

Valentino Smaldore

Curriculum vitae

Personal information

First Name/Surname: Valentino Smaldore
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Current position

2024- **Research Fellow (RTD-A)**, Università degli Studi di Padova (Italy)

Previous position

2022- **PostDoc**, Università degli Studi di Padova (Italy)
Project name: *Polinomi linearizzati scattered e geometrie e codici MRD associati*
Supervisor: Professor Corrado Zanella

Education

2019-2023 **PhD in Mathematics and Informatics**, Università del Salento (Italy)
Thesis: *On Geometry and Combinatorics of Finite Classical Polar Spaces*
Supervisors: Professors Gábor Korchmáros, Antonio Cossidente
Optimum

2017-2019 **Master's Degree in Mathematics**, Università degli Studi della Basilicata (Italy)
Master thesis: *Varietà Hermitiane sopra campi finiti*
Supervisors: Professors Gábor Korchmáros, Angelo Sonnino
110/110 cum laude

2014-2017 **Bachelor's Degree in Mathematics**, Università degli Studi della Basilicata (Italy)
Bachelor thesis: *Classification of Closed Surfaces*
Supervisor: Professor Martin Funk
110/110 cum laude

September 2016-January 2017 **Erasmus student**, Szegedi Tudományegyetem (Hungary)

Abroad research periods

December 2021-January 2022,
Vrije Universiteit Brussel (Belgium)

September 2022,
Eötvös Loránd Tudományegyetem Budapest (Hungary)

January 2025,
Vrije Universiteit Brussel (Belgium)

August 2025,

Institute of Computational and Experimental Research in Mathematics at Brown University (USA)

Memberships

Member of the association *Combinatorics2016* since 2022

Member of the association *De Componendis Cifris APS* since 2023

Member of the research group GNSAGA-INdAM since 2024

Member of Unione Matematica Italiana (UMI) since 2025

Member of the UMI group “Crittografia e Codici” since 2025

Academic services

Reviewer for: *Combinatorial Theory*; *IEEE Transactions on Information Theory*; *Designs, Codes and Cryptography*; *Computational and Applied Mathematics*

Reivewer for: *zbMATH*; *Mathematical Reviews*

Projects and grants

Tensors over finite fields and their applications

INdAM-GNSAGA Project 2024 – CUP E53C23001670001

Coordinator: Paolo Santonastaso

Linear Algebra methods in Combinatorics and Industrial Engineering: Coding Theory, Graphs and their interest in Assembly Line Problems

Project SID Dipartimento di Tecnica e Gestione dei Sistemi Industriali at Università degli Studi di Padova - CUP C33C25001110005

Coordinator: Valentino Smaldore

Conference invited talks

Graphs cospectral with $NU(n+1, q^2)$, $n \neq 3$,

18/06/2021, UGent-VUB eSeminar on Finite Geometry and related topics (online)

GGG: Graphs, Groups and Geometry and the Automorphism Group of $NU(3, q^2)$,

03/02/2022, Dutch-Belgian Combinatorics Colloquium

Stabilizers of graphs of linear functions and rank-metric codes,

31/10/2023, Coding Theory and Cryptography Meetup

Equivalences of strongly regular polar graphs,

25/03/2024, Discrete Mathematics Seminars (online)

Parabolic and linear one-factorizations of the complete graph K_{p+1} ,

19/09/2024, ELTE Finite Geometry Seminars

On Geometry and Combinatorics of Finite Classical Polar Spaces,

18/10/2024, 3 Anni in 3 Minuti – 3A3M

Equivalences of rank distance codes,
17/07/2025, 30th Applications of Computer Algebra

Conference contributed talks

GGG: Graphs, Groups and Geometry and the Automorphism Group of $NU(3, q^2)$,
13/03/2022, Finite Geometry Workshop Szeged

Partial ovoids of symplectic and Hermitian polar spaces, large cocliques in the collinearity graph, and applications, 02/06/2022, Combinatorics

On a graph isomorphic to $NO^+(6, 2)$,
28/06/2022, Combinatorial Constructions Workshop Zagreb

Two-weight codes and hemisystems,
21/07/2022, Contemporary algebraic and geometric techniques in Coding Theory and Cryptography

Some non-existence results for m -ovoids in classical polar spaces,
26/06/2023, 11th Phd Summer School in Discrete Mathematics

On regular systems of finite classical polar spaces,
03/07/2023, Rijeka Conference on Combinatorial Objects and Their Applications

Polar Geometry and (Belgian) Friends,
20/09/2023, Finite Geometry & Friends

Switching equivalences of strongly regular polar graphs,
06/06/2024, Combinatorics

Stabilizers of graphs of linear functions and rank-metric codes,
18/06/2024, WCC 2024: The Thirteenth International Workshop on Coding and Cryptography

Hemisystems and Strongly Regular Graphs,
09/07/2024, Combinatorial Designs and Codes

A note on parabolic and linear one-factorizations of the complete graph K_{p+1} ,
21/09/2024, ITAT'24: Information technologies-Applications and Theory

New scattered linearized quadrimonomials,
06/03/2025, Error-Correcting Codes and Combinatorial Structures Workshop

A family of strongly regular graphs from hyperbolic quadrics,
06/06/2025, 5th Pythagorean Conference

Goppa codes from a Singer cycle,
22/08/2025, Graduate Workshop on Linear Algebra over Finite Fields&Applications

Goppa codes from a Singer cycle,
04/09/2025, Seventh Irsee Conference

Strongly regular graphs with 2-transitive two-graphs,
26/10/2025, Finite Geometry Workshop Szeged

Publications

[0] *On Geometry and Combinatorics of Finite Classical Polar Spaces*, V. Smaldore, <https://arxiv.org/abs/2409.11131>, PhD Thesis, Università del Salento, Italy, 2023.

[1] *Graphs cospectral with $NU(n+1, q^2)$, $n \neq 3$* , F. Ihringer, F. Pavese, V. Smaldore, *Discrete Mathematics*, 2021, 334(11), 112560.

[2] *On regular systems of finite classical polar spaces*, A. Cossidente, G. Marino, F. Pavese, V. Smaldore, *European Journal of Combinatorics*, 2022, 100, 103439.

[3] *The Automorphism Group of $NU(3, q^2)$* , F. Romaniello, V. Smaldore, *Journal of Geometry*, 2022, 113(3), 42.

[4] *New hemisystems of the Hermitian surface*, V. Pallozzi Lavorante, V. Smaldore, *Designs, Codes and Cryptography*, 2023, 91(1), pp. 293-307.

[5] *On large partial ovoids of symplectic and Hermitian polar spaces*, M. Ceria, J. De Beule, F. Pavese, V. Smaldore, *Journal of Combinatorial Designs*, 2023, 31(1), pp. 5-22.

[6] *All minimal $[9, 4]_2$ -codes are hyperbolic quadrics*, V. Smaldore, *Examples and Counterexamples*, 2023, 3, 100097.

[7] *On a graph isomorphic to $NO^+(6, 2)$* , F. Romaniello, V. Smaldore, *Bulletin of the Institute of Combinatorics and its Applications*, 2024, 100, pp. 151-161.

Conference proceeding

[8] *A note on parabolic and linear one-factorizations of the complete graph K_{p+1}* , Gy. Kiss, G. Korchmáros, F. Romaniello, V. Smaldore, *CEUR Workshop Proceedings, ITAT'24: Information technologies-Applications and Theory, September 20-22, 2024, Drienica Čergovské vrchy, Slovakia*, Volume 3792, pp. 136-142.

[9] *Some non-existence results for m -ovoids in classical polar spaces*, J. De Beule, J. Mannaert, V. Smaldore, *European Journal of Combinatorics*, 2024, 118, 103943.

[10] *New scattered linearized quadrimonomials*, V. Smaldore, C. Zanella, F. Zullo, *Linear Algebra and its Applications*, 2024, 702, pp. 143-160.

[11] *Bent functions and strongly regular graphs*, V. Smaldore, <https://www.qeios.com/read/A2V6PB.2>, *Qeios*, Vol. 6, 2024.

[12] *On the stabilizer of the graph of linear functions over finite fields*, V. Smaldore, C. Zanella, F. Zullo, *Forum Mathematicum*, 2025, 37(6), pp. 1673-1687.

[13] *Hemisystems and strongly regular graphs*, V. Pallozzi Lavorante, F. Romaniello, V. Smaldore, *Discrete Applied Mathematics*, 2026, 379, pp. 1-6.

Preprint

[1] *Ramanujan polar graphs*, V. Smaldore,
accepted by *Journal of Algebraic Systems*.

[2] *Switching equivalence of strongly regular polar graphs*, G. P. Nagy, V. Smaldore,
<https://arxiv.org/abs/2402.05754>, submitted to *Algebraic Combinatorics*.

[3] *Strongly regular graphs in hyperbolic quadrics*, A. Cossidente, J. De Beule, G. Marino, F. Pavese, V. Smaldore,
<https://arxiv.org/abs/2504.19560>, submitted to *Australasian Journal of Combinatorics*.

[4] *List of constructions of $NO^+(6,2)$* , V. Smaldore,
<https://arxiv.org/abs/2510.03235>, submitted to *Note di Matematica*.

Other publications

[1] 2nd edition of “*Finite Geometry and Friends*” – A Brussels’ summer school on finite geometry,
communicated by C. Castello, V. Smaldore,
Bulletin of the Institute of Combinatorics and its Applications, 2024, 100, pp. 24-27.

[2] *Stabilizers of graphs of linear functions and rank-metric codes*, V. Smaldore, C. Zanella,
F. Zullo, https://wcc2024.sites.dmi.unipd.it/WCC_proceedings.pdf, Extended Abstract for *WCC 2024: The Thirteenth International Workshop on Coding and Cryptography*.

Teaching

2014/2015: Tutor for Italian Mathematical Olympiad,
Liceo Scientifico Galileo Galilei, Potenza (Italy)

2015/2016: Tutor for Italian Mathematical Olympiad,
Liceo Scientifico Galileo Galilei, Potenza (Italy)

2017/2018: Tutor of mathematics courses,
Faculty of Informatics, Università degli Studi della Basilicata (Italy)

2018/2019: Tutor of mathematics courses,
Faculty of Informatics, Università degli Studi della Basilicata (Italy)

2019/2020: (Teaching assistant) *Geometry I*,
Faculty of Mathematics, Università degli Studi della Basilicata (Italy)

2020/2021: (Teaching assistant) *Geometry I*,
Faculty of Mathematics, Università degli Studi della Basilicata (Italy)

2021/2022: (Teaching assistant) *Geometry I*,
Faculty of Mathematics, Università degli Studi della Basilicata (Italy)

2023/2024: *Topics in Linear Algebra and Geometry*,
Departement of Industrial Engineering, Università degli Studi di Padova (Italy)

2024/2025: *Topics in Linear Algebra and Geometry*,
Departement of Industrial Engineering, Università degli Studi di Padova (Italy)

2025/2026: *Topics in Linear Algebra and Geometry*,
Departement of Industrial Engineering, Università degli Studi di Padova (Italy)

Grants and awards

2014: Italian Mathematical Olympiad, Honourable mention.

2024: NSUCRYPTO International Olympiad in Cryptography, team round, Honourable diploma.

2024: Contest 3 Anni in 3 Minuti – 3A3M, Accademia Pugliese delle Scienze, Certificate of merit.

Erdős number: 3

A note on parabolic and linear one-factorizations of the complete graph K_{p+1} ,

Gy. Kiss, G. Korchmáros, F. Romaniello, V. Smaldore, *CEUR Workshop Proceedings, ITAT'24: Information technologies-Applications and Theory, September 20-22, 2024, Drienica Čergovské vrchy, Slovakia*, Volume 3792, pp. 136-142.

One-factorizations of complete graphs with a doubly transitive automorphism group,

P. J. Cameron, G. Korchmáros, *Bulletin of the London Mathematical Society*, 1993, 25(1), pp. 1-6.

On the number of sets of integers with various properties,

P. J. Cameron, P. Erdős, In R. Mollin (Ed.), *Number Theory: Proceedings of the First Conference of the Canadian Number Theory Association held at the Banff Center, Banff, Alberta, April 17-27, 1988*, Berlin, Boston: de Gruyter, 1990, pp. 61-80.