

DELAHAYE Benoît**Born** : September, 25, 1982 (38 yo)**Nationality** : French**Address** : 3, Chemin des fourrés
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France**Position** : Maître de Conférences**Employer** : Université de Nantes, Faculté des Sciences et Techniques / LS2N**Section** : 27**Laboratory** : Laboratoire des Sciences du Numérique de Nantes (LS2N) – UMR 6004**Web Page** : <http://pagesperso.ls2n.fr/~delahaye-b/>

Scientific activities

My main interests lie in the domains of modeling and verification of complex systems (mostly probabilistic). Since 2014 and my involvement in the french ANR project PACS (Parametric Analyses of Concurrent Systems), for which I was responsible of 2 work packages, I have been more and more interested in parametric probabilistic and timed systems. Since 2016, I have started a collaboration with researchers from Biology and Oceanography.

In the Verification domain, conventions are that, unless one wants to promote the results of a Ph.D. student, authors of publications are sorted in alphabetical order.

In the Biology domain, the order of authors has more importance : the first author is the researcher or student who performed the major part of the work, while the last author is the confirmed researcher leading the work.

Publications and scientific production

Conference Proceedings.

- [1] T. Brihaye, B. Delahaye, L. Jezequel, N. Markey, J. Srba. *Proceedings Cassting Workshop on Games for the Synthesis of Complex Systems and 3rd International Workshop on Synthesis of Complex Parameters*. Electronic Proceedings in Theoretical Computer Science, Vol. 220, pp 1-89, 2016.

International journal publications.

- [2] S. Ramondenc, D. Eveillard, L. Guidi, F. Lombard, B. Delahaye. Probabilistic modeling to estimate jellyfish ecophysiological properties and size distributions. In *Scientific Reports*, Vol 10-1, pp 1-13, 2020.
- [3] E. André, B. Delahaye, P. Fournier. Consistency in Parametric Interval Probabilistic Timed Automata. In *Journal of Logical and Algebraic Methods in Programming*, Vol 110, 2020.
- [4] M.A. Aouadhi, B. Delahaye, A. Lanoix. Introducing probabilistic reasoning within Event-B. In *Statistical Model Checking QoS Properties of Systems with SBIP*, Vol 18(3), pp 1953-1984, 2019.
- [5] J.L. Fiadeiro, A. Lopes, B. Delahaye, A. Legay. Dynamic networks of heterogeneous timed machines. In *Mathematical Structures in Computer Science*, Vol 28(6), pp 800-855, 2018.
- [6] A. Bart, B. Delahaye, P. Fournier, D. Lime, E. Monfroy, C. Truchet. Reachability in parametric Interval Markov Chains using constraints. In *Theoretical Computer Science*, Vol 747, pp 48-74, 2018.
- [7] B. Delahaye, D. Eveillard, N. Bouskill. On the power of uncertainties in microbial system modeling : No need to hide them anymore. In *MSystems*, Vol 2(6), e00169–17, 2017.
- [8] A. Nouri, S. Bensalem, M. Bozga, B. Delahaye, C. Jégourel, A. Legay. Statistical Model Checking QoS Properties of Systems with SBIP. In *Software Tools for Technology Transfer*, Vol 17(2), pp 171-185, 2015.
- [9] B. Delahaye, U. Fahrenberg, K.G. Larsen, A. Legay. Refinement and Difference for Probabilistic Automata. In *Logical Methods in Computer Science*, Vol 10(3-11), pp 1-32, 2014.

- [10] B. Delahaye, K.G. Larsen, A. Legay. Stuttering for Abstract Probabilistic Automata. In *Journal of Logic and Algebraic Programming*, Vol 83(1), pp 1-10, 2014.
- [11] B. Delahaye, J.-P. Katoen, K.G. Larsen, A. Legay, M.L. Pedersen, F. Sher, A. Wasowski. Abstract Probabilistic Automata. In *Information and Computation*, Vol 232, pp 66-116, 2013.
- [12] B. Delahaye, K.G. Larsen, A. Legay, M.L. Pedersen, A. Wasowski. Consistency and Refinement for Interval Markov Chains. In *Journal of Logic and Algebraic Programming*, 2012.
- [13] B. Delahaye, K.G. Larsen, A. Legay, M.L. Pedersen, A. Wasowski. New results for Constraint Markov Chains. In *Performance Evaluation*, 2012.
- [14] A. Basu, S. Bensalem, M. Bozga, B. Caillaud, B. Delahaye, and A. Legay. Statistical abstraction and model-checking of large heterogeneous systems. In *Software Tools for Technology Transfer*, 2012.
- [15] B. Delahaye, B. Caillaud, A. Legay. Probabilistic Contracts : A Compositional Reasoning Methodology for the Design of Systems with Stochastic and/or Nondeterministic Aspects. In *Formal Methods in System Design* Vol. 38, pp 1-32, 2011.
- [16] B. Caillaud, B. Delahaye, K.G. Larsen, A. Legay, M.L. Pedersen, A. Wasowski. Constraint Markov Chains. In *Theoretical Computer Science*, 2011.

International conference publications.

- [17] R. Bao, C. Attiogbe, B. Delahaye, P. Fournier, D. Lime. Parametric Statistical Model Checking of UAV Flight Plan, In *FMOODS/FORTE, 14th International Federated Conference on Distributed Computing Techniques*, pp 57-74 Kongens Lyngby, Denmark, 2019.
- [18] D. Antakly, B. Delahaye, P. Leray. Graphical Event Model Learning and Verification for Security Assessment, In *IEA/IAE, 32nd International Conference on Industrial, Engineering and Other Applications of Applied Intelligent Systems*, pp 245-252, Graz, Austria, 2019.
- [19] E. André, B. Delahaye, P. Fournier, D. Lime. Parametric Timed Broadcast Protocols, In *VMCAI, 20th International Conference on Verification, Model Checking and Abstract Interpretation*, pp 491-512 Caiscais, Portugal, 2019.
- [20] A. Bart, B. Delahaye, D. Lime, E. Monfroy, C. Truchet. Reachability in Parametric Interval Markov Chains Using Constraints, In *QEST, 14th International Conference on Quantitative Evaluation of Systems*, pp 173-189, Berlin, Germany, 2017.
Best Paper Award
- [21] M.A. Aouadhi, B. Delahaye, A. Lanoix. Moving from Event-B to Probabilistic Event-B, In *SAC, 32nd ACM Symposium on Applied Computing – Software Verification and Testing track*, Marrakech, Morocco, 2017.
- [22] Y. Emzivat, B. Delahaye, D. Lime, O.H. Roux. Probabilistic Time Petri Nets, In *PETRI NETS, 37th International Conference on Application and Theory of Petri Nets and Concurrency*, pp 261-280, Toruń, Poland, 2016.
- [23] E. André, B. Delahaye. Consistency in Parametric Interval Probabilistic Timed Automata, In *TIME, 23rd International Symposium on Temporal Representation and Reasoning*, pp 110-119, Kongens Lyngby, Denmark, 2016.
- [24] B. Delahaye, D. Lime, L. Petrucci. Parameter Synthesis for Parametric Interval Markov Chains, In *VMCAI, 17th International Conference on Verification, Model Checking and Abstract Interpretation*, pp 372-390, St Petersburg, Florida, United States, 2016.

- [25] B. Delahaye, J.L. Fiadeiro, A. Legay, A. Lopes. Heterogeneous Timed Machines, In *ICTAC, 11th International Colloquium on Theoretical Aspects of Computing*, pp 115-132, Bucharest, Romania, 2014.
- [26] N. Benes, B. Delahaye, U. Fahrenberg, J. Kretínský, A. Legay. Hennessy-Milner Logic with Greatest Fixed Points as a Complete Behavioural Specification Theory. In *CONCUR, 24th international conference on Concurrency Theory*, pp 76-90, Buenos Aires, Argentina, 2013.
- [27] B. Delahaye, U. Fahrenberg, K.G. Larsen, A. Legay. Refinement and Difference for Probabilistic Automata. In *QEST, 10th international conference on Quantitative Evaluation of SysTems*, pp 22-38, Buenos Aires, Argentina, 2013.
- [28] B. Delahaye, J.-L. Fiadeiro, A. Legay, A. Lopes. A Timed Component Algebra for Services. In *FMOODS/FORTE, 8th International Federated Conference on Distributed Computing Techniques*, pp 242-257, Florence, Italy, 2013.
- [29] B. Delahaye, K.G. Larsen, A. Legay. Stuttering for Abstract Probabilistic Automata. In *LFCS, Symposium on Logical Foundations of Computer Science*, pp 149-163, San Diego, California, USA, 2013.
- [30] S. Bensalem, M. Bozga, B. Delahaye, C. Jégourel, A. Legay, A. Nouri. Statistical Model Checking QoS Properties of Systems with SBIP. In *ISoLA, Leveraging Applications of Formal Methods, Verification and Validation. Technologies for Mastering Change*, Heraklion, Crete, Greece, 2012.
- [31] B. Delahaye, U. Fahrenberg, T.A. Henzinger, A. Legay, D. Nickovic. Synchronous Interface Theories and Time Triggered Scheduling. In *FMOODS/FORTE, 7th International Federated Conference on Distributed Computing Techniques*, Stockholm, Sweden, 2012.
- [32] B. Delahaye, K.G. Larsen, A. Legay, M.L. Pedersen, A. Wasowski. APAC : a tool for reasoning about Abstract Probabilistic Automata. In *QEST, 8th International Conference on Quantitative Evaluation of SysTems*, Aachen, Germany, 2011.
- [33] B. Delahaye, J.-P. Katoen, K.G. Larsen, A. Legay, M.L. Pedersen, F. Sher, A. Wasowski. New Results on Abstract Probabilistic Automata. In *ACSD, 11th International Conference on Application of Concurrency to System Design*, Newcastle, UK, 2011.
- [34] B. Delahaye, K.G. Larsen, A. Legay, M.L. Pedersen, A. Wasowski. Decision Problems for Interval Markov Chains. In *LATA, 5th International Conference on Language and Automata Theory and Applications*, Tarragona, Spain, 2011.
- [35] B. Delahaye, J.-P. Katoen, K.G. Larsen, A. Legay, M.L. Pedersen, F. Sher, A. Wasowski. Abstract Probabilistic Automata. In *VMCAI, 12th International Conference on Verification, Model Checking, and Abstract Interpretation*, Austin, TX, USA, 2011.
- [36] B. Caillaud, B. Delahaye, K.G. Larsen, A. Legay, M.L. Pedersen, A. Wasowski. Compositional Design Methodology with Constraint Markov Chains. In *QEST, 7th International Conference on Quantitative Evaluation of SysTems*, Williamsburg, Virginia, USA, 2010.
- [37] A. Basu, S. Bensalem, M. Bozga, B. Delahaye, A. Legay, and E. Sifakis. Verification of an afdx infrastructure using simulations and probabilities, 2010. In *RV, 1st Conference on Runtime Verification*, Malta, 2010.
- [38] A. Legay, B. Delahaye, S. Bensalem. Statistical Model Checking : Present and Future. In *RV, 1st conference on Runtime Verification*, Malta, 2010.
- [39] B. Delahaye, B. Caillaud, A. Legay. Probabilistic Contracts : A Compositional Reasoning Methodology for the Design of Stochastic Systems. In *ACSD, 10th International Conference on Application of Concurrency to System Design*, Braga, Portugal, 2010.
- [40] A. Basu, S. Bensalem, M. Bozga, B. Caillaud, B. Delahaye, and A. Legay. Statistical abstraction and model-checking of large heterogeneous systems. In *FMOODS/FORTE, 5th IFIP International Conference on Formal Techniques for Distributed Systems, Amsterdam, The Netherlands*, volume 6117 of *Lecture Notes in Computer Science*, pages 32-46. Springer, 2010.

International workshops.

- [41] A. Bart, B. Delahaye, E. Monfroy, C. Truchet. An Improved Constraint Programming Model for Parametric Interval Markov Chain Verification. In *CP meets Verification 2016 Workshop*, Toulouse, France, 2016.
- [42] B. Delahaye. Consistency for Parametric Interval Markov Chains. In *SynCoP, 2nd Workshop on Synthesis of Complex Parameters*, pp. 17-32, London, UK, 2015.
- [43] B. Delahaye, K.G. Larsen, A. Legay, M.L. Pedersen, A. Wasowski. Stuttering in Abstract Probabilistic Automata. In *NWPT, 23rd Nordic Workshop on Programming Theory*, Västerås, Sweden, 2011.
- [44] B. Delahaye, K.G. Larsen, A. Legay, M.L. Pedersen, A. Wasowski. Decision Problems for Interval Markov Chains. In *NWPT, 22nd Nordic Workshop on Programming Theory*, Turku, Finland, 2010.
- [45] B. Delahaye, B. Caillaud, A. Legay. Compositional Reasoning for Assume/Guarantee Contracts Combining Stochastic and Nondeterministic Aspects. In *NWPT, 21st Nordic Workshop on Programming Theory*, Lyngby, Denmark, 2009.
- [46] B. Delahaye. Probabilistic Contract Based Reasoning with Markov Decision Processes. In *MOVEP, 8th International Summer School on MOdelling and VERifying parallel Processes*, Orléans, France, 2008.

National workshops.

- [47] A. Bart, B. Delahaye, E. Monfroy, C. Truchet. Vérification de chaînes de Markov à intervalles paramétrés avec des contraintes. In *13èmes Journées Francophones de Programmation par Contraintes*, 2017
- [48] M.A. Aouadhi, B. Delahaye, A. Lanoix. Une extension probabiliste pour Event-B. In *16èmes journées AFADL*, 2017
- [49] É. André, B. Delahaye, P. Habermehl, C. Jard, D. Lime, L. Petrucci, O.H. Roux, T. Touili. Beyond Model Checking : Parameters Everywhere. In *Journées GDR GPL – Défis 2025*, 2014

Major publications

I hereby present the 5 publications that I consider as the most important w.r.t. my career.

- [2] S. Ramondenc, D. Eveillard, L. Guidi, F. Lombard, B. Delahaye. Probabilistic modeling to estimate jellyfish ecophysiological properties and size distributions. In *Scientific Reports*, Vol 10-1, pp 1-13, 2020. *Generalist scientific journal. Impact factor : 4.5 (where typical CS journals like TCS have an impact factor of 0.7).*

This paper presents the application of statistical verification methods to a realistic biological case study. Our methods have allowed in particular to parametrize the model w.r.t. experimental data, as well as to derive global correlation information between all parameters of the model (which is, at the moment, out of reach of traditional methods).

- [6] A. Bart, B. Delahaye, P. Fournier, D. Lime, E. Monfroy, C. Truchet. Reachability in parametric Interval Markov Chains using constraints. In *Theoretical Computer Science*, Vol 747, pp 48-74, 2018. *Rank A journal (core.edu.au)*

Best paper award (for the conference version)

This paper proposes novel solutions, based on constraint programming techniques, for synthesizing parameter values in the context of parametric interval Markov chains.

- [11] B. Delahaye, J.-P. Katoen, K.G. Larsen, A. Legay, M.L. Pedersen, F. Sher, A. Wasowski. Abstract Probabilistic Automata. In *Information and Computation*, Vol 232, pp 66-116, 2013. *Rank B journal (core.edu.au)*

This paper develops the theory of Abstract Probabilistic Automata, a compositional modeling formalism. This is a particularly complete article that resumes several years of work on this topic. While my co-authors have contributed to this paper by punctual interactions, I was the only person involved in its writing and in the proof of all theoretical results.

- [10] B. Delahaye, K.G. Larsen, A. Legay. Stuttering for Abstract Probabilistic Automata. In *Journal of Logic and Algebraic Programming*, Vol 83(1), pp 1-10, 2014. *Rank A journal (core.edu.au)*

This article solves the problem of simulation and weak bisimulation in the context of abstract probabilistic automata.

- [28] B. Delahaye, J.-L. Fiadeiro, A. Legay, A. Lopes. A Timed Component Algebra for Services. In *FMOODS/FORTE, 8th International Federated Conference on Distributed Computing Techniques*, pp 242-257, Florence, Italy, 2013. *Rank A conference (core.edu.au). 34% acceptance.*

This paper develops an interface theory for timed systems with heterogeneous clocks.

Ph.D. students / Post-doctorants

2017/2018 Paulin Fournier, post-doctorant.

Verification of parametric probabilistic systems
Co-supervised by par Didier Lime
Funded by ANR PACS
2 conference and 2 journal articles

2017 Hadrien Bride, post-doctorant.

Verification of parametric timed probabilistic systems
Co-supervised by Didier Lime
Funded by ANR PACS

2017/2020 Dimitri Antakly, Ph.D. student with a CIFRE (industrial) funding.

Learning and statistical verification for safety.
Co-supervised by Philippe Leray (40%)
1 conference article
Defense : July 2020

2017/2020 Ran Bao, Ph.D. student with a CIFRE (industrial) funding.

Formal modeling of civil drones with parametric probabilistic methods.
Co-supervised by Christian Attiogbe (40%)
2 conference articles
Defense : April 2020.

2016/2017 Anicet Bart, Ph.D. student.

Constraint Programming for Verification.
Officially supervised by Eric Monfroy (40%) and Charlotte Truchet (60%)
While not being his official supervisor, I have been actively involved in Anicet Bart's supervision in 2016 and 2017.
1 workshop, 1 conference (Best paper award) and 1 journal articles.
Defense : november 2017.

2014/2017 Mohamed Amine Aouadhi, doctorant.

Quantitative and Probabilistic aspects for discrete event models.
Officially Co-supervised by Claude Jard (40%) and Arnaud Lanoix (30%)
In practice, Claude Jard was not involved in Mohamed Amine Ahoudi's supervision.
1 conference and 1 journal articles.
Defense : October 2017.

Internships

- 2019** **Abhignya Kamma**, Intern, Master 2 – 5 months.
Statistical Model Checking for Parametric Models.
- 2019** **Yannis Le Bars**, Intern, Master 1 – 7 months.
Implementation of a parametric statistical model checker.
Co-supervisor : Pascal André
- 2016** **Ran Bao**, Intern, Master 2 – 6 months.
Formal modeling of civil drones with probabilistic methods.
Incollaboration with PIXIEL company
- 2015** **Roland Houssou**, Intern, Master 1 – 3 months.
Derivation of constraint systems for the consistency of interval Markov chains.
- 2014** **Aurélien Boutillier**, Intern, Master 2 – 6 months.
Implementation of a Petri net statistical model checker.
Co-supervisor : Claude Jard

Dissemination and outreach

Invitations

- 2019** **Santiago, Chili** – 2 weeks mobility in Alejandro Maass's group (Center for Mathematical Modeling).
Funded by ANR PACS
- 2018** **Berkeley, CA, USA** – 10 days mobility in Nicholas Bouskill's group (Climate and Ecosystem Sciences Division, Lawrence Berkeley National Laboratory).
Funded by ANR PACS
- 2016** **Berkeley, CA, USA** – 10 days mobility in Nicholas Bouskill's group (Climate and Ecosystem Sciences Division, Lawrence Berkeley National Laboratory).
Funded by PICS CNRS EmbassY
- 2015** **Aachen, Allemagne** – 1 week mobility in Joost-Pieter Katoen's group (RWTH Aachen University).
Funded by RWTH Aachen
- 2013** **San Carlos de Bariloche / Buenos Aires, Argentine** – 2 weeks mobility in San Carlos de Bariloche and Buenos Aires, in Holger Hermanns's group (Saarbrücken University) during his sabbatical year in South America.
Funded by EU project MEALS

Invited Communications

Summer/Winter schools

2017 **Invited speaker** - *Ecole d'été Temps Réel - Vérification Classique et Statistique pour les Systèmes Probabilistes* - Paris, France.

International conferences / workshops

2020 **Invited speaker** - *GreenOcean Workshop - Parametrisation of (biogeochemical) models using Stantistical Model Checking* - Villefranche-sur-mer, France.

2019 **Invited speaker** - *International Workshop on Synthesis of Complex Parameters - Parametric statistical model checking of UAV flightplan* - Prague, République Tchèque.

National Conferences / workshops

2020 **Invited speaker** - *AI and Sustainable Development Goal 14 (Life below water) - Modeling and Statistical Verification for the Ocean* - Nantes, France.

2018 **Invited speaker** - *RNA Kinetics day - Statistical Model Checking for Complex Systems* - LRI, Paris Saclay, France.

2018 **Invited speaker** - *Institut du Thorax - Model Verification* - Noirmoutier, France.

Seminars

2017 **Guest seminar** - *68NQRT - Reachability in Parametric Interval Markov Chains using Constraints* - IRISA/INRIA, Rennes, France.

2017 **Guest seminar** - *MEGALODOM interdisciplinary workshop - Model Verification* - Villefranche-sur-mer, France.

2015 **Guest seminar** - *Parameter Synthesis for Parametric Interval Markov Chains* - RWTH Aachen University, Aachen, Germany.

2015 **Guest seminar** - *Modélisation et Vérification de systèmes complexes : Aperçu et exemples de ce que l'informatique peut apporter* - UMR BioEpAR, Nantes.

2014 **Guest seminar** *68NQRT - Heterogeneous Timed Machines* - IRISA/INRIA, Rennes.

2013 **Guest seminar** *MEALS Workshop - Distance and Difference for Abstract Probabilistic Automata* - Buenos Aires, Argentina.

2012 **Guest seminar** *MV - Compositional Specification Theories for Stochastic Systems* - LABRI, Bordeaux.

Organization of scientific events

- 2020** **EJCP 2020, Ecole des Jeunes Chercheurs en Programmation**, Nantes, France.
Summer school – approx. 50 participants.
Co-organized by C. Truchet, A. Mahboubi, N. Tabareau and H. Coullon.
Delayed due to Covid-19
- 2020** **SynCoP 2020, 7th International Workshop on Synthesis of Complex Parameters**, Dublin, Ireland.
Satellite event of ETAPS conferences – approx. 30 participants.
Co-organized by N. Bertrand.
Delayed due to Covid-19
- 2019** **MSR 2019, Colloque sur la Modélisation des Systèmes Réactifs**, Angers, France.
Approx. 50 participants.
Co-organized by S. Lahaye and M. Lhommeau.
- 2019** **GT Vérif Days**, Nantes, France.
Approx. 40 participants.
Co-organized by D. Lime.
- 2017** **FEVER 2017, Workshop on Formal Approaches to Explainable VERification**, Heidelberg, Germany.
Satellite event of the CAV conference – approx. 30 participants.
Co-organized by N. Jansen.
- 2016** **SynCoP 2016, 3rd International Workshop on Synthesis of Complex Parameters**, Eindhoven, The Netherlands.
Satellite event of ETAPS conferences – approx. 30 participants.
Co-organisateur by J. Srba (Aalborg University).
- 2015** **SynCoP 2015, 2nd International Workshop on Synthesis of Complex Parameters**, Londres, UK.
Satellite event of ETAPS conferences – approx. 30 participants.
Member of the organizing committee.
- 2014** **MOVEP'14, 11th summer school on Modelling and Verification of Parallel Processes**, Nantes, France.
CNRS Summer school – approx. 70 participants of more than 15 nationalities.
Co-organized by D. Lime (Ecole Centrale de Nantes).

Steering/Program committees

Beside being a reviewer for more than 20 conferences (LICS, CAV, TACAS, QEST, FORMATS, TIME, VMCAI...) and international journals (TCS, JSS, PEVA, JACM...), I have participated in the following steering and program committees.

- 2020** **SynCoP 2020, 7th International Workshop on Synthesis of Complex Parameters**, Dublin, Ireland.
Co-chair.

- 2019** **MSR 2019, Colloque sur la Modélisation des Systèmes Réactifs**, Angers, France.
Co-chair.

- 2017** **FEVER 2017, Workshop on Formal Approaches to Explainable VERification**, Heidelberg, Germany.
Co-chair.

- 2016** **SynCoP 2016, 3rd International Workshop on Synthesis of Complex Parameters**, Eindhoven, The Netherlands.
Member of the program committee.

- 2015** **SynCoP 2015, 2nd International Workshop on Synthesis of Complex Parameters**, Londres, UK.
Member of the program committee..

- 2014/–** **GT-Vérif, Work group of GdR-IM (CNRS)**
Member of the steering committee.

- 2014** **QASA, 3rd International Workshop on Quantitative Aspects in Security Assurance**, Wroclow, Poland.
Member of the program committee.

- 2013** **SMC'13, 1st Workshop on Statistical Model Checking**, Rennes, France.
Membre of the program committee.

Projects

Beside the following projects, which have been funded, I have been submitting (without success until now) several types of projects over the years : French ANR and CNRS projects and a RISE EU project. A bilateral collaboration project with Alejandro Maass (CMM, Santiago, Chile) has been recently submitted and is under investigation at the moment.

- 2019/2020** **VENUS** – *Verification of Natural Uncertain Systems* – Interdisciplinary CNRS project.
Amount : 10 K€. Partners : Université de Nantes, Sorbonne Université, ENS Cachan, ENS Paris.
Principal Investigator.
- 2016/2020** *Industrial collaboration project with GFI*
Amount : 52.5 K€. Partners : GFI, Université de Nantes.
Co-head : P. Leray (Université de Nantes)
- 2016/2020** *Industrial collaboration project with PIXIEL*
Amount : 45 K€. Partners : PIXIEL, Université de Nantes.
Co-head : C. Attiogbe (Université de Nantes)
- 2016/2017** **MEGALODOM** – *MarinE Biogeochemistry : Advancing the Link between Data science, Observations, and Models* – DEFI MASTODONS project
Amount : 80 K€. 11 French partners, 8 international partners.
Participant
- 2016/2017** **CoPaS** – *Constraints for Parametric Systems* – ATLANSTIC 2020 Starting grant
Amount : 7,5 K€.
Principal Investigator.
- 2014/2019** **PACS** – *Parametric Analyses of Concurrent Systems* – ANR project 14-CE28-0002.
Amount : 450 K€ (90 K€ for LINA). Partners : LIPN, LIAFA, IRCCyN, LINA.
Local PI for LINA.
Head of two Work Packages.



Scientific Expertise

- 2020 Université de Nantes - Jury - *Ph.D. Defense of Dimitri Antakly.*
- 2020 Université de Nantes - Jury - *Ph.D. Defense of Bao Ran.*
- 2019 Université de Nantes/LS2N - *Recruitment committee for two permanent positions (MCF 4515 and 4516).*
- 2018 Université de Nantes/ONERA - Jury - *Ph.D. Defense of Romain Rincé.*
- 2017 Saarland University - *Reviewer - Ph.D. Defense of Vahid Hashemi.*
- 2017 Université de Nantes - Jury - *Ph.D. Defense of Anicet Bart.*
- 2017 Université de Nantes - Jury - *Ph.D. Defense of Mohamed Amine Aouadhi.*
- 2016 IUT de Nantes - *Recruitment committee for a permanent position (PRAG 1679).*
- 2015 ANRT - *Scientific expertise of CIFRE applications.*