

M2 Physics of complex system

The scope of the Palm project M2 Physics of Complex Systems is to fund the participation of students of the Masters in Physics of Complex Systems (PCS) / Physique Theorique des Systemes Complexes (PTSC) to the annual spring college on Physics of Complex Systems. It is held at the Abdus Salam ICTP in Trieste

Formation et établissement concerné ici avec un lien (par exemple : [Master in Physics of Complex Systems](#))

Part of the funding is also allocated to support speakers. The college, of the duration of four weeks, forms integral part of the PCS program and can be chosen as an option alternative to courses in Paris for PTCS students, giving rise to 12 ECTS in their cursus studiorum. The college is open to the participation of external Masters and PhD students from all over the world. In particular the participation of students from developing countries is financed by ICTP. The program, different each year, offers a formation in modelling of Complex Systems in Physics as well as interdisciplinary domains, that depending of the year can be at the interface with Biology, Engineering, Economics or Computer Science to name but a few. Each year, 5 courses of 9 lectures plus practical exercises are given by renowned specialists at the international level. Subjects are chosen among topic of actual research interest. Each course is terminated by a final exam. During their stay in Trieste, the students and the lecturers are lodged at the ICTP guest house. Seminars given by the PhD students of the nearby SISSA are regularly organized. This exposes very early in their formation the students to a vibrant international research environment.

The courses given in 2015 and 2016 editions were the following:

- Year 2015: 21 May to 19 June 2015
 - Arezki Boudaoud (ENS Lyon, France) Morphogenesis: from physical to biological systems
 - Fabrizio Lillo (Scuola Normale Superiore, Pisa, Italy) Statistical methods for quantitative finance
 - Satya N. Majumdar (Université de Paris-Sud, France) Introduction to random matrix theory and its applications
 - Alessandro Treves (SISSA, Italy) Evolution of neuronal computation
 - Riccardo Zecchina (Politecnico di Torino, Italy) Statistical inference, Optimization and Machine Learning
 - & Florent Krzakala (ENS Paris, France)
- Year 2016: 25 April – 20 May
 - Aaron King (Univ. of Michigan, USA) Model-based inference in ecology and epidemiology
 - Martin Lenz (Univ. Paris Sud, Orsay, France) Statistical mechanics of cellular motion
 - Giuseppe Mussardo (SISSA, Italy) Conformal field theory
 - Giuseppe Santoro (SISSA, Italy) Non-equilibrium quantum systems
 - Susanna Still (University of Hawaii, USA) Machine learning and physics of information processing

On a total funding of 20 000€, 10258 € were spent, while 9742 € are still unspent. We have therefore asked for an extension of the funding till june 2017 to fund the college of next year. This was accepted by P. Mendels on Nov. 19 2015.

The confirmed lecturers of the 2017 college are the following:

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| Matt Scott (Waterloo) | Bacterial physiology |
| Aleksandra Walkzac/Thierry Mora (ENS Paris) | Evolution and immunology |
| Pasquale Calabrese (SISSA Trieste) | Quantum Information |

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