

# Michael VanValkenburgh

## Curriculum Vitae

### Contact Information

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### Personal

Born 1981, Long Beach, California.  
Citizenship: United States of America.

### Current Position

NSF Postdoctoral Research Instructorship, U.C. Berkeley, Fall 2009-Summer 2012.

### Education

Ph.D.: University of California, Los Angeles. June 2009.  
Mathematics.  
Thesis Title: Hermite/Laguerre-Gaussian Modes  
& Lower Bounds for Quasimodes of Semiclassical Operators.  
Advisor: Michael Hitrik.

M.A.: University of California, Los Angeles. December 2004.  
Mathematics.

B.A.: University of California, Los Angeles. June 2003.  
Mathematics, with a Specialization in Computing.  
Summa Cum Laude.  
Departmental Highest Honors.

### Research Interests

Harmonic Analysis in Phase Space and Applications to Mathematical Physics.

## Academic Honors and Fellowships

Distinguished Teaching Award, given by the Mathematics Undergraduate Students Association of U.C. Berkeley (MUSA), 2011.  
 NSF Postdoctoral Research Instructorship, 2009-2012.  
 Dissertation Year Fellowship, 2008-2009.  
 UCLA Research Assistantship, Summers 2007-2008.  
 NSF VIGRE Fellowship, 2003-2004 and 2006-2007.  
 UCLA Research Assistantship, Summer 2005.  
 Daus Prize in Mathematics, June 2003.

## Publications

*Exponential lower bounds for quasimodes of semiclassical Schrödinger operators.*  
 Math. Res. Lett. 16 (2009), no. 4, 721-734.  
*Laguerre-Gaussian modes and the Wigner transform.*  
 Journal of Modern Optics. Volume 55, Issue 21, 3535–3547 (2008).  
*Manipulation of semiclassical photon states.*  
 Journal of Mathematical Physics. Volume 50, 023501 (2009).  
*Manipulation of semiclassical Laguerre-Gaussian modes: a model case.*  
 arXiv:0902.1976.  
*A Simple Proof of Unique Continuation for  $J$ -holomorphic Curves.*  
 arXiv:0905.0224.  
*Examples of Automorphic Distributions.*  
 In preparation.

## Teaching Experience

NSF Postdoctoral Research Instructorship, U.C. Berkeley:

- Spring 2012: Math 104 (Introduction to Analysis)
- Fall 2011: Math H54 (Honors Linear Algebra and Differential Equations)
- Spring 2011: Math 185 (Complex Analysis)
- Fall 2010: Math H54 (Honors Linear Algebra and Differential Equations)

Teaching Assistant, UCLA:

- Fall 2004: 32A (Calculus of Several Variables), 113 (Combinatorics)
- Winter 2005: 31A (Differential Calculus), 115A (Linear Algebra)
- Spring 2005: 32B (Calculus of Several Variables), 113
- Fall 2005: 3C (Calculus and Probability for Life Sciences Students), 33A (Linear Algebra and Applications)
- Winter 2006: 33B (Differential Equations), 61 (Introduction to Discrete Structures)
- Spring 2006: 33A, 134 (Linear and Nonlinear Systems of Differential Equations)
- Fall 2007: 3C
- Winter 2008: 31B (Integration and Infinite Series)
- Spring 2008: 132 (Complex Analysis)

## Professional Activities

Secretary of the Berkeley Postdoc Association (BPA), December 2010 to December 2011.

Referee for the Journal of Mathematical Physics.

Invited Speaker,

Student Harmonic Analysis and Differential Equations Seminar

Berkeley, November 8, 2011.

Title: “Invariance Under Subgroups of the Metaplectic Group.”

Invited Speaker,

Special session on “Harmonic Analysis, Microlocal Analysis and PDE”

of the 8th Joint Meeting Between the AMS and SMM,

Berkeley, June 3-4, 2010.

Title: “Elementary Experiments with Toeplitz Quantization.”

Co-organizer of the MRC Special Session on Inverse Problems

Joint Mathematics Meeting of the AMS,

San Francisco, January 13-16, 2010.

## Conferences and Workshops Attended

Program on Inverse Problems and Applications,

Mathematical Sciences Research Institute, Berkeley, CA, Fall 2010.

MRC Special Session on Inverse Problems

Joint Mathematics Meeting of the AMS,

San Francisco, January 13-16, 2010.

American Mathematical Society: Mathematical Research Community

on Inverse Problems, Snowbird, Utah, 2009.

Analysis on Singular Spaces: Elliptic and Hyperbolic Equations,

Mathematical Sciences Research Institute, Berkeley, CA, 2008.

Clay Mathematics Institute Summer School on Evolution Equations,

Eidgenössische Technische Hochschule, Zürich, Switzerland, 2008.

Clay Mathematics Institute Workshop: Solvability and Spectral Instability,

Clay Mathematics Institute, Cambridge, MA, 2007.

Global Harmonic Analysis and its Applications,

Johns Hopkins University, Baltimore, MD, 2006.

Rivière-Fabes Symposium on Analysis and Partial Differential Equations,

University of Minnesota, Minneapolis, MN, 2006.

Institute for Advanced Study/Park City Mathematics Institute Summer School

on Harmonic Analysis and Partial Differential Equations, Utah, 2003.

Research Experience for Undergraduates,

East Tennessee State University, Summer 2002.

## References

Michael Hitrik, Professor of Mathematics, UCLA, [hitrik@math.ucla.edu](mailto:hitrik@math.ucla.edu)  
L. Craig Evans, Professor of Mathematics, U.C. Berkeley, [evans@math.berkeley.edu](mailto:evans@math.berkeley.edu)  
Martin Olsson, Professor of Mathematics, U.C. Berkeley, [molsson@math.berkeley.edu](mailto:molsson@math.berkeley.edu)  
Sam Castañeda, VSPA Director, U.C. Berkeley, [samc@berkeley.edu](mailto:samc@berkeley.edu)