
Charles Joseph COLBOURN

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Office: Brickyard 444, (480) 727-6631
 Fax: 480-965-2751

School of Computing, Informatics, and Decision Systems Engineering
 Arizona State University
 Tempe, AZ 85287-8809
 U.S.A.

E-mail: Charles.Colbourn@asu.edu
 WWW: <http://www.public.asu.edu/~ccolbou>

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
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.
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Research Publications

Refereed Journal Papers

1. D.S. Hoskins, C.J. Colbourn, and D.C. Montgomery, D-Optimal designs with interaction coverage, *Journal of Statistical Theory and Practice*, to appear (acc Jun09).
2. J.I. Brown, C.J. Colbourn, and R.J. Nowakowski, Chip Firing and All-Terminal Network Reliability Bounds, *Discrete Optimization*, to appear (acc May09).
3. T.R. Farley and C.J. Colbourn, Multiterminal network connectedness on series-parallel networks, *Discrete Mathematics, Algorithms, and Applications* 1 (2009), 253–265.
4. C.J. Colbourn, G. Ge, and A.C.H. Ling, Optical Grooming with Grooming Ratio Eight, *Discrete Applied Mathematics* 157 (2009), 2763–2772.
5. C.J. Colbourn and A.C.H. Ling, Linear Hash Families and Forbidden Configurations, *Designs, Codes and Cryptography* 59 (2009), 25–55.
6. C.J. Colbourn, Distributing Hash Families and Covering Arrays, *Journal of Combinatorics, Information, and System Sciences*, to appear (acc Sep 08).
7. 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.
8. 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.
9. C.J. Colbourn and Y. Fujiwara, Small stopping sets in Steiner triple systems, *Cryptography and Communications* 1 (2009), 31–46.
10. 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.

11. C.J. Colbourn, The Configuration Polytope of ℓ -Line Configurations in Steiner Triple Systems, *Mathematica Slovaca* 59 (2009), 77–108.
12. C.J. Colbourn, G. Quattrocchi, and V.R. Syrotiuk, Lower Bounds for Two-Period Grooming Via Linear Programming Duality, *Networks* 58 (2008), 299–306.
13. C.J. Colbourn, G. Quattrocchi, and V.R. Syrotiuk, Grooming for Two-Period Optical Networks, *Networks* 58 (2008), 307–324.
14. A. H. Ronneseth and C. J. Colbourn, Merging Covering Arrays and Compressing Multiple Sequence Alignments, *Discrete Applied Mathematics* 157 (2009), 2117–2190.
15. C.J. Colbourn, G. Ge, and A.C.H. Ling, Graph designs for the eight-edge five-vertex graphs, *Discrete Mathematics*, to appear (acc Apr07).
16. C. J. Colbourn and S. Kumar, Lower bounds on multiple sequence alignment using exact 3-way alignment, *BMC Bioinformatics* 8:140 (2007).
17. 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.
18. C.J. Colbourn and D.W. McClary, Locating and detecting arrays for interaction faults, *Journal of Combinatorial Optimization* 15 (2008), 17-48.
19. 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.
20. D.S. Hoskins, C.J. Colbourn, and M. Kulahci, Truncated D-Optimal Designs for Screening Experiments, *American Journal of Mathematical and Management Sciences*, to appear (acc Feb07).
21. 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.
22. 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.
23. 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.
24. T.R. Farley and C.J. Colbourn, Multiterminal Resilience for Series-Parallel Networks, *Networks* 50 (2007), 164–172.
25. R.C. Bryce and C.J. Colbourn, The density algorithm for pairwise interaction testing, *Software Testing, Verification, and Reliability* 17 (2007), 159–182.
26. R.A. Walker II and C.J. Colbourn, Perfect hash families: Construction and Existence, *Journal of Mathematical Cryptography* 1 (2007), 125–150.
27. V.R. Syrotiuk, Z. Zhang, and C.J. Colbourn, Transport schemes for topology-transparent scheduling, *Journal of Combinatorial Optimization* 14 (2007), 229–248.
28. 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.
29. 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.
30. C.J. Colbourn, Strength two covering arrays: existence tables and projection, *Discrete Mathematics* 308 (2008), 772–786.
31. W. Chu, C.J. Colbourn, and P. Dukes, On constant composition codes, *Discrete Applied Math.* 154 (2006), 912-929.
32. P.J. Dukes, C.J. Colbourn, and V.R. Syrotiuk, Directed Complete Bipartite Graph Decompositions: Indirect Constructions, *Discrete Mathematics* 308 (2008), 367–374.
33. K. Srinivasan and C.J. Colbourn, Failed disk recovery in double erasure RAID arrays, *Journal of Discrete Algorithms* 5 (2007), 115–128.

34. 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.
35. W. Chu, C.J. Colbourn, and V.R. Syrotiuk, The Effects of Synchronization on Topology-Transparent Scheduling, *Wireless Networks* 12 (2006), 681-690.
36. 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.
37. C.J. Colbourn and V.R. Syrotiuk, Cover-free families and topology-transparent communication, *Bayreuther Mathematische Schriften* 74 (2005) 79-99.
38. C.J. Colbourn, A.C.H. Ling, and G. Quattrocchi, Embedding path designs into kite systems, *Discrete Mathematics* 297 (2005), 38-48.
39. S.S. Martirosyan and C.J. Colbourn, Recursive Constructions for Covering Arrays, *Bayreuther Mathematische Schriften* 74 (2005) 266-275.
40. C.J. Colbourn and C. Huybrechts, Fully gated graphs: recognition and convex operations, *Discrete Mathematics* 308 (2008), 5184-5195.
41. C.J. Colbourn, A.C.H. Ling, and G. Quattrocchi, Minimum embeddings of Steiner triple systems into (K_4-e) -designs I, *Discrete Mathematics* 308 (2008), 5308-5311.
42. 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.
43. 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.
44. C.J. Colbourn, Combinatorial aspects of covering arrays, *Le Matematiche (Catania)* 58 (2004), 121-167.
45. W. Chu and C.J. Colbourn, Optimal Frequency Hopping Sequences via Cyclotomy, *IEEE Transactions on Information Theory* 51 (2005), 1139-1141.
46. W. Chu, C.J. Colbourn, and P. Dukes, Tables for constant composition codes, *J. Combinatorial Mathematics and Combinatorial Computing* 54 (2005), 57-65.
47. 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.
48. V.R. Syrotiuk, M. Cui, S. Ramkumar, and C.J. Colbourn, Dynamic spectrum utilization in ad hoc networks, *Computer Networks* 46 (2004), 665-678.
49. W. Chu, C.J. Colbourn, and V.R. Syrotiuk, Slot Synchronized Topology-Transparent Scheduling for Sensor Networks, *Computer Communications* 29 (2006), 421-428.
50. 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.
51. C.J. Colbourn, D.A. Drake, and W.J. Myrvold, Ovals and hyperovals in nets, *Discrete Mathematics* 294 (2005), 53-74.
52. 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.
53. 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.
54. W. Chu, C.J. Colbourn, and P. Dukes, Constructions for Permutation Codes in Powerline Communications, *Designs, Codes, and Cryptography* 32 (2004), 51-64.
55. 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.
56. W. Chu and C.J. Colbourn, Recursive Constructions for Optimal $(n, 4, 2)$ -OOCs, *Journal of Combinatorial Designs* 12 (2004), 333-345.

57. R.J.R. Abel, C.J. Colbourn, and M. Wojtas, Concerning seven and eight mutually orthogonal latin squares, *Journal of Combinatorial Designs* 12 (2004), 123-131.
58. W. Chu and C.J. Colbourn, Optimal $(n,4,2)$ -OOC of small orders, *Discrete Mathematics* 279 (2004), 163-172.
59. J.-C. Bermond, C.J. Colbourn, A.C.H. Ling, and M.L. Yu, Grooming in unidirectional rings: $K_4 - e$ designs, *Discrete Mathematics* 284 (2004), 57-62.
60. C.J. Colbourn, A.C.H. Ling, and G. Quattrocchi, Minimum embedding of P_3 -designs into $(K_4 - e)$ -designs, *Journal of Combinatorial Designs* 11 (2003), 352-366.
61. M.B. Cohen and C.J. Colbourn, Ladder orderings of pairs and RAID performance, *Discrete Applied Mathematics* 138 (2004), 35-46.
62. C.J. Colbourn, G. Quattrocchi, and A. Rosa, Resolving $P(v, 3, \lambda)$ designs into regular P_3 -configurations, *Australasian Journal of Combinatorics* 27 (2003), 205-212.
63. C.J. Colbourn and A. Rosa, Specialized block-colourings of Steiner triple systems and the upper chromatic index, *Graphs and Combinatorics* 19 (2003), 335-345.
64. F. Sagols, L. Riccio, and C.J. Colbourn, Dominated error-correcting codes with distance two, *Journal of Combinatorial Designs* 10 (2002), 294-302.
65. C.J. Colbourn and A.C.H. Ling, Wavelength add-drop multiplexing for minimizing SONET ADMs, *Discrete Mathematics* 261 (2003) 141-156.
66. C.J. Colbourn, A.C.H. Ling, and M. Tompa, Construction of optimal quality control for oligo arrays, *Bioinformatics* 18 (2002), 529-535.
67. C.J. Colbourn, E.R. Lamken, A.C.H. Ling, and W.H. Mills, The existence of Kirkman squares – doubly resolvable $(v,3,1)$ -BIBDs, *Designs, Codes and Cryptography* 26 (2002), 169-196.
68. C.J. Colbourn, Projective planes and congestion-free networks, *Discrete Applied Math.* 122 (2002), 117-126.
69. N. Alon, C.J. Colbourn, A.C.H. Ling, and M. Tompa, Equireplicate balanced binary codes for oligo arrays, *SIAM Journal on Discrete Mathematics* 14 (2001), 481-497.
70. C.J. Colbourn and A.C.H. Ling, Kirkman triple systems of orders 27, 33, and 39, *Journal of Combinatorial Mathematics and Combinatorial Computing* 43 (2002), 3-8.
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82. C.J. Colbourn and M.J. Colbourn, The complexity of combinatorial isomorphism problems II, Proceedings of the Ninth Manitoba Conference on Numerical Mathematics and Computing, Winnipeg, October 1979, pp. 167-172.
83. C.J. Colbourn, M.J. Colbourn, and K.T. Phelps, Combinatorial algorithms for generating cyclic Steiner quadruple systems, Proceedings of the Conference on Discrete Mathematical Analysis and Combinatorial Computation, Fredericton, May 1980, pp. 25-39.
84. C.J. Colbourn, Refinement techniques for graph isomorphism, Proceedings of the Tenth Southeastern Conference on Combinatorics, Graph Theory, and Computing, Boca Raton FLA, April 1979, pp. 281-288.
85. C.J. Colbourn and M.J. Colbourn, Isomorphism problems involving self-complementary graphs and tournaments, Proceedings of the Eighth Manitoba Conference on Numerical Mathematics and Computing, Winnipeg, October 1978, pp. 153-164.

Books

1. C.J. Colbourn and J.H. Dinitz (editors), *Handbook of Combinatorial Designs, Second Edition*, Chapman and Hall/CRC Press, Boca Raton FL, 2006.
2. C.J. Colbourn and A. Rosa, *Triple Systems*, Oxford University Press, Oxford, 1999. ISBN 0 19 853576 7.
3. C.J. Colbourn and J.H. Dinitz (editors), *CRC Handbook of Combinatorial Designs*, CRC Press, Boca Raton FL, 1996 (ISBN 0 8493 8498 8).
4. D.D. Harms, M. Kraetzl, C.J. Colbourn, and J.S. Devitt, *Network Reliability: Experiments with a Symbolic Algebra Environment*, CRC Press, Boca Raton FL, 1995.
5. C.J. Colbourn and E.S. Mahmoodian (editors), *Combinatorics Advances*, Kluwer Academic Press, 1995.
6. C.J. Colbourn, D. Jungnickel and A. Rosa (editors), *Designs and Graphs*, special volume of *Discrete Mathematics*, 97 (1991); also *Topics in Discrete Mathematics* 4 (1991).
7. C.J. Colbourn, *The Combinatorics of Network Reliability*, Oxford University Press, 1987.
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.

Chapters in Books (refereed)

1. C.J. Colbourn and D.R. Shier, Computational issues in network reliability, *Encyclopedia of Statistics for Quality and Reliability*, F. Ruggeri, R.S. Kennet, F.W. Faltin (editors), Wiley, 2008.
2. Y.M. Chee and C.J. Colbourn, Scalable Optimal Test Patterns for Crosstalk-Induced Faults on Deep Submicron Global Interconnects, *Coding and Cryptology*, Y. Li, S. Ling, H. Niederreiter, H.X. Wang, C.P. Xing, S.Y. Yang (editors), World Scientific, pp. 80-91.
3. 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.
4. chapters in the *Handbook of Combinatorial Designs, Second Edition* (C.J. Colbourn and J.H. Dinitz, editors), CRC Press, 2006:

Sect	Title	Authors	Pages
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
II.5	Steiner Systems	C.J. Colbourn, Rudolf Mathon	101-109
III.1	Latin Squares	C.J. Colbourn, J.H. Dinitz, I.M. Wanless	135-152
III.3	Mutually Orthogonal Latin Squares (MOLS)	R. Julian R. Abel, C.J. Colbourn, J.H. Dinitz	160-192
III.4	Incomplete MOLS	R. Julian R. Abel, C.J. Colbourn, J.H. Dinitz	193-210
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
VI.65	Youden Squares and Generalized Youden Designs	Donald A. Preece, C.J. Colbourn	668-674

5. 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.
6. chapters in the *CRC Handbook of Discrete and Combinatorial Mathematics* (K. Rosen *et al.*, editors), CRC Press, 2000:

Sect	Authors	Title	Pages
8.1	C.J. Colbourn, J.H. Dinitz	Block designs	754-770
8.2	C.J. Colbourn, J.H. Dinitz	Symmetric designs and finite geometries	770-778
8.3	C.J. Colbourn, J.H. Dinitz	Latin squares and orthogonal arrays	778-786

7. C.J. Colbourn, Reliability issues in telecommunications network planning, in: *Telecommunications Network Planning* (B. Sansó, ed.) Kluwer Academic Press, 1999, pp. 135-146.
8. C.J. Colbourn, J.H. Dinitz and D.R. Stinson, Applications of combinatorial designs to communications, cryptography, and networking, *Surveys in Combinatorics 1999* (J.D. Lamb and D.A. Preece, eds.), Cambridge University Press, pp. 37-100.
9. 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.
10. C.J. Colbourn and J.H. Dinitz, $N(n)$ and $\nu(n)$: similarities and differences, in *Combinatorics, Complexity and Logic* (D.S. Bridges, et al, eds.), Springer, 1996, pp. 35-46.
11. chapters in the *CRC Handbook of Combinatorial Designs* (C.J. Colbourn and J.H. Dinitz, editors), CRC Press, 1996:

Sect	Authors	Title	Pages
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
II.4	C.J. Colbourn	Orthogonal arrays of index more than one	172-178
II.5	J. Bierbrauer, C.J. Colbourn	Orthogonal arrays of strength more than two	179-182
IV.11	C.J. Colbourn, W. de Launey	Difference matrices	287-297
IV.14	C.J. Colbourn	Difference triangle sets	312-317
IV.47	C.J. Colbourn	(t,m,s)-nets in base b	478-480
IV.54	C.J. Colbourn	Youden designs, generalized	508-514
V.2	C.J. Colbourn	Computer science: selected applications	543-549
V.6	C.J. Colbourn	Group testing	564-565
V.8	C.J. Colbourn	Winning the lottery	578-584

12. C.J. Colbourn and J.H. Dinitz, Making the MOLS table, in: *Computational and Constructive Design Theory* (W.D.Wallis, ed.) Kluwer Academic Press, 1996, pp. 67-134.
13. C.J. Colbourn, Construction techniques for mutually orthogonal latin squares, in: *Combinatorics Advances* (C.J. Colbourn and E.S. Mahmoodian, eds.) Kluwer Academic Press, 1995, 27-48.
14. C.J. Colbourn and L. Zhu, The spectrum of r -orthogonal latin squares, in: *Combinatorics Advances* (C.J. Colbourn and E.S. Mahmoodian, eds.) Kluwer Academic Press, 1995, 49-75.
15. 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.
16. 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.
17. D.D. Harms, J.S. Devitt and C.J. Colbourn, Networks and reliability in MAPLE, *Computational Support for Discrete Mathematics* (N. Dean and G.E. Shannon, eds.) AMS/DIMACS, 1994, pp. 223-243.
18. 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.
19. 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.
20. C.J. Colbourn and A. Rosa, Directed and Mendelsohn triple systems, *Contemporary Design Theory*, Chapter 4, 1992, pp. 97-136.
21. A. Rosa and C.J. Colbourn, Colorings of block designs, *Contemporary Design Theory*, Chapter 10, 1992, pp. 401-430.
22. 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.

Other publications (non-refereed)

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, "Balanced grooming in optical networks", *Combinatorial Configurations and Their Applications*, Houghton MI, August 2009.
2. C.J. Colbourn, "Network reliability and resilience", *Combinatorial Configurations and Their Applications*, Houghton MI, August 2009.
3. C.J. Colbourn, "Finding an interaction fault", *Dagstuhl Workshop on Search Theory*, Dagstuhl, Germany, July 2009.
4. C.J. Colbourn, "Combinatorial Aspects of Compressive Sensing Matrices", *Network Mapping and Measurement*, College Park MD, June 2009.
5. C.J. Colbourn, "Binary covering arrays", *International Workshop on Coding and Cryptology (IWCC2009)*, Zhangjiajie, China, June 2009.
6. C.J. Colbourn, "Distributing hash families and covering arrays", *Canadian Mathematics Society Winter Meeting*, Ottawa, Canada, December 2008.
7. C.J. Colbourn, "Linear hash families", *Combinatorial Design Theory Workshop*, BIRS, Banff, Canada, November 2008.
8. C.J. Colbourn, "Covering arrays", *Workshop on Combinatorial Designs*, Nanyang Technological University, Singapore, June 2008.
9. C.J. Colbourn, "Graph decompositions and optical grooming", *Sixth Shanghai Conference on Combinatorics and Coding*, Shanghai, China, May 2008.
10. C.J. Colbourn, "Graph decompositions and optical grooming", *Ottawa-Carleton Graph Theory Workshop*, Fields Institute, Ottawa, Canada, May 2008.
11. C.J. Colbourn, "Locating and Detecting Arrays for Interaction Faults", *Network Mapping and Measurement*, College Park MD, June 2008.
12. C.J. Colbourn, "Locating Interaction Faults", *Miniconference on Discrete Mathematics With An Emphasis on Search Theory*, University of South Carolina, Columbia SC, October 2007.
13. C.J. Colbourn, "Combinatorial Aspects of Network Reliability", *DRCN2007, the 6th International Workshop on Design and Reliable Communication Networks*, La Rochelle, France, October 2007.
14. C.J. Colbourn, "Configurations in Steiner triple systems", *Design Theory of Alex Rosa*, Bratislava, Slovakia, July 2007.
15. C.J. Colbourn, "Grooming in Optical Networks", *Workshop on Combinatorial Designs*, Hangzhou, China, June 2007.

16. C.J. Colbourn, "A Density Algorithm for Perfect Hash Families", International Workshop on Coding and Cryptography, Fujian, China, June 2007.
17. C.J. Colbourn, "Grooming in Optical Networks", Workshop on Combinatorial Designs, Kyoto, Japan, June 2007.
18. C.J. Colbourn, "Covering Arrays for Interaction Testing", Workshop on Combinatorics, Yokohama, Japan, June 2007.
19. C.J. Colbourn, Graph Decompositions and Grooming in Optical Networks, 5th Cracow Conference on Graph Theory, Ustron, Poland, September 2006.
20. C.J. Colbourn, Locating and Detecting Interaction Faults, Conference on Optimal Discrete Structures and Algorithms, Rostock, Germany, September 2006.
21. C.J. Colbourn, Perfect hash families, Dry and Discrete Workshop, Yulara, Australia, July 2006.
22. C.J. Colbourn, Screening to Locate Interaction Faults, Workshop on Combinatorial Algorithms, Kings Canyon, Australia, July 2006.
23. C.J. Colbourn, Graph Decompositions and Grooming in Optical Networks, 31st Australasian Conference on Combinatorial Mathematics and Computing, Alice Springs, Australia, July 2006.
24. C.J. Colbourn, "Screening to Locate Interactions", DIMACS Workshop on Combinatorial Group Testing, New Brunswick NJ, May 2006.
25. C.J. Colbourn, "Construction Techniques for Covering Arrays", Fields Institute Workshop on Covering Arrays, Ottawa, Canada, May 2006.
26. C.J. Colbourn, "Graph Decompositions and Grooming in Optical Networks", Colloque en l'honneur de Jean-Claude Bermond, Sophia-Antipolis, France, December 2005.
27. 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).
28. C.J. Colbourn, "Cover-free families and topology-transparent communication", CTS Conference on Combinatorics and Its Applications, Hsinchu, Taiwan, May 2005.
29. C.J. Colbourn, "Two-period optical grooming and graph decompositions", Fifth Shanghai Conference on Combinatorics, Shanghai, China, May 2005.
30. C.J. Colbourn, "Cover-free families and topology-transparent communication", ALOCOMA 2005, Bayreuth, Germany, April 2005.
31. C.J. Colbourn, "Software testing and covering arrays", 36th Southeastern Conference on Combinatorics, Graph Theory, and Computing, Boca Raton FL, March 2005.
32. C.J. Colbourn, "Covering Arrays and the Power of Apathy", 36th Southeastern Conference on Combinatorics, Graph Theory, and Computing, Boca Raton FL, March 2005.
33. C.J. Colbourn, "Covering arrays", ACCOTA 2004, San Miguel de Allende, Mexico, November 2004.
34. C.J. Colbourn, "Combinatorial aspects of covering arrays", Combinatorics 2004, Capomulini, Italy, September 2004.
35. C.J. Colbourn, "Grooming in optical networks", Workshop on Working Applications of Discrete Mathematics, University of Queensland, Brisbane, Australia, January 2004.
36. C.J. Colbourn, "Combinatorial Techniques for Interaction Software Testing", Workshop on Working Applications of Discrete Mathematics, University of Queensland, Brisbane, Australia, January 2004.
37. C.J. Colbourn, "Software Interaction Testing and Covering Arrays", Thirty-First Miami University Conference on Mathematics, Oxford OH, October 2003.
38. 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.
39. C.J. Colbourn, "Erasure Coding for RAID Disk Arrays", Andrew J. Buckingham Lecture, Thirty-First Miami University Conference on Mathematics, Oxford OH, October 2003.

40. C.J. Colbourn, "Life is like a box of smarties", Computer Science Alumni Reunion Conference, University of Saskatchewan, Saskatoon SK, September 2003.
41. C.J. Colbourn, "Permutation Codes for Powerline Communications", International Conference on Designs and Finite Geometries, Rhodes, Greece, June 2003.
42. C.J. Colbourn, "Software interaction testing", BIRS Workshop on Constraint Programming, Belief Revision, and Combinatorial Optimization, Banff, Alberta, Canada, May 2003.
43. C.J. Colbourn, "Cluttered Orderings of the Complete Graph", Clemson Miniconference on Discrete Mathematics, Clemson SC, October 2002.
44. C.J. Colbourn, "Testing for defectives using combinatorial designs", Workshop on Frontiers of Applied and Theoretical Combinatorics, Richmond VA, September 2002.
45. C.J. Colbourn, "Fully gated graphs", Shanghai Conference on Combinatorics, Shanghai, China, May 2002.
46. C.J. Colbourn, "Testing for consecutive defectives and ordering a binary code", COSSAC 2001, Ischia Island, Italy, September 2001.
47. C.J. Colbourn, "Graph decompositions and SONET networks", ACCOTA 2000, Mérida, Yucatan, Mexico, November 2000.
48. C.J. Colbourn, "Applications of combinatorial designs in communications and networking", Workshop on Emerging Applications of Combinatorial Designs, Berkeley CA, November 2000.
49. C.J. Colbourn, "Erasure codes and configurations in designs", Optimal Discrete Structures and Algorithms 2000, Rostock, Germany, September 2000.
50. C.J. Colbourn, "Multiple access communications and combinatorial designs", First Workshop on Theoretical Computer Science, Tehran, Iran, July 2000.
51. C.J. Colbourn, "Group testing and computational molecular biology", Combinatorics 2000, Gaeta, Italy, June 2000.
52. C.J. Colbourn, "Applications of combinatorial designs to communications, cryptography, and networking", British Combinatorial Conference, Canterbury, England, July 1999.
53. C.J. Colbourn, "Combinatorial embeddings in the classical designs", Second Pythagorean Conference on Geometry and Combinatorial Designs, Pythagorion, Samos, Greece, June 1999.
54. C.J. Colbourn, "A graph decomposition problem for SONET/WADM networks", Third Shanghai Conference on Designs, Codes, and Finite Geometries, Shanghai, China, May 1999.
55. C.J. Colbourn, "Combinatorial designs and cryptography" (series of three lectures), Workshop on Codes, Designs, and Cryptography, POSTECH, Pohang, South Korea, January 1999.
56. C.J. Colbourn, "Codes for MT-MFSK signalling, and configurations in designs", ACCOTA 98, Oaxaca, Mexico, December 1998.
57. C.J. Colbourn, "Cryptography and combinatorial designs" (five one hour lectures), Workshop on Coding Theory, Cryptography, and Computer Security, Lethbridge, Canada, August 1998.
58. C.J. Colbourn, "Weakly union-free designs and packings", Frontiers of Combinatorics, Los Alamos National Laboratory, New Mexico, July 1998.
59. C.J. Colbourn, "Group testing and weakly union-free designs", Combinatorists of New England (CONE) 27, Smith College, Northampton MA, December 1997.
60. C.J. Colbourn, "Applications of transversal designs in design theory", Workshop on Transversal Designs and Orthogonal Arrays, Kitchener, Ontario, April, 1997.
61. C.J. Colbourn, "Erasure codes", Combinatorial aspects of optimization, topology and algebra (ACOTA), Taxco, Mexico, Nov 1996.
62. C.J. Colbourn, "Network diagnosis", Second ALIO/EURO Workshop on Practical Combinatorial Optimization, Valparaiso, Chile, Nov 1996.
63. C.J. Colbourn, "Bounds on H-vectors", AMS Mathfest (Session on Algorithms on Graphs and Matroids), Burlington VT, August 1995.

64. 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.
65. C.J. Colbourn, "Transversal designs of higher index", Twentieth Australasian Conference on Combinatorial Mathematics and Combinatorial Computing, Auckland, NZ, December 1994.
66. C.J. Colbourn, "Performability of networks", II Seminario Internacional Diseño y Gestión Estratégica de las Redes, Viña del Mar, Chile, November 1994.
67. C.J. Colbourn, "Puncturing projective planes and making more MOLS", Twentyfourth Manitoba Conference on Combinatorial Mathematics and Computing, Winnipeg MB, October 1994.
68. C.J. Colbourn, "Making a difference (matrix)", Second Upper Michigan Conference on Designs and Finite Geometries, Houghton MI, August 1994.
69. C.J. Colbourn, "Constructing the MOLS table", Sixth Vermont Summer Workshop on Combinatorics, Burlington VT, June 1994.
70. C.J. Colbourn, "Constructions of mutually orthogonal latin squares", Session on Combinatorics, Canadian Mathematical Society Summer Meeting, Edmonton, June 1994.
71. C.J. Colbourn, "Construction techniques for mutually orthogonal latin squares", Twenty-fifth Annual Iranian Mathematics Conference, Tehran, Iran, March 1994.
72. C.J. Colbourn, "Orthogonal group divisible designs", Shanghai Conference on Designs, Codes and Finite Geometries, Shanghai, China, May 1993.
73. C.J. Colbourn, "Reliability polynomials", Twenty-fourth Southeastern Conference on Combinatorics, Graph Theory and Computing, Boca Raton FL, February 1993.
74. C.J. Colbourn, "Edge-partitioning multigraphs into triangles", Twenty-fourth Southeastern Conference on Combinatorics, Graph Theory and Computing, Boca Raton FL, February 1993.
75. C.J. Colbourn, "Enclosing triple systems and latin squares", Kombinatorik, Mathematisches Institut Oberwolfach, November 1992.
76. C.J. Colbourn, "Intersections and support sizes of triple systems", Sixth Midwest Conference on Combinatorics, Cryptography and Computing, Lincoln NE, November 1991.
77. C.J. Colbourn, "Subgraph counting bounds for network reliability", TIMS XXX — SOBRAPO XXIII, Rio de Janeiro, Brazil, July 1991.
78. C.J. Colbourn, "The combinatorics of network reliability", XIV Taller de Ingenieria de Sistemas, Santiago, Chile, July 1991.
79. C.J. Colbourn, "Conflict-free latin squares", Fourth Auburn Design Theory Conference, Auburn, Alabama, March 1991.
80. C.J. Colbourn, "Faithful enclosings of triple systems", AMS Special Session on Combinatorial Design Theory, San Francisco CA, January 1991.
81. C.J. Colbourn, "Leaves and neighbourhoods in triple systems", Sixteenth Australasian Conference on Combinatorial Mathematics and Computing, Palmerston North, New Zealand, December 1990.
82. C.J. Colbourn, "Intersections and supports of designs", Combinatorial Potlatch, Seattle, December 1989.
83. C.J. Colbourn, "Bounding network reliability by approximating graphs", DIMACS Workshop on Network Reliability, New Brunswick NJ, December 1989.
84. C.J. Colbourn, "Bounding network reliability efficiently", WOBCATS Meeting, Portland OR, October 1989.
85. C.J. Colbourn, "Leaves and neighbourhoods", Fourth Clemson Conference On Discrete Mathematics, September 1989.
86. C.J. Colbourn, "Support sizes of designs", Second International Catania Conference on Designs and Combinatorial Geometries, September 1989.
87. C.J. Colbourn, "Series-parallel bounds for two-terminal reliability", 1989 SIAM Annual Meeting, San Diego CA, July 1989.

88. (keynote lecture) C.J. Colbourn, "Combinatorial aspects of network reliability", NATO Advanced Research Workshop, Copenhagen, Denmark, June 1989.
89. C.J. Colbourn, "Intersections of quadruple systems", Vermont Summer Workshop on Design Theory, Stowe, Vermont, June 1989.
90. C.J. Colbourn, "Support sizes of designs", AMS Special Session on Codes and Designs, Chicago, May 1989.
91. C.J. Colbourn, "Combinatorial designs: their role in computer science", The Toronto Exxperience, Toronto, May 1988.
92. C.J. Colbourn, "Probabilistic single processor scheduling", Workshop on Computational Combinatorics, Burnaby, BC, July 1987.
93. C.J. Colbourn, "Leaves, excesses, and neighbourhoods", Fifteenth Winter School on Abstract Analysis and Topology, Srní, Czechoslovakia, January 1987.
94. C.J. Colbourn, "Bounding network reliability efficiently", Fifteenth Winter School on Abstract Analysis and Topology, Srní, Czechoslovakia, January 1987.
95. C.J. Colbourn, "Directing and orienting triple systems", Conference on Geometry and Combinatorial Designs, Kyoto Japan, June 1986.
96. C.J. Colbourn, "Edge-packings of graphs and network reliability", First Japan Conference on Graph Theory and Applications, Hakone Japan, June 1986.
97. C.J. Colbourn, "Exact algorithms for network reliability", Fifteenth Manitoba Conference on Numerical Mathematics and Computing, Winnipeg Manitoba, October 1985.
98. 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

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