

NEWSLETTER

of the Work Group Mathematical Fluid Mechanics

Newsletter no. 5 (2022)

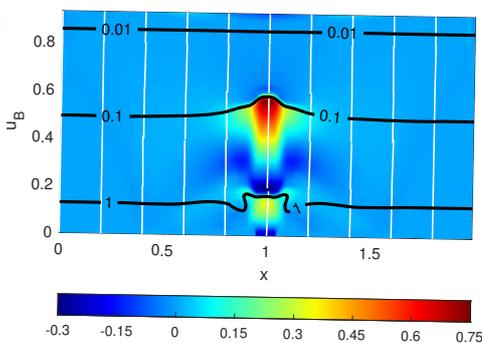
Semester end party

On **Sunday, March 20** we will have our delayed end-of-semester party. I'll send around a more detailed invitation.

Farah submitted paper

Farah Kanbar submitted the paper [Farah Kanbar, Christian Klingenberg, Rony Touma: "Well-balanced central scheme for the system of MHD equations with a gravitational source term" \(2022\)](#).

In this paper the equations of ideal magnetohydrodynamics with a gravitational source term are solved numerically using a central scheme. For an a-priori given stationary solution the scheme will maintain the discretized stationary solution exactly. In addition a discretized version of the constraint $\nabla \cdot B = 0$ is maintained exactly, making use of a staggered grid that come naturally in a central scheme.



This is a coronal mass ejection, where the x -axis is the surface of the sun. Plasma is ejected from the sun. Here $u_B = \frac{\langle u, B \rangle}{|B|}$ is plotted. This is a tough problem to simulate.

Marlies Pirner is offered a Junior-Professorship in Münster



The typical academic career in Germany begins with a PhD. Then follows a longer postdoc period after which one is hopefully appointed to a permanent professorship. The postdoc period ideally has two parts. During the first part (~ 3 years) one is still guided by a professor. The second more independent part ideally is a longer temporary position called *junior professor*. If during this period one continues to evolve academically, this is the stepping stone for a permanent professor position.

Marlies will now move on to her second post-doc period. She has just received an offer to be a *junior professor* at Münster University - which is great!

Congratulations, Marlies!



the old city center of Münster

Workshop on kinetic theory in Luminy

In Luminy (near Marseille, France) at [CIRN](#) (a conference site), Nov. 14 - 18, 2022 José Carillo, Markus Schmittchen and others will organize a workshop called [Kinetic Theory](#).



the CIRN conference site

Sonja Leicht submitted her Master thesis

Sonja Leicht submitted her Master thesis "Numerical solutions of elastic bodies".

She solves the 2-d linearized elasticity equations using [Clawpack](#), a numerical package by Randy LeVeque. She then uses this to model the movement of a thorax. This is then used by a computer program of Bernadette Hahn, which solves a dynamic inverse problem.

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
- March 14 - 18, 2022: [SIAM Conference on Analysis of Partial Differential Equations online](#), organized by Sid Mishra and Emil Wiedemann
- 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 Després, Michael Dumbser, myself
- May 11 - 13, 2022: [High-order Time Discretization Methods for PDEs](#), on the island of Capri, Italy, organized by Lorenzo Pareschi, Giovanni Russo and others
- May 16 - 20, 2022: [The Boltzmann Equations: in the trail of Torsten Carlemann](#), near Stockholm, Sweden
- May 23 - 29, 2022: [Sharing Higher-order Advanced Research Know-how on Finite Volume \(SHARK-FV\)](#) in Portugal, organized by Raphael Loubère und Stephane Clain
- June 12 - 18, 2022: [Summer School on "Methods and models of kinetic theory"](#) organized by Marzia Bisi (Parma) among others
- 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 19 - 24, 2022 ["Numerical methods for kinetic equations"](#) a *summer school* by Eric Sonnendrücker and Lukas Einkemmer in the alps in Italy
- 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
- 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, 2002: [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)
- Nov. 14 - 18, 2022: [Kinetic Theory](#), in Luminy (near Marseille, France), organized by José Carillo, Markus Schmittchen and others

 this week Kathrin Hellmuth and myself will run a mini-symposium here