

# James B. Wilson

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## **Education**

**Ph.D. Candidate**, University of Oregon, Eugene, June 2005-present.  
(expected completion April 2008) Advisor, Professor William M. Kantor.

**M.S. in Mathematics**, University of Oregon, Eugene, June 2004.

**B.S. in Mathematics**, Portland State University, Portland, June 2002.

## **Academic Positions**

**Graduate Teaching Fellow**, Fall 2002 – present.  
Department of Mathematics, University of Oregon.

**Graduate Affairs Committee** (elected graduate student representative), Department of Mathematics, University of Oregon, February 2005 - February 2006.

## **Related Work Experience**

[Jun 2001-Jul 2001] **Undergraduate Researcher, Trinity University/NSF Research Experience for Undergraduates in Mathematics**. Developed theoretical and heuristic approaches to enumerate certain directed paths in the  $p$ -adic upper half plane used in the construction of representation numbers of quadratic forms. The research culminated in the development of software designed to graphically model the problem and to computationally search for formulas.

[Aug 1999-Jun 2001] **Software Technician, Intel Tablet Operations and Intel Architecture Labs, Intel Corporation**. Designed, implemented, maintained, and submitted patent for Internet connection management software for the Intel Web Tablet<sup>TM</sup>. Implemented security, a database wrapper, and startup/shutdown controls. Gave seminars in Java development. Aided natural language research project by interfacing an English/Chinese (Mandarin) speech engine with a natural language engine by implementing a bridge to the Java Speech API.

[Dec 1997-Aug 1999] **Internship, Intel Architecture Labs, Intel Corporation**. Designed and implemented a bridge from the Microsoft Speech API to the Java Speech API and implemented an experimental natural language model for conversational interactions with consumer electronics including televisions, VCRs, and sound equipment. Also implemented necessary consumer electronics software controllers and a spoken language e-mail client.

## **Patent Submissions**

**Dynamic Native Interface**, (1999-2000) submission process canceled due to prior art.

**Internet Connection Manager**, (2001) submitted through Intel, submission process not completed.

**Database security wrapper**, with Kelly Hollis, (2001) submitted through Intel, submission process not completed.

## **Research Interests**

finite groups,  $p$ -groups, bilinear maps and their isometry groups, computational group theory, finite Jordan algebras, polynomial time algorithms.

- Publications**    **Decomposing  $p$ -groups via Jordan algebras**, (submitted for publication)  
<http://www.arxiv.org/abs/0711.0201>.
- Finding central decomposition of  $p$ -groups**, to be submitted December 2007.
- Finding direct product decomposition of  $p$ -groups and algebras**, to be submitted December 2007.
- Lie equivalent  $p$ -groups**, in preparation.
- $p$ -groups, bilinear maps, and algebras**, in preparation.
- Sylow subgroups in solvable matrix groups**, with W. M. Kantor and E. M. Luks, in preparation.
- Talks**     **$p$ -groups and algebras**, Invited 30 minute talk, Groups and Computations, Ohio State University, March 2008.
- Decomposing  $p$ -groups via Jordan algebras**, 10 minute talk, AMS/ MAA Joint Mathematics Meetings, San Diego, January 2008.
- Enumerating Finite Groups**, 50 minute talk, University of Oregon, April 2006.
- Computing Sylow subgroups of solvable matrix groups**, Invited 90 minute talk, University of Auckland, New Zealand, February 2005.
- Symmetries in the Lindisfarne gospels**, Invited 30 minute talk, Symposium at the Portland Art Museum, May 2002.
- $p$ -adic upper half planes and representation numbers of quadratic forms**, 20 minute talk, AMS/ MAA Joint Mathematics Meetings, San Diego, January 2002.
- Ganymede: A conversational consumer electronics software interface**, with B. Wymore, 3 day booth presentation, Intel Developer Forum, Palm Springs, September 1 – 3, 1999.
- Conference Participation**    **Groups and Computation**, Ohio State University, March 16 – 22, 2008.
- AMS/MAA Joint Mathematics Meetings**, San Diego, January 6 – 9, 2008.
- Lie Groups, Representations and Discrete Mathematics II**, Institute for Advanced Study, Princeton, February 6 – 10, 2006.
- Lie Groups, Representations and Discrete Mathematics I**, Institute for Advanced Study, Princeton, November 14 – 18, 2005.
- Geometry: Its interactions with algebra and analysis**, University of Auckland, New Zealand, February 15 – 19, 2005.
- Finite Geometries, Groups and Computation**  
 Pingree Park, CO, September 4 – 9, 2004.
- AMS/MAA Joint Mathematics Meetings**, San Diego, January 6 – 9, 2002.
- Intel Developer Forum**, Palm Springs, September 1 – 3, 1999.
- Other Experience**    **Algebraic Algorithms Seminar**, University of Oregon  
 Occasional speaker since Fall 2004, on topics including permutation groups, complexity theory, and  $p$ -groups.
- University of Oregon Ring Theory Seminar**, University of Oregon  
 Frequent speaker since Fall 2003, on topics including  $p$ -groups, permutation groups, complexity theory, and non-associative algebras.

- Teaching Experience** In the role of a Graduate Teaching Fellow I have been in charge of all aspects of the courses I have taught. This requires me to design a syllabus, assign homework, write and grade all quizzes and exams, and provide final grades for each student. Also I created and maintained a course website providing written assignments, handouts, and self-authored on-line lecture notes; available by visiting [www.uoregon.edu/~jwilson7/teaching/](http://www.uoregon.edu/~jwilson7/teaching/).
- Elementary linear algebra I**, Summer 2005.  
Matrix algorithms, definitions and concepts of vector spaces, determinants, linear functions and isomorphisms.
- Co-coordinator for calculus I**, Spring 2005.  
Designed the syllabus for all Calculus I classes for Spring 2005.
- Calculus I**, Spring 2005, Winter 2004 & Spring 2006. Differential Calculus of a single variable.
- Business calculus I**, Summer 2004 & Fall 2004. Differential Calculus of a single variable with applications towards business and economics.
- Calculus II**, Spring 2004. Integral Calculus of a single variable.
- Calculus III**, Fall 2006. Sequences and Series.
- Calculus for liberal arts**, Fall 2003.  
Introduction to functions, differentiation, and integration. Large enrollment class requiring supervision of two undergraduate student aids.
- Elementary statistics and probability**, Summer 2007.
- Elementary functions**, Fall 2002, Winter 2002, Spring 2002, & Summer 2002.  
Elementary functions of a real variable.
- Computer Skills** Groups Algorithms and Programming (GAP), Java, C/C++, Pascal, HTML, VRML, L<sup>A</sup>T<sub>E</sub>X, Microsoft Windows, Linux, Client/Server side application development, Java Native Interface (JNI), Swing, multi-threading, multi-process applications, framework and application design, networking, JDBC, SQL, Java Speech API, Microsoft Speech API, RMI, Java Beans, Java Mail, Introspection, JProbe, & CVS.
- Memberships** **American Mathematical Society**, 2002 – present.
- Languages** Native English and Spanish speaker.
- Other Interests** Architecture, Art History, and Graphic Design.

## References

### Advisor

William M. Kantor  
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