

# Clément Requilé | Curriculum Vitae

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<https://requile.github.io>

## Education

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<b>Ph.D. in Mathematics</b> <i>Supervisor: Juanjo Rué</i> <i>Title: Asymptotic study of regular planar graphs</i>	<b>Freie Universität Berlin</b> 11/2017
<b>Master in Computer Science</b> <i>Modélisation, Optimisation, Combinatoire et Algorithmique</i>	<b>Université de Montpellier</b> 07/2014
<b>Bachelor in Mathematics</b> <i>Mathématiques Fondamentales et Appliquées</i>	<b>Université de Montpellier</b> 07/2011

## Current affiliation

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<b>Beatriu de Pinós postdoctoral researcher in Mathematics</b> <i>Research group: Geometric, Algebraic and Probabilistic Combinatorics</i>	<b>Universitat Politècnica de Catalunya (UPC)</b> 05/2021 - present
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## Past affiliations

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<b>Postdoctoral researcher in Mathematics</b> <i>Research group: Analysis and Probability Theory</i>	<b>Uppsala University</b> 09/2020 - 05/2021
<b>Postdoctoral researcher in Mathematics</b> <i>Research group: Discrete Mathematics and Geometry</i>	<b>Technische Universität Wien</b> 05/2018 - 06/2020
<b>Postdoctoral researcher in Mathematics</b> <i>Research group: Algebra</i>	<b>Johannes Kepler Universität Linz</b> 10/2017 - 04/2018
<b>Phase II student</b> <i>Mentor: Raman Sanyal</i>	<b>Berlin Mathematical School</b> 02/2015 - 10/2017
<b>Ph.D. student in Mathematics</b> <i>Research group: Combinatorics and Graph Theory</i>	<b>Freie Universität Berlin</b> 09/2014 - 09/2017
<b>Master student in Computer Science</b> <i>Research group: AIGCo (algorithmes, graphes et combinatoire)</i>	<b>LIRMM</b> 03/2014 - 07/2014

## Research interests

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My main research consists in applying methods from *analytic combinatorics* and computer algebra to the study of *random discrete structures*. I am particularly interested in the study of topological graphs, tree-like structures and lattice paths. Another topic of interest is the design of *fixed-parameter tractable algorithms* to efficiently solve NP-Hard problems. I also like *extremal problems* on combinatorial structures, in particular those expressed in terms of *positional games*.

## Preprints

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- ▷ **On the expected number of perfect matchings in cubic planar graphs**, with Marc Noy and Juanjo Rué. *To appear in Publicacions Matemàtiques.* [arXiv:2005.13821](https://arxiv.org/abs/2005.13821).
- ▷ **Asymptotic enumeration of labelled 4-regular planar graphs**, with Marc Noy and Juanjo Rué. *Submitted.* [arXiv:2001.05943](https://arxiv.org/abs/2001.05943).

## Publications

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12. **Block statistics in subcritical graph classes**, with Dimbinaina Ralaivaosaona and Stephan Wagner. *Analysis of Algorithms (AofA) 2020, Klagenfurt, Austria - Leibniz International Proceedings in Informatics (LIPIcs)*, volume 159, June 2020, pp. 24:1–24:14.
11. **Further results on random cubic planar graphs**, with Marc Noy and Juanjo Rué. *Random Structures and Algorithms*, volume 56, Issue 3, May 2020, pp. 892-924. *arXiv:1802.06679*.
10. **Maximal independent sets and maximal matchings in subcritical graph classes**, with Michael Drmota, Lander Ramos and Juanjo Rué. *The Electronic Journal of Combinatorics*, volume 27, Issue 1, January 2020, P1.5. *arXiv:1904.10244*.
9. **Enumeration of labelled 4-regular planar graphs**, with Marc Noy and Juanjo Rué. *Proceedings of the London Mathematical Society*, volume 119, Issue 2, August 2019, pp. 358-378. *arXiv:1709.04678*.
8. **Maximal independent sets and maximal matchings in series-parallel and related graph classes** (extended abstract), with Michael Drmota, Lander Ramos and Juanjo Rué. *Analysis of Algorithms (AofA) 2018, Uppsala, Sweden - Leibniz International Proceedings in Informatics*, volume 110, June 2018, pp. 18:1–18:15.
7. **Proper coloring Painter-Builder game**, with Małgorzata Bednarska-Bzdęga, Michael Krivelevich and Viola Mészáros. *Discrete Mathematics*, volume 341, Issue 3, March 2018, pp. 658-664. *arXiv:1612.02156*.
6. **Strong Ramsey games: Drawing on an infinite board**, with Dan Hefetz, Christopher Kusch, Lothar Narins, Alexey Pokrovskiy and Amir Sarid. *Journal of Combinatorial Theory, Series A*, volume 150, August 2017, pp. 248-266. *arXiv:1605.05443*.
5. **Enumeration of labeled 4-regular planar graphs** (extended abstract), with Marc Noy and Juanjo Rué. *European Conference on Combinatorics, Graph Theory and Applications (EuroComb) 2017, Vienna, Austria - Electronic Notes in Discrete Mathematics*, volume 61, August 2017, pp. 933-939.
4. **Random cubic planar graphs revisited** (extended abstract), with Marc Noy and Juanjo Rué. *Discrete Mathematics Days (DMD) 2016, Barcelona, Spain - Electronic Notes in Discrete Mathematics*, volume 54, October 2016, pp. 211-216.
3. **FPT algorithms for plane completion problems**, with Dimitris Chatzidimitriou, Archontia C. Giannopoulou, Spyridon Maniatis, Dimitrios M. Thilikos and Dimitris Zoros. *41st International Symposium on Mathematical Foundations of Computer Science (MFCS), August 2016, Kraków, Poland - Leibniz International Proceedings in Informatics*, volume 58, August 2016, pp. 26:1-26:13.
2. **Variants of plane diameter completion**, with Petr A. Golovach and Dimitrios M. Thilikos. *10th International Symposium on Parameterized and Exact Computation (IPEC) 2015, Patras, Greece - Leibniz International Proceedings in Informatics*, volume 43, November 2015, pp. 30-42. *arXiv:1509.00757*.
1. **Triangles in random cubic planar graphs** (extended abstract), with Juanjo Rué. *European Conference on Combinatorics, Graph Theory and Applications (EuroComb) 2015, Bergen, Norway - Electronic Notes in Discrete Mathematics*, volume 49, November 2015, pp. 383-391.

## Experiences as teaching assistant

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### Discrete Mathematics (English)

First semester of the Master in Computer Science

Technische Universität Wien

Winter semester 2019 - 30 hours

### Discrete Mathematics (English)

First semester of the Master in Computer Science

Technische Universität Wien

Winter semester 2018 - 30 hours

### Stochastic II (English)

Sixth semester of the Bachelor in Mathematics

Freie Universität Berlin

Summer semester 2015 - 30 hours

## Experience as lecturer

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### ProInformatik I: Logik und Diskrete Mathematik (German)

First semester of the Bachelor in Computer Science

Freie Universität Berlin

Summer semester 2017 - 36 hours

## Grants

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<b>Beatriu de Pinós</b> <i>Structural analysis of random planar graphs and maps.</i> Principal investigator: Clément Requilé.	<b>BP-2019 AGAUR</b> 05/2021 - 04/2024
<b>Special Research Program (SFB) of the Austrian Science Fund (FWF)</b> <i>Shape characteristics of planar maps and planar graphs.</i> Principal investigator: Michael Drmota.	<b>F50-02 Algorithmic and Enumerative Combinatorics</b> 05/2018 - 06/2020
<b>Special Research Program (SFB) of the Austrian Science Fund (FWF)</b> <i>Algorithmic lattice path counting using the kernel method.</i> Principal investigator: Manuel Kauers.	<b>F50-04 Algorithmic and Enumerative Combinatorics</b> 10/2017 - 04/2018
<b>FU Berlin Research Alumni Program</b> <i>Size of the largest 2-connected component in a random cubic planar graph.</i> Principal investigator: Clément Requilé.	<b>Travel grant to UPC, Barcelona</b> 06 - 07/2016
<b>DAAD - CAMPUS FRANCE</b> <i>Analytic, probabilistic and geometric methods for random constrained graphs.</i> Principal investigators: Juanjo Rué and Vlady Ravelomanana.	<b>Bilateral Project ID - 57134837</b> 01/2015 - 12/2016
<b>Marie Skłodowska-Curie Career Integration Grant (Europe) FP7-PEOPLE-2013-CIG</b> <i>Enumeration of discrete structures: algebraic, analytic, probabilistic and algorithmic methods for enriched planar graphs and planar maps.</i> Principal investigator: Juanjo Rué.	<b># 630749 CountGraph</b> 03/2014 - 12/2016 (early termination)

## Internships

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<b>Parameterized complexity of modification problems on plane graphs</b> <i>Supervisor: Dimitrios M. Thilikos</i>	<b>LIRMM, Montpellier</b> 03 - 06/2014
<b>Model reduction with many timescales of bio-chemical graphs</b> <i>Supervisor: Ovidiu Radulescu</i>	<b>DIMNP - Udm</b> 06 - 08/2013
<b>Algorithms of approximation for the maximum clique problem</b> <i>Joint with Gaëlle Hisler. Supervisor: Rodolphe Giroudeau</i>	<b>Udm</b> 03 - 06/2013
<b>Topological methods in combinatorics</b> <i>Supervisor: Jorge Luis Ramírez Alfonsín</i>	<b>Udm</b> 03 - 06/2012

## Co-organization of scientific meetings

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<b>SFB F50 Statusseminar 2018</b> <i>Member of the organizing committee (chair: Christian Krattenthaler)</i>	<b>Strobl am Wolfgangsee</b> 2 - 5/12/2018
<b>10th Jornadas de Matemática Discreta y Algorítmica</b> <i>Member of the organizing committee (chair: Juanjo Rué)</i>	<b>Barcelona</b> 6 - 8/07/2016
<b>TAU-FUB Joint Workshop on Positional Games</b> <i>Member of the organizing committee (chairs: Michael Krivelevich and Tibor Szabó)</i>	<b>Berlin</b> 22 - 26/02/2016

## Advanced courses and thematic meetings as student

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<b>Algorithmic and Enumerative Combinatorics</b> <i>5th AEC Summer School</i>	<b>RISC, Hagenberg</b> 07/2019
<b>Algorithmic and Enumerative Combinatorics</b> <i>4th AEC Summer School</i>	<b>RISC, Hagenberg</b> 07/2018

<b>Random Discrete Structures and Beyond</b> <i>BGSMath Monthly Program</i>	<b>UPC, Barcelona</b> 06/2017
<b>Random Graphs</b> <i>Cargèse Fall School</i>	<b>IES de Cargèse</b> 09/2015
<b>Additive Combinatorics</b> <i>Block Course</i>	<b>Freie Universität Berlin</b> 10/2014

### Scientific visits

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<b>Department of Mathematical Sciences of Stellenbosch University, Western Cape, South Africa</b> <i>Research group: Mathematics Division with Stephan Wagner</i>	12/2018
<b>Department of Mathematics of the Universitat Politècnica de Catalunya, Barcelona, Spain</b> <i>Research group: Discrete Mathematics with Marc Noy</i>	03/2016 – 04/2017
<b>IRIF (Research Institute on the Foundations of Computer Science) at Université de Paris, France</b> <i>Research group: Combinatorics with Vlado Ravelomanana</i>	11/2016
<b>Department of Mathematics of the National Kapodistrian University of Athens, Greece</b> <i>Research group: Mathematical Analysis with Dimitrios Thilikos</i>	02/2015

### Conference talks

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<b>Analysis of Algorithms 2021</b> <i>The expected number of perfect matchings in cubic planar graphs</i>	<b>Klagenfurt/Online</b> 15/06/2021
<b>SFB F50 Statusseminar</b> <i>Ising model on maps and enumeration of some classes of planar graphs</i>	<b>Online</b> 15/12/2020
<b>Analysis of Algorithms 2020</b> <i>Block statistics in subcritical graph classes</i>	<b>Klagenfurt/Online recording</b> <a href="https://www.youtube.com/watch?v=-SJRssqq020">youtube.com/watch?v=-SJRssqq020</a>
<b>3rd Workshop on Analytic and Enumerative Aspects of Combinatorics</b> <i>Long cycles in cubic planar graphs</i>	<b>Caen</b> 31/08/2019
<b>Discrete Mathematics Workshop</b> <i>A census of planar maps and graphs</i>	<b>Stellenbosch</b> 12/12/2018
<b>CSASC 2018</b> <i>Asymptotic enumeration of labelled 4-regular planar graphs</i>	<b>Bratislava</b> 13/09/2018
<b>Analysis of Algorithms 2018</b> <i>Maximal independent sets and maximal matchings in series-parallel and related graph classes</i>	<b>Uppsala</b> 25/06/2018
<b>Workshop on Enumerative Combinatorics</b> <i>Asymptotic enumeration of 4-regular planar graphs</i>	<b>Oberwolfach</b> 15/05/2018
<b>SFB F50 Statusseminar</b> <i>Asymptotic study of regular planar graphs</i>	<b>Strobl</b> 4/12/2017
<b>European Conference on Combinatorics, Graph Theory and Applications, 2017</b> <i>Enumeration of labelled 4-regular planar graphs</i>	<b>Vienna</b> 28/08/2017
<b>Berlin-Poznań seminar on Discrete Mathematics</b> <i>On the enumeration of regular planar graphs</i>	<b>Hamburg</b> 21/04/2017
<b>Journées ALÉA 2017</b> <i>Énumération des graphes planaires 4-réguliers</i>	<b>Marseille</b> 20/03/2017
<b>FUB-TAU Joint Research Workshop on Graph and Hypergraph Coloring</b> <i>On a version of the game of Painter-Builder</i>	<b>Tel Aviv</b> 5/03/2017

<b>10th Jornadas de Matematica Discreta y Algoritmica</b> <i>Random cubic planar graph, revisited</i>	<b>Barcelona</b> 7/07/2016
<b>10th International Symposium on Parameterized and Exact Computation</b> <i>Variants of plane diameter completion</i>	<b>Patras</b> 16/09/2015
<b>European Conference on Combinatorics, Graph Theory and Applications, 2015</b> <i>Triangles in random cubic 3-connected planar graphs</i>	<b>Bergen</b> 31/08/2015

## Seminar talks

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<b>Séminaire de combinatoire énumérative et analytique de l'IRIF</b> <i>Modèle d'Ising et couplages parfaits sur les graphes planaires cubiques</i>	<b>Online</b> 17/12/2020
<b>Probability and Combinatorics Seminar</b> <i>Random planar graphs</i>	<b>Uppsala University</b> 08/10/2020
<b>Seminar Arbeitsgemeinschaft Diskrete Mathematik</b> <i>Long cycles in cubic planar graphs</i>	<b>Technische Universität Wien</b> 22/10/2019
<b>Seminar Arbeitsgemeinschaft Diskrete Mathematik</b> <i>Enumeration of labeled 4-regular planar graphs</i>	<b>Technische Universität Wien</b> 12/12/2017
<b>Seminar Algebra</b> <i>Enumeration of regular planar graphs</i>	<b>Johannes Kepler Universität Linz</b> 23/11/2017
<b>LIMDA Joint Seminar</b> <i>The enumeration of 4-regular planar graphs</i>	<b>Universitat Politècnica de Catalunya</b> 26/04/2017
<b>Combinatorics reading seminar</b> <i>Graph limits: graph parameters and connection matrices</i>	<b>Universitat Politècnica de Catalunya</b> 31/01/2017
<b>Combinatorics reading seminar</b> <i>Sampling and random walks on expander graphs</i>	<b>Universitat Politècnica de Catalunya</b> 27/10 - 03/11/2016
<b>Combinatorics reading seminar</b> <i>The phase transition in random graphs</i>	<b>Universitat Politècnica de Catalunya</b> 12/04/2016
<b>Seminar Discrete Geometry</b> <i>Intrinsic volumes for polyconvex sets</i>	<b>Freie Universität Berlin</b> 15/12/2016
<b>LIMDA Joint Seminar</b> <i>Variants of plane diameter completion</i>	<b>Universitat Politècnica de Catalunya</b> 18/11/2015
<b>Research Seminar Combinatorics</b> <i>Triangles in random cubic planar graphs</i>	<b>Freie Universität Berlin</b> 15/07/2015
<b>Research Seminar Combinatorics</b> <i>A parameterized algorithm for the diameter improvement problem for plane graphs</i>	<b>Freie Universität Berlin</b> 27/11/2014
<b>Séminaire ALGCo</b> <i>Complexité paramétrée et complétion plane à diamètre borné</i>	<b>LIRMM</b> 12/06/2014

## Languages

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### Natural

*French* (native), *English* (fluent), *German* (good), *Spanish* (good), *Catalan* (beginner) and *Swedish* (beginner)

### Programming

*Python*, *C* and *C++*, and mathematical softwares (*Maple*, *Sage*, *Mathematica* and *MatLab*)