Annual Report

Department of Mathematics and Statistics

Faculty of Arts
Faculty of Pure and Applied Science

York University

Number 14 2003–2004
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1. Introduction

York University was founded in 1959, and quickly achieved an international reputation for excellence in scholarship, research, and teaching at both the undergraduate and graduate levels. In less than half a century, York became a major educational institution. In the 2003–04 academic year, York granted 9,029 degrees. Its student population totaled 63,693, making York the second largest university in Ontario and the third largest in Canada. York's growth is not surprising. From its birth, York committed to, and continues to be distinguished for, a close student-faculty relationship, innovative teaching methods and academic experimentation, and a strong dedication to research.

During that same academic year, the University employed 1,279 full-time faculty members, 41 professional librarians, 1,213 contract faculty and 1,214 full-time support staff. York also provided support to its undergraduate, graduate and post-graduate students, employing a total of 2,601 students as assistants, teaching assistants, graduate research assistants and associates, and post-doctoral fellows. An additional 454 undergraduate students were hired under York's Work Study Programme. Professional and managerial staff, CUPE and casual staff, security officers and various other employees brought the total employee population to 9,497, an increase of 980 over the total employed in the academic year 2002–03.

The Department of Mathematics and Statistics has always been a strong resource for York. In addition to providing its own programmes, the Department partners with and serves other departments, faculties and interdisciplinary programmes. In 1998-99, the Department was chosen as the home for the Faculty of Arts Information Technology Programme (ITEC). The Department is also an integral provider to the Business in Society Programme (BuSo) and is a collaborator with the Schulich School of Business in offering a Graduate Diploma in Financial Engineering. As a result, the Department's growth parallels the growth of the University. In the academic year 2003–04, the Department numbered 77, consisting of 25 Full Professors, 18 Associate Professors, 10 Assistant Professors, 3 Adjunct Professors, 1 Lecturer, 1 Associate Lecturer, 2 Special Renewable Contract Instructors, 6 Contract and Contractually Limited Faculty Instructors, and an eleven person support staff. Visiting faculty, faculty seconded from other departments, and postdoctoral students substantially increase this number, and, of greater import, add to the vibrancy of research and teaching. Several of our officially retired faculty members still retain a formal connection with the Department and provide a stimulating presence in its activities.

Members of the Department of Mathematics and Statistics have achieved Canadian and international recognition for their scholarly work and have been honoured by a host of bodies for their achievements. Faculty members serve or have served on research grant application review committees, scientific program committees of international conferences and editorial boards of international journals. The scholarly and research interests of the members of the Department are diverse. Faculty members actively pursue their research and publish in virtually all of the major fields of mathematics and statistics. Probability, statistics, algebra, general and algebraic topology, differential equations and dynamical systems, foundations of mathematics, pure and applied geometry, mathematical physics, operations research, the history of mathematics, and mathematical education represent areas of particular strength. During the 2003–04 academic year, more than sixty articles, authored or co-authored by members of the Department, appeared in or were accepted by refereed journals. Frequent colloquia and seminars (see Sections 9 and 10), and their number and variety, attest to the breadth and vigour of this ongoing research activity.

The statistics on external grant support further confirm the quality and importance of the research produced by members of the Department of Mathematics and Statistics. During the 2003–04 academic year, 37 members of the Department (including cross- and joint-appointments) held grants, of which 32 were recipients of Natural Science and Engineering Research (NSERC) grants totaling $600,025 and $663,508 in NSERC's fiscal years (April to April) 2003–04 and 2004–05 respectively. Other major grant agencies, including the Social Science and Humanities Research Council of Canada, Statistics Canada, Canadian Institute of Health Research, the Ontario Cancer Research Network, Bell University Laboratories and the Ontario Innovation Trust, provide our members with individual, team, or equipment grants. One member was awarded a Canada Research Chair (Ottawa) and a Premier's Research Excellence Award (Ontario). The
total of grants received by members of the Department from all sources, administered or reportable through the Office of Research Administration was $1,584,581. The total of all grants received is significantly higher since several members of the Department share team grants administered by other universities.

The Department of Mathematics and Statistics strongly endorses York’s view that quality teaching is complementary to quality research and scholarship. Innovative approaches to teaching and the enthusiasm and talent of faculty members combine to make this Department the first choice of a growing number of undergraduate majors. Students choose their undergraduate degree programme from within one of three major-field streams offered by the Department: Mathematics, Applied Mathematics, and Statistics. These major-field streams are complemented by the Computational Mathematics Programme that takes students through the full process of applying mathematics to commercial and industrial problems, such as controlling heat flow in a manufacturing process, pricing a stock option, or assessing the risk of issuing an insurance policy. For those students who hope to enter the demanding world of business, the Mathematics for Commerce Programme provides the mathematical skills, intellectual tools and the confidence to succeed. In 2003–04, the Department had 549 mathematics and statistics majors enrolled in its programmes, 337 from the Faculty of Arts, 211 from the Faculty of Science, and 1 in the Faculty of Fine Arts. (Notably, the gender gap no longer exists.) In the June and November 2004 ceremonies, 116 majors in Arts and Science received degrees. A complete breakdown of these numbers by programme may be found in Section 15.

The Department takes pride in its accredited and thriving graduate programme that offers both masters and doctoral degrees. Graduate students study to attain an MA, MSc or PhD in mathematics or statistics. Alternately, they may enroll in the Department’s long-standing MA Programme for Teachers, a programme designed to enhance the breadth of knowledge of high school mathematics teachers and their effectiveness in the classroom. All programmes permit students to enroll part-time. The M.A. Programme for Teachers was designed from the outset for part-time enrolment, though it is possible to enroll full-time. In 2003–04, the Department had 25 full-time students and 41 part-time students in its Masters Programme and 35 full-time and 2 part-time students in its PhD Programme. Seven PhD, 32 MA and 3 MSc degrees were granted.

Computing facilities in the Department are well developed, providing faculty, undergraduate and graduate students with e-mail, Internet access, and sophisticated research and learning resources. Faculty and graduate students also enjoy a computer room containing PC’s, X-terminals, and Macs. The Department has a large PC/UNIX lab for use in undergraduate teaching, and maintains several teaching and research servers to provide general purpose and task-specific, such as computation and web page, support. All Department computers are networked to the Internet. The success of computer-assisted learning initiatives using the Department’s state-of-the-art computer lab has paved the way for enhanced use of computer technology in teaching. In 2001-02, the Laboratory for Industrial and Applied Mathematics (LIAM) was founded to provide for the educational and training needs in industrial and applied mathematics. LIAM creates opportunities for interdisciplinary research, and provides a locus around which industrial outreach can be centred and built. Initially funded by CFI, OIT, and CRC, LIAM has a Sun Enterprise 3500 Server, multiple Sun Blade 1000 and other workstations, and various backup, storage, and associated components, all housed in Bethune College. Grants from Generation 5 Data Modeling and Statistical Analysis Inc., NSERC, MITACS, and NIH have supported the purchase of additional equipment and regular maintenance. Recent grants from CFI and OIT will fund a new parallel computing facility located within the Department. While the facility’s purpose is to aid several members in their ongoing research, the long-term benefit of this resource to the Department and the York community should not be understated.

The Department of Mathematics and Statistics recognizes the need and is committed to maintain contact with the general community beyond York’s borders. Its High School Liaison Committee is very active, providing lecturers and consultants to schools in the area. The Department believes that strong contacts with local high schools will yield a more satisfactory university experience for our future students. This contact also serves to alert students to the desirability of York in general, and the programmes offered by the Mathematics and Statistics Department in particular, as a venue for their future undergraduate education.

--This report was prepared by the 2004-05 Publications Committee – Annual Report. The Committee wishes to express its gratitude to Susan Rainey for her dedication and competence in helping prepare and publish this Annual Report, 2003–04.

Annual Report 2003 – 2004
2. Faculty Members

Full-Time Faculty

Abramson, Z. Morton, BSc, MSc, PhD (McGill University)
   Professor: Combinatorics, Actuarial Mathematics

Benslimane, Younes, PhD (Université du Québec à Montréal)
   Assistant Professor: IT Analysis and Design

Bergeron, Nantel, MSc (Université du Québec à Montréal), PhD (University of California at San Diego)
   Professor: Algebraic Combinatorics, Algebra

Brettler, Eli, BA (Haverford College), MA (Columbia University), PhD (McGill University)
   Special Renewable Contract: Algebraic Number Theory, Pedagogy

Brown, Julia M.N., AB, AM (University of Michigan), AM, PhD (Harvard University)
   Associate Professor: Finite Geometries

Bugajska, Krystyna, MSc (Krakow), PhD (Silesian U Katowice), Habilitation (Wroclaw University)
   Associate Professor: Mathematical Physics

Burns, Robert G., BSc (University of Queensland), PhD (Australian National University)
   Professor: Group Theory

Chamberlin, Stephen R., BMath, MMath, PhD (University of Waterloo)
   Associate Professor: Statistical Modelling and Inference, Asymptotics

Cysneiros, Luiz, BSc, MS, PhD (PUC -Rio de Janeiro)
   Assistant Professor: Requirements Engineering, Non-Functional Requirements, Agent-Oriented Modelling

Denzel, Gene, BSc, MS, PhD (University of Washington)
   Associate Professor: Probability, Statistics

Farah, Ilijas, BSc, MSc (University of Belgrade), PhD (University of Toronto)
   Assistant Professor: Set Theory, Combinatorics, Applications of Combinatorics to Analysis

Ganong, Richard A., BA (Reed College), MSc, PhD (McGill University)
   Associate Professor: Algebraic Geometry

Gao, Xin, BS (Wuhan University), MS (University of Chicago), PhD (University of Ottawa)
   Assistant Professor: Nonparametrics, Monte Carlo Methods, Large Sample Theory, Statistical Computing, Statistical Genetics, Bioinformatics

Gao, Yun, BA (University of China), MS (Chinese Academy of Science), PhD (University of Saskatchewan)
   Associate Professor: Algebra, Mathematical Physics

Ho, Jackie C. K., BMath, MAcc, MMath, PhD (University of Waterloo)
   Lecturer: Operations Research, Optimization

Huang, Huaxiong, BSc, MSc (Fudan University), PhD (University of British Columbia)
   Associate Professor: Scientific Computing (Computational Fluid Dynamics), Mathematical Modeling, Industrial Mathematics

Janse van Rensburg, Esaias J., BSc (Stellenbosch), BSc Hons (University of the Witwatersrand), PhD (Cambridge University)
   Professor: Statistical Mechanics

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Joshi, Hans Raj P., BSc, MSc, PhD (Banaras University)

*Special Renewable Contract*: Summability methods, History of Mathematics

Kochman, Stanley O., AB (Kenyon College), MS, PhD (University of Chicago)

*Professor*: Algebraic Topology

Ku, Hyejin, BA, MS, PhD (Seoul National University)

*Assistant Professor*: Mathematical Finance, Applied Probability

Kushniruk, André, BA, BSc (Brock University), MSc (McMaster University), PhD (McGill University)

*Associate Professor*: Information Technology, Health Informatics, Human – Computer Interaction

Lafraimboise, James G., BSc (University of Windsor), BASc, MA, PhD (University of Toronto)

*Professor (cross-appointment with Physics and Astronomy)*: Theoretical Plasma Physics

Liang, Dong, BSc, MSc, PhD (Shandong University)

*Assistant Professor*: Numerical Analysis for PDEs, Numerical Methods for Fluid Flows in Porous Media, Scientific Computing, Computational Biology

Madras, Neal, BSc (McGill University), MS, PhD (Cornell University), FRSC

*Professor*: Probability, Mathematical Models in Biology and Physics, Monte Carlo Methods

Maltman, Kim, BSc (University of Calgary), PhD (University of Toronto)

*Professor*: Quantum Field Theory, Quantum Continuum Mechanics

Massam, Hélène M., BSc, PhD (McGill University)

*Professor*: Statistical Theory

Monette, Georges A., BSc (University of Western Ontario), MSc, PhD (University of Toronto)

*Associate Professor*: Statistical Inference

Muldoon, Martin E., BSc (National University of Ireland), PhD (University of Alberta)

*Professor*: Analysis, Differential Equations, Special Functions

Ng, Peggy, BA, MA (York University), PhD (University of Toronto)

*Associate Professor (Arkinson Faculty member of Statistics Section)*: Applied Statistics and Management Science

O’Brien, George L., BSc, MSc (Queen’s University), AM, PhD (Dartmouth University), FIMS

*Professor*: Probability, Stochastic Processes

Olin, Philip, BSc (University of Manitoba), PhD (Cornell University)

*Professor*: Model Theory

Pelletier, Donald H., BA (Williams College), MS (Massachusetts Institute of Technology/MIT), PhD (University of Illinois)

*Associate Professor*: Set Theory

Pelletier, Joan Wick, AB (Smith College), MSc, PhD (McGill University)

*Professor (on leave of absence — retired January 1, 2004)*: Category Theory, Analysis

Peskun, Peter H., BSc, MSc, PhD (University of Toronto)

*Associate Professor*: Statistics

Pietrowski, Alfred, BA (Adelphi University), MSc, PhD (University of Toronto)

*Associate Professor*: Group Theory, Algebra, Geometry, History of Mathematics

Promislow, S. David, BCom (University of Manitoba), PhD (University of British Columbia), FSA

*Professor*: Actuarial Science, Group Theory, Operator Theory
Purzitsky, Norman, BS, PhD (University of Maryland)
Associate Professor: Complex Analysis, Calculus

Salisbury, Thomas S., BSc (McGill University), PhD (University of British Columbia), FIMS
Professor: Probability

Song, Peter X.-K., BSc (Jilin University), MSc (SW Jiaotong University), PhD (University of British Columbia)
Associate Professor: Generalized Linear Models, Time series, Longitudinal Data Analysis

Stauffer, Allan D., BSc (University of Toronto), PhD (University of London)
Professor (cross-appointment with Physics and Astronomy): Atomic and Molecular Collisions and Structure

Steprāns, Juris, BA (University of Waterloo), MSc, PhD (University of Toronto)
Professor: Set Theory

Szeto, Anthony, BSc (University of Sydney), PhD (Australian National University)
Associate Professor (cross-appointment with Earth and Atmospheric Science): Earth’s Rotation, Core Dynamics

Tanny, David L., BSc (McGill University), MA, PhD (Cornell University)
Associate Professor (on disability leave): Probability, Stochastic Processes, Mathematical Statistics

Taylor, Peter A., BSc, PhD (University of Bristol)
Professor (cross-appointment with Earth and Atmospheric Science): Fluid Mechanics

Tholen, Walter, MSc, PhD (Universität Münster), Habilitation (Fernuniversität)
Professor: Category Theory

Wall, Byron E., BA (Drew University), MA, MBA, PhD (University of Toronto)
Associate Lecturer: History and Philosophy of Mathematics, History of Science

Wang, Steven X., BSc MSc, PhD (University of British Columbia)
Assistant Professor: Weighted Likelihood Inference and Statistical Data Mining

Watson, Stephen, BA (Carleton University), MA, PhD (University of Toronto)
Professor: Set Theory and General Topology

Weiss, Asia Ivic, BSc (University of Zagreb), MSc, PhD (University of Toronto)
Professor: Combinatorial Geometry, Hyperbolic Geometry, Polytopes

Whiteley, Walter J., BSc (Queen’s University), PhD (Massachusetts Institute of Technology/MIT)
Professor: Discrete Applied Geometry, Diagrammatic Reasoning, Geometric Homologies

Wong, Augustine C.M., BSc (University of Toronto), MA (York University), PhD (University of Toronto)
Associate Professor (Atkinson Faculty member of Statistics Section): Statistical Inference, Survival Data Analysis, Econometrics

Wong, Man Wah, BSc (Sir George Williams University/Concordia), MSc, PhD (University of Toronto)
Professor: Functional Analysis, Pseudo-differential Operators, Partial Differential Equations

Wu, Jianhong, BA, MSc, PhD (Hunan University)
Professor: Differential Equations, Nonlinear Analysis, Population Dynamics, Neural Networks

Wu, Yuehua, BS (Nanjing Institute of Technology), MA, MS, PhD (University of Pittsburgh)
Professor: Multivariate Analysis

Yang, Zijiang, BSc (Beijing University), MSc (University of Toronto), PhD (University of Toronto)
Assistant Professor: Information Technology (IT) Evaluation, Decision Support System Algorithms, Statistical Analysis in Data Envelopment Analysis (DEA), Business Failure Prediction, Data Mining Algorithms

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Annual Report 2003 – 2004
Zabrocki, Michael, BA, MA, PhD (University of California at San Diego)
  Assistant Professor: Algebraic Combinatorics

Zhu, Huaiping, BS (Nanjing Normal University), MA (East China Normal University),
PhD (Université du Québec à Montréal)
  Assistant Professor: Differential Equations and Dynamical Systems, Hilbert's 16th Problem, Mathematical
  Ecology and Epidemiology

Professors Emeriti

Bean, Donald W.T., BSc, MSc, PhD (McMaster University)
  Associate Professor: Combinatorics, Analysis

Fraser, D.A.S., BA, MA (University of Toronto), MA, PhD (Princeton University) FIMS, FRESS, FISI, FASA,
FRSC, FAAAS
  Professor: Statistical Theory

Grant, J. Hardy, BSc (Queen’s University), MSc (McGill University)
  Associate Professor: History and Cultural Relations of Mathematics

Guiasu, Silviu, MSc (University of Bucharest), PhD (Romanian Academy of Science)
  Professor: Information Theory, Operations Research

Hruska, Carl, MSc, PhD (Czech Academy of Science), RNDr (University of Prague), Dozent (Palacky, Olomouc)
  Professor: Theory of Relativity, Acoustics, Piezoelectricity

Kleiner, Israel, BSc, MSc (McGill University), MA (Yale University), PhD (McGill University)
  Professor: History of Mathematics, Mathematics Education

Lee, Sung Wok, BS (Seoul National University), MS, PhD (Kansas State University)
  Associate Professor: Statistics

Lorch, Lee, AB (Cornell University), MA, PhD (University of Cincinnati), LHD (City University of New York),
FRSC, LLD (York University), LHD (Fisk University), FAAAS, SciD (Spelman College)
  Professor: Analysis, Differential Equations

MacHenry, Trueman, BS (Black Mountain College), MSc (University of Manchester), PhD (Adelphi University)
  Associate Professor: Group Theory, Homological Algebra, Geometry

McEachran, Robert P., BSc, MSc, PhD (University of Western Ontario)
  Professor (cross-appointment with Physics): Atomic and Molecular Collisions and Structure

Rogers, Pat, BA (Oxford University), MSc (University of Toronto), PhD (University of London)
  Professor (joint-appointment with the Faculty of Education): Mathematics Education

Russell, Dennis C., BSc (University of Sheffield), MSc, PhD, DSc (University of London) FIMA
  Professor: Classical and Functional Analysis, Approximation Theory

Schaufele, Ronald A., BEd (University of Alberta), BS, MS, PhD (University of Washington)
  Associate Professor: Probability and Statistics

Shenitzer, Abe, BS (Brooklyn College), MSc, PhD (New York University)
  Professor: Algebra, Geometry, Mathematics Education

Solitar, Donald, BS (Brooklyn), AM (Princeton), PhD (New York) FRSC
  Professor: Combinatorial Group Theory

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Annual Report 2003 – 2004
Contract and Contractually Limited Faculty

Chawla, Jagmohan, MSc, PhD (McMaster University)  
Ergodic Theory, Probability Theory

Ivanova, Vera, MS (Moscow University), PhD (University of Sofia)  
Information Technology

Michkine, Valery, MSc (Moscow University), PhD (Moscow University)  
Symmetry Groups of Set Ideals, Arithmetic Ideals, Diophantine Analysis

Poliakov, Igor, MSc (Moscow University), PhD (Moscow University)  
Control Theory

Raguimov, Iouldouz, MSc (Azerbaijan University), PhD (Moscow University)  
Operations Research

Wheeler, Eric, BSc (Trent University), MA, PhD (University of Toronto)  
Information Technology

Adjunct Faculty

Chen, Yuming, BSc MSc (Beijing University), PhD (York University)  
Assistant Professor of Mathematics (Wilfrid Laurier University): Dynamical Systems

Fox, John, BA (New York University), MA, PhD (University of Michigan)  
Professor of Sociology (McMaster University): Statistics and Research Methods, Computer Applications

Huang, Wenxiu, BS, MS (Nanchang University), PhD (University of Western Ontario)  
Generation 5: Algebra, Differential Geometry, Statistics

Meir, Amram, MSc, PhD (Hebrew University)  
Professor Emeritus (University of Alberta): Approximation Theory, Combinatorial Geometry, Graph Theory

Rubinstein, Iren, BSc (Poland), MSc (New Jersey), BEd (Queens University), PhD (York University)  
Adjunct Professor (York University): Interpretation and Processing of Satellite Imagery

Zhang, Xuebin, BEng, MEng (Hohai University), PhD (University of Lisbon)  
Meteorological Service of Canada: Climate Modeling, Statistical Climatology

Appointments and Leaves

Don Bean, Professor Emeritus, passed away on January 6, 2004.

Xin Gao accepted a tenure stream position as Assistant Professor in Statistics, effective July 1, 2003.

Silviu Guiasu retired, effective July 1, 2003.

Hyejin Ku accepted a tenure stream position as Assistant Professor in Pure Mathematics, effective July 1, 2003.

Vera Ivanova accepted a Contractually Limited Appointment in ITEC, effective July 1, 2003

Eric Wheeler accepted a Contractually Limited Appointment in ITEC, effective July 1, 2003


Byron Wall was granted tenure, effective July 1, 2003.
Donald W. T. Bean
IN MEMORIAM

Donald W. T. Bean, Associate Professor Emeritus, died on January 6, 2004. He was appointed Lecturer in Mathematics at York University in 1964, and in 1965, was one of the first two members of the Department to be located at the new Keele Campus. In 1967, he was awarded the PhD degree by McMaster University with a thesis entitled Infinite Exchange Systems under the supervision of Gert Sabidussi, and in the following years he published a number of articles in the areas of matroid theory and graph theory. Don Bean was a member of the Graduate Programme in Mathematics and served as its Director for a three year term in the late 1970s, but his main teaching contributions were at the undergraduate level where he taught a wide variety of courses. He retired in 1995.

– Martin Muldoon, Professor
Department of Mathematics & Statistics
### 3. Administration and Staff

**Chair of the Department:** Neal Madras  
**Assistant to the Chair:** Anna Cavaliere  
**Director of Graduate Programme:** Yuehua Wu  
**Graduate Programme Assistant:** Primrose Miranda  
**Director of Undergraduate Studies:**  
  - Applied Mathematics: Walter Whiteley  
  - Pure Mathematics: Man Wah Wong  
  - Statistics: Peter Song  
**Information Technology (ITEC):** André Kushniruk  
**Undergraduate Office:**  
  - Administrative Assistant: Janice Grant  
  - Student Inquiries Secretary: Jennifer Malisani  
**Administrative Secretary (Applied Mathematics):** Gillian Moore  
**ITEC Undergraduate Office:**  
  - Student Inquiries Secretary: Antonietta Della Pia Vian  
**Administrative Secretary:** Marie Milani  
**Faculty Secretaries:** Teresa Masucci  
  - Susan Rainey  
**Technical Typist/Web Master:** Steven Chen  
**Systems Administrator:** Alexei Nakonechnyi  
**Statistical Consulting Service:**  
  - Coordinator: Georges Monette  
  - Associate Coordinator: Michael Friendly  
  - Associate Coordinator: John Fox  
  - Consultant: Mirka Ondrack  
  - Graduate Assistant: Ernest Kwan  
  - Graduate Assistant: Qing Shao  
  - Graduate Assistant: Oren Amitay  
  - Graduate Assistant: Deena Weiss
4. Visitors

(STAYS OF ONE WEEK OR MORE)

Bohun, Sean, Penn State University (United States)
Host(s): Huaxiong Huang
May 24, 2004 - June 11, 2004

Boutouria, Imen, University of Sfax (Tunisia)
Host(s): Hélène Massam
September 23, 2003 - October 8, 2003

Chen, Li, Yu-Nan University (China)
Host(s): Steven Wang
February 1, 2004 - June 30, 2004

Cheng, Jin, Fudan University (China)
Host(s): Huaxiong Huang
February 15-22, 2004

Clementino, Maria Manuel, University of Coimbra (Portugal)
Host(s): Walter Tholen
May 9-21, 2004

Dikranjan, Dikran, University of Udine (Italy)
Host(s): Walter Tholen
August 27, 2003 - September 7, 2003

Duff, Ana, (Post-doctorate) York University (Canada)
Host(s): Nantel Bergeron
July 1, 2002 - June 30, 2004

Frigaard, Ian, University of British Columbia (Canada)
Host(s): Huaxiong Huang
June 3-11, 2004

Garcia-Ferreira, Salvador, UNAM – Morelia (Mexico)
Host(s): Stephen Watson
April 4-11, 2004

Giarlotta, Alfio, University of Catania (Italy)
Host(s): Stephen Watson
July 1, 2003 - June 30, 2004

Gupta, Dharma, Allahabad (India)
Host(s): Martin Muldoon
July 1, 2003 - August 15, 2003

Hofmann, Dirk, University of Aveiro (Portugal)
Host(s): Walter Tholen
May 9-21, 2004

Hu, Naihong, East China Normal University (China)
Host(s): Nantel Bergeron, Yun Gao
September 1, 2003 - August 31, 2004

Karavan, Mehrdad, Ahvaz University (Iran)
Host(s): Stephen Watson
October 1, 2003 - April 1, 2004

Liu, Baodong, Shandong University (China)
Host(s): Dong Liang
November 1, 2003 - October 11, 2004

Ou, Chun-Hua, (Post-doctorate) York University (Canada)
Host(s): Jianhong Wu
August 1, 2003 - July 31, 2004

Park, Andrew, University of Cambridge (United Kingdom)
Host(s): Neal Madras, Jianhong Wu
January 1, 2004 - June 30, 2004

Premat, Alejandra, Post-doctorate York University (Canada)
Host(s): Nantel Bergeron
June 1, 2003 - May 31, 2004

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Rezunenko, Alexander, Kharkov University (Ukraine)
   Host(s): Jianhong Wu/Huiaping Zhu
   July 15, 2003 - September 15, 2003

Sabourin, Sindi, University of Notre Dame (United States)
   Host(s): Nantel Bergeron
   June 1, 2003 - May 31, 2004

Schinazi, Rinaldo, University of Colorado (United States)
   Host(s): Neal Madras
   May 15-29, 2004

Thomas, Hugh, Post-doctorate York University (Canada)
   Host(s): Nantel Bergeron
   July 1, 2003 - June 30, 2004

Tudose, Geanina, Post-doctorate York University (Canada)
   Host(s): Nantel Bergeron
   July 1, 2002 - June 30, 2004

Werneck, Vera, Rio de Janeiro State University (Brazil)
   Host(s): Luiz Cysneiros, André Kushniruk
   August 1, 2003 - August 31, 2004

Wesolowski, Jacek, Warsaw Politechnica (Poland)
   Host(s): Hélène Massam
   July 7-21, 2003

Wu, Jinbiao, Beijing University (China)
   Host(s): Huaxiong Huang
   February 1, 2004 - July 31, 2004

Zhao, Weidong, Shandong University (China)
   Host(s): Dong Liang
   January 1, 2004 - April 30, 2004
5. Grants and Projects

Agency and Program Abbreviations

- CFCAS = Canadian Foundation for Climate and Atmospheric Sciences
- CFI = Canadian Funds for Innovation
- CIHR = Canadian Institute of Health Research
- CITO = Communications and Information Technology Ontario
- CMS = Canadian Mathematical Society
- CRC = Canada Research Chair
- FRG = Faculty Research Chair
- MITACS = Mathematics for Information Technology and Complex Systems
- NSERC = Natural Sciences and Engineering Research Council of Canada
- NSERC DG = NSERC Discovery Grant (formerly Research Grant)
- NSERC RT = NSERC Research Tools and Instruments (formerly NSERC EQ)
- OIT = Ontario Innovation Trust
- PREA = Premier’s Research Excellence Award
- PTFF = Contract Faculty Research Fund (formerly Part-Time Faculty Fund)
- SCOTL = Senate Committee on Teaching and Learning
- SLFF = Sabbatical Leave Fellowship Fund
- SSHRC = Social Sciences and Humanities Research Council of Canada
- YSSHRC T = York SSHRC Travel Grant

<table>
<thead>
<tr>
<th>Name</th>
<th>Amount</th>
<th>Agency</th>
<th>Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bergeron, Nantel</td>
<td>$100,000</td>
<td>CRC (Ottawa)</td>
<td>Discrete Algebraic Structures (Yr 3 of 5)</td>
</tr>
<tr>
<td></td>
<td>$30,000</td>
<td>PREA(Ontario)</td>
<td>Discrete Algebraic Structures (Yr 4 of 5)</td>
</tr>
<tr>
<td></td>
<td>$28,000</td>
<td>NSERC DG</td>
<td>Discrete Algebraic Structures (Yrs 1/2 of 4)¹</td>
</tr>
<tr>
<td>Burns, Robert G.</td>
<td>$8,000</td>
<td>NSERC DG</td>
<td>Problems of Combinatorial Group Theory (Yrs 2/3 of 4)¹</td>
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<tr>
<td>Cysneiros, Luiz</td>
<td>$14,000</td>
<td>NSERC DG</td>
<td>Non-functional Requirements: from Early Requirements to Implementation (Yrs 1/2 of 2)¹</td>
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<tr>
<td>Farah, Ilijas</td>
<td>$14,500</td>
<td>NSERC DG</td>
<td>Control Measure Problem and Basis Problem for ccc Posets (Yrs 1/2 of 4)¹</td>
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<tr>
<td>Gao, Xin</td>
<td>$17,000</td>
<td>NSERC DG</td>
<td>Development of Statistical Methodologies for Genetic Analysis (Yr 1 of 3)¹</td>
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<td></td>
<td>$12,000</td>
<td>NSERC DG (E)</td>
<td>Infinite Dimensional Lie Algebras and Their Applications (Yr 4 of 4)¹</td>
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<td>$17,000</td>
<td>NSERC DG (S)</td>
<td>Extended Affine Lie Algebras and Quantizations (Yr 1 of 5)¹</td>
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<tr>
<td>Name</td>
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<tr>
<td>(Gao, Yun cont'd.)</td>
<td>$120,000</td>
<td>Chinese Academy of Science</td>
<td>Hundred Talents Project (Yr 2 of 3)</td>
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<tr>
<td>Guisasu, Silviu</td>
<td>$9,000</td>
<td>NSERC DG</td>
<td>Probabilistic Measures of Uncertainty and Constrained Optimization Involving Them. Applications (Yr 4 of 4)&lt;sup&gt;1&lt;/sup&gt;</td>
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<td>Huang, Huaxiong</td>
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<td>NSERC DG</td>
<td>Numerical Methods for Singular and Nearly Singular Problems (Yrs 3/4 of 4)&lt;sup&gt;1&lt;/sup&gt;</td>
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<td>$165,000</td>
<td>MITACS</td>
<td>Mathematical Modeling and Scientific Computation (with B. Wetton et al)</td>
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<td></td>
<td>$24,500</td>
<td>Firebird Semiconductor</td>
<td>Mathematical and Computational Modeling of InSb Crystal Growth Process (with I. Frigaard and S. Bohun)</td>
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<tr>
<td>Janse van Rensburg, Esaias J.</td>
<td>$18,000</td>
<td>NSERC DG</td>
<td>Statistical Mechanics of Lattice Models of Polymers (Yrs 1/2 of 4)&lt;sup&gt;1&lt;/sup&gt;</td>
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<tr>
<td>Ku, Hyejin</td>
<td>$18,000</td>
<td>NSERC DG</td>
<td>Mathematical Methods for Financial Applications (Yr 1 of 3)&lt;sup&gt;1&lt;/sup&gt;</td>
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<tr>
<td>Kushniruk, André</td>
<td>$36,000</td>
<td>SSHRC</td>
<td>Making Medical Meaning: Cognitive, Social and Educational Implications of an Emerging Information Technology in Health Care (primary investigator) (Yr 3 of 3)</td>
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<td>$980,000</td>
<td>SSHRC Initiatives in the New Economy (INE)</td>
<td>Simulation and Advanced Gaming Environments (SAGE) for Learning (co-investigator) (Yr 2 of 3)</td>
</tr>
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<td></td>
<td>$50,000</td>
<td>CIHR</td>
<td>How Should Evidence Be Presented? Electronic Guideline Usability and Information Design Evaluation Study (eGUIDES) (co-investigator) (Yr 2 of 2)</td>
</tr>
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<td></td>
<td>$115,000</td>
<td>CITO</td>
<td>Outcomes in the Palm of Your Hand: Improving the Quality and Continuity of Patient Care (co -investigator) (Yr 2 of 3)</td>
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<td>$150,000</td>
<td>Ontario Cancer Research Network</td>
<td>(co -investigator) (Yr 2 of 3)</td>
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<td></td>
<td>$50,000</td>
<td>Bell University Laboratories</td>
<td>EPOCare—Evidence at Point of Care (co -investigator) (Yr 4 of 5)</td>
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<td>Laframboise, James G.</td>
<td>$25,000</td>
<td>NSERC DG</td>
<td>Theory of Electrode Devices in Plasmas, and Spacecraft-plasma Interactions (Yrs 3 of 4; extend 4 of 5)&lt;sup&gt;1&lt;/sup&gt;</td>
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<sup>1</sup> £
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<tr>
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<tr>
<td>Liang, Dong</td>
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<td>Develop and Analyze Numerical Methods for Fluid Flow Problems (Yrs 2/3 of 4)¹</td>
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<td>$5,000</td>
<td>CFCAS Project</td>
<td>Methods for Improvement of Aerosol Information – part of project Multiscale Air Quality Modeling (John C. McConnel, S. Gong, et al) (Yr 1 of 1)</td>
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<td>Madras, Neal</td>
<td>$32,025</td>
<td>NSERC DG</td>
<td>Analysis of Random Interacting Systems (Yr 5 of 5)¹</td>
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<td>$34,500</td>
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<td>Stochastic Models in the Sciences (Yr 1 of 5)¹</td>
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<td>CMS Endowment Grant</td>
<td>Winter Training Camp (Yr 1 of 1)</td>
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<td>Maltman, Kim</td>
<td>$40,000</td>
<td>NSERC DG</td>
<td>QCD and the Standard Model in Hadronic Physics, (Yrs 1/2 of 4)¹</td>
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<td>Massam, Hélène</td>
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<td>Graphical Markov Models: the Wishart, Dirichlet and Related Distributions (Yrs 3/4 of 4)¹</td>
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<td>Monette, Georges</td>
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<td>SSHRC/Statistics Canada</td>
<td>Canadian Initiative on Social Statistics Data Training School, Spring 2002 (M. Ornstein et al) (Yr 3 of 3)</td>
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<td>Muldoon, Martin E.</td>
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<td>NSERC DG</td>
<td>Special Functions and Orthogonal Polynomials (Yrs 3 of 4; extend 4 of 5)¹</td>
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<td>Promislow, David</td>
<td>$850</td>
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<td>Stochastic Orderings on Discrete Multivariate Distributions (Yr 1 of 1)</td>
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<td>Raguimov, Iouldouz</td>
<td>$5,000</td>
<td>PTFF</td>
<td>Optimization on Time Series and Its Applications to Decision-Making in Operations with Stochastic Parameters</td>
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<td>Salisbury, Tom</td>
<td>$20,000</td>
<td>NSERC DG</td>
<td>Conditioned Brownian Motion and Superprocesses (Yr 4 of 4)¹</td>
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<tr>
<td>Song, Peter</td>
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<td>NSERC DG</td>
<td>Regression Models for Longitudinal Data and Related Statistical Inference (Yrs 3/4 of 4)¹</td>
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<td>Regression Models for Longitudinal Data and Related Statistical Inference (Yrs 3/4 of 4)¹</td>
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<td>Stauffer, Al</td>
<td>$33,700</td>
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<td>Theoretical and Computational Studies of Electron and Positron Collisions with Atoms and Molecules (Yrs 3 of 4; extend 4 of 5)¹</td>
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<tr>
<td>Steprāns, Juris</td>
<td>$23,000</td>
<td>NSERC DG</td>
<td>Applications of Set Theory to Geometry (Yrs 4/5 of 6)¹</td>
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¹ Yrs refer to the year(s) of the grant's duration.
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<tr>
<td>Taylor, Peter A.</td>
<td>$38,000</td>
<td>NSERC DG</td>
<td>Atmospheric Boundary-layer Studies (Yrs 2/3 of 4)</td>
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<td>Tholen, Walter</td>
<td>20,000</td>
<td>NSERC DG</td>
<td>Categorical Methods in Topology, Algebra, and Computer Science (Yrs 2/3 of 4)</td>
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<td>Wang, Steven</td>
<td>$13,000</td>
<td>NSERC DG</td>
<td>Statistical Data Mining and Information Integration (Yrs 1/2 of 4)</td>
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<td>$250,000</td>
<td>OIT</td>
<td>Parallel Computing for Mathematical and Statistical Analysis of Complex Systems, Large Data Sets, and Performance Analysis (With H. Zhu and Z. Yang) (Yr 1 of 1)</td>
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<tr>
<td>Watson, Stephen</td>
<td>$26,000</td>
<td>NSERC DG</td>
<td>The Construction of Topological Spaces and Its Applications to Mathematics and the Sciences (Yrs 4/5 of 5)</td>
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<td>Weiss, Asia Ivic</td>
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<td>NSERC DG</td>
<td>Regular and Chiral Polytopes (Yrs 2/3 of 4)</td>
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<td>Whiteley, Walter</td>
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<td>NSERC DG</td>
<td>Discrete Geometry, with Applications (Yrs 3/4 of 4)</td>
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<td>Wong, Augustine</td>
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<td>NSERC DG</td>
<td>Theories and Applications of Parametric and Nonparametric Likelihood-based Inference (Yrs 2/3 of 4)</td>
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<td>Wong, Man Wah</td>
<td>$7,000</td>
<td>NSERC DG</td>
<td>Wavelet-based Analysis of Pseudo-differential Operators (Yrs 3 of 4; extend 4 of 5)</td>
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<td>Wu, Jianhong</td>
<td>$34,000</td>
<td>NSERC DG</td>
<td>Global Dynamics of Delay Differential Systems: Theory and Applications (Yrs 3 of 4; extend 4 of 5)</td>
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<td>$20,000</td>
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<td>Clustering Categorical Data Based on Nonlinear Dynamics and Spectral Graph Partitioning (Yr 1 of 3)</td>
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<tr>
<td>Wu, Yuehua</td>
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<td>NSERC DG</td>
<td>Topics in Model Selection and M-estimation (Yrs 2/3 of 4)</td>
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<tr>
<td>Yang, Zijiang</td>
<td>$250,000</td>
<td>OIT</td>
<td>Parallel Computing for Mathematical and Statistical Analysis of Complex Systems, Large Data Sets, and Performance Analysis (with H. Zhu and S. Wang) (Yr 1 of 1)</td>
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<tr>
<td>Name</td>
<td>Amount</td>
<td>Agency</td>
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<tr>
<td>Zabrocki, Michael</td>
<td>$13,500</td>
<td>NSERC DG</td>
<td>Quantization of Hopf algebra structures (Yrs 1/2 of 4)¹</td>
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<td>Zhu, Huaiping</td>
<td>$17,000</td>
<td>NSERC DG</td>
<td>Bifurcation theory and related problems in mathematical biology (Yrs 1/2 of 4)¹</td>
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<td>$250,000²</td>
<td>OIT</td>
<td>Parallel Computing for Mathematical and Statistical Analysis of Complex Systems, Large Data Sets, and Performance Analysis (with S. Wang and Z. Yang) (Yr 1 of 1)</td>
</tr>
</tbody>
</table>

**TOTAL GRANTS reported by ORA³**  
$1,584,581

¹The academic year July 1 to June 30 overlaps two of NSERC's fiscal years which run from April to April. Both of NSERC's fiscal year numbers are reported. "28,000 …Yrs 1/2 of 4" means $28,000 was paid in 2003–04 and 2004–05 as the 1st and 2nd installments of a four year grant. "Yrs 3 of 4; extend. 4 of 5" means that the third and fourth installments of what was originally a four year grant were paid and that the grant was extended to five years. Some grants were only for NSERC's 2003-04 fiscal year ("Ends April 2004") while others were only for NSERC'S fiscal year 2004-05 ("Starts April 2004")

²This grant is held jointly by 3 faculty members, S. Wang, Z. Yang, and H. Zhu.

³This is the amount reported by the Office of Research. Some of the grants are joint with faculty members from other institutions so this number will not correspond to the sum of the column.
6. Refereed Publications

Bergeron, Nantel


Brown, Julia M.N.

"On the action of the groups GL(n+1,q), PGL(n+1,q), SL(n+1,q) and PSL(n+1,q) on PG(n, q)

"Graphs with the n-e.c. adjacency property constructed from affine planes", submitted. (With C.A. Baker, A. Bonato and T. Szöny)

Burns, Robert G.


The St. Petersburg School of Number Theory, (Translation for the American Mathematical Society) Springer-Verlag, to appear.

Farah, Ilijas


Gao, Xin


"A nonparametric test for interaction based on composite linear rank statistics", submitted. (With M. Alvo)

"Nonparametric inference for local extrema with application to oligonucleotide microarray data in yeast genome", submitted. (With P. Song)

"Nonparametric multifactor analysis for repeated microarray experiments", submitted. (With P. Song)

Gao, Yun

"U_q(\hat{gl}_n) action on \hat{gl}_n module and quantum toroidal algebras", Journal of Algebra 273 (2004), 320-343. (With N. Jing)
Refereed Publications

(Gao, Yun cont’d.)
"Drinfeld double and Lusztig symmetry of two parameter quantum groups", submitted. (With N. Bergeron and N. Hu)

Guiasu, Silviu


Huang, Huaxiong


"Ruined moments in your life: how good are the approximations", Insurance: Mathematics and Economics, 34, (3) (2004),421-447. (With M. Milevsky and J. Wang)

"Motion of drops on a planar surface under shear", Communication on Mathematical Sciences, to appear.

Kleiner, Israel


"Sherlock Holmes in Babylon and other Tales of Mathematical History", Mathematical Association of America, M. Anderson, V. Katz and R. Wilson, eds., Isis, to appear. (Book review)

Ku, Hyejin


Liang, Dong


"Modelling population growth with delayed nonlocal reaction in 2-dimensions", submitted. (With J. Wu and F. Zhang)

MacHenry, Trueman


Madras, Neal


Maltman, Kim


"The K →π matrix elements of the electroweak penguin operators in the SU (3) Chiral limit", *Proceedings of the 10th International Conference on Hadron Spectroscopy, Aschaffenburg, Germany, August 31-September 6, 2003*, to appear. (With V. Cirigliano, J. Donoghue and E. Golowich)

"Quark model perspectives on pentaquark exotics", *Proceedings of the 7th International Conference on the Physics of Excited Nucleons, Grenoble, France, March 24-27, 2004*, to appear

"Heavy quark analogues of the theta and their excitations", *Physics Letters B*, submitted.

Massam, Hélène


“Monte Carlo method to compute the marginal likelihood in non decomposable graphical Gaussian models”, *Biometrika*, to appear. (With A. Atay-Kayis)

"The Matsumoto-Yor property on trees", *Bernoulli*, to appear. (With J. Wesolowski)
(Massam, Hélène cont’d.)

Meir, Amram

"Bicoloured recursive trees and Eulerian numbers", submitted. (With J.W. Moon)

Muldoon, Martin


Promislow, S. David


"Optimal insurance", Insurance: Mathematics and Economics, submitted. (With V. Young)

"Indifference pricing via the probability of ruin", North American Actuarial Journal, submitted. (With V. Young)

Raguimov, Iouldouz


Tholen, Walter


(Tholen, Walter cont'd.)
"Kleisli operations for topological spaces", Topology Applications, submitted. (Wit D. Hofmann)

Wang, Steven X.

“Selecting likelihood weights by cross-validation”, submitted. (With X. Wang and J.V. Zidek)

Weiss, Asia Ivic


“Self-duality of chiral polytopes”, submitted. (With I. Hubard)

Wong, Augustine

“p-value formulas from likelihood asymptotics: bridging the singularities”, Journal of Statistical Research, 37, (2003), 1–15. (With D.A.S. Fraser, N. Reid and R. Li)


"Inference for bounded parameters", Physics Review D, to appear. (With D.A.S. Fraser and N. Reid)

"Improved interval estimation for the two-parameter Birnbaum-Saunders distribution", Computational Statistics and Data Analysis, to appear. (With J. Wu)

Yang, Zijiang


Zabrocki, Michael

“On equations of degree 3 * 2^m”, Boletin del Instituto de Matematica "Beppo Levi", 2,(2003), 109–122. (With C. De Concini, C. Procesi and E. Rogora)


"q and q,t-analogues of non-commutative symmetric functions", to appear. (With N. Bergeron)

"Deformed universal characters for classical and affine algebras", to appear. (With M. Shimozono)
7. Invited Conference Presentations

Bergeron, Nantel


“Inverse system and representation”, Workshop on Inverse System and Combinatorics, Queen’s University, Kingston, ON, Canada, January 2004. Plenary Speaker.


Brown, Julia M.N.


“On the action of $\text{GL}(n+1,q)$ on $\text{PG}(n,q^t)$”, 19th British Combinatorial Conference, Bangor, Wales, United Kingdom, June 29–July 4, 2004.

Farah, Ilijas

Barcelona Conference on Set Theory, Barcelona, Spain, September 2003.

Gao, Xin

“Development of rank tests for factorial designs with applications in genetics”, Fields Institute Summer School, University of Ottawa, ON, Canada, June 2004.

Gao, Yun

“A Tits-Kantor-Koecher algebra and its quantization”, (China) 8th National Conference of Lie Algebras, Xiamen University, China, December 2003.

Kleiner, Israel


Liang, Dong


Madras, Neal


Maltman, Kim

“The K→ππ matrix elements of the electroweak penguin operators in the SU(3) Chiral limit”, 11th International Conference on Hadron Spectroscopy, Aschaffenburg, Germany, August 31–September 6, 2003.


"Theoretical status of pentaquark exotics", Taiwan National Center for Theoretical Sciences Pentaquark Workshop, Taipei, Taiwan, April 12, 2004.

Massam, Hélène


Meir, Amram

“A combinatorial problem with connections to splines and probability”, ISAAC Conference, York University, Toronto, ON, Canada, August 15, 2003.

Promislow, David


Tholen, Walter


Wang, Steven X.

“Clustering categorical data by using CD vectors”, CASCON 2004, IBM Canada, Markham, ON, Canada, October 2003.
Weiss, Asia Ivic


Yang, Zijiang


Zabrocki, Michael


Zhu, Huaiping

8. Conferences Organized and Special Events

Bergeron, Nantel

*Combinatorial Hopf Algebras and Problems in Geometry, Representation Theory and Convex Polytope*
Banff International Research Station, Banff, AB, Canada, Spring 2004.
Member of planning and organizing committee.

Member of planning and organizing committee.

Farah, Ilijas

*Special Session on General Topology and Topological Algebra: Canadian Mathematical Society Summer Meeting*, Dalhousie University, Halifax, NS, Canada, June 2004.
Co-organizer.

Gao, Yun

*Workshop on Mathematical Physics*, CMS of Zhejiang University, Hangzhou, China, July 2003.
Co-organizer.

Kleiner, Israel

Co-organizer. (With G. O'Brien)

Weiss, Asia Ivic

Member of organizing committee.

Wong, Man Wah

*4th International Society for Analysis, Applications and Computation Congress*, York University, Toronto, ON, Canada, August 11-16 2003.
Organizer.

Zabrocki, Michael

Organizer.
9. Colloquia

*Dynamic equations on time scales.*

*Lynn Erbe*, University of Nebraska (United States)  

April 22, 2004

*On almost automorphic dynamics of differential equations.*

*Yingfei Yi*, Georgia Institute of Technology (United States)  

May 3, 2004
10. Seminars

Algebra Seminar

ORGANIZERS: NANTEL BERGERON AND MICHAEL ZABROCKI

A study of lex plus powers ideals.
Sindi Sabourin, York University (Canada)
September 30, 2003

Combinatorial Hopf algebras have characters.
Nantel Bergeron, York University (Canada)
October 7, 2003

Lattice animals: why can't we solve any of these things?
Andrew Rechitser, University of Melbourne (Australia)
October 14, 2003

Bosonic representations of the Lie algebras $W_{1+\infty}$ and $W_{1+\infty}(\mathfrak{gl}_N)$
Naihong Hu, East China Normal University (China)
October 21, 2003

The Hopf algebras of non-commutative symmetric functions.
Michael Zabrocki, York University (Canada)
October 28, 2003

Schemes, VOA and monster.
Krystyna Bugajska, York University (Canada)
November 4, 2003

Permutations statistics, invariant and covariant algebra for the Wwyl Group of Type D.
Ricardo Biagioli, Université du Québec à Montréal (Canada)
November 11, 2003

Algebras over a Fock space.
Yun Gao, York University (Canada)
November 18, 2003

On a conjecture concerning Littlewood-Richardson coefficients.
Mercedes Rosas, Université du Québec à Montréal (Canada)
November 25, 2003

Polynomiality properties of Kostka numbers and Littlewood-Richardson coefficients.
Etienne Rassart, Université du Québec à Montréal (Canada)
January 13, 2004

Refined enumerations of pattern-avoiding permutations.
Sergi Eliesse, Massachusetts Institute of Technology/M.I.T. (United States)
January 20, 2004

Left symmetric algebra.
Aristide Tsemo, University of Toronto (Canada)
January 28, 2004

P-partitions and quasi-symmetric functions.
Peter McNamara, Lacim, Université du Québec à Montréal (Canada)
February 3, 2004

Twisted vertex operators and Steinberg unitary Lie algebras.
Yun Gao, York University (Canada)
February 10, 2004

Linear recursions, symmetric polynomials and algebraic number fields.
Trueman MacHenry, York University (Canada)
February 24, 2004

Peak algebras and representations of the Hecke-Clifford algebras at q=0.
Nantel Bergeron, York University (Canada)
March 2, 2004

The free product of matroids
William Schmitt, George Washington University (United States)
March 9, 2004
q-deformed universal characters of type BCD.
   Michael Zabrocki, York University (Canada)

Analogues of Plancherel measure for some algebras of type A.
   Florent Hivert, Marne la Valle (France)

The homotopy Lie algebra of an arrangement.
   Graham Denhem, University of Western Ontario (Canada)

Applied and Industrial Mathematics Seminar
ORGANIZER: DONG LIANG

Fast algorithms for the electromagnetic scattering from a large cavity.
   Weiwei Sun, University of Hong Kong (China)

Critical role of nosocomial transmission in the Toronto SARS outbreak.
   Huaiping Zhu, York University (Canada)

Affine stochastic differential equations with finite and infinite delay.
   Markus Riedle, Humboldt University of Berlin (Germany)

High-Reynolds number solutions of Navier-Stokes equations.
   Rossitza S. Marinova, Concordia University College of Alberta (Canada)

The bifurcation of aero-elastic airfoils with structural non-linearities.
   Liping Liu, Duke University (United States)

A recent multi-scale time-frequency analysis and its biomedical applications.
   Hongmei Zhu, University of Calgary (Canada)

Pattern formation in non-local phase transition models.
   Adam J.J. Chmaj, Memorial University (Canada)

On a two-point boundary value problem with spurious solutions.
   C.H. Ou, York University (Canada)

Asset allocation and annuitization.
   Virginia R. Young, University of Michigan (United States)

A simple cellular automaton model for influenza A viral infections.
   Catherine Beauchemin, University of Alberta (Canada)

A general theory for the evolutionary dynamics of violence?
   Troy Day, Queen's University (Canada)

Dynamically modelling disease outbreaks as they occur.
   Zachary Jacobson, Health Canada (Canada)

Heterogeneous transmission of infectious diseases, and implications on
   transmission potential, epidemic control efforts and interpretation of trends.
   Ping Yan, Health Canada (Canada)

Delayed stochastic differential model for quiet standing.
   Weiguang Yao, York University (Canada)

Truncation techniques – the good, the bad, and the not-so-ugly.
   Nilima Nigam, McGill University (Canada)
<table>
<thead>
<tr>
<th>Seminar Title</th>
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<tr>
<td>Predicting excess returns under heterogeneous trading and learning: a diffusion approach.</td>
<td>February 27, 2004</td>
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<tr>
<td><strong>Masimiliano Giuli</strong>, University of L'Aquila (Italy)</td>
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<td>Generalized projective clustering in high dimensional data.</td>
<td>March 24, 2004</td>
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<tr>
<td><strong>Asrat Gashaw</strong>, York University (Canada)</td>
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<td>Symmetry and elliptic attractors.</td>
<td>March 31, 2004</td>
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<td><strong>Messoud Efendiev</strong>, University of Stuttgart (Germany)</td>
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<td>Impact of dispersion on dynamics of a discrete meta-population model.</td>
<td>April 22, 2004</td>
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<td><strong>Xingfu Zou</strong>, University of Western Ontario (Canada)</td>
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<td>The Wigner-Poisson system with an external Coulomb field.</td>
<td>May 31, 2004</td>
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<td><strong>C. Sean Bohun</strong>, Penn State University (United States)</td>
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<td>Crystal growth from 3D to 1D.</td>
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<td>Local homeomorphisms via ultrafilter convergence.</td>
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<td><strong>Maria Manuel Clemintino</strong>, University of Coimbra (Portugal)</td>
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<td>Closure operators in topological groups related to von Neumann's kernel.</td>
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<td><strong>Dikran Dikranjan</strong>, University of Udine (Italy)</td>
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<td>Coproducts in categories of Lax algebras.</td>
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<td><strong>Christoph Schubert</strong>, University of Bremen (Germany)</td>
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<td>Coproducts in categories of Lax algebras.</td>
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<td><strong>Eraldo Giuli</strong>, University of L'Aquila (Italy)</td>
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<td>Subobject classifiers for Lax algebras.</td>
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<td><strong>Christoph Schubert</strong>, University of Bremen (Germany)</td>
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<td><strong>History and Philosophy of Mathematics and Mathematics Education Seminar</strong></td>
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<td>Bhashkaracharya's Lilavati.</td>
<td>October 17, 2003</td>
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<td><strong>Som Naimpally</strong>, Lakehead University (Canada)</td>
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<td>Fermat's Last Theorem revisited.</td>
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<td><strong>Israel Kleiner</strong>, York University (Canada)</td>
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<td>John Charles Fields and the Fields Medal</td>
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<td><strong>Marcus Emmanuel Barnes</strong>, York University (Canada)</td>
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<td>Rethinking the typology of numerical notation systems.</td>
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<td><strong>Stephen Chrisomalis</strong>, University of Toronto (Canada)</td>
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<td>Greek mathematics in cultural context.</td>
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<td><strong>Hardy Grant</strong>, York University (Canada)</td>
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<td>Geometry in the Vedic literature.</td>
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<td><strong>Ravi Prakash Arya</strong>, Chandigarh University (India)</td>
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Mathematical thinking and human nature – consonance and conflict.
   Uri Leron, Technion-Israel Institute of Technology (Israel)  
   June 8, 2004

Statistics Seminars

**ORGANIZER:** XIN GAO

*Use of latent variable model in genetic epidemiology of ordinal traits and understanding of familial aggregation of alcoholism.*
   Heping Zhang, Yale University (United States)  
   September 19, 2003

*Statistical methods for detection of pedigree error in genetic linkage studies.*
   Lei Sun, University of Toronto (Canada)  
   September 26, 2003

*A first look at microarray technology: challenges in gene expression data analysis.*
   Nikolai Slobodianik, York University (Canada)  
   October 3, 2003

*Maximization by parts in likelihood inference.*
   Peter Song, York University (Canada)  
   October 10, 2003

*The Volume-of-Tube formula: applications to perturbations and mixture models.*
   Ramani S. Pilla, Case Western Reserve University (Canada)  
   October 31, 2003

*Unbiased estimation following a group sequential test for distributions in the exponential family.*
   Aiyi Liu, National Institute of Health (United States)  
   November 14, 2003

*Detection and attribution of human induced climate change at regional scale.*
   Xuebin Zhang, Meteorological Service of Canada - Climate Research Branch (Canada)  
   November 21, 2003

*Characterizing and eradicating autocorrelation in MCMC algorithms.*
   Dongchu Sun, University of Missouri (United States)  
   December 3, 2003

*Varying-coefficient marginal models and applications in longitudinal data analysis.*
   Peter Song, York University (Canada)  
   March 5, 2004

*Robustness issues in models for molecular evolution.*
   Christopher Field, Dalhousie University (Canada)  
   March 12, 2004

*Inverse quadratic forms and exponential families.*
   Gerard Letac, Universite Paul Sabatier (France), and Indiana University (United States)  
   March 15, 2004

*General score statistics on ranks in the analysis of unbalanced design.*
   Mayer Alvo, University of Ottawa (Canada)  
   March 19, 2004
11. Mathematical Outreach

**High School Talks**

**Burns, Robert G.**


**Kleiner, Israel**


**Muldoon, Martin**

“Mathematics in Careers”, *Cathedral Christian Academy*, Toronto, (Grade 12), November 4, 2003


**Promislow, David**


Other Related Activities

Meir, Amram

12. Honours and Other Items of Interest

Bergeron, Nantel


Madras, Neal


Muldoon, Martin

Received an NSERC 25 Year Research Achievement Award.

Salisbury, Tom

Named Fellow of the Institute of Mathematical Statistics.

Tholen, Walter

Member of the editorial board for the following journals:
  Applied Categorical Structures (Kluwer-Spring),
  Theory and Applications of Categories (electronic journal),
  Homology, Homotopy and Applications (electronic journal),
  Proceedings A. Razmadze Mathematical Institute (Georgian Academy of Sciences).

Wong, Augustine


Yang, Zijiang

Member of the Advisory Board of 2004, North American Productivity Workshop, Toronto, Canada
13. PhD Degrees Granted

On LCA Groups and Epimorphisms of Topological Groups
Daniel DeaconuSUPERVISOR: S. WATSON

Selections, Orderability and Complex Systems: Formally Convex-valued Multifunctions, Minimum Maps and the Tightness of Upper Hyperspaces
Debora Di CaprioSUPERVISOR: S. WATSON

Stochastic Models for High Frequency Financial Time Series
Dingan FengSUPERVISOR: P. SONG.

Topologies on Omegas and guessing sequences
Fernando Hernandez-HernandezSUPERVISOR: P. SZEPTYCKI

Bézier Curves and Surfaces: A New Approach
Achan LinSUPERVISOR: M. WALKER

c–Compactness and Generalized Dualities of Topological Groups
Gabor LukácsSUPERVISOR: W. THOLEN

Categorical Approaches to Connectedness and Total Disconnectedness
Kim-Quang TranSUPERVISOR: W. THOLEN
14. Student Awards and Competitions

Department Related Awards

Allen S. Berg Award for Applied Mathematics: for an outstanding 3rd year student in Applied Mathematics
   Zhijiang Du

The George and Frances Denzel Award: for excellence in Statistics
   Matthew Kowgier
   Tianshu Ma

The Linda Herskowitz Award: to a person who best honours the memory of Linda Herskowitz
   Marcus Emmanuel Barnes
   Sylvain Ganter

Abe Karrass Mathematics Bursary: for an outstanding student majoring in Mathematics, and with an interest in Mathematics Education
   Tatiana Kachira
   Eric Lee

Irvine R. Pounder Award: for outstanding majors in each of the year levels 2, 3 and 4 in a Departmental Programme
   Leora Weltman 2nd year
   Paul James Giralico 3rd year
   André Parent 4th year

Moshe Shimrat Prize: for demonstrated ability in mathematical problem-solving
   Shadie Broumandi

Alice Turner Award: for outstanding graduating majors in a Departmental Programme
   Nataliya Stoianov 4th year

G.R. Wallace Award: for outstanding students in a Departmental Programme with particular interest in Actuarial Science, Applied Mathematics, or Operations Research
   Elena Stoyanova Actuarial Science
   Conrad Coleman Applied Mathematics

Other Awards

SSC Chairs Award: for meritorious service above and beyond the call of duty to the SSC and Senate
   Joy Abramson

Deborah Hobson Award: for Student Leadership at York University
   Joy Abramson

Murray G. Ross Award: for academic distinction and contributions to campus life
   Joy Abramson

Faculty of Pure and Applied Science Gold & Silver Medal: for academic excellence and contributions to campus life (Fall 2003)
   Joy Abramson
NSERC and Science Summer Awards

Zhijiang Du  
SUPervisor: T. Salisbury
Ryan Margel  
SUPervisor: W. Whiteley
Xuesong Wang  
SUPervisor: Y. Wu

NSERC Post Graduate Scholarships (PGSA)

Joy Abramson
Joseph Aiken
Eitan Prisman

Chair’s Honour Roll

Jenny Assadourian  Eric Lee  Yongxiu She
Hao Bai  Renhua Li  Imad Siddiqui
Marcus Emmanuel Barnes  Xudong Li  Eti Soloviev
Mark Bolivar  Chun-Wei Lin  Rinat Soloviev
Tsui Chau  Jing Liu  Dong Song
Hao Chen  Yue Liu  Andrew Speers
Jerome Cheng  Alison Lo  Paolo Spensieri
Kuo-Ming Chou  Jun Lu  Shreyas Bidadi Sridhar
Elia Chu Lau  Xiao Hong Lu  Nataliya Stoianov
Conrad Coleman  Simon Luk  Elena Stoyanova
Gregory Cumberbatch  Tianshu Ma  Jing Sun
Mehdi Dadar  Ivan Makarenka  Zhi Wei Sun
Yu Du  Francis McMullan  Victor Swishchuk
Zhijiang Du  Roberto Melaragno  Xiaofeng Tang
Ruixin Feng  Asad Muhammed  Fei Tao
Yun Feng  Karuna Nanda  Khoa Tran
Matthew Friedlander  Nimalraj Navarathinam  Henk Van Ravenswaay
Moshe Gershuni  Ha Nguyen  Hsiao-Hsuan Wang
Paul Girafico  Andrey Pak  Jessica Wang
Michael Greene  André Parent  Xuesong Wang
Michael Greenspan  Jung Park  Zhili Wang
Sandra Gregov  Hanan Peretz  Yuan Wei
Alon Gurbeda  Claudia Pimentel  Leora Weltman
Addison Hung  Vlad Popovici  Katrina Wood
Qian Huang  Wenjie Qiao  Bin Wu
Shasha Huang  Xiao ning Qin  Feng Xie
Johnathan Isaac  Danielle Richer  Qiang Xu
Yue Jin  Hashmatullah Rohian  Yang Yang
Tatiana Kachira  Rabih Saab  Sin Yiu
Mykhaylo Kholodov  Kartheephan Sathiyathan  Lisa Young
Matthew Kowgier  Manija Samim  Yue Zhang
Enkelejda Lapardhaja  Anjali Sarin  Wei Zhao
Wen Le  Michael Seto  Chunxuan Zhou
Competitions

Putnam Examination Participants

Shadie Broumandi  Zhen Chen  Jina Lee
Yang Ou  Andrey Pak  Nataliya Stoianova
Elizabeth Weiss

17th Annual Mathematical Competition in Modeling Participants

Shadie Broumandi  Alexander Chigodaev  Lynda Cockins
Christopher Godbout  Andriy Muntyanov  Senthuran Senthilnathan
15. Undergraduate Data

PROGRAMME ABBREVIATIONS

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<tr>
<th>Abbreviation</th>
<th>Description</th>
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<td>APPL</td>
<td>APPLIED MATHEMATICS</td>
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<td>COMPUTATIONAL MATHEMATICS</td>
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Enrolment by Programme, Faculty and Major

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<th>Major 2</th>
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<th>Total Fine Arts Majors</th>
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Enrolment by Programme, Gender and Major

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1based on November 2003 student registration
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2 Degrees were granted in June or November 2004 convocations.