

# 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  
• **ARC2S at Unito** visitor

### 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

2017 - today **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 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	<b>BeNet 2016</b> Organizing committee	Louvain-la-Neuve, Belgium
30 Nov 2016	<b>Complex Networks 2016</b> Program committee	Milan, Italy
21 Sep 2016	<b>Coarse-graining of Complex Systems</b> Organizing committee	CCS2016, Amsterdam, Netherlands
2 Jun 2014	<b>Quantum Frontiers for Network Science</b> 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	<b>LINMA2111 Algorithms and Complexity</b> Université Catholique de Louvain	Assistant Professor
2005	<b>Physics and Math at primary school</b> NEST	Hetauda, Nepal
2004	<b>guide in Science Museum</b> Organizer: INFN	Padova, Italy

## EDUCATION

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

## PUBLICATIONS

- **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
- **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)

7-9 Dec 2020	<b>Using predictive models and risk assessment tools to find unreported TB cases</b>	Washington DC, USA (online)
	Global Digital Health Forum 2020	
20-24 Oct 2020	<b>Data-driven TB active-case finding in South Kivu (DRC)</b>	Paris, France (online)
	The Union 2020	
10-12 Dec 2019	<b>Auto-information in non-Markovian diffusion systems</b>	Lisbon, Portugal
	Complex Networks 2019	
22 Feb. 2019	<b>Variable aggregation for dynamical systems on networks</b>	Hasselt, Belgium
	Benet 2019	
23-28 Sept. 2018	<b>A dynamical approach to block structure analysis</b>	Thessaloniki, Greece
	CCS 2018	
11-15 Jun 2018	<b>Dynamical Markov Modules</b>	Paris, France
	Netsci 2018	
21-24 Mar 2017	<b>Community detection in networks with non-Markovian dynamics</b>	Dubrovnik, Croatia
	CompleNet 2017	
30 Nov-2 Dec 2016	<b>Behind Communities: Dynamics Define Modules</b>	Milan, Italy
	ComplexNetworks 2016	
19-22 Sep 2016	<b>Beyond Communities: Dynamical Markov Modules</b>	Amsterdam, Netherlands
	CCS 2016	
May 30-June 3 2016	<b>Mesoscopic Structure And Diffusion Process Memory</b>	Seoul, Korea
	NetSci 2016	
10-15 Jan 2015	<b>Mesoscopic Structures and Diffusion Process Memory</b>	Wrocław, Poland
	NetSci-X 2016	
2-6 Jun 2015	<b>Structural controllability of EEG temporal causal networks</b>	Zaragoza, Spain
	NetSci 2015	
22-26 Sep 2014	<b>Quantum Approaches to Community Detection</b>	Lucca, Italy
	ECCS 2014	
12-14 Mar 2014	<b>Community detection on quantum systems</b>	Bologna, Italy
	CompleNet 2014	
22-24 Jan 2014	<b>Community Detection on Quantum Systems</b>	Zaragoza, Spain
	BIFI2014	
24-26 May 2013	<b>Degree distribution in quantum complex networks</b>	Waterloo, Canada
	IQC workshop on quantum computation and complex networks	
6-8 Nov 2012	<b>Ground state spin logic</b>	Torino, Italy
	Tensor Network States and Algebraic Geometry Workshop	

- 2-4 Feb 2011 **Equilibrium and kinetics of the ankyrin repeat protein Myotrophin through a simple statistical mechanical model** Zaragoza, Spain  
V BIFI National Conference
- 5-7 Feb 2009 **Bayesian Characterization of Protein Tandem Mass Spectra** Zaragoza, Spain  
IV BIFI National Conference
- 8-9 May 2008 **Noise description in MSMS mass spectrometry, looking for a de novo sequencing algorithm** San Sebastian, Spain  
VI Jornadas Aragonesas de Estabilidad y Plegamiento de Proteínas

## CONFERENCES (POSTER CONTRIBUTIONS)

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

## 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