilistic reformulation of the supercooled Stefan problem through a McKean-Vlasov equation. This allows to introduce global notions of solution even in cases where the classical free boundary problem exhibits blow-up in finite time. We study two such solution concepts, physical and minimal solutions and prove that minimal solutions are physical under mild assumptions. Next, we derive numerical schemes that allow to calculate the minimal solution globally, prove their global convergence and derive a convergence rate in the case where no blow-up occurs. Finally, we study an associated stochastic control problem for a simple banking network, where the control corresponds to a central bank that aims to prevent financial crashes.

**Prüfungssenat**

Univ.-Prof. Mag. Dr. Andreas Cap  
(Vorsitz)

Univ.-Prof. Dipl.-Ing. Dr. Christa Cuchiero, Privatdoz.  
(Universität Wien )

Prof. Dr. Ben Hambly  
(University of Oxford)

Prof. Dr. Mykhaylo Shkolnikov  
(University of Princeton)

**Zeit:**

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SR06 Oskar-Morgenstern-Platz 1, 1090 Wien