

# Christophe Crespelle

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## KEY POINTS

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- Highly level scientific production (16 articles published since 2013).
- Very strong international collaborations, with Vietnam and Norway.
- Advising students : 3 PhD theses completed, 9 Master 2 research internships, 5 Master 1 research internships (3 months length in average)
- Habilitation thesis completed : <https://perso.ens-lyon.fr/christophe.crespelle/hdr.html>
- Laureate of the MSCA program (Marie Skłodowska-Curie Actions) of European Union
- Responsibilities in organizing research

## POSITIONS

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2010 - now	LIP laboratory, <b>University Claude Bernard Lyon 1</b> , Assistant Professor ( <i>Maître de conférences</i> )
2014 - 2016	Temporary research position at CNRS (2 years) at the <b>Institute of Mathematics Hanoi</b> , Vietnam
2008 - 2010	LIP6 laboratory, <b>University Paris 6</b> , Post-doc
2007 - 2008	LIAFA laboratory, <b>University Paris 7</b> , Post-doctoral teacher
2004 - 2007	LIRMM laboratory, <b>IUT Montpellier</b> , Junior lecturer
2000 - 2004	<b>Ecole Normale Supérieure (ENS) de Cachan</b> , Student (French state employee)

## RESEARCH

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My interests are focused on networks and on the practical and theoretical aspects of graphs and algorithms, with an emphasis on the dynamics of these objects.

<b>Networks</b>	Dynamic Networks	Metrology
	Diffusion phenomena	Generation of synthetic networks
<b>Algorithms and graphs</b>	Dynamic algorithms	Graph editing problems
	Graph decompositions	Data structures

## PUBLICATIONS

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11 (+ 5 *submitted*) high-standard international journals : *Algorithmica*, *Discrete Mathematics* (2), *Discrete Applied Mathematics* (2), *Theoretical Computer Science* (3), *Complex Systems*, *Computer Communications*, *Information Processing Letters*.

17 international conferences and workshops

## PERSONAL DATA AND PRESENT POSITION

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Assistant Professor (*Maître de conférences*) at Université Claude Bernard Lyon 1 (UCBL) since September 2010.  
Member of *Laboratoire de l'Informatique du Parallélisme* (LIP), Lyon.  
DANTE research group (Dynamic Networks : Temporal and Structural Capture Approach).  
Member of the Rhône-Alpes Complex System Institute (IXXI).

Born on the 3<sup>rd</sup> March 1979 in Carpentras, France. Married, no children, French citizenship.

## Acronyms

ANR	French national agency for funding research
ASEAN	Association of South-East Asian Nations
ATER	Post-doctoral teacher ( <i>Attaché Temporaire d'Enseignement et de Recherche</i> )
CES	Economic Center of <i>la Sorbonne</i> (University Paris 1)
CNRS	French national center for scientific research ( <i>Centre National de la Recherche Scientifique</i> )
CS	Selection Committee for the permanent research and teaching positions in French universities
DANTE	Dynamic Networks: Temporal and Structural Capture Approach (my research team)
DEA	Former name for the Master diploma in France ( <i>Diplôme d'Etude Approfondie</i> )
ENS	French national school for higher education and research ( <i>Ecole Normale Supérieure</i> )
GDR	National research community of CNRS ( <i>Groupement De Recherche</i> )
GDR ASR	GDR on Architecture, Systems and Networks
GDR IM	GDR on Computer Science and Mathematics
G-SCOP	Grenoble Laboratory of Sciences for Conception, Optimization and Production
HUST	Hanoi University of Science and Technology
IEEE	Institute of Electrical and Electronics Engineers
IFI	French Institute for Computer Science, Vietnam.
IMH	Institute of Mathematics Hanoi
INRIA	French National Institute of Research in Computer Science and Automatism
IP	Internet Protocol (network protocol for delivery of packets over Internet)
IRD	Institute of Research for Development (cooperation between France and developing countries)
IRISA	Institute of Research in Computer Science and Stochastic Systems, Rennes
IUT	Academic Institute of Technology
IXXI	Rhône-Alpes Complex Systems Institute
JCJC	Young researcher program of ANR
LaBRI	Bordeaux Laboratory of Research in Computer Science
LAMSADE	Laboratory of Analysis and Modeling of Systems for Decision Making, University Paris Dauphine
LIAFA	Laboratory of Computer Science and Algorithms: Foundations and Applications, University Paris 7
LIF	Marseille Laboratory of Fundamental Computer Science
LIFO	Orléans Laboratory of Fundamental Computer Science
LIGM	Laboratory of Computer Science Gaspard-Monge, Marne-la-Vallée
LIMOS	Laboratory of Computer Science, Modeling and Optimization of Systems, Clermont-Ferrand
LIP	Laboratory of Computer Science and Parallelism (my research laboratory)
LIP6	Laboratory of Computer Science of Paris 6
LIRMM	Montpellier Laboratory of Computer Science, Robotics and Micro-electronics
LNCS	Lecture Notes in Computer Science, series edited by Springer
LORIA	Lorraine Laboratory of Research in Computer Sciences and its Applications
LSIIT	Laboratory of Sciences of Image, Computing and Teledetection, Strasbourg
M1/M2	Master 1 <sup>st</sup> /2 <sup>nd</sup> year
MSC	Modeling of Complex Systems, interdisciplinary master of ENS Lyon
NAFOSTED	Vietnam National Foundation for Science and Technology Development
PEPS	Interdisciplinary and Exploratory Projects (funding program of CNRS in 2009)
PICS	Program for International Scientific Collaborations (funding program of CNRS)
PSI*	Physics and Engineering Sciences, teaching program in <i>classes préparatoires</i>
RNSC	National Research Network on Complex Systems, France
SEAMS	South-East Asia Mathematical Society
SIMI 2	Computer Science and Applications (funding program of ANR)
SMF	French Mathematical Society
UCBL	University Claude Bernard Lyon 1 (my university)
UMMISCO	Unit of Computer Science and Mathematical Modeling for Complex Systems (research team of IRD)
UPMC	University Pierre and Marie Curie, Paris 6
VAST	Vietnam Academy of Science and Technology
VIASM	Vietnam Institute for Advanced Study in Mathematics
VMS	Vietnam Mathematical Society
VNU	Vietnam National University

## PRESENT POSITION

Assistant Professor (*Maître de Conférences*) at UCBL, *Université Claude Bernard Lyon 1* (<http://www.univ-lyon1.fr/>)

Laboratory : LIP, *Laboratoire de l'Informatique du Parallélisme* (<http://www.ens-lyon.fr/LIP/>)

Host institutions : ENS Lyon, UCBL, INRIA and CNRS

Research group: DANTE, *Dynamic Networks: Temporal and Structural Capture Approach* (<https://team.inria.fr/dante/>)

Member of IXXI, *Rhône-Alpes Complex Systems Institute* (<http://www.ixxi.fr/>)

## PAST POSITIONS

Sept. 2016 – now	<b>University Claude Bernard Lyon 1</b> <i>Assistant Professor (Maître de conférences)</i>	<b>LIP</b> DANTE « Dynamic Networks » research group
Sept. 2014 – Aug. 2016	<b>Vietnam Academy of Science and Technology</b> <i>Temporary research position at CNRS</i>	<b>Institute of Mathematics Hanoi</b> Department « Mathematics for Computer Science »
Sept. 2010 – Aug. 2014	<b>University Claude Bernard Lyon 1</b> <i>Assistant Professor (Maître de conférences)</i>	<b>LIP</b> DANTE « Dynamic Networks » research group
Sept. 2008 – Aug. 2010	<b>University Paris 6</b> <i>Post-doc</i>	<b>LIP6</b> « Complex Networks » research group
Sept. 2007 – Aug. 2008	<b>University Paris 7</b> <i>Post-doctoral teacher (ATER)</i>	<b>LIAFA</b> « Algorithms and Combinatorics » research group
Sept. 2004 – Aug. 2007	<b>IUT of Montpellier 2</b> <i>Junior lecturer (Moniteur)</i>	<b>LIRMM</b> « Visualisation and Graph Algorithms » research group

## EDUCATION

2017	<b>Habilitation Thesis (HDR)</b> « Structures of Complex Networks and of their Dynamics » <a href="https://perso.ens-lyon.fr/christophe.crespelle/hdr.html">https://perso.ens-lyon.fr/christophe.crespelle/hdr.html</a>	University Claude Bernard Lyon 1 (UCBL)
2007	<b>PhD in Computer Science</b> (grade Very Good, <i>Très Honorable</i> ) Thesis : « <i>Dynamic Graph Representations</i> » Advisors : Christophe Paul and Michel Habib	University Montpellier 2
2003	<b>Master of Computer Science</b> (grade Very Good, <i>ranked 1st</i> ) Thesis : « <i>Some Variations of the Notion of Dimension for Partially Ordered Sets</i> » Advisors : Louhari Nourine and Michel Habib	University Montpellier 2 (Internship at LIMOS laboratory, Clermont- Ferrand, France)
2001	<b>Bachelor of Mathematics</b> (grade <i>Good</i> )	University Paris 7
2000	<b>Admitted to Ecole Normale Supérieure (ENS) de Cachan</b> Competitive exam entrance in the specialty Mathematics and Physics	ENS Cachan

## DISTINCTIONS AND AWARDS

- Laureate of the MSCA program (Marie Skłodowska-Curie Actions) of European Union. Mobility scholarship for two years in the Institute of Informatics of the University of Bergen, Norway, in 2018-2020 (forthcoming).
- Laureate of the CMIRA program of *région Rhône-Alpes* in 2014. Mobility grant of 10 months at the Institute of Mathematics Hanoi, Vietnam, from September 2014 to July 2015.

- Laureate of the delegation program of CNRS in 2014-2015 and in 2015-2016. Grant for temporary full research position, totally 2 years.
- Prime for Excellent Scientists (PES), since September 2012. This is the prime for high-level research activity in French universities.

## PUBLICATIONS (28) (+ 5 SUBMITTED ARTICLES)

The links toward on-line versions of my publications can be found on my personal webpage :

<http://perso.ens-lyon.fr/christophe.crespelle/publications.html>

Number of co-authors : **19**, number of foreign co-authors : **5**. Average number of co-authors per paper (excluding myself) : **1,7**.

### INTERNATIONAL JOURNALS (11)

**[J11] Rigorous Measurement of the Internet Degree Distribution.**

Matthieu Latapy, Elie Rotenberg, Christophe Crespelle and Fabien Tarissan.

Complex Systems, volume 26, issue 1, 2017.

**[J10] Linearity is Strictly More Powerful than Contiguity for Encoding Graphs.**

Christophe Crespelle, Tien-Nam Le, Kevin Perrot and Thi Ha Duong Phan.

Discrete Mathematics, volume 339, issue 8, pages 2168-2177, 2016.

**[J9] Computing the Directed Cartesian-Product Decomposition of a Directed Graph from its Undirected Decomposition in Linear Time.**

Christophe Crespelle and Eric Thierry.

Discrete Mathematics, volume 338, issue 12, pages 2393-2407, 2015.

**[J8] On the Termination of Some Biclique Operators on Multipartite Graphs.**

Christophe Crespelle, Matthieu Latapy and Thi Ha Duong Phan.

Discrete Applied Mathematics, volume 195, pages 59-73, 2015.

**[J7] Termination of the Iterated Strong-Factor Operator on Multipartite Graphs.**

Christophe Crespelle, Thi Ha Duong Phan and The Hung Tran.

Theoretical Computer Science, volume 571, pages 67-77, 2015.

**[J6] (Nearly-)Tight Bounds on the Contiguity and Linearity of Cographs.**

Christophe Crespelle and Philippe Gambette.

Theoretical Computer Science, volume 522, pages 1-12, 2014.

**[J5] An  $O(n^2)$ -time Algorithm for the Minimal Interval Completion Problem.**

Christophe Crespelle and Ioan Todinca.

Theoretical Computer Science, volume 494, pages 75-85, 2013.

**[J4] Evaluation of a New Method for Measuring the Internet Degree Distribution: Simulation Results.**

Christophe Crespelle and Fabien Tarissan.

Computer Communications, volume 34, issue 5, pages 635-648, 2011.

**[J3] Unrestricted and Complete Breadth-First Search of Trapezoid Graphs in  $O(n)$  Time.**

Christophe Crespelle and Philippe Gambette.

Information Processing Letters, volume 110, issues 12-13, pages 497-502, 2010.

**[J2] Fully Dynamic Algorithm for Recognition and Modular Decomposition of Permutation Graphs.**

Christophe Crespelle and Christophe Paul.

Algorithmica, volume 58, number 2, pages 405-432, 2010.

**[J1] Fully Dynamic Recognition Algorithm and Certificate for Directed Cographs.**

Christophe Crespelle and Christophe Paul.

Discrete Applied Mathematics, Volume 154, Number 12, Pages 1722-1741, 2006.

Note : all acts are published by a professional editor, 10 in the series LNCS, Lecture Notes in Computer Science.

**[C17] Faster and Enhanced Inclusion-Minimal Cograph Completion.**

Christophe Crespelle, Daniel Lokshtanov, Thi Ha Duong Phan and Eric Thierry.

11th Annual International Conference on Combinatorial Optimization and Applications – COCOA 2017. To appear.

**[C16] An  $O(n^2)$ -time algorithm for the minimal permutation completion problem.**

Christophe Crespelle, Anthony Perez and Ioan Todinca.

41st International Workshop on Graph-Theoretic Concepts in Computer Science – WG 2015.

LNCS, num. 9224, pages 103-115, 2016.

**[C15] Non-Altering Time Scales for Aggregation of Dynamic Networks into Series of Graphs.**

Yannick Léo, Christophe Crespelle and Eric Fleury.

11th International Conference on emerging Networking EXperiments and Technologies – CoNEXT 2015.

ACM, 2015.

**[C14] Linearity is Strictly More Powerful than Contiguity for Encoding Graphs.**

Christophe Crespelle, Tien-Nam Le, Kevin Perrot and Thi Ha Duong Phan.

14th International Symposium on Algorithms and Data Structures – WADS 2015.

LNCS, num. 9214, pages 212-223, Springer, 2015.

**[C13] Measuring the Degree Distribution of Routers in the Core Internet.**

Matthieu Latapy, Elie Rotenberg, Christophe Crespelle and Fabien Tarissan.

13th IFIP International Conference on Networking – Networking 2014, pages 1-9, IEEE, 2014.

**[C12] Measuring Routing Tables in the Internet.**

Elie Rotenberg, Christophe Crespelle and Matthieu Latapy.

6<sup>th</sup> IEEE International Workshop on Network Science for Communication Networks – NetSciCom'14.

In INFOCOM IEEE Conference on Computer Communications Workshops, pages 795-800, IEEE, 2014.

**[C11] Dynamic Contact Network Analysis in Hospital Wards.**

Lucie Martinet, Christophe Crespelle and Eric fleury.

5th Workshop on Complex Networks – CompleNet 2014.

Studies in Computational Intelligence, num. 549, pages 241-249, Springer, 2014.

**[C10] A linear-time algorithm for computing the prime decomposition of a directed graph with regard to the cartesian product.**

Christophe Crespelle, Eric Thierry and Thomas Lambert.

19th Annual International Computing and Combinatorics Conference – COCOON 2013.

LNCS, num. 7936, pages 469-480, Springer, 2013.

**[C9] Linear-time Constant-ratio Approximation Algorithm and Tight Bounds for the Contiguity of Cographs.**

Christophe Crespelle and Philippe Gambette.

Seventh International Workshop on Algorithms and Computation – WALCOM 2013.

LNCS, num. 7748, pages 126-136, Springer, 2013.

**[C8] On the Structure of Changes in Dynamic Contact Networks.**

Vincent Neiger, Christophe Crespelle and Eric Fleury.

Workshop on Complex Networks and their Applications – Complex Networks 2012.

In 8<sup>th</sup> Int. Conference on Signal Image Technology and Internet Based Systems – SITIS 2012, pages 731-738, IEEE, 2012.

**[C7] Termination of Multipartite Graph Series Arising from Complex Network Modelling.**

Matthieu Latapy, Thi Ha Duong Phan, Christophe Crespelle and Thanh Qui Nguyen.

4th Annual International Conference on Combinatorial Optimization and Applications – COCOA'10.

LNCS, num. 6508, partie I, pages 1-10, Springer, 2010.

**[C6] *An  $O(n^2)$ -time Algorithm for the Minimal Interval Completion Problem.***

Christophe Crespelle and Ioan Todinca.

7<sup>th</sup> Annual Conference on Theory and Applications of Models of Computation – TAMC'10.

LNCS, num. 6108, pages 175-186, Springer, 2010.

**[C5] *Rigorous Measurement of IP-level Neighborhood of Internet Core Routers.***

Christophe Crespelle, Matthieu Latapy and Elie Rotenberg.

2<sup>nd</sup> IEEE International Workshop on Network Science for Communication Networks – NetSciCom'10.

In INFOCOM IEEE Conference on Computer Communications Workshops, pages 1-6, IEEE, 2010.

**[C4] *Fully Dynamic Representations of Interval Graphs.***

Christophe Crespelle.

35<sup>th</sup> International Workshop on Graph-Theoretic Concepts in Computer Science – WG'09.

LNCS, num. 5911, pages 77-87, Springer, 2010.

**[C3] *Efficient Neighborhood Encoding for Interval Graphs and Permutation Graphs and  $O(n)$  Breadth-First Search.***

Christophe Crespelle and Philippe Gambette.

20<sup>th</sup> International Workshop on Combinatorial Algorithms – IWOCA'09.

LNCS, num. 5874, pages 146-157, Springer, 2009.

**[C2] *Fully Dynamic Algorithm for Recognition and Modular Decomposition of Permutation Graphs.***

Christophe Crespelle and Christophe Paul.

31<sup>st</sup> International Workshop on Graph-Theoretic Concepts in Computer Science – WG'05.

LNCS, num. 3787, pages 38-48, Springer, 2005.

**[C1] *Fully Dynamic Recognition Algorithm and Certificate for Directed Cographs.***

Christophe Crespelle and Christophe Paul.

30<sup>th</sup> International Workshop on Graph-Theoretic Concepts in Computer Science – WG'04.

LNCS, num. 3353, pages 93-104, Springer, 2004.

## SUBMITTED ARTICLES (5 JOURNALS)

**[S5] *An  $O(n^2)$ -time Algorithm for the Minimal Permutation Completion Problem.***

Christophe Crespelle, Anthony Perez and Ioan Todinca. Journal.

**[S4] *The Dynamic Contact Network of a Whole Hospital.***

Lucie Martinet, Christophe Crespelle and Eric fleury. Journal.

**[S3] *Non-Altering Time Scales for Aggregation of Dynamic Networks into Series of Graphs.***

Yannick Léo, Christophe Crespelle and Eric Fleury. Journal.

**[S2] *Algorithmic Equivalence of the PQ-tree and the Modular Decomposition of Interval Graphs.***

Christophe Crespelle. Journal.

**[S1] *Recognition of dynamic circle graphs.***

Christophe Crespelle, Emeric Gioan and Christophe Paul. Journal.

## OTHER INTERNATIONAL COMMUNICATIONS

**[A3] *UDP Ping: a dedicated tool for improving measurements of the Internet topology.***

Matthieu Latapy, Elie Rotenberg, Christophe Crespelle and Fabien Tarissan.

In IEEE 22<sup>nd</sup> International Symposium on Modeling Analysis and Simulation of Computer and Telecommunication Systems (MASCOTS'14), pages 506-509, IEEE, 2014. Demonstration paper.

**[A2] *Contacts network analysis in hospital wards.***

Lucie Martinet, Christophe Crespelle, Eric Fleury and Didier Guillemot.

In 4<sup>th</sup> Workshop on Complex Networks (CompleNet 2013), 2013. Abstract.

## [A1] New parameters for measuring exposure to diffusion in dynamic networks.

Jérémie Dumas, Christophe Crespelle and Eric Fleury.

In Latin American Workshop on Dynamic Networks (LAWDN 2010), 2010. Abstract.

## SOFTWARE

*These are research software, used in the context of my works.*

- UDP-PING : software for measuring the physical-layer topology of Internet by sending UDP packets on the network. Developed in C and deployed in a distributed measurement launched simultaneously from the 900 machines of PlanetLab (<https://www.planet-lab.org/>). Used in [C12,C13,A3]
- SimulTrace : software for simulating measurements of Internet topology. Developed in C. Used in [J4,C5,C13].
- IP-Neighbors : software for measuring the topology of Internet at the IP level, based on traceroute. Developed in bash and deployed in a distributed measurement from the 900 machines of PlanetLab. Used in [C5].

## TRANSFER AND INDUSTRIAL RELATIONSHIPS

My relationships with industry take place in the framework of funded collaborative projects. I work with industrial partners on providing solutions to some concrete research problems arising from their activity. The transfer of knowledge works in the two directions : I benefit from their expertise in the practical context of their domain of activity, which is essential for me as my research focuses on objects and questions coming from this practical context, and I bring to them my expertise on theoretical tools which match their needs and on the conception of new methods to solve issues they face in their activity.

- Linkfluence. Company founded in 2006 which proposes tools for analyzing social media for marketing studies. Its clients include big groups such as L'Oréal, Adidas, Vinci and Google. I work with Linkfluence on the CODDDE project. We combine our expertise on dynamic networks and community detections with their expertise on measurement of the blogosphere, in order to design methods to extract communities from the blogosphere and follow their temporal evolution.
- Pasteur Institute. Non-profit private foundation created in 1887, working in public health sector of activity. I collaborate with Didier Guillemot on the propagation of nosocomial infections in hospitals, following the MOSAR project which involved the DANTE team. This constitutes for me an action of transfer in the medical domain of my expertise on analyses of contact networks measured by sensors, aiming at solving an epidemiology issue, see section « Interdisciplinarity ».

## INTERDISCIPLINARITY

My research naturally involves a strong interdisciplinary dimension. This comes from the fact that i) it deals with a generic object, networks, which is encountered and used in numerous contexts and discipline, and ii) my interest is for questions on these objects that have a strong meaning in the contexts where they appear. My collaborations with most of other disciplines is then built on a common interest for some objects and for some questions on these objects. For me, these collaborations constitute both application domains for my works and sources of new questions and problematics on the objects I study. In this case, the methods I use to answer these questions are those of my domain. On the opposite, my collaboration with Physics is based on the combination and the mix of our respective methods, which are very different, in order to achieve our common goals.

- With medical domain. With Didier Guillemot from Pasteur Institute, we work on combating propagation of nosocomial infections in hospitals. Our goal is to understand why and how the strains of staphylococcus aureus become resistant to antibiotic treatments. To this purpose, we analyse data collected in the european project MOSAR (<http://www.mosar-sic.org/mosar/en-gb/index>). This data contains both biological data and contact data of all patients and staffs of an hospital, collected by sensors during 6 months with a 30s granularity. On this subject, I co-advise the PhD thesis of Lucie Martinet.
- With physics. With Pierre Borgnat and Patrice Abry of the laboratory of physics of ENS Lyon, we mix the methods of graph theory and the methods of signal processing used in physics, for detecting events and anomalies in dynamic networks. On this subject, I was the head of the DYNANET project between the LIP6 laboratory (Paris) and the laboratory of Physics of ENS Lyon, funded by the PEPS 2009 program of CNRS (the interdisciplinarity program of CNRS), and I am responsible for the DANTE team of the project proposal ALiSS we jointly submitted to ANR in 2015.

- Responsible of the course “Large Complex Networks” in the master Modeling of Complex Systems (MSC) from 2010 to 2014. The master MSC is an interdisciplinary program of ENS Lyon for the second year of master, involving students and teachers coming from Physics, Biology, Sociology, Computer Science and Mathematics. I was responsible of the course and member of the council of the master MSC from my arrival in Lyon in 2010 until I leave in sabbatical at CNRS in Hanoi, Vietnam, in 2014.
- Member of the committee for restructuring the master MSC (composed of 4 people : the two heads of the master + 2 invited members, including me). The master MSC went through a deep restructuring process at the beginning of the academic year 2014-2015. Its content has been focused on the topic of complex networks (instead of complex systems) and on the methods coming from physics and computer science. I participated to the definition of the new program of the master, as a representative of computer science.
- Elected member of the steering committee of IXXI (Rhône-Alpes Institute for Complex Systems). IXXI is an institute promoting interdisciplinary research on complex systems, in *région Rhône-Alpes*. The steering committee discusses and decides organization of events (thematic days, conferences) and funding of projects by the institute (2 calls for projects per year, 20 to 30 submitted proposals).
- Introductory plenary talk of the 11<sup>th</sup> ReSTo Day « Networks and spaces, analysis and modeling » of the labex Structures of Social Worlds (SMS) which involves 10 laboratories of Human and Social Sciences (SHS) in Toulouse, May 2014.

## RESPONSIBILITY OF FUNDED COLLABORATIVE PROJECTS

- PICS 2015 (CNRS), 3 years, 2016-2018. « Modelling complex networks through graph editing problems ».  
Head of the project.  
The PICS program of CNRS is dedicated to the support of international collaborations. The project (ongoing) involves two teams of the LIP laboratory (Lyon), namely DANTE (my research team) and MC2, and the Algorithms group of the University of Bergen, Norway. The goal of the project is to open a new way for analysing, modelling and managing complex networks, by approximating their structure thanks to graph editing problems.
- Call for ideas RNSC 2010, 1 year, 2011. « Metrology of complex networks : property driven measurement ».  
Head of the project.  
The call for ideas of RNSC aims at launching research projects having a strong innovating profile, in the domain of complex systems. The project involved the LIP laboratory in Lyon (team DANTE), the LIP6 laboratory in Paris (team Complex Networks) and the LSIT laboratory in Strasbourg (team Networks and Protocols). The goal of the project was to design measurement methods for Internet topology that allows to obtain a trustful view of its structure. The idea is to eliminate the biases of classical methods by designing measurement methods dedicated to one specific targeted property of the network, and which avoid gathering a sample of the topology (like it is done usually, leading to well-known biases). We designed, implemented and validated such a method for measuring the degree distribution of the Internet, which is a fundamental property of the topology of the Internet which was the object of a great scientific controversy during the past 15 years.
- PICS 2009 (CNRS), 3 years, 2010-2012. « Combinatorial structures of complex networks ».  
Head of the project.  
The project involved the LIP laboratory (Lyon), the LIP6 laboratory (Paris) and the Institute of Mathematics Hanoi, Vietnam. The project aimed at designing a model of complex networks (coming from real-world data) which is able to capture two of their most fundamental characteristics: their degree distribution and their high local density. The approach proposed was to generate graphs not by generating their edges, as done usually, but rather by directly generating their cliques. The key contribution of the project was to design a new representation of the structure of overlaps of cliques of a graph and to use it to design a new method for generating synthetic graphs.
- PEPS 2009 (CNRS), 2 years, 2009-2011. DYNANET : « Automatic detection of anomalies and events in the dynamics of Internet ».  
Head of the project.  
The PEPS program of CNRS in 2009 was devoted to promotion of interdisciplinary research projects with a strong innovation profile. The project involved the LIP6 laboratory in Paris (I was a post-doc there at that time) and the laboratory of Physics of ENS Lyon. The approach proposed was to use techniques coming from signal processing and graph theory in order to detect anomalies or unusual events in the dynamics of Internet. Its principal result is the design



of a method to detect such events in the ego-centered views of the network obtained by repeating traceroute measurements of the topology of Internet from one single source.

## HABILITATION À DIRIGER DES RECHERCHES (HDR)

I defended my habilitation thesis (HDR) titled « Structures of complex networks and of their dynamics » in September 2017. The manuscript, in English language, can be found at this address : <https://perso.ens-lyon.fr/christophe.crespelle/hdr.html>. It is a synthetic document that put in perspective my research activity since my PhD. It contains four chapters : I) Internet metrology, II) dynamic networks, III) complex network modelling and IV) efficient graph encodings. The manuscript was reviewed by Ulrik Brandes (Univ. Konstanz), Pierre Fraigniaud (CNRS) and Renaud Lambiotte (Univ. Oxford). It has been defended in front of the jury composed of Pierre Fraigniaud (CNRS), Isabelle Guerin-Lassous (UCB Lyon 1), Bertrand Jouve (CNRS), Renaud Lambiotte (Univ. Oxford), Matthieu Latapy (CNRS) and Rolf Niedermeier (TU Berlin).

## ADVISING STUDENTS

### PHD THESIS (3)

- Yannick Léo, *Diffusion phenomena and community structures in complex dynamic networks*,  
Co-advised (30%) with Marton Karsai and Eric Fleury.  
Defended on the 16<sup>th</sup> December 2016, at LIP laboratory, ENS Lyon.  
1 conference article [C15], 1 journal article submitted.
- Lucie Martinet, *Diffusion phenomena in dynamic networks*,  
Co-advised (50%) with Eric Fleury.  
Defended on the 18<sup>th</sup> September 2015, at LIP laboratory, ENS Lyon.  
1 publication in CompleNet 2014 [C11], 1 journal article submitted.
- Elie Rotenberg, *An approach for a reliable estimation of the properties of the Internet topology*,  
Co-advised (50%) with Matthieu Latapy.  
Defended on the 8<sup>th</sup> January 2015, at LIP6 laboratory, University Pierre and Marie Curie (Paris 6).  
3 publications in conferences [C5,C12,C13], 1 journal article submitted.

### MASTER 2 RESEARCH INTERNSHIPS (9)

- Louis Duvivier (Master Foundations of Computer Science, ENS de Lyon)  
*Causality in link streams*  
In 2017, 5 months at LIP laboratory, Lyon.
- Aniela Popescu (Master Foundations of Computer Science, ENS Lyon)  
*Product graph algorithms*  
In 2014, 5 months at LIP laboratory, Lyon.
- Yannick Léo (Master Foundations of Computer Science, ENS Lyon)  
*Aggregation of temporal graph series*  
In 2013, 5 months at LIP laboratory, Lyon. PhD under my co-supervision, at ENS Lyon.
- Pierre-Alain Scribot (Master Foundations of Computer Science, ENS Lyon)  
*Bursty dynamic networks*  
In 2013, 5 months at LIP laboratory, Lyon. PhD at University of Nice Sophia Antipolis.
- Jérémie Dumas (Master Foundations of Computer Science, ENS Lyon)  
*Representations of path graphs*  
In 2012, 5 months at LIP laboratory, Lyon. PhD at INRIA Nancy.
- Oana Iova (Master Foundations of Computer Science, ENS Lyon)  
*Aggregation of temporal graph series*  
In 2011, 5 months at LIP laboratory, Lyon. PhD at University of Strasbourg.

- Duc Thinh Nguyen (Master of Computer Science of IFI, Hanoi, Vietnam)  
*Random generation of complex networks using multipartite graphs*  
In 2011, 6 months at LIP laboratory, Lyon.
- The Hung Tran (Master of Computer Science of IFI, Hanoi, Vietnam)  
*Multipartite models for complex networks*  
In 2009, 6.5 months at LIP6 laboratory, Paris. **1 journal publication in TCS [J7]**. PhD at University Paris 7.
- Elie Rotenberg (Parisian Master of Research in Computer Science – MPRI, ENS Cachan)  
*Measurement of the degree distribution of the topology of Internet at IP level*  
In 2009, 6 months at LIP6 laboratory, Paris. **1 publication in NetSciCom 2010 [C5]**. PhD at University Paris 6.

#### MASTER 1 RESEARCH INTERNSHIPS (5)

- Aniela Popescu (Master Foundations of Computer Science, ENS Lyon)  
*Cartesian product of graphs*  
In 2013, 3 months at LIP laboratory, Lyon.
- Pranav Jindal (IIT Bombay, India)  
*Aggregation of temporal graph series*  
In 2012, 2.5 months at LIP laboratory, Lyon.
- Yannick Leo (Master Foundations of Computer Science, ENS Lyon)  
*Aggregation of temporal graph series*  
In 2012, 3 months at LIP laboratory, Lyon. PhD under my co-supervision, at LIP laboratory since September 2013.
- Vincent Neiger (Master Foundations of Computer Science, ENS Lyon)  
*Structure of changes in dynamic contact networks*  
In 2011, 3.5 months at LIP laboratory, Lyon. **1 publication in Complex Networks 2012 [C8]**. PhD at ENS Lyon.
- Saemeh Hadavi (Master of Computer Science, University Paris 7)  
*Validation of a method for measuring the degree distribution of Internet*  
In 2009, 2.5 months at LIP6 laboratory, Paris.

#### OTHER RESEARCH INTERNSHIPS (5)

- Nguyen Thi Viet Ha, 4<sup>th</sup> year of Bachelor – Vietnam National University in Hanoi, 2015, 1 year, for her Bachelor thesis.
- Thomas Lambert, 3<sup>rd</sup> year of Bachelor - ENS Lyon, 2011, 6 weeks at LIP laboratory in Lyon.  
*Cartesian product of graphs. 1 publication in COCOON 2013 [C10]*
- Frédéric Ouédraogo, University of Ouagadougou (Burkina Fasso), post-doctoral visit, 2010, 1 month at LIP laboratory in Lyon.  
*Structure of changes in dynamic contact networks.*
- Jérémie Dumas, 3<sup>rd</sup> year of Bachelor - ENS Lyon, 2010, 6 weeks at LIP6 laboratory in Paris.  
*Exposure to diffusion in dynamic networks. 1 communication in LAWDN 2010 [A1]*
- François Gindraud, 3<sup>rd</sup> year of Bachelor - ENS Lyon, 2010, 6 weeks at LIP6 laboratory in Paris.  
*Analysis of the results of a measurement of Internet topology.*

## TEACHING ACTIVITIES

**Total number of hours of teaching : > 1700 h (580 h at level Master 2)**

### TEACHING INSTITUTIONS

2014-2016	<b>Vietnam National University, Hanoi</b> Bachelor of Mathematics, 4 <sup>th</sup> year.	36h
2013-2015	<b>Institute of Mathematics Hanoi (IMH)</b> International Master of Mathematics, 1 <sup>st</sup> year.	51h
2010 - 2018	<b>University Claude Bernard Lyon 1 – Department of Computer Science</b> Assistant Professor	987 h
2009-2018	<b>ENS Lyon</b> Master Modeling of Complex Systems, 2 <sup>nd</sup> year.	177 h
2009-2010	<b>University Paris 6 – Department of Engineering</b> External recruited teacher	53 h
2009-2010	<b>Vietnam National University, Ho Chi Minh City</b> Master of Computer Science specialization in Networking, 2 <sup>nd</sup> year.	32 h
2007 – 2008	<b>University Paris 7 – Department of Computer Science</b> Post-doctoral teacher (ATER)	192 h
2004 – 2007	<b>IUT of Computer Science of Montpellier</b> Junior lecturer	192 h
2006-2007	<b>High School Joffre, Montpellier</b> Responsible of one course in the PSI* class (Maple)	50 h

### SUBJECTS TAUGHT

<b>Internet Metrology</b>	96 h	<b>Computer Architecture</b>	45 h
<b>Network Security</b>	308 h	<b>Operating System (linux)</b>	53 h
<b>Complex Networks</b>	75 h	<b>WEB Programming</b>	56 h
<b>Graphs and Algorithms</b>	190 h	<b>Formal Calculus (Maple)</b>	50 h
<b>Calculability and Complexity</b>	15 h	<b>Functional Programming</b>	37 h
<b>Data Bases</b>	28 h	<b>Imperative Programming</b>	212 h

## MOBILITY IN RESEARCH TOPICS

My initial background is in algorithms and graph theory. I worked in this domain from March 2003 until August 2008, during my Master 2 internship, my PhD thesis and the year I spent in LIAFA laboratory (CNRS & Univ. Paris 7) as a post-doctoral teacher. I obtained in this topic some important results that have been published in high-standard international journals and conferences. When I arrived in the Complex Networks team of the LIP6 laboratory (CNRS & UPMC) in September 2008, I changed my domain of activity for the domain of Networks. Now, the main part of both my research activity and my teaching activity lays in this domain. I currently co-advise 2 theses on these topics (another one has been completed already) and I mainly teach in the second year of the Master Networks and Information Systems of my university UCBL.

Presently, my two main research topics are measurements of Internet topology (PhD thesis of Elie Rotenberg) and diffusion phenomena in dynamic networks (theses of Lucie Martinet and Yannick Léo). This evolution of my main domain of research resulted in a shift of the center of my activities in the computer science community (in France, from the GDR IM to GDR ASR), but it also allowed me to go beyond the frontiers of my discipline by developing my activity in the medical domain (diffusion of bacteriological strain in hospitals) and in physics (combination of methods of graph theory and signal processing for study of dynamic networks), cf. section « Pluridisciplinarity ».

On the other hand, I also remain very active on my initial topics of research. On these topics, I collaborate with the MC2 team of my laboratory, with Ioan Todinca (University of Orléans), with Philippe Gambette (University Marne-la-Vallée) and with Emeric Gioan and Christophe Paul (University Montpellier 2). This duality in my research, between experimental approaches and formal approaches, between practical problems and theoretical questions, gives me a particular position and visibility at the intersection of different communities. This is reflected by the conferences and seminars which I am involved in: the conference Algotel in the domain of telecommunication networks (co-organizer in 2012, member of the program committee in 2013 and 2014), the national days of RESCOM group (national research group of CNRS on Communication Networks) of the GDR ASR (co-chair in 2010), the seminar « Graphs and Discrete structures » of the LIP laboratory (co-organizer from Sept. 2011 to Sept. 2014) and the Discrete Mathematics session of a congress of pure mathematics in Vietnam in 2013.

## GEOGRAPHIC MOBILITY IN FRANCE

The mobility in my research topics goes together with a geographic mobility in research institutions in France. Since 2003, I developed my activity in three different cities, I taught in 4 universities and I worked in 4 leading French research laboratories.

<i>Since Sept. 2010</i>	University Lyon 1	LIP	Lyon	4 years
<i>Sept. 2008 – Aug. 2010</i>	University Paris 6	LIP6	Paris	2 years
<i>Sept. 2007 – Aug. 2008</i>	University Paris 7	LIAFA	Paris	1 year
<i>Sept. 2003 – Aug. 2007</i>	IUT of Montpellier 2	LIRMM	Montpellier	4 years
	<b>4 universities</b>	<b>4 laboratories</b>	<b>3 cities</b>	

## INTERNATIONAL MOBILITY

Since I met Phan Thi Ha Duong at LIP6 in 2009, I developed a very strong scientific collaboration with Vietnam, including pure research activity, but also organization of events, formation and advising of students (see section « International Collaborations »). For this reason, I did many research stays in Vietnam over the past few years, where I am presently for academic year 2014-2015 on a temporary research position at CNRS at the Institute of Mathematics Hanoi. This collaboration has also resulted in many visits of Vietnamese researchers and students in Lyon. There is a strong potential for developing computer science in Vietnam. The personal links that I created grew at the level of my institution with the signature of a partnership agreement between the Institute of Mathematics Hanoi and ENS Lyon, in June 2014, and the joint organization of the first edition of the autumn school « Theoretical Computer Science » in Hanoi in November 2014. In my research, the topics I investigate with Phan Thi Ha Duong deal with modeling of complex networks. We developed an original approach, based on combinatorics property of these objects, which is probably the part of my activity which makes the stronger link between my initial background in graph theory and my current activity in the domain of networks.

Since 2014, I initiated a close collaboration with the Institute for Informatics in Bergen, Norway, where I did several research stays. This collaboration, which also involves another team of my laboratory, is supported by a PICS project of CNRS (2016-2018) which I am the head of. I will also spend a 2-year research stay in Bergen in 2018-2020, thanks to a mobility scholarship of the MSCA program of EU.

### LONG RESEARCH STAYS

- 2-year stay (2018-2020, forthcoming) at the Institute for Informatics of the University of Bergen, in the group « Algorithms », with Pinar Heggernes. MSCA (Marie Curie) mobility scholarship of the European Union.
- 2 years (2014-2016) at the Institute of Mathematics Hanoi (IMH), Vietnam Academy of Science and Technology. Supported by a temporary research position at CNRS and a mobility grant from *Région Rhône-Alpes*. IMH is the historical research institution in mathematics in Vietnam, founded in 1969.

### SHORT TO AVERAGE LENGTH RESEARCH STAYS

- University of Bergen, Institute of Computer Science. 2 stays in the group « Algorithms », with Pinar Heggernes: December 2014 (1 week), November 2016 (2 semaines).
- Vietnam Institute for Advanced Studies in Mathematics (VIASM), Hanoi, Vietnam, <http://viasm.edu.vn/?lang=en>. VIASM is an institution promoting excellence in research in mathematics, founded in 2012 and directed by Ngo Bao Chau (Medal Fields laureate in 2010). One of its goal is to attract foreign scientists for short to mid term stays.

2 stays, totally 4 months, with contracts of « Invited Researcher » : Jun.-Jul. 2014 (2 months), Jan.-Feb. 2013 (2 months).

- Institute of Mathematics Hanoi (IMH), Vietnam Academy of Science and Technology.  
6 stays, totally 7 months: Jan.-Feb. 2014 (2 months), Jul. 2013 (1 month), Aug. 2012 (1 month), Jan.-Feb. 2012 (1.5 month), Jan. 2011 (1 month), Jan. 2010 (2 weeks).

## INTERNATIONAL COLLABORATIONS

### WITH VIETNAM

- Prime mover for the signature of a partnership agreement between ENS Lyon and the Institute of Mathematics Hanoi (IMH), Vietnam, in June 2014, for exchange of students, teachers and researchers between the 2 institutions, as well as organization of joint actions in research and teaching. In 2014-2015, 4 students from Hanoi are pursuing their master studies at ENS Lyon and I co-organized with Phan Thi Ha Duong the first two editions of the joint autumn school in « Theoretical Computer Science » of IMH and ENS Lyon, in Hanoi in Nov. 2014 and Oct. 2015.
- Head of the project « Combinatorial Structures of Complex Networks », between the Institute of Mathematics Hanoi, the LIP laboratory (Lyon) and the LIP6 laboratory (Paris). Funded for 3 years (Jan. 2010 to Dec. 2012) by the PICS program of CNRS (Program for International Scientific Collaborations).
- Co-chair of the Discrete Mathematics session of the VMS-SMF joint congress of mathematics, in August 2012 in Huế, Vietnam. See section « Organization of Events ».
- 2 years at Institute of Mathematics Hanoi (IMH) from September 2014 to August 2016 supported by a temporary research position at CNRS and a mobility grant from *Région Rhône-Alpes*.
- 6 stays at IMH between January 2010 and February 2014, totally 7 months.  
2 stays (with contracts of « Invited Researcher ») at the Vietnam Institute for Advanced Study in Mathematics (VIASM), in January-February 2013 and June-July 2014, totally 4 months.
- Teaching at Vietnam National University of Ho Chi Minh Ville (2010, 32h at level M2), at VIASM, Hanoi (2013, 10h for Master and PhD Students), at IMH, Hanoi (Jan.-Feb. 2014, 30h at level M1, Nov. 2014, 21h at level M1), at Vietnam National University of Hanoi (Oct. 2014, 36h for 4<sup>th</sup>-year bachelor students).
- Advising 2 students of IFI Hanoi (French Institute for Computer Science) for their Master 2 internship in Lyon, Duc Thinh Nguyen and The Hung Tran.
- Expert for the Vietnamese National Foundation for Science and Technology Development (NAFOSTED) in 2014 and 2015.
- Invitation of Phan Thi Ha Duong, IMH, at the LIP laboratory, 3 stays, totally 4.5 months. In March-April 2014 (2 months as Invited Professor of ENS Lyon), in May-June 2012 (1.5 month) and in June-July 2011 (2 months).

### WITH NORWAY

- 2-year stay (2018-2020, forthcoming) at the Institute for Informatics of the University of Bergen, in the group « Algorithms », with Pinar Heggernes. MSCA (Marie Curie) mobility scholarship of the European Union.
- Head of the project « Modelling Complex Networks through Graph Editing Problems » between the « Algorithms » group of the University of Bergen and the LIP laboratory (Lyon). Funded for 3 years (Jan. 2016 to Dec. 2018) by the PICS program of CNRS (Program for International Scientific Collaborations).
- 2 research stays in the group « Algorithms » of the University of Bergen, invited by Pinar Heggernes: December 2014 (1 week), November 2016 (2 weeks).

### WITH OTHER COUNTRIES

- Germany. 2-day visit and seminar in the « Algorithmics » group of the University of Konstanz, June 2015.

- Belgium. Invitation of Renaud Lambiotte (University of Namur, Belgique), 2 weeks at LIP in 2012, for a research stay in the DANTE team and teaching in the Master MSC of ENS Lyon.
- India. Advising one Master 1 internship of a student of IIT Bombay (Indian Institute of Technology), Pranav Jindal, in 2012 at LIP.

## COLLABORATIONS IN LYON (OUT OF MY RESEARCH TEAM)

- With the MC2 team (Models of Computation and Complexity) of LIP, co-organization of the joint seminar of our two groups, named « Graphs and Discrete Structures », from Sept. 2011 to Sept. 2014, collaboration with Eric Thierry on the algorithmic aspects of graph products, co-advising of Thomas Lambert and Aniela Popescu for their internships of Bachelor and Master, 1 published article [C10] and 1 submitted [S2].
- With the SySiphe team of the Laboratory of Physics of ENS Lyon. Participation to the joint working group of our 2 teams on dynamic networks and responsible for ENS Lyon of the joint project proposal submitted to ANR in 2014 (project ALiSS).

## NATIONAL COLLABORATIONS

- With the team Complex Networks of LIP6, on Internet metrology, modeling of complex networks and link streams. 6 published articles [J4,J8,C5,C7,C12, C13], and 2 in preparation.
- With Philippe Gambette (LIGM, University Marne-la-Vallée) on compact graph encodings, 4 published articles [J3,J6,C3,C9].
- With Ioan Todinca (LIFO, University of Orléans) on graph editing problems, 3 published articles [J5,C6,C16], and 1 in preparation.
- With Emeric Gioan and Christophe Paul (LIRMM, University of Montpellier 2) on graph algorithms, 1 article submitted.

## RESPONSIBILITIES

### ADMINISTRATIVE RESPONSIBILITIES

- Member (elected) of the council of the LIP laboratory, from Feb. 2011 to Dec. 2014.  
The council is composed of 20 members, 5 of which are elected among researchers of the laboratory. Its meeting frequency is approximately once every 3 weeks. The council discusses all questions related to the management of the laboratory : allocation of the resources, evolution and changes of the research teams and service teams, advice of the laboratory on the candidates applying for research positions, relationships with the hosting institutions, etc.
- Member (elected) of the steering committee of IXXI (Rhône-Alpes Complex System Institute), since December 2012. IXXI is an highly interdisciplinary institute for research in complex systems. The institute organizes events, funds projects and support a cross-disciplinary master program in complex systems attracting students from physics, mathematics, computer science and biology.
- Referent person for the relationships between the computer science department of University Claude Bernard Lyon 1 and the computer science department of ENS Lyon, from September 2011 to September 2014.  
The relationships between UCBL and ENS Lyon are tight and complex. UCBL is the institution giving the diploma of the master program of the computer science department of ENS Lyon and is also one of the hosting institution of the LIP laboratory, with ENS, CNRS and INRIA. Several teachers of the computer science department of UCBL perform their research at LIP, and some, including me, also give some lectures in the teaching programs of ENS. I am in charge of the administrative relationships between the two teaching departments. I am the referent person on both sides for questions concerning both institutions. For me, it consists in directing the request form one department to the relevant person in the other one, and following the good processing of current cases. This is what I did for example in 2011 for the renewal of the accreditation of the formations of UCBL and ENS by the French ministry for research and higher education, and in 2012 when ENS modified the program of the first year of its master. I am also in charge of validating, for UCBL employees, the teaching hours they perform in ENS as part of their teaching duty in UCBL.

## RECRUITING COMMITTEES

- Member of the Expert Committee of University Paris 6, only members of this committee can participate to the Selection Committees (CS) who ranks applicants on the permanent research and teaching positions of the university (one CS for each position).  
Member of the CS for the position « Algorithms and Programming for Complex Systems », in 2014.  
Member of the CS for position number 27 MC 4153, in 2013.  
Member of the joint CS for positions number 27 MC 4064 and number 27 MC 4074, in 2012.
- Member of the jury , author and corrector of the 2<sup>nd</sup> competitive admission exam for students in ENS Lyon in 2011.  
This competitive admission exam is the one reserved for students of French universities (the main entrance exam is for students coming from *classes préparatoires*). The admission exam for ENS has a particular importance in France since the students recruited become employee of the French government during all their studies in the school (4 years), and receive a full salary for this. I designed and corrected the exam of computer science and I participated to the final jury which ranks the candidates.

## EVALUATION OF PROJECT PROPOSALS

- Expert for ANR (French national agency for funding of research).  
On the call for project JCJC – Generic call for projects in 2016.  
On the call for project JCJC - SIMI 2 – Computer Science and applications in 2013.  
On the call for projects Numerical Models in 2012.
- Expert for NAFOSTED (Vietnamese national agency for funding research )  
On the call for projects « Basic research funding » in « Natural Sciences and Engineering » in 2015.  
On the call for projects « Basic research grant » in « Information Technology – Computer Science » in 2014.
- Expert for the BQI program in 2012. BQI (Bonus for Quality of Industrial Relationships) is a program of UCBL dedicated to promote scientific collaborations between the university and the companies of *région Rhône-Alpes*.
- Expert for the call for projects of IXXI, spring 2013, autumn 2013, autumn 2014, spring 2015 and autumn 2015.

## REFeree ON RESEARCH ARTICLES

- For the following journals : Discrete Mathematics (Elsevier), Discrete Applied Mathematics (Elsevier), Computer Communications (Elsevier), Theoretical Computer Science (Elsevier), JSAC (IEEE), Communication Letters (IEEE), Information Processing Letters (Elsevier), Computer Networks (Elsevier), Physica A (Elsevier), Technologies (MDPI), Network Science (Cambridge).
- For the following conferences : STACS, ISAAC, WG, Eurocomb, LAGOS, Algotel, Netscom, Marami.

## VISIBILITY

### PROGRAM COMMITTEES

- Member of the Program Committee of ICGT 2018 « 10th International Colloquium on Graph Theory », which is a worldwide colloquium of mathematics on graph theory, held every four years.
- Member of the Program Committee of DyNo 2017 « 3<sup>rd</sup> International Workshop on Dynamics in and of Networks ».
- Member of the Program Committee of WG 2016 « 42<sup>nd</sup> International Workshop on Graph-Theoretic Concepts in Computer Science », which is the international conference of reference on graph theory in computer science.
- Member of the Program Committee of MARAMI in 2015 and 2017 « Network Models and Analyses: Approaches from Mathematics and Computer Science », which is the French conference on complex networks.

- Member of the Program Committee of « IEEE International Workshop on Network Science for Communication Networks », in conjunction with INFOCOM, in 2015.
- Member of the Program Committee of AlgoTel conference in 2013 and 2014. AlgoTel is the conference of reference in France for the algorithmic aspects of telecommunication networks.
- Co-chair of the Discrete Mathematics session of the France-Vietnam Congress of Mathematics of the SMF and the VMS, in aug. 2012 in Huê, Vietnam. See section « Organization of Events ».

#### PHD JURYS

- Kaoutar Ghazi, « Heuristics and Conjectures about the 2-dimension of partial orders »  
Reviewer. 29<sup>th</sup> September 2017, University Clermont Auvergne.
- Pham Van Trung, « Properties of Stable Configurations of the Chip-firing Game and Extended Models »  
Reviewer. 6<sup>th</sup> November 2014 and 24<sup>th</sup> September 2015, Vietnam Academy of Science and Technology.  
NB: there are 2 defenses for PhD in Vietnam, with 2 distinct juries, the first one at the level of the ministry of education and the second one at the level of the university where was made the thesis.
- Massoud Seifi, « Stable Cores of Communities in Complex Networks »  
Member of the Jury. 15<sup>th</sup> March 2012, University Paris 6.
- Xiaomin Wang, « Formal Approaches for Internet Topology Measurements »  
Member of the Jury. 13<sup>th</sup> December 2011, University Paris 6.
- Assia Hamzaoui, « Detection of Events in the Dynamics of Complex Networks : a Statistical Approach »  
Member of the Jury. 28<sup>th</sup> June 2011, University Paris 6.

#### INVITED TALKS ABROAD

- Institute for Informatics, University of Bergen (2), Norway, in 2014 and 2016.
- Department of Computer and Information Science, University of Konstanz, Germany, in 2015.
- RELISH laboratory, University of Science and Technology of Hanoi (USTH), Vietnam, in 2015.
- Hanoi University of Science and Technology (HUST), Vietnam, in 2015.
- Vietnam National University (VNU) in Hanoi, Vietnam, in 2015.
- Plenary talk during the summer school of the Institute of Mathematics Hanoi, Vietnam, in July 2014. The summer school gather about 80 students in mathematics coming from all universities of Vietnam, in Hanoi for 3 weeks, following several different courses. I gave a talk for all the students of the school on the foundations of computer science.
- MICA research institute « Multimedia, Information, Communication and Applications », Hanoi, in 2014.
- Vietnam Institute for Advanced Studies in Mathematics (VIASM) (3), Hanoi, in 2013, 2014 and 2016.
- Institute of Mathematics Hanoi (5), Vietnam Academy of Science and Technology, Hanoi, in 2011, 2012, 2015, 2017.

#### INVITED TEACHING ABROAD

- Vietnam National University (VNU) of Hanoi (2), Bachelor of Mathematics, 4<sup>th</sup> year, international class, October 2014 and May 2016. Two times 18h of lectures in the course « Combinatorial Optimization », given in English.
- SEAMS « School on Combinatorics », March 2015, 10h of lectures « Structure of chordal graphs and algorithms », given in English. Thematic school for students of South-East Asia (ASEAN) in mathematics and computer science, in their 4<sup>th</sup> or 5<sup>th</sup> year of university.



- Institute of Mathematics Hanoi (IMH), Vietnam, International Master of Mathematics, level M1. 2 times 21 h of lectures « Introduction to Graph Algorithms », Jan.-Feb. 2014 and Nov. 2014, given in English. Part of the autumn school « Theoretical Computer Science », joint action of IMH and ENS Lyon, which I co-organize with Phan Thi Ha Duong.
- Vietnam Institute for Advanced Studies in Mathematics (VIASM), for PhD students and Master students from universities of Hanoi, January 2013. 10h of lectures « Chordal Graphs and Algorithms », given in English.
- Vietnam National University (VNU) of Ho Chi Minh City, Master of Computer Science specialty in Networking, level M2, March 2010. 32h of lectures « Internet Metrology », given in English.

#### INVITED TALKS AND TEACHING IN FRANCE

- Introductory plenary talk of the 11<sup>th</sup> ReSTo Day « Networks and spaces, analysis and modeling » of the labex Structures of Social Worlds (SMS) which involves 10 laboratories of Human and Social Sciences (SHS) in Toulouse, May 2014.
- *Ecole Normale Supérieure de Lyon*, Master Modeling of Complex Systems, level M2, January 2010 (I was then a post-doctoral student in UPMC). 9 h of lectures « Internet Metrology », given in French.
- In the following laboratories in France : ISCC (Paris)LIRMM (Montpellier), LIP6 (Paris), UMMISCO/IRD (Bondy), LIAFA (Paris), LaBRI (Bordeaux), LAMSADE (Paris), LIP (Lyon), LIF (Marseille) (2), IRISA (Rennes), LSIIT (Strasbourg), INRIA Sophia-Antipolis (2) (Nice), G-SCOP (Grenoble) (2), CES (Paris), LIFO (Orléans) (2).

### ORGANIZATION OF EVENTS

- Co-organization (with Phan T.H.D.) of the joint autumn school « Theoretical Computer Science » of the Institute of Mathematics Hanoi and ENS Lyon, in Hanoi. 1<sup>st</sup> edition in November 2014, 2<sup>nd</sup> edition in October 2015.  
[http://www.ens-lyon.fr/DI/?page\\_id=3501&lang=en](http://www.ens-lyon.fr/DI/?page_id=3501&lang=en)  
The school is intended to the students of mathematics and computer science of Hanoi from the 4<sup>th</sup> year of university and beyond. Two courses of 21h each are given, on two different topics of theoretical computer science, by two researchers of the LIP (Nicolas Brisebarre and I for the 1<sup>st</sup> edition, Nicolas Brisebarre and AnthonyBusson for the 2<sup>nd</sup> edition). The school gathers 15 to 20 students coming from the master of IMH (the courses are mandatory for them) and from 4 other scientific universities of Hanoi : VNU , HUST, the Educational School of Hanoi (DHSP) and the University of Engineering and Technology of Hanoi (DHCN). To this purpose, I made a web page for the autumn school on the website of ENS Lyon and I give introductory presentations of the school in VNU and HUST.
- Co-chair (with Phan T.H.D.) of the Discrete Mathematics session of the joint VMS-SMF Congress of Mathematics, august 2012 in Huê, Vietnam. <http://hue2012.ens-lyon.fr>  
The joint congress of mathematics of the VMS (Vietnamese Mathematical Society) and the SMF (French Mathematical Society) gathered 500 participants during one week in Huê, Vietnam, from the 20<sup>th</sup> to the 24<sup>th</sup> august 2012. There were 14 thematic sessions, including the Discrete Mathematics session that I co-organized with Phan Thi Ha Duong. The session involved 45 participants and was one of the most attended of the congress. We managed both the scientific program and the practical organization of the event. We obtained the participation of fifteen French researchers and an important part of the Vietnamese research community, including students.
- Co-chair of the Organising Committee (with A.-E. Baert) of the conference AlgoTel (French Meeting on Algorithmic Aspects of Telecommunications), May 2012 in La Grande Motte, France. <http://algotel2012.ens-lyon.fr/>  
AlgoTel is the leading French conference for the research community on communication networks. With A.-E. Baert we entirely managed the practical organization of the event. We obtained fundings form industry (Orange, Alcatel) as well as from INRIA and CNRS, which allowed us to ask only low registration fees for students (including accommodation and food) and to provide some of them with traveling grants. The event was very successful and involved 80 participants during 4 days in hotel Mercure in La Grande Motte.
- Co-chair (with F. Valois) of the scientific days of the RESCOM group of GDR ASR, November 2010 in Lyon.  
<http://www.ens-lyon.fr/LIP/D-NET/2010/journees-rescom-2010/>  
The scientific days of the Communication Networks group (RESCOM) of the GDR Architecture, Systems and Networks (ASR) is an important event for structuring the research community on networks in France. We managed both the scientific program and the practical organization of the event. The event gathered more than 70 participants and had a strong impact on the national research community on networks. The 25 talks covered a wide range of the

topics of the community, from measurement and network protocols to graphs and algorithms, as reflected by the two invited talks given by Jean-Jacques Pansiot and Stéphan Thomassé.

- Co-organizer of the seminar Graphs and Discrete Structures of the LIP laboratory (twice a month), from October 2011 to September 2014. <http://perso.ens-lyon.fr/irena.penev/seminaire.html>  
The seminar Graphs and Discrete Structures is co-organized by the teams MC2 (Computation Models and Complexity) and DANTE (my research team) from LIP. It occurs twice a month and the audience is from different laboratories of Lyon. The seminar is an important element for structuring the research community on graphs in Lyon. The talks are given both by speakers coming from formal methods and by speakers coming from experimental methods. It also makes a strong link between our two research teams on their common interest for graphs.

## LANGUAGES

- French : mother tongue
- English : fluent
- Spanish : very good
- Vietnamese : basic notions