

Introduction to large deviations and random graphs

Dr Luisa Andreis, from Weierstrass Institute of Berlin, will give a cycle of doctoral seminars (a short 8-hour course) for the Ph D program of Turin University.

The course will be online and it is taught for students of the program in Modeling and Data Science and for motivated Master students of Stochastics and Data Science.

Ph D students from other universities are welcome as well.

Abstract

Random graphs play a key role in the modelling of real-world networks. For this reason, many stochastic models have been introduced to capture the huge variety of properties of such networks. In this course we are going to have an overview on the main random graph models, focusing on their key features and, typically, on their large scale properties. An important mathematical tool in the study of such properties is therefore given by large deviations theory. We will introduce its key points and present the state-of-art with respect to the graph models of interest. The course is intended to be at a graduate school level, but it does not require specific previous knowledge in probability. The structure of the course consists in three (plus one) introductory lectures.

- Lecture 1 (14/01/2021 - 16:30-18:30) Introduction to large deviation theory, rare events and large deviation principle
- Lecture 2 (18/01/2021 - 16:30-18:30) Dense random graphs and Graphons
- Lecture 3 (22/01/2021 - 16:30-18:30) Sparse random Graphs
- Lecture 4 (25/01/2021 - 16:30-18:30) Mathematical analysis of the models treated in the course and, if possible, connection between random graphs and coagulation processes

Link: <https://unito.webex.com/unito/j.php?MTID=m7e49af24bb2b0499542737cb7d005915>

Numero riunione: 121 638 8827

Password: VDkZZ33jmv8

Dr Andreis is informed that the course is proposed for students in Modeling and Data Science and that many students are not mathematicians

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