

Phil

Ph.D. Student, Applied Math

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SUMMARY OF QUALIFICATIONS AND ASSETS

I am currently a D.Phil. student at the Oxford Centre for Industrial and Applied Mathematics. For a long time now, I've enjoyed a passion for teaching mathematics and have assisted the teaching in many classes, both at Oxford and at Carleton University. Recently, I was a volunteer in Nairobi, Kenya, where I taught secondary students in Math and Physics. I am also a two-time recipient of the prestigious Canadian Governor General's Academic Medal (2004, 2006).

EDUCATION

2007 - Present

Doctor of Philosophy in Mathematics

University of Oxford, Balliol College

- Research Areas: Exponential asymptotics and free surface flows

2006 – 2007

Master of Science in Applied Mathematics

Carleton University (Ottawa, Ontario)

- Thesis: Resonant Solutions of a Broad Class of Korteweg-de Vries Equations
- Classes: Topology I and II, Applied Methods in Mathematics, Ordinary Differential Equations, Partial Differential Equations, Fluid Dynamics and Nonlinear Waves

2004 – 2006

Bachelor of Mathematics in Pure Math with Distinction

Carleton University (Ottawa, Ontario)

- The only student to complete an undergraduate degree in 2 years
- Graduated with the highest grade point average (12.0/12.0) among the University's graduating class of 3200 students

2000 – 2004

High School Diploma

Hillcrest High School (Ottawa, Ontario)

Graduated with the highest grade point average (99.0%) among a graduating class of approximately 300 students and the second highest among the schools of the Ottawa-Carleton District School Board

RESEARCH EXPERIENCE

For a more detailed outline of past and present research, please see the attached supplement.

- 2007 - 2008 **Researcher (Supervised by Prof. Jon Chapman)**
OCIAM, Mathematical Institute, Oxford
- Researching the application of exponential asymptotics to the study of gravity and capillary waves in water
- 2006 - 2007 **Researcher (Supervised by Dr. Dave Amundsen)**
Department of Mathematics, Carleton University (Ottawa, Ontario)
- Researched the asymptotic solutions of a broad class of forced Korteweg-de Vries equations (KdV, mKdV, and eKdV)
 - Developed numerical methods for solving differential equations and applied analytical methods, including perturbation theory and multiple-scale analysis
- Summer 2005 **Researcher (Supervised by Dr. Dave Amundsen)**
Department of Mathematics, Carleton University (Ottawa, Ontario)
- Researched a generalized pair of coupled Korteweg-de-Vries equations
 - Developed an array of numerical tools using Maple and Matlab in order to study the coupled equations at both a quantitative and qualitative level
- 2003 – 2004 **Researcher (Supervised by Dr. David Sankoff)**
Department of Mathematics, University of Ottawa (Ottawa, Ontario)
- Studied the unaligned regions between syntenic blocks conserved on human/mice genomes in order to determine the mechanisms behind genome rearrangement
 - Computational tools were developed in order to sequence the data after which statistical methods were applied to study the problem
- Summer 2003 **Researcher (Supervised by Dr. David Sankoff)**
Department of Mathematics, University of Ottawa (Ottawa, Ontario)
- Examined the findings of a group of researchers regarding the ‘fragility’ of breakpoints in the human/mouse genomes in order to critique a possible weakness in their analysis
 - Computational simulations of genome rearrangement were developed and the results were supplemented with analytical methods

TEACHING EXPERIENCE

2007 – 2008

Teaching Assistant

University of Oxford

Michaelmas 2007:

- 3 Classes of Mathematics of Viscous Flows (3rd year, Mathematics)

Hillary 2008

- Waves and Compressible Flow (3rd year, Mathematics)
- Applied Complex Variables (4th year, Mathematics)

Summer 2007

High School Teacher (Global Volunteer Network)

Dagoretti Hidden Talents School (Nairobi, Kenya)

- Taught large classes of secondary school students in Math and Physics

2006 - 2007

Teaching Assistant

Carleton University (Ottawa, Ontario)

Fall 2006:

- MATH 1107 (1st year, Lin. Alg. for Sciences)
- MATH 1119 (1st year, Lin. Alg for Business)

Winter 2007

- MATH 3001 (3rd year, Real Analysis for Honours Math)
- MATH 3008 (3rd year, Differential Equations for Honours Math)

2002 - Present

Math, Statistics, Physics and Programming Tutor

- Private tutor for high school and university students

ACADEMIC ACHIEVEMENTS/AWARDS

2007 Awards

University of Oxford Clarendon Fellowship (2007)

- Full University fees and living expenses for tenure 2007-2010

Gary S. Duck Scholarship in Physics, Math, and Photonics (2007)

- Awarded for excellence in mathematics. Valued at \$8,000.00

Commonwealth Scholarship (2007) (Declined)

- Full University fees and living expenses for tenure at the University of Oxford, 2007-2010

University of Cambridge, Cambridge Trusts Scholarship (Declined)

- Full University fees and living expenses for tenure at the University of Oxford, 2007-2010.

NSERC Postgraduate Doctoral Scholarship

- Valued at \$21,000.00
- Nominated as most outstanding candidate at the Doctoral level by the Mathematical Sciences Scholarships and Fellowships Selection Committee in consideration for the Andrew Hamer Postgraduate Prize.

2006 Awards

Governor General's Academic Silver Medal (2006)

- The Academic Medal is presented on behalf of the Governor General to the top student of an entire graduating class. It represents the most prestigious award that a student in a Canadian institution can receive.
- Faculty of Graduate Studies and Research Domestic Tuition Scholarship (2006)
- Carleton Mathematics Departmental Scholarship (2006)

USRA NSERC Undergraduate Research Award (2006)

- This highly competitive and prestigious award is provided by the National Sciences and Engineering Research Council of Canada and allows students to gain valuable research experience in their discipline.

2005 Awards

Helga H. Shirmer Mathematics Award (2005)

- This award is presented on the recommendation of the Director of the School of Mathematics and Statistics of Carleton University to an outstanding student in the B. Math. Honours program in mathematics.
- USRA NSERC Undergraduate Research Award (2005)
- Carleton University Undergraduate Scholarship (2004 to Present)
- Carleton University Dean's List (2004 to 2007)

2004 Awards

Governor General's Academic Bronze Medal (2004)

- Highest award given to a single student from a graduating class at the secondary level
- Various high school awards including Mathematics awards, Hillcrest Silver Medal, and Honor Society
- Invitee of the University of Ottawa's Luncheon of Excellence (2004)

PUBLICATIONS

- Internal Reports **P. [removed]** (2005) “Steady Solutions of a Coupled Korteweg-de Vries Equation,” Internal report submitted to Dr. David Amundsen (NSERC USRA 2005)
- Refereed Articles P.[removed] and D. Amundsen (2008) “Unifying Steady-State Resonant Solutions of a Broad Class of KdV-Type Equations,” Journal of Computational and Applied Mathematics, To Appear.
- D. Sankoff, **P. [removed]** (2005) “Chromosomal breakpoint re-use in genome sequence rearrangement,” Journal of Computational Biology, 12:812–821.
- P. [removed]**, A. McLysaght, and D. Sankoff (2004). “Genomic features in the breakpoint regions between syntenic blocks,” Bioinformatics 20, Suppl 1:I318-I325. (Acceptance rate: 10%, 50/492)
- D. Sankoff, **P. [removed]** (2004). “Chromosomal breakpoint re-use in the inference of genome sequence rearrangement,” Proceedings of RECOMB 04, Eighth International Conference on Computational Molecular Biology. New York: ACM Press, 30–5. (Acceptance rate: 18%, 38/215)

SKILLS

- Fluent in English, French, and Vietnamese
- Aptitude in Public Speaking (Winner of the 2004 OCDSB Provincial Public Speaking Competition at York University, Ontario, Canada)
- Experience in a variety of languages: C++, Java, Matlab, etc.

ACTIVITIES AND INTERESTS

1990 – 2004

Classical Violinist

Conservatoire de Musique du Québec à Hull (Hull, Québec)

- Studied under Brian Boychuck (Former Concertmaster, NAC Orchestra violinist) and Calvin Sieb (Former Concertmaster, Montreal Symphony Orchestra, Orchestre National du Capitole de Toulouse, France)
- Violinist with Royal Conservatory Orchestra
- Concours du Canada CIMF Radio 94.9 FM Scholarship (1998)
- Mrs. G.W. Boyd Memorial Scholarship for Strings (1999)
- Numerous Kiwanis Music Festival awards (1995-2002)

2006 – 2007

Vice Present of Math Society

Carleton University Math Society (Ottawa, Ontario)

- Promoting camaraderie, enthusiasm, and good cheer for the study of mathematics