

# Charles Starling

## Curriculum Vitae

School of Mathematics and Statistics  
Carleton University  
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Nationality: Canadian

### Education

2012 **Doctor of Philosophy**, *University of Ottawa*, Canada.  
Supervisor: Thierry Giordano. Thesis: Actions of Finite Groups on Substitution Tilings and Their Associated  $C^*$ -algebras.

2005 **Master of Science**, *University of Victoria*, Canada.  
Supervisor: Ian Putnam. Thesis: Computation of the Ruelle-Sullivan Map for Substitution Tilings.

2003 **Bachelor of Science**, *University of Victoria*, Canada, Honours in Mathematics and Physics.  
Jubilee Silver Medal for top graduating GPA in the Faculty of Science.

### Positions

2017–present **Term Assistant Professor**, *Carleton University*, Ottawa, Canada.

2015–2017 **Postdoctoral Researcher**, *University of Ottawa*, Ottawa, Canada.  
Supervisors: Thierry Giordano, Benoît Collins, and Vladimir Pestov

2013–2014 **Pós-doutorado Junior**, *Universidade Federal de Santa Catarina*, Florianópolis, Brazil.  
Supervisor: Ruy Exel

2012 **Postdoctoral Researcher**, *University of Ottawa*, Ottawa, Canada.  
Supervisors: Thierry Giordano and Benoît Collins

2007–2012 **Part-time Professor and Teaching Assistant**, *University of Ottawa*, Ottawa, Canada.

### Publications

#### Submitted Publications

[18] R. Exel, E. Pardo, and **C. Starling**,  *$C^*$ -algebras of self-similar graphs over arbitrary graphs*, arXiv:1807.01686.

#### Publications in Press

[17] T. Bice and **C. Starling**, *Hausdorff Tight Groupoids Generalised*, to appear in Semigroup Forum, arXiv:1809.08578.

[16] L. O. Clark, R. Exel, E. Pardo, A. Sims, and **C. Starling**, *Simplicity of algebras associated to non-Hausdorff groupoids*, to appear in Trans. Amer. Math. Soc., arXiv:1806.04362.

#### Publications in Print

[15] T. Bice and **C. Starling**, *General Non-Commutative Locally Compact Locally Hausdorff Stone Duality*, Adv. Math., **341**, 40–91, 2019 .

[14] T. Bice and **C. Starling**, *Locally Compact Stone Duality*, J. Log. Anal., **10**, Paper No. 2, 1–36, 2018.

- [13] D. Gonçalves, M. Sobottka, and **C. Starling**, *Inverse semigroup shifts over countable alphabets*, Semigroup Forum, **96** (2), 203–240, 2018.
- [12] R. Exel and **C. Starling**, *Amenable actions of inverse semigroups*, Ergodic Theory Dynam. Systems, **37** No.2, 481–489, 2017.
- [11] T. Giordano, D. Gonçalves , and **C. Starling**, *Bratteli-Vershik models for partial actions of  $\mathbb{Z}$* , Int. J. Math., **22** No.10, 2017.
- [10] D. Gonçalves, M. Sobottka, and **C. Starling**, *Two-sided shift spaces over infinite alphabets*, J. Aust. Math. Soc., **103** (3), 357–386, 2017.
- [9] D. Gonçalves, M. Sobottka, and **C. Starling**, *Sliding block codes between shift spaces over infinite alphabets*, Math. Nachr., **289** (17–18), 2178–2191, 2016.
- [8] **C. Starling**,  *$C^*$ -algebras of Boolean inverse monoids – traces and invariant means*, Doc. Math., **21**, 809–840, 2016.
- [7] **C. Starling**, *Inverse semigroups associated to subshifts*, J. Algebra, **463**, 211–233, 2016.
- [6] R. Exel and **C. Starling**, *Self-Similar Graph  $C^*$ -Algebras and Partial Crossed Products*, J. Operat. Theor., **75** (1), 299–317, 2016.
- [5] **C. Starling**, *Boundary quotients of  $C^*$ -algebras of right LCM semigroups*, J. Funct. Anal., **268** (11) 3326–3356, 2015.
- [4] **C. Starling**,  *$K$ -theory of crossed products of tiling  $C^*$ -algebras by rotation groups*, Commun. Math. Phys., **344** (1), 301–311, 2015.
- [3] D. Gonçalves and **C. Starling**, *Division Point Measures from Primitive Substitutions*, Expo. Math., **33** (1), 67–77, 2015.
- [2] **C. Starling**, *Finite symmetry group actions on substitution tiling  $C^*$ -algebras*, Münster J. Math. **7**, 381–412, 2014.
- [1] R. Exel, D. Gonçalves, and **C. Starling**, *The tiling  $C^*$ -algebra viewed as a tight inverse semigroup algebra*, Semigroup Forum, **84**, 229–240, 2012.

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## Invited Conference Presentations

- Aug 2018 **Non-Hausdorff groupoids arising from self-similar actions and simplicity of their algebras**, International Congress of Mathematicians Operator Algebras Satellite Conference, Florianópolis, Brazil.
- Jun 2018 **The Mathematics of Aperiodic Patterns**, Ottawa Mathematics Conference, Ottawa, Canada.
- Jul 2017 **Bratteli-Vershik models for partial actions of  $\mathbb{Z}$** , Mathematical Congress of the Americas, Montreal, Canada.
- Jun 2016 **Inverse semigroups in  $C^*$ -algebras**, Fields Workshop on New Directions in Inverse Semigroups, University of Ottawa, Canada.
- Dec 2015  **$C^*$ -algebras generated by partial isometries and amenability**, Canadian Mathematical Society Winter Meeting, Montreal, Canada.
- Feb 2015 **Boundary Quotients of Semigroup  $C^*$ -algebras**, Workshop on Functional Analysis and Dynamical Systems, Florianópolis, Brazil.

Feb 2015 **Boundary Quotients of Semigroup  $C^*$ -algebras**, Fields Workshop on Quantum Groups and Operator Algebras, University of Ottawa, Canada.

May 2014  **$C^*$ -algebras of Partial Isometries**, 3º Colóquio de Matemática da Região Sul, UFSC Florianópolis, Brazil.

May 2014 **Self-Similar Graph Actions and Partial Crossed Products**, Partial Actions and Representations Symposium, Gramado, Brazil.

Nov 2013 **The Dynamics of Inverse Semigroups**, Floripadyns Workshop on Dynamics, Numeration and Tilings, Florianópolis, Brazil.

Jul 2012 **Finite Group Actions on Aperiodic Tilings**, Workshop on Sofic and Hyperlinear Groups and the Connes Embedding Conjecture, UFSC Florianópolis, Brazil.

May 2012 **Finite Group Actions on Aperiodic Tilings**, NSF/CBMS Regional Conference in the Mathematical Sciences, University of Louisiana at Lafayette, United States.

Aug 2011 **Finite Group Actions on  $C^*$ -algebras Associated to Tilings**, Fields Workshop on Positivity, University of Toronto, Canada.

Feb 2011 **Finite Group Actions on Substitution Tilings**, Brazilian Operator Algebra Symposium, Florianópolis, Brazil.

May 2010 **Substitution Tilings and Groupoids**, Fields Workshop on Semigroups and Categories, University of Ottawa, Canada.

### Invited Colloquia and Seminar Presentations

Oct 2016 **Inverse semigroups and  $C^*$ -algebras**, Operator Algebra Seminar, Fields Institute, Toronto.

Aug 2016 **Boundary Quotients of Semigroup  $C^*$ -algebras**, Analysis Seminar, University of Aberdeen, Scotland.

Aug 2016 **Boundary Quotients of Semigroup  $C^*$ -algebras**, Analysis Seminar, University of Glasgow, Scotland.

Jul 2014 **Inverse semigroup  $C^*$ -algebras and partial crossed products**,  $C^*$ -algebras seminar, UFSC Florianópolis, Brazil.

May 2013 **Division Point Measures from Primitive Substitutions**,  $C^*$ -algebras seminar, UFSC Florianópolis, Brazil.

Nov 2013 **Semigrupos inversos são objetos dinâmicos**, Colloquium at UFSC, Florianópolis, Brazil.

Oct 2012 **The Mathematics of Aperiodic Patterns**, Colloquium at the University of Saskatchewan, Canada.

### Contributed Presentations

Sep 2016 **Groupoids**, Analysis Seminar, University of Ottawa, Canada.

Jun 2016  **$C^*$ -algebras generated by partial isometries and amenability**, Canadian Operator Symposium, Centre de Recherches de Mathématiques, Montréal, Canada.

Mar 2016 **Self-similar groups and their  $C^*$ -algebras**, Analysis Seminar, University of Ottawa, Canada.

Jun 2015 **Boundary Quotients of Semigroup  $C^*$ -algebras**, Canadian Operator Symposium, University of Waterloo, Canada.

May 2015 **Boundary Quotients of Semigroup  $C^*$ -algebras**, Classification of  $C^*$ -algebras, flow equivalence of shift spaces, and graph and Leavitt path algebras, University of Louisiana at Lafayette, United States.

May 2012 **A Leisurely Walk from Inverse Semigroups to  $C^*$ -algebras**, Canadian Operator Symposium, Queen's University, Kingston, Canada.

May 2011 **Finite Group Actions on Substitution Tilings**, Canadian Operator Symposium, University of Victoria, Canada.

May 2008 **Aperiodic Tilings**, Ottawa Mathematics Conference, University of Ottawa, Canada.

Jun 2005 **Computation of the Ruelle-Sullivan Map for Substitution Tilings**, Victoria Workshop on Aperiodic Order, University of Victoria, Canada.

### Minicourses

Feb 2012 **Aperiodic Order in Dynamical Systems and Operator Algebras**, 3-day minicourse at UFSC Escola de Verão 2012, Florianópolis, Brazil.

### Supervision and Mentoring

Summer 2015 **Alexander McDonald, NSERC Undergraduate Research Student**, (Co-supervised with Thierry Giordano), Project: Spectral triples associated to aperiodic tilings.

### Teaching

Winter 2019 **MATH3003 – Advanced Differential Calculus**, Carleton University.  
Average student rating: 4.96/5

Fall 2018 **MATH5003 – Banach Algebras**, Carleton University.  
No evaluations due to class size

Fall 2018 **MATH1002 – Calculus and Introductory Analysis I**, Carleton University.

Winter 2019 Average student rating: 4.77/5

Winter 2018 **MATH3002 – Real Analysis II**, Carleton University.  
Average student rating: 4.75/5

Winter 2018 **MATH1007 – Elementary Calculus I**, Carleton University.  
Average student rating: 4.79/5

Fall 2017 **MATH3037 – Complex Analysis**, Carleton University.  
Average student rating: 4.80/5

Fall 2017 **MATH1007 – Elementary Calculus I**, Carleton University.  
Average student rating: 4.61/5

Winter 2017 **MAT1341 – Introduction to Linear Algebra**, University of Ottawa.  
Average student rating: 4.62/5

Fall 2016 **MAT1341 – Introduction to Linear Algebra**, University of Ottawa.  
Average student rating: 4.75/5

Winter 2016 **MAT1341 – Introduction to Linear Algebra**, University of Ottawa.  
Average student rating: 4.90/5

Fall 2015 **MAT1341 – Introduction to Linear Algebra**, University of Ottawa.  
Average student rating: 4.68/5

Winter 2015 **MAT1300 – Mathematical Methods I**, *University of Ottawa*.  
 Average student rating: 4.76/5

Fall 2012 **MAT1341 – Introduction to Linear Algebra**, *University of Ottawa*.  
 Average student rating: 4.53/5

Fall 2012 **MAT1300 – Mathematical Methods I**, *University of Ottawa*.  
 Average student rating: 4.58/5

Summer 2012 **MAT1318 – Functions**, *University of Ottawa*.  
 Average student rating: 4.73/5

Winter 2012 **MAT1318 – Functions**, *University of Ottawa*.  
 Average student rating: 4.69/5

Fall 2011 **MAT1300 – Mathematical Methods I**, *University of Ottawa*.  
 Average student rating: 4.53/5

Summer 2011 **MAT1318 – Functions**, *University of Ottawa*.  
 Average student rating: 4.69/5

Winter 2011 **MAT1318 – Functions**, *University of Ottawa*.  
 Average student rating: 4.67/5

Summer 2010 **MAT1318 – Functions**, *University of Ottawa*.  
 Average student rating: 4.40/5

Winter 2010 **MAT1318 – Functions**, *University of Ottawa*.  
 Average student rating: 4.50/5

Fall 2009 **MAT1318 – Functions**, *University of Ottawa*.  
 Average student rating: 4.43/5

Summer 2009 **MAT1318 – Functions**, *University of Ottawa*.  
 Average student rating: 4.75/5

Fall 2008 **MAT1300 – Mathematical Methods I**, *University of Ottawa*.  
 Average student rating: 4.24/5

Winter 2008 **MAT1341 – Introduction to Linear Algebra**, *University of Ottawa*.  
 Average student rating: 4.13/5

Summer 2007 **MAT1341 – Introduction to Linear Algebra**, *University of Ottawa*.  
 Average student rating: 4.78/5

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## Grants, Awards, and Fellowships

April 2016 **Edinburgh Mathematical Society Travel Grant**, £800.  
 Funds used to facilitate a research visit to Michael Whittaker (Glasgow)

2014–2015 **Junior Excellence in Teaching Award**, *University of Ottawa Department of Mathematics and Statistics*.  
 Awarded to “an exceptional teacher from among all graduate students and postdoctoral fellows”

2013–2014 **CNPq (Brazil) Pós-Doutorado Júnior**, BRL 108,000.  
 Joint award with Ruy Exel to fund postdoctoral studies at UFSC Florianópolis, Brazil

2006–2008 **NSERC Postgraduate Scholarship - Doctoral**, *University of Ottawa*, \$41,000 CAD.  
 2006–2008 **President's Scholarship**, *University of Ottawa*.

2003-2010 **NSERC Postgraduate Scholarship - Masters**, *University of Victoria*, \$34,600 CAD.

2003 **Jubilee Silver Medal**, *University of Victoria*.  
Awarded to the student with the highest graduating GPA in the Faculty of Science

2003 **NSERC Undergraduate Research Award**, *University of Victoria*, \$4500 CAD.  
Supervisor: Ian Putnam

2002 **NSERC Undergraduate Research Award**, *University of Victoria*, \$4500 CAD.  
Supervisor: Ahmed Sourour

## Organization and Service

2018–2019 **Mathematics Program Committee**, *Carleton University*.  
Chair

May 2018 **Canadian Abstract Harmonic Analysis Symposium**, *Carleton University* (Co-organized with Mahmood Alaghmandan, Jason Crann, and Matthias Neufang).  
Conference Website: <https://sites.google.com/site/cahas2018ottawa/>

2017–2018 **Retention Committee**, *Carleton University*.  
Member

2017–present **Joint Analysis Seminar**, *Carleton University — University of Ottawa* (Co-organized with Thierry Giordano and Aaron Tikuisis).  
Seminar Website: <http://people.math.carleton.ca/~cstar/analysisseminar.html>

May 2016 **Fields Workshop on Dynamical Systems and Operator Algebras**, *University of Ottawa* (Co-organized with Benoît Collins, Thierry Giordano, and Vladimir Pestov).  
Conference Website: <http://www.fields.utoronto.ca/activities/15-16/dynamical>

2015–2017 **Analysis Seminar**, *University of Ottawa*.  
Seminar Website: <http://mysite.science.uottawa.ca/cstar050/analysisseminar/>

May 2012 **Ottawa Mathematics Conference**, *University of Ottawa* (Co-organized with Farnoosh Abbas Aghababazadeh, Steven Amelotte, Jan Cannizzo, Aleksandr Gontcharov, Camelia Karimianpour, Joel Lemay, Negin Mehrdad, Babak Moazzez, and Fanny Santamaria).

Fall 2011 **Graduate Student Seminar**, *University of Ottawa*.

Refereeing Ergodic Theory and Dynamical Systems, Journal of Functional Analysis, Semigroup Forum.