

## CURRICULUM VITAE OF ANITA PASOTTI

### Personal Details

- Name: Anita Pasotti.
- Birth: October 12, 1980 in Brescia (Italy).
- Working Address: DICATAM - Sez. di Matematica, Università degli Studi di Brescia, Via Branze, 43 - 25123 Brescia, Italy.
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- homepage: <http://anita-pasotti.unibs.it>

### Education

- December 4, 2006. Ph.D. in Pure and Applied Mathematics, at Università degli Studi di Milano-Bicocca, Italy.  
Thesis: *Graph decompositions with a sharply vertex transitive automorphism group.*  
Supervisors: Prof. Marco Buratti and Francesca Dalla Volta.
- September 18, 2003. Master degree in Mathematics, 110/110 cum laude at Università Cattolica, Italy.  
Thesis: *Algebra cinematiche e loro geometrie.*  
Supervisor: Prof. Elena Zizioli.

### Academic experience

- 01/01/15 – current. Associate Professor of Geometry at Università degli Studi di Brescia, Italy.
- 01/12/10 – 31/12/14. Assistant Professor of Geometry at Università degli Studi di Brescia, Italy.
- 01/06/07 – 30/11/10. Postdoctoral Research Assistant of Geometry at Università degli Studi di Brescia, Italy.

### Membership

- European Mathematical Society (E.M.S.) since 2020.
- Institute of Combinatorics and its Applications since 2018.

- Unione Matematica Italiana (U.M.I.) since 2011.
- Istituto Nazionale di Alta Matematica (I.N.d.A.M.), G.N.S.A.G.A, section “Strutture Algebriche e Geometria Combinatoria” since 2005.
- Seminario Matematico di Brescia since 2004.

### Research interests

Combinatorial designs; Difference families; Embeddings of graphs; Graceful labelings; Graph decompositions; Heffter arrays; Optical orthogonal codes.

### Awards and grants

- 2022. *She Made a Difference 2022* an award assigned by the European Women’s Management Development Network (EWMD) of Brescia to women who have distinguished themselves for their professionalism.
- 2021. *Hall Medal 2021* assigned by the Institute of Combinatorics and its Applications to researchers in mid-career for “extensive quality research with substantial international impact”.
- 2008/09. Grant by “Giuseppe Tovini” Foundation.
- 2003/04 – 2005/06. Grant for Ph.D. at Università degli Studi Milano-Bicocca.
- 2003. XLIII Premio *Agostino Gemelli* of Ludovico Necchi Association as the best graduated student of the year in the Faculty at Università Cattolica.
- 2000/01 – 2002/03. Grant as the best student in the Faculty at Università Cattolica.

### Funded research projects

- 2022. Supervisor of the research project “Matematica discreta e sue applicazioni” funded by DICATAM - Università di Brescia with 5 participants.
- 2019 – 2021. Supervisor of the research project “Disegni, codici, parallelismi in spazi proiettivi e loro applicazioni” funded by DICATAM - Università di Brescia with 6 participants.
- 2015 – 2018. Supervisor of the research project “Strutture geometriche, grafi, codici e loro applicazioni” funded by DICATAM - Università di Brescia with 6 participants.

- 2012 – 2015. Participant of the PRIN project “Strutture geometriche, combinatoria e loro applicazioni”. PI: Guglielmo Lunardon.
- 2008 – 2010. Participant of the PRIN project “Disegni, grafi e i loro codici e gruppi”. PI: Mario Gionfriddo.

### Reviewer activity

#### Grant proposal reviewer for:

- 22/11/21 – 10/01/22. A research project submitted to “National Sciences and Engineering Research Council of Canada (NSERC)”.
- 29/7/20 – 15/09/20. A research project (IP-2020-02) 2nd Round Evaluation Criteria (B) submitted to “Croatian Science Foundation (HRZZ)”.

#### Referee for the following journals:

- AKCE International Journal of Graphs and Combinatorics; Ars Combinatoria; Ars Mathematica Contemporanea; Australasian Journal of Combinatorics; Bulletin of the Institute of Combinatorics and its Applications; Designs, Codes and Cryptography; Discrete Mathematics; Electronic Journal of Combinatorics; Graphs and Combinatorics; Journal of Combinatorial Designs; Mathematical Reviews; Quaderni di Matematica; RAIRO - Operations Research; Theory and Applications of Graphs.

### Scientific visits

- 25/02/13 – 09/03/13. Visiting Professor at Universidade de Brasília, Brasília-DF, Brazil.
- 30/03/11 – 01/04/11. Visiting Professor at Università di Roma “La Sapienza”, Roma, Italy.

### Publications

#### Submitted papers

- [43] M.M. Ferrari, A. Pasotti and T. Traetta, *On non-isomorphic bimiminal pots realizing the cube*, preprint available at <https://arxiv.org/abs/2210.15295>.
- [42] A. Pasotti and J.H. Dinitz, *A survey of Heffter arrays*, preprint available at <https://arxiv.org/abs/2209.13879>.

- [41] S. Costa and A. Pasotti, *On the number of non-isomorphic (simple)  $k$ -gonal biembeddings of complete multipartite graphs*, preprint available at <https://arxiv.org/abs/2111.08323>.

#### Refereed papers

- [40] L. Mella and A. Pasotti, *Tight globally simple non-zero sum Heffter arrays and biembeddings*, *J. Combin. Des.*, **31** (2023), 41-83.
- [39] M.A. Ollis, A. Pasotti, M.A. Pellegrini and J.R. Schmitt, *Growable Realizations: a Powerful Approach to the Buratti-Horak-Rosa Conjecture*, *Ars Math. Contemp.*, **22** (2022), #P4.04.
- [38] S. Costa, S. Della Fiore and A. Pasotti, *Non-zero sum Heffter arrays and their applications*, *Discrete Math.* **345** (2022), 112952.
- [37] M.A. Ollis, A. Pasotti, M.A. Pellegrini and J.R. Schmitt, *New methods to attack the Buratti-Horak-Rosa conjecture*, *Discrete Math.* **334** (2021), 112486.
- [36] S. Costa and A. Pasotti, *On  $\lambda$ -fold relative Heffter arrays and biembedding multigraphs on surfaces*, *Europ. J. Combin.* **97** (2021), 103370.
- [35] L. Mella and A. Pasotti, *Some counterexamples to a conjecture on difference graphs*, *Examples and Counterexamples* **1** (2021), 100002.
- [34] M. Buratti, A. Pasotti and T. Traetta, *A reduction of the spectrum problem for odd sun systems and the prime case*, *J. Combin. Des.* **29** (2021), 5–37.
- [33] S. Costa, A. Pasotti and M.A. Pellegrini, *Relative Heffter arrays and biembeddings*, *Ars Math. Contemp.* **18** (2020), 241–271.
- [32] A. Zazio, A. Pasotti, M.A. Pellegrini, C. Miniussi and M. Bortoletto, *Inter-area communication within the motor network: Prestimulus functional connectivity predicts TMS-evoked response*, *Clinical Neurophysiology* **131** (2020), e72–e73 (Extended abstract).
- [31] S. Costa, F. Morini, A. Pasotti and M.A. Pellegrini, *A generalization of Heffter arrays*, *J. Combin. Des.* **28** (2020), 171–206.
- [30] S. Costa, M. Dalai and A. Pasotti, *A tour problem on a toroidal board*, *Australas. J. Combin.* **76** (2020), 183–207.
- [29] A. Pasotti and M.A. Pellegrini, *Cyclic uniform 2-factorizations of the complete multipartite graph*, *Graphs Combin.* **34** (2018), 901–930.
- [28] S. Costa, F. Morini, A. Pasotti and M.A. Pellegrini, *Globally simple Heffter arrays and orthogonal cyclic cycle decompositions*, *Australas. J. Combin.* **72** (2018), 549–593.

- [27] S. Costa, F. Morini, A. Pasotti and M.A. Pellegrini, *A problem on partial sums in abelian groups*, Discr. Math. **341** (2018), 705–712.
- [26] F. Merola, A. Pasotti and M.A. Pellegrini, *Cyclic and symmetric hamiltonian cycle systems of the complete multipartite graph: an even number of parts*, Ars Math. Contemp. **12** (2017), 219–233.
- [25] A. Pasotti and M.A. Pellegrini, *A generalization of the problem of Mariusz Meszka*, Graphs Combin. **32** (2016), 333–350.
- [24] A. Benini and A. Pasotti,  *$\alpha$ -labelings of a class of generalized Petersen graphs*, Discuss. Math. Graph Theory **35** (2015), 43–53.
- [23] A. Pasotti and M.A. Pellegrini, *On the Buratti–Horak–Rosa Conjecture about Hamiltonian Paths in Complete Graphs*, Electron. J. Combin. **21** (2014), #P2.30.
- [22] A. Benini and A. Pasotti, *Decompositions of complete multipartite graphs via generalized graceful labelings*, Australas. J. Combin. **59** (2014), 120–143.
- [21] A. Pasotti and M.A. Pellegrini, *A new result on the problem of Buratti, Horak and Rosa*, Discrete Math. **319** (2014), 1–14.
- [20] M. Buratti and A. Pasotti, *Cyclic kite-designs of order  $v$  that are cyclically embedded into a cyclic  $(v, 4, 2)$ -design*, Quaderni di Matematica della II Università di Napoli **28** (2013), 165–176.
- [19] A. Pasotti, *On  $d$ -graceful labelings*, Ars Combin. **111** (2013), 207–223.
- [18] A. Pasotti and A. Benini, *Decompositions into generalized Petersen graphs via graceful labelings*, Electron. Notes Discrete Math. **40** (2013), 295–298.
- [17] A. Benini and A. Pasotti, *Decompositions of graphs via generalized graceful labelings*, Electron. Notes Discrete Math. **40** (2013), 39–42.
- [16] M. Buratti, A. Pasotti and D. Wu, *On optimal  $(v, 5, 2, 1)$  optical orthogonal codes*, Des. Codes Cryptog. **68** (2013), 349–371.
- [15] A. Pasotti, *On  $d$ -divisible  $\alpha$ -labelings of  $C_{4k} \times P_m$* , Util. Math. **90** (2013), 135–148.
- [14] A. Benini, L. Giuzzi and A. Pasotti, *New results on path-decompositions and their down-links*, Util. Math. **90** (2013), 369–382.
- [13] A. Benini, L. Giuzzi and A. Pasotti, *Down-linking  $(K_v, \Gamma)$ -designs to  $P_3$ -designs*, Util. Math. **90** (2013), 3–21.

- [12] L. Giuzzi and A. Pasotti, *Sampling complete designs*, Discrete Math. **312** (2012), 488–497.
- [11] M. Buratti, K. Momihara and A. Pasotti, *New results on optimal  $(v, 4, 2, 1)$  optical orthogonal codes*, Des. Codes Cryptogr. **58** (2011), 89–103.
- [10] A. Pasotti and M. A. Pellegrini, *Symmetric 1-factorizations of the complete graph*, European J. Combin. **31** (2010), 1410–1418.
- [9] M. Buratti and A. Pasotti, *Further progress on difference families with block size 4 or 5*, Des. Codes Cryptogr. **56** (2010), 1–20.
- [8] A. Pasotti, *Constructions for cyclic Moebius ladder systems*, Discrete Math. **310** (2010), 3080–3087.
- [7] M. Buratti and A. Pasotti, *Combinatorial designs and the Theorem of Weil on multiplicative character sums*, Finite Fields Appl. **15** (2009), 332–344.
- [6] A. Benini and A. Pasotti, *On the existence of elementary abelian cycle systems*, Graphs Combin. **25** (2009), 1–14.
- [5] M. Buratti and A. Pasotti, *On perfect  $\Gamma$ -decompositions of the complete graph*, J. Combin. Des. **17** (2008), 197–209.
- [4] A. Pasotti, *On equidistance graphs*, Australasian J. Combin. **42** (2008), 229–240.
- [3] A. Pasotti, *Decomposizioni di grafi con un gruppo di automorfismi strettamente transitivo sui vertici*, Bollettino UMI, La Matematica nella Società e nella Cultura, Serie VIII, Vol. X-A, Agosto 2007, 311–314.
- [2] A. Pasotti and E. Zizioli, *Incidence left loops derived from kinematic algebras*, Results Math. **50** (2007), 125–139.
- [1] M. Buratti and A. Pasotti, *Graph decompositions with the use of difference matrices*, Bull. Inst. Combin. Appl. **47** (2006), 23–32.

## Conference talks and presentations

### Invited talks

- [32] October 2022. *On graphs with prescribed edge-lengths*, 34th Midwestern Conference on Combinatorics and Combinatorial Computing, Normal, Illinois. (Keynote speaker).

- [31] July 2022. *An overview of Heffter arrays*, 5th Catania Combinatorial Conference - HyGraDe 2022, Catania, Italy. (Keynote speaker).
- [30] June 2022. *Heffter arrays: origins, variants and applications*, Combinatorial Constructions Workshop, Zagreb, Croatia. (Keynote speaker).
- [29] June 2022. *Relative Non-Zero Sum Heffter Arrays and Orthogonal Path Decompositions*, “Stinson66 - New Advances in Designs, Codes and Cryptography”, Toronto, Canada. (Invited speaker).
- [28] June 2021. *A reduction of the spectrum problem for sun systems*, 8th European Congress of Mathematics (blended mode), Portoroz, Slovenia. (Invited speaker for a 30-minute talk in the minisymposium Combinatorial Designs).
- [27] June 2021. *A reduction of the spectrum problem for sun systems*, CMS 75+1 Anniversary Summer Meeting (online), Ottawa, Canada. (Invited speaker for the Session of Graph Decompositions).
- [26] September 2019. *I disegni combinatorici e il metodo delle differenze*, XXI U.M.I. Conference, Pavia, Italy. (Invited speaker for the Session of Combinatorics).
- [25] September 2015. *Sistemi ciclici e simmetrici di cicli hamiltoniani del grafo multipartito completo*, XX U.M.I. Conference, Siena, Italy. (Invited speaker for the Session of Combinatorics).
- [24] February 2013. *Old and new graceful labelings*, Escola de Verao, Universidade de Brasília, Brasília-DF, Brazil. (Keynote speaker).
- [23] March 2011. *d-graceful labelings e decomposizioni cicliche*, national meeting, Vicenza, Italy. (Keynote speaker).

### Ordinary talks

- [22] May 2022. *On non-zero sum Heffter arrays*, Combinatorics 2022, Mantua, Italy.
- [21] June 2019. *Odd sun systems of the complete graph*, 9th Slovenian Conference on Graph Theory, Bled, Slovenia.
- [20] June 2017. *Some conjectures on partial sums of a given set*, Hypergraphs, Graphs and Designs - HyGraDe 2017, Sant’Alessio Siculo (Messina), Italy.
- [19] June 2015. *Near 1-factors with prescribed edge-lengths in the complete graph*, 8th Slovenian Conference on Graph Theory, Kranjska Gora, Slovenia.

- [18] January 2015. *Disegni combinatorici e grafi*, national meeting, Brescia, Italy.
- [17] June 2014. *From Buratti's problem to Meszka's one*, Combinatorics 2014, Gaeta, Latina, Italy.
- [16] July 2013. *On the problem of Buratti, Horak and Rosa*, 24th British Combinatorial Conference, London, England.
- [15] September 2012. *Decompositions into generalized Petersen graphs via graceful labelings*, Combinatorics 2012, Perugia, Italy.
- [14] February 2012. *On  $(v, k, 2, 1)$ -optical orthogonal codes*, national meeting, Vicenza, Italy.
- [13] June 2011. *d-graceful labelings and graph decompositions*, 2nd Istanbul Design Theory, Graph Theory and Combinatorics Conference, Istanbul, Turkey.
- [12] June 2010. *Down-linking graph decompositions*, Combinatorics 2010, Verbania, Italy.
- [11] January 2010. *Nuove costruzioni ottimali di codici ottici ortogonali*, national meeting, Brescia, Italy.
- [10] September 2009. *Regular 1-factorizations of the complete graph*, 9th International Conference on Geometry and Applications, Varna, Bulgaria.
- [9] June 2008. *Elementary abelian designs via the Theorem of Weil on multiplicative character sums*, Combinatorics 2008, Costermano (Verona), Italy.
- [8] February 2008. *Equidistance and isodistance graphs*, 35th Conference on Geometry and Algebra, Berlin, Germany.
- [7] February 2007. *Esistenza asintotica di  $\Gamma$ -sistemi di Steiner*, national meeting, Caserta, Italy.
- [6] June 2006. *Constructions for 2-perfect designs with a regular automorphism group*, Combinatorics 2006, Ischia (Napoli), Italy.
- [5] September 2005. *Costruzioni ricorsive di disegni combinatori regolari*, national meeting, Vicenza, Italy.
- [4] April 2005. *A generalization of difference matrices and its applications to graph decompositions*, ALCOMA 05: Algebraic Combinatorics and its Applications, Thurnau (Bayreuth), Germany.



- [3] February 2005. *Mappe complete e quadrati latini*, national meeting, Messina, Italy.
- [2] December 2003. *Algebre quadratiche non associative, geometrie derivate e loro automorfismi*, national meeting, Roma, Italy.
- [1] October 2003. *Kinematic algebras and incidence fibered loop*, national meeting, Bologna, Italy.

### Invited seminars and lectures

- [16] November 2022. *Some conjectures on graphs with prescribed edge-lengths*. “Combinatorics Seminar”, University of Manitoba, Canada.
- [15] November 2022. *On Hamiltonian paths of the complete graph with prescribed edge-lengths*. “Mirka Miller’s Combinatorics Webinar Series”.
- [14] December 2015. *2-fattorizzazioni cicliche del grafo multipartito completo*. Università Cattolica di Brescia, Italy.
- [13] April 2015. *La teoria dei grafi e la connettività del cervello umano*. Università Cattolica di Brescia, Italy.
- [12] November 2012. *Da matematico ad event planner*. Università Cattolica di Brescia, Italy.
- [11] April 2011. *Torneo all’italiana e Problema di Oberwolfach*. Università Cattolica di Brescia, Italy.
- [10] March 2011. *Graceful labelings e loro generalizzazioni*. Università di Roma “La Sapienza”, Italy.
- [9] March 2011. *Campionato di calcio, cene e... matematica*. Mathesis, Vicenza, Italy.
- [8] October 2008. *Graziose scale di Moebius*. Università Cattolica di Brescia, Italy.
- [7] February 2007.  *$\Gamma$ -sistemi di Steiner regolari*. Università Cattolica di Brescia, Italy.
- [6] October 2006. *2-disegni e decomposizioni di grafi*. Università degli Studi di Brescia, Italy.
- [5] October 2006. *Il gruppo di automorfismi di un grafo*. Università Cattolica di Brescia, Italy.
- [4] March 2006. *Fattorizzazioni del grafo completo*. Università degli Studi di Brescia, Italy.

- [3] February 2006. *Teoria dei grafi: un'introduzione*. Università Cattolica di Brescia, Italy.
- [2] January 2006. *Mappe complete e matrici differenza*. Università degli Studi di Milano-Bicocca, Italy.
- [1] October 2004. *Mappe complete e quadrati latini*. Università Cattolica di Brescia, Italy.

### **Organisation**

- 08/04/2022 Member of the scientific and organising committee of “Geometric structures and loops - A day in honor of Silvia Pianta and Elena Zizioli”, Università Cattolica di Brescia (Italy).
- 09/2018 – current. Member of the scientific and organising committee of five editions of the series of seminars “Discrete Mathematics Seminars”, held at Università di Brescia, Università di Modena e Reggio Emilia, Università di Verona (Italy).
- 03/06/18 – 09/06/18. Member of the organising committee of the International Conference “Combinatorics 2018”, Arco, Trento (Italy).
- 30/01/2010 Member of the scientific and organising committee of “A day in honor of Mario Marchi”, Università Cattolica di Brescia (Italy).

### **Advisor of Ph.D. Students and Post Docs**

- 1/11/21 – current. Advisor of Dr. Lorenzo Mella, Ph.D. student at Università di Modena e Reggio Emilia.
- 1/1/21 – 31/10/21. Advisor of Dr. Simone Costa for a postdoc position at Università di Brescia. Title of the project: “Applicazioni della teoria dei grafi e dei disegni a problemi di codifica zero error”.
- 1/1/20 – 31/12/20. Advisor of Dr. Simone Costa for a postdoc position at Università di Brescia. Title of the project: “Decomposizioni in grafi con un gruppo di automorfismi strettamente transitivo sui vertici”.
- 1/12/18 – 30/11/19. Advisor of Dr. Simone Costa for a postdoc position at Università di Brescia. Title of the project: “Applicazioni della teoria dei grafi e dei disegni alla teoria dell’informazione e della codifica”.
- 1/1/17 – 31/12/17. Advisor of Dr. Simone Costa for a postdoc position at Università di Brescia. Title of the project: “Applicazioni di strutture geometriche e combinatoria alle famiglie differenza e alla decomposizione di grafi”.

## Member of academic/direction boards

- 2020/2021 – current. Member of the academic board of the Ph.D. degree in Mathematics, Università di Parma, Modena e Reggio Emilia, and Ferrara.
- 2020/2021 – current. Member of the direction board of the Master of I level in “Matematica (MasterMath) per l’accesso nei ruoli di docente della scuola secondaria classe A26”, at Università di Brescia.

## Teaching experience

### Ph.D. Courses

- 2021/22. Main instructor for *Designs, Graphs and their Applications* (18 hours, total hours of the course 40) for Ph.D. in Mathematics, at Università di Modena e Reggio Emilia.
- 2020/21. Main instructor for *Graph labelings, colorings and their applications* (8 hours, total hours of the course 16) for Ph.D. in Information Engineering (DRII), at Università di Brescia.
- 2020/21. Main instructor for *Topics in Discrete Mathematics* (8 hours, total hours of the course 40) for Ph.D. in Mathematics, at Università di Modena e Reggio Emilia.
- 2019/20. Main instructor for *Graph Theory and Applications* (16 hours) for Ph.D. in Information Engineering (DRII), at Università di Brescia.

### Master Courses

- 2020/21. Main instructor for *Algebra, Matematica Discreta e Applicazioni* (21 hours, total hours of the course 63) for Master of I level: in “Matematica (MasterMath) per l’accesso nei ruoli di docente della scuola secondaria classe A26”, at Università di Brescia.

### Degree Courses

- 2011/12 – current. Main instructor for *Algebra e Geometria*, at Università di Brescia.
- 2010/11 – 2012/13. Teaching assistant for *Approfondimenti di Geometria*, at Università Cattolica di Brescia.
- 2007/08 – 2014/15. Teaching assistant for *Algebra e Geometria*, at Università di Brescia.

- 2006/07. Teaching assistant for *Matematica-Geometria*, at Università di Brescia.
- 2004/05 – 2005/06. Teaching assistant for *Algebra Lineare e Geometria*, at Università di Milano-Bicocca.
- 2003/04 – 2005/06. Teaching assistant for *Geometria 3*, at Università Cattolica di Brescia.

### Other experiences

- 2022. Member of the Council of the Institute of Combinatorics and its Applications (ICA).
- 2021. Member of the committee for an upgrade from Assistant Professor (RTDB) to Associate Professor in MAT/03 at Università di Brescia.
- 2021. Member of the committee for a position of Assistant Professor (RTDA) in MAT/03 at Università di Napoli - Federico II.
- 2021. Member of the committee for a position of Assistant Professor (RTDB) in MAT/03 at Università di Brescia.
- 2021 - now. Member of the committee of DICATAM (Università di Brescia) for the funding Post Doc positions.
- 2020. Member of the committee for a postdoc position in MAT/03 at Università di Verona.
- 2020. Member of the committee for a position of Assistant Professor (RTDA) in MAT/03 at Università Cattolica di Brescia.
- 2020. Member of the committee for a postdoc position in MAT/03 at Università di Brescia.
- 2019. President of the committee for a postdoc position in MAT/03 at Università di Brescia.
- 2018. Member of the committee for a position of Assistant Professor (RTDB) in MAT/03 at Università di Brescia.
- 2018. Member of the committee for a postdoc position in MAT/03 at Università di Brescia.
- 2014/15. Member of the thesis advisory committee for Bachelor Degree in Mathematics at Università Cattolica di Brescia.
- 2011/12 – current. Member of the thesis advisory committee for Bachelor and Master Degree in Engineering at Università di Brescia.