
Charles Joseph COLBOURN

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Personal Information

Birthdate: 24 October 1953
 Birthplace: Toronto, Ontario, Canada.
 Citizenship: Canadian
 Status: United States permanent resident



Education

| Degree | Date | Institution | Department |
|---------|---------|------------------------|------------------|
| Ph.D. | 06/1980 | University of Toronto | Computer Science |
| M.Math. | 05/1978 | University of Waterloo | Computer Science |
| B.Sc. | 06/1976 | University of Toronto | Computer Science |

Awards

Euler Medal for Lifetime Research Achievement, Institute for Combinatorics and Its Applications, 2003.
 A.J. Buckingham Scholar, Mathematics and Statistics, Miami University, Oxford OH, 2003.
 University Scholar in Basic and Applied Sciences, University of Vermont, 1997-98.
 Instructor of the Year, 1995-96, Faculty of Mathematics, University of Waterloo, awarded by MathSoc, the students' society.

Theses

C.J. Colbourn, "Graph generation", M.Math. Thesis, Department of Computer Science, University of Waterloo, 1977.
 C.J. Colbourn, "The complexity of graph isomorphism and related problems", Ph.D. Thesis, Department of Computer Science, University of Toronto, 1980.

Academic Experience

| Regular appointments | | | |
|---|----------------------------|---|----------------------------------|
| Position | Period | Institution | Department |
| Professor (tenured) | 08/01- 08/01- | Arizona State University | Computer Science and Engineering |
| Dorothean Professor (tenured) | 08/96-08/01 08/96-08/01 | University of Vermont | Computer Science |
| Professor | 07/89-08/98 | University of Waterloo | Combinatorics and Optimization |
| Associate Professor | 09/87-06/89 | University of Waterloo | Combinatorics and Optimization |
| Associate Professor (tenured) | 01/84-08/87 07/86-08/98 | University of Waterloo | Computer Science |
| Associate Professor | 07/82-12/83 | University of Saskatchewan | Computational Science |
| Assistant Professor | 07/80-06/82 | University of Saskatchewan | Computational Science |
| Visiting and cross appointments | | | |
| Position | Period | Institution | Department |
| Professor | 08/96-08/01 | University of Vermont | Mathematics and Statistics |
| Visiting Scientist | 08/97 | Defence Science and Technology Organization, Salisbury, Australia | Communications Division |
| University of Auckland Foundation Fellow | 03/96-06/96 | University of Auckland | Computer Science |
| Raybould Fellow | 07/94-08/94 | Univ. Queensland | Mathematics |
| Visiting Scientist | 03/93-04/93 | Rutgers University | Dimacs |
| Senior Research Fellow | 08/90-12/90 | Curtin University | Mathematics and Statistics |
| Professor | 09/90-08/98 | University of Waterloo | Computer Science |
| Research Professor | 04/90-03/93 | Carleton University | Computer Science |
| Senior Fellow | 09/89-12/89 | Simon Fraser University | Systems Science |
| Visiting Professor | 01/89-03/89 | Auburn University | Algebra, Combinatorics, Analysis |
| Senior Fellow | 09/87-10/87 | University of Minnesota | Mathematics and Applications |
| Associate Professor | 09/87-08/90 | University of Waterloo | Computer Science |
| Visiting Professor | 01/86-05/86 | University of Auckland | Computer Science |
| Visiting Assoc Prof | 09/85-12/85 | University of Toronto | Computer Science |
| Associate Professor | 01/84-08/87 | University of Waterloo | Combinatorics and Optimization |

Teaching Experience

| Term (F,W,S) | Course | Size | Topic |
|-------------------------------|---------------|------|---|
| F10 | CSE 355 | 43 | Theory of Computing |
| S10 | CSE 552 | 17 | Randomized and Approximation Algorithms |
| S10 | CSE 457 | 8 | Theory of Formal Languages |
| S10 | CSE 591 | 4 | Perfect Hashing |
| F09 | CSE 424 | 20 | Systems Capstone 2 |
| S09 | CSE 355 | 60 | Theory of Computing |
| S09 | CSE 301 | 42 | Ethics for Computer Science |
| S08 | CSE 591 | 6 | Software Interaction Testing |
| S08 | CSE 420 | 35 | Computer Architecture I |
| F07 | CSE 420/598 | 68 | Computer Architecture I |
| S07 | IEE 598 | 26 | Optimization II |
| S07 | CSE 434 | 30 | Computer Networks |
| F06 | CSE 355 | 55 | Theory of Computing |
| S06 | CSE 591 | 6 | Interaction Testing |
| S06,F05 | CSE 412/598 | 35 | Database Management Systems |
| F05 | CSE 534 | 19 | Advanced Computer Networks |
| F04 | CSE 591 | 8 | Network Reliability |
| F04 | CSE 434 | 28 | Computer Networks |
| F03 | CSE 591 | 14 | Genomics: Sequencing and Mapping |
| F03 | CSE 434/598 | 55 | Computer Networks |
| F02 | CSE 310 | 160 | Data Structures |
| S01 | CS 103 | 30 | Programming Languages |
| F00 | CS 201 | 36 | Operating Systems |
| W00 | CS 222 | 33 | Computer Architecture |
| W00, W99 | CS 395 | 2 | Combinatorial Algorithms |
| F99 | CS 101 | 39 | Computer Organization |
| F98 | CS 266 | 24 | Network Security and Cryptography |
| F98 | CS 294 | 2 | Medical Informatics |
| F97 | CS 265 | 22 | Computer Networks |
| W97 | CS 395 | 10 | Applied Cryptography |
| F96 | CS 243 | 20 | Theory of Computation |
| 96(1st) | 415(CS).701 | 15 | Network Reliability |
| F95,F94,F92 | C&O438/638 | 15 | Combinatorial Computing |
| F94,F91 | C&O434/634 | 14 | Combinatorial Design |
| S94 | E&CE203 | 90 | Discrete Math for Engineers |
| W94,F92,S89($\times 2$),W88 | C&O230 | 50 | Introduction to Combinatorics |
| W94,S88 ($\times 2$) | C&O351 | 40 | Network Flows |
| F92,F91,S91,S88 | C&O454 | 30 | Scheduling Theory |
| F91 | C&O750B/CS756 | 10 | Topics on Network Reliability |
| S89 | MATH 134b | 100 | Linear Algebra |
| W89 | MH371A | 24 | Discrete Mathematics 1 |
| W88 | C&O380 | 12 | Invention and Discovery in Mathematics |
| S87 | CS766 | 14 | Topics in Network Algorithms |
| S87,F86,S85 | CS466/666 | 40 | Analysis of Algorithms |
| F86 | CS234 | 150 | Programming Principles |
| F86 | C&O739/CS756 | 15 | Combinatorics of Network Reliability |
| F85 | CSC2427F | 8 | Topics in Graph Theory |
| S85 | CS756 | 17 | Topological Design of Networks |
| S85,S84 | CS450/650 | 35 | Computer Architecture |
| W85 | CS435 | 30 | Computer Applications |

| Term (F,W,S) | Course | Size | Topic |
|-----------------|------------|------|--|
| F84 | CS462/662 | 20 | Formal Languages and Parsing |
| F84 | CS354/554 | 60 | Software Systems |
| S84 | CS766 | 12 | Network Reliability: Algorithms and Complexity |
| F83 | CMPT 419.3 | 3 | Computability and Complexity Theory |
| F83 | CMPT 416.3 | 12 | Combinatorial and Geometric Algorithms |
| F83,W83 | CMPT 230.6 | 70 | Software Design |
| F83,F82,F81,F80 | CMPT 882.3 | 3 | Topics in the Theory of Computing |
| W83 | CMPT 361.3 | 20 | Theory of Computation 2 |
| W83 | CMPT 424.3 | 45 | Computer Communication Networks |
| F82,W82,W81 | CMPT 313.3 | 90 | Software Design |
| W82 | CMPT 419B | 1 | Introduction to Combinatorics |
| W82 | CMPT 326B | 70 | Theory of Computation 1 |
| F81 | CMPT 427A | 12 | Analysis of Algorithms |
| F81 | CMPT 212A | 70 | Assembly Language Programming |
| W81 | CMPT 419B | 5 | Recursive Function Theory and Computability |
| F80 | CMPT 180A | 240 | Introduction to Computer Science |
| F80 | CMPT 375A | 75 | Computing for Accounting |
| W80 | CSC 208S | 40 | Assembly Language Programming |
| S79 | CSC 258H | 50 | Computer Organization |

Graduate Supervision

Ph.D. Theses Supervised

Theses completed

1. Toni R. Farley, Ph.D., "Network reliability and resilience", Computer Science and Engineering, Arizona State University, 2009.
2. Dean S. Hoskins, Ph.D., "Covering Arrays and Optimal Designs", Computer Science and Engineering, Arizona State University, 2006.
3. Renée C. Bryce (Turban), Ph.D. "Algorithms for Covering Arrays", Computer Science and Engineering, Arizona State University, 2006.
4. Robert A. Walker II, Ph.D., "Covering Arrays and Perfect Hash Families", Computer Science and Engineering, Arizona State University, 2005.
5. Robert P. Gallant, Ph.D., "Tight orthogonal main effect plans", Combinatorics and Optimization, University of Waterloo, 1997.
6. Alan C.H. Ling, Ph.D., "Pairwise balanced designs and related codes", Combinatorics and Optimization, University of Waterloo, 1996.
7. Yeow Meng Chee, Ph.D., "Turan-type problems in group testing, coding theory and cryptography", Computer Science, University of Waterloo, 1996.
8. Zhike Jiang, Ph.D., "Rotational Steiner triple systems", Combinatorics and Optimization, University of Waterloo, 1995.
9. Heidi J. Strayer, Ph.D., "Bounding flows, distances and reliability in probabilistic networks", Computer Science, University of Waterloo, 1995.
10. Doreen L. Erickson (Galli), Ph.D., "Conflict-free access to parallel memory modules", Computer Science, University of Waterloo, 1993.

11. Violet R. Syrotiuk, Ph.D., “Wang tilings and distributed orientation on torus networks”, Computer Science, University of Waterloo, 1992 (co-supervised with J.K. Pachl).
12. Daryl D. Harms, Ph.D., “A symbolic algebra environment for research in network reliability”, School of Computing Science, Simon Fraser University, 1992 (co-supervised with A.L. Liestman).
13. David C. Bigelow, Ph.D., “Enclosings of latin squares and triple systems”, Pure Mathematics, University of Waterloo, 1990.
14. Anthony J. Gahlinger, Ph.D., “Coherence and satisfiability of waveform timing specifications”, Computer Science, University of Waterloo, 1990.
15. Louis D. Nel, Ph.D., “Network reliability and facility location in unreliable networks”, Computer Science, University of Waterloo, 1988.
16. Hosam M. F. AboElFotoh, Ph.D., “Reliability of radio broadcast networks: a graph theoretic approach”, Computer Science, University of Waterloo, 1988.
17. Wendy J. Myrvold, Ph.D., “The ally and adversary reconstruction problems”, Computer Science, University of Waterloo, 1988.
18. Ehab S. El Mallah, Ph.D., “Decomposition and embedding problems for restricted networks”, Computer Science, University of Waterloo, 1987.
19. Aparna Ramanathan, Ph.D., “Improving bounds for all-terminal network reliability”, Computer Science, University of Waterloo, 1986.

Masters Supervised

Theses supervised

1. Deepa R. Iyer, M.S. (CS), “Identification of Network Communities using Cocitation Analysis and Bibliographic Coupling”, Computer Science and Engineering, Arizona State University, 2008.
2. Jamieson French, M.S. (CS), “A Parallel Approach for k-Nearest Neighbor Search in Metric Space”, Computer Science and Engineering, Arizona State University, 2008.
3. Akhila Avirneni, M.S. (CS), “Feasibility of interaction testing for web-based forms”, Computer Science and Engineering, Arizona State University, 2007.
4. Andreas H. Ronneseth, M.S. (CS), “The Building Block Algorithm: A New Method for Constructing Covering Arrays”, Computer Science and Engineering, Arizona State University, 2006.
5. Kylan N. Johnson, M.S.(CS), “Selecting reliable connections in mobile ad hoc networks”, Computer Science and Engineering, Arizona State University, 2005.
6. Sandhya Durvasula, M.S.(CS), “Lower bounds for multiple sequence alignment”, Computer Science and Engineering, Arizona State University, 2004.
7. Kaushik Srinivasan, M.S.(CS), “Disk recovery in double erasure RAID disk arrays”, Computer Science and Engineering, Arizona State University, 2004.
8. Xunshan Ma, M.S.(CS), “Computational method to construct erasure-resilient codes”, Computer Science, University of Vermont, 1999.
9. Shanon D. Place, M.S.(CS), “Application of bipartite graph matching algorithms for physical therapy student internship assignments”, Computer Science, University of Vermont, 1999.
10. Myra B. Cohen, M.S.(CS), “Performance analysis of triple erasure codes in large disk arrays”, Computer Science, University of Vermont, 1999.
11. Lise Arseneau, M.Math., “Optimal testing strategies for s,t-series parallel systems”, Combinatorics and Optimization, University of Waterloo, 1996.
12. Alan C.H. Ling, M.Math., “Pairwise balanced designs with consecutive block sizes”, Combinatorics and Optimization, University of Waterloo, 1995.
13. Doreen L. Erickson (Galli), M.Math., “Threshold schemes”, Computer Science, University of Waterloo, 1990.

14. Yeow Meng Chee, M.Math., "The basis reduction algorithm and the existence of combinatorial designs", Computer Science, University of Waterloo, 1989.
15. H.M. Kenneth Warkentyne, M.Math., " Δ -Y- Δ reducible graphs", Computer Science, University of Waterloo, 1988.
16. Peter B. Channen, M.Math., "A performance evaluation of distributed discrete event simulation", Computer Science, University of Waterloo, 1988 (co-supervised with Jan K. Pachl).
17. Brent N. Clark, M.Math. "Unit disk graphs", Computer Science, University of Waterloo, 1985.
18. Timothy B. Brecht, M.Math. "Lower bounds for two-terminal network reliability", Computer Science, University of Waterloo, 1985.
19. Ehab S. El-Mallah, M.Sc. "Recursive graph structure and the optimum communication spanning tree problem", Computational Science, University of Saskatchewan, 1983.
20. Daryl D. Harms, M.Sc. "An investigation into bounds on network reliability", Computational Science, University of Saskatchewan, 1983.
21. Eric M. Neufeld, M.Sc. "Construction of reliable series-parallel networks: a combinatorial approach", Computational Science, University of Saskatchewan, 1983.
22. Judith B. Peachey, M.Sc. "The Bradford-Zipf distribution and program behaviour", Computational Science, University of Saskatchewan, 1981 (co-supervised with R.B. Bunt).

Essays Supervised

1. Adithya Raghavendra, MCS, "Interaction Testing of Web Services", Computer Science and Engineering, Arizona State University, 2006.
 2. Robin L. Wilcox, MCS, "In Parameter Order Test Generation Strategies", Computer Science and Engineering, Arizona State University, 2006.
 3. Ron Castelletto, M.Math., "A comparison and implementation of Monte Carlo methods for estimating the probability of s, t connectedness", Computer Science, University of Waterloo, 1991.
 4. F. David Fracchia, M.Math., "F-factors and single processor scheduling", Computer Science, University of Waterloo, 1987.
 5. Bradley M. Debroni, M.Math., "Monte Carlo algorithms for estimating the coefficients of the network reliability polynomial", Computer Science, University of Waterloo, 1987.
 6. Katherine E. Stewart, M.Math., "Computing the all-terminal reliability exactly", Computer Science, University of Waterloo, 1987.
 7. Andrea R. Chappell, M.Math. "The terminal layout problem", Computer Science, University of Waterloo, 1986.
 8. Louis D. Nel, M.Math. "The design and complexity of VideoTex cycles", Computer Science, University of Waterloo, 1985.
 9. Eddy H. Carrasco, M.Math., "An implementation of a first order and second order method for network reliability", Computer Science, University of Waterloo, 1984.
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Current Research Interests

My research concentrates on areas in which combinatorics and computer science interact in an elegant way. Two main directions are:

- network algorithms and network design
 - network reliability: efficiently computable bounds, combinatorial structure from matroids, polyhedral and shellable complexes; exact algorithms; most probable state methods.
 - network design and analysis: graph algorithms, heuristics, search techniques.
 - network diagnosis and testing.
- combinatorial design theory
 - applications in computer science: erasure correction, error correction, combinatorial cryptography, computational biology.
 - triple systems, block designs, pairwise balanced designs, group-divisible designs, transversal designs, latin squares, orthogonal arrays.
 - algorithms and computational methods; combinatorial search techniques.
 - applications of designs to lotteries.

Research Publications

Refereed Journal Papers

1. C.J. Colbourn and J. Zhou, Improving Two Recursive Constructions for Covering Arrays, *Journal of Statistical Theory and Practice*, to appear (acc Oct10).
2. C.J. Colbourn, G. Quattrocchi, and V.R. Syrotiuk, Grooming traffic to maximize throughput in SONET rings, *Journal of Optical Communications and Networking*, to appear (acc Oct10).
3. C.J. Colbourn, G. Ge, and A.C.H. Ling, Optical grooming with grooming ratio nine, *Discrete Mathematics*, to appear (acc Aug10).
4. Y. Tang, C.J. Colbourn, and J. Yin, Optimality and constructions of locating arrays, *Journal of Statistical Theory and Practice*, to appear (acc Aug10).
5. C.J. Colbourn, A.D. Forbes, M.J. Grannell, T.S. Griggs, P. Kaski, P.R.J. Östergård, D.A. Pike, and O. Pottonen, Properties of the Steiner triple systems of order 19, *Electronic J. Combinatorics* 17 (2010), #R98.
6. C.J. Colbourn, G. Kéri, P.P. Rivas Soriano, and J.-C. Schlage-Puchta, Covering and Radius-covering Arrays: Constructions and Classification, *Discrete Applied Mathematics*, to appear (acc Mar10).
7. Y. Fujiwara and C.J. Colbourn, A Combinatorial Approach to X-Tolerant Compaction Circuits, *IEEE Transactions on Information Theory* 56 (2010), 3196–3206.
8. J.-C. Bermond, C.J. Colbourn, L. Gionfriddo, G. Quattrocchi, and I. Sau, Drop Cost and Wavelength Optimal Two-Period Grooming with Ratio 4, *SIAM Journal on Discrete Mathematics* 24 (2010), 400–418.
9. C.J. Colbourn, Covering arrays from cyclotomy, *Designs Codes and Cryptography* 55 (2010), 201–219.
10. C.J. Colbourn and A.C.H. Ling, A recursive construction for perfect hash families, *Journal of Mathematical Cryptology* 3 (2009), 291–306.
11. D.S. Hoskins, C.J. Colbourn, and D.C. Montgomery, D-Optimal designs with interaction coverage, *Journal of Statistical Theory and Practice* 3 (2009), 817–830.

12. J.I. Brown, C.J. Colbourn, and R.J. Nowakowski, Chip Firing and All-Terminal Network Reliability Bounds, *Discrete Optimization* 6 (2009), 436–445.
13. T.R. Farley and C.J. Colbourn, Multiterminal network connectedness on series-parallel networks, *Discrete Mathematics, Algorithms, and Applications* 1 (2009), 253–265.
14. C.J. Colbourn, G. Ge, and A.C.H. Ling, Optical Grooming with Grooming Ratio Eight, *Discrete Applied Mathematics* 157 (2009), 2763–2772.
15. C.J. Colbourn and A.C.H. Ling, Linear Hash Families and Forbidden Configurations, *Designs, Codes and Cryptography* 59 (2009), 25–55.
16. C.J. Colbourn, Distributing Hash Families and Covering Arrays, *Journal of Combinatorics, Information, and System Sciences* 34 (2009), 113–126.
17. C.J. Colbourn, H.-L. Fu, G. Ge, A.C.H. Ling, and H.-C. Lu, Minimizing SONET ADMs in Unidirectional WDM Rings with Grooming Ratio 7, *SIAM J. Discrete Mathematics* 23 (2008), 109–122.
18. R.C. Bryce and C.J. Colbourn, A density-based greedy algorithm for higher strength covering arrays, *Software Testing, Verification, and Reliability* 19 (2009), 37–53.
19. C.J. Colbourn and Y. Fujiwara, Small stopping sets in Steiner triple systems, *Cryptography and Communications* 1 (2009), 31–46.
20. M.P. McGarry, M. Reisslein, C.J. Colbourn, M. Maier, F. Aurzada, and M. Scheutzow, Just-in-Time Scheduling for Multichannel EPONs, *IEEE/OSA Journal of Lightwave Technology* 26,10 (2008), 1204–1216.
21. C.J. Colbourn, The Configuration Polytope of ℓ -Line Configurations in Steiner Triple Systems, *Mathematica Slovaca* 59 (2009), 77–108.
22. C.J. Colbourn, G. Quattrocchi, and V.R. Syrotiuk, Lower Bounds for Two-Period Grooming Via Linear Programming Duality, *Networks* 58 (2008), 299–306.
23. C.J. Colbourn, G. Quattrocchi, and V.R. Syrotiuk, Grooming for Two-Period Optical Networks, *Networks* 58 (2008), 307–324.
24. A. H. Ronneseth and C. J. Colbourn, Merging Covering Arrays and Compressing Multiple Sequence Alignments, *Discrete Applied Mathematics* 157 (2009), 2117–2190.
25. C.J. Colbourn, G. Ge, and A.C.H. Ling, Graph designs for the eight-edge five-vertex graphs, *Discrete Mathematics* 309 (2009), 6440–6445.
26. C. J. Colbourn and S. Kumar, Lower bounds on multiple sequence alignment using exact 3-way alignment, *BMC Bioinformatics* 8:140 (2007).
27. R.A. Walker II and C.J. Colbourn, Tabu search for covering arrays using permutation vectors, *Journal of Statistical Planning and Inference* 139 (2009), 69–80.
28. C.J. Colbourn and D.W. McClary, Locating and detecting arrays for interaction faults, *Journal of Combinatorial Optimization* 15 (2008), 17–48.
29. P.J. Dukes, V.R. Syrotiuk, and C.J. Colbourn, Ternary schedules for energy-limited sensor networks, *IEEE Transactions on Information Theory* 53 (2007), 2791–2798.
30. D.S. Hoskins, C.J. Colbourn, and M. Kulahci, Truncated D-Optimal Designs for Screening Experiments, *American Journal of Mathematical and Management Sciences* 28 (2008), 359–383.
31. A.C.H. Ling, C.J. Colbourn, and G. Quattrocchi, Minimum embeddings of Steiner triple systems into (K4-e)-designs II, *Discrete Mathematics* 309 (2009), 400–411.
32. V.R. Syrotiuk, C.J. Colbourn, and S. Yellamraju, Rateless Forward Error Correction for Topology-Transparent Scheduling, *IEEE/ACM Transactions on Networking* 16,2 (2008), 464–472.
33. C.J. Colbourn, M. Cui, E.L. Lloyd, and V.R. Syrotiuk, A Carrier Sense Multiple Access Protocol with Power Backoff (CSMA/PB), *Ad Hoc Networks* 5 (2007), 1233–1250.
34. T.R. Farley and C.J. Colbourn, Multiterminal Resilience for Series-Parallel Networks, *Networks* 50 (2007), 164–172.

35. R.C. Bryce and C.J. Colbourn, The density algorithm for pairwise interaction testing, *Software Testing, Verification, and Reliability* 17 (2007), 159–182.
36. R.A. Walker II and C.J. Colbourn, Perfect hash families: Construction and Existence, *Journal of Mathematical Cryptography* 1 (2007), 125–150.
37. V.R. Syrotiuk, Z. Zhang, and C.J. Colbourn, Transport schemes for topology-transparent scheduling, *Journal of Combinatorial Optimization* 14 (2007), 229–248.
38. R.C. Bryce and C.J. Colbourn, Prioritized Interaction Testing for Pairwise Coverage with Seeding and Constraints, *Journal of Information Science and Technology* 48 (2006), 960–970.
39. C.J. Colbourn, S.S. Martirosyan, Tran Van Trung, and R.A. Walker II, Roux-type Constructions for Covering Arrays of Strengths Three and Four, *Designs, Codes and Cryptography* 41 (2006), 33–57.
40. C.J. Colbourn, Strength two covering arrays: existence tables and projection, *Discrete Mathematics* 308 (2008), 772–786.
41. W. Chu, C.J. Colbourn, and P. Dukes, On constant composition codes, *Discrete Applied Math.* 154 (2006), 912–929.
42. P.J. Dukes, C.J. Colbourn, and V.R. Syrotiuk, Directed Complete Bipartite Graph Decompositions: Indirect Constructions, *Discrete Mathematics* 308 (2008), 367–374.
43. K. Srinivasan and C.J. Colbourn, Failed disk recovery in double erasure RAID arrays, *Journal of Discrete Algorithms* 5 (2007), 115–128.
44. R.C. Bryce, Y. Chen, and C.J. Colbourn, Biased Covering Arrays for Progressive Ranking and Composition of Web Services, *International Journal Simulation and Process Modelling* 3 (2007), 80–87.
45. W. Chu, C.J. Colbourn, and V.R. Syrotiuk, The Effects of Synchronization on Topology-Transparent Scheduling, *Wireless Networks* 12 (2006), 681–690.
46. G.B. Sherwood, S.S. Martirosyan, and C.J. Colbourn, Covering Arrays of Higher Strength From Permutation Vectors, *Journal of Combinatorial Designs* 14 (2006), 202–213.
47. C.J. Colbourn and V.R. Syrotiuk, Cover-free families and topology-transparent communication, *Bayreuther Mathematische Schriften* 74 (2005) 79–99.
48. C.J. Colbourn, A.C.H. Ling, and G. Quattrocchi, Embedding path designs into kite systems, *Discrete Mathematics* 297 (2005), 38–48.
49. S.S. Martirosyan and C.J. Colbourn, Recursive Constructions for Covering Arrays, *Bayreuther Mathematische Schriften* 74 (2005) 266–275.
50. C.J. Colbourn and C. Huybrechts, Fully gated graphs: recognition and convex operations, *Discrete Mathematics* 308 (2008), 5184–5195.
51. C.J. Colbourn, A.C.H. Ling, and G. Quattrocchi, Minimum embeddings of Steiner triple systems into (K4-e)-designs I, *Discrete Mathematics* 308 (2008), 5308–5311.
52. C.J. Colbourn, S.S. Martirosyan, G.L. Mullen, D.E. Shasha, G.B. Sherwood, and J.L. Yucas, Products of Mixed Covering Arrays of Strength Two, *Journal of Combinatorial Designs* 14 (2006), 124–138.
53. J.-C. Bermond, C.J. Colbourn, D. Coudert, G. Ge, A.C.H. Ling, and X. Muñoz, Traffic grooming in unidirectional WDM rings with grooming ratio $C=6$, *SIAM Journal on Discrete Mathematics* 19 (2005), 523–542.
54. C.J. Colbourn, Combinatorial aspects of covering arrays, *Le Matematiche (Catania)* 58 (2004), 121–167.
55. W. Chu and C.J. Colbourn, Optimal Frequency Hopping Sequences via Cyclotomy, *IEEE Transactions on Information Theory* 51 (2005), 1139–1141.
56. W. Chu, C.J. Colbourn, and P. Dukes, Tables for constant composition codes, *J. Combinatorial Mathematics and Combinatorial Computing* 54 (2005), 57–65.
57. W. Chu and C.J. Colbourn, Sequence designs for ultra-wideband impulse radio with optimal correlation properties, *IEEE Transactions on Information Theory* 50 (2004), 2402–2407.

58. V.R. Syrotiuk, M. Cui, S. Ramkumar, and C.J. Colbourn, Dynamic spectrum utilization in ad hoc networks, *Computer Networks* 46 (2004), 665–678.
59. W. Chu, C.J. Colbourn, and V.R. Syrotiuk, Slot Synchronized Topology-Transparent Scheduling for Sensor Networks, *Computer Communications* 29 (2006), 421–428.
60. W. Chu, C.J. Colbourn, and S.W. Golomb, A recursive construction for regular difference triangle sets, *SIAM J. Discrete Mathematics* 18 (2005), 741–748.
61. C.J. Colbourn, D.A. Drake, and W.J. Myrvold, Ovals and hyperovals in nets, *Discrete Mathematics* 294 (2005), 53–74.
62. C.J. Colbourn, T. Kløve, and A.C.H. Ling, Permutation arrays for powerline communication and mutually orthogonal Latin squares, *IEEE Transactions on Information Theory* 50 (2004), 1289–1291.
63. C.J. Colbourn, A.C.H. Ling, and V.R. Syrotiuk, Cover-free families and topology-transparent scheduling in MANETs, *Designs, Codes, and Cryptography* 32 (2004), 65–95.
64. W. Chu, C.J. Colbourn, and P. Dukes, Constructions for Permutation Codes in Powerline Communications, *Designs, Codes, and Cryptography* 32 (2004), 51–64.
65. M.B. Cohen, C.J. Colbourn, and A.C.H. Ling, Constructing Strength Three Covering Arrays with Augmented Annealing, *Discrete Mathematics* 308 (2008), 2709–2722.
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8. C.J. Colbourn and R.A. Mathon (editors), *Combinatorial Design Theory*, Annals of Discrete Mathematics, North-Holland, volume 34, 1987.
9. C.J. Colbourn and M.J. Colbourn (editors), *Algorithms in Combinatorial Design Theory*, Annals of Discrete Mathematics, volume 26, North-Holland, 1985.

I have also edited special volumes of *Discrete Applied Mathematics* (1999), *Discrete Mathematics* (2000), the *Journal of Statistical Planning and Inference* (2000), and others.

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4. C.J. Colbourn, Constructing Perfect Hash Families using a Greedy Algorithm, *Coding and Cryptology*, Y. Li, S. Ling, H. Niederreiter, H.X. Wang, C.P. Xing, S.Y. Yang (editors), World Scientific, pp. 109-118.
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|-------|--|---|---------|
| I.1 | Opening the Door | C.J. Colbourn | 3-10 |
| I.2 | Design Theory: Antiquity to 1950 | Ian Anderson, C.J. Colbourn, J.H. Dinitz, T.S. Griggs | 11-22 |
| II.2 | Triple Systems | C.J. Colbourn | 58-70 |
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| III.1 | Latin Squares | C.J. Colbourn, J.H. Dinitz, I.M. Wanless | 135-152 |
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| III.6 | Orthogonal Arrays of Index More Than One | Malcolm Greig, C.J. Colbourn | 219-223 |
| III.7 | Orthogonal Arrays of Strength More Than Two | C.J. Colbourn | 224-228 |
| VI.10 | Covering Arrays | C.J. Colbourn | 361-365 |
| VI.17 | Difference Matrices | C.J. Colbourn | 410-417 |
| VI.43 | Perfect Hash Families | Robert A. Walker II, C.J. Colbourn | 565-568 |
| VI.56 | Superimposed Codes and Combinatorial Group Testing | C.J. Colbourn, Frank K. Hwang | 628-632 |
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6. C.J. Colbourn and G. Xue, Grade of service Steiner trees in series-parallel networks, *Advances in Steiner Trees* (D.Z. Du, J.M. Smith, J.H. Rubinstein; eds.) Kluwer Academic Press, 2000, pp. 163–174.

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| 8.2 | C.J. Colbourn, J.H. Dinitz | Symmetric designs and finite geometries | 770-778 |
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10. A.C.H. Ling and C.J. Colbourn, Rosa triple systems, in: *Geometry, Combinatorial Designs and Related Structures* (J.W.P. Hirschfeld, S.S. Magliveras, M.J. de Resmini; editors) Cambridge University Press, 1997, pp. 149-159.
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| I.4 | C.J. Colbourn, R. Mathon | Steiner systems | 66-75 |
| II.1 | C.J. Colbourn, J.H. Dinitz | Latin squares | 97-110 |
| II.2 | R.J.R. Abel, A.E. Brouwer, C.J. Colbourn, J.H. Dinitz | Mutually orthogonal latin squares (MOLS) | 111-142 |
| II.3 | R.J.R. Abel, C.J. Colbourn, J.H. Dinitz | Incomplete MOLS | 142-172 |
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| V.6 | C.J. Colbourn | Group testing | 564-565 |
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16. D.L. Erickson and C.J. Colbourn, Conflict-free access to rectangular subarrays of constant perimeter, *Interconnection Networks and Mapping and Scheduling Parallel Computations*, ACM/DIMACS, 1995, pp. 105-124.
17. M.O. Ball, C.J. Colbourn and J.S. Provan, Network reliability, Chapter 11 of *Handbook of Operations Research: Network Models*, Elsevier North-Holland, 1995, 673-762.
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19. D.C. Bigelow and C.J. Colbourn, Faithful enclosing of triple systems: a generalization of a theorem of Stern, in: *Graphs, Matrices and Designs* (R. Rees, editor) Dekker, 1992, pp. 31-42.
20. J.S. Devitt and C.J. Colbourn, On implementing an environment for investigating network reliability, in: *Computer Science and Operations Research: New Developments in their Interfaces*, Pergamon Press, 1992, pp. 159-173.
21. C.J. Colbourn and A. Rosa, Directed and Mendelsohn triple systems, *Contemporary Design Theory*, Chapter 4, 1992, pp. 97-136.
22. A. Rosa and C.J. Colbourn, Colorings of block designs, *Contemporary Design Theory*, Chapter 10, 1992, pp. 401-430.
23. C.J. Colbourn and E.I. Litvak, Bounding network parameters by approximating graphs, *Reliability of Computer and Communications Networks*, AMS/ACM, 1991, pp. 91-104.

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1. C.J. Colbourn, Separations of Steiner triple systems: some questions, *Bulletin of the ICA* 6 (1992) 53-56.
2. C.J. Colbourn and J.S. Devitt, Notes on some computations for reliability polynomials, Mathematics and Statistics Technical Report 7-90, Curtin University of Technology, 1990.
3. C.J. Colbourn and A. Rosa, Bibliography on triple systems, Research Report 90-14, Department of Combinatorics and Optimization, University of Waterloo, 1990.
4. C.J. Colbourn, Network reliability: numbers or insight?, *Annals of Operations Research* 33 (1991) 87-93.
5. C.J. Colbourn and A. Rosa, Maximal partial Steiner triple systems of order $v \leq 11$ and their embedding, immersion and enclosing, Preprint Series 1988/89 No. 1, McMaster University, 1988.
6. C.J. Colbourn, Directing and orienting triple systems, Proc. Research Institute in Mathematical Sciences, Kyoto University, Volume 607, 1987, pp. 33-38.
7. C.J. Colbourn and E. Mendelsohn, The rainbow highways of OZ, *J. Recreational Mathematics* 13 (1981) 246-249.
8. K.S. Booth and C.J. Colbourn, Problems polynomially equivalent to graph isomorphism, Technical Report CS-77/04, Department of Computer Science, University of Waterloo, 1979.
9. C.J. Colbourn, A bibliography of the graph isomorphism problem, Technical Report 123/78, Department of Computer Science, University of Toronto, 1978.
10. M.J. Colbourn and C.J. Colbourn, Graph isomorphism and self-complementary graphs, *ACM SIGACT News* 10 (1978) 25-29.

Invited Conference Presentations

1. C.J. Colbourn, "A handful of sparse testing problems", Network Mapping and Measurement Conference, McGill University, Montréal, Canada, August 2010.
2. C.J. Colbourn, "Applications of Designs: Covering Arrays, and Optical Grooming", 10 lecture short course, AMSI 2010 Australian Graduate Theme Program in Mathematical Sciences, Brisbane, Australia, July 2010.
3. C.J. Colbourn, "Hash Families and Covering Arrays", Combinatorics 2010, Verbania, Italy, July 2010.
4. C.J. Colbourn, "Perfect hash families and covering arrays", NATO Advanced Study Institute on Information Security and Related Combinatorics, Opatija, Croatia, June 2010.
5. C.J. Colbourn, "Interaction testing", Computer Science Research Day, University of Vermont, Burlington VT, December 2009.
6. C.J. Colbourn, "Grooming to minimize load", Workshop on Combinatorics in Memory of Lucia Gionfriddo, Catania, Italy, December 2009.

7. C.J. Colbourn, "Balanced grooming in optical networks", Combinatorial Configurations and Their Applications, Houghton MI, August 2009.
8. C.J. Colbourn, "Network reliability and resilience", Combinatorial Configurations and Their Applications, Houghton MI, August 2009.
9. C.J. Colbourn, "Finding an interaction fault", Dagstuhl Workshop on Search Theory, Dagstuhl, Germany, July 2009.
10. C.J. Colbourn, "Combinatorial Aspects of Compressive Sensing Matrices", Network Mapping and Measurement, College Park MD, June 2009.
11. C.J. Colbourn, "Binary covering arrays", International Workshop on Coding and Cryptology (IWCC2009), Zhangjiajie, China, June 2009.
12. C.J. Colbourn, "The Combinatorics at the Heart of the Problem, Inaugural Peter Gibbons Lecture, University of Auckland, Auckland, New Zealand, May 2009.
13. C.J. Colbourn, "Distributing hash families and covering arrays", Canadian Mathematics Society Winter Meeting, Ottawa, Canada, December 2008.
14. C.J. Colbourn, "Linear hash families", Combinatorial Design Theory Workshop, BIRS, Banff, Canada, November 2008.
15. C.J. Colbourn, "Covering arrays", Workshop on Combinatorial Designs, Nanyang Technological University, Singapore, June 2008.
16. C.J. Colbourn, "Graph decompositions and optical grooming", Sixth Shanghai Conference on Combinatorics and Coding, Shanghai, China, May 2008.
17. C.J. Colbourn, "Graph decompositions and optical grooming", Ottawa-Carleton Graph Theory Workshop, Fields Institute, Ottawa, Canada, May 2008.
18. C.J. Colbourn, "Locating and Detecting Arrays for Interaction Faults", Network Mapping and Measurement, College Park MD, June 2008.
19. C.J. Colbourn, "Locating Interaction Faults", Miniconference on Discrete Mathematics With An Emphasis on Search Theory, University of South Carolina, Columbia SC, October 2007.
20. C.J. Colbourn, "Combinatorial Aspects of Network Reliability", DRCN2007, the 6th International Workshop on Design and Reliable Communication Networks, La Rochelle, France, October 2007.
21. C.J. Colbourn, "Configurations in Steiner triple systems", Design Theory of Alex Rosa, Bratislava, Slovakia, July 2007.
22. C.J. Colbourn, "Grooming in Optical Networks", Workshop on Combinatorial Designs, Hangzhou, China, June 2007.
23. C.J. Colbourn, "A Density Algorithm for Perfect Hash Families", International Workshop on Coding and Cryptography, Fujian, China, June 2007.
24. C.J. Colbourn, "Grooming in Optical Networks", Workshop on Combinatorial Designs, Kyoto, Japan, June 2007.
25. C.J. Colbourn, "Covering Arrays for Interaction Testing", Workshop on Combinatorics, Yokohama, Japan, June 2007.
26. C.J. Colbourn, Graph Decompositions and Grooming in Optical Networks, 5th Cracow Conference on Graph Theory, Ustron, Poland, September 2006.
27. C.J. Colbourn, Locating and Detecting Interaction Faults, Conference on Optimal Discrete Structures and Algorithms, Rostock, Germany, September 2006.
28. C.J. Colbourn, Perfect hash families, Dry and Discrete Workshop, Yulara, Australia, July 2006.
29. C.J. Colbourn, Screening to Locate Interaction Faults, Workshop on Combinatorial Algorithms, Kings Canyon, Australia, July 2006.
30. C.J. Colbourn, Graph Decompositions and Grooming in Optical Networks, 31st Australasian Conference on Combinatorial Mathematics and Computing, Alice Springs, Australia, July 2006.

31. C.J. Colbourn, "Screening to Locate Interactions", DIMACS Workshop on Combinatorial Group Testing, New Brunswick NJ, May 2006.
32. C.J. Colbourn, "Construction Techniques for Covering Arrays", Fields Institute Workshop on Covering Arrays, Ottawa, Canada, May 2006.
33. C.J. Colbourn, "Graph Decompositions and Grooming in Optical Networks", Colloque en l'honneur de Jean-Claude Bermond, Sophia-Antipolis, France, December 2005.
34. C.J. Colbourn, "Combinatorial Designs for Software Interaction Testing", International Conference on Statistics, Combinatorics, Mathematics and Applications, Auburn AL, December 2005 (Presidential Invited Plenary Lecture).
35. C.J. Colbourn, "Cover-free families and topology-transparent communication", CTS Conference on Combinatorics and Its Applications, Hsinchu, Taiwan, May 2005.
36. C.J. Colbourn, "Two-period optical grooming and graph decompositions", Fifth Shanghai Conference on Combinatorics, Shanghai, China, May 2005.
37. C.J. Colbourn, "Cover-free families and topology-transparent communication", ALOCOMA 2005, Bayreuth, Germany, April 2005.
38. C.J. Colbourn, "Software testing and covering arrays", 36th Southeastern Conference on Combinatorics, Graph Theory, and Computing, Boca Raton FL, March 2005.
39. C.J. Colbourn, "Covering Arrays and the Power of Apathy", 36th Southeastern Conference on Combinatorics, Graph Theory, and Computing, Boca Raton FL, March 2005.
40. C.J. Colbourn, "Covering arrays", ACCOTA 2004, San Miguel de Allende, Mexico, November 2004.
41. C.J. Colbourn, "Combinatorial aspects of covering arrays", Combinatorics 2004, Capomulini, Italy, September 2004.
42. C.J. Colbourn, "Grooming in optical networks", Workshop on Working Applications of Discrete Mathematics, University of Queensland, Brisbane, Australia, January 2004.
43. C.J. Colbourn, "Combinatorial Techniques for Interaction Software Testing", Workshop on Working Applications of Discrete Mathematics, University of Queensland, Brisbane, Australia, January 2004.
44. C.J. Colbourn, "Software Interaction Testing and Covering Arrays", Thirty-First Miami University Conference on Mathematics, Oxford OH, October 2003.
45. C.J. Colbourn, "Topology-Transparent Communication in Mobile Ad Hoc Networks Using Orthogonal Arrays", Thirty-First Miami University Conference on Mathematics, Oxford OH, October 2003.
46. C.J. Colbourn, "Erasure Coding for RAID Disk Arrays", Andrew J. Buckingham Lecture, Thirty-First Miami University Conference on Mathematics, Oxford OH, October 2003.
47. C.J. Colbourn, "Life is like a box of smarties", Computer Science Alumni Reunion Conference, University of Saskatchewan, Saskatoon SK, September 2003.
48. C.J. Colbourn, "Permutation Codes for Powerline Communications", International Conference on Designs and Finite Geometries, Rhodes, Greece, June 2003.
49. C.J. Colbourn, "Software interaction testing", BIRS Workshop on Constraint Programming, Belief Revision, and Combinatorial Optimization, Banff, Alberta, Canada, May 2003.
50. C.J. Colbourn, "Cluttered Orderings of the Complete Graph", Clemson Miniconference on Discrete Mathematics, Clemson SC, October 2002.
51. C.J. Colbourn, "Testing for defectives using combinatorial designs", Workshop on Frontiers of Applied and Theoretical Combinatorics, Richmond VA, September 2002.
52. C.J. Colbourn, "Fully gated graphs", Shanghai Conference on Combinatorics, Shanghai, China, May 2002.
53. C.J. Colbourn, "Testing for consecutive defectives and ordering a binary code", COSSAC 2001, Ischia Island, Italy, September 2001.
54. C.J. Colbourn, "Graph decompositions and SONET networks", ACCOTA 2000, Mérida, Yucatan, Mexico, November 2000.

55. C.J. Colbourn, "Applications of combinatorial designs in communications and networking", Workshop on Emerging Applications of Combinatorial Designs, Berkeley CA, November 2000.
56. C.J. Colbourn, "Erasure codes and configurations in designs", Optimal Discrete Structures and Algorithms 2000, Rostock, Germany, September 2000.
57. C.J. Colbourn, "Multiple access communications and combinatorial designs", First Workshop on Theoretical Computer Science, Tehran, Iran, July 2000.
58. C.J. Colbourn, "Group testing and computational molecular biology", Combinatorics 2000, Gaeta, Italy, June 2000.
59. C.J. Colbourn, "Applications of combinatorial designs to communications, cryptography, and networking", British Combinatorial Conference, Canterbury, England, July 1999.
60. C.J. Colbourn, "Combinatorial embeddings in the classical designs", Second Pythagorean Conference on Geometry and Combinatorial Designs, Pythagorion, Samos, Greece, June 1999.
61. C.J. Colbourn, "A graph decomposition problem for SONET/WADM networks", Third Shanghai Conference on Designs, Codes, and Finite Geometries, Shanghai, China, May 1999.
62. C.J. Colbourn, "Combinatorial designs and cryptography" (series of three lectures), Workshop on Codes, Designs, and Cryptography, POSTECH, Pohang, South Korea, January 1999.
63. C.J. Colbourn, "Codes for MT-MFSK signalling, and configurations in designs", ACCOTA 98, Oaxaca, Mexico, December 1998.
64. C.J. Colbourn, "Cryptography and combinatorial designs" (five one hour lectures), Workshop on Coding Theory, Cryptography, and Computer Security, Lethbridge, Canada, August 1998.
65. C.J. Colbourn, "Weakly union-free designs and packings", Frontiers of Combinatorics, Los Alamos National Laboratory, New Mexico, July 1998.
66. C.J. Colbourn, "Group testing and weakly union-free designs", Combinatorists of New England (CONE) 27, Smith College, Northampton MA, December 1997.
67. C.J. Colbourn, "Applications of transversal designs in design theory", Workshop on Transversal Designs and Orthogonal Arrays, Kitchener, Ontario, April, 1997.
68. C.J. Colbourn, "Erasure codes", Combinatorial aspects of optimization, topology and algebra (ACOTA), Taxco, Mexico, Nov 1996.
69. C.J. Colbourn, "Network diagnosis", Second ALIO/EURO Workshop on Practical Combinatorial Optimization, Valparaiso, Chile, Nov 1996.
70. C.J. Colbourn, "Bounds on H-vectors", AMS Mathfest (Session on Algorithms on Graphs and Matroids), Burlington VT, August 1995.
71. C.J. Colbourn, "Pairwise balanced designs with block sizes five, seven and eight", R.C. Bose Memorial Conference on Statistical Design and Related Combinatorics, Fort Collins CO, June 1995.
72. C.J. Colbourn, "Transversal designs of higher index", Twentieth Australasian Conference on Combinatorial Mathematics and Combinatorial Computing, Auckland, NZ, December 1994.
73. C.J. Colbourn, "Performability of networks", II Seminario Internacional Diseño y Gestión Estratégica de las Redes, Viña del Mar, Chile, November 1994.
74. C.J. Colbourn, "Puncturing projective planes and making more MOLS", Twentyfourth Manitoba Conference on Combinatorial Mathematics and Computing, Winnipeg MB, October 1994.
75. C.J. Colbourn, "Making a difference (matrix)", Second Upper Michigan Conference on Designs and Finite Geometries, Houghton MI, August 1994.
76. C.J. Colbourn, "Constructing the MOLS table", Sixth Vermont Summer Workshop on Combinatorics, Burlington VT, June 1994.
77. C.J. Colbourn, "Constructions of mutually orthogonal latin squares", Session on Combinatorics, Canadian Mathematical Society Summer Meeting, Edmonton, June 1994.

78. C.J. Colbourn, "Construction techniques for mutually orthogonal latin squares", Twenty-fifth Annual Iranian Mathematics Conference, Tehran, Iran, March 1994.
79. C.J. Colbourn, "Orthogonal group divisible designs", Shanghai Conference on Designs, Codes and Finite Geometries, Shanghai, China, May 1993.
80. C.J. Colbourn, "Reliability polynomials", Twenty-fourth Southeastern Conference on Combinatorics, Graph Theory and Computing, Boca Raton FL, February 1993.
81. C.J. Colbourn, "Edge-partitioning multigraphs into triangles", Twenty-fourth Southeastern Conference on Combinatorics, Graph Theory and Computing, Boca Raton FL, February 1993.
82. C.J. Colbourn, "Enclosing triple systems and latin squares", Kombinatorik, Mathematisches Institut Oberwolfach, November 1992.
83. C.J. Colbourn, "Intersections and support sizes of triple systems", Sixth Midwest Conference on Combinatorics, Cryptography and Computing, Lincoln NE, November 1991.
84. C.J. Colbourn, "Subgraph counting bounds for network reliability", TIMS XXX — SOBRAPO XXIII, Rio de Janeiro, Brazil, July 1991.
85. C.J. Colbourn, "The combinatorics of network reliability", XIV Taller de Ingenieria de Sistemas, Santiago, Chile, July 1991.
86. C.J. Colbourn, "Conflict-free latin squares", Fourth Auburn Design Theory Conference, Auburn, Alabama, March 1991.
87. C.J. Colbourn, "Faithful enclosings of triple systems", AMS Special Session on Combinatorial Design Theory, San Francisco CA, January 1991.
88. C.J. Colbourn, "Leaves and neighbourhoods in triple systems", Sixteenth Australasian Conference on Combinatorial Mathematics and Computing, Palmerston North, New Zealand, December 1990.
89. C.J. Colbourn, "Intersections and supports of designs", Combinatorial Potlatch, Seattle, December 1989.
90. C.J. Colbourn, "Bounding network reliability by approximating graphs", DIMACS Workshop on Network Reliability, New Brunswick NJ, December 1989.
91. C.J. Colbourn, "Bounding network reliability efficiently", WOBCATS Meeting, Portland OR, October 1989.
92. C.J. Colbourn, "Leaves and neighbourhoods", Fourth Clemson Conference On Discrete Mathematics, September 1989.
93. C.J. Colbourn, "Support sizes of designs", Second International Catania Conference on Designs and Combinatorial Geometries, September 1989.
94. C.J. Colbourn, "Series-parallel bounds for two-terminal reliability", 1989 SIAM Annual Meeting, San Diego CA, July 1989.
95. (keynote lecture) C.J. Colbourn, "Combinatorial aspects of network reliability", NATO Advanced Research Workshop, Copenhagen, Denmark, June 1989.
96. C.J. Colbourn, "Intersections of quadruple systems", Vermont Summer Workshop on Design Theory, Stowe, Vermont, June 1989.
97. C.J. Colbourn, "Support sizes of designs", AMS Special Session on Codes and Designs, Chicago, May 1989.
98. C.J. Colbourn, "Combinatorial designs: their role in computer science", The Toronto Exxperience, Toronto, May 1988.
99. C.J. Colbourn, "Probabilistic single processor scheduling", Workshop on Computational Combinatorics, Burnaby, BC, July 1987.
100. C.J. Colbourn, "Leaves, excesses, and neighbourhoods", Fifteenth Winter School on Abstract Analysis and Topology, Srní, Czechoslovakia, January 1987.
101. C.J. Colbourn, "Bounding network reliability efficiently", Fifteenth Winter School on Abstract Analysis and Topology, Srní, Czechoslovakia, January 1987.
102. C.J. Colbourn, "Directing and orienting triple systems", Conference on Geometry and Combinatorial Designs, Kyoto Japan, June 1986.

- 103. C.J. Colbourn, "Edge-packings of graphs and network reliability", First Japan Conference on Graph Theory and Applications, Hakone Japan, June 1986.
- 104. C.J. Colbourn, "Exact algorithms for network reliability", Fifteenth Manitoba Conference on Numerical Mathematics and Computing, Winnipeg Manitoba, October 1985.
- 105. C.J. Colbourn, "The reliability polynomial", Thirteenth Australasian Conference on Combinatorial Mathematics and Computing, Sydney Australia, August 1985.

Research Grants

| Agency | Period | Amount | Note |
|--------------------------|-------------|-----------------|---|
| ONR | 06/08-06/09 | 150000 | |
| ONR | 06/08-06/09 | 150000 | Violet Syrotiuk PI |
| Los Alamos | 08/05-08/07 | 72177 | Violet Syrotiuk PI |
| DSTO | 08/05-08/07 | 54465 | Violet Syrotiuk PI |
| CEINT | 08/04-08/05 | 61000 | |
| General Dynamics (DARPA) | 12/03-09/04 | 54000 | Violet Syrotiuk PI |
| CEINT | 01/03-12/03 | 67402 | |
| AZ Prop. 301 | 05/02-06/03 | 240000 | IGI, with Sudhir Kumar |
| ARO | 04/01-03/04 | 299658 + 154216 | cost share (3 years) DAAD 19-01-1-0406 |

| Agency | Period | Amount | Note |
|-------------------|-------------|-----------------|--|
| DOE | 07/00-06/03 | 1950000 | DOE EPSCoR Computational and Structural Biology (PI: Wallace) (Project Leader: Colbourn) |
| NSF | 02/99-01/01 | 350000 | vBNS (S.J. Cavrak PI) ANI-9876415 |
| ARO | 04/98-03/01 | 354266 + 186797 | cost share (3 years) DAAG55-98-1-0272 |
| NSF | 11/97-10/98 | 50000+30000 | Instrumentation (S.K. Baruah PI) |
| NSERC | 04/97-03/98 | 49950 | |
| NSERC | 04/96-03/97 | 44000 | |
| CRM | 04/97 | 15000 | (Workshop) |
| NSERC | 04/95-03/96 | 44000 | |
| NSERC | 05/95-08/95 | 8500 | (Foreign Researcher) |
| NSERC | 04/94-03/95 | 44000 | |
| NSERC | 07/94-10/94 | 12900 | (Foreign Researcher) |
| NSERC | 04/93-03/94 | 44000 | |
| NSERC | 01/93-12/93 | 29000 | (International Postdoc.) |
| NSERC | 11/92-03/93 | 7600 | (Visiting Scholar) |
| NSERC | 04/92-03/93 | 42221 | |
| NSERC | 04/91-03/92 | 42221 | |
| NSERC | 04/90-03/91 | 42221 | |
| NSERC | 04/89-03/90 | 38900 | |
| NSERC | 04/88-03/89 | 38900 | |
| NSERC | 04/87-03/88 | 38900 | |
| NSERC | 04/86-03/87 | 23257 | |
| NSERC | 04/85-03/86 | 24226 | |
| NSERC | 04/84-03/85 | 24226 | |
| President's NSERC | 05/83-12/83 | 1500 | |
| NSERC | 04/83-03/84 | 13858 | |
| NSERC | 04/82-03/83 | 11040 | |
| Goodfellow Fund | 04/82 | 385 | |
| President's NSERC | 05/82-06/83 | 2100 | |
| President's NSERC | 11/81-06/82 | 615 | |
| NSERC | 04/81-03/82 | 7000 | |
| Goodfellow Fund | 04/81 | 370 | |
| President's NSERC | 11/80-06/81 | 2450 | |

Editorial Work

I serve(d) in following editorial capacities:

- Editor-in-Chief, *Journal of Combinatorial Designs*, 1992-
- Associate Editor, *Networks*, 1986-
- Associate Editor, *Designs, Codes, and Cryptography*, 1996-
- Associate Editor, *Journal of Combinatorial Theory, Series A*, 2002-
- Associate Editor, *Discrete Mathematics*, 2002-

- Associate Editor, *Journal of Statistical Planning and Inference*, 2004-
- Associate Editor, *Journal of Statistical Theory and Practice*, 2006-
- Associate Editor, *Discrete Mathematics, Algorithms, and Applications*, 2007-
- Associate Editor, *IEEE Transactions on Reliability*, 1992-1998.
- Member, Editorial Board, *Aequationes Mathematicae*, 1993-2000.
- Associate Editor, *Combinatorial Optimization: Theory and Practice*, 1994-1999.
- Advisory Editor, *Handbook of Discrete and Combinatorial Mathematics*, 1993-1999.
- Member, Editorial Board, *Journal of Combinatorics, Information and System Sciences*, 1990-
- Member, Editorial Board, *Journal of Combinatorial Mathematics and Combinatorial Computing*, 1987-1993.

Administrative Experience

| Position | Period | Department/Organization/Committee |
|------------------------|-----------|--|
| Senator | 2003-08 | Arizona State University Senate |
| Chair | 2001-02 | Computer Science and Engineering |
| Chair | 2000-01 | Computer Science |
| Chair | 1997-99 | Computer Science |
| Associate Chair, CS | 1996-97 | Computer Science and Electrical Engineering |
| Chair | 1993-95 | Combinatorics and Optimization |
| Senator, Mathematics | 1992-95 | University of Waterloo Senate |
| Associate Chair, C&O | 1991-93 | Undergraduate Studies |
| Associate Chairman, CS | 1984-85 | Undergraduate Studies |
| Member | 2008-09 | School of Mathematics Planning Committee |
| Member | 2006-08 | University Personnel Committee |
| Member | 2006-07 | IEE Search Committee |
| Member | 2005-06 | CSE/AME Search Committee |
| Member | 2005-08 | Dean's Advisory Personnel Committee |
| Member | 2004- | Steering Committee for Computational Biosciences Program |
| Member | 2003-05 | CSE Personnel Committee |
| Member | 2003-04 | Recruiting Committee for Evolutionary Functional Genomics |
| Member | 2003-04 | Ad Hoc Committee for MCS Online |
| Chair | 2003-04 | Graduate Programs Committee |
| Member | 2002-04 | Graduate Programs Committee |
| Member | 2001-02 | Proposition 301 Information Technology Committee |
| Member | 1999-2001 | Instructional Incentive Grants Committee |
| Member | 1999-2001 | Kroepsch-Maurice Teaching Awards Committee |
| Member | 1999-2000 | College Standards Committee |
| Member | 1999-2001 | IDX Workforce Training Committee |
| Member | 1998-2001 | Working Group for the Study of Media, Culture, and Society |
| Chair | 1998 | UVM CLIO Search Committee |
| Chairman | 1984-85 | CS Curriculum Committee |

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|------------------------|---------|---|
| Member | 1996-99 | College Board of Advisors |
| Chair | 1996-97 | CS Curriculum Committee |
| Member | 1996-97 | College Standards Committee |
| Member | 1996-97 | College Curriculum Committee |
| Member | 1996-97 | College Computing Task Force |
| Member | 1993-94 | Senate Finance Committee |
| Member | 1993-95 | Academic Policy Committee |
| Member | 1991-93 | Undergraduate Affairs Committee |
| Member | 1991-93 | Standings and Promotions Committee |
| Library Representative | 1988-89 | Combinatorics and Optimization |
| Member | 1986-88 | Board of Directors, Institute for Computer Research |
| Chairman | 1986-88 | CS Ph.D. Comprehensives Committee |
| Chairman | 1986 | CS M.Math. Review Committee |
| Member | 1986 | CS Recruiting Committee |
| Chairman | 1985 | CS Ph.D. Comprehensives Committee |
| Member | 1985 | CS Ph.D. Comprehensives Committee |
| Member | 1984-85 | CS Admissions Committee |
| Member | 1984-86 | CS Advisory Committee |
| Member | 1984-87 | CS Graduate Committee |
| Chairman | 1981-83 | CMPT Graduate Advisory Committee |
| Member | 1980-82 | University Subcommittee on Computers in Education |
| Library Representative | 1980-81 | Computational Science |

I served on the Scientific Advisory Panel to the Ontario Technology Fund, reporting to the Management Board of the Cabinet of the Government of Ontario, from 1986-1989.

I serve on the Advisory Board for the Department of Mathematical Sciences, Michigan Technological University, Houghton MI, 1993-2001.

I serve on the Advisory Board for the Centre for Discrete Mathematics and Theoretical Computer Science at the University of Auckland, New Zealand, 1994-2000.

I served on the Council of the Institute for Combinatorics and Its Applications, 1999-2002.

I was the lead UVM representative in negotiating an articulation agreement with the IDX Institute of Technology, 1998-99.

Major Administrative Initiatives

- 2006 served on external review committee for Mathematics and Statistics, Auburn University
 - 2005 served on external review committee for Mathematics and Statistics, Simon Fraser University
 - 1999-2000 coordinated computer science role in the introduction of a major research and educational initiative in structural and computational biology, jointly with six life science departments in Medicine, Agriculture, and Arts and Sciences; funded with \$3 million from the Department of Energy.
 - 1998-99 developed cooperative relationship with IDX Systems Corporation, a health care software provider, for education and training.
 - 1998 served on an external review committee for the School of Mathematical and Information Sciences, University of Auckland
 - 1997-99 introduced a dual reporting structure for the Department of Computer Science through the College of Arts and Sciences as well as through the College of Engineering and Mathematics, in order to introduce a new Bachelor of Arts (Computer Science) degree.
 - 1996-98 developed a new joint program with the School of Business Administration, the Bachelor of Science (Computer Science and Information Systems).
 - 1996-97 led major revision of Bachelor of Science (Computer Science) degree to meet the standards of the Computer Science Accreditation Board.
 - 1996-97 was the principal in presenting the case for the separation of the CS program from the Electrical Engineering department, resulting in the formation of the Department of Computer Science. Enrollments then doubled within two years, and tripled within three.
 - 1993-94 served as chair during dismissal for cause of tenured professor, including extensive involvement in legal proceedings. The University won the case and the appeal outright.
 - 1991-92 as Associate Chair for Undergraduate Affairs, coordinated the transfer of Mathematics/Business programs to the department.
 - 1984-85 extensive redesign of comprehensive examination procedures for the Ph.D. program in Computer Science.
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Industrial Experience

- Ministry of Industry, Trade and Technology, Government of Ontario, Science Monitor (consultant), 10/88-06/90.
- Bulldog Holdings, Burlington VT, Consultant on Ecommerce Business, 4/99-12/99.
- Speedfam/Ipec, Chandler AZ, Consultant on Flexible Manufacturing Opportunities, 7/02-12/02