MADONIA Maria Serafina
Curriculum

Education and academic positions

1985: Degree in Mathematics with 110 cum laude – University of Palermo
1991: Doctorate in Mathematics - Consortium Universities of Palermo, Catania and Messina
1996 - 2021: Permanent researcher – 92/bis (later INF01) – Department of Mathematics and Computer Science - University of Catania
2022 - today: Associate Professor - INF01 - Department of Mathematics and Computer Science - University of Catania

Teaching activity

- Bachelor's and Master's degree courses: "Fundamentals of Computer Science", "Formal Languages" and "Mark-up Languages: XML"

PhD activities

2003- 2012: Participation in the Academic Board of the Research Doctorate - Computer Science - from cycle XVIII to cycle XXVIII
2019-present: Participation in the Academic Board of the Research Doctorate - Computer Science - from cycle 35 to cycle 38

Science projects

2019 – 2020: Coordinator of the INdAM Project – GNCS "Study of combinatorial properties of formal languages inspired by biology and two-dimensional structures".

Member of the following MIUR PRIN projects:
1998-2000: "Analysis and application of formal methods for the specification and verification of software systems"
2001-2003: "Reasoning on aggregates and numbers to support programming and related verifications: from decision algorithms to multi-set constraint programming, sets and maps
2006-2008: " Automata and Formal Languages: mathematical and applicative aspects "
2008-2010: " Mathematical aspects and emerging applications of automata and formal languages
2013-2016: " Formal Languages and Automata: Mathematical structures and applicative orientations "

Member of the following INdAM – GNCS projects:
2017-2018: "Codes of non-overlapping strings and arrays"
2018-2019: "Combinatorial properties and pattern detection in linear and two-dimensional discrete structures"
2020-2021: "Combinatoric of permutations, words and graphs: algorithms and applications"

2021-2022: "Strings and matrices: combinatorics, enumeration and algorithms"

Member of the following PO ERDF projects:
2019-today: BioSpec3 project ("Next generation biobanking (NGB): models and operational tools of a new generation biobank as a knowledge hub for precision medicine") - PO FESR Sicily 2014/2020
2012-2015: PRIME Project ("Integrated Reasoning Platform, Multimedia, Expert") - PO FESR Sicily 2007/2013
2012-2015: PRISMA Project ("Interoperable Cloud Platforms for SMArt-government") - framework PON04a2

International scientific cooperations

January 2019: invited for 1 week at the LITIS laboratory - Université de Rouen-Normandie (France), for a collaboration on "Bidimensional languages and codes".
2006-2009: scientific cooperation with N. Jonoska - University of South Florid (USA)

Review activity

2004-present: Scientific reviewer, among others, for the following international journals: Acta Informatica, Cryptography and Communications, Fundamenta Informaticae, International Journal of Foundations of Computer Science, Mathematical Structures in Computer Science, Rairo-ITA, Theoretical Computer Science
2004-present: Scientific reviewer, among others, for the following national and international conferences: ICALP, MFCS, SOFSEM, DLT, LATA, CIAA, CAI, DCFS, ICTCS.

Scientific activity

Research area: Theoretical computer science.

- Two-dimensional picture languages
- Recognizability through tiling systems, regular expressions and other calculation models.
- Overlap property between picture.
- Two-dimensional picture codes.

- String languages
- Combinatorial properties: isometry.
- String codes.