

Antoine RENARD

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Education

Academic Background

2022–... PhD in Mathematical Sciences, University of Liège, Belgium.

Supervised by Michel Rigo and Markus A. Whiteland.

2020–2022 Master's Degree in Mathematical Sciences (teaching focus), University of Liège, Belgium.

Master's thesis: "*La cryptographie sur les courbes elliptiques, et son application à la blockchain du Bitcoin*", supervised by Michel Rigo.

Honours: Summa cum laude.

2017–2020 Bachelor's Degree in Mathematical Sciences, University of Liège, Belgium.

Honours: Summa cum laude.

2011–2017 Collège Saint-Joseph de Chênée, Liège, Belgium.

Graduated from secondary school with highest honours.

Professional Experience

2022–... Teaching Assistant, Department of Mathematics, University of Liège, Belgium.

Supervision of exercise sessions in linear algebra, graph theory, and general mathematics.

November 2021–December 2021 Temporary teaching position, Centre Scolaire Saint-Benoît Saint-Servais, Liège, Belgium.

In charge of a 4th-grade mathematics course (5h/week) for a one-month substitution.

Scientific Background

Published papers

1. Bastient Mignoty, Antoine Renard, Michel Rigo, and Markus A. Whiteland. Automatic proofs in combinatorial game theory. *International Journal of Game Theory* **54** (2025), 35. doi : <https://doi.org/10.1007/s00182-025-00953-3>
2. Antoine Renard, Michel Rigo, and Markus A. Whiteland. Introducing q -deformed binomial coefficients of words. *Journal of Algebraic Combinatorics* **61** (2025), 25. doi: <https://doi.org/10.1007/s10801-025-01384-9>.
3. Antoine Renard, Michel Rigo, and Markus A. Whiteland. q -Parikh matrices and q -deformed binomial coefficients of words. *Discrete Mathematics* **348** (2025), 5. doi: <https://doi.org/10.1016/j.disc.2024.114381>.

4. Antoine Renard and Michel Rigo. Variants of the Wythoff game with terminal positions or blocking maneuvers. *Journal of Integer Sequences* **29** (2026), Article 26.1.6.
Preprint: <https://arxiv.org/abs/2512.11601>

Research stays

June 26, 2023 – June 30, 2023 Laboratory of Mathematics, University of Reims Champagne-Ardenne, supervised by Sophie Morier-Genoud and Valentin Ovsienko.

Posters

1. *Generalisations of the binomial coefficient of words*, CANT 2025, CIRM, Marseille, France, September 29–October 3, 2025.
2. *q-deformations of binomial coefficients of words*, Journées Nationales d’Informatique Mathématique 2023, IRIF (University Paris Cité), Paris, France, April 4–7, 2023.

Talks

Items marked with a * are invited talks.

Talks in international conferences and seminars

1. *Automatic proofs in combinatorial game theory*, Numeration and Substitutions 2025, University of Tsukuba, Japan, September 8–12, 2025.
2. *Automatic proofs in combinatorial game theory*, 15th Days on Computational Game Theory, Tilburg University, The Netherlands, March 6–7, 2025.
3. *q-deformed binomial coefficients of words*, Mons 19th Theoretical Computer Science Days, Côte d’Azur University, Nice, France, September 2–6, 2024.

Talks in local seminars and workshops

4. *A stroll around binomial coefficients*, PhD Day 2026, University of Liège, Liège, Belgium, May 20, 2026.
5. **q-deformed binomial coefficients of words*, Séminaire ADA (weekly seminar), Laboratoire de Mathématiques Pures et Appliquées Joseph Liouville (LMPA), Université du Littoral Côte d’Opale (ULCO), Calais, France, December 11, 2025.
6. *Automatic proofs in combinatorial game theory*, PhD Seminar Days 2025, University of Luxembourg, Belval, Luxembourg, May 19–21, 2025.
7. *q-deformed binomial coefficients of words*, Workshop “Words and Subwords”, University of Liège, Liège, Belgique, May 12–16, 2025.
8. *q-deformed binomial coefficients of words*, PhD Away Days 2024, University of Liège, Liège, Belgium, October 21–23, 2024.
9. **q-deformed binomial coefficients of words*, weekly seminar at the Laboratory of Computer Science, University of Rouen, Rouen, France, October 3, 2024.
10. *q-deformations of binomial coefficients of words*, Discrete mathematics seminar, University of Liège, Liège, Belgium, November 10, 2023.
11. *q-deformations of binomial coefficients of words*, weekly seminar at the Laboratory of Mathematics, University of Reims Champagne-Ardenne, Reims, France, June 27, 2023.
12. *q-deformations of binomial coefficients of words*, PhD Seminar of the UR Mathematics, University of Liège, Liège, Belgium, April 11, 2023.

Attended scientific venues

- ✓ **One-off meetings:** DLT 2026 (Rouen, France), CANT 2025 (CIRM, Marseille, France), Numeration 2025 (Tsukuba, Japan), WORDS 2025 (Nancy, France), Workshop “Words and Subwords” 2025 (Liège, Belgium), Workshop “Uniform Distribution of Sequences” 2025 (Vienna, Austria), 15th Days on Computational Game Theory 2025 (Tilburg, the Netherlands), Mons 19th TCS Days 2024 (Nice, France), Numeration 2024 (Utrecht, the Netherlands), Thematic month February 2024: Discrete Mathematics & Computer Science: Groups, Dynamics, Complexity, Words (CIRM, Marseille, France), DLT–WORDS 2023 (Umeå, Sweden), Numeration 2023 (Liège, Belgium), 15th JCB 2023 (Bordeaux, France), Mons 18th TCS Days 2022 (Prague, Czech Republic), Dyadisc 5: S -adicity 2022 (Liège, Belgium), SDA2 Days 2022 (Liège, Belgium).
- ✓ **On a regular basis:** Seminars of the discrete mathematics team (ULiège), One World Combinatorics on Words Seminar (online), One World Numeration Seminar (online).

Miscellaneous

Science Outreach

- ✓ *Communicating Science*, course given by Yaël Nazé in the context of the doctoral training in sciences (ULiège), January–March 2025.
- ✓ MATH.en.JEANS, since September 2023.

University Service

- ✓ Member of the Department of Mathematics Council (2022–2025).

PhD Students Network – Mathematics

- ✓ Active member (secretary) of ULiège’s PhD Students Network (ReD) (2025–...).
- ✓ Co-organisier of the PhD Seminar Days, Department of Mathematics, University of Liège (2022–...).

Languages

French Mother tongue

English Advanced (C1-C2)

Dutch Notions (A1-A2)

Other activities and interests

- ✓ Running and hiking
- ✓ Music (piano)
- ✓ Astronomy