



# Nuno Miguel Arala Santos

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## Education

**BSc, Mathematics**, *Faculdade de Ciências da Universidade do Porto*, Portugal.

2015-2018  
(GPA: 19.6/20)

**MSc, Mathematics**, *University of Bonn*, Germany.

2018-2020  
Thesis title: Representation Numbers of Quadratic Forms  
Advisor: Valentin Blomer

**PhD, Mathematics**, *University of Warwick*, United Kingdom.

2020-present

## Selected Awards and Contest Participations

### Domestic

- Gold Medal (2011, 2012, 2013, 2015) and Silver Medal (2014) in the Portuguese Mathematical Olympiad
- *Prémio Incentivo* (2017), as the first-year student with the best GPA of the University of Porto
- *Prémio Jayme Rios de Sousa* (2017), as the student with the highest grade in Geometry course
- *Prémio Abílio Aires* (2018), as the student with the highest grade in Probability and Statistics course
- *Prémio Gomes Ribeiro* (2018), as the student with the highest average grade in Complex Analysis, Vector Analysis and Differential Equations courses
- *Prémio Augusto Martins* (2019), as the student with the highest average grade in Complex Analysis and Functional Analysis courses
- *Prémio Doutor Neves Real* (2019), as the student who finished the BSc in Mathematics with the highest GPA
- Silver Medal (2016, 2017), as team member, in *Maratona Inter-Universitária de Programação*, a Portuguese Programming Contest for University Students

### International

- Bronze Medal (2014, 2015) and Honourable Mention (2013) in the International Mathematical Olympiad (IMO)
- Silver Medal (2015) in the Iberoamerican Mathematical Olympiad

- o Participation (2016, 2017), as team member, in the ACM-ICPC (International Collegial Programming Contest) South Western European Regional Contest (ranked 47th and 15th)
- o Gold Medal (2017) and Silver Medal (2015, 2016) in the Iberoamerican Mathematical Olympiad for University Students

## Research Grants

- 2015 - 2016 **Programa Novos Talentos em Matemática**, *Fundação Calouste Gulbenkian*.
- o Supervisor: Maria Pires de Carvalho
  - o Topic: Playing Snooker on the Sides of a Box - a problem in Dynamics
- 2016 - 2017 **Programa Novos Talentos em Matemática**, *Fundação Calouste Gulbenkian*.
- o Supervisor: Jorge Milhazes de Freitas
  - o Topic: Recurrence and Induced Dynamics

## Summer Schools and Conferences attended

- 2016 Partial Differential Equations Summer School, Lisboa, Portugal
- 2016 National meeting of *Programa Novos Talentos em Matemática*
- 2016 London International Youth Science Forum, London, UK *Presented a poster, entitled "Playing Snooker on the Sides of a Box"*
- 2017 Algebraic Topology Summer School, Lisboa, Portugal
- 2017 National meeting of *Programa Novos Talentos em Matemática* *Gave a talk on "Recurrence and Induced Dynamics"*
- 2018 Young Researchers of University of Porto *Presented a poster, awarded a Honourable Mention*
- 2018 Differential Geometry Summer School, Lisboa, Portugal
- 2019 Probability Summer School, Lisboa, Portugal
- 2021 AGRA IV- Aritmética, Grupos y Análisis, Part I (online)
- 2022 11th one-day meeting in Additive Combinatorics and Analytic Number Theory, Oxford, United Kingdom
- 2022 Bryan Birch celebratory conference, Bristol, United Kingdom
- 2022 Park City Mathematics Institute Graduate Summer School, Park City, Utah, United States of America

## Publications and preprints

- 2021 *On the density of a set of primes associated to an Elliptic Curve*  
Journal of Number Theory **243** (2023), 241-255
- 2022 *Lines of polynomials with alternating Galois group*  
arXiv:2111.02562, Submitted
- 2023 *A maximal extension of the Bloom-Maynard bound for sets with no square differences*  
arXiv:2303.03345

## Teaching Experience

### University of Warwick

- 2021 Teaching Assistant for *Advanced Linear Algebra*
- 2021 Teaching Assistant for *Fourier Analysis*
- 2021 Supervisor of first-year students
- 2022 Teaching Assistant for *Analysis III*
- 2022 Teaching Assistant for *Algebraic Geometry*

## Further Experience

- 2011 - 2015 Attended *Projecto Delfos*, a school for math olympiad preparation. This involved attending monthly problem-solving training camps at weekends at the University of Coimbra during my high-school years.
- 2016 - 2022 Participated, as a coach, in Portuguese training camps for the International Mathematical Olympiad (IMO). This mostly involved preparing classes, designing Olympiad Training Material and creating mock papers, as well as grading them and giving the students detailed feedback.
- 2018 Attended the Iberoamerican Mathematical Olympiad as a Coordinator (a member of the grading team).
- 2022 Attended the Iberoamerican Mathematical Olympiad as Deputy Leader of the Portuguese team.

## Languages

- Portuguese Native
- English Fluent
- Spanish Conversational
- German Intermediate
- French Basic

## Computer skills

Python,  $\LaTeX$ , Maxima, MATLAB