NEWSLETTER

of the Work Group Mathematical Fluid Mechanics

Newsletter no. 9 (2026)

News about papers from our work group

Paper with Lisa Lechner and other authors has been accepted

The paper *Wasilij Barsukow, Christian Klingenberg, Lisa Lechner, Jan Nordström, Sigrun Ortleb, Hendrik Ranocha: "Stability of the Active Flux Method in the Framework of Summation-by-Parts Operators" (2026)*, has been accepted to the journal *BIT Numerical Mathematics*. It is one of the oldest and quite prestigious peer-reviewed academic journals dedicated to the field of numerical analysis.

In this paper the energy stability of the Active Flux method using the framework of degenerate summation-by-parts (SBP) operators is shown.

This is the third and last paper jointly with Lisa Lechner to be published: *tempi passati* (those times have passed).

NumKin 2026

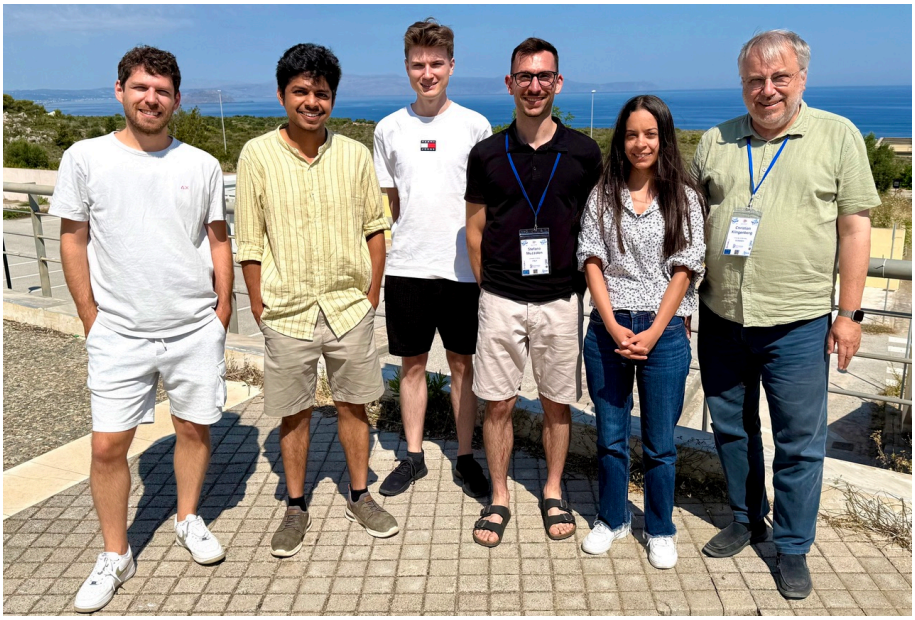
Eric Sonnendrücker organizes a yearly workshop: "Numerical Methods for the Kinetic Equations of Plasma Physics, NumKin". This year it will take place Sept. 28 - Oct. 2, 2026 in Bochum, Germany, and is co-organized by Katharina Kormann, *see here*. This year's edition will have a special focus on hybrid fluid-kinetic models.

A coding retreat in Crete last month

From June 21 to 26, 2026 Elena Gaburro had organized a coding retreat in Chania, Crete, called *Solving ultimate challenges and network building: a coding and modelling week on and beyond hyperbolic equations* (SunHyp 2026).

Six groups were led among others by Wasilij Barsukow, Giovanni Leidi (from the astrophysics group of Fritz Röpke) and Walter Boscheri. In the numerical astrophysics coding group the Active Flux method was put into an astrophysics code and various features added to the code. We plan to simulate stellar convection with this. This will be a good test to see how the Active Flux fares in an application context.

Elena arranged things such that there also was free time to enjoy Crete with its splendid weather, beaches and ancient culture.



Our group at the SunHyp coding retreat in Crete.
From left to right: Giovanni Leidi, Nikhil Manoj. Simon Krotsch, Stefano Muzzolon, Ibtissem Lannabi, myself.

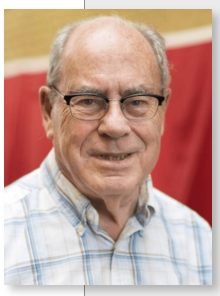
Giovanni Leidi cancelled his post-doc with us

Giovanni Leidi (now a post-doc with Fritz Röpke's group) had planned to join us in September. We wanted to apply the Active Flux numerical method to astrophysical applications. Unfortunately he has now cancelled his stay with is. Instead he will move on to a 5-year post-doc position in Graz.

We still plan to work on this intended project with someone else.

Two news items related to Phil Roe

Phil Roe Symposium

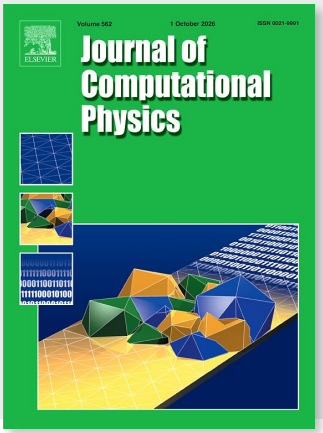


In honor of Phil Roe, who passed away in April, there will be a symposium May 17 - 19, 2027 in Ann Arbor organized Amon others by Karthik Duraisamy.

A partial list of invited speakers is Rémi Abgrall, Christiane Helzel, myself, Mario Ricchiuto , Chi Wang Shu and many others.

Special issue by JCP dedicated to Phil Roe

The *Journal of Computational Physics* (JCP) is a highly regarded journal on the computational aspects of physical problems. It plans a special issue dedicated to Phil Roe, *see here*. Contributions to this special issue will be by invitation only. We have been invited to contribute.



Upcoming scientific conferences

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

- July 19 - 24, 2026: *17th World Congress on Computational Mechanics & 10th European Congress on Computational Methods in Applied Sciences and Engineering*, in Munich, Germany
- July 23 – 30, 2026: the *International Congress of Mathematicians* (ICM) in Philadelphia, USA.
- 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
- Sept. 28 - Oct. 2, 2026: *Numerical Methods for the Kinetic Equations of Plasma Physics* (NumKin 2026) in Bochum (Germany) organized by Eric Sonnendrücker and Katharina Kormann
- Feb. 22 – 26 , **2027**: *SIAM Conference on Computational Science and Engineering (SCE27)*, in Pittsburgh, Penn., USA.
- May 17 - 19, 2027: Phil Roe Symposium, in Ann Arbor, Mich. USA, organized by Karthik Duraisamy
- June 20 - 25, 2027: *Numerical Methods for Hyperbolic Problems (NumHyp 2027)*, in Verona 2027 organized by Elena Gaburro
- July 5 - 9, 2027: *International Conference on Spectral and High-Order Methods* (ICOSAHOM 2027), in Milan organized by Marco Verani, Paola Antonietti and others
- July 12 – 16, 2027: *11th International Congress on Industrial and Applied Mathematics (ICIAM)*, in The Hague, The Netherland

Michael Dumbser has been awarded an ERC grant

The European Research Council (ERC) funds excellent research in Europe. ERC grants support outstanding researchers in carrying out ambitious and original research projects.

Michael Dumbser is a researcher at Trento University in Italy working on scientific computing for hyperbolic conservation laws. In June he has been awarded an ERC grant. This is the second time has received an ERC grant. This is considered a great achievement.

His ERC research proposal has the title '*Structure and Operator Preserving High Order Schemes for Thermodynamically Compatible Hyperbolic PDE Systems*'. It is an ambitious project including solving the Einstein equations and solving turbulent flow in light of recent advances in the theory of DMV solutions by Feireisl.