# Curriculum Vita

Donald L. Kreher

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## Address

Department of Mathematical Sciences
Michigan Technological University
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## University Education

B.A. in Computer Science and in Mathematics (Cum Laude), State University of New York at Oswego, 1977.

M.A. in Mathematics, Michigan State University, 1979.

Ph.D in the joint program of Computer Science and Mathematics, University of Nebraska-Lincoln, 1984.

## Employment

Teaching Assistant, Michigan State University, 1977–1979.

Instructor and Teaching Assistant, University of Nebraska, 1979–1984.

Assistant professor, Rochester Institute of Technology, 1984–1988.

Associate professor, Rochester Institute of Technology, 1988–1989.

Visiting Associate professor, University of Wyoming , 1989–1991.

Associate professor, Michigan Technological University, 1991–1993.

Professor, Michigan Technological University, 1993-present.

## Research Interests

Computational and algebraic methods for determining the structure and existence of combinatorial configurations, such as designs, graphs, error-correcting codes, cryptographic systems and extremal set systems. Applications of combinatorial configurations to computer science and information theory. Design and analysis of combinatorial algorithms for problems considered almost intractable.

## Funded Research and Projects

1. Principal investigator on "Improvements and applications of the Lenstra, Lenstra, Lovász Basis Reduction Algorithm" (with S. P. Radziszowski), $27,183, at Rochester Institute of Technology, Fall, 1986, Supported by NSF Grant DCR-8606378.

2. Principal investigator on "Computing Combinatorial Configurations: $t$-Designs and Ramsey Numbers" (with S. P. Radziszowski), $70,747, at Rochester Institute of Technology, Fall, 1987 and Fall 1988, Supported by NSF Grant CCR-8711229.

3. Principal investigator on "Computer Search for Elusive Combinatorial Configurations: A Research Toolchest" (with S. P. Radziszowski), $41,216, at Rochester Institute of Technology, Summer 1990, Supported by NSF Grant CCR-8920692.

4. Principal investigator on "Computing Combinatorial Configurations," $21,808, at Michigan Technological University, Summer 1992 and Summer 1993, Supported by NSA grant MDA904-92-H-3036.

5. Co-investigator on "Second Upper Michigan Combinatorics Workshop on Codes, Designs and Geometries", (with A. H. Baartmans and V. D. Tonchev), $8,460, at Michigan Technological University, Summer 1994 Summer 1994, Supported bf NSF Grant DMS-9402637.

6. Summer support at the University of Queensland, Brisbane, Australia, $4,000A, Supported by Raybould Fellowship.

7. Principal investigator on "Combinatorial Configurations: $t$-designs and Orthogonal Arrays" $14,936, at Michigan Technological University, Summer 1996 and Summer 1997, Supported by NSA grant MSPF-96G-103.

## Awards

- **1995 Hall Medal**

  The Hall Medal is awarded by the Institute of Combinatorics and its Applications. It is for recognition of an extensive and significant body of research work of exceptional quality.

## Publications in print

### 1974 to 1979

1. D.L. Kreher, Thimble Magic, *MUM* **63** (March 1974) 14–15.

2. D.L. Kreher, How a magic show succeeds, *MUM* **63** (March 1974) 28.

### 1980 to 1984

3. E.S. Kramer, D.L. Kreher, S.S. Magliveras and D.M. Mesner, Coherent Room Rectangles from Permutation Groups, *Ars Combinatoria* **9** (1980) 101–111.

4. E.S. Kramer, D.L. Kreher, S.S. Magliveras and D.M. Mesner, Coherent Room Rectangles from Permutation Groups, *Ars Combinatoria* **9** (1980) 101–111.

5. E.S. Kramer, D.L. Kreher, S.S. Magliveras and D.M. Mesner, An Assortment of Room-Type Designs, *Ars Combinatoria* **11** (1981) 9–29.

6. E.S. Kramer, D.L. Kreher and D.M. Mesner, Some Crowded Room Rectangles, *Ars Combinatoria* **11** (1982) 71–85

7. L.G. Chouinard, D.L. Kreher and E.S. Kramer, Graphical $t$-wise Balanced Designs, *Discrete Mathematics* **46** (1983) 227–240.

### 1985 to 1989

8. D.L. Kreher, An Incidence Algebra for Combinatorial Designs with Automorphisms, *Journal of Combinatorial Theory Series A* Vol. 42, No 2. July 1986 239–251.

9. D.L. Kreher and S. P. Radziszowski, Finding Simple $t$-Designs by Using Basis Reduction, *Congressus Numerantium* Proceedings of the 17-th Southeastern Conference on Combinatorics, Graph Theory and Computing **55** (1986) 235–244.

10. D.L. Kreher and S. P. Radziszowski, The Existence of Simple 6-(14,7,4) Designs *Journal of Combinatorial Theory Series A* **43** , No. 2 (1986) 237–243.

11. D.L. Kreher and S. P. Radziszowski, Search Algorithm for Ramsey Graphs by Union of Group Orbits, *Journal of Graph Theory* **12** No. 1 (1987) 59–72.

12. D.L. Kreher and S. P. Radziszowski, Simple 5-(28,6,$\lambda$) Designs from $PSL_2(27)$, *Annals of Discrete Mathematics* 34, special volume on Combinatorial Design Theory dedicated to Alexander Rosa (edited by C.J. Colbourn and R.A. Mathon) North-Holland Mathematics Studies **149** (1987) 315–318.

13. D.L. Kreher and S. P. Radziszowski, New $t$-Designs Found by Using Basis Reduction, *Congressus Numerantium* **59** (1987) 155–164.

14. D.L. Kreher and S. P. Radziszowski, Solving Subset-Sum Problems with the $L^3$ Algorithm, *Journal of Combinatorial Mathematics and Combinatorial Computing* **3** (1988) 49–63.

15. D.L. Kreher and S. P. Radziszowski, On (3,k) Ramsey Graphs: Theoretical and Computational Results, *Journal of Combinatorial Mathematics and Combinatorial Computing* **4** (1988) 37–52.

16. D.L. Kreher and S. P. Radziszowski, Upper Bounds for Some Ramsey Numbers R(3,k) *Journal of Combinatorial Mathematics and Combinatorial Computing* **4** (1988) 207–212.

17. D.L. Kreher and S. P. Radziszowski and W. Li, Lower bounds for Multi-color Ramsey Numbers From Group Orbits, *Journal of Combinatorial Mathematics and Combinatorial Computing* **4** (1988) 87–96.

18. D. de Caen, D.L. Kreher and J. Wiseman, On Constructive Upper Bounds for the Turán numbers $T(n, 2r+1, 2r)$, *Congressus Numerantium* **65** (1988) 277–280

19. D.L. Kreher, A Generalization of Connors Inequality, *Journal of Combinatorial Theory Series A* **50** (1989) 259–268.

20. P. Horak, D.L. Kreher and A. Rosa, Jointly Extendible Latin Rectangles, *Utilitas Mathematica* **36** (1989) 193–195.

21. D.L. Kreher, E.S. Kramer, R.Rees and D.R. Stinson, On perpendicular arrays with $t \geq 3$, *Ars Combinatoria* **28** (1989) 215–223.

## 1990 to 1994

22. D. de Caen, D. A. Gregory and I.G. Hughes and D.L.Kreher, Near-factors of Finite Groups, *Ars Combinatoria* **29** (1990) 53–63.

23. D.L. Kreher and S.P. Radziszowski, Constructing 6-(14,7,4) Designs, *Contemporary Mathematics* **111** (1990) 137–151.

24. Y. M. Chee, C. J. Colbourn and D.L. Kreher, Simple $t$-Designs with $v \leq 30$, *Ars Combinatoria* **29** (1990) 193–258.

25. D.L. Kreher, A 4-(15,5,5) design, in *Coding Theory and Design Theory: Part II Design Theory* ed. Dijen Ray-Chaudhuri, *The IMA Volumes in Mathematics and its Applications* **21** (1990) 226.

26. D.L. Kreher, Design Theory Toolchest - User Manual and Report, in *Coding Theory and Design Theory: Part II Design Theory* ed. Dijen Ray-Chaudhuri, *The IMA Volumes in Mathematics and its Applications* **21** (1990) 227–235.

27. Yeow Meng Chee, Charles J. Colbourn, Steven C. Furino and D.L. Kreher, Large Sets of Disjoint $t$-Designs, *The Australasian Journal of Combinatorics* **2** (1990) 111–119.

28. D. de Caen, D.L. Kreher and J. A. Wiseman, A Turán Problem for Cartesian Products of Hypergraphs, *The Journal of Combinatorial Mathematics and Combinatorial Computing* **8** (1990) 17–25.

29. D.L. Kreher, Y. M. Chee, D. de Caen, C.J. Colbourn and E.S. Kramer, Some New Simple $t$-Designs, *The Journal of Combinatorial Mathematics and Combinatorial Computing* **7** (1990) 53–90.

30. D. de Caen, D.L. Kreher, W.H. Mills, and S.P. Radziszowski, On the covering of $t$-sets with $(t+1)$-sets: $C(9,5,4)$ and $C(10,6,5)$, *Discrete Mathematics* **92** (1991) 65–77

31. D.L. Kreher and S.P. Radziszowski, Minimum Triangle-Free Graphs, *Ars Combinatorica* **31** (1991) 65–92.

32. D. de Caen and D.L. Kreher, The 3-hypergraphical Steiner quadruple systems of order twenty, in *Graphs, Matrices and Designs* Ed. Rolf Rees, *Lecture Notes in Pure and Applied Mathematics* **139** (1992) 85–92.

33. T. Frenz and D.L. Kreher, Enumerating Cyclic Steiner Systems, *in The Journal of Combinatorial Mathematics and Combinatorial Computing* **11** (1992) 23–32.

34. E.D. Billington and D.L. Kreher, Yet another characterization of the Petersen Graph, *Bulletin of the Institute of Combinatorics and its Applications* **7** (1993) 73–77.

35. D.L. Kreher, D. de Caen, S.A. Hobart, E.S. Kramer and S. P. Radziszowski, The Parameters 4-(12,6,6) and Related $t$-Designs, *The Australasian Journal of Combinatorics* **7** (1993) 3–20.

36. D.L. Kreher, An infinite family of (simple) 6-designs, *The Journal of Combinatorial Designs* **1** No. 4 (1993) 277–280.

37. Yeow Meng Chee and D.L. Kreher, Simple 4-(21,5, $\lambda$) Designs from the Frobenius Group of Order 171, *Ars Combinatoria* **36** (1993) 199–205.

38. D.G. Hoffman and D.L. Kreher, The Bigraphical $t$-Wise Balanced Designs of Index One, *The Journal of Combinatorial Designs* **2** (1994) 41–48.

39. E.D. Boyer, D.L. Kreher, A. Sidorenko and S.P. Radziszowski, On T(n,5,3)-Turán Systems, *Ars Combinatoria* **37** (1994) 1–19.

40. D.L. Kreher, $t$-Designs With Large $t$: A Survey, *The Journal of Combinatorial Mathematics and Combinatorial Computing* **15** (1994) 97–110.

## 1995 to 1999

41. C.A. Cusack, D.L. Kreher and S.W. Graham, Large sets of 3-designs from PSL(2,$q$) with block sizes 4 and 5, *The Journal of Combinatorial Designs* **3** (1995) 147–160.

42. C.J. Colbourn, C.A. Cusack and D.L. Kreher, Partial Steiner Triple Systems with Equal-Sized Holes, *The Journal of combinatorial Theory Series A* **70** (1995) 56–65.

43. L.M. Weiss and D.L. Kreher, The Bigraphical $t$-Wise Balanced Designs of Index Two, *The Journal of Combinatorial Designs* **3** (1995) 233–255.

44. E.D. Billington and D.L. Kreher, The intersection problem for small $G$-designs, *The Australasian Journal of Combinatorics* **12** (1995) 239–258.

45. D.L. Kreher, Orthogonal arrays of strength 3, *the Journal of Combinatorial Designs* **4** (1995).

46. M. Gilpin and D.L. Kreher, A note on spanning trees in near $d$-angulations. *Ars Combinatoria* **41** (1995) 189–192.

47. D.L. Kreher, $t$-Designs, $t \geq 3$, *The CRC handbook of combinatorial designs* C.J. Colbourn and J.H. Dinitz (Editors) CRC Press, Boca Raton, 1996.

48. C.J. Colbourn and D.L. Kreher, Concerning difference matrices, *Designs, Codes and Cryptography* **9** 67–70 (1996).

49. D.L. Kreher, G.F. Royle and W.D. Wallis, A Family of Resolvable Regular Graph Designs, *Discrete Mathematics* **156** 269–275 (1996).

50. E.S. Kramer, D.L. Kreher and R. Mathon, On Steiner 3–wise balanced designs of order 17, *Journal of Combinatorial Designs* **5** 125–145, (1997).

51. D.L. Kreher and D.R. Stinson, Small group divisible designs with block size four, *Journal of Statistical Planning and Inference* **58** 111–118, (1997).

52. D.L. Kreher, D.R. Stinson and L. Zhu, On the maximum number of fixed points in automorphisms of 2-$(v, k, 1)$ designs, *Annals of Combinatorics* **1** (1997) 227–243.

53. M.A. Chateauneuf, C.J. Colbourn and D.L.Kreher, Covering arrays of strength 3, *Designs Codes and Cryptography* **16** 235–242 (1999).

54. L. Burgess, D.L. Kreher and D.Street, Small orthogonal main effect plans with four factors, *Communications in Statistics* **28** Issue 10, 1999.

55. M.A. Chateauneuf, C.J. Colbourn, D.L. Kreher, E.S. Lamkin and D.C. Torney, Pooling, Lattice Square, and Union Jack Designs, *Annals of Combinatorics* **3** (1999) 27–35.

## 2000 to 2004

56. C.L. Olsen and D.L. Kreher, Steiner graphical t-wise balanced designs of type $n^r$ , *Statistical Planning and Inference* **86** (2000) 535–566.

57. D.R. Stinson and D.L. Kreher Pseudocode: A LaTeX Style File for Displaying Algorithms, *Bulletin of the institute of Combinatorics and its Applications* **30** (2000) 11–24.

58. D.L. Kreher, R.S. Rees, A hole-size bound for incomplete $t$-wise balanced designs, *The Journal of Combinatorial Designs* **9** (2001) 269–145.

59. D.L. Kreher, United We Stand: A quick production of the American Flag *MUM* **96** (March 2001) 12–13.

60. D.L. Kreher, R.S. Rees, On the maximum size of a hole in an incomplete $t$-wise balanced design with specified minimum block size, *Ohio State Univ. Math. Res. Inst. Publ.* **10** (2002) 179–186.

61. I. Adamczak, D.L. Kreher, A.C.H. Ling and R.S. Rees, Further results on the maximum size of a hole in an incomplete $t$-wise balanced design *Journal of Combinatorial Designs* **10** (2002) 256–281,

62. M. Greig, D.L. Kreher, and A.C.H. Ling, On PBIBD Designs Based on Triangular Schemes, Ann. Comb. 6 (2002) 2, 147–155.

63. M.A. Chateauneuf, and D.L. Kreher, On the state of strength-three covering arrays, *Journal of Combinatorial Designs* **10** (2002) no. 4, 217–238.

64. C.J. Colbourn, D. L.Kreher, J. P. McSorley, and D.R. Stinson, Orthogonal Arrays of Strength 3 from 3–designs *Journal of Statistical Planning and Inference* **100** (2002) no. 2, 191–195.

65. D.L. Kreher, C.W.H. Lam, A.C.H. Ling, and R.S. Rees, A note on {4}-GDDs of type $2^{10}$, *Discrete Mathematics* **261** (2003) 373–376.

66. M.S. Keranen, D.L. Kreher, and P.J.-.S. Shiue, The quadruple systems of the projective special linear group PSL(2,$q$) $q = 1 \pmod 4$. *Journal of Combinatorial Designs* **11** (2003) no. 5, 339–351

67. M.S. Keranen, D.L. Kreher, The 3-designs of PSL$(2, 2^n)$ with block sizes 4 and 5 *Journal of Combinatorial Designs* **12** (2003) 103–111.

68. D. Gronau, A.C.H. Ling and D.L. Kreher, Super Simple (v,5,2)-designs. *Discrete Applied Mathematics* **138** (2004) 65–77.

69. I. Adamczak, D.L. Kreher and R.S. Rees, Tight Incomplete Block Designs, *Discrete Mathematics* **284** (2004) 11–20.

### 2005 to 2009

70. K.A. Lauinger, D.L. Kreher, R. Rees, and D.R. Stinson, Computing transverse $t$-designs, *Journal of Combinatorial Mathematics and Combinatorial Computing.* **54** (2005), 33–56.

71. B. Alspach, D. Dyer, D.L. Kreher, On isomorphic factorizations Of circulant graphs, *Journal of Combinatorial Designs.* **14** (2006), 406–414.

72. Earl S. Kramer, D.L. Kreher, $t$-Wise Balanced Designs, $t \geq 3$, *The CRC handbook of combinatorial designs* C.J. Colbourn and J.H. Dinitz (Editors) CRC Press, Boca Raton, 2007.

73. Y.M. Chee, D.L. Kreher, Graphical Designs *The CRC handbook of combinatorial designs* C.J. Colbourn and J.H. Dinitz (Editors) CRC Press, Boca Raton, 2007.

74. M.S. Keranen and D.L. Kreher, Transverse quadruple systems with five holes, *Journal of Combinatorial Designs.* **15**, (2007), 315–240.

75. L.R. Thimm, D.L. Kreher, and P.A., Merkey, Parallel implementation for the maximum clique problem. *J. Combin. Math. Combin. Comput.* **63** (2007), 183–207.

76. A.A. Zhuralev, M.S. Keranen, and D.L. Kreher, Small group divisible Steiner quadruple systems, *J. Combin. Math. Combin. Comput.*, **15** (2008), #R40.

77. M.S. Keranen, and D.L. Kreher, Correction to: Transverse quadruple systems with five holes. *J. Combin. Des.* **17** (2009), no. 6, 492–495.

78. M.S. Keranen, D.L. Kreher, W. Kocay and Pak Ching Li, Degree sequence conditions for partial Steiner triple systems.*Bull. Inst. Combin. Appl.* **57** (2009), 71–73.

79. E.E. Westlund, J. Liu, Jiuqiang and D.L. Kreher, 6-regular Cayley graphs on abelian groups of odd order are Hamiltonian decomposable. *Discrete Math.* **309** (2009), no. 16, 5106–5110.

80. H. Cao, J. Dinitz, D.L. Kreher, D.R. Stinson and R. Wei, On orthogonal generalized equitable rectangles. *Des. Codes Cryptogr.* **51** (2009), no. 3, 225–230.

### 2010 to Present

81. D. L. Kreher and E. E. Westlund, $n$-isofactorizations of 8-regular circulant graphs, *J. Combin. Math. Combin. Comput.* **72** (2010) 197–209.

82. M.S. Keranen, D.L. Kreher,S. Özkan, Uniform two-class regular partial Steiner triple systems. *J. Combin. Des.* 20 (2012), no. 3, 161–178.

83. B. Alspach, C. Caliskan and D.L. Kreher, Orthogonal Projection and Liftings of Hamilton-Decomposable Cayley Graphs on Abelian Groups. *Discrete Math.* **313** (2013), no. 13, 1475–1489.

84. B. Alspach, D. Bryant and D.L. Kreher, Vertex-Transitive Graphs of Prime-Squared Order Are Hamilton-Decomposable. *J. Combin. Des.* **22** (2014), no. 1, 12–25.

85. C.J. Colbourn, M.S. Keranen, and D.L. Kreher, f-vectors of Pure Complexes and Pure Multicomplexes of Rank Three, *Discrete Mathematics* **320** (2014), 26-39.

## Publications in Press

1. W. L. Kocay and D. L. Kreher, On Reconstructing Graphs and Their Complements *Submitted*(Sept 28, 2012).

2. S. De Winter, M.S. Keranen, D.L. Kreher, J. Nakamura, and Zeying Wang, On a representation of integers, *Submitted* (March 18, 2013)

## Publications in preparation

1. S. De Winter, M.S. Keranen, D.L. Kreher, and Zeying Wang, On Hamilton Decompositions Of Circulant Graphs Of prime cubed Order .

## Books

1. D.L. Kreher and D.R. Stinson, *Combinatorial Algorithms: Generation, Enumeration and Search*, CRC press LTC, Boca Raton, Florida, 1998.

2. D.L. Kreher, W. Kocay, *Graph Algorithms and Optimization* Chapman & Hall/CRC press, Boca Raton, Florida, 2005.

## Software Distribution

1. D.L. Kreher and D.R. Stinson. The CTAN `macros/latex/contrib/pseudocode/` directory, Comprehensive TeX Archive Network, January 14, 2005.

## Invited Talks

1. Algebraic Methods in the Theory of Combinatorial Designs.
   (a) Drexel University, 1984.
   (b) Lehigh University, 1984.
   (c) University of Vermont, 1984.
   (d) University of Southern Maine, 1984.
   (e) Rochester Institute of Technology, 1984.
2. Codes, Designs and Groups.
   (a) Rochester Institute of Technology 1985.
3. Search Algorithm for Ramsey Graphs.
   (a) University of Nebraska, 1986.
   (b) State University of New York at Oswego, 1986.
4. Combinatorial Search Algorithms: A Demonstration.
   (a) University of Vermont, 1987.
5. Constructing 6-(14,7,4) designs.
   (a) University of Waterloo, Waterloo, Ontario, 1987.
   (b) The 307th meeting of the American Mathematical Society, University of Nebraska, Lincoln Nebraska, November 1987.
6. Computing Combinatorial Configurations.
   (a) 3rd Ontario Combinatorics Workshop, University of Waterloo, Waterloo, Ontario, 1987
   (b) McMaster University, Hamilton Ontario, 1988.
   (c) University of Wyoming, Laramie, Wyoming, 1988.
   (d) Syracuse University, Syracuse, New York, 1988.
   (e) Michigan Technological University, Houghton Michigan, 1991.
   (f) University of West Virginia, Morgantown, West Virginia, 1991.
7. A Design Theory Toolchest
   (a) Eighteenth Annual Conference on Numerical Mathematics and Computing, University of Manitoba, Winnipeg, Manitoba, September 1988.
   (b) Institute for Mathematics and its Applications Workshops on Coding Theory and Applications and on Design Theory and Applications, University of Minnesota, Minneapolis, Minnesota, June 12–25, 1988.
8. Large Sets of Disjoint $t$-Designs

(a) The 859th meeting of the American Mathematical Society, Columbus, Ohio, August 1990.

(b) The 97th Annual meeting of the American Mathematical Society, San Francisco, California, January 1991.

9. On Turán's Problem on Hypergraphs.

   (a) University of Colorado, Denver, Colorado, December 1990.

   (b) Auburn University , Auburn, Alabama , March 1991.

   (c) University of Vermont, February 1999.

10. $t$-designs with Large $t$: A survey.

    (a) The Seventh Midwestern Conference on Combinatorics, Cryptography and Computing, Carbondale, Illinois, October, 1992.

11. Large sets of quadruple systems from $\mathrm{PSL}_2(q)$.

    (a) Auburn University, Auburn, Alabama, March 1993.

12. Large sets of 3–designs from PSL(2,q), with block sizes 4 and 5,

    (a) University of Nebraska, Lincoln, Nebraska, October 1993.

13. Constructing $t$–designs with $t \geq 3$.

    (a) Twenty sixth Southeastern International Conference on Combinatorics, Graph Theory and Computing, Boca Raton, Florida, March 1995.

14. On Orthogonal Arrays of strength 3.

    (a) The R.C. Bose memorial conference, Ft. Collins, Colorado, June 1995.

15. Hunting $t$-Designs with $t > 3$.

    (a) The Twenty-second Australasian Conference on Combinatorial Mathematics and Combinatorial Computing,

    (b) Sydney, Australia, July, 1996. University of Auckland, Auckland, New Zealand, July 1996.

16. From $t$-Wise Balanced Designs to Orthogonal Arrays.

    (a) Central Michigan University, Mt. Pleasant Michigan, January 1997.

    (b) CRM Workshop on Transversal Designs and Orthogonal Arrays, Kitchener-Waterloo, Ontario, CANADA, April 1997.

    (c) University of Nevada-Las Vegas, Las Vegas, Nevada, February 2002.

17. Covering arrays of strength 3.

    (a) University of Nebraska, February 1998.

    (b) University of Vermont, February 1998.

    (c) Center for Nonlinear Research at Los Alamos, July 1998.

18. Graphical Designs

    (a) University of Vermont, February 1998.

19. Computing Cliques

(a) University of Vermont, May 1998.

(b) University of Nebraska, May 1998.

(c) Rochester Institute of Technology, Sept 1999.

20. Constructing Arrays

    (a) Second Pythagorean Conference, An Advanced Research Workshop in Geometry, Combinatorial Designs & Related Structures. Pythagoreion, Samos, Greece, June 1999.

21. Covering Arrays of Strength 3

    (a) University of Rochester, Sept 1999.

    (b) Rochester Institute of Technology, Sept 1999.

22. A Hole-size bound for incomplete t-wise balanced designs

    (a) The XXVth Ohio State-Denison Mathematics Conference, May 2000.

    (b) Optimal Discrete Structures and Algorithms - ODSA, Rostock (Germany), September 2000.

    (c) The Second Lethbridge Workshop onCryptography Designs, Codes, Cryptography and Graph Theory, June 2001.

23. Magic Squares and Orthogonal Arrays

    (a) University of Nevada-Las Vegas, Las Vegas, Nevada, February 2002.

    (b) University of Minnesota Duluth, Duluth, Minnesota, November 3, 2011

24. Computing Transverse t-Designs

    (a) First Prairie Discrete Mathematics Workshop Regina, Saskatchewan, October 2003.

    (b) Eighteen Midwestern Conference on Combinatorics, Cryptography and Computing, Las Vegas, Nevada, October 2004.

25. Isofactorizations of circulant graphs

    (a) Fourth Prairie Discrete Mathematics Workshop Lethbridge, Alberta, August 2006.

26. The hypergraph degree sequence problem

    (a) Thirty ninth Southeastern International Conference on Combinatorics, Graph Theory and Computing, Boca Raton, Florida, March 2008.

27. Hamilton decomposition of circulant graphs of order $p^2$.

    (a) University of Arizona, Tempe, Arizona, February 2013.

28. Vertex-Transitive Graphs Of Prime-Squared Order Are Hamilton-Decomposable.

    (a) University of Minnesota Duluth, Duluth, Minnesota, May 2013.

29. Groups Designs and Linear Algebra: Orbit incidence matrices.

    (a) (3 lectures) University of Newcastle, Newcastle, Australia, March 2012.

    (b) (5 lectures) CIMPA School ECOS 2013 held at National University of San Luis, San Luis, Argentina, July 2013.

30. The Degree Sequence Problem For Partial Steiner Triple Systems

    (a) University Wisconsin October 5, 2012

## Contributed presentations at Conferences

1. Thirteenth Southeastern International Conference on Combinatorics, Graph Theory and Computing, Boca Raton, Florida, February 1982.
2. Fifteenth Southeastern International Conference on Combinatorics, Graph Theory and Computing, Baton Rouge, Louisiana, March 1984.
3. Seventeenth Southeastern International Conference on Combinatorics, Graph Theory and Computing, Boca Raton, Florida, February 1986.
4. Second Ontario Combinatorics Workshop, McMaster University, Hamilton, Ontario, October 1986.
5. Eighteenth Southeastern International Conference on Combinatorics, Graph Theory and Computing, Boca Raton, Florida, February 1987.
6. Fifth Caribbean Conference on Combinatorics and Computing, University of the West Indies, Cave Hill, Barbados, January 1988.
7. Twentieth Southeastern International Conference on Combinatorics, Graph Theory and Computing, Boca Raton, Florida, February 1986.
8. Third Vermont Combinatorics Workshop, University of Vermont, Held in Stowe, Vermont, June 1989.
9. Fifth Vermont Combinatorics Workshop, University of Vermont, Held in Stowe, Vermont, June 1991.
10. Sixth Midwestern Conference on Combinatorics, Computing and Computing, Lincoln Nebraska, November 1991.
11. Twenty Fourth Southeastern International Conference on Combinatorics, Graph Theory and Computing, Boca Raton, Florida, February 1993.
12. Twenty Third Annual Conference on Numerical Mathematics and Computing, University of Manitoba, Winnipeg, Manitoba, September 1993.
13. Twenty Fifth Southeastern International Conference on Combinatorics, Graph Theory and Computing, September 1998.
14. Cryptology, Designs, and Finite Groups 2009 Conference. In honor of Spyros Magliveras' 70th birthday. Dearfield Beach, Florida, May 17-22, 2009.
15. The 35th Australasian Conference on Combinatorial Mathematics & Combinatorial Computing. 5-9 December 2011. Monash University, Melbourne, Australia.

## Ph.D. students

1. Cheryl L. Olson, Ph.D. (Maths), "On Graphical Designs", University of Nebraska-Lincoln, 1997. (co-supervised with E.S. Kramer.)
2. Mike Ira, Ph.D. (Maths), "TriGraphical Designs", University of Nebraska-Lincoln, (co-supervised with E.S. Kramer.) 2000.
3. Mark Chateauneuf, Ph.D. (Maths), "Covering arrays", Michigan Technological University, 2000.
4. Izabela B. Adamczak, Ph.D. (Maths), "Tight Incomplete Block designs", Michigan Technological University, 2002.

5. Melissa S. Keranen Ph.D. (Maths), "Transverse Steiner quadruple system", Michigan Technological University, 2005.

6. Erik E. Westlund, Ph.D. (Maths), "Hamilton decompositions of 6-regular Abelian Cayley Graphs Michigan Technological University, 2010.

## Master's students

1. P. A. Eggleston, M.S. (CS), "Detection and Coding of Edges in Natural Scenes: Building a Fact Base for an Expert System", 1986.

2. R. E. Hill, M.S. (CS), "ACL: A Combinatorics Language", 1986.

3. R. T. Salamone, M.S. (CS), "An Implementation of the Chor-Rivest Knapsack Type Public Key Cryptosystem", 1986.

4. R. Nenno, M.S. (CS), "Nonlinear Error-correcting Codes", 1987.

5. Wei Li, M.S. (CS), "Algorithms for Constructing Multicolor Ramsey Graphs", 1987.

6. A. Stankus, M.S. (CS), "Implementing Ray Tracing with Techniques from Image Processing", 1987.

7. J. E. Robinson, M.S. (CS), "A Noiseless Data Compression Method Suitable for In–line Communication Channel Use", 1988.

8. S. Metha, M.S. (CS), "A Window-Oriented User-Interface for Image Processing on Unix Based Workstations", 1988.

9. T. C. Frenz, M.S. (CS), "Computing Techniques for the Enumeration of Cyclic Steiner Systems", 1989.

10. N. M. Schornstein, M.S. (CS), "Computing the Chromatic Number of t-(v,k,$\lambda$) Designs", 1989.

11. W. J. Monroe, M.S. (CS), "Computer Construction of (4,4,c)-Threshold Schemes using Steiner Quadruple Systems", 1989.

12. C. A. Cusack, M.S. (Maths), "PSL(2,$q$) as an automorphism group of 3-designs with blocksize 4", 1994.

13. L. M. Koehn, M.S. (Maths), "The Bigraphical $t$-Wise Balanced Designs of Index Two", 1994.

14. Jun Meng, M.S. (Maths), "Some new orthogonal arrays of strength 2", 1995.

15. Hrsito S. Sendov, M.S. (Maths), "A Graph Decomposition Theorem", 1996.

16. Melissa S. Keranen, M.S. (Maths), "An Infinite Class of Fibres In CURDs" 2002.

17. Kimberly Lauinger, M.S. (Maths), "Computing Transverse $t$–designs" 2003.

18. Lisa Thimm, M.S. (Maths) "A Unified Parallel C Implementation for the Maximum Clique Problem", 2005

19. Erik E. Westlund, M.S. (Maths), "$n$-Isofactorizations of Circulant Graphs", 2006

20. Artem Zurhalev, M.S. (Maths) "Group Divisible Steiner Quadruple Systems", 2007.