

MATTHIEU SOZEAU
59 rue de la Chine
75020 Paris, France

Phone : (+33) 6 88 36 74 27
matthieu.sozeau@inria.fr
<http://www.irif.fr/~sozeau>

Researcher at Inria Paris, project-team pi.r² and IRIF.
Born February 22nd 1982 in Massy.
French nationality.

Research interests

- Type theory, dependently-typed programming and constructive logic
- Interactive proof assistants: coordinator of the Coq development team
- Links between category theory and type theory

Projects and Grants

- ERC Starting Grant [CoqHoTT](#) led by Nicolas Tabareau (Inria Rennes, École des Mines de Nantes), 2015-2020. Collaborator.

Books

- The Univalent Foundations Program. *Homotopy Type Theory: Univalent Foundations for Mathematics*. Institute for Advanced Study, 2013

Journals

- Beta Ziliani and Matthieu Sozeau. *A Comprehensive Guide to a New Unifier for CIC Including Universe Polymorphism and Overloading*. *Journal of Functional Programming*, 27:e10, 2017
- Ana Bove, Alexander Krauss, and Matthieu Sozeau. *Partiality and recursion in interactive theorem provers – an overview*. *Mathematical Structures in Computer Science*, FirstView:1–51, 2 2015. ISSN 1469-8072
- Matthieu Sozeau. *A New Look at Generalized Rewriting in Type Theory*. *Journal of Formalized Reasoning*, 2(1):41–62, December 2009a

International Conferences

- Gaëtan Gilbert, Jesper Cockx, Matthieu Sozeau, and Nicolas Tabareau. [Definitional Proof-Irrelevance without K](#). In *46th ACM SIGPLAN Symposium on Principles of Programming Languages (POPL 2019)*, POPL, Lisbon, Portugal, January 2019
-
- Amin Timany and Matthieu Sozeau. [Cumulative Inductive Types In Coq](#). In Hélène Kirchner, editor, *3rd International Conference on Formal Structures for Computation and Deduction, FSCD 2018, July 9-12, 2018, Oxford, UK*, volume 108 of *LIPICs*, pages 29:1–29:16. Schloss Dagstuhl - Leibniz-Zentrum fuer Informatik, 2018

- Abhishek Anand, Simon Boulier, Cyril Cohen, Matthieu Sozeau, and Nicolas Tabareau. [Towards Certified Meta-Programming with Typed Template-Coq](#). In Jeremy Avigad and Assia Mahboubi, editors, *ITP 2018*, volume 10895 of *Lecture Notes in Computer Science*, pages 20–39. Springer, 2018
- Bauer, A. and Gross, J. and LeFanu Lumsdaine, P. and Shulman, M. and Sozeau, M. and Spitters, B. [The HoTT Library: A formalization of homotopy type theory in Coq](#). *ArXiv e-prints*, October 2016. Accepted at CPP'17
- Guilhem Jaber, Gabriel Lewertowski, Pierre-Marie Pédrot, Matthieu Sozeau, and Nicolas Tabareau. [The Definitional Side of the Forcing](#). In Martin Grohe, Eric Koskinen, and Natarajan Shankar, editors, *Proceedings of the 31st Annual ACM/IEEE Symposium on Logic in Computer Science, LICS '16, New York, NY, USA, July 5-8, 2016*, pages 367–376. ACM, 2016
- Beta Ziliani and Matthieu Sozeau. [A Unification Algorithm for Coq featuring Universe Polymorphism and Overloading](#). In *ACM SIGPLAN International Conference on Functional Programming 2015*, 2015
- Matthieu Sozeau and Nicolas Tabareau. [Universe Polymorphism in Coq](#). In Gerwin Klein and Ruben Gamboa, editors, *Interactive Theorem Proving - 5th International Conference, ITP 2014, Held as Part of the Vienna Summer of Logic, VSL 2014, Vienna, Austria, July 14-17, 2014. Proceedings*, volume 8558 of *Lecture Notes in Computer Science*, pages 499–514. Springer, 2014
- Guilhem Jaber, Nicolas Tabareau, and Matthieu Sozeau. [Extending Type Theory with Forcing](#). In *Proceedings of LICS'12*, Dubrovnik, Croatie, June 2012
- Matthieu Sozeau. [Equations: A Dependent Pattern-Matching Compiler](#). In *First International Conference on Interactive Theorem Proving*. Springer, July 2010b
- Matthieu Sozeau and Nicolas Oury. [First-Class Type Classes](#). In César Muñoz Otmane Ait Mohamed and Sofiène Tahar, editors, *TPHOLs*, volume 5170 of *LNCS*, pages 278–293. Springer, August 2008 (18/40)
- Matthieu Sozeau. [Program-ing Finger Trees in Coq](#). In *ICFP'07*, pages 13–24, Freiburg, Germany, 2007a. ACM Press (26/103)
- Matthieu Sozeau. [Subset Coercions in Coq](#). In Thorsten Altenkirch and Conor McBride, editors, *TYPES'06*, volume 4502 of *Lecture Notes in Computer Science*, pages 237–252. Springer, 2007c (17/29)

International Workshops

- Matthieu Sozeau. [Nested, Well-Founded and Mutual recursion in Equations](#). Talk given at the EUTypes 2018 Working Meeting, January 2018a
- Simon Boulier, Matthieu Sozeau, Nicolas Tabareau, and Abhishek Anand. [Typed Template Coq](#). In *CoqPL'18*, Los Angeles, CA, USA, January 2018
- Abhishek Anand, Andrew Appel, Greg Morrisett, Zoe Paraskevopoulou, Randy Pollack, Olivier Savary Belanger, Matthieu Sozeau, and Matthew Weaver. [CertiCoq: A verified compiler for Coq](#). In *CoqPL*, Paris, France, 2017
- Cyprien Mangin and Matthieu Sozeau. [Equations for Hereditary Substitution in Leivant's Predicative System F: A Case Study](#). In *Proceedings Tenth International Workshop on Logical Frameworks and Meta Languages: Theory and Practice*, volume 185 of *EPTCS*, May 2015. LFMTTP'15
- Matthieu Sozeau. [A New Look at Generalized Rewriting in Type Theory](#). *1st Coq Workshop proceedings*, August 2009b

National Conferences

- Matthieu Sozeau and Nicolas Oury. [Classes de types de première classe](#). In *Journées Nationales du GDR GPL*, Toulouse, France, January 2009

Theses

- Matthieu Sozeau. [Un environnement pour la programmation avec types dépendants](#). PhD thesis, Université Paris 11, Orsay, France, December 2008e
- Matthieu Sozeau. [Coercion par prédicats en Coq](#). Master's thesis, Université Paris VII, LRI, Orsay, 2005

Research Reports

- Amin Timany and Matthieu Sozeau. [Consistency of the Predicative Calculus of Cumulative Inductive Constructions \(pCuIC\)](#). Research Report RR-9105, KU Leuven, Belgium ; Inria Paris, October 2017

Software

- Matthieu Sozeau and Cyprien Mangin. [Equations 1.0 for Coq 8.7](#), December 2017
- The Coq Development Team. [The Coq Proof Assistant, version 8.8.0](#), Apr 2018
- The Coq Development Team. [The Coq Proof Assistant, version 8.7.1](#), December 2017

Manuals and Tutorials

- Pierre Castéran and Matthieu Sozeau. [A Gentle Introduction to Type Classes and Rewriting in Coq](#), May 2012
- Matthieu Sozeau. [Coq Reference Manual](#), chapter Type Classes. Inria, 2008–2018a
- Matthieu Sozeau. [Coq Reference Manual](#), chapter User defined equalities and relations. Inria, 2008–2018b
- Matthieu Sozeau. [Coq Reference Manual](#), chapter Program. Inria, 2008–2018c

Invited Talks and Seminars

- Matthieu Sozeau. [The Predicative, Polymorphic, Cumulative Calculus of Inductive Constructions and its implementation](#). Invited talk at the TYPES 2018 conference, Braga, Portugal, June 20th 2018b
- Matthieu Sozeau, Maxime Dénès, and Yves Bertot. [Coq dev talk](#). In *CoqPL'18*, Los Angeles, CA, USA, January 2018
- Matthieu Sozeau. [Coq 8.6](#). Talk at the Coq Workshop in Nancy, France, August 26th 2016

- Matthieu Sozeau. [Forcing Translations in Type Theory](#). Invited talk at the Categorical Logic and Univalent Foundations workshop, Leeds, UK, July 28th 2016c
- Matthieu Sozeau. [Coq for HoTT](#). Invited talk at the International Conference on Mathematical Software in Berlin, Germany, July 14th 2016a
- Maxime Dénès, Matthieu Sozeau. [Coq 8.6](#). Talk at the DeepSpec Kickoff Workshop in Princeton, NJ, USA, June 8th 2016
- Matthieu Sozeau Maxime Dénès. [Coq 8.5 at work](#). Talk given at the second CoqPL Workshop, January 2016
- Matthieu Sozeau. [Equations: a function definition toolbox for Coq](#). Talk at Dagstuhl, March 2016b
- Matthieu Sozeau. [Coq – Recent History](#). SIGPLAN Programming Language Software Award 2013 talk, at POPL'14, San Diego, January 23rd 2014
- Matthieu Sozeau. [Coq with Classes](#). Lecture at the "Advanced Martial Arts in Coq" course at University of Pennsylvania, October 2012a
- Matthieu Sozeau. [Coq with Classes](#). Talk given at the IAS seminar in Princeton, NJ, October 2012b
- Matthieu Sozeau. [Equations: A Dependent Pattern-Matching Suite](#). Talk given at the Institute of Cybernetics, Tallinn, Estonia, May 2012d
- Matthieu Sozeau. [Coq with Classes](#). Lecture notes for a course given at JFLA'12 in Carnac, France, February 2012c
- Matthieu Sozeau. [Coq with Classes](#). Talk given at the PLAS seminar in Canterbury - UK, November 2011a
- Matthieu Sozeau. [Coq with Classes](#). Talk given at the IMDEA seminar in Madrid - Spain, October 2011b
- Matthieu Sozeau. [Coq with Classes](#). Talk given at the PPS days in Trouville - France, September 2011c
- Matthieu Sozeau. [Equations: A Dependent Pattern-Matching Suite](#). Talk given at the DTP meeting in Shonan - Japan, September 2011e
- Matthieu Sozeau. [Equations: A Dependent Pattern-Matching Compiler](#). Talk given at University of Chalmers - Gothenburg, January 2011d
- Matthieu Sozeau. [Equations: A Dependent Pattern-Matching Compiler](#). Talk given at the University of Pennsylvania PLClub, September 2010c
- Matthieu Sozeau. [Elaborations in Type Theory](#). Invited Talk at DTP'10 - Edinburgh, UK, July 2010a
- Matthieu Sozeau. [Equations: A Dependent Pattern-Matching Compiler](#). Talk given at PPS - Université Paris 7, January 2010d
- Matthieu Sozeau. [Programming with Dependent Types in Coq](#). PPS Seminar, 26th February 2009e
- Matthieu Sozeau. [An Environment for Proving and Programming](#). LIFO Seminar, 26th January 2009d
- Matthieu Sozeau. [An Environment for Programming with Dependent Types](#). ICIS Seminar, 20th January 2009c
- Matthieu Sozeau. [First-Class Type Classes](#). Talk given at the Gallium seminar, 3rd November 2008a
- Matthieu Sozeau. [Program-ing in Coq](#). Talk given at the Foundations of Programming seminar, 15th February 2008b
- Matthieu Sozeau. [Program-ing in Coq](#). Talk given at Harvard, 23th january 2008c

- Matthieu Sozeau. [Program-ing in Coq](#). Talk given at Portland State University, 16th january 2008d
- Matthieu Sozeau. [Program-ing in Coq](#). Talk given at the Gallium seminar, 16th march 2007b

Community service

- Co-organizer and chairman of the first [CoqPL](#) workshop, 2015.
- Co-organizer and co-chairman of [TYPES'14](#), co-editor of the post-proceedings.
- Co-organizer and co-chairman of the [Coq Workshop 2018](#).
- Co-organizer and PC member of [DTP'11](#).
- PC member: [TLDF'10](#), [ICFP'10](#), [MSFP'12](#), [PLPV'12](#), [DTP'13](#), [JFLA'13](#), [JFLA'14](#), [TLCA'15](#), [CoqPL'16](#), [FSCD'16](#), [ITP'16](#), [ITP'18](#), [LSFA'18](#), [ICFP'19 \(ERC\)](#).

Teaching

2012-2018

- Proof assistants
Parisian Master of Research in Computer Science (MPRI)

2005-2008

- Teaching assistant at Université Paris Sud XI
Licence

Jobs and internships

Since October 2010	Junior Researcher. INRIA Paris, pi.r2 team.
March 2009 -	Postdoctoral Fellow. Harvard University.
September 2010	
September to December 2008	Temporary researcher at CNRS. Paris XI University.
2005-2008	PhD Thesis funded by the french government. Paris XI University.
2005-2008	Teaching assistant position in Computer Science. Paris XI University.
March to September 2005	Master internship on the development of an environment for programming with dependent types. With CHRISTINE PAULIN-MOHRING. Paris XI University.
July / August 2004	Internship on optimisation of pattern-matching in CDuce. With GIUSEPPE CASTAGNA. Computer Science Laboratory of ENS Ulm.
April to June 2004	Internship on graph triangulation. With PASCAL BERTHOMÉ. Laboratoire de recherche en informatique, Paris XI University.
Summer 2003	Optimisation of a real-time video process. With PIERRE GAROCHE. Laboratoire de physique des solides, Paris XI University.
Summer 2002	Update and maintenance of a product management software. Thalès.
September 2000	Interim work. Manpower.

Education

2009-10	Postdoctoral studies in the Ynot group. <i>Working with Greg Morrisett and his team on Coq and Ynot.</i> Harvard University.
2005-08	PhD in Computer Science. <i>With honors.</i> Paris XI University.
2004-05	Master of research in Computer Science. <i>Grade A.</i> Paris VII University - Denis Diderot.
2003-04	”Maitrise” of Computer Science. <i>Grade B.</i> Paris XI University.
2002-03	Licence in Computer Science. <i>Grade B.</i> Paris XI University.
2000-02	University Diploma of Technology in Computer Science. <i>Grade B.</i> Orsay’s Institute of Technology.

Development experience

- Major contributor to the Coq project written in OCaml
- Web development using CGIs, LAMP, XML/XSLT/XSP's, Java applets, Javascript
- C, C++ and assembly programming, optimization for x86
- OpenGL programming in C and OCaml

Technical Knowledge

- Programming languages: OCaml, Coq, Haskell, C, asm x86, C++, Java, Python, Ruby
- W3C Markup languages: XML, XHTML, XPath, XSLT, CSS
- Program certification and theorem proving in the Coq proof-assistant
- Administration under GNU/Linux of Apache, Samba, Squid, CUPS, qmail, courier, iptables, nfs and nis

Open Source software

- Yaxi, an XML/XPath/XSLT library for OCaml
- Hamilcar, an XML application server in OCaml
- Former developer for [Gentoo Linux](#) (OCaml, Coq maintainer), [XMMS](#) (ALSA plugin), [Dia](#) (UML, XSLT export), [Apache Cocoon](#) (i18n, CVS repository viewer).
- Various toy projects: webapp server in Ruby, distributed file index in Python, networked coinche (french card game) in OCaml, Bomberman in C++/OpenGL, Genealogy engine in Boost/C++.