



The College of
WILLIAM & MARY

Department News, Fall 2005

Faculty News



New Faculty members

- [Nick Loehr](#) (Assistant Professor). Nick joins William and Mary from the University of Pennsylvania. He received a Ph.D. from the University of California, San Diego in 2003. His research area is combinatorics, and in Fall 2005, he teaches Math 112 (Calculus II) and Math 214 (Foundation of Mathematics).
- [Mark Tomforde](#) (Visiting Assistant Professor) Mark joins William and Mary from the University of Iowa, where he held an NSF postdoc in 2002-05. He received his Ph.D from [Dartmouth College](#) in 2002, and his research interests are in Operator Algebras, C^* -algebras, and Topological Dynamics. Mark teaches Math 112 (Calculus II) and Math 211 (Linear Algebra) in Fall 2005.
- [Jinchuan Hou](#) (Visiting Professor) Supported by a grant from Freeman Foundation, Professor Hou is visiting William and Mary for the Fall 2005 semester. Professor Hou received a Ph.D degree from Fudan University, Shanghai, China in 1986. He was a visiting professor in the University of Illinois, Urbana-Champaign in April-July, 2005; he was the president of [Shanxi Normal University](#), China, in 1995-2005. His research areas are Operator Theory and Operator Algebra. Professor Hou is teaching Math 150 (Freshman seminar) with Professor [Chi-Kwong Li](#) in Fall 2005.
- [Philip D. DeCamp](#) (Adjunct instructor) Philip is a new adjunct instructor in our department. He received his Ph.D from Georgia Institute of Technology, and his research area is Industrial Engineering. In Fall 2005, he is teaching Math 459/CSCI 688 (Data Analysis Regression Model).

Other Faculty News

- Professor [Chi-Kwong Li](#) returned from sabbatical leave 2004-05 to serve as Department Chairman again starting July 1, 2005; Professor [George Rublein](#) became Associate Chairman of the department starting July 1, 2005.
- Professor [Vladimir Bolotnikov](#) was recently promoted to Associate Professor with tenure.
- Professor [Sebastian Schreiber](#) won the 2005 Simon Teaching Prize. (see [Mathematics Faculty and Student Awards](#) page)
- In the academic year of 2005-06, Professors [Vladimir Bolotnikov](#), [Rex K. Kincaid](#) (Fall 2005), [Larry M. Leemis](#) (Spring 2006), and [John H. Drew](#) (full year) will be on Faculty Semester Research Assignments.



William and Mary Mathematics Faculty Group Photo (Fall 2005)

Faculty Award

Professor [Vladimir Bolotnikov](#) has been selected for the Alumni Fellowship Award for 2005. The award was established by the College's Class of 1968 to recognize outstanding young faculty members. The picture below shows Mrs. Bolotnikov, Prof. [Bolotnikov](#), and Chairman of Department Prof. [Li](#) at a reception following the award ceremony.



Faculty Grants

Math Faculty receive more than \$500,000 in research grants in 2005, with total active grants exceeding \$2.2million



Rodman

Professors [George T. Rublein](#) and [Robert A. Orwoll](#) (Chemistry) have received a research grant of \$75,000 from the National Science Foundation. The project name is *Embedding Chemistry Problems in Calculus Courses*, and the duration is from February 15, 2005 to January 31, 2007. In this project the investigators are developing a collection of elementary and intermediate exercises in the mathematics of chemistry. ([Full project summary at NSF](#))



Rublein



Spitkovsky

Professors [Leiba Rodman](#) and [Ilya Spitkovsky](#) have received a research grant of \$153,000 from the National Science Foundation. The project name is *Wiener-Hopf factorization and its applications*, and the duration is from June 1, 2005 to May 31, 2008. This research project will study a variety of problems concerning factorizations of matrix and operator functions of the Wiener-Hopf type and their applications. ([Full project summary at NSF](#))



Schreiber

Professor [Sebastian Schreiber](#) has received a research grant of \$102,709 from the National Science Foundation. The project name is *Ecological dynamics in random environments*, and the duration is from August 1, 2005 to July 31, 2008. This project investigates the interplay of nonlinear dynamics and random abiotic fluctuations on distribution and abundance of interacting populations. ([Full project summary at NSF](#))

Besides the new NSF grants, currently the research and educational activities in Department of Mathematics is also supported by the following active NSF grants:

1. [UBM: Undergraduate Research in Metapopulation Ecology](#) PI: D. Cristo (Biology), co-PIs: S. Schreiber (Math) and J. Swaddle (Biology), senior personnel: T. Killingback (Math), R. Chambers (Biology) and J. Shi (Math). \$647,000, 2004-2009.

Department

2. [*Collaborative Research: Statistical Decision-Theoretic Methods for Robust Design Optimization*](#), PI: M.W. Trosset, \$126,000, 2004-2007.
3. [*Stochastic Automata Networks in Cell Biology -- Modeling, Computation and Analysis*](#), PI: R. Mathias, \$99,999, 2004-2006.
4. [*REU Site: Matrix Analysis and Applications*](#), PI: C.R. Johnson, \$48,000, 2004-2007.
5. [*A Study of Undergraduate Programs in the Mathematical and Statistical Sciences in the United States and the Publication of the Results*](#), PI: J. Maxwell (AMS), co-PIs: D. Lutzer and R. Agans (AMS), \$74,163, 2004-2005.
6. [*Postdoctoral Research Fellowship*](#), PI: N. Loehr, \$108,000, 2003-2007.
7. [*Persistence and Pattern Formation in Biological Systems*](#), PI: J. Shi, \$108,545, 2003-2006.
8. [*Effective Transitions Through Academe to Industry for Computer Scientists and Mathematicians*](#), PI: L. Leemis, co-PIs: R. Prosl (CS) and R. Noonan, \$398,748, 2002-2006.
9. [*Scientific Computing Research Environments for the Mathematical Sciences*](#), PI: M. Lewis, co-PIs: L. Leemis, R. Mathias, M.W. Trosset, \$39,999, 2002-2005.
10. [*Matrix Analysis in Engineering and Science*](#), PI: R. Mathias, co-PI: C.K. Li, senior personnel: G. Smith (Applied Sci) and S. Schreiber, \$324,977, 2000-2005.

Three new grants bring the total number of active NSF grants for Department of Mathematics to 13, with a total amount over \$2 million.



Li

Professor [Chi-Kwong Li](#) has received two research grants from the [Hong Kong Research Grants Council](#).

1. *Preserver problems*.

Joint with Jor-Ting Chan for 2005-2007. (HK\$386,600)

2. *Matrix inequalities and geometry of polynomials*.

Joint with Tuen-Wai Ng for 2005-2008. (HK\$231,000)



Lewis



Kincaid

Professor [Rex K. Kincaid](#) has received a \$12,000 [NASA Faculty Fellowship](#) for the summer of 2005; and in fall 2005, he also received a NASA grant "Evaluating the Performance of Air Transport Networks" of \$13,337.

Professor [Robert Michael Lewis](#) has received a [Sandia National Laboratories](#) grant of \$10,571 for the project *Using linearly constrained generating set search to solve nonlinear programming problems*, for the summer of 2005.



Schreiber



Trosset

Professor [Sebastian Schreiber](#) is the Co-investigator of the project *Native oyster restoration in the Virginia portion of the Chesapeake Bay*, (Principle investigator: Roger Mann), [National Oceanographic and Atmospheric Administration](#), total amount: \$1.9 million (with a \$40,000 subcontract to Schreiber), July 2005--June 2007.

Professor [Michael W. Trosset](#) has received a grant of \$25,000 for the project *Analysis of High Dimensional Data for the Discovery of Biomarkers*, from [Eastern Virginia Medical School](#), February 2005--June 2006.



Other active grants obtained by math faculty members are

1. *Multidisciplinary design optimization problem synthesis and solution*, NASA, PI: R.M.Lewis, 2002-2006, : \$67,707.
2. *Biosensor/Biomotor Nanotechnologies*, DARPA/AFOSR, PI: B. Holloway (Applied Sci), co-PI: M.W. Trosset, 2004-2006, \$355,867.
3. *Proteomics Software for Cancer Diagnostics*, INCOGEN (subcontract of Phase II SBIR grant from National Institutes of Health), PI: D. M. Manos (Applied Sci), co-PI: M.W. Trosset, 2004-2006, \$358,459.

Faculty Research Highlight



Killingback

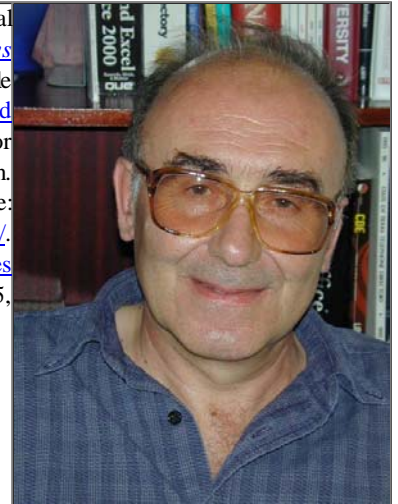
- Professor [Tim Killingback](#)'s research was recently featured in several national and local news outlets. In the issue of *Science News* published in the [Week of Jan. 15, 2005 \(vol 167 No3\)](#), an article titled as "[When Laziness Pays: Math explains how cooperation and cheating evolve](#)" was published based on an interview of Professor Tim Killingback during the Joint Mathematics Meetings held in Jan. 5-8 in Atlanta. A copy of the article can be found in this webpage: http://www.rednova.com/news/science/123032/when_laziness_pays/. A similar article "[Cooperators' and 'cheaters' Killingback creates evolutionary model](#)" was also published on *W&M News* in April 5, 2005. Both articles are based on the results in the paper

[The Evolutionary Origin of Cooperators and Defectors](#),
Michael Doebeli, Christoph Hauert and Timothy Killingback,
Science 29 October 2004; 306: 859-862.

- Visiting Professor [Alexander Pankov](#) recent published a monograph on his research:

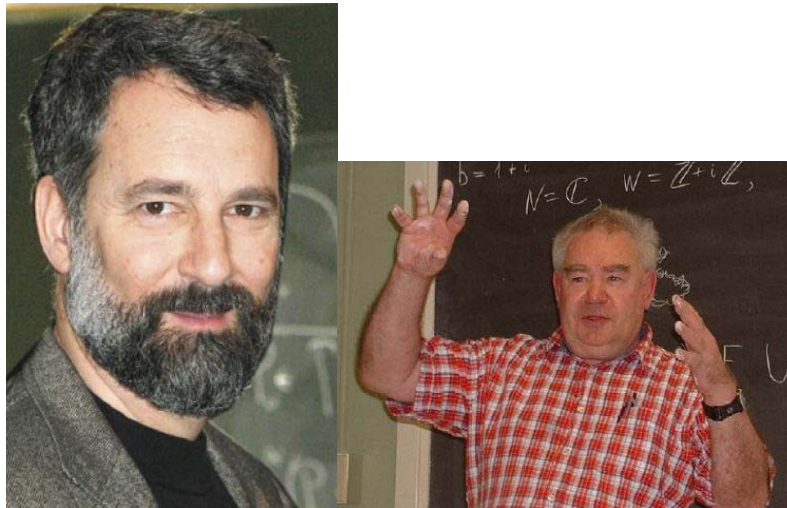
[Travelling waves and periodic oscillations in Fermi-Pasta-Ulam lattices](#),

The Imperial College Press, 2005. (the book can be found in Swem library, math department office, and also purchased from [Amazon.com](#))



Pankov

Lectures and conferences



Left: Fefferman, Right: Kirillov

- Two distinguished mathematicians, [Charles L. Fefferman](#) (Herbert Jones University Professor of Princeton University) and [Alexander A. Kirillov](#) (Francis J. Carey Professor of University of Pennsylvania), gave several lectures at William and Mary during 2005. Professor Fefferman received the Fields Medal (highest honor for mathematicians under 40) in 1978, and has been a member of the National Academy of Sciences since 1979. He gave two lectures on *Whitney's extension problems* and *Sharp front singularities for fluids* on May 5 and 6. Professor Kirillov is among the best world experts in Representation Theory – a field of mathematics which explores the role of symmetries. He gave two lectures on *The Orbit Method in Representation Theory of Lie Groups* on September 7 and 9. (see posters of these two lecture series: [Fefferman](#) and [Kirillov](#))

Student News



Class of 2005 in mathematics (May 2005)

- Paul A. Smith (Class of 2006, Mathematics) received a [Goldwater Fellowship](#) in 2004 for the years 2004-2006; he also received a Chappell Fellowship in 2003 to support research with [Charles R. Johnson](#); Paul also co-authored a research paper with Professor [Vladimir Bolotnikov](#): *Positive extension problems for a class of structured matrices*, [Linear Algebra and Applications](#) 381 (2004), 165-195.
- Lena Sherbakov (Class of 2005, Mathematics and Physics) has been accepted to the University of Washington's prestigious applied mathematics PhD program, where she will begin studying mathematical biology in Fall 2005; she is one of coauthors of the research paper [Bifurcation Diagrams of Population Models with Nonlinear Diffusion](#), by Y. H. Lee, L. Sherbakov, J. Taber and [J. Shi](#), which will be published by [Journal of Computational and Applied Mathematics](#); and Lena has also been selected as the recipient of the Colonial Athletic Association's Scholar-Athlete of the Year award for women's tennis. Sherbakov is the first Tribe tennis player to earn the award, and she becomes just the seventh women's tennis player in W&M history to win at least 100 singles matches, ending her career with 102 victories.

Created by Junping Shi, Sept. 25th, 2005

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