RĂZVAN DIACONESCU

curriculum vitæ

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CONTACT:

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ROMANIA

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PERSONAL DATA:

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Romanian nationality.
Fluent in Romanian and English languages.

DIPLOMAS:

- *Habilitation* in Informatics, IMAR (România), 2014.
- *DPhil* in Computation, Faculty of Mathematical Sciences, University of Oxford (England), 1994.
- *MSc* in Algebra and Informatics, Faculty of Mathematics, Universitatea Bucureşti (România), 1988.
- *BSc* in Informatics, Faculty of Mathematics, Universitatea Bucureşti (România), 1987.
- *Bacalaureat*, Liceul teoretic "Mihai Viteazul" Ploieşti (România), 1982.

POSITIONS:

- Head of IMAR[†] Department of *Number Theory and Computational Methods*, since 2015.
- Research Professor (CS1) at IMAR[†], since 2001.
- Research Associate Professor (CS2) at IMAR[†], 1997–2001
- Panasonic-Fujitsu-USAC Endowed Chair & Associate at JAIST[*], 1996–1999.
- Research Assistant Professor (CS3) at IMAR[†], 1995–1997.
- Visiting Researcher at the Naval Postgraduate School, Monterey, CA, Sept 1994.
- Researcher at IMAR[†], 1990–1995.

[†]Simion Stoilow Institute of Mathematics of the Romanian Academy. www.imar.ro
[*]Japan Advanced Institute for Science and Technology, Hokuriku. www.jaist.ac.jp

PROFESSIONAL AWARDS AND DISTINCTIONS:

- Birkhäuser Award for the winner of the contest "How to translate a logic into another one?" of the *2nd World Congress of Universal Logic* (joint work with T. Mossakowski and A. Tarlecki) (2007).
- *Grigore Moisil Award* (for 2002) of the Romanian Academy (2004).
- J. William Fulbright Award under *Mutual Educational Exchange Program* (1996).‡
- US National Research Council *Resident Research Associateship Award* (1995).‡
- *Romanian Mathematical Society* Award at the *Romanian National Mathematical Olympiad* (1980).
- Winner of the *Romanian National Mathematical Olympiad* (1979).

PUBLICATION LIST

STATISTICS

- 66% peer-reviewed journal publications, 89% of them in Web of Science indexed journals;
- publications in 29 different journals (22 Web of Science indexed journals) in informatics, mathematics, logic and philosophy;
- 65% of publications are single authored;
- paramount scientists as co-authors: J. Goguen, R. Burstall, A. Tarlecki, T. Mossakowski, etc.
- 3700 citations (Google Scholar); h-index = 30(GS), =18 (Scopus), =14(WoS), =13(MathSciNet)

THESES

[1-T] *Institution Theory and Applications*,
Habilitation thesis, Simion Stoilow Institute of Mathematics of the Romanian Academy, 2014.

[2-T] *Category-based Semantics for Equational and Constraint Logic Programming*,
DPhil thesis, University of Oxford, 1994. (published as OUCL Monograph PRG-116, 120 pages)

[3-T] *Monadic Signatures for Abstract Model Theory*,
MSc thesis, Universitatea Bucureşti, 1988.

[4-T] *Algebraic Aspects of Logic Programming and Theorem Proving*,
BSc graduation thesis, Universitatea Bucureşti, 1987.

MONOGRAPHS AND TEXTBOOKS

[5-B] *Institution-independent Model Theory*,
volume of *Studies in Universal Logic* series. Birkhäuser Basel, 2008. (386 pages).

[6-B] *CafeOBJ Report: the language, proof techniques, and methodologies for object-oriented algebraic specification* (with K. Futatsugi),
volume 6 of *AMAST Series in Computing*. World Scientific Singapore, 1998. (174 pages)

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‡But fellowship declined due to concurrency with other professional commitments.

JOURNAL ARTICLES (PEER-REVIEWED)

[7-J] Concepts of interpolation in stratified institutions,
Logics 1(2):80–96, MDPI, 2023.

[8-J] Preservation in many-valued truth institutions,
Fuzzy Sets and Systems 456:38–71, Elsevier, 2023.

[9-J] Decompositions of stratified institutions,
Journal of Logic and Computation, Oxford Univ. Press, 2022.

[10-J] Generalised graded interpolation,
International Journal of Approximate Reasoning 152:236–261, Elsevier, 2023.

[11-J] Permutation groups generated by γ-cycles,
Axioms 11(10):528, MDPI, Basel, Switzerland, 2022.

[12-J] The axiomatic approach to non-classical model theory,
Mathematics 10(19):3428, MDPI, Basel, Switzerland, 2022.

[13-J] Representing 3/2-Institutions as Stratified Institutions,
Mathematics, 10(9):1507, MDPI, Basel, Switzerland, 2022.

[14-J] Introducing H, an institution-based formal specification and verification language,
Logica Universalis, 14(2)259–277, Springer Nature Switzerland, 2020.

[15-J] Towards Fuzzy Neural Conceptors (with T. Mossakowski and M. Glauer),
Journal of Applied Logics – IfCoLog Journal of Logics and their Applications, 6(4)725–744, College Publications, 2019.

[16-J] Implicit Kripke semantics and ultraproducts in stratified institutions,
Journal of Logic and Computation, 27(5):1577–1606, Oxford Univ. Press, 2017.

[17-J] Functorial semantics of first-order views,
Theoretical Computer Science 656:46–59, Elsevier, 2016.

[18-J] Encoding hybridized institutions into first order logic (with Alexandre Madeira),
Mathematical Structures in Computer Science 26(5):745–788, Cambridge Univ. Press, 2016.

[19-J] Quasi-varieties and initial semantics for hybridized institutions,
Journal of Logic and Computation 26(3):855–891, Oxford Univ. Press, 2016.

[20-J] Institution Theory,
Internet Encyclopedia of Philosophy, 2016.

[21-J] On the existence of translations of structured specifications,
Information Processing Letters 115:15–22, Elsevier, 2015.

[22-J] The institution-theoretic scope of logic theorems (with T. Mossakowski and A. Tarlecki),
Logica Universalis, 8(3-4):393–406, Springer Basel, 2014.

[23-J] Graded consequence: an institution theoretic study,
Soft Computing,18(7):1247–1267, Springer, 2014.

[24-J] Foundations for structuring behavioural specifications (with I. Țuțu),
Journal of Logical and Algebraic Methods in Programming, 83(3-4):319–338, Elsevier, 2014.

[25-J] Institutional semantics for many-valued logics,
Fuzzy Sets and Systems, 218:32–52, Elsevier, 2013.

[26-J] Borrowing interpolation,
Journal of Logic and Computation, 22(3):561–586, Oxford Univ. Press, 2012.

[27-J] An axiomatic approach to structuring specifications,
Theoretical Computer Science, 433:20–42, Elsevier, 2012.

[28-J] Interpolation for predefined types,
Mathematical Structures in Computer Science, 22(1):1–24, Cambridge Univ. Press, 2012.

[29-J] Grothendieck inclusion systems,
Applied Categorical Structures, 19(5):783–802, Springer, 2011.

[30-J] Structural Induction in Institutions,
Information and Computation, 209(9):1197–1222, Elsevier, 2011.

[31-J] On the Algebra of Structured Specifications (with I. Țuțu),
Theoretical Computer Science, 412(28):3145–3174, Elsevier, 2011.

[32-J] On quasi-varieties of multiple valued logic models,
Mathematical Logic Quarterly, 57(2):194–203, Wiley, 2011.

[33-J] Coinduction for preordered algebras,
Information and Computation, 209(2):108–117, Elsevier, 2011.

[34-J] Saturated models in institutions (with M. Petria),
Archive for Mathematical Logic, 49(6):693–723, Springer, 2010.

[35-J] Quasi-Boolean encodings and conditionals in algebraic specification,
Journal of Logic and Algebraic Programming, 79(2):174–188, Elsevier, 2010.

[36-J] An encoding of partial algebras as total algebras,
Information Processing Letters, 109(23-24):1245–1251, Elsevier, 2009.

[37-J] What is a Logic Translation? (with T. Mossakowski and A. Tarlecki),
Logica Universalis, 3(1):59–94, Birkhäuser, 2009.

[38-J] A categorical study on the finiteness of specifications,
Information Processing Letters, 108(2):75–80, Elsevier, 2008.

[39-J] Ultraproducts and possible worlds semantics in institutions (with P. Stefaneas),
Theoretical Computer Science, 379(1):210–230, Elsevier, 2007.

[40-J] Stratified institutions and elementary homomorphisms (with M. Aiguier),
Information Processing Letters, 103(1):5–13, Elsevier, 2007.

[41-J] Abstract Beth definability in institutions (with M. Petria),
Journal of Symbolic Logic, 71(3):1002–1028, 2006.

[42-J] Proof systems for institutional logic,
Journal of Logic and Computation, 16(3):339–357, Oxford Univ. Press, 2006.

[43-J] Behavioural specification for hierarchical object composition,
Theoretical Computer Science, 343(3):305–331, Elsevier, 2005.

[44-J] Elementary diagrams in institutions,
Journal of Logic and Computation, 14(5):651–674, Oxford Univ. Press, 2004.

[45-J] Herbrand theorems in arbitrary institutions,
Information Processing Letters, 90:29–37, Elsevier, 2004.

[46-J] An institution-independent proof of Craig interpolation theorem,
Studia Logica, 77(1):59–79, Springer, 2004.

[47-J] Interpolation in Grothendieck institutions,
Theoretical Computer Science, 311:439–461, Elsevier, 2004.

[48-J] Modality in open institutions with concrete syntax (with P. Stefaneas),
Bulletin of the Greek Mathematical Society, 49:91–101, 2004.

[49-J] CafeOBJ: logical foundations and methodologies (with K. Futatsugi and K. Ogata),
Computing and Informatics, 22:257–283, 2003.

[50-J] Institution-independent ultraproducts,
Fundamenta Informaticæ, 55(3-4):321–348, IOS Press, 2003.

[51-J] Logical foundations of CafeOBJ (with K. Futatsugi),
Theoretical Computer Science, 285:289–318, Elsevier, 2002.

[52-J] Grothendieck institutions,
Applied Categorical Structures, 10(4):383–402, Kluwer, 2002.

[53-J] Behavioural coherence in object-oriented algebraic specification (with K. Futatsugi),
Universal Computer Science, 6(1):74–96, Springer, 2000.

[54-J] Category-based constraint logics,
Mathematical Structures in Computer Science, 10(3):373–407, Cambridge Univ. Press, 2000.

[55-J] Extra theory morphisms for institutions: logical semantics for multi-paradigm languages,
Applied Categorical Structures, 6(4):427–453, Kluwer, 1998.

[56-J] An overview of CafeOBJ (with K. Futatsugi, M. Ishisone, A. Nakagawa and T. Sawada),
Electronic Notes in Theoretical Computer Science, 15:285–298, Elsevier Science, 1998.

[57-J] Category-based modularization for equational logic programming,
Acta Informatica, 33(5):477–510, Springer, 1996.

[58-J] Foundations of behavioural specification in rewriting logic,
Electronic Notes in Theoretical Computer Science, 4:226–245, Elsevier Science, 1996.

[59-J] Completeness of category-based equational deduction,
Mathematical Structures in Computer Science, 5(1):9–41, Cambridge Univ. Press, 1995.

[60-J] An Oxford survey of order sorted algebra (with J. Goguen),
Mathematical Structures in Computer Science, 4(4):363–392, Cambridge Univ. Press, 1994.

[61-J] Contraction algebras and unification of infinite terms,
Journal of Computer and System Sciences, 44(1):23–43, Academic Press, 1992.

[62-J] A short Oxford survey of order sorted algebra (with J. Goguen),
Bulletin of EATCS, 48:121–133, European Association of Theoretical Computer Science, 1992.

INVITED PAPERS

[63-I] Universal logic and computation (editorial),
Journal of Logic and Computation, 27(6):1677–1678, Oxford Univ. Press, 2017.

[64-I] Structuring of Specification Modules (extended),
Computer Science Journal of Moldova, 23(2):135–152, 2015.

[65-I] Structuring of Specification Modules,
in Proceedings of the Workshop on *Foundations of Informatics – FOI 2015*, pages 4–13, Institute of
Mathematics and Computer Science, Chişinău, Republic of Moldova, August 2015. ISBN 978-9975-
4237-3-1

[66-I] From universal logic to computer science, and back,
in G. Ciobanu and D. Méry (Eds.): *Theoretical Aspects of Computing – ICTAC 2014*,
Lecture Notes in Computer Science 8687, pages 1–16, Springer Switzerland, 2014.

[67-I] An introduction to category-based equational logic (with J. Goguen),
in V.S. Alagar and Maurice Nivat, editors, *Algebraic Methodology and Software Technology*, vol. 936 of
Lecture Notes in Computer Science, pag. 91–126, Springer, 1995.

[68-I] Hiding and behaviour: an institutional approach (with R. Burstall),
in A. William Roscoe, editor,
A Classical Mind: Essays in Honour of C.A.R. Hoare, pages 75–92, Prentice-Hall, 1994.

BOOK CHAPTERS

[69-P] Implicit Partiality of Signature Morphisms in Institution Theory,
in Judit Madarász and Gergely Székely editors,
*Hajnal Andréka and István Németi on Unity of Science: From Computing to Relativity Theory Through
Algebraic Logic*, pages 81–123, Springer, 2021.

[70-P] The Algebra of Opposition (and universal logic interpretations),
in A. Koslow and A. Buchsbaum editors,
The Road to Universal Logic, pages 127–143, Springer Basel, 2015.

[71-P] Three decades of institution theory,
in Jean-Yves Beziau editor,
Universal Logic: an Anthology, pages 309–322, Springer Basel, 2012.

[72-P] A methodological guide to CafeOBJ logic,
in Dines Björner and Martin Henson editors,
Logics of Specification Languages, pages 153–240, Springer-Verlag Berlin Heiderberg, 2008.

[73-P] Institutions, Madhyamaka, and universal model theory,
in Jean-Yves Béziau and Alexandre Costa-Leite editors,
Perspectives in Universal Logic, pages 41–65, Polimetrica, 2007.

[74-P] What is a Logic? (with T. Mossakowski, J. Goguen and A. Tarlecki),
in Jean-Yves Beziau editor,
Logica Universalis, pages 113–133, Birkhauser, 2005.

[75-P] CafeOBJ jewels (with K. Futatsugi and S. Iida),
In Kokichi Futatsugi, Ataru Nakagawa, and Tetsuo Tamai editors,
Cafe: An Industrial-Strength Algebraic Formal Method, Elsevier, 2000.

[76-P] Component-based algebraic specification - behavioural specification for component-based software engineering - (with S. Iida and K. Futatsugi),
In *Behavioral specifications of businesses and systems*, The Springer International Series in Engineering and Computer Science Volume 523, pages 105–121, Kluwer, 1999.

[77-P] A short Oxford survey of order sorted algebra (with J. Goguen),
Current Trends in Theoretical Computer Science: Essays and Tutorials, World Scientific, 1993, pages 209–221.

CONFERENCE PUBLICATIONS (PEER-REVIEWED)

[78-C] CafeOBJ traces,
in S. Iida, J. Meseguer, K. Ogata editors,
Specification, Software and Algebra, volume 8373 *Lecture Notes in Computer Science*, pages 53–65, Springer, Berlin Heidelberg, 2014.

[79-C] Hybridization of Institutions (with M. Martins, A. Madeira and L. Barbosa),
in Andrea Corradini, Bartek Klin and Corina Cîrstea editors,
Algebra and Coalgebra in Computer Science, volume 6859 *Lecture Notes in Computer Science*, pages 283–297, Springer, Berlin Heidelberg, 2011.

[80-C] Jewels of institution-independent model theory,
in Kokichi Futatsugi, Jean-Pierre Jouannaud, and Jose Meseguer editors,
Algebra, Meaning, and Computation (a Festschrift in honour of Professor Joseph Goguen), vol. 4060 of *Lecture Notes in Computer Science*, pag. 65–98, Springer, 2006.

[81-C] Behavioural specification of hierarchical object composition,
in Frank S. de Boer, Marcello M. Bonsangue, Susanne Graf and Willem-Paul de Roever editors,
Formal Methods for Components and Objects, vol. 3188 of *Lecture Notes in Computer Science*, pag. 134–156, Springer, 2004.

[82-C] Component-based algebraic specification and verification in CafeOBJ (with K. Futatsugi and S. Iida),
in Jeanette M. Wing, Jim Woodcock and Jim Davies editors,
FM'99 – Formal Methods, vol. 1709 of *Lecture Notes in Computer Science*, pg. 1644–1663, Springer, 1999.

[83-C] A category-based equational logic semantics to constraint programming,
in Magne Haveraaen, Olaf Owe, and Ole-Johan Dahl, editors,
Recent Trends in Data Type Specification, vol. 1130 of *Lecture Notes in Computer Science*, pag. 200–221, Springer, 1996.

[84-C] Towards an algebraic semantics for the object paradigm (with J. Goguen),
In Harmut Ehrig and Fernando Orejas, editors,
Recent Trends in Data Type Specification, vol. 785 of *Lecture Notes in Computer Science*, pag. 1–34, Springer, 1994.

[85-C] Logical support for modularization (with J. Goguen and P. Stefaneas),
In Gerard Huet and Gordon Plotkin, editors,
Logical Environments, pages 83–130, Cambridge Univ. Press, 1993.

[86-C] Component-based algebraic specification: – behavioural specification for component based software engineering – (with S. Iida and K. Futatsugi),
in *7th OOPSLA Workshop on Behavioral Semantics of OO Business and System Specification*, 1998. Also in the technical report of Technical University of Munich TUM-I9820.

[87-C] Logical semantics for CafeOBJ (with K. Futatsugi),
In *Precise Semantics for Software Modeling Techniques*, 1998. Technical Report TUM-I9803, Technical University Munchen, pages 31–54. Proceedings of an ICSE'98 workshop held in Kyoto, Japan.

[88-C] Free monads in the hypercategory of all the monads,
In *East European Category Seminar 1990*. Proceedings of a Workshop held in Predela, Bulgaria, March 1990.

TECHNICAL REPORTS (NOT PUBLISHED ELSEWHERE)

[89-R] Non-deterministic algebraic rewriting as adjunction.
arXiv:2204.12133 [math.LO], 2022.

[90-R] Generic partiality for $\frac{3}{2}$-Institutions.
arXiv:1711.04666 [math.LO], 2017.

[91-R] WADT 2014 Preliminary Proceedings (with M. Codescu, I. Ţuţu)
Technical Report 7-2014, Simion Stoilow Institute of Mathematics of the Romanian Academy, 2014.

[92-R] A module algebra for behavioural specifications.
In N. Marti-Oliet and M. Palomino editors, *WADT 2012 Preliminary Proceedings*, Technical report TR-08/12 pages 44–45, Universidad Complutense de Madrid Departamento de Sistemas Informaticos y Computacion, 2012.

[93-R] (with K. Futatsugi and S. Iida)   Component-based algebraic specification and verification in CafeOBJ.
Technical Report IS-RR-99-0020S, Japan Advanced Institute for Science and Technology, 1999.

[94-R] (with P. Stefaneas)   Categorical foundations of modularization for multi-paradigm languages.
Technical Report IS-RR-98-0014F, Japan Advanced Institute for Science and Technology, 1998.

[95-R] (with S. Iida, M. Matsumoto, K. Futatsugi and D. Lucanu) Concurrent object composition in CafeOBJ.
Technical Report IS-RR-98-0009S, Japan Advanced Institute for Science and Technology, 1998.

[96-R] Completeness of semantic paramodulation: a category-based approach.
Technical Report IS-RR-96-0006S, Japan Advanced Institute for Science and Technology, 1996.

[97-R] The logic of Horn clauses is equational.
Technical Report PRG-TR-3-93, Programming Research Group, University of Oxford, 1990.

[98-R] Monadic equational logic.
Technical Report 9-90, INCREST Bucureşti, 1990.

EDITORIAL WORK:

VOLUMES

[99-E] *Logic and Computation*, a reprint of the Special Issue 'Logic and Computation' that was published in *Mathematics*, MDPI, Basel, Switzerland, 2023.

[100-E] *Universal Logic and Computation*, (with M.Coniglio). Special issue to celebrate Jean-Yves Beziau's 50th birthday, *Journal of Logic and Computation* 27(6), Oxford University Press, 2017.

[101-E] *Recent Trends in Algebraic Development Techniques* – 22nd International Workshop, WADT 2014, revised selected papers (with M. Codescu and I. Ţuţu), volume 9463 of *Lecture Notes in Computer Science (Theoretical Computer Science and General Issues)*, Springer, 2015.

EDITORIAL BOARD MEMBERSHIP

– *Studies in Universal Logic* book series at Springer Basel (formerly Birkhäuser), Switzerland (2007–).
– *Mathematics* section *Mathematics and Computer Science*, MDPI, Basel, Switzerland (2022–).
– *Logics*, MDPI, Basel, Switzerland (2021–).
– *International Journal of Mathematics and Mathematical Sciences* at Hindawi Publishing Corporation, USA (2013–2018).
– *ISRN Algebra* at Hindawi Publishing Corporation, USA (2013–2014).
– *International Scholarly Research Notices* at Hindawi Publishing Corporation, USA (2014–2018).

PRESENTATIONS

KEYNOTE / INVITED SPEAKER

• "The axiomatic approach to non-classical model theory", *Logic and Formal Methods* (a UNILOG 2022 workshop), Athens, Greece, September 2022.

- "Mathematical Foundations for Conceptual Blending", *Working Formal Methods Symposium*, Bucharest, Romania, July 2017.
- "$\frac{3}{2}$-Institutions – an institution-theoretic perspective to theory blending", *From Computational Creativity to Creativity Science* conference, Zentrum für interdisziplinäre Forschung, Bielefeld, Germany, September 2016.
- "Structuring of Specification Modules", *Workshop on Foundations of Informatics 2015*, Chişinău, Moldova, August 2015.
- "On the logical nature of the Nalanda tradition of Buddhism", *1st World Congress on Logic and Religion*, João Pessoa, Brazil, April 2015.
- "From universal logic to computer science, and back", *11th International Colloquium on Theoretical Aspects of Computing*, Bucharest, Romania, September 2014.
- "Stainless Formal Verification", *JAIST Advanced School on Formal Specification and Systems Verification 2010*, Kanazawa, Japan, March 2010.
- "Institution theory and Buddhist thinking", *2nd World Congress on Universal Logic*, Xi'an, China, August 2007.
- "Behavioural Specification of Hierarchical Object Composition", *2nd Formal Methods for Components and Objects Symposium*, Leiden, Netherlands, November 2003.

TUTORIALS

- "Theory of institutions", *4th World School on Universal Logic*, Rio de Janeiro, Brazil, March/April 2013.
- "Institution theory for computer science", *Mondrian Workshop*, Aveiro, Portugal, July 2010.
- "CafeOBJ: logical foundations and methodologies", invited lecture course in the European Summer School on *Logics for Specification Languages*, Stara Lesna, Slovakia, June 2004.

OTHER PRESENTATIONS

- "Experimental mathematics by rewriting", LOS/IMAR Logic Seminar, University of Bucharest, Romania, December 2021.
- "Many-valued truth in an institution-theoretic setting", Faculty of Informatics, University of Magdeburg, Germany, November 2017.
- "Specificare şi verificare bazate pe logică", Academia Română (secţia de ştiinţa şi tehnologia informaţiei), September 2017.
- "Composition of specification modules: recent developments" (via Skype), *Workhsop of the THALES project Algebraic modeling of topological and computational structures*, National Technical University Athens, Greece, July 2015.
- "The Architecture of Logical Interpolation", *IMAR Monthly Conferences*, February 2015.
- "Composition of specification modules: recent developments", *2014 Conference on Computational Intelligence and Software Engineering (CiSE 2014)*, Beijing, China, July 2014.
- "Institution Theory and Applications", Habilitation defence, IMAR, May 2014.
- "Thoughts on graded consequence", *(last) Mondrian Workshop*, Aveiro, Portugal, July 2013.
- "Institution theoretic scope of logic theorems", *4th World Congress on Universal Logic*, Rio de Janeiro, Brazil, April 2013.
- "Institution theory: internal logic", *Logic Seminar*, IMAR, March 2013.
- "Institution theory: introduction", *Logic Seminar*, IMAR, March 2013.
- "A module algebra for behavioural specifications", *The 21th Workshop on Algebraic Development Techniques*, Salamanca, Spain, June 2012.
- "Towards Automated Structural Induction: an institution-independent methodology", *Third Romanian-Japanese Algebraic Specification Workshop*, Sinaia, Romania, April 2012.
- "Guidelines for Formal Specification and Verification", *Second Romanian-Japanese Algebraic Specification Workshop*, Sinaia, Romania, March 2011.
- "Coinduction for preordered algebras", *Mondrian Workshop*, Aveiro, Portugal, July 2010.
- "Stainless Formal Verification", *3rd MAP-i Doctoral Symposium*, Aveiro, Portugal, July 2010.
- "Introduction to institution theory", Senshu University, Tokyo, Japan, March 2010.
- "What is a formal proof?", *Conference on Logic, Algebra, and Fundamentals of Computer Science*, IMAR, Bucharest, Romania, May 2008.
- "What is a logic translation?", *2nd World Congress on Universal Logic*, Xi'an, China, August 2007. (winner of the UNILOG'07 contest 'What is a logic translation?')

- "Inclusion Systems", Faculty of Mathematics and Informatics, University "Ovidius" Constanţa, April 2007.
- "Behavioural specification of hierarchical object composition", *DFKI*, University of Bremen, November 2006.
- "Ultraproducts in institution-independent model theory", *KatMAT* (category theory) seminar, University of Bremen, November 2006.
- "Jewels of institution-independent model theory", Symposium *Algebra, Meaning and Computation*, La Jolla, California, June 2006.
- "Institution-independent Model Theory", IFIP 1.3 WG meeting, La Roche, Belgium, June 2006.
- "Behavioural specification of hierarchical object composition", *Institute d'Informatique*, Universite Notre-Dame de la Paix, Namur, Belgium, May 2006.
- "Behavioural specification of hierarchical object composition", *Language Design Laboratory seminary*, Japan Advanced Institute for Science and Technology, Ishikawa-ken, Japan, March 2006.
- "Institution-independent Model Theory", *Symposium for the 100th anniversary of Grigore Moisil*, Bucharest, Romania, January 2006.
- "Institutions: methodological implications", *Logic Colloquim 2005* (Association of Symbolic Logic European Summer Meeting), Athens, Greece, July-August 2005.
- "What is a Logic?", *First World Congress on Universal Logic*, Montreux, Switzerland, March-April 2005.
- "Abstract Modalities and Institutions", Workshop on *Combination of Logics: theory and applications*, Lisbon, Portugal, July 2004.
- "Formal Specification and Verification with CafeOBJ: logical foundations and methodologies", VERIMAG, Grenoble, France, March 2004.
- "Abstract Modal Logic", *4th Panhellenic Logic Symposium*, Thessaloniki, Greece, July 2003.
- "From Birkhoff axiomatizability to Interpolation: a categorical model theoretic approach", Logic Seminar, University of Athens, Greece, March 2003.
- "Institutions in algebraic specification", a V-a conferinţă *Modelarea structural-fenomenologică*, Academia Română, June 2001.
- "Specificaţii Algebrice: drumul de la logica ecuaţională la teoria abstractă a modelelor categorială", Seminarul *Mari teme matematice in secolul XX*, Bucharest, Romania, May 2000.
- "Grothendieck Institutions", Instituto Tecnico Superior, Lisbon, Portugal, November 1999.
- "Component-based Algebraic Specification and Verification in CafeOBJ", *World Congress on Formal Methods FM'99*, Toulouse, France, September 1999.
- "Object-oriented Algebraic Specification and Verification in CafeOBJ", project presentation at *2nd Panhellenic Logic Symposium*, Delfi, Greece, July 1999.
- "Behavioural Methodologies for Algebraic Specification and Verification", IFIP2.2 WG Meeting, Udine, Italy, June 1999.
- "Rezultate Recente in Teoria Specificaţiilor Algebrice", *50th Anniversary of the IMAR Conference*, Bucharest, Romania, June 1999.
- "Object-oriented Methodologies in CafeOBJ", CafeOBJ Workshop, Miurakaigan, Japan, April 1999.
- "A Survey of Institutions", National Technical University of Athens, Greece, November 1998.
- "CafeOBJ: language definition, proof techniques and methodologies", *CafeOBJ Symposium*, Numazu, Japan, April 1998.
- "Logical Semantics for CafeOBJ", *Precise Semantics for Software Modeling Techniques*, Kyoto, Japan, April 1998.
- "Overview of the CafeOBJ Definition", University of Kyushu, Fukuoka, Japan, February 1998.
- "Modern Algebraic Specification and Verification in CafeOBJ", Philips Research Laboratories, Eindhoven, The Netherlands, January 1998.
- "Overview of the CafeOBJ Definition", the 3rd CafeOBJ International Workshop, Kanazawa, Japan, October 1997.
- "The CafeOBJ Definition", the First Romanian-Japanese Algebraic Specification Meeting, Sinaia, Romania, August 1997.
- "Teorii Categoriale ale Modelelor în Informatica Teoretică", Institute of Mathematics of the Romanian Academy, May 1997.
- "Modern algebraic specification and programming in CafeOBJ", National Technical University of Athens, Greece, April 1997.
- "An overview of the current stage of CafeOBJ", 2nd CafeOBJ International Workshop, Saitama, Japan, March 1997.
- "The CafeOBJ Definition", CafeOBJ project meeting, Tōkyō, Japan, January 1997.
- "Foundations of behavioural specification in rewriting logic", 1st International Workshop on Rewriting Logic and its Applications, Asilomar, California, September 1996.
- "Logical Semantics for CafeOBJ", 1st CafeOBJ International Workshop, Shonnan International Village, Kanagawa, Japan, August 1996.
- "Institutions: abstract model theory for Computing", Algebra and Logic Seminar, Japan Advanced Institute for Sci. & Tech., May 1996.
- "Common Framework Initiative", CafeOBJ project meeting, Tōkyō, Japan, February 1996.

- "Extensible Modular Constraint Programming: a category-based equational logic perspective", the University of Amsterdam, Netherlands, November 1995.
- "Category-based Equational Logic Semantics to Constraint Programming", presented at the joint 11th ADT conference and COMPASS workshop, Oslo, Norway, September 1995.
- "Category-based Equational Logic Programming", presented at BRICS, University of Aarhus, Denmark, August 1995.
- "Completeness of Model Theoretic Paramodulation: a Category-based Approach" joint 10th ADT conference and COMPASS workshop, St Margherita Ligure, Italy, May/June 1994.
- "Equational logic programming in Eqlog", Abo Academy, Turku, Finland, November 1993.
- "A model-theoretic approach to rewriting", University of Turku, Finland, November 1993.
- "Hiding and Behaviour: an Institutional Approach", ISCORE group meeting, Oxford, England, March 1993.
- "The Equational Logic Programming project in Oxford", Edinburgh LFCS, Scotland, February 1992.
- "The Formal Completeness of Equational Logics", London Mathematical Society conference on Applications of Categories to Computer Science, Durham, England, July 1991.
- "Logical Support for Modularisation", Amsterdam University, Netherlands, January 1992.
- "Logical Support for Modularisation", joint COMPASS and WADT workshop, Dourdan, France, August 1991.
- (with Joseph Goguen) "Logical Support for Modularisation", Workshop of ESPRIT project in Logical Frameworks, Edinburgh, Scotland, May 1991.
- "Equational Logic Programming", PRG Oxford University Computing Laboratory meeting on Future Research Directions, England, April 1991.
- "Free Monads in the Hypercategory of All the Monads", East European Category Seminar 1990, Predela, Bulgaria, March 1990.

RESEARCH GRANTS:

PROJECT DIRECTOR:

2021–2023 "Axiomatic Methods in Non-Classical Model Theory" (CNCSIS[*] grant PN-III-P4-ID-PCE-2020-0446)

2020–2022 "Component-based Formal Verification" (CNCSIS grant PN-III-P2-2.1-PED-2019-0955)

2017–2018 "Formal Verification of Reconfigurable Systems" (CNCSIS grant PN-III-P2-2.1-PED-2016-0494)

2011–2016 "Universal Logic Methods in Computer Science" (CNCSIS grant PN-II-ID-PCE-2011-3-0439)

2006–2008 "Model theory for formal specification" (CNCSIS grant)

2003–2004 "Logical models for system and software engineering" (GAR[†])

.   1995 "Modular and extensible constraint logic programming" (GAR)

PARTNER TEAM LEADER:

2013–2016 "Generalizing Truth-functionality" (project 318986/FP7-PEOPLE-2012-IRSES of EC[‡])

.   1998 "Environment for algebraic specification on distributed architectures of highly reliable software systems"[§]

TEACHING:

- Director of Master (by research) programme in *Logic and Formal Specification*, SNSB, 2004-2011. (students of this programme have published 6 research papers in top international journals)
- "Structuring specifications and programs", SNSB 2008.
- "Model theory for specification and programming", SNSB 2005-2006.
- "Mathematical foundations of Algebraic Specification", SNSB, 2002-2006, 2008, 2010.
- "Formal Specification and Verification Methodologies", SNSB 2005, 2007, 2009-2010, Master in Informatics at Universities of Bucharest, 2003-2004 and Ploieşti, 2011-2012.
- "Heterogenous Multi-Logic Specification", SNSB, 2004.
- "Logic Programming", SNSB, 2003.
- "Introduction to Algebraic Specification", Inter-University Program in Graduate Studies in *Logic and Theory of Algorithms and Computation*, University of Athens, Greece, March 2003.
- "Theory of Institutions", MSc in Computing, Faculty of Mathematics, University of Bucharest, 2000.
- "Formal Languages and Automata", undergraduate, Faculty of Mathematics and Informatics, University of Ploieşti, 1995.

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[*]National Council for Scientific Research
[†]Romanian Academy Grant for basic research in information science and technology
[‡]European Commission
[§]grant of Ministry of Research and Technology for scientific collaboration between Romania and Japan

– "Equational Logic Programming", MSc in Computing, Faculty of Mathematics, University of Bucharest, 1995.

SCIENTIFIC EVENTS:

– Member of the steering board of *IMAR workshops on Mathematical Structures in Computer Science*, since 2022.
– Organiser of the special session *Mathematical Structures in Formal System Development and Analysis* at the Ninth Congress of the Romanian Mathematicians, Galaţi, Romania, 2-3 July 2019.
– Organiser and local chair of *22nd International Workshop on Algebraic Development Techniques*, Sinaia, Romania, 4-7 September 2014.
– Co-chair and organizer of *Sinaia School on Formal Verification of Software Systems*, 3-10 March 2008. (co-chairs: R. Diaconescu and K. Futatsugi)
– Co-chair and organizer of *Third Romanian-Japanese Algebraic Specification Workshop*, Sinaia, Romania, 2-3 April 2012. (co-chairs: R. Diaconescu and K. Futatsugi)
– Co-chair and organizer of *Second Romanian-Japanese Algebraic Specification Workshop*, Sinaia, Romania, 1-4 March 2011. (co-chairs: R. Diaconescu and K. Futatsugi)
– Co-chair and organizer of *First Romanian-Japanese Algebraic Specification Workshop*, Sinaia, Romania, August 1997. (co-chairs: R. Diaconescu and K. Futatsugi)
– Program Committee member at *ICTAC 2016*, Taipei, Taiwan.
– Program Committee member at *FOI 2015*, *MFOI 2016*, Chişinău, Moldova.
– Program Committee member at *IJSI 2015* (Special Issue of *Intl. J. of Software and Informatics* in Honor of Bernd Krieg-Brückner).
– Program Committee member at *ICAASE 2014*, *ICAASE 2016*, Constantine, Algeria.
– Program Committee member at *AMAST 2008*, Urbana, Illinois, USA.
– Program Committee member at *International Workshop on Rewriting Logic and its Applications* (WRLA2000), Kanazawa, Japan, 2000.
– Program Committee member at OBJ/CafeOBJ/Maude satellite workshop at *World Congress of Formal Methods '99*, Toulouse, France, 1999.
– Program Committee member at Distributed Systems satellite workshop at *FCT'99 conference*, Iaşi, Romania, 1999.

STUDENTS:

– advisor of Alexandru Ioniţă PhD thesis, 2020 –
– co-advisor of Alexandre Madeira's PhD thesis *Foundations and Techniques for Software Reconfigurability – an institution-independent approach for specifying and reasoning about reconfigurable systems*, MAP-i (joint doctoral programme in informatics of the universities Minho, Aveiro and Porto), Portugal, 2013 – winner the *IBM Scientific Award 2013*.
– member of the commitee for Fabrice Barbier's PhD thesis *Géneralisation et préservation au travers de la combinaison des logique des résultats de théorie des modèles standards liés à la structuration des spécifications algébriques*, University Evry, France, 2005.
– member of the commitee for Daniel Găină's PhD thesis *Theorem proving and institutions*, Japan Advanced Institute for Science and Technology, 2009.
– advisor of Ionuţ Ţuţu's MSc thesis *On the Instantiation of Multiple Parameterized Specifications*, SNSB, 2012.
– advisor of Marius Petria's MSc thesis *Abstract Beth definability institutionally*, SNSB, 2005.
– advisor of Mihai Codescu's MSc thesis *Model theory for higher order logic with Henkin semantics*, SNSB, 2007.
– advisor of Daniel Găină's MSc thesis *Layered Completeness*, SNSB, 2006.
– advisor of Denisa Diaconescu's MSc thesis *Model theory for multiple valued logic*, SNSB, 2009.
– co-advisor of Traian-Florin Şerbănuţă's MSc thesis *Institutions and logic programming compiling*, Univ Bucharest, 2004.

COMMITTEES:

– Scientific Council of IMAR (2012 –)
– Scientific Council of "Şcoala Normală Superioară" Bucharest (2002 –)
– head of the CNATDCU[¶] Commission for Informatics (2017 – 2018)
– bureau of the CNATDCU Commission for Informatics (2011–2012)
– head of the CNATDCU Contestation Commission for Informatics (2012–2016)
– *AdAstra* representative in the selection Committee for the CNATDCU Commission for Informatics (2016)

SYSTEMS:

(1) Designer of CafeOBJ,[‖] an industrial strength multi-logic heterogenous algebraic language, succesor of the OBJ, and directly incorporating some modern developments in algebraic specification such as behavioural specification and rewriting logic.

(2) Author of COMP, a language and system for formal specification and verification of component-based systems, based on hierarchical object composition within the hidden algebra formalism.

(3) Author of H, a language and system for logic-based formal specification and verification of reconfigurable systems.

(4) Built the first prototype of EQLOG, an equational and constraint logic programming system with subtypes and generic modules, extending the OBJ3 system.

[¶]National Council for Attesting Titles, Diplomas and Certificates
[‖]Developed at the Japan Advanced Institute for Science & Technology; supported on a large scale by the Japanese Government through its Information-technology Promotion Agency.