Time	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	October, 13	October, 14	October, 15	October, 16	October, 17	October, 18
09:00 – 10.30	Angela Madeo	Samuel Forest	Bruno Lombard	Jean-François Ganghoffer	Varvara Kouznetsova	Ingo Münch
11:00 – 12:30	Jean-François Ganghoffer	Patrice Cartraud	Manuel Collet	Patrice Cartraud	Giulio Sciarra	Ingo Münch
	Lunch break					
14:00 – 15:30	Patrizio Neff	Varvara Kouznetsova	Angela Madeo	Patrizio Neff	Marco Valerio d'Agostino	Marco Valerio d'Agostino
16:00 – 17:30	Giuseppe Rosi	Giulio Sciarra	Bruno Lombard	Giuseppe Rosi	Manuel Collet	
18:00	Welcome aperitif		Conference dinner			

Admission

The course is offered as on-site attendance and spots will be allocated on a first-come, first-served basis.

Application forms should be submitted via https://www.ms2master.com/summer-school-2025

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dortmund university

UNIVERSITÉ DE LORRAINE

CENTRALE NANTES

Université franco-allemande Deutsch-Französische Hochschule

erc

META-LEGO (101001759)

Multi-scale approaches for architectured and microstructured materials and metamaterials

Nantes, October 13-18, 2025

Summer School coordinated by

Angela Madeo
TU Dortmund, Germany

Jean-François Ganghoffer
Université de Lorraine, Nancy, France

Supported by
Université franco-allemande Deutsch-Französische Hochschule
and
European Commission H2020

Local scientific and organizational support

Giulio Sciarra
Ecole Centrale de Nantes

Multi-scale approaches for architecture, microstructured materials and metamaterials

This interdisciplinary program offers an unparalleled opportunity to explore the fascinating world of mechanics and structural engineering for architected materials and metamaterials. Join us for the latest advancements in heterogeneous materials, homogenization methods, and their applications in structural design.

Over the course of 6 days, participants will engage in a dynamic mix of lectures, workshops, and hands-on activities led by renowned experts in the field. Study fascinating topics such as microstructure-based modeling, effective medium theories, and the design of metamaterials with tailored mechanical properties. Explore a range of key themes, including the mechanics of heterogeneous media, homogenization techniques, multiscale modeling approaches, 3D printing, experimental methods, and the design and characterization of metamaterials. Investigate the behavior of complex materials at different length scales and in different regimes (statistics, dynamics, acoustics), uncovering the underlying principles that govern their mechanical response. Through interactive sessions and collaborative projects, you'll gain practical insights and skills that are also applicable to real-world engineering challenges.

Our distinguished faculty members and guest speakers bring a wealth of expertise and experience to the summer school led by Prof, Angela Madeo from the TU Dortmund University and Prof. Jean-François Ganghoffer from the University of Lorraine. They will guide participants through an enriching learning journey with other esteemed speakers.
In addition to the academic program, participants will have the opportunity to explore the vibrant culture and history of Nantes, our host city. Cultural excursions and networking events will complement the academic program, providing a well-rounded experience for participants to connect with peers and explore the beauty of Nantes.

Audience

The Summer School is addressed to international PhD students and postdoctoral researchers in mechanical and civil engineering, applied mathematics, physics, mechanics of materials, and material science who are interested in broadening their interests and knowledge in analyzing and designing heterogeneous materials.

Location

The Summer School will be held at the Ecole Centrale de Nantes, France.

Lecturers

Patrice Cartraud – École Centrale de Nantes, France

Manuel Collet – French National Centre for Scientific Research, Paris, France

Samuel Forest – Paris Sciences et Lettres University, France

Jean-François Ganghoffer – Université de Lorraine, Nancy, France

Giulio Sciarra – École Centrale de Nantes, France

Varvara Kouznetsova – Eindhoven University of Technology, Netherlands

Bruno Lombard – French National Centre for Scientific Research, Marseille, France

Angela Madeo – TU Dortmund, Germany

Ingo Münch – TU Dortmund, Germany

Patrizio Neff – University of Duisburg-Essen, Germany

Marco Valerio d'Agostino – INSA, Lyon, France

Giuseppe Rosi – Paris-Est Créteil University, France

ERC Meta-Lego – Results will be presented during the session

Lectures

All lectures will be given in English and their notes can be downloaded. Instructions will be sent to accepted participants.