MEDITERRANEAN SCHOOL OF COMPLEX NETWORKS

THIRD EDITION

29 AUGUST - 2 SEPTEMBER 2016

http://mediterraneanschoolcomplex.net/

Table of contents

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 three 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

ORGANISERS

Alex Arenas	Universitat Rovira i Virgili
Manlio De Domenico	Universitat Rovira i Virgili
Vito Latora	Queen Mary University of London
	Università degli studi di Catania - INFN Sezione di Catania

LOCAL ORGANISING COMMITTEE

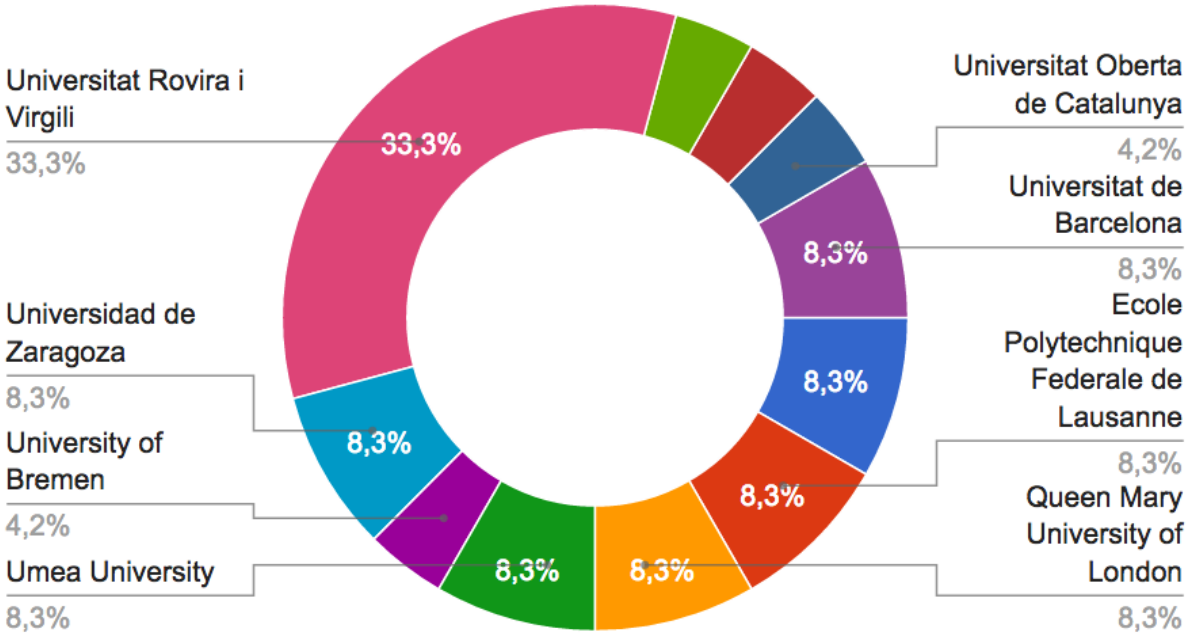
Serafina Agnello	Universitat Rovira i Virgili
Alessio Cardillo	École polytechnique fédérale de Lausanne
Clara Granell	University of North Carolina at Chapel Hill
Elisa Omodei	Universitat Rovira i Virgili

LECTURERS

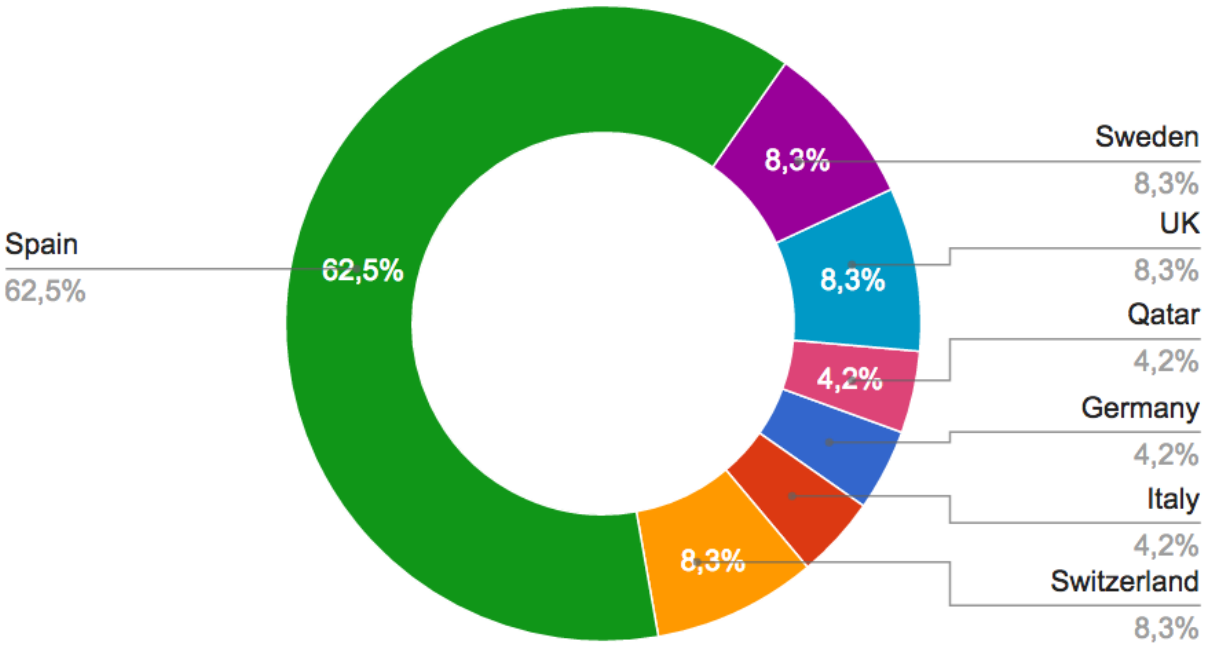
Javier Borge	Universitat Oberta de Catalunya
Alessio Cardillo	École polytechnique fédérale de Lausanne
Albert Diaz-Guilera	Universitat de Barcelona
Sergio Gómez	Universitat Rovira i Virgili
Jesús Gómez-Gardeñes	Universidad de Zaragoza
Clara Granell	University of North Carolina at Chapel Hill
Vito Latora	Queen Mary University of London
	Università degli studi di Catania - INFN Sezione di Catania
Sandro Meloni	Universidad de Zaragoza
Elisa Omodei	Universitat Rovira i Virgili
Tiago Peixoto	University of Bremen / ISI Turin
Martin Rosvall	Umea University
Marta Sales-Pardo	Universitat Rovira i Virgili

Lecturers

Lecturers by institutions

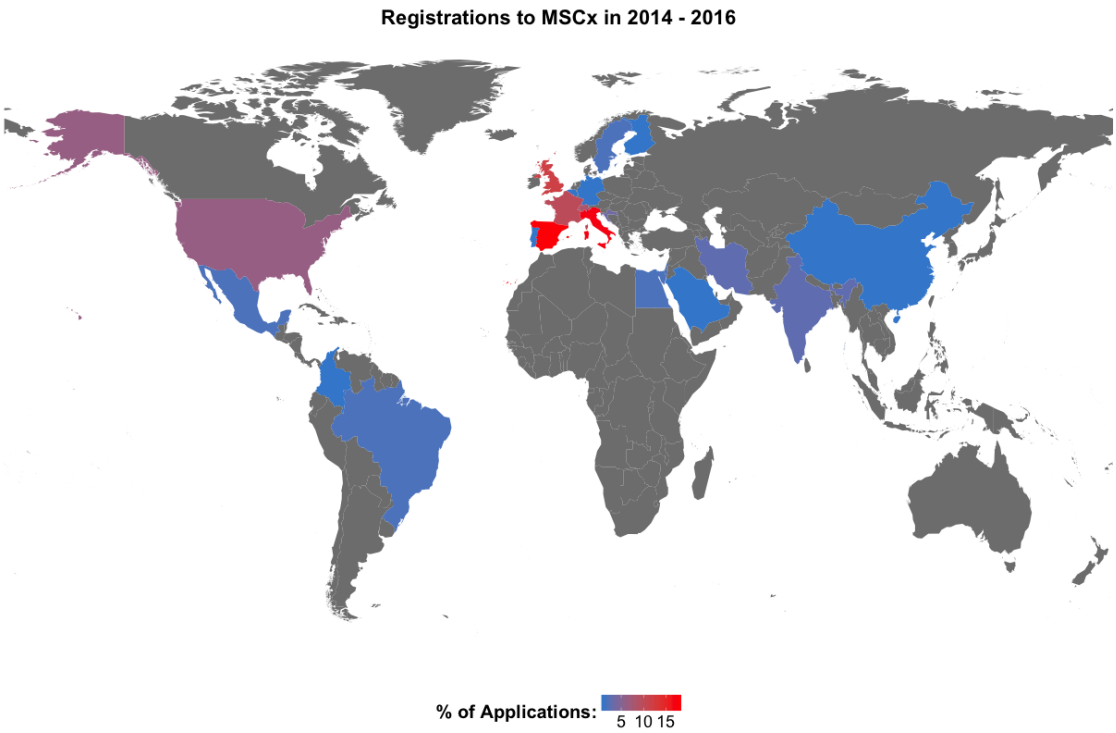


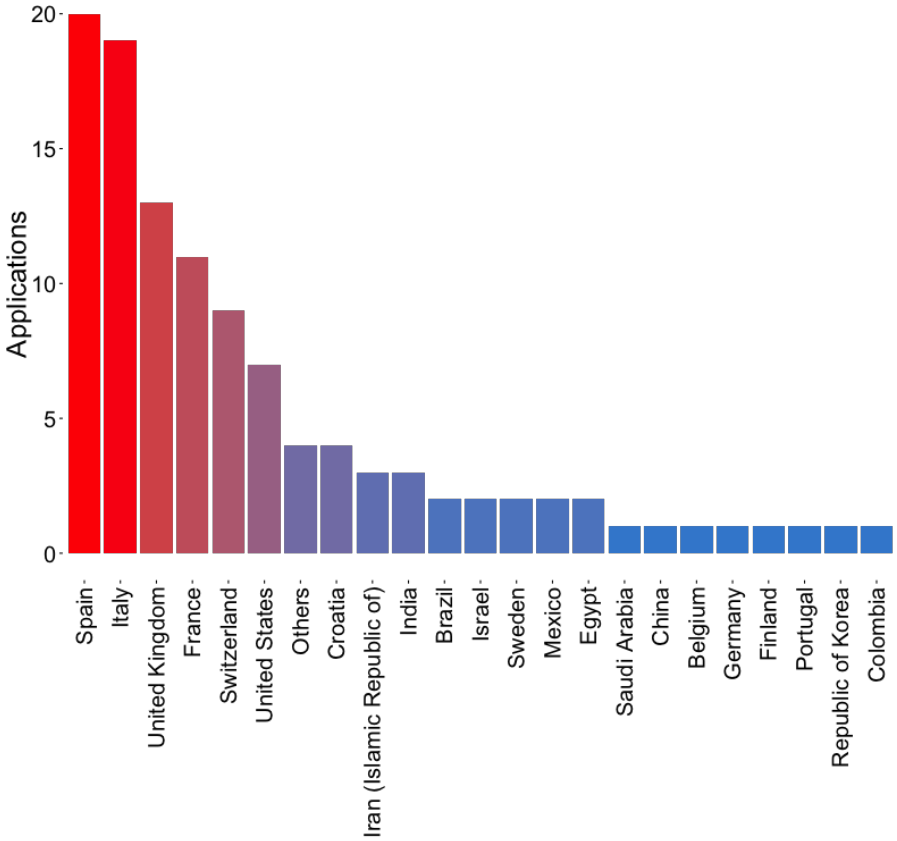
Lecturers by country



Students

Surname	Name	Affiliation
Abbar	Sofiane	Qatar Computing Research Institute
Andreotti	Eleonora	University of L' Aquila
Arola	Lluis	Universitat Rovira i Virgili
Baltakiene	Margarita	University of Pisa
Baltakys	Kestutis	Tampere University of Technology
Beronov	Boyan	Università della Svizzera italiana
Buzzanca	Marco	Università degli Studi di Catania
Criscione	Teodoro	University of Siena
Faggian	Marco	Università degli studi di Padova
Granero Belinchon	Carlos	École Normale Supérieure de Lyon
Iotti	Bryan	University of Torino
Jayles	Bertrand	CNRS
Jimenez Martin	Manuel	UNED
Lipari	Francesca	University of Pennsylvania
Ignacio	Morer	Universitat de Barcelona
Naghipour	Leyla	Tabriz University
Pelino	Guglielmo	Barcelona Graduate School of Economics
Perillo	Chiara	University of Zurich
Petit	Julien	University of Namur
Petralia	Angelo Enrico	Università degli Studi di Catania
Ranganathan	Sindhuja	Tampere University of Technology
Roccaverde	Andrea	Leiden University
Rosell	Gemma	Universtat Autònoma de Barcelona (UAB)
Rubrichi	Stefania	Orange Labs
Štepánek	Petr	Masaryk University
Surano	Francesco Vincenzo	Univeristà degli Studi di Torino
Suzuki	Yuka	Okinawa Institute of Science and Technology
Tejero-Cantero	Alvaro	Swiss Federal Institute of Technology
Vanhoof	Maarten	Orange Labs/Open Lab, Newcastle University
Vigneri	Luigi	EURECOM
Yose	Joseph	Coventry University


Registrations to MSCx in 2014 - 2016
% of Applications:
5 10 15


Applications
0
5
10
15
20
Spain
Italy
United Kingdom
France
Switzerland
United States
Others
Croatia
Iran (Islamic Republic of)
India
Brazil
Israel
Sweden
Mexico
Egypt
Saudi Arabia
China
Belgium
Germany
Finland
Portugal
Republic of Korea
Colombia

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 First and Second Edition in 2014 and 2015 of the Mediterranean School of Complex Networks, we call for applications to the Third Edition in 2016.

Schedule

PROGRAM AT A GLANCE

HOURS	MONDAY 29 AUGUST	TUESDAY 30 AUGUST	WEDNESDAY 31 AUGUST	THURSDAY 1 SEPTEMBER	FRIDAY 2 SEPTEMBER
8.30	Registration				
9.30 - 13.00	Session I *Inference of network structure and dynamics*	Session II *Multilayer and multiplex networks*	Session III *Epidemics on networks*	Session IV *Social networks and cooperation*	Session V *Methods and challenges in the analysis of empirical networks*
16.00				Social Event: boat trip (until sunset)	
18.00	Participant Talks Cocktail Talk				Closing ceremony
20.00			Social Dinner		

	Lecturers
Session I	Marta Sales-Pardo, Tiago Peixoto, Martin Rosvall
Session II	Sergio Gómez, Vito Latora
Session III	Clara Granell, Sandro Meloni
Session IV	Alessio Cardillo, Jesús Gómez-Gardeñes
Session V	Elisa Omodei, Javier Borge-Holthoefer
Cocktail Talk	Albert Diaz-Guilera

THE SESSIONS IN DETAIL

SESSION I: Inference of network structure and dynamics

A network's structure is shaped by evolutionary mechanisms and determines the network's function. Therefore, a substantial volume of research is devoted to extracting such structures from empirical data via the identification of modules (or "communities"), which represent the large-scale organisation of networks. In this lecture, we review two complementary approaches towards this goal: The first focuses on identifying purely structural patterns via the elaboration of probabilistic models responsible for their formation, and their principled inference from empirical data. The second approach is based on the analysis of dynamical processes that take place on them, and an information-theoretic approach to identify modular structures that are useful in describing them. We aim to cover the following topics:

INFERENCE OF GENERATIVE MODELS

Marta Sales-Pardo (Universitat Rovira i Virgili, Spain)
Tiago Peixoto (University of Bremen / ISI-Turin, Germany/Italy)

- The stochastic block model (SBM) and its variants (degree correction, overlapping groups, etc.)
- Semi-Bayesian inference, the belief propagation method, and the detectability threshold.
- Fully Bayesian inference, priors, minimum description length (MDL), model selection, resolution limit and hierarchical priors.
- Generalizing from data: Prediction of missing and spurious links.
- Model extensions: Layered, dynamic SBMs, and generalized models on continuous latent spaces.
- Practical aspects: Efficient inference algorithms.

INFERENCE OF NETWORK DYNAMICS

Martin Rosvall (Umea University, Sweden)

- Encoding of random walks, MDL and the map equation.
- Hierarchical modular structures.
- Higher-order Markov chains and overlapping modules.
- Flows on multilayer networks.

SYNCHRONIZATION IN TIME-DEPENDENT NETWORKS

Albert Diaz Guilera (Universitat de Barcelona, Spain)

I will show how to generalize spectral properties and dynamical approach to a synchronized state in the case of moving oscillators. When oscillators move and they can interact with nearby oscillators they form a time dependent contact network. In terms of the time scales for motion and synchronization we describe the different regimes of the system.

SESSION II: Multilayer and multiplex networks

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.

Sergio Gómez (Universitat Rovira i Virgili, Spain)

- Centrality and communities in multilayer networks
- Diffusion, navigability and robustness in multiplex networks
- Routing and congestion in multiplex networks

Vito Latora (Queen Mary University of London, United Kingdom)

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

SESSION III: Epidemics on networks

Contagious diseases spread among people and animals following transmissibility patterns that can be represented as networks. To learn about the outcome of a particular spreading process in a population, we use mathematical models to model and simulate the spreading of a particular pathogen on a particular network of interactions. In the first part of the lecture we will present the most commonly used compartmental models for epidemic spreading (SIS and SIR), for both the case in which we assume a well-mixed population as well as for heterogeneous infectivity patterns between individuals. Then, we will introduce a very powerful technique, the Microscopic Markov Chain Approach (MMCA), a method that allows to calculate the individual probabilities of each node to be in each of the compartmental states, and which provides accurate results even beyond the epidemic threshold. This approach will be also applied to the case of competition of a contagious disease and information spreading on top of a multiplex network. In the second part we will build on the previous results to study the large scale spreading of an epidemics. As a first step we will introduce the so-called Meta-Population approach where different populations are connected via mobility/migration flows. This class of models offers the possibility to represent realistic scenarios for disease diffusion at both the local and global level. Finally, we will present some recent results in the modeling of interaction and competition between different pathogens, two mechanisms that are at the basis of real world epidemic spreading.

Clara Granell (University of North Carolina at Chapel Hill, United States)

- Introduction to SIS and SIR in networks
- Microscopic Markov Chain Approach
- Epidemics in multiplex networks

Sandro Meloni (Universidad de Zaragoza, Spain)

- Dynamics of interacting diseases
- Towards realistic modeling of epidemics: the Meta-Population approach

- Pathogen competition and coexistence in spatially structured population

SESSION IV: Social networks and cooperation

In the last decade, the exploration of "dynamics of/on networks" has followed several trails from nonlinear systems to stochastic processes just to cite a few. Among these trails, one that has been extensively addressed is that of evolutionary dynamics. More specifically, the interest was based on unveiling the mechanisms that foster cooperative traits in social systems. The evolutionary perspective, based on the well-known replicator equations, predicts that under mean-field conditions (in which agents interact all-to-all) cooperation gets beaten by defection; as observed in paradigmatic social games such as the Prisoner's Dilemma. Given that many social contexts can be explained in terms of such game, and that cooperation among unrelated humans is observed in society, many studies have tried to provide ways to scape the victory of defection. One of the most studies avenues is that of abandoning the well-mixed (or mean-field) hypothesis, and study evolutionary games in structured populations. This simple step forward has shown that cooperators can resist the temptation of defectors by taking advantage of the bounded number of interactions. In fact, the formation of cooperator clusters in regular lattice was seen to be at the core of such resistance. This finding motivated the study of evolutionary games in complex networks, thus making one step further to incorporate realistic structures of interaction among the agents. The findings were even more positive (for the sake of explaining cooperation) than in regular lattice, being scale-free networks the best platform for increasing the survival of cooperators. Another turning point in the quest to explain the emergence of cooperation in networked systems has been the passage from pairwise to group interactions. Such change has been made through the study of another paradigmatic case: the Public Goods Game. Considering groups instead of pairs opened new perspectives about the mechanisms that promotes the survival of cooperation even under hostile conditions for cooperators. In this lecture we will cover all the former steps, from the replicator equation and the classical theory of evolutionary games to the most recent results about the implementation of evolutionary games on networks. We will pay attention to both pairwise and group interactions thus

covering the most important benchmarks in evolutionary game theory. Finally, we will also provide a brief overview on how coevolutionary dynamics involving game theory could address problems that cannot be described by a unique type of dynamical process.

Alessio Cardillo (École Polytechnique Fédérale de Lausanne, Switzerland)
Jesús Gómez-Gardeñes (Universidad de Zaragoza, Spain)

SESSION V: Methods and challenges in the analysis of empirical networks

Data about human behavior and social interactions is nowadays produced and made available at an unprecedented pace, opening new possibilities as well as new issues for complex network research. In this lecture we will give an overview of the challenges that we have to face when dealing with real-world complex networks, from the data collection to the network design. In particular we will focus on empirical multilayer networks, and present a few case studies ranging from bibliographic records to online media data.

SCIENCE OF SCIENCE

Elisa Omodei (Universitat Rovira i Virgili, Spain)

- Mapping science using bibliographic data
- Citation networks and scientific impact metrics
- Multilayer citation networks: measuring interdisciplinarity

INFORMATION ECOSYSTEMS

Javier Borge-Holthoefer (Internet Interdisciplinary Institute (IN3), Spain)

- Collective behavior and coordination phenomena
- Information and Urban ecosystems
- Effective connectivity in urban structures

PARTICIPANT TALKS

FLASH TALKS

MULTISCALE INFORMATION TRANSFER IN TURBOLENCE

Granero Belinchon Carlos

Richardson stated in the beginning of the 20th century that Turbulence presents an hierarchical structure, where bigger eddies interacts with smaller ones in a cascade process. This idea inspired Kolmogorov to develop his famous theories of fully developed Turbulence. These theories have been extended later to account for new discoveries: inverse cascade, multifractal approach of intermittency, analysis of scales higher than the integral scale ... Turbulence can be seen as a very interesting and challenging Dynamical Complex System, where different scales interact together. In addition, it's well known that turbulent processes are present in a wide range of real complex systems, which makes Turbulence analysis even more interesting. We propose to analyse Turbulence using Information Theory. Information Theory is a non-parametric and model-free method of analysis. These two characteristics, together with the generality of the method, make this approach very attractive for constructing the functional connectivity network of the studied system. As a first step towards a description of Turbulence in terms of an information cascade, we propose a new estimator of the entropy rate at different scales, which heavily relies on Mutual Information. We show that this quantity is an efficient measure of the correlations. We are able to locate characteristic scales defining the dissipative, inertial and integral domains. The Kolmogorov scaling law in the inertial range is recovered for our estimator, which we relate to the behavior of the autocorrelation function.

EVIDENCE OF AN ABSORBING PHASE TRANSITION IN A BI-STABLE SYSTEM WITH DELAYED FEEDBACK

Marco Faggian

It is well known that complex dynamical evolution may originate from simple low dimensional dynamical systems when a time-delayed feedback mechanism is

considered. These may typically happen in systems where the propagation time of a signal is not negligible with respect to the typical timescale of the local dynamics. Examples include many biological systems and laser physics, where a long delayed feedback may be easily obtained by optical or electronic device. A deep analogy exists between delayed feedback and spatially extended dynamical systems. In particular, it is well known that deterministic systems with long time-delay τ may be interpreted in terms of a suitable spatiotemporal dynamics of spatial size τ. In this work we extend this interpretation to stochastic differential equations, considering a simple bistable system with long delayed feedback and multiplicative noise, introduced in a way to preserve the lowest energy state. Our numerical analysis shows that – as the asymmetry in the bi-stable potential is carefully changed – our system undergoes a transition into an absorbing state of the effective spatio-temporal dynamics , i.e. the lowest energy state, with critical exponents compatible with the celebrated Directed Percolation class. This simple model is believed to qualitatively capture the behavior of a class of laser systems such as a bistable semiconductor laser with long delayed feedback. While extending the validity of the space-time analogy and verifying several features of front dynamics, we expect our results to possibly trigger new directions of theoretical and experimental research. The possibility to independently generate and erase localized states in our setup as in spatially-extended systems, enable their use as otpical information bits in a fast, all-optical setup.

PATTERN PREDICTION IN REACTION-DIFFUSION SYSTEMS ON NETWORKS

Julien Petit

Reaction-diffusion equations help researchers from diverse fields to model those systems in Nature where a combination of local reaction rules - representing the creation or destruction of entities - with a diffusion process - the migration of entities, dictates the whole dynamics. In accordance with the growing interest for network science, a lot of effort was deployed to study many aspects of these equations when they evolve on complex networks. In various settings, the goal was always to analyze them for Turing-instabilities. The standard approach relies on a linear stability analysis. It produces conditions that the model parameters need to satisfy in order to observe the emergence of a self-organized inhomogeneous steady state. Still, the exact shape of the pattern, that is, the asymptotic concentration of

the entities in every node of the network, cannot be revealed without a possibly time-consuming integration of the equations of the model. The aim of our talk we will be to present an approach to circumvent this problem, and to explain how we obtain an accurate prediction of the pattern via analytical formulas in terms of the given model parameters.

HIERARCHY AND SATISFACTION IN COEVOLVING NETWORKS

Manuel Jimenez Martin

It is a known fact that there is an upper limit to the number of acquaintances that a person can maintain (Dunbar's number). It is thus reasonable to assume that creating and keeping social relationships consumes some kind of social energy, might it be attention, memory or, ultimately, time. Also, there is the realization that relationships are often asymmetrical, as one actor is more involved in it than the other. This defines a sense of directionality that is related to the existence of a hierarchical structure. An agent's position in the network determines its status. An agent would, in principle, try to use its available social energy in acquiring a beneficial position in the network. For this he may make use of local (neighbor's) information only. Yet, his previous acquaintances might resent his lower involvement with them and some relationships might die out. We will formulate a coevolving dynamics bringing in concepts from social capital and status theory. We will investigate the effect of these coevolving dynamics on the global network structure: Is an stationary topology achieved? Is there a well defined hierarchy?

GLOBAL INFORMATION AND CONSENSUS FORMATION: THEORY AND SIMULATIONS

Francesca Lipari

We study how individuals learn about socially acceptable identity attributes using a social influence mechanism and a network based non-Bayesian rule for the disposition formation. Social learning is a particular form of learning as process in which individuals learn from each other. This shared knowledge creates the basis for conventions and descriptive norms to arise in a community. We model a collection of interacting agents. Each agent is endowed with an initial multi-attribute identity and initial dispositions over those attributes. The dispositions

evolve over time in a social learning process. First, the agents learn the descriptive norm by communicating their dispositions to each other. Then, they calculate a weighted average of its own dispositions, its neighbors' dispositions, and an external source of information. The agents then update their identity as a function of the new dispositions. This model allows us to study how fast consensus on norms is reached in this learning environment as a function of the strength of the external information and the divergence between agents' individual disposition and the established norms.

BAYESIAN AUTOREGRESSIVE SEGMENTATION OF ELECTROPHYSIOLOGY SIGNALS

Álvaro Tejero Cantero

Electrical patterns of activity recorded from the brain correlate with sensory perception, internal communication or motor output. Current popular approaches to identify such patterns by their spectral fingerprint scale poorly as the signal becomes more multivariate. At the same time, techniques predicated on stationarity (e.g. Fourier-based) suffer an undesirable tradeoff: either the signal is divided in small windows, resulting in low frequency resolution, or if longer windows are used, the resulting time resolution is often too low to investigate behaviour or rapid brain communication. We combine the simplest nontrivial temporal structure in the latent brain states (Markovian dynamics) and in the multivariate observations (linear dependence of current samples on past history) in a Bayesian Hidden Markov / Multivariate Autoregressive Model (HMM-MAR) that provides a segmentation into states with approximately linear and stationary dynamics. We apply the unsupervised HMM-MAR scheme to the classification and characterisation of mouse brain states using quintuple-area recordings during appetitive behaviour. We characterise both well-known oscillatory states and hitherto unknown directed interactions between brain areas, as well as the temporal structure of such states in relation to the behavioural phases.

CONTRIBUTED TALKS

NETWORK SCIENCE INVESTIGATION

Joseph Yose

In recent years, the Applied Maths Research Centre (Coventry University) has been developing a new approach to the analysis of ancient texts. Our network-scientific investigations initially focussed on comparative mythology and epic narratives and the approach is gaining in popularity and expanding in pertinence. Here we explain the context in which mathematicians and physicists are interested in literature and contextualise our approach within the broader relationship between science and humanities. We then go on to report on an application of the method to investigate a famous controversy in the history of epic literature. In 1760 James Macpherson published the first volume of a series of epic poems which he claimed to have translated into English from ancient Scottish-Gaelic sources. The poems invited comparisons with major works of the epic tradition, including Homer's Iliad and Odyssey, and effected a profound influence on the emergent of a Romantic period in literature and the arts. However, the authenticity of the poems was questioned by some scholars, while others protested that they misappropriated material from Irish mythological sources. Here we use network science to investigate these issues. In particular we construct the character network for the poems of Ossian and we compare it to the social networks underlying narratives with which Macpherson's opus was compared, namely the Homeric classics and tales from the Fenian Cycle of Irish mythology. We find that, despite attempts to position Ossian alongside the Classics and to distance it from Irish sources, the social networks underlying the narratives reveal a remarkable similarity between the Scottish and Irish tales and a dissimilarity between the former and the works of Homer.

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 August 28 2016 to September 2 (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

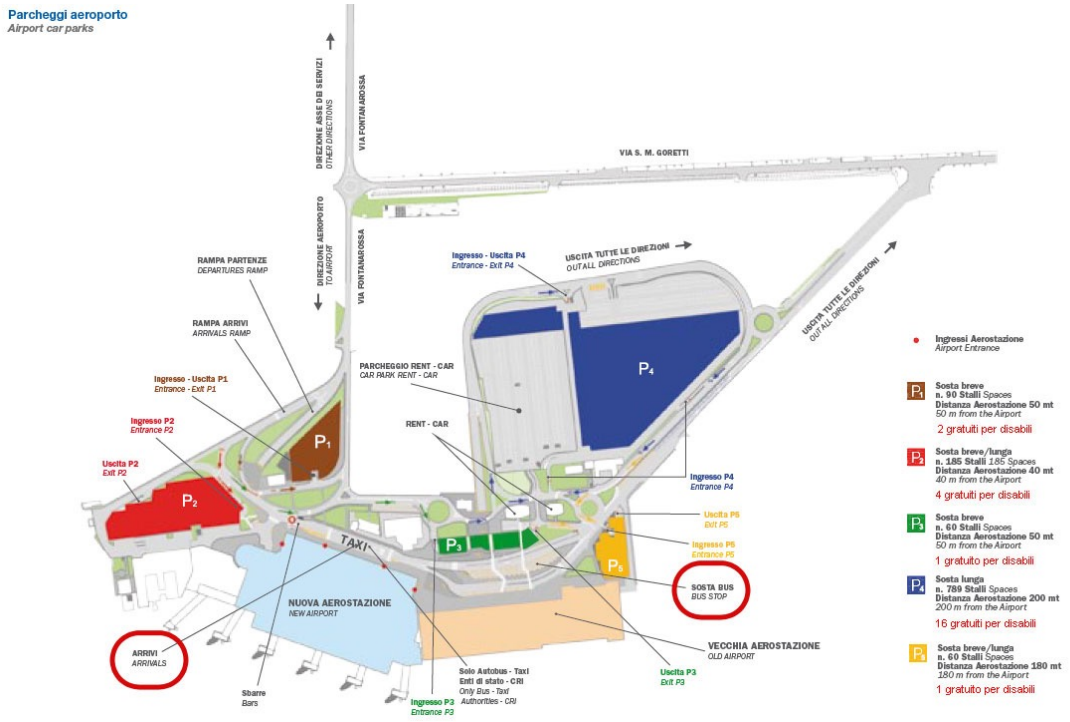
TRANSPORT ORGANISED BY THE SCHOOL

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)



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 29th Aug 2016 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.

Sponsors

Alepsys Lab	*Complex System Society*
UNICT	*EPFL*
URV	*Diputación Tarragona*