Daily program: Monday, 9 September 2019

08:40 – 09:00 **Opening and Welcome**

09:00 – 09:25 **Mikhail Shashkov** (Los Alamos National Lab, USA)
Intersection-distribution-based remapping for multi-material staggered arbitrary Lagrangian-Eulerian hydrodynamics

09:25 – 09:50 **Robert Rieben** (Lawrence Livermore National Lab, USA)
A matrix-free hyper-viscosity method for high-order finite element ALE hydrodynamics

09:50 – 10:25 **Eleuterio Francisco Toro** (University of Trento, Italy)
On flux splitting schemes for a class of hyperbolic systems

10:25 – 11:00 **Coffe Break**

11:00 – 11:25 **William Rider** (Sandia National Lab, Albuquerque, USA)
The Power and Secrets of the Sigmoid Function: A Numerical Swiss Army Knife

11:25 – 11:50 **Nathaniel Morgan** (Los Alamos National Lab, USA)
A fourth-order accurate Lagrangian discontinuous Galerkin method for cubic cells

11:50 – 12:15 **Michael Powell** (Sandia National Lab, Albuquerque, USA)
Multi-material dynamic domain topology changes in the Lagrangian Grid Reconnection (LGR) code

12:15 – 12:40 **Elena Gaburro** (University of Trento, Italy)
Arbitrary high order direct ALE schemes on moving Voronoi meshes with topology changes

12:40 – 13:05 **Discussion**

13:05 – 14:45 **Lunch**

14:45 – 15:35 **Thematic Minisymposium:** *Residual distribution*

14:45 – 15:10 **Philippe Hoch** (CEA, Arpajon, France)
Well-balanced schemes on two dimensionnal conical meshes

Svetlana Tokareva (Los Alamos National Lab, USA)
Residual Distribution Scheme for Multi-Material Lagrangian Hydrodynamics

15:10 – 15:35 **Andrew Corrigan** (US Naval Research Lab, Washington DC)
A Moving Discontinuous Galerkin Method with Interface Condition Enforcement Applied to Multi-Material Flows

Paola Bacigaluppi (University of Zürich, Switzerland)
Non-conservative explicit residual distribution formulation with a posteriori limiting for multiphase flow systems with source terms

15:35 – 17:50 **Thematic Minisymposium:** *CFD and turbulence*

15:35 – 16:00 **Christopher Rousculp** (Los Alamos National Lab, USA)
Simulation of Magnetically Driven HEDP/ICF Experiments with a Lagrangian/ALE Code

Kseniya Ivanova (University of Zürich, Switzerland)
Multi-dimensional shear shallow water flows

16:00 – 16:35 **Coffe Break**

16:35 – 17:00 **Matej Klima** (Czech Technical University in Prague)
A Closure Model for Impacts of All Speeds in Multi-Material Arbitrary Lagrangian-Eulerian Hydrodynamics

Sergey Utyuzhnikov (University of Manchester, UK)
Efficient Full Non-overlapping Domain Decomposition for near-wall Turbulent Flows

17:00 – 17:25 **Florian Chevassu** (Kitware SAS, Lyon, France)
SHAPO - Recent Advances on the Voronoi Mesh Generation Toolkit

Vladimir Titarev (MIPT, Russia)
Near-wall Domain Decomposition for Essentially Unsteady Turbulent Flows

17:25 – 17:50 **Jim E. Morel** (Texas A&M, College Station, USA)
Second-Order Coupling of Radiation and Hydrodynamics with Different Spatial and Temporal Discretizations

Fernando F. Grinstein (Los Alamos National Lab, USA)
Eulerian Hydrodynamics Effects in Turbulent Mixing Simulations

17:50 – 18:15 **Discussion**

19:00 – ... **Welcome reception**

Daily program: Tuesday, 10 September 2019

09:00 **Opening**

09:00 – 09:25 **Remi Abgrall** (University of Zürich, Switzerland)
Some preliminary results on a kinetic scheme that has an Lattice Boltzmann method flavour

09:25 – 09:50 **Marica Pelanti** (ENSTA ParisTech, Palaiseau, France)
Numerical modeling of liquid-vapor flows with arbitrary heat and mass transfer relaxation times and general equation of state

09:50 – 10:25 **Evgeniy Romenskiy** (University of Trento, Italy)
A two-phase model for fluid saturated elastoplastic porous medium based on the theory of thermodynamically compatible systems

10:25 – 11:00 **Coffe Break**

11:00 – 11:25 **Richard Saurel** (Aix-Marseille University, France)
Riemann solver with internal reconstruction (RSIR) for compressible single-phase and non-equilibrium two-phase flows

11:25 – 11:50 **Igor Menshov** (VNIIA, Moscow, Russia)
A Diffuse Interface Method for Calculating Multifluid Compressible Flows on Eulerian Grids

11:50 – 12:15 **Ilya Peshkov** (University of Toulouse III, France)
Monolithic multiscale modeling of solidification and melting processes

12:15 – 12:40 **Petr Sváček** (Czech Technical University in Prague)
Mathematical Modelling of Multiphase Flows with Surface Tension and the Finite Element Approximation

12:40 – 13:05 **Discussion**

13:05 – 14:45 **Lunch**

14:45 – 15:10 **Christian Klingenberg** (Wuerzburg University, Germany)
Kinetic modeling and numerical simulation of multi-species plasma

15:10 – 15:35 **Dinshaw Balsara** (University of Notre Dame, USA)
The Multidimensional Approximate Generalized Riemann Problem

15:35 – 16:00 **Feng Xiao** (Tokyo Institute of Technology, Japan)
A robust and interface preserving formulation for compressible multiphase flows

16:00 – 16:35 **Coffe Break**

16:35 – 17:00 **Nicolas Favrie** (Aix-Marseille University, France)
Dynamic compaction of granular material

17:00 – 17:25 **Barbara Re** (University of Zürich, Switzerland)
A diffuse interface method for weakly compressible multiphase flows based on the Baer and Nunziato model

17:25 – 17:50 **Michael Dumbser** (University of Trento, Italy)
High order ADER schemes for a unified first order hyperbolic formulation of Newtonian continuum mechanics coupled with electro-dynamics

17:50 – 18:15 **Discussion**

19:00 – ... **Poster session and Wine tasting**

Daily program: Wednesday, 11 September 2019

09:00 **Opening**

09:00 – 09:25 **Pierre-Henri Maire** (CEA, Le Barp, France)
Thermodynamic consistency of cell-centered Lagrangian hydrodynamics method

09:25 – 09:50 **Stéphane Del Pino** (CEA, Arpajon, France)
Triangular metric-based mesh adaptation for compressible multi-material flows in semi-Lagrangian coordinates

09:50 – 10:25 **Richard Liska** (Czech Technical University in Prague)
Cell-centered Lagrangian Lax-Wendroff HLL Hybrid Scheme in Cylindrical Geometry

10:25 – 11:00 **Coffe Break**

11:00 – 11:25 **Jean-Luc Guermond** (Texas A&M, College Station, USA)
High-order invariant domain preserving ALE approximation of hyperbolic systems

11:25 – 11:50 **Ignacio Tomas** (Sandia National Lab, Albuquerque, USA)
Invariant domain preserving methods and convex limiting: towards an extension to MhD

11:50 – 12:15 **Hong Luo** (North Carolina State University, USA)
A Moving Discontinuous Galerkin Finite Element Method for Conservation Laws

12:15 – 12:40 **Walter Boscheri** (University of Ferrara, Italy)
High order direct Arbitrary-Lagrangian-Eulerian (ALE) PNPM schemes on unstructured meshes

12:40 – 13:05 **Discussion**

13:05 – 14:45 **Lunch**

14:45 – 15:35 **Thematic Minisymposium:** *Methods and algorithms*

14:45 – 15:10 **Christoph Lohmann** (TU Dortmund University, Germany)
Algebraic flux correction schemes for symmetric tensors with applications to fiber suspension flows

15:10 – 15:35 **Sidafa Conde** (Sandia National Lab, Albuquerque, USA)
On algebraic flux correction in continuous finite element schemes for problems in plasma physics

15:35 – 16:00 **Alan Dawes** (AWE, Aldermaston, UK)
Solving the diffusion equation on a flattened AMR mesh

Yuliya Kanarska (Lawrence Livermore National Lab, USA)
Semi-implicit compressible DEM multiphase model without acoustic time step restrictions

Britton Olson (Lawrence Livermore National Lab, USA)
An explicit material contact model for simple gaps on structured meshes

Vincent Chiravalle (Los Alamos National Lab, USA)
Subscale Closure Model for Cell-Centered Hydrodynamics using a Multidirectional Approximate Riemann Solution

16:00 – 16:35 **Coffe Break**

16:35 – 17:50 **Thematic Minisymposium:** *Methods and algorithms*

16:35 – 17:00 **John N Shadid** (Sandia National Lab, Albuquerque, USA)
An IMEX Continuum Multifluid Electromagnetic Plasma Formulation for Challenging Fusion Related Applications

17:00 – 17:25 **Duan Zhang** (Los Alamos National Lab, USA)
Dual Domain Material Point Method and Multivelocity Formulation Applied to Sweeping Wave Impact and Plastic Spallation

17:25 – 17:50 **Douglas Miller** (Lawrence Livermore National Lab, USA)
Splitting shock heating between ions and electrons in an ionized gas

Brody Bassett (Lawrence Livermore National Lab, USA)
Efficient solution of the SPH radiation hydrodynamics equations

Baolin Tian (IAPCM, Beijing, China)
Numerical Simulation of Compressible Multi-Material Multiphase Flows with High Order Eulerian Methods

David Sidilkover (Soreq NRC, Yavne, Israel)
Vorticity Confinement and Shock Capturing - two sides of the same coin?

17:50 – 18:15 **Discussion**

20:00 – ... **Conference dinner**

Daily program: Thursday, 12 September 2019

09:00 **Opening**

09:00 – 09:25 **Pavel Bochev** (Sandia National Lab, Albuquerque, USA)
A consistent, conservative and scalable meshfree mimetic method

09:25 – 09:50 **Michael Owen** (Lawrence Livermore National Lab, USA)
Meshfree modeling of the DART mission impactor on the asteroid Didymos-B

09:50 – 10:25 **Na Liu** (IAPCM, Beijing, China)
High-order spectral volume scheme for multi-component flows using non-oscillatory kinetic flux

10:25 – 11:00 **Yibing Chen** (IAPCM, Beijing, China)
Recent Developments of HGKS: High Order Approach Based On Gas Kinetic Scheme

11:00 – 11:25 **Coffe Break**

11:25 – 11:50 **Dmitri Kuzmin** (TU Dortmund University, Germany)
Bound-Preserving High-Order Finite Element Schemes for Advection Problems: I. Matrix-Based Approaches

11:50 – 12:15 **Hennes Hajduk** (TU Dortmund University, Germany)
Bound-Preserving High-Order Finite Element Schemes for Advection Problems: II. Matrix-Free Approaches

12:15 – 12:40 **Qiang Zhao** (IAPCM, Beijing, China)
A Positivity-Preserving FV Scheme for Diffusion Equations on Polyhedral Meshes and its Application in Electrostatic Particle-In-Cell Simulation

12:40 – 13:05 **Marta D'Elia** (Sandia National Lab, Albuquerque, USA)
Mathematical foundations for nonlocal interface problems: multiscale simulations of heterogeneous materials

13:05 – 14:45 **Lunch**

15:10 – 18:15 **Guided city tour**

Visit to the Buonconsiglio Castle, the ancient Tridentum and the Cathedral of Trento

Daily program: Friday, 13 September 2019

09:00 Opening

09:00 – 09:25 **Raphaël Loubère** (University of Bordeaux & CNRS, France)
Solution Property Preserving Reconstruction for Finite Volume schemes

09:25 – 09:50 **Vladimir Tomov** (Lawrence Livermore National Lab, USA)
Adaptation of High-Order Curved Meshes in ALE Hydrodynamics

09:50 – 10:25 **Joanna Szmelter** (Loughborough University, UK)
A Multidimensional Positive Definite Remapping Algorithm for Unstructured Meshes

10:25 – 11:00 Coffe Break

11:00 – 11:25 **Milan Holec** (Lawrence Livermore National Lab, USA)
An efficient coupling of thermal radiation transport to ALE hydrodynamics on high-order curvilinear meshes

11:25 – 11:50 **Qinghong Zeng** (IAPCM, Beijing, China)
Sliding interfaces with radiation in multi-material fluid flows

11:50 – 12:15 **Nicolas Therme** (CEA, Le Barp, France)
A new segregated-explicit staggered scheme for Lagrangian hydrodynamics

12:15 – 12:40 **Thomas Leroy** (CEA, Arpajon, France)
Curved interface reconstruction for 2D compressible multi-material flows

12:40 – 13:05 Discussion

13:05 – 14:45 Lunch

14:45 – 15:10 **Robert Managan** (Lawrence Livermore National Lab, USA)
Modeling the Free Expansion of an Ideal Gas with and without Shocks

15:10 – 15:35 **Douglas Woods** (Los Alamos National Lab, USA)
Modeling Shock Wave Speed in MARBLE Foam

15:35 – 16:00 **Tomislav Maric** (TU Darmstadt, Germany)
Distance-gradient normal reconstruction

16:00 – 16:35 Coffe Break

16:35 – 17:00 **Daniil Svyatskiy** (Los Alamos National Lab, USA)
A higher order approximate static condensation method for multi-material diffusion problems

17:00 – 17:25 **Jason Albright** (Los Alamos National Lab, USA)
Machine learning-based optimization strategies for artificial viscosity

17:25 – 17:50 **Elizabeth Lovegrove** (Los Alamos National Lab, USA)
Radiation Diffusion in FLAG SGH and CCH

17:50 – 18:15 Closing discussion