

Xavier Leroy

Liste de publications

La plupart des publications sont disponibles en texte intégral sur [l'archive ouverte HAL](#) et sur les [pages Web personnelles de Xavier Leroy](#).

Ouvrages

Xavier Leroy et Pierre Weis : *Manuel de référence du langage Caml*. InterÉditions, 1993.

Pierre Weis et Xavier Leroy : *Le langage Caml*. Dunod, 2 édition, 1999.

Xavier Leroy : *Le logiciel, entre l'esprit et la matière*, volume 284 de *Leçons inaugurales du Collège de France*. Fayard, avril 2019.

Xavier Leroy : *Le logiciel, entre l'esprit et la matière*, volume 284 de *Leçons inaugurales du Collège de France*. OpenEdition Books, décembre 2019.

Articles dans des revues

Xavier Leroy et Michel Mauny : Dynamics in ML. *Journal of Functional Programming*, 3(4):431–463, 1993.

Xavier Leroy : A syntactic theory of type generativity and sharing. *Journal of Functional Programming*, 6(5):667–698, 1996.

Xavier Leroy et François Pessaux : Type-based analysis of uncaught exceptions. *ACM Transactions on Programming Languages and Systems*, 22(2):340–377, 2000.

Xavier Leroy : A modular module system. *Journal of Functional Programming*, 10(3):269–303, 2000.

Xavier Leroy : Bytecode verification on Java smart card. *Software – Practice & Experience*, 32(4):319–340, 2002.

Xavier Leroy : Java bytecode verification: algorithms and formalizations. *Journal of Automated Reasoning*, 30(3–4):235–269, 2003.

Tom Hirschowitz et Xavier Leroy : Mixin modules in a call-by-value setting. *ACM Transactions on Programming Languages and Systems*, 27(5):857–881, 2005.

Laurence Rideau, Bernard P. Serpette et Xavier Leroy : Tilting at windmills with Coq: formal verification of a compilation algorithm for parallel moves. *Journal of Automated Reasoning*, 40(4): 307–326, 2008.

Xavier Leroy et Sandrine Blazy : Formal verification of a C-like memory model and its uses for verifying program transformations. *Journal of Automated Reasoning*, 41(1): 1–31, 2008.

Xavier Leroy et Hervé Grall : Coinductive big-step operational semantics. *Information and Computation*, 207(2): 284–304, 2009.

Xavier Leroy : A formally verified compiler back-end. *Journal of Automated Reasoning*, 43(4): 363–446, 2009.

Sandrine Blazy et Xavier Leroy : Mechanized semantics for the Clight subset of the C language. *Journal of Automated Reasoning*, 43(3): 263–288, 2009.

Tom Hirschowitz, Xavier Leroy et J. B. Wells : Compilation of extended recursion in call-by-value functional languages. *Higher-Order and Symbolic Computation*, 22(1):3–66, 2009.

Zaynah Dargaye et Xavier Leroy : A verified framework for higher-order uncurrying optimizations. *Higher-Order and Symbolic Computation*, 22(3):199–231, 2009.

Xavier Leroy : Formal verification of a realistic compiler. *Communications of the ACM*, 52(7): 107–115, 2009.

Andrew W. Appel, Robert Dockins et Xavier Leroy : A list-machine benchmark for mechanized metatheory. *Journal of Automated Reasoning*, 49(3): 453–491, 2012.

Sylvie Boldo, Jacques-Henri Jourdan, Xavier Leroy et Guillaume Melquiond : Verified compilation of floating-point computations. *Journal of Automated Reasoning*, 54(2): 135–163, 2015.

Chapitres d'ouvrages collectifs

Xavier Leroy et François Rouaix : Security properties of typed applets. In J. Vitek et C. Jensen, éditeurs : *Secure Internet Programming – Security issues for Mobile and Distributed Objects*, numéro 1603 de LNCS, pages 147–182. Springer, 1999.

Xavier Leroy : Mechanized semantics. In J. Esparza, B. Spanfelner et O. Grumberg, éditeurs : *Logics and languages for reliability and security*, numéro 25 de NATO Science for Peace and Security Series D: Information and Communication Security, pages 195–224. IOS Press, 2010.

Xavier Leroy, Andrew W. Appel, Sandrine Blazy et Gordon Stewart : The CompCert memory model. In Andrew W. Appel, éditeur : *Program Logics for Certified Compilers*, pages 237–271. Cambridge University Press, mars 2014.

Articles dans des congrès de premier plan

Xavier Leroy et Pierre Weis : Polymorphic type inference and assignment. *In POPL 1991: 18th symposium Principles of Programming Languages*, pages 291–302. ACM, 1991.

Xavier Leroy : Unboxed objects and polymorphic typing. *In POPL 1992: 19th symposium Principles of Programming Languages*, pages 177–188. ACM, 1992.

Xavier Leroy : Polymorphism by name for references and continuations. *In POPL 1993: 20th symposium Principles of Programming Languages*, pages 220–231. ACM, 1993.

Damien Doligez et Xavier Leroy : A concurrent, generational garbage collector for a multithreaded implementation of ML. *In POPL 1993: 20th symposium Principles of Programming Languages*, pages 113–123. ACM, 1993.

Xavier Leroy : Manifest types, modules, and separate compilation. *In POPL 1994: 21st symposium Principles of Programming Languages*, pages 109–122. ACM, 1994.

Xavier Leroy : Applicative functors and fully transparent higher-order modules. *In POPL 1995: 22nd symposium Principles of Programming Languages*, pages 142–153. ACM, 1995.

Xavier Leroy et François Rouaix : Security properties of typed applets. *In POPL 1998: 25th symposium Principles of Programming Languages*, pages 391–403. ACM, 1998.

François Pessaux et Xavier Leroy : Type-based analysis of uncaught exceptions. *In POPL 1999: 26th symposium Principles of Programming Languages*, pages 276–290. ACM, 1999.

Xavier Leroy : Java bytecode verification: an overview. *In CAV 2001: Computer Aided Verification*, numéro 2102 de LNCS, pages 265–285. Springer, 2001.

Tom Hirschowitz et Xavier Leroy : Mixin modules in a call-by-value setting. *In ESOP 2002: European Symposium on Programming*, numéro 2305 de LNCS, pages 6–20. Springer, 2002.

Benjamin Grégoire et Xavier Leroy : A compiled implementation of strong reduction. *In ICFP 2002: International Conference on Functional Programming*, pages 235–246. ACM, 2002.

Tom Hirschowitz, Xavier Leroy et J. B. Wells : Call-by-value mixin modules: reduction semantics, side effects, types. *In ESOP 2004: European Symposium on Programming*, numéro 2986 de LNCS, pages 64–78. Springer, 2004.

Xavier Leroy : Formal certification of a compiler back-end, or: programming a compiler with a proof assistant. *In POPL 2006: 33rd symposium Principles of Programming Languages*, pages 42–54. ACM, 2006.

Xavier Leroy : Coinductive big-step operational semantics. *In ESOP 2006: European Symposium on Programming*, numéro 3924 de LNCS, pages 54–68. Springer, 2006.

Jean-Baptiste Tristan et Xavier Leroy : Formal verification of translation validators: A case study on instruction scheduling optimizations. *In POPL 2008: 35th symposium Principles of Programming Languages*, pages 17–27. ACM, 2008.

Jean-Baptiste Tristan et Xavier Leroy : Verified validation of Lazy Code Motion. *In PLDI 2009: Programming Language Design and Implementation*, pages 316–326. ACM, 2009.

Jean-Baptiste Tristan et Xavier Leroy : A simple, verified validator for software pipelining. *In POPL 2010: 37th symposium Principles of Programming Languages*, pages 83–92. ACM, 2010.

Tahina Ramananandro, Gabriel Dos Reis et Xavier Leroy : Formal verification of object layout for C++ multiple inheritance. *In POPL 2011: 38th symposium Principles of Programming Languages*, pages 67–79. ACM, 2011.

Tahina Ramananandro, Gabriel Dos Reis et Xavier Leroy : A mechanized semantics for C++ object construction and destruction, with applications to resource management. *In POPL 2012: 39th symposium Principles of Programming Languages*, pages 521–532. ACM, 2012.

Jacques-Henri Jourdan, François Pottier et Xavier Leroy : Validating LR(1) parsers. *In ESOP 2012: Programming Languages and Systems, 21st European Symposium on Programming*, numéro 7211 de LNCS, pages 397–416. Springer, 2012.

Sylvie Boldo, Jacques-Henri Jourdan, Xavier Leroy et Guillaume Melquiond : A formally-verified C compiler supporting floating-point arithmetic. *In ARITH 2013: 21st International Symposium on Computer Arithmetic*, pages 107–115. IEEE Computer Society, 2013.

Jacques-Henri Jourdan, Vincent Laporte, Sandrine Blazy, Xavier Leroy et David Pichardie : A formally-verified C static analyzer. *In POPL 2015: 42nd symposium Principles of Programming Languages*, pages 247–259. ACM, 2015.

Timothy Bourke, Lélío Brun, Pierre Évariste Dagand, Xavier Leroy, Marc Pouzet et Lionel Rieg : A formally verified compiler for Lustre. *In PLDI 2017: Programming Language Design and Implementation*, pages 586–601. ACM, 2017.

Articles dans d'autres congrès internationaux

Xavier Leroy : Efficient data representation in polymorphic languages. *In PLILP 1990: Programming Language Implementation and Logic Programming*, numéro 456 de LNCS. Springer, 1990.

Luca Cardelli et Xavier Leroy : Abstract types and the dot notation. *In Proceedings IFIP TC2 working conference on programming concepts and methods*, pages 479–504. North-Holland, 1990.

Xavier Leroy et Michel Mauny : Dynamics in ML. *In FPCA 1991: Functional Programming Languages and Computer Architecture*, numéro 523 de LNCS, pages 406–426. Springer, 1991.

Xavier Leroy : An overview of types in compilation. *In TIC 1998: workshop Types in Compilation*, numéro 1473 de LNCS, pages 1–8. Springer, mars 1998.

Xavier Leroy : On-card bytecode verification for Java Card. *In E-SMART 2001: Smart card programming and security*, numéro 2140 de LNCS, pages 150–164. Springer, 2001.

Cristiano Calcagno, Walid Taha, Liwen Huang et Xavier Leroy : Implementing multi-stage languages using ASTs, gensym, and reflection. *In GPCE 2003: Generative Programming and Component Engineering*, numéro 2830 de LNCS, pages 57–76. Springer, 2003.

Tom Hirschowitz, Xavier Leroy et J. B. Wells : Compilation of extended recursion in call-by-value functional languages. *In PPDP 2003: International Conference on Principles and Practice of Declarative Programming*, pages 160–171. ACM, 2003.

Serge Abiteboul, Ciarán Bryce, Roberto Di Cosmo, Klaus R. Dittrich, Stéphane Fermigier, Stéphane Laurière, Frédéric Lepied, Xavier Leroy, Tova Milo, Eleonora Panto, Radu Pop, Assaf Sagi, Yotam Shtossel, Florent Villard et Boris Vrdoljak : EDOS: Environment for the Development and Distribution of Open Source Software. *In OSS 2005: International Conference on Open Source Systems*, 2005.

Sandrine Blazy et Xavier Leroy : Formal verification of a memory model for C-like imperative languages. *In ICFEM 2005: International Conference on Formal Engineering Methods*, numéro 3785 de LNCS, pages 280–299. Springer, 2005.

Yves Bertot, Benjamin Grégoire et Xavier Leroy : A structured approach to proving compiler optimizations based on dataflow analysis. *In TYPES 2004: Types for Proofs and Programs*, numéro 3839 de LNCS, pages 66–81. Springer, 2006.

Roberto Di Cosmo, Berke Durak, Xavier Leroy, Fabio Mancinelli et Jérôme Vouillon : Maintaining large software distributions: new challenges from the FOSS era. *In FRCSS 2006: Future Research Challenges for Software and Services*, numéro 12 de EASST Newsletter, pages 7–20, 2006.

Sandrine Blazy, Zaynah Dargaye et Xavier Leroy : Formal verification of a C compiler front-end. *In FM 2006: Int. Symp. on Formal Methods*, numéro 4085 de LNCS, pages 460–475. Springer, 2006.

Fabio Mancinelli, Roberto Di Cosmo, Jérôme Vouillon, Jaap Boender, Berke Durak, Xavier Leroy et Ralf Treinen : Managing the complexity of large free and open source

package-based software distributions. *In ASE 2006: 21st Int. Conf. on Automated Software Engineering*, pages 199–208. IEEE Computer Society, 2006.

Zaynah Dargaye et Xavier Leroy : Mechanized verification of CPS transformations. *In LPAR 2007: Logic for Programming, Artificial Intelligence and Reasoning*, numéro 4790 de LNAI, pages 211–225. Springer, 2007.

Silvain Rideau et Xavier Leroy : Validating register allocation and spilling. *In CC 2010: Compiler Construction*, numéro 6011 de LNCS, pages 224–243. Springer, 2010.

Ricardo Bedin França, Sandrine Blazy, Denis Favre-Felix, Xavier Leroy, Marc Pantel et Jean Souyris : Formally verified optimizing compilation in ACG-based flight control software. *In ERTS 2012: Embedded Real Time Software and Systems*, 2012.

Valentin Robert et Xavier Leroy : A formally-verified alias analysis. *In CPP 2012: Certified Programs and Proofs*, numéro 7679 de LNCS, pages 11–26. Springer, 2012.

Robbert Krebbers, Xavier Leroy et Freek Wiedijk : Formal C semantics: CompCert and the C standard. *In ITP 2014: Interactive Theorem Proving*, numéro 8558 de LNCS, pages 543–548. Springer, 2014.

Xavier Leroy, Sandrine Blazy, Daniel Kästner, Bernhard Schommer, Markus Pister et Christian Ferdinand : CompCert – a formally verified optimizing compiler. *In ERTS 2016: Embedded Real Time Software and Systems*. SEE, 2016.

Daniel Kästner, Ulrich Wünsche, Jörg Barrho, Marc Schlickling, Bernhard Schommer, Michael Schmidt, Christian Ferdinand, Xavier Leroy et Sandrine Blazy : CompCert: Practical experience on integrating and qualifying a formally verified optimizing compiler. *In ERTS 2018: Embedded Real Time Software and Systems*. SEE, janvier 2018.

Articles dans des congrès nationaux ou des ateliers

María-Virginia Aponte et Xavier Leroy : Llamado de procedimientos a distancia y abstracción de tipos. *In Proc. 20th CLEI PANEL latino-american computer science conference*, pages 1281–1292, 1994.

Xavier Leroy : Lessons learned from the translation of documentation from LaTeX to HTML. *In ERCIM/W4G Workshop on WWW Authoring and Integration Tools*, février 1995.

Xavier Leroy : Le système Caml Special Light: modules et compilation efficace en Caml. *In Actes des Journées Francophones des Langages Applicatifs*, pages 111–131. INRIA, janvier 1996.

Xavier Leroy : The effectiveness of type-based unboxing. *In TIC 1997: workshop Types in Compilation*. Technical report BCCS-97-03, Boston College, Computer Science Department, juin 1997.

Marco Danelutto, Roberto Di Cosmo, Xavier Leroy et Susanna Pelagatti : Parallel functional programming with skeletons: the OCamlP3L experiment. *In Proceedings ACM workshop on ML and its applications*. Cornell University, 1998.

Andrew W. Appel et Xavier Leroy : A list-machine benchmark for mechanized metatheory (extended abstract). *In LFMTTP 2006: Int. Workshop on Logical Frameworks and Meta-Languages*, numéro 174/5 de ENTCS, pages 95–108, 2007.

Ricardo Bedin França, Denis Favre-Felix, Xavier Leroy, Marc Pantel et Jean Souyris : Towards formally verified optimizing compilation in flight control software. *In PPES 2011: Predictability and Performance in Embedded Systems*, numéro 18 de OASICS, pages 59–68. Dagstuhl Publishing, 2011.

Daniel Kästner, Xavier Leroy, Sandrine Blazy, Bernhard Schommer, Michael Schmidt et Christian Ferdinand : Closing the gap – the formally verified optimizing compiler CompCert. *In SSS'17: Developments in System Safety Engineering: Proceedings of the Twenty-fifth Safety-critical Systems Symposium*, pages 163–180. CreateSpace, 2017.

Bernhard Schommer, Christoph Cullmann, Gernot Gebhard, Xavier Leroy, Michael Schmidt et Simon Wegener : Embedded program annotations for WCET analysis. *In WCET 2018: 18th International Workshop on Worst-Case Execution Time Analysis*, volume 63 de OASICS. Dagstuhl Publishing, juillet 2018.

Vulgarisation scientifique

Xavier Leroy : Comment faire confiance à un compilateur? *La Recherche*, 440, avril 2010.

Xavier Leroy : How I found a crash bug with hyperthreading in Intel's Skylake processors. *The Next Web*, juillet 2017.

Xavier Leroy : À la recherche du logiciel parfait. *Le Monde, blog Binaire*, novembre 2018.

Édition d'actes

Xavier Leroy et Atsushi Ohori, éditeurs. *Types in Compilation, Second International Workshop, TIC '98, Kyoto, Japan, March 25-27, 1998, Proceedings*, numéro 1473 de LNCS. Springer, 1998.

Neil D. Jones et Xavier Leroy, éditeurs. *Proceedings of the 31st ACM SIGPLAN-SIGACT Symposium on Principles of Programming Languages, POPL 2004, Venice, Italy, January 14-16, 2004*. ACM, 2004.

Nick Benton et Xavier Leroy, éditeurs. *ML 2005: Proceedings of the ACM SIGPLAN Workshop on ML*, numéro 148(2) de ENTCS, 2006.

Brevets

[1]

Xavier Leroy : Management protocol, method for verifying and transforming a downloaded programme fragment and corresponding systems / Protocole de gestion, procédé de vérification et de transformation d'un fragment de programme téléchargé et systèmes correspondants, décembre 2001.

[2]

Xavier Leroy, Patrice Hameau, Nicolas Regnault et Renaud Marlet : Control of data access by dynamically verifying legal references / Contrôle d'accès aux données par vérification dynamique des références licites, août 2005.

[3]

Dominique Bolignano, Xavier Leroy et Renaud Marlet : Method for controlling program execution integrity by verifying execution trace prints / Procédé de contrôle d'intégrité de programmes par vérification d'empreintes de traces d'exécution, avril 2006.