

NEWSLETTER

of the Work Group Mathematical Fluid Mechanics

Newsletter no. 10 (2026)

News about submitted theses from our work group

Julius Krotsch submitted his Bachelor thesis

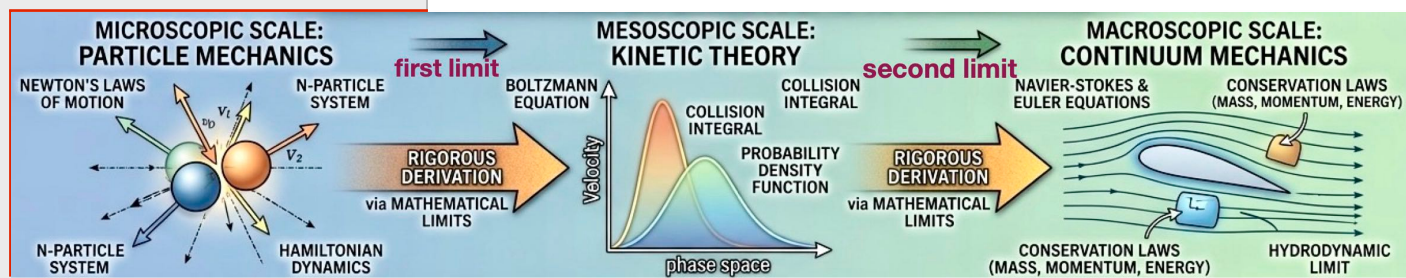
Julius Krotsch submitted his Bachelor thesis "[Compensated Compactness Applied to the Isentropic Euler Equations](#)"

In this thesis the method of compensated compactness is introduced, and then applied to the one dimensional isentropic Euler equations, thereby proving existence of weak solutions for bounded initial data. This extends Glimm's result for these equations, where small BV-data is required.

International Congress of Mathematicians: Fields medal

The International Congress of Mathematicians (ICM) takes place July 23 – 30, 2026 in Philadelphia, USA. It is mathematics most prestigious conference, taking place every 4 years, where mathematics foremost prize is awarded, the Fields medal. Allow me to single out two things:

1. One of the fields medalists is [Yu Deng](#) (37 years old) from Chicago University. One topic (of several he has contributed to) is his substantial progress on Hilbert's sixth problem, see the illustration below. For his contribution to the first limit [see here](#) and to the second limit [see here](#). In the first limit he overcame the difficulty of describing the interacting particles past a short time. The complicated interactions occurring for longer times are analyzed by a 'cutting algorithm', where it is possible to take apart these



A graphic representation of Hilbert's sixth problem

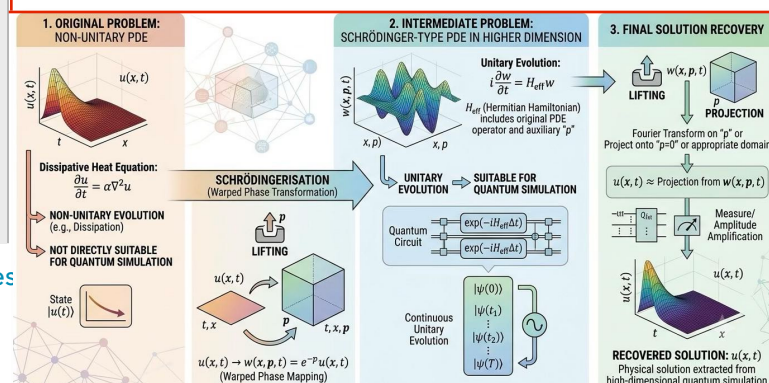
Giacomo Lorelli submitted his Master thesis

Giacomo Lorelli submitted his Master thesis "[Quantum Algorithms for PDEs: Leveraging Schrödingerization](#)".

Quantum computers are substantially different from our digital computers. Even though they exist only conceptually with a few prototypes having been built, they generate big interest. In this thesis a quantum algorithm for solving linear partial equations is presented.

interactions into a straightforward part and the complicated part called cumulants. He shows that the cumulants are small, which allows him to reach even the macroscopic limit. For a few more details, [see here](#).

2. Another honor bestowed by the ICM are the invited talks. Michael Dumbser has been invited to give a talk in the section on Numerical Analysis and Scientific Computing.

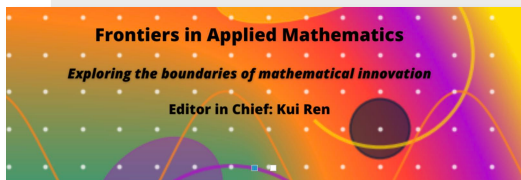


A graphic representation of 'Schrödingerization' as a tool to solve partial differential equations

News about a new PhD students**Giacomo will begin his PhD with us in September**

Giacomo Lorelli has done most of his Bachelor and Master studies in Italy at Calabria University. The last year of his Masters he spent in Würzburg, the first semester doing course work, the second his Master thesis.

In September he will begin to work on his PhD with us. We plan for him to be at the interface between the group of Fritz Röpke (numerical astrophysics) and us.

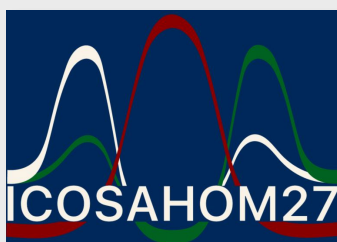
News about a new journal**Kui Ren's new journal**

Kui Ren started a new Journal called *Frontiers in Applied Mathematics*, covering applied and computational mathematics. One feature of this journal is that its articles can be freely downloaded without a publication fee. - I became an editor of this journal.

News about a conference**Mini-symposium submission to ICOSAHOM 2027**

The bi-yearly conference *ICOSAHOM* mainly consists of mini-symposia that people submit. These are a sequence of talks on a particular subject.

We have submitted a mini-symposium to ICOSAHOM 2027 on the Active Flux method.

**Upcoming scientific conferences**

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

- 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, myself and others
- 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 Netherlands

Phil Roe Symposium has a website

In May 2027 there will be an international symposium in memory of Phil Roe in Ann Arbor, Mi., USA. This now has a website, [see here](#).

15th AIMS conference

The American Institute of Mathematical Sciences (AIMS) organizes a big bi-yearly conference, [see here](#). This year it took place in Athens July 6 - 10.

Mengni Li had organized a mini-symposium called 'Inverse problems arising in partial differential equations and mathematical physics'. Kathrin Hellmuth was one of the speakers there.



Mengni Li and Kathrin Hellmuth at the 15th AIMS conference in Athens