Daniel Horsley

School of Mathematical Sciences
Monash University
VIC 3800
Australia

Date of birth: 21 May 1981
Office phone: +61 (3) 9905-4459
Email: danhorsley@gmail.com
Citizenship: Australian

Employment

2014 - present: Senior Lecturer at Monash University

2011 - 2014: Lecturer at Monash University

2010 - 2011: Postdoctoral Scholar at Arizona State University

2008 - 2010: AARMS Postdoctoral Research Fellow at Memorial University of Newfoundland

2007 - 2008: Postdoctoral Research Fellow at The University of Queensland

Education

PhD, Mathematics (2008) — The University of Queensland

Bachelor of Science (Honours Class 1) (2002) — The University of Queensland

External grant funding

- ARC Future Fellowship "Edge decomposition of dense graphs" (2017–2021)
- ARC Discovery Project Grant "Matchings in combinatorial structures" (2015–2019).
- ARC Discovery Early Career Researcher Award "Partitioning and ordering Steiner triple systems" (2012–2016).
- ARC Discovery Project Grant "A new approach to compressed sensing" (2012–2014).
- Atlantic Association for Research in the Mathematical Sciences Postdoctoral Fellowship (2008–2010).

Publications

[30] D. Horsley, Generalising Fisher's inequality to coverings and packings, *Combinatorica*, in press (accepted 13 Aug 2015).

[29] D. Horsley and R.A. Hoyte, Doyen-Wilson Results for Odd Length Cycle Systems *J. Combin. Des.* **30** (2016), 308–335.

[28] Disjoint spread systems and fault location C.J. Colbourn, B. Fan and D. Horsley, *SIAM Journal on Discrete Mathematics* **30** (2016), 2011–2026.

[27] B. Alspach, D. Bryant, D. Horsley, B. Maenhaut and V. Scharaschkin, On factorisations of complete graphs into circulant graphs and the Oberwolfach problem, *Ars Math. Contemp.* **11** (2016) 157–173.

[26] N. Francetić, S. Herke and D. Horsley, More nonexistence results for symmetric pair coverings, *Linear Algebra Appl.* **487** (2015), 43–73.

[25] D. Bryant and D. Horsley, Steiner triple systems without parallel classes, *SIAM J. Discrete Math.* **29** (2015), 693–696.

[24] D. Horsley, Embedding Partial Steiner Triple Systems with Few Triples, *SIAM J. Discrete Math.* **28** (2014), 1199–1213.

[23] D. Horsley, Small Embeddings of Partial Steiner Triple Systems, *J. Combin. Des.* **22** (2014), 343–365.

[22] D. Bryant, D. Horsley, and W. Pettersson, Cycle decompositions V: Complete graphs into cycles of arbitrary lengths, *Proc. London Math. Soc.* **108** (2014), 1153–1192.

[21] D. Horsley and D.A. Pike, On balanced incomplete block designs with specified weak chromatic number, *J. Combin. Theory Ser. A* **123** (2014), 123–153.

[20] P. Danziger, D. Horsley and B.S. Webb, Resolvability of infinite designs, *J. Combin. Theory Ser. A* **123** (2014), 73–85.

[19] Y.M. Chee, C.J. Colbourn, D. Horsley and J. Zhou, Sequence Covering Arrays, *SIAM J. Discrete Math.* **27** (2013), 1844–1861.

[18] D. Bryant and D. Horsley, A second infinite family of Steiner triple systems without almost parallel classes, *J. Combin. Theory Ser. A* **120** (2013), 1851–1854.

[17] C.J. Colbourn, D. Horsley and C. Wang, Colouring Triples in Every Way: A Conjecture, *Quaderni di Matematica* **28** (2012), 257–286.

[16] C.J. Colbourn, D. Horsley and C. Wang, Trails of triples in partial triple systems, *Des. Codes Cryptogr.* **6** (2012), 199–212.

[15] C.J. Colbourn, D. Horsley and V.R. Syrotiuk, Strengthening hash families and compressive sensing, *J. Discrete Algorithms* **16** (2012), 170–186.

[14] D. Horsley, Decomposing various graphs into short even-length cycles. *Ann. Comb.* **16** (2012), 571–589.

[13] D. Bryant, M. Buchanan, D. Horsley, B. Maenhaut and V. Scharaschkin, The non-existence of certain pair covering designs with at least as many points as blocks, *Combinatorica*, **31** (2011), 507–528.

[12] C.J. Colbourn, D. Horsley and C. McLean, Compressive sensing matrices and hash families, *IEEE Trans. on Communications* **59** (2011), 1840–1845.

[11] D. Horsley, D.A. Pike and A. Sanaei, Existential Closure of Block Intersection Graphs of Infinite Designs Having Infinite Block Size, *J. Combin. Des.* **19** (2011), 317–327.

[10] D. Horsley, Maximum packings of the complete graph with uniform length cycles, *J. Graph Theory* **68** (2011), 1–7.

[9] D. Bryant, D. Horsley, B. Maenhaut and B.R. Smith, Cycle decompositions of complete multigraphs, *J. Combin. Des.* **19** (2011), 42–69.

[8] D. Bryant and D. Horsley, An asymptotic solution to the cycle decomposition problem for complete graphs, *J. Combin. Theory Ser. A* **117** (2010), 1258–1284.

[7] D. Horsley and D.A. Pike, On cycle systems with specified weak chromatic number, *J. Combin. Theory Ser. A* **117** (2010), 1195–1206.

[6] D. Horsley and D.A. Pike, Embedding partial odd-cycle systems in systems with orders in all

admissible congruence classes, *J. Combin. Des.* **18** (2010), 202–208.

[5] D. Bryant and D. Horsley, Decompositions of complete graphs into long cycles, *Bull. Lond. Math. Soc.* **41** (2009), 927–934.

[4] D. Bryant and D. Horsley, A proof of Lindner's conjecture on embeddings of partial Steiner triple systems, *J. Combin. Des.* **17** (2009), 63–89.

[3] D. Bryant and D. Horsley, Packing cycles in complete graphs, *J. Combin. Theory Ser. B* **98** (2008), 1014–1037.

[2] D. Bryant and D. Horsley, Steiner triple systems with two disjoint subsystems, *J. Combin. Des.* **14** (2006), 14–24.

[1] D. Bryant, D. Horsley and B. Maenhaut, Decompositions into 2-regular subgraphs and equitable partial cycle decompositions, *J. Combin. Theory Ser. B* **93** (2005), 67–72.

Teaching

Monash University

Autumn 2017: "Discrete Mathematics for Computer Science" (first year subject) (I lectured the first half and was course coordinator). In progress.

Summer 2017: "Mathematical Foundations for Data Science" (online only Graduate Diploma subject) (I created the course materials and taught the course). Overall student evaluation median of 4.88

Autumn 2016: "Discrete Mathematics for Computer Science" (first year subject) (I lectured the first half and was course coordinator). Overall student evaluation median of 4.29

Autumn 2015: "Discrete Mathematics for Computer Science" (first year subject) (I lectured the first half and was course coordinator). Overall student evaluation median of 4.29

Autumn 2014: "Discrete Mathematics for Computer Science" (first year subject) (I lectured the first half and was course coordinator). Overall student evaluation median of 4.47

Autumn 2013: "Discrete Mathematics for Computer Science" (first year subject) (I lectured the first half and was course coordinator). Overall student evaluation median of 4.84 out of 5.

Spring 2012: "Algebra and Number Theory II" (I lectured the first half). Overall student evaluation median of 4.5 out of 5.

Autumn 2012: "Discrete Mathematics for Computer Science" (first year subject) (I lectured the first half and was course coordinator). Overall student evaluation median of 4.64 out of 5.

Spring 2011: "Algebra and Number Theory II" (third year subject) (I lectured half). Overall student evaluation medians of 4.81 out of 5.

Autumn 2011: "Algebra and Number Theory I" (second/third year subject) (I lectured the second half). Overall student evaluation medians of 4.50 out of 5 and 4.21 out of 5.

Autumn 2011: "Discrete Mathematics for Computer Science" (first year subject) (I lectured the first half). Overall student evaluation medians of 4.62 out of 5 and 4.22 out of 5.

Memorial University of Newfoundland

Fall 2009: "Introduction to Number Theory" (third year subject). Overall student evaluation average of 4.87 out of 5 (in the top decile compared with all other courses).

Fall 2008: "Introduction to Number Theory" (third year subject). Overall student evaluation average of 4.44 out of 5 (in the 8th decile compared with all other courses).

The University of Queensland

Spring 2006: "Set Theory and Mathematical Logic" (third year subject) (I lectured the set theory half and was course coordinator). Overall student evaluation average of 4.50 out of 5 (in the 4th quartile compared with "equivalent" courses).

Autumn 2006: Guest lecturer in "Advanced Combinatorics" (fourth year subject).

2001-2006: Tutor for a wide variety of mathematics subjects.

Professional Service Roles

- Member of the editorial board for *Journal of Combinatorial Designs.*
- Managing editor for *Australasian Journal of Combinatorics.*

Conference presentations

Invited plenary presentations

- 26th British Combinatorial Conference, Glasgow, UK, June/July 2017 (to occur).
- Interactions with Combinatorics, Birmingham, UK, June 2017 (to occur).
- 2016 Midwest Combinatorics Conference, Normal, USA, October 2016.
- 3rd Istanbul Design Theory, Graph Theory and Combinatorics Workshop, Istanbul, Turkey, June 2016.
- Combinatorics 2016, Maratea, Italy, May/June 2016.
- 5th Early Career Workshop of the Australian Mathematical Society, Leura, Australia, September 2013.
- 36th Australasian Conference on Combinatorial Mathematics and Combinatorial Computing, UNSW, Australia, December 2012.
- Workshop on Coding, Cryptology and Combinatorial Designs, Singapore, May/June 2011.

Other presentations

- 40th Australasian Conference on Combinatorial Mathematics and Combinatorial Computing, Newcastle, Australia, December 2016.
- 39th Australasian Conference on Combinatorial Mathematics and Combinatorial Computing, Brisbane, Australia, December 2015.
- Combinatorics and Computer Algebra 2015, Fort Collins, USA, July 2015.
- 25th British Combinatorial Conference, Coventry, UK, June/July 2015.
- 38th Australasian Conference on Combinatorial Mathematics and Combinatorial Computing, Wellington, New Zealand, December 2014.
- International conference on graphs and combinatorics, Beijing, China, August 2014.
- The 19th International Linear Algebra Society Conference, Seoul, Korea, August 2014.
- 37th Australasian Conference on Combinatorial Mathematics and Combinatorial Computing, Perth, Australia, December 2013.
- 57th Annual Meeting of the Australian Mathematical Society, Sydney, Australia, September/October 2013.

- 24th British Combinatorial Conference, London, UK, June/July 2013.
- 4th Canadian Discrete and Algorithmic Mathematics Conference, St John's, Canada, June 2013 (two invited minisymposium presentations).
- 18th Coast Combinatorics Conference, Kona, US, July 2013.
- SIAM Conference on Discrete Mathematics, Halifax, Canada, June 2012 (invited minisymposium presentation).
- 35th Australasian Conference on Combinatorial Mathematics and Combinatorial Computing, Monash University, Australia, December 2011.
- 23rd British Combinatorial Conference, University of Exeter, UK, July 2011.
- Combinatorics 2010, Verbania, Italy, June/July 2010.
- SIAM Conference on Discrete Mathematics, Austin, USA, June 2010.
- 23rd Midwest Conference on Combinatorics, Cryptography, and Computing, Rochester Institute of Technology, USA, October 2009.
- 21st British Combinatorial Conference, University of Reading, UK, July 2007.
- Workshop on Designs, Graphs, and their Topological Representations, University of Queensland, Australia, April 2007.
- 31st Australasian Conference on Combinatorial Mathematics and Combinatorial Computing, Alice Springs, Australia, July 2006.
- 30th Australasian Conference on Combinatorial Mathematics and Combinatorial Computing, University of Queensland, Australia, Dec 2005.
- 2004 NZIMA Conference in Combinatorics/29th Australasian Conference in Combinatorial Mathematics and Combinatorial Computing, Lake Taupo, New Zealand, Dec 2004.