

Fumiko Futamura

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Department of Mathematics and Comp. Science
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EDUCATION

- Ph.D.*, Mathematics, Vanderbilt University May 2007
Advisor: Professor Akram Aldroubi
Dissertation: Localized Operators and the Construction of Localized Frames
- M.S.*, Mathematics. Vanderbilt University May 2004
- B.A.*, Mathematics. University of Louisville May 2002
Minor: Fine Arts
Graduated Summa Cum Laude, 3.94 GPA
Advisor: Professor Robert Powers
Honors thesis: On the Use of Polygonal Diagrams to Depict Finite Affine Planes

PUBLICATIONS

- F. Futamura, *Symmetrically localized frames and the removal of subsets of positive density*, J. Math. Anal. Appl., 326 no. 2, (2007) 1225–1235.
- F. Futamura, *Banach framed, decay in the context of localization*, Sampl. Theory Signal Image Process., 6 no. 2, (2007) 151–166.
- F. Futamura, *Localizable operators and the construction of localized frames*, submitted 2008.

RESEARCH INTERESTS

Frame theory, time-frequency analysis, wavelet analysis, sampling theory, operator theory

PRESENTATIONS

Conference talks:

- Localized Frames and Localizable Operators*, invited talk August 2007
Wavelets XII Conference, SPIE Optics and Photonics, San Diego, CA
- Localized Operators and the Construction of Localized Frames* August 2006
International Conference of Harmonic Analysis and Applications,
San Luis, Argentina

- Symmetrically Localized Frames* May 2006
Current Trends in Harmonic Analysis and Its Applications: Wavelets and Frames,
University of Colorado at Boulder
- On Localized Frames* May 2005
International Conference on Modern Methods of Time-Frequency Analysis,
Strobl, Austria
- On Localized Frames* March 2005
Southeastern Sectional Meeting, Western Kentucky University
- On the Use of Polygonal Diagrams to Depict Finite Affine Planes* May 2002
Annual Meeting of KYMAA.

Seminar talks:

- *Localized Frames and Localizable Operators* September 2007
Department Seminar, Southwestern University
- *Localized Operators and the Construction of Localized Frames* October 2006
Analysis Seminar, Texas A&M University
- *Localized Operators and the Construction of Localized Frames* October 2006
Computational Mathematics Seminar, Sam Houston State University.
- *Localized Operators and the Construction of Localized Frames* October 2006
Analysis Seminar, University of Houston
- *Localized Operators and the Construction of Localized Frames* September 2006
Computational Analysis Seminar, Vanderbilt University
- *On Localized Frames* March 2005
Computational Analysis Seminar, Vanderbilt University

Undergraduate seminar talks:

- Intersections and Parallels, How an Artist Sees Mathematics* October 2006
MAA Student Chapter, Sam Houston State University
- *How to Win at Dots and Boxes Using Combinatorial Game Theory* September 2006
Vanderbilt Math Club, Vanderbilt University
- Mathematical Influences in Art, from Picasso to Escher to Man Ray* October 2005
Undergraduate Seminar in Mathematics, Vanderbilt University
- Whistling Girls and Crowing Hens:* May 2005
Women in Mathematics from Ancient to Modern Times
joint talk with Dr. Jo Ann Staples,
Undergraduate Seminar in Mathematics, Vanderbilt University
- The Poincaré Conjecture* March 2005
Vanderbilt Math Club, Vanderbilt University
- Phi = 1.61803399...* November 2004
Undergraduate Seminar in Mathematics, Vanderbilt University

Art exhibits:

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| <i>Self-Portraits as Other People's Preconceptions</i> | April 2006 |
| installation of eight paintings, oil on canvas, 60 in×36 in | |
| Invoke/Invoke/Provoke, A Multimedia Project of Discovery, Vanderbilt University. | |
| <i>Meret's Nambu</i> | April 2004 |
| painting, oil on canvas, 50 in×30 in | |
| Sarratt Student Art Show, Vanderbilt University | |
| <i>Mentally bound</i> | April 2002 |
| sculpture piece, wax; cheesecloth; wood; chicken wire, 52 in×25 in×28 in | |
| Student Art Show, University of Louisville | |

TEACHING EXPERIENCE

Classes taught:

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| <i>Calculus I</i> , Vanderbilt University, Southwestern University |
| <i>Calculus II</i> , Vanderbilt University, Southwestern University |
| <i>Accelerated Calculus I</i> , Vanderbilt University |
| <i>Accelerated Calculus II</i> , Vanderbilt University |
| <i>Linear Algebra</i> , Southwestern University |
| <i>Introduction to Analysis</i> , Southwestern University |
| <i>Projective Geometry</i> , Southwestern University |

Professional training:

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| <i>MAA minicourse: Perspective Viewing and Drawing Make Good Math Problems</i> | July 2008 |
| MAA MathFest 2008, Madison WI | |
| <i>Project NExT (New Experiences in Teaching) workshop,</i> | July 2008 |
| Cooperative Learning in Undergraduate Mathematics | |
| MAA MathFest 2008, Madison, WI | |
| <i>Texas Section Project NExT Fall Meeting</i> | 2007-2008 |
| Sam Houston State University | |
| <i>Texas Section Project NExT Fellow</i> | 2007-2008 |
| <i>Professor 101, workshop for new professors</i> | April 2007 |
| Vanderbilt University Center for Teaching | |
| <i>GradSTEP (Graduate Student Teaching Event for Professional Development)</i> | 2005-2007 |
| Vanderbilt University Center for Teaching | |
| <i>Professional Development Working Group</i> | 2005 |
| Vanderbilt University Center for Teaching | |
| <i>Group Student Analysis participant</i> | 2003-2006 |
| Vanderbilt University Center for Teaching | |
| <i>Teaching Assistant Orientation Workshop</i> | 2002 |
| Vanderbilt University Center for Teaching | |

COMMUNITY INVOLVEMENT

- Co-organizer, Math Club and Pi Mu Epsilon Chapter* 2007-present
Southwestern University
- Volunteer math tutor and mentor* 2007-2008
Migrant Program at Georgetown High School, Georgetown, TX
- Panel member, Mathematics and Mingling: The Undergraduate Math Club* August 2006
Project NExT session at Mathfest 2006, Knoxville, TN
- Graduate student advisor, Vanderbilt University High School Mathematics Competition* 2006
Vanderbilt University
- Co-founder, graduate student advisor, Math Club* 2005-2007
Vanderbilt University
- Volunteer math tutor and mentor through the Pencil Foundation* 2005-2006
Rose Park Metro Public Middle School, Nashville TN

HONORS AND AWARDS

- B.F. Bryant Prize for Excellence in Teaching* 2007
Graduate teaching award, Vanderbilt University
- Selected Presenter* 2007
Poster presentation, *Localized Operators and the Construction of Localized Frames*
AWM Workshop for Women Graduate Students and Recent PhDs, Joint Mathematics Meetings,
New Orleans, LA
- Graduate Teaching Assistantship* 2002-2007
Vanderbilt University
- Graduate Student Travel Grant* 2006
Vanderbilt University
- Summer Research Assistantship with A. Aldroubi* 2005-2006
Vanderbilt University
- Selected visual artist participant* 2006
Judy Chicago and Donald Woodman's participatory art pedagogy project,
the Multimedia Project of Discovery, Vanderbilt University
- Research Assistantship with M. Neamtu* 2002-2003
Vanderbilt University
- Phi Beta Kappa Award* 2002
University of Louisville

Mary Ruth Brookover Award, Top Senior in Mathematics 2002
University of Louisville

Robert J. Bickel Scholarship, Top Junior in Mathematics 2002
University of Louisville

CONFERENCES ATTENDED

Mathematical Association of America (MAA) MathFest, Madison, WI July 2008

National Institute for Technology and Liberal Education (NITLE) Summit April 2008
San Francisco, CA

February Fourier Talks University of Maryland, College Park February 2008

Joint Mathematics Meeting, San Diego, CA January 2008

The 3rd Annual Spring Institute on Noncommutative Geometry and Operator Algebras May 2005
Vanderbilt University

Southeastern Sectional Meeting, Special Session on Wavelets and Multiwavelets March 2005
Western Kentucky University

MGA Workshop V: Math Analysis and Multiscale Geometric Analysis November 2004
Institute of Pure and Applied Mathematics (IPAM) at UCLA

Southeastern Section Meeting, Special Session on Wavelets, Frames, and Sampling October 2004
Vanderbilt University

Workshop in Knots and 3-Manifolds July 2004
Pacific Institute for the Mathematical Sciences, University of British Columbia, Vancouver, Canada

2nd International Conference on Computational Harmonic Analysis May 2004
Vanderbilt University

The 2nd Annual Spring Institute on Noncommutative Geometry and Operator Algebras May 2004
Vanderbilt University

Noncommutative Geometry in Mathematics and Physics January 2004
CIRM, Luminy, France

3rd International Conference on Multivariate Approximation: Theory and Applications April 2003
Cancun, Mexico

PROFESSIONAL SOCIETIES

American Mathematical Society, Association for Women in Mathematics, Mathematical Association of America

ADDITIONAL INFORMATION

Citizenship: Japan; U.S. permanent resident.

Computer Skills: html, css, Matlab, LaTeX, Maple, Mathematica

Languages Spoken: English (native), Japanese (native, proficient), Spanish (intermediate), French (basic)