Preface to DSFD 2021

DSFD 2021, the 30th edition of the Discrete Simulation of Fluid Dynamics, took place again at University of Tuscia, Viterbo, Italy on September 13-17 2021. Due to the persisting uncertainties associated with the COVID-19 pandemics it was again organised virtually, like the preceding one.

And like the preceding one, it was characterised by a vibrant participation with talks from around the world, covering a broad spectrum of topics, including applications in soft matter and multiphase flows [1–3,5,12], flows in porous media and deep-sea sponges [6, 17], hemodynamics [7], active matter [15], relativistic [10] and quantum fluids [4], magnetohydrodynamics [13], multiscale molecular dynamics [8], as well as a number of methodological advances [9, 11, 14, 16].

This large variety of subjects confirms the vitality of the field, thirty-five years down the line of the first 1986 edition in Los Alamos, when some of the present contributors were probably not yet born.

Even though the conference solicits and welcomes contributions from the full portfolio of mesoscale methods, the vast majority of the contributions deals with new variants and applications of the Lattice Boltzmann method, reflecting a consolidated trend over the years.

Mesoscale methods have made a prominent contribution to the simulation of complex states of flowing matter and are constantly expanding in the direction of incorporating additional physics to describe problems of increasing complexity at the crossroad between the physics of fluids and its allied disciplines, such as material science, engineering, as well as life sciences. Such contribution is more strategic then ever in the current worldwide scenario, characterized by unprecedented scientific-societal challenges, such as pandemics and the energy crisis.

The DSFD series has played a unique role in promoting and nurturing the remarkable development of mesoscale methods and we are confident it will keep doing so for many years to come.

Special Issue Editors:

Giacomo Falcucci
University of Rome "Tor Vergata", Rome, Italy
Harvard University, Cambridge, MA, USA

Sauro Succi
Italian Institute of Technology, Rome, Italy
Harvard University, Cambridge, MA, USA

Marco Lauricella
IAC – CNR, Rome, Italy

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