

# CURRICULUM VITAE

ELISHA PETERSON

DEPARTMENT OF MATHEMATICS, UNIVERSITY OF MARYLAND, COLLEGE PARK, 20742

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## Education:

- PHD MATHEMATICS, University of Maryland, anticipated May 2006.  
\*Thesis: *Trace diagrams, representations, and low-dimensional topology*. Advisor: Bill Goldman.
- RHODES SCHOLAR, Oxford University, 2000-2002.  
\*Field of Study: knot theory, esp. tangle surgery. Advisor: Marc Lackenby.
- BS MATHEMATICS, Harvey Mudd College, 2000 (1st in class, 4.00 GPA).  
\*Thesis: *Combinatorial proofs of a generalized Sperner's Lemma*. Advisor: Francis Su.

## Research Interests:

- Trace diagrams (or spin networks) and their application to representation theory, algebra, moduli spaces, geometric structures, and low-dimensional topology; knot theory; Sperner's lemma, fair division.

## Academic Honors:

- NSF Graduate Research Fellowship Award, 2002-2004.
- Rhodes Scholar, 2000-2002.
- Outstanding Mathematics Thesis Award, HMC, 2000.
- Barry Goldwater Scholar, 1999-2000.
- Giovanni Mathematics Fellow (for scholastic distinction and research), HMC, 1999-2000.
- Sophomore Mathematics Award, HMC, 1998.
- Robert C. Byrd Scholar, 1996-2000.

## Preprints & Papers:

- *Spin networks and  $SL(2, \mathbf{C})$ -character varieties* (with Sean Lawton). arXiv: math.QA/0511271.
- *Trace diagrams and the Littlewood-Richardson rule*. Preprint.
- *A not so characteristic equation: the art of linear algebra*. Preprint.
- *Spin networks and trace diagrams for the working mathematician*. Preprint.
- *A polytopal generalization of Sperner's Lemma* (with Jesus de Loera and Francis Su). Journal of Combinatorial Theory Series A, July 2002.
- *Four-person envy-free chore division*. (with Francis Su). Mathematics Magazine, April 2002.

### **Selected Talks:**

- Junior Geometry/Topology Seminar, U. Maryland: Mar. 2005, Nov. 2005.
- Spotlight on Graduate Research, U. Maryland: Nov. 2004, Nov. 2005.
- Preliminary Oral Exam, U. Maryland: Apr. 2004.
- Oral Examination (viva voce), University of Oxford: Nov. 2001.
- MAA Regional Meeting, Chapman University: Oct. 1999.
- Harvey Mudd College Research Week: May 1999, May 2000.

### **University of Maryland Teaching Experience:**

- INSTRUCTOR: Linear Algebra, Introduction to Probability.
- TEACHING ASSISTANT: Calculus I, Calculus III, Linear Algebra, Differential Equations, Numerical Methods in Engineering.
- DEPARTMENT TA AWARD: Fall 2003 (Differential Equations).

### **Work Experience:**

- MEDIA PROJECT MANAGER, Cornerstone Community Church, Columbia, MD.  
\*2004-2006: designed and produced video and media materials for church campaigns; recruited and coordinated volunteer efforts.
- COUNSELOR, SWT MathWorks Summer Camp, San Marcos, TX.  
\*Summer 2002: mentored high school students in an advanced number theory course.
- CRYPTOLOGIC MATHEMATICIAN, Director's Summer Program, NSA, Ft. Meade, MD.  
\*Summer 2000: worked on a problem involving signals processing; wrote paper and presented results with team.  
\*Summer 1999: worked on a problem involving signals processing, probability, and statistics; wrote paper and presented results in organization-level seminar.
- RESEARCH ASSISTANT, Harvey Mudd College, Claremont, CA. Advisor: Francis Su.  
\*Summer 1998: investigated fair division of goods, chore division and rent partitioning; wrote a paper on several new chore division algorithms discovered; began proof of a generalization of Sperner's Lemma which was later published.

### **Skills & Interests:**

- COMPUTER: Windows, Unix, Mac; Matlab, Mathematica, Maple, LaTeX, xfig; Java, C/C++, Adobe software (AfterEffects, Premiere, Photoshop, Illustrator, InDesign);
- NOTABLE CREATIVE SKILLS: writing, photography, media design, video production.
- ATHLETICS:  
\*Oxford University Blues Cross Country & Track and Field 2000-2002. FULL BLUE.  
\*Magdalen College Boat Club 2000-2002.  
\*Claremont-Mudd-Scripps Cross County & Track and Field 1996-2000; *Honors*: all-conference/region, academic all-American, team undefeated in conference.  
\*Ran five marathons; first at age 14, latest in Washington DC, placed 48th out of 4309.
- OTHER INTERESTS: triathlons, juggling, traveling, building almost anything.