

NATAŠA JONOSKA

Curriculum Vitae

Office Address

Department of Mathematics
University of South Florida
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EDUCATION:

- **PhD** June 1, 1993
Department of Mathematical Sciences, SUNY at Binghamton
Title: Synchronizing Representations of Sofic Systems
- Spring 1985 - Spring 1987
Graduate course work at University of Belgrade
- Fall 1980 - Fall 1984 :
B.S. in Mathematics and Computer Science
University 'Cyril and Methodius' - Skopje
Skopje, Macedonia (former Yugoslavia). Graduation: October 31, 1984.
Graduation thesis: The Word Problem in Groups

POSITIONS HELD (since 2000):

- Fall 2006 - present : *Professor*, University of South Florida, Tampa Florida.
- Jan - June 2008: *Visiting Researcher*, University of Milano - Bicocca, Milano, Italy.
- Fall 1998 - Spring 2006 : *Associate Professor*, University of South Florida, Tampa Florida.
- Summer 2003 : *Visiting Researcher*, University of Metz, Metz, France.
- Fall 2001 : *Visiting Scholar*, New York University, NY.
- Spring 2001 : *Van Vleck Visiting Associate Professor*, Wesleyan University, Middletown CT.

Extended research visits since 2000

- June 2004: University of Metz, Metz France (supported by NATO grant PST.CLG.976912).
- January 2003 : *Visiting Researcher*, Rovira i Virgili University, Tarragona, Spain.

GRANTS, AWARDS AND MEMBERSHIPS:

Awards

2007 Tulip Award in DNA Computing

Presidential Excellence Award, USF 2003.

Best graduating student of the year 1984; Faculty of Natural and Mathematical Sciences at the University 'Cyril and Methodius' - Skopje.

Grant awards since 2000

- NSF - CCF: *Programmable Molecular Movements* - NSF award 9/07-8/10. (Collaborative research with N. Seeman at NYU)

- NSF - *Knotting Mathematics and Art* - NSF conference grant 9/07–8/08.
- CCF - 0523928 *Enzyme Driven Autonomous Biomolecular Computer* – NSF award 7/05–8/08.
- CCF - 0432009 *Nano: Programmable Finite-State Machines Achieved by DNA Self-assembly* –NSF award 9/04–8/07.
- EIA - 0074808 *POWRE: Self Assembling Graphs by DNA*, – NSF award 8/00–8/03.
- EIA - 0086015 *Self-Assembling of DNA Nano-Scale Structures for Computation*, – ITR NSF award 9/00–8/06.
- DNA Based Computers - NASA JPL award 1/01–1/03.
- DNA Based Computers - Division of Sponsored Research USF award 1/01–1/03.

Memberships:

- International Society for Nanoscale Science Computing and Engineering, founding officer, member since 2004.
- American Association for Advancement in Science, member since January 1997.
- European Association of Theoretical Computer Science, member since December 1994.
- Association for Women in Mathematics, member since October 1992.
- American Mathematical Society, member since January 1990.

PROFESSIONAL ACTIVITIES AND SERVICE

- Editorial Board: *Natural Computing* (associate editor)
- Editorial Board: *Theoretical Computer Science – C*
- Editorial Board: *New Generation Computing* published by Springer-Verlag.
- Editorial Board: *Soft Computing* published by Springer-Verlag.
- One of the Founding Officers of the International Society for Nanoscale Science Computing and Engineering (ISNSCE), treasurer 2004-2007.
- Chair of the Steering Committee for DNA Based Computers meetings. (Member since 2004)
- Co-organizer: *Knotting Mathematics and Art: International Conference on Low Dimensional Topology and Mathematical Art* USF Tampa FL November 2007.
- Special Issues: *Aspects of Molecular Self-assembly* and *Theory and applications of tilings* (edited with J. Kari) *Theoretical Computer Science*, 2009.
- Special issue on Membrane Computing, *New Generation Computing*, (edited with Gh.Paun) **22** No. 4 (2004).
- Editor and main organizer of the meeting: *Seventh International Meeting on DNA Based Computers* June 2001, USF Tampa FL.

- (co -chair, past chair) of the track on Theoretical aspects of Self-assembly for the annual meeting FNANO: Foundations of Nanoscience 2004–2008.
- Chair of the track (chair of the program committee) on Biomolecular and Quantum Computing at GECCO'03 (Genetic and Evolutionary Computing Conference)
- Chair of the track (chair of the program committee) on Biomolecular Computing at GECCO'02 (Genetic and Evolutionary Computing Conference)
- Grants reviewer for NSF, NASA, NSA, BBSRC.
- On Program Committee (refereed and reviewed papers) for DNA6 (DNA Based Computers) -'00, SPIRE (String Processing and Information Retrieval) '99, SPIRE'00, DNA9-'03, DNA10-'03, WMC'05, DNA11'05, UC (Unconventional Computing)'05, DNA 12 '06, UC'06, DLT '06, DLT'07, UC'07, UC'08, Conf. on Graph Transformations '08, UC'09.
- Reviewed and refereed papers and books for AMS, Springer LNM, Springer LNCS, JCST, TCS, DLT'99, PSB'99, GECCO, DLT'04, various scientific journals including Science, Theoretical Computer Science, Natural Computing, J. of Discrete and Applied Math.

BOOKS:

- J. Chen, N. Jonoska, G. Rozenberg, (eds) *Nanotechnology: Science and Computing*, Springer - Verlag 2006.
- N. Jonoska, Gh. Paun, G. Rozenberg, (eds.) *Aspects of Molecular Computing* LNCS **2950** Springer-Verlag 2004.
- N. Jonoska, N.C. Seeman, (eds.) *DNA Computing*, Revised papers from the 7th International Meeting on DNA Based Computers, LNCS **2340** Springer-Verlag 2002.
- N. Jonoska, *Automata, Languages and Symbolic Dynamics* (~ 90 pages) in preparation.

RESEARCH PAPERS:

1. N. Jonoska, J.B. Pirnot, *Finite state automata representing two-dimensional subshifts* to appear Theoretical Computer Science.
2. M. Anselmo, N. Jonoska, M. Madonia, *Framed versus Unframed Two Dimensional Languages*, SOFSEM 09 (M. Nielsen et al. eds) LNCS **5404** (2009) 79–92.
3. N. Jonoska, G. Wu, N.C. Seeman, *Existence of single-stranded reporters in DNA-based graph structures* to appear Theoretical Computer Science currently available online:
<http://dx.doi.org/10.1016/j.tcs.2008.12.004>
4. E. Dolzhenko, N. Jonoska, *On complexity of two dimensional languages generated by transducers* in Implementation and Application of Automata (O. Ibaraa et al eds.) Springer LNCS **5148** (2008) 181 –190.
5. N. Jonoska, G. McColm, *Complexity classes for self-assembling flexible tiles* Theoretical Computer Science **410** 4-5 (2009) 332–346.

6. N. Jonoska, L. Kari, K. Mahalingam, Involution join and solid codes, *Fundamenta Informaticae* **86** 1–2 (2008) 127–142.
7. N. Jonoska, R. Twarock, *Blueprints for dodecahedral DNA cages*, J. of Physics A: Mathematical and Theoretical **41** (2008) 304043 (14pp) .
8. N. Jonoska, A. Taormina, R. Twarock, *DNA cages with icosahedral symmetry in bionanotechnology* to appear in Algorithmic Bioprocesses (Condon, A.; Harel, D.; Kok, J.N.; Salomaa, A.; Winfree, E. , eds.) June 2009.
9. A. Angeleska, N. Jonoska, M. Saito, L. Landweber, Strategies for RNA-Guided DNA Recombination, to appear in Algorithmic Bioprocesses (Condon, A.; Harel, D.; Kok, J.N.; Salomaa, A.; Winfree, E. , eds.) June 2009.
10. N. Jonoska, Biomolecular Automata in *NanoBioTechnology, Bioinspired Devices and Materials of the Future*, Chapter 11, (S. Oded, I. Levi eds.) Humana Press 2008.
11. N. Jonoska, G. McColm, *Describing Self-assembly of Nanostructures*, SOFSEM (V. Geffert et al eds.) Springer LNCS **4910** (2008) 66–73.
12. A. Angeleska, N. Jonoska, M. Saito, L. Landweber, RNA-Guided DNA Assembly, *Journal of Theoretical Biology* **248** 4 (2007) 706–720.
13. N. Jonoska, J. Pirnot, Finite State Automata Representing Two-dimensional Subshifts, CIAA 2007 (J. Holub, J. Žd’árek eds.) Springer LNCS **4783** (2007) 277–289.
14. M. Cavaliere, N. Jonoska, P. Leupold, *DNA Splicing: Computing by Observing* to appear in Natural Computing (published online first DOI:10.1007/s11047-007-9062-8)
15. D. Genova, N. Jonoska, *Defining Structures through Forbidding and Enforcing Constraints* Phisica B **394**, Issue 2, 15 May 2007, 306–310.
16. G. Franco, N. Jonoska, A. Plass, B. Osborn *Knee Joint Injury and Repair Modeled by Membrane Systems* BioSystems **91** 3 (2008) 473-488.
17. N. Jonoska, G. McColm *Flexible versus Rigid Tiles*, Unconventional Computers (Gh. Paun et al. eds.) Springer LNCS **4135** (2006) 139–151.
18. N. Jonoska, L. Kari, K. Mahalingam *Involution Solid and Join Codes*, Developments in Language Theory, (O.H. Ibarra, Z. Dang eds.) Springer LNCS **4036** (2006) 192-202.
19. N. Jonoska, *Biomolecular Automata* Bulletin of EATCS **88** (2006) 141– 166.
20. D. Genova, N. Jonoska, *Topological properties of forbidding-enforcing systems*, Journal of Automata Languages and Combinatorics **11** 4 (2006) 375–397.
21. M. Cavaliere, N. Jonoska, P. Leupold, *Recognizing DNA Splicing* in DNA Computing (DNA11), (A. Carbone N.A. Pierce, eds.) Springer LNCS **3892** (2006) 12–26.
22. G. Franco, N. Jonoska, *Forbidding-Enforcing Conditions in DNA Self-Assembly of Graphs*, in *Nanotechnology: science and computing* (J. Chen, et. al. eds.) Springer-Verlag (2006) 105 – 118.

23. N. Jonoska, G. McColm, A. Staninska, *Expectation and Variance of Self-Assembled Graph Structures* Proceedings of the 11th meeting of DNA based computers, in DNA Computing (DNA11), (A. Carbone N.A. Pierce, eds.) Springer LNCS **3892** (2006) 144–157.
24. N. Jonoska, G. McColm, A. Staninska, *Spectrum of a pot for DNA complexes* in DNA Computing 12 (C. Mao, T. Yokomori eds.) Springer LNCS **4287** (2006) 83–94.
25. N. Jonoska, J. Pirnot, *Transitivity in two-dimensional local languages defined by dot systems*, Int. J. of Foundations of Computer Science, **17**(2) (2006) 435 – 463.
26. R.Sha, X.Zhang, S.Liao, P.E.Constantinou, B.Ding, T.Wang, A.V.Garibotti, H.Zhong, L.B.Israel, X.Wang, G.Wu, B.Chakraborty, J.Chen, Y.Zhang, H.Yan, Z.Shen, W.Shen, P.Sa-Ardyen, J.Kopatsch, J.Zheng, P.S.Lukeman, W.B.Sherman, C. Mao, N. Jonoska. N.C. Seeman, *Structural DNA Nanotechnology: Molecular Construction and Computation*, in Unconventional Computing 2005 (C. Calude et al. eds.) Lecture Notes in Computer Science **3699** (2005) 20–31.
27. L. Colson, N. Jonoska, M. Margenstern, *λP Systems and Typed Λ -calculus*, (invited paper) (G. Mauri et al. eds.) Springer LNCS **3365** (2005) 1–18.
28. N. Jonoska, G. McColm, *A Computational Model for Self-assembling Flexible Tiles* (C.S. Calude et. al. eds.) LNCS **3699** (2005) 142–156.
29. M. Cavaliere, N. Jonoska, S. Yogev, R. Piran, E. Keinan, N.C. Seeman *Biomolecular Implementation of Computing Devices with Unbounded Memory* (G. Ferretti, et. al. eds.) Springer LNCS **3384** (2005) 35–49.
30. N. Jonoska, K. Mahalingam, J. Chen, *Involution Codes; With Application to DNA Coded Languages* Natural Computing **4** (2) (2005) 141–162.
31. N. Jonoska, M. Saito, *Algebraic and topological models for DNA recombinant processes* (invited paper) (C.S. Calude, E. Calude, M.J. Dinneen eds.) Springer LNCS **3340** (2004) 49–62.
32. P. Sa-Ardyen, N. Jonoska, N.C. Seeman, *Self-assembly of graphs represented by DNA Helix Axis Topology*, *J. Am. Chem. Soc.* **126**(21) (2004) 6648–6657.
33. N. Jonoska, M. Margenstern, *Tree operations in P systems and Λ -calculus*, *Fundamenta Informaticae*, Vol. **59** 1 (2004) 67–90.
34. N. Jonoska, S. Liao, N.C. Seeman, *Transducers with Programmable Input by DNA Self-assembly* in *Aspects of Molecular Computing* (N. Jonoska, Gh. Paun, G. Rozenberg eds.) LNCS **2950** (2004) 219–240.
35. N. Jonoska, K. Mahalingam, *Methods for Constructing Coded DNA Languages* in *Aspects of Molecular Computing* (N. Jonoska, Gh. Paun, G. Rozenberg eds.) LNCS **2950** (2004) 241–253.
36. R. Ceterchi, R. Gramatovici, N. Jonoska, *Tiling Rectangular Pictures with P Systems Membrane Computing* International Workshop, WMC 2003 Tarragona, Spain, Revised Papers (C. Martin-Vide, G. Mauri, G. Păun, G. Rozenberg, A. Salomaa, Eds.) Springer-Verlag LNCS **2933** (2004) 88–103.

37. R. Ceterchi, R. Gramatovici, N. Jonoska, K.G. Subramanian, *Tissue-like P Systems for Picture Generation*, *Fundamenta Informaticae*, **56** (2003), 311–328.
38. N. Jonoska *Trends in computing with DNA* (survey article) *Journal of Computer Science and Technology* **19** 1 (2004) 98–113.
39. N. Jonoska, K. Mahalingam *Languages of DNA based code words DNA Computing* (J. Chen, J. Reif, eds.) LNCS **2943** (2004) 61–73.
40. M. Cavaliere, N. Jonoska, *Forbidding and enforcing in membrane computing* *Natural Computing* **2** (2003) 215–228.
41. E. Coven, A. Johnson, N. Jonoska, K. Madden, *The symbolic dynamics of multidimensional tiling systems*, *Ergodic Theory and Dynamical Systems* **23** (2003), 1–14.
42. N. Jonoska, D. Kephart, K. Mahalingam, *Generating codes for DNA computing*, *Congressus Numerantium* **156** (2002) 99–110. (Also published in the book of late breaking papers GECCO'02.)
43. N. Jonoska, P. Sa-Ardyen, N.C. Seeman, *Computation by self-assembly of DNA graphs*, *Journal of Genetic Programming And Evolvable Machines* **4** (2003) 123–137.
44. P. Sa-Ardyen, N. Jonoska, N.C. Seeman, *Self-assembling DNA graphs*, Revised papers of 8th International Meeting on DNA based computers (eds. M. Hagiya, A. Ohuchi) Springer LNCS vol. **2568** (2002), 1–9. *also in a journal: Natural Computing* **2** 4 (2003) 427–438.
45. E. Coven, N. Jonoska, *DNA Hybridization, Shifts of Finite type and Tiling of the Integers, Grammars and Automata for String Processing: From Mathematics and Computer Science to Biology, and Back*. (C. Martin-Vide, V. Mitrana, eds.) Taylor and Francis, London, (2003) 369–380.
46. N. Jonoska, M. Saito, *Boundary Components of Thickened Graphs*, Revised papers of 7th International Meeting on DNA based computers (eds. N. Jonoska, N.C. Seeman) Springer LNCS vol. **2340** (2002) 70–81.
47. D. Fiebig, U. Fiebig, N. Jonoska, *Multiplicities of SFT Covers*, *Theoretical Computer Science*, **262** (2001) 349–375.
48. N. Jonoska, S. Karl, M. Saito: *Three dimensional DNA structures in computing BioSystems*, **52** (1999) 143–153.
49. M. Garzon, N. Jonoska, S.A. Karl: *Bounded Complexity of DNA Computing BioSystems*, **52** (1999) 63–72.
50. N. Jonoska, *3D DNA patterns and Computing* (invited paper) (A. Carbone, M. Gromov, P. Pruzinkiewicz editors) World Scientific Publishing Company, Singapore, (1999) 310–324.
51. N. Jonoska, S. Karl, M. Saito, *Creating 3-Dimensional Graph Structures With DNA* in *DNA based computer III* (Editors: H. Rubin, D. Wood) DIMACS series in Discrete Math. and Theoretical Comp. Sci. vol **48** (1999) 123–136.
52. N. Jonoska, S. Karl, M. Saito, *Graph structures in DNA computing in Computing with Bio-Molecules, theory and experiments*, (editor Gh. Paun) Springer-Verlag (1998) 93–110.

53. N. Jonoska, S. Karl, *Ligation Experiments in Computing with DNA*, *Proceedings of 1997 IEEE International Conference on Evolutionary Computation (ICEC'97)*, April 13-16, (1997) 261–265.
54. C. Mitrovski, Lj. Kocarev, N. Jonoska, *On a class of n -th order digital filters operating outside the region of stability*, *Int. Journal of Circuit Theory and Appl*, **26** #2 (1998) 199–205.
55. N. Jonoska, S. Karl, *A molecular computation of the road coloring problem in DNA based computer II* (Editors: L. Landwaber, E. Baum) DIMACS series in Discrete Math. and Theoretical Comp. Sci. **44** (1999) 87 – 96,
56. N. Jonoska, *Constants in factorial and prolongable languages*, *Pure Math. Appl.* **7** 1-2 (1996), 99–110.
57. N. Jonoska, *A conjugacy invariant for reducible sofic shifts and its semigroup characterizations* *Israel Journal of Mathematics* **106** (1998) 221–249.
58. N. Jonoska, S. Suen, *Monocyclic decomposition of Graphs and the Road Coloring Problem*, *Cong. Num.* **110** (1995) 201–209.
59. N. Jonoska, *Sofic Shifts with Synchronizing Presentations*, *Theoretical Computer Science* **158** 1-2 (1996) 81–115.
60. N. Jonoska, T. Head, *Images of Cellular Maps on Sofic Shifts*, *Congressus Numerantium*, **101** (1994) 109–115.
61. N. Jonoska, B. Marcus, *Minimal Presentations of Irreducible Sofic Shifts*, *IEEE Transactions on Information Theory*, **40** No.6 (1994) 1818–1825.
62. N. Jonoska, *Spinal Cellular Automata*, *IEEE proceedings of the International Conference on Computing and Information 1992 (ICCI'92)* (1993) 18–21.
63. Z. Mitreska, Lj. Janićijević, B. Veljanovski, N. Jonoska, *Hermite-Gaussian beam transformation by thin hologram grating*, *Optik* **88** No.1 (1991) 1–6.

TECHNICAL REPORTS

64. R. Ceterchi, R. Gramatovici, N. Jonoska, K.G. Subramanian, *Generating Picture Languages with P systems*, *Technical Report 26/03*, Rovira i Virgili University, (M. Cavaliere, C. Martín-Vide, Gh. Păun, eds.), *Brainstorming Week on Membrane Computing*, Tarragona, 2003, 85–100.
65. M. Cavaliere, N. Jonoska, *Forbidding and Enforcing in Membrane Computing*, Rovira i Virgili Univ., Tech. Rep. No. 26, (M. Cavaliere, C. Martn-Vide, Gh. Paun, Eds.), *Brainstorming Week on Membrane Computing*; Tarragona, Feb 5-11 2003, 75-84.
66. N. Jonoska, *Computing with Biomolecules: Trends and Challenges*, Technical report 27/03, University 'Rovira i Virgili', Tarragona, Spain, 2003.

RESEARCH ARTICLES SUBMITTED OR IN PREPARATION:

67. *DNA recombinations through assembly graphs* (with. A. Angeleska, N. Jonoska, M. Saito) submitted.

68. *The computational nature of gene assembly in ciliates* (with R. Brijder, M. Daley, T. Harju, I. Petre, and Gr. Rozenberg) chapter in Handbook for natural computing.
69. *On the Stoichiometry for the Assembly of Flexible Tile DNA Complexes* (with G. McColm and A. Staninska)
70. *Construction of a DNA Nano-Object Directly Demonstrates Computation* (with G. wu, N.C. Seeman), submitted
71. *Transducer Generated Arrays of Robotic Nano-arms* (with E. Dolzhenko, N.C. Seeman) submitted
72. *Programmable transducer by DNA self-assembly* (with B. Chakraborty, N.C. Seeman) in preparation
73. *Characterization of splicing languages* (with P. Bomizzoni) in preparation.
74. *On the Expressibility of a Model of Self-Assembling DNA Tiles* (with G. McColm) in preparation.

OTHER SCHOLARLY PUBLICATIONS:

- G. Hart, N. Jonoska *Knotting Mathematics and Art* (review of the International Conference on Low Dimensional Topology and Mathematical Art), Journal of Mathematical Art **2** 1 (2008) 47–51.
- *Computing with Biomolecules* Quaternion Mathematics Department USF, Fall 2001.
- N. Jonoska, *Computing with Biomolecules* (invited paper), *Theorietag 2000: New Computing Paradigms: Molecular Computing and Quantum Computing* (R. Freund editor) University of Technology Vienna, (2000) 35-58.

CONFERENCES AND INVITATIONS:

Short course invitations (series of lectures) in last 5 years

- *Computing by DNA Self-assembly* School of Formal Methods, Bertinoro, Italy, 2–7 June, 2008.
- *Nanostructures and nanodevices made of DNA* (short PhD course) Faculty of Science, University of Milano - Bicocca, May 5–9, 2008.
- *Biomolecular Computing: Theory and Experiments* (PhD course) Computer Science Department, University of Milano - Bicocca, March 31 – April 15, 2008.
- *DNA Computing: theory and experiments* (short course) - University Rovira i Virgili, Tarragona, Spain, October 2006.
- *Biomolecular Automata* (tutorial) Unconventional Computing - September 2006, York UK.
- *Biomolecular Computing* (short course) Summer School in Complex Systems, Valparaiso, Chile, January 3-10, 2004.
- *Computing with DNA graphs; temptation and challenges* (invited short course) Rovira i Virgili University, Tarragona, Spain (January 2003.)

Invited lectures (in last five years):

- *Existence of single-stranded reporters in DNA-based graph structures*, (invited speaker) Biomathematical computing, SUNY Binghamton, Oct.30-Nov.2, 2008.
- *DNA Computing: Trends and Challenges* (colloquium) University of Bologna, Bologna Italy, June 23, 2008.
- *Programmable Transducer Implemented by DNA Self-assembly* (colloquium) University of Verona, Verona May 28th, 2008.
- *Transducer Generated 2D Languages Implemented by DNA Self-assembly* University of Salerno, (colloquium) April 22nd, 2008.
- *Describing DNA Nanostructures: Computing by DNA Self-assembly*, (plenary lecture) SOFSEM 2008 (January 20, 2008).
- *Biomolecular Automata*, (colloquium) University of Milano, January 17, 2008.
- *RNA Guided DNA Assembly* (invited speaker) Workshop in honor of Grzegorz Rozenberg, University of Leiden, the Netherlands, December 2007.
- *RNA Guided DNA Assembly: Assembly graphs and Virtual Knot Diagrams* (colloquium) University of Wesleyan, Middletown CT, October 12th, 2007.
- *Computing by Flexible and Rigid Tiles* (invited speaker) Workshop on Self-assembly in Turku, 7th of July 2007.
- *Computing by Self-assembly* (colloquium) University of Milano-Bicocca, Italy, June 26, 2007.
- *Computing by Self-assembly* (invited speaker) Computability in Europe, Siena , Italy June 18–23, 2007.
- *Two-dimensional subshifts of finite type* (colloquium) Department of mathematics at University of Turku, Turku, Finland (April 2007).
- *Algebraic and topological models for DNA recombinant processes* (colloquium) - York September 2006.
- *Algebraic and topological models for DNA recombinant processes*, (invited speaker) as EDGE speaker - New College , Sarasota FL, June 20th 2006.
- *Dot Systems and Transitivity of Two-dimensional Languages* -(invited speaker) Salerno, Italy-May 3-5,2006.
- *Computing by Graph Self-assembly* (colloquium) University of Western Ontario December, 9th, 2005.
- *Algebraic and topological models for DNA recombinant processes 8th* (plenary lecture) Meeting of Developments in Language Theory, Auckland New Zealand, December 10-17, 2004.
- *Topological questions related to DNA self-assembly of graph structures* (invited speaker) Knots in Washington XIX; Topology in Biology II, George Washington University November 12-14, 2004.
- *Computing by DNA graph self-assembly* (invitation) Philips Research, NY, October 21, 2004.
- *Graph self-assembly: the theoretical model* (invited speaker) Foundations of Nanoscience 2004, April 2004, Snowbird Utah.
- *Topological questions related to DNA graph self assembly* (plenary lecture) annual meeting of European Women in Mathematics, CIRM Marceille, France, November 1-5, 2003.
- *Topological questions related to DNA graph self assembly* (invited speaker) Northeastern AMS meeting at Binghamton University, Special Session on Biomolecular Mathematics.

- *Computing by DNA Graph Self-assembly* (colloquium) University of Metz, Metz, France, June 2003.
- *Computing by DNA Graph Self-assembly* (colloquium) University of Nancy, Nancy France, June 2003.

THESIS ADVISOR:

Major advisor for PhD dissertations:

- Angela Angeleska (co-mentored with M. Saito) topic: *Virtual knots and braiding associated with gene assembly in ciliates* (current student).
- Egor Dolzhenko topic: *Transducer generated two-dimensional languages* (current student).
- Daniela Genova, title: *Forbidding and enforcing properties in graphs and languages* (graduated July 2007). First appointment: University of North Florida, Assistant Professor (tenure-track)
- David Kephart, title *Topology, Morphisms and Randomness in the Space of Formal Languages* (graduated June 2005). First appointment: Link Systems (software development)
- Kalpana Mahalingam, title *Involution Codes: with applications to DNA strand design* (graduated July, 2004). First appointment: University of Western Ontario, Postdoctoral associate. Currently: Indian Institute of Technology, Chennai, India, Assistant Professor.
- Tilahun Muche, topic *Algebraic models for DNA splicing* (current student).
- Joni Pirno, title: *Two dimensional languages, shift spaces and automata* (graduated October, 2006). First appointment: Manatee Community College, Bradenton Florida, Associate Professor.
- Ana Staninska (co-mentored with G. McColm) title *Computing by graph self-assembly* (graduated May 2007). First appointment: Max-Planck Institute Leipzig, Germany, Postdoctoral associate. Currently: Institute for Biomathematics and Biometrie (IBB) at Helmholtz Zentrum-Muenchen (Munich), Germany, Postdoctoral Associate.

Mentor (students with extended visits to USF):

- Matteo Cavaliere - University of Sevilla - Spain (Fall 2003)
- Giuditta Franco - University of Verona - Italy (Spring 2005, Fall 2006)

Masters Thesis Mentor: Egor Dolzhenko, title: *Transducer Dynamics* graduated May 2008.