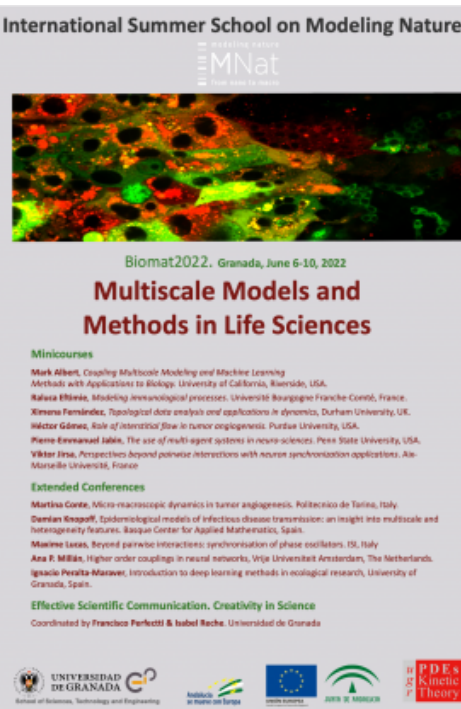


# IDSS Biomat 2022. Multiscale Models and Methods in Life Science

JUNE 6TH -10TH 2022



International Summer School on Modeling Nature

MNaT

Biomat2022, Granada, June 6-10, 2022

**Multiscale Models and Methods in Life Sciences**

**Minicourses**

Mark Albert, Coupling Multiscale Modeling and Machine Learning Methods with Applications to Biology, University of California, Riverside, USA.

Nakata Hiroaki, Modeling Mesoscale Processes, Université Bourgogne Franche-Comté, France.

Ximena Fernández, Topological data analysis and applications in dynamics, Durham University, UK.

Walter Gilman, Role of interstitial flow in tumor angiogenesis, Purdue University, USA.

Marie-Eve Hénaff, The use of multi-agent systems in neurosciences, Pease State University, USA.

Viktor Jirsa, Perspectives beyond pairwise interactions with neuron synchronization applications, Aix-Marseille Université, France.

**Extended Conferences**

Martina Conti, Micro-macroscopic dynamics in tumor angiogenesis, Politecnico di Torino, Italy.

Devran Kozgoff, Epidemiological models of infectious disease transmission: an insight into multiscale and heterogeneity features, Basque Center for Applied Mathematics, Spain.

Maxime Taxis, Beyond pairwise interactions: synchronization of phase oscillators, IS, Italy.

Aza R. Miller, Higher order couplings in neural networks, WU, Universität Amsterdam, The Netherlands.

Ignacio Peralta Maraver, Introduction to deep learning methods in ecological research, University of Granada, Spain.

**Effective Scientific Communication. Creativity in Science**

Coordinated by Francesco Perletti & Isabel Rahe, Universidad de Granada

UNIVERSIDAD DE GRANADA  
Instituto de Matemática de Berge  
EUROPEAN UNION  
INSTITUT FÜR MATHEMATIK  
PDEs Kinetic Theory

The understanding of complex systems is one of the main scientific endeavours nowadays. Complex phenomena abound in Life Sciences and in Social Sciences, in connection with practical problems relevant to modern societies: cancer prognosis, developmental biology, ecological networks, traffic flow or evacuation protocols just to name a few. Most of the times the proper understanding of such complex phenomena requires a multiscale point of view, both in space and time. Quantitative methods are being developed during the recent years to tackle multiscale dynamics. We feel that this is the right time to set up a summer school focused on the recent developments in the field.

The courses will cover multiscale modeling techniques, machine learning, deep learning, neural networks, topological data analysis and specific applications to neuroscience, tumor angiogenesis, immunology and multi-agent systems. From the point of view of PhD training, a sensible balance between theory and practice is promoted, while fostering multidisciplinary approaches. Interactions between attendees and speakers will be promoted on a lively environment and in several social events.

For more information on registration, grants and important dates please visit the homepage of the event:

- [Biomat 2022 Website](#)

## Contact information

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