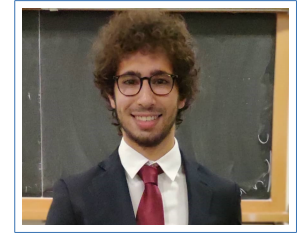# Vincenzo Pallozzi Lavorante

Curriculum Vitae

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Born on 11/11/1994 in Atri (TE), Italy.

Position

2022–2025	**PostDoc fellow**, University of South Florida, Tampa, Florida
06–12/2021	**Visiting PhD Student**, University of South Florida, Tampa, Florida
Advisor	Prof. Xiang-Dong Hou
2019–2020	**Visiting PhD student**, Università della Basilicata, Italia
Advisor	Prof. Gàbor Korchmàros
2018–2021	**PhD student in Mathematics**, Università degli Studi di Modena e Reggio Emilia, Italia
Advisor	Prof. Massimo Giulietti
Co-advisor	Prof. Arrigo Bonisoli

Education

2018–2022	**Ph.D. in Mathematics**, *Università di Modena e Reggio Emilia*, Italy, **CUM LAUDE**
2016–2018	**Master's Degree in Mathematics, general Curriculum**, Università degli Studi di Perugia, Italy, *110/110 cum laude*, **GPA: 30.00/30.00**
2013–2016	**Bachelor's degree in Mathematics**, Università degli Studi di Perugia, Italy, *110/110 cum laude*
2008–2013	**Experimental scientific maturity**, *Scientific high school P.N.I. (Piano nazionale di informatica)*, Istituto Galileo Galilei, Perugia (PG), 98/100

Thesis

Ph.D.'s Thesis

Title	***Finite geometry and its application***
Supervisors	Prof. Massimo Giulietti, Prof. Arrigo Bonisoli
Description	Construction of hemysistems of the Hermitian surface and blocking sets arising from conics. Investigation of polynomials which permute a finite field by using the theory of plane curves over finite fields and Hasse-Weil type theorems.

Master's Thesis

Title	***One-Point codes from the BM curves***
Supervisor	Prof. Massimo Giulietti

Description	Study of some Weierstrass Point of the BM curves; complete characterization of Weierstrass semigroups of two short orbits; Costruction of AG and Quantum codes; Determination of Frobenius dimension of the BM curves.

Bachelor's Thesis

Title	**Monomial Ideals**
Supervisor	Prof. Anna Lorenzini
Description	Complete characterization of monomial ideals, uniqueness of a particular type of minimal primary decomposition; monomial modules of finite type and characterization of monomial syzygies.

Areas of interest

Finite geometry and its applications to coding theory, Blocking sets, Permutation polynomials, algebraic curves over finite fields, coding theory, Polar structures.

Activities

Didactics

2023	**MAD4472 Modern Cryptography**, *University of South Florida*, Tampa, Teaching
2023	**Research Experience for Undergraduates program (REU)**, *University of South Florida*, Tampa Tutoring
2023	**MAC2282 Calculus II**, *University of South Florida*, Tampa, Teaching
2022	**MAC2311 Calculus I**, *University of South Florida*, Tampa, Teaching
2021–2022	**Tutor of 'Geometry and algebra'**, Università degli Studi di Perugia, Dip. di Ingegneria Supervisor: Prof. Fernanda Pambianco
2020–2021	**'Cultore della Materia'**, Università degli studi di perugia, *Dipartimento di Scienze Farmaceutiche, corso di laurea in Chimica e Tecniche Farmaceutiche*, Italia Didactics and activities with supervisor Prof. Fernanda Pambianco.
2018–2019	**Tutor of 'Geometry and algebra'**, Università degli Studi di Perugia, Dip. di Ingegneria Supervisor: Prof. Fernanda Pambianco
2016–2018	**Tutor of 'Numerical Analysis'**, Università degli Studi di Perugia, Italia Supervisor: Prof. Bruno Iannazzo

Grants, Honours and Awards

2019	**Degree Award 'Stefano Guazzone'**, *Università degli studi di Perugia*, Italia `http://www.dmi.unipg.it/dipartimento/news/338-cerimonia-di-assegnazione-premi-di-laure`
2018–2021	**PhD scholarship**, Università degli Studi di Modena e Reggio Emilia, Italy

Talks

2023	**A general construction of permutation polynomials**, *International Conference on Finite Fields and Their Applications 2023 (Fq15 Workshop)*, Paris
2022	**New result on permutation binomials**, *Combinatorics 2022*, Mantova
2021	**Algebraic curves over finite fields: theory and applications**, *University of South Florida Discrete Seminars*, Tampa
2021	**New hemisystems of the Hemitian surface**, *eSeminar UGent-VUB*, Gent
2019	**AG codes from the second generalization of the GK maximal curve**, *9th Slovenian International Conference on Graph Theory*, Bled

Conference and Workshop

25–20 June 2023	**IEEE ISIT**, *Taipei, Taiwan*
18–24 June 2023	**Fq 15 conference**, *Univ. Paris 8*, Paris
27–29 June 2022	**Combinatorial Constructions Workshop**, *University of Zagreb*, Zagreb
31 may–3 June 2022	**Combinatorics 2022**, *Università di Mantova*, Mantova
23 June–29 June 2019	**9th Slovenian International Conference on Graph Theory**, *Institute of Mathematics, Physics and Mechanics*, Bled https://conferences.matheo.si/event/28/overview
September 2108–June 2019	**Discrete Mathematics Seminars**, Università di Brescia, Modena e Reggio Emilia *and* Verona, Italia Monthly seminars on Discrete Mathematics
22 July–16 August 2018	**SMI (Scuola Matematica Interuniversitaria)**, University of Perugia, Italia Attended the courses held by Juan Migliore (Univ. of Notre Dame, IN) 'Commutative algebra and Geometry' and Francois Berteloot (Univ. of Toulouse, FR) 'Complex Analysis'

Miscellaneous

2013	Finalist at Cesenatico for the "Italian Mathematical Olympics", team games
2012	Finalist in Perugia for the "Matematica e Realtà" project

Publications

2020 **AG codes from the second generalization of the GK maximal curve**, *M. Montanucci and V. Pallozzi Lavorante*, Discrete Mathematics, Volume 343, Issue 5, 2020, 111810, ISSN 0012-365X, `https://doi.org/10.1016/j.disc.2020.111810`

2022 **New hemisystems of the Hermitian surface**, *V. Pallozzi Lavorante, V. Smaldore*, Designs, Codes and Cryptography, https://doi.org/10.1007/s10623-022-01107-2

2022 **External points to a conic from a Baer subplane**, *Pallozzi Lavorante V.*, Designs, Codes and Cryptography, https://doi.org/10.1007/s10623-022-01156-7

2023 **Optimal locally recoverable codes with hierarchy from nested F-adic expansions**, *A. Dukes, G. Micheli and V. Pallozzi Lavorante*, IEEE Transactions on Information Theory (2023)

2023 **A General Construction of Permutation Polynomials of $\mathbf{F}_{q^2}$**, *X.D. Hou and V. Pallozzi Lavorante*, Finite Fields and Their Applications, 2023, 89: 102193.

2023 **New results on permutation binomials over finite fields**, *X.D. Hou and V. Pallozzi Lavorante*, Finite Fields and Their Applications, 2023, 88: 102179.

2023 **On a Class of Optimal Locally Recoverable Codes with Availability.**, *Garrison, Clifton, et al.*, 2023 IEEE International Symposium on Information Theory (ISIT)

Preprint

2022 **New families of permutation trinomials constructed by permutations of μ_{q+1}**, *V. Pallozzi Lavorante*, https://arxiv.org/abs/2105.12012

2023 **On Permutation Quadrinomials from NIHO Exponents in Characteristic Two**, *V. Pallozzi Lavorante*, https://arxiv.org/abs/2112.07006

2023 **An approach to normal polynomials through symmetrization and symmetric reduction.**, *Connolly, Darien, et al.*, arXiv preprint arXiv:2309.05470 (2023)

Computer skills

Basic	Phyton, CoCoa
Intermediate	C, Wolfram Mathematica, Magma
Advanced	LaTeX

Language

Italian	Mothertongue
English	C1