

Flavien BREUVART

Research interests

Key-words: Lambda-calculus, type systems, denotational semantics, topology, probabilistic computing, quantum computing, category theory, domains theory, proof theory

Program: I am interested in operational and denotational semantics for programming languages and lambda-calculi in particular. More precisely I am working on:

- Models of pure lambda-calculus: used for studying the lattice of lambda-theories, in particular its interactions with computability theory.
- Quantitative semantics: building parametrised concrete semantics either to extract quantitative information or to model resource sensitive calculi. I am particularly interested in probabilistic calculi as well as semantics sensible to complexity and sequentiality.

By transitivity I am also interested in many related domains: logic, algebra, proof theory, computability theory, complexity theory,.. But also further computer science domains: language design, circuit design, cryptography protocols (differential privacy)...

Position

2016-Now: **Professor (maître de conférence)**, at LIPN, Université Paris 13, Villetaneuse, France.

2015-2016: **Iria post-doctoral position**, in Focus Team, Bologna, Italy.

2012-2015: **PhD candidate**, with *Antonio Bucciarelli* and *Michele Pagani*, at PPS, University Paris Diderot, Paris, France.

2012-2015: **Teaching Assistant**, at UFR Informatique, University Paris Diderot, Paris, France.

Other research experience

2011-2012: **12 months internship**, with *Antonio Bucciarelli*, at PPS, University Paris Diderot, Paris, France.

2011: **5 months internship**, with *Thomas Ehrhard* and *Antonio Bucciarelli*, at PPS, University Paris Diderot, Paris, France.

2010: **5 months internship**, with *Peter Selinger*, at Dalhousie University, Halifax, Canada.

2009: **2 months internship**, with *Achim Jung*, at University of Birmingham, Birmingham, UK.

Grants and Awards

2015: **Iria post-doctoral positions**, in Focus Team, Bologna, Italy.

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Université Paris 13, Institut Galilée, LIPN, team LRC

- 2014: **Kleene Award**, for best student paper, in CSL-LICS, Vienna, Austria.
2012: **Three-Years PhD fellowship**, from the french "Ministry of Higher Education and Research", France.

Publications

Conference papers

- [C1] Flavien Breuvert et al. "New Results on Morris's Observational Theory: the benefits of separating the inseparable". In: *FSCD*. 2016.
[C2] Marco Gaboardi et al. "Combining effects and coeffects". In: *ICFP*. 2016.
[C3] Flavien Breuvert and Michele Pagani. "Modelling Coeffects in the Relational Semantics of Linear Logic". In: *CSL*. 2015.
[C4] Flavien Breuvert. "On the characterization of models of \mathcal{H}^* ". In: *Proceedings of the Joint Meeting of the Twenty-Third EACSL Annual Conference on Computer Science Logic (CSL) and the Twenty-Ninth Annual ACM/IEEE Symposium on Logic in Computer Science (LICS)*. ACM. 2014, p. 24.
[C5] Flavien Breuvert. "The resource lambda calculus is short-sighted in its relational model". In: *Typed Lambda Calculi and Applications*. Springer, 2013, pp. 93–108.

Journal papers

- [J1] Flavien Breuvert. "On the characterization of models of \mathcal{H}^* : the semantical aspect". In: *Lecture and Methodes in Computer Sciences* (2016). Invited.

Submitted

- [S1] Flavien Breuvert, Ugo Dal Lago, and Agathe Herrou. "On Higher-Order Probabilistic Subrecursion". submitted. 2016.

non peer-reviewed

- [A1] Flavien Breuvert. "On the discriminating power of tests in resource lambda-calculus". In: 2012.

Responsibilities

- 2016: **Seminar organization**, *Organization of the temporary working group "Probabilistic calculi"*, at Focus, University of Bologna, Bologna, Italy.
2014: **Workshop organization**, *Participation at the organization of the international workshop Domain XI*, at PPS, University Paris Diderot, Paris, France.
2013: **seminar organization**, *Organization of the temporary working group "Sémantique des calculs classiques"*, at PPS, University Paris Diderot, Paris, France.
2012-2015: **Representative of PhD students**, in the Board of directors, of the laboratory PPS, Paris, France.

Teaching

- 2015: **advanced Java**, TA for L3 course named POOIG, at university Paris Diderot, Paris, France.

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- 2014: **advanced Java**, TA for M3 course for linguists named POO3, at university Paris Diderot, Paris, France.
- 2014 & 2015: **architecture**, TA for M1 course, at university Paris Diderot, Paris, France.
- 2014: **“UE libre” vulgarization**, In charge of the “UE libre” (optional short course) on scientific vulgarization in M1, at university Paris Diderot, Paris, France.
- 2013 & 2014: **mid-beginner Java**, TA for L1 course named TO2, at university Paris Diderot, Paris, France.
- 2012: **Java projects**, Supervising Java projects in L2 (more exactly for the “classe préparatoire intégrée de l'EIDD”), at university Paris Diderot, Paris, France.
- 2008-2012: **vulgarization**, occasional (5-10 times per years) 1 hour of vulgarization on mathematics and computer sciences for middle school students, with the association PRACCIS, Cachan, France.
- 2008-2009: **vulgarization of game theory**, 1h/week of vulgarization of game theory to high school students, with the association Sciences Ouvertes, Drancy, France.

Communications

- 06/09/2016 **Workshop LC&A**, Innsbruck, Austria.
“On Higher-Order Probabilistic Subrecursion”
- 28/08/2016 **Workshop Crecogi**, *collocated with CSL*, Marseille, France.
“From Hard Work to Trickery: A Systematic Approach to Probabilistic Rewriting”
- 26/06/2016 **Workshop ITRS**, *collocated with FSCD*, Porto, Portugal.
“Old and New Results on Probabilistic Intersection Type System”
- 07/04/2016 **seminar semantics**, in IRIF, Paris, France.
“L’encodage probabiliste: vers une formalisation systématique des langages probabilistes, déterministes et potentiellement divergent.”
- 26/03/2016 **seminar of logic team**, in I2M, Marseille, France.
“L’encodage probabiliste: vers une formalisation systématique des langages probabilistes, déterministes et potentiellement divergent.”
- 02/03/2016 **GdT Probabilistic Calculi**, Bologna, Italy.
“From hard work to trickery: a systematic approach of probabilistic rewriting.”
- 06/02/2016 **GdRI-LL**, Bologna, Italy.
“Toward dependant coeffects”
- 32/10/2015 **PhD Defence**, Paris, France.
“Dissecting Denotational Semantics”
- 10/09/2015 **CSL’2015**, Berlin, Germany.
“Modelling Coeffects in Rel”
- 03/09/2014 **seminar of logic team**, of LAMA, University of Savoie, Chambéry, France.
“On the characterization of models of \mathcal{H}^* ”
- 17/07/2014 **CSL-LICS**, Vienna, Austria.
“On the characterization of models of \mathcal{H}^* ”
- 04/04/2014 **seminar of team LCR**, in LIPN, University Paris Nord, Paris, France.
“De la caractérisation des modèles de \mathcal{H}^* ”

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- 09/04/2014 **LIAFA-PPS' PHD seminar**, University Paris Diderot, Paris,France.
"Basic notions on weighted models"
- 14/03/2014 **"Theory seminar"**, *School of Computer Science*, University of Birmingham, Birmingham, UK.
"A bridge between semirings"
- 03/12/2013 **BLL'workshop**, Fontainebleau, France.
"A bridge between semirings"
- 27/06/2013 **TLCA**, Eindhoven, Netherlands.
"The resource lambda calculus is short-sighted in its relational model"
- 15/02/2013 **GEOCAL Meeting**, Lyon, France.
"Une bien étrange caractérisation de l'adéquation complète dans les domaines de Scott"
- 24/10/2012 **LIAFA-PPS' PHD seminar**, University Paris Diderot, Paris,France.
"Petites histoires entre modèles et syntaxes"
- 12/09/2012 **PPS' anual meating**, University Paris Diderot, Trouville,France.
"Petites histoires entre modèles et syntaxes"
- 02/09/2011 **LIAFA-PPS' PHD seminar**, University Paris Diderot, Paris,France.
"Et si les PPSiens se mettaient à faire de l'algèbre?!"

Education

- 2010-2011: **PHD thesis in Paris Diderot**, Paris, France.
- 2010-2011: **M2 in MPRI**, Cachan, France.
- 2009-2010: **M1 in MPRI**, Cachan, France.
- 2008-2009: **L3 in computer sciences and in mathematics**, at ENS Cachan, Cachan, France.
2008: **admission at ENS Cachan**, Cachan, France.
- 2006-2008: **CPGE MPSI and MP***, at *Lycée Fénélon*, Paris 5^{iem}, France.
2006: **French baccalaureate**, "*mention bien*", at *Lycée W.A.Mozart*, Le Blanc Mesnil, France.

Associative activities

- 2010-2011: **president of PRACCIS project**, in SONO, Cachan, France.
- 2009-2010: **active member**, of BDE ENS Cachan, with high implication in the clubs *BDA*, *Mediatek*, *PRACCIS*, Cachan,France.
- 2007-2008: **active member**, of Sciences Ouvertes, Drancy, France.
- 2005-2007: **board of directors**, of the association *MJC Daniel André*, Drancy, France.