



Du  
**11**  
JAN.  
2021  
au  
**19**  
FÉV.  
2021

07h30  
-  
19h30

**2021-T1A QUANTITATIVE EVOLUTION, PHYLOGENY AND ECOLOGY :  
FROM MODELS TO DATA AND BACK**

**Quantitative evolution, phylogeny and ecology : from models to data and  
back, Paris**

IHP  
Amphitheater Darboux  
11, Rue Pierre et Marie Curie  
75005 Paris

**Thematic trimester program at Institut Henri Poincaré, Paris**

**Quantitative evolution, phylogeny and ecology : from models to data and  
back  
January 11th to February 19th, 2021**

**Abstract:**

URL de la page : [https://www.ihp.fr/fr/agenda/quantitative-evolution-phylogeny-and-ecology-models-data-and-back-paris&is\\_pdf=true](https://www.ihp.fr/fr/agenda/quantitative-evolution-phylogeny-and-ecology-models-data-and-back-paris&is_pdf=true)

The basic laws of evolution are simple: mutations generate variation, while genetic drift, recombination, migration and selection change the frequencies of the variants. Yet even in very simple circumstances, it is often surprisingly difficult to predict how these forces will act on millions of individuals to collectively determine the course of evolution in a population. This has left important gaps in our ability to learn from the genetic variation we see in nature. The dramatic increase in the amount of sequence data makes quantitative comparisons to predictive models accessible. As in many other fields, machine learning promises to solve this problem. However, even if we identify patterns of variation using these techniques, and we are able to generate datasets that have the same properties as real world data, this does not necessarily help us build a quantitative and predictive theory of evolution.

Our program will bring together biophysicists, bio-mathematicians and statisticians with biologists and other researchers working in population genetics to explore the interfaces of data and theory in evolution. The last century has brought about mathematical descriptions of evolving systems and ecological communities. At the same time, mainly thanks to the revolution in sequencing, evolution, whether at the molecular or organismal scales has recently become an extremely data rich field, which leads to advances in inference methods. However, there is a large disconnect between theory and data. Our goal is to foster dialogue between these two sub-domains that deal with the same phenomenon.

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### **Program:**

11/01-15/01: Conference "Ecology and co-evolution: from models to data and back" - [Program](#)

18/01-29/01: Main theme: Ecology and co-evolution

01/02-05/02: Conference "Phylogeny and inference: from models to data and back" - [Program](#)

08/02-19/02: Main theme: Phylogeny and inference

### **Scientific committee:**

- Anne-Florence Bitbol (EPFL)
- Claude Loverdo (CNRS & Sorbonne Université)
- Mikhail Tikhonov (Washington University St Louis)
- Aleksandra Walczak (CNRS & ENS)



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**HORAIRES**

Lundi au vendredi : 8h30 à 18h  
Fermé les jours fériés