

CURRICULUM VITAE

Jay James Zimmerman
January 2019

Department of Mathematics
Towson University
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EDUCATION

June 1983 - Ph.D. (Mathematics) University of Illinois, Urbana, Illinois.
Dissertation: The Occurrence of Certain
Types of Groups as Automorphism Groups. Thesis
Advisor: Derek J. S. Robinson

Jan. 1979 - M.S. (Mathematics) University of Illinois, Urbana, Illinois.

June 1976 - B.A. (Physics and Mathematics) Knox College, Galesburg, Illinois.

EXPERIENCE

2001 – 2018 – Professor, Towson University

1996 - 2000 - Associate Professor, Towson University.

Spring 1999 - Taught a Distance Education class at Woodlawn High School. I am a Long Term Substitute for Baltimore County Schools.

1989 - 1996 - Assistant Professor, Towson State University.

1990 - 1991 - Taught one class at Catonsville High School.

1986 - 1989 - Assistant Professor, University of Alabama, Tuscaloosa, Alabama.

1983 - 1986 - Instructor, Michigan State University, East Lansing, Michigan.

1976 - 1983 - Teaching Assistant, University of Illinois, Urbana, Illinois.

Summer-1978 - Research Assistant (computer work). Los Alamos Scientific Laboratory.

1972 - 1976 - Computer Lab. Assistant, Knox College.

Summer-1975 - Research Assistant (Digital Electronic Design), Knox College.

PUBLICATION LIST

1. The Symmetric Genus Spectrum of Abelian Groups, (with Coy L. May), submitted *Ars Mathematica Contemporanea* (submitted 1/25/2019).
2. The Strong Symmetric Genus Spectrum of Nilpotent Groups, (with Coy L. May), accepted (November 2, 2018) *Communications in Algebra*.
3. The Real Genus Spectrum of Abelian Groups, (with Coy L. May), accepted (August 3, 2018) *Journal of Algebra and its Applications*, DOI: 10.1142/S0219498819501585.
4. The Density of the Strong Symmetric Genus Values of p-Groups, (with Coy L. May) *Communications in Algebra*, 45, Issue 11 (2017), 4730 – 4739, DOI:10.1080/00927872.2017.1278766.
5. Portraits of Groups on Bordered Surfaces, *Proceedings of Bridges, 2016: Mathematics, Music, Art, Architecture, Education, Culture*, Jyväskylä, Finland, 241 – 246.
6. The Strong Symmetric Genus Spectrum of Abelian Groups (with Angel Kumchev and Coy L. May), *Archiv der Mathematik*, 108(4), (2017) 341-350.
7. The Symmetric Genus of Large Odd Order Groups (with Coy L. May), *Houston J. of Math.*, 44, No. 1 (2018), 1 – 19.
8. The Density of the Real Genus Values of p-Groups (with Coy L. May), *Mathematical Proceedings of the Royal Irish Academy*, 115A, No. 1 (2015), 1 – 8.
9. The Symmetric Genus of p-Groups (with Coy L. May), *Communications in Algebra*, 42, Issue 10 (2014), 4402 - 4413; DOI:10.1080/00927872..2013.811673.
10. The Real Genus of p-Groups (with Coy L. May), *Mathematical Proceedings of the Royal Irish Academy*, 113A, No. 1 (2013), 31 – 43.
11. Portraits of Groups in Three Dimensions (with Kevin Zimmerman), *Proceedings 2012, Bridges: Mathematical Connections in Art, Music and Science*, Towson, MD, USA, 413 - 414.
12. The Symmetric Genus of 2-Groups (with Coy L. May), *Glasgow Mathematical Journal*, 55, No. 1 (2013), 9 – 21.
13. A Portrait of a Quadrilateral Group, *Proceedings 2011, Bridges: Mathematical Connections in Art, Music and Science*, Coimbra, Portugal, 505 – 508.
14. The Real Genus of 2-Groups II (with Coy L. May), *Mathematical Proceedings of the Royal Irish Academy*, 110A (2010), 137 – 147; doi:10.3318/PRIA.2010.110.2.137.
15. Minimal Extension Covers, *Communications in Algebra*, 39, No. 4 (2011), 1250 - 1259.
16. Subdirect Products of M^* -groups (with Coy L. May), *Rocky Mountain Journal of Mathematics*, 42, No. 4 (2012); doi:10.1216/RMJ-2012-42-5-1561.
17. The 2-Groups of Odd Strong Symmetric Genus (with Coy L. May), *Journal of Algebra and its Applications*, 9, No. 3 (2010), 465 - 481.
18. A Group Portrait on a Surface of Genus Five, *Proceedings 2009, Bridges: Mathematical Connections in Art, Music and Science*, Banff, Alberta, Canada, 259 - 264.
19. Teaching Group Theory using Portraits of Groups, *Proceedings 2008, Bridges, Leeuwarden: Mathematical Connections in Art, Music and Science*, Municipality of Leeuwarden, the Netherlands, 377 - 380.
20. The Groups of Symmetric Genus $\sigma \leq 8$ (with Coy L. May), *Communications in Algebra*, 36, No. 11 (2008), 4078 - 4095.
21. The Symmetric Genus of Groups of Odd Order (with Coy L. May), *Houston J. of Math.* 34, No. 2 (2008), 319 – 338.

22. Portraits of Groups II, Orientation Reversing Actions, Proceedings 2007, Bridges, Donostia: Mathematical Connections in Art, Music and Science, San Sebastian, Spain, 109 - 114.
23. Predicting Demand for the Carroll Area Transit System (with Ge Han), UMAP Journal, Vol. 27, No. 1 (2006), 3 - 15.
24. Portraits of Groups, Proceedings 2006, Bridges London: Mathematics, Music, Art, Architecture and Culture, London, England, 131 - 134.
25. Symmetries and Design Science, Two graduate courses for a mathematics education program (with Reza Sarhangi), Proceedings 2005, Bridges: Mathematical Connections in Art, Music and Science, Banff, Alberta, Canada, 357 - 366.
26. The Groups of Strong Symmetric Genus Four (with Coy L. May), Houston J. of Math. 31, No. 1 (2005), 21 – 35.
27. There is a Group of Every Strong Symmetric Genus (with Coy L. May), Bull. London Math. Soc. 35 (2003), 433 – 439.
28. The group of symmetric Euler characteristic -3 (with Coy L. May), Houston J. Math. 27, No. 4 (2001), 737 – 752.
29. The mathematics of information science (with James W. Smith), Journal of Mathematics and Science: Collaborative Explorations 4, No. 1 (2001) 187 - 214.
30. Groups of small strong symmetric genus (with Coy L. May), Journal of Group Theory 3, Issue 3 (2000) 233-245.
31. The symmetric genus of 2-groups, Glasgow Math. J. 41 (1999) 115-124.
32. The groups of symmetric genus three (with Coy L. May), Houston J. Math. 23, No. 4, (1997), 573 - 590.
33. The symmetric genus of metacyclic groups (with Coy L. May), Topology and its Applications, 66, (1995), 101-115.
34. Groups of small symmetric genus (with Coy L. May), Glasgow Math. J., 37, (1995), 115 - 129.
35. Groups that admit partial power automorphisms, Groups '93, Galway/St. Andrews, Volume 2, London Mathematical Society Lecture Note Series 212, Cambridge University Press, 594-601.
36. The symmetric genus of finite abelian groups (with Coy L. May) Illinois J. of Math., Vol. 37, No. 3, Fall 1993, 400-423.
37. Groups with automorphisms squaring most elements, Arch. Math. 54,(1990), 241-246.
38. Complete groups with non-abelian composition factors, Trans. Amer. Math. Soc., Vol. 302, Number 1, July 1987, 151-159.
39. Some properties of FC-groups which occur as automorphism groups, Proc. Amer. Math. Soc., 96 (1), (1986), 39-40.
40. Finite groups which are automorphism groups of infinite groups only, Canad. Math Bull. 28(1), (1985), 84-90.
41. Countable torsion FC-groups as automorphism groups, Arch. Math. 43, (1984), 108-116.

HONORS AND AWARDS

Presidential Distinguished Service Award – December 2015

Outstanding Faculty Award from FCSM in Fall 2007.

Excellence in Teaching Award from CSM in Fall 2001.

PROFESSIONAL MEMBERSHIPS: American Mathematical Society,
Mathematical Association of America

INVITED LECTURES

United States Naval Academy, Annapolis, Maryland, February, 1994.

Columbus College, Columbus, Georgia, April, 1987.

Western Michigan University, Michigan, March, 2002

PAPERS PRESENTED

January 2018 - 2018 Joint Mathematics Meetings, AMS Special Session on Topological Graph Theory, Structure and Symmetry, San Diego, California.
Title: The Genus Spectrum of Abelian Groups.

August 2016 – Bridges Finland: Mathematics, Music, Art, Architecture, Education, Culture, University of Jyvaskyla, Jyvaskyla, Finland.
Title: Portraits of Groups on Bordered Surfaces.

April 2014 - Ischia Group Theory Conference, Ischia, Italy.
Title: Large odd order groups of acting on Riemann surfaces.

January 2014 - 2014 Joint Mathematics Meetings, AMS Special Session on Topological Graph Theory, Structure and Symmetry III, Baltimore, Maryland.
Title: Large odd order groups of fixed symmetric genus.

May 2013 – 2013 Zassenhaus Group Theory Conference, Western Carolina University at Biltmore Park, Asheville, North Carolina.
Title: The symmetric genus of p -groups.

July 2012 - Bridges Towson: Mathematics / Music / Art, Architecture / Culture, Towson University, Maryland, USA.
Title: Portraits of Groups in Three Dimensions.

August 2011 – Conference on Group Theory, Harlaxton College, Grantham, England.
Title: The number of p -groups with large cyclic subgroups.

July 2011 - Bridges Coimbra: Mathematics / Music / Art, Architecture / Culture, Coimbra, Portugal.
Title: A portrait of a quadrilateral group.

- May 2011 – 2011 Zassenhaus Group Theory Conference, Towson University, Towson, Maryland.
Title: The number of 2-groups with large cyclic subgroups.
- October 2009- 1052nd AMS Meeting, Pennsylvania State University, University Park, Pennsylvania, Special Session on Automorphisms of Riemann Surfaces and related Topics.
Title: The 2-groups of odd strong symmetric genus.
- July 2009 - Renaissance Banff II, Bridges Banff: Mathematics / Music / Art, Architecture / Culture, Banff, Alberta, Canada.
Title: A group portrait on a surface of genus five.
- May 2009 – Zassenhaus 2009 Group Theory Conference, Franklin and Marshall College, Lancaster, Pennsylvania
Title: Minimal Extension Covers.
- March 2008 - Derek Robinson Group Theory Conference, Auburn University in Montgomery, Montgomery, Alabama.
Title: Subdirect Products of M^* - groups.
- July 2007 - Bridges Donostia: Mathematics, Music, Art, Architecture and Culture, San Sebastian, Spain.
Title: Portraits of Groups II, Orientation Reversing Actions.
- March 2007 – Zassenhaus 2007 Group Theory Conference, St. Louis University, Saint Louis, Missouri.
Title: The groups of symmetric genus $\sigma \leq 8$.
- August 2006 - Bridges London: Mathematics, Music, Art, Architecture and Culture, London, England.
Title: Portraits of Groups.
- August 2005 - Renaissance Banff, Bridges: Mathematical Connections in Art, Music and Science, Banff, Alberta, Canada.
Title: Symmetries and Design Science, Two Graduate Courses for a Mathematics Education Program.
- April 2005 - 1007th AMS Meeting, University of California at Santa Barbara, Santa Barbara, California.
Title: The genus distribution for odd order groups.
- March 2005 – 2005 Zassenhaus Group Theory Conference, Auburn University Montgomery, Montgomery, Alabama.
Title: Odd order groups of specified genus.

- October 2003 – 990th AMS Meeting, Binghamton, New York.
Title: The distribution of the genus of groups.
- January 2001 - Zassenhaus Group Theory Conference, New College of the University of South Florida, Sarasota, Florida.
Title: Groups of Small Strong Symmetric Genus
- March 2000 - CETP 2000 Conference, Washington, D.C.
Title: The Mathematics of Information Science. (Presented with James W. Smith)
- April 1999 - Lilly Conference on College and University Teaching - Atlantic, Towson University, Towson, MD.
Title: The Mathematics of Information Science. Presented with James W. Smith)
- April 1998 - Lilly Conference on College and University Teaching - Atlantic, Towson University, Towson, MD.
Title: Distance Education - Extending the College Classroom to High School - What works and what doesn't. (Presented with Raouf Boules.)
- October 1997 - Annual Fall Conference of the Maryland Council of Teachers of Mathematics, Rockville, MD.
Title: A Hands-On Approach to Error Correcting Codes.
- August 1997 - Groups St. Andrews 1997 in Bath, University of Bath, Bath, England.
Title: Some recent results on the symmetric genus of finite groups
- January 1997 - Zassenhaus Group Theory Conference, New College of the University of South Florida, Sarasota, Florida.
Title: The Groups of Symmetric Genus Three
- August 1993 - Groups 1993 Galway/St. Andrews, Galway, Ireland.
Title: Groups of small symmetric genus
- March 1992 - American Mathematical Society Meeting, University of Alabama, Tuscaloosa, Alabama.
Title: The symmetric genus of K -metacyclic groups
- May 1991 - Annual Group Theory Conference 1991, Bucknell University, Lewisburg, Pennsylvania.
Title: The symmetric genus of finite abelian groups
- October 1988 - Weekend Group Theory Conference, Hattiesburg, Mississippi.
- January 1986 - American Mathematical Society Meeting, New Orleans, Louisiana, contributed paper.

August 1985 - Groups 1985 - St. Andrews Conference, St. Andrews, Scotland.

July 1984 - Canadian Math Society Meeting, Edmonton, Alberta, Special Session on Group Theory.

October 1983 - American Mathematical Society, Fairfield, CT, Special Session on Group Theory.

January 1983 - American Mathematical Society Meeting, Denver, Colorado, contributed paper.

OTHER MEETINGS ATTENDED

April 2013 – USM Symposium: Student Success Revisited, University of Baltimore, Baltimore, Maryland.

January 2013 – January Conference, Towson University, Towson, Maryland.

April 2005 - MAA Section Meeting, Charlottesville, Virginia.

March 2004 – Tenth Annual Multicultural Conference, Towson, Maryland.

January 2004 – January Conference, Towson University, Towson, Maryland.

January 2003 – January Conference, Towson University, Towson, Maryland.

October 2002 – Teaching Diversity / Thinking Diversity Faculty Conference, Towson University, Towson, Maryland.

January 2002 – January Conference, Towson University, Towson, Maryland.

January 2002 – Combined MAA, AMS, SIAM Meeting, San Diego, California.

May 1998 - Mathematica Workshop, Towson University, Towson, MD. (May and Sept.)

November 1997 - MAA Meeting of the MD-DC-VA Section, Mount St. Mary's College, Emmitsberg, MD.

April 1997 - Lilly Conference on College and University Teaching - Atlantic, Towson State University, Towson, Maryland.

October 1996 - American Mathematical Society Meeting, Rider University, Lawrenceville, New Jersey.

March 1995 - CREST Regional Conference on NASA Space Science and the Hubble Telescope, Johns Hopkins University, Baltimore, Maryland.

January 1995 - CONAMS conference on Critical Thinking, Towson State University, Towson, Maryland.

June 1994 - MAA Workshop - "Surfaces, Soap Bubbles, and General Relativity", Frostburg State University, Frostburg, Maryland.

August 1990 - American Mathematical Society Meeting, Columbus, Ohio.

October 1989 - American Mathematical Society Meeting, Hoboken, New Jersey.

April 1988 - American Mathematical Society Meeting, College Park, Maryland.

January 1984 - American Mathematical Society Meeting, Louisville, Kentucky.

RESEARCH GRANTS

Coy L. May and I were awarded a Fisher Endowment Grant of \$31,040.00 to recruit and pay undergraduate students to do summer research. We recruited three undergraduate students, Breanna Borrer, Allison Morris and Michelle Tarr to work for 8 weeks in the summer of 2014 on a research project. The result was a paper, "The strong symmetric genus spectrum of abelian groups", which was published in the Rose-Hulman Undergraduate Mathematics Journal in October 2014.

I have been awarded several Summer Research Grants from the Faculty Development and Research committee.

During the summers of 1993, 94, 95 and 96, I worked on the Maryland Collaborative for Teacher Preparation (MCTP) which is an NSF funded project to improve the training of future elementary school teachers in mathematics and the sciences. I attended 6 workshops in the summers and collaborated in the development of two modules which will be part of an entire curriculum. I developed the course, "The Mathematics of Information Science" which has been taught in the Spring of 1998, 1999 and 2000. I was awarded a Technology Fellowship by CIAT for the Spring of 1999.

EXTERNAL GRANTS

- ADVANCE-IT START: ADVANCEment Towards Institutional Transformation at Towson University, 2008, NSF Proposal Number 0811048, \$191,709 [Co-PI with Gail Gasparich (PI) and others].
- Carroll Area Transit System, 2005, \$1500 [with Ge Han and Mike O'Leary (P.I.)].

TEACHING EXPERIENCE

Undergraduate Courses: Large lecture sections of College Algebra and Trigonometry, all Calculus and Business Calculus courses, Finite Mathematics, Mathematical Ideas (Math 105) Mathematical Concepts and Structures (Math 205), Complex Analysis, Differential Equations, Non-Euclidean Geometry, Differential Geometry, Number Theory, Abstract Algebra, Linear Algebra, Real Analysis, Advanced Calculus, Discrete Mathematics, Topology, Graph Theory and Basic Statistics. I have been involved in Distance Learning for several years in the late 1990s. I

taught Math 263, 374 and 231 in our Fiber-optics Classroom to classes at Towson and at as many as 3 remote sites. In Fall 2010, I taught Math 263 to two distant sites using the web conferencing tool, Webex. I team taught The Mathematics of Information Science for junior Education majors. The Mathematics of Information Science is an MCTP course that I developed as a junior level Interdisciplinary course. I also helped direct the Applied Mathematics Laboratory in 2004 – 2005 and 2008 - 2009.

Graduate Courses: Numerical Linear Algebra, Abstract Algebra, Algebraic Number Theory, Algebra of Symmetries, Topics in Geometry, Real Analysis for Teachers. I also taught two graduate courses in Shanghai, China in the Summer of 2008.

RECOGNITION OF TEACHING ABILITY

I was cited twice in the "List of Teachers Rated Excellent" while a graduate student at the University of Illinois. I have been nominated several times by my students for the title of "Best Adult Educator", a contest which is co-sponsored by the College of Continuing Studies and by Alpha Sigma Lambda at Towson University. I have had consistently high student evaluations both at Towson and at the University of Alabama.

SERVICE

University of System of Maryland

1. Member of the Council of University System Faculty, 2003 – 2005, 2007 – 2018.
Vice-Chair of CUSF 2010 – 2012 and Chair of CUSF 2012 – 2014.
Alternate for the Council of University System Faculty, 1998-99, 2001-2002, 2006 – 2007.
2. I have been a member of the following USM committees or workgroups: USM Meet and Confer committee, 2012 – 2013, USM Health Care Reform Workgroup, (2013), USM Retirement Incentives Workgroup (2014), Undergraduate Admissions Policy committee (2009), committee on Math Standards (2014), Faculty Workload Revision Workgroup (2015) and the Regent's Faculty Awards Committee, 1999, 2002, 2004, 2008, 2009 and chair of this committee in 2010, 2013 and 2014.
3. I was chairman of the University of Maryland System Committee, which reviewed the proposed High School Core Learning Goals of MSDE. (1996)

Towson University

1. I have served on the following Departmental committees: Adjunct Faculty Committee, Algebra and Geometry Committee (Chair), Colloquium Committee, Computer Committee, Curriculum Committee, DVMT Goals and Standards Committee, Election Committee (Chair), Ad Hoc Election Reform Committee (Chair), Honors, Standards and Scholarship Committee, the Student Welfare Committee, the Scheduling Committee, Self – Study Committee and the Social Committee. I was also the Records Coordinator (Fall 1990) and Chair of the Rank Committee for Instructors, Chair of the Rank Committee for Assistant

Professors and Chair of the Rank Committee for Professors. I have served on numerous Hiring committees and chaired the hiring committee in Summer 2001 and Spring 2015. I am currently the Departmental PTRM Chair. Finally, I served on the Ad-Hoc Committee for Election reform (2002) and the Ad-Hoc Committee to provide assistance to Parkville Magnet School in developing their curriculum. I have been the Director of the Applied Mathematics Laboratory.

2. I have been a member and Vice-Chair of the CONAMS Council, Chairman of the CONAMS Student Recruitment Committee and a member of the Dean Search Committee (1996). In addition, I served on the Faculty Development and Research Committee, Intercollegiate Athletics Committee, Library Committee (as Chair in 2002 and 2003), Resource, Planning and Advisory Committee (2003 and 2010 - 2014), Retrenchment Appeals Committee, University Continuing Studies Committee, University Curriculum Committee (as Chair in 2009 and 2010), University Promotion, Tenure, Reappointment and Merit Committee and the CIAT Technology Fellows Committee. I served on the Inaugural committee for Dr. Mark Perkins. I was a member of the Ad-Hoc Merit and Compensation Task Force in 2008, the Faculty Development Task Force 2008 – 2009 and the Middle States Working Group 3A 2008 – 2009. I am a member of the University Senate (2001 to 2005, 2006 – 2010, and 2013 to 2018), the Member – At – Large of the Senate (and hence on the Executive committee of the senate) 2006 – 2010, Vice-Chair 2015 – 2016 and Secretary 2016 - 2017. I co-chaired the Provost's Workload committee in 2014 – 2016.
3. I served as a Higher Education Representative to the High School Assessment Task Force of the Maryland School Performance Assessment Program (MSPAP). MSPAP is administered by the Maryland State Department of Education (MSDE).
4. I was Vice President of the local chapter of the AAUP (2000 – 2002) and President (2003 – 2005). I was in the 2001 Faculty Leadership class.
5. I have refereed numerous papers for journals and reviewed other papers for Mathematical Reviews and Zentralblatt.

University of Alabama

1. Served on the Undergraduate Curriculum Committee 1986-88. Introduced the Elementary Number Theory Course and restructured the Abstract Algebra Sequence.
2. Participant and frequent lecturer in the Group Theory Seminar.
3. Member Ph.D. Committee for Mr. Hyunyong Shin, June 1987.