

CURRICULUM VITAE – DAVID CONLON

POSITIONS HELD	2019- : Professor, California Institute of Technology. 2016-19: Professor, University of Oxford. 2011-16: Associate Professor, University of Oxford. 2011-19: Tutorial Fellow, Wadham College, Oxford. 2010-18: Royal Society University Research Fellow. 2007-10: Junior Research Fellow, St John's College, Cambridge.
EDUCATION	2004-09: PhD in mathematics, University of Cambridge. Advisor: W.T. Gowers Title: <i>Upper bounds for Ramsey numbers</i> . 2003-04: Part III mathematics, University of Cambridge. With distinction. 1999-2003: BA in mathematics, Trinity College Dublin. First class degree with gold medal.
AWARDS AND DISTINCTIONS	2019: LMS Whitehead Prize. 2018: Kalman Visiting Fellowship, University of Auckland. 2018: Moore Distinguished Scholar, California Institute of Technology. 2014: Sectional speaker at the ICM. 2011: European Prize in Combinatorics. 2006: Smith–Knight Prize, University of Cambridge.
RESEARCH GRANTS	2021-24: NSF Award. 2016-19: ERC Starting Grant. 2010-18: Royal Society University Research Fellowship.
PUBLICATIONS	1. Homogeneous structures in subset sums and non-averaging sets, with J. Fox and H. T. Pham, submitted. 2. Everywhere unbalanced configurations, with J. Lim, submitted. 3. Ramsey numbers and the Zarankiewicz problem, with S. Mattheus, D. Mubayi and J. Verstraëte, submitted. 4. Simplicial Turán problems, with S. Piga and B. Schülke, submitted. 5. Extremal numbers and Sidorenko's conjecture, with J. Lee and A. Sidorenko, submitted. 6. Sums of linear transformations, with J. Lim, submitted. 7. Domination inequalities and dominating graphs, with J. Lee, submitted. 8. Subset sums, completeness and colorings, with J. Fox and H. T. Pham, submitted. 9. Difference sets in \mathbb{R}^d , with J. Lim, to appear in <i>Israel J. Math.</i>

10. Set-coloring Ramsey numbers and error-correcting codes near the zero-rate threshold, with J. Fox, H. T. Pham and Y. Zhao, to appear in *IEEE Trans. Inform. Theory*.
11. Set-coloring Ramsey numbers via codes, with J. Fox, X. He, D. Mubayi, A. Suk and J. Verstraëte, to appear in *Studia Sci. Math. Hungar.*
12. On the size-Ramsey number of grids, with R. Nenadov and M. Trujić, to appear in *Combin. Probab. Comput.*
13. Fixing a hole, with J. Lim, to appear in *Discrete Comput. Geom.*
14. Monochromatic components with many edges, with S. Luo and M. Tyomkyn, to appear in *J. Combin.*
15. Intervals in the Hales–Jewett theorem, with N. Kamčev, to appear in *Eur. J. Combin.*
16. A new bound for the Brown–Erdős–Sós problem, with L. Gishboliner, Y. Levanzov and A. Shapira, *J. Combin. Theory Ser. B* **158** (2023), 1–35.
17. Sums of transcendental dilates, with J. Lim, *Bull. London Math. Soc.* **55** (2023), 2400–2406.
18. Three early problems on size Ramsey numbers, with J. Fox and Y. Wigderson, *Combinatorica* **43** (2023), 743–768.
19. Hypergraph Ramsey numbers of cliques versus stars, with J. Fox, X. He, D. Mubayi, A. Suk and J. Verstraëte, *Random Structures Algorithms* **63** (2023), 610–623.
20. More on lines in Euclidean Ramsey theory, with Yu-Han Wu, *C. R. Math. Acad. Sci. Paris.* **361** (2023), 897–901.
21. Off-diagonal book Ramsey numbers, with J. Fox and Y. Wigderson, *Combin. Probab. Comput.* **32** (2023), 516–545.
22. Ramsey numbers of trails and circuits, with M. Tyomkyn, *J. Graph Theory* **102** (2023), 194–196.
23. Threshold Ramsey multiplicity for paths and even cycles, with J. Fox, B. Sudakov and F. Wei, *Eur. J. Combin.* **107** (2023), 103612.
24. Rational exponents near two, with O. Janzer, *Adv. Comb.* 2022, Paper No. 9, 10 pp.
25. The upper logarithmic density of monochromatic subset sums, with J. Fox and H. T. Pham, *Mathematika* **68** (2022), 1292–1301.
26. Which graphs can be counted in C_4 -free graphs?, with J. Fox, B. Sudakov and Y. Zhao, *Pure Appl. Math. Q.* **18** (2022), 2413–2432.
27. The size-Ramsey number of cubic graphs, with R. Nenadov and M. Trujić, *Bull. London Math. Soc.* **54** (2022), 2135–2150.
28. Ramsey numbers of books and quasirandomness, with J. Fox and Y. Wigderson, *Combinatorica* **42** (2022), 309–363.
29. Some remarks on the Zarankiewicz problem, *Math. Proc. Cambridge Philos. Soc.* **173** (2022), 155–161.
30. Threshold Ramsey multiplicity for odd cycles, with J. Fox, B. Sudakov and F. Wei, *Rev. Un. Mat. Argentina* **64** (2022), 49–68.

31. Monochromatic combinatorial lines of length three, *Proc. Amer. Math. Soc.* **150** (2022), 1–4.
32. The regularity method for graphs with few 4-cycles, with J. Fox, B. Sudakov and Y. Zhao, *J. London Math. Soc.* **104** (2021), 2376–2401.
33. Repeated patterns in proper colourings, with M. Tyomkyn, *SIAM J. Discrete Math.* **35** (2021), 2249–2264.
34. On the extremal number of subdivisions, with J. Lee, *Int. Math. Res. Not.* 2021, 9122–9145.
35. More on the extremal number of subdivisions, with O. Janzer and J. Lee, *Combinatorica* **41** (2021), 465–494.
36. Lower bounds for multicolor Ramsey numbers, with A. Ferber, *Adv. Math.* **378** (2021), 107528.
37. Random multilinear maps and the Erdős box problem, with C. Pohoata and D. Zakharov, *Discrete Anal.* 2021, Paper No. 17, 8 pp.
38. Sidorenko’s conjecture for blow-ups, with J. Lee, *Discrete Anal.* 2021, Paper No. 2, 13 pp.
39. Extremal numbers of cycles revisited, *Amer. Math. Monthly* **128** (2021), 464–466.
40. Hypergraph expanders of all uniformities from Cayley graphs, with J. Tidor and Y. Zhao, *Proc. London Math. Soc.* **121** (2020), 1311–1336.
41. Short proofs of some extremal results III, with J. Fox and B. Sudakov, *Random Structures Algorithms* **57** (2020), 958–982.
42. Ramsey games near the critical threshold, with S. Das, J. Lee and T. Mészáros, *Random Structures Algorithms* **57** (2020), 940–957.
43. Books versus triangles at the extremal density, with J. Fox and B. Sudakov, *SIAM J. Discrete Math.* **34** (2020), 385–398.
44. Graphs with few paths of prescribed length between any two vertices, *Bull. London Math. Soc.* **51** (2019), 1015–1021.
45. Tower-type bounds for unavoidable patterns in words, with J. Fox and B. Sudakov, *Trans. Amer. Math. Soc.* **372** (2019), 6213–6229.
46. The Ramsey number of books, *Adv. Comb.* 2019, Paper No. 3, 12 pp.
47. Hypergraph cuts above the average, with J. Fox, M. Kwan and B. Sudakov, *Israel J. Math.* **233** (2019), 67–111.
48. Hypergraph expanders from Cayley graphs, *Israel J. Math.* **233** (2019), 49–65.
49. Online Ramsey numbers and the Subgraph Query Problem, with J. Fox, A. Grinshpun and X. He, in *Building Bridges II*, 159–194, Springer, 2019.
50. Lines in Euclidean Ramsey theory, with J. Fox, *Discrete Comput. Geom.* **61** (2019), 218–225.
51. Some advances on Sidorenko’s conjecture, with J. H. Kim, C. Lee and J. Lee, *J. London Math. Soc.* **98** (2018), 593–608.
52. Quasirandomness in hypergraphs, with E. Aigner-Horev, H. Hàn, Y. Person and M. Schacht, *Electron. J. Combin.* (2018), P3.34.

53. Rational exponents in extremal graph theory, with B. Bukh, *J. Eur. Math. Soc.* **20** (2018), 1747–1757.
54. Hereditary quasirandomness without regularity, with J. Fox and B. Sudakov, *Math. Proc. Cambridge Philos. Soc.* **164** (2018), 385–399.
55. A note on induced Ramsey numbers, with D. Dellamonica, S. La Fleur, V. Rödl and M. Schacht, in *A Journey through Discrete Mathematics: A Tribute to Jiří Matoušek*, 357–366, Springer, Cham, 2017.
56. Finite reflection groups and graph norms, with J. Lee, *Adv. Math.* **315** (2017), 130–165.
57. Hedgehogs are not colour blind, with J. Fox and V. Rödl, *J. Combin.* **8** (2017), 475–485.
58. Almost-spanning universality in random graphs, with A. Ferber, R. Nenadov and N. Škorić, *Random Structures Algorithms* **50** (2017), 380–393.
59. Freiman homomorphisms on sparse random sets, with W. T. Gowers, *Q. J. Math.* **68** (2017), 275–300.
60. Quasirandom Cayley graphs, with Y. Zhao, *Discrete Anal.* 2017, Paper No. 6, 14 pp.
61. A sequence of triangle-free pseudorandom graphs, *Combin. Probab. Comput.* **26** (2017), 195–200.
62. Ordered Ramsey numbers, with J. Fox, C. Lee and B. Sudakov, *J. Combin. Theory Ser. B* **122** (2017), 353–383.
63. Combinatorial theorems in sparse random sets, with W. T. Gowers, *Ann. of Math.* **184** (2016), 367–454.
64. Short proofs of some extremal results II, with J. Fox and B. Sudakov, *J. Combin. Theory Ser. B* **121** (2016), 173–196.
65. Ramsey numbers of cubes versus cliques, with J. Fox, C. Lee and B. Sudakov, *Combinatorica* **36** (2016), 37–70.
66. Monochromatic cycle partitions in local edge colourings, with M. Stein, *J. Graph Theory* **81** (2016), 134–145.
67. A relative Szemerédi theorem, with J. Fox and Y. Zhao, *Geom. Funct. Anal.* **25** (2015), 733–762.
68. Recent developments in graph Ramsey theory, with J. Fox and B. Sudakov, *Surveys in Combinatorics 2015*, 49–118.
69. On the grid Ramsey problem and related questions, with J. Fox, C. Lee and B. Sudakov, *Int. Math. Res. Not.* **17** (2015), 8052–8084.
70. The Erdős–Gyárfás problem on generalized Ramsey numbers, with J. Fox, C. Lee and B. Sudakov, *Proc. London Math. Soc.* **110** (2015), 1–18.
71. Distinct volume subsets, with J. Fox, W. Gasarch, D. G. Harris, D. Ulrich and S. Zbarsky, *SIAM J. Discrete Math.* **29** (2015), 472–480.
72. Combinatorial theorems relative to a random set, *Proceedings of the International Congress of Mathematicians 2014*, Vol. 4, 303–328.
73. The Green–Tao theorem: an exposition, with J. Fox and Y. Zhao, *EMS Surv. Math. Sci.* **1** (2014), 249–282.

74. On the KLR conjecture in random graphs, with W. T. Gowers, W. Samotij and M. Schacht, *Israel J. Math.* **203** (2014), 535–580.
75. Cycle packing, with J. Fox and B. Sudakov, *Random Structures Algorithms* **45** (2014), 608–626.
76. Ramsey-type results for semi-algebraic relations, with J. Fox, J. Pach, B. Sudakov and A. Suk, *Trans. Amer. Math. Soc.* **366** (2014), 5043–5065.
77. Extremal results in sparse pseudorandom graphs, with J. Fox and Y. Zhao, *Adv. Math.* **256** (2014), 206–290.
78. Short proofs of some extremal results, with J. Fox and B. Sudakov, *Combin. Probab. Comput.* **23** (2014), 8–28.
79. Two extensions of Ramsey’s theorem, with J. Fox and B. Sudakov, *Duke Math. J.* **162** (2013), 2903–2927.
80. Graph removal lemmas, with J. Fox, in *Surveys in Combinatorics 2013*, 1–50.
81. The Ramsey number of dense graphs, *Bull. London Math. Soc.* **45** (2013), 483–496.
82. An improved bound for the stepping-up lemma, with J. Fox and B. Sudakov, *Discrete Appl. Math.* **161** (2013), 1191–1196.
83. On two problems in graph Ramsey theory, with J. Fox and B. Sudakov, *Combinatorica* **32** (2012), 513–535.
84. Bounds for graph regularity and removal lemmas, with J. Fox, *Geom. Funct. Anal.* **22** (2012), 1191–1256.
85. Erdős–Hajnal-type theorems in hypergraphs, with J. Fox and B. Sudakov, *J. Combin. Theory Ser. B* **102** (2012), 1142–1154.
86. On the Ramsey multiplicity of complete graphs, *Combinatorica* **32** (2012), 171–186.
87. Weak quasi-randomness for uniform hypergraphs, with H. Hàn, Y. Person and M. Schacht, *Random Structures Algorithms* **40** (2012), 1–38.
88. Large almost monochromatic subsets in hypergraphs, with J. Fox and B. Sudakov, *Israel J. Math.* **181** (2011), 423–432.
89. An approximate version of Sidorenko’s conjecture, with J. Fox and B. Sudakov, *Geom. Funct. Anal.* **20** (2010), 1354–1366.
90. An extremal theorem in the hypercube, *Electron. J. Combin.* **17** (2010), R111.
91. Hypergraph Ramsey numbers, with J. Fox and B. Sudakov, *J. Amer. Math. Soc.* **23** (2010), 247–266.
92. On-line Ramsey numbers, *SIAM J. Discrete Math.* **23** (2009), 1954–1963.
93. Ramsey numbers of sparse hypergraphs, with J. Fox and B. Sudakov, *Random Structures Algorithms* **35** (2009), 1–14.
94. Hypergraph packing and sparse bipartite Ramsey numbers, *Combin. Probab. Comput.* **18** (2009), 913–923.
95. A new upper bound for diagonal Ramsey numbers, *Ann. of Math.* **170** (2009), 941–960.
96. A new upper bound for the bipartite Ramsey problem, *J. Graph Theory* **58** (2008), 351–356.

97. On the existence of rainbow 4-term arithmetic progression, with V. Jungić and R. Radoičić, *Graphs Combin.* **23** (2007), 249–254.
98. Rainbow solutions of linear equations over \mathbb{Z}_p , *Discrete Math.* **306** (2006), 2056–2063.

COAUTHORS	Elad Aigner-Horev, Boris Bukh, Shagnik Das, Domingos Dellamonica Jr, Asaf Ferber, Jacob Fox, Bill Gasarch, Lior Gishboliner, Tim Gowers, Andrey Grishpun, Hiệp Hàn, David Harris, Xiaoyu He, Oliver Janzer, Veselin Jungić, Nina Kamčev, Jeong Han Kim, Matthew Kwan, Steven La Fleur, Choongbum Lee, Joonkyung Lee, Yevgeny Levanzov, Jeck Lim, Sammy Luo, Sam Mattheus, Tamás Mészáros, Dhruv Mubayi, Rajko Nenadov, János Pach, Yury Person, Huy Tuan Pham, Simón Piga, Cosmin Pohoata, Radoš Radoičić, Vojtech Rödl, Wojciech Samotij, Mathias Schacht, Bjarne Schülke, Asaf Shapira, Alexander Sidorenko, Nemanja Škorić, Maya Stein, Benny Sudakov, Andrew Suk, Jonathan Tidor, Miloš Trujić, Mykhaylo Tyomkyn, Douglas Ulrich, Jacques Verstraëte, Fan Wei, Yuval Wigderson, Yu-Han Wu, Dmitriy Zakharov, Samuel Zbarsky, Yufei Zhao
PHD STUDENTS	2023- : Guo Dong Hong 2022- : Dylan King 2020- : Jeck Lim 2013-18: Joonkyung Lee
POSTDOCS	2021- : Bjarne Schülke 2020: Clara Shikhelman 2018-20: Mykhaylo Tyomkyn 2018-19: Joonkyung Lee 2016-19: Annika Heckel
SELECTED TALKS	07/23: 200 Years of Trinity Combinatorics, University of Cambridge. 03/23: Special Year seminar, Institute for Advanced Study, Princeton. 11/22: Combinatorics and Probability seminar, UC Irvine. 04/22: Combinatorics and probability workshop, Oberwolfach. 12/21: Claremont College Algebra/Number Theory/Combinatorics seminar. 06/21: Round the World Relay in Combinatorics. 03/21: Workshop on Euclidean Ramsey theory. 10/20: Webinar in Additive Combinatorics. 06/20: Group Theory Seminar, ENS, Paris. 03/20: New perspectives in coloring and structure workshop, BIRS, Banff. 09/19: Probabilistic and extremal combinatorics workshop, BIRS, Banff. 05/19: CanaDAM, Vancouver. 07/18: ICM Satellite conference on Combinatorics, Sao Paulo, Brazil. 06/18: British Mathematical Colloquium, St Andrews. 04/18: High-Dimensional Combinatorics workshop, IIAS, Jerusalem. 08/17: Random Structures and Algorithms, Gniezno, Poland. 05/17: Recent advances in Extremal Combinatorics workshop, TSIMF, China. 04/17: Structure and Randomness workshop, Simons Institute, Berkeley. 06/16: SIAM Conference on Discrete Mathematics, Atlanta. 03/16: MINT Distinguished Lecture Series, Tel Aviv University. 07/15: British Combinatorial Conference, University of Warwick.

06/15: Connections in Discrete Mathematics, Simon Fraser University, Vancouver.
 04/15: Atlanta Lecture Series, Georgia Tech.
 12/14: Departmental colloquium, Yale University.
 08/14: Combinatorics section, ICM, Seoul.
 08/14: ICM Satellite conference on Extremal and Structural Graph Theory.
 04/14: Combinatorics section, British Mathematical Colloquium, Queen Mary.
 07/13: Erdős Centennial conference, Budapest.
 01/13: Extremal and Probabilistic Combinatorics workshop, IPAM, Los Angeles.
 07/12: Additive Combinatorics conference, Paris.
 08/11: Eurocomb, Rényi Institute, Budapest.
 08/11: Irish Maths Society meeting, University of Limerick.
 10/10: Discrete Mathematics seminar, Institute for Advanced Study, Princeton.
 08/10: Extremal Combinatorics workshop, Fraunhofer, Germany.
 11/09: Topics in Graphs and Hypergraphs conference, IPAM, Los Angeles.
 08/09: Extremal and Probabilistic Combinatorics workshop, BIRS, Banff.
 08/09: Random Structures and Algorithms conference, Poznań.
 08/08: Fête of Combinatorics and Computer Science, Keszthely, Hungary.
 05/07: One-day colloquium in Combinatorics, Queen Mary, London.
 12/06: Pure Mathematics colloquium, University College London.
 07/06: Czech-Slovak Symposium on Discrete Mathematics, Prague.
 04/06: Additive Combinatorics conference, CRM, Montréal.

WORKSHOPS
 ORGANISED

09/23: Eurocomb 2023.
 05/21: Canadam 2021.
 08/19: Eurocomb 2019.
 12/18: CMI Workshop on Recent Advances in Extremal Combinatorics.
 06/18: SIAM Conference on Discrete Mathematics.
 02/18: CMSA Workshop on Probabilistic and Extremal Combinatorics.
 03/17: Simons Workshop on Proving and Using Pseudorandomness.
 01/15: AIM Workshop on Graph Ramsey theory.
 10/14: CRM Workshop on New Horizons in Additive Combinatorics.
 10/14: IMA Workshop on Additive and Analytic Combinatorics.
 06/14: CMI Workshop on Extremal and Probabilistic Combinatorics.
 08/13: CMI Workshop on Developing Exceptional Talent in Mathematics.
 08/13: Oxford Masterclasses in Combinatorics.
 06/12: Mini-session organiser for SIAM Conference on Discrete Mathematics.

EDITORIAL DUTIES

2020- : Combinatorial Theory - Handling Editor.
 2020- : Electronic Journal of Combinatorics - Editorial Board.
 2019- : Journal of Combinatorial Theory, Series B - Editorial Board.
 2019- : SIAM Journal on Discrete Mathematics - Editorial Board.
 2018- : Journal of Graph Theory - Editorial Board.
 2017- : London Mathematical Society - Editorial Advisory Board.
 2013- : Journal of Combinatorics - Associate Editor.

FORMER EDITORIAL
 DUTIES

2015-20: Electronic Journal of Combinatorics - Editor-in-Chief.

COMMITTEE WORK

2016-20: Royal Society International Exchanges Committee.
 2015-19: British Combinatorial Committee.

RESEARCH
INTERESTS

Extremal and probabilistic combinatorics, particularly extremal graph theory, Ramsey theory, random structures, quasirandomness, discrete geometry and additive combinatorics.