

PERSONAL INFORMATION **MIRCEA MERCA**✉ mircea.merca@profinfo.edu.ro🌐 <http://mirceamerca.wixsite.com/prof>

Gender Male | Nationality Romanian

WORK EXPERIENCEJune 2018 **Visiting Researcher**College of The Holy Cross, Worcester, USA
Department of Mathematics and Computer ScienceJune – July 2017 **Visiting Researcher**College of The Holy Cross, Worcester, USA
Department of Mathematics and Computer ScienceMay 2017 – present **Researcher**

Academy of Romanian Scientists, Bucharest, Romania

July 2016 – present **Associate Researcher**University of Craiova, Romania
Department of MathematicsJuly 2014 **Visiting Researcher**College of The Holy Cross, Worcester, USA
Department of Mathematics and Computer Science**EDUCATION AND TRAINING**2011–2014 **PhD in Mathematics**University of Craiova, Department of Mathematics
Thesis: New Algorithms and Relations Involving Integer Partitions
Supervisor: Prof. Dr. Constantin P. Niculescu2001–2003 **Bachelor of Applied Science in Computer Science**

University Politehnica of Bucharest

1987–1991 **Bachelor of Science in Mathematics**

Babes-Bolyai University, Cluj-Napoca

RESEARCH INTEREST

My research centers on the theory of partitions, number theory, combinatorics, special functions, algorithms and related areas. I have an interest in generating the integer partitions. The algorithm that I published in 2012 is considered the most efficient algorithm for generating the integer partitions. I am collaborating with George E. Andrews on truncated theta series. The first paper of this study appeared in november 2012, and the second in february 2018. In 2017, I published the Lambert series factorization theorem. This general result allowed me to obtain new connections between the seemingly disparate branches of the additive and multiplicative number theory. Few papers of this investigation appeared in 2017 and 2018. Recently, I published the first algorithm for proving the non-trivial linear homogeneous partition inequalities. Currently I am working on q -series and on further aspects of partitions and their amazing relationship with Rogers-Ramanujan's enigmatic identities.

PUBLICATIONS

From 2011 to the present, I published 81 papers as follows: 67 papers in ISI Web of Science journals, 13 papers in journals indexed in other international data bases, 1 paper as a chapter book (see my list of papers).

The impact of my work can be characterized by citations and h -index as follows: 332 citations with 10 h -index in Google Scholar, 215 citations with 8 h -index in Scopus, 176 citations with 8 h -index in MathSciNet, 164 citations with 7 h -index in ISI Web of Science.

GRANTS, HONORS AND AWARDS

2019 Romanian National Authority for Scientific Research, CNCS-UEFISCDI (RON 8000)

1. PN-III-P1-1.1-PRECISI-2019-32496: Jacobi's Four and Eight Squares Theorems and Partitions into Distinct Parts, *Mediterranean Journal of Mathematics*, 16, 16-26 (2019) (RON 6000)
2. PN-III-P1-1.1-PRECISI-2019-32511: The partition function $p(n)$ in terms of the classical Möbius function, *The Ramanujan Journal*, 49, 87-96 (2019) (RON 2000)

2018 European Mathematical Society - Solidarity Travel Grant (€900)

Romanian National Authority for Scientific Research, CNCS-UEFISCDI (RON 28000)

1. PN-III-P1-1.1-PRECISI-2018-23027: Euler-Riemann Zeta Function and Chebyshev-Stirling Numbers of the First Kind, *Mediterranean Journal of Mathematics*, 15:123 (2018) (RON 6000)
2. PN-III-P1-1.1-PRECISI-2018-23034: New Connections Between Functions from Additive and Multiplicative Number Theory, *Mediterranean Journal of Mathematics*, 13:56 (2018) (RON 6000)
3. PN-III-P1-1.1-PRECISI-2018-23042: A q -analogue for sums of powers, *Acta Arithmetica*, 183, 185–190 (2018) (RON 2000)
4. PN-III-P1-1.1-PRECISI-2018-24072: Truncated Theta Series and a Problem of Guo and Zeng, *Journal of Combinatorial Theory, Series A*, 154, 610–619 (2018) (RON 6000)
5. PN-III-P1-1.1-PRECISI-2018-26481: Binomial transforms and integer partitions into parts of k different magnitudes, *The Ramanujan Journal*, 46, 765–774 (2018) (RON 2000)
6. PN-III-P1-1.1-PRECISI-2018-27721: Combinatorial proofs of two truncated theta series theorems, *Journal of Combinatorial Theory, Series A*, 160, 168–185 (2018) (RON 6000)

2017 Prize **Nicolae Teodorescu - 2015** of the Academy of Romanian Scientists for contributions in combinatorics and algorithm theory.

Romanian National Authority for Scientific Research, CNCS-UEFISCDI (RON 10000)

1. PN-III-P1-1.1-PRECISI-201714957: New convolutions for the number of divisors, *Journal of Number Theory*, 170, 17–34 (2017) (RON 2000)
2. PN-III-P1-1.1-PRECISI-201714986: On families of linear recurrence relations for the special values of the Riemann zeta function, *Journal of Number Theory*, 170, 55–65 (2017) (RON 2000)
3. PN-III-P1-1.1-PRECISI-201715008: New relations for the number of partitions with distinct even parts, *Journal of Number Theory*, 176, 1–12 (2017) (RON 2000)
4. PN-III-P1-1.1-PRECISI-201720238: The Lambert series factorization theorem, *The Ramanujan Journal*, 44, 417–435 (2017) (RON 2000)
5. PN-III-P1-1.1-PRECISI-201721056: Parity of sums of partition numbers and squares in arithmetic progressions, *The Ramanujan Journal*, 44, 617–630 (2017) (RON 2000)

- 2015 Romanian National Authority for Scientific Research, CNCS-UEFISCDI (RON 2000)
1. PN-II-RU-PRECISI-2015-9-9110: A generalization of Euler's pentagonal number recurrence for the partition function, *The Ramanujan Journal*, 37(3), 589-595 (2015) (RON 2000)
- 2014 Romanian National Authority for Scientific Research, CNCS-UEFISCDI (RON 6000)
1. PN-II-RU-PRECISI-2014-8-5388: A note on the Jacobi-Stirling numbers, *Integral Transforms and Special Functions*, 25(3), 196-202 (2014) (RON 4000)
 2. PN-II-RU-PRECISI-2014-8-5394: New upper bounds for the number of partitions into a given number of parts, *Journal of Number Theory*, 142, 298-304 (2014) (RON 2000)
- 2013 Romanian National Authority for Scientific Research, CNCS-UEFISCDI (RON 4000)
1. PN-II-RU-PRECISI-2013-7-3442: The truncated pentagonal number theorem, *Journal of Combinatorial Theory, Series A*, 119(8), 1639-1643 (2012) (RON 2000)
 2. PN-II-RU-PRECISI-2013-7-3443: Binary Diagrams for Storing Ascending Compositions, *The Computer Journal*, 56(11), 1320-1327 (2013) (RON 2000)
- 2011–2014 Romanian Ministry of National Education (MEN) – PhD Student Grant (RON 34428)

ADDITIONAL INFORMATION

- Conference Papers**
1. M. Merca: *On the Toeplitz-Hessenberg determinant*, The XVI th Annual Conference of the Romanian Mathematical Society, Petroleum-Gas University of Ploiesti, Romania, Oct. 2012
 2. M. Merca: *A Special Case of Restricted Integer Partitions*, Special Session on Discrete Mathematics and Theoretical Computer Science, Joint American Mathematical Society-Romanian Mathematical Society Meeting, Alba Iulia, Romania, Jun. 2013
 3. M. Merca: *On a double inequality*, The twelfth conference on nonlinear analysis and applied mathematics, Valahia University of Targoviste, Romania, June 2014.
 4. M. Merca: *A convolution for the number of divisors*, Summer research seminar, College of the Holy Cross, Worcester, USA, Jul. 2014
 5. M. Merca: *A refined form of a recent convolution for the number of divisors*, The XVIII th National Conference of the Romanian Mathematical Society, Alexandru Ioan Cuza University of Iasi, Romania, Oct. 2014
 6. M. Merca: *Lambert series and conjugacy classes in GL*, Spring Session, Academy of Romanian Scientists, Bucharest, Romania, March 24, 2017
 7. M. Merca: *A partition identity related to Stanley's theorem and applications*, Autumn Session, Academy of Romanian Scientists, Timisoara, Romania, October 12-14, 2017
 8. C. Ballantine, M. Merca: *Bisected theta series, least r-gaps in partitions, and polygonal numbers*, Joint Mathematics Meetings, San Diego, USA, Jan. 2018
 9. M. Merca: *The partition function $p(n)$ in terms of the classical Möbius function*, Scientific Conference, Academy of Romanian Scientists, Bucharest, Romania, March 30, 2018.
 10. M. Merca: *Non-trivial linear partition inequalities and the Prouhet-Tarry-Escott problem*, Combinatory Analysis 2018: Partitions, q -Series, and Applications, Pennsylvania State University, USA, June 2018.
 11. M. Merca: *A general method for proving the non-trivial linear homogeneous partition inequalities*, National Scientific Conference, Academy of Romanian Scientists, Targoviste, Romania, September 20-22, 2018
 12. M. Merca: *A truncated theta identity of Gauss*, National Scientific Conference, Academy of Romanian Scientists, Bucharest, Romania, April 4-6, 2019.
 13. M. Merca: *Truncated Theta Series, Partitions Inequalities and Rogers-Ramanujan Functions*, Transient Transcendence in Transylvania, Brasov, Romania, May 13-17, 2019.
 14. M. Merca: *An algorithm for proving the non-trivial linear homogeneous partition inequalities*, The Ninth Congress of Romanian Mathematicians, Galati, Romania, June 28-July 3, 2019.
 15. M. Merca: *Truncated theta identities and rank partition functions*, National Scientific Conference, Academy of Romanian Scientists, Brasov, Romania, September 20-21, 2019
- Conferences Attended**
1. *Srinivasa Ramanujan: in celebration of the centenary of his election as FRS*, The Royal Society, London, UK, October 15-16, 2018

- Editor Activity** Annals of the Academy of Romanian Scientists. Series on Mathematics and its Applications. Ed. Acad. Oamen. Știință Rom., Bucharest. ISSN 2066-5997. (Since 2019)
- Reviewing Activity (43 Reviews)** I demonstrate my contribution to the scientific community with 14 reviews for Mathematical Reviews and 29 reviews for Zentralblatt MATH.
- Refereeing Activity (38 Journals)** I contributed to the peer review process for many works on 38 journals as: *Acta et Commentationes Universitatis Tartuensis de Mathematica*, *Advances in Difference Equations*, *Advances in Mathematics*, *AIMS Mathematics*, *American Mathematical Monthly*, *Applicable Analysis and Discrete Mathematics*, *ARS Combinatoria*, *Bulletin of the Australian Mathematical Society*, *Contributions to Discrete Mathematics*, *Demonstratio Mathematica*, *Discrete Applied Mathematics*, *Discrete Mathematics*, *Electronic Journal of Combinatorics*, *European Journal of Combinatorics*, *Filomat*, *Indagationes Mathematicae*, *Integers*, *Integral Transforms and Special Functions*, *International Journal of Number Theory*, *Journal of Combinatorial Theory Series A*, *Journal of Computational and Applied Mathematics*, *Journal of Mathematical Modelling and Algorithms*, *Journal of Number Theory*, *Mathematical Problems in Engineering*, *Mathematics*, *Miskolc Mathematical Notes*, *Notes on Number Theory and Discrete Mathematics*, *Proceedings of the American Mathematical Society*, *Proceedings of the Indian Academy of Sciences-Mathematical Sciences*, *Proceedings of Jangjeon Mathematical Society*, *Rocky Mountain Journal of Mathematics*, *Special Matrices*, *Studia Scientiarum Mathematicarum Hungarica*, *Symmetry-Basel*, *The College Mathematics Journal*, *Turkish Journal of Mathematics*, *Utilitas Mathematica*, *Zeitschrift für angewandte Mathematik und Physik*