

Curriculum Vitae

April 2011

Name: Dan Steven Archdeacon

Position: Professor, University of Vermont

Field: Graph Theory and Combinatorics

Work Address: Department of Mathematics and Statistics
The University of Vermont
Burlington, VT 05401 USA

Home Address: 4797 Oak Hill Rd.
Williston, VT 05495

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Education: Wilmington College, Wilmington, Ohio, 9/73 - 6/74
Earlham College, Richmond, Indiana, 9/72-6/73 & 9/74 - 6/75
The Ohio State University, Columbus, Ohio, 6/75 – 8/80

Positions Held: Teaching Associate, The Ohio State University, 9/75 – 12/79
Presidential Fellow, The Ohio State University, 1/80 – 8/80
Instructor, The University of Kansas, 8/80 – 8/82
Assistant Professor, The University of Vermont, 9/82 – 8/87
Associate Professor, The University of Vermont, 9/87 – 8/94
Director of Mathematics Graduate Program, The University of Vermont, 9/90 - 9/95
Fulbright Teaching Fellow, Riga's Commerce School, 1/93 - 5/93
Professor, The University of Vermont, 9/94 - present
Secondary Appt. in Dept. of Computer Science, 9/94 - 6/01
Visiting Lecturer, University of Auckland, 1/96 - 6/96
Interim Chair, Department of Computer Science, 6/99-4/00
Visiting Professor, University of Auckland, 9/99 - 12/99
Visiting Professor, Yokohama National University, 1/03 - 5/03
Visiting Professor, Technical University of Denmark, 9/06 – 12/06
Visiting Research Professor, The Open University, 1/10 – 7/10

Honors: University Scholar, University of Vermont 9/03-8/04

Member: American Mathematical Society
Mathematical Association of America
Institute of Combinatorics and its Applications (Foundation Fellow)
Combinatorial Mathematics Society of Australasia (Lifetime Member)

Editor: *Journal of Combinatorial Theory, Series B* (1987-1999)
Journal of Graph Theory, (2000 – 2007), Managing Editor, ran the journal offices

Refereeing and Reviewing: *Acta Mathematica Sinica, Aequationes Mathematicae, American Mathematical Monthly, Arabian Journal for Science and Engineering, Ars Combinatoria, Australasian Journal of Combinatorics, Canadian Journal of Mathematics, COCOON Conference Proceedings, Combinatorica, Congressus Numerantium, Cubo Mathematica, Discrete Mathematics, Discrete Applied Mathematics, Edinburgh Mathematical Society, The Electronic Journal of Combinatorics, The European Journal of Combinatorics, International Journal of Mathematics and Mathematical Sciences, Israel Journal of Mathematics, The Journal of Algorithms, Journal of Applied Mathematics and Computing, The Journal of Combinatorial Designs, The Journal of Combinatorial Theory, Journal of Franklin Institute, The Journal of Graph Theory, Mathematica Slovaca, Punjab University Journal of Mathematics, Random Structures and Algorithms, The Rocky Mountain Journal of Mathematics, The SIAM Journal of Computing, the SIAM Journal of Discrete Mathematics, Slovakian Journal of Mathematics, NSF, NSA, Deutsche Forschungsgemeinschaft, US-Israel Binational Science Foundation, *Quiriosity*³, *Mathematical Reviews, Zentralblatt fur Mathematik**

External Research Grants:

NSF-EPSCoR Research Grant: Multi-coverings of graphs by cycles (6/87-8/87) \$3,000.
NSF-EPSCoR Research Grant: Embeddings of Covering Graphs and Surface Representability (10/88-9/89) \$6,666.
NSF-EPSCoR Research Grant: Covering Graphs (10/89-9/90) \$7,000.
NSF Grant: Covering Graphs (4/91-3/93) \$41,300.

Conference Grants:

NSF-EPSCoR Grant: The Second Summer Workshop on Combinatorics and Graph Theory, with J. Dinitz (6/88-8/88) \$5,200.
NSF-EPSCoR Grant: The Third Summer Workshop on Combinatorics and Graph Theory, with J. Dinitz (3/89-10/89) \$6,200.
NSF-EPSCoR Grant: Northeast Symposium on Graph Theory and Combinatorics, with J. Dinitz (3/89-2/90) \$300.
NSF-EPSCoR Grant: The Fourth Summer Workshop on Combinatorics and Graph Theory, with J. Dinitz (3/90-10/90) \$5,000.
NSF-EPSCoR Grant: The Fifth Summer Workshop on Combinatorics and Graph Theory, with J. Dinitz (3/91-10/91) \$4,200.
NSF-EPSCoR Grant: Graph Theory Seminar (4/91-4/92) \$2,800.
NSF Grant: The Sixth Summer Workshop on Combinatorics and Graph Theory, with J. Dinitz (6/94-5/95) \$9,600.
ICA Grant: The Seventh Summer Workshop on Combinatorics and Graph Theory, with J. Dinitz (8/95) \$500.

Other Grants:

The University of Kansas General Research Fund Grant, Realization of Graphs and More Complicated Structures (7/81-8/81) \$2,782.

The University of Kansas General Research Fund Grant: Embedding Identified Disk Spaces into Surfaces (7/82-8/82) \$2,032.

University of Vermont Instructional Incentive Grant: A New Approach to Teaching Math 173, with J. Dinitz (6/83-8/83) \$3,350.

University of Vermont Committee on Research and Scholarship Summer Research Fellowship: Network Emulations (6/88-8/88) \$2,000.

Conference Organization:

The First Vermont Summer Workshop on Combinatorics,
with J. Dinitz (6/87) Budget \$1,698

The Second Vermont Summer Workshop on Combinatorics and Graph Theory,
with J. Dinitz (7/88) Budget \$5,200

The Third Vermont Summer Workshop on Combinatorics and Graph Theory,
with J. Dinitz (6/89) Budget \$6,000

The Northeast Symposium on Graph Theory and Combinatorics,
with J. Dinitz (11/89) Budget \$300

The Fourth Vermont Summer Workshop on Combinatorics and Graph Theory,
with J. Dinitz (6/90) Budget \$5,000

The Fifth Vermont Summer Workshop on Combinatorics and Graph Theory,
with J. Dinitz (6/91) Budget \$4,200

The Sixth Vermont Summer Workshop on Combinatorics and Graph Theory,
with J. Dinitz (6/94) Budget \$12,400

The Seventh Vermont Summer Workshop on Combinatorics and Graph Theory,
with J. Dinitz (8/95) Budget \$500

AMS/MAA Mathfest, Special Session on Problems in Topological Graph Theory
at the Summer Meetings (8/95)

MAA Mathfest, Special Session on Discrete Geometry at the Summer Meetings (7/02)

SIAM Discrete Mathematics Meeting (6/08) was local host and program coordinator

Discrete Mathematics Days (7/20), with J. Ellis-Monaghan and G. Pangborn

Master's Students:

Ian Stobert

Jason Mimick

Marisa Debowsky

Patricia Fogerty

Mary Cox

Sarah Nordle

Ph.D. Students:

Melanie Brown, Surface embeddings of families of combinatorial designs, 2010

Kirsten Stor, Drawing graphs as superthrackles, 2010

Refereed Publications:

- 1) Some new row complete latin squares, by D. Archdeacon, J. Dinitz, D. Stinson and T. Tillson, *J. Combin. Th. Ser. A* **29** (1980) 395-398.
- 2) A Kuratowski theorem for the projective plane, by D. Archdeacon, *J. of Graph Theory* **5** (1981) 243-246.
- 3) The generalized genus and its applications to topological graph theory, by D. Archdeacon, *Congressus Numerantium* **33** (1981) 379-386.
- 4) Coupled colorings of planar maps, by D. Archdeacon, *Congressus Numerantium* **39** (1983) 89-94.
- 5) Face colorings of embedded graphs, by D. Archdeacon, *J. of Graph Theory* **8** (1984) 387-398.
- 6) Sets of pairwise orthogonal 1-factorizations of K_{10} , by D. Archdeacon, J. Dinitz and W. Wallis, *Congressus Numerantium* **43** (1984) 45-79.
- 7) V-Squares, by D. Archdeacon, J. Dinitz and D. Stinson, *Ars Combinatoria* **19** (1985) 161-174.
- 8) On cubic graphs which are irreducible for nonorientable surfaces, by D. Archdeacon and J.P. Huneke, *J. Combin. Th. Ser. B* **39** (1985) 233-264.
- 9) Orthogonal edge colorings of graphs, by D. Archdeacon, J. Dinitz and F. Harary, *Congressus Numerantium* **47** (1985) 49-67.
- 10) The nonorientable genus is additive, by D. Archdeacon, *J. of Graph Theory* **10** (1986) 363-383.
- 11) The orientable genus is nonadditive, by D. Archdeacon, *J. of Graph Theory* **10** (1986) 385-401.
- 12) Coverings of graphs by cycles, by D. Archdeacon, *Congressus Numerantium* **53** (1986) 7-14.
- 13) Circuits in 4-regular plane graphs, by D. Archdeacon and R.B. Richter, *Congressus Numerantium* **53** (1986) 39-47.
- 14) A note on defective colorings of graphs in surfaces, by D. Archdeacon, *J. of Graph Theory* **11** (1987) 517-519.
- 15) Factorizations and orthogonal matchings, by D. Archdeacon and J. Dinitz, *Congressus Numerantium* **58** (1987) 69-74.
- 16) On the parity of crossing numbers, by D. Archdeacon and R.B. Richter, *J. of Graph Theory* **12** (1988) 307-310.

- 17) Calculations on the average genus and genus distribution of graphs, by D. Archdeacon, *Congressus Numerantium* **67** (1988) 114-124.
- 18) A Kuratowski theorem for nonorientable surfaces, by D. Archdeacon and J.P. Huneke, *J. Combin. Th. Ser B* **46** (1989) 173-231.
- 19) The genus of amalgamations, by D. Archdeacon, *Annals of the New York Acad. of Sciences* **555** (1989) 17-20.
- 20) Constructing polygonal graphs of large girth and degree, by D. Archdeacon and M. Perkel, *Congressus Numerantium* **70** (1990) 81-85.
- 21) On the parity of planar covers, by D. Archdeacon and R.B. Richter, *J. of Graph Theory* **14** (1990) 199-204.
- 22) The complexity of the graph embedding problem, by D. Archdeacon, *Topics in Combinatorics and Graph Theory*, (R. Bodendiek, R. Henn Eds.) Physica-Verlag, Heidelberg (1990) 59-63.
- 23) Relative irreducibility, by D. Archdeacon and J.P. Huneke, *Contemporary Methods in Graph Theory*, R. Bodendiek (Ed.) Wissenschaftsverlag, Mannheim. (1990) 83-98.
- 24) Constructing indecomposable 1-factorizations of the complete multigraph, by D. Archdeacon and J. Dinitz, *Annals of Discrete Math.* **92** (1991) 9-19.
- 25) Densely embedded graphs, by D. Archdeacon, *J. Combin. Th. Ser. B* **54** (1992) 13-36.
- 26) Construction and classification of self-dual polyhedra, by D. Archdeacon and R.B. Richter, *J. Combin. Th. Ser. B* **54** (1992) 37-63.
- 27) Self-dual embeddings of complete bipartite graphs, by D. Archdeacon and N. Hartsfield, *J. Combin. Th. Ser. B* **54** (1992) 249-256.
- 28) The medial graph and voltage-current duality, by D. Archdeacon, *Discrete Math.* **104** (1992) 111-141.
- 29) Self-dual regular maps from medial graphs, by D. Archdeacon, J. Siran, and M. Skoviera, *Acta Mathematica Univ. Comeniana* Vol. LXI, **1** (1992) 57-64.
- 30) A survey of self-dual polyhedra, by D. Archdeacon, Fourth Czechoslovak Symposium on Combinatorics, Graphs and Complexity (J. Nešetřil and M. Fiedler, Eds.) Elsevier Science (1992) 5-12.
- 31) Indecomposable triple systems exist for all λ , by D. Archdeacon and J. Dinitz, *Discrete Math.* **113** (1993) 1-6.

- 32) The construction of self-dual projective polyhedra, by D. Archdeacon and S. Negami, *J. Combin. Th. Ser. B* **59** (1993) 122-131.
- 33) Cycles, cocycles, and diagonals: A characterization of planar graphs, by D. Archdeacon, C.P. Bonnington and C.H.C. Little, in *Planar Graphs* Vol 8, DIMACS series in discrete mathematics and theoretical computer science, (William T. Trotter Ed.) AMS (1993) 1-4.
- 34) Self-dual embeddings of complete multipartite graphs, by D. Archdeacon, *J. of Graph Theory* **18** (1994) 735-749.
- 35) Branched coverings of maps and lifts of map homomorphisms, by D. Archdeacon, R.B. Richter, J. Siran, and M. Skoviera, *Australasian Journal of Combinatorics* **9** (1994) 109-121.
- 36) An algebraic characterization of planar graphs, by D. Archdeacon, C.P. Bonnington and C.H.C. Little, *J. of Graph Theory* **19-2** (1995) 237-250.
- 37) The genus of a random graph, by D. Archdeacon and D. Grable, *Discrete Math.* **142** (1995) 21-37.
- 38) Maximum genus and connectivity, by D. Archdeacon, J. Chen and J.L. Gross, *Discrete Math.* **149** (1996) 19-29.
- 39) Nonhamiltonian triangulations of large connectivity and representativity, by D. Archdeacon, N. Hartsfield, and C.H.C. Little, *J. Combin. Theory Ser. B* **68** (1996) 45-55.
- 40) The Hadwiger number for the product of two cycles, by D. Archdeacon, C.P. Bonnington, J. Pearson, and J. Siran, *Combinatorics, Complexity and Logic*, (Bridges et al, Eds.) Springer (1996) 113-120.
- 41) Topological graph theory: a survey, by D. Archdeacon, *Congressus Numerantium* **115** (1996) 5-54.
- 42) Constructing and forbidding automorphisms in lifted maps, by D. Archdeacon, Pavol Gvozdzjak and Jozef Siran, *Mathematica Slovaca* **47** (1997) 113-129.
- 43) Characterizing planarity using theta graphs, by D. Archdeacon and J. Siran *J. of Graph Theory* **27** (1998) 17-20.
- 44) Obstruction sets for outer-projective-planar graphs, D. Archdeacon, N.Hartsfield, C.H.C. Little, and B.-Mohar, *Ars Combinatoria* **49** (1998) 113-127
- 45) A Nebesky-type characterization for relative maximum genus, by D. Archdeacon, C.P. Bonnington and J. Siran, *J. Combin. Theory Ser. B* **73** (1998) 77-98.

- 46) Problems in topological graph theory--questions I can't answer, by D. Archdeacon, *Proceedings of the 10th Workshop on Topological Graph Theory* (Yokohama, 1998). *Yokohama Math. J.* **47** (1999), Special Issue, 89-92.
- 47) Line graphs of covering graphs are covering graphs, by D. Archdeacon, J. Lee, and M.Y. Sohn, *Bull. Korean Math. Soc.* **37-3** (2000) 487-491.
- 48) Four-terminal reducibility and projective-planar wye-delta-wye-reducible graphs, by D. Archdeacon, C. Colbourn, I. Gitler, and J.S. Provan. *J. of Graph Theory* **33-2** (2000) 83-93.
- 49) Bipartite covering graphs, by D. Archdeacon, J.H. Kwak, J. Lee, and M.Y. Sohn, *Discrete Math.* **214** (2000) 51-63.
- 50) Two maps on one surface, by D. Archdeacon and C.P. Bonnington. *J. of Graph Theory* **36** (2001) 198-216.
- 51) Chromatic numbers of quadrangulations on closed surfaces, by D. Archdeacon, J. Hutchinson, A. Nakamoto, S. Negami, and K. Ota., *J. of Graph Theory* **37** (2001) 100-114.
- 52) Obstruction sets for outer-cylindrical graphs, by D. Archdeacon, C.P. Bonnington, N. Dean, N. Hartsfield, and K. Scott, *J. of Graph Theory* **38-1** (2001) 42-64.
- 53) Trading crossings for handles and crosscaps, by D. Archdeacon, C.P. Bonnington and J. Siran, *J. of Graph Theory* **38-4** (2001) 230-243.
- 54) Sewing ribbons on graphs in space, by D. Archdeacon, R.B. Richter, P. Bonnington, and J. Siran, *J. of Combin. Th. Ser. B* **86-1** (2002) 1-26.
- 55) Nesting points in the sphere, by D. Archdeacon and F. Sagols, *Discrete Math.*, **244** (1-3) (2002) 5-16.
- 56) Two graphs without planar covers, by D. Archdeacon, *J. of Graph Theory* **41** (2002) 318-326.
- 57) Topological graph theory: a picture is worth a thousand words, by D. Archdeacon, *Cubo Matematica Educacional* Vol. **5**, no.1, Enero (2003) 103-114.
- 58) Halin's theorem for the Mobius strip, by D. Archdeacon, C.P. Bonnington, M. Debowsky, and M. Prestridge, *Ars Combinatoria* **68** (2003) 243-256.
- 59) Variations on a theme of Kuratowski, by D. Archdeacon, *Discrete Math.* **302** (2005) 22-31
- 60) Regular clique covers of graphs, by D. Archdeacon, D. Froncek, R. Jajcay, Z. Ryjacek, and J. Siran, *Australas. J. Combin.* **27** (2003) 307-316.

- 61) Representativity, Chapter 7.7 in Handbook of Graph Theory: Discrete Mathematics and its Applications, (J. Gross and J. Yellen Eds.), CRC Press (2003)
- 62) Halin's theorem for cubic graphs on the annulus, by D. Archdeacon, C.P. Bonnington and J. Siran, *Discrete. Math* **281** (2004) pp. 13-25.
- 63) Cycle decompositions in the complete bipartite graph minus a one-factor, by D. Archdeacon, M. Debowsky, J. Dinitz, and H. Gavlas, *Discrete Math.* **284** (2004) 37-43.
- 64) Obstruction sets for cubic graphs on the spindle surface, by D. Archdeacon and C.P. Bonnington, *Journal of Combin. Th. Ser. B* **91** (2004) 229-252.
- 65) Some remarks on domination, D. Archdeacon, J. Ellis-Monaghan, D. Fisher, D. Froncek, P.C.B. Lam, S. Seager, B. Wei and R. Yuster, *J. Graph Theory* **46-3** (2004) 207-210.
- 66) A characterization of projective-planar signed graphs, by D. Archdeacon and M. Debowsky, *Discrete Math.* **290** (2005) 109-116.
- 67) How to exhibit toroidal maps in space, by D. Archdeacon, C.P. Bonnington, and J. Ellis-Monaghan, *Discrete Comput. Geom.* **38** (2007) 573-594.
- 68) Open problems, Chapter 15 in Selected topics in topological graph theory, Cambridge University Press (2009)
- 69) Steiner triple systems, pinched surfaces, and complete multigraphs, by D. Archdeacon, *Journal of Combinatorics* (submitted 2010)
- 70) Representing graphs in Steiner triple systems, by D. Archdeacon, T. Griggs, and P. Costas, *Graphs and Combinatorics* (submitted 2010)
- 71) Trinity symmetry and kaleidoscopic regular maps, by D. Archdeacon, M. Conder, and J. Siran, *London Mathematical Society* (submitted 2010)
- 72) Regular pinched maps, by D. Archdeacon, C.P. Bonnington, and J. Siran, (in preparation)
- 73) Drawing graphs with few edge-lengths (in preparation)
- 74) Orthogonal Heffter systems and graph embeddings (in preparation)

Other Papers:

- a) Relating the thickness and genus of a graph, with B. Richter, UVM Research Report No. 87-20.
- b) Graphs with constant crossing number modulo n , with B. Richter, UVM Research Report No. 87-21.

- c) Small indecomposable triple systems with $\lambda = 5$, with J. Dinitz. UVM Research Report No. 90-06.
- d) A maximal clique in the coauthorship graph, with et al. UVM Research Report No. 90-07. (Humorous article).
- e) The converse to a discrete Jordan curve theorem is false. UVM Research Report No. 90-09.
- f) The construction of centrally symmetric self-dual polyhedra. UVM Research Report 91-10.
- g) How planar is a nonplanar map? I (and II), *Newsletter of the SIAM Activity Group on Discrete Mathematics*, Vol 6 No. 2 (and No. 3) (1996).
- h) Maximum genus, connectivity, and Nebesky's theorem, by D. Archdeacon, J. Chen, D. Li, Y. Liu, Y. Huang, S. Kanchi, R. Nedela and M. Skoviera
- i) Problems in topological graph theory (an ongoing www list of problems, now becoming stale, accessible through my home page).