



UNIVERSITÀ
DEGLI STUDI
DELL'AQUILA

G S GRAN SASSO
S I SCIENCE INSTITUTE
SCHOOL OF ADVANCED STUDIES
Scuola Universitaria Superiore

PROGRAMME



July^{6th} - 10th
2026

under the patronage of



DIIE
Dipartimento di Ingegneria
Industriale e dell'Informazione
e di Economia

9 JULY

Room1 Auditorium

09:00 Pierre-Thomas Brun — Plenary (Chair: Francesco Viola)

SESSION: MS: Emerging Patterns in Biological Flows Chair: *Mattia Serra*

10:00 **Rajat Mittal**-Vortices write the blueprint: how vortex dynamics reveal the evolved design of swimming fish

10:15 **Roberta Santoriello**-Key features of batoid locomotion: a numerical study

10:30 **Eric Segalerba**-Why jellyfish need stopping vortices: hydrodynamic consequences of bell perforation

10:45 **Emir Erdem**-Geometry-dependent optical trapping and dynamical stability of deformed red blood cells

11:00 Coffee break

SESSION: Waves and Vortex Dynamics Chair: *Ion Dan Borcia*

11:30 **Morten Brørs**-Two-parameter bifurcations of critical points of vorticity

11:45 **Ahmet Cagdas Kalayci**-RANS closure-driven stability of the draft tube vortex rope

12:00 **Tristan Favre**-On the change in flow topology from different wing tip geometries in ground effect

12:15 **Anil Kumar**-From Miles to Holmboe to KH: instability transitions in two-phase shear flow

12:30 Lunch

SESSION: MS: Emerging Patterns in Biological Flows Chair: *Vincenzo Citro*

14:00 **Antonio Barletta**-Anomaly of Darcy-Bénard instability with anomalous diffusion

14:15 **Niteen Kumar**-Detecting seizures through bifurcation in neuron dynamics

14:30 **Filippo Caruso Lombardi**-Hemodynamic consequences of ventricular tachycardia

14:45 **Gianlorenzo Granata**-Intra- versus supra-annular deployment of the mechanical aortic valve: a fluid-structure interaction investigation

15:00 **Valerio Lupi**-On the link between hydrodynamic instabilities and flow-induced thrombosis in extracorporeal medical devices

15:15 Coffee break

15:45 Closing remarks

9 JULY

Room2

Ipogea

SESSION: Suspensions and Particulate Flows Chair: *Cristian Marchioli*

- 10:00 **Andrew Boyd**-Chaotic orbits of multiple immersed ellipsoids
- 10:15 **Alok Kumar**-Nonlinear particle dynamics in vortical flows
- 10:30 **Sasha Perez**-Emptying bottles filled with suspensions
- 10:45 **Adam Carter**-Collective diffusion of a quasi-2D colloidal monolayer above a wall
- 11:00 **Coffee break**

SESSION: Suspensions and Particulate Flows Chair: *Ramiro Godoy-Diana*

- 11:30 **Camille Porceillon**-Emergence of fluidization instabilities at granular interfaces
- 11:45 **Harishankar Muppurala**-Quantifying fragmentation events of flexible fibers in wall-bounded turbulence
- 12:00 **Darish Jeswin Dhas**-The tamed chaos of long flexible fibers in wall turbulence
- 12:15 **Ilteber R. Ozdemir**-Collective dynamics of active filament arrays
- 12:30 **Lunch**

SESSION: Waves and Vortex Dynamics Chair: *Morten Bråns*

- 14:00 **Grégoire Le Lay**-Parametric destabilization of an acoustically forced rivulet
- 14:15 **Ion Dan Borcia**-Surface waves in a circular channel: generation, propagation, collision, resonance and mean flow
- 14:30 **Philippe Petitjeans**-Perfect active absorption of water waves in a channel by a dipole source
- 14:45 **Evgeny Mogilevskiy**-Wave pattern formation in a dispersive system: development of wind waves
- 15:00 **Nikhil Janardan Yewale**-Finite-amplitude viscous gravity-capillary water waves with wind-forcing
- 15:15 **Coffee break**

9 JULY

Room3

Main lecture hall

SESSION: Computational Methods Chair: *Francesco Duronio*

10:00 **Paolo Guida**-Neural model predictive control for precision histotripsy

10:15 **Didzis Berenis**-Attractor sorting algorithm for post processing bistable hydrodynamic systems with intermittent switching

10:30 **Ilies Haouche**-Rayleigh-Taylor instability in the presence of surfactants: a theoretical and numerical study using a coupled VOF/diffuse interface method

10:45 **Henar Herrero**-A certified reduced-order model based on Legendre collocation for a Rayleigh-Bénard problem

11:00 Coffee break

SESSION: Computational Methods Chair: *Francesco De Vita*

11:30 **Didzis Berenis**-Exploration of techniques for finding chaotic attractors and their switching statistics in intermittent bistable hydrodynamic systems

11:45 **Eric Segalerba**-Variational flow-state estimation and sensor placement optimization from discrete measurements

12:00 **Francesco Duronio**-A low-dissipative solver for multi-species compressible flow simulations on unstructured grids

12:15 **Darío Martínez Martínez**-Implicit Schwarz domain decomposition for the Rayleigh-Bénard convection

12:30 Lunch

15:15 Coffee break



SOLUTION

EVENTS | COMMUNICATION | MEETING & CONGRESS