

## Francesca MEROLA

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### ACADEMIC APPOINTMENTS:

- June 2019 to present: Associate Professor SD Geometria–MAT/03, Department of Mathematics and Physics, Roma Tre University.
- October 2006 to May 2019: Ricercatore SD Geometria–MAT/03 (Lecturer), Department of Mathematics, Roma Tre University.
- Research contract with the Department of Mathematics “G. Castelnuovo” of the University of Rome “La Sapienza” with the research group “Gruppi Grafi e Geometrie” (Groups, Graphs and Geometries) (2004-2005).
- Post-doc at the Department of Mathematics of the University of Rome “La Sapienza”: Title of the research: “Gruppi di permutazioni e strutture combinatorie” (2002-2004).
- Research contract with the Department of Mathematics of the University of Rome “La Sapienza” (2000-2001).
- Post-doc at the Department of Mathematics of the University of Rome “La Sapienza” (1999-2000).

### EDUCATION:

- PhD In Mathematics, University of Palermo  
Thesis: *Orbits of infinite permutation groups*  
Thesis advisor: Peter J. Cameron (February 1999).
- Laurea di Dottore in Matematica (Degree in Mathematics) - University of Rome “La Sapienza”  
Thesis: *Insiemi differenza e moltiplicatori* (Difference sets and multipliers)  
Thesis advisor: Prof. Dina Ghinelli (November 1992).

### RESEARCH INTERESTS:

- Combinatorics and Algebra: Design Theory, Graph decompositions, Graph Theory, Permutation Groups, Algebraic Combinatorics.

### SELECTED PUBLICATIONS:

1. Orbits on  $n$ -tuples for infinite permutation groups, *European J. Combin.* **22** (2001), 225–241.

2. Some factorisations counted by Catalan numbers (with Daniele A. Gewurz), *European J. Combin.* **27** (2006), 990–994.
3. Product action, (with Peter J. Cameron and Daniele A. Gewurz), *Discrete Math.*, **308** (2008), 386–394.
4. Dihedral Hamiltonian cycle systems of the cocktail party graph (with Marco Buratti), *J. Combin. Des.* **21** (2013), 1–23.
5. Infinitely many cyclic solutions to the Hamilton-Waterloo problem with odd length cycles (with Tommaso Traetta), *Discrete Math.* **339** (2016), 2267–2283.
6. Cyclic and symmetric hamiltonian cycle systems of the complete multipartite graph: even number of parts (with Anita Pasotti and Marco A. Pellegrini), *Ars Math. Contemp.* **12** (2017), 219–233.
7. Fano Kaleidoscopes and their generalizations (with Marco Buratti), *Des. Codes Cryptogr.* **87** (2019), 769–784.

#### TEACHING EXPERIENCE:

- Courses taught from 2004, at Roma Tre University, to Engineering and Mathematics students:
  - Crittografia a Chiave pubblica (Public Key Cryptography)
  - Geometria e Combinatoria (Geometry and Combinatorics)
  - Algebra Lineare (Linear Algebra)
  - Elementi di Crittografia (Introduction to Cryptography)
  - Matematica Discreta (Discrete Mathematics)
  - Algebra Lineare II (Advanced Linear Algebra)

#### CONFERENCES:

- Recent talks given by invitation:
  - An introduction to combinatorial designs and graph decompositions*, EMap, FGV, Rio de Janeiro (Brazil), 2012
  - On Kaleidoscope Designs*, Finite Geometries Third Irsee Conference, Irsee (Germany) 2017
  - Cycle systems of the complete multipartite graph*, CanaDAM 2019, Vancouver (Canada) 2019
- Recent conference talks:
  - A first look through Fano Kaleidoscopes*, Third Istanbul Design Theory, Graph Theory and Combinatorics Conference, Istanbul (Turkey) 2016
  - Cycle systems for the complete multipartite graph*, Combinatorics 2018, Arco di Trento 2018