CYNTHIA FARTHING

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Positions Held

Director, Math Tutorial Lab, and Lecturer, University of Iowa, 2011 to present.
Clare Boothe Luce Assistant Professor, Creighton University, 2007 to 2011.
Edith T. Hitz Research Assistant Professor, University of Nebraska – Lincoln, 2005 to 2007.
Research Assistant, University of Newcastle, Australia, 2003 to 2004.
Teaching Assistant, University of Iowa, 1999 to 2003, 2004 to 2005.

Education

Ph.D., Mathematics, University of Iowa, May 2005.
  Advisor: Dr. Paul S. Muhly
  Thesis: *Higher-rank graph C*-algebras: desingularization and groupoid methods*
M.S., Mathematics, University of Iowa, December 2002.
B.A., Mathematics, Hiram College, May 1999.

Awards

Project NExT Fellow, 2006 – 2007.
T. Anne Cleary International Dissertation Research Fellowship, April 2003.
University of Iowa Outstanding Teaching Assistant Award, April 2003.
  One of 25 awards given yearly to graduate teaching assistants throughout the university.
Catherine Wagner Outstanding Teaching Award, April 2001 and April 2000.
  Awarded yearly to graduate teaching assistants in the mathematics department.

Research

Interests

Functional Analysis, C*-algebras, Graph Algebras, K-theory

Publications

[1] *The crossed-product structure of* C*-algebras arising from topological dynamical systems (with Nura Patani and Paulette Willis), Journal of Operator Theory, to appear, arXiv:1105.4526.

[2] *Crossed-products of* k-*graph* C*-*algebras by* Z^ℓ (with David Pask and Aidan Sims), Houston Journal of Mathematics, **35** (2009), 903 – 933.

[3] *Removing sources from higher-rank graphs,* Journal of Operator Theory 60 (2008), 165 – 198.

[4] *Higher-rank graph* C*-*algebras: an inverse semigroup and groupoid approach* (with Paul Muhly and Trent Yeend), Semigroup Forum **71** (2005), 159 – 187.

[5] *A groupoid generalization of Leavitt path algebras* (with Lisa Orloff Clark, Aidan Sims and Mark Tomforde), submitted, arXiv:1110.6198.

[6] *Simplicity of algebras associated to étale groupoids* (with Jonathan H. Brown, Lisa Orloff Clark and Aidan Sims), submitted, arXiv:1204.3127.

Invited Research Talks

Desingularization technique for higher-rank graphs, 20 minute talk, AMS Special Session, Joint Mathematics Meetings, San Francisco, January 2010.

C*-algebras of directed graphs and their generalizations, 1 hour Mathematics Department colloquium, University of Nebraska at Omaha, November 2008.

Crossed products of k-graph C*-algebras by Z^ℓ, 45 minute plenary talk, Groupoidfest, University of Iowa, November 2007.

Crossed products by free abelian groups as higher-rank graph algebras, 20 minute contributed talk, AMS Western Section Meeting, University of Arizona, April 2007.

C*-algebras of directed graphs and higher-rank graphs, 1 hour Mathematics Department colloquium, University of Nebraska – Lincoln, October 2006.

Equivalence of groupoids associated to higher-rank graphs with and without sources, 20 minute contributed talk, AMS Central Section Meeting, University of Nebraska – Lincoln, October 2005.

Graph C*-*algebras,* 1 hour Mathematics Department colloquium, Bradley University, December 2004.

Research Presentations

Viewing crossed-products by Z^ℓ *as higher-rank graph algebras*, Great Plains Operator Theory Symposium, 20 minute contributed talk, University of Nebraska – Lincoln, May 2005.

Removing sources from higher-rank graphs, Great Plains Operator Theory Symposium, 20 minute contributed talk, University of Central Florida, June 2005.

Desingularizations of k-*graphs*, 30 minute contributed talk, Groupoidfest, University of Nevada, Reno, November 2004.

Semigroups, groupoids and C*-*algebras of* k-*graphs,* 20 minute contributed talk, Conference Board of the Mathematical Sciences Conference Series, University of Iowa, June 2004.

Higher-rank graph C*-*algebras: an inverse semigroup and groupoid approach*, 20 minute contributed talk, Great Plains Operator Theory Symposium, Texas A&M University, May 2004.

Academic Visits

Department of Mathematics, University of Newcastle, Australia, June 2006.

Teaching

Courses Taught

Creighton University: Calculus I, Calculus II, Calculus III, Fundamentals of Mathematics, Linear Algebra, Topology, Real Analysis, Complex Analysis, Women in Science.

University of Nebraska – Lincoln: Calculus I, Honors Calculus III, Differential Equations, Matrix Theory, Elementary Analysis.

University of Iowa: Basic Algebra, Trigonometry, Calculus I for the Biological Sciences, Calculus II, Fundamental Properties of Functions and Spaces (Real Analysis).

Faculty Preceptor, Ratio Studiorum Program, Creighton University, Fall 2008, 2009.

Advised 15 – 20 incoming first-year students and taught RSP 101: Fundamentals of Collegiate Life.

Students Supervised

Katherine Lester, directed undergraduate research project, 2009 – 2010.

Adam Karnik, directed independent study for Real Analysis II, Fall 2009.

Teaching Assistant, Summer Program for Women in Mathematics, George Washington University*,* July 2003.

Assisted with two mini-courses during the 5 week program. Responsibilities included leading problem sessions and assisting students with course projects.

Teaching Certification

Received Teaching Certificate for secondary mathematics (grades 8-12) from the State of Ohio, 1999

Professional Activities

Panels
   How to write an effective letter of recommendation, Member of organizing committee (with Kumer Das
      and Jennifer Wightman), Mathfest, San Jose State University, August 2007.
   Assessing students' learning, Member of organizing committee (with Emily Dryden, Kathy Pinzon, and
      Michael Posner), Joint Mathematical Meetings, New Orleans, January 2007.
   Choosing a graduate school, panelist, Nebraska Conference for Undergraduate Women in
      Mathematics, University of Nebraska – Lincoln, February 2006.
   Advice on being a TA, panelist, New graduate student orientation, University of Iowa, 2002, 2003.

Workshops
   Directing Undergraduate Research, Joint Mathematics Meetings, Washington, D.C., January 2009.
      Participated in 4 hour workshop sponsored by the Mathematical Association of America.
   Recruiting Students to Take More Mathematics Courses and to Be Math Majors, Mathfest, Lexington,
   KY, August 2011.
      Participated in four hour workshop.

Advanced Placement Calculus Reader, June 2008, 2009 and 2010.
   Graded AP Calculus exams according to a grading rubric provided by Educational Testing Service.

Professional Memberships
   American Mathematical Society
   Association for Women in Mathematics
   Association for Women in Science
   Mathematical Association of America

Service

University of Iowa
   Mathematics Placement Coordinator, Fall 2011-present.
      Ensured students enrolled in mathematics courses had necessary placement scores or prerequisite
      courses. Coordinated with Academic Advising Center to communicate with students.
   New TA Workshops, Fall 2011 to present.
      A series of 5 meetings throughout the fall semester to introduce new mathematics TAs to
      departmental policies and teaching strategies.
   TA Professional Development Worshops, Spring 2012 to present.
      Monthly workshops designed to help graduate students learn about research and teaching
      opportunities during and after graduate school.
   Undergraduate Tutor Training, Fall 2012.
      Member of organizing committee for campus-wide tutor traning workshop.
   On Iowa! volunteer, Assisted with student interviews, Spring 2012.

Creighton University
   Diversity Advisory Board, 2010 – 2011.
   Organized Clare Boothe Luce Symposium, Fall 2010.
      Planned 1 day symposium for 50 Creighton science alumnae and current students to discuss issues
         facing women in science.
   Clare Boothe Luce Undergraduate Scholarship Committee, Chair, Spring 2008, 2009, 2010 and 2011.
   Coordinator, Mathematics Placement, Summer 2010.
   Organized Student Development Panels
      Conversation with Omaha Businesswomen, co-organizer with Patricia Soto, March 2010.
      Applying to Graduate School in the Sciences, October 2008.

Math, Science and Healthcare Careers Information Event, co-organizer with Jim Bretl, Lisa Brockhoff, Linda Dunn, and Brian Kokensparger, November 2008.
Dean's Summer Research Awards, Proposal Reviewer, Spring 2008.
Goldwater Scholarship Selection Committee, 2007, 2008.
Presidential Mentoring Fellowships Selection Committee, Fall 2007, 2008.

Professional
Referee
  Journal of Functional Analysis, 2012.
  Transactions of the AMS, 2011.
  Journal of Operator Theory, 2009.
Mentor for Mathematics Ph.D. Students
  Katherine Johnson, Mentoring through Critical Transition Points, University of Nebraska – Lincoln, Spring 2011.
  Lori McDonnell, Preparing Future Faculty, University of Nebraska – Lincoln, Fall 2010.
  Jesse Burke, Mentoring through Critical Transition Points, University of Nebraska – Lincoln, Spring 2009.
  Zahava Wilstein, Preparing Future Faculty, University of Nebraska – Lincoln, Fall 2008.
Judge, Undergraduate Research Talks, Mathfest, 2012.
Judge, Undergraduate Poster Session, Joint Mathematics Meetings, 2008 to 2011.
GPOTS Organizing Committee, University of Nebraska – Lincoln, 2006 to 2007.
  Member of the organizing committee (with Allan Donsig, John Orr and David Pitts) for conference to be held at the University of Nebraska – Lincoln in May 2007.