

**Résumé:**

Wayne Goddard

**Personal Data:**

Associate Professor  
School of Computing & Dept of Mathematical Sciences  
Clemson University  
Clemson SC 29634  
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**Education:**

B.A., University of South Africa, 2002, Politics/Economics.  
Ph.D., Massachusetts Institute of Technology, 1992, Mathematics/Computer Science.  
Ph.D., University of Natal, Durban, 1989, Mathematics.  
B.Sc.Hon., University of Natal, Durban, 1986, Mathematics.  
B.Sc., University of Natal, Durban, 1985, Mathematics.

**Professional Experience:**

Clemson University  
2008– Associate Professor, School of Computing and Dept Mathematical Sciences  
2002–2008, Associate Professor of Computer Science.  
University of Natal, Durban  
1999–2002, Professor of Computer Science  
1994–1999, Associate Professor of Computer Science  
ML Sultan Technikon, 1996–2001, Part-time lecturer in Computer Studies department.  
University of Pennsylvania, 1992–1994, Lecturer, Department of Mathematics.  
University of Natal, 1986–1987, Part-time lecturer, Department of Mathematics and Applied Mathematics.

**Consulting Experience:**

Rogamur Solutions CC, 1995–2000. (Analysis of lotteries and gambling.)  
Salbu (Pty) Ltd, 1987–1988. (Analysis of meteor-burst communication.)

## Memberships:

Fellow of The Institute of Combinatorics and its Applications,  
Society for Industrial and Applied Mathematics

## Professional Activities:

Foundation for Research Development & ML Sultan Technikon, Research Funding Committee, 1996–2000.

Program committee: 2004 International Workshop on Mobile Ad Hoc Networks and Interoperability Issues (MANETII'04);

IEEE International Workshop on Pervasive Computing and Ad Hoc Communications (PCAC'06);

WCIT'2006 (Wireless Communications and Information Technology in Developing Countries);

Third IEEE International Workshop on Heterogeneous Multi-Hop Wireless and Mobile Networks 2007 (IEEE MHWMN'07);

Jubilee Conference on Discrete Mathematics, Banasthali University India, 2009;

International Conference of Recent Trends in Graph Theory and Combinatorics, Cochin India, 2010.

## Publications:

### *Books:*

S.W. Melville and W.D. Goddard, “Research Methodology: An introduction”, Juta, 1996. Second edition by W.D. Goddard and S.W. Melville, 2001.

W. Goddard, “Introducing the Theory of Computation”, Jones and Bartlett, 2008.

### *Journal publications:*

1. wdg, J.H. Swart, and P. Spencer. The construction of Pythagorean triples with prescribed initial differences. *South African J. Science*, 81:524, 1985.
2. wdg and P.A. Winter. All graphs on a non-prime number of vertices are destructible. *Quaestiones Math.*, 8:381–385, 1986.
3. wdg and P.A. Winter. A characterization of stable graphs on a maximum (minimum) number of edges. *Quaestiones Math.*, 10:175–178, 1986.
4. wdg and H.C. Swart. The integrity of combinations of graphs. *J. Combin. Math. Combin. Comput.*, 4:3–18, 1988.
5. S. Melville, J. Larsen, R. Letschert, and wdg. The classification of meteor trail reflections by a rule-based system. *Trans. SA IEE*, 80:104–116, 1989.

6. G. Chartrand, wdg, M. Henning, L. Lesniak, H.C. Swart, and C. Wall. Which graphs are distance graphs? *Ars Combin.*, 29A:225–232, 1990.
7. J. Larsen, S. Melville, R. Mawrey, R. Letschert, and wdg. Throughput capacity of meteor burst communications. *Trans. SA IEE*, 81:20–30, 1990.
8. wdg. The binding number of trees and  $k(1, 3)$ -free graphs. *J. Combin. Math. Combin. Comput.*, 7:193–200, 1990.
9. wdg, O. Oellermann, and H.C. Swart. A new approach to distance stable graphs. *J. Combin. Math. Combin. Comput.*, 8:209–220, 1990.
10. wdg and H.C. Swart. The integrity of a graph: bounds and basics. *J. Combin. Math. Combin. Comput.*, 7:139–151, 1990.
11. wdg and H.C. Swart. On the toughness of a graph. *Quaestiones Math.*, 13:217–232, 1990.
12. L. Beineke, wdg, P. Hamburger, D.J. Kleitman, M. Lipman, and R. Pippert. The integrity of the cube is small. *J. Combin. Math. Combin. Comput.*, 9:191–193, 1991.
13. G. Benadé, wdg, T.A. McKee, and P.A. Winter. On distances between isomorphism classes of graphs. *Math. Bohem.*, 116:160–169, 1991.
14. Zhu Binghuan and wdg. An algorithm for outerplanar graphs with parameter. *J. Algorithms*, 12:657–662, 1991.
15. wdg. Acyclic colorings of planar graphs. *Discrete Math.*, 91:91–94, 1991.
16. wdg, G. Kubicki, O. Oellermann, and S. Tian. On multipartite tournaments. *J. Combin. Theory Ser. B*, 52:284–300, 1991.
17. K.S. Bagga, L.W. Beineke, wdg, M.J. Lipman, and R.E. Pippert. A survey of integrity. *Discrete Appl. Math.*, 37/38:13–28, 1992.
18. wdg, M.A. Henning, and H.C. Swart. Some Nordhaus-Gaddum-type results. *J. Graph Theory*, 16:221–231, 1992.
19. wdg and H.C. Swart. Two results on the binding numbers of products graphs. *Ars Combin.*, 34:119–128, 1992.
20. G. Chartrand, wdg, M.A. Henning, F. Saba, and H.C. Swart. Principal common divisors. *Europ. J. Combin.*, 14:85–93, 1993.
21. H. Chen, wdg, J. McCanna, and R. Poh. Path chromatic sequences of graphs. *Bull. Inst. Combin. Appl.*, 7:33–35, 1993.
22. wdg, M.A. Henning, O. Oellermann, and H.C. Swart. Some general results on the framing number of a graph. *Quaestiones Math.*, 16:289–301, 1993.
23. wdg, V. King, C. Kenyon, and L. Schulman. Optimal randomized algorithms for local sorting and set-maxima. *SIAM J. Comput.*, 22:272–283, 1993. preliminary version in STOC, 1990.

24. wdg and D.J. Kleitman. A note on maximal triangle-free graphs. *J. Graph Theory*, 17:629–631, 1993.
25. B. Aronov, P. Erdős, wdg, D.J. Kleitman, M. Klugerman, J. Pach, and L.J. Schulman. Crossing families. *Combinatorica*, 14:127–134, 1994. preliminary version in 7th Computational Geometry, 1991.
26. L. Beineke, wdg, and P. Hamburger. Randomly-packable graphs. *Discrete Math.*, 125:45–54, 1994.
27. F.R.K. Chung, wdg, and D.J. Kleitman. Even cycles in directed graphs. *SIAM J. Discrete Math.*, 7:474–483, 1994.
28. wdg. Measures of vulnerability—the integrity family. *Networks*, 24:207–213, 1994.
29. wdg and D.J. Kleitman. An upper bound on the ramsey numbers  $r(K_3, G)$ . *Discrete Math.*, 125:177–182, 1994.
30. wdg, E. Kubicka, G. Kubicki, and F. McMorris. The agreement metric for labeled binary trees. *Math. Biosci.*, 123:215–226, 1994.
31. wdg, O. Oellermann, and H.C. Swart. Steiner distance stable graphs. *Discrete Math.*, 132:65–73, 1994.
32. wdg. Mistilings with dominos. *Discrete Math.*, 137:361–365, 1995.
33. L.W. Beineke, wdg, and M.J. Lipman. The edge integrity of cartesian products. *J. Combin. Math. Combin. Comput.*, 21:129–145, 1996.
34. G. Chartrand, wdg, G. Kubicki, C. Mynhardt, and F. Saba. The greatest common divisor index of a graph. *J. Combin. Math. Combin. Comput.*, 20:11–26, 1996.
35. J. Dunbar, wdg, M.A. Henning, S. Hedetniemi, and A. McRae. On algorithmic complexity of minus domination. *Discrete Applied Math.*, 68:73–84, 1996.
36. I. Gessel, wdg, W. Shur, H. Wilf, and L. Yen. Counting pairs of lattice paths by intersections. *J. Combin. Theory Ser. A*, 74:173–187, 1996.
37. wdg. The toughness of cubic graphs. *Graphs Combin.*, 12:17–22, 1996.
38. wdg, M. Katchalski, and D.J. Kleitman. Forcing disjoint line segments in the plane. *Europ. J. Combin.*, 17:391–395, 1996.
39. wdg and H.C. Swart. Distances between graphs via edge operations. *Discrete Math.*, 161:121–132, 1996.
40. L.W. Beineke, wdg, and M.J. Lipman. Graphs with maximum edge integrity. *Ars Combin.*, 46:119–127, 1997.
41. L. Cowen, wdg, and E. Jesurum. Defective colorings revisited. *J. Graph Theory*, 24:205–219, 1997. Preliminary version in SODA 97.
42. R. Entringer, wdg, and M.A. Henning. Extremal graphs with cliques and independent sets. *J. Graph Theory*, 24:21–23, 1997.

43. wdg, M. Plummer, and H.C. Swart. The toughness of graphs of small genus. *Discrete Math.*, 167/168:329–339, 1997.
44. S. Brandt, R. Faudree, and wdg. Weakly pancyclic graphs. *J. Graph Theory*, 27:141–176, 1998.
45. P. Dankelmann, wdg, M.A. Henning, and H.C. Swart. Generalised eccentricity, radius and diameter in graphs. *Networks*, 34:312–319, 1999.
46. wdg and M. Henning. Real and integer domination in graphs. *Discrete Math.*, 199:61–75, 1999.
47. wdg, M. Henning, and H. Maharaj. Homogeneous embeddings of cycles in graphs. *Graphs Combin.*, 15:159–173, 1999.
48. wdg, M.A. Henning, and O. Oellermann. Bipartite Ramsey numbers and Zarenkiewicz bounds. *Discrete Math.*, 219:85–95, 2000.
49. wdg and G. Kubicki. Results about graph decomposition, greatest common divisor index for graphs and digraphs. *J. Combin. Math. Combin. Comput.*, 32:173–184, 2000.
50. wdg, O. Oellermann, P. Slater, and H.C. Swart. Bounds on the total redundancy and efficiency of a graph. *Ars Combin.*, 54:129–138, 2000.
51. P. Dankelmann, D. Erwin, G. Fricke, wdg, and H.C. Swart. Minimal and maximal  $e = 1$  functions. *J. Combin. Math. Combin. Comput.*, 36:127–138, 2001.
52. P. Dankelmann, wdg, and P. Slater. Average distance in coloured graphs. *J. Graph Theory*, 38:1–17, 2001.
53. D. Day, wdg, M.A. Henning, and H.C. Swart. Multipartite Ramsey numbers. *Ars Combin.*, 58:23–31, 2001.
54. wdg and M.A. Henning. Pancyclicity of the prism. *Discrete Math.*, 234:139–142, 2001.
55. wdg and G. Kubicki. Between packable and randomly packable graphs: Packer–spoiler graphs. *J. Combin. Math. Combin. Comput.*, 39:19–32, 2001.
56. P. Dankelmann, wdg, O. Oellermann, and H.C. Swart. Augmentation to every 3 vertices in a cycle. *Discrete Applied Math.*, 116:145–159, 2002.
57. M. Denko and wdg. Hierarchical cluster routing in mobile ad hoc networks. *UNISWA Research Journal of Agriculture, Science and Technology*, 6:81–90, 2002. preliminary version in proceedings of the 5th International Conference on Communication systems (AFRICOM 2001), Cape Town, South Africa, May 2001.
58. M. Denko and wdg. Limited flooding protocol for mobile ad hoc networks. *South African Computer Journal*, 19:49–57, 2002.
59. wdg. 4-connected maximal planar graphs are 4-orderable. *Discrete Math.*, 257:405–410, 2002.

60. wdg. A note on Steiner-distance-hereditary graphs. *J. Combin. Math. Combin. Comput.*, 40:167–170, 2002.
61. wdg and M.A. Henning. Domination in planar graphs with small diameter. *J. Graph Theory*, 40:1–25, 2002.
62. E.J. Cockayne, O. Favaron, wdg, P.J.P. Grobler, and C.M. Mynhardt. Changing upper irredundance by edge addition. *Discrete Math.*, 266:185–193, 2003.
63. E. Dalhaus, P. Dankelmann, wdg, and H.C. Swart. MAD trees and distance-hereditary graphs. *Discrete Applied Math.*, 131:151–167, 2003.
64. wdg. A computer/human Mastermind player using grids. *South African Computer Journal*, 30:3–8, 2003.
65. wdg. Static Mastermind. *J. Combin. Math. Combin. Comput.*, 47:225–236, 2003.
66. wdg and M.A. Henning. Nordhaus–Gaddum bounds for independent domination. *Discrete Math.*, 268:299–302, 2003.
67. wdg, M. Raines, and P. Slater. Connectivity and distance measures in generalised prisms. *Discrete Math.*, 271:61–70, 2003.
68. I. Broere, M. Dorfling, wdg, J.H. Hattingh, M.A. Henning, and E. Ungerer. Augmenting trees to have two disjoint total dominating sets. *Bull. Inst. Combin. Appl.*, 42:12–18, 2004.
69. P. Dankelmann, G.S. Domke, wdg, P. Grobler, J.H. Hattingh, and H.C. Swart. Maximum sizes of graphs with given domination parameters. *Discrete Math.*, 281(1-3):137–148, 2004.
70. P. Dankelmann, wdg, and C.S. Swart. The average eccentricity of a graph and its subgraphs. *Util. Math.*, 65:41–51, 2004.
71. O. Favaron, G. Fricke, wdg, S.M. Hedetniemi, S.T. Hedetniemi, P. Kristiansen, R. Laskar, and D. Skaggs. Offensive alliances. *Discussiones Math. Graph Theory*, 24:263–275, 2004.
72. M. Gairing, wdg, S.T. Hedetniemi, and D.P. Jacobs. Self-stabilizing maximal  $k$ -dependent sets in linear time. *Parallel Process. Lett.*, 14(1):75–82, 2004.
73. M. Gairing, wdg, S.T. Hedetniemi, P. Kristiansen, and A.A. McRae. Distance-two information in self-stabilizing algorithms. *Parallel Processing Letters*, 14:387–398, 2004.
74. Z. Shi, wdg, and S.T. Hedetniemi. An anonymous self-stabilizing algorithm for 1-maximal independent set in trees. *Inform. Process. Lett.*, 91(2):77–83, 2004.
75. wdg. Mastermind revisited. *J. Combin. Math. Combin. Comput.*, 51:215–220, 2004.
76. wdg. Minimum degree conditions for cycles including specified sets of vertices. *Graphs Combin.*, 20(4):467–483, 2004.

77. wdg, T. Haynes, and D. Knisely. Hereditary domination and independence parameters. *Discuss. Math. Graph Theory*, 24:239–248, 2004.
78. wdg, T.W. Haynes, M.A. Henning, and L.C. van der Merwe. The diameter of total domination vertex critical graphs. *Discrete Math.*, 286(3):255–261, 2004.
79. wdg and M.A. Henning. Clique/connected/total domination perfect graphs. *Bull. Inst. Combin. Appl.*, 41:20–21, 2004.
80. M. Dorfling, wdg, J.H. Hattingh, and M.A. Henning. Augmenting a graph of minimum degree 2 to have two disjoint total dominating sets. *Discrete Math.*, 300:82–90, 2005.
81. M.A. Henning and wdg. Vertex coverings by coloured induced graphs—frames and umbrellas. *Quaestiones Math.*, 28:1–10, 2005.
82. Z. Shi, wdg, S.T. Hedetniemi, K. Kennedy, R. Laskar, and A. McRae. An algorithm for partial Grundy number on trees. *Discrete Math.*, 304:108–116, 2005.
83. wdg, S.M. Hedetniemi, and S.T. Hedetniemi. Eternal security in graphs. *J. Combin. Math. Combin. Comput.*, 52:169–180, 2005.
84. wdg, S.M. Hedetniemi, S.T. Hedetniemi, and R. Laskar. Generalized subgraph-restricted matchings in graphs. *Discrete Math.*, 293:129–138, 2005.
85. wdg, S.T. Hedetniemi, D.P. Jacobs, and P.K. Srimani. Self-stabilizing algorithms for orderings and colorings. *Internat. J. Found. Comput. Sci.*, 16(1):19–36, 2005. Also in APDCM’04.
86. wdg, S.T. Hedetniemi, D.P. Jacobs, and P.K. Srimani. Self-stabilizing global optimization algorithms for large network graphs. *International Journal of Distributed Sensor Networks*, 1:329–344, 2005.
87. wdg and M.A. Henning. Multiple vertex coverings by cliques. *J. Graph Theory*, 48(2):157–167, 2005.
88. wdg, C.S. Swart, and H.C. Swart. On the extremal graphs for distance and  $k$ -diameter. *Math. Slovaca*, 55:131–139, 2005.
89. J.R.S. Blair, wdg, S.M. Hedetniemi, S.T. Hedetniemi, and S.B. Horton. Domination equivalence in graphs. *AKCE International Journal of Graphs and Combinatorics*, 2:123–136, 2006.
90. P. Dankelmann, M.A. Henning, wdg, and R. Laskar. Simultaneous graph parameters: Factor domination and factor total domination. *Discrete Math.*, 306:2229–2233, 2006.
91. M. Dorfling, wdg, M.A. Henning, and C.M. Mynhardt. Construction of trees and graphs with equal domination parameters. *Discrete Math.*, 306:2647–2654, 2006.
92. M.S. Dorfling, wdg, and M.A. Henning. Domination of planar graphs II. *Ars Combin.*, 78:237–255, 2006.

93. wdg. A note on the integrity of trees. *Utilitas Math.*, 69:227–232, 2006.
94. wdg and M.A. Henning. Restricted domination parameters in graphs. *J. Combin. Optim.*, 13:353–363, 2007.
95. wdg and K. Kanakadandi. Orientation distance graphs revisited. *Discussiones Math. Graph Theory*, 27:125–136, 2007.
96. J.R.S. Blair, wdg, S.T. Hedetniemi, S. Horton, P. Jones, and G.Kubicki. On domination numbers and reinforcement numbers in trees. *Discrete Math.*, 308:1165–1175, 2008.
97. P. Dankelmann, H.C. Swart, P. van den Berg, wdg, and M.D. Plummer. Minimal claw-free graphs. *Czechoslovak Math. J.*, 58(133)(3):787–798, 2008.
98. A. Jamieson, wdg, and S.T. Hedetniemi. On the Wimer method for designing edge-based algorithms. *AKCE International Journal of Graphs and Combinatorics*, 5:115–125, 2008.
99. M. Springfield and wdg. Domino magic squares. *Bull. Inst. Combin. Appl.*, 52:101–108, 2008.
100. wdg. Automated bounds in recursive structures. *Utilitas Math.*, 75:193–210, 2008.
101. wdg, S.M. Hedetniemi, S.T. Hedetniemi, J.M. Harris, and D.F. Rall. Broadcast chromatic numbers of graphs. *Ars Combin.*, 86:33–49, 2008.
102. wdg, S.T. Hedetniemi, D.P. Jacobs, P.K. Srimani, and X. Zhu. Self-stabilizing graph protocols. *Parallel Process. Lett.*, 18:189–199, 2008.
103. wdg, S.T. Hedetniemi, D.P. Jacobs, and V. Trevisan. Distance- $k$  knowledge in self-stabilizing algorithms. *Theor. Comput. Sci.*, 399(1-2):118–127, 2008.
104. J. Blair, wdg, S.M. Hedetniemi, S.T. Hedetniemi, F. Manne, and D. Rall. Emergency response sets in graphs. *J. Combin. Math. Combin. Comput.*, 68:225–243, 2009.
105. J. Lyle and wdg. The binding number of a graph and its cliques. *Discrete Appl. Math.*, 157:3336–3340, 2009.
106. wdg and S.T. Hedetniemi. A note on trees, tables, and algorithms. *Networks*, 53:184–190, 2009.

*Reviewed conference proceedings:*

1. wdg, D.J. Kleitman, and D. Sturtevant. On the convergence of a nonlinear transform. *Congr. Numer.*, 82:179–185, 1991.
2. wdg and O. Oellermann. The cycle structure of multipartite tournaments. In *Graph Theory, Combinatorics and Applications, Vol. 1*, Y. Alavi et al. eds, pages 525–533, 1991.

3. wdg and H.C. Swart. On some extremal problems in connectivity. In *Graph Theory, Combinatorics, and Applications, Vol. 1*, Y. Alavi et al. eds, pages 535–551, 1991.
4. wdg and G. Kubicki. The minimum size of agreement subtrees of two binary trees. *Congr. Numer.*, 97:131–136, 1993.
5. wdg, E. Kubicka, G. Kubicki, and F. McMorris. Agreement subtrees, metrics and consensus for labeled binary trees. In *Partitioning Data Sets*, Cox et al. eds, pages 97–104, 1995.
6. wdg and M.A. Henning. Generalized domination and independence. *Congr. Numer.*, 123:161–171, 1997.
7. L.W. Beineke, wdg, and R. Vandell. More measures of vulnerability: Splinter sets and directed toughness. *Congr. Numer.*, 155:81–88, 2002.
8. K. Reddy, J. Kinyua, and wdg. Deploying mobile agents to solve the distributed buying problem. In *Proceedings of ICAAI'03*, 2003.
9. wdg, S.T. Hedetniemi, D.P. Jacobs, and P.K. Srimani. A robust distributed generalized matching protocol that stabilizes in linear time. In *Proceedings of ICDCS Workshop on Mobile Distributed Computing (MDC03), Rhode Island*, pages 461–465, 2003.
10. wdg, S.T. Hedetniemi, D.P. Jacobs, and P.K. Srimani. A self-stabilizing distributed algorithm for minimal total domination in an arbitrary system graph. In *Proceedings of 8th IPDPS Workshop on Formal Methods for Parallel Programming, Nice*, page 240, 2003.
11. wdg, S.T. Hedetniemi, D.P. Jacobs, and P.K. Srimani. Self-stabilizing distributed algorithm for strong matching in a system graph. In *HiPC*, volume 2913 of *Lecture Notes in Computer Science*, pages 66–73. Springer, 2003.
12. wdg, S.T. Hedetniemi, D.P. Jacobs, and P.K. Srimani. Self-stabilizing protocols for maximal matching and maximal independent sets for ad hoc networks. In *Proceedings of 5th IPDPS Workshop on Advances in Parallel and Distributed Computational Models, Nice*, page 162, 2003.
13. Z. Xu, S.T. Hedetniemi, wdg, and P.K. Srimani. A synchronous self-stabilizing minimal domination protocol in an arbitrary network graph. In *IWDC*, volume 2918 of *Lecture Notes in Computer Science*, pages 26–32. Springer, 2003.
14. J. Jacob, R. Laskar, and wdg. The upper domination partition numbers of special graphs. *Congr. Numer.*, 182:65–77, 2006.
15. wdg, S.T. Hedetniemi, D.P. Jacobs, and V. Trevisan. Distance- $k$  information in self-stabilizing algorithms. In Paola Flocchini and Leszek Gasieniec, editors, *Structural Information and Communication Complexity, 13th International Colloquium, SIROCCO 2006, Chester, UK, July 2-5, 2006, Proceedings*, volume 4056 of *Lecture Notes in Computer Science*, pages 349–356. Springer, 2006.

16. wdg, S.T. Hedetniemi, and Z. Shi. An anonymous self-stabilizing algorithm for 1-maximal matching in trees. In *Proceedings of PDPTA '06*, volume II, pages 797–803, 2006.
17. J. Jacob, wdg, and R. Laskar. Double vertex graphs and complete double vertex graphs. In *Proceedings of the Thirty-Eighth Southeastern International Conference on Combinatorics, Graph Theory and Computing*, volume 188, pages 161–174, 2007.
18. wdg, S.T. Hedetniemi, D.P. Jacobs, and P.K. Srimani. Anonymous daemon conversion in self-stabilizing algorithms by randomization in constant space. In S. Rao et al., editor, *Distributed Computing and Networking, 9th International Conference, ICDCN 2008, Kolkata, India, January 5-8, 2008*, volume 4904 of *Lecture Notes in Computer Science*, pages 182–190. Springer, 2008.

*Publications to appear:*

1. *Capacitated domination*, wdg, S.T. Hedetniemi, J. Huff and A.A. McRae, To appear in *Ars Combin.*, (accepted Jun06; expected 2009)
2. *Distance in Graphs*, wdg, O.R. Oellermann, To appear in *Structural Analysis of Complex Networks: Theory and Applications*, (Birkhauser. ISBN 0817647880) Proofs Jun09
3. *A characterization of cubic graphs with paired-domination number three-fifths their order*, wdg, M.A. Henning, To appear in *Graphs Combin.*, (accepted Aug09)

**Presentations at Conferences or Universities:**

1. Conference, University of South Africa, Pretoria, S. Africa, 1986
2. University of New Mexico, Albuquerque, August 1987
3. “The Integrity of a Graph”, University of Western Michigan, Kalamazoo, September 1987
4. 6th International Conference on Graph Theory, Combinatorics, Algorithms and Applications, Kalamazoo, June 1988
5. Indiana–Purdue University at Fort Wayne, June 1988
6. 255th Anniversary of Graph Theory, Durban, S Africa, 1991
7. “Partial Sorting” University of Natal, Durban, S Africa, 1991
8. South-Eastern Conference, Louisiana State University, Baton Rouge, February 1991
9. “An upper bound for the Ramsey numbers  $r(K_3, G)$ ”, British Combinatorics Conference, University of Surrey, Guildford, July 1991.
10. Cumberland Conference, Rhodes College, Memphis, May 1992

11. 7th International Conference on Graph Theory, Combinatorics, Algorithms and Applications, Kalamazoo, June 1992
12. University of Delaware, 1993.
13. Special Session on Graph Theory, AMS Regional Meeting, Lexington, March 1994
14. Cumberland Conference, University of Alabama at Huntsville, 1994
15. "Measures of Vulnerability", Twente University, August 1994
16. Eighth International Conference on Graph Theory, Combinatorics, Algorithms and Applications, Kalamazoo, USA, June 1996.
17. 8th SIAM Conference on Discrete Mathematics, Baltimore, June 1996
18. Joint International Conference of the American Math. Soc., London Math. Soc., and South African Math. Soc., University of Pretoria, Pretoria, S. Africa, June 1997 (Invited address).
19. 41st annual congress of South African Mathematical Society, RAU, Auckland Park, 1998
20. Prague, June 1998
21. 9th Quadrennial International Conference on Graph Theory, Combinatorics, Algorithms and Applications, Kalamazoo, MI, USA, June 2000
22. 43rd annual congress of South African Mathematics Society, University of South Africa, Pretoria, November 2000.
23. South African International Graph Theory Conference, Ithala Game Reserve, S Africa, June 2001
24. 44th annual congress of South African Mathematics Society Conference, University of Durban-Westville, South Africa, November 2001.
25. "Mastermind and static Mastermind revisited", Clemson University, Feb 2002.
26. "The average eccentricity and the k-diameter of a graph", Vanderbilt University, Nashville, February 2002
27. "The mathematics of Mastermind and static Mastermind", University of Alabama at Huntsville, March 2002
28. "Splinter sets", South Eastern Conference, Boca Raton, February 2002
29. AMS Meeting, Georgia Tech, Atlanta, March 2002
30. Clemson Mini-conference, Clemson, October 2002
31. "Offensive alliances", ISCIS XVII, Central Florida University, Orlando, October 2002
32. Cumberland Conference, Georgia State University, Atlanta, May 2003
33. "Domination equivalence in graphs", University of Stellenbosch, June 2003

34. University of South Carolina, 2003
35. “Making computers count”, Ninth North Carolina Mini-Conference, Boone, April 2004 (keynote speaker)
36. SIAM Southeast Atlantic Section meeting, 2004
37. “Trees, tables and theorems”, Cumberland Conference, East Tennessee State University, May 2006
38. “Anonymous deterministic self-stabilizing algorithms”, SIAM Conference on Discrete Mathematics, Victoria, June 2006
39. “Automated bounds on recursive structures”, 38th Southeastern International Conference on Combinatorics, Graph Theory, and Computing, Boca Raton, March 2007
40. “Almost tilings with T-tetrominoes”, 20th Cumberland conference on Discrete Mathematics, Atlanta, May 2007
41. “An introduction to self-stabilizing algorithms”, Network Science Conference, West Point, October 2007
42. “Binding number, cycles and cliques revisited”, University of California San Diego, March 2008
43. “Capacitated domination, tetrominoes, and computers”, SIAM Conference on Discrete Mathematics, Burlington, June 2008
44. “ $L(2, 1)$ -graph coloring”, 2nd Canadian Discrete and Algorithmic Mathematics Conference (CanaDam), Montreal, May 2009

### **Honors and Awards:**

Presidential award from Foundation for Research Development, South Africa (1995)  
 Silver medal, South African Academy for the Advancement of Science (1997)

### **Sponsored Research:**

Office of Naval Research, PI=Wilf, Additional investigator, No record of amount (1992–1994), N00014-91-J-1022.

“No Record of Name”, Foundation for Research Development continued as National Research Foundation (South Africa), Grant-holder, No record of amount (1995–1998).

Autonomous Distributed Local Computing Models using Self-Stabilization, PI=Srimani, \$150,000 (my part is \$70,000) (2008–10).

### **Other Sponsored Activity:**

Vice-Chancellor's Research Award, University of Natal, approx \$10000, (1996).

Research Award, Anonymous donor to the University of Natal, approx \$40000, (2000–2002).

21st Clemson Mini-conference on Discrete Mathematics and Algorithms, National Security Agency, \$6,000 (2006).

22nd Clemson Mini-conference on Discrete Mathematics and Algorithms, National Science Foundation, \$10,000 (2007).

### **Graduate Student Advising:**

#### *Doctoral Graduates:*

Mieso Denko, “The design and implementation of routing protocols for mobile ad hoc networks” (2001)

Zhengnan Charlie Shi, “Self-stabilization protocols and distributed protocols in mobile ad hoc networks” (2005)

Jeremy Lyle, “Homomorphisms of graphs” (2008)

Jobby Jacob, “Variations on Graph Products and Vertex Partitions” (2009)

#### *Masters Graduates:*

Supriya Bhargavan, “On ISDN and ATM Networks” (1996) [Thesis-only]

Tom Brazier, “Zero-knowledge interactive proof systems” (1997) [Thesis-only]

Christine Swart, “Distance measures in graphs and subgraphs” (1997) [Thesis-only]

Thiruthlall Nepal, “The time-tabling problem in tertiary institutions” (1998) [Thesis-only]

Kamil Reddy, “Using mobile agents to solve the distributed buying problem” (2002) [Thesis-only]

Anban Pillay, “Agent-oriented software engineering” (2003) [Thesis-only]

Kiran Kanakadandi, “On orientation distance graphs” (2006) [Thesis option]

Michael Springfield, “Domino magic squares” (2006) [Paper option]

Brent Nulph, “Nano-system programming” (2006) [Paper option]

Nandita Gokale, “Super edge-magic labeling of disjoint stars” (2008) [Paper option]

## Teaching:

### *Courses Taught:*

1986–1987, University of Natal: Operations Research.

1992–1994, University of Pennsylvania: Calculus and Linear Algebra, Algebra, Mathematics for Liberal Arts, Graph Theory.

1994–2002, University of Natal, Durban: Algorithms and Complexity Theory, Architecture, Artificial Intelligence, Complexity Theory, Computer Literacy, Computer Science 1A/1X, Computer Science II: System Software, Computer Science II: Data Structures, Cryptography, Databases, Networks.

1996–2001, ML Sultan Technikon: Artificial Intelligence, Networks, Research Methodology.

2003–present, Clemson University, School of Computing: Complexity Theory, Data Structures, Artificial Intelligence, Algorithms, CpSc 102 (Java Programming), CpSc 111 (C programming), CpSc 101 (C programming).

2008–present, Clemson University, Dept of Mathematical Sciences: Discrete Mathematics, Graph Theory, Linear Algebra and Matrix Theory.

### *New Course Development:*

For several of the courses mentioned above, I developed materials, course notes, visual aids, etc, from scratch. In particular, I am author of in-house texts on Networks, Algorithms, and Programming.

## University and Public Service:

### *Committees:*

At the University of Natal:

University-wide: Broad Transformation Forum, Senate, University Timetabling Committee, Review Committee on Computer Science and Information Systems (Pietermaritzburg campus), Review Committee on School of Chemistry and Applied Chemistry (Durban campus).

College: Honours and Undergraduate Management, Faculty Planning, Timetabling, and Research.

At Clemson University:

University-wide: Faculty Senate, Academic Calendar Planning Committee.

School of Computing: Advisory Committee, Research Committee, Awards Committee, Graduate Committee and departmental Webmaster.

Dept of Mathematical Sciences: two search committees; Graduate Committee

*Other Service:*

Honorary faculty president, Science Students Council (1996) at University of Natal.  
Organizer, Clemson mini-conference (2005–).

**Miscellaneous:**

Managing editor of “Discrete Mathematics” (2007–).

Member editorial board of “Utilitas Mathematica”; technical editor (1998), managing editor (graph theory) (2003–2007); Co-editor for special issue in honour of Henda C. Swart (2006).

Founder member editorial board, AKCE International Journal of Graph Theory and Combinatorics.

Thesis examiner for University of Cape Town, University of Pretoria, University of KwaZulu-Natal, Manonmaniam Sundaranar University, Bharathidasan University, National University of Singapore, University of South Africa. External course moderator for University of Durban-Westville, University of Zululand, ML Sultan Technikon. External reviewer for: University of Cyprus, South African National Research Foundation, National Security Agency.

*September 15, 2009*