**CURRICULUM VITAE**

**Alexandre V. Karassev**

Professor of Mathematics

Computer Science and Mathematics Department
Nipissing University
100 College Drive, Box 5002
North Bay, Ontario P1B 8L7 CANADA

Office: A124C
Phone: +1 (705) 474–3461 ext. 4140
Fax: +1 (705) 474–1947
E-mail: alexandk@nipissingu.ca
http://faculty.nipissingu.ca/alexandk

## PERSONAL INFORMATION

Date of birth: April 4, 1974

Citizenship: Russian, Canadian

## EDUCATION

Ph. D. in Mathematics, 1999 – 2002, University of Saskatchewan.
Advisor: A. Chigogidze

M. Sc. in Mathematics and Applied Mathematics (with distinction), 1991 – 1996, Moscow State University. Advisor: V.V. Fedorchuk

## GRANTS, AWARDS, SCHOLARSHIPS

- NSERC Discovery Development Grant, $20,000/year, 2024 – 2026
- Nipissing University Award in Support of Research, Scholarly, and Creative Activities, $7,000, 2023 – 2024
- NSERC Discovery Grant, $11,000/year, 2015 – 2020
- NSERC Discovery Grant, $16,000/year, 2009 – 2014
- Nipissing University Research Achievement Award, $5,000, 2009 – 2010
- NSERC Discovery Grant, $9,000/year, 2004 – 2009
- Nipissing University Start-Up Research Grant, $3,000, 2003 – 2004
- University of Saskatchewan Graduate Thesis Award in the Physical and Engineering Sciences, Spring 2002
- University Graduate Scholarship, 1999 – 2002, University of Saskatchewan

- Russian Foundation for Basic Research Grant, project no. 97-01-00357, 1996 – 1999
- I.G. Petrovsky Scholarship, 1994, Moscow State University, Moscow, Russia

# RESEARCH

## RESEARCH INTERESTS

General and Geometric Topology, Geometric Group Theory, Geometry, Topological Data Analysis

## PAPERS, PUBLISHED, ACCEPTED, OR SUBMITTED TO REFEREED JOURNALS

1. *Simple polynomial equations over* $(m \times m)$*-matrices* (with V. Chatyrko), submitted.
2. *Simple polynomial equations over* $2 \times 2$*-matrices* (with V. Chatyrko), Applied General Topology, accepted.
3. *Analyzing short texts using Wordscores*, (with D. Paczay), submitted.
4. *A topological data analysis of the language of loneliness*, (with M.P. Sullivan, C. Victor, and B. Effah), preprint.
5. *Metric thickenings of Vietoris-Rips complexes are ANRs*, (with H. Adams and Z. Virk), preprint.
6. *Dimension and decomposition complexity properties of tree-graded spaces* (with N. Brodskiy), preprint.
7. *On structural numbers of topological spaces*, (with V. Chatyrko), Mathematica Slovaca, accepted.
8. *On discrete homogeneity*, (with V. Chatyrko), General topology and related fields, RIMS Kyoto University, 2024, 14-21.
9. *Strongly locally homogeneous generalized continua of finite cohomological dimension*, (with P. Krupski, V. Valov, and V. Todorov), Topology Appl., 348, 2024, 108888, https://doi.org/10.1016/j.topol.2024.108888.
10. *On (θ-)discrete homogeneous spaces*, (with V. Chatyrko), Mathematica Slovaca, 73, no. 6, 2023, pp. 1587-1596. https://doi.org/10.1515/ms-2023-0115.
11. *Discrete homogeneity and ends of manifolds*, (with V. Chatyrko), Topology Appl. 336 (2023).
12. *On homogeneity of* $\mathbb{N}^\tau$, (with E. Shchepin and V. Valov), Topology Appl. 329 (2023).
13. *Homological characterizations of* $Q$*-manifolds and* $l_2$*-manifolds* (with V. Valov), Fund. Math. 259 (2022), 255–269.
14. *Countable dense homogeneity and Hattori spaces* (with V. Chatyrko), Q&A, 39, no. 2 (2021), 73 –87.

15. *Admissible topologies for groups of homeomorphisms and substitutions of groups of G-spaces* (with K. Kozlov), Topology Appl., 275 (2020).
16. *Reversible spaces and products* (with V. Chatyrko), Topology Proc., 49 (2017), 317–320.
17. *Base normal inductive dimension I of cubes* (with K.L. Kozlov), Fundamental and Applied Math., 20 (2015), no. 2, 113–124.
18. *Computation of inductive dimensions of product of compacta* (with K.L. Kozlov), Topology Appl., 179 (2015), 131–147.
19. *(Non)connectedness and (non)homogeneity* (with V. Chatyrko), Topology Appl., 179 (2015), 122–130.
20. *Alexandroff manifolds and homogeneous continua* (with V. Todorov and V. Valov), Canad. Math. Bull., 57 (2014), no. 2, 335–343.
21. *Maximal metrizable remainders of locally compact separable metrizable spaces* (with V. Chatyrko), Topology Appl. 160 (2013), 1292–1297.
22. *On metrizable remainders of locally compact separable metrizable spaces* (with V. Chatyrko), Houston J. Math. 39 (4), 2013.
23. *The (dis)connectedness of products in the box topology* (with V. Chatyrko), Q&A 31 (2013), 11–21.
24. *Generalized Cantor manifolds and homogeneity* (with P. Krupski, V. Valov, and V. Todorov), Houston J. Math. 38 (2012), no. 2, 583–609.
25. *On homotopical and homological $Z_n$-sets* (with T. Banakh and R. Cauty), Topology Proc. 38 (2011) 29–82.
26. *Finite-to-one maps into Euclidean manifolds and spaces with disjoint disks properties* (with M. Tuncali and V. Valov), Topology Appl. 157 (2010) 779–788.
27. *Equivalent metrics and spans of graphs* (with L. Hoehn), Colloq. Math. 114 (2009), no. 1, 135–153.
28. *Universal spaces, homotopy, and dimension of maps* (with V. Valov), Modern Math. and its Appl., Georgian Acad. Sci. (in Russian); transl. in J. Math. Sci. 155, Issue 4 (2008).
29. *Michael's problem and weakly infinite-dimensional spaces*, Topology Appl. 155 (2008), no. 15, 1694–1698.
30. *Root closed function algebras on compacta of large dimension* (with N. Brodskiy, J. Dydak, and K. Kawamura), Proc. Am. Math. Soc. 135 (2007), 587–596.
31. *Extension dimension and quasi-finite CW-complexes* (with V. Valov), Topology Appl. 153 (2006), no. 17, 3241–3254.
32. *Universal absolute extensors in extension theory* (with V. Valov), Proc. Amer. Math. Soc. 134 (2006), no. 8, 2473–2478.
33. *On two problems in extension theory*, Topology Appl. 153 (2006), no. 10, 1609–1613.

34. *On commutative and noncommutative $C^*$-algebras with the approximate n-th root property* (with A. Chigogidze, K. Kawamura, and V. Valov), Bull. Austral. Math. Soc. 72 (2005), 197–212.
35. *The Urysohn identity for closed subsets of some nonmetrizable manifolds*, Topology Proc. 28 (2004), no. 2, 579–585.
36. *Real rank and squaring mapping for unital $C^*$-algebras* (with A. Chigogidze and M. Rordam). Proc. Am. Math. Soc. 132 (2004), 783–788.
37. *Topological model categories generated by finite complexes* (with A. Chigogidze). Monatshefte für Mathematik 139 (2003), no. 2, 129–150.
38. *Approximations and selections of multivalued mappings of finite-dimensional spaces* (with N. Brodsky and A. Chigogidze). JP Journal of Geometry and Topology 2 (2002), no. 1, 29–73.
39. *On [L]-homotopy groups.* JP Journal of Geometry and Topology 3 (2001), no. 3, 301–310.
40. *Topological semigroups and universal spaces related to extension dimension* (with A. Chigogidze and M. Zarichnyi). Mat. Stud. 16, no. 2 (2001), 195 – 198.
41. *An infinite-dimensional 4-manifold of finite cohomological dimension with the continuum hypothesis.* Mat. Zametki 66 (1999), no. 5, 664–670 (Russian); English translation in Mathematical Notes 66 (1999), no. 5.
42. *On the inductive dimension of subsets of some nonmetrizable manifolds.* Vestnik Moskov. Univ. Ser. I Mat. Mekh. (1997) no. 5, 11–14 (Russian).

**INVITED PUBLICATIONS**

43. *Topology in North Bay: some problems in continuum theory, dimension theory, and selections* (with V. Valov and M. Tuncali), a chapter in the "Open Problems in Topology II" (Edited by Elliott Pearl), 2007, Elsevier

**THESES**

44. *On extension dimension and [L]-homotopy.* (2002) PhD Thesis.
45. *On the inductive dimension of subsets of some nonmetrizable manifolds.* (1996) MSc Thesis.

## INVITED TALKS AND VISITS

- Visited Department of Mathematics, Linkoping University, Sweden. April 24-May 3, 2025.
- *Metric thickenings of Vietoris-Rips complexes*, 58th Spring Topology and Dynamics Conference, March 6 - 8, 2025, Newport News, USA.
- *A topological analysis of the BBC Loneliness Experiment*, Joint Mathematical Meeting, January 8-11, 2025, Seattle, USA.

- Visited Department of Mathematics, Linkoping University, Sweden.
  April 2024.
- Visited Department of Mathematics, Linkoping University, Sweden.
  December 2022.
- Visited Department of Mathematics, University of Tennessee, Knoxville.
  December 2018.
- Visited Department of Mathematics, Linkoping University, Sweden.
  October 2018.
- Visited Department of Mathematics, University of Tennessee, Knoxville.
  December 6 - 19, 2017.
- Visited Department of Mathematics, University of Tennessee, Knoxville.
  May 1 - 4, 2017.
- Visited Department of Mathematics, Linkoping University, Sweden.
  October 2016.
- *Inductive dimension with respect to normal base*, 31st Summer Conference on Topology and its Applications, August 2-5, 2016, University of Leicester, UK.
- Visited Department of Mathematics, Linkoping University, Sweden.
  October 2015.
- *Homogeneous spaces and the Bing-Borsuk conjecture*, International Conference on Topology and its Applications, July 3-7, 2014, Nafpaktos, Greece.
- Visited Department of Mathematics, Linkoping University, Sweden.
  April 2014.
- Visited Department of Mathematics, Linkoping University, Sweden.
  October 2012.
- *Metrizable remainders of locally compact spaces*, International Conference dedicated to P.S. Aleksandrov.
  May 2012. Moscow State University, Moscow, Russia
- *Metrizable remainders of locally compact spaces*, Geometric Topology conference in honor of Evgeny Shchepin, October 15 – 16, 2011, UNAM, Oaxaca, Mexico.
- *Spans of continua*, Topology Seminar at the University of Tennessee, Knoxville. March, 2011.
- *Finite-to-one maps into Euclidean manifolds and spaces with disjoint disks properties*, International Conference on Topology and its Applications, June 26 – 30, 2010, Nafpaktos, Greece.
- *Equivalent metrics and the spans of graphs*, International Conference "Analysis, Topology and Applications", June 21 – 25, 2010, Vrnjačka Banja, Serbia.
- Visited Department of General Topology and Geometry, Moscow State University, Russia, and Department of Mathematics and Statistics, University of Saskatchewan, Saskatoon, Canada. Summer 2009.

- *Michael's problem and weakly infinite-dimensional Spaces*, International Conference "Analysis and Topology", June 2 – 7, 2008, Ivan Franko National University of Lviv, Lviv, Ukraine.
- *Root closed function algebras on compacta of large dimension*, Spring Topology and Dynamics Conference, March 23 – 25, 2006, University of North Carolina at Greensboro, NC, USA
- *On commutative and noncommutative C*-algebras with the approximate n-th root property*, Topology Seminar at the University of Tennessee, Knoxville. April 11 – 15, 2005
- *Quasi-finite complexes and universal absolute extensors*, International Conference dedicated to P.S. Aleksandrov. May 2004. Moscow State University, Moscow, Russia
- *On two problems in extension theory*, Topology Seminar at the University of Tennessee, Knoxville. April 5 – 9, 2004

## OTHER CONFERENCE PRESENTATIONS

- *Discrete homogeneity*, 37th Summer Conference on Topology and Its Applications, July 17 – 21, 2023, Youngstown State University, USA.
- *(Non)connectedness and (non)homogeneity* , 48th Spring Topology and Dynamics Conference, March 13 – 15, 2014, University of Richmond, USA.
- *Metrizable remainders of locally compact spaces*, International Conference on Topology and Geometry, September 2 – 6, 2013, Shimane University, Matsue, Japan.
- *Finite-to-one maps into Euclidean manifolds and spaces with disjoint disks properties*, 7th Annual Workshop on Topology, Analysis, and Math Education, May 18 – 22, 2009, Nipissing University, North Bay, Canada.
- *Michael's problem and weakly infinite-dimensional Spaces*, Spring Topology and Dynamics Conference, March 13 – 15, 2008, Milwaukee, Wisconsin, USA.
- *Root closed function algebras on compacta of large dimension*, International Conference on Topology and its Applications, June 23 – 26, 2006, Aegion, Greece.
- *Approximations and selections of multivalued mappings*, Canadian Mathematical Society Summer 2001 Meeting. Special Session: Geometric Topology. June 2001. University of Saskatchewan, Saskatoon, Canada
- *On L-homotopy groups*, International Conference dedicated to P.S. Aleksandrov. May 2000. Moscow State University, Moscow, Russia

## INTERDISCIPLINARY RESEARCH

- Applications of topological data analysis to biomedical hyperspectral images (joint with Yeni Yucel, Director of Ophthalmic Pathology, University of Toronto, 2023 - present)

- Complexity of service (joint with One Kids Place, 2023 - present)
- Analyzing open-ended survey responses (joint with the School of Social Work, 2021 - present)
- Improving SLAM Cartographer accuracy (joint with SafeSight Exploration Inc., 2020 - 2021)

## PARTICIPATION IN COLLOQUIA AND SEMINARS

- Topology seminar, Nipissing University,
  North Bay, Canada (September 2003 – present)
- Topology seminar, University of Saskatchewan,
  Saskatoon, Canada (September 2000 – May 2003)
- P.S. Aleksandrov topology seminar, Moscow State University,
  Moscow, Russia (1992–1999)

## LIST OF COLLABORATORS

Henry Adams (U. of Florida), Taras Banakh (Ivan Franko National Univ. of Lviv, Ukraine), Nikolay Brodskiy (U. of Tennessee), Robert Cauty (Université de Paris VI (Pierre et Marie Curie), France), Vitalij A. Chatyrko (Linkoping University, Sweden), Alex Chigogidze (U. of North Carolina), Jerzy Dydak (U. of Tennessee), Logan Hoehn (Nipissing U.), Kazuhiro Kawamura (U. of Tsukuba, Japan), Konstantin Kozlov (Moscow State University, Russia), Pawel Krupski (University of Wroclaw, Poland), Mikael Rordam (U. of Copenhagen, Denmark), Evgeny Shchepin (Steklov Math. Institute, Russia), Vladimir Todorov (U. for Architecture and Civil Engineering, Sofia, Bulgaria), Murat Tuncali (Nipissing U.), Vesko Valov (Nipissing U.), Žiga Virk (U. of Ljubljana, Slovenia), Michael Zarichnyi (Ivan Franko National Univ. of Lviv, Ukraine)

## MEMBERSHIP

American Mathematical Society

## EDITOR

Topology Proceedings

## REFEREE

Colloquium Mathematicum

European Journal of Mathematics

Fundamenta Matematicae

Hacettepe Journal of Mathematics and Statistics

JP Journal of Geometry and Topology

Proceedings of the American Mathematical Society

Questions and Answers in General Topology

Rocky Mountain Journal of Mathematics
Topology Proceedings
Topology and its Applications

**REVIEWER**
zbMATH

## TEACHING

### TEACHING EXPERIENCE

- July 2003 – present: Professor, Nipissing University.

  Undergraduate courses taught: Critical and Applied Thinking, Fund. Math. Concepts for Teachers, Technical Statistics, Applied Health Statistics, Introduction to Data Science, Calculus I&II, Advanced Calculus, Introductory Linear Algebra, Advanced Linear Algebra, Discrete Mathematics II, Probability and Statistics I&II, Introduction to Computational Geometry, Problem Solving, History of Mathematics, Number Theory, Complex Analysis, Cryptography, Combinatorics and Graph Theory, Mathematics of Finance, Introduction to Stochastic Processes, Topology, Optimization.

  Graduate courses taught: General Topology, Introduction to Algebraic Topology, Computational Topology, Tilings and Patterns, Optimization.
- January 2002 – June 2003: Sessional Lecturer, University of Saskatchewan.

  Courses taught: Intermediate Calculus, Calculus II, Calculus II for Engineers, Differential Equations, Euclidean Geometry, Linear Algebra I.
- August 2002: Tutorial Leader, Math Readiness Course
- September 2000 – December 2002: Instructor, Mathematics and Statistics Help Centre, University of Saskatchewan
- September 1999 – April 2002: Teaching Assistant, University of Saskatchewan
- June 1997 – August 1999: Instructor (Microsoft Certified Trainer), IT Training Centre "Academy of Networking", Moscow, Russia.
- Spring 1997: Instructor, Special seminar in Discrete Mathematics, Faculty of Economics, Moscow State University, Russia

### GRADUATE STUDENTS SUPERVISED

- Luke Cooper (MSc Thesis in progress)
- Bright Effah (MSc Thesis "Topological Data Analysis of Open-Ended Responses", was successfully defended on January 11, 2023)

- Tim Sibbald (MSc Thesis "Tilings and Packings", was successfully defended on October 5, 2020)
- Emily Tian (MRP, titled "Expander Families and their Applications", was successfully defended on January 13, 2014)
- Jon Heindl (MRP, titled "Around the Bing-Borsuk Conjecture", was successfully defended on October 30, 2012)
- Jason Grandy (MRP, titled "The Additivity of Crossing Number with Respect to the Composition of Knots", was successfully defended on August 26, 2010)

**USRA STUDENTS SUPERVISED**

- Desiree Paczay (Project: "Topological data analysis of hyperspectral images"), Summer 2025.
- Desiree Paczay (Project: "Analysis of texts"), Summer 2024.
- Desiree Paczay (Project: "Topological data analysis"), Summer 2023.
- Luke Cooper (Project: "Finite decomposition complexity and Thompson group F"), Summer 2020.
- Luke Cooper (Project: "Tree-graded spaces and their generalizations"), Summer 2019.
- Luke Cooper (Project: "Polyhedra with homogeneous-type properties"), Summer 2018.
- Mitchell Haslehurst (Project: "Vertex-transitive contractible polyhedra"), Summer 2015
- Mitchell Haslehurst (Project: "Are weakly-infinite dimensional spaces $C$-spaces?"), Summer 2014.
- Mitchell Haslehurst (Project: "Reconstruction of Homogeneous Spaces From Automorphism Groups"), Summer 2013.
- Jon Heindl (Project: "Aperiodic Tilings and Tiling Spaces"), Summer 2011.
- Jon Heindl (Project: "Z-sets in Hilbert Cube"), Summer 2010.
- Jon Heindl (Project: "Algebraic methods for distinguishing extension types"), Summer 2009.
- Jonathan Zimmerling (Project: "Homogeneous continua"), Summer 2008.
- Jonathan Zimmerling (Project: "Spans of continua"), Summer 2007.
- Brandon Brown (Project: "Lipschitz extensors"), Summer 2006.
- Natasha May (Project: "Asymptotic topology"), Summer 2005.

**UNDERGRADUATE RESEARCH ASSISTANTS SUPERVISED**

- James Spratt (Project: "Topological analysis of hyperspectral biomedical images"), January 2024 - June 2024.

## STUDENT RESEARCH PROJECTS SUPERVISED

**Winter 2025**

"Algebra of the Rubik's cube" by Wesley Arenovich

"Algebraic topology: Homology" by Desiree Paczay

**Fall 2024**

"Introduction to Algebraic Topology" by Desiree Paczay

**Winter 2022**

"Planar Graphs" by Jared Limbani

**Fall 2021**

"Stochastic Calculus for Finance" by Lucien Hartell

**Fall 2020**

"Introduction to Queuing Theory" by Meghan Kapellas

"An Introduction to Mathematical Linguistics" by Rosemarie Hartman

"An Introduction To Fourier Series" by Reynold Assiniwe

**Winter 2020**

"Introduction to Queuing Theory" by Meghan Kapellas

**Fall 2019**

"Geometric Group Theory" by Luke Cooper

**Winter 2019**

"Cryptography" by Maggie Holod

**Winter 2018**

"Banach-Tarski Paradox and Amenability of Groups" by John Tsafatinos

**Fall 2017**

"Quasicrystals and geometry" by Jessica Stephenson

**Summer 2016**

"Applications of Probability Theory in Finance" by Braden Leonard

**Winter 2015**

"Fourier Analysis" by Mitchell Haslehurst

**Fall 2013 / Winter 2014**

"Mathematical puzzles" and "Symmetry of things" by Daniel Blanchard

"Topics in Linear Algebra" by Erica Crozier
"Geometric group theory" by Jordan Shoesmith

**Fall 2012 / Winter 2013**

"Linear Algebra" and "Quaternions and Applications" by Alyssa McIntee

**Fall 2011 / Winter 2012**

"Hyperbolic Geometry" by Sarah Brethet
"Crystallography" and "Chemical Graph Theory" by Donna Keranen
"Math Modeling with Maple" by Stephanie Lamb

**Fall 2010 / Winter 2011**

"Around Kuratowski's Theorem" and "Number Theory" by Jessica Bushell
"Hilbert Cube Manifolds" and "Algebraic Topology" by Jon Heindl
"Cryptography" and "Game Theory" by Steve Lauzon

**Fall 2009 / Winter 2010**

"Hyperbolic Geometry" and "Fary's Theorem and Kuratowski's Theorem" by Alain Baxter
"When Astronomy and Math Collide" by Stephanie Hicks
"Maps and Mathematics" by Shannon Klawitter

**Fall 2008 / Winter 2009**

"Markov Chains" and "Information Retrieval" by Krista Morrow
"Hyperbolic Geometry and M.C. Escher" by Breanne King
"The Prime Counting Function" by Richard Smith
"Potentially Visible Set" by Rob Alkins

**Fall 2007 / Winter 2008**

"Hyperbolic Geometry" and "Knot Theory" by Jason Grandy
"Riemann Hypothesis" and "Multivariable Calculus" by Tomara Kaye

**Fall 2006 / Winter 2007**

"Applications of Topology in Chemistry" and "Non-standard analysis" by Brandon Brown
"Game Theory: Von Neumann's Theorem" by Breann Duncan
"Algebraic Graph Theory" by Cameron Hodgins
"Cryptography" and "Rigorous Probability Theory and Mathematics of Finance"
by Nick Mailloux
"Cryptography" and "Coding Theory" by Christopher Phillips

**Fall 2005 / Winter 2006**

"Algebraic Topology" by Kaitlyn Church
"Hyperbolic Geometry" and "Computational Geometry" by Jill Lazarus

**Fall 2004 / Winter 2005**
"Set Theory" and "The History of Non-Euclidean Geometry" by Natasha May
"Chaotic Elections and Arrow's Theorem" by David Briggs

## SERVICE

**Chair of the Department of Computer Science, Mathematics, and Physics** (2024 – present)

**Graduate Studies Coordinator in Mathematics** (2017 – 2024)

**Teaching Chair – Motivation and Assessment in STEM** (2019 – 2022)

- Experimenting with various assessment practices in Math and math-related courses
- Development of MathTank - collaborative online resource for instructors in Mathematics and other STEM-fields.

**CHAIR OF THE DEPARTMENT OF COMP. SCIENCE & MATHEMATICS** (September 2011 – June 2015)

- Prepared responses for the Program Prioritization Process surveys
- Prepared a draft description of program in Mathematical Economics
- Coordinated the work of Math Drop-in center
- Undergraduate Research Seminar - Coordinator
- Participation in establishing partnership with colleges (in progress)
- Departmental Review (March 2013)
- Formulating program-level expectations for Computer Science, Mathematics, and Science and Technology
- Development of common degree structure model for Computer Science, Mathematics, and Science and Technology

**PARTICIPATION IN COMMITTEES AND SENATE**

- Internal Awards Review Committee (2023 – present)
- First Year Courses and Retention working group (2023 – present)
- Academic Curriculum Committee (2020 – 2024)
- Graduate Studies Committee (2009 – 2024)
- Teaching and Learning Committee (2018 – 2022)
- Tenure and Promotion University Committee (2018 – 2020)
- First Year Foundations Committee (Spring 2020)

- IQAP Protocol Review Committee
- Academic Quality Assurance and Planning Committee (2017 – 2018)
- Planning and Priorities Committee (2015 – 2016)
- Nipissing University Academic Senate (2011 – 2014), (2015 – 2018)
- Undergraduate Studies Committee (2012 – 2013)
- Tenure-track search committees
- Nipissing University Faculty Review Committee (2009 – 2010)
- Research Achievement Award Selection Committee (2009 – 2011)
- Internal Research Grant Review Committee (2009 – 2010)
- University Research Council
- Academic Computing Committee (2006 – 2008)
- Concurrent Education Coordinating Committee (2005 – 2006)

## ORGANIZING WORKSHOPS AND CONFERENCES

- 19th Annual Workshop, May 20-24, 2024, Nipissing University, North Bay, Canada.
- 18th Annual Workshop, May 15-19, 2023, Nipissing University, North Bay, Canada.
- 15th Annual Workshop, May 15-19, 2018, Nipissing University, North Bay, Canada.
- 14th Annual Workshop, May 15-19, 2017, Nipissing University, North Bay, Canada.
- 13th Annual Workshop, May 16-20, 2016, Nipissing University, North Bay, Canada.
- 12th Annual Workshop, May 25-29, 2015, Nipissing University, North Bay, Canada.
- 11th Annual Workshop, May 26-30, 2014, Nipissing University, North Bay, Canada.
- 28th Summer Conference on Topology and its Applications, July 23-26, 2013, Nipissing University, North Bay, Canada.
- Workshop on Recent Advances in General Topology, Dimension Theory, Continuum Theory and Dynamical Systems (10th Annual Workshop), May 14-18, 2012, Nipissing University, North Bay, Canada.
- 9th Annual Workshop, May 16-20, 2011, Nipissing University, North Bay, Canada.
- Workshops on Recent Advances in Topological and Measure-Theoretic Methods in Dynamical Systems, May 17-22, 2010, Nipissing University, North Bay, Canada.
- Canadian Mathematical Society Summer 2009 meeting. Special session on Topological Algebra, Topology, and Functional Analysis. June 5-8 2009, Memorial University of Newfoundland, St. John's, Canada.
- 7th Annual Workshop on Topology, Analysis, and Math Education, May 18-22, 2009, Nipissing University, North Bay, Canada.
- Fields Institute Workshop on Topological Methods in Algebra, Analysis and Dynamical Systems, May 2008, Nipissing University, North Bay, Canada.

- 5th Annual Workshop on General Topology and Related Areas, May 2007, Nipissing University, North Bay, Canada.
- 4th Annual Workshop on General Topology and Related Areas, May 2006, Nipissing University, North Bay, Canada.
- Canadian Mathematical Society Summer 2005 meeting. Special session on General Topology and Its applications. June 2005, University of Waterloo, Waterloo, Canada.
- 3rd Annual Workshop on General and Geometric Topology, May 2005, Nipissing University, North Bay, Canada.

## CURRICULUM DEVELOPMENT

- Redesigning Data Science program (in progress).
- Redesigning Computer Science program (in progress).
- Development (jointly with other colleagues) a Post-baccalaureate Diploma in Mathematics and Economics (in progress).
- Redesigning MSc program requirements.
- Development of a program in Data Science (jointly with other members of the Department).
- Designing of various new graduate and undergraduate courses in Mathematics, Data Science, and First Year Foundation programs.
- Development of a joint program in Mathematical Economics (in progress) (jointly with other members of the Department).
- Development of an on-line version of MATH 1036 (Calculus I).
- Development (jointly with Mark Wachowiak) of a certificate program in Game design and development.
- Development (jointly with Mark Wachowiak) of two new course proposals: "Introduction to computational geometry" and "Advanced computational geometry".
- Redesigning the calculus course (2005/2006).

## OUTREACH ACTIVITIES

- "Math Circles"
- Popular talks for high-school students (2005 – present; slides of some talks are available at http://www.nipissingu.ca/faculty/alexandk/popular/popular.html and on the CD, appended to the dossier)
  - *Sequences and series*, December 3, 2024, Nipissing University.
  - *Complex numbers*, May 10, 2024, Nipissing University.
  - *Aperiodic tilings*, November 18, 2016, Nipissing University.
  - *Applications of Calculus*, April 16, 2015, Chippewa Secondary School, North Bay.
  - *Embedding of graphs*, September 12, 2014, Nipissing University.
  - *Graphs and surfaces*, November 22, 2013, Nipissing University.

- *Quantum computing*, April 25, 2008, Widdifield Secondary School, North Bay.
- *Why do we need more than three dimensions?*, October 19, 2007, Nipissing University.
- *What is the Poincaré Conjecture?*, October 20, 2006, Nipissing University.
- *Cryptography: from substitution cipher to RSA*, November 2005, Nipissing University.
- A series of talks on complex numbers, Fall 2005, Nipissing University.

- Participation in the organization of the Math Fair, May 2008 and May 2009, Nipissing University.

## OTHER PROFESSIONAL ACTIVITIES

- Represented Nipissing University at the 46th OAME conference (University of Ottawa, Ottawa, May 16-18, 2019)
- Represented Nipissing University at the 45th OAME conference (Humber College, Toronto, May 3-4, 2018)
- Represented Nipissing University at the 44th OAME conference (St. Lawrence College, Kingston, May 11-13, 2017)
- Represented Nipissing University at the 43rd OAME conference (Georgian College, Barrie, May 5-7, 2016)
- Represented Nipissing University at the 42nd OAME conference (Humber College, Toronto, May 7-9, 2015)
- External reviewer for Mathematics program at Algoma University (site visit September 26-27, 2013)
- A panel chair for Nipissing University Undergraduate Research Conference (March 2012)
- Organizer of Nipissing University Undergraduate Mathematics Competition (March 2012, 2013, 2014)
- Coordinator of a seminar for Math and Comp. Science majors (Fall 2008)
- Coordinator of the Pre-Calculus Camps
(August 2006, August 2007, August 2008)
- Development of the Calculus website – Supervisor, Summer 2005
(http://www.nipissingu.ca/calculus)
- Development and maintenance of the Topology Research Group website
(http://www.nipissingu.ca/topology)
- Development and maintenance of the webpage for the Fields Institute Workshop on Topological Methods, May 2008
(http://www.nipissingu.ca/topology/workshop2008/workshop08.html)

# OTHER

**INTERESTS AND HOBBIES**

Cross-country and downhill skiing, fishing, gardening, painting, photography, tennis