

Short Vitae (2019)

François Bergeron

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Ph.D. thesis

F. Bergeron, *Une systematique de la combinatoire enumerative*,
University of Montreal, 1986.

Experience (since 2000)

- Full Professor, Department of Mathematics, UQAM, since 1984 – .
- Director of Laboratoire de combinatoire et d’informatique mathématique, UQAM, 1994–2000 et 2008–2014.
- Interim director, Centre de Recherche Mathématique, 2004.
- Vice-Dean Research, Faculty of science, UQAM, 2000–2002.
- Researcher/professor invitations : Simon Fraser University, Université de Nice, University of California San Diego, University of Sydney, Université de Bordeaux I, Université Louis-Pasteur, Universidad de Chile, Université Paris Sud Orsay, Université de Paris VI, Université Paris-Est Marne-la-Vallée, Université Paris 13, Université de Nancy, Institut Mittag-Leffler, INRIA, etc.

Books

- F. Bergeron, *Algebraic Combinatorics and Coinvariant Spaces*, **CMS Treatise in Mathematics**, A.K. Peters Publishers, 2009. 221 pages.
- F. Bergeron, G. Labelle and P. Leroux, *Combinatorial Species and Tree-like Structures*, **Encyclopedia of Mathematics**, Cambridge University Press, 1998. 497 pages.
- F. Bergeron, G. Labelle and P. Leroux, *Théorie des espèces et combinatoire des structures arborescente*, **Publications du Lacim**, No. 19, Université du Québec à Montréal, 1994.

Recent refereed papers

1. F. Bergeron, and C. Reutenauer, *Golden Ratio and Phyllotaxis, What is the Mathematical Link?* **Journal of Mathematical Biology**, January 2019, Volume 78, Issue 1–2, pp 1–19. Preprint: [arXiv:1704.02880](#).
2. J.C. Aval, and F. Bergeron, *A Note on : Rectangular Schroder Parking Functions Combinatorics*, **Séminaire Lotharingien de Combinatoire**, 79 (2018-2019), Art. B79a, 13 pages. [MR3882516](#), Preprint: [arXiv:1603.09487](#).
3. F. Bergeron, *Open Questions for Operators Related to Rectangular Catalan Combinatorics*, **Journal of Combinatorics**, Volume 8, No. 4 (2017), 673–703. [MR3682396](#), Preprint: [arXiv:1603.04476](#).
4. F. Bergeron, *A q -Analog of Foulke’s Conjecture*, **Electronic Journal of Combinatorics**, Volume 24, Issue 1 (2017) Paper #P1.38. [MR3625915](#), Preprint: [arXiv:1602.08134](#).
5. F. Bergeron, *Bounded Height Interlaced Pairs of Parking Functions*, **Discrete Mathematics**, Volume 340, Issue 5, (2017), 1054–1058. [MR3612441](#), Preprint: [arXiv:1504.07136](#).
6. F. Bergeron, A. Garsia, E. Leven, and G. Xin, *Some Remarkable new Plethystic Operators in the Theory of Macdonald Polynomials*, **Journal of Combinatorics**, Volume 7, Number 4 (2016), 671–714. [MR3538159](#), Preprint: [arXiv:1405.0316](#).
7. F. Bergeron, A. Garsia, E. Leven, and G. Xin, *Compositional (km, kn) -Shuffle Conjectures*, **International Mathematics Research Notices** (2016), 4229–4270. [MR3556418](#), Preprint: [arXiv:1404.4616](#).
8. J.C. Aval, F. Bergeron, and A. Garsia, *Combinatorics of Labelled Parallelogram Polyominoes*, **Journal of Combinatorial Theory, Series A**, **132** (2015), 32–57. [MR3311337](#), Preprint: [arXiv:1301.3035](#).
9. F. Bergeron, and M. Haiman, *Tableaux Formulas for Macdonald Polynomials*, Special edition in honour of Christophe Reutenauer 60 birthday, **International Journal of Algebra and Computation**, 23 (2013), 833–852. [MR3078059](#).
10. F. Bergeron, *Multivariate Diagonal Coinvariant Spaces for Complex Reflection Groups*, **Advances in Mathematics**, Volume 239 (2013), 97–108. [MR3045143](#), Preprint: [arXiv:1105.4358](#).
11. F. Bergeron, and L.F. Prévaille-Ratelle, *Higher Trivariate Diagonal Harmonics via Generalized Tamari Posets*, **Journal of Combinatorics**, Volume 3 Number 3 (2012), 317–341. [MR3029440](#), Preprint: [arXiv:1105.3738](#).
12. J.-C. Aval, and F. Bergeron, *Co-quasi-invariant Spaces for Generalized Symmetric Groups*, **Journal of Combinatorial Theory, Series A**, Volume 119, Issue 7, (2012), 1432–1446. [MR2925935](#), Preprint: [arXiv:1107.0537](#).
13. F. Bergeron, and G. Labelle, *Qu’est-ce qu’une espèce de structures? Genèse et description*, **Bulletin de l’AMQ**, 29–51 (2011). Preprint: [arXiv:1105.5406](#).
14. F. Bergeron, N. Borie and N. Thiery, *Deformed Diagonal Harmonic Polynomials for Complex Reflection Groups*, **DMTCS Proceedings**, 23rd International Conference on Formal Power Series and Algebraic Combinatorics (FPSAC 2011), 135–146. [MR2820704](#), Preprint: [arXiv:1011.3654](#).

Submitted

15. J.C. Aval, and F. Bergeron, *Interlaced Rectangular Parking Functions*, Submitted (2019), 16 pages. [Preprint: arXiv:1503.03991](#).

Non refereed papers (since 2009)

18. *Combinatorics of r -Dyck paths, r -Parking functions, and the r -Tamari lattices*, 2012, [Preprint: arXiv:1202.6269](#).
19. *New Formulas and Conjectures for the ∇ Operator*, 2011, [Preprint: arXiv:1105.5795](#).
20. *Combinatorial Cellular Decompositions for the Space of Complex Coefficient Polynomials*, 2009, [Preprint: arXiv:0901.4030](#).

Lecture notes (available on web page)

- F. Bergeron, *Symmetric Functions and Combinatorics*, 65 pages, 2018.
- F. Bergeron and C. Hohlweg, *Théorie des groupes*, 145 pages, 2015.
- F. Bergeron, *Introduction à la combinatoire algébrique*, 225 pages, 2015.
- F. Bergeron and C. Hohlweg, *Arithmétique et géométrie classique*, 162 pages, 2014.
- F. Bergeron, *Mathématiques algorithmiques*, 182 pages, 2011.
- F. Bergeron, *Introduction à la combinatoire*, 228 pages, 2011.
- F. Bergeron and A. Goupil, *La cryptographie de l'antiquité à l'Internet*, 128 pages, 2006.

Recent communications

1. *Schur positivity and recent trends in algebraic combinatorics*, Invited speaker, **82e Séminaire Lotharingien de Combinatoire**, Curia, Portugal. April 2019.
2. *La combinatoire de Catalan rectangulaire : un survol*, Invited speaker, **Journées Nationales du GdR Informatique Mathématique**, Orléans, France. March 2019.
3. *Mathématiques expérimentales*, Invited speaker, Conference on Free Computational Mathematics at the **CIRM**, Marseille, France. February 2019.
4. *Multivariate modules for (m, n) -rectangular combinatorics I and II*, Invited speaker, Representation Theory Connection to (q, t) -Combinatorics, **BIRS**, Banff. January 2019.
5. *Modules for rectangular Catalan combinatorics, and beyond ...*, Invited speaker, **The 81th Séminaire Lotharingien de Combinatoire**, In honour of Christian Krattenthaler 60th-Birthday, Strobl, Autriche. September 2018.
6. *Structural Properties of Modules of Rectangular Multivariate Harmonic polynomials*, Invited speaker, **Algebraic groups and related topics**, Summer Meeting of the Canadian Mathematical Society. June 2018.

7. *Structure of generic modules of diagonal harmonic polynomials, and elliptic Hall algebra*, Invited speaker, **Combinatorial Algebra meets Algebraic Combinatorics**, Fifteenth Annual Meeting, Hamilton, Canada. January 2018.
8. *Operation Chains*, Invited speaker, Conference in honour of Srecko Brlek 65th-Birthday, **Words 2017**, Montréal, September 2017.
9. *Experimental Mathematics*, Invited speaker, **Sage Days 86**, Montréal, April 2017.
10. *The (q, t) -Foulkes conjecture*, Invited speaker, **The 78th Séminaire Lotharingien de Combinatoire**, In honour of Jean-Yves Thibon 60th-Birthday, Domaine Saint-Jaques, Ottrott, France. March 2017.
11. *The (q, t) -Foulkes conjecture, and ...*, Invited speaker, **Combinatorial Algebra meets Algebraic Combinatorics, Fourteenth Annual Meeting**, UQAM. January 2017.
12. *The q -Foulkes conjecture*, Invited speaker, **Special Session on Plethysm and Kronecker Products in Representation Theory**, AMS Sectional Meeting, Bowdoin College, Brunswick, Maine, September 24–25, 2016.
13. *The q -Foulkes conjecture*, Invited speaker, **Conference on Group Action and Algebraic Combinatorics**, Herstmonceux Castle UK, July 2016.
14. *Positivity for rectangular Catalan combinatorics*, Invited speaker, **Special Session on Algebraic Combinatorics**, Winter Meeting of the Canadian Mathematical Society, December 2015.
15. *Combinatorics and the Elliptic Hall Algebra*, Invited speaker, **Combinatorial Algebra meets Algebraic Combinatorics**, Queen's University, January 2015.
16. *Algebraic combinatorics and finite reflection groups*, Invited speaker, **Colloque des sciences mathématiques du Québec**, Université de Montréal, December 2014.
17. *The combinatorial side (and more) of the elliptic hall algebra*, Invited speaker, **DAHA, Hall Algebras, Torus Knots and Combinatorics**, Université d'Orsay, November 2014.
18. *Chemins de (a, b) -Dyck, et fonctions de stationnement*, Invited speaker, **Journée de combinatoire de l'institut Camille Jourdan**, Université de Lyon, November 2014.
19. *Algebraic combinatorics and finite reflection groups*, Invited address, **AMS Sectional Meeting, Dalhousie University**, Halifax, October 2014. (Slides in PDF, 16 MB)
20. *Recent Developments in Rational Combinatorics*, Invited speaker, **Special Session : Combinatorial Commutative Algebra, AMS meeting**, Philadelphia, October 2014
21. *New tableaux formulas for Macdonald polynomials*, Invited speaker, **Words, Codes and Algebraic Combinatorics**, Cetraro, Italy, July 2013.
22. *Algebraic Combinatorics and Rational Combinatorics*, Invited speaker, **International Workshop in Combinatorial Algebra**, Halifax, June 2013.
23. *Encore des surprises concernant les fonctions de stationnement*, Invited speaker, **Journées combinatoires de Bordeaux 2013**, Université de Bordeaux 1, February 2013.
24. *Multivariate Diagonal Harmonic Polynomials*, Invited speaker, Rational Catalan Combinatorics Workshop, **American Institute of Mathematics**, December 2012.
25. *Polarization, combinatorics and geometry*, Invited speaker, **22nd Annual Route 81 Conference, Interactions between Commutative Algebra and Algebraic Geometry**, Kingston, October 2012.

26. *h-Positivity and Diagonal Coinvariant Spaces*, Invited speaker, Special session : Symmetric Functions, Symmetric Group Characters, and Their Generalizations, **AMS Section Meeting**, Winston-Salem, September 2011.
27. *h-Positivity and Diagonal Coinvariant Spaces*, Invited speaker, Special session : Algebraic Combinatorics, **CMS Winter Meeting**, Toronto, December 2011.
28. *Flajolet, Power Series and Analytic Combinatorics*, Invited speaker, **FPSAC'2011**, Reykjavik, Iceland, June 2011.
29. (with N. Borie and N. Thiéry) *Deformed diagonal harmonic polynomials for complex reflection groups*, **FPSAC'2011**, Reykjavik, Iceland, June 2011.
30. *Diagonal harmonics (coinvariant spaces) of complex reflexion groups in several sets of variables*, Invited speaker, **Combinatorial Algebra meets Algrabric Combinatorics**, Eight annual meeting, Lakehead University, Thunder Bay, January 2011.

Students and postdoc fellows (since 2005)

Name (from)	Year	Level	Current position
G. Frieden (U. Michigan)	2018–	Postdoc	
R. Patrias (U. Minnesota)	2016–	Postdoc	
P. Hubert	2015–	Ph. D.	
J.E. Blazek	2014–	Ph. D.	
N. Wallace	2017–	Ph. D.	
E. Tétreault	2017–	M.Sc.	
N. Wallace	2014–2017	M.Sc.	
N. Williams (U. Minnesota)	2013–2016	Postdoc	Ass. Prof. U. Texas Dallas
A. Pang (Stanford)	2013–2016	Postdoc	Ass. Prof. Hong Kong Baptist Univ.
M. Guay-Paquette (Waterloo)	2012–2016	Postdoc.	
R. Pettus	2013–2016	M.Sc.	
M. Rashdi	2013–2015	M.Sc.	
H. Blandin (Venezuela)	2010–2015	Ph.D.	
A. Morales (MIT)	2012–2014	Postdoc.	Ass. Prof. U. Mass. Amherst.
J.E. Blazek	2013–2014	M. Sc.	Ph. D. UQAM
C. Berg (UC Davis)	2011–2013	Postdoc.	Engineer Google/Youtube
L. Serrano (Michigan)	2010–2013	Postdoc.	Soft. Engineer Google
V. Ripoll (Paris VII)	2010–2013	Postdoc.	Postdoc Univ. Vienna
L. Katshingu	2010–2013	M.Sc.	Prof. Collège Montmorency
A. Rodriguez (Venezuela)	2008–2013	Ph.D.	Merchlar, Scientist, R&D
L.F. Préville-Ratelle (Waterloo)	2008–2012	Ph.D.	Postdoc. Talca, Chile
C. Stump (Vienna)	2009–2011	Postdoc.	Prof, Ruhr-Universität Bochum
Y. Vargas (Venezuela)	2007–2009	M.Sc.	Postdoc, Fields -Toronto
A. Letarte	2006–2009	M.Sc.	Prof. Collège Jean-de-Brébeuf
F. Saliola (Cornell)	2006–2008	Postdoc.	Prof, UQAM
A. Rodriguez (Venezuela)	2006–2008	M.Sc.	Merchlar, Scientist, R&D
J. Paré	2006–2008	M.Sc.	Prof. Collège Édouard-Montpetit
H. Li (York U.)	2007–2007	Postdoc.	Ass. Prof. Drexel University
S. Mason (U. Penn.)	2007–2007	Postdoc.	Ass. Prof. Wake Forest Univ.
A. Lauve (Rutgers)	2005–2007	Postdoc.	Ass. Prof. Loyalla U. Chicago
D. Gagnon	2005–2006	M.Sc.	Prof. Cegep Vieux-Montréal
M. Pagé	2005–2006	M.Sc.	Prof. Collège Montmorency
P. McNamara (MIT)	2003–2005	Postdoc.	Ass. Prof. Bucknell Univ.
R. Biaggoli (U. Roma)	2003–2005	Postdoc.	Maître de conf., Univ. de Lyon 1

Organization and Scientific Committee (since 2006)

- Co-organizer of the the School and Workshop on Equivariant Combinatorics, June 12-23, 2017, of the CRM-Thematic Semester on Algebra and Words in Combinatorics.
- Scientific committee of the Conference on Group Action and Algebraic Combinatorics, Herstmonceaux, UK, July 2016.
- Co-organizer of the International Math Outreach Workshop, Banff International Research Station, November 2015.
- Scientific committee of the Winter meeting of the Canadian Mathematical Society, Montréal, December 2012.
- Co-organizer of the ninth workshop : Combinatorial Algebra meets Algebraic Combinatorics, Montréal, January 2012.
- Co-organizer of the seventh workshop : Combinatorial Algebra meets Algebraic Combinatorics, Toronto, January 2010.
- Program committee member, CanaDAM 2009, CRM, Montréal, May 2009.
- Co-organizer of the special session : algebraic combinatorics, Winter meeting of the CMS 2008, Ottawa, December 2008.
- Co-organizer of the workshop : Applications of Macdonald Polynomials, BIRS, Banff, September 2007.
- Principal organizer of the CRM Thematic Semester : Recent progress in combinatorics, from January to June 2007. This semester consisted in 6 workshops, each preceded by a one week special school :
 - mini-workshop : *Algebraic combinatorics and inverse systems*, January 2007.
 - workshop : *Combinatorial problems raised by statistical physics*, February 2007.
 - workshop : *Recent progress in combinatorics on words*, March 2007.
 - workshop : *Hopf algebras and combinatorics of Macdonald polynomials*, May 2007.
 - workshop : *Interactions between algebraic combinatorics and algebraic geometry*, June 2007.
 - workshop : *Enumerative aspects of real, complex and tropical geometry*, June 2007.
- Chair of the program committee of FPSAC'06, San Diego, 2006.
- Program committee member of FPSAC'05, Taormina, Italy, 2005.

Committees (since 2006)

- Editor : Annales de l'institut Henri Poincaré D, Combinatoire, Physique, et leurs interactions. 2014–
- Member of the Commission des études et de la recherche universitaire, du Conseil Supérieur de l'Éducation du Québec, 2011–2014.
- Member of the Board of the Centre de Recherche Mathématique, 2012–2015.
- Chair of a NSERC research grant selection committee, 2004–2006.
- Member of the steering committee of the Centre de Recherche Mathématique, 1998–2005.

Outreach (since 2006)

- Spectacle/Conference : *Math et Bach*, **Coeur des Sciences**, UQAM, November 2017.
- Co-author of paper : *Joining Forces in International Mathematics Outreach Efforts*, in Notices of the AMS, October 2016.
- Interview : *Financement de la recherche : le baromètre des élections*, Je vote pour la science, 23 septembre 2015.
- Interview : *La beauté des mathématiques*, Revue INTER UQAM, April 2015.
- Participation in : *Cube Rubik*, *Émission Découverte*, **Radio-Canada**, October 2014.
- Interview : *Cryptographie et mathématiques*, for : **Dans le Champs Lexical**, CIBL 101.5 FM, March 2013.
- Text : *Lu pour vous : Théorème Vivant de Cédric Villani*, **Québec-Sciences**, December 2012.
- Video capsule for : *Découverte*, **Radio-Canada**, November 2012.
- Video capsule for : *Gala des concours scientifiques du collège Montmorency*, February 2011.
- Talk : *La combinatoire algébrique*, **Club mathématique**, Université de Montréal, February 2011.
- Talk : *Pourquoi la combinatoire algébrique est-elle si cool?*, **Séminaire Universitaire de Mathématiques à Montréal**, February 2010.
- Interview : *Spécial 40 ans : le Département de Mathématiques*, **Sciences Express**, UQAM, January 2010.
- Video capsule for : **Club Social**, TV5, November 2009.
- Interview : *L'énigme du cube Rubik*, **Journal L'UQAM**, November 2008.
- Collaboration to the documentary : *Achieving the Unachievable*, A Locomotion Films production, 2007.
- Talk : *Symmetric questions have symmetric answers* , Concordia University, Invited speaker-graduate student ISM conference, May 2007.
- Talk : *Les mathématiques au secours de l'art d'Escher*. Conférences Midi de Mathématiques, UQAM ; Collège Brébeuf ; Cegep François-Xavier Garneau ; Collège de Rosemont ; Cegep Ahuntsic ; Collège Édouard-Montpetit ; Cegep régional de Lanaudière à L'Assomption.
- Talk : *Une exploration visuelle des mathématiques*. Défi Biotech-Avantis (twice), UQAM ; Cegep de Rivière-du-Loup ; Cegep Marie-Victorin ; Cegep Dawson ; Conférences Midi de Mathématiques, UQAM ; Cegep Ahuntsic ; Collège des Marcelines ; Portes Ouvertes pour les élèves de la Polyvalente Deux-Montagnes, UQAM.
- Talk : *Introduction à la cryptographie*. Cegep régional de Lanaudière à L'Assomption ; Conférences Midi du Module de Mathématiques, UQAM ; Cegep du Vieux-Montréal ; Défi Biotech, UQAM.
- Talk : *Why is algebraic combinatorics so hot ?* Queen's University, Invited speaker for Canadian Undergraduate Mathematics Conference (CUMC'2005), July 2005.
- Interview for : *La science, c'est de famille*, **Les Années Lumières**, Radio-Canada, July 2003.