

Cargèse International School 2021

Wave propagation and control in complex media – From order to disorder May 10th – 14th, 2021

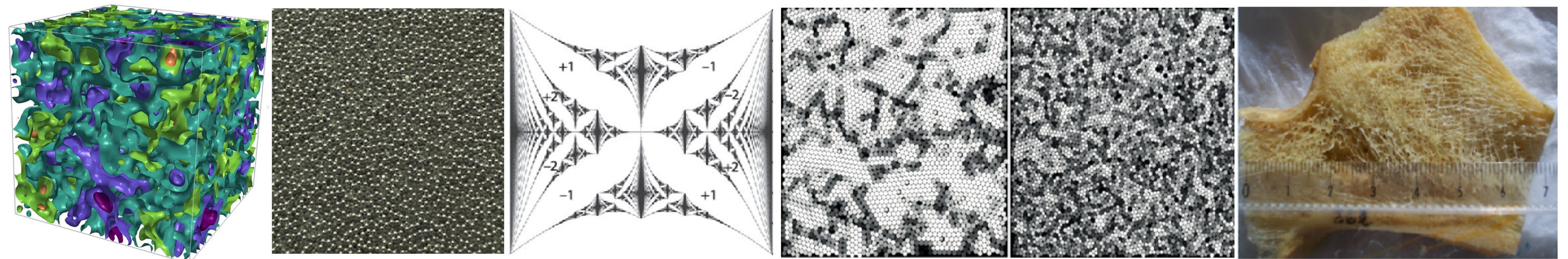
School director
Pr. Mathias Fink

**Scientific and
organizing committee**

Dr. F. Lemoult
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Understanding wave propagation in homogeneous media is the basis of classical imaging, sensing or telecommunications techniques. The presence of disorder complicates these problems and the study of propagation in disordered media, associated with spatio-temporal wave control techniques, has enabled major advances in many fields, from acoustics to optics, including seismology and microwave. All these techniques share the same base, namely the wave propagation medium itself. This remains a subject of study in its own right, which we wish to address during this summer school, while keeping in mind the spirit of making crossings between the different communities of wave physics. Indeed, there is a multitude of different propagation media, each coming with its own specificities and its own terminology.

In particular, the usual propagation media are generally neither totally ordered nor totally disordered. The introduction of disorder correlations or particular symmetries introduces non-trivial behaviors for waves that open the way to new applications. Based on this observation, the main theme of our school is the study of the order/disorder transition in complex media. The objective is to share fundamentally multidisciplinary knowledge acquired by experts from different fields of research who face similar problems. The subjects treated will allow approaching the theoretical aspects related to complex environments (correlated disorder, topology, multiple scattering, disordered waveguides) as well as their practical applications (optical and microwave telecommunications, imaging, non-destructive testing, computation by physical systems, metamaterials).



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Main topics will include

Quantum and classical optics, acoustics, microwaves, seismology, granular media, topology, metamaterials, etc.

Eminent scientists in the field will animate the school

Pr. **Andrea Alu** – City University of New York
Pr. **Jacqueline Bloch** – Université Paris Saclay
Pr. **Yaron Bromberg** – Hebrew University of Jerusalem
Pr. **Hui Cao** – Yale University
Pr. **Rémi Carminati** – ESPCI Paris - PSL University
Pr. **Ad Lagendijk** – University of Twente
Pr. **Joel Carpenter** – University of Queensland
Pr. **Mordechai Segev** – Technion
Pr. **Marcel Filoche** – École Polytechnique

Pr. **Mathias Fink** – ESPCI Paris - PSL University
Pr. **Arnaud Tourin** – ESPCI Paris - PSL University
Pr. **Nader Engheta** – University of Pennsylvania
Pr. **Ulrich Kuhl** – Université Côte d'Azur
Pr. **Stefan Rotter** – TU Wien
Pr. **Philippe Roux** – University Grenoble Alpes
Pr. **Ping Sheng** – HKUST, Hong Kong
Pr. **David Smith** – Duke University
Pr. **George C. Valley** – Aerospace Corporation
Pr. **Jelena Vuckovic** – Stanford University

■ **Registration fees (lunch and lodging included)** 650 € for undergraduate and PhD students – 900 € otherwise

■ **WEB** https://www.institut-langevin.espci.fr/cargese_2021

■ **Deadline for applications** April 9, 2021

Image credits D.N. Arnold – F. Lemoult – J.K. Asbóth et al. Phys. Rev. Lett. (2017) – J. Ricouvier et al. Phys. Rev. Lett. (2017) – A. Aubry