Winter School on Quantitative Systems Biology: Quantitative Approaches in Ecosystem Ecology

30 November - 18 December 2020
An ICTP Virtual Meeting
Trieste, Italy

Further information:
http://indico.ictp.it/event/9131/
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Ecology views biological systems as composed of many interdependent parts, whose interactions between themselves and the environment span a wide range of spatial and temporal scales (from cells to the biosphere). This incredible complexity of interactions parallels often with the simplicity of emergent statistical patterns of abundance and biodiversity, as well as nutrient cycling. Describing quantitatively the dynamics of populations, communities and ecosystems requires therefore a broad range of mathematical and modelling techniques. Thanks to new experimental and sequencing techniques, community and ecosystem ecology are experiencing a revolution, as they are transitioning from a traditionally data-poor discipline to a data-rich one. This change presents new challenges and new possibilities for ecologists, physicists, and mathematicians around the world.

This advanced school will focus on ecosystems, and it aims at providing an integrated perspective of both experimental and theoretical approaches.

Description:

Ecology has extremely important applications, from environmental preservation to disease eradication. Most ecologists in the majority of developing countries have strong applied expertise, but they are not up to date with the most recent theoretical and quantitative tools and results. Applied ecologists, with some quantitative background, could strongly benefit from this school, both in terms of exposure to fundamental questions in ecology, and of quantitative methods that they could apply to their research. On the other hand, the strong expertise in quantitative and theoretical tools (e.g., dynamical systems theory, stochastic processes, random matrix theory) of physicists and mathematicians from developing countries is sometimes dissipated to study problems of secondary relevance. This school could offer them exposure to up-to-date problems in quantitative ecology, where those theoretical tools could find interesting and novel applications.

Topics:

- Ecological networks
- Population and community dynamics
- Macroecology, including ecosystems and landscapes
- Ecological interactions
- Ecological Communities in-vitro

Directors:

S. LEVIN, Princeton University, USA
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Local Organizer:

A. CELANI, ICTP, ITALY

Lecturers:

S. ALLESINA, University of Chicago, USA
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D. FISHER, Stanford University, USA
M. GATTO, Politecnico di Milano, Italy
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J. LEVINE, Princeton University, USA
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How to apply:

Online application:
http://indico.ictp.it/event/9131/

Female scientists are encouraged to apply.

Registration:

There is no registration fee.

Deadline:

15 November 2020

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