February 27th to April 7th, 2023

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Organizers:

Antonio Galves (Universidade de S.Paulo)
Eva Löcherbach (Université Paris 1 Panthéon-Sorbonne)
Christophe Pouzat (Université de Strasbourg and CNRS)
Claudia D. Vargas (Universidade Federal do Rio de Janeiro)

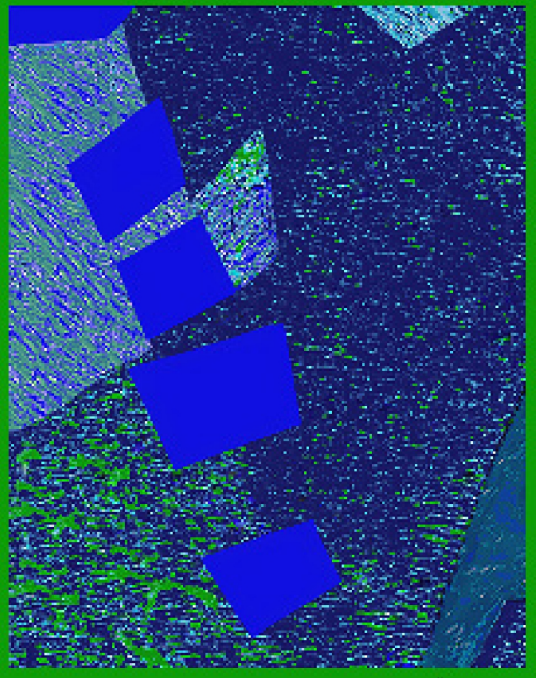
Institut Henri Poincaré
11 rue Pierre et Marie Curie
75231 Paris Cedex 05
France

Random Processes in the Brain: from experimental data to Math and back

Thematic program with short courses, seminars and workshops

Structural learning by the brain
March 6-10, 2023

Networks of spiking neurons
March 27-31, 2023



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Program coordinated by the Centre Emile Borel (CEB) at IHP (Paris) and also accessible online
Participation of postdocs and PhD students is strongly encouraged
Registration is free however mandatory

Scientific program and registration on: https://indico.math.cnrs.fr/category/558/
Deadline for financial support: June 30th, 2022
Contact: rbp2023@ihp.fr

CEB organization assistant: Hapsa Dia
CEB manager: Sylvie Lhermitte
www.ihp.fr

Also supported by:

IHP thematic program : Random Processes in the Brain from experimental data to Math and back

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- 1st week : February 27 to March 3.
  Scratch courses for mathematicians and neurobiologists

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  2nd Doctoral course : **Stochastic modeling of neural networks**

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- 6th week : April 3 to 7
  Hands-on week : **courses conclusion, projects discussion**

Séances grand public

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- Gilles Laurent
  Saturday March 11, 4 pm

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- Olivier Faugeras
  Saturday March 25, 4 pm

1st week : Scratch courses

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- **Neurobiology for mathematicians**
  by C. Pouzat and C.D. Vargas

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Daily schedule :

- 10 :00-12 :00 : Lecture
- 14 :00-16 :00 : Lecture
- 16 :00-18 :00 : Informal discussions and project proposals

2nd week : Workshop Structural learning by the brain

Speakers :

Oswaldo Baffa
Vikram Chib
Leonardo Cohen
Aline Duarte
Olivier Faugeras
Daniel Fraiman
Yves Frégnac
Antonio Galves
Sonja Gruen
Risto Ilmoniemi
Viktor Jirsa
Gilles Laurent
Florencia Leonardi
Bill Lytton
Florent Meyniel
Maria Elisa Pimentel
Marcela Svarc
Wojciech Szpankowski
Antoine Triller
Claudia D. Vargas

+ a **poster** session

3rd week : 1st Doctoral course
Structural learning by the brain

by C. Vargas, A. Duarte, M. Svarc.

3rd week : 1st Doctoral course
Structural learning by the brain

by C. Vargas, A. Duarte, M. Svarc.

Content : Learning stochastic sequences of events by the brain ; sequences of random objects driven by context tree models ; statistical model selection for sequences of random objects driven by context tree models ; the projective method ; evoked potentials in EEG data ; retrieving the structure of probabilistic sequences from EEG data ; clustering EEG data by law.

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Daily schedule :

- 9 :00-10 :30 Lecture
- 10 :30-11 :00 Coffee break
- 11 :00-12 :00 Lecture
- 15 :00-16 :00 Coffee and informal discussions
- 16 :00-17 :30 Work in progress seminars

4th week : 2nd Doctoral course
Stochastic modeling of neural networks

by A. Galves and C. Pouzat.

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Stochastic modeling of neural networks

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Content : A discrete time stochastic neural network model : a system of interacting chains with memory of variable length ; a case study : correlations between successive inter spike intervals ; a continuous time model : systems of interacting point processes with memory of variable length ; models without reset : Hawkes processes ; stationary states in an infinite system ; perfect simulation and Kalikow decompositions ; statistical model selection in a class of systems of spiking neurons ; short-term synaptic facilitation and working memory.

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Daily schedule :

- 9 :00-10 :30 Lecture
- 11 :00-12 :00 Lecture
- 16 :00-17 :30 Work in progress seminars

5th week : Workshop Networks of spiking neurons

Speakers :

Bruno Cessac
Rodrigo Cofré
Emilio De Santis
Markus Diesmann
Céline Duval
Priscilla Greenwood
Reinhard Höpfner
Eva Löcherbach
Gilles Louppe
Guilherme Ost
Mauro Piccioni
Christophe Pouzat
Patricia Reynaud-Bouret
Antonio C. Roque
Tilo Schwalger
Shigeru Shinomoto
Thibaud Taillefumier
Massimiliano Tamborrino
Étienne Tanré
Sacha van Albada
Romain Veltz

+ a **poster** session

6th week : Hands-on week

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- Doctoral courses : conclusion and discussion of projects with students

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- Work in progress seminars

6th week : Hands-on week

- Doctoral courses : conclusion and discussion of projects with students
- Work in progress seminars

Daily schedule :

- 10 :00-11 :30 Research projects discussion.
- 16 :30-17 :30 Work in progress seminar.

Pathways to the 2023 IHP thematic program Random Processes in the Brain

NeuroMat Research, Innovation and Dissemination Center for Neuromathematics

102 days to the 2023 IHP thematic program Random Processes in the Brain. update ↻

Presentation

Pathways to the 2023 IHP thematic program Random Processes in the Brain is a preparatory process for the conference "Random Processes in the Brain: From Experimental Data to Math and Back", to be held at the Institut Henri Poincaré, Paris, from February 27 to April 7, 2023. The goal of the preparatory process is to frame and pave research practices among the participants of the IHP thematic program that will eventually emerge during the actual conference in Paris.

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NeuroMat webinars 2022

pathways to the 2023 IHP thematic program Random Processes in the Brain

speakers:

September 27
Thibaud Taillefumier (University of Texas at Austin)

October 11
Tilo Schwalger (Technische Universität Berlin)

October 25
Olivier Faugeras (Inria Sophia Antipolis)

November 8
Wojciech Szpankowski (Purdue University)

November 22
Gilles Laurent (Max Planck Institute for Brain Research)

December 6
Cindy Greenwood (University of British Columbia)

Sara Müller

neuromat.numec.prp.usp.br/rpb-ihp2023

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supported by FAPESP

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- Two others will be held until the end of this year and three are scheduled at the beginning of next year (before the start of the thematic program).

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- Two others will be held until the end of this year and three are scheduled at the beginning of next year (before the start of the thematic program).
- Interviews and pedagogical material are associated to this webminar series.

`https://neuromat.numec.prp.usp.br/rpb-ihp2023`

RPB-IHP website

The program page on the IHP website is :

`https://indico.math.cnrs.fr/event/7792/`