

VITA

Jonathan K. Hodge
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EDUCATION

- Ph.D. 2002 Western Michigan University
Area: Mathematics (Voting Theory)
Dissertation Title: *Separable Preference Orders*
Advisor: Allen J. Schwenk
- M.A. 2000 Western Michigan University
Area: Mathematics
- B.S. 1998 Calvin College
Area: Mathematics (honors)

PROFESSIONAL EXPERIENCE

- 2008 – Present Associate Professor of Mathematics
Grand Valley State University, Allendale, MI
- 2008 – 2009 Visiting Associate Professor of Mathematics
Hope College, Holland, MI
- 2002 – 2008 Assistant Professor of Mathematics
Grand Valley State University, Allendale, MI
- 1999 – 2002 Graduate Teaching Assistant
Western Michigan University, Kalamazoo, MI
- 2000 – 2001 Mathematics Instructor
Academically Talented Youth Program (ATYP)
Western Michigan University, Kalamazoo, MI
- 1999 Mathematics Teacher
Sylvan Learning Center, Grand Rapids, MI
- 1998 Adjunct Mathematics Instructor
Northwestern Michigan College, Traverse City, MI

HONORS/AWARDS

- 2003 – 2004 R. L. Moore Project NExT Fellow
Mathematical Association of America
- 2002 All-University Graduate Research and Creative Scholars Award
The Graduate College, Western Michigan University
- 2002 Yousef Alavi Outstanding Doctoral Student Award
Department of Mathematics, Western Michigan University
- 2001 Charles H. Butler Teaching Excellence Award
Department of Mathematics, Western Michigan University
- 1999 – 2002 GAANN Fellowship
Department of Mathematics, Western Michigan University

PUBLICATIONS

J.K. Hodge. Review of *Mathematics and Democracy: Designing Better Voting and Fair-Division Procedures* by Steven J. Brams. To appear, *The Mathematical Intelligencer*.

J.K. Hodge and M. TerHaar. Classifying interdependence in multidimensional binary preferences. *Mathematical Social Sciences* 55(2):190-204, March 2008.

J.K. Hodge and R.E. Klima (translated by N.A. Shikhova). Математика выборов. Russian translation of *The Mathematics of Voting and Elections: A Hands-On Approach*. Moscow Center for Continuous Mathematical Education, Moscow, 2007.

J.K. Hodge and P. Schwallier. How does separability affect the desirability of referendum election outcomes? *Theory and Decision* 61(3):251-276, November 2006.

J.K. Hodge. Permutations of separable preference orders. *Discrete Applied Mathematics* 154(10):1478-1499, June 2006.

J.K. Hodge. The top ten things I have learned about discovery-based teaching. *PRIMUS* 26(2):154-161, June 2006.

J.K. Hodge and R.E. Klima. *The Mathematics of Voting and Elections: A Hands-On Approach*. Volume 22 of *Mathematical World*. American Mathematical Society, Providence, May 2005.

W.J. Bradley, J.K. Hodge, and D.M. Kilgour. Separable discrete preferences. *Mathematical Social Sciences* 49(3):335-353, May 2005.

J.K. Hodge. *Separable Preference Orders*. Ph.D. thesis. Western Michigan University, Kalamazoo, MI, August 2002.

WORKS IN PROGRESS

J.K. Hodge, M. Krines, and J. Lahr. Preseparable extensions of multidimensional preferences. Submitted to *Order*.

J.K. Hodge and C. Wells. *An Analysis Sketchbook*. Activities-based textbook developed as part of a Pew Scholar Teacher Award. Currently being considered for publication.

J.K. Hodge. The mathematics of referendum elections and separable preferences. Submitted to *Mathematics Magazine*.

J.K. Hodge and R.E. Klima. *Instructor's Manual for The Mathematics of Voting and Elections: A Hands-On Approach*. Currently in development for online distribution.

PRESENTATIONS

Invited Talks:

Recent Work on the Separability Problem in Referendum Elections, presented at Western Michigan University, October 2008.

Trouble in Democracy: A Mathematical Look at Voting and Elections, presented at:

- Aquinas College, Grand Rapids, MI, October 2008
- Hillsdale College, Hillsdale, MI, April 2008

Math Matters: Numerate Approaches to Everyday Issues, panelist for session at Mathfest, Madison, WI, August 2008.

Trouble in Direct Democracy: The Separability Problem in Referendum Elections, presented at Hillsdale College, Hillsdale, MI, April 2008.

The Mathematics of Referendum Elections and Separable Preferences, presented at:

- Hope College Mathematics Colloquium, Holland, MI, October 2007
- Grand Valley State University Mathematics REU, Allendale, MI, June 2006.

- MAA Michigan Sectional Meeting, Grand Rapids, MI, May 2006.
- Miami University Mathematics Colloquium, Oxford, OH, March 2006.

Classifying Interdependence in Referendum Election Preferences, presented at the Calvin College Mathematics Colloquium, Grand Rapids, MI, December 2005.

A Moore-Style Course on the Mathematics of Voting and Elections, presented at the 8th Annual Legacy of R.L. Moore Conference, Austin, TX, April 2005.

The Top Ten Things I Have Learned About Discovery-Based Teaching, presented at the 7th Annual Legacy of R.L. Moore Conference, Austin, TX, March 2004.

Separable Discrete Preferences, presented at the Joint Mathematics Meetings, Phoenix, AZ, January 2004.

Teaching Students How to Write Proofs, panelist for Project NExT session at Mathfest, Burlington, VT, July 2002.

Reflections on My Research Experiences, presented for the Grand Valley State University mathematics REU, Allendale, MI, July 2002.

A Quick Introduction to Separable Preference Orders, presented at the Graduate Research and Teaching Awards, Western Michigan University, Kalamazoo, MI, April 2002.

Separability and Symmetry and Algebra, Oh My!, presented at:

- Calvin College, Grand Rapids, MI, October 2002.
- Hope College, Holland, MI, April 2002.
- Pi Mu Epsilon, Western Michigan University, Kalamazoo, MI, February 2002.

Trouble in Democracy: The Separability Problem in Referendum Elections, presented at:

- Kalamazoo College, Kalamazoo, MI, October 2000.
- Pi Mu Epsilon, Western Michigan University, Kalamazoo, MI, February 2000.

Contributed Talks:

Trouble in Democracy: A Mathematical Look at Voting and Elections, presented at:

- Pi Mu Epsilon, Western Michigan University, Kalamazoo, MI, October 2008
- Hope College Mathematics Colloquium, Holland, MI, September 2008.

Separable Preferences and Referendum Elections, presented at the Joint Mathematics Meetings, San Diego, CA, January 2008

A Moore-Inspired Advanced Calculus Course at Grand Valley State University, presented at the 10th Annual Legacy of R.L. Moore Conference, Austin, TX, April 2007.

Great Ideas for Teaching Students (GIFTS), presenter/panelist for session at Math in Action, Grand Rapids, MI, February 2007.

The Mathematics of Voting and Elections, workshop at National Council of Teachers of Mathematics regional conference, Chicago, IL, September 2006.

The Mathematics of Voting and Elections, workshop at Math in Action, Grand Rapids, MI, February 2006.

How Does Separability Affect the Desirability of Referendum Election Outcomes? (with Pete Schwallier), presented at the Mathematics Department Seminar, Grand Valley State University, Allendale, MI, November 2005.

The Mathematics of Voting and Elections, workshop at Michigan Council of Teachers of Mathematics annual meeting, Grand Rapids, MI, October 2005.

A Course on the Mathematics of Voting and Elections, presented at Mathfest, Albuquerque, NM, August 2005.

The Mathematics of Voting and Elections: A Discovery-Based Approach, minicourse at National Council of Teachers of Mathematics regional conference, Minneapolis, MI, November 2004.

The Mathematics of Voting and Elections, workshop at Michigan Council of Teachers of Mathematics annual meeting, Detroit, MI, October 2004.

Designing and Teaching Courses for Non-mathematics Majors, panelist and co-organizer for Project NExT session at Mathfest, Providence, RI, August 2004.

Separable Preferences and Admissible Characters (with Micah TerHaar), presented at:

- Grand Valley State University, Allendale, MI, September 2003.
- Western Michigan University, Kalamazoo, MI, October 2003.

R. L. Moore and the Teaching of Mathematics, presented at the Science and Mathematics Division Research Colloquium, Grand Valley State University, Allendale, MI, March 2003.

Permutations of Separable Preference Orders, presented at Public Choice Society, Nashville, TN, March 2003.

A Quick Introduction to Separable Preference Orders, presented at the Science and Mathematics Division Research Colloquium, Grand Valley State University, Allendale, MI, October 2002.

Separable Preference Orders, presented at Western Michigan University, Kalamazoo, MI, July 2002.

Separable Preferences and The Symmetric Group, presented at the Joint Mathematics Meetings, San Diego, CA, January 2002.

Some Questions Regarding Separable Preference Orders, presented at Western Michigan University, Kalamazoo, MI, September 2001.

Separable Relations on Cartesian Product Sets, presented at Horizons in Combinatorics, Nashville, TN, May 2001.

On Ky Fan's Minimax Theorem, presented for the Analysis Seminar, Western Michigan University, Kalamazoo, MI, November 2000.

Identifying Dependencies in Binary Preferences, presented at Public Choice Society, New Orleans, LA, March 1998.

Identifying Dependencies in Binary Preferences, presented at the Calvin College Mathematics Colloquium, Grand Rapids, MI, March 1998.

Media Appearances:

Guest (with Rick Klima) on *The Edge with Tom Smith*, a talk radio program on 1520AM in Tampa, FL. Participated in two one-hour interviews on the mathematics of voting and elections, July 2005 and September 2005.

Sponsored Undergraduate Research Presentations/Poster Sessions:

Emily Marshall and Geoff Patterson (NSF-funded REU, 2008), *Convexity, Gerrymandering, and Shape Compactness*, presented at:

- Mathfest, Madison, WI, August 2008. (This talk received an award from the MAA for Excellence in Undergraduate Research.)
- SUMMR (Summer Undergraduate Michigan Mathematics Research) conference, Hope College, July 2008.

Mark Krines and Jennifer Lahr (NSF-funded REU, 2007), *Finding and Maintaining Separable Preferences*, presented at:

- Mathfest, San Jose, CA, August 2007.
- Michigan REU Mini-Conference, Grand Valley State University, July 2007.

Peter Schwallier (GVSU Student Summer Scholars, 2005), *How Does Separability Affect the Desirability of Referendum Election Outcomes?*, presented at:

- Mathematics Department Seminar, Grand Valley State University, Allendale, MI, November 2005.
- Mathfest, Albuquerque, NM, August 2005.
- Michigan REU Mini-Conference, Grand Valley State University, Allendale, MI, July 2005.

Micah TerHaar (GVSU Student Summer Scholars, 2003), *Separable Preferences and Admissible Characters*, presented at:

- Posters on the Hill, Council on Undergraduate Research, Washington, DC, April 2004.
- Pi Mu Epsilon, Western Michigan University, Kalamazoo, MI, October 2003.
- Michigan Undergraduate Mathematics Conference, Grand Rapids, MI, October 2003.
- Mathematics Department Seminar, Grand Valley State University, Allendale, MI, September 2003.
- Mathfest, Boulder, CO, August 2003.
- Student Summer Scholars poster session, Grand Valley State University, Allendale, MI, August 2003.
- Michigan REU Mini-Conference, Central Michigan University, Mt. Pleasant, MI, July 2003.

GRANT ACTIVITY

Senior Personnel (2007 & 2008), *NSF-funded Research Experiences for Undergraduates (REU) Grant*, Grand Valley State University. PI: Edward Aboufadel, Co-PI: Steven Schlicker. Amount of grant (2005 – 2009): \$292,780

Pew Scholar Teacher Award (\$3,000, with Clark Wells), Grand Valley State University, for developing a discovery-based curriculum for advanced calculus, May 2006 – April 2007.

Student Summer Scholars Grant (\$6,000), Grand Valley State University, for undergraduate research during Summer 2005.

Pew Scholar Teacher Award (\$5,100), Grand Valley State University, for development of discovery-based materials on the mathematics of voting and elections, May – August 2004.

Educational Advancement Foundation Grant (\$7,750), for development of discovery-based materials on the mathematics of voting and elections, May – November 2004.

Student Summer Scholars Grant (\$6,000), Grand Valley State University, for undergraduate research during Summer 2003.

OTHER PROFESSIONAL ACTIVITIES

- Test development consulting (including writing multiple-choice discrete mathematics items) for Prometric, Inc., 2008.
- Referee for *Communicating Mathematics: A Conference in Honor of Joseph Gallian's 65th Birthday*, 2008.
- Referee for *Mathematical and Computer Modeling*, 2008.
- Textbook reviewer for Prentice Hall, 2007.
- Referee for *Mathematical Inequalities and Applications*, 2007.
- Referee for *The College Mathematics Journal*, 2005 – 2008.
- Referee for *Mathematics Magazine*, 2005.
- Textbook reviewer for Brooks-Cole publishers, 2004.
- Referee for *Theory and Decision*, 2002.

PROFESSIONAL AFFILIATIONS/MEMBERSHIPS

- American Mathematical Society
- Mathematical Association of America
- Phi Beta Kappa
- Michigan Council of Teachers of Mathematics
- Pi Mu Epsilon

COURSES TAUGHT

Grand Valley State University:

- Math 122: College Algebra
- Math 201: Calculus I
- Math 202: Calculus II
- Math 210: Communicating in Mathematics
- Math 304: Analysis of Differential Equations
- Math 310: Modern Algebra
- Math 325: Discrete Structures for Computer Science II
- Math 330: The Mathematics of Voting and Elections
- Math 345: Discrete Mathematics
- Math 408: Advanced Calculus I
- Math 645: Discrete Mathematics (graduate course for practicing teachers)

Hope College:

- Math 131: Calculus I

Western Michigan University:

- Math 114: Excursions in Mathematics (freshman-level survey course, recitation sections)
- Math 118: Precalculus
- Math 122: Calculus I
- Math 123: Calculus II
- Math 314: Mathematical Proofs
- ATYP (Academically Talented Youth Program) Accelerated Algebra I/II

Northwestern Michigan College:

- Math 131: Introduction to Probability and Statistics

SERVICE ACTIVITIES

Grand Valley State University:

2007 – 2008	Member, Mathematics Advisory Committee
2007	Chair, Mathematics Textbook Selection Policy Task Force
2006 – 2008	Co-chair, Math in Action (conference for K-12 mathematics teachers)
2005 – 2006	Member, Mathematics Search Committee
2004 – 2005	Member, Science/Math Cluster Curriculum Committee
2004 – 2005	Chair, Mathematics Curriculum Committee
2003 – 2006	Member, Mathematics Curriculum Committee
2003 – 2004	Member, Mathematics Search Committee

Western Michigan University:

2001 – 2002	Graduate Representative, Pi Mu Epsilon
2001 – 2002	Graduate Representative, Mathematics Undergraduate Committee

REFERENCES

Available upon request.