The GEILO School 2022

50-year jubilee

Organized by
Institute for Energy Technology (IFE)
in cooperation with
Soft and Complex Matter group at NTNU

NTNU

SOFT and COMPLEX

The Physics of Evolving Matter: Memory, Learning and Evolution

21-31 March 2022, Geilo, Norway

The Geilo School 2022
Preceding Geilo Schools

Theme

Condensed Matter Physics involves the study and characterization of how individual components like atoms, molecules, particles, and other entities selforganize is some collective state and where the behavior of the collective is more important than the behavior of the individuals. **The physics of evolving matter** does also have application in biology because biology is all about evolving collective effects.

Sub-Themes

A) Memory

Memory formation in matter, as an interdisciplinary theme, is situated at the crossroads of physics, biology, chemistry, and computer science. It relates to the ability to encode, access, and erase traces of history in the state of an evolving system.

B) Learning

Modern machine **learning** technology offers a new arena for study and characterization of how individual components selforganize is some collective state in condensed matter.

C) Evolution

Evolution is traditionally understood as the change in the heritable characteristics of biological populations over successive generations. It could also be denoted fundamental physical processes that give rise to biological phenomena. Condensed matter physics concepts might provide a useful perspective in evolutionary biology and animate matter.

Topics will cover both experiments and theory. In addition to about 40 hours of invited lectures and seminars, there will be tutorials and discussions. Participants are encouraged to submit abstracts for a poster session.

Objective

The objective of this School is to bring together researchers with various interests and background in fields like soft matter science, complex matter physics, biological physics, mechanical or chemical engineering. The focus of the School is synergism between modern science and technology in the area of physics inspired by evolving matter.

Invited Lecturers, confirmed

Matthieu Wyart, Ecole Polytechnique, Switzerland
Jean-François Joanny, Instute Curie, Paris, France
Julia Yeomans, Oxford U, UK
Yasser Roudi, NTNU, Trondheim, Norway
Amy Rowat, UCLA, USA
Jean-Philippe Bouchaud, École Normale Supérieure, Paris, France

Invited Lecturers, tentative

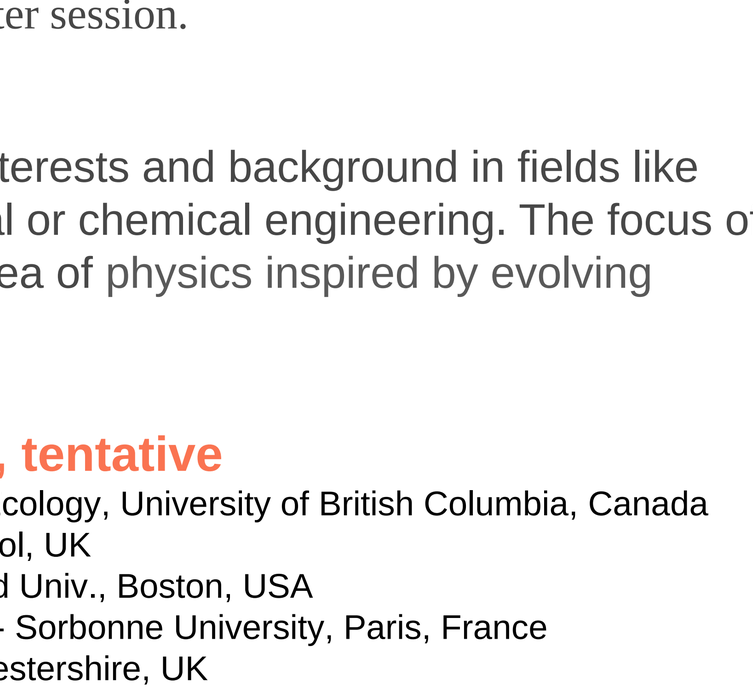
Suzanne Simard, Forest Ecology, University of British Columbia, Canada
Stephen Mann, Univ. Bristol, UK
Vinny Manoharan, Harvard Univ., Boston, USA
Eric Clement, ESPCI-PSL- Sorbonne University, Paris, France
Philip Ball, Leicester, Leicestershire, UK

Organizing Committee

Arne T. Skjeltorp - Institute for Energy Technology and Giamag Technologies, Norway
Jon Otto Fossum - NTNU, Trondheim, Norway
Geir Helgesen - Institute for Energy Technology and the University of Oslo, Norway
Paul Dommersnes - NTNU, Trondheim and Giamag Technologies, Norway
Kenneth Knudsen - Institute for Energy Technology and NTNU, Trondheim, Norway

A 10-day School in Condensed Matter Physics organized every two years since 1971. Listing of all of the 25 preceding Schools can be found here

For graduate students, post-doctoral fellows, researchers, and others who would like to gain an understanding of the fundamentals of the Physics of Evolving Matter for application to research in their respective fields.



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