# IHP Thematic Program: Random Processes in the Brain: from experimental data to Math and back

November 14, 2022

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## 4th week: March 20 to 24: 2nd Doctoral course

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

*A. Galves and C. Pouzat.*

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.

**Bibliography :**


- Galves, A., Löcherbach, E. and Pouzat, C., Probabilistic spiking neuronal nets- Data, Models and Theorems. https://hal.archives-ouvertes.fr/hal-03196369v1


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

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