



CCS'24 Exeter & London

Talks List

Sept.4 Lighting 1

- 10:30 Local dominance unveils clusters in networks
- 10:33 Adaptive Cut reveals multiscale complexity in networks
- 10:36 Optimal transport problem in complex systems
- 10:39 Inferring contact network degree distribution from epidemic data via the edge-based compartmental model
- 10:42 Milgram's experiment in the knowledge space: Individual navigation strategies
- 10:45 Interdependence of Emissions: Analysing the dynamics in emissions using a simple linear model
- 10:48 Understanding the Vegetable Oil Debate and Its Implications for Sustainability through Social Media

Auditorium

*Shi, Dingyi; Shang, Fan; Chen, Bingsheng; Expert, Paul; Lü, Linyuan; Stanley, H. Eugene; Lambiotte, Renaud; Evans, Tim; LI, Ruiqi**

Boucherie, Louis; Lehmann, Sune*

Mazzilli, Dario; Patelli, Aurelio; Buffa, Lorenzo; Saracco, Fabio; Cimini, Giulio*

Guzmán Morán, José Andrés; Kiss, Istvan Z; Malizia, Federico; Cole, Diana; Choi, Boseung*

Zhu, Manran; János, Kertész*

*Kumar, Nishanth**

Candellone, Elena; Aleta, Alberto; Ferraz de Arruda, Henrique; Meijaard, Erik; Moreno, Yamir*

Chair: Ronaldo Menezes

Sept.4 Complex Behaviors in Animal Populations

- 11:30 Scary movie: Behavioural Rules Governing Escape Decisions in Wild Fish Shoals
- 11:45 Leveraging the power of higher-order networks to study animal communication
- 12:00 Temnothorax ants use recruitment to achieve beyond their individual capabilities
- 12:15 Scaling-up interaction signal dynamics to understand population-level spatial organization

Room 11

Neven, Sara Linde; Martin, Benjamin; de Roos, André*

Silk, Matthew; Iacopini, Iacopo; Foote, Jennifer; Derryberry, Liz; Fefferman, Nina*

*Ohlinger, Bradley D**

*Colombo, Eduardo H**

Chair: Maxime Lucas

Sept.4 Complexity in Cities 1

- 11:30 Understanding Route Diversifiability in Urban Road Networks
- 11:45 Self-organized, globally optimal, and real-world urban transportation networks -- Similarities and discrepancies
- 12:00 SP(L)ACES: Remote sensing sidewalk networks at scale
- 12:15 Optimising geospatial vector data matching algorithms for change detection with synthetic data
- 12:30 City mobility across the urban hierarchy

Auditorium

Cornacchia, Giuliano; Pappalardo, Luca; Nanni, Mirco; Pedreschi, Dino; González, Marta C.*

*Schläpfer, Markus**

*Borge-Holthoefer, Javier**

Guardiola, Paul; Raimbault, Juste; Olteanu-Raimond, Ana-Maria; Perret, Julien*

*Musso, Andrea**

Chair: Marta Gonzalez

Sept.4 Modeling Climate Risks and Impacts

- 11:30 Firm-level supply chains to minimize unemployment and economic losses in rapid decarbonization scenarios
- 11:45 Swarm Mobile Sensors for Air Quality Monitoring and Citizen Science
- 12:00 A scalable gravity-based method for identifying critical road segments in global cities
- 12:15 Modeling the Dynamics of Heterogeneous Climate Change Risk Perceptions: An Agent Based Model of US Population, 2010-2030
- 12:30 Assessing the interdependence of climate tipping elements

Lab 1

- Stangl, Johannes**; *Borsos, András*; *Diem, Christian*; *Reisch, Tobias*; *Thurner, Stefan*
- Dimitri, Giovanna*; *Vitanza, Eleonora**; *Mocenni, Chiara*
- Chakraborty, Sukankana**; *O'Clery, Neave*; *Rentschler, Jun*; *Avner, Paolo*
- Zia, Asim**
- Scagliarini, Tomas**; *De Domenico, Manlio*; *Gamba, Lorenzo*

Chair: **Pietro Gravino**

Sept.4 Behavioral Patterns and Social Structures 1

- 11:30 The Robust Benefits of Social Influence for the Wisdom of Individuals in the Crowd
- 11:45 Bots, Elections, and Controversies: Twitter Insights from Brazil's Polarised Elections
- 12:00 Story Arcs, Success and Diffusion of Turkish TV Dramas
- 12:15 Detection of fraudulent practices in the Mexican public procurement network
- 12:30 Exploring Patterns of Moderation in Mastodon's Network of Federated Instances
- 12:45 Networks of Lawyers Before the European Court of Human Rights

Room 1-2-3

- Pilgrim, Charles**; *Becker, Joshua*
- Pacheco, Diogo F**
- K. Rizvi, Abbas**; *Pan, Guanghui*; *Adeel, Abdul Basit*; *Mutgan, Selcan*
- Medina-Hernández, Martí**; *János, Kertész*; *Fazekas, Mihály*
- Baqir, Anees**; *Arregui-García, Beatriz*; *La Cava, Lucio*; *Meloni, Sandro*; *Gallotti, Riccardo*
- Ridi, Niccolò**; *Fikfak, Veronika*

Chair: **Thomas Louf**

Sept.4 Opinion Dynamics and Network Stability

- 11:30 Heterogeneous connectivity mitigates adversarial attacks on voter model dynamics in complex networks
- 11:45 Assessing frustration in real-world signed networks: towards a statistical theory of balance
- 12:00 Spontaneous Opinion Swings in the Voter Model with Latency
- 12:15 An extended Axelrod's model of innovation spreading and emergence of linguistic diversity
- 12:30 Temporal Dynamics of Social Networks in Rural India: Insights from a Longitudinal Study

Room 10

- Takemoto, Kazuhiro**
- Gallo, Anna**; *Garlaschelli, Diego*; *Lambiotte, Renaud*; *Saracco, Fabio*; *Squartini, Tiziano*
- Palermo, Giovanni**; *Mancini, Anna*; *Desiderio, Antonio*; *Di Clemente, Riccardo*; *Cimini, Giulio*
- Dornelas, Vivian**; *Anteneodo, Celia*; *Heinsalu, Els*; *Patriarca, Marco*
- Singh, Rahul Kumar**; *Gaurav, Sarthak*

Chair: **Giulia Cencetti**

Sept.4 Financial Complexity, and Economic Networks 1

- 11:30 Towards a statistical understanding of the evolution of production networks on the firm level
- 11:45 The Impact of AI on the Labour Market from the perspective of Economic Complexity
- 12:00 Shock propagation in multi-product-firm production networks
- 12:15 A Network Approach for supply chain due diligence risk assessment in the EU
- 12:30 Economic shocks in reconstructed firm-to-firm networks from input-output data
- 12:45 Mitigating systemic risk in production networks by local rewiring

Room 4

- Reisch, Tobias**; *Borsos, András*; *Thurner, Stefan*
- Fenoaltea, Enrico Maria**
- Kreis, Maike**; *Diem, Christian*; *Schueller, William*; *Fialkowski, Jan*; *Thurner, Stefan*
- Hurt, Jan**; *Ledebur, Katharina*; *Meyer, Birgit*; *Friesenbichler, Klaus*; *Gerschberger, Markus*; *Thurner, Stefan*; *Klimek, Peter*
- Luzzati, Davide Samuele*; *Ialongo, Leonardo Niccolò**; *Fagiolo, Giorgio*; *Garlaschelli, Diego*
- Zelbi, Giacomo**; *Thurner, Stefan*

Chair: **Paolo Barucca**

Sept.4 Modeling and Mitigating Epidemics 1

- 11:30 Limited efficacy of forward contact tracing in epidemics
- 11:45 Enhancing global preparedness during an ongoing pandemic from partial and noisy data
- 12:00 Analytical modeling of generalized ring vaccination strategies
- 12:15 Quantifying the impact of behavioural relaxation during the initial phase of COVID-19 vaccinations
- 12:30 Strength and weakness of disease-induced herd immunity
- 12:45 Characterizing collaborations and research flows in Vaccine Hesitancy Research

Room 5

*de Meijere, Giulia**

*d'Andrea, Valeria**

Scianna, Matteo; Tizzoni, Michele; Gallotti, Riccardo; Artime, Oriol; Alvarez Zuzek, Lucila G*

*Li, Yuhan; Gozzi, Nicolò; Perra, Nicola**

Hiraoka, Takayuki; Ghadiri, Zahra; K. Rizi, Abbas; Kivelä, Mikko; Saramäki, Jari*

Balsamo, Duilio; Offeddu, Vittoria; Aghamohammadi, Zhina; Leone, Laura Pasqua ; Torbica, Aleksandra; Shayegh, Soheil; Andreu-Perez,*

Chair: Huijuan Wang

Sept.4 Foundations of Complex Systems

- 11:30 Modeling complex aggregation processes using recent advances in combinatorial approach
- 11:45 Awareness paradox induced by network density, degree heterogeneity, and disassortativity
- 12:00 A self-supervised learning approach to the cellular automaton classification problem
- 12:15 Criticality in linear vs. combinatorial evolutionary models: from graphs to hypergraphs
- 12:30 Canards: Continuous rapid transitions in turbulent combustors

Room 7-8

Łepek, Michał; Fronczak, Agata; Fronczak, Piotr*

Kolok, Csego; Odor, Gergely; Keliger, Daniel; Karsai, Marton*

*Rollier, Michiel**

*Michaud, Jérôme**

Siddaruda Bhavi, Ramesh; Sudarsanan, Sivakumar; Bhaskaran, Anaswara; Raghunathan, Manikandan; Sujith, R.I*

Chair: Laetitia Gauvin

Sept.4 Science of Science

- 11:30 From Revolution to Research: Interplay Between Funding, Migration, and Scholarly Attention post-Arab Spring
- 11:45 Is disruption decreasing, or is it accelerating?
- 12:00 Gender representation and homophily as barriers to women's career in science
- 12:15 Temporal glass ceiling: Gender disparities in the dissemination and acquisition of scientific knowledge
- 12:30 The Role of Science in the Universe of Conspiracy Theories
- 12:45 AI for neuroscience and neuroscience for AI: how AI and neuroscience are growing together

Room 9

Asgari, Yasaman; Zhou, Hongyu; Rezapour, Shadi; Villacastin, Juven ; Kadir Ozer, Ozgur; Sloane, Mary Ellen; Bovet, Alexandre*

*Valverde, Sergi**

Jaramillo, Ana Maria; Macedo, Mariana; Oliveira, Marcos; Karimi, Fariba; Menezes, Ronaldo*

Zappalà, Chiara; Gallo, Luca; Bachmann, Jan; Battiston, Federico; Karimi, Fariba*

Alvarez Zuzek, Lucila G; Bertani, Anna; Baqir, Anees; Venturini, Tommaso; Traag, Vincent; Gallotti, Riccardo*

Fontaine, Sylvain; Gargiulo, Floriana*

Chair: Mohsen Mosleh

Sept.4 Robustness and Complexity in Biological Networks

- 15:30 Assessing robustness of microbiological behaviours using agent-based model
- 15:45 Robustness and Complexity of Directed and Weighted Metabolic Hypergraphs
- 16:00 Investigating the Effect of Noise on the Density Classification Task for Various Cellular Automaton Rules
- 16:45 Protein self-similarity and protein function
- 17:00 Network Modeling of Endothelial-to-Mesenchymal Transition (EndMT) caused by Dengue Virus
- 17:15 In-silico model of the pregnant uterus as a network of oscillators under sparse adaptive control

Room 11

Proverbio, Daniele; Reginato, Damiano; Gallo, Luca; Passalacqua, Barbara; Giordano, Giulia*

Traversa, Pietro; Ferraz de Arruda, Guilherme; Vazquez, Alexei; Moreno, Yamir*

Challa, Annajirao ; Hao, Duxiao; Rozum, Jordan ; Rocha, Luis M*

*Moret, Marcelo A**

*Fernández, Nelson *; Gershenson, Carlos; Camacho, Paula*

Ferro, Giuseppe M; Sornette, Didier; Somazzi, Andrea*

Chair: Sergi Valverde

Sept.4 Complexity in Cities 2

- 15:30 Information Flow and Causal Redundancy in Geographic Systems: With the Case of the UK Housing Market
- 15:45 Measuring urban mobility and employment diversification across different regions
- 16:00 Mobility behavior by type of work and its implications for informality
- 16:45 Unraveling the interplay of time use, mobility, and lifestyles across urban occupations
- 17:00 Modeling gentrification as a relocation flow-based, spatio-temporal process

Auditorium

- Zhang, Jing**
- Wu, Zeyu*; González, Marta C.*
- Chavez-Jimenez, Christopher*; Rosas, Marco Antonio; Osorio, Carlos; Knoblauch, Steffen; Rocha, Antonio A; Gershenson, Carlos;*
- Chen, Baoqi Eileen*; González, Marta C.*
- Mauro, Giovanni*; Pedreschi, Nicola; Lambiotte, Renaud; Pappalardo, Luca*

Chair: Massimiliano Luca

Sept.4 Behavioral Patterns and Social Structures 2

- 15:30 Detectability of Minority Communities in Networks
- 15:45 Migration costs and rewarding schemes in spatial public goods games
- 16:00 An entropic study of social manifestations
- 16:45 News ecosystem dynamics: Supply, Demand, Diffusion, and the role of Disinformation
- 17:00 Drift Diffusion Model to Predict the Evolution of Cooperation in Group Dynamics
- 17:15 Tendencies toward triadic closure: Field-experimental evidence

Room 1-2-3

- Li, Jiaze*; Peel, Leto*
- Ibrahimli, Rashid*; Antonioni, Alberto*
- Gandica, Yérali C**
- Gravino, Pietro*; Prevedello, Giulio; Brugnoli, Emanuele*
- Alvarez Zuzek, Lucila G*; Ferrarotti, Laura; Lepri, Bruno; Gallotti, Riccardo*
- Mosleh, Mohsen**

Chair: Richard Blythe

Sept.4 Modeling and Mitigating Epidemics 2

- 15:30 Endemic infectious states below the epidemic threshold and beyond herd immunity
- 15:45 Modeling pathogen-pathogen competition in a multi-pathogen ensemble: application to the co-circulation of seasonal respiratory
- 16:00 An analytical approach to estimating outbreak probability for spatially structured epidemics and its application to pandemic preparedness

Room 5

- Ramasco, Jose**
- Sartore, Marika*; Azaele, Sandro; Maritan, Amos; Poletto, Chiara*
- Wang, Boxuan*; Valdano, Eugenio*

Chair: Istvan Kiss

Sept.4 Financial Complexity, and Economic Networks 2

- 15:30 Source of multiscaling in rough volatility models
- 15:45 Synthetic Financial Time Series by Diffusion Models
- 16:00 Venture Capital: how to become a successful investor
- 16:45 Mapping critical raw materials in green technologies
- 17:00 Calibration of a Novel Large-Scale Economic Agent-based Model

Room 4

- Casaburi, Pasquale*; Di Matteo, Tiziana*
- Mizuno, Takayuki*; Takahashi, Tomonori*
- Zava, Marta**
- Sbardella, Angelica*; de Cunzio, Francesco; Consoli, Davide ; Perruchas, Francois*
- Wiese, Samuel*; Kaszowska-Mojza, Jagoda; Dyer, Joel; Moran, Jose; Pangallo, Marco; Calinescu, Anisoara; Farmer, Doyne*

Chair: *Maria del Rio-Chanona*

Sept.4 Personalization and Information Spread

Room 7-8

- 15:30 The Preservation of Input/Output Directed Graph Informativeness under Crossover *Pape, Andreas D; Schaffer, J. David; Sayama, Hiroki*; Zosh, Christopher*
- 15:45 Disentangling high order effects in the transfer entropy *Stramaglia, Sebastiano; Faes, Luca; Cortes, Jesus; Marinazzo, Daniele**
- 16:00 Search-engine personalization and filter bubbles: evidence from searches related to an ongoing conflict *Damião, Íris*; Almeida, Paulo; Sa, Joana G; Reis, José*
- 16:45 Decoding the News Media Diet of Disinformation Spreaders *Bertani, Anna A*; Mazzeo, Valeria; Gallotti, Riccardo*

Chair: *Jason Reifler*

Sept.4 Complex Human Systems

Room 9

- 15:30 Exploratory Network Modelling of Complex Human Systems in Time-Use Research: Results from Wave 1 of the Singapore NCSS-NAK 360 *Ho, Han Sheng*; Ortega, Emily; Chan, Bryan Yu Xiu; Tay, Azriel Xunkai; Tang, Sabrina Seng Ooi*
- 15:45 A theoretical framework for studying culture as a complex adaptive system *Jansson, Fredrik**
- 16:00 Complex systems analysis of subjective well-being *Dignum, Eric*; Roy, Debraj; Gerrits, Lasse*
- 16:45 Using measures from complexity to predict transitions towards depression *George, Sandip V**
- 17:00 A Reciprocal-Practice-Skill Model of Self-Regulated Learning *Laskar, Pritam*; van der Maas, Han*

Chair: *Nandini Iyer*

Sept.4 Team Dynamics and Collaboration

Lab 1

- 15:30 Non-linearity and Power laws in IPSC shooting ranks *Frisia, Michele**
- 15:45 Event Distribution Randomness for Predicting Match Winners in Association Football *Bandara, Ishara S**
- 16:00 Team and workload dynamics in collaborative environment *Betti, Lorenzo*; Gallo, Luca; Wachs, Johannes; Battiston, Federico*
- 16:45 Evolution in the Olympic Race *Rella, Simon A**
- 17:00 The Evolution of Platform-Driven Collaboration *Maddah, Negin; Heydari, Babak**

Chair: *Riccardo Gallotti*

Sept.4 Theory of Complex Systems 1

Room 10

- 15:30 Biased versus unbiased numerical methods for stochastic simulations of complex systems *Toral, Raul*; Aguilar, Javier; Ramasco, Jose*
- 15:45 Mining Walks on a Network: path prediction and motif counting with self-loops and given start/end nodes *Teo, Kevin*; Arnold, Naomi; Kiss, Istvan Z; Hone, Andrew*
- 16:00 Finding Large Independent Sets in Networks Using Competitive Dynamics *Mooij, Niek**
- 16:45 The Oneira Project: Visualizing Complex Systems in Motion *Phoenix, Jon C**

17:00 A generative model for networks that creates networks with given partition similarity

*Zhong, Peijie**; *Clegg, Richard G*; *Mondragon, Raul J.*

Chair: *Alvaro Corral*

Sept.5 Lighting 2

10:30 On the forecastability of food insecurity

10:36 Higher-order correlations reveal complex memory in temporal hypergraphs

10:39 Distinguishing between determinism and noise in complex systems data

10:42 Complexity and Ethics

10:45 Urban poor exhibit higher smartphone usage during nighttime hours

10:48 Revisiting and modeling power-law distributions in empirical outage data of power systems

10:51 Multiplayer cooperation in networks of communities

Auditorium

Foini, Pietro; *Tizzoni, Michele*; *Martini, Giulia*; *Paolotti, Daniela*; *Omodei, Elisa**

*Gallo, Luca**; *Lacasa, Lucas*; *Latora, Vito*; *Battiston, Federico*

*Rowland Adams, Joe**

*Alterman Blay, Enio**; *Jaramillo, Ana*; *Adisa, Olumide*; *Dies, Samantha*; *Resende, Paulo*; *Di Bona, Gabriele*

*Musso, Andrea**; *Alessandretti, Laura M*

*Odor, Geza**; *Hartmann, Balint*; *Deng, Shengfeng*; *Kelling, Jeffrey*

*Pires, Diogo L**; *Broom, Mark*

Chair: *Iacopo Iacopini*

Sept.5 Complexity in Cities 3

11:30 Assessing the real estate market spatial segmentation

11:45 Mobility is more sustainable in compact and 15-minute cities

12:00 Integrating Air Traffic into the Global Value Chain: the case of Singapore

12:15 Finite-size scaling of human-population distributions over fixed-size cells and relation to bifractality

12:30 Land Use and Urban Accessibility: A New Approach using Fitness and Complexity Metrics

12:45 Emerging electricity usage patterns and its origins in urban travel behavior

Auditorium

*Abella, David**

*Marzolla, Francesco**; *Bruno, Matteo*; *Monteiro Melo, Hygor Piaget*; *Loreto, Vittorio*

*Amico, Ambra**

*corral, alvaro**; *Garcia del Muro, Montse*

*Monteiro Melo, Hygor Piaget**; *Bruno, Matteo*; *Loreto, Vittorio*

*Acosta Sequeda, Juan G**; *Auld, Joshua*; *Derrible, Sybil*

Chair: *Roberto Murcio*

Sept.5 Complex Networks 1

11:30 Communicability geometry reveals antagonistic factions in signed networks

11:45 Investigating shocking events in temporal and multilayer complex networks

12:00 Multi-Scale Node Embeddings for Networks

12:15 Temporal network generation: from small to large scale in time and topology

12:30 Graph embeddings with structured kernels

Room 7-8

*Diaz-Diaz, Fernando**; *Estrada Roger, Ernesto*

*Ba, Cheick Tidiane**; *Steer, Ben*; *Clegg, Richard G*

*Milocco, Riccardo RM**; *Garlaschelli, Diego*; *Jansen, Fabian*

*Cencetti, Giulia**; *Barrat, Alain*

*Talaga, Szymon**

Chair: *Giulio Cimini*

Sept.5 Complexity and Sustainability in Ecological Systems 1

11:30 Modelling higher-order interactions using agent based models

Room 11

*Van Giel, Thomas**; *Baetens, Jan*; *De Baets, Bernard*; *Daly, Aisling*

11:45	Universal spatial properties of coral reefs	<i>Giménez-Romero, Àlex*</i> ; <i>Matías, Manuel A.</i> ; <i>Duarte, Carlos</i>
12:00	Spatial self-organisation of microbial decomposer communities	<i>Kaiser, Christina*</i> ; <i>Dieckmann, Ulf</i> ; <i>Evans, Sarah</i> ; <i>Guseva, Ksenia</i> ; <i>Widder, Stefanie</i>
12:15	Stable coexistence in indefinitely large systems of competing species	<i>Niek Mooij, Mara Baudena, Anna von der Heydt, Ivan Kryven*</i>
12:30	Game theory to implement conservation strategies on marine life	<i>Buenvoron, Gorka*</i>
12:45	Structural controllability of cascading regime shifts	<i>Rocha, Juan C*</i> ; <i>Crépin, Anne-Sophie</i>

Chair: *Nina Fefferman*

Sept.5 Financial Complexity, and Economic Networks 3 Room 4

11:30	The rise and fall of WallStreetBets: social roles and opinion leaders across the GameStop saga	<i>Mancini, Anna*</i> ; <i>Cimini, Giulio</i> ; <i>Di Clemente, Riccardo</i> ; <i>Desiderio, Antonio</i> ; <i>Palermo, Giovanni</i>
11:45	Prediction of TV weekly sales using time series decomposition	<i>Yamashita Rios de Sousa, Arthur Matsuo*</i> ; <i>Ozaki, Junichi</i> ; <i>Shida, Yohei</i> ; <i>Wu, Qianyun</i> ; <i>Yixuan, Zheng</i> ; <i>Zhong, Zhihua</i> ; <i>Masukawa, Rie</i> ;
12:00	Modeling Negative Sentiment Diffusion in Financial Markets via Reddit Interactions: Integrating Deep Learning and Network Dynamics	<i>Baratto, Marta*</i> ; <i>Paletto, Lorenzo</i>
12:15	Networked Truths: Understanding the Statistical Patterns of Fact-Checkers' Debunks	<i>Bertani, Anna A</i> ; <i>Kadkhoda, Kaveh*</i> ; <i>Mazzeo, Valeria</i> ; <i>Szymkiewicz, Aleksy</i> ; <i>Gallotti, Riccardo</i>
12:30	A novel Sparse Graphical Model for optimizing portfolio assets allocation	<i>Riso, Luigi*</i> ; <i>Zoia, Maria Grazia</i> ; <i>Di Matteo, Tiziana</i>

Chair: *Hiroko Yamano*

Sept.5 Complexity in Health Room 5

11:30	Exploring Diabetics' Online Food Shopping Experience with Large Pre-Trained Language Models	<i>Zhu, Zhen*</i>
11:45	Stratification of Cancer Patients Using Visit Trajectory Analysis	<i>Lindner, Simon D*</i> ; <i>Zeilinger, Elisabeth</i> ; <i>Gaiger, Alexander</i> ; <i>Klimek, Peter</i> ; <i>Lubowitzki, Simone</i>
12:00	The Gravity of Gravity: How Enhanced Newtonian Principles Predict Emergency Department Visits	<i>Bertolotti, Francesco*</i> ; <i>Schettini, Fabrizio</i> ; <i>Asperti, Federica</i> ; <i>Foglia, Emanuela</i>
12:15	Unraveling cradle-to-grave disease trajectories from multilayer comorbidity networks	<i>Dervic, Elma *</i>
12:30	Bridging Complexity and Biomedical Sciences	<i>Espinosa Sosa, Alejandro*</i>

Chair: *Chiara Poletto*

Sept.5 Human Mobility 1 Lab 1

11:30	Barriers of Urban Mobility	<i>Pintér, Gergő*</i> ; <i>Lengyel, Balázs</i>
11:45	Decomposing geographical and universal aspects of human mobility	<i>Boucherie, Louis*</i> ; <i>Maier, Benjamin</i> ; <i>Lehmann, Sune</i>
12:00	A generalized vector-field framework for mobility	<i>Mazzoli, Mattia*</i> ; <i>Liu, Erjian</i> ; <i>Ramasco, Jose</i>
12:15	Detection of Anomalous Spatio-temporal Patterns of App Traffic in Response to Catastrophic Events	<i>Medina, Sofia*</i> ; <i>Pedreschi, Nicola</i> ; <i>LaRock, Timothy</i> ; <i>Babul, Shazia Ayn</i> ; <i>Sahasrabuddhe, Rohit</i> ; <i>Lambiotte, Renaud</i>
12:30	Modelling Traffic Flow for Mixed Slow and Fast Moving Transport System: The Case of Baybay City	<i>Derecho, John Niño T.*</i> ; <i>Abad, Hannah Rissah</i>

Chair: *Luca Pappalardo*

Sept.5 Complex Systems Applications Room 9

11:30	Tweet2Geo: from locations extraction to the network of international interests	Orsanigo, Veronica*; Bontorin, Sebastiano; Louf, Thomas; Leonardelli, Elisa; Palmero Aproso, Alessio; Tonelli, Sara; Gallotti, Niedostatek, Marta*; Baptista, Anthony; Sanchez-Garcia, Ruben J; MacArthur, Ben; Yamamoto, Jun; Bianconi, Ginestra; Kurths, Jürgen
11:45	Mining higher-order triadic interactions in gene-expression data	
12:00	Modeling lead-acid batteries lifecycle performance using rhoDCCA in the automotive context	Murari, Thiago B*; Moret, Marcelo A; Costa, Roberto
12:15	Path dependency in the evolution of grammar: a network analysis of linguistic traits	Jon-And, Anna*; Domínguez-García, Virginia; Ranjan, Ravi; Bücken, Joris; Ang, Bernise; Skirgård, Hedvig; Jansson, Fredrik; Michaud, Ghosh, Anupam*
12:30	Quantifying Kuramoto coupling across inherent brain networks: Application to EEG data in major depressive disorder	
12:45	Language distances and geographical proximity through the lens of syntactic variation: An information-theoretic approach	Sanchez, David*; De Gregorio, Juan; Toral, Raul

Chair: Alex Arenas

Sept.5 Complexity and Opinion Dynamics in Society

Room 1-2-3

11:30	A Higher-Order Lens for Social Systems	Preti, Giulia*; Fazzino, Adriano; Petri, Giovanni; De Francisci Morales, Gianmarco
11:45	Dynamics of political regime types in the 20th century	Pirker-Diaz, Paula*; Wiesner, Karoline
12:00	The role of moral values in the social media debate	Prevedello, Giulio*; Brugnoli, Emanuele; Gravino, Pietro; Lo Sardo, Donald Ruggiero; Loreto, Vittorio
12:15	Understanding individual experience in a human society by applying the normalized Lempel-Ziv complexity to an adaptive social network model	Gangadhar, Akshay*; Sayama, Hiroki
12:30	Phase coexistence as a consequence of heterogeneity in the Hegselmann-Krause opinion dynamics model	Perrier, Rémi; Schawe, Hendrik; Hernandez, Laura*

Chair: Guillaume Deffuant

Sept.5 Theory of Complex Systems 2

Room 10

11:30	Asymmetry in the distribution of unit properties is the key factor determining the efficiency of collective oscillations in FitzHugh-Nagumo	Sciolla, Stefano*; Patriarca, Marco; Heinsalu, Els; Yamakou, Marius; Cartwright, Julyan
11:45	Meta-plasticity and memory in multi-level recurrent feed-forward networks	Zanardi, Gianmarco*; Bettotti, Paolo; Morand, Jules; PAVESI, Lorenzo; Tubiana, Luca
12:00	Estimating Time-Resolved Stochasticity in Nonstationary Timeseries	Manshour, Pouya*; Palus, Milan; Rahimi Tabar, M. Reza
12:15	The distribution of first passage times of random walks on random regular graphs	Biham, Ofer*; Tishby, Ido; Katzav, Eytan
12:30	Universal scaling behavior at finite times in the transcritical, saddle-node, and pitchfork discrete and continuous bifurcations	corral, alvaro*
12:45	A microstrip antenna based on aperiodic tilings.	Rivera Torres, Pedro J*

Chair: Filippo Radicchi

Sept.5 Complexity in Cities 4

Auditorium

15:30	City-State Interactions in a Resource-Constrained Environment: an Agent-based Model	Piras, Andrea; Bertolotti, Francesco*
15:45	Understanding Resource-Flow Resilience in the Face of Climate Change	González, Marta C.*; Salgado, Ariel; He, Yiyi; Radke, John; Ganguly, Auroop
16:00	Monocentrism and phase transition in traffic systems	Amaduzzi, Alberto*; Gallotti, Riccardo; González, Marta C.; Bazzani, Armando
16:45	Evolution of urban community structures	Guizzo, Andrea*; Centellegher, Simone; Lucchini, Lorenzo; Privitera, Filippo; Lepri, Bruno; Girolami, Michele; Pappalardo, Luca; Gallotti, Maulana, Ardian*; Situngkir, Hokky
17:00	Hierarchical Structure of Interregional Supply Chain: A Multilayer Network Approach	

Chair: Li Ruiqi

Sept.5 Cognition and Complexity in Social Systems

Room 9

- 15:30 Impact of cognitive biases on collective reinforcement learning and application to sustainability transitions
- 15:45 Exploitation and exploration in text evolution. Quantifying planning and translation flows during writing
- 16:00 Unfreezing Opinions: Understanding Pretest Effects in the Ising Attitude Model
- 16:45 Revisiting Word Order in the Left Periphery: A Dynamic Model Inspired by Ecological Systems

*Bergerot, Clemence**; *Barfuss, Wolfram*; *Romanczuk, Pawel*

*Lo Sardo, Donald Ruggiero**; *Gravino, Pietro*; *Loreto, Vittorio*; *Cuskley, Christine*

*Smal, Iris M**; *Dalege, Jonas*; *Alexi, Xanthippi*; *van der Maas, Han*

*Callegari, Elena**

Chair: *Cynthia S. Q. Siew*

Sept.5 Behavioral Patterns and Social Structures 3

Room 1-2-3

- 15:30 When Dialects Collide: How Socioeconomic Mixing Affects Language Use
- 15:45 Multimodal emotional analysis of the conversation around climate change on YouTube
- 16:00 Thresholds for learning language lead to a variety of stable states in bilingual societies
- 16:45 From Journals to GitHub: Understanding AI Researchers' Practices
- 17:00 Polarization on social media - German Twitter trends 2021-2023
- 17:15 Can language learning be responsible for language coexistence?

*Louf, Thomas**; *Ramasco, Jose*; *Sanchez, David*; *Karsai, Marton*

Ganbold, Byambakhishig; *Kadkhoda, Kaveh*; *Sebe, Nicu*; *Gallotti, Riccardo**

*Tamm, Mikhail**; *Heinsalu, Els*; *Scialla, Stefano*; *Patriarca, Marco*

*Houssard, Antoine**

Pournaki, Armin; *Gaisbauer, Felix*; *Olbrich, Eckehard**

Tamm, Mikhail; *Scialla, Stefano*; *Heinsalu, Els*; *Patriarca, Marco**

Chair: *Floriana Gargiulo*

Sept.5 Complexity and Sustainability in Ecological Systems 2

Room 11

- 15:30 Complexity Issues in Sustainability: Time to Focus on Overall System Outcomes Rather Than Simplistic Individual Targets
- 15:45 From dense to sparse - Optimal Transport in a random graph framework
- 16:00 Ranking species in complex ecosystems through nestedness maximization
- 16:45 On the structure of species-function participation in multilayer ecological networks
- 17:00 Network theory for ecosystem services research

*Fisher, Len R**; *Gross, Thilo*; *Hillebrand, Helmut*; *Sandberg, Anders*; *Sayama, Hiroki*

*Buffa, Lorenzo**; *Cimini, Giulio*; *Mazzilli, Dario*; *Patelli, Aurelio*; *Saracco, Fabio*

Mariani, Manuel Sebastian; *Mazzilli, Dario*; *Patelli, Aurelio**; *Morone, Flaviano*

*Cuevas Blanco, Mar**

*Casali, Ylenia**

Chair: *Javier Borge Holthoefer*

Sept.5 Modeling and Mitigating Epidemics 3

Room 5

- 15:30 Epidemic spreading in group-structured populations
- 15:45 Local awareness fatigue during COVID-19 inferred by surveys and genetic sequence data
- 16:00 The limits of human mobility traces to predict the spread of COVID-19
- 16:45 Quantifying the impact of border screening and travel restrictions during global infectious disease outbreaks
- 17:00 The socioeconomic determinants of contact patterns: insights from Italy
- 17:15 The effect of Human Mobility on Exposure to Air Pollution

*Radicchi, Filippo**

*Odor, Gergely**; *Karsai, Marton*

Delussu, Federico; *Tizzoni, Michele*; *Gauvin, Laetitia**

*Bay, Clara**; *Davis, Jessica*; *Chinazzi, Matteo*; *Vespignani, Alessandro*

*Tizzani, Michele**; *Gauvin, Laetitia*

*Delussu, Federico**; *Alessandretti, Laura M*; *Lousseau, David*

Chair: **Eugenio Valdano**

Sept.5 Higher-Order Networks

- 15:30 Entropy-based random models for hypergraphs
- 15:45 Insights from exact social contagion dynamics on networks with higher-order structures
- 16:00 Multiplex measures for higher-order networks
- 16:45 Intra-order hyperedge overlap drives explosive collective behaviors in systems with higher-order interactions
- 17:00 Functional reducibility of higher-order networks

Room 10

- Squartini, Tiziano**
- Kiss, Istvan Z**
- Lotito, Quintino Francesco*; Montresor, Alberto; Battiston, Federico*
- Malizia, Federico**
- Lucas, Maxime*; Gallo, Luca; Ghavasieh, Arsham; Battiston, Federico; De Domenico, Manlio*

Chair: **Antoine Allard**

Sept.5 Machine Learning

- 15:30 Non-Spatial Hash Chemistry as a Minimalistic Open-Ended Evolutionary System
- 15:45 The Spontaneous Emergence of Social Norms in Societies of Large Language Model-based Agents
- 16:00 Unpacking heterogeneities of Swarm Intelligence using Network Science
- 16:45 From Raman spectra of thyroid samples to carcinoma diagnosis through eXplainable Artificial Intelligence
- 17:00 Emergence of Consensus among Large Language Models
- 17:15 LLMs Are Zero-Shot Next-Location Predictors

Room 4

- Sayama, Hiroki**
- Flint Ashery, Ariel*; Aiello, Luca Maria; Baronchelli, Andrea*
- Lira da Silva, Rodrigo Cesar; Macedo, Mariana*; Siqueira, Hugo Valadares; Menezes, Ronaldo; Bastos-Filho, Carmelo J. A.*
- Bellantuono, Loredana*; Tommasi, Raffaele; Di Gioacchino, Michael; Pantaleo, Ester; Amoroso, Nicola; Crucitti, Pierfilippo; Longo, Filippo;*
- De Marzo, Giordano**
- Beneduce, Ciro*; Luca, Massimiliano; Lepri, Bruno

Chair: **Diogo Pacheco**

Sept.5 Human Mobility 2

- 15:30 Resilience of mobility network in Chile to dynamic population response across COVID-19 interventions: evidence from Chile
- 15:45 Human mobility in the metaverse
- 16:00 Prioritizing links in bicycle network plans with greedy network optimization
- 16:45 Those holding the fort: The complexity of human mobility beyond the traditional commute patterns
- 17:00 Mixing Individual and Collective Behaviours in Mobility Models

Lab 1

- Casaburi, Pasquale*; Mazzoli, Mattia; Gozzi, Nicolò; Ferres, Leo; Kalimeri, Kyriaki; Dall'Amico, Lorenzo; Sapienza, Anna; Schifanella,*
- Vasan, Kishore**
- Sebastiao, Clément*; Vybornova, Anastassia; Rahbek Vierø, Ane; Szell, Michael*
- Murcio, Roberto*; Barros, Joana*
- Bontorin, Sebastiano; Centellegher, Simone; Gallotti, Riccardo; Pappalardo, Luca; Lepri, Bruno; Luca, Massimiliano**

Chair: **Mattia Mazzoli**

Sept.5 Complex Networks 2

- 15:30 Information diffusion backbone of temporal higher-order networks
- 15:45 Network mutual information measures for graph similarity
- 16:00 Heterogeneity in Multilayer Random Boolean Networks
- 16:45 Topological communities in complex networks
- 17:00 Multi-scale Laplacian community detection in heterogeneous networks

Room 7-8

- Zhang, Shilun*; Wang, Huijuan; Ceria, Alberto*
- Felippe, Helcio*; Battiston, Federico; Kirkley, Alec*
- Lopez-Diaz, Amahury J.*; Franco, Mario; Gershenson, Carlos*
- Seoane, Luis F**
- Gabrielli, Andrea**

Chair: **Laura Hernandez**

Sept.6 Lighting 3

- 10:30 Extending the moral machine experiment on large language models
- 10:36 A universal framework for inclusive 15-minute cities
- 10:39 Market and price forecasting behaviour of Large Language Models compared to human subjects
- 10:42 A Markov Decision Model for Emotion Regulation
- 10:45 Dynamic predictability and spatio-temporal contexts in human mobility

Auditorium

- Takemoto, Kazuhiro**
- Bruno, Matteo*; Monteiro Melo, Hygor Piaget; Campanelli, Bruno; Loreto, Vittorio*
- del rio chanona, maria*; Pangallo, Marco; Hommes, Cars; Mishkin, Pamela*
- Vitanza, Eleonora*; Mocenni, Chiara*
- Poudyal, Bibandhan; Pacheco, Diogo F*; Oliveira, Marcos; Chen, Zexun; Barbosa, Hugo; Menezes, Ronaldo; Ghoshal, Gourab*

Chair: **Federico Botta**

Sept.6 Complex Networks 3

- 11:30 Enabling Viable Supply Networks with Cooperative-Distributed Local-Decentralised Control
- 11:45 Modelling of three-component complex conflict with decision-making, host population support and resource redistribution
- 12:00 Endogenous labour flow networks and the skills evolution of the UK labour market
- 12:15 Do skills predict labour mobility? Delving deeper into the drivers of job switches
- 12:30 Exploring the Impact of Spatial Community Structure On Extremism in an Adaptive Spatial Social Network Model

Room 7-8

- Proselkov, Yaniv**
- Shelyag, Sergiy*; McKerral (Fisher), Jody; Zuparic, Mathew; Francis, Michael; McLennan-Smith, Timothy*
- Fair, Kathryn R*; Meine, David; Guerrero, Omar*
- Kessler, Zachary; Fair, Kathryn R*; Guerrero, Omar*
- Bullock, Seth**

Chair: **Sofia Teixeira**

Sept.6 Behavioral Patterns and Social Structures 4

- 11:30 The role of context in the bursty temporal dynamics of online activities on Facebook
- 11:45 Patterns of Trust in News. Disagreement or disinformation?
- 12:00 Quantifying social stereotypes toward older drivers in Japan using social media posts
- 12:15 Cross-platform impact of social media algorithmic adjustments on public discourse
- 12:30 Social Media Polarization Mirrors Shifts in Pakistani Political Alliances
- 12:45 Who is driving the conversation? Analysing the nodality of British MPs and journalists on online platforms

Room 1-2-3

- Deng, Dongning*; Kmetty, Zoltán; Koltai, Julia*
- Lo Sardo, Donald Ruggiero*; Brugnoli, Emanuele; Loreto, Vittorio; Ubaldi, Enrico; Gravino, Pietro*
- Nakanishi, Akito*; Sano, Yukie; Ichikawa, Masao*
- Gravino, Pietro*; Lo Sardo, Donald Ruggiero; Brugnoli, Emanuele*
- Baqir, Anees; Galeazzi, Alessandro*; Drocco, Andrea; Zollo, Fabiana*
- Chakraborty, Sukankana*; Castro-Gonzalez, Leonardo; Margetts, Helen; Rajpal, Hardik; Guariso, Daniele; Bright, Jonathan*

Chair: **Gourab Ghoshal**

Sept.6 Behavioral Patterns and Social Structures 5

- 11:30 Network topology effects on the social circle polls.
- 11:45 Minor extensions of the logistic equation for growth curves of word counts on online media: parametric observation of diversity of growth in

Room 11

- Palermo, Giovanni*; Gravino, Pietro; Prevedello, Giulio; Brugnoli, Emanuele; Lo Sardo, Donald Ruggiero; Loreto, Vittorio*
- Watanabe, Hayafumi**

- 12:00 Behavioural Contagion in Human and Artificial Multi-Agent Systems: A Computational Modeling Perspective *Karimian, Maryam M**
- 12:15 A spectrum of complexity uncovers Dunbar's number and other leaps in social structure *Saavedra, Martin; Mira, Jorge; Muñuzuri, Alberto P.; Seoane, Luis F**
- 12:30 Trade-off between quality and speed of collective discovery processes: from social simulations to empirical evidences with the Nobel Game *Chavalarias, David*; Segovia, Jose; Panahi, Mazyar*

Chair: Gerardo Iniguez

Sept.6 Disordered Systems and Critical Behaviors

Room 10

- 11:30 Local sign stability as a predictor for stability in complex systems *Valigi, Pietro; Neri, Izaak*; Cammarota, Chiara*
- 11:45 Cluster-Driven Momentum Portfolios *Bradley, Joseph C*; Di Matteo, Tiziana; Mrazik, Matus*
- 12:00 Spectral theory of multivariate Ornstein-Uhlenbeck reversible processes *Barucca, Paolo**
- 12:15 Analysis of critical behaviour using social inequality indices *Biswas, Soumyajyoti**
- 12:30 First-passage on disordered intervals *Holehouse, James*; Redner, Sidney*
- 12:45 Nonlinear responses and tipping in strongly fluctuation-driven systems *Börner, Georg*; Thümler, Moritz; Schröder, Malte; Timme, Marc*

Chair: Carlos Gershenson

Sept.6 Complexity in Food Systems

Lab 1

- 11:30 Collaborative filtering and food pairing *Palermo, Giovanni*; Caprioli, Claudio; Alhora, Giambattista*
- 11:45 Adaptive Shock Compensation in the Multi-layer Network of Global Food Production and Trade *Baum, Sophia*; Laber, Moritz; Yang, Liuhuaying; Thurner, Stefan; Klimek, Peter*
- 12:00 Characterizing Restaurant Nutritional Quality Across the United States *Seo, DongHyeon*; Burghardt, Keith; Abeliuk, Andrés; Horn, Abigail*
- 12:15 Modeling Racial/Ethnic Disparities in Diet: An Agent-Based Approach to Understanding Diet Dynamics in Philadelphia *Useche, Andres F*; Stankov, Ivana; Langellier, Brent*
- 12:30 Replanting unproductive palm oil with smallholder plantations can help achieve Sustainable Development Goals in Sumatra, Indonesia *Fosch, Ariadna*; Ferraz de Arruda, Guilherme; Aleta, Alberto; Descals, Adrià; Gaveau, David; Morgans, Courtney; Rintanen, Truly;*

Chair: Elisa Omodei

Sept.6 Evolutionary Dynamics and Brain Networks

Room 9

- 11:30 Higher-order connectomics of human brain function reveals local topological signatures of task decoding, individual identification, and *Santoro, Andrea*; Battiston, Federico; Lucas, Maxime; Petri, Giovanni; Amico, Enrico*
- 11:45 Cross-frequency coupling in the brain dynamics: Causality vs. lead-lag relationship *Palus, Milan*; Arinyo-i-Prats, Andreu; Lopez-Madrona, Victor*
- 12:00 Jensen–Shannon Complexity for measuring deterministic properties of mouse EEG *Koyama, Kazuki*; Sakaguchi, Masanori; Ohnishi, Takaaki*
- 12:15 Information transfer as an evolutionary feed for emergence of critical brain network *Roudakian, Kamyar*; Kabakcioglu, Alkan*
- 12:30 Approximate symmetries of complex networks *Hartman, David; Pidnebesna, Anna; Pokorna, Aneta; Hlinka, Jaroslav**
- 12:45 Homological cycles of Functional Connectivity delimit highly synergistic brain areas *Poetto, Simone*; Petri, Giovanni; Neri, Matteo; Brovelli, Andrea*

Chair: Marilyn Gatica

Sept.6 Epidemiological Dynamics and Social Behavior

Room 5

- 11:30 Getting the Flu in El Farol: Exploring Epidemiological Dynamics in a Social Dilemma *Bertolotti, Francesco*; Pasquino, Luca; Kadera, Niccolò; Mari, Luca*

11:45	Dynamics of vaccine hesitancy analysis using social network and implications on virus propagation	<i>Achitouv , Ixandra *; Chavalarias , David</i>
12:00	News propagation on Twitter - analysis of a diverse dataset does not show evidence of difference in fake news spread	<i>Vranić, Ana*; Almeida, Paulo; Reis, José; Sa, Joana G</i>
12:15	Mapping emotional landscapes during the COVID-19 pandemic	<i>Balsamo, Duilio*; Lucchini, Lorenzo; Bianchi, Federico; Hovy, Dirk; Melegaro, Alessia; Balbo, Nicoletta</i>
12:30	A family of distance backbones that preserves spreading dynamics and centrality ranks	<i>Pereira, Miguel B.*; Costa, Felipe X; Rocha, Luis M</i>

Chair: Fabiana Zollo

Sept.6 Multimodal Networks and Urban Accessibility

11:30	The role of transport systems in housing insecurity: a mobility-based analysis
11:45	Novel Phase Transition on Charging Networks of Electric Vehicles
12:00	Access to Opportunities and Car Dependency in Urban Environments
12:15	Geometry of optimal multilayer transportation networks
12:30	Complex dynamics in multimodal networks
12:45	Planning the Electric Vehicle Transition by Integrating Spatial Information and Social Networks

Auditorium

<i>Iyer, Nandini*; Barbosa, Hugo; Menezes, Ronaldo</i>
<i>Tanizawa, Toshihiro*; Goto, Hayato; Yoshida, Hiroaki</i>
<i>Campanelli, Bruno*; Marzolla, Francesco; Bruno, Matteo; Monteiro Melo, Hygor Piaget; Loreto, Vittorio</i>
<i>Marquis, Ulysse P*; Bontorin, Sebastiano; Gallotti, Riccardo</i>
<i>Lebacque, Jean-Patrick*; Khoshyaran, Megan</i>
<i>Wu, Jiaman*; González, Marta C.; Salgado, Ariel</i>

Chair: Juste Raimbault