Institute for Scientific Interchange
Data Science Lab
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Laetitia Gauvin

Current position

Apr. 2015 – **Principal Researcher**, *Institute for Scientific Interchange, Data Science LAB*, Turin, Italy.

Nov. 2013 – **Visiting Scientist**, *Institut rhône-alpin des systèmes complexes, IXXI, École Normale Supérieure*, Lyon, Collaboration with Màrton Karsai, Laboratoire de l'informatique du parallélisme.

Research experience

Nov. 2011 – **Junior Researcher**, *Institute for Scientific Interchange, Data Science LAB*, Turin,
March 2015 Italy.

2010 – 2011 **Post-doctoral researcher**

Institute Physics Department, *École Normale Supérieure*, Paris

Project Urban Collective Dynamics: Individual and Spatial Heterogeneities, ANR (ANR-08-SYSC-008)

Collaborators Annick Vignes, ERMES, *Equipe de Recherche sur les Marchés, l'Emploi et la Simulation, Université Panthéon-Assas*, Paris 2 and Jean-Pierre Nadal, *Laboratoire de Physique Statistique de l'Ecole Normale Supérieure*.

2007 – 2010 **PhD**

Laboratoire de Physique Statistique, **École Normale Supérieure**, Paris, France

Title Modeling of socio-economic systems with statistical physics tools
presented on October, 22nd 2010

Advvisors J.-P. Nadal and J. Vannimenus

Fellowship from the French Ministère de l'Énseignement Supérieur et de la Recherche, allocated by the Ecole doctorale de Physique de l'UPMC ED 389

Jury Alain Barrat, CPT, Marseille

Leticia Cugliandolo, LPTHE, Paris

Silvio Franz, LPhTMS, Orsay

Alan Kirman, GREQAM, Marseille

Matteo Marsili ICTP, Trieste

Jean-Pierre Nadal, ENS - CAMS, Paris

Teaching experience

March 2014 – 2017 Lesson **linear algebra for data mining and introduction to deep learning** in the course Data Mining, Statistical Modeling and Machine Learning, Master 1 / Master 2, Università degli Studi di Torino

January 2016 Teaching **Data Mining : Statistical Modeling and Learning from Data** in the Computer Science Department Computer Science Department of ENS Lyon, France

June 2013-2017 Teaching **network science** in the program Big Dive (`http://www.bigdive.eu/`)

2008 – 2010 Teaching assistant for undergraduate students, Université Pierre et Marie Curie, *Paris*.
- **General mathematics for scientists**
- **Calculus and statistics**

Supervision

2017 Supervisor of Maddalena Torricelli, Master student, Università degli Studi di Torino, 6-months research training on **Italian politics data**. (Co-supervisor : Ciro Cattuto).

2016-2017 Supervisor of Francesco Parino, Master student, Università degli Studi di Torino, 9-months research training on the **analysis of the bitcoin blockain**.

2015- Co-Supervisor of Denise Maffione, PhD student, Università degli Studi di Torino, on **advanced analytical methodologies for high-dimensional, low-cardinality data in systems vaccinology**. (Co-supervisor : Emilio Siena).

2014-2017 Co-Supervisor of Anna Sapienza, PhD student, Politechnico di Torino, on **tensor decompositions for time-varying social networks**. (Supervisor : Ciro Cattuto).

2015 Supervisor of Iacopo Iacopini, Master student, Università degli Studi di Torino, 6-months research training on **urban traffic data**. (Co-supervisor : Giovanni Petri).

2014 Supervisor of Laura Alessandretti, Master student, École Normale Supérieure de Lyon, one year research training on **urban transportation networks**. (Co-supervisor : Màrton Karsai).

2013 Supervisor of Andrea Martini, Master student, Università degli Studi di Torino, 6-months research training on **community detection on temporal networks**. (Co-supervisor : Ciro Cattuto).

Education

2006 – 2007 Preparation to physics agregation University of Provence, Marseille, France.

2005 – 2006 Master's degree in physics , speciality : theoretical, mathematical and particle physics, with honors. **Centre de Physique Théorique, Marseille**, France.

2004 – 2005 Master 1 in fundamental physics with ERASMUS program, with high honors, **Imperial College**, London, United Kingdom.

Imperial College International Diploma

2003 – 2004 Licence-Magistère in fundamental physics with honors; **Université Paris XI**, Orsay, France.

2000 – 2003 Preparatory classes (MPSI, MP), Lycée Jacques Amyot, Melun, France.

Responsibilities

Programme Comittee Member

WTSC Workshop on Trusted Smart Contracts,2017

DELVE: Digital epidemiology and surveillance, 2016

Complex Networks: from theory to interdisciplinary applications, 2016

Computational Social Science, LC2S2 2015

ACM Web Science Conference 2014

Reviewer

– Physica A

– Advances in Complex Systems

– EPJ Data Science

– JSTAT

– Nature Scientific Reports

– PloS one

– Physical Review E

– Interface

– Scientific Reports

– Transactions on Knowledge and Data Engineering

– European Journal of Applied Mathematics

– European Symposium on Artificial Neural Networks, Computational Intelligence and Machine Learning 2017

Skills

Computer skills

Systems	Windows, Linux
Programming languages	C/C++, Matlab, Python
Text formatting	LaTeX, Word

Languages

French	**native language**
English	**understood, spoken and written**
German	**basic knowledge**
Italian	**basic knowledge**

Publications

Journal Articles

[1] L.M. Alessandretti, M. Karsai, L. Gauvin, *User-based representation of time-resolved multimodal public transportation networks*, R. Soc. open sci. 3 160156 (2016)

[2] L. Gauvin, A. Panisson, C. Cattuto, *Detecting the community structure and activity patterns of temporal networks: a non-negative tensor factorization approach*, PLoS ONE 9(1): e86028 (2014)

[3] L. Gauvin, A. Panisson, A. Barrat,C. Cattuto, *Activity clocks: spreading dynamics in empirical temporal networks of human contacts*, Scientific Reports **3**, (2013)

[4] L. Gauvin, A. Vignes and J.-P. Nadal, *Modeling urban housing market dynamics: can the socio-spatial segregation preserve some social diversity?*, Journal of Economic Dynamics and Control **37**, 1300–1321, (2013)

[5] L. Gauvin, J.-P. Nadal, J. Vannimenus, *Schelling segregation in an open city: a kinetically constrained Blume-Emery-Griffiths spin-1 system*, Phys. Rev. E **81**, 066120 (2010)

[6] L. Gauvin, J. Vannimenus, J.-P. Nadal, *Phase diagram of a Schelling segregation model*, Eur. Phys. J. B - Condensed Matter and Complex Systems **70**, 293- -304 (2009)

Conference Proceedings

[7] A. Panisson, L. Gauvin, M. Quaggiotto, C. Cattuto, *Mining Time-resolved Topical Activity in Microblog Streams*, Making Sense of Microposts (Best paper award), World Wide Web Conference 2014

[8] A. Panisson, L. Gauvin, A. Barrat, C. Cattuto, *Fingerprinting temporal networks of close-range human proximity*, Workshop Permoby in international conference on Pervasive Commputing and Communications 2013

[0] L. Gauvin, A. Vignes and J. -P. Nadal, *Modeling urban housing market dynamics: can the socio-spatial segregation preserve some social diversity?*, (version courte du papier JEDC) in International Conference on Complex Systems 2011

[10] L. Gauvin, J.-P. Nadal, J. Vannimenus, *Schelling's segregation model for an open city : emergence of physical frontiers from a socio-spatial dynamics*, in European Conference on Complex Systems 2010

[11] L. Gauvin, J. Vannimenus, J.-P. Nadal, *Phase diagram of a Schelling segregation model*, in European Conference on Complex Systems 2009

[12] A. Sapienza, A. Panisson, J. Wu, L. Gauvin, C. Cattuto *Anomaly Detection in Temporal Graph Data: An Iterative Tensor Decomposition and Masking Approach* , Proceedings of AALTD. Portugal (2015): 117

[13] A. Sapienza, A. Panisson, J. Wu, L. Gauvin, C. Cattuto *Detecting anomalies in time-varying networks using tensor decomposition*, Proc. 5th IEEE ICDM Workshop on Data Mining in Networks 2015

Thesis

L. Gauvin, *Modélisation de systèmes socio-économiques à l'aide des outils de physique statistique*, PhD Thesis, Université Pierre et Marie Curie, Paris

Science popularization

L. Gauvin, J-P. Nadal *Modéliser, comprendre et combattre la ségrégation sociale*, blog Mαthématiques de la planète Terre, `http://mpt2013.fr/modeliser-comprendre-et-combattre-la-segregation-sociale/`

Publications in preparation or under review

L.Gauvin, A. Panisson, A. Barrat, C. Cattuto, *Revealing latent factors of temporal networks for mesocale intervention in epidemic spread*

Talks and conferences attended

As an invited speaker

July 2016	Talk in the symposium *Cities as complex systems*, Hanover
June 2015	Talk in the "Analysis of networks for social sciences day" in the context of the *EHESS 40th anniversary*
May 2015	Talk in the colloquium *Mathematical Sciences to the proof of Human & Social Sciences* - Université Paris Panthéon-Sorbonne
May 2015	Talk in the Urban economics *LIEPP Sciences Po*, Paris, France
6 July 2013	Talk in the colloquium *Understanding Urban Conflicts*, Université de Paris Panthéon-Sorbonne, France
30 – 31 May 2011	Talk in the colloquium *Mathematical Sciences to the proof of Human & Social Sciences* - Université Paris Panthéon-Sorbonne
1 - 3 Sep. 2010	Talk at the *Optimal transport and Kinetics Applied to Socio-Economics conference*- Université Toulouse 1, Toulouse

Talks at conferences

Sep. 2016	Talk at *European Conference on Complex Systems*, Amsterdam, Netherlands
June 2016	Talk at *NetSci*, Seoul, Korea
Sep. 2015	Talk at *Conference on Complex Systems*, Phoenix, USA
June 2015	Talk at *NetSci*, Zaragoza, Spain
June 2015	Talk at *International Conference on Computational Social Science*, Helsinki, Finland
Jan. 2015	Talk at *NetSci-X*, Rio, Brasil
Sep. 2014	Talk at *European Conference on Complex Systems*, Lucca, Italy
June 2014	Talk in the *International School and Conference on Network Science (NetSci)*, Berkeley, USA
Sep. 2013	Talk in the Social Systems, Economics and Finance track, *European Conference on Complex Systems*, Barcelona, Spain
Sep. 2013	Talk in the satellite Temporal Networks in Human Dynamics , *European Conference on Complex Systems*, Barcelona, Spain
Sep. 2013	Talk in the satellite Dynamics On and Of Complex Networks, *European Conference on Complex Systems*, Barcelona, Spain
June 2013	Talk in the symposium *Complexity in social systems: from data to models*, Université de Cergy-Pontoise, France
June 2013	Talk in the *International School and Conference on Network Science (NetSci)*, Copenhague, Danemark
Sep. 2012	Talk in the *European Conference on Complex Systems* - Université Libre de Bruxelles, Belgique

Sep. 2011	Talk in the *European Conference on Complex Systems* - University of Vienna, Autriche
July 2011	Talk in the *International Conference on Complex Systems* - Boston, USA
Sep. 2010	Talk in the *European Conference on Complex Systems* - ISCTE – Lisbon University Institute, Portugal
Sep. 2009	Talk in the *European Conference on Complex Systems* - University of Warwick, Royaume-Uni

Talks at working groups

Oct.2016	Seminar in the team *Statistique, Analyse, Modélisation Multidisciplinaire* - Université Paris 1 Panthéon-Sorbonne, Paris
Feb. 2015	Seminar at *University of Tokyo*, Japan
Jan. 2015	Seminar at *IMERA*, Marseille, France
May 2014	Seminar at *IXXI* (Institut des Systèmes Complexes de la région Rhône-Alpes)
Déc. 2013	Seminar in the team *Statistique, Analyse, Modélisation Multidisciplinaire* - Université Paris 1 Panthéon-Sorbonne, Paris
May 2013	Seminar at *IXXI* (Institut des Systèmes Complexes de la région Rhône-Alpes)
March 2013	Seminar in the team *Statistique, Analyse, Modélisation Multidisciplinaire* - Université Paris 1 Panthéon-Sorbonne, Paris
Sep. 2011	Seminar at the *Centre de Physique Théorique* - Université Aix-Marseille II, Marseille
May 2011	Seminar at *Institute for Scientific Interchange* - Turin, Italie
Feb. 2011	Seminar at *ERMES, Equipe de Recherche sur les Marchés, l'Emploi et la Simulation* - Université Panthéon-Assas, Paris
Apr. 2010	Seminar at the *Laboratoire Mathématiques et Applications, Physique Mathématique* - Université d'Orléans
Jan. 2010	Seminar at the*Journées de Physique Statistique* - ESPCI, Paris
Jan. 2010	Seminar at the *Laboratoire de Physique Théorique* - University Paris XI, Orsay

Attendance of Workshop and Summer school

July 2016	*Compex Networks: from theory to interdisciplinary applications*,Marseille, France
Feb. 2016	NII Shonan Meeting on *Analytics on complex networks: scalable solutions for empirical questions*, Japan
April 2014	*World Wide Web Conference 2014*, Seoul, Korea
21 Nov. 2013	Colloque La Politique des Données Personnelles :Big Data ou Contrôle Individuel à l'ENS Lyon
27 Sep. 2013	Workshop Tensor Methods for Machine Learning lors de l'*European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases*, Prague

Posters

12 – 16 Sep. 2011	*European Conference on Complex Systems* - University of Vienna, Austria
21 - 25 Sep. 2009	*European Conference on Complex Systems* - University of Warwick, United Kingdom

6 - 10 July 2009	*Congrès Général de la Société Française de Physique* - école Polytechnique, Palaiseau, France

Research projects

March– June 2006	**Study of the Euler-Poincaré characteristic and Betti numbers of the Potts Model** at the Centre de Physique Théorique – Marseille, France
Supervisors	Daniel Gandolfo and Jean Ruiz
Jan. – Apr. 2005	**Search for the Higgs Boson at the Tevatron Collider** at the High Energy Physics department, Imperial College – London, UK
Supervisor	Michele Petteni
June – July 2004	**Modelling the Cosmic Microwave Background Temperature Spectra** at the Laboratoire de l'Accélérateur Linéaire – Orsay, France
Responsable	Stéphane Plaszczynski