

# Monday

**09:00 - 09:45**

**Registration and Opening**

**09:45 - 10:30**

**Plenary speaker**

Room: Salón de Actos

09:45-10:30

Speaker: Denis Serre

Title: Compensated Integrability and Conservation Laws

**10:30 - 11:00**

**Coffee break**

**11:00 - 12:00**

**Mon01**

Room: 303

11:00-11:20

Speaker: Matthew Schrecker

Title: Self-similar gravitational collapse for the Euler-Poisson equations

Topic: Theoretical aspects. Euler and Navier-Stokes equations

11:20-11:40

Speaker: Paolo Secchi

Title: Geometric optics for hyperbolic free boundary problems

Topic: Theoretical aspects. Hyperbolic conservation laws

11:40-12:00

Speaker: Juan Calvo

Title: Initial-boundary value problem for the Lifshitz-Slyozov system with inflow boundary conditions

Topic: Theoretical aspects. Other topics

## **Mon02**

Room: 304

11:00-11:20

Speaker: Philip Roe

Title: Shock capturing and limiting in the Active Flux method

Topic: Modeling and applications. Applications

11:20-11:40

Speaker: Christiane Helzel

Title: An Active Flux Cut Cell Method with SIAC Filter

Topic: Numerical methods. Conservation laws

11:40-12:00

Speaker: Wasilij Barsukow

Title: Extensions of Active Flux to arbitrary order of accuracy

Topic: Numerical methods. High-order methods

## **Mon03**

Room: 305

11:00-11:20

Speaker: Gerardo Hernandez-Duenas

Title: A new two-dimensional blood flow model with arbitrary cross sections

Topic: Numerical methods. Well-balanced schemes

11:20-11:40

Speaker: Lucas Omar Müller

Title: Splitting methods for a generalized blood flow equation model applied on networks

Topic: Modeling and applications. Biological and health related models

11:40-12:00

Speaker: Ernesto Pimentel García

Title: High-order fully well-balanced methods for one-dimensional blood flow model with discontinuous mechanical and geometrical properties

Topic: Numerical methods. Well-balanced schemes

**Mon04**

Room: 306

11:00-11:20

Speaker: Shyam Ghoshal

Title: On the uniqueness of solutions to hyperbolic systems of conservation laws

Topic: Theoretical aspects. Euler and Navier-Stokes equations

11:20-11:40

Speaker: Abraham Sylla

Title: Inverse Design for compactly heterogeneous conservation laws

Topic: Theoretical aspects. Hyperbolic conservation laws

11:40-12:00

Speaker: Elio Marconi

Title: Fine properties of weak solutions of Burgers equation and applications to a singularly perturbed variational problem

Topic: Modeling and applications. Applications

**12:00 - 13:00**

**Mon05**

Room: 303

12:00-12:20

Speaker: Christian Klingenberg

Title: Endowing kinetic transport equations using a BGK collision term with additional physics

Topic: Modeling and applications. Applications

12:20-12:40

Speaker: Giorgio Martalò

Title: A hybrid kinetic model for inert gas mixtures

Topic: Modeling and applications. Kinetic models

12:40-13:00

Speaker: Marlies Pirner

Title: Extending the BGK model via entropy minimization

Topic: Theoretical aspects. Kinetic equations

Room: 304

## **Mon06**

12:00-12:20

Speaker: Debora Amadori

Title: A hydrodynamic model of flocking type: BV solutions and long-time behavior

Topic: Modeling and applications. Applications

12:20-12:40

Speaker: Francesca Brini

Title: On the hyperbolicity region of Rational Extended Thermodynamics models for rarefied gases

Topic: Modeling and applications. Applications

12:40-13:00

Speaker: Steven Schochet

Title: Fast Three-Scale Singular Limits

Topic: Modeling and applications. Multiscale models

## **Mon07**

Room: 305

12:00-12:20

Speaker: Sergio Amat

Title: On a monotone local fifth order accurate reconstruction for the approximation of hyperbolic conservation laws

Topic: Numerical methods. Conservation laws

12:20-12:40

Speaker: David Ketcheson

Title: High-order accurate bound-preserving space-time limiting for conservation laws

Topic: Numerical methods. High-order methods

12:40-13:00

Speaker: Matteo Semplice

Title: One- and multi-dimensional CWENOZ reconstructions for implementing boundary conditions without ghost cells

Topic: Numerical methods. High-order methods

## **Mon08**

Room: 306

12:00-12:20

Speaker: Wanderson José Lambert

Title: Decomposition of the Wave Manifold in Lax Admissible Regions and its Application to the Solution of Riemann Problems

Topic: Theoretical aspects. Hyperbolic conservation laws

12:20-12:40

Speaker: Heinrich Freistühler

Title: Dissipative relativistic fluid dynamics and shock waves

Topic: Theoretical aspects. Hyperbolic conservation laws

12:40-13:00

Speaker: Iuliia Petrova

Title: On admissibility criteria for contact discontinuities in Glimm-Isaacson model arising in chemical flooding

Topic: Theoretical aspects. Hyperbolic conservation laws

**13:00 - 15:00**

**Lunch break**

**15:00 - 16:00**

**Mon09**

Room: 303

15:00-15:20

Speaker: Rafael González-Albaladejo

Title: A poroelastic model for cell motility

Topic: Modeling and applications. Biological and health related models

15:20-15:40

Speaker: Kathrin Hellmuth

Title: Kinetic equations and inverse problems: an application to chemotaxis

Topic: Modeling and applications. Kinetic models

15:40-16:00

Speaker: Alessandra Spilimbergo

Title: One-Dimensional Blood Flow with Discontinuous Properties and Transport: Numerical Schemes and Treatment of Junctions  
Topic: Modeling and applications. Biological and health related models

**Mon10**

Room: 304

15:00-15:20

Speaker: Ullika Scholz

Title: Dispersive Shallow Moment Equations

Topic: Modeling and applications. Dispersive equations

15:20-15:40

Speaker: Giada Cianfarani Carnevale

Title: High Friction Limits for Euler-Korteweg and Navier-Stokes Korteweg models

Topic: Modeling and applications. Euler and Navier-Stokes equations

15:40-16:00

Speaker: Raffaele Scandone

Title: Existence and stability of finite energy solutions to a quantum MHD system

Topic: Modeling and applications. Dispersive equations

**Mon11**

Room: 305

15:00-15:20

Speaker: Nora Philippi

Title: An asymptotic preserving discretization scheme for gas transport on pipe networks

Topic: Numerical methods. Asymptotic preserving

15:20-15:40

Speaker: Claudius Birke

Title: A well-balanced relaxation method for low Mach number flows with gravity.

Topic: Numerical methods. Asymptotic preserving

15:40-16:00

Speaker: Irene Gómez Bueno

Title: Implicit and semi-implicit high-order well-balanced methods for systems of balance laws

Topic: Numerical methods. Well-balanced schemes

**Mon12**

Room: 306

15:00-15:20

Speaker: Alexandra Wuerth

Title: Existence of solutions of the initial boundary value problem for a non-strictly hyperbolic system of conservation laws

Topic: Theoretical aspects. Hyperbolic conservation laws

15:20-15:40

Speaker: Akshay Kumar

Title: Riemann problem for rate-type materials with nonconstant initial conditions

Topic: Theoretical aspects. Hyperbolic conservation laws

15:40-16:00

Speaker: Xuban Diez Izagirre

Title: Non-classical shocks in the limit of a diffusive-dispersive regularisation

Topic: Theoretical aspects. Hyperbolic conservation laws

**16:00 - 16:30**

**Coffee break**

**16:30 - 17:30**

**Mon13**

Room: 303

16:30-16:50

Speaker: Dagmar Zakova

Title: Numerical solution of scalar conservation laws using semi-implicit WENO scheme

Topic: Numerical methods. High-order methods

16:50-17:10

Speaker: Michal Žeravý

Title: Numerical solution of nonlinear conservation laws using TVD semi-implicit scheme

Topic: Numerical methods. High-order methods

17:10-17:30

Speaker: Florian Streitbürger

Title: DoD-stabilized DG schemes for solving conservation laws on cut cell meshes

Topic: Numerical methods. High-order methods

## **Mon14**

Room: 304

16:30-16:50

Speaker: Thomas Schillinger

Title: A traffic flow model and the self-excitation property of accidents

Topic: Modeling and applications. Models of traffic flow

16:50-17:10

Speaker: John Wakefield

Title: Traffic Flow Models with Noise

Topic: Modeling and applications. Models of traffic flow

17:10-17:30

Speaker: Nitesh Mathur

Title: Global BV Solution to a System of Balance Laws from Traffic Flow

Topic: Theoretical aspects. Hyperbolic conservation laws

## **Mon15**

Room: 305

16:30-16:50

Speaker: Víctor González-Tabernero

Title: High-order well-balanced finite volume schemes for 1d and 2d shallow water equations with Coriolis forces

Topic: Numerical methods. Well-balanced schemes

16:50-17:10

Speaker: Ernesto Guerrero Fernández

Title: Well-Balanced High-Order Discontinuous Galerkin Methods for Systems of Balance Laws

Topic: Modeling and applications. Applications

17:10-17:30

Speaker: Emanuele Macca

Title: An implicit-explicit strategy for Exner model with Grass equation for sediment evolution

Topic: Modeling and applications. Geophysical flows

**Mon16**

Room: 306

16:30-16:50

Speaker: Johannes Bärlin

Title: Spectral stability of shock profiles in hyperbolically regularized systems of conservation laws

Topic: Theoretical aspects. Hyperbolic conservation laws

16:50-17:10

Speaker: Valentin Pellhammer

Title: Transition to oscillatory behavior and breakup of shock profiles in a model of relativistic fluid dynamics

Topic: Theoretical aspects. Hyperbolic conservation laws

17:10-17:30

Speaker: Akash Parmar

Title: Fractional regularity for conservation laws with discontinuous flux

Topic: Theoretical aspects. Hyperbolic conservation laws

# Tuesday

**09:00 - 09:45**

**Plenary speaker**

Room: Salón de Actos

09:00-09:45

Speaker: Eleuterio Toro

Title: The ADER path to constructing very high-order schemes for approximating hyperbolic equations

**09:45 - 10:30**

**Invited speaker**

Room: Salón de Actos

09:45-10:30

Speaker: Qin Li Stechmann

Title: Low rank structure in forward and inverse kinetic theory

**Invited speaker**

Room: 307+308+309

09:45-10:30

Speaker: Raphaël Loubere

Title: Entropy stable and positivity preserving innovative Godunov-type schemes for multidimensional hyperbolic systems of conservation laws on unstructured grid — Bridging Lagrangian and Eulerian frameworks

**10:30 - 11:00**

**Coffee break**

## 11:00 - 12:00

### Tue01

Room: 303

11:00-11:20

Speaker: Hermano Frid

Title: A Boundary Value Problem for a Class of Anisotropic Stochastic Degenerate Parabolic-Hyperbolic Equations

Topic: Theoretical aspects. Hyperbolic conservation laws

11:20-11:40

Speaker: Daniel Marroquin

Title: Homogenization of Stochastic Conservation Laws with Multiplicative Noise

Topic: Theoretical aspects. Hyperbolic conservation laws

11:40-12:00

Speaker: Peter Ho Cheung Pang

Title: High order commutator estimates for SPDEs with transport-type noise

Topic: Theoretical aspects. Nonlinear wave equations

### Tue02

Room: 304

11:00-11:20

Speaker: Thomas Izgin

Title: Positivity and Linear Invariant Preserving Schemes: A new Theorem on Stability

Topic: Numerical methods. High-order methods

11:20-11:40

Speaker: Louis Reboul

Title: Asymptotic-preserving methods for hyperbolic problems with stiff source terms

Topic: Numerical methods. Asymptotic preserving

11:40-12:00

Speaker: Andrea Thomann

Title: An all-speed scheme for isentropic two-phase flows

Topic: Numerical methods. Asymptotic preserving

Room: 305

## **Tue03**

11:00-11:20

Speaker: Bruno Despres

Title: The implicit Lagrangian Riemann problem

Topic: Modeling and applications. Applications

11:20-11:40

Speaker: Shyam Ghoshal

Title: Adapted entropy solution for conservation laws with BV spatial flux

Topic: Numerical methods. Conservation laws

11:40-12:00

Speaker: Philipp Öffner

Title: Convergence of FE Based Schemes for the Euler Equations via Dissipative Weak Solutions

Topic: Numerical methods. Conservation laws

## **Tue04**

Room: 306

11:00-11:20

Speaker: Elena Gaburro

Title: A well balanced finite volume scheme for general relativity

Topic: Modeling and applications. Astrophysics and general relativity

11:20-11:40

Speaker: Roger Käppeli

Title: Well-balanced schemes for nearly steady adiabatic flow

Topic: Numerical methods. Well-balanced schemes

11:40-12:00

Speaker: Victor Michel-Dansac

Title: A very easy high-order well-balanced reconstruction for hyperbolic systems with source terms

Topic: Numerical methods. Well-balanced schemes

## 12:00 - 13:00

**Tue05**

Room: 303

12:00-12:20

Speaker: Celia Caballero Cárdenas

Title: Well-balanced implicit-explicit Lagrange-projection-type schemes for the one-dimensional shallow water system

Topic: Numerical methods. Other topics

12:20-12:40

Speaker: Alessia Del Grosso

Title: Well-balanced implicit-explicit Lagrange-projection scheme for two-layer shallow water equations

Topic: Numerical methods. Non-conservative systems

12:40-13:00

Speaker: Sophie Hörnschemeyer

Title: Stabilizing high order shallow water solvers via parachutes

Topic: Numerical methods. Well-balanced schemes

**Tue06**

Room: 304

12:00-12:20

Speaker: Edilbert Christhuraj

Title: Solving a generic hyperbolic formulation of moment approximations of Boltzmann Equation

Topic: Numerical methods. Kinetic equations

12:20-12:40

Speaker: Christopher Alexander

Title: Formal Existence of Friedmann-Static Pure Radiation Shock Waves

Topic: Theoretical aspects. General relativity

12:40-13:00

Speaker: Claudia Duarte

Title: INVARIANT MEASURES FOR STOCHASTIC PARABOLIC-HYPERBOLIC EQUATIONS IN THE SPACE OF ALMOST PERIODIC FUNCTIONS: LIPSCHITZ FLUX CASE

Topic: Theoretical aspects. Hyperbolic conservation laws

## **Tue07**

Room: 305

12:00-12:20

Speaker: Harold Contreras

Title: Nonlocal reaction traffic flow model with on-off ramps

Topic: Modeling and applications. Models of traffic flow

12:20-12:40

Speaker: Matteo Piu

Title: Stability analysis of microscopic models for traffic flow with lane changing

Topic: Modeling and applications. Models of traffic flow

12:40-13:00

Speaker: Mickael Bestard

Title: Optimal Control of Traffic in Road Networks

Topic: Modeling and applications. Models of traffic flow

## **Tue08**

Room: 306

12:00-12:20

Speaker: Silvia Tozza

Title: 3D shape reconstruction via Hamilton-Jacobi equations

Topic: Modeling and applications. Applications

12:20-12:40

Speaker: Giuseppe Visconti

Title: Qualitative Properties of a Mathematical Model For Data Flow

Topic: Modeling and applications. Applications

12:40-13:00

Speaker: Jacek Polewczak

Title: Global in time existence of solutions with L1-initial data for the revised Enskog equation

Topic: Theoretical aspects. Kinetic equations

## **13:00 - 15:00**

### **Lunch break**

## 15:00 - 16:00

**Tue09**

Room: 303

15:00-15:20

Speaker: Mayank Singh

Title: Propagation of one-dimensional planar and non-planar shock waves in nonideal radiating gas

Topic: Numerical methods. Conservation laws

15:20-15:40

Speaker: Mainak Kar

Title: An Energy Stable Semi-implicit Scheme for the Euler System Under Diffusive Scaling

Topic: Modeling and applications. Applications

15:40-16:00

Speaker: Apurva Tiwari

Title: Comparison of divergence error and conventional energy error based p-adaptive discontinuous Galerkin methods in higher-order solutions of time-domain Maxwell's equations

Topic: Numerical methods. High-order methods

**Tue10**

Room: 304

15:00-15:20

Speaker: Marina Berbel

Title: Exact Riemann solver for nonconvex special relativistic hydrodynamics

Topic: Numerical methods. Conservation laws

15:20-15:40

Speaker: Sedrick Kameni Ngwamou

Title: Weak convergence of the finite volume method for hyperbolic systems on general meshes

Topic: Numerical methods. Conservation laws

15:40-16:00

Speaker: Yukun Yue

Title: Convergence Analysis of a Fully Discrete Energy-Stable Numerical Scheme for the Q-Tensor Flow of Liquid Crystals

Topic: Numerical methods. Fluid and multiphase flows

**Tue11**

Room: 305

15:00-15:20

Speaker: Claudia Acosta Díaz

Title: Entropy stable schemes for parabolic degenerate equations with a discontinuous flux

Topic: Numerical methods. Entropic schemes

15:20-15:40

Speaker: Megala Anandan

Title: An entropy conservative and exact discontinuity capturing discrete kinetic scheme for scalar conservation laws

Topic: Numerical methods. Entropic schemes

15:40-16:00

Speaker: Kunal Bahuguna

Title: Experiments with Entropy Conservative Flux Functions

Topic: Numerical methods. Entropic schemes

**Tue12**

Room: 306

15:00-15:20

Speaker: Manas Bhatnagar

Title: Critical thresholds in the Euler-Poisson-alignment system

Topic: Theoretical aspects. Euler and Navier-Stokes equations

15:20-15:40

Speaker: Nuno Januario Alves

Title: High-friction limit of the bipolar Euler-Poisson system

Topic: Theoretical aspects. Euler and Navier-Stokes equations

15:40-16:00

Speaker: Marwa Shahine

Title: Compactness Property of the Linearized Boltzmann Operator for Polyatomic Gases

Topic: Theoretical aspects. Other topics

**16:00 - 16:30**

## Coffee break

**16:30 - 17:30**

**Tue13**

Room: 303

16:30-16:50

Speaker: Nikola Gajdosova

Title: High order semi-implicit numerical schemes for some level set equations

Topic: Numerical methods. High-order methods

16:50-17:10

Speaker: Katarína Lacková

Title: Upwind methods for advection dominated level set equation with small curvature term

Topic: Numerical methods. High-order methods

17:10-17:30

Speaker: Giuseppe Orlando

Title: An IMEX-DG solver for the compressible Navier-Stokes equations with a general equation of state

Topic: Numerical methods. Fluid and multiphase flows

**Tue14**

Room: 304

16:30-16:50

Speaker: Erik Chudzik

Title: The Cartesian Grid Active Flux Method with Adaptive Mesh Refinement

Topic: Numerical methods. Conservation laws

16:50-17:10

Speaker: Adrian Kolb

Title: Multiresolution-analysis for stochastic hyperbolic conservation laws

Topic: Numerical methods. Uncertainty quantification

17:10-17:30

Speaker: Lucas Coeuret

Title: Large time behavior of finite difference schemes for the transport equation

Topic: Numerical methods. Conservation laws

**Tue15**

Room: 305

16:30-16:50

Speaker: Bobby Gunarso

Title: Hyperbolic Systems with Non-Convex Flux on Networks

Topic: Theoretical aspects. Hyperbolic conservation laws

16:50-17:10

Speaker: Juliette Dubois

Title: Acoustic-gravity waves in the ocean: a new derivation for a general model

Topic: Modeling and applications. Geophysical flows

17:10-17:30

Speaker: Jeffrey Kuan

Title: A stochastic fluid-structure interaction problem describing Stokes flow interacting with a membrane

Topic: Modeling and applications. Stochastic models

**Tue16**

Room: 306

16:30-16:50

Speaker: Corentin Kilque

Title: Geometric optics for quasilinear hyperbolic boundary value problems

Topic: Theoretical aspects. Hyperbolic conservation laws

16:50-17:10

Speaker: Matthew Tandy

Title: Lipschitz Stability for the Hunter-Saxton Equation

Topic: Theoretical aspects. Non-conservative systems

17:10-17:30

Speaker: Vladimir Djordjic

Title: Moment equations for a polytropic gas reproducing adjustable transport coefficients

Topic: Modeling and applications. Kinetic models

**17:30 - 18:00**

**Poster session**

Speaker: Clarissa Astuto

Title: Tensor PDE model of biological network formation

Topic: Modeling and applications. Applications

Speaker: Rahul Barthwal

Title: Construction of solutions of a two-dimensional Riemann problem for a thin film model of a perfectly soluble anti-surfactant solution

Topic: Modeling and applications. Applications

Speaker: Sabrine Chebbi

Title: Discrete Energy behavior of a damped Timoshenko system

Topic: Modeling and applications. Applications

Speaker: Rafael Granero Belinchón

Title: Waves with viscosity

Topic: Modeling and applications. Applications

Speaker: Gino I. Montecinos

Title: Revisiting Essentially Non-Oscillatory Reconstruction Schemes

Topic: Modeling and applications. Applications

Speaker: Juan Francisco Rodríguez Gálvez

Title: Use of neural networks for tsunami maximum height and arrival time predictions

Topic: Modeling and applications. Applications

Speaker: Yuri Trakhinin

Title: Well-posedness of the free boundary problem in ideal compressible MHD with surface tension

Topic: Modeling and applications. Applications

Speaker: Sokrani Sokrani

Title: On the Global Well-Posedness of 3-D Density-Dependent MHD System

Topic: Modeling and applications. Euler and Navier-Stokes equations

Speaker: Ingo Steldermann

Title: Zoom into the shallow: Resolving vertical flow structure with shallow moment equations

Topic: Modeling and applications. Geophysical flows

Speaker: Yifan Bai

Title: Shock capturing and limiting in the Active Flux method

Topic: Numerical methods. Conservation laws

Speaker: Vadim Kolotilov

Title: Quasi-invariants method in CABARET schemes for hyperbolic systems of conservation laws that don't have the form of invariants

Topic: Numerical methods. Conservation laws

Speaker: Tomasz Debiec

Title: Energy conservation for the compressible Euler equations with vacuum

Topic: Theoretical aspects. Euler and Navier-Stokes equations

Speaker: Billel Guelmame

Title: On a Hamiltonian regularised Burgers equation

Topic: Theoretical aspects. Hyperbolic conservation laws

Speaker: Iuliia Petrova

Title: On admissibility criteria for contact discontinuities in Glimm-Isaacson model arising in chemical flooding

Topic: Theoretical aspects. Hyperbolic conservation laws

Speaker: Teke Xu

Title: Dynamical boundary conditions for the water hammer problem

Topic: Theoretical aspects. Hyperbolic conservation laws

Speaker: Difan Yuan

Title: Global Solutions of the Compressible Euler-Poisson Equations with Large Initial Data of Spherical Symmetry

Topic: Modeling and applications. Applications

Speaker: Almudena del Pilar Márquez

Title: Conservation laws and symmetry reductions for a hyperbolic wave equation

Topic: Modeling and applications. Equations of mathematical physics

Speaker: Dmitry Tkachev

Title: Linear instability of the polymeric fluid flow with constant flow rate in an infinite plane channel with perforated walls

Topic: Modeling and applications. Equations of mathematical physics

Speaker: Aparecido de Souza

Title: The Riemann solution for the generic three-phase flow of the Glimm-Isaacson model in porous media

Topic: Modeling and applications. Multiphase flows

Speaker: Anjali Nair

Title: An inverse problem and diffusion limit for the phonon transport equation

Topic: Numerical methods. Kinetic equations

Speaker: Yiran Hu

Title: Existence of Global in Time Weak Solutions to Singular 3D Quasi-Geostrophic Systems

Topic: Theoretical aspects. Euler and Navier-Stokes equations

Speaker: Van Phu Cuong Le

Title: A variational scheme for hyperbolic obstacle-type problems

Topic: Theoretical aspects. Nonlinear wave equations

# Wednesday

**09:00 - 09:45**

**Plenary speaker**

Room: Salón de Actos

09:00-09:45

Speaker: Eduard Feireisl

Title: Euler equations in fluid dynamics: Good and bad news

**09:45 - 10:30**

**Invited speaker**

Room: 307+308+309

09:45-10:30

Speaker: Benjamin Gess

Title: Non-equilibrium large deviations and parabolic-hyperbolic PDE with irregular drift

**Invited speaker**

Room: Salón de Actos

09:45-10:30

Speaker: Giovanni Russo

Title: Asymptotic preserving well-balanced schemes for hyperbolic systems of balance laws

**10:30 - 11:00**

**Coffee break**

## 11:00 - 12:00

### Wed01

Room: 303

11:00-11:20

Speaker: Aneta Wróblewska-Kamińska

Title: From compressible Navier-Stokes with nonlocal forces to Euler - relative entropy method

Topic: Theoretical aspects. Euler and Navier-Stokes equations

11:20-11:40

Speaker: Simon Markfelder

Title: Convex Integration Applied to the Compressible Euler Equations

Topic: Theoretical aspects. Euler and Navier-Stokes equations

11:40-12:00

Speaker: Hugo Alfredo Carrillo Serrano

Title: Fast and optimal WENO schemes for degenerate parabolic conservation laws

Topic: Modeling and applications. Applications

### Wed02

Room: 304

11:00-11:20

Speaker: Philippe G. LeFloch

Title: Global evolution of self-gravitating matter fields: nonlinear stability, asymptotics, and singularities

Topic: Modeling and applications. Astrophysics and general relativity

11:20-11:40

Speaker: Ilya Peshkov

Title: On a first-order hyperbolic formulation of the pure tetrad teleparallel gravity

Topic: Modeling and applications. Astrophysics and general relativity

11:40-12:00

Speaker: Athanasios Tzavaras

Title: Sustained oscillations in hyperbolic parabolic systems

Topic: Theoretical aspects. Other topics

Room: 305

## **Wed03**

11:00-11:20

Speaker: José Garres-Díaz

Title: An efficient shallow model for granular avalanches with a weakly non-hydrostatic pressure

Topic: Modeling and applications. Geophysical flows

11:20-11:40

Speaker: Gabriella Puppo

Title: Quinpi, or constructing implicit high order schemes for hyperbolic systems

Topic: Numerical methods. Conservation laws

11:40-12:00

Speaker: Samuel Stechmann

Title: Quasi-Geostrophic Equations for Atmospheric Dynamics with Clouds and Phase Changes

Topic: Modeling and applications. Geophysical flows

## **Wed04**

Room: 306

11:00-11:20

Speaker: Paola Goatin

Title: A multi-scale multi-lane model for heterogeneous traffic flows

Topic: Modeling and applications. Models of traffic flow

11:20-11:40

Speaker: Luis Miguel Villada

Title: A multiclass Lighthill-Whitham-Richards traffic model with a discontinuous velocity function

Topic: Numerical methods. Conservation laws

11:40-12:00

Speaker: Pep Mulet

Title: Characteristic-based numerical schemes for generalized models in chromatography

Topic: Modeling and applications. Applications

## 12:00 - 13:00

**Wed05**

Room: 303

12:00-12:20

Speaker: Romane Hélié

Title: Equivalent equation analysis of a kinetic relaxation scheme

Topic: Numerical methods. Kinetic equations

12:20-12:40

Speaker: Shashi Shekhar Roy

Title: An entropic kinetic scheme with compactly supported velocities

Topic: Modeling and applications. Kinetic models

12:40-13:00

Speaker: Sina Dahm

Title: Hyperbolic Systems of Moment Equations Describing Sedimentation in Suspensions of Rod-Like Particles

Topic: Numerical methods. Kinetic equations

**Wed06**

Room: 304

12:00-12:20

Speaker: Sarswati Shah

Title: Weakly Compressible Two-layer Shallow-Water Flows with Friction and Entrainment along Channels

Topic: Numerical methods. Non-conservative systems

12:20-12:40

Speaker: Carlos Muñoz

Title: Fast, Robust, Iterative Riemann Solvers for the Shallow Water and Euler Equations

Topic: Numerical methods. Efficient algorithms and HPC

12:40-13:00

Speaker: Nelly Boulos Al Makary

Title: Numerical analysis for the shallow water model with two velocities

Topic: Numerical methods. Well-balanced schemes

## **Wed07**

Room: 305

12:00-12:20

Speaker: Ioanna Mousikou

Title: Axisymmetric Flows

Topic: Modeling and applications. Euler and Navier-Stokes equations

12:20-12:40

Speaker: William Golding

Title: Uniqueness of shock waves under small perturbations for the Isentropic Euler Equations

Topic: Theoretical aspects. Euler and Navier-Stokes equations

12:40-13:00

Speaker: Stefanos Georgiadis

Title: Asymptotic Derivation of Multicomponent Compressible Flows with Heat Conduction and Mass Diffusion

Topic: Modeling and applications. Euler and Navier-Stokes equations

## **Wed08**

Room: 306

12:00-12:20

Speaker: Teresa Kunkel

Title: Observer-based data assimilation for isothermal gas transport using distributed measurements

Topic: Modeling and applications. Euler and Navier-Stokes equations

12:20-12:40

Speaker: Manuel Colera

Title: A high-order continuous Lagrange--Galerkin method for compressible flows

Topic: Numerical methods. Conservation laws

12:40-13:00

Speaker: Kévin Guillon

Title: A Fick's law recovering relaxation BGK operator for general mixtures of gases

Topic: Modeling and applications. Applications

**13:00 - 15:00**

## **Lunch break**

**15:00 - 15:30**

**Wed09**

Room: Salón de Actos

15:00-15:30

Speaker: James Glimm

Title: Maximum Entropy Production Rate

**15:30 - 16:15**

**Invited speaker**

Room: Salón de Actos

15:30-16:15

Speaker: Benoit Perthame

Title: Structured equations in biology; entropy and Monge-Kantorovich distance

**16:15 - 16:45**

**Coffee break**

**16:45 - 17:30**

**Invited speaker**

Room: Salón de Actos

16:45-17:30

Speaker: Maria Colombo

Title: Non-uniqueness of Leray solutions of the forced Navier-Stokes equations

**20:00**

**Gala dinner**

# Thursday

**09:00 - 09:45**

**Plenary speaker**

Room: Salón de Actos

09:00-09:45

Speaker: Jan Hesthaven

Title: On the use of artificial neural networks when solving conservation laws

**09:45 - 10:30**

**Invited speaker**

Room: 307+308+309

09:45-10:30

Speaker: Kenneth Karlsen

Title: Stochastic conservation laws: some homogenisation and singular limit problems

**Invited speaker**

Room: Salón de Actos

09:45-10:30

Speaker: Konstantina Trivisa

Title: Analysis of models of superfluidity

**10:30 - 11:00**

**Coffee break**

## 11:00 - 12:00

### Thu01

Room: 303

11:00-11:20

Speaker: Rinaldo M. Colombo

Title: Non Homogeneous Coercive Conservation Laws

Topic: Theoretical aspects. Hyperbolic conservation laws

11:20-11:40

Speaker: Simone Fagioli

Title: On gradient flow and entropy solutions for nonlocal transport equations with nonlinear mobility

Topic: Theoretical aspects. Hyperbolic conservation laws

11:40-12:00

Speaker: Sam Krupa

Title: New Results for the Well-Posedness of Small BV Solutions to Systems of Conservation Laws

Topic: Theoretical aspects. Hyperbolic conservation laws

### Thu02

Room: 304

11:00-11:20

Speaker: Felisia Angela Chiarello

Title: Kinetic nonlocal description and macroscopic limits of car-following traffic dynamics

Topic: Modeling and applications. Applications

11:20-11:40

Speaker: Mauro Garavello

Title: Control and Optimization for Traffic Flow

Topic: Modeling and applications. Models of traffic flow

11:40-12:00

Speaker: Sebastien Boyaval

Title: Symmetric-hyperbolic conservation laws modelling viscoelastic flows

Topic: Modeling and applications. Equations of mathematical physics

### **Thu03**

Room: 305

11:00-11:20

Speaker: Enrique Domingo Fernández Nieto

Title: A semi-implicit method for Saint-Venant-Exner systems with solid transport discharge formulae including gravitational terms

Topic: Numerical methods. Efficient algorithms and HPC

11:20-11:40

Speaker: Kleiton Andre Schneider

Title: Two-dimensional incomplete Riemann solvers for shallow water systems with topography and dry areas.

Topic: Numerical methods. Non-conservative systems

11:40-12:00

Speaker: Michele Giuliano Carlino

Title: High order well balanced schemes for shallow water equations in covariant coordinates

Topic: Modeling and applications. Geophysical flows

### **Thu04**

Room: 306

11:00-11:20

Speaker: Philip Roe

Title: Can we compute useful solutions on coarse grids?

Topic: Modeling and applications. Applications

11:20-11:40

Speaker: Benjamin Dörich

Title: Exponential integrators for quasilinear hyperbolic evolution equations

Topic: Numerical methods. Other topics

11:40-12:00

Speaker: Jean-Luc Guermond

Title: Invariant-domain-preserving high-order time stepping: Explicit Runge-Kutta schemes

Topic: Numerical methods. High-order methods

## 12:00 - 13:00

**Thu05**

Room: 303

12:00-12:20

Speaker: Graziano Guerra

Title: Balance Laws with Singular Source Term and Applications to Fluid Dynamics

Topic: Modeling and applications. Euler and Navier-Stokes equations

12:20-12:40

Speaker: Lars Eric Hientzsch

Title: Existence of weak solutions and low Mach number limit for quantum Navier-Stokes equations

Topic: Modeling and applications. Applications

12:40-13:00

Speaker: Katrin Grunert

Title: Uniqueness of conservative solutions for the Hunter-Saxton equation

Topic: Theoretical aspects. Nonlinear wave equations

**Thu06**

Room: 304

12:00-12:20

Speaker: Haitao Fan

Title: Hysteretic traffic flow and stop-and-go waves

Topic: Modeling and applications. Models of traffic flow

12:20-12:40

Speaker: Jan Friedrich

Title: Traffic flow models with nonlocal velocity: The singular limit problem

Topic: Modeling and applications. Models of traffic flow

12:40-13:00

Speaker: Giuseppe Visconti

Title: The BGK approximation of kinetic models for traffic

Topic: Modeling and applications. Models of traffic flow

## **Thu07**

Room: 305

12:00-12:20

Speaker: Alexander Kurganov

Title: Central-Upwind Schemes and Contact Discontinuities

Topic: Numerical methods. Conservation laws

12:20-12:40

Speaker: José Antonio García Rodríguez

Title: Second order finite volume IMEX-RK numerical methods for 1d models in option pricing

Topic: Modeling and applications. Applications

12:40-13:00

Speaker: Corrado Mascia

Title: Analysis and numerics of the propagation speed for hyperbolic reaction-diffusion models

Topic: Numerical methods. Other topics

## **Thu08**

Room: 306

12:00-12:20

Speaker: Michael Dumbser

Title: On thermodynamically compatible schemes for continuum mechanics

Topic: Numerical methods. Entropic schemes

12:20-12:40

Speaker: Hailiang Liu

Title: Efficient, positive, and energy stable schemes for multi-D Poisson-Nernst-Planck systems.

Topic: Numerical methods. Entropic schemes

12:40-13:00

Speaker: Stéphane Brull

Title: A discrete velocity numerical scheme for the 2D bitemperature Euler system

Topic: Theoretical aspects. Hyperbolic conservation laws

**13:00 - 15:00**

## **Lunch break**

**15:00 - 16:00**

**Thu09**

Room: 303

15:00-15:20

Speaker: Andrea Corli

Title: Traveling-wave solutions to reaction-convection equations with Perona-Malik diffusion

Topic: Theoretical aspects. Other topics

15:20-15:40

Speaker: Hailiang Liu

Title: Sharp critical thresholds in a hyperbolic system with relaxation

Topic: Theoretical aspects. Euler and Navier-Stokes equations

15:40-16:00

Speaker: Billel Guelmame

Title: Global weak solutions and blow-up for the Serre–Green–Naghdi equations with surface tension

Topic: Theoretical aspects. Other topics

**Thu10**

Room: 304

15:00-15:20

Speaker: Ingo Steldermann

Title: Zoom into the shallow: Resolving vertical flow structure with shallow moment equations

Topic: Modeling and applications. Geophysical flows

15:20-15:40

Speaker: Gerardo Hernandez-Duenas

Title: A central-upwind scheme for two-layer shallow-water flows with friction and entrainment along channels

Topic: Numerical methods. Well-balanced schemes

15:40-16:00

Speaker: Tomás Morales de Luna

Title: Vertical discretization of Euler equations in a shallow water framework

Topic: Modeling and applications. Geophysical flows

## **Thu11**

Room: 305

15:00-15:20

Speaker: José Germán López Salas

Title: Second order finite volume IMEX Runge-Kutta schemes for two dimensional parabolic PDEs in finance

Topic: Modeling and applications. Applications

15:20-15:40

Speaker: Giulia Bertaglia

Title: Physics-informed neural networks and uncertainty quantification for hyperbolic transport models: Application to epidemic dynamics

Topic: Modeling and applications. Kinetic models

15:40-16:00

Speaker: Léo Bois

Title: Neural network based closures to fluid systems trained with kinetic simulations

Topic: Numerical methods. Kinetic equations

## **Thu12**

Room: 306

15:00-15:20

Speaker: Maria Teresa Chiri

Title: A posteriori Error Estimates for Numerical Solutions to Hyperbolic Conservation Laws

Topic: Numerical methods. Conservation laws

15:20-15:40

Speaker: Aleksey Sikstel

Title: A local a-posteriori error estimator for systems of hyperbolic conservation laws

Topic: Numerical methods. Conservation laws

15:40-16:00

Speaker: Jan Nordström

Title: Provably Energy Stable Approximations of Nonlinear Hyperbolic Problems

Topic: Theoretical aspects. Non-conservative systems

**16:00 - 16:30**

**Coffee break**

**16:30 - 17:30**

**Thu13**

Room: 303

16:30-16:50

Speaker: Bojan Popov

Title: Invariant domain preserving approximations for the Euler equations with a tabulated equation of state

Topic: Numerical methods. Conservation laws

16:50-17:10

Speaker: Michael Ndjinga

Title: A class of conservative L2-stable schemes for the compressible Euler equations on staggered grids

Topic: Numerical methods. Fluid and multiphase flows

17:10-17:30

Speaker: Silvia Tozza

Title: New smoothness indicators for Hamilton-Jacobi equations applied to Image Segmentation

Topic: Numerical methods. High-order methods

**Thu14**

Room: 304

16:30-16:50

Speaker: Firas Dhaouadi

Title: A first-order hyperbolic reformulation of the Navier-Stokes-Korteweg system

Topic: Modeling and applications. Dispersive equations

16:50-17:10

Speaker: Eric Tovar

Title: Well-balanced second-order convex limiting technique for solving the Serre--Green-Naghdi equations

Topic: Modeling and applications. Dispersive equations

17:10-17:30

Speaker: Cipriano Escalante Sánchez

Title: On a General Non-hydrostatic Formulation for Boussinesq Dispersive Shallow Water Systems and its Numerical Approximation

Topic: Modeling and applications. Dispersive equations

**Thu15**

Room: 305

16:30-16:50

Speaker: Aneta Wróblewska-Kamińska

Title: Asymptotic analysis, low Mach number limit: from compressible to incompressible system

Topic: Theoretical aspects. Euler and Navier-Stokes equations

16:50-17:10

Speaker: Alessandro Morando

Title: Local existence of 2D compressible current-vortex sheets

Topic: Theoretical aspects. Hyperbolic conservation laws

17:10-17:30

Speaker: Rafael Granero Belinchón

Title: On an inhomogeneous fluid with odd viscosity

Topic: Theoretical aspects. Euler and Navier-Stokes equations

**Thu16**

Room: 306

16:30-16:50

Speaker: Jan Glaubitz

Title: Beyond polynomials: SBP operators for general function spaces

Topic: Numerical methods. Other topics

16:50-17:10

Speaker: Sandra May

Title: Commutative properties for conservative space-time DG discretizations of optimal control problems involving regularized hyperbolic problems

Topic: Numerical methods. High-order methods

17:10-17:30

Speaker: Niklas Kolbe

Title: A moving mesh Lagrangian Finite Volume method for convection-diffusion equations

Topic: Numerical methods. Other topics

## **17:30 - 18:00**

### **Poster session**

Speaker: Clarissa Astuto

Title: Tensor PDE model of biological network formation

Topic: Modeling and applications. Applications

Speaker: Rahul Barthwal

Title: Construction of solutions of a two-dimensional Riemann problem for a thin film model of a perfectly soluble anti-surfactant solution

Topic: Modeling and applications. Applications

Speaker: Sabrina Chebbi

Title: Discrete Energy behavior of a damped Timoshenko system

Topic: Modeling and applications. Applications

Speaker: Rafael Granero Belinchón

Title: Waves with viscosity

Topic: Modeling and applications. Applications

Speaker: Gino I. Montecinos

Title: Revisiting Essentially Non-Oscillatory Reconstruction Schemes

Topic: Modeling and applications. Applications

Speaker: Juan Francisco Rodríguez Gálvez

Title: Use of neural networks for tsunami maximum height and arrival time predictions

Topic: Modeling and applications. Applications

Speaker: Yuri Trakhinin

Title: Well-posedness of the free boundary problem in ideal compressible MHD with surface tension

Topic: Modeling and applications. Applications

Speaker: Sokrani Sokrani

Title: On the Global Well-Posedness of 3-D Density-Dependent MHD System

Topic: Modeling and applications. Euler and Navier-Stokes equations

Speaker: Ingo Steldermann

Title: Zoom into the shallow: Resolving vertical flow structure with shallow moment equations

Topic: Modeling and applications. Geophysical flows

Speaker: Yifan Bai

Title: Shock capturing and limiting in the Active Flux method

Topic: Numerical methods. Conservation laws

Speaker: Vadim Kolotilov

Title: Quasi-invariants method in CABARET schemes for hyperbolic systems of conservation laws that don't have the form of invariants

Topic: Numerical methods. Conservation laws

Speaker: Tomasz Debiec

Title: Energy conservation for the compressible Euler equations with vacuum

Topic: Theoretical aspects. Euler and Navier-Stokes equations

Speaker: Billel Guelmame

Title: On a Hamiltonian regularised Burgers equation

Topic: Theoretical aspects. Hyperbolic conservation laws

Speaker: Iuliia Petrova

Title: On admissibility criteria for contact discontinuities in Glimm-Isaacson model arising in chemical flooding

Topic: Theoretical aspects. Hyperbolic conservation laws

Speaker: Teke Xu

Title: Dynamical boundary conditions for the water hammer problem

Topic: Theoretical aspects. Hyperbolic conservation laws

Speaker: Difan Yuan

Title: Global Solutions of the Compressible Euler-Poisson Equations with Large Initial Data of Spherical Symmetry

Topic: Modeling and applications. Applications

Speaker: Almudena del Pilar Márquez

Title: Conservation laws and symmetry reductions for a hyperbolic wave equation

Topic: Modeling and applications. Equations of mathematical physics

Speaker: Dmitry Tkachev

Title: Linear instability of the polymeric fluid flow with constant flow rate in an infinite plane channel with perforated walls

Topic: Modeling and applications. Equations of mathematical physics

Speaker: Aparecido de Souza

Title: The Riemann solution for the generic three-phase flow of the Glimm-Isaacson model in porous media

Topic: Modeling and applications. Multiphase flows

Speaker: Anjali Nair

Title: An inverse problem and diffusion limit for the phonon transport equation

Topic: Numerical methods. Kinetic equations

Speaker: Yiran Hu

Title: Existence of Global in Time Weak Solutions to Singular 3D Quasi-Geostrophic Systems

Topic: Theoretical aspects. Euler and Navier-Stokes equations

Speaker: Van Phu Cuong Le

Title: A variational scheme for hyperbolic obstacle-type problems

Topic: Theoretical aspects. Nonlinear wave equations

# Friday

**09:00 - 09:45**

**Plenary speaker**

Room: Salón de Actos

09:00-09:45

Speaker: Tong Yang

Title: Stability Analysis on Compressible Navier-Stokes Equations with Strong Boundary Layer

**09:45 - 10:30**

**Invited speaker**

Room: Salón de Actos

09:45-10:30

Speaker: Emil Wiedemann

Title: Weak and measure-valued solutions of the Euler equations

**Invited speaker**

Room: 307+308+309

09:45-10:30

Speaker: Yao Yao

Title: Small scale formations in the incompressible porous media equation

**10:30 - 11:00**

**Coffee break**

## 11:00 - 12:00

### Fri01

Room: 303

11:00-11:20

Speaker: Sondre Tesdal Galtung

Title: Stumpons are non-conservative traveling waves of the Camassa–Holm equation

Topic: Theoretical aspects. Nonlinear wave equations

11:20-11:40

Speaker: Jan Giesselmann

Title: Weak-strong stability for wave-maps

Topic: Theoretical aspects. Nonlinear wave equations

11:40-12:00

Speaker: Rafael Granero Belinchón

Title: On certain nonlocal PDEs describing weakly nonlinear waves

Topic: Theoretical aspects. Nonlinear wave equations

### Fri02

Room: 304

11:00-11:20

Speaker: Yuhuan Yuan

Title: Convergence and error estimates of the Godunov Method for Multidimensional Compressible Euler Equations

Topic: Theoretical aspects. Measure valued solutions

11:20-11:40

Speaker: Wladimir Neves

Title: Solvability of the Fractional Hyperbolic Keller-Segel System

Topic: Modeling and applications. Applications

11:40-12:00

Speaker: Daniel Inzunza

Title: A non-local pedestrian flow model with anisotropic interactions and domain boundaries

Topic: Modeling and applications. Applications

### Fri03

Room: 305

11:00-11:20

Speaker: Alina Chertock

Title: Numerical Simulations of Shallow Water Equations with Uncertainty

Topic: Numerical methods. Uncertainty quantification

11:20-11:40

Speaker: Elisa Iacomini

Title: Uncertainty Quantification in Hierarchical Vehicular Flow Models

Topic: Numerical methods. Uncertainty quantification

11:40-12:00

Speaker: Maria Lukacova

Title: Convergence analysis of some uncertainty quantification methods for compressible Navier-Stokes equations

Topic: Numerical methods. Uncertainty quantification

**Fri04**

Room: 306

11:00-11:20

Speaker: Raimund Bürger

Title: Degenerating triangular convection-diffusion systems modelling froth flotation

Topic: Modeling and applications. Multiphase flows

11:20-11:40

Speaker: Francesca Marcellini

Title: Hyperbolic Techniques in Epidemiological Modeling

Topic: Modeling and applications. Biological and health related models

11:40-12:00

Speaker: Marica Pelanti

Title: Numerical modeling of compressible two-phase flows with arbitrary-rate heat and mass transfer

Topic: Numerical methods. Fluid and multiphase flows

## 12:00 - 13:00

### Fri05

Room: 303

12:00-12:20

Speaker: Razvan Fetecau

Title: Aggregation with intrinsic interactions on Riemannian manifolds

Topic: Theoretical aspects. Measure valued solutions

12:20-12:40

Speaker: Antonio Esposito

Title: Nonlocal dynamics on graphs

Topic: Theoretical aspects. Measure valued solutions

12:40-13:00

Speaker: Gennaro Ciampa

Title: Magnetic reconnection in Magnetohydrodynamics

Topic: Theoretical aspects. Other topics

### Fri06

Room: 304

12:00-12:20

Speaker: Julia Docampo

Title: A Filtering Framework for Finite Volume/Element Schemes

Topic: Numerical methods. High-order methods

12:20-12:40

Speaker: Jooyoung Hahn

Title: Time-dependent eikonal equation with Soner boundary condition

Topic: Numerical methods. High-order methods

12:40-13:00

Speaker: Peter Frolkovic

Title: Semi-implicit numerical methods for conservation laws and level set problems

Topic: Numerical methods. High-order methods

### Fri07

Room: 305

12:00-12:20

Speaker: Corrado Mascia

Title: Shock profiles for fluid-particles flows

Topic: Modeling and applications. Multiphase flows

12:20-12:40

Speaker: Christoph Matern

Title: The Riemann Problem for a Weakly Hyperbolic Two-Phase Flow Model of a Dispersed Phase in a Carrier Fluid

Topic: Modeling and applications. Applications

12:40-13:00

Speaker: Ferdinand Thein

Title: A Non-Strictly Hyperbolic System for Compressible Two Phase Flows

Topic: Modeling and applications. Multiphase flows

**Fri08**

Room: 306

12:00-12:20

Speaker: Juan Manuel Delgado-Sánchez

Title: A correction of the friction term in depth-averaged granular flow models related to the motion/stop criterion

Topic: Modeling and applications. Geophysical flows

12:20-12:40

Speaker: Jose Manuel Gonzalez Vida

Title: The tsunami urgent computing service in the ARISTOTLE consortium

Topic: Modeling and applications. Applications

12:40-13:00

Speaker: Carlos Sánchez Linares

Title: Towards Faster Than Real Time Simulations in tsunami modelling

Topic: Modeling and applications. Applications

**13:00 - 15:00**

**Lunch break**

