David Shane Gunderson

Curriculum Vitae, October 2013

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EDUCATION

- Ph.D., 1995, Emory University; supervisor: Vojtěch Rödl (Samuel Candler Dobbs Professor of Mathematics). Dissertation: *Extremal problems on Boolean algebras, sum-sets of integers, and hypergraphs.*

- M.Sc., 1991, University of Calgary; supervisor: Norbert W. Sauer. Thesis: *Finite induced graph Ramsey theory.*

- B.Sc., 1988, University of Calgary; major: Pure Mathematics; minor: Philosophy.

EMPLOYMENT

- 2011–present: Associate Professor, Department of Mathematics, University of Manitoba.

- 2010–2012: Department head, Department of Mathematics, University of Manitoba.

- 2002–2010: University of Manitoba, Department of Mathematics, assistant professor; tenure granted for July 2009.

- 1999—2004: University of Calgary, Department of Mathematics and Statistics, adjunct assistant professor.

- 1999—2001: Mount Royal College (Calgary) Mathematics, Physics, and Engineering, Instructor.

- 1999: Columbia International College, Hamilton, Ontario; (Summer) Instructor.

- 1997–1999: Department of Mathematics and Statistics, McMaster University, Hamilton, Ontario; postdoctoral fellow and instructor.

- 1996–1997: Howard University, Washington, DC; visiting Lecturer III.

- 1995–1996: University of Bielefeld, SFB 343, Institute for Research in Discrete Mathematical Structures, Bielefeld, Germany; postdoctoral researcher.

- 1994–1995: Evening at Emory, Atlanta, GA; instructor.

- 1991–1995: Department of Mathematics and Computer Science, Emory University, Atlanta, GA; Graduate instructor (1992–1995) and Teaching Assistant (1991–1992).

- 1985–1990: Department of Mathematics and Statistics, University of Calgary; Alberta; Teaching Assistant.

RESEARCH

Refereed publications

[MR = Mathematical Reviews]

1. D. S. Gunderson, V. Rödl, and N. Sauer, Some results in finite graph Ramsey theory, *Congressus Numerantium* **79** (1990), 232–243. [MR 92k:05093]

2. D. S. Gunderson, V. Rödl, and N. Sauer, Finite induced graph Ramsey theory: on partitions of subgraphs, *J. Combin. Th. Ser. B* **59** (1993), 199–209. [MR 94j:05087]

3. P. Erdős, Z. Füredi, R. Gould, and D. S. Gunderson, Extremal graphs for intersecting triangles, *J. Combin. Th. Ser. B* **64** (1995), 89–100. [MR 96e:05080]

4. W. Deuber, D. S. Gunderson, N. Hindman, and D. Strauss, Independent finite sums for K_m-free graphs, *J. Combin. Th. Ser. A* **78** (1997) 171–198. [MR 98d:05140]

5. D. S. Gunderson and V. Rödl, On extremal problems for affine cubes of integers, *Combin. Probab. Comput.* **7** (1998), 65–79. [MR 99a:11015]

6. W. A. Deuber, P. Erdős, D. S. Gunderson, A. V. Kostochka, and A. G. Meyer, Intersection statements for systems of sets, *J. Combin. Th. Ser. A* **79** (1997), 118–132. [MR 98f:05144]

7. D. S. Gunderson, V. Rödl, and A. Sidorenko, Extremal problems for sets forming Boolean algebras and complete partite hypergraphs, *J. Combin. Th. Ser. A* **88** (1999), 342–367. [MR 2000i:05131]

8. D. S. Gunderson, I. Leader, H. J. Prömel, and V. Rödl, Independent arithmetic progressions in clique-free graphs on the natural numbers, *J. Combin. Th. Ser. A* **93** (2001), 1–17.

9. D. S. Gunderson, On Deuber's partition theorem for (m, p, c)-sets, *Ars Combinatoria* **63** (2002), 15–31. [MR 2003c:05021]

10. N. Alon, P. Erdős, D. S. Gunderson, and M. Molloy, On a Ramsey type problem and the Turán numbers, *J. Graph Th.* **40** (2002), 120–129. [MR 2003d:05139]

11. D. S. Gunderson, I. Leader, H. J. Prömel, and V. Rödl, Independent Deuber sets in graphs on the natural numbers, *J. Combin. Th. Ser. A* **103** (2003), 305–322. [MR 1996069 (2004h:05123)]

12. T. Bisztriczky, K. Böröczky, and D. S. Gunderson, Cyclic polytopes, hyperplanes, and Gray codes, *J. Geom.* **78** (2003), no. 1–2, 25–49. [MR 2031563]

13. J. F. Peters, M. Borkowski, C. Henry, D. Lockery, D. S. Gunderson, Line-Crawling bots that inspect electric power transmission line equipment, in *Proc. Third Int. Conference on Autonomous Robots and Agents (ICARA 2006)*, Palmerston North, New Zealand, 2007, 39-44.

14. J. F. Peters, C. Henry, D. S. Gunderson, Biologically-inspired approximate adaptive learning control strategies: a rough set approach, *International Journal of Hybrid Intelligent Systems*, **4** (no. 4) (2007), 203-216.

15 D. S. Gunderson and K. R. Johannson, On combinatorial upper bounds for van der Waerden numbers $W(3; r)$, *Congressus Numerantium* **190** (2008), 33–46.

16 G. Grätzer, D. S. Gunderson, and R. W. Quackenbush, The spectrum of a pseudocomplemented lattice, *Algebra Universalis* **61** (2009), 407–411.

17 H. Ardal, D. S. Gunderson, V. Jungic, B. M. Landman, and K. Williamson, Ramsey Results Involving the Fibonacci Numbers, *Fibonacci Quarterly* **46/47** (no. 1) (2008/2009), 10–17. [Published February 2009.]

18 D. S. Gunderson and H. Lefmann, Graphs on affine and linear spaces and Deuber sets, *The Electronic Journal of Combinatorics* **20** (2) (2013), P47 (15 pages).

Submitted manuscripts, preprints, unrefereed articles, and works in progress

- D. S. Gunderson, N. Hindman, and H. Lefmann, Some partition theorems for finite and infinite matrices, submitted to *Integers*, 13 June 2013, 24 pages.

- C. Elsholtz and D. S. Gunderson, Congruence properties of multiplicative functions on sumsets and monochromatic solutions of linear equations, submitted to *Acta Arithmetica*, 6 August 2013, 22 pages.

- S. Durocher, D. S. Gunderson, P.C. Li, and M. Skala, Cycle-maximal triangle-free graphs, submitted to *Discrete Mathematics* 18 October 2013, 32 pages.

- Z. Füredi and D. S. Gunderson, *Extremal numbers for odd cycles*, to be submitted to *Combinatorics, Probability and Computing*, 2013.

- P. Balister and D. S. Gunderson, *The number of distinct differences in graceful labellings of trees*, to be submitted, 2013.

- D. S. Gunderson, *Handbook of mathematical induction: theory and applications*, Chapman and Hall/CRC, Boca Raton FL, 2011. 893 pages + xxxv.

- D. S. Gunderson and W. Kocay, *Great circle graphs*, in progress.

- W. Deuber, D. S. Gunderson, N. Hindman, and D. Strauss, *Independent finite sums for K_m-free graphs*, Preprint 96-042, SFB 343, Diskrete Strukturen in der Mathematik, Universität Bielefeld, 27 pages.

- D. S. Gunderson and V. Rödl, *An alternative proof of Szemerédi's cube lemma using extremal hypergraphs*, Preprint 95-110, SFB 343, Diskrete Strukturen in der Mathematik, Universität Bielefeld, 9 pages.

- D. S. Gunderson and V. Rödl, *Extremal problems for affine cubes of integers*, Preprint 95-109, SFB 343, Diskrete Strukturen in der Mathematik, Universität Bielefeld, 16 pages.

- D. S. Gunderson and V. Rödl, *On discrepancy of finite projective planes*, preprint.

- D. S. Gunderson, *Finite projective planes and applications in combinatorics*, book, in progress, 171 pages.

- D. S. Gunderson, *Ramsey theory*, book, in progress, 262 pages (as of April 2013), in progress.

- D. S. Gunderson, *The probabilistic method for engineers*, manuscript, 2006, 95 pages, written for Math 8210 notes.

- D. S. Gunderson, *Introduction to graph theory*, 26 pages, written for use by graduate students, and for Math 4400 and 4410 background review.

- D. S. Gunderson, Notes for advanced graph theory, in progress (as of 19 May 2013, it is 95 pages).

- D. S. Gunderson, "Extremal graph theory notes", 172 pages as of 10 October 2013, in progress.

- D. S. Gunderson, "The probabilistic method", September 2011, 145 pages, in progress.

- D. S. Gunderson, Classic puzzles: False proofs, *Manitoba Mathlinks*, Winter 2007, 4–7.

- D. S. Gunderson, "Nathan Mendelsohn, 1917–2006", *Manitoba Mathlinks*, Fall 2006, 7.

- D. S. Gunderson, Classic puzzles, *Manitoba Mathlinks*, Winter 2006, 2.

- D. S. Gunderson, The π is the limit , *Manitoba Mathlinks*, Spring 2005, 6–7.

- D. S. Gunderson, Classic puzzles, *Manitoba Mathlinks*, Winter 2005, 5.

- D. S. Gunderson, Definitions with e's, *Manitoba Mathlinks*,Winter 2004, 5–6.

- D. S. Gunderson, A Hall of shame?, *Manitoba Mathlinks*, Winter 2003, 1,5–6.

- D. S. Gunderson, The RSA encryption algorithm, *Manitoba Mathlinks*, Spring 2003, 4–5.

TEACHING

- University of Manitoba, Undergraduate (17 different courses):

    Finite mathematics (Math 1010) Summer 2008.

    Math in art (136.102) Winter 2004.

    Elements of discrete math (136.120), Fall 2003.

    Linear algebra I (136.130) Summer 2004, Summer 2005, (MATH 1300) Fall 2009.

    Calculus I (136.150) Winter 2003;

    Applied calculus II for engineers (136.171) Summer 2006, (Math 1710) Summer 2007.

    Linear algebra II (136.230) Fall 2002, Fall 2004, Fall 2006 (Math 2300) Winter 2007, Fall 2007, Fall 2008, Winter 2013.

    Honours Linear algebra II (136.235) 2004–2005;

    Applied graph theory (136.240) Winter 2006, (Math 2400) Winter 2007, Winter 2008, Winter 2009, Fall 2009, Fall 2012, Winter 2014.

    Number theory (136.250) Summer 2006, (MATH 2500) Fall 2008.

    Combinatorial Mathematics (136.245) 2002–2003;

    Combinatorics I (136.340) Winter 2005, 2006;

    Combinatorics II (Math 4400) Winter 2008, Winter 2014.

    Graphs, codes, and designs (MATH 4410), Winter 2007, Winter 2009.

    Field theory and applications in combinatorics and geometry (Math 4920) (given while on sabbatical, reading course for Jeff Lanyon), Winter 2010.

    Advanced graph theory (MATH 4920), Fall 2009, Winter 2013.

    Applied calculus 1, for engineers (MATH 1510), Fall 2013.

- University of Manitoba, Graduate (15 different courses):

    Extremal combinatorics (136.821), Fall 2004.

    Graduate set theory (136.871), Winter 2005.

    Ramsey theory (136.821), Winter 2006.

    The probabilistic method for computing and engineering (Math 8210), Fall 2006.

    Ramsey theory and additive combinatorics (Math 8210/4920), Winter 2010.

    Introduction to topological groups (Math 8210/4920), Fall 2010 (I only covered a few weeks, after which a visiting prof finished the course).

    Probabilistic graph theory (Math 8210/4920), Fall 2011.

    Extremal graph theory (Math 8210), Winter 2011.

    The probabilistic method (Math 8210), Winter 2011, Winter 2014.

    Combinatorial geometry (Math 8210), Winter 2012 (reading course for Radchenko).

    Extremal graph theory and combinatorics (Math 8210) Winter 2012 (reading course for Arman).

    Ramsey theory (Math 8210), Fall 2012.

Extremal combinatorics (Math 8210), Fall 2012.

Extremal graph theory and the regularity lemma (Math 8210), Fall 2013.

Finite and combinatorial geometry (MATH 8810), Winter 2013.

- Mount Royal College (Calgary):

  Calculus II for engineers (Math 1219) Winter 2001;

  Linear Algebra (Math 2221) Fall 1999, Winter 2000, Fall 2000, Winter 2001;

  Calculus I (Math 2251) Fall 1999; (Math 2249) Fall 2000;

  Calculus II (Math 2253) Fall 2000;

  Discrete Math (Math 2271) Winter 2000 (two sections, coordinator), Winter 2001;

  Calculus III (Math 3349) Fall 1999;

  Calculus IV (Math 3353) Winter 2000 (coteaching).

- Columbia International College (Hamilton, Ontario): *Finite Mathematics* for Ontario Advanced Credit (OAC), May–July 1999 (two sections, each 110 credit hours).

- McMaster University (Hamilton, Ontario):

  Business Calculus I, (Math 1K03) Summer 1999;

  Linear Algebra II, (Math 2R03) Summer 1999;

  Linear Algebra for engineers (Math 1H05) Fall 1998–Winter 1999;

  Combinatorics (Math 4C03, 4th yr), Fall 1997;

  Graph Theory (Math 4J03, 4th yr), Spring 1998.

- Howard University (Washington, DC):

  Algebra I, Fall 1996, Spring 1997;

  Calculus II, Spring 1997;

  Business Calculus, Fall 1996;

  Graduate Seminar on Semigroups, (with N. Hindman) 1996–1997.

- Emory University (Atlanta, GA):

  Calculus I, Fall 1992, Fall 1993, Fall 1994;

  Calculus II, Spring 1993, Summer 1994;

  Trigonometry and Algebra, Summer 1993;

  Business Calculus, Spring 1994;

  Vector Calculus, Spring 1995.

- Coordinator/instructor for six week business calculus (including multivariate) course for Emory Business School, Evening Masters of Business Administration (MBA) program, Spring 1994, Spring 1995; assistant instructor, Spring 1993.

- Designed and taught 16 Graduate Record Examination (GRE) Math Preparation courses for Evening at Emory, 1994–1995.

Students supervised

[All students in this list are from University of Manitoba.]

- Jeff Lanyon, beginning MSc January 2014.

- Sergei Tatsurian, MSc, September 2012, switching to PhD January 2014.

- Andrii Arman, PhD student, began Fall 2013 (extremal graph theory).

- Vanessa Reimer, NSERC undergraduate summer research assistantship, 2013.

- Toban Wiebe, NSERC undergraduate summer research assistantship, 2012 and 2013. Now at U. Penn. working on PhD.

- Dustin Styner, PhD student, January–June 2013 (withdrew, personal reasons)

- Brian Ketelboeter, MSc in math, graduated 2012, now at U. of R. working on PhD.

- Jason Klusowski, NSERC undergraduate summer research assistantship, 2012. Received Governor General Silver medal (top undergrad student) UofM 2013; now at Yale, working on PhD.

- Krista Reimer, NSERC undergraduate scholarship, summer 2011 (co-supervised with Stephanie Portet). Beginning graduate work at U. of Alberta, 2013.

- Karen Johannson, Postdoctoral fellowship U. of Manitoba, summer 2011. (Later did postdoc at Cambridge University, and now doing postdoc at the Heilbronn Institute for Mathematical Research, Bristol, England.)

- Garett Klus, NSERC undergraduate scholarship, summer 2008.

- Robert Borgersen, MSc in math, graduated 2008. Thesis: *Topics in finite graph Ramsey theory*, 247+*xiii* pages. Now mathematics Instructor at U. of Manitoba.

- Karen Johannson, MSc in math, graduated 2007. Thesis: *Variations on a theorem by van der Waerden*, 201+*vi* pages. Finished PhD under Bollobás, Memphis.

- Trevor Wares, NSERC undergraduate scholarships, summer 2005 and summer 2007.

- Evan Haldane, NSERC undergraduate scholarship, summer 2004.

- Goldwyn Millar, NSERC undergraduate scholarships, summer 2004, summer 2006.

- Michael Geith, Faculty of Science summer undergraduate scholarship, summer 2004.

- Manon Mireault, summer research assistantship, *Graceful colourings of paths*, May–July 2003.

Graduate student advisory or defense examining committees [With the exception of the last student in the list below, all are from University of Manitoba.]

- Daniel Page, MSc in Computer Science; thesis: *Tractability and Approximability for subinstances of the Makespan Problem on Unrelated Parallel Machines.*2013–2014. (Superviser, Ben Li.)

- Ayat Al-Meanazel, PhD in Statistics (Supervisor, Brad Johnston); started 2013.

- Kateryna Melnykova, MSc in Mathematics; thesis: Foregger conjecture concerning permanents, defended 3 April 2012 (Supervisor: Kopotun). Now working on PhD at UBC.

- Ivan Iurchenko, MSc in Mathematics (Supervisor: Prymak); thesis: *Properties of extremal convex bodies*, defended 17 April 2012. Now working on PhD at U. of Alberta.

- Laurentiu Troanca, MSc in Mathematics, completed 2008. (Supervisor: K. Kopotun, Math; topic: permanents) Now a teacher in Manitoba.

- Vitaliy Degtyaryov, PhD in ECE, 2008, now employed in industry. (Supervisor: J. Peters, ECE)

- Eric Zhou, MSc in Computer Science, completed spring 2007. (Supervisor: B. Li, CS. Title: Complexity and approximation algorithms for the maximum leaf spanning tree problem and its variations.)

- Shabman Shafir, MSc in Electrical computing and engineering (ECE), 2004–2007. (Supervisor: J. Peters, ECE)

- Daniel Lockery, MSc in ECE, (completed summer 2007–I was on his committee from 2003 until spring 2007). (Supervisor: J. Peters, ECE)

- Liting Han, PhD in ECE, defended 2007. (Supervisor: J. Peters, ECE; topic: power fault classification in high voltage systems, graduated 2008)

- Maciej Borkowski, PhD in ECE, 2007, (Supervisor: J. Peters, ECE; topic: image analysis and rough set approximation spaces).

- Christopher Henry, MSc in computer science, completed 2006; PhD in ECE recently begun. (Supervisor: J. Peters, ECE; topic: image analysis and rough set approximation spaces)

- Xiaonon He, MSc in Computer Science, completed 2006. (Supervisor: B. Li, CS. Key pre-distribution schemes in distributed sensor networks.)

- P. Eldergill, MSc in mathematics, McMaster University, defended August 28, 1997. (Supervisor, A. Rosa)

I have also chaired PhD thesis defenses (e.g., Surachai Chieoghan, 16 Sept. 2012).

Other teaching related activities:

- Partially supported graduate students in the Department of Mathematics, U. of M., 2002–2008 (*e.g.*, M. Davidson 2002, and A. Gareau 2007).

- Assisted in training of mathletes (for Putnam and regional MAA contest), University of Manitoba, 2002–present.

- Made wooden mathematical models for use in classroom (platonic and archimedean solids, puzzles, optical illusions) and for display at U of M. (Also helped with brochure for display "Mathematics in Wood", published March 2006.)

- Coordinated Mount Royal College's mathematics contest, 2000-2001.

- Completed The Ohio State University technology college short course program on enhancing the teaching and learning mathematics using hand-held technology from the Teachers Teaching with Technology Program, May 24–26, 2000.

- Partially supported graduate students at Univ. of Calgary (*e.g.*, A. Odunga, spring and summer GATR), 1999, 2000.

- Co-taught Mount Royal College's *Math is fun* night, offering the average Junior High School student perspectives on mathematics which hope to inspire and entertain, complementing their school curriculum, Mount Royal College, Fall 1999, Winter 2000, and Winter 2001.

- Assisted Profs. M. G. Stone and N. Sauer in Computer Assisted Learning (PLATO) version of linear algebra course, curriculum design, course development, and lab implementation, University of Calgary, 1987–1990.

- Assisted in Putnam competition student training, Emory, 1994.

- Teaching Assistant Training and Teaching Opportunities program completed, Emory, 1992–1993.

SELECT INVITED LECTURES

- "Triangles", University of Manitoba Math Camp, August 2013.

- "Graph and Ramsey theory applied to number theoretic properties of sumsets", Bristol University, England, 21 February 2013.

- "Applications of the probabilistic method", Department colloquium, 7 December 2012.

- "Random permutations and graceful paths", Discrete Math Seminar, Simon Fraser University, Burnaby, B.C., 13 November 2012.

- "Ramsey theory and arithmetic structures", University of Wisconsin at Madison, 24 February 2012.

- "Distance between consecutive entries in permutations, Graduate Colloquium, University of Minnesota at Duluth, 23 February 2012.

- "What is symmetry?", Math Camp, 22 July 2011.

- "Distances between consecutive entries in a permuation", Math and Stats Seminar, University of Winnipeg, 5 November 2010.

- "Multiplicative functions and sumsets", Prairie Discrete Math Workshop, University of Manitoba, 29 April 2010.

- "On distances in permutations", Emory University, Atlanta, 23 March 2010, invited by the SIAM student chapter.

- "Mathematical illusions", Career Days, UofM, 18 February 2009.

- "To infinity and beyond", 11th annual IIMS Manitoba high school problem solving workshop, 7 Feb. 2009.

- "What is infinity", Churchill High School, (Grade 9 classes) 22 January 2009.

- "One-sided structural Ramsey theorems", Conference in honour of Robert Woodrow's 60th birthday, University of Calgary, 13 December 2008.

- "One-sided structure Ramsey theorems", Memphis University, 28 Nov. 2008.

- "Polyhedra and crystals", Vincent Massey Collegiate, (two lectures) 23 April 2008.

- "Guessing patterns and proving patterns by mathematical induction", Churchill High School, (March 2008?)

- "Ramsey theory and the infinite", Coast-to-Coast seminar, broadcasted across Canada, invited by IRMACS, The 2008 Spring lecture series, 19 February 2008.

- "Model math", 14th annual Manitoba high school problem solving workshop, 2 February 2008.

- "Ramsey theory and topology", seminar for Topology and its applications, UofM, 25 October 2007.

- "Infinite Ramsey-type statements and toplogy, seminar for Topology and its applications, UofM, 1 Nov. 2007.

- "Polyhedra and da Vinci solids", Math Camp, UofM, Aug. 2007.

- "What's wrong? Hidden math lessons", IIMS High School Workshops, UofM, 10 February 2007.

- "Mathematical induction", Churchill High School, (two lectures) 24 April 2006.

- "The impossible triangle", IIMS High School Workshops, UofM, 10 February 2006.

- "What is symmetry?" Churchill High School (two lectures), 25 May 2005.

- "Graph theory and puzzles", Churchill High School (two lectures), 14 March 2005,

- "Sumsets, primes, and combinatorics", Joint UBC/SFU discrete math and theoretical CS seminar, IRMACS, Simon Fraser, 6 December 2005.

- "Completely multiplicative functions on sumsets", University of Memphis, 4 November 2005.

- "Multiplicative functions on sumsets", SIAM Student Chapter Seminar, Emory University, Atlanta, 3 November 2005.

- "Completely multiplicative functions and congruences", Integers 2005 conference, West Georgia State, Carrollton, GA, 2005.

- "Aspects of Ramsey theory", Royal Holloway University of London, Egham, England, 27 November 2005.

- "The pigeonhole principle" and "Ramsey theory", UofM Math Camp, 21–25 August 2005.

- "Ramsey theory on graphs and integers", Computer Science Seminar, McGill University, Montreal, 26 May 2004.

- "I love math!", IIMS high school workshop, 14 February 2004.

- "Mathematical literacy: More than numbers and words", joint lecture with Christine Ottawa to Winnipeg School Division teachers at Grant Park, 29 November 2004.

- "Integers and Ramsey theory", Conference *Integers*, WGSU, Carrollton, GA, October 2003.

- "The pigeonhole principle" and "Ramsey theory", UofM Math Camp, 20 August 2003.

- "Great circle graphs", Convex and discrete geometry problem solving seminar, University of Calgary, 31 July 2003.

- "Convex bodies resting on four pedestals", special session on Convex and Discrete geometry, AMS sectional, San Francisco State Univ., 1 May 2003.

- "The RSA encryption algorithm", IIMS High School Workshop, University of Manitoba, 1 February 2003.

- "On Euler's polyhedra formula" IIMS Math Camp, University of Manitoba, Summer 2002.

- "Bisecting hyperplanes and cyclic polytopes", Emory University, Atlanta, 10 May 2002.

- "Combining theorems of Ramsey, Schur, and van der Waerden", West Georgia State University, Carrollton, GA, 21 February 2002.

- "Ramsey's theorem and partition regular equations", Indianna Purdue University, Ft. Wayne, Indianna, 1 February 2002.

- "A Ramsey-type theorem for both graphs and arithmetic", University of Manitoba, January 2002.

- " A common extension of theorems of Ramsey, Rado, and Schur," Department Colloquium, University of Calgary, 13 April 2000.

- " Extremal problems for Delta systems," University of Toronto, 19 March 1999.

- "Aspects of Ramsey theory," University of Waterloo, Waterloo, Canada, 27 February 1998.

- "Ramsey theory and structure," University of Toronto, Toronto, Canada, 1 December 1997.

- "Recent results in extremal theory and Ramsey theory," Colloquium, George Washington University, Washington, DC, 25 April 1997.

- "Recent results in extremal and partition theories," Combinatorics colloquium, University of California (UCLA), Los Angeles, CA, 6 January 1997.

- "Ramsey theory across disciplines," Functional analysis colloquium, Catholic University, Washington, DC, 25 September 1996.

- "Coloring graphs on integers," and "On Frankl's union-closed conjecture," Applications of the Probabilistic Method to Graph Coloring, The Second Annecy Workshop in Combinatorics, Annecy, France, 8–13 July 1996.

- "Structural versus arithmetic Ramsey questions," Canadian Mathematics Society Summer meetings, University of Calgary, Calgary, Canada, 6–9 June 1996.

- "Independent finite sums for K_m-free graphs," Workshop on Ramsey theory, Humboldt University, Berlin, Germany, 14–16 May 1996.

- "Some structural versus arithmetic Ramsey questions," Colloquium, Technische Universität Braunschweig, Germany, 12 January 1996.

- "Extremal problems for affine cubes of integers," Kolloquium über Kombinatorik, Diskrete Mathematik, Technische Universität Braunschweig, Germany, 17–18 November 1995.

- "Recent developments for Delta systems," problem session, Recent Trends in Discrete Mathematics, Hungarian Academy of Sciences, Matrahaza, Hungary, 28 October 1995.

- "On extremal problems for hypergraphs and affine cubes," Apres-Midi Mathematiques Discretes, Université Claude Bernard Lyon-1, Lyon, France, 12 September 1995.

- "Boolean algebras, sum-sets of integers, and hypergraphs," combinatorics seminar, Georgia Institute of Technology, Atlanta, GA, 23 February 1995.

- "Turan type results for graphs with many triangles," Special meeting of the American Mathematical Society, Dekalb, IL, 23 May 1993 [see *Abstracts* **14** (1993), p. 413].

- "Size Requirements for intersecting cliques," Fifth Cumberland conference on Graph Theory, Combinatorics and Computing, East Tennessee University, Johnson City, TN, 14–16 May 1992.

SELECTED CONTRIBUTED TALKS

- "Distance between consecutive entries in a permutation, UM Department Colloquium, 4 November 2010.

- "On pseudocomplemented lattices", Fete of Combinatorics, Lake Balaton, Hungary, 11–15 Aug. 2008 (work with G. Grätzer).

- "On upper bounds for van der Waerden numbers $W(3; r)$", 39th S. E. Int'l Conference for Combinatorics, Graph theory and Combinatorics, Florida Atlantic University, 6 March 2008.

- "Sumsets, primes, and graph theory", University of Manitoba, Mathematics Colloquium, 1 December 2005.

- "The golden thread", U. of M. Math Club, 9 March 2004.

- "Ramsey theory and graphs on the natural numbers", Workshop on extremal graph theory, Csopak (Lake Balaton), Hungary, 25 June 2003.

- "Blocking sets in finite projective planes", FPP seminar, University of Manitoba, 3 and 10 February 2003.

- "Discrepancy in finite projective planes", FPP seminar, University of Manitoba, 18 November and 2 December 2002.

- "Hyperplanes, cyclic polytopes, and codes", U. of M. department colloquium, 24 October 2002.

- "Extremal problems for hypergraphs and Boolean algebras of sets," Fifth Czech-Slovak International Symposium on Combinatorics, Graph Theory, Algorithms and Applications, Prague, Czech Republic, 6–12 July 1998.

- "Survey on Ramsey theory," Colloquium, Howard University, Washington, D.C., 13 September 1996.

- "On Ramsey theory," SFB Seminar, Universität Bielefeld, Germany, 13 November 1995.

- "On a problem of Paul Erdős," Oberseminar Kombinatorik, Universität Bielefeld, Germany, 17 October 1995 (with W. Deuber).

- "On extremal problems for hypergraphs and affine cubes," Oberseminar Kombinatorik, Universität Bielefeld, Germany, 26 September 1995.

- "Extremal problems on affine cubes," Seventh International Conference on Random Structures and Algorithms, Emory University, Atlanta, GA, 16–20 May 1995.

- "On theorems of Hilbert and Behrend," Eighth Cumberland Conference on Graph Theory, Combinatorics, and Computing, in conjunction with the Eleventh Annual Shanks Lectures, Vanderbilt University, Nashville, TN, 14–16 April 1995.

- "On Boolean algebras, sum-sets of integers, and hypergraphs," 26'th S. E. International conference on Combinatorics, Graph Theory and Computing, Boca Raton, FL, March, 1995.

- "On Boolean algebras of sets," Combinatorics Seminar, Emory University, Atlanta, GA, 14 November 1994.

- "Turan and Triangles," Combinatorics Seminar, Emory University, Atlanta, GA, 5 April 1993.

- "Finite induced graph Ramsey theory," NATO Advanced Study Institute, *Finite and infinite combinatorics in sets and logic*, Banff, Canada, 21 April to 4 May 1991. (unscheduled talk)

- "Some results in finite graph Ramsey theory," 21'st S.E. International conference on Combinatorics, Graph Theory and Computing, Florida Atlantic University, Boca Raton, FL, 12–16 February 1990.

AWARDS and OTHER HONOURS

- Received credit in a movie "Achieving the unachievable" by Jean Bergeron that won a Gold Magnolia in the Shanghai festival.

- Elected fellow of the *Institute for Combinatorics and its Applications* (ICA), 25 June 2007.

- Consulted by set designers of the movie "Pirates of the Caribbean: the Black Pearl" for design of a map puzzle, 2006.

- University of Manitoba Outreach Award, Fall 2004 (for community outreach, design of Brookside monument, and Machray Hall display).

- Commissioned to produce artwork for CCCG 2004, Concordia, Aug. 2004.

- Member of the Institute of Industrial Mathematical Sciences, University of Manitoba, July 2003–2009.

- NSERC (Natural Sciences and Engineering Research Council of Canada) research grant "Graph Ramsey theory and extremal relational structures", 2000-2004.

- NSERC Discovery grant, "Ramsey theory and arithmetic structure", 2004–2009. (\$ 13,000 per year).

- Nominated by McMaster Students Union for Faculty of Science teaching award, 1999.

- *Award of Achievement* for outstanding teaching quality, McMaster University, 23 March, 1999.

- Postdoctoral Fellowship, Department of Mathematics, McMaster University, Hamilton, Ontario, sponsored by Prof. A. Rosa, 1997–1999.

- Postdoctoral fellowship, Institute for Research in Discrete Mathematical Structures (Sonderforschungsbereich 343), Bielefeld, Germany, under direction of Prof. W. Deuber, September 1995–August 1996.

- *Award of Achievement* for outstanding instruction, Evening at Emory, July, 1995.

- NSERC Undergraduate Summer Scholarships at University of Calgary:

    1988: Latin squares and finite projective planes, Prof. T. Bisztriczky, director.

    1986: Universal algebra, analysis, Prof. M. G. Stone, director.

- *Viscount Bennett Scholarship*, Calgary, 1985.

- *University of Calgary Undergraduate Merit Award*, 1985.

- Society memberships: C.M.S., A.M.S., and M.A.A. (member since 1988); Institute for Combinatorics and its Applications, (elected Member 1991, elected Associate Fellow 23 July 1997, and elected Fellow, 25 June 2007); DIMANET and PECO, 1995-1996.

- Referee for several journals, including *Ars Combinatoria*, *Journal of Combinatorial Theory* (both Series A and B), *Combinatorics, Probability and Computing*, *Discrete Mathematics*, *European Journal of Combinatorics*, *Graphs and combinatorics*, and *Integers*.

COMMUNITY INVOLVEMENT and COMMITTEE WORK

- Mathletics committee, continuing.

- Combinatorics comprehensive exam coordinator, May 2013.

- Subcommittee for currriculum review in discrete mathematics, 2012–13.

- Committees for comprehensives in combinatorics and geometry, 2012–13.

- Promotion committees (Zhang and Zhong 2012–13 and Prymak 2013)

- Internationalization committee, Faculty of Science, 2012.

- Mathematics placement test (MPT) committee, 2012.

- Department Head, June 2010–June 2012—on many committees.

- Featured in an article " A long road to travel; from truck driver to tenured math prof", by Sean Moore in the *Bulletin*, 8 October 2010.

- Featured in an article "Da Vinci in 3D... Without the goggles!" by Jodie R. Reimer, in *Notes from the margin*, Volume 1, 2011, pp. 4–5 (published by the Canadian Mathematical Society).

- Appeared (while head) in promotional video for UM Math Dept, shown at the Joint Meeting, 4–7 January 2012 (produced by Web's Edge—available at `http://www.youtube.com/watch?v=QlgXc2ZZBjA`)

- Headship search committee, UM Math Department, 2009–2010.

- Working with Spirit of Math (a national independent program with a division in Winnipeg for local school children) on a program to integrate their best students into UofM undergrad courses, 2011–present. Contact: Deb Tardiff, regional manager, and Kim Landgren, president.

- Coordinator (together with R. Craigen) for "Finite combinatorics", special session, CMS summer meeting, June 1–3, 2007.

- Invited panelist on UMFM's radio program "The spoken word", discussing the book "Struck by Lightning", moderated by Liz Clayton, 15 November 2005.

- Served on the Outreach Committee for University of Manitoba, Department of Mathematics, University of Manitoba, since July 2002. Writing articles for *Manitoba Mathlinks*, helping with Information Days, and various other programs dealing with the community.

- Assisted with "Meet your future" University One symposium, U. of M., 30 January 2006.

- Editor for *Manitoba Mathlinks*, 2004–2007.

- Assisted Wayne Larsen (Larsen Memorials) in designing monument at Brookside cemetery for those donating their bodies to science, 2002-2003.

- Assisted with High School Workshop, IIMS, University of Manitoba, February 2003 (gave lecture, constructed models for students, helped creating and grading problem sets).

- Served as judge for science fairs, St. John's High School, 20 February 2003, and Winnipeg No. 1 Division, Tech. Voc. School, 21 April 2006 and 11 April 2003.

- Worked with the Faculty of Science (UofM) to establish display (in lobby of Machray Hall) of mathematical objects I created , 2002-7.

- Worked with U. of M. Bookstore to assist in acquisition selection, and in creating displays of mathematics (with Craig Bauer, bookstore, 2002–2003).

- Working with Christine Ottawa, math consultant for the 13 Winnipeg Division high schools, to establish closer relationship between high schools and university math programs, 2003–2007.

- Gave presentations at Kelvin High School, Winnipeg School Division, (Feb 13, 16, April 22, 23, 2004).

- Invited classes of high school students to UofM, gave lecture and tours. (Dec 2006, Churchill High School S1 students; Dec 2004, Kelvin High School students; 10 February 2005, Churchill High School students)

- Volunteered as a mathematics advisor for Science Alberta, 2000.

- Acting as a consultant to Rosalind Hamilton for the program "Creative Arts Academy" (developing the relationship between mathematics and the arts) implemented at Forest Lawn High School (Calgary), 2000.

- Panel member for discussion at University of Calgary, Career Services: "Employment with a recent mathematics degree", 20 November 2000.

- Adjunct Director of charity "People with a Purpose"; voting member of program "Chill Out," clothing the homeless, Toronto, 1997–2000.

- Attended "The Other Side of the Fence", U. of Calgary, 22 November 1999; high school teachers meeting with faculty from University of Calgary and Mount Royal College.

- Featured in newspaper article on traffic and mathematics by Doug Monroe, *Atlanta Journal-Constitution*, 24 August 1994.

Recent CONFERENCES and WORKSHOPS attended

- Erdős Centennial conference, Hungarian Academy of Sciences, Budapest, 1–5 July 2013.

- Abel conference honouring Szemédi, IMA, Minnesota, 30 Nov.–2 Dec. 2012.

- Memphis–Budapest Summer School in Combinatorics, The Renyi Institute, Budapest, 7–20 August 2011. [Four courses: Percolation, by B. Bollobás; Additive combinatorics, by G. Károlyi; Ramsey theory, by I. Leader; Branching processes, by P. Balister.]

- Probabilistic and structural graph theory workshop, McGill's Bellairs Research Institute, Barbados, 25 March–1 April, 2011.

- The 12th annual meeting of the Chairs of Canadian Mathematics Departments, McMaster University, Hamilton, Ontario, 12–13 November 2010.

- Paul Erd?os lectures series, University of Memphis, 1920 March 2010.

- Topics in graphs and hypergraphs, Institute for Pure and Applied Mathematics workshop, UCLA, 26 November 2009.

- Conference in honour of Robert Woodrow, University of Calgary, December 2008.

- Fete of Combinatorics, Keszthely, Lake Balaton, Hungary, 1115 August 2008.

- Building bridges, A conference on mathematics and computer science in honour of Lov?asz, Budapest, 5–9, August 2008.

- Bridging the gaps, Bristol summer school on probabilistic techniques in computer science, University of Bristol, England, 7–11 July 2008.

- Prairie Discrete Math Workshop, U. of Manitoba, 28–29 May 2008.

- New directions in algorithms, combinatorics, and optimization, GA Tech, Atlanta GA, 59 May 2008.

- 39th S.E. intl conference on combinatorics, graph theory, and computing, FAU, Boca Raton, FL, 3–7 March 2008.

- CMS summer meeting, June 1–3, 2007.