

NEWSLETTER

of the Work Group Mathematical Fluid Mechanics

Newsletter no. 10 (2022)

Our visit to the “Shark” workshop in Portugal

May 23 - 29, 2022 Claudius Birke and myself attended the workshop: [Sharing Higher-order Advanced Research Know-how on Finite Volume \(SHARK-FV\)](#) in Portugal, organized by Raphael Loubère.

The emphasis of this workshop was on gathering in small working groups in order to make progress on individual projects. Claudius and myself had a project with [Walter Boscheri](#) on an IMEX scheme for MHD with gravity that is both well-balanced and low Mach.



our working-group at the Shark workshop: myself, Claudius Birke and Walter Boscheri

NumKin 2022

The workshop "Numerical Methods for the Kinetic Equations of Plasma Physics" (NumKin 2022), organized by Eric Sonnendrücker, will take place from November 7 - 10 in Garching this year.

The purpose of this workshop is to bring together specialists in the modelling and development of numerical methods for kinetic equations in plasma physics, and discuss the current evolutions in the field.

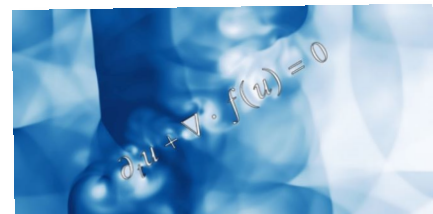
DFG Deutsche
Forschungsgemeinschaft

New DFG priority program for hyperbolic equations

The German Science foundation (DFG) has so called priority programs, where they ask researchers to submit research proposal (typically to fund a PhD student) in a particular subject considered of high priority.

They decided to fund a priority program called "Hyperbolic conservation laws in fluid mechanics: complexity, scales, noise (CoScaRa)". Calls for projects will open later this summer.

You can find an announcement [here](#).



Gerhard Dill begins his Master thesis with us

Gerhard Dill will work on his Master thesis with us. In collaboration with the [SKZ](#) he wants to use a machine learning approach for the quality control of manufactured plastic parts.



I am in the scientific committee of NEGF23

I was asked to be on the scientific committee of the [4th European conference on Non-equilibrium gas flows](#) to be held in Eindhoven, Netherlands March 29 - 31, 2023.

Seminar lectures by students

The seminar lectures by Bachelor and Master students on my seminars can be found [here](#).

Vanessa Halat's new job

Vanessa Halat completed her Master thesis with us two months ago. She now works at [Koenig & Bauer Coding](#) in Veitshöchheim near Würzburg.

Upcoming scientific conferences

Go ahead and click the links to check where you might want to participate.

- Jan. 10 - June 24, 2022: [Frontiers in kinetic theory: connecting microscopic to macroscopic scales - KineCon 2022](#), a one semester program organized at the Newton Institute at Cambridge University with 5 one week workshops in this time
- June 12 - 18, 2022: [Summer School on "Methods and models of kinetic theory"](#) organized by Marzia Bisi (Parma) among others
- June 19 - 24, 2022 ["Numerical methods for kinetic equations"](#) a *summer school* by Eric Sonnendrücker and Lukas Einkemmer in the alps in Italy
- June 20 - 25: HYP2022: [18th International Conference on Hyperbolic Problems, Theory, Numerics, Applications](#) - Part 2 (formerly HYP 2020), in Malaga, Spain, organized by Carlos Pares
- June 27 - July 1, 2022: [Hyperbolic balance laws & beyond](#), in Magdeburg, organized by Helzel and Lukacova
- July 18 - 22, 2022: [When Kinetic Theory meets Fluid Mechanics](#), in Zürich, organized among others by Alexis Vasseur
- July 25 - 29, 2022: [2nd IST Austrian Summer School in Analysis and PDEs](#), with Felix Otto and László Székelyhidi as lecturers
- Aug. 22 - 26, 2022: [10th International Conference on Numerical Methods for Multi-Material Fluid Flow \(MULTIMAT 2021\)](#) in Zürich, organized by Remi Abgrall and others
- Sept. 12 - 14, 2022: [Nils Henrik Risebro birthday conference](#) in Oslo, organized among others by Fjordholm, Holden, Mishra
- Sept. 26 - 30, 2022: [Horizons in non-linear PDEs](#), a *summer school* in Ulm, organized by Emil Wiedemann and others
- Oct. 9 - 14, 2022: [Computation of hyperbolic and related PDEs: A conference in honor of Remi Abgrall](#), organized by Sid Mishra at ETH Zurich on Monte Verità (Ascona, Switzerland)
- Sept. 19 - 23, 2022: [12th European Conference on Mathematical and Theoretical Biology](#) in Heidelberg, organized by Anna Marciniak (Heidelberg) and others
- Nov. 7 - 10, 2022: "Numerical Methods for the Kinetic Equations of Plasma Physics" (NumKin 2022) in Garching (near Munich), organized by Eric Sonnendrücker
- Nov. 14 - 18, 2022: [Research School on Kinetic Theory](#), in Luminy (near Marseille, France), organized by José Carillo, Markus Schmittchen and others
- March 29 - 31, 2023: [4th European conference on Non-equilibrium gas flows](#) to be held in Eindhoven, Netherlands

Research School on Kinetic Theory
CRM, Marseille - November 14th - 18th, 2022

Lecturers: Jacki Bedrossian, Marianne Bessemoulin-Chatard, Pierre Colinet, Mikaela Jacobelli, Stéphane Michelin

Speakers: Rafael Bak-Schwalbe, Frédéric Chapout, Antonio Esposto, Josephine Evans, Marina Ferraro, Margas Gerfis-Pickering, Richard Isler, Heliava Hout, Sinaia Iorio, Angeliki Maniaki, Sergio Simonella, Arianna Treccani, Nicolas Tones, Raphael Witter, Jeremy Wu, Claudia Wyzanski

Abstract:
One of the great mathematical achievements of the late 19th century is the description of the evolution of thermodynamical systems such as gases or fluids by L. Boltzmann. Since then, kinetic theory has become a branch of applied and pure mathematics in its own right. While all kinetic equations have in common that they describe the evolution of a physical-space density, nowadays their applications range from fluid dynamics, plasma physics, Superfluidity, even economic modelling. Many fruitful interactions between these different fields have taken place as well as mathematical advances not only led to a better understanding of the known models but also gave rise to new questions and challenges. We want to provide participants, in particular the early career researchers, with the chance to learn how the field of kinetic theory has emerged and how it has evolved over time. In addition we envisage that all participants get up to speed with the current theory and are presented with cutting edge techniques and the current challenges in the field.

Organizing Committee: José A. Carrillo (University of Oxford), Branka Gruber (MPF Leipzig), Markus Schmittchen (TU Dresden), Heva Yoidy (University of Vienna)

Scientific Committee: Vincent Calvez (CNRS, Université Lyon 1), José A. Carrillo (University of Oxford), Sara Minicchi (Università di Venezia), Bernd Perthaler (Sorbonne University), Marco Thiene (University of Bonn)

Partners: UNIVERSITÄT WÜRZBURG, UNIVERSITÄT DUISBURG ESSEN, UNIVERSITÄT OXFORD, UNIVERSITÄT LEIPZIG, UNIVERSITÄT WÜRZBURG, UNIVERSITÄT BONNEN, UNIVERSITÄT WÜRZBURG, UNIVERSITÄT WÜRZBURG, UNIVERSITÄT WÜRZBURG