Cristian S. Calude

Curriculum Vitæ: May 10, 2018

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[1] Current positions are emphasised.
[2] Cooperation with 134 colleagues from 30 countries.
[3] Courses I have created are emphasised.
[4] Current positions are emphasised.

1 Personal Data

Nationality: New Zealand and Romanian
Family Status: Married: Elena Calude (Ph.D.), senior lecturer, Massey University at Albany
One child: Andreea S. Calude, BSc (Mathematics), BA (Linguistics), 2001,
PhD 2008 (Linguistics), senior lecturer, Waikato University
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2 Education

1976–1977: Graduate studies in Mathematics
Bucharest University, Romania
Degree: *Ph.D. in Computer Science* (defended 1976; confirmed 1977)
Ph.D.Thesis: *Categorical Methods in Computation Theory*
Supervisor: Professor S. Marcus
1971–1975: Undergraduate studies in Computer Science and Mathematics
Bucharest University, Romania
Degrees: *B.Sc.(Hons) in Computer Science and Mathematics* (1975)
Computer Science Thesis: *Man–Computer Communication*
Mathematics Thesis: *Contextual Metrics*
Supervisor: Professor S. Marcus
1967–1971: High–School Studies
National College "Vasile Alecsandri", Galaţi, Romania

3 Work Experience[5]

3.1 Academic Positions

1. *Professor (Personal Chair in Computer Science), Computer Science Department, University of Auckland, Auckland, NZ*, from April 1994 on.

2. Lecturer (December 1992 to May 1993), Associate-Professor (May 1993 to April 1994), Computer Science Department, University of Auckland, Auckland, NZ.

3. Adjunct Professor, Faculty of Mathematics and Informatics, "Ovidius" University of Constanţa, Romania, from September 2000 to August 2004.

4. Associate Professor (May 1993 to March 1994), lecturer (December 1992 to May 1993), Computer Science Department, University of Auckland, Auckland, NZ.

5. Professor (February 1994 to September 2000), Associate Professor (February 1991 to February 1994), Senior Lecturer (September 1990 to February 1991), Assistant Professor (September 1981 to September 1990), Researcher and Associate Assistant Professor (September 1975 to September 1981), Department of Foundations Computer of Science, Faculty of Mathematics, Bucharest University, Romania.

6. Mathematics and Computer Science Teacher, National College for Computer Science Tudor Vianu, Bucharest, Romania, from September 1975 to October 1978.

[5]Current positions are emphasised.

3.2 Research Positions

1. *Research Consultant, Quantum Computing Research Initiatives at Lockheed Martin*, USA, from July 2013 on.
2. Research Associate and Member of the Council, The Centre for Logic and Informatics Bucharest, Romania, from May 2001 to December 2008.
3. Research Associate, University of Canterbury, Christchurch, NZ, from November 1999 to 2014.
4. Associate Member of the International Solvay Institutes, Brussels Free University, Brussels, Belgium, from June 1998 to December 2003.
5. *Director, Centre for Discrete Mathematics and Theoretical Computer Science, University of Auckland, NZ*, from January 1998 on; co-director from May 1995 to December 1997.
6. Head of the Symbolic Computation Division, Bucharest University, Romania, from November 1991 to December 1994.
7. Senior Researcher and Scientific Secretary, Committee on Prospective Studies, Romanian Academy, Bucharest, Romania, from April 1989 to September 1992.
8. Mathematics Researcher, Department of Mathematics, INCREST, Bucharest, Romania, from September 1984 to February 1985.
9. Senior Computer Scientist, Department of Compiler Design, Research Institute for Computer Technique, Bucharest and Cluj, Romania, from September 1981 to July 1982.
10. Senior Researcher, Project on Goals, Processes and Indicators of Development (GPID), United Nations University, Tokyo, Japan, from November 1978 to December 1983.

3.3 Visiting Positions

1. Visiting Professor, Research Institute of the University of Bucharest, 2017.
2. *Guest Professor, School of Data and Computer Science, Sun Yat-sen University, Guangzhou, China, July 2017 – June 2020.*
3. Visiting Professor, Department of Mathematics and School of Computing, National University of Singapore, Singapore, July 2017.
4. Visiting Professor, Institute of Mathematical Science, National University of Singapore, June 2014.
5. Visiting Professor, Chuo University, Tokyo, Japan, January 2013.
6. Visiting Fellow, Isaac Newton Institute of Mathematical Sciences, Cambridge University, UK, June–July 2012.
7. Visiting Professor, École Polytechnique, Paris, France, October–December, 2011.
8. Visiting Scholar, Australian National University, Canberra, Australia, March 2011.
9. Visiting Professor, École Normale Supérieure, Paris, France, July and October, 2009.
10. Visiting Researcher, Centre for Computational and Systems Biology, The Microsoft Research–University of Trento, Trento, Italy, July 2008.
11. Visiting Professor, Department of Computer Science, Martin-Luther-Universität, Halle, Germany, November 2006.
12. Visiting Professor, Department of Computer Science, Hong Kong University of Science and Technology, Hong Kong, August 2006.

13. Visiting Professor, Department of Decision Sciences, UNISA, Pretoria, South Africa, November–December 2005.

14. Visiting Academic, School of Computer Science and Software Engineering, Monash University, Melbourne, Australia, May–June 2004.

15. Visiting Researcher, Rovira i Virgili University, Tarragona, Spain, September–December 2003.

16. Visiting Professor, Second International Ph.D. School in Formal Languages and Applications, Rovira i Virgili University, Tarragona, Spain, 2003.

17. Visiting Professor, Centro de Modelamiento Matemático, Universidad de Chile, Santiago, Chile, August, 2003.

18. Visiting Professor, Université de Bourgogne, Dijon, France, June–August, 2003.

19. Visiting Professor, First International Ph.D. School in Formal Languages and Applications, Rovira i Virgili University, Tarragona, Spain, 2002.

20. Visiting Professor, Facultad de Ciencias Exactas y Naturales Universidad de Buenos Aires, Argentina, June, 2000.

21. Monbusho[6] Visiting Professor, Japan Advanced Institute of Science and Technology, September–December, 1999.

22. Gastprofessor, Institut für Theoretische Physik, Technischen Universität Wien, Austria, June, 1994, and May–June, 1999.

23. Visiting Researcher, Sandia National Laboratories, Albuquerque, USA, April, 1999.

24. Visiting Professor, Department of Computer Science, University of Western Ontario, London, Canada, Fall 1992, October–November 1993, and February–March, 1999.

25. Visiting Professor, Department of Mathematics, University of Chicago, Chicago, USA, February, 1999.

26. Visiting Researcher, International Solvay Institutes, Brussels Free University, Brussels, Belgium, June 1998.

27. Visiting Researcher, Danish Mindship Foundation, Copenhagen, Denmark, June–July, 1996.

28. Visiting Professor, Department of Mathematics, Turku University, Turku, Finland, April–May, 1991.

3.4 Expert

1. Member, European Science Foundation College of Expert Reviewers, 2016 on.

2. International expert evaluator, Russian Science Foundation, 2015–2016.

3. Horizon 2020 expert evaluator, European Commission, DG Research, 2014–2016.

4. FP7 evaluator, European Commission - DG Research, Brussels, Belgium, 2013.

5. FP6 evaluator, European Commission - DG Research, Brussels, Belgium, 2006.

6. Expert evaluator, European Science Foundation, Strasbourg, France, 2006–2013.

4 Research[7]

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[6] Japan Ministry of Education, Science, Sports and Culture.
[7] Cooperation with 134 colleagues from 30 countries.

4.1 Papers in Refereed Journals

1. C. S. Calude, L. Staiger. A simple construction of absolutely disjunctive Liouville Numbers, *Journal of Automata, Languages and Combinatorics* 23, 1–3 (2018), 103–109.

2. A. Adamatzky, S. Akl, M. Burgin, C. S. Calude, J. F. Costa, M. M. Dehshibi, Y.-P. Gunji, K. Zoran, B. MacLennan, B. Marchal, M. Margenstern, G. J. Martínez, R. Mayne, K. Morita, A. Schumann, Y. D. Sergeyev, G. Ch. Sirakoulis, S. Stepney, K. Svozil, H. Zenil. East-West paths to unconventional computing, *Progress in Biophysics and Molecular Biology* 131 (2017), 469–493.

3. C. S. Calude, M. J. Dinneen, R. Hua. QUBO formulations for the graph isomorphism problem and related problems, *Theoretical Computer Science C* 701 (2017), 54–69.

4. C. S. Calude, M. Dumitrescu. A probabilistic anytime algorithm for the Halting Problem, *Computability*, published online on May 2017.

5. C. S. Calude, L. Staiger. Liouville numbers, Borel normality and algorithmic randomness, *Theory of Computing Systems*, First online 27 April 2017, doi:10.1007/s00224-017-9767-8.

6. C. S. Calude, F. Kroon, N. Poznanović. Free will is compatible with randomness, *Philosophical Inquiries*, 4, 2 (2016), 37–52.

7. C. S. Calude, G. Longo. The deluge of spurious correlations in big data, *Foundations of Science* 22, 3 (2017), 595–612. First online: DOI 10.1007/s10699-016-9489-4, 2016.

8. C. S. Calude, L. Staiger, F. Stephan. Finite state incompressible infinite sequences, *Information and Computation* 247 (2016), 23–36. http://dx.doi.org/10.1016/j.ic.2015.11.003.

9. C. S. Calude, R. Freivalds, S. Jain, F. Stephan. Deterministic frequency pushdown automata, *JUCS*, 21, 12 (2015), 1563–1576.

10. C. S. Calude, G. Longo. Classical, quantum and biological randomness as relative unpredictability, *Natural Computing* 15, 2 (2016), 263–278. http://dx.doi.org/10.1007/s11047-015-9533-2.

11. A. Abbott, C. S. Calude, K. Svozil. A non-probabilistic model of relativised predictability in physics, *Information* 6, (2015), 773–789; http://dx.doi.org/10.3390/info6040773.

12. A. Abbott, C. S. Calude, K. Svozil. A variant of the Kochen-Specker theorem localising value indefiniteness, *Journal of Mathematical Physics* 56, 102201 (2015); https://link.aps.org/doi/10.1103/PhysRevA.89.032109.

13. C. S. Calude, D. Desfontaines. Anytime algorithms for non-ending computations, *International Journal of Foundations of Computer Science* 26, 4 (2015) 465–475.

14. C. S. Calude, D. Desfontaines. Universality and almost decidability, *Fundamenta Informaticae* 138 (2015), 77–84.

15. C. S. Calude, E. Calude, M. J. Dinneen. Adiabatic quantum computing challenges, *ACM SIGACT News* 46, 1 (2015), 40–61.

16. A. Abbott, C. S. Calude, K. Svozil. Value-indefinite observables are almost everywhere, *Physical Review A* 89, 3 (2014), 032109–032116; http://dx.doi.org/10.1016/10.1103/PhysRevA.89.032109.

17. A. Abbott, C. S. Calude, K. Svozil. A quantum random number generator certified by value indefiniteness, *Mathematical Structures in Computer Science* 24, 3, (2014), e240303; http://dx.doi.org/10.1017/S0960129512000692.

18. C. S. Calude, E. Calude. Algorithmic complexity of mathematical problems: an overview of results and open problems, *International Journal of Unconventional Computing* 9(3-4) (2013), 327-343.

19. M. Burgin, C. S. Calude, E. Calude. Inductive complexity measures for mathematical problems, *International Journal of Foundations of Computer Science* 24, 4 (2013) 487–500.

20. C. S. Calude, E. Calude, M. S. Queen. Inductive complexity of the P versus NP problem, *Parallel Processing Letters* 23, 1 (2013), 1350007-1–1350007-16.

21. C. S. Calude. The halting problem, *Canadian Mathematical Society Notes* 45, 2, March-April (2013), 16–17.

22. D. H. Bailey, J. M. Borwein, C. S. Calude, M. J. Dinneen, M. Dumitrescu, A. Lee. An empirical approach to the normality of π, *Experimental Mathematics* 21, 4 (2012), 375–384.

23. A. A. Abbott, C.S. Calude, J. Conder, K. Svozil. Strong Kochen-Specker theorem and incomputability of quantum randomness, *Physical Review A* 86, 6 (2012); http://dx.doi.org/10.1103/PhysRevA.86.062109.[8]

24. C. S. Calude, B. S. Cooper. Introduction: computability of the physical, *Mathematical Structures in Computer Science* 22, 05 (2012), 723–728.

25. A. Abbott, C. S. Calude. Von Neumann normalisation of a quantum random number generator, *Computability* 1 (2012), 59–83.

26. C. S. Calude, E. Calude, M. S. Queen. The complexity of Euler's integer partition theorem *Theoretical Computer Science* 454 (2012), 72–80; http://dx.doi.org/10.1016./j.tcs.2012.03.02.

27. A. A. Abbott, M. Bechmann, C. S. Calude, A. Sebald. A nuclear magnetic resonance implementation of a classical Deutsch-Jozsa algorithm, *International Journal of Unconventional Computing* 8,2 (2012), 161–175.

28. A. A. Abbott, C. S. Calude, K. Svozil. On demons and oracles, *Asia Pacific Mathematics Newsletter* 2,1 (2012), 9–15.

29. C. S. Calude, K. Salomaa, T. K. Roblot. State-size hierarchy for FS-complexity, *International Journal of Foundations of Computer Science* 23, 1 (2012) 37–50.

30. C. S. Calude, J. P. Lewis. Is there a universal image generator? *Applied Mathematics and Computation* 218 (2012), 8151–8159; http://dx.doi.org/10.1016/j.amc.2011.06.35.

31. A. Akhtarzada, C. S. Calude, J. Hosking. A multi-criteria metric algorithm for recommender systems, *Fundamenta Informaticae* 110 (2011), 1–11.

32. C. S. Calude, K. Salomaa, T. K. Roblot. Finite state complexity, *Theoretical Computer Science* 412 (2011), 5668–5677.

33. C. S. Calude, A. Nies, L. Staiger and F. Stephan. Universal recursively enumerable sets of strings, *Theoretical Comput. Sci.* 412 (2011), 2253–2261; http://dx.doi.org/10.1016/j.tcs.2011.01.002.

34. C. S. Calude, M. Cavaliere, R. Mardare. An observer-based de-quantisation of Deutsch's algorithm, *International Journal of Foundations of Computer Science* 22, 1 (2011), 191–202.

35. C. S. Calude, E. Calude and K. Svozil. The complexity of proving chaoticity and the Church-Turing Thesis, *Chaos* 20 037103 (2010), 1–5.

36. C. S. Calude, N. J. Hay, F. Stephan. Representation of left-computable ε–random reals, *Journal of Computer and System Sciences* 77 (2011), 812–819; http://dx.doi.org/10.1016/j.jcss.2010.08.0001.

37. C. S. Calude, M. J. Dinneen, M. Dumitrescu, K. Svozil. Experimental evidence of quantum randomness incomputability, *Physical Review A* 82, 022102 (2010), 1–8.

[8] A physical successful realisation of the 3D experiment proposed in this paper was reported in A. Kulikov, M. Jerger, A. Potočnik, A. Wallraff, A. Fedorov. Realization of a quantum random generator certified with the Kochen-Specker theorem, arXiv:1709.03687, September 2017.

38. C. S. Calude, L. Staiger. A note on accelerated Turing machines, *Mathematical Structures in Computer Science*, 20 (2010), 1011–1017; http://dx.doi.org/10.1017/S0960129510000344.

39. C. S. Calude, E. Calude. The complexity of the Four Colour Theorem, *LMS J. Comput. Math.* 13 (2010), 414–425.

40. C. S. Calude. Simplicity via provability for universal prefix-free Turing machines, *Theoretical Comput. Sci.* 412 (2010), 178–182; http://dx.doi.org/10.1016/j.tcs.2010.08.002.

41. C. S. Calude, E. Calude. Evaluating the complexity of mathematical problems. Part 2, *Complex Systems* 18 (2010), 387–401.

42. C. S. Calude, G. J. Chaitin. What is ... a halting probability? *Notices of the AMS* 57, 2 (2010), 236–237.

43. C. S. Calude, M. Zimand. Algorithmically independent sequences, *Information and Computation* 208 (2010), 292–308; http://dx.doi.org/10.1016/j.ic.2009.05.004.

44. C. S. Calude, E. Calude. Evaluating the complexity of mathematical problems. Part 1, *Complex Systems* 18 (2009), 267–285.

45. C. S. Calude, N. J. Hay. Every computably enumerable random real is provably computably enumerable random, *Logic Jnl. IGPL* 17 (2009,) 325–350; http://dx.doi.org/10.1093/jigpal/jzp015.

46. C. S. Calude, H. Jürgensen and L. Staiger. Topology on words, *Theoretical Comput. Sci.* 410 (2009), 2323–2335.

47. C. S. Calude and L. Staiger. On universal computably enumerable prefix codes, *Mathematical Structures in Computer Science* 19 (2009), 45–57; http://dx.doi.org/10.1017/S0960129508007238.

48. C. S. Calude, K. Svozil. Quantum randomness and value indefiniteness, *Advanced Science Letters* 1 (2008), 165–168; http://dx.doi.org/10.1166/asl.2008.016.

49. C. S. Calude, M. A. Stay. Most programs stop quickly or never halt, *Advances in Applied Mathematics*, 40 (2008), 295–308; http://dx.doi.org/10.1016/j.amm.2007.01.001.

50. C. S. Calude. De-quantising the solution of Deutsch's problem, *International Journal of Quantum Information* 5, 4(2007), 1–7.

51. C. S. Calude, M. J. Dinneen. Exact approximations of Omega numbers, *Int. Journal of Bifurcation & Chaos* 17, 6 (2007), 1937–1954.

52. C. S. Calude, G. J. Chaitin. A dialogue on mathematics & physics, *The Rutherford Journal: The New Zealand Journal for the History and Philosophy of Science and Technology*, Vol. 2, 2006–2007.

53. C. S. Calude, M. A. Stay. Natural halting probabilities, partial randomness, and Zeta functions, *Information and Computation* 204 (2006), 1718–1739.

54. C. S. Calude, E. Calude, M. J. Dinneen. A new measure of the difficulty of problems, *Journal for Multiple-Valued Logic and Soft Computing* 12 (2006), 285–307.

55. C. S. Calude, C. Câmpeanu, M. Dumitrescu. Automata recognizing no words: A statistical approach, *Fundamenta Informaticae* 72 (2006), 1–18.

56. C. S. Calude, L. Staiger, S. A. Terwijn. On partial randomness, *Annals of Applied and Pure Logic*, 138 (2006), 20–30.

57. C. S. Calude, M. A. Stay. From Heisenberg to Gödel via Chaitin, *International Journal of Theoretical Physics* 44, 7 (2005), 1053–1065.

58. C. S. Calude, H. Jürgensen. Is complexity a source of incompleteness? *Advances in Applied Mathematics* 35 (2005), 1–15.

59. C. S. Calude, L. Staiger, K. Svozil. Randomness relative to Cantor expansions, *Communications in Nonlinear Science and Numerical Simulation*, 10/8 (2005), 921–930.

60. C. S. Calude, S. Rudeanu. Proving as a computable procedure, *Fundamenta Informaticae* 64, 1–4 (2005), 43–52.

61. C. S. Calude, L. Staiger. Generalisations of disjunctive sequences, *Math. Log. Quart.* 51, 2 (2005), 120–128.

62. C. S. Calude, E. Calude, S. Marcus. Passages of proof, *Bull. Eur. Assoc. Theor. Comput. Sci.* 84 (2004), 167–188. Reprinted in S. Marcus. *Words and Languages Everywhere*, Polimetrica, Milano, 2007, 89–102.

63. C. S. Calude, G. Păun. Bio-steps beyond Turing, *BioSystems* 77 (2004), 175–194.

64. C. S. Calude, J. Casti. The jumble cruncher, *New Scientist*, 25 September 2004, 36–37.

65. J. J. Arulanandham, C. S. Calude, M. J. Dinneen. A fast natural algorithm for searching, *Theoret. Comput Sci., Natural Computing* 320, 1 (2004), 3–13.

66. C. S. Calude, E. Calude, M. J. Dinneen. What is the value of $Taxicab(6)$?, *J. UCS* 9, 10 (2003), 1196–1203.

67. C. S. Calude, S. Marcus, L. Staiger. A topological characterization of random sequences, *Inform. Process. Lett.* 88 (2003), 245–250. Reprinted in S. Marcus. *Words and Languages Everywhere*, Polimetrica, Milano, 2007, 357–364.

68. J. J. Arulanandham, C. S. Calude, M. J. Dinneen. Solving SAT with bilateral computing, *Romanian Journal of Information Science and Technology* 6, 1-2 (2003), 9–18.

69. C. S. Calude. Incompleteness, complexity, randomness and beyond, *Minds and Machines: Journal for Artificial Intelligence, Philosophy and Cognitive Science* 12, 4 (2002), 503–517. Italian version: Incompletezza, complessità, casualità e oltre, in G. Lolli, and U. Pagallo (eds.). *La Complessità Di Gödel*, Giappichelli Editore, 2008, 7–29.

70. C. S. Calude, M. J. Dinneen and C.-K. Shu. Computing a glimpse of randomness, *Experimental Mathematics* 11, 2 (2002), 369–378.

71. C. S. Calude, M. Dumitrescu. Entropic measures, Markov information sources and complexity, *Appl. Math. Comput.* 132, 2–3 (2002), 369–384.

72. C. S. Calude, B. Pavlov. Coins, quantum measurements, and Turing's barrier, *Quantum Information Processing* 1, 1–2 (2002), 107–127.

73. C. S. Calude, E. Calude. The bridge crossing problem, *Bull. Eur. Assoc. Theor. Comput. Sci.* 77 (2002), 180–190.

74. C. S. Calude. Chaitin Ω numbers, Solovay machines and incompleteness, *Theoret. Comput. Sci.* 284 (2002), 269–277.

75. C. S. Calude, K. Salomaa, S. Yu. Additive distance and quasi-distances between words, *J. UCS* 8, 2 (2002), 141–152.

76. J. J. Arulanandham, C. S. Calude, M. J. Dinneen. Bead–sort: a natural sorting algorithm, *Bull. Eur. Assoc. Theor. Comput. Sci.* 76 (2002), 153–162.

77. C. S. Calude. A characterization of c.e. random reals, *Theoret. Comput. Sci.* 271 (2002), 3–14.

78. C. S. Calude, H. Ishihara, T. Yamaguchi. Minimal programs are almost optimal, *International Journal of Foundations of Computer Science* 12, 4 (2001), 479–489.

79. C. S. Calude. Real numbers: from computable to random, *Studia Universitatis Babeş–Bolyai, Philosophia*, XLVI, 1–2 (2001), 3–24.

80. C. S. Calude, P. Hertling, B. Khoussainov, Y. Wang. Recursively enumerable reals and Chaitin Ω numbers, *Theoret. Comput. Sci.* 255 (2001), 125–149.

81. C. S. Calude, G. Păun, M. Tătărâm. A glimpse into natural computing, *J. Multi Valued Logic* 7 (2001), 1–28.

82. C. S. Calude, E. Calude, T. Chiu, M. Dumitrescu, R. Nicolescu. Testing computational complementarity for Mermin automata, *J. Multi-Valued Logic* 6 (2001), 47–65.

83. C. S. Calude, P. Hertling, H. Jürgensen, K. Weihrauch. Randomness on full shift spaces, *Chaos, Solitons & Fractals* 12/3 (2001), 491–503.

84. C. S. Calude, M. J. Dinneen, K. Svozil. Reflections on quantum computing, *Complexity* 6, 1 (2000), 35–37.

85. C. S. Calude, G. Păun. Computing with cells and atoms in a nutshell, *Complexity* 6, 1 (2000), 38–48.

86. C. S. Calude, E. Calude, B. Khoussainov. Finite nondeterministic automata: simulation and minimality, *Theoret. Comput. Sci.* 242, 1–2 (2000), 219–235.

87. C. S. Calude, M. Lipponen. Computational complementarity and shift spaces, *Chaos, Solitons & Fractals* 11 (2000), 315–319.

88. C. S. Calude, G. J. Chaitin. Randomness everywhere, *Nature* 400, 22 July (1999), 319–320.

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90. C. S. Calude, P. H. Hertling, K. Svozil. Embedding quantum universes into classical ones, *Foundations of Physics* 29, 3 (1999), 349–379.

91. D. Bridges, C. Calude, B. Pavlov, D. Ştefănescu. The inverse function theorem: a constructive approach, *Chaos, Solitons & Fractals* 10, 6 (1999), 927–934.

92. C. Calude, S. Marcus, D. Ştefănescu. The Creator versus its creation. From Scotus to Gödel, *Collegium Logicum. Annals of the Kurt Gödel Society*, Vol. 3, Institute of Computer Science, AS CR Prague, Vienna, 1999, 1–10. Reprinted in S. Marcus. *Words and Languages Everywhere*, Polimetrica, Milano, 2007, 117–126.

93. C. S. Calude, T. Zamfirescu. Most numbers obey no probability laws, *Publicationes Mathematicae Debrecen,* Tome 54 Supplement (1999), 619–623.

94. C. S. Calude, J. L. Casti. Silicon, molecules, or photons? *Complexity* 4, 1, (1998), 13.

95. C. S. Calude, E. Calude, C. Ştefănescu. Computational complementarity for Mealy automata, *Bull. Eur. Assoc. Theor. Comput. Sci.* 66 (1998), 139–149.

96. C. S. Calude, P. Hertling. Computable approximations of reals: an information–theoretic analysis, *Fundamenta Informaticae* 33 (1998), 1–16.

97. C. S. Calude, J. L. Casti. Parallel thinking, *Nature* 392, 9 April (1998), 549–551.

98. C. S. Calude, J. L. Casti, P. B. Gibbons, M. Lipponen. Unconventional models of computation: a conventional report, *Complexity* 3, 4 (1998), 8–11.

99. C. S. Calude, P. H. Hertling, K. Svozil. Kochen–Specker theorem: two geometric proofs, *Tatra Mt. Math. Publ.* 15 (1998), 133–142.

100. C. Calude, T. Zamfirescu. The typical number is a lexicon, *New Zealand Journal Math.* 27 (1998), 7–13.

101. C. S. Calude. A genius's story: two books on Gödel. The life and works of a master logician, *Complexity* 3, 2 (1997), 1–5.

102. C. S. Calude, A. Nies. Chaitin Ω numbers and strong reducibilities, *J. UCS* 3 (1997), 1161–1166.

103. C. S. Calude, I. Tomescu. Optimum extendible prefix codes, *J. UCS* 3 (1997), 1167–1179.

104. C. Calude, E. Calude, B. Khoussainov. Deterministic automata: simulation, universality and minimality, *Annals of Applied and Pure Logic* 90, 1–3 (1997), 263–276.

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110. C. Calude. Algorithmic information theory: open problems, *J. UCS* 2 (1996), 439–441.

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4.9 Miscellanea Papers and Reviews

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47. C. S. Calude. My roots: from Moisil to Marcus, in A. Iorgulescu, S. Marcus, S. Rudeanu, D. Vaida (eds.). *Grigore C. Moisil and His Followers in the Field of Theoretical Computer Science*, Ed. Academiei, Bucharest, 2007, 362–365.

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120. C. Calude. Review of D. Bridges, F. Richman. *Varieties of Constructive Mathematics*, Cambridge University Press, 1987 in: *EATCS Bull.* 34 (1988), 305–307.

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123. C. Calude. Mathematics and computers, *Gazeta Matematică (PMMMI)* 1 (1986), 14. (in Romanian)

124. C. Calude, I. Chiţescu, Gh. Păun, D. Vaida. Professor Solomon Marcus at the 60th birthday anniversary, *Gazeta Matematică (PMMMI)* 3–4 (1985), 179–181. (in Romanian)

125. C. Calude. A student of Professor Moisil, *Gazeta Matematică Seria A*, LXIX (1974), 179–180. (in Romanian)

4.10 Research Grants

1. United Nations University (Tokyo) Research Grant, US$60,000, for the project *Mathematical Paths in the Study of Human Needs*, 1978–1982. Team's leader: Prof. S. Marcus.

2. Romanian Ministry of Education Research Grant, US$18,000, for the project *Contributions to Descriptive Complexity*, 1988–1992.

3. Soros Foundation for An Open Society Fellowship, US$2,800, to attend the *Colloquium on Semigroups, Formal Languages and Combinatorics on Words*, Kyoto Sangyo University, Japan, 1992.

4. UARC Grant A18/30/62090/3414012, NZ$8,000, for the project *Random Numbers and Applications*, 1993.

5. UARC Grant, A18/30/62090/F3414018, NZ$1,500, for the project *Random Numbers and Applications*, 1993.

6. UARC Grant, A18/30/62090/F3414022, NZ$4,152, for the project *Random Numbers and Applications*, 1994.

7. AU Foundation Grant for supporting the visit of Professor H. Jürgensen, 1994.

8. UARC Grant, A18/30/62090/F3414030, 1994, NZ$7,000, for the project *Random Numbers and Applications*.

9. UARC Grant, A18/30/62090/F3414044, 1995, NZ$5,000, for the project *Randomness on Shift Spaces*.

10. UARC Grant, A18/30/62090/F3414050, NZ$3,200, for the project *Randomness on Shift Spaces*, 1996.

11. UARC Post-Doctoral Fellowship, 1996, NZ$92,250, for the project *Complexity and Randomness in Non-Linear Spaces*, 1997–1999.

12. UARC Grant, A18/30/62090/F3414056, NZ$3,200, for the project *Physical versus Computational Complementarity*, 1996.

13. UARC Grant, A18/30/62090/F3414063, NZ$4,000, for the project *Physical versus Computational Complementarity*, 1997.

14. UARC Grant, A18/30/62090/F3414069, NZ$2,000 (with A. Arslanov), for the project *Topics in Algorithmic Information Theory*.

15. UARC Grant, A18/30/62090/F3414075, NZ$4,000, for the project *Physical versus Computational Complementarity*, 1997.

16. Pukekohe Travel Research Grant for the Centre for Discrete Mathematics and Theoretical Computer Science, NZ$25,000, 1997–2000.

17. UARC Grant, A18/30/62090/F3414082, NZ$4,500, for the project *Physical versus Computational Complementarity*, 1998.

18. UARC Infrastructure Grant, A18/30/9343/3391207, 1998, NZ$75,000 (with C. Collberg, M. Dinneen, P. Fenwick, P. Gibbons, H. Guesgen, J. Hamer, J. Hosking, B. Khoussainov, J. Lennon, R. Murgridge, P. Riddle, C. Thomborson, X. Ye).

19. Monbusho (Japan Ministry of Education, Science, Sports and Culture), Research and Travel Grant, 1999, Yen 727,000.

20. UARC Grant, 9343/3414111, NZ$2,600, for the project *Complexity of Random Reals and Applications*, 2000.

21. AU Foundation Grant (with J. Hosking, F. Kroon) for supporting the visit of Professor J. Casti, 2000.

22. AU Graduate Research Fund 3602307/9343 (with J. Arulanandham), NZ$1,600, for the project *Natural Algorithms*, 2002.

23. The Vice-Chancellor's University Development Fund 23124 (with H. Carmichael and B. Pavlov), NZ$16,000, for the project *Trespassing the Turing Barrier via Quantum Computing*, 2002.

24. JSPS Grant-in-Aid for Scientific Research (C) No.15500005, (with D. Bridges, B. Khoussainov, H. Ishihara and P. Schuster), Yen 360,000, for the project *Computability and Complexity in Constructive Mathematics*, 2003–2006.

25. AGAUR Grant 2002PIV 00052, Spain, for the project *Trespassing the Turing Barrier*, €7,500, 2003.

26. Comisión Nacional de Investigación Científica y Tecnológica Grant, Chile, US$ 3,000, 2005.

27. University of South Africa Grant, South Africa, US$ 4,000, 2005.

28. Comisión Nacional de Investigación Científica y Tecnológica Grant, Chile, US$ 4,000, 2006.

29. UARC Grant, 3607894/9343, NZ$7,000, for the project *Approximate Methods for the Halting Problem and Applications*, 2006–2007.

30. CS-PBRF Grant (with N. Hay), *Provable Random C.E. Reals: Theory and Implementation in an Automated Reasoning System*, 2007, NZ$4,225.

31. Hood Fellowship, 2008–2009, NZ$20,600.

32. Leverhulme Trust Grant of the Academia Europaea, 2008, €500.

33. FRDF Grant (with J. Hosking), NZ$ 20,000, for the project *Accessible software framework for multidimensional criteria decision making*, 2009–2010.

34. FRDF Grant (with A. Nies), NZ$ 18,000, for the project *Finite state complexity*, 2009–2010.

35. Faculty of Science Masters Scholarship (for Alastair Abbott for the project *Quantum vs algorithmic randomness*), NZ$15,000, 2010.

36. Faculty of Science Masters Scholarship (for Tania Roblot for the project *Topics in finite state complexity*), NZ$15,000, 2010.

37. London Mathematical Society Travel Grant for a research visit to Oxford University, Leeds University and Edinburgh University, October-November 2010, £1200.

38. PI, IRSES Grant RANPHYS (with G. Longo, ENS, Paris, T. Paul, École Polytechnique, Paris, K. Svozil, Vienna University of Technology, A. Abbott, C. S. Calude and M. J. Dinneen) Unit P2 (Marie Curie FP7-PEOPLE-2010-IRSES), 2011–2015, €88,200.

4.11 Lectures at Conferences (Some Invited)

1. Solomon Marcus: In Memoriam, Symposium "S. Marcus, Our Contemporary", Iaşi, Romania, March 2018. (invited)

2. A Quantum Random Generator Certified by Kochen-Specker Theorem, 4th Romanian Cryptology Days Conference, Bucharest, Romania, September 2017. (invited)

3. A Quantum Algorithm for the Graph Isomorphism Problem, The 13th International Conference on Discrete Mathematics: Discrete Geometry and Convex Bodies, Bucharest, September 2017.

4. Incomputability: Theory vs. Practice, Artificial General Intelligence, Melbourne, August 2017. (keynote speaker)

5. C. S. Calude. The Global Race for Quantum Computer Supremacy, *3rd Romanian Diaspora Symposium*, Europe House, Auckland, New Zealand, July 2017. (invited)

6. C. S. Calude. The Role of Arts for Future Technology, *2nd Festival of Romanian Creativity*, Europe House, Auckland, New Zealand, July 2017. (invited)

7. C. S. Calude. Incompleteness, Undecidability and Automated Proofs, Computer Algebra in Scientific Computing (CASC 2016), Bucharest, Romania, September 2016. (invited)

8. C. S. Calude, L. Staiger. Liouville, computable, Borel normal and Martin-Löf random numbers, Solomon Marcus Heritage Memorial Symposium, University of Bucharest, Bucharest, Romania, July 2016.

9. C. S. Calude, L. Staiger. Liouville, computable, Borel normal and Martin-Löf random numbers, Mathematics for Computation, Benediktinerabtei St. Mauritius, Niederalteich, Germany, May 2016.

10. C. S. Calude. Quantum indeterminism, unpredictability and randomness revisited, Asia-Pacific Conference and Workshop on Quantum Information Science 2015, Auckland, New Zealand, December 2015. (invited)

11. C. S. Calude. On the unpredictability of individual quantum measurement outcomes, A Symposium on Logic in Computer Science Celebrating Yuri Gurevich's 75th Birthday, Berlin, September 2015. (invited)

12. A. A. Abbott, C. S. Calude, K. Svozil. Locating value indefiniteness with a variant of the Kochen-Specker theorem, Randomness in Quantum Physics and Beyond, Barcelona, Spain, May 2015.

13. C. S. Calude. Proving quantum indeterminism: Measurements of value indefinite observables are unpredictable, Workshop on Mathematics and Computation, CARMA, University of Newcastle, Australia, June 2015 (key-note speaker)

14. A. A. Abbott, C. S. Calude, K. Svozil. Quantum information with meaning inside and outside the quantum, ISIS Summit Vienna 2015—The Information Society at the Crossroads, Vienna, June 2015.

15. C. S. Calude. What is your Everest?, Conference at Colegiul Naţional "Vasile Alecsandri", Galaţi, Romania, March 2015. (invited)

16. C. S. Calude, L. Staiger. Finite automata and randomness, *Jewels of Automata: from Mathematics to Applications AutoMathA*, Leipzig University, 2015. (invited)

17. C. S. Calude. The Ackermann-Sudan function, *Marcus 90*, University of Bucharest, Romania, March 2015. (invited) (in Romanian)

18. C. S. Calude. The relevance of pseudo-boolean optimisation for adiabatic computing, *Rudeanu 80*, University of Bucharest, Romania, February 2015. (invited) (in Romanian)

19. C. S. Calude. The quest for quantum randomness, DNA20, DNA Computing and Molecular Programming, Kyoto University, Japan, September 2014. (invited)

20. C. S. Calude. Probabilistic solutions for undecidable problems, Theoretical Aspects of Computing — ICTAC 2014, University of Bucharest, Romania, September 2014. (invited)

21. C. S. Calude. The founding professors of the University of Bucharest School of Theoretical Computer Science, Theory Day in Computer Science, University of Bucharest, Romania, September 2014. (invited)

22. C. S. Calude, Alasdair Coull, J. P. Lewis. Can We Solve the Pipeline Problem? Digital Production Symposium DigiPro2014, Vancouver, Canada, August 2014.

23. C. S. Calude. Finite state incompressible infinite sequences, *Computability, Complexity and Randomness*, Institute of Mathematical Science, National University of Singapore, Singapore, June 2014. (invited)

24. C. S. Calude. Understanding quantum randomness, *Arto Salomaa 80*, Turku University, Finland, June 2014. (invited)

25. C. S. Calude. Anytime algorithms with algorithmic incompressibility resource cut-off, *Anniversary Conference: Faculty of Sciences—150 Years*, University of Bucharest, Romania, August 2013. (invited)

26. C. S. Calude, E. Calude, M. S. Queen. Inductive complexity of P versus NP problem, *Unconventional Computation and Natural Computation*, Orléans, France, September 2012. (invited)

27. C. S. Calude. The Halting Problem Revisited, *The Incomputable*, Chicheley Hall, UK, June 2012. (invited)

28. C. S. Calude. Alan Turing and the Unsolvable Problem. To Halt or Not to Halt—That Is the Question, The lead lecture on The Turing Legacy, *Gibbons Lecture Series*, University of Auckland, April 2012. (invited)

29. C. S. Calude. How Random is Quantum Randomness? *Asian Logic Conference*, Wellington, December 2011. (invited)

30. C. S. Calude, E. Calude. The Complexity of Mathematical Problems: An Overview of Results and Open Problems, *Dynamics of Complex Systems*, Valparaiso, Chile, November, 2011. (invited)

31. C. S. Calude. Probability, Randomness, Entropy. Convenience or Necessity? *Débat Sur la Phase Actuelle du Concept De Probabilité et D'aléatoire*, École Normale Supérieure, Paris, France, October 2011. (invited)

32. C. S. Calude. Quantum randomness: Where Is It Coming From and How Random Is It? *Central European Quantum Information Processing Workshop*, Znojmo, Czech Republic, June 2011.

33. C. S. Calude. Understanding the Quantum Computational Speed-up via De-quantisation, *Workshop Developments in Computational Models*, Edinburgh, UK, July 2010. (invited)

34. C. S. Calude. Finite-state Complexity and Randomness, *Computability in Europe 2010*, Ponta Delgada, July 2010.

35. C. S. Calude. Infinities in Quantum Field Theory and in Classical Computing: Renormalization Program, by Yuri I. Manin, *Computability in Europe 2010*, Ponta Delgada, July 2010. (invited)

36. C. S. Calude. Finite-state Complexity and Randomness, *Conference on Logic, Computability and Randomness*, Notre Dame, USA, May 2010. (invited)

37. C. S. Calude. Arithmetic Progressions with Primes, *S. Marcus 85th Anniversary Symposium*, University of Bucharest, Romania, March 2010. (invited)

38. C. S. Calude. Finite-state Complexity, *S. Rudeanu 75th Anniversary Symposium*, University of Bucharest, Romania, February 2010. (invited)

39. C. S. Calude, E. Calude, M. Dinneen. The Complexity of the Riemann Hypothesis, *Riemann Hypothesis Day*, Auckland, NZ, November 2009. (invited)

40. Can Peano Arithmetic Prove Randomness? *Workshop "Theoretical Computer Science. From Foundation to Application*, Niš, Serbia, November 2009. (invited)

41. A Note on Accelerated Turing Machines, *Workshop on Hypercomputation*, Ponta Delgada, Portugal, September 2009. (invited)

42. Every Computably Enumerable Random Real Is Provably Computably Enumerable Random, *International Conference on Theory and Applications in Mathematics and Informatics*, Alba Iulia, Romania, September 2009. (invited).

43. Can Peano Arithmetic Prove Randomness? *4th Conference on Logic, Computability and Randomness*, CIRM Marseille, France, June-July 2009. (invited)

44. Randomness, Logic, and Computation, *Symposium Information Processing: Modern Perspectives*, Turku University, Turku, Finland, May 2009. (invited)

45. Incomputability in Physics: Does It Really Matter? *Science and Philosophy of Unconventional Computing (SPUC09)*, Cambridge, UK, March 2009. (invited)

46. Simplicity via Provability for Universal Prefix-free Turing Machines, *International Workshop on The Complexity of Simple Programs*, Cork, Ireland December, 2008. (invited)

47. Can Randomness Be Certified by Proof? *NKS 2008: What is Computation? How Does Nature Compute?*, Bloomington, USA, October 2008. (Invited)

48. Can Peano Arithmetic Prove Randomness?, *Workshop on Automata, Formal Languages and Algebraic Systems*, Kyoto, September 2008. (invited).

49. Incompleteness and Complexity, *10th International Workshop DCFS'08*, UPEI, Charlottetown, Canada, July 2008. (invited)

50. Mathematics and Law, *Kiwi Foo*, Warkworth, New Zealand, February 2008.

51. The Mathematician Moisil and the Phenomenon Moisil, *Moisil Symposium*, Romanian Academy, Bucharest, January 2008. (invited)

52. Representation of Computably Enumerable ε–Random Reals, *Joint Meeting of the AMS–NZMS*, Wellington, NZ, December 2007. (invited speaker, Special Session "Computability Theory")

53. Most Programs Stop Quickly or Never Halt, *Randomness and Complexity*, IBM Research, Yorktown, USA, November 2007. (invited)

54. Presentation of the books *Thinking about Gödel and Turing* and *Randomness and Complexity: From Leibniz to Chaitin*, University of Vienna and Erwin Schrödinger International Institute for Mathematical Physics, Vienna, Austria, November 2007. (invited)

55. Most Programs Stop Quickly or Never Halt, *Significant Advances in Computer Science*, Graz Technical University, Austria, November, 2007. (invited speaker, "Track 1: Foundations and Theory")

56. On Universal Computably Enumerable Prefix Codes, *Combinatorics and Related Areas*, Institute of Mathematics, Romanian Academy, Bucharest, Romania, November 2007.

57. C. S. Calude, H. Jürgensen, L. Staiger. Topology on Strings, *Workshop "Domains VIII and Computability over Continuous Data Types"*, Novosibirsk, Russia, September, 2007.

58. Proving and Programming, *A New Kind of Science NKS 2007*, Burlington, Vermont, USA, July 2007. (invited)

59. The Universe Is Probably Random, *A New Kind of Science NKS 2007*, Burlington, Vermont, USA, July 2007.

60. The Halting Problem and Experimental Mathematics, *6-th Congress of Romanian Mathematicians*, Bucharest, Romania, June-July, 2007.

61. Most Programs Stop Quickly or Never Halt, *4th Annual Conference on Theory and Applications of Models of Computation (TAMC07)*, Shanghai, China, May 2007. (invited speaker, Special Session "Computability and Randomness")

62. Computing with Randomness, *Unconventional Computing 2006*, York, UK, September 2006. (invited 3-hour tutorial)

63. Incompleteness, Uncertainty and Complexity, *Turing's Day 2006*, Istanbul Bilgi University, Turkey, May 2006. (invited)

64. Algorithmic Information Theory, *Workshop on Information Theories*, Münchenwiler, Switzerland, May 2006. (invited)

65. Incompleteness, Uncertainty and Complexity, *La Complesità di Gödel. Nel Centenario della nascita (1906–2006)*, University of Torino, Italy, April 2006. (invited)

66. Partial Randomness and Zeta Functions, *Kolmogorov Complexity and Applications*, Dagstuhl-Seminar 06051, January 2006. (invited)

67. Natural Halting Probabilities, Partial Randomness, and Physics Zeta Functions: A Moisilian Theory of Algorithmic Randomness, *Symposium Dedicate to Gr. C. Moisil Centenary*, Institute of Mathematics, Romanian Academy, January 2006. (invited)

68. *Is Quantum Randomness Algorithmic Random? A Preliminary Attack*, 1st International Conference on Algebraic Informatics, Aristotle University of Thessaloniki, Greece, October, 2005.(invited)

69. *Computing at the Speed of Light*, Workshop on Natural Processes and Models of Computation, Bologna, Italy, 2005. (invited)

70. *Complexity, Provability and Incompleteness*, Special Session on Complexity of Computation and Algorithms, AMS Sectional Meeting Santa Barbara, USA, April, 2005. (invited)

71. *Topology, Randomness & Uncertainty*, One Day Symposium Celebrating Professor David Gauld, Auckland University, NZ, December 2004. (invited)

72. *Algorithmic Randomness, Quantum Physics, and Incompleteness*, International Conference on Machine, Computation and Universality (MCU'2004), Euler International Mathematical Institute, S. Petersburg, Russia, September 2004. (invited)

73. C. S. Calude, L. Staiger. *Generalisations of Disjunctive Sequences*, International Conference on Computability and Complexity in Analysis (CCA 2003), University of Cincinnati, USA, August 2003.

74. C. S. Calude, E. Calude, S. Marcus. *To Prove or Not to Prove, That Is the Question*, 5th Congress of Romanian Mathematicians, Piteşti, Romania, June 2003.

75. *What is Turing's Halting Problem?*, NZ Mathematical Colloquium, Auckland, NZ, December 2002. (invited)

76. *A Quantum Attack on Undecidable Problems: An Informal Discussion*, Unconventional Models of Computation 2002, Kobe, Japan, October 2002.

77. *A Quantum Attack on Undecidable Problems*, Quantum Structures 2002, Vienna, Austria, July 2002.

78. *Passages of Proof*, Workshop on Truths and Proofs, Auckland University, December 2001.

79. *Automata, from Uncertainty to Quantum*, Developments in Language Theory, Vienna, Austria, July 2001. (invited)

80. *QED vs QD*, DMTCS'01, Constanţa, Romania, July 2001.

81. *Molecular and Quantum Computing: Dreams or Nightmare ?,* 21 Anniversary Symposium, Auckland University, February 2001.

82. *Real Numbers: From Computable to Random*, The Second Pacific Rim Conference on Mathematics, Institute of Mathematics, Academia Sinica, Taipei, Taiwan, January 2001. (invited)

83. *Who Is Afraid of Randomness ?*, Millennial Symposium 'Defining the Science of Stochastics', Würzburg, Germany, October 2000. (invited)

84. *Liars, Demons and Chaos*, The 5th Anniversary Workshop on Discrete Mathematics and Theoretical Computer Science, Auckland University, May 2000.

85. *Recent Results on Chaitin Omega Numbers*, Workshop on Constructivity, Complexity and Fuzzyness (CCF'99), Galaţi, Romania, August 1999. (invited)

86. *Computable Enumerable Reals*, The Eighth International Colloquium on Numerical Analysis and Computer Science with Applications, Plovdiv, Bulgaria, August 1999. (one-hour invited lecture)

87. *A Characterization of C.E. Random Reals*, Workshop Descriptional Complexity of Automata, Grammars and Related Structures, (DCAGRS'99), Magdeburg, Germany, July 1999.

88. *Metric Lexical Analysis*, Workshop Implementing Automata'99 (WIA'99), Potsdam, Germany, July, 1999.

89. *Quantum Correlations Conundrum: An Automaton-Theoretic Approach*, Workshop Implementing Automata'99 (WIA'99), Potsdam, Germany, July 1999.

90. *Bisimulations and Behaviour of Nondeterministic Automata,* Developments in Language Theory (DLT'99), Aachen, Germany, July 1999.

91. *Sudan's function,* Workshop on G. Sudan Centenary, Romanian Academy, Bucharest, Romania, May 1999. (invited)

92. *Computable Approximations of Reals: An Information-theoretic Analysis,* Third International Conference on Information-Theoretic Approaches to Logic, Language, and Computation, Hsitou, Taiwan, June 1998.

93. *Recursively Enumerable Reals and Chaitin* Ω *Numbers*, STACS'98, The 15th Annual Symposium on Theoretical Aspects of Computer Science, Paris, France, January 1998.

94. *Chaitin* Ω *Numbers and Strong Reducibilities*, The First Japan–NZ Workshop Logic in Computer Science, CDMTCS, Auckland, NZ, August 1997.

95. *Computational Complementarity via Incomplete Automata and Shift Spaces,* International Conference Integrability and Chaos in Discrete Systems, International Solvay Institutes, Brussels, Belgium, July 1997. (invited lecture)

96. *Deterministic Automata: Simulation, Universality and Minimality,* Developments in Language Theory, DLT'97, Thessaloniki, Greece, July 1997.

97. *Do the Zeros of Riemann's Zeta Function Form a Random Sequence ?*, Schloss Dagstuhl Seminar on Constructivity and Complexity in Analysis, Dagstuhl, Saarbrücken, Germany, April, 1997. (invited lecture)

98. *Automata for Physics*, Workshop Computability and Related Matters in Mathematics and Physics, CDMTCS, Hamilton, NZ, February 1997.

99. *Recollections on Paul Erdös*, Paul Erdös Mini–Seminar, Auckland University, September, 1996.

100. *The Typical Number Is a Lexicon*, AFL'96 (8th Conference on Automata and Formal Languages), Salgotarjan, Hungary, July 1996.

101. *The Concept of Complexity*, Seminar Order, Complexity and Beauty, The Project "Third Culture Copenhagen", Danish Mindship Foundation, Copenhagen, Denmark, July, 1996. (invited lecture)

102. *The Web Attitude*, Graduate Student Workshop, Auckland University, March, 1996.

103. *A Virtual Letter to Gr. C. Moisil*, Symposium Dedicated to Gr. C. Moisil, Romanian Academy, Bucharest, Romania, March, 1996.

104. *Language-Theoretic Complexity of Disjunctive Sequences*, CATS'97 (Computing: the Australian Theory Seminar), Melbourne, Australia, January, 1996.

105. *Can Ignorance Help ?*, Ken Ashton Mini–Conference, Auckland University, July, 1995.

106. *Randomness-Preserving Transformations*, Summer School Chaitin Complexity and Applications, Black Sea University, Mangalia, Romania, July 1995.

107. *J. UCS: A New Publication in Cyberspace*, ROSE'94, The Second Romanian Conference on Open Systems, Bucharest, Romania, November, 1994.

108. *What Is a Random String ?*, Symposium The Foundational Debate. Complexity and Constructivity in Mathematics and Physics, Vienna, Austria, September, 1994. (plenary invited address)

109. *Gödel's Incompleteness Theorem: An Information-Theoretic Perspective*, 1994 George Hughes Memorial Conference, Australasian Association for Logic, Dunedin, NZ, August, 1994.

110. *Randomness as an Invariant for Number Representations*, Symposium Results and Trends in Theoretical Computer Science, Graz, Austria, June, 1994. (invited lecture)

111. *Experimental Mathematics*, Symposium Romania and Romanians in Contemporary Science, Sinaia, Romania, June, 1994. (invited lecture)

112. *The Basics of LaTeX*, A Half–Day Course Getting Started with LaTeX, Auckland University, May, 1994.

113. *On Recursive Bounds for the Exceptional Values in Speed-up*, 1994 N.Z. Mathematics Colloquium, Hamilton, NZ, April, 1994.

114. *Pocket Mathematics*, Symposium Salodays in Auckland, Auckland University, March, 1994.

115. *Information and Randomness: An Overview*, Schloss Dagstuhl Seminar on Structure on Complexity, Dagstuhl, Saarbrücken, Germany, February, 1994. (invited lecture)

116. *Coding Without Tears*, Symposium on Combinatorics, Algebra and Topology in Logic and Languages, Romanian Academy, Bucharest, Romania, January, 1994.

117. *Three Theories of Computational Complexity*, ROSYCS'93, Iaşi, Romania, November, 1993. (invited lecture)

118. *More About the Halting Probability*, Informatics Workshops 1993, University of Auckland, NZ, August, 1993.

119. *The Randomness Hypothesis*, Conference Developments in Language Theory, University of Turku, Finland, July, 1993. (invited lecture)

120. *Borel Normality and Algorithmic Randomness*, Conference Developments in Language Theory, University of Turku, Finland, July, 1993.

121. *How Should I Forget ?*, Symposium Dedicated to Gr. C. Moisil, Romanian Academy, Iaşi, Romania, May, 1993.

122. *Two Questions on Chaitin's Model of Randomness*, Conference Does God Play Dice ?, University of Auckland, NZ, February, 1993.

123. *Topological Methods in Complexity Theory*, Computer Science Colloquium, Waikato University, Hamilton, NZ, February, 1993.

124. *Elementary Algorithmic Information Theory: Borel Normality and Algorithmic Randomness*, Workshop on Semigroups, Formal Languages and Combinatorics on Words, Kyoto Sangyo University, Japan, August, 1992.

125. *On Three Theorems in Abstract Complexity Theory: A Topological Glimpse*, The Second International Colloquium on Words, Languages and Combinatorics, Kyoto Sangyo University, Japan, August, 1992.

126. *Elementary Algorithmic Information Theory*, Colloquium SALODAYS in Theoretical Computer Science, Bucharest University, Romania, June, 1992.

127. *Constructive Negligible Sets in Complexity Theory*, Fifth International Conference on Discrete Mathematics, Dortmund, Germany, September, 1991. (invited lecture)

128. *Recursive Baire Classification, Speedable Functions and Independent Statements*, Mathematical Logic Week, Oberwolfach, Germany, December, 1990. (invited lecture)

129. *The Development of Computer Science in Romania*, Future Trends in Information Technology, Salzburg, Austria, September, 1990. (invited lecture)

130. *Determining and Stationary Sets for Some Classes of Partial Recursive Functions*, Third Logical Biennial Summer School and Conference, Kleene'90, Varna, Bulgaria, June, 1990.

131. *Mathematics and Informatics: Some Lessons and Key Points of Reflection*, International Workshop On Informatics Curricula for the 1990s, Providence, RI, USA, April, 1990.

132. *On Kraft–Chaitin Inequality*, Logic Colloquium'89, European Summer Meeting of the Association for Symbolic Logic, West Berlin, Germany, July, 1989.

133. *Descriptive Complexity and Natural Languages*, PROCOMP'89, Central Institute for Informatics, Bucharest, Romania, October, 1989. (invited lecture)

134. *Complexity as a Source of Randomness*, Workshop How to Cope with Complexity, Romanian Academy, Bucharest, Romania, October, 1989.

135. *On B. Russell Definition of Mathematics*, National Colloquium Info–Iaşi'89, Romania, October, 1989. (invited lecture)

136. *Ehrenfeucht Test Set Theorem and Hilbert Basis Theorem: A Constructive Glimpse*, Symposium Mathematical Foundations of Computer Science, Porabka–Kozubnik, Poland, September, 1989.

137. *Languages, Effectivity and Constructive Mathematics*, Second National Colloquium on Languages, Logic and Mathematical Linguistics, Braşov, Romania, June, 1988.

138. *Ehrenfeucht's Property and Constructivity*, National Colloquium Info–Iaşi'87, Romania, October, l987. (invited lecture)

139. *Romanian Results in Recursion Function Theory: 1927–1987*, Computer Center Anniversary Symposium, Bucharest University, Romania, February, 1987. (invited lecture)

140. *Super-exponentials Non-Primitive Recursive, but Rudimentary*, Advanced International Summer School and Conference on Mathematical Logic and Its Applications, Gödel'86, Druzhba, Bulgaria, June, l986.

141. *P. Martin-Löf Tests: Representability and Embeddability*, National Colloquium Info–Iaşi'85, Romania, October, 1985. (invited lecture)

142. *On a class of Independent Problems Related to Rice's Theorem*, National Colloquium Info–Iaşi'83, Romania, October, 1983. (invited lecture)

143. *Dilemmas of Computational Complexity*, Symposium Mathematics, Today and Tomorrow, Romanian Academy, Bucharest, Romania, June, 1983. (invited lecture)

144. *Independent Instances for Some Undecidable Problems*, Logic Colloquium'82, European Summer Meeting of the Association for Symbolic Logic, Florence, Italy, August, 1982.

145. *On Per Martin-Löf Random Sequences*, Workshop On Recursion Aspects of Computer Science, Purdue University, USA, June, 1981.

146. *On Per Martin-Löf Random Sequences*, National Colloquium Info–Iaşi'81, Romania, October, 1981.

147. *Knuth Test on Compiler Efficiency*, The 4th International Conference on Control Systems and Computer Science, Polytechnical Institute, Bucharest, Romania, July, 1981.

148. *The Universal Grammar as a Hypothetical Brain*, International Symposium on Mathematics in System Theory, Braşov, Romania, November, 1978.

149. *The Category of Čech Topological Spaces*, Colloquium on Topology, Budapest, Hungary, August, 1978.

150. *Pompeiu's Distance Between Closed Sets*, Symposium on Geometry and Global Analysis, Romanian Academy, Bucharest, Romania, October, 1973.

4.12 Invited Seminar Presentations

1. How Realistic is "Google's Plan for Quantum Computer Supremacy"?, Department of Computer Science, University of Auckland, August 2017.

2. How Realistic is "Google's Plan for Quantum Computer Supremacy"?, School of Data and Computer Science, Sun Yat-sen University, Guangzhou, China, June 2017.

3. On Quantum Indeterminism, Unpredictability and Randomness, School of Data and Computer Science, Sun Yat-sen University, Guangzhou, China, July 2017.

4. Quantum Annealing Solutions for the Graph Isomorphism Problem and Related Problems, School of Data and Computer Science, Sun Yat-sen University, Guangzhou, China, July 2017.

5. *On Quantum Indeterminism, Unpredictability and Randomness*, Joint Physics-Maths Seminar, University of Western Australia, Perth, February 2017.

6. *How Realistic is "Google's Plan for Quantum Computer Supremacy"?*, Faculty of Mathematics and Informatics, Bucharest University, Romania, September 2016. (Colloquium Lecture)

7. *From Quantum Indeterminism to Quantum Randomness: A Formal Approach*, Institute of Quantum Optics and Quantum, Austrian Academy of Sciences and Vienna University, Vienna, Austria, October 2015.

8. *The Deluge of Spurious Correlations in Big Data*, Faculty of Informatics, Masaryk University, Brno, Czech Republic, October 2015. (Colloquium Lecture)

9. *The Deluge of Spurious Correlations in Big Data*, Graz Technical University, Austria, September 2015.

10. *The Deluge of Spurious Correlations in Big Data*, FMI, University of Bucharest, Romania, September 2015.

11. *Proving Quantum Indeterminism*, Simion Stoilow Institute of Mathematics of the Romanian Academy, Bucharest, Romania, September 2015. (Colloquium Lecture)

12. *Absolutely Unprovable Mathematical Statements: Do They Exist?*, Department of Philosophy, University of Auckland, April 2015.

13. *D-Wave and Quantum Computing Challenges*, Milford Asset Management, Auckland, NZ, August 2014.

14. *Anytime Algorithms for Non-Ending Computations*, School of Computer Science, National University of Singapore, Singapore, November 2013.

15. *Anytime Algorithms for Non-Ending Computations*, Laboratoire d'Algorithmique, Complexité et Logique, LIAFA (Laboratoire d'Informatique Algorithmique: Fondements et Applications), French National Center for Scientific Research (CNRS) and the University Paris Diderot – Paris 7, France, October 2013.

16. *Anytime Algorithms for Non-Ending Computations*, Laboratoire d'Informatique Gaspard Monge, Université Paris Marne-La-Valée, and Institut d'Électronique and d'Informatique Gaspard Monge, Paris, France, October 2013.

17. *Quantum Randomness*, Laboratoire d'Algorithmique, Complexité et Logique, Université Paris-Est Créteil – Val de Marne, Paris, France, October 2013.

18. *Anytime Algorithms for Non-Ending Computations*, Faculty of Informatics, Masaryk University, Brno, Czech Republic, September 2013. (Colloquium Lecture)

19. *Quantum Randomness*, Faculty of Informatics, Masaryk University, Brno, Czech Republic, September 2013.

20. *From Quantum Randomness to Hypercomputation*, University of Bologna, Italy, July 2013.

21. *The Kochen-Specker Theorem and Quantum Randomness*, Chuo University, Tokyo, January 2013.

22. *The Complexity of Mathematical Problems*, Chuo University, Tokyo, January 2013.

23. *Is the Conjecture $P \neq NP$ Algorithmically more Complex than the Riemann Hypothesis?* University of Bucharest, Romania, September 2012.

24. *The Halting Problem Revisited*, Loughborough University, UK, June 2012.

25. *The Concept of Algorithmic Randomness*, Seminaire Philosophie de l'informatique, de la logique et de leurs interfaces, École Normale Supérieure, Paris, France, June 2012.

26. *The Power and Limits of Quantum Computing*, Reason and Science Society, Auckland, August 2011.

27. *Is Quantum Randomness Pseudo-Randomness?* Imperial College, London, UK, July 2011.

28. *Is Quantum Randomness Pseudo-Randomness?* Research Centre for Computer-Assisted Research Mathematics and its Applications, The University of Newcastle, Newcastle, Australia, March 2011. (CARMA Colloquium Lecture)

29. *Is Quantum Randomness Pseudo-Randomness?* Research School of Information Sciences and Engineering, Australia National University, Canberra, Australia, March 2011.

30. *Is Quantum Randomness Pseudo-Randomness?* Martin-Luther-Universität, Halle, Germany, October 2010.

31. *Is Quantum Randomness Pseudo-Randomness?* Leipzig Universität, Leipzig, Germany, October 2010.

32. *Is Quantum Randomness Pseudo-Randomness?* Oxford University, November 2010.

33. *Is Quantum Randomness Pseudo-Randomness?* University of Leeds, November 2010.

34. *Representation of Left-Computable ε–Random Reals*, University of Leeds, UK, November 2010.

35. *Finite-State Randomness*, University of Western Ontario, London, Canada, August 2010.

36. *Understanding the Quantum Computational Speed-up via De-quantisation*, Queens University, Kingston, Canada, August 2010.

37. *Algorithmic Randomness: A Primer*, University of Bucharest, November 2009. (Colloquium Lecture)

38. *Algorithmic Randomness: A Primer*, École Normale Supérieure, Paris, France, October 2009. (Colloquium Lecture)

39. *Can Peano Arithmetic Prove Randomness?*, Department of Mathematics, Canterbury University, NZ, October 2009. (Colloquium Lecture)

40. *AIT and Quantum Physics*, Seven Lectures, École Normale Supérieure, Paris, France, July 2009.

41. *Can Peano Arithmetic Prove Randomness?*, National University of Singapore, Singapore, May 2009.

42. *Incompleteness: A Personal Perspective*, Google Technical Talk, Mountainview, USA, 4 November 2008.

43. *Incompleteness: A Personal Perspective*, Würzburg University, Germany, October 2008. (Colloquium Lecture)

44. *Can Peano Arithmetic Prove Randomness?*, École Normale Supérieure, Paris, France, September 2008.

45. *Halting or Non-Halting: That is the Question*, Centre for Computational and Systems Biology, The Microsoft Research–University of Trento, Trento, Italy, July 2008.

46. *Most Programs Stop Quickly or Never Halt*, Queen's University, Kingston, Canada, November 2007.

47. *Algorithmic versus Quantum Randomness*, Erwin Schrödinger International Institute for Mathematical Physics, Vienna, Austria, November 2007.

48. *Representation of Computably Enumerable ε–Random Reals*, CDMTCS Seminar, October, 2007.

49. *Most Programs Stop Quickly or Never Halt*, University of Western Ontario, London, Canada, August 2007. (Colloquium Lecture)

50. *Most Programs Stop Quickly or Never Halt*, Mathematics and Statistics Seminar, University of Canterbury, Christchurch, February 2007.

51. *A New Probabilistic Approach to the Halting Problem*, Heidelberg University, Germany, November 2006.

52. *Computation, Randomness and Beyond*, University of Bologna, Italy, November 2006.

53. *Natural Complexity, Partial Randomness and Zeta Functions*, Institut für Informatik, Universität Potsdam, Germany, October 2006.

54. *What Is the Halting Problem?*, Martin-Luther-Universität Halle-Wittenberg, Germany, October 2006. (Colloquium Lecture)

55. Inaugural lecture *Algorithmic Randomness and Quantum Randomness* to the stage-3 course *Statistical Mechanics II*, Technical University of Vienna, Austria, October 2006.

56. *What Is the Halting Problem?*, Masaryk University, Brno, Czech Republic, October 2006. (Colloquium Lecture)

57. *An Exercise in De-Quantisation*, Slovak Academy of Science, Bratislava, Slovakia, September 2006.

58. *Natural Complexity, Partial Randomness and Zeta Functions*, 'Le Séminaire Complexité' organised by Hervé Zwirn, IHPST (Sorbonne, Paris), France, September 2006.

59. *Complexity, Provability and Incompleteness*, University of the Witwatersrand, Johannesburg, South Africa, December 2005.

60. *Computing at the Speed of Light*, University of South Africa in Muckleneuk, Pretoria, South Africa, November 2005.

61. *Complexity, Provability and Incompleteness*, University of Capetown, Capetown, South Africa, November 2005.

62. *Complexity, Provability and Incompleteness*, University of South Africa in Muckleneuk, Pretoria, South Africa, November 2005.

63. *Computing at the Speed of Light*, Graz University of Technology, Austria, October, 2005. (Colloquium Lecture)

64. *Complexity, Provability, and Incompleteness*, Department of Mathematics, University of Rome "La Sapienza", Rome, Italy, June 2005.

65. *Complexity, Provability and Incompleteness*, Department of Philosophy, Auckland University, April 2004.

66. *Fighting Complexity*, Black Sea University, Casa Titulescu, Bucharest, Romania, September 2004.

67. *From Uncertainty to Incompleteness via Randomness*, "S. Petersburg Seminar on Quantum Computing", S. Petersburg, Russia, September 2004.

68. *From Uncertainty to Incompleteness via Randomness*, Joint Institute for Nuclear Research (JINR), Dubna, Moscow Region, Russia, September 2004.

69. *Computing a Glimpse of Randomness*, Monash University, Melbourne, Australia, June 2004.

70. *From Uncertainty to Incompleteness via Randomness*, Monash University, Melbourne, Australia, May 2004.

71. *From Uncertainty to Incompleteness via Randomness*, Victoria University, Melbourne, Australia, May 2004.

72. C. S. Calude, M. A. Stay. *From Uncertainty to Incompleteness via Randomness*, CDMTCS Seminar, Auckland University, April 2004.

73. *Passages of Proof*, Halle University, Germany, November 2003.

74. C. S. Calude, G. Păun. *Bio-Steps Beyond Turing Barrier*, Rovira i Virgili University, Tarragona, Spain, November 2003.

75. *Passages of Proof*, Rovira i Virgili University, Tarragona, Spain, October 2003.

76. *Dialogues on Quantum Computing*, Facultad de Informática, Universidad Politécnica de Madrid, Spain, October 2003.

77. *What Is Turing Halting Problem?*, Mathematical Institute, Belgrade, Serbia, October 2003. (Colloquium Lecture)

78. *Computing a Glimpse of Randomness*, Faculty of Science, University of Novi Sad, Serbia, October 2003.

79. *Passages of Proof*, Niš University, Niš, Serbia, October 2003.

80. *Computing a Glimpse of Randomness*, LITA, EA 3097, Université de Metz, France, September 2003.

81. *Paradoxes of Voting*, Computer Science Department of the Hong Kong University of Science & Technology, Hong Kong, September 2003.

82. *Computing a Glimpse of Randomness*, Centre for Mathematical Modelling, Universidad de Chile, Santiago, Chile, August 2003.

83. *An Introduction to Quantum Computing*, Centre for Mathematical Modelling, Universidad de Chile, Santiago, Chile, August 2003.

84. *What Is Turing's Halting Problem?*, Centre for Mathematical Modelling, Universidad de Chile, Santiago, Chile, August 2003.

85. *Passages of Proof*, CDMTCS Seminar, Auckland University, August 2003.

86. *What Is Turing's Halting Problem?*, Mathematischen Institut der Ludwig-Maximilians-Universität München, Germany, July 2003.

87. *Quantum Computing and Learning*, Romanian Academy, Bucharest, Romania, July 2003.

88. *What Is Turing's Halting Problem?*, Université de Bourgogne, Dijon, France, July, 2003.

89. *Passages of Proof*, Université de Bourgogne, Dijon, France, July, 2003.

90. *The Power and Limits of Classical Computing*, Quantum Optics Seminar, Auckland University, NZ, March 2003.

91. *Computing A Glimpse of Randomness,* Heidelberg University, Heidelberg, Germany, October 2002.

92. *Computing A Glimpse of Randomness,* Frankfurt University, Frankfurt, October 2002.

93. *A Quantum Attack on Undecidable Problems*, Kyoto Sangyo University, Kyoto, October 2002.

94. *Computing A Glimpse of Randomness,* University of Science and Technology, Hong Kong, July 2002.

95. *A Quantum Attack on Undecidable Problems*, "Ovidius" University of Constantţa, Romania, July 2002.

96. *A Quantum Attack on Undecidable Problems*, Bucharest University, Romania, July 2002.

97. *Computing A Glimpse of Randomness,* Massey University at Albany, Auckland, June 2002.

98. *Gödel and Turing Revisited*, University of Western Ontario, Canada, March 2002.

99. *Randomness and Incompleteness*, Massey University, Palmerston North, NZ, November 2001.

100. *Randomness and Incompleteness*, University of Western Ontario, London, Canada, October 2001.

101. *Randomness and Incompleteness*, Queen's University, Kingston, Canada, October 2001.

102. *Computably Enumerable Random Reals*, Canterbury University, Christchurch, NZ, July 2001.

103. *Randomness and Incompleteness*, Istituto Dalle Molle di Studi sull'Intelligenza Artificiale, Lugano, Switzerland, June 2001.

104. *Computing the Uncomputable*,"Ovidius" University of Constanţa, Romania, December 2000.

105. *Computing the Uncomputable*, Bucharest University, Romania, November 2000.

106. *Real Numbers: From Computable to Random*, Rutgers University, USA, November 2000.

107. *Computably Enumerable Reals*, National University of Singapore, Singapore, July 2000.

108. *Chaitin Ω Numbers, Solovay Machines and Incompleteness*, Kyoto Sangyo University, Kyoto, Japan, December 1999.

109. *What Is Algorithmic Information ?*, Meijo University, Nagoya, Japan, October, 1999.

110. *Completeness, Decidability, Incompleteness*, Massey University at Albany, NZ, September, 1999.

111. *Recent Results on Chaitin Omega Numbers*, "Ovidius" University of Constanţa, Romania, August 1999.

112. *The Incompleteness Phenomenon*, Halle University, Germany, July 1999.

113. *Recent Results on Chaitin Omega Numbers*, Halle University, Germany, July 1999.

114. *Recent Results on Chaitin Omega Numbers*, Open University, Hagen, Germany, July 1999.

115. *Quantum Correlations Conundrum: An Automaton-Theoretic Approach*, International Solvay Institutes, Brussels Free University, Brussels, Belgium, June 1999.

116. *Recent Results on Chaitin Omega Numbers*, Institut für Theoretische Physik, Technischen Universität Wien, Austria, June, 1999.

117. *Understanding Quantum Correlations via Automata,* National Sandia Laboratories, Albuquerque, USA, April 1999.

118. *C.E. Reals: Complexity and Randomness,* The Santa Fe Institute, Santa Fe, USA, April 1999.

119. *Recent Progress on the Complexity of C.E. Reals,* Department of Computer Science, University of New Mexico, Albuquerque, USA, April 1999.

120. *Recent Progress on the Complexity of C.E. Reals,* Department of Mathematics and Computer Science, University of Massachusetts at Boston, USA, April 1999.

121. *Recent Progress on the Complexity of C.E. Reals,* Department of Mathematics, Cornell University, USA, April 1999.

122. *Recent Progress on the Complexity of C.E. Reals,* Department of Computer Science, Rochester University, USA, April 1999.

123. *A Characterization of C.E. Random Reals,* Department of Mathematics, University of Chicago, USA, February 1999.

124. *Recent Progress on the Complexity of C.E. Reals,* Department of Mathematics, University of Chicago, USA, February 1999.

125. *Recursively Enumerable Reals: Computability, Complexity and Randomness,* Department of Computer Science, University of California at San Diego, USA, December 1998.

126. *Recursively Enumerable Reals: Computability, Complexity and Randomness,* Berkeley Logic Colloquium, University of California at Berkeley, USA, November 1998.

127. *The Halting Problem and the Mathematical Practice*, Logic Group Seminar, Bucharest University, Romania, November, 1998.

128. *Recursively Enumerable Reals: Computability, Complexity and Randomness,* Department of Computer Science, Birmingham University, UK, October 1998.

129. *Finite Automata: Complementarity, Simulation, Universality*, Department of Computer Science, Birmingham University, UK, October 1998.

130. *The Computing Cell*, Department of Computer Science, Birmingham University, UK, October 1998.

131. *Why Do We Believe in God ? Three Non-Theological Arguments*, Logic Group Seminar, Bucharest University, Romania, July, 1998.

132. *Symbolic Dynamics: Complexity, Entropy, Randomness,* International Solvay Institutes, Brussels Free University, Brussels, Belgium, June 1998.

133. *Complexity, Randomness, Independence and the Brain,* Institute of Mathematics, Academia Sinica, Taipei, Taiwan, June 1998.

134. *Recursively Enumerable Reals: Computability, Complexity, Randomness,* Department of Mathematics, Turku University and Turku Centre for Computer Science, Turku, Finland, March, 1998.

135. *Automata as Toy Models for Uncertainty*, "Séminaire Complexité", Université Paris Sud, Orsay, France, February, 1998.

136. *Recursively Enumerable Reals: Computability, Complexity, Randomness,* Bucharest University, Romania, February, 1998.

137. *The Cost of Forgetting: Quantum Computation,* Romanian Academy, February, 1998 (plenary address to the Academy).

138. *Reversible Computation*, University "Dunărea de Jos", Galaţi, Romania, February, 1998.

139. *New Trends in the Theory of Computation*, National College "V. Alecsandri", Galaţi, Romania, February, 1998.

140. *A Brief Excursion in Algorithmic Information Theory,* Babeş–Bolyai University, Cluj, Romania, April, 1997.

141. *Automata for Physics*, Department of Mathematics, University of Turin, Italy, April, 1997.

142. *Some Applications of Automata to Physics*, Informal & Colloquial Talks, Department of Mathematics, University of Auckland, April, 1997.

143. *A Brief Excursion in Algorithmic Information Theory*, University of Chicago, USA, January 1997.

144. *Minimal Universal Automata*, Institute for Theoretical Physics, Technical University of Vienna, Austria, January 1997.

145. *Is the Universe Lawful ?*, Danish Mindship Foundation, Copenhagen, Denmark, July, 1996.

146. *Cyberspace*, Bucharest University, Romania, July 1996.

147. *Is Computer Science a Science ?*, University of Auckland, NZ, March 1996.

148. *Molecular Computation*, Bucharest University, Romania, December 1995.

149. *Algorithmic Information Theory*, Leeds University, England, November 1995.

150. *Disjunctive Sequences*, University of Western Ontario, London, Canada, November 1995.

151. *Randomness-Preserving Transformations*, Hagen University, Germany, July 1995.

152. *Randomness-Preserving Transformations*, Siegen University, Germany, July 1995.

153. *Understanding our Universe: Randomness vs. Constructivity*, Gödel Society, Vienna, Austria, June 1995.

154. *What Is a Random String ?*, University Koblenz–Landau, Germany, January, 1995.

155. *Computability and Information*, University of Waikato, Hamilton, NZ, November, 1994.

156. *Paradigms of Information*, Technical University, Bucharest, Romania, October, 1994.

157. *Computability and Information*, Lincoln University, Christchurch, NZ, September, 1994.

158. *Are Binary Codings Universal ?*, University of Canterbury, Christchurch, NZ, August, 1994.

159. *Computability and Information*, University of Canterbury, Christchurch, NZ, August, 1994.

160. *Paper Computation vs. Real Computation*, Otago University, Dunedin, NZ, August, 1994.

161. *Randomness as an Invariant for Number Representations*, Victoria University of Wellington, NZ, August, 1994.

162. *Computability and Information*, Victoria University of Wellington, NZ, August, 1994.

163. *Computability and Information*, Massey University, Palmerston North, NZ, August, 1994.

164. *The Incompleteness Phenomenon: From Gödel to Chaitin*, Institute for Theoretical Physics, Technical University of Vienna, Austria, June, 1994.

165. *Unimedia: An Overview*, "Ovidius" University of Constanţa, Romania, May, 1944.

166. *Statistics and Communication*, Black Sea University, Mangalia, Romania, May, 1994.

167. *Information and Randomness: An Overview*, University of Bucharest, Romania, February, 1994.

168. *Baire Category Classification in Abstract Complexity Theory*, Seminario Matematico dell' Universitá e del Politecnico di Torino (Direttore: Professor Sergio Benenti), University of Turin, Italy, January, 1994.

169. *Information and Randomness–An Overview*, University of Turin, Italy, January, 1994.

170. *Borel Normality and Algorithmic Randomness*, Cornell University, Ithaca, USA, November, 1993.

171. *Invariants for Number Representations*, University of Toronto, Canada, October, 1993.

172. *Invariants for Number Representations*, University of Western Ontario, London, Canada, October, 1993.

173. *Fermat's Last Theorem*, Romanian Academy, Romania, July, 1993.

174. *Mathematics, from Axiomatics and Algorithmics to Experimental,* Bucharest University, Romania, July, 1993.

175. *Randomness as a Universal Invariant,* Auckland University, June, 1993.

176. *Randomness as a Universal Invariant,* University of Waikato, Hamilton, NZ, May, 1993.

177. *Three Theories of Computational Complexity*, University of Waikato, Hamilton, NZ, May, 1993.

178. *Topological Methods in Complexity Theory*, University of Waterloo, Canada, November, 1992.

179. *Random Sequences and Strings*, Hamburg University, Germany, June, 1991.

180. *Random Strings and Sequences*, Turku University, Finland, April, 1991.

181. *A Topological Analysis of Gödel Independent Statements*, Turku University, Finland, April, 1991.

182. *Random Strings and Sequences*, University of Western Ontario, London, Canada, April, 1990.

183. *Algorithmic Randomness*, Wesleyan University, Connecticut, USA, April, 1990.

184. *Complexity as a Source of Randomness*, Bucharest University, Romania, November, 1988.

185. *Gödel's Theorem: A Limit of Formalization ?*, Institute of Atomic Physics, Măgurele, Romania, October, 1984.

186. *Kolmogorov Complexity and Applications*, Babeş–Bolyai University, Cluj, Romania, June, 1980.

4.13 Post-Doctoral Fellows

1. Dr. Richard Coles, research in *Algorithmic Information Theory*, March 1998 – May 1999.

2. Prof. Peter Hertling (hertling@informatik.uni-duisburg.de), research in *Algorithmic Information Theory*, November 1996 – August 1998. Peter has got a visiting position with the Institute of Mathematics, Berkeley University, USA (6 months), then he returned to Hagen Open University, Germany and currently a professor at Institut für Theoretische Informatik und Mathematik Fakultät für Informatik Universität der Bundeswehr München, Germany.

3. A/Prof. Yongge Wang (ywang@certicom.com), research in *Algorithmic Information Theory*, February 1997 – December 1997. After working at Certicom Research Certicom Corp., USA, Yongge is an associate-professor at the University of North Carolina at Charlotte, USA.

4. Dr. Marjo Lipponen (marlip@utu.fi), research in the *Theory of Automata and Applications to Quantum Mechanics and Quantum Computation*, March 1997 – March 1998. Marjo has got an assistant professorship position with the Department of Mathematics, Turku University, Finland.

4.14 Research Seminars

1. *Complexity Theory*, Bucharest University, Romania, 1980–1992.

2. (jointly with B. Doran), *DNA Computation*, University of Auckland, NZ, 1995–1996.

3. (jointly with B. Pavlov), *Dynamical Systems*, University of Auckland, NZ, 1997.

4.15 Consulting

Computer Science (Artificial Intelligence, Higher Education), CEPES, UNESCO, Romania, 1988–1992. Lockheed Martin, USA (quantum computing), 2013–on.

4.16 Interviews

1. Interview with Sylvia Sammer, *Risiko Big Data*, Austrian Broadcasting-Company ORF, Graz, 10 November 2015.

2. Interview with Denise Theodoru, Radio România Actualităţi:, 5 November 2013. (in Romanian)

3. Denise Theodoru. Romanians in the World, Radio Romania Actualităţi, 21 April 2012. (in Romanian)

4. Marian Baroni. "Not too many jobs pay for doing what you like: mathematicians are. An interview with C. S. Calude" *Revista de Matematica din Galaţi* 34 (2010), 1–6. (in Romanian)

5. Mikey Havoc. "Ready, Steady, Learn" about limits of computation with Professor Cristian Calude, 95BFM, Auckland, New Zealand, 9 December 2008.

6. Helen Broome. Talk about Omega,[10] Elam School of Fine Arts, University of Auckland, 14 November 2008.

7. About a meeting: Mirror interview[11] with Cristian Calude and Solomon Marcus, *Romania—View over the Top*, 12 October 2008, 88–96. (in English and Romanian)

8. Vlad Mixich. Interview with mathematician Cristian Calude, *Hotnews*, April 2008. (in Romanian)

9. Interviewed by the Radio Romania International (interviewer: Mihaela Dincă) in the series " Romanian Personalities". Broadcast: 17 September 2006. (in Romanian)

[10] Part of H. Broome's BA presentation.
[11] All questions have been answered independently by both interviewees.

10. Interview *Taxicab Numbers*, Radio BBC, Rome, Italy, (interviewer: Adrian Washbourne). Broadcast: 23 September 2005.

11. Half-an-hour live interview *Quantum Computing*, "Romania Tomorrow TV Channel", Bucharest, Romania (interviewer: C. Român), 9 June 2005. (in Romanian)

12. Interview *The Centre for Discrete Mathematics and Theoretical Computer Science?*, "Romanian Television", filmed in Auckland, August 2004 (interviewer: A. Mironov, in Romanian).

13. One-hour live interview *From Quantum Mechanics to Quantum Computing*, "Romania Tomorrow TV Channel", Bucharest, Romania, July 2004(interviewers: A. Mironov and C. Român, in Romanian).

14. E-books and electronic publishing, *Romania International Radio*, 28 October 2002 (interviewer: Andreea Demirgian) (in Romanian).

15. Reality vs virtual reality, *Romania International Radio*, 18 October 2001 (interviewer: Denise Theodoru) (in Romanian).

16. NZ today, *Romania Radio 1*, 11 July 2001 (interviewer: Mihael Ghiţă) (in Romanian).

17. Social conflicts, interview prepared for the Seminar *Possible Conflicts in the World*, *Romania International Radio*, 22 May 2001 (interviewer: Andreea Demirgian) (in Romanian).

18. Questions for the 21st Century: Online discussion with C. S. Calude, D. Chiţoran (Unesco, Paris), M. Maliţa (Romanian Academy, Bucharest) and V. Nemoianu (The Catholic University of America, Washington DC), *Romania International Radio*, 19 January 2001 (moderator: Denise Theodoru) (in Romanian).

19. Profesorul Cristian S. Calude has got a Ph.D. in mathematics at 25, *Viaţa Liberă, The Cultural Page*, 30 Novermber 2000, (interviewer: Nicoleta Crânganu). (in Romanian)

20. D. S. Bridges and C. S. Calude. Constructive mathematics, *Romania Radio 1*, 30 August 1999 (interviewer: C. Mihăilescu) (in Romanian).

21. An interview with Professors D. S. Bridges and C. S. Calude, *MegaTV and ExpressTV, Galaţi*, 26 August 1999 (interviewer: L. Şerbănescu) (in Romanian).

22. Reinventing the computer, *Radio NZ*, 27 July 1998 (interviewer: J. Reynolds).

23. D. King. Scientists ponder future development of computers, *NZ InfoTech Weekly*, January 1998.

24. A. Gifford. Boffins seek quantum leap forward, *NZ Herald* 14 January 1998.

25. R. Keenan. When a computing conference departs from the norm, *Computerworld NZ* 30 June (1997), 10.

26. An interview with Professor Cristian Calude (interviewer: Irina Athanasiu), *PC Report*, 51 (1996), 18–20. (in Romanian)

27. An interview with Professor Cristian Calude (interviewer: M. Jalobeanu), *PC Report*, 34 (1995), 16–17. (in Romanian)

4.17 Research Impact

His works have been cited by more than 5500 papers and 120 books by 550 authors including eminent physicists Luigi Accardi, John D. Barrow, Seth Lloyd, Anton Zeilinger, Umesh Vazirani), mathematicians (Jonathan Borwein, Michel Deza, Shmuel Gal, Yuri I. Manin, Yuri V. Matiyasevich, Harald Niederreiter, Saharon Shelah, Craig Smoryński, Vladimir A. Uspensky), linguist (Noam Chomsky), logician (Jaakko Hintikka) and computer scientists (Scott Aaronson,, Martin Davis, Yuri Gurevich, Donald E. Knuth, Anil Nerode, Arto Salomaa, Joseph F. Traub, Stephen Wolfram). Some of his results have been presented in science magazines like *New Scientist, Pour La Science, Innovate!*

(Quarterly magazine of *Suddeutsche Zeitung*), *Corriere della Sera* (science section), *Quanta Magazine* and in many books for larger audiences like J. Barrow. *Impossibility,* Oxford University Press, 1998, A. A. Bolibruch, Yu. S. Osipov, Ya. G. Sinai (eds.). *Mathematical Events of the Twentieth Century*, Springer, Berlin, 2006, B. Carpenter. *Network Geeks*, Copernicus Books, London, 2013, G. J. Chaitin. *The Limits of Mathematics*, Springer, Singapore, 1998, J.-P. Delahaye. *La Logique, un Aiguillon pour la Pensée*, Pour la Science, Paris, 2012, J. Gleick. *The Information: A History, A Theory, A Flood*, Pantheon Books, Toronto, 2011. More than 450 citations in Wikipedia.

4.18 Selected Parts from Reviews and other Opinions

1. "This enjoyable collection of conversations[12] with 26 outstanding computing scientists and mathematicians is to a certain extent a follow-up to a collection of authored papers [13], also edited by Calude. The most fascinating fragments of many papers in both books directly or indirectly respond to the famous statement by Richard Feynman from his Nobel lecture, quoted by Borwein on page 151: 'There isn't any place to publish, in a dignified manner, what you actually did in order to get to do the work' (E. W. Dijkstra independently stressed the need to be explicit in describing program design considerations and design processes [14]). ... Summing up, one cannot but agree with the statement by Calude that "mathematics is a 'superposition' of modeling, reasoning and computing"–in good agreement with Dijkstras famous definition of mathematics as the art and science of effective reasoning. I think that the aim of the book stated on its back cover—"not only to inform and entertain but also to motivate and stimulate"—has been achieved. H. I. Kilov. CR144758 (1612–0887), Computing Reviews, 2017.

2. "During a visit to New Zealand, Cris Calude in Auckland introduced me to algorithmic information theory, a subject on which he had just finished a book. We wrote a paper showing that a set truth-table above the halting problem is not Martin-Löf random... I also learned about Solovay reducibility ... " From A. Nies. Studying randomness through computation, in H. Zenil (ed.). *Randomness Through Computation*, World Scientific, Singapore, 2011, p. 207.

3. "1993 was also the year when I met Cris Calude first. He was the one who draw my attention from the mere interest in the amount of information to questions related with randomness... From that time we met more and more often which resulted in a fruitful cooperation." From L. Staiger. From error-correcting codes to algorithmic information theory, in H. Zenil (ed.). *Randomness Through Computation*, World Scientific, Singapore, 2011, p. 294.

4. "Though we did not know it at the time, this book's genesis began with the arrival of Cris Calude in New Zealand. Cris has always had an intense interest in algorithmic information theory. The event that led to much of the recent research presented here was the articulation by Cris of a seemingly innocuous question. This question goes back to Solovay's legendary manuscript [371], and Downey learned of it during a visit made to Victoria University in early 2000 by Richard Coles, who was then a postdoctoral fellow with Calude at Auckland University. In effect, the question was whether the Solovay degrees of left-computably enumerable reals are dense.

   At the time, neither of us knew much about Kolmogorov complexity, but we had a distinct interest in it after Lance Fortnow's illuminating lectures [148] at Kaikoura in January 2000. After thinking about Calude's question for a while, and eventually solving it together with André Nies [116], we began to realize that there was a huge and remarkably fascinating area of research, whose potential was largely untapped, lying at the intersection of computability theory and the theory of algorithmic randomness." From the Preface to R. Downey, D. Hirschfeldt. *Algorithmic Randomness and Complexity*, Springer, Heidelberg, 2010, p. xiv.

5. The paper "C. S. Calude. Chaitin Ω numbers, Solovay machines and incompleteness, *Theoret. Comput. Sci.* 284 (2002), 269–277" was in 'top 25 of most downloaded *Theoretical Computer Science* articles in April – August 2002'.

[12] C. Calude. *The Human Face of Computing*, Imperial College Press, London, UK, 2015.
[13] C. S. Calude. *People and Ideas in Theoretical Computer Science*, Springer, New York, NY, 1999
[14] E. W. Dijkstra. *A Discipline of Programming*, Prentice-Hall, Upper Saddle River, NJ, 1976.

6. The paper "C. S. Calude, M. A. Stay. From Heisenberg to Goedel via Chaitin" was in the CERN's list of most downloaded papers of year 2004.

7. On the second edition of the book *Information and Randomness,* 2002:

   D.S. Bridges (from the book back cover): "Professor Calude has produced a first-rate exposition of up-to-date work in information and randomness."

   G.J. Chaitin (from the book 'Foreword'): "This book, benefiting as it does from Cristian Calude's own research in *AIT* and from his experience teaching *AIT* in university courses around the world, has helped to make the detailed mathematical techniques of *AIT* accessible to a much wider audience. This vastly expanded second edition collects in one place much exciting recent work of its author and others, and offers leisurely discussions of applications to philosophy and physics. I am sure that it will be even more successful and influential than the first edition."

   A. Salomaa (from the book 'Foreword by the Editor'): "The vigorous growth in the study of algorithmic information theory has continued during the past few years, which is clearly visible in the present second edition. Many new results, examples, exercises and open problems have been added. The additions include two entirely new chapters: "Computably Enumerable Random Reals" and "Randomness and Incompleteness". The really comprehensive new bibliography makes the book very valuable for a researcher. The new results about the characterization of computably enumerable random reals, as well as the fascinating Omega Numbers, should contribute much to the value of the book as a textbook. The author has been directly involved in these results that have appeared in the prestigious journals *Nature*, *New Scientist* and *Pour la Science*."

   K. Svozil (from the book back cover): "This book is a must for a comprehensive introduction to algorithmic information theory and for anyone interested in its applications in the natural sciences."

   S. Rao (*Computing Reviews*, April 2003): "This book by Calude is the second edition of a very useful 1994 monograph on AIT. It includes new content, deriving from the work of Solovay, Chaitin, and the author himself, and also includes an updated bibliography."

8. Stephen Wolfram: "As I'm sure you know, I've made quite an effort to do explicit studies of properties of simple programs. I particularly applaud your efforts along similar lines." (Email 4 Dec 2002).

9. M. Chown (3 July 2002): "Omega may be uncomputable but one man has computed the uncomputable. His name is Cristian Calude, and has calculated the first 64 bits of Omega. Omega is like a sacred text. Its few thousand bits contain the answers to more mathematical questions than can be written down in the entire universe."

10. M. Chown (Smash and grab, (Feature Story) *New Scientist* 6 April (2002), p. 24): "A daring assault on the very bounds of mathematics could bring back treasures we thought were forever beyond our reach. Get ready to know the unknowable."

11. J.-P. Delahaye (Les nombres oméga, *Pour la Science*, 292 May (2002), 102): "...connaître les chiffres d'une machine universelle U à programmes autodélimités précise qui n'a pas été construite de manière adéquate pour avoir des chiffres connus à l'avance est rèellement une tâche difficile, car Ω_U contient alors sous forme concentrée l'information sur l'arrêt des programmes de U. Peut-on tenter de calculer quelques chiffres d'un tel Ω_U? Oui et c'est ce qu'ont fait récemment C. Calude, M.J. Dinneen et C.K. Shu."

12. J.-P. Delahaye (La barrière de Turing, *Pour la Science*, 312 October (2003), 95): "Presque simultanément Tien Kieu, d'une part, Cristian Calude et Boris Pavlov d'autre part, ont décrit des mécanismes quantiques franchissant—en théorie—la barrière de Turing, c'est à dire résolvant en temps fini des problèmes demandant classiquement des calculs infinis."

13. "Ages ago, ... we agreed that it would be ok if very rarely we would mention interesting books, that are not directly related to programming languages, but may interest LtU readers none the less. Well, I decided to mention this book *Computing with Cells and Atoms*". Review by Ehud Lamm in the *The Programming Languages Weblog*, 2002.

14. R. M. Baer (review of *Computing with Cells and Atoms*, MR 2002e:68020): "The book is a well-produced paperback, the font is sharp and sensible, and the figures are nicely drawn. ... On the whole, the book nicely serves its declared intent, and the "mathematically educated layman" who reads it and follows its leads will learn more than just a glimpse of many of its topics."

15. M. Ferbus-Zanda, S. Grigorieff (Is randomness "native" to computer science? *Bull. Eur. Assoc. Theor. Comput. Sci.* 74 (2001), p. 111): "Calude, Hertling, Khoussainov and Wang, 1998 (cf. also Kučera and Slaman, 2001) proved a very beautiful result: r is a Chaitin Ω real if and only if (the binary development of) r is Martin-Löf random and recursively enumerable from below..."

16. J. Casti (*Five More Golden Rules: Knots, Codes, Chaos, and Other Great Theories of 20th–Century Mathematics*, Wiley, New York, 2000, p. 262): "Calude, C. Information and Randomness. Berlin, Springer-Verlag, Heidelberg, 1994. Extremely clear monograph on algorithmic information theory. Contains discussion of some interesting philosophical questions surrounding the meaning of 'randomness,' as well as notion of randomness in physics and the information content of mathematical knowledge."

17. '... although mathematics and physics are different, it is more a matter of degree than black and white." This is from a piece entitled "Randomness Everywhere" in the July 22, 1999 Nature, by C. S. Calude and Greg Chaitin. They explain recent results in algorithmic information theory due to Calude and to Theodore Slaman of U. C. Berkeley, building on earlier work of Chaitin and Robert Solovay. "This work reinforces the message of algorithmic information theory that randomness is as fundamental and pervasive in pure mathematics as it is in theoretical physics." Get ready for experimental mathematics.' (from Math in the Media 10–1999). The paper was also summarized by Allyn Jackson.

18. Denis R. Hirschfeldt (MR 1 923 902) "In this paper, the author extends Solovay's result by proving the following theorem. Let α be a c.e. 1-random real with binary expansion $0.a_0a_1a_2\ldots$, and let n be such that $a_i = 1$ for $i < n$ and $a_n = 0$. Then there is a self-delimiting machine U such that PA proves that U is universal and $\Omega_U = \alpha$, but ZFC cannot prove any statement of the form "the ith bit of the binary expansion of Ω_U is k" for $i \geq n$. This is the best possible result in this direction, since ZFC can always prove that the ith bit of the binary expansion of Ω_U is 1 for all $i < n$."

19. V. Ya. Kreinovich (MR 2000f:03185) "The implicit function theorem and the related inverse function theorem are important tools in nonlinear mechanics; for example, these theorems are used to define a canonical transformation of a dynamical system to a form in which periodic orbits are explicit. However, traditional proofs of these theorems are not constructive: they are pure existence proofs, which do not describe algorithms for computing the implicit or the inverse function. In principle, it is possible to modify the existing proofs and provide the desired algorithms, but since the original proofs were not intended to be algorithmic, the resulting algorithms are overly complicated. To make the corresponding algorithms more practically useful, the authors provide a completely new constructive proof for the implicit function theorem."

20. O. Sparrow, AI Philosophy Forum, 1999/07/27: "The Nature News and Views paper of 22 July 1999, pp 319–320 is interesting. They show that randomness is as deeply embedded in mathematics as in physics, and perhaps finally kill the issues of computability and reductionism."

21. J. Collier (Information. *Stanford Encyclopedia of Philosophy*, 1999: "Calude (1994) is a basic text on information and randomness."

22. M. Davis. FOM, London Review of Books: letters about Sokal–Bricmont, 1999: "Cristian Calude [is] a reputable computer scientist whose work has to do with the Chaitin–Martin-Löf theory of randomness."

23. M. I. Dekhtyar (review of *Information and Randomness,* MR 96d:68103): "The author selected for the book the theory of random strings and sequences, which is the basic part of AIT, combining theoretical recursive and probabilistic reasoning. The theory is presented with respect to strings in an arbitrary (Q letters) alphabet which provides more general results than in the classical binary case. ... The extensive bibliography includes more than 250 items. All the basic chapters are followed by exercises and problems and by a history of results. The book is clearly written, self-contained and coherent and may be recommended as a textbook for graduate students in computer science."

24. J. P. Helm (review of *Theories of Computational Complexity*, MR 89g:03057): "This is a book for professionals in the field of computability theory. Its goal is to present, in mathematically rigorous fashion, four different machine-independent theories of computational complexity. Although the book is essentially self-contained, it assumes a high degree of mathematical sophistication on the part of the reader."

25. A. Leitsch (review of *Theories of Computational Complexity*, Zbl 0633.03034): "This book represents wide areas of abstract complexity theory, or rather 'theories' as the title suggests. The areas discussed in the book, each of them representing another concept of complexity, are the following ones: Subrecursive hierarchies, Blum's complexity theory, Kolmogorov's complexity theory and Martin-Löf's complexity theory. ... The material is presented at a high level and contains many results of recent research (partly from the author himself). The point of view of the presentation is rather a mathematical than a computational one (no machine models for computation)."

5 Teaching[15]

5.1 Undergraduate Courses

Introduction to Programming, Mathematical Linguistics, Assembler Programming, Discrete Mathematics, Introduction to Computing I, Algebra for Computer Science, Formal Languages and Automata, General Topology, Programming Techniques, Elementary Mathematical Logic, Theory of Programming Languages, Data Structures and Algorithms, *Computers in Juridical Sciences*, *Theory of Algorithms*, Introduction to Computing II, *Recursive Function Theory*, *Computational Complexity*, *Constructive and Computer Algebra*, *Constructive Analysis*, History of Mathematics, Complexity of Parallel Computation, Automata Theory, *Descriptive Complexity*, Model Theory (Bucharest University, Bucharest, Romania, 1975–92), Introduction to Computing I, *Topology and Logic* (Hyperion University, Bucharest, Romania, 1991–2), Mathematical Foundations of Computer Science, Design and Analysis of Algorithms, Algorithmics, Mathematical Logic, History of Computing and Computers, Data Communications Fundamentals, *Philosophy of Computation*, An Introduction to Practical Computing (University of Auckland, 1993–2016).

5.2 Graduate Courses

Topological and Categorical Methods in Computer Science, Advanced Functional Programming, *Logic for Computer Science*, *Advanced Computation Theory*, *Advanced Computational Complexity*, *Kolmogorov and Chaitin Complexity Theories*, *Models of Brain Behaviour*, Constructive Measure Theory, *Algorithmic Randomness*, *Incompleteness Theory* (Department of Computer Science, Bucharest University, Bucharest, Romania, 1975–92), *Algorithmic Information Theory (Complexity Theory)* (University of Western Ontario, London, Canada, Fall 1992), *Truths and Proofs*, *Algorithmic Information Theory*, *Unconventional Models of Computation*, Computational Complexity (University of Auckland, 1993–2001), *Chaitin Complexity* (Bucharest University, Romania, Fall 1994), *Information Theory* (Technical University of Vienna, Summer 1999), *Algorithmic Information Theory* (JAIST, Japan, Fall 1999), *Randomness Everywhere: Computably Enumerable Reals and Incompleteness* (Universidad de Buenos Aires, Argentina, Summer 2000), *Quantum Computing* ("Ovidius" University of Constanţa, Romania, Fall 2000–1), *Quantum Computing* (Rovira i Virgili University, Tarragona, Spain, Fall 2002), *Introduction to Research in Computer Science* (University

[15]Courses I have created are emphasised.

of Auckland, 2004), *Complexity, Proofs and Physics* (Third Valparaiso Summer School on "Complex Systems, Theoretical Informatics & Systems Biology", The Valparaiso Institute of Complex Systems, Valparaiso, Chile, 2005), *Natural Halting Probabilities, Partial Randomness, and Physics* (Fourth Valparaiso Summer School on "Theoretical Computer Science, Ecology & Cognitive Science", The Valparaiso Institute of Complex Systems, Valparaiso, Chile, January 2006), *Algorithmic Information Theory: A Personal Perspective* (Istanbul Bilgi University, Turkey, May 2006).

5.3 Textbooks and Lecture Notes

1. C. Calude. *Algorithmic Information Theory, Lecture Notes*, University of Western Ontario, London, 1992, 42 pp.

2. C. Calude. *Introduction to Computing. Lecture Notes for Mathematics Teachers*, Bucharest University, Bucharest, 1988, 42 pp. (in Romanian)

3. C. Calude. *Theory of Algorithms. Recursiveness, Complexity and Constructivity*, Bucharest University, Bucharest, 1987, 197 pp. (first edition), 1988, 208 pp (second edition). (in Romanian)

4. C. Calude, V. E. Căzănescu. *Introduction to Computing. Mathematical Logic Lecture Notes*, Bucharest University, Bucharest, 1984, 96 pp. (in Romanian)

5. C. Calude. *Introduction to Computing. Laboratory Themes*, Bucharest University, Bucharest, 1982, 66 pp. (in Romanian).

5.4 PhD Students

1. Richard Hua (rwan074@aucklanduni.ac.nz). *Adiabatic Quantum Computing*, started August 2017. (co-supervised with M.J. Dinneen)

2. Nan Huang (nhua630@aucklanduni.ac.nz). *Certified Quantum Random Generators*, started October 2016. (co-supervised with M.J. Dinneen and K. Svozil)

3. Alastair Abbott (al.a.abbott@gmail.com). *Value Indefiniteness, Randomness and Unpredictability in Quantum Foundations*, co-toutelle, University of Auckland and École Normale Supérieure, Paris, 2015 (co-supervised with Giuseppe Longo). Alastair has a post-doc at Institut Néel, CNRS and Université Grenoble Alpes, 38042 Grenoble Cedex 9, France.

4. Mike Stay (metaweta@gmail.com). *Physics and Computation*, University of Auckland, 2015 (co-supervised with John Baez). Mike did the PhD remotely from USA where he works full time at Google, Mountainview.

5. Hector Zenil C. (hectorz@wolfram.com). *Une Approche Expérimentale à la Thérorie Algorithmique de la Complexité*, Lille 1 University, France, 2011. (co-supervised with Jean-Paul Delahaye) Hector is a researcher at Karolinska Institute in Stockholm, Sweden.

6. Joshua J. Arulanandham (dhay049@ec.auckland.ac.nz). *Natural Algorithms: A New Theory of Computation*, University of Auckland, NZ, 2005. (co-supervised with M.J. Dinneen) He is a professor at the Sri Krishna College of Engineering and Technology, India.

7. Chi-Kou Shu (chikou.shu@gmail.com). *Computing Exact Approximations of a Chaitin Omega Number*, University of Auckland, 2004. (co-supervised with M.J. Dinneen) He is an assistant professor at China University of Technology,Taipei, Taiwan.

8. Cristian Grozea (chrisg@phobos.ro). *Contributions to Algorithmic Information Theory*, Bucharest University, Romania, 2003. Researcher at Fraunhofer FIRST, Berlin, Germany.[16]

[16]Cristian won the 1st International Competition on Plagiarism Detection http://www.uni-weimar.de/medien/webis/research/workshopseries/pan-09/competition.html.

9. Luminiţa Vîţă (L.Vita@math.canterbury.ac.nz). *Recursive-Theoretical Methods in Algebra*, Bucharest University, Romania, 2002. In 2000 Luminiţa has got a Ph.D. Degree with the Thesis *Constructive Theory of Operator Algebras*, at University of Canterbury, NZ under the supervision of Professor D.S. Bridges. Luminiţa is a research manager with AC Nielsen, Wellington, NZ.

10. Asat Arslanov (sascokid@gmail.com). *Contributions to Algorithmic Information Theory*, University of Auckland, 1998. The Thesis was awarded the *Montgomery Memorial Prize*. He is a senior analyst in risk management with ANZ National, Wellington, NZ.

11. Cezar Câmpeanu (cezar@sun11.math.upei.ca). *Topological Methods in Complexity Theory*, Bucharest University, Romania, 1995. He has currently an associate professorship with Prince Eduard Island University, Charlottetown, Canada.

12. Ileana Streinu (streinu@cs.smith.edu). *Grammatical Inference*, Bucharest University, Romania, 1994. (co-supervised with S. Marcus and Gh. Păun) Ileana has got a Ph.D. degree in Computer Science, Rutgers University, USA, 1994. She has currently a professorship position with Smith College, Massachusetts, USA.

13. Marius Zimand (mzimand@saber.towson.edu). *Positive Relativizations and Baire Classification*, Bucharest University, Romania, 1991. He has got a Ph.D. in Computer Science from the University of Rochester, USA, 1996. Marius holds an associate-professorship position with Towson University, Towson, USA.

14. Mihaela Maliţa (mmalita@smcm.edu). *Learning Processes in Artificial Intelligence*, Bucharest University, Romania, 1990. (co-supervised with S. Marcus) She has currently a senior lectureship position with Saint Anselm College, Manchester, New Hampshire, USA.

15. Şerban Buzeţeanu. *Degrees of Effectivity in Computation Theory: Recursive, Analytical and Combinatorial Aspects,* Bucharest University, Romania, 1988. (co-supervised with S. Marcus and I. Tomescu) He had (until his death in November 1994) a senior lectureship position with Bucharest University.

16. Nelu Dima (Nelu.DIMA@RRZ-WIEN.raiffeisen.at). *Contributions to Recursive Function Theory*, Bucharest University, Romania, 1986. (co-supervised with C. Popovici) He has a got a position with BEKO "Die Computer Leute", Vienna, Austria.

17. M. Tătărăm (tataram@funinf.cs.unibuc.ro). *Logical, Analytical and Generative Models in the Study of Languages*, Bucharest University, Romania, 1984. (co-supervised with S. Marcus and Gh. Păun). Associate-professor at Bucharest University.

5.5 Honours and Masters Students

1. Daniel Britten. *Absolutely Unprovable Statements in Coq*, Honours Thesis, University of Auckland, 2017–2018.

2. Alec Henderson. *Quantum Randomness Certified by Bell Theorem*, Honours Thesis, University of Auckland, 2017.

3. Conor Clancy. *The Data Processing Inequality*, Honours Thesis, University of Auckland, 2016.

4. M. Fowler. *Linguistic Models, Zipf's Law and Textual Stratification*, MSc, University of Auckland, 2013.

5. M. Fowler. *Simulation and Bounds of Finite-State Complexity*, Honours Thesis, University of Auckland, 2012.

6. A. Wilson. *Primality and Tests of Randomness*, Honours Thesis, University of Auckland, 2012.

7. J. Bax. *A Framework for Formal Proofs in Algorithmic Information Theory*, Honours Thesis, University of Auckland, 2011.

8. Ali Akhtarzada (ali.akhtarzada@gmail.com) *Wiki Ratings: Algorithms, Design and Architecture*, MSc, University of Auckland, 2010. (co-supervised with J. Hosking)

9. Sonny Datt (ndat001@aucklanduni.ac.nz) *Membrane Computing*, MSc, University of Auckland, 2010. (co-supervised with M. Dinneen)

10. Alastair Abbott (aabb009@aucklanduni.ac.nz) *Quantum Randomness*, MSc, University of Auckland, 2010.

11. Tania Roblot (trob048@aucklanduni.ac.nz). *Finite-state Descriptional Complexity*, MSc, University of Auckland, 2010. (co-supervised with M. Dinneen)

12. Alastair Abbott (aabb009@aucklanduni.ac.nz) *De-quantisation in Quantum Computing*, Honours Thesis, University of Auckland, 2009.

13. Liam Fearnley (lfea003@aucklanduni.ac.nz). *On Accelerated Turing Machines*, Honours Thesis, University of Auckland, 2009.

14. Tania Roblot (trob048@aucklanduni.ac.nz). *Finite-state Descriptional Complexity*, Honours Thesis, University of Auckland, 2009. (co-supervised with A. Nies)

15. Nicholas Hay (nickjhay@gmail.com). *Universal Semimeasures: An Introduction*, University of Auckland, 2007. (co-supervised with A. Nies)

16. Michael A. Stay (metaweta@gmail.com). *Truth and Light: Physical Algorithmic Randomness*, University of Auckland, 2005. Michael works for Google (Mountain View, Ca).

17. Terrence Wilson Johnson (tjoh018@ec.auckland.ac.nz). *Finding the Shortest Average Path Lengths in Kleinberg's Small World Model*, University of Auckland, 2005. (co-supervised with M. Dinneen)

18. Simona Dragomir (simona@easynet.ro). *An Interpreter for Register Machine Programs*, "Ovidius" University of Constanţa, Romania, 2002. (co-supervised with M. Dinneen). Simona works for Datasis Prosoft in Bucharest, Romania, www.datasis.ro/.

19. Qinghui Zeng (Alex.Zeng@justice.govt.nz). *Randomness as an Invariant for Number Representations*, University of Auckland, 2000. He has got a programming position with the Ministry of Justice, Wellington, NZ.

20. Peiming Liang (pmliang@hotmail.com). *Randomness and Cellular Automata*, University of Auckland, 2000. He has got a position with an IT company in Parramatta, Australia.

21. Margaret Ng (margaretckng@hotmail.com). *A Metric Lexical Analysis*, University of Auckland, NZ, 2000. Margaret has got a teaching position with the Deakin University, Melbourne, Asutralia.

22. Terry Chiu (terry@ns1.mit.edu.tw). *Testing Computational Complementarity For Finite Automata Using Distributed Object Technology,* University of Auckland, 1999. (co-supervised with E. Calude and R. Nicolescu) Terry has a position with Mingchi Institute of Technology, Taipei, Taiwan.

23. Yongyi Hu. *Information-Theoretic Incompleteness*, University of Auckland, 1998.

24. Gordon Alford (gordon@cs.utu.fi). *DNA Computation: From Turing Machines to H Systems*, University of Auckland, 1997. He is currently a Ph.D. student in Computer Science with TUCS, Turku University, Finland.

25. Shane Legg (mathemajician@gmail.com). *Solomonov Induction and Algorithmic Information Theory*, University of Auckland, 1996. He got a Ph.D. in artificial intelligence from IDSIA, Lugano, Switzerland (April 2004). After a post-doc at University College London, UK in 2011 he founded with Demis Hassabis and Mustafa Suleyman the artificial intelligence company DeepMind, from 2014 part of Google, Google DeepMind.

26. Ion Măndoiu (ion@engr.uconn.edu). *An Extension of Gács Reducibility Theorem*, Bucharest University, Romania, 1992. He has a Ph.D. in Computer Science, Georgia University, USA, 1999. Associate-Professor University of Connecticut, USA.

27. Ion Macarie (macarie@metamorsw.com). *Applications of Chaitin Complexity to Software Engineering*, Bucharest University, Romania, 1991. He has got a Ph.D. degree in Computer Science, University of Rochester, USA, 1994. He has a position with Millennium Computer Corp., Rochester, USA.

28. Nicolae Duţă (dutanico@bbn.com). *Representable P. Martin-Löf Tests*, Bucharest University, Romania, 1991. He has got a Master Degree in Applied Mathematics, Université Paris-Sud, France, 1994 and a Ph.D. in Computer Science, Iowa State University, USA, 2000. Currently he works for Microsoft, Boston, USA.

29. Ana-Maria Sălăgean. *Kraft–Chaitin Inequality and Applications in Computer Algebra*, Bucharest University, Romania, 1989. She has got a Ph.D. degree in Computer Science from RISC, Johanes Kepler University, Austria. Ana-Maria is currently with the Computer Science Department, Loughborough University, UK.

30. Eva Kurta. *An Extension of Kraft–Chaitin Theorem*, Bucharest University, Romania, 1989.

31. Cezar Câmpeanu. *Variants of Post Correspondence Problem*, Bucharest University, Romania, 1988.

32. Marius Zimand (mzimand@saber.towson.edu). *Complexity of Probabilistic Algorithms*, Bucharest University, Romania, 1983. (co-supervision with D. Vaida)

33. Valentin Vieru (ivr_cti@yahoo.com). *Recursion and Iteration. Efficient Translations*, Bucharest University, Romania, 1981. He is currently with Canada Computers, Toronto, Canada.

34. Brâduşa Fântâneanu. *Recursive and Non-Primitive Recursive Functions*, Bucharest University, Romania, 1978.

5.6 Other Graduate Supervision

1. Peter Huxford. *Computational Group Theory*, Research Project, University of Auckland, 2017. (co-supervision with E. O'Brien)

2. Yan Kolezhitskiy. *Calculating the Length of the Rationals Under Grossone Assumptions*, Research Project, University of Auckland, 2016.

3. Daniel Britten. *Exploring Program Verification in Coq*, Research Project, University of Auckland, 2016.

4. Marcus Triplett. *Approximate Solutions for the Halting Problem*, University of Auckland, 2014–15 (summer research fellowship). Marcus is doing a PhD at the University fo Queensland, Australia.

5. Timothy Resnick. *Sudoku at the Intersection of Classical and Quantum Computing*, University of Auckland, 2014, 2014.

6. Declan Thompson. *Decidable Approximations of the Halting Problem: An Isabelle Formalisation*, University of Auckland, 2014. Declan is doing a PhD in Philosophy, Stanford University, USA.

7. Nemanja Poznanović (nempoznanovic@gmail.com), *Free Will and Randomness*, University of Auckland, 2013–14 (summer research fellowship).

8. Damien Desfontaines (ENS Paris, desfonta@clipper.ens.fr). *Halting Time*, University of Auckland, 2013. (MSc internship)

9. Melissa S. Queen (Dartmouth College, NH USA, mqueen.blue@gmail.com). *The Complexity of Mathematical Statements*, Thesis, Dartmouth College, NH USA, 2013 (with A. Chakrabarti).

10. Jonathan Conder (j.conder@aucklanduni.ac.nz). *Quantum Randomness*, University of Auckland, 2011–12 (summer research fellowship).

11. Melissa S. Queen (Dartmouth College, NH USA, mqueen.blue@gmail.com). *Complexity of Mathematical Problems*, University of Auckland, 2011–12 (with E. Calude) (summer research fellowship). For this work Melissa was awarded a *Honorable Mention in the Computing Research Association's Outstanding Undergraduate Researcher Award (Female)*, 2013.

12. Ali Akhtarzada (ali.akhtarzada@gmail.com). *A Framework for a Decentralized Ranking System*, University of Auckland, 2008–9. (with J. Hosking)

13. Christine Müller (Jacobs University Bremen, christine.mueller05@gmail.com). *Active Mathematical Documents*, University of Auckland, 2008–9. (PhD internship)

14. Bruno Grenet (ENS Lyon, bruno.grenet@ens-lyon.fr). *Complexity and Incompleteness*, University of Auckland, 2008. (MSc internship)

15. Nicholas Hay (nickjhay@gmail.com). *Optimal Agents*, University of Auckland, 2005.

16. Mike Stay. *Uncertainty, Incompleteness and Randomness*, 2004, University of Auckland, NZ.

17. Dominik Schultes. (mail@dominik-schultes.de) *Rainbow Sort*, University of Auckland, 2004.

18. Pulkit Grover (IIT Kanpur, pulkit.grover@iitk.ac.in). *Transcending the Turing Barrier via Quantum Computing*, University of Auckland, 2003 (with H. Carmichael and B. Pavlov) (internship)

19. Igor Kurlatov. *Simulating the EPR Effect*, University of Auckland, 2003.

20. Jim Yaghi. *A User Friendly Version of Chaitin's UTM-lisp*, University of Auckland, 2001. (co-supervised with R. Nicolescu)

21. Terry Chiu. *An Infrastructure for Testing Computational Complementarity Using Java Aglets*, University of Auckland, 1998. (co-supervised with E. Calude and R. Nicolescu)

22. Gerard P. Atkinson. *Information-Theoretic Incompleteness*, University of Auckland, 1997–8.

23. Gordon Alford. *Modelling DNA Computation*, University of Auckland, 1996.

24. Gabriel Istrate (gabriel.istrate@gmail.com). *Topological Methods in Recursive Function Theory*, University of Bucharest, Romania, 1988–1992. He got a Ph.D. degree from the University of Rochester, USA. Started his career at Los Alamos National Laboratory, USA. Presently researcher at the E-Austria Research Institute, Timişoara, Romania.

25. Gabriel Ciobanu. *Programming Logic*, University of Bucharest, Romania, 1988–1991. He has got a Ph.D. degree from the University "Alex.I.Cuza", Iaşi, Romania, 1990 where he is a professor of computer science.

26. Lila Kari (Sântean) (lila@csd.uwo.ca). *Hierarchies of Primitive Recursive String-Functions*, University of Bucharest, Romania, 1985–1987. She has got a Ph.D. degree from Turku University, Finland, 1991 and is currently professor of computer science at the University of Western Ontario, London, Canada.

27. Daniel Naie (Daniel.Naie@univ-angers.fr). *Equations on Free Monoids*, University of Bucharest, Romania, 1985–86. He has got a Ph.D. degree from the University Paris XI, Orsay, France, 1994 and is currently professor of mathematics at the Université d'Angers, France.

28. Viorel Vâjâitu (vvajaitu@stoilow.imar.ro). *Exotic Numeration Systems*, University of Bucharest, Romania,1981–82. He has got a Ph.D. degree from the Institute of Mathematics, Romanian Academy where he has currently a senior research position.

29. Victor Vianu (vianu@cs.ucsd.edu). *Metrics on Free Monoids*, University of Bucharest, Romania, 1975–76. He received his Ph.D. from the University of California, San Diego, where he is currently professor of computer science.

5.7 Teaching Impact

Consistently scoring an average greater than 8.5 (on the scale 1–10) in student teaching evaluations. Various textbooks and expository papers are used as support for courses in many universities around the world, e.g., Stanford University (USA), University of Chicago (USA), UCLA (USA), National Defense University (USA), Universidad De Granada (Spain), University of Ulm (Germany), Martin-Luther-Universität Halle-Wittenberg (Germany), Asian Institute of Technology (Thailand), University of Western Ontario (Canada), Siena University (Italy), Technical University of Vienna (Austria), Bucharest University (Romania).

6 Service and Administration

6.1 Selected Committee Work[17]

1. *Member, University of Auckland International Committee, 2018–2021.*
2. *Member, IEEE Task Force Unconventional Computing Emergent Technologies TC, IEEE Computational Intelligence Society, 2017 on.*
3. Member, University of Auckland Honours Committee, 2015–2016.
4. Honours & Projects Coordinator, Department of Computer Science, 2014–2015.
5. Member of Faculty of Science Travelling Academic Group, 2013.
6. Logic and Computation Coordinator, Department of Computer Science, 2013.
7. Chair, Best Student Paper Committee, Department of Computer Science, 2012.
8. Member, Distinguished Visitor Awards, UARC, University of Auckland, 2012.
9. Member, University of Auckland Research Committee, 2012–2014.
10. Member, DSAC, Department of Computer Science, 2011.
11. Member of the UoA PBRF Mathematical and Information Sciences and Technology (MIST) panel, Faculty of Science, 2011–2012.
12. Member, National Informatics Committee, Bucharest, Romania, 2011–2012.
13. PhD Coordinator, Department of Computer Science, 2010–2011.
14. Member, Academia Europaea Informatics Section Informatics Education Committee, 2009–2011.
15. APR interviewer for Theory Group sub-professorial members, Department of Computer Science, 2008–2009.
16. DSAC referee for two SL6 (over the bar) applications, Department of Computer Science, 2007.
17. Member, FoS Research Committee, University of Auckland, NZ, November 2005 to July 2006.
18. Deputy Head of Department Research, Department of Computer Science, August 2005 to July 2006.
19. PhD Coordinator and Chair of the Graduate Committee, Department of Computer Science, January 2004 – June 2010.
20. Member, Academic Committee, Department of Computer Science, 2004–5, 2007.
21. External assessor for the quality of the EPs in the Departments of Mathematics and Statistics, University of Auckland, May–June 2003.

[17] Current positions are emphasised.

22. Member, Research Committee, Department of Computer Science, January 2003 – August 2009.

23. Member, Committee for a Chair in Applied Computer Science, University of Auckland, 2000–2001.

24. Member, Department Advisory Staffing Committee, Department of Computer Science, 1998–2001, 2004.

25. Chair, Graduate Student Support Committee, Department of Computer Science, from August 1994 to December 1996.

26. *Member, University of Auckland Senate, University of Auckland, NZ*, from April 1994 on.

27. Member, Hyper-Media Unit, from January 1994 to December 1995.

28. Member, Pure Mathematics Committee, School of Mathematical & Information Sciences, from May 1993 to December 1999.

29. Member, Standing Committee on Informatics, Board of Studies in Mathematical & Information Sciences, University of Auckland, from August 1993 December 1999.

30. Chair, Working Group on Theoretical Computer Science, University of Auckland, Auckland, from April 1993 to December 1995.

31. Dean, Faculty of Mathematics, Hyperion University, Bucharest, Romania, from October 1991 to October 1992.

32. Member, Appointment and Promotion Committee, Bucharest University, Romania, from September 1990 to September 1992.

33. Member, Committee on Mathematics Education, Bucharest University, Romania, from September 1990 to September 1992.

34. Member, Computer Science Ph.D. Committee, Bucharest University, Romania, 1990–2000.

35. Member, Library Committee, Faculty of Mathematics, Bucharest University, Romania, from September 1988 to November 1990.

36. Member, Graduation Executive Committee, Bucharest University, Romania, from September 1981 to September 1990.

37. Head of the Computer Science Department, School for Computer Science, Bucharest, Romania, from January 1978 to October 1978.

6.2 Editorial Activity

1. Member of the Advisory Board, Monographs in Theoretical Computer Science. An EATCS Series, Springer-Verlag, Heidelberg, (from 2004 on).

2. Member of the Advisory Board,Texts in Theoretical Computer Science. An EATCS Series, Springer-Verlag, Heidelberg, (from 2004 on).

3. Book series editor, *Discrete Mathematics and Theoretical Computer Science* Book Series, Springer-Verlag, London (from 1996 to 2004).

4. Member of the Editorial Advisory Board of the book series *Advances in Languages Studies*, Polimetrica, Milan, (from 2005 to 2006).

5. Founding editor–in–chief, *Journal of Universal Computer Science*, Springer-Verlag (from 1994 to 2009); member of the Editorial Board (from 2009 on).

6. Member of the Editorial Board of the following journals: *Analele Universităţii Bucureşti, Matematică–Informatică* (from 1988 to 2006), *Bulletin of the European Association of Theoretical Computer Science* (from 1993 on) *Grammars* (from 1997 to 2003), *Fundamenta Informaticae* (from 1997 on), *Romanian Journal of Information Science and Technology* (from 1998 to 2011), *Natural Computing Journal* (from 2005 to 2016), *Contributions to Discrete Mathematics* (from 2005 on), *International Journal of Foundations of Computer Science*, *Mathematics Applied in Science and Technology* (from 2006 on), *unoMolti, Modi della Filosofia*, *Revista de Filosofie Analitica* (from 2007 on), *The Open Software Engineering Journal* (from 2008 on), *Theoretical Computer Science, International Journal of Nanotechnology and Molecular Computation* (from 2009 on), *Mathematical Structures in Computer Science, International Journal of Unconventional Computing* (from 2010 on), *International Journal of Modern Nonlinear Theory and Application* (from 2012 on), *Chinese Journal of Mathematics* (from 2013), *Scientific Annals of Computer Science* (from 2014), *International Journal of Parallel, Emergent and Distributed Systems* (from 2015), Complex Systems (from 2018).

7. Associate–editor, G. Rozenberg, A. Salomaa (eds.). *Handbook of Formal Languages*, Vol. I–II, Springer-Verlag, Berlin, 1997.

8. Member of the Advisory Board, G. Rozenberg, T. Bäck, J. N. Kok. *Handbook of Natural Computing: Theory, Experiments, and Applications*, Springer, Berlin, 2012.

6.3 Webmaster

1. *Academia Europaea Informatics Section*, 2008–2010.

2. *Developments in Language Theory*, 2005–2011.

3. International Conference Series *"Unconventional Computation"*, 2002–2011.

4. International Conference Series *"Unconventional Computation and Natural Computation"*, 2011 on.

6.4 Conferences and Workshops

6.4.1 Steering Committee

1. Member, *International Steering Committee of the International Workshop on Natural Computing*, 2009 on.

2. Co-chair, *Physics and Computation*, 2008–2012.

3. Member, Developments in Language Theory, 2005 on.

4. Co-chair, *International Conference "Unconventional Computation"*, 1998–2010,

5. Founding chair, *International Conference "Unconventional Computation and Natural Computation"* from 2011 on.

6.4.2 Programme Committee

1. Unconventional Computation and Natural Computation, University of Paris Est Creteil Val de Marne, Fontainebleau, June 2018.

2. Unconventional Computation and Natural Computation, University of Arkansas Fayetteville, Arkansas, USA, June 2017.

3. Theory and Applications of Models of Computation, Bern, Switzerland, April 2017.

4. Numerical Computations: Theory and Algorithms, Pizzo Calabro, Calabria, Italy, June 2016.

5. Physics and Computation, Manchester, UK, July 2016.

6. Unconventional Computation and Natural Computation, Manchester, UK, July 2016.

7. Descriptional Complexity of Formal Systems, Bucharest, Romania July 2016.
8. *6th Workshop on Physics and Computation*, Auckland, New Zealand, August 2015.
9. 14th International Conference Unconventional Computation & Natural Computation, Auckland, New Zealand, August 2015. (co-chair)
10. *Interdisciplinary Symposium on Complex Systems*, Florence, Italy, September 2014.
11. *Theoretical Computer Science*, IFIP World Computing Congress, Rome, Italy, September 2014.
12. *16th International Workshop on Descriptional Complexity of Formal Systems*, Turku, Finland, August 2014.
13. *13th International Conference Unconventional Computation & Natural Computation*, London, Ontario, Canada, July 2014.
14. *11th Annual Conference on Theory and Applications of Models of Computation*, Anna University, Chennai, India, April 2014.
15. *History And Philosophy of Computing*, Paris, France, November 2013.
16. *Confluence 2013*, Amity University Uttar Pradesh, India, September 2013.
17. *Interdisciplinary Symposium on Complex Systems*, Prague, Czech Republic, September 2013.
18. *12th International Conference Unconventional Computation & Natural Computation*, Milano, Italy, July 2013.
19. *Numerical Computations: Theory and Algorithms*, Falerna, Italy, June 2013.
20. *AISB Symposium on Music and Unconventional Computing*, University of Exeter, UK, April 2013.
21. *International Conference On "Role of Technology in Enhancing The Quality of Higher Education"*, Kanya Maha Vidyalaya, Jalandhar, India, October 2012.
22. *11th International Conference Unconventional Computation & Natural Computation*, September 2012, Orléans, France.
23. *Interdisciplinary Symposium on Complex Systems*, September 2012, Kos Island, Greece.
24. *Workshop on Reachability Problems 2012*, Bordeaux, France, September 2012.
25. *Turing Centenary Workshop on The Incomputable*, June 2012, London, UK.
26. *9th Annual Conference on Theory and Applications of Models of Computation, TAMC 2012*, May 2012, Beijing, China.
27. *Workshop on Physics and Computation 2011*, June 2011, Turku, Finland.
28. *Workshop on HyperNet 2011*, June 2011, Turku, Finland.
29. *The Seventh Congress of Romanian Mathematicians*, June-July 2011, Braşov, Romania.
30. *Interdisciplinary Symposium on Complex Systems*, September 2011, Halkidiki, Greece.
31. *Workshop on Reachability Problems 2011*, Genova, Italy, September 2011.
32. *8th Annual Conference on Theory and Applications of Models of Computation*, Tokyo, Japan, 2011.
33. *Annual International Conference on Information Theory and Application*, February 2011, Cebu Philippines.
34. *13th CATS 2011 Computing: The Australasian Theory Symposium*, Perth, Australia, January 2011.

35. *Workshop on Reachability Problems 2010*, Brno, Czech Republic, October 2010.

36. *Theoretical Computer Science, World Computer Congress*, Brisbane, Australia, September 2010. (Chair Track A)

37. *Workshop on Physics and Computation 2010*, Luxor-Aswan, Egypt, September 2010.

38. *Workshop on Hypercomputation 2010*, Tokyo, Japan, June 2010.

39. *9th International Conference on Unconventional Computation*, Tokyo, Japan, June 2010.

40. *14th Developments in Language Theory (DLT'10)*, London, Ontario, Canada, August 2010.

41. *Infinite and Infinitesimal in Mathematics, Computing and Natural Sciences*, Cetraro, Italy, May 2010.

42. *Advances in the Theory of Computing*, Timişoara, Romania, September 2009.

43. *8th International Conference on Unconventional Computation*, Azores, Portugal, September 2009.

44. *International Conference on Theory and Applications in Mathematics and Informatics*, Alba Iulia, Romania, September 2009.

45. Workshop *Just One Universal Algorithm 2009*, Pisa, Italy, July 2009.

46. *14th International Conference on Implementation and Application of Automata* Sydney, Australia, July 2009.

47. *4th International Computer Science Symposium in Russia*, Novosibirsk, Russia, August 2009.

48. *3rd International Workshop on Reachability Problems in Computational Models*, Paris, France, September 2009.

49. *6th Annual Conference on Theory and Applications of Models of Computation 2009*, ChangSha, China, May 2009.

50. Member of the Advisory Committee of the *International Symposium on Information Theory and its Applications (ISITA 2008)*, Auckland, New Zealand, December 2008.

51. *2nd International Workshop on Reachability Problems in Computational Models*, Liverpool, UK, September 2008.

52. *13th International Conference on Implementation and Application of Automata (CIAA'08)*, San Francisco, USA, July 2008.

53. *5th Annual Conference on Theory and Applications of Models of Computation (TAMC08)*, Xi'an, China, April 2008.

54. *5th Symposium on Foundations of Info and Knowledge Systems (FoIKS 2008)*, Pisa, Italy, February 2008.

55. *14th CATS 2008 Computing: The Australasian Theory Symposium*, Wollongong, Australia, January 2008.

56. *3rd South-East European Workshop on Formal Methods (SEEFM'07)*, Thessaloniki, Greece, November-December 2007.

57. *6th Congress of Romanian Mathematicians*, Bucharest, Romania, July 2007.

58. *9th International Workshop on Descriptional Complexity of Formal Systems (DCFS'07)*, High Tatras, Slovakia, July 2007.

59. *12th International Conference on Implementation and Application of Automata (CIAA'07)*, Prague, Czech Republic, July 2007.

60. *11th Developments in Language Theory (DLT'07)*,Turku, Finland, July 2007.

61. *11th International Conference on Algebraic Methodology and Software Technology (AMAST'06)*, Kuressaare, Estonia, July 2006.

62. *11th International Conference on Implementation and Application of Automata (CIAA'06)*, Taipei, Taiwan, August 2006.

63. *International School and Conference on Combinatorics, Automata and Number Theory (CANT'06)*, University of Liège, Belgium, May 2006.

64. *Descriptional Complexity of Formal Systems (DCFS'06)*, Las Cruces, New Mexico, USA, June 2006.

65. *Third International Colloquium on Theoretical Aspects of Computing (ICTAC06)*, Gammarth/Tunis, Tunisia, November, 2006.

66. *Tenth International Conference on Developments in Language Theory (DLT'06)*, Santa Barbara, USA, June 2006.

67. *Theory and Applications of Models of Computation (TAMC 2006)*, Beijing, China, 2006, May 15–20.

68. *2nd South-Eastern European Workshop on Formal Methods (SEEFM'05)*, Ohrid, Macedonia, November 2005.

69. *Conference on Algebraic Informatics (CAI'O5)*, Thessaloniki, Greece, October, 2005.

70. *Second International Colloquium on Theoretical Aspects of Computing (ICTAC05)*, Hanoi, Vietnam, 17–21 October, 2005.

71. *ITW2005–IEEE ITSOC Information Theory Workshop 2005 on Coding and Complexity*, Rotorua, NZ, August 29–September 1, 2005.

72. *Ninth International Conference on Developments in Language Theory (DLT'05)* , Palermo, Italy, July 2005.

73. *The 7th workshop "Descriptional Complexity of Formal Systems" (DCFS'05)*, Como, Italy, June 30–July 2, 2005.

74. *Quantum Physics and Communication, (QPC 2005)*, Dubna, Russia, 30 June–3 July, 2005.

75. *Reversible Computing*, ACM Computing Frontiers 2005 (CF05) Ischia, Italy, May 4–7, 2005.

76. *Computational Aspects and Modeling of Complex Systems* Valparaiso, Chile, January 3–21, 2005.

77. *Eighth International Conference on Developments in Language Theory (DLT'04)*, Massey University at Albany, Auckland, NZ, December 2004. (Chair)

78. *The 10th International Conference on Algebraic Methodology And Software Technology (AMAST 2004)*, Stirling, Scotland, UK, July 2004.

79. *Descriptional Complexity of Formal Systems (DCFS'04)*, London, Ontario, Canada, August 2004.

80. *First International Colloquium on Theoretical Aspects of Computing (ICTAC 2004)*, Guiyang, China, September 2004.

81. *10th Journées Montoises d'Informatique Théorique*, Universitè de Liège, Belgium, September 2004.

82. *The 1st South-East European Workshop in Formal Methods*, Thessaloniki, Greece, November 2003.

83. *Descriptional Complexity of Formal Systems (DCFS'03)* Budapest, Hungary, July 2003.

84. *Developments in Language Theory (DLT'02)*, Kyoto, Japan, September 2002.

85. *Descriptional Complexity of Formal Systems (DCFS'02)*, London, Ontario, Canada, August 2002.

86. *Quantum Computation and Learning*, Riga, Latvia, May 2002.

87. *The Fourth Conference of Systemics, Cybernetics and Informatics (SCI2001)*, Orlando, Florida, USA, July, 2001.

88. *Workshop on Membrane Computing (WMC-CdeA 2001)*, Curtea de Argeş, Romania, August 2001.

89. *Third International Conference Discrete Mathematics and Theoretical Computer Science (DMTCS'01)*, Constanţa, Romania, July 2001.

90. *The 14th International Symposium on Foundations of Computation Theory (FCT'2001)*, Riga, Latvia, August 2001.

91. *Workshop on Descriptional Complexity of Automata, Grammars and Related Structures (DCA-GRS 2001)*, Vienna, Austria, July 2001.

92. The Second International Conference *UMC'2K, Unconventional Models of Computation*, Solvay Institutes, Free University of Brussels, Belgium, December 2000. (Co-chair)

93. *The Fourth Conference of Systemics, Cybernetics and Informatics (SCI2000)*, Orlando, Florida, USA, July, 2000.

94. *Workshop on Descriptional Complexity of Automata, Grammars and Related Structures (DCA-GRS 2000)*, London, Ontario, Canada, July, 2000.

95. *First Conference on Theoretical Computer Science and Informatics Technologies*, Eforie, Romania, May, 2000.

96. *The 8-th International Conference on Algebraic Methodology And Software Technology (AMAST'2000)*, Iowa City, USA, May, 2000.

97. *Third International Colloquium on Words, Languages and Combinatorics,* Kyoto, Japan, March, 2000.

98. *Workshop on Constructivity, Complexity and Fuzzyness (CCF'99),* Galaţi, Romania, August, 1999.

99. *The 12th International Symposium on Foundations of Computation Theory (FCT'99)*, Iaşi, Romania, August–September, 1999.

100. *Molecular Computing,* A Satellite Workshop to *MFCS'98*, Brno, Czech Republic, August, 1998.

101. *Randomized Algorithms*, A Satellite Workshop to *MFCS'98*, Brno, Czech Republic, August, 1998.

102. *Computing: the Australian Theory Seminar (CATS'98)*, Perth, Australia, January, 1998.

103. *Romanian Internet Learning Workshop ("Internet as a Vehicle for Teaching")*, Ilieni, Romania, June 1997.

104. *Twentieth Australasian Computer Science Conference (ACSC'97)*, Sydney, Australia, February, 1997.

105. *Computing: the Australian Theory Seminar (CATS'97)*, Sydney, Australia, January, 1997.

106. International Conference *Discrete Mathematics and Theoretical Computer Science (DMTCS'96)*, Auckland, NZ, December, 1996.

107. Summer School *"Chaitin Complexity and Applications"*, Black Sea University, Mangalia, Romania, July 1995.

108. The *22nd International Colloquium on Automata, Languages, and Programming (ICALP'95)*, Szeged, Hungary, July 1995.

109. Symposium *Salodays in Auckland*, The University of Auckland, Auckland, NZ, February, 1994.

110. The *9th Romanian Symposium on Computer Science'93 (ROSYCS'93),* Iaşi, Romania, 1993.

111. *National Colloquium Info–Iaşi*, Iaşi, Romania, 1983, 1985, 1987, 1989.

6.4.3 Organising Committee

1. *Workshop on Physics and Computation 2011*, Turku, Finland, June 2010.

2. *Workshop on Hypercomputation 2011*, Turku, Finland, June 2010.

3. Seventh Congress of Romanian Mathematicians Brasov, Romania, June 29–July 5, 2011.

4. *Workshop on Physics and Computation 2010*, Luxor-Aswan, Egypt, September 2010.

5. Co-organised with Barry Cooper the special session "Computability of the Physical" (speakers: S. Lloyd, Y. I. Manin, C. Moore, D. Wolpert), *CiE 2010*, Ponta Delgada, Portugal, June 2010.

6. *Grand Challenges of Unconventional Computation*, A Workshop of the Academia Europaea Informatics Section, Liverpool University, September 2008.

7. *Workshop on Physics and Computation*, Technical University of Vienna, August 2008.

8. *Computability and Complexity*, CDMTCS, Auckland, December 2007.

9. *Special Session: Mathematical Truth and Provability in the 21st Century*, 6-th Congress of Romanian Mathematicians, Bucharest, Romania, July 2007.

10. *Eighth International Conference on Developments in Language Theory (DLT'04)*, Massey University at Albany, Auckland, NZ, December 2004.

11. *Applications in Computer Science Session*, of the *17th Summer Topology Conference*, Auckland University, NZ, July 2002.

12. *Workshop on Truths and Proofs*, Auckland University, Auckland, NZ, December 2001.

13. The Second International Conference *UMC'K, Unconventional Models of Computation*, Solvay Institutes, Free University of Brussels, Belgium, December 2000. (Co-chair)

14. *Workshop on Multiset Processing (WMC'2000)*, Curtea de Argeş, Romania, August 2000.

15. *The 5th Anniversary Workshop on Discrete Mathematics and Theoretical Computer Science*, Auckland University, May 2000.

16. *Workshop on Constructivity, Complexity and Fuzzyness (CCF'99)*, Galaţi, Romania, August, 1999.

17. *DMTCS'99–CATS'99*, University of Auckland, Auckland, NZ, January, 1999. (Chair)

18. The Second Japan–NZ Workshop on *Logic In Computer Science*, University of Auckland, Auckland, NZ, October, 1998. (Co-chair)

19. The First International Conference *UMC'98, Unconventional Models of Computation*, University of Auckland, Auckland, NZ, January, 1998. (Chair)

20. The First Japan–NZ Workshop on *Logic In Computer Science*, University of Auckland, Auckland, NZ, August, 1997. (Co-chair)

21. International Conference *DMTCS'96, Discrete Mathematics and Theoretical Computer Science*, Auckland, NZ, December, 1996. (Co-chair)

22. Summer School *"Chaitin Complexity and Applications"*, Black Sea University, Mangalia, July, 1995. (Chair)

23. Symposium *Salodays in Auckland*, University of Auckland, Auckland, NZ, February, 1994. (Chair)

24. Conference *Does God Play Dice ?*, University of Auckland, Auckland, NZ, February, 1993. (Chair)

25. Symposium *SALODAYS in Theoretical Computer Science*, Bucharest University, Bucharest, Romania, June, 1992. (Co-chair)

26. Workshop *There Are Only 3000 Days Before the Year 2000*, Romanian Academy, Bucharest, Romania, 1991. (Co-chair)

27. Workshop on *Mathematics and Computer Science Education for the 21th Century*, Romanian Academy and CEPES–UNESCO, Bucharest, Romania, 1990. (Co-chair)

28. Workshop *How to Cope with Complexity*, Romanian Academy, Bucharest, Romania, 1988. (Chair)

29. Symposium on *Mathematics and Computer Science dedicated to the 60th Birthday Anniversary of Professor Solomon Marcus*, Bucharest University, Bucharest, Romania, March, 1985.

30. Symposium on *Human Needs (Project GPID)*, UNU, Tokyo and CEPES–UNESCO, Bucharest, Romania, 1980.

6.5 External Evaluator

6.5.1 Official Nominator

1. Nominator for the "Kyoto Prize", The Inamori Foundation, Kyoto, Japan, 2004, 2012–2017.

2. Official Nominator for the "Japan Prize", The Japan Prize Foundation, 2013–2017.

6.5.2 Referee for Journal and Conferences

1. Referee for the journals: *Revue Roumaine de Mathématiques Pures et Appliquées*, *Bulletin Mathématique de la Societé Mathématique de Roumanie*, *Studii şi Cercetări Matematice*, *Kybernetika*, *Theoretical Computer Science*, *Notre Dame Journal of Formal Logic*, *Complexity*, *Theory of Computing Systems*, *Soochow Journal of Mathematics*, *Trends in Biotechnology*, *Journal of Symbolic Logic*, *Discrete Applied Mathematics*, *Journal of Logic, Language and Information*, *SIAM Journal on Computing*, *Journal of Automata, Languages and Combinatorics*, *Journal of Philosophical Logic*, *International Journal of Foundations of Computer Science*, *Complexity*, *Mathematical Logic Quarterly*, *Logic Journal of the Interest Group in Pure and Applied Logics (IGPL)*, *Computer and Systems Sciences*, *Advances in Mathematics*, *Applied Mathematics E-Notes*, *Journal of ACM*, *Journal of Natural Computing*, *Applied Numerical Mathematics*, *Central European Journal of Mathematics*, *Information Sciences*, *Theoretical Computer Science: Theory of Natural Computing*, *Multiple Valued Logic and Soft Computing Journal*, *Journal of Complexity*, *London Mathematical Society*, *Journal of Numerical Analysis*, *Industrial and Applied Mathematics*, *Journal of Computer and System Sciences*, *Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences*, *IEEE Transactions on Nanobioscience*, *Int. J. of Parallel, Emergent and Distributed Systems*, *International Journal of Computer Mathematics*, *Acta Informatica*, *Information and Computation*, *Information Processing Letters*, *International Journal of Quantum Information*, *IEEE Transactions on Computers*, *Advances in Complex Systems*, *Nature*, *Foundations of Physics*, *The European Physical Journal B*, *Romanian Journal of Information Science and Technology*, *Information Sciences*, *Comm. ACM*, *Theory of Computing Systems*, *ACM Transactions on Computational*

Logic, The Computer Journal, Philosophical Transactions of the Royal Society, Comptes rendu Mathématique, Asia Pacific Math Newsletter, Numerical Algorithms, Computer Physics Communications, Glottometrics, Applied Mathematics Letters, Journal of Complexity, Physica A: Statistical Mechanics and its Applications, Studia Logica, Synthese, Quantum Information Processing, Philosophical Transactions of the Royal Society A, Experimental Mathematics, Journal of Consciousness Studies, Nature Communications, Scientific Annals of Computer Science, Journal of Experimental Algorithmics, Logical Methods in Computer Science, Minds and Machines, Scripta Mathematica, Journal of Automata, Languages and Combinatorics, Cartography and Geoinformation, Foundations of Science.

2. Referee for the Proceedings of the conference *Horizons of Truth – Gödel Centenary*, Cambridge University Press, New York, 2007.

3. Referee for *42nd MFCS*, Aalborg, Denmark, 2017, *32th Logic in Computer Science Symposium*, Reykjavik, Iceland, 2017, *34th International Symposium on Theoretical Aspects of Computer Science*, Hanover, Germany, 2016, *41st Mathematical Foundations of Computer Science Symposium 2016*, Krakow, Poland, 2016, *Quantum Interaction 2016*, San Francisco, USA, 2016, *CiE2014 Computability in Europe*, Budapest, Hungary, 2014, *2013 IEEE Information Theory Workshop*, Seville, Spain, 2013, *The Second Russian-Finnish Symposium in Discrete* , Turku, Finland, 2012, *International Symposium on Information Theory ISIT2010*, Austin, USA, *2009 Information Theory Workshop*, Taormina, Italy, *35th International Colloquium on Automata, Languages and Programming (ICALP'08)*, Reykjavik, Iceland, *International Symposium on Information Theory (ISIT2008)*, Toronto, Canada, *Computability in Europe (CiE2007)*, Siena, Italy, 2007, *15th International Symposium Fundamentals of Computation Theory (FCT'05)*, Lübeck, Germany, 2005, *32nd International Colloquium on Automata, Languages and Programming (ICALP'05)*, Lisboa, Portugal, 2005, *Tenth International Workshop on Combinatorial Image Analysis (IWCIA 04)*, Auckland, NZ, 2004, *Real Numbers and Computers (RNC6)*, Dagstuhl, Germany, 2004, *CIAA 2004*, Kingston, Ontario, Canada, 2004, *RNC'5*, Lyon, France, 2003, *FOCS'02*, Vancouver, Canada, 2002, *STACS'2002*, Antibes Juan-les-Pins, France, 2002, *FCT'2001*, Riga, Latvia, 2001, *MFCS'2001*, Marianske Lazne, Czech Republic, 2001, *STACS'2001 (Annual Symposium on Theoretical Aspects of Computer Science)*, Dresden, Germany, 2001, *MFCS'2000 (Mathematical Foundations of Computer Science)*, Bratislava, Slovakia, 2000, *DLT'99 (Developments in Language Theory)*, Aachen, Germany, 1999, *1999 IEEE Conference on Computational Complexity*, USA, 1999, *FCT'97 (Fundamentals of Computation Theory),* Krakow, Poland, 1997, *AFL'96 (8th Conference on Automata and Formal Languages),* Salgotarjan, Hungary, 1996, *CATS'96 (Computing: the Australian Theory Seminar)*, October, Melbourne, Australia, 1995, *COCOON 2004 (Tenth International Computing and Combinatorics Conference*, Jeju Island, Koreea, 2004.

6.5.3 Referee for Granting Agencies

Referee for an NSF-GRFP (866-673-4737), USA, October 2017, NSERC Discovery Grants, Canada, January 2017, Inaugural call for *Catalyst: Seeding and Catalyst: Leaders*, The Royal Society of New Zealand and MBIE, May 2016. Elected evaluator for the Russian Science Foundation (RSF), area 01 – Mathematics, Informatics and Systems Sciences, 2015–2016. Expert evaluator Horizon2020 FET OPEN RIA Call 2015/2. Evaluator for the South Africas National Research Foundation (NRF), 2015. Elected EU expert evaluator for H2020-FETOPEN-2014-2015-RIA-31-03-2015, 2015/1. Expert evaluator, EPSRC, UK and LE STUDIUM(R) Loire Valley Institute for Advanced Studies, France, 2014. Expert evaluator "Latvian Science Council", 2012. Referee for the "Turing Centenary Research Fellowship", 2012. Elected EU expert evaluator for FP7-ICT-2011-8-ICT Information and Communication Technologies, Objective 9.6 "Unconventional Computation", Brussels, 2011–13. Referee, *The University System of Maryland Regent's Award for Scholarship*, USA, September 2011, *South Africa's National Research Foundation (NRF)*, June 2010, *ESF Standing Committee for Physical and Engineering Sciences (PESC), European Science Foundation* 2010–2012, *The Research Promotion Foundation (RPF) of Cyprus*, Programme "DIDAKTOR", European Union's (EU) Structural Funds (SF), Cyprus, November 2009, *South Africa's National Research Foundation (NRF)*, June 2009, *Science and Engineering Research Council, Singapore*, March 2009, *Romanian National University Research Council*, October 2008, *South Africa's National Research Foundation*

(NRF), June 2007, *European Science Foundation Standing Committee for Physical and Engineering Sciences*, July 2006, *NEST, "Tackling Complexity in Science", Sixth Framework Programme*, March 2006, *Friedrich Wilhelm Bessel Research Award of the Alexander von Humboldt Foundation*, March 2006, *Swiss National Science Foundation (FNSNF)*, December 2004, *South Africa's National Research Foundation (NRF)*, September 2004, *ESF Standing Committee for Physical and Engineering Sciences (PESC), European Science Foundation*, December 2003, *The Council of Physical Sciences of the Netherlands Organization for Scientific Research (NWO)*, April 2003, *Natural Sciences and Engineering Research Council of Canada*, December, 1998, *Grant Agency*, Academy of Sciences of the Czech Republic, Praha, Czech Republic, July 1998, *Public Good Science Fund*, Foundation for Research and Technology, Wellington, NZ, January 1998. Member, *Marsden Fund Selection Panel*, Foundation for Research and Technology, Wellington, NZ, July 1995, *Science Foundation Ireland*, Dublin, May 2009.

6.5.4 Referee for Publishing Companies

Referee for the publishing houses *Academiei* and *Ştiinţifică*, (Romania), *Springer-Verlag* (Heidelberg), *Springer-Verlag* (New York), *Springer-Verlag* (London), *World Scientific* (Singapore), *Oxford University Press* (Oxford), *Bentham Science Publishers* (Oak Park), *Scientific Research Publishing*.

6.5.5 Referee for Universities/Academies

1. Referee for the recruitment of a researcher at the University of Sheffield, UK, 2011.
2. Referee for the recruitment of a Full Professor at the École Polytechnique, Paris, 2010.
3. Referee for the election of Fellows at the Academy of Sciences of the Developing World, Trieste, Italy, 2009.
4. Referee for the Appointment of a Docent in Mathematics, University of Turku, Finland, 2008.
5. Referee for the Appointment of a Full Professor in the Department of Computer Science & Engineering of the Hong Kong University of Science and Technology, Hong Kong, 2007.
6. Referee for the Appointments Committee, Computer Science Department, Holon Academic Institute of Technology, Holon, Israel, May 2005.
7. Referee for the Committee for Advancement to Professor Above Scale, Department of Computer Science and Engineering, University of California, San Diego, USA, January 2005.
8. Member of the *Appointment Committees for Chairs in Computer Science*, Bucharest University, Romania, June–July 2001, Auckland University, February–May 2001.
9. Referee for the *Appointment Committees*, Applied Science University, Amman, Jordan, November 2001, University of Canterbury, NZ, October 1997, May 1996, *Standing Committee of Senate*, University of Manchester, United Kingdom, August, 1995 and *Collegiate Personnel Committee*, University of Massachusetts, Boston, Ma., USA, May 1995.

6.5.6 Other

1. Invited reviewer for "QS Global Academic Survey", 20017–2018.
2. Invited discipline reviewer for Clarivate Analytics, 2017.
3. Referee for the project "Modeling Linguistic Networks: from Language Structures to Communication Processes" volume *Modeling Linguistic Networks*, Springer, 2014.
4. Member "Romanian National Board for Certification of Degrees, Diplomas and Certificates", Ministry of Education, Youth and Sports, Romania, 2011–2012.
5. Invited reviewer for Thomson Reuters and Times Higher Education "Academic Reputation Survey", 2010–2016.
6. Invited reviewer for "Times Higher - QS World University Rankings", 2007–2016.

7. Reviewer for the section *Algebra, Logic & Foundations* of the Report *NZ Knowledge Base Profiles: The Mathematical Sciences*, The Royal Society of NZ, 1997.

8. Reviewer for *Mathematical Reviews* (from 1976 on), *Zentralblatt für Mathematik* (from 1979 on), *Computing Reviews* (from 1983 on).

9. Referee for the publishing houses *Academiei,* and *Ştiinţifică*, (Romania), *Springer-Verlag* (Heidelberg), *Springer-Verlag* (New York), *Springer-Verlag* (London), *World Scientific* (Singapore), *Oxford University Press* (Oxford).

6.6 Examiner of Ph.D., Master, Project Theses

1. Deqi Li. *Contraction Hierarchies Algorithm: Implementation and Experiments*, UoA, 2014 (Project Thesis).

2. Independent Chair for the PhD oral examination of Neel Pandey, Auckland University, 2013.

3. Independent Chair for the PhD oral examination of Gareth Shaw, Auckland University, 2012.

4. Hector Zenil, *Une Approche Expérimentale à la Théorie Algorithmique de la Complexité*, University Lille 1, France, 2011 (Ph.D. Thesis).

5. Ewan Orr. *Evolving Turing's Artificial Networks*, University of Canterbury, Christchurch, NZ, 2010 (Ph.D. Thesis).

6. Christine Müller. *daptation of Mathematical Documents*, Jacobs University Bremen, Germany, 2010 (Ph.D. Thesis).

7. Matthew Hendtlass. *Aspects of Constructive Dynamical Systems*, University of Canterbury, Christchurch, NZ, 2009 (Masters Thesis).

8. Independent Chair for the Ph.D. oral examination of Roopak Sinha, Auckland University, 2008.

9. Cristóbal Rojas González. *Aléatoire et théorie ergodique: un point de vue algorithmique*, École Normale Polytechnique, Paris, France, 2008 (Ph.D. Thesis).

10. Michael Brough. *Sequential Automatic Algebras*, University of Auckland, 2008 (Masters Thesis).

11. Matthew Hendtlass. *Measure and Integration*, Canterbury University, NZ, 2008 (Project Thesis).

12. Aleksandar Stojmirović. *Quasi-Metrics, Similarities and Searches: Aspects of Geometry of Protein Datasets*, Victoria University of Wellington, NZ, 2005 (Ph.D. Thesis).

13. Jack Stecher. *Business Language and Asymmetric Perceptions*, University of Minnesota, USA, 2005 (Ph.D. Thesis).

14. Independent Chair for the Ph.D. oral examination of Jeffrey Gong, Auckland University, 2005.

15. H. Diener. *Apartness Spaces*, Canterbury University, NZ, 2004 (Honours Thesis).

16. Adriana Popovici, *n-Dimensional Cellular Automata: Applications and Generalizations*, University of Timişoara, Romania, 2003 (Ph.D. Thesis).

17. Douglas Campbell. *Induction Machines and the Mind*, Canterbury University, NZ, 2001 (Masters Thesis).

18. Robin Havea. *Constructive Spectral and Numerical Range Theory*, Canterbury University, NZ, 2001 (Ph.D. Thesis).

19. Independent Chair for the Ph.D. oral examination of Mark Stuart, Auckland University, 2000.

20. Robert Doron Reisz. *Stochastic Automata on Infinite Words*, University of Timişoara, Romania, 2000 (Ph.D. Thesis).

21. Lynda E. Robbins. *Modelling Cryptographic Systems*, University of Western Ontario, London, Canada, 1998 (Ph.D. Thesis).

22. Kahn Mason. *Notes on the Parallel Decomposition Theory for Finite State Machines*, Canterbury University, NZ, 1998 (Masters Thesis).

23. John Pearson. *Heuristic Search in Route Finding*, University of Auckland, NZ, 1998 (Masters Thesis).

24. Robin Siale Havea. *Constructive Operator Theory on Hilbert Space,* Waikato University, Hamilton, NZ, 1998 (Masters Thesis).

25. Yuchuan Wang. *Constructive Theory of Partial Differential Equations*, Waikato University, Hamilton, NZ, 1996 (Ph.D. Thesis).

26. Robert Blandford. *Type Algebra*, University of Auckland, NZ, 1996 (Masters Thesis).

27. Hacic-Cristian Kevorchian. *Reasoning by Analogy and Applications to Automated Theorem-Proving*, Bucharest University, Romania, 1995 (Ph.D. Thesis).

28. Klaus-Hilmar Sprenger. *Hierarchies of Primitive Recursive Functions on Term Algebras*, Universität–GH–Siegen, Germany, 1995 (Ph.D. Thesis).

29. Rodica Ceterchi. *Topology, Categories, Learning*, Bucharest University, Romania, 1992 (Ph.D. Thesis).

6.7 Professional Societies

1. *American Mathematical Society*, from 1976 on.

2. *Romanian Mathematical Society*, from 1976 to 1990.

3. *European Association for Theoretical Computer Science*, from 1983 on.

4. *NZ Computer Science Society*, from 1993 to 1995.

5. *NZ Mathematical Society*, from 1993 on.

6. *European Association for Computer Science Logic*, from 1994 on.

7. *Kurt Gödel Society*, from 1996 on.

8. *European Mathematical Society*, from 1997 on.

9. *The Royal Society of NZ*, from 1997 to 2010.

10. FIP TC1 – Foundations of Computer Science, WG 1.2 – Descriptional Complexity, from 1999 on.

11. *Association Computability in Europe*, from 2008.

12. *Association for Computing Machinery*, 2015–2016.

13. Global Geography Consortium, from 2015 on.

14. France-Aotearoa Science Technology and !nnovation (FAST!), from 2018 on.

15. Auckland Council People's Panel, New Zealand, from 2018 on.

7 Awards and Distinctions

1. *Theoretical Computer Science, Certificate of Outstanding Contribution in Reviewing*, Elsevier, Amsterdam, The Netherlands, 2017.
2. Honorary Citizen of the city Galaţi, Romania, November 2017.
3. The book C. S. Calude. *The Human Face of Computing*, Imperial College Press, London, 2015, was included in the 21st Annual Best of Computing. The Notable Books and Articles List for 2016, July 2017.
4. STOC 2017 Best Paper Award for co-authoring the paper Deciding parity games in quasipolynomial time.[18]
5. Honorary member, International Membrane Computing Society, 2016.
6. *2013 R. R. Hawkins Award* (The American Publishers Awards for Professional and Scholarly Excellence) for co-authoring the book *Alan Turing: His Work and Impact*, Elsevier, 2013.
7. *International Workshop on Theoretical Computer Science*, Dedicated to Prof. Cristian S. Calude's 60th Birthday, Auckland 2012.
8. *Member of the Informatics Section Committee*, Academia Europaea, 2010–2012.
9. Visiting Fellow, London Mathematical Society (scheme two grants), 2010.
10. *Hood Fellow*, University of Auckland, 2008–2009.
11. *Member of Academia Europaea*, 2008 on.
12. *Dean's Award for Excellence in Teaching*, Faculty of Science, University of Auckland, 2007.
13. *Award for Excellence in Research*, University of Bucharest, Romania, 2007.
14. *Member of the International Board*, Valparaiso Institute of Complex Systems, Valparaiso, Chile, 2005–2010.
15. Quality Category A in the PBRF Performance Based Research Fund, 2003, 2006, 2012 assessments (New Zealand).
16. *Honorificum Membrum*, Black Sea University, Bucharest, Romania, 2002.
17. "C. S. Calude" Mathematics Regional Contest. Annual competition organised by the National College "Vasile Alecsandri", Galaţi, Romania, from 2000 on.
18. Council, *European Association for Theoretical Computer Science*, 1995–2003.
19. Presented in the *Who's Who in Combinatorics*, 1999.
20. *1994 NZ Computer Science Visiting Lecturer.*
21. *"Gheorghe Lazăr" Mathematical Prize*, Romanian Academy, Romania, 1988.
22. *Computing Reviews Award*, Association for Computing Machinery, New York, USA, 1986.
23. *Mathematical Student Prize*, Faculty of Mathematics, Bucharest University, Romania, 1975.

[18] Probably the most prestigious award given by a conference in theoretical computer science. This is the first time this distinction was given to a researcher in New Zealand and Romania. For comments see https://goo.gl/bB9g2x, https://goo.gl/jdNDmv, https://goo.gl/YyuZ9B.