

# The closure of constraints in practices

Workshop organization: Maël Montévil, Anton Robert\*

16/12/2024

Salle de réunion Cavaillès, 3rd floor

29 rue d'Ulm

École Normale Supérieure, Paris

## Abstract

What understanding does the closure of constraints bring about a biological system in practices? Without discussing particular cases, one cannot answer this question. The goal of this workshop is to bring together and synthesize individual modeling experiences in physiology and ecology to establish perspectives of research collectively regarding organization in biology, *sensu* closure of constraints.

This workshop is intended to a specialized audience. We encourage speakers to present models or modeling methods, and share critical reflections on their work and the difficulties encountered. Identifying achievements, open questions, perspectives, and experimental, conceptual or technical difficulties is the main goal of this meeting.

Additionally to relatively short Q&A sessions, a general discussion will synthesize the main points raised during the day. This synthesis will be transcribed and shared with the participants after the workshop.

*The timezone is CET. On the day of the workshop, the timeshift will be -4h in Salvador, Brazil.*

## Program (10:00-19:30)

Speakers: 15-20min of presentation + 5-10min Q&A

- 11:00 Giampaolo Folena (Sapienza University of Rome). *Searching for elementary forms of closure in an algorithmic chemistry*
- 11:25 Maël Montévil (République des Savoires, CNRS and ENS). *Disruption of plant-pollinators interactions*
- 11:50 Anton Robert (République des Savoires, ENS). *Organizing mathematical descriptions*

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- 12:15 Intermediate discussion
- 13:00 Lunch
- 14:30 Ana Soto (Tufts University) and Maël Montévil. *Modeling Mammary Gland Morphogenesis from first principles.*
- 14:55 Charbel N. El-Hani (Institute of Biology, Federal University of Bahia) *Closure of constraints and individuation of ecological systems*
- 15:20 Paulo Inácio Prado (São Paulo University) *Applying closure of constraints to model consumer-resource dynamics*
- 15:45 Intermediate discussion
- 16:25 Coffee break
- 16:40 Ana Soto and Matteo Mossio (IHPST, CNRS and Paris 1). *Glycemia regulation from an organizational perspective*
- 17:05 Ítalo Nascimento de Carvalho and Clarissa Leite (Institute of Biology, Federal University of Bahia), *tbd*
- 17:30 Intermediate discussion
- 18:00 Break
- 18:10 General discussion
- 19:30 End - dinner for the speakers