

## Katherine L. Hurley

School of Mathematics  
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### Education

Ph.D. March 2002, University of California, Santa Cruz  
Dissertation title: *Strongly holomorphic  $c = 24$  vertex operator algebras and modular forms*  
Adviser: Geoffrey Mason  
M.A. May 1998, Johns Hopkins University  
B.S. May 1994, Brown University, magna cum laude with honors in mathematics

### Honors

Fall 1999 – Spr. 2000 Research/Mentorship Fellowship, Univ. of California, Santa Cruz

### Publications

*Highest-weight vectors of the moonshine module with non-zero graded trace,*  
Journal of Algebra 261 (2003) 411-433.

*The space of graded traces for holomorphic vertex operator algebras of small central charge,* submitted, arXiv:math.QA/0606282.

### Employment

Present Position	Visiting Assistant Professor Georgia Institute of Technology
Fall 2003 – Sum. 2005	S. Chowla Research Assistant Professor, Pennsylvania State University
Fall 2002 – Sum. 2003	Postdoctoral Fellow University of South Carolina
Fall 2000 – Sum. 2002	Instructor University of South Carolina
Summer 1999	Associate in Mathematics University of California, Santa Cruz
Fall 1998 – Spr. 1999	Teaching Assistant University of California, Santa Cruz
Summer 1997	Co-instructor Johns Hopkins University
Fall 1996 – Spr. 1998	Teaching Assistant Johns Hopkins University

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### Classes Taught

Precalculus, Calculus I, II & III, Linear Algebra,  
Discrete Math, Linear Programming

### Talks given

- Oct. 9, 2005 Fall Eastern Sectional Meeting of the AMS: Special Session on Theory of Infinite-Dimensional Lie Algebras, Vertex Operator Algebras, and Related Topics  
*Virasoro highest-weight vectors and invariant spherical harmonics*
- Apr. 22, 2005 Quantum Algebra Seminar, Rutgers Univ.  
*Some modular forms associated to the moonshine module*
- Nov. 11, 2004 Algebra and Number Theory Seminar, Penn State Univ.  
*Vertex operator algebras and spherical harmonics*
- Oct. 11, 2003 Fall Eastern Sectional Meeting of the AMS: Special Session on Lie Algebras, Conformal Field Theory, and Related Topics.  
*The space of graded traces for holomorphic  $c = 24$  vertex operator algebras*
- Sept. 19, 2003 Geometry and Mathematical Physics Seminar, Penn. State Univ.  
*Primary fields in vertex operator algebra*
- Apr. 6, 2003 Central Sectional Meeting of the AMS: Special Session on Representations of Infinite Dimensional Lie Algebras and Mathematical Physics.  
*Virasoro highest-weight vectors in vertex operator algebras*
- Feb. 26, 2003 Geometry and Mathematical Physics Seminar, Penn. State Univ.  
*Some Virasoro highest-weight vectors for the moonshine module*
- Jan. 27, 2003 Colloquium, Univ. of South Carolina  
*Vertex operator algebras and modular forms*
- Jan. 18, 2003 AWM Workshop for Women Graduate Students and Recent PhDs at the 2003 Joint Mathematics Meetings, Baltimore MD.  
*The space of graded traces for holomorphic vertex operator algebras with central charge 24*
- Mar. 16, 2001 Southeastern Sectional Meeting of the AMS: Special Session on Algebraic Structures Associated with Lie Theory.  
*The space of one-point correlation functions for certain holomorphic vertex operator algebras*
- Feb. 16 & 23, 2001 Number Theory Seminar, Univ. of South Carolina  
*Using spherical harmonics to realize  $E_4$  as the graded trace of a lattice vertex operator algebra element*
- June 1, 2000 Algebra/Number Theory Seminar, Univ. of California, Santa Cruz  
*Lattice vertex operator algebras and modular forms*
- Apr. 20, 2000 Undergraduate Math Seminar, Univ. of California, Santa Cruz  
 *$p$ -adic numbers*

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### Conferences attended

- May 17–21, 2005 Lie Algebras, Vertex Operator Algebras and Their Applications,  
North Carolina State Univ.
- Nov. 12–16, 2001 Representation of Loop Groups,  
Institute for Pure and Applied Mathematics
- Oct. 23–27, 2000 Vertex Operator Algebras in Mathematics and Physics,  
The Fields Institute
- May 22–28, 2000 Infinite Dimensional Lie Theory and Conformal Field Theory,  
Univ. of Virginia

### Professional society memberships

American Mathematical Society  
Association for Women in Mathematics