

# *Curriculum Vitae*

*Michael J. Bardzell*, Professor  
Department of Mathematics and Computer Science  
Salisbury University  
Salisbury, Maryland

## **Research Interests:**

Noncommutative Ring Theory  
Cohomology of Finite Dimensional Algebras  
Cellular Automata  
Computational Algebra

## **Educational Background:**

- May 1996 *Ph.D. in Mathematics* - Virginia Polytechnic Institute and State University Blacksburg, Virginia.
- December 1992 *M.S. in Mathematics* - Virginia Polytechnic Institute and State University Blacksburg, Virginia.
- May 1989 *B.S. in Physics* - Graduated summa cum laude with Honors in Physics Mary Washington College Fredericksburg, Virginia

## **Honors and Affiliations**

- Recipient of the 2010 *Salisbury University Outstanding Research Mentor Award*. Presented at the ninth annual SU Student Research Conference, April 23, 2010.
- Recipient of the 2009 *Deborah and Franklin Haimo Award for Distinguished College or University Teaching* from the Mathematical Association of America. One of three faculty selected nationwide.
- Recipient of a 2009 University System of Maryland Regents *Award for Excellence in Teaching*.
- Recipient of the 2007 *John M. Smith Award for Distinguished College or University Teaching of Mathematics* by the Mathematical Association of America – MD/VD/DC Section.
- Faculty Appreciation Award. Presented by the Salisbury University Student Government Association, November 2007.
- Appreciation Award. Presented by President Janet Dudley-Eshbach for contributions to the
- Salisbury University Student Undergraduate Research Conference, May 2007.

- Inducted into *Who's Who Among American Teachers* in 2005.
- 2001 *Distinguished Faculty Award* - Salisbury University
- Mathematical Association of America 1997-present
- American Mathematical Society 1990-1996
- Phi Beta Kappa (1989)
- Pi Mu Epsilon, National Honorary Mathematics Society (1989)
- Sigma Pi Sigma, National Honorary Physics Society (1989)
- Chi Beta Phi, National Science Honorary Society (1988)

## **Grants Funded/Submitted**

### External

- ❖ Salisbury University Noyce Scholarship Recruitment and Induction of STEM Educators Initiative (SUNRISE Initiative), with Randy Groth. Submitted to the National Science Foundation for \$1,449,551.
- ❖ Received a \$93,666 grant from the Maryland Higher Education Commission (MHEC) Improving Teacher Quality Program (ITQ). The project is entitled "*Transitioning from Elementary to Middle School Mathematics.*"
- ❖ Received a \$49,708 grant from the Maryland Higher Education Commission (MHEC) for the College Preparation Intervention Program (CPIP) GEAR UP program. The SU GEAR UP project is entitled "Excelling in Math and Science V1" and is effective May 1, 2005 – Aug. 31, 2006.
- ❖ Received (with Kathleen Shannon and Eirini Poimenidou) for a \$179,157 NSF grant entitled *The PascGalois Project: Visualization in Abstract Mathematics*, effective Jan. 1, 2004.
- ❖ Received (with Kathleen Shannon) an NSF grant for \$74,990 to support the *The PascGalois Project: Visualizing Abstract Algebra*. Effective January 1, 2001 - December 31, 2003.

### Internal

- Received a \$2500 Guerrieri Undergraduate Research Summer Program grant to support a research student during summer 2005.
- Received (with Don Spickler) a \$2500 Guerrieri Undergraduate Research Summer Program grant to support a research student during summer 2006.

- Received a \$2500 Guerrieri Undergraduate Research Summer Program grant to support a research student during summer 2007.

## Selected Service Activities

- Chair, Department of Mathematics and Computer Science Salisbury University, July 2009-July 2015.
- Associate Editor, *Classroom Resources Materials* series of the Mathematical Association of America, 2009 – 2014.
- Advisor STEM Living Learning Community, since 2009.
- Henson Dean's Search Committee 2007.
- Member of SU Graduate Council, 2007-2008.
- Co-chaired SUSRC undergraduate research conference committee, 2004 and 2007.
- Advisor for SU Mathematics Club. Worked with student members to obtain Maryland Zeta Chapter of Pi Mu Epsilon in 2001.
- Chaired Salisbury University's Faculty Development Committee, 2001.

## Publications and Manuscripts

- 1) *Teacher Training and Student Assessment: At Odds?*, with Jennifer Bergner. Doceamus Column of the Notices of the American Mathematical Society. June/July 2013. pp763-764.
- 2) *A Ring Construction Using Finite Directed Graphs*. PRIMUS. Volume 22, Issue 5, 2012, pp. 428-436.
- 3) *The Evolution of Finite 1-Dimensional Cellular Automata updated with k-Rules*, with Joseph Seaborn III, and Aaron Churchill, and Philip Mummert. Journal of Cellular Automata. Volume 6, Number 6. 2011. p. 505-515
- 4) *Cellular Automata over Group Alphabets: Undergraduate Education and the PascGalois Project*, with Donald Spickler. Journal of Cellular Automata, Volume 6, Number 2-3, pp. 215-230, 2011.
- 5) *Binomial Coefficients Modulo a Prime – A Visualization Approach to Undergraduate Research*, with Eirini Poimenidou. PRIMUS, 21(3), pp. 238-251, 2011.

- 6) *A p-adic Approach to Binomial Identities*, with Katelin Childers, Erin Craig, Israa Taha, and Eirini Poimenidou. *The Pi Mu Epsilon Journal*. Volume 13, Number 3. Fall 2010. pp. 133-142.
- 7) *A Qualitative Approach to Assessing Technological Pedagogical Content Knowledge*, with Randall Groth, Jennifer Bergner, and Donald Spickler. *Contemporary Issues in Technology and Teacher Education*, Volume 9, Issue 4, 2009.
- 8) *PascGalois Abstract Algebra Classroom Resources*, with Jennifer Bergner, Kathleen Shannon, Don Spickler, Tyler Evans. Loci: Resources, Digital Classroom Resources on MathDL website, July 2008.
- 9) *PascGalois Number Theory Classroom Resources*, with Michael Fisher, and Kurt Ludwick. Loci: Resources, Digital Classroom Resources on MathDL website, July 2008.
- 10) *The PascGalois Summer Undergraduate Research Retreats*, with Eirini Poimenidou, May/June issue of the MAA newsletter FOCUS, 2007.
- 11) *The Evolution Homomorphism and Permutation Actions on Group Generated Cellular Automata*, with Nicole Miller, *Complex Systems*, Volume 15, Issue 2, 2004.
- 12) *Searching for Patterns in Pascal's Triangle With a Twist*, with Kathleen Shannon. *Journal of Online Mathematics and its Applications*, <http://www.joma.org/>, Volume 3, November 2003.
- 13) *The PascGalois Triangle: A Tool for Visualizing Abstract Algebra*, with K.M. Shannon, MAA Notes: Innovations in Teaching Abstract Algebra , April 2002.
- 14) *The PascGalois Project: Visualizing Abstract Algebra*, with K.M. Shannon, March issue MAA newsletter FOCUS, 2002.
- 15) Lab Manual to Accompany the Standard Version of Starting Out with C++ (Third Edition by Tony Gaddis), joint with Dean DeFino. Scott Jones Publisher, 2001.
- 16) Lab Manual to Accompany the Alternate Version of Starting Out with C++ (Alternate Edition by Tony Gaddis), joint with Dean DeFino and Judy Walters. Scott Jones Publisher, 2001.
- 17) *Non-Commutative Groebner Bases and Hochschild Cohomology*, *Contemporary Mathematics*, Volume 286, *Symbolic Computation: Solving Equations in Algebra, Geometry, and Engineering*, 2001; pp. 227-240.
- 18)  *$H^1(A)$  and Presentations of Finite Dimensional Algebras*, with E.N. Marcos, Representations of Algebras, *Lecture Notes in Pure and Applied Mathematics*, volume 224, Marcel Dekker, Inc. pp. 31 - 38, 2001.

- 19) *Can We Learn Calculus From A Jerk?*, with Paula Kenyon, *PRIMUS*, Volume XI Number 2, pp. 97-110, June 2001.
- 20) *On the Hochschild Cohomology of Truncated Cycle Algebras*, with A.C. Locateli and E.N. Marcos, *Communications in Algebra*, 28(3), 1615-1639, 2000.
- 21) *An Invariant Characterization of Monomial Algebras*, with E.L. Green, *Communications in Algebra*, 27(5), 2331-2344, 1999.
- 22) *Induced Boundary Maps for the Cohomology of Monomial and Auslander Algebras*, with E.N. Marcos, *Canadian Mathematical Society Conference Proceedings*, Volume 24, 1998.
- 23) *The Alternating Syzygy Behavior of Monomial Algebras*, *Journal of Algebra* 188, 69-89 (1997).
- 24) *Resolutions and Cohomology of Finite Dimensional Algebras*, Ph.D. Thesis, Virginia Tech 1996.

### **Publications in Preparation**

*Fractal Dimensions of Group Generated Cellular Automata*, with Donald Spickler.

### **MAA Mini-Course/Workshops Delivered**

- *Using PascGalois Materials to Teach Abstract Algebra*, Project NExT workshop at Math Fest in Portland, Oregon, Aug. 5, 2009.
- *Abstract Algebra Meets Fractal Geometry*, Workshop for the fall 2008 meeting of the MD/DC/VA Section of the MAA, Hood College, Frederick MD, Nov. 7, 2008.
- Mini-course #5: *Visualizing Abstract Mathematics with Cellular Automata*, with Donald Spickler. Presented at the Joint AMS/MAA National Meetings, San Diego. Jan. 2008.

### **Grant Funded Workshops Awarded/Delivered**

- *Some Big Ideas with Regard to Rational Numbers II*, April 18, 2015. Delivered with Jenn Bergner as part of the Eastern Shore Consortium/Math Partnership Grant Program serving math teachers from five Maryland counties.
- *Some Big Ideas with Regard to Rational Numbers I*, Feb.7, 2015. Delivered with Jenn Bergner as part of the Eastern Shore Consortium/Math Partnership Grant Program serving math teachers from five Maryland counties.

- MSP one-week Capstone Workshop. With Jenn Bergner. Focused on the connections between algebra, geometry, probability, and statistics. June 20, 21, 25, 26, 27 2012. This workshop was the culminating activity for this grant which ran continuously since 2006.
- *Excursions into probability: How Sweet it is.* One day workshop presented with Jenn Bergner. May, 2012
- *Geometric probability in the Geosciences.* One day workshop presented with Dan Harris, Mara Chen, and Jenn Bergner. March 26, 2012.
- *Excursions into probability.* Eastern Shore Consortium/Math Partnership Grant Program (delivered with Drs. Jennifer Bergner) – January 21, 2012. This workshop focused in geometric probability. Teachers from six Maryland counties attended.
- Eastern Shore Consortium/Math Partnership Grant Program (delivered with Drs. Jennifer Bergner) – June 23, 24, 27, 28, and 29, 2011. This workshop focused on geometry, probability, and statistics. Teachers from six Maryland counties attended.
- Eastern Shore Consortium/Math Partnership Grant Program (delivered with Drs. Jennifer Bergner, Mara Chen, and Dan Harris). *Math in the Geosciences*, March 26, 2011.
- Eastern Shore Consortium/Math Partnership Grant Program (delivered with Dr. Jennifer Bergner). Geometer's Sketchpad Workshop – Jan. 22, 2011.
- Eastern Shore Consortium/Math Partnership Grant Program (delivered with Dr. Jennifer Bergner) – August 28, 2010. Teachers from six Maryland counties on the Eastern Shore attended.
- Eastern Shore Consortium/Math Partnership Grant Program (delivered with Dr. Jennifer Bergner) – July 7, 8, and 9, 2010. This workshop focused on prime decomposition and the combining mathematics and science using CBL/CBR technology. Teachers from six Maryland counties on the Eastern Shore attended.
- Eastern Shore Consortium/Math Partnership Grant Program (delivered with Dr. Jennifer Bergner) – June 24, 25, 28, 29, and 30, 2010. This workshop focused on number and operation. Teachers from four Maryland counties on the Eastern Shore attended.
- Eastern Shore Consortium/Math Partnership Grant Program (delivered with Dr. Jennifer Bergner) – January 8 and 9, 2010. This workshop focused on division algorithms and pattern recognition. Teachers from six Maryland counties on the Eastern Shore attended.
- Eastern Shore Consortium/Math Partnership Grant Program (delivered with Dr. Jennifer Bergner) - July 16, 17, 20, 21, and 22 2009. This workshop focused on number and

operations for elementary and middle school teachers. Teachers from six Maryland counties on the Eastern Shore attended.

- Eastern Shore Consortium/Math Partnership Grant Program (delivered with Dr. Jennifer Bergner) – July 7 and 8, 2009. This workshop focused on number and operations for middle and early high school teachers.
- MHEC Math ITQ Grant Summer Mathematics Institute (with Dr. Claudia Burgess) – June 22 – June 26, 2009. This workshop focused on number, operations, and algebra for late elementary and early middle school teachers.
- Eastern Shore Consortium/Math Partnership Grant Program (delivered with Kelly Sullivan) – July 15 and 16, 2008. This workshop focused on algebra, probability, and statistics for late elementary, middle, and early high school teachers.
- Eastern Shore Consortium/Math Partnership Grant Program (delivered with Dr. Jennifer Bergner) - June 19, 20, 23, 24, and 25, 2008. This workshop focused on algebra, fractions, and statistics for elementary and middle school teachers. Teachers from six Maryland counties on the Eastern Shore attended.
- Technology and Mathematics - (Delaware Professional Development Cluster). Proposal written with Dr. Jennifer Bergner and approved by the Delaware Professional Standards Board in spring 2007.
- Eastern Shore Consortium/Math Partnership Grant Program (delivered with Dr. Jennifer Bergner) - June 21, 22, 25, 26, and 27 2007. This workshop focused on algebra for middle school teachers. Teachers from six Maryland counties on the Eastern Shore attended.
- Real World Mathematics – Applications for the 21<sup>st</sup> Century (Delaware Professional Development Cluster). Proposal written with Dr. Jennifer Bergner and approved by the Delaware Professional Standards Board. Corresponding workshop delivered on July 19, 20, 24, 26, and 27, 2006 with Bergner.
- Eastern Shore Consortium/Math Partnership Grant Program (delivered with Dr. Jennifer Bergner) - June 22, 23, 26, 27, and 28 2006. This workshop focused on algebra for middle school teachers. Teachers from six Maryland counties on the Eastern Shore attended.
- The PascGalois Summer Undergraduate Research Retreat, New College of Florida, June 5 – June 9, 2006 (Supported by NSF PascGalois grant). Lectures given:
  - *What Are Cellular Automata?*
  - *Combinatorics of Pascal's Triangle and Beyond*
  - *An Introduction to Fractal Dimensions*
  - *Global Properties of Cellular Automata*
  - *Visualizing Combinatorial Identities*

- *Algebraic Approaches to Fractal Dimensions*
  - *Cellular Automata as Algebraic Systems*
- PRIME Geometry Workshop (delivered with Drs. Jennifer Bergner and Kurt Ludwick) July 26 – July 30 and August 1 – August 5, 2005. PRIME is a Title II Partnership grant, federally funded, with Worcester County, Maryland.
  - The PascGalois Summer Undergraduate Research Retreat, New College of Florida, June 6 – June 10, 2005. Lectures given:
    - *What Are Cellular Automata?*
    - *Fractal Dimensions of Cellular Automata I*
    - *Combinatorial Aspects of Cellular Automata I*
    - *Cellular Automata as Algebraic Systems I (with Nicole Miller)*
    - *Fractal Dimensions of Cellular Automata II*
    - *Cellular Automata as Algebraic Systems II*
    - *Ideas for Programming Applications (with Brian Guarraci)*
  - PRIME Geometry Workshop (delivered with Drs. Jennifer Bergner and Kurt Ludwick) July 25 – July 29 and August 2 – August 6, 2004. PRIME is a Title II Partnership grant, federally funded, with Worcester County, Maryland.

## Presentations

- “*A Partnership with Local Schools: Implementing the Paradigm Shift to Teaching Common Core Mathematics*”, with Jenn Bergner. Presented at the Joint National Math Meetings in San Antonio, January 2015.
- Panelist for the Young Mathematicians’ Network Panel Discussion *Building Your CV* at the Joint National Math Meetings in Baltimore, MD January 2014.
- “*Building a Noncommutative Ring from a Finite Directed Graph*”, Joint AMS/MAA National Meetings, New Orleans. Jan. 6, 2011.
- “*Building a Robust STEM Pipeline.*” Presented at the Potomac & Chesapeake Association for College Admission Counseling. Salisbury University, Nov. 16, 2010.
- “*Effective teaching when the class's ability distribution is bimodal.*” Section NExT panel discussion session at the fall meeting of the MD/DC/VA Section of the MAA. Member of a 3 person panel which met at George Mason University on Saturday, November 6, 2010.
- “*The Seven Bridges of Königsberg*”, invited talk for the Stephen Decatur High School Mu Alpha Theta Induction Ceremony, April 27, 2010.



- “*Global Properties of Linear Finite Cellular Automata*”, Invited SIAM Lecture at Texas Tech University, March 25, 2010.
- “*The Seven Bridges of Königsberg*”, invited talk for the Bennett High School Mu Alpha Theta Induction Ceremony, March 18 2009.
- “*From Groups to Graphics – Stories of Undergraduate Research in Visualizing Abstract Mathematics*”, invited talk for the Haimo award session, Joint AMS/MAA National Meetings, Washington DC. Jan. 7, 2009.
- “*The PascGalois Project: Visualizing Abstract Mathematics*”, presented with Donald Spickler and Kathleen Shannon at the MAA Poster Session: Projects Supported by the NSF Division on Undergraduate Education, Joint AMS/MAA National Meetings, Washington DC. Jan. 6, 2009.
- “*The PascGalois Project: Visualizing Abstract Mathematics*”, presented with Donald Spickler and Kathleen Shannon at the MAA Poster Session: Projects Supported by the NSF Division on Undergraduate Education, Joint AMS/MAA National Meetings, San Diego. Jan. 7, 2008.
- “*Visualizing Binomial Identities Using PascGaloisJE*”, presented in the MAA Special Session on Applications of Discrete Mathematics at the Joint AMS/MAA National Meetings, New Orleans. Jan 8, 2007.
- “*The PascGalois Project: Visualizing Abstract Mathematics*”, presented with Kathleen Shannon at the MAA Poster Session: Projects Supported by the NSF Division on Undergraduate Education, Joint AMS/MAA National Meetings, New Orleans. Jan. 6, 2007.
- “*The PascGalois Project: Visualizing Abstract Mathematics*”, presented with Kathleen Shannon at the MAA Poster Session: Projects Supported by the NSF Division on Undergraduate Education, Joint AMS/MAA National Meetings, San Antonio. Jan. 14, 2006.
- “*Prime: Partnership for Revitalized Instruction in Mathematics Education*”, presented with Jennifer Bergner in the MAA Special Session on Professional Development Programs for K-12 Teachers at the Joint AMS/MAA National Meetings, San Antonio. Jan 13, 2006.
- “*PascGalois Summer Research Retreat at New College of Florida*”, presented with Eirini Poimenidou in the MAA Special Session on Research and Other Mathematical Experiences for Students Outside the Classroom at the Joint AMS/MAA National Meetings, San Antonio. Jan 13, 2006.
- “*Number Theoretic Applications to Group Generated Cellular Automata*”, presented with Tyler Evans in the MAA Special Session on Number-Theoretic Applications at the Joint AMS/MAA National Meetings, San Antonio. Jan 12, 2006.

- "*The PascGalois Project: Visualizing Abstract Mathematics*", presented with Kathleen Shannon at the MAA Poster Session: Projects Supported by the NSF Division on Undergraduate Education, Joint AMS/MAA National Meetings, Atlanta, Georgia. Jan 7, 2005.
- "*The PascGalois Project: Visualization in Abstract Mathematics*", presented at the NSF CCLI conference Invention and Impact: Building Excellence in Undergraduate STEM Education, Crystal City, VA. April 16, 2004.
- "*The PascGalois Project: Visualization in Abstract Mathematics*", NSF CCLI SIGCSE Showcase 04, Norfolk, Va. March 5, 2004.
- "*Fractal Dimension and Iterated Automorphism Systems*", presented in the Special MAA Session on Chaotic Dynamics and Fractal Geometry at the Joint AMS/MAA National Meetings, Phoenix, Arizona. Jan 8, 2004.
- "*The PascGalois Project: Visualizing Abstract Algebra*", presented with Kathleen Shannon at the MAA Poster Session: Projects Supported by the NSF Division on Undergraduate Education, Joint AMS/MAA National Meetings, Phoenix, Arizona. Jan 9, 2004.
- "*Using Groups to Generate Automata*", with Kathleen Shannon, presented at AMS-MAA Joint Mathematics Meetings, Baltimore, MD. Jan 16, 2003.
- "*The PascGalois Project: Visualizing Abstract Algebra*", presented with Kathleen Shannon at the MAA Poster Session: Projects Supported by the NSF Division on Undergraduate Education, Joint AMS/MAA National Meetings, Baltimore, MD. Jan 17, 2003.
- "*The PascGalois Project: Visualization Projects for Abstract Algebra*", with Kathleen Shannon and Cynthia Woodburn, presented at AMS-MAA Joint Mathematics Meetings, Baltimore, MD. Jan 18, 2003.
- "*Cellular Automata and Discrete Dynamical Systems*", invited lecture for the Associated Colleges of Central Kansas, Mathematical Sciences Departments. Presented at McPherson College, Nov. 18, 2002.
- "*The Geometry of Group Generated Cellular Automata*", colloquium talk given with Kathleen Shannon at Towson University, May 2002.
- "*The PascGalois Project: Visualizing Abstract Algebra*", presented with Kathleen Shannon at the MAA Workshop for NSF PI's, NSF Headquarters, March 2002.
- "*The PascGalois Project: Visualizing Abstract Algebra*", presented with Kathleen Shannon at the MAA Poster Session: Projects Supported by the NSF Division on Undergraduate Education, Joint AMS/MAA National Meetings, San Diego, CA., Jan. 8, 2002.

- "*Establishing a Long Term Undergraduate Research Program in Mathematics*", presented at the Joint AMS/MAA National Meetings, San Diego, CA., Jan. 7, 2002.
- "*Institutionalizing Undergraduate Research* ", led Teaching Learning Network roundtable discussion at Salisbury State University, Feb. 14, 2001.
- "*Groups, Fractal Patterns, and the Dynamics of Cellular Automata* ", with Kathleen Shannon, presented at the Joint AMS/MAA National Meetings, New Orleans, LA., Jan. 10, 2001.
- "*PascalGT: Conjectures, Explorations, and Reasoning in Mathematics* ", with Kathleen Shannon, presented at the Joint AMS/MAA National Meetings, New Orleans, LA., Jan. 13, 2001.
- "*Hit Counting Algorithms for 2-D Cellular Automata*", with Brian Guarraci, presented at the Regional Fall MAA Meeting at American University, Washington, D.C., Nov. 18, 2000.
- "*Writing in Mathematics: Constructing Definitions* ", Writing Across the Curriculum Workshop at Washington High School for area teachers.
- "*Groebner Bases and Hochschild Cohomology* ", presented at the AMS-IMS-SIAM Summer Research Conference on *Symbolic Computation: Solving Equations in Algebra, Geometry, and Engineering*, Mt. Holyoke College, June 11 - June 15, 2000.
- "*Emerging Technology and 3-D Graphics* ", Faculty Week Series in the Bell Atlantic Studio, Salisbury State University; April 20, 2000.
- "*Automorphisms, Subnormal Series, and Group Generated Cellular Automata* ", Mid Atlantic Algebra Conference, George Mason University, March 11-12, 2000.
- "*Life, Death, and the Six States In-Between* ", with Kathleen Shannon, 11th Annual Eastern Shore Computer Bowl, Salisbury State University, March 3, 2000.
- "*Fractal Dimensions For Group Generated Cellular Automata* ", with Kathleen Shannon, Joint AMS/MAA National Meetings, Washington D.C., January 19, 2000.
- "*Planned Projects Using 3-D Rendering Software* ", with Kathleen Shannon, Faculty Week Series in the Bell Atlantic Studio, Salisbury State University; December 9, 1999.
- "*The PascGalois Project: Computer Visualizations* ", with Kathleen Shannon, presented at the Henson School Seminar Series, Salisbury State University, December 2, 1999.
- "*Fractal Dimensions in the PascGalois Triangle* ", with Kathleen Shannon, presented at the Regional Fall MAA Meeting at Loyola University, Baltimore ( Nov. 13, 1999).

- "*Searching For a Mathematical Definition*", presented at the **Writing Across the Curriculum Mini Conference: Writing, Critical Thinking and Reflective Teaching** at Salisbury State University, February 1999.
- "*Introducing Liberal Arts Students to the Beauty of Abstract Mathematics via Computer Graphics, Groups, and Pascal's Triangle* ", with Kathleen Shannon, presented in the MAA Session **Ethical, Humanistic, and Artistic Mathematics** at the Joint National AMS/MAA Meetings in San Antonio, Texas ( Jan. 15, 1999).
- "*Using Pascal's Triangle to Visualize Abstract Algebra Concepts*", with Kathleen Shannon, presented in the MAA Session **Innovations in Teaching Abstract Algebra** at the Joint National AMS/MAA Meetings in San Antonio, Texas ( Jan. 13, 1999)
- "*Using Computer Graphics to Investigate Group Structure*", with Kathleen Shannon, presented at the Regional Fall MAA Meeting at Towson State University, Nov. 14, 1998
- "*The Robot Who Knows Algebra*", with Robert Tardiff, 15<sup>th</sup> Annual High School Mathematics Contest, Salisbury State University ( Nov. 12, 1998 )
- "*Cohomology Rings for Cycle Algebras*", **Workshop on Rings and Representations**, June 8-June 12, Morelia Mexico, 1998.
- "*Cohomology for  $Z(m)$  Cycles*" , given at the **Mid Atlantic Algebra Conference**, May 1-May 2 1998, James Madison University, Harrisonburg, Va.
- "*Calculus for Jerks*", with Paula Kenyon, presented at the Joint AMS/MAA National Meetings in Baltimore, January 1998.
- "*Invariants of Brauer Tree Algebras*", presented at the Joint AMS/MAA National Meetings in Baltimore, January 1998.
- "*Computational Techniques for Hochschild Cohomology*", presented at the **AMS-IMS-SIAM Joint Research Conference** at the University of Washington, July 1997.
- "*Graphs, Groebner Bases, and Noncommutative Rings*", colloquium talk given at George Mason University, January 1997.
- "*A Lifted Groebner Basis for the Enveloping Algebra*", presented at the **22<sup>nd</sup> Holiday Mathematics Symposium** at New Mexico State University, January 1997.
- "*Symmetry in Mathematics and Nature*", presented at the 13<sup>th</sup> Annual High School Mathematics Contest, Salisbury State University, Nov. 1996.
- "*Low Dimensional Cohomology and the Euler Characteristic*", Invited talk for the **Rings and Modules** Special Session at the AMS regional meeting, Baton Rouge, Louisiana ( April 19-21, 1996).

- "*Hochschild Cohomology of Monomial Algebras*", presented at the AMS-MAA Joint Mathematics Meetings, Orlando, Florida ( January 1996 )
- "*Calculated Electric Dipole Contribution to the He Giant Resonance*", Poster presented at the Third National Conference on Undergraduate Research, San Antonio, Texas ( May 1989).

### **Other Conferences and Workshops Attended & Student Presentations**

- Attended CUR's *Posters on the Hill* event, April 2013. Accompanied my student Samim Manizade who was one of 60 applicants accepted nationwide (out of over 800) to present *Computational Modeling of Robotic Arm Kinematics*.
- Attended MD/DC/VA Sectional Spring 2013 Meeting of the MAA at Salisbury University. Accompanied my student Samim Manizade who presented *Computational Modeling of Robotic Arm Kinematics*.
- Attended the MD/DC/VA Sectional Spring 2010 Meeting of the MAA – Virginia State University. Accompanied my student Katie Walsh who presented "*The Dynamics of Finite Cellular Automata with Null Boundary Conditions*." Katie won second place in the student presentation category.
- Attended NCUR 2008 at Salisbury University. Accompanied students Val Laurushchyk and Brandy Griffin who presented *Measuring Fractal Dimension in 2-D Cellular Automata* and *The Lucas Correspondence Theorem and Discrete Dynamical Systems*, respectively NCUR.
- Attended the MD/DC/VA Sectional Spring Meeting of the MAA – Roanoke College, Salem Va. April 14, 2007.
- 2006 NCUR, Asheville NC. Accompanied my students Aaron Churchill who presented "*Life and Death of a Finite 1-D Cellular Automata*" and Jonathon Miller who presented "*Fractal Dimensions of Infinite Cellular Automata*".
- 2005 NCUR, Lexington Va. Accompanied my student Lauren Eckert who presented "*Measuring Fractal Dimensions of Cellular Automata in 2D & 3D Space*".
- Central Virginia Regional Undergraduate Research Mathematics Conference, January 2005, University of Mary Washington. Accompanied my student Lauren Eckert who presented "*Measuring Fractal Dimensions of Cellular Automata in 2D & 3D Space*".
- 2004 Joint AMS/MAA National Math Meetings, Phoenix, Arizona. Accompanied Brenda Russo who presented "*Calculating Dimension of Discrete Dynamical Systems Using Iterated Automorphism Systems*" in the MAA Undergraduate Poster Session.

- 2003 Math Fest, Boulder Co. Accompanied my student Brenda Russo who presented "*Algebraic Structures and the Long-term Behavior of Discrete Dynamical Systems*". Brenda won an award from Pi Mu Epsilon for outstanding paper.
- 2003 NCUR University of Utah. Accompanied my student April Calloway who presented "*Information Entropy in Discrete Dynamical Systems*".
- 2003 Attended the MAA Minicourse: *Cwatsets: A Research Experience for Undergraduates*, at the Joint AMS/MAA National Math Meetings in Baltimore.
- 2003 Attended the MAA Minicourse: *Getting Students Involved in Undergraduate Research*, at the Joint AMS/MAA National Math Meetings in Baltimore.
- 2002 Summer Math Fest, Burlington, VT. Accompanied my student Nicole Miller who presented "*The Evolution Homomorphism and Classification of Cellular Automata*".
- 2002 NCUR University of Wisconsin, Whitewater. Accompanied my student Stephan Gymnich who presented "*State Transition Diagrams for Group Generated Automata*".
- 2001 Summer Math Fest, University of Wisconsin, Madison. Accompanied my student Nicole Miller who presented "*Periodicity and Long-Term Evolution of Cellular Automata*".
- 2001 CUR Posters on Capitol Hill. Accompanied my student Nicole Miller who presented "*Periodicity and Long-Term Evolution of 2-D Cellular Automata*". Nicole was one of 68 students chosen nationally to present to members of the Congress and Senate.
- 2001 NCUR University of Kentucky. Accompanied my student Nicole Miller who presented "*Periodicity and Long-Term Evolution of 2-D Cellular Automata*".
- CUR Institute, *Institutionalizing Undergraduate Research*, Coastal Carolina University, Oct. 20 - 22, 2000. Attended with Dean Tom Jones and Dr. E.J. Crane and developed an SSU plan for institutionalizing undergraduate research.
- 2000 NCUR University of Montana, Accompanied my student Dan Winter who presented "*Modeling Cellular Automata Using Virtual Reality and Animations*".
- 2000 Microsoft Certified Education Center, completed course Programming with Microsoft Visual C++ given by ObjectArts Inc.
- 2000 Attended the MAA Mini course entitled *Exploring Abstract Topics Through Interactive Labs* at the Joint AMS/MAA National Meetings in Washington D.C.

- 1999 NCUR University of Rochester, New York. Accompanied my student Bianca Townsend who presented "*Self-Similar Patterns in Pascal's Triangle Under Cyclic Group Multiplication*".
- 1998 NCUR Salisbury State University, Salisbury Maryland. Special Session Moderator and accompanied my student Randy Cone who presented "*On the Edge: Visual Representations of Digraphs with Java*".
- 1998 Advanced Writing Across the Curriculum workshop, Salisbury State University.
- 1998 Attended the MAA Mini course entitled *Polynomial Algebra* at the Joint AMS/MAA National Meetings in Baltimore.
- 1997 MAA Regional Fall Meeting, Mount Saint Mary's College.
- 1997 NCUR (National Conference on Undergraduate Research) University of Texas, Austin, Texas. Accompanied my student Paula Kenyon who presented "*Jerk: The Third Derivative*".
- 1996 Writing Across the Curriculum workshop, Salisbury State University.
- 1996 MAA Regional Fall Meeting, Hood College. Accompanied my student Paula Kenyon who presented "*Jerk: The Third Derivative*".