

# DANIEL G. DAVIS

Department of Mathematics  
Univ. of Louisiana at Lafayette  
Maxim Doucet Hall, Room 217  
Lafayette, LA 70504-1010

<http://www.ucslouisiana.edu/~dxd0799/>

dgdavis@louisiana.edu  
(337) 482-5943  
Citizenship: USA

---

## EDUCATION

- **Ph.D. Mathematics**, Northwestern University, June, 2003, Advisor: Paul G. Goerss.  
Thesis: *The Lubin-Tate Spectrum and its Homotopy Fixed Point Spectra* (106 pp.).
- **M.S. Mathematics**, University of Illinois, Urbana-Champaign, May, 1997.  
Ph.D. program, 1995 - 1999. Advisor: Randy McCarthy.
- Austin Peay State University, 1994 - 1995, studied mathematics, German, philosophy.
- **B.A. Mathematics**, *summa cum laude*, Vanderbilt University, 1990 - 1994.  
Phi Beta Kappa; College Scholar, 1990 - 1994.

---

## EMPLOYMENT

- **Assistant Professor**, University of Louisiana at Lafayette, August, 2007 - present.  
*Graduate Courses Taught:* Topology I (once), II (twice); Algebraic Topology I, II;  
Commutative Algebra (reading course); Seminar in Category Theory.  
*Undergraduate Courses Taught:* Introduction to Topology, Elementary Linear Algebra,  
Survey of Calculus, Calculus I, II, III.
- **Visiting Scholar**, Rice University, July - December, 2008.
- **Visiting Assistant Professor**, Wesleyan University, September, 2006 - June, 2007.  
*Courses Taught:* Algebraic Topology (2nd semester of the first-year graduate course in topology),  
Differential Equations, Elementary Linear Algebra (two times).
- **VIGRE Research Assistant Professor**, Purdue University, August, 2003 - May, 2006.  
*Courses Taught:* Real Analysis; Vector Calculus for Master's degree students  
in engineering; Abstract Algebra (four times; two different textbooks); Calculus III  
for advanced freshmen - an honors course for engineering students (two times).
- **Visiting Scholar**, University of Notre Dame, June - December, 2005, in association with Bill Dwyer.
- **Teaching Assistant**, Northwestern University, September, 1999 - June, 2003.  
*Courses Assisted with:* Introduction to Modern Algebra, Linear Algebra for Applications,  
Accelerated Mathematics: First Year, Multiple Integration and Vector Calculus, Calculus II/III  
for social sciences and economics, Calculus I - III, Survey of Modern Mathematics I and II.
- **Instructor**, Northwestern University Summer School, Summer 2000. *Course Taught:* Calculus III.
- **Teaching Assistant**, University of Illinois, Urbana-Champaign, 1995 - 1999.  
*Full Responsibility Instructor:* Multiple Integration and Vector Calculus, Calculus II/III  
for social sciences and economics, Calculus II (three times), Finite Mathematics, Numeracy.  
*Assisted with:* Calculus I (two sections).

---

## PUBLICATIONS, SUBMISSIONS, and PAPERS IN PREPARATION

- Homotopy fixed points for  $L_{K(n)}(E_n \wedge X)$  using the continuous action, *Journal of Pure and Applied Algebra*, 206(3): 322–354, 2006.
- The  $E_2$ -term of the descent spectral sequence for continuous  $G$ -spectra, *New York Journal of Mathematics*, 12 (2006), 183–191. Published at <http://nyjm.albany.edu/j/2006/12-11.html>.
- Explicit fibrant replacement for discrete  $G$ -spectra, *Homology, Homotopy and Applications*, 10(3): 137–150, 2008.

(Publications, etc., continued)

- Epimorphic covers make  $R_G^+$  a site, for profinite  $G$ , *Theory and Applications of Categories*, Vol. 22, No. 16: 388–400, 2009.
- Iterated homotopy fixed points for the Lubin-Tate spectrum (with an Appendix, by D. G. Davis and Ben Wieland, titled An example of a discrete  $G$ -spectrum that is not hyperfibrant), *Topology and its Applications*, 156(17): 2881–2898, 2009.
- The homotopy fixed point spectra of profinite Galois extensions, joint with Mark Behrens, *Transactions of the American Mathematical Society*, 362(9): 4983–5042, 2010.
- Obtaining intermediate rings of a local profinite Galois extension without localization, *Journal of Homotopy and Related Structures*, 5(1): 253–268, 2010.
- Every  $K(n)$ -local spectrum is the homotopy fixed points of its Morava module, joint with Takeshi Torii, *Proceedings of the American Mathematical Society*, published online on July 18, 2011, PII: S 0002-9939(2011)11189-4 (to appear in print), 7 pages.
- Function spectra and continuous  $G$ -spectra, *Bulletin of the London Mathematical Society* (2011), first published online September 16, 2011, doi:10.1112/blms/bdr049, 10 pages.
- Delta-discrete  $G$ -spectra and iterated homotopy fixed points, *Algebraic & Geometric Topology*, 11(5): 2775-2814, 2011.
- The homotopy orbit spectrum for profinite groups, submitted on 8/8/06 to *Homology, Homotopy and Applications*, received favorable referee’s report, under revision, 13 pages, available online at the arXiv: math.AT/0608262.
- Rognes’s theory of Galois extensions and the continuous action of  $G_n$  on  $E_n$ , preprint, 14 pages, May, 2004, available online at the arXiv: math.AT/0611943.
- The  $N$ th completed layer of  $E_{n+1}$  yields  $L_{K(n)}L_{K(n+1)}(S^0)$ , joint with Takeshi Torii, in preparation, 11 pages.
- Iterated continuous homotopy fixed points for Lubin-Tate spectra, joint with Gereon Quick, in preparation, 11 pages.
- Realizing  $L_{K(n)}L_{K(n+1)}(X)$  for finite complexes by using sequentially continuous  $(G, H)$ -spectra, joint with Takeshi Torii, in preparation, 25 pages.
- A universal coefficient spectral sequence for discrete  $G$ -spectra, in preparation, 28 pages.
- Continuous  $G$ -spectra and Brown-Comenetz duality, in preparation, 15 pages.
- A new descent spectral sequence for the  $K(n)$ -local sphere, in preparation, 14 pages.
- Using Postnikov towers for iterated homotopy fixed points of discrete  $G$ -spectra, in preparation, 13 pages.
- On the mapping telescope of the mod  $(p, v_1)$  homotopy of the algebraic  $K$ -theory of  $p$ -adic complex  $K$ -theory, in preparation, 16 pages.
- A derived Lyndon-Hochschild-Serre spectral sequence for arbitrary discrete  $G$ -spectra, in preparation, 4 pages.
- The homotopy fixed points of Morava modules and the Devinatz-Hopkins construction, in preparation, 7 pages.
- Some examples of totally hyperfibrant discrete  $G$ -spectra, in preparation, 4 pages.

## **RESEARCH-RELATED ACTIVITIES, SERVICE TO THE PROFESSION, AND AWARDS**

---

- Member of Organizing Committee for the NSF/CBMS Regional Conference in the Mathematical Sciences, “Topological and algebraic regularity properties of nuclear  $C^*$ -algebras,” May 11–15, 2012, University of Louisiana at Lafayette.
- Have done refereeing work for the journal *Homology, Homotopy and Applications*.
- In Summers 2009, 2010, 2011, Ph.D. student Chris Ryan was my graduate assistant; each summer he received financial support from my Board of Regents grant.
- Reviewer for Zentralblatt, October, 2010 – present.
- Member of Organizing Committee for the Lloyd Roeling UL Lafayette Mathematics Conference (in topology), October, 2009; in charge of use of technology by the speakers.

(Research-related activities and awards, continued)

- Gave two hour-long talks in the mini-seminar “Stacks and Homotopy Theory” (at UL), March 14, 2009 and March 28, 2009.
- Organizer of Topology Seminar, Univ. of Louisiana at Lafayette: Spring, 2008; Spring, 2009; Spring, 2010.
- Worked on my research while visiting the Rice University Math Department, two weeks, Summer, 2008.
- Awarded a 3-year RCS grant (for a total of \$34,719) from the Louisiana Board of Regents; project title: “Homotopy fixed points and chromatic homotopy theory;” began June 1, 2008.
- Summer Research Award from the College of Science of the University of Louisiana at Lafayette, two months, Summer, 2008.
- Gave talks on a variety of topics in the Topology Seminar at the University of Louisiana at Lafayette: 3 talks in Spring, 2008; 2 talks in Fall, 2008; 4 talks in Spring, 2009; 2 talks in Fall, 2009; 4 talks in Spring, 2010; 2 talks in Fall, 2010; 1 talk in Spring, 2011.
- Participation in *Algebraic Topology* program at the Mittag-Leffler Institute, Djursholm, Sweden, January 15 – February 15, 2006.
- Editor, *Journal of Homotopy and Related Structures*, October, 2005 – present.

## TALKS

---

- *A Lyndon-Hochschild-Serre-type spectral sequence for discrete  $G$ -spectra*, 10-minute talk, at the conference “Structured Ring Spectra – TNG,” Hamburg, Germany, August 4, 2011.
- *Arbitrary  $I$ -adically complete spectra and continuous group cohomology*, Algebra Seminar, Tulane University, February 23, 2011.
- *Arbitrary Morava modules, their Adams spectral sequence, and continuous group cohomology*, Colloquium, University of Louisiana at Lafayette, February 10, 2011.
- *Using Postnikov towers to form iterated homotopy fixed point spectra*, 45-minute talk, in the AMS Special Session on Homotopy Theory and Algebraic Topology, Huntsville, October 25, 2008.
- *Galois theory, commutative rings, and chromatic homotopy theory*, Colloquium, University of Louisiana at Lafayette, April 24, 2008.
- *Fixed points in group cohomology, topological algebra, and homotopy theory*
  - Colloquium, University of Louisiana at Lafayette, March 15, 2007.
  - Colloquium, Wesleyan University, February 22, 2007.
- *Algebraic structures, continuous cohomology, and point-set Morava modules*, Algebra Seminar, University of Connecticut, February 27, 2007.
- *The homotopy orbit spectrum for profinite groups*
  - Topology Seminar, MIT, October 16, 2006.
  - Topology Seminar, Northwestern University, May 22, 2006.
- *A homotopy orbit spectral sequence for countably based profinite groups*, Topology et al. Seminar, Wesleyan University, September 27, 2006.
- *Examples of spectra with continuous profinite group actions*, Algebraic Topology Seminar, Mittag-Leffler Institute, February 7, 2006, invited speaker.
- *Interesting examples in the theory of spectra with a continuous action by a profinite group*, Topology Seminar, University of Notre Dame, October 11, 2005.
- *The theory of spectra with a continuous action by a profinite group*, at the conference “The Arithmetic of Structured Ring Spectra,” Barony Rosendal, Norway, August 24, 2005, invited speaker.
- *Iterated homotopy fixed points for the Lubin-Tate spectrum*, Topology Seminar, Purdue University, September 9, 2004.
- *The Lubin-Tate spectrum  $E_n$  as a continuous  $G_n$ -spectrum and its homotopy fixed point spectra*
  - Topology Seminar, University of Illinois, Urbana-Champaign, February 10, 2004.
  - Topology Seminar, Purdue University, April 10, 2003.
  - Algebraic Topology Seminar, University of Chicago, February 4, 2003.
  - A.M.S., National Meeting, Homotopy Theory Session, Baltimore, January 18, 2003, invited speaker.
  - Topology Seminar, Northwestern University, October 31, 2002.

(Talks, continued)

- *R. L. Moore: Thoughts on the Philosophy and Methods of an American Mathematical Pioneer*, Tennessee Academy of Science, November 18, 1994.
- *The R. L. Moore Experience*, Austin Peay State University's Galois Math Club, Fall, 1994.

## HONORS, ACADEMIC ACHIEVEMENTS, and SCHOLARSHIPS

---

- Finalist for Math Department's T.A. Teaching Award, University of Illinois, Urbana–Champaign, May, 1999.
- 1st place (tied), Real Analysis Comprehensive Exam, University of Illinois, Urbana–Champaign, August, 1998.
- *Who's Who Among America's Teachers*, 1998.
- 1st place, Algebra Comprehensive Exam, University of Illinois, Urbana–Champaign, August, 1997.
- Included on *An Incomplete List of Teachers Ranked as Excellent By Their Students*, denoted *Outstanding*, University of Illinois, Urbana–Champaign, Spring 1996, Spring 1997, Fall 1997.
- College Cabinet Honor Scholarship, Vanderbilt University, full-tuition, 1990–1994.
- Scholarship for International Studies in London program of Vanderbilt University, at Birkbeck College, London, studied economics and politics, July–August, 1993.

## CONFERENCE ATTENDANCE

---

- Structured Ring Spectra – TNG, University of Hamburg, Germany, August, 2011.
- The 2010 Georgia Topology Conference, University of Georgia, Athens, May, 2010.
- Lloyd Roeling UL Lafayette Mathematics Conference (in topology), October, 2009.
- Conference on Homotopy Theory and Applications, University of Nebraska, Lincoln, April, 2009.
- Howard Rowlee Lecture in Mathematics, University of Nebraska, Lincoln, April 3, 2009.
- The 2009 Spring Texas Geometry and Topology Conference, University of Houston, February, 2009.
- American Mathematical Society, Special Session on Homotopy Theory and Algebraic Topology, Huntsville, Alabama, October, 2008.
- Conference on Homotopical Group Theory and Topological Algebraic Geometry, Bonn, Germany, June, 2008.
- Conference on Complex Cobordism in Homotopy Theory: Its Impact and Prospects, Johns Hopkins University, March, 2007.
- MIT Topology Seminar, five times in Fall, 2006.
- Conference on the Arithmetic of Structured Ring Spectra, Rosendal, Norway, August, 2005.
- Lehigh University Geometry and Topology Conference, June, 2004.
- All-Chicago Topology Seminar, Northwestern University, May, 2004.
- Midwest Commutative Algebra and Geometry Meeting, Purdue University, May 19, 2004.
- Midwest Topology Seminar, Northwestern University, February, 2004.
- Midwest Topology Seminar, University of Wisconsin, October, 2003.
- Fields Institute Program on Homotopy Theory and its Applications, University of Western Ontario, September, 2003.
- Conference on Algebraic Topology in honor of Goro Nishida's 60th birthday, Kinosaki, Japan, July, 2003.
- American Mathematics Society, Homotopy Theory Sessions, Baltimore, January, 2003.
- Midwest Topology Seminar, University of Chicago, April, 2002.
- International Algebraic Topology Conference, Northwestern University, March, 2002.
- Midwest Topology Seminar, University of Illinois at Chicago, February, 2002.
- Ontario Topology Seminar, University of Western Ontario, October, 2001.
- Great Lakes K-Theory Conference, Evanston, April, 2001.
- Midwest Topology Seminar, University of Illinois at Chicago, February, 2001.
- Ontario Topology Seminar, University of Western Ontario, October, 2000.

(Conference attendance, continued)

- American Mathematics Society, Notre Dame, April, 2000.
- Midwest Topology Seminar, University of Chicago, February, 2000.
- Midwest Topology Seminar, Northwestern University, April, 1999.
- American Mathematics Society, Urbana, March, 1999.
- Midwest Topology Seminar, University of Michigan, October, 1998.

### **SERVICE and COMMITTEES (UNIVERSITY of LOUISIANA at LAFAYETTE)**

---

- Organizer of the Colloquium for the Mathematics Department, Fall, 2010 – present.
- Member of the Faculty Senate: Fall, 2010 – present.
- Library Committee (Math Dept.): 2008 – present.
- Graduate Students, Recruiting and Advertising Committee (Math Dept.): 2007–2009.
- Topology Comprehensive Exam Committee, chair: August, 2008; January, 2009; August, 2011;  
member: August, 2007; August, 2009; August, 2010.
- Complex Variables Comprehensive Exam Committee, member:  
August, 2008; August, 2009; August, 2010; August, 2011.

### **PROFESSIONAL MEMBERSHIPS**

---

- American Mathematical Society