

# NEWSLETTER

## of the Work Group Mathematical Fluid Mechanics

### Newsletter no. 4 (2024)

#### Claudius Birke submitted PhD thesis

Claudius Birke has submitted his PhD thesis [Low Mach and well-balanced numerical methods for compressible Euler and ideal MHD equations with gravity.](#)

Claudius has used relaxation approximate Riemann solvers and other methods to achieve both well-balancing and the low Mach property for Euler und MHD with gravity. This work came out of a collaboration with Fritz Röpke (astrophysics, Heidelberg) funded by the German Science foundation (DFG).

#### Yu-Chen Cheng begins her PhD with us

After finishing her Master thesis, Yu-Chen Cheng has begun as a PhD student with us. Her topic will be numerics of conservation laws, starting off with central schemes.

#### Amelie Gehring submitted her Master thesis

Amelie Gehring has submitted her Master thesis ["Linear Landau Damping Coupled with Relaxation for the Two-Species Vlasov-Poisson-BGK System"](#). In this thesis she proves Landau damping for the two species Vlasov-Poisson-BGK equations.

#### James Glimm's 90th birthday today

Jim Glimm made most significant scientific contributions to the field of hyperbolic conservation laws. He has tremendous vision and scientifically sees way ahead compared to others. For example it was him who suggested for the first time that for 2-d and 3-d Euler we might have to go beyond weak solutions and look at measure valued solutions. At first his suggestion was met with great incredulity, but it was picked up eventually. This happened to him several times. Glimm's fate was to withstand this, having to withstand the slow way the rest of the scientific community caught up (and are still catching up) with his theorems and his visions.



James Glimm, at age 88

I took courses from Jim as a graduate student and later he was my post-doc advisor. Even though it was quite challenging to follow him, it was among my greatest scientific experiences, one that inspires me until today.

Jim, many happy returns!



## Praveen will visit us



We are lucky that [Praveen Chandrashekar](#) will visit us for more than two weeks, May 15 - June 1.

We have had a number of successful (and well-cited) collaborations. Besides he explains mathematics in an excellent way.

## Maria Han-Veiga will visit



[Maria Han-Veiga](#) plans to visit us for one week, probably June 16 - 22. Since her visit last year she has now become a tenure track professor at Ohio State University, in Columbus, Ohio, USA.

## Upcoming scientific conferences

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

- April 22 - 26, 2024: ProHyp2024, [Workshop on Multiphase Fluid Dynamics, Continuum Mechanics and Hyperbolic Balance Laws](#), in Trento, Italy, organized by Michael Dumber
- June 5 - 7, 2024: [Analysis of dissipation in compressible and inviscid fluids](#), in Konstanz, Germany, organized among others by Emil Wiedemann
- July 1 - 5, 2024: [XIX International Conference on Hyperbolic Problems: Theory, Numerics and Applications \(HYP 2024\)](#) in Shanghai, China, at Shanghai Jiao Tong University, organized by Yachun Li & Ya-Guang Wang
- July 8 - 11, 2024: [Modern Perspectives in Applied Mathematics: Theory and Numerics of PDEs](#) in Zürich, organized by Sid Mishra
- Aug. 26 - 30, 2024: [11th International Conference on Multi-Material Fluid Flow \(MultiMat 2024\)](#) in Colorado, USA, organized by the Lawrence Livermore National Laboratory, USA
- Sept. 9 - 13, 2024: [Conference on high-order nonlinear numerical methods for evolutionary PDEs](#) (HONOM2024) on the Crete Island, Greece, organized by Elena Gaburro
- March 2 - 7, **2025**: SIAM Conference on Computational Science and Engineering (CSE25), in Fort Worth, Texas, USA
- June 9 - 13, 2025: NumHyp 2025, in Darmstadt
- Sept. 14 - 20, 2025: Hirschegg Workshop, in the Kleinwalsertal, Austria, organized by Gerald Warnecke and others
- sometime in **2026**: Finite Volume and Complex Applications 11, in Münster, Germany

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## New conference on my list

Find the conferences mentioned here in the above list

**ProHyp2024:** Michael Dumber is running a workshop in Trento, Italy, April 22 - 26 on Continuum Mechanics in the spirit of Godunov's original suggestion.

**Konstanz workshop:** Emil Wiedemann and Heinrich Freistühler have the website up on their workshop June 5 -7. Simon Markfelder will give an invited lecture there.

**MultiMat:** This conference Aug. 26 - 30, 2024 in Colorado, USA, called Multi-Materials deals with the numerics of conservation laws not only in the context of different materials.

**SIAM CSE:** Lena, Kathrin and myself attended the last SIAM Conference on Computational Science and Engineering 2023 in Amsterdam. The next one will take place March 2-7, 2025 in Fort Worth, Texas, USA.