

DEPARTMENT OF MATHEMATICS
Annual Report to the Board of Trustees of
Rose-Hulman Institute of Technology
1 June 05 - 31 May 06

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1. Department Overview

This was a successful year for the department. In addition to good teaching, professional development, and service programs on the part of the faculty, here are some high points:

- a. Successful hiring a faculty member in Discrete Mathematics to replace loss of Tom Langley.
- b. 45% or more of incoming freshman have advanced math placements, allowing them to get AP credit for one or more calculus classes. Fast Track Calculus is over 10% of the freshman class. The math schedule accommodates all these students starting at different places in the curriculum, allowing students to take full advantage of their advanced placements.
- c. There is significant interest in mathematics courses beyond calculus, differential equations and basic statistics. Almost 30% of students are taking these “beyond the foundation” courses.
- d. Continuing success in undergraduate mathematics research through student research and presentations,
 - NSF-REU (18 years),
 - Undergraduate Math conference (23 years)
 - and Undergraduate Journal (75 papers and 125 authors in the 6 years of its existence)
- e. Continuing support of mathematics outreach programs in High School Math Contest, hosting regional MathCounts, and administrative support for American Mathematics Competitions and MathCounts

2. Personnel Changes

Joining Rose-Hulman

- *William (Bill) Butske* – Converted from visiting to tenure-track
- *Donald (Don) Mills* - coming from Southern Illinois University

Sabbaticals

- *Kurt Bryan* - will be on sabbatical at Rutgers University, Winter and Spring quarters

Leaving

- *Ghan Bhatt* – One year visiting appointment
- *Gary Sherman* – retiring after 35 year of service. Thank you Gary for all your contributions over 35 years.

3. Student and Alumni Highlights

Pi Mu Epsilon Honorary Mathematics Fraternity: Twenty-seven new members of the Rose-Hulman student body were inducted at the spring 2006 Initiation Banquet for the Indiana Gamma Chapter of Pi Mu Epsilon. The speaker was *Dr. Gary Sherman*.

Mathematics Competitions

- **18th annual Alfred R. Schmidt Freshman Mathematics Competition** (adviser John Rickert). Nineteen freshmen took part in the *Eighteenth* Annual ARS Competition. First place prize was awarded to *Casimir Ksiazek*, 2nd place prizes were awarded to *Anirudh Narayanan and Michael Nguyen*, and 3rd place prize was awarded to *Tyler Gonnsen*.
- **28th Annual Virginia Tech Regional Mathematics Competition** (advisor John Rickert). Thirteen Rose-Hulman students participated in this nation-wide mathematics problem solving competition held November 2006.
- **67th Annual Putnam Competition** (advisor Kurt Bryan) In the 66th Annual William Lowell Putnam Mathematical Competition, *Hari Ravindran* scored 19, *Robert Lemke-Oliver* scored 18, *Adam Outcalt* scored 12, and *Tom Werne* scored 10.
- **22nd Mathematical Contest in Modeling** (advisor David Rader). Two teams from Rose-Hulman spent four days in February competing in this annual international modeling contest. The team of *Ted Lyman, Eli Spears, and Tom Werne* received Honorable Mention for their paper. The team of *Dan Dominick, Stephen Dupal, and Peter Fine* got Successful Participant.

- **41st Indiana College Mathematics Competition** (advisor John Rickert). The team of *Stephen Dupal, Robert Lemke-Oliver and Hari Ravindran* received first-place honors out of 35 teams at the 2006 ICMC held at Taylor University in March 2006. The No. 2 Team of *John Beety, Adam Outcalt and Angela Smiley* placed 5th. Other students participating: *Ted Lyman, Ian Rogers and Ely Spears*.

Student Presentations

23rd Annual Conference on Undergraduate Mathematics

- *Brandon Borkholder* presented “Breaking the MD5”
- *Lee McDaniel* presented “Benford and Winning Streaks”
- *Hari Ravindran* presented “Investigating the Shape of a Cookie”
- *Eric Reyes* presented “Do Dogs Really Know Calculus?” also at Fall INMAA meeting at Depauw University.

Rose Math Seminars:

- *Eric Reyes* presented “Do Dogs Really Know Calculus?”, October 2005
- *Hari Ravindran* presented “Investigating the Shape of a Cookie”, February 2006
- *Brandon Borkholder* presented “Breaking the MD5”, March 2006

Student Awards

Clarence P. Sousley Memorial Award presented to *Eric M. Reyes*. This is awarded to a graduating mathematics major that has demonstrated exceptional performance in their field, and is voted on by the Mathematics faculty.

Freshmen Awards *Robert Lemke-Oliver* received the Theodore Paine Palmer Award for demonstrating excellence in mathematics during the freshman year.

Indiana Mathematics Competition Recognition

Stephen Dupal, Robert Lemke-Oliver and Hari Ravindran as the winning team.

4. Faculty and Staff Activities

4.a Teaching, Curriculum Development and Student Advising

Enrollments Data for the last four years:

<i>Year</i>	<i>2005-06</i>	<i>2004-05</i>	<i>2003-04</i>	<i>2002-03</i>
<i>Calculus/DE/Stats</i>	2180	2398	2390	2220
<i>Post Calculus/DE/Stats</i>	917	852	785	839
<i>Total</i>	3097	3250	3175	3059

Program Changes The Statistics concentration was modified into the Statistics and Operations Research concentration.

Curriculum development groups The faculty is organized into four self selected interest groups according to the four concentrations of the degree program. The groups are:

- Traditional mathematics concentration –convener Brian Martensen
- Discrete applied mathematics – convener John Rickert
- Continuous applied mathematics – convener Kurt Bryan
- Statistics/OR – convener Mark Inlow

New courses

- MA190 Contemporary Problems in Mathematics – *David Finn*
- MA323 Geometric Modeling (finished work on CCLI grant) – *David Finn*
- Developed and taught Topics in Mathematics course on Galois Theory: *Joshua Holden*
- MA490 (new course): Introduction to Statistical Programming – *Mark Inlow*
- MA490 Nonlinear Dynamics and Chaos with applications to Physics, Biology and Engineering. – *Brian Martensen*
- MA 382 Introduction to Statistics with Probability – *David Rader*

Student Advising, Mentoring and Support

- FastTrack Calculus, Summer 2005 – *G. Elton Graves/Roger Lautzenheiser/ David Finn*
- Freshman Advising – *Roger Lautzenheiser, Elton Graves, David Finn*
- Advisor for Sophomores, Juniors and Seniors – *Josh Holden, Kurt Bryan, David Rader*
- Double Majors advisor – *Allen Broughton*
- Advisor to students pursuing a statistics emphasis within Stat/OR concentration *Mark Inlow, Diane Evans*
- *David Finn* Hari Ravindran “Weaver Grant” Modeling the Shape of a Cookie – *David Finn*
- Conducted research with Eric Reyes who gave the following Presentations of our work: “Do Dogs Really Know Calculus?”, presented at the 23rd Annual Rose-Hulman Conference on Undergraduate Mathematics, April, 2006 and at Fall 2005 Meeting of the Indiana Section of the Mathematical Association of America, DePauw University, Greencastle, November, 2005 – *Mark Inlow*.
- Member of Master’s Thesis Committee for Tyler Gremore in Mechanical Engineering, “Development of an Experiment to Determine Transmission Loss Through a Partition.” – *Mark Inlow*
- Pi Mu Epsilon Advisor – *G. Elton Graves*
- Lambda Chi Alpha advisor – *Mark Inlow*
- Contest teams advisors: *Kurt Bryan, David Rader, John Rickert*

4.b Professional Development and Student Project Mentoring

Publications, Articles, and Writing

Ghan Bhatt

- “Multiple attacks on Oversampling of Fourier Coefficients Method for Hiding Messages”, with Eric Weber et. al. To appear on the Journal of Mathematical Analysis and Applications.
- “Completion of Multivariate Wavelets”, submitted to International Journal of Wavelets, Multiresolution and Information Processing, World Scientific Publishing Company.
- “Computing Moments, Approximation Orders and Lifting Scheme for the Multivariate Multiwavelets, under preparation.
- “Orthogonal wavelet frames”, with Eric Weber, in preparation.

S. Allen Broughton

- “Science of Nanotechnology: An Introductory Text”, Chapter 4, in preparation.
- Finite Subgroups of the Mapping Class Group *with Aaron Wootton*, in preparation.

Kurt Bryan

- With Lester Caudill at the University of Richmond, has continued to work on inverse problems related to thermal imaging. They are currently working on a paper related to the resolution limits for thermal methods in nondestructive testing.
- Paper, “Imaging of Multiple Linear Cracks Using Impedance Data,” co-authored with summer 2003 REU students Nic Trainor (a Rose-Hulman student) and Rachel Krieger has been accepted by the *Journal of Computational and Applied Mathematics*.
- “Fast Imaging of Partially Conductive Linear Cracks”, authored with 2004 REU students Janine Haugh and David McCune, has been submitted to the journal *Inverse Problems*.
- Two papers were also produced by the summer 2005 group; one, “Thermal Imaging of Circular Inclusions Within a Two-Dimensional Region” by Hilary Spring and Shannon Talbot, has been accepted by the *Rose-Hulman Undergraduate Mathematics Journal*.

William Butske

- “Introduction to the Sato-Tate Conjecture”, in preparation.
- “Endomorphisms of the Jacobian of a Genus Two Curve, submitted.
- “Sato-Tate Distributions of Genus Two Curves”, in preparation.

Stephan Carlson

- “The Quest for a Fuzzy Tychonoff Theorem,” submitted.

Diane Evans

- “The Distribution of Order Statistics for Discrete Random Variables with Applications to Bootstrapping”, (with L. Leemis and J. Drew), *INFORMS Journal on Computing*, Winter 2006.
- “Conditional Probability and *Who Wants to Be a Millionaire*,” submitted August 2005.

G. Elton Graves

- “The Usefulness of Mathematics” conference proceedings ASEE, June 2005.
- “How to Get Engineers to Take Mathematics Courses”, accepted for conference proceedings ASEE, June 2005.

Ralph Grimaldi

- “A Combinatorial Identity Involving Stirling Numbers of the Second Kind”, *Utilitas Mathematica*, 2005, Volume 67, Pp. 301-303.
- “Ternary Strings with No Consecutive 1’s”, *Ars Combinatoria*, to appear.
- “Discrete and Combinatorial Mathematics: An Applied Introduction”, Fifth Edition – Chinese translation – November, 2005.
- “Binary Strings and the Jacobstahl Numbers”, *Congressus Numerantium*, Volume 174, Pp. 3-22, Winnepeg, Canada, December, 2005.

Joshua Holden

- “Some Heuristics and Results for Small Cycles of the Discrete Logarithm”, with Pieter Moree, *Mathematics of Computation*, 75:419--449, 2006.
- “Distribution of the Error in Estimated Numbers of Fixed Points of the Discrete Logarithm”, *Communications in Computer Algebra*, 38:111--118, 2004.
- “Underwater Model Rockets: An Innovative Design Problem and Competition for Undergraduate Students in Engineering, Math and Science”, With Richard Layton, Tina Hudson and Laurence D. Merkle. Published in Proceedings of the 2005 American Society for Engineering Education Annual Conference and Exposition.
- “Underwater Hacker Missile Wars: A Cryptography and Engineering Contest”, with Richard Layton, Laurence Merkle, and Tina Hudson. Published in *Cryptologia*, 30:69--77, 2006.

Mark Inlow

- “Teaching the IID Assumption in Engineering Statistics I” accepted for publication in Proceedings of the 2006 ASEE Annual Conference.

Roger Lautzenheiser

- “Creating and Publishing an Undergraduate Math Paper” (with Tram Hoang), *Math Horizons*, Nov, 2005.

Kenneth McMurdy

- “Stable reduction of $X_0(p^3)$ ”, joint work with Robert Coleman, submitted.
- “Fake CM and the stable model of $X_0(Np^3)$ ”, joint work with Robert Coleman, submitted.
- “Explicit generators for endomorphism rings of supersingular elliptic curves”, joint work with Kristin Lauter, in preparation.
- “Stable reduction of $X_0(81)$ ”, in preparation.

Brian Martensen

- Embedding tiling spaces in surfaces," (with C. Holton), submitted.

Virginia Naibo

- “On some Schroedinger and wave equations with time dependent potentials”, (with A. Stefanov), published in *Mathematische Annalen* 334 (2006), 325-338.
- “Bessel capacities and rectangular differentiation in Besov spaces”. To appear in *Journal Mathematical Analysis and Applications*.
- “Failure of an endpoint inhomogeneous Strichartz estimate”. Preprint.

David Rader

- “A heuristic algorithm for a chance constrained stochastic program” (co-authored with Concetta A. DePaolo), accepted by *European Journal of Operational Research*.

John Rickert

- “Divisibility of restricted partition functions”, *Proceedings of the American Mathematical Society*, to appear

Gary Sherman

- “Indiscrete Discrete Mathematics” (an idiosyncratic undergraduate textbook with an algebraic/combinatorial theme that uses technology as a catalyst and emphasizes process over content), in progress
- “The Theory of Cwatsets”, (a monograph), in progress.
- “Representation and Isomorphism of Cwatsets” (with Ben Goodwin, Matt Lepinski and Dennis Lin), in progress.
- “Equations, Scramblings, and Random Walks in Finite Groups” (with Lawren Smithline and Jamie Kawabata), in progress.

Presentations:

Stephan Carlson

- “2001: A (Topological) Space Odyssey in Color,” Wabash College Mathematics Seminar, February 2006.

David Finn

- “An Enriched Course in Geometric Modelling”, Mathfest, Albuquerque NM, August 2005.

- “Some New Results on the Geometry of Bicycle Tracks”, Mathfest, Albuquerque NM, August 2005.
- “Modelling the Shape of a Cookie”, INMAA Meeting, Depauw University, Fall 2005.
- Poster: “Motivating Geometry through Computation and Visualization”.
- “On the Shape of a Cookie”, AMS/MAA/SIAM Joint Meeting, San Antonio, January 2006.
- “Bicycle tracks on the plane and the sphere”, Ohio Section MAA Meeting, University of Akron, April 2006.
- “Motivating and Designing Writing Assignments”, Ohio NExT Workshop, Ohio Section MAA Meeting, University of Akron, April 2006.

G. Elton Graves

- “The Usefulness of Mathematics” presented at 2005 National ASEE Meeting.

Ralph Grimaldi

- “Compositions of Integers”, Nineteenth Midwest Conference on Combinatorics, Cryptography, and Computing, Rochester Institute of Technology, October 2005
- “Modeling Discrete Structures with 0’s and 1’s Compositions of Integers”, Gordon Series Lecturer, Denison University, October, 2005.
- “MiniCourse on Fibonacci and Catalan Numbers”, National Mathematics Meetings, San Antonio, Texas, January, 2006.
- “Sums of k-th Summands for Jacobsthal Compositions”, Southeast Conference on Combinatorics, Graph Theory and Computing, March, 2006.

Joshua Holden

- “Modular Arithmetic and Trap Door Ciphers”, Math Club Invited Speaker, Benedictine University, April 11, 2006.
- “Blackwork Embroidery and Algorithms for Maze Traversals”, Indiana MAA Section Meeting, DePauw University, November 5, 2005.
- “Number Theory, Polynomials, and the Advanced Encryption Standard”, MAA Session on Number-Theoretic Applications, Joint Mathematics Meetings, San Antonio, January 12, 2006.

Mark Inlow

- “A New Class of Smooth Tests of Fit for Exponential Family” (Koopman-Darmois) Distributions, Joint Statistical Meetings held in Minneapolis, August, 2005.
- “New Goodness-of-Fit/Goodness-of-Link Smooth Tests”, 8th North American New Researchers’ Conference in Statistics and Probability, University of Minnesota, Minneapolis, August, 2005.
- “New Goodness-of-Fit Smooth Tests for Exponential Family Distributions”, Rose-Hulman Mathematics Seminar, May, 2005.

Kenneth McMurdy

- “Stable Reduction of $X_0(81)$ ”, Joint Meetings, Number Theory Contributed Session, (San Antonio, TX), January 2006.

Brian Martensen

- “Mixing and embedding properties of tiling spaces”, AMS National Meeting, San Antonio, January 2006.
- “Tiling spaces associated to pseudo-Anosov surface diffeomorphisms”, AMS Eastern Sectional Meeting, Bard College, October 2005.
- “Substitution tiling spaces and positive automorphisms of surfaces”, Summer Conference on Topology and its Applications, Denison University, July 2005.

Virginia Naibo

- “Failure of an endpoint inhomogeneous Strichartz estimate”, 5th Prairie Analysis Seminar, Dept. of Mathematics, Kansas State University, Manhattan, KS, October, 2005.

Rose Math Seminar

William Butske

- Solving the Rubik's cube: An Introduction to Group/Graph Theory (2 talks).

David Finn

- “Modeling the Shape of a Cookie”
- “Existence for a Heuristic Model for the Shape of a Cookie (Part II Cookie Series)”
- “Bicycle tracks on the plane and the sphere”

Conferences and Workshops attended

Ghan Bhatt

- Joint MAA/AMS Meetings held in San Antonio, TX, January 2006.

S. Allen Broughton

- Fall INMAA Meeting held at DePauw University, Greencastle, IN, November 2005.
- Joint MAA/AMS Meetings held in San Antonio, TX, January 2006.
- Spring INMAA meeting at Taylor University in Upland, IN, March 2006.

Kurt Bryan

- Joint MAA/AMS Meetings held in San Antonio, TX, January 2006.

Stephan Carlson

- MathFest at Albuquerque, NM, August 2005.
- Fall INMAA Meeting held at DePauw University, Greencastle, IN, November 2005.

- Joint MAA/AMS Meetings held in San Antonio, TX, January 2006.

David Finn

- MathFest at Albuquerque, NM, August 2005.
- Fall INMAA Meeting held at DePauw University, Greencastle, IN, November 2005.
- Joint MAA/AMS Meetings held in San Antonio, TX, January 2006.
- American Association for Advancement of Science (AAAS) meeting at St. Louis, MO, February 2006.
- Spring INMAA meeting at Taylor University in Upland, IN, March 2006 attended the Ohio MAA Section Meeting at the University of Akron, March 2006 (invited speaker).

Elton Graves

- 2005 ASEE National Meeting at Portland, OR, June 2005.
- Fall INMAA Meeting held at DePauw University, Greencastle, IN, November 2005.
- Joint MAA/AMS Meetings held in San Antonio, TX, January 2006.

Ralph Grimaldi

- Midwest Conference on Combinatorics, Cryptology and Computing at RIT, NY, October 2005.
- Mathematics Conference at Dennison University, Ohio, in October 2005 (invited speaker).
- Joint MAA/AMS Meetings held in San Antonio, TX, January 2006.
- SW Combinatorics Conference in Boca Raton, FL, March 2006.

Joshua Holden

- ICI Technology Summit at Franklin College in Franklin, IN, August 2005.
- Fall INMAA Meeting held at DePauw University, Greencastle, IN, November 2005.
- AMS Special Session on Number Theory, AMS Central Section Meeting at Notre Dame University, April 2006.

Mark Inlow

- 8th Annual IMS North American New Researchers Conference, Minneapolis, MN, August 2005.
- Joint Statistical Meetings at Minneapolis, August 2005.
- 49th Annual Fall Technical Conference sponsored by the American Society for Quality and ASA at St. Louis, MO, October 2005.
- Fall INMAA Meeting held at DePauw University, Greencastle, IN, November 2005.

Roger Lautzenheiser

- Fall INMAA Meeting held at DePauw University, Greencastle, IN, November 2005.

Brian Martensen

- Summer Conference on Topology and Its Applications at Dennison University in Greenville, OH, July 2005.
- AMS Eastern Sectional Meeting at Bard College, NY, October, 2005.
- Joint MAA/AMS Meetings held in San Antonio, TX, January 2006.

Kenneth McMurdy

- Joint MAA/AMS Meetings held in San Antonio, TX, January 2006.
- AMS Regional Conference in San Francisco, CA, May 2006.

Virginia Naibo

- Prairie Analysis Seminar at Manhattan, KS, October 2005.
- 9th Riviere-Fabes Symposium on Analysis and PDE at the University of Minnesota at Minneapolis, MN, in April 2006.

David Rader

- Fall INMAA Meeting held at DePauw University, Greencastle, IN, November 2005.
- Spring INMAA meeting at Taylor University in Upland, IN, March 2006.

John Rickert

- Spring INMAA meeting at Taylor University in Upland, IN, March 2006.

Yosi Shibberu

- SIAM Annual Conference in New Orleans, LA, July 2005.

Other professional development and student mentoring activities

S. Allen Broughton:

- Work with Dan Jelski and Guo Ping Zhang (ISU) on computational chemistry.

Kurt Bryan:

- Continued as director of Rose-Hulman's summer REU Program in Mathematics in 2005.
- Continued to organize the math department's weekly seminar.

Stephan Carlson:

- Completion of sabbatical leave activity as Visiting Mathematician for the Mathematical Association of America, June – August 2005.

Diane Evans:

- Worked with senior mathematics/economics double major Lee McDaniel on a senior project entitled “Benford’s Distribution and Winning Streaks.” Lee presented his work at the 2006 Rose-Hulman Undergraduate Mathematics Conference.
- integrated project committee for Dean Heaton in the Engineering Management program. His project is entitled “Proposal Installation and Qualification of a New Electronics Assembly Line”.
- took Quality Control students in Spring 2005 to Bemis Manufacturing Company in Terre Haute for a Quality Control tour.
- Helped ME students in Fall 2005 with statistical aspects of their senior project on building a model for basketball foul shooting.
- Masters Thesis Committee for Darin Voorhies.

David Finn:

- Writing articles for SIAM News on AAAS Meeting.
- Reviewed chapters for a new calculus book.
- Attended Panel Discussion for W.H. Freeman on Multivariate Calculus.

Elton Graves:

- Masters Thesis Committee for Brett Rice “The Development of a NONEL Initiation Sensor”.

Joshua Holden:

- Reader, AP Calculus Exam.
- Ongoing work on graph theory related to blackwork embroidery.
- Ongoing work on graph-theoretic structure of the discrete logarithm map.

Roger Lautzenheiser:

- Editor of the Mathematics Undergraduate Journal (75 papers and 125 authors in the 6 years of its existence).

Jeffery Leader:

- Sabbatical at Sandia National Labs (Computational Biology).

Yosi Shibberu

- Sabbatical at Washington University (Bioinformatics).

4.c Faculty and Staff Professional Service

RHIT Committee Chairs

- Academic Technology Committee – *Joshua Holden*
- Admissions and Standing Committee – *Elton Graves*
- Faculty Affairs Committee – *Stephan Carlson*
- Laptop Committee – *David Rader*
- Software review Team – Allen Broughton

Other Professional Service and Outreach Activities

S. Allen Broughton: reviewed a book chapter on image processing.

Kurt Bryan: Dr. Bryan reviewed a number of papers for the Rose Undergraduate Math Journal, Inverse Problems, the SIAM journal of Mathematical Analysis, and the journal PRIMUS.

Stephan Carlson: Member of Indiana MAA Section Distinguished Service Award Selection Committee (third year of three year term). Member and Chair of MAA National Committee on SIGMAAs (Special Interest Groups of the MAA) (term expires in 2007). Member of MAA Coordinating Council on Meetings (term expires in 2007). Member of MAA National MathFest Site Selection Committee (term expires in 2008). Member of MAA Strategic Planning Working Group on Professional Development (2005-2006). Served as external promotion and tenure consultant for the Indiana University, fall 2005.

David Finn: MAA Exec/Newsletter Editor. MAA Liaison and MAA Student Chapter Advisor. MR Reviewer. Referee for College Mathematics Journal, Journal of Functional Analysis.

William S. Galinaitis: MAA, national and regional. AMS, American Mathematical Society. SIAM, Society for Industrial and Applied Mathematics. SPIE, International Society of Optical Engineering. VAS, Virginia Academy of Science. SIAM- SEAS, Society for Industrial and Applied Mathematics Southeastern Atlantic Section. CAP, Civil Air Patrol.

Elton Graves: Member Mathematics Across the Disciplines (MAD), subcommittee of MAA. Program-chair Elect, Mathematics Division of ASEE. Refereed papers for ASEE. Mathematical Liaison between ASEE and MAA. Organizer of MAA (MAD) panel. “Mathematics and Biology 2010” for National MAA Meeting in January 2006. MATHCOUNTS coordinator for Francis Vigo Chapter. Indiana State Director AMC 8 and AMC 10/12. Interviewer for AMC research study. Project NEXT IN mentor.

Joshua Holden: Co-organizer of 23rd Annual Rose-Hulman Undergraduate Mathematics conference. Reviewer for RHIT Undergraduate Mathematics Journal and Princeton University Press. Editor, Cryptologia Editorial Board.

Brian Martensen: Refereed two papers for the RHIT Undergraduate Journal.

David Rader: Assistant Editor, RHIT Undergraduate Mathematics Journal. Co-Organizer of Undergraduate Mathematics Conference. Public Information Officer, Indiana MAA Section. Member, RHIT United Way Organizational Committee.

John Rickert: Consulted on design of Safeco Field, NBBJ, Seattle, Washington. Member of Mathematical Association of American and American Mathematical Society

Gary Sherman: Member of American Mathematical Society. Member of SIAM.

4.d Faculty Honors and Awards

Ralph Grimaldi: Being selected as the Gordon Series speaker at Denison University.

Joshua Holden: "Underwater Model Rockets: An Innovative Design Problem and Competition for Undergraduate Students in Engineering, Math and Science" (see Publications) was chosen Best Paper Submitted to the ME Division of ASEE 2005.

4.e Membership in Interdepartmental Faculty Clusters

Imaging Systems Faculty: Allen Broughton, David Finn, Joshua Holden

Parallel Computing Users Group: Allen Broughton, Joshua Holden, Jeff Leader

Nano-Technology Text Writing Group: Allen Broughton

5. Grants and Continuing Grant activities

- NSF-CCLI – *David Finn.*
- NSF – REU – *David Finn and Kurt Bryan (18'th year).*
- Undergraduate Mathematics Conference Grant for the RHIT Undergraduate Mathematics Conference, administered by the Mathematical Association of America, supported by grant DMS-0241090 from the National Science Foundation – *Joshua Holden.*
- NSF- RUI (transferred from Ferris College) Steve Galinaitis.

6. Departmental Programs

Fast Track Calculus 50 students, Director Elton Graves, Instructors: Elton Graves, David Finn and Roger Lautzenheiser.

Rose-Hulman Undergraduate Mathematics Journal Editor Roger Lautzenheiser, Assistant editor David Rader.

Rose-Hulman High School Mathematics Competition (fortieth annual). Organizers Ralph Grimaldi and John Rickert. Approximately 400 students participated.

Rose-Hulman Undergraduate Mathematics Conference (March 2006, 23rd annual), co-organizers, David Rader and Joshua Holden. 12 student talks, about 50 conference participants. 75 papers and 125 authors in the 6 years of its existence

MATHCOUNTS Regional competitions Elton Graves, Denis Radecki and William Eccles local co-organizers