

DEPARTMENT OF MATHEMATICS
Annual Report to the Board
1 June 01 - 31 May 02

PERSONNEL

LeRoy Franklin has resigned his position of Professor of Mathematics and will be leaving at the end of the 2001-2002 school year.

Three assistant professors were welcomed into the Math Department this year. **Diane Evans** from the College of William and Mary; **Joshua Holden** from Duke University; and **Thomas Langley** from the University of California, San Diego.

Ralph Grimaldi was on sabbatical leave during the entire academic year.

GRANTS AND CONTINUING GRANT ACTIVITIES

The Rose-Hulman NSF-Research Experience for Undergraduates Program will continue during the upcoming summer. This summer's program, which will be directed by **Allen Broughton** and **Kurt Bryan**, is the fourteenth consecutive year of the program.

David Finn obtained and will administer NSF grant "Course, Curriculum and Laboratory Improvement (CCLI) for curriculum development in 3D geometry. Three Rose-Hulman students will participate for six weeks this summer. The grant is for \$75,000 and will run three years.

STUDENT ACTIVITIES, PRESENTATIONS, PUBLICATIONS and AWARDS

Pi Mu Epsilon Honorary Mathematics Fraternity

Thirteen new members of the Rose-Hulman student body were inducted at the spring 2002 Initiation Banquet for the Indiana Gamma Chapter of Pi Mu Epsilon. The speaker was Dr. Herb Bailey, emeritus faculty member of the Department of Mathematics.

Mathematics Competitions

1. **13'th annual Alfred R. Schmidt Freshman Mathematics Competition** (advisor John Rickert) Twenty-six freshmen took part in the Thirteenth Annual ARS Competition. First place was awarded to Dean Fehlau, second place to Jonathan Trojan and third place went to Kyle Coplinger, Alex Kutsenok, Eric Tollefson, Andrew Twarek and Matt Weinstock.

2. **23rd Annual Virginia Tech Regional Mathematics Competition** (Advisor John Rickert) Eleven Rose-Hulman students participated in this nation-wide mathematics problem solving competition held November 2001.
3. **62nd Annual Putnam Competition** (Advisor Steve Carlson) In the 62nd Annual William Lowell Putnam Mathematical Competition students Stephen Young, Matt Katinas, Nate Berglund and Kellan Wampler ranked in the top 300 out of 2954 participants. The team representing Rose-Hulman in the Competition consisted of Nate Berglund, Michael Ewing, and Stephen Young, and they earned a team rank of 49th among the 336 colleges and universities that entered teams.
4. **18th 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 Nate Berglund, Mike Ewing and Stephen Young received Honorable Mention and the team of Guy Srinivasan, Eric Tollefson and Kellan Wampler received a Successful Participant Award.
5. **37th Indiana College Mathematics Competition** (Advisor John Rickert) Nate Berglund, Mike Ewing, Dean Fehlau, Phillip Powell, Eric Smith, Guy Srinivasan, Adam Thompson, Kellan Wampler and Stephen Young represented Rose-Hulman at the 2002 ICMC held at Anderson University in March 2002.

Student Presentations

Stephen Young presented *A Faster Way to Split a Donut* at the PI MU Epsilon Annual Student Mathematics Conference held at Miami University in Oxford, OH, in September.

Nathanael Berglund presented *Refinable Functions: What they are and how to produce them* and **Stephen Young** presented *A Faster Splitting of a Doughnut* as part of the 2001-2002 Math Colloquium series.

Three presentations were given by Rose-Hulman students at the 2002 Undergraduate Math Conference held March 15 and 16, 2002: **Nathanael Berglund** presented *How to Solve a Rubik's Hypercube*; **Lucas Beverlin** presented *The Optimality of Morse Code*; and **Stephen Young** presented *Graph Colorings with Restrictions*.

Awards

During the Spring Honors and Awards Banquet, **Stephen Young** received the Clarence P. Sousley Award, presented to a senior mathematics major for exceptional performance in mathematics.

Freshman **Kellan Wampler** received the Theodore Paine Palmer Award for demonstrating excellence in mathematics during the freshman year.

FACULTY and STAFF ACTIVITIES

Allen Broughton returned from sabbatical to take up his duties as Department Chair that consumed the bulk of his time. He proposed and obtained internal funding for a parallel computing cluster that has been installed and is increasingly being used by students and faculty. During the summer he mentored four REU students on topics in Riemann surfaces with each student producing a technical report. He, with El Doering, presented “the Laptop program at Rose-Hulman” to the engineering faculty at Ohio Northern University at the invitation of Barry Farbrother. He attended the Miami University Conference, where Rose student Steve Young presented his summer REU research. He also attended the fall and the spring meetings of the Indiana Section of the MAA and the January meeting of the American Mathematical Society where he was a judge in the REU student poster session. One of his REU students won a \$100 prize. He presented two talks on his REU research with students in the Rose Math Seminar. He serves as Curriculum Committee chair and departmental webmaster.

Kurt Bryan has continued work with Michael Vogelius of Rutgers University on nonlinear partial differential equations arising in corrosion modeling. Dr. Bryan spent a week in March visiting Rutgers to finish a survey paper they are writing for the journal "Inverse Problems" on the mathematics of electrical impedance methods for the detection of cracks in conductors. He also spent time talking to Dr. Vogelius about suitable inverse problems for undergraduates to tackle in the upcoming summer REU program at Rose-Hulman. Dr. Bryan has also continued work with Lester Caudill at the University of Richmond on inverse problems related to thermal imaging. Dr. Bryan spent a week visiting Richmond in April. Kurt Bryan also gave a series of four talks in Mathematics Department's weekly seminar on the mathematics of financial derivatives and the Black-Scholes equation. He intends to teach a course on the subject next spring.

During July of 2001, **Stephan Carlson** presented a series of lecture-workshops entitled “Topology: From Plato to Playdough” to the participants in the Rose-Hulman *Fast Forward* program for middle school girls. In August he attended Math Fest 2001, the summer meeting of the Mathematical Association of America, in Madison, Wisconsin. At Math Fest, he began his third year as MAA Governor from Indiana and he also participated as a member of MAA Committee on Sections and the MAA Task Force On Special Interest Groups. At that meeting, the Task Force was dissolved and was replaced by a standing Committee on SIGMAAs (Special Interest Groups of the MAA), for which Carlson was named as the first committee chair, a position that will extend through the year 2005. In October he attended the Fall Meeting of the Indiana MAA Section at Purdue University, and in January 2002 he attended the Winter Mathematics Meetings, held jointly by the MAA and the American Mathematical Society, in San Diego at which he continued his duties as Governor and on committees. Also in late 2001, Carlson’s book “Topology of Surfaces, Knots, and Manifolds: A First Undergraduate Course,” (published by John Wiley & Sons in December 2000) was contracted for translation into Japanese with Bifucan Publications, Ltd. In March of 2002, he attended the Spring Meeting of the Indiana MAA Section in Anderson, Indiana. At that MAA conference, he was awarded the Section’s Distinguished Service Award.

Diane Evans defended her dissertation in July 2001 and received her doctorate from The College of William & Mary in August 2001. The title of her dissertation is *Algorithms for Computing and Manipulating Distributions of Discrete Random Variables*. In December, she

was invited to give a talk at Wittenberg University entitled *Survival Distributions Satisfying Benford's Law*. Diane also attended the 2001 Winter Simulation Conference and the fall meeting of the Indiana Section of the MAA. Additionally, she plans on attending the Joint Statistical Meetings in August. Along with co-inventors Dr. Lawrence Leemis (College of William & Mary) and Dr. Andrew Glen (West Point Academy), she has continued to develop the Maple-based probability programming language APPL. Their joint paper describing the software "APPL: A Probability Programming Language" was published in *The American Statistician* in May 2001. Diane, along with Dr. Glen, has been nominated for the John M. Chambers Statistical Software Award through the American Statistical Association for their development of APPL. With Dr. Franklin, Diane has begun a joint statistical consulting project with the Civil Engineering department and Indiana Department of Transportation on evaluating procedures for hot mix asphalt pavement

David Finn obtained an NSF-CCLI grant to reinvigorate the applied geometry course MA 321 at Rose as a geometric modeling course. The grant will run for three years. A set of interactive webpages for the course and a set of course notes will be developed. His paper "Can a bicycle create a unicycle track?" has been accepted for publication in the *College Mathematics Journal*. A second paper on the mathematics of bicycle tracks "Which way did you say that bicycle went?" was submitted to the *Mathematics Magazine*. During the National Meetings in San Diego he gave a survey talk on his current research on the singular Yamabe problem. He also attended both the fall and spring meetings of the Indiana Section of the MAA. He continues to review papers for *Mathematical Reviews*, referee papers for various research journals on PDEs and review research grants for the NSF. He also served as departmental liaison to the MAA.

LeRoy A. Franklin. Along with serving as the course coordinator for MA223, Engineering Statistics I, Dr. Franklin taught the last of the new statistics elective courses in the fall quarter - Introduction to Regression Analysis and Time Series. He also acted as advisor to the Rose Hulman undergraduates electing the new Statistics concentration and minor as well as advising several graduating seniors interested in continuing their studies in Statistics by pursuing a Masters degree. Thus far, three seniors (one Math-Econ major and two Chemical engineering students) have received offers of acceptance to and scholarships/teaching assistantships for such graduate programs. In August, he attended the National Joint American Statistical Meetings held in Atlanta. Most of his time at the meetings was devoted to completion of his duties as the Treasurer of the National American Statistical Association Quality and Productivity Section and Treasurer of The Quality and Productivity Research Conference. His 3-year elected term of office was completed at the end of December 2001. In November, he jointly presented a paper with Dr. Belva Cooley, University of Montana, at the National Decision Sciences Institute Meetings in San Francisco, California entitled "Implementing Quality Tools in a Customer Service Environment." Dr. Cooley and Dr. Franklin have also just had a journal article accepted that will be published in the Spring issue of the *Journal of Statistical Education* entitled "An Experiential Approach to Integrating ANOVA Concepts". In January 2002, Dr. Franklin was the invited speaker for the Wabash Valley American Society for Quality speaking on the topic of "Introduction to Reliability Concepts".

Elton Graves continues to remain an active member of our department. In June 2001 he attended the National ASEE meeting held in Albuquerque, New Mexico. While at the meeting he presented a paper entitled "Building an Airfoil on the Fly", was the moderator for a session on

using computer algebra systems in mathematics courses, and was re-elected to the Board of Directors of the Division of Mathematics of ASEE. During the summer of 2001, he was the program director and also taught Fast-Track Calculus. In September he participated in a preliminary meeting of an NSF sponsored research program to assess the use of technology in teaching calculus. As the State Director for the AMC (American Mathematics Competitions) he spent the fall months encouraging Indiana middle and high schools to participate in the AMC 8, AMC 10 and AMC12 mathematics competitions. Each year Rose-Hulman awards \$20,000 in scholarships to Indiana students who participate in these competitions. In January Elton attended the National MAA meeting in San Diego where he presented a paper entitled "What the Shortstop Sees." While in San Diego he also attended the annual planning meeting of the MAA-CUPM joint committee on Mathematics Across the Curriculum, of which he is a member. This spring he attended the Indiana Section Meeting of the MAA. He also reviewed five papers that will be published by ASEE as part of their annual conference. As the advisor to Pi Mu Epsilon (the national mathematics honorary) he oversaw the initiation of thirteen new members at their annual banquet held on May 14, 2002. Dr. Herb Bailey, professor emeritus of mathematics, was the invited speaker at the banquet.

Professor Grimaldi has been on sabbatical leave for the 2001-2002 academic year.

In September, **Joshua Holden** attended the AMS Central Section meeting at The Ohio State University and presented a talk on "Recent Results on the computation of zeta values at negative integers", continuing work that he had been doing at Duke university. Discussions carried on at the meeting prompted him to start another project, resulting in the paper "Fixed Points and Two-cycles of the Discrete Logarithm" which has been accepted to the refereed proceedings of the Fifth Algorithmic Number Theory Symposium. Professor Holden will present this paper at the symposium in Sydney, Australia, in July. In March, he gave a talk on "Counting Fontaine-Mazur-like function fields" at the Algebraic Number Theory Seminar at the University of Illinois at Urbana-Champaign. Also in March, Professor Holden reviewed a paper for the Journal of Number Theory. During the Spring Quarter he is helping to develop and teach a new course in Cryptography in collaboration with Professor David Mutchler of the Computer Science Department.

Thomas Langley attended the fall meeting of the Indiana MAA and the annual Joint AMS/MAA Meetings in San Diego where he presented a paper entitled "The plethysm of two Schur functions at hook and near-hook shapes" at an AMS special session on the theory and applications of symmetric functions. While at the Meetings he also attended MAA mini-courses for involving undergraduates in mathematics research and in using computer puzzles to teach permutation groups. Throughout the academic year he continued his research in the areas of symmetric functions and algebraic combinatorics and had the paper "A class of symmetric functions in two parameters arising from plethysm" accepted for a poster presentation at the international Formal Power Series and Algebraic Combinatorics conference in Melbourne in July 2002.

Professor Lautzenheiser continues to be the editor of the Rose-Hulman Institute of Technology Undergraduate Journal in Mathematics. The fall, 2001, issue contained 6 articles and the spring, 2002, issue contains 5. Since the first issue of the journal in 2000, there have been 17 articles published. The journal has received many favorable comments and may be viewed at <http://www.rose-hulman.edu/mathjournal/>. Last summer Professor Lautzenheiser assisted

Professor Graves in the Fast Track Calculus program, and during the academic year, he was coordinator of the department's mathematics seminar. Also Professor Lautzenheiser received the Dean's Outstanding Teaching Award presented at last year's commencement.

Jeffery J. Leader co-authored a paper entitled "A Comprehensive Vertebrate Phylogeny Using Vector Representations of Protein Sequences from Whole Genomes" (with two colleagues from ISU) that appeared in *Molecular Biology and Evolution*. He also co-authored a related poster presentation at the Ninth International Conference on Intelligent Systems for Molecular Biology and presented the work at the Joint MAA Meetings in San Diego and in the RHIT mathematics seminar as well as at another institution. He also presented "The Theodorus Equations" at a May Math Colloquium. He worked with Atanas Serbezov of the Department of Chemical Engineering and a graduate student of his on a paper that will be presented at the annual meeting of the American Institute of Chemical Engineers in November. He attended the SIAM Conference on Optimization in Toronto, including two short courses before and after the conference. He continued to work on his Numerical Analysis manuscript and reviewed two proposed textbooks and two journal articles. He served as chair of the Graduate Studies Committee.

During the fall quarter of 2001, **Tanya Leise** took a leave of absence via a Sloan Foundation Pre-tenure Leave Fellowship in order to care for her baby daughter Adira. She has continued to collaborate with Jay Walton at Texas A&M University, with a paper in progress on dynamically accelerating cracks in a viscoelastic body to be submitted in August 2002 to a special issue of the *International Journal of Fracture*. The organizers of a new MAA Notes volume on "Demos and Projects: Tools for the Student-Centered Classroom" invited Prof. Leise to submit "A Shape Memory Alloys Calculus Project," based on a talk given at the 2001 AMS/MAA Joint Meeting.

In June 2001, **Robert Lopez** gave conference presentations at the IMACS-ACA and ASEE conferences in Albuquerque, NM. In August, he gave a conference presentation at the MAA Mathfest in Madison, WI. During that same summer, he reviewed the manuscript "Dabbling in Differential Equations: A Contrarian Guide" for the MAA. In October, he gave invited lectures at the University of Western Ontario, London, Ontario, and at the Ohio Section meeting of the American Physical Society. In November and April, respectively, he gave Maple workshops at the ICTCM meeting in Baltimore, MD, and at the ASEE Sectional conference in Chicago, IL. During the year, he served as the Faculty Advisor to the RHIT Roller Hockey Club, and as a Freshman Advisor, finished work on the Instructor and Student Manuals for his Advanced Engineering Mathematics text, and taught a math class at the high school his parish church has launched.

Throughout the past year, **Jerry Muir** has continued his research in Several Complex Variables, including joint work with Ted Suffridge at the University of Kentucky. This includes a two month visit to the University of Kentucky in the summer. Their paper "Unbounded Convex Mappings of the Ball in C^n " appeared in the Proceedings of the American Mathematical Society. Muir also gave a talk entitled "Convex Mappings of the Ball in C^n With One Infinite Boundary Singularity" at the AMS/MAA Joint Mathematics Meetings in San Diego in January. He was also invited to give a seminar on this research at Purdue University in April. Muir continued his participation in the MAA program Project Next (New Experiences in Teaching) by attending the MAA Mathfest in Madison, Wisconsin in August and participated in several workshops. Together with Roger Lautzenheiser, he organized the 19th annual Rose-Hulman

Undergraduate Mathematics Conference. For the Complex Analysis course (MA 310) in the spring quarter, he wrote a complete set of course notes designed to present the material in a modern viewpoint that complements the students' backgrounds.

David Rader participated in a number of on- and off-campus activities. During the academic year he introduced a new course in Discrete Mathematical Models. He organized the Jump Start program prior to the start of classes last fall and was also the advisor for this year's Mathematical Contest in Modeling, which yielded an Honorable Mention commendation. Professionally, he attended the Fall and Spring meeting of the Indiana Section of the Mathematical Association of America, and continued to serve as the section's Public Information Office. He presented the paper "Optimal cell flipping to minimize channel density in VLSI design and pseudo-Boolean optimization" in invited colloquium talks at both Kalamazoo College and Hope College, and the talk "Teaching Operations Research to Mathematics and Computer Science Students" at the 2001 INFORMS national meeting. In addition, during the academic year, the two papers were accepted for publication: "Maximizing the product of two linear functions in 0-1 variables" in *Optimization* and "The quadratic 0-1 knapsack problem with series-parallel support" in *Operations Research Letters*.

Professor **John Rickert** developed and taught the new class "The Mathematics and Physics of baseball" during the winter term. During the summer of 2001, he supervised four students studying partition functions in Rose-Hulman's REU program. He was coach for Rose-Hulman's teams competing in the Indiana College Mathematics Competition administered at the spring meeting of the Indiana Section of the MAA at Anderson University. He constructed and administered the Alfred R. Schmidt freshman mathematics competition. He has been working with the assessment office to analyze the Mathematics Diagnostic Examination. He was one of the organizers of the thirty-sixth annual Rose-Hulman High School Mathematics Competition. He served as a coach and organizer of the teams representing the state of Indiana at the American Regions Math League meet, to be held in June and is the web-master for the American Regions Mathematics League historical web site. He has been coordinating weekly mathematical problem solving sessions for area high school students. During the summer, he will be working as a tutor at the Research Science Institute program at MIT.

Gary Sherman continued to develop Indiscrete Discrete Mathematics, his idiosyncratic approach to discrete mathematics, and The Theory of Cwatsets, his research monograph based on work he and his students have done in creating and developing the theory at Rose-Hulman. He refereed several papers, presented a four hour mini-course on the theory of cwatsets at the summer MAA meetings at the University of Wisconsin, gave a SIAM Visiting Lecturer talk at Eastern Kentucky University on error-correcting codes, and served on the Institute PTR Committee.

During the summer, **Professor Shibberu** continued his research work on ab initio protein structure prediction algorithms. He gave a poster presentation on protein folding at the Annual Meeting of the Society for Industrial and Applied Mathematics, San Diego, CA, July 11--14, 2001. During the academic year, Professor Shibberu worked 1/3 time at Rose-Hulman Ventures on several projects which included: hybrid electric vehicles, analysis of a new electric motor, analysis of the error rates of a large computer memory system and application of hidden Markov models to a problem in pattern recognition.

PRESENTATIONS, SEMINARS and COLLOQUIA

Off Campus Presentations:

Allen Broughton (with Ed Doering) “The Rose-Hulman Laptop Program”, Ohio Northern University, September 2001.

Diane Evans, “Survival Distributions Satisfying Benford’s Law”, Wittenberg University, December 2001.

David Finn, “Existence & Behavior of Singular Solutions to Semilinear Elliptic Equations”, Joint AMS/MAA Meetings, San Diego, January 2002.

LeRoy Franklin (Dr. Belva Cooley), “Implementing Quality Tools in a Customer Service Environment”, National Decision Sciences Institute Meetings, San Francisco, November 2001
_____ “Introduction to Reliability Concepts”, Wabash Valley American Society for Quality, January 2002.

Elton Graves, “Building an Airfoil on the Fly”, National ASEE meeting, Albuquerque, June 2001.

_____ “What the Shortstop Sees”, National MAA meeting, San Diego, January 2002

Joshua Holden, “Recent Results on the Computation of Zeta Values at Negative Integers”, AMS Central Section meeting, Ohio State University, September 2001.

_____ “Counting Fontaine-Mazur-like function fields”, Algebraic Number Theory Seminar, University of Illinois, March 2002.

Thomas Langley, “The plethysm of two Schur functions at hook and near-hook shapes, Joint AMS/MAA meetings, San Diego, January 2002.

Jeffery Leader, (Gary Stuart, ISU) “Whole Genome Phylogenies using Vector Representations of Protein Sequences, ISMB Conference, Denmark, Fall 2001.

_____ “A Comprehensive Vertebrate Phylogeny Using Vector Representations of Protein Sequences from Whole Genomes”, Ninth International Conference on Intelligent Systems for Molecular Biology, December 2001.

_____ “Mathematical Phylogeny”, Joint MAA Meetings, San Diego, January 2002.

Jerry Muir, “Convex Mappings of the Ball in C^n With One Infinite Boundary Singularity”, AMS/MAA Joint Mathematics Meetings, San Diego, January 2002 and Purdue University, April 2002.

David Rader, “Optimal cell flipping to minimize channel density in VLSI design and pseudo-Boolean Optimization”, Kalamazoo College and Hope College.

_____ “Teaching Operations Research to Mathematics and Computer Science Students”, 2001 INFORMS national meeting, November 2001.

Gary Sherman, “The Theory of Cwatsets” mini-course, MAA meetings, University of Wisconsin, July 2001.

_____ “Error Correcting Codes”, SIAM Visiting Lecturer talk, Eastern Kentucky University.

Yosi Shibberu, “Protein Folding”, Annual Meeting for the Society for Industrial and Applied Mathematics, San Diego, July 2001.

Rose-Hulman Mathematics Seminar (Coordinator Roger Lautzenheiser)

Allen Broughton, “Automorphisms of Riemann Surfaces, Galois Groups, and Hecke Algebras (2 talks).

Kurt Bryan, “The Mathematics of Financial Derivatives and Option Pricing” (4 talks)

Jeffery Leader, “Mathematical Phylogeny (2 talks)
_____ “The Theodorus Equations

Alumni Speakers:

Matt Lepinski (MIT), “Ideal Error-Correcting Codes: Reed-Solomon Decoding without Fourier Analysis” .

Jonathan Webster (U of Illinois), “Linear Algebra for Cryptography”.

Off campus Speakers

Concetta DePaolo (Indiana State University), “Optimizing College Enrollments Under Uncertainty” .

Gary Stuart (Indiana State University), “Species Phylogenies from Whole Genomes using SVD”.

PAPERS AND PUBLICATIONS

Diane Evans (Dr. Lawrence Leemis, College of William & Mary, and Dr. Andrew Glen, West Point Academy), “APPL: A Probability Programming Language”, *The American Statistician*, May 2001

David Finn, “Can a bicycle create a unicycle track?”, *College Mathematics Journal* (accepted)
_____ “Which way did you say that bicycle went?”, *Mathematics Magazine* (submitted)

LeRoy Franklin (Dr. Belva Cooley, University of Montana) “An Experiential Approach to Integrating ANOVA Concepts”, *Journal of Statistical Education*, Spring 2002

Joshua Holden, “Fixed Points and Two-cycles of the Discrete Logarithm”, *Fifth Algorithmic Number Theory Symposium* (accepted)

Thomas Langley, “A Class of symmetric functions in two parameters arising from plethysm”, *International Power Series and Algebraic Combinatorics Conference*, summer 2002

Jeffery Leader (Gary Stuart and Karen Moffett, ISU), “A Comprehensive Vertebrate Phylogeny Using Vector Representations of Protein Sequences from Whole Genomes”, *Molecular Biology and Evolution*, April 2002

Tanya Leise, “Dynamically accelerating cracks II: A finite length mode III crack in elastic material”, *Quarterly of Applied Math*, December 2001

_____ “A general method for solving dynamically accelerating multiple co-linear cracks”, *International Journal of Fracture*, September 2001

_____ “A Shape Memory Alloys Calculus Project”, *MAA Notes Volume on “Demos and Projects: Tools for the Student-Centered Classroom”* (accepted)

Jerry Muir (Ted Suffridge, University of Kentucky), “Unbounded Convex Mappings of the Ball in C^n ”, *Proceedings of the American Mathematical Society*, Summer 2001

David Rader, “Maximizing the product of two linear functions in 0-1 variables, *Optimization* (accepted)

_____ “The quadratic 0-1 knapsack problem with series-parallel support”, *Operations Research Letters* (accepted)

The Rose-Hulman Undergraduate Mathematics (Electronic) Journal

There have been three issues this academic year. There were 3 papers in the Fall 2001 issue, 6 papers in the Winter 2001 issue, and 5 papers in the Spring 2002 issue. The Journal has received very favorable comments.

PROGRAMS AND CONFERENCES

The **36th Annual Rose-Hulman High School Mathematics Competition** was held in November. Approximately 500 high school students were in attendance. It was co-organized by Ralph Grimaldi and John Rickert with assistance from other mathematics faculty.

The **19th Annual RHIT Undergraduate Mathematics Conference** held in March 2002, organized by Roger Lautzenheiser and Jerry Muir, was very successful. There were over eighty participants and a record eighteen student speakers. The invited guest speakers were Professor Harold Boas from Texas A&M and Professor Liz Jessup from the University of Colorado.

The **2001 Fast Track Calculus** program had another successful year with 43 participants chosen from a large number of applicants. This program attracts some of the best and brightest incoming Rose-Hulman freshmen. Professors Elton Graves and Roger Lautzenheiser taught the five-week program which ran from July 16 through August 18.