

# Joaquim Cera Da Conceição

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Born on 06/06/1998

## Education and affiliations

- 2025–2026 **ATER (Temporary Teaching and Research Associate) in mathematics**, Université de Caen Normandie (LMNO)
- 2022–2025 **PhD in Mathematics**, Université de Caen Normandie (LMNO),  
Advisor: Christian Ballot  
Thesis: Various density questions in the theory of Lucas sequences
- 2021–2022 **Master's Degree in Pure Mathematics**, *Number theory and functional analysis*, Université de Bourgogne Franche-Comté
- 2019–2021 **Master's Degree in General Mathematics**, Université de Caen Normandie
- 2016–2019 **Bachelor's Degree in Mathematics**, Université de Caen Normandie, 3-year program
- 2015–2016 **Baccalauréat Scientifique**, Lycée Jean Rostand, Caen

## Experience

- Mar.–Apr. 2025 **Visiting Scientist**, Max Planck Institute for Mathematics,  
Mentor: Pieter Moree
- 2022 **Research Internship**, *Master's thesis*, Université de Caen Normandie,  
Advisor: Christian Ballot  
Title: Two density studies
- 2021 **Research Project**, Université de Franche-Comté,  
Advisor: Christophe Delaunay  
Title: The prime number theorem
- 2020 **Research Project**, Université de Caen Normandie,  
Advisor: Christian Ballot  
Title: Euler's totient function for Gaussian and Eisenstein integers
- 2019 **Laboratory Internship**, Université de Caen Normandie,  
Advisor: Christian Ballot  
Title: Solvable, nilpotent, abelian and cyclic numbers

## Organisation

- 2025–ongoing **PhD Speed Talks, LMNO (Caen)**

## Publications

- 2025 **Divisibility of the Multiplicative Order Modulo Monic Irreducible Polynomials Over Finite Fields**, *Journal of Number Theory*, 277 (2025), 105–123
- 2025 **Primitive Divisors of Lucas Sequences in Polynomial Rings**, *Journal of Algebra*, 672 (2025), 400–412
- 2023 **Multinomial Catalan Numbers and Lucas analogues**, *Journal of Integer Sequences*, 26 (2023), Article 23.9.7

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## Teaching

- 2025–2026 **Calculus**, first-year computer-science students, equations and inequalities, functions, sequences, limits, asymptotic analysis  
50h of mixed courses and exercise sessions
- Probability**, first-year mathematics students, sets and functions, sums and products, combinatorics, introduction to probabilities  
50h of mixed courses and exercise sessions
- Applied linear algebra**, third-year applied-mathematics students, linear programming, matrix decomposition, singular value decomposition, simplex method  
10h of practical sessions
- Linear Algebra**, second-year mathematics students, geometry, endomorphisms, euclidean spaces, symmetry, projection  
35h of exercise sessions
- Algebra**, first-year computer-science students  
50h of mixed courses and exercise sessions
- 2024–2025 **Calculus**, first-year computer-science students, equations and inequalities, functions, sequences, limits, asymptotic analysis  
50h of mixed courses and exercise sessions
- 2023–2024 **Approfondissement en Mathématiques**, first-year mathematics students, induction, logic, sets, complex numbers, differential equations  
30h of exercise sessions
- Mock Oral Exams (“Colles”)** in **Approfondissement en Mathématiques**, first-year mathematics CUPGE students, 10h
- Linear Algebra**, second-year mathematics students, geometry, endomorphisms, euclidean spaces, symmetry, projection  
15h of exercise sessions

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## Talks

- Sep. 18, 2025 **On the rank of appearance of polynomial Lucas sequences**, 9th Number Theory Meeting (Turin, Italy)
- June 30, 2025 **On the rank of appearance of polynomial Lucas sequences**, 33èmes Journées arithmétiques (Esch-sur-Alzette, Luxembourg)
- May 25, 2025 **Une conjecture d’Artin et des suites de (non-)torsion**, PhD students retreat, LMNO (Bayeux, France)

- May 22, 2025 **Sur le rang d'apparition des suites de Lucas polynomiales**, “Arithmétique” seminar, LPP (Lille, France)
- May 16, 2025 **Sur le rang d'apparition des suites de Lucas polynomiales**, Number Theory seminar, IMB (Bordeaux, France)
- Apr. 28, 2025 **Density questions on primitive divisors of Lucas sequences**, PLeaSANT seminar, MPIM (Bonn, Germany)
- Oct. 7, 2024 **Nombres de Catalan multinomiaux et suites de Lucas**, Young Researchers seminar, LMNO (Caen, France)
- July 11, 2024 **Divisibility of the rank of appearance of primes in Fibonacci polynomials in  $\mathbb{F}_q[T]$** , 21st International Fibonacci Conference (Claremont, CA, USA)
- Nov. 23, 2023 **Prime divisors of companion Lucas sequences in  $\mathbb{F}_q[\theta]$** , Number Theory team retreat, LMNO (Bayeux, France)
- May 17, 2023 **Quid of primes for which the multiplicative order of rationals is divisible by a fixed integer**, QUID seminar, IMT (Toulouse, France)
- Dec. 8, 2022 **Premiers pour lesquels le ppcm des ordres de nombres rationnels est multiple d'un entier fixé**, Young Researchers seminar, LMNO (Caen, France)

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## Training

- 2025-ongoing **Working Group on Diophantine Approximation, Lehmer's conjecture and generalisations to positive characteristic** (Caen, France)
- 2025 **Research Ethics**, Université de Lyon, France
- 2024 **Scientific Integrity**, ED MIIS (Caen, France)
- 2023–2024 **Working Group on Elliptic Curves**, Young Researchers Working Group (Caen, France)
- 2023 **Summer School**, local Langlands correspondences,  $p$ -adic group representations, local class field theory, Bruhat–Tits buildings (Amiens, France)
- 2023 **Teaching Training**, ED MIIS (Caen, France)

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## Skills

- Languages **French** (native), **English** (proficient user), **Brazilian Portuguese** (independent user), **Italian** (basic user)
- Programming **LaTeX, PARI/GP, Python, SageMath, Maxima, HTML**