

Thomas M. Fiore

Curriculum Vitae

November 2008

Work Address

Department of Mathematics
University of Chicago
5734 South University
Chicago, IL 60637

Electronic Address

fiore@math.uchicago.edu
<http://www.math.uchicago.edu/~fiore/>

Employment

University of Chicago, Chicago, IL, U.S.A.
L.E. Dickson Instructor, NSF Postdoctoral Fellow,
September 2005 - August 2007 and September 2008 - present
Universitat Autònoma de Barcelona, Bellaterra, Spain
Profesor Visitante, September 2007 - August 2008

Education

University of Michigan, Ann Arbor, MI, U.S.A.
Ph.D. in Mathematics, August 2005
Dissertation title: *Pseudo Limits, Biadjoints, and Pseudo Algebras: Categorical Foundations of Conformal Field Theory*
Advisor: Igor Kriz
University of Vienna, Vienna, Austria
Mathematics, October 1998 - June 2000
University of Pittsburgh, Pittsburgh, PA, U.S.A.
B.S. in Mathematics, 4.0, August 1999
B.Phil. (Honors B.A.) in German, 4.0, August 1999

Research

Interests

Higher Category Theory and its Applications, Algebraic Topology,
and Mathematical Music Theory

Publications

- (All available on my website)
- (1) *Generalized Contextual Groups*
with Ramon Satyendra,
Music Theory Online 11, No. 3, 2005.
 - (2) *Pseudo Limits, Biadjoints, and Pseudo Algebras: Categorical Foundations of Conformal Field Theory*
Memoirs of the AMS, 182, No. 860, 2006.
 - (3) *On the Cobordism and Commutative Monoid with Cancellation Approaches to Conformal Field Theory*
Journal of Pure and Applied Algebra 209, No. 3, 583–620, 2007.
 - (4) *Pseudo Algebras and Pseudo Double Categories*
Journal of Homotopy and Related Structures 2, No. 2,
119–170, 2007. Mac Lane Memorial Volume.

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Publications

Continued

- (5) *Laplaza Sets, or How to Select Coherence Diagrams for Pseudo Algebras* with Po Hu and Igor Kriz, *Advances in Mathematics* 218, No. 6, 1705–1722, 2008.
- (6) *Model Structures on the Category of Small Double Categories* with Dorette Pronk and Simona Paoli, *Algebraic and Geometric Topology* 8, No. 4, 1855–1959, 2008.
- (7) *Musical Actions of Dihedral Groups* with Alissa Crans and Ramon Satyendra, in press at the *American Mathematical Monthly* since June, 2008.
- (8) *What is the Jacobian of a Riemann Surface with Boundary?* with Igor Kriz, accepted September, 2008 in *Proceedings of the 2007 Max-Planck Workshop on Hochschild and Cyclic (Co-)Homology and Applications to Geometry and Physics, Aspects of Mathematics, Viehweg, Braunschweig.*
- (9) *A Thomason Model Structure on n -fold Categories* with Simona Paoli, Preprint at Centre de Recerca Matemàtica, September 2008. Submitted for Publication, August 2008.

Papers

in Progress

- (10) *The Fundamental Double Category of a Bisimplicial Set* with Simona Paoli.
- (11) *Monads in Double Categories* with Nicola Gambino and Joachim Kock.
- (12) *Double Categorical K -Theory* with Mark Johnson.
- (13) *Euler Characteristics of Categories* with Wolfgang Lück and Roman Sauer.

Teaching

Dickson Instructor

University of Chicago, Spring 2007, Autumn 2008 Instructor for Math 201, Mathematical Methods for Physical Sciences II
Math 274, Introduction to Differentiable Manifolds and Integration on Manifolds
Math 254, Abstract Algebra I

Research Experience for Undergraduates Program

University of Chicago, July, 2006 and July, 2007
Two multimedia lecture series on Mathematical Music Theory,
Mentor for Student Papers. See website for slides, music, and student projects.

Graduate Student Instructor

University of Michigan, Fall 2000, Winter 2001, Fall 2002, Fall 2003
Instructor for Precalculus, Calculus I, and Calculus II
Recitation Instructor for Calculus III

Guest Lecturer

University of Michigan, three multi-media lectures in Math 107 in Winter 2004 for non-math majors on my music research with R. Satyendra. See website for course notes.

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Talks	<i>Group Actions in Neo-Riemannian Music Theory</i> Wayne State University, Colloquium	November 10th, 2008
	<i>A Thomason Model Structure for n-fold Categories</i> AMS Joint Meetings, Special Session	January 8th, 2009
	Purdue University, Topology Seminar	November 20th, 2008
	Univ. of Illin. Urbana-Champaign, Topology Seminar	November 4th, 2008
	AMS Eastern Sectional Meeting, Special Session	October 11th, 2008
	Notre Dame University, Topology Seminar	October 2nd, 2008
	<i>Homotopy Theory of Double Categories</i> Centre de Recerca Matemàtica, HOCAT2008	June 30th, 2008
	Københavns Universitet, Topology Seminar	December 17th, 2007
	Centre de Recerca Matemàtica, Passe-partout Seminar	October 4th, 2007
	Carvoeiro, International Category Theory Meeting	June 19th, 2007
	University of Michigan, Topology Seminar	March 8th, 2007
	Wayne State University, Topology Seminar	March 6th, 2007
	<i>Selecting Coherence Diagrams for Pseudo Algebras</i> Centre de Recerca Matemàtica, Passe-partout Seminar	May 21st, 2008
	<i>Generalized Rings for Arakelov Geometry</i> Universitat Autònoma de Barcelona, Tropical Geometry Seminar	October 15th, 2007
	<i>Multi-Media Lectures on Mathematical Music Theory</i> University of Chicago, REU Program (7 Lectures)	July, 2007
	University of Chicago, REU Program (4 Lectures)	July, 2006
	Math 107, University of Michigan (3 Lectures)	Winter 2003
	<i>Jacobians of Riemann Surfaces with Parametrized Boundary</i> Universität Bonn, Topology Seminar	December 12th, 2006
	University of Pittsburgh, Topology Seminar	November 21st, 2006
	Pennsylvania State University, Topology Seminar	November 16th, 2006
	<i>Topology and Algebra in Music Theory</i> University of Pittsburgh, Undergraduate Math Club	November 20th, 2006
	Pennsylvania State University Altoona, Colloquium	November 17th, 2006
	University of Chicago	November 7th, 2006
	<i>Double Categories and Pseudo Algebras</i> Fields Institute, Seminar Up to Homotopy	February 20th, 2007
	White Point, International Category Theory Meeting	June 26th, 2006
	University of Chicago, Mac Lane Memorial Conference	April 11th, 2006
	Northwestern University, Topology Seminar	March 27th, 2006
	<i>Categories and Jacobians</i> Notre Dame University, Topology Seminar	April 12th, 2005
	Michigan State University, Topology Seminar	February 14th, 2005
	<i>On Jacobians of Complex Curves with Boundary</i> AMS Central Section Meeting, Special Session	October 23rd, 2004
	<i>Beethoven and the Torus</i> University of Michigan, Undergraduate Math Club	October 14th, 2004
	<i>Pseudo Algebraic Structures in CFT</i> IMA Summer Program on n -Categories	June 11th, 2004

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**Awards and
Memberships**

NSF Mathematical Sciences Postdoctoral Research Fellowship
September 2005 - August 2007, September 2008 - August 2009

Grant from the Spanish Ministerio de Educación y Ciencia
September 2007 - August 2008

NSF VIGRE Graduate Fellowship
University of Michigan, September 2001 - May 2005

Rackham Dissertation Fellowship
University of Michigan, January 2005 - April 2005

NSF Graduate Research Fellowship Honorable Mention
2000

Chancellor's Scholarship
Full scholarship, University of Pittsburgh,
September 1995 - August 1999

Culver Prize
University of Pittsburgh, March 1998

Member of the AMS, MAA, and Soc. for Math. and Comp. in Music

**Research
Program
Participation**

Fields Institute, Toronto
Thematic Program in Geometric Applications of Homotopy Theory,
January and February 2007

Centre de Recerca Matemàtica, Barcelona
Homotopy Theory and Higher Categories
September 2007 - July 2008

**Organizing
Activities**

Co-Organizer for AMS Special Session
Homotopy Theory and Higher Categories, Joint Meeting, January 2009
Topology Seminar Co-Organizer,
University of Chicago, 2006 - 2007, 2008 - 2009
Category Theory Seminar Organizer, University of Chicago, 2006 - 2007
Student Topology/Geometry Seminar Organizer,
University of Michigan, 2004 - 2005
Mentor Program Organizer for incoming graduate students in
2002, 2003, 2004 at the University of Michigan

**Additional
Qualifications**

Reviewer for Math Reviews (10 reviews)
Referee Work
Instructor Training, Chicago, April 2006, Michigan, September 2000
Foreign Languages
German: near native proficiency
Spanish: intermediate proficiency

Citizenship

U.S.A.