

# PIERRE-ALAIN JACQMIN

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## PERSONAL DETAILS

Family Name: Jacqmin  
First name: Pierre-Alain  
Date of Birth: 11 April 1991  
Citizenship: Belgian  
Affiliation: University of Ottawa  
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## RESEARCH INTERESTS

Category theory, categorical algebra, universal algebra, categorical logic.

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## EDUCATION

- 2013–2016: Ph.D. in Sciences, Université catholique de Louvain, ‘Embedding theorems in non-abelian categorical algebra’. Supervisors: Prof. E.M. Vitale and Prof. Z. Janelidze.
- 2012–2013: Master in Mathematical Sciences, Université catholique de Louvain.  
Final grade: La plus grande distinction.  
Dissertation: ‘Classification of cat-groups’. Supervisor: Prof. E.M. Vitale.
- 2011–2012: Part III of the Mathematical Tripos, University of Cambridge, King’s College.  
Final grade: Distinction.  
Dissertation: ‘Homology in semi-abelian categories’. Supervisor: Dr. J. Goedecke.
- 2008–2011: Bachelor in Mathematical Sciences, Université catholique de Louvain.  
Final grade: La plus grande distinction.  
Dissertation: ‘Sous-groupes normaux de groupes de matrices’. Supervisor: Prof. P.-E. Caprace.

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## RESEARCH EXPERIENCE

- 2017–present: Postdoctoral researcher at the University of Ottawa under the supervision of R. Blute, T. Giordano, P. Hofstra, P.-E. Parent, A. Savage and Ph. Scott.
- May 2017: Invited researcher by the University of Cambridge.
- Sep.–Dec. 2014: Visit of Stellenbosch University for a collaboration with Z. Janelidze.
- 2013–2016: Ph.D. at the Université catholique de Louvain supervised by E.M. Vitale and Z. Janelidze.

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## PUBLICATIONS

### Peer-reviewed journal articles

- [with R.F. Blute, J.R.B. Cockett and P.J. Scott]: Finiteness spaces and generalized power series, *Electronic Notes in Theoretical Computer Science*, **341** (2018), 5–22.
- [with S. Mantovani, G. Metere and E.M. Vitale]: On fibrations between internal groupoids and their normalizations, *Applied Categorical Structures*, **26** (5) (2018), 1015–1039.

- An embedding theorem for regular Mal'tsev categories, *Journal of Pure and Applied Algebra*, **222** (5) (2018), 1049–1068.
- [with D. Rodelo]: Stability properties characterising  $n$ -permutable categories, *Theory and Applications of Categories*, **32** (45) (2017), 1563–1587.
- [with E.M. Vitale]: Bicategories of fractions for groupoids in monadic categories, *Tbilisi Mathematical Journal*, **8** (2) (2015), 85–105.

### Submitted for publication

- Partial Mal'tsev algebras and an embedding theorem for (weakly) Mal'tsev categories, *submitted to Cahiers de Topologie et Géométrie Différentielle Catégoriques*.
- Embedding theorems for Janelidze's matrix conditions, *submitted to Journal of Pure and Applied Algebra*.
- [with S. Mantovani, G. Metere and E.M. Vitale]: Bipullbacks of fractions and the snail lemma, *submitted to Journal of Pure and Applied Algebra*.

### In preparation

- Syntactic characterisation of protomodular essentially algebraic categories.
- [with Z. Janelidze]: Unconditional exactness properties.

### Other scientific publications

- [with M. Sebille]: EGMO 2017 à Zürich, *Losanges*, **39** (2017), 54–59.
- [with M. Sebille]: European Girl's Mathematical Olympiad 2014 ou l'art de méjuger un questionnaire, *Losanges*, **27** (2014), 60–64.
- [with M. Sebille]: European Girl's Mathematical Olympiad 2013, *Losanges*, **21** (2013), 47–52.
- [with M. Sebille]: European Girl's Mathematical Olympiad 2012, *Losanges*, **17** (2012), 50–55.

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### TALKS

- October 2018, Ottawa-Carleton Logic Seminar, Ottawa, Canada, *Embedding theorem for (weakly) Mal'tsev categories*.
- June 2018, 34th Conference on the Mathematical Foundations of Programming Semantics, Halifax, Canada, *Finiteness spaces and generalized power series*.
- May 2018, 4th Workshop on Categorical Algebra: Recent developments and future perspectives, Gargnano, Italy, *Internal fibrations and their normalizations*.
- May 2018, UCL-ULB-VUB Category Theory Seminar, Louvain-la-Neuve, Belgium, *Finiteness spaces and generalized power series*.
- February 2018, Ottawa-Carleton Logic Seminar, Ottawa, Canada, *Stability properties characterising  $n$ -permutable categories*.
- February 2018, Ottawa-Carleton Logic Seminar, Ottawa, Canada, *Functorial exactness properties*.
- September 2017, Ottawa-Carleton Joint Algebra Seminar, Ottawa, Canada, *Where the snake is just a snail*.
- July 2017, International Conference on Category Theory and its Applications, Vancouver, Canada, *An embedding theorem for regular Mal'tsev categories*.
- May 2017, Category Theory Seminar, Cambridge, United Kingdom, *Embedding theorems for (regular) Mal'tsev categories*.

- May 2016, 4th Workshop on Categorical Methods in Non-Abelian Algebra, Coimbra, Portugal, *An embedding theorem for regular Mal'tsev categories.*
  - March 2016, UCL-ULB-VUB Category Theory Seminar, Brussels, Belgium, *An embedding theorem for regular Mal'tsev categories.*
  - September 2015, Workshop in Category Theory and Algebraic Topology, Louvain-la-Neuve, Belgium, *Bicategories of fractions for groupoids in monadic categories.*
  - January 2015, 97th Peripatetic Seminar on Sheaves and Logic, Louvain-la-Neuve, Belgium, *Exactness properties and cofiltered limit completion.*
  - November 2014, Brümmer 80 Seminar, Cape Town, South Africa, *Embedding theorem for regular subtractive categories.*
  - October 2014, 57th South African Mathematical Society annual congress, Johannesburg, South Africa, *Bicategories of fractions for groupoids in monadic categories.*
  - October 2014, Seminar of the Centre for Mathematical Structure, Stellenbosch, South Africa, *An introduction to bicategories.*
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## TEACHING EXPERIENCE

- Fall 2018: Méthodes Mathématiques II (MAT 1702 C) at uOttawa, Instructor.
  - Winter 2018: Mathematical Methods II (MAT 1302 B) at uOttawa, Instructor.
  - Fall 2017: Mathematical Methods I (MAT 1300 D) at uOttawa, Instructor.
  - Spring 2017: Mathématiques générales 1 (LMAT 1111 G) at UCL, Teaching Assistant.
  - Spring 2015: Mathématiques : algèbre et calcul matriciel (LINGE 1121) at UCL, Teaching Assistant.
  - Autumn 2013: Mathématiques générales 1 (LMAT 1111 D) at UCL, Teaching Assistant.
  - 2013–2017: Taught in the olympiad training sessions for high school Belgian students.
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## SERVICE

- Co-organised the ‘UCL Math PhD Seminar 2017’ in Leuven.
  - Co-organised the ‘UCL Math PhD Seminar 2016’ in Namur.
  - 2012–2017: Deputy Leader of the Belgian team for the European Girl’s Mathematical Olympiad (Cambridge, Luxembourg, Antalya, Minsk, Busteni and Zurich).
  - 2014–2016: Deputy Leader of the Belgian team for the Benelux Mathematical Olympiad (Brugge, Mersch and Soest).
  - 2013 and 2014: Animation of a stand at the ‘Printemps des Sciences’ at UCL, for popularisation of Mathematics to 10–18 year old children.
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## AWARDS–GRANTS

- Doctoral fellowship from the National Scientific Fund of Belgium F.R.S.-FNRS (2013).
- Second prize in the International Mathematical Competition for University Students 2011 (Bulgaria).
- Two bronze medals in the International Mathematical Olympiad 2007 (Vietnam) and 2008 (Spain).
- Two first, two second and two third prizes in the ‘Olympiade Mathématique Belge’ (2003–2008).