

# NEWSLETTER

## of the Work Group Mathematical Fluid Mechanics

*Newsletter no. 17 (2025)*

### **Junming received a Chinese research award**

Junming Duan was awarded a grant from the *Young Scientists Fund Program (Overseas)*. This award, which comes with funding for research, holds high prestige in China. In that sense it is a bit like a *European Research Council (ERC) starting grant* in Europe.

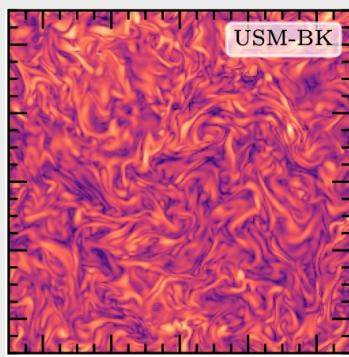
This award was given to him in the context that he is now moving to the Chinese University of Hong Kong in Shenzhen.

Congratulations, Junming!

### **Paper jointly with numerical astrophysicists has been accepted**

The paper James Watt, Christoph Federrat, Claudio Birke, Christian Klingenberg: "Mitigating numerical dissipation in simulations of subsonic turbulent flows" has been accepted by the journal Monthly Notices of the Royal Astronomical Society.

This paper numerically solves the equations of ideal MHD for subsonic turbulent flow using a Riemann solver from Claudio Birke's PhD thesis.



Here one sees a turbulent dynamo at Mach 0.01. The scheme uses an approximate Riemann solver that captures more small-scale structure than other Riemann solver based schemes.

### **Lena Baumann's PhD defense scheduled for Nov. 26**

Lena Baumann had submitted her PhD thesis in late September, see this newsletter. The referee reports for her thesis are in and the faculty of mathematics and computer science are now given the opportunity to look it over.

Lena's defense has been scheduled for Wednesday Nov. 26. Her opponents will be: Lukas Einkemmer, Komla Domelevo and myself. Nikhil Manoj will write the minutes.

Good luck, Lena!



### **Our trip to Bordeaux**

Funded by a Bavarian grant for scientific exchange obtained from BayFrance, the week Nov. 2 - 8 Junming Duan, Simon Krotsch and myself traveled to Bordeaux to work with Wasilij Barsukow on the Active Flux finite volume method. As usual when working with Wasilij, it was lively and we got a lot done.



myself Junming Duan Wasilij Barsukow Simon Krotsch

## News about conferences:

### The next HONOM conference

Every two years, the *International Conference on High-Order Nonlinear Numerical Methods for Evolutionary Partial Differential Equations* (HONOM) is held. It presents mathematical models and numerical algorithms for evolutionary PDEs describing a wide range of applications. The next one will take place March 30 - April 4, 2026 in Trento, Italy, organized by Michael Dumbser and others.

Here is a list of some invited speakers:

- Rémi Abgrall
- Walter Boscheri
- Angelo Iollo
- Christian Klingenberg
- Pep Mulet Mestre
- Lorenzo Pareschi
- Mario Ricchiuto
- Vladimir Titarev
- Tito Toro
- Elena Vazquez

### Shenzhen workshop on Active Flux

December 6 - 8, 2025 the workshop *Active Flux Methods: Developments and Applications*, will take place in Shenzhen, China, organized by Rémi Abgrall and Alexander Kurganov.

This is a partial list of the speakers there: Remi Abgrall, Wasilij Barsukow, Alina Chertock, Junming Duan, Michael Dumbser, Alexander Kurganov, Yongle Liu, Maria Lukacova, Lorenzo Micalizzi, Huazhong Tang, Tito Toro, Jianxian Qiu, Feng Xiao and Tao Xiong.

### Summer School “Methods & Models of Kinetic Theory”

Every two years a summer school *“Methods and models of kinetic theory”* takes place in beautiful Pesaro. The next will be June 7 - 13, 2026.

Among others Qin Li will be presenting a course called *Inverse Kinetic Theory and interacting particles in Machine Learning*, which is related to Kathrin Hellmuth's work.

## Upcoming scientific conferences

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

- November 17 - 20, 2025: [SIAM Conference on Analysis of Partial Differential Equations](#) (PD25), Pittsburgh, Pennsylvania, USA
- December 6 - 8, 2025: [Active Flux Methods: Developments and Applications](#), in Shenzhen, China, organized by Rémi Abgrall and Alexander Kurganov and others
- Dec 15 - 17, 2025: [XIX Winter Workshop on Stellar Astrophysics 2025](#), organized by Fritz Röpke in Heidelberg
- March 23 - 27, 2026: [Hyperbolic problems - a comprehensive approach](#), in Würzburg, Germany, organized by Wasilij Barsukow, Simon Markfelder, Marlies Pirner, Fritz Röpke, Emil Wiedemann
- March 25 - 27, 2026: [5th European Conference on Non-Equilibrium Gas Flows](#) (NEGF26), in Toulouse, France, organized by Stéphane Colin among others
- March 30 - April 4, 2026: International Conference on high-order nonlinear numerical methods for evolutionary PDE (HONOM) in Trento, Italy, organized among others by Michael Dumbser
- May 4 - 8, 2026: [Sharing Higher order Advanced Research Known-how on Finite Volume](#) (SHARK-FV 2026) in Minho, Portugal, organized by Raphael Loubère and others
- May 25 - 29, 2026: [20th International Conference on Hyperbolic Problems \(HYP2026\)](#): Theory, Numerics and Applications, in Stuttgart, Germany organized by Maja Lukacova und Christian Rhode
- June 7 - 13, 2026: Summer School [“Methods & Models of Kinetic Theory”](#), in Pesaro (Italy), organized by Maria Groppi and others
- Sept. 7 - 11, 2026: [12th International Conference on Numerical Methods for Multi-Material Fluid Flow](#) (MultiMat 2026) at Biarritz, France, organized by Raphael Loubère and others
- mid June 2027: Numerical Methods for Hyperbolic Problems (NumHyp 2027), in Verona 2027 organized by Elena Gaburro
- late June/early July 2027: International Conference on Spectral and High-Order Methods (ICOSAHOM 2027), in Milan organized Marco Verani among others.

