

Mihai Prunescu

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## Productia stiintifica

1. **Gheorghe Craciun, Paul Horja, Mihai Prunescu, Tudor Zamfirescu:** *Most homeomorphisms of the circle are semi-periodic.* Archiv der Mathematik (Basel) 64, 452-458, 1995.
2. **Mihai Prunescu:** *A structural approach to diophantine definability.* Konstanzer Dissertationen, Hartung - Gorre Verlag Konstanz, 1998; auch in Konstanzer Schriften für Mathematik und Informatik 87, 1999. (Carte)
3. **Mihai Prunescu:** *Defining constant polynomials.* Contemporary Mathematics CONM 270, 139 - 145, 2000.
4. **Mihai Prunescu:**  *$P \neq NP$  for the reals with various analytic functions.* Journal of Complexity 17, 1, 17 - 26, 2001.
5. **Mihai Prunescu:** *Non-effective quantifier elimination.* Mathematical Logic Quarterly 47, (4), 557 - 561, 2001.
6. **Mihai Prunescu:** *An isomorphism between monoids of external embeddings - about definability in arithmetic.* Journal of Symbolic Logic 67, 2, 598 - 620; 2002.
7. **Mihai Prunescu:** *A model-theoretic proof for  $P \neq NP$  over all infinite abelian groups.* Journal of Symbolic Logic 67, 1, 235 - 238, 2002.
8. **Mihai Prunescu:** *Diophantine properties of finite commutative rings.* Archive for Mathematical Logic 42, 3, 293 - 302, 2003.
9. **Mihai Prunescu:**  *$P \neq NP$  for all infinite boolean algebras.* Mathematical Logic Quarterly 49, 2, 210 - 213, 2003.
10. **Mihai Prunescu:** *Symmetric subset-sum problem over the complex numbers.* Algorithmic Algebra and Logic. Proceedings of the A3L Conference in the Honour of the 60-th. Birthday of Volker Weispfenning, Passau, 2005. Editors: Dolzmann, Seidl, Sturm. ISBN: 3-8334-2669-1. 201 - 207, 2005.

11. **Mihai Prunescu:** *Two situations with unit-cost: ordered abelian semi-groups and some commutative rings.* Journal of Complexity, 21, 4, 579-592, 2005.
12. **Mihai Prunescu:** *Undecidable and decidable restrictions of Hilbert's Tenth Problem: images of polynomials vs. images of exponential functions.* Mathematical Logic Quarterly, 52, 1, 14 - 19, 2006. I
13. **Mihai Prunescu:** *Structure with fast elimination of quantifiers.* The Journal of Symbolic Logic, 71, 1, 321 - 328, 2006.
14. **Mihai Prunescu:** *Fast elimination of quantifiers means  $P = NP$ .* Lecture Notes in Computer Science 3988, 459 - 471, 2006. Volume: "Logical Approaches to Computational Barriers"; Arnold Beckmann, Ulrich Berger, Benedikt Löwe, John V. Tucker editors.
15. **Mihai Prunescu:** *Concrete algebraic cohomology for the group  $(\mathbb{R}, +)$  or how to solve the functional equation  $f(x+y) - f(x) - f(y) = g(x, y)$ .* CUBO, a mathematical journal; 9, 3, 39 - 45, 2007.
16. **Mihai Prunescu:** *Symmetric functions over finite fields.* Preprint 2009.  
[https://www.academia.edu/3136100/Symmetric\\_functions\\_over\\_finite\\_fields](https://www.academia.edu/3136100/Symmetric_functions_over_finite_fields)
17. **Mihai Prunescu:** *An undecidable property of recurrent double sequences.* Notre Dame Journal of Formal Logic, 49, 2, 143 - 153, 2008.
18. **Mihai Prunescu:** *Self-similar carpets over finite fields.* European Journal of Combinatorics, 30, 4, 866 - 878, 2009.
19. **Mihai Prunescu:** *Recurrent double sequences that can be produced by context-free substitutions.* Fractals, 18, 1, 65 - 73, 2010.
20. **Mihai Prunescu:** *Recurrent double sequences generated by homomorphisms of finite abelian  $p$ -groups with periodic initial conditions.* Fractals, 19, 4, 431 - 442, 2011.
21. **Mihai Prunescu:** *The linear recurrent double sequences in  $M_2(\mathbb{F}_2)$  are classified according to their geometric content.* Symmetry (Basel), 3, 3, 402 - 442, 2011.
22. **Mihai Prunescu:** *The Thue-Morse-Pascal double sequence and similar structures.* Comptes Rendus - Mathematique 349, 939-942, 2011.
23. **Mihai Prunescu:**  *$\mathbb{F}_p$ -affine recurrent  $n$ -dimensional sequences over  $\mathbb{F}_q$  are  $p$ -automatic.* European Journal of Combinatorics, 34, 2, 260 - 284, 2013.
24. **Mihai Prunescu:** *A two-valued recurrent double sequence that is not automatic.* Theoretical Computer Science, 528, 32 - 39, 2014.

25. **Mihai Prunescu:** *Sign-reductions, p-adic valuations, binomial coefficients modulo  $p^k$  and triangular symmetries.* Preprint 2014. Publicat online pe ResearchGate.net si pe Academia.edu.
26. **Mihai Prunescu:** *About a surprizing computer program of Matthias Müller.* Convexity and Discrete Geometry Including Graph Theory; Springer Proceedings in Mathematics and Statistics, vol. 148, 97 - 109, 2016.
27. **Cristian Cobeli, Mihai Prunescu, Alexandru Zaharescu:** *A growth model based on the arithmetic Z-game.* Chaos, Solitons and Fractals, 91, 136 - 147, 2016.
28. **Mihai Prunescu:** *Homomorphisms of abelian p-groups produce p-automatic recurrent sequences.* Publicat online pe ResearchGate.net si pe Academia.edu.
29. **Mihai Prunescu:** *Recurrent 2-dimensional sequences can encode counting.* Preprint 2016. Publicat online pe ResearchGate.net si pe Academia.edu.
30. **Mihai Prunescu:** *A many-sorted approach to the Special Theory of Relativity.* Preprint 2016. Publicat online pe ResearchGate.net si pe Academia.edu.
31. **Mihai Prunescu:** *Continuous Choice.* Preprint 2018.
32. **Mihai Prunescu:** *The exponential diophantine problem for  $\mathbb{Q}$  is undecidable.* Preprint 2019.

## Satisfacerea Criteriului de Producție Științifică

1. Journal of Complexity: 2 articole A, 16 puncte.
2. European Journal of Combinatorics: 2 articole A, 16 puncte.
3. Theoretical Computer Science: 1 articol A, 8 puncte.
4. Journal of Symbolic Logic: 3 articole B, 12 puncte.
5. Mathematical Logic Quarterly, 2 articole C, 4 puncte.
6. Fractals, 2 articole C, 4 puncte.
7. Symmetry, 1 articol C, 2 puncte.

8. Notre Dame Journal of Formal Logic, 1 articol C, 2 puncte.
9. Publicatiile Comptes Rendus Mathematique, Archiv der Mathematik, Archive for Mathematical Logic, Chaos Solitons and Fractals, Contemporary Mathematics nu apar in baza de date. Daca notam fiecare articol cu 1 punct, rezulta alte 5 puncte.

TOTAL: 67 puncte.

## Contributii la conferinte, care se suprapun partial cu alte publicatii

1. **Mihai Prunescu:** *Self-similar Carpets Associated to the Odd Primes*. Computation and Logic in the Real World, 306 - 312, 2007. (By the CiE 2007 Conference)
2. **Mihai Prunescu:** *Polynomial Iterations over Finite Fields*. Logic and Theory of Algorithms, 387 - 392, 2008. (By the CiE 2008 Conference)
3. **Mihai Prunescu:** *Triangular perplexity and a stairway to heaven*. Logical Approaches to Barriers in Computing and Complexity, 87 - 97, Greifswald 2010.
4. **Mihai Prunescu:** *Rekurrente Doppelfolgen über endlichen Mengen*. 18.02.2011, Bielefeld: Spectral theory of aperiodic order; 21.02.2011, Berlin: Embodied Information.  
<http://home.mathematik.uni-freiburg.de/prunescu/prunescu.html>
5. **Mihai Prunescu:** *Some carpets in the Online Enciclopedia of Tilings in Bielefeld*.  
[http://tilings.math.uni-bielefeld.de/people/m\\_prunescu](http://tilings.math.uni-bielefeld.de/people/m_prunescu)
6. **Mihai Prunescu:** *Combinatorial aspects in recurrent sequences over finite alphabets*. 12. International Conference in Discrete Mathematics and Alexandrov Surfaces, Bucuresti, 2013.  
<http://imar.ro/~leustean/LogicSeminar/Mihai-slides.pdf>

## Impactul rezultatelor

1. **Mihai Prunescu:** *Self-similar carpets over finite fields.* European Journal of Combinatorics, 30, 4, 866 - 878, 2009:
  - (a) **Weir, Michael K., and Adrian P. Wale** *Revealing non-analytic kinematic shifts in smooth goal-directed behaviour.* Biological cybernetics 105.2 (2011): 89-119.
2. **Mihai Prunescu:** *A model-theoretic proof for  $P \neq NP$  over all infinite abelian groups.* Journal of Symbolic Logic 67, 1, 235 - 238, 2002:
  - (a) **Hemmerling, Armin**  *$P=NP$  for some structures over the binary words.* Journal of Complexity 21.4 (2005): 557-578.
  - (b) **Mainhardt, Gunther**  *$P$  versus  $NP$  and computability theoretic constructions in complexity theory over algebraic structures.* Journal of Symbolic Logic (2004): 39-64.
  - (c) **Rybalov, Alexander** *On the  $PNP$  problem over real matrix rings.* Theoretical Computer Science 314.1 (2004): 281-285.
  - (d) **Meer, Klaus, and Martin Ziegler** *Real Computational Universality: The Word Problem for a class of groups with infinite presentation.* Foundations of Computational Mathematics 9.5 (2009): 599-609.
  - (e) **Meer, Klaus, and Martin Ziegler** *Real computational universality: the word problem for a class of groups with infinite presentation.* Springer Berlin Heidelberg, 2007. (Book)
  - (f) **Hemmerling, Armin** Preprint-Reihe Mathematik. Greifswald (2003).
  - (g) **Lellmann, Björn** Diplomarbeit, Albert-Ludwigs-Universität Freiburg. (2010)
  - (h) **Gaßner, Christine** *Computation over Groups.* Logic and Theory of Algorithms (2008): 147.
  - (i) **Bourgade, Menard** *Calculs sur les structures de langage denombrable.* Theoretical Computer Science 270.1 (2002): 205-222.
  - (j) **Rybalov, Alexander N.** *On the  $P$  vs  $NP$  problem over reals with integer oracle.* In Dynamics of Systems, Mechanisms and Machines (Dynamics), 2016, pp. 1-4. IEEE, 2016.
3. **Mihai Prunescu:** *Structure with fast elimination of quantifiers.* The Journal of Symbolic Logic, 71, 1, 321 - 328, 2006.

- (a) **Gaßner, Christine.** *On Relativizations of the  $P=? NP$  Question for Several Structures* Electronic Notes in Theoretical Computer Science 221 (2008): 71-83.
  - (b) **Gaßner, Christine.** *From structures with  $P= NP$  to structures with  $P \neq NP$  and Reverse* (2006).
  - (c) **Bodin, Martin.** *Construction d'une structure ou  $P= NP$* , Universite Lyon I, (2011).
  - (d) **Lellmann, Björn** Diplomarbeit, Albert-Ludwigs-Universität Freiburg. (2010)
4. **Mihai Prunescu:** *Fast quantifier elimination means  $P = NP$ .* Lecture Notes in Computer Science 3988, 459 - 471, 2006. Volume: "Logical Approaches to Computational Barriers"; Arnold Beckmann, Ulrich Berger, Benedikt Löwe, John V. Tucker editors.
- (a) **Vnne, Jouko, Ruy de Queiroz, Mauricio Osorio Galindo, Claudia Zepeda Cortes, and Jos R. Arrazola Ramirez.** *23rd Workshop on Logic, Language, Information and Computation (WoLLIC 2016).* Logic Journal of the IGPL 25, no. 2 (2017): 253-272.
5. **Mihai Prunescu:** *Defining constant polynomials.* Contemporary Mathematics 270, 139 - 145, 2000.
- (a) **Shlapentokh, Alexandra** *Diophantine undecidability of function fields of characteristic greater than 2, finitely generated over fields algebraic over a finite field.* Compositio Mathematica 132.1 (2002): 99-120.
  - (b) **Shlapentokh, Alexandra** *Hilbert's tenth problem: diophantine classes and extensions to global fields.* Vol. 7. Cambridge: Cambridge University Press, 2007. (Book)
  - (c) **Shlapentokh, Alexandra** *On Diophantine definability and decidability in some rings of algebraic functions of characteristic 0.* Journal of Symbolic Logic (2002): 759-786.
6. **Mihai Prunescu:**  *$P \neq NP$  for all infinite boolean algebras.* Mathematical Logic Quarterly 49, 2, 210 - 213, 2003.
- (a) **Rybalov, Alexander** *On the PNP problem over real matrix rings.* Theoretical computer science 314.1 (2004): 281-285.
  - (b) **Xu Zhao-mei** *A Method for 0/1 Knapsack Problem Which Value Equal with Weight.* Group Technology & Production Modernization, 26(3), 2009 (in limba chineza) doi 10.3969/j.issn.1006-3269.2009.03.015
7. **Mihai Prunescu:** *A structural approach to diophantine definability.* Konstanzer Dissertationen, Hartung - Gorre Verlag Konstanz, 1998; auch in Konstanzer Schriften für Mathematik und Informatik 87, 1999. (Carte)

- (a) **Pheidias, Thanases, and Karim Zahidi** *Undecidability of existential theories of rings and fields: a survey*. Contemporary Mathematics 270 (2000): 49-106.
8. **Gheorghe Craciun, Paul Horja, Mihai Prunescu, Tudor Zamfirescu**: *Most homeomorphisms of the circle are semi-periodic*. Archiv der Mathematik (Basel) 64, 452-458, 1995.
- (a) **Kincses, Janos** *The determination of a convex set from its angle function*. Discrete & Computational Geometry 30.2 (2003): 287-297.
- (b) **Marzantowicz, Wacaw, and Justyna Signerska**. *Displacement sequence of an orientation preserving circle homeomorphism*. Dynamical Systems - an international journal, 29, 153 - 166, 2014.
- (c) **Craciun, Gheorghe** *Most homeomorphisms with a fixed point have a Cantor set of fixed points*. Archiv der Mathematik 100.1 (2013): 95-99.
9. **Mihai Prunescu**: *The Thue-Morse-Pascal double sequence and similar structures*. Comptes Rendus - Mathematique 349, 939-942, 2011.
- (a) **Bertazzon, Jean-Francois** *Resolution of an integral equation with the Thue-Morse sequence*. Indagationes Mathematicae 23.3 (2012): 327-336.
- (b) **Bertazzon, Jean-Francois, V. Delecroix** *Étude d'une équation intégrale avec des méthodes combinatoires*. Preprint arXiv:1403.2235 (2014)
10. **Mihai Prunescu**: *Sign-reductions,  $p$ -adic valuations, binomial coefficients modulo  $p^k$  and triangular symmetries*. Preprint Academia.edu, 2012.
- (a) **Mestrovic R** *Lucas' theorem: its generalizations, extensions and applications (1878-2014)* Preprint arXiv:1409.3820. (2014)
- (b) **Cristian Cobeli, Alexandru Zaharescu** *A game with divisors and absolute differences of exponents*. Journal of Difference Equations and Applications, 20, 11, 1489 – 1501, 2014.

## Satisfacerea Criteriului de Impact

1. Citari in articole A: 7, 56 puncte.
2. Citari in articole B: 4, 16 puncte.
3. Citari in articole C: 3, 6 puncte.
4. Citari in articole D: 6, 6 puncte.

TOTAL: 84 puncte.

Nu stiu cum se considera cele doua citari aparute in carti internationale.

## Cursuri Ținute

1. Structuri de baza in matematica. Universitatea din Greifswald 2002.
2. Teoria Calculabilitatii si Limbaje Formale, Universitatea din Greifswald 2002-2003.
3. Complexitate Unit-Cost peste Structuri Algebrice, Universitatea din Freiburg, 2003-2004.
4. Quantum Computing, Universitatea din Freiburg, 2004.
5. Coduri corectoare de erori, Universitatea din Freiburg, 2004-2005.
6. Teoria Computationala a Informatiei, Universitatea din Freiburg, 2005.
7. Criptografie si Securitatea Informatiei, Universitatea din Bucuresti, 2017, 2018.
8. Criptografie Avansata (master), Universitatea din Bucuresti, 2018, 2019.
9. Teoria modelelor (master), Universitatea din Bucuresti, 2018.
10. Topici speciale in logica si securitate, Universitatea din Bucuresti, 2018 - 2019.

## Satisfacerea Criteriului de Performanță Academică

1. 54 luni la Universitatea Konstanz, Germania, (rank 319 mondial).
2. 54 luni la Universitatea Greifswald, Germania. Din pacate universitatea aceasta nu este clasificata.
3. 120 luni la Albrechts-Ludwig-Universität Freiburg, Germania, rank 133 mondial. (24 de luni am fos platit in cadrul unui grant al universitatii, iar restul de 96 de luni am avut statut de invitat neplatit.)
4. Dezvoltarea a 6 produse software pentru firma Brain Products (Gilching, Germania) 12 puncte. Pentru descrierea produselor, vezi C.V.

## Satisfacerea Criteriului de Recunoastere Academica

In anul 2011 am primit **Premiul Gheorghe Titeica al Academiei Romane** pentru un grup de articole cu tema: Siruri duble recurente peste alfabete finite.