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- EXPERIENCE **United States Naval Academy**, Annapolis, MD, USA.
Assistant Professor, Department of Computer Science. Fall 2011–present.
- Symbolic Computation Group**, U. of Waterloo.
Research assistant and Instructor. Fall 2006–Summer 2011
- Quantum Leap Innovations**, Newark, DE, USA. Research intern, Summer 2006.
- LinBox Research Group**, U. of Delaware.
Undergraduate researcher, Summer 2004–Spring 2006.
B. David Saunders, principal investigator.
- EDUCATION **University of Waterloo**, Waterloo, ON, Canada. Degree completed April 2011.
Ph.D., Computer Science
Thesis: *Efficient Computation with Sparse and Dense Polynomials*
 • Supervisors: Mark Giesbrecht and Arne Storjohann
- University of Delaware**, Newark, DE, USA. Degrees conferred May 2006.
B.S., Computer and Information Sciences
B.S., Mathematical Sciences
B.Music, Applied Music Instrumental, Tuba
 • Summa Cum Laude
- MAJOR AWARDS **Outstanding Achievement in Graduate Studies**, June 2011.
NSERC Vanier Canada Graduate Scholarship, Spring 2009–Winter 2011.
David R. Cheriton Graduate Scholarship, Winter 2008–Spring 2009.
Quantum Leap Innovations Outstanding Senior Award, Spring 2006.
William D. Clark Prize, Spring 2006.
- PEER-REVIEWED Mark Giesbrecht, Daniel S. Roche, and Hrushikesh Tilak.
JOURNAL
PUBLICATIONS* **Computing sparse multiples of polynomials.**
Algorithmica, in press.
- Daniel S. Roche. **Chunky and Equal-Spaced Polynomial Multiplication.**
Journal of Symbolic Computation, Vol. 46, Issue 7, Jul. 2011, pp. 791–806.
- Mark Giesbrecht and Daniel S. Roche.
Detecting lacunary perfect powers and computing their roots
Journal of Symbolic Computation, Vol. 46, Issue 11, Nov. 2011, pp. 1242–1259.
- Mark Giesbrecht and Daniel S. Roche.
Complexity of Shifted-Lacunary Polynomial Interpolation
Computational Complexity, Vol. 19 No. 3, 2010, pp. 333–354.

*All authors listed alphabetically

REFEREED
CONFERENCE
PUBLICATIONS*

Mark Giesbrecht and Daniel S. Roche. **Diversification improves interpolation.** Intl. Symposium on Symbolic and Algebraic Computation (ACM ISSAC), 2011.

Mark Giesbrecht, Daniel S. Roche, and Hrushikesh Tilak.

Computing sparse multiples of polynomials (extended abstract).

International Symposium on Algorithms and Computation (ISAAC), 2010.

David Harvey and Daniel S. Roche. **An in-place truncated Fourier transform and applications to polynomial multiplication.** ACM ISSAC, 2010.

Daniel S. Roche. **Space- and Time-Efficient Polynomial Multiplication.** ACM ISSAC, 2009.

Mark Giesbrecht and Daniel S. Roche. **On Lacunary Polynomial Perfect Powers.** ACM ISSAC, 2008.

Daniel S. Roche. **Adaptive Polynomial Multiplication.**

Milestones in Computer Algebra (MICA), 2008.

Mark Giesbrecht and Daniel S. Roche.

Interpolation of Shifted-Lacunary Polynomials [Extended Abstract]

Mathematical Aspects of Computer and Information Sciences (MACIS), 2007.

TEACHING

United States Naval Academy, Assistant Professor.

- SI 413: Programming Languages and Implementation, Fall 2011.

University of Waterloo, Instructor, Instructional Apprentice, Teaching Assistant.

- CS 240: Data Structures and Data Management, Winter 2010 & Spring 2011.
- CS 135: Designing Functional Programs, Fall 2008.
- CS 135: Designing Functional Programs, Fall 2007.
- CS 136: Elementary Algorithm Design and Data Abstraction, Spring 2007.
- CS 134: Principles of Computer Science, Winter 2007.
- CS 341: Algorithms, Winter 2009. (Recipient of departmental TA award.)
- CS 487/687: Introduction to Symbolic Computation, Winter 2008.
- CS 134: Principles of Computer Science, Fall 2005.

University of Delaware, Teaching Assistant.

- CISC 181: Introduction to Computer Science, Spring 2006.
- CISC 105: General Computer Science, Fall 2005.
- MATH 245: Introduction to Proof, Fall 2005–2006.
- MUSC 285/6: Advanced Ear Training and Sight Singing. 2005–2006.
- MUSC 185/6: Ear Training and Sight Singing. 2004–2005.

SERVICE AND
OTHER ACTIVITIES

ECCAD 2012, organizer.

ISSAC 2011, poster committee member.

ECCAD 2011, organizer.

Referee for ANTS, CASC, ISAAC, ISSAC, JSC, MICA, PASCO, SNC, STACS, TCS

ACM SIGSAM, web site design and maintenance.

Math Faculty Players, 2007-present. Humorous skits for new TAs.

Departmental Graduate Committee, 2010–present.

Faculty Committee on Student Appeals, 2008-2010.

Graduate Recruitment Committee, 2008–2009.

Musician (trombone/tuba). Currently playing with Guelph Symphony Orchestra, Wellington Winds, Brass Essentials, orchestra@uwaterloo, Ebytown Brass Band

*All authors listed alphabetically