LAURA FONTANELLA

Profession : Maîtresse de conférences (Senior Lecturer)
Work Address: Université Paris Est Créteil, bâtiment P2 228,
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E-mail : laura.fontanella@u-pec.fr
CNU : 27 Computer Science

LANGUAGES: Italian (native), French (fluent), English (fluent)

RESEARCH INTERESTS

Logic and theoretical computer science: classical realizability, set theory, philosophy of mathematics

EMPLOYMENT HISTORY

SINCE 01/09/2020	MAÎTRESSE DE CONFÉRENCES (SENIOR LECTURER) in Computer Science at the UNIVERSITÉ PARIS EST CRÉTEIL, LACL (since 2023) teaching at the computer science departement (FST) (2020-2023) teaching at DUT MMI of the IUT Senart Fontainebleau
01/10/2017 - 30/09/2019	POSTDOC, UNIVERSITÉ AIX-MARSEILLE INSTITUT DE MATHÉMATIQUES DE MARSEILLE. team: Logique de la programmation
01/06/2014 – 31/05/2016	POSTDOC, HEBREW UNIVERSITY OF JERUSALEM EINSTEIN INSTITUTE OF MATHEMATICS
23/08/2015 – 03/10/2015	INVITED RESEARCHER, ISAAC NEWTON INSTITUTE (Cambridge, UK). Project: *Mathematical, Foundational and Computational aspects of the Higher Infinite.*
01/01/2013 – 31/03/2014	POSTDOC, UNIVERSITY OF VIENNA (Autriche) KURT GÖDEL RESEARCH CENTER FOR MATHEMATICAL LOGIC
01/10/2012 – 31/12/2012	STAGE DE RECHERCHE, UNIVERSITY OF VIENNA (Autriche) KURT GÖDEL RESEARCH CENTER FOR MATHEMATICAL LOGIC
01/10/2011 – 31/08/2012	ATER, UNIVERSITÉ PARIS 7 (teaching assistant), Math. department
01/10/2008 – 12/12/2012	PHD UNIVERSITÉ PARIS 7 INSTITUT DE MATHÉMATIQUES DE JUSSIEU, Équipe de Logique *Allocation de Recherche* and *Monitorat*

EDUCATION

2008 - 2012	PHD, UNIVERSITÉ PARIS 7 Mathematics. Thesis title: *Large properties at small cardinals.* Advisor: B. Veličković. PhD defence: 12/12/2012
2007-2008	MASTER 2, UNIVERSITÉ PARIS 7 Mathematics. *Logic and theoretical computer science.*
2006-2007	MASTER 1, UNIVERSITÉ SORBONNE PARIS 1 Philosophy. *Logic and philosophy of science*
2003–2006	LAUREA TRIENNALE [Bachelor], UNIVERSITÉ ROMA TRE, Rome Philosophy. *Logic and computer science*

PUBLICATIONS

Submitted

1. L. Fontanella *The evolution of the proofs-as-programs interpretation through realizability* **invited paper** for the proceedings of FILMAT that will be published by Springer.

In Proceedings

1. L. Fontanella, G. Geoffroy, R. Matthews: *Realizability Models for Large Cardinals.* CSL 2024: 28:1-28:18

2. L. Fontanella and B. Veličković. *Oscillations and their applications in partition calculus* (survey). PROC. OF THE YOUNG SET THEORY WORKSHOP 2009, Centre de Recerca Matematica, eds. Asperó et al., p. 13-38 (2011).

Journal papers

1. L. Fontanella and R. Matthews *Realizing the totally unordered structure of ordinals*, to appear in ANNALS OF PURE AND APPLIED LOGIC.

2. L. Fontanella and G. Geoffroy. *Preserving cardinals and weak forms of Zorn's lemma in realizability models*. MATHEMATICAL STRUCTURES IN COMPUTER SCIENCE, vol.30 (9), pp. 976-996 (2020).

3. L. Fontanella. *Axioms as definitions: revisiting Poincaré and Hilbert*. PHILOSOPHIA SCIENTIAE vol. 22/3 pp. 166 –183 (2019).

4. L. Fontanella and M. Magidor. *Reflection of stationary sets and the tree property at the successor of a singular cardinal*, JOURNAL OF SYMBOLIC LOGIC, vol. 82 (1), 272–291 (2017).

5. L. Fontanella and Y. Hayut. *Square and Delta-reflection*. ANNALS OF PURE AND APPLIED LOGIC. Vol. 167 (8), pp. 663 - 683 (2016).

6. L. Fontanella and P. Matet. *Fragments of strong compactness, families of partitions and ideal extensions*, FUNDAMENTA MATHEMATICAE, vol. 234, pp. 171- 190 (2016).

7. L. Fontanella and S. D. Friedman. *The tree property at both* $\aleph_{\omega+1}$ *and* $\aleph_{\omega+2}$. FUNDAMENTA MATHEMATICAE, vol. 229, pp. 83-100 (2015)

8. L. Fontanella. *The strong tree property at successors of singular cardinals*, JOURNAL OF SYMBOLIC LOGIC, vol. 79 (1), pp. 193 - 207 (2014).

9. L. Fontanella. *Strong tree properties for small cardinals*. JOURNAL OF SYMBOLIC LOGIC, vol. 78 (1), pp. 317-333 (2013).

10. L. Fontanella. *Strong tree properties for two successive cardinals*. ARCHIVE FOR MATHEMATICAL LOGIC, vol. 51 (5-6), pp. 601-620 (2012).

Book chapters

1. L. Fontanella. *How to chose new axioms for set theory?* **Invited paper** for the book *Reflections on the Foundations of Mathematics: Univalent Foundations, Set Theory and General Thoughts*, SPRINGER (2019). Editeurs: S. Centrone, D. Kant et D. Sarikaya.

PhD thesis

1. *Large properties for small cardinals*, Université Paris 7 (2012). Advisor: Boban Veličković.
   https://www.imj-prg.fr/theses/pdf/2012/laura_fontanella.pdf

Unpublished notes

1. *Large Cardinals as Properties of Sheaves*, with M. Gavrilovich.
   Draft available at https://lacl.fr/~lfontanella/papers/FontanellaGavrilovic13 (2013).

Media reports

1. J. Cervelle, L. Fontanella, L. Maignan. *Kurt Gödel : ses théorèmes d'incomplétude ont ébranlé les mathématiques*. The Conversation France (July 2024).
   https://theconversation.com/kurt-godel-ses-theoremes-dincompletude-ont-ebranle-les-mathematiques-227074

FUNDED PROJETS

- 01/10/2022-31/12/2026 COCONTENS, **Project leader**, national agency **ANR JC**, budget 159k €
- 01/10/2022-31/03/2023 MDR, **Project leader** regional funding **DIM RFSI** (réseau francilien de sciences informatiques), budget 74k €
- 01/06/2014-31/05/2016 LAPSCA, **Project leader**, european funding **Marie Curie IEF** (individual european fellowship), budget 192.464 €

PARTICIPANT IN OTHER NATIONAL AND INTERNATIONAL PROJECTS

- (starting December 2024) QCOMICAL. MSCA funding
- (2022-2023) ApCORE funded by South-American agency STIC-AmSud.
- (2023-date) CHOICE, funded by the national agency ANR.
- (01/09/2023-date) CHOCOLA as part of a project coordinated by the ENS Lyon (monthly meeting on Curry Howard correspondence).

PHD SUPERVISION

- Ada Picano Nacci - started 13/10/2023. Co-supervisor (50%) with Julien Cervelle (Université Paris Est Créteil, LACL)
- Jacopo Furlan - started 01/10/2023, Co-supervisor (50%) with Damiano Mazza (Université Sorbonne Paris Nord, laboratoire LIPN)

MASTER RESEARCH SUPERVISION

- Ada Picano Nacci (2023) student at Master2 LMFI Université Paris Cité
- Anita Moyassari (2023) student at Master2 LMFI Université Paris Cité
- Jacopo Furlan (2023) student at Master2 international de Logique, Université Aix Marseille et Università di Roma 3. Co-supervision with Giulio Manzonetto, Université Sorbonne Paris Nord, laboratoire LIPN)

INVITED TALKS (LAST 5 YEARS)

18/11/2024 JEAN NICOD CENTENARY CONFERENCE, Institut Nicod Paris
Chicken or egg? Axioms or perception? Which comes first? Jean Nicod on geometry, and the role of axioms in mathematics.

27/05/2024 AXIOMS AND IMPLICIT DEFINITIONS, Université Aix Marseille
On the computational content of axioms

22/03/2024 LOGIC MENTORING WORKSHOP, Napoli
Good student vs. Good Researcher

29/11/2023 SCALP, Orléans
Realizability models for large cardinals

29/09/2022 FILMAT 2022, Pavia
The evolution of the concept of proofs through realizability

29/08/2022 EUROPEAN SET THEORY WORKSHOP 2022, Torino
Realizability models for large cardinals

28/06/2022 GREEK SUMMER SCHOOL Greece (online)
The evolution of the concept of proofs through realizability

18/05/2022 ICREA LOGIC SEMINARS, Barcelona (online)
Representing ordinals in classical realizability

15/05/2022 UNIVERSITÉ PARIS CITÉ, séminaires de l'IRIF
Representing ordinals in classical realizability

24/03/2021 UNIV. DE PARIS ET UNIV. LYON 1, Séminaires de logique Lyon-Paris (online)
Realizability and the Axiom of Choice

11/11/2020 UNIVERSITY OF LEEDS, UK (online)
Realizability and the Axiom of Choice

SCIENTIFIC DISSEMINATION

- Media report: J. Cervelle, L. Fontanella, L. Maignan *Kurt Gödel : ses théorèmes d'incomplétude ont ébranlé les mathématiques*. The Conversation France (July 2024) .
  https://theconversation.com/kurt-godel-ses-theoremes-dincompletude-ont-ebranle-les-mathematiques-227074
- *Women and science speed-meetings* at UPEC (2023 et 2024) to promote sciences for female high school students
- *La nuit des chercheurs* ("The researchers night") at UPEC (2024) meetings with the students of UPEC to present Research Career
- *Fête de la Science 2011*, scientific dissemination for scholars Université Paris 7, Paris.

TEACHING EXPERIENCE

TEACHING QUALIFICATIONS

- CAPES *Mathematics* 2019.
- QUALIFICATION SECTION 25 *Mathématics*, obtained in 2013
- QUALIFICATION SECTION 72 *Epistemology, History of Science and Technology* obtained in 2015.

TEACHING POSITIONS

DEPUIS 01/09/2020	MAÎTRESSE DE CONFÉRENCES (Senior Lecturer), UNIVERSITÉ PARIS EST CRÉTEIL SECTION 27 COMPUTER SCIENCE (since 01/09/2023) teaching at Faculté des Sciences et Technologie - Computer Science department (01/09/2020–31/08/2023) teaching at IUT Sénart Fontainebleau - DUT MMI
01/10/2011 – 31/08/2012	ATER (teaching assistant), UNIVERSITÉ PARIS 7 Mathematics department
01/10/2008 – 30/09/2011	MONITORAT (teaching assistant), UNIVERSITÉ PARIS 7, Mathematics department

TEACHING

Year	Level	Department	Title	Hours
2023-2024	Bachelor	Computer science	Web development Back-end	55.5H
2023-2024	Bachelor	Computer science	Web development project	30H
2023-2024	Bachelor	CS and Math	Data Encoding	23.5H
2023-2024	Bachelor	CS and Math	Functional programming	24H
2023-2024	Bachelor	Computer science	Functional programming project	20H
2023-2024	Bachelor	Computer science	Object oriented programming	21H
2023-2024	Bachelor	CS and Math	Web pages	30H
2023-2024	Bachelor	Computer science	Introduction to database	16H
2023-2024	Bachelor	CS and Math	Data representation	23.5H
2023-2024	University Bachelor of Technology	Computer science	Multimedia development	12H
2022-2023	University Bachelor of Technology	Multimedia	VR development	25H
2022-2023	University Bachelor of Technology	Multimedia	Computer Networks	96H
2022-2023	University Bachelor of Technology	Multimedia	Web development Front-end	48H
2022-2023	University Bachelor of Technology	Multimedia	Data Encoding and signal theory	51H
2022-2023	University Bachelor of Technology	Multimedia	Data Encoding and signal theory	49H
2021-2022	University Bachelor of Technology	Multimedia	Computer Networks	48H
2021-2022	University Bachelor of Technology	Multimedia	Object oriented programming	86H
2021-2022	University Bachelor of Technology	Multimedia	Data Encoding and signal theory	98H
2021-2022	University Bachelor of Technology	Multimedia	Multimedia development – projects	52H
2020-2021	University Bachelor of Technology	Multimedia	Data Encoding and signal theory	85H
2020-2021	University Bachelor of Technology	Multimedia	Data Encoding and signal theory	67H
2020-2021	University Bachelor of Technology	Multimedia	Multimedia development – projects	14H

ADMINISTRATION

ADMINISTRATIVE RESPONSIBILITIES

- Since June 2024 Elected member of the Laboratory Council. Research unit: LACL, UPEC)
- Since October 2023 SAPS contact: contact person for projects around 'Science with and for society'. Research unit : LACL , 'Université Paris Est Créteil
- 2020-2025 Elected member of the Department Council. Department MMI, IUTSF UPEC
- 2021-2022 Director of studies of DUT2 MMI (103 students), IUTSF UPEC
- 2020-2021 Teachers Coordinator for the courses in Computer Science at the DUT MMI, IUTSF
- 13-17/01/2014 Proceedings editor for the *Oberwolfach workshop in set theory*,
- Reviewer for *Handbook of intuition*, *Bulletin of Symbolic Logic*, *Review of Symbolic Logic*; *Journal of symbolic logic*; *Annals of Pure and Applied Logic*; *Journal of Mathematical Logic*; *Israel Journal of Mathematics*; *Houston Journal of Mathematics*; *Archive for Mathematical Logic*; *Mathematical Logic Quarterly*; *Topoi*; *Logic Colloquium*; *Entia et Nomina*.

COMMITEES

- 2024 position: MCF (Senior Lecturer) in Computer Science, Université Paris Est Créteil, IUT de Vitry
- 2024 position: MCF (Senior Lecturer) in Computer Science, Université Sorbonne Paris Nord, IUT GEA
- 2023 position: MCF (Senior Lecturer) in Computer Science, Université Gustave Eiffel, IUT MMI
- 2023 position: MCF (Senior Lecturer) in Computer Science, Université de Renne, IUT de Lannion, departement:MMI
- 2022 position: MCF (Senior Lecturer) in Computer Science, Université Paris Est Créteil, EPISEN
- 2022 position: PRAG in Mathematics and Computer Science, Université Paris Est Créteil, Faculté de Lettre
- 2022 poste de PRAG in Mathematics and Computer Science, IUT Sénart Fontainebleau, MMI, UPEC
- 2021 poste de PRAG in Mathematics and Computer Science, IUT Sénart Fontainebleau, MMI, UPEC

ORGANISATION OF WORKSHOPS

- *Realisability workshop 2022* (with G. Geoffroy), 25-27 October 2022, Université Paris Cité
- *Scalp 2021* (with D. Mazza, L. Pellissier and A. Saurin) 3-5 November 2021, IUTSF UPEC, Fontainebleau
- *Realisability workshop 2019* (with G. Geoffroy), 18-20/09/2019, CIRM, Université Aix-Marseille, Marseille.
- *Realisability workshop 2018* (with G. Geoffroy), 12-13/06/2018, CIRM, Université Aix-Marseille, Marseille.
- Workshop MM^{+70} in honor of Menachem Magidor (with A. Karagila and A. Rinot), 17-19/02/2016, Hebrew University of Jerusalem, Israël