

M. Lionel RIEG
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Education

- 2010-2014** **PhD** under the supervision of Mr Alexandre MIQUEL (Plume team)
On Forcing and Classical Realizability
Laboratoire de l'Informatique du Parallélisme, ENS de Lyon, France
Defended on June, 17th 2014
Jury: Thierry COQUANT (reviewer) Alexandre MIQUEL (advisor)
 Martin HYLAND (president) Laurent RÉGNIER (reviewer)
 Olivier LAURENT (examinator)
- 2009-2010** **Master of Science** in Computer Science
MPRI, Université Paris 7 – Denis Diderot, France
- 2008-2009** **“Agrégation” in Mathematics** (highest teaching diploma), Computer Science option
ENS de Lyon, France
- 2007-2008** **1st year of Master of Science** in Computer Science
ENS de Lyon, France (first semester)
University of Western Ontario, London ON, Canada (second semester)

Work experience

- 2016-now** Post-Doc at **Yale University**, in the FLINT group
- 2014-2016** Post-Doc (full-time) at the **Collège de France**
Leading Professor: Mr Gérard Berry, chaire Algorithmes, Machines, Langages
- 2013-2014** ATER (teaching assistant) at the **ENSIIE**, an engineering school in Évry (south of Paris)
- 2010** Graduation internship, with Alexandre MIQUEL
Extracting Herbrand trees in classical realizability
Laboratoire de l'Informatique du Parallélisme, ENS de Lyon, France

Research interests

- Classical Curry-Howard correspondence, classical realizability
 ↪ program extraction, computational interpretation of logical translations (including forcing)
 ↪ formalization of classical realizability inside the Coq proof assistant
- Formal proofs on robots networks (with P. COURTIEU, S. TIXEUIL, X. URBAIN)
 ↪ algorithm correctness and impossibility
- Certified compilers for synchronous languages:
 ↪ from Esterel to digital circuits (with G. BERRY)
 ↪ from Lustre to C (with T. BOURKE, L. BRUN, P.-É. DAGAND, M. POUZET)
- Formal proofs about real-time for CertiKOS, a verified concurrent OS kernel (with M. LIU, Z. SHAO)

Teaching (over 500h)

My teaching duties were mostly practice session, although I also did some lectures.
Whenever necessary, I created exercise sheets with full correction, available on my web page.

2013-2016	270h	Teaching at the ENSIIE (3 rd and 4 th years of university) 3 rd year: Imperative Programming, Functional Programming, Advanced Programming, Compilation, Mathematical Optimization, Computer Science Projet, Mathematical Projet, Logic 4 th year: Software Validation and Verification, Formal Languages and Systems, Models of Computation
2010-2013	190h	ENS de Lyon and UCBL (Lyon 1), 1 st to 4 th year of university 1 st year: Introduction to Computer Science, Individual Mentoring (math) 2 nd /3 rd year: Introduction to Networks and Databases, Programming II 4 th year: Proofs on Computers, Performance Evaluation
2008-2009	50h	Lycée du Parc, Lyon (2 nd year of university) Practice session in the Computer Science option of “classe préparatoire” MP

Research productions

Journals (3)

Synchronous Gathering without Multiplicity Detection: a Certified Algorithm Theory of Comp. Sys. 2017
Thibault BALABONSKI, Amélie DELGA, Lionel RIEG, Sébastien TIXEUIL, Xavier URBAIN

Impossibility of gathering, a certification Information Processing Letters, 115 (3), 447–452
Pierre COURTIEU, Lionel RIEG, Sébastien TIXEUIL, Xavier URBAIN

Formal Methods for Mobile Robots: Current Results and Open Problems
International Journal of Informatics Society, 7 (3), 101–114
B. BÉRARD, P. COURTIEU, L. MILLET, M. POTOP-BUTUCARU, L. RIEG, N. SZNAJDER, S. TIXEUIL, X. URBAIN

International Conferences (7)

A Foundational Framework for Certified Impossibility Results with Mobile Robots on Graphs ICDCN 2018
Thibault BALABONSKI, Robin PELLE, Lionel RIEG, Sébastien TIXEUIL

Certified Gathering of Oblivious Mobile Robots: Survey of Recent Results and Open Problems FMICS-AVoCS 2017
Thibault BALABONSKI, Pierre COURTIEU, Lionel RIEG, Sébastien TIXEUIL, Xavier URBAIN

A Formally Verified Compiler for Lustre PLDI 2017
Timothy BOURKE, Lélio BRUN, Pierre-Évariste DAGAND, Xavier LEROY, Marc POUZET, Lionel RIEG

Synchronous Gathering without Multiplicity Detection: a Certified Algorithm SSS 2016
Thibault BALABONSKI, Amélie DELGA, Lionel RIEG, Sébastien TIXEUIL, Xavier URBAIN

Certified Universal Gathering in R^2 for Oblivious Mobile Robots DISC 2016 + BA PODC 2016
Pierre COURTIEU, Lionel RIEG, Sébastien TIXEUIL, Xavier URBAIN

Extracting Herbrand trees in classical realizability using forcing CSL 2013, 597–614
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Good friends are hard to find! TIME 2008, 32–40
Thomas BRIHAYE, Mohamed GHANNEM, Nicolas MARKEY, Lionel RIEG

Formal Coq library (3)

ClassicalRealizability 2014

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Package `coq-classical-realizability` on <https://coq.inria.fr/opam/www/>

MMultisets 2015

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Available as part of the Pactole project (<http://pactole.lri.fr/>)

Pactole 2014-now

Thibault BALABONSKI, Pierre COURTIEU, Lionel RIEG, Xavier URBAIN

<http://pactole.lri.fr/>