

# NEWSLETTER

## of the Work Group Mathematical Fluid Mechanics

*Newsletter no. 23 (2021)*

### Online Fall school with Qin Li

KINETIC & MEAN FIELD PROBLEMS: THEORY, NUMERICS AND APPLICATIONS

Virtual PhD School, October 25 – 28 2021 – University of Ferrara

Later this month, Oct. 25 - 28, there will be an online fall school, organized by Lorenzo Pareschi (and others). It is called [\*Kinetic and mean-field problems\*](#).

I'd like to point you to Qin Li's three lectures, titled "[\*Computational kinetic theory, and its applications in inverse problems and machine learning\*](#)".

Make sure to register in advance, it is free.

### Eva's birthday

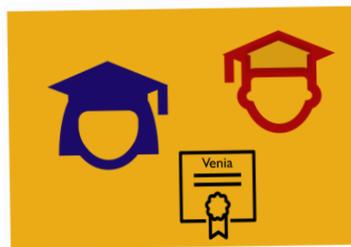
Eva Horlebein celebrated her birthday a week ago. Congratulations!

### I am a *senior professor* now

In Germany civil servants (which is what professors are) retire at a fixed age. The work-around for those professors, that are able to continue, is to make them so-called *senior professors*. This month I became a senior professor. In the last 10 years our mathematics department awarded this status to Stephan Ruscheweyh and to Hans-Georg Weigand.

For me it is nice that I am able to continue my research and my interaction with the work-group without impediment.

### Marlies Pirner initiated her Habilitation



One of the steps towards a permanent academic position at the university is an academic degree above the PhD. This degree is the [\*Habilitation\*](#). One typically obtains this around 6 years after the PhD. It certifies that one is capable of doing independent research in a particular area of research. This is a prerequisite for becoming a professor. At Würzburg University this procedure takes 3 years. Marlies Pirner has now initiated her habilitation procedure. Good luck, Marlies!



## We submitted an article with Eduard Feireisl and Simon Markfelder

We submitted the article [Eduard Feireisl, Christian Klingenberg, Simon Markfelder: "Euler system with a polytropic equation of state as a vanishing viscosity limit", submitted \(2021\).](#)

It has always been a dream to prove that the Euler equations with viscosity, in the limit as viscosity goes to zero, reach the inviscid Euler equations. In this paper we show that if we add heat conductivity to viscosity, this limit is possible under certain circumstances.

## Mattis Vogelsang submitted his Master thesis

Mattis Vogelsang has submitted his Master thesis. Using finite-volume methods he implemented Marlies Pirner's model for multi-species kinetic equations including a force field coming from a magnetic field.

Time explicit and implicit finite volume schemes for the multi-species BGK and Poisson-Vlasov-BGK equations

Master-Thesis



Julius-Maximilians-Universität Würzburg  
Lehrstuhl für Mathematik in den Naturwissenschaften

vorgelegt von

Mattis Vogelsang

Matrikelnummer: 2053142

Studienfach: Mathematische Physik

Betreuer: Prof. Dr. Christian Klingenberg

Würzburg, den 30.09.2021

## Upcoming scientific conferences

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

### 2021:

- Oct. 25 - 28, 2021: [Kinetic & Mean Field Problems: Theory, Numerics and Applications](#), online Fall School, co-organized by Lorenzo Pareschi
- Nov. 8 - 12, 2021: [Convex Integration and Nonlinear Partial Differential Equations](#), a hybrid workshop organized among others by Gui-Qiang Chen and László Székelyhidi

### 2022:

- Jan. 10 - 14, 2022: [Workshop on tissue growth and movement](#), at the Poincaré Institute in Paris, co-organized by Perthame
- 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
- Feb. 14 - 18: [Rigorous analysis of incompressible fluid models and turbulence](#) organized among others by Anna Mazzukato and Edriss Titi
- March 7 - 11, 2022: [Perspectives on Multiphase Fluid Dynamics, Continuum Mechanics and Hyperbolic Balance Laws](#) in Luminy near Marseille, France, organized among others by Dumbser and Warnecke
- March 14 - 18, 2022: [SIAM Conference on Analysis of Partial Differential Equations online](#), organized by Sid Mishra and Emil Wiedemann
- May 16 - 20, 2022: [The Boltzmann Equations: in the trail of Torsten Carlemann](#), near Stockholm, Sweden
- April 4 - 8, 2022: [HIGH ORDER NONLINEAR NUMERICAL METHODS FOR EVOLUTIONARY PDES: THEORY AND APPLICATIONS \(HONOM\)](#) in Braga, Portugal, organized by Raphael Loubère und Stephane Clain
- April 10 - 15, 2022: [Structure preserving discretizations](#), in Oberwolfach, organized by Bruno Despres, Michael Dumbser, myself
- May 25 - 29, 2022: [Sharing Higher-order Advanced Research Knowledge on Finite Volume \(SHARK-FV\)](#) in Portugal, organized by Raphael Loubère und Stephane Clain (still in its planning stage)
- June 5 - 9, 2022: [ECCOMAS congress](#) (ECCOMAS = European Community on Computational Methods in Applied Sciences), in Oslo
- 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
- July 18 - 22, 2022: [When Kinetic Theory meets Fluid Mechanics](#), in Zürich, organized among others by Alexis Vasseur
- Sept. 5 - 9, 2022: [10th International Conference on Numerical Methods for Multi-Material Fluid Flow \(MULTIMAT 2021\)](#) in Zürich, organized by Remi Abgrall