# CURRICULUM VITAE

- *Name:* Sofia LAMBROPOULOU
- *Nationality:* Greek
- *Address:* National Technical University, Department of Mathematics, Zografou campus, Athens 157 80, Greece.
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## RESEARCH INTERESTS

Knot theory, low-dimensional topology, braid theory, knots and braids in 3-manifolds, quotient algebras of braid groups, construction of Jones-type invariants. Applications of knots and braids to physics, chemistry, molecular biology.

## ACADEMIC QUALIFICATIONS

- B.Sc. in Mathematics, University of Athens, Greece, 1988.

- Master of Science (M.Sc.) in Mathematics, University of Warwick, UK, Sept. 1989. Title of dissertation: *Surgery on 3-manifolds and pure braids.*

- Philosophical Doctorate (Ph.D.) in Mathematics, University of Warwick, July 1993. Title of thesis: *A study of braids in 3-manifolds.* Thesis advisor: C.P. Rourke.

- Post-doctorate, Department of Pure Mathematics and Mathematical Statistics, University of Cambridge, UK, 1993 – 1995.
- Qualification for Maître de Conférence, French Ministry of Education, Sept. 2002.

## POSITIONS

2013 – to date: Professor, National Technical University of Athens, Greece.

2000 – 2012:  Associate Professor, National Technical University of Athens, Greece.

2003 -- 2004: Visiting Maître de Conférence, Université de Caen, France.

1996 – 2000: C1-Stelle (elected position), Georg-August-Universität Göttingen, Germany.

1995 – 1996:  Research Fellow, University of Athens, Greece.

1993 – 1995:  Research Fellow, University of Cambridge, U.K.

## SCHOLARSHIPS – FELLOWSHIPS

1989 – 1990: University of Warwick Award & partial support by Onassis Foundation.

1990 – 1993: Greek State Scholarship Foundation doctoral grant.

1993 – 1995: European Commission Individual Postdoctoral Research Fellowship, *Human Capital and Mobility* scheme.

1995 – 1996: European Commission Return Fellowship, *Training and Mobility of Researchers* scheme.

## RESEARCH DIRECTIONS – RESEARCH WORK

I.   Knots, braids and braid equivalences in various diagrammatical settings. [1993 – ]

II.  Quotient algebras of braid groups and Jones-type invariants. [1993 – ]

III. Applications to biology, polymers, graph theory. [2002 – ]

IV.  Applications of topological surgery and dynamical systems. [2005 – ]


## PAPERS IN SCIENTIFIC JOURNALS AND REFEREED PROCEEDINGS

1. S. Lambropoulou "Solid torus links and Hecke algebras of B-type", in *Quantum Topology*; D.N. Yetter Ed.; World Scientific Press, 1994; pp. 225-245.

2. M. Geck, S. Lambropoulou "Markov traces and knot invariants related to Iwahori-Hecke algebras of type B", *J. reine angew. Math.* 482 (1997), 191-213.

3. S. Lambropoulou, C.P. Rourke "Markov's theorem in 3-manifolds", *Topology and its Applications* 78 (1997), 95-122.

4. S. Lambropoulou "Knot theory related to generalized and cyclotomic Hecke algebras of type B", *J. Knot Theory Ramifications* 8 (1999), no. 5, 621-658.

5. S. Lambropoulou "Braid structures in knot complements, handlebodies and 3-manifolds", in *Knots in Hellas `98*, C.McA. Gordon, V.F.R. Jones, L.H. Kauffman, S. Lambropoulou, J.H. Przytycki, Eds.; Ser. Knots Everything, vol. 24; World Scientific Press, 2000; pp. 274-289.

6. R. Häring-Oldenburg, S. Lambropoulou "Knot theory in handlebodies", *J. Knot Theory Ramifications* 11 (2002), no. 6, 921-943.

7. L.H. Kauffman, S. Lambropoulou "Classifying and applying rational knots and rational tangles", in *Physical Knots: Knotting, Linking and Folding Geometric Objects in* $\mathbb{R}^3$; J.A. Calvo, K.C. Millett, E.J. Rawdon, Eds.; Contemporary Mathematics Series, vol. 304; AMS Prov. RI, 2002; pp. 223-258.

8. L.H. Kauffman, S. Lambropoulou "On the classification of rational knots", *L' Enseignement Mathématiques* 49 (2003), 357-410.

9. L.H. Kauffman, S. Lambropoulou "On the classification of rational tangles", *Advances Applied Math.* 33 (2004), no. 2, 199-237.

10. L.H. Kauffman, S. Lambropoulou "Virtual braids", *Fundamenta Mathematicae* 184 (2004), 159-186.

11. S. Lambropoulou, C.P. Rourke "Algebraic Markov equivalence for links in 3-manifolds", *Compositio Mathematica* 142 (2006), 1039-1062.

12. L.H. Kauffman, S. Lambropoulou "Virtual braids and the *L*-move", *J. Knot Theory Ramifications* 15 (2006), no. 6, 773-811.

13. L.H. Kauffman, S. Lambropoulou "Unknots and Molecular Biology", *Milan J. Math.* 74 (2006), 227-263.

14. J. Juyumaya, S. Lambropoulou "*p*-adic framed braids", *Topology and its Applications* 154 (2007), no. 8, 1804-1826.

15. S. Lambropoulou "$L$-moves and Markov theorems", *J. Knot Theory Ramifications* 16 (2007), no. 10, 1-10.

16. J. Juyumaya, S. Lambropoulou "An invariant for singular knots", *J. Knot Theory Ramifications* 18 (2009), no. 6, 825-840.

17. E. Panagiotou, K.C. Millett, S. Lambropoulou "The linking number and the writhe of uniform random walks and polygons in confined space", *J. Phys. A: Math. Theor.* 43 (2010) 045208.

18. J. Juyumaya, S. Lambropoulou "An adelic extension of the Jones polynomial", in *The Mathematics of Knots, Theory and Application*; M. Banagl, D. Vogel, Eds.; Contributions in Mathematical and Computational Sciences, vol. 1; *Springer,* 2010; pp. 125-142.

19. E. Androulaki, S. Lambropoulou, I. Economou, J. Przytycki "Inductive construction of 2-connected graphs for analyzing the virial coefficients in thermodynamics", *J. Phys. A: Math. Theor.* 43 (2010) 315004.

20. E. Karali, S. Pavlopoulos, S. Lambropoulou, D. Koutsouris "ISWLS: Novel algorithm for image reconstruction in PET", *IEEE Transactions on Information Technology in Biomedicine* 15 (2011), no. 13, 381-386.

21. L.H. Kauffman, S. Lambropoulou "Hard Unknots and Collapsing Tangles", in *Introductory Lectures on Knot Theory* with subtitle *Selected Lectures presented at the Advanced School and Conference on Knot Theory and its Applications to Physics and Biology, ICTP, Trieste, Italy, 11 - 29 May 2009*; L.H. Kauffman, S. Lambropoulou, J.H. Przytycki, S. Jablan, Eds.; Ser. Knots Everything, vol. 46; *World Scientific Press*, 2011; pp. 187-247. See also ArXiv.

22. L.H. Kauffman, S. Lambropoulou "A categorical model for the virtual braid group", in *LAGB Communications in Algebra* 39 (2011), no. 12, special issue for Miriam Cohen; L. Rowen, H.J. Schneider, Eds.; Taylor & Francis; Manuscript ID: 617280.

23. E. Karali, S. Lambropoulou, D. Koutsouris *"Elastic models: a comparative study applied to retinal images"*, *Technology and Health Care,* vol. 19, 1-13, *IOS Press*, 2011.

24. E. Panagiotou, S. Lambropoulou, K. Millett, C. Tzoumanekas, D.N. Theodorou "A study of the entanglement in systems with periodic boundary conditions", in *Progress of Theoretical Physics Supplement* (2011).

25. L.H. Kauffman, S. Lambropoulou "A Categorical Model for the Virtual Braid Group", in *J. Knot Theory Ramifications* 21(2012) No. 13, 1240008 - *Special Issue on Virtual Knot Theory, Vol. I*.

26. E. Panagiotou, K. Millett, S. Lambropoulou "Quantifying entanglement for collections of chains in periodic boundary conditions models", in *Procedia IUTAM* 7 (2013), 251-260.

27. J. Juyumaya, S. Lambropoulou "$p$-adic framed braids II", *Advances in Mathematics* 234 (2013), 149-191.

28. M. Chlouveraki, S. Lambropoulou "The Yokonuma-Hecke algebras and the HOMFLYPT polynomial", *J. Knot Theory Ramifications* 22(2013) No. 14, 1350080.

29. J. Juyumaya, S. Lambropoulou, "On the framization of knot algebras", in *New Ideas in Low-Dimensional Topology*, L.H. Kaufffman, V. Manturov Eds; Ser. Knots Everything, *World Scientific Press*, 2014.

30. D. Goundaroulis, J. Juyumaya, A. Kontogeorgis, S. Lambropoulou "The Yokonuma-Temperley-Lieb algebra", *Banach Center Pub*. 103, December 2014. See also arXiv:1012.1557.

31. I. Diamantis, S. Lambropoulou, "A new basis for the Homflypt skein module of the solid torus", *J. Pure Appl. Algebra* (2015), http://dx.doi.org/10.1016/j.jpaa.2015.06.014. See also arXiv:1412.3642.

32. I. Diamantis, S. Lambropoulou "Braid equivalences in 3-manifolds with rational surgery description", *Topology and its Applications* (2015), http://dx.doi.org/10.1016/j.topol.2015.08.009. See also arXiv:1311.2465.

33. S. Chmutov, S. Jablan, K. Karvounis, S. Lambropoulou "On the knot invariants from the Yokonuma-Hecke algebras", to appear in *J. Knot Theory Ramifications* - Special Issue dedicated to the memory of S. Jablan. See arXiv:1505.06667.

**PAPERS SUBMITTED FOR PUBLICATION**

34. D. Goundaroulis, J. Juyumaya, A. Kontogeorgis, S. Lambropoulou "Framization of the Temperley-Lieb algebra". See arXiv:1304.7440.

35. M. Chlouveraki, J. Juyumaya, K. Karvounis, S. Lambropoulou "Identifying the invariants for classical knots and links from the Yokonuma-Hecke algebras". See arXiv:1505.06666.

36. I. Diamantis, S. Lambropoulou, J. Przytycki "The Homflypt skein module of *L(p,1)* via braids".

37. S. Lambropoulou, S. Antoniou "Extending Topological Surgery to Natural Processes".

**WORK IN PROGRESS**

1. L. H. Kauffman, S. Lambropoulou "New invariants of links and their state sum models".

2. S. Lambropoulou, D. Kodokostas "Hecke-type quotients of the mixed braid group with two fixed identity strands".

3. Marcelo Flores, Jesus Juyumaya, Sofia Lambropoulou "The framization of the Hecke algebra of type B".

**MONOGRAPHS IN PREPARATION**

4. S. Lambropoulou, "Braid structures and braid equivalences in 3-manifolds", monograph for the Series of Knots and Everything, *World Scientific Publ. Co.* [By invitation from the Editorial Board, in final stage]

5. D. Buck, L.H. Kauffman, S. Lambropoulou, "Topology, Knots and DNA", monograph, *Cambridge University Press*. [By invitation from the Editorial Board, in close-to-final stage]

6. L.H. Kauffman, S. Lambropoulou, "Low Dimensional Topology and Modern Physics", monograph. [in preparation]

## PREPRINTS – TECHNICAL REPORTS

1.  S. Lambropoulou "On Markov's theorem", *Warwick University Preprint* 30 (1992).

2.  M. Geck, S. Lambropoulou "Markov traces and knot invariants related to Iwahori-Hecke algebras of type B", *Mathematica Gottingensis*, Heft 25 (1995).

3.  S. Lambropoulou, C.P. Rourke "Markov's theorem in 3-manifolds", *Mathematica Gottingensis*, Heft 46 (1995).

4.  S. Lambropoulou, "Knot theory related to generalized and cyclotomic Hecke algebras of type B", *Mathematica Gottingensis*, Heft 25 (1997).

5.  S. Lambropoulou, "Braid groups related to knot complements, handlebodies and 3-manifolds", *Mathematica Gottingensis*, Heft 01 (2000).

6.  S. Lambropoulou, C.P. Rourke "Algebraic Markov equivalence for links in 3-manifolds", Rapport de recherche 2004 – 40, *Université de Caen* CNRS UMR 6139.

7.  L.H. Kauffman, S. Lambropoulou "Virtual braids", Rapport de recherche 2004 – 41, *Université de Caen* CNRS UMR 6139.

8.  J. Juyumaya, S. Lambropoulou "Invariants of framed links and $p$-adic framed links", *Mathematisches Forschungsinstitut Oberwolfach* Report No. 22/2008; pp. 1192-1195.

9.  L.H. Kauffman, S. Lambropoulou "A categorical model for the virtual braid group", *Oberwolfach Preprints* OWP 2011 - 19**.**

10. S. Lambropoulou "Braid equivalences and the $L$-moves", *Oberwolfach Preprints* OWP 2011 - 20.

11. M. Chlouveraki, S. Lambropoulou "The 2-variable Jones polynomial and the invariants from the Yokonuma--Hecke algebras", *Mathematisches Forschungsinstitut Oberwolfach* Report No. 28/2012.

12. J. Juyumaya, S. Lambropoulou "Modular framization of the BMW algebra". See arXiv:1007.0092.

13. S. Lambropoulou (joint work with S. Antoniou, N. Samardzija, I. Diamantis) "Topological Surgery and Dynamics", *Mathematisches Forschungsinstitut Oberwolfach* Report No. 26/2014 (Workshop: Algebraic Structures in Low-Dimensional Topology).

## CHAPTERS IN BOOKS – SURVEY PAPERS

1.  L.H. Kauffman, S. Lambropoulou, "From tangle fractions to DNA", in *Topology in Molecular Biology, Proceedings of the International Workshop and Seminar on Topology in Condensed Matter Physics, Dresden, 16-23 June 2002*, M. Monastirsky Ed.; *Springer Verlag,* 2006.

2.  J. Juyumaya, S. Lambropoulou "*p*-adic framed braids", in *Proceedings of the 6th Panhellenic Conference in Algebra and Number Theory, Thessaloniki, June 10-12, 2006*; Th. Theohari-Apostolidi, H. Charalambous, Eds.; Aristotle University of Thessaloniki Publ., 2006; pp. 69-80.

3. L.H. Kauffman, S. Lambropoulou "Unknots and DNA", in *Current Developments in Mathematical Biology*; K. Mahdavi, R. Culshaw, J. Bucher Eds.; Ser. Knots Everything, vol. 38; World Sci. Publ. Co., 2007; pp. 39-68.

4. J. Juyumaya, S. Lambropoulou "*p*-adic framed braids and *p*-adic Markov traces", in *Intelligence of Low Dimensional Topology 2006*; J.S. Carter, S. Kamada, L.H. Kauffman, A. Kawauchi, T. Kohno, Eds.; Ser. Knots Everything, vol. 40; World Sci. Publ. Co., 2007; pp. 75-84.

5. L.H. Kauffman, S. Lambropoulou "The *L*-move and virtual braids", in *Intelligence of Low Dimensional Topology 2006*; J.S. Carter, S. Kamada, L.H. Kauffman, A. Kawauchi, T. Kohno, Eds.; Ser. Knots Everything, vol. 40; World Sci. Publ. Co., 2007; pp. 133-142.

6. L.H. Kauffman, S. Lambropoulou, "Tangles, Rational Knots and DNA", in *Lectures on Topological Fluid Mechanics; Lectures given at the C.I.M.E. Summer School held in Cetraro, Italy, July 2-10, 2001, Berger et al.*, R.L. Ricca Ed.; Lecture Notes in Mathematics, vol. 1973; Springer*,* 2009, pp. 99-138 (3rd chapter).

7. S. Lambropoulou "Braid equivalences and the *L*-moves", in *Introductory Lectures on Knot Theory* with subtitle *Selected Lectures presented at the Advanced School and Conference on Knot Theory and its Applications to Physics and Biology, ICTP, Trieste, Italy, 11 - 29 May 2009*; L.H. Kauffman, S. Lambropoulou, J.H. Przytycki, S. Jablan, Eds.; Ser. Knots Everything, vol. 46; World Scientific Press, 2011; pp. 281-320. See also ArXiv.

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**CITATIONS**

183 times by 112 authors (MathSciNet)
230 (Google Scholar)
h-index=6 (Scopus)

**SELECTED CITATIONS IN MONOGRAPHS AND BOOKS**

1. Kamada, S. "Braid and Knot Theory in Dimension Four", *Mathematical Surveys and Monographs*, Vol. 95, AMS 2002 (cites 3, 4).

2. Burde, G.; Zieschang, H. "Knots" 2nd revised and extended edition, *Walter de Gruyter* Berlin·New York 2003 (cites 1, 2, 3, 4, 5).

3. Cromwell P. "Knots and Links", illustrated ed., *Cambridge University Press*, 2004 (cites 7, 8, 9).

4. Jablan, S.; Sazdanovic, R., "LinKnot – Knot Theory by Computer", Series Knots Everything, vol. 21, *World Scientific,* 2007 (cites 7, 8, 9, 13-arXiv).

5. Kassel, C.; Turaev, V., "Braid groups", *GTM Springer* 2008 (citations in 2nd edition).

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**SCIENTIFIC ADMINISTRATOR OF GRANTS**

1998:       *Knots in Hellas '98*, Euroconferences EC Programme
                  ERBFMMACT980409, Delphi 7-15 August 1998. Budget: 72,000 EUR.

2002 - 2004: *Mathematics Education in Engineering,* EC Programme TEMPUS

JEP-16119-2001 with the Technical Univ. of Tirana and the Univ. of Trieste. Budget: 220,915 EUR.

2006 - 2008: LEUKIPPOS basic research grant of the National Technical University of Athens. Budget: 15,000 EUR.

2009 - 2011: PEBE2008 basic research grant of the National Technical University of Athens. Budget: 15,000 EUR.

2011 - 2012: PEBE2010 basic research grant of the National Technical University of Athens. Budget: 15,000 EUR.

2010 - 2013: *Topological methods for measuring polymer entanglements*, program IRAKLEITOS II of the Greek Ministry of Education & EU for the doctoral student Eleni Panagiotou. Budget: 45,000 EUR.

2012 - 2014: *Hecke algebras and braid groups associated with complex reflection groups*, program of the General Secretariat of Research and Technology & EU for the post-doctoral researcher Maria Chlouveraki. Budget: 150,000 EUR.

2012 - 2015: *Algebraic modeling of topological and computational structures*, program THALES, MIS 380154, co-financed by Greece and the EU. Involves 37 researchers worldwide. Budget: 540,000 EUR.

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## RESEARCH VISITS BY INVITATION

- **Odense University** (Denmark), 2 weeks, March 1993 (J. Przytycki).
- **Univ. of Texas at Austin** (USA), 5 weeks, April-May 1993 (K. Uhlenbeck & C. Gordon).
- **Columbia Univ. N.Y.** (USA), 4 weeks, March 1994 (J. Birman).
- **Göttingen Univ.** (Germany), 2 weeks, February 1994, 7 weeks, June-July 1994, 4 months, May-August 1995 (T. tom Dieck).
- **Univ. de Paris VII Denis Diderot** (France), 1 week, June 1996, 1 week Sept. 1996 (M. Geck).
- **Polish Academy of Science**, Warsaw (Poland), 2 weeks, March-April 1996, 1 week, August 1997 (B. Jakubczyk & P. Traczyk).
- **Max-Planck-Institut für Mathematik, Bonn** (Germany), 4 days, April 1999 (A. Stoimenow & F. Hirzebruch).
- **Univ. of Illinois at Chicago** (USA), 1 week, April 1999, 1 week in October 1999, 2 weeks in April 2000, 2 weeks in February 2001, 1 week in November 2001, 2 weeks Jan. – Feb. 2005, 2 weeks in Sept. 2005, 1 week in April 2006, 2 weeks in April 2007. (L.H. Kauffman).
- **Univ. of Madison** (USA), 1 week in February 2002 (A. Ram).
- **Univ. de Caen** (France), 1 month in February 2003 (P. Dehornoy).
- **Univ. of Valparaiso** (Chile), 2 weeks in Nov. 2003, 2 weeks in August 2005, 2 weeks in Feb. 2008, 2 weeks in March 2009, 1 week in December 2010 (J. Juyumaya).
- **MF Oberwolfach,** Germany, 2 weeks in July 2005 (Research In Pairs with L.H. Kauffman).

- **MF Oberwolfach,** Germany, 2 weeks in July 2010 (Research In Pairs with L.H. Kauffman).
- **Abdus Salam School of Mathematical Sciences** (ASSMS) Lahore - Pakistan, invited for any duration from 1 month to 1 year (Prof. Dr. A.D.R. Choudary Director General). Did not realize the visit.
- **MF Oberwolfach,** Germany, 2 weeks in March 2011 (Research In Pairs with K. Karvounis and S. Chmutov).
- **MF Oberwolfach,** Germany, 1 week in December 2011 (Research In Pairs with L.H. Kauffman and D. Buck).
- **MF Oberwolfach,** Germany, 1 week in November 2012 (Research In Pairs with S. Klaus).
- **MF Oberwolfach,** Germany, 1 week in February 2013 (Research In Pairs with S. Klaus).
- **Belgrade University and Serbian Academy of Sciences,** Serbia, 1 week in April 2013 (Research collaboration with S. Jablan).
- **Minneapolis,** USA, 1 week July 2013 (Research collaboration with N.Samardzija).
- **MF Oberwolfach,** Germany, 1 week in April 2015 (Research In Pairs with I. Diamantis and B. Gabrovsek).

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### ORGANIZING OF MEETINGS AND WORKSHOPS

- Co-organized (with T. tom Dieck) a meeting on Braids, Knots and related Algebra, SFB 170, **Göttingen Univ.**, 13 – 16 July 1995.
- Organized a workshop on Braids within the Conference in Knot Theory and Low-dimensional Topology, **Warsaw**, 17 July – 25 August 1995.
- Main organizer of the International Conference in Knot theory and its Ramifications; **Knots in Hellas '98**, European Cultural Centre of Delphi, 7 – 15 August 1998. (Euroconferences Programme of E.C. Co-organizers: V.F.R. Jones, C. Gordon, S. Negrepontis, J. Przytycki.)
- Member of the International Advisory Board of the 3rd International Workshop Graphs Operads Logic, **Mexico**, 2-13 February 2004.
- Co-organizer (with J. Przytycki and Y. Rong) of the meeting "Knots in Washington XX; 60th birthday of Louis H. Kauffman", **George-Washington Univ.**, 11–13 February 2005.
- Organized a workshop in Knot Theory and Applications, **NTUA**, 30 October 2005.
- Organized a workshop in Knot Theory and Applications, **NTUA**, November 2006.
- Main organizer of the **8th Panhellenic conference** in Algebra, Number theory and Applications, NTUA, 29 – 31 May 2008.
- Co-organizer (with L.H. Kauffman, J.H. Przytycki, S. Jablan) of the Advanced School and Conference on "Knot Theory and its Applications to Physics and Biology", ICTP (International Centre for Theoretical Physics) **Trieste**, 11 – 29 May 2009.

- Co-organizer (with L.H. Kauffman, J.H. Przytycki, S. Jablan) of the "**KNOTS IN CHICAGO**", University of Illinois at Chicago, 10--12 September 2010.
- Co-organizer (with J. Juyumaya, L.H. Kauffman, V.F.R. Jones) of the 1st Joint Meeting of **AMS − SOMACHI, Special Session** on Algebraic modeling of knotted objects, Pucon, **Chile**, 15—18 December 2010.
- Organized (with A. Arageorgis) a workshop in Mathematics for students of the Anavryta experimental high school, **NTUA**, Athens, 3 February 2012.
- Co-organizer (with P. Psarrakos, M. Loulakis) the journee "**Papafest**" for the 100 years from the birth of C. Papakyriakopoulos (see link at http://www.math.ntua.gr/~sofia/), NTUA, Athens, 22 December 2014.
- 3-day meeting for dissemination of the results of the grant **THALES**, NTUA, Athens, 1—3 July 2015.
- Main organizer of the International Conference **Knots in Hellas 2016**, Olympic Academy, Greece, 10 – 16 July 2016. (Co-organizers: V.F.R. Jones, L.H. Kauffman, C. Adams, C. Gordon, K. Millett, R. Ricca.)

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**CO-EDITORSHIPS**

- Academic editor of the journal *J. Knot theory Ramifications,* World Sci. Press (since 2002). http://www.worldscinet.com/jktr/jktr.shtml

- Co-editor (with L.H. Kauffman, J.H. Przytycki, S. Jablan), Proceedings of the Advanced School and Conference on Knot Theory and its Applications to Physics and Biology at the International Centre for Theoretical Physics (ICTP), Trieste, Italy, 11 – 29 May 2009. In *Ser. Knots Everything,* World Scientific Press (in preparation).

- Co-editor (with J.H. Przytycki), Proceedings of the International Conference Knots in Washington XX; 60th birthday of Louis H. Kauffman; 11 – 13 February 2005, George Washington University. Volume 6, in World Scientific *Ser. Knots Everything*, Vol. (not decided yet), to appear 2011 (in preparation).

- Co-editor (with J.H. Przytycki), Proceedings of the International Conference Knots in Washington XX; 60th birthday of Louis H. Kauffman; 11 – 13 February 2005, George Washington University. Volume 5, in *J. Knot Theory Ramifications* 16(10), December 2007, 211 + xi pages.

- Co-editor (with J.H. Przytycki), Proceedings of the International Conference Knots in Washington XX; 60th birthday of Louis H. Kauffman; 11 – 13 February 2005, George Washington University. Volume 4, *J. Knot Theory Ramifications* 16(7), September 2007, 159 + xii pages.

- Co-editor (with J.H. Przytycki), Proceedings of the International Conference Knots in Washington XX; 60th birthday of Louis H. Kauffman; 11 – 13 February 2005, George Washington University. Volume 3, in *J. Knot Theory Ramifications* 16(3), March 2007, 135 + viii pages.

- Co-editor (with J.H. Przytycki), Proceedings of the International Conference Knots in Washington XX; 60th birthday of Louis H. Kauffman; 11 – 13 February 2005, George Washington University. Volume 2, in *J. Knot Theory Ramifications* 15(8), October 2006, 158 + v pages.

- Co-editor (with J.H. Przytycki), Proceedings of the International Conference Knots in Washington XX; 60th birthday of Louis H. Kauffman; 11 – 13 February

2005, George Washington University. Volume 1, in *J. Knot Theory Ramifications* 15(6), August 2006, 151 + xii pages.

- Co-editor (with V.F.R. Jones, C. Gordon, L.H. Kauffman, J.H. Przytycki), Proceedings of the International Conference ``Knots in Hellas 98'', Volume 3, in *J. Knot Theory Ramifications* 10(5), August 2001, 170 pages.

- Co-editor (with V.F.R. Jones, C. Gordon, L.H. Kauffman, J.H. Przytycki), Proceedings of the International Conference ``Knots in Hellas 98'', Volume 2, in *J. Knot Theory Ramifications* 10(2), March 2001, 175 pages.

- Co-editor (with V.F.R. Jones, C. Gordon, L.H. Kauffman, J.H. Przytycki), Proceedings of the International Conference ``Knots in Hellas 98'', Volume 1, in *Ser. Knots Everything,* Vol. 24 , 2000, World Scientific Press, 600 pages.

- Co-editor (with L.H. Kauffman, R. Sazdanovic) of the special issue of *J. Knot Theory Ramifications* dedicated to the memory of S. Jablan.

- Co-editor (with D. Theodorou, P. Stefaneas and L.H. Kauffman) of the Book at *Springer Proceedings in Mathematics & Statistics (PROMS)* titled "Algebraic modeling of Topological and Computational Structures and Applications".

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### REFEREE – REVIEWER

- Referee for the journals:
  *J. Knot Theory Ramifications, Geometry and Topology, Topology and its Applications, J.Reine und Angew. Math., The Fibonacci Quarterly, J. Mathematical Chemistry, Discrete Mathematics, Rocky Mountain J., Applied General Topology, Manuscripta Mathematica.*
- NSF proposal reviewer.
- NSF panelist for the section "Topology", Washington DC, February 2005.
- DAAD panellist for the section "Mathematics & Physics", since 2012.
- Reviewer of research proposals for the University of Patras (2008, 2014).
- Referee for the conference proceedings:
  "Conference in Knot theory and Low-dimensional Topology" in *Banach Centre Publications;* V.I. Arnold's memorial issue of the *Moscow Mathematical Journal.*
  - Reviewer of research proposal for the Competition of Applied Research and Innovation «Η Ελλάδα Καινοτομεί!» (ΣΕΒ-Eurobank), Dec. 2012.

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### PARTICIPATION IN MEETINGS

### INVITED TALKS TO MEETINGS

- Conference on Quantum Topology, **Kansas State Univ.**, USA, 21- 27 March 1993.
- International meeting on Knots and Links, **Siegen Univ.**, Germany, 18 – 24 July 1993.
- Workshop on Conformal Field Theory, Operator Algebras and Low-dimensional Topology, **Warwick Univ.**, U.K., 10 – 24 August 1993.
- 892nd AMS meeting, Special Session on Invariants of Low-dimensional Manifolds III, **Brooklyn, N.Y.**, USA, 8 – 10 April 1994.

- Workshop on Quantum Groups, **Bielefeld Univ.**, Germany, 7 – 9 July 1994 (invited speaker).
- International Conference in Low-dimensional Topology: Knots, 3-manifolds and applications, **CIRM Marseille-Luminy**, France, 18 – 22 July 1994.
- 1st International Joint Meeting of AMS – IMU, Special Session on Braids and Low-dimensional Topology, **Hebrew Univ.**, Israel, 23 – 26 May 1995.
- International Conference in Knot Theory and Low-dimensional Topology, S. **Banach International Mathematical Centre**, Warsaw, Poland, 17 July – 25 August 1995.
- 1st British Women Mathematicians' meeting, **Imperial College**, London, U.K., 22 September 1995 (invited speaker).
- International Conference in Knot Theory and Low-dimensional Topology, **Tokyo Univ.**, Japan, 22 – 31 July 1996.
- International Conference in Knot theory and its Ramifications; Knots in Hellas '98, European Cultural Centre of Delphi, Greece,  7 – 15 August 1998 (main organizer).
- 943rd AMS meeting, Special Session on Knots and 3-Manifolds, **SUNY Buffalo**, USA, 24 – 25 April 1999.
- Rencontre "Journées Tresses", **CIRM Marseille-Luminy**, France, 8–13 June 1999.
- 954th AMS meeting, Special Session on Quantum Topology, **Univ. of Louisiana at Lafayette**, USA, 14–16 April 2000.
- International Conference "Knots 2000", **Korea**, 31 July – 5 August 2000.
- International Conference on Knots, Links and Manifolds, **Siegen Univ.**, Germany, 5 – 12 January 2001.
- 965th AMS meeting, Special Session on Topology of Links, **Las Vegas Univ.**, Nevada, USA, 21-22 April 2001.
- 972nd AMS meeting, Special Session on Quantum Topology, **Irvine Univ.**, California, USA, 10-11 November 2001.
- VII Meeting on Mathematics and Molecular Biology, **Santa Fe**, New Mexico, 5-10 January 2002 (invited poster).
- 974th AMS meeting, Special Session on Quantum Topology in Dimension Three, **Ann Arbor**, Michigan, USA, 1-3 March 2002.
- International Workshop and Seminar on Topology in Condensed Matter Physics, **Max-Planck-Institut für Physik komplexer Systeme, Dresden**, Germany, 16-23 June 2002.
- Workshop on Interactions between Representation theory, Knot theory, Topology and Mathematical Physics, **Potsdam Univ.**, USA, 8-12 July 2002 (inv. speaker).
- Colloque de Théorie des Nœuds, **LMPA Calais**, France, 27-28 November 2002 (invited speaker).
- Workshop on Interactions between Representation theory, Knot theory, Topology, Quantum field theory, Category theory and Mathematical Physics, **Potsdam Univ.**, USA, 2-6 June 2003.
- Knots in **Poland** 2003, Warsaw, Poland, 7-13 July 2003.

- 3rd International Workshop Graphs Operads Logic, **Mexico**, 2-13 February 2004 (plenary speaker).
- 1000th AMS Meeting, Special Session on Categories and Operads in Topology, Geometry, Physics and Other Applications, **Albuquerque**, New Mexico, USA, 15-17 October 2004.
- 1002nd AMS Meeting, Special Session on Invariants of knots and 3-manifolds, **Pittsburgh, Philadelphia**, USA, 6-7 November 2004.
- Knots in Washington XX; 60th birthday of Louis H. Kauffman, **George Washington Univ.**, USA, 11-13 February 2005 (co-organizer).
- Workshop on Cellular and diagram algebras in mathematics and physics, Mathematical Institute, **University of Oxford**, UK, 3-9 April 2005.
- 2005 AMS-IMS-SIAM Summer Research Conference on Quantum Topology, **Snowbird, Utah**, USA, 5-9 June 2005.
- MANIFOLDS and their MAPPINGS, 5th International Siegen Topology Symposium, **Siegen Univ.**, Germany, 25-30 July 2005.
- 1017th AMS Meeting, Special Session on Quantum invariants of knots and 3-Manifolds, **Durham, New Hampshire**, USA, 22-23 April 2006.
- 6th Panhellenic Conference in Algebra and Number Theory, Thessaloniki, 10-11 June 2006 (with international participation).
- Intelligent of Low Dimensional Topology 2006, **Hiroshima Univ.**, Japan, 22-27 July 2006 (invited speaker).
- Knots in Washington XXIV, **George Washington Univ.**, USA, 13-15 April 2007.
- 7th Panhellenic Conference in Algebra and Number Theory, Samos, 31 May–2 June 2007 (with international participation).
- AMS/PTM International Meeting, Special Session on Invariants of links and 3-manifolds, **Warsaw**, Poland, 31 July-3 August 2007.
- Workshop "Invariants in Low-Dimensional Topology", **MF Oberwolfach** Germany, 4-10 May 2008 (invited participation & talk).
- 8th Panhellenic Conference in Algebra and Number Theory, NTUA, Athens, 29-31 May 2008 (with international participation) (main organizer).
- Workshop "The Mathematics of Knots: Theory and Application", **Mathematics Centre Heidelberg**, 15- 19 December 2008 (invited speaker).
- Conference on "Knot Theory and its Applications to Physics and Biology", **ICTP Trieste**, 11 – 29 May 2009 (co-organizer & conference speaker).
- 26th Panhellenic Conference on Mathematical Education, Greek Math. Soc., Workshop "The Mathematics of everyday life", **Thessaloniki**, 13-15 Dec. 2009 (invited speaker).
- KNOTS IN CHICAGO, University of Illinois at **Chicago**, 10--12 September 2010 (co-organizer & invited speaker).
- 1st Joint Meeting of AMS – SOMACHI, Special Session on Algebraic modelling of knotted objects, Pucon, **Chile,** 15—18 December 2010 (co-organizer & invited speaker).

- International Conference on "Knot Theory and Applications", **Pisa**, 2 - 8 July 2011 (invited speaker).
- "Geometry and Topology, International Conference dedicated to the 75th birthday of Alexei B. Sossinsky", **Moscow** Independent University, 8-9 Oct. 2012.
- "Algebraic Structures in Low-Dimensional Topology", **MF Oberwolfach Germany**, 26-30 May 2014 (invited participation & talk).
- "Knots and Links in Fluid Flows - From Helicity to Knot Energies", **Moscow** Independent University, 27-30 April, 2015.
- 18th Symposium on Topological Quantum Information, Univ. of **Athens**, Greece, 8-10 June 2015.
- International Congress on Mathematics MICOM-2015, Math. Soc. of South-Eastern Europe and Hellenic Math. Soc., 22-26 Sept. 2015, **Athens**, Greece.
- 32nd Panhellenic Meeting on Mathematical Education, Hellenic Math. Soc., 30 Oct. – 1 Nov., **Kastoria**, Greece.

### SELECTED INVITED PARTICIPATION TO MEETINGS

- Knotentheorie Meeting, **Oberwolfach Forschungsinstitut**, Germany, 10–16 September 1995.
- Modular Representation Theory meeting, **Isaac Newton Institute**, Cambridge, 1–6 April 1997.
- Topologie Meeting, **Oberwolfach Forschungsinstitut**, Germany, 31 August – 6 September 1997.
- Conference in Low-dimensional topology in honour of J. Birman's 70th birthday, **Columbia Univ., N.Y.**, 14-16 March 1998.
- Conference on Mathematics and Molecular Biology, **Santa Fe**, New Mexico, 9-14 January 1999.
- Rencontre "Journées Tresses", **CIRM Marseille-Luminy**, France, 8–13 June 1999.
- Journées Toulousaines, Autour des tresses et des noeds, Univ. Paul Sabatier, **Toulouse**, 5-8 June 2000.
- Journee du GDR Tresses du CNRS, **Marne-la-Vallee**, Paris, 16 – 18 Novembre 2000.
- Rencontre " Journées Tresses", **CIRM Marseille-Lumini**, 11–15 June 2001.
- Workshop on Quantum Topology in Dimension 3, **MF Oberwolfach**, Germany, 20-25 October 2003.
- International Conference on "Knot Theory and Algebra", **Switzerland**, 21–27 May 2011.
- Workshop "Invariants in Low-Dimensional Topology and Knot Theory", **MF Oberwolfach,** Germany, 3 - 9 June 2012.

### SELECTED SEMINARS AND COLLOQUIUM TALKS

- **Warwick University** (UK), Topology Seminars, 21/06/1990, 10/10/1991.
- **Austin University**, Texas (USA), Topology Seminars, 19/04/1993, 21/04/1993.
- **Univ. of Swansea** (UK), Topology Seminar, spring 1994.

- **Cambridge University** (UK), Topology Seminars, 25/11/1993, 14/11/1994.
- **Columbia University** (USA), Topology Seminars, 01/04/1994.
- **Göttingen Universität** (Germany), Topology Seminars, 21/02/1994, 28/02/1994.
- **Odense Univ.** (Denmark), Colloquium, 04/03/1993.
- **J.W.Goethe-Universität, Frankfurt** (Germany), Colloquium, 10/11/1995.
- **Paris VII** (France), 12/06/1996 (Groupe de travail organisé par A. Bruguières, G. Maltsiniotis, G. Masbaum et P. Vogel).
- **University of Athens**, Greece, Topology Seminar, April 1996.
- **Isaac Newton Institute**, Cambridge, April 1997.
- **Bonn Universität**, 02/12/1997 (H. Bödigheimer's Oberseminar).
- **Universität -GH-Siegen**, Colloquium, 15/12/1998.
- **Max-Planck-Institut für Mathematik, Bonn** (Germany), 09/04/1999.
- **Univ. SUNY Buffalo** (USA), Topology Seminar, 23/04/1999.
- **Univ. of Illinois at Chicago** (USA), Topology Seminars, April 1999, October 1999, April 2000, February 2001, November 2001.
- **Univ. of Wisconsin**, Madison (USA), Topology Seminar and Lie Theory Seminar, 22/02/.2002 and 24/02/2002.
- **IRMA, Université Louis Pasteur, Strasbourg** (France), Séminaire de Géométrie et Topologie, 01/12/2002.
- **Université de Caen** (France), Séminaire Structures Discrètes, 18/02/2003.
- **George-Washington University** (USA), Colloquium, 05/11/2004.
- **University of Valparaiso** (Chile), Colloquium, August 2005.
- **170 years NTUA**, 12/2007.
- **University of Thessaloniki**, Greece, Algebra Seminar, 13/12/2007.
- **Experimental School of Anavryta**, 7/02/2008.
- **University of Ioannina**, Greece, Colloquium, 18/12/2009.
- **Sebian Academy of Sciences,** 11 April 2013.
- **EPF Lausanne**, Geometry Seminar, 31 March 2015.

## LECTURER IN ADVANCED SCHOOLS

- **University of British Columbia**, MSRI-PIMS Summer Graduate Programme: Knots and 3-Manifolds and Knots in Vancouver, 6-21 July 2004, 4 invited lectures (organizer D. Rolfsen).
- Summer School, **National Technical University of Athens**, Summer 2008, 1 invited lecture (organizer N. Stavrakakis).
- Advanced School on "Knot Theory and its Applications to Physics and Biology", **ICTP Trieste**, 11 – 29 May 2009, 3 lectures (co- organizer).
- Advanced School on "Knot Theory and Applications", **Pisa**, 2 -- 13 May 2011, 6 invited lectures (organizer R. Ricca). Did not realize the visit.

## STUDENTS

**POST-DOC RESEARCHERS**

Maria Chlouveraki (2012 – 2014)
"Hecke algebras and braid groups associated with complex reflection groups"

(U. Versailles)

Eleni Panagiotou (2013; since August 2013 Visiting Assist. Prof. U.S.B. California)
"Measuring topological entanglement in polymers"
Ioannis Diamantis (2015; since September 2015 Visiting Prof. China Agricultural U.)


**PHD STUDENTS**

Stathis Antoniou (started May 2014)

Neslihan Gügümcü (started December 2013)

Ioannis Diamantis (November 2007 - December 2014)
"The HOMFLYPT skein module of lens spaces via braids"

Demoklis Goundaroulis (Spring 2007 - January 2014)
"Invariants of knots and 3-manifolds from the Yokonuma-Temperley-Lieb algebras"

Eleni Panagiotou (July 2008 - September 2012)
"Topological methods for measuring the entanglement of polygonal curves"


**MSC STUDENTS**

Eleni Panagiotou, "Topological methods for measuring the entanglement of polymers", December 2008. Thomaidio Award NTUA for best publication in 2010.

Anastasios Chronopoulos, "The analogues of the 2-variable Jones polynomial for type B – knots in the solid torus", February 2008.

Ioannis Diamantis, "Applications of Knot Theory in Chemistry and Biology", Nov. 2007.

Konstantina Kominaki, "Applications of Knot theory to electrical networks", July 2002.


**DIPLOMA STUDENTS**

Petros Pandavos (ΣΗΜΜΥ) "An introduction to Khovanov homology", January 2014.
Despina Mandratzi "Music and symmetry: the actions of the atonal and the neo-Riemannian group on the set of consonant triads", December 2013.

Danai Mantopoulou-Palouka "The braid groups and applications to cryptography and polymers", July 2013.

Evangelia Larentzaki "The prime numbers", June 2012.

Vassiliki Bithimitri "Continued fractions and real numbers: approximations and applications", November 2011.

Georgios Ninis "Group theory in crystallography", March 2011.

Konstantinos Karvounis "Programming for Yokonuma-Hecke algebras", Nov. 2010.

Dimitrios Kardaris "Differential Topology in Physics", July 2010.

Adriani Nikolakopoulou "On Dehn's Lemma", July 2010.

Konstantinos Panagidis "What is Knot Theory in Mathematics: an introduction in HTML and Flash", (co-supervision with N. Tracas), June 2008.

Ioannis Kiouvrekis "The Banach-Tarski paradox", June 2008.

Antonis Paterakis "The Theorems of Alexander and Markov in Knot Theory", May

2008.

<u>Eleni Androulaki</u> "Thermodynamical analysis based on Statistical Mechanics and the Theory of Knots", March 2008.

<u>Faedra Stavropoulou</u> "Knots and links in graphs and applications to Stereochemical Topology", October 2007.

<u>Evgenia Alexopoulou</u> "p-adic numbers and an application to Diophantine equations", June 2007.

<u>Eleni Panagiotou</u> "Twelve proofs of the Fundamental Theorem of Algebra", October 2006.

<u>Konstantinos Eptaimeros</u> "Continuous finite element methods of interior penalty for the biharmonic problem", October 2006.

<u>Anastasios Chronopoulos</u> "An introduction to the theory of knots, the 2-variable Jones polynomial and the classification of the Weyl groups", October 2005.

<u>Kostis Barbagianneris</u> "Knots, braids and Statistical Mechanics", October 2005.

<u>Stathis Antoniou</u> "The chaotic attractor of a 3-dimensional Lotka-Volterra dynamical system and its relation to topological surgery", July 2005.

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**TEACHING**

1990/1991:   Supervisions to undergraduate students of mathematics, **Warwick U**.

1991/1992:   Example classes in 3rd year *Group Theory*, **Warwick U**.

1994/1995:   Supervisions to 2$^{nd}$ year undergraduates of Christ's College in *Linear Mathematics*, **Cambridge U**.

Spring 1996: Assistant for the 3$^{rd}$ year course: *Topologie und Algebraische Topologie*, **Göttingen Uni**.

1996 / 1997:  Assistant for the 1$^{st}$ year course: *Analytische Geometrie und Lineare Algebra,* **Göttingen Uni**.

1997 / 1998:   Assistant for the 1$^{st}$ year course: *Differenzial- und Integralrechnung I & II*, **Göttingen Uni**.

Spring 1998:  Reading seminar on topics of *Knot theory and 3-manifolds*, **Göttingen Uni**.

Fall      1998: Assistant for the 3$^{rd}$ year course *Differenzial Geometrie*, **Göttingen U**.

Spring 1999: Graduate course in *Knotentheorie*, **Göttingen Uni**.

Fall     1999: Assistant for the 1$^{st}$ year course: *Mathematik für Biologen und Geologen*, **Göttingen Uni**.

April    2002: Postgraduate mini-course in *Knotentheorie*, in the framework of the Erasmus EC Programme, **Göttingen Uni**.

Spring 2004: Example classes in *Mathematique* 1$^{st}$ year, **Université Caen**.

**<u>Teaching at the NTUA</u>**

- *Linear Algebra and Analytic Geometry,* 1$^{st}$ semester Mechanical Engineering School (2000), 1$^{st}$ semester Civil Engineering School (2000, 2008, 2009, 2013, 2014), 1$^{st}$ semester Mining Engineering School (2009).
- *Linear Algebra and Analytic Geometry,* 1$^{st}$ semester SAMPS (2001, 2002, 2003, 2004, 2005, 2009, 2011, 2012, 2013, 2014).
- *Linear Algebra and Applications,* 2$^{nd}$ semester SAMPS (2000, 2001, 2002, 2003, 2005, 2010, 2012).

- *Algebra I*, 5th semester SAMPS (2001, 2002, 2003, 2004, 2005, 2007, 2008), renamed to:
- *Algebra and Applications*, 7th semester SAMPS (2009, 2010, 2011, 2012, 2013, 2014).
- *Algebra II*, 8th semester SAMPS (2010, 2012, 2014, 2015).
- *Knot Theory and Applications in Physics, Biology, Chemistry and Graph Theory,* M.Sc. course at SAMPS (spring 2001, 2006, 2007, 2008, 2010, 2014).
- *Algebra Seminar* for graduates and undergraduates, NTUA (fall 2005, spring 2006).

## OTHER PROFESSIONAL ACTIVITIES

- Member of the Scientific Users Committee for Zentralblatt/ZBMATH (as of May 2011).
- Member of three Selection Committees for positions at the Department of Mathematics of SAMPS, NTUA and member of electing bodies for positions at SAMPS, NTUA.
- Member of Committees for PhD theses, and MSc and Diplom dissertations of the Department of Mathematics of SAMPS and of the School of Electrical Engineering, NTUA.
- Member of the Postgraduate Committee of the Mathematics Department of SAMPS, NTUA.
- Member of the Committee for organizing conferences for the professional orientation of students of SAMPS, NTUA (2002 - 03).
- Coordinator of the ERASMUS Student/Staff Exchange Program of the School of Applied Mathematical and Physical Sciences of the NTUA.
- Member of the International Relations Committee of SAMPS and of the NTUA.
- Member of the Educational Excursion Committee of SAMPS, NTUA.
- Member of the MSc Program committee of the Univ. of Valparaiso, Chile.

## LANGUAGES

Greek, English, German, French.