Physics of Wave Turbulence and Beyond
Celebrating the 60th birthday of Sergey Nazarenko
From September 2 to 6, 2024

Workshop

The classical theory of turbulence, based on our physical understanding of the Navier-Stokes equations, falls short when applied to systems composed of waves, a fundamental ingredient commonly found in nature. For this reason, wave turbulence has become a major topic in the field of turbulence, where substantial progress has been made over the last two decades. This advancement encompasses laboratory experiments, observations, numerical simulations, and mathematical theories. Wave turbulence studies now extend across a variety of physical domains, including oceanography, atmospheric dynamics, astrophysics, cosmology, mechanics and quantum physics. On the one hand, these waves, spanning from atomic to cosmic scales, share common properties that can be explored using unified concepts. On the other hand, wave turbulence can exhibit both weak and strong regimes, sometimes coexisting: addressing this variety of regimes constitutes fundamental challenges at both theoretical and observational levels.

The workshop aims to bring together experts in wave turbulence to present the state of the art in the field at the theoretical, numerical and experimental levels. The limits of wave turbulence will also be discussed, including but not limited to strong wave turbulence and singularity formation. The main themes will be:

- Mathematics of kinetic equations
- Observation of wave turbulence
- Beyond wave turbulence

Celebrating the 60th birthday of Sergey Nazarenko

The workshop will be an opportunity to celebrate the 60th birthday of Sergey Nazarenko, whose work over the past 30 years has significantly contributed to the understanding and current research dynamics in wave turbulence.

Invited speakers

Pierre Cortet
Vincent David
Yu Deng
Romain Dubessy
Bérengère Dubrulle
Éric Falcon
Gregory Falkovich
Sergey Nazarenko
Alan Newell
Miguel Onorato
Davide Proment
Samriddhi Sankar Ray
Michal Shavit
JonathanSkipp
Ying Zhu

Organizers

Sébastien Galtier
Giorgio Krstulovic
Jason Laurie
Simon Thalabard

ÉCOLE DE PHYSIQUE DES HOUCHES

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