

PROFESSIONAL EXPERIENCE

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|-------------|--|---------------------------|
| 2021 - 2022 | Université de Paris, (CEPED and IRD) | Paris, France |
| | PostDoc | |
| 2015 - 2020 | Université Catholique de Louvain (ICTEAM) | Louvain la Neuve, Belgium |
| | PostDoc | |
| 2011 - 2015 | ISI Foundation | Torino, Italy |
| | PostDoc | |
| 2006 - 2011 | Bifi Institute | Zaragoza, Spain |
| | PhD | |

FELLOWSHIPS AND PROJECTS

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|-------------|---|
| 2021 - 2022 | 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

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

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

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|-----------|--|---------------------|
| 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 |

MAINTAINED PROJECTS

- **AISA**
Python module aimed at partitioning a network through Autoinformation maximization
- **CartoTB**
Cartography of predicted tuberculosis in high burden settings

PUBLICATIONS

- **Measuring dynamical systems on directed hypergraphs** Phys Rev E, 106 (034306), 2022
M. Faccin
- **Assessing the influence of French vaccine critics during the two first years of the COVID-19 pandemic** PLOS ONE, 17(8): e0271157
M. Faccin, F. Gargiulo, L. Atlani-Duault, J.K. Ward
- **Data-driven identification of communities with high levels of tuberculosis infection in the Democratic Republic of Congo.** Sci Rep 12, 3912 (2022)
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)

- | | | |
|------------------|---|---|
| 9 Nov 2022 | Data-driven mapping of tuberculosis incidence allows identifying communities with high circulation of tuberculosis in the Democratic Republic of Congo | Online |
| | The Union Conference 2022 | |
| 9 Nov 2022 | Identification of urban areas presenting high incidence of tuberculosis using satellite images allows increasing the yield of active case finding in Kigali, Rwanda. | Online |
| | The Union Conference 2022 | |
| 17 Oct 2022 | Use of compartmental models to detect high TB incidence rates in South-Kivu (DRC) | Palma de Mallorca/Online |
| | CCS 2022 | |
| 30 May 2022 | Outreach of vaccine-critic content on French-speaking Twitter | Online |
| | CompleNet 2022 | |
| 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 | |

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|--------------------|--|------------------------|
| 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 | Zaragoza, Spain |
| | NetSci 2015 | |
| 22-26 Sep 2014 | Quantum Approaches to Community Detection | Lucca, Italy |
| | ECCS 2014 | |
| 12-14 Mar 2014 | Community detection on quantum systems | Bologna, Italy |
| | CompleNet 2014 | |
| 22-24 Jan 2014 | Community Detection on Quantum Systems | Zaragoza, Spain |
| | BIFI2014 | |
| 24-26 May 2013 | Degree distribution in quantum complex networks | Waterloo, Canada |
| | IQC workshop on quantum computation and complex networks | |
| 6-8 Nov 2012 | Ground state spin logic | 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)

| | | |
|-----------------|---|------------------|
| 1 Dec 2021 | Directed hyper-graphs and dynamical systems | Madrid (Spain) |
| | Complex Networks 2021 | |
| 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

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|-------------|--|
| 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