

NEWSLETTER

of the Work Group Mathematical Fluid Mechanics

1st newsletter 2021

I wish you a healthy and successful New Year!



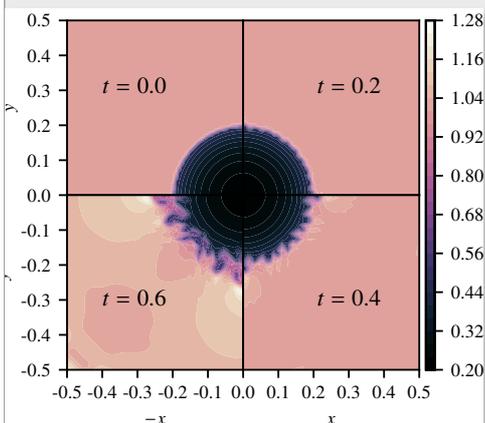
Paper accepted

A paper by Berberich, J., Käppeli, R., Chandrashekar, P. and Klingenberg, C. called "High order discretely well-balanced methods for arbitrary hydrostatic atmospheres" has been accepted for publication in Communications in Computational Physics [view PDF](#). This is our first collaboration with Roger Käppeli from ETH Zürich

Many upcoming online conferences

On the the next page you find a list of conferences.

- this week there is the *WCCM and Ecomac*. There are many online pre-recorded lectures, including a lecture by myself on multi-species kinetic equations.
- Shi Jin has organized an online winter school January 18 - 22 with mini-courses, for example:
 - François Golse (Ecole polytechnique, Paris) : Mean-field Limit of Quantum Mechanics
 - Shi Jin (Shanghai) : Asymptotic-preserving methods for multi-scale physical problems
 - Lorenzo Pareschi (University of Ferrara) : Uncertainty quantification for kinetic equations
 - Mario Pulvirenti : Mathematical Transition from Newton's Law to the Boltzmann Equation
 - E. Weinan (Princeton University) : Machine learning and PDE's
- Maria Groppi is organizing a winter school on kinetic theory Feb. 8 - 10.



A radial Rayleigh-Taylor instability, the relative density is shown. The fluid inside flows into the outside in an unstable way. The third order well-balanced numerical method is shown on a relatively coarse 64×64 grid (figure from the above paper).

I became editor for the new interdisciplinary journal *Natural Sciences*

A new open-access journal, published by Wiley, is called *Natural Sciences* and will begin later this year. It will be an interdisciplinary journal from biology, chemistry and physics and their interfaces. Physics will have five sections. I will be the editor for the *mathematical physics* section.

Natural Sciences 

Upcoming scientific conferences in 2021

I encourage you to click the links and check, where you may want to participate.

2021:

- Jan. 11 - 15: [WCCM-ECCOMAS 2020](#): World Congress on Computational Methods, online.
 - Jan. 18 - 22: [Scaling Limits from Microscopic to Macroscopic Physics](#), online, organized by Shi Jin, for the schedule [see here](#)
 - Feb. 8 - 10: [Methods and models of kinetic theory 2022](#) in Torino, Italy, organized among others by Maria Groppi
 - March 1 - 5: Oberwolfach: [Hyperbolic Balance Laws: modeling, analysis, and numerics](#), organized among others by Remi Abgrall and Maria Lukacova
 - March 1 - 5, [SIAM Conference on Computational Science and Engineering](#), online
 - March: Special program on Numerical Methods for Nonlinear Hyperbolic PDEs; at SUSTech, Shenzhen, China: organized by Alex Kurganov (still in its planning stage)
 - March 22- 26: [Kinetic Equations: From Modeling, Computation to Analysis](#), in Marseille, France, organized by Shi Jin (still in its planning stage)
 - March 22 - 26: [HIGH ORDER NONLINEAR NUMERICAL METHODS FOR EVOLUTIONARY PDES: THEORY AND APPLICATIONS \(HONOM\)](#) in Braga, Portugal, organized by Raphael Loubère und Stephane Clain
 - April: [Nils-Henrik Risebro's birthday conference](#) in Oslo, Norway (still in its planning stage)
 - May 24 - 28: [The Legacy of Carlo Cercignani: from Kinetic Theory to Turbulence Modeling](#) Milan, Italy, organized among others by Tommaso Ruggeri
 - May: [Sharing Higher-order Advanced Research Know-how on Finite Volume \(SHARK-FV\)](#) in Portugal, organized by Raphael Loubère und Stephane Clain (still in its planning stage)
 - June 21 - 24: [SIAM Conference on Mathematical & Computational Issues in the Geosciences \(GS21\)](#), in Milan, (still in its planning stage)
 - June 28 - July 2: [18th International Conference on Hyperbolic Problems, Theory, Numerics, Applications](#) (HYP 2020), (still in its planning stage)
 - July 5 - 9: [THE BOLTZMANN EQUATION: IN THE TRAIL OF TORSTEN CARLEMAN](#), near Stockholm, Sweden
 - July 12 - 16: [International Conference on Spectral and Higher Order Methods](#) ICOSAHOM 2020, Vienna (online only), Wasilij and myself plan to run a minisymposium there
 - Sept. 6 - 10: [10th International Conference on Numerical Methods for Multi-Material Fluid Flow \(MULTIMAT 2021\)](#) in Zürich, organized by Remi Abgrall
- 2022:**
- July 18 - 22, 2022: [When Kinetic Theory meets Fluid Mechanics](#), Zürich



In Dec. 2020, for [this paper](#), the prize ceremony took place in China for the *International Consortium of Chinese Mathematicians Best Paper Award 2020*.

Yinhu Xia from Hefei, China traveled there to pick up the award.