

Random walks and graphs

Bastien Mallein

Random graphs are a fascinating subject at the intersection of probability, combinatorics and statistical physics, with various applications. Indeed, random graphs play an essential role in the representation of real-world networks.

The objective of this lecture is to present some usual random graphs models, including the Erdos-Rényi random graph and the preferential attachment model, as well as to introduce some of the classical tools for the study of these models. This includes use of first- and second-moment methods, exploration processes around vertices, connection with branching processes, etc.

1 References

- N. Curien, A random walk among random graphs, available at:
<https://www.dropbox.com/scl/fi/g4hlg7fernxm4o6o0mqq8/cours-GA-online.pdf?rlkey=9yg9muoteqamhon23e17o8ojl&st=ivid8pw7&dl=0>