#### PhD student

- Born in Nieuwegein, the Netherlands on April 21st 1998
- Budapestlaan 6, Utrecht, the Netherlands
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- b.c.moerman@uu.nl

#### About Me -

I am doing a PhD studying special subsets of rational points on algebraic varieties. These points, called  $\mathcal{M}$ -points generalize integral, Campana, and Darmon points. Currently I am working on adelic approximation for  $\mathcal{M}$ -points as well as an analogue for Manin's conjecture for such points, particularly on toric varieties. Alongside this, I am working on connections between stacks and such points.

#### **Employment**

| 2021 – 2025 | PhD Utrecht University   |
|-------------|--|
|             | Currently ongoing thesis in arithmetic geometry, with emphasis on Cam- |
|             | pana points and toric varieties. Advisor: Dr. M. Pieropan              |

2017 – 2021 **Tutorial assistant** Radboud University Taught and graded students in 10 courses

Radboud University

**Bulgarian Academy of Sciences** 

#### **Education**

2019 - 2021

| 2013 2021   | Master in Matricinaties, cam laude   | Radboad Offiversity |
|-------------|--|---------------------|
|             | Thesis: Genus 2 fibrations, Advisor: Prof. Dr. B. Mo   | oonen               |
| 2017 – 2019 | Honours program  | Radboud University  |
|             | Two year extracurricular program of 48 ECTS  |                     |
|             | First year project: wrote research proposal for pl<br>Joint with J. de Kleuver, J. Nieuwveld, C. ten Dam   |                     |
|             | Second year project: greatly extended bachelor the   | nesis (see below)   |
| 2016 – 2019 | Bachelor in Mathematics, cum laude<br>Thesis: <i>Eisenstein series and periods</i> , Advisor: Pr<br>panded on during my masters program and publ<br><i>conductor</i> 32. |                     |

Master in Mathematics, cum laude

#### **Publications**

| 2025 | <b>Generalized Campana points of bounded height</b> <i>In preparation</i>                          |
|------|--|
| 2024 | Generalized Campana points and adelic approximation on toric varieties  Preprint  arXiv:2407.03048 |
| 2022 | L-values for conductor $32Journal of Number theoryDOI: 10.1016/j.jnt.2021.09.013, ISSN: 0022-314X$ |

#### **Research visits**

Visit Dr. V. Mitankin

09/2024

| <i>i</i> - |  | · · · · · · · · · · · · · · · · · · · |
|------------|--|---------------------------------------|
|            | Visit to discuss approximation properties for M-points   | s and the associated                  |
|            | Brauer-Manin obstruction, 9 September – 13 September – 14 September – 15 Septembe | mber                                  |
| 02/2024    | Workshop Campana points on toric varieties II  | University of Bristol                 |
|            | Small scale meeting to discuss counting Campana  | points on toric vari-                 |
|            | eties, 19 February – 23 February   |                                       |
| 04/2019    | Visit Dr. M. Neururer  | TU Darmstadt                          |
|            | For discussing bachelor thesis (for honours progran  | n), 1 April – 5 April                 |
| 03/2019    | Visit Dr. F. Brunault (and R. Pengo)   | ENS Lyon                              |
|            | For discussing bachelor thesis (for honours progra   | am), 21 March – 27                    |
|            | March  |                                       |

#### Research talks given

| 06/2025 | Journées Arithmétiques Université du Luxembourg, Esch-sur-Alzette, Luxembourg             |
|---------|---|
|         | M-points of bounded height  |
| 04/2025 | <b>LENT seminar</b> Utrecht University  |
|         | M-points of bounded height  |
| 02/2025 | Bath Arithmetic Geometry Seminar University of Bath, Bath, England                        |
|         | Generalized Campana points and adelic approximation                                       |
| 11/2024 | Oberseminar Diophantische Geometrie (online)  Georg-August Universitat Göttingen, Germany |
|         | M-points and adelic approximation on toric varieties                                      |
| 10/2024 | Intercity number theory seminar Leiden University, Leiden, the Netherlands                |
|         | M-points and adelic approximation on toric varieties                                      |
| 09/2024 | ICMS seminar Bulgarian Academy of Sciences, Sofia, Bulgaria                               |
|         | Generalized integral points and strong approximation                                      |
| 07/2024 | The Mordell conjecture 100 years later MIT, Cambridge, United States                      |

Generalized Campana points and adelic approximation

PhD student

| 04/2024     | Campana points seminar  | Utrecht University                    |
|-------------|---|---------------------------------------|
|             | M-approximation on toric varieties  |                                       |
| 04/2024     | Campana points seminar  | Utrecht University                    |
| ,           | M-points  | ,                                     |
| 11/2023     | Junior AG day   | Utrecht University                    |
|             | Generalized integral points and strong app  | roximation                            |
| 08/2023     | GQT school and colloquium   | Groesbeek, the Netherlands            |
|             | Adelic approximation of generalized integra   | al points                             |
| 06/2023     |   | Jniversité de Lorraine, Nancy, France |
|             | Approximation for generalized Campana po<br>Geometric and Arithmetic Frontiers of Orl | oints                                 |
| 00/2022     | Geometric and Arithmetic Frontiers of Orl   | bifolds                               |
| 06/2023     | II: Arithmetic and hyperbolicity  | Université de Strasbourg              |
|             | Approximation for generalized Campana po  | oints                                 |
| 04/2023     | DIAMANT symposium   | Utrecht                               |
|             | Approximation for generalized Campana po  | oints on proiective space             |
| 03/2023     | LENT seminar  | Utrecht University                    |
| , - <b></b> | Approximation for generalized Campana po  | 3                                     |
|             | rippi ominacion for generalized campana pe  | onite on torio rariotics              |

#### **Posters presented**

| 04/2025 | Nederlands Mathematisch Congres  | Soesterberg, the Netherlands |
|---------|--|------------------------------|
| 11/2024 | Counting special points on toric varieties Instructional workshop on rational points | Groningen, the Netherlands   |
| 11,2021 | M-points and adelic approximation  | Groningen, the Netherlands   |
| 06/2024 | GAeL XXXI  | Turin, Italy                 |
|         | M-points and adelic approximation  |                              |
| 03/2024 | <b>Enumerative Geometry and Arithmetic</b>   | Lorentz Center, Leiden       |
|         | M-points and adelic approximation  |                              |

## **Seminars organized**

| 05/2024 | Gong show  | Utrecht University |
|---------|--|--------------------|
|         | Series of lighting talks by PhD students at the Utrech | t Geometry Centre  |

## Learning seminar talks given

| 11/2024 | Learning seminar on log stacks  | Utrecht University   |
|---------|---|----------------------|
| 06/2024 | Log schemes 1 Learning seminar on stacks  | Online               |
| 03/2024 | Deligne-Mumford stacks and examples Rational points consortium  | Utrecht University   |
| 03/2024 | Arakelov theory: arithmetic curves  | Ottechic Offiversity |
| 02/2024 | Campana points seminar  | Utrecht University   |
| 09/2022 | Darmon points and root stacks Algebraic Geometry seminar  | Utrecht University   |
| •       | Weak approximation and the Hilbert property for Campa   | na points            |
| 02/2022 | Algebraic Geometry seminar  | Utrecht University   |
| 11/2021 | Cox coordinates for toric varieties  Mazur seminar  | Utrecht University   |
| 10/2021 | Jacobians and criteria for the rank  Circle method seminar  Introduction to the Circle method and Warings problem | Online               |

#### **Teaching experience**

#### Teaching assistant

2020

| Summer/Fall   | Commutative Algebra                         | Utrecht University |
|---------------|---|--------------------|
| 2024          |   |                    |
| Spring 2024   | Probability Theory                          | Utrecht University |
| Summer/Fall   | Commutative Algebra                         | Utrecht University |
| 2023          | 3   | •                  |
| Spring 2023   | Probability Theory                          | Utrecht University |
| Winter 2023   | Analyis                                     | Utrecht University |
| Summer/Fall   | Commutative Algebra                         | Utrecht University |
| 2022          | -   | -                  |
| Winter 2022   | Analysis                                    | Utrecht University |
| Summer 2021   | Linear Algebra and Infinitesimal Calculus 1 | Utrecht University |
| Winter/Spring | Complex Analysis                            | Radboud University |
| 2021          | r y   |                    |
| Summer/Fall   | Analysis 2                                  | Radboud University |
|               |   |                    |

PhD student

| Spring 2020<br>Winter 2020<br>Summer/Fall       | Elementary Number Theory Introduction to Fourier Theory Calculus A                                | Radboud University<br>Radboud University<br>Radboud University |
|---|---|--|
| 2019<br>Winter/Spring<br>2019                   | Topology  | Radboud University   |
| Summer/Fall                                     | Analysis 2  | Radboud University   |
| 2018<br>Spring 2018<br>Winter 2018<br>Fall 2017 | Linear Algebra B<br>Famous Problems in Mathematics<br>Kepler and Newton in Historical Perspective | Radboud University<br>Radboud University<br>Radboud University |

## **Conferences attended**

| 06/2025  | Journées Université du Luxembourg, Esch-sur-Alzette, Luxembourg  |
|----------|--|
| 0.4/2025 | Arithmétiques Link to site   |
| 04/2025  | Nederlands Mathematisch Congres  Link to site  Soesterberg, the Netherlands  |
| 03/2025  | <b>Diophantine and Rationality Problems</b> ICMS, Sofia, Bulgaria  |
| 11/2024  | Link to site Instructional workshop on rational points Link to site  Groningen, the Netherlands  |
| 07/2024  | The Mordell conjecture 100 years later  MIT, Cambridge, United States  Link to site  |
| 06/2024  | GAEL XXXI Turin, Italy   |
| 04/2024  | Link to site Diamant symposium Utrecht, the Netherlands  |
| 03/2024  | Enumerative Geometry and Arithmetic Link to site  Lorentz Center, Leiden, the Netherlands  |
| 11/2023  | <b>Diamant symposium</b> Eindhoven, the Netherands   |
| 08/2023  | <b>GQT school and colloquium</b> School and conference on geometry and topology.   |
| 08/2023  | ENTR23 Bielefeld University  |
| 06/2023  | Link to site  Journées Arithmétiques  Université de Lorraine, Nancy, France  |
| 06/2023  | Link to site Geometric and Arithmetic Frontiers of Orbifolds II: Arithmetic and hyperbolicity Link to site   |
| 05/2023  | Link to site An Expedition into Arithmetic Geometry Link to site   |
| 04/2023  | Link to site Diamant symposium Utrecht, the Netherlands  |
| 03/2023  | <b>FRACASSO</b> Université de Bordeaux, France Workshop on rationally connected varieties. <i>Link to site</i>   |
| 02/2023  | SAGA CIRM, Marseille, France   |
| 02/2023  | Conference on arithmetic geometry. <i>Link to site</i> intro to SAGA CIRM, Marseille, France Winter school on arithmetic geometry. <i>Link to site</i>   |
| 11/2022  | DIAMANT symposium  Leiden, the Netherlands   |
| 08/2022  | GQT school and colloquium Zeist, the Netherlands   |
| 07/2022  | School and conference on geometry and topology.  Meeting on GDR singularities  Aussois, France   |
| 06/2022  | Conference on singularities of algebraic varieties. <i>Link to site</i> <b>Geometric and Arithmetic Frontiers of Orbifolds</b> UQAM, Montreal, Canada  Workshop on orbifolds and stacks. <i>Link to site</i> |
| 04/2022  | Rational Points on Higher-Dimensional Varieties  ICMS, Edinburgh, Scotland   |
| 04/2022  | Conference on Diophantine geometry. <i>Link to site</i> <b>DIAMANT symposium</b> Utrecht, the Netherlands  |
| 11/2021  | DIAMANT symposium Utrecht, the Netherlands   |
| 11/2021  | outcoil, the Netherland  |

## **Seminars attended**

| 11/2022 -                       | LENT seminar                            | Utrecht University |
|---------------------------------|---|--------------------|
| present<br>10/2021 -<br>present | Algebraic / Arithmetic Geometry Seminar | Utrecht University |

PhD student

| 06/2025            | Patternal and the control of                               |   |
|--------------------|--|---|
| 06/2025            | Rational points consortium                                 | Leiden University                             |
| 04/2025            | Rational points consortium                                 | Utrecht University                            |
| 01/2025            | Rational points consortium                                 | Leiden University                             |
| 11/2024 -          | Log Stacks seminar Utrecht                                 | : University/Leiden University                |
| 1/2025<br>12/2024  | Flatland Arithmetic  | Utrecht University                            |
| 12/2024            | Rational points consortium                                 | Utrecht University                            |
| 10/2024            |  | niversity of Antwerp, Belgium                 |
| 10/2024            | Intercity number theory seminar                            | Leiden University                             |
| 06/2024            | Rational points consortium                                 | Utrecht University                            |
| 06/2024            | Intercity number theory seminar                            | Utrecht University                            |
| 05/2024-           | Learning seminar on stacks                                 | Online  |
| 06/2024            |  |   |
| 05/2024            | Rational points consortium                                 | Leiden University                             |
| 05/2024            | Young KWG day  | Utrecht University                            |
| 05/2024            | Intercity number theory seminar                            | University of Groningen                       |
| 04/2024            | Belgian-Dutch AG day                                       | Utrecht University                            |
| 04/2024            | Rational points consortium                                 | University of Groningen                       |
| 04/2024            | Campana points seminar                                     | Utrecht University                            |
| 03/2024            | Rational points consortium                                 | Utrecht University                            |
| 02/2024            | Campana points seminar                                     | Utrecht University                            |
| 02/2024            | Flatland Arithmetic  | KU Leuven                                     |
| 01/2024            | Rational points consortium                                 | Leiden University                             |
| 12/2023            | Intercity number theory seminar                            | University of Amsterdam                       |
| 12/2023            | Rational points consortium                                 | University of Groningen                       |
| 11/2023            | Intercity number theory seminar                            | Leiden University                             |
| 11/2023            | Junior AG day  | Utrecht University                            |
| 11/2023            | Rational points consortium                                 | Utrecht University                            |
| 10/2023            | Belgian-Dutch Algebraic Geometry Seminar                   | Leiden University                             |
| 10/2023            | Rational points consortium                                 | Utrecht University                            |
| 09/2023            | Intercity number theory seminar                            | Utrecht University                            |
| 09/2023-           | Seminar on the conjectures of Campana, Lang a              | nd Radboud University                         |
| 12/2023            | Vojta  |   |
| 09/2023            | Rational points consortium                                 | Utrecht University                            |
| 06/2023            | Junior AG day  | University of Amsterdam                       |
| 03/2023            | Belgian-Dutch AG day                                       | Radboud University                            |
| 03/2023            | EWM meeting  | Utrecht University                            |
| 01/2023            | Junior AG day  | Radboud University                            |
| 12/2022<br>11/2022 | Intercity Geometry seminar                                 | Utrecht University                            |
| 10/2022            | Intercity Geometry seminar Intercity number theory seminar | Leiden University                             |
| 10/2022            | <u> </u>   | Leiden University                             |
| 10/2022            | Intercity Geometry seminar                                 | Radboud University                            |
| 10/2022            | Junior AG day<br>Intercity Geometry seminar                | Leiden University                             |
| 09/2022            | Belgian-Dutch Algebraic Geometry Seminar                   | University of Amsterdam<br>KU Leuven, Belgium |
| 09/2022            | Getaltheorie in het vlakke land                            | Utrecht University                            |
| 09/2022            | EWM meeting  | Vrije Universiteit Amsterdam                  |
| 09/2022            | Curves over finite fields and arithmetic of K3             | •   |
| 03/2022            | surfaces   | University of Groningen                       |
| 05/2022            | Intercity number theory seminar                            | Utrecht University                            |
| 12/2021            | Junior AG day  | Online  |
| 11/2021            | Intercity number theory seminar                            | Leiden University                             |
| 10/2021            | Intercity number theory seminar                            | Leiden University                             |
|                    |  |   |

July 7, 2025 Boaz Moerman