



MEDITERRANEAN SCHOOL OF COMPLEX NETWORKS

IV edition
3-8 September 2017

<http://mediterraneanschoolcomplex.net>



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Introduction to the school

GOALS OF THIS EDITION

The goal of this school is twofold:

1. **Provide a theoretical background** to students (Master, PhD) and young researchers in the field, with particular attention to current trends in Network Science
2. **Promote philosophical and scientific exchange** between all participants, i.e., lecturers and attendants.

For this reason, the program will involve **lectures from experts** in different fields (social science, game theory, human mobility, neuroscience, etc) for 70% of the duration of the school. The remaining time will be dedicated to **participants talks** given by attendants, followed by debates.

PRIZES AND FELLOWSHIPS

The School will award two prizes: i) to one attendant, for the participant talk; ii) to one lecturer, for the best lecture.

PhD students and Junior Post Doctoral researchers (no more than two years from their PhD completion) who are members of the CSS (cssociety.org/home) are eligible to get a fellowship covering the School fee and the participation to social events. We granted two fellowships.

LOCATION

The school will take place in Salina, a small island in the north of Sicily (Italy). Salina, fully covered by green vegetation and surrounded by the sea, represents a suitable small and quiet environment to achieve the purposes of this school.

Organization

DIRECTORS

Alex Arenas	Universitat Rovira i Virgili
Manlio De Domenico	Universitat Rovira i Virgili

ORGANIZERS

Alex Arenas	Universitat Rovira i Virgili
Manlio De Domenico	Universitat Rovira i Virgili

LOCAL ORGANIZING COMMITTEE

Serafina Agnello	Universitat Rovira i Virgili
Massimo Stella	University of Southampton

LECTURERS

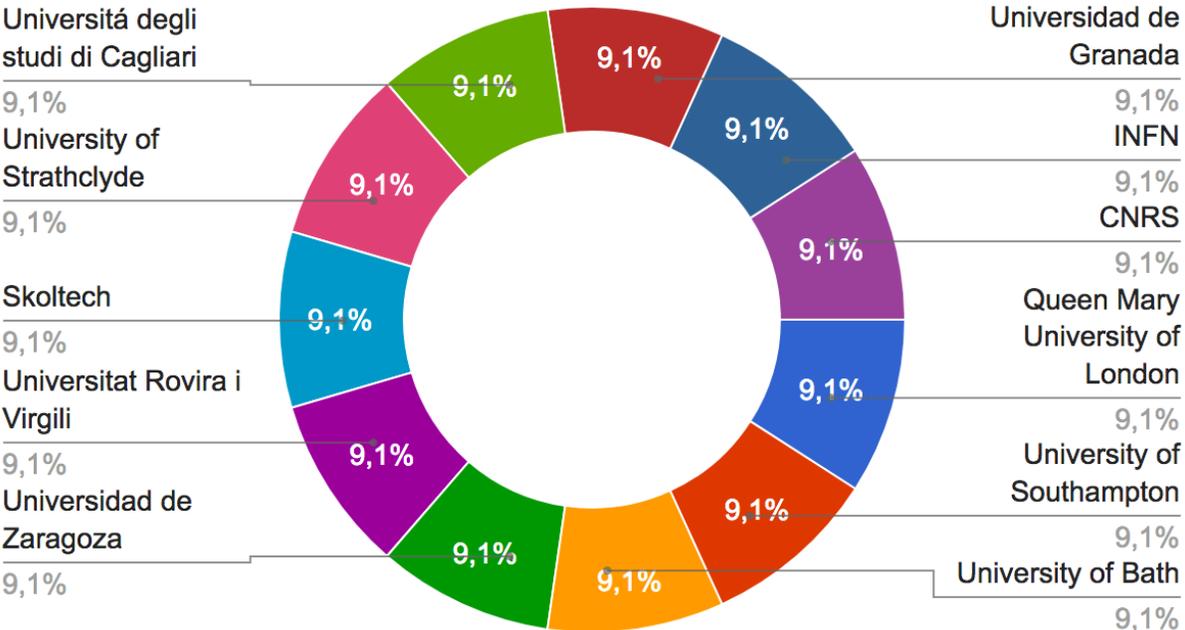
Sonia Kéfi	Université de Montpellier/CNRS
Vito Latora	Queen Mary University
Sandro Meloni	Universidad de Zaragoza
Tiago Peixoto	University of Bath and ISI foundation

SPEAKER

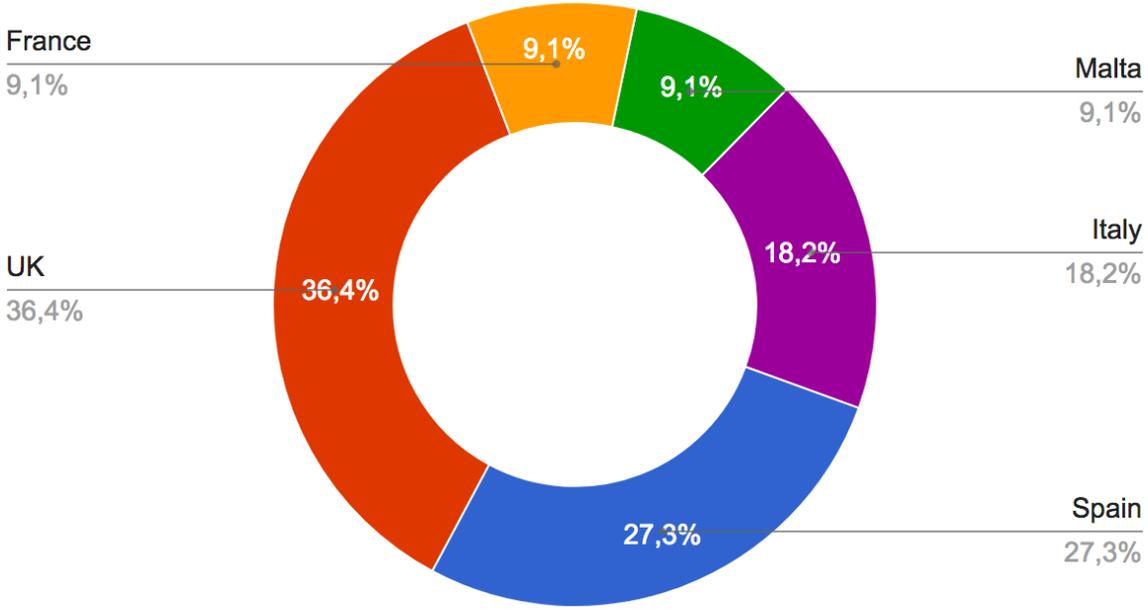
Ernesto Estrada	University of Strathclyde
Marco Javarone	University of Hertfordshire
Miguel Muñoz	University of Granada
Massimo Stella	University of Southampton
Samir Suweis	INFN Padova
Eugenio Valdano	Universitat Rovira i Virgili

Lecturers

Lecturers by institutions



Lecturers by country

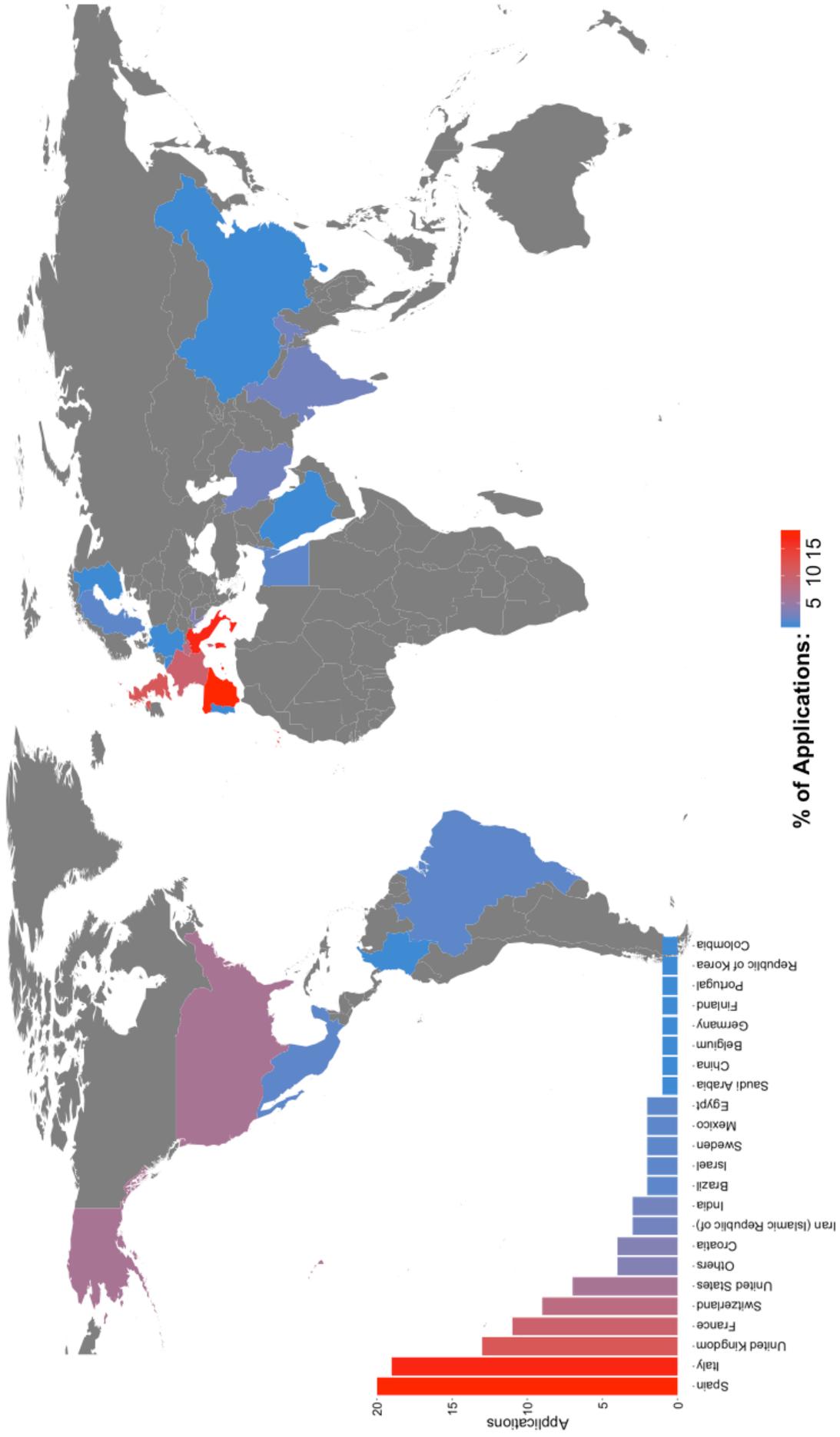


Students

Surname	Name	Affiliation
Abellá	Federico	Universidad de la República
Aengenheyster	Matthias	Utrecht University
Amico	Enrico	Purdue University
Benjamin	Steinegger	EPFL
Berti	Emilio	Aarhus University
Caldera	Michael	CeMM
Cencetti	Giulia	Università degli Studi di Firenze
Di nanni	Noemi	itb-cnr
Dimitrova	Tamara	Macedonian Academy of Sciences and Arts
Estevez	Estefania	University of Barcelona
Fachechi	Alberto	Università del Salento
Galdi	Paola	Università di Salerno
Génin	Alexandre	Institut de Montpellier
Hanteer	Obaida	IT University Of Copenhagen
Heiss	Julian	Heidelberg University
Jovanovski	Petar	MANU
Kekic	Armin	University of Heidelberg
Klimm	Florian	University of Oxford
Laurence	Edward	Université Laval
Lella	Eufemia	Università degli Studi di Bari
Lo Sardo	Donald	Medical University of Vienna
Lombardi	Angela	Politecnico di Bari
Ludl	Adriaan	Universitat de Barcelona
Mosquera	Guillem	University of Warwick
Mukerjee	Subhayan	University of Pennsylvania
Nowak	Aleksandra	Jagiellonian University

Pages	Pau aleix	Université Laval
Petrovski	Kristijan	Macedonian academy of sciences and arts
Previti	Marialaura	Università degli Studi di Catania
Puxeddu	Maria grazia	Sapienza, University of Rome
Reichardt	Ignasi	Universitat Rovira i Virgili
Ren	Xiaolong	ETH Zurich
Rodriguez	Ana lucia	Florida international University
Romanini	Daniele	Aalto University
Rose	Alex	University of Nottingham
Scalisi	Marco	KU Leuven / DESY
Seegers	Kai	Technische Universität Berlin, Germany
Serra	Angela	Università degli Studi di Salerno
Silva	Jorge	MAPi
Simard	Frederic	Universite Pierre et Marie Curie
Smith	Oliver	University of Nottingham
Stojkoski	Viktor	Macedonian Academy of Sciences and Arts
Tizzani	Michele	Università degli Studi di Parma
Trenkwalder	Lea	University of Innsbruck
Van lidth de jeude	Jeroen	IMT School for Advanced Studies Lucca
Vasiliausakite	Vaiva	Imperial College London
Viña	Viviana marcela	Unamur
Wellnitz	David	Heidelberg University
Wu	Hongrun	Wuhan University
Zankoc	Clément	University of Firenze
Zavojanni	Leonardo	Medizinische Universität Wien
Zhan	Xiuxiu	Delft University

Registrations to MSCx in 2014 - 2016



Complex Networks

In the last decade, network theory has been revealed to be a perfect instrument to model the structure of complex systems and the dynamical process they are involved into. The wide variety of applications to social sciences, technological networks, biology, transportation and economic, to cite just only some of them, showed that network theory is suitable to provide new insights into many problems.

Given the success of the Third Edition in 2016 of the Mediterranean School of Complex Networks, we call for applications to the Fourth Edition in 2017.



Transfer schedule

HOURS	SUNDAY 3 SEPTEMBER	SATURDAY 9 SEPTEMBER
7.00		Departure from Salina
12:00		Arrive in Catania airport (approx)
15:00	Meeting point at Catania airport with the School bus.	
16.00		
17.00	Arrive in Milazzo	
18:00	Hydrofoil to Salina Island (approx)	
19.00	Arrive in Salina (approx)	

School schedule

HOURS	MONDAY 4 SEPTEMBER	TUESDAY 5 SEPTEMBER	WEDNESDAY 6 SEPTEMBER	THURSDAY 7 SEPTEMBER	FRIDAY 8 SEPTEMBER
8.30	Introduction				
9.30 - 12.30	Session I <i>Structure and dynamics of multilayer networks.</i>	Session II <i>Networks inference</i>	FOCUSED SEMINARS SESSION I	Session III <i>Spreading processes in complex networks</i>	Session IV <i>Ecological networks</i>
13:00					
16.00					
17.00			Social Event: boat trip	FOCUSED SEMINARS SESSION II	Award Cerimonies
18:00	STUDENT TALKS I	STUDENT TALKS II			Closing ceremony
19.00					
20.00	Cocktail & Music Concert			Social Dinner	
21.00					

Lecturers	
Session I	Vito Latora
Session II	Tiago Peixoto
Seminars session I	Ernesto Estrada, Marco Javarone, Samir Suweis, Miguel Muñoz
Session III	Sandro Meloni
Seminars session II	Eugenio Valdano, Massimo Stella
Session IV	Sonia Kéfi

SESSION I

Structure and dynamics of multilayer networks.

Vito Latora (Queen Mary University of London, UK)

The constituents of a wide variety of real-world complex systems interact with each other in complicated patterns that can encompass multiple types of relationships and change in time. Recently, the interest of the research community towards such systems has increased because accounting for their "multilayer" features is a challenge. In this lecture, we will review the most recent advances in this new field, with main attention to the emergent properties induced by the structure of multiplex networks.

Topics covered:

- From complex systems to multilayer networks.
- Structural properties of multilayer networks.
- Reducibility of multilayer networks.
- Dynamical properties of multilayer networks.

STUDENT TALKS I

Florian Klimm (Mathematical Institute University of Oxford)

PROMISCUITY IN MULTILAYER NETWORKS

We define the promiscuity of a node in a multilayer network as a measure for the variability of its degree across layers in comparison to a randomised null model. Using those tools on a range of empirical networks from a variety of disciplines including transportation, economic and social interactions, and biological regulation we show that the observed promiscuity distributions are different on the networks of different origins. Employing the promiscuity on transcription factor interaction in multiple cell types reveals proteins that are potential biomarkers of cell fate.

Giulia Cencetti (Università degli Studi di Firenze)

CONTROL OF MULTIDIMENSIONAL SYSTEMS ON COMPLEX NETWORK

From ecology to physics, individual entities in mutual interactions are grouped in families, homogeneous in kind. These latter interact selectively, through a sequence of self-consistently regulated steps, whose architecture is stored in the assigned matrix of connections. The asymptotic equilibrium eventually attained by the system, and its associated stability, can be assessed by employing standard nonlinear dynamics tools. For many practical applications, it is however important to externally drive the system towards a desired equilibrium, which is stable, to external perturbations. To this end we here consider a system made up of N interacting populations which evolve according to general rate equations. One species is added to the pool of interacting families and used as a dynamical controller to induce novel stable equilibria.

Jeroen van Lidth de Jeude (IMT School for Advanced Studies Lucca)

BOWTIE AND CORE-PERIPHERY: MESO-STRUCTURE SIGNIFICANCE

Networks can show meso-scale structures, as the bow-tie structure of the world wide web. To identify and verify the significance of such a higher order core-periphery structure, I will introduce an adapted version of the Surprise distribution used for community detection. This measure gives the 'surprise' or improbability of such an observed core-periphery partition.

Lea Trenkwalder (Institute for theoretical physics at the University of Innsbruck)

PROJECTIVE SIMULATION FOR ARTIFICIAL INTELLIGENCE

Projective Simulation (PS) is a novel reinforcement learning model for artificial intelligence that is based on a random walk through a clip network. The focus of my investigation lies on testing the abilities of this model when multi-layered networks are introduced. Applications for the PS can be found in various research areas, ranging from robotics to biology. For example, it can be used to investigate the evolution of swarm-forming behaviour in animals such as locusts.

Vaiva Vasiliauskaite (Imperial College London)

CENTRALITY MEASURES FOR DIRECTED ACYCLIC GRAPHS

Centrality is a vital measure when evaluating the importance of nodes in a network. Depending on the type of social network and the conceptual meaning of "important" or "central", centrality possesses various definitions, however, none of them take into account the "time" constraint on the topologies of directed acyclic graphs, example of which is a citation network. In this study we adapt existing centrality measures and produce new measures which are more suitable for the specific topological

features of such graphs. Our new measures will provide new insightful recommendations as to which documents we should read from the sea of information available today.

Matthias Aengenheyster (Institute for Marine and Atmospheric Research Utrecht, Utrecht University)

POINT OF NO RETURN AND OPTIMAL TRANSITIONS IN CMIP5

The evolution of global mean surface temperature (GMST) under anthropogenic forcing scenarios is explored with respect to the warming targets of 1.5 K and 2 K, by successfully using Linear Response Theory on the CMIP5 ensemble. Based on a simple stochastic model that recovers ensemble mean and variance of the CMIP5 GMST, we derive the Point of No Return (PONR), the point in time when it is too late to reach a warming target. We conclude the the 1.5 K target to not be reachable anymore. In addition we show how PONR depends on cumulative emissions, climate uncertainty, risk tolerance and stringency of efforts to combat climate change, and find illustrative, welfare-maximizing pathways for energy transitions to a carbon-free era.

Alberto Fachechi (Università del Salento & INFN Sezione di Lecce)

GLOBAL AND LOCAL COMPLEXITIES IN THE IMMUNIZATION PROBLEM

Complex networks are the ideal theoretical framework to model many real systems and their dynamics. In the recent years, important applications of statistical mechanics of complex networks concern the study of epidemic processes in order to realize optimized immunization programs. The disease spreading is a result of the competing roles of global (presence of hubs, most probable paths between nodes, etc.) and local (influencer individuals, proximity to the epidemic front, etc.) features. In this spirit, we realized a new immunization scheme which takes into account both these aspects and which is (unlike other immunization strategies we used as

comparison) adaptable enough to work well in each setting we considered in our numerical simulations.

Alex Rose (The University of Nottingham)

THE PRICE OF ANARCHY IN TRAFFIC NETWORKS AND BIPARTITE GRAPH MATCHING

The "price of anarchy" (PoA) measures the inefficiency of the Nash Equilibrium compared to the Social Optimum. We consider the PoA in two contexts: traffic networks and bipartite graph matching. The variation of the PoA with certain system/network parameters will be discussed and analysed.

Viktor Stojkoski (Macedonian Academy of Sciences and Arts)

EMERGENCE OF COOPERATION THROUGH GENERALIZED RECIPROCITY: THE ROLE OF NETWORK STRUCTURE

We propose several simple mechanisms of anonymous network interactions identified as a form of generalized reciprocity – a concept organized around the premise “help anyone if helped by someone”, and study their dynamics on random graphs. In the presence of such mechanisms, the evolution of cooperation is related to the dynamics of the levels of investments (i.e. probabilities of cooperation) of the individual nodes engaging in interactions. We demonstrate that the propensity for cooperation in each mechanism is determined by a network centrality measure which, when considering random walk on complex networks, is exactly the sum of the jump probabilities towards the node from its neighbors and discuss relevant implications to natural and artificial systems.

SESSION II

Networks inference.

Tiago Peixoto (University of Bath, UK and ISI foundation, Italy)

Network structures are shaped by evolutionary mechanisms and determine the central aspects of how a system functions. However, differently from systems that are naturally embedded in space, we cannot simply "look" at network in order to extract its most important structural patterns. Instead, we must rely on well-founded algorithmic methods to extract this information from data in an interpretable way. In this lecture, we review a principled approach to this problem based on the elaboration of probabilistic models of network structure, and their statistical inference from empirical data.

We aim to cover the following topics:

- The stochastic block model (SBM) and its variants (degree correction, overlapping groups, etc.)
- Bayesian inference and model selection: Distinguishing structure from noise.
- Generalizing from data: Prediction of missing and spurious links.
- Model extensions: Layered, dynamic SBMs, and generalized models on continuous latent spaces.
- Fundamental limits of inference: The undetectability transition.
- Efficient inference algorithms.

STUDENT TALKS II

Ana Lucia Rodriguez De La Rosa (Florida International University)

GENDER IDEOLOGIES AND INTIMATE PARTNER VIOLENCE AMONG COLLEGE STUDENTS: A NETWORK ANALYSIS OF BELIEFS

The purpose of this study is to examine college students systems of beliefs, perceptions and attitudes towards violence, gender and intimate partner violence (IPV) and how these are affected by being exposed to a gender egalitarian audiovisual content. Previous research has shown that community and individual systems of values, meanings and norms towards Gender and IPV, are associated to higher risks in both perpetration and victimization. After an experimental survey design (with 1200 participants), two correlations networks of beliefs are to be built: one for a group previously exposed to a gender salient stimulus and a second one for a control group. Identifying structural characteristics or differences among this two networks on IPV beliefs, will provide valuable information for future interventions that could more efficiently impact these systems and generate healthier attitudes towards Intimate Partner Violence. This project is currently on it's data collection phase and results are expected to be analyzed during the month of august (2017).

Subhayan Mukerjee (University of Pennsylvania)

NETWORKS OF AUDIENCE OVERLAP IN THE CONSUMPTION OF DIGITAL NEWS

In my research I use observational data to build networks of audience overlap mapping the consumption of news online. The nodes in my network are the websites of news outlets and the ties are weighted edges that measure the number of readers that outlets share. I apply tools from network science to (a) characterize the structure of this network as it emerges in different countries during times of peak political activity; (b) identify the backbone of the network so that I can identify

core outlets (thereby comparing the power dynamics between legacy and digital born brands); and lastly, (c) determine whether the news consumption landscape in these countries are fragmented or not.

Xiaolong Ren (Computational Social Science, ETH Zurich)

METHODS FOR IMMUNIZING RUMORS IN SOCIAL NETWORKS

To find better link immunization strategies in networks, we here apply spectral clustering and non-negative matrix factorization to partition the network. We present two newly developed strategies: Hierarchical-Ncut and Hierarchical-NMF, and demonstrate their effectiveness on stochastic block model and real networks.

Edward Laurence (Université Laval, Québec)

FUNCTIONAL RESILIENCE IN NEURAL NETWORKS WITH ADAPTIVE CONNECTIVITY

We extend the effective formalism of Gao et al., 2016 to study the resilience of neural networks (e.g. firing-rates model) with adaptive connectivity (e.g. Hebb's rule with saturation). We prove, both numerically and analytically, that the effective formalism captures more accurately the behaviour of the network than the usual mean network activity. Structural perturbations, such as weak or strong attacks that respectively change weights or break edges, result in a modification of a unique effective structural parameter. If the latter reaches some critical value, the system undergoes a sudden transition and loses its resilience.

Estefanía Estévez (University of Barcelona)

RESILIENCE AND RECOVERY IN NEURONAL NETWORKS.

When applying a controlled perturbation to a neuronal network, changes in dynamics are expected, and the adaptive response of the network can be measured and analysed. The study of the resilience of neuronal networks to different perturbations, and their capability of recovery after an attack, is helping to develop models to quantify network damage, with promising applications for the study of neuronal disorders in vitro.

Adriaan Ludl (Universitat de Barcelona)

INFERENCE OF NEURONAL CONNECTIONS

Understanding the organisation of neuronal networks is key for the treatment of neurodegenerative diseases. The activity of rat and human neurons in vitro is measured using calcium fluorescence imaging. Using Transfer Entropy we can infer directed functional and causal connections between neurons in the recordings.

Maria Grazia Puxeddu (University of Rome La Sapienza)

MULTILAYER ANALYSIS FOR COMMUNITY DETECTION IN EVOLVING BRAIN NETWORKS

Identifying community structure in time-varying brain networks could be crucial, as the brain functioning is thought to be based on modular organization. In the last decades, several multilayer clustering algorithm has been developed and are characterized by parameters that regulate the compromise between dynamic and accuracy; however, there is still no agreement about which one is the most reliable, and a way to test and compare these algorithms under a variety of conditions is lacking. With this work, we aim to find an ideal setting of such parameters and to perform a comparative analysis between different multislice clustering algorithms, evaluating their performances by means of a tool implemented ad-hoc for generating benchmark graphs with evolving community structure, characterized by properties spanning a wide range of conditions. Finally, as a proof of concept, we

applied the algorithms under exam to brain functional connectivity networks estimated from EEG signals recorded during a working memory task.

Enrico Amico (School of Industrial Engineering, Purdue University)

MAPPING JOINT STRUCTURAL-FUNCTIONAL CONNECTOME TRAITS IN HUMAN BRAIN NETWORKS.

One of the crucial questions in neuroscience is how brain function relates to its underlying structure. The joint study of structural and functional layers is difficult to accomplish due to the massive preprocessing, the inter-subject variability and the vast amount of information contained in both functional and structural connectomes. We propose a methodology that implements Independent Component Analysis (ICA) in the connectome domain, for the extraction of conjunct functional-structural connectivity patterns from a set of individual functional and structural connectomes, by merging them into a common “hybrid” matrix that collects together the structural and functional fingerprint of a human brain.

Pau Aleix Pagés (Université Laval)

NEURONAL NETWORK INFERENCE IN-VIVO.

The aim of the project which I am involved is to build a multimodal system that can image (thanks to Calcium Imaging technique and Light-Sheet Microscopy), analyze (using the complex systems theory and computational neuroscience tools) and interrogate (thanks to several external stimulations) a neuronal network to produce comprehensive, validated functional connectomes.

FOCUSED SEMINARS SESSION I

Ernesto Estrada (University of Strathclyde, UK)

COMMUNICABILITY IN NETWORKS.

The concept of communicability will be motivated and introduced. Then, matrix functions will be used for its definition. Several theoretical properties of communicability functions and related parameters will be explained. Finally, a few examples of applications in neurosciences, social, ecological and infrastructural networks will be given.

Marco Javarone (University of Hertfordshire, UK)

EVOLUTIONARY GAME THEORY: A BRIEF INTRODUCTION.

Evolutionary Game Theory (EGT) represents the attempt to describe the evolution of populations by combining the mathematical framework of Game Theory with the Darwinian principles of evolution. Nowadays, a long list of applications of EGT spans from biology to socio-economic systems, aiming to describe the behavior of complex phenomena. In particular, the discovering (and the understanding) of mechanisms able to trigger the emergence of cooperation constitutes one of the most interesting challenges in this area. Here, networked topologies play a very important role, in particular in relation to the phenomenon known as 'network-reciprocity'. During this brief tutorial, participants will have the opportunity to learn about the preliminary concepts in EGT, with a focus on two famous games, i.e. the Prisoner's Dilemma and the Public Goods Game. In addition, some use cases, related to the modeling of social behaviors will be discussed, in order to stimulate the interest of students coming from different areas, e.g. from physics to computational social science.

Eugenio Valdano (URV, Spain)

TIME-EVOLVING NETWORKS AND THE SPREAD OF INFECTIOUS DISEASES.

Network epidemiology represents a powerful tool for assessing the vulnerability of a population to the introduction of a new infectious pathogen. The increased availability of highly resolved data tracking host interactions is making epidemic models potentially increasingly accurate. Integrating into them all the features emerging from these data, however, still represents a challenge. In particular, the interaction between disease dynamics and the time evolution of contact structures has been shown to impact the way pathogens spread. It changes, for instance, the conditions that lead to the wide-spreading regime, as encoded in epidemic threshold, which is the critical transmissibility value above which the epidemic breaks out. With a data-driven perspective, I will review the progress made in this field. I will show theoretical results and their applications, using both numerical and analytical techniques.

Miguel Angel Muñoz (University of Granada, Spain)

COMPLEX SYNCHRONIZATION PATTERNS AND GRIFFITHS PHASES IN BRAIN NETWORKS.

In this talk, I will discuss how the special features of the connectivity patterns of (human) brain networks, severely affect dynamical processes --relevant in neurodynamics, information processing, and ultimately in cognition-- occurring on top of them. Particular emphasis will be put onto the hierarchical and modular organization of the network of anatomical connections, and how the heterogeneity of its modules induces new behaviors --absent in more regular networks-- such as critical-like features such as generic slow relaxations, large correlation lengths and responses, etc (i.e. Griffiths phases) and highly variable synchronization patterns, matching empirical observations from functional magnetic resonance recordings.

SESSION III

Spreading processes in complex networks.

Sandro Meloni (Universidad de Zaragoza, Spain)

In this lecture we will cover the fundamentals of contagion processes in complex networks. We will start by introducing the so-called compartmental models and show the main techniques aimed at studying this framework in populations whose interaction backbone is a graph. Then we will explore metapopulations dynamics to tackle the analysis of spreading processes in realistic scenarios. We will show how real mobility patterns, described as origin-destination matrices, can be incorporated in metapopulation models to obtain predictions about the epidemic onset.

The outline of this lecture is:

- Introduction.
- Compartmental models.
- The heterogeneous mean field approach.
- The microscopic Markovian framework.
- Metapopulation models
- The Markovian formulation of metapopulation dynamics.
- Vector-borne diseases.

FOCUSED SEMINARS SESSION II

Samir Suweis (INFN Padova, Italy)

ADAPTABILITY AND STABILITY IN MUTUALISTIC ECOLOGICAL NETWORKS.

Mutualistic networks are formed when the interactions between two classes of species are mutually beneficial and they are important examples of cooperation shaped by evolution. The topological properties of the ecological interaction networks have been the subject of sparkling research and they indicate non-random pattern of community organization. Indeed, ecologists have collected extensive data on species interactions showing that, independently of species composition and latitude, mutualistic networks (such as plant-pollinator systems) have nested architectures: specialist species, with only few mutualistic links, tend to interact with a proper subset of the many mutualistic partners of any of the generalist species. I will show how nested interaction networks could emerge as a consequence of an optimization principle that also attenuates the impact of perturbation propagation on species abundance.

Massimo Stella (University of Southampton, UK)

WHAT CAN NETWORK THEORY TELL US ABOUT THE HUMAN MIND?

Representing words in the human mind as a network opened new scenarios in cognitive science, providing new quantitative tools for the investigation of linguistic and cognitive patterns. This talk will review the impact that network models have in psycholinguistic applications, such as: (i) the identification of constraints over sound similarities in words, and the (ii) quantification of word learning strategies in young children and adults. Well known cognitive effects like phonological competition or lexical learning will be quantified and related to network features like centrality measures or multiplexity within models of network growth.

SESSION IV

Ecological networks.

Sonia Kéfi (Université de Montpellier/CNRS, France)

Networks provide powerful tools to visualize and quantify the complexity of ecological systems. In this lecture, I'll present some of the broad questions that have been addressed with networks in ecology. I'll give an overview of recent (and less recent) studies on the structural regularities of ecological networks, and what we know about the links between these structural properties and ecological network dynamics, and in particular their resilience to perturbations.

Topics covered (tentative):

- The complexity-stability debate in ecology.
- Food webs: data and theory.
- Mutualistic networks: data and theory.
- Toward multiplex ecological networks.

Location

SCHOOL LOCATION

The School will take place in "Palazzo Marchetti" (Via Conti 28, Malfa, Salina Island). If you do not intend to join the transfers organised by the School, please refer to information below to travel from Catania to Salina. Once in Salina, you might want to get the public bus from SM Salina to Malfa (available only for arrivals before 7pm) or book a taxi (about 20€) in advance. In any case, please contact "Salina Servizi Turistici" for local support and to know the exact location of your accommodation.

The fastest way to reach Salina is to:

- fly to the international airport in Catania or Palermo
- move by bus from Catania (or Palermo) to Milazzo (public transport available, see below)
- move by hydrofoil/ship from Milazzo to Salina (public transport available, see below)

ACCOMODATION

The fee includes accommodation in shared house with 2-3 rooms (from 3 to 5 beds) with shared bathroom, available from September 3 2017 to September 8 (night) included. Attendants who wish to arrive before, or leave after, these dates should arrange for other accomodation on their own (ask the local organising committee for help). Each house comes with a fully equipped kitchen.

BREAKFAST, COFFEE BREAK AND MEALS

Participants should arrange for breakfast, lunch and dinners by their own. However, they can have a (cheap) typical Sicilian breakfast in the places close to their house and to the School.

Some refreshments will be available during the morning sessions and are included in the fee.

Participants can have lunch and dinner in different places. A full list of places where it will be possible to have lunch/dinner (at reduced price) and social networking will be made available prior to the beginning of the School.

SOCIAL EVENTS

Social events will include:

- A guided tour by boat
- A social dinner
- Cocktail night talks given by invited speakers between 7 pm and 8 pm. The talks will be sponsored by local producers of wine and sweets.

Travel information

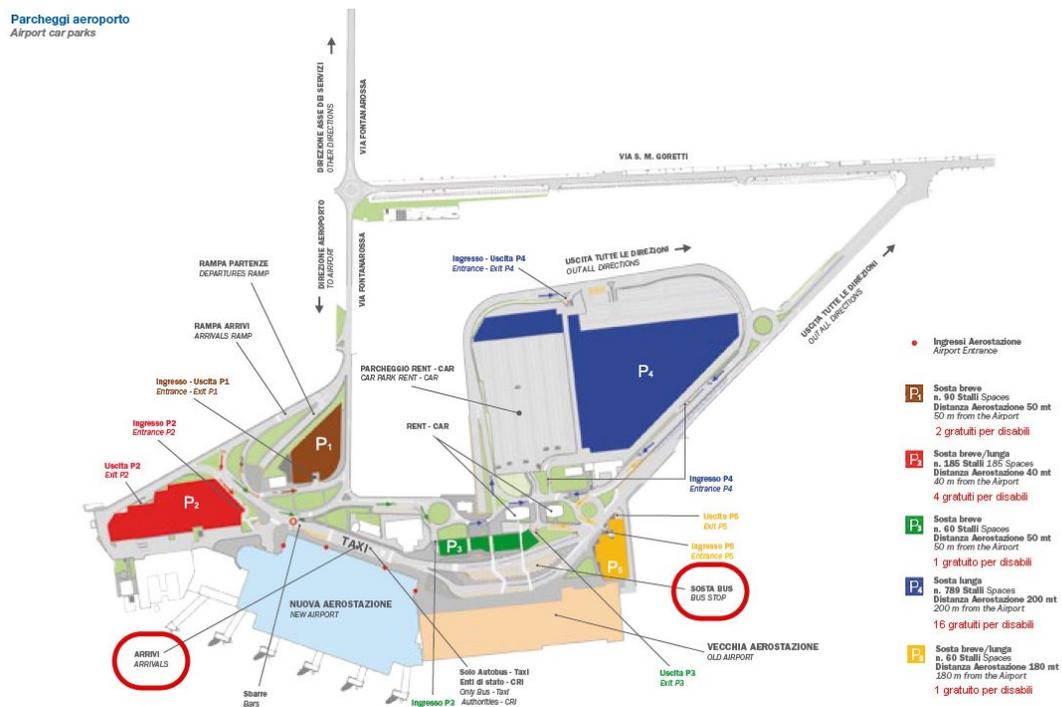
TRANSPORT ORGANISED BY THE SCHOOL

The best and cheapest strategy is to exploit the free transfers from Catania airport to Salina and back organised by the School, and included in the fee. If you prefer, you can also join us in Milazzo, where we will take the hydrofoil/ship.

To schedule your flights, please consider that our departure from Salina will be at 7.00am: this is to allow you to reach the Catania airport at 12.30am at most (accounting for possible traffic congestion). Please, DO NOT schedule flights before 13:30h on the departure day. If for some reason you can not book a flight after 13:30h, than you might want to consider the possibility to depart from Salina on your own (see the travel information in the Website) the day before, book an Hotel close to the airport and the day after get a bus to reach the airport.

IMPORTANT: We do not manage personal trips, hotel booking out of Salina and we can not refund them.

MAP OF THE MEETING POINT (CATANIA AIRPORT)



BUS COMPANY



The School bus should look like in the above picture, and expect to read “MSCX” somewhere inside.

While at the Catania airport, look around for these faces:



Alex Arenas: +34 661 349710



Manlio De Domenico: +39 338 5863802

PUBLIC TRANSPORT AND HOTELS

If you can not take advantage of the organised transport, below you can find information about hotels in Catania and Milazzo. Please, consider that we are not managing alternative journeys. We warmly recommend that before 03 Sept 2017 you stay in Milazzo, close to the port where you should easily take the hydrofoil, while after the end of the School we recommend to stay in Catania, close to the airport.

[Hotels Milazzo](#)

[Hotels Catania](#)

If you will not join the transfers organised by the School, here you will find some useful information for your journey from Catania to Milazzo (bus) and Milazzo to Salina (hydrofoil).

http://www.eoliando.it/arrivo/arrivo_eng.asp

<http://www.eoliebooking.com/navetta/indexeng.asp>

<http://www.estateolie.net/en/tourist-information/transfer-catania-milazzo.html>

Liberty lines: <http://www.libertylines.it/>

Note that this is not a public service and it costs a bit more than public one. However, this is also the fastest and simplest way: they will pick you up in Catania and can manage also to buy your hydrofoil ticket.

Another alternative might be to take one almost-hourly bus from Catania to Messina and there, take the daily hydrofoil departing at 2pm, every day. The distance between Messina station and the hydrofoil point is within walking distance.

For those of you who like to drive, an alternative could be to rent a car, reach Milazzo Harbour and there take the hydrofoil (you can buy the ticket there, but we recommend to buy it in advance: look the website for further detail).

<http://www.avis.com/car-rental/location/EUR/IT/Catania,+Sicily>

<http://www.rentalcars.com>

In any case, remember that your destination is S.M. Salina. Once there, you will need to pick the local minibus (ticket is just 1€ or 2€) to move to Malfa (5 min journey), the village where the School will take place and you will find your house.

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