Curriculum Vitæ
Jean-Philippe Labbé

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AREA OF SPECIALIZATION

My research is at the intersection of combinatorics, discrete geometry and group theory. My speciality is combining computational, combinatorial, and geometric approaches to study properties of algebraic and topological structures. In particular, my research merges computational experimentations and abstract modelizations to tackle open problems related to Coxeter groups, polytopes (in particular the permutahedra, associahedra and their generalizations), triangulations, and simplicial complexes.

MSC2010 keywords:

Combinatorial aspects of groups and algebras, Reflection and Coxeter groups (05E15, 20F55, 20B40)

Combinatorial aspects of Stanley-Reisner face rings of simplicial complexes (05E45, 13F55)

Combinatorial and computational aspects of polytopes, Special polytopes (52B05, 52B12, 52B55)

WORK EXPERIENCE

10/2016 – 09/2020	**Research Fellow**, *SFB Transregio* "Discretization in Geometry and Dynamics" Freie Universität Berlin, Germany
10/2014 – 09/2016	**Research Fellow**, *Israel Science Foundation Grant of* Pr Eran Nevo Hebrew University of Jerusalem, Israel
02/2015 – 10/2015	**Research Fellow**, Fonds de recherche Nature et Technologies (Québec) Universitad de Cantabria, Santander, Spain
07/2013 – 06/2014	**Research Fellow**, *SFB Transregio* "Discretization in Geometry and Dynamics" Freie Universität Berlin, Germany

TEACHING EXPERIENCE

2017 –	**University courses** Master courses: *Discrete Mathematics I, Seminar Discrete Mathematics I* Bachelor courses: *Wahrscheinlichkeit & Statistik, Seminar zur Geometrie*
2016 –	**Programming** Sagemath: SageDays 79 (Teaching `python` and `Sagemath`), Friday Coding Sprints
2008 – 2010	**Teaching Assistant** *Algèbre Matricielle, Combinatoire, Algèbre II*

EDUCATION

06/2020	**Habilitation**, Mathematics / Freie Universität Berlin
10/2010 – 07/2013	**Dr. rer. nat.**, Mathematics / Freie Universität Berlin Title: *Polyhedral Combinatorics of Coxeter Groups* Grade: *Magna Cum Laude* Advisor: Prof. Günter M. Ziegler
05/2008 – 08/2010	**Maîtrise ès Sciences**, Mathématiques / Université du Québec à Montréal Title: *Approche combinatoire des amas par les éléments triés des groupes de Coxeter* Advisor: Prof. Christophe Hohlweg
09/2005 – 04/2008	**Bachelier ès Sciences**, Mathématiques / Université Laval, Québec City
09/2007 – 12/2007	**Math in Moscow** / Independant University of Moscow
09/2006 – 12/2006	**Budapest Semesters in Mathematics** / Eötvös University

Publications

- 13 published articles in international refereed journals
  General journals: Canadian Journal of Mathematics, Mathematika
  Combinatorics: JCTA, EJC, J. Algebraic Combin., SIAM J. Discrete Math., Order
  Geometry and Dynamics: DCG, Geom. Dedicata, Groups Geom. Dyn., Beitr. Algebra Geom.
  Computational mathematics: Math. Program., Exp. Math.
- 1 submitted article (Advances in Mathematics)
- 2 preprints
- 3 articles in preparation
- 5 conference proceedings in major international conferences with acceptance rate $\approx 25\%$
- 1 software package (3500 lines of `Sagemath` code)
- `Sagemath`: 55 tickets authored, 105 tickets reviewed, $\approx (+12\,024$ lines, $-5\,837$ lines$)$

Honors, Awards and Grants

01/2015 – 12/2016	Postdoctoral Research Fellowship – **by Competition** *Fonds de recherche Nature et Technologies (Québec)*, (70 000\$CAD)
10/2013	Phase II – Certificate of Distinction *Berlin Mathematical School*
02/2013	Public Prize for Best Talk *Math Slam (Sandwich Theory)* – BMS Days February 2013
2011 –	Ambassador, Centre d'étude Collégial, Lac-Mégantic (Québec)
09/2010 – 08/2013	Doctoral Research Fellowship – **by Competition** *Fonds de recherche Nature et Technologies (Québec)*, (60 000\$CAD)
08/2010	Mention d'Honneur – Top Score Thesis *Faculté des Sciences, Université du Québec à Montréal*
09/2008 – 08/2010	Master Research Fellowship – **by Competition** *Fonds de recherche Nature et Technologies (Québec)*, (30 000\$CAD)
05/2008 – 08/2008	Summer Research Grant *LaCIM-UQAM*, (5 000\$CAD)
05/2007	Math in Moscow Scholarship – **by National Competition** *CMS and NSERC Scholarship (Canada)*, 3 Prizes/Year, (9 000\$CAD)
05/2007 – 08/2007	Summer Research Grant – **by Competition** *NSERC*, (6250\$CAD)
05/2006 – 08/2006	Summer Research Grant – **by Competition** *NSERC*, (6250\$CAD)
08/2005 – 04/2006	Tableau d'Honneur – Perfect Grade Point Average (4.3/4.3) *Département de Mathématiques et Statistique, Université Laval*

Selected Scientific Invitations

<u>FPSAC International Conferences</u> (acceptance $\approx 20\%$)
Tel Aviv Israel (Poster, 2020), Daejeon South Korea (Poster, 2015), Chicago USA (Poster, 2014), Nagoya Japan (2 Talks, 2012)

<u>Research invitations</u>
Oberwolfach *Algorithms in Polyhedral Geometry* (Research in Pairs, 04/2019), Institute for Mathematics and its Applications – Minneapolis (Research in Pairs, 04/2018), Oberwolfach *Algebraic and geometric Combinatorics* (02/2015), Centre International de Rencontres Mathématiques (05/2010)

<u>Invited Talks</u>
AMS Sectional Meeting *Geometric and Topological Combinatorics* (11/2019), Institute for Mathematics and its Applications (08/2017), Encuentro Colombiano de Combinatoria (06/2016)

<u>Combinatorics & Geometry Seminars</u>
Max Planck Institute Leipzig (03/2020), UCLA (11/2019), University of Southern California (11/2019), University of Washington (11/2019), University of Miami (11/2019), Institut Henri-Poincaré (03/2019), LaBRI Bordeaux (11/2017)

Professional Services

Referee

Annales Henri Lebesgue, Experimental Mathematics, Israel Journal of Mathematics, Journal of Algebra, Algebraic Combinatorics, Discrete & Computational Geometry, New York Journal of Mathematics, Beiträge zur Algebra und Geometrie, Journal of Combinatorial Theory A, European Journal of Combinatorics, Electronic Journal of Combinatorics, Séminaire Lotharingien de Combinatoire, Discrete Mathematics, Australasian Journal of Combinatorics

Organizer
- 2 Chair of organization committee (Sage Days 79, 1st BMS Student Conference)
- 5 Member of organization committee (ECCO 2020, 1st and 2nd BMS–BGSMath Joint Junior Meeting, Sage Days 84, Coxeter Groups meet Convex Geometry 2012)
- 2 Member of organization committee of research seminars at the Freie Universität Berlin (Discrete Geometry group seminar, Polyhedral Combinatorics research seminar)

Thesis Advisorship
- 3 completed bachelor theses, 1 on-going
- 3 completed master theses
- 1 on-going doctoral thesis

Past and present committees
- Examination: 3 bachelor theses, 1 master thesis, 3 PhD Qualifying Exams, 3 PhD Defenses
- Hiring: 2 post-doctoral positions
- Representation: elected student representative (3), appointed postdoctoral faculty spokesperson (2), board member (Berlin Mathematical School, *Facets of Complexity* Graduate School), Early Career Representative for the Berlin Excellence Strategy University Alliance

References

Günter M. Ziegler
Institut für Mathematik
Freie Universität Berlin
Arnimallee 2, D-14195, Berlin Germany

Eran Nevo
Institute of Mathematics
Hebrew University
Givat Ram, Jerusalem 91904, Israel

Victor Reiner
School of Mathematics
University of Minnesota
Minneapolis, MN 55455 (USA)

Francisco Santos
Departamento de Matemáticas, Estadística y Computación
Universidad de Cantabria
Av. de los Castros 48, E-39005 Santander, Spain

Matthias Beck
Department of Mathematics
San Francisco State University
1600 Holloway ave
San Francisco, CA 94132 (USA)

Volkmar Welker
Philipps-Universität Marburg
Fachbereich Mathematik und Informatik
Hans-Meerwein-Strasse
D-35032 Marburg, Germany

Interests

Languages

French:	Native speaker	English:	Fluent	German:	Fluent
Russian:	Pushkin State Institute, Moscow McGill University (Advanced 2)	Spanish:	Upper Intermediate	Hebrew:	Beginner
Hungarian:	Budapest Semesters (Beginner)				

Cycling
- Constructed three single-speed bikes
- Cyclo-camping: Québec City – Îles-de-la-Madeleine (1200km in 7 days)
- Race: Vélothon Berlin 2012 (60km in 1h38min12sec)

Other

Colonial History of the Americas	Ultimate frisbee	Sustainable gardening
Theater of the Absurd	French poetry	Fine Woodworking