DAVID A. CARDON, PH. D.

Contact Information

326 TMCB
Department of Mathematics
Brigham Young University
Provo, Utah 84602

E-mail: cardon@math.byu.edu
Office Phone: (801) 422-4863
Department Fax: (801) 422-0504
Department Phone: (801) 422-2061

Academic Positions

2012-Present: Professor at Brigham Young University*
2004-2012: Associate Professor at Brigham Young University
1998-2004: Assistant Professor at Brigham Young University
1996-1998: Post-Doctoral Fellow at Queen's University, Kingston, Ontario

Education

Stanford University
Ph.D. in Mathematics 1996
MS in Mathematics 1993
Advisor: Daniel Bump
Brigham Young University
BS in Mathematics 1990
BS in Physics 1990
Magna Cum Laude with University Honors and Thesis

Research Interests

Complex Analysis, Analytic Number Theory

Teaching Awards

- *2011 Kenneth C. Savage Distinguished Teaching Award* – Presented by the BYU Department of Mathematics for outstanding teaching.
- *2010 Distinguished Teaching Award* – Presented by the BYU Department of Mathematics for outstanding teaching.
- *2002 Outstanding Teacher Award* – Presented by the BYU mathematics graduate students in April 2002.
- *Fall 1997 Applied Science First Year Teaching and Learning Award* – Queen's University, Kingston, Ontario.
- *1996-97 Applied Science First Year Teaching and Learning Award* – Queen's University, Kingston, Ontario. Award recipients were selected from among ten university departments involved in teaching the first year courses in the applied science program.

* With a full-time enrollment of over 30,000 students, Brigham Young University is among the largest private universities in the United States. BYU's main emphasis is to provide an extremely high quality undergraduate education.

Mathematical Publications

Refereed Publications (most recent first)

1. David A. Cardon and Dylan Park, *Real Zeros of Solutions of a Certain Differential-Difference Operators* (2023), (in preparation).
2. David A. Cardon, Evan Sorensen, and Jason White, *Interlacing Properties of Coefficient Polynomials in Differential Operator Representations of Real-Root Preserving Linear Transformations,* Journal of Constructive Approximation (2022). https://doi.org/10.1007/s00365-022-09581-6
3. David A. Cardon, Tamas Forgacs, Andrzej Piotrowski, Evan Sorensen, and Jason White, *On Zero-Sector Reducing Operators*, J. Math. Anal. Appl. **468** (2018), no. 1, 480–490.
4. David A. Cardon, *Complex Zero Strip Decreasing Operators*, J. Math. Anal. Appl., **426**, (2015) Issue 1, 406–422, http://dx.doi.org/10.1016/j.jmaa.2015.01.026
5. David A. Cardon and Pace P. Nielsen, *Nonnegative minors of minor matrices*, Linear Algebra Appl. 436 (2012), no. 7, 2187–2200.
6. David A. Cardon and Bradford Tuckfield, *The Jordan canonical form for a class of zero-one matrices*, Linear Algebra Appl. **435** (2011) 2942–2954.
7. David Cardon, *Matrices related to Dirichlet series*, J. Number Theory **130** (2010), no. 1, 27–39.
8. David A. Cardon, *Extended Laguerre inequalities and a criterion for real zeros*, Progress in Analysis and its Applications, Proceedings of the 7th International Isaac Conference, pp 143–149 (2009).
9. David A. Cardon and Adam Rich, *Turan inequalities and and subtraction-free expressions*, JIPAM. J. Inequal. Pure Appl. Math. 9 (2008), no.4, Article 91, 11 pages.
10. Steven R. Adams and David A. Cardon, *Sums of entire functions having only real zeros*, Proc. Amer. Math. Soc. **135** (2007), no. 12, 3857–3866
11. David A. Cardon and Sharleen A. Roberts, *An equivalence for the Riemann Hypothesis in terms of orthogonal polynomials*, J. Approx. Theory **138** (2006), no. 1, 54–64.
12. David A. Cardon and Sharleen A. de Gaston, *Differential Operators and Entire Functions with Simple Real Zeros*, J. Math. Anal. Appl. **301** (2005), no. 2, 386–393.
13. David Cardon, *Fourier Transforms Having Only Real Zeros*, Proc. Amer. Math. Soc. **133**, (2005), no. 5, 1349–1356.
14. David Cardon, *Sums of Exponential Functions Having Only Real Zeros*, Manuscripta Math. **113**, (2004), no.3, 307–317.
15. David Cardon and Pace Nielsen, *Convolution operators and entire functions with simple zeros*. Number theory for the millennium, I (Urbana, IL, 2000), 183–196, A K Peters, Natick, MA, 2002.
16. David Cardon and Xian-Jin Li, *A Dirichlet series related to eigenvalues of the Laplacian for congruence subgroups.* Number theory for the millennium, I (Urbana, IL, 2000), 153–181, A K Peters, Natick, MA, 2002.
17. David Cardon, *Convolution operators and zeros of entire functions*, Proc. Amer. Math. Soc. **130** (2002), no. 6, 1725–1734.
18. David Cardon and M. Ram Murty, *Exponents of class groups of quadratic function fields over finite fields*, Canad. Math. Bull. **44** (2001), no. 4, 398–407.
19. David Cardon, *A Euclidean ring containing* $Z[\sqrt{14}]$, C. R. Math. Rep. Acad. Sci. Canada **19** (1997), no. 1, 28–32.
20. David Cardon, *A Riemann Hypothesis Condition for Metaplectic Eisenstein Series*, J. Ramanujan Math. Soc., **12** (1997), no. 2, 203–238.

Ph.D. Dissertation

- David Cardon, *Zeros of Fourier Coefficients of Eisenstein Series on the Metaplectic Groups – The Function Field Case*, Stanford University Ph.D. Dissertation, 1996.

Other Research Publications

Summer 1991 internship at Los Alamos National Laboratory – performed computer simulations in nuclear physics. This resulted in the following papers:

- Whalen, Cardon, Uhle, Hendricks, *MCNP: Neutron Benchmark Problems*, LA-12212, Los Alamos National Lab. (Nov. 1991).
- Hendricks, Whalen, Cardon, Uhle, *MCNP Neutron Benchmarks*, Trans. Am. Nuc. Soc. 65 262 (1992).

Graduate Students Supervised

2018-2019 Michael Carroll
2004 Celeste Elton, M.S.
2001 Shane Tang, M.S.

Undergraduate Mentored Research – In the Department of Mathematics at Brigham Young University, intensive undergraduate research experiences are encouraged. I mentored the following students in significant research projects:

(* Work with these students led to co-authored papers in peer-reviewed journals.)

2018-2019 Brevan Ellefsen
2018 Amanda Hirschmann
2016-2018 *Jason White
2016-2017 *Evan Sorensen
2016-2017 James Scott
2010-2011 Rebecca Brogan
2010-2011 Nathan Green
2010 *Bradford Tuckfield
2007 *Adam Rich
2006 *Steven Adams
2003 John Bankhead
2003 *Sharlene de Gaston Roberts
2000 Johnny Vogler
2000 *Pace Nielsen

Mathematical Workshops, Conferences, and Seminars Attended in Recent Years

(* speaker, † invited speaker, ‡ invited participant, ♦ organizer)

†2016 Joint Mathematical Meetings, Seattle, WA, January
♦2014 28th Automorphic Forms Workshop, Moab, UT, May
2011 Analytic Aspects of *L*-functions and Applications to Number Theory, University of Calgary, Alberta, Canada, May-June
♦2010 Western Number Theory Conference, Orem, UT, December
*2010 Canadian Number Theory Association XI Meeting, Wolfville, Canada, July
*2009 West Coast Number Theory Conference, Monterey, CA, December
†2009 Colloquium Speaker, Brigham Young University, October
†2009 7th ISAAC Congress, Imperial College, London, England, July
2009 Summer Graduate Workshop on Zeta Functions, *L*-functions and Applications, Orem, UT, June
*2008 Western Number Theory Conference, Fort Collins, CO, December
*2008 Canadian Number Theory Association X Meeting, Waterloo, Canada, July
2008 Modular Forms and Arithmetic, MSRI, Berkeley, CA, June-July

‡2007 Workshop on Polya-Schur-Lax problems: hyperbolicity and stability preservers, American Institute of Mathematics, Palo Alto, CA, May-June
*2006 AMS Special Session on Number Theory, Salt Lake City, UT, October
*2006 Canadian Number Theory Association IX Meeting, Vancouver, Canada, July
*2005 West Coast Number Theory Conference, Monterey, CA, December
* 2004 West Coast Number Theory Conference, Las Vegas, NV, December
†2004 Colloquium Speaker, Utah Valley State College, Orem, UT, November
* 2004 Canadian Number Theory Association VIII, Toronto, Canada, June
2004 Illinois Number Theory Conference, Urbana-Champaign, May
2003 The Web of Modularity, University of Illinois, Urbana-Champaign, June
*2002 West Coast Number Theory Conference, San Francisco State University, December
*2002 American Mathematical Society, Special Session on Analytic Number Theory, University of Utah, October
2002 Conference on the Riemann Hypothesis, Currant Institute, NY, NY, May
2001 West Coast Number Theory Conference, Asilomar, CA, December
2001 Conference on Modular Elliptic Curves, University of Central Florida, August
2001 Illinois Number Theory Conference and Workshop on the Interface of Probability and Number Theory, University of Illinois, Urbana-Champaign, May
2001 Arizona Winter School on Modular Forms, University of Arizona, Tucson, March