

Bill Bialek from Princeton University will be visiting the department in May and June as Professeur invité ENS. He will give a series of 5 pedagogical lectures (on top of the May 29th colloquium). Bill is a great speaker and educator and the lectures will be interesting for both specialists and non-specialists coming from different areas. Students of all stages and post-docs are especially encouraged to attend.

All lectures will take place at the **Physics Department of the ENS, 24 rue Lhomond, 75005 Paris**. Generally the lectures are on Tuesday at 9:30 but please note the first lecture is on Wednesday and the 4th lecture is at 14:00 (in a different room).

Please help us distribute this announcement.

We hope you can make it,

Thierry Mora and Aleksandra Walczak

Lecture synopsis:

Life is more than the sum of its parts: functions crucial for life emerge from interactions among hundreds or thousands of microscopic components. Less obvious, perhaps, is that the mechanisms of life are extraordinarily precise: our visual system counts single photons, many signaling systems are limited by the random arrivals of individual molecules, and more. Observations of extreme precision suggest a theoretical framework in which biological systems have been exquisitely tuned, optimizing performance in the presence of physical constraints. Observations of emergence suggest a different theoretical framework, in which functional behaviors are collective, and hence perhaps insensitive to microscopic details. In these lectures I will give examples from each of these points of view, focusing on recent work, and hint at ways in which the different views may be connected. Examples will range from molecular events in a developing embryo to the collective dynamics in networks of neurons, and from the visual computation of motion to the ordering in flocks of birds. I hope to show how unifying theoretical ideas are now connecting with experiments on these diverse systems, in unprecedented quantitative detail.

Date, time and place:

Lecture 1: Introduction, and taming the phenomena - Wednesday 16/05/2018, 9:30 - 12:30, salle L357/359

Lectures 2 & 3: Signals, noise, and information flow in biological networks

Lecture 2: Tuesday 22/05/2018, 9:30 - 12:30, salle L357/359

Lecture 3: Tuesday 29/05/2018, 9:30 - 12:30, salle L357/359

Lectures 4 & 5: Statistical mechanics for real biological networks

Lecture 4: Tuesday 5/06/2018, 14:00 - 17:00, salle conf IV

Lecture 5: Tuesday 12/06/2018, 9:30 - 12:30, salle L357/359