

Maria Montanucci

CONTACT INFORMATION	Assistant Professor Technical University of Denmark Department of Applied Mathematics and Computer Science Asmussens Allé Building 303B, room 150, 2800 Kongens Lyngby, Denmark	<i>Mobile:</i> +39 3338114009 <i>E-mail:</i> marimo@dtu.dk
PERSONAL INFORMATION	Date of birth: 09/09/1991 Place of birth: Umbertide (PG), Italy Nationality: Italian Address: Via delle Azalee, 06019 Umbertide (PG), Italy	
RESEARCH INTERESTS	Algebraic curves over finite fields and their applications: My main research interests concern Galois Geometries, their applications to Coding Theory and Cryptography, and their interactions with Algebraic Curves over Finite Fields. <ul style="list-style-type: none">• Algebraic Geometry in positive characteristic (automorphisms of curves, maximal curves)• Coding Theory (functional codes, AG codes, quantum codes, convolutional codes)	
ADDITIONAL RESEARCH INFORMATION	ORCID: http://orcid.org/0000-0002-1226-3209 H-index (SCOPUS): 3 H-index (GoogleScholar): 6 SCOPUS profile: https://www.scopus.com/authid/detail.uri?authorId=57190028370 CITATIONS (SCOPUS): 24 JOURNAL PUBLICATIONS: 19 PREPRINTS: 9	
CURRENT ACADEMIC APPOINTMENTS	Assistant Professor, Department of Applied Mathematics and Computer Science, Technical University of Denmark	April 2019 to present
RESEARCH POSITIONS	Postdoctoral Researcher in Mathematics, 01/11/2018 to 28/02/2019 <ul style="list-style-type: none">• Department of Management and Engineering• University of Padova• Project title: <i>Linear sets, MRD codes and algebraic curves over finite fields</i>• Supervisor of the Project: Corrado Zanella	
EDUCATION	Università degli Studi della Basilicata, Università del Salento, Potenza (PZ), Italy Ph.D in Mathematics, 01/11/2015 to 30/11/2018 <ul style="list-style-type: none">• Thesis Topic: <i>Algebraic curves over finite fields</i>• Adviser: Professor Gábor Korchmáros Università degli Studi di Perugia, Perugia (PG), Italy M.S., Mathematics, 27/09/2014 to 16/07/2015 <ul style="list-style-type: none">• 110/110 <i>Cum Laude</i>• Thesis Topic: <i>Algebraic Curves in Positive Characteristic</i>• Adviser: Professor Massimo Giulietti• Area of Study: Algebraic Geometry and Combinatorics	

B.S., Mathematics, 15/10/2010 to 18/07/2013

- 110/110 *Cum Laude*
- Thesis Topic: *Algebraic Function Fields and their Applications*
- Adviser: Professor Massimo Giulietti
- Area of Study: Function Field Theory and Coding Theory

Conservatorio di Musica di Perugia, Perugia (PG), Italy

Conservatory grad. (M.S.) in flute performance, 04/11/2004 to 14/09/2010

- 10/10
- Thesis Topic: *French Music: Pierre Sancan, Sonatina for flute and piano (1946)*
- Adviser: Professor Pierluigi Tabachin

QUALIFICATIONS

- Qualification for an Assistant Professor position 201806 in Algebraic Coding Theory and Code-based Cryptography at Aalborg University. Excerpt from the evaluation:
"The applicant is evaluated as professionally qualified for this position. The applicant is a young exceptionally strong researcher with a high potential to become a world leading expert within any fields she chooses to study."
[Attached document: Committee's assessment for position 201806 "Assistant Professor in Algebraic Coding Theory and Code-based Cryptography" (Aalborg University)]

JOURNAL PUBLICATIONS

- [1] M. Giulietti, M. Montanucci and G. Zini, On maximal curves that are not quotients of the Hermitian curve, *Finite Fields Appl.* **41** (2016), 72-88
- [2] D. Bartoli, M. Montanucci and G. Zini, Multi-Point AG Codes on the GK Maximal Curve, *Des. Codes Cryptogr.*, **3** (2017), 1-17
- [3] M. Montanucci and G. Zini, Generalized Artin-Mumford curves over finite fields, *J. Algebra*, **485** (2017), 310-331
- [4] M. Montanucci and G. Zini, Some Ree and Suzuki curves are not Galois covered by the Hermitian curve, *Finite Fields Appl.* **48** (2017), 175-195
- [5] M. Montanucci and P. Speziali, The a -numbers of Fermat and Hurwitz curves, *J. Pure Appl. Algebra*, **2** (2018), 477-488
- [6] G. Korchmáros, M. Montanucci and P. Speziali, Transcendence Degree One Function Fields Over a Finite Field with Many Automorphisms, *J. Pure Appl. Algebra*, **222** (2018), no. 7, 1810-1826
- [7] G. Korchmáros and M. Montanucci, The Geometry of the Artin-Schreier-Mumford Curves over an Algebraically Closed Field, *Acta Sci. Math.*, (Szeged) 83:3-4 (2017), 673-681
- [8] D. Bartoli, M. Montanucci and G. Zini, AG codes and AG quantum codes from the GGS curve, *Des. Codes Cryptogr.*, DOI: 10.1007/s10623-017-0450-5
- [9] M. Giulietti, M. Montanucci, L. Quoos and G. Zini, The automorphism group of some Galois covers of the Suzuki and Ree curves, *J. Number Theory*, DOI: 10.1016/j.jnt.2017.12.005
- [10] M. Montanucci and G. Zini, On the spectrum of genera of Galois subcovers of the Hermitian curve, *Comm. Algebra* **46** (2018), 4739-4776
- [11] M. Montanucci, G. Zini and M. Timpanella, AG codes and AG quantum codes from cyclic extensions of the Suzuki and the Ree curves, *J. Geom.* (2018) 109: 23. DOI:10.1007/s00022-018-0428-0

- [12] P. Beelen and M. Montanucci, Weierstrass semigroups on the Giulietti-Korchmáros curve, *Finite Fields Appl.* **52** (2018), 10-29
- [13] P. Beelen and M. Montanucci, A new family of maximal curves, *Journal of the London Math. Soc.* **98** (2018), 573–592.
- [14] D. Bartoli, M. Giulietti and M. Montanucci, Linear codes from Denniston maximal arcs, *Des. Codes Cryptogr.*, DOI: 10.1007/s10623-018-0515-0
- [15] D. Bartoli, A. Masuda, M. Montanucci and L. Quoos, Pure gaps on curves with many rational points, *Finite Fields Appl.* **53** (2018), 287-308
- [16] G. Korchmáros and M. Montanucci, Ordinary algebraic curves with many automorphisms in positive characteristic, *Algebra and Number Theory*, **13** (2019), 1–18
- [17] M. Montanucci and P. Speziali, Large automorphism groups of ordinary curves in characteristic 2, *J. Algebra* **526** (2019), 30–50
- [18] M. Bonini, M. Montanucci and G. Zini, On plane curves given by separated polynomials and applications, *Adv. Geom.*, to appear
- [19] F. Dalla Volta, M. Montanucci and G. Zini, On the classification problem for the genera of quotients of the Hermitian curve, *Comm. Algebra*, to appear

PREPRINTS

- [20] D. Bartoli, M. Montanucci and F. Torres, \mathbb{F}_{p^2} -maximal curves with many automorphisms are Galois-covered by the Hermitian curve, preprint, arXiv:1708.03933
- [21] M. Giulietti, M. Kawakita, S. Lia and M. Montanucci, An \mathbb{F}_{p^2} -maximal Wiman’s sextic and its automorphisms, preprint, arXiv:1805.06317
- [22] M. Montanucci and G. Zini, The complete list of genera of quotients of the \mathbb{F}_{q^2} -maximal Hermitian curve for $q \equiv 1 \pmod{4}$, preprint, arXiv:1806.04546
- [23] M. Montanucci and G. Zini, Quotients of the Hermitian curve from subgroups of $PGU(3, q)$ without fixed points or triangles, preprint, arXiv:1804.03398
- [24] M. Montanucci and V. Pallozzi Lavorante, AG codes from the second generalization of the GK maximal curve, preprint, arXiv:1901.08897
- [25] P. Beelen and M. Montanucci, On subfields of the second generalization of the GK maximal function field, preprint, arXiv:1811.00049
- [26] D. Bartoli, M. Montanucci and G. Zini, Bent functions from triples of permutation polynomials, arXiv:1901.02359
- [27] D. Bartoli, M. Montanucci and G. Zini, Weierstrass semigroups at every point of the Suzuki curve, arXiv:1811.07890
- [28] G. Korchmáros and M. Montanucci, Large odd prime power order automorphism groups of algebraic curves in any characteristic, preprint, arXiv:1810.07506

CONFERENCES,
WORKSHOPS AND
RESEARCH VISITS

- [1] **Workshop on Algebraic Curves and Function Fields over a Finite Field** (Perugia, Italy, 2-7 February 2015)
- [2] **GAC 2016** Workshop on Geometric and Algebraic Combinatorics (Pécs, Hungary, 5-9 May 2016).
- [3] **Combinatorics 2016** (Maratea, Italy, 29 May-4 June 2016),
Talk : *The a-number of Fermat and Hurwitz curves*

- [4] **First Joint Meeting Italy Brazil in Mathematics** Special Session: "Algebraic Geometry over Finite Fields and its applications to Coding Theory" (Rio de Janeiro, Brazil, 29 August-2 September 2016),
Talk: *Large Automorphism Groups and p -rank of Curves*
- [5] **Technical University of Denmark** Visiting Ph.D. student (Tutor: Professor Peter Beelen) (Kongens Lyngby, Denmark, 1 April-31 May 2017),
- [6] **The 13th International Conference on Finite Fields and their Applications** (Gaeta, Italy, 4-10 June, 2017),
Talk: \mathbb{F}_{p^2} -maximal curves with many automorphisms are Galois-covered by the Hermitian curve
- [7] **Summer School on Finite Geometry** (Brighton, England, 26 - 30 June 2017),
Talk: *On Galois-subcovers of the Hermitian curve*
- [8] **Technical University of Denmark** Visiting PhD student (Tutor: Professor Peter Beelen) (Kongens Lyngby, Denmark, 1 August-30 November 2017)
- [9] **Workshop on Finite Fields, Function Fields and Their Applications** (Istanbul, Turkey, 26 - 27 April 2018),
- [10] **Combinatorics 2018** (Arco, Italy, 3 June-9 June 2018),
Talk : *A new family of maximal curves*
- [11] **Technical University of Denmark** Research visit (Kongens Lyngby, Denmark, 10-20 June 2018)

TEACHING	<p>Università degli Studi di Perugia, Perugia (PG), Italy Tutorial teaching in Mathematical physics (Professor Maria Clara Nucci), October 2013 to March 2015</p> <p>Università degli Studi della Basilicata, Potenza (PZ), Italy Lecturer in Group Theory and Representation Theory (Supervisor of the project: Professor Gábor Korchmáros), October 2016 to March 2017</p>
SUPERVISION	<p>Master's thesis: 3 co-advised (University of Perugia, advisor Professor Massimo Giulietti)</p> <ol style="list-style-type: none"> 1. Marco Timpanella (2016): <i>AG codes on maximal curves</i> 2. Stefano Lia (2017): <i>Riemann surfaces and maximal curves over finite fields</i> 3. Vincenzo Pallozzi Lavorante (2018): <i>One-point AG codes on the BM maximal curves</i>
GRANTS	<p>FFTA travel grant for early career researchers to be present at the 13th International Conference on Finite Fields and their Applications in Gaeta, Italy, June 4-10, 2017</p>
REFEREE FOR THE FOLLOWING INTERNATIONAL JOURNALS	<ul style="list-style-type: none"> • Advances in Geometry • Designs, Codes and Cryptography • IEEE transaction on information theory • Tokyo Journal of Mathematics
LANGUAGES	<ul style="list-style-type: none"> • Italian (mother tongue) • English (fluent)