

MAURO FACCIN

Curriculum Vitæ

Ceped
Université de Paris - Campus St Germain des Prés
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75006 Paris, France
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<https://maurofaccin.github.io>

ACTUAL POSITION

2021 - today **CEPED and IRD** Université de Paris, France
Interests/Research line
• Dynamical systems evolving on complex networks
• Mesoscopic structures and their influence on the dynamical system
• Applied data analysis for disease control
• Analysis of information dynamics in social networks

PROFESSIONAL EXPERIENCE

2021 - today **Université de Paris, (CEPED and IRD)** Paris, France
PostDoc
2015 - 2020 **PostDoc** Louvain la Neuve, Belgium
Université Catholique de Louvain (ICTEAM)
2011 - 2015 **ISI Foundation** Torino, Italy
PostDoc
2006 - 2011 **Bifi Institute** Zaragoza, Spain
PhD

FELLOWSHIPS AND PROJECTS

2021 - today **TRACTRUST (ANR-20-COVI-0102)**
2017 - 2021 **Innoviris Iris-TB (D1.31402.007-F)**
2015 - 2017 **MOVE-IN Louvain Fellowship (with support of Marie Curie Actions)**

MEMBERSHIP

2018 - today **SICC - Italian Society for Chaos and Complexity**
2015 - today **Network Science Society**
Member
2014 - today **Complex Systems Society**
Member
2013 - today **Frontiers in Quantum Computing**
Review Editor

COMMITTEES

1 Dec 2021 **Complex Networks 2021** Madrid, Spain
Program Committee
1 Dec 2020 **Complex Networks 2020** Madrid, Spain
Program Committee
10 Dec 2019 **Complex Networks 2019** Lisbon, Portugal
Program Committee
22 Feb 2019 **BeNet 2019** Hasselt, Belgium
Program committee
11 Dec 2018 **Complex Networks 2018** Cambridge, UK
Program Committee
29 Nov 2017 **Complex Networks 2017** Lyon, France
Program Committee

15 Dec 2016	BeNet 2016 Organizing committee	Louvain-la-Neuve, Belgium
30 Nov 2016	Complex Networks 2016 Program committee	Milan, Italy
21 Sep 2016	Coarse-graining of Complex Systems Organizing committee	CCS2016, Amsterdam, Netherlands
2 Jun 2014	Quantum Frontiers for Network Science Organizing committee	NetSci 2014, Berkeley, California

REVIEWER

- Advances in Complex Systems
- Applied Network Science
- APS (Physical Review E)
- Journal of Complex Networks
- Journal of Statistical Mechanics
- Natural Computing
- PLOS ONE
- Science Advances
- Scientific Reports

TEACHING

2015-2020	LINMA2111 Algorithms and Complexity Université Catholique de Louvain	Assistant Professor
2005	Physics and Math at primary school NEST	Hetauda, Nepal
2004	guide in Science Museum Organizer: INFN	Padova, Italy

EDUCATION

2020	24CFU	Univestità telematica Pegaso
2011	PhD in Physics supervisor: Pierpaolo Bruscolini	University of Zaragoza
2007	Master in Physics and Technology supervisor: Pierpaolo Bruscolini	University of Zaragoza
2005	MSc in Physics supervisor: Enzo Orlandini	University of Padova

PUBLICATIONS

- **Data-driven identification of previously unrecognized communities with alarming levels of tuberculosis infection in the Democratic Republic of Congo.** medRxiv
M. Faccin, O. Rusumba, A. Ushindi, M. Riziki, T. Habiragi, F. Boutachkourt, E. André
- **State aggregations in Markov chains and block models of networks**
Phys. Rev. Lett., 127, 078301 (2021)
M. Faccin, M.T. Schaub and j.-C. Delvenne
• Figure selected for the journal cover
- **Complex Networks from Classical to Quantum** Communications Physics 2-53 (2019)
J. Biamonte, M. Faccin, M. De Domenico
- **Outbreak of multidrug-resistant tuberculosis in South Africa undetected by WHO-endorsed commercial tests: an observational study**
The Lancet Infectious Diseases 2018
Makhado, Matabane, Faccin, Pinçon, Jouet, Boutachkourt, Goeminne, Gaudin, Maphalala, Beckert, Niemann, Delvenne, Delmée, Razwiedani, Nchabeleng, Supply, de Jong, André

- **Entrograms and coarse graining of dynamics on complex networks**
Journal of Complex Networks
M. Faccin, M.T. Schaub, J-C. Delvenne
- **Chiral Quantum Walks**
Phys. Rev. A 93, 042302
D. L. Lu, J. D. Biamonte, J. Li, H. Li, T. H. Johnson, V. Bergholm, M. Faccin, Z. Zimborás, R. Laflamme, J. Baugh, and S. Lloyd
- **Mapping the topography of a protein energy landscape**
J. Am. Chem. Soc., 2015, 137 (46), pp 14610–14625
R. D. Hutton, J. Wilkinson, M. Faccin, E. M. Sivertsson, A. Pelizzola, A. R. Lowe, P. Bruscolini, L. S. Itzhaki
- **Community Detection in Quantum Complex Networks**
Phys. Rev. X 4 (4 2014), p. 041012
M. Faccin, P. Migdał, T. H. Johnson, V. Bergholm, and J. D. Biamonte
- **Degree Distribution in Quantum Walks on Complex Networks**
Phys. Rev. X 3 (4 2013), p. 041007
M. Faccin, T. Johnson, J. Biamonte, S. Kais, and P. Migdał
- **Quantum Transport Enhancement by Time-Reversal Symmetry Breaking**
Sci. Rep. 3 (2013). Ed. by NPG, p. 2361
Z. Zimboras, M. Faccin, Z. Kadar, J. Whitfield, B. Lanyon, and J. Biamonte
- **MS/MS Spectra Interpretation as a Statistical-Mechanics Problem**
Analytical Chemistry 85.10 (2013), pp. 4884–4892
M. Faccin and P. Bruscolini
- **Ground-state spin logic**
Europhysics Letters 99.5 (2012), p. 57004
J. D. Whitfield, M. Faccin, and J. D. Biamonte
- **Analysis of the equilibrium and kinetics of the ankyrin repeat protein myotrophin**
The Journal of Chemical Physics 134.7, 075102 (2011), p. 075102
M. Faccin, P. Bruscolini, and A. Pelizzola

CONFERENCES (ORAL CONTRIBUTIONS)

- | | | |
|--------------------|--|---|
| 2 Dec 2021 | Autoinformation state aggregation | Madrid (Spain) |
| | Complex Networks 2021 | |
| 30 Nov 2021 | Vaccine-critical discourse on French-speaking Twitter and its outreach | Madrid (Spain) |
| | Complex Networks 2021 | |
| | • Best lightning talk award | |
| 19 Oct 2021 | State aggregation for dynamical systems: An information-theoretic approach | Math Dept, Oxford University, (UK – Online) |
| | Network Seminar 2021 | |
| 7-9 Dec 2020 | Using predictive models and risk assessment tools to find unreported TB cases | Washington DC, USA (online) |
| | Global Digital Health Forum 2020 | |
| 20-24 Oct 2020 | Data-driven TB active-case finding in South Kivu (DRC) | Paris, France (online) |
| | The Union 2020 | |
| 10-12 Dec 2019 | Auto-information in non-Markovian diffusion systems | Lisbon, Portugal |
| | Complex Networks 2019 | |
| 22 Feb. 2019 | Variable aggregation for dynamical systems on networks | Hasselt, Belgium |
| | Benet 2019 | |
| 23-28 Sept. 2018 | A dynamical approach to block structure analysis | Thessaloniki, Greece |
| | CCS 2018 | |
| 11-15 Jun 2018 | Dynamical Markov Modules | Paris, France |
| | Netsci 2018 | |
| 21-24 Mar 2017 | Community detection in networks with non-Markovian dynamics | Dubrovnik, Croatia |
| | CompleNet 2017 | |
| 30 Nov-2 Dec 2016 | Behind Communities: Dynamics Define Modules | Milan, Italy |
| | ComplexNetworks 2016 | |
| 19-22 Sep 2016 | Beyond Communities: Dynamical Markov Modules | Amsterdam, Netherlands |
| | CCS 2016 | |
| May 30-June 3 2016 | Mesoscopic Structure And Diffusion Process Memory | Seoul, Korea |
| | NetSci 2016 | |
| 10-15 Jan 2015 | Mesoscopic Structures and Diffusion Process Memory | Wrocław, Poland |
| | NetSci-X 2016 | |

2-6 Jun 2015	Structural controllability of EEG temporal causal networks NetSci 2015	Zaragoza, Spain
22-26 Sep 2014	Quantum Approaches to Community Detection ECCS 2014	Lucca, Italy
12-14 Mar 2014	Community detection on quantum systems CompleNet 2014	Bologna, Italy
22-24 Jan 2014	Community Detection on Quantum Systems BIFI2014	Zaragoza, Spain
24-26 May 2013	Degree distribution in quantum complex networks IQC workshop on quantum computation and complex networks	Waterloo, Canada
6-8 Nov 2012	Ground state spin logic Tensor Network States and Algebraic Geometry Workshop	Torino, Italy
2-4 Feb 2011	Equilibrium and kinetics of the ankyrin repeat protein Myotrophin through a simple statistical mechanical model V BIFI National Conference	Zaragoza, Spain
5-7 Feb 2009	Bayesian Characterization of Protein Tandem Mass Spectra IV BIFI National Conference	Zaragoza, Spain
8-9 May 2008	Noise description in MSMS mass spectrometry, looking for a de novo sequencing algorithm VI Jornadas Aragonesas de Estabilidad y Plegamiento de Proteínas	San Sebastian, Spain

CONFERENCES (POSTER CONTRIBUTIONS)

1 Dec 2021	Directed hyper-graphs and dynamical systems Complex Networks 2021	Madrid (Spain)
17-25 Sept 2020	State aggregation in non-Markovian systems by auto-information maximization Netsci 2020	Rome, Italy
17-25 Sept 2020	The variability of network structures inferred from time series data Netsci 2020	Rome, Italy
10-12 Dec 2019	The variability of network structures inferred from time series data Complex Networks 2019	Lisbon, Portugal
1-3 July 2019	Variable aggregation on (broadcasting) networks CCS/Italy 2019	Trento, Italy
23-25 Mar 2016	Memory and Mesoscopic Structures in Diffusion Processes CompleNet 2016	Dijon, France
7-10 Jul 2010	Folding Pathways Characterization for Ankyrin Repeat Protein Myotrophin IV Spanish Portuguese Biophysical Congress	Zaragoza, Spain
2-6 Jun 2008	Statistical characterization of fragment ions in MSMS mass spectrometry XXI Sitges Conference on Statistical Mechanics: Statistical Mechanics of Molecular Biophysics	Sitges, Spain

COMPUTER SKILLS

Coding	Python, C, C++, Matlab, Fortran
Shell	Bash, iPython/Jupyter
Versioning	GIT, Subversion, Mercurial
Plotting	Gnuplot, Matplotlib, PGFPlots(latex)
Typesetting	Latex, LibreOffice, MSOffice, Markdown
Imaging	Gimp (Raster), Inkscape (Vectorial), Rawtherapee (RAW)
Web	HTML5, CSS/SCSS, static site generators, Wordpress

LANGUAGES

Italian	Mother tongue
English	Fluent

Spanish **Fluent**

French **Fair**

Mauro Faccin