LÉO STEFANESCO

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Computer Laboratory, 15 JJ Thomson av, Cambridge, United Kingdom

EDUCATION AND EMPLOYMENT

Postdoc at the University of Cambridge *Jan. 2025 - now*
with Tobias Grosser, working on developping and applying formal methods to compilers.

Postdoc at the Max Planck Institute for Software Systems *Oct. 2021 - Dec. 2024*
with Viktor Vafeiadis, working on the interplay of weak memory and non-volatile memory.

ATER at the Collège de France with Xavier Leroy *2020 - 2021*

Université Paris Diderot / de Paris / Paris Cité *2017 - 2021*
PhD student at IRIF, supervised by Paul-André Melliès and co-supervised by Lars Birkedal
Title: Asynchronous and Relational Soundness Theorems for Concurrent Separation Logic

Internships (4th year at ENS Lyon) *2016 - 2017*

Université Paris Diderot *2015 - 2016*
Master (M2) in computer science at MPRI

École Normale Supérieure de Lyon *2013 - 2015*
L3 and M1 in computer science

TEACHING

Proof assistants, MPhil course University of Cambridge, 2025 (expected)
Co-lecturer with Dr Thomas Bauereiss, Michaelmas term.

MPhil thesis supervision, I am advising one student University of Cambridge, 2025

Teacher assistant (ATER) Collège de France, 2020-2021
I helped Xavier Leroy prepare his letures for one term.

Teaching assistant Université de Paris, 2017-2020
I was teaching assistant for 6 courses during my PhD.

PUBLICATIONS AND DRAFTS

Note: "with" denotes alphabetical ordering of authors, asterisks denote explicit shared authorship.

Certified Decision Procedures for Width-Independent Bitvector Predicates in Interactive Theorem Provers by Siddarth Bhat*, Leo Stefanesco*, Chris Hughes, and Tobias Grosser, accepted for publication at OOPSLA 2025.

Interactive Bit Vector Reasoning using Verified Bitblasting by Henrik Böving, Siddharth Bhat, Alex Keizer, Luisa Cicolini, Leon Frenot, Abdalrhman Mohamed, Léo Stefanesco, Harun Khan, Josh Clune, Clark Barrett, Tobias Grosser, under submission at OOPSLA 2025.

Constructive characterisations of the must-preorder for asynchrony with Giovanni Bernardi, Ilaria Castellani and Paul Laforgue, ESOP 2025.

Specifying and Verifying Persistent Libraries, by Léo Stefanesco, Azalea Raad, and Viktor Vafeiadis, ESOP 2024.

Trillium: Higher-Order Concurrent and Distributed Separation Logic for Intensional Refinement, by Amin Timany, Simon Gregersen, Léo Stefanesco, Jonas Hinrichsen, Léon Gondelman, Abel Nieto and Lars Birkedal, POPL 2024.

Game semantics: Easy as Pi, by Simon Castellan, Léo Stefanesco, and Nobuko Yoshida, draft.

Layered and Object-Based Game Semantics , by Arthur Oliveira Vale, Paul-André Melliès, Zhong Shao, Jeremy Koenig, Léo Stefanesco, POPL 2022.

Concurrent Separation Logic Meets Template Games, with P-A Melliès, LICS 2020.

Scala's Lost Steps: Soundness for Dependent Object Types with Step-Indexed Logical Relations and Iris, by Paulo Giarrusso, Léo Stefanesco, Amin Timany, Lars Birkedal, Robbert Krebbers, ICFP 2020.

An Asynchronous Soundness Theorem for Concurrent Separation Logic, with P-A Melliès, LICS 2018.

A Logical Relation for Monadic Encapsulation of State, by Amin Timany, Léo Stefanesco, Morten Krogh-Jesperen, Lars Birkedal, POPL 2018.

A Game Semantics for Concurrent Separation Logic, with P-A Melliès, MFPS 2017.

Relational reasoning via probabilistic coupling with G Barthe, T Espitau, B Grégoire, J Hsu, and P-Y Strub, LPAR 20.

Verifying Fast and Sparse SSA-based Optimizations in Coq with D Demange and D Pichardie, CC 2015.

SERVICE

Program committee: VSTTE (2024), POPL (2026)

External reviewer: CSL (2017, 2018), ICALP (2019), POPL (2020), LICS (2021, 2023), ICFP (2021), MFPS (2022), FOSSACS (2023), CONCUR (2023), FSTTCS (2024), Transactions on Computational Logic (2026)

PhD committee: Koen Jacobs, KU Leuven (Examiner, 2022); Hoang-Hai Dang, University of Saarland (Scientific secretary, 2024)

INTERNSHIPS AND LONG VISITS

Visit Nobuko Yoshida's Group, Imperial College, London *April-May 2019*
Working π-calculus and concurrent game semantics.

Visit Lars Birkedal's Group, Aarhus, Denmark *April-Jully 2018*
Working on logical relations in Iris.

Internship with Masahito Hasegawa, Kyoto, Japan *January-July 2017*
Partial traces in symmetric monoidal categories.

Internship with Lars Birkedal, Aarhus, Denmark *September-December 2016*
Logical relation for the ST monad of Haskell in Iris.

M2 Internship with Paul-André Melliès, Paris, France *May-August 2016*
Game semantic model of concurrent separation logic.

M1 Internship with Gilles Barthe, Madrid, Spain *May-Jully 2015*
Formal proofs of the "forking lemma", and the relationship between probabilistic couplings and the semantics of the pRHL logic.

L3 Internship with David Pichardie and Delphine Demange, Rennes, France *June-Jully 2014*
Implemented and proved in Coq an optimisation pass on CompcertSSA.

TALKS AND SEMINARS

At conferences:

- POPL (2018, 2024)
- LICS (2018, 2020)
- ETAPS (2024)

Workshops

- GDR GPL-LTP, 2016, Orsay
- GDR IM, Rencontres Géocal-LAC, 2017, Nantes
- GDR IM, Rencontre LHC, 2018, Marseille
- Dagstuhl 2023
- Leaning in, Berlin (2025)

Team and group seminars

- Logsem seminar, 2016, Aarhus
- Seminar at RIMS, 2017, Kyoto
- Hasuo lab, NII, 2017, Tokyo
- PhD seminar, 2017, IRIF, Paris
- PhD seminar, 2018, IRIF, Paris
- Gallium seminar, 2018, INRIA, Paris
- Logsem seminar, 2018, Aarhus
- Team seminar, 2018, Chambery
- Group seminar at MRG, 2019, Imperial College, London
- Group seminar at MRG, 2020, Imperial College, London (remote)
- Cambium seminar, 2020, INRIA, Paris
- Cambium seminar, 2021, INRIA, Paris
- Plume seminar, 2021, ENS Lyon, Lyon
- Cătălin Hriţcu's group, 2024, MPI-SP, Bochum