

INSTITUT D'ÉTUDES SCIENTIFIQUES DE CARGÈSE

Cargèse International School 2018

Analytics, Inference, and Computation in Cosmology: Advanced methods

September 02 - 08, 2018

INSTITUT
D'ÉTUDES
SCIENTIFIQUES
DE CARGÈSE



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CIMPA



Cosmology is about understanding the origin and evolution of the universe and the formation of all structure within it — one of the most challenging intellectual projects undertaken by humanity. To make progress, we need the most powerful mathematical methods available: analytics to guide us through subtle theoretical issues, simulations to compute the detailed quantitative predictions of the theory, and statistical inference to confront these predictions with large cosmological data sets.

The IHP trimester entitled “Analytics, Inference, and Computation in Cosmology,” will be dedicated not only to the “what” and the “why” but also, and specifically, to the “how” of cosmological calculation. Is the mathematical toolset of cosmology adequate for the challenges ahead? Where do we need new ideas?

Whether it be on advances in analytical techniques, innovative computational methods or new ways to infer cosmological information from cosmological data, this trimester will be an occasion to gather the leading experts from around the world to share their expertise, spark new ideas and collaborations, and equip the next generation of cosmologists with the innovative mathematical tools we need as we enter a new era in precision cosmology.

Topics

Unbounded effective field theory

Random matrices

Introduction to Bayesian analysis

Computational methods in Cosmology

Data Analysis

Lecturers

Daniel Baumann (Amsterdam Univ.), Sebastien Renaux-Petel (IAP, Paris), Roberto Trotta (Imperial College, London), Klaus Dolag (MPI für Astrophysik, Munich), Daniela Huppenkotehn (Univ. of Washington)

Scientific Committee

David Hogg (Center for Cosmology and Astroparticle Physics), Lisa Randall (Harvard Univ.), Joe Silk (IAP & Univ. of Oxford), Eva Silverstein (Stanford Univ.), David Spergel (Princeton Univ.)

Organization Committee

Peter Patrick (IAP), Roland Triay (CPT Marseille), Benjamin Wandelt (IAP), Matias Zaldarriaga (IAS, Princeton)

Application and registration

Registration : <http://www.iesc.univ-corse.fr/en/participation/online-registration/>

Contact : Roland Triay (triay@cpt.univ-mrs.fr)

Deadline Application : August 6th, 2018

Website : <http://www.cpt.univ-mrs.fr/~cosmo/MFC2018/index.php>