

Clément Requile | Curriculum Vitae

Matematiska institutionen, Uppsala universitet.
Rum ÅNG 74105, Box 480, Lägerhyddsvägen 1, 751 06 Uppsala, Sweden.

clement.requile@math.uu.se
<https://requile.github.io>

Education

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

Current affiliation

Postdoctoral researcher in Mathematics <i>Research group: Analysis and Probability Theory</i>	Uppsala University 09/2020 - present
---	--

Past affiliations

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

Research interests

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

- ▷ **On the expected number of perfect matchings in cubic planar graphs**, with Marc Noy and Juanjo Rué. *Submitted. arXiv:2005.13821.*
- ▷ **Asymptotic enumeration of labelled 4-regular planar graphs**, with Marc Noy and Juanjo Rué. *Submitted. arXiv:2001.05943.*

Publications

12. **Block statistics in subcritical graph classes**, with Dimbinaina Ralaivaosaona and Stephan Wagner. *Analysis of Algorithms (AofA) 2020, Klagenfurt, Austria - Leibniz International Proceedings in Informat-*

- ics (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

Discrete Mathematics (English) <i>First semester of the Master in Computer Science</i>	Technische Universität Wien <i>Winter semester 2019 - 30 hours</i>
Discrete Mathematics (English) <i>First semester of the Master in Computer Science</i>	Technische Universität Wien <i>Winter semester 2018 - 30 hours</i>
Stochastic II (English) <i>Sixth semester of the Bachelor in Mathematics</i>	Freie Universität Berlin <i>Summer semester 2015 - 30 hours</i>

Experience as lecturer

ProInformatik I: Logik und Diskrete Mathematik (German) <i>First semester of the Bachelor in Computer Science</i>	Freie Universität Berlin <i>Summer semester 2017 - 36 hours</i>
---	---

Grants

Special Research Program (SFB) of the Austrian Science Fund (FWF) <i>Shape Characteristics of Planar Maps and Planar Graphs.</i>	F50-02 Algorithmic and Enumerative Combinatorics <i>05/2018 - 06/2020</i>
--	---

Special Research Program (SFB) **F50-04 Algorithmic and Enumerative Combinatorics**
of the Austrian Science Fund (FWF)
Algorithmic lattice path counting using the kernel method. *10/2017 - 04/2018*
Principal investigator: Manuel Kauers.

DAAD - CAMPUS FRANCE Bilateral Project ID - 57134837
Analytic, probabilistic and geometric methods for random constrained graphs. 01/2015 - 12/2016
 Principal investigators: Juanjo Rué and Vlado Ravelomanana.

Marie Skłodowska-Curie Career Integration Grant (Europe)	# 630749	CountGraph
FP7-PEOPLE-2013-CIG		
<i>Enumeration of discrete structures: algebraic, analytic, probabilistic</i>		03/2014 - 12/2016
<i>and algorithmic methods for enriched planar graphs and planar maps.</i>		(early termination)
Principal investigator: Juanjo Rué.		

Parameterized complexity of modification problems on plane graphs **LIRMM, Montpellier**
Supervisor: Dimitrios M. Thilikos *03 - 06/2014*

Model reduction with many timescales of bio-chemical graphs DIMNP - UdM
Supervisor: Ovidiu Radulescu *06 - 08/2013*

Algorithms of approximation for the maximum clique problem **UdM**
Joint with Gaëlle Hisler. Supervisor: Rodolphe Giroudeau *03 - 06/2013*

Topological methods in combinatorics
Supervisor: Jorge Luis Ramírez Alfonsín

UdM
03 - 06/2012

SFB Statusseminar 2018 **Strobl am Wolfgangsee**
Member of the organizing committee (chair: Christian Krattenthaler) *2 - 5/12/2018*

10th Jornadas de Matemática Discreta y Algorítmica **Barcelona**
Member of the organizing committee (chair: Juanjo Rué) *6 - 8/07/2016*

TAU-FUB Joint Workshop on Positional Games	Berlin
<i>Member of the organizing committee (chairs: Michael Krivelevich and Tibor Szabó)</i>	<i>22 - 26/02/2016</i>

Algorithmic and Enumerative Combinatorics RISC, Hagenberg
 5th AEC Summer School 07/2019

Algorithmic and Enumerative Combinatorics RISC, Hagenberg
 4th AEC Summer School 07/2018

Random Discrete Structures and Beyond
BGSMath Monthly Program

UPC, Barcelona
 06/2017

Random Graphs IES de Cargèse
Cargèse Fall School
 09/2015

Additive Combinatorics **Freie Universität Berlin**
Block Course *10/2014*

Scientific visits

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

Conference talks

- Analysis of Algorithms 2020** Online
Block statistics in subcritical graph classes Online video recording
- SFB Statusseminar** Online
Ising model on maps and enumeration of some classes of planar graphs 15/12/2020
- 3rd Workshop on Analytic and Enumerative Aspects of Combinatorics** Caen
Long cycles in cubic planar graphs 31/08/2019
- Discrete Mathematics Workshop** Stellenbosch
A census of planar maps and graphs 12/12/2018
- CSASC 2018** Bratislava
Asymptotic enumeration of labelled 4-regular planar graphs 13/09/2018
- Analysis of Algorithms 2018** Uppsala
Maximal independent sets and maximal matchings in series-parallel and related graph classes 25/06/2018
- Workshop on Enumerative Combinatorics** Oberwolfach
Asymptotic enumeration of 4-regular planar graphs 15/05/2018
- SFB Statusseminar** Strobl
Asymptotic study of regular planar graphs 4/12/2017
- European Conference on Combinatorics, Graph Theory and Applications, 2017** Vienna
Enumeration of labelled 4-regular planar graphs 28/08/2017
- Berlin-Poznań seminar on Discrete Mathematics** Hamburg
On the enumeration of regular planar graphs 21/04/2017
- Journées ALÉA 2017** Marseille
Énumération des graphes planaires 4-réguliers 20/03/2017
- FUB-TAU Joint Research Workshop on Graph and Hypergraph Coloring** Tel Aviv
On a version of the game of Painter-Builder 5/03/2017
- 10th Jornadas de Matematica Discreta y Algoritmica** Barcelona
Random cubic planar graph, revisited 7/07/2016
- 10th International Symposium on Parameterized and Exact Computation** Patras
Variants of plane diameter completion 16/09/2015
- European Conference on Combinatorics, Graph Theory and Applications, 2015** Bergen
Triangles in random cubic 3-connected planar graphs 31/08/2015

Seminar talks

Séminaire de combinatoire énumérative et analytique de l'IRIF

Modèle d'Ising et couplages parfaits sur les graphes planaires cubiques

Online

17/12/2020

Probability and Combinatorics Seminar

Random planar graphs

Uppsala University

08/10/2020

Seminar Arbeitsgemeinschaft Diskrete Mathematik

Long cycles in cubic planar graphs

Technische Universität Wien

22/10/2019

Seminar Arbeitsgemeinschaft Diskrete Mathematik

Enumeration of labeled 4-regular planar graphs

Technische Universität Wien

12/12/2017

Seminar Algebra

Enumeration of regular planar graphs

Johannes Kepler Universität Linz

23/11/2017

LIMDA Joint Seminar

The enumeration of 4-regular planar graphs

Universitat Politècnica de Catalunya

26/04/2017

Combinatorics reading seminar

Graph limits: graph parameters and connection matrices

Universitat Politècnica de Catalunya

31/01/2017

Combinatorics reading seminar

Sampling and random walks on expander graphs

Universitat Politècnica de Catalunya

27/10 - 03/11/2016

Combinatorics reading seminar

The phase transition in random graphs

Universitat Politècnica de Catalunya

12/04/2016

Seminar Discrete Geometry

Intrinsic volumes for polyconvex sets

Freie Universität Berlin

15/12/2016

LIMDA Joint Seminar

Variants of plane diameter completion

Universitat Politècnica de Catalunya

18/11/2015

Research Seminar Combinatorics

Triangles in random cubic planar graphs

Freie Universität Berlin

15/07/2015

Research Seminar Combinatorics

A parameterized algorithm for the diameter improvement problem for plane graphs

Freie Universität Berlin

27/11/2014

Séminaire AlGCo

Complexité paramétrée et complétion plane à diamètre borné

LIRMM

12/06/2014

Languages

Natural

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

Programming

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