

NEWSLETTER

of the Work Group Mathematical Fluid Mechanics

Newsletter no. 13 (2022)

Paper submitted on my project with Fritz Röpke

The paper [G. Leidi, C. Birke, R. Andrassy, J. Higl, P. V. F. Edelmann, G. Wiest, C. Klingenberg, F. K. Röpke, "A finite-volume scheme for modelling compressible MHD flows at low Mach numbers in stellar interiors"](#) was submitted to the journal *Astronomy & Astrophysics*. It presents progress made on a DFG-funded project of Fritz and myself. In Würzburg [Claudius Birke](#) works on this project.

DFG priority program on hyperbolic problems

In Germany we will have a [DFG](#) funded emphasis program on hyperbolic equations, [see here](#). This allows scientists working at a German university to apply for scientific projects. If funded, this would typically pay for a PhD student to work on this project. In addition all groups that are funded will meet regularly. The proposals are due in January 2023. If funded, the project will begin in the fall of 2023.



logo of the priority program

Sandra Warnecke defended her PhD

On July 25 the PhD defense of Sandra Warnecke took place. She presented her [PhD thesis](#) with about 45 minutes of questions afterwards. Her main opponents were Cory Hauck and myself. It all went quite well, leading to cheerful celebrations afterwards.

Sandra puts on her doctoral graduation hat



Sandra's PhD hat was skillfully made by the work group in Würzburg. It contains many aspects of her past PhD life. The donut-shaped object represents the [Tokamak](#), referencing to her work on plasma. Some other things you see are: her coffee cup with her name on it, a book with Boltzmann's work, a photo with Cory Hauck, Jeff Haack and myself.



Remi Abgrall's birthday conference in Oct.

During the week Oct. 9 - 14, 2022 will be a Remi's 60th birthday conference (delayed by a year) in Switzerland, [see here](#), where among others I will give a presentation.

Marius Volpert begins his Master thesis with us

Marius Volpert will work on a numerical implementation of Guermond's invariant domain preserving algorithm.

Sebastian Schmidt begins his Master thesis with us

Sebastian Schmidt plans to implement a well-balancing algorithm for Euler with gravity into the [Clawpack](#) software package.

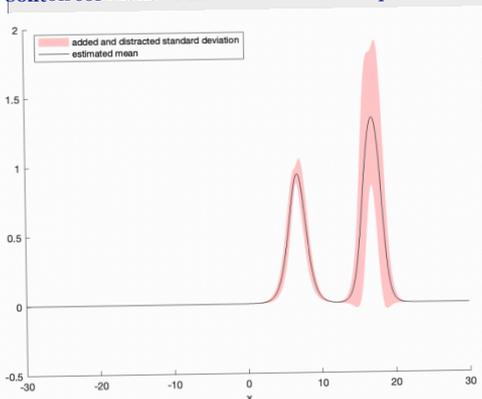
Luis Kaiser begins his Master thesis with us

Luis Kaiser will be co-supervised by [Richard Tsai](#) from the Univ. of Texas in Austin, USA. He will work on numerical wave propagation aided by deep learning.

Jonas Jackwirth has submitted his Master thesis

His master thesis is titled "Uncertainty Quantification for the Korteweg-de Vries equation". He used stochastic spectral methods and generalized polynomial chaos methods to study the Korteweg-de Vries (KdV) equation with uncertainty.

Soliton solutions of KdV with stochastic perturbations



Upcoming scientific conferences

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

- 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 Mario Ricchiuto and Sid Mishra 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 ([webpage](#) of the last NumKin in 2020)
- Nov. 14 - 18, 2022: [Research School on Kinetic Theory](#), in Luminy (near Marseille, France), organized by José Carillo, Markus Schmittchen and others
- 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
- spring of 2023: NumHyp 2023 in Bordeaux, France ([link of NumHyp2021](#))
- May, 2023 (either 8-12 or 22-26): [Sharing Higher-order Advanced Research Know-how on Finite Volume \(SHARK-FV\)](#) in Portugal, organized by Raphael Loubère and others
- Sept. 4 - 8, 2023: [European Conference on Numerical Mathematics and Advanced Applications \(ENUMATH\)](#), in Lisbon, Portugal
- summer of 2024: *International Conference on Hyperbolic Problems: Theory, Numerics and Applications (HYP 2024)* in Shanghai, China, organized by Shi Jin

Rumor on NumHyp

NumHyp is a European centered bi-yearly conference last held in 2021 in Trento, Italy. Rumor has it, that NumHyp 2023 will be held in spring of 2023 in Bordeaux, France.