

## 19. PAULI KOLLOQUIUM,

jointly with

## KOLLOQUIUM der Fakultät für MATHEMATIK

The Fakultät für Mathematik and the Wolfgang Pauli Institut, and the FWF Doktoratskolleg „Dissipation and Dispersion in Nonlinear PDEs“ and the FWF Spezialforschungsbereich “Taming Complexity in PDE Systems” kindly invite you to the talk of **Martin BURGER**

**Time:** Wednesday, 18. April 2018, 16:15 – 17:15

**Place:** „Sky Lounge“, Oskar-Morgenstern-Platz 1, 1090 Wien

- 1) 15.45 – 16.15 Uhr  
Coffee & Cake

- 2) 16.15 – 17.15 Uhr

**Martin Burger** (WWU Münster)



“Propagation of gradient flow structures  
from microscopic to macroscopic models”

*Abstract: In this talk we will discuss the propagation of gradient flow structures from microscopic models in statistical mechanics such as overdamped particle dynamics or interacting particle systems on lattices to macroscopic partial differential equations. The key insight is that microscopic models can be formulated as linear Markov chains in high-dimensional spaces, e.g. via Liouville equations, for which recent work by Maas, Mielke and others has provided a rather complete picture. The propagation to macroscopic models is then carried out - at least formally - by constructing a metric structure on an associated infinite hierarchy of equations, resembling the BBGKY hierarchy in kinetic theory, and studying mean-field or other limits in this setup.*

**Radu Bot**  
(Vice-Dean of research, Fak. Math)

**Norbert J Mauser**  
(director WPI)

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**Martin Burger (WWU Münster)**

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**Short Biography:**

**Martin Burger** is a professor for applied mathematics at the WWU Münster. He studied at the Johannes Kepler University in Linz, graduated in 2000 and passed his habilitation in 2005. Before joining the WWU Münster in 2006 he held a CAM Visiting professorship at the University of California, Los Angeles. He is going to move to a chair in Applied Mathematics at FAU Erlangen-Nürnberg in 2018. His research comprises many themes in computational and applied mathematics: inverse problems, nonlinear partial differential equations and the development of computational methods. Martin Burger has received several awards and honours for his scientific contributions, e.g. in 2009 he received the Calderon price for distinguished contributions in the field of inverse problems and in 2013 he received an ERC consolidator grant. He serves in the editorial board of several journals and is one of the editors-in-chief of the European Journal of Applied Mathematics. In addition he is well-known for interdisciplinary research initiatives between mathematics and biomedicine such as the Cluster of Excellence Cells in Motion and the Multiscale Imaging Center in Münster, for both of which he has been one of the initiators and PI.

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