

# Matt Patterson

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## Education

- Ph. D. Applied Mathematics (expected 2007): University of Washington, Seattle, WA  
Dissertation: *Algebro-geometric algorithms for integrable systems*
- M. S. Applied Mathematics (2006): University of Washington, Seattle, WA
- B. S. Applied and Computational Mathematical Sciences (2002): University of Washington, Seattle, WA  
Senior Thesis: *Coupled multi-species Bose-Einstein condensates in a generalized periodic potential*

## Academic Interests

Nonlinear dynamical systems with applications in optics, BECs, and water waves; Symbolic computation; Riemann surfaces and algebraic geometry

## Research Experience

VIGRE Research Fellow (September 2006 - June 2007, September 2003 - 2005)

Dept. of Applied Mathematics, U. of Washington, Seattle, WA.

Project: *Symbolic computation as related to integrable systems*

Adviser: Bernard Deconinck

Undergraduate Research Assistant (September 2000 - June 2002)

Dept. of Applied Mathematics, U. of Washington, Seattle, WA.

Project: *Dynamics of Bose-Einstein condensates*

Adviser: Nathan Kutz/Bernard Deconinck

Undergraduate Research Assistant (September 1999 - September 2000)

Dept. of Applied Mathematics, U. of Washington, Seattle, WA.

Project: *Riemann surfaces and water waves*

Adviser: Bernard Deconinck

## Teaching Experience

GK-12 Fellow (September 2005 - July 2006), Emerson Elementary School, Seattle, WA.

Position: Mathematics Specialist

Teaching Assistant/Lecturer (March 2004 - June 2004), Dept. of Applied Mathematics, U. of Washington,

Class: *Partial Differential Equations*

Teaching Assistant (October 2002 - June 2003), Dept. of Mathematics, U. of Washington,

Classes: *Differential Calculus, Integral Calculus*

Teaching Assistant (September 1997 - December 1998), Tacoma Community College, Tacoma, WA.

Classes: *Algebra I, II*

## Presentations: Talks

- Fifth I. M. A. C. S. International Conference, *Toward computing multi-phase solutions of integrable systems*, 16 April 2007, Athens, Georgia
- C. S. T. M. E. Seminar, *Water waves and Riemann surfaces*, 1 November 2006, Kean University, New Jersey
- Research Workshop: Riemann surfaces-Analytical and Numerical Methods, *Computing with Maple on Riemann surfaces arising from algebraic curves*, 2 June 2006, Max Plank Institute, Leipzig, Germany
- Applied Mathematics Graduate Student Conference, *Computing the Abel transform*, 28 January 2006, Simon Fraser University, Vancouver, Canada
- U. W. A. C. M. S. Seminar, *Water Waves and Riemann Surfaces*, 12 May 2005, Seattle, Washington
- Fourth I. M. A. C. S. International Conference, *Computing the Abel transform*, 11 April 2005, Athens, Georgia
- I. C. I. A. M. 2003, *Calculus on Riemann Surfaces*, 6 July 2003, Sydney, Australia
- U. W. Undergraduate Research Symposium, *Dynamics of Coupled Bose-Einstein Condensates*, 17 May 2002, Seattle, Washington
- U. W. A. C. M. S. Seminar, *Riemann Surfaces and Water Waves*, 25 May 2001, Seattle, Washington
- U. W. Undergraduate Research Symposium, *Computing on Riemann Surfaces*, 4 May 2001, Seattle, Washington

## Presentations: Posters

- Institute for Math and its Applications Program Year Workshop, Algorithms in Algebraic Geometry, *Computing the Abel map and vector of Riemann constants* (with Bernard Deconinck), 19 September 2006, Minneapolis, Minnesota

## Awards and Scholarships

- GK-12 Fellowship in Mathematics, 2005-2006
- Boeing Award for Excellence, 2004
- National Science Foundation Vertical Integration Grant of Research and Education Fellow, 2006, 2004, 2003, 2002
- Mary Gates Research Training Grant Recipient, 2001

## Publications

- Computing the Abel Transform (with Bernard Deconinck), (submitted 2007)
- Computing the vector of Riemann constants (with Bernard Deconinck), (in preparation)
- On the laboratory generation of two-dimensional, progressive, surface waves of nearly permanent form on deep water (with Diane Henderson, Harvey Segur), (*J. Fluid Mech.* **559**, 2006)
- Dynamics of periodic multi-components Bose-Einstein condensates (with Bernard Deconinck, J. Nathan Kutz, Brandon W. Warner), (*J. Phys. A: Math. Gen.* **36**, 2003)