

NEWSLETTER

of the Work Group Mathematical Fluid Mechanics

Newsletter no. 1 (2023)

Kaja submitted her Master thesis

Kaja Jurak submitted her Master thesis [Multiscale Analysis and ill Conditioning in the Diffusive Limit of the Inverse Problem for Chemotaxis in the Bayesian Setting](#). She extended results of a paper by Kathrin Hellmuth et. al. ([see here](#)), where the PDE inverse problem for chemotaxis is considered both at the kinetic and the fluid scale. Then the convergence of one problem to the other is shown in the Bayesian setting.

Kathrin submitted a paper

Kathrin Hellmuth submitted the article [Kathrin Hellmuth, Christian Klingenberg: "On the verge of a big step forward in modeling biological phenomena"](#) to the journal [Natural Sciences](#) by Wiley.

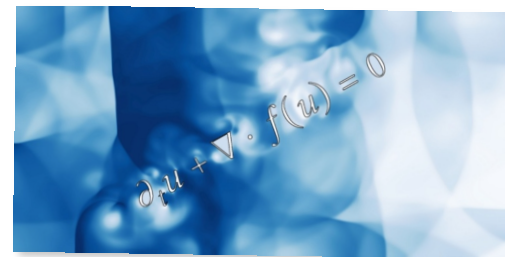
This is an article that explains a viewpoint on a certain scientific development. Have look, it makes for easy reading.

Marlies will visit us for a week

[Marlies Pirner](#) will visit us Feb. 10 - 16. She will give a lecture on Feb. 14, [see here](#).

Priority Program of the German Science Foundation on Hyperbolic Problems

The DFG (German Science Foundation) has approved a priority program for hyperbolic equations, [see here](#). One can submit scientific proposals for topics in that field and ask for a PhD position or a post-doc. The group of successful applicants will meet regularly in workshops of this priority program.



The deadline for submitting proposals was last month. From our extended work group three proposals were submitted:

- [Marlies Pirner](#): "Kinetic modeling and quantifying of uncertainties in modeling errors of the Bhatnagar-Gross-Krook equation for gas mixtures"
- [Simon Markfelder](#): "Convex Integration: Towards a Mathematical Understanding of Turbulence, Onsager Conjectures and Admissibility Criteria"
- [Wasilij Barsukow](#) and myself: "A structure-preserving compact high-order method for multi-dimensional hyperbolic conservation laws".

If successful, Marlies will get money for a PhD student, Simon for his own position (with us in Würzburg) and Wasilij and myself for a PhD student in Würzburg. At the end of April all applicants will travel to a place near Bonn, where the applicants will be reviewed by the referees, who are there in person. The outcome will be known in the summer.



SIAM CSE coming up in Amsterdam

The SIAM Conference on Computational Science and Engineering ([SIAM CSE 23](#)) will take place Feb. 26 - March 3 in Amsterdam. Lena Baumann, Kathrin Hellmuth and myself will take part and will lecture in the mini-symposium "Numerics of inverse problems for kinetic models and their corresponding macroscopic PDEs", see [here](#) and [here](#).

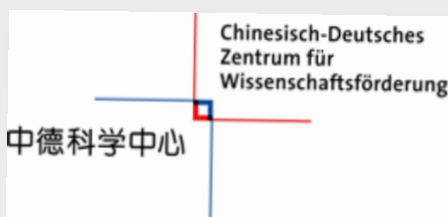
This is a huge conference (at least 1500 participants). This way we will be sure to meet many familiar faces there.

Visitors after Amsterdam

After the SIAM CSE conference two speakers from there will visit us in Würzburg: [Li Wang](#) (Minneapolis) and [Kui Ren](#) (New York). They will lecture in our Oberseminar on Monday, March 6, [see here](#).

Sino-German Center

A group of 5 German and 5 Chinese professors in the field of hyperbolic conservation laws have a [Sino-German grant](#) for scientific exchange. This will run until the end of 2024. I am in this group, and with me my PhD students are also included. This way we can plan for scientific trips to China. A workshop of the members of this group is planned for late Sept. 2023 in Beijing.



Upcoming scientific conferences

Click the links to check where you might want to participate.

- Feb. 26 - March 3, 2023: [SIAM Conference on Computational Sciences and Engineering or SIAM CSE23](#), held in Amsterdam, organized among others by Hans deSterck
- March 29 - 31, 2023: [4th European conference on Non-equilibrium gas flows](#), in Eindhoven, Netherlands
- May 22 - 26, 2023: [Sharing Higher-order Advanced Research Know-how on Finite Volume \(SHARK-FV\)](#) in Portugal, organized by Raphael Loubère and others
- May 30 - June 3, 2023: [Annual meeting of the Gesellschaft für angewandte Mathematik und Mechanik \(GAMM\)](#) in Dresden
- June 5 - 9, 2023: [Emerging topics in applications of optimal transport](#) at ETH Zürich, organized by [Alessio Figalli](#) and [Yunan Yang](#)
- June 26 - 30, 2023: [NumHyp 2023 \(Numerical methods for hyperbolic problems\)](#) in Bordeaux, France, organized by Raphael Loubère and others
- Sept. 4 - 8, 2023: [European Conference on Numerical Mathematics and Advanced Applications \(ENUMATH\)](#), in Lisbon, Portugal
- Oct. 30 - Nov. 3, 2023: [Finite Volumes for Complex Applications in Strasbourg](#) in Strasbourg, France, organized by Philippe Helluy and others
- May or June of 2024: [International Conference on Hyperbolic Problems: Theory, Numerics and Applications \(HYP 2024\)](#) in Shanghai, China, organized by Shi Jin

Humboldt application

Yunguang Lu, author of the a [book on compensated compactness](#), has applied for a grant from the Humboldt Foundation to visit us in this summer semester.

Simon applied for a post-doc fellowship with us

[Simon Markfelder](#) applied for a post-doc fellowship from the Humboldt Foundation to be a post-doc with us from April on. Hopefully afterwards he can continue with his DFG grant (see the first page).

Conference at ETH-Zürich

At the ETH in Zürich, there will be a [workshop on optimal transport](#), June 5 - 9, organized by [Alessio Figalli](#) and [Yunan Yang](#). I am invited to attend.

