

# HPCSIM

FRONTIERS OF  
HIGH-PERFORMANCE COMPUTING  
IN MODELING AND SIMULATION

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**2023** SEPTEMBER 14<sup>th</sup>-15<sup>th</sup>  
PADOVA, ITALY

[www.m3eweb.it/HPCSIM](http://www.m3eweb.it/HPCSIM)

## Event focus

The demand for accurate and reliable numerical simulations of complex phenomena is increasing exponentially across a broad range of scientific and engineering applications. Problems like modeling fractal formation in macroscopic elasto-plasticity, simulation of biological systems, flow and transport in fractured formations are extremely challenging and require specific knowledge to be addressed.

Moreover, modeling becomes even more expensive when several different configurations or scenarios must be considered or when the object of the analysis must be optimized according to some criteria.

In addition, Machine and Deep Learning approaches (such as PINN, Deep Learning ROM, Auto-encoders just to name a few examples) are beginning to play an important role in advancing scientific discovery in several engineering domains, traditionally dominated by the numerical solution of PDEs.

To address the request for larger simulations, involving billions of unknowns, the development of novel and technology-aware algorithms able to exploit modern HPC systems is of paramount importance.

The focus of this event is exploring the most recent methodologies available to accelerate simulation software on massively parallel platforms providing to researchers as well as practitioners a survey of the potentiality of HPC in real world applications.

# When

2023  
September 14<sup>th</sup>-15<sup>th</sup>

# Where

**PADOVA - ITALY**  
c/o Le Village by CA  
Piazza Giacomo Zanellato 23

This event is organized by  
Department of Civil,  
Environmental And  
Architectural Engineering  
of University of Padova  
in collaboration with M3E



UNIVERSITÀ  
DEGLI STUDI  
DI PADOVA



DIPARTIMENTO DI INGEGNERIA  
CIVILE, EDILE E AMBIENTALE  
DEPARTMENT OF CIVIL, ENVIRONMENTAL  
AND ARCHITECTURAL ENGINEERING



MATHEMATICAL  
METHODS and  
MODELS for  
ENGINEERING

# Keynote speakers

## Massimo Bernaschi

Massimo Bernaschi is with CNR, the National Research Council of Italy as Chief Technology Officer of the Institute for Applied Computing. In 2012 he has been named "Cuda Fellow".

He has been four times finalist in the Gordon Bell challenge.



## Luis Crivelli

Luis Crivelli holds a PhD in Aerospace Engineering and he is currently Technology Director at Simulia Corp., Dassault Systemes.

He is also Lecturer of Software Engineering For Scientific Computing at U.C. Berkeley.



# Program

## Thursday 14<sup>th</sup> Friday 15<sup>th</sup>

9:00 - 9:15	Event opening	Second day opening
9:15 - 10:15	Keynote lecture: Massimo Bernaschi	Keynote lecture: Luis Crivelli
10:15 - 10:45	Coffee break	Coffee break
10:45 - 12:15	Session 1 (3 talks)	Session 4 (3 talks)
12:15 - 14:15	Lunch break	Lunch break
14:15 - 15:45	Session 2 (3 talks)	Session 5 (3 talks)
15:45 - 16:15	Coffee break	Coffee break
16:15 - 17:15	Session 3 (2 talks)	Session 6 (2 talks)
17:15	Closure of first day	Closure of second day

For the latest version of the schedule, visit:

[www.m3eweb.it/HPCSIM](http://www.m3eweb.it/HPCSIM)

# Sponsorship



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