

## Curriculum Vitae

### Rodica CETERCHI

#### Professor

Department of Computer Science

Faculty of Mathematics and Computer Science

University of Bucharest, Romania

<https://cs.unibuc.ro/rceterchi/>

#### Education:

Habilitation, April 28 2017, University of Bucharest, Faculty of Mathematics and Computer Science

Thesis title: "Non-classical models: pseudo hoops and applications of P systems"

Ph.D. in Mathematics, 1989-1991, University of Bucharest, Faculty of Mathematics

Thesis title: "Topology, Categories, Learning"

Advisor: Acad. Prof. Dr. Doc. Solomon Marcus

M.S. in Mathematics, 1976-1977, University of Bucharest, Faculty of Mathematics

Thesis title: "The Prediction of Second-Order Stochastic Processes"

Advisor: Prof. Dr. Doc. Silviu Guiaşu

B.S. in Mathematics, 1972-1976, University of Bucharest, Faculty of Mathematics

Thesis title: "The Samuel Stratification of the Discriminant is Whitney Regular"

Advisor: Prof. Dr. Dan Burghilea

Baccalaureate Diploma, 1972, "I.L. Caragiale" Highschool, Bucharest

#### Positions:

Sept. 2019-present, Professor (Associate), Faculty of Mathematics and Computer Science, University of Bucharest, CS Dept.

2017-Sept. 2019, Professor, Faculty of Mathematics and Computer Science, University of Bucharest, CS Dept.

2002-2017, Associate Professor, Faculty of Mathematics and Computer Science, University of Bucharest, CS Dept.

1994-2002, Senior Lecturer, Faculty of Mathematics and Computer Science, University of Bucharest, Fundamentals of CS Dept.

1992-1994, Teaching Assistant, Faculty of Mathematics and Computer Science, University of Bucharest, CS Dept., next Fundamentals of CS Dept.

1987-1992 programmer, Computing Center, University of Bucharest

1981-1987 researcher, System Studies Division, University of Bucharest

1977-1981 analyst-programmer, Computing Center, IPGGH (Institute for Geological and Geophysical Prospecting) Bucharest

1977 (September 1 - October 10) analyst-programmer, CINOR, Bucharest

1991-1995 Associate Professor of CS, Faculty of Law, Atheneum University, Bucharest

#### Visiting positions:

2019 (14-16) Invited Speaker at ACMC 2019, Xiamen, China

2019 (Sept. 1-4) Invited Speaker at SocProS 2019, Liverpool Hope University, UK

2019 (2 weeks, June-July): visiting researcher at HUST, Wuhan, China, Key Laboratory for Image Processing

2002 May – 2003 October: visiting researcher at GRLMC, University Rovira i Virgili, Tarragona, Spain, Sabbatical grant SAB-2000-0145, Spanish Ministry for Education, Culture and Sport

1997 April-May: University of Bordeaux I, I.U.T. A, France, TEMPUS individual mobility grant.

1993 September: invited Associate Professor, University of Nice, Sophia-Antipolis, ISSS, France.

1992 July-August: Visiting Professor, Sheffield City Polytechnic, UK

**Academic Teaching:****Undergraduate:**

Data Structures and Algorithms; Programming Graphical Interfaces (Windows Applications); Programming; Algebra.

**Graduate:**

Category Theory, with Applications to Computer Science; Algebraic Models in Syntax, Semantics, and Parallelism; MV Algebras.

Contextual Grammars, course module in The 1<sup>st</sup> International PhD School “Formal Languages and Applications”, University Rovira I Virgili, Tarragona, Spain, 2002.

Data Structures: Advanced Topics. Programming Efficient Algorithms.

**Research areas (former and recent):**

Topology, Universal Algebra, MV Algebras, Wajsberg algebras, Pseudo-Hoops, Applications to Many-Valued Logics

Algebra and Category Theory, their Applications to Computer Science, Algebraic Models for the Semantics of Programs.

Formal Languages, Contextual Languages and Grammars, 2D-languages.

Unconventional Models of Computation, Natural Computing, Membrane Computing, Splicing.

**Awards:**

The “Grigore C. Moisil” award of the Romanian Academy 2003 (awarded in 2006).

**Participation to national and international contracts:**

As a member of the System Studies Division of the University of Bucharest I was involved in the following research contracts: with the University of United Nations (UNU):

"Goals, Processes and Indicators of Development" (GPID) 1979-1982 (15.000 USD/year)

"People Development Problematique" (PDP) 1984

"Economic Aspects of Human Development" (EAHD) 1986-1987

With the Ministry of Education (MEI), Romania:

“Abordarea matematica a problemelor dezvoltarii”; 1982 – 1985;

“Metode matematice in teoria sistemelor cu aplicatii in problemele dezvoltarii”: 1986 – 1990.

**Editorial activity:**

*Papers in Honor of Professor Solomon Marcus on the Occasion of his 90<sup>th</sup> Birthday – First Volume*

Analele Universitatii Bucuresti – Informatica, Anul LXII, no. 2, 2015

(R. Ceterchi, R. Gramatovici, eds.)

*Papers in Honor of Professor Solomon Marcus on the Occasion of his 90<sup>th</sup> Birthday – Second Volume*

Analele Universitatii Bucuresti – Informatica, Anul LXII, no. 3, 2015

(R. Ceterchi, R. Gramatovici, eds.)

*Papers in Honor of Kumbakonam Govindarajan Subramanian on the Occasion of his 70<sup>th</sup> Birthday*

ROMJIST Volume 21, Number 3, 2018

(R. Ceterchi, L. Pan, Gh. Păun, eds.)

## **Rodica Ceterchi - Publications:**

### **Papers in peer-reviewed journals:**

1. R. Ceterchi, M. Malița A topological approach to learning processes,  
Foundations of Control Engineering vol. 2, no. 3 (1977)
2. A. Dimca, Rodica Rosian (Ceterchi)  
The Samuel Stratification of the Discriminant is Whitney Regular,  
Geometriae Dedicata 17, p. 181-184 (1984),
3. R. Ceterchi,  
Change, Entropy, Information and Communication,  
Rev. Roum. De Linguistique, vol. XXXII (1987), CLTA vol. 24 (1987), no.1, p. 17-36
4. R. Ceterchi,  
Temporality, Development and Human Communication,  
Rev. Roum. De Linguistique, vol. XXIII (1988), CLTA vol. 25 (1988), no. 2, p. 117-136
5. R. Ceterchi,  
Cauchy Structures and the Kérékjarto-Stoilow Compactification,  
Demonstratio Mathematica, Vol. XXI, No. 3 (1988), p. 685-695
6. R. Ceterchi,  
A Localization Theorem for Topological Categories,  
Stud. Cerc. Mat., vol. 42 (1990)1, p. 3-8
7. V.E.Căzănescu, R.Ceterchi  
Initial and final congruences, Acta Cybernet. 10,3(1992), 199-215
8. R.Ceterchi  
On Canonical Fixed Points,  
Annals of the Bucharest University, Mathematics-Informatics Series, Vol. 41, No. 2, 1992, p. 55-60
9. R.Ceterchi  
Characterizing Contextual Languages with Fixed-Point Equations,  
Annals of the Bucharest University, Mathematics-Informatics Series, Vol. 47, 1998, p. 41-49
10. R.Ceterchi  
Pseudo-Wajsberg Algebras,  
Multi. Val. Logic, Numbers 1-2, 2001, Vol. 6, p. 67-88
11. R. Ceterchi  
The Lattice Structure of Pseudo-Wajsberg Algebras,  
J.UCS vol. 6, nr. 1, January 28, 2000, p. 22-38
12. R.Ceterchi  
Weak Pseudo-Wajsberg and Weak Pseudo-MV Algebras,  
Soft Computing, Vol. 5 (2001) Issue 5, p. 334-346
13. R. Ceterchi, K. G. Subramanian  
Simple Circular H Systems,  
Romanian Journal of Information Science and Technology, Vol. 6, Numbers 1-2 (2003), p. 121-134

14. R. Ceterchi, M. Mutyam, G. Păun, K.G. Subramanian  
Array-Rewriting P Systems,  
Natural Computing 2 (2003), p. 229-249
15. R. Ceterchi, R. Gramatovici, N. Jonoska, K.G. Subramanian  
Tissue-like P Systems with Active Membranes for Picture Generation,  
Fundamenta Informaticae 56 (2003), 311-328
16. R. Ceterchi, R. Gramatovici  
On Total Contextual Grammars with Restricted Choice,  
Fundamenta Informaticae, 64, 1-4(2005), 79-91
17. Rodica Ceterchi, M. J. Pérez-Jiménez  
On Simulating a Class of Parallel Architectures  
International Journal of Foundations of Computer Science,  
Volume 17, Number 1, February 2006, p.91-110
18. Rodica Ceterchi  
An Algebraic Characterization of Semi-Simple Splicing  
Fundamenta Informaticae 73 (1-2) (2006), p. 19-25
19. I. Ardelean, R. Ceterchi, A. I. Tomescu  
Sorting with P Systems: A Biological Perspective  
Romanian Journal of Information Science and Technology 11(3), 243-252, 2008.
20. R. Ceterchi, A. I. Tomescu  
Implementing Sorting Networks with Spiking Neural P Systems,  
Fundamenta Informaticae, Vol. 87, Nr.1, 2008, p. 35-48
21. R.Ceterchi, R.Gramatovici, Rosihan M. Ali, K.G.Subramanian  
An Extension of External Contextual Array Grammars  
Annals of Bucharest University, Informatics Series Volume LVIII, 2009, 65-75.
22. R.Ceterchi  
The Decomposition of Linearly Ordered Pseudo-Hoops  
Soft Computing (2017) 21: 5631, October 2017, Volume 21, Issue 19, pp 5631–5639  
(20 August 2016 appeared online <http://rdcu.be/jRcs>)
23. M. Gheorghe, R. Ceterchi, F. Ipate, S. Konur, R. Lefticaru  
Kernel P Systems: From Modelling to Verification and Testing  
Theoretical Computer Science (In Press, Available online 13 December 2017)  
  
<https://doi.org/10.1016/j.tcs.2017.12.010>
24. S. N. Krishna, M. Gheorghe, F. Ipate, E. Csuhaaj-Varju, R. Ceterchi,  
Further Results on Generalised Communicating P Systems  
Theoretical Computer Science, Volume 701, 21 November 2017, Pages 146-160
25. Somnath Bera, Rodica Ceterchi, Kalpana Mahalingam, K.G. Subramanian  
Parikh q-matrices and q-ambiguous words  
Int. Journal of Foundations of Comput. Sci. (accepted for publication 2018)
26. R. Ceterchi, L. Zhang, L. Pan, K.G. Subramanian, G. Zhang,  
Generating Hilbert Words in Array Representation with P Systems (submitted)

## Papers in conferences:

1. R. Ceterchi, M. Malița: A Semiotic Approach to Knowledge Processing Systems, Proc. of the Seventh International Congress of Cybernetics and Systems, London, September 1987, ed. J. Rose, Thales Publications, Lytham, St. Annes, England, vol. 2, p. 941-944
2. R. Ceterchi  
Categories in the Study of Communication Processes and Meaning Generation, in "Signs of Humanity" / "L'Homme et ses Signes" Proceedings of the Fourth International Congress / Actes du Quatrieme Congres Mondial, International Association for Semiotic Studies / Association Internationale du Semiotique, Barcelone - Perpignan 1989, 03-03/06-04, edited by Michel Balad et Janice Delledale-Rhodes, general editor Gérard Delledale, Mouton DeGruyter, Berlin, New York, 1993, p.181-186
3. R. Ceterchi  
Marcus Contextual Languages and their Cut-and-Paste Properties, in "Rough Sets and Current Trends in Computing" (L. Polkowski, A. Skowron eds.) RSCTC '98 Proceedings, Springer Lecture Notes in Computer Science 1424, 1998, p. 99-106
4. R. Ceterchi  
Selection Mechanisms Between Strings and Contexts: an Equational Approach, MFCS '98 Workshop "Mathematical Linguistics" Proceedings, Brno, July 1998, p. 23-44.
5. R. Ceterchi  
A Hierarchy of Conceptual Complexity, The 7th International Congress of the International Association for Semiotic Studies (IASS), Technical University Dresden, 1999, October 6-11
6. R.Ceterchi  
Cut-and-Paste Languages, Workshop on Formal languages and Automata (WFLA), 12-th International Symposium on Fundamentals of Computation Theory - FCT'99 Iasi, Romania, August 30 - September 3, 1999, Grammars, vol.2, nr. 3, 1999, p. 179-188
7. R. Ceterchi  
On Algebras With Implications, Categorically Equivalent to Pseudo-MV Algebras, in "Information Technology", Proceedings of the 4th International Symposium on Economic Informatics, May 1999, INFOREC Printing House, Bucharest, Romania, 1999, p. 912-917
8. R. Ceterchi  
Weak Pseudo-Wajsberg Algebras, The Fifth International Conference FSTA 2000 On Fuzzy Sets Theory And Its Applications, editors F. Chovanec and E. Rybarikova, p. 60-62
9. R. Ceterchi, Carlos Martin-Vide  
Dynamic P Systems, in "Membrane Computing", International Workshop, WMC-CdeA 2002, Curtea de Arges, Romania, August 2002, Revised Papers, (G. Păun, G. Rozenberg, A. Salomaa, C. Zandron eds.), LNCS 2597, Springer 2003, p. 146-186

10. G. Bel-Enguix, M. Cavalliere, R. Ceterchi, R. Gramatovici, C. Martin-Vide  
An Application of Dynamic P Systems: Generating Context-Free Languages,  
in "Membrane Computing", International Workshop, WMC-CdeA 2002, Curtea de Arges, Romania,  
August 2002, Revised Papers, (G. Păun, G. Rozenberg, A. Salomaa, C. Zandron eds.),  
LNCS 2597, Springer, 2003, p. 90-106
11. R. Ceterchi, R. Gramatovici, N. Jonoska  
Tiling Rectangular Pictures with P Systems  
in "Membrane Computing: International Workshop WMC 2003, Tarragona, Spain  
(Carlos Martin-Vide, Gh. Păun, Gr. Rozenberg, A. Salomaa Eds.)  
LNCS 2933, Springer Verlag, Berlin, 2004, p. 88-103
12. R. Ceterchi, D. Sburlan  
Simulating Boolean Circuits with P Systems  
in "Membrane Computing: International Workshop" WMC 2003, Tarragona, Spain  
(Carlos Martin-Vide, Gh. Păun, Gr. Rozenberg, A. Salomaa Eds.)  
LNCS 2933, Springer Verlag, Berlin, 2004, p. 104-122
13. R. Ceterchi, M. J. Pérez-Jiménez  
Simulating Shuffle-Exchange Networks with P Systems,  
in Proceedings of the Second Brainstorming Week on Membrane Computing, February 2004  
(G. Păun, A. Riscos, F. Sancho and A. Romero Eds.), p. 117-129
14. R. Ceterchi, M. J. Pérez-Jiménez  
A Perfect Shuffle Algorithm for Reduction Processes and its Simulation with P Systems,  
in Proceedings of ICCO 2004, Baile Felix Spa-Oradea, Ed. Univ. din Oradea, Romania,  
(I. Dzitac, T. Maghiar, C. Popescu Eds.) p. 92-97
15. R. Ceterchi, M. J. Pérez-Jiménez  
On Two-Dimensional Mesh Networks and Their Simulation with P Systems,  
in Membrane Computing, 5th International Workshop, WMC 2004, Milan, Italy,  
June 14-16, 2004, Revised Selected and Invited Papers,  
(G. Mauri, G. Păun, M. J. Pérez-Jiménez, G. Rozenberg, A. Salomaa Eds.)  
LNCS 3365, Springer 2005, ISBN 3-540-25080, p. 259-277
16. Rodica Ceterchi, M. J. Pérez-Jiménez  
Simulating a Class of Parallel Architectures: A Broader Perspective,  
in "Cellular Computing (Complexity Aspects)" ESF PESC Exploratory Workshop,  
Sevilla, Spain, January 31 - February 2, 2005,  
(M.A. Gutierrez-Naranjo et al, eds), Fenix Editora, Sevilla, 2005, p. 131-148.
17. Rodica Ceterchi  
Rewriting in P Systems: an Algebraic Approach  
in "Fourth Brainstorming Week on Membrane Computing", Sevilla, Spain,  
Jan. 30 - Febr. 3, 2006, Vol. I (M.A. Gutierrez-Naranjo et al, eds),  
Fenix Editora, Sevilla, 2006, p. 165-168.

18. F. J. Romero-Campero, M. Gheorghe, L. Bianco, D. Pescini, Mario J. Pérez-Jiménez, R. Ceterchi  
Towards Probabilistic Model Checking on P Systems Using PRISM  
in "Membrane Computing. 7th International Workshop, WMC2006, Leiden,  
The Netherlands, July 2006. Revised, Selected, and Invited Papers",  
LNCS 4361 (H.J. Hoogeboom, Gh. Păun, G. Rozenberg, A. Salomaa, eds.) Springer, 2006, pag. 477-495.
19. R. Ceterchi, M. J. Pérez-Jiménez, A. I. Tomescu,  
Simulating the Bitonic Sort Using P Systems  
in "Membrane Computing. 8th International Workshop, WMC2007, Thessaloniki,  
Greece, June 2007. Revised, Selected, and Invited Papers",  
LNCS 4860 (G. Eleftherakis et. al. eds.) Springer, 2007, pag. 172-192.
20. R. Ceterchi, M. J. Pérez-Jiménez, A. I. Tomescu  
Sorting Omega Networks Simulated with P Systems  
"International Workshop on Computing with Biomolecules", August 27 2008, Wien, Austria  
(E. Csuhaj-Varju et. al. eds), p.29-42
21. R. Ceterchi, A. I. Tomescu  
Computing the Maximum Bisimulation with Spiking Neural P Systems  
in "Computation, Cooperation and Life", (Josef Kelemen, Alica Kelemenova Eds.), LNCS 6610, Springer 2011,  
p.151-157
22. R. Ceterchi  
The Decomposition of Linear Pseudo-Hoops  
Logic, Algebra and Truth Degrees LATD 2012, 10-14 September 2012, Kanazawa, Japan
23. R. Ceterchi, M.A. Martínez-del-Amor, M.J. Pérez-Jiménez.  
The reduction problem in CUDA and its simulation with P systems.  
In L.F. Macías-Ramos, M.A. Martínez-del-Amor, Gh. Paun, A. Riscos-Núñez, L. Valencia-Cabrera  
(eds.) Proceedings of the Twelfth Brainstorming Week on Membrane Computing, Seville, Spain, February 3-7,  
2014, Report RGNC 01/2014, Fénix Editora, 2014, pp. 91-102.
24. R. Ceterchi, E. G. Omodeo, A. I. Tomescu  
The representation of Boolean algebras in the spotlight of a proof checker  
CILC 2014, Italian Conference on Computational Logic  
Proceedings of the 29th Italian Conference on Computational Logic, Torino, Italy, June 16-18, 2014.
25. R. Ceterchi,  
A categorical equivalence for a class of product pseudo-hoops,  
Proceedings of the Workshop "Theory Day in Computer Science" (DACs 2014) (afiliat ICTAC 2014)  
Analele Universitatii din Bucuresti, Informatica, Anul LXI-2014, 105-115
26. R. Ceterchi, K.G Subramanian, I. Venkat,  
P Systems with Parallel Rewriting for Chain-code Picture Languages,  
in Evolving Computability (A. Beckmann, V. Mitrana, M. Soskova Eds.), 11th Conference on Computability in  
Europe, CiE 2015, Bucharest, Romania, June 29-July 3, 2015, LNCS 9136, Springer, p. 145—155
27. R. Ceterchi, L. Pan, B. Song, K.G. Subramanian,  
Matrix Flat Splicing Systems,

Bio-inspired Computing – Theories and Applications, 11th International Conference BIC-TA 2016  
Xi'an, China, October 28–30, 2016, Revised Selected Papers, Part I  
(Maoguo Gong, Linqiang Pan, Tao Song, Gexiang Zhang eds.) Springer, 2016, 54—63

28. M. Gheorghe, R. Ceterchi, F. Ipate, S. Konur,  
Kernel P Systems Modelling, Testing and Verification – Sorting Case Study  
CMC17, Milan, Italy, 2016, LNCS 10105, 233-250 (eds. A. Leporati, G. Rozenberg, A. Salomaa, C. Zandron)
29. M. Gheorghe, R. Ceterchi, F. Ipate, S. Konur,  
Kernel P Systems Modelling, Testing and Verification  
14<sup>th</sup> BWMC 2016, (eds. Carmen Graciani, David Orellana-Martín, Agustín Riscos-Núñez, Álvaro Romero-Jiménez, Luis Valencia-Cabrera) ISBN: 978-84-946316-1-0, Sevilla. Fénix Editora 2016, 205-230
30. R. Ceterchi, A.K. Nagar, K.G. Subramanian,  
Chain Code P System Generating a Variant of the Peano Space-filling Curve  
19<sup>th</sup> Conference on Membrane Computing, 3-7 September 2018, Dresden, Germany,  
Proceedings (to appear in LNCS, Springer)
31. R. Ceterchi, A.K. Nagar, L. Pan, K.G. Subramanian,  
P Systems Generating Array Representations of Peano Type Space Filling Curves  
20<sup>th</sup> Conference on Membrane Computing CMC 20, 5-8 August 2019, Curtea de Arges, Romania,  
Proceedings, Editura Bibliostar, Ramnicu-Valcea, 2019, 309-324
32. R. Ceterchi, L. Zhang, L. Pan, K.G. Subramanian, G. Zhang,  
Generating Hilbert Words in Array Representation with P Systems  
Presented at ACMC 2019, November 14-16, Xiamen, China

### **Books, book chapters, contributions to volumes:**

1. R. Ceterchi  
Data Structures and Algorithms: Mathematical Aspects and Applications  
Part I Elementary Data Structures (in Romanian)  
Edit. Univ. Bucuresti, 2001, (177 pag.) (ISBN 973-575-594-7)
2. R. Ceterchi  
Marcus Contextual Grammars,  
chapter 17 of "Formal Languages and Applications" (C. Martin-Vide, V. Mitrană, Gh. Păun Eds.),  
(ISSN 1434-9922, ISBN 3-540-20907-7, 620 p.)  
Vol. 148 Studies in Fuzziness and Soft Computing Series, Editor in Chief Janusz Kacprzyk,  
Springer Verlag, Berlin, Heidelberg, New York, 2004, p. 335-366
3. R. Ceterchi, D. Sburlan  
Membrane Computing and Computer Science  
Chapter 22 in "The Oxford Handbook of Membrane Computing"  
(G. Păun, G. Rozenberg, A. Salomaa eds.) , Oxford University Press 2010, p. 554-583
4. R. Ceterchi  
The Naturality of the Semantics of Recursion,  
in "Mathematical Linguistics and Related Topics" (Gh.Păun ed.), Ed. Acad. Rom. 1995, p.44-52



5. R. Ceterchi

Modeling DNA Recombinant Behavior with Fixed-Point Equations,  
in "Computing with Bio-Molecules: Theory and Experiments" (Gh. Păun ed.),  
Springer-Verlag, Singapore 1998, p. 340-352

6. R. Ceterchi

Some Algebraic Properties of Contexts and Their Applications to Contextual Languages,  
in "Where Mathematics, Computer Science, Linguistics and Biology Meet" , C. Martin-Vide and V.  
Mitrana editors, Kluwer Academic Publ., Dordrecht, London, Boston, 2001, p. 219-226

7. R. Ceterchi, C. Martin-Vide, K.G. Subramanian

On Some Classes of Splicing Languages,  
in "Aspects of Molecular Computing: Essays in Honor of the 70th Birthday of Tom Head"  
(N. Jonoska, Gh. Păun, Gr. Rozenberg Eds.),  
LNCS 2950, Springer Verlag, Berlin, 2004, p. 84-105

8. R. Ceterchi, K.G. Subramanian,

Grammar Systems with Context-free Rewriting and Flat Splicing,  
In: M. Gheorghe, I. Petre, M.J. Pérez-Jiménez, G. Rozenberg, A. Salomaa (eds.) "Multidisciplinary Creativity",  
Hommage to Gheorghe Păun on His 65<sup>th</sup> Birthday, Editura Spandugino, 2015, p. 221—227

9. R. Ceterchi, A.K. Nagar, K.G. Subramanian,

Approximating Polygons for Space-Filling Curves Generated with P Systems,  
C. Graciani et al. (Eds.): Enjoying Natural Computing, Pérez-Jiménez Festschrift, LNCS 11270, Springer, 2018.  
[https://doi.org/10.1007/978-3-030-00265-7\\_5](https://doi.org/10.1007/978-3-030-00265-7_5)

Author

February 18, 2020

Prof. Dr. Rodica Ceterchi