

### Spatio-Temporal Control of Waves: From Imaging to Sensing April 24<sup>th</sup> – 28<sup>th</sup>, 2017

**School director:** Mathias Fink

**Scientific committee:**

Pr. Hui Cao (USA)

Pr. Allard Mosk (The Netherlands)

Pr. John Page (Canada)

**Organizing committee:**

A. Aubry, G. Lerosey, R. Pierrat

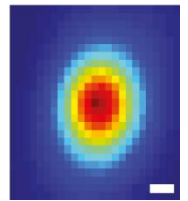
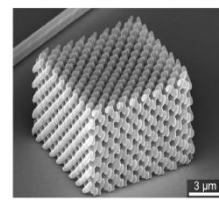
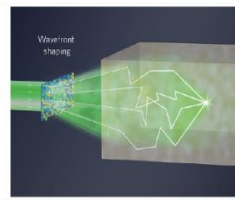
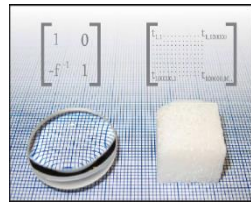
**Contact**

Cargèse Summer School - 2017

Institut Langevin

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Amongst numerous communities and fields of research related to wave physics, scientists share the same goal of exploring and understanding what surrounds them, from the very small scale of the atom to the infinite one of the universe. Throughout these disciplines, although different types of waves, spatial scales or propagation media require specific instruments and methods, some key concepts are clearly of common interests. For instance, the physics of wave propagation in complex, scattering and structured media is at the heart of various research fields such as metamaterials and crystals, Anderson localization in fundamental physics, or bio-imaging in applied physics. Similarly, arrays of sensors are being more and more used in domains ranging from ultrasound imaging or optics, to those of seismology or radio-astronomy. Furthermore, all these research fields are clearly working towards very similar goals related to the control of wave propagation, through the concept of time reversal or wave-front shaping, or to their signal processing counterparts, namely, the notions of cross-correlation imaging or compressive sensing.

#### Main topics will include

waves in complex media, wave front shaping, metamaterials, photonic and phononic crystals, cross-correlation imaging, compressed sensing, nanophotonics

#### Eminent scientists in the field will animate the school.

Pr. Hui Cao – *Multimode fibers*

Pr. Steven Cummer – *Acoustic metamaterials*

Pr. Yonina Eldar – *Compressed sensing*

Pr. Mathias Fink – *Matrix approach of wave imaging*

Pr. Ad Lagendijk – *From transport to diffusion*

Pr. Georg Maret – *Dynamic light scattering*

Pr. Fabrice Mortessagne – *Topological insulators*

Pr. Allard Mosk – *Wave-front shaping*

Pr. John Page – *Acoustic waves in complex media*

Pr. John Pendry – *Transformation optics*

Pr. Stefan Rotter – *Mesosopic scattering meets wave control*

Pr. Juan José Sáenz – *Near-field optics and multiple scattering*

Pr. Sergey Skipetrov – *Anderson localization*

Pr. David Smith – *Electromagnetic metamaterials*

Pr. Douglas Stone – *RMT applied to wave transport*

Pr. Willem Vos – *Photonic band gap crystals*

Pr. Thomas Wellens – *Mesosopic physics with cold atoms*

**Registration fees** (lunch and lodging included): 500€ for undergraduate and PhD students - 750€ otherwise

**WEB:** <https://www.institut-langevin.espci.fr/spatio-temporal-control-of-waves-from-imaging-to-sensing-2017>

**Deadline** for applications to **February 15<sup>th</sup>, 2017** - <https://www.institut-langevin.espci.fr/registration926>