

Xavier Pérez-Giménez

Curriculum Vitæ as of October 2015

Personal information

Born: October 2, 1979, in Barcelona (Spain)
Citizenship: Spanish (Canadian Permanent Resident)

Address: Department of Mathematics
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Objective

Pursuing a career in research and teaching at the university level.

Research interests

Probabilistic methods in combinatorics • Random structures • Graph theory •
Asymptotic enumeration • Applied probability • Algorithms

Education

June 2007 **Ph.D. in Mathematics** (*Cum Laude*),
Universitat Politècnica de Catalunya (Spain).
Thesis advisor: Josep Díaz.
Thesis title: *Aspects of random graphs; colourings, walkers and Hamiltonian cycles.*

July 2002 **Degree in Mathematics** (equivalent to B.Sc. + M.Sc.),
Universitat Politècnica de Catalunya (Spain).
(Stay at the University of Sheffield (U.K.) during the course 2001–2002,
under the Erasmus mobility programme.)

Professional experience

Sep. 2014 – Present	Post-doctoral position. Department of Mathematics. Ryerson University (Canada).
Oct. 2012 – Aug. 2014	Post-doctoral fellowship. Department of Combinatorics and Optimization. University of Waterloo (Canada).
Oct. 2010 – Sep. 2012	Post-doctoral position. Department of Algorithms and Complexity. Max Planck Institut für Informatik (Germany).
Sep. 2008 – Aug. 2010	Post-doctoral fellowship. Department of Combinatorics and Optimization. University of Waterloo (Canada).
Sep. 2002 – Aug. 2008	Full-time research position. Departament de Llenguatges i Sistemes Informàtics. Universitat Politècnica de Catalunya (Spain).
Sep. 1998 – Jun. 2001	Part-time tutoring grant. This position involved tutoring 1st year undergraduates and teaching problem sessions. Facultat de Matemàtiques i Estadística. Universitat Politècnica de Catalunya (Spain).

Teaching experience

Regular teaching:

- Instructor of ECE103 - **Discrete Mathematics for Engineers** (undergraduate course, 110 students). University of Waterloo (Canada). Winter term 2014.
- Instructor of ECE103 - **Discrete Mathematics for Engineers** (undergraduate course, 157 students). University of Waterloo (Canada). Spring term 2014.
- Instructor of MATH235 - **Linear Algebra 2 for Honours Mathematics** (undergraduate course, 53 students). University of Waterloo (Canada). Spring term 2013.
- Co-instructor of **Probabilistic method and randomized algorithms** (graduate course). Universität des Saarlandes (Germany). Summer semester 2011.
- Instructor of CO738 - **Probabilistic methods in discrete mathematics** (graduate course). University of Waterloo (Canada). Spring term 2009.
- Tutorial instructor of MATH136 (**Linear Algebra 1**) and MATH138 (**Calculus 2**). University of Waterloo (Canada). Winter term 2009.
- Tutorial classes in **Algorithms**. Universitat Politècnica de Catalunya (Spain). First semester of the academic years 2004–05, 2005–06 and 2006–07.

- Tutorial classes in basic **Algebra, Calculus, Programming** and **Physics**. Universitat Politècnica de Catalunya (Spain). This was a one-year review course that 1st-year undergraduates could optionally take. Academic years 1999–00 and 2000–01.

Other:

- Training of young students for the Mathematical Olympiad. In Barcelona (Spain). Occasionally, from 1998 to present.

Supervision of students

Undergraduate students (Summer research):

- **Rita María del Río-Chanona** (co-advised with A. Bonato), Summer 2015.
- **Calum MacRury** (co-advised with P. Prałat), Summer 2015.
- **Jake Nicolaidis** (co-advised with P. Prałat), Summer 2015.
- **Kirill Ternovsky** (co-advised with P. Prałat), Summer 2015.

Publications & preprints

(Co-authors who are undergraduate students are underlined.)

- [30]. D. Bal, P. Bennett, X. Pérez-Giménez and P. Prałat. **Rainbow Hamilton cycles in random geometric graphs.** (In preparation.)
- [29]. P. Gao, X. Pérez-Giménez, and C. M. Sato. **Spanning-tree packing in random geometric graphs.** (In preparation.)
- [28]. J. Díaz, X. Pérez-Giménez and N. Wormald. **A long-range infection process in a random environment.** (In preparation.)

Journal articles:

- [27]. R. M. del Río-Chanona, C. MacRury, J. Nicolaidis, X. Pérez-Giménez, P. Prałat, and K. Ternovsky. **Injective colouring of binomial random graphs.** (Submitted to *Discrete Mathematics*.)
- [26]. A. Bonato, R. M. del Río-Chanona, C. MacRury, J. Nicolaidis, X. Pérez-Giménez, P. Prałat, and K. Ternovsky. **The robot crawler graph process.** (Submitted to *Discrete Applied Mathematics*.)
- [25]. P. Gao, X. Pérez-Giménez, and C. M. Sato. **Arboricity and spanning-tree packing in random graphs.** (Submitted to *Random Structures & Algorithms*.)

- [24]. D. Mitsche, X. Pérez-Giménez and P. Prałat. **Strong-majority bootstrap percolation on regular graphs with low dissemination threshold.** (Submitted to *Combinatorics, Probability and Computing*.)
- [23]. A. Bonato, D. Mitsche, X. Pérez-Giménez and P. Prałat. **A probabilistic version of the game of zombies and survivors on graphs.** (Submitted to *Theoretical Computer Science*.)
- [22]. D. Mitsche, X. Pérez-Giménez and P. Prałat. **The bondage number of random graphs.** (Submitted to *The Electronic Journal of Combinatorics*.)
- [21]. J. Díaz, D. Mitsche, G. Perarnau, and X. Pérez-Giménez **On the relation between graph distance and Euclidean distance in random geometric graphs.** *Advances in Applied Probability*, to appear, 2015.
- [20]. A. Frieze, D. Mitsche, X. Pérez-Giménez and P. Prałat. **On-line list colouring of random graphs.** *The Electronic Journal of Combinatorics*, 22(2), #P2.41, 2015.
- [19]. K. Panagiotou, X. Pérez-Giménez, T. Sauerwald, and H. Sun. **Randomized Rumor Spreading: the Effect of the Network Topology.** *Combinatorics, Probability and Computing*, 24(2):457–479, 2015.
- [18]. X. Pérez-Giménez, and N. Wormald. **Asymptotic enumeration of strongly connected digraphs by vertices and edges.** *Random Structures & Algorithms*, 43(1):80–114, 2013.
- [17]. T. Müller, X. Pérez-Giménez, and N. Wormald. **Disjoint Hamilton cycles in the random geometric graph.** *Journal of Graph Theory*, 68(4):299–322, 2011.
- [16]. G. Kemkes, X. Pérez-Giménez, and N. Wormald. **On the chromatic number of random d -regular graphs.** *Advances in Mathematics*, 223(1):300–328, 2010.
- [15]. J. Díaz, L. Kirousis, D. Mitsche, and X. Pérez-Giménez. **On the satisfiability threshold of formulas with three literals per clause.** *Theoretical Computer Science*, 410(30–32):2920–2934, 2009.
- [14]. J. Díaz, D. Mitsche, and X. Pérez-Giménez. **Large Connectivity for Dynamic Random Geometric Graphs.** *IEEE Transactions on Mobile Computing*, 8(6):821–835, 2009.
- [13]. J. Díaz, D. Mitsche, and X. Pérez-Giménez. **On the probability of the existence of fixed-size components in random geometric graphs.** *Advances in Applied Probability*, 41(2):344–357, 2009.
- [12]. J. Díaz, A.C. Kaporis, G.D. Kemkes, L.M. Kirousis, X. Pérez, and N. Wormald. **On the chromatic number of a random 5-regular graph.** *Journal of Graph Theory*, 61(3):157–191, 2009.

- [11]. J. Díaz, X. Pérez, M. J. Serna, and N. C. Wormald. **Walkers on the cycle and the grid.** *SIAM Journal on Discrete Mathematics*, 22(2):747–775, 2008.
- [10]. J. Díaz, D. Mitsche, and X. Pérez. **Sharp threshold for hamiltonicity of random geometric graphs.** *SIAM Journal on Discrete Mathematics*, 21(1):57–65, 2007.

In peer-reviewed conference proceedings:

- [9]. A. Bonato, R. M. del Río-Chanona, C. MacRury, J. Nicolaidis, X. Pérez-Giménez, P. Prałat, and K. Ternovsky. **The robot crawler number of a graph.** In *12th Workshop on Algorithms and Models for the Web-graph (waw’15)*, volume 9479 of *Lecture Notes in Computer Science*, pages 1–16. Springer, 2015.
- [8]. A. Bonato, M. Lozier, D. Mitsche, X. Pérez-Giménez and P. Prałat. **The domination number of on-line social networks.** In *12th Annual Conference on Theory and Applications of Models of Computation (TAMC’15)*, volume 9076 of *Lecture Notes in Computer Science*, pages 150–163. Springer, 2015.
- [7]. P. Gao, X. Pérez-Giménez, and C. M. Sato. **Arboricity and spanning-tree packing in random graphs with an application to load balancing.** In *25th Annual ACM-SIAM Symposium on Discrete Algorithms (soda’14)*, pages 317–326, 2014. (Full article version submitted to *Random Structures & Algorithms*.)
- [6]. J. Díaz, L. Kirousis, D. Mitsche, and X. Pérez-Giménez. **A new upper bound for 3-SAT.** In *IARCS Annual Conference on Foundations of Software Technology and Theoretical Computer Science (FSTTCS’08)*, volume 08004 of *Dagstuhl Seminar Proceedings*, pages 353–364. Internationales Begegnungs- und Forschungszentrum fuer Informatik, 2008.
- [5]. J. Díaz, D. Mitsche, and X. Pérez-Giménez. **On the connectivity of dynamic random geometric graphs.** In *19th Annual ACM-SIAM Symposium on Discrete Algorithms (soda’08)*, pages 601–610, 2008.
- [4]. J. Díaz, A. Kaporis, L. Kirousis, and X. Pérez. **Partitioning networks into classes of mutually isolated nodes.** In *European Conference on Complex Systems*, 2005.
- [3]. J. Díaz, G. Grammatikopoulos, A. Kaporis, L. Kirousis, X. Pérez, and D. G. Sotiropoulos. **5-regular graphs are 3-colorable with positive probability.** In *13th Annual European Symposium on Algorithms (ESA’05)*, volume 3669 of *Lecture Notes in Computer Science*, pages 215–225. Springer, 2005.
- [2]. X. Pérez. **Empirical analysis of the connectivity threshold of mobile agents on the grid.** In *4th International Workshop on Efficient and Experimental Algorithms (wea’05)*, volume 3503 of *Lecture Notes in Computer Science*, pages 253–264. Springer, 2005.

- [1]. J. Díaz, X. Pérez, M. J. Serna, and N. C. Wormald. **Connectivity for wireless agents moving on a cycle or grid.** In *22nd Annual Symposium on Theoretical Aspects of Computer Science (STACS'05)*, volume 3404 of *Lecture Notes in Computer Science*, pages 353–364. Springer, 2005.

Conferences/workshops/schools/seminars

Organization of events:

- **Random Geometric Graphs and Their Applications to Complex Networks.** Banff (Canada), scheduled for Nov. 2016.

Talks in conferences or workshops:

- **17th International Conference on Random Structures and Algorithms.** Pittsburgh (USA), Jul. 2015.
- **Workshop on Strategic Behavior and Phase Transitions in Random and Complex Combinatorial Structures.** Bellaterra (Spain), Jun. 2015.
- **3rd Graph Searching in Canada (GRASCan) Workshop.** Montreal (Canada), May 2015.
- **25th Annual ACM-SIAM Symposium on Discrete Algorithms (SODA'14).** Portland (USA), Jan. 2014.
- **16th International Conference on Random Structures and Algorithms.** Poznań (Poland), Aug. 2013.
- **ESF Perspectives in Discrete Mathematics.** Bellaterra (Spain), Jun. 2012.
- **Segona jornada SCM de joves investigadors en matemàtiques.** Barcelona (Spain), Oct. 2011.
- **Young Workshop in Arithmetics and Combinatorics.** Madrid (Spain), Jun. 2011.
- **Trends in Theoretical Computer Science: Celebrating Josep Díaz's 60th birthday.** Barcelona (Spain), Feb. 2011.
- **Conference on Probabilistic Techniques in Computer Science.** Bellaterra (Spain), Sep. 2009.
- **14th International Conference on Random Structures and Algorithms.** Poznań (Poland), Aug. 2009.
- **Watermellon Workshop on Extremal Graph Theory.** Waterloo (Canada), May 2009.
- **19th Annual ACM-SIAM Symposium on Discrete Algorithms (SODA'08).** San Francisco (USA), Jan. 2008.

- **Statistical Mechanics of Distributed Information Systems (STATPHYS'23) Satellite Meeting.** Mariehamn (Finland), Jul. 2007.
- **13th International Conference on Random Structures and Algorithms.** Tel Aviv (Israel), May 2007.
- **COMBSTRU Final Workshop.** Barcelona (Spain), Sep. 2006.
- **European Conference on Complex Systems (ECCS'05).** Paris (France), Nov. 2005.
- **13th Annual European Symposium on Algorithms (ESA'05).** Mallorca (Spain), Oct. 2005.
- **4th International Workshop on Efficient and Experimental Algorithms (WEA'05).** Santorini (Greece), May 2005.
- **3rd COMBSTRU Workshop.** Oxford (United Kingdom), Apr. 2005.
- **22nd Annual Symposium on Theoretical Aspects of Computer Science (STACS'05).** Stuttgart (Germany), Feb. 2005.

Invited talks in seminars:

- Seminar. Queen Mary University of London (United Kingdom). Jun. 2015.
- **CRM-ISM Probability Seminar.** McGill University (Canada). Apr. 2015.
- **Graph Theory Seminar.** University of Waterloo (Canada). Mar. 2015.
- **Colloquium.** Iowa State University (United States). Feb. 2014.
- Seminar. University of Birmingham (United Kingdom). Jan. 2014.
- **Séminaire GT proba-info–LaBRI.** Laboratoire Bordelais de Recherche en Informatique (France). Dec. 2013.
- **Séminaire GT Combi–LIX.** Laboratoire d'Informatique de l'École Polytechnique (France). Dec. 2013.
- **Graphs @ Ryerson Seminar.** Ryerson University (Canada). Nov. 2012, Sep. 2013, Jan. 2015 and Sep. 2015.
- **Utrecht Stochastics Seminar.** Universiteit Utrecht (the Netherlands). Sep. 2012.
- **CWI–DIAMANT Seminar Combinatorics and Optimization.** Centrum Wiskunde & Informatica (the Netherlands). Sep. 2012.
- **AG1 Mittagseminar.** Max-Planck-Institut für Informatik (Germany). Jul. 2012.
- **Séminaire ALGCo–LIRMM.** Laboratoire d'Informatique, de Robotique et de Microélectronique de Montpellier (France). Jun. 2012.

- Seminar. University of Waterloo. Mar. 2006.
- **ALBCOM Seminar.** Universitat Politècnica de Catalunya (Spain). Jun. 2005.
- Seminar. University of Patras (Greece). May 2005.

Other events attended:

- **Fall School on Random Graphs.** Cargèse (France), Sep. 2015.
- **MDS Block course: Extremal Combinatorics in Random Discrete Structures.** Berlin (Germany), Feb. 2012.
- **19th Annual European Symposium on Algorithms (ESA'11).** Saarbrücken (Germany), Sep. 2011.
- **15th International Conference on Random Structures and Algorithms.** Atlanta (USA), May 2011.
- **4th Workshop on Graph Searching, Theory and Applications (GRASTA'11).** Dagstuhl (Germany), Feb. 2011.
- **DELIS Final Workshop and Review Meeting.** Barcelona (Spain), Feb. 2008.
- **Conference on Enumeration and Probabilistic Methods in Combinatorics.** Barcelona (Spain), Jun. 2007.
- **Advanced Course on Analytic and Probabilistic Techniques in Combinatorics.** Barcelona (Spain), Jan. 2007.
- **10th International Workshop on Randomization and Computation (RANDOM'06).** Barcelona (Spain), Aug. 2006.
- **Advanced Course on Recent Trends of Combinatorics in the Mathematical Context.** Barcelona (Spain), Sep. 2005.
- **International Conference on the Analysis of Algorithms (AofA'05).** Barcelona (Spain), Jun. 2005.
- **Annual DELIS Meeting.** Prague (Czech Republic), Feb. 2005.
- **Workshop/School on Models and Algorithms for the Web.** Udine (Italy), Jun. 2002.

Teaching workshops:

- **Teaching Development Seminar Series.** University of Waterloo (Canada). Mar. 2013.
- **Teaching Workshop for New (and Nearly New) Instructors in Math and CS.** University of Waterloo (Canada). Sep. 2013.

Fellowships and grants

2008–2010 **Ontario Ministry of Research and Innovation** (Canada) — \$50,000/yr.

2008–2010 Ministerio de Educación y Ciencia (Spain) — *Declined*.

2010–2012 **Max Planck Institut** (Germany) — €27,600/yr.

2015–2016 **Tutte Institute** (Canada) — \$52,000/yr.

Other professional activities

Service:

Member of the Postdoc Selection Committee at the Max Planck Institut für Informatik (Germany), Winter 2012.

Refereeing activities:

Journal of Combinatorial Theory (Series B) • Random Structures & Algorithms • Discrete Mathematics • Electronic Journal of Combinatorics • ACM Transactions on Algorithms • Theoretical Computer Science • Internet Mathematics • SODA 2013 • ICALP 2010

Awards and Honours

Sep. 1997 Bronze medal in the XII Iberoamerican Mathematical Olympiad.

Apr. 1997 7th place in the mathematical competition Cangur, 4th level (*Societat Catalana de Matemàtiques*).

Mar. 1997 Gold medal in the XXXIII Spanish Mathematical Olympiad (*Real Sociedad Matemática Española*).

Dec. 1996 1st place in the Catalan Classification for the XXXIII Spanish Mathematical Olympiad (*Societat Catalana de Matemàtiques*).

Mar. 1996 6th place in the mathematical competition Cangur, 3rd level (*Societat Catalana de Matemàtiques*).

Languages

- **Catalan** (native speaker).
- **Spanish** (native speaker).
- **English** (fluent). *Certificate of Proficiency in English, University of Michigan.*
- **French** (conversational).
- **Modern Greek** (basic/intermediate).

References

Josep Díaz	Universitat Politècnica de Catalunya (Spain).	diaz@cs.upc.edu
Nick Wormald	Monash University (Australia).	nick.wormald@monash.edu
Lefteris Kirousis	University of Athens (Greece).	lkirousis@math.uoa.gr
Paweł Pralat	Ryerson University (Canada).	pralat@ryerson.ca
Anthony Bonato	Ryerson University (Canada).	abonato@ryerson.ca