



**COMPLEX NETWORKS 2017**

## ***Tutorials***

**November 28, 2017**

**Lyon, France**

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**Ginestra BIANCONI**

**1 :00 pm to 3 :30 pm**

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### NETWORK THEORY : THE CHALLENGES THAT LIE AHEAD

Network theory has emerged almost twenty years ago, as a new field for characterizing interacting complex systems, such as the Internet, the biological networks of the cell, and social networks. This tutorial will provide a (personal) reflection on the maturity of the field, indicating the main results obtained so far and the big challenges that lie ahead. The hot topics that will be critically discussed include: multilayer networks, network geometry and percolation theory.



*Ginestra Bianconi is Associate Professor (Reader) and Director of the MSc in Network Science at the School of Mathematical Sciences at Queen Mary University of London, London, UK. Her research activity on network science includes network theory and its applications and has appeared in journal such as Science, PNAS, PRX and Physical Review Letters. In the last years her work have focused on multilayer networks, network geometry, percolation and network control.*



#### MINING INFORMATION PROPAGATION DATA

With the success of online social networks and microblogging platforms such as Facebook, Tumblr, and Twitter, the phenomenon of influence-driven propagations, has recently attracted the interest of computer scientists, sociologists, information technologists, and marketing specialists. In this talk we will take a data mining perspective, discussing what (and how) can be learned from a social network and a database of traces of past propagations over the social network. Starting from one of the key problems in this area, i.e. the identification of influential users, we will provide a brief overview of our recent contributions in this area. We will expose the connection between the phenomenon of information propagation and the existence of communities in social network, and we will go deeper in this new research topic arising at the overlap of information propagation analysis and community detection.



*Francesco Bonchi is Research Leader at the ISI Foundation, Turin, Italy, where he's the head of the "Algorithmic Data Analytics" group. He is also (part-time) Principal Scientist for Data Mining at Eurecat (Technological Center of Catalunya), Barcelona.*

*Before he was Director of Research at Yahoo Labs in Barcelona, Spain, where he was leading the Web Mining Research group. His recent research interests include mining query-logs, social networks, and social media, as well as the privacy issues related to mining these kinds of sensible data. In the past he has been interested in data mining query languages, constrained pattern mining, mining spatiotemporal and mobility data, and privacy preserving data mining.*

*He is member of the ECML PKDD Steering Committee, Associate Editor of the newly created IEEE Transactions on Big Data (TBD), of the IEEE Transactions on Knowledge and Data Engineering (TKDE), the ACM Transactions on Intelligent Systems and Technology (TIST), Knowledge and Information Systems (KAIS), and member of the Editorial Board of Data Mining and Knowledge Discovery (DMKD). He has been program co-chair of the European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (ECML PKDD 2010). Dr. Bonchi has also served as program co-chair of the 28th ACM Conference on Hypertext and Hypermedia (HT 2017), the 16th IEEE International Conference on Data Mining (ICDM 2016), the first and second ACM SIGKDD International Workshop on Privacy, Security, and Trust in KDD (PinKDD 2007 and 2008), the 1st IEEE International Workshop on Privacy Aspects of Data Mining (PADM 2006), and the 4th International Workshop on Knowledge Discovery in Inductive Databases (KDID 2005). He is co-editor of the book "Privacy-Aware Knowledge Discovery: Novel Applications and New Techniques" published by Chapman & Hall/CRC Press. He earned his Ph.D. in computer science from the University of Pisa in December 2003.*

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